CUTTING TOOLS CATALOG

CBN · PCD · TURNING · SMALL PART MACHINING · GROOVING · THREADING · MILLING · TOOLING SYSTEMS

WERNER

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WERNER

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Grade table of CVD coating

Machining Type	Workpiece Material	Code	Grade table of competitors and WERNER														
			WERNER	SANDVIK	ISACR	KENNAMETAL	TAEGUTEC	WALTER	MITSUBISHI	SUMITOMO	TUNGALOY	KYOCERA	DIJET	HITACHI	KORLOY	SECO	ZCC.CT
Turning	P	P01		GC4005	IC9150	KC9105		WAP01	UE6050	AC700G	T9005	CA5505	JC110V	HC5000		TP1000 TK1000	
		P10	KC1115	GC4015	IC9150 IC9015	KC9110 TN7005 TN7010	TT1300	WAP10	UE6050 UE6110 UE6010 UC6020 UC6010	AC700G AC2000	T9005 T9015	CA5505 CA5515	JC110V JC215V	HG8010 GM8015 GM10	NC310 NC3015	TP1000 TK1000 TP2000 TK2000	YBC152 YBC151
		P20	KC1115 KC1125	GC4015 GC4225 GC4025 GC2015	IC9250 IC9025 IC9054	KC9125 KC9225 TN7015	TT1500	WAP20	UE6110 UE6010 UE6020 UC6010	AC2000 AC3000	T9015 T9025	CA5515 CA5525 CA5025 CR9025	JC110V JC215V	HG8025 GM8020	NC3020	TP2000 TK2000 TP200	YBC251 YBC252
		P30	KC1125 KC1135	GC4225 GC4025 GC4035 GC2025 GC2135	IC9350 IC656	KC8050 TN7025	TT3500 TT5100	WAP30	UE6035 UH6400 US735	AC3000 AC630M	T9025 T9035	CA5535	JC215V JC325	GM25	NC330	TP3000 TP300	YBC252 YBC351
		P40		GC4035 GC235	IC635	KC9140 KC9040 KC9240 KX9245 TN7035 TPC35	TT450		UE6035 UH6400 US735	AC630M	T9035	CA5535	JC325V JC450V	GM8035 GX30		TP3000 TP400	YBC351
	M	M10		GC2015	IC9250	TN7010		WAM10	US7020	AC610M	T9015	CA6515 CA6015	JC110V	GM10		TP200	
		M20		GC2025	IC9250 IC9025 IC9054	KC9225 TN7015	TT2500	WAM20	US7020	AC610M AC630M	T6020 T9025	CA6525 CA6015	JC110V JC215V	GM8020	NC9020	TP200	YBM151
		M30		GC2135 GC235	IC9350 IC9025	KC8050 TN8025	TT3500	WAM30	US735	AC630M	T6030		JC215V JC325V	HG8025 GM25	NC330	TP300 TP400 TP40	YBM151 YBC251
		M40			IC656 IC635	KC9240 KC9245 TPC35	TT5100		US735				JC325V JC450V	GX30		TP400 TP40	
	K	K01		GC3205 GC3210	IC9150				UC5015	AC300G	T5010	CA4010	JC105V	GM3005		TK1000	YBD052
		K10	KC3110	GC3205 GC3210 GC3015	IC9150 IC9015 IC4010 IC418 IC428	KC9315 KC9110 TN5015	TT1300	WAK10	UC5115	AC700G	T5010	CA4010 AC4115	JC110V	HG8010 GM8015	N305K	TK1000 TK2000	YBD102 YBD151
		K20	KC3125	GC3215	IC9015	KC9320 TN5020	TT1500	WAK20	UC5115	AC700G	T5020	CA4120	JC110V JC215V	HG8025 GM8020	N315K	TK2000 TP200	YBD152 YBD252
Milling	P	P01															
		P10			IC9080 IC4100	TN2510 TN25M				ACP100			JC730U				
		P20		GC4020	IC520M	TN7525		WAP25	FH7020 F7030	ACP100			JC730U			T200M T250M	YBM251
		P30		GC4030	IC4050	KC930M	TT7300	WAP35	F7030	AC230	T3030				NCM335	T250M T350M T25M	YBM351
		P40		GC4240 GC4040		KC935M TN7535				AC230				GF30 GX2030 GX30		T350M	
	M	M01															
		M10				TN25M											
		M20			IC520M	TN7525			F7030				JC730U			T350M T25M	YBM251
		M30		GC2040	IC4050	KC930M TN7535		WTP35	F7030		T3030				NCM335	T250M T25M	YBM351
		M40												GF30 GX30			
	K	K01			IC9080								JC600				
		K10			IC4100	TN5505 TN5515		WAK15	F5010	ACK200 AC211	T1015		JC600		NCM310		YBD152
		K20		GC3220 GC3020 K20D K21W	C520M DT7150	KC915M TN5520		WAK25	F5020	ACK200	T1015		JC610		NCM320	T150M T200M	YBD252
		K30		GC3040	IC4050	KC930M KC935M							JC610			T200M	

Grade table of PVD coating

Machining Type	Workpiece Material	Code	Grade table of competitors and WERNER														
			WERNER	SANDVIK	ISACR	KENNAMETAL	TAEGUTEC	WALTER	MITSUBISHI	SUMITOMO	TUNGALOY	KYOCERA	DIJET	HITACHI	KORLOY	SECO	ZCC.CT
Turning	P	P01										PR915	JC5003				
		P10			IC507	KC5010 KC5510			VP10MF		AH710	PR915 PR930	JC5003			CP200	YBG102
		P20	KP2120 KTX	GC1020 GC1025	IC908 IC928 IC1008 IC1028	KC5025			VP15TF VP20MF		AH710 AH330	PR630 PR915 PR930 PR660	JC5015		PC230	CP250	YBG202
		P30	KP2130 KVX	GC1025 GC4125	IC928 IC1008 IC1028	K7010 K7020 K7235			VP15TF VP20MF		GH330 GH730 AH120 AH330 AH740	PR630 PR660	JC5015			CP500	YBG202
		P40		GC1020 GC2145	IC928 IC1008 IC1028	K7030			VP15TF VP20MF		AH120	PR660			PC240	CP500	YBG302
	M	M01								EH510Z EH10Z		PR915					
		M10		GC1005 GC1025	IC507 IC907	KC5010 KC5510			VP10MF	EH510Z EH10Z		PR915 PR930	JC5003			CP200	YBG102
		M20	KP2120 KKX	GC1020 GC1025 GC4125	IC354 IC3028	KC5025 KC730 KC5525			VP15TF VP20MF	EH520Z EH20Z	GH330 GH730	PR630 PR915 PR930	JC5015		PC9030	CP200 CP500	YBG202
		M30	KP2130 KVX	GC1020 GC2035	IC908 IC928 IC1008 IC1028	KC5025 KC5525			VP15TF VP20MF		AH120	PR630 PR660	JC5015		PC9030	CP500	YBG302
		M40		GC2145	IC228 IC328							PR660					
	K	K01								EA10Z	AH110		JC5003				
		K10				KC5010 KC5510				EA10Z	GH110 AH110		JC5003 JC5015		PC205K	CP200	YBG102
		K20		GC1020	IC928 IC1008 IC908 IC22	KC7015			VP15TF	EH20Z	AH120		JC5015		PC205K	CP200 CP250	YBG202
		K30		GC4125	IC928 IC1008 IC908 IC22	KC7225			VP15TF							CP500	
	S	S01	KP6105	GC1005					VP05RT		AH110	PR915	JC5003				
		S10	KP6105 KP6110	GC1005 GC1025		KC5410 KC5010			VP05RT VP10RT	EH510Z EH10Z	AH120	PR915	JC5015			CP200 CP250	YBG102
		S20		GC4125		KC5025 KC5525			VP10RT VP15TF	EH20Z EH520Z		PR915				CP250 CP500	
		S30		GC2145					VP15TF								
Milling	P	P01								APC100			JC5003	PTH08M PAC08M TB6005 JX1005			
		P10	KP1210		IC903 IC950	KC715M		WXH15 WXM15		ACZ310 ACP100		PR730 PR830	JC5003 JC5030	CY9020 PCA12M TB6005 JX1020 PC20M			
		P20	KP1220	GC1025	IC950 IC900 IC908 IC910	KC522M KC525M			VP15TF	ACZ310 ACZ330 ACZ200		PR630 PR730 PR830 PR660	JC5015 JC5030 JC5040	TB6020 CY150 JX1015	PC230	F25M	YBG202
		P30	KP1230	GC1030	IC900 IC928 IC300 IC328	KC725M	TT7030 TT7070 TT9030	WXM35	VP15TF VP30RT	ACZ300 ACZ350 ACZ200	GH330 AH330 AH120 AH740	PR630 PR660 PR730 PR830	JC5015 JC5040	TB6020 CY250 CY25 HC844 JX1045 PTH30E	PC3530 PC130	F25M F30M	YBG302
		P40			IC900 IC928 IC300 IC328	KC735M	TT8020 TT8030	WXP45	VP30RT	ACZ350 ACP300	AH120	PA660	JC5040	PTH30E TB6060 PTH40H		F40M T60M	
	M	M01												PCS08M			
		M10		GC1025		KC715M		WXM15				PR630 PR730 PR830	JC5003	CY9020 JX1020			
		M20	KP2220	GC2030	IC900 IC903 IC908 IC928	KC522M KC525M	TT8020 TT9030		VP15TF VP20RT	ACZ310 EH20Z	GH330	PR630 PR730 PR830 PR660	JC5015 JC5030 JC5040	TB6020 CY150 JX1015		F25M	YBG202
		M30		GC2030	IC928 IC328	KC725M KC735M	TT8030	WXM35	VP15TF VP20RT VP30RT	ACZ330 EH20Z ACZ350	AH120	PR630 PR660 PR730 PR830	JC5015 JC5030 JC5040	TB6045 CY250 HC844	PC9530	F30M F40M	YBG302
		M40			IC928 IC328				VP30RT	ACZ350 ACP300	AH140	PR660	JC5015	TB6060 PTH40H JX1060			

Grade table of uncoated carbide

Machining Type	Workpiece Material	Code	Grade table of competitors and WERNER														
			WERNER	SANDVIK	ISACR	KENNAMETAL	TAEGUTEC	WALTER	MITSUBISHI	SUMITOMO	TUNGALOY	KYOCERA	DIJET	HITACHI	KORLOY	SECO	ZCC.CT
Turning	P	P01													ST05		
		P10		SIP	IC70	P10	P10			ST10P	TX10S		SRT	WS10	ST10		YC10
		P20		SMA	IC70 IC50M	K125M TTM	P20		UTi20t	ST20E	TX20 TX25		SRT DX30	EX35	ST20		
		P30		SM30	IC50M IC54	GK K600 TTR	P30		UTi20t	A30 A30N	TX30 UX30	PW30	SR30 DX30	EX35 EX40	ST30A		
		P40		S6	IC54	G13				ST40E	TX40		SR30 DX35	EX45			YC40
	M	M10		H10A		K313	M10			EH510 U10E	TU10		UMN	WA10B	U10	890	YC10
		M20		H13A	IC08	K68 KMF K125M TTM	M20		UTi20t	EH520 U2	TU20 UX30		DX25 UMS	EX35	U20	HX 883	
		M30		H19F SM30	IC08 IC28	K600 TTR			UTi20t	A30 A30N	UX30		DX25 UMS	EX40 EX45	ST30A		YC40
		M40		S6	IC128	G13	M40				TU40		UM40	EX45	U40		
	K	K01		H1P		K605			UTi05t	H1 H2	TH03 KS05F		KG03	WH05	H02		YD051
		K10		H1P H10 HM	IC20	K313 K110M THM THM-U	K10		HTi10	EH10 EH510	G1F TH10	KW10	KG10 KT9	WH10	H01	890	YD101
		K20		H13A	IC20 IC10	K715 KMF K600	K20		UTi20t	G10E EH20 EH520	G2F KS15F G2 KS20	GW10	CR1 KG20	WH20	G10	890 HX 883	YD201
		K30			IC10 IC28	THR			UTi20t	G10E	G3		KG30		G3	883	
	N	N01		H10 H13A		K605				H1 H2	KS05F		KG03				
		N10				K313 K110M THM THM-U	K10		HTi10	EH10 EH510	TH10 H10T		KG10 KT9		H01	890 H15	YD101
		N20	KW20			K715 KMF K600	K20			G10E EH20 EH520	KS15F		CR1 KG20			HX KX 883 H15 H25	YD201
		N30				G13 THR							KG30			H25	
	S	S01							RT9005				KG03				
		S10		H10 H10A H10F H13A		K10 K313 THM	K10		RT9005 RT9010	EH10 EH510	KS05F TH10		FZ05 KG10		H01	890	YD101
		S20				K715 KMF			RT9010 TF15	EH20 EH520	KS15F KS20		FZ15 KG20			890 883 HX H25	
		S30				G13 K600 THR			TF15				KG30				
Milling	P	P10		S1P									SRT				YC10
		P20			IC50M IC28	K125	P10		UTi20t	A30N	TX25		SRT DX30	EX35	ST20		
		P30			IC50M IC28	GX K600	P20		UTi20t	A30N	UX30	PW30	SR30 DX30	EX35 EX40	ST30A		
		P40			IC28		P30					PW30	SR30	EX45	ST40		YC40
	M	M10				K110M	M10						UMN		U10		YC10
		M20				K313	M20		UTi20t	A30N			DX25 UMS	EX35	U20		
		M30			IC28	KFM K600			UTi20t	A30N	UX30		DX25 UMS	EX40 EX45			YC40
		M40			IC28		M40				TU40			EX45	U40		
	K	K01							UTi05t				KG03		H01		YD051
		K10		H1P	IC20	K110M K313	K10	WK10	HTi10	G10E	TH10	KW10	KG10	WH10	H05 H10		YD101
		K20			IC20 IC10	KFM	K20		UTi20t	G10E			KT9 CR1 KG20	WH20	G10	HX	YD201
		K30			IC20 IC28				UTi20t				KG30				

Grade table of PCBN

Workpiece Material	Code	Grade table of competitors and WERNER									
		WERNER	SUMITOMO	MITSUBISHI	TUNGALOY	KYOCERA	NTK	SANDVIK	KENNA METAL	ISCAR	SECO
K	K01	KBN7508	NCB100 BNC500 BN7000 BN500	MB710 MB5015	BX910 BX930 BX870	KBN475 KBN60M	B30 B16	CB50 CB7525	KB1340	IB50 IB85	
	K10	KBN910 KBN900 KBN95N	BN7000 BN500	MB710. MB730 MB5015. MB4020	BX470. BX480. BX950	KBN60M KBN900	B23 B16	CB7925		IB55 IB90	CBN200. CBN300 CBN300P. CBN400C
	K20	KBN910 KBN900 KBN95N KBN800	BN7000 BNS800	MB730. MB4020 MB4120. MBS140	BX470. BX480 BXC90. BX90S	KBN900					
	K30	KBN800	BNS800	MB4120. MBS140 BC5030	BXC90 BX90S				KB5630		CBN500
S	S01	KBN7508	NCB100 BN7000	MB730 MB4020 MB4120	BX904. BX950 BX470. BX480 M714B				KB5630 KB1340	IB85 IB05S IB10S	
H	H01	KBN10N	BNC2010 BNC100 BN1000 BN2000 BNX10	BC8105 BC8110 MBC010 MB810 MB8110	BXM10 BX310	KBN05M KBN10M KBN510	B5K B52	CB7105	KB5610	IB05H IB50 IB10HC	CH0550 CBN10 CBN100 CBN060K
	H10	KBN10N KBN20N KBN25N KBN700	BNC2010 BNC2020 BNC160 BNC200 BN2000	BC8110 BC8120 MBC020 MB8025 MB8110 MB825	BXM10 BX330 BX530	KBN05M KBN25M KBN525	B5K B6K B52 B36	CB7015 CB7115 CB20	KBH20 KB5610 KB5625	IB10H IB55 IB25HA	CBN10 CBN100 CBN150 CBN060K CBN160C
	H20	KBN20N KBN25N KBN700 KBN710 KBN750	BNC2020 BNC200 BNX20	BC8120. BC8020 MBC020 MB8025. MB8120	BXA20 BXM20 BX360	KBN30M KBN35M KBN900	B36 B40 B6K	CB7025 CB7125 CB50	KBH20 KB5625 KB5630	IB20H. IB20HC IB25H. IB25HC	CH2540 CBN150 CBN160C
	H30	KBN35N KBN610 KBN700 KBN710 KBN750	BNC300 BN350 BNX25	BC8130 MB8130 MB835	BXM20 BXA20 BXC50 BX380	KBN30M KBN35M KBN900	B40	CB7135 CB7525	KB5630	IB90	CH3515

Grade table of PCD

Workpiece Material	Code	Grade table of competitors and WERNER									
		WERNER	SUMITOMO	MITSUBISHI	TUNGALOY	KYOCERA	NTK	SANDVIK	KENNA METAL	ISCAR	SECO
N	N01	KPD01	DA1000 DA90	MD205	DX180 DX160	KPD001	PD1	CD05 CD01	KD1400	ID5	
	N10	KPD05	DA1000 DA150	MD205 MD220	DX140	KPD001 KPD010 KPD230	PD2	CD1810	KD1400 KD1425	ID5	PCD05 PCD10
	N20	KPD10	DA1000 DA2200	MD230 MD220	DX120 DX110	KPD230 KPD250	PD2		KD1400 KD1425		PCD05 PCD20
	N30	KPD25	DA1000 DA2220	MD230 MD2030	DX110				KD1400		PCD05 PCD30 PCD30N



PCBN Introduction and Features

PCBN hardness is weaker than diamond and PCD only,Because of it's crystal structure and inter-crystalline arrangement,makes it closer to diamond hardness and compressive strength.

Blades made of PCBN material have extremely high hardness and good red hardness (tolerate high temperatures of 1400 to 1500°C), oxidation resistance (no chemical reaction with iron metals at temperatures of 1200 to 1300°C) and resistance Fracture toughness,It is the ideal tool for turning ferrous materials. Compared to cemented carbide and ceramic tools, PCBN has excellent thermal conductivity, and under the same turning conditions, PCBN tools have lower turning temperatures.

At present, PCBN tools have been widely used in machining hardened steels, chilled cast irons, thermal spray materials, pure nickel and other difficult to machined materials and precision machining,also it have achieved significant technical and economic benefits.

WERNER

B

PCBN Tools

B1- B46

PCBN
PCBN series products B01-B45

PCBN series products ..... B
Inserts identification ..... B
PCBN Inserts ..... B
KNR-PCBN Radius endmills ..... B
KNR-PCBN Radius endmills ..... B
KNB-PCBN Ball endmills ..... B

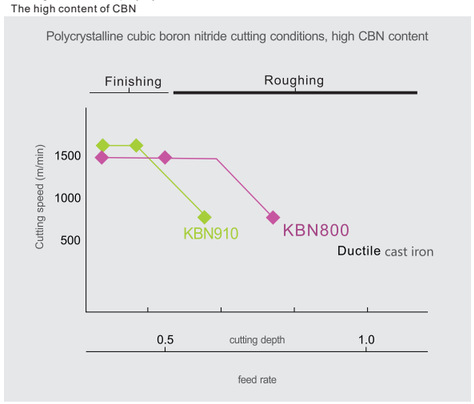


PCBN

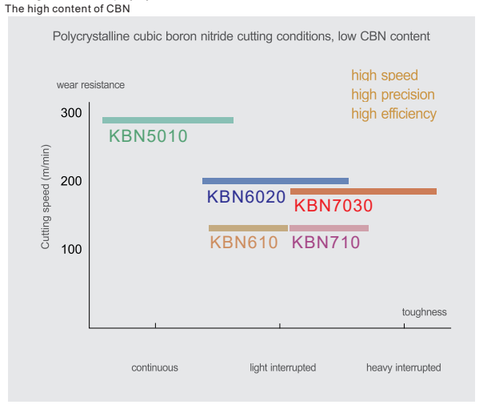
Carbide on the back side Carbide in the middle

	Type	Grade	Features	Application
CBN		KBN1000	Non - binding materials, nano - to submicron grade The direct combination of particles has excellent thermal conductivity.	Suitable for processing high temperature alloy, difficult to process materials
High CBN content		KBN900	High CBN content, fine granule, excellent wear resistance and chipping resistance	Suitable for various types of cast iron and powder metal alloys
		KBN910	Suitable for processing all kinds of cast iron and powder metal alloys	Suitable for processing all kinds of cast iron
		KBN800	Combination of wear and heat resistance properties	Suitable for processing non-homogeneous cast iron
CBN		KBN710	Combination of wear and impact resistance	Suitable for heavy interrupted hard steel
low CBN content		KBN7030	Fine granule CBN combined with ceramic binder for excellent toughness and impact resistance	Suitable for medium and strong intermittent processing of hardened steel
		KBN6020	The distribution of CBN and binder is uniform, Excellent thermal stability and wear resistance	Suitable for weak and medium intermittent processing of hardened steel
		KBN610	Combination of wear and heat resistance properties	Widely used for continuous and light interrupted processing of hard steels
		KBN5010	Impurities are effectively controlled Excellent thermal stability and wear resistance	Suitable for continuous and weak discontinuous machining of hardened steel

Cutting conditions of polycrystalline cubic boron nitride
The high content of CBN



Cutting conditions of polycrystalline cubic boron nitride
The high content of CBN

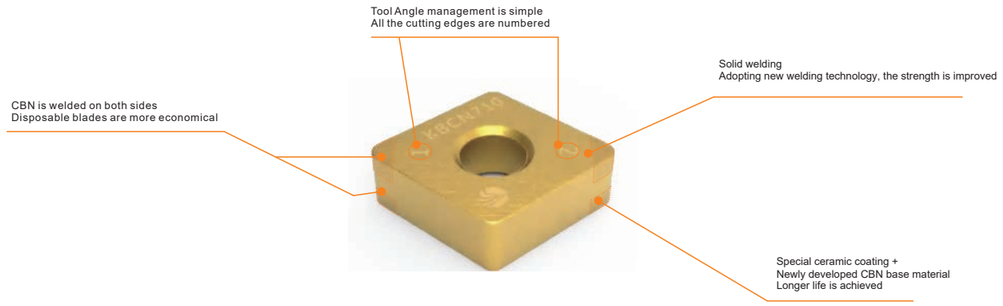


PCBN Cooating PCBN insert

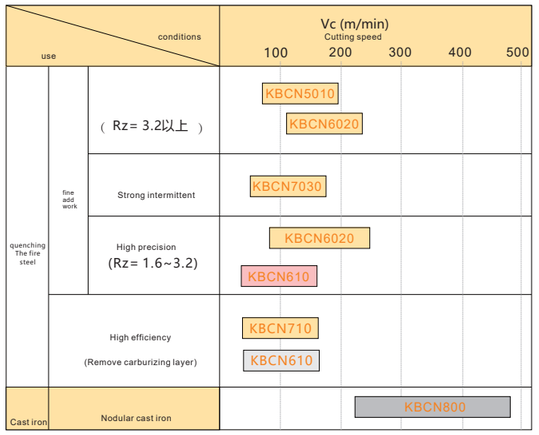


The profile

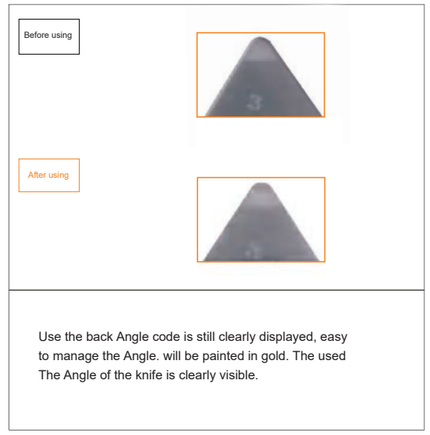
The strong and tough CBN base material with excellent heat resistance and special ceramic coating are used The combination of CBN, higher life than the previous, and improve the machining accuracy.
There are cost-effective double-sided multi-angle disposable blades and other applications in a wide range Product series, easier to use, more economic.
In addition, the extension of the coating CBN tip pattern can be effectively carried out
High precision machining and burr control



Applicable fields



Used tool Angle management



Use the back Angle code is still clearly displayed, easy to manage the Angle. will be painted in gold. The used The Angle of the knife is clearly visible.

Material introduction

Hardened steel cutting

Hard Turning – Advantages
Substitution of Grinding by Turning
Decreased production costs
Smaller investment
Higher flexibility in manufacturing process
Shorter process chain
Environmentaly friendly

PCBN	Add coolant condition Preferred for hardened steel processing Demand efficient processing High speed and high precision machining is required
PCBN	Low rigidity machining Cannot improve the cutting speed when machining small parts In the processing of various hard particle materials

The recommended material

			%	μm	HV	Gpa	
coating	KCBN7030	TiCN	70-75	1	34-36	1.4-1.5	With excellent coating on strong base material, high efficiency and long life are achieved
	KCBN710	TiN	65-70	2	33-35	1.5-1.6	The strong base material is combined with wear-resistant coating to achieve long processing life
	KCBN6020	TiN	60-65	2	31-33	1.2-1.3	Maintain stable and high precision in the finishing of hardened steel
	KCBN610	TiN	55-60	2	31-33	1.2-1.3	Excellent wear-resistant coating for stable processing
	KCBN5010	TiCN	50-55	1	30-32	1.1-1.2	Improve the abrasion resistance of coating and base material to achieve excellent surface roughness
No coating	KBN7030	TiCN	70-75	1	34-36	1.4-1.5	Hardened steel general processing, excellent resistance to breakage and wear resistance
	KBN710	TiN	65-70	2	33-35	1.5-1.6	Excellent blade strength, suitable for intermittent machining
	KBN6020	TiN	60-65	2	31-33	1.2-1.3	Excellent crescent depression wear resistance, suitable for high efficiency processing
	KBN610	TiN	55-60	2	31-33	1.2-1.3	Universal material with wear resistance
	KBN5010	TiCN	50-55	1	30-32	1.1-1.2	Excellent wear resistance, suitable for high-speed continuous machining

Recommended Cutting Conditions

Applications	Grade	Recommended Cutting Speed		
		Vc (m/min)	f (mm/rev)	ap (mm)
Continious cutting	KBN5010	110-180-300	0.03-0.10-0.20	0.03-0.20-0.35
General cutting	KBN610	50-100-160	0.03-0.20-0.40	0.03-0.20-0.35
	KBN6020	80-160-200	0.03-0.10-0.20	0.03-0.20-0.35
Interrupted cutting	KBN710	50-100-150	0.03-0.10-0.20	0.03-0.20-0.35
	KBN7030	60-100-180	0.03-0.10-0.20	0.03-0.20-0.35

WERNER

Material introduction

Cast iron cutting

CBN tool features:

1. The structure of cubic boron nitride material belongs to the cubic structure. The molecular atoms and nitrogen atoms have the cubic structure, and the atomic spacing is small, which makes cubic boron nitride very stable and has the characteristics of high hardness.
2. The two elements of cubic boron nitride have no affinity with iron and do not react.
3. The use of high strength CBN micron tool materials combined with a variety of trace elements, has formed similar to spline beef ultra-uniform distribution of composite materials, with high hardness, but also has good high temperature resistance and collapse resistance, etc., set a variety of advantages in a tool material.

The recommended material

	Material	Combined with the material	Containing rate%	Granularity microns μm	HV Hardness	GPA Bending Force	Characteristics
No coating	KBN910	TiN	90-95	2	41-44	1.8-1.9	High hardness, high bending strength, high temperature resistance
	KBN800	TiN	85-90	4	39-42	1.0-1.1	Suitable for cast iron processing, excellent abrasion resistance and collapse resistance material
Coating	KBCN800	TiN	85-90	4	39-42	1.0-1.1	Base material and coating with excellent abrasion resistance, suitable for hard cutting cast iron

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc (m/min)	f (mm/rev)	ap (mm)
Turning	Cast iron	<230	KBN910	500-2000(650)	0.1-1.0	<5.0
			KBN800	200-700	0.1-0.5	<3.0
			KBCN800	200-1000	0.1-0.5	<3.0
	Cast iron	>200	KBN800	200-800	0.1-0.4	<3.0
			KBCN800	200-1000	0.1-0.6	<3.0
	Cast iron	QT450-QT550 QT600-QT700	KBN800	80-200	0.1-0.4	<3.0
			KBCN800	150-400	0.1-0.4	<0.5
Milling	Cast iron	HT200-HT300 (HB<200)	KBN910	800-2000	0.1-1.0	<5.0

P M K N S H

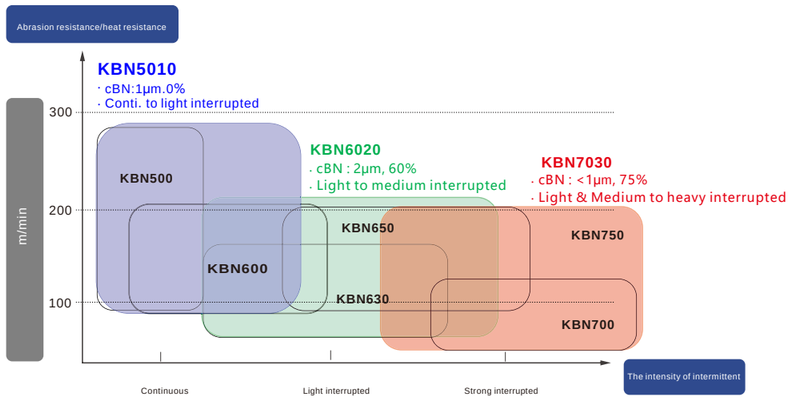
PCBN coated inserts for harden quenched stee

KBCN7030/KBCN6020/KBCN5010

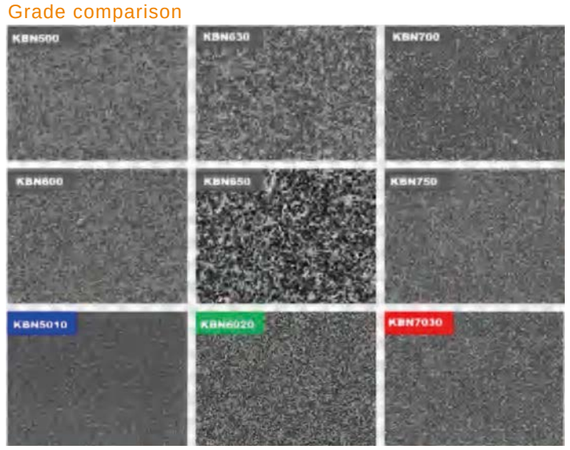


Committed to high precision, efficient processing
Support high precision machining, can maintain excellent dimensional accuracy and long time Surface roughness;
Long life of CBN blade is achieved through excellent wear-resistant coating,
Play the excellent cutting performance!

Applications



Grade comparison

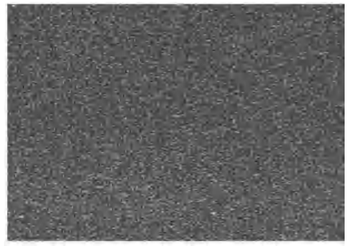


KBN5010/KBCN5010

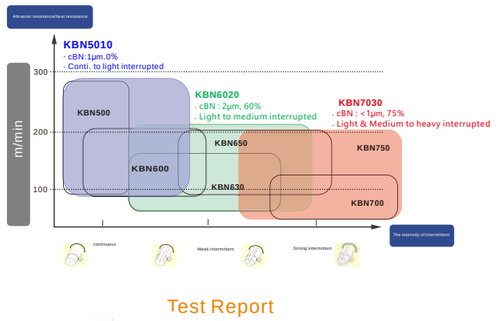
Features

Grade	Grain Size	CBN(vol.%)	Binder	Characteristics & Applications
KBN5010	<1	50	TiCN	CBN Disperse evenly with binder Impurities are effectively controlled. Excellent thermal stability and wear resistance. Suitable for continuous and weak discontinuous cutting of hardened steel. Suitable for machining shaft, gear, bearing parts, etc.

Microstructure



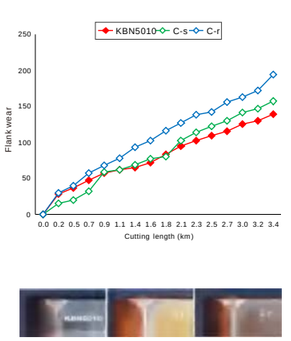
Applications



Test Report

Type	Continuous turning
Coolant	Dry
Cutting Speed	180 m/min
Feed Rate	0.1 mm/rev
Depth of Cut	0.1 mm
Cutting tool Type	CNGA120408
Workpiece	SUJ2HRC62

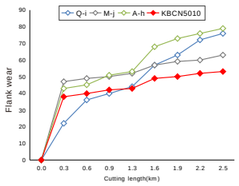
No.	Grade	Coating	Company
1	C-r	Non-coated	Comp.
2	C-s	Coated	Comp.
3	KBN5010	Non-coated	WERNER



Test Report

Type	Continuous turning
Coolant	Dry
Cutting Speed	250m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

No.	Grade材质牌号	Coating	Company
1	Q-i	Coated	Comp.
2	M-j	Coated	Comp.
3	A-h	Non-coated	Comp.
4	KBCN5010	Coated	WERNER

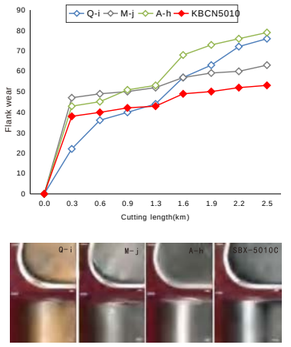




Test Report

Type	Continuous turning
Coolant	Dry
Cutting Speed	250m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

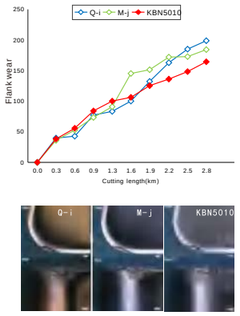
No.	Grade	Coating	Company
1	Q-i	Coated	Comp.
2	M-j	Coated	Comp.
3	A-h	Non-coated	Comp.
4	KBCN5010	Coated	WERNER



Test Report

Type	Interrupted turning
Coolant	Dry
Cutting Speed	180m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

No.	Grade	Coating	Company
1	Q-i	Coated	Comp.
2	M-j	Coated	Comp.
3	KBN5010	Non-coated	WERNER

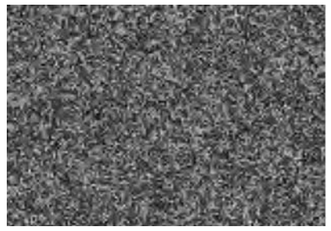


KBN6020/KBCN6020

Features

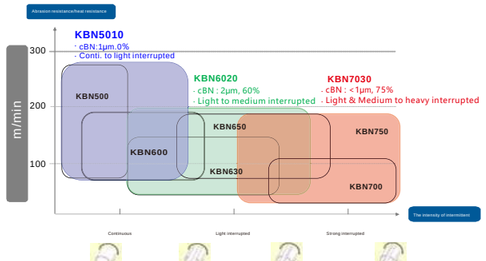
Grade	Grain size	cBN (vol.%)	Binder	Characteristics & Applications
KBN6020	2	60	TiN	cBNAnd binder evenly distributed Impurities are effectively controlled. Excellent thermal stability and wear resistance. Suitable for weak and medium intermittent processing of hardened steel. Suitable for machining shaft, gear, etc.

Microstructure



Application

3. PCBN

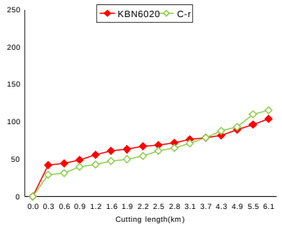


Test Report



Type	Interrupted turning
Coolant	Dry
Cutting Speed	180m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

No.	Grade	Coating	Company
1	C-r	Non-coated	Comp.
2	KBN6020	Non-coated	WERNER



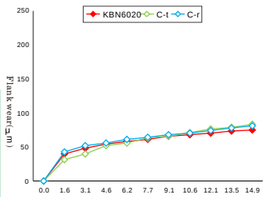


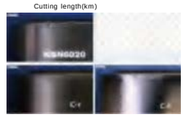
Test Report



Type	Interrupted turning
Coolant	Dry
Cutting Speed	150m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

No.	Grade	Coating	Company
1	C-r	Non-coated	Comp.
2	C-t	Coated	Comp.
3	KBN6020	Non-coated	WERNER



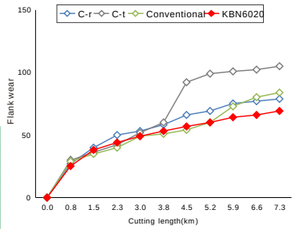


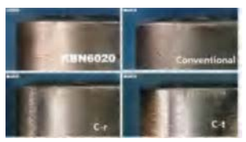
Test Report



Type	Interrupted turning
Coolant	Dry
Cutting Speed	150m/min
Feed Rate	0.2mm/rev
Depth of Cut	0.15mm
Cutting tool Type	CNGA120408
Workpiece	SCM415H HRC60

No.	Grade	Coating	Company
1	C-r	Non-coated	Comp.
2	C-t	Coated	Comp.
3	Conventional	Non-coated	WERNER
4	KBN6020	Non-coated	WERNER



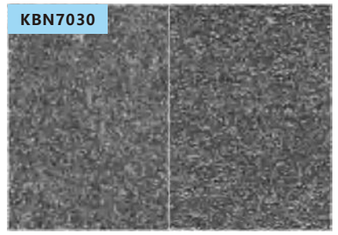


KBN7030/KBCN7030

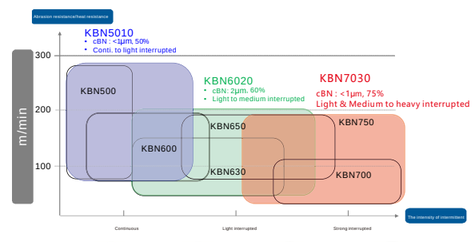
Features

Grade	Grain size	cBN (vol.%)	Characteristics & Applications
KBN7030	< 1	75	fine cBN The combination of particles and ceramic binder greatly improves the toughness of the material. Suitable for medium and strong discontinuous machining of hardened steel. Suitable for shaft and gear discontinuous processing.

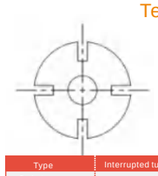
Microstructure



Application

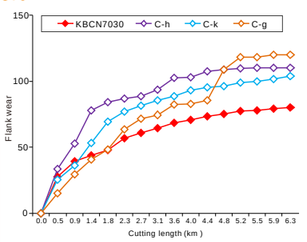


Test Report



Type	Interrupted turning
Coolant	Dry
Cutting Speed	170m/min
Feed Rate	0.1mm/rev
Depth of Cut	0.2mm
Cutting tool Type	DNGA150408
Workpiece	SCM440H (JIS) HRC50

No.	Grade	Coating	Company
1	C-g	Coated	Comp.
2	C-h	Non- coated	Comp.
3	C-k	Coated	Comp.
4	KBCN7030	Coated	WERNER



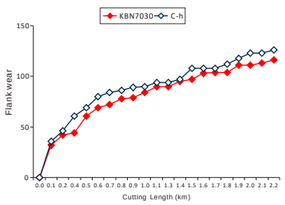


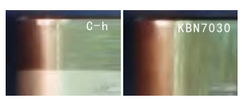
Test Report



Type	Interrupted turning
Coolant	Dry
Cutting Speed	180m/min
Feed Rate	0.2mm/rev
Depth of Cut	0.1mm
Cutting tool Type	CNGA120408
Workpiece	SCM440H (JIS) HRC50

No.	Grade	Coating	Company
1	C-h	Non- coated	Comp.
2	KBN7030	Non- coated	WERNER





WERNER

Insert Identification System

4-	NU	C	N	M	G	12	04	04	S	02020	KBN
Flute/Edge	1	2	3	4	5	6	7	8	9	10	11

1 Welding type

Multi-cornered Single-use Type



Sandwich Type



Single Sided Type



Solid Type



2 Insert shape

A 85° B 82° K 55°	
H 120°	
L 90°	
O 135°	
P 108°	
C 80° D 55° E 75° M 86° V 35°	
R -	
S 90°	
T 60°	
W 80°	

3 Insert clearance angle



	a
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special

4 Tolerance

	d (±mm)	m (±mm)	s (±mm)	d= 6.3/9.525	d=12.7	d=15.8/19.05
A	0.025	0.005	0.025	•	•	•
C	0.025	0.013	0.025	•	•	•
E	0.025	0.025	0.025	•	•	•
F	0.013	0.005	0.025	•	•	•
G	0.025	0.025	0.130	•	•	•
H	0.013	0.013	0.025	•	•	•
J	0.050	0.05	0.025	•		
	0.080	0.05	0.025		•	
	0.100	0.05	0.025			•
K	0.050	0.013	0.025	•		
	0.080	0.013	0.025		•	
	0.100	0.013	0.025			•
M	0.05	0.08	0.13	•		
	0.08	0.13	0.13		•	
	0.10	0.15	0.13			•
N	0.05	0.08	0.025	•		
	0.08	0.13	0.025		•	
	0.10	0.15	0.025			•
U	0.08	0.13	0.13	•		
	0.13	0.20	0.13		•	
	0.18	0.27	0.13			•







5 Chip-breaker and clamp type

R	Without hole	Q	40°~60° Cylindrical hole+double countersink
F	Without hole	C	70°~90° Cylindrical hole+double countersink
N	Without hole	G	Cylindrical hole
A	Cylindrical hole	T	40°~60° Cylindrical hole+ countersink
M	Cylindrical hole	H	70°~90° Cylindrical hole+ countersink
U	40°~60° Cylindrical hole+double countersink	W	40°~60° Cylindrical hole+ countersink
J	70°~90° Cylindrical hole+double countersink	B	70°~90° Cylindrical hole+ countersink
X	Special		

6 Insert size

d mm	C	D	R	S	T	V	W
5.56	05	-	-	05	09	-	03
6.0	-	-	06	-	-	-	-
6.35	06	07	-	06	11	11	04
6.65	-	-	-	-	-	-	-
7.94	07	-	-	07	-	-	-
8.0	-	-	08	-	-	-	-
9.525	09	11	-	09	16	16	06
10.0	-	-	10	-	-	-	-
12.0	-	-	12	-	-	-	-
12.7	12	15	-	12	22	22	08
15.875	16	19	-	15	27	-	10
16.0	-	-	16	-	-	-	-
16.74	-	-	-	16	-	-	-
19.05	19	-	-	19	33	-	13
20.0	-	-	20	-	-	-	-
25.4	25	-	25	25	-	-	-

7 Insert thickness



01	S=1.59
T1	S=1.98
02	S=2.38
03	S=3.18
T3	S=3.97
04	S=4.76
05	S=5.56
06	S=6.35
07	S=7.94
09	S=9.52

8 Corner radius

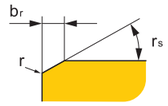


	R (mm)
02	0.2
04	0.4
05	0.5
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2

9 Cutting Edge Type

T	Chamfer	
S	Chamfer and Honing	
WT/WS	Wiper Insert Type	
FA	Chip breaker Type	

10 Chamfer type



The chamfering width Br is expressed as 1/100mm.
Angle Rs does not have "."

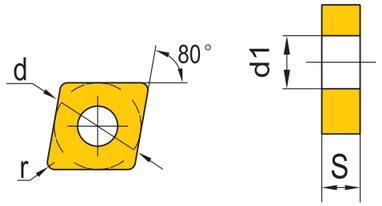
0.10X20°X r0.03=0102003
0.05X20°X r0.02=0052002

11 Materials

KBN	Poly square boron nitride PCBN
KBCN	Coating polysquare boron nitride PCBN + Coated
KPD	Polycrystalline diamond PCD

PCBN Inserts

CN..



Model	Size (mm) d	s	d1
CN..0903..	9.525	3.18	3.18
CN..1204..	12.7	4.76	5.16
4N-CN..1206..	12.7	6.00	5.16
CN..1606..	16.1	6.35	6.35
CN..1906..	19.05	6.35	7.94
CN..2509..	25.4	9.53	9.12

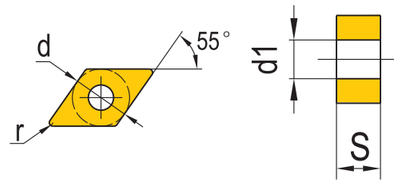
Insert shape	Model	r	Ch S02020	Ch S01525	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	4NU-CNGA120404	0.4	○	○			●		●				
	4NU-CNGA120408	0.8	○	○			●		●				
	4NU-CNGA120412	1.2	○	○			●		●				
	4NU-CNGA160612	1.2											
	2NU-CNGA120404	0.4	○	○			●		●	○	○	○	○
	2NU-CNGA120408	0.8	○	○			●		●	○	○	○	○
	2NU-CNGA120412	1.2	○	○			●		●	○	○	○	○
	2NU-CNGA160612	1.2											
	1NU-CNGA120404	0.4	○	○			●						
	1NU-CNGA120408	0.8	○	○			●						
	1NU-CNGA120412	1.2	○	○			●						
	4NR-CNGA120408	0.8	○				●						
	4NR-CNGA120412	1.2	○				●						
	4NR-CNGA160612	1.2	○				●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCBN Inserts

DN..



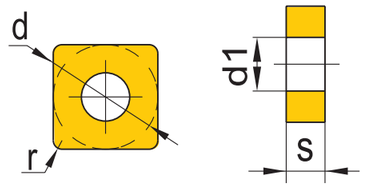
Model	Size (mm) d	s	d1
DN..1104..	9.525	4.76	3.81
DN..1504..	12.7	4.76	5.16
DN..1506..	12.7	6.35	5.16
4N-DN..1506	12.7	6.00	5.16

Insert shape	Model	r	Ch S02020	Ch S01525	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	4NU-DNGA150404	0.4	○	○			●		●				
	4NU-DNGA150408	0.8	○	○			●		●				
	4NU-DNGA150412	1.2	○	○			●		●				
	4NU-DNGA150604	0.4	○	○			●		●				
	4NU-DNGA150608	0.8	○	○			●		●				
	4NU-DNGA150612	1.2	○	○			●		●				
	2NU-DNGA150404	0.4	○	○			●		●	○	○	○	○
	2NU-DNGA150408	0.8	○	○			●		●	○	○	○	○
	2NU-DNGA150412	1.2	○	○			●		●	○	○	○	○
	2NU-DNGA150604	0.4	○	○			●		●	○	○	○	○
	2NU-DNGA150608	0.8	○	○			●		●	○	○	○	○
	2NU-DNGA150612	1.2	○	○			●		●	○	○	○	○
	1NU-DNGA150404	0.4	○	○			●		●				
	1NU-DNGA150408	0.8	○	○			●		●				
	1NU-DNGA150412	1.2	○	○			●		●				
	1NU-DNGA150604	0.4	○	○			●		●				
	1NU-DNGA150608	0.8	○	○			●		●				
	1NU-DNGA150612	1.2	○	○			●		●				
	4NR-DNGA150404	0.4	○				●						
	4NR-DNGA150408	0.8	○				●						
	4NR-DNGA150608	0.8	○				●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

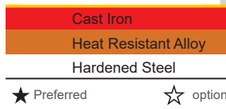
★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

SN..



Model	Size (mm) d	s	d1
SN..1204..	12.7	4.76	5.16
SN..1506..	15.88	7.94	6.35
SN..1906..	19.05	6.35	7.94
SN..2509..	25.4	9.53	9.12

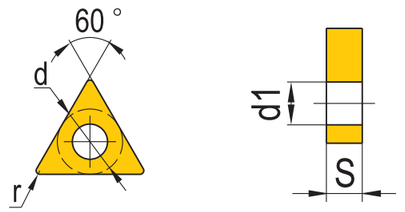
Insert shape	Model	r	Insert grades and application: Ch S02020	Ch S01525	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	4NU-SNGA120404	0.4	○	○			●		●				
	4NU-SNGA120408	0.8	○	○			●		●				
	4NU-SNGA120412	1.2	○	○			●		●				
	2NU-SNGA120404	0.4	○	○			●		●	○	○	○	○
	2NU-SNGA120408	0.8	○	○			●		●	○	○	○	○
	2NU-SNGA120412	1.2	○	○			●		●	○	○	○	○
	1NU-SNGA120404	0.4	○	○			●		●				
	1NU-SNGA120408	0.8	○	○			●		●				
	1NU-SNGA120412	1.2	○	○			●		●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

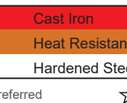
WERNER

PCBN Inserts

TN..



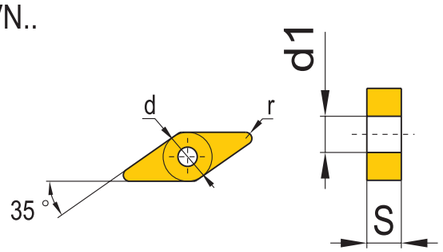
Model	Size (mm) d	s	d1
TN..1604..	9.525	4.76	3.81
TN..2204..	12.7	4.76	5.16
6N-TN..2206..	12.7	6.00	5.16

Insert shape	Model	r	Insert grades and application: Ch S02020	Ch S01525	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	6NU-TNGA160404	0.4	○	○			●		●	○	○	○	○
	6NU-TNGA160408	0.8	○	○			●		●	○	○	○	○
	6NU-TNGA160412	1.2	○	○			●		●	○	○	○	○
	3NU-TNGA160404	0.4	○	○			●		●	○	○	○	○
	3NU-TNGA160408	0.8	○	○			●		●	○	○	○	○
	3NU-TNGA160412	1.2	○	○			●		●	○	○	○	○
	1NU-TNGA160404	0.4	○	○			●		●				
	1NU-TNGA160408	0.8	○	○			●		●				
	1NU-TNGA160412	1.2	○	○			●		●				
	6NR-TNGA160404	0.4	○				●						
	6NR-TNGA160408	0.8	○				●						
	6NR-TNGA220612	1.2	○				●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

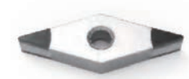
★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

VN..



Model	Size (mm) d	s	d1
VN..1604..	9.525	4.76	3.81
4N-VN..1606..	9.525	6.0	3.81

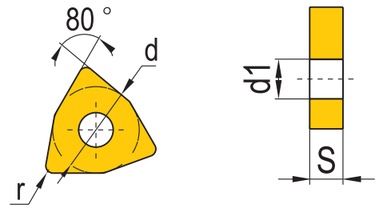
Insert shape	Model	r	Ch S02020	Ch S01525	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	4NU-VNGA160404	0.4	○	○			●		●	○	○	○	○
	4NU-VNGA160408	0.8	○	○			●		●	○	○	○	○
	4NU-VNGA160412	1.2	○	○			●		●	○	○	○	○
	2NU-VNGA160404	0.4	○	○			●		●	○	○	○	○
	2NU-VNGA160408	0.8	○	○			●		●	○	○	○	○
	2NU-VNGA160412	1.2	○	○			●		●	○	○	○	○
	1NU-VNGA160404	0.4	○	○			●		●				
	1NU-VNGA160408	0.8	○	○			●		●				
	1NU-VNGA160412	1.2	○	○			●		●				
	4NR-VNGA160404	0.4	○	○			●						
	4NR-VNGA160408	0.8	○	○			●						
	4NR-VNGA160608	1.2	○	○			●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

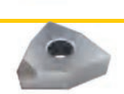
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PCBN Inserts

WN..



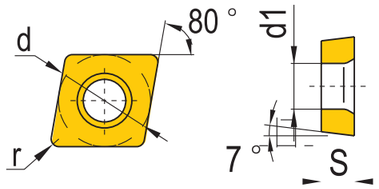
Model	Size (mm) d	s	d1
WN..0604..	9.525	4.76	3.81
WN..0804..	12.7	4.76	5.16
6N-WN..0806..	12.7	6.0	5.16

Insert shape	Model	r	Ch S02020	Ch S01525	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	6NU-WNGA080404	0.4	○	○			●		●				
	6NU-WNGA080408	0.8	○	○			●		●				
	6NU-WNGA080412	1.2	○	○			●		●				
	3NU-WNGA080404	0.4	○	○			●		●	○	○	○	○
	3NU-WNGA080408	0.8	○	○			●		●	○	○	○	○
	3NU-WNGA080412	1.2	○	○			●		●	○	○	○	○
	1NU-WNGA080404	0.4	○	○			●		●				
	1NU-WNGA080408	0.8	○	○			●		●				
	1NU-WNGA080412	1.2	○	○			●		●				
	6NR-WNGA080408	0.8	○				●						
	6NR-WNGA080412	1.2	○				●						
	6NR-WNGA080608	0.8	○				●						
	6NR-WNGA080612	1.2	○				●						
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel									★	★	★	★	★

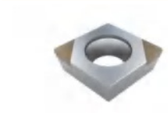
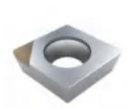
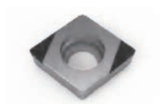
★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

CC..



Model	Size (mm) d	s	d1
CC..0301..	3.5	1.4	1.9
CC..0401..	4.3	1.8	2.3
CC..0602..	6.35	2.38	2.8
CC..09T3..	9.525	3.97	4.4
CC..1204..	12.7	4.76	5.5

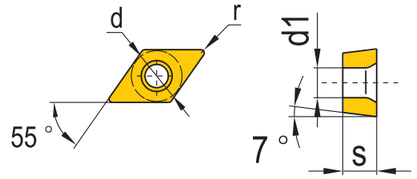
Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2NU-CCGW060202	0.2	○	○			●		●	○	○	○	○
	2NU-CCGW060204	0.4	○	○			●		●	○	○	○	○
	2NU-CCGW060208	0.8	○	○			●		●	○	○	○	○
	2NU-CCGW09T302	0.2	○	○			●		●	○	○	○	○
	2NU-CCGW09T304	0.4	○	○			●		●	○	○	○	○
	2NU-CCGW09T308	0.8	○	○			●		●	○	○	○	○
	1NU-CCGW030102	0.2	○	○			●		●				
	1NU-CCGW030104	0.4	○	○			●		●				
	1NU-CCGW040102	0.2	○	○			●		●				
	1NU-CCGW040104	0.4	○	○			●		●				
	1NU-CCGW060202	0.2	○	○			●		●				
	1NU-CCGW060204	0.4	○	○			●		●				
	1NU-CCGW060208	0.8	○	○			●		●				
	1NU-CCGW09T302	0.2	○	○			●		●				
	1NU-CCGW09T304	0.4	○	○			●		●				
	1NU-CCGW09T308	0.8	○	○			●		●				
	T2NU-CCGW060202	0.2	○	○			●	●	●				
	T2NU-CCGW060204	0.4	○	○			●	●	●				
	T2NU-CCGW060208	0.8	○	○			●	●	●				
	T2NU-CCGW09T302	0.2	○	○			●	●	●				
	T2NU-CCGW09T304	0.4	○	○			●	●	●				
	T2NU-CCGW09T308	0.8	○	○			●	●	●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

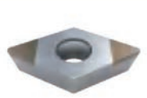
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PCBN Inserts

DC..



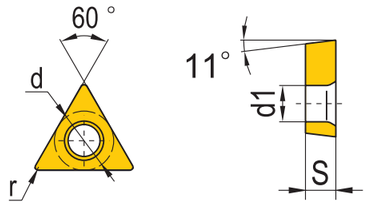
Model	Size (mm) d	s	d1
DC..0702..	6.35	2.38	2.8
DC..11T3..	9.525	3.97	4.4

Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2NU-DCGW070202	0.2	○	○			●		●	○	○	○	○
	2NU-DCGW070204	0.4	○	○			●		●	○	○	○	○
	2NU-DCGW070208	0.8	○	○			●		●	○	○	○	○
	2NU-DCGW11T302	0.2	○	○			●		●	○	○	○	○
	2NU-DCGW11T304	0.4	○	○			●		●	○	○	○	○
	2NU-DCGW11T308	0.8	○	○			●		●	○	○	○	○
	1NU-DCGW070202	0.2	○	○			●		●				
	1NU-DCGW070204	0.4	○	○			●		●				
	1NU-DCGW070208	0.8	○	○			●		●				
	1NU-DCGW11T302	0.2	○	○			●		●				
	1NU-DCGW11T304	0.4	○	○			●		●				
	1NU-DCGW11T308	0.8	○	○			●		●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

TB../TP..



Model	Size (mm) d	s	d1
TB..0601..	3.97	1.59	2.3
TP..0802..	4.76	2.38	2.3
TP..0902..	5.56	2.38	3.0
TP..1102..	6.35	2.38	3.5
TP..1103..	6.35	3.18	3.5
TP..16T3..	9.525	3.18	4.5

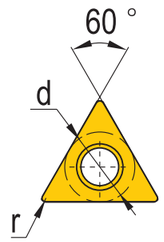
Insert shape	Model	r	Ch S01020	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	3NU-TPGW080202	0.2	○	○			●		●	○	○	○	○
	3NU-TPGW080204	0.4	○	○			●		●	○	○	○	○
	3NU-TPGW090202	0.2	○	○			●		●	○	○	○	○
	3NU-TPGW090204	0.4	○	○			●		●	○	○	○	○
	3NU-TPGW110302	0.2	○	○			●		●	○	○	○	○
	3NU-TPGW110304	0.4	○	○			●		●	○	○	○	○
	3NU-TPGW16T302	0.2	○	○			●		●	○	○	○	○
	3NU-TPGW16T304	0.4	○	○			●		●	○	○	○	○
	3NU-TPGW16T308	0.8	○	○			●		●	○	○	○	○
	1NU-TBGW060102	0.2	○	○			●		●	○	○	○	○
	1NU-TBGW060104	0.4	○	○			●		●	○	○	○	○
	1NU-TPGW080202	0.2	○	○			●		●	○	○	○	○
	1NU-TPGW080204	0.4	○	○			●		●	○	○	○	○
	1NU-TPGW090202	0.2	○	○			●		●	○	○	○	○
	1NU-TPGW090204	0.4	○	○			●		●	○	○	○	○
	1NU-TPGW110302	0.2	○	○			●		●	○	○	○	○
	1NU-TPGW110304	0.4	○	○			●		●	○	○	○	○
	1NU-TPGW16T302	0.2	○	○			●		●	○	○	○	○
	1NU-TPGW16T304	0.4	○	○			●		●	○	○	○	○
	1NU-TPGW16T308	0.8	○	○			●		●	○	○	○	○
	T3NU-TPGW080202	0.2	○	○			●	●	●	○	○	○	○
	T3NU-TPGW080204	0.4	○	○			●	●	●	○	○	○	○
	T3NU-TPGW090202	0.2	○	○			●	●	●	○	○	○	○
	T3NU-TPGW090204	0.4	○	○			●	●	●	○	○	○	○
	T3NU-TPGW110302	0.2	○	○			●	●	●	○	○	○	○
	T3NU-TPGW110304	0.4	○	○			●	●	●	○	○	○	○
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

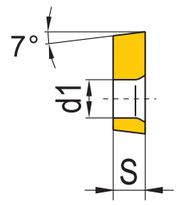
★ Preferred ☆ optional ● standard stock ○ order production

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PCBN Inserts

TC..



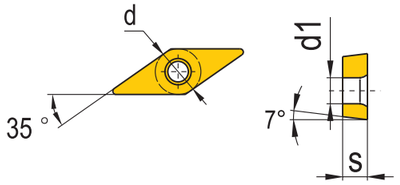


Model	Size (mm) d	s	d1
TC..0902..	5.56	2.38	2.5
TC..1102..	6.35	2.38	2.8
TC..1103..	6.35	3.18	2.8

Insert shape	Model	r	Ch S01020	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	3NU-TCGW090202	0.2	○	○			●		●	○	○	○	○
	3NU-TCGW090204	0.4	○	○			●		●	○	○	○	○
	3NU-TCGW090208	0.8	○	○			●		●	○	○	○	○
	3NU-TCGW110202	0.8	○	○			●		●	○	○	○	○
	3NU-TCGW110204	0.8	○	○			●		●	○	○	○	○
	3NU-TCGW110208	0.8	○	○			●		●	○	○	○	○
	3NU-TCGW110302	0.2	○	○			●		●	○	○	○	○
	3NU-TCGW110304	0.4	○	○			●		●	○	○	○	○
	3NU-TCGW110308	0.8	○	○			●		●	○	○	○	○
	1NU-TCGW090202	0.2	○	○			●		●	○	○	○	○
	1NU-TCGW090204	0.4	○	○			●		●	○	○	○	○
	1NU-TCGW090208	0.8	○	○			●		●	○	○	○	○
	1NU-TCGW110202	0.2	○	○			●		●	○	○	○	○
	1NU-TCGW110204	0.4	○	○			●		●	○	○	○	○
	1NU-TCGW110208	0.8	○	○			●		●	○	○	○	○
	1NU-TCGW110302	0.2	○	○			●		●	○	○	○	○
	1NU-TCGW110304	0.4	○	○			●		●	○	○	○	○
	1NU-TCGW110308	0.8	○	○			●		●	○	○	○	○
	T3NU-TCGW090202	0.8	○	○			●		●	○	○	○	○
	T3NU-TCGW090204	0.8	○	○			●		●	○	○	○	○
	T3NU-TCGW090208	0.8	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110202	0.2	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110204	0.4	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110208	0.8	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110302	0.2	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110304	0.4	○	○			●	●	●	○	○	○	○
	T3NU-TCGW110308	0.8	○	○			●	●	●	○	○	○	○
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

VC..

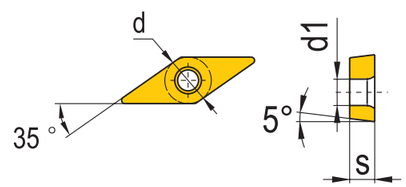


Model	Size (mm) d	s	d1
VC..1103..	6.35	3.18	2.8
VC..1604..	9.525	4.76	4.4

Insert shape	Model	r	Ch S01020	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
			Insert grades and application										
	2NU-VCGW110302	0.2	○	○			●		●	○	○	○	○
	2NU-VCGW110304	0.4	○	○			●		●	○	○	○	○
	2NU-VCGW110308	0.8	○	○			●		●	○	○	○	○
	2NU-VCGW160402	0.2	○	○			●		●	○	○	○	○
	2NU-VCGW160404	0.4	○	○			●		●	○	○	○	○
	2NU-VCGW160408	0.8	○	○			●		●	○	○	○	○
	1NU-VCGW110302	0.2	○	○			●		●				
	1NU-VCGW110304	0.4	○	○			●		●				
	1NU-VCGW110308	0.8	○	○			●		●				
	1NU-VCGW160402	0.2	○	○			●		●				
	1NU-VCGW160404	0.4	○	○			●		●				
	1NU-VCGW160408	0.8	○	○			●		●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

VB..

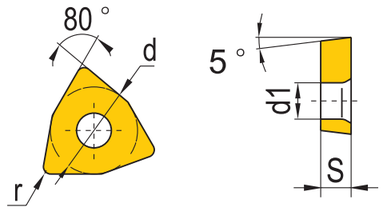


Model	Size (mm) d	s	d1
VB..1103..	6.35	3.18	2.8
VB..1604..	9.525	4.76	4.4

Insert shape	Model	r	Ch S01020	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
			Insert grades and application										
	2NU-VBGW110302	0.2	○	○			●		●	○	○	○	○
	2NU-VBGW110304	0.4	○	○			●		●	○	○	○	○
	2NU-VBGW110308	0.8	○	○			●		●	○	○	○	○
	2NU-VBGW160402	0.2	○	○			●		●	○	○	○	○
	2NU-VBGW160404	0.4	○	○			●		●	○	○	○	○
	2NU-VBGW160408	0.8	○	○			●		●	○	○	○	○
	1NU-VBGW110302	0.2	○	○			●		●				
	1NU-VBGW110304	0.4	○	○			●		●				
	1NU-VBGW110308	0.8	○	○			●		●				
	1NU-VBGW160402	0.2	○	○			●		●				
	1NU-VBGW160404	0.4	○	○			●		●				
	1NU-VBGW160408	0.8	○	○			●		●				
Cast Iron						★	★	★	★				
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WB..

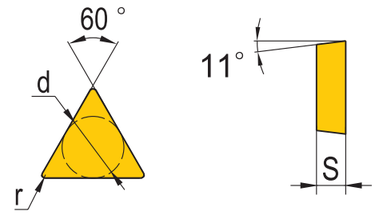


Model	Size (mm) d	s	d1
WB..0601..	3.97	1.59	2.3

Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	WBGW060102	0.2	○	○			●		●	○	○	○	○
	WBGW060104	0.4	○	○			●		●	○	○	○	○
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

TBGN../TPGN..



Model	Size (mm) d	s
TB..0601	3.97	1.59
TP..0902..	5.56	2.38
TP..1103..	6.35	3.18
TP..1603..	9.525	3.18

Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	TBGN060102	0.2	○	○			●		●				
	TBGN060104	0.4	○	○			●		●				
	TPGN090204	0.4	○	○			●		●				
	TPGN090208	0.8	○	○			●		●				
	TPGN110302	0.2	○	○			●		●				
	TPGN110304	0.4	○	○			●		●				
	TPGN110308	0.8	○	○			●		●				
	TPGN160302	0.2	○	○			●		●				
	TPGN160304	0.4	○	○			●		●				
	TPGN160308	0.8	○	○			●		●				
	1FN-TBGN060102	0.2	○	○			●						
	1FN-TBGN060104	0.4	○	○			●						
	1FN-TPGN090204	0.4	○	○			●						
	1FN-TPGN090208	0.8	○	○			●						
	1FN-TPGN110302	0.2	○	○			●						
	1FN-TPGN110304	0.4	○	○			●						
	1FN-TPGN110308	0.8	○	○			●						
	1FN-TPGN160302	0.2	○	○			●						
	1FN-TPGN160304	0.4	○	○			●						
	1FN-TPGN160308	0.8	○	○			●						
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

CNGN..



Model	Size (mm) IC	S
2FN-CNGN1204	12.7	4.76
2FN-CNGN1206	12.7	6.35

Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2FN-CNGN120408	0.8	○	○			●		●				
	2FN-CNGN120412	1.2	○	○			●		●				
	2FN-CNGN120608	0.8	○	○			●		●				
	2FN-CNGN120612	1.2	○	○			●		●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCBN Inserts

RNGN..



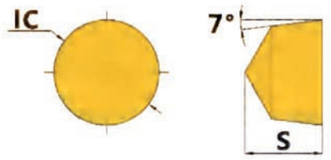
Model	Size (mm) IC	S
2FN-RNGN0904	9	4.76
2FN-RNGN1204	12	4.76

Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2FN-RNGN0904	4.5	○	○			●		●				
	2FN-RNGN1204	6.0	○	○			●		●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

RCGX..



Model	Size (mm) IC	S
FN-RCGX0907	9.525	7.0
FN-RCGX1207	12.7	7.0

Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	FN-RCGX0907Y	4.5	○	○			●		●				
	FN-RCGX1207Y	6.0	○	○			●		●				
	FN-RCGX0907V	4.5	○	○			●		●				
	FN-RCGX1207V	6.0	○	○			●		●				
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCBN Inserts

SNGN..



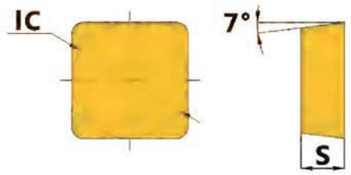
Model	Size (mm) IC	S
2FN-SNGN0904	9.525	4.76
2FN-SNGN1204	12.7	4.76
2FN-SNGN1206	12.7	6.0

Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2FN-SNGN090408	0.8	○	○			●		●				
	2FN-SNGN090412	1.2	○	○			●		●				
	2FN-SNGN120408	0.8	○	○			●		●				
	2FN-SNGN120412	1.2	○	○			●		●				
	2FN-SNGN120608	0.8	○	○			●		●				
	2FN-SNGN120612	1.2	○	○			●		●				
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

SCGN..



Model	Size (mm) IC	S
FN-SCGN0904	9.525	4.76
FN-SCGN1204	12.7	4.76

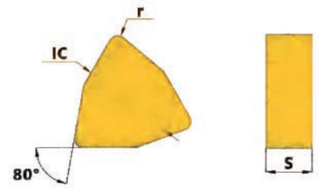
Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	1FN-SCGN090408	0.8	○	○			●		●				
	1FN-SCGN090408ZZ	0.8	○	○			●		●				
	1FN-SCGN090412	1.2	○	○			●		●				
	1FN-SCGN090412ZZ	1.2	○	○			●		●				
	1FN-SCGN120408	0.8	○	○			●		●				
	1FN-SCGN120408ZZ	0.8	○	○			●		●				
	1FN-SCGN120412	1.2	○	○			●		●				
	1FN-SCGN120412ZZ	1.2	○	○			●		●				
Cast Iron						★	★	★	★				
Heat Resistant Alloy						☆							
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCBN Inserts

WNGN..

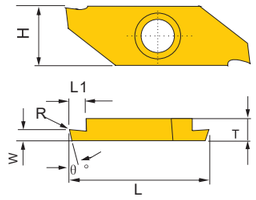


Model	Size (mm) IC	S
2FN-WNGN0804	12.7	4.76
2FN-WNGN0806	12.7	6.35

Insert shape	Model	r	Ch S02020	Ch S05020	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2FN-WNGN080408	0.8	○	○			●		●				
	2FN-WNGN080412	1.2	○	○			●		●				
	2FN-WNGN080608	0.8	○	○			●		●				
	2FN-WNGN080612	1.2	○	○			●		●				
Cast Iron						★	★	★	★				
Heat Resistant Alloy						☆							
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

KTPR/L..

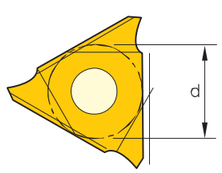


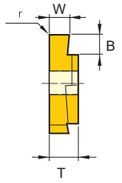
Model	Size (mm) d	T	d1
KTPR..	12.7	4.76	5.5

Insert shape	Model	W	B	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	KTPR/L 100	1.00	2.0	○			●		●	○	○		
	KTPR/L 150	1.50	3.5	○			●		●	○	○		
	KTPR/L 200	2.00	3.5	○			●		●	○	○		
Cast Iron						★	★	★	★				
Heat Resistant Alloy						☆							
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

GBA43R/L..



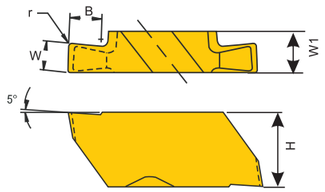


Model	Size (mm) d	T	d1
GBA43..	12.7	4.76	5.5

Insert shape	Model	W	B	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	GBA43R/L 125	1.25	2.0	○			●		●	○	○		
	GBA43R/L 150	1.50	3.5	○			●		●	○	○		
	GBA43R/L 200	2.00	3.5	○			●		●	○	○		
	GBA43R/L 250	2.50	4.0	○			●		●	○	○		
	GBA43R/L 300	3.00	4.0	○			●		●	○	○		
Cast Iron						★	★	★	★				
Heat Resistant Alloy						☆							
Hardened Steel										★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

NS

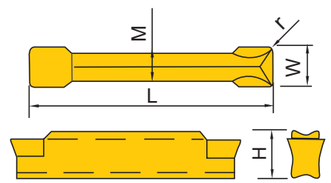


型号 Model	Size (mm) W1	H
NS3..	4.95	8.74

Insert shape	Model	W	B	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	NS3125R	1.25	2.0	○			●		●	○			
	NS3150R	1.50	3.5	○			●		●	○			
	NS3200R	2.00	3.5	○			●		●	○			
	NS3250R	2.50	4.0	○			●		●	○			
	NS3300R	3.00	4.0	○			●		●	○			
	NS3350R	3.50	6.0	○			●		●	○			
	NS3400R	4.00	6.0	○			●		●	○			
	NS3450R	4.50	8.0	○			●		●	○			
	NS3500R	5.00	8.0	○			●		●	○			
	NS3125L	1.25	2.0	○			●		●	○			
	NS3150L	1.50	3.5	○			●		●	○			
	NS3200L	2.00	3.5	○			●		●	○			
	NS3250L	2.50	4.0	○			●		●	○			
	NS3300L	3.00	4.0	○			●		●	○			
	NS3350L	3.50	6.0	○			●		●	○			
	NS3400L	4.00	6.0	○			●		●	○			
	NS3450L	4.50	8.0	○			●		●	○			
	NS3500L	5.00	8.0	○			●		●	○			
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WD..

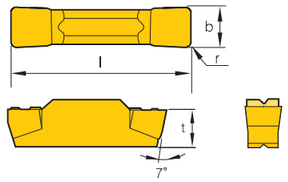


Model	Size (mm) L	H
WD22..	22	4.0
WD25..	25	4.0

Insert shape	Model	W	r	Ch S01025	KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	WD22N2.00S	2.00	0.2	○			●		●	○			
	WD22N3.00S	3.00	0.4	○			●		●	○			
	WD25N4.00S	4.00	0.4	○			●		●	○			
	WD25N5.00S	5.00	0.4	○			●		●	○			
	WD25N6.00S	6.00	0.4	○			●		●	○			
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

MGGN..

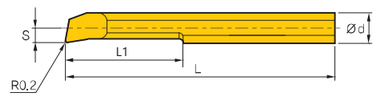


Model	Size (mm) b	r	t	l
MGGN150	1.5	0.15	4.8	16.0
MGGN200	2.0	0.20	4.8	16.0
MGGN250	2.5	0.20	4.8	18.5
MGGN300	3.0	0.40	4.8	21.0
MGGN400	4.0	0.40	4.8	21.0

Insert shape	Model	W	r	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	MGGN150-V	1.5	0.2	○			●		●	○			
	MGGN200-V	2.0	0.2	○			●		●	○			
	MGGN250-V	2.5	0.2	○			●		●	○			
	MGGN300-V	3.0	0.4	○			●		●	○			
	MGGN400-V	4.0	0.4	○			●		●	○			
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PSBR..



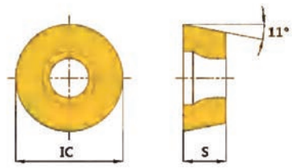
Model	Size (mm) d	L	L1	S
PSBR0303-50	2.8	50	25	1.4
PSBR0404-60	3.8	60	30	1.9
PSBR0505-70	4.8	70	40	2.4
PSBR0606-70	5.8	70	45	2.9
PSBR0707-80	6.8	80	60	3.4

Insert shape	Model	W	r	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	PSBR0303-50	3.0	○	○			●		●			○	
	PSBR0404-60	4.0	○	○			●		●			○	
	PSBR0505-70	5.0	○	○			●		●			○	
	PSBR0606-70	6.0	○	○			●		●			○	
	PSBR0707-80	7.0	○	○			●		●			○	
Cast Iron						★	★	★	★				
Heat Resistant Alloy							☆						
Hardened Steel										★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

RPGW..



Model	Size (mm) IC	S
RP..1003M0	10	3.18
RP..1204M0	12	4.76

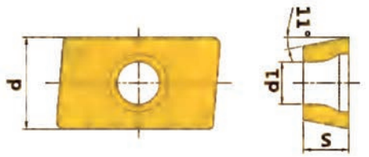
Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	FN-RPGW1003M0	5.0	○	○					●				
	FN-RPGW1204M0	6.0	○	○					●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCBN Inserts

AP..

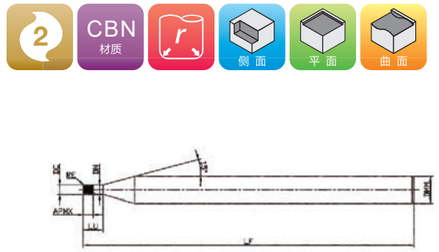


Model	Size (mm) d	s	d1
AP..1135..	6.35	3.5	2.8
AP..1604..	9.525	4.76	4.4

Insert shape	Model	r	Ch S01020	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2NU-APGW113504	0.4	○	○			●		●				
	2NU-APGW113508	0.8	○	○			●		●				
	2NU-APGW113512	1.2	○	○			●		●				
	2NU-APGW160404	0.4	○	○			●		●				
	2NU-APGW160408	0.8	○	○			●		●				
	2NU-APGW160412	1.2	○	○			●		●				
	1NU-APGW113504	0.4	○	○			●		●				
	1NU-APGW113508	0.8	○	○			●		●				
	1NU-APGW113512	1.2	○	○			●		●				
	1NU-APGW160404	0.4	○	○			●		●				
	1NU-APGW160408	0.8	○	○			●		●				
	1NU-APGW160412	1.2	○	○			●		●				
	FN-APGW113504	0.4	○	○					●				
	FN-APGW113508	0.8	○	○					●				
	FN-APGW113512	1.2	○	○					●				
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

KNR-PCBN Radius endmill





Model	Stock	DC	RE	APMX	LU	LF	DN	DMM
KNR2D020R005-0054	○	0.2	0.05	0.1	0.5	50	0.17	4
KNR2D030R005-0054	○	0.3	0.05	0.15	0.5	50	0.27	4
KNR2D040R005-0054	○	0.4	0.05	0.2	0.5	50	0.37	4
KNR2D050R005-0054	○	0.5	0.05	0.3	0.5	50	0.47	4
KNR2D050R005-0154	○	0.5	0.05	0.3	1.5	50	0.47	4
KNR2D050R005-0254	○	0.5	0.05	0.3	2.5	50	0.47	4
KNR2D050R010-0154	○	0.5	0.10	0.3	1.5	50	0.47	4
KNR2D050R010-0254	○	0.5	0.10	0.3	2.5	50	0.47	4
KNR2D100R005-0304	○	1.0	0.05	0.7	3.0	50	0.97	4
KNR2D100R005-0504	○	1.0	0.05	0.7	5.0	50	0.97	4
KNR2D100R010-0304	○	1.0	0.10	0.7	3.0	50	0.97	4
KNR2D100R010-0504	○	1.0	0.10	0.7	5.0	50	0.97	4
KNR2D100R020-0304	○	1.0	0.20	0.7	3.0	50	0.97	4
KNR2D100R020-0504	○	1.0	0.20	0.7	5.0	50	0.97	4
KNR2D100R030-0304	○	1.0	0.30	0.7	3.0	50	0.97	4
KNR2D100R030-0504	○	1.0	0.30	0.7	5.0	50	0.97	4
KNR2D150R010-0454	○	1.5	0.10	1.2	4.5	50	1.47	4
KNR2D150R010-0754	○	1.5	0.10	1.2	7.5	50	1.47	4
KNR2D150R020-0454	○	1.5	0,20	1.2	4.5	50	1.47	4
KNR2D150R020-0754	○	1.5	0.20	1.2	7.5	50	1.47	4
KNR2D150R030-0454	○	1.5	0.30	1.2	4.5	50	1.47	4
KNR2D150R030-0754	○	1.5	0.30	1.2	7.5	50	1.47	4
KNR2D200R010-0604	○	2.0	0.10	1.5	6.0	50	1.97	4
KNR2D200R020-0604	○	2.0	0.20	1.5	6.0	50	1.97	4
KNR2D200R030-0604	○	2.0	0.30	1.5	6.0	50	1.97	4
KNR2D200R050-0604	○	2.0	0.50	1.5	6.0	50	1.97	4

● standard stock　　○ order production

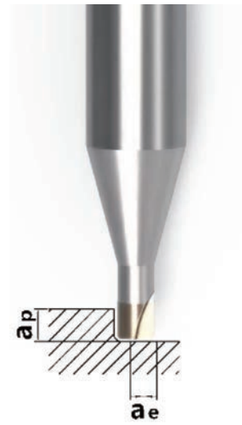
Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
		○	○	◎	◎														

◎ Preferred　　○ optional

WERNER

KNR-PCBN Radius endmill

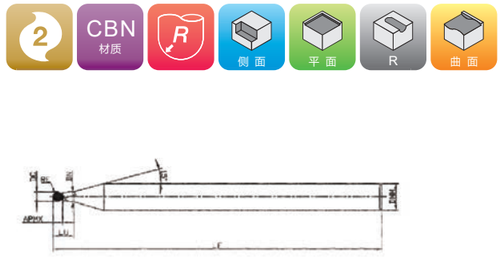
(1) In order to ensure stable cutting, please use high rigidity milling machine.
(2) recommend the use of insoluble water cutting fluid, and use spray or external oil. When using, there is a risk of fire due to sparks and tool breakage, so please take fire prevention measures.
(3) Please shorten the overhang of the tool as much as possible.
(4) According to the mechanical rigidity and other different processing conditions are not the same, so please adjust the processing conditions each time.
(5) Please adjust the cutting depth according to the required surface roughness.



Standard Drilling Conditions

D (mm)	RE (mm)	CE Len (mm)	STAVAX、NAK80、SKD61(~52HRC) n (min⁻¹)	Vc (mm/min)	ap (mm)	ae (mm)	ELMAX,DC53,SKD11 (~62HRC) n (min⁻¹)	Vc (mm/min)	ap (mm)	ae (mm)	YXR3,SKH(~70HRC) n (min⁻¹)	Vc (mm/min)	ap (mm)	ae (mm)
0.2	0.05	0.05	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3				500	0.010	0.05		500	0.010	0.05		300		0.03
0.4					0.015	0.1			0.015	0.1				0.05
0.5	0.1	1.5		600	0.02	0.15		600	0.02	0.15		400		0.1
	0.05	2.5			0.01	0.1			0.01	0.1	35,000			0.05
	0.1					0.05				0.05				
1.0	0.05	3.0	35,000		0.03	0.3	35,000		0.03	0.2	30,000	600	0.01	0.1
	0.1													
	0.2													
	0.3													
	0.05	5.0			0.02	0.2			0.02	0.1				
	0.1													
	0.2													
	0.3													
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000		0.02	0.3
	0.2													
	0.3													
	0.1	7.5												
	0.2													
	0.3													
2.0	0.1	6.0				0.7				0.7	15,000		0.03	0.7
	0.2													
	0.3													
	0.5													

KNB-PCBN Ball endmill





Model	Stock	Size (mm)						
		RE	DC	APMX	LU	LF	DN	DMM
KNB2R020-0124	○	0.20	0.4	0.3	1.2	50	0.37	4
KNB2R020-0126	○	0.20	0.4	0.3	1.2	50	0.37	6
KNB2R020-0204	○	0.20	0.4	0.3	2.0	50	0.37	4
KNB2R020-0304	○	0.20	0.4	0.3	3.0	50	0.37	4
KNBR020-0404	○	0.20	0.4	0.3	4.0	50	0.37	4
KNB2R030-0154	○	0.30	0.6	0.4	1.5	50	0.57	4
KNB2R030-0156	○	0.30	0.6	0.4	1.5	50	0.57	6
KNB2R030-0304	○	0.30	0.6	0.4	3.0	50	0.57	4
KNB2R030-0404	○	0.30	0.6	0.4	4.0	50	0.57	4
KNB2R030-0504	○	0.30	0.6	0.4	5.0	50	0.57	4
KNB2R030-0604	○	0.30	0.6	0.4	6.0	50	0.57	4
KNB2R050-0254	○	0.50	1.0	0.6	2.5	50	0.97	4
KNB2R050-0256	○	0.50	1.0	0.6	2.5	50	0.97	6
KNB2R050-0304	○	0.50	1.0	0.6	3.0	50	0.97	4
KNB2R050-0404	○	0.50	1.0	0.6	4.0	50	0.97	4
KNB2R050-0604	○	0.50	1.0	0.6	6.0	50	0.97	4
KNB2R050-0804	○	0.50	1.0	0.6	8.0	50	0.97	4
KNB2R075-0404	○	0.75	1.5	0.9	4.0	50	1.47	4
KNB2R075-0406	○	0.75	1.5	0.9	4.0	50	1.47	6
KNB2R100-0554	○	1.00	2.0	1.4	5.5	50	1.97	4
KNB2R100-0556	○	1.00	2.0	1.4	5.5	50	1.97	6
KNB2R100-0804	○	1.00	2.0	1.4	8.0	50	1.97	4

● standard stock ○ order production

Address method of model number

KNB 2 R030 R010 - 015 4

① Form number ② The blade number ③ The blade diameter ④ Tip radius ⑤ Cutting blade length ⑥ The handle diameter

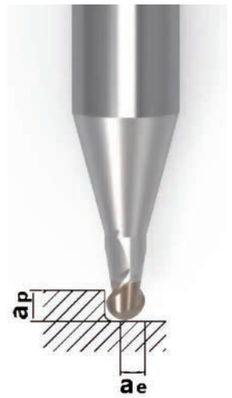
Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
		○	○	◎	◎														

◎ Preferred ○ optional

WERNER

KNB-PCBN Ball endmill

(1) In order to ensure stable cutting, please use high rigidity milling machine.
(2) recommend the use of insoluble water cutting fluid, and use spray or external oil. When using, there is a risk of fire due to sparks and tool breakage, so please take fire prevention measures.
(3) Please shorten the overhang of the tool as much as possible.
(4) According to the mechanical rigidity and other different processing conditions are not the same, so please adjust the processing conditions each time.
(5) Please adjust the cutting depth according to the required surface roughness.

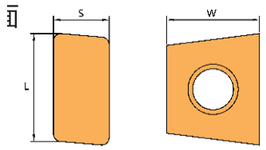


Standard Drilling Conditions

By cutting material		STAVAX、NAK80、SKD61(~52HRC)				ELMAX,DC53,SKD11 (~62HRC)				YXR3,SKH(~70HRC)			
The blade radius (mm)	Cutting blade length (mm)	speed (min^{-1})	Feed speed (mm/min)	a_p (mm)	p_f (mm)	speed (min^{-1})	Feed speed (mm/min)	a_p (mm)	p_f (mm)	speed (min^{-1})	Feed speed (mm/min)	a_p (mm)	p_f (mm)
0.2	1.2	40,000	1,000	0.005	0.010	40,000	800	0.005	0.010	40,000	600	0.005	0.005
	2.0		800				600				400		
	3.0		600				500				300		
0.3	1.5		1,600	0.020	0.020		1400	0.010	0.020		1200	1.200	0.020
	2.0		1,500				1300				1100	1.100	0.010
	3.0		1,400				1200				1000	1.000	
	4.0		1,200	0.010	0.010	30,000	1000	0.005	0.010	30,000	700	700	0.005
	5.0	30,000	800				700				600	600	
	6.0		600				500		0.005		400	400	
0.5	2.5	40,000	2,800	0.005	0.050	40,000	2800	0.030	0.040	40,000	2200	2.200	0.030
	3.0		2,600	0.040			2600				2100	2.100	
	4.0		2,400	0.030			2400	0.020	0.030		2000	2.000	0.020
	6.0	25,000	1,500	0.020	0.030	25,000	1500	0.010	0.020	25,000	1300	1.300	0.010
	8.0	16,000	1,200		0.020	16,000	1100			16,000	850	850	
0.7	4.0	32,000	2,400	0.030	0.030	32,000	2200	0.020	0.030	32,000	2000	2.000	0.020
1.0	5.5	40,000	4,000	0.050	0.050	40,000	4000	0.030		40,000		3.000	0.030
	8.0	32,000	3,000	0.030		32,000	2600	0.020		32,000	2200	2.200	0.020

PCBN Inserts

LCGW..



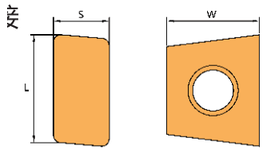
Model	Size (mm) S	L	W
LCGW1206	6	11.58	10
LCGW1508	8	15	13

Insert shape	Model	r	APMX	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	1F-LCGW120608	0.8	5.0	○			●	●	●				
	1F-LCGW150808	0.8	8.0	○									
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

PCBN Inserts

LCGW..



Model	Size (mm) S	L	W
LCGW1206	6	11.58	10
LCGW1508	8	15	13

Insert shape	Model	r	APMX	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	2NU-LCGW120608	0.8	5.0	○			●	●	●				
	2UN-LCGW150808	0.8	8.0	○									
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

★ Preferred ☆ optional ● standard stock ○ order production

90° Indexable Face Mills

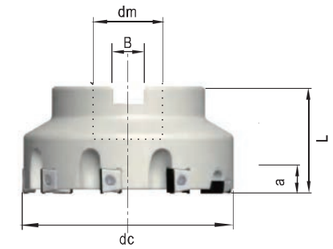
FM90





- Using single-sided, four-blade, efficient and economical sharp tools.
- Flat mounted vertical super thick blade design
- Suitable for medium and heavy milling of steel and cast iron.





Model	Stock	Dimensions dc	dm	a	B	L	No.of teeth	Insert	Screw	Torx wrench	Weight
FM90-63-22-LC12-04	●	63	22	15	10.4	40	4				
FM90-80-27-LC12-06	●	80	27	15	12.4	50	6				
FM90-100-32-LC12-08	●	100	32	15	14.4	50	8				
FM90-125-40-LC12-10	●	125	40	15	16.4	60	10	LC..1206..	M4.0X12	T15	
FM90-160-40-LC12-14	●	160	40	15	16.4	63	14				
FM90-200-60-LC12-18	○	200	60	15	23.7	63	18				
FM90-250-60-LC12-24	○	250	60	15	23.7	63	24				

✲ Blades to be ordered separately.

● standard stock ○ order production

90° Indexable Face Mills

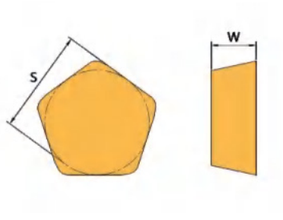
FM90

Model	Stock	Dimensions dc	dm	a	B	L	No.of teeth	Insert	Screw	Torx wrench	Weight
FM90-63-22-LC15-04	●	63	22	15	10.4	40	4				
FM90-80-27-LC15-05	●	80	27	15	12.4	40	5				
FM90-100-32-LC15-06	●	100	32	15	14.4	50	6				
FM90-125-40-LC15-07	●	125	40	15	16.4	63	7	LC..1508..	M5.0×15	T20	
FM90-160-40-LC15-08	●	160	40	15	16.4	63	8				
FM90-200-60-LC15-10	●	200	60	15	23.7	63	10				
FM90-250-60-LC15-12	●	250	60	15	23.7	63	12				

✲ Blades to be ordered separately.

● standard stock ○ order production

PCBN Inserts
PCGW..



Model	Size (mm) S	W
POGN0804	11.2	4.8

Insert shape	Model	r	APMX	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	1FN-POGN080412	1.2	5.0	○			●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

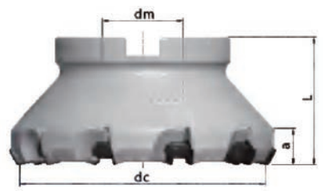
★ Preferred ☆ optional ● standard stock ○ order production

60° Indexable Face Mills
FM60





- Adopt single-sided and five-blade, efficient and economical sharp tool.
- Low resistance design
- Suitable for medium and heavy milling of steel and cast iron.

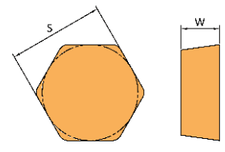


Model	Stock	Dimensions dc	dm	a	B	L	No.of teeth	Insert	clamp	Screw	Torx wrench	Weight
FM60-63-22-P008-05	●	63	22	17			40 5	PO..0804..	SBT1012	M6.0*18	S3	
FM60-80-27-P008-06	●	80	27	17			40 6					
FM60-100-32-P008-08	●	100	32	17			50 8					
FM60-125-40-P008-10	●	125	40	17			50 10					
FM60-160-40-P008-12	●	160	40	17			63 12					
FM60-200-60-P008-14	●	200	60	17			63 14					
FM60-250-60-P008-17	●	250	60	17			63 17					

✲ Blades to be ordered separately.

● standard stock ○ order production

PCBN Inserts
HOGN..



Model	Size (mm) S	W
HOGN0604	11.8	4.76
HOGN0906	16	6.35

Insert shape	Model	r	APMX	Ch S01025	Insert grades and application KBN1000	KBN900	KBN910	KBN800	KBN710	KBN7030	KBN6020	KBN610	KBN5010
	1FN-HOGN060412	1.2	5.0	○			●						
	1FN-HOGN090612	1.2	8.0	○			●						
Cast Iron					★	★	★	★					
Heat Resistant Alloy						☆							
Hardened Steel									★	★	★	★	★

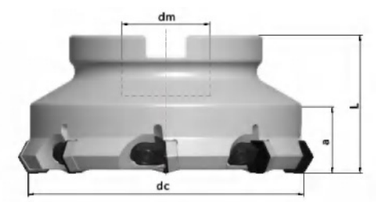
★ Preferred ☆ optional ● standard stock ○ order production

58° Indexable Face Mills
FM58





- Adopt single-sided and five-blade, efficient and economical sharp tool.
- Low resistance design
- Suitable for medium and heavy milling of steel and cast iron.



Model	Stock	Dimensions dc	dm	a	L	No.of teeth	Insert	clamp	Screw	Torx wrench	Weight
FM58-63-22-HO06-06	●	63	22	25	40	6					
FM58-80-27-HO06-07	●	80	27	25	40	7					
FM58-100-32-HO06-08	●	100	32	25	50	8					
FM58-125-40-HO06-10	●	125	40	25	63	10	HO. . 0604.	SBT1012	M6. 0*18	S3	
FM58-160-40-HO06-12	●	160	40	25	63	12					
FM58-200-60-HO06-14	●	200	60	25	63	14					
FM58-250-60-HO06-17	●	250	60	25	63	17					

✲ Blades to be ordered separately.

● standard stock ○ order production

Model	Stock	Dimensions dc	dm	a	L	No.of teeth	Insert	clamp	Screw	Torx wrench	Weight
FM58-63-22-HO09-05	●	63	22	25	40	5					
FM58-80-27-HO09-06	●	80	27	25	40	6					
FM58-100-32-HO09-07	●	100	32	25	50	7					
FM58-125-40-HO09-09	●	125	40	25	63	9	HO..0906..	SBT101210	M6.0*20	S3	
FM58-160-40-HO09-11	●	160	40	25	63	11					
FM58-200-60-HO09-13	●	200	60	25	63	13					
FM58-250-60-HO09-16	●	250	60	25	63	16					

✲ Blades to be ordered separately.

● standard stock ○ order production



PCD

KPD05/KPD10/KPD25

PCD tool adopt high temperature and high pressure PCD material welding on superior hard alloy substrate.

It can meet all kinds of processing demands of turning and milling.It has the ultra long tool life in the aluminum alloy and copper alloy processing.

It also have superior machining in non-alloy materials,such as ceramics,stone,rubber, graphite, wood and soon.

WERNER

PCD cutting tool

C01 - C48

C

PCD Inserts C01-C24

PCD Inserts C

Solid Turning Inserts C

HCBE - Solid diamond ball mills C24-C36

HCBE - PCD Ball endmills for tungsten carbide C

HCRE - PCD radius endmills C

HBE - PCD Ball endmills C

HCE - PCD Ball endmills C

PCE1 - PCD Straight edge endmills C

PCES1 - PCD Spiral edge endmills C

PCB1 - PCD Ball edge endmills C

PCD Drills C37-C43

SCD - PCD sintered drills C

SCLD - PCD sintered drills C

HCD - PCD welded drills C

PHD - PCD welded drills C

PCD Chipbreaker: Diamond Insert C43-C48

Non-standard cutters C

Scheme supporting capacity C

PCD Inserts

PCD material

Grades	Characteristic	Application	Grain size (μm)	Hardness (Hv)	Bending strength (kgf)
KPD05	Ultra fine particle drilling essence, can make sharp cutting edge, It is a suitable material for non-ferrous metal processing	Plastic,wood, aluminum alloy processing.	5μm	10,000 ~ 12,000	220
KPD10	Fine particle material, fine granularity, suitable for non-ferrous metals, graphite processing	High silicon aluminum alloy, purple bronze alloy, rubber, wood, graphite processing	10μm	10,000 ~ 12,000	200
KPD25	Rough grained material has excellent wear resistance For high silicon aluminum alloy and cemented carbide processing	Carbide, ceramic rough processing, high silicon aluminum alloy, rock, stone	25μm	10,000 ~ 12,000	110
KCD02	Precision machining	Low silicon aluminum alloy, copper alloy, Finishing of precious metals.	2μm	10,000 ~ 12,000	
KCD05	Precision machining center	Low silicon aluminum alloy (electronics, automotive),Wood plastic composite materials, copper alloy,PCB, plastic.	5μm	10,000 ~ 12,000	
KCD10	Good EDM processing, strong impact resistance	Good versatility, rough machining and Finishing, highly recommended Low content aluminum alloy	10μm	10,000 ~ 12,000	
KCD25	General purpose, good balance of toughness and wear resistance	Good versatility, rough machining and fineProcessing, medium and low contentis highly recommendedMeasure aluminumalloy. Specially manufactured,Excellent wear resistance.	25μm	10,000 ~	
KCD35	Good EDM, long service life, good heat resistance and impact resistance.	For composite materials and reinforced ground; Plate, non-metallic hard and brittle materialsCemented carbide, silicon aluminum alloy (silicon content > 12%), other high Wear resistant materials, such as ceramics, carbides, etc.	≥95	1-3 25-35	
KCD40	Good EDM, long service life, good heat resistance and impact resistance.	Used for resin, composite materials, FRP, high densityReinforced wood board, silicon aluminum alloy, etc.	≥95	25-40	
KCD60			60μm	10,000 ~ 12,000	

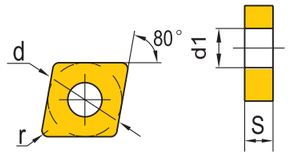
Recommended cutting conditions

Processed material	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Recommended material 1st	Recommended material 2nd
Aluminum alloy (4%~8%, Si)	1000~3000	0.1~0.6	~3	KPD10	KPD25
Aluminum alloy (9%~14%, Si)	600~2500	0.1~0.5	~3	KPD10	KPD25
Aluminum alloy (15%~18%, Si)	300~700	0.1~0.4	~3	KPD10	KPD25
Red copper, bronze alloy	~1000	0.05~0.2	~3	KPD10	KPD25
High strength plastic	~1000	0.1~0.3	~2	KPD10	KPD25
wood	~4000	0.1~0.4	-	KPD10	KPD25
Cemented carbide	10~30	~0.2	~0.5	KPD05	KPD10

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PCD Inserts

CN..



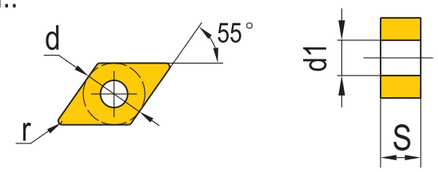
Model	Size (mm) d	s	d1
CN..0903..	9.525	3.18	3.81
CN..1204..	12.7	4.76	5.16
CN..1606..	15.88	6.35	6.35
CN..1906..	19.05	6.35	7.94
CN..2509..	25.4	9.53	9.12

Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	CNMM120402	0.2	1		●						
	CNMM120404	0.4	1		●						
	CNMM120408	0.8	1		●						
	CNMM120412	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

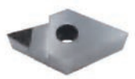
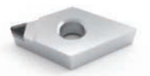
★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

DN..



Model	Size (mm) d	s	d1
DN..1104..	9.525	4.76	3.81
DN..1504..	12.7	4.76	5.16
DN..1506..	12.7	6.35	5.16

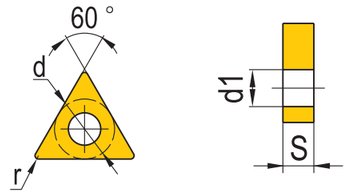
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	DNMM150402	0.2	1		●						
	DNMM150404	0.4	1		●						
	DNMM150408	0.8	1		●						
	DNMM150412	1.2	1		●						
	DNMG150404FA	0.4	1		●						
	DNMG150408FA	0.8	1		●						
	DNMG150412FA	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

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PCD Inserts

TN..



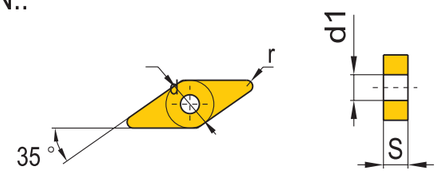
Model	Size (mm) d	s	d1
TN..1604..	9.525	4.76	3.81
TN..2204..	12.7	4.76	5.16

Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	TNMM160402	0.2	1		●						
	TNMM160404	0.4	1		●						
	TNMM160408	0.8	1		●						
	TNMM160412	1.2	1		●						
	TNMG160404FA	0.4	1		●						
	TNMG160408FA	0.8	1		●						
	TNMG160412FA	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

VN..



Model	Size (mm) d	s	d1
VN..1604..	9.525	4.76	3.81

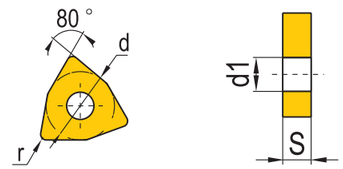
Insert shape	Model	r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	VNMM160402	0.2	1		●						
	VNMM160404	0.4	1		●						
	VNMM160408	0.8	1		●						
	VNMM160412	1.2	1		●						
	VNMG160404FA	0.4	1		●						
	VNMG160408FA	0.8	1		●						
	VNMG160412FA	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCD Inserts

WN..



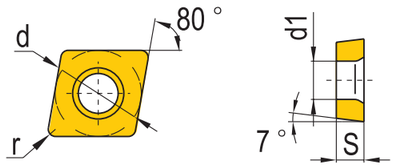
Model	Size (mm) d	s	d1
WN..0604..	9.525	4.76	3.81
WN..0804..	12.7	4.76	5.16

Insert shape	Model	r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	WNMM080402	0.2	1		●						
	WNMM080404	0.4	1		●						
	WNMM080408	0.8	1		●						
	WNMM080412	1.2	1		●						
	WNMG080404FA	0.4	1		●						
	WNMG080408FA	0.8	1		●						
	WNMG080412FA	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

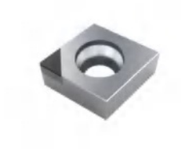
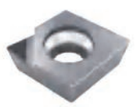
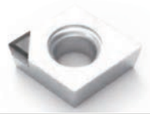
★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

CC..



Model	Size (mm) d	s	d1
CC..0301..	3.5	1.4	1.9
CC..0401..	4.3	1.8	2.3
CC..0602..	6.35	2.38	2.8
CC..09T3..	9.525	3.97	4.4

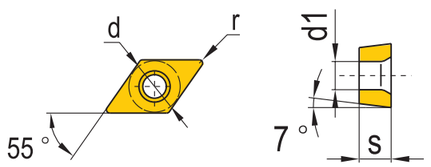
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	CCGW040101	0.1	1		●						
	CCGW040102	0.2	1		●						
	CCGW040104	0.4	1		●						
	CCGW060201	0.1	1		●						
	CCGW060202	0.2	1		●						
	CCGW060204	0.4	1		●						
	CCGW09T301	0.1	1		●						
	CCGW09T302	0.2	1		●						
	CCGW09T304	0.4	1		●						
	CCGW09T308	0.8	1		●						
	CCMT060201	0.1	1		●						
	CCMT060202	0.2	1		●						
	CCMT060204	0.4	1		●						
	CCMT09T301	0.1	1		●						
	CCMT09T302	0.2	1		●						
	CCMT09T304	0.4	1		●						
	CCMT09T308	0.8	1		●						
	CCGW060204FA	0.4	1		●						
	CCGW09T304FA	0.4	1		●						
	CCGW09T308FA	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

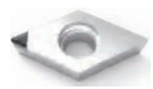
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PCD Inserts

DC..



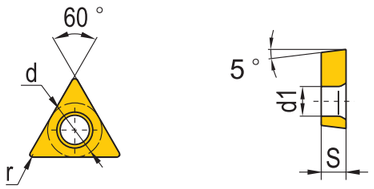
Model	Size (mm) d	s	d1
DC..0702..	6.35	2.38	2.8
DC..11T3..	9.525	3.97	4.4

Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	DCGW070201	0.1	1		●						
	DCGW070202	0.2	1		●						
	DCGW070204	0.4	1		●						
	DCGW11T301	0.1	1		●						
	DCGW11T302	0.2	1		●						
	DCGW11T304	0.4	1		●						
	DCGW11T308	0.8	1		●						
	DCMT070201	0.1	1		●						
	DCMT070202	0.2	1		●						
	DCMT070204	0.4	1		●						
	DCMT11T301	0.1	1		●						
	DCMT11T302	0.2	1		●						
	DCMT11T304	0.4	1		●						
	DCMT11T308	0.8	1		●						
	DCGW070204FA	0.4	1		●						
	DCGW11T304FA	0.4	1		●						
	DCGW11T308FA	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

TB..



Model	Size (mm) d	s	d1
TB..0601..	3.97	1.59	2.3

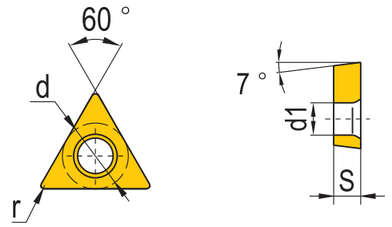
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	TBGW060101	0.1	1		●						
	TBGW060102	0.2	1		●						
	TBGW060104	0.4	1		●						
	TBMT060101	0.1	1		●						
	TBMT060102	0.2	1		●						
	TBMT060104	0.4	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCD Inserts

TC..



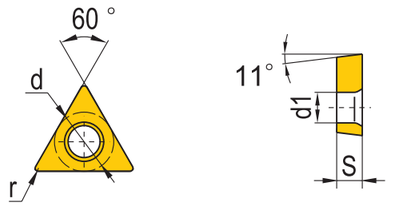
Model	Size (mm) d	s	d1
TC..0902..	5.56	2.38	2.5
TC..1102..	6.35	2.38	2.5
TC..16T3..	9.525	3.97	4.4

Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	TCGW090201	0.1	1		●						
	TCGW090202	0.2	1		●						
	TCGW090204	0.4	1		●						
	TCGW110201	0.1	1		●						
	TCGW110202	0.2	1		●						
	TCGW110204	0.4	1		●						
	TCGW110208	0.8	1		●						
	TCMT090201	0.1	1		●						
	TCMT090202	0.2	1		●						
	TCMT090204	0.4	1		●						
	TCMT110201	0.1	1		●						
	TCMT110202	0.2	1		●						
	TCMT110204	0.4	1		●						
	TCMT110208	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

TP..



Model	Size (mm) d	s	d1
TP..0802..	4.76	2.38	2.3
TP..0902..	5.56	2.38	3.0
TP..1102..	6.35	2.38	3.5
TP..1103..	6.35	3.18	3.3
TP..16T3....	9.525	3.18	4.5

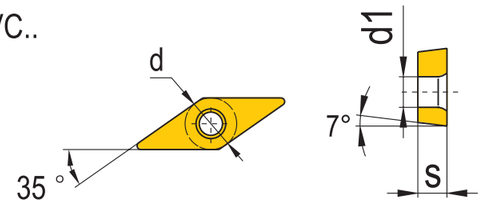
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	TPGW080201	0.1	1		●						
	TPGW080202	0.2	1		●						
	TPGW080204	0.4	1		●						
	TPGW090201	0.1	1		●						
	TPGW090202	0.2	1		●						
	TPGW090204	0.4	1		●						
	TPGW110301	0.1	1		●						
	TPGW110302	0.2	1		●						
	TPGW110304	0.4	1		●						
	TPMT080201	0.1	1		●						
	TPMT080202	0.2	1		●						
	TPMT080204	0.4	1		●						
	TPMT090201	0.1	1		●						
	TPMT090202	0.2	1		●						
	TPMT090204	0.4	1		●						
	TPMT110301	0.1	1		●						
	TPMT110302	0.2	1		●						
	TPMT110304	0.4	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

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PCD Inserts

VC..



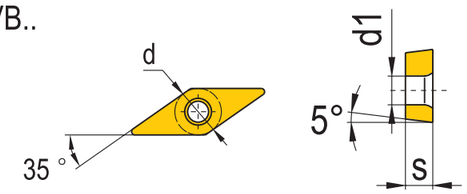
Model	Size (mm) d	s	d1
VC..1103..	6.35	3.18	2.8
VC..1604..	9.525	4.76	4.4

Insert shape	型号 Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	VCGW110301	0.1	1		●						
	VCGW110302	0.2	1		●						
	VCGW110304	0.4	1		●						
	VCGW110308	0.8	1		●						
	VCGW160401	0.1	1		●						
	VCGW160402	0.2	1		●						
	VCGW160404	0.4	1		●						
	VCGW160408	0.8	1		●						
	VCMT110301	0.1	1		●						
	VCMT110302	0.2	1		●						
	VCMT110304	0.4	1		●						
	VCMT110308	0.8	1		●						
	VCMT160401	0.1	1		●						
	VCMT160402	0.2	1		●						
	VCMT160404	0.4	1		●						
	VCMT160408	0.8	1		●						
	VCGW110304FA	0.4	1		●						
	VCGW160404FA	0.4	1		●						
	VCGW160408FA	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

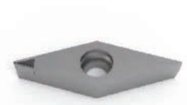
★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

VB..



Model	Size (mm) d	s	d1
VB..1103..	6.35	3.18	2.8
VB..1604..	9.525	4.76	4.4

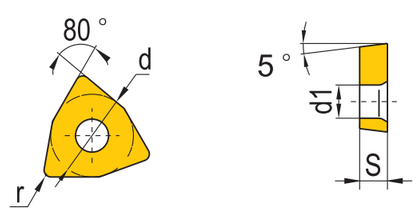
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	VBGW110301	0.1	1		●						
	VBGW110302	0.2	1		●						
	VBGW110304	0.4	1		●						
	VBGW110308	0.8	1		●						
	VBGW160401	0.1	1		●						
	VBGW160402	0.2	1		●						
	VBGW160404	0.4	1		●						
	VBGW160408	0.8	1		●						
	VBMT110301	0.1	1		●						
	VBMT110302	0.2	1		●						
	VBMT110304	0.4	1		●						
	VBMT110308	0.8	1		●						
	VBMT160401	0.1	1		●						
	VBMT160402	0.2	1		●						
	VBMT160404	0.4	1		●						
	VBMT160408	0.8	1		●						
	VBGW110304FA	0.4	1		●						
	VBGW160404FA	0.4	1		●						
	VBGW160408FA	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

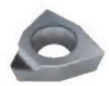
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PCD Inserts

WB..



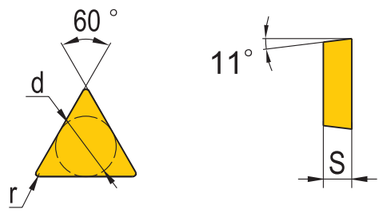
Model	Size (mm) d	s	d1
WB..0601..	3.97	1.59	2.3

Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	WBGW060101	0.1	1		●						
	WBGW060102	0.2	1		●						
	WBGW060104	0.4	1		●						
	WBMT060101	0.1	1		●						
	WBMT060102	0.2	1		●						
	WBMT060104	0.4	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

TP..



Model	Size (mm) d	s
TP..0902..	5.56	2.38
TP..1103..	6.35	3.18
TP..1603..	9.525	3.18

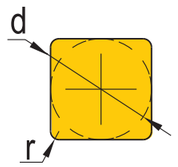
Insert shape	Model	r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	TPGN090201	0.1	1		●						
	TPGN090202	0.2	1		●						
	TPGN090204	0.4	1		●						
	TPGN090208	0.8	1		●						
	TPGN110302	0.2	1		●						
	TPGN110304	0.4	1		●						
	TPGN110308	0.8	1		●						
	TPGN160302	0.2	1		●						
	TPGN160304	0.4	1		●						
	TPGN160308	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

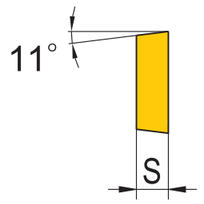
★ Preferred ☆ optional ● standard stock ○ order production

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PCD Inserts

SP..





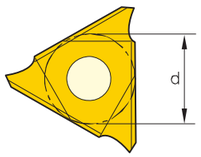
Model	Size (mm) d	s
SP..0903..	9.525	3.18
SP..1203..	12.7	3.18

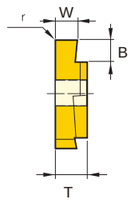
Insert shape	Model	r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	SPGN090302	0.2	1		●						
	SPGN090304	0.4	1		●						
	SPGN090308	0.8	1		●						
	SPGN120304	0.4	1		●						
	SPGN120308	0.8	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

GBA43/TGF32R..





Model	Size (mm) d	T	d1
GBA43..	12.7	4.76	5.5
TGF32R..	9.525	3.18	4.5

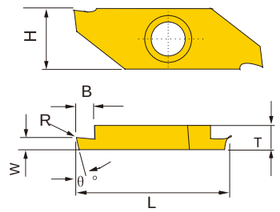
Insert shape	Model	Insert grades and application W	B	r	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	GBA43R125	1.25	2.0	0.1		●						
	GBA43R150	1.50	3.5	0.1		●						
	GBA43R200	2.00	3.5	0.1		●						
	GBA43R250	2.50	4.0	0.1		●						
	GBA43R300	3.00	4.0	0.1		●						
	TGF32R125	1.25	2.0	0.1		●						
	TGF32R150	1.50	2.0	0.1		●						
	TGF32R200	2.00	2.5	0.1		●						
Nonferrous Metal						★						
Heat Resistant Alloy						☆						

★ Preferred ☆ optional ● standard stock ○ order production

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PCD Inserts

KTPR..



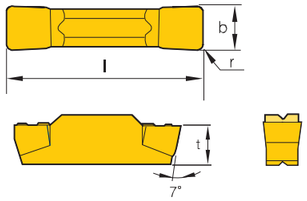
Model	Size (mm) L	T	H
KTPR...	25	3.5	9.4

Insert shape	Model	Insert grades and application W	B	r	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	KTPR150	1.50	3.5	0.1		●						
	KTPR200	2.00	4.0	0.1		●						
	KTPR250	2.50	4.0	0.1		●						
						●						
	KTPR150FA	1.50	1.50	1.50		●						
	KTPR200FA	2.00	2.00	2.00		●						
	KTPR250FA	2.50	2.50	2.50		●						
Nonferrous Metal						★						
Heat Resistant Alloy						☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

MGGN..MRGN



Model	Size (mm)			
	b	r	t	l
MGGN150	1.5	0.15	4.8	16.0
MGGN200	2.0	0.20	4.8	16.0
MGGN250	2.5	0.20	4.8	18.5
MGGN300	3.0	0.40	4.8	21.0
MGGN400	4.0	0.40	4.8	21.0
MRGN6030	6.0	3.00	5.8	26.0
MRGN8040	8.0	4.00	6.5	31.0

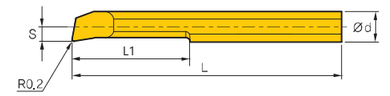
Insert shape	Model	Insert grades and application									
		w	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	MGGN150	1.5	1		●						
	MGGN200	2.0	1		●						
	MGGN250	2.5	1		●						
	MGGN300	3.0	1		●						
	MGGN400	4.0	1		●						
	MRGN6030	6.0	1		●						
	MRGN8040	8.0	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCD Inserts

PSBR..



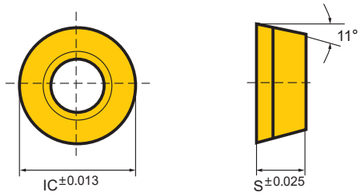
Model	Size (mm)			
	d	L	L1	S
PSBR0303-50	2.8	50	25	1.4
PSBR0404-60	3.8	60	30	1.9
PSBR0505-70	4.8	70	40	2.4
PSBR0606-70	5.8	70	45	2.9
PSBR0707-80	6.8	80	60	3.4

Insert shape	Model	Insert grades and application									
		Dmin	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	PSBR0303-50	3.0	1		●						
	PSBR0404-60	4.0	1		●						
	PSBR0505-70	5.0	1		●						
	PSBR0606-70	6.0	1		●						
	PSBR0707-80	7.0	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

PCD Inserts

RPKW..



Model	Size (mm) IC	S
RPKW1003MO	10	3.18
RPKW1204MO	12	4.76

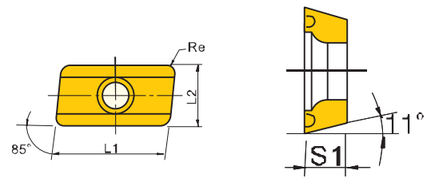
Insert shape	Model	Insert grades and application r	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	RPKW1003MO	5.0	FACE		●						
	RPKW1204MO	6.0	FACE		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCD Inserts

AP..



Model	Size (mm) L2	L1	S
AP..1135..	6.6	11.3	3.6
AP..1604..	9.56	16.4	4.76

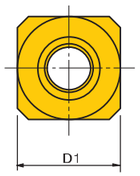
Insert shape	Model	Insert grades and application Re	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	APKT113504	0.4	1		●						
	APKT113508	0.8	1		●						
	APKT113512	1.2	1		●						
	APKT160404	0.4	1		●						
	APKT160408	0.8	1		●						
	APKT160412	1.2	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

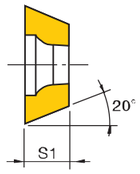
★ Preferred ☆ optional ● standard stock ○ order production

WERNER

PCD Inserts

SEKT..

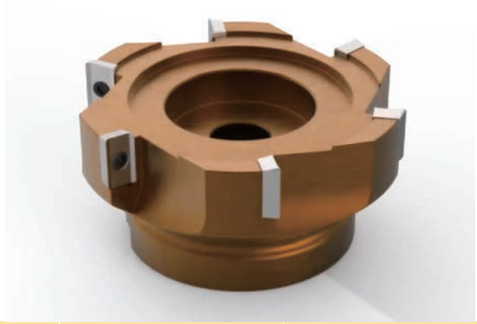




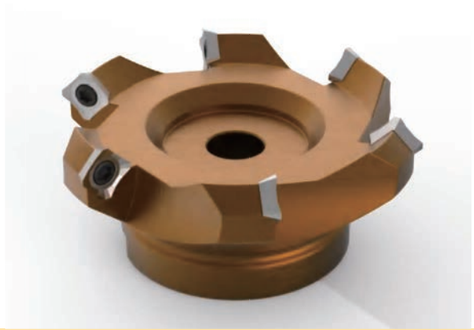
Model	Size (mm) d1	s1
SEKT1204..	12.7	4.76

Insert shape	Model	Insert grades and application Re	Corner	KPD05	KPD10	KPD25	KCD02	KCD05	KCD10	KCD25	KCD60
	SEKT1204AFFN	C0.45	1		●						
Nonferrous Metal					★						
Heat Resistant Alloy					☆						

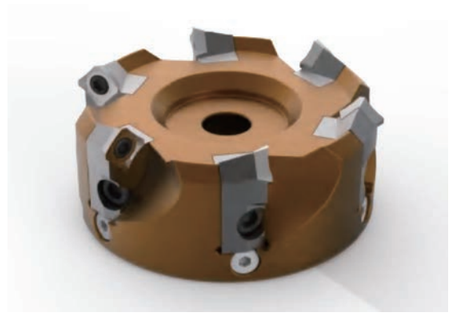
★ Preferred ☆ optional ● standard stock ○ order production



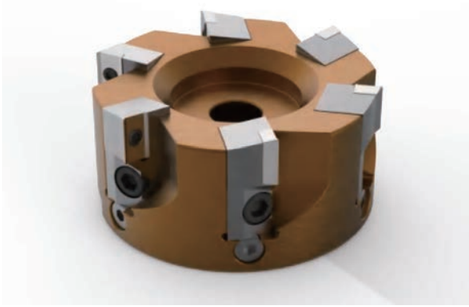
Model	Stock	D	A		
BAP400R-50-22-4T-AL	O	φ50	22		
BAP400R-63-22-4T-AL	O	φ63	22		
BAP400R-80-27(22)-6T-AL	O	φ80	22/27		
BAP400R-100-32(22/27)-6T-AL	O	φ100	22/27/32		
BAP400R-125-40(27/32)-7T-AL	O	φ125	27/32/40		
BAP400R-160-40(27/32)-8T-AL	O	φ160	27/32/40		
BAP400R-200-40(27/32)-10T-AL	O	φ200	27/32/40		
BAP400R-250-40-12T-AL	O	φ250	40		



Model	Stock	D	A		
KM12-50-22-4T	O	φ50	22		
KM12-63-22-4T	O	φ63	22		
KM12-80-27(22)-5T	O	φ80	22/27		
KM12-100-32(22/27)-6T	O	φ100	22/27/32		
KM12-125-40(27/32)-6T	O	φ125	27/32/40		
KM12-160-40(27/32)-8T	O	φ160	27/32/40		
KM12-200-40(27/32)-10T	O	φ200	27/32/40		
KM12-250-40-10T	O	φ250	40		



Model	Stock	D	A		
KM12-63-22-5T-AL-KT	O	φ63	22		
KM12-80-22/27-6T-AL-KT	O	φ80	22/27		
KM12-100-32-7T-AL-KT	O	φ100	32		
KM12-125-40-8T-AL-KT	O	φ125	40		
KM12-160-40-10T-AL-KT	O	φ160	40		
KM12-200-40-10T-AL-KT	O	φ200	40		
KM12-250-60-15T-AL-KT	O	φ250	60		
KM12-315-60-15T-AL-KT	O	φ315	60		



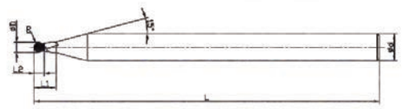
Model	Stock	D	A		
BAP400R-63-22-4T-AL-KT	O	φ63	22		
BAP400R-80-27-6T-AL-KT	O	φ80	22/27		
BAP400R-100-27-6T-AL-KT	O	φ100	32		
BAP400R-125-32-8T-AL-KT	O	φ125	40		
BAP400R-160-32-10T-AL-KT	O	φ160	40		
BAP400R-200-40-10T-AL-KT	O	φ200	40		
BAP400R-250-60-15T-AL-KT	O	φ250	60		
BAP400R-315-60-15T-AL-KT	O	φ315	60		

HCBE-PCD Ball endmill

PCD

- Tool dia: D0.4-D2.0 mm
- Dia tolerance: D: 0,-0.01mm
  d: 0,-0.003mm
- R tolerance: R: +0.005 mm





1. It has high machining precision and good surface finish.
2. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	R	Flute Diameter D	Effective length L1	Flute length L2	Neck Diameter D1	PCD length	Total length L	Shank Diameter d
HCBE020	○	0.2	0.4	0.8	0.3	0.36	0.6	50	4
HCBE025	○	0.25	0.5	1.0	0.4	0.46	0.8	50	4
HCBE030	○	0.3	0.6	1.2	0.5	0.56	1	50	4
HCBE040	○	0.4	0.8	1.6	0.6	0.76	1	50	4
HCBE050	○	0.5	1.0	2.0	1.0	0.95	1	50	4
HCBE060	○	0.6	1.2	2.4	1.2	1.15	2	50	4
HCBE070	○	0.7	1.4	2.8	1.4	1.35	2	50	4
HCBE075	○	0.75	1.5	3.0	1.5	1.45	2	50	4
HCBE080	○	0.8	1.6	3.2	1.5	1.55	2	50	4
HCBE090	○	0.9	1.8	3.6	1.5	1.75	2	50	4
HCBE100	○	1.0	2.0	4.0	1.5	1.95	2	50	4

● standard stock ○ order production

Standard Drilling Conditions
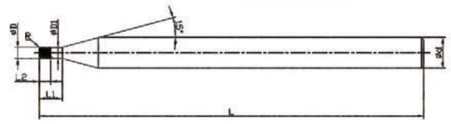
Work Material	Tungsten carbide					
R mm	Rotation min^{-1}	Feed mm/min	Feed2 mm/min	Cutting Depth Ad mm	Cutting Depth Rd mm	
0.2	50000	70~140	15~50	0.005~0.008	0.03	
0.25	50000	70~140	15~50	0.005~0.008	0.04	
0.3	45000	85~160	25~55	0.008~0.011	0.05	
0.4	35000	90~165	30~60	0.008~0.011	0.07	
0.5	30000	100~170	30~60	0.01~0.02	0.1	
0.6	30000	100~170	30~60	0.012~0.024	0.13	
0.7	28000	115~170	30~65	0.014~0.028	0.16	
0.75	27000	115~170	30~65	0.015~0.03	0.17	
0.8	26000	120~175	35~70	0.016~0.032	0.19	
0.9	25000	120~175	35~75	0.018~0.036	0.22	
1.0	25000	120~175	40~80	0.02~0.04	0.25	

HCRE-PCD Corner R endmill

PCD

- Tool dia: D0.4-D2.0 mm
- Dia tolerance: D: 0,-0.01mm
  d: 0,-0.003mm
- R tolerance: R: +0.005 mm





1. It has high machining precision and good surface finish.
2. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	Flute Diameter D	Corner R R	Effective length L1	Flute length L2	Neck Diameter D1	PCD length	Total length L	Shank Diameter d
HCRE05005	○	0.5	0.05	1	0.5	0.46	0.8	50	4
HCRE05010	○	0.5	0.1	1	0.5	0.16	0.8	50	4
HCRE05020	○	0.5	0.2	1	0.5	0.46	0.8	50	4
HCRE10005	○	1	0.05	2	1	0.95	1	50	4
HCRE10010	○	1	0.1	2	1	0.95	1	50	4
HCRE10020	○	1	0.2	2	1	0.95	1	50	4
HCRE15005	○	1.5	0.05	3	1.5	1.45	2	50	4
HCRE15010	○	1.5	0.1	3	1.5	1.45	2	50	4
HCRE15020	○	1.5	0.2	3	1.5	1.45	2	50	4
HCRE20005	○	2	0.05	4	1.5	1.95	2	50	4
HCRE20010	○	2	0.1	4	1.5	1.95	2	50	4
HCRE20020	○	2	0.2	4	1.5	1.95	2	50	4

● standard stock ○ order production

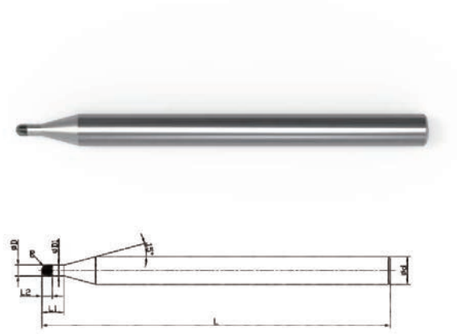
Standard Drilling Conditions

Work Material	Tungsten carbide					
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Feed2 mm/min	Cutting Depth Ad mm	Cutting Depth Rd mm	
0.5	35000	150~300	20~40	0.005~0.01	0.03	
1.0	30000	300~550	30~60	0.005~0.01	0.125	
1.5	25000	250~150	30~60	0.007~0.014	0.18	
2.0	20000	200~400	30~60	0.01~0.02	0.25	

HBE-PCD Ball endmill

PCD

- Tool dia：D0.4-D3.0 mm
- Dia tolerance：D: 0,-0.005 mm
  d: 0,-0.003mm
- R tolerance：R: +0.003 mm



1. It has high machining precision and good surface finish.
2. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	R	Flute Diameter D	Effective length L1	Flute length L2	PCD length	Total length L	Shank Diameter d
HBE010	○	0.1	0.2	0.6	0.2	1	50	4
HBE015	○	0.15	0.3	0.9	0.3	1	50	4
HBE020	○	0.2	0.4	1.2	0.4	1	50	4
HBE025	○	0.25	0.5	1.5	0.5	1	50	4
HBE030	○	0.3	0.6	1.8	0.6	1	50	4
HBE040	○	0.4	0.8	2.4	0.8	1	50	4
HBE050	○	0.5	1.0	3.0	1.0	1	50	4
HBE060	○	0.6	1.2	3.6	1.2	1	50	4
HBE070	○	0.7	1.4	4.2	1.4	1	50	4
HBE075	○	0.75	1.5	4.5	1.5	2	50	4
HBE080	○	0.8	1.6	4.8	1.5	2	50	4
HBE090	○	0.9	1.8	5.4	1.5	2	50	4
HBE100	○	1.0	2.0	6.0	1.5	2	50	4
HBE150	○	1.5	3.0	9.0	2.0	3	50	4

● standard stock　　○ order production

Standard Drilling Conditions

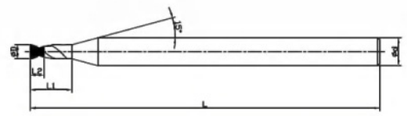
Work Material	Aluminum Alloy			High silicon Aluminum			Machinable Ceramics			Quartz Glass			Copper and Copper Alloy			MMC(Ceramice30%)			Carbon			Graphite		
Cutting Speed mm/min	150~250~400m/min			80~150~300m/min			5~8~15m/min			30~50~75m/min			60~120~300m/min			20~30~40m/min			100~150~250m/min			150~200~350m/min		
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm	Speed min^{-1}	Feed mm/rev	Depth of cur Ad mm
0.1	60000	360	0.005	50000	250	0.005	20000	70	0.003	50000	250	0.003	50000	150	0.005	50000	150	0.003	50000	270	0.005	50000	400	0.005
0.15	60000	420	0.01	50000	300	0.01	14000	75	0.005	50000	300	0.005	50000	200	0.01	43000	170	0.005	50000	320	0.01	50000	450	0.01
0.2	60000	450	0.02	50000	340	0.02	10000	80	0.01	48000	360	0.01	50000	240	0.02	32000	180	0.01	50000	360	0.02	50000	500	0.02
0.25	60000	550	0.03	50000	400	0.03	8500	80	0.015	38000	450	0.015	50000	280	0.03	26000	200	0.015	50000	380	0.03	50000	550	0.03
0.3	60000	640	0.05	50000	480	0.05	7000	90	0.02	32000	540	0.02	50000	320	0.05	22000	220	0.02	50000	420	0.05	50000	600	0.05
0.4	60000	720	0.1	50000	540	0.1	5200	100	0.03	24000	600	0.03	50000	360	0.1	16000	240	0.03	50000	500	0.1	50000	650	0.1
0.5	60000	750	0.1	50000	600	0.1	4200	120	0.03	20000	750	0.03	50000	400	0.1	12000	300	0.03	50000	500	0.1	50000	680	0.1
0.6	60000	780	0.1	50000	650	0.1	3500	120	0.03	16000	800	0.03	50000	420	0.1	10800	320	0.03	50000	500	0.1	50000	720	0.1
0.7	60000	800	0.15	50000	720	0.15	3000	150	0.05	13500	900	0.05	42000	450	0.15	9200	360	0.05	50000	600	0.15	50000	800	0.15
0.75	60000	800	0.15	50000	720	0.15	2800	150	0.05	12800	900	0.05	42000	450	0.15	8600	360	0.05	50000	600	0.15	50000	800	0.15
0.8	60000	800	0.15	50000	720	0.15	2700	150	0.05	12000	900	0.05	42000	450	0.15	8000	360	0.05	50000	600	0.15	50000	800	0.15
0.9	60000	900	0.15	50000	800	0.15	2400	150	0.05	10500	850	0.05	38000	500	0.15	7200	400	0.05	45000	650	0.15	50000	850	0.15
1	60000	1000	0.2	48000	900	0.2	2100	140	0.08	9500	850	0.08	34000	550	0.2	6500	450	0.08	40000	700	0.2	50000	900	0.2
1.5	44000	1300	0.2	32000	1000	0.2	1400	130	0.08	6700	740	0.08	23000	700	0.2	4500	500	0.08	26000	750	0.2	35000	1000	0.2

HSE-PCD endmill

PCD

- Tool dia：D0.2-D6.0mm
- Dia tolerance：D: 0,-0.01mm
  d: 0,-0.003mm





1. It has high machining precision and good surface finish.
2. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	Flute Diameter D	Effective length L1	Flute length L2	PCD length	Total length L	Shank Diameter d
HSE020	○	0.2	0.6	0.2	1	50	4
HSE030	○	0.3	0.9	0.3	1	50	4
HSE040	○	0.4	1.2	0.4	1	50	4
HSE050	○	0.5	1.5	0.5	1	50	4
HSE060	○	0.6	1.8	0.6	1	50	4
HSE070	○	0.7	2.1	0.7	1	50	4
HSE080	○	0.8	2.4	0.8	1	50	4
HSE090	○	0.9	2.7	0.9	1	50	4
HSE100	○	1.0	3.0	1	1	50	4
HSE110	○	1.1	3.3	1	1	50	4
HSE120	○	1.2	3.6	1	1	50	4
HSE130	○	1.3	3.9	1	1	50	4
HSE140	○	1.4	4.2	1	1	50	4
HSE150	○	1.5	4.5	1.5	2	50	4
HSE160	○	1.6	4.8	1.5	2	50	4
HSE170	○	1.7	5.1	1.5	2	50	4
HSE180	○	1.8	5.4	1.5	2	50	4
HSE190	○	1.9	5.7	1.5	2	50	4
HSE200	○	2.0	6.0	2	2	50	4
HSE210	○	2.1	6.3	2	2	50	4
HSE220	○	2.2	6.6	2	2	50	4
HSE230	○	2.3	6.9	2	2	50	4
HSE240	○	2.4	7.2	2	2	50	4
HSE250	○	2.5	7.5	2	2	50	4
HSE260	○	2.6	7.8	2	2	50	4
HSE270	○	2.7	8.1	2	2	50	4
HSE280	○	2.8	8.4	2	2	50	4
HSE290	○	2.9	8.7	2	2	50	4
HSE300	○	3.0	9.0	2.5	3	50	6
HSE350	○	3.5	10.5	2.5	3	50	6
HSE400	○	4.0	12.0	2.5	3	50	6
HSE450	○	4.5	13.5	2.5	3	50	6
HSE500	○	5.0	15	3	4	60	6
HSE550	○	5.5	16.5	3	4	60	6
HSE600	○	6.0	18.0	3	4	60	6

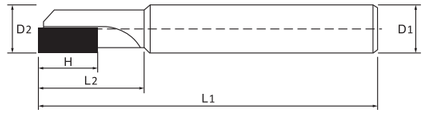
● standard stock　　○ order production

Standard Drilling Conditions

Work Material	Aluminum Alloy		High silicon Aluminum		Machinable Ceramics			Quartz Glass		Copper and Copper Alloy		Carbon		Graphite	
Cutting Speed mm/min	250~350~500m/min		150~2150~400m/min		5~8~15m/min			40~60~80m/min		150~200~350m/min		150~200~350m/min		150~250~400m/min	
Drill Dia. mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm	Speed min⁻¹	Feed mm/rev	Depth of cut Ad mm
0.2	60000	240	0.003	50000	200	0.003	14000	5	0.002	50000	36	0.002	50000	120	0.003	50000	300	0.003
0.3	60000	280	0.005	50000	220	0.005	9000	6	0.003	50000	40	0.003	50000	150	0.005	50000	320	0.005
0.4	60000	300	0.01	50000	240	0.01	7000	6	0.005	47000	40	0.005	50000	170	0.01	50000	370	0.01
0.5	60000	320	0.01	50000	300	0.01	5500	7	0.005	37000	45	0.005	50000	200	0.01	50000	420	0.01
0.6	60000	350	0.02	50000	300	0.02	4600	7	0.01	30000	45	0.01	50000	240	0.02	50000	420	0.02
0.7	60000	370	0.02	50000	320	0.02	4000	7	0.01	27000	45	0.01	50000	260	0.02	50000	420	0.02
0.8	60000	400	0.05	50000	320	0.05	3400	7	0.01	23000	50	0.01	50000	280	0.05	50000	450	0.05
0.9	60000	420	0.05	50000	340	0.05	3000	7	0.01	21000	50	0.01	50000	280	0.05	50000	450	0.05
1	60000	450	0.07	50000	360	0.07	2800	8	0.015	19000	65	0.015	50000	300	0.07	50000	500	0.07
1.1	60000	450	0.07	50000	360	0.07	2500	8	0.015	17000	65	0.015	50000	300	0.07	50000	500	0.07
1.2	60000	450	0.07	50000	360	0.07	2300	8	0.015	16000	65	0.015	50000	300	0.07	50000	500	0.07
1.3	60000	480	0.08	50000	360	0.08	2100	8	0.02	14500	65	0.02	48000	300	0.08	50000	500	0.08
1.4	60000	480	0.08	50000	360	0.08	2000	8	0.02	13500	65	0.02	45000	300	0.08	50000	500	0.08
1.5	60000	480	0.1	50000	400	0.1	1800	8	0.03	12800	65	0.03	42000	350	0.1	50000	560	0.1
1.6	60000	500	0.1	50000	400	0.1	1700	8	0.03	12000	65	0.03	40000	350	0.1	50000	560	0.1
1.7	60000	500	0.1	50000	400	0.1	1600	8	0.03	11500	65	0.03	37000	350	0.1	46000	560	0.1
1.8	60000	540	0.1	50000	400	0.1	1550	8	0.03	11000	65	0.03	35000	350	0.1	44000	560	0.1
1.9	58000	540	0.1	50000	400	0.1	1450	8	0.03	10500	65	0.03	33000	350	0.1	42000	560	0.1
2	56000	580	0.15	48000	450	0.15	1400	9	0.05	9500	80	0.05	32000	400	0.15	40000	600	0.15
2.1	53000	580	0.15	45000	450	0.15	1300	9	0.05	9000	80	0.05	30000	400	0.15	38000	600	0.15
2.2	50000	580	0.15	43000	450	0.15	1250	9	0.05	8500	80	0.05	29000	400	0.15	36000	600	0.15
2.3	48000	600	0.15	41000	450	0.15	1200	9	0.05	8300	80	0.05	28000	400	0.15	34000	600	0.15
2.4	47000	600	0.15	40000	450	0.15	1150	9	0.05	8000	80	0.05	27000	400	0.15	33000	600	0.15
2.5	45000	650	0.15	38000	500	0.15	1100	9	0.05	7600	80	0.05	26000	450	0.15	32000	650	0.15
2.6	43000	650	0.15	36000	500	0.15	1080	9	0.05	7300	80	0.05	25000	450	0.15	31000	650	0.15
2.7	41000	650	0.15	35000	500	0.15	1040	9	0.05	7000	80	0.05	24000	450	0.15	30000	650	0.15
2.8	40000	650	0.15	34000	500	0.15	1000	9	0.05	6800	80	0.05	23000	450	0.15	29000	650	0.15
2.9	38000	700	0.15	33000	500	0.15	950	9	0.05	6500	80	0.05	22000	450	0.15	28000	650	0.15
3	37000	700	0.18	32000	600	0.18	900	10	0.06	6200	100	0.06	21000	500	0.18	27000	700	0.18
3.5	32000	800	0.18	27000	600	0.18	800	10	0.06	5400	100	0.06	20000	520	0.18	23000	700	0.18
4	28000	1000	0.2	24000	600	0.2	700	10	0.08	4700	100	0.08	16000	550	0.2	20000	700	0.2
4.5	24000	1000	0.2	21000	680	0.2	600	10	0.08	4200	100	0.08	15000	600	0.2	18000	750	0.2
5	22000	1050	0.2	19000	720	0.2	550	12	0.08	3800	120	0.08	13000	650	0.2	16000	800	0.2
5.5	20000	1100	0.2	17500	800	0.2	500	12	0.08	3300	120	0.08	11500	670	0.2	14500	850	0.2
6	19000	1200	0.2	16000	900	0.2	450	12	0.1	3000	120	0.01	10000	700	0.2	13000	900	0.2

PCE1- PCD Straight endmill 1 flute





Model	Stock	D1	D2	L1	L2	H	Z
PCE1-2.0X6	○	6	2	50	5--8	3	1
PCE1-2.5X6	○	6	2.5	50	5--8	4	1
PCE1-3.0X6	○	6	3	50	5--8	5	1
PCE1-3.5X6	○	6	3.5	50	5--8	5	1
PCE1-4.0X6	○	6	4	50	8--10	6	1
PCE1-5.0X6	○	6	5	50	8--10	6	1
PCE1-6.0X6	○	6	6	50	10--15	8	1
PCE1-7.0X6	○	6	7	50	10--15	8	1
PCE1-8.0X8	○	8	8	60	15--20	10	1
PCE1-8.5X8	○	8	8.5	60	15--20	10	1
PCE1-9.0X8	○	8	9	60	15--20	10	1
PCE1-10.0X10	○	10	10	70	15--20	12	1
PCE1-11.0X10	○	10	11	70	15--20	12	1
PCE1-10.0X12	○	12	10	70	15--20	15	1
PCE1-12.0X12	○	12	12	70	15--20	15	1
PCE1-14.0X14	○	14	14	70	15--20	15	1
PCE1-15.0X16	○	16	15	70	22--28	18	1
PCE1-16.0X16	○	16	16	70	22--28	18	1

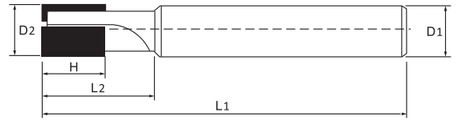
● standard stock ○ order production

Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

PCE2- PCD Straight endmill 2 flute





Model	Stock	D1	D2	L1	L2	H	Z
PCE2-2.0X6	○	6	2	50	5--8	3	2
PCE2-2.5X6	○	6	2.5	50	5--8	4	2
PCE2-3.0X6	○	6	3	50	5--8	5	2
PCE2-3.5X6	○	6	3.5	50	5--8	5	2
PCE2-4.0X6	○	6	4	50	8--10	6	2
PCE2-5.0X6	○	6	5	50	8--10	6	2
PCE2-6.0X6	○	6	6	50	10--15	8	2
PCE2-7.0X6	○	6	7	50	10--15	8	2
PCE2-8.0X8	○	8	8	60	15--20	10	2
PCE2-8.5X8	○	8	8.5	60	15--20	10	2
PCE2-9.0X8	○	8	9	60	15--20	10	2
PCE2-10.0X10	○	10	10	70	15--20	12	2
PCE2-11.0X10	○	10	11	70	15--20	12	2
PCE2-10.0X12	○	12	10	70	15--20	15	2
PCE2-12.0X12	○	12	12	70	15--20	15	2
PCE2-14.0X14	○	14	14	70	15--20	15	2
PCE2-15.0X16	○	16	15	70	22--28	18	2
PCE2-16.0X16	○	16	16	70	22--28	18	2

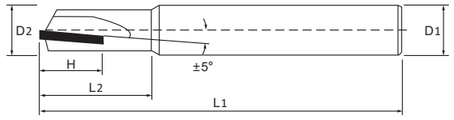
● standard stock ○ order production

Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

PCES1-PCD Spiral endmill 1 flute





Model	Stock	D1	D2	L1	L2	H	Z
PCES1-2.0X6	○	6	2	50	5--8	3	1
PCES1-2.5X6	○	6	2.5	50	5--8	4	1
PCES1-3.0X6	○	6	3	50	5--8	5	1
PCES1-3.5X6	○	6	3.5	50	5--8	5	1
PCES1-4.0X6	○	6	4	50	8--10	6	1
PCES1-5.0X6	○	6	5	50	8--10	6	1
PCES1-6.0X6	○	6	6	50	10--15	8	1
PCES1-7.0X6	○	6	7	50	10--15	8	1
PCES1-8.0X8	○	8	8	60	15--20	10	1
PCES1-8.5X8	○	8	8.5	60	15--20	10	1
PCES1-9.0X8	○	8	9	60	15--20	10	1
PCES1-10.0X10	○	10	10	70	15--20	12	1
PCES1-11.0X10	○	10	11	70	15--20	12	1
PCES1-10.0X12	○	12	10	70	15--20	15	1
PCES1-12.0X12	○	12	12	70	15--20	15	1
PCES1-14.0X14	○	14	14	70	15--20	15	1
PCES1-15.0X16	○	16	15	70	22--28	18	1
PCES1-16.0X16	○	16	16	70	22--28	18	1

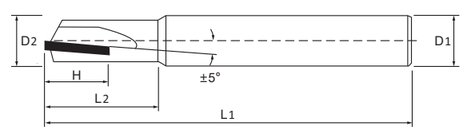
● standard stock ○ order production

Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

PCES2-PCD Spiral endmill 2 flute





Model	Stock	D1	D2	L1	L2	H	Z
PCES2-2.0X6	○	6	2	50	5--8	3	2
PCES2-2.5X6	○	6	2.5	50	5--8	4	2
PCES2-3.0X6	○	6	3	50	5--8	5	2
PCES2-3.5X6	○	6	3.5	50	5--8	5	2
PCES2-4.0X6	○	6	4	50	8--10	6	2
PCES2-5.0X6	○	6	5	50	8--10	6	2
PCES2-6.0X6	○	6	6	50	10--15	8	2
PCES2-7.0X6	○	6	7	50	10--15	8	2
PCES2-8.0X8	○	8	8	60	15--20	10	2
PCES2-8.5X8	○	8	8.5	60	15--20	10	2
PCES2-9.0X8	○	8	9	60	15--20	10	2
PCES2-10.0X10	○	10	10	70	15--20	12	2
PCES2-11.0X10	○	10	11	70	15--20	12	2
PCES2-10.0X12	○	12	10	70	15--20	15	2
PCES2-12.0X12	○	12	12	70	15--20	15	2
PCES2-14.0X14	○	14	14	70	15--20	15	2
PCES2-15.0X16	○	16	15	70	22--28	18	2
PCES2-16.0X16	○	16	16	70	22--28	18	2

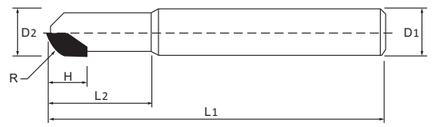
● standard stock ○ order production

Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

PCB1- PCD Ball endmill 1 flute





Model	Stock	D1	D2	L1	L2	H	Z	R
PCB1-R1.0X6	○	6	2	50	5--8	3	1	1.5
PCB1-R1.75X6	○	6	3.5	50	5--8	3	1	1.75
PCB1-R2.0X6	○	6	4	50	8--10	4	1	2
PCB1-R2.5X6	○	6	5	50	8--10	5	1	2.5
PCB1-R3.0X6	○	6	6	50	10--15	6	1	3
PCB1-R3.5X6	○	6	7	50	10--15	6	1	3.5
PCB1-R4.0X8	○	8	8	60	15--20	7	1	4
PCB1-R4.25X8	○	8	8.5	60	15--20	8	1	4.25
PCB1-R4.5X8	○	8	9	60	15--20	8	1	4.5
PCB1-R5.0X10	○	10	10	70	15--20	8	1	5
PCB1-R5.5X10	○	10	11	70	15--20	9	1	5.5
PCB1-R5.0X12	○	12	10	70	18--25	9	1	5
PCB1-R6.0X12	○	12	12	70	18--25	10	1	6
PCB1-R7.0X14	○	14	14	70	18--25	10	1	7
PCB1-R7.5X16	○	16	15	70	22--28	11	1	7.5
PCB1-R8.0X16	○	16	16	70	22--28	12	1	8

● standard stock ○ order production

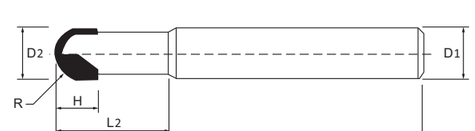
加工材料 Work Material

S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

PCB1- PCD Ball endmill 2 flute





Model	Stock	D1	D2	L1	L2	H	Z	R
PCB2-R1.0X6	○	6	2	50	5--8	3	2	1.5
PCB2-R1.75X6	○	6	3.5	50	5--8	3	2	1.75
PCB2-R2.0X6	○	6	4	50	8--10	4	2	2
PCB2-R2.5X6	○	6	5	50	8--10	5	2	2.5
PCB2-R3.0X6	○	6	6	50	10--15	6	2	3
PCB2-R3.5X6	○	6	7	50	10--15	6	2	3.5
PCB2-R4.0X8	○	8	8	60	15--20	7	2	4
PCB2-R4.25X8	○	8	8.5	60	15--20	8	2	4.25
PCB2-R4.5X8	○	8	9	60	15--20	8	2	4.5
PCB2-R5.0X10	○	10	10	70	15--20	8	2	5
PCB2-R5.5X10	○	10	11	70	15--20	9	2	5.5
PCB2-R5.0X12	○	12	10	70	18--25	9	2	5
PCB2-R6.0X12	○	12	12	70	18--25	10	2	6
PCB2-R7.0X14	○	14	14	70	18--25	10	2	7
PCB2-R7.5X16	○	16	15	70	22--28	11	2	7.5
PCB2-R8.0X16	○	16	16	70	22--28	12	2	8

● standard stock ○ order production

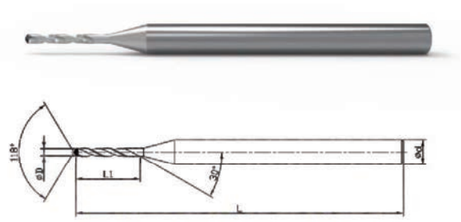
Work Material

S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Preferred ○ optional

SCD Sintered diamond drill (endmill shank)

PCD 30° 180°



1. Compared with the traditional diamond bit, it can be used for ideal high-speed machining due to its integral sintering.
2. Because of the high strength of the cutting edge, the problem of diamond desoldering will not occur.
3. It has high machining precision and good surface finish.
4. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	ØD	ℓ1	L	Ød
SCD0040	○	0.4	6	40	3
SCD0041	○	0.41	6	40	3
SCD0042	○	0.42	6	40	3
SCD0043	○	0.43	6	40	3
SCD0044	○	0.44	6	40	3
SCD0045	○	0.45	6	40	3
SCD0046	○	0.46	6	40	3
SCD0047	○	0.47	6	40	3
SCD0048	○	0.48	6	40	3
SCD0049	○	0.49	6	40	3
SCD0050	○	0.5	6	40	3
SCD0051	○	0.51	6	40	3
SCD0052	○	0.52	6	40	3
SCD0053	○	0.53	6	40	3
SCD0054	○	0.54	6	40	3
SCD0055	○	0.55	6	40	3
SCD0056	○	0.56	6	40	3
SCD0057	○	0.57	6	40	3
SCD0058	○	0.58	6	40	3
SCD0059	○	0.59	6	40	3
SCD0060	○	0.6	7	40	3
SCD0061	○	0.61	7	40	3
SCD0062	○	0.62-	7	40	3
SCD0063	○	0.63	7	40	3
SCD0064	○	0.64	7	40	3
SCD0065	○	0.65	7	40	3
SCD0066	○	0.66	7	40	3
SCD0067	○	0.67	7	40	3
SCD0068	○	0.68	7	40	3
SCD0069	○	0.69	7	40	3
SCD0070	○	0.7	8	40	3
SCD0071	○	0.71	8	40	3
SCD0072	○	0.72	8	40	3
SCD0073	○	0.73	8	40	3
SCD0074	○	0.74	8	40	3

Model	Stock	ØD	ℓ1	L	Ød
SCD0075	○	0.75	8	40	3
SCD0076	○	0.76	8	40	3
SCD0077	○	0.77	8	40	3
SCD0078	○	0.78	8	40	3
SCD0079	○	0.79	8	40	3
SCD0080	○	0.8	8	40	3
SCD0081	○	0.81	8	40	3
SCD0082	○	0.82	8	40	3
SCD0083	○	0.83	8	40	3
SCD0084	○	0.84	8	40	3
SCD0085	○	0.85	8	40	3
SCD0086	○	0.86	8	40	3
SCD0087	○	0.87	8	40	3
SCD0088	○	0.88	8	40	3
SCD0089	○	0.89	8	40	3
SCD0090	○	0.9	8	40	3
SCD0091	○	0.91	8	40	3
SCD0092	○	0.92	8	40	3
SCD0093	○	0.93	8	40	3
SCD0094	○	0.94	8	40	3
SCD0095	○	0.95	8	40	3
SCD0096	○	0.96	8	40	3
SCD0097	○	0.97	8	40	3
SCD0098	○	0.98	8	40	3
SCD0099	○	0.99	8	40	3
SCD010	○	1	10	40	3
SCD0101	○	1.01	10	40	3
SCD0102	○	1.02	10	40	3
SCD0103	○	1.03	10	40	3
SCD0104	○	1.04	10	40	3
SCD0105	○	1.05	10	40	3
SCD0106	○	1.06	10	40	3
SCD0107	○	1.07	10	40	3
SCD0108	○	1.08	10	40	3
SCD0109	○	1.09	10	40	3

● standard stock ○ order production

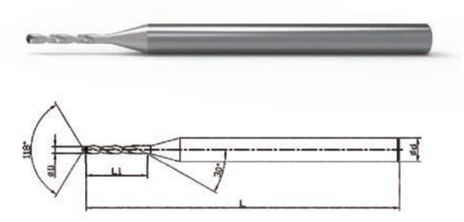
Work Material																				
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Fit best ○ Fit

WERNER

SCD Sintered diamond drill (endmill shank)

PCD 30° 180°



1. Compared with the traditional diamond bit, it can be used for ideal high-speed machining due to its integral sintering.
2. Because of the high strength of the cutting edge, the problem of diamond desoldering will not occur.
3. It has high machining precision and good surface finish.
4. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	(mm) ØD	ℓ1	L	Ød
SCD0110	○	1.1	10	40	3
SCD0111	○	1.11	10	40	3
SCD0112	○	1.12	10	40	3
SCD0113	○	1.13	10	40	3
SCD0114	○	1.14	10	40	3
SCD0115	○	1.15	10	40	3
SCD0116	○	1.16	10	40	3
SCD0117	○	1.17	10	40	3
SCD0118	○	1.18	10	40	3
SCD0119	○	1.19	10	40	3
SCD0120	○	1.2	10	40	3
SCD0121	○	1.21	10	40	3
SCD0122	○	1.22	10	40	3
SCD0123	○	1.23	10	40	3
SCD0124	○	1.24	10	40	3
SCD0125	○	1.25	10	40	3
SCD0126	○	1.26	10	40	3
SCD0127	○	1.27	10	40	3
SCD0128	○	1.28	10	40	3
SCD0129	○	1.29	10	40	3
SCD0130	○	1.3	10	40	3
SCD0131	○	1.31	10	40	3
SCD0132	○	1.32	10	40	3
SCD0133	○	1.33	10	40	3
SCD0134	○	1.34	10	40	3
SCD0135	○	1.35	10	40	3
SCD0136	○	1.36	10	40	3
SCD0137	○	1.37	10	40	3
SCD0138	○	1.38	10	40	3
SCD0139	○	1.39	10	40	3
SCD0140	○	1.4	10	40	3
SCD0141	○	1.41	10	40	3
SCD0142	○	1.42	10	40	3
SCD0143	○	1.43	10	40	3
SCD0144	○	1.44	10	40	3
SCD0145	○	1.45	10	40	3

Model	Stock	(mm) ØD	ℓ1	L	Ød
SCD0146	○	1.46	10	40	3
SCD0147	○	1.47	10	40	3
SCD0148	○	1.48	10	40	3
SCD0149	○	1.49	10	40	3
SCD0150	○	1.5	10	40	3
SCD0155	○	1.55	10	40	3
SCD0160	○	1.6	22	45	3
SCD0165	○	1.65	22	45	3
SCD0170	○	1.7	22	45	3
SCD0175	○	1.75	22	45	3
SCD0180	○	1.8	22	45	3
SCD0185	○	1.85	22	45	3
SCD0190	○	1.9	22	45	3
SCD0195	○	1.95	22	45	3
SCD0200	○	2	22	45	3
SCD0205	○	2.05	22	45	3
SCD0210	○	2.1	22	45	3
SCD0215	○	2.15	22	45	3
SCD0220	○	2.2	22	45	3
SCD0225	○	2.25	22	45	3
SCD0230	○	2.3	22	45	3
SCD0235	○	2.35	22	45	3
SCD0240	○	2.4	22	45	3
SCD0245	○	2.45	22	45	3
SCD0250	○	2.5	22	45	3
SCD0255	○	2.55	22	45	3
SCD0260	○	2.6	22	45	3
SCD0265	○	2.65	25	50	3
SCD0270	○	2.7	25	50	3
SCD0275	○	2.75	25	50	3
SCD0280	○	2.8	25	50	3
SCD0285	○	2.85	25	50	3
SCD0290	○	2.9	25	50	3
SCD0295	○	2.95	25	50	3
SCD0300	○	3	25	50	3

● standard stock ○ order production

Work Material																				
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Fit best ○ Fit

SCLD Sintered diamond drill (straight shank)

PCD 30° 180°



1. Compared with the traditional diamond bit, it can be used for ideal high-speed machining due to its integral sintering.
2. Because of the high strength of the cutting edge, the problem of diamond desoldering will not occur.
3. It has high machining precision and good surface finish.
4. Chip removal is smooth. Almost no stick knife phenomenon.

Model	Stock	(mm) ØD	ℓ_1	L	Ød
SCLD010	○	1	20	75	1
SCLD011	○	1.1	20	75	1.1
SCLD012	○	1.2	20	75	1.2
SCLD013	○	1.3	20	75	1.3
SCLD014	○	1.4	20	75	1.4
SCLD015	○	1.5	20	75	1.5
SCLD016	○	1.6	20	75	1.6
SCLD017	○	1.7	20	75	1.7
SCLD018	○	1.8	20	75	1.8
SCLD019	○	1.9	20	75	1.9
SCLD020	○	2	30	100	2
SCLD021	○	2.1	30	100	2.1
SCLD022	○	2.2	30	100	2.2
SCLD023	○	2.3	30	100	2.3
SCLD024	○	2.4	30	100	2.4
SCLD025	○	2.5	30	100	2.5
SCLD026	○	2.6	30	100	2.6
SCLD027	○	2.7	30	100	2.7
SCLD028	○	2.8	30	100	2.8
SCLD029	○	2.9	30	100	2.9
SCLD030	○	3	40	120	3
SCLD031	○	3.1	40	120	3.1
SCLD032	○	3.2	40	120	3.2
SCLD033	○	3.3	40	120	3.3
SCLD034	○	3.4	40	120	3.4
SCLD035	○	3.5	40	120	3.5
SCLD036	○	3.6	40	120	3.6
SCLD037	○	3.7	40	120	3.7
SCLD038	○	3.8	40	120	3.8
SCLD039	○	3.9	40	1 20	3.9
SCLD040	○	4	40	120	4
SCLD041	○	4.1	40	120	4.1
SCLD042	○	4.2	40	120	4.2
SCLD043	○	4.3	40	120	4.3
SCLD044	○	4.4	40	120	4.4

Model	Stock	(mm) ØD	ℓ_1	L	Ød
SCLD045	○	4.5	40	120	4.5
SCLD046	○	4.6	40	120	4.6
SCLD047	○	4.7	40	120	4.7
SCLD048	○	4.8	40	120	4.8
SCLD049	○	4.9	40	120	4.9
SCLD050	○	5	60	150	5
SCLD051	○	5.1	60	150	5.1
SCLD052	○	5.2	60	150	5.2
SCLD053	○	5.3	60	150	5.3
SCLD054	○	5.4	60	150	5.4
SCLD055	○	5.5	60	150	5.5
SCLD056	○	5.6	60	150	5.6
SCLD057	○	5.7	60	150	5.7
SCLD058	○	5.8	60	150	5.8
SCLD059	○	5.9	60	150	5.9
SCLD060	○	6	60	150	6
SCLD061	○	6.1	60	150	6.1
SCLD062	○	6.2	60	150	6.2
SCLD063	○	6.3	60	150	6.3
SCLD064	○	6.4	60	150	6.4
SCLD065	○	6.5	60	150	6.5
SCLD066	○	6.6	60	150	6.6
SCLD067	○	6.7	60	150	6.7
SCLD068	○	6.8	60	150	6.8
SCLD069	○	6.9	60	150	6.9
SCLD070	○	7	60	150	7
SCLD071	○	7.1	60	150	7.1
SCLD072	○	7.2	60	150	7.2
SCLD073	○	7.3	60	150	7.3
SCLD074	○	7.4	60	150	7.4
SCLD075	○	7.5	60	150	7.5
SCLD076	○	7.6	60	150	7.6
SCLD077	○	7.7	60	150	7.7
SCLD078	○	7.8	60	150	7.8
SCLD079	○	7.9	60	150	7.9

● standard stock ○ order production

Work Material																		
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Fit best ○ Fit

SCLD Sintered diamond drill (straight shank)

Model	Stock	(mm) ØD	ℓ_1	L	Ød
SCLD080	○	8	80	180	8
SCLD081	○	8.1	80	180	8.1
SCLD082	○	8.2	80	180	8.2
SCLD083	○	8.3	80	180	8.3
SCLD084	○	8.4	80	180	8.4
SCLD085	○	8.5	80	180	8.5
SCLD086	○	8.6	80	180	8.6
SCLD087	○	8.7	80	180	8.7
SCLD088	○	8.8	80	180	8.8
SCLD089	○	8.9	80	180	8.9
SCLD090	○	9	80	200	9
SCLD091	○	9.1	80	200	9.1
SCLD092	○	9.2	80	200	9.2
SCLD093	○	9.3	80	200	9.3
SCLD094	○	9.4	80	200	9.4
SCLD095	○	9.5	80	200	9.5
SCLD096	○	9.6	80	200	9.6
SCLD097	○	9.7	80	200	9.7
SCLD098	○	9.8	80	200	9.8
SCLD099	○	9.9	80	200	9.9
SCLD100	○	10	80	200	10

Model	Stock	(mm) ØD	ℓ_1	L	Ød
SCLD101	○	10.1	80	200	10.1
SCLD102	○	10.2	80	200	10.2
SCLD103	○	10.3	80	200	10.3
SCLD104	○	10.4	80	200	10.4
SCLD105	○	10.5	80	200	10.5
SCLD106	○	10.6	80	200	10.6
SCLD107	○	10.7	80	200	10.7
SCLD108	○	10.8	80	200	10.8
SCLD109	○	10.9	80	200	10.9
SCLD110	○	11	120	250	11
SCLD111	○	11.1	120	250	11.1
SCLD112	○	11.2	120	250	11.2
SCLD113	○	11.3	120	250	11.3
SCLD114	○	11.4	120	250	11.4
SCLD115	○	11.5	120	250	11.5
SCLD116	○	11. 6	120	250	11. 6
SCLD117	○	11.7	120	250	11.7
SCLD118	○	11.8	120	250	11.8
SCLD119	○	11.9	120	250	11.9
SCLD120	○	12	120	250	12

● standard stock ○ order production

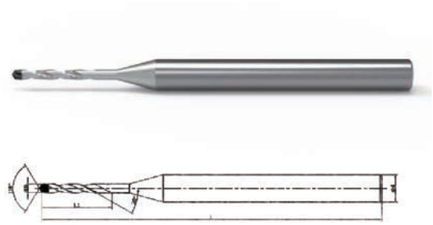
Standard Drilling Conditions

Work Material	Aluminum Alloy		High Silicon Aluminum		Copper Alloy		Fiber reinforced plastics		MMC(ceramics30%)		Magnesium Alloy		Plastics	
Drill Dia. mm	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev	Rotation min^{-1}	Feed mm/rev
0.5	20000	0.005~0.01	12000	0.005~0.01	10000	0.005~0.01	10000	0.005~0.01	10000	0.005~0.01	10000	0.005~0.01	10000	0.005~0.01
1	15000	0.01~0.03	10000	0.01~0.03	10000	0.01~0.03	10000	0.01~0.03	10000	0.01~0.03	10000	0.01~0.03	10000	0.01~0.03
1.5	14000	0.03~0.06	9000	0.03~0.06	10000	0.02~0.05	10000	0.02~0.05	10000	0.02~0.05	10000	0.02~0.05	10000	0.02~0.05
2	13000	0.05~0.15	8000	0.05~0.15	9000	0.03~0.06	9000	0.03~0.06	8500	0.02~0.08	9000	0.03~0.06	9000	0.03~0.06
3	12000	0.08~0.2	8000	0.08~0.2	8000	0.04~0.08	8000	0.04~0.08	8000	0.03~0.1	8000	0.04~0.08	8000	0.04~0.08
4	12000	0.1~0.25	8000	0.1~0.25	7500	0.06~0.12	7500	0.06~0.12	7500	0.04~0.12	7500	0.06~0.12	7500	0.06~0.12
5	12000	0.15~0.3	7000	0.15~0.3	6500	0.08~0.15	6500	0.08~0.15	6500	0.05~0.14	6500	0.08~0.15	6500	0.08~0.15
6	12000	0.15~0.3	6500	0.15~0.3	5500	0.1~0.18	5500	0.1~0.18	5300	0.06~0.15	5500	0.1~0.18	5500	0.1~0.18
7	12000	0.15~0.3	5500	0.15~0.3	5000	0.12~0.2	5000	0.12~0.2	4500	0.07~0.16	5000	0.12~0.2	5000	0.12~0.2
8	12000	0.15~0.3	5000	0.15~0.3	4500	0.12~0.2	4500	0.12~0.2	4000	0.08~0.18	4500	0.12~0.2	4500	0.12~0.2
9	12000	0.15~0.3	4200	0.15~0.3	4000	0.12~0.2	4000	0.12~0.2	3500	0.09~0.19	4000	0.12~0.2	4000	0.12~0.2
10	10000	0.15~0.3	3800	0.15~0.3	3500	0.12~0.2	3500	0.12~0.2	3200	0.1~0.2	3500	0.12~0.2	3500	0.12~0.2
11	9000	0.15~0.3	3500	0.15~0.3	3000	0.12~0.2	3000	0.12~0.2	3000	0.11~0.2	3000	0.12~0.2	3000	0.12~0.2
12	8000	0.15~0.3	3300	0.15~0.3	2800	0.12~0.2	2800	0.12~0.2	2800	0.12~0.2	2800	0.12~0.2	2800	0.12~0.2

HCD Welding diamond drill (end mill shank)

PCD 30° 120°

- Tool dia：D0.3-D3.0mm
- Dia tolerance：0,-0.005mm



1. It has high machining precision and good surface finish.
2. Chip removal is smooth. Almost no stick knife phenomenon.

Work Material																				
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎最适合 ○适合

Model	Stock	ØD	ℓ1	L	Ød	PCD Length
HCD030	○	0.3	4	38	3	1
HCD031	○	0.31	4	38	3	1
HCD032	○	0.32	4	38	3	1
HCD033	○	0.33	4	38	3	1
HCD034	○	0.34	4	38	3	1
HCD035	○	0.35	4	38	3	1
HCD036	○	0.36	4	38	3	1
HCD037	○	0.37	4	38	3	1
HCD038	○	0.38	4	38	3	1
HCD039	○	0.39	4	38	3	1
HCD040	○	0.40	5	38	3	1
HCD041	○	0.41	5	38	3	1
HCD042	○	0.42	5	38	3	1
HCD043	○	0.43	5	38	3	1
HCD044	○	0.44	5	38	3	1
HCD045	○	0.45	5	38	3	1
HCD046	○	0.46	5	38	3	1
HCD047	○	0.47	5	38	3	1
HCD048	○	0.48	5	38	3	1
HCD049	○	0.49	5	38	3	1
HCD050	○	0.50	5	38	3	1
HCD051	○	0.51	5	38	3	1
HCD052	○	0.52	5	38	3	1
HCD053	○	0.53	5	38	3	1
HCD054	○	0.54	5	38	3	1
HCD055	○	0.55	5	38	3	1
HCD056	○	0.56	5	38	3	1
HCD057	○	0.57	5	38	3	1
HCD058	○	0.58	5	38	3	1
HCD059	○	0.59	5	38	3	1
HCD060	○	0.60	7	38	3	1
HCD061	○	0.61	7	38	3	1
HCD062	○	0.62	7	38	3	1
HCD063	○	0.63	7	38	3	1
HCD064	○	0.64	7	38	3	1
HCD065	○	0.65	7	38	3	1
HCD066	○	0.66	7	38	3	1
HCD067	○	0.67	7	38	3	1
HCD068	○	0.68	7	38	3	1
HCD069	○	0.69	7	38	3	1
HCD070	○	0.70	8	38	3	1
HCD071	○	0.71	8	38	3	1
HCD072	○	0.72	8	38	3	1
HCD073	○	0.73	8	38	3	1
HCD074	○	0.74	8	38	3	1
HCD075	○	0.75	8	38	3	1

Model	Stock	ØD	ℓ1	L	Ød	PCD Length
HCD076	○	0.76	8	38	3	1
HCD077	○	0.77	8	38	3	1
HCD078	○	0.78	8	38	3	1
HCD079	○	0.79	8	38	3	1
HCD080	○	0.80	8	38	3	1
HCD081	○	0.81	8	38	3	1
HCD082	○	0.82	8	38	3	1
HCD083	○	0.83	8	38	3	1
HCD084	○	0.84	8	38	3	1
HCD085	○	0.85	8	38	3	1
HCD086	○	0.86	8	38	3	1
HCD087	○	0.87	8	38	3	1
HCD088	○	0.88	8	38	3	1
HCD089	○	0.89	8	38	3	1
HCD090	○	0.90	8	38	3	1
HCD091	○	0.91	8	38	3	1
HCD092	○	0.92	8	38	3	1
HCD093	○	0.93	8	38	3	1
HCD094	○	0.94	8	38	3	1
HCD095	○	0.95	8	38	3	1
HCD096	○	0.96	8	38	3	1
HCD097	○	0.97	8	38	3	1
HCD098	○	0.98	8	38	3	1
HCD099	○	0.99	8	38	3	1
HCD100	○	1.0	8	38	3	1
HCD101	○	1.01	8	38	3	1
HCD102	○	1.02	8	38	3	1
HCD103	○	1.03	8	38	3	1
HCD104	○	1.04	8	38	3	1
HCD105	○	1.05	8	38	3	1
HCD106	○	1.06	8	38	3	1
HCD107	○	1.07	8	38	3	1
HCD108	○	1.08	8	38	3	1
HCD109	○	1.09	8	38	3	1
HCD110	○	1.1	8	38	3	1
HCD111	○	1.11	8	38	3	1
HCD112	○	1.12	8	38	3	1
HCD113	○	1.13	8	38	3	1
HCD114	○	1.14	8	38	3	1
HCD115	○	1.15	8	38	3	1
HCD116	○	1.16	8	38	3	1
HCD117	○	1.17	8	38	3	1
HCD118	○	1.18	8	38	3	1
HCD119	○	1.19	8	38	3	1
HCD120	○	1.2	8	38	3	1
HCD121	○	1.21	8	38	3	1

● standard stock ○ order production

WERNER

HCD Welding diamond drill (end mill shank)

Model	Stock	ØD	ℓ1	L	Ød	PCD Length
HCD122	○	1.22	8	38	3	1
HCD123	○	1.23	8	38	3	1
HCD124	○	1.24	8	38	3	1
HCD125	○	1.25	8	38	3	1
HCD126	○	1.26	8	38	3	1
HCD127	○	1.27	8	38	3	1
HCD128	○	1.28	8	38	3	1
HCD129	○	1.29	8	38	3	1
HCD130	○	1.3	8	38	3	1
HCD131	○	1.31	8	38	3	1
HCD132	○	1.32	8	38	3	1
HCD133	○	1.33	8	38	3	1
HCD134	○	1.34	8	38	3	1
HCD135	○	1.35	8	38	3	1
HCD136	○	1.36	8	38	3	1
HCD137	○	1.37	8	38	3	1
HCD138	○	1.38	8	38	3	1
HCD139	○	1.39	8	38	3	1
HCD140	○	1.4	8	38	3	1
HCD141	○	1.41	8	38	3	1
HCD142	○	1.42	8	38	3	1
HCD143	○	1.43	8	38	3	1
HCD144	○	1.44	8	38	3	1
HCD145	○	1.45	8	38	3	1
HCD146	○	1.46	8	38	3	1
HCD147	○	1.47	8	38	3	1
HCD148	○	1.48	8	38	3	1
HCD149	○	1.49	8	38	3	1
HCD150	○	1.5	8	38	3	2
HCD151	○	1.51	8	38	3	2
HCD152	○	1.52	8	38	3	2
HCD153	○	1.53	8	38	3	2
HCD154	○	1.54	8	38	3	2
HCD155	○	1.55	8	38	3	2
HCD156	○	1.56	8	38	3	2
HCD157	○	1.57	8	38	3	2
HCD158	○	1.58	8	38	3	2
HCD159	○	1.59	8	38	3	2
HCD160	○	1.6	8	38	3	2
HCD161	○	1.61	8	38	3	2
HCD162	○	1.62	8	38	3	2
HCD163	○	1.63	8	38	3	2
HCD164	○	1.64	8	38	3	2
HCD165	○	1.65	8	38	3	2
HCD166	○	1.66	8	38	3	2

Model	Stock	ØD	ℓ1	L	Ød	PCD Length
HCD167	○	1.67	8	38	3	2
HCD168	○	1.68	8	38	3	2
HCD169	○	1.69	8	38	3	2
HCD170	○	1.7	10	38	3	2
HCD171	○	1.71	10	38	3	2
HCD172	○	1.72	10	38	3	2
HCD173	○	1.73	10	38	3	2
HCD174	○	1.74	10	38	3	2
HCD175	○	1.75	10	38	3	2
HCD176	○	1.76	10	38	3	2
HCD177	○	1.77	10	38	3	2
HCD178	○	1.78	10	38	3	2
HCD179	○	1.79	10	38	3	2
HCD180	○	1.8	10	38	3	2
HCD181	○	1.81	10	38	3	2
HCD182	○	1.82	10	38	3	2
HCD183	○	1.83	10	38	3	2
HCD184	○	1.84	10	38	3	2
HCD185	○	1.85	10	38	3	2
HCD186	○	1.86	10	38	3	2
HCD187	○	1.87	10	38	3	2
HCD188	○	1.88	10	38	3	2
HCD189	○	1.89	10	38	3	2
HCD190	○	1.9	10	38	3	2
HCD191	○	1.91	10	38	3	2
HCD192	○	1.92	10	38	3	2
HCD193	○	1.93	10	38	3	2
HCD194	○	1.94	10	38	3	2
HCD195	○	1.95	10	38	3	2
HCD196	○	1.96	10	38	3	2
HCD197	○	1.97	10	38	3	2
HCD198	○	1.98	10	38	3	2
HCD199	○	1.99	10	38	3	2
HCD200	○	2.0	10	38	3	2
HCD210	○	2.1	10	38	3	2
HCD220	○	2.2	10	38	3	2
HCD230	○	2.3	10	38	3	2
HCD240	○	2.4	10	38	3	2
HCD250	○	2.5	10	38	3	2
HCD260	○	2.6	10	38	3	2
HCD270	○	2.7	10	38	3	2
HCD280	○	2.8	10	38	3	2
HCD290	○	2.9	10	38	3	2
HCD300	○	3.0	10	38	3	2

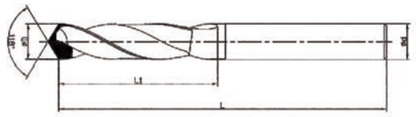
● standard stock ○ order production

Standard Drilling Conditions

Work Material	Aluminum Alloy		High Silicon Aluminum		Copper Alloy		Fiber reinforced plastics		MMC(ceramics30%)		Carbon		Plastics	
Drill Dia. mm	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev	Speed m/min	Feed mm/rev
0.3~1.0	30~70	0.005~0.01	20~60	0.005~0.01	20~60	0.005~0.01	20~60	0.005~0.01	10~40	0.005~0.01	20~60	0.005~0.01	20~60	0.005~0.01
1.01~2.0	40~80	0.01~0.05	30~70	0.01~0.05	30~70	0.01~0.05	30~70	0.02~0.05	20~50	0.02~0.05	30~70	0.01~0.05	30~70	0.01~0.05
2.1~3.0	50~120	0.04~0.1	40~100	0.04~0.1	40~100	0.04~0.1	40~100	0.03~0.08	30~70	0.03~0.1	40~100	0.04~0.1	40~100	0.04~0.1

PHD Welding diamond drill (end mill shank)



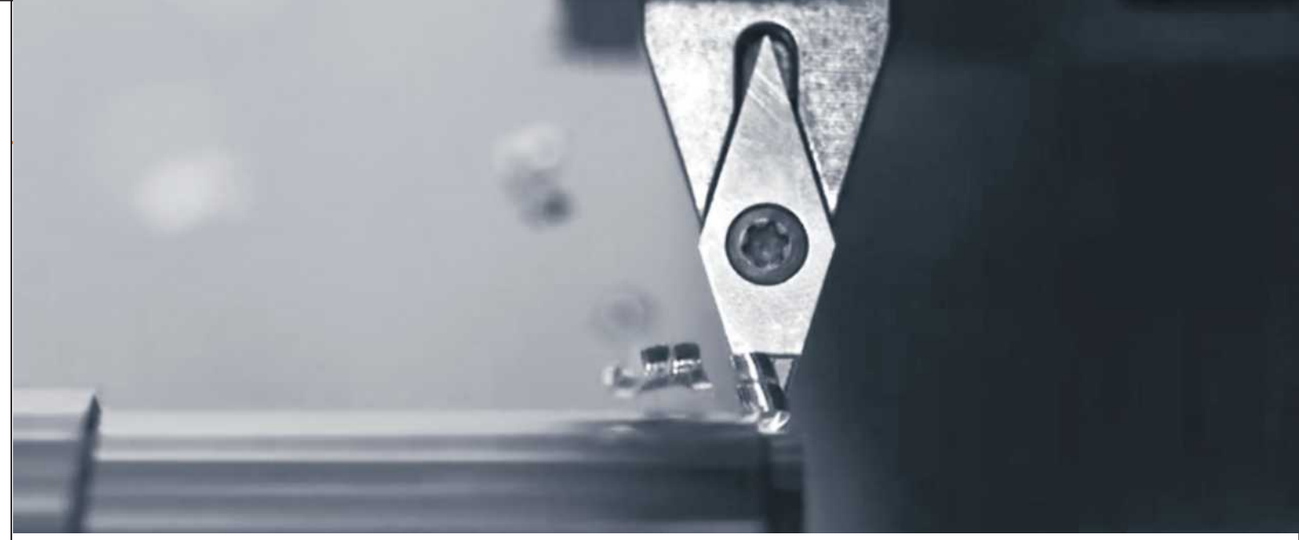


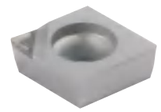
Model	Stock	D/d	L1	L
PHD020	O	2.0	12	38
PHD035	O	3.5	20	52
PHD040	O	4.0	22	55
PHD055	O	5.5	28	66
PHD060	O	6.0	28	66
PHD075	O	7.5	34	74
PHD090	O	9.0	40	84
PHD105	O	10.5	43	89
PHD120	O	12.0	51	102

● standard stock ○ order production

Work Material																				
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
							○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎

◎ Fit best ○ Fit

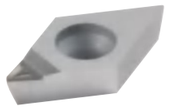




FA/KPD10

PCD Chipbreaker inserts

P M K N S H



(1) PCD chipbreaker insert has more high effiency,long life.
(2) It can make the hole processing of chip removal more smoothly, and meet the high processing surface requirements.
(3) It can prevent tool damage, cutter breakage and workpiece scrapping caused by unsmooth chip removal.

Turning contrast



With chipbreaker

Without chipbreaker

Non-standard cutter

According to the requirements of various sizes of non-standard tool,We can provide perfect machining way to solve the poor efficiency,low accuracy,poor surface finishing,long time consuming problems!



Scheme supporting capacity



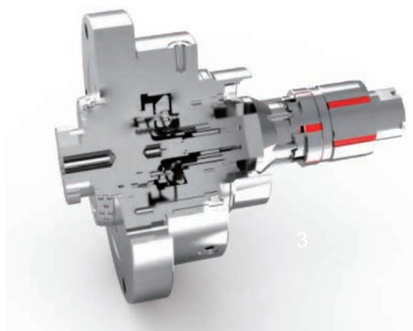
1, Motor shell rough boring cutter



Electric Engine Housing



2, motor shell fine boring cutter



3, high precision motor housing fixture



Turning inserts
D01 - D36

D

Inserts Identification System D01

Inserts Material Information D03

Turning Insert Grades D05

Features of Turning Insert D11

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Insert Identification System

1	2	3	4	5	6	7	8
C	N	M	G	12	04	04	PM

1 Insert shape

A 85° B 82° K 55°	
H 120°	
L 90°	
O 135°	
P 108°	
C 80° D 55° E 75° M 86° V 35°	
R -	
S 90°	
T 60°	
W 80°	

2 Insert clearance angle



	a
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special

3 Tolerance

	d (±mm)	m (±mm)	s (±mm)	d=6.3/9.525	d=12.7	d=15.8/19.05
A	0.025	0.005	0.025	•	•	•
C	0.025	0.013	0.025	•	•	•
E	0.025	0.025	0.025	•	•	•
F	0.013	0.005	0.025	•	•	•
G	0.025	0.025	0.130	•	•	•
H	0.013	0.013	0.025	•	•	•
J	0.050	0.05	0.025	•		
	0.080	0.05	0.025		•	
	0.100	0.05	0.025			•
K	0.050	0.013	0.025	•		
	0.080	0.013	0.025		•	
	0.100	0.013	0.025			•
M	0.05	0.08	0.13	•		
	0.08	0.13	0.13		•	
	0.10	0.15	0.13			•
N	0.05	0.08	0.025	•		
	0.08	0.13	0.025		•	
	0.10	0.15	0.025			•
U	0.08	0.13	0.13	•		
	0.13	0.20	0.13		•	
	0.18	0.27	0.13			•







4 Chip-breaker and clamp type

R Without hole	Q Cylindrical hole+double countersink
F Without hole	C Cylindrical hole+double countersink
N Without hole	G Cylindrical hole
A Cylindrical hole	T Cylindrical hole+ countersink
M Cylindrical hole	H Cylindrical hole+ countersink
U 40º60° Cylindrical hole+double countersink	W Cylindrical hole+ countersink
J Cylindrical hole+double countersink	B Cylindrical hole+ countersink
X Special	

5 Insert size

d mm	C	D	R	S	T	V	W
5.56	05	-	-	05	09	-	03
6.0	-	-	06	-	-	-	-
6.35	06	07	-	06	11	11	04
6.65	-	-	-	-	-	-	-
7.94	07	-	-	07	-	-	-
8.0	-	-	08	-	-	-	-
9.525	09	11	-	09	16	16	06
10.0	-	-	10	-	-	-	-
12.0	-	-	12	-	-	-	-
12.7	12	15	-	12	22	22	08
15.875	16	19	-	15	27	-	10
16.0	-	-	16	-	-	-	-
16.74	-	-	-	16	-	-	-
19.05	19	-	-	19	33	-	13
20.0	-	-	20	-	-	-	-
25.4	25	-	25	25	-	-	-

6 Insert thickness





01	S=1.59
T1	S=1.98
02	S=2.38
03	S=3.18
T3	S=3.97
04	S=4.76
05	S=5.56
06	S=6.35
07	S=7.94
09	S=9.52

7 Corner rakdius

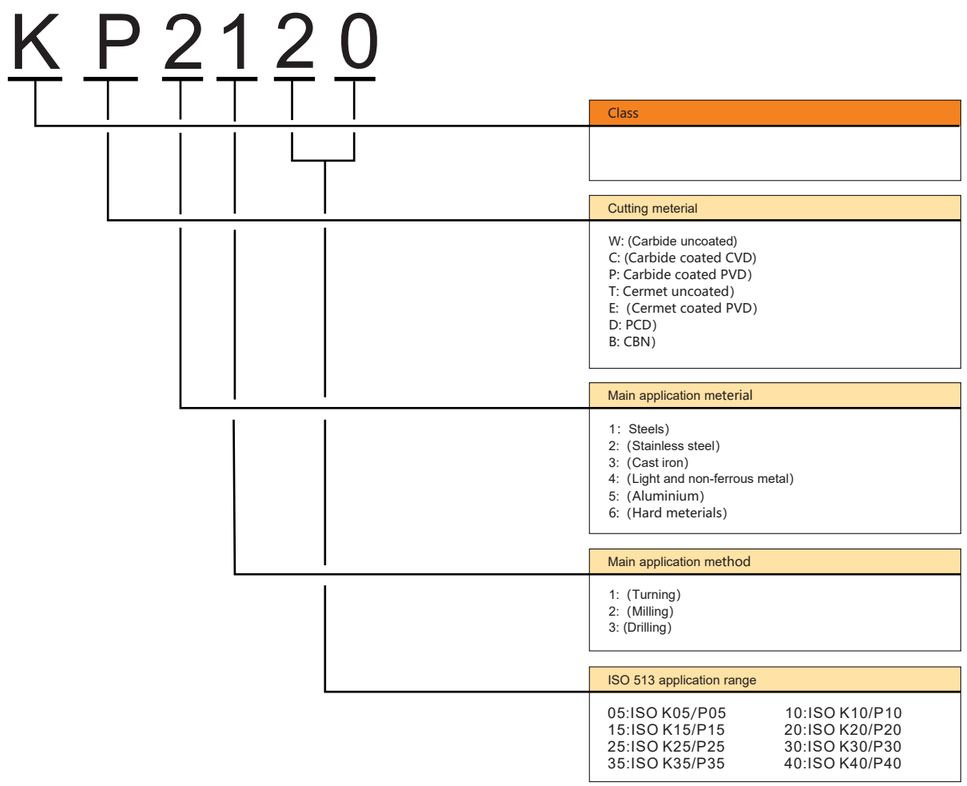


R (mm)
02 0.2
04 0.4
05 0.5
08 0.8
12 1.2
16 1.6
20 2.0
24 2.4
32 3.2

8 Chip breaker

KM	
PM	
MM	
APK	

Inserts Material Construction



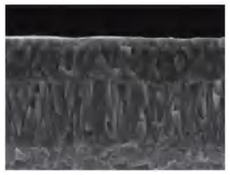
Summary of Insert Grades

General Turning

Workpiece Material	P					M					K				N			S				H		
	Steel					Stainless steel					Cast Iron				Nonferrous			NRSA				Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
CVD Coated Carbide		KC1115	KC1125	KC1135							KC3110		KC3125											
PVD Coated Carbide							KP2120	KP2130										KP6105	KP6110			KP1110		
Uncoated Carbide																KW20								
Cermet		KT20					KT20						KT20											

KC1115

Cutting Range: Finishing and Semi-finishing





Super fine MT-TiCN,Al_2O_3 and TiN coating on carbide substrate,
smooth surface and superior wear resistance,
Application: Suitable for the cutting of steel and alloy steel.

KC1125

Cutting Range: Semi-finishing to Light Roughing





Super fine MT-TiCN,Al_2O_3 and TiN coating on carbide substrate,
smooth surface， superior wear resistance and improved toughness
upgraded from KC1125,
Application: Suitable for the cutting of steel and alloy steel under
interrupted conditions.

KC1135

Cutting Range: Semi-finishing to Light Roughing

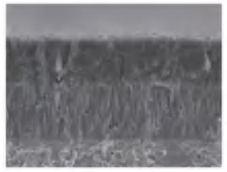




Super fine MT-TiCN,Al_2O_3 and TiN coating on carbide substrate,
smooth surface， superior wear resistance and improved toughness
upgraded from KC1125,
Application: Suitable for the cutting of steel and alloy steel under
interrupted conditions.

KC3110

Cutting Range: For Cost iron Semi-finishing to Roughing





New grade, special for iron cutting .Al_2O_3 and coated on thick micro-grain carbide
substrate, superior wear resistance and greatly improved toughness Suitable for
bad machining conditions which require high toughness.

KC3125

Cutting Range: For Cost iron Semi-finishing to Roughing





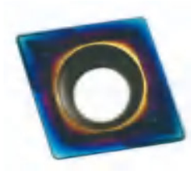
New grade, special for iron cutting .Al_2O_3 and coated on thick micro-grain carbide
substrate, superior wear resistance and greatly improved toughness Suitable for
bad machining conditions which require high toughness.

Turning Insert Grades

PVD coating carbide inserts

KP1110 Cutting Range: Finishing and Semi-finishing





TiAlN coating on super micro-grain carbide substrate with good toughness, superior adhesion resistance and longer tool life
Application: Suitable for stainless steel cutting

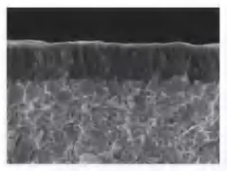
KP2120 Cutting Range: Finishing and Semi-finishing





TiAlN coating on super micro-grain carbide substrate with good toughness, superior adhesion resistance and longer tool life
Application: Suitable for stainless steel cutting

KP2130 Cutting Range: Semi-finishing to Light Roughing





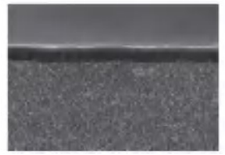
TiCN and TiN coating on good toughness carbide substrate, superior resistance to thermal shock and mechanical shock, Application: Suitable for stainless steel cutting and interrupted cutting.

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Turning Insert Grades

PVD coating carbide inserts

KP6105 Cutting Range: Finishing and Semi-finishing





TiAlN coating on super micro-grain carbide substrate with good toughness, superior adhesion resistance and longer tool life
Application: Suitable for stainless steel cutting

KP6110 Cutting Range: Finishing and Semi-finishing





TiAlN coating on super micro-grain carbide substrate with good toughness, superior adhesion resistance and longer tool life
Application: Suitable for stainless steel cutting

Cermet Grades

KT20



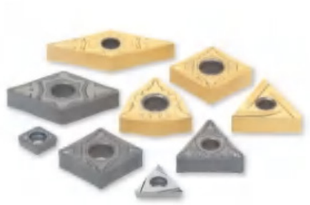
For turning and milling of steel ,cast iron and stainless,
High wear resistance and good roughness



KCT20



For turning and milling of steel ,cast iron and stainless,
High wear resistance and good roughness



Coating Cermet Grades

Grades for N applications

KW20



Micro-grain carbide substrate with high hardness and superior wear resistance
Application: copper alloys and aluminum alloys
Buffed on top face reduced built-up edge



KCW20

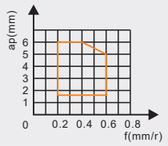
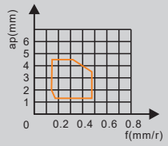
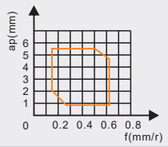
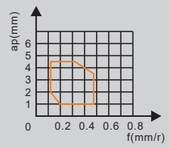
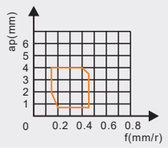
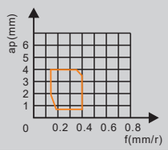
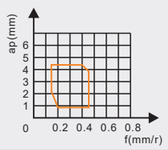
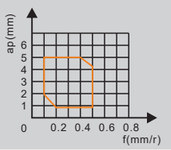


Micro-grain carbide substrate with high hardness and superior wear resistance
Application: copper alloys and aluminum alloys
Buffed on top face reduced built-up edge



Features of Turning Insert

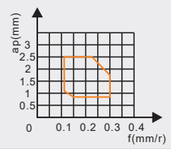
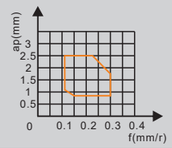
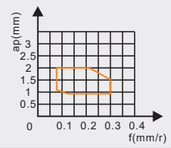
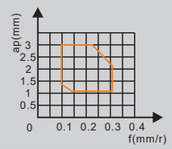
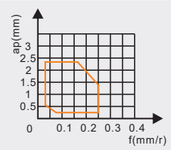
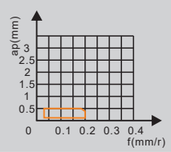
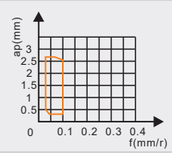
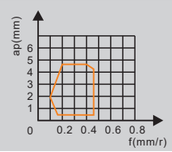
Turning Inserts (Negative)

Chipbreaker		Applicable Chipbreaker Range	Features
None			Without chip breaker, Flat-top. Stable placement Strong edge design for intermittent cutting coinditions .
KM			Double-sided chipbreaker Strong cutting edge and wide land for improved performance
KR			For rough machining of carbon steel, cast steel and alloy steel The combination of variable rake angle and variable edge width can meet the requirements of sharpness and strength of cutting edges with different cutting depths
PM			For semi-finishing of general steel and alloy steel Double-sided chip breaker Strong flat cutting edge
MM			For medium cutting of stainless steel and mild steel Double-sided chip breaker Sharp cutting edge
MH			Semi finishing of steel parts and stainless steel. Double rake angle design, light cutting, reinforced tool tip Open chip breaking groove, ideal chip breaking and chip removal effect, wide chip breaking range
SM			For semi finishing of superalloys and titanium alloys, With high strength cutting edge and positive rake angle, cutting is light and fast!
AH			Double-sided chip breaker Sharp tool nose and strong cutting edge

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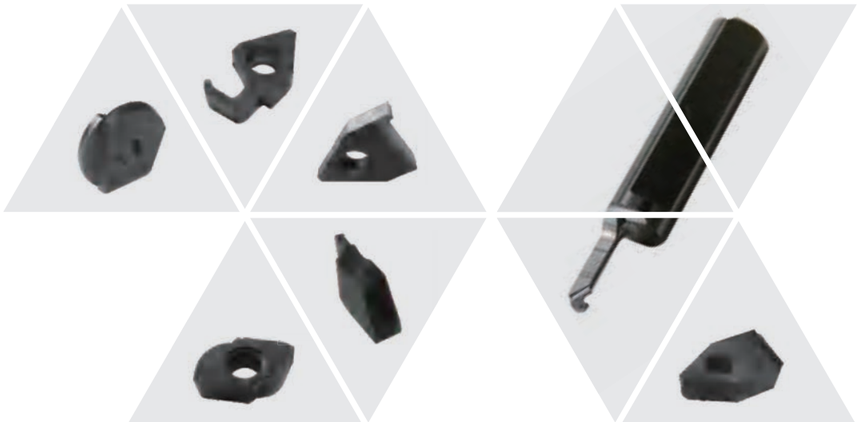
Features of Turning Insert

Turning Inserts (Positive)

Chipbreaker	Shape	Applicable Chipbreaker Range	Features
GPK			Strong tool nose due to flat cutting edge and sharp cutting edge due to double rake angle.
TMP			Special chip breaker design to keep both sharp cutting edge and good impact resistance which can efficiently avoid accum-ulated and suited for semi-finishing steel and stainless steel.
None			Finishing to semi finishing of steel parts and stainless steel inner holes, simple chip breaking groove design, Strong universality and wide application range
SM			Semi finish machining to medium machining of super alloys and titanium alloys, and the blade inclination design ensures low cutting force, Good chip breaking control comes from professional chip breaking groove design
SA			For superfinishing to finishing of stainless steel and superalloys, Excellent chip breaking effect at low feed and small cutting depth, Good surface finish and longer tool life can be obtained during machining
R/L-F			Finishing control cutting flow direction which can reduce the cutting resistance
R/L-U			Suitable for finishing and semi-finishing, it can control the chip even under low feed conditions.
APK			For aluminum alloy cutting Sharp tool nose due to large rake angle

Non-standard cutter

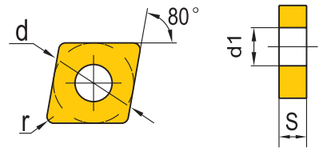
According to the requirements of various sizes of non-standard tool, We can provide perfect machining way to solve the poor efficiency,low accuracy,poor surface finishing,long time consuming problems!





Turning Inserts (Negative)

CN..



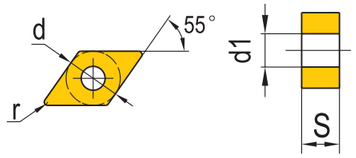
Model	d	s	d1
CN..0903 ..	9.525	3.18	3.81
CN..1204 ..	12.7	4.76	5.16
CN..1606 ..	15.88	6.35	6.35
CN..1906 ..	19.05	6.35	7.94
CN..2509 ..	25.4	9.53	9.12

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Roughing	CNMA120408	0.8	0.25-0.70	3.0-7.0	●													
	CNMA120412	1.2	0.25-0.70	3.0-7.0	●													
Semi-Finishing	CNMG120408KM	0.8	0.17-0.55	1.2-5.0	●													
	CNMG120412KM	1.2	0.20-0.55	1.5-5.0	●													
Roughing	CNMG120408KR	0.8	0.20-0.60	1.20-6.4		●			●									
	CNMG120412KR	1.2	0.30-0.90	1.80-6.4		●			●									
	CNMG160608KR	0.8	0.20-0.60	1.20-8.1		●			●									
	CNMG160612KR	1.2	0.30-0.90	1.80-8.1		●			●									
Semi-Finishing	CNMG120404PM	0.4	0.12-0.52	0.7-4.8			●	●										
	CNMG120408PM	0.8	0.12-0.52	0.7-4.8			●	●										
	CNMG120412PM	1.2	0.12-0.52	0.7-4.8			●	●										
Semi-Finishing	CNMG120404MM	0.4	0.10-0.50	0.5-5.0							●	●						
	CNMG120408MM	0.8	0.12-0.50	0.5-5.0							●	●						
Semi-Finishing	CNMG120404MH	0.4	0.07-0.20	0.34-3.9						●	●							
	CNMG120408MH	0.8	0.14-0.40	0.68-3.9						●	●							
	CNMG120412MH	1.2	0.20-0.60	1.02-3.9						●	●							
Semi-Finishing	CNMG120404SM	0.4	0.08-0.22	0.40-4.3									●	●				
	CNMG120408SM	0.8	0.15-0.44	0.80-4.3									●	●				
Semi-Finishing	CNMG120404MT	0.4	0.15-0.40	1.0-5.0											●	●		
	CNMG120408MT	0.8	0.17-0.55	1.2-5.0											●	●		
Semi-fnishing/Finishing	CNMG120402AH	0.2	0.05-0.20	0.8-3.5													●	●
	CNMG120404AH	0.4	0.10-0.40	0.8-3.5													●	●
	CNMG120408AH	0.8	0.13-0.55	0.8-3.5													●	●
Steel						★	★	★	★	☆	☆	☆		★	★			
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																★	★	
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Negative)

DN..



Model	d	s	d1
DN..1104..	9.525	4.76	3.81
DN..1504..	12.7	4.76	5.16
DN..1506..	12.7	6.35	5.16

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Roughing	DNMA150408	0.8	0.25-0.70	3.0-7.0	●													
	DNMA150412	1.2	0.25-0.70	3.0-7.0	●													
Semi-Finishing	DNMG150408KM	0.8	0.17-0.50	1.0-4.0	●													
	DNMG150412KM	1.2	0.20-0.50	1.3-4.0	●													
Roughing	DNMG150408KR	0.8	0.20-0.60	1.20-5.4		●			●									
	DNMG150412KR	1.2	0.30-0.90	1.80-5.4		●			●									
	DNMG150608KR	0. 8	0.20-0.60	1.20-5.1		●			●									
	DNMG150612KR	1. 2	0.30-0.90	1.80-5.4		●			●									
Semi-Finishing	DNMG150404PM	0.4	0.12-0.52	0.7-4.8		●	●											
	DNMG150408PM	0.8	0.12-0.52	0.7-4.8		●	●											
	DNMG150604PM	0.4	0.12-0.52	0.7-4.8		●	●											
	DNMG150608PM	0.8	0.12-0.52	0.7-4.8		●	●											
	DNMG150612PM	1.2	0.12-0.52	0.7-4.8		●	●											
Semi-Finishing	DNMG150404MH	0.4	0.07-0.20	0.34-3.5						●	●							
	DNMG150408MH	0.8	0.14-0.40	0.68-3.5						●	●							
Semi-Finishing	DNMG150404SM	0.4	0.08-0.22	0.40-3.9								●	●					
	DNMG150408SM	0.8	0.15-0.44	0.80-3.9								●	●					
Semi-Finishing	DNMG150404MM	0.4	0.10-0.50	0.5-5.0							●	●						
	DNMG150408MM	0.8	0.12-0.50	0.5-5.0							●	●						
Semi-Finishing	DNMG150404R-VF	0.4	0.15-0.40	0.8-4.0										●				
	DNMG150408R-VF	0.8	0.17-0.50	1.0-4.0										●				
Steel						★	★	★	★	☆	☆	☆		★	★			
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																★	★	
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel									★									

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

Turning Inserts (Negative)

SN..



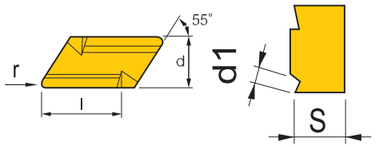
Model	d	s	d1
SN..1204 ..	12.7	4.76	5.16
SN..1506 ..	15.88	6.35	6.35
SN..1906 ..	19.05	6.35	7.94
SN..2509 ..	25.4	9.53	9.12

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Roughing	SNMA120408	0.8	0.25-0.70	3.0-7.0	●													
	SNMA120412	1.2	0.25-0.70	3.0-7.0	●													
Semi-Finishing	SNMG120408KM	0.8	0.17-0.55	1.2-5.0	●													
	SNMG120412KM	1.2	0.20-0.55	1.5-5.0	●													
Roughing	SNMG120408KR	0.8	0.20-0.60	0.80-5.2		●			●									
	SNMG120412KR	1.2	0.30-0.90	1.20-5.2		●			●									
	SNMG120416KR	1.6	0.40-1.20	1.60-5.2		●			●									
	SNMG150608KR	0.8	0.20-0.60	1.20-7.9		●			●									
	SNMG150612KR	1.2	0.30-0.90	1.80-7.9		●			●									
	SNMG150616KR	1.6	0.40-1.20	2.40-7.9		●			●									
	SNMG190612KR	1.2	0.30-0.90	1.80-9.5		●			●									
	SNMG190616KR	1.6	0.10-1.20	2.40-9.5		●			●									
Semi-Finishing	SNMG120404PM	0.4	0.15-0.50	1.2-5.0			●	●										
	SNMG120408PM	0.8	0.15-0.50	1.2-5.0			●	●										
Semi-Finishing	SNMG120404MM	0.4	0.10-0.50	0.5-5.0							●	●						
	SNMG120408MM	0.8	0.12-0.50	0.5-5.0							●	●						
Semi-Finishing	SNMG120404MH	0.4	0.07-0.20	0.34-3.8						●	●							
	SNMG120408MH	0.8	0.14-0.40	0.68-3.8						●	●							
Semi-Finishing	SNGG120404R-C	0.4	0.15-0.30	1.0-4.0												●		
	SNGG120408R-C	0.8	0.15-0.35	1.0-4.0												●		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel									★									

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Negative)

KN..



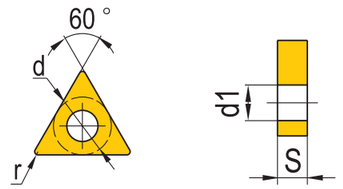
Model	l	d	s	d1	r
KN..160405..	19.2	9.525	4.76	2.2	0.5
KN..160410..	18.8	9.525	4.76	2.2	1.0

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
	KNUX160405R-11	0.5	0.20-0.35	1.0-6.0				●			●							
	KNUX160405L-11	0.5	0.20-0.35	1.0-6.0				●			●							
	KNUX160410R-11	1.0	0.30-0.60	1.5-6.0				●			●							
	KNUX160410L-11	1.0	0.30-0.60	1.5-6.0				●			●							
Semi-Finishing																		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Negative)

TN..



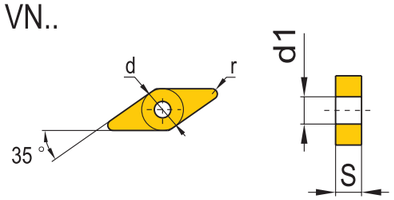
Model	d	s	d1
TN..1604..	9.525	4.76	3.81
TN..2204..	12.7	4.76	5.16

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Roughing 	TNMA160408	0.8	0.25-0.70	3.0-7.0	●													
	TNMA160412	1.2	0.25-0.70	3.0-7.0	●													
Semi-Finishing 	TNMG160408KM	0.8	0.17-0.50	1.2-3.5	●													
	TNMG160412KM	1.2	0.20-0.50	1.5-3.5	●													
Roughing 	TNMG160408KR	0.8	0.17-0.50	1.2-3.5		●		●										
	TNMG160412KR	1.2	0.20-0.50	1.5-3.5		●		●										
Semi-Finishing 	TNMG160404PM	0.4	0.05-0.30	0.5-2.0				●	●									
	TNMG160408PM	0.8	0.07-0.30	0.5-2.0				●	●									
Semi-Finishing 	TNMG160404MM	0.4	0.05-0.30	0.8-5.0						●	●							
	TNMG160408MM	0.8	0.10-0.50	1.0-5.0						●	●							
Semi-Finishing 	TNMG160404MH	0.4	0.07-0.20	0.34-3.7						●	●							
	TNMG160408MH	0.8	0.14-0.40	0.68-3.7						●	●							
Semi-Finishing 	TNMG160404SM	0.4	0.05-0.15	0.40-4.1								●	●					
	TNMG160408SM	0.8	0.15-0.44	0.80-4.1								●	●					
Semi-Finishing 	TNMG160404MT	0.4	0.10-0.50	0.5-5.0										●				
	TNMG160408MT	0.8	0.12-0.50	0.5-5.0										●				
Semi-fnishing/Finishing 	TNMG160402AH	0.2	0.04-0.28	0.5-3.0												●		
	TNMG160404AH	0.4	0.05-0.30	0.8-3.5												●		
	TNMG160408AH	0.8	0.10-0.40	0.8-3.5												●		
Semi-Finishing 	TNMG160404R-C	0.4	0.12-0.30	1.0-3.5						●				●				
	TNMG160404L-C	0.4	0.12-0.30	1.0-3.5						●				●				
	TNMG160408R-C	0.8	0.15-0.35	1.3-3.5						●				●				
	TNMG160408L-C	0.8	0.15-0.35	1.3-3.5						●				●				
Finishing 	TNGG160402R-F	0.2	0.03-0.20	0.1-1.5						●				●				
	TNGG160402L-F	0.2	0.03-0.20	0.1-1.5						●				●				
	TNGG160404R-F	0.4	0.05-0.25	0.3-2.0						●				●				
	TNGG160404L-F	0.4	0.05-0.25	0.3-2.0						●				●				
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Negative)

VN..



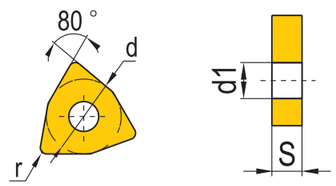
Model	d	s	d1
VN..1604..	9.525	4.76	3.81

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	VNMG160404KM	0.4	0.15-0.36	0.8-3.0	●													
	VNMG160408KM	0.8	0.17-0.36	1.0-2.5	●													
Semi-Finishing	VNMG160404PM	0.4	0.15-0.50	1.2-5.0			●	●										
	VNMG160408PM	0.8	0.15-0.50	1.2-5.0			●	●										
Semi-Finishing	VNMG160404MM	0.4	0.05-0.30	0.5-2.0							●	●						
	VNMG160408MM	0.8	0.07-0.30	0.5-2.0							●	●						
Semi-Finishing	VNMG160404MH	0.4	0.07-0.20	0.34-3.3						●	●							
	VNMG160408MH	0.8	0.14-0.40	0.68-3.3						●	●							
Semi-Finishing	VNMG160404SM	0.4	0.08-0.22	0.40-3.3								●	●					
	VNMG160408SM	0.8	0.15-0.44	0.80-3.3								●	●					
Semi-Finishing	VNMG160404MT	0.4	0.15-0.36	0.8-3.0											●			
	VNMG160408MT	0.8	0.17-0.36	1.0-2.5											●			
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Negative)

WN..

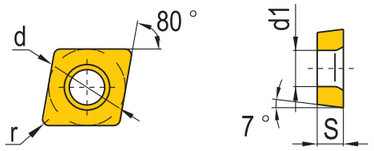


Model	d	s	d1
WN..0604 ..	9.525	4.76	3.81
WN..0804 ..	12.7	4.76	5.16

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Roughing	WNMA080408	0.8	0.25-0.70	3.0-7.0	●													
	WNMA080412	1.2	0.25-0.70	3.0-7.0	●													
Semi-Finishing	WNMG080408KM	0.8	0.17-0.55	1.2-4.0	●													
	WMMG080412KM	1.2	0.25-0.55	1.5-4.0	●													
Roughing	WNMG080408KR	0.8	0.20-0.60	1.20-5.8		●		●										
	WMMG080412KR	1.2	0.30-0.90	1.20-5.8		●		●										
Semi-Finishing	WNMG080404PM	0.4	0.12-0.52	0.7-4.8		●	●											
	WNMG080408PM	0.8	0.12-0.52	0.7-4.8		●	●											
	WNMG080404MM	0.4	0.10-0.50	0.5-5.0						●	●							
	WNMG080408MM	0.8	0.12-0.50	0.5-5.0						●	●							
Semi-Finishing	WNMG080404MH	0.4	0.07-0.20	0.34-2.6						●	●							
	WNMG080408MH	0.8	0.14-0.40	0.68-2.6						●	●							
Semi-Finishing	WNMG080404SM	0.4	0.08-0.22	0.40-2.9									●	●				
	WNMG080408SM	0.8	0.15-0.44	0.80-2.9									●	●				
Semi-Finishing	WNMG080404MT	0.4	0.12-0.40	1.0-4.0										●				
	WNMG080408MT	0.8	0.17-0.55	1.2-4.0										●				
Semi-fnishing/Finishing	WNMG080402AH	0.2	0.04-0.28	0.5-3.0												●		
	WNMG080404AH	0.4	0.05-0.30	0.8-3.5												●		
	WNMG080408AH	0.8	0.10-0.40	0.8-3.5												●		
Steel						★	★	★	★	☆	☆	☆		★	★			
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																★	★	
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

CC..

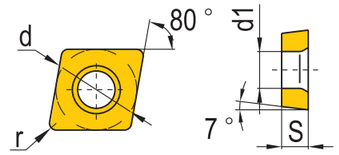


Model	d	s	d1
CC..0602..	6.35	2.38	2.8
CC..09T3..	9.525	3.97	4.4
CC..1204..	12.7	4.76	5.5

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	CCMT060204GPK	0.4	0.06-0.15	0.3-2.0	●													
	CCMT060208GPK	0.8	0.08-0.21	0.5-2.0	●													
	CCMT09T304GPK	0.4	0.08-0.21	0.3-2.5	●													
	CCMT09T308GPK	0.8	0.10-0.30	0.6-3.0	●													
	CCMT120404GPK	0.4	0.09-0.27	0.3-3.5	●													
	CCMT120408GPK	0.8	0.12-0.35	0.6-3.5	●													
Semi-Finishing	CCMT060204TMP	0.4	0.06-0.17	0.2-2.4			●	●			●	●						
	CCMT09T302TMP	0.2	0.07-0.22	0.1-2.0			●	●			●	●						
	CCMT09T304TMP	0.4	0.08-0.23	0.3-3.0			●	●			●	●						
	CCMT09T308TMP	0.8	0.10-0.30	0.5-3.0			●	●			●	●						
	CCMT120404TMP	0.4	0.09-0.27	0.3-3.6			●	●			●	●						
	CCMT120408TMP	0.8	0.24-0.36	1.0-3.6			●	●			●	●						
Semi-Finishing	CCMT060202	0.2	0.02-0.07	0.15-1.6						●	●							
	CCMT060204	0.4	0.05-0.16	0.35-1.9						●	●							
	CCMT09T302	0.8	0.02-0.07	0.15-2.4						●	●							
	CCMT09T304	0.4	0.05-0.16	0.35-2.9						●	●							
	CCMT09T308	0.8	0.10-0.32	0.70-2.9						●	●							
	CCMT120404	0.4	0.10-0.32	0.35-3.9						●	●							
	CCMT120408	0.8	0.16-0.48	0.70-3.9						●	●							
Semi-Finishing	CCMT060204SM	0.4	0.05-0.16	0.35-1.9								●	●					
	CCMT060208SM	0.8	0.10-0.32	0.70-1.9								●	●					
	CCMT09T304SM	0.4	0.05-0.16	0.35-2.9								●	●					
	CCMT09T308SM	0.8	0.10-0.32	0.70-2.9								●	●					
	CCMT120404SM	0.4	0.05-0.16	0.35-3.9								●	●					
	CCMT120408SM	0.8	0.10-0.32	0.70-3.9								●	●					
Semi-fnishing/Finishing	CCMT060204FG		0.07-0.15	0.4-2.0											●			
	CCMT060208FG		0.08-0.18	0.4-2.0											●			
	CCMT09T304FG		0.07-0.20	0.4-2.0											●			
	CCMT09T308FG		0.10-0.25	0.6-2.0											●			
Semi-fnishing/Finishing	CCGT060202APK	0.2	0.01-0.12	0.05-3.0													●	
	CCGT060204APK	0.4	0.02-0.15	0.1-3.0													●	
	CCGT060208APK	0.8	0.02-0.20	0.1-4.0													●	
	CCGT09T302APK	0.2	0.02-0.20	0.05-3.0													●	
	CCGT09T304APK	0.4	0.02-0.30	0.1-5.0													●	
	CCGT09T308APK	0.8	0.03-0.50	0.1-5.0													●	
	CCGT120402APK	0.2	0.02-0.30	0.05-4.0													●	
	CCGT120404APK	0.4	0.03-0.50	0.1-5.0													●	
	CCGT120408APK	0.8	0.04-0.80	0.1-5.0													●	
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

CC..



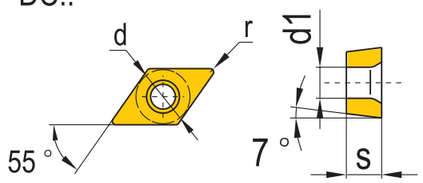
Model	d	s	d1
CC..0301..	3. 5	1.4	1.9
CC..0401..	4. 3	1.8	2.3
CC..0602..	6. 35	2.38	2.8
CC..09T3..	9. 525	3.97	4.4

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Finishing	CCGT0301005L-F	0.05	0.01-0.05	0.1-0.3														
	CCGT030101L-F	0.1	0.01-0.05	0.1-0.3							●				●		●	
	CCGT030102L-F	0.2	0.01-0.05	0.1-0.3							●				●		●	
	CCGT0401005L-F	0.05	0.01-0.10	0.1-0.5														
	CCGT040101L-F	0.1	0.01-0.10	0.1-0.5							●				●		●	
	CCGT040102L-F	0.2	0.01-0.10	0.1-0.5							●				●		●	
	CCGT0602005R-F	0.05	0.01-0.06	0.04-1.3														
	CCGT0602005L-F	0.05	0.01-0.06	0.04-1.3														
	CCGT060201R-F	0.1	0.02-0.08	0.05-1.5							●				●			
	CCGT060201L-F	0.1	0.02-0.08	0.05-1.5							●				●			
	CCGT060202R-F	0.2	0.03-0.11	0.06-1.7							●				●			
	CCGT060202L-F	0.2	0.03-0.11	0.06-1.7							●				●			
	CCGT09T3005R-F	0.05	0.02-0.08	0.05-1.5														
	CCGT09T3005L-F	0.05	0.02-0.08	0.05-1.5														
	CCGT09T301R-F	0.1	0.03-0.11	0.06-1.7							●				●			
	CCGT09T301L-F	0.1	0.03-0.11	0.06-1.7							●				●			
	CCGT09T302R-F	0.2	0.04-0.15	0.08-2.0							●				●			
	CCGT09T302L-F	0.2	0.04-0.15	0.08-2.0							●				●			
Semi-fnishing/Finishing	CCGT060201R-U	0.1	0.02-0.08	0.05-1.5							●				●	●		
	CCGT060201L-U	0.1	0.02-0.08	0.05-1.5							●				●	●		
	CCGT060202R-U	0.2	0.03-0.11	0.06-1.7							●				●	●		
	CCGT060202L-U	0.2	0.03-0.11	0.06-1.7							●				●	●		
	CCGT060204R-U	0.4	0.05-0.15	0.08-2.0														
	CCGT060204L-U	0.4	0.05-0.15	0.08-2.0														
	CCGT09T301R-U	0.1	0.03-0.11	0.06-1.7							●				●	●		
	CCGT09T301L-U	0.1	0.03-0.11	0.06-1.7							●				●	●		
	CCGT09T302R-U	0.2	0.04-0.15	0.08-2.0							●				●	●		
	CCGT09T302L-U	0.2	0.04-0.15	0.08-2.0							●				●	●		
	CCGT09T304R-U	0.4	0.05-0.20	1.0-2.5							●				●	●		
	CCGT09T304L-U	0.4	0.05-0.20	1.0-2.5							●				●	●		
	CCGT060201SA	0.1	0.02-0.15	0.10-1.4										●				
	CCGT060202SA	0.2	0.02-0.15	0.10-1.4										●				
	CCGT060204SA	0.4	0.03-0.20	0.10-1.4										●				
	CCGT09T301SA	0.1	0.02-0.15	0.10-2.4										●				
	CCGT09T302SA	0.2	0.02-0.15	0.10-2.4										●				
	CCGT09T304SA	0.1	0.03-0.20	0.10-2.4										●				
	CCGT09T308SA	0.8	0.03-0.25	0.10-2.4										●				
Steel							★	★	★	★	☆	☆	☆			★	★	
Stainless Steel											★	★	☆	☆				
Cast Iron						★	★											
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

DC..



Model	d	s	d1
DC..0702 ..	6.35	2.38	2.8
DC..11T3 ..	9.525	3.97	4.4

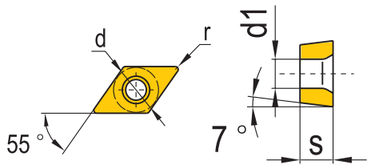
Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	DCMT070204GPK	0.4	0.06-0.15	0.3-2.0	●													
	DCMT11T304GPK	0.4	0.08-0.21	0.3-2.5	●													
	DCMT11T308GPK	0.8	0.10-0.26	0.5-3.0	●													
Semi-Finishing	DCMT070202TMP	0.2	0.03-0.12	0.1-1.5			●	●			●	●						
	DCMT070204TMP	0.4	0.06-0.17	0.2-2.3			●	●			●	●						
	DCMT11T302TMP	0.2	0.04-0.22	0.1-2.0			●	●			●	●						
	DCMT11T304TMP	0.4	0.08-0.23	0.3-3.0			●	●			●	●						
	DCMT11T308TMP	0.8	0.10-0.30	0.5-3.0			●	●			●	●						
	DCMT070202	0.2	0.02-0.07	0.15-1.5						●	●							
	DCMT11T302	0.2	0.02-0.07	0.15-2.3						●	●							
	DCMT11T304	0.4	0.05-0.16	0.35-3.1						●	●							
	DCMT11T308	0.8	0.10-0.32	0.70-3.1						●	●							
Semi-Finishing	DCMT070202SM	0.2	0.05-0.16	0.35-2.1								●	●					
	DCMT070204SM	0.4	0.10-0.32	0.70-2.1								●	●					
	DCMT11T304SM	0.4	0.05-0.16	0.35-3.1								●	●					
	DCMT11T308SM	0.8	0.10-0.32	0.70-3.1								●	●					
	DCMT11T312SM	1.2	0.16-0.48	1.05-3.1								●	●					
Semi-fnishing/Finishing	DCMT070204FG	0.4	0.07-0.20	0.4-1.5										●				
	DCMT070208FG	0.8	0.08-0.25	0.5-2.5										●				
	DCMT11T304FG	0.4	0.07-0.20	0.4-2.0										●				
	DCMT11T308FG	0.8	0.10-0.25	0.6-2.0										●				
	DCGT070202APK	0.2	0.01-0.20	0.05-3.0												●		
	DCGT070204APK	0.4	0.02-0.30	0.1-4.0												●		
	DCGT070208APK	0.8	0.03-0.40	0.1-4.0												●		
	DCGT11T302APK	0.2	0.02-0.30	0.05-4.0												●		
	DCGT11T304APK	0.4	0.03-0.50	0.1-5.0												●		
	DCGT11T308APK	0.8	0.03-0.50	0.1-5.0												●		
	DCGT11T312APK	1.2	0.04-0.60	0.15-5.0												●		
Steel							★	★	★	★	☆	☆	☆			★	★	
Stainless Steel											★	★	☆	☆				
Cast Iron						★	★											
Nonferrous Metal																★	★	
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

Turning Inserts (Positive)

DC..



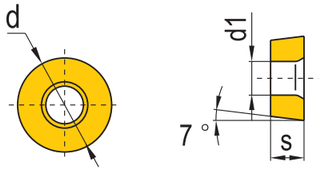
Model	d	s	d1
DC..0702 ..	6.35	2.38	2.8
DC..11T3 ..	9.525	3.97	4.4

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Finishing	DCGT0702005R-F	0.05	0.01-0.06	0.04-1.3														
	DCGT0702005L-F	0.05	0.01-0.06	0.04-1.3														
	DCGT070201R-F	0.1	0.02-0.08	0.05-1.5							●				●			
	DCGT070201L-F	0.1	0.02-0.08	0.05-1.5							●				●			
	DCGT070202R-F	0.2	0.03-0.11	0.06-1.5							●				●			
	DCGT070202L-F	0.2	0.03-0.11	0.06-1.5							●				●			
	DCGT11T3005R-F	0.05	0.02-0.08	0.05-1.5														
	DCGT11T3005L-F	0.05	0.02-0.08	0.05-1.5														
	DCGT11T301R-F	0.1	0.03-0.11	0.06-1.7							●				●			
	DCGT11T301L-F	0.1	0.03-0.11	0.06-1.7							●				●			
	DCGT11T302R-F	0.2	0.04-0.15	0.08-2.0							●				●			
	DCGT11T302L-F	0.2	0.04-0.15	0.08-2.0							●				●			
Semi-fnishing/Finishing	DCGT070201R-U	0.1	0.02-0.08	0.05-1.5							●				●	●		
	DCGT070201L-U	0.1	0.02-0.08	0.05-1.5							●				●	●		
	DCGT070202R-U	0.2	0.03-0.11	0.06-1.5							●				●	●		
	DCGT070202L-U	0.2	0.03-0.11	0.06-1.5							●				●	●		
	DCGT070204R-U	0.4	0.04-0.15	0.08-1.5							●				●	●		
	DCGT070204L-U	0.4	0.04-0.15	0.08-1.5							●				●	●		
	DCGT11T301R-U	0.1	0.03-0.11	0.06-1.7							●				●	●		
	DCGT11T301L-U	0.1	0.03-0.11	0.06-1.7							●				●	●		
	DCGT11T302R-U	0.2	0.04-0.15	0.08-2.0							●				●	●		
	DCGT11T302L-U	0.2	0.04-0.15	0.08-2.0							●				●	●		
	DCGT11T304R-U	0.4	0.05-0.2	1.0-2.5							●				●	●		
	DCGT11T304L-U	0.4	0.05-0.2	1.0-2.5							●				●	●		
	DCGT070201SA	0.1	0.02-0.15	0.10-1.4										●				
	DCGT070202SA	0.2	0.02-0.15	0.10-1.4										●				
	DCGT070204SA	0.4	0.03-0.20	0.10-1.4										●				
	DCGT11T301SA	0.1	0.02-0.15	0.10-2.4										●				
	DCGT11T302SA	0.2	0.02-0.15	0.10-2.4										●				
	DCGT11T304SA	0.4	0.03-0.20	0.10-2.4										●				
Steel							★	★	★	★	☆	☆	☆		★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

RC..



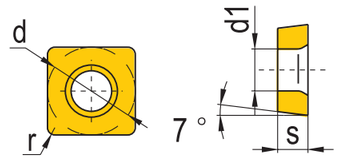
Model	d	s	d1
RC..0602MO	6	2.38	2.8
RC..0803MO	8	3.18	3.4
RC..1003MO	10	3.18	3.6
RC..1204MO.	12	4.76	4.2

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
	RCMT0602MO	6.0	0.06-0.15	0.2-2.0			●											
	RCMT0803MO	8.0	0.08-0.21	0.3-2.5			●											
	RCMT1003MO	10.0	0.25-0.50	1.5-4.0			●											
	RCMT1204MO	12.0	0.30-0.60	2.5-5.0			●											
	RCGT0602MO-APK	6.0	0.05-0.20	0.5-2.0												●		
	RCGT0803MO-APK	8.0	0.05-0.25	0.5-2.5												●		
	RCGT1003MO-APK	10.0	0.10-0.30	1.0-3.0												●		
	RCGT10T3MO-APK	10.0	0.10-0.30	1.0-3.0												●		
	RCGT1204MO-APK	12.0	0.10-0.35	1.0-3.5												●		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel										★	★	☆	☆					
Cast Iron						★	★											
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

SC..



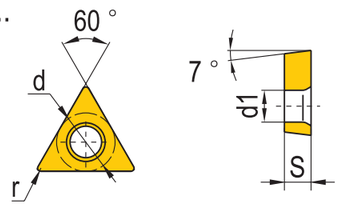
Model	d	s	d1
SC..09T304..	9.525	3.97	4.4
SC..120404..	12.7	4.76	5.5

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing 	SCMT09T304GPK	0.4	0.08-0.25	0.3-3.0	●													
	SCMT09T308GPK	0.8	0.10-0.30	0.5-3.0	●													
	SCMT120408GPK	0.8	0.12-0.35	0.6-4.0	●													
	SCMT120412GPK	1.2	0.15-0.40	0.9-4.0	●													
Semi-Finishing 	SCMT09T304TMP	0.4	0.08-0.23	0.3-3.0			●	●			●							
	SCMT09T308TMP	0.8	0.10-0.30	0.5-3.0			●	●			●							
	SCMT120408TMP	0.8	0.09-0.27	0.3-3.6			●	●			●							
	SCMT120412TMP	1.2	0.12-0.36	0.6-3.6			●	●			●							
	SCGT09T302APK	0.2	0.02-0.30	0.1-4.0													●	
	SCGT09T304APK	0.4	0.04-0.40	0.1-5.0													●	
	SCGT09T308APK	0.8	0.03-0.40	0.1-5.0													●	
	SCGT120404APK	0.4	0.03-0.50	0.1-5.0													●	
	SCGT120408APK	0.8	0.04-0.60	0.15-5.5													●	
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

TC..



Model	d	s	d1
TC..0902..	5.56	2.38	2.5
TC..1102..	6.35	2.38	2.8
TC..16T3..	9.525	3.97	4.4

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	TCMT090204GPK	0.4	0.06-0.18	0.3-1.5	●													
	TCMT090208GPK	0.8	0.08-0.22	0.5-1.8	●													
	TCMT110204GPK	0.4	0.06-0.20	0.3-2.0	●													
	TCMT110208GPK	0.8	0.08-0.25	0.6-2.0	●													
	TCMT16T304GPK	0.4	0.08-0.30	0.3-3.0	●													
	TCMT16T308GPK	0.8	0.10-0.35	0.6-3.0	●													
	TCMT16T312GPK	1.2	0.12-0.40	0.9-3.5	●													
Semi-Finishing	TCMT090204TMP	0.4	0.06-0.17	0.2-2.3			●	●			●	●						
	TCMT110204TMP	0.4	0.06-0.19	0.2-2.5			●	●			●	●						
	TCMT110208TMP	0.8	0.09-0.26	0.4-2.5			●	●			●	●						
	TCMT16T304TMP	0.4	0.08-0.23	0.3-3.0			●	●			●	●						
	TCMT16T308TMP	0.8	0.10-0.30	0.5-3.0			●	●			●	●						
Semi-Finishing	TCMT090202	0.4	0.04-0.14	0.30-1.9							●	●						
	TCMT090204	0.8	0.05-0.16	0.35-2.6							●	●						
	TCMT110202	0.2	0.02-0.07	0.15-2.2							●	●						
	TCMT110204	0.4	0.05-0.16	0.35-3.0							●	●						
	TCMT110208	0.8	0.10-0.32	0.70-3.0							●	●						
	TCMT16T304	0.4	0.05-0.16	0.70-4.5							●	●						
	TCMT16T308	0.8	0.10-0.32	1.05-4.5							●	●						
Semi-fnishing/Finishing	TCMT110204FG	0.4	0.10-0.25	0.7-3.5										●				
	TCMT110208FG	0.8	0.13-0.30	1.0-3.5										●				
	TCGT090202APK	0.2	0.01-0.12	0.05-3.0												●		
	TCGT090204APK	0.4	0.02-0.15	0.1-4.0												●		
	TCGT110202APK	0.2	0.02-0.20	0.05-4.0												●		
	TCGT110204APK	0.4	0.03-0.30	0.1-4.0												●		
	TCGT110208APK	0.8	0.03-0.40	0.1-5.0												●		
	TCGT16T302APK	0.2	0.02-0.30	0.05-5.0												●		
	TCGT16T304APK	0.4	0.03-0.40	0.1-5.5												●		
	TCGT16T308APK	0.8	0.03-0.50	0.1-5.5												●		
	TCGT16T312APK	1.2	0.04-0.60	0.15-5.5												●		

Insert grades and application

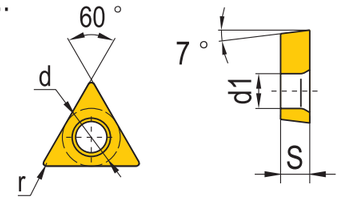
Steel	
Stainless Steel	
Cast Iron	
Nonferrous Metal	
Heat Resistant Alloy	
Hardened Steel	

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

Turning Inserts (Positive)

TC..



Model	d	s	d1
TC..0902..	5.56	2.38	2.5
TC..1102..	6.35	2.38	2.5
TC..1103..	6.35	2.38	2.8
TC..16T3..	9.525	3.97	4.4

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Finishing	TCGT090201R-F	0.1	0.02-0.08	0.05-1.5														
	TCGT090201L-F	0.1	0.02-0.08	0.05-1.5														
	TCGT090202R-F	0.2	0.03-0.11	0.06-1.7														
	TCGT090202L-F	0.2	0.03-0.11	0.06-1.7														
	TCGT110201R-F	0.1	0.02-0.10	0.05-1.5														
	TCGT110201L-F	0.1	0.02-0.10	0.05-1.5														
	TCGT110202R-F	0.2	0.03-0.13	0.06-1.7											●			
	TCGT110202L-F	0.2	0.03-0.13	0.06-1.7											●			
	TCGT110301R-F	0.1	0.02-0.10	0.05-1.5														
	TCGT110301L-F	0.1	0.02-010	0.05-1.5														
	TCGT110302R-F	0.2	0.03-0.13	0.06-1.7														
	TCGT110302L-F	0.2	0.03-0.13	0.06-1.7														
	TCMT090204SM	0.4	0.05-0.16	0.35-2.6										●	●			
	TCMT090208SM	0.8	0.10-0.32	0.70-2.6										●	●			
	TCMT110204SM	0.1	0.05-0.16	0.35-3.0										●	●			
	TCMT110208SM	0.8	0.10-0.32	0.70-3.0										●	●			
	TCMT16T304SM	0.4	0.05-0.16	0.35-4.5										●	●			
	TCMT16T308SM	0.8	0.10-0.32	0.70-4.5										●	●			
	TCMT16T312SM	1.2	0.16-0.48	1.05-4.5										●	●			
	TCGT110201SA	0.1	0.02-0.15	0.10-2.4											●			
	TCGT110202SA	0.2	0.02-0.15	0.20-2.4											●			
	TCGT110204SA	0.4	0.03-0.20	0.20-2.4											●			
	TCGT16T304SA	0.4	0.03-0.20	0.20-2.4											●			

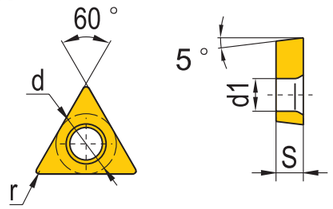
Insert grades and application

Steel					★	★	★	★	☆	☆	☆			★	★			
Stainless Steel									★	★	☆	☆						
Cast Iron				★	★													
Nonferrous Metal																	★	★
Heat Resistant Alloy									☆	☆	★	★						
Hardened Steel								★										

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

TB..



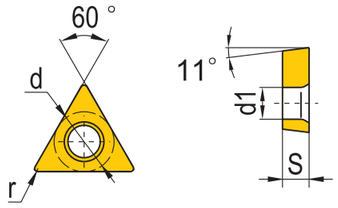
Model	d	s	d1
TB..0601..	3.97	1.59	2.3

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
	TBGT060101R-F	0.1	0.03-0.15	0.06-1.0														
	TBGT060101L-F	0.1	0.03-0.15	0.06-1.0														
	TBGT060102R-F	0.2	0.05-0.20	0.1-1.3														
	TBGT060102L-F	0.2	0.05-0.20	0.1-1.3							●				●		●	
	TBGT060104R-F	0.4	0.08-0.20	0.1-1.3														
	TBGT060104L-F	0.4	0.05-0.20	0.1-1.3							●				●		●	
Finishing																		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron						★	★											
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

TP..



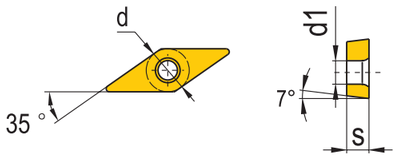
Model	d	s	d1
TP..0802..	4.76	2.38	2.3
TP..0902..	5.56	2.38	3.0
TP..1102..	6.35	2.38	3.5
TP..1103..	6.35	3.18	3.3
TP..16T3..	9.525	3.18	4.5

Insert shape	Model	r	fn mm/rev	ap mm	KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
	TPGH080201R-F	0.1	0.02-0.08	0.05-1.0														
Finishing	TPGH080201L-F	0.1	0.02-0.08	0.05-1.0														
	TPGH080202R-F	0.2	0.03-0.10	0.06-1.2														
	TPGH080202L-F	0.2	0.03-0.10	0.06-1.2							●				●		●	
	TPGH080204R-F	0.4	0.04-0.12	0.08-1.5														
	TPGH080204L-F	0.4	0.04-0.12	0.08-1.5							●				●		●	
	TPGH090201R-F	0.1	0.02-0.08	0.05-1.0														
	TPGH090201L-F	0.1	0.02-0.08	0.05-1.0														
	TPGH090202R-F	0.2	0.03-0.10	0.06-1.2							●				●		●	
	TPGH090202L-F	0.2	0.03-0.10	0.06-1.2							●				●		●	
	TPGH090204R-F	0.4	0.04-0.12	0.08-1.5														
	TPGH090204L-F	0.4	0.04-0.12	0.08-1.5							●				●		●	
	TPGH110202R-F	0.2	0.03-0.10	0.06-1.2														
	TPGH110202L-F	0.2	0.03-0.10	0.06-1.2														
	TPGH110204R-F	0.4	0.04-0.12	0.08-1.5														
	TPGH110204L-F	0.4	0.04-0.12	0.08-1.5														
	TPGH110302R-F	0.2	0.03-0.10	0.06-1.2														
	TPGH110302L-F	0.2	0.03-0.10	0.06-1.2							●				●		●	
	TPGH110304R-F	0.4	0.04-0.12	0.08-1.5														
	TPGH110304L-F	0.4	0.04-0.12	0.08-1.5							●				●		●	
	TPGH110308R-F	0.8	0.05-0.15	1.0-1.7														
	TPGH110308L-F	0.8	0.05-0.15	1.0-1.7														
	TPGH16T302R-F	0.2	0.03-0.10	0.06-1.2														
	TPGH16T302L-F	0.2	0.03-0.10	0.06-1.2														
	TPGH16T304R-F	0.4	0.04-0.12	0.08-1.7														
	TPGH16T304L-F	0.4	0.04-0.12	0.08-1.7														
	TPGH16T308R-F	0.8	0.05-0.20	1.0-2.0														
	TPGH16T308L-F	0.8	0.05-0.20	1.0-2.0														
Steel																		
Stainless Steel																		
Cast Iron																		
Nonferrous Metal																		
Heat Resistant Alloy																		
Hardened Steel																		

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

VC..



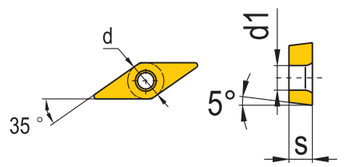
Model	d	s	d1
VC..1103 ..	6.35	3.18	2.8
VC..1604 ..	9.525	4.76	4.4

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	VCMT110304TMP	0.4	0.03-0.20	0.15-2.7			●	●			●	●						
	VCMT160404TMP	0.4	0.07-0.20	0.2-2.7			●	●			●	●						
	VCMT160408TMP	0.8	0.09-0.27	0.5-2.7			●	●			●	●						
Semi-Finishing	VCMT110304	0.4	0.05-0.16	0.35-2.1						●	●							
	VCMT110308	0.8	0.10-0.32	0.70-2.1						●	●							
	VCMT160404	0.4	0.05-0.16	0.35-3.1						●	●							
	VCMT160408	0.8	0.10-0.32	0.70-3.1						●	●							
	VCGT110301R-F	0.1	0.02-0.08	0.05-1.5						●								
	VCGT110301L-F	0.1	0.02-0.08	0.05-1.5						●								
	VCGT110302R-F	0.2	0.03-0.13	0.06-1.7						●								
	VCGT110302L-F	0.2	0.03-0.13	0.06-1.7						●								
	VCGT110304R-F	0.4	0.05-0.20	0.08-2.0						●								
	VCGT110304L-F	0.4	0.05-0.20	0.08-2.0						●								
Semi-Finishing	VCGT110302R-U	0.2	0.03-0.13	0.06-1.7						●					●			
	VCGT110302L-U	0.2	0.03-0.13	0.06-1.7						●					●			
	VCGT110304R-U	0.4	0.05-0.15	0.08-2.0						●					●			
	VCGT110304L-U	0.4	0.05-0.15	0.08-2.0						●					●			
	VCGT160404R-U	0.4	0.05-0.17	0.08-2.0						●								
	VCGT160404L-U	0.4	0.05-0.17	0.08-2.0						●								
	VCGT110302APK	0.2	0.02-0.20	0.05-3.0												●		
	VCGT110304APK	0.4	0.02-0.20	0.1-4.0												●		
	VCVT110308APK	0.8	0.03-0.30	0.1-5.0												●		
	VCGT160402APK	0.2	0.02-0.30	0.05-5.0												●		
	VCGT160404APK	0.4	0.03-0.40	0.1-5.0												●		
	VCGT160408APK	0.8	0.03-0.50	0.1-5.0												●		
	VCGT160412APK	1.2	0.05-0.60	0.1-5.0												●		
	VCGT110301SA	0.1	0.02-0.15	0.10-1.4											●			
	VCGT110302SA	0.2	0.02-0.15	0.20-1.4											●			
	VCGT110304SA	0.4	0.03-0.20	0.20-1.4											●			
Steel							★	★	★	★	☆	☆	☆		★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

VB..



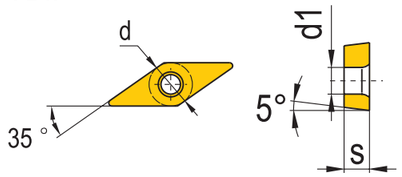
Model	d	s	d1
VB..1103..	6.35	3.18	2.8
VB..1604..	9.525	4.76	4.4

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing	VBMT160404GPK	0.4	0.08-0.20	0.3-2.5	●													
	VBMT160408GPK	0.8	0.10-0.25	0.5-2.5	●													
Semi-Finishing	VBMT110304TMP	0.4	0.03-0.20	0.15-2.7			●	●			●	●						
	VBMT160404TMP	0.4	0.07-0.20	0.2-2.7			●	●			●	●						
	VBMT160408TMP	0.8	0.09-0.27	0.5-2.7			●	●			●	●						
	VBMT110302	0.2	0.02-0.07	0.15-1.4							●	●						
	VBMT110304	0.4	0.05-0.16	0.35-2.1							●	●						
	VBMT110308	0.8	0.10-0.32	0.70-2.1							●	●						
	VBMT160404	0.4	0.05-0.16	0.35-3.1							●	●						
	VBMT160408	0.8	0.10-0.32	0.70-3.1							●	●						
Semi-fnishing/Finishing	VBGT110301R-F	0.1	0.02-0.08	0.05-1.5							●				●			
	VBGT110301L-F	0.1	0.02-0.08	0.05-1.5							●							
	VBGT110302R-F	0.2	0.03-0.13	0.06-1.7							●				●			
	VBGT110302L-F	0.2	0.03-0.13	0.06-1.7							●							
	VBGT110304R-F	0.4	0.05-0.15	0.08-2.0							●							
	VBGT110304L-F	0.4	0.05-0.15	0.08-2.0							●							
	VBGT160402R-F	0.2	0.03-0.13	0.06-1.7														
	VBGT160402L-F	0.2	0.03-0.13	0.06-1.7														
	VBGT160404R-F	0.4	0.05-0.15	0.08-2.0														
	VBGT160404L-F	0.4	0.05-0.15	0.08-2.0														
Semi-Finishing	VBGT110302R-U	0.2	0.03-0.13	0.06-1.7							●				●			
	VBGT110302L-U	0.2	0.03-0.13	0.06-1.7							●				●			
	VBGT110304R-U	0.4	0.05-0.15	0.08-2.0							●				●			
	VBGT110304L-U	0.4	0.05-0.15	0.08-2.0							●				●			
	VBGT110308R-U	0.8	0.08-0.20	0.08-2.3														
	VBGT110308L-U	0.8	0.08-0.20	0.08-2.3														
	VBGT160402R-U	0.2	0.03-0.13	0.06-1.7							●							
	VBGT160402L-U	0.2	0.03-0.13	0.06-1.7							●							
	VBGT160404R-U	0.4	0.05-0.15	0.08-2.0							●				●			
	VBGT160404L-U	0.4	0.05-0.15	0.08-2.0							●							
	VBGT110302APK	0.2	0.02-0.15	0.05-3.0												●		
	VBGT110304APK	0.4	0.02-0.15	0.1-4.0												●		
	VBGT110308APK	0.8	0.03-0.18	0.1-5.0												●		
	VBGT160402APK	0.2	0.03-0.30	0.05-4.0												●		
	VBGT160404APK	0.4	0.03-0.40	0.1-5.0												●		
	VBGT160408APK	0.8	0.03-0.50	0.1-5.0												●		
	VBGT160412APK	1.2	0.05-0.60	0.1-5.5												●		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel										★	★	☆	☆					
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy										☆	☆	★	★					
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

VB..



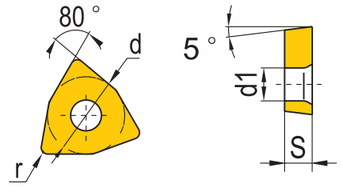
Model	d	s	d1
VB..1103..	6.35	3.18	2.8
VB..1604..	9.525	4.76	4.4

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
Semi-Finishing 	VBMT110304SM	0.4	0.05-0.16	0.35-2.1									●	●				
	VBMT110308SM	0.8	0.10-0.32	0.70-2.1									●	●				
	VBMT160404SM	0.4	0.05-0.16	0.35-3.1									●	●				
	VBMT160408SM	0.8	0.10-0.32	0.70-3.1									●	●				
	VBMT160412SM	1.2	0.16-0.48	1.05-3.1									●	●				
Semi-Finishing 	VBGT110301SA	0.1	0.02-0.15	0.10-1.4										●				
	VBGT110302SA	0.2	0.02-0.15	0.20-1.4										●				
	VBGT110304SA	0.4	0.03-0.20	0.20-1.4										●				
	VBGT160401SA	0.1	0.02-0.15	0.10-1.4										●				
	VBGT160402SA	0.2	0.02-0.15	0.20-1.4										●				
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron					★	★												
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Inserts (Positive)

WB..



Model	d	s	d1
WB..0601..	3.97	1.59	2.3

Insert shape	Model	r	fn mm/rev	ap mm	Insert grades and application: KC3110	KC3125	KC1115	KC1125	KC1135	KP1110	KP2120	KP2130	KP6105	KP6110	KT20	KCT20	KW20	KCW20
	WBGT060101R-F	0.1	0.01-0.05	0.1-0.3														
	WBGT060101L-F	0.1	0.01-0.05	0.1-0.3							●				●			
	WBGT060102R-F	0.2	0.01-0.08	0.1-0.4														
	WBGT060102L-F	0.2	0.01-0.08	0.1-0.4							●				●		●	
	WBGT060104R-F	0.4	0.01-0.10	0.1-0.5														
	WBGT060104L-F	0.4	0.01-0.10	0.1-0.5							●				●		●	
Finishing																		
Steel						★	★	★	★	☆	☆	☆			★	★		
Stainless Steel											★	★	☆	☆				
Cast Iron						★	★											
Nonferrous Metal																	★	★
Heat Resistant Alloy											☆	☆	★	★				
Hardened Steel										★								

★ Preferred ☆ optional ● standard stock ○ order production

Turning Insert

Recommended Cutting Conditions

Workpiece Materials			HB	Vc(m/min) Recommended Cutting Speed																			
				KC1115 f(mm)			KC1125 f(mm)			KC1135 f(mm)			KC3110 f(mm)			KC3125 f(mm)			KT20 f(mm)			KW20 f(mm)	
				0.1	0.2	0.3	0.1	0.2	0.4	0.1	0.2	0.6	0.1	0.2	0.4	0.1	0.2	0.3	0.1	0.2	0.4	0.1	0.2	0.3
P	Catbon Steel	About 0.15%C,Annealed	125	500	440	390	430	380	300	370	250	200				200	160	120						
		About 0.45%C,Annealed	190	430	380	320	360	310	250	310	220	180				185	145	110						
		About 0.45%C,Quenched	250	300	270	240	270	230	190	220	180	140				150	120	90						
		About 0.75%C,Annealed	270	320	300	270	320	280	220	260	200	160				160	135	105						
		About 0.75%C,Quenched	300	260	240	220	230	200	170	200	120	90				140	110	85						
	Low Alloy Steel	Annealed	180	370	320	280	330	280	220	260	180	160				140	100	85						
		Quenched and Tempered	275	290	240	200	260	220	180	190	140	100				120	90	75						
		Quenched and Tempered	300	260	220	180	230	200	150	160	120	90				100	90	70						
		Quenched and Tempered	350	240	200	160	200	160	120	140	90	80				95	75	55						
	High Alloy Steel	Annealed	200	360	300	260	320	270	220	260	180	100				75	70	55						
	Tool Steel	Quenched and Tempered	325	200	160	120	180	140	100	90	70	50				60	60	50						
M	Stainless Steel	Ferrite/Martensite	200													120	100	90						
		Martensite	280													100	95	85						
		Austenite	180													90	80	70						
K	Gray Cast iron	Pearlite/Ferrite	180										360	270	190	130	100							
		Pearlite/Martensite	260										240	170	130	80	80							
	Nodular Cast iron	Ferrite	160										270	210	160	115	110							
		Pearlite	250										210	170	130	100	90							
	Malleable Cast iron	Ferrite	130										330	300	180	130	135							
		Pearlite	230										210	140	140	105	100							
N	Aluminium Alloys	Non-aging Hardened	60																			2900	2200	1600
		Aging Hardened	100																			900	720	360
	Copper Alloy	Free Cutting Alloys	110																			720	480	320
		Brass	90																			480	360	300
		Bronze & Electrolytic Copper	100																			340	240	160
S	Heat Resistant Alloy	Iron base alloy	280																					
		Cobalt base alloy	320																					
		Nickel base alloy	350																					
		Titanium alloy	370																					

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Turning Insert

Recommended Cutting Conditions

Workpiece Materials			HB	Vc(m/min) Recommended Cutting Speed																			
				KP1110 f(mm)			KP2120 f(mm)			KP2130 f(mm)			KP6105 f(mm)			KP6110 f(mm)			KCT20 f(mm)			KCW20 f(mm)	
				0.1	0.2	0.3	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2	0.3
P	Catbon Steel	About 0.15%C,Annealed	125																					
		About 0.45%C,Annealed	190																					
		About 0.45%C,Quenched	250																					
		About 0.75%C,Annealed	270																					
		About 0.75%C,Quenched	300																					
	Low Alloy Steel	Annealed	180																					
		Quenched and Tempered	275																					
		Quenched and Tempered	300																					
		Quenched and Tempered	350																					
	High Alloy Steel	Annealed	200																					
	Tool Steel	Quenched and Tempered	325																					
M	Stainless Steel	Ferrite/Martensite	200				250	230	180	150	120	110	215	170	145	180	140	110						
		Martensite	280				220	180	155	110	95	100	240	190	155	200	16	130						
		Austenite	180				180	150	120	100	90	80	215	150	85	160	130	70						
K	Gray Cast iron	Pearlite/Ferrite	180																					
		Pearlite/Martensite	260																					
	Nodular Cast iron	Ferrite	160																					
		Pearlite	250																					
	Malleable Cast iron	Ferrite	130																					
		Pearlite	230																					
N	Aluminium Alloys	Non-aging Hardened	60																			2900	2200	1600
		Aging Hardened	100																			900	720	360
	Copper Alloy	Free Cutting Alloys	110																			720	480	320
		Brass	90																			480	360	300
		Bronze & Electrolytic Copper	100																			340	240	160
S	Heat Resistant Alloy	Iron base alloy	280										180	110	40	150	90	40						
		Cobalt base alloy	320										100	65	30	80	50	30						
		Nickel base alloy	350										100	65	30	80	50	30						
		Titanium alloy	370										200	125	50	160	90	35						

E

External turning tools
E01 - E49

External turning tools E01

External turning tool clamping systems E02

List of external turning tools E03

95° MCLNR/L 75° MCBNR/L E05
75° MCKNR/L 93° MDJNR/L E06
62° 30′ MDPNN 107° 30′ MDQNR/L E07
75° MSBNR/L 75° MSRNR/L E08
75° MSKNR/L 45° MSDNN E09
45° MSSNR/L 90° MTGNR/L E10
93° MTJNR/L 90° MTFNR/L E11
105° MTQNR/L 60° MTENN E12
93° MVJNR/L 72° 30′ MVVNN E13
93° MVUNR/L 117.5° MVQNR/L E14
95° MWLNR/L MRGNR E15
MRDNN E16
75° PCBNR/L 95° PCLNR/L E17
95° PDJNR/L 63° PDNNR/L E18
75° PSBNR/L 45° PSDNN E19
75° PSKNR/L 45° PSSNR/L E20
PRDCN PRACR/L E21
PRGCR/L 90° PTGNR/L E22
90° PTFNR/L 60° PTTNR/L E23
95° PWLNR/L E24
95° DCLNR/L 75° DCBNR/L E25
75° DCKNR/L 50° DCMNN E26
75° DCKNR/L 50° DCMNN E27
107.5° DDQNR/L 75° DSBNR/L E28
45° DSDNN 45° DSSNR/L E29
75° DSKNR/L 90° DTGNR E30
90° DTFNR 72.5° DVVNN E31
93° DVJNR 95° DWLNR E32
95° CCLNR/L 93° CDJNR/L E33
75° CSKNR/L CSDNN E34
75° CSRNR/L CRDNN E35
93° CTJNR/L 93° CTUNR/L E36
CKJNR/L E37
90° SCACR/L 95° SCLCR/L E38
90° SDACR/L 93° SDJCR/L E39
60° 30′ SDNCN 93° SVJCR/L E40
93° SVJBR/L 90° SVABR/L E41
90° SVACR/L 72° 30′ SVVBN E42
72° 30′ SVVCN 75° SSBCR/L E43
45° SSDCN 75° SSKCR/L E44
45° SSSCR/L 91° STACR/L E45
91° STFCR/L 91° STGCR/L E46
60° STTCR/L 90° SWACR/L E47
0° SRDCN SRGCR/L E48
SRACR/L E49

Toolhoder Identification System

M	C	L	N	R	25	25	M	12	
1	2	3	4	5	6	7	8	9	10

1 Clamping mode

D — Double clamp type

C — Clamp type

M — Multi lock type

P — Lever lock type

S — Screw on type

2 Insert shape

C 80° · D 55° · K 55° · L 90° · R · S 90° · T 60° · V 35° · W 80°

3 Tool form

A 90° · B 75° · C 90° · D 45° · E 60° · F 90° · G 90° · H 107°30′ · J 93° · K 75° · L 90° 95° · M 50° · N 62°30′ · P 117°30′ · R 75° · S 45° · T 60° · U 93° · V 72°30′ · W 60° · Y 85° · Z 100° · X Nonstandard main deflection Angle

4 Insert normal rear Angle

B	5°
C	7°
D	15°
E	20°
F	25°
N	0°
P	11°

5 Cutting direction of the tool

R · N · L

6 Height

h

7 Width

b

8 Tool length

A=32	P=170
B=40	Q=180
C=50	R=200
D=60	S=250
E=70	T=300
F=80	U=350
G=90	V=400
H=100	W=450
J=110	Y=500
K=125	X=special
L=140	
M=150	
N=160	

9 Insert dimensions

C 80° · D 55° · K 55° · L 90° · R · S · T 60° · V 35° · W 80°

10 Manufacturer code

F: Straight head, unbiased

S: Single-sided positioning design

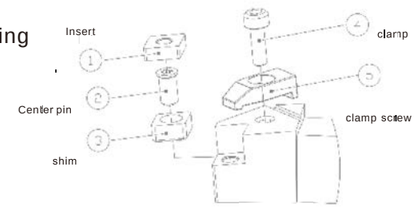
D: Pad type front corner turning tool

Double pressure external turning tool

Improve the collapse resistance of the insert through stable locking

Improve machining accuracy through high precision installation.

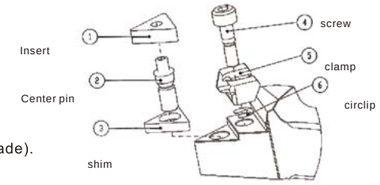
Insert can be replaced at the turning tool.



Most suitable for high efficiency, intermittent, high hardness materials processing.

Double pressure external round turning tool

External round turning tool with pressing plate



- Strong lock
- Negative Angle blade: semi-finishing to heavy cutting (important for CBN, ceramic blade).
- Positive Angle insert: Low cutting resistance.

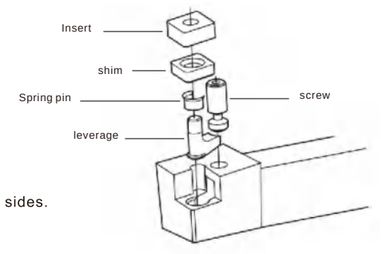
Installation of external round turning tool and insert with pressing plate

Lever press external turning tool

Using the lever principle, use screws to press the lever and lock the blade.

Can be used for heavy duty vehicle pins.

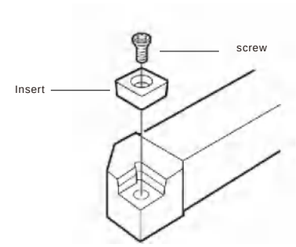
- Use the N rear Angle blade (the rear Angle of the blade is 0°). The blade can be used on both sides.
- Strong cutting pin edge and firm clamping method provide reliable guarantee for high efficiency cutting.



The installation of lever pressing external round turning tool and blade is shown

External turning tools for screw compaction

- External turning tools with screw pressing
- Use a forward-angle insert (insert rear Angle greater than 0°).
- Simple and reliable blade clamping mode and few spare parts.
- Chips flow out smoothly from the front cutter face.



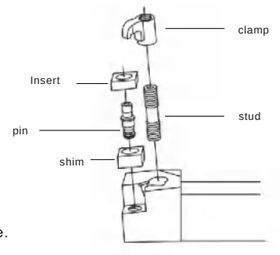
This section describes how to install screw pressing external turning tool and blade

Compound compacting external turning tool

Use the side pressure of the pin and the pressure plate.

Can be used for vertical lathe for inner hole turning pin processing.

- Use the N rear Angle blade (the rear Angle of the blade is 0°). The blade can be used on both sides.
- Strong cutting edge and strong clamping mode for efficient cutting pin to provide reliable guarantee.



Installation of compound pressing external turning tool and insert

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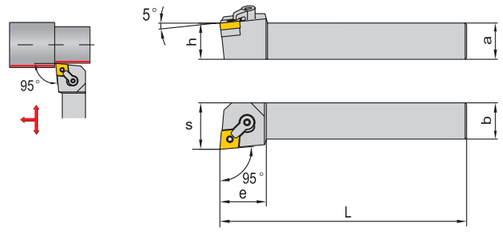
List of external turning tools

The blade model	C..			W..	R..	D..		
Applicable blade shape	80°			80°		55°		
Processing form	Outer circle/end face	cylindrical	End face	Outer circle/end face	Cylindrical shape	Cylindrical shape		
Compound compression type	MCLN	MCBN	MCKN	MWLN	MRGN	MDJN	MDPNN	MDQN
					MRDNN			
Lever compression type	PCLN	PCBN		PWLN	PRGC	PDJN	PDPNN	
Double compression type	DCLN	DCBN	DCKN	DWLN		DDJN	DDPNN	DDQN
Pressing plate type	CCLN				CRDNN	CDJN		
Screw clamp type	SCAC			SWLC	SRGC	SDAC	SDNCN	
	SCLC				SRDCN	SDJC		

	S..			T..			V..	
Applicable blade shape	90°			60°			35°	
Processing form	cylindrical	End face	Outer circle/chamfering	cylindrical	End face	cylindrical	Cylindrical shape	
Compound compression type	MSBN	MSKN	MSDNN	MTGN	MTFN	MTQN	MVJN	MVVNN
	MSRN		MSSN	MTJN		MTENN	MVQN	MVUN
Lever compression type	PSBN	PSKN	PSDNN	PTGN	PTFN	PTTNN		
Double compression type	DSBN	DSKN	DSDNN	DTGN	DTFN		DVJN	DVVNN
Pressing plate type	CSBN	CSKN	CSDNN	CTGN	CTUN			
Screw clamp type	SSCB	SSKC	SSDCN	STAC	STFC	STTC	SVAC/B	SVVCN
			SSSC	STGC			SVJC/B	SVVBN

95° MCLNR/L





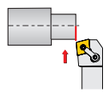
Legend of right hand knife

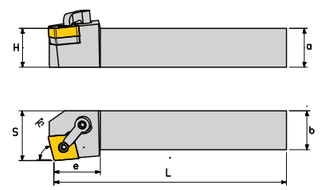
Model		Stock		(mm)											
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MCLNR1616H12	MCLNL1616H12	●	○	16	16	100	16	20	32	CN..1204..	MC1204	MSP617	MCL1814	WS0625	S2.5/S3
MCLNR2020K12	MCLNL2020K12	●	●	20	20	125	20	25	32						
MCLNR2525M12	MCLNL2525M12	●	●	25	25	150	25	32	32						
MCLNR3232P12	MCLNL3232P12	●	●	32	32	170	32	40	32						
MCLNR2525M16	MCLNL2525M16	○	○	25	25	150	25	32	38	CN..1606..	MC1604	MSP821	MCL2114	WS0630	S3
MCLNR3232P16	MCLNL3232P16	●	●	32	32	170	32	40	38						
MCLNR4040R16	MCLNL4040R16	○	○	40	40	200	40	50	38						
MCLNR2525M19	MCLNL2525M19	○	○	25	25	150	25	32	38	CN..1906..	MC1904	MSP1021	MCL2217	WS0830	S4
MCLNR3232P19	MCLNL3232P19	○	○	32	32	170	32	40	38						
MCLNR4040R19	MCLNL4040R19	●	●	40	40	200	40	50	38						
MCLNR4040R25	MCLNL4040R25	○	○	40	40	200	40	50	45	CN..2509..	MC2508	MSP1229	MCL3220	WS1035	S4/S5

* Blades to be ordered separately.

75° MCKNR/L







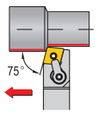
Legend of right hand knife

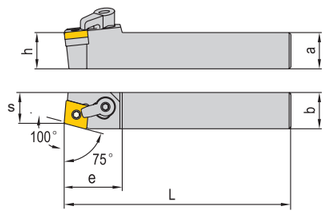
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MCKNR2020K12	MCKNL2020K12	●	○	20	20	125	20	25	28	CN..1204..	MC1204	MSP617	MCL1814	WS061025	S3
MCKNR2525M12	MCKNL2525M12	●	●	25	25	150	25	32	28					WS061030	
MCKNR3225P12	MCKNL3225P12	●	●	32	25	170	32	32	28						
MCKNR2525M16	MCKNL2525M16	●	●	25	25	150	25	32	30	CN..1606..	MC1604	MSP821	MCL2114	WS061030	S3
MCKNR3225P16	MCKNL3225P16	○	○	32	25	170	32	32	30						
MCKNR3232P16	MCKNL3232P16	●	●	32	32	170	32	38	30						
MCKNR3232P19	MCKNL3232P19	○	○	32	32	170	32	40	36	CN..1906..	MC1904	MSP1021	MCL2217	WS081030	S4
MCKNR4040R19	MCKNL4040R19	○	○	40	40	200	40	48	36						

* Blades to be ordered separately.

75° MCBNR/L





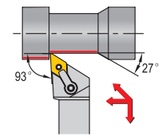


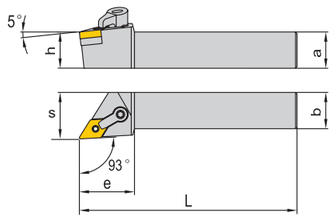
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MCBNR2020K12	MCBNL2020K12	○	○	20	20	125	20	17	32	CN..1204..	MC1204	MSP617	MCL1814	WS0625	S2.5/S3
MCBNR2525M12	MCBNL2525M12	●	○	25	25	150	25	22	32						
MCBNR3232P12	MCBNL3232P12	○	○	32	32	170	32	27	32						
MCBNR2525M16	MCBNL2525M16	○	○	25	25	150	25	22	40	CN..1606..	MC1604	MSP821	MCL2114	WS0630	S3
MCBNR3232P16	MCBNL3232P16	○	○	32	32	170	32	27	40						
MCBNR4040R19	MCBNL4040R19	○	○	40	40	200	40	35	40	CN..1906..	MC1904	MSP1021	MCL2217	WS0830	S4

* Blades to be ordered separately.

93° MDJNR/L







Legend of right hand knife

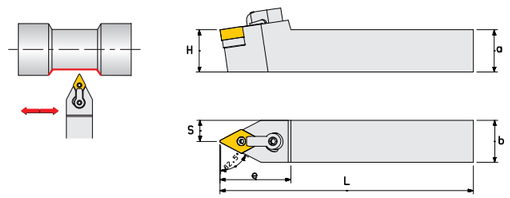
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MDJNR1616H11	MDJNL1616H11	○	○	16	16	100	16	20	30	DN..1104..	MD1103	MSP513	MCK1814	Ws061025	S2
MDJNR2020K11	MDJNL2020K11	○	○	20	20	125	20	25	32						S3
MDJNR2525M11	MDJNL2525M11	○	○	25	25	150	25	32	32					WS061030	
MDJNR3225P11	MDJNL3225P11	○	○	32	25	170	32	32	32						
MDJNR2020K1504/06	MDJNL2020K1504/06	○	○	20	20	125	20	25	36	DN..1504.. DN..1506..	MD1504	04:MSP617 06:MSP619	MCL2114	WS061025	S3
MDJNR2525M1504/06	MDJNL2525M1504/06	○	○	25	25	150	25	32	38						
MDJNR3225P1504/06	MDJNL3225P1504/06	○	○	32	25	170	32	32	38					WS061030	
MDJNR3232P1504/06	MDJNL3232P1504/06	○	○	32	32	170	32	40	38						
MDJNR4040R15	MDJNL4040R15	○	○	40	40	200	40	48	40	DN..1506..					

* Blades to be ordered separately.

● Standard inventory 非生产 Made to order production

62° 30' MDPNN





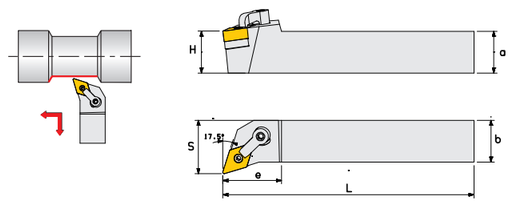
Legend of right hand knife

Model	Stock	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MDPNN1616H11	O	16	16	100	16	8	35	DN..1104..	MD1103	MSP513	MCL1814	WS0625	S2 S3
MDPNN2020K11	O	20	20	125	20	10	34					WS0630	
MDPNN2525M11	O	25	25	150	25	12.5	36						
MDPNN3225P11	O	32	25	170	32	12.5	35						
MDPNN2020K1504/06	O	20	20	125	20	10	42	DN..1504.. DN..1506..	MD1504	04:MSP617 06:MSP619	MCL2114	WS0625 WS0630	S3
MDPNN2525M1504/06	O	25	25	150	25	12.5	42						
MDPNN3225P1504/06	O	32	25	170	32	12.5	42						
MDPNN3232P1504/06	O	32	32	170	32	16	42						

* Blades to be ordered separately.

107° 30' MDQNR/L



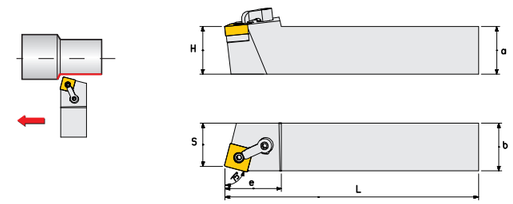


Model		Stock		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L												
MDQNR1616H11	MDQNL1616H11	O	O	16	16	100	16	21	30	DN..1104..	MD1103	MSP513	MCK1814	WS061025	S2 S3
MDQNR2020K11	MDQNL2020K11	O	O	20	20	125	20	25	32					WS061030	
MDQNR2525M11	MDQNL2525M11	O	O	25	25	150	25	30	30						
MDQNR3225P11	MDQNL3225P11	O	O	32	25	170	32	30	30						
MDQNR2020K1504/06	MDQNL2020K1504/06	O	O	20	20	125	20	27	36	DN..1504.. DN..1506..	MD1504	04:MSP617 06:MSP619	MCL2114	WS061025 WS061030	S3
MDQNR2525M1504/06	MDQNL2525M1504/06	O	O	25	25	150	25	32	35						
MDQNR3225P1504/06	MDQNL3225P1504/06	O	O	32	25	170	32	32	35						
MDQNR3232P1504/06	MDQNL3232P1504/06	O	O	32	32	170	32	40	35						

* Blades to be ordered separately.

75° MSBNR/L





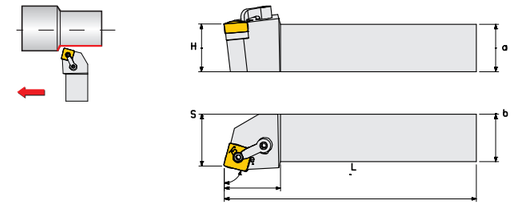
Legend of right hand knife

Model		Stock		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L												
MSBNR2020K12	MSBNL2020K12	O	O	20	20	125	20	17	34					WS061025	
MSBNR2525M12	MSBNL2525M12	O	O	25	25	150	25	22	32	SN..1204..	MS1204	MSP617	MCL1814	WS061030	S3
MSBNR3225P12	MSBNL3225P12	O	O	32	25	170	32	22	32						
MSBNR2525M15	MSBNL2525M15	O	O	25	25	150	25	22	38	SN..1506..	MS1504	MSP821	MCL2114	WS061030	S3
MSBNR3232P15	MSBNL3232P15	O	O	32	32	170	32	29	38						
MSBNR3232P19	MSBNL3232P19	O	O	32	32	170	32	27	45	SN..1906..	MS1904	MSP1021	MCL2217	WS081030	S4
MSBNR4040R19	MSBNL4040R19	O	O	40	40	200	40	35	45						
MSBNR4040S25	MSBNL4040S25	O	O	40	40	250	40	34	60	SN..2509..	MS2508	MSP1229	MCL3220	WS101035	S4/S5

* Blades to be ordered separately.

75° MSRNR/L



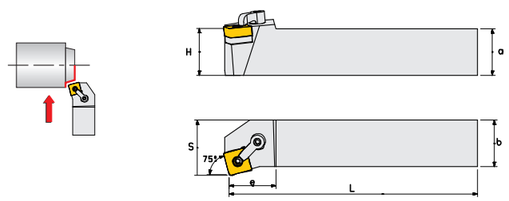


Model		Stock		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L												
MSRNR2020K12	MSRNL2020K12	O	O	20	20	125	20	22	32					WS061025	
MSRNR2525M12	MSRNL2525M12	O	O	25	25	150	25	27	32	SN..1204..	MS1204	MSP617	MCL1814	WS061030	S3
MSRNR3225P12	MSRNL3225P12	O	O	32	25	170	32	27	32						
MSRNR2525M15	MSRNL2525M15	O	O	25	25	150	25	27	38	SN..1506..	MS1504	MSP821	MCL2114	WS061030	S3
MSRNR3232P15	MSRNL3232P15	O	O	32	32	170	32	35	38						
MSRNR3232P19	MSRNL3232P19	O	O	32	32	170	32	35	43	SN..1906..	MS1904	MSP1021	MCL2217	WS081030	S4
MSRNR4040R19	MSRNL4040R19	O	O	40	40	200	40	43	43						
MSRNR4040S25	MSRNL4040S25	O	O	40	40	250	40	43	55	SN..2509..	MS2508	MSP1229	MCL3220	WS101035	S4/S5

* Blades to be ordered separately.

75° MSKNR/L





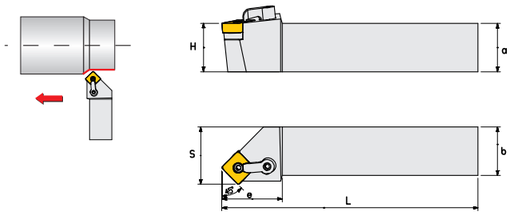
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MSKNR2020K12	MSKNL2020K12	O	O	20	20	125	20	25	28	SN..1204..	MS1204	MSP617	MCL1814	WS061025	S3
MSKNR2525M12	MSKNL2525M12	O	O	25	25	150	25	32	27					WS061030	
MSKNR3225P12	MSKNL3225P12	O	O	32	25	170	32	32	27						
MSKNR2525M15	MSKNL2525M15	O	O	25	25	150	25	32	32	SN..1506..	MS1504	MSP821	MCL2114	WS061030	S3
MSKNR3232P15	MSKNL3232P15	O	O	32	32	170	32	38	32						
MSKNR3232P19	MSKNL3232P19	O	O	32	32	170	32	38	36	SN..1906..	MS1904	MSP1021	MCL2217	WS081030	S4
MSKNR4040R19	MSKNL4040R19	O	O	40	40	200	40	50	40						
MSKNR4040S25	MSKNL4040S25	O	O	40	40	250	40	50	45	SN..2509..	MS2508	MSP1229	MCL3220	WS101035	S4/S5

* Blades to be ordered separately.

45° MSSNR/L





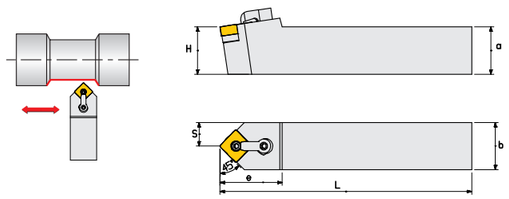
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MSSNR2020K12	MSSNL2020K12	O	O	20	20	125	20	25	36	SN..1204..	MS1204	MSP617	MCL1814	WS061025	S3
MSSNR2525M12	MSSNL2525M12	O	O	25	25	150	25	30	36					WS061030	
MSSNR3225P12	MSSNL3225P12	O	O	32	25	170	32	30	33						
MSSNR3232P12	MSSNL3232P12	O	O	32	32	170	32	38	35						
MSSNR2525M15	MSSNL2525M15	O	O	25	25	150	25	30	40	SN..1506..	MS1504	MSP821	MCL2114	WS061030	S3
MSSNR3232P15	MSSNL3232P15	O	O	32	32	170	32	38	40						
MSSNR3232P19	MSSNL3232P19	O	O	32	32	170	32	38	45	SN..1906..	MS1904	MSP1021	MCL2217	WS081030	S4
MSSNR4040R19	MSSNL4040R19	O	O	40	40	200	40	46	45						
MSSNR4040S25	MSSNL4040S25	O	O	40	40	250	40	50	60	SN..2509..	MS2508	MSP1229	MCL3220	WS101035	S4/S5

* Blades to be ordered separately.

45° MSDNN



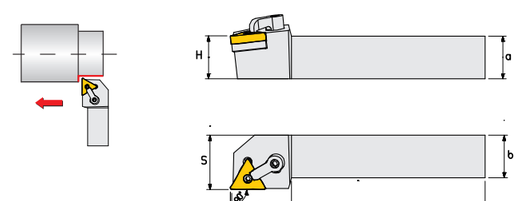


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MSDNN2020K12	O	20	20	125	20	10	34	SN..1204..	MS1204	MSP617	MCL1814	WS061025	S3
MSDNN2525M12	O	25	25	150	25	12.5	34					WS061030	
MSDNN3225P12	O	32	25	170	32	12.5	34						
MSDNN2525M15	O	25	25	150	25	12.5	42	SN..1506..	MS1504	MSP821	MCL2114	WS031030	S3
MSDNN3232P15	O	32	32	170	32	16	42						
MSDNN3232P19	O	32	32	170	32	16	45	SN..1906..	MS1904	MSP1021	MCL2217	WS081030	S4
MSDNN4040R19	O	40	40	200	40	20	50						
MSDNN4040S25	O	40	40	250	40	20	60	SN..2509..	MS2508	MSP1229	MCL3220	WS101035	S4/S5

* Blades to be ordered separately.

90° MTGNR/L



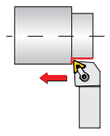


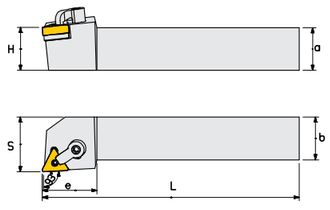
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MTGNR2020K16	MTGNL2020K16	O	O	20	20	125	20	25	32	TN..1604..	MT1603	MSP513	MCL1814	WS061025	S2/S3
MTGNR2525M16	MTGNL2525M16	●	O	25	25	150	25	32	30					WS061030	
MTGNR3225P16	MTGNL3225P16	●	O	32	25	170	32	32	30						
MTGNR2525M22	MTGNL2525M22	O	O	25	25	150	25	32	36						
MTGNR3225P22	MTGNL3225P22	O	O	32	25	170	32	32	36	TN..2204..	MT2204	MSP617	MCL2114	Ws061030	S3
MTGNR3232P22	MTGNL3232P22	O	O	32	32	170	32	38	36						

* Blades to be ordered separately.

93° MTJNR/L







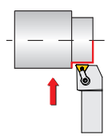
Legend of right hand knife

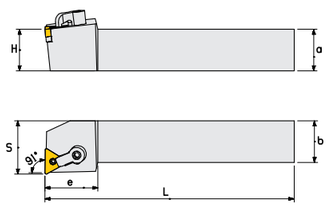
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MTJNR1616H16	MTJNL1616H16	O	O	16	16	100	16	20	28	TN..1604..	MT1603	MSP513	MCL1814	WS061025	S2/S3
MTJNR2020K16	MTJNL2020K16	O	O	20	20	125	20	25	32						
MTJNR2525M16	MTJNL2525M16	O	O	25	25	150	25	32	32					WS061030	
MTJNR3225P16	MTJNL3225P16	O	O	32	25	170	32	32	32						
MTJNR3232P16	MTJNL3232P16	O	O	32	32	170	32	32	32						
MTJNR2525M22	MTJNL2525M22	O	O	25	25	150	25	32	36	TN..2204..	MT2204	MSP617	MCL2114	WS061030	S3
MTJNR3225P22	MTJNL3225P22	O	O	32	25	170	32	32	36						
MTJNR3232P22	MTJNL3232P22	O	O	32	32	170	32	38	36						

* Blades to be ordered separately.

90° MTFNR/L





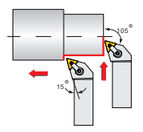


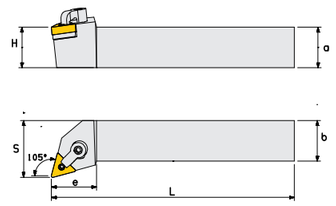
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MTFNR1616H16	MTFNR1616H16	O	O	16	16	100	16	21	28	TN..1604..	MV1603	MSP513	MCL1814	WS061025	S2/S3
MTFNR2020K16	MTFNR2020K16	●	●	20	20	125	20	25	30						
MTFNR2525M16	MTFNR2525M16	●	●	25	25	150	25	32	32					WS061030	
MTFNR3225P16	MTFNR3225P16	●	●	32	25	170	25	32	32						
MTFNR3232P16	MTFNR3232P16	●	●	32	32	170	32	38	32						
MTFNR2525M22	MTFNR2525M22	●	●	25	25	150	25	32	36	TN..2204..	MV2204	MSP617	MCL2114	WS061030	S3
MTFNR3225P22	MTFNR3225P22	●	●	32	25	170	25	32	36						
MTFNR3232P22	MTFNR3232P22	●	●	32	32	170	25	38	36						

* Blades to be ordered separately.

105° MTQNR/L







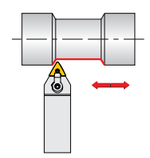
Legend of right hand knife

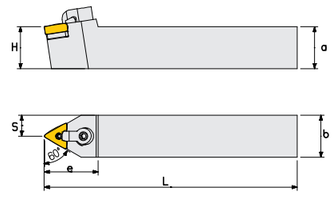
Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MTQNR2020K16	MTQNL2020K16	O	O	20	20	125	20	29	25	TN..1604..	MT1603	MSP513	MCL1814	WS061025	S2/S3
MTQNR2525M16	MTQNL2525M16	O	O	25	25	150	25	35	28					WS061030	
MTQNR3225P16	MTQNL3225P16	O	O	32	25	170	32	35	25						
MTQNR2525M22	MTQNL2525M22	O	O	25	25	150	25	38	36	TN..2204..	MT2204	MSP617	MCL2114	WS061030	S3
MTQNR3232P22	MTQNL3232P22	O	O	32	32	170	32	46	36						

* Blades to be ordered separately.

60° MTENN





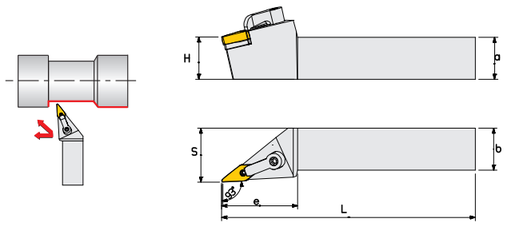


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MTENN1616H16	O	16	16	100	16	8	32	TN..1604..	MT1603	MSP513	MCL1814	WS061025	S2
MTENN2020K16	O	20	20	125	20	10	34						S3
MTENN2525M16	O	25	36	150	25	12.5	32					WS061030	
MTENN3232P16	O	32	32	170	32	16	32						

* Blades to be ordered separately.

93° MVJNR/L





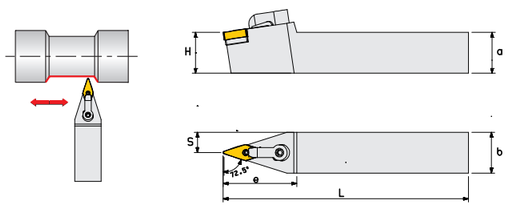
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
MVJNR1616H16	MVJNL1616H16	O	O	16	16	100	16	22	43					WS061025		
MVJNR2020K16	MVJNL2020K16	O	O	20	20	125	20	26	45							
MVJNR2525M16	MVJNL2525M16	O	O	25	25	150	25	32	45	VN..1604..	MV1603	MSP513	MCL2414		S2	
MVJNR3225P16	MVJNL3225P16	O	O	32	25	170	32	32	45					WS061030	S3	
MVJNR3232P16	MVJNL3232P16	O	O	32	32	170	32	40	45							

* Blades to be ordered separately.

72° 30' MVVNN



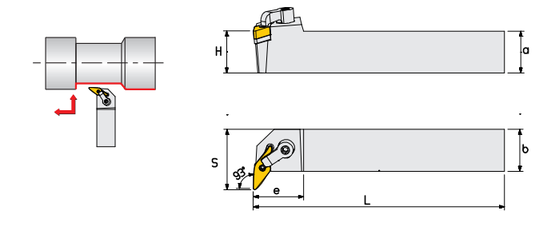


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MVVNN2020K16	O	20	20	125	20	10	45					WS061025	
MVVNN2525M16	O	25	25	150	25	12.5	45						
MVVNN3225P16	O	32	25	170	32	12.5	45	VN..1604..	MV1603	MSP513	MCL2414		S2
MVVNN3232P16	O	32	32	170	32	16	45					WS061030	S3

* Blades to be ordered separately.

93° MVUNR/L





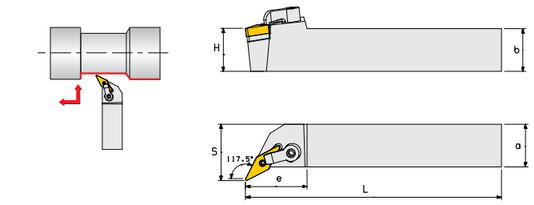
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
MVUNR1616H16	MVUNL1616H16	O	O	16	16	100	16	20	45					WS061025		
MVUNR2020K16	MVUNL2020K16	O	O	20	20	125	20	25	45							
MVUNR2525M16	MVUNL2525M16	O	O	25	25	150	25	32	45	VN..1604..	MV1603	MSP513	MCL2414		S2	
MVUNR3225P16	MVUNL3225P16	O	O	32	25	170	32	32	45					WS061030	S3	
MVUNR3232P16	MVUNL3232P16	O	O	32	32	170	32	40	45							

* Blades to be ordered separately.

117.5° MVQNR/L



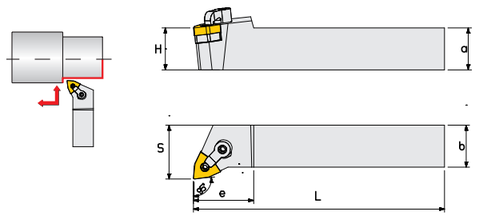


Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
MVQNR1616H16	MVQNL1616h16	O	O	16	16	100	16	24	36					WS061025		
MVQNR2020K16	MVQNL2020K16	O	O	20	20	125	20	27	36							
MVQNR2525M16	MVQNL2525M16	O	O	25	25	150	25	33	36	VN..1604..	MV1603	MSP513	MCL2114		S2	
MVQNR3225P16	MVQNL3225P16	O	O	32	25	170	32	33	36					WS061030	S3	
MVQNR3232P16	MVQNL3232P16	O	O	32	32	170	32	40	36							

* Blades to be ordered separately.

95° MWLNR/L





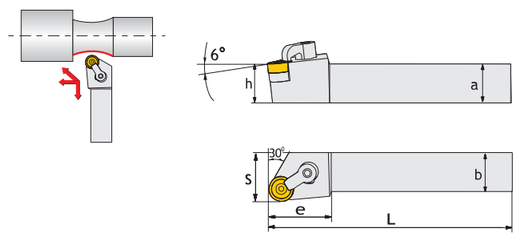
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MWLNR2020K06	MWLNL2020K06	O	O	20	20	125	20	25	28	WN..0604..	MW0603	MSP513		WS061025	S2
MWLNR2525M06	MWLNL2525M06	O	O	25	25	150	25	32	30					WS061030	S3
MWLNR2020K08	MWLNL2020K08	O	O	20	20	125	20	26	28	WN..0804..	MW0804	MSP617	MCL1814	WS061025	S3
MWLNR2525M08	MWLNL2525M08	O	O	25	25	150	25	32	35					WS061030	
MWLNR3225P08	MWLNL3225P08	O	O	32	25	170	32	32	35						
MWLNR3232P08	MWLNL3232P08	O	O	32	32	170	32	40	35						

* Blades to be ordered separately.

MRGNR





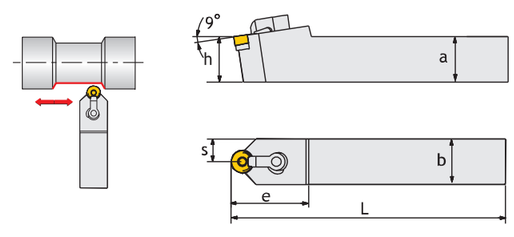
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MRGNR2020K12	MRGNL2020K12	O	O	20	20	125	20	25	28	RN..1204..	MR1204	MSP617	MCL1814	WS061025	S3
MRGNR2525M12	MRGNL2525M12	O	O	25	25	150	25	32	32					WS061030	
MRGNR3225P12	MRGNL3225P12	O	O	32	25	170	32	32	32						
MRGNR3232P12	MRGNL3232P12	O	O	32	32	170	32	39	32						

* Blades to be ordered separately.

MRDNN



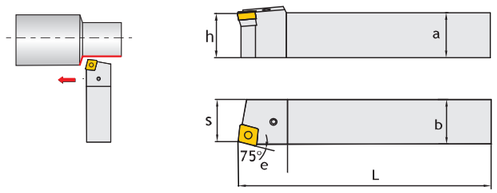


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
MRDNN2020K12	O	20	20	125	20	10	30	RN..1204..	MR1204	MSP617	MCL1814	WS061025	S3
MRDNN2525M12	O	25	25	150	25	12.5	32					WS061030	
MRDNN3225P12	O	32	25	170	32	12.5	30						
MRDNN3232P12	O	32	32	170	32	16	30						

* Blades to be ordered separately.

75° PCBNR/L





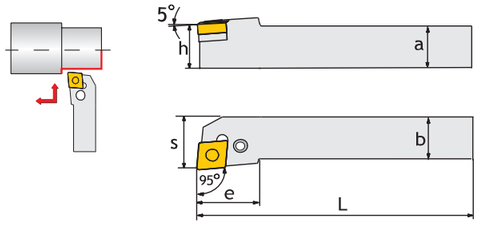
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PCBNR2020K12	PCBNL2020K12	O	O	20	20	125	20	17	30	CN..1204..	PC12318	VHX0821	LV4	SP4	S3
PCBNR2525M12	PCBNL2525M12	O	O	25	25	150	25	22	26						
PCBNR3232P12	PCBNL3232P12	O	O	32	32	170	32	29	27						
PCBNR2525M16	PCBNL2525M16	O	O	25	25	150	25	22	32	CN..1606..	PC16476	VHX0825	LV5	SP5	S3
PCBNR3232P16	PCBNL3232P16	O	O	32	32	170	32	27	33						
PCBNR3232P19	PCBNL3232P19	O	O	32	32	170	32	27	38	CN..1906..	PC19476	VHX1027	LV6	SP6	S4
PCBNR4040S19	PCBNL4040S19	O	O	40	40	250	40	35	38						
PCBNR4040S2507	PCBNL4040S2507	O	O	40	40	250	40	37	50	CN..2507..	PC25	VHX1236	LV8	SP8	S5
PCBNR4040S2509	PCBNL4040S2509	O	O	40	40	250	40	37	50	CN..2509..					

* Blades to be ordered separately.

95° PCLNR/L



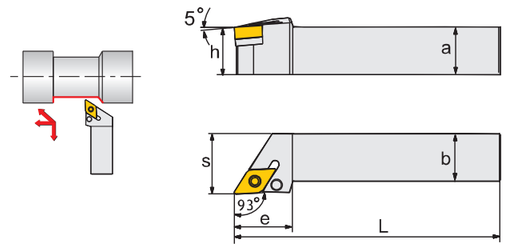


Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PCLNR1616H09	PCLNL1616H09	O	O	16	16	100	16	20	20	CN..0903..	PC09318	VHX0613	LV3	SP3	S2.5
PCLNR2020K09	PCLNL2020K09	O	O	20	20	125	20	25	22						
PCLNR2525M09	PCLNL2525M09	O	O	25	25	150	25	32	22						
PCLNR2020K12	PCLNL2020K12	O	O	20	20	125	20	26	28	CN..1204..	PC12318	VHX0821	LV4	SP4	S3
PCLNR2525M12	PCLNL2525M12	O	O	25	25	150	25	32	28						
PCLNR3232P12	PCLNL3232P12	O	O	32	32	170	32	39	32						
PCLNR2525M16	PCLNL2525M16	O	O	25	25	150	25	32	36	CN..1606..	PC16476	VHX0825	LV5	SP5	S3
PCLNR3232P16	PCLNL3232P16	O	O	32	32	170	32	39	36						
PCLNR3232P19	PCLNL3232P19	O	O	32	32	170	32	40	40	CN..1906..	PC19476	VHX1027	LV6	SP6	S4
PCLNR4040S19	PCLNL4040S19	O	O	40	40	250	40	49	40						
PCLNR4040S2507	PCLNL4040S2507	O	O	40	40	250	40	50	47	CN..2507..	PC25	VHX1236	LV8	SP8	S5
PCLNR4040S2509	PCLNL4040S2509	O	O	40	40	250	40	50	47	CN..2509..					

* Blades to be ordered separately.

95° PDJNR/L





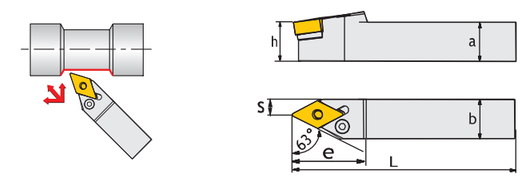
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PDJNR1616H11	PDJNL1616H11	O	O	16	16	100	16	20	25	DN..1104..	PD11270	VHX0613	LV3	SP3	S2.5
PDJNR2020K11	PDJNL2020K11	O	O	20	20	125	20	25	25						
PDJNR2525M11	PDJNL2525M11	O	O	25	25	150	25	30	30						
PDJNR2020K15	PDJNL2020K15	O	O	20	20	125	20	25	32	DN..1506..	PD15318	VHX0825	LV4B	SP4	S3
PDJNR2525M15	PDJNL2525M15	O	O	25	25	150	25	32	35						
PDJNR3232P15	PDJNL3232P15	O	O	32	32	170	32	38	35						
PDJNR2020K15-3	PDJNL2020K15-3	O	O	20	20	125	20	25	35	DN..1504..	PD15318	VHX0801	LV4	SP4	S3
PDJNR2525M15-3	PDJNL2525M15-3	O	O	25	25	150	25	32	35						
PDJNR3232P15-3	PDJNL3232P15-3	O	O	32	32	170	32	38	35						

* Blades to be ordered separately.

63° PDNNR/L





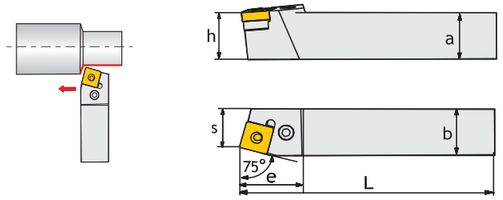
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PDNNR2020K15	PDNNL2020K15	O	O	20	20	125	20	8	37	DN..1506..	PD15318	VHX0825	LV4B	SP4	S3
PDNNR2525M15	PDNNL2525M15	O	O	25	25	150	25	12.5	37						
PDNNR3225P15	PDNNL3225P15	O	O	32	25	170	32	12.5	37						
PDNNR3232P15	PDNNL3232P15	O	O	32	32	170	32	16	37						
PDNNR2020K15-3	PDNNL2020K15-3	O	O	20	20	125	30	8	37	DN..1504..	PD15318	VHX0821	LV4	SP4	S3
PDNNR2525M15-3	PDNNL2525M15-3	O	O	25	25	150	25	12.5	37						
PDNNR3232P15-3	PDNNL3232P15-3	O	O	32	32	170	32	16	37						

* Blades to be ordered separately.

75° PSBNR/L





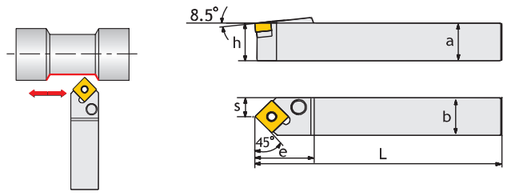
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PSBNR1616H09	PSBNL1616H09	O	O	16	16	100	16	13	21	SN..0903..	PS09318	VHX0613	LV3	SP3	S2.5
PSBNR2020K09	PSBNL2020K09	O	O	20	20	125	20	17	23						
PSBNR2020K12	PSBNL2020K12	O	O	20	20	125	20	17	28						
PSBNR2525M12	PSBNL2525M12	O	O	25	25	150	25	22	28	SN..1204..	PS12318	VHX0821	LV4	SP4	S3
PSBNR3225P12	PSBNL3225P12	O	O	32	32	170	32	22	28						
PSBNR3232P12	PSBNL3232P12	O	O	32	32	170	32	29	28						
PSBNR2525M15	PSBNL2525M15	O	O	25	25	150	25	22	32	SN..1506..	PS15476	VHX0825	LV5	SP5	S3
PSBNR3232O15	PSBNL3232O15	O	O	32	32	170	32	28	32						
PSBNR3232P19	PSBNL3232P19	O	O	32	32	170	32	36	45	SN..1906..	PS19476	VHX1027	LV6	SP6	S4
PSBNR4040S19	PSBNL4040S19	O	O	40	40	250	40	35	45						
PSBNR4040S2507	PSBNL4040S2507	O	O	40	40	250	40	35	50	SN..2507..	PS25634	VHX1236	LV8	SP8	S5
PSBNR4040S2509	PSBNL4040S2509	O	O	40	40	250	40	35	50	SN..2509..	PS25476				

* Blades to be ordered separately.

45° PSDNN



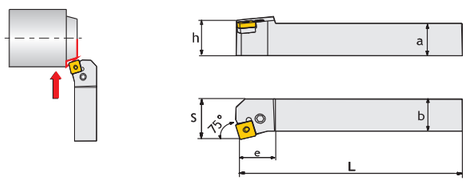


Model	Stock	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PSDNN2020K12	O	20	20	125	20	10	30						
PSDNN2525M12	O	25	25	150	25	12.5	32	SN..1204..	PS12318	VHX0821	LV4	SP4	S3
PSDNN3232P12	O	32	32	170	32	16	30						
PSDNN2525M15	O	25	25	150	25	12.5	40	SN..1506..	PS15476	VHX0825	LV5	SP5	S3
PSDNN3232P15	O	32	32	170	32	16	40						
PSDNN3232P19	O	32	32	170	32	16	40	SN..1906..	PS19476	VHX1027	LV6	SP6	S4
PSDNN4040S19	O	40	40	250	40	20	40						
PSDNN4040S2507	O	40	40	250	40	20	50	SN..2507..	PS25634	VHX1236	LV8	SP8	S5
PSDNN4040S2509	O	40	40	250	40	20	50	SN..2509..	PS25476				

* Blades to be ordered separately.

75° PSKNR/L





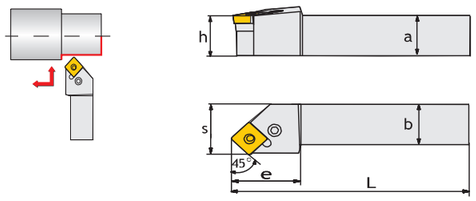
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PSKNR1616H09	PSKNL1616H09	O	O	16	16	100	16	20	17	SN..0903..	PS09318	VHX0613	LV3	SP3	S2.5
PSKNR2020K09	PSKNL2020K09	O	O	20	20	125	20	25	20						
PSKNR2020K12	PSKNL2020K12	O	O	20	20	125	20	25	26						
PSKNR2525M12	PSKNL2525M12	O	O	25	25	150	25	30	26	SN..1204..	PS12318	VHX2821	LV4	SP4	S3
PSKNR3232P12	PSKNL3232P12	O	O	32	32	170	32	38	26						
PSKNR2525M15	PSKNL2525M15	O	O	25	25	150	25	32	32	SN..1506..	PS15476	VHX0825	LV5	SP5	S3
PSKNR3232P15	PSKNL3232P15	O	O	32	32	170	32	38	32						
PSKNR3232P19	PSKNL3232P19	O	O	32	32	170	32	38	36	SN..1906..	PS19476	VHX1027	LV6	SP6	S4
PSKNR4040S19	PSKNL4040S19	O	O	40	40	250	40	48	32						
PSKNR4040S2507	PSKNL4040S2507	O	O	40	40	250	40	50	40	SN..2507..	PS25634	VHX1236	LV8	SP8	S5
PSKNR4040S2509	PSKNL4040S2509	O	O	40	40	250	40	50	40	SN..2509..	PS25476				

* Blades to be ordered separately.

45° PSSNR/L



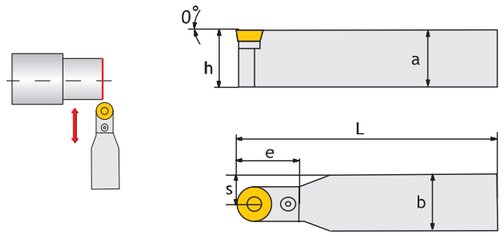


Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PSSNR1616H09	PSSNL1616H09	O	O	16	16	100	16	18	25	SN..0903..	PS09318	VHX0613	LV3	SP3	S2.5
PSSNR2020K12	PSSNL2020K12	O	O	20	20	125	20	20	28						
PSSNR2525M12	PSSNL2525M12	O	O	25	25	150	25	25	32	SN..1204..	PS12318	VHX0821	LV4	SP4	S3
PSSNR3232P12	PSSNL3232P12	O	O	32	32	170	32	32	32						
PSSNR2525M15	PSSNL2525M15	O	O	25	25	150	25	25	35	SN..1506..	PS15476	VHX0825	LV5	SP5	S3
PSSNR3232P15	PSSNL3232P15	O	O	32	32	170	32	32	35						
PSSNR3232P19	PSSNL3232P19	O	O	32	32	170	32	32	40	SN..1906..	PS19476	VHX1027	LV6	SP6	S4
PSSNR4040S19	PSSNL4040S19	O	O	40	40	250	40	40	50						
PSSNR4040S2507	PSSNL4040S2507	O	O	40	40	250	40	40	50	SN..2507..	PS25634	VHX1236	LV8	SP8	S5
PSSNR4040S2509	PSSNL4040S2509	O	O	40	40	250	40	40	50	SN..2509..	PS25476				

* Blades to be ordered separately.

PRDCN



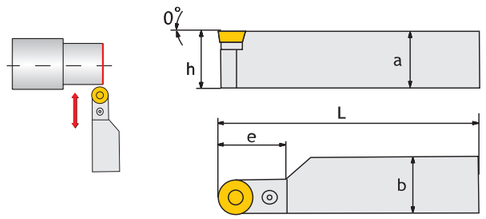


Model	Stock	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PRDCN2020K12	O	20	20	125	20	10	25	RCMX1204..	PR1204	VHX0613	LCL12C	SP3	S2.5
PRDCN2525M12	O	25	25	150	25	12.5	25						
PRDCN2525M16	O	25	25	150	25	40	35	RCMX1606..	PR1604	VHX0621	LCL16C	SP4	S2.5
PRDCN3232P16	O	32	32	170	32	16	32						
PRDCN3232P20	O	32	32	170	32	16	40	RCMX2006..	PR2004	VHX0825	LCL20C	SP5	S3
PRDCN4040T20	O	40	40	300	40	20	45						
PRDCN3232P25	O	32	32	170	32	16	45	RCMX2507..	PR2506	VHX1030	LCL25C	SP6	S4
PRDCN4040T25	O	40	40	300	40	20	50						

* Blades to be ordered separately.

PRACR/L





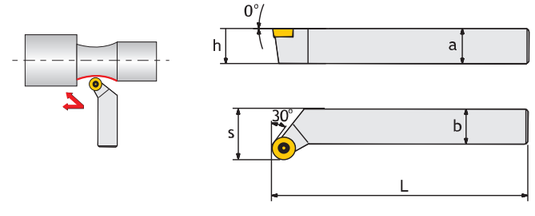
Legend of right hand knife

Model: Right hand	Model: Left hand	Stock R	Stock L	a	b	L	h	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PRACR2020K12	PRACL2020K12	O	O	20	20	125	20	30	RCMX1204..	PR1204	VHX0613	LCL12C	SP3	S2.5
PRACR2525M12	PRACL2525M12	O	O	25	25	150	25	30						
PRACR2525M16	PRACL2525M16	O	O	25	25	150	25	35	RCMX1606..	PR1604	VHX0621	LCL16C	SP4	S2.5
PRACR3232P16	PRACL3232P16	O	O	32	32	170	32	35						
PRACR3232P20	PRACL3232P20	O	O	32	32	170	32	40	RCMX2006..	PR2004	VHX0825	LCL20C	SP5	S3
PRACR4040T20	PRACL4040T20	O	O	40	40	300	40	50						
PRACR3232P25	PRACL3232P25	O	O	32	32	170	32	45	RCMX2507..	PR2506	VHX1030	LCL25C	SP6	S4
PRACR4040T25	PRACL4040T25	O	O	40	40	300	40	50						

* Blades to be ordered separately.

PRGCR/L





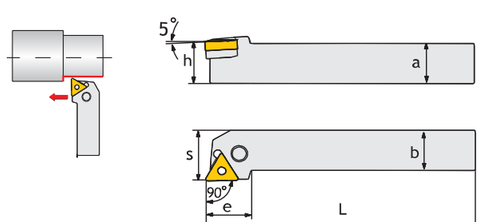
Legend of right hand knife

Model: Right hand	Model: Left hand	Stock R	Stock L	a	b	L	h	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PRGCR2020K12	PRGCL2020K12	O	O	20	20	125	20	25	RCMX1204..	PR1204	VHX0613	LCL12C	SP3	S2.5
PRGCR2525M12	PRGCL2525M12	O	O	25	25	150	25	32						
PRGCR2525M16	PRGCL2525M16	O	O	25	25	150	25	35	RCMX1606..	PR1604	VHX0621	LCL16C	SP4	S2.5
PRGCR3232P16	PRGCL3232P16	O	O	32	32	170	32	42						
PRGCR3232P20	PRGCL3232P20	O	O	32	32	170	32	40	RCMX2006..	PR2004	VHX0825	LCL20C	SP5	S3
PRGCR3232T20	PRGCL3232T20	O	O	40	40	300	40	50						
PRGCR3232P25	PRGCL3232P25	O	O	32	32	170	32	45	RCMX2507..	PR2506	VHX1030	LCL25C	SP6	S4
PRGCR4040T25	PRGCL4040T25	O	O	40	40	300	40	56						

* Blades to be ordered separately.

90° PTGNR/L





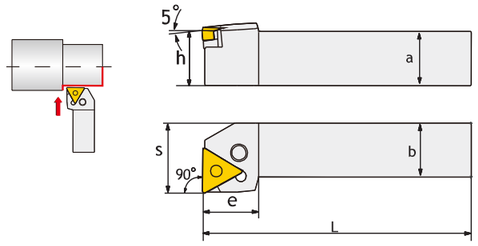
Legend of right hand knife

Model: Right hand	Model: Left hand	Stock R	Stock L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PTGNR1616H11	PTGNL1616H11	O	O	16	16	100	16	19	18	TN..1103..	–	VHX059B	LV2	–	S2
PTGNR2020K11	PTGNL2020K11	O	O	20	20	125	20	24	20						
PTGNR2525M11	PTGNL2525M11	O	O	25	25	150	25	29	20						
PTGNR1616H16	PTGNL1616H16	O	O	16	16	100	16	19	22	TN..1604..	PT16	VHX0617	LV3	SP3	S2.5
PTGNR2020K16	PTGNL2020K16	O	O	20	20	125	20	23	25						
PTGNR2525M16	PTGNL2525M16	O	O	25	25	150	25	29	25						
PTGNR3232P16	PTGNL3232P16	O	O	32	32	170	32	37	32						
PTGNR2525M22	PTGNL2525M22	O	O	25	25	150	25	30	30	TN..2204..	PT22	VHX0821	LV4	SP4	S3
PTGNR3232P22	PTGNL3232P22	O	O	32	32	170	32	37	32						
PTGNR3232P27	PTGNL3232P27	O	O	32	32	170	32	37	38	TN..2706..	PT27	VHX0825	LV5	SP5	S3
PTGNR4040S27	PTGNL4040S27	O	O	40	40	250	40	47	38						

* Blades to be ordered separately.

90° PTFNR/L





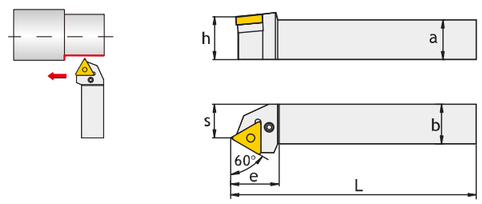
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PTFNR1616H16	PTFNL1616H16	O	O	16	16	100	16	20	20	TN..1604..	PT16	VHX0617	LV3	SP3	S2.5
PTFNR2020K16	PTFNL2020K16	O	O	20	20	125	20	25	20						
PTFNR2525M16	PTFNL2525M16	O	O	25	25	150	25	30	25						
PTFNR2525M22	PTFNL2525M22	O	O	25	25	150	25	32	30	TN..2204..	PT22	VHX0821	LV4	SP4	S3
PTFNR3232P22	PTFNL3232P22	O	O	32	32	170	32	38	30						
PTFNR3232P27	PTFNL3232P27	O	O	32	32	170	32	38	35	TN..2706..	PT27	VHX0825	LV5	SP5	S3
PTFNR4040S27	PTFNL4040S27	O	O	40	40	250	40	50	34						

* Blades to be ordered separately.

60° PTTNR/L





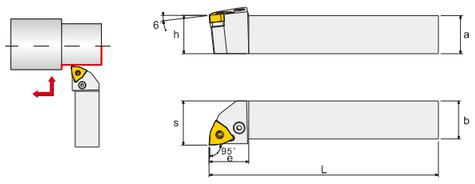
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PTTNR1616H16	PTTNL1616H16	O	O	16	16	100	16	13	22	TN..1604..	PT16	VHX0617	LV3	SP3	S2.5
PTTNR2020K16	PTTNL2020K16	O	O	20	20	125	20	17	22						
PTTNR2525M22	PTTNL2525M22	O	O	25	25	150	25	22	32	TN..2204..	PT22	VHX0821	LV4	SP4	S3

* Blades to be ordered separately.

95° PWLNR/L





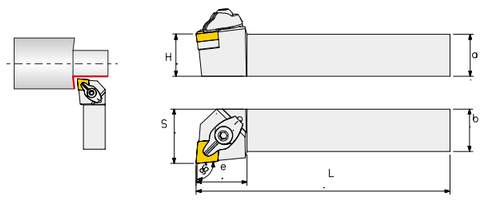
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
PWLNR1616H06	PWLNL1616H06	O	O	16	16	100	16	19	22						
PWLNR2020K06	PWLNL2020K06	O	O	20	20	125	20	23	25	WN..0604..	PW06270	VHX0617	LV3	SP3	S2.5
PWLNR2525M06	PWLNL2525M06	O	O	25	25	150	25	28	25						
PWLNR2020K08	PWLNL2020K08	O	O	20	20	125	20	25	26						
PWLNR2525M08	PWLNL2525M08	O	O	25	25	150	25	29	26	WN..0804..	PW08318	VHX0821	LV4	SP4	S3
PWLNR3232P08	PWLNL3232P08	O	O	32	32	170	32	37	26						

* Blades to be ordered separately.

95° DCLNR/L





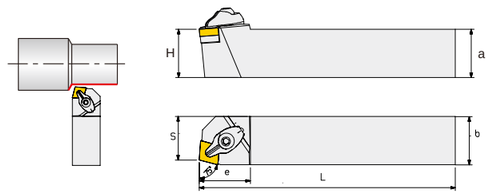
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench	
DCLNR2020K12	DCLNL2020K12	O	O	20	20	125	20	27	32	CN..1204..	MC1204	DM0626	DCL2612	DSP0612	S4 S3	
DCLNR2525M12	DCLNL2525M12	O	O	25	25	150	25	32	30							
DCLNR3232P12	DCLNL3232P12	O	O	32	32	170	32	39	30							

* Blades to be ordered separately.

75° DCBNR/L





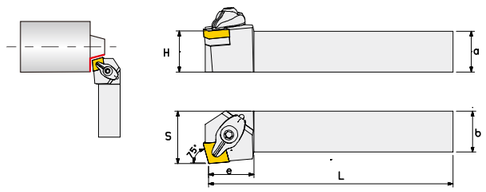
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench	
DCBNR2020K12	DCBNL2020K12	O	O	20	20	125	20	17	34	CN..1204..	MC1204	DM0625	DCL2612	DSP0612	S4 S3	
DCBNR2525M12	DCBNL2525M12	O	O	25	25	150	25	22	36							
DCBNR3232P12	DCBNL3232P12	O	O	32	32	170	32	29	34							

* Blades to be ordered separately.

75° DCKNR/L





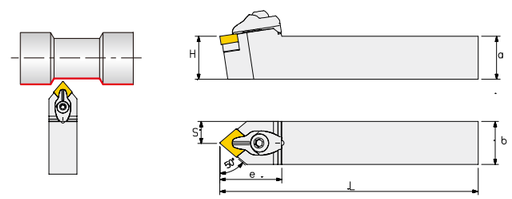
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench	
DCKNR2020K12	DCKNL2020K12	O	O	20	20	125	20	26	28	CN..1204..	MC1204	DM0626	DCL2612	DSP0612	S3 S4	
DCKNR2525M12	DCKNL2525M12	O	O	25	25	150	25	32	28							
DCKNR3232P12	DCKNL3232P12	O	O	32	32	170	32	39	28							

* Blades to be ordered separately.

50° DCMNN



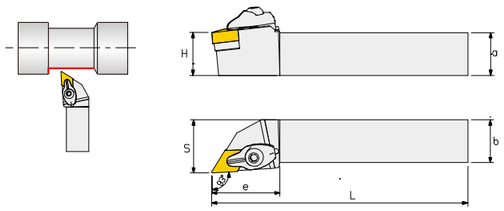


Model	Stock														
		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench	
DCMNN2020K12	O	20	20	125	20	10	36	CN..1204..	MC1204	DM0626	DCL2612	DSP0612	S3 S4	
DCMNN2525M12	O	25	25	150	25	12.5	36							
DCMNN3232P12	O	32	32	170	32	16	36							

* Blades to be ordered separately.

93° DDJNR/L





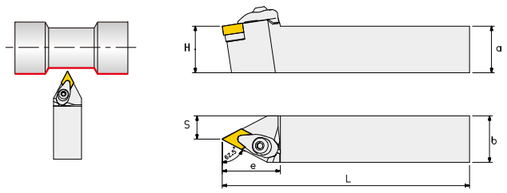
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DDJNR2020K11	DDJNL2020K11	O	O	20	20	125	20	25	28	CN..1104..	MC1103	DM0520	DCL2211	DSP0510	S3
DDJNR2525M11	DDJNL2525M11	O	O	25	25	150	25	30	28						
DDJNR2020K1504	DDJNL2020K1504	O	O	32	32	125	20	25	28						

* Blades to be ordered separately.

62.5° DDPNN



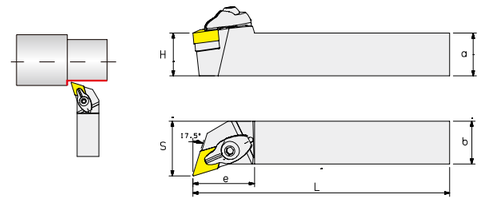


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DDPNN2020K11	O	20	20	125	20	10	32	DN..1104..	MD1103	DM0520	DCL2211	DSP0510	S3
DDPNN2525M11	O	25	25	150	25	12.5	36						
DDPNN2020K1504	O	20	20	125	20	10	36	DN..1504..	MD1504	DM0625	DCL2612	DSP0612	S4 S3
DDPNN2525M1504	O	25	25	150	25	12.5	36						
DDPNN3232P1504	O	32	32	170	32	16	36						
DDPNN2020K1506	O	20	20	125	20	10	36	DN..1506..					
DDPNN2525M1506	O	25	25	150	25	12.5	36						
DDPNN3232P1506	O	32	32	170	32	16	36						

* Blades to be ordered separately.

107.5° DDQNR/L





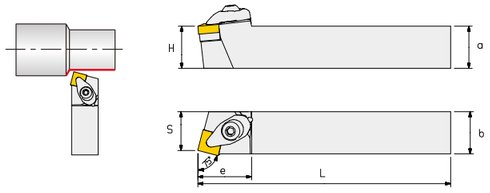
Legend of right hand knife

Model		Stock														
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DDQNR2020K11	DDQNL2020K11	O	O	20	20	125	20	25	28	DN..1104..	MD1103	DM0520	DCL2211	DSP0510	S4 43
DDQNR2525M11	DDQNL2525M11	O	O	25	25	150	25	31	28						
DDQNR2020K1504	DDQNL2020K1504	O	O	20	20	125	20	26	36	DN..1504..	MD1504	DM0625	DCL2612	DSP0612	S4 43
DDQNR2525M1504	DDQNL2525M1504	O	O	25	25	150	25	32	36						
DDQNR3232P1504	DDQNL3232P1504	O	O	32	32	170	32	38	36						
DDQNR2020K1506	DDQNL2020K1506	O	O	20	20	125	20	26	36	DN..1506..					
DDQNR2525M1506	DDQNL2525M1506	O	O	25	25	150	25	32	36						
DDQNR3232P1506	DDQNL3232P1506	O	O	32	32	170	32	38	36						

* Blades to be ordered separately.

75° DSBNR/L



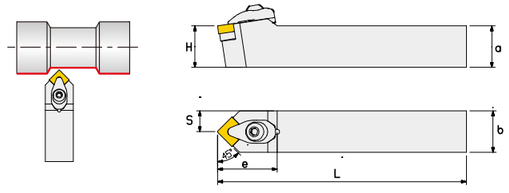


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DSBNR2020K12	O	20	20	125	20	18	34	SN..1204..	MS1204	DM0625	DCL2612	DSP0612	S3 S4
DSBNR2525M12	O	25	25	150	25	23	32						
DSBNR3232P12	O	32	32	170	32	30	33						

* Blades to be ordered separately.

45° DSDNN



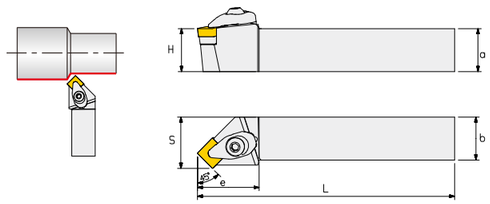


Model	Stock	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DSDNN2020K12	O	20	20	125	20	10	36	SN..1204..	MS1204	DM0625	DCL2612	DSP0612	S3 S4
DSDNN2525M12	O	25	25	150	25	12.5	36						
DSDNN3232P12	O	32	32	170	32	12.5	36						

* Blades to be ordered separately.

45° DSSNR/L





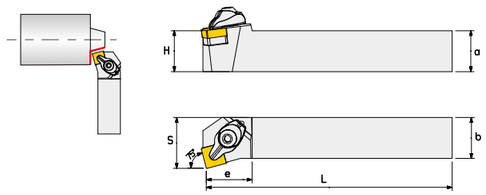
Legend of right hand knife

Model		Stock		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
Right hand	Left hand	R	L												
DSSNR2020K12	DSSNL2020K12	O	O	20	20	125	20	25	36	CN..1204..	Ms1204	DM0625	DCL2612	DSP0612	S3 S4
DSSNR2525M12	DSSNL2525M12	O	O	25	25	150	25	30	35						
DSSNR3232P12	DSSNL3232P12	O	O	32	32	170	32	38	35						

* Blades to be ordered separately.

75° DSKNR/L





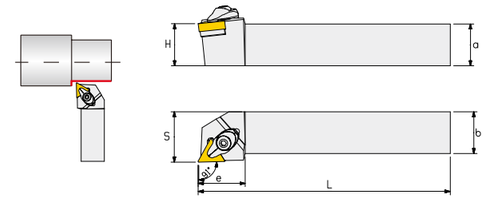
Legend of right hand knife

Model		Stock		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
Right hand	Left hand	R	L												
DSKNR2020K12	DSKNL2020K12	O	O	20	20	125	20	26	28	CN..1204..	MS1204	DM0625	DCL2612	DSP0612	S3 S4
DSKNR2525M12	DSKNL2525M12	O	O	25	25	150	25	36	28						
DSKNR3232P12	DSKNL3232P12	O	O	32	32	125	20	38	32						

* Blades to be ordered separately.

90° DTGNR



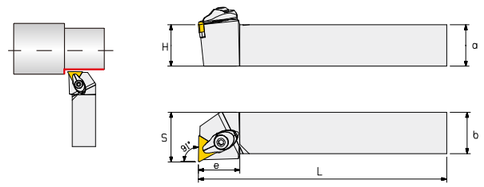


Model	Stock	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DTGNR2020K16	O	20	20	125	20	24	28	TN..1604..	MT1603	DM520	DCL2211	DSP0510	S3
DTGNR2525M16	O	25	25	150	25	30	28						
DTGNR3225P16	O	32	25	170	32	30	28						
DTGNR3232P16	O	32	32	170	32	38	32						

* Blades to be ordered separately.

90° DTFNR





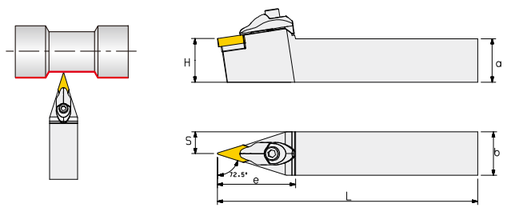
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DTFNR2020K16	DTFNL2020K16	O	O	20	20	125	20	25	28	CN..1204..	MT1603	DM0520	DCL2211	DSP0510	S3
DTFNR2525M16	DTFNL2525M16	O	O	25	25	150	25	30	26						
DTFNR3225P16	DTFNL3225P16	O	O	32	25	170	32	30	26						
DTFNR3232P16	DTFNL3232P16	O	O	32	32	170	32	38	26						

* Blades to be ordered separately.

72.5° DVVNN



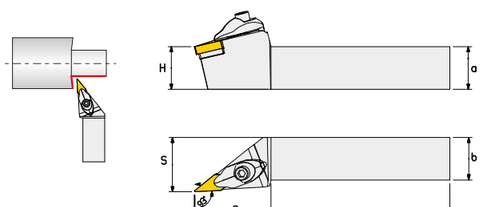


Model	Stock							Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
		a	b	L	h	s	e						
DVVNN2020K16	O	20	20	125	20	10	45	TN..1604..	MV1603	M5X25	DCLI3113	DSP0510	S3
DVVNN2525M16	O	25	25	150	25	12.5	45						
DVVNN3225P16	O	32	25	170	32	12.5	45						
DVVNN3232P16	O	32	32	170	32	16	45						

* Blades to be ordered separately.

93° DVJNR





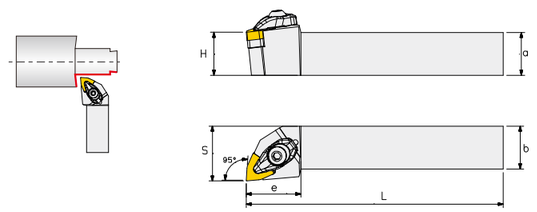
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
DVJNR2020K16	DVJNL2020K16	O	O	20	20	125	20	26	45	VN..1604..	MV1603	M5X25	DCL3113	DSP0510	S3
DVJNR2525M16	DVJNL2525M16	O	O	25	25	150	25	32	45						S4
DVJNR3225P16	DVJNL3225P16	O	O	32	25	170	32	32	45						
DVJNR3232P16	DVJNL3232P16	O	O	32	32	170	32	40	45						

* Blades to be ordered separately.

95° DWLNR



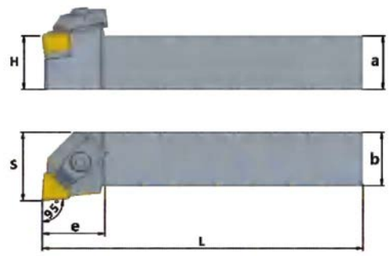


Model	Stock							Insert	Shim	Clamp Screw	Clamp	Screw	Wrench
		a	b	L	h	s	e						
DWLNR2020K08	O	20	20	125	20	25	32	WN..0804..	WM0804	DM0625	DCL2612	DSP0612	S4
DWLNR2525M08	O	25	25	150	25	32	31						S3
DWLNR3225P08	O	32	32	170	32	32	31						
DWLNR3232P08	O	32	32	170	32	39	31						
DWLNR2020K06	O	20	20	125	20	25	25	WN..0603..	WM0603	DM0520	DCL2211	DSP0510	S3
DWLNR2525M06	O	25	25	150	25	30	25						

* Blades to be ordered separately.

95° CCLNR/L





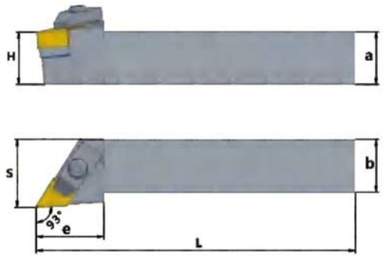
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CCLNR2020K12	CCLNL2020K12	O	O	20	20	125	20	26	32	CN..1207..	MC1204	DM0625	CCL2612	S4 S3
CCLNR2525M12	CCLNL2525M12	O	O	25	25	150	25	31	31					
CCLNR2525M16	CCLNL2525M16	O	O	25	25	150	25	32	36	CN..1606..	MC1604	DM0830	CCL2816	S4
CCLNR3225P16	CCLNL3225P16	O	O	32	25	170	32	32	36					

* Blades to be ordered separately.

93° CDJNR/L





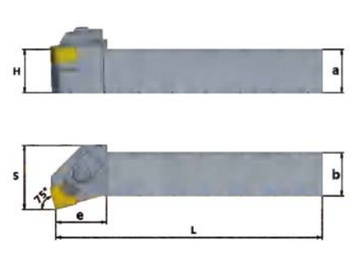
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CDJNR2525M15	CDJNl2525M15	O	O	25	25	150	25	32	40	DN..1507..	MD1504	DM0625	CCL2612	S4 S3
CDJNR3225P15	CDJNl3225P15	O	O	32	25	170	32	32	40					

* Blades to be ordered separately.

75° CSKNR/L





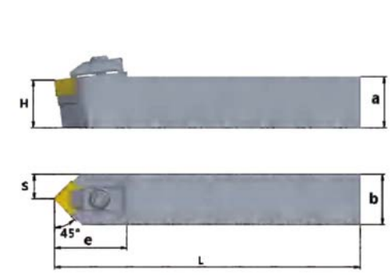
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CSKNR2020K12	CSKNL2020K12	O	O	20	20	125	20	26	28	SN..1207..	MS1204	DM0625	CCL2612	S4 S3
CSKNR2525M12	CSKNL2525M12	O	O	25	25	150	25	32	30					
CSKNR3225P12	CSKNL3225P12	O	O	32	25	170	32	32	30					

* Blades to be ordered separately.

CSDNN



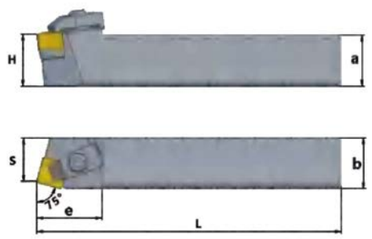


Model	Stock												
		a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CSDNN2020K12	O	20	20	125	20	10	36	SN..1207..	MS1204	DM0625	CCL2612	S4 S3
CSDNN2525M12	O	25	25	150	25	12.5	36					
CSDNN3225P12	O	32	25	170	32	12.5	36					

* Blades to be ordered separately.

75° CSRNR/L





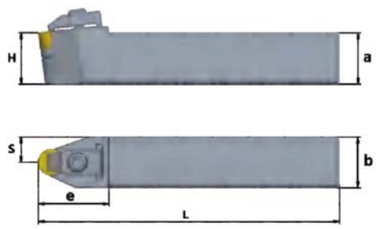
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CSRNR2020K12	CSRNL2020K12	O	O	20	20	125	20	22	32	SN..1207..	MS1204	DM0625	CCL2612	S4 S3
CSRNR2525M12	CSRNL2525M12	O	O	25	25	150	25	27	32					
CSRNR3225P12	CSRNL3225P12	O	O	32	25	170	32	27	32					

* Blades to be ordered separately.

CRDNN



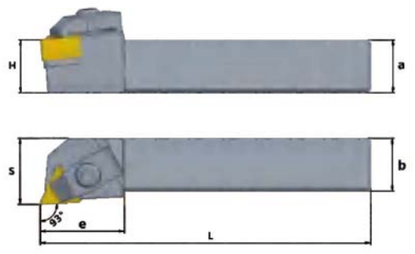


Model	Stock	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CRDNN2020K12	O	20	20	125	20	10	36	SN..1207..	MS1204	DM0625	CCL2612	S3 S4
CRDNN2525M12	O	25	25	150	25	12.5	36					
CRDNN3225P12	O	32	25	170	32	12.5	36					

* Blades to be ordered separately.

93° CTJNR/L





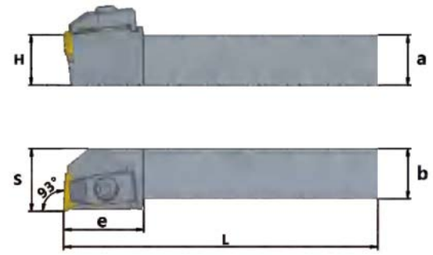
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CTJNR2020K16	CTJNL2020K16	O	O	20	20	125	20	26	32	CN..1607..	MT1603	DM0625	CCL2612	S4 S3
CTJNR2525M16	CTJNL2525M16	O	O	25	25	150	25	31	32					

* Blades to be ordered separately.

93° CTUNR/L





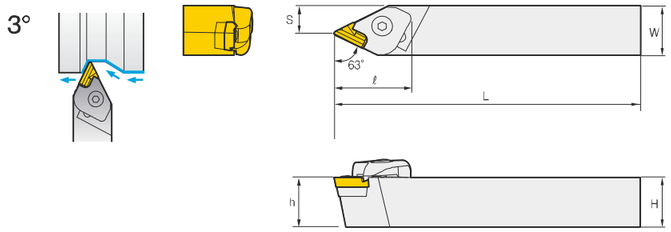
Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Shim	Clamp Screw	Clamp	Wrench
CTUNR2020K16	CTUNL2020K16	O	O	20	20	125	20	25	32	PN..16..	MT1603	DM0625	CCL2612	S4 S3
CTUNR2525M16	CTUNL2525M16	O	O	25	25	150	25	35	32					

* Blades to be ordered separately.

CKJNR/L





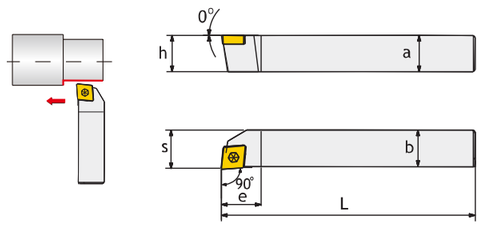
Legend of right hand knife

Model	Stock								Insert	Shim	Clamp Screw	Clamp	Spring	Wrench	Shim Screw	Pin+Spring
	R	L	a	b	L	h	s	e								
CKJNR2020-K16	O	O	20	20	125	25	20	32	KN..1604..R	SK33C	CHX0625	CTH6R1	SR3	HW20L HW40L	SHX0310	PN0515 SR4
CKJNR2525-M16	O	O	25	25	150	32	25	32								
CKJNR3225-M16	O	O	32	25	150	32	32	32								
CKJNR3225-P16	O	O	32	25	170	32	32	32								
CKJNR3232-P16	O	O	32	32	170	40	32	32								
CKJNR4040-R16	O	O	40	40	200	50	40	32								
CKJNL2020-K16	O	O	20	20	125	25	20	32	KN..1604..L	SK33CL	CHX0625	CTH6L1	SR3	HW20L HW40L	SHX0310	PN0515 SR4
CKJNR2525-M16	O	O	25	25	150	32	25	32								
CKJNR3232-P16	O	O	32	32	170	40	32	32								
CKJNR4040-R16	O	O	40	40	200	50	40	32								

* Blades to be ordered separately.

90° SCACR/L





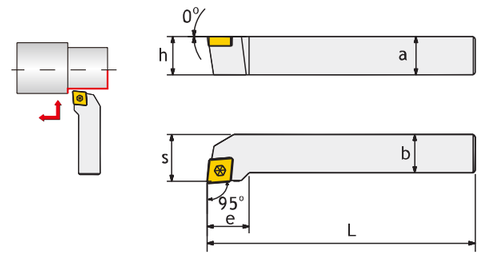
Legend of right hand knife

Model		Stock										
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Screw	Hex wrench
SCACR1010E06	SCACL1010E06	O	O	10	10	70	10	10.5	10	CC..T0602..	L60M2.5×5	T08
SCACR1212F09	SCACL1212F09	O	O	12	12	80	12	12.7	16	CC..T09T3..	L60M4×8	T15

* Blades to be ordered separately.

95° SCLCR/L





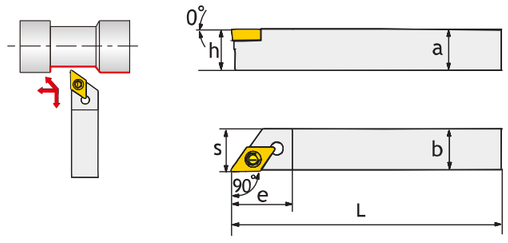
Legend of right hand knife

Model		Stock										
Right hand	Left hand	R	L	a	b	L	h	s	e	Insert	Screw	Hex wrench
SCLCR1212F09	SCLCL1212F09	O	O	12	12	80	12	15	16	CC..T09T3..	L60M4×8	T15
SCLCR1616H09	SCLCL1616H09	O	O	16	16	100	16	20	16			
SCLCR2020K09	SCLCL2020K09	O	O	20	20	125	20	23	20			
SCLCR2020K12	SCLCL2020K12	O	O	20	20	125	20	24	25	CC..T1204..	L60M5×12	T20
SCLCR2525M12	SCLCL2525M12	O	O	25	25	150	25	29	25			
SCLCR3225P12	SCLCL3225P12	O	O	32	32	170	32	29	25			
SCLCR3232P12	SCLCL3232P12	O	O	32	32	170	32	36	38			

* Blades to be ordered separately.

90° SDACR/L





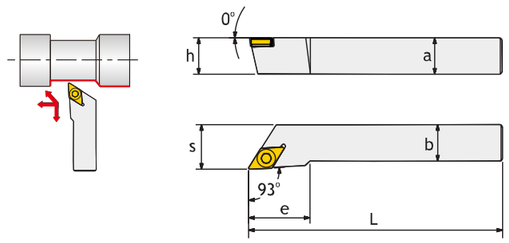
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SDACR1010E07	SDACL1010E07	O	O	10	10	70	10	10.5	15	DC..T0702..	L60M2.5×5	T08
SDACR1212F11	SDACL1212F11	O	O	12	12	12	12	12.5	20	DC..T11T3..	L60M4×8	T15
SDACR1616H11	SDACL1616H11	O	O	16	16	16	16	16.7	20			

* Blades to be ordered separately.

93° SDJCR/L





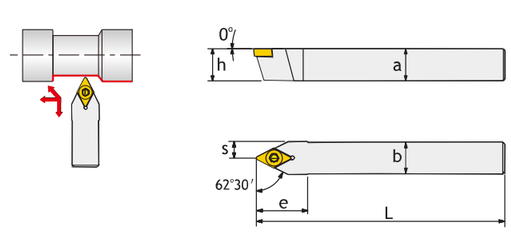
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SDJCR1010E07	SDJCR1010E07	O	O	10	10	70	10	12	15	DC..T0702..	L60M2.5×5	T08
SDJCR1212F07	SDJCR1212F07	O	O	12	12	80	12	14	15			
SDJCR1616H07	SDJCR1616H07	O	O	16	16	100	16	18	18			
SDJCR2020K07	SDJCR2020K07	O	O	20	20	125	20	22	18	DC..T11T3..	L60M4×8	T15
SDJCR1616H11	SDJCR1616H11	O	O	16	16	100	16	19	20			
SDJCR2020K11	SDJCR2020K11	O	O	20	20	125	20	23	26			
SDJCR2525M11	SDJCR2525M11	O	O	25	25	150	25	28	26			
SDJCR3225P11	SDJCR3225P11	O	O	32	32	170	32	28	26			
SDJCR3232P11	SDJCR3232P11	O	O	32	32	170	32	35	31			

* Blades to be ordered separately.

60° 30' SDNCN



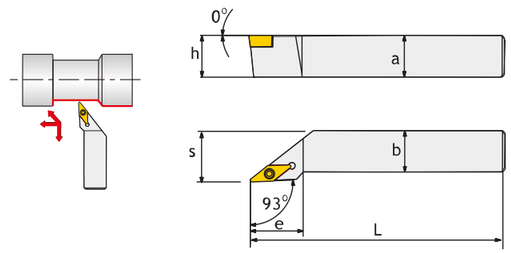


Model	Stock	a	b	L	h	s	e	Insert	Screw	Hex wrench
SDNCN1010E07	O	10	10	70	10	5	16	DC..T0702..	L60M2.5×5	T08
SDNCN1212F07	O	12	12	80	12	6	20			
SDNCN1212H11	O	12	12	100	12	6	22	DC..T11T3..	L60M4×8	T15
SDNCN1616H11	O	16	16	100	16	8	22			
SDNCN2020K11	O	20	20	125	20	10	22			
SDNCN2525M11	O	25	25	150	25	12.5	22			

* Blades to be ordered separately.

93° SVJCR/L





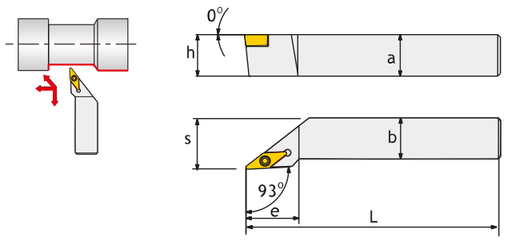
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SVJCR1212F11	SVJCL1212F11	O	O	12	12	80	12	14	20	VC..T1103..	L60M2.5×5	T08
SVJCR1616H11	SVJCL1616H11	O	O	16	16	100	16	18	22			
SVJCR2020K11	SVJCL2020K11	O	O	20	20	125	20	22	27			
SVJCR2525M11	SVJCL2525M11	O	O	25	25	150	25	27	35			
SVJCR1616H16	SVJCL1616H16	O	O	16	16	100	16	18	32	VC..T1604..	L60M4×8	T15
SVJCR2020K16	SVJCL2020K16	O	O	20	20	125	20	22	32			
SVJCR2525M16	SVJCL2525M16	O	O	25	25	150	25	27	35			
SVJCR3225P16	SVJCL3225P16	O	O	32	25	170	32	27	35			
SVJCR3232P16	SVJCL3232P16	O	O	32+	32	170	32	35	45			

* Blades to be ordered separately.

93° SVJBR/L





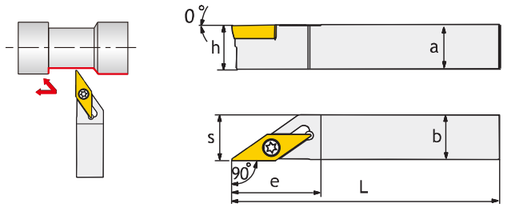
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SVJBR1212F11	SVJBL1212F11	○	○	12	12	80	12	14	27	VB..T1103..	L16M2.5×5	T08
SVJBR1616H11	SVJBL1616H11	○	○	16	16	100	16	18	27			
SVJBR2020K11	SVJBL2020K11	○	○	20	20	125	20	22	27			
SVJBR2525M11	SVJBL2525M11	○	○	25	25	150	25	27	27			
SVJBR1616H16	SVJBL1616H16	○	○	16	16	100	16	18	36	VB..T1604..	L60M4×8	T15
SVJBR2020K16	SVJBL2020K16	○	○	20	20	125	20	22	41			
SVJBR2525M16	SVJBL2525M16	○	○	25	25	150	25	27	41			
SVJBR3225P16	SVJBL3225P16	○	○	32	25	170	32	27	41			
SVJBR3232P16	SVJBL3232P16	○	○	32	32	170	32	35	41			

* Blades to be ordered separately.

90° SVABR/L





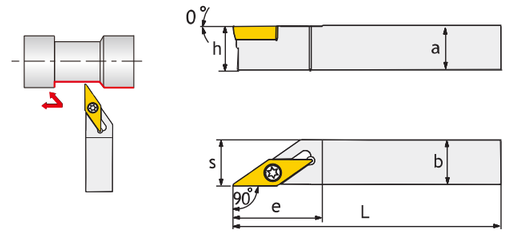
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SVABR1616H16	SVABL1616H16	○	○	16	16	100	16	16.5	32	VC..T1604..	L60M4×8	T15
SVABR2020K16	SVABL2020K16	○	○	20	20	125	20	20.5	32			
SVABR2525M16	SVABL2525M16	○	○	25	25	150	25	25.5	38			

* Blades to be ordered separately.

90° SVACR/L





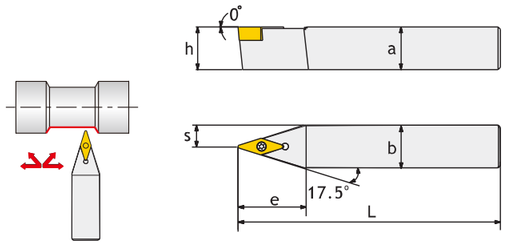
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SVACR1616H16	SVACL1616H16	○	○	16	16	100	16	16.5	32	VC..T1604..	L60M4×8	T15
SVACR2020K16	SVACL2020K16	○	○	20	20	125	20	20.5	32			
SVACR2525M16	SVACL2525M16	○	○	25	25	150	25	25.5	38			

* Blades to be ordered separately.

72° 30' SVVBN



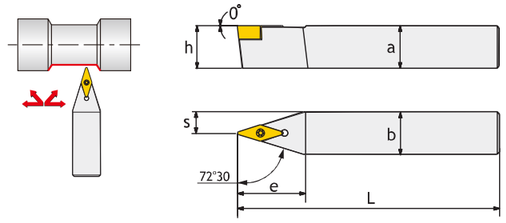


Model	Stock							Insert	Screw	Hex wrench
		a	b	L	h	s	e			
SVVBN1212F11	○	12	12	80	12	6	22	VB..T1103..	L60M2.5×5	T08
SVVBN1616H11	○	16	16	100	16	8	27			
SVVBN2020K11	○	20	20	125	20	10	30			
SVVBN1616H16	○	16	16	100	16	8	33	VB..T1604..	L60M4×8	T15
SVVBN2020K16	○	20	20	125	20	10	33			
SVVBN2525M16	○	25	25	150	25	12.5	38			
SVVBN3225P16	○	32	25	170	32	12.5	38			
SVVBN3232P16	○	32	32	170	32	16	38			

* Blades to be ordered separately.

72° 30' SVVCN



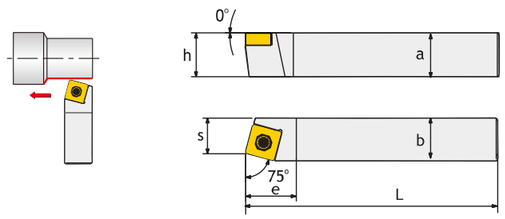


Model	Stock	a	b	L	h	s	e	Insert	Screw	Hex wrench
SVVCN1212F11	O	12	12	80	12	6	22	VC..T1103..	L60M2.5×5	T08
SVVCN1616H11	O	16	16	100	16	8	27			
SVVCN2020K11	O	20	20	125	20	10	30			
SVVCN1616H16	O	16	16	100	16	8	33	VC..T1604..	L60M4×8	T15
SVVCN2020K16	O	20	20	125	20	10	33			
SVVCN2525K16	O	25	25	150	25	12.5	38			
SVVCN3225P16	O	32	25	170	32	12.5	38			
SVVCN3232P16	O	32	32	170	32	16	38			

✲ Blades to be ordered separately.

75° SSBCR/L





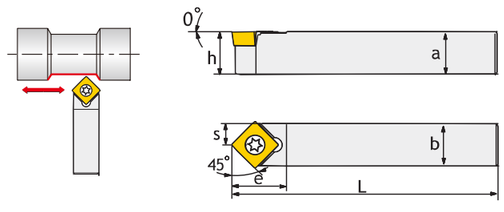
Legend of right hand knife

Model		Stock		a	b	L	h	s	e	Insert	Screw	Hex wrench
Right hand	Left hand	R	L									
SSBCR1212F09	SSBCL1212F09	O	O	12	12	80	12	11	14	SC..T09T3..	l60M4×8	T15
SSBCR1616H09	SSBCL1616H09	O	O	16	16	100	16	13	16			
SSBCR2020K12	SSBCL2020K12	O	O	20	20	125	20	17	25	SC..T1204..	l60M5×12	T20
SSBCR2525M12	SSBCL2525M12	O	O	25	25	150	25	22	25			
SSBCR3232P12	SSBCL3232P12	O	O	32	32	170	32	27	28			

✲ Blades to be ordered separately.

45° SSDCN



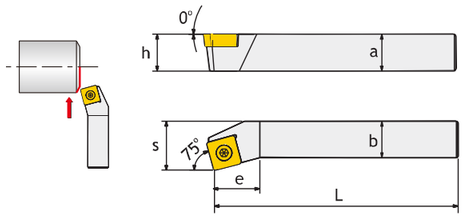


Model	Stock	a	b	L	h	s	e	Insert	Screw	Hex wrench
SSDCN1212F09	O	12	12	80	12	6	16	SC..T09T3..	L60M4×8	T15
SSDCN1616H09	O	16	16	100	16	8	16			
SSDCN2020K09	O	20	20	125	20	10	16			
SSDCN2525M09	O	25	25	150	25	12.5	25			
SSDCN2020K12	O	20	20	125	20	10	25	SC..T1204..	L60M5×12	T20
SSDCN2525M12	O	25	25	150	25	12.5	25			
SSDCN3232P12	O	32	32	170	32	16	25			

✲ Blades to be ordered separately.

75° SSKCR/L





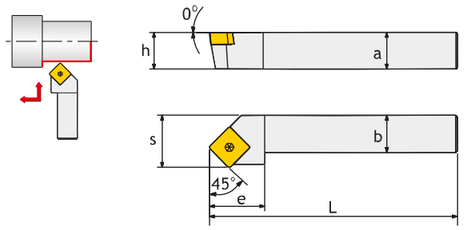
Legend of right hand knife

Model		Stock		a	b	L	h	s	e	Insert	Screw	Hex wrench
Right hand	Left hand	R	L									
SSKCR1616H09	SSKCL1616H09	O	O	16	16	100	16	20	13	SC..T09T3..	l60M4×8	T15
SSKCR2020K09	SSKCL2020K09	O	O	20	20	125	20	25	18			
SSKCR2020K12	SSKCL2020K12	O	O	20	20	125	20	25	18	SC..T1204..	l60M5×12	T20
SSKCR2525M12	SSKCL2525M12	O	O	25	25	150	25	32	22			
SSKCR3232P12	SSKCL3232P12	O	O	32	32	170	32	40	27			

✲ Blades to be ordered separately.

45° SSSCR/L





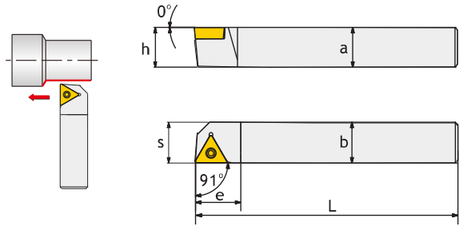
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SSSCR1616H09	SSSCL1616H09	O	O	16	16	100	16	20	16	SC..T09T3..	I60M4×8	T15
SSSCR2020K09	SSSCL2020K09	O	O	20	20	125	20	25	20			
SSSCR2020K12	SSSCL2020K12	O	O	20	20	125	20	25	23	SC..T1204..	I60M5×12	T20
SSSCR2525M12	SSSCL2525M12	O	O	25	25	150	25	32	25			
SSSCR3232P12	SSSCL3232P12	O	O	32	32	170	32	38	28			

* Blades to be ordered separately.

91° STACR/L





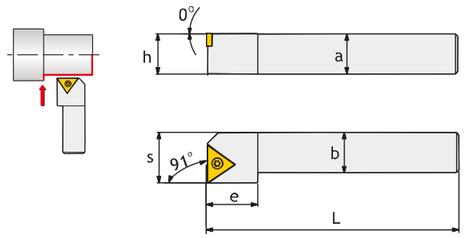
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
STACR1212F11	STACL1212F11	O	O	12	12	80	12	12. 5	14	TC..T1102..	I60M2. 5×5	T08

* Blades to be ordered separately.

91° STFCR/L





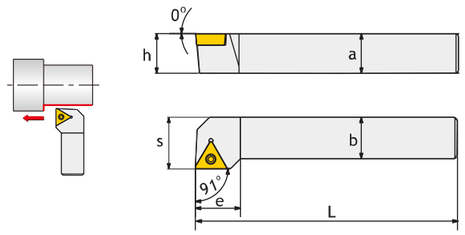
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
STFCR1212F11	STFCL1212F11	O	O	12	12	80	12	14	14			
STFCR1616H11	STFCL1616H11	O	O	16	16	100	16	18	16	TC..T1102..	I60M42. 5×5	T08
STFCR2020K11	STFCL2020K11	O	O	20	20	125	20	22	16			
STFCR1616H16	STFCL1616H16	O	O	16	16	100	16	18	19			
STFCR2020K16	STFCL2020K16	O	O	20	20	125	20	22	19	TC..T16T3..	I60M4×8	T15
STFCR2525M16	STFCL2525M16	O	O	25	25	150	25	27	24			

* Blades to be ordered separately.

91° STGCR/L





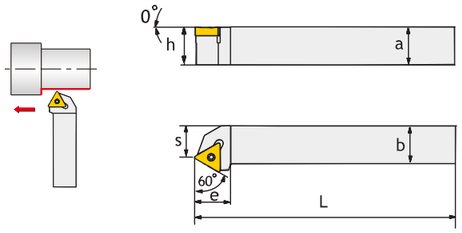
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
STGCR0808D09	STGCL0808D09	O	O	08	08	60	8	10	11	TC..T0902..	I60M2. 2×5	T06
STGCR1010E09	STGCL1010E09	O	O	10	10	70	10	11	11			
STGCR1212F11	STGCL1212F11	O	O	12	12	80	12	14	14	TC..T1102..	I60M2. 5×5	T08
STGCR1616H11	STGCL1616H11	O	O	16	16	100	16	17	16			
STGCR2020K16	STGCL2020K16	O	O	20	20	125	20	22	21	TC..T16T3..	I60M4×8	T15
STGCR2525M16	STGCL2525M16	O	O	25	25	150	25	27	21			

* Blades to be ordered separately.

60° STTCR/L





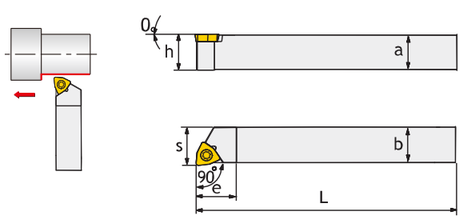
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
STTCR1616H11	STTCL1616H11	O	O	16	16	100	16	13	14	TC..T1102..	l60M42. 5×5	T08
STTCR1616H16	STTCL1616H16	O	O	16	16	100	16	13	19	TC..T16T3..	l60M4×8	T15
STTCR2020K16	STTCL2020K16	O	O	20	20	125	20	17	19			

✲ Blades to be ordered separately.

90° SWACR/L





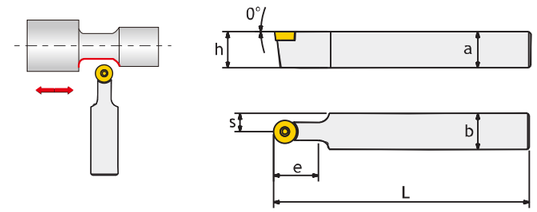
Legend of right hand knife

Model		Stock								Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s	e			
SWACR1010E04	SWACL1010E04	O	O	10	10	70	10	10.5	10	WC..X0402..	l60M2. 2×5	T08
SWACR1212F04	SWACL1212F04	O	O	12	12	80	12	12.5	14			
SWACR1616H06	SWACL1616H06	O	O	16	16	100	16	16.5	20	WC..X06T3..	l60M3×7	T09
SWACR2020K08	SWACL2020K08	O	O	20	20	125	20	20.5	24	WC..X0804..	l60M4×8	T15

✲ Blades to be ordered separately.

0° SRDCN



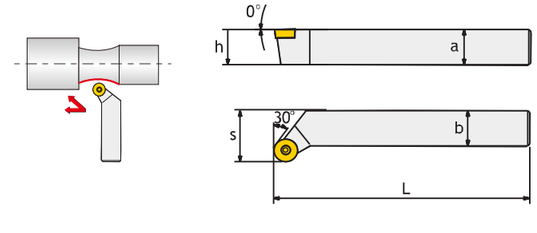


Model	Stock								Insert	Shim	Screw	Wrench	Screw	Wrench
		a	b	L	h	s	e							
SRDCN2020K06	O	20	20	125	20	10	11	RC..T0602..			T08	L60M2.5×5	
SRDCN2525M06	O	25	25	150	25	12.5	11							
SRDCN2020K08	O	20	20	125	20	10	16	RC..T0803..			T09	L60M3×7	
SRDCN2525M08	O	25	25	150	25	12.5	16							
SRDCN2020K10	O	20	20	125	20	10	25	RC..T10T3..			T15	L60M3.5×10	
SRDCN2525M10	O	25	25	150	25	12.5	25							
SRDCN2020K12	O	20	20	125	20	10	35	RC..T1204..			T15	L60M3.5×12	
SRDCN2525M12	O	25	25	150	25	12.5	35							
SRDCN3225P12	O	32	25	170	32	16	35							
SRDCN2525M16	O	25	25	150	25	12.5	35	RC..T1606..	R16BS	SM0614	T20	L60M4×16	S4	
SRDCN3232P16	O	32	32	170	32	16	40							
SRDCN3232P20	O	32	32	170	32	16	40	RC..TRCMX2006	R10BS	SM0814	T20	L60M5×16-8.1	S5	
SRDCN4040S20	O	40	40	250	40	20	40							

✲ Blades to be ordered separately.

SRGCR/L





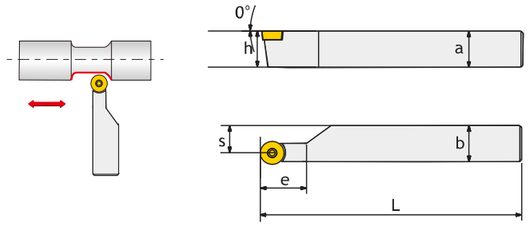
Legend of right hand knife

Model		Stock							Insert	Shim	Screw	Wrench	Screw	Wrench
Right hand	Left hand	R	L	a	b	L	h	s						
SRGCR2020K10	SRGCL2020K10	O	O	20	20	125	20	25	RC..T10T3..			T15	L60M3.5×10	
SRGCR2525M10	SRGCL2525M10	O	O	25	25	150	25	32						
SRGCR2020K12	SRGCL2020K12	O	O	20	20	125	20	27	RC..T1204..			T15	L60M3.5×12	
SRGCR2525M12	SRGCL2525M12	O	O	25	25	150	25	32						
SRGCR3232P12	SRGCL3232P12	O	O	32	32	170	32	32						
SRGCR2525M16	SRGCL2525M16	O	O	25	25	150	25	32	RC..T1606..	R16BS	SM0614	T20	L60M4×16	S4
SRGCR3232P16	SRGCL3232P16	O	O	32	32	170	32	40						
SRGCR3232P20	SRGCL3232P20	O	O	32	32	170	32	40	RCMX2006	R20BS	SM0814	T20	L60M5×16-8.1	S5
SRGCR4040S20	SRGCL4040S20	O	O	40	40	250	40	48						

✲ Blades to be ordered separately.

SRACR/L



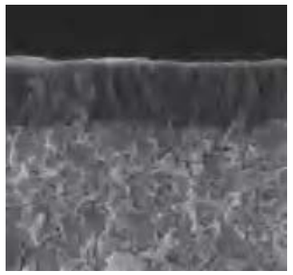


Legend of right hand knife

Model		Stock												
Right hand	Left hand	R	L	a	b	L	h	e	Insert	Shim	Screw	Wrench	Screw	Wrench
SRACR2020K06	SRACL2020K06	○	○	20	20	125	20	15	RC..T0602..			T08	L60M2.5×5	
SRACR2525M06	SRACL2525M06	○	○	25	25	150	25	23						
SRACR2020K08	SRACL2020K08	○	○	20	20	125	20	18	RC..T0803..			T09	L60M3×7	
SRACR2525M08	SRACL2525M08	○	○	25	25	150	25	33						
SRACR2020K10	SRACL2020K10	○	○	20	20	125	20	20	RC..T10T3..			T15	L60M3.5×10	
SRACR2525M10	SRACL2525M10	○	○	25	25	150	25	25						
SRACR2020K12	SRACL2020K12	○	○	20	20	125	20	28	RC..T1204..			T15	L60M3.5×12	
SRACR2525M12	SRACL2525M12	○	○	25	25	150	25	28						
SRACR3225P12	SRACL3225P12	○	○	32	25	170	32	28						
SRACR2525M16	SRACL2525M16	○	○	25	25	150	25	35	RC..T1606..	R16BS	SM0614	T15	L60M4×16	S4
SRACR3232P16	SRACL3232P16	○	○	32	32	170	32	40						
SRACR3232P20	SRACL3232P20	○	○	32	32	170	32	40	RCMX2006	R20BS	SM0814	T20	L60M5×16-8.1	S5
SRACR4040S20	SRACL4040S20	○	○	40	40	250	40	55						

* Blades to be ordered separately.

WERNER



Turning tools for smal lathes

Turning tools for smal lathes

F03-F34

F

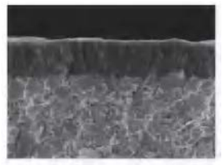
KER/L.. ..... F03
KBR/L.. ..... F03
ER/L15.. ..... F04
EN15.. ..... F04
EGR/L15.. ..... F05
EGR/L15..C F05
BR/L15.. ..... F06
BGR/L15.. ..... F06
BPR/L15.. ..... F07
BTR/L15.. ..... F07
KHR/L F09
KHR/L...F F10
Blade for front sweep
KHR/L...B F10
Blade for rear sweep processing
KHR/L...C F11
KHR/L...G F12
KTPR.. ..... F13
KTPR.. FA F14
KTPR.. FN F14
KTPR.. FB F15
KTPR.. FT F15
List of integral alloy small diameter inner hole turning tools F16

Boring F17
PSBFR F17
PSBPR F18
PSBT F19
PSBQR F20
PSBUR F21
PSBDR F22
2PSBTR F23
Threading F24
PSTIR F24
PSTIR F25
PSBWR F26
Transverse groove F27
PSMFR F27
PSMFL F28
PSMVR F29
PSBKR F30
PSBXR F31
PSBCR F32
Recommended Cutting Conditions F33
PSL F34

Turning Insert Grades

PVD coating carbide inserts

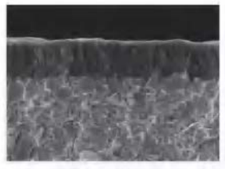
KTX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and .Use TiCN PVD coating with excellent versatility
Application: Suitable for steel cutting

KVX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and excellen tversatility
Application: Suitable for stainless steel and steel cutting

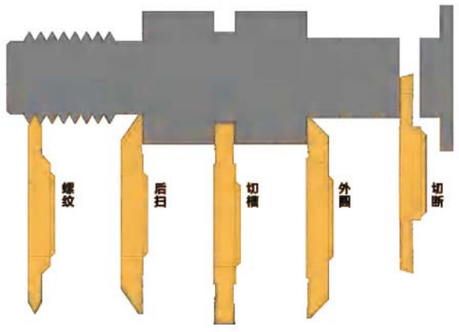
Small Part Cutting Inserts

Workpiece Material	P					M					K				N			S				H		
	Steel					Stainless steel					Cast Iron				Nonferrous			NRSA				Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
PVD Coated Carbide		KTX																						
			KVX					KVX					KVX						KVX					
Uncoated Carbide																KW20								

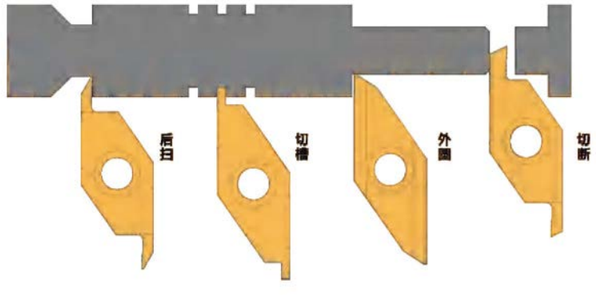
KER Series (F03-F08)



KHR Series (F09-F12)



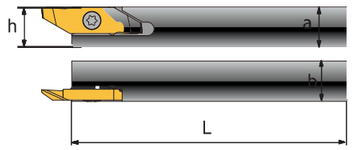
CSV Series (F13-F15)



Front Turning Holders

KER/L..





Legend of right hand knife

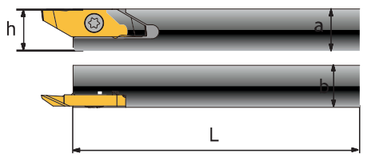
Model		Stock						Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h			
KER1010D15	KEL1010D15	●	●	10	10	60	10	ER/L15.. EN15.. EGR/L15..	L60M3×7	T8
KER1010K15	KEL1010K15	●	●	10	10	125	10			
KER1212D15	KEL1212D15	●	●	12	12	60	12			
KER1212K15	KEL1212K15	●	●	12	12	125	12			
KER1616D15	KEL1616D15	●	●	16	16	60	16			
KER1616K15	KEL1616K15	●	●	16	16	125	16			

✲ Blades to be ordered separately.

BackTurning Holders

KBR/L..





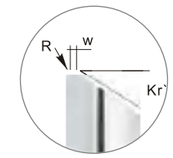
Legend of right hand knife

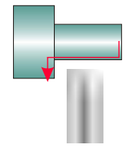
Model		Stock							Insert	Screw	Hex wrench
Right hand	Left hand	R	L	a	b	L	h	s			
KBR1010D15	KBL1010D15	●	●	10	10	60	10	10	BR/L15.. BPR/L15.. BGR/L15.. BVR/L15..	L60M3×7	T8
KBR1010K15	KBL1010K15	●	●	10	10	125	10	10			
KBR1212D15	KBL1212D15	●	●	12	12	60	12	12			
KBR1212K15	KBL1212K15	●	●	12	12	125	12	12			
KBR1616D15	KBL1616D15	●	●	16	16	60	16	16			
KBR1616K15	KBL1616K15	●	●	16	16	125	16	16			

✲ Blades to be ordered separately.

General External Turning Inserts

ER/L15..





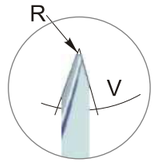
W: Wisphered edge

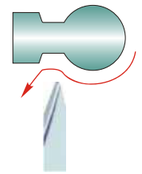
Insert shape	Model	Size and Grades						
		L	Kr	R		KTX	KVX	KW20
	ER/L151200	15	12	0		●	●	●
	ER/L151205	15	12	0.05		●	●	●
	ER/L151210	15	12	0.10		●	●	●
	ER/L151220	15	12	0.20		●	●	●
	ER/L153310W	15	33	0.10	0.3			
	ER/L153320W	15	33	0.20	0.3			
	ER/L156010	15	60	0.10				
	ER/L156020	15	60	0.20				
Steel						★	☆	
Stainless							★	
Cast Iron						☆		
Nonferrous Metal						☆		★
Heat Resistant Alloy							★	
Hardened Steel								

★ Preferred ☆ optional ● standard stock ○ order production

External Copy Turning Inserts

EN15..



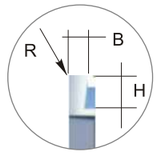


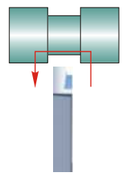
Insert shape	Model	Size and Grades					
	L	V	R	KTX	KVX	KW20
	EN156010	15	60	0.10	●	●	●
	EN156020	15	60	0.20	●	●	●
Steel					★	☆	
Stainless						★	
Cast Iron					☆		
Nonferrous Metal					☆		★
Heat Resistant Alloy						★	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

External Groving Inserts

EGR/L15..



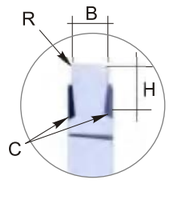


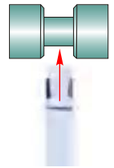
Insert shape	Model	Size and Grades							
		L	B	H			KTX	KVX	KW20
	EGR/L1508005	15	0.5	0.8			●	●	●
	EGR/L1512075	15	0.75	1.2			●	●	●
	EGR/L1516100	15	1.0	1.6			●	●	●
	EGR/L1523150	15	1.5	2.3			●	●	●
	EGR/L1516100	15	1.0	1.6			●	●	●
	EGR/L1523150	15	1.5	2.3			●	●	●
Steel							★	☆	
Stainless								★	
Cast Iron							☆		
Nonferrous Metal							☆		★
Heat Resistant Alloy								★	
Hardened Steel									

★ Preferred ☆ optional ● standard stock ○ order production

External Copy Groving Inserts

EGR/L15..C



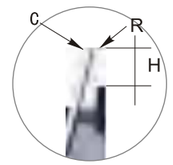


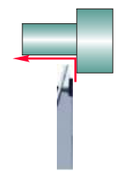
Insert shape	Model	Size and Grades								
		L	B	H	R	C	KTX	KVX	KW20	
	EGR/L152H050C	15	0.50	1.00	0.01	45	●	●	●	
	EGR/L152H076C	15	0.76	1.00	0.01	45	●	●	●	
	EGR/L153H076C	15	0.76	1.50	0.01	45	●	●	●	
	EGR/L151H050C	15	0.80	0.50	0.01	45	●	●	●	
	EGR/L152H080C	15	0.80	1.00	0.01	45	●	●	●	
	EGR/L153H080C	15	0.80	1.50	0.01	45	●	●	●	
	EGR/L152H096C	15	0.96	1.00	0.01	45	●	●	●	
	EGR/L153H096C	15	0.96	1.50	0.01	45	●	●	●	
	EGR/L152H106C	15	1.06	1.00	0.01	45	●	●	●	
	EGR/L153H106C	15	1.06	1.50	0.01	45	●	●	●	
Steel							★	☆		
Stainless								★		
Cast Iron							☆			
Nonferrous Metal							☆		★	
Heat Resistant Alloy								★		
Hardened Steel										

★ Preferred ☆ optional ● standard stock ○ order production

General External Back Turning Inserts

BR/L15..



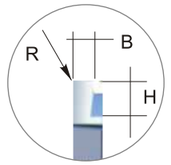


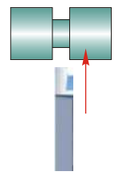
Insert shape	Model	Size and Grades							
		L	H	R	C		KTX	KVX	KW20
	BR/L154000	15	4	0			●	●	●
	BR/L154005	15	4	0.05			●	●	●
	BR/L154010	15	4	0.1			●	●	●
	BR/L154020	15	4	0.2			●	●	●
	BR/L154010C	15	4	0.1	●		●	●	●
	BR/L154020C	15	4	0.2	●		●	●	●
Steel							★	☆	
Stainless								★	
Cast Iron							☆		
Nonferrous Metal							☆		★
Heat Resistant Alloy								★	
Hardened Steel									

★ Preferred ☆ optional ● standard stock ○ order production

Back Groving Inserts

BGR/L15..



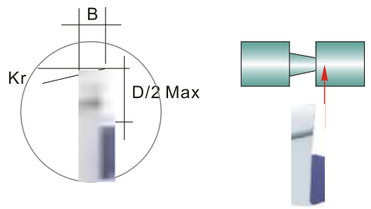


Insert shape	Model	Size and Grades						
		L	B	H	R	KTX	KVX	KW20
	BGR/L151005	15	0.5	1.0		●	●	●
	BGR/L151206	15	0.6	1.2		●	●	●
	BGR/L151608	15	0.8	1.6		●	●	●
	BGR/L152010	15	1.0	2.0		●	●	●
	BGR/L153015	15	1.5	3.0		●	●	●
Steel						★	☆	
Stainless							★	
Cast Iron						☆		
Nonferrous Metal						☆		★
Heat Resistant Alloy							★	
Hardened Steel								

★ Preferred ☆ optional ● standard stock ○ order production

Parting Inserts

BPR/L15..

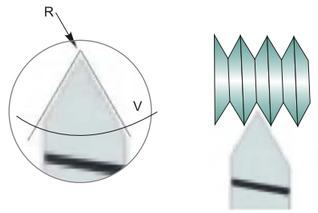


Insert shape	Model	Size and Grades L	B	Dmax	KTX	KVX	KW20
	BPR/L150505	15	0.5	5	●	●	●
	BPR/L151010	15	1.0	8	●	●	●
	BPR/L151215	15	1.5	12	●	●	●
	BPR/L151220	15	2.0	12	●	●	●
Steel					★	☆	
Stainless						★	
Cast Iron					☆		
Nonferrous Metal					☆		★
Heat Resistant Alloy						★	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

Threading Inserts

BTR/L15..



Insert shape	Model	Size and Grades L	V	P	R	KTX	KVX	KW20
	BTR/L1555P05	15	55	0.5	0.03	●	●	●
	BTR/L1560P025	15	60	0.25	0.02	●	●	●
	BTR/L1560P05	15	60	0.5	0.03	●	●	●
	BTR/L1560P08	15	60	0.8	0.05	●	●	●
Steel						★	☆	
Stainless							★	
Cast Iron						☆		
Nonferrous Metal						☆		★
Heat Resistant Alloy							★	
Hardened Steel								

★ Preferred ☆ optional ● standard stock ○ order production

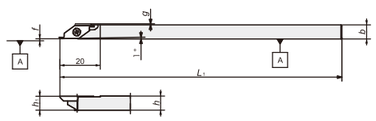
Recommended Cutting Conditions

Material	Turning VC (m/min)	Turning Feed (mm/rev)	Parting off VC (m/min)	Parting off Feed (mm/rev)
Free-cutting steel	120-200	0.01-0.25	80-150	0.01-0.15
Low alloyed steel	80-160	0.01-0.25	60-120	0.01-0.12
High alloyed steel	50-120	0.01-0.15	40-100	0.01-0.10
Stainless steel	60-120	0.01-0.15	60-100	0.01-0.08
Aluminium	180-1000	0.01-0.40	150-400	0.01-0.20
Titanium	30-70	0.01-0.15	30-50	0.01-0.06
Copper	100-500	0.01-0.35	100-300	0.01-0.20

KHR

Turning Holders





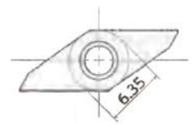
Model		Stock							Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	h	b	L	h1	g			
KHR07	KHL07	○	○	7	7	140	7	0.5	KHR/L..F KHR/L..B KHR/L..G KHR/L..C	M2.5*7	T15
KHR08	KHL08	○	○	8	8	140	8	0			
KHR095	KHL095	○	○	9.5	9.5	140	9.5	0			
KHR10	KHL10	○	○	10	10	140	10	0			
KHR12	KHL12	○	○	12	12	140	12	0			

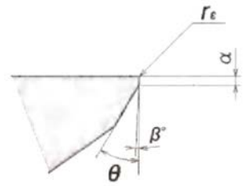
☆ Blades to be ordered separately.

● Standard inventory ○ Ile order production

CSVF

Blade for CSVF foresweep processing



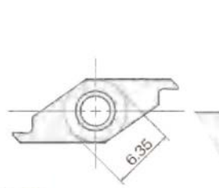


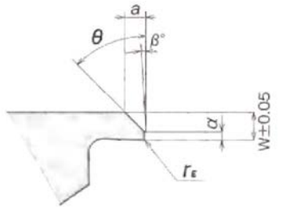
Insert shape		Model		Stock		Size and Grades α	β	θ	r	KTX	KVX	KW20
	CSVF	11FR/L	V	○		0.30	5°	30°	0.0	●	●	●
		11FR/L	V-A	○		0.30	2°	30°	0.0	●	●	●
		11FR/L	V-M	○		0.15	2°	30°	0.0	●	●	●
		11FR/L	V-C	○		0.15	5°	30°	0.0	●	●	●
	CSVF	11FR/L	VB	○		0.30	5°	30°	0.0	●	●	●
		11FR/L	VB-A	○		0.30	2°	30°	0.0	●	●	●
		11FR/L	VB-M	○		0.15	2°	30°	0.0	●	●	●
		11FR/L	VB-C	○		0.15	5°	30°	0.0	●	●	●
Steel										★	☆	
Stainless											★	
Cast Iron										☆		
Nonferrous Metal										☆		★
Heat Resistant Alloy											★	
Hardened Steel												

★ Preferred ☆ optional ● standard stock ○ order production

CSVB

Blades for CSVB aftersweep processing

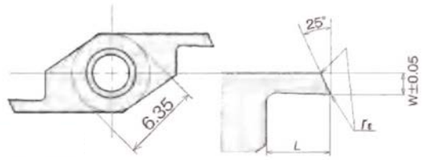




Insert shape		Model		Stock		Size and Grades w	α	β	θ	r	eff lenght	ap	KTX	KVX	KW20
	CSVB	11FR/L	V	○		1.00	0.30	5°	45°	0.0	0.7	2.0	●	●	●
		11FR/L	V-A	○		1.00	0.30	2°	45	0.0	0.7	2.0	●	●	●
		11FR/L	V-M	○		1.00	0.15	2°	45	0.0	0.7	2.0	●	●	●
		11FR/L	V-C	○		1.00	0.15	5°	45°	0.0	0.7	2.0	●	●	●
		11FR/L	V-12	○		1.20	0.30	5°	45°	0.0	0.8	2.0	●	●	●
		11FR/L	V-14	○		1.40	0.30	5°	45°	0.0	1.0	2.0	●	●	●
	CSVB	11FR/L	VB	○		1.00	0.30	5°	45°	0.0	0.7	2.0	●	●	●
		11FR/L	VB-A	○		1.00	0.30	2°	45	0.0	0.7	2.0	●	●	●
		11FR/L	VB-M	○		1.00	0.15	2°	45	0.0	0.7	2.0	●	●	●
		11FR/L	VB-C	○		1.00	0.15	5°	45°	0.0	0.7	2.0	●	●	●
		11FR/L	VB-12	○		1.20	0.30	5°	45°	0.0	0.8	2.0	●	●	●
		11FR/L	VB-14	○		1.40	0.30	5°	45°	0.0	1.0	2.0	●	●	●
Steel													★	☆	
Stainless														★	
Cast Iron													☆		
Nonferrous Metal													☆		★
Heat Resistant Alloy														★	
Hardened Steel															

★ Preferred ☆ optional ● standard stock ○ order production

CSVC
CSVC type cut off



Insert shape		Model			Stock	Chip removal tank	Size and Grades					
							Dmax	W	r	KTX	KVX	KW20
	CSVC	11FR/L	V06		○		3.0	0.6	0.0	●	●	●
		11FR/L	V07		○		4.0	0.7	0.0	●	●	●
		11FR/L	V08		○		4.0	0.8	0.0	●	●	●
		11FR/L	V09		○		4.0	0.9	0.0	●	●	●
		11FR/L	V10		○		5.0	1.0	0.0	●	●	●
		11FR/L	V13		○		5.0	1.3	0.0	●	●	●
		11FR/L	V15		○		5.0	1.5	0.0	●	●	●
 This style comes with chip discharge groove	CSVC	11FR/L	VB06		○		3.0	0.6	0.0	●	●	●
		11FR/L	VB07		○		4.0	0.7	0.0	●	●	●
		11FR/L	VB08		○		4.0	0.8	0.0	●	●	●
		11FR/L	VB09		○		4.0	0.9	0.0	●	●	●
		11FR/L	VB10		○		5.0	1.0	0.0	●	●	●
		11FR/L	VB13		○		5.0	1.3	0.0	●	●	●
		11FR/L	VB15		○		5.0	1.5	0.0	●	●	●
Steel										★	☆	
Stainless											★	
Cast Iron										☆		
Nonferrous Metal										☆		★
Heat Resistant Alloy											★	
Hardened Steel												

★ Preferred ☆ optional ● standard stock ○ order production

CSVT
CSVT type screw thread

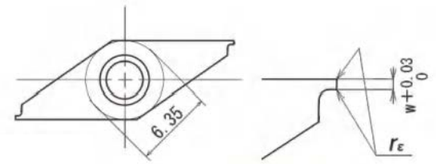
A



Insert shape		Model		Stock	Chip removal tank	Size and Grades				
						(mm)	(TPI)	KTX	KVX	KW20
A 	CSVT	11FR/L	P60-035A	○		0.2~0.5	127-51	●	●	●
		11FR/L	P60-035B	○		0.2~0.5	127-51	●	●	●
Steel								★	☆	
Stainless									★	
Cast Iron								☆		
Nonferrous Metal								☆		★
Heat Resistant Alloy									★	
Hardened Steel										

★ Preferred ☆ optional ● standard stock ○ order production

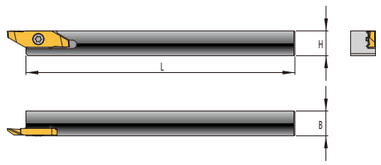
CSVG
Fuller dao CSVG type



Insert shape		Model			Stock	Chip removal tank	Size and Grades					
							W	Eff. Depth	r	KTX	KVX	KW20
	CSVG	11FR/L	V025		○		0.25	0.15	0.0	●	●	●
		11FR/L	V030		○		0.30	0.15	0.0	●	●	●
		11FR/L	V035		○		0.35	0.15	0.0	●	●	●
		11FR/L	V040		○		0.40	0.15	0.0	●	●	●
		11FR/L	V045		○		0.45	0.45	0.0	●	●	●
		11FR/L	V050		○		0.50	0.45	0.0	●	●	●
		11FR/L	V055		○		0.55	0.45	0.0	●	●	●
		11FR/L	V060		○		0.60	0.45	0.0	●	●	●
		11FR/L	V065		○		0.65	0.45	0.0	●	●	●
		11FR/L	V070		○		0.70	0.45	0.0	●	●	●
		11FR/L	V075		○		0.75	1.40	0.0	●	●	●
		11FR/L	V080		○		0.80	1.40	0.0	●	●	●
		11FR/L	V085		○		0.85	1.40	0.0	●	●	●
		11FR/L	V090		○		0.90	1.40	0.0	●	●	●
		11FR/L	V095		○		0.95	1.40	0.0	●	●	●
		11FR/L	V100		○		1.00	1.40	0.0	●	●	●
		11FR/L	V110		○		1.10	2.60	0.0	●	●	●
		11FR/L	V120		○		1.20	2.60	0.0	●	●	●
		11FR/L	V130		○		1.30	2.60	0.0	●	●	●
		11FR/L	V140		○		1.40	2.60	0.0	●	●	●
		11FR/L	V150		○		1.50	2.60	0.0	●	●	●
Steel										★	☆	
Stainless											★	
Cast Iron										☆		
Nonferrous Metal										☆		★
Heat Resistant Alloy											★	
Hardened Steel												

★ Preferred ☆ optional ● standard stock ○ order production

KTPR..
Turning Holders



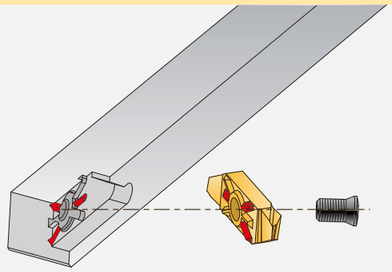
Model		Stock					
Right hand	Left hand	R	L	H	B	L	Insert
KTPR-0808-115	KTPL-0808-115	○		8	8	15	KTPL/R...
KTPR-1010-115	KTPL-1010-115	○		10	10	115	KTPL/R...
KTPR-1212-130	KTPL-1212-130	○		12	12	130	KTPL/R...
KTPR-1212-90	KTPL-1212-90	○		12	12	90	KTPL/R...
KTPR-1313-130	KTPL-1313-130	○		13	13	130	KTPL/R...
HDXR-1616-130	HDXL-1616-130	○		16	16	130	KTPL/R...
HDXR-1616-75	HDXL-1616-75	○		16	16	75	KTPL/R...
HDXR-2020-12	HDXL-2020-12	○		20	20	120	KTPL/R...

✲ Blades to be ordered separately.

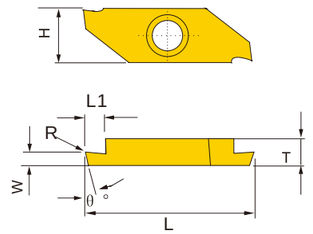
Insert		front turning
		Back turning
		grooving and turning
		parting off
		threading
		blank
Holders		General tool rod

Tool concept

- A complete swiss turning programm
- Rigid clamping sysem based on 3 serrations
- Some inserts can be reground(up to geometry)



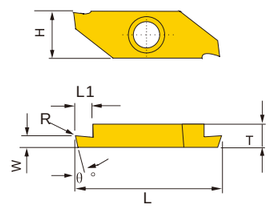
KTPR..FA
Parting off inserts



Insert shape	Model	Size and Grades									
		w	L1	R	T	H	L	θ°	KTX	KVX	KW20
	KTPR/L100FA	1.0	5.0	0.08	3.5	9.4	25	16	●	●	●
	KTPR/L150FA	1.5	7.0	0.08	3.5	9.4	25	16	●	●	●
	KTPR/L200FA	2.0	8.5	0.08	3.5	9.4	25	16	●	●	●
	KTPR/L250FA	2.5	8.5	0.08	3.5	9.4	25	16	●	●	●
Steel									★	★	
Stainless										★	
Cast Iron									☆	☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

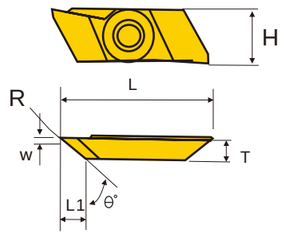
KTPR..FN
Grooving inserts



Insert shape	Model	Size and Grades									
		w	L1	R	T	H	L	θ°	KTX	KVX	KW20
	KTPR/L050FN	0.5	2.0	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L070FN	0.7	2.8	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L100FN	1.0	4.0	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L125FN	1.25	5.0	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L150FN	1.5	5.5	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L200FN	2.0	5.5	0.05	3.5	9.4	25	0	●	●	●
	KTPR/L250FN	2.5	5.5	0.05	3.5	9.4	25	0	●	●	●
Steel									★	★	
Stainless										★	
Cast Iron									☆	☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

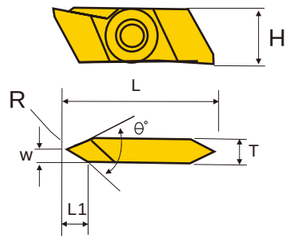
KTPR..FB
Back turning inserts



Insert shape	Model	Size and Grades									
		w	L1	R	T	H	L	θ°	KTX	KVX	KW20
	KTPR/L05FB	0.5	4.0	0.05	3.5	9.4	25	60	●	●	●
	KTPR/L10FB	1.0	4.0	0.1	3.5	9.4	25	60	●	●	●
Steel									★	★	
Stainless										★	
Cast Iron									☆	☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

KTPR..FT
Threading inserts



Insert shape	Model	Size and Grades									
		Pitch	W	R	T	H	L	θ°	KTX	KVX	KW20
	KTPR/L6000FT	0.2-0.6	2.0	0.00	3.5	9.4	25	60	●	●	●
	KTPR/L6005FT	0.5-1.25	2.0	0.05	3.5	9.4	25	60	●	●	●
	KTPR/L5500FT	64-48	2.0	0.00	3.5	9.4	25	55	●	●	●
	KTPR/L5505FT	48-24	2.0	0.05	3.5	9.4	25	55	●	●	●
Steel									★	★	
Stainless										★	
Cast Iron									☆	☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Solid carbide mini boring bar

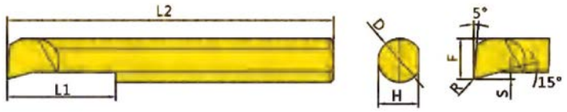
Size	Shape	Features
PSBFR Boring		1.0mm
PSBPR Boring		1.0mm
PSBTR Boring		1.0mm
PSBQR Copying		3.0mm
PSBUR Boring		3.0mm
PSBDR Chamfering		4.0mm
2PSBTR Boring		2.0mm
PSTIR Threading		1.5mm
PSTIR 30° Threading		TR8
PSBWR Square Grooving		4.0mm
PSMFR Face Grooving		8.0mm
PSMFL Face Grooving		8.0mm
PSMVR Face Grooving		15.0mm
PSBKR Round Grooving		4.0mm
PSBXR Back Boring		4.0mm
PSBCR Chamfering		3.0mm
PSL Sleeve		

Recommended Cutting Conditions

Boring

PSBFR





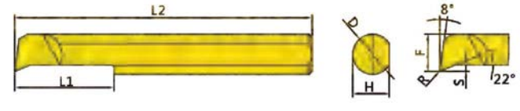
Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBFR10030R005-D4	0.05	1.0	4.0	3.0	40	0.8	0.2	3.7	●	●
	PSBFR15050R010-D4	0.1	1.5	4.0	5.0	40	1.2	0.2	3.7	●	●
	PSBFR20070R010-D4	0.1	2.0	4.0	7.0	40	1.7	0.35	3.7	●	●
	PSBFR25070R010-D4	0.1	2.5	4.0	7.0	40	2.3	0.45	3.7	●	●
	PSBFR30100R010-D4	0.1	3.0	4.0	10.0	50	2.7	0.45	3.7	●	●
	PSBFR35150R015-D4	0.15	3.5	4.0	15.0	50	3.2	0.5	3.7	●	●
	PSBFR40150R015-D4	0.15	4.0	4.0	15.0	50	3.7	0.5	3.7	●	●
	PSBFR45150R015-D4	0.15	4.5	4.0	15.0	50	4.0	0.5	3.7	●	●
	PSBFR50200R020-D6	0.20	5.0	6.0	20.0	50	4.7	0.9	5.7	●	●
	PSBFR55200R020-D6	0.20	5.5	6.0	20.0	50	5.2	0.9	5.7	●	●
	PSBFR60200R020-D6	0.20	6.0	6.0	20.0	50	5.7	0.9	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Boring

PSBPR





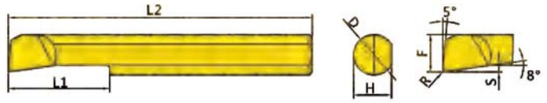
Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBPR1 4L R0.00	0.00	1.0	4.0	4.0	40	0.85	0.15	3.7	●	●
	PSBPR1 4L R0.05	0.05	1.0	4.0	4.0	40	0.85	0.15	3.7	●	●
	PSBPR2 6L R0.05	0.05	2.0	4.0	6.0	40	1.8	0.3	3.7	●	●
	PSBPR2 6L R0.1	0.1	2.0	4.0	6.0	40	1.8	0.3	3.7	●	●
	PSBPR3 6L R0.05	0.05	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBPR3 6L R0.1	0.1	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBPR3 6L R0.2	0.2	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBPR3 10L R0.05	0.05	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBPR3 10L R0.1	0.1	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBPR3 10L R0.2	0.2	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBPR4 8L R0.05	0.05	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBPR4 8L R0.1	0.1	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBPR4 8L R0.2	0.2	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBPR4 15L R0.05	0.05	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBPR4 15L R0.1	0.1	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBPR4 15L R0.2	0.2	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBPR5 20L R0.05	0.05	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBPR5 20L R0.1	0.1	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBPR5 20L R0.2	0.2	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBPR6 20L R0.05	0.05	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBPR6 20L R0.1	0.1	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBPR6 20L R0.2	0.2	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBPR7 25L R0.15	0.15	7.0	7.0	25.0	50	6.5	0.5	6.7	●	●
	PSBPR8 30L R0.15	0.15	8.0	8.0	30.0	60	7.5	0.5	7.7	●	●
	PSBPR8 30L R0.3	0.3	8.0	8.0	30.0	60	7.5	0.5	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Boring

PSBTR



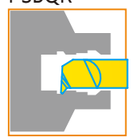


Insert shape	Model	Size and Grades R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBTR1 4L R0.00	0.00	1.0	4.0	4.0	40	0.85	0.15	3.7	●	●
	PSBTR1 4L R0.05	0.05	1.0	4.0	4.0	40	0.85	0.15	3.7	●	●
	PSBTR2 6L R0.05	0.05	2.0	4.0	6.0	40	1.8	0.3	3.7	●	●
	PSBTR2 6L R0.1	0.1	2.0	4.0	6.0	40	1.8	0.3	3.7	●	●
	PSBTR3 6L R0.05	0.05	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBTR3 6L R0.1	0.1	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBTR3 6L R0.2	0.2	3.0	4.0	6.0	50	2.7	0.3	3.7	●	●
	PSBTR3 10L R0.05	0.05	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBTR3 10L R0.1	0.1	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBTR3 10L R0.2	0.2	3.0	4.0	10.0	50	2.7	0.3	3.7	●	●
	PSBTR4 8L R0.05	0.05	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBTR4 8L R0.1	0.1	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBTR4 8L R0.2	0.2	4.0	4.0	8.0	50	3.7	0.4	3.7	●	●
	PSBTR4 15L R0.05	0.05	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBTR4 15L R0.1	0.1	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBTR4 15L R0.2	0.2	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	PSBTR5 20L R0.05	0.05	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBTR5 20L R0.1	0.1	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBTR5 20L R0.2	0.2	5.0	5.0	20.0	50	4.7	0.5	4.7	●	●
	PSBTR6 20L R0.05	0.05	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBTR6 20L R0.1	0.1	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBTR6 20L R0.2	0.2	6.0	6.0	20.0	50	5.7	0.5	5.7	●	●
	PSBTR7 25L R0.15	0.15	7.0	7.0	25.0	50	6.5	0.5	6.7	●	●
	PSBTR8 30L R0.15	0.15	8.0	8.0	30.0	60	7.5	0.5	7.7	●	●
	PSBTR8 30L R0.4	0.4	8.0	8.0	30.0	60	7.5	0.5	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Copying

PSBQR





Insert shape	Model	Size and Grades R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBQR3 6L R0.05	0.05	3.0	4.0	6.0	50	2.9	0.6	3.7	●	●
	PSBQR3 10L R0.2	0.2	3.0	4.0	10.0	50	2.9	0.6	3.7	●	●
	PSBQR4 10L R0.1	0.1	4.0	4.0	10.0	50	3.9	0.8	3.7	●	●
	PSBQR4 10L R0.2	0.2	4.0	4.0	10.0	50	3.9	0.8	3.7	●	●
	PSBQR5 15L R0.1	0.1	5.0	5.0	15.0	50	4.9	1.0	4.7	●	●
	PSBQR5 15L R0.2	0.2	5.0	5.0	15.0	50	4.9	1.0	4.7	●	●
	PSBQR6 15L R0.1	0.1	6.0	6.0	15.0	50	5.9	1.0	5.7	●	●
	PSBQR6 15L R0.2	0.2	6.0	6.0	15.0	50	5.9	1.0	5.7	●	●
	PSBQR7 20L R0.2	0.2	7.0	7.0	20.0	50	6.5	1.5	6.7	●	●
	PSBQR8 25L R0.1	0.1	8.0	8.0	25.0	60	7.5	2.0	7.7	●	●
	PSBQR8 25L R0.2	0.2	8.0	8.0	25.0	60	7.5	2.0	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Boring

PSBUR



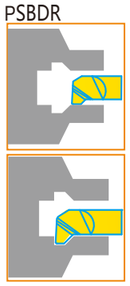


Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F/F1	S	H	KTX	KW20
	PSBUR3 10L R0.1	0.1	3.0	4.0	10.0	50	2.7/1.3	0.4	3.7	●	●
	PSBUR4 15L R0.1	0.1	4.0	4.0	15.0	50	3.7/1.7	0.5	3.7	●	●
	PSBUR5 20L R0.2	0.2	5.0	5.0	20.0	50	4.7/2.1	0.7	4.7	●	●
	PSBUR6 20L R0.2	0.2	6.0	6.0	20.0	50	5.7/2.8	1.0	5.7	●	●
	PSBUR7 25L R0.2	0.2	7.0	7.0	25.0	50	6.7/3.2	1.0	6.7	●	●
	PSBUR8 30L R0.2	0.2	8.0	8.0	30.0	60	7.7/3.8	1.0	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional

Chamfering

PSBDR





Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S/W	H	KTX	KW20
	PSBDR4 10L R0.2	0.2	4.0	4.0	10.0	50	3.8	0.8/1.5	3.7	●	●
	PSBDR5 15L R0.2	0.2	5.0	5.0	15.0	50	4.8	1.2/1.5	4.7	●	●
	PSBDR6 15L R0.2	0.2	6.0	6.0	15.0	50	5.8	1.4/1.5	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional

Boring

2PSBTR



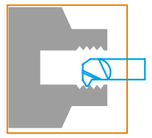


Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	2PSBTR2 5L R0.05	0.05	2.0	3.0	5.0	50	1.8	0.15	2.7	●	●
	2PSBTR3 15L R0.1	0.1	3.0	3.0	15.0	50	2.7	0.3	3.7	●	●
	2PSBTR4 15L R0.15	0.15	4.0	4.0	15.0	50	3.7	0.4	3.7	●	●
	2PSBTR5 25L R0.2	0.2	5.0	5.0	25.0	70	4.7	0.5	4.7	●	●
	2PSBTR6 25L R0.2	0.2	6.0	6.0	25.0	70	5.7	0.5	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Threading

PSTIR





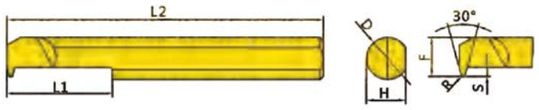
Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	F	L1/L2	S	pitch	A	KTX	KW20
	PSTIR14050-60°	0.00	1.5	4.0	1.4	5.0/50	0.4	0.25-0.45	60	●	●
	PSTIR18070-60°	0.00	1.5	4.0	1.8	7.0/50	0.6	0.25-0.7	60	●	●
	PSTIR24070-60°	0.00	2.5	4.0	2.4	7.0/50	0.5	0.35-0.6	60	●	●
	PSTIR30120-60°	0.03	3.1	4.0	3.0	12.0/50	0.85	0.5-0.8	60	●	●
	PSTIR40150-60°	0.05	4.0	4.0	3.85	15.0/50	1.1	0.5-1.0	60	●	●
	PSTIR50150-60°	0.05	5.0	5.0	4.8	15.0/50	1.5	0.75-1.5	60	●	●
	PSTIR60200-60°	0.08	6.0	6.0	5.6	20.0/50	1.8	0.75-1.75	60	●	●
	PSTIR80220-60°	0.08	8.0	8.0	7.8	22.0/60	2.2	1.0-2.0	60	●	●
	PSTIR40150-55°	0.05	4.0	4.0	3.85	15.0/50	1.1	1/4-20BSW	55	●	●
	PSTIR50150-55°	0.05	5.0	5.0	4.8	15.0/50	1.5	5/16-18BSW	55	●	●
	PSTIR60200-55°	0.08	6.0	6.0	5.6	20.0/50	1.8	3/8-16BSW	55	●	●
	PSTIR80220-55°	0.08	8.0	8.0	7.8	22.0/60	2.2	1/2-12BSW	55	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Threading

PSTIR 30°



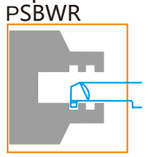


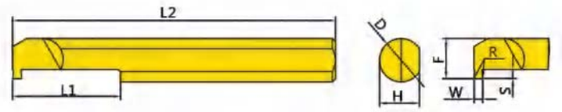
Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	F	L1	S	pitch	L2	KTX	KW20
	PSTIR8 25L A30°	0.1	Tr8	8.0	6.2	25	1.3	1.5	60	●	●
	PSTIR8 25L A30°	0.2	Tr9	8.0	6.5	25	1.8	2.0	60	●	●
	PSTIR8 30L A30°	0.2	Tr11	8.0	7.5	30	2.5	3.0	60	●	●
	PSTIR10 35L A30°	0.2	Tr14	10.0	9.5	35	2.8	4.0	70	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Square Grooving

PSBWR

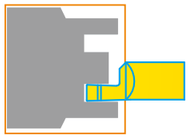


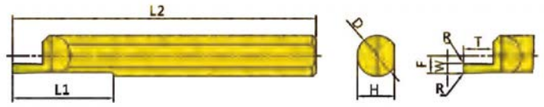


Insert shape	Model	Size and Grades									
		W	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBWR05100R005-D4	0.5	4.0	4.0	10	50	3.8	1.0	3.7	●	●
	PSBWR08100R005-D4	0.8	4.0	4.0	10	50	3.8	1.0	3.7	●	●
	PSBWR10100R005-D4	1.0	4.0	4.0	10	50	3.8	1.5	3.7	●	●
	PSBWR15100R005-D4	1.5	4.0	4.0	10	50	3.8	1.5	3.7	●	●
	PSBWR10100R010-D5	1.0	5.0	5.0	10	50	4.8	1.5	4.7	●	●
	PSBWR12100R010-D5	1.2	5.0	5.0	10	50	4.8	1.5	4.7	●	●
	PSBWR15100R010-D5	1.5	5.0	5.0	10	50	4.8	2.0	4.7	●	●
	PSBWR20100R010-D5	2.0	5.0	5.0	10	50	4.8	2.0	4.7	●	●
	PSBWR10120R015-D6	1.0	6.0	6.0	12	50	5.8	2.0	5.7	●	●
	PSBWR15120R015-D6	1.5	6.0	6.0	12	50	5.8	2.0	5.7	●	●
	PSBWR20120R015-D6	2.0	6.0	6.0	12	50	5.8	2.0	5.7	●	●
	PSBWR25160R015-D6	2.5	6.0	6.0	16	50	5.8	2.5	5.7	●	●
	PSBWR15160R015-D8	1.5	8.0	8.0	16	50	7.8	2.0	7.7	●	●
	PSBWR20160R015-D8	2.0	8.0	8.0	16	50	7.8	3.0	7.7	●	●
	PSBWR25160R015-D8	2.5	8.0	8.0	16	50	7.8	3.0	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Face Grooving
PSMFR



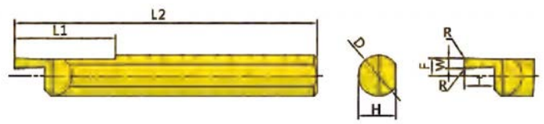


Insert shape	Model	Size and Grades									
		W	Min Dia mm	D	L1	L2	F	R	H	KTX	KW20
	PSMFR6 15L W0.75	0.75	8.0	6.0	15	50	2.95	0.1	5.7	●	●
	PSMFR6 15L W1.0	1.0	8.0	6.0	15	50	2.95	0.1	5.7	●	●
	PSMFR8 20L W2.0	2.0	10.0	8.0	20	50	3.95	0.2	7.7	●	●
	PSMFR8 20L W2.5	2.5	10.0	8.0	20	50	3.95	0.2	7.7	●	●
	PSMFR8 20L W3.0	3.0	10.0	8.0	20	50	3.95	0.2	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Face Grooving
PSMFL

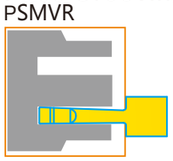


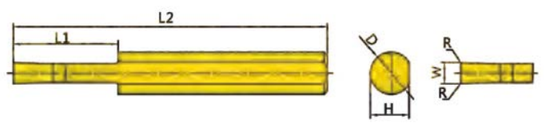


Insert shape	Model	Size and Grades									
		W	Min Dia mm	D	L1	L2	F	R	H	KTX	KW20
	PSMFL6 15L W0.75	0.75	8.0	6.0	15	50	2.95	0.1	5.7	●	●
	PSMFL6 15L W1.0	1.0	8.0	6.0	15	50	2.95	0.1	5.7	●	●
	PSMFL8 20L W2.0	2.0	10.0	8.0	20	50	3.95	0.2	7.7	●	●
	PSMFL8 20L W2.5	2.5	10.0	8.0	20	50	3.95	0.2	7.7	●	●
	PSMFL8 20L W3.0	3.0	10.0	8.0	20	50	3.95	0.2	7.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Face Grooving
PSMVR



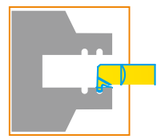


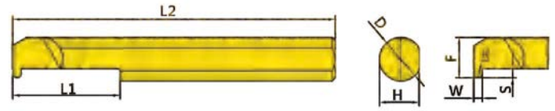
Insert shape	Model	Size and Grades								
		W	Min Dia mm	D	L1	L2	R	H	KTX	KW20
	PSMVR10 15L W2.0	2.0	15.0	10	15	50	0.2	9	●	●
	PSMVR10 15L W3.0	3.0	15.0	10	15	50	0.2	9	●	●
	PSMVR10 15L W4.0	4.0	15.0	10	15	50	0.2	9	●	●
Steel									★	
Stainless									★	
Cast Iron									☆	
Nonferrous Metal										★
Heat Resistant Alloy									☆	

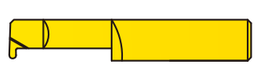
Hardened Steel

★ Preferred ☆ optional ● standard stock ○ order production

Round Grooving
PSBKR





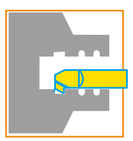
Insert shape	Model	Size and Grades									
		W	Min Dia mm	D	L1	L2	F	R	H	KTX	KW20
	PSBKR4 R0.5 10L	1.0	4.0	4.0	10	50	3.8	0.5	3.7	●	●
	PSBKR4 R0.75 10L	1.5	4.0	4.0	10	50	3.8	0.75	3.7	●	●
	PSBKR6 R0.5 15L	1.0	6.0	6.0	15	50	5.8	0.5	5.7	●	●
	PSBKR6 R0.75 15L	1.5	6.0	6.0	15	50	5.8	0.75	5.7	●	●
	PSBKR6 R1.0 15L	2.0	6.0	6.0	15	50	5.8	1.0	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	

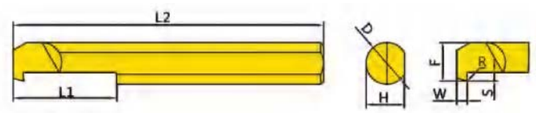
Hardened Steel

★ Preferred ☆ optional ● standard stock ○ order production

Back Boring

PSBXR





Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBXR4 R0.1 10L	0.1	4.0	4.0	10	50	3.8	1.0	3.7	●	●
	PSBXR5 R0.15 15L	0.15	5.0	5.0	15	50	4.8	1.5	4.7	●	●
	PSBXR6 R0.2 20L	0.2	6.0	6.0	20	50	5.8	2.0	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

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Chamfering

PSBCR





Insert shape	Model	Size and Grades									
		R	Min Dia mm	D	L1	L2	F	S	H	KTX	KW20
	PSBCR3 10L R0.2	0.2	3.0	4.0	10	50	2.8	0.5	3.7	●	●
	PSBCR4 15L R0.2	0.2	4.0	4.0	15	50	3.7	0.8	3.7	●	●
	PSBCR5 15L R0.2	0.2	5.0	5.0	15	50	4.7	1.2	4.7	●	●
	PSBCR6 15L R0.2	0.2	6.0	6.0	15	50	5.7	1.5	5.7	●	●
Steel										★	
Stainless										★	
Cast Iron										☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Summary of Insert Grades

Solid Carbide Mini Boring Bar

Workpiece Material	P					M					K				N			S				H		
	Steel					Stainless steel					Cast Iron				Nonferrous			NRSA				Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
PVD Coated Carbide		KTX																						
			KVX					KVX					KVX											
Uncoated Carbide																KW20								

Recommended Cutting Conditions

Material	VC (m/min)	boring bar Φ		
		Φ1.0-Φ2.0 (mm/rev)	Φ2.5-Φ4.0 (mm/rev)	Φ4.5-Φ5.5 (mm/rev)
Free-cutting steel	60-100	0.02-0.03	0.02-0.08	0.03-0.10
Low alloyed steel	50-80	0.01-0.03	0.02-0.05	0.03-0.06
High alloyed steel	40-60	0.01-0.02	0.02-0.04	0.02-0.06
Stainless steel	40-90	0.01-0.03	0.02-0.05	0.03-0.08
Aluminium	60-150	0.01-0.03	0.02-0.06	0.03-0.1
Titanium	30-70	0.01-0.03	0.02-0.05	0.03-0.1
Copper	60-150	0.01-0.03	0.02-0.05	0.03-0.08

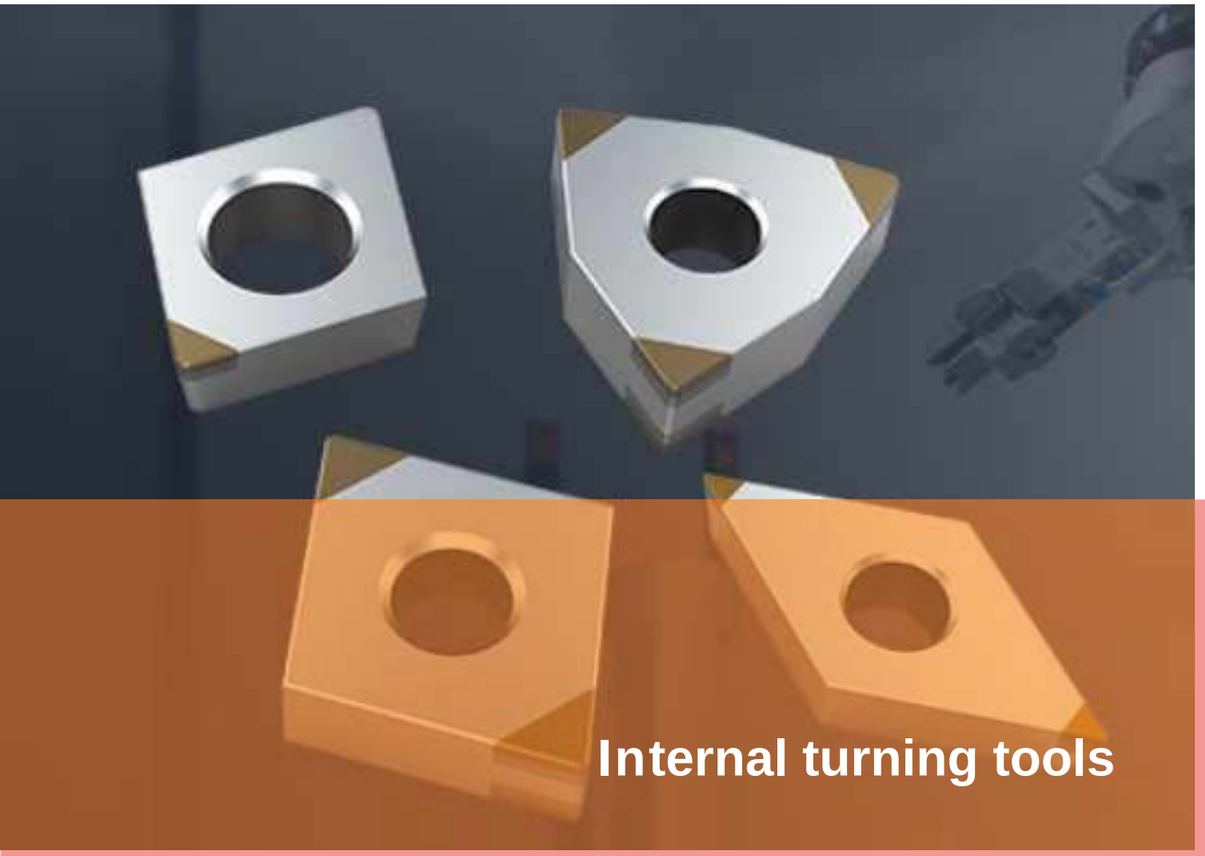
Sleeve

PSL



shape	Model	Stock	Size					
			D	d	L1	L2	H	L
	SL1603	●	16	3.0	6.0	6.0	15	100
	SL1604	●	16	4.0	6.0	6.0	15	100
	SL1605	●	16	5.0	6.0	6.0	15	100
	SL1606	●	16	6.0	6.0	6.0	15	100
	SL1607	●	16	7.0	6.0	6.0	15	100
	SL1608	●	16	8.0	6.0	6.0	15	100
	SL2003	●	20	3.0	6.0	6.0	19	100
	SL2004	●	20	4.0	6.0	6.0	19	100
	SL2005	●	20	5.0	6.0	6.0	19	100
	SL2006	●	20	6.0	6.0	6.0	19	100
	SL2007	●	20	7.0	6.0	6.0	19	100
	SL2008	●	20	8.0	6.0	6.0	19	100

● standard stock ○ order production



Internal turning tools

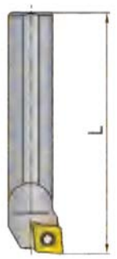
WERNER

Internal turning tools

G

G1 - G26

75° MCKNR/L	95° MCLNR/L	G01
107. 5° MDQNR/L	93° MDUNR/L	G02
93° MDZNR/L	75° MSKNR/L	G03
117.5° MVQNR/L	93° MVUNR/L	G04
72° 30' MVWNR/L	96° MVXNR/L	G05
95° MWLNR/L	91° MTFNR/L	G06
93° MTUNR/L	60° MTWNR/L	G07
95° PCLNR/L	93° PDUNR/L	G08
75° PSKNR/L	90° PTFNR/L	G09
95° PWLNR/L		G10
93° SWUBR		G11
95° SCLCR		G12
95° SCLC		G13
75° SCKCR/L	93° SCZCR/L	G14
93° SDUCR/L		G15
107.5° SDQCR/L		G16
122° SDJCR/L		G17
62.5° SDWCR/L		G18
3° SDZCR/L		G19
75° SSKCR/L		G20
93° STUC		G21
93° STUB/P		G22
60° STWBR/L	60° STWCR/L	G23
52° SVJCR/L	52° SVJBR/L	G24
117.5° SVQCR/L	117.5° SVQBR/L	G25
93° SVUCR/L	93° SVUBR/L	G26



1 Tool structure

S
C
E

3 Tool length

A=32	P=170
B=40	Q=180
C=50	R=200
D=60	S=250
E=70	T=300
F=80	U=350
G=90	V=400
H=100	W=450
J=110	Y=500
K=125	X= special
L=140	
M=150	
N=160	

5 Blade shape

T	
S	
C	80°
D	55°
V	35°
W	80°

7 blade normal rear Angle

B	5°
C	7°
P	11°
N	0°

9 Blade dimensions

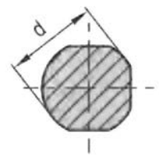
T
S
C
D
V
W

use	Inner end face root cleaning processing		Root with			Inner diameter spherical root cleaning	
The blade shape	80 ° C of diamond		55 ° diamond D	35 ° diamond V		55 ° diamond D	35 ° diamond V
Screw lock type	 SCLP	 SCLC	 SDUC SDQC	 SVUC SCUB	 SVQC SVQB	 SDZC	 SVZC SVZB
Compound pressing	 MCLN	——	 MDUN MDQN	——	——	——	——
Lever lock	 PCLN	——	 PDUN	——	——	 PDZN	——

use	Inner diameter spherical root cleaning	Blind hole processing		Hole processing			
The blade shape	35 ° diamond V	Hexagonal W/other	Square S	Hexagonal W/other		Delta T/others	
Screw lock type	 SVJB SVJC	 SWUB SWUP	 SSKP SSKC	 SWUB SWUP	——	 STUP/STUB	——
Compound pressing	——	——	 MSKN	——	 MWLN	 MTFN	——
Lever lock	——	——	 PSKN PSYN	 PWLN	——	 PTFN	——

S 1 | 32 2 | U 3 - S 4 | T 5 | 6 | C 7 | R 8 F | 16 9 - | 10

2 Diameter of cutter rod



4 Pressing mode

C	Clamp type
M	Top pressing and hole pressing type
P	Pore pressure type
S	Screw on type

6 Tool form

K 75°	F 90°	U 93°
L 95°	Q 107°30′	J 93°
N 62°30′	S 45°	X other

8. Cutting direction of the tool

R
L

10. Manufacturer code

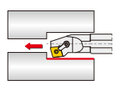
D= Increase bias F +1.0mm

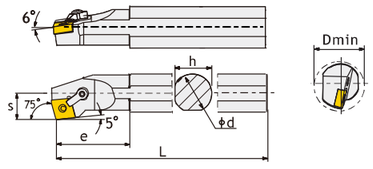
E= Increase bias F +2.0mm

X = boring

75° MCKNR/L







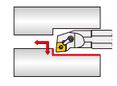
Legend of right hand knife

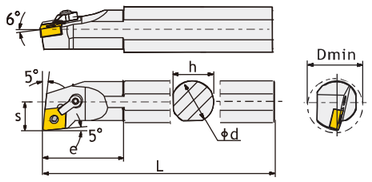
Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MCKNR-12	S20Q-MCKNL-12	○	○	26	20	18	180	14	35	CN..1204..	×	MSP613	MCL1810	WS061020	S2.5
S25R-MCKNR-12	S25R-MCKNL-12	○	○	32	25	23	200	16.5	35						S3
S32S-MCKNR-12	S32S-MCKNL-12	○	○	40	32	30	250	22	50		MC1204	MSP617	MCL1814	WS061025	S3
S40T-MCKNR-12	S40T-MCKNL-12	○	○	50	40	38	300	26	55						

* Blades to be ordered separately.

95° MCLNR/L







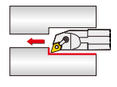
Legend of right hand knife

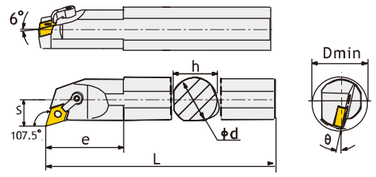
Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MCLNR-12	S20Q-MCLNL-12	○	○	26	20	18	180	13	40	CN..1204..	×	MSP613	MCL1810	WS061020	S2.5
S25R-MCLNR-12	S25R-MCLNL-12	○	○	32	25	23	200	16	40						S3
S32S-MCLNR-12	S32S-MCLNL-12	○	○	40	32	30	250	20	50		MC1204	MSP617	MCL1814	WS161025	S3
S40T-MCLNR-12	S40T-MCLNL-12	○	○	50	40	37	300	26	55						

* Blades to be ordered separately.

107. 5° MDQNR/L







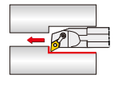
Legend of right hand knife

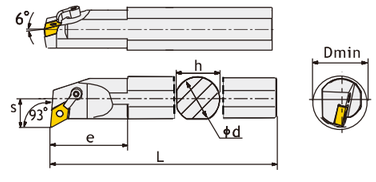
Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MDQNR-1504	S20Q-MDQNL-1504	○	○	26	20	18	180	13	40	DN..1504..	×	MSP613	MCL1810	WS061020	S2.5
S25R-MDQNR-1504	S25R-MDQNL-1504	○	○	32	25	23	200	17	45						S3
S32S-MDQNR-1504	S32S-MDQNL-1504	○	○	40	32	30	250	20	55		MD1504	MSP617	MCL2114	WS061025	S3
S40T-MDQNR-1504	S40T-MDQNL-1504	○	○	50	40	38	300	24	55						
S32S-MDQNR-1506	S32S-MDQNL-1506	○	○	40	32	30	250	20	55	DN..1506..		MSP619			
S40T-MDQNR-1506	S40T-MDQNL-1506	○	○	50	40	38	300	24	55						

* Blades to be ordered separately.

93° MDUNR/L







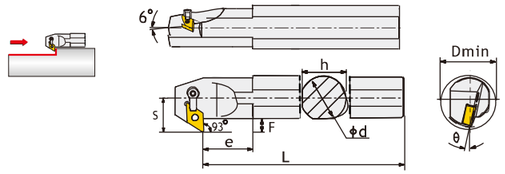
Legend of right hand knife

Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MDUNR-1504	S20Q-MDUNL-1504	○	○	28	20	18	180	17	40	DN..1504..	×	MSP613	MCL1810	WS061020	S2.5
S25R-MDUNR-1504	S25R-MDUNL-1504	○	○	32	25	24	200	19	40				MCL1814		S3
S32S-MDUNR-1504	S32S-MDUNL-1504	○	○	40	32	30	250	22	45		MD1504	MSP617	MCL2114	WS161025	S3
S40T-MDUNR-1504	S40T-MDUNL-1504	○	○	50	40	37	300	26	55						
S32S-MDUNR-1506	S32S-MDUNL-1506	○	○	40	32	30	250	22	45	DN..1506..		MSP619			
S40T-MDUNR-1506	S40T-MDUNL-1506	○	○	50	40	37	300	26	55						

* Blades to be ordered separately.

93° MDZNR/L





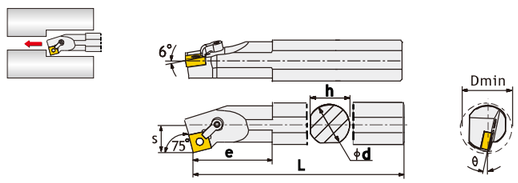
Legend of right hand knife

Model		Stock									Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	F						
S25R-MDZNR-1504	S25R-MDZNL-1504	○	○	36	25	23	200	22	35	11	DN..1504..	×	MSP613	MCL1814	WS061025	S2.5/S3
S32S-MDZNR-1504	S32S-MDZNL-1504	○	○	43	32	30	250	26	40	12		MD1504	MSP617			S3
S40T-MDZNR-1504	S40T-MDZNL-1504	○	○	50	40	37	300	29	50	11.5						
S32S-MDZNR-1506	S32S-MDZNL-1506	○	○	43	32	30	250	26	40	12	DN..1506..		MSP619			
S40T-MDZNR-1506	S40T-MDZNL-1506	○	○	50	40	37	300	29	50	11.5						

* Blades to be ordered separately.

75° MSKNR/L





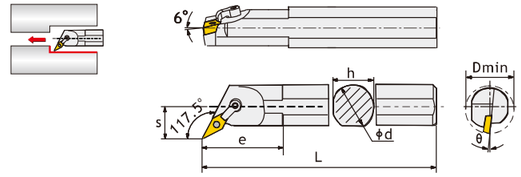
Legend of right hand knife

Model		Stock									Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e						
S20Q-MSKNR-12	S20Q-MSKNL-12	○	○	26	20	18	180	13	15°	31	DN..1204..	×	MSP613	MCL1810	WS061020	S2.5/S3
S25R-MSKNR-12	S25R-MSKNL-12	○	○	32	25	23	200	17	12°	35		MD1204	MSP617	MCL1814	WS161025	
S32S-MSKNR-12	S32S-MSKNL-12	○	○	40	32	30	250	22	17°	40						
S40T-MSKNR-12	S40T-MSKNL-12	○	○	50	40	37	300	27	15°	50						

* Blades to be ordered separately.

117.5° MVQNR/L





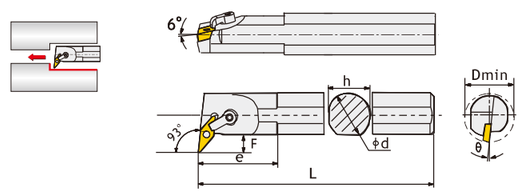
Legend of right hand knife

Model		Stock										Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e							
S25R-MVQNR-16	S25R-MVQNL-16	○	○	32	25	23	200	17	12°	40		DN..1604..	×	MSP510	MCL1814	WS161025	S2.5/S3
S32S-MVQNR-6	S32S-MVQNL-16	○	○	42	32	30	250	22	17°	40			MD1603	MSP513	MCL2414		
S40T-MVQNR-16	S40T-MVQNL-16	○	○	50	40	37	300	27	15°	50							

* Blades to be ordered separately.

93° MVUNR/L





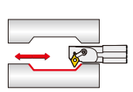
Legend of right hand knife

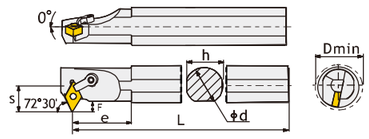
Model		Stock										Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	F							
S25R-MVUNR-16	S25R-MVUNL-16	○	○	36	25	23	200	20	40	8		VN..1604..	×	MSP510	MCL1814	WS061025	S2/S3
S32S-MVUNR-16	S32S-MVUNL-16	○	○	42	32	30	250	23	40	8			MV1603	MSP513			
S40T-MVUNR-16	S40T-MVUNL-16	○	○	50	40	37	300	27	55	10							

* Blades to be ordered separately.

72° 30' MVWNR/L







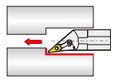
Legend of right hand knife

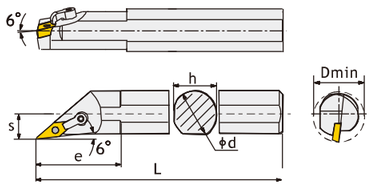
Model		Stock														
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	F	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S25R-MVWNR-16	S25R-MVWNL-16	○	○	36	25	23	200	22	35	10	VN..1604..	×	MSP510	MCL1814	WS061025	S2/S3
S32S-MVWNR-16	S32S-MVWNL-16	○	○	48	32	30	250	25	40	10		MV1603	MSP513			
S40T-MVWNR-16	S40T-MVWNL-16	○	○	56	40	37	300	29	45	11						

* Blades to be ordered separately.

96° MVXNR/L







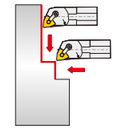
Legend of right hand knife

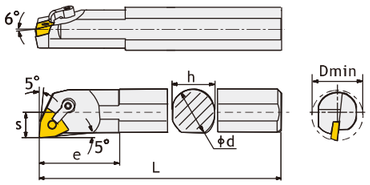
Model		Stock														
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
S25R-MVXNR-16	S25R-MVXNL-16	○	○	32	25	23	200	17	55	VN..1604..	×	MSP510	MCL2414	WS061025	S2/S3	
S32S-MVXNR-16	S32S-MVXNL-16	○	○	42	32	30	250	21	60		MV1603	MSP513				
S40T-MVXNR-16	S40T-MVXNL-16	○	○	50	40	38	300	25	68							

* Blades to be ordered separately.

95° MWLNR/L







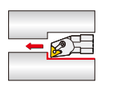
Legend of right hand knife

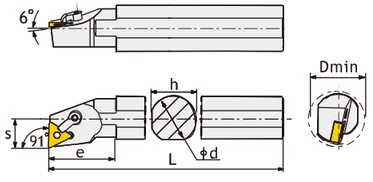
Model		Stock														
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
S20Q-MWLNR-08	S20Q-MWLNL-08	○	○	25	20	18	180	14.5	36	WN..0804..	×	MSP613	MCL1810	WS061020	S2.5	
S25R-MWLNR-08	S25R-MWLNL-08	○	○	32	25	23	200	17	40						S3	
S32S-MWLNR-08	S32S-MWLNL-08	○	○	41	32	30	250	22	50		MW0804	MSP617	MCL1814	WS061025	S3	
S40T-MWLNR-08	S40T-MWLNL-08	○	○	50	40	37	300	27	55							

* Blades to be ordered separately.

91° MTFNR/L







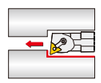
Legend of right hand knife

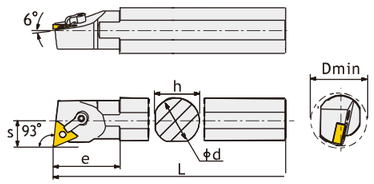
Model		Stock														
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench	
S20Q-MTFNR-16	S20Q-MTFNL-16	○	○	25	20	18	180	13	35	TN..1604..	×	MSP510	MCL1810	WS061020	S2	
S25R-MTFNR-16	S25R-MTFNL-16	○	○	32	25	23	200	16	40						S3	
S32S-MTFNR-16	S32S-MTFNL-16	○	○	40	32	30	250	20	45		MT1603	MSP513	MCL1814	WS061025		
S40T-MTFNR-16	S40T-MTFNL-16	○	○	50	40	37	300	25	50							

* Blades to be ordered separately.

93° MTUNR/L







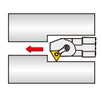
Legend of right hand knife

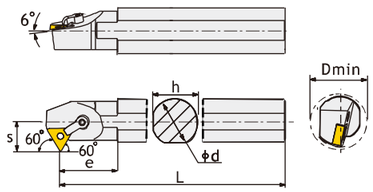
Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MTUNR-16	S20Q-MTUNL-16	○	○	25	20	18	180	13	31	TN..1604..	×	MSP650	MCL1810	WS061020	S2 S3
S25R-MTUNR-16	S25R-MTUNL-16	○	○	32	25	23	200	17	35						
S32S-MTUNR-16	S32S-MTUNL-16	○	○	40	32	30	250	22	40		MT1603	MSP613	MCL1814	WS061025	
S40T-MTUNR-16	S40T-MTUNL-16	○	○	50	40	37	300	23	50						

* Blades to be ordered separately.

60° MTWNR/L







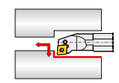
Legend of right hand knife

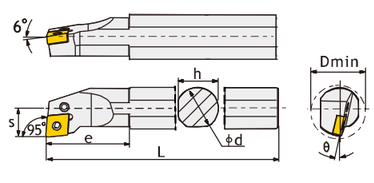
Model		Stock													
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e	Insert	Shim	Lock pin	Clamp	Clamp Screw	Hex wrench
S20Q-MTWNR-16	S20Q-MTWNL-16	○	○	27	20	18	180	15	31	TN..1604..	×	MSP510	MCL1810	WS061020	S2 S3
S25R-MTWNR-16	S25R-MTWNL-16	○	○	32	25	23	200	17	35						
S325-MTWNR-16	S325-MTWNL-16	○	○	40	32	30	250	22	42		MT1603	MSP513	MCL1814	WS061025	
S40T-MTWNR-16	S40T-MTWNL-16	○	○	50	40	38	300	27	50						

* Blades to be ordered separately.

95° PCLNR/L







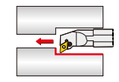
Legend of right hand knife

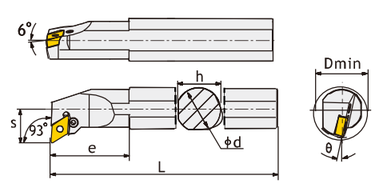
Model		Stock															
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
S16Q-PCLNR-09	S16Q-PCLNL-09	○	○	20	16	15	180	10	-12°	30	CN..0903..		VHX0609	LV3C		S2
S20Q-PCLNR-09	S20Q-PCLNL-09	○	○	25	20	18	180	12	-11°	30						
S25R-PCLNR-09	S25R-PCLNL-09	○	○	32	25	23	200	15	-10°	35						
S20Q-PCLNR-12	S20Q-PCLNL-12	○	○	25	20	18	180	13	-11°	35	CN..1204..		VHX0613	LV4A		S2.5
S25R-PCLNR-12	S25R-PCLNL-12	○	○	32	25	23	200	15	12°	40						
S32S-PCLNR-12	S32S-PCLNL-12	○	○	44	32	30	250	22	-10°	50						
S40T-PCLNR-12	S40T-PCLNL-12	○	○	54	40	37	300	24	-10°	55		PC12318	VHX0821	LV4	SP4	S3
S50U-PCLNR-12	S50U-PCLNL-12	○	○	63	50	47	350	27	-10°	58						
S50U-PCLNR-19	S50U-PCLNL-19	○	○	63	50	47	350	32	-10°	70	CN..1906..	PC19476	VHX1027	LV6	SP6	S4

* Blades to be ordered separately.

93° PDUNR/L







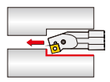
Legend of right hand knife

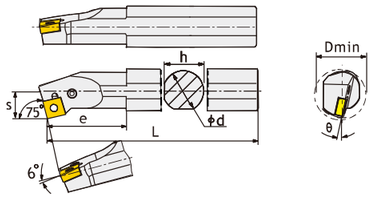
Model		Stock														
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e	Insert	Shim	Screw	Lever	Shim pin	Hex wrench
S20Q-PDUNR-11	S20Q-PDUNL-11	○	○	25	20	18	180	13	-16°	30	CN..1104..		VHX0512	LV3D		S2
S25R-PDUNR-11	S25R-PDUNL-11	○	○	32	25	23	200	17	-13°	35						
S32S-PDUNR-11	S32S-PDUNL-11	○	○	40	32	30	250	22	-16°	40		PD11270	VHX0617	LV3	SP3	S2.5
S32S-PDUNR-15	S32S-PDUNL-15	○	○	40	32	30	250	22	-16°	50	DN..1506..	PD15318	VHX0821	LV4B	SP4	S3
S40T-PDUNR-15	S40T-PDUNL-15	○	○	50	40	37	300	27	-11°	50						
S32S-PDUNR15-3	S32S-PDUNL15-3	○	○	40	32	30	250	22	-16°	50	DN..1504..	PD12318	VHX0821	LV4	SP4	S3
S40T-PDUNR15-3	S40T-PDUNL15-3	○	○	50	40	37	300	27	-11°	50						

* Blades to be ordered separately.

75° PSKNR/L







Legend of right hand knife

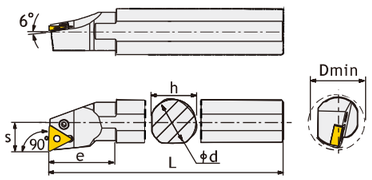
Model		Stock									Insert	Shim	Screw	Lever	Shim pin	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e						
S25R-PSKNR-12	S25R-PSKNL-12	O	O	32	25	23	200	17	-12°	42	SN..1204..		VHX0831	LV4B		S2.5
S32S-PSKNR-12	S32S-PSKNL-12	O	O	44	32	30	250	22	-10°	45		PS12318	VHX0821	LV4	SP4	S3
S40T-PSKNR-12	S40T-PSKNL-12	O	O	54	40	37	300	27	-10°	50						

* Blades to be ordered separately.

90° PTFNR/L







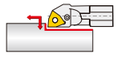
Legend of right hand knife

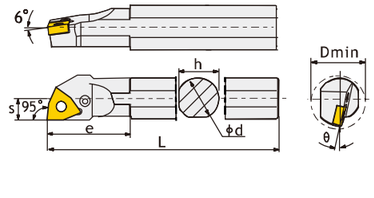
Model		Stock								Insert	Shim	Screw	Lever	Shim pin	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	e						
S16Q-PTFNR-11	S16Q-PTFNL-11	O	O	20	16	15	180	11	28	TN..1103..		VHX0509	LV2		S2
S20Q-PTFNR-11	S20Q-PTFNL-11	O	O	25	20	18	180	13	31						
S25R-PTFNR-11	S25R-PTFNL-11	O	O	32	25	23	200	17	35						
S25R-PTFNR-16	S25R-PTFNL-16	O	O	32	25	23	200	17	42	TN..1604..		VHX0512	LV3B		S2
S32S-PTFNR-16	S32S-PTFNL-16	O	O	44	32	30	250	22	50		PT16476	VHX0613	LV3	SP3	S2.5
S40T-PTFNR-16	S40T-PTFNL-16	O	O	54	40	37	300	27	55						

* Blades to be ordered separately.

95° PWLNR/L







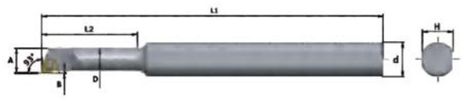
Legend of right hand knife

Model		Stock								Insert	Shim	Screw	Lever	Shim pin	Hex wrench
Right hand	Left hand	R	L	Dmin	Φd	h	L	s	θ°	e						
S16Q-PWLNR-06	S16Q-PWLNL-06	O	O	20	16	15	180	11	-13°	25	WN..1604..		VHX0512	LV3B		S2
S20Q-PWLNR-06	S20Q-PWLNL-06	O	O	25	20	18	180	13	-13°	32						
S36R-PWLNR-06	S36R-PWLNL-06	O	O	32	25	23	200	17	-13°	35						
S20Q-PWLNR-08	S20Q-PWLNL-08	O	O	25	20	18	180	13	-13°	32	WN..0804..		VHX0613	LV4A		S2.5
S25R-PWLNR-08	S25R-PWLNL-08	O	O	32	25	23	200	17	-13°	45						
S32S-PWLNR-08	S32S-PWLNL-08	O	O	40	32	30	250	22	-13°	50		PW08318	VHX0821	LV4	SP4	S3
S40T-PWLNR-08	S40T-PWLNL-08	O	O	50	40	42	300	30	-13°	55						

* Blades to be ordered separately.

93° SWUBR





STEEL

Model		Stock								Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	D	Ød	L2	L1	A	B				
H1005K-SWUBR06-20	H1005K-SWUBR06-20	●	○	05	10	20	125	5.4	0.4	6	WB--0201 WB--0601	M2.0	T6
H1006K-SWUBR06-24	H1006K-SWUBR06-24	●	○	06	10	24	125	6.4	0.4	7			

* Blades to be ordered separately.

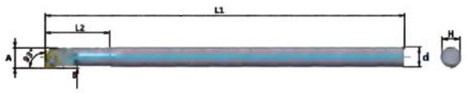


CARBIDE

Model		Stock						Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	A	B				
C05H-SWUBR-06	C05H-SWUBL-06	●	○	05	100	5.4	0.4	5.8	WB--0601 WB--0201	M2.0	T6
C06J-SWUBR-06	C06J-SWUBL-06	●	○	06	110	6.4	0.4	6.8			
C07K-SWUBR-06	C07K-SWUBL-06	●	○	07	125	7.4	0.4	7.8			
C08K-SWUBR-06	C08K-SWUBL-06	●	○	08	125	8.5	0.5	9.0			

* Blades to be ordered separately.





CARBIDE WITH COOLANT

Model		Stock						Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	A	B				
E05H-SWUBR-06	E05H-SWUBL-06	●	○	05	100	5.4	0.4	5.8	WB--0601 WB--0201	M2.0	T6
E06J-SWUBR-06	E06J-SWUBL-06	●	○	06	110	6.4	0.4	6.8			
E07K-SWUBR-06	E07K-SWUBL-06	●	○	07	125	7.4	0.4	7.8			
E08K-SWUBR-06	E08K-SWUBL-06	●	○	08	125	8.5	0.5	9.0			

* Blades to be ordered separately.

95 SCLCR

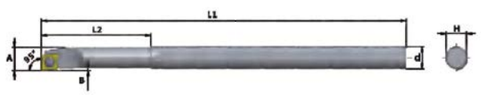




STEEL

Model		Stock								Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	d	Ød	L2	L1	A	B				
H1004K-SCLCR03-16	H1004K-SCLCL03-16	●	○	04	10	16	125	4.4	0.4	5	CC..03S	M1.6	T6
H1005K-SCLCR03-20	H1005K-SCLCL03-20	●	○	05	10	20	125	5.4	0.4	6			
H1005K-SCLCR04-20	H1005K-SCLCL04-20	●	○	05	10	20	125	5.4	0.4	6	CC..04T	M2.0	

* Blades to be ordered separately.

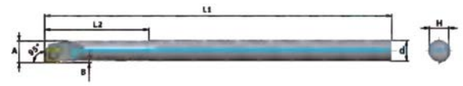


CARBIDE

Model		Stock						Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	A	B				
C04G-SCLCR-03	C04G-SCLCL-03	●	○	04	90	4.5	0.5	4.8	CC..03S1	M1.6	T6
C05H-SCLCR-03	C05H-SCLCL-03	●	○	05	100	5.5	0.5	5.8			
C06J-SCLCR-03	C06J-SCLCL-03	●	○	06	110	6.5	0.5	6.8			
C05H-SCLCR-04	C05H-SCLCL-04	●	○	05	100	5.5	0.5	5.8	CC..04T	M2.0	
C06J-SCLCR-04	C06J-SCLCL-04	●	○	06	110	6.5	0.5	6.8			
C07K-SCLCR-04	C07K-SCLCL-04	●	○	07	125	7.5	0.5	7.8			
C08K-SCLCR-04	C08K-SCLCL-04	●	○	08	125	8.5	0.5	8.8			

* Blades to be ordered separately.





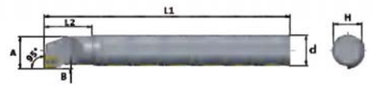
CARBIDE WITH COOLANT

Model		Stock						Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	A	B				
E04G-SCLCR-03	E04G-SCLCL-03	●	○	04	90	4.5	0.5	4.8	CC..03S1	M1.6	T6
E05H-SCLCR-03	E05H-SCLCL-03	●	○	05	100	5.5	0.5	5.8			
E06J-SCLCR-03	E06J-SCLCL-03	●	○	06	110	6.5	0.5	6.8			
E06J-SCLCR-04	E06J-SCLCL-04	●	○	06	110	6.5	0.5	6.8	CC..04T	M2.0	
E07K-SCLCR-04	E07K-SCLCL-04	●	○	07	125	7.5	0.5	7.8			
E08K-SCLCR-04	E08K-SCLCL-04	●	○	08	125	8.5	0.5	8.8			

* Blades to be ordered separately.

95° SCLC R/L

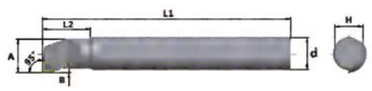




Model		Stock							Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2	F	a					
S08H-SCLCR-06	S08H-SCLCL-06	●	○	8	100	20	5	0.5	10				
S10K-SCLCR-06	S10K-SCLCL-06	●	○	10	125	20	6	0.5	12		0602..	BFTX02506	TRX08
S12M-SCLCR-06	S12M-SCLCL-06	●	○	12	150	20	7	0.5	14				
S12M-SCLCR-09	S12M-SCLCL-09	●	○	12	150	23	9	0.5	14		09T3..	BFTX0407	TRX15
S14N-SCLCR-09	S14N-SCLCL-09	●	○	14	160	25	9	0.5	18				
S14N-SCLCR-06	S14N-SCLCL-06	●	○	14	160	25	9	0.5	18	CCMT	0602..	BFTX02506	TRX08
S16N-SCLCR-09	S16N-SCLCL-09	●	○	16	160	27	11	1	18	CCGT			
S20Q-SCLCR-09	S20Q-SCLCL-09	●	○	20	180	27	13	1	23		09T3..	BFTX0407	TRX15
S25R-SCLCR-09	S25R-SCLCL-09	●	○	25	200	40	15.5	1	28				
S32S-SCLCR-09	S32S-SCLCL-09	●	○	32	250	45	18	1.5	36				
S32S-SCLCR-12	S32S-SCLCL-12	●	○	32	250	45	18	1.5	36		1204..	BFTX0511	
S40T-SCLCR-12	S40T-SCLCL-12	●	○	40	300	45	18	1.5	44				

✲ Blades to be ordered separately.



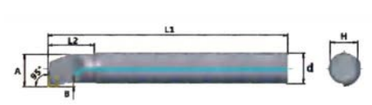


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
C08K-SCLCR-06	C08K-SCLCL-06	●	○	8	125	09	1.0	10				
C10K-SCLCR-06	C10K-SCLCL-06	●	○	10	125	11	1.0	12				
C10M-SCLCR-06	C10M-SCLCL-06	●	○	10	150	11	1.0	12		0602..	BFTX02506	TRX08
C12M-SCLCR-06	C12M-SCLCL-06	●	○	12	150	13	1.0	14				
C12Q-SCLCR-06	C12Q-SCLCL-06	●	○	12	180	13	1.0	14	CCGT			
C12M-SCLCR-09	C12M-SCLCL-09	●	○	12	150	13.5	1.5	15	CCMT			
C16Q-SCLCR-09	C16Q-SCLCL-09	●	○	16	180	17	1.0	18				
C16R-SCLCR-09	C16R-SCLCL-09	●	○	16	200	17	1.0	18		09T3..	BFTX0407	TRX15
C20R-SCLCR-09	C20R-SCLCL-09	●	○	20	200	21	1.0	22				
C20S-SCLCR-09	C20S-SCLCL-09	●	○	20	250	21	2.5	25				

✲ Blades to be ordered separately .





CARBIDE WITH COOLANT

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
E08K-SCLCR-06	E08K-SCLCL-06	●	○	8	125	09	1.0	10				
E10K-SCLCR-06	E10K-SCLCL-06	●	○	10	125	11	1.0	12				
E10M-SCLCR-06	E10M-SCLCL-06	●	○	10	150	11	1.0	12		0602..	BFTX02506	TRX08
E12M-SCLCR-06	E12M-SCLCL-06	●	○	12	150	13	1.0	14				
E12Q-SCLCR-06	E12Q-SCLCL-06	●	○	12	180	13	1.0	14	CCGT			
E12M-SCLCR-09	E12M-SCLCL-09	●	○	12	150	13.5	1.5	15	CCMT			
E16Q-SCLCR-09	E16Q-SCLCL-09	●	○	16	180	17	1.0	18				
E16R-SCLCR-09	E16R-SCLCL-09	●	○	16	200	17	1.0	18		09T3..	BFTX0407	TRX15
E20R-SCLCR-09	E20R-SCLCL-09	●	○	20	200	21	1.0	22				
E20S-SCLCR-09	E20S-SCLCL-09	●	○	20	250	21	2.5	25				

✲ Blades to be ordered separately.

75° SCKCR/L



STEEL

Model		Stock					Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2					
S08H-SCKCR-06	S08H-SCKCL-06	●	○	8	5	100	10				
S10K-SCKCR-06	S10K-SCKCL-06	●	○	10	6	125	12		0602..	BFTX02506	TRX08
S12M-SCKCR-06	S12M-SCKCL-06	●	○	12	7	150	14				
S12M-SCKCR-09	S12M-SCKCL-09	●	○	12	8	150	16	CCMT			
S16Q-SCKCR-09	S16Q-SCKCL-09	●	○	16	9	180	18	CCGT			
S20R-SCKCR-09	S20R-SCKCL-09	●	○	20	12.5	200	25		09T3..	BFTX0407	TRX15
S25R-SCKCR-09	S25R-SCKCL-09	●	○	25	16	200	32				

✲ Blades to be ordered separately.

93° SCZCR/L



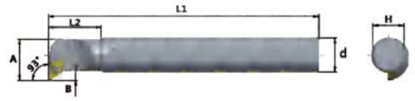
STEEL

Model		Stock								Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	L1	L2	F	S					
S08H-SCZCR-06	S08H-SCZCL-06	●	○	08	100	10	16	7	3	13				
S10K-SCZCR-06	S10K-SCZCL-06	●	○	10	125	10	20	8	3	12		0602..	BFTX02506	TRX08
S12M-SCZCR-06	S12M-SCZCL-06	●	○	12	150	10	24	9	3	10				
S16N-SCZCR-09	S16N-SCZCL-09	●	○	16	160	15	32	12.5	4.5	9	CCMT			
S20Q-SCZCR-09	S20Q-SCZCL-09	●	○	20	180	15	40	14.5	4.5	7		09T3..	BFTX0407	TRX15
S25R-SCZCR-09	S25R-SCZCL-09	●	○	25	200	15	50	17	4.5	7				

✲ Blades to be ordered separately.

93° SDUCR/L



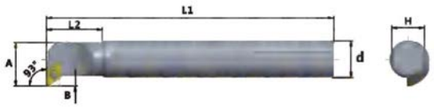


STEEL

Model		Stock								Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2	F	a	S					
S10K-SDUCR-07	S10K-SDUCL-07	●	○	10	125	20	8.3	0.5	3.3	14				
S12M-SDUCR-07	S12M-SDUCL-07	●	○	12	150	25	9.3	0.5	3.3	16		0702..	BFTX02506	TRX08
S16Q--SDUCR-07	S16Q-SDUCL-07	●	○	16	180	25	11.3	1	3.3	20	DCMW			
S20QSDUCR-11	S20Q-SDUCL-11	●	○	20	180	30	16.1	1	6.1	26	DCMT			
S25R-SDUCR-11	S25R-SDUCL-11	●	○	25	200	40	18.6	1	6.1	32	DCGW			
S32S-SDUCR-11	S32S-SDUCL-11	●	○	32	250	50	22.1	1	6.1	40		11T3..	BFTX0407	TRX15
S40T-SDUCR-11	S40T-SDUCL-11	●	○	40	300	60	27	1	6.1	50				

* Blades to be ordered separately.



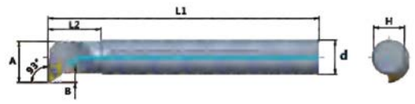


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
C08K-SDUCR-07	C08K-SDUCL-07	●	○	08	125	11	3.0	12				
C10M-SDUCR-07	C10M-SDUCL-07	●	○	10	150	13	3.0	14				
C12Q-SDUCR-07	C12Q-SDUCL-07	●	○	12	180	15	3.0	16	DCMW	0702..	M2.5	T8
C14Q-SDUCR-07	C14Q-SDUCL-07	●	○	14	180	17	3.0	18	DCMT			
C16R-SDUCR-07	C16R-SDUCL-07	●	○	16	200	19	3.0	20	DCGW			
C16R-SDUCR-11	C16R-SDUCL-11	●	○	16	250	20	4.0	21		11T3..	M4.0	T15
C20S-SDUCR-11	C20S-SDUCL-11	●	○	20	300	24	4.0	25				

* Blades to be ordered separately.





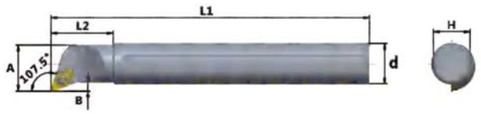
CARBIDE WITH COOLANT

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
E08K-SDUCR-07	E08K-SDUCL-07	●	○	08	125	11	3.0	12				
E10M-SDUCR-07	E10M-SDUCL-07	●	○	10	150	13	3.0	14				
E12Q-SDUCR-07	E12Q-SDUCL-07	●	○	12	180	15	3.0	16	DCMW	0702..	M2.5	T8
E14Q-SDUCR-07	E14Q-SDUCL-07	●	○	14	180	17	3.0	18	DCMT			
E16R-SDUCR-07	E16R-SDUCL-07	●	○	16	200	19	3.0	20	DCGW			
E16R-SDUCR-11	E16R-SDUCL-11	●	○	16	250	20	4.0	21		11T3..	M4.0	T15
E20S-SDUCR-11	E20S-SDUCL-11	●	○	20	300	24	4.0	25				

* Blades to be ordered separately.

107.5° SDQCR/L



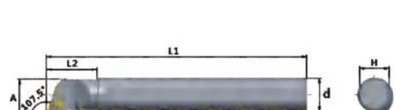


STEEL

Model		Stock								Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2	F	a	S					
S10K-SDQCR-07	S10K-SDQCL-07	●	○	10	125	20	8	0.5	3.0	13				
S12M-SDQCR-07	S12M-SDQCL-07	●	○	12	150	20	9.5	0.5	3.5	16		0702..	BFTX02506	TRX08
S16Q-SDQCR-07	S16Q-SDQCL-07	●	○	16	180	30	12	1	4	20	DCMT			
S20Q-SDQCR-11	S20Q-SDQCL-11	●	○	20	180	40	14.5	1	4.5	25	DCGT			
S25R-SDQCR-11	S25R-SDQCL-11	●	○	25	200	40	17	1	6	32		11T3..	BFTX0407	TRX15
S32S-SDQCR-11	S32S-SDQCL-11	●	○	32	250	50	22	1	6	40				

* Blades to be ordered separately.



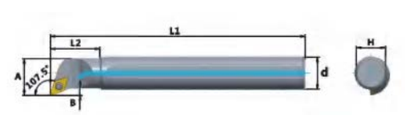


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
C08K-SDQCR-07	C08K-SDQCL-07	●	○	08	125	11	3.0	12				
C10M-SDQCR-07	C10M-SDQCL-07	●	○	10	150	13	3.0	14				
C12Q-SDQCR-07	C12Q-SDQCL-07	●	○	12	180	15	3.0	16	DCMT	0702..	BFTX02506	TRX08
C14Q-SDQCR-07	C14Q-SDQCL-07	●	○	14	180	17	3.0	18	DCGT			
C16R-SDQCR-07	C16R-SDQCL-07	●	○	16	200	19	3.0	20				
C16R-SDQCR-11	C16R-SDQCL-11	●	○	16	200	20	4.0	21		11T3..	BFTX0407	TRX15
C20S-SDQCR-11	C20S-SDQCL-11	●	○	20	250	24	4.0	25				

* Blades to be ordered separately.





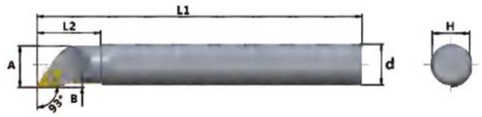
CARBIDE WITH COOLANT

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L	A	B					
E08K-SDQCR-07	E08K-SDQCL-07	●	○	08	125	11	3.0	12				
E10M-SDQCR-07	E10M-SDQCL-07	●	○	10	150	13	3.0	14				
E12Q-SDQCR-07	E12Q-SDQCL-07	●	○	12	180	15	3.0	16	DCMT	0702..	BFTX02506	TRX08
E14Q-SDQCR-07	E14Q-SDQCL-07	●	○	14	180	17	3.0	18	DCGT			
E16R-SDQCR-07	E16R-SDQCL-07	●	○	16	200	19	3.0	20				
E16R-SDQCR-11	E16R-SDQCL-11	●	○	16	200	20	4.0	21		11T3..	BFTX0407	TRX15
E20S-SDQCR-11	E20S-SDQCL1-1	●	○	20	250	24	4.0	25				

* Blades to be ordered separately.

122° SDJCR/L



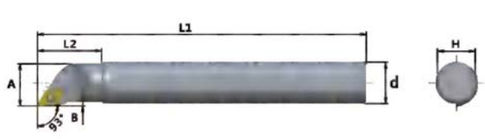


STEEL

Model		Stock								Min Cutting Diameter	Standard corner radius	Insert	Clamp Screw		Wrench
Right hand	Left hand	R	L	Ød	L1	L2	F	H							
S10K-SDJCR-07	S10K-SDJCL-07	●	○	10	125	18	6	9	12	0.2	DCMT DCGT	0702..	BFTX02506	TRX08
S12M-SDJCR-07	S12M-SDJCL-07	●	○	12	150	25	7	11	14						
S16N-SDJCR-07	S16N-SDJCL-07	●	○	16	160	30	9	15	18						
S20Q-SDJCR-11	S20Q-SDJCL-11	●	○	20	180	40	11.5	18	22			11T3..	BFTX0407	TRX15	
S25R-SDJCR-11	S25R-SDJCL-11	●	○	25	200	45	14	23	28						

* Blades to be ordered separately.





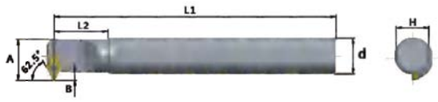
CARBIDE

Model		Stock							Min Cutting Diameter	Standard corner radius	Insert	Clamp Screw		Wrench
Right hand	Left hand	R	L	Ød	L1	A	B							
C08K-SDJCR-07	C08K-SDJCL-07	●	○	08	125	09	1.0	10	0.2	DCMT DCGT	0702..	BFTX02506	TRX08	
C10M-SDJCR-07	C10M-SDJCL-07	●	○	10	150	11	1.0	12						
C12Q-SDJCR-07	C12Q-SDJCL-07	●	○	12	180	13	1.0	14						
C14Q-SDJCR-07	C14Q-SDJCL-07	●	○	14	180	15	1.0	16						
C16R-SDJCR-07	C16R-SDJCL-07	●	○	16	200	17	1.0	18						
C16R-SDJCR-11	C16R-SDJCL-11	●	○	16	200	17	1.0	18			11T3..	BFTX0407	TRX15	
C20S-SDJCR-11	C20S-SDJCL-11	●	○	20	250	21	1.0	22						

* Blades to be ordered separately.

62.5° SDWCR/L



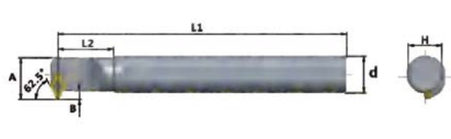


STEEL

Model		Stock								Min Cutting Diameter	Standard corner radius	Insert	Clamp Screw		Wrench
Right hand	Left hand	R	L	Ød	L1	L2	F	S							
S12M-SDWCR-07	S12M-SDWCL-07	●	○	12	150	3	6	4.5	17	0.2	DCMT DCGT	0702..	BFTX02506	TRX08
S16N-SDWCR-07	S16N-SDWCL-07	●	○	16	160	3	7	4.5	21						
S20Q-SDWCR-07	S20Q-SDWCL-07	●	○	20	180	3	9	4.5	25						
S25R-SDWCR-11	S25R-SDWCL-11	●	○	25	200	4.7	11.5	4.5	30			11T3..	BFTX0407	TRX15	
S32S-SDWCR-11	S32S-SDWCL-11	●	○	32	250	4.7	14	4.5	37						

* Blades to be ordered separately.





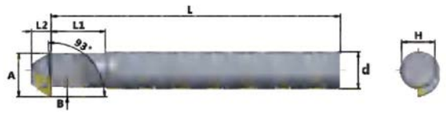
CARBIDE

Model		Stock						Min Cutting Diameter	Standard corner radius	Insert	Clamp Screw		Wrench
Right hand	Left hand	R	L	Ød	L1	A	B						
C08K-SDWCR-07	C08K-SDWCL-07	●	○	08	125	11	3.0	12	0.2	DCMT DCGT	0702..	BFTX02506	TRX08
C10M-SDWCR-07	C10M-SDWCL-07	●	○	10	150	13	3.0	14					
C12Q-SDWCR-07	C12Q-SDWCL-07	●	○	12	180	16	3.0	16					
C14Q-SDWCR-07	C14Q-SDWCL-07	●	○	14	180	18	3.0	18					
C16R-SDWCR-07	C16R-SDWCL-07	●	○	16	200	20	3.0	20					
C20S-SDWCR-11	C20S-SDWCL-11	●	○	20	250	25	5.0	27			11T3..	BFTX0407	TRX15

* Blades to be ordered separately.

3° SDZCR/L





STEEL

Model		Stock								Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2	L3	F	S					
S10K-SDZCR-07	S10K-SDZCL-07	●	○	10	125	20.5	9.5	8.3	3.5	14	DCGT DCMT	0702..	BFTX02506	TRX08
S12M-SDZCR-07	S12M-SDZCL-07	●	○	12	150	20.5	10.5	9.3	3.5	15.5				
S16Q-SDZCR-07	S16Q-SDZCL-07	●	○	16	180	35	12.5	11.4	4.5	16				
S20R-SDZCR-11	S20R-SDZCL-11	●	○	20	200	40	15	15.1	6.5	20		11T3..	BFTX0407	TRX15
S25R-SDZCR-11	S25R-SDZCL-11	●	○	25	200	50	15	17.6	6.5	25				
S32S-SDZCR-11	S32S-SDZCL-11	●	○	32	250	60	15	21.1	6.5	32				
S40T-SDZCR-11	S40T-SDZCL-11	●	○	40	300	75	15	25.1	6.5	40				

* Blades to be ordered separately.



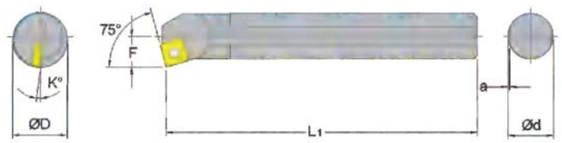


Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	A	B					
C08K-SDZCR-07	C08K-SDZCL-07	●	○	08	125	12	4.0	13	DCGT DCMT	0702..	BFTX02506	TRX08
C10M-SDZCR-07	C10M-SDZCL-07	●	○	10	150	14	4.0	15				
C12Q-SDZCR-07	C12Q-SDZCL-07	●	○	12	180	16	4.0	17				
C14Q-SDZCR-07	C14Q-SDZCL-07	●	○	14	180	18	4.0	19				
C16R-SDZCR-11	C16R-SDZCL-11	●	○	16	200	20	4.0	21		11T3..	BFTX0407	TRX15
C20S-SDZCR-11	C20S-SDZCL-11	●	○	20	250	25	5.0	26				
C25T-SDZCR-11	C25T-SDZCL-11	●	○	25	300	30	5.0	32				

* Blades to be ordered separately.

75° SSKCR/L



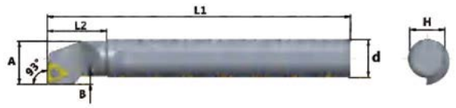


Model		Stock					Min Cutting Diameter	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L	Ød	L1	L2				
S12M-SSKCR-09	S12M-SSKCL-09	●	○	12	8	150	16	SCMT 09T3...	BFTX0407	TRX15
S16Q-SSKCR-09	S16Q-SSKCL-09	●	○	16	11	180	20			
S20R-SSKCR-09	S20R-SSKCL-09	●	○	20	13	200	25			
S25R-SSKCR-09	S25R-SSKCL-09	●	○	25	17	200	30			
S32S-SSKCR-09	S32S-SSKCL-09	●	○	32	21	250	40			

* Blades to be ordered separately.

93° STUCR/L

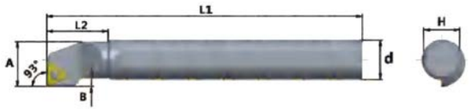




STEEL

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	L2	F	a	K°	Min Cutting Diameter	Insert		Clamp Screw	Wrench
S08H-STUCR-09	S08H-STUCL-09	●	○	8	100	15	6	0.5	13	10	TCMT TCGT	0902.. 1102..	BFTX02506	TRX08
S10K-STUCR-09	S10K-STUCL-09	●	○	10	125	16	7	0.5	12	12				
S12M-STUCR-11	S12M-STUCL-11	●	○	12	150	20	9	0.5	10	14				
S16N-STUCR-11	S16N-STUCL-11	●	○	16	160	25	11	1	8	18				
S20Q-STUCR-11	S20Q-STUCL-11	●	○	20	180	32	13	1	7	23				
S25R-STUCR-16	S25R-STUCL-16	●	○	25	200	40	17	1	5	28		16T3..	BFTX0407	TRX15
S32S-STUCR-16	S32S-STUCL-16	●	○	32	250	48	20	1	5	38				
S40T-STUCR-16	S40T-STUCL-16	●	○	40	300	50	24	1	5	46				

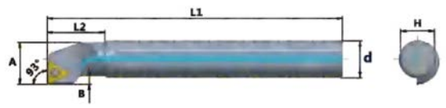




CARBIDE

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	A	B	Min Cutting Diameter	Insert		Clamp Screw	Wrench
C08K-STUCR-09	C08K-STUCL-09	●	○	8	125	09	1.0	10	TCGT TCMT	0902.. 1102..	BFTX02506	TRX08
C10K-STUCR-09	C10K-STUCL-09	●	○	10	125	11	1.0	12				
C12M-STUCR-11	C12M-STUCL-11	●	○	12	150	13	1.0	14				
C12Q-STUCR-11	C12Q-STUCL-11	●	○	12	180	13	1.0	14				
C16Q-STUCR-11	C16Q-STUCL-11	●	○	16	180	15	1.0	18				
C16R-STUCR-11	C16R-STUCL-11	●	○	16	200	17	1.0	18				
C20R-STUCR-11	C20R-STUCL-11	●	○	20	200	21	1.0	22				
C20S-STUCR-11	C20S-STUCL-11	●	○	20	250	21	1.0	22				



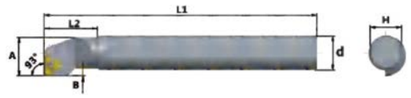


CARBIDE

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	A	B	Min Cutting Diameter	Insert		Clamp Screw	Wrench
E08K-STUCR-09	E08K-STUCL-09	●	○	8	125	09	1.0	10	TCGT TCMT	0902.. 1102..	BFTX02506	TRX08
E10K-STUCR-09	E10K-STUCL-09	●	○	10	125	11	1.0	12				
E12M-STUCR-11	E12M-STUCL-11	●	○	12	150	13	1.0	14				
E12Q-STUCR-11	E12Q-STUCL-11	●	○	12	180	13	1.0	14				
E16Q-STUCR-11	E16Q-STUCL-11	●	○	16	180	15	1.0	18				
E16R-STUCR-11	E16R-STUCL-11	●	○	16	200	17	1.0	18				
E20R-STUCR-11	E20R-STUCL-11	●	○	20	200	21	1.0	22				
E20S-STUCR-11	E20S-STUCL-11	●	○	20	250	21	1.0	22				

93° STUBR/L

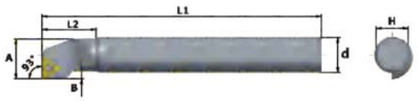




STEEL

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	L2	F	K°	Min Cutting Diameter	Insert		Clamp Screw	Wrench
S08H-STUBR-06	S08H-STUBL-06	●	○	8	100	20	4	-12	8	TBGT	0601..	BFTX0206	TPX06
S08H-STUPR-08	S08H-STUPL-08	●	○	8	100	18	5	-8	10	TPGH	0802..		
S10K-STUPR-11	S10K-STUPL-11	●	○	10	125	23	6	-5	12	TPGH TPMH TPMT	1103..	BFTX0306	TPX10
S12M-STUPR-11	S12M-STUPL-11	●	○	12	150	23	7	-4	14				
S16N-STUPR-11	S16N-STUPL-11	●	○	16	160	25	9	-2	18			BFTX0310	
S20Q-STUPR-11	S20Q-STUPL-11	●	○	20	180	30	12.5	0	23				
S20Q-STUPR-16	S20Q-STUPL-16	●	○	20	180	30	12.5	0	25		1604..	BFTX0407	TPX15
S25R-STUPR-16	S25R-STUPL-16	●	○	25	200	30	12.5	0	28				

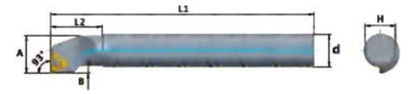




CARBIDE

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	A	B	Min Cutting Diameter	Insert		Clamp Screw	Wrench
C06J-STUBR-06	C06J-STUBL-06	○		6	110	6.5	0.5	6.8	TBGT	0601..	BFTX0206	TPX06
C07K-STUBR-06	C07K-STUBL-06	○		7	125	7.5	0.5	7.8				
C08K-STUBR-06	C08K-STUBL-06	○		8	125	8.5	0.5	8.8				
C10M-STUBR-06	C10M-STUBL-06	○		10	150	10.5	0.5	11				
C07K-STUPR-08	C07K-STUPL-08	○		7	125	08	1.0	09	TPGH TPMT	0802..	M2.2	T7
C08K-STUPR-08	C08K-STUPL-08	○		8	125	09	1.0	10				
C08K-STUPR-09	C08K-STUPL-09	○		8	125	09	1.0	10		0902..	M2.5	T8
C10K-STUPR-09	C10K-STUPL-09	○		10	125	11	1.0	12				
C10M-STUPR-09	C10M-STUPL-09	○		10	150	11	1.0	12				
C12Q-STUPR-09	C12Q-STUPL-09	○		12	180	13	1.0	14				
C10K-STUPR-11	C10K-STUPL-11	○		10	125	11	1.0	12				
C10M-STUPR-11	C10M-STUPL-11	○		10	150	11	1.0	12				
C12M-STUPR-11	C12M-STUPL-11	○		12	150	13	1.0	14				
C12Q-STUPR-11	C12Q-STUPL-11	○		12	180	13	1.0	14				
C14Q-STUPR-11	C14Q-STUPL-11	○		14	180	15	1.0	16		1103..	BFTX0310	T8
C16R-STUPR-11	C16R-STUPL-11	○		16	200	17	1.0	18				
C18S-STUPR-11	C18S-STUPL-11	○		18	250	19	1.0	20				
C20R-STUPR-11	C20R-STUPL-11	○		20	200	21	1.0	22				
C20S-STUPR-11	C20S-STUPL-11	○		20	250	21	1.0	22				



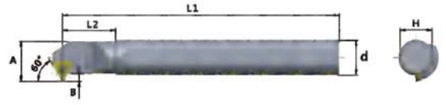


CARBIDE

Model Right hand	Model Left hand	Stock R	Stock L	d	L1	A	B	Min Cutting Diameter	Insert		Clamp Screw	Wrench
E06J-STUBR-06	E06J-STUBL-06	●	○	6	110	6.5	0.5	07	TBGT	0601..	BFTX0206	TPX06
E08K-STUBR-06	E08K-STUBL-06	●	○	8	125	8.5	0.5	09				
E08K-STUPR-09	E08K-STUPL-09	●	○	8	125	09	1.0	10	TPGH TPMT	0902..	M2.5	T8
E10M-STUPR-09	E10M-STUPL-09	●	○	10	150	11	1.0	12				
E12Q-STUPR-11	E12Q-STUPL-11	●	○	12	180	13	1.0	14				
E14Q-STUPR-11	E14Q-STUPL-11	●	○	14	180	15	1.0	16		1103..	M3.0	T8
E16R-STUPR-11	E16R-STUPL-11	●	○	16	200	17	1.0	18				
E20S-STUPR-11	E20S-STUPL-11	●	○	20	250	21	1.0	22				

60° STWBR/L
60° STWCR/L





STEEL

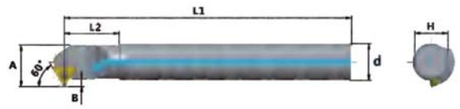
Model		Stock							Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	F	L1	K°						
S08H-STWCR-09	S08H-STWCL-09		○	8	6	100	13	10		TCMT	0902..		
S10K-STWCR-11	S10K-STWCL-11		○	10	6	125	13	12					
S12M-STWCR-11	S12M-STWCL-11		○	12	8	150	10	16			1102..	BFTX02506	TRX08
S16N-STWCR-11	S16N-STWCL-11		○	16	10	160	7	20		TCMT			
S20Q-STWCR-11	S20Q-STWCL-11		○	20	12.5	180	7	25					
S20Q-STWCR-16	S20Q-STWCL-16		○	20	12.5	180	7	25					
S25R-STWCR-16	S25R-STWCL-16		○	25	17	200	5	32			16T3..	BFTX0407	TRX15
S32S-STWCR-16	S32S-STWCL-16	●	○	32	22	250	3	40					



CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	扳手 Wrench
Right hand	Left hand	R	L	d	L1	A	B					
C06J-STWBR-06	C06J-STWBL-06	●	○	6	110	7.2	1.2	08	TBGT	0601..	BFTX0206	TPX06
C07K-STWBR-06	C07K-STWBL-06	●	○	7	125	8.3	1.3	09				
C08K-STWCR-09	C08K-STWCL-09	●	○	8	125	10	2.0	11		0902..	M2.2	T7
C10M-STWCR-11	C10M-STWCL-11	●	○	10	150	13	3.0	14	TCGT			
C12Q-STWCR-11	C12Q-STWCL-11	●	○	12	180	15	3.0	16	TCMT	1102..	BFTX02506	TRX08
C14Q-STWCR-11	C14Q-STWCL-11	●	○	14	180	17	3.0	18				
C16R-STWCR-11	C16R-STWCL-11	●	○	16	200	19	3.0	20				
C20S-STWCR-16	C20S-STWCL-16	●	○	20	250	24	4.0	26		16T3..	M4.0	T15



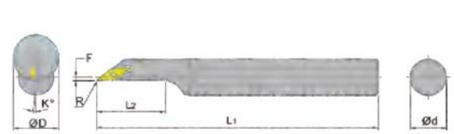


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
E06J-STWBR-06	E06J-STWBL-06	●	○	6	110	7.2	1.2	08	TBGT	0601..	BFTX0206	TPX06
E07K-STWBR-06	E07K-STWBL-06	●	○	7	125	8.3	1.3	09				
E08K-STWCR-09	E08K-STWCL-09	●	○	8	125	10	2.0	11		0902..	M2.2	T7
E10M-STWCR-11	E10M-STWCL-11	●	○	10	150	13	3.0	14	TCGT			
E12Q-STWCR-11	E12Q-STWCL-11	●	○	12	180	15	3.0	16	TCMT	1102..	BFTX02506	TRX08
E14Q-STWCR-11	E14Q-STWCL-11	●	○	14	180	17	3.0	18				
E16R-STWCR-11	E16R-STWCL-11	●	○	16	200	19	3.0	20				
E20S-STWCR-16	E20S-STWCL-16	●	○	20	250	24	4.0	26		16T3..	M4.0	T15

52° SVJCR/L
52° SVJBR/L

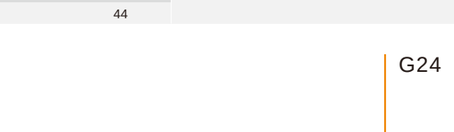




STEEL

Model		Stock						Min Cutting Diameter	Insert			Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	L2	F						
S12M-SVJCR-08	S12M-SVJCL-08	●	○	12	150	26	2	16		0802..		BFTX0205	TRX06
S16Q-SVJCR-11	S16Q-SVJCL-11	●	○	16	180	36	2	18					
S20Q-SVJCR-11	S20Q-SVJCL-11	●	○	20	180	37.5	2	25	VCMT	1103..		BFTX02506	TRX08
S25R-SVJCR-11	S25R-SVJCL-11	●	○	25	200	45	3.5	30	VCGT				
S32R-SVJCR-16	S32R-SVJCL-16	●	○	32	200	60	3.5	40		1604..	SSV32	BCP141	BFTX03511	TRX15
S40S-SVJCR-16	S40S-SVJCL-16	●	○	20	250	75	4.5	50					





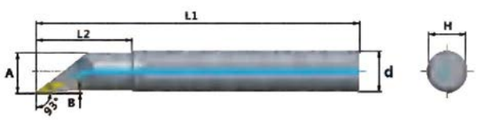
CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
C08K-SVJCR-08	C08K-SVJCL-08	●	○	08	125	09	1.0	10		0802..	BFTX02206	T7
C10M-SVJCR-11	C10M-SVJCL-11	●	○	10	150	11	1.0	12				
C12Q-SVJCR-11	C12Q-SVJCL-11	●	○	12	180	13	1.0	14		1103..	BFTX02506	T8
C14Q-SVJCR-11	C14Q-SVJCL-11	●	○	14	180	15	1.0	16	VCGT			
C16R-SVJCR-11	C16R-SVJCL-11	●	○	16	200	17	1.0	18	VCMT			
C20S-SVJCR-16	C20S-SVJCL-16	●	○	20	250	21	1.0	22				
C25T-SVJCR-16	C25T-SVJCL-16	●	○	25	300	27	2.0	29		1604..	BFTX04010	T15
C32U-SVJCR-16	C32U-SVJCR-16	●	○	32	350	34	2.0	36				
C40V-SVJCR-16	C40V-SVJCR-16	●	○	40	400	42	2.0	44				

＊刀片需单独订购。 Blades to be ordered separately.

● Standard inventory ○ Made to order production



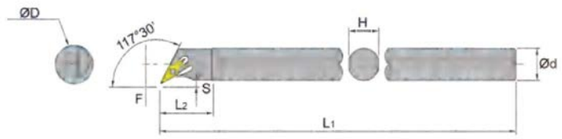


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
E08K-SVJBR-08	E08K-SVJBL-08	●	○	08	125	09	1.0	10		0802..	BFTX02206	T7
E10M-SVJBR-11	E10M-SVJBL-11	●	○	10	150	11	1.0	12				
E12Q-SVJBR-11	E12Q-SVJBL-11	●	○	12	180	13	1.0	14		1103..	BFTX02506	T8
E14Q-SVJBR-11	E14Q-SVJBL-11	●	○	14	180	15	1.0	16	VBGT			
E16R-SVJBR-11	E16R-SVJBL-11	●	○	16	200	17	1.0	18	VBMT			
E20S-SVJBR-16	E20S-SVJBL-16	●	○	20	250	21	1.0	22				
E25T-SVJBR-16	E25T-SVJBL-16	●	○	25	300	27	2.0	29		1604..	BFTX04010	T15
E32U-SVJBR-16	E32U-SVJBR-16	●	○	32	350	34	2.0	36				
E40V-SVJBR-16	E40V-SVJBR-16	●	○	40	400	42	2.0	44				

117.5° SVQCR/L
117.5° SVQBR/L





STEEL

Model		Stock							Min Cutting Diameter	Insert		Shim	Shim pin	Clamp Screw	Wrench
Right hand	Left hand	R	L	D	L1	L2	F	S							
S12MSVQCR-11	S12MSVQCL-11	●	○	12	150	28	9.5	3.5	16	VCMT VCGT	1103.. 1604..	SSV32	BCP141	BFTX02506 BFTX03511	TRX08 TRX15
S16QSVQCR-11	S16QSVQCL-11	●	○	16	180	28	4	4	20						
S20QSVQCR-16	S20QSVQCL-16	●	○	20	180	40	6.5	6.5	27						
S25RSVQCR-16	S25RSVQCL-16	●	○	28	200	40	6.5	6.5	32						
S32SSVQCR-16	S32SSVQCL-16	●	○	32	250	50	6	6	40						
S40TSVQCR-16	S40TSVQCL-16	●	○	40	300	60	7	7	50						





CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
C08K-SVQCR-08	C08K-SVQCL-08	●	○	08	125	11	3.0	12	VCGT VCMT	0802.. 1103.. 1604..	BFTX02206 BFTX02506 BFTX04010	T7 T8 T15
C10M-SVQCR-08	C10M-SVQCL-08	●	○	10	150	13	3.0	14				
C12Q-SVQCR-11	C12Q-SVQCL-11	●	○	12	180	15	3.0	16				
C14Q-SVQCR-11	C14Q-SVQCL-11	●	○	14	180	17	3.0	18				
C16R-SVQCR-11	C16R-SVQCL-11	●	○	16	200	19	3.0	20				
C20S-SVQCR-11	C20S-SVQCR-11	●	○	20	250	24	4.0	25				
C25T-SVQCR-16	C25T-SVQCR-16	●	○	25	300	31	6.0	33				
C32U-SVQCR-16	C32U-SVQCR-16	●	○	32	350	39	7.0	42				
C40V-SVQCR-16	C40V-SVQCR-16	●	○	40	400	49	9.0	52				



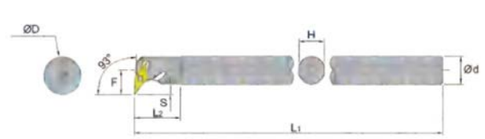


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
E08K-SVQBR-08	E08K-SVQBL-08	●	○	08	125	11	3.0	12	VBGT VBMT	0802.. 1103.. 1604..	BFTX02206 BFTX02506 BFTX04010	T7 T8 T15
E10M-SVQBR-08	E10M-SVQBL-08	●	○	10	150	13	3.0	14				
E12Q-SVQBR-11	E12Q-SVQBL-11	●	○	12	180	15	3.0	16				
E14Q-SVQBR-11	E14Q-SVQBL-11	●	○	14	180	17	3.0	18				
E16R-SVQBR-11	E16R-SVQBL-11	●	○	16	200	19	3.0	20				
E20S-SVQBR-11	E20S-SVQBR-11	●	○	20	250	24	4.0	25				
E25T-SVQBR-16	E25T-SVQBR-16	●	○	25	300	31	6.0	33				
E32U-SVQBR-16	E32U-SVQBR-16	●	○	32	350	39	7.0	42				
E40V-SVQBR-16	E40V-SVQBR-16	●	○	40	400	49	9.0	52				

93° SVUCR/L
93° SVUBR/L





STEEL

Model		Stock							Min Cutting Diameter	Insert		Shim	Shim pin	Clamp Screw	Wrench
Right hand	Left hand	R	L	D	L1	L2	F	S							
S12M-SVUCR-08	S12M-SVUCL-08	●	○	12	150	34	11	5	16	VCMT VCGT	0802.. 1103.. 1604..	SSV32	BCP141	BFTX02205 BFTX02506 BFTX03511	TRX06 TRX08 TRX15
S16Q-SVUCR-11	S16Q-SVUCL-11	●	○	16	180	33	14.5	7	20						
S20Q-SVUCR-11	S20Q-SVUCL-11	●	○	20	180	43	17	7	25						
S25R-SVUCR-16	S25R-SVUCL-16	●	○	25	200	40	20.5	8	34						
S32S-SVUCR-16	S32S-SVUCL-16	●	○	32	250	50	23.5	8.5	40						
S40T-SVUCR-16	S40T-SVUCL-16	●	○	40	300	60	29.5	10	50						



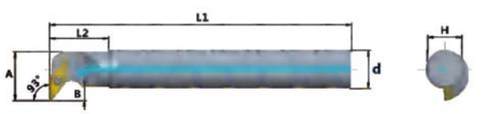


CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
C10M-SVUCR-08	C10M-SVQCL-08	●	○	10	150	13	3.0	14	VCGT VCMT	0802.. 1103.. 1604..	BFTX02206 BFTX02506 BFTX04010	T7 T8 T15
C12Q-SVUCR-08	C12Q-SVQCL-08	●	○	12	180	15	3.0	16				
C14Q-SVUCR-11	C14Q-SVQCL-11	●	○	14	180	17	3.0	18				
C16R-SVUCR-11	C16R-SVQCL-11	●	○	16	200	19	3.0	20				
C20S-SVUCR-11	C20S-SVQCL-11	●	○	20	250	24	4.0	25				
C25T-SVUCR-11	C25T-SVQCL-11	●	○	25	300	30	5.0	32				
C25T-SVUCR-16	C25T-SVQCL-16	●	○	25	300	32	7.0	34				
C32U-SVUCR-16	C32U-SVQCL-16	●	○	32	350	40	8.0	42				
C40V-SVUCR-16	C40V-SVQCL-16	●	○	40	400	50	10	55				

.





CARBIDE

Model		Stock						Min Cutting Diameter	Insert		Clamp Screw	Wrench
Right hand	Left hand	R	L	d	L1	A	B					
E10M-SVUCR-08	E10M-SVQBL-08	●	○	10	150	13	3.0	14	VBGT VBMT	0802.. 1103.. 1604..	BFTX02206 BFTX02506 BFTX04010	T7 T8 T15
E12Q-SVUCR-08	E12Q-SVQBL-08	●	○	12	180	15	3.0	16				
E14Q-SVUCR-11	E14Q-SVQBL-11	●	○	14	180	17	3.0	18				
E16R-SVUCR-11	E16R-SVQBL-11	●	○	16	200	19	3.0	20				
E20S-SVUCR-11	E20S-SVQBL-11	●	○	20	250	24	4.0	25				
E25T-SVUCR-11	E25T-SVQBL-11	●	○	25	300	30	5.0	32				
E25T-SVUCR-16	E25T-SVQBL-16	●	○	25	300	32	7.0	34				
E32U-SVUCR-16	E32U-SVQBL-16	●	○	32	350	40	8.0	42				
E40V-SVUCR-16	E40V-SVQBL-16	●	○	40	400	50	10	55				

Parting and grooving tools

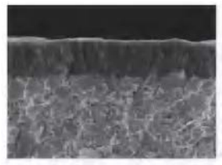
H1 - H 24

KTGFR/L KTGXFR H01
KIGFR/L H02
TGF32.. ..... H03
NS H04
A-NNT H04
NS.. ..... H05
SIGE H06
GER/L...A H07
GER/L...C H08
GER/L...D H08
GER/L...E H08
WD H09
WD Chipbreakers H09
HWDR/L.. ..... H10
HFDR/L300.. ..... H11
HFDR/L400.. ..... H12
HFDR/L500.. ..... H13
HDR/L.. ..... H14
HER/L.. ..... H15
Wd TWDR/L.. ..... H16
Wd TIWDR/L H17
Wd WDFR/L.. ..... H18
WD.. ..... H19
MGEHR/L H20
MGIVR/L H21
M.MN.. ..... H22
SPB PHS H23
SP.. ..... H24

Turning Insert Grades

PVD coating carbide inserts

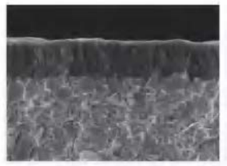
KTX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and .Use TiCN PVD coating with excellent versatility
Application: Suitable for steel cutting

KVX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and excellen tversatility
Application: Suitable for stainless steel and steel cutting

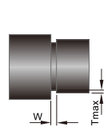
Summary of Insert Grades

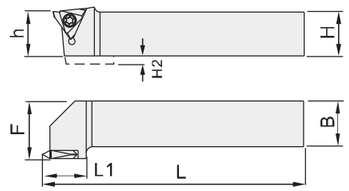
For Grooving, Parting off

Workpiece Material	P					M					K				N			S				H		
	Steel					Stainless steel					Cast Iron				Nonferrous			NRSA				Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
PVD Coated Carbide		KTX										KTX												
			KVX					KVX																
Uncoated Carbide																KW20								

KTGFR/L



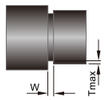


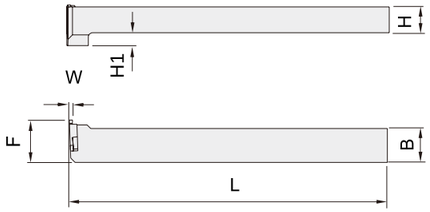


Model		Stock		W	H H1	B	L	f	Dmax	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L									
KTGFR1010K-16F	KTGFL1010K-16F	O		0.33-2.5	10	10	126	10	5.9	TGF32R/L...	ETNA0408	TW15P
KTGFR1212M-16F	KTGFL1212M-16F	O		0.33-2.5	12	12	150	12	5.9			
KTGFR1616M-16F	KTGFL1616M-16F	O		0.33-2.5	16	16	150	16	5.9			
KTGFR1010F-16	KTGFL1010F-16	O		0.33-2.5	10	10	80	12	5.9			
KTGFR1212H-16	KTGFL1212H-16	O		0.33-2.5	12	12	100	16	5.9			
KTGFR1616H-16	KTGFL1616H-16	O		0.33-2.5	16	16	100	20	5.9			
KTGFR2020K-16	KTGFL2020K-16	O		0.33-2.5	20	20	125	25	5.9			
KTGFR2525M-16	KTGFL2525M-16	O		0.33-2.5	25	25	150	20	5.9			
KTGFR2020K-22	KTGFL2020K-22	O		1.6-4.6	20	20	125	25	8.0	TGF43R/L...	ETNA0511	TW20P
KTGFR2525M-22	KTGFL2525M-22	O		1.6-4.6	25	25	150	32	8.0			
KTGFR3225P-22	KTGFL3225P-22	O		1.6-4.6	32	25	170	32	8.0			

KTGXFR



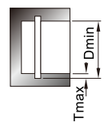


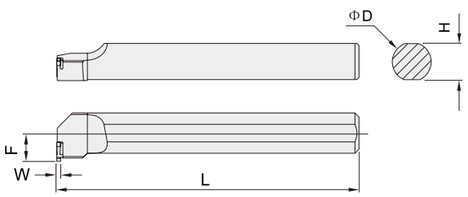


Model	Stock		W	H H1	B	L	f	Dmax	Insert	Clamp Screw	Wrench
	R	L									
KTGXFR1012H-16F	O		0.33-2.5	10	12	100	18	5.9	TGF32R/L...	ETNA0408	TW15P
KTGXFR1212H-16F	O		0.33-2.5	12	12	100	18	5.9			
KTGXFR1616K-16F	O		0.33-2.5	16	10	125	20	5.9			
KTGXFR2020K-16F	O		0.33-2.5	20	20	125	24	5.9			

KIGFR/L



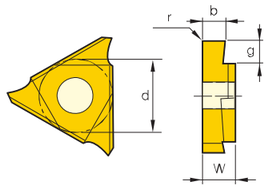




Model		Stock		W	D	L	F	H	Tmax	Dmin	Insert	Clamp Screw	Wrench
Right hand	Left hand	R	L										
KIGFR2016T-11	KIGFL2016T-11	O		0.33-2.0	16	170	12	14	2.0	20	TG22R/L...	ETNA0308	TW08P
KIGFR2520T-11	KIGFL2520T-11	O		0.33-2.0	20	200	14	18	2.0	25			
KIGFR3525T-16	KIGFL3525T-16	O		0.33-2.5	25	220	17.5	23	2.0-3.0	35	TGF32R/L...	ETNA0408	TW15P
KIGFR4532T-22	KIGFL4532T-22	O		1.5-4.6	32	250	22.0	30	3.6-5.0	45	TGF43R/L...	ETNA0511	

Grooving inserts

TGF32..



Model	d	s	d1
TGF32..	9.525	3.18	4.6

Insert shape	Model	Size and Grades W	B	R	KTX	KVX	KW20
	TGF32R033	0.33	0.8	0.05		●	●
	TGF32R050	0.50	1.2	0.05		●	●
	TGF32R075	0.75	2.0	0.1		●	●
	TGF32R095	0.95	2.0	0.1		●	●
	TGF32R100	1.00	2.0	0.1		●	●
	TGF32R120	1.20	2.0	0.1		●	●
	TGF32R125	1.25	2.0	0.1		●	●
	TGF32R150	1.50	2.0	0.1		●	●
	TGF32R175	1.75	2.0	0.1		●	●
	TGF32R200	2.00	2.5	0.1		●	●
	TGF32R250	2.50	2.5	0.1		●	●
	TGF32L033	0.33	0.8	0.05			
	TGF32L050	0.50	1.2	0.05			
	TGF32L075	0.75	2.0	0.1			
	TGF32L095	0.95	2.0	0.1			
	TGF32L100	1.00	2.0	0.1			
	TGF32L120	1.20	2.0	0.1			
	TGF32L125	1.25	2.0	0.1			
	TGF32L150	1.50	2.0	0.1			
	TGF32L175	1.75	2.0	0.1			
	TGF32L200	2.00	2.5	0.1			
	TGF32L250	2.50	2.5	0.1			
Steel					★	★	
Stainless						★	
Cast iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

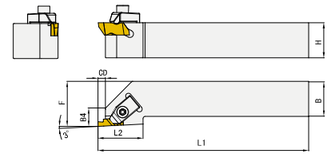
Recommended Cutting Conditions

Workpiece Materials		Vc(m/min) Recommended Cutting Speed KTX	KVX	KW20	f(mm/rev) Recommended Cutting Speed 0.33-0.50 f(mm/rev)	0.75-0.95 f(mm/rev)	1.00-1.45 f(mm/rev)	1.50-2.50 f(mm/rev)
P	Steel		80-180		0.01-0.05	0.02-0.07	0.03-0.08	0.03-0.08
			80-180				0.03-0.06	0.03-0.06
M	Stainless Steel		60-130		0.01-0.04	0.2-0.06	0.03-0.07	0.03-0.07
			60-130				0.02-0.05	0.02-0.05
K	Cast iron			60-100	0.01-0.05	0.02-0.07	0.03-0.08	0.03-0.08
				60-100			0.03-0.06	0.03-0.06
N	Nonferrous metal			150-400	0.01-0.04	0.02-0.06	0.03-0.08	0.03-0.08
				150-400			0.03-0.06	0.03-0.06

NS External slotted knife rod





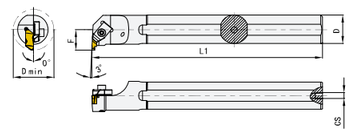


Model	Stock	H	B	F	L1	L2	B4	CD	Insert	Clamping	Clamping Screw	Wrench
NSR2020K3	●	20.0	20.0	25.0	125	32	13	5.3	NS3..R	CM72L	MS2111	L25
NSR2525M3	●	25.0	25.0	32.0	150	32	13	5.3				
NSR3225P3	○	32.0	32.0	32.0	170	32	13	5.3				
NSR3232P3	●	32.0	32.0	40.0	170	32	13	5.3				

A-NNT Internal slotting tool rod



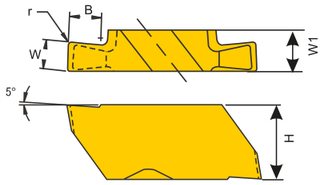




Model	Stock	D	Dmin	L1	F	CS	Insert	Clamping	Clamping Screw	Wrench
A12MNNTOR2	○	12	18.5	150	11	1/16-27NPT	NS2..L	CM147	MS1200	L25
A16MNNTOR2	●	16	22.0	150	11	1/8-27NPT		CM75		
A20QNNTOR2	●	20	26.0	180	13	1/8-27NPT				
A25RNNTOR2	●	25	34.0	200	17	1/4-18NPT				
A25RNNTOR3	●	25	34.0	200	17	1/4-18NPT	NS3..L	CM73LP	MS2111	L25
A32SNNTOR3	○	32	44.0	250	22	1/4-18NPT				
A40TNNTOR3	○	40	54.0	300	27	1/4-18NPT				

Grooving inserts

NS..



Model	W1	H
NS3..	4.95	8.74
NS2..	3.81	5.56

Insert shape	Model	W	B	r	KTX	KVX	KW20
	NS3100R	1.0	2.0	0.2	○	●	○
	NS3150R	1.5	3.5	0.2	○	●	○
	NS3200R	2.0	3.5	0.2	○	●	○
	NS3250R	2.5	4.0	0.2	○	●	○
	NS3300R	3.0	4.0	0.2	○	●	○
	NS3500R	3.5	6.0	0.2	○	○	○
	NS3400R	4.0	6.0	0.2	○	●	○
	NS3450R	4.5	8.0	0.2	○	●	○
	NS3500R	5.0	8.0	0.2	○	○	○
	NS2050L	0.5	2.0	0.1	○	○	○
	NS2100L	1.0	2.0	0.1	○	○	○
	NS2150L	1.5	3.5	0.2	○	○	○
	NS2200L	2.0	3.5	0.2	○	○	○
	NS3100L	1.0	2.0	0.2	○	○	○
	NS3150L	1.5	3.5	0.2	○	○	○
	NS3200L	2.0	3.5	0.2	○	○	○
	NS3250L	2.5	4.0	0.2	○	○	○
	NS3300L	3.0	4.0	0.2	○	○	○
	NS3500L	3.5	6.0	0.2	○	○	○
	NS3400L	4.0	6.0	0.2	○	○	○
	NS3450L	4.5	8.0	0.2	○	○	○
	NS3500L	5.0	8.0	0.2	○	○	○
Steel					★	★	
Stainless						★	
Cast Iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

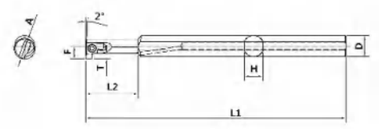
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Processing the form	Recommended Cutting Speed			Recommended Cutting Speed					
			KTX	KVX	KW20	1.5/2.0	2.5	3.0	4.0	5.0	6.0
						f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)
P	Steel	Cylindrical processing	50-100-130	50-100-130		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18
M	Stainless Steel	Cylindrical processing		60-110-150		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing		50-80-120		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18
K	Cast iron	Cylindrical processing	50-100-130	50-100-130		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18

SIGE



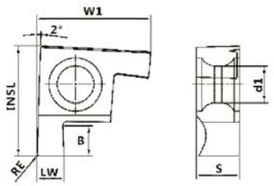


Model		Stock R	Stock L	ϕA	ϕD	H	L1	L2	F	T	ϕd	Clamping Screw	Wrench		Apply to the blade
SIGE型	0808A-EH	●	●	8	8	7.2	100	20	4.8	1.5	3	SB-2045TRN	FT-6	-	GER100-050AR~GER200-100AR GE\100-005A~GER200-010A
	1010B-EH	●	●	10	10	9	125	20	6.2	22	3	SB-2255TR	-	DT-7	GE\100-005B~GE\300-020B GER100-050BR~GER200-100BR
	1210B-EH	●	●	12	10	9	125	25	7	22	3				
	1412C-EH	●	●	14	12	11.4	150	33	8	2.5	4	SB-2570TR	FT-8	-	GE\100-005C~GE\350-020C GER150-010CM~GER350-020M GER200-100CR~GER300-150CR
	1612C-EH	●	●	16	12	11.4	150	20	8.5	2.5	4				
	1616C-EH	●	●	16	16	15	160	36	9	2.5	5				
	2020D-EH	●	●	20	20	19	180		12.1	4.5	5	SB-3080TR	FT-10	-	GE\100-005D~GE\400-020D GER150-010DM~GER400-020M GER200-100DR~GER300-150DR
	2525E EH	●	●	25	25	24	200	45	15.6	6.5	5	SB-4085TR	FT-15	-	GE\100-005E~GE\500-020E GER150-010EM~GER500-020EM

● Standard inventory ○ Make order production

GER/L...A

Grooving inserts



Model	W1	INSL	s	d1
GER/L..A	6.69	6.5	2.58	2.58
GER...-AR	6.69	6.5	2.58	2.58

Insert shape	Model	Size and Grades CW	CDX	RE	KTX	KVX	KW20
	GER100-005A	1.00	1.5	0.05		●	●
	GER120-005A	1.20	1.5	0.05		●	●
	GER125-005A	1.25	1.5	0.05		●	●
	GER150-010A	1.50	1.5	0.1		●	●
	GER200-010A	2.00	1.5	0.1		●	●
	GEL100-005A	1.00	1.5	0.05		●	●
	GEL120-005A	1.20	1.5	0.05		●	●
	GEL125-005A	1.25	1.5	0.05		●	●
	GEL150-010A	1.50	1.5	0.1		●	●
	GEL200-010A	2.00	1.5	0.1		●	●
	GER100-050AR	1.00	1.5	0.5		●	●
	GER200-100AR	2.00	1.5	1.0		●	●
Steel						★	★
Stainless							★
Cast Iron						☆	☆
Nonferrous Metal							★
Heat Resistant Alloy							☆
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

Insert shape	Model	Size and Grades CW	CDX	RE	KTX	KVX	KW20
	GE$^{W}/_{125}$-005B	1.25	2.2	0.1		●	●
	GE$^{W}/_{145}$-010B	1.45	2.2	0.1		●	●
	GE$^{W}/_{150}$-010B	1.50	2.2	0.1		●	●
	GE$^{W}/_{200}$-010B	2.00	2.2	0.5		●	●
	GE$^{}/_{250}$-020B	2.50	2.2	0.5			
	GE$^{W}/_{300}$-020B	3.00	2.2	0.2		●	●
	GER100-050BR	1.00	2.2	0.5		●	●
	GER200-100BR	2.00	2.2	1.0		●	●
Steel						★	★
Stainless						★	
Cast Iron						☆	☆
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

GER/L...C

Insert shape	Model	Size and Grades CW	CDX	RE	KTX	KVX	KW20
	GE$^{W}/_{150}$-010C	1.50	2.5	0.1		●	●
	GE$^{W}/_{170}$-010C	1.70	2.5	0.1		●	●
	GE$^{W}/_{185}$-010C	1.85	2.5	0.1		●	●
	GE$^{W}/_{195}$-010C	1.95	2.5	0.1		●	●
	GE$^{W}/_{200}$-010C	2.00	2.5	0.2		●	●
	GE$^{W}/_{250}$-020C	2.50	2.5	0.2		●	●
	GE$^{W}/_{300}$-020C	3.00	2.5	0.2		●	●
	GER200-100CR	2.00	2.5	1.0		●	●
	GER250-125CR	2.50	2.5	1.25		●	●
	GER300-150CR	3.00	2.5	1.5		●	●
Steel					★	★	
Stainless						★	
Cast Iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

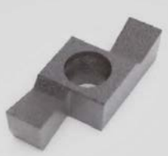
★ Preferred ☆ optional ● standard stock ○ order production

GER/L...D

Insert shape	Model	Size and Grades CW	CDX	RE	KTX	KVX	KW20
	GE$^{W}/_{195}$-010D	1.95	3.2	0.10		●	●
	GE$^{W}/_{200}$-010D	2.00	3.2	0.10		●	●
	GE$^{W}/_{225}$-010D	2.25	3.2	0.10		●	●
	GE$^{W}/_{230}$-020D	2.30	3.2	0.20		●	●
	GE$^{W}/_{250}$-020D	2.50	3.2	0.20		●	●
	GE$^{W}/_{275}$-020D	2.75	3.2	0.20		●	●
	GE$^{W}/_{280}$-020D	2.80	3.2	0.20		●	●
	GER300-150DR	3.00	4.5	1.5		●	●
Steel					★	★	
Stainless						★	
Cast Iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

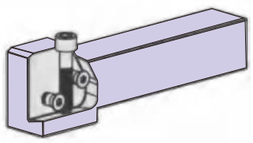
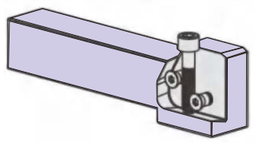
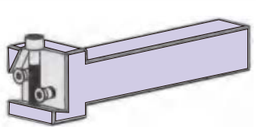
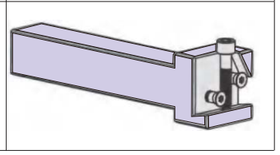
GER/L...E

Insert shape	Model	Size and Grades CW	CDX	RE	KTX	KVX	KW20
	GE$^{W}/_{200}$-010E	2.00	3.2	0.1		●	●
	GE$^{W}/_{225}$-010E	2.25	3.2	0.1		●	●
	GE$^{W}/_{230}$-020E	2.30	3.2	0.1			
	GE$^{W}/_{250}$-020E	2.50	4.5	0.2		●	●
	GE$^{}/_{275}$-020E	2.75	4.5	0.2			
	GE$^{W}/_{280}$-020E	2.80	4.5	0.2		●	●
	GE$^{W}/_{300}$-020E	3.00	4.5	0.2		●	
	GE$^{W}/_{330}$-020E	3.30	4.5	0.2		●	●
	GE$^{W}/_{350}$-020E	3.50	5.5	0.2		●	●
	GE$^{W}/_{400}$-020E	4.00	5.5	0.2		●	●
	GE$^{W}/_{430}$-020E	4.30	5.5	0.2		●	●
	GE$^{W}/_{450}$-020E	4.50	6.5	0.2		●	●
	GE$^{W}/_{460}$-020E	4.60	6.5	0.2		●	●
Steel					★	★	
Stainless						★	
Cast Iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

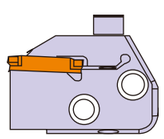
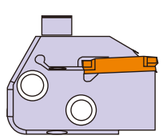
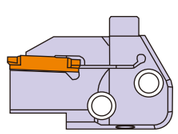
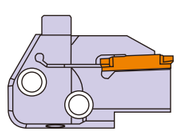
★ Preferred ☆ optional ● standard stock ○ order production

WD Modular part-off and grooving tools

Holder

Horizontal Type		Vertical Type	
HDR	HDL	HER	HEL
			

Cartridge

External Process		Facing Process	
HWDR	HWDL	HFDR	HFDL
			

Because of using independent tool holder design,
Compared with existing integrated tool:
The Applicability and economy are improved!
Replace able cutter holder:
You can change the type of installation according to the workpiece,
the cutting tool costs can be reduced by about 30%
Strong and Stable clamping force:
the carbide insert and cutter holder can be installed at the same time,
installation and replacement are very convenient

WD
Chipbreakers>>

F



Very soft cutting geometry
For low to medium strength materials
with low built-up edge tendency

T



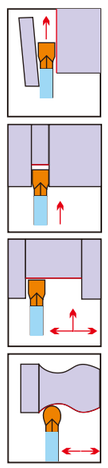
Very good swarf control and formation
Universal geometry for steel and stainless steel
machining ,also for thin-walled components

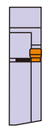
M

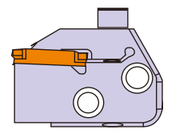


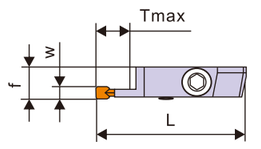
Geometry with small negative chamfer for
medium to high strength materials
suitable for all steels(stainless and cast)
first choice where cutting conditions are solid

WD Modular part-off and grooving tools
HWDR/L..



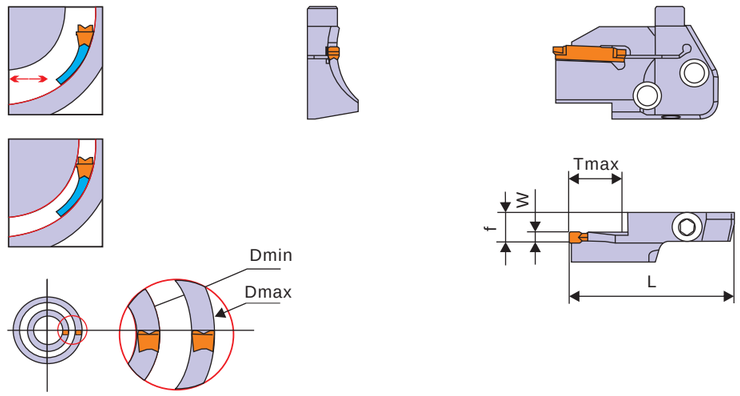






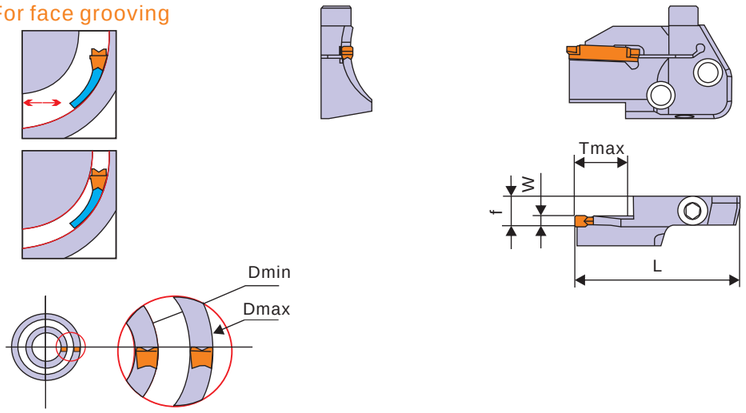
Model	Inserts	Size and Grades				Apply for	(kg)
		W	Tmax	L	f		
HWDR200-10	WD22N2.00..	2	10	46	10.3	HDR/HEL	0.10
HWDL200-10	WD22N2.00..	2	10	46	10.3	HDL/HER	0.10
HWDR200-22	WD22N2.00..	2	22	58	10.3	HDR/HEL	0.10
HWDL200-22	WD22N2.00..	2	22	58	10.3	HDL/HER	0.10
HWDR250-10	WD22N2.50..	2.5	10	46	10.3	HDR/HEL	0.10
HWDL250-10	WD22N2.50..	2.5	10	46	10.3	HDL/HER	0.10
HWDR250-22	WD22N2.50..	2.5	22	58	10.3	HDR/HEL	0.10
HWDL250-22	WD22N2.50..	2.5	22	58	10.3	HDL/HER	0.10
HWDR300-10	WD22N3.00..	3	10	46	10.3	HDR/HEL	0.10
HWDL300-10	WD22N3.00..	3	10	46	10.3	HDL/HER	0.10
HWDR300-22	WD22N3.00..	3	22	58	10.3	HDR/HEL	0.10
HWDL300-22	WD22N3.00..	3	22	58	10.3	HDL/HER	0.10
HWDR400-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HWDL400-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HWDR400-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HWDL400-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HWDR500-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.15
HWDL500-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.15
HWDR500-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.15
HWDL500-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.15

WD Modular part-off and grooving tools
HFDR/L300..
Blades >> For face grooving



Model	Inserts	Size and Grades w	Tmax	L	f	Apply for	(kg)
HFDR300034-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300034-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300038-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300038-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300042-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300042-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300042-19	WD22N3.00..	3	19	55	10.3	HDR/HEL	0.10
HFDL300042-19	WD22N3.00..	3	19	55	10.3	HDL/HER	0.10
HFDR300054-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300054-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300054-19	WD22N3.00..	3	19	55	10.3	HDR/HEL	0.10
HFDL300054-19	WD22N3.00..	3	19	55	10.3	HDL/HER	0.10
HFDR300067-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300067-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300067-22	WD22N3.00..	3	22	58	10.3	HDR/HEL	0.10
HFDL300067-22	WD22N3.00..	3	22	58	10.3	HDL/HER	0.10
HFDR300090-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300090-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300090-22	WD22N3.00..	3	22	58	10.3	HDR/HEL	0.10
HFDL300090-22	WD22N3.00..	3	22	58	10.3	HDL/HER	0.10
HFDR300130-12	WD22N3.00..	3	12	48	10.3	HDR/HEL	0.10
HFDL300130-12	WD22N3.00..	3	12	48	10.3	HDL/HER	0.10
HFDR300130-22	WD22N3.00..	3	22	58	10.3	HDR/HEL	0.10
HFDL300130-22	WD22N3.00..	3	22	58	10.3	HDL/HER	0.10

WD Modular part-off and grooving tools
HFDR/L400..
Blades >> For face grooving

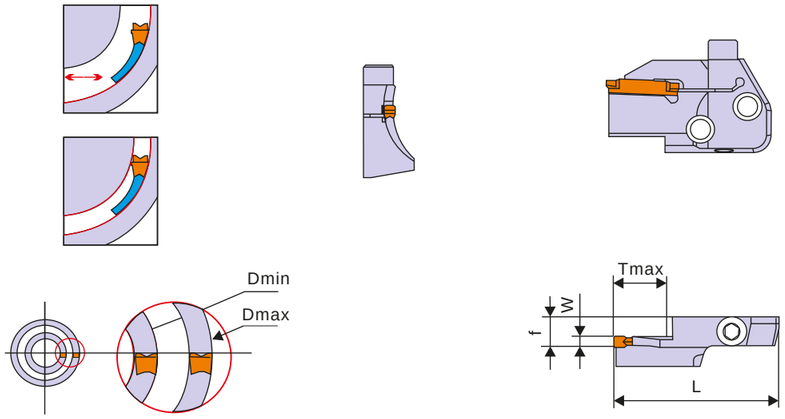


Model	Inserts	Size and Grades w	Tmax	L	f	Apply for	(kg)
HFDR400040-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400040-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400040-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400040-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400052-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400052-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400052-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400052-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400064-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400064-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400064-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400064-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400092-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400092-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400092-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400092-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400132-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400132-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400132-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400132-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400220-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400220-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400220-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400220-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15
HFDR400300-13	WD25N4.00..	4	13	49	10.6	HDR/HEL	0.15
HFDL400300-13	WD25N4.00..	4	13	49	10.6	HDL/HER	0.15
HFDR400300-25	WD25N4.00..	4	25	61	10.6	HDR/HEL	0.15
HFDL400300-25	WD25N4.00..	4	25	61	10.6	HDL/HER	0.15

WD Modular part-off and grooving tools

HFDR/L500..

Blades >> For face grooving

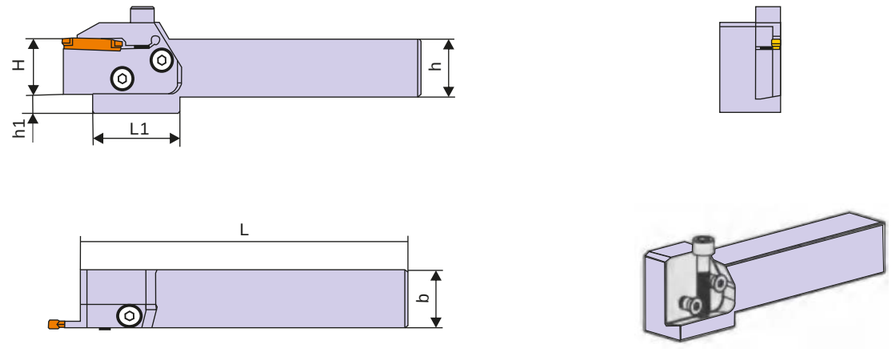


Model	Inserts	Size and Grades				Apply for	(kg)
		W	Tmax	L	f		
HFDR500040-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500040-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500040-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500040-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18
HFDR500060-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500060-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500060-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500060-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18
HFDR500085-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500085-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500085-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500085-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18
HFDR500120-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500120-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500120-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500120-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18
HFDR500175-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500175-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500175-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500175-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18
HFDR500180-13	WD25N5.00..	5	13	49	10.6	HDR/HEL	0.18
HFDL500180-13	WD25N5.00..	5	13	49	10.6	HDL/HER	0.18
HFDR500180-25	WD25N5.00..	5	25	61	10.6	HDR/HEL	0.18
HFDL500180-25	WD25N5.00..	5	25	61	10.6	HDL/HER	0.18

WD Modular part-off and grooving tools

HDR/L..

Part-off block



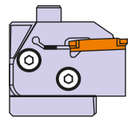
Model	h	b	H	L	L1	h1	Apply for	(kg)		Screw	Screw	Wrench	Wrench
HDR2020K	20	20	20	110	32	12	HWDR/HFDL	0.60					
HDL2020K	20	20	20	110	32	12	HWDL/HFDR	0.60					
HDR2525M	25	25	25	135	32	7	HWDR/HFDL	0.80					
HDL2525M	25	25	25	135	32	7	HWDL/HFDR	0.80					
HDR3225P	32	25	32	155	32	-	HWDR/HFDL	0.90		BS060160	BX060400	LT25	LH050
HDL3225P	32	25	32	155	32	-	HWDL/HFDR	0.90					
HDR3232P	32	32	32	155	32	-	HWDR/HFDL	1.00					
HDL3232P	32	32	32	155	32	-	HWDL/HFDR	1.00					
HDR4040R	40	40	40	180	32	-	HWDR/HFDL	1.50					
HDL4040R	40	40	40	180	32	-	HWDL/HFDR	1.50					

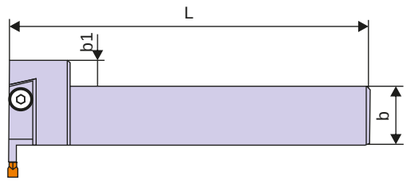
WD Modular part-off and grooving tools

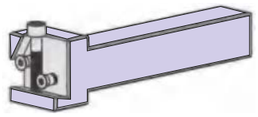
HER/L..

Part-off block







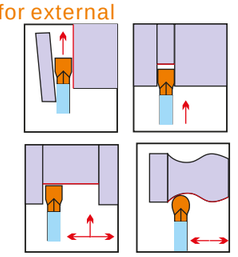


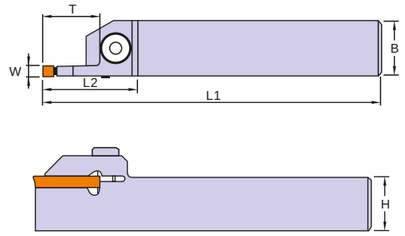
Model	h	b	H	L	L1	h1	Apply for	(kg)		Screw	Screw	Wrench	Wrench
HER2020K	20	20	20	110	32	12	HWDR/HFDL	0.60					
HEL2020K	20	20	20	110	32	12	HWDL/HFDR	0.60					
HER2525M	25	25	25	135	32	7	HWDR/HFDL	0.80					
HEL2525M	25	25	25	135	32	7	HWDL/HFDR	0.80					
HER3225P	32	25	32	155	32	-	HWDR/HFDL	0.90					
HEL3225P	32	25	32	155	32	-	HWDL/HFDR	0.90					
HER3232P	32	32	32	155	32	-	HWDR/HFDL	1.00		BS060160	BX060400	LT25	LH050
HEL3232P	32	32	32	155	32	-	HWDL/HFDR	1.00					
HER4040R	40	40	40	180	32	-	HWDR/HFDL	1.50					
HEL4040R	40	40	40	180	32	-	HWDL/HFDR	1.50					

WERNER

WD Tool holder >> for external

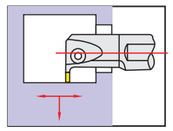
TWDR/L..



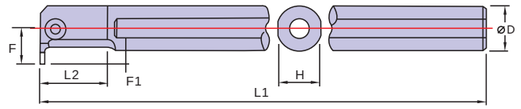


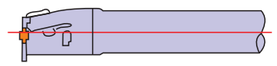
Model	W	H	B	L	T	Inserts	(kg)		Screw	Wrench
TWDR1212K-2T12	2	12	12	125	12	WD22N2.00..	0.16		BS0407	Lt15
TWDL1212K-2T12	2	12	12	125	12	WD22N2.00..	0.16		BS0407	LT15
TWDR1616K-2T16	2	16	16	125	17	WD22N2.00..	0.22		BX0520	LH040
TWDL1616K-2T16	2	16	16	125	17	WD22N2.00..	0.22		BX0520	LH040
TWDR2020K-2T16	2	20	20	125	17	WD22N2.00..	0.37		BX0620	LH050
TWDL2020K-2T16	2	20	20	125	17	WD22N2.00..	0.37		BX0620	LH050
TWDR2525M-2T16	2	25	25	150	17	WD22N2.00..	0.69		BX0620	LH050
TWDL2525M-2T16	2	25	25	150	17	WD22N2.00..	0.69		BX0620	LH050
TWDR1616K-3T06	3	16	16	125	14	WD22N3.00..	0.22		BX0520	LH040
TWDL1616K-3T06	3	16	16	125	14	WD22N3.00..	0.22		BX0520	LH040
TWDR1616K-3T20	3	16	16	125	20	WD22N3.00..	0.22		BX0520	LH040
TWDL1616K-3T20	3	16	16	125	20	WD22N3.00..	0.22		BX0520	LH040
TWDR2020K-3T09	3	20	20	125	09	WD22N3.00..	0.37		BX0620	LH050
TWDL2020K-3T09	3	20	20	125	09	WD22N3.00..	0.37		BX0620	LH050
TWDR2020K-3T20	3	20	20	125	20	WD22N3.00..	0.37		BX0620	LH050
TWDL2020K-3T20	3	20	20	125	20	WD22N3.00..	0.37		BX0620	LH050
TWDR2525M-3T09	3	25	25	150	09	WD22N3.00..	0.69		BX0620	LH050
TWDL2525M-3T09	3	25	25	150	09	WD22N3.00..	0.69		BX0620	LH050
TWDR2525M-3T22.5	3	25	25	150	20	WD22N3.00..	0.69		BX0620	LH050
TWDL2525M-3T22.5	3	25	25	150	20	WD22N3.00..	0.69		BX0620	LH050
TWDR2020K-4T10	4	20	20	125	10	WD25N4.00..	0.37		BX0620	LH050
TWDL2020K-4T10	4	20	20	125	10	WD25N4.00..	0.37		BX0620	LH050
TWDR2020K-4T20	4	20	20	125	20	WD25N4.00..	0.37		BX0620	LH050
TWDL2020K-4T20	4	20	20	125	20	WD25N4.00..	0.37		BX0620	LH050
TWDR2525M-4T10	4	25	25	150	10	WD25N4.00..	0.69		BX0620	LH050
TWDL2525M-4T10	4	25	25	150	10	WD25N4.00..	0.69		BX0620	LH050
TWDR2525M-4T22.5	4	25	25	150	20	WD25N4.00..	0.69		BX0620	LH050
TWDL2525M-4T22.5	4	25	25	150	20	WD25N4.00..	0.69		BX0620	LH050
TWDR2525M-5T12	5	25	25	150	12	WD25N5.00..	0.69		BX0620	LH050
TWDL2525M-5T12	5	25	25	150	12	WD25N5.00..	0.69		BX0620	LH050
TWDR2525M-5T24	5	25	25	150	25	WD25N5.00..	0.69		BX0620	LH050
TWDL2525M-5T24	5	25	25	150	25	WD25N5.00..	0.69		BX0620	LH050

WDTool holder>> for internal
TIWDR/L



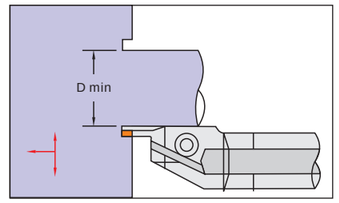


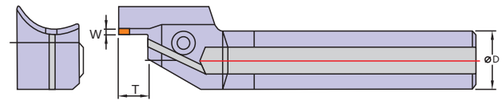


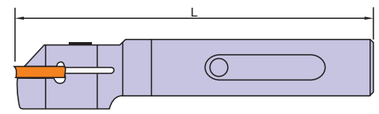


Model	W	D	F	F1	L1	L2	Dmin	The blade	(kg)		Screw	Wrench
TIWDR2025-2T06	2	20	15	6	180	40	25	WD22N2.00..	0.46		BX0520	LH040
TIWDL2025-2T06	2	20	15	6	180	40	25	WD22N2.00..	0.46		BX0520	LH040
TIWDR2532-2T07	2	25	21.5	7	200	50	32	WD22N2.00..	0.80		BX0520	LH040
TIWDL2532-2T07	2	25	21.5	7	200	50	32	WD22N2.00..	0.80		BX0520	LH040
TIWDR2025-3T06	3	20	15	6	180	40	25	WD22N3.00..	0.46		BX0520	LH040
TIWDL2025-3T06	3	20	15	6	180	40	25	WD22N3.00..	0.46		BX0520	LH040
TIWDR2532-3T07	3	25	21.5	7	200	50	32	WD22N3.00..	0.80		BX0520	LH040
TIWDL2532-3T07	3	25	21.5	7	200	50	32	WD22N3.00..	0.80		BX0520	LH040
TIWDR3240-3T11	3	32	27	11	250	60	40	WD22N3.00..	1.62		BX0620	LH050
TIWDL3240-3T11	3	32	27	11	250	60	40	WD22N3.00..	1.62		BX0620	LH050
TIWDR2532-4T09	4	25	21.5	9	200	50	32	WD25N4.00..	0.80		BX0520	LH040

WDTool holder>> for face grooving
WDFR/L..



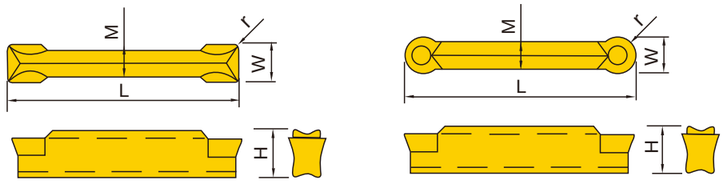




Coolant

Model	W	H	B	L	T	Inserts	(kg)		Screw	Wrench
A25M-WDFR2934-2T06	2	25	6	150	29	WD22N2.00..	0.50		BX0620	LH050
A25M-WDFR3444-2T06	2	25	6	150	34	WD22N2.00..	0.50		BX0620	LH050
A25M-WDFR4454-2T06	2	25	6	150	44	WD22N2.00..	0.50		BX0620	LH050
A25M-WDFR5470-2T12	2	25	12	150	54	WD22N2.00..	0.50		BX0620	LH050
A32M-WDFR70100-2T12	2	32	12	150	70	WD22N2.00..	0.70		BX0620	LH050
A32M-WDFR100150-2T12	2	32	12	150	100	WD22N2.00..	0.70		BX0620	LH050
A32M-WDFR150250-2T12	2	32	12	150	150	WD22N2.00..	0.70		BX0620	LH050
A32M-WDFR250800-2T12	2	32	12	150	250	WD22N2.00..	0.70		BX0620	LH050
A25M-WDFR2934-3T12	3	25	12	150	29	WD22N3.00..	0.50		BX0620	LH050
A25M-WDFR3444-3T12	3	25	12	150	34	WD22N3.00..	0.50		BX0620	LH050
A25M-WDFR4454-3T12	3	25	12	150	44	WD22N3.00..	0.50		BX0520	LH050
A25M-WDFR5470-3T20	3	25	20	150	54	WD22N3.00..	0.50		BX0520	LH050
A32M-WDFR70100-3T20	3	32	20	150	70	WD22N3.00..	0.70		BX0620	LH050
A32M-WDFR100150-3T20	3	32	20	150	100	WD22N3.00..	0.70		BX0620	LH050
A32M-WDFR150250-3T20	3	32	20	150	150	WD22N3.00..	0.70		BX0620	LH050
A32M-WDFR250800-3T20	3	32	20	150	250	WD22N3.00..	0.70		BX0620	LH050
A25M-WDFR2934-4T12	4	25	12	150	29	WD25N4.00..	0.50		BX0620	LH050
A25M-WDFR3444-4T12	4	25	12	150	34	WD25N4.00..	0.50		BX0620	LH050
A25M-WDFR4454-4T12	4	25	12	150	44	WD25N4.00..	0.50		BX0520	LH050
A25M-WDFR5470-4T20	4	25	20	150	54	WD25N4.00..	0.50		BX0520	LH050
A32M-WDFR70100-4T20	4	32	20	150	70	WD25N4.00..	0.70		BX0620	LH050
A32M-WDFR100150-4T20	4	32	20	150	100	WD25N4.00..	0.70		BX0620	LH050
A32M-WDFR150250-4T20	4	32	20	150	150	WD25N4.00..	0.70		BX0620	LH050
A32M-WDFR250800-4T20	4	32	20	150	250	WD25N4.00..	0.70		BX0620	LH050

Grooving inserts
WD..



Insert shape	Model	Size and Grades W	L	R	H	A	KTX	KVX	KW20
	WD22N2.00S-0.2T	2.0	22	0.2	4.0			●	
	WD22N3.00S-0.3T	3.0	22	0.3	4.0			●	
	WD25N4.00S-0.4T	4.0	25	0.4	4.0			●	
	WD25N5.00S-0.4T	5.0	25	0.4	4.0			●	
	WD22R-2.00S-06F	2.0	22		4.0	6			
	WD22R-3.00S-06F	3.0	22		4.0	6		●	
	WD22N3.00S-1.5R	3.0	22	1.5	4.0			●	
	WD25N4.00S-2.0R	4.0	25	2.0	4.0			●	
								●	
Steel							★	★	
Stainless Steel								★	
Cast Iron							☆	☆	
Nonferrous Metal									★
Heat Resistant Alloy								☆	
Hardened Steel									

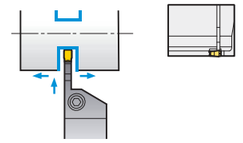
★ Preferred ☆ optional ● standard stock ○ order production

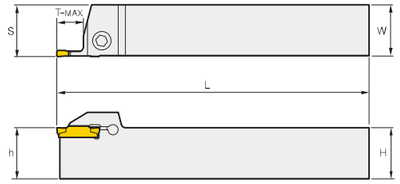
Recommended Cutting Conditions

Workpiece Materials		Processing the form	Vc(m/min) Recommended Cutting Speed KTX	KVX	KW20	f (mm/rev) Recommended Cutting Feed 2.0 f(mm/rev)	3.0 f(mm/rev)	4.0 f(mm/rev)	5.0 f(mm/rev)		
P	Steel	Cylindrical processing	50-100-170	50-100-170		0.06-0.12	0.08-0.20	0.10-0.25	0.12-0.25		
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.07-0.12	0.08-0.14	0.10-0.16		
M	Stainless Steel	Cylindrical processing		100-130-170		0.06-0.12	0.08-0.20	0.10-0.25	0.12-0.25		
		Inner hole end processing		50-80-120		0.05-0.10	0.07-0.12	0.08-0.14	0.10-0.16		
K	Cast iron	Cylindrical processing	50-100-170	50-100-170		0.06-0.12	0.08-0.20	0.10-0.25	0.12-0.25		
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.07-0.12	0.08-0.14	0.10-0.16		

MGEHR/L

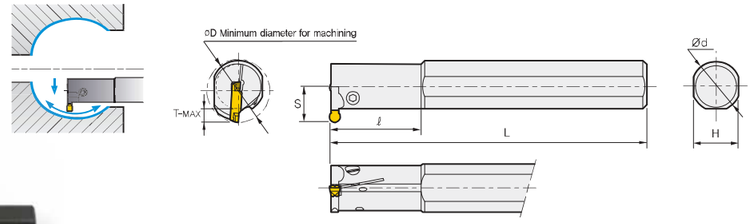






Model Right hand	Model Left hand	Stock R	Stock L	H	L	S	W	a max	Insert	Clamp Screw	Hex wrench
MGEHR1616-2	MGEHL1616-2	○		16	100	15	2	14.5	MGMN200-M	M5×17	S4
MGEHR2020-2	MGEHL2020-2	○		20	125	19	2	14.5	MGMN200-M	M6×20	S5
MGEHR2525-2	MGEHL2525-2	○		25	150	24	2	14.5	MGMN200-M	M6×20	S5
MGEHR1616-2.5	MGEHL1616-2.5	○		16	100	15	2.5	16.5	MGMN250-M	M5×17	S4
MGEHR2020-2.5	MGEHL2020-2.5	○		20	125	19	2.5	16.5	MGMN250-M	M6×20	S5
MGEHR2525-2.5	MGEHL2525-2.5	○		25	150	24	2.5	16.5	MGMN250-M	M6×20	S5
MGEHR1616-3	MGEHL1616-3	○		16	100	14.8	3	18	MGMN300-M	M5×17	S4
MGEHR2020-3	MGEHL2020-3	○		20	125	18.8	3	18	MGMN300-M		
MGEHR2020-3-T10	MGEHL2020-3-T10	○		20	125	18.8	3	10	MGMN300-M		
MGEHR2525-3	MGEHL2525-3	○		25	150	23.8	3	18	MGMN300-M	M6×20	S5
MGEHR2525-3-T10	MGEHL2525-3-T10	○		25	150	23.8	3	10	MGMN300-M		
MGEHR3232-3	MGEHL3232-3	○		32	170	30.5	3	18	MGMN300-M		
MGEHR3232-3-T10	MGEHL3232-3-T10	○		32	170	30.5	3	10	MGMN300-M		
MGEHR2020-4	MGEHL2020-4	○		20	125	18.5	4	18	MGMN400-M		
MGEHR2020-4-T10	MGEHL2020-4-T10	○		20	125	18.5	4	10	MGMN400-M		
MGEHR2525-4	MGEHL2525-4	○		25	150	23.5	4	18	MGMN400-M		
MGEHR2525-4-T10	MGEHL2525-4-T10	○		25	150	23.5	4	10	MGMN400-M		
MGEHR3232-4	MGEHL3232-4	○		32	170	30.5	4	18	MGMN400-M		
MGEHR3232-T-T10	MGEHL3232-T-T10	○		32	170	30.5	4	10	MGMN400-M		
MGEHR2020-5	MGEHL2020-5	○		20	150	18	5	23	MGMN500-M		
MGEHR2020-5-T15	MGEHL2020-5-T15	○		20	150	18	5	25	MGMN500-M		
MGEHR2525-5	MGEHL2525-5	○		25	150	23	5	23	MGMN500-M	M6×20	S5
MGEHR2525-5-T15	MGEHL2525-5-T15	○		25	150	23	5	15	MGMN500-M		
MGEHR3232-5	MGEHL3232-5	○		32	170	30	5	23	MGMN500-M		
MGEHR3232-5-T15	MGEHL3232-5-T15	○		32	170	30	5	15	MGMN500-M		
MGEHR2020-6	MGEHL2020-6	○		20	125	17	6	23	MGMN600-M		
MGEHR2020-6-T10	MGEHL2020-6-T10	○		20	125	17	6	10	MGMN600-M		
MGEHR2525-6	MGEHL2525-6	○		25	150	22.6	6	23	MGMN600-M		
MGEHR2525-6-T15	MGEHL2525-6-T15	○		25	150	22.6	6	15	MGMN600-M		
MGEHR3232-6	MGEHL3232-6	○		32	170	29.6	6	23	MGMN600-M		
MGEHR3232-6-T15	MGEHL3232-6-T15	○		32	170	29.6	6	15	MGMN600-M		

MGIVR/L

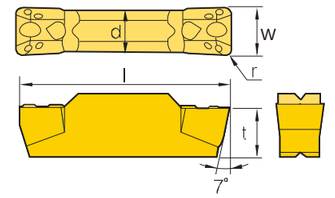




Model		Stock								
Right hand	Left hand	R	L	ØD	L	S	W		Insert	Clamp Screw	Hex wrench
MGIVR2016-1.5	MGIVL2016-1.5		O	16	180	11.3	1.5	3	MGMNI150-M	M4×14	S3
MGIVR2520-1.5	MGIVL2520-1.5		O	20	180	13.1	1.5	4	MGMNI150-M	M5×17	S4
MGIVR2925-1.5	MGIVL2925-1.5		O	25	200	16.2	1.5	4	MGMNI150-M	M5×17	S4
MGIVR2016-2	MGIVL2016-2		O	16	125	12.4	2	3	MGMNI200-M	M4×14	S3
MGIVR2520-2	MGIVL2520-2		O	20	125	14	2	5	MGMNI200-M	M5×17	S4
MGIVR2925-2	MGIVL2925-2		O	25	200	17.2	2	5	MGMNI200-M	M5×17	S4
MGIVR2016-2.5	MGIVL2016-2.5		O	16	125	12.5	2.5	6	MGMNI250-M	M4×14	S3
MGIVR2520-2.5	MGIVL2520-2.5		O	20	180	15.1	2.5	6	MGMNI250-M	M5×17	S4
MGIVR2925-2.5	MGIVL2925-2.5		O	25	200	18.2	2.5	6	MGMNI250-M	M5×17	S4
MGIVR2520-3	MGIVL2520-3		O	20	180	15.6	3	6	MGMNI300-M	M5×17	S4
MGIVR3125-3	MGIVL3125-3		O	25	200	18.9	3	5	MGMNI300-M	M5×17	S4
MGIVR3732-3	MGIVL3732-3		O	32	250	21.5	3	6	MGMNI300-M	M5×20	S4
MGIVR2520-4	MGIVL2520-4		O	20	180	15.6	4	6	MGMNI400-M	M5×17	S4
MGIVR3125-4	MGIVL3125-4		O	25	200	18.9	4	6	MGMNI400-M	M5×17	S4
MGIVR3732-4	MGIVL3732-4		O	32	250	21.5	4	6	MGMNI400-M	M5×20	S4
MGIVR3125-5	MGIVL3125-5		O	25	200	19.1	5	8	MGMNI500-M		
MGIVR3732-5	MGIVL3732-5		O	32	250	21.5	5	8	MGMNI500-M		
MGIVR3125-6	MGIVL3125-6		O	25	200	19.4	6	8	MGMNI600-M		
MGIVR3732-6	MGIVL3732-6		O	32	250	21.5	6	8	MGMNI600-M		
MGIVR3732-8	MGIVL3732-8		O	32	250	23.2	8	10	MGMNI800-M		
MGIVR4540-8	MGIVL4540-8		O	40	300	27.2	8	10	MGMNI800-M	M5×20	S5
MGIVR3125-6A	MGIVL3125-6A		O	25	200	19.4	6	8	MGMNI600-M		
MGIVR3732-6A	MGIVL3732-6A		O	32	250	21.5	6	8	MGMNI600-M		
MGIVR3732-8A	MGIVL3732-8A		O	32	250	23.4	8	10	MGMNI800-M		
MGIVR4540-8A	MGIVL4540-8A		O	40	300	27.2	8	10	MGMNI800-M		

Grooving inserts

M.MN..



Insert shape	Model	Size and Grades							
		W	r	l	d	t	KTX	KVX	KW20
	MGMN150-G	1.5	0.15	16.0	1.2	3.5	●	●	
	MGMN200-G	2.0	0.2	16.0	1.6	3.5	●	●	
	MGMN250-G	2.5	0.2	18.5	2.0	3.85	●	●	
	MGMN300-M	3.0	0.4	21.0	2.35	4.8	●	●	
	MGMM400-M	4.0	0.4	21.0	3.3	4.8	●	●	
	MGMN500-M	5.0	0.8	26.0	4.1	5.8	●	●	
	MGMN600-M	6.0	0.8	26.0	5.0	5.8	●	●	
	MRMN200-M	2.0	1.0	16.0	1.5	3.5	●	●	
	MRMN300-M	3.0	1.5	21.0	2.35	4.8	●	●	
	MRMN400-M	4.0	2.0	21.0	3.3	4.8	●	●	
Steel							★	★	
Stainless Steel								★	
Cast Iron							☆	☆	
Nonferrous Metal									★
Heat Resistant Alloy								☆	
Hardened Steel									

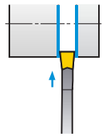
★ Preferred ☆ optional ● standard stock ○ order production

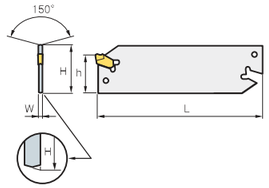
Recommended Cutting Conditions

Workpiece Materials		Processing the form	Vc(m/min) Recommended Cutting Speed			f (mm/rev) Recommended Cutting Feed					
			KTX	KVX	KW20	1.5/2.0	2.5	3.0	4.0	5.0	6.0
						f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)	f(mm/rev)
P	Steel	Cylindrical processing	50-100-130	50-100-130		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18
M	Stainless Steel	Cylindrical processing		60-110-150		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing		50-80-120		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18
K	Cast iron	Cylindrical processing	50-100-130	50-100-130		0.06-0.12	0.07-0.15	0.08-0.20	0.10-0.25	0.12-0.25	0.15-0.25
		Inner hole end processing	40-70-100	40-70-100		0.05-0.10	0.06-0.10	0.07-0.12	0.08-0.14	0.10-0.16	0.10-0.18

SPB



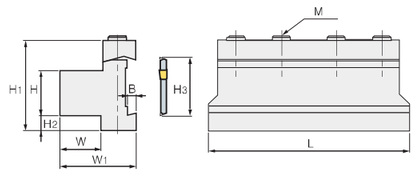




Model	Stock R	Stock L	H	B	B	L	Insert
SPB326-S		O	26	2.4	110	21.6	ZQMX300-1E
SPB426-S		O	26	3.2	110	21.6	ZQMX400-1E
SPB526-S		O	26	4.0	110	21.6	ZQMX500-ZE
SPB626-S		O	26	5.2	110	21.6	ZQMX600-1E
SPB332-S		O	32	2.4	150	25	ZQMX300-1E
SPB432-S		O	32	3.2	150	25	ZQMX400-1E
SPB532-S		O	32	4.0	150	25	ZQMX500-1E
SPB632-S		O	32	5.2	150	25	ZQMX600-1E

PHS

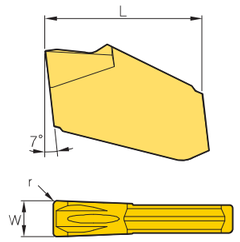




Model	Stock R	Stock L		H	h1	h2	B	B1	Clamp	Clamp Screw	Wrench
PHS2026		O	86	20	10	46.6	19	38	PHS26	M6	S5
PHS2526		O	86	25	5	46.6	23	42	PHS26		
PHS3226		O	86	32	3	51.6	30	48	PHS26		
PHS2032		O	110	20	13	50	19	38	PHS32		
PHS2532		O	110	25	8	50	23	42	PHS32		
PHS3232		O	110	32	5	54	30	48	PHS32		

Grooving inserts

SP..



Insert shape	Model	Size and Grades W	I	R	KTX	KVX	KW20
	SP200	2.0	9.3	0.2	●	●	
	SP300	3.0	11.3	0.2	●	●	
	SP400	4.0	11.3	0.25	●	●	
	SP500	5.0	11.4	0.3	●	●	
	SP600	6.4	11.4	0.35	●	●	
Steel					★	★	
Stainless Steel						★	
Cast Iron					☆	☆	
Nonferrous Metal							★
Heat Resistant Alloy						☆	
Hardened Steel							

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Processing the form	Vc(m/min) Recommended Cutting Speed KTX	KVX	KW20	f(mm/rev) Recommended Cutting Feed 2.0 f(mm/rev)	3.0 f(mm/rev)	4.0 f(mm/rev)	5.0 f(mm/rev)
P	Steel	Cylindrical processing	60-100-150			0.07-0.12	0.08-0.15	0.09-0.20	0.10-0.25
M	Stainless Steel	Cylindrical processing							
K	Cast iron	Cylindrical processing	60-100-150			0.07-0.12	0.08-0.15	0.09-0.20	0.10-0.25

Threading tools

I1-I22

KTTR/L-F I01

TT..55.. ..... I01
Thread inserts

TT..60.. ..... I02
Thread inserts

SER/L I03

SIR/L I04

CSIR/L ESIR/L I05

Thread inserts I06

60 ..... I06
60° flood external thread

60° I07
60° wide internal thread

55° I08
55° wide external thread

55° I09
55° wide internal thread

60° I10
60° metric external thread

60° I11
60° metric internal thread

60° I12
60° INCH MALE thread (UN)

60° I13
60° inch internal thread (UN)

55° I14
55° Wyeth MALE thread (W) Pipe parallel thread G(PF)

55° I15
55° Whitworth internal thread (W) Pipe parallel thread G(PF)

55° I16
55° Taper Pipe thread MALE thread (BSPT)

55° I17
55° Taper pipe Thread Internal thread (BSPT)

60° I18
60° American taper pipe Thread MALE thread (NPT)

60° I19
60° American taper Pipe Internal thread (NPT)

30° I20
30° Trapezoidal thread MALE thread (TR)

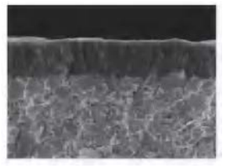
30° I21
30° Trapezoidal thread Internal thread (TR)

Table of recommended cutting conditions I22

Turning Insert Grades

PVD coating carbide inserts

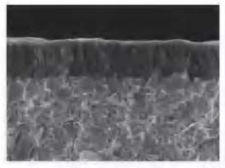
KTX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and .Use TiCN PVD coating with excellent versatility
Application: Suitable for steel cutting

KVX Cutting Range: Finishing and Semi-finishing





With highly hard substrate, favorable red hardness and excellent versatility

Application: Suitable for stainless steel and steel cutting

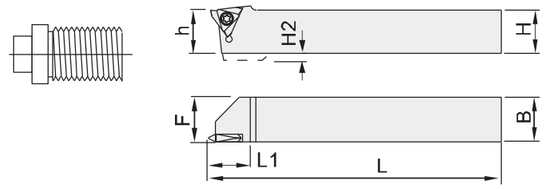
Summary of Insert Grades

Threading Turning

Workpiece Material	P					M					K				N			S				H		
	Steel					Stainless steel					Cast Iron				Nonferrous			NRSA				Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
PVD Coated Carbide		KTX						KKX				KTX												
			KVX						KVX															
Uncoated Carbide																KW20								

KTTR/L-F

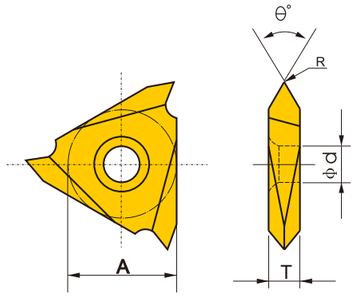




Model		Stock										
Right hand	Left hand	R	L	H h	B	L	L1	F	H2	Insert	Clamp Screw	Wrench
KTTR1010F-16F	KTTL1010F-16F	○		10	10	80	18	13	4	TT32R/L	ETNA0410	TW15P
KTTR1212H-16F	KTTL1212H-16F	○		12	12	100	18	17	2			
KTTR1616H-16F	KTTL1616H-16F	○		16	16	100	18	19	–			
KTTR2020K-16F	KTTL2020K-16F	○		20	20	125	18	23	–			
KTTR2525M-16F	KTTL2525M-22F	○		25	25	150	18	28	–			
KTTR2020K-22F	KTTL2020K-22F	○		20	20	150	25	23	–	TT43R/L	ETNA0512	TW20P
KTTR2525M-22F	KTTL2525M-22F	○		25	25	150	25	28	–			

Thread inserts

TT..55..

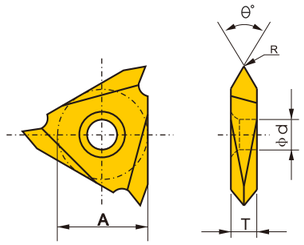


Insert shape	Model	Size and Grades									
		Pitch	TPI	R	T	A	θ°	KTX	KKX	KVX	KW20
	TT32R5501		28-10	0.1	3.18	9.525	55			●	●
	TT32R5502		14-11	0.2	3.18	9.525	55				
	TT43R5501		28-11	0.1	4.76	12.70	55			●	●
	TT43R5502		14-11	0.2	4.76	12.70	55				
	TT43R5503		10-7	0.3	4.76	12.70	55				
	TT43R5504		8-7	0.4	4.76	12.70	55				
	TT32L5501		28-10	0.1	3.18	9.525	55				
	TT32L5502		14-11	0.2	3.18	9.525	55				
	TT43L5501		28-11	0.1	4.76	12.70	55				
	TT43L5502		14-11	0.2	4.76	12.70	55				
	TT43L5503		10-7	0.3	4.76	12.70	55				
	TT43L5504		8-7	0.4	4.76	12.70	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		★	
Nonferrous Metal											★
Heat Resistant Alloy									☆	★	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

TT..60..

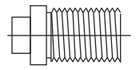


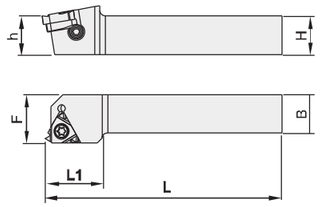
Insert shape	Model	Size and Grades									
		Pitch	TPI	R	T	A	θ°	KTX	KKX	KVX	KW20
	TT32R6000	0.5~2.5		0.0	3.18	9.525	60			●	●
	TT32R6001	1.0~2.5		0.1	3.18	9.525	60			●	●
	TT32R6002	1.5~2.5		0.2	3.18	9.525	60				
	TT32R6003	2.5~3.5		0.3	3.18	9.525	60				
	TT43R6001	1.0~3.5		0.1	4.76	12.70	60			●	●
	TT43R6002	1.5~3.5		0.2	4.76	12.70	60				
	TT43R6003	2.5~3.5		0.3	4.76	12.70	60				
	TT43R6004	3.0~3.5		0.4	4.76	12.70	60				
	TT32L6000	0.5~2.5		0.0	3.18	9.525	60				
	TT32L6001	1.0~2.5		0.1	3.18	9.525	60				
	TT32L6002	1.5~2.5		0.2	3.18	9.525	60				
	TT32L6003	2.5~3.5		0.3	3.18	9.525	60				
	TT43L6001	1.0~3.5		0.1	4.76	12.70	60				
	TT43L6002	1.5~3.5		0.2	4.76	12.70	60				
	TT43L6003	2.5~3.5		0.3	4.76	12.70	60				
	TT43L6004	3.0~3.5		0.4	4.76	12.70	60				
Steel									★	★	
Stainless Steel										★	
Cast Iron									☆	☆	
Nonferrous Metal											★
Heat Resistant Alloy										☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

SER/L



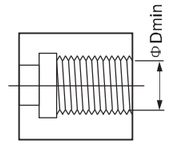


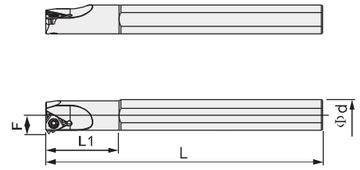


Model		Stock											
Right hand	Left hand	R	L	H h	B	L	L1	F	Insert	Shim	Insert Screw	Shim Screw	Wrench
SER0808H11	SEL0808H11	○		08	08	100	18	11	11ER/L..		ST11N		TW08P
SER1010H11	SEL1010H11	○		10	10	100	18	11					
SER1212F16	SEL1212F16	○		12	12	80	22	16			ST16N		
SER1616H16	SEL1616H16	○		16	16	100	22	16					
SER2020K16	SEL2020K16	○		20	20	125	30	20	16ER/L..	ATE16 ATI16	ST16	STA16	TW15P
SER2525M16	SEL2525M16	○		25	25	150	30	15					
SER3232P16	SEL3232P16	○		32	32	170	30	32					
SER2020K22	SEL2020K22	○		20	20	125	36	20					
SER2525M22	SEL2525M22	○		25	25	150	36	25	22ER/L..	ATE22 ATI22	ST22	STA22	TW15P
SER3232P22	SEL3232P22	○		32	32	170	36	32					
SER4040R22	SEL4040R22	○		40	40	200	36	40					
SER2525M27	SEL2525M27	○		25	25	150	40	25	27ER/L..	ATE27 ATI27	ST27	STA27	TW25P
SER3232P27	SEL3232P27	○		32	32	170	40	32					
SER4040R27	SEL4040R27	○		40	40	200	40	40					

SIR/L



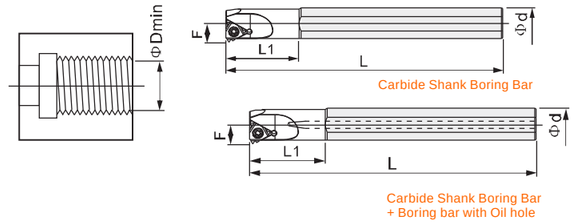




Model		Stock											
Right hand	Left hand	R	L	Dmin	d	L	L1	F	Insert	Shim	Insert Screw	Shim Screw	Wrench
SIR0005H06	SIL0005H06	●	○	6.4	12	100	15	4.3	06IR/L..		ST06N		TW06P
SIR0007H06	SIL0007H06	●	○	7.8	16	125	21	5.3					
SIR0008K08	SIL0008K08	●	○	9.0	16	125	24	6.4	08IR/L..		ST08N		TW06P
SIR0010H11	SIL0010H11	●	○	12	10	100	-	7.4					
SIR0010K11	SIL0010K11	●	○	12	16	125	30	6.5	11IR/L..		ST11N		TW08P
SIR0012K11	SIL0012K11	●	○	15	12	140	36	8.0					
SIR0012M16	SIL0012M16	●	○	16	16	150	36	10.0					
SIR0016P16	SIL0016P16	●	○	19	16	170	-	11.4					
SIR0020P16	SIL0020P16	●	○	24	20	170	-	13.4	16IR/L..		ST16		TW15P
SIR0025R16	SIL0025R16	●	○	29	25	200	-	16.3		ATE16 ATI16			
SIR0032S16	SIL0032S16	●	○	36	32	250	-	19.6					
SIR0040T16	SIL0040T16	●	○	44	40	300	-	13.8					
SIR0020P22	SIL0020P22	●	○	24	20	170	-	13.0	22IR/L..		ST22	STA22	TW15P
SIR0025R22	SIL0025R22	●	○	29	25	200	-	17.2		ATE22 ATI22			
SIR0032S16	SIL0032S16	●	○	38	32	250	-	21.5					
SIR0040T22	SIL0040T22	●	○	46	40	300	-	25.8					
SIR0032S27	SIL0032S27	●	○	40	32	250	-	22.4	27IR/L..	ATE27 ATI27	ST27	STA27	TW25P
SIR0040T27	SIL0040T27	●	○	48	40	300	-	26.4					
SIR0050U27	SIL0050U27	●	○	58	50	350	-	31.4					
SIR0060V27	SIL0060V27	●	○	68	60	400	-	36.4					

CSIR/L
ESIR/L

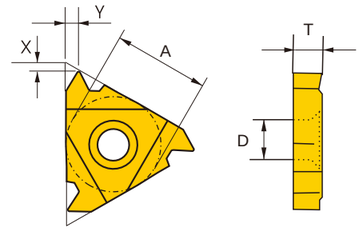




Model		Stock											
Right hand	Left hand	R	L	Dmin	d	L	L1	F	Insert	Shim	Insert Screw	Shim Screw	Wrench
CSIR0005H06	CSIL0005H06	O		6.4	6	110	25	4.3	06IR/L..		ST06N		TW06P
CSIR0007K06	CSIL0007K06	O		7.8	8	125	30	5.3					
CSIR0008K08	CSIL0008K08	O		9.0	8	125	35	6.4	08IR/L..		ST08N		TW06P
CSIR0010M11	CSIL0010M11	O		12	10	150	-	7.4	11IR/L..		ST11N		TW08P
CSIR0012P11	CSIL0012P11	O		15	12	170	-	8.5					
CSIR0016R16	CSIL0016R16	O		19	16	200	-	11.4	16IR/L..	ATE16	ST16		TW15P
CSIR0020S16	CSIL0020S16	O		23	20	250	-	13.7		ATI16			
CSIR0025S16	CSIL0025S16	O		28	25	300	-	16.2					
ESIR0005H06	ESIL0005H06	O		6.4	6	110	25	4.3	06IR/L..		ST06N		TW06P
ESIR0007K06	ESIL0007K06	O		7.8	8	125	30	5.3					
ESIR0008K08	ESIL0008K08	O		9.0	8	125	35	6.4	08IR/L..		ST08N		TW06P
ESIR0010M11	ESIL0010M11	O		12	10	150	-	7.6	11IR/L..		ST11N		TW08P
ESIR0012P11	ESIL0012P11	O		15	12	170	-	8.5					
ESIR0016R16	ESIL0016R16	O		19	16	200	-	11.4					
ESIR0020S16	ESIL0020S16	O		23	20	250	-	13.7	16IR/L..	ATE16	ST16		TW15P
ESIR0025S16	ESIL0025S16	O		28	25	300	-	16.2		ATI16			

Thread inserts

60° full external thread



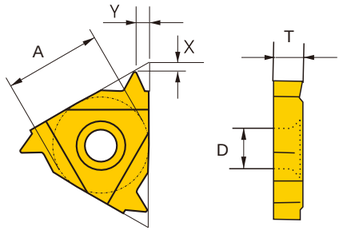
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM A60	0.5-1.5		0.06	0.8	0.9	60			●	
	16ERM G60	1.75-3		0.22	1.2	1.7	60			●	
	16ERM AG60	0.5-3		0.06	1.2	1.7	60			●	
	16ER A60	0.5-1.5		0.06	0.8	0.9	60	●	●	●	●
	16ER G60	1.75-3		0.22	1.2	1.7	60	●	●	●	●
	16ER AG60	0.5-3		0.06	1.2	1.7	60	●	●	●	●
	16ELM A60	0.5-1.5		0.06	0.8	0.9	60				
	16ELM G60	1.75-3		0.22	1.2	1.7	60				
	16ELM AG60	0.5-3		0.06	1.2	1.7	60				
	16EL A60	0.5-1.5		0.06	0.8	0.9	60				
	16EL G60	1.75-3		0.22	1.2	1.7	60				
	16EL AG60	0.5-3		0.06	1.2	1.7	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

60° full external thread



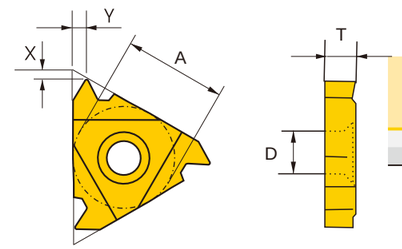
Model	A	T	D
06NR..	3.97	1.91	2.3
08NR..	4.76	2.38	2.3
11NR..	6.35	3.18	3.0
16NR..	9.525	3.68	4.0
22NR..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	06NR A60	0.75-1.25		0.05	0.6	0.6	60			●	●
	08NR A60	1.0-1.75		0.07	0.6	0.7	60			●	●
	11NR A60	0.5-1.5		0.02	0.8	0.9	60	●	●	●	●
	16NR A60	0.5-1.5		0.02	0.8	0.9	60	●	●	●	●
	16NR G60	1.75-3		0.11	1.2	1.7	60	●	●	●	●
	16NR AG60	0.5-3		0.02	1.2	1.7	60	●	●	●	●
	22NR N60	3.5-5		0.22	1.7	2.5	60	●		●	●
	06NL A60	0.75-1.25		0.05	0.6	0.6	60				
	08NL A60	1.0-1.75		0.07	0.6	0.7	60				
	11NL A60	0.5-1.5		0.02	0.8	0.9	60				
	16NL A60	0.5-1.5		0.02	0.8	0.9	60				
	16NL G60	1.75-3		0.11	1.2	1.7	60				
	16NL AG60	0.5-3		0.02	1.2	1.7	60				
	22NL N60	3.5-5		0.22	1.7	2.5	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

55° full external thread

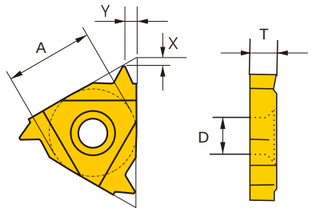


Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM A55		40-16	0.06	0.8	0.9	55			●	
	16ERM G55		14-8	0.22	1.2	1.7	55			●	
	16ERM AG55		40-8	0.06	1.2	1.7	55			●	
	16ER A55		40-6	0.06	0.8	0.9	55	●	●	●	●
	16ER G55		14-8	0.22	1.2	1.7	55	●	●	●	●
	16ER AG55		40-8	0.06	1.2	1.7	55	●	●	●	●
	22ER N55		7-5	047	1.7	2.5	55	●		●	●
	16ELM A55		40-16	0.06	0.8	0.9	55				
	16ELM G55		14-8	0.22	1.2	1.7	55				
	16ELM AG55		40-8	0.06	1.2	1.7	55				
	16EL A55		40-6	0.06	0.8	0.9	55				
	16EL G55		14-8	0.22	1.2	1.7	55				
	16EL AG55		40-8	0.06	1.2	1.7	55				
	22EL N55		7-5	0.47	1.7	2.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts
55° universal internal thread

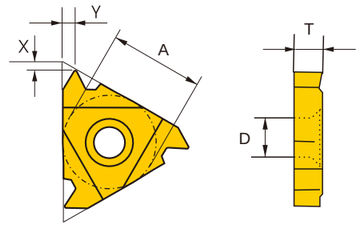


Model	A	T	D
06NR..	3.97	1.91	2.3
08NR..	4.76	2.38	2.3
11NR..	6.35	3.18	3.0
16NR..	9.525	3.68	4.0
22NR..	12.70	4.9	4.85

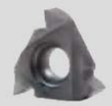
Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	06NR A55		24	0.10	0.6	0.6	55			●	●
	08NR A55		24,20	0.10	0.6	0.7	55			●	●
	11NR A55		40-16	0.06	0.8	0.9	55	●	●	●	●
	16NR A55		40-16	0.06	0.8	0.9	55	●	●	●	●
	16NR G55		14-8	0.22	1.2	1.7	55	●	●	●	●
	16NR AG55		40-8	0.06	1.2	1.7	55	●	●	●	●
	22NR N55		7-5	0.47	1.7	2.5	55	●		●	●
	06NL A55		24	0.10	0.6	0.6	55				
	08NL A55		24,20	0.10	0.6	0.7	55				
	11NL A55		40-16	0.06	0.8	0.9	55				
	16NL A55		40-16	0.06	0.8	0.9	55				
	16NL G55		14-8	0.22	1.2	1.7	55				
	16NL AG55		40-8	0.06	1.2	1.7	55				
	22NL N55		7-5	0.47	1.7	2.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts
60° metric external thread



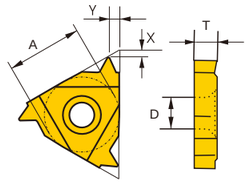
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM 1.00 ISO	1.0		0.12	0.7	0.7	60			●	
	16ERM 1.25 ISO	1.25		0.15	0.8	0.9	60			●	
	16ERM 1.50 ISO	1.5		0.19	0.8	1.0	60			●	
	16ERM 1.75 ISO	1.75		0.22	0.9	1.2	60			●	
	16ERM 2.00 ISO	2.0		0.25	1.0	1.3	60			●	
	16ERM 2.50 ISO	2.5		0.33	1.1	1.5	60			●	
	16ERM 3.00 ISO	3.0		0.41	1.2	1.6	60			●	
	16ER 0.50 ISO	0.5		0.06	0.6	0.6	60	●	●	●	●
	16ER 0.75 ISO	0.75		0.09	0.6	0.6	60	●	●	●	●
	16ER 1.00 ISO	1.0		0.12	0.7	0.7	60	●	●	●	●
	16ER 1.25 ISO	1.25		0.15	0.8	0.9	60	●	●	●	●
	16ER 1.50 ISO	1.5		0.19	0.8	1.0	60	●	●	●	●
	16ER 1.75 ISO	1.75		0.22	0.9	1.2	60	●	●	●	●
	16ER 2.00 ISO	2.0		0.25	1.0	1.3	60	●	●	●	●
	16ER 2.50 ISO	2.5		0.32	1.1	1.5	60	●	●	●	●
	16ER 3.00 ISO	3.0		0.41	1.2	1.6	60	●	●	●	●
	22ER 3.00 ISO	3.0		0.41	1.2	1.6	60	●		●	●
	22ER 3.50 ISO	3.5		0.48	1.6	2.3	60	●		●	●
	22ER 4.00 ISO	4.0		0.55	1.6	2.3	60	●		●	●
	22ER 4.50 ISO	4.0		0.62	1.7	2.4	60	●		●	●
	22ER 5.00 ISO	5.0		0.70	1.7	2.5	60	●		●	●
	16ELM 1.00 ISO	1.0		0.12	0.7	0.7	60				
	16ELM 1.25 ISO	1.25		0.15	0.8	0.9	60				
	16ELM 1.50 ISO	1.5		0.19	0.8	1.0	60				
	16ELM 1.75 ISO	1.75		0.22	0.9	1.2	60				
	16ELM 2.00 ISO	2.0		0.25	1.0	1.3	60				
	16ELM 2.50 ISO	2.5		0.33	1.1	1.5	60				
	16ELM 3.00 ISO	3.0		0.41	1.2	1.6	60				
	16EL 0.50 ISO	0.5		0.06	0.6	0.6	60				
	16EL 0.75 ISO	0.75		0.09	0.6	0.6	60				
	16EL 1.00 ISO	1.0		0.12	0.7	0.7	60				
	16EL 1.25 ISO	1.25		0.15	0.8	0.9	60				
	16EL 1.50 ISO	1.5		0.19	0.8	1.0	60				
	16EL 1.75 ISO	1.75		0.22	0.9	1.2	60				
	16EL 2.00 ISO	2.0		0.25	1.0	1.3	60				
	16EL 2.50 ISO	2.5		0.32	1.1	1.5	60				
	16EL 3.00 ISO	3.0		0.41	1.2	1.6	60				
	22EL 3.00 ISO	3.0		0.41	1.2	1.6	60				
	22EL 3.50 ISO	3.5		0.48	1.6	2.3	60				
	22EL 4.00 ISO	4.0		0.55	1.6	2.3	60				
	22EL 4.50 ISO	4.0		0.62	1.7	2.4	60				
	22EL 5.00 ISO	5.0		0.70	1.7	2.5	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

60° metric internal thread



Model	A	T	D
11NR..	6.35	3.18	3.0
16NR..	9.525	3.68	4.0
22NR..	12.70	4.9	4.85

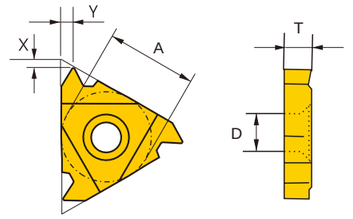
Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	11NRM 1.00 ISO	1.0		0.07	0.6	0.7	60			●	
	11NRM 1.25 ISO	1.25		0.08	0.8	0.9	60			●	
	11NRM 1.50 ISO	1.5		0.11	0.8	1.0	60			●	
	11NRM 1.75 ISO	1.75		0.12	0.9	1.1	60			●	
	16NRM 1.00 ISO	1.0		0.07	0.6	0.7	60			●	
	16NRM 1.25 ISO	1.25		0.08	0.8	0.9	60			●	
	16NRM 1.50 ISO	1.5		0.11	0.8	1.0	60			●	
	16NRM 1.75 ISO	1.75		0.12	0.9	1.2	60			●	
	16NRM 2.00 ISO	2.0		0.14	1.0	1.3	60			●	
	16NRM 2.50 ISO	2.5		0.17	1.1	1.5	60			●	
	16NRM 3.00 ISO	3.0		0.19	1.1	1.5	60			●	
	11NR 0.50 ISO	0.5		0.03	0.6	0.6	60	●	●	●	●
	11NR 0.75 ISO	0.75		0.05	0.6	0.6	60	●	●	●	●
	11NR 1.00 ISO	1.0		0.07	0.6	0.7	60	●	●	●	●
	11NR 1.25 ISO	1.25		0.08	0.8	0.9	60	●	●	●	●
	11NR 1.50 ISO	1.5		0.11	0.8	1.0	60	●	●	●	●
	11NR 1.75 ISO	1.75		0.12	0.9	1.1	60	●	●	●	●
	11NR 2.00 ISO	2.0		0.14	0.8	0.9	60	●	●	●	●
	16NR 1.00 ISO	1.0		0.07	0.6	0.7	60	●	●	●	●
	16NR 1.25 ISO	1.25		0.08	0.8	0.9	60	●	●	●	●
	16NR 1.50 ISO	1.5		0.11	0.8	1.0	60	●	●	●	●
	16NR 1.75 ISO	1.75		0.12	0.9	1.2	60	●	●	●	●
	16NR 2.00 ISO	2.0		0.14	1.0	1.3	60	●	●	●	●
	16NR 2.50 ISO	2.5		0.16	1.1	1.5	60	●	●	●	●
	16NR 3.00 ISO	3.0		0.19	1.1	1.5	60	●	●	●	●
	22NR 3.00 ISO	3.0		0.19	1.1	1.5	60	●		●	●
	22NR 3.50 ISO	3.5		0.23	1.6	2.3	60	●		●	●
	22NR 4.00 ISO	4.0		0.26	1.6	2.3	60	●		●	●
	22NR 4.50 ISO	4.5		0.30	1.6	2.3	60	●		●	●
	22NR 5.00 ISO	5.0		0.34	1.6	2.3	60	●		●	●
	11NRM 1.00 ISO	1.0		0.07	0.6	0.7	60				
	11NRM 1.25 ISO	1.25		0.08	0.8	0.9	60				
	11NRM 1.50 ISO	1.5		0.11	0.8	1.0	60				
	11NRM 1.75 ISO	1.75		0.12	0.9	1.1	60				
	16NRM 1.00 ISO	1.0		0.07	0.6	0.7	60				
	16NRM 1.25 ISO	1.25		0.08	0.8	0.9	60				
	16NRM 1.50 ISO	1.5		0.11	0.8	1.0	60				
	16NRM 1.75 ISO	1.75		0.12	0.9	1.2	60				
	16NRM 2.00 ISO	2.0		0.14	1.0	1.3	60				
	16NRM 2.50 ISO	2.5		0.17	1.1	1.5	60				
	16NRM 3.00 ISO	3.0		0.19	1.1	1.5	60				
	11NR 0.50 ISO	0.5		0.03	0.6	0.6	60				
	11NR 0.75 ISO	0.75		0.05	0.6	0.6	60				
	11NR 1.00 ISO	1.0		0.07	0.6	0.7	60				
	11NR 1.25 ISO	1.25		0.08	0.8	0.9	60				
	11NR 1.50 ISO	1.5		0.11	0.8	1.0	60				
	11NR 1.75 ISO	1.75		0.12	0.9	1.1	60				
	11NR 2.00 ISO	2.0		0.14	0.8	0.9	60				
	16NR 1.00 ISO	1.0		0.07	0.6	0.7	60				
	16NR 1.25 ISO	1.25		0.08	0.8	0.9	60				
	16NR 1.50 ISO	1.5		0.11	0.8	1.0	60				
	16NR 1.75 ISO	1.75		0.12	0.9	1.2	60				
	16NR 2.00 ISO	2.0		0.14	1.0	1.3	60				
	16NR 2.50 ISO	2.5		0.16	1.1	1.5	60				
	16NR 3.00 ISO	3.0		0.19	1.1	1.5	60				
	22NR 3.00 ISO	3.0		0.19	1.1	1.5	60				
	22NR 3.50 ISO	3.5		0.23	1.6	2.3	60				
	22NR 4.00 ISO	4.0		0.26	1.6	2.3	60				
	22NR 4.50 ISO	4.5		0.30	1.6	2.3	60				
	22NR 5.00 ISO	5.0		0.34	1.6	2.3	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

WERNER

Thread inserts

60° Inch male thread (UN)



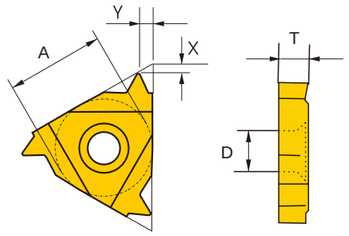
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM 24 UN		24	0.12	0.8	0.9	60			●	
	16ERM 20 UN		20	0.15	0.8	1.0	60			●	
	16ERM 18 UN		18	0.18	0.9	1.1	60			●	
	16ERM 16 UN		16	0.20	1.0	1.2	60			●	
	16ERM 14 UN		14	0.23	1.0	1.3	60			●	
	16ERM 13 UN		13	0.25	1.1	1.4	60			●	
	16ERM 12 UN		12	0.27	1.1	1.5	60			●	
	16ERM 10 UN		10	0.34	1.1	1.5	60			●	
	16ERM 08 UN		8	0.43	1.2	1.6	60			●	
	16ER 24 UN		24	0.13	0.7	0.8	60	●	●	●	●
	16ER 20 UN		20	0.16	0.8	0.9	60	●	●	●	●
	16ER 18 UN		18	0.18	0.8	1.0	60	●	●	●	●
	16ER 16 UN		16	0.20	0.9	1.1	60	●	●	●	●
	16ER 14 UN		14	0.23	1.0	1.2	60	●	●	●	●
	16ER 12UN		12	0.27	1.1	1.4	60	●	●	●	●
	22ER 08 UN		8	0.43	1.2	1.6	60	●		●	
	16ELM 24 UN		24	0.12	0.7	0.9	60				
	16ELM 20 UN		20	0.15	0.8	1.0	60				
	16ELM 18 UN		18	0.18	0.9	1.1	60				
	16ELM 16 UN		16	0.20	1.0	1.2	60				
	16ELM 14 UN		14	0.23	1.0	1.3	60				
	16ELM 13 UN		13	0.25	1.1	1.4	60				
	16ELM 12 UN		12	0.27	1.1	1.5	60				
	16ELM 10 UN		10	0.34	1.1	1.5	60				
	16ELM 08 UN		8	0.43	1.2	1.6	60				
	16EL 24 UN		24	0.13	0.7	0.8	60				
	16EL 20 UN		20	0.16	0.8	0.9	60				
	16EL 18 UN		18	0.18	0.8	1.0	60				
	16EL 16 UN		16	0.20	0.9	1.1	60				
	16EL 14 UN		14	0.23	1.0	1.2	60				
	16EL12UN		12	0.27	1.1	1.4	60				
	22EL 08 UN		8	0.43	1.2	1.6	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

60° Inch internal thread (UN)



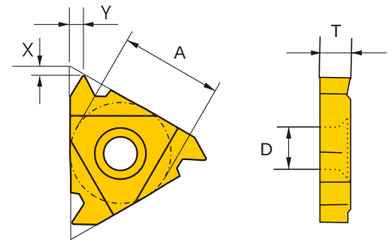
Model	A	T	D
16NR/L..	9.525	3.68	4.0
22NR/L..	12.70	4.9	4.85

Insert shape	Model	Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16NRM 24 UN		24	0.06	0.7	0.8	60			●	
	16NRM 20 UN		20	0.08	0.8	0.9	60			●	
	16NRM 18 UN		18	0.09	0.8	1.0	60			●	
	16NRM 16 UN		16	0.10	0.9	1.1	60			●	
	16NRM 14 UN		14	0.12	0.9	1.2	60			●	
	16NRM 13 UN		13	0.13	1.0	1.3	60			●	
	16NRM 12 UN		12	0.14	1.1	1.4	60			●	
	16NRM 10 UN		10	0.17	1.1	1.5	60			●	
	16NRM 08 UN		8	0.21	1.1	1.5	60			●	
	16NR 24 UN		24	0.05	0.7	0.8	60	●	●	●	●
	16NR 20 UN		20	0.07	0.8	0.9	60	●	●	●	●
	16NR 18 UN		18	0.09	0.8	1.0	60	●	●	●	●
	16NR 16 UN		16	0.10	0.9	1.1	60	●	●	●	●
	16NR 14 UN		14	0.12	0.9	1.2	60	●	●	●	●
	16NR 12UN		12	0.14	1.1	1.4	60	●	●	●	●
	22NR 08 UN		8	0.20	1.1	1.5	60	●		●	
	16NLM 24 UN		24	0.06	0.7	0.8	60				
	16NLM 20 UN		20	0.08	0.8	0.9	60				
	16NLM 18 UN		18	0.09	0.8	1.0	60				
	16NLM 16 UN		16	0.10	0.9	1.1	60				
	16NLM 14 UN		14	0.12	0.9	1.2	60				
	16NLM 13 UN		13	0.13	1.0	1.3	60				
	16NLM 12 UN		12	0.14	1.1	1.4	60				
	16NLM 10 UN		10	0.17	1.1	1.5	60				
	16NLM 08 UN		8	0.21	1.1	1.5	60				
	16NL 24 UN		24	0.05	0.7	0.8	60				
	16NL 20 UN		20	0.07	0.8	0.9	60				
	16NL 18 UN		18	0.09	0.8	1.0	60				
	16NL 16 UN		16	0.10	0.9	1.1	60				
	16NL 14 UN		14	0.12	0.9	1.2	60				
	16NL12UN		12	0.14	1.1	1.4	60				
	22NL 08 UN		8	0.20	1.1	1.5	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

55° external thread (W) pipe parallel thread G(PF)



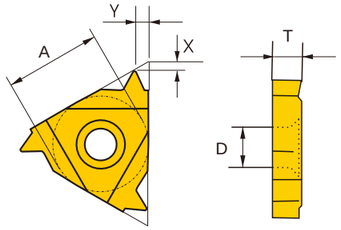
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM 19W		19	0.16	0.8	1.0	55			●	
	16ERM 16W		16	0.19	0.9	1.1	55			●	
	16ERM 14W		14	0.23	1.0	1.2	55			●	
	16ERM 11W		11	0.30	1.1	1.5	55			●	
	16ER 19W		19	0.16	0.8	1.0	55	●	●	●	●
	16ER14W		14	0.23	1.0	1.2	55	●	●	●	●
	16ER 11W		11	0.30	1.1	1.5	55	●	●	●	●
	16ELM 19W		19	0.16	0.8	1.0	55				
	16ELM 16W		16	0.19	0.9	1.1	55				
	16ELM 14W		14	0.23	1.0	1.2	55				
	16ELM 11W		11	0.30	1.1	1.5	55				
	16EL 19W		19	0.16	0.8	1.0	55				
	16EL14W		14	0.23	1.0	1.2	55				
	16EL 11W		11	0.30	1.1	1.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

55° internal thread (W) tube Parallel thread G(PF)



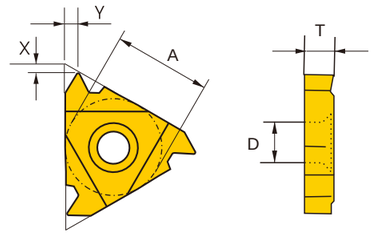
Model	A	T	D
16NR/L..	9.525	3.68	4.0
22NR/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16NRM 19W		19	0.16	0.8	1.0	55			●	
	16NRM 16W		16	0.19	0.9	1.2	55			●	
	16NRM 14W		14	0.23	1.0	1.4	55			●	
	16NRM 11W		11	0.30	1.1	1.5	55			●	
	16NR 14W		14	0.23	1.0	1.2	55	●	●	●	●
	16NR 11W		11	0.30	1.1	1.5	55	●	●	●	●
	16NLM 19W		19	0.16	0.8	1.0	55				
	16NLM 16W		16	0.19	0.9	1.2	55				
	16NLM 14W		14	0.23	1.0	1.4	55				
	16NLM 11W		11	0.30	1.1	1.5	55				
	16NL 14W		14	0.23	1.0	1.2	55				
	16NL 11W		11	0.30	1.1	1.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

55° Taper Pipe thread external thread (BSPT)

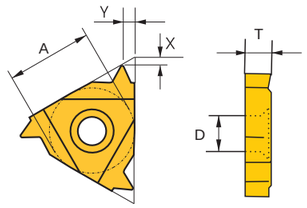


Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ERM 28BSPT		28	0.10	0.6	0.6	55			●	
	16ERM 19BSPT		19	0.16	0.8	0.9	55			●	
	16ERM 14BSPT		14	0.22	1.0	1.2	55			●	
	16ERM 11BSPT		11	0.29	1.1	1.5	55			●	
	16ER 28BSPT		28	0.10	0.6	0.6	55	●	●	●	●
	16ER 19BSPT		19	0.16	0.8	0.9	55	●	●	●	●
	16ER 14BSPT		14	0.22	1.0	1.2	55	●	●	●	●
	16ER 11BSPT		11	0.29	1.1	1.5	55	●	●	●	●
	16ELM 28BSPT		28	0.10	0.6	0.6	55				
	16ELM 19BSPT		19	0.16	0.8	0.9	55				
	16ELM 14BSPT		14	0.22	1.0	1.2	55				
	16ELM 11BSPT		11	0.29	1.1	1.5	55				
	16EL 28BSPT		28	0.10	0.6	0.6	55				
	16EL 19BSPT		19	0.16	0.8	0.9	55				
	16EL 14BSPT		14	0.22	1.0	1.2	55				
	16EL 11BSPT		11	0.29	1.1	1.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts
55° Taper pipe thread, Internal thread (BSPT)

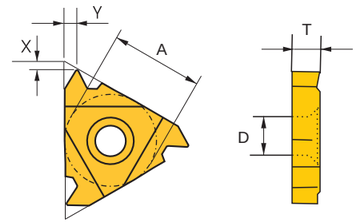


Model	A	T	D
11NR..	6.35	3.18	3.0
16NR..	9.525	3.68	4.0

Insert shape	Model	Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	11NRM 28BSPT		28	0.10	0.6	0.6	55			●	
	11NRM 19BSPT		19	0.16	0.8	0.9	55			●	
	11NRM 14BSPT		14	0.22	0.9	1.0	55			●	
	16NRM 14BSPT		14	0.22	1.0	1.2	55			●	
	16NRM 11BSPT		11	0.29	1.1	1.5	55			●	
	11NR 28BSPT		28	0.10	0.6	0.6	55	●	●	●	●
	11NR 19BSPT		19	0.16	0.8	0.9	55	●	●	●	●
	11NR 14BSPT		14	0.22	0.9	1.0	55	●	●	●	●
	16NR 14BSPT		14	0.22	1.0	1.2	55	●	●	●	●
	16NR 11BSPT		11	0.29	1.1	1.5	55	●	●	●	●
	11NLM 28BSPT		28	0.10	0.6	0.6	55				
	11NLM 19BSPT		19	0.16	0.8	0.9	55				
	11NLM 14BSPT		14	0.22	0.9	1.0	55				
	16NLM 14BSPT		14	0.22	1.0	1.2	55				
	16NLM 11BSPT		11	0.29	1.1	1.5	55				
	11NL 28BSPT		28	0.10	0.6	0.6	55				
	11NL 19BSPT		19	0.16	0.8	0.9	55				
	11NL 14BSPT		14	0.22	0.9	1.0	55				
	16NL 14BSPT		14	0.22	1.0	1.2	55				
	16NL 11BSPT		11	0.29	1.1	1.5	55				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts
60° American Taper Pipe Thread, NPT



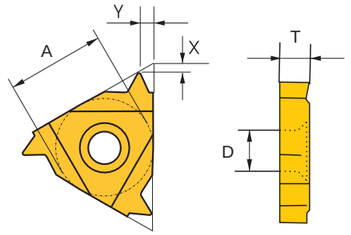
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

刀片外形 Insert shape	Model	Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ER 18NPT		18	0.04	0.8	1.0	60	●	●	●	●
	16ER 14NPT		14	0.05	0.9	1.2	60	●	●	●	●
	16ER 11.5NPT		11.5	0.06	1.1	1.5	60	●	●	●	●
	16EL 18NPT		18	0.04	0.8	1.0	60				
	16EL 14NPT		14	0.05	0.9	1.2	60				
	16EL 11.5NPT		11.5	0.06	1.1	1.5	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

60° American Taper Pipe Thread, INTERNAL thread (NPT)



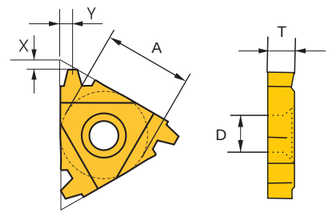
Model	A	T	D
16NR/L..	9.525	3.68	4.0
22NR/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16NR 18NPT		18	0.04	0.8	1.0	60	●	●	●	●
	16NR 14NPT		14	0.05	0.9	1.2	60	●	●	●	●
	16NR 11.5NPT		11.5	0.06	1.1	1.5	60	●	●	●	●
	16NL 18NPT		18	0.04	0.8	1.0	60				
	16NL 14NPT		14	0.05	0.9	1.2	60				
	16NL 11.5NPT		11.5	0.06	1.1	1.5	60				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

30° Trapezoidal thread External thread (TR)



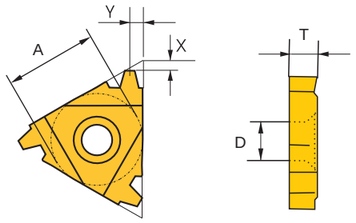
Model	A	T	D
16ER/L..	9.525	3.68	4.0
22ER/L..	12.70	4.9	4.85

Insert shape	Model	Size and Grades									
		Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16ER 2.0TR	2.0		0.20	1.1	1.3	30	●	●	●	●
	16ER 3.0TR	3.0		0.20	1.3	1.5	30	●	●	●	●
	22ER 4.0TR	4.0		0.20	1.7	1.9	30	●		●	●
	22ER 5.0TR	5.0		0.20	2.1	2.5	30	●		●	●
	16EL 2.0TR	2.0		0.20	1.1	1.3	30				
	16EL 3.0TR	3.0		0.20	1.3	1.5	30				
	22EL 4.0TR	4.0		0.20	1.7	1.9	30				
	22EL 5.0TR	5.0		0.20	2.1	2.5	30				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Thread inserts

30° Trapezoidal thread Internal thread (TR)



Model	A	T	D
16NR/L..	9.525	3.68	4.0
22NR/L..	12.70	4.9	4.85

Insert shape	Model	Pitch	TPI	R	X	Y	θ°	KTX	KKX	KVX	KW20
	16NR 2.0TR	2.0		0.20	1.1	1.3	30	●	●	●	●
	16NR 3.0TR	3.0		0.20	1.3	1.5	30	●	●	●	●
	22NR 4.0TR	4.0		0.20	1.7	1.9	30	●		●	●
	22NR 5.0TR	5.0		0.20	2.1	2.5	30	●		●	●
	16NL 2.0TR	2.0		0.20	1.1	1.3	30				
	16NL 3.0TR	3.0		0.20	1.3	1.5	30				
	22NL 4.0TR	4.0		0.20	1.7	1.9	30				
	22NL 5.0TR	5.0		0.20	2.1	2.5	30				
Steel								★		★	
Stainless Steel									★	★	
Cast Iron								☆		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel											

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials			HB	Vc(m/min) Recommended Cutting Speed							
				KTX		KKX		KVX		KW20	
				ER	NR	ER	NR	ER	NR	ER	NR
P	Carbon Steel	C=0.1-0.25%	125	100-190	90-180			130-190	110-180		
		C=0.25-0.55%	150	100-170	90-160			130-170	110-160		
		C=0.55-0.85%	170	80-160	70-150			110-160	100-150		
	Alloy Steel		180	80-160	70-150			120-170	110-150		
		HRC=28-40		70-130	60-120			100-150	80-120		
		HRC=41-48		60-100	50-80			80-130	60-90		
		HRC=49-55		40-60	40-60			50-70	40-70		
	Casting Steel	Low Carbon Steel	200	70-140	70-130			100-180	100-160		
		Medium Carbon Steel	250	60-130	60-120			90-170	90-150		
	Forging Steel	Low Carbon Steel	230	60-130	60-120			100-150	100-130		
		Medium Carbon Steel	280	60-120	60-110			100-130	100-120		
M	Stainless Steel Austenite	Austenite	200			80-120	60-100	100-150	80-130		
		Pre quenching	330			60-80	50-80	70-100	70-100		
	Stainless Steel Ferrite/Martensite	Easy car stainless steel	200			80-120	60-100	100-150	80-130		
		Pre quenching	330			50-70	50-70	80-100	60-80		
		hardened	330			60-90	50-80	60-90	50-80		
	Stainless Steel Ferrite/Austenite	C⩾0.05%	230			40-60	40-60	50-70	45-70		
		C<0.05%	260			70-80	50-70	70-80	55-80		
	Stainless Steel Casting Austenite	Austenite	200			80-120	60-100	100-150	100-130		
			330			45-70	50-70	70-90	60-80		
	Stainless Steel Casting Ferrite/Martensite	Martensite	200			80-120	60-100	100-150	100-130		
			330			45-60	45-70	45-70	45-70		
	Stainless Steel Casting Ferrite/Austenite	C⩾0.05%	230			40-60	40-65	45-70	45-70		
		C<0.05%	260			45-70	45-70	50-80	50-80		
K	Gray Cast iron	Ferrite	130	100-190	100-180			100-190	100-180		
		Pearlite	230	80-150	80-150			80-150	80-150		
	Nodular Cast iron	Ferrite	180	100-160	90-160			100-160	90-160		
		Pearlite	260	100-150	90-150			100-150	90-150		
	Malleable Cast iron	Ferrite	160	110-170	110-170			110-170	110-170		
		Pearlite	260	100-120	100-120			100-120	100-120		
N	Aluminium Alloys	Non-aging Hardened	60							180-280	180-300
		Aging Hardened	100							100-220	100-220
		13-22% Si	130							80-180	80-180
	Copper Alloy	Brass	100							100-220	100-220
		Bronze	100							100-220	100-220

Milling cutters

J1 - J54

J

APMT.. Milling blade APMT.. A series of J01-24

APMT.. The milling blade ..... J
APMT.. The milling blade ..... J
BAP BAP corn milling cutter head/shank ..... J
RD.. The milling blade ..... J
RP.. The milling blade ..... J
SE.. The milling blade ..... J
TP.. The milling blade ..... J
LNMU0303 LNMU0303 High feed milling inserts ..... J
HXN03 HXN03 Fast feed modular milling cutter/cutter head/cutter shank ..... J
WNMU0806 WNMU milling inserts ..... J
MFWN MFWN Double sided 6edge Face mill ..... J
SOKU1205 SOKU1205 milling inserts ..... J
FM45 FM45 indexable face milling cutter ..... J
LNPU1104 LNPU1104 milling inserts ..... J
HM4 HM4 modular milling cutter/cutter shank/cutter head ..... J

ZPFG J25-29

ZPFG ..... J
ABPFM.. ..... J
ABPF..S..(L/L..) ..... J
ABPF..S..W(./....) ..... J
ZCFW ..... J
ARPF..S..(. . . . /. .) ..... J

Straight rod series J30-33

Straight bar series - locking type seismic tungsten steel cutter bar ..... J
Indexable lock type end milling shank ..... J
Indexable lock type end milling shank ..... J

APMT.. Milling blade APMT.. A series of J34-54

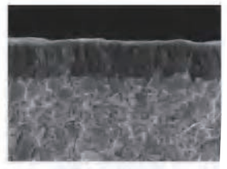
CTHQ.. Milling inserts ..... J
Square shoulder milling cutter ..... J
Indexable helical edge milling cutter ..... J
Special tool holder for milling and boring ..... J
Special blade for milling and boring ..... J
Indexable slot milling cutter ..... J
Three side milling cutter blade ..... J
Three side milling cutter ..... J
ISO standard thread milling blade ..... J
Indexable thread milling cutter ..... J

WERNER

Milling Insert Grades

KP1230

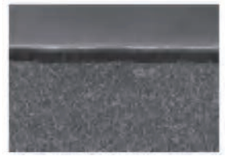
Nano-structure TiAlN coating on micro-grain carbide, superior wear resistance and fracture resistance





KP1110

The highly hard and thin grained substrate combines with wearing resistance AlTiN coating, it is optimized for impact resistance, suited for mid-high hardness steel and cost iron in milling





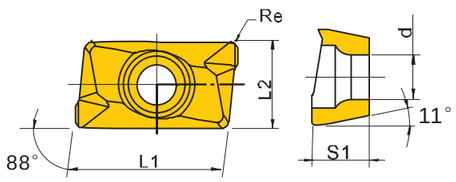
Summary of Insert Grades

Milling

Workpiece Material	P Steel					M Stainless steel					K Cast Iron				N Nonferrous			S NRSA				H Hardess		
ISO	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
PVD			KP1230					KP1230					KP1230											
PVD Coated Carbide		KP1210						KP2220											KP6210			KP1210		
Uncoated Carbide																KW20								
Cermet			KT20					KT20					KT20											

Milling inserts

APKT..



Insert shape	Model	Size and Grades									
		Re	L1	L2	S1	d	KP1110	KP1230	KP2220	KT20	KW20
	APKT11T304-PM	0.4	12.24	6.5	3.6	2.8		●			
	APKT160408-PM	0.8	17.878	9.33	5.76	4.4		●			
	APKT1604PDFR MA	0.8	17.878	9.33	5.76	4.4					●
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

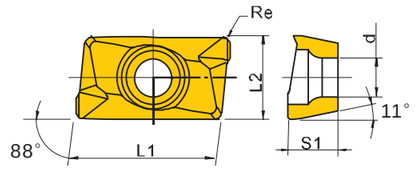
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	200-360	0.1-0.3	
		180-280	KP1230	180-360	0.1-0.3	
		280-350	KP1230	160-340	0.1-0.3	
M	Stainless Steel	270	KP1230	110-270	0.1-0.3	
K	Cast iron	180-250	KP1230	120-300	0.1-0.3	
N	Aluminium Alloys		KW20	300	0.08-0.4	
H	Hardess	HRC50-60				

Milling inserts

APMT..



Insert shape	Model	Size and Grades									
		Re	L1	L2	S1	d	KP1110	KP1230	KP2220	KT20	KW20
	APMT1135PDER	0.8	11.25	6.2	3.5	2.8	●	●			
	APMT1604PDER	0.8	17.25	9.25	4.76	4.4	●	●			
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

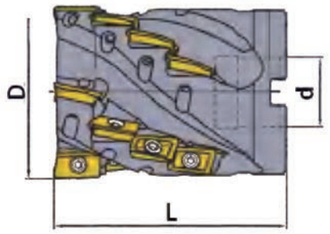
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	140-250	0.04-0.15	
		180-280	KP1230	130-250	0.04-0.15	
		280-350	KP1230	110-240	0.04-0.15	
M	Stainless Steel	270	KP1230	80-190	0.04-0.15	
K	Cast iron	180-250	KP1230	80-210	0.04-0.15	
N	Aluminium Alloys					
H	Hardess	HRC50-60	KP1110	70-120		

BAP corn milling cutter head

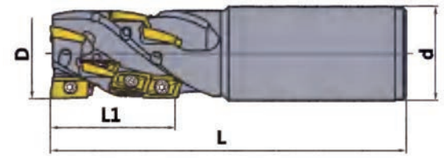




Model	Stock R	Stock L	d	D	L1	The blade number		Apply to the blade
BAP400R-D50-22d-42M-3T-9P	O		50	22	42	9		APMT1604
BAP400R-D50-22d-42M-4T-12P	O		50	22	42	12		
BAP400R-D50-22d-60M-4T-16P	O		50	22	60	16		
BAP400R-D63-27d-42M-4T-12P	O		63	27	42	12		
BAP400R-D63-27d-60M-4T-12P	O		63	27	60	12		
BAP400R-D63-27d-68M-4T-20P	O		63	27	68	20		
BAP400R-D63-27d-95M-4T-20P	O		63	27	95	20		
BAP400R-D80-32d-72M-5T-25P	O		80	32	72	25		
BAP400R-D100-40d-72M-6T-30P	O		100	40	72	30		

BAP corn milling cutter shank

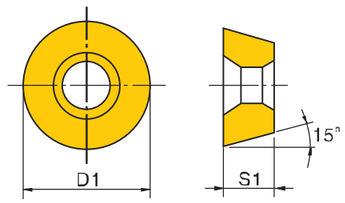




Model	Stock	d	D	L1	L		The blade number	Apply to the blade
BAP300R-C20-20-28M-120L-2T	O	20	20	28	120		2	
BAP300R-C20-20-48M-130L-2T	O	20	20	48	130		2	
BAP300R-C20-20-68M-200L-2T	O	20	20	68	200		2	
BAP300R-C25-25-38M-130L-2T	O	25	25	38	130		2	
BAP300R-C25-25-48M-130L-2T	O	25	25	48	130		2	
BAP300R-C25-25-68M-200L-2T	O	25	25	68	200		2	
BAP300R-C32-32-48M-150L-3T	O	32	32	48	150		3	
BAP400R-C32-32- 42M-150L-2T	O	32	32	42	150		2	
BAP400R-C32-32-55M-150L-2T	O	32	32	55	150		2	
BAP400R-C32-32- 70M-150L-2T	O	32	32	70	150		2	
BAP400R-C32-32- 70M-220L-2T	O	32	32	70	220		2	
BAP400R-C32-32- 100M-220L-2T	O	32	32	100	220		2	
BAP400R-C32-33- 55M-150L-2T	O	32	33	55	150		2	AP1135 AP1604
BAP400R-C32-33-70M-150L-2T	O	32	33	70	150		2	
BAP400R-C32-33-100M-200L-2T	O	32	33	100	200		2	
BAP400R-C32-35-55M-150L-2T	O	32	35	55	150		2	
BAP400R-C32-35-70M-150L-2T	O	32	35	70	150		2	
BAP400R-C32-35-100M-200L 2T	O	32	35	100	200		2	
BAP400R-C32-40-70M-150-2T	O	32	40	70	150		2	
BAP400R-C32-40-70M-150-3T	O	32	40	70	150		3	
BAP400R-C32- 40-100M-200-3T	O	32	40	100	200		3	
BAP400R-C32- 50-70M-150-3T	O	32	50	70	150		3	
BAP400R-C40-50-70M-150-3T	O	40	50	70	150		3	
BAP400R-C32- 50- 100M-175-3T	O	32	50	100	175		3	
BAP400R-C40-50-100M-175-3T	O	40	50	100	175		3	
BAP400R-C32- 50-150M-220-3T	O	32	50	150	220		3	

Milling inserts

RD..



Insert shape	Model	D1	S1	KP1110	KP1230	KP2220	KT20	KW20
	RDKW0702MO	07	2.38	●				
	RDKW0803MO	08	3.18	●				
	RDMW10T3MO	10	3.97	●	●			
	RDMW1204MO	12	4.76	●	●			
Steel				★	★		★	
Stainless Steel					★	★	★	
Cast Iron					★		☆	
Nonferrous Metal								★
Heat Resistant Alloy						☆	☆	
Hardened Steel				★				

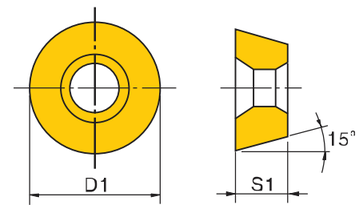
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	200-360	0.1-0.45	
		180-280	KP1230	180-350	0.1-0.45	
		280-350	KP1230	170-340	0.1-0.45	
M	Stainless Steel	270	KP1230	110-270	0.1-0.45	
K	Cast iron	180-250	KP1230	120-300	0.1-0.45	
N	Aluminium Alloys					
H	Hardess	HRC50-60	KP1110	70-120		

Milling inserts

RP..



Insert shape	Model	D1	S1	KP1110	KP1230	KP2220	KT20	KW20
	RPMW1003MOE	10	3.18		●			
	RPMW10T3MOE	10	3.97		●			
	RPMW1204MOE	12	4.76		●			
Steel				★	★		★	
Stainless Steel					★	★	★	
Cast Iron					★		☆	
Nonferrous Metal								★
Heat Resistant Alloy						☆	☆	
Hardened Steel				★				

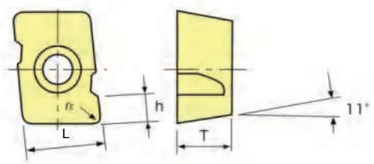
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	200-360	0.1-0.45	
		180-280	KP1230	180-350	0.1-0.45	
		280-350	KP1230	170-340	0.1-0.45	
M	Stainless Steel	270	KP1230	110-270	0.1-0.45	
K	Cast iron	180-250	KP1230	120-300	0.1-0.45	
N	Aluminium Alloys					
H	Hardess	HRC50-60				

WERNER

MPHW060308



Insert shape	Model	Size and Grades								
		T	h	L	rE	KP1110	KP1230	KP2220	KT20	KW20
	MPHW060304	3.18	3	6.35	0.2		●			
	MPHW060308	3.18	3	6.35	0.2		●			
							●			
Steel						★	★		★	
Stainless Steel							★	★	★	
Cast Iron							★		☆	
Nonferrous Metal										★
Heat Resistant Alloy								☆	☆	
Hardened Steel						★				

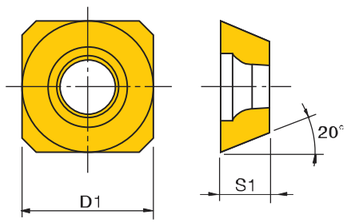
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	130-300	0.1-0.15	0.1~0.3
		180 280	KP1230	100-250	0.1-0.15	0.1~0.3
		280 350	KP1230	90-250	0.1-0.12	0.1~0.3
M	Stainless Steel	270	KP1230	100-250	0.1-0.15	0.1~0.3
K	Cast iron	180 250	KP1230	130-250	0.1-0.2	0.1~0.3
N	Aluminium Alloys					
H	Hardess	HRC50-60				

Milling inserts

SE..



Insert shape	Model	Size and Grades D1	S1	KP1110	KP1230	KP2220	KT20	KW20
	SEKT1204AFEN-11	12.7	4.76		●			
	SEHW1204AFSN	12.7	4.76		●			
	SEHT1204AFFN	12.7	4.76					●
Steel				★	★		★	
Stainless Steel					★	★	★	
Cast Iron					★		☆	
Nonferrous Metal								★
Heat Resistant Alloy						☆	☆	
Hardened Steel				★				

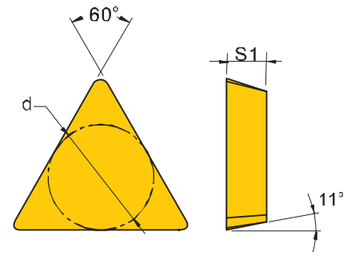
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	200-360	0.1-0.3	
		180-280	KP1230	180-350	0.1-0.3	
		280-350	KP1230	170-340	0.1-0.3	
M	Stainless Steel	270	KP1230	110-270	0.1-0.3	
K	Cast iron	180-250	KP1230	120-300	0.1-0.3	
N	Aluminium Alloys		KW20	300	0.1-0.4	
H	Hardess	HRC50-60				

Milling inserts

TP..



Insert shape	Model	Size and Grades d	S1	KP1110	KP1230	KP2220	KT20	KW20
	TPUN160308	9.525	3.18		●			
	TPKN1603PDTR	9.525	3.18		●			
	TPKR1603PDTR	9.525	3.18		●			
	TPKN2204PDTR	12.7	4.76		●			
	TPKR22204PDTR	12.7	4.76		●			
Steel				★	★		★	
Stainless Steel					★	★	★	
Cast Iron					★		☆	
Nonferrous Metal								★
Heat Resistant Alloy						☆	☆	
Hardened Steel				★				

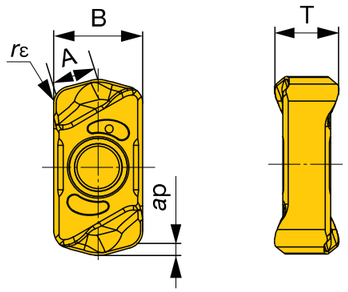
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	180	KP1230	200-360	0.1-0.3	
		180-280	KP1230	180-350	0.1-0.3	
		280-350	KP1230	170-340	0.1-0.3	
M	Stainless Steel	270	KP1230	100-250	0.1-0.3	
K	Cast iron	180-250	KP1230	120-300	0.1-0.3	
N	Aluminium Alloys					
H	Hardess	HRC50-60				

LNMU0303

LNMU0303 High feed milling inserts



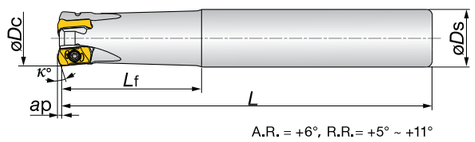
Insert shape	Model	Stock	rε	Size and Grades								
				ap	A	B	T	KP1110	KP1230	KP2220	KT20	KW20
	LNMU0303ZER-MJ	●	1.2	1	3.2	6	4.3		●			
	LNMU0303ZER-ML	●	1.2	1	3.2	6	4.3		●			
Steel								★	★	★	☆	
Stainless Steel									★		★	
Cast Iron									★	☆		
Nonferrous Metal										☆		★
Heat Resistant Alloy											★	
Hardened Steel								★				

★ Preferred ☆ optional ● standard stock ○ order production

EXN03

EXN03 High Feedrate End Mill





A.R. = +6°, R.R.= +5° ~ +11°

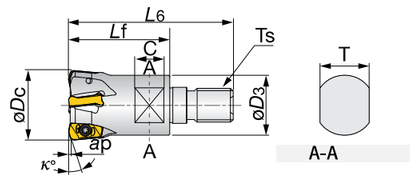
Model	Stock	ap	ØDc	z	ØDs	L	Lf	K°	Kg	Insert
EXN03R016M16.0-02	●	1	16	2	16	160	40	15	0.2	LNMU03...
EXN03R020M20.0-03	●	1	20	3	20	160	50	17	0.3	LNMU03...
EXNO3R021M20.0-03	●	1	21	3	20	160	50	17	0.4	LNMU03...
EXNO3R021M20.0-03L	●	1	21	3	20	200	50	17	0.5	LNMU03...
EXNO3R025M25.0-04	●	1	25	4	25	160	50	17	0.5	LNMU03...
EXN03R025M25.0-04L	●	1	25	4	25	200	50	17	0.6	LNMU03...
EXN03R026M25.0-04	●	1	26	4	25	160	50	17	0.5	LNMU03...
EXN03R026M25.0-04L	●	1	26	4	25	200	50	17	0.7	LNMU03...
EXN03R032M32.0-05	●	1	32	5	32	160	50	17	0.8	LNMU03...
EXN03R032M32.0-05L	●	1	32	5	32	200	50	17	1.1	LNMU03...
EXN03R033M32.0-05	●	1	33	5	32	160	50	17	0.9	LNMU03...
EXN03R033M32.0-05L	●	1	33	5	32	200	50	17	1.0	LNMU03...
EXN03R035M32.0-05	●	1	35	5	32	160	50	17	0.9	LNMU03...
EXN03R035M32.0-05L	●	1	35	5	32	200	50	17	1.2	LNMU03...

model	Lock screw	lubricant	wrench
EXN03...	CSPB-2.5	M-1000	IP-8D

HXN03

HXN03High Feedrate Modular Endmill Head





A.R. = +6°, R.R.= +5° ~ +11°

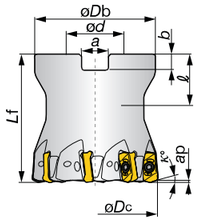
Model	Stock	ap	ØDc	z	L6	Lf	C	T	ØD3	K°	Ts	Kg	刀片
HXN03R016MM08-02	●	1	16	2	42	25	8	10	12.8	15	M8	0.03	LNMU03...
HXN03R017MM08-02	●	1	17	2	42	25	8	10	14.5	17	M8	0.04	LNMU03...
HXN03R020MM10-03	●	1	20	3	49	30	10	15	17.8	17	M10	0.06	LNMU03...
HXNO3R021MM10-03	●	1	21	3	49	30	10	15	17.8	17	M10	0.06	LNMU03...
HXN03R025MM12-04	●	1	25	4	57	35	10	17	20.8	17	M12	0.1	LNMU03...
HXN03R026MM12-05	●	1	26	4	57	35	10	17	20.8	17	M12	0.11	LNMU03...
HXN03R032MM1 6-05	●	1	32	5	63	40	12	22	28.8	17	M16	0.2	LNMU03...
HXN03R033MM1 6-05	●	1	33	5	63	40	12	22	28.8	17	M16	0.21	LNMU03...

model	Lock screw	lubricant	wrench
HXN03...	CSPB-2.5	M-1000	IP-8D

TXN03

TXN03High Feedrate Face Mill





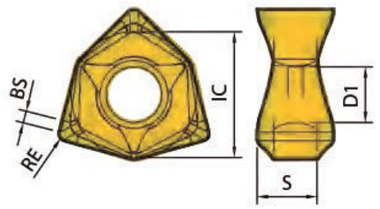
A.R. = +6°, R.R.= +12° ~ 13°

Model	Stock	ap	ØDc	z	ØDb	Ød	ℓ	Lf	b	a	K°	Kg	刀片
TXNO3R040M16.0E05	●	1	40	5	35	16	18	40	5.6	8.4	17	0.2	LNMU03...
TXNO3R050M22.0E08	●	1	50	8	47	22	20	50	6.3	10. 4	17	0.5	LNMU03...
TXNO3R063M22.2-08	●	1	63	8	47	22	20	50	5	8	17	0.5	LNMU03...

model	Lock screw	lubricant	The center bolt	wrench
TXN03R04...	CSPB-2.5	M-1000	CM8X30H	IP-8D
TXN03R05...	CSPB-2.5	M-1000	CM10X30H	IP-8D

WNMU0806

WNMU milling inserts



Insert shape	Model	Size and Grades									
		RE	IC	S	D1	BS	KP1110	KP1230	KP2220	KT20	KW20
	WNMU080604EN-GM	0.4	14.02	6.65	6.2	1.7		●			
	WNMU080608EN-GM	0.8	14.02	6.65	6.2	1.3		●			
											●
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

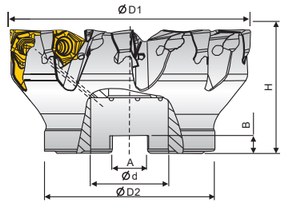
MFWN

MFWN Double sided 6edge Face mill



Sharp cutting due to lower cutting forces
Resistant to chattering and applicable to long overhang

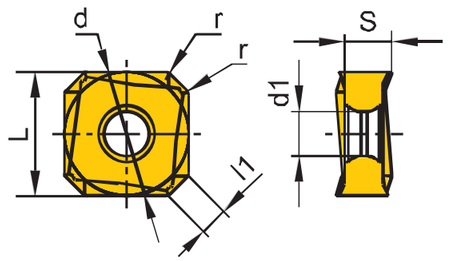




Model	Stock	Dimensions						No.of teeth	Insert	Screw	Torx wrench	Price
		D	D2	d	A	B	H					
MFWN0806-050R-4T-M	●	50	42	22	10.4	6.3	40	4	WNMU 080608N	M5	T20	
MFWN0806-063R-4T-M	●	63	47	22	10.4	6.3	40	4				
MFWN0806-063R-5T-M	●	63	47	22	10.4	6.3	40	5				
MFWN0806-080R-5T-M	●	80	60	27	12.4	7	50	5				
MFWN0806-080R-6T-M	●	80	60	27	12.4	7	50	6				
MFWN0806-100R-7T-M	●	100	70	32	14.4	8	50	7				
MFWN0806-125R-8T-M	●	125	85	40	16.4	9	63	8				
MFWN0806-160R-10T-M	●	160	105	40	16.4	9	63	10				
MFWN0806-200R-12T-M	●	200	140	60	25.7	14	63	12				

SNGX1205

SOKU1205 milling inserts



Insert shape	Model	Size and Grades									
		RE	L	S	L1	d	KP1110	KP1230	KP2220	KT20	KW20
	SNGX1206AZER-EMF	0.8	12.7	6.98	1.8	12.7		●			
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

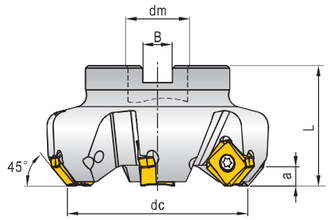
FM45

FM45 indexable face milling cutter



- Screw type compression structure, large space for chip, smooth chip removal.
- Large rake design, easy cutting.
- Suitable for light and medium milling.

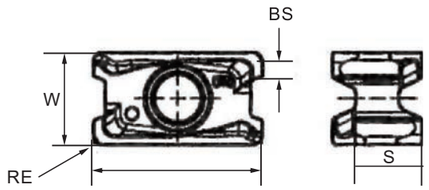




Model	Stock	Dimensions					No.of teeth	Insert	Screw	Torx wrench	Weight
		dc	dm	a	B	L					
FM45-50-22-5T-SN12	○	50	22	6.5	10.4	40	5	SN..1206..	C040A11S	WT15	0.5
FM45-63-22-6T-SN12	○	63	22	6.5	10.4	40	6				0.6
FM45-80-27-8T-SN12	○	80	27	6.5	12.4	50	8				1.1
FM45-100-32-10T-SN12	○	100	32	6.5	14.4	50	10				1.8
FM45-125-40-12T-SN12	○	125	40	6.5	16.4	63	12				3.7
FM45-160-40-14T-SN12	○	160	40	6.5	16.4	63	14				4.5

LNPU1104

LNPU1104 milling inserts



Insert shape	Model	Stock	Size and Grades									
			L1	S	W	BS	RE	KP1110	KP1230	KP2220	KT20	KW20
	LNPU110408ERGEKP1230	○	12.1	4.83	6.6	0.9	0.8		●			
Steel								★	★		★	
Stainless Steel									★	★	★	
Cast Iron									★		☆	
Nonferrous Metal												★
Heat Resistant Alloy										☆	☆	
Hardened Steel								★				

★ Preferred ☆ optional ● standard stock ○ order production

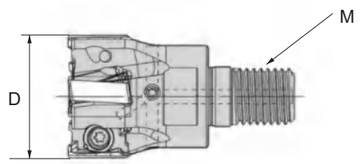
Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

HM4

HM4 Modular Endmill Head





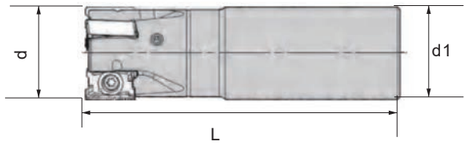
Model	Stock R	Stock L	D	M	Teeth	The blade model
HM4-D16-M8-2T	○		16	8	2	LNPU1104
HM4-D17-M8-2T	○		17	8	2	
HM4-D20-M10-3T	○		20	10	3	
HM4-D21-M10-3T	○		21	10	3	
HM4-D25-M12-4T	○		25	12	4	
HM4-D26-M12-4T	○		26	12	4	
HM4-D32-M16-5T	○		32	16	5	
HM4-D35-M16-5T	○		35	16	5	

model	 Lock screw	 lubricant	 wrench
HM4...	CSPB-2.5	M-1000	IP-8D

EM4

EM4 End Mill





Model	Stock R	Stock L	d1	d	L	Teeth	The blade model
EM4-C16-16-120-2T-C	O		16	16	120	2	LNPU1104
EM4-C16-16-120-2T	O		16	16	120	2	
EM4-C16-17-120-2T	O		16	17	120	2	
EM4-C16-16-160-2T-C	O		16	16	160	2	
EM4-C20-20-160-2T	O		20	20	160	2	
EM4-C20-21-150-3T	O		20	21	150	3	
EM4-C25-26-150-4T	O		25	26	150	4	
EM4-C25-26-200-4T	O		25	26	200	4	
EM4-C25-26-250-4T	O		25	26	250	4	
EM4-C25-30-150-4T	O		25	30	150	4	
EM4-C25-30-200-4T	O		25	30	200	4	
EM4-C32-35-150-5T	O		32	35	150	5	
EM4-C32-35-200-5T	O		32	35	200	5	
EM4-C32-35-250-5T	O		32	35	250	5	

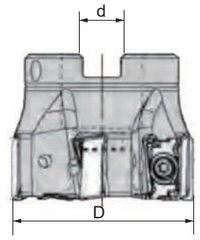
Note: -C indicates in-band cold

model	Lock screw	lubricant	wrench
EM4...	CSPB-2.5	M-1000	IP-8D

TM4

TM4 Face Mill

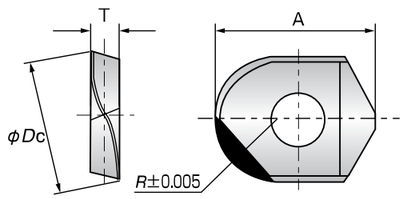




Model	Stock R	Stock L	D	d	Teeth	The blade model
TM4-D50-22-5T	O		50	22	5	LNPU1104
TM4-D63-22-6T	O		63	22	6	
TM4-D80-27-8T	O		80	27	8	

model	Lock screw	lubricant	wrench
TM4...	CSPB-2.5	M-1000	IP-8D

ZPFG

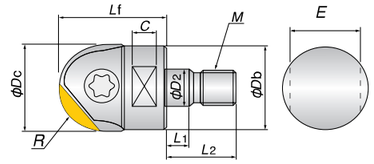


Insert shape	Model	Stock	Size and Grades R	A	ØDc	T	KP1110	KP1230	KP2220	KT20	KW20
	ZPFG160	○	8	16.6	16	4.2		●			
	ZPFG200	○	10	20.3	20	5.2		●			
	ZPFG250	○	12.5	24.1	25	6.2		●			
	ZPFG300	○	15	29.2	30	7.2		●			
								●			
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

★ Preferred ☆ optional ● standard stock ○ order production

ABPFM..





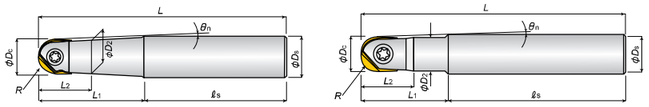
Model	Stock R	L	ØDc	R	Lf	ØD2	M	ØDb	L1	L2	C	E		
ABPFM1 6	○		16	8	32	8.5	M8	12.8	5.5	17	8	10	1	ZPFG160
ABPFM20	○		20	10	38	10.5	M10	17.8	5.5	19	10	15	1	ZPFG200
ABPFM25	○		25	12.5	38	12.5	M12	20.8	5.5	22	10	17	1	ZPFG250
ABPFM30	○		30	15	43	17	M16	28.8	6	23	12	22	1	ZPFG300

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

ABPF..S..(L/L...)

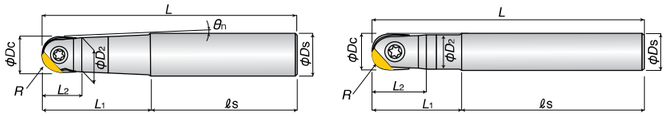




Model	Stock R	Stock L	ØDc	R	L	ØDs	L2	L1	ØD2	ℓs	θn			
ABPF16S20	O		16	8	130	20	27	50	15	80	2.8°	1	A	ZPFG160
ABPF20S25	O		20	10	140	25	35	60	19	80	2.9°	1	A	ZPFG200
ABPF25S32	O		25	12.5	150	32	43	70	24	80	3.5°	1	A	ZPFG250
ABPF30S32	O		30	15	160	32	55	80	29	80	1.2°	1	A	ZPFG300
ABPF16S20L	O		16	8	160	20	27	65	15	95	2.1°	1	A	ZPFG160
ABPF20S25L	O		20	10	180	25	35	80	19	100	2.1°	1	A	
ABPF20S20L120	O		20	10	220	20	35	120	19	100	-	1	B	ZPFG200
ABPF20S20L1 50	O		20	10	250	20	35	1 50	19	100	-	1	B	
ABPF25S32L	O		25	12.5	200	32	43	90	24	110	2.6°	1	A	ZPFG250
ABPF25S32L150	O		25	12.5	250	32	43	150	24	100	1.5°	1	B	
ABPF30S32L	O		30	15	220	32	55	100	29	120	0.7°	1	A	
ABPF30S32L150	O		30	15	250	32	55	150	29	100	0.5°	1	B	ZPFG300
ABPF30S32L200	O		30	15	300	32	55	200	29	100	0.3°	1	B	

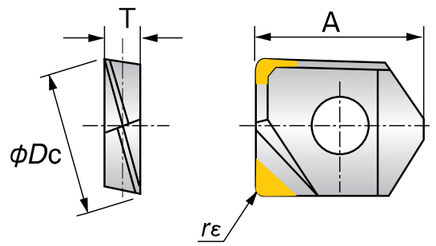
ABPF..S..W(./....)





Model	Stock R	Stock L	ØDc	R	L	ØDs	L2	L1	※L/D	ØD2	ℓs	θn		
ABPF16S16W60	O		16	8	130	16	27	60	3.8	15	70	-	1	B	
ABPF16S16WL80	O		16	8	160	16	27	80	5	15	80	-	1	B	
ABPF16S16WL100	O		16	8	200	16	27	100	6.3	15	100	-	1	B	ZPFG160
ABPF16S16WE	O		16	8	200	16	27	120	7.5	15	80	-	1	B	
ABPF16S16WE150	O		16	8	220	16	27	150	9.4	15	70	-	1	B	
ABPF16S20WLT100	O		16	8	165	20	27	100	6.3	15	65	1.25°	1	A	
ABPF20S20W80	O		20	10	160	20	35	80	4	19	80	-	1	B	
ABPF20S20WL100	O		20	10	220	20	35	100	5	19	120	-	1	B	
ABPF20S20WL120	O		20	10	220	20	35	120	6	19	100	-	1	B	ZPFG200
ABPF20S2OWE	O		20	10	250	20	35	150	7.5	19	100	-	1	B	
ABPF20S20WE220	O		20	10	300	20	35	220	11	19	80	-	1	B	
ABPF20S25WLT115	O		20	10	195	25	35	115	5.8	19	80	1.37°	1	A	
ABPF25S25W100	O		25	12.5	220	25	43	100	4	24	120	-	1	B	
ABPF25S25WL120	O		25	12.5	220	25	43	120	4.8	24	100	-	1	B	
ABPF25S25WL150	O		25	12.5	250	25	43	150	6	24	100	-	1	B	ZPFG250
ABPF25S25WE	O		25	12.5	300	25	43	190	7.6	24	110	-	1	B	
ABPF25S32WLT135	O		25	12.5	215	32	43	135	5.4	24	80	1. 64°	1	A	
ABPF30S32W100	O		30	15	180	32	55	100	3.3	29	80	0.7°	1	B	
ABPF30S32W120	O		30	15	220	32	55	120	4	29	100	0.6°	1	B	
ABPF30S32WL150	O		30	15	250	32	55	150	5	29	100	0.4°	1	B	ZPFG300
ABPF30S32WE	O		30	15	350	32	55	230	7.7	29	120	0.3°	1	B	
ABPF30S32WLT160	O		30	15	240	32	55	160	5.3	29	80	0.4°	1	A	

ZCFW



Insert shape	Model	Stock	Size and Grades rε	A	ØDc	T	KP1110	KP1230	KP2220	KT20	KW20
	ZCFW160-R1.0	○	1.0	16.6	16	4.2		●			
	ZCFW160-R2.0	○	2.0	16.6	16	4.2		●			
	ZCFW200-R1.0	○	1.0	19.9	20	5.2		●			
	ZCFW200-R2.0	○	2.0	19.9	20	5.2		●			
	ZCFW250-R1.0	○	1.0	22.6	25	6.2		●			
	ZCFW250-R2.0	○	2.0	22.6	25	6.2					
	ZCFW300-R1.0	○	1.0	27.2	30	7.2					
	ZCFW300-R2.0	○	2.0	27.2	30	7.2					
Steel							★	★		★	
Stainless Steel								★	★	★	
Cast Iron								★		☆	
Nonferrous Metal											★
Heat Resistant Alloy									☆	☆	
Hardened Steel							★				

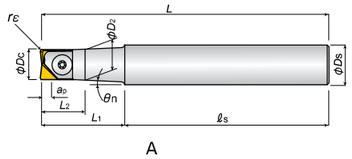
★ Preferred ☆ optional ● standard stock ○ order production

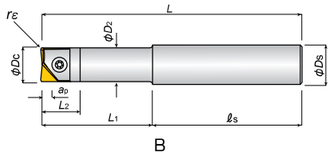
Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

ARPF..S..(..../..)

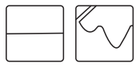


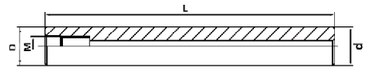




Model	Stock R	Stock L	ØDc	L	ØDs	ap	L2	L1	θn	ØD2	ℓs			
ARPF16S16	○		16	130	16	5.0	27	50	–	15	80	1	B	ZCFW160-R..
ARPF20S20	○		20	140	20	6.0	35	60	–	19	80	1	B	ZCFW200-R..
ARPF25S25	○		25	150	25	8.0	43	70	–	24	80	1	B	ZCFW250-R..
ARPF30S32	○		30	160	32	10.0	55	80	–	29	80	1	B	ZCFW300-R..
ARPF16S16L	○		16	165	16	5.0	27	65	–	15	100	1	B	ZCFW160-R..
ARPF20S2OL	○		20	180	20	6.0	35	80	–	19	100	1	B	
ARPF20S20L120	○		20	220	20	6.0	35	120	–	19	100	1	B	ZCFW200-R..
ARPF20S2OL150	○		20	250	20	6.0	35	150	–	19	100	1	B	
ARPF25S25L	○		25	200	25	8.0	43	90	–	24	110	1	B	ZCFW250-R..
ARPF25S32L150	○		25	250	32	8.0	43	150	–	24	100	1	B	
ARPF30S32L	○		30	220	32	10.0	55	100	–	29	120	1	B	
ARPF30S32L150	○		30	250	32	10.0	55	150	–	29	100	1	B	ZCFW300-R ..
ARPF30S32L200	○		30	300	32	10.0	55	200	–	29	100	1	B	
ARPF16S16E	○		16	200	16	5.0	27	65	–	15	135	1	B	ZCFW160-R..
ARPF20S20E	○		20	250	20	6.0	35	80	–	19	170	1	B	ZCFW200-R..
ARPF25S25E	○		25	300	25	8.0	43	90	–	24	210	1	B	ZCFW250-R..
ARPF25S32E	○		25	300	32	8.0	43	100	2°	24	200	1	A	
ARPF30S32E	○		30	350	32	10.0	55	1 00	–	29	250	1	B	ZCFW300-R..
ARPF30S42E	○		30	350	42	10.0	55	120	3°	29	230	1	A	
ARPF16S16WE	○		16	200	16	5.0	27	120	–	15	80	1	B	ZCFW160-R..
ARPF20S2OWE	○		20	250	20	6.0	35	150	–	19	100	1	B	ZCFW200-R..
ARPF25S25WE	○		25	300	25	8.0	43	190	–	24	110	1	B	ZCFW250-R..
ARPF30S32WE	○		30	350	32	10.0	55	230	–	29	120	1	B	ZCFW300-R..

Straight bar series - locking type seismic tungsten steel cutter bar



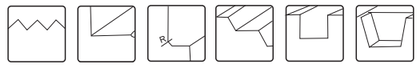


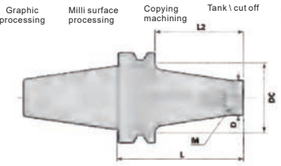


Model	Stock R	Stock L	M	D	d	L	L1
8-M4-100	O		M4	8	8	100	
10-M5-100	O		M5	10	10	100	
10-M5-150	O		M5	10	10	150	
12-M6-100	O		M6	12	12	100	
12-M6-150	O		M6	12	12	150	
12-M6-200	O		M6	12	12	200	
15-M8-100	O		M8	15	15	100	
15-M8-150	O		M8	15	15	150	
15-M8-200	O		M8	15	15	200	
16-M8-100	O		M8	16	16	100	
16-M8-150	O		M8	16	16	150	
16-M8-200	O		M8	16	16	200	
16-M8-250	O		M8	16	16	250	
16-M8-300	O		M8	16	16	300.	
19-M10-150	O		M10	19	19	150	
19-M10-200	O		M10	19	19	200	
19-M10-250	O		M10	19	19	250	
20-M10-100	O		M10	20	20	100	
20-M10-150	O		M10	20	20	150	
20-M10-200	O		M10	20	20	200	
20-M10-250	O		M10	20	20	250	
20-M10-300	O		M10	20	20	300	
24-M12-150	O		M12	24	24	150	
24-M12-200	O		M12	24	24	200	
24-M12-250	O		M12	24	24	250	
24-M12-300	O		M12	24	24	300	
25-M12-150	O		M12	25	25	150	
25-M12-200	O		M12	25	25	200	
25-M12-250	O		M12	25	25	250	
25-M12-300	O		M12	25	25	300	
32-M16-150	O		M16	32	32	150	
32-M16-200	O		M16	32	32	200	
32-M16-250	O		M16	32	32	250	
32-M16-300	O		M16	32	32	300	
32-M16-350	O		M16	32	32	350	
32-M16-400	O		M16	32	32	400	

1. Improve seismic strength, precision processing size, high surface finish of the workpiece,
2. Suitable for overhanging workpiece processing.
3. The uniform cutting of the blade improves the service life of the blade and reduces the vibration marks caused by the cycle jump in the processing process.
4. Matched with replaceable thread head, repeat clamping precision is high, suitable for rough and fine milling.
5. The tool holder can correspond to different types of tool head, and a variety of combinations with the handle,
even if the tool part damage can be replaced immediately, more economical.

Indexable lock type end milling shank





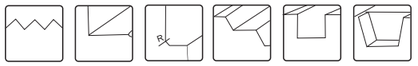


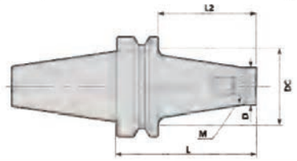
Model	Stock R	Stock L	尺寸 Size (mm) M	D	DC	L	L1	L2
BT30-M6-50L	O		6	12	17	50	/	30
BT30-M6- 100L	O		6	12	17	100	/	80
BT30-M8- 45L	O		8	15	17	45	/	25
BT30-M8- -50L	O		8	15	17	50	/	30
BT30-M8-100L	O		8	15	17	100	/	80
BT30-M10-45L	O		10	19	21	45	/	25
BT30-M10-50L	O		10	19	21	50	/	30
BT30-M10-100L	O		10	19	21	100	/	80
BT30-M12-60L	O		12	24	25	60	/	40
BT30-M12-100L	O		12	24	26	100	/	80
BT30-M16-45L	O		16	30	33	45	/	30
BT30-M16-60L	O		16	30	33	60	/	40
BT30-M16-100L	O		16	30	32	100	/	80
BT40-M8- 70L	O		8	15	17	70	/	45
BT40-M8- 100L	O		8	15	17	100	/	75
BT40-M8- 150L	O		8	15	22	150	50	125
BT40-M8- -200L	O		8	15	22	200	70	175
BT40-M10-70L	O		10	19	20	70	/	45
BT40-M10-100L	O		10	19	25	100	/	75
BT40-M10-150L	O		10	19	25	150	/	125
BT40-M10-200L	O		10	19	31	200	70	175
BT40-M12-70L	O		12	24	26	70	/	45
BT40-M12-100L	O		12	24	32	100	/	75
BT40-M12-150L	O		12	24	37	150	50	125
BT40-M12- -200L	O		12	24	68	200	/	175
BT40-M16-70L	O		16	30	32	70	/	45
BT40-M16-100L	O		16	30	36	100	30	75
BT40-M16-150L	O		16	30	41	150	/	125
BT40-M16-200L	O		16	30	46	200	70	175

1. Modular combination, threaded connection of tool head and handle, countersunk head
2. The tool holder is directly connected with the tool head, without collet, reducing the precision tolerance of multiple clamping
3. The blade cutting evenly improves the blade poison life and reduces the vibration marks caused by cycle jump in the processing process
4. Changeable cutter head, high repeatable clamping accuracy, suitable for rough and fine milling
5. Knife head can correspond to different types of blade, and a variety of combinations with the handle, even if the tool is damaged,
it can be replaced immediately, more economical

WERNER

Indexable lock type end milling shank



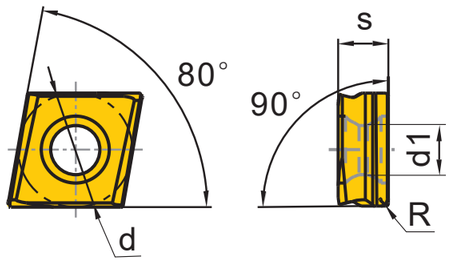




Model	Stock R	Stock L	M	D	DC	L	L1	L2
BT50-M8-100L		O	8	16	32	100	/	65
BT50-M8-150L		O	8	16	32	150	/	115
BT50-M8-200L		O	8	16	32	200	/	165
BT50-M8-250L		O	8	16	37	250	/	215
BT50-M8-300L		O	8	16	37	300	/	265
BT50-M10-100L		O	10	20	37	100	/	65
BT50-M10-150L		O	10	20	37	150	/	115
BT50-M10-200L		O	10	20	37	200	/	165
BT50-M10-250L		O	10	20	37	250	/	215
BT50-M10-300L		O	10	20	37	300	85	265
BT50-M12-100L		O	12	24	40	100	/	65
BT50-M12-150L		O	12	24	40	150	/	115
BT50-M12-200L		O	12	24	40	200	/	165.
BT50-M12-250L		O	12	24	50	250	/	215
BT50-M12-300L		O	12	24	50	300	105	265
BT50-M16-100L		O	16	29	50	100	/	65
BT50-M16-150L		O	16	29	50	150	/	115
BT50-M16-200L		O	16	29	50	200	65	165
BT50-M16-250L		O	16	29	55	250	85	215
BT50-M16-300L		O	16	29	55	300	105	265

1. Modular combination, threaded connection of tool head and handle, countersunk head
2. The tool holder is directly connected with the tool head, without collet, reducing the precision tolerance of multiple clamping
3. The blade cutting evenly improves the blade poison life and reduces the vibration marks caused by cycle jump in the processing process
4. Changeable cutter head, high repeatable clamping accuracy, suitable for rough and fine milling
5. Knife head can correspond to different types of blade, and a variety of combinations with the handle, even if the tool is damaged, it can be replaced immediately, more economical

Milling inserts
CNCQ..



Insert shape	Model	Size and Grades									
		R	d	s	d1	KP1110	KP1230	KP2220	KP3220	KT20	KW20
	CNCQ090508NF	0.8	9.525	5.56	4.4		●		●		
	CNCQ120508NF	0.8	12.7	5.56	5.5		●		●		
Steel						★	★			★	
Stainless Steel							★	★		★	
Cast Iron							★		★	☆	
Nonferrous Metal											★
Heat Resistant Alloy								☆		☆	
Hardened Steel						★					

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

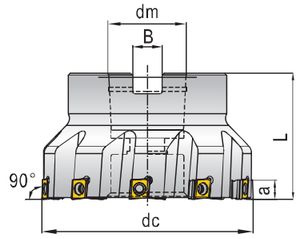
Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	80-180	0.1-0.25	2.0-4.0
		180-280	KP1230	80-180	0.1-0.25	2.0-4.0
		280-350	KP1230	80-180	0.1-0.25	2.0-4.0
M	Stainless Steel	<270	KP1230	80-180	0.1-0.25	2.0-4.0
K	Cast iron	180-250	KP3220	80-180	0.1-0.25	2.0-4.0
N	Aluminium Alloys					
H	Hardess	HRC50-60				

Square shoulder milling cutter



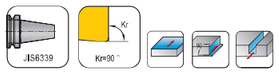
- Screw type compression structure, large space for chip, smooth chip removal.
- Large rake blade for easy cutting.
- Suitable for light and medium milling.





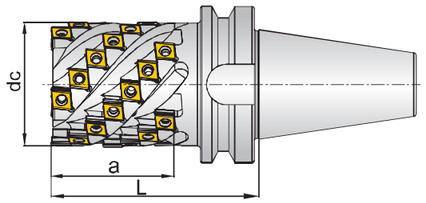
Model	Stock	Dimensions					No.of teeth	Insert	Forcing Screw	Screw	Torx wrench
		dc	dm	a	B	L					
FM90-50CN09.XDZ24	○	50	24	9	10	50	5	CNCQ090508NF	MS10035	CO40A11S	Wt15
FM90-63CN09.XDZ24	○	63	24	9	10	50	6	CNCQ090508NF	MS10035	CO40A11S	WT15
FM90-80CN09.XDZ30	○	80	30	9	12	55	8	CNCQ090508NF	MS12045	CO40A11S	WT15
FM90-100CN09.XDZ38	○	100	38	9	14	63	10	CNCQ090508NF	SXDZ38	CO40A11S	WT15
FM90-125CN09.XDZ48	○	125	48	9	16	63	12	CNCQ090508NF	SXDZ48	CO40A11S	WT15
FM90-80CN12.XDZ30	○	80	30	12	12	55	7	CNCQ120508NF	MS12045	C050A12S	WT20
FM90-100CN12.XDZ38	○	100	38	12	14	63	9	CNCQ120508NF	SXDZ38	C050A12S	WT20
FM90-125CN12.XDZ48	○	125	48	12	16	63	11	CNCQ120508NF	SXDZ48	C050A12S	WT20
FM9O-160CN12.XDZ48	○	160	48	12	16	63	14	CNCQ120508NF	SXDZ48	C050A12S	Wt20

Indexable helical edge milling cutter



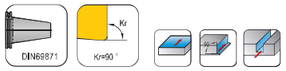
- Suitable for rough and semi-finish machining.
- Full effect processing, high efficiency processing sharp tools.





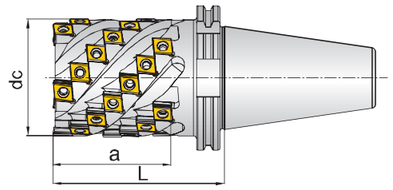
Model	Stock	Dimensions dc	a	L		No.of teeth	No.of blade	Insert	Screw	Torx wrench
HEM90-50CNO9L.51/100.3-BT40	O	50	51	100	40	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/115.4-BT40	O	63	58	100	40	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-50CN09L.51/125.3-BT50	O	50	51	125	50	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/140.4-BT50	O	50	58	140	50	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-80CN09L.80/150.5-BT50	O	80	80	150	50	35	5	CNCQ120508F	C050A12S	WT20

Indexable helical edge milling cutter



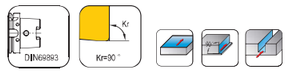
- Suitable for rough and semi-finish machining.
- Full effect processing, high efficiency processing sharp tools.





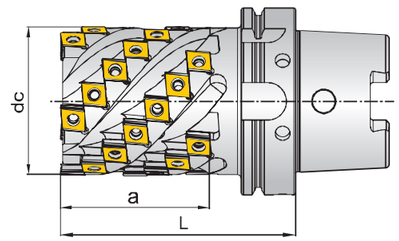
Model	Stock	Dimensions dc	a	L		No.of teeth	No.of blade	Insert	Screw	Torx wrench
HEM90-50CN09L.51/95.3-JT40	O	50	51	95	40	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/110.4-JT40	O	63	58	110	40	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-50CN09L.51/110.3-JT50	O	50	51	110	50	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/125.4-JT50	O	50	58	125	50	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-80CN09L.80/135.5-JT50	O	80	80	135	50	35	5	CNCQ120508F	C050A12S	WT20

Indexable helical edge milling cutter



- Suitable for rough and semi-finish machining.
- Full effect processing, high efficiency processing sharp tools.



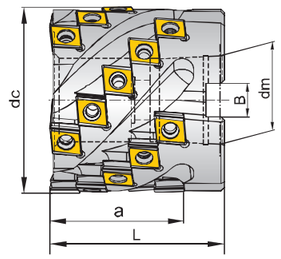


Model	Stock	Dimensions dc	a	L		No.of teeth	No.of blade	Insert	Screw	Torx wrench
HEM90-50CN09L.51/95.3-HSK63A	O	50	51	95	40	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/110.4-HSK63A	O	63	58	110	40	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-50CN09L.51/110.3-HSK100A	O	50	51	110	50	18	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.58/125.4-HSK100A	O	50	58	125	50	28	4	CNCQ090508F	CO40A11S	WT15
HEM90-80CNO9L.80/135.5-HSK100A	O	80	80	135	50	35	5	CNCQ120508F	C050A12S	WT20

Indexable helical edge milling cutter



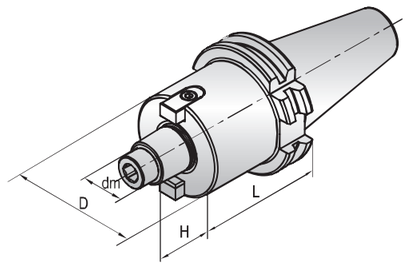




Model	Stock	Dimensions					No.of teeth	No.of blade	Insert	Screw	Torx wrench
		dc	dm	a	B	L					
HEM90-50CN09L.42/60.3XDZ24	O	50	24	42	10	60	15	3	CNCQ090508F	CO40A11S	WT15
HEM90-63CN09L.51/70.4XDZ30	O	63	30	51	12	70	24	4	CNCQ090508F	CO40A11S	WT15
HEM90-80CN12L.57/75.5XDZ38	O	80	38	57	14	75	25	5	CNCQ120508F	C050A12S	WT20
HEM90-100CN12L.69/90.6XDZ48	O	100	48	69	16	90	36	6	CNCQ120508F	C050A12S	WT20

Special tool holder for milling and boring

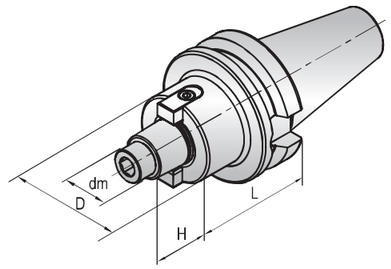




Model	Stock	Dimensions					Key	Screw
		dc	D	L	H			
JT40-XDZ24-60	O	24	48	60	17	40	JC10021-h9	MS04010
JT40-XDZ30-75	O	30	61	75	22	40	JC12023-h9	MS05016
JT50-XDZ24-60	O	24	48	60	17	50	JC10021-h9	MS04010
JT50-XDZ30-60	O	30	61	60	22	50	JC12023-h9	MS05016
JT50-XDZ38-60	O	38	78	60	26	50	JC14018-h9	MS06020
JT50-XDZ48-75	O	48	98	75	25	50	KXM40-h9	MS08020

Special tool holder for milling and boring

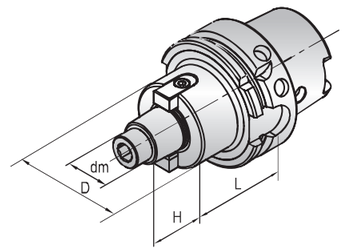




Model	Stock	Dimensions					Key	Screw
		dc	D	L	H			
BT40-XDZ24-60	O	24	48	60	17	40	JC10021-h9	MS04010
BT40-XDZ30-60	O	30	61	60	22	40	JC12023-h9	MS05016
BT50-XDZ24-60	O	24	48	60	17	50	JC10021-h9	MS04010
BT50-XDZ30-60	O	30	61	60	22	50	JC12023-h9	MS05016
BT50-XDZ38-60	O	38	78	60	26	50	JC14018-h9	MS06020
BT50-XDZ48-60	O	48	98	60	25	50	KXM40-h9	MS08020

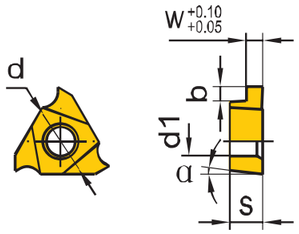
Special tool holder for milling and boring

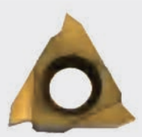




Model	Stock	Dimensions					Key	Screw
		dm	D1	L	H			
HSK63A-XDZ24-50	O	63	24	50	17	HSK-A63	JC10021-h9	MS04010
HSK63A-XDZ30-60	O	63	30	60	22	HSK-A63	JC12023-h9	MS05016
HSK100A-XDZ24-50	O	100	24	50	17	HSK-A100	JC10021-h9	MS04010
HSK100A-XDZ30-50	O	100	30	50	22	HSK-A100	JC12023-h9	MS05016
HSK100A-XDZ38-50	O	100	38	50	26	HSK-A100	JC14018-h9	MS06020
HSK100A-XDZ48-70	O	100	48	70	25	HSK-A100	KXM40-h9	MS08020

Special blade for milling and boring



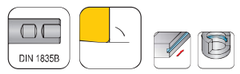
Insert shape	Model	Stock	Size and Grades w	b	d	d1	s	α	KP1210	KP1230	KP2220	KT20	KW20
	TN1635 R110	○	1.1	0.9	9.53	3.8	3.5	0°		●			
	TN1635 R130	○	1.3	1.3	9.53	3.8	3.5	0°		●			
	TN1635 R160	○	1.6	1.4	9.53	3.8	3.5	0°		●			
	TN1635 R185	○	1.85	1.7	9.53	3.8	3.5	0°		●			
	TN1635 R215	○	2.15	2	9.53	3.8	3.5	0°		●			
	TN1635 R265	○	2.65	2.2	9.53	3.8	3.5	0°		●			
Steel									★	★	★		
Stainless Steel										★	☆		
Cast Iron										★		★	
Nonferrous Metal													★
Heat Resistant Alloy													
Hardened Steel									★				

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

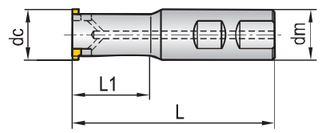
Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

Indexable slot milling cutter



– Suitable for milling inside and outside groove.







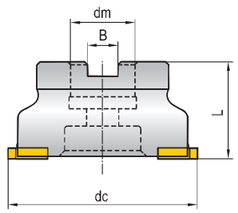
Model	Stock	Dimensions dc	dm	L1	L	No.of teeth	Insert	Screw	Torx wrench	Weight
CMT-20TN16	○	20	20	30	90	1	TN1635 R	L60-M3.5x8.8A	T15	0.2
CMT-25TN16	○	25	25	40	105	1				0.3
CMT-32TN16	○	32	32	55	125	3				0.5
CMT-40TN16	○	40	32	70	135	3				0.8

Indexable slot milling cutter



- Suitable for milling inside and outside groove.





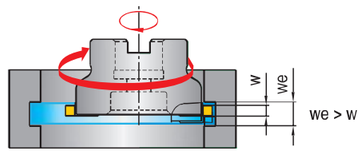
Model	Stock	Dimensions dc	dm	B	L	No.of teeth	Insert	Screw	Torx wrench	Weight
FMT-51TN16	○	51	22	10.4	40	4				0.4
FMT-63TN16	○	63	22	10.4	40	6	TN1635 R..	L60-M3.5x8.8A	WT15	0.6
FMT-80TN16	○	80	27	12.4	50	6				0.9

Axial feed is not allowed

Special shaped blade

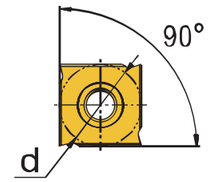
- Customized special blades for different slots.

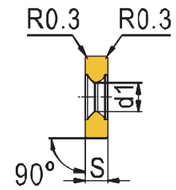
- Blade width W can be specially ordered according to user's product requirements, the total thickness should be less than blade thickness S



- When the slot width (WE) is greater than the blade width (W) When please two knife or many processing.

Three side milling cutter blade





Insert shape	Model	Size and Grades d	s	d1	KP1110	KP1230	KP2220	KT20	KW20
	SNCQ123503N	12.7	3.5	4.5		●			
	SNCQ120403N	12.7	4	4.5		●			
	SNCQ124503N	12.7	4.5	4.5		●			
	SNCQ120503N	12.7	5	4.5		●			
						●			
Steel					★	★		★	
Stainless Steel						★	★	★	
Cast Iron						★		☆	
Nonferrous Metal									★
Heat Resistant Alloy							☆	☆	
Hardened Steel					★				

★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

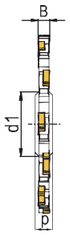
Three side milling cutter

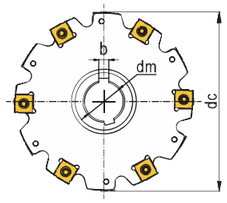




- Suitable for milling inside and outside groove.



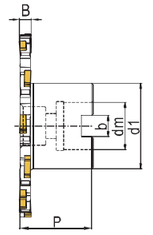


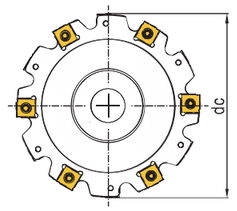


Model	Stock	Dimensions						No.of teeth	Insert	Screw	Torx wrench
		dc	d1	dm	P	B	b				
S3M-80P12B6SN1235.XS22	O	80	38	22	12	6	6	4x2	SNCQ123503N	ST4073-91F	WT15
S3M-100P12B6SN1235.XS27	O	100	45	27	12	6	7	5x2		ST4073-91F	WT15
S3M-125P12B6SN1235.XS40	O	125	55	40	12	6	10	6x2		ST4073-91F	WT15
S3M-160P12B6SN1235.XS40	O	160	55	40	12	6	10	8x2		ST4073-91F	WT15
S3M-200P12B6SN1235.XS50	O	200	69	50	12	6	12	9x2		ST4073-91F	WT15
S3M-250P12B6SN1235.XS50	O	250	69	50	12	6	12	12x2		ST4073-91F	WT15
S3M-80P12B7SN1204 XS22	O	80	38	22	12	7	6	4x2	SNCQ120403N	ST409-91F	WT15
S3M-100P12B7SN1204.XS27	O	100	45	27	12	7	7	5x2		ST409-91F	WT15
S3M-125P12B7SN1204.XS40	O	125	55	40	12	7	10	6x2		ST409-91F	WT15
S3M-160P12B7SN1204.XS40	O	160	55	40	12	7	10	8x2		ST409-91F	WT15
S3M-200P12B7SN1204.XS50	O	200	69	50	12	7	12	9x2		ST409-91F	WT15
S3M-250P12B7SN1204.XS50	O	250	69	50	12	7	12	12x2		ST409-91F	WT15
S3M-80P12B8SN1245.XS22	O	80	38	22	12	8	6	4x2	SNCQ124503N	ST409-91F	WT15
S3M-100P12B8SN1245.XS27	O	100	45	27	12	8	7	5x2		ST409-91F	WT15
S3M-125P12B8SN1245.XS40	O	125	55	40	12	8	10	6x2		ST409-91F	WT15
S3M-160P12B8SN1245.XS40	O	160	55	40	12	8	10	8x2		ST409-91F	WT15
S3M-200P12B8SN1245.XS50	O	200	69	50	12	8	12	9x2		ST409-91F	WT15
S3M-250P12B8SN1245.XS50	O	250	69	50	12	8	12	12x2		ST409-91F	WT15
S3M-100P12B9SN1205.XS27	O	100	45	27	12	9	7	5x2	SNCQ120503N	ST409-91F	WT15
S3M-125P12B9SN1205.XS40	O	125	55	40	12	9	10	6x2		ST409-91F	WT15
S3M-160P12B9SN1205.XS40	O	160	55	40	12	9	10	8x2		ST409-91F	WT15
S3M-200P12B9SN1205.XS50	O	200	69	50	12	9	12	9x2		ST409-91F	WT15
S3M-250P12B9SN1205.XS50	O	250	69	50	12	9	12	12x2		ST409-91F	WT15

Three side milling cutter

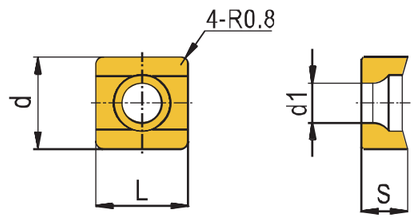






Model	Stock	Dimensions						No.of teeth	Insert	Screw	Torx wrench
		dc	d1	dm	P	B	b				
S3M-63P40B6SN1235.XMB22	O	63	42	22	50	6	10.4	3x2	SNCQ123503N	ST4073-91F	Wt15
S3M-80P50B6SN1235.XMB22	O	80	42	22	50	6	10.4	4x2		ST4073-91F	WT15
S3M-100P50B6SN1235.XMB27	O	100	60	27	50	6	12.4	5x2		ST4073-91F	WT15
S3M-125P50B6SN1235.XMB32	O	125	78	32	50	6	14.4	6x2		ST4073-91F	WT15
S3M-160P50B6SN1235.XMB40	O	160	89	40	50	6	16.4	8x2		ST4073-91F	WT15
S3M-63P40B7SN1204.XMB22	O	63	42	22	50	7	10.4	3x2	SNCQ120403N	ST409-91F	WT15
S3M-80P50B7SN1204.XMB22	O	80	42	22	50	7	10.4	4x2		ST409-91F	WT15
S3M-100P50B7SN1204.XMB27	O	100	60	27	50	7	12.4	5x2		ST409-91F	WT15
S3M-125P50B7SN1204.XMB32	O	125	78	32	50	7	14.4	6x2		ST409-91F	WT15
S3M-160P50B7SN1204.XMB40	O	160	89	40	50	7	16.4	8x2		ST409-91F	WT15
S3M-63P40B8SN1245.XMB22	O	63	42	22	50	8	10.4	3x2	SNCQ124503N	ST409-91F	WT15
S3M-80P50B8SN1245.XMB22	O	80	42	22	50	8	10.4	4x2		ST409-91F	WT15
S3M-100P50B8SN1 245.XMB27	O	100	60	27	50	8	12.4	5x2		ST409-91F	WT15
S3M-125P50B8SN1245.XMB32	O	125	78	40	50	8	14.4	6x2		ST409-91F	WT15
S3M-160P50B8SN1245.XMB40	O	160	89	40	50	8	16.4	8x2		ST409-91F	WT15
S3M-100P50B9SN1205.XMB27	O	100	60	27	50	8	12.4	5x2	SNCQ120503N	ST409-91F	WT15
S3M-125P50B9SN1205.XMB32	O	125	78	40	50	8	14.4	6x2		ST409-91F	WT15
S3M-160P50B9SN1205.XMB40	O	160	89	40	50	8	16.4	8x2		ST409-91F	WT15

Three side milling cutter blade

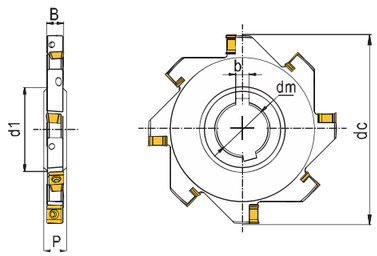


Insert shape	Model	Size and Grades									
		L	d	s	d1	KP1110	KP1230	KP2220	KP3220	KT20	KW20
	LNCT070408N	7 94	9.525	4.76	4.7		●		●		
	LNCT090408N	9.525	9.525	4.76	5.8		●		●		
	LNCT120508N	12.7	11.5	5.56	6						
Steel						★	★			★	
Stainless Steel							★	★		★	
Cast Iron							★		★	☆	
Nonferrous Metal											★
Heat Resistant Alloy								☆		☆	
Hardened Steel						★					

★ Preferred ☆ optional ● standard stock ○ order production

Three side milling cutter





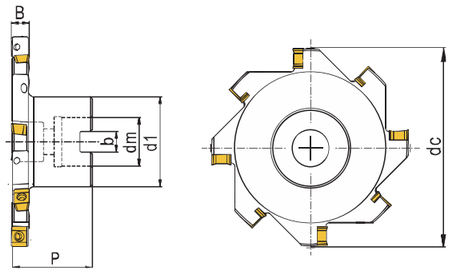
Model	Stock	Dimensions						No.of teeth	Insert	Screw	Torx wrench
		dc	d1	dm	P	B	b				
S3M-100P16B10L NO7.XS32	○	100	46	32	16	10	8	4x2	LNCTO70408N	C030A07S	WT9
S3M-125P16B10L NO7.XS40	○	125	55	40	16	10	10	5x2		C030A08S	WT9
S3M-160P 16B10LN07.XS40	○	160	55	40	16	10	10	6x2		CO30A09S	WT9
S3M-200P16B10LN07.XS50	○	200	69	50	16	10	12	7x2		C030A10S	WT9
S3M-100P18B12LN09.XS32	○	100	46	32	18	12	8	4x2	LNCTO90408N	C035A08S	WT15
S3M-125P 18B12L NO9.XS40	○	125	55	40	18	12	10	5x2		C035A08S	WT15
S3M-160P18B12LN09.XS40	○	160	55	40	18	12	10	6x2		C035A08S	WT15
S3M-200P18B12L NO9.XS50	○	200	69	50	18	12	12	7x2		C035A08S	WT15
S3M-250P 18B12LN09.XS50	○	250	69	50	18	12	12	8x2		C035A08S	WT15
S3M-125P24B16LN12.XS40	○	125	55	40	24	16	10	5x2	LNCT120508N	C035A09S	WT15
S3M-160P24B16LN12.XS40	○	160	55	40	24	16	10	6x2		C035A09S	WT15
S3M-200P24B16LN12.XS50	○	200	69	50	24	16	12	7x2		C035A09S	WT15
S3M-250P24B16LN12.XS50	○	250	69	50	24	12	12	8x2		C035A09S	WT15

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

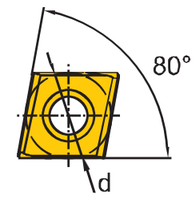
Three side milling cutter

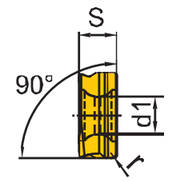




Model	Stock	Dimensions						No.of teeth	Insert	Screw	Torx wrench
		dc	d1	dm	P	B	b				
S3M-80P50B10LNO7.XMB22	O	80	42	22	50	10	10.4	4x2	LNCTO70408N	C030A07S	WT9
S3M-100P50B10LNO7.XMB27	O	100	60	27	50	10	12.4	5x2		C030A07S	WT9
S3M-125P50B10LN07.XMB32	O	125	78	32	50	10	14.4	6x2		C030A07S	WT9
S3M-160P50B10LN07.XMB40	O	160	89	40	50	10	16.4	7x2		CO30A07S	WT9
S3M-100P50B12LN09.XMB27	O	100	60	27	50	12	12.4	5x2	LNCT090408N	C035A08S	WT15
S3M-125P50B12LN09.XMB32	O	125	78	32	50	12	14.4	6x2		C035A08S	WT15
S3M-1 60P50B12LN09.XMB40	O	160	89	40	50	12	16.4	7x2		C035A08S	WT15
S3M-200P50B12LN09.XMB40	O	200	89	40	50	12	16.4	8x2		C035A08S	WT15
S3M-125P50B16LN12.XMB32	O	125	78	32	50	16	14.4	5x2	LNCT120508N	C040A09S	WT15
S3M-160P50B16LN12.XMB40	O	160	89	40	50	16	16.4	6x2		C040A09S	WT15
S3M-200P50B16LN12 XMB40	O	200	89	40	50	16	16.4	7x2		CO40A09S	WT15
S3M-250P50B16LN12.XMB60	O	250	129	60	50	16	25.7	8x2		C040A09S	WT15

Three side milling cutter blade





Insert shape	Model	Size and Grades								
		r	d	s	d1	KP1110	KP1230	KP2220	KT20	KW20
	CNCQ090504L/R	0.4	9.525	5.56	4.4		●			
	CNCQ090508L/R	0.8	9.525	5.56	4.4		●			
	CNCQ120504L/R	0.4	12.7	5.56	5.5		●			
	CNCQ120508L/R	0.8	12.7	5.56	5.5		●			
	CNCQ150504L/R	0.4	15.875	5.56	5.5		●			
Steel						★	★		★	
Stainless Steel							★	★	★	
Cast Iron							★		☆	
Nonferrous Metal										★
Heat Resistant Alloy								☆	☆	
Hardened Steel						★				

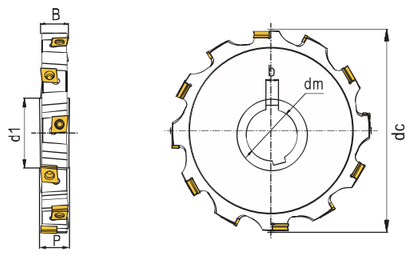
★ Preferred ☆ optional ● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed		
				Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

Three side milling cutter

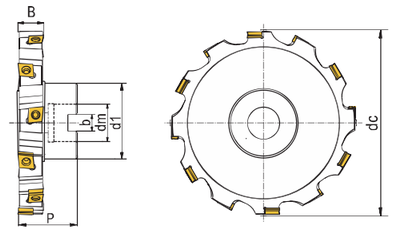




Model	Stock	Dimensions dc	d1	dm	P	B	b	No.of teeth	Insert	Screw	Torx wrench
S3M-100P16B14CN09.XS32	O	100	46	32	16	14	8	4x2		C040A09S	WT15
S3M-125P16B14CN09.XS40	O	125	55	40	16	14	10	4x2	CNCQ0905..L	C040A09S	WT15
S3M-160P16B14CN09.XS40	O	160	55	40	16	14	10	6x2	CNCQ0905..R	C040A09S	WT15
S3M-200P16B14CN09.XS50	O	200	69	50	16	14	12	7x2		C040A09S	WT15
S3M-250P16B14CN09.XS50	O	250	69	50	16	14	12	9x2		C040A09S	WT15
S3M-100P16B14CN09.XS32	O	100	46	32	22	20	8	4x2		C050A12S	WT20
S3M-125P22B20CN12.XS40	O	125	55	40	22	20	10	4x2		C050A12S	WT20
S3M-160P22B20CN12.XS40	O	160	55	40	22	20	10	6x2	CNCQ1205..L CNCQ1205..R	C050A12S	WT20
S3M-200P22B20CN12.XS50	O	200	69	50	22	20	12	7x2		C050A12S	WT20
S3M-250P22B20CN12.XS50	O	250	69	50	21	20	12	9x2		C050A12S	WT20
S3M-125P27B24CN15.XS40	O	125	55	40	27	24	10	4x2		C050A12S	WT20
S3M-160P27B24CN15.XS40	O	160	55	40	27	24	10	6x2	CNCQ1505..L	C050A12S	WT20
S3M-200P27B24CN15.XS50	O	200	69	50	27	24	12	7x2	CNCQ1505..R	C050A12S	WT20
S3M-250P27B24CN15.XS50	O	250	69	50	27	24	12	9x2		C050A12S	WT20

Three side milling cutter

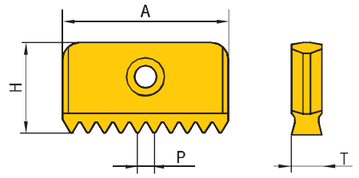




Model	Stock	Dimensions dc	d1	dm	P	B	b	No.of teeth	Insert	Screw	Torx wrench
S3M-80P50B14CN09.XMB22	O	80	42	22	50	14	10.4	3x2		C040A09S	WT15
S3M-100P50B14CN09.XMB27	O	100	60	27	50	14	12.4	4x2	CNCQ0905..L	CO40A09S	WT15
S3M-125P50B14CN09.XMB32	O	125	78	32	50	14	14.4	4x2	CNCQ0905..R	C040A09S	WT15
S3M-160P50B14CN09.XMB40	O	160	89	40	50	14	16.4	6x2		C040A09S	WT15
S3M-100P50B20CN12.XMB27	O	100	60	27	50	20	12.4	4x2		C050A12S	WT20
S3M-125P50B20CN12.XMB32	O	125	78	32	50	20	14.4	4x2	CNCQ1205..L	CO50A12S	WT20
S3M-160P50B20CN12.XMB40	O	160	89	40	50	20	16.4	6x2	CNCQ1205..R	C050A12S	WT20
S3M-200P50B20CN12.XMB40	O	200	89	40	50	20	16.4	8x2		CO50A12S	WT20
S3M-125P50B24CN1 5.XMB32	O	125	78	32	50	24	14.4	4x2		C050A12S	WT20
S3M-160P50B24CN15.XMB40	O	160	89	40	50	24	16.4	6x2	CNCQ1505..L	C050A12S	WT20
S3M-200P50B24CN15.XMB40	O	200	89	40	50	24	16.4	7x2	CNCQ1505..R	C050A12S	WT20
S3M-250P50B24CN15.XMB60	O	250	129	60	50	24	25.7	9x2		C050A12S	WT20

ISO standard thread milling blade





Pitch(mm)		Stock	Insert size 14mm(1)	21mm	30mm	40mm	Grade and application KTX	KVX	KW20
0.50	EXT	○							
	INT	○	1410.50 ISO				●	●	●
0.75	EXT	○	14E0.75 ISO				●	●	●
	INT	○	1410.75 ISO				●	●	●
1.00	EXT	○	14E1.00 ISO	21E1.00 ISO			●	●	●
	INT	○	141.00 ISO	21.00 ISO			●	●	●
1.25	EXT	○	14E1.25 ISO				●	●	●
	INT	○	141.25 ISO				●	●	●
1.50	EXT	○	14E1.50 ISO	21E1.50 ISO	30E1.50 ISO	40E1.50 ISO	●	●	●
	INT	○	141.50 ISO	21.50 ISO	301.50 ISO	4011.50 ISO	●	●	●
1.75	EXT	○	14E1.75 ISO				●	●	●
	INT	○	141.75 ISO	21.75 ISO			●	●	●
2.00	EXT	○	14E2.00 ISO	21E2.00 ISO	30E2.00 ISO	40E2.00 ISO	●	●	●
	INT	○	1412.00 ISO	212.00 ISO	3012.00 ISO	4012.00 ISO	●	●	●
2.50	EXT	○	14E2.50 ISO	21E2.50 ISO			●		●
	INT	○	1412.50 ISO	212.50 ISO			●	●	●
3.00	EXT	○		21E3.00 ISO	30E3.00 ISO	40E3.00 ISO	●	●	●
	INT	○		213.00 ISO	3013.00 ISO	4013.00 ISO	●	●	●
3.50	EXT	○			30E3 50 ISO		●		●
	INT	○		213.50 ISO	3013.50 ISO	4013.50 ISO	●	●	●
4.00	EXT	○			30E4.00 ISO	40E4.00 ISO	●	●	●
	INT	○			3014.00 ISO	4014.00 ISO	●	●	●
4.50	EXT	○							
	INT	○			3014.50 ISO	4014.50 ISO	●	●	●
5.00	EXT	○				40E5.00 ISO	●	●	●
	INT	○				4015.00 ISO	●	●	●
5.50	EXT	○							
	INT	○				4015.50 ISO	●	●	●
6.00	EXT	○				40E6.00 ISO	●	●	●
	INT	○				4016.00 ISO	●	●	●
H		○	7.5	12	16	20	Steel	Stainless Steel	Nonferrous metal
T		○	3.1	4.7	5.5	6.3		Cast iron	

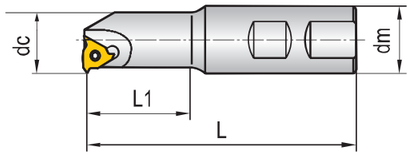
● standard stock ○ order production

Recommended Cutting Conditions

Workpiece Materials		Brinell hardness HB	Grade	Recommended Cutting Speed Vc(m/min)	f(mm/z)	ap(mm)
P	Steel	<180	KP1230	120-180-250	0.1-0.3	
		180-280	KP1230	100-160-220	0.1-0.3	
		280-350	KP1230	80-140-180	0.1-0.3	
M	Stainless Steel	<270	KP1230	80-160-250	0.1-0.25	
K	Cast iron	180-250	KP1230			
N	Aluminium Alloys					
H	Hardess	HRC50-60				

Indexable thread milling cutter



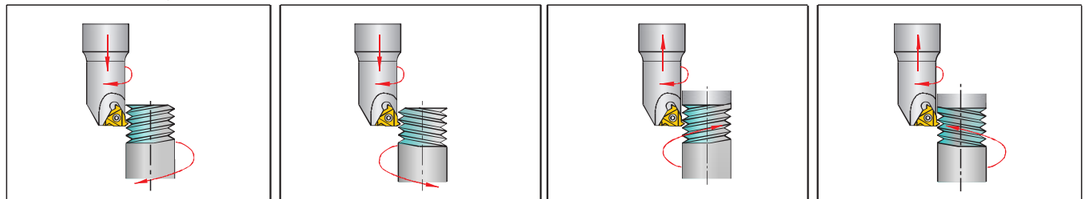


Model	Stock	Dimensions dc	dm	L1	L	Insert	Screw	Torx wrench	Weight
SMT-25-16	○	25	25	75	140	16....	C035A08S	T15	0.7
SMT-40-16	○	40	32	85	150	16....	C035A08S	T15	1.1

External thread: 16EL....

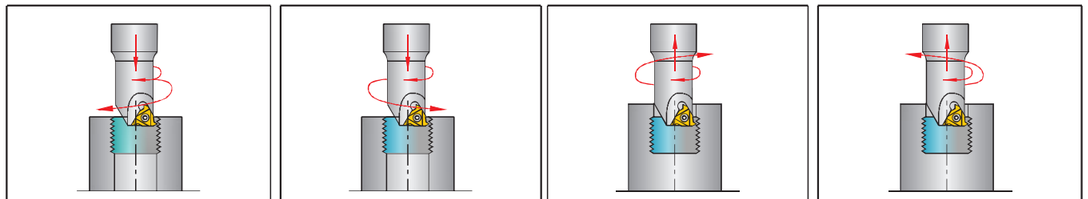
Internal thread: 16NR....

External thread milling method



Right hand thread -R	L-I	Right hand thread -R	L-I
Feed clockwise and mill down	Feed clockwise and mill down	Feed clockwise and mill down	Feed clockwise and mill down
16EL.... The blade	16EL.... The blade	16EL.... The blade	16EL.... The blade

Internal thread milling method



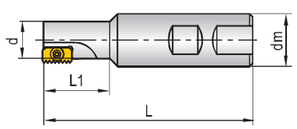
Right hand thread -R	L-I	Right hand thread -R	L-I
Feed clockwise and mill down	Feed clockwise and mill down	Feed clockwise and mill down	Feed clockwise and mill down
16ER.... The blade	16ER.... The blade	16ER.... The blade	16ER.... The blade

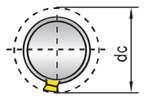
Indexable thread milling cutter







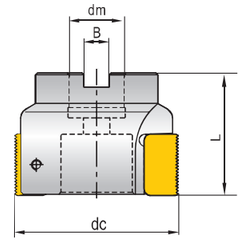




Model	Stock	Dimensions					No.of teeth	Insert	Screw	Torx wrench	Weight
		dc	dm	d	L1	L					
SMT-14.5-14	O	14.5	20	11	25	85	1	14...	C030A07S	T9	0.2
SMT-17-14	O	17	20	14	30	85	1	14...	C030A07S	T9	0.3
SMT-20-14	O	20	20	17	35	90	1	14...	C030A07S	T9	0.3
SMT-25-14	O	25	25	22	40	100	1	14...	C030A07S	T9	0.4
SMT-18-21	O	18	20	14	30	85	1	21...	C040A09S	T15	0.3
SMT-21-21	O	21	20	17	40	95	1	21...	C040A09S	T15	0.3
SMT-25-21	O	25	25	21	50	115	1	21...	C040A09S	T15	0.4
SMT-29-30	O	29	25	24	50	115	1	30...	CO50A12S	T20	0.6
SMT-48-40	O	48	40	40	80	160	1	40...	C050A12S	T20	2.3

Indexable thread milling cutter





Model	Stock	Dimensions				No.of teeth	Insert	Screw	Torx wrench	Weight
		dc	dm	B	L					
SMF-50-14	O	50	22	10.4	40	5	14...	C030A07S	WT9	0.4
SMF-63-21	O	63	22	10.4	50	5	21...	C040A09S	WT15	0.6
SMF-80-21	O	80	27	12.4	50	6	21...	C040A09S	WT15	1.1
SMF-80-30	O	80	27	12.4	55	4	30...	C050A12S	WT20	1.1
SMF-100-30	O	100	32	14.4	60	4	30...	C050A12S	WT20	1.9
SMF-80-40	O	80	27	12.4	65	4	40...	C050A12S	WT20	1.1
SMF-100-40	O	100	32	14.4	70	4	40...	C050A12S	WT20	1.9



Solid Carbide Mills

K1 - K71

K

HP-MAX: Hp-max: General processing series 01-06

HPB230 K
HPR435 K
HPE435 K
HPEL435 K
HPE235 K
HPEL235 K

HM-MAX: Hm-max: General processing series 07-16

HMB230 K
HMR435 K
HME435 K
HMEL435 K
HME235 K
HMEL235 K
HME645 K
HMEL645 K
HMRE430 K
HMREL430 K

HY-MAX: Hy-max: High hard machining series 17-20

HYB230 K
Double end milling cutter with ball head
HYR435 K
Four end milling cutter with round nose
HYE445 K
Four flat end milling cutter

HR-MAX: Hr-max: Deep groove micro trail series 22-29

HRB230 K
HRR430 K
HRR230 K
HRE430 K
HRE230 K

HS-MAX: Hs-max: stainless steel processing series 30-35

HSB230 K
HSR435 K
HSE435 K
HSEL435 K
HSE235 K
HSEL235 K

XS-MAX: Xs-max: high temperature alloy processing series 36-38

XSE445 K
XSR445 K
XSEL445 K

AL-MAX: Al-max: Aluminum alloy processing series 39-44

ALB230 K
ALE345 K
ALEL345 K
ALE255 K
ALEL255 K
ALRE327 K

CO-MAX: Co-max: Copper and aluminum processing series 45-50

COB230 K
COE345 K
COEL345 K
COE255 K
COEL255 K
CORE327 K

DIA-MAX: DIA-MAX: graphite processing series 51-56

DMB230 K
DMR430 K
DME430 K
DME230 K

Thread milling cutter series 57-56

ISO K
ISO Metric Full Profile
UN-60° K
American UN Full Profile
BSP(G)-55° K
BSP(G)-55° British Standard Pipe Full Profile
BSPT-55° K
BSPT-55° British Standard Pipe Full Profile
NPT-60° K
NPT-60° National Pipe Threads
NPTF K
NPTF National Pipe Threads
ISO K
ISO Metric Full Profile
60° K
60° full thread
ISO K
ISO Metric Full Profile
UN-60° K
American UN Full Profile
UN-60° K
American UN Full Profile

Saw blade milling cutter series 68-71

A-tooth type Tungsten Carbide Circular Saws K
S-type solid carbide saw cutter and milling cutter K
Solid carbide side milling cutter K
Solid carbide convex semicircle saw blade milling cutter K
Solid carbide concave semicircle milling cutter K
Saw blade shank K

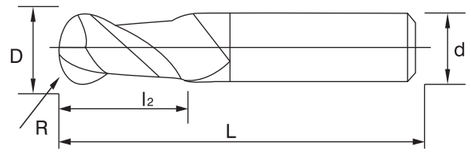
WERNER

HPB230

HP-MAX Ball End Mill 2-Flute 30°

CARBIDE MG | HP MAX | 2 | 30° Helix | R ±0.005 D≤6 | R ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HPB230-010020-050-S04	1.0	0.5	2	50	4	
HPB230-015030-050-S04	1.5	0.75	3	50	4	
HPB230-020040-050-S04	2.0	1	4	50	4	
HPB230-030060-050-S04	3.0	1.5	6	50	4	
HPB230-030060-050-S06	3.0	1.5	6	50	6	
HPB230-040080-050-S04	4.0	2	8	50	4	
HPB230-040080-050-S06	4.0	2	8	50	6	
HPB230-050100-050-S06	5.0	2.5	10	50	6	
HPB230-060120-050-S06	6.0	3	12	50	6	
HPB230-060120-075-S06	6.0	3	12	75	6	
HPB230-060120-100-S06	6.0	3	12	100	6	
HPB230-080160-060-S08	8.0	4	16	60	8	
HPB230-080160-075-S08	8.0	4	16	75	8	
HPB230-080160-100-S08	8.0	4	16	100	8	
HPB230-100200-075-S10	10.0	5	20	75	10	
HPB230-100200-100-S10	10.0	5	20	100	10	
HPB230-120240-075-S12	12.0	6	24	75	12	
HPB230-120240-100-S12	12.0	6	24	100	12	

Work Material

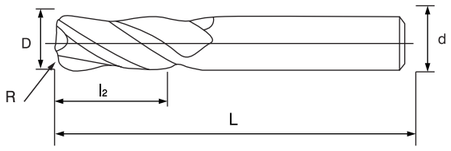
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎		◎					◎													

HPR435

HP-MAX Rudius End Mill 4-Flute 35°

CARBIDE MG | HP MAX | 4 | 35° Helix | CR ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HPR435-010030R0.2-050-S04	1	R0.2	3	50	4	
HPR435-020060R0.2-050-S04	2	R0.2	6	50	4	
HPR435-030090R0.2-050-S04	3	R0.2	9	50	4	
HPR435-030090R0.5-050-S04	3	R0.5	9	50	4	
HPR435-040110R0.2-050-S04	4	R0.2	11	50	4	
HPR435-040110R0.5-050-S04	4	R0.5	11	50	4	
HPR435-050130R0.2-050-S06	5	R0.2	13	50	6	
HPR435-050130R0.5-050-S06	5	R0.5	13	50	6	
HPR435-050130R1.0-050-S06	5	R1.0	13	50	6	
HPR435-060160R0.2-050-S06	6	R0.2	16	50	6	
HPR435-060160R0.5-050-S06	6	R0.5	16	50	6	
HPR435-060160R1.0-050-S06	6	R1.0	16	50	6	
HPR435-060160R0.5-075-S06	6	R0.5	16	75	6	
HPR435-060160R1.0-075-S06	6	R1.0	16	75	6	
HPR435-060160R0.5-100-S06	6	R0.5	16	100	6	
HPR435-060160R1.0-100-S06	6	R1.0	16	100	6	
HPR435-080200R0.5-060-S08	8	R0.5	20	60	8	
HPR435-080200R1.0-060-S08	8	R1.0	20	60	8	
HPR435-080200R0.5-075-S08	8	R0.5	20	75	8	
HPR435-080200R1.0-075-S08	8	R1.0	20	75	8	
HPR435-080200R0.5-100-S08	8	R0.5	20	100	8	
HPR435-080200R1.0-100-S08	8	R1.0	20	100	8	
HPR435-100250R0.5-075-S10	10	R0.5	25	75	10	
HPR435-100250R1.0-075-S10	10	R1.0	25	75	10	
HPR435-100250R0.5-100-S10	10	R0.5	25	100	10	
HPR435-100250R1.0-100-S10	10	R1.0	25	100	10	
HPR435-120300R0.5-075-S12	12	R0.5	30	75	12	
HPR435-120300R1.0-075-S12	12	R1.0	30	75	12	
HPR435-120300R0.5-100-S12	12	R0.5	30	100	12	
HPR435-120300R1.0-100-S12	12	R1.0	30	100	12	

Work Material

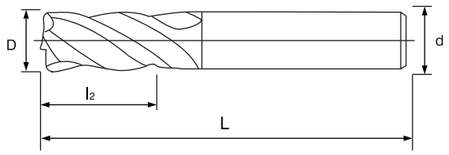
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎		◎					◎													

HPE435

HP-MAX Flat End Mill 4-Flute 35°

CARBIDE MG | HP MAX | 4 | 35° Helix | D 0/-0,015 D≤5 | D 0/-0,02 D≥6





Type	D	R	l2	L	d	
HPE435-010030-050-S04	1.0		3	50	4	
HPE435-015040-050-S04	1.5		4	50	4	
HPE435-020060-050-S04	2		6	50	4	
HPE435-025070-050-S04	2.5		7	50	4	
HPE435-030090-050-S04	3		9	50	4	
HPE435-040120-050-S04	4		12	50	4	
HPE435-040120-050-S06	4		12	50	6	
HPE435-050130-050-S06	5		13	50	6	
HPE435-060150-050-S06	6		15	50	6	
HPE435-080200-060-S08	8		20	60	8	
HPE435-100250-075-S10	10		25	75	10	
HPE435-120300-075-S12	12		30	75	12	
HPE435-140400-100-S14	14		40	100	14	
HPE435-160450-100-S16	16		45	100	16	
HPE435-180500-100-S18	18		50	100	18	
HPE435-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎		◎					◎													

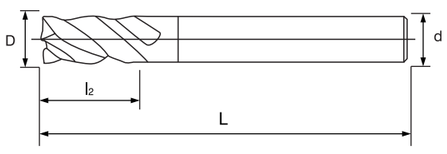
◎First choice ○ Second choice

HPEL435

HP-MAX Long Flute Flat End Mill 4-Flute 35°

CARBIDE MG | HP MAX | 4 | 35° Helix | D 0/-0,015 D≤5 | D 0/-0,02 D≥6





Type	D	R	l2	L	d	
HPEL435-030090-075-S04	3		9	75	4	
HPEL435-030090-100-S04	3		9	100	4	
HPEL435-040120-075-S04	4		12	75	4	
HPEL435-040120-100-S04	4		12	100	4	
HPEL435-050160-075-S06	5		16	75	6	
HPEL435-050160-100-S06	5		16	100	6	
HPEL435-060180-075-S06	6		18	75	6	
HPEL435-060180-100-S06	6		18	100	6	
HPEL435-080250-075-S08	8		25	75	8	
HPEL435-080250-100-S08	8		25	100	8	
HPEL435-100300-100-S10	10		30	100	10	
HPEL435-120360-100-S12	12		36	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎		◎					◎													

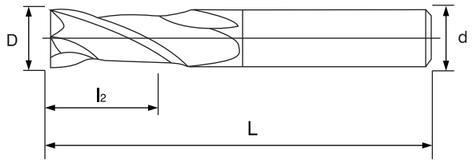
◎First choice ○ Second choice

HPE235

HP-MAX Flat End Mill 2-Flute 35°

CARBIDE MG | HP MAX | 2 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HPE235-010030-050-S04	1.0		3	50	4	
HPE235-015040-050-S04	1.5		4	50	4	
HPE235-020060-050-S04	2		6	50	4	
HPE235-025070-050-S04	2.5		7	50	4	
HPE235-030090-050-S04	3		9	50	4	
HPE235-040120-050-S04	4		12	50	4	
HPE235-040120-050-S06	4		12	50	6	
HPE235-050130-050-S06	5		13	50	6	
HPE235-060150-050-S06	6		15	50	6	
HPE235-080200-060-S08	8		20	60	8	
HPE235-100250-075-S10	10		25	75	10	
HPE235-120300-075-S12	12		30	75	12	
HPE235-140400-100-S14	14		40	100	14	
HPE235-160450-100-S16	16		45	100	16	
HPE235-180500-100-S18	18		50	100	18	
HPE235-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎		◎					◎													

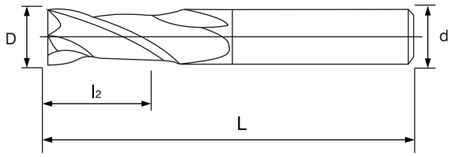
◎First choice ○Second choice

HPEL235

HP-MAX Long Flute Flat End Mill 2-Flute 35°

CARBIDE MG | HP MAX | 2 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HPEL235-030090-075-S04	3		9	75	4	
HPEL235-030090-100-S04	3		9	100	4	
HPEL235-040120-075-S04	4		12	75	4	
HPEL235-040120-100-S04	4		12	100	4	
HPEL235-050160-075-S06	5		16	75	6	
HPEL235-050160-100-S06	5		16	100	6	
HPEL235-060180-075-S06	6		18	75	6	
HPEL235-060180-100-S06	6		18	100	6	
HPEL235-080250-075-S08	8		25	75	8	
HPEL235-080250-100-S08	8		25	100	8	
HPEL235-100300-100-S10	10		30	100	10	
HPEL235-120360-100-S12	12		36	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎		◎					◎													

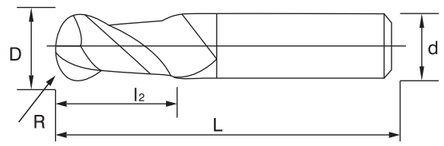
◎First choice ○Second choice

HMB230

HM-MAX Ball End Mill 2-Flute 30°

CARBIDE SUPER | HM MAX | 2 | 30° Helix | R ±0.005 D≤6 | R ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMB230-020040-050-S04	2	0.5	4	50	4	
HMB230-030060-050-S04	3	0.75	6	50	4	
HMB230-040080-050-S04	4	1.0	8	50	4	
HMB230-040080-050-S06	4	1.0	8	50	6	
HMB230-050100-050-S06	5	1.25	10	50	6	
HMB230-060120-050-S06	6	1.5	12	50	6	
HMB230-060120-075-S06	6	1.5	12	75	6	
HMB230-060120-100-S06	6	1.5	12	100	6	
HMB230-080160-060-S08	8	2.0	16	75	8	
HMB230-080160-075-S08	8	2.0	16	100	8	
HMB230-080160-100-S08	8	2.0	16	75	8	
HMB230-100200-075-S10	10	2.5	20	100	10	
HMB230-100200-075-S10	10	2.5	20	100	10	
HMB230-120240-075-S12	12	3.0	24	75	12	
HMB230-120240-100-S12	12	3.0	24	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

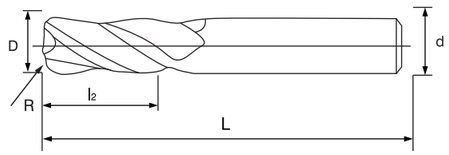
●First choice ○Second choice

HMR435

HM-MAX Radius End Mill 4-Flute 35°

CARBIDE SUPER | HM MAX | 4 | 35° Helix | CR ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMR435-010R0.2-050-S04	1	0.2	3	50	4	
HMR435-020R0.2-050-S04	2	0.2	6	50	4	
HMR435-030R0.2-050-S04	3	0.2	8	50	4	
HMR435-030R0.5-050-S04	3	0.5	8	50	4	
HMR435-040R0.2-050-S04	4	0.2	11	50	4	
HMR435-040R0.5-050-S04	4	0.5	11	50	4	
HMR435-060R0.2-050-S06	6	0.2	16	50	6	
HMR435-060R0.5-050-S06	6	0.5	16	50	6	
HMR435-060R1.0-050-S06	6	1	16	75	6	
HMR435-060R0.5-075-S06	6	0.5	16	75	6	
HMR435-060R1.0-075-S06	6	1	16	75	6	
HMR435-060R0.5-100-S06	6	0.5	16	100	6	
HMR435-060R1.0-100-S06	6	1	16	100	6	
HMR435-080R0.5-060-S08	8	0.5	20	60	8	
HMR435-080R1.0-060-S08	8	1	20	60	8	
HMR435-080R0.5-075-S08	8	0.5	20	75	8	
HMR435-080R1.0-075-S08	8	1	20	75	8	
HMR435-080R0.5-100-S08	8	0.5	20	100	8	
HMR435-080R1.0-100-S08	8	1	20	100	8	
HMR435-100R0.5-075-S10	10	0.5	25	75	10	
HMR435-100R0.5-075-S10	10	1	25	75	10	
HMR435-100R0.5-100-S10	10	0.5	25	100	10	
HMR435-100R1.0-100-S10	10	1	25	100	10	
HMR435-120R0.5-075-S12	12	0.5	30	75	12	
HMR435-120R1.0-075-S12	12	1	30	75	12	
HMR435-120R0.5-100-S12	12	0.5	30	100	12	
HMR435-120R1.0-100-S12	12	1	30	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

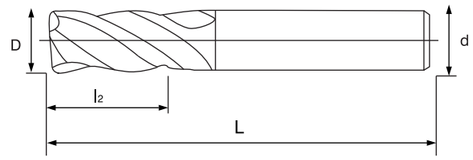
●First choice ○Second choice

HME435

HM-MAX Flat End Mill 4-Flute 35°

CARBIDE SUPER | HM MAX | 4 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HME435-010030-050-S04	1.0		3	50	4	
HME435-015040-050-S04	1.5		4	50	4	
HME435-020060-050-S04	2		6	50	4	
HME435-025070-050-S04	2.5		7	50	4	
HME435-030090-050-S03	3		9	50	3	
HME435-030090-050-S04	3		9	50	4	
HME435-040110-050-S04	4		11	50	4	
HME435-050130-050-S06	5		13	50	6	
HME435-060160-050-S06	6		16	50	6	
HME435-080200-060-S08	8		20	60	8	
HME435-100250-075-S10	10		25	75	10	
HME435-120300-075-S12	12		30	75	12	
HME435-140350-100-S14	14		35	100	14	
HME435-160400-100-S16	16		40	100	16	
HME435-180450-100-S18	18		45	100	18	
HME435-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
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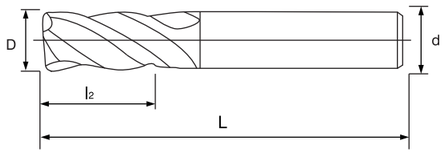
◎First choice ○Second choice

HMEL435

HM-MAX Long Flute Flat End Mill 4-Flute 35°

CARBIDE SUPER | HM MAX | 4 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMEL435-030090-075-S04	3		9	75	4	
HMEL435-040120-075-S04	4		12	75	4	
HMEL435-030120-100-S04	3		12	100	4	
HMEL435-040160-100-S04	4		16	100	4	
HMEL435-050150-075-S06	5		15	75	6	
HMEL435-060180-075-S06	6		18	75	6	
HMEL435-050200-100-S06	5		20	100	6	
HMEL435-060240-100-S06	6		24	100	6	
HMEL435-080240-075-S08	8		24	75	8	
HMEL435-080320-100-S08	8		32	100	8	
HMEL435-100400-100-S10	10		40	100	10	
HMEL435-120480-100-S12	12		48	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

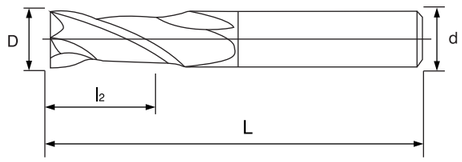
◎First choice ○Second choice

HME235

HM-MAX Flat End Mill 2-Flute 35°

CARBIDE SUPER | HM MAX | 2 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.0 D≥6





Type	D	R	l2	L	d	
HME235-010030-050-S04	1.0		3	50	4	
HME235-015040-050-S04	1.5		4	50	4	
HME235-020060-050-S04	2		6	50	4	
HME235-025070-050-S04	2.5		7	50	4	
HME235-030090-050-S03	3		9	50	3	
HME235-030090-050-S04	3		9	50	4	
HME235-040110-050-S04	4		11	50	4	
HME235-050130-050-S06	5		13	50	6	
HME235-060160-050-S06	6		16	50	6	
HME235-080200-060-S08	8		20	60	8	
HME235-100250-075-S10	10		25	75	10	
HME235-120300-075-S12	12		30	75	12	
HME235-140350-100-S14	14		35	100	14	
HME235-160400-100-S16	16		40	100	16	
HME235-180450-100-S18	18		45	100	18	
HME235-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
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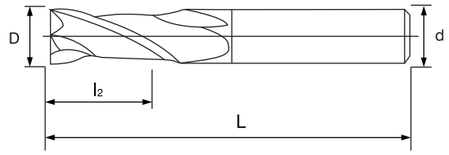
◎First choice ○Second choice

HMEL235

HM-MAX Long Flute Flat End Mill 2-Flute 35°

CARBIDE SUPER | HM MAX | 2 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMEL235-030090-075-S04	3		9	75	4	
HMEL235-040120-075-S04	4		12	75	4	
HMEL235-030120-100-S04	3		12	100	4	
HMEL235-040160-100-S04	4		16	100	4	
HMEL235-050150-075-S06	5		15	75	6	
HMEL235-060180-075-S06	6		18	75	6	
HMEL235-050200-100-S06	5		20	100	6	
HMEL235-060240-100-S06	6		24	100	6	
HMEL235-080240-075-S08	8		24	75	8	
HMEL235-080320-100-S08	8		32	100	8	
HMEL235-100400-100-S10	10		40	100	10	
HMEL235-120480-100-S12	12		48	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

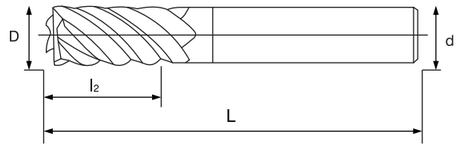
◎First choice ○Second choice

HME645

HM-MAX Flat End Mill 6-Flute 45°

CARBIDE SUPER | HM MAX | 6 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HME645-060180-060-S06	6		18	50	6	
HME645-080200-060-S08	8		20	60	8	
HME645-100300-075-S10	10		30	75	10	
HME645-120320-075-S12	12		32	75	12	
HME645-160400-100-S16	16		40	100	16	
HME645-200450-100-S20	20		45	100	20	

Work Material																								
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎			◎													

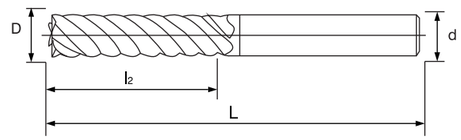
◎First choice ○Second choice

HMEL645

HM-MAX Long Flute Flat End Mill 6-Flute 45°

CARBIDE SUPER | HM MAX | 6 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMEL645-606240-075-S06	6		24	75	6	
HMEL645-060240-100-S06	6		24	100	6	
HMEL645-080320-075-S08	8		32	75	8	
HMEL645-080320-100-S08	8		32	100	8	
HMEL645-100450-100-S10	10		40	100	10	
HMEL645-120450-100-S12	12		45	100	12	
HMEL645-160640-150-S16	16		64	150	16	
HMEL645-200750-150-S20	20		75	150	20	

Work Material																								
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎			◎													

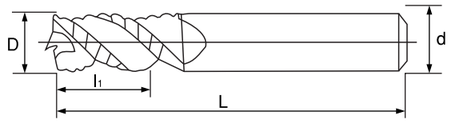
◎First choice ○Second choice

HMRE430

HM-MAX Roughing Flat End Mill 4-Flute 30°

CARBIDE SUPER | HM MAX | 4 | 30° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMRE430-030080-050-S04	3		8	50	4	
HMRE430-040100-050-S04	4		10	50	4	
HMRE430-060150-060-S06	6		15	50	6	
HMRE430-080200-060-S08	8		20	60	8	
HMRE430-100250-075-S10	10		25	75	10	
HMRE430-120300-075-S12	12		30	75	12	
HMRE430-160400-100-S16	16		40	100	16	
HMRE430-200500-100-S20	20		50	100	20	

Work Material																							
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

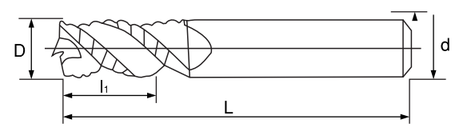
◎ First choice ○ Second choice

HMREL430

HM-MAX Long Flute Roughing Flat End Mill 4-Flute 30°

CARBIDE SUPER | HM MAX | 4 | 30° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	l2	L	d	
HMREL430-060240-100-S06	6		24	100	6	
HMREL430-080320-100-S08	8		32	100	8	
HMREL430-100400-100-S10	10		40	100	10	
HMREL430-120480-100-S12	12		48	100	12	
HMREL430-160650-150-S16	16		65	150	16	
HMREL430-200800-150-S20	20		80	150	20	

Work Material																							
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎				◎													

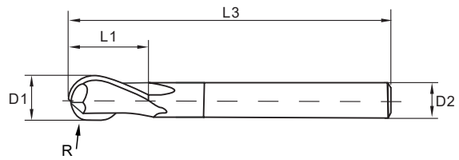
◎ First choice ○ Second choice

HYB230

HY-MAX Ball End Mill 2-Flute 30°

CARBIDE NANO | HY MAX | 2 | 30° Helix | R ±0.005 | D 0/-0.015





Type	D1	R	L1	L3	D2	
HYB230-010020-050-S04	1.0	R0.5	2	50	4	
HYB230-015030-050-S04	1.5	R0.75	3	50	4	
HYB230-020040-050-S04	2.0	R0.1	4	50	4	
HYB230-030060-050-S04	3.0	R1.5	6	50	4	
HYB230-040080-050-S04	4.0	R2.0	8	50	4	
HYB230-040080-075-S04	4.0	R2.0	8	75	4	
HYB230-050100-050-S06	5.0	R2.5	10	50	6	
HYB230-060120-050-S06	6.0	R3.0	12	50	6	
HYB230-060120-075-S06	6.0	R3.0	12	75	6	
HYB230-060120-100-S06	6.0	R3.0	12	100	6	
HYB230-080160-060-S08	8.0	R4.0	16	60	8	
HYB230-080160-075-S08	8.0	R4.0	16	75	8	
HYB230-080160-100-S08	8.0	R4.0	16	100	8	
HYB230-100200-075-S10	10	R5.0	20	75	10	
HYB230-100200-100-S10	10	R5.0	20	100	10	
HYB230-120240-075-S12	12	R6.0	24	75	12	
HYB230-120240-100-S12	12	R6.0	24	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎	◎	◎	◎													

●First choice ○ Second choice

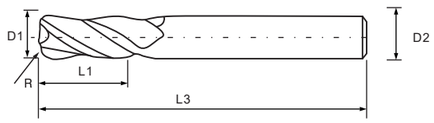
HYR435

HY-MAX Rudius End Mill 4-Flute 35°

CARBIDE NANO | HY MAX | 4 | 35° Helix | CR ±0.01 | D 0/-0.015 | D 0/-0.02

D>6 D≤5 D≥6





Type	D1	R	L1	L3	D2	
HYR435-010030R0.2-050-S04	1	R0.2	3	50	4	
HYR435-020050R0.2-050-S04	2	R0.2	5	50	4	
HYR435-030070R0.2-050-S04	3	R0.2	7	50	4	
HYR435-030070R0.5-050-S04	3	R0.5	7	50	4	
HYR435-040100R0.2-050-S04	4	R0.2	10	50	4	
HYR435-040100R0.5-050-S04	4	R0.5	10	50	4	
HYR435-060150R0.5-050-S06	6	R0.5	15	50	6	
HYR435-060150R1.0-050-S06	6	R1.0	15	50	6	
HYR435-060150R0.5-075-S06	6	R0.5	15	75	6	
HYR435-060150R1.0-075-S06	6	R1.0	15	75	6	
HYR435-060150R0.5-100-S06	6	R0.5	15	100	6	
HYR435-060150R1.0-100-S06	6	R1.0	15	100	6	
HYR435-080200R0.5-060-S08	8	R0.5	20	60	8	
HYR435-080200R1.0-060-S08	8	R1.0	20	60	8	
HYR435-080200R0.5-075-S08	8	R0.5	20	75	8	
HYR435-080200R1.0-075-S08	8	R1.0	20	75	8	
HYR435-080200R0.5-100-S08	8	R0.5	20	100	8	
HYR435-080200R1.0-100-S08	8	R1.0	20	100	8	
HYR435-100250R0.5-075-S10	10	R0.5	25	75	10	
HYR435-100250R1.0-075-S10	10	R1.0	25	75	10	
HYR435-100250R0.5-100-S10	10	R0.5	25	100	10	
HYR435-100250R1.0-100-S10	10	R1.0	25	100	10	
HYR435-120300R0.5-075-S12	12	R0.5	30	75	12	
HYR435-120300R1.0-075-S12	12	R1.0	30	75	12	
HYR435-120300R0.5-100-S12	12	R0.5	30	100	12	
HYR435-120300R1.0-100-S12	12	R1.0	30	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎	◎	◎	◎													

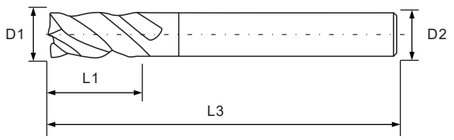
●First choice ○ Second choice

HYE445

HY-MAX Flat End Mill 4-Flute 45°

CARBIDE NANO | HY MAX | 4 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6



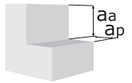


Type	D1	L1	L3	D2	
HYE445-010030-050-S04	1.0	3	50	4	
HYE445-015040-050-S04	1.5	4	50	4	
HYE445-020060-050-S04	2.0	6	50	4	
HYE445-025080-050-S04	2.5	8	50	4	
HYE445-030080-050-S04	3.0	8	50	4	
HYE445-040110-050-S04	4.0	11	50	4	
HYE445-040150-075-S04	4.0	15	75	4	
HYE445-050130-050-S06	5.0	13	50	6	
HYE445-060160-050-S06	6.0	16	50	6	
HYE445-060200-075-S06	6.0	20	75	6	
HYE445-080200-060-S08	8.0	20	60	8	
HYE445-080250-100-S08	8.0	25	100	8	
HYE445-100250-075-S10	10.0	25	75	10	
HYE445-100300-100-S10	10.0	30	100	10	
HYE445-120300-075-S12	12.0	30	75	12	
HYE445-120350-100-S12	12.0	35	100	12	

Work Material

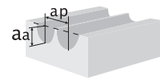
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	Hardess steel ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎	◎		◎													

◎First choice ○Second choice



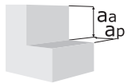
Side milling

The workpiece material		Processing conditions	Vc m/min	ap mm	d1 mm	2	4	6	8	10	12
H	Alloy Steel Hardened Steel <55HRC	High Speed	220	ap≤0.5D	N (min-1)	35000	17500	11600	8700	7000	5800
				ae≤0.02D	F(mm/min)	1400	1400	1400	1400	1300	1300
		General	100	ap≤1D	N (min-1)	15900	7900	5300	3900	3100	2600
				ae≤0.05D	F(mm/min)	630	630	630	600	590	580
	Alloy Steel Hardened Steel 55-65HRC	High Speed	140	ap≤0.3D	N (min-1)	22000	11000	7400	5500	4400	3700
				ae≤0.01D	F(mm/min)	700	660	680	660	670	620
		General	80	ap≤0.7D	N (min-1)	12700	6400	4200	3200	2500	2100
				ae≤0.03D	F(mm/min)	400	380	390	380	380	350



Copying milling

The workpiece material		Processing conditions	Vc m/min	ap mm	d1 mm	2	4	6	8	10	12
H	Alloy Steel Hardened Steel <65HRC	High Speed	220	ap≤0.03D	N (min-1)	35000	17500	11600	8700	7000	5800
				ae≤0.03D	F(mm/min)	1400	1400	1400	1400	1300	1300
		General	150	ap≤0.08D	N (min-1)	24000	12000	7900	5900	4800	4000
				ae≤0.03D	F(mm/min)	960	960	950	950	890	900



Side milling

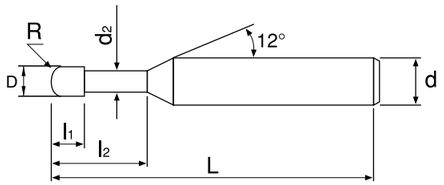
The workpiece material		Processing conditions	Vc m/min	ap mm	d1 mm	2	4	6	8	10	12
H	Alloy Steel Hardened Steel <55HRC	High Speed	220	ap≤0.5D	N (min-1)	35000	17500	11600	8700	7000	5800
				ae≤0.02D	F(mm/min)	1400	1400	1400	1400	1300	1300
		General	100	ap≤1D	N (min-1)	15900	7900	5300	3900	3100	2600
				ae≤0.05D	F(mm/min)	630	630	630	600	590	580
	Alloy Steel Hardened Steel 55-65HRC	High Speed	140	ap≤0.3D	N (min-1)	22000	11000	7400	5500	4400	3700
				ae≤0.01D	F(mm/min)	700	660	680	660	670	620
		General	80	ap≤0.7D	N (min-1)	12700	6400	4200	3200	2500	2100
				ae≤0.03D	F(mm/min)	400	380	390	380	380	350

HRB230

HR-MAX Rib Ball End Mill 2-Flute 30°

CARBIDE NANO | HR MAX | 2 | 30° Helix | R ±0.005 | D 0/-0.015





Type	D	d2	l2	R	L1	L	d	
HRB230-020010-050-S04	0.2	0.18	1	R0.1	1	50	4	
HRB230-020015-050-S04	0.2	0.18	1.5	R0.1	1.5	50	4	
HRB230-020020-050-S04	0.2	0.18	2	R0.1	2	50	4	
HRB230-030010-050-S04	0.3	0.27	1	R0.15	1	50	4	
HRB230-030020-050-S04	0.3	0.27	2	R0.15	2	50	4	
HRB230-030030-050-S04	0.3	0.27	3	R0.15	3	50	4	
HRB230-040010-050-S04	0.4	0.37	1	R0.2	1	50	4	
HRB230-040020-050-S04	0.4	0.37	2	R0.2	2	50	4	
HRB230-040040-050-S04	0.4	0.37	4	R0.2	4	50	4	
HRB230-040060-050-S04	0.4	0.37	6	R0.2	6	50	4	
HRB230-050020-050-S04	0.5	0.46	2	R0.25	2	50	4	
HRB230-050040-050-S04	0.5	0.46	4	R0.25	4	50	4	
HRB230-050060-050-S04	0.5	0.46	6	R0.25	6	50	4	
HRB230-050080-050-S04	0.5	0.46	8	R0.25	8	50	4	
HRB230-060020-050-S04	0.6	0.55	2	R0.3	2	50	4	
HRB230-060030-050-S04	0.6	0.55	3	R0.3	3	50	4	
HRB230-060040-050-S04	0.6	0.55	4	R0.3	4	50	4	
HRB230-060060-050-S04	0.6	0.55	6	R0.3	6	50	4	
HRB230-060080-050-S04	0.6	0.55	8	R0.3	8	50	4	
HRB230-080020-050-S04	0.8	0.75	2	R0.4	2	50	4	
HRB230-080040-050-S04	0.8	0.75	4	R0.4	4	50	4	
HRB230-080060-050-S04	0.8	0.75	6	R0.4	6	50	4	
HRB230-080080-050-S04	0.8	0.75	8	R0.4	8	50	4	
HRB230-080100-050-S04	0.8	0.75	10	R0.4	10	50	4	
HRB230-100040-050-S04	1.0	0.95	4	R0.5	4	50	4	
HRB230-100060-050-S04	1.0	0.95	6	R0.5	6	50	4	
HRB230-100080-050-S04	1.0	0.95	8	R0.5	8	50	4	
HRB230-100100-050-S04	1.0	0.95	10	R0.5	10	50	4	
HRB230-100120-050-S04	1.0	0.95	12	R0.5	12	50	4	
HRB230-100160-050-S04	1.0	0.95	16	R0.5	16	50	4	

Work Material																									
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎			◎													

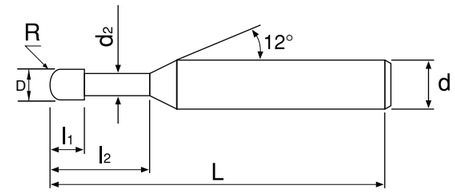
●First choice ○ Second choice

HRB230

HR-MAX Rib Radius End Mill 2-Flute 30°

CARBIDE NANO | HR MAX | 2 | 30° Helix | R ±0.005 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	d2	l2	R	L1	L	d	
HRB230-012060-050-S04	1.2	1.15	6	R0.6	1.2	50	4	
HRB230-012080-050-S04	1.2	1.15	8	R0.6	1.2	50	4	
HRB230-015100-050-S04	1.2	1.15	10	R0.6	1.2	50	4	
HRB230-015120-050-S04	1.2	1.15	12	R0.6	1.2	50	4	
HRB230-015060-050-S04	1.5	1.45	6	R0.75	1.5	50	4	
HRB230-015080-050-S04	1.5	1.45	8	R0.75	1.5	50	4	
HRB230-015100-050-S04	1.5	1.45	10	R0.75	1.5	50	4	
HRB230-015120-050-S04	1.5	1.45	12	R0.75	1.5	50	4	
HRB230-015160-050-S04	1.5	1.45	16	R0.75	1.5	50	4	
HRB230-015200-050-S04	1.5	1.45	20	R0.75	1.5	50	4	
HRB230-020080-050-S04	2.0	1.95	8	R1.0	2.0	50	4	
HRB230-020100-050-S04	2.0	1.95	10	R1.0	2.0	50	4	
HRB230-020120-050-S04	2.0	1.95	12	R1.0	2.0	50	4	
HRB230-020160-050-S04	2.0	1.95	16	R1.0	2.0	50	4	
HRB230-020180-050-S04	2.0	1.95	18	R1.0	2.0	50	4	
HRB230-030200-050-S06	2.0	1.95	20	R1.0	2.0	50	4	
HRB230-030220-050-S06	2.0	1.95	22	R1.0	2.0	50	4	
HRB230-030100-050-S06	3.0	2. 85	10	R1. 5	3. 0	50	6	
HRB230-030120-050-S06	3.0	2. 85	12	R1. 5	3. 0	50	6	
HRB230-030160-050-S06	3.0	2. 85	16	R1. 5	3. 0	50	6	
HRB230-030300-070-S06	3.0	2.85	20	R1.5	3.0	50	6	
HRB230-040160-050-S06	4.0	3.85	16	R2.0	4.0	50	6	
HRB230-040200-050-S06	4.0	3.85	20	R2.0	4.0	50	6	

Work Material																									
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	○	◎	◎	◎			◎													

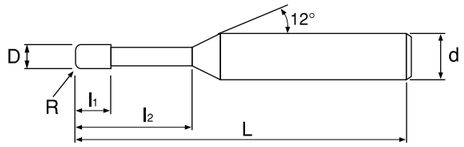
●First choice ○ Second choice

HRR430

HR-MAX Rib Radius End Mill 4-Flute 30°

CARBIDE NANO | HR MAX | 4 | 30° Helix | CR ±0.01 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	l2	R	L1	L	d	
HRR430-010040R0.1-050-S04	1.0	4	R0.1	1.5	50	4	
HRR430-010060R0.1-050-S04	1.0	6	R0.1	1.5	50	4	
HRR430-010080R0.1-050-S04	1.0	8	R0.1	1.5	50	4	
HRR430-010040R0.2-050-S04	1.0	4	R0.2	1.5	50	4	
HRR430-010060R0.2-050-S04	1.0	6	R0.2	1.5	50	4	
HRR430-010080R0.2-050-S04	1.0	8	R0.2	1.5	50	4	
HRR430-015060R0.2-050-S04	1.5	6	R0.2	2.3	50	4	
HRR430-015080R0.2-050-S04	1.5	8	R0.2	2.3	50	4	
HRR430-015100R0.2-050-S04	1.5	10	R0.2	2.3	50	4	
HRR430-020080R0.1-050-S04	2.0	8	R0.1	3.0	50	4	
HRR430-020100R0.1-050-S04	2.0	10	R0.1	3.0	50	4	
HRR430-020120R0.1-050-S04	2.0	12	R0.1	3.0	50	4	
HRR430-020160R0.1-050-S04	2.0	16	R0.1	3.0	50	4	
HRR430-020080R0.2-050-S04	2.0	8	R0.2	3.0	50	4	
HRR430-020100R0.2-050-S04	2.0	10	R0.2	3.0	50	4	
HRR430-020120R0.2-050-S04	2.0	12	R0.2	3.0	50	4	
HRR430-020160R0.2-050-S04	2.0	16	R0.2	3.0	50	4	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	○	◎	◎	◎			◎													

●First choice ○ Second choice

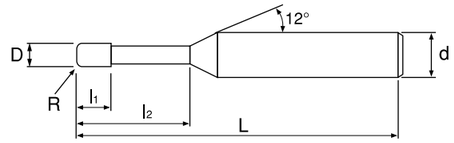
WERNER

HRR430

HR-MAX Rib Radius End Mill 4-Flute 30°

CARBIDE NANO | HR MAX | 4 | 30° Helix | CR ±0.01 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	l2	R	L1	L	d	
HRR430-030120R0.2-050-S04	3.0	4.5	R0.2	12	50	6	
HRR430-030160R0.2-050-S06	3.0	4.5	R0.2	16	50	6	
HRR430-030200R0.2-050-S06	3.0	4.5	R0.2	20	50	6	
HRR430-030260R0.2-070-S06	3.0	4.5	R0.2	26	70	6	
HRR430-030300R0.2-070-S06	3.0	4.5	R0.2	30	70	6	
HRR430-030260R0.3-070-S06	3.0	4.5	R0.3	26	70	6	
HRR430-030300R0.3-070-S06	3.0	4.5	R0.3	30	70	6	
HRR430-030120R0.5-050-S06	3.0	4.5	R0.5	12	50	6	
HRR430-030160R0.5-050-S06	3.0	4.5	R0.5	16	50	6	
HRR430-030200R0.5-050-S06	3.0	4.5	R0.5	20	50	6	
HRR430-030260R0.5-070-S06	3.0	4.5	R0.5	26	70	6	
HRR430-030300R0.5-070-S06	3.0	4.5	R0.5	30	70	6	
HRR430-040160R0.2-050-S06	4.0	6	R0.2	16	50	6	
HRR430-040200R0.2-050-S06	4.0	6	R0.2	20	50	6	
HRR430-040160R0.3-050-S06	4.0	6	R0.3	16	50	6	
HRR430-040200R0.3-050-S06	4.0	6	R0.3	20	50	6	
HRR430-040160R0.5-050-S06	4.0	6	R0.5	16	50	6	
HRR430-040200R0.5-050-S06	4.0	6	R0.5	20	50	6	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	○	◎	◎	◎			◎													

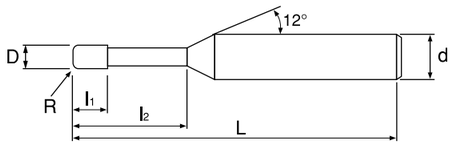
●First choice ○ Second choice

HRR230

HR-MAX Rib Radius End Mill 2-Flute 30°

CARBIDE NANO | HR MAX | 2 | 30° Helix | CR ±0.01 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	l2	R	L1	L	d	
HRR230-005020R0.05-050-S04	0.5	2	R0.05	0.7	50	4	
HRR230-005040R0.05-050-S04	0.5	4	R0.05	0.7	50	4	
HRR230-005060R0.05-050-S04	0.5	6	R0.05	0.7	50	4	
HRR230-006020R0.05-050-S04	0.6	2	R0.05	0.9	50	4	
HRR230-006040R0.05-050-S04	0.6	4	R0.05	0.9	50	4	
HRR230-006060R0.05-050-S04	0.6	6	R0.05	0.9	50	4	
HRR230-008040R0.05-050-S04	0.8	4	R0.05	1.2	50	4	
HRR230-008060R0.05-050-S04	0.8	6	R0.05	1.2	50	4	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
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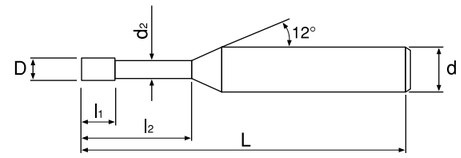
●First choice ○ Second choice

HRE430

HR-MAX Rib Flat End Mill 4-Flute 30°

CARBIDE NANO | HR MAX | 4 | 30° Helix | D 0/-0.015





Type	D	l2	L1	d2	L	d	
HRE430-010050-050-S04	1.0	5	1.5	0.95	50	4	
HRE430-010060-050-S04	1.0	6	1.5	0.95	50	4	
HRE430-010080-050-S04	1.0	8	1.5	0.95	50	4	
HRE430-010100-050-S04	1.0	10	1.5	0.95	50	4	
HRE430-010120-050-S04	1.0	12	1.5	0.95	50	4	
HRE430-010160-050-S04	1.0	16	1.5	0.95	50	4	
HRE430-015060-050-S04	1.5	6	2.3	1.45	50	4	
HRE430-015080-050-S04	1.5	8	2.3	1.45	50	4	
HRE430-015100-050-S04	1.5	10	2.3	1.45	50	4	
HRE430-015120-050-S04	1.5	12	2.3	1.45	50	4	
HRE430-015160-050-S04	1.5	16	2.3	1.45	50	4	
HRE430-015180-050-S04	1.5	18	2.3	1.45	50	4	
HRE430-015200-050-S04	1.5	20	3.0	1.45	50	4	
HRE430-020080-050-S04	2.0	8	3.0	1.95	50	4	
HRE430-020100-050-S04	2.0	10	3.0	1.95	50	4	
HRE430-020120-050-S04	2.0	12	3.0	1.95	50	4	
HRE430-020160-050-S04	2.0	16	3.0	1.95	50	4	
HRE430-020180-050-S04	2.0	18	3.0	1.95	50	4	
HRE430-020200-050-S04	2.0	20	3.0	1.95	50	4	
HRE430-020220-050-S04	2.0	22	3.0	1.95	50	4	
HRE430-030120-050-S04	3.0	12	4.5	2.85	50	6	
HRE430-030160-050-S04	3.0	16	4.5	2.85	50	6	
HRE430-030200-050-S04	3.0	20	4.5	2.85	50	6	
HRE430-040160-050-S06	4.0	16	6	3.85	50	6	
HRE430-040200-050-S06	4.0	20	6	3.85	50	6	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	○	◎	◎	◎			◎													

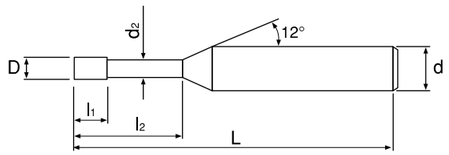
●First choice ○ Second choice

HRE230

HR-MAX Rib Flat End Mill 2-Flute 30°

CARBIDE NANO | HR MAX | 2 | 30° Helix | D 0/-0.015





Type	D	l2	L1	d2	L	d	
HRE230-002010-050-S04	0.2	1	0.3	0.18	50	4	
HRE230-002015-050-S04	0.2	1.5	0.3	0.18	50	4	
HRE230-002020-050-S04	0.2	2	0.3	0.18	50	4	
HRE230-003010-050-S04	0.3	1	0.5	0.27	50	4	
HRE230-003020-050-S04	0.3	2	0.5	0.27	50	4	
HRE230-003030-050-S04	0.3	3	0.5	0.27	50	4	
HRE230-004020-050-S04	0.4	2	0.6	0.37	50	4	
HRE230-004040-050-S04	0.4	4	0.6	0.37	50	4	
HRE230-004060-050-S04	0.4	6	0.6	0.37	50	4	
HRE230-005020-050-S04	0.5	2	0.7	0.45	50	4	
HRE230-005030-050-S04	0.5	3	0.7	0.45	50	4	
HRE230-005040-050-S04	0.5	4	0.7	0.45	50	4	
HRE230-005060-050-S04	0.5	6	0.7	0.45	50	4	
HRE230-005080-050-S04	0.5	8	0.7	0.45	50	4	
HRE230-006020-050-S04	0.6	2	0.9	0.55	50	4	
HRE230-006030-050-S04	0.6	3	0.9	0.55	50	4	
HRE230-006040-050-S04	0.6	4	0.9	0.55	50	4	
HRE230-006060-050-S04	0.6	6	0.9	0.55	50	4	
HRE230-006080-050-S04	0.6	8	0.9	0.55	50	4	
HRE230-007040-050-S04	0.7	4	1.0	0.65	50	4	
HRE230-007060-050-S04	0.7	6	1.0	0.65	50	4	
HRE230-007080-050-S04	0.7	8	1.0	0.65	50	4	
HRE230-007100-050-S04	0.7	10	1.0	0.65	50	4	
HRE230-008040-050-S04	0.8	4	1.2	0.95	50	4	
HRE230-008060-050-S04	0.8	6	1.2	0.95	50	4	
HRE230-008080-050-S04	0.8	8	1.2	0.95	50	4	
HRE230-008100-050-S04	0.8	10	1.2	0.95	50	4	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~62 HRC	Hardess steel ~65 HRC													
◎	◎	○	◎	◎	◎		◎													

●First choice ○Second choice

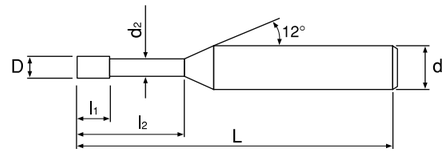
WERNER

HRE230

HR-MAX Rib Flat End Mill 2-Flute 30°

CARBIDE NANO | HR MAX | 2 | 30° Helix | D 0/-0.015





Type	D	l2	L1	d2	L	d	
HRE230-010050-050-S04	1.0	5	1.5	0.95	50	4	
HRE230-010060-050-S04	1.0	6	1.5	0.95	50	4	
HRE230-010080-050-S04	1.0	8	1.5	0.95	50	4	
HRE230-010100-050-S04	1.0	10	1.5	0.95	50	4	
HRE230-010120-050-S04	1.0	12	1.5	0.95	50	4	
HRE230-010160-050-S04	1.0	16	1.5	0.95	50	4	
HRE230-015060-050-S04	1.5	6	2.3	1.45	50	4	
HRE230-015080-050-S04	1.5	8	2.3	1.45	50	4	
HRE230-015100-050-S04	1.5	10	2.3	1.45	50	4	
HRE230-015120-050-S04	1.5	12	2.3	1.45	50	4	
HRE230-015160-050-S04	1.5	16	2.3	1.45	50	4	
HRE230-015180-050-S04	1.5	18	2.3	1.45	50	4	
HRE230-015200-050-S04	1.5	20	2.3	1.45	50	4	
HRE230-020080-050-S04	2.0	8	3.0	1.95	50	4	
HRE230-020100-050-S04	2.0	10	3.0	1.95	50	4	
HRE230-020120-050-S04	2.0	12	3.0	1.95	50	4	
HRE230-020160-050-S04	2.0	16	3.0	1.95	50	4	
HRE230-020180-050-S04	2.0	18	3.0	1.95	50	4	
HRE230-020200-050-S04	2.0	20	3.0	1.95	50	4	
HRE230-020220-050-S04	2.0	22	3.0	1.95	50	4	
HRE230-030120-050-S06	3.0	12	4.5	2.85	50	6	
HRE230-030160-050-S06	3.0	16	4.5	2.85	50	6	
HRE230-030200-050-S06	3.0	20	4.5	2.85	70	6	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~62 HRC	Hardess steel ~65 HRC													
◎	◎	○	◎	◎	◎		◎													

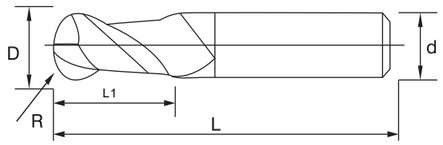
●First choice ○Second choice

HSB230

HS-MAX Ball End Mill 2-Flute 30°

CARBIDE SUPER | HS MAX | 2 | 30° Helix | R ±0.005 D≤6 | R ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
HSB230-010020-050-S04	0.5	0.25	2	50	4	
HSB230-015030-050-S04	0.75	0.375	3	50	4	
HSB230-020040-050-S04	1	0.5	4	50	4	
HSB230-030060-050-S04	1.5	0.75	6	50	4	
HSB230-030060-050-S04	1.5	0.75	6	50	4	
HSB230-040080-050-S04	2	1.0	8	50	4	
HSB230-040080-050-S06	2	1.0	8	50	6	
HSB230-050100-050-S06	2.5	1.25	10	50	6	
HSB230-060120-050-S06	3	1.5	12	50	6	
HSB230-060120-075-S06	3	1.5	12	75	6	
HSB230-060120-100-S06	3	1.5	12	100	6	
HSB230-080160-060-S08	4	2.0	16	60	8	
HSB230-080160-075-S08	4	2.0	16	75	8	
HSB230-080160-100-S08	4	2.0	16	100	8	
HSB230-100200-075-S10	5	2.5	20	75	10	
HSB230-100200-100-S10	5	2.5	20	100	10	
HSB230-120240-075-S12	6	3.0	24	75	12	
HSB230-120240-100-S12	6	3.0	24	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	○	◎	◎	◎			◎													

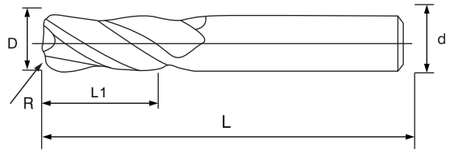
◎First choice ○ Second choice

HSR435

HS-MAX Rudius End Mill 4-Flute 35°

CARBIDE SUPER | HS MAX | 4 | 35° Helix | CR ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
HSR435-010R0.2-050-S04	1	0.2	3	50	4	
HSR435-020R0.2-050-S04	2	0.2	6	50	4	
HSR435-030R0.2-050-S04	3	0.2	8	50	4	
HSR435-030R0.5-050-S04	3	0.5	8	50	4	
HSR435-040R0.2-050-S04	4	0.2	11	50	4	
HSR435-040R0.5-050-S04	4	0.5	11	50	4	
HSR435-060R0.2-050-S06	6	0.2	16	50	6	
HSR435-060R0.5-050-S06	6	0.5	16	50	6	
HSR435-060R0.5-075-S06	6	0.5	16	75	6	
HSR435-060R1.0-075-S06	6	1	16	75	6	
HSR435-060R0.5-100-S06	6	0.5	16	100	6	
HSR435-060R1.0-100-S06	6	1	16	100	6	
HSR435-080R0.5-060-S08	8	0.5	20	60	8	
HSR435-080R1.0-060-S08	8	1	20	60	8	
HSR435-080R0.5-075-S08	8	0.5	20	75	8	
HSR435-080R1.0-075-S08	8	1	20	75	8	
HSR435-080R0.5-100-S08	8	0.5	20	100	8	
HSR435-080R1.0-100-S08	8	1	20	100	8	
HSR435-100R0.5-075-S10	10	0.5	25	75	10	
HSR435-100R1.0-075-S10	10	1	25	75	10	
HSR435-100R0.5-100-S10	10	0.5	25	100	10	
HSR435-100R1.0-100-S10	10	1	25	100	10	
HSR435-120R0.5-075-S12	12	0.5	30	75	12	
HSR435-120R1.0-075-S12	12	1	30	75	12	
HSR435-120R0.5-100-S12	12	0.5	30	100	12	
HSR435-120R1.0-100-S12	12	1	30	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○				○														

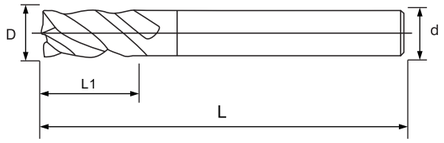
◎First choice ○ Second choice

HSE435

HS-MAX Flat End Mill 4-Flute 35°

CARBIDE SUPER | HS MAX | 4 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
HSE435-010030-050-S04	1.0		3	50	4	
HSE435-015040-050-S04	1.5		4	50	4	
HSE435-020060-050-S04	2		6	50	4	
HSE435-025070-050-S04	2.5		7	50	4	
HSE435-030090-050-S04	3		9	50	4	
HSE435-030090-050-S03	3		9	50	3	
HSE435-040110-050-S04	4		11	50	4	
HSE435-050130-050-S06	5		13	50	6	
HSE435-060160-050-S06	6		16	50	6	
HSE435-080200-060-S08	8		20	60	8	
HSE435-100250-075-S10	10		25	75	10	
HSE435-120300-075-S12	12		30	75	12	
HSE435-140350-100-S14	14		35	100	14	
HSE435-160400-100-S16	16		40	100	16	
HSE435-180450-100-S18	18		45	100	18	
HSE435-200500-100-S20	20		50	100	20	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

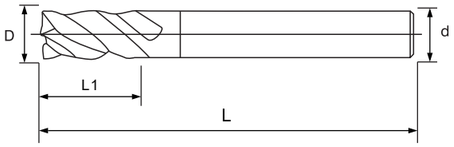
◎First choice ○Second choice

HSEL435

HS-MAX Long Flute Flat End Mill 4-Flute 35°

CARBIDE SUPER | HS MAX | 4 | 35° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
HSEL435-030090-075-S04	3		9	75	4	
HSEL435-040120-075-S04	4		12	75	4	
HSEL435-030120-100-S04	3		12	100	4	
HSEL435-040120-100-S04	4		16	100	4	
HSEL435-050150-075-S06	5		15	75	6	
HSEL435-060180-075-S06	6		18	75	6	
HSEL435-050200-100-S06	5		20	100	6	
HSEL435-060240-100-S06	6		24	100	6	
HSEL435-080240-075-S08	8		24	75	8	
HSEL435-080320-100-S08	8		32	100	8	
HSEL435-100400-100-S10	10		40	100	10	
HSEL435-120480-100-S12	12		48	100	12	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

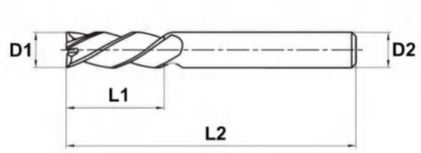
◎First choice ○Second choice

XSE445

XS-MAX Flat End Mill 4-Flute 45°

CARBIDE SUPER | XS MAX | 4 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	F	A	D1	L1	L2	D2	
XSE445-010020-050-S04	4F	45°	1	2	50	4	
XSE445-010030-050-S04	4F	45°	1	3	50	4	
XSE445-015030-050-S04	4F	45°	2	3	50	4	
XSE445-015040-050-S04	4F	45°	2	4	50	4	
XSE445-020040-050-S04	4F	45°	2	4	50	4	
XSE445-020060-050-S04	4F	45°	2	6	50	4	
XSE445-025050-050-S04	4F	45°	3	5	50	4	
XSE445-025070-050-S04	4F	45°	3	7	50	4	
XSE445-030060-050-S04	4F	45°	3	6	50	4	
XSE445-030090-050-S04	4F	45°	3	9	50	4	
XSE445-035070-050-S04	4F	45°	4	7	50	4	
XSE445-040080-050-S04	4F	45°	4	8	50	4	
XSE445-040120-050-S04	4F	45°	4	12	50	4	
XSE445-050100-050-S06	4F	45°	5	10	50	6	
XSE445-050150-050-S06	4F	45°	5	15	50	6	
XSE445-060120-050-S06	4F	45°	6	12	50	6	
XSE445-060180-050-s06	4F	45°	6	18	50	6	
XSE445-080200-060-S08	4F	45°	8	20	60	8	
XSE445-080240-060-S08	4F	45°	8	24	60	8	
XSE445-100200-075-S10	4F	45°	10	20	75	10	
XSE445-100300-075-S10	4F	45°	10	30	75	10	
XSE445-120240-075-S12	4F	45°	12	24	75	12	
XSE445-120350-075-S12	4F	45°	12	35	75	12	
XSE445-040200-075-S04	4F	45°	4	20	75	4	
XSE445-060300-100-S06	4F	45°	6	30	100	6	
XSE445-080400-100-S08	4F	45°	8	40	100	8	
XSE445-100500-100-S10	4F	45°	10	50	100	10	
XSE445-120550-100-S12	4F	45°	12	55	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

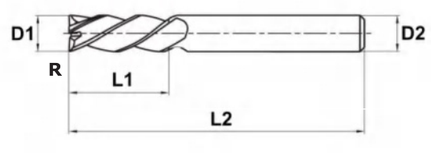
◎First choice ○ Second choice

XSR445

XS-MAX Rudius End Mill 4-Flute 45°

CARBIDE SUPER | XS MAX | 4 | 45° Helix | CR ±0.01 D>6 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	F	A	D1	L1	R	L2	D2	
XSR445-040100R0.5-050-S04	4F	45°	4	10	R0.5	50	4	
XSR445-040100R0.2-050-S04	4F	45°	4	10	R0.2	50	4	
XSR445-040100R1.0-050-S04	4F	45°	4	10	R1.0	50	4	
XSR445-060150R0.5-050-S06	4F	45°	6	15	R0.5	50	6	
XSR445-060150R1.0-050-S06	4F	45°	6	15	R1.0	50	6	
XSR445-080200R0.5-060-S08	4F	45°	8	20	R0.5	60	8	
XSR445-080200R1.0-060-S08	4F	45°	8	20	R1.0	60	8	
XSR445-100250R0.5-075-S10	4F	45°	10	25	R0.5	75	10	
XSR445-100250R1.0-075-S10	4F	45°	10	25	R1.0	75	10	
XSR445-120300R0.5-075-S12	4F	45°	12	30	R0.5	75	12	
XSR445-120300R1.0-075-S12	4F	45°	12	30	R1.0	75	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

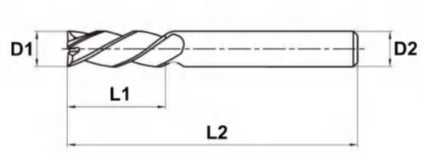
◎First choice ○ Second choice

XSEL 445

XS-MAX Flat End Mill 4-Flute 45°

CARBIDE SUPER | XS MAX | 4 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	F	A	D1	L1	L2	D2	
XSEL445-040200-075-S04	4F	45°	4	20	75	4	
XSEL445-060300-100-S06	4F	45°	6	30	100	6	
XSEL445-080400-100-S08	4F	45°	8	40	100	8	
XSEL445-100500-100-S10	4F	45°	10	50	100	10	
XSEL445-120550-100-S12	4F	45°	12	55	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

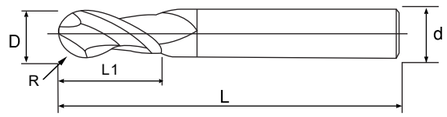
◎First choice ○Second choice

ALB230

ALU-MAX Ball End Mill 2-Flute 30°

CARBIDE NANO | 2 | 30° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6 | R ±0.005 D≤6 | R ±0.01 D>6





Type	D	R	L1	L	d	
ALB230-020040-050-S04	2	R1	4	50	4	
ALB230-030060-050-S04	3	R1.5	6	50	4	
ALB230-040080-050-S04	4	R2	8	50	4	
ALB230-040080-075-S04	4	R2	8	75	4	
ALB230-040080-050-S06	4	R2	8	50	6	
ALB230-050100-050-S06	5	R2.5	10	50	6	
ALB230-060120-050-S06	6	R3	12	50	6	
ALB230-060120-075-S06	6	R3	12	75	6	
ALB230-060120-100-S06	6	R3	12	100	6	
ALB230-080160-060-S08	8	R4	16	60	8	
ALB230-080160-075-S08	8	R4	16	75	8	
ALB230-080160-100-S08	8	R4	16	100	8	
ALB230-100200-075-S10	10	R5	20	75	10	
ALB230-100200-100-S10	10	R5	20	100	10	
ALB230-120240-075-S12	12	R6	24	75	12	
ALB230-120240-100-S12	12	R6	24	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

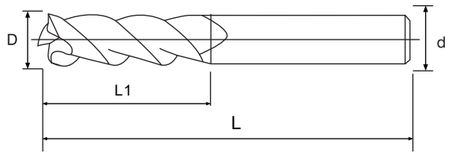
◎First choice ○Second choice

ALE345

ALU-MAX Flat End Mill 3-Flute 45°

CARBIDE NANO | 3 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
ALE345-010030-050-S04	1		3	50	4	
ALE345-015040-050-S04	1.5		4	50	4	
ALE345-020060-050-S04	2		6	50	4	
ALE345-025070-050-S04	2.5		7	50	4	
ALE345-030090-050-S04	3		9	50	4	
ALE345-040120-050-S04	4		12	50	4	
ALE345-040120-050-S06	4		12	50	6	
ALE345-050130-050-S06	5		13	50	6	
ALE345-060150-050-S06	6		15	50	6	
ALE345-080200-060-S08	8		20	60	8	
ALE345-100250-075-S10	10		25	75	10	
ALE345-120300-075-S12	12		30	75	12	
ALE345-160450-100-S16	16		45	100	16	
ALE345-200500-100-S20	20		50	100	20	

Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

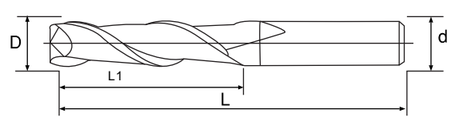
◎First choice ○Second choice

ALEL255

ALU-MAX Long Flute Flat End Mill 2-Flute 55°

CARBIDE NANO | 2 | 55° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
ALEL255-030090-075-S04	3		9	75	4	
ALEL255-040120-075-S04	4		12	75	4	
ALEL255-050160-075-S06	5		16	75	6	
ALEL255-060180-075-S06	6		18	75	6	
ALEL255-060180-100-S06	6		18	100	6	
ALEL255-080250-075-S08	8		25	75	8	
ALEL255-080250-100-S08	8		25	100	8	
ALEL255-100300-100-S10	10		30	100	10	
ALEL255-120360-100-S12	12		36	100	12	
ALEL255-160650-150-S16	16		65	150	16	
ALEL255-200800-150-S20	20		80	150	20	

Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

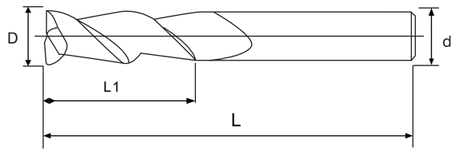
◎First choice ○Second choice

ALE255

ALU-MAX Flat End Mill 2-Flute 55°

CARBIDE NANO | 2 | 55° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
ALE255-010030-050-S04	1		3	50	4	
ALE255-015040-050-S04	1.5		4	50	4	
ALE255-020060-050-S04	2		6	50	4	
ALE255-025070-050-S04	2.5		7	50	4	
ALE255-030090-050-S04	3		9	50	4	
ALE255-040120-050-S04	4		12	50	4	
ALE255-040120-050-S06	4		12	50	6	
ALE255-050130-050-S06	5		13	50	6	
ALE255-060150-050-S06	6		15	50	6	
ALE255-080200-060-S08	8		20	60	8	
ALE255-100250-075-S10	10		25	75	10	
ALE255-120300-075-S12	12		30	75	12	
ALE255-160450-100-S16	16		45	100	16	
ALE255-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: ~50 HRC	Hardess steel: ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

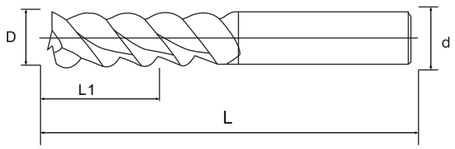
◎First choice ○Second choice

ALEL345

ALU-MAX Long Flute Flat End Mill 3-Flute 45°

CARBIDE NANO | 3 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
ALEL345-030090-075-S04	3		9	75	4	
ALEL345-040120-075-S04	4		12	75	4	
ALEL345-050160-075-S06	5		16	75	6	
ALEL345-060180-075-S06	6		18	75	6	
ALEL345-060180-100-S06	6		18	100	6	
ALEL345-080250-075-S08	8		25	75	8	
ALEL345-080250-100-S08	8		25	100	8	
ALEL345-100300-100-S10	10		30	100	10	
ALEL345-120360-100-S12	12		36	100	12	
ALEL345-160650-150-S16	16		65	150	16	
ALEL345-200800-150-S20	20		80	150	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel: ~50 HRC	Hardess steel: ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

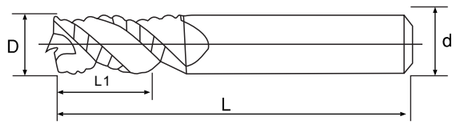
◎First choice ○Second choice

ALRE327

ALU-MAX Roughing Flat End Mill 3-Flute 27°

CARBIDE NANO | 3 | 27° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
ALRE327-040120-050-S04	4		12	50	4	
ALRE327-060150-050-S06	6		16	50	6	
ALRE327-080200-060-S08	8		20	60	8	
ALRE327-100250-075-S10	10		25	75	10	
ALRE327-120300-075-S12	12		30	75	12	
ALRE327-160400-100-S16	16		40	100	16	
ALRE327-200450-100-S20	20		45	100	20	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

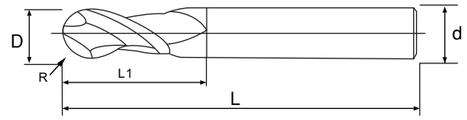
◎First choice ○Second choice

COB230 DLC coating

CO-MAX Ball End Mill 2-Flute 30°

CARBIDE NANO | CO MAX | 2 | 30° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6 | R ±0.005 D≤6 | R ±0.01 D>6





Type	D	R	L1	L	d	
COB230-020040-050-S04	1.0	0.5	4	50	4	
COB230-030060-050-S04	1.5	0.75	6	50	4	
COB230-040080-050-S04	2.0	1.0	8	50	4	
COB230-040080-075-S04	2.0	1.0	8	75	4	
COB230-040080-050-S06	2.0	1.0	8	50	6	
COB230-050100-050-S06	2.5	1.25	10	50	6	
COB230-060120-050-S06	3.0	1.5	12	50	6	
COB230-060120-075-S06	3.0	1.5	12	75	6	
COB230-060120-100-S06	3.0	1.5	12	100	6	
COB230-080160-060-S08	4.0	2.0	16	60	8	
COB230-080160-075-S08	4.0	2.0	16	75	8	
COB230-080160-100-S08	4.0	2.0	16	100	8	
COB230-100200-075-S10	5.0	2.5	20	75	10	
COB230-100200-075-S10	5.0	2.5	20	100	10	
COB230-120240-075-S12	6.0	3.0	24	75	12	
COB230-120240-100-S12	6.0	3.0	24	100	12	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

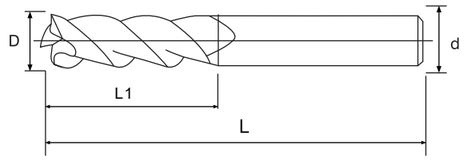
◎First choice ○Second choice

COE345 DLC coating

CO-MAX Flat End Mill 3-Flute 45°

CARBIDE NANO | CO MAX | 3 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
COE345-010030-050-S04	1		3	50	4	
COE345-015040-050-S04	1.5		4	50	4	
COE345-020060-050-S04	2		6	50	4	
COE345-025070-050-S04	2.5		7	50	4	
COE345-030090-050-S04	3		9	50	4	
COE345-040120-050-S04	4		12	50	4	
COE345-040120-050-S06	4		12	50	6	
COE345-050130-050-S06	5		13	50	6	
COE345-060150-050-S06	6		15	50	6	
COE345-080200-060-S08	8		20	60	8	
COE345-100250-075-S10	10		25	75	10	
COE345-120300-075-S12	12		30	75	12	
COE345-160450-100-S16	16		45	100	16	
COE345-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	Hardess steel ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

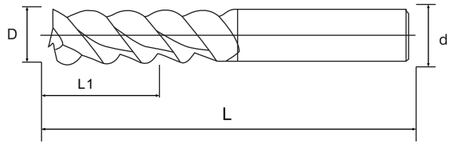
◎ First choice ○ Second choice

COEL345 DLC coating

CO-MAX Long Flute Flat End Mill 3-Flute 45°

CARBIDE NANO | CO MAX | 3 | 45° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
COEL345-030090-075-S04	3		9	75	4	
COEL345-040120-075-S04	4		12	75	4	
COEL345-050160-075-S06	5		16	75	6	
COEL345-060180-075-S06	6		18	75	6	
COEL345-060180-100-S06	6		18	100	6	
COEL345-080250-075-S08	8		25	75	8	
COEL345-080250-100-S08	8		25	100	8	
COEL345-100300-100-S10	10		30	100	10	
COEL345-120360-100-S12	12		36	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	Hardess steel ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

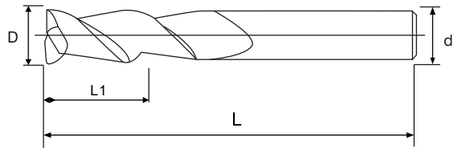
◎ First choice ○ Second choice

COE255 DLC coating

CO-MAX Flat End Mill 2-Flute 55°

CARBIDE NANO | CO MAX | 2 | 55° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
COE255-010030-050-S04	1		3	50	4	
COE255-015040-050-S04	1.5		4	50	4	
COE255-020060-050-S04	2		6	50	4	
COE255-025070-050-S04	2.5		7	50	4	
COE255-030090-050-S04	3		9	50	4	
COE255-040120-050-S04	4		12	50	4	
COE255-040120-050-S06	4		12	50	6	
COE255-050130-050-S06	5		13	50	6	
COE255-060150-050-S06	6		15	50	6	
COE255-080200-060-S08	8		20	60	8	
COE255-100250-075-S10	10		25	75	10	
COE255-120300-075-S12	12		30	75	12	
COE255-160450-100-S16	16		45	100	16	
COE255-200500-100-S20	20		50	100	20	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

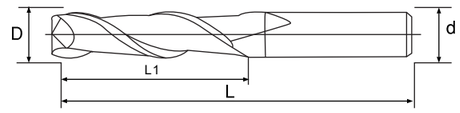
●First choice ○Second choice

COEL255

CO-MAX Long Flute Flat End Mill 2-Flute 55°

CARBIDE NANO | CO MAX | 2 | 55° Helix | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	R	L1	L	d	
COEL255-030090-075-S04	3		9	75	4	
COEL255-040120-075-S04	4		12	75	4	
COEL255-050160-075-S06	5		16	75	6	
COEL255-060180-075-S06	6		18	75	6	
COEL255-060180-100-S06	6		18	100	6	
COEL255-080250-075-S08	8		25	75	8	
COEL255-080250-100-S08	8		25	100	8	
COEL255-100300-100-S10	10		30	100	10	
COEL255-120360-100-S12	12		36	100	12	

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

●First choice ○Second choice

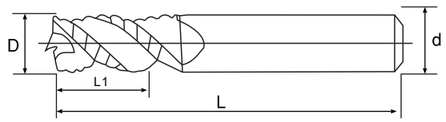
WERNER

CORE327

CO-MAX Roughing Flat End Mill 3-Flute 27°







Type	D	R	L1	L	d	
COR327-040120-050-S04	4		12	50	4	
COR327-060160-050-S04	6		16	50	6	
COR327-080200-060-S08	8		20	60	8	
COR327-100250-075-S10	10		25	75	10	
COR327-120300-075-S12	12		30	75	12	
COR327-160400-100-S16	16		40	100	16	
COR327-200450-100-S20	20		45	100	20	

Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

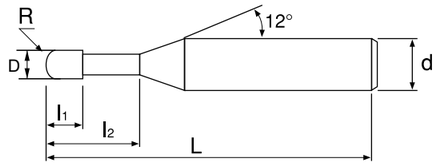
◎First choice ○Second choice

DMB230

DIA-MAX Ball End Mill 2-Flute 30° / Diamond coated

CARBIDE MG | DIA CVD | 2 | 30° Helix | R ±0.01 | D 0/-0.015 | D 0/-0.02





Type	D	Z	R	l1	l2	L	d		
DMB230-020020-050-S04	0.2	2	0.1	0.4	2	50	4		
DMB230-030030-050-S04	0.3	2	0.15	0.6	3	50	4		
DMB230-040040-050-S03	0.4	2	0.2	0.8	4	50	3		
DMB230-050050-050-S04	0.5	2	0.25	1	4	50	4		
DMB230-060060-050-S04	0.6	2	0.3	1.2	6	50	4		
DMB230-060010-050-S04	0.6	2	0.3	1.2	10	50	4		
DMB230-080080-050-S04	0.8	2	0.4	2	8	50	4		
DMB230-100060-050-S04	1.0	2	0.5	2	6	50	4		
DMB230-100010-050-S04	1.0	2	0.5	2	10	50	4		
DMB230-100150-050-S04	1.0	2	0.5	2	15	50	4		
DMB230-100010-060-S04	1.0	2	0.5	2	10	60	4		
DMB230-100015-060-S04	1.0	2	0.5	2	15	60	4		
DMB230-100020-060-S04	1.0	2	0.5	2	20	60	4		
DMB230-100010-075-S04	1.0	2	0.5	2	10	75	4		
DMB230-100150-075-S04	1.0	2	0.5	2	15	75	4		
DMB230-150060-050-S04	1.5	2	0.75	3	6	50	4		
DMB230-150010-050-S04	1.5	2	0.75	3	10	50	4		
DMB230-150150-050-S04	1.5	2	0.75	3	15	50	4		
DMB230-150010-060-S04	1.5	2	0.75	3	10	60	4		
DMB230-150150-060-S04	1.5	2	0.75	3	15	60	4		
DMB230-150010-075-S04	1.5	2	0.75	3	10	75	4		
DMB230-150150-075-S04	1.5	2	0.75	3	15	75	4		
DMB230-200060-050-S04	2.0	2	1	4	6	50	4		
DMB230-200040-050-S04	2.0	2	1	4	10	50	4		
DMB230-200150-050-S04	2.0	2	1	4	15	50	4		

Work Material																								
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber			
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC																	
◎	◎	◎	○					○																

◎First choice ○Second choice

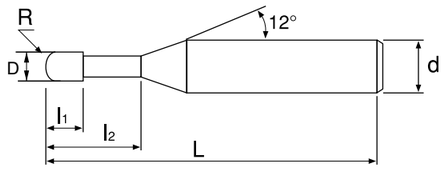
WERNER

DMB230

DIA-MAX Ball End Mill 2-Flute 30° / Diamond coated

CARBIDE MG | DIA CVD | 2 | 30° Helix | R ±0.01 | D 0/-0.015 | D 0/-0.02





Type	D	Z	R	l1	l2	L	d		
DMB230-200010-060-S04	2.0	2	1	4	10	60	4		
DMB230-200150-060-S04	2.0	2	1	4	15	60	4		
DMB230-200010-075-S04	2.0	2	1	4	10	75	4		
DMB230-200150-075-S04	2.0	2	1	4	15	75	4		
DMB230-300060-050-S03	3.0	2	1.5	6	6	50	3		
DMB230-300060-060-S03	3.0	2	1.5	6	6	60	3		
DMB230-300060-075-S03	3.0	2	1.5	6	6	75	3		
DMB230-300060-100-S03	3.0	2	1.5	6	6	100	3		
DMB230-400080-050-S04	4.0	2	2	8	8	50	4		
DMB230-400080-060-S04	4.0	2	2	8	8	60	4		
DMB230-400080-075-S04	4.0	2	2	8	8	75	4		
DMB230-400010-100-S04	4.0	2	2	10	10	100	4		
DMB230-600120-060-S06	6.0	2	3	12	12	60	6		
DMB230-600120-075-S06	6.0	2	3	12	12	75	6		
DMB230-600160-100-S06	6.0	2	3	16	16	100	6		
DMB230-600020-150-S06	6.0	2	3	20	20	150	6		
DMB230-800160-075-S08	8.0	2	4	16	16	75	8		
DMB230-800160-100-S08	8.0	2	4	16	16	100	8		
DMB230-800030-150-S08	8.0	2	4	30	30	150	8		
DMB230-100020-100-S10	10.0	2	5	20	20	100	10		
DMB230-100020-110-S10	10.0	2	5	20	20	110	10		
DMB230-100030-150-S10	10.0	2	5	30	30	150	10		
DMB230-120030-100-S12	12.0	2	6	30	30	100	12		
DMB230-120030-150-S12	12.0	2	6	30	30	150	12		

Work Material																								
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber			
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC																	
◎	◎	◎	○					○																

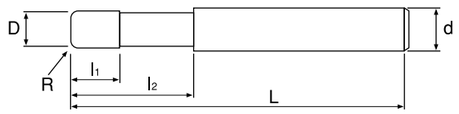
◎First choice ○Second choice

DMR430

DIA-MAX Ball End Mill 4-Flute 30 / Diamond coated

CARBIDE MG | DIA CVD | 4 | 30° Helix | R ±0.01 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	Z	R	l1	l2	L	d		
DMR430-100010-050-S04	1.0	4	0.1	3	10	50	4		
DMR430-100010-060-S04	1.0	4	0.2	3	10	60	4		
DMR430-150070-050-S04	1.5	4	0.1	3	7	50	4		
DMR430-150010-050-S04	1.5	4	0.1	3	10	50	4		
DMR430-150010-060-S04	1.5	4	0.1	3	10	60	4		
DMR430-150010-050-S04	1.5	4	0.2	3	10	50	4		
DMR430-200010-050-S04	2.0	4	0.1	3	10	50	4		
DMR430-200010-060-S04	2.0	4	0.1	6	10	60	4		
DMR430-200010-050-S04	2.0	4	0.2	6	10	50	4		
DMR430-200150-075-S04	2.0	4	0.2	6	15	75	4		
DMR430-200010-060-S04	2.0	4	0.3	6	10	60	4		
DMR430-300010-040-S04	3.0	4	0.1	6	10	40	4		
DMR430-300010-050-S04	3.0	4	0.1	6	10	50	4		
DMR430-300010-050-S04	3.0	4	0.2	6	10	50	4		
DMR430-300010-060-S03	3.0	4	0.2	6	10	60	3		
DMR430-300010-075-S03	3.0	4	0.2	10		75	3		
DMR430-300010-100-S03	3.0	4	0.2	10		100	3		
DMR430-300010-060-S03	3.0	4	0.3	10		60	3		
DMR430-300010-060-S03	3.0	4	0.5	10		60	3		
DMR430-300010-075-S03	3.0	4	0.5	10		75	3		
DMR430-300010-100-S03	3.0	4	0.5	10		100	3		

Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

◎First choice ○Second choice

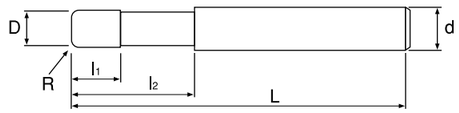
WERNER

DMR430

DIA-MAX Ball End Mill 4-Flute 30 / Diamond coated

CARBIDE MG | DIA CVD | 4 | 30° Helix | R ±0.01 | D 0/-0.015 D≤5 | D 0/-0.02 D≥6





Type	D	Z	R	l1	l2	L	d		
DMR430-400060-040-S04	4.0	4	0.1	6		50	4		
DMR430-400060-050-S04	4.0	4	0.2	6		50	4		
DMR430-400010-050-S04	4.0	4	0.2	10		50	4		
DMR430-400120-060-S04	4.0	4	0.2	12		60	4		
DMR430-400020-075-S04	4.0	4	0.2	20		75	4		
DMR430-400020-100-S04	4.0	4	0.2	20		100	4		
DMR430-400060-050-S04	4.0	4	0.5	6		50	4		
DMR430-400120-060-S04	4.0	4	0.5	12		60	4		
DMR430-400120-075-S04	4.0	4	0.5	12		75	4		
DMR430-400020-100-S04	4.0	4	0.5	20		100	4		
DMR430-600020-075-S06	6.0	4	0.3	20		75	6		
DMR430-600030-100-S06	6.0	4	0.3	30		100	6		
DMR430-600020-060-S06	6.0	4	0.5	20		60	6		
DMR430-600020-075-S06	6.0	4	0.5	20		75	6		
DMR430-600250-100-S06	6.0	4	0.5	25		100	6		
DMR430-800250-100-S08	8.0	4	0.3	25		75	8		
DMR430-800030-100-S08	8.0	4	0.3	30		100	8		
DMR430-800030-075-S08	8.0	4	0.5	30		75	8		
DMR430-800030-100-S08	8.0	4	0.5	30		100	8		
DMR430-800040-150-S08	8.0	4	0.5	40		150	8		
DMR430-100250-075-S10	10.0	4	0.5	25		75	10		
DMR430-100030-100-S10	10.0	4	0.5	30		100	10		
DMR430-100040-150-S10	10.0	4	0.5	40		150	10		
DMR430-120030-100-S12	12.0	4	0.5	30		100	12		
DMR430-120040-150-S12	12.0	4	0.5	40		150	12		

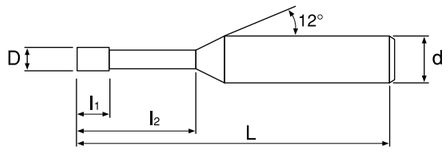
Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

◎First choice ○Second choice

DME430

DIA-MAX Flat End Mill 4-Flute 30 / Diamond coated





Type		D	Z	l1	l2	L	d	
DME430-100060-050-S04		1.0	4	3	6	50	4	
DME430-100010-050-S04		1.0	4	3	10	50	4	
DME430-100060-060-S04		1.0	4	3	6	60	4	
DME430-100010-060-S04		1.0	4	3	10	60	4	
DME430-100150-060-S04		1.0	4	3	15	60	4	
DME430-100010-075-S04		1.0	4	3	10	75	4	
DME430-100150-075-S04		1.0	4	3	15	75	4	
DME430-150060-050-S04		1.5	4	4.5	6	50	4	
DME430-150010-050-S04		1.5	4	4.5	10	50	4	
DME430-150150-050-S04		1.5	4	4.5	15	50	4	
DME430-150060-060-S04		1.5	4	4.5	6	60	4	
DME430-150010-060-S04		1.5	4	4.5	10	60	4	
DME430-150150-060-S04		1.5	4	4.5	15	60	4	
DME430-150010-075-S04		1.5	4	4.5	10	75	4	
DME430-150150-075-S04		1.5	4	4.5	15	75	4	
DME430-200060-050-S04		2.0	4	6	-	50	4	
DME430-200010-050-S04		2.0	4	6	10	50	4	
DME430-200150-050-S04		2.0	4	6	15	50	4	
DME430-200010-060-S04		2.0	4	6	10	60	4	
DME430-200150-060-S04		2.0	4	6	15	60	4	
DME430-200020-060-S04		2.0	4	6	20	60	4	
DME430-200010-075-S04		2.0	4	6	10	75	4	
DME430-200150-075-S04		2.0	4	6	15	75	4	
DME430-300090-050-S03		3.0	4	9	9	50	3	
DME430-300090-060-S03		3.0	4	9	9	60	3	
DME430-300090-075-S03		3.0	4	9	9	75	3	
DME430-300150-075-S03		3.0	4	15	15	100	3	
DME430-300090-050-S04		3.0	4	9	9	50	4	
DME430-300150-060-S04		3.0	4	9	15	60	4	
DME430-400120-050-S04		4.0	4	12	12	50	4	
DME430-400120-060-S04		4.0	4	12	12	60	4	
DME430-400120-075-S04		4.0	4	12	12	75	4	
DME430-400020-100-S04		4.0	4	20	20	100	4	
DME430-200020-050-S06		6.0	4	20	20	50	6	
DME430-600020-060-S06		6.0	4	20	20	60	6	
DME430-600250-075-S06		6.0	4	25	25	75	6	
DME430-600030-100-S06		6.0	4	30	30	100	6	
DME430-600040-150-S06		6.0	4	40	40	150	6	
DME430-800020-050-S08		8.0	4	20	20	50	8	
DME430-800020-060-S08		8.0	4	20	20	60	8	
DME430-800030-075-S08		8.0	4	30	30	75	8	
DME430-800030-100-S08		8.0	4	30	30	100	8	
DME430-800040-150-S08		8.0	4	40	40	150	8	
DME430-100250-060-S10		10.0	4	25	25	60	10	
DME430-100030-075-S10		10.0	4	30	30	75	10	
DME430-100030-100-S10		10.0	4	30	40	100	10	
DME430-100040-150-S10		10.0	4	40	40	150	10	
DME430-120040-100-S12		12.0	4	40	50	100	12	
DME430-120050-150-S12		12.0	4	50	50	150	12	
DME430-120050-180-S12		12.0	4	50	50	180	12	

Work Material

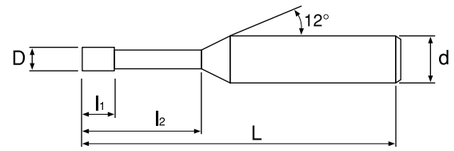
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

●First choice ○ Second choice

DME230

DIA-MAX Flat End Mill 2-Flute 30°/Diamond coated





Type		D	Z	l1	l2	L	d	
DME230-020020-050-S04		0.2	2	0.4	2	50	4	
DME230-030030-050-S04		0.3	2	0.6	3	50	4	
DME230-040040-050-S04		0.4	2	0.8	4	50	4	
DME230-050060-050-S04		0.5	2	1	6	50	4	
DME230-050010-050-S04		0.5	2	1	10	50	4	
DME230-060060-050-S04		0.6	2	1.2	6	50	4	
DME230-060010-050-S04		0.6	2	1.2	10	50	4	
DME230-080060-050-S04		0.8	2	1.6	6	50	4	
DME230-080010-050-S04		0.8	2	1.6	10	50	4	
DME230-010010-050-S04		1.0	2	3	10	50	4	
DME230-010010-060-S04		1.0	2	3	10	60	4	
DME230-150010-050-S04		1.5	2	4.5	10	50	4	
DME230-150010-060-S04		1.5	2	4.5	10	60	4	
DME230-200010-050-S04		2.0	2	6	10	50	4	
DME230-200010-060-S04		2.0	2	6	10	60	4	

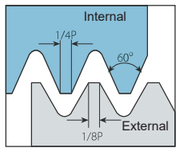
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

●First choice ○ Second choice

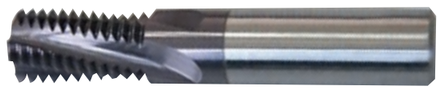
ISO

ISO Metric Full Profile solid carbide thread mill



Defined by :R262 (DIN 13)

Tolerance class : 6g/6H





Pitch	Coarse	Fine	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
0.4	M2X0.4		KM2X0.4ISO	1.54	4	3	4	50		●	●	●
0.45	M2.5X0.45		KM2.5X0.45ISO	1.96	4	3	5	50		●	●	●
0.5	M3X0.5		KM24X3.0ISO	2.3	4	3	6	52		●	●	●
0.5		M6X0.5	KM6X0.5ISO	4	4	3	10	52		●	●	●
0.5		M10X0.5	KM10X0.5ISO	6	6	3	13	62		●	●	●
0.7	M4X0.7		KM4X0.7ISO	3	4	3	8	52		●	●	●
0.75	M4.5X0.7		KM4.5X0.7ISO	3.4	4	3	9	52		●	●	●
0.75		M12X0.75	KM12X0.75ISO	8	8	3	20	62		●	●	●
0.8	M5X0.8		KM5X0.8ISO	4	4	3	10	52		●	●	●
1.0		M6X1.0	KM6X1.0	4.8	6	3	16	62		●	●	●
1.0		M8X1.0	KM8x1.0ISO	6	6	3	16	62		●	●	●
1.0		M10X1.0	KM10X1.0ISO	8	8	3	20	52		●	●	●
1.0		M12X1.0	KM12X1.0ISO	10	10	4	22	78		●	●	●
1.0		M16X1.0	KM16X1.0ISO	12	12	4	22	78		●	●	●
1.0		M20X1.0	KM20X1.0ISO	16	16	4	30	83		●	●	●
1.25	M8X1.25		KM8X1.25ISO	6	6	3	16	62		●	●	●
1.25		M16X1.25	KM16X1.25ISO	10	10	4	25	78		●	●	●
1.25		M20X1.25	KM20X1.25ISO	12	12	4	25	78		●	●	●
1.5	M10X1.5		KM10X1.5ISO	7.8	8	3	20	62		●	●	●
1.5		M12X1.5	KM12X1.5ISO	10	10	4	28	78		●	●	●
1.5		M16X1.5	KM16X1.5ISO	12	12	4	28	78		●	●	●
1.5		M20X1.5	KM20X1.5ISO	16	16	4	30	83		●	●	●
1.5		M30X1.5	KM30X1.5ISO	20	20	4	30	100		●	●	●
1.75	M12X1.75		KM12X1.75ISO	9.8	10	4	30	78		●	●	●
2.0	M14X2.0		KM14X2.0ISO	11.2	12	4	30	78		●	●	●
2.0		M20X2.0	KM20X2.0ISO	16	16	4	35	83		●	●	●
2.5	M20X2.5		KM20X2.5ISO	16	16	4	35	83		●	●	●
3.0	M24X3.0		KM24X3.0ISO	16	16	4	35	83		●	●	●
3.5	M30X3.5		KM30X3.5ISO	20	20	4	60	90		●	●	●

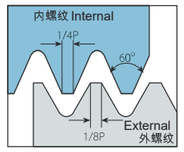
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

◎First choice ○Second choice

UN-60°

American UN Full Profile solid carbide thread mill



Defined by : ANSI B 1.1:74

Tolerance class : 2A/2B

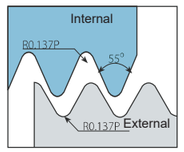




Pitch TPI	Coarse UNC	Fine UNC	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
14	7/16"X14		KM7/16"X14UN	8	8	3	22	62		●	●	●
13	1/2"X13		KM1/2"X13UN	8	8	3	22	62		●	●	●
12	9/16"X12		KM9/16"X12UN	10	10	3	30	78		●	●	●
11	5/8"X11		KM5/8"X11UN	10	10	3	30	78		●	●	●
10	3/4"X10		KM3/4"X10UN	12	12	4	35	78		●	●	●
9	7/8"X9		KM7/8"X9UN	16	16	5	38	83		●	●	●
8	1/8"X8		KM1/8"X8UN	16	16	5	60	110		●	●	●
20		7/16"X20	KM7/16"X20UN	8	8	3	22	62		●	●	●
20		1/2"X20	KM1/2"X20UN	8	8	3	22	62		●	●	●
18		9/16"X18	KM9/16"X18UN	10	10	3	25	78		●	●	●
18		5/8"X18	KM5/8"X18UN	10	10	3	25	78		●	●	●
16	3/8"X16		KM3/8"X16UN	6	6	3	21	62		●	●	●
16		3/4"X16	KM3/4"X16UN	12	12	4	30	78		●	●	●
14		7/8"X14	KM7/8"X14UN	12	12	4	30	78		●	●	●
12		1"X12	KM1"X12UN	16	16	5	40	83		●	●	●
12		1-1/8" X12	KM1-1/8" X12UN	16	16	5	40	83		●	●	●
12		1-1/4"X12	KM1-1/4"X12UN	16	16	5	40	83		●	●	●
12		1-3/8"X12	KM1-3/8"X12UN	16	16	5	40	83		●	●	●
12		1-1/2"X12	KM1-1/2"X12UN	16	16	5	40	83		●	●	●

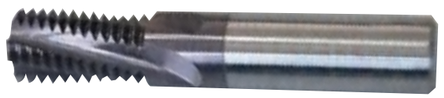
BSP(G)-55°

BSP(G)-55° British Standard Pipe Full Profile solid carbide thread mill



Defined by : B.S.2779:1956

Tolerance class : Medium class





Pitch TPI	Standard	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
28	1/16"X28 1/8"X28	KM1/16"X28BSP(1/8"X28BSP)	6	6	3	12	62		●	●	●
28	1/8"X28	KM1/8"X28	8	8	3	12	62		●	●	●
19	1/4"X19 3/8"X19	KM1/4"X19BSP(3/8"X19BSP)	10	10	4	15	78		●	●	●
19	3/8"X19	KM3/8"X19	14	14	4	22	78		●	●	●
14	1/2"X14 5/8"X143/4"X14	KM1/2"X14BSP(5/8"X14BSP/3/4"X14BSP)	16	16	4	30	83		●	●	●
14	7X8	KM7X8BSP	16	16	4	30	90		●	●	●
11	1"X11 1-1/2"X11	KM1"X11BSP(1-1/2"X11BSP)	16	16	4	34	83		●	●	●
11	>1" 1-1/2	KM>1"BSP(1-1/2BSP)	20	20	5	50	110		●	●	●

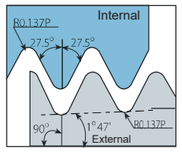
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

●First choice ○Second choice

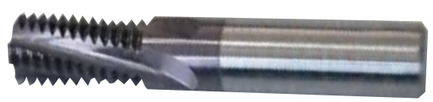
BSPT-55°

BSPT-55° British Standard Pipe Full Profile solid carbide thread mill



Defined by : B.S.21:1985

Tolerance class : Standard BSPT





Pitch TPI	Standard	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
28	1/16"X28 1/8"X28	KM1/16"X28BSPT(KM1/8"X28BSPT)	6	6	3	12	62		●	●	●
28	1/8"X28	KM1/8"X28BSPT	8	8	3	12	62		●	●	●
19	1/4"X19 3/8"X19	KM1/4"X19BSPT(KM3/8"X19BSPT)	10	10	4	18	78		●	●	●
19	3/8"X19	KM3/8"X19BSPT	14	14	4	20	78		●	●	●
14	1/2"X14 7/8"X14	KM1/2"X14BSPT(KM7/8"X14BSPT)	16	16	4	24	83		●	●	●
14	3/4"X14 7/8	KM3/4"X14BSPT(KM7/8BSPT)	16	16	4	24	83		●	●	●
11	>1"X11	KM>1"X11BSPT	16	16	4	30	83		●	●	●

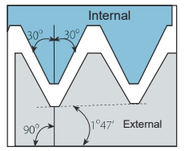
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

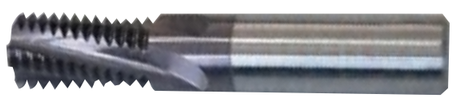
●First choice ○Second choice

NPT-60°

NPT-60° National Pipe Threads solid carbide thread mill



Defined by : USAS B2.1:1968
Tolerance class : Standard NPT





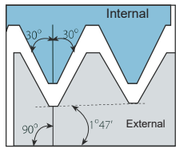
Pitch TPI	Standard	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
27	1/16"X27 1/8"X27	KM1/16"X27NPT(KM1/8"X27NPT)	6	6	3	12	62		●	●	●
27	1/8"X27	KM1/8"X27NPT	8	8	3	12	62		●	●	●
18	1/4"X18 3/8"X18	KM1/4"X18NPT(KM3/8"X18NPT)	10	10	4	20	78		●	●	●
18	3/8"X18	KM3/8"X18NPT	14	14	4	22	78		●	●	●
14	1/2"X14 5/8"X14 3/4"X14	KM1/2"X14NPT(KM5/8"X14NPT/KM3/4"X14NPT)	16	16	4	25	83		●	●	●
11.5	1"X11 2"X11	KM1"X11NPT(KM2"X11NPT)	16	16	4	30	83		●	●	●
8	2-1/2 3"	KM2-1/2NPT(KM3"NPT)	13.72	16	4	30	83		●	●	●

Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

●First choice ○Second choice

NPTF

NPTF National Pipe Threads solid carbide thread mill



Defined by : ANSI B1.20.3-1976
Tolerance class : Standard NPTF





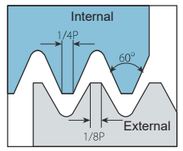
Pitch TPI	Standard	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
27	1/16"X27 1/8"X27	KM1/16"X27NPTF(KM91/8"X27NPTF)	6	6	3	12	62		●	●	●
27	1/8"X27	KM1/8"X27NPTF	8	8	3	12	62		●	●	●
18	1/4"X18 3/8"X18	KM1/4"X18NPTF(KM3/8"X18NPTF)	10	10	4	20	78		●	●	●
18	3/8"X18	KM3/8"X18NPTF	14	14	4	22	78		●	●	●
14	1/2"X14 5/8"X14 3/4"X14	KM1/2"X14NPTF (KM5/8"X14NPTF/KM3/4"X14NPTF)	16	16	4	25	83		●	●	●
11.5	1"X11 2"X11	KM1"X11NPTF(KM2"X11NPTF)	16	16	4	30	83		●	●	●
8	NPT2-1/2 NPT3"	KM2-1/2NPT(KM3"NPT)	13.72	16	4	30	83		●	●	●

Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

●First choice ○Second choice

ISO

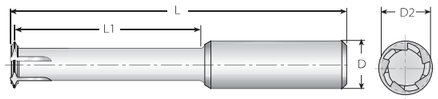
ISO Metric Full Profile solid carbide thread mill



Defined by :R262 (DIN 13)

Tolerance class : 6H





Pitch	Coarse	Type	D2	D	Z	Le	L		KVX	KW20	STOCK
0.2	M0.8X0.2	D1TM0.8X0.2ISO	0.55	4	3	2.8	50		●	●	●
0.25	M1.0X0.25	D1TM1.0X0.25ISO	0.7	4	3	3.1	50		●	●	●
0.25	M1.2X0.25	D1TM1.2X0.25ISO	0.9	4	3	3.8	50		●	●	●
0.3	M1.4X0.3	D1TM1.4X0.3ISO	1.05	4	3	4.4	50		●	●	●
0.35	M1.6X0.35	D1TM1.6X0.35ISO	1.2	4	3	5.0	50		●	●	●
0.35	M1.8X0.35	D1TM1.8X0.35ISO	1.4	4	3	5.6	50		●	●	●
0.4	M2.0X0.4	D1TM2.0X0.4ISO	1.5	4	3	6.2	50		●	●	●
0.45	M2.5X0.45	D1TM2.5X0.45ISO	1.95	4	3	7.7	50		●	●	●
0.5	M3X0.5	D1TM3X0.5ISO	2.4	4	3	9	50		●	●	●
0.6	M3.5X0.6	D1TM3.5X0.6ISO	2.75	4	3	10	50		●	●	●
0.7	M4X0.7	D1TM4X0.7ISO	3.15	4	3	12	50		●	●	●
0.8	M5X0.8	D1TM5X0.8ISO	4	4	3	15	50		●	●	●
1.0	M6X1.0	D1TM6X1.0ISO	4.8	6	3	19	50		●	●	●
1.25	M8X1.25	D1TM8X1.25ISO	6	6	3	26	50		●	●	●
1.5	M10X1.5	D1TM10X1.5ISO	8	8	3	32	60		●	●	●
1.5	M12X1.5	D1TM12X1.5ISO	9.4	10	4	38	75		●	●	●
1.75	M12X1.75	D1TM12X1.75ISO	9.4	10	4	38	75		●	●	●
2.0	M14X2.0	D1TM14X2.0ISO	10.2	12	4	44	75		●	●	●
2.0	M16X2.0	D1TM16X2.0ISO	13	14	4	48	80		●	●	●
2.5	M18X2.5	D1TM18X2.5ISO	14.5	16	4	60	90		●	●	●
2.5	M20X2.5	D1TM20X2.5ISO	16	16	5	60	90		●	●	●

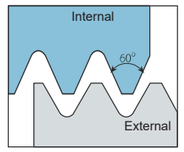
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

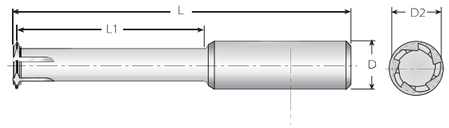
◎First choice ○ Second choice

60°

Milling cutter with integral alloy thread for 60° universal thread







Pitch	Type	D	D2	Z	Le	L		KVX	KW20	STOCK
0.5-0.8	DIT0.5-0.8 60°	3.9	4	3	16	50		●	●	●
0.5-1.0	DIT0.5-1.0 60°	4.85	6	3	20	50		●	●	●
0.5-1.25	DIT0.5-1.25 60°	5.9	6	3	25	50		●	●	●
1.0-1.5	DIT1.0-1.5 60°	7.9	8	3	28	60		●	●	●
1.0-1.75	DIT1.0-1.75 60°	9.9	10	4	38	75		●	●	●
1.0-2.0	DIT1.0-2.0 60°	11.9	12	4	40	75		●	●	●
2.0-3.0	DIT2.0-3.0 60°	14	14	4	48	80		●	●	●
2.0-3.5	DIT2.0-3.5 60°	16	16	5	50	90		●	●	●

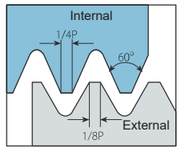
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

◎First choice ○ Second choice

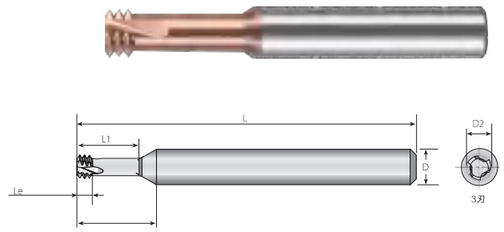
ISO

ISO Metric Full Profile solid carbide thread mill



Defined by :R262 (DIN 13)

Tolerance class : 6H



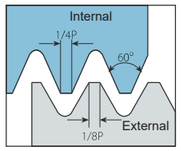
Pitch	Coarse	Type	D2	D	Z	L1	L		KVX	KW20	STOCK
0.25	M1.0X0.25	D3TM1.0X0.25	0.73	4	3	2.3	50		●	●	●
0.25	M1.2X0.25	D3TM1.2X0.25	0.92	4	3	2.8	50		●	●	●
0.3	M1.4X0.3	D3TM1.4X0.3	1.05	4	3	3.2	50		●	●	●
0.35	M1.6X0.35	D3TM1.6X0.35	1.2	4	3	3.3	50		●	●	●
0.35	M1.8X0.35	D3TM1.8X0.35	1.41	4	3	4.1	50		●	●	●
0.4	M2.0X0.4	D3TM2.0X0.4	1.54	4	3	4.4	50		●	●	●
0.45	M2.2X0.45	D3TM2.2X0.45	1.63	4	3	4.8	50		●	●	●
0.45	M2.5X0.45	D3TM2.5X0.45	1.96	4	3	5.3	50		●	●	●
0.5	M3X0.5	D3TM3X0.5	2.4	4	3	6.4	50		●	●	●
0.5	M4X0.5	D3TM4X0.5	3	4	3	8.6	50		●	●	●
0.5	M8X0.5	D3TM8X0.5	6	6	3	17.3	50		●	●	●
0.5	M10X0.5	D3TM10X0.5	8	8	3	21.8	60		●	●	●
0.6	M3.5X0.6	D3TM3.5X0.6	2.75	4	3	7.4	50		●	●	●
0.7	M4X0.7	D3TM4X0.7	3.15	4	3	8.6	50		●	●	●
0.75	M4.5X0.75	D3TM4.5X0.75	3.5	4	3	9.5	50		●	●	●
0.75	M6X0.75	D3TM6X0.75	4.8	6	3	13	50		●	●	●
0.75	M8X0.75	D3TM8X0.75	6	6	3	17.3	50		●	●	●
0.75	M10X0.75	D3TM10X0.75	8	8	3	21.8	60		●	●	●
0.8	M5X0.8	D3TM5X0.8	4	4	3	12	50		●	●	●
1.0	M6X1.0	D3TM6X1.0	4.75	6	3	13	50		●	●	●
1.0	M8X1.0	D3TM8X1.0	6	6	3	17.3	50		●	●	●
1.0	M10X1.0	D3TM10X1.0	8	8	3	21.8	60		●	●	●
1.0	M12X1.0	D3TM12X1.0	10	10	4	25	75		●	●	●
1.0	M14X1.0	D3TM14X1.0	10	10	4	28	75		●	●	●
1.0	M16X1.0	D3TM16X1.0	12	12	4	30	75		●	●	●
1.0	M20X1.0	D3TM20X1.0	15.8	16	4	40	90		●	●	●
1.25	M8X1.25	D3TM8X1.25	6	6	3	17.3	50		●	●	●
1.25	M10X1.25	D3TM10X1.25	8	8	3	21.8	60		●	●	●
1.25	M12X1.25	D3TM12X1.25	10	10	4	25	75		●	●	●
1.25	M14X1.25	D3TM14X1.25	10	10	4	28	75		●	●	●
1.25	M16X1.25	D3TM16X1.25	12	12	4	30	75		●	●	●
1.5	M10X1.5	D3TM10X1.5	8	8	3	21.8	60		●	●	●
1.5	M12X1.5	D3TM12X1.5	10	10	4	25	75		●	●	●
1.5	M14X1.5	D3TM14X1.5	10	10	4	28	75		●	●	●
1.5	M16X1.5	D3TM16X1.5	12	12	4	30	75		●	●	●
1.5	M20X1.5	D3TM20X1.5	15.8	16	4	40	90		●	●	●
1.75	M12X1.75	D3TM12X1.75	10	10	4	24	75		●	●	●
2.0	M14X2.0	D3TM14X2.0	10	10	4	25	75		●	●	●
2.0	M16X2.0	D3TM16X2.0	11.5	12	4	27	75		●	●	●
2.0	M20X2.0	D3TM20X2.0	15.8	16	4	40	90		●	●	●
2.5	M20X2.5	D3TM20X2.5	15	16	4	36	90		●	●	●
3.0	M24X3.0	D3TM24X3.0	16	16	4	45	90		●	●	●

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel																		
			~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

UN-60°

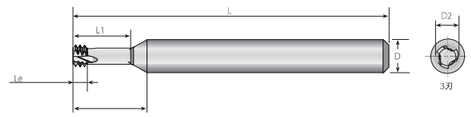
American UN Full Profile solid carbide thread mill



Defined by : ANSI B 1.1:74

Tolerance class : 2B





Pitch TPI	Coarse UNC	Fine UNF	Type	D2	D	Z	L1	L		KVX	KW20	STOCK
80		NO.0-80	D3TNO.0-80 60°	1.15	4	3	3.5	50		●	●	●
72		NO.1-72	D3TNO.1-72 60°	1.45	4	3	3.9	50		●	●	●
64	NO.1-64	NO.2-64	D3TNO.2-64 60° (D3TNO.1-64 60°)	1.4	4	3	4.2	50		●	●	●
56	NO.2-56	NO.3-56	D3TNO.3-56 60° (D3TNO.2-56 60°)	1.65	4	3	5.0	50		●	●	●
48	NO.3-48	NO.4-48	D3TNO.4-48 60° (D3TNO.3-48 60°)	1.9	4	3	6.0	50		●	●	●
40	NO.4,NO.5-40	NO.6-40	D3TNO.6-40 60° (D3TNO.5-40 60°)	2.45	4	3	7.2	50		●	●	●
36		NO.8-36	D3TNO.8-36 60°	3.3	4	3	8.7	50		●	●	●
32	NO.6,NO.8-32	NO.10-32	D3TNO.10-32 60° (D3TNO.6,NO.8-32 60°)	2.55	4	3	7.4	50		●	●	●
32	NO.8-32	NO.10-32	D3TNO.10-32 60° (D3TNO.8-32 60°)	3.2	4	3	10.0	50		●	●	●
32		NO.10-32	D3TNO.10-32 60°	3.8	4	3	10.3	50		●	●	●
28		1/4-28	D3T1/4-28 60°	5.25	6	3	13.2	50		●	●	●
24	NO.10-24	5/16-24	D3T5/16-24 60° (D3TNO.10-24 60°)	3.58	4	3	10.2	50		●	●	●
24		5/16-24	D3T5/16-24 60°	6.68	8	3	16.5	60		●	●	●
20	1/4-20	7/16-20	D3T7/16-20 60° (D3T1/4-20 60°)	4.88	6	3	13.4	50		●	●	●
20		7/16-20	D3T7/16-20 60°	9.55	10	4	23	75		●	●	●
18	5/16-18		D3T5/16-18 60°	6.15	8	3	16.9	60		●	●	●
16	3/8-16		D3T3/8-16 60°	6.7	8	3	19.1	60		●	●	●
14	7/16-14		D3T7/16-14 60°	9.0	10	4	23.3	75		●	●	●

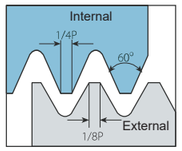
Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel					Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel																		
			~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC														
◎	◎	◎	○					○													

●First choice ○ Second choice

UN-60°

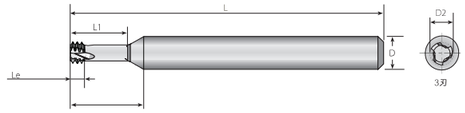
American UN Full Profile solid carbide thread mill



Defined by : ANSI B 1.1:74

Tolerance class : 2B





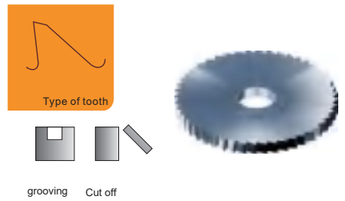
Pitch TPI	Coarse UNC	Fine UNF	Type	D2	D	Z	L1	L		KVX	KW20	STOCK
80		NO.0-80	D3TNO.0-80 60°	1.15	4	3	3.5	50		●	●	●
72		NO.1-72	D3TNO.1-72 60°	1.45	4	3	3.9	50		●	●	●
64	NO.1-64	NO.2-64	D3TNO.2-64 60° (D3TNO.1-64 60°)	1.4	4	3	4.2	50		●	●	●
56	NO.2-56	NO.3-56	D3TNO.3-56 60° (D3TNO.2-56 60°)	1.65	4	3	5.0	50		●	●	●
48	NO.3-48	NO.4-48	D3TNO.4-48 60° (D3TNO.3-48 60°)	1.9	4	3	6.0	50		●	●	●
40	NO.4,NO.5-40	NO.6-40	D3TNO.6-40 60° (D3TNO.4,NO.5-40 60°)	2.1	4	3	6.0	50		●	●	●
40	NO.5-40	NO.6-40	D3TNO.6-40 60° (D3TNO.5-40 60°)	2.45	4	3	7.2	50		●	●	●
36		NO.8-36	D3TNO.8-36 60°	3.3	4	3	8.7	50		●	●	●
32	NO.6,NO.8-32	NO.10-32	D3TNO.10-32 60° (D3TNO.6,NO.8-32 60°)	2.55	4	3	7.4	50		●	●	●
32	NO.8-32	NO.10-32	D3TNO.10-32 60° (D3TNO.8-32 60°)	3.2	4	3	10.0	50		●	●	●
32		NO.10-32	D3TNO.10-32 60°	3.8	4	3	10.3	50		●	●	●
28		1/4-28	D3T1/4-28 60°	5.25	6	3	13.2	50		●	●	●
24	NO.10-24	5/16-24	D3T5/16-24 60° (D3TNO.10-24 60°)	3.58	4	3	10.2	50		●	●	●
24		5/16-24	D3T5/16-24 60°	6.68	8	3	16.5	60		●	●	●
20	1/4-20	7/16-20	D3T7/16-20 60° (D3T1/4-20 60°)	4.88	6	3	13.4	50		●	●	●
20		7/16-20	D3T7/16-20 60°	9.55	10	4	23	75		●	●	●
18	5/16-18		D3T5/16-18 60°	6.15	8	3	16.9	60		●	●	●
16	3/8-16		D3T3/8-16 60°	6.7	8	3	19.1	60		●	●	●
14	7/16-14		D3T7/16-14 60°	9.0	10	4	23.3	75		●	●	●

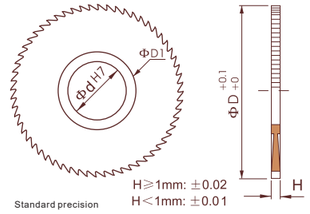
Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

●First choice ○ Second choice

A

A-tooth type Tungsten Carbide Circular Saws





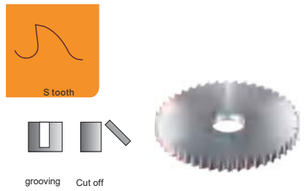
Code	D	H	T Used teeth	T-Type	d	
KAA	12	0.15-3.0	32,24,20,16	A-type	4	
	16	0.15-3.0	40,32,24,20		5	
	20	0.15-3.0	48,40,32,24		6	
	25	0.20-3.0	64,48,40,32		8	
	32	0.20-4.0	80,64,48,40,32		8	
	40	0.20-6.0	100,80,64,48,40		10	
	45	0.20-6.0	100,80,64,48,40		12.7.13	
	50	0.20-6.0	100,80,64,48,40		13	
	63	0.20-6.0	120,100,80,64,48		16	
	70	0.20-6.0	120,100,80,64,48		12.7	
	75	0.30-8.0	120,100,80,64,48		22.25.4	
	80	0.50-8.0	120,100,80,64,48		22.25.4	
	100	0.60-8.0	120,100,80,64		22.25.4	
	125	1.00-8.0	160,120,100,80		22.25.4	
	160	1.50-8.0	160,120,100,80		17.25.4	
	200	2.00-8.0	200,160,120,100		32.31.75	

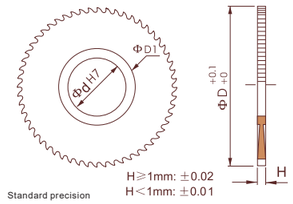
Work Material																				
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

●First choice ○ Second choice

S

S-type solid carbide saw cutter and milling cutter



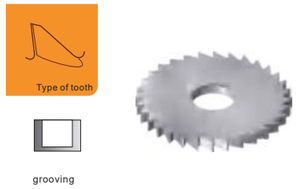


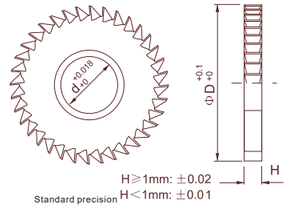
Code	D	H	T Used teeth	T-Type	d	
KAA	12	0.15-3.0	**16**.12	S-type	4	
	16	0.15-3.0	**20**.16		5	
	20	0.30-3.0	40.32.**24**.20		6	
	25	0.30-3.0	32.**24**.20		8	
	32	0.30-4.0	48.40.32.**24**		8	
	40	0.30-6.0	56.48.40.**32**.24		10	
	45	0.30-6.0	56.48.40.**32**.24		12.7.13	
	50	0.30-6.0	64.56.48.40.**32**		13	
	63	0.30-6.0	100.**80**.64.**48**.**40**		16	
	70	0.30-6.0	100.**80**.64.**48**.**40**		12.7	
	75	0.50-8.0	100.**80**.64.**48**.**40**		22.25.4	
	80	0.50-8.0	100.**80**.64.**48**.**40**		22.25.4	
	100	0.80-8.0	120.100.**80**.64.**48**		22.25.4	
	125	1.00-8-0	160.120.100.**80**.64		22.25.4	
	160	1.50-8.0	160.120.**100**.80		27.25.4	
	200	2.00-8.0	180.160.**120**.100		32.31.75	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

◎First choice ○ Second choice

Solid carbide side milling cutter



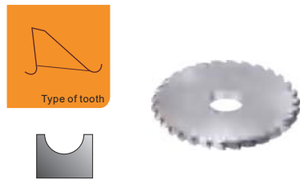


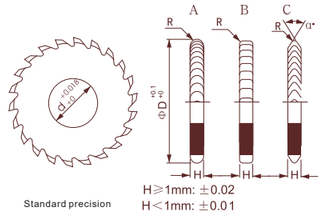
Code	D	H	T Used teeth	T-Type	d	
KAB	32	2.0-6.0	32.24.20.**16**	A-type	8	
	40	2.0-6.0	40.32.24.**20**		10	
	45	2.0-6.0	40.32.**24**.**20**		12.7.13	
	50	2.0-6.0	48.40.32.**24**		13	
	63	2.0-8.0	56.48.40.**32**.24		16	
	70	2.0-8.0	56.48.40.**32**.24		12.7	
	75	2.0-8.0	56.48.40.**32**.24		22.25.4	
	80	2.0-8.0	64.56.48.40.**32**.24		22.25.4	
	100	2.0-8.0	80.64.48.**40**.32		22.25.4	
	125	2.0-8.0	80.64.**48**.40		22.25.4	
	160	2.0-8.0	80.**64**.48.40		27.25.4	
	200	2.0-8.0	100.**80**.64.48		32.31.75	

Work Material																						
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					○													

◎First choice ○ Second choice

Solid carbide convex semicircle saw blade milling cutter





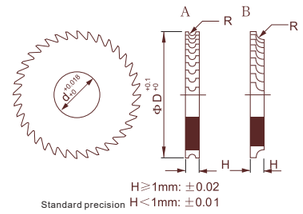
Code	D	H	T Used teeth	T-Type	d	
KAC	12	1.0-3.0	6.4	A-type	4	
	16	1.0-3.0	8.6		5	
	20	1.0-3.0	12.8		6	
	25	1.0-3.0	20.16		8	
	32	1.0-4.0	24.20.16		8	
	40	1.0-6.0	32.28.24.20		10	
	45	1.0-6.0	32.28.24.20		12.7.13	
	50	1.0-6.0	32.28.24.20		13	
	63	1.0-6.0	40.36.32.28.24.20		16	
	70	1.0-6.0	40.36.32.28.24.20		12.7	
	75	1.0-8.0	40.36.32.28.24.20		22.25.4	
	80	1.5-8.0	40.36.32.28.24.20		22.25.4	
	100	1.5-8.0	48.40.36.32.28.24		22.25.4	
	125	2.0-8.0	56.48.40.36.32.28		22.25.4	
	160	2.0-8.0	64.56.48.40.36.32		27.25.4	
	200	2.0-8.0	80.64.56.48.40.36		32.31.75	
		2.0-8.0				

Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel																
			~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC													
◎	◎	◎	○				○													

◎First choice ○Second choice

Solid carbide concave semicircle milling cutter





Code	D	H	T Used teeth	T-Type	d	
KAD	12	1.0-3.0	4	A-type	4	
	16	1.0-3.0	6		5	
	20	1.0-3.0	12.8		6	
	25	1.0-3.0	16.12		8	
	32	1.0-4.0	24.20.16		8	
	40	1.0-6.0	32.28.24.20		10	
	45	1.0-6.0	32.28.24.20		12.7.13	
	50	1.0-6.0	32.28.24.20		13.16	
	63	1.0-6.0	40.36.32.28.24.20		12.7	
	70	1.0-6.0	40.36.32.28.24.20		22.25.4	
	75	1.0-8.0	40.36.32.28.24.20		22.25.4	
	80	1.5-8.0	40.36.32.28.24.20		22.25.4	
	100	2.0-8.0	48.40.36.32.28.24		22.25.4	
	125	2.0-8.0	56.48.40.36.32.28		27.25.7	
	160	2.0-8.0	64.56.48.40.36.32		32.31.75	
	200	2.0-8.0	80.64.56.48.40.36		32.31.75	

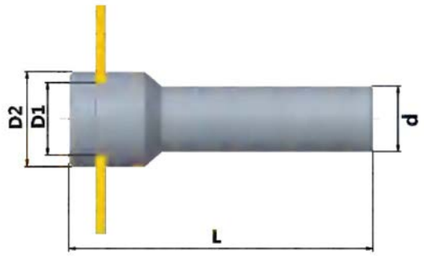
Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel																
			~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC													
◎	◎	◎	○				○													

◎First choice ○Second choice

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Saw blade shank





model	D1 Saw blade inner hole	D2 Diameter of the cutting tools	d The handle diameter	L Tool rod length	STOCK
D4-D8-D8-L50	4	8	8	50	●
D4-D8-D8-L60	4	8	8	60	●
D4-D8-D8-L80	4	8	8	80	●
D5-D10-D10-L68	5	10	10	68	●
D6-D10-D10-L68	6	10	10	68	●
D8-D12-D12-L68	8	12	12	68	●
D10-D15-D10-L68	10	15	10	68	●
D13-D18-D12-L68	13	18	12	68	●
D13-D18-D12-L68	13	18	12	68	●
D13-D18-D12-L92	13	18	12	92	●
D13-D18-D10-L92	13	18	10	92	●
D16-D22-D16-L75	16	22	16	75	●
D16-D22-D16-L140	16	22	16	140	●
D16-D22-D16-L180	16	22	16	180	●
D22-D28-D16-L88	22	28	16	88	●
D22-D28-D16-L130	22	28	16	130	●
D27-D32-D20-L85	27	32	20	85	●
D27-D32-D20-L220	27	32	20	220	●
D27-D32-D20-L85	27	32	20	85	●
D27-D32-D20-L180	27	32	20	180	●

Solid carbide drills

L1 - L46

L

Flat drills L01-L04

CFD-Carbide flat drills

Micro drills L05-L29

CPD- General purpose micro drills

CPDL- General purpose long flute micro drills

CDD- DLC Coating micro drills

CDDL- DLC Coating long flute micro drills

CHD-Multi-function micro drills

CHDL-Multi-function long flute micro drills

CXD- Left rotation micro drills

CHXD- Coating Left rotation micro drills

High performance drills L30-L39

CCD-High performance drills 3D

CCD-High performance drills 5D

HKD-High performance drills with oil hole 3D

HKD-High performance drills with oil hole 5D

HKD-High performance drills with oil hole 8D

General drills (straight shank) L40-L43

CD- General Carbide drills

HD- Coating Carbide drills

Spotting drills L43-L45

CHSD-Multi-function spotting drills

CHSXD- Coating Left rotation spotting micro drills

Center drills L46

CND-Carbide center drills

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CFD-CARBIDE FLAT DRILLS



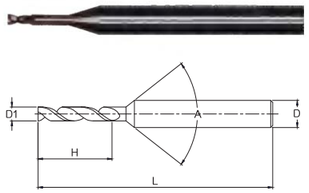
Tool dia：D0.50-D12.0mm

Dia tolerance：D≤3.00 0,-0.005mm D＞3.00 0,-0.01mm

Counter boring and guide hole cutting with a single end mill

Reduces burrs at hole exits

Applicable to various types or drilling thanks to a point angle of 180°



Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					◎	○	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-0500	○	0.50	2.5	3	38
CFD-0510	○	0.51	2.5	3	38
CFD-0520	○	0.52	2.5	3	38
CFD-0530	○	0.53	2.5	3	38
CFD-0540	○	0.54	2.5	3	38
CFD-0550	○	0.55	2.5	3	38
CFD-0560	○	0.56	2.5	3	38
CFD-0570	○	0.57	2.5	3	38
CFD-0580	○	0.58	2.5	3	38
CFD-0590	○	0.59	2.5	3	38
CFD-0600	○	0.60	2.5	3	38
CFD-0610	○	0.61	2.5	3	38
CFD-0620	○	0.62	2.5	3	38
CFD-0630	○	0.63	2.5	3	38
CFD-0640	○	0.64	2.5	3	38
CFD-0650	○	0.65	2.5	3	38
CFD-0660	○	0.66	2.5	3	38
CFD-0670	○	0.67	2.5	3	38
CFD-0680	○	0.68	2.5	3	38
CFD-0690	○	0.69	2.5	3	38
CFD-0700	○	0.70	3.0	3	38
CFD-0710	○	0.71	3.0	3	38
CFD-0720	○	0.72	3.0	3	38
CFD-0730	○	0.73	3.0	3	38
CFD-0740	○	0.74	3.0	3	38
CFD-0750	○	0.75	3.0	3	38
CFD-0760	○	0.76	3.0	3	38
CFD-0770	○	0.77	3.0	3	38
CFD-0780	○	0.78	3.0	3	38
CFD-0790	○	0.79	3.0	3	38
CFD-0800	○	0.80	3.0	3	38
CFD-0810	○	0.81	3.0	3	38
CFD-0820	○	0.82	3.0	3	38
CFD-0830	○	0.83	3.0	3	38
CFD-0840	○	0.84	3.0	3	38
CFD-0850	○	0.85	3.0	3	38
CFD-0860	○	0.86	3.0	3	38
CFD-0870	○	0.87	3.0	3	38
CFD-0880	○	0.88	3.0	3	38
CFD-0890	○	0.89	3.0	3	38
CFD-0900	○	0.90	3.0	3	38
CFD-0910	○	0.91	3.0	3	38
CFD-0920	○	0.92	3.0	3	38
CFD-0930	○	0.93	3.0	3	38
CFD-0940	○	0.94	3.0	3	38
CFD-0950	○	0.95	3.0	3	38
CFD-0960	○	0.96	3.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-0970	○	0.97	3.0	3	38
CFD-0980	○	0.98	3.0	3	38
CFD-0990	○	0.99	3.0	3	38
CFD-1000	○	1.00	4.0	3	38
CFD-1010	○	1.01	4.0	3	38
CFD-1020	○	1.02	4.0	3	38
CFD-1030	○	1.03	4.0	3	38
CFD-1040	○	1.04	4.0	3	38
CFD-1050	○	1.05	4.0	3	38
CFD-1060	○	1.06	4.0	3	38
CFD-1070	○	1.07	4.0	3	38
CFD-1080	○	1.08	4.0	3	38
CFD-1090	○	1.09	4.0	3	38
CFD-1100	○	1.10	4.0	3	38
CFD-1110	○	1.11	4.0	3	38
CFD-1120	○	1.12	4.0	3	38
CFD-1130	○	1.13	4.0	3	38
CFD-1140	○	1.14	4.0	3	38
CFD-1150	○	1.15	4.0	3	38
CFD-11 60	○	1.16	4.0	3	38
CFD-1170	○	1.17	4.0	3	38
CFD-1180	○	1.18	4.0	3	38
CFD-1190	○	1.19	4.0	3	38
CFD-1200	○	1.20	4.5	3	38
CFD-1210	○	1.21	4.5	3	38
CFD-1220	○	1.22	4.5	3	38
CFD-1230	○	1.23	4.5	3	38
CFD-1240	○	1.24	4.5	3	38
CFD-1250	○	1.25	4.5	3	38
CFD-1260	○	1.26	4.5	3	38
CFD-1270	○	1.27	4.5	3	38
CFD-1280	○	1.28	4.5	3	38
CFD-1290	○	1.29	4.5	3	38
CFD-1300	○	1.30	4.5	3	38
CFD-1310	○	1.31	4.5	3	38
CFD-1320	○	1.32	4.5	3	38
CFD-1330	○	1.33	4.5	3	38
CFD-1340	○	1.34	4.5	3	38
CFD-1350	○	1.35	4.5	3	38
CFD-1360	○	1.36	4.5	3	38
CFD-1370	○	1.37	4.5	3	38
CFD-1380	○	1.38	4.5	3	38
CFD-1390	○	1.39	4.5	3	38
CFD-1400	○	1.40	4.5	3	38
CFD-1410	○	1.41	4.5	3	38
CFD-1420	○	1.42	4.5	3	38
CFD-1430	○	1.43	4.5	3	38

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CFD-CARBIDE FLAT DRILLS



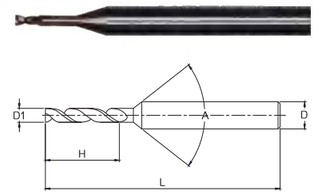
Tool dia：D0.50-D12.0mm

Dia tolerance：D≤3.00 0,-0.005mm D＞3.00 0,-0.01mm

Counter boring and guide hole cutting with a single end mill

Reduces burrs at hole exits

Applicable to various types or drilling thanks to a point angle of 180°



Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					◎	○	○	○	○	○	○	○	○					

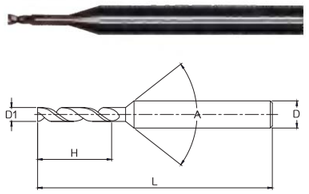
Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-1440	○	1.44	4.5	3	38
CFD-1450	○	1.45	4.5	3	38
CFD-1460	○	1.46	4.5	3	38
CFD-1470	○	1.47	4.5	3	38
CFD-1480	○	1.48	4.5	3	38
CFD-1490	○	1.49	4.5	3	38
CFD-1500	○	1.50	5.0	3	38
CFD-1510	○	1.51	5.0	3	38
CFD-1520	○	1.52	5.0	3	38
CFD-1530	○	1.53	5.0	3	38
CFD-1540	○	1.54	5.0	3	38
CFD-1550	○	1.55	5.0	3	38
CFD-1560	○	1.56	5.0	3	38
CFD-1570	○	1.57	5.0	3	38
CFD-1580	○	1.58	5.0	3	38
CFD-1590	○	1.59	5.0	3	38
CFD-1600	○	1.60	5.0	3	38
CFD-1610	○	1.61	5.0	3	38
CFD-1620	○	1.62	5.0	3	38
CFD-1630	○	1.63	5.0	3	38
CFD-1640	○	1.64	5.0	3	38
CFD-1650	○	1.65	5.0	3	38
CFD-1660	○	1.66	5.0	3	38
CFD-1670	○	1.67	5.0	3	38
CFD-1680	○	1.68	5.0	3	38
CFD-1690	○	1.69	5.0	3	38
CFD-1700	○	1.70	6.0	3	38
CFD-1710	○	1.71	6.0	3	38
CFD-1720	○	1.72	6.0	3	38
CFD-1730	○	1.73	6.0	3	38
CFD-1740	○	1.74	6.0	3	38
CFD-1750	○	1.75	6.0	3	38
CFD-1760	○	1.76	6.0	3	38
CFD-1770	○	1.77	6.0	3	38
CFD-1780	○	1.78	6.0	3	38
CFD-1790	○	1.79	6.0	3	38
CFD-1800	○	1.80	6.5	3	38
CFD-1810	○	1.81	6.5	3	38
CFD-1820	○	1.82	6.5	3	38
CFD-1830	○	1.83	6.5	3	38
CFD-1840	○	1.84	6.5	3	38
CFD-1850	○	1.85	6.5	3	38
CFD-1860	○	1.86	6.5	3	38
CFD-1870	○	1.87	6.5	3	38
CFD-1880	○	1.88	6.5	3	38
CFD-1890	○	1.89	6.5	3	38
CFD-1900	○	1.90	6.5	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-1910	○	1.91	7.0	3	38
CFD-1920	○	1.92	7.0	3	38
CFD-1930	○	1.93	7.0	3	38
CFD-1940	○	1.94	7.0	3	38
CFD-1950	○	1.95	7.0	3	38
CFD-1960	○	1.96	7.0	3	38
CFD-1970	○	1.97	7.0	3	38
CFD-1980	○	1.98	7.0	3	38
CFD-1990	○	1.99	7.0	3	38
CFD-2000	○	2.00	8.0	3	38
CFD-2010	○	2.01	8.0	3	38
CFD-2020	○	2.02	8.0	3	38
CFD-2030	○	2.03	8.0	3	38
CFD-2040	○	2.04	8.0	3	38
CFD-2050	○	2.05	8.0	3	38
CFD-2060	○	2.06	8.0	3	38
CFD-2070	○	2.07	8.0	3	38
CFD-2080	○	2.08	8.0	3	38
CFD-2090	○	2.09	8.0	3	38
CFD-2100	○	2.10	8.0	3	38
CFD-2110	○	2.11	8.0	3	38
CFD-2120	○	2.12	8.0	3	38
CFD-2130	○	2.13	8.0	3	38
CFD-2140	○	2.14	8.0	3	38
CFD-2150	○	2.15	8.0	3	38
CFD-2160	○	2.16	8.0	3	38
CFD-2170	○	2.17	8.0	3	38
CFD-2180	○	2.18	8.0	3	38
CFD-2190	○	2.19	8.0	3	38
CFD-2200	○	2.20	8.5	3	38
CFD-2210	○	2.21	8.5	3	38
CFD-2220	○	2.22	8.5	3	38
CFD-2230	○	2.23	8.5	3	38
CFD-2240	○	2.24	8.5	3	38
CFD-2250	○	2.25	8.5	3	38
CFD-2260	○	2.26	8.5	3	38
CFD-2270	○	2.27	8.5	3	38
CFD-2280	○	2.28	8.5	3	38
CFD-2290	○	2.29	8.5	3	38
CFD-2300	○	2.30	9.0	3	38
CFD-2310	○	2.31	9.0	3	38
CFD-2320	○	2.32	9.0	3	38
CFD-2330	○	2.33	9.0	3	38
CFD-2340	○	2.34	9.0	3	38
CFD-2350	○	2.35	9.0	3	38
CFD-2360	○	2.36	9.0	3	38
CFD-2370	○	2.37	9.0	3	38

CFD-CARBIDE FLAT DRILLS

Tool dia: D0.50-D12.0mm

Dia tolerance : D≤3.00 0,-0.005mm, D > 3.00 0,-0.01mm
Counter boring and guide hole cutting with a single end mill
Reduces burrs at hole exits
Applicable to various types or drilling thanks to a point angle of 180°



Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					◎	○	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-2380	○	2.38	9.0	3	38
CFD-2390	○	2.39	9.0	3	38
CFD-2400	○	2.40	9.0	3	38
CFD-2410	○	2.41	9.0	3	38
CFD-2420	○	2.42	9.0	3	38
CFD-2430	○	2.43	9.0	3	38
CFD-2440	○	2.44	9.0	3	38
CFD-2450	○	2.45	9.0	3	38
CFD-2460	○	2.46	9.0	3	38
CFD-2470	○	2.47	9.0	3	38
CFD-2480	○	2.48	9.0	3	38
CFD-2490	○	2.49	9.0	3	38
CFD-2500	○	2.50	9.5	3	38
CFD-2510	○	2.51	9.5	3	38
CFD-2520	○	2.52	9.5	3	38
CFD-2530	○	2.53	9.5	3	38
CFD-2540	○	2.54	9.5	3	38
CFD-2550	○	2.55	9.5	3	38
CFD-2560	○	2.56	9.5	3	38
CFD-2570	○	2.57	9.5	3	38
CFD-2580	○	2.58	9.5	3	38
CFD-2590	○	2.59	9.5	3	38
CFD-2600	○	2.60	10.0	3	38
CFD-2610	○	2.61	10.0	3	38
CFD-2620	○	2.62	10.0	3	38
CFD-2630	○	2.63	10.0	3	38
CFD-2640	○	2.64	10.0	3	38
CFD-2650	○	2.65	10.0	3	38
CFD-2660	○	2.66	10.0	3	38
CFD-2670	○	2.67	10.0	3	38
CFD-2680	○	2.68	10.0	3	38
CFD-2690	○	2.69	10.0	3	38
CFD-2700	○	2.70	10.0	3	38
CFD-2710	○	2.71	10.0	3	38
CFD-2720	○	2.72	10.0	3	38
CFD-2730	○	2.73	10.0	3	38
CFD-2740	○	2.74	10.0	3	38
CFD-2750	○	2.75	10.0	3	38
CFD-2760	○	2.76	10.0	3	38
CFD-2770	○	2.77	10.0	3	38
CFD-2780	○	2.78	10.0	3	38
CFD-2790	○	2.79	10.0	3	38
CFD-2800	○	2.80	10.0	3	38
CFD-2810	○	2.81	10.0	3	38
CFD-2820	○	2.82	10.0	3	38
CFD-2830	○	2.83	10.0	3	38
CFD-2840	○	2.84	10.0	3	38

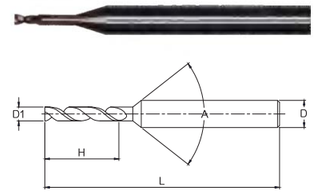
Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-2850	○	2.85	10.0	3	38
CFD-2860	○	2.86	10.0	3	38
CFD-2870	○	2.87	10.0	3	38
CFD-2880	○	2.88	10.0	3	38
CFD-2890	○	2.89	10.0	3	38
CFD-2900	○	2.90	10.0	3	38
CFD-2910	○	2.91	10.0	3	38
CFD-2920	○	2.92	10.0	3	38
CFD-2930	○	2.93	10.0	3	38
CFD-2940	○	2.94	10.0	3	38
CFD-2950	○	2.95	10.0	3	38
CFD-2960	○	2.96	10.0	3	38
CFD-2970	○	2.97	10.0	3	38
CFD-2980	○	2.98	10.0	3	38
CFD-2990	○	2.99	10.0	3	38
CFD-3000	○	3.00	10.0	3	38
CFD-3100	○	3.10	15.0	4	50
CFD-3200	○	3.20	15.0	4	50
CFD-3300	○	3.30	15.0	4	50
CFD-3400	○	3.40	15.0	4	50
CFD-3500	○	3.50	15.0	4	50
CFD-3600	○	3.60	15.0	4	50
CFD-3700	○	3.70	15.0	4	50
CFD-3800	○	3.80	15.0	4	50
CFD-3900	○	3.90	15.0	4	50
CFD-4000	○	4.00	20.0	4	55
CFD-4100	○	4.10	20.0	6	55
CFD-4200	○	4.20	20.0	6	55
CFD-4300	○	4.30	20.0	6	55
CFD-4400	○	4.40	20.0	6	55
CFD-4500	○	4.50	20.0	6	55
CFD-4600	○	4.60	20.0	6	55
CFD-4700	○	4.70	20.0	6	55
CFD-4800	○	4.80	20.0	6	55
CFD-4900	○	4.90	20.0	6	55
CFD-5000	○	5.00	25.0	6	60
CFD-5100	○	5.10	25.0	6	60
CFD-5200	○	5.20	25.0	6	60
CFD-5300	○	5.30	25.0	6	60
CFD-5400	○	5.40	25.0	6	60
CFD-5500	○	5.50	25.0	6	60
CFD-5600	○	5.60	25.0	6	60
CFD-5700	○	5.70	25.0	6	60
CFD-5800	○	5.80	25.0	6	60
CFD-5900	○	5.90	25.0	6	60
CFD-6000	○	6.00	25.0	8	60
CFD-6100	○	6.10	30.0	8	75

WERNER

CFD-CARBIDE FLAT DRILLS

Tool dia: D0.50-D12.0mm

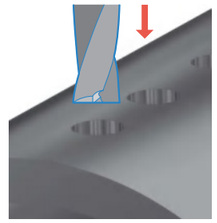
Dia tolerance : D≤3.00 0,-0.005mm, D > 3.00 0,-0.01mm
Counter boring and guide hole cutting with a single end mill
Reduces burrs at hole exits
Applicable to various types or drilling thanks to a point angle of 180°



Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					◎	○	○	○	○	○	○	○	○					

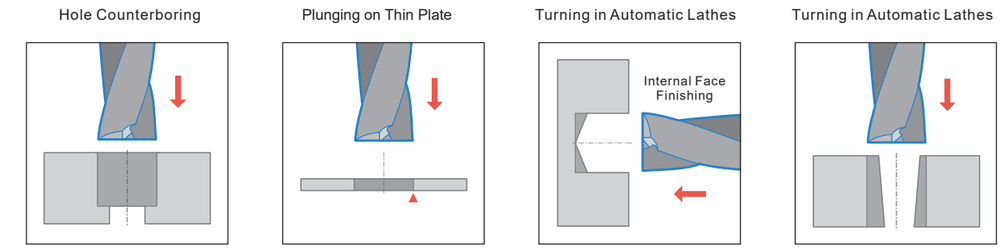
型号 Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-6200	○	6.20	30.0	8	75
CFD-6300	○	6.30	30.0	8	75
CFD-6400	○	6.40	30.0	8	75
CFD-6500	○	6.50	30.0	8	75
CFD-6600	○	6.60	30.0	8	75
CFD-6700	○	6.70	30.0	8	75
CFD-6800	○	6.80	30.0	8	75
CFD-6900	○	6.90	30.0	8	75
CFD-7000	○	7.00	30.0	8	75
CFD-7100	○	7.10	30.0	8	75
CFD-7200	○	7.20	30.0	8	75
CFD-7300	○	7.30	30.0	8	75
CFD-7400	○	7.40	30.0	8	75
CFD-7500	○	7.50	30.0	8	75
CFD-7600	○	7.60	30.0	8	75
CFD-7700	○	7.70	30.0	8	75
CFD-7800	○	7.80	30.0	8	75
CFD-7900	○	7.90	30.0	8	75
CFD-8000	○	8.00	30.0	8	75
CFD-8100	○	8.10	31.0	10	75
CFD-8200	○	8.20	32.0	10	75
CFD-8300	○	8.30	32.0	10	75
CFD-8400	○	8.40	32.0	10	75
CFD-8500	○	8.50	32.0	10	75
CFD-8600	○	8.60	33.0	10	80
CFD-8700	○	8.70	33.0	10	80
CFD-8800	○	8.80	34.0	10	80
CFD-8900	○	8.90	34.0	10	80
CFD-9000	○	9.00	35.0	10	80
CFD-9100	○	9.10	35.0	10	80

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CFD-9200	○	9.20	35.0	10	80
CFD-9300	○	9.30	36.0	10	80
CFD-9400	○	9.40	36.0	10	80
CFD-9500	○	9.50	37.0	10	80
CFD-9600	○	9.60	37.0	10	80
CFD-9700	○	9.70	37.0	10	80
CFD-9800	○	9.80	38.0	10	80
CFD-9900	○	9.90	38.0	10	80
CFD-10000	○	10.00	39.0	10	80
CFD-10100	○	10.10	39.0	12	85
CFD-10200	○	10.20	39.0	12	85
CFD-10300	○	10.30	40.0	12	85
CFD-10400	○	10.40	40.0	12	85
CFD-10500	○	10.50	40.0	12	85
CFD-10600	○	10.60	41.0	12	85
CFD-10700	○	10.70	41.0	12	85
CFD-10800	○	10.80	42.0	12	85
CFD-10900	○	10.90	42.0	12	85
CFD-11000	○	11.00	42.0	12	85
CFD-11100	○	11.10	43.0	12	85
CFD-11200	○	11.20	43.0	12	85
CFD-11300	○	11.30	44.0	12	85
CFD-11400	○	11.40	44.0	12	85
CFD-11500	○	11.50	44.0	12	85
CFD-11600	○	11.60	45.0	12	90
CFD-11700	○	11.70	45.0	12	90
CFD-11800	○	11.80	45.0	12	90
CFD-11900	○	11.90	46.0	12	90
CFD-12000	○	12.00	46.0	12	90



Effective for drilling in inclined and cylindrical surfaces!
Reduces burrs at hole exits

APPLICATIONS:



Recommended Cutting Conditions

1. The recommended hole depth is 2 x DC.
   The depth is measured from the highest point of the work when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling on an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30 or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traversing or helical milling.

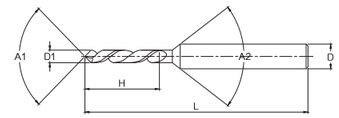
Diameter	Cutting Conditions	Structural Steel Carbon Steel ~250HB	Alloy Steel ~300HB	Hardened Steel ~50HRC	Stainless Steel ~200HB	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
0.5	Vc m/min	30-40-50	30-35-40	15-20-25	15-20-25	30-40-50	20-30-40	60-80-100
	f mm/rev	0.004-0.005-0.006	0.004-0.005-0.006	0.001-0.002-0.003	0.003-0.004-0.005	0.004-0.005-0.006	0.001-0.003-0.005	0.003-0.005-0.007
1.0	Vc m/min	45-55-65	35-45-55	20-30-40	20-25-30	45-55-65	30-40-50	80-100-120
	f mm/rev	0.01-0.03-0.05	0.01-0.03-0.05	0.002-0.006-0.01	0.005-0.007-0.01	0.01-0.03-0.05	0.005-0.01-0.015	0.01-0.02-0.03
2.0	Vc m/min	50-60-70	40-50-60	20-30-40	20-30-40	50-60-70	45-55-65	90-110-130
	f mm/rev	0.02-0.04-0.06	0.02-0.04-0.06	0.01-0.018-0.025	0.01-0.015-0.02	0.02-0.04-0.06	0.015-0.03-0.045	0.03-0.05-0.07
4.0	Vc m/min	60-75-90	50-65-80	20-30-40	20-30-40	60-75-90	55-65-75	90-110-130
	f mm/rev	0.06-0.08-0.10	0.05-0.08-0.10	0.01-0.02-0.03	0.01-0.02-0.03	0.06-0.08-0.10	0.04-0.06-0.08	0.06-0.08-0.10
6.0	Vc m/min	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f mm/rev	0.05-0.10-0.15	0.05-0.10-0.15	0.04-0.06-0.08	0.03-0.04-0.05	0.05-0.10-0.15	0.06-0.09-0.12	0.05-0.10-0.15
8.0	Vc m/min	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f mm/rev	0.10-0.15-0.20	0.10-0.15-0.20	0.06-0.08-0.10	0.04-0.06-0.08	0.10-0.15-0.20	0.10-0.12-0.15	0.10-0.15-0.20
10.0	Vc m/min	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f mm/rev	0.12-0.17-0.22	0.12-0.17-0.22	0.08-0.10-0.12	0.06-0.08-0.10	0.12-0.17-0.22	0.12-0.15-0.18	0.12-0.17-0.22
12.0	Vc m/min	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f mm/rev	0.15-0.20-0.25	0.15-0.20-0.25	0.12-0.15-0.18	0.08-0.10-0.12	0.15-0.20-0.25	0.15-0.18-0.20	0.15-0.20-0.25

WERNER

CPD- GENERAL PURPOSE MICRO DRILLS







Tool dia：D0.04-D3.0mm

Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal

Suitable for precision hole machining of soft materials such as engineering plastics and ordinary steel

Work Material																					
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
○	○	○						○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD0040	○	0.040	0.40	3	38
CPD0045	○	0.045	0.45	3	38
CPD0050	○	0.050	0.50	3	38
CPD0055	○	0.055	0.55	3	38
CPD0060	○	0.060	0.60	3	38
CPD0065	○	0.065	0.65	3	38
CPD0070	○	0.070	0.70	3	38
CPD0075	○	0.075	0.75	3	38
CPD0080	○	0.080	0.80	3	38
CPD0085	○	0.085	0.85	3	38
CPD0090	○	0.090	0.90	3	38
CPD0095	○	0.095	0.95	3	38
CPD0100	○	0.10	1.5	3	38
CPD0110	○	0.11	1.5	3	38
CPD0120	○	0.12	2.5	3	38
CPD0130	○	0.13	2.5	3	38
CPD0140	○	0.14	2.5	3	38
CPD0150	○	0.15	2.5	3	38
CPD0160	○	0.16	2.5	3	38
CPD0170	○	0.17	2.5	3	38
CPD0180	○	0.18	2.5	3	38
CPD0190	○	0.19	2.5	3	38
CPD0200	○	0.20	3.5	3	38
CPD0210	○	0.21	3.5	3	38
CPD0220	○	0.22	3.5	3	38
CPD0230	○	0.23	3.5	3	38
CPD0240	○	0.24	3.5	3	38
CPD0250	○	0.25	3.5	3	38
CPD0260	○	0.26	3.5	3	38
CPD0270	○	0.27	3.5	3	38
CPD0280	○	0.28	3.5	3	38
CPD0290	○	0.29	3.5	3	38
CPD0300	○	0.30	5.0	3	38
CPD0310	○	0.31	5.0	3	38
CPD0320	○	0.32	5.0	3	38
CPD0330	○	0.33	5.0	3	38
CPD0340	○	0.34	5.0	3	38
CPD0350	○	0.35	5.0	3	38
CPD0360	○	0.36	5.0	3	38
CPD0370	○	0.37	5.0	3	38
CPD0380	○	0.38	5.0	3	38
CPD0390	○	0.39	5.0	3	38
CPD0400	○	0.40	6.0	3	38
CPD0410	○	0.41	6.0	3	38
CPD0420	○	0.42	6.0	3	38
CPD0430	○	0.43	6.0	3	38
CPD0440	○	0.44	6.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD0450	○	0.45	6.0	3	38
CPD0460	○	0.46	6.0	3	38
CPD0470	○	0.47	6.0	3	38
CPD0480	○	0.48	6.0	3	38
CPD0490	○	0.49	6.0	3	38
CPD0500	○	0.50	6.0	3	38
CPD0510	○	0.51	6.0	3	38
CPD0520	○	0.52	6.0	3	38
CPD0530	○	0.53	6.0	3	38
CPD0540	○	0.54	6.0	3	38
CPD0550	○	0.55	6.0	3	38
CPD0560	○	0.56	6.0	3	38
CPD0570	○	0.57	6.0	3	38
CPD0580	○	0.58	6.0	3	38
CPD0590	○	0.59	6.0	3	38
CPD0600	○	0.60	7.0	3	38
CPD0610	○	0.61	7.0	3	38
CPD0620	○	0.62	7.0	3	38
CPD0630	○	0.63	7.0	3	38
CPD0640	○	0.64	7.0	3	38
CPD0650	○	0.65	7.0	3	38
CPD0660	○	0.66	7.0	3	38
CPD0670	○	0.67	7.0	3	38
CPD0680	○	0.68	7.0	3	38
CPD0690	○	0.69	7.0	3	38
CPD0700	○	0.70	8.0	3	38
CPD0710	○	0.71	8.0	3	38
CPD0720	○	0.72	8.0	3	38
CPD0730	○	0.73	8.0	3	38
CPD0740	○	0.74	8.0	3	38
CPD0750	○	0.75	8.0	3	38
CPD0760	○	0.76	8.0	3	38
CPD0770	○	0.77	8.0	3	38
CPD0780	○	0.78	8.0	3	38
CPD0790	○	0.79	8.0	3	38
CPD0800	○	0.80	8.0	3	38
CPD0810	○	0.81	8.0	3	38
CPD0820	○	0.82	8.0	3	38
CPD0830	○	0.83	8.0	3	38
CPD0840	○	0.84	8.0	3	38
CPD0850	○	0.85	8.0	3	38
CPD0860	○	0.86	8.0	3	38
CPD0870	○	0.87	8.0	3	38
CPD0880	○	0.88	8.0	3	38
CPD0883	○	0.883	8.0	3	38
CPD0885	○	0.885	8.0	3	38
CPD0887	○	0.887	8.0	3	38

CPD- GENERAL PURPOSE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD0888	O	0.888	8.0	3	38
CPD0890	O	0.890	8.0	3	38
CPD0893	O	0.893	8.0	3	38
CPD0895	O	0.895	8.0	3	38
CPD0897	O	0.897	8.0	3	38
CPD0900	O	0.90	8.0	3	38
CPD0910	O	0.91	8.0	3	38
CPD0920	O	0.92	8.0	3	38
CPD0930	O	0.93	8.0	3	38
CPD0940	O	0.94	8.0	3	38
CPD0950	O	0.95	8.0	3	38
CPD0960	O	0.96	8.0	3	38
CPD0970	O	0.97	8.0	3	38
CPD0980	O	0.98	8.0	3	38
CPD0990	O	0.99	8.0	3	38
CPD1000	O	1.00	10.0	3	38
CPD1010	O	1.01	10.0	3	38
CPD1020	O	1.02	10.0	3	38
CPD1030	O	1.030	10.0	3	38
CPD1040	O	1.040	10.0	3	38
CPD1050	O	1.050	10.0	3	38
CPD1060	O	1.060	10.0	3	38
CPD1070	O	1.070	10.0	3	38
CPD1080	O	1.080	10.0	3	38
CPD1083	O	1.083	10.0	3	38
CPD1085	O	1.085	10.0	3	38
CPD1087	O	1.087	10.0	3	38
CPD1088	O	1.088	10.0	3	38
CPD1090	O	1.090	10.0	3	38
CPD1093	O	1.093	10.0	3	38
CPD1095	O	1.095	10.0	3	38
CPD1097	O	1.097	10.0	3	38
CPD1100	O	1.10	10.0	3	38
CPD1110	O	1.11	10.0	3	38
CPD1120	O	1.12	10.0	3	38
CPD1130	O	1.13	10.0	3	38
CPD1140	O	1.14	10.0	3	38
CPD1150	O	1.15	10.0	3	38
CPD1160	O	1.16	10.0	3	38
CPD1170	O	1.17	10.0	3	38
CPD1180	O	1.18	10.0	3	38
CPD1190	O	1.19	10.0	3	38
CPD1200	O	1.20	10.0	3	38
CPD1210	O	1.21	10.0	3	38
CPD1220	O	1.22	10.0	3	38
CPD1230	O	1.23	10.0	3	38
CPD1240	O	1.24	10.0	3	38
CPD1250	O	1.25	10.0	3	38
CPD1255	O	1.255	10.0	3	38
CPD1260	O	1.260	10.0	3	38
CPD1265	O	1.265	10.0	3	38
CPD1270	O	1.270	10.0	3	38
CPD1280	O	1.280	10.0	3	38
CPD1283	O	1.283	10.0	3	38
CPD1285	O	1.285	10.0	3	38
CPD1290	O	1.290	10.0	3	38
CPD1300	O	1.30	10.0	3	38
CPD1310	O	1.31	10.0	3	38
CPD1320	O	1.32	10.0	3	38
CPD1330	O	1.33	10.0	3	38
CPD1340	O	1.34	10.0	3	38
CPD1350	O	1.35	10.0	3	38
CPD1360	O	1.36	10.0	3	38
CPD1370	O	1.37	10.0	3	38
CPD1380	O	1.38	10.0	3	38
CPD1390	O	1.39	10.0	3	38
CPD1400	O	1.40	10.0	3	38
CPD1410	O	1.41	10.0	3	38
CPD1420	O	1.42	10.0	3	38
CPD1430	O	1.43	10.0	3	38
CPD1440	O	1.44	10.0	3	38
CPD1450	O	1.45	10.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD1455	O	1.455	10.0	3	38
CPD1460	O	1.460	10.0	3	38
CPD1470	O	1.470	10.0	3	38
CPD1480	O	1.480	10.0	3	38
CPD1490	O	1.49	10.0	3	38
CPD1500	O	1.50	10.0	3	38
CPD1510	O	1.51	10.0	3	38
CPD1520	O	1.52	10.0	3	38
CPD1530	O	1.53	10.0	3	38
CPD1540	O	1.54	10.0	3	38
CPD1550	O	1.55	10.0	3	38
CPD1560	O	1.56	10.0	3	38
CPD1570	O	1.57	10.0	3	38
CPD1580	O	1.58	10.0	3	38
CPD1590	O	1.59	10.0	3	38
CPD1600	O	1.60	12.0	3	38
CPD1610	O	1.61	12.0	3	38
CPD1620	O	1.62	12.0	3	38
CPD1630	O	1.63	12.0	3	38
CPD1640	O	1.64	12.0	3	38
CPD1650	O	1 65	12.0	3	38
CPD1660	O	1.66	12.0	3	38
CPD1670	O	1.67	12.0	3	38
CPD1680	O	1.68	12.0	3	38
CPD1690	O	1.69	12.0	3	38
CPD1700	O	1.70	12.0	3	38
CPD1710	O	1.71	12.0	3	38
CPD1720	O	1.72	12.0	3	38
CPD1730	O	1.73	12.0	3	38
CPD1740	O	1.74	12.0	3	38
CPD1750	O	1.75	12.0	3	38
CPD1760	O	1.76	12.0	3	38
CPD1770	O	1.77	12.0	3	38
CPD1780	O	1.78	12.0	3	38
CPD1790	O	1.79	12.0	3	38
CPD1800	O	1.80	12.0	3	38
CPD1810	O	1.81	12.0	3	38
CPD1820	O	1.82	12.0	3	38
CPD1830	O	1.83	12.0	3	38
CPD1840	O	1.84	12.0	3	38
CPD1850	O	1.85	12.0	3	38
CPD1860	O	1.86	12.0	3	38
CPD1870	O	1.87	12.0	3	38
CPD1880	O	1.88	12.0	3	38
CPD1890	O	1.89	12.0	3	38
CPD1900	O	1.90	12.0	3	38
CPD1910	O	1.91	12.0	3	38
CPD1920	O	1.92	12.0	3	38
CPD1930	O	1.93	12.0	3	38
CPD1940	O	1.94	12.0	3	38
CPD1950	O	1.95	12.0	3	38
CPD1960	O	1.96	12.0	3	38
CPD1970	O	1.97	12.0	3	38
CPD1980	O	1.98	12.0	3	38
CPD1990	O	1.99	12.0	3	38
CPD2000	O	2.00	12.0	3	38
CPD2010	O	2.01	12.0	3	38
CPD2020	O	2.02	12.0	3	38
CPD2030	O	2.03	12.0	3	38
CPD2040	O	2.04	12.0	3	38
CPD2050	O	2.05	12.0	3	38
CPD2060	O	2.06	12.0	3	38
CPD2070	O	2.07	12.0	3	38
CPD2080	O	2.08	12.0	3	38
CPD2090	O	2.09	12.0	3	38
CPD2100	O	2.10	12.0	3	38
CPD2110	O	2.11	12.0	3	38
CPD2120	O	2.12	12.0	3	38
CPD2130	O	2.13	12.0	3	38
CPD2140	O	2.14	12.0	3	38
CPD2150	O	2.15	12.0	3	38
CPD2160	O	2.16	12.0	3	38

CPD- GENERAL PURPOSE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD2170	O	2.17	12.0	3	38
CPD2180	O	2.18	12.0	3	38
CPD2190	O	2.19	12.0	3	38
CPD2200	O	2.20	12.0	3	38
CPD2210	O	2.21	12.0	3	38
CPD2220	O	2.22	12.0	3	38
CPD2230	O	2.23	12.0	3	38
CPD2240	O	2.24	12.0	3	38
CPD2250	O	2.25	12.0	3	38
CPD2260	O	2.26	12.0	3	38
CPD2270	O	2.27	12.0	3	38
CPD2280	O	2.28	12.0	3	38
CPD2290	O	2.29	12.0	3	38
CPD2300	O	2.30	12.0	3	38
CPD2310	O	2.31	12.0	3	38
CPD2320	O	2.32	12.0	3	38
CPD2330	O	2.33	12.0	3	38
CPD2340	O	2.34	12.0	3	38
CPD2350	O	2.35	12.0	3	38
CPD2360	O	2.36	12.0	3	38
CPD2370	O	2.37	12.0	3	38
CPD2380	O	2.38	12.0	3	38
CPD2390	O	2.39	12.0	3	38
CPD2400	O	2.40	12.0	3	38
CPD2410	O	2.41	12.0	3	38
CPD2420	O	2.42	12.0	3	38
CPD2430	O	2.43	12.0	3	38
CPD2440	O	2.44	12.0	3	38
CPD2450	O	2.45	12.0	3	38
CPD2460	O	2.46	12.0	3	38
CPD2470	O	2.47	12.0	3	38
CPD2480	O	2.48	12.0	3	38
CPD2490	O	2.49	12.0	3	38
CPD2500	O	2.50	12.0	3	38
CPD2510	O	2.51	12.0	3	38
CPD2520	O	2.52	12.0	3	38
CPD2530	O	2.53	12.0	3	38
CPD2540	O	2.54	12.0	3	38
CPD2550	O	2.55	12.0	3	38
CPD2560	O	2.56	12.0	3	38
CPD2570	O	2.57	12.0	3	38
CPD2580	O	2.58	12.0	3	38
CPD2590	O	2.59	12.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPD2600	O	2.60	12.0	3	38
CPD2610	O	2.61	12.0	3	38
CPD2620	O	2.62	12.0	3	38
CPD2630	O	2.63	12.0	3	38
CPD2640	O	2.64	12.0	3	38
CPD2650	O	2.65	12.0	3	38
CPD2660	O	2.66	12.0	3	38
CPD2670	O	2.67	12.0	3	38
CPD2680	O	2.68	12.0	3	38
CPD2690	O	2.69	12.0	3	38
CPD2700	O	2.70	12.0	3	38
CPD2710	O	2.71	12.0	3	38
CPD2720	O	2.72	12.0	3	38
CPD2730	O	2.73	12.0	3	38
CPD2740	O	2.74	12.0	3	38
CPD2750	O	2.75	12.0	3	38
CPD2760	O	2.76	12.0	3	38
CPD2770	O	2.77	12.0	3	38
CPD2780	O	2.78	12.0	3	38
CPD2785	O	2.785	12.0	3	38
CPD2790	O	2.79	12.0	3	38
CPD2800	O	2.80	12.0	3	38
CPD2810	O	2.81	12.0	3	38
CPD2820	O	2.82	12.0	3	38
CPD2830	O	2.83	12.0	3	38
CPD2840	O	2.84	12.0	3	38
CPD2850	O	2.85	12.0	3	38
CPD2860	O	2.86	12.0	3	38
CPD2870	O	2.87	12.0	3	38
CPD2880	O	2.88	12.0	3	38
CPD2890	O	2.89	12.0	3	38
CPD2900	O	2.90	12.0	3	38
CPD2910	O	2.91	12.0	3	38
CPD2920	O	2.92	12.0	3	38
CPD2930	O	2.93	12.0	3	38
CPD2940	O	2.94	12.0	3	38
CPD2950	O	2.95	12.0	3	38
CPD2960	O	2.96	12.0	3	38
CPD2970	O	2.97	12.0	3	38
CPD2980	O	2.98	12.0	3	38
CPD2990	O	2.99	12.0	3	38
CPD3000	O	3.00	12.0	3	38

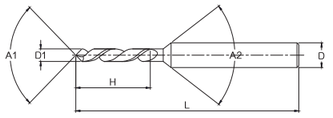
Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Aluminum Alloy			Copper Alloy			Plastics Resin		
Drill Dia. mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm
0.04-0.09	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 20	0.001	10000~ 20000	5~ 20	0.0005~ 0.001	10000~ 30000	10~ 90	0.001~ 0.003	10000~ 20000	20~ 100	0.002~ 0.005	10000~ 20000	10~ 60	0.001~ 0.003
0.1-0.29	19000~ 13000	38~ 130	0.002~ 0.01	16000~ 11000	22~ 75	0.0014~ 0.007	13000~ 8800	13~ 35	0.001~ 0.004	10000~ 5000	5	0.0005~ 0.001	22200~ 16500	110~ 330	0.005~ 0.02	16000~ 11000	32~ 88	0.002~ 0.008	20000~ 15000	100~ 150	0.005~ 0.01
0.3-0.49	13000~ 12000	130~ 240	0.01~ 0.02	11000~ 9700	75~ 95	0.007~ 0.01	8800~ 6500	26~ 32	0.003~ 0.005	5000~ 4500	5~ 22	0.001~ 0.005	16500~ 13000	330~ 520	0.02~ 0.04	11000~ 11500	88~ 170	0.008~ 0.015	15000	150~ 300	0.01~ 0.02
0.5-0.99	12000~ 9600	240~ 380	0.02~ 0.04	9700~ 6400	95~ 128	0.01~ 0.02	6500~ 4800	32~ 48	0.005~ 0.01	4500~ 3200	22~ 32	0.005~ 0.01	13000~ 12700	520~ 760	0.04~ 0.06	11500~ 9600	170~ 380	0.015~ 0.04	15000~ 10000	150~ 400	0.02~ 0.04
1.0-1.99	9600~ 6400	290~ 380	0.03~ 0.06	6400~ 4000	128~ 200	0.02~ 0.05	3100~ 2400	31~ 72	0.01~ 0.03	3200~ 2400	32~ 72	0.01~ 0.03	12700~ 6400	760	0.06~ 0.12	9600~ 4800	380	0.04~ 0.08	10000~ 6000	500	0.05~ 0.07
2.0-3.0	6400~ 4200	440	0.07~ 0.1	4000~ 3200	200~ 260	0.05~ 0.08	2400~ 1600	48~ 64	0.02~ 0.04	2400~ 1800	72~ 90	0.03~ 0.05	6400~ 5300	760~ 1060	0.12~ 0.2	4800~ 4200	380~ 630	0.08~ 0.15	6000~ 5000	500	0.07~ 0.1

CPDL- GENERAL PURPOSE LONG FLUTE MICRO DRILLS







Tool dia：D0.04-D3.0mm

Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal

Suitable for precision hole machining of soft materials such as engineering plastics and ordinary steel

Work Material																		
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel				Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
			Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC													
○	○	○					○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL0040	○	0.040	0.6	3	38
CPDL0045	○	0.045	0.7	3	38
CPDL0050	○	0.050	0.9	3	38
CPDL0055	○	0.055	0.9	3	38
CPDL0060	○	0.060	0.9	3	38
CPDL0065	○	0.065	0.9	3	38
CPDL0070	○	0.070	1.2	3	38
CPDL0075	○	0.075	1.2	3	38
CPDL0080	○	0.080	1.2	3	38
CPDL0085	○	0.085	1.2	3	38
CPDL0090	○	0.090	1.2	3	38
CPDL0095	○	0.095	1.2	3	38
CPDL0100	○	0.10	2.0	3	38
CPDL0110	○	0.11	2.0	3	38
CPDL0120	○	0.12	2.0	3	38
CPDL0130	○	0.13	3.0	3	38
CPDL0140	○	0.14	3.0	3	38
CPDL0150	○	0.15	3.0	3	38
CPDL0160	○	0.16	4.0	3	38
CPDL0170	○	0.17	4.0	3	38
CPDL0180	○	0.18	4.0	3	38
CPDL0190	○	0.19	4.0	3	38
CPDL0200	○	0.20	4.0	3	38
CPDL0210	○	0.21	5.0	3	38
CPDL0220	○	0.22	5.0	3	38
CPDL0230	○	0.23	5.0	3	38
CPDL0240	○	0.24	5.0	3	38
CPDL0250	○	0.25	5.0	3	38
CPDL0260	○	0.26	6.0	3	38
CPDL0270	○	0.27	6.0	3	38
CPDL0280	○	0.28	6.0	3	38
CPDL0290	○	0.29	6.0	3	38
CPDL0300	○	0.30	6.0	3	38
CPDL0310	○	0.31	6.0	3	38
CPDL0320	○	0.32	6.0	3	38
CPDL0330	○	0.33	6.0	3	38
CPDL0340	○	0.34	6.0	3	38
CPDL0350	○	0.35	6.0	3	38
CPDL0360	○	0.36	6.0	3	38
CPDL0370	○	0.37	6.0	3	38
CPDL0380	○	0.38	6.0	3	38
CPDL0390	○	0.39	6.0	3	38
CPDL0400	○	0.40	6.0	3	38
CPDL0410	○	0.41	7.0	3	38
CPDL0420	○	0.42	7.0	3	38
CPDL0430	○	0.43	7.0	3	38
CPDL0440	○	0.44	7.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL0450	○	0.45	7.0	3	38
CPDL0460	○	0.46	7.0	3	38
CPDL0470	○	0.47	7.0	3	38
CPDL0480	○	0.48	7.0	3	38
CPDL0490	○	0.49	7.0	3	38
CPDL0500	○	0.50	7.0	3	38
CPDL0510	○	0.51	9.0	3	38
CPDL0520	○	0.52	9.0	3	38
CPDL0530	○	0.53	9.0	3	38
CPDL0540	○	0.54	9.0	3	38
CPDL0550	○	0.55	9.0	3	38
CPDL0560	○	0.56	9.0	3	38
CPDL0570	○	0.57	9.0	3	38
CPDL0580	○	0.58	9.0	3	38
CPDL0590	○	0.59	9.0	3	38
CPDL0600	○	0.60	9.0	3	38
CPDL0610	○	0.61	9.0	3	38
CPDL0620	○	0.62	9.0	3	38
CPDL0630	○	0.63	9.0	3	38
CPDL0640	○	0.64	9.0	3	38
CPDL0650	○	0.65	9.0	3	38
CPDL0660	○	0.66	9.0	3	38
CPDL0670	○	0.67	9.0	3	38
CPDL0680	○	0.68	9.0	3	38
CPDL0690	○	0.69	9.0	3	38
CPDL0700	○	0.7	9.0	3	38
CPDL0710	○	0.71	10.0	3	38
CPDL0720	○	0.72	10.0	3	38
CPDL0730	○	0.73	10.0	3	38
CPDL0740	○	0.74	10.0	3	38
CPDL0750	○	0.75	10.0	3	38
CPDL0760	○	0.76	10.0	3	38
CPDL0770	○	0.77	10.0	3	38
CPDL0780	○	0.78	10.0	3	38
CPDL0790	○	0.79	10.0	3	38
CPDL0800	○	0.80	10.0	3	38
CPDL0810	○	0.81	10.0	3	38
CPDL0820	○	0.82	10.0	3	38
CPDL0830	○	0.83	10.0	3	38
CPDL0840	○	0.84	10.0	3	38
CPDL0850	○	0.85	10.0	3	38
CPDL0860	○	0.86	10.0	3	38
CPDL0870	○	0.87	10.0	3	38
CPDL0880	○	0.88	10.0	3	38
CPDL0890	○	0.89	10.0	3	38
CPDL0900	○	0.9	10.0	3	38
CPDL0910	○	0.91	10.0	3	38

WERNER

CPDL- GENERAL PURPOSE LONG FLUTE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL0920	○	0.92	10.0	3	38
CPDL0930	○	0.93	10.0	3	38
CPDL0940	○	0.94	10.0	3	38
CPDL0950	○	0.95	10.0	3	38
CPDL0960	○	0.96	10.0	3	38
CPDL0970	○	0.97	10.0	3	38
CPDL0980	○	0.98	10.0	3	38
CPDL0990	○	0.99	10.0	3	38
CPDL1000	○	1.0	12.0	3	50
CPDL1010	○	1.01	12.0	3	50
CPDL1020	○	1.02	12.0	3	50
CPDL1030	○	1.03	12.0	3	50
CPDL1040	○	1.04	12.0	3	50
CPDL1050	○	1.05	12.0	3	50
CPDL1060	○	1.06	12.0	3	50
CPDL1070	○	1.07	12.0	3	50
CPDL1080	○	1.08	12.0	3	50
CPDL1090	○	1.09	12.0	3	50
CPDL1100	○	1.1	12.0	3	50
CPDL1110	○	1.11	12.0	3	50
CPDL1120	○	1.12	12.0	3	50
CPDL1130	○	1.13	12.0	3	50
CPDL1140	○	1.14	12.0	3	50
CPDL1150	○	1.15	12.0	3	50
CPDL1160	○	1.16	12.0	3	50
CPDL1170	○	1.17	12.0	3	50
CPDL1180	○	1.18	12.0	3	50
CPDL1190	○	1.19	12.0	3	50
CPDL1200	○	1.2	15.0	3	50
CPDL1210	○	1.21	15.0	3	50
CPDL1220	○	1.22	15.0	3	50
CPDL1230	○	1.23	15.0	3	50
CPDL1240	○	1.24	15.0	3	50
CPDL1250	○	1.25	15.0	3	50
CPDL1260	○	1.26	15.0	3	50
CPDL1270	○	1.27	15.0	3	50
CPDL1280	○	1.28	15.0	3	50
CPDL1290	○	1.29	15.0	3	50
CPDL1300	○	1.3	15.0	3	50
CPDL1310	○	1.31	15.0	3	50
CPDL1320	○	1.32	15.0	3	50
CPDL1330	○	1.33	15.0	3	50
CPDL1340	○	1.34	15.0	3	50
CPDL1350	○	1.35	15.0	3	50
CPDL1360	○	1.36	15.0	3	50
CPDL1370	○	1.37	15.0	3	50
CPDL1380	○	1.38	15.0	3	50
CPDL1390	○	1.39	15.0	3	50
CPDL1400	○	1.4	15.0	3	50
CPDL1410	○	1.41	15.0	3	50
CPDL1420	○	1.42	15.0	3	50
CPDL1430	○	1.43	15.0	3	50
CPDL1440	○	1.44	15.0	3	50
CPDL1450	○	1.45	15.0	3	50
CPDL1460	○	1.46	15.0	3	50
CPDL1470	○	1.47	15.0	3	50
CPDL1480	○	1.48	15.0	3	50
CPDL1490	○	1.49	15.0	3	50
CPDL1500	○	1.5	20.0	3	50
CPDL1510	○	1.51	20.0	3	50
CPDL1520	○	1.52	20.0	3	50
CPDL1530	○	1.53	20.0	3	50
CPDL1540	○	1.54	20.0	3	50
CPDL1550	○	1.55	20.0	3	50
CPDL1560	○	1.56	20.0	3	50
CPDL1570	○	1.57	20.0	3	50
CPDL1580	○	1.58	20.0	3	50
CPDL1590	○	1.59	20.0	3	50
CPDL1600	○	1.6	20.0	3	50
CPDL1610	○	1.61	20.0	3	50
CPDL1620	○	1.62	20.0	3	50
CPDL1630	○	1.63	20.0	3	50

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL1640	○	1.64	20.0	3	50
CPDL1650	○	1 65	20.0	3	50
CPDL1660	○	1.66	20.0	3	50
CPDL1670	○	1.67	20.0	3	50
CPDL1680	○	1.68	20.0	3	50
CPDL1690	○	1.69	20.0	3	50
CPDL1700	○	1.70	20.0	3	50
CPDL1710	○	1.71	20.0	3	50
CPDL1720	○	1.72	20.0	3	50
CPDL1730	○	1.73	20.0	3	50
CPDL1740	○	1.74	20.0	3	50
CPDL1750	○	1.75	20.0	3	50
CPDL1760	○	1.76	20.0	3	50
CPDL1770	○	1.77	20.0	3	50
CPDL1780	○	1.78	20.0	3	50
CPDL1790	○	1.79	20.0	3	50
CPDL1800	○	1.80	20.0	3	50
CPDL1810	○	1.81	20.0	3	50
CPDL1820	○	1.82	20.0	3	50
CPDL1830	○	1.83	20.0	3	50
CPDL1840	○	1.84	20.0	3	50
CPDL1850	○	1.85	20.0	3	50
CPDL1860	○	1.86	20.0	3	50
CPDL1870	○	1.87	20.0	3	50
CPDL1880	○	1.88	20.0	3	50
CPDL1890	○	1.89	20.0	3	50
CPDL1900	○	1.90	20.0	3	50
CPDL1910	○	1.91	20.0	3	50
CPDL1920	○	1.92	20.0	3	50
CPDL1930	○	1.93	20.0	3	50
CPDL1940	○	1.94	20.0	3	50
CPDL1950	○	1.95	20.0	3	50
CPDL1960	○	1.96	20.0	3	50
CPDL1970	○	1.97	20.0	3	50
CPDL1980	○	1.98	20.0	3	50
CPDL1990	○	1.99	20.0	3	50
CPDL2000	○	2.00	20.0	3	50
CPDL2010	○	2.01	25.0	3	60
CPDL2020	○	2.02	25.0	3	60
CPDL2030	○	2.03	25.0	3	60
CPDL2040	○	2.04	25.0	3	60
CPDL2050	○	2.05	25.0	3	60
CPDL2060	○	2.06	25.0	3	60
CPDL2070	○	2.07	25.0	3	60
CPDL2080	○	2.08	25.0	3	60
CPDL2090	○	2.09	25.0	3	60
CPDL2100	○	2.10	25.0	3	60
CPDL2110	○	2.11	25.0	3	60
CPDL2120	○	2.12	25.0	3	60
CPDL2130	○	2.13	25.0	3	60
CPDL2140	○	2.14	25.0	3	60
CPDL2150	○	2.15	25.0	3	60
CPDL2160	○	2.16	25.0	3	60
CPDL2170	○	2.17	25.0	3	60
CPDL2180	○	2.18	25.0	3	60
CPDL2190	○	2.19	25.0	3	60
CPDL2200	○	2.20	25.0	3	60
CPDL2210	○	2.21	25.0	3	60
CPDL2220	○	2.22	25.0	3	60
CPDL2230	○	2.23	25.0	3	60
CPDL2240	○	2.24	25.0	3	60
CPDL2250	○	2.25	25.0	3	60
CPDL2260	○	2.26	25.0	3	60
CPDL2270	○	2.27	25.0	3	60
CPDL2280	○	2.28	25.0	3	60
CPDL2290	○	2.29	25.0	3	60
CPDL2300	○	2.30	25.0	3	60
CPDL2310	○	2.31	25.0	3	60
CPDL2320	○	2.32	25.0	3	60
CPDL2330	○	2.33	25.0	3	60
CPDL2340	○	2.34	25.0	3	60
CPDL2350	○	2.35	25.0	3	60

CPDL- GENERAL PURPOSE LONG FLUTE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL2360	O	2.36	25.0	3	60
CPDL2370	O	2.37	25.0	3	60
CPDL2380	O	2.38	25.0	3	60
CPDL2390	O	2.39	25.0	3	60
CPDL2400	O	2.40	25.0	3	60
CPDL2410	O	2.41	25.0	3	60
CPDL2420	O	2.42	25.0	3	60
CPDL2430	O	2.43	25.0	3	60
CPDL2440	O	2.44	25.0	3	60
CPDL2450	O	2.45	25.0	3	60
CPDL2460	O	2.46	25.0	3	60
CPDL2470	O	2.47	25.0	3	60
CPDL2480	O	2.48	25.0	3	60
CPDL2490	O	2.49	25.0	3	60
CPDL2500	O	2.50	25.0	3	60
CPDL2510	O	2.51	25.0	3	60
CPDL2520	O	2.52	25.0	3	60
CPDL2530	O	2.53	25.0	3	60
CPDL2540	O	2.54	25.0	3	60
CPDL2550	O	2.55	25.0	3	60
CPDL2560	O	2.56	25.0	3	60
CPDL2570	O	2.57	25.0	3	60
CPDL2580	O	2.58	25.0	3	60
CPDL2590	O	2.59	25.0	3	60
CPDL2600	O	2.60	25.0	3	60
CPDL2610	O	2.61	25.0	3	60
CPDL2620	O	2.62	25.0	3	60
CPDL2630	O	2.63	25.0	3	60
CPDL2640	O	2.64	25.0	3	60
CPDL2650	O	2.65	25.0	3	60
CPDL2660	O	2.66	25.0	3	60
CPDL2670	O	2.67	25.0	3	60
CPDL2680	O	2.68	25.0	3	60

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CPDL2690	O	2.69	25.0	3	60
CPDL2700	O	2.70	25.0	3	60
CPDL2710	O	2.71	25.0	3	60
CPDL2720	O	2.72	25.0	3	60
CPDL2730	O	2.73	25.0	3	60
CPDL2740	O	2.74	25.0	3	60
CPDL2750	O	2.75	25.0	3	60
CPDL2760	O	2.76	25.0	3	60
CPDL2770	O	2.77	25.0	3	60
CPDL2780	O	2.78	25.0	3	60
CPDL2790	O	2.79	25.0	3	60
CPDL2800	O	2.80	25.0	3	60
CPDL2810	O	2.81	25.0	3	60
CPDL2820	O	2.82	25.0	3	60
CPDL2830	O	2.83	25.0	3	60
CPDL2840	O	2.84	25.0	3	60
CPDL2850	O	2.85	25.0	3	60
CPDL2860	O	2.86	25.0	3	60
CPDL2870	O	2.87	25.0	3	60
CPDL2880	O	2.88	25.0	3	60
CPDL2890	O	2.89	25.0	3	60
CPDL2900	O	2.90	25.0	3	60
CPDL2910	O	2.91	25.0	3	60
CPDL2920	O	2.92	25.0	3	60
CPDL2930	O	2.93	25.0	3	60
CPDL2940	O	2.94	25.0	3	60
CPDL2950	O	2.95	25.0	3	60
CPDL2960	O	2.96	25.0	3	60
CPDL2970	O	2.97	25.0	3	60
CPDL2980	O	2.98	25.0	3	60
CPDL2990	O	2.99	25.0	3	60
CPDL3000	O	3.00	25.0	3	60

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Aluminum Alloy			Copper Alloy			Plastics Resin		
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm
0.04-0.09	10000~20000	10~30	0.001~0.0015	10000~20000	10~30	0.001~0.0015	10000~20000	10~20	0.001	10000~20000	5~20	0.0005~0.001	10000~30000	10~90	0.001~0.003	10000~20000	20~100	0.002~0.005	10000~20000	10~60	0.001~0.003
0.1-0.29	19000~13000	38~130	0.002~0.01	16000~11000	22~75	0.0014~0.007	13000~8800	13~35	0.001~0.004	10000~5000	5	0.0005~0.001	22200~16500	110~330	0.005~0.02	16000~11000	32~88	0.002~0.008	20000~15000	100~150	0.005~0.01
0.3-0.49	13000~12000	130~240	0.01~0.02	11000~9700	75~95	0.007~0.01	8800~6500	26~32	0.003~0.005	5000~4500	5~22	0.001~0.005	16500~13000	330~520	0.02~0.04	11000~11500	88~170	0.008~0.015	15000	150~300	0.01~0.02
0.5-0.99	12000~9600	240~380	0.02~0.04	9700~6400	95~128	0.01~0.02	6500~4800	32~48	0.005~0.01	4500~3200	22~32	0.005~0.01	13000~12700	520~760	0.04~0.06	11500~9600	170~380	0.015~0.04	15000~10000	150~400	0.02~0.04
1.0-1.99	9600~6400	290~380	0.03~0.06	6400~4000	128~200	0.02~0.05	3100~2400	31~72	0.01~0.03	3200~2400	32~72	0.01~0.03	12700~6400	760	0.06~0.12	9600~4800	380	0.04~0.08	10000~6000	500	0.05~0.07
2.0-3.0	6400~4200	440	0.07~0.1	4000~3200	200~260	0.05~0.08	2400~1600	48~64	0.02~0.04	2400~1800	72~90	0.03~0.05	6400~5300	760~1060	0.12~0.2	4800~4200	380~630	0.08~0.15	6000~5000	500	0.07~0.1

CDD- DLC COATING MICRO DRILLS



Tool dia：D0.04-D3.0mm

Dia tolerance：0,-0.003mm

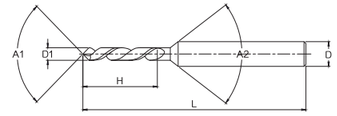
Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal

Suitable for precision hole machining of soft materials such as engineering plastics and ordinary steel

DLC Coating, Increase chip removal effect





Work Material																							
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
○	○	○						○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD0040	O	0.040	0.40	3	38
CDD0045	O	0.045	0.45	3	38
CDD0050	O	0.050	0.50	3	38
CDD0055	O	0.055	0.55	3	38
CDD0060	O	0.060	0.60	3	38
CDD0065	O	0.065	0.65	3	38
CDD0070	O	0.070	0.70	3	38
CDD0075	O	0.075	0.75	3	38
CDD0080	O	0.080	0.80	3	38
CDD0085	O	0.085	0.85	3	38
CDD0090	O	0.090	0.90	3	38
CDD0095	O	0.095	0.95	3	38
CDD0100	O	0.10	1.5	3	38
CDD0110	O	0.11	1.5	3	38
CDD0120	O	0.12	2.5	3	38
CDD0130	O	0.13	2.5	3	38
CDD0140	O	0.14	2.5	3	38
CDD0150	O	0.15	2.5	3	38
CDD0160	O	0.16	2.5	3	38
CDD0170	O	0.17	2.5	3	38
CDD0180	O	0.18	2.5	3	38
CDD0190	O	0.19	2.5	3	38
CDD0200	O	0.20	3.5	3	38
CDD0210	O	0.21	3.5	3	38
CDD0220	O	0.22	3.5	3	38
CDD0230	O	0.23	3.5	3	38
CDD0240	O	0.24	3.5	3	38
CDD0250	O	0.25	3.5	3	38
CDD0260	O	0.26	3.5	3	38
CDD0270	O	0.27	3.5	3	38
CDD0280	O	0.28	3.5	3	38
CDD0290	O	0.29	3.5	3	38
CDD0300	O	0.30	5.0	3	38
CDD0310	O	0.31	5.0	3	38
CDD0320	O	0.32	5.0	3	38
CDD0330	O	0.33	5.0	3	38
CDD0340	O	0.34	5.0	3	38
CDD0350	O	0.35	5.0	3	38
CDD0360	O	0.36	5.0	3	38
CDD0370	O	0.37	5.0	3	38
CDD0380	O	0.38	5.0	3	38
CDD0390	O	0.39	5.0	3	38
CDD0400	O	0.40	6.0	3	38
CDD0410	O	0.41	6.0	3	38
CDD0420	O	0.42	6.0	3	38
CDD0430	O	0.43	6.0	3	38
CDD0440	O	0.44	6.0	3	38

型号 Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD0450	O	0.45	6.0	3	38
CDD0460	O	0.46	6.0	3	38
CDD0470	O	0.47	6.0	3	38
CDD0480	O	0.48	6.0	3	38
CDD0490	O	0.49	6.0	3	38
CDD0500	O	0.50	6.0	3	38
CDD0510	O	0.51	6.0	3	38
CDD0520	O	0.52	6.0	3	38
CDD0530	O	0.53	6.0	3	38
CDD0540	O	0.54	6.0	3	38
CDD0550	O	0.55	6.0	3	38
CDD0560	O	0.56	6.0	3	38
CDD0570	O	0.57	6.0	3	38
CDD0580	O	0.58	6.0	3	38
CDD0590	O	0.59	6.0	3	38
CDD0600	O	0.60	7.0	3	38
CDD0610	O	0.61	7.0	3	38
CDD0620	O	0.62	7.0	3	38
CDD0630	O	0.63	7.0	3	38
CDD0640	O	0.64	7.0	3	38
CDD0650	O	0.65	7.0	3	38
CDD0660	O	0.66	7.0	3	38
CDD0670	O	0.67	7.0	3	38
CDD0680	O	0.68	7.0	3	38
CDD0690	O	0.69	7.0	3	38
CDD0700	O	0.70	8.0	3	38
CDD0710	O	0.71	8.0	3	38
CDD0720	O	0.72	8.0	3	38
CDD0730	O	0.73	8.0	3	38
CDD0740	O	0.74	8.0	3	38
CDD0750	O	0.75	8.0	3	38
CDD0760	O	0.76	8.0	3	38
CDD0770	O	0.77	8.0	3	38
CDD0780	O	0.78	8.0	3	38
CDD0790	O	0.79	8.0	3	38
CDD0800	O	0.80	8.0	3	38
CDD0810	O	0.81	8.0	3	38
CDD0820	O	0.82	8.0	3	38
CDD0830	O	0.83	8.0	3	38
CDD0840	O	0.84	8.0	3	38
CDD0850	O	0.85	8.0	3	38
CDD0860	O	0.86	8.0	3	38
CDD0870	O	0.87	8.0	3	38
CDD0880	O	0.88	8.0	3	38
CDD0883	O	0.883	8.0	3	38
CDD0885	O	0.885	8.0	3	38
CDD0887	O	0.887	8.0	3	38

CDD- DLC COATING MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD0888	O	0.888	8.0	3	38
CDD0890	O	0.890	8.0	3	38
CDD0893	O	0.893	8.0	3	38
CDD0895	O	0.895	8.0	3	38
CDD0897	O	0.897	8.0	3	38
CDD0900	O	0.90	8.0	3	38
CDD0910	O	0.91	8.0	3	38
CDD0920	O	0.92	8.0	3	38
CDD0930	O	0.93	8.0	3	38
CDD0940	O	0.94	8.0	3	38
CDD0950	O	0.95	8.0	3	38
CDD0960	O	0.96	8.0	3	38
CDD0970	O	0.97	8.0	3	38
CDD0980	O	0.98	8.0	3	38
CDD0990	O	0.99	8.0	3	38
CDD1000	O	1.00	10.0	3	38
CDD1010	O	1.01	10.0	3	38
CDD1020	O	1.02	10.0	3	38
CDD1030	O	1.030	10.0	3	38
CDD1040	O	1.040	10.0	3	38
CDD1050	O	1.050	10.0	3	38
CDD1060	O	1.060	10.0	3	38
CDD1070	O	1.070	10.0	3	38
CDD1080	O	1.080	10.0	3	38
CDD1083	O	1.083	10.0	3	38
CDD1085	O	1.085	10.0	3	38
CDD1087	O	1.087	10.0	3	38
CDD1088	O	1.088	10.0	3	38
CDD1090	O	1.090	10.0	3	38
CDD1093	O	1.093	10.0	3	38
CDD1095	O	1.095	10.0	3	38
CDD1097	O	1.097	10.0	3	38
CDD1100	O	1.10	10.0	3	38
CDD1110	O	1.11	10.0	3	38
CDD1120	O	1.12	10.0	3	38
CDD1130	O	1.13	10.0	3	38
CDD1140	O	1.14	10.0	3	38
CDD1150	O	1.15	10.0	3	38
CDD1160	O	1.16	10.0	3	38
CDD1170	O	1.17	10.0	3	38
CDD1180	O	1.18	10.0	3	38
CDD1190	O	1.19	10.0	3	38
CDD1200	O	1.20	10.0	3	38
CDD1210	O	1.21	10.0	3	38
CDD1220	O	1.22	10.0	3	38
CDD1230	O	1.23	10.0	3	38
CDD1240	O	1.24	10.0	3	38
CDD1250	O	1.25	10.0	3	38
CDD1255	O	1.255	10.0	3	38
CDD1260	O	1.260	10.0	3	38
CDD1265	O	1.265	10.0	3	38
CDD1270	O	1.270	10.0	3	38
CDD1280	O	1.280	10.0	3	38
CDD1283	O	1.283	10.0	3	38
CDD1285	O	1.285	10.0	3	38
CDD1290	O	1.290	10.0	3	38
CDD1300	O	1.30	10.0	3	38
CDD1310	O	1.31	10.0	3	38
CDD1320	O	1.32	10.0	3	38
CDD1330	O	1.33	10.0	3	38
CDD1340	O	1.34	10.0	3	38
CDD1350	O	1.35	10.0	3	38
CDD1360	O	1.36	10.0	3	38
CDD1370	O	1.37	10.0	3	38
CDD1380	O	1.38	10.0	3	38
CDD1390	O	1.39	10.0	3	38
CDD1400	O	1.40	10.0	3	38
CDD1410	O	1.41	10.0	3	38
CDD1420	O	1.42	10.0	3	38
CDD1430	O	1.43	10.0	3	38
CDD1440	O	1.44	10.0	3	38
CDD1450	O	1.45	10.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD1455	O	1.455	10.0	3	38
CDD1460	O	1.460	10.0	3	38
CDD1470	O	1.470	10.0	3	38
CDD1480	O	1.480	10.0	3	38
CDD1490	O	1.49	10.0	3	38
CDD1500	O	1.50	10.0	3	38
CDD1510	O	1.51	10.0	3	38
CDD1520	O	1.52	10.0	3	38
CDD1530	O	1.53	10.0	3	38
CDD1540	O	1.54	10.0	3	38
CDD1550	O	1.55	10.0	3	38
CDD1560	O	1.56	10.0	3	38
CDD1570	O	1.57	10.0	3	38
CDD1580	O	1.58	10.0	3	38
CDD1590	O	1.59	10.0	3	38
CDD1600	O	1.60	12.0	3	38
CDD1610	O	1.61	12.0	3	38
CDD1620	O	1.62	12.0	3	38
CDD1630	O	1.63	12.0	3	38
CDD1640	O	1.64	12.0	3	38
CDD1650	O	1 65	12.0	3	38
CDD1660	O	1.66	12.0	3	38
CDD1670	O	1.67	12.0	3	38
CDD1680	O	1.68	12.0	3	38
CDD1690	O	1.69	12.0	3	38
CDD1700	O	1.70	12.0	3	38
CDD1710	O	1.71	12.0	3	38
CDD1720	O	1.72	12.0	3	38
CDD1730	O	1.73	12.0	3	38
CDD1740	O	1.74	12.0	3	38
CDD1750	O	1.75	12.0	3	38
CDD1760	O	1.76	12.0	3	38
CDD1770	O	1.77	12.0	3	38
CDD1780	O	1.78	12.0	3	38
CDD1790	O	1.79	12.0	3	38
CDD1800	O	1.80	12.0	3	38
CDD1810	O	1.81	12.0	3	38
CDD1820	O	1.82	12.0	3	38
CDD1830	O	1.83	12.0	3	38
CDD1840	O	1.84	12.0	3	38
CDD1850	O	1.85	12.0	3	38
CDD1860	O	1.86	12.0	3	38
CDD1870	O	1.87	12.0	3	38
CDD1880	O	1.88	12.0	3	38
CDD1890	O	1.89	12.0	3	38
CDD1900	O	1.90	12.0	3	38
CDD1910	O	1.91	12.0	3	38
CDD1920	O	1.92	12.0	3	38
CDD1930	O	1.93	12.0	3	38
CDD1940	O	1.94	12.0	3	38
CDD1950	O	1.95	12.0	3	38
CDD1960	O	1.96	12.0	3	38
CDD1970	O	1.97	12.0	3	38
CDD1980	O	1.98	12.0	3	38
CDD1990	O	1.99	12.0	3	38
CDD2000	O	2.00	12.0	3	38
CDD2010	O	2.01	12.0	3	38
CDD2020	O	2.02	12.0	3	38
CDD2030	O	2.03	12.0	3	38
CDD2040	O	2.04	12.0	3	38
CDD2050	O	2.05	12.0	3	38
CDD2060	O	2.06	12.0	3	38
CDD2070	O	2.07	12.0	3	38
CDD2080	O	2.08	12.0	3	38
CDD2090	O	2.09	12.0	3	38
CDD2100	O	2.10	12.0	3	38
CDD2110	O	2.11	12.0	3	38
CDD2120	O	2.12	12.0	3	38
CDD2130	O	2.13	12.0	3	38
CDD2140	O	2.14	12.0	3	38
CDD2150	O	2.15	12.0	3	38
CDD2160	O	2.16	12.0	3	38

WERNER

CDD- DLC COATING MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD2170	O	2.17	12.0	3	38
CDD2180	O	2.18	12.0	3	38
CDD2190	O	2.19	12.0	3	38
CDD2200	O	2.20	12.0	3	38
CDD2210	O	2.21	12.0	3	38
CDD2220	O	2.22	12.0	3	38
CDD2230	O	2.23	12.0	3	38
CDD2240	O	2.24	12.0	3	38
CDD2250	O	2.25	12.0	3	38
CDD2260	O	2.26	12.0	3	38
CDD2270	O	2.27	12.0	3	38
CDD2280	O	2.28	12.0	3	38
CDD2290	O	2.29	12.0	3	38
CDD2300	O	2.30	12.0	3	38
CDD2310	O	2.31	12.0	3	38
CDD2320	O	2.32	12.0	3	38
CDD2330	O	2.33	12.0	3	38
CDD2340	O	2.34	12.0	3	38
CDD2350	O	2.35	12.0	3	38
CDD2360	O	2.36	12.0	3	38
CDD2370	O	2.37	12.0	3	38
CDD2380	O	2.38	12.0	3	38
CDD2390	O	2.39	12.0	3	38
CDD2400	O	2.40	12.0	3	38
CDD2410	O	2.41	12.0	3	38
CDD2420	O	2.42	12.0	3	38
CDD2430	O	2.43	12.0	3	38
CDD2440	O	2.44	12.0	3	38
CDD2450	O	2.45	12.0	3	38
CDD2460	O	2.46	12.0	3	38
CDD2470	O	2.47	12.0	3	38
CDD2480	O	2.48	12.0	3	38
CDD2490	O	2.49	12.0	3	38
CDD2500	O	2.50	12.0	3	38
CDD2510	O	2.51	12.0	3	38
CDD2520	O	2.52	12.0	3	38
CDD2530	O	2.53	12.0	3	38
CDD2540	O	2.54	12.0	3	38
CDD2550	O	2.55	12.0	3	38
CDD2560	O	2.56	12.0	3	38
CDD2570	O	2.57	12.0	3	38
CDD2580	O	2.58	12.0	3	38
CDD2590	O	2.59	12.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDD2600	O	2.60	12.0	3	38
CDD2610	O	2.61	12.0	3	38
CDD2620	O	2.62	12.0	3	38
CDD2630	O	2.63	12.0	3	38
CDD2640	O	2.64	12.0	3	38
CDD2650	O	2.65	12.0	3	38
CDD2660	O	2.66	12.0	3	38
CDD2670	O	2.67	12.0	3	38
CDD2680	O	2.68	12.0	3	38
CDD2690	O	2.69	12.0	3	38
CDD2700	O	2.70	12.0	3	38
CDD2710	O	2.71	12.0	3	38
CDD2720	O	2.72	12.0	3	38
CDD2730	O	2.73	12.0	3	38
CDD2740	O	2.74	12.0	3	38
CDD2750	O	2.75	12.0	3	38
CDD2760	O	2.76	12.0	3	38
CDD2770	O	2.77	12.0	3	38
CDD2780	O	2.78	12.0	3	38
CDD2785	O	2.785	12.0	3	38
CDD2790	O	2.79	12.0	3	38
CDD2800	O	2.80	12.0	3	38
CDD2810	O	2.81	12.0	3	38
CDD2820	O	2.82	12.0	3	38
CDD2830	O	2.83	12.0	3	38
CDD2840	O	2.84	12.0	3	38
CDD2850	O	2.85	12.0	3	38
CDD2860	O	2.86	12.0	3	38
CDD2870	O	2.87	12.0	3	38
CDD2880	O	2.88	12.0	3	38
CDD2890	O	2.89	12.0	3	38
CDD2900	O	2.90	12.0	3	38
CDD2910	O	2.91	12.0	3	38
CDD2920	O	2.92	12.0	3	38
CDD2930	O	2.93	12.0	3	38
CDD2940	O	2.94	12.0	3	38
CDD2950	O	2.95	12.0	3	38
CDD2960	O	2.96	12.0	3	38
CDD2970	O	2.97	12.0	3	38
CDD2980	O	2.98	12.0	3	38
CDD2990	O	2.99	12.0	3	38
CDD3000	O	3.00	12.0	3	38

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Aluminum Alloy			Copper Alloy			Plastics Resin		
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm
0.04-0.09	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 20	0.001	10000~ 20000	5~ 20	0.0005~ 0.001	10000~ 30000	10~ 90	0.001~ 0.003	10000~ 20000	20~ 100	0.002~ 0.005	10000~ 20000	10~ 60	0.001~ 0.003
0.1-0.29	19000~ 13000	38~ 130	0.002~ 0.01	16000~ 11000	22~ 75	0.0014~ 0.007	13000~ 8800	13~ 35	0.001~ 0.004	10000~ 5000	5	0.0005~ 0.001	22200~ 16500	110~ 330	0.005~ 0.02	16000~ 11000	32~ 88	0.002~ 0.008	20000~ 15000	100~ 150	0.005~ 0.01
0.3-0.49	13000~ 12000	130~ 240	0.01~ 0.02	11000~ 9700	75~ 95	0.007~ 0.01	8800~ 6500	26~ 32	0.003~ 0.005	5000~ 4500	5~ 22	0.001~ 0.005	16500~ 13000	330~ 520	0.02~ 0.04	11000~ 11500	88~ 170	0.008~ 0.015	15000	150~ 300	0.01~ 0.02
0.5-0.99	12000~ 9600	240~ 380	0.02~ 0.04	9700~ 6400	95~ 128	0.01~ 0.02	6500~ 4800	32~ 48	0.005~ 0.01	4500~ 3200	22~ 32	0.005~ 0.01	13000~ 12700	520~ 760	0.04~ 0.06	11500~ 9600	170~ 380	0.015~ 0.04	15000~ 10000	150~ 400	0.02~ 0.04
1.0-1.99	9600~ 6400	290~ 380	0.03~ 0.06	6400~ 4000	128~ 200	0.02~ 0.05	3100~ 2400	31~ 72	0.01~ 0.03	3200~ 2400	32~ 72	0.01~ 0.03	12700~ 6400	760	0.06~ 0.12	9600~ 4800	380	0.04~ 0.08	10000~ 6000	500	0.05~ 0.07
2.0-3.0	6400~ 4200	440	0.07~ 0.1	4000~ 3200	200~ 260	0.05~ 0.08	2400~ 1600	48~ 64	0.02~ 0.04	2400~ 1800	72~ 90	0.03~ 0.05	6400~ 5300	760~ 1060	0.12~ 0.2	4800~ 4200	380~ 630	0.08~ 0.15	6000~ 5000	500	0.07~ 0.1

CDDL- DLC COATING LONG FLUTE MICRO DRILLS



Tool dia：D0.04-D3.0mm

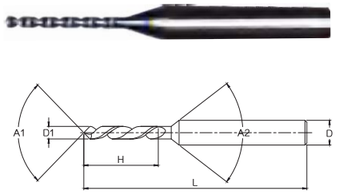
Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal

Suitable for precision hole machining of soft materials such as engineering plastics and ordinary steel

DLC Coating, Increase chip removal effect



Work Material																			
S45C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
○	○	○						○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL0040	○	0.040	0.6	3	38
CDDL0045	○	0.045	0.7	3	38
CDDL0050	○	0.050	0.9	3	38
CDDL0055	○	0.055	0.9	3	38
CDDL0060	○	0.060	0.9	3	38
CDDL0065	○	0.065	0.9	3	38
CDDL0070	○	0.070	1.2	3	38
CDDL0075	○	0.075	1.2	3	38
CDDL0080	○	0.080	1.2	3	38
CDDL0085	○	0.085	1.2	3	38
CDDL0090	○	0.090	1.2	3	38
CDDL0095	○	0.095	1.2	3	38
CDDL0100	○	0.10	2.0	3	38
CDDL0110	○	0.11	2.0	3	38
CDDL0120	○	0.12	2.0	3	38
CDDL0130	○	0.13	3.0	3	38
CDDL0140	○	0.14	3.0	3	38
CDDL0150	○	0.15	3.0	3	38
CDDL0160	○	0.16	4.0	3	38
CDDL0170	○	0.17	4.0	3	38
CDDL0180	○	0.18	4.0	3	38
CDDL0190	○	0.19	4.0	3	38
CDDL0200	○	0.20	4.0	3	38
CDDL0210	○	0.21	5.0	3	38
CDDL0220	○	0.22	5.0	3	38
CDDL0230	○	0.23	5.0	3	38
CDDL0240	○	0.24	5.0	3	38
CDDL0250	○	0.25	5.0	3	38
CDDL0260	○	0.26	6.0	3	38
CDDL0270	○	0.27	6.0	3	38
CDDL0280	○	0.28	6.0	3	38
CDDL0290	○	0.29	6.0	3	38
CDDL0300	○	0.30	6.0	3	38
CDDL0310	○	0.31	6.0	3	38
CDDL0320	○	0.32	6.0	3	38
CDDL0330	○	0.33	6.0	3	38
CDDL0340	○	0.34	6.0	3	38
CDDL0350	○	0.35	6.0	3	38
CDDL0360	○	0.36	6.0	3	38
CDDL0370	○	0.37	6.0	3	38
CDDL0380	○	0.38	6.0	3	38
CDDL0390	○	0.39	6.0	3	38
CDDL0400	○	0.40	6.0	3	38
CDDL0410	○	0.41	7.0	3	38
CDDL0420	○	0.42	7.0	3	38
CDDL0430	○	0.43	7.0	3	38
CDDL0440	○	0.44	7.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL0450	○	0.45	7.0	3	38
CDDL0460	○	0.46	7.0	3	38
CDDL0470	○	0.47	7.0	3	38
CDDL0480	○	0.48	7.0	3	38
CDDL0490	○	0.49	7.0	3	38
CDDL0500	○	0.50	7.0	3	38
CDDL0510	○	0.51	9.0	3	38
CDDL0520	○	0.52	9.0	3	38
CDDL0530	○	0.53	9.0	3	38
CDDL0540	○	0.54	9.0	3	38
CDDL0550	○	0.55	9.0	3	38
CDDL0560	○	0.56	9.0	3	38
CDDL0570	○	0.57	9.0	3	38
CDDL0580	○	0.58	9.0	3	38
CDDL0590	○	0.59	9.0	3	38
CDDL0600	○	0.60	9.0	3	38
CDDL0610	○	0.61	9.0	3	38
CDDL0620	○	0.62	9.0	3	38
CDDL0630	○	0.63	9.0	3	38
CDDL0640	○	0.64	9.0	3	38
CDDL0650	○	0.65	9.0	3	38
CDDL0660	○	0.66	9.0	3	38
CDDL0670	○	0.67	9.0	3	38
CDDL0680	○	0.68	9.0	3	38
CDDL0690	○	0.69	9.0	3	38
CDDL0700	○	0.7	9.0	3	38
CDDL0710	○	0.71	10.0	3	38
CDDL0720	○	0.72	10.0	3	38
CDDL0730	○	0.73	10.0	3	38
CDDL0740	○	0.74	10.0	3	38
CDDL0750	○	0.75	10.0	3	38
CDDL0760	○	0.76	10.0	3	38
CDDL0770	○	0.77	10.0	3	38
CDDL0780	○	0.78	10.0	3	38
CDDL0790	○	0.79	10.0	3	38
CDDL0800	○	0.80	10.0	3	38
CDDL0810	○	0.81	10.0	3	38
CDDL0820	○	0.82	10.0	3	38
CDDL0830	○	0.83	10.0	3	38
CDDL0840	○	0.84	10.0	3	38
CDDL0850	○	0.85	10.0	3	38
CDDL0860	○	0.86	10.0	3	38
CDDL0870	○	0.87	10.0	3	38
CDDL0880	○	0.88	10.0	3	38
CDDL0890	○	0.89	10.0	3	38
CDDL0900	○	0.9	10.0	3	38
CDDL0910	○	0.91	10.0	3	38

WERNER

CDDL- DLC COATING LONG FLUTE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL0920	○	0.92	10.0	3	38
CDDL0930	○	0.93	10.0	3	38
CDDL0940	○	0.94	10.0	3	38
CDDL0950	○	0.95	10.0	3	38
CDDL0960	○	0.96	10.0	3	38
CDDL0970	○	0.97	10.0	3	38
CDDL0980	○	0.98	10.0	3	38
CDDL0990	○	0.99	10.0	3	38
CDDL1000	○	1.0	12.0	3	50
CDDL1010	○	1.01	12.0	3	50
CDDL1020	○	1.02	12.0	3	50
CDDL1030	○	1.03	12.0	3	50
CDDL1040	○	1.04	12.0	3	50
CDDL1050	○	1.05	12.0	3	50
CDDL1060	○	1.06	12.0	3	50
CDDL1070	○	1.07	12.0	3	50
CDDL1080	○	1.08	12.0	3	50
CDDL1090	○	1.09	12.0	3	50
CDDL1100	○	1.1	12.0	3	50
CDDL1110	○	1.11	12.0	3	50
CDDL1120	○	1.12	12.0	3	50
CDDL1130	○	1.13	12.0	3	50
CDDL1140	○	1.14	12.0	3	50
CDDL1150	○	1.15	12.0	3	50
CDDL1160	○	1.16	12.0	3	50
CDDL1170	○	1.17	12.0	3	50
CDDL1180	○	1.18	12.0	3	50
CDDL1190	○	1.19	12.0	3	50
CDDL1200	○	1.2	15.0	3	50
CDDL1210	○	1.21	15.0	3	50
CDDL1220	○	1.22	15.0	3	50
CDDL1230	○	1.23	15.0	3	50
CDDL1240	○	1.24	15.0	3	50
CDDL1250	○	1.25	15.0	3	50
CDDL1260	○	1.26	15.0	3	50
CDDL1270	○	1.27	15.0	3	50
CDDL1280	○	1.28	15.0	3	50
CDDL1290	○	1.29	15.0	3	50
CDDL1300	○	1.3	15.0	3	50
CDDL1310	○	1.31	15.0	3	50
CDDL1320	○	1.32	15.0	3	50
CDDL1330	○	1.33	15.0	3	50
CDDL1340	○	1.34	15.0	3	50
CDDL1350	○	1.35	15.0	3	50
CDDL1360	○	1.36	15.0	3	50
CDDL1370	○	1.37	15.0	3	50
CDDL1380	○	1.38	15.0	3	50
CDDL1390	○	1.39	15.0	3	50
CDDL1400	○	1.4	15.0	3	50
CDDL1410	○	1.41	15.0	3	50
CDDL1420	○	1.42	15.0	3	50
CDDL1430	○	1.43	15.0	3	50
CDDL1440	○	1.44	15.0	3	50
CDDL1450	○	1.45	15.0	3	50
CDDL1460	○	1.46	15.0	3	50
CDDL1470	○	1.47	15.0	3	50
CDDL1480	○	1.48	15.0	3	50
CDDL1490	○	1.49	15.0	3	50
CDDL1500	○	1.5	20.0	3	50
CDDL1510	○	1.51	20.0	3	50
CDDL1520	○	1.52	20.0	3	50
CDDL1530	○	1.53	20.0	3	50
CDDL1540	○	1.54	20.0	3	50
CDDL1550	○	1.55	20.0	3	50
CDDL1560	○	1.56	20.0	3	50
CDDL1570	○	1.57	20.0	3	50
CDDL1580	○	1.58	20.0	3	50
CDDL1590	○	1.59	20.0	3	50
CDDL1600	○	1.6	20.0	3	50
CDDL1610	○	1.61	20.0	3	50
CDDL1620	○	1.62	20.0	3	50
CDDL1630	○	1.63	20.0	3	50

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL1640	○	1.64	20.0	3	50
CDDL1650	○	1.65	20.0	3	50
CDDL1660	○	1.66	20.0	3	50
CDDL1670	○	1.67	20.0	3	50
CDDL1680	○	1.68	20.0	3	50
CDDL1690	○	1.69	20.0	3	50
CDDL1700	○	1.70	20.0	3	50
CDDL1710	○	1.71	20.0	3	50
CDDL1720	○	1.72	20.0	3	50
CDDL1730	○	1.73	20.0	3	50
CDDL1740	○	1.74	20.0	3	50
CDDL1750	○	1.75	20.0	3	50
CDDL1760	○	1.76	20.0	3	50
CDDL1770	○	1.77	20.0	3	50
CDDL1780	○	1.78	20.0	3	50
CDDL1790	○	1.79	20.0	3	50
CDDL1800	○	1.80	20.0	3	50
CDDL1810	○	1.81	20.0	3	50
CDDL1820	○	1.82	20.0	3	50
CDDL1830	○	1.83	20.0	3	50
CDDL1840	○	1.84	20.0	3	50
CDDL1850	○	1.85	20.0	3	50
CDDL1860	○	1.86	20.0	3	50
CDDL1870	○	1.87	20.0	3	50
CDDL1880	○	1.88	20.0	3	50
CDDL1890	○	1.89	20.0	3	50
CDDL1900	○	1.90	20.0	3	50
CDDL1910	○	1.91	20.0	3	50
CDDL1920	○	1.92	20.0	3	50
CDDL1930	○	1.93	20.0	3	50
CDDL1940	○	1.94	20.0	3	50
CDDL1950	○	1.95	20.0	3	50
CDDL1960	○	1.96	20.0	3	50
CDDL1970	○	1.97	20.0	3	50
CDDL1980	○	1.98	20.0	3	50
CDDL1990	○	1.99	20.0	3	50
CDDL2000	○	2.00	20.0	3	50
CDDL2010	○	2.01	25.0	3	60
CDDL2020	○	2.02	25.0	3	60
CDDL2030	○	2.03	25.0	3	60
CDDL2040	○	2.04	25.0	3	60
CDDL2050	○	2.05	25.0	3	60
CDDL2060	○	2.06	25.0	3	60
CDDL2070	○	2.07	25.0	3	60
CDDL2080	○	2.08	25.0	3	60
CDDL2090	○	2.09	25.0	3	60
CDDL2100	○	2.10	25.0	3	60
CDDL2110	○	2.11	25.0	3	60
CDDL2120	○	2.12	25.0	3	60
CDDL2130	○	2.13	25.0	3	60
CDDL2140	○	2.14	25.0	3	60
CDDL2150	○	2.15	25.0	3	60
CDDL2160	○	2.16	25.0	3	60
CDDL2170	○	2.17	25.0	3	60
CDDL2180	○	2.18	25.0	3	60
CDDL2190	○	2.19	25.0	3	60
CDDL2200	○	2.20	25.0	3	60
CDDL2210	○	2.21	25.0	3	60
CDDL2220	○	2.22	25.0	3	60
CDDL2230	○	2.23	25.0	3	60
CDDL2240	○	2.24	25.0	3	60
CDDL2250	○	2.25	25.0	3	60
CDDL2260	○	2.26	25.0	3	60
CDDL2270	○	2.27	25.0	3	60
CDDL2280	○	2.28	25.0	3	60
CDDL2290	○	2.29	25.0	3	60
CDDL2300	○	2.30	25.0	3	60
CDDL2310	○	2.31	25.0	3	60
CDDL2320	○	2.32	25.0	3	60
CDDL2330	○	2.33	25.0	3	60
CDDL2340	○	2.34	25.0	3	60
CDDL2350	○	2.35	25.0	3	60

CDDL- DLC COATING LONG FLUTE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL2360	O	2.36	25.0	3	60
CDDL2370	O	2.37	25.0	3	60
CDDL2380	O	2.38	25.0	3	60
CDDL2390	O	2.39	25.0	3	60
CDDL2400	O	2.40	25.0	3	60
CDDL2410	O	2.41	25.0	3	60
CDDL2420	O	2.42	25.0	3	60
CDDL2430	O	2.43	25.0	3	60
CDDL2440	O	2.44	25.0	3	60
CDDL2450	O	2.45	25.0	3	60
CDDL2460	O	2.46	25.0	3	60
CDDL2470	O	2.47	25.0	3	60
CDDL2480	O	2.48	25.0	3	60
CDDL2490	O	2.49	25.0	3	60
CDDL2500	O	2.50	25.0	3	60
CDDL2510	O	2.51	25.0	3	60
CDDL2520	O	2.52	25.0	3	60
CDDL2530	O	2.53	25.0	3	60
CDDL2540	O	2.54	25.0	3	60
CDDL2550	O	2.55	25.0	3	60
CDDL2560	O	2.56	25.0	3	60
CDDL2570	O	2.57	25.0	3	60
CDDL2580	O	2.58	25.0	3	60
CDDL2590	O	2.59	25.0	3	60
CDDL2600	O	2.60	25.0	3	60
CDDL2610	O	2.61	25.0	3	60
CDDL2620	O	2.62	25.0	3	60
CDDL2630	O	2.63	25.0	3	60
CDDL2640	O	2.64	25.0	3	60
CDDL2650	O	2.65	25.0	3	60
CDDL2660	O	2.66	25.0	3	60
CDDL2670	O	2.67	25.0	3	60
CDDL2680	O	2.68	25.0	3	60

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CDDL2690	O	2.69	25.0	3	60
CDDL2700	O	2.70	25.0	3	60
CDDL2710	O	2.71	25.0	3	60
CDDL2720	O	2.72	25.0	3	60
CDDL2730	O	2.73	25.0	3	60
CDDL2740	O	2.74	25.0	3	60
CDDL2750	O	2.75	25.0	3	60
CDDL2760	O	2.76	25.0	3	60
CDDL2770	O	2.77	25.0	3	60
CDDL2780	O	2.78	25.0	3	60
CDDL2790	O	2.79	25.0	3	60
CDDL2800	O	2.80	25.0	3	60
CDDL2810	O	2.81	25.0	3	60
CDDL2820	O	2.82	25.0	3	60
CDDL2830	O	2.83	25.0	3	60
CDDL2840	O	2.84	25.0	3	60
CDDL2850	O	2.85	25.0	3	60
CDDL2860	O	2.86	25.0	3	60
CDDL2870	O	2.87	25.0	3	60
CDDL2880	O	2.88	25.0	3	60
CDDL2890	O	2.89	25.0	3	60
CDDL2900	O	2.90	25.0	3	60
CDDL2910	O	2.91	25.0	3	60
CDDL2920	O	2.92	25.0	3	60
CDDL2930	O	2.93	25.0	3	60
CDDL2940	O	2.94	25.0	3	60
CDDL2950	O	2.95	25.0	3	60
CDDL2960	O	2.96	25.0	3	60
CDDL2970	O	2.97	25.0	3	60
CDDL2980	O	2.98	25.0	3	60
CDDL2990	O	2.99	25.0	3	60
CDDL3000	O	3.00	25.0	3	60

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Aluminum Alloy			Copper Alloy			Plastics Resin		
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm
0.04-0.09	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 20	0.001	10000~ 20000	5~ 20	0.0005~ 0.001	10000~ 30000	10~ 90	0.001~ 0.003	10000~ 20000	20~ 100	0.002~ 0.005	10000~ 20000	10~ 60	0.001~ 0.003
0.1-0.29	19000~ 13000	38~ 130	0.002~ 0.01	16000~ 11000	22~ 75	0.0014~ 0.007	13000~ 8800	13~ 35	0.001~ 0.004	10000~ 5000	5	0.0005~ 0.001	22200~ 16500	110~ 330	0.005~ 0.02	16000~ 11000	32~ 88	0.002~ 0.008	20000~ 15000	100~ 150	0.005~ 0.01
0.3-0.49	13000~ 12000	130~ 240	0.01~ 0.02	11000~ 9700	75~ 95	0.007~ 0.01	8800~ 6500	26~ 32	0.003~ 0.005	5000~ 4500	5~ 22	0.001~ 0.005	16500~ 13000	330~ 520	0.02~ 0.04	11000~ 11500	88~ 170	0.008~ 0.015	15000	150~ 300	0.01~ 0.02
0.5-0.99	12000~ 9600	240~ 380	0.02~ 0.04	9700~ 6400	95~ 128	0.01~ 0.02	6500~ 4800	32~ 48	0.005~ 0.01	4500~ 3200	22~ 32	0.005~ 0.01	13000~ 12700	520~ 760	0.04~ 0.06	11500~ 9600	170~ 380	0.015~ 0.04	15000~ 10000	150~ 400	0.02~ 0.04
1.0-1.99	9600~ 6400	290~ 380	0.03~ 0.06	6400~ 4000	128~ 200	0.02~ 0.05	3100~ 2400	31~ 72	0.01~ 0.03	3200~ 2400	32~ 72	0.01~ 0.03	12700~ 6400	760	0.06~ 0.12	9600~ 4800	380	0.04~ 0.08	10000~ 6000	500	0.05~ 0.07
2.0-3.0	6400~ 4200	440	0.07~ 0.1	4000~ 3200	200~ 260	0.05~ 0.08	2400~ 1600	48~ 64	0.02~ 0.04	2400~ 1800	72~ 90	0.03~ 0.05	6400~ 5300	760~ 1060	0.12~ 0.2	4800~ 4200	380~ 630	0.08~ 0.15	6000~ 5000	500	0.07~ 0.1

CHD- MULTI-FUNCTION MICRO DRILLS

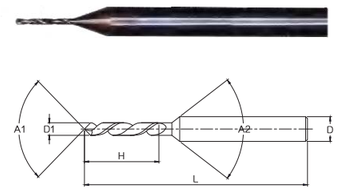


Tool dia：D0.04-D3.0mm

Dia tolerance：0,-0.005mm

D1≤1.0mm - 118°

D1＞1.0mm - 135°



Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit

Suitable for hole machining of stainless steel, heat resistant alloy and other materials

Work Material

S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	Hardess steel ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎					◎	◎	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD0040	O	0.040	0.40	3	38
CHD0045	O	0.045	0.45	3	38
CHD0050	O	0.050	0.50	3	38
CHD0055	O	0.055	0.55	3	38
CHD0060	O	0.060	0.60	3	38
CHD0065	O	0.065	0.65	3	38
CHD0070	O	0.070	0.70	3	38
CHD0075	O	0.075	0.75	3	38
CHD0080	O	0.080	0.80	3	38
CHD0085	O	0.085	0.85	3	38
CHD0090	O	0.090	0.90	3	38
CHD0095	O	0.095	0.95	3	38
CHD0100	O	0.10	1.5	3	38
CHD0110	O	0.11	1.5	3	38
CHD0120	O	0.12	2.5	3	38
CHD0130	O	0.13	2.5	3	38
CHD0140	O	0.14	2.5	3	38
CHD0150	O	0.15	2.5	3	38
CHD0160	O	0.16	2.5	3	38
CHD0170	O	0.17	2.5	3	38
CHD0180	O	0.18	2.5	3	38
CHD0190	O	0.19	2.5	3	38
CHD0200	O	0.20	3.5	3	38
CHD0210	O	0.21	3.5	3	38
CHD0220	O	0.22	3.5	3	38
CHD0230	O	0.23	3.5	3	38
CHD0240	O	0.24	3.5	3	38
CHD0250	O	0.25	3.5	3	38
CHD0260	O	0.26	3.5	3	38
CHD0270	O	0.27	3.5	3	38
CHD0280	O	0.28	3.5	3	38
CHD0290	O	0.29	3.5	3	38
CHD0300	O	0.30	5.0	3	38
CHD0310	O	0.31	5.0	3	38
CHD0320	O	0.32	5.0	3	38
CHD0330	O	0.33	5.0	3	38
CHD0340	O	0.34	5.0	3	38
CHD0350	O	0.35	5.0	3	38
CHD0360	O	0.36	5.0	3	38
CHD0370	O	0.37	5.0	3	38
CHD0380	O	0.38	5.0	3	38
CHD0390	O	0.39	5.0	3	38
CHD0400	O	0.40	6.0	3	38
CHD0410	O	0.41	6.0	3	38
CHD0420	O	0.42	6.0	3	38
CHD0430	O	0.43	6.0	3	38
CHD0440	O	0.44	6.0	3	38

型号 Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD0450	O	0.45	6.0	3	38
CHD0460	O	0.46	6.0	3	38
CHD0470	O	0.47	6.0	3	38
CHD0480	O	0.48	6.0	3	38
CHD0490	O	0.49	6.0	3	38
CHD0500	O	0.50	6.0	3	38
CHD0510	O	0.51	6.0	3	38
CHD0520	O	0.52	6.0	3	38
CHD0530	O	0.53	6.0	3	38
CHD0540	O	0.54	6.0	3	38
CHD0550	O	0.55	6.0	3	38
CHD0560	O	0.56	6.0	3	38
CHD0570	O	0.57	6.0	3	38
CHD0580	O	0.58	6.0	3	38
CHD0590	O	0.59	6.0	3	38
CHD0600	O	0.60	7.0	3	38
CHD0610	O	0.61	7.0	3	38
CHD0620	O	0.62	7.0	3	38
CHD0630	O	0.63	7.0	3	38
CHD0640	O	0.64	7.0	3	38
CHD0650	O	0.65	7.0	3	38
CHD0660	O	0.66	7.0	3	38
CHD0670	O	0.67	7.0	3	38
CHD0680	O	0.68	7.0	3	38
CHD0690	O	0.69	7.0	3	38
CHD0700	O	0.70	8.0	3	38
CHD0710	O	0.71	8.0	3	38
CHD0720	O	0.72	8.0	3	38
CHD0730	O	0.73	8.0	3	38
CHD0740	O	0.74	8.0	3	38
CHD0750	O	0.75	8.0	3	38
CHD0760	O	0.76	8.0	3	38
CHD0770	O	0.77	8.0	3	38
CHD0780	O	0.78	8.0	3	38
CHD0790	O	0.79	8.0	3	38
CHD0800	O	0.80	8.0	3	38
CHD0810	O	0.81	8.0	3	38
CHD0820	O	0.82	8.0	3	38
CHD0830	O	0.83	8.0	3	38
CHD0840	O	0.84	8.0	3	38
CHD0850	O	0.85	8.0	3	38
CHD0860	O	0.86	8.0	3	38
CHD0870	O	0.87	8.0	3	38
CHD0880	O	0.88	8.0	3	38
CHD0883	O	0.883	8.0	3	38
CHD0885	O	0.885	8.0	3	38
CHD0887	O	0.887	8.0	3	38

CHD- MULTI-FUNCTION MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD0888	O	0.888	8.0	3	38
CHD0890	O	0.890	8.0	3	38
CHD0893	O	0.893	8.0	3	38
CHD0895	O	0.895	8.0	3	38
CHD0897	O	0.897	8.0	3	38
CHD0900	O	0.90	8.0	3	38
CHD0910	O	0.91	8.0	3	38
CHD0920	O	0.92	8.0	3	38
CHD0930	O	0.93	8.0	3	38
CHD0940	O	0.94	8.0	3	38
CHD0950	O	0.95	8.0	3	38
CHD0960	O	0.96	8.0	3	38
CHD0970	O	0.97	8.0	3	38
CHD0980	O	0.98	8.0	3	38
CHD0990	O	0.99	8.0	3	38
CHD1000	O	1.00	10.0	3	38
CHD1010	O	1.01	10.0	3	38
CHD1020	O	1.02	10.0	3	38
CHD1030	O	1.030	10.0	3	38
CHD1040	O	1.040	10.0	3	38
CHD1050	O	1.050	10.0	3	38
CHD1060	O	1.060	10.0	3	38
CHD1070	O	1.070	10.0	3	38
CHD1080	O	1.080	10.0	3	38
CHD1083	O	1.083	10.0	3	38
CHD1085	O	1.085	10.0	3	38
CHD1087	O	1.087	10.0	3	38
CHD1088	O	1.088	10.0	3	38
CHD1090	O	1.090	10.0	3	38
CHD1093	O	1.093	10.0	3	38
CHD1095	O	1.095	10.0	3	38
CHD1097	O	1.097	10.0	3	38
CHD1100	O	1.10	10.0	3	38
CHD1110	O	1.11	10.0	3	38
CHD1120	O	1.12	10.0	3	38
CHD1130	O	1.13	10.0	3	38
CHD1140	O	1.14	10.0	3	38
CHD1150	O	1.15	10.0	3	38
CHD1160	O	1.16	10.0	3	38
CHD1170	O	1.17	10.0	3	38
CHD1180	O	1.18	10.0	3	38
CHD1190	O	1.19	10.0	3	38
CHD1200	O	1.20	10.0	3	38
CHD1210	O	1.21	10.0	3	38
CHD1220	O	1.22	10.0	3	38
CHD1230	O	1.23	10.0	3	38
CHD1240	O	1.24	10.0	3	38
CHD1250	O	1.25	10.0	3	38
CHD1255	O	1.255	10.0	3	38
CHD1260	O	1.260	10.0	3	38
CHD1265	O	1.265	10.0	3	38
CHD1270	O	1.270	10.0	3	38
CHD1280	O	1.280	10.0	3	38
CHD1283	O	1.283	10.0	3	38
CHD1285	O	1.285	10.0	3	38
CHD1290	O	1.290	10.0	3	38
CHD1300	O	1.30	10.0	3	38
CHD1310	O	1.31	10.0	3	38
CHD1320	O	1.32	10.0	3	38
CHD1330	O	1.33	10.0	3	38
CHD1340	O	1.34	10.0	3	38
CHD1350	O	1.35	10.0	3	38
CHD1360	O	1.36	10.0	3	38
CHD1370	O	1.37	10.0	3	38
CHD1380	O	1.38	10.0	3	38
CHD1390	O	1.39	10.0	3	38
CH1400	O	1.40	10.0	3	38
CHD1410	O	1.41	10.0	3	38
CHD1420	O	1.42	10.0	3	38
CHD1430	O	1.43	10.0	3	38
CHD1440	O	1.44	10.0	3	38
CHD1450	O	1.45	10.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD1455	O	1.455	10.0	3	38
CHD1460	O	1.460	10.0	3	38
CHD1470	O	1.470	10.0	3	38
CHD1480	O	1.480	10.0	3	38
CHD1490	O	1.49	10.0	3	38
CHD1500	O	1.50	10.0	3	38
CHD1510	O	1.51	10.0	3	38
CHD1520	O	1.52	10.0	3	38
CHD1530	O	1.53	10.0	3	38
CHD1540	O	1.54	10.0	3	38
CHD1550	O	1.55	10.0	3	38
CHD1560	O	1.56	10.0	3	38
CHD1570	O	1.57	10.0	3	38
CHD1580	O	1.58	10.0	3	38
CHD1590	O	1.59	10.0	3	38
CHD1600	O	1.60	12.0	3	38
CHD1610	O	1.61	12.0	3	38
CHD1620	O	1.62	12.0	3	38
CHD1630	O	1.63	12.0	3	38
CHD1640	O	1.64	12.0	3	38
CHD1650	O	1 65	12.0	3	38
CHD1660	O	1.66	12.0	3	38
CHD1670	O	1.67	12.0	3	38
CHD1680	O	1.68	12.0	3	38
CHD1690	O	1.69	12.0	3	38
CHD1700	O	1.70	12.0	3	38
CHD1710	O	1.71	12.0	3	38
CHD1720	O	1.72	12.0	3	38
CHD1730	O	1.73	12.0	3	38
CHD1740	O	1.74	12.0	3	38
CHD1750	O	1.75	12.0	3	38
CHD1760	O	1.76	12.0	3	38
CHD1770	O	1.77	12.0	3	38
CHD1780	O	1.78	12.0	3	38
CHD1790	O	1.79	12.0	3	38
CHD1800	O	1.80	12.0	3	38
CHD1810	O	1.81	12.0	3	38
CHD1820	O	1.82	12.0	3	38
CHD1830	O	1.83	12.0	3	38
CHD1840	O	1.84	12.0	3	38
CHD1850	O	1.85	12.0	3	38
CHD1860	O	1.86	12.0	3	38
CHD1870	O	1.87	12.0	3	38
CHD1880	O	1.88	12.0	3	38
CHD1890	O	1.89	12.0	3	38
CHD1900	O	1.90	12.0	3	38
CHD1910	O	1.91	12.0	3	38
CHD1920	O	1.92	12.0	3	38
CHD1930	O	1.93	12.0	3	38
CHD1940	O	1.94	12.0	3	38
CHD1950	O	1.95	12.0	3	38
CHD1960	O	1.96	12.0	3	38
CHD1970	O	1.97	12.0	3	38
CHD1980	O	1.98	12.0	3	38
CHD1990	O	1.99	12.0	3	38
CHD2000	O	2.00	12.0	3	38
CHD2010	O	2.01	12.0	3	38
CHD2020	O	2.02	12.0	3	38
CHD2030	O	2.03	12.0	3	38
CHD2040	O	2.04	12.0	3	38
CHD2050	O	2.05	12.0	3	38
CHD2060	O	2.06	12.0	3	38
CHD2070	O	2.07	12.0	3	38
CHD2080	O	2.08	12.0	3	38
CHD2090	O	2.09	12.0	3	38
CHD2100	O	2.10	12.0	3	38
CHD2110	O	2.11	12.0	3	38
CHD2120	O	2.12	12.0	3	38
CHD2130	O	2.13	12.0	3	38
CHD2140	O	2.14	12.0	3	38
CHD2150	O	2.15	12.0	3	38
CHD2160	O	2.16	12.0	3	38

CHD- MULTI-FUNCTION MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD2170	O	2.17	12.0	3	38
CHD2180	O	2.18	12.0	3	38
CHD2190	O	2.19	12.0	3	38
CHD2200	O	2.20	12.0	3	38
CHD2210	O	2.21	12.0	3	38
CHD2220	O	2.22	12.0	3	38
CHD2230	O	2.23	12.0	3	38
CHD2240	O	2.24	12.0	3	38
CHD2250	O	2.25	12.0	3	38
CHD2260	O	2.26	12.0	3	38
CHD2270	O	2.27	12.0	3	38
CHD2280	O	2.28	12.0	3	38
CHD2290	O	2.29	12.0	3	38
CHD2300	O	2.30	12.0	3	38
CHD2310	O	2.31	12.0	3	38
CHD2320	O	2.32	12.0	3	38
CHD2330	O	2.33	12.0	3	38
CHD2340	O	2.34	12.0	3	38
CHD2350	O	2.35	12.0	3	38
CHD2360	O	2.36	12.0	3	38
CHD2370	O	2.37	12.0	3	38
CHD2380	O	2.38	12.0	3	38
CHD2390	O	2.39	12.0	3	38
CHD2400	O	2.40	12.0	3	38
CHD2410	O	2.41	12.0	3	38
CHD2420	O	2.42	12.0	3	38
CHD2430	O	2.43	12.0	3	38
CHD2440	O	2.44	12.0	3	38
CHD2450	O	2.45	12.0	3	38
CHD2460	O	2.46	12.0	3	38
CHD2470	O	2.47	12.0	3	38
CHD2480	O	2.48	12.0	3	38
CHD2490	O	2.49	12.0	3	38
CHD2500	O	2.50	12.0	3	38
CHD2510	O	2.51	12.0	3	38
CHD2520	O	2.52	12.0	3	38
CHD2530	O	2.53	12.0	3	38
CHD2540	O	2.54	12.0	3	38
CHD2550	O	2.55	12.0	3	38
CHD2560	O	2.56	12.0	3	38
CHD2570	O	2.57	12.0	3	38
CHD2580	O	2.58	12.0	3	38
CHD2590	O	2.59	12.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHD2600	O	2.60	12.0	3	38
CHD2610	O	2.61	12.0	3	38
CHD2620	O	2.62	12.0	3	38
CHD2630	O	2.63	12.0	3	38
CHD2640	O	2.64	12.0	3	38
CHD2650	O	2.65	12.0	3	38
CHD2660	O	2.66	12.0	3	38
CHD2670	O	2.67	12.0	3	38
CHD2680	O	2.68	12.0	3	38
CHD2690	O	2.69	12.0	3	38
CHD2700	O	2.70	12.0	3	38
CHD2710	O	2.71	12.0	3	38
CHD2720	O	2.72	12.0	3	38
CHD2730	O	2.73	12.0	3	38
CHD2740	O	2.74	12.0	3	38
CHD2750	O	2.75	12.0	3	38
CHD2760	O	2.76	12.0	3	38
CHD2770	O	2.77	12.0	3	38
CHD2780	O	2.78	12.0	3	38
CHD2785	O	2.785	12.0	3	38
CHD2790	O	2.79	12.0	3	38
CHD2800	O	2.80	12.0	3	38
CHD2810	O	2.81	12.0	3	38
CHD2820	O	2.82	12.0	3	38
CHD2830	O	2.83	12.0	3	38
CHD2840	O	2.84	12.0	3	38
CHD2850	O	2.85	12.0	3	38
CHD2860	O	2.86	12.0	3	38
CHD2870	O	2.87	12.0	3	38
CHD2880	O	2.88	12.0	3	38
CHD2890	O	2.89	12.0	3	38
CHD2900	O	2.90	12.0	3	38
CHD2910	O	2.91	12.0	3	38
CHD2920	O	2.92	12.0	3	38
CHD2930	O	2.93	12.0	3	38
CHD2940	O	2.94	12.0	3	38
CHD2950	O	2.95	12.0	3	38
CHD2960	O	2.96	12.0	3	38
CHD2970	O	2.97	12.0	3	38
CHD2980	O	2.98	12.0	3	38
CHD2990	O	2.99	12.0	3	38
CHD3000	O	3.00	12.0	3	38

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Heat-resisting Alloy			Cobalt Nickel Alloy			Titanium Alloy		
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm
0.04-0.09	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 30	0.001~ 0.0015	10000~ 20000	10~ 20	0.001	10000~ 15000	10~ 22	0.001~ 0.0015	4300	1.29~ 3	0.0003~ 0.0007	9500	2.85~ 7.6	0.0003~ 0.0008	7400	2.22~ 5.18	0.0003~ 0.0007
0.1-0.29	25000~ 20000	50~ 200	0.002~ 0.01	20000~ 15000	30~ 100	0.0015~ 0.007	17000~ 13000	17~ 52	0.001~ 0.004	15000~ 7500	7~ 7.5	0.0005~ 0.001	3900~ 3600	3.9~ 7.2	0.001~ 0.002	8500~ 7900	12.8~ 23.7	0.0015~ 0.003	6000~ 6200	6.6~ 12.4	0.001~ 0.002
0.3-0.49	20000~ 18000	200~ 720	0.01~ 0.04	15000	100~ 150	0.007~ 0.01	13000~ 10000	40~ 50	0.003~ 0.005	10000~ 8000	20~ 80	0.002~ 0.01	4900~ 4400	14.7~ 26.4	0.003~ 0.006	7600~ 6800	30.4~ 68	0.004~ 0.01	5900~ 5300	17.7~ 31.8	0.003~ 0.006
0.5-0.99	18000~ 15000	360~ 600	0.02~ 0.04	15000~ 9500	150~ 190	0.01~ 0.02	10000~ 7000	50~ 70	0.005~ 0.01	8000~ 6000	120	0.015~ 0.02	3100~ 2900	21.7~ 29	0.007~ 0.01	6800~ 6400	102~ 128	0.015~ 0.02	5300~ 5000	37.1~ 50	0.007~ 0.01
1.0-1.99	15000~ 9500	600	0.03~ 0.06	9500~ 6000	190~ 300	0.02~ 0.05	7000~ 4000	70~ 120	0.01~ 0.03	6000~ 4000	120~ 160	0.02~ 0.04	2000~ 1500	40~ 50	0.02~ 0.03	4300~ 3200	129~ 160	0.03~ 0.05	3400~ 2500	68~ 75	0.02~ 0.03
2.0-3.0	9500~ 6300	650	0.07~ 0.1	6000~ 4800	300~ 380	0.05~ 0.08	4000~ 3000	140	0.02~ 0.04	4000~ 3700	120~ 185	0.03~ 0.05	1200	48	0.04	2700	189	0.07	2000	80	0.04

CHDL- MULTI-FUNCTION LONG FLUTE MICRO DRILLS

MICRO GRAIN · 1 SHANK 3.0mm · 1 SHANK 3.175mm · 1 SHANK 4.0mm · LONG Flute · 25° · 118° 135° · TiAlN Coating

Tool dia：D0.04-D3.0mm

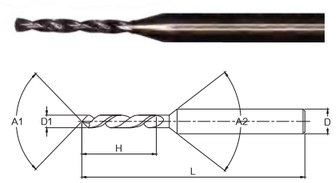
Dia tolerance：0,-0.005mm

D1≤1.0mm - 118°
D1＞1.0mm - 135°

Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit

Suitable for hole machining of stainless steel, heat resistant alloy and other materials



Work Material																		
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel ~50 HRC	Hardess steel ~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎					◎	◎	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL0040	○	0.040	0.6	3	38
CHDL0045	○	0.045	0.7	3	38
CHDL0050	○	0.050	0.9	3	38
CHDL0055	○	0.055	0.9	3	38
CHDL0060	○	0.060	0.9	3	38
CHDL0065	○	0.065	0.9	3	38
CHDL0070	○	0.070	1.2	3	38
CHDL0075	○	0.075	1.2	3	38
CHDL0080	○	0.080	1.2	3	38
CHDL0085	○	0.085	1.2	3	38
CHDL0090	○	0.090	1.2	3	38
CHDL0095	○	0.095	1.2	3	38
CHDL0100	○	0.10	2.0	3	38
CHDL0110	○	0.11	2.0	3	38
CHDL0120	○	0.12	2.0	3	38
CHDL0130	○	0.13	3.0	3	38
CHDL0140	○	0.14	3.0	3	38
CHDL0150	○	0.15	3.0	3	38
CHDL0160	○	0.16	4.0	3	38
CHDL0170	○	0.17	4.0	3	38
CHDL0180	○	0.18	4.0	3	38
CHDL0190	○	0.19	4.0	3	38
CHDL0200	○	0.20	4.0	3	38
CHDL0210	○	0.21	5.0	3	38
CHDL0220	○	0.22	5.0	3	38
CHDL0230	○	0.23	5.0	3	38
CHDL0240	○	0.24	5.0	3	38
CHDL0250	○	0.25	5.0	3	38
CHDL0260	○	0.26	6.0	3	38
CHDL0270	○	0.27	6.0	3	38
CHDL0280	○	0.28	6.0	3	38
CHDL0290	○	0.29	6.0	3	38
CHDL0300	○	0.30	6.0	3	38
CHDL0310	○	0.31	6.0	3	38
CHDL0320	○	0.32	6.0	3	38
CHDL0330	○	0.33	6.0	3	38
CHDL0340	○	0.34	6.0	3	38
CHDL0350	○	0.35	6.0	3	38
CHDL0360	○	0.36	6.0	3	38
CHDL0370	○	0.37	6.0	3	38
CHDL0380	○	0.38	6.0	3	38
CHDL0390	○	0.39	6.0	3	38
CHDL0400	○	0.40	6.0	3	38
CHDL0410	○	0.41	7.0	3	38
CHDL0420	○	0.42	7.0	3	38
CHDL0430	○	0.43	7.0	3	38
CHDL0440	○	0.44	7.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL0450	○	0.45	7.0	3	38
CHDL0460	○	0.46	7.0	3	38
CHDL0470	○	0.47	7.0	3	38
CHDL0480	○	0.48	7.0	3	38
CHDL0490	○	0.49	7.0	3	38
CHDL0500	○	0.50	7.0	3	38
CHDL0510	○	0.51	9.0	3	38
CHDL0520	○	0.52	9.0	3	38
CHDL0530	○	0.53	9.0	3	38
CHDL0540	○	0.54	9.0	3	38
CHDL0550	○	0.55	9.0	3	38
CHDL0560	○	0.56	9.0	3	38
CHDL0570	○	0.57	9.0	3	38
CHDL0580	○	0.58	9.0	3	38
CHDL0590	○	0.59	9.0	3	38
CHDL0600	○	0.60	9.0	3	38
CHDL0610	○	0.61	9.0	3	38
CHDL0620	○	0.62	9.0	3	38
CHDL0630	○	0.63	9.0	3	38
CHDL0640	○	0.64	9.0	3	38
CHDL0650	○	0.65	9.0	3	38
CHDL0660	○	0.66	9.0	3	38
CHDL0670	○	0.67	9.0	3	38
CHDL0680	○	0.68	9.0	3	38
CHDL0690	○	0.69	9.0	3	38
CHDL0700	○	0.7	9.0	3	38
CHDL0710	○	0.71	10.0	3	38
CHDL0720	○	0.72	10.0	3	38
CHDL0730	○	0.73	10.0	3	38
CHDL0740	○	0.74	10.0	3	38
CHDL0750	○	0.75	10.0	3	38
CHDL0760	○	0.76	10.0	3	38
CHDL0770	○	0.77	10.0	3	38
CHDL0780	○	0.78	10.0	3	38
CHDL0790	○	0.79	10.0	3	38
CHDL0800	○	0.80	10.0	3	38
CHDL0810	○	0.81	10.0	3	38
CHDL0820	○	0.82	10.0	3	38
CHDL0830	○	0.83	10.0	3	38
CHDL0840	○	0.84	10.0	3	38
CHDL0850	○	0.85	10.0	3	38
CHDL0860	○	0.86	10.0	3	38
CHDL0870	○	0.87	10.0	3	38
CHDL0880	○	0.88	10.0	3	38
CHDL0890	○	0.89	10.0	3	38
CHDL0900	○	0.9	10.0	3	38
CHDL0910	○	0.91	10.0	3	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL0920	○	0.92	10.0	3	38
CHDL0930	○	0.93	10.0	3	38
CHDL0940	○	0.94	10.0	3	38
CHDL0950	○	0.95	10.0	3	38
CHDL0960	○	0.96	10.0	3	38
CHDL0970	○	0.97	10.0	3	38
CHDL0980	○	0.98	10.0	3	38
CHDL0990	○	0.99	10.0	3	38
CHDL1000	○	1.0	12.0	3	50
CHDL1010	○	1.01	12.0	3	50
CHDL1020	○	1.02	12.0	3	50
CHDL1030	○	1.03	12.0	3	50
CHDL1040	○	1.04	12.0	3	50
CHDL1050	○	1.05	12.0	3	50
CHDL1060	○	1.06	12.0	3	50
CHDL1070	○	1.07	12.0	3	50
CHDL1080	○	1.08	12.0	3	50
CHDL1090	○	1.09	12.0	3	50
CHDL1100	○	1.1	12.0	3	50
CHDL1110	○	1.11	12.0	3	50
CHDL1120	○	1.12	12.0	3	50
CHDL1130	○	1.13	12.0	3	50
CHDL1140	○	1.14	12.0	3	50
CHDL1150	○	1.15	12.0	3	50
CHDL1160	○	1.16	12.0	3	50
CHDL1170	○	1.17	12.0	3	50
CHDL1180	○	1.18	12.0	3	50
CHDL1190	○	1.19	12.0	3	50
CHDL1200	○	1.2	15.0	3	50
CHDL1210	○	1.21	15.0	3	50
CHDL1220	○	1.22	15.0	3	50
CHDL1230	○	1.23	15.0	3	50
CHDL1240	○	1.24	15.0	3	50
CHDL1250	○	1.25	15.0	3	50
CHDL1260	○	1.26	15.0	3	50
CHDL1270	○	1.27	15.0	3	50
CHDL1280	○	1.28	15.0	3	50
CHDL1290	○	1.29	15.0	3	50
CHDL1300	○	1.3	15.0	3	50
CHDL1310	○	1.31	15.0	3	50
CHDL1320	○	1.32	15.0	3	50
CHDL1330	○	1.33	15.0	3	50
CHDL1340	○	1.34	15.0	3	50
CHDL1350	○	1.35	15.0	3	50
CHDL1360	○	1.36	15.0	3	50
CHDL1370	○	1.37	15.0	3	50
CHDL1380	○	1.38	15.0	3	50
CHDL1390	○	1.39	15.0	3	50
CHDL1400	○	1.4	15.0	3	50
CHDL1410	○	1.41	15.0	3	50
CHDL1420	○	1.42	15.0	3	50
CHDL1430	○	1.43	15.0	3	50
CHDL1440	○	1.44	15.0	3	50
CHDL1450	○	1.45	15.0	3	50
CHDL1460	○	1.46	15.0	3	50
CHDL1470	○	1.47	15.0	3	50
CHDL1480	○	1.48	15.0	3	50
CHDL1490	○	1.49	15.0	3	50
CHDL1500	○	1.5	20.0	3	50
CHDL1510	○	1.51	20.0	3	50
CHDL1520	○	1.52	20.0	3	50
CHDL1530	○	1.53	20.0	3	50
CHDL1540	○	1.54	20.0	3	50
CHDL1550	○	1.55	20.0	3	50
CHDL1560	○	1.56	20.0	3	50
CHDL1570	○	1.57	20.0	3	50
CHDL1580	○	1.58	20.0	3	50
CHDL1590	○	1.59	20.0	3	50
CHDL1600	○	1.6	20.0	3	50
CHDL1610	○	1.61	20.0	3	50
CHDL1620	○	1.62	20.0	3	50
CHDL1630	○	1.63	20.0	3	50

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL1640	○	1.64	20.0	3	50
CHDL1650	○	1.65	20.0	3	50
CHDL1660	○	1.66	20.0	3	50
CHDL1670	○	1.67	20.0	3	50
CHDL1680	○	1.68	20.0	3	50
CHDL1690	○	1.69	20.0	3	50
CHDL1700	○	1.70	20.0	3	50
CHDL1710	○	1.71	20.0	3	50
CHDL1720	○	1.72	20.0	3	50
CHDL1730	○	1.73	20.0	3	50
CHDL1740	○	1.74	20.0	3	50
CHDL1750	○	1.75	20.0	3	50
CHDL1760	○	1.76	20.0	3	50
CHDL1770	○	1.77	20.0	3	50
CHDL1780	○	1.78	20.0	3	50
CHDL1790	○	1.79	20.0	3	50
CHDL1800	○	1.80	20.0	3	50
CHDL1810	○	1.81	20.0	3	50
CHDL1820	○	1.82	20.0	3	50
CHDL1830	○	1.83	20.0	3	50
CHDL1840	○	1.84	20.0	3	50
CHDL1850	○	1.85	20.0	3	50
CHDL1860	○	1.86	20.0	3	50
CHDL1870	○	1.87	20.0	3	50
CHDL1880	○	1.88	20.0	3	50
CHDL1890	○	1.89	20.0	3	50
CHDL1900	○	1.90	20.0	3	50
CHDL1910	○	1.91	20.0	3	50
CHDL1920	○	1.92	20.0	3	50
CHDL1930	○	1.93	20.0	3	50
CHDL1940	○	1.94	20.0	3	50
CHDL1950	○	1.95	20.0	3	50
CHDL1960	○	1.96	20.0	3	50
CHDL1970	○	1.97	20.0	3	50
CHDL1980	○	1.98	20.0	3	50
CHDL1990	○	1.99	20.0	3	50
CHDL2000	○	2.00	20.0	3	50
CHDL2010	○	2.01	25.0	3	60
CHDL2020	○	2.02	25.0	3	60
CHDL2030	○	2.03	25.0	3	60
CHDL2040	○	2.04	25.0	3	60
CHDL2050	○	2.05	25.0	3	60
CHDL2060	○	2.06	25.0	3	60
CHDL2070	○	2.07	25.0	3	60
CHDL2080	○	2.08	25.0	3	60
CHDL2090	○	2.09	25.0	3	60
CHDL2100	○	2.10	25.0	3	60
CHDL2110	○	2.11	25.0	3	60
CHDL2120	○	2.12	25.0	3	60
CHDL2130	○	2.13	25.0	3	60
CHDL2140	○	2.14	25.0	3	60
CHDL2150	○	2.15	25.0	3	60
CHDL2160	○	2.16	25.0	3	60
CHDL2170	○	2.17	25.0	3	60
CHDL2180	○	2.18	25.0	3	60
CHDL2190	○	2.19	25.0	3	60
CHDL2200	○	2.20	25.0	3	60
CHDL2210	○	2.21	25.0	3	60
CHDL2220	○	2.22	25.0	3	60
CHDL2230	○	2.23	25.0	3	60
CHDL2240	○	2.24	25.0	3	60
CHDL2250	○	2.25	25.0	3	60
CHDL2260	○	2.26	25.0	3	60
CHDL2270	○	2.27	25.0	3	60
CHDL2280	○	2.28	25.0	3	60
CHDL2290	○	2.29	25.0	3	60
CHDL2300	○	2.30	25.0	3	60
CHDL2310	○	2.31	25.0	3	60
CHDL2320	○	2.32	25.0	3	60
CHDL2330	○	2.33	25.0	3	60
CHDL2340	○	2.34	25.0	3	60
CHDL2350	○	2.35	25.0	3	60

CHDL- MULTI-FUNCTION LONG FLUTE MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL2360	O	2.36	25.0	3	60
CHDL2370	O	2.37	25.0	3	60
CHDL2380	O	2.38	25.0	3	60
CHDL2390	O	2.39	25.0	3	60
CHDL2400	O	2.40	25.0	3	60
CHDL2410	O	2.41	25.0	3	60
CHDL2420	O	2.42	25.0	3	60
CHDL2430	O	2.43	25.0	3	60
CHDL2440	O	2.44	25.0	3	60
CHDL2450	O	2.45	25.0	3	60
CHDL2460	O	2.46	25.0	3	60
CHDL2470	O	2.47	25.0	3	60
CHDL2480	O	2.48	25.0	3	60
CHDL2490	O	2.49	25.0	3	60
CHDL2500	O	2.50	25.0	3	60
CHDL2510	O	2.51	25.0	3	60
CHDL2520	O	2.52	25.0	3	60
CHDL2530	O	2.53	25.0	3	60
CHDL2540	O	2.54	25.0	3	60
CHDL2550	O	2.55	25.0	3	60
CHDL2560	O	2.56	25.0	3	60
CHDL2570	O	2.57	25.0	3	60
CHDL2580	O	2.58	25.0	3	60
CHDL2590	O	2.59	25.0	3	60
CHDL2600	O	2.60	25.0	3	60
CHDL2610	O	2.61	25.0	3	60
CHDL2620	O	2.62	25.0	3	60
CHDL2630	O	2.63	25.0	3	60
CHDL2640	O	2.64	25.0	3	60
CHDL2650	O	2.65	25.0	3	60
CHDL2660	O	2.66	25.0	3	60
CHDL2670	O	2.67	25.0	3	60
CHDL2680	O	2.68	25.0	3	60

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHDL2690	O	2.69	25.0	3	60
CHDL2700	O	2.70	25.0	3	60
CHDL2710	O	2.71	25.0	3	60
CHDL2720	O	2.72	25.0	3	60
CHDL2730	O	2.73	25.0	3	60
CHDL2740	O	2.74	25.0	3	60
CHDL2750	O	2.75	25.0	3	60
CHDL2760	O	2.76	25.0	3	60
CHDL2770	O	2.77	25.0	3	60
CHDL2780	O	2.78	25.0	3	60
CHDL2790	O	2.79	25.0	3	60
CHDL2800	O	2.80	25.0	3	60
CHDL2810	O	2.81	25.0	3	60
CHDL2820	O	2.82	25.0	3	60
CHDL2830	O	2.83	25.0	3	60
CHDL2840	O	2.84	25.0	3	60
CHDL2850	O	2.85	25.0	3	60
CHDL2860	O	2.86	25.0	3	60
CHDL2870	O	2.87	25.0	3	60
CHDL2880	O	2.88	25.0	3	60
CHDL2890	O	2.89	25.0	3	60
CHDL2900	O	2.90	25.0	3	60
CHDL2910	O	2.91	25.0	3	60
CHDL2920	O	2.92	25.0	3	60
CHDL2930	O	2.93	25.0	3	60
CHDL2940	O	2.94	25.0	3	60
CHDL2950	O	2.95	25.0	3	60
CHDL2960	O	2.96	25.0	3	60
CHDL2970	O	2.97	25.0	3	60
CHDL2980	O	2.98	25.0	3	60
CHDL2990	O	2.99	25.0	3	60
CHDL3000	O	3.00	25.0	3	60

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel			Heat-resisting Alloy			Cobalt Nickel Alloy			Titanium Alloy		
Drill Dia. mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm	Rotation min⁻¹	Feed mm/min	Q mm
0.04-0.09	10000~20000	10~30	0.001~0.0015	10000~20000	10~30	0.001~0.0015	10000~20000	10~20	0.001	10000~15000	10~22	0.001~0.0015	4300	1.29~3	0.0003~0.0007	9500	2.85~7.6	0.0003~0.0008	7400	2.22~5.18	0.0003~0.0007
0.1-0.29	25000~20000	50~200	0.002~0.01	20000~15000	30~100	0.0015~0.007	17000~13000	17~52	0.001~0.004	15000~7500	7~7.5	0.0005~0.001	3900~3600	3.9~7.2	0.001~0.002	8500~7900	12.8~23.7	0.0015~0.003	6000~6200	6.6~12.4	0.001~0.002
0.3-0.49	20000~18000	200~720	0.01~0.04	15000	100~150	0.007~0.01	13000~10000	40~50	0.003~0.005	10000~8000	20~80	0.002~0.01	4900~4400	14.7~26.4	0.003~0.006	7600~6800	30.4~68	0.004~0.01	5900~5300	17.7~31.8	0.003~0.006
0.5-0.99	18000~15000	360~600	0.02~0.04	15000~9500	150~190	0.01~0.02	10000~7000	50~70	0.005~0.01	8000~6000	120	0.015~0.02	3100~2900	21.7~29	0.007~0.01	6800~6400	102~128	0.015~0.02	5300~5000	37.1~50	0.007~0.01
1.0-1.99	15000~9500	600	0.03~0.06	9500~6000	190~300	0.02~0.05	7000~4000	70~120	0.01~0.03	6000~4000	120~160	0.02~0.04	2000~1500	40~50	0.02~0.03	4300~3200	129~160	0.03~0.05	3400~2500	68~75	0.02~0.03
2.0-3.0	9500~6300	650	0.07~0.1	6000~4800	300~380	0.05~0.08	4000~3000	140	0.02~0.04	4000~3700	120~185	0.03~0.05	1200	48	0.04	2700	189	0.07	2000	80	0.04

CXD- LEFT ROTATION MICRO DRILLS



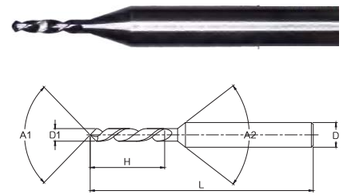
Tool dia：D0.15-D3.18mm

Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal

The specially designed left-hand groove is suitable for hole processing of automatic lathe



Work Material																							
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	S304L 316L Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
○	○	○	○					○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD0150	O	0.15	2.5	3.2	38
CXD0160	O	0.16	2.5	3.2	38
CXD0170	O	0.17	2.5	3.2	38
CXD0180	O	0.18	2.5	3.2	38
CXD0190	O	0.19	2.5	3.2	38
CXD0200	O	0.20	3.5	3.2	38
CXD0210	O	0.21	3.5	3.2	38
CXD0220	O	0.22	3.5	3.2	38
CXD0230	O	0.23	3.5	3.2	38
CXD0240	O	0.24	3.5	3.2	38
CXD0250	O	0.25	3.5	3.2	38
CXD0260	O	0.26	3.5	3.2	38
CXD0270	O	0.27	3.5	3.2	38
CXD0280	O	0.28	3.5	3.2	38
CXD0290	O	0.29	3.5	3.2	38
CXD0300	O	0.30	3.5	3.2	38
CXD0310	O	0.31	3.5	3.2	38
CXD0320	O	0.32	3.5	3.2	38
CXD0330	O	0.33	3.5	3.2	38
CXD0340	O	0.34	3.5	3.2	38
CXD0350	O	0.35	3.5	3.2	38
CXD0360	O	0.36	3.5	3.2	38
CXD0370	O	0.37	3.5	3.2	38
CXD0380	O	0.38	3.5	3.2	38
CXD0390	O	0.39	3.5	3.2	38
CXD0400	O	0.40	3.5	3.2	38
CXD0410	O	0.41	3.5	3.2	38
CXD0420	O	0.42	3.5	3.2	38
CXD0430	O	0.43	3.5	3.2	38
CXD0440	O	0.44	3.5	3.2	38
CXD0450	O	0.45	4.5	3.2	38
CXD0460	O	0.46	4.5	3.2	38
CXD0470	O	0.47	4.5	3.2	38
CXD0480	O	0.48	4.5	3.2	38
CXD0490	O	0.49	4.5	3.2	38
CXD0500	O	0.50	5.0	3.2	38
CXD0510	O	0.51	5.0	3.2	38
CXD0520	O	0.52	5.0	3.2	38
CXD0530	O	0.53	5.0	3.2	38
CXD0540	O	0.54	5.0	3.2	38
CXD0550	O	0.55	5.0	3.2	38
CXD0560	O	0.56	5.0	3.2	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD0570	O	0.57	5.0	3.2	38
CXD0580	O	0.58	5.0	3.2	38
CXD0590	O	0.59	5.0	3.2	38
CXD0600	O	0.60	5.0	3.2	38
CXD0610	O	0.61	5.0	3.2	38
CXD0620	O	0.62	5.0	3.2	38
CXD0630	O	0.63	5.0	3.2	38
CXD0640	O	0.64	5.0	3.2	38
CXD0650	O	0.65	5.0	3.2	38
CXD0660	O	0.66	5.0	3.2	38
CXD0670	O	0.67	5.0	3.2	38
CXD0680	O	0.68	5.0	3.2	38
CXD0690	O	0.69	5.0	3.2	38
CXD0700	O	0.70	5.0	3.2	38
CXD0710	O	0.71	5.0	3.2	38
CXD0715	O	0.715	5.0	3.2	38
CXD0720	O	0.720	5.0	3.2	38
CXD0725	O	0.725	5.0	3.2	38
CXD0730	O	0.730	5.0	3.2	38
CXD0740	O	0.740	5.0	3.2	38
CXD0750	O	0.75	5.0	3.2	38
CXD0760	O	0.76	5.0	3.2	38
CXD0770	O	0.77	5.0	3.2	38
CXD0780	O	0.78	5.0	3.2	38
CXD0790	O	0.79	5.0	3.2	38
CXD0800	O	0.80	5.0	3.2	38
CXD0810	O	0.81	5.0	3.2	38
CXD0820	O	0.82	5.0	3.2	38
CXD0830	O	0.83	5.0	3.2	38
CXD0840	O	0.84	5.0	3.2	38
CXD0850	O	0.85	5.0	3.2	38
CXD0860	O	0.86	5.0	3.2	38
CXD0870	O	0.87	5.0	3.2	38
CXD0873	O	0.873	5.0	3.2	38
CXD0875	O	0.875	5.0	3.2	38
CXD0880	O	0.880	5.0	3.2	38
CXD0883	O	0.883	5.0	3.2	38
CXD0885	O	0.885	5.0	3.2	38
CXD0887	O	0.887	5.0	3.2	38
CXD0888	O	0.887	5.0	3.2	38
CXD0890	O	0.890	5.0	3.2	38
CXD0892	O	0.892	5.0	3.2	38

CXD- LEFT ROTATION MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD0893	O	0.893	5.0	3.2	38
CXD0895	O	0.895	5.0	3.2	38
CXD0897	O	0.897	5.0	3.2	38
CXD0900	O	0.900	5.0	3.2	38
CXD0903	O	0.903	5.0	3.2	38
CXD0905	O	0.905	5.0	3.2	38
CXD0907	O	0.907	5.0	3.2	38
CXD0910	O	0.910	5.0	3.2	38
CXD0915	O	0.915	5.0	3.2	38
CXD0920	O	0.92	5.0	3.2	38
CXD0930	O	0.93	5.0	3.2	38
CXD0940	O	0.94	5.0	3.2	38
CXD0950	O	0.95	5.0	3.2	38
CXD0960	O	0.96	5.0	3.2	38
CXD0970	O	0.97	5.0	3.2	38
CXD0980	O	0.98	5.0	3.2	38
CXD0990	O	0.99	5.0	3.2	38
CXD1000	O	1.00	5.5	3.2	38
CXD1010	O	1.01	5.5	3.2	38
CXD1020	O	1.02	5.5	3.2	38
CXD1030	O	1.03	5.5	3.2	38
CXD1040	O	1.04	5.5	3.2	38
CXD1050	O	1.05	5.5	3.2	38
CXD1060	O	1.06	5.5	3.2	38
CXD1070	O	1.07	5.5	3.2	38
CXD1073	O	1.073	5.5	3.2	38
CXD1075	O	1.075	5.5	3.2	38
CXD1078	O	1.078	5.5	3.2	38
CXD1080	O	1.080	5.5	3.2	38
CXD1083	O	1.083	5.5	3.2	38
CXD1085	O	1.085	5.5	3.2	38
CXD1087	O	1.087	5.5	3.2	38
CXD1088	O	1.088	5.5	3.2	38
CXD1090	O	1.090	5.5	3.2	38
CXD1093	O	1.093	5.5	3.2	38
CXD1095	O	1.095	5.5	3.2	38
CXD1097	O	1.097	5.5	3.2	38
CXD1100	O	1.10	5.5	3.2	38
CXD1110	O	1.11	5.5	3.2	38
CXD1120	O	1.12	5.5	3.2	38
CXD1130	O	1.13	5.5	3.2	38
CXD1140	O	1.14	5.5	3.2	38
CXD1150	O	1.15	5.5	3.2	38
CXD1160	O	1.16	5.5	3.2	38
CXD1170	O	1.17	5.5	3.2	38
CXD1180	O	1.18	5.5	3.2	38
CXD1190	O	1.19	5.5	3.2	38
CXD1200	O	1.20	5.5	3.2	38
CXD1210	O	1.21	8.0	3.2	38
CXD1220	O	1.22	8.0	3.2	38
CXD1230	O	1.23	8.0	3.2	38
CXD1240	O	1.24	8.0	3.2	38
CXD1245	O	1.245	8.0	3.2	38
CXD1250	O	1.25	8.0	3.2	38
CXD1255	O	1.255	8.0	3.2	38
CXD1260	O	1.260	8.0	3.2	38
CXD1265	O	1.265	8.0	3.2	38
CXD1268	O	1.268	8.0	3.2	38
CXD1270	O	1.270	8.0	3.2	38
CXD1275	O	1.275	8.0	3.2	38
CXD1280	O	1.280	8.0	3.2	38
CXD1283	O	1.283	8.0	3.2	38
CXD1285	O	1.285	8.0	3.2	38
CXD1290	O	1.290	8.0	3.2	38
CXD1300	O	1.30	8.0	3.2	38
CXD1310	O	1.31	8.0	3.2	38
CXD1320	O	1.32	8.0	3.2	38
CXD1330	O	1.33	8.0	3.2	38
CXD1340	O	1.34	8.0	3.2	38
CXD1350	O	1.35	8.0	3.2	38
CXD1360	O	1.36	8.0	3.2	38
CXD1370	O	1.37	8.0	3.2	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD1380	O	1.38	8.0	3.2	38
CXD1390	O	1.39	8.0	3.2	38
CXD1400	O	1.40	8.0	3.2	38
CXD1410	O	1.41	8.0	3.2	38
CXD1420	O	1.42	8.0	3.2	38
CXD1430	O	1.43	8.0	3.2	38
CXD1440	O	1.44	8.0	3.2	38
CXD1450	O	1.45	8.0	3.2	38
CXD1460	O	1.46	8.0	3.2	38
CXD1470	O	1.47	8.0	3.2	38
CXD1480	O	1.48	8.0	3.2	38
CXD1490	O	1.49	8.0	3.2	38
CXD1500	O	1.50	8.0	3.2	38
CXD1510	O	1.51	8.0	3.2	38
CXD1520	O	1.52	8.0	3.2	38
CXD1530	O	1.53	8.0	3.2	38
CXD1540	O	1.54	8.0	3.2.	38
CXD1550	O	1.55	8.0	3.2	38
CXD1560	O	1.56	8.0	3.2	38
CXD1570	O	1.57	8.0	3.2	38
CXD1580	O	1.58	8.0	3.2	38
CXD1590	O	1.59	8.0	3.2	38
CXD1600	O	1.60	8.0	3.2	38
CXD1610	O	1.61	8.0	3.2	38
CXD1620	O	1.62	8.0	3.2	38
CXD1630	O	1.63	8.0	3.2	38
CXD1640	O	1.64	8.0	3.2	38
CXD1650	O	1.65	8.0	3.2	38
CXD1660	O	1.66	8.0	3.2	38
CXD1670	O	1.67	8.0	3.2	38
CXD1680	O	1.68	8.0	3.2	38
CXD1690	O	1.69	8.0	3.2	38
CXD1700	O	1.70	8.0	3.2	38
CXD1710	O	1.71	8.0	3.2	38
CXD1720	O	1.72	8.0	3.2	38
CXD1730	O	1.73	8.0	3.2	38
CXD1740	O	1.74	8.0	3.2	38
CXD1750	O	1.75	8.0	3.2	38
CXD1760	O	1.76	8.0	3.2	38
CXD1770	O	1.77	8.0	3.2	38
CXD1780	O	1.78	8.0	3.2	38
CXD1790	O	1.79	8.0	3.2	38
CXD1800	O	1.80	8.0	3.2	38
CXD1810	O	1.81	8.0	3.2	38
CXD1820	O	1.82	8.0	3.2	38
CXD1830	O	1.83	8.0	3.2	38
CXD1835	O	1.835	8.0	3.2	38
CXD1840	O	1.840	8.0	3.2	38
CXD1845	O	1.845	8.0	3.2	38
CXD1850	O	1.85	8.0	3.2	38
CXD1860	O	1.86	8.0	3.2	38
CXD1870	O	1.87	8.0	3.2	38
CXD1880	O	1.88	8.0	3.2	38
CXD1890	O	1.89	8.0	3.2	38
CXD1900	O	1.90	10.0	3.2	38
CXD1910	O	1.91	10.0	3.2	38
CXD1920	O	1.92	10.0	3.2	38
CXD1930	O	1.93	10.0	3.2	38
CXD1940	O	1.94	10.0	3.2	38
CXD1950	O	1.95	10.0	3.2	38
CXD1960	O	1.96	10.0	3.2	38
CXD1970	O	1.97	10.0	3.2	38
CXD1980	O	1.98	10.0	3.2	38
CXD1990	O	1.99	10.0	3.2	38
CXD2000	O	2.00	10.0	3.2	38
CXD2010	O	2.01	10.0	3.2	38
CXD2020	O	2.02	10.0	3.2	38
CXD2030	O	2.03	10.0	3.2	38
CXD2040	O	2.04	10.0	3.2	38
CXD2050	O	2.05	10.0	3.2	38
CXD2060	O	2.06	10.0	3.2	38
CXD2070	O	2.07	10.0	3.2	38

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CXD- LEFT ROTATION MICRO DRILLS

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD2080	O	2.08	10.0	3.2	38
CXD2090	O	2.09	10.0	3.2	38
CXD2100	O	2.10	12.0	3.2	38
CXD2110	O	2.11	12.0	3.2	38
CXD2120	O	2.12	12.0	3.2	38
CXD2130	O	2.13	12.0	3.2	38
CXD2140	O	2.14	12.0	3.2	38
CXD2150	O	2.15	12.0	3.2	38
CXD2160	O	2.16	12.0	3.2	38
CXD2170	O	2.17	12.0	3.2	38
CXD2180	O	2.18	12.0	3.2	38
CXD2190	O	2.19	12.0	3.2	38
CXD2200	O	2.20	12.0	3.2	38
CXD2210	O	2.21	12.0	3.2	38
CXD2220	O	2.22	12.0	3.2	38
CXD2230	O	2.23	12.0	3.2	38
CXD2240	O	2.24	12.0	3.2	38
CXD2250	O	2.25	12.0	3.2	38
CXD2260	O	2.26	12.0	3.2	38
CXD2270	O	2.27	12.0	3.2	38
CXD2280	O	2.28	12.0	3.2	38
CXD2290	O	2.29	12.0	3.2	38
CXD2300	O	2.30	12.0	3.2	38
CXD2310	O	2.31	12.0	3.2	38
CXD2320	O	2.32	12.0	3.2	38
CXD2330	O	2.33	12.0	3.2	38
CXD2340	O	2.34	12.0	3.2	38
CXD2350	O	2.35	12.0	3.2	38
CXD2360	O	2.36	12.0	3.2	38
CXD2370	O	2.37	12.0	3.2	38
CXD2380	O	2.38	12.0	3.2	38
CXD2390	O	2.39	12.0	3.2	38
CXD2400	O	2.40	12.0	3.2	38
CXD2410	O	2.41	12.0	3.2	38
CXD2420	O	2.42	12.0	3.2	38
CXD2430	O	2.43	12.0	3.2	38
CXD2440	O	2.44	12.0	3.2	38
CXD2450	O	2.45	12.0	3.2	38
CXD2460	O	2.46	12.0	3.2	38
CXD2470	O	2.47	12.0	3.2	38
CXD2480	O	2.48	12.0	3.2	38
CXD2490	O	2.49	12.0	3.2	38
CXD2500	O	2.50	12.0	3.2	38
CXD2510	O	2.51	12.0	3.2	38
CXD2520	O	2.52	12.0	3.2	38
CXD2530	O	2.53	12.0	3.2	38
CXD2540	O	2.54	12.0	3.2	38
CXD2550	O	2.55	12.0	3.2	38
CXD2560	O	2.56	12.0	3.2	38
CXD2570	O	2.57	12.0	3.2	38
CXD2580	O	2.58	12.0	3.2	38
CXD2590	O	2.59	12.0	3.2	38
CXD2600	O	2.60	12.0	3.2	38
CXD2610	O	2.61	12.0	3.2	38
CXD2620	O	2.62	12.0	3.2	38
CXD2630	O	2.63	12.0	3.2	38

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CXD2640	O	2.64	12.0	3.2	38
CXD2650	O	2.65	12.0	3.2	38
CXD2660	O	2.66	12.0	3.2	38
CXD2670	O	2.67	12.0	3.2	38
CXD2680	O	2.68	12.0	3.2	38
CXD2690	O	2.69	12.0	3.2	38
CXD2700	O	2.70	12.0	3.2	38
CXD2710	O	2.71	12.0	3.2	38
CXD2720	O	2.72	12.0	3.2	38
CXD2730	O	2.73	12.0	3.2	38
CXD2740	O	2.74	12.0	3.2	38
CXD2750	O	2.75	12.0	3.2	38
CXD2760	O	2.76	12.0	3.2	38
CXD2770	O	2.77	12.0	3.2	38
CXD2780	O	2.78	12.0	3.2	38
CXD2790	O	2.79	12.0	3.2	38
CXD2800	O	2.80	12.0	3.2.	38
CXD2810	O	2.81	12.0	3.2	38
CXD2820	O	2.82	12.0	3.2	38
CXD2830	O	2.83	12.0	3.2	38
CXD2840	O	2.84	12.0	3.2	38
CXD2850	O	2.85	12.0	3.2	38
CXD2860	O	2.86	12.0	3.2	38
CXD2870	O	2.87	12.0	3.2	38
CXD2880	O	2.88	12.0	3.2	38
CXD2890	O	2.89	12.0	3.2	38
CXD2900	O	2.90	12.0	3.2	38
CXD2910	O	2.91	12.0	3.2	38
CXD2920	O	2.92	12.0	3.2	38
CXD2930	O	2.93	12.0	3.2	38
CXD2940	O	2.94	12.0	3.2	38
CXD2950	O	2.95	12.0	3.2	38
CXD2960	O	2.96	12.0	3.2	38
CXD2970	O	2.97	12.0	3.2	38
CXD2980	O	2.98	12.0	3.2	38
CXD2990	O	2.99	12.0	3.2	38
CXD3000	O	3.00	12.0	3.2	38
CXD3010	O	3.01	12.0	3.2	38
CXD3020	O	3.02	12.0	3.2	38
CXD3030	O	3.03	12.0	3.2	38
CXD3040	O	3.04	12.0	3.2	38
CXD3050	O	3.05	12.0	3.2	38
CXD3060	O	3.06	12.0	3.2	38
CXD3070	O	3.07	12.0	3.2	38
CXD3080	O	3.08	12.0	3.2	38
CXD3090	O	3.09	12.0	3.2	38
CXD3100	O	3.10	12.0	3.2	38
CXD3110	O	3.11	12.0	3.2	38
CXD3120	O	3.12	12.0	3.2	38
CXD3130	O	3.13	12.0	3.2	38
CXD3140	O	3.14	12.0	3.2	38
CXD3150	O	3.15	12.0	3.2	38
CXD3160	O	3.16	12.0	3.2	38
CXD3170	O	3.17	12.0	3.2	38
CXD3180	O	3.18	12.0	3.2	38

CHXD- COATING LEFT ROTATION MICRO DRILLS



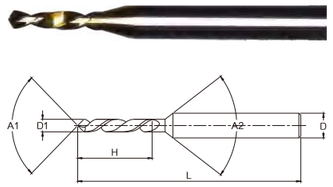
Tool dia：D0.15-D3.18mm

Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

The specially designed left-hand groove is suitable for hole processing of automatic lathe

Universal coating, suitable for hole machining of stainless steel, titanium alloy and other materials



Work Material																		
Carbon Steel	Alloy Steel	Stainless Steel	NAK/HPM Pre Hardened Steel Hardess steel ~50 HRC	~55 HRC	~60 HRC	~62 HRC	~65 HRC	Cast iron	Titanium Alloy	HRA	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○					◎	◎	◎	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD0150	○	0.15	2.5	3.2	38
CHXD0160	○	0.16	2.5	3.2	38
CHXD0170	○	0.17	2.5	3.2	38
CHXD0180	○	0.18	2.5	3.2	38
CHXD0190	○	0.19	2.5	3.2	38
CHXD0200	○	0.20	3.5	3.2	38
CHXD0210	○	0.21	3.5	3.2	38
CHXD0220	○	0.22	3.5	3.2	38
CHXD0230	○	0.23	3.5	3.2	38
CHXD0240	○	0.24	3.5	3.2	38
CHXD0250	○	0.25	3.5	3.2	38
CHXD0260	○	0.26	3.5	3.2	38
CHXD0270	○	0.27	3.5	3.2	38
CHXD0280	○	0.28	3.5	3.2	38
CHXD0290	○	0.29	3.5	3.2	38
CHXD0300	○	0.30	3.5	3.2	38
CHXD0310	○	0.31	3.5	3.2	38
CHXD0320	○	0.32	3.5	3.2	38
CHXD0330	○	0.33	3.5	3.2	38
CHXD0340	○	0.34	3.5	3.2	38
CHXD0350	○	0.35	3.5	3.2	38
CHXD0360	○	0.36	3.5	3.2	38
CHXD0370	○	0.37	3.5	3.2	38
CHXD0380	○	0.38	3.5	3.2	38
CHXD0390	○	0.39	3.5	3.2	38
CHXD0400	○	0.40	3.5	3.2	38
CHXD0410	○	0.41	3.5	3.2	38
CHXD0420	○	0.42	3.5	3.2	38
CHXD0430	○	0.43	3.5	3.2	38
CHXD0440	○	0.44	3.5	3.2	38
CHXD0450	○	0.45	4.5	3.2	38
CHXD0460	○	0.46	4.5	3.2	38
CHXD0470	○	0.47	4.5	3.2	38
CHXD0480	○	0.48	4.5	3.2	38
CHXD0490	○	0.49	4.5	3.2	38
CHXD0500	○	0.50	5.0	3.2	38
CHXD0510	○	0.51	5.0	3.2	38
CHXD0520	○	0.52	5.0	3.2	38
CHXD0530	○	0.53	5.0	3.2	38
CHXD0540	○	0.54	5.0	3.2	38
CHXD0550	○	0.55	5.0	3.2	38
CHXD0560	○	0.56	5.0	3.2	38

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD0570	○	0.57	5.0	3.2	38
CHXD0580	○	0.58	5.0	3.2	38
CHXD0590	○	0.59	5.0	3.2	38
CHXD0600	○	0.60	5.0	3.2	38
CHXD0610	○	0.61	5.0	3.2	38
CHXD0620	○	0.62	5.0	3.2	38
CHXD0630	○	0.63	5.0	3.2	38
CHXD0640	○	0.64	5.0	3.2	38
CHXD0650	○	0.65	5.0	3.2	38
CHXD0660	○	0.66	5.0	3.2	38
CHXD0670	○	0.67	5.0	3.2	38
CHXD0680	○	0.68	5.0	3.2	38
CHXD0690	○	0.69	5.0	3.2	38
CHXD0700	○	0.70	5.0	3.2	38
CHXD0710	○	0.71	5.0	3.2	38
CHXD0715	○	0.715	5.0	3.2	38
CHXD0720	○	0.720	5.0	3.2	38
CHXD0725	○	0.725	5.0	3.2	38
CHXD0730	○	0.73	5.0	3.2	38
CHXD0740	○	0.74	5.0	3.2	38
CHXD0750	○	0.75	5.0	3.2	38
CHXD0760	○	0.76	5.0	3.2	38
CHXD0770	○	0.77	5.0	3.2	38
CHXD0780	○	0.78	5.0	3.2	38
CHXD0790	○	0.79	5.0	3.2	38
CHXD0800	○	0.80	5.0	3.2	38
CHXD0810	○	0.81	5.0	3.2	38
CHXD0820	○	0.82	5.0	3.2	38
CHXD0830	○	0.83	5.0	3.2	38
CHXD0840	○	0.84	5.0	3.2	38
CHXD0850	○	0.85	5.0	3.2	38
CHXD0860	○	0.86	5.0	3.2	38
CHXD0870	○	0.87	5.0	3.2	38
CHXD0873	○	0.873	5.0	3.2	38
CHXD0875	○	0.875	5.0	3.2	38
CHXD0880	○	0.880	5.0	3.2	38
CHXD0883	○	0.883	5.0	3.2	38
CHXD0885	○	0.885	5.0	3.2	38
CHXD0887	○	0.887	5.0	3.2	38
CHXD0888	○	0.887	5.0	3.2	38
CHXD0890	○	0.890	5.0	3.2	38
CHXD0892	○	0.892	5.0	3.2	38

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CHXD- COATING LEFT ROTATION MICRO DRILLS

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD0893	○	0.893	5.0	3.2	38
CHXD0895	○	0.895	5.0	3.2	38
CHXD0897	○	0.897	5.0	3.2	38
CHXD0900	○	0.900	5.0	3.2	38
CHXD0903	○	0.903	5.0	3.2	38
CHXD0905	○	0.905	5.0	3.2	38
CHXD0907	○	0.907	5.0	3.2	38
CHXD0910	○	0.910	5.0	3.2	38
CHXD0915	○	0.915	5.0	3.2	38
CHXD0920	○	0.92	5.0	3.2	38
CHXD0930	○	0.93	5.0	3.2	38
CHXD0940	○	0.94	5.0	3.2	38
CHXD0950	○	0.95	5.0	3.2	38
CHXD0960	○	0.96	5.0	3.2	38
CHXD0970	○	0.97	5.0	3.2	38
CHXD0980	○	0.98	5.0	3.2	38
CHXD0990	○	0.99	5.0	3.2	38
CHXD1000	○	1.00	5.5	3.2	38
CHXD1010	○	1.01	5.5	3.2	38
CHXD1020	○	1.02	5.5	3.2	38
CHXD1030	○	1.03	5.5	3.2	38
CHXD1040	○	1.04	5.5	3.2	38
CHXD1050	○	1.05	5.5	3.2	38
CHXD1060	○	1.06	5.5	3.2	38
CHXD1070	○	1.07	5.5	3.2	38
CHXD1073	○	1.073	5.5	3.2	38
CHXD1075	○	1.075	5.5	3.2	38
CHXD1078	○	1.078	5.5	3.2	38
CHXD1080	○	1.080	5.5	3.2	38
CHXD1083	○	1.083	5.5	3.2	38
CHXD1085	○	1.085	5.5	3.2	38
CHXD1087	○	1.087	5.5	3.2	38
CHXD1088	○	1.088	5.5	3.2	38
CHXD1090	○	1.090	5.5	3.2	38
CHXD1093	○	1.093	5.5	3.2	38
CHXD1095	○	1.095	5.5	3.2	38
CHXD1097	○	1.097	5.5	3.2	38
CHXD1100	○	1.10	5.5	3.2	38
CHXD1110	○	1.11	5.5	3.2	38
CHXD1120	○	1.12	5.5	3.2	38
CHXD1130	○	1.13	5.5	3.2	38
CHXD1140	○	1.14	5.5	3.2	38
CHXD1150	○	1.15	5.5	3.2	38
CHXD1160	○	1.16	5.5	3.2	38
CHXD1170	○	1.17	5.5	3.2	38
CHXD1180	○	1.18	5.5	3.2	38
CHXD1190	○	1.19	5.5	3.2	38
CHXD1200	○	1.20	5.5	3.2	38
CHXD1210	○	1.21	8.0	3.2	38
CHXD1220	○	1.22	8.0	3.2	38
CHXD1230	○	1.23	8.0	3.2	38
CHXD1240	○	1.24	8.0	3.2	38
CHXD1245	○	1.245	8.0	3.2	38
CHXD1250	○	1.250	8.0	3.2	38
CHXD1255	○	1.255	8.0	3.2	38
CHXD1260	○	1.260	8.0	3.2	38
CHXD1265	○	1.265	8.0	3.2	38
CHXD1268	○	1.268	8.0	3.2	38
CHXD1270	○	1.270	8.0	3.2	38
CHXD1275	○	1.275	8.0	3.2	38
CHXD1280	○	1.280	8.0	3.2	38
CHXD1283	○	1.283	8.0	3.2	38
CHXD1285	○	1.285	8.0	3.2	38
CHXD1290	○	1.29	8.0	3.2	38
CHXD1300	○	1.30	8.0	3.2	38
CHXD1310	○	1.31	8.0	3.2	38
CHXD1320	○	1.32	8.0	3.2	38
CHXD1330	○	1.33	8.0	3.2	38
CHXD1340	○	1.34	8.0	3.2	38
CHXD1350	○	1.35	8.0	3.2	38
CHXD1360	○	1.36	8.0	3.2	38
CHXD1370	○	1.37	8.0	3.2	38

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD1380	○	1.38	8.0	3.2	38
CHXD1390	○	1.39	8.0	3.2	38
CHXD1400	○	1.40	8.0	3.2	38
CHXD1410	○	1.41	8.0	3.2	38
CHXD1420	○	1.42	8.0	3.2	38
CHXD1430	○	1.43	8.0	3.2	38
CHXD1440	○	1.44	8.0	3.2	38
CHXD1450	○	1.45	8.0	3.2	38
CHXD1460	○	1.46	8.0	3.2	38
CHXD1470	○	1.47	8.0	3.2	38
CHXD1480	○	1.48	8.0	3.2	38
CHXD1490	○	1.49	8.0	3.2	38
CHXD1500	○	1.50	8.0	3.2	38
CHXD1510	○	1.51	8.0	3.2	38
CHXD1520	○	1.52	8.0	3.2	38
CHXD1530	○	1.53	8.0	3.2	38
CHXD1540	○	1.54	8.0	3.2.	38
CHXD1550	○	1.55	8.0	3.2	38
CHXD1560	○	1.56	8.0	3.2	38
CHXD1570	○	1.57	8.0	3.2	38
CHXD1580	○	1.58	8.0	3.2	38
CHXD1590	○	1.59	8.0	3.2	38
CHXD1600	○	1.60	8.0	3.2	38
CHXD1610	○	1.61	8.0	3.2	38
CHXD1620	○	1.62	8.0	3.2	38
CHXD1630	○	1.63	8.0	3.2	38
CHXD1640	○	1.64	8.0	3.2	38
CHXD1650	○	1.65	8.0	3.2	38
CHXD1660	○	1.66	8.0	3.2	38
CHXD1670	○	1.67	8.0	3.2	38
CHXD1680	○	1.68	8.0	3.2	38
CHXD1690	○	1.69	8.0	3.2	38
CHXD1700	○	1.70	8.0	3.2	38
CHXD1710	○	1.71	8.0	3.2	38
CHXD1720	○	1.72	8.0	3.2	38
CHXD1730	○	1.73	8.0	3.2	38
CHXD1740	○	1.74	8.0	3.2	38
CHXD1750	○	1.75	8.0	3.2	38
CHXD1760	○	1.76	8.0	3.2	38
CHXD1770	○	1.77	8.0	3.2	38
CHXD1780	○	1.78	8.0	3.2	38
CHXD1790	○	1.79	8.0	3.2	38
CHXD1800	○	1.80	8.0	3.2	38
CHXD1810	○	1.81	8.0	3.2	38
CHXD1820	○	1.82	8.0	3.2	38
CHXD1830	○	1.83	8.0	3.2	38
CHXD1835	○	1.835	8.0	3.2	38
CHXD1840	○	1.840	8.0	3.2	38
CHXD1845	○	1.845	8.0	3.2	38
CHXD1850	○	1.85	8.0	3.2	38
CHXD1860	○	1.86	8.0	3.2	38
CHXD1870	○	1.87	8.0	3.2	38
CHXD1880	○	1.88	8.0	3.2	38
CHXD1890	○	1.89	8.0	3.2	38
CHXD1900	○	1.90	10.0	3.2	38
CHXD1910	○	1.91	10.0	3.2	38
CHXD1920	○	1.92	10.0	3.2	38
CHXD1930	○	1.93	10.0	3.2	38
CHXD1940	○	1.94	10.0	3.2	38
CHXD1950	○	1.95	10.0	3.2	38
CHXD1960	○	1.96	10.0	3.2	38
CHXD1970	○	1.97	10.0	3.2	38
CHXD1980	○	1.98	10.0	3.2	38
CHXD1990	○	1.99	10.0	3.2	38
CHXD2000	○	2.00	10.0	3.2	38
CHXD2010	○	2.01	10.0	3.2	38
CHXD2020	○	2.02	10.0	3.2	38
CHXD2030	○	2.03	10.0	3.2	38
CHXD2040	○	2.04	10.0	3.2	38
CHXD2050	○	2.05	10.0	3.2	38
CHXD2060	○	2.06	10.0	3.2	38
CHXD2070	○	2.07	10.0	3.2	38

CHXD- COATING LEFT ROTATION MICRO DRILLS

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD2080	O	2.08	10.0	3.2	38
CHXD2090	O	2.09	10.0	3.2	38
CHXD2100	O	2.10	12.0	3.2	38
CHXD2110	O	2.11	12.0	3.2	38
CHXD2120	O	2.12	12.0	3.2	38
CHXD2130	O	2.13	12.0	3.2	38
CHXD2140	O	2.14	12.0	3.2	38
CHXD2150	O	2.15	12.0	3.2	38
CHXD2160	O	2.16	12.0	3.2	38
CHXD2170	O	2.17	12.0	3.2	38
CHXD2180	O	2.18	12.0	3.2	38
CHXD2190	O	2.19	12.0	3.2	38
CHXD2200	O	2.20	12.0	3.2	38
CHXD2210	O	2.21	12.0	3.2	38
CHXD2220	O	2.22	12.0	3.2	38
CHXD2230	O	2.23	12.0	3.2	38
CHXD2240	O	2.24	12.0	3.2	38
CHXD2250	O	2.25	12.0	3.2	38
CHXD2260	O	2.26	12.0	3.2	38
CHXD2270	O	2.27	12.0	3.2	38
CHXD2280	O	2.28	12.0	3.2	38
CHXD2290	O	2.29	12.0	3.2	38
CHXD2300	O	2.30	12.0	3.2	38
CHXD2310	O	2.31	12.0	3.2	38
CHXD2320	O	2.32	12.0	3.2	38
CHXD2330	O	2.33	12.0	3.2	38
CHXD2340	O	2.34	12.0	3.2	38
CHXD2350	O	2.35	12.0	3.2	38
CHXD2360	O	2.36	12.0	3.2	38
CHXD2370	O	2.37	12.0	3.2	38
CHXD2380	O	2.38	12.0	3.2	38
CHXD2390	O	2.39	12.0	3.2	38
CHXD2400	O	2.40	12.0	3.2	38
CHXD2410	O	2.41	12.0	3.2	38
CHXD2420	O	2.42	12.0	3.2	38
CHXD2430	O	2.43	12.0	3.2	38
CHXD2440	O	2.44	12.0	3.2	38
CHXD2450	O	2.45	12.0	3.2	38
CHXD2460	O	2.46	12.0	3.2	38
CHXD2470	O	2.47	12.0	3.2	38
CHXD2480	O	2.48	12.0	3.2	38
CHXD2490	O	2.49	12.0	3.2	38
CHXD2500	O	2.50	12.0	3.2	38
CHXD2510	O	2.51	12.0	3.2	38
CHXD2520	O	2.52	12.0	3.2	38
CHXD2530	O	2.53	12.0	3.2	38
CHXD2540	O	2.54	12.0	3.2	38
CHXD2550	O	2.55	12.0	3.2	38
CHXD2560	O	2.56	12.0	3.2	38
CHXD2570	O	2.57	12.0	3.2	38
CHXD2580	O	2.58	12.0	3.2	38
CHXD2590	O	2.59	12.0	3.2	38
CHXD2600	O	2.60	12.0	3.2	38
CHXD2610	O	2.61	12.0	3.2	38
CHXD2620	O	2.62	12.0	3.2	38
CHXD2630	O	2.63	12.0	3.2	38

Model	Stock	Dia	Flute length H	Shank	Total length L
CHXD2640	O	2.64	12.0	3.2	38
CHXD2650	O	2.65	12.0	3.2	38
CHXD2660	O	2.66	12.0	3.2	38
CHXD2670	O	2.67	12.0	3.2	38
CHXD2680	O	2.68	12.0	3.2	38
CHXD2690	O	2.69	12.0	3.2	38
CHXD2700	O	2.70	12.0	3.2	38
CHXD2710	O	2.71	12.0	3.2	38
CHXD2720	O	2.72	12.0	3.2	38
CHXD2730	O	2.73	12.0	3.2	38
CHXD2740	O	2.74	12.0	3.2	38
CHXD2750	O	2.75	12.0	3.2	38
CHXD2760	O	2.76	12.0	3.2	38
CHXD2770	O	2.77	12.0	3.2	38
CHXD2780	O	2.78	12.0	3.2	38
CHXD2790	O	2.79	12.0	3.2	38
CHXD2800	O	2.80	12.0	3.2.	38
CHXD2810	O	2.81	12.0	3.2	38
CHXD2820	O	2.82	12.0	3.2	38
CHXD2830	O	2.83	12.0	3.2	38
CHXD2840	O	2.84	12.0	3.2	38
CHXD2850	O	2.85	12.0	3.2	38
CHXD2860	O	2.86	12.0	3.2	38
CHXD2870	O	2.87	12.0	3.2	38
CHXD2880	O	2.88	12.0	3.2	38
CHXD2890	O	2.89	12.0	3.2	38
CHXD2900	O	2.90	12.0	3.2	38
CHXD2910	O	2.91	12.0	3.2	38
CHXD2920	O	2.92	12.0	3.2	38
CHXD2930	O	2.93	12.0	3.2	38
CHXD2940	O	2.94	12.0	3.2	38
CHXD2950	O	2.95	12.0	3.2	38
CHXD2960	O	2.96	12.0	3.2	38
CHXD2970	O	2.97	12.0	3.2	38
CHXD2980	O	2.98	12.0	3.2	38
CHXD2990	O	2.99	12.0	3.2	38
CHXD3000	O	3.00	12.0	3.2	38
CHXD3010	O	3.01	12.0	3.2	38
CHXD3020	O	3.02	12.0	3.2	38
CHXD3030	O	3.03	12.0	3.2	38
CHXD3040	O	3.04	12.0	3.2	38
CHXD3050	O	3.05	12.0	3.2	38
CHXD3060	O	3.06	12.0	3.2	38
CHXD3070	O	3.07	12.0	3.2	38
CHXD3080	O	3.08	12.0	3.2	38
CHXD3090	O	3.09	12.0	3.2	38
CHXD3100	O	3.10	12.0	3.2	38
CHXD3110	O	3.11	12.0	3.2	38
CHXD3120	O	3.12	12.0	3.2	38
CHXD3130	O	3.13	12.0	3.2	38
CHXD3140	O	3.14	12.0	3.2	38
CHXD3150	O	3.15	12.0	3.2	38
CHXD3160	O	3.16	12.0	3.2	38
CHXD3170	O	3.17	12.0	3.2	38
CHXD3180	O	3.18	12.0	3.2	38
	O				

CCD- HIGH PERFORMANCE DRILLS 3D (END MILL SHANK)



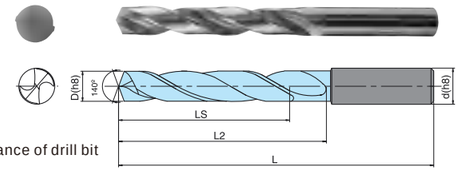
Tool dia: D3.0-D20.0mm

Dia tolerance:h8

Standard DIN6537

Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit



Work Material																			
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel 55 HRC	60 HRC	70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	○	○	○	○									

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS	
CCD3030	●	3.0	20	62	4	14	48.00
CCD3031	●	3.1	20	62	4	14	48.00
CCD3032	●	3.2	20	62	4	14	48.00
CCD3033	●	3.3	20	62	4	14	48.00
CCD3034	●	3.1	20	62	4	14	48.00
CCD3035	●	3.5	20	62	4	14	48.00
CCD3036	●	3.6	20	62	4	14	48.00
CCD3037	●	3.7	20	62	4	14	48.00
CCD3038	●	3.8	24	62	4	17	48.00
CCD3039	●	3.9	24	62	4	17	48.00
CCD3040	●	4.0	24	62	4	17	48.00
CCD3041	●	4.1	24	66	6	17	86.00
CCD3042	●	4.2	24	66	6	17	86.00
CCD3043	●	4.3	24	66	6	17	86.00
CCD3044	●	4.4	24	66	6	17	86.00
CCD3045	●	4.5	24	66	6	17	86.00
CCD3046	●	4.6	24	66	6	17	86.00
CCD3047	●	4.7	24	66	6	17	86.00
CCD3048	●	4.8	28	66	6	20	86.00
CCD3049	●	4.9	28	66	6	20	86.00
CCD3050	●	5.0	28	66	6	20	86.00
CCD3051	●	5.1	28	66	6	20	86.00
CCD3052	●	5.2	28	66	6	20	86.00
CCD3053	●	5.3	28	66	6	20	86.00
CCD3054	●	5.4	28	66	6	20	86.00
CCD3055	●	5.5	28	66	6	20	86.00
CCD3056	●	5.6	28	66	6	20	86.00
CCD3057	●	5.7	28	66	6	20	86.00
CCD3058	●	5.8	28	66	6	20	86.00
CCD3059	●	5.9	28	66	6	20	86.00
CCD3060	●	6.0	28	66	6	20	86.00
CCD3061	●	6.1	34	79	8	24	138.00
CCD3062	●	6.2	34	79	8	24	138.00
CCD3063	●	6.3	34	79	8	24	138.00
CCD3064	●	6.4	34	79	8	24	138.00
CCD3065	●	6.5	34	79	8	24	138.00
CCD3066	●	6.6	34	79	8	24	138.00
CCD3067	●	6.7	34	79	8	24	138.00
CCD3068	●	6.8	34	79	8	24	138.00
CCD3069	●	6.9	34	79	8	24	138.00
CCD3070	●	7.0	34	79	8	24	138.00
CCD3071	●	7.1	41	79	8	29	138.00
CCD3072	●	7.2	41	79	8	29	138.00
CCD3073	●	7.3	41	79	8	29	138.00
CCD3074	●	7.4	41	79	8	29	138.00
CCD3075	●	7.5	41	79	8	29	138.00
CCD3076	●	7.6	41	79	8	29	138.00
CCD3077	●	7.7	41	79	8	29	138.00
CCD3078	●	7.8	41	79	8	29	138.00
CCD3079	●	7.9	41	79	8	29	138.00

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS	
CCD3080	●	8.0	41	79	8	29	138.00
CCD3081	●	8.1	47	89	10	35	200.00
CCD3082	●	8.2	47	89	10	35	200.00
CCD3083	●	8.3	47	89	10	35	200.00
CCD3084	●	8.4	47	89	10	35	200.00
CCD3085	●	8.5	47	89	10	35	200.00
CCD3086	●	8.6	47	89	10	35	200.00
CCD3087	●	8.7	47	89	10	35	200.00
CCD3088	●	8.8	47	89	10	35	200.00
CCD3089	●	8.9	47	89	10	35	200.00
CCD3090	●	9.0	47	89	10	35	200.00
CCD3091	●	9.1	47	89	10	35	200.00
CCD3092	●	9.2	47	89	10	35	200.00
CCD3093	●	9.3	47	89	10	35	200.00
CCD3094	●	9.4	47	89	10	35	200.00
CCD3095	●	9.5	47	89	10	35	200.00
CCD3096	●	9.6	47	89	10	35	200.00
CCD3097	●	9.7	47	89	10	35	200.00
CCD3098	●	9.8	47	89	10	35	200.00
CCD3099	●	9.9	47	89	10	35	200.00
CCD3100	●	10.0	47	89	10	35	200.00
CCD3101	●	10.1	55	102	12	40	284.00
CCD3102	●	10.2	55	102	12	40	284.00
CCD3103	●	10.3	55	102	12	40	284.00
CCD3104	●	10.4	55	102	12	40	284.00
CCD3105	●	10.5	55	102	12	40	284.00
CCD3106	●	10.6	55	102	12	40	284.00
CCD3107	●	10.7	55	102	12	40	284.00
CCD3108	●	10.8	55	102	12	40	284.00
CCD3109	●	10.9	55	102	12	40	284.00
CCD3110	●	11.0	55	102	12	40	284.00
CCD3111	●	11.1	55	102	12	40	284.00
CCD3112	●	11.2	55	102	12	40	284.00
CCD3113	●	11.3	55	102	12	40	284.00
CCD3114	●	11.4	55	102	12	40	284.00
CCD3115	●	11.5	55	102	12	40	284.00
CCD3116	●	11.6	55	102	12	40	284.00
CCD3117	●	11.7	55	102	12	40	284.00
CCD3118	●	11.8	55	102	12	40	284.00
CCD3119	●	11.9	55	102	12	40	284.00
CCD3120	●	12.0	55	102	12	40	284.00
CCD3121	●	12.1	60	107	14	43	374.00
CCD3122	●	12.2	60	107	14	43	374.00
CCD3123	●	12.3	60	107	14	43	374.00
CCD3124	●	12.4	60	107	14	43	374.00
CCD3125	●	12.5	60	107	14	43	374.00
CCD3126	●	12.6	60	107	14	43	374.00
CCD3127	●	12.7	60	107	14	43	374.00
CCD3128	●	12.8	60	107	14	43	374.00
CCD3129	●	12.9	60	107	14	43	374.00

CCD- HIGH PERFORMANCE DRILLS 3D (END MILL SHANK)

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS	
CCD3130	●	13.0	60	107	14	43	374.00
CCD3131	●	13.1	60	107	14	43	374.00
CCD3132	●	13.2	60	107	14	43	374.00
CCD3133	●	13.3	60	107	14	43	374.00
CCD3134	●	13.4	60	107	14	43	374.00
CCD3135	●	13.5	60	107	14	43	374.00
CCD3136	●	13.6	60	107	14	43	374.00
CCD3137	●	13.7	60	107	14	43	374.00
CCD3138	●	13.8	60	107	14	43	374.00
CCD3139	●	13.9	60	107	14	43	374.00
CCD3140	●	14.0	60	107	14	43	374.00
CCD3141	●	14.1	65	115	16	45	478.00
CCD3142	●	14.2	65	115	16	45	478.00
CCD3143	●	14.3	65	115	16	45	478.00
CCD3144	●	14.4	65	115	16	45	478.00
CCD3145	●	14.5	65	115	16	45	478.00
CCD3146	●	14.6	65	115	16	45	478.00
CCD3147	●	14.7	65	115	16	45	478.00
CCD3148	●	14.8	65	115	16	45	478.00
CCD3149	●	14.9	65	115	16	45	478.00

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS	
CCD3150	●	15.0	65	115	16	45	478.00
CCD3151	●	15.1	65	115	16	45	478.00
CCD3152	●	15.2	65	115	16	45	478.00
CCD3153	●	15.3	65	115	16	45	478.00
CCD3154	●	15.4	65	115	16	45	478.00
CCD3155	●	15.5	65	115	16	45	478.00
CCD3156	●	15.6	65	115	16	45	478.00
CCD3157	●	15.7	65	115	16	45	478.00
CCD3158	●	15.8	65	115	16	45	478.00
CCD3159	●	15.9	65	115	16	45	478.00
CCD3160	●	16.0	65	115	16	45	478.00
CCD3165	●	16.5	73	123	18	51	554.00
CCD3170	●	17.0	73	123	18	51	554.00
CCD3175	●	17.5	73	123	18	51	554.00
CCD3180	●	18.0	73	123	18	51	554.00
CCD3185	●	18.5	79	131	20	55	702.00
CCD3190	●	19.0	79	131	20	55	702.00
CCD3195	●	19.5	79	131	20	55	702.00
CCD3200	●	20.0	79	131	20	55	702.00

Standard Drilling Conditions

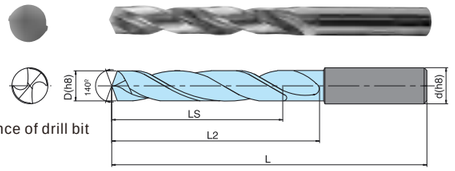
Work Material	C <0 3 Low Carbon Steel		~210HB Carbon Steel		16 28HRC Alloy Steel		28~35HRC Alloy Steel		Cast iron		Ductile Cast iron	
Cutting Speed mm/min	70~120m/min		60~120m/min		60~120m/min		50~90m/min		60~120m/min		50~100m/min	
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev
2	12000	0.06~0.08	10400	0.06~0.08	10400	0.06~0.08	8800	0.06~0.08	10400	0.06~0.08	9600	0.06~0.08
4	8000	0.08~0.16	7200	0.08~0.16	7200	0.08~0.16	5600	0.08~0.16	7200	0.08~0.16	6000	0.08~0.16
6	5300	0.12~0.24	4800	0.12~0.24	4800	0.12~0.24	3700	0.12~0.24	4800	0.12~0.24	4000	0.12~0.24
8	4000	0.16~0.28	3600	0.16~0.28	3600	0.16~0.28	2800	0.16~0.28	3600	0.16~0.28	3000	0.16~0.28
10	3200	0.2~0.3	2900	0.2~0.3	2900	0.2~0.3	2200	0.2~0.3	2900	0.2~0.3	2400	0.2~0.3
12	2700	0.21~0.3	2400	0.21~0.3	2400	0.21~0.3	1900	0.21~0.3	2400	0.21~0.3	2000	0.21~0.3
14	2300	0.22~0.35	2050	0.22~0.35	2050	0.22~0.35	1400	0.22~0.35	2050	0.22~0.35	1700	0.22~0.35
16	2000	0.25~0.36	1800	0.25~0.36	1800	0.25~0.36	1200	0.25~0.36	1800	0.25~0.36	1500	0.25~0.36
18	1800	0.28~0.38	1600	0.28~0.38	1600	0.28~0.38	1050	0.28~0.38	1600	0.28~0.38	1350	0.28~0.38
20	1600	0.3~0.4	1450	0.3~0.4	1450	0.3~0.4	950	0.3~0.4	1450	0.3~0.4	1200	0.3~0.4

1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
3. When using non-water-soluble oil or water-soluble oil (over 20 times dilution),reduce cutting speed by 30%.
4. These conditions are for drilling depth under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet that does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

CCD- HIGH PERFORMANCE DRILLS 5D (END MILL SHANK)



Tool dia: D3.0-D20.0mm
Dia tolerance:h8
Standard: DIN6537
Micro Grain Tungsten Carbide
Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit



Work Material																		
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel 55 HRC	60 HRC	70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	○	○	○	○									

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
CCD5030	●	3.0	28	66	4	23
CCD5031	●	3.1	28	66	4	23
CCD5032	●	3.2	28	66	4	23
CCD5033	●	3.3	28	66	4	23
CCD5034	●	3.1	28	66	4	23
CCD5035	●	3.5	28	66	4	23
CCD5036	●	3.6	28	66	4	23
CCD5037	●	3.7	28	66	4	23
CCD5038	●	3.8	36	66	4	29
CCD5039	●	3.9	36	66	4	29
CCD5040	●	4.0	36	66	4	29
CCD5041	●	4.1	36	74	6	29
CCD5042	●	4.2	36	74	6	29
CCD5043	●	4.3	36	74	6	29
CCD5044	●	4.4	36	74	6	29
CCD5045	●	4.5	36	74	6	29
CCD5046	●	4.6	36	74	6	29
CCD5047	●	4.7	36	74	6	29
CCD5048	●	4.8	44	82	6	35
CCD5049	●	4.9	44	82	6	35
CCD5050	●	5.0	44	82	6	35
CCD5051	●	5.1	44	82	6	35
CCD5052	●	5.2	44	82	6	35
CCD5053	●	5.3	44	82	6	35
CCD5054	●	5.4	44	82	6	35
CCD5055	●	5.5	44	82	6	35
CCD5056	●	5.6	44	82	6	35
CCD5057	●	5.7	44	82	6	35
CCD5058	●	5.8	44	82	6	35
CCD5059	●	5.9	44	82	6	35
CCD5060	●	6.0	44	82	6	35
CCD5061	●	6.1	53	91	8	43
CCD5062	●	6.2	53	91	8	43
CCD5063	●	6.3	53	91	8	43
CCD5064	●	6.4	53	91	8	43
CCD5065	●	6.5	53	91	8	43
CCD5066	●	6.6	53	91	8	43
CCD5067	●	6.7	53	91	8	43
CCD5068	●	6.8	53	91	8	43
CCD5069	●	6.9	53	91	8	43
CCD5070	●	7.0	53	91	8	43
CCD5071	●	7.1	53	91	8	43
CCD5072	●	7.2	53	91	8	43
CCD5073	●	7.3	53	91	8	43
CCD5074	●	7.4	53	91	8	43
CCD5075	●	7.5	53	91	8	43
CCD5076	●	7.6	53	91	8	43
CCD5077	●	7.7	53	91	8	43
CCD5078	●	7.8	53	91	8	43
CCD5079	●	7.9	53	91	8	43

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
CCD5080	●	8.0	53	91	8	43
CCD5081	●	8.1	61	103	10	49
CCD5082	●	8.2	61	103	10	49
CCD5083	●	8.3	61	103	10	49
CCD5084	●	8.4	61	103	10	49
CCD5085	●	8.5	61	103	10	49
CCD5086	●	8.6	61	103	10	49
CCD5087	●	8.7	61	103	10	49
CCD5088	●	8.8	61	103	10	49
CCD5089	●	8.9	61	103	10	49
CCD5090	●	9.0	61	103	10	49
CCD5091	●	9.1	61	103	10	49
CCD5092	●	9.2	61	103	10	49
CCD5093	●	9.3	61	103	10	49
CCD5094	●	9.4	61	103	10	49
CCD5095	●	9.5	61	103	10	49
CCD5096	●	9.6	61	103	10	49
CCD5097	●	9.7	61	103	10	49
CCD5098	●	9.8	61	103	10	49
CCD5099	●	9.9	61	103	10	49
CCD5100	●	10.0	61	103	10	49
CCD5101	●	10.1	71	118	12	56
CCD5102	●	10.2	71	118	12	56
CCD5103	●	10.3	71	118	12	56
CCD5104	●	10.4	71	118	12	56
CCD5105	●	10.5	71	118	12	56
CCD5106	●	10.6	71	118	12	56
CCD5107	●	10.7	71	118	12	56
CCD5108	●	10.8	71	118	12	56
CCD5109	●	10.9	71	118	12	56
CCD5110	●	11.0	71	118	12	56
CCD5111	●	11.1	71	118	12	56
CCD5112	●	11.2	71	118	12	56
CCD5113	●	11.3	71	118	12	56
CCD5114	●	11.4	71	118	12	56
CCD5115	●	11.5	71	118	12	56
CCD5116	●	11.6	71	118	12	56
CCD5117	●	11.7	71	118	12	56
CCD5118	●	11.8	71	118	12	56
CCD5119	●	11.9	71	118	12	56
CCD5120	●	12.0	71	118	12	56
CCD5121	●	12.1	77	124	14	60
CCD5122	●	12.2	77	124	14	60
CCD5123	●	12.3	77	124	14	60
CCD5124	●	12.4	77	124	14	60
CCD5125	●	12.5	77	124	14	60
CCD5126	●	12.6	77	124	14	60
CCD5127	●	12.7	77	124	14	60
CCD5128	●	12.8	77	124	14	60
CCD5129	●	12.9	77	124	14	60

CCD- HIGH PERFORMANCE DRILLS 5D (END MILL SHANK)

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
CCD5130	●	13.0	77	124	14	60
CCD5131	●	13.1	77	124	14	60
CCD5132	●	13.2	77	124	14	60
CCD5133	●	13.3	77	124	14	60
CCD5134	●	13.4	77	124	14	60
CCD5135	●	13.5	77	124	14	60
CCD5136	●	13.6	77	124	14	60
CCD5137	●	13.7	77	124	14	60
CCD5138	●	13.8	77	124	14	60
CCD5139	●	13.9	77	124	14	60
CCD5140	●	14.0	77	124	14	60
CCD5141	●	14.1	83	133	16	63
CCD5142	●	14.2	83	133	16	63
CCD5143	●	14.3	83	133	16	63
CCD5144	●	14.4	83	133	16	63
CCD5145	●	14.5	83	133	16	63
CCD5146	●	14.6	83	133	16	63
CCD5147	●	14.7	83	133	16	63
CCD5148	●	14.8	83	133	16	63
CCD5149	●	14.9	83	133	16	63

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
CCD5150	●	15.0	83	133	16	63
CCD5151	●	15.1	83	133	16	63
CCD5152	●	15.2	83	133	16	63
CCD5153	●	15.3	83	133	16	63
CCD5154	●	15.4	83	133	16	63
CCD5155	●	15.5	83	133	16	63
CCD5156	●	15.6	83	133	16	63
CCD5157	●	15.7	83	133	16	63
CCD5158	●	15.8	83	133	16	63
CCD5159	●	15.9	83	133	16	63
CCD5160	●	16.0	83	133	16	63
CCD5165	●	16.5	93	143	18	71
CCD5170	●	17.0	93	143	18	71
CCD5175	●	17.5	93	143	18	71
CCD5180	●	18.0	93	143	18	71
CCD5185	●	18.5	101	153	20	77
CCD5190	●	19.0	101	153	20	77
CCD5195	●	19.5	101	153	20	77
CCD5200	●	20.0	101	153	20	77

Standard Drilling Conditions

Work Material	C<0.3% Low Carbon Steel		~210HB Carbon Steel		16~28HRC Alloy Steel		28~35HRC Alloy Steel		Cast iron		Ductile Cast iron	
Cutting Speed mm/min	70~120m/min		60~120m/min		60~120m/min		50~90m/min		60~120m/min		50~100m/min	
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev
2	12000	0.06~0.08	10400	0.06~0.08	10400	0.06~0.08	8800	0.06~0.08	10400	0.06~0.08	9600	0.06~0.08
4	8000	0.08~0.16	7200	0.08~0.16	7200	0.08~0.16	5600	0.08~0.16	7200	0.08~0.16	6000	0.08~0.16
6	5300	0.12~0.24	4800	0.12~0.24	4800	0.12~0.24	3700	0.12~0.24	4800	0.12~0.24	4000	0.12~0.24
8	4000	0.16~0.28	3600	0.16~0.28	3600	0.16~0.28	2800	0.16~0.28	3600	0.16~0.28	3000	0.16~0.28
10	3200	0.2~0.3	2900	0.2~0.3	2900	0.2~0.3	2200	0.2~0.3	2900	0.2~0.3	2400	0.2~0.3
12	2700	0.21~0.3	2400	0.21~0.3	2400	0.21~0.3	1900	0.21~0.3	2400	0.21~0.3	2000	0.21~0.3
14	2300	0.22~0.35	2050	0.22~0.35	2050	0.22~0.35	1400	0.22~0.35	2050	0.22~0.35	1700	0.22~0.35
16	2000	0.25~0.36	1800	0.25~0.36	1800	0.25~0.36	1200	0.25~0.36	1800	0.25~0.36	1500	0.25~0.36
18	1800	0.28~0.38	1600	0.28~0.38	1600	0.28~0.38	1050	0.28~0.38	1600	0.28~0.38	1350	0.28~0.38
20	1600	0.3~0.4	1450	0.3~0.4	1450	0.3~0.4	950	0.3~0.4	1450	0.3~0.4	1200	0.3~0.4

1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
3. When using non-water-soluble oil or water-soluble oil (over 20 times dilution),reduce cutting speed by 30%.
4. These conditions are for drilling depth under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet that does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

HKD- HIGH PERFORMANCE DRILLS WITH OIL HOLE 3D (END MILL SHANK)

MICRO GRAIN · 30° · 140° · TiALN Coating

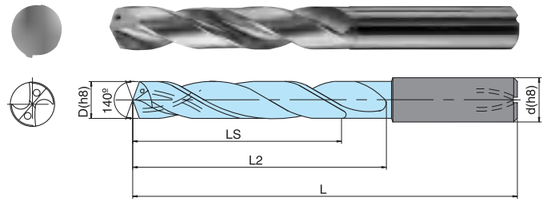
Tool dia: D3.0-D20.0mm

Dia tolerance:h8

Standard: DIN6537

Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit



Work Material																				
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel 55 HRC	60 HRC	70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	○	○	○	○									

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD3030	○	3.0	20	62	6	14
HKD3031	○	3.1	20	62	6	14
HKD3032	○	3.2	20	62	6	14
HKD3033	○	3.3	20	62	6	14
HKD3034	○	3.1	20	62	6	14
HKD3035	○	3.5	20	62	6	14
HKD3036	○	3.6	20	62	6	14
HKD3037	○	3.7	20	62	6	14
HKD3038	○	3.8	24	66	6	17
HKD3039	○	3.9	24	66	6	17
HKD3040	○	4.0	24	66	6	17
HKD3041	○	4.1	24	66	6	17
HKD3042	○	4.2	24	66	6	17
HKD3043	○	4.3	24	66	6	17
HKD3044	○	4.4	24	66	6	17
HKD3045	○	4.5	24	66	6	17
HKD3046	○	4.6	24	66	6	17
HKD3047	○	4.7	24	66	6	17
HKD3048	○	4.8	28	66	6	20
HKD3049	○	4.9	28	66	6	20
HKD3050	○	5.0	28	66	6	20
HKD3051	○	5.1	28	66	6	20
HKD3052	○	5.2	28	66	6	20
HKD3053	○	5.3	28	66	6	20
HKD3054	○	5.4	28	66	6	20
HKD3055	○	5.5	28	66	6	20
HKD3056	○	5.6	28	66	6	20
HKD3057	○	5.7	28	66	6	20
HKD3058	○	5.8	28	66	6	20
HKD3059	○	5.9	28	66	6	20
HKD3060	○	6.0	28	66	6	20
HKD3061	○	6.1	34	79	8	24
HKD3062	○	6.2	34	79	8	24
HKD3063	○	6.3	34	79	8	24
HKD3064	○	6.4	34	79	8	24
HKD3065	○	6.5	34	79	8	24
HKD3066	○	6.6	34	79	8	24
HKD3067	○	6.7	34	79	8	24
HKD3068	○	6.8	34	79	8	24
HKD3069	○	6.9	34	79	8	24
HKD3070	○	7.0	34	79	8	24
HKD3071	○	7.1	41	79	8	29
HKD3072	○	7.2	41	79	8	29
HKD3073	○	7.3	41	79	8	29
HKD3074	○	7.4	41	79	8	29
HKD3075	○	7.5	41	79	8	29
HKD3076	○	7.6	41	79	8	29
HKD3077	○	7.7	41	79	8	29
HKD3078	○	7.8	41	79	8	29
HKD3079	○	7.9	41	79	8	29

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD3080	○	8.0	41	79	8	29
HKD3081	○	8.1	47	89	10	35
HKD3082	○	8.2	47	89	10	35
HKD3083	○	8.3	47	89	10	35
HKD3084	○	8.4	47	89	10	35
HKD3085	○	8.5	47	89	10	35
HKD3086	○	8.6	47	89	10	35
HKD3087	○	8.7	47	89	10	35
HKD3088	○	8.8	47	89	10	35
HKD3089	○	8.9	47	89	10	35
HKD3090	○	9.0	47	89	10	35
HKD3091	○	9.1	47	89	10	35
HKD3092	○	9.2	47	89	10	35
HKD3093	○	9.3	47	89	10	35
HKD3094	○	9.4	47	89	10	35
HKD3095	○	9.5	47	89	10	35
HKD3096	○	9.6	47	89	10	35
HKD3097	○	9.7	47	89	10	35
HKD3098	○	9.8	47	89	10	35
HKD3099	○	9.9	47	89	10	35
HKD3100	○	10.0	47	89	10	35
HKD3101	○	10.1	55	102	12	40
HKD3102	○	10.2	55	102	12	40
HKD3103	○	10.3	55	102	12	40
HKD3104	○	10.4	55	102	12	40
HKD3105	○	10.5	55	102	12	40
HKD3106	○	10.6	55	102	12	40
HKD3107	○	10.7	55	102	12	40
HKD3108	○	10.8	55	102	12	40
HKD3109	○	10.9	55	102	12	40
HKD3111	○	11.0	55	102	12	40
HKD3112	○	11.1	55	102	12	40
HKD3113	○	11.2	55	102	12	40
HKD3114	○	11.3	55	102	12	40
HKD3115	○	11.4	55	102	12	40
HKD3116	○	11.5	55	102	12	40
HKD3117	○	11.6	55	102	12	40
HKD3118	○	11.7	55	102	12	40
HKD3119	○	11.8	55	102	12	40
HKD3120	○	11.9	55	102	12	40
HKD3121	○	12.0	55	102	12	40
HKD3122	○	12.1	60	107	14	43
HKD3123	○	12.2	60	107	14	43
HKD3124	○	12.3	60	107	14	43
HKD3125	○	12.4	60	107	14	43
HKD3126	○	12.5	60	107	14	43
HKD3127	○	12.6	60	107	14	43
HKD3128	○	12.7	60	107	14	43
HKD3129	○	12.8	60	107	14	43
	○	12.9	60	107	14	43

HKD- HIGH PERFORMANCE DRILLS 3D WITH OIL HOLE (END MILL SHANK)

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD3130	○	13.0	60	107	14	43
HKD3131	○	13.1	60	107	14	43
HKD3132	○	13.2	60	107	14	43
HKD3133	○	13.3	60	107	14	43
HKD3134	○	13.4	60	107	14	43
HKD3135	○	13.5	60	107	14	43
HKD3136	○	13.6	60	107	14	43
HKD3137	○	13.7	60	107	14	43
HKD3138	○	13.8	60	107	14	43
HKD3139	○	13.9	60	107	14	43
HKD3140	○	14.0	60	107	14	43
HKD3141	○	14.1	65	115	16	45
HKD3142	○	14.2	65	115	16	45
HKD3143	○	14.3	65	115	16	45
HKD3144	○	14.4	65	115	16	45
HKD3145	○	14.5	65	115	16	45
HKD3146	○	14.6	65	115	16	45
HKD3147	○	14.7	65	115	16	45
HKD3148	○	14.8	65	115	16	45
HKD3149	○	14.9	65	115	16	45

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD3150	○	15.0	65	115	16	45
HKD3151	○	15.1	65	115	16	45
HKD3152	○	15.2	65	115	16	45
HKD3153	○	15.3	65	115	16	45
HKD3154	○	15.4	65	115	16	45
HKD3155	○	15.5	65	115	16	45
HKD3156	○	15.6	65	115	16	45
HKD3157	○	15.7	65	115	16	45
HKD3158	○	15.8	65	115	16	45
HKD3159	○	15.9	65	115	16	45
HKD3160	○	16.0	65	115	16	45
HKD3165	○	16.5	73	123	18	51
HKD3170	○	17.0	73	123	18	51
HKD3175	○	17.5	73	123	18	51
HKD3180	○	18.0	73	123	18	51
HKD3185	○	18.5	79	131	20	55
HKD3190	○	19.0	79	131	20	55
HKD3195	○	19.5	79	131	20	55
HKD3200	○	20.0	79	131	20	55

Standard Drilling Conditions

Work Material	~150HB Low Carbon Steel		~210HB Carbon Steel		16 28HRC Alloy Steel		28~35HRC Alloy Steel		Cast iron		Ductile Cast iron		Stainless Steel		34~40HRC Hardened Steel	
Cutting Speed mm/min	80~120m/min		80~160m/min		80~120m/min		60~90m/min		80~120m/min		60~100m/min		40~80m/min		30~60m/min	
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev
3	10600	0.06~0.12	10600	0.06~0.12	10600	0.06~0.12	7400	0.06~0.12	10600	0.06~0.12	8500	0.06~0.12	6400	0.06~0.12	4800	0.06~0.09
4	8000	0.08~0.16	8000	0.08~0.16	8000	0.08~0.16	5600	0.08~0.16	8000	0.08~0.16	6400	0.08~0.16	4800	0.08~0.16	3600	0.08~0.12
5	6400	0.1~0.2	6400	0.1~0.2	6400	0.1~0.2	4500	0.1~0.2	6400	0.1~0.2	5100	0.1~0.2	3800	0.1~0.2	2900	0.1~0.15
6	5300	0.12~0.24	5300	0.12~0.24	5300	0.12~0.24	3700	0.12~0.24	5300	0.12~0.24	4200	0.12~0.24	3200	0.12~0.24	2400	0.12~0.18
7	4500	0.14~0.26	4500	0.14~0.26	4500	0.14~0.26	3200	0.14~0.26	4500	0.14~0.26	3600	0.14~0.26	2700	0.14~0.26	2000	0.14~0.21
8	4000	0.16~0.28	4000	0.16~0.28	4000	0.16~0.28	2800	0.16~0.28	4000	0.16~0.28	3200	0.16~0.28	2400	0.16~0.28	1800	0.16~0.24
9	3500	0.18~0.3	3500	0.18~0.3	3500	0.18~0.3	2500	0.18~0.3	3500	0.18~0.3	2800	0.18~0.3	2100	0.18~0.3	1600	0.18~0.27
10	3200	0.2~0.3	3200	0.2~0.3	3200	0.2~0.3	2200	0.2~0.3	3200	0.2~0.3	2500	0.2~0.3	1900	0.2~0.3	1400	0.2~0.3
11	2900	0.2~0.3	2900	0.2~0.3	2900	0.2~0.3	2000	0.2~0.3	2900	0.2~0.3	2300	0.2~0.3	1700	0.2~0.3	1300	0.2~0.3
12	2700	0.21~0.3	2700	0.21~0.3	2700	0.21~0.3	1900	0.21~0.3	2700	0.21~0.3	2100	0.21~0.3	1600	0.21~0.3	1200	0.21~0.3
13	2400	0.21~0.33	2400	0.21~0.33	2400	0.21~0.33	1700	0.21~0.33	2400	0.21~0.33	2000	0.21~0.33	1500	0.21~0.33	1100	0.21~0.33
14	2300	0.22~0.35	2300	0.22~0.35	2300	0.22~0.35	1600	0.22~0.35	2300	0.22~0.35	1800	0.22~0.35	1400	0.22~0.35	1000	0.22~0.35
16	2000	0.25~0.36	2000	0.25~0.36	2000	0.25~0.36	1400	0.25~0.36	2000	0.25~0.36	1600	0.25~0.36	1200	0.25~0.36	900	0.25~0.36
18	1800	0.28~0.38	1800	0.28~0.38	1800	0.28~0.38	1200	0.28~0.38	1800	0.28~0.38	1400	0.28~0.38	1100	0.28~0.38	800	0.28~0.38
20	1600	0.3~0.4	1600	0.3~0.4	1600	0.3~0.4	1100	0.3~0.4	1600	0.3~0.4	1300	0.3~0.4	1000	0.3~0.4	700	0.3~0.4

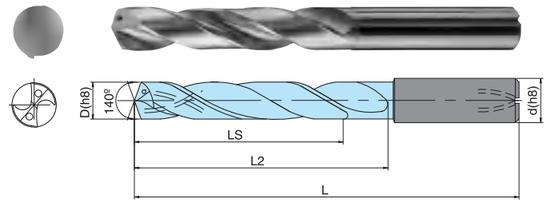
1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
3. When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
4. These conditions are for drilling depth under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet that does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

WERNER

HKD- HIGH PERFORMANCE DRILLS WITH OIL HOLE 5D (END MILL SHANK)

MICRO GRAIN · 30° · 140° · TiALN Coating

Tool dia: D3.0-D20.0 mm
Dia tolerance:h8
Standard: DIN6537
Micro Grain Tungsten Carbide
Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit



Work Material																			
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	○	○	○	○									

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD5030	○	3.0	28	66	6	23
HKD5031	○	3.1	28	66	6	23
HKD5032	○	3.2	28	66	6	23
HKD5033	○	3.3	28	66	6	23
HKD5034	○	3.1	28	66	6	23
HKD5035	○	3.5	28	66	6	23
HKD5036	○	3.6	28	66	6	23
HKD5037	○	3.7	28	66	6	23
HKD5038	○	3.8	36	74	6	29
HKD5039	○	3.9	36	74	6	29
HKD5040	○	4.0	36	74	6	29
HKD5041	○	4.1	36	74	6	29
HKD5042	○	4.2	36	74	6	29
HKD5043	○	4.3	36	74	6	29
HKD5044	○	4.4	36	74	6	29
HKD5045	○	4.5	36	74	6	29
HKD5046	○	4.6	36	74	6	29
HKD5047	○	4.7	36	74	6	29
HKD5048	○	4.8	44	82	6	35
HKD5049	○	4.9	44	82	6	35
HKD5050	○	5.0	44	82	6	35
HKD5051	○	5.1	44	82	6	35
HKD5052	○	5.2	44	82	6	35
HKD5053	○	5.3	44	82	6	35
HKD5054	○	5.4	44	82	6	35
HKD5055	○	5.5	44	82	6	35
HKD5056	○	5.6	44	82	6	35
HKD5057	○	5.7	44	82	6	35
HKD5058	○	5.8	44	82	6	35
HKD5059	○	5.9	44	82	6	35
HKD5060	○	6.0	44	82	6	35
HKD5061	○	6.1	53	91	8	43
HKD5062	○	6.2	53	91	8	43
HKD5063	○	6.3	53	91	8	43
HKD5064	○	6.4	53	91	8	43
HKD5065	○	6.5	53	91	8	43
HKD5066	○	6.6	53	91	8	43
HKD5067	○	6.7	53	91	8	43
HKD5068	○	6.8	53	91	8	43
HKD5069	○	6.9	53	91	8	43
HKD5070	○	7.0	53	91	8	43
HKD5071	○	7.1	53	91	8	43
HKD5072	○	7.2	53	91	8	43
HKD5073	○	7.3	53	91	8	43
HKD5074	○	7.4	53	91	8	43
HKD5075	○	7.5	53	91	8	43
HKD5076	○	7.6	53	91	8	43
HKD5077	○	7.7	53	91	8	43
HKD5078	○	7.8	53	91	8	43
HKD5079	○	7.9	53	91	8	43

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD5080	○	8.0	53	91	8	43
HKD5081	○	8.1	61	103	10	49
HKD5082	○	8.2	61	103	10	49
HKD5083	○	8.3	61	103	10	49
HKD5084	○	8.4	61	103	10	49
HKD5085	○	8.5	61	103	10	49
HKD5086	○	8.6	61	103	10	49
HKD5087	○	8.7	61	103	10	49
HKD5088	○	8.8	61	103	10	49
HKD5089	○	8.9	61	103	10	49
HKD5090	○	9.0	61	103	10	49
HKD5091	○	9.1	61	103	10	49
HKD5092	○	9.2	61	103	10	49
HKD5093	○	9.3	61	103	10	49
HKD5094	○	9.4	61	103	10	49
HKD5095	○	9.5	61	103	10	49
HKD5096	○	9.6	61	103	10	49
HKD5097	○	9.7	61	103	10	49
HKD5098	○	9.8	61	103	10	49
HKD5099	○	9.9	61	103	10	49
HKD5100	○	10.0	61	103	10	49
HKD5101	○	10.1	71	118	12	56
HKD5102	○	10.2	71	118	12	56
HKD5103	○	10.3	71	118	12	56
HKD5104	○	10.4	71	118	12	56
HKD5105	○	10.5	71	118	12	56
HKD5106	○	10.6	71	118	12	56
HKD5107	○	10.7	71	118	12	56
HKD5108	○	10.8	71	118	12	56
HKD5109	○	10.9	71	118	12	56
HKD5110	○	11.0	71	118	12	56
HKD5111	○	11.1	71	118	12	56
HKD5112	○	11.2	71	118	12	56
HKD5113	○	11.3	71	118	12	56
HKD5114	○	11.4	71	118	12	56
HKD5115	○	11.5	71	118	12	56
HKD5116	○	11.6	71	118	12	56
HKD5117	○	11.7	71	118	12	56
HKD5118	○	11.8	71	118	12	56
HKD5119	○	11.9	71	118	12	56
HKD5120	○	12.0	71	118	12	56
HKD5121	○	12.1	77	124	14	60
HKD5122	○	12.2	77	124	14	60
HKD5123	○	12.3	77	124	14	60
HKD5124	○	12.4	77	124	14	60
HKD5125	○	12.5	77	124	14	60
HKD5126	○	12.6	77	124	14	60
HKD5127	○	12.7	77	124	14	60
HKD5128	○	12.8	77	124	14	60
HKD5129	○	12.9	77	124	14	60

HKD- HIGH PERFORMANCE DRILLS 5D WITH OIL HOLE (END MILL SHANK)

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD5130	○	13.0	77	124	14	60
HKD5131	○	13.1	77	124	14	60
HKD5132	○	13.2	77	124	14	60
HKD5133	○	13.3	77	124	14	60
HKD5134	○	13.4	77	124	14	60
HKD5135	○	13.5	77	124	14	60
HKD5136	○	13.6	77	124	14	60
HKD5137	○	13.7	77	124	14	60
HKD5138	○	13.8	77	124	14	60
HKD5139	○	13.9	77	124	14	60
HKD5140	○	14.0	77	124	14	60
HKD5141	○	14.1	83	133	16	63
HKD5142	○	14.2	83	133	16	63
HKD5143	○	14.3	83	133	16	63
HKD5144	○	14.4	83	133	16	63
HKD5145	○	14.5	83	133	16	63
HKD5146	○	14.6	83	133	16	63
HKD5147	○	14.7	83	133	16	63
HKD5148	○	14.8	83	133	16	63
HKD5149	○	14.9	83	133	16	63

Model	Stock	Dia	Flute length L2	Total length L	Shank d	length of cut LS
HKD5150	○	15.0	83	133	16	63
HKD5151	○	15.1	83	133	16	63
HKD5152	○	15.2	83	133	16	63
HKD5153	○	15.3	83	133	16	63
HKD5154	○	15.4	83	133	16	63
HKD5155	○	15.5	83	133	16	63
HKD5156	○	15.6	83	133	16	63
HKD5157	○	15.7	83	133	16	63
HKD5158	○	15.8	83	133	16	63
HKD5159	○	15.9	83	133	16	63
HKD5160	○	16.0	83	133	16	63
HKD5165	○	16.5	93	143	18	71
HKD5170	○	17.0	93	143	18	71
HKD5175	○	17.5	93	143	18	71
HKD5180	○	18.0	93	143	18	71
HKD5185	○	18.5	101	153	20	77
HKD5190	○	19.0	101	153	20	77
HKD5195	○	19.5	101	153	20	77
HKD5200	○	20.0	101	153	20	77

Standard Drilling Conditions

Work Material	~150HB Low Carbon Steel		~210HB Carbon Steel		16~28HRC Alloy Steel		28~35HRC Alloy Steel		Cast iron		Ductile Cast iron		Stainless Steel		34~40HRC Hardened Steel	
Cutting Speed mm/min	80~120m/min		80~160m/min		80~120m/min		60~90m/min		80~120m/min		60~100m/min		40~80m/min		30~60m/min	
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev
3	10600	0.06~0.12	10600	0.06~0.12	10600	0.06~0.12	7400	0.06~0.12	10600	0.06~0.12	8500	0.06~0.12	6400	0.06~0.12	4800	0.06~0.09
4	8000	0.08~0.16	8000	0.08~0.16	8000	0.08~0.16	5600	0.08~0.16	8000	0.08~0.16	6400	0.08~0.16	4800	0.08~0.16	3600	0.08~0.12
5	6400	0.1~0.2	6400	0.1~0.2	6400	0.1~0.2	4500	0.1~0.2	6400	0.1~0.2	5100	0.1~0.2	3800	0.1~0.2	2900	0.1~0.15
6	5300	0.12~0.24	5300	0.12~0.24	5300	0.12~0.24	3700	0.12~0.24	5300	0.12~0.24	4200	0.12~0.24	3200	0.12~0.24	2400	0.12~0.18
7	4500	0.14~0.26	4500	0.14~0.26	4500	0.14~0.26	3200	0.14~0.26	4500	0.14~0.26	3600	0.14~0.26	2700	0.14~0.26	2000	0.14~0.21
8	4000	0.16~0.28	4000	0.16~0.28	4000	0.16~0.28	2800	0.16~0.28	4000	0.16~0.28	3200	0.16~0.28	2400	0.16~0.28	1800	0.16~0.24
9	3500	0.18~0.3	3500	0.18~0.3	3500	0.18~0.3	2500	0.18~0.3	3500	0.18~0.3	2800	0.18~0.3	2100	0.18~0.3	1600	0.18~0.27
10	3200	0.2~0.3	3200	0.2~0.3	3200	0.2~0.3	2200	0.2~0.3	3200	0.2~0.3	2500	0.2~0.3	1900	0.2~0.3	1400	0.2~0.3
11	2900	0.2~0.3	2900	0.2~0.3	2900	0.2~0.3	2000	0.2~0.3	2900	0.2~0.3	2300	0.2~0.3	1700	0.2~0.3	1300	0.2~0.3
12	2700	0.21~0.3	2700	0.21~0.3	2700	0.21~0.3	1900	0.21~0.3	2700	0.21~0.3	2100	0.21~0.3	1600	0.21~0.3	1200	0.21~0.3
13	2400	0.21~0.33	2400	0.21~0.33	2400	0.21~0.33	1700	0.21~0.33	2400	0.21~0.33	2000	0.21~0.33	1500	0.21~0.33	1100	0.21~0.33
14	2300	0.22~0.35	2300	0.22~0.35	2300	0.22~0.35	1600	0.22~0.35	2300	0.22~0.35	1800	0.22~0.35	1400	0.22~0.35	1000	0.22~0.35
16	2000	0.25~0.36	2000	0.25~0.36	2000	0.25~0.36	1400	0.25~0.36	2000	0.25~0.36	1600	0.25~0.36	1200	0.25~0.36	900	0.25~0.36
18	1800	0.28~0.38	1800	0.28~0.38	1800	0.28~0.38	1200	0.28~0.38	1800	0.28~0.38	1400	0.28~0.38	1100	0.28~0.38	800	0.28~0.38
20	1600	0.3~0.4	1600	0.3~0.4	1600	0.3~0.4	1100	0.3~0.4	1600	0.3~0.4	1300	0.3~0.4	1000	0.3~0.4	700	0.3~0.4

1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
3. When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
4. These conditions are for drilling depth under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet that does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

WERNER

HKD- HIGH PERFORMANCE DRILLS WITH OIL HOLE 8D (END MILL SHANK)

MICRO GRAIN · 30 · 140 · TiALN Coating

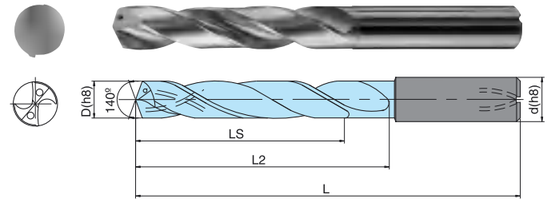
Tool dia: D3.0-D20.0mm

Dia tolerance:h8

Standard: DIN6537

Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit



Work Material																			
S45C S55C Carbon Steel	SK-SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel 55 HRC	60 HRC	70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	○	○	○	○									

Model	Stock	Dia D	Flute length L2	Total length L	Shank d	length of cut LS
HKD8030	○	3.0	34	72	6	29
HKD8031	○	3.1	34	72	6	29
HKD8032	○	3.2	34	72	6	29
HKD8033	○	3.3	34	72	6	29
HKD8034	○	3.1	34	72	6	29
HKD8035	○	3.5	34	72	6	29
HKD8036	○	3.6	34	72	6	29
HKD8037	○	3.7	34	72	6	29
HKD8038	○	3.8	43	81	6	36
HKD8039	○	3.9	43	81	6	36
HKD8040	○	4.0	43	81	6	36
HKD8041	○	4.1	43	81	6	36
HKD8042	○	4.2	43	81	6	36
HKD8043	○	4.3	43	81	6	36
HKD8044	○	4.4	43	81	6	36
HKD8045	○	4.5	43	81	6	36
HKD8046	○	4.6	43	81	6	36
HKD8047	○	4.7	43	81	6	36
HKD8048	○	4.8	57	95	6	48
HKD8049	○	4.9	57	95	6	48
HKD8050	○	5.0	57	95	6	48
HKD8051	○	5.1	57	95	6	48
HKD8052	○	5.2	57	95	6	48
HKD8053	○	5.3	57	95	6	48
HKD8054	○	5.4	57	95	6	48
HKD8055	○	5.5	57	95	6	48
HKD8056	○	5.6	57	95	6	48
HKD8057	○	5.7	57	95	6	48
HKD8058	○	5.8	57	95	6	48
HKD8059	○	5.9	57	95	6	48
HKD8060	○	6.0	57	95	6	48
HKD8061	○	6.1	76	114	8	64
HKD8062	○	6.2	76	114	8	64
HKD8063	○	6.3	76	114	8	64
HKD8064	○	6.4	76	114	8	64
HKD8065	○	6.5	76	114	8	64
HKD8066	○	6.6	76	114	8	64
HKD8067	○	6.7	76	114	8	64
HKD8068	○	6.8	76	114	8	64
HKD8069	○	6.9	76	114	8	64
HKD8070	○	7.0	76	114	8	64
HKD8071	○	7.1	76	114	8	64
HKD8072	○	7.2	76	114	8	64
HKD8073	○	7.3	76	114	8	64
HKD8074	○	7.4	76	114	8	64
HKD8075	○	7.5	76	114	8	64
HKD8076	○	7.6	76	114	8	64
HKD8077	○	7.7	76	114	8	64
HKD8078	○	7.8	76	114	8	64
HKD8079	○	7.9	76	114	8	64

Model	Stock	Dia D	Flute length L2	Total length L	Shank d	length of cut LS
HKD8080	○	8.0	76	114	8	64
HKD8081	○	8.1	95	142	10	80
HKD8082	○	8.2	95	142	10	80
HKD8083	○	8.3	95	142	10	80
HKD8084	○	8.4	95	142	10	80
HKD8085	○	8.5	95	142	10	80
HKD8086	○	8.6	95	142	10	80
HKD8087	○	8.7	95	142	10	80
HKD8088	○	8.8	95	142	10	80
HKD8089	○	8.9	95	142	10	80
HKD8090	○	9.0	95	142	10	80
HKD8091	○	9.1	95	142	10	80
HKD8092	○	9.2	95	142	10	80
HKD8093	○	9.3	95	142	10	80
HKD8094	○	9.4	95	142	10	80
HKD8095	○	9.5	95	142	10	80
HKD8096	○	9.6	95	142	10	80
HKD8097	○	9.7	95	142	10	80
HKD8098	○	9.8	95	142	10	80
HKD8099	○	9.9	95	142	10	80
HKD8100	○	10.0	95	142	10	80
HKD8101	○	10.1	114	162	12	96
HKD8102	○	10.2	114	162	12	96
HKD8103	○	10.3	114	162	12	96
HKD8104	○	10.4	114	162	12	96
HKD8105	○	10.5	114	162	12	96
HKD8106	○	10.6	114	162	12	96
HKD8107	○	10.7	114	162	12	96
HKD8108	○	10.8	114	162	12	96
HKD8109	○	10.9	114	162	12	96
HKD8110	○	11.0	114	162	12	96
HKD8111	○	11.1	114	162	12	96
HKD8112	○	11.2	114	162	12	96
HKD8113	○	11.3	114	162	12	96
HKD8114	○	11.4	114	162	12	96
HKD8115	○	11.5	114	162	12	96
HKD8116	○	11.6	114	162	12	96
HKD8117	○	11.7	114	162	12	96
HKD8118	○	11.8	114	162	12	96
HKD8119	○	11.9	114	162	12	96
HKD8120	○	12.0	114	162	12	96
HKD8121	○	12.1	133	178	14	112
HKD8122	○	12.2	133	178	14	112
HKD8123	○	12.3	133	178	14	112
HKD8124	○	12.4	133	178	14	112
HKD8125	○	12.5	133	178	14	112
HKD8126	○	12.6	133	178	14	112
HKD8127	○	12.7	133	178	14	112
HKD8128	○	12.8	133	178	14	112
HKD8129	○	12.9	133	178	14	112

HKD- HIGH PERFORMANCE DRILLS 8D WITH OIL HOLE (END MILL SHANK)

Model	Stock	Dia D	Flute length L2	Total length L	Shank d	length of cut LS
HKD8130	○	13.0	133	178	14	112
HKD8131	○	13.1	133	178	14	112
HKD8132	○	13.2	133	178	14	112
HKD8133	○	13.3	133	178	14	112
HKD8134	○	13.4	133	178	14	112
HKD8135	○	13.5	133	178	14	112
HKD8136	○	13.6	133	178	14	112
HKD8137	○	13.7	133	178	14	112
HKD8138	○	13.8	133	178	14	112
HKD8139	○	13.9	133	178	14	112
HKD8140	○	14.0	133	178	14	112
HKD8141	○	14.1	152	203	16	128
HKD8142	○	14.2	152	203	16	128
HKD8143	○	14.3	152	203	16	128
HKD8144	○	14.4	152	203	16	128
HKD8145	○	14.5	152	203	16	128
HKD8146	○	14.6	152	203	16	128
HKD8147	○	14.7	152	203	16	128
HKD8148	○	14.8	152	203	16	128
HKD8149	○	14.9	152	203	16	128

Model	Stock	Dia D	Flute length L2	Total length L	Shank d	length of cut LS
HKD8150	○	15.0	152	203	16	128
HKD8151	○	15.1	152	203	16	128
HKD8152	○	15.2	152	203	16	128
HKD8153	○	15.3	152	203	16	128
HKD8154	○	15.4	152	203	16	128
HKD8155	○	15.5	152	203	16	128
HKD8156	○	15.6	152	203	16	128
HKD8157	○	15.7	152	203	16	128
HKD8158	○	15.8	152	203	16	128
HKD8159	○	15.9	152	203	16	128
HKD8160	○	16.0	152	203	16	128
HKD8165	○	16.5	171	222	18	144
HKD8170	○	17.0	171	222	18	144
HKD8175	○	17.5	171	222	18	144
HKD8180	○	18.0	171	222	18	144
HKD8185	○	18.5	190	243	20	160
HKD8190	○	19.0	190	243	20	160
HKD8195	○	19.5	190	243	20	160
HKD8200	○	20.0	190	243	20	160

Standard Drilling Conditions

Work Material	~150HB Low Carbon Steel		~210HB Carbon Steel		16~28HRC Alloy Steel		28~35HRC Alloy Steel		Cast iron		Ductile Cast iron		Stainless Steel		34~40HRC Hardened Steel	
Cutting Speed mm/min	80~120m/min		80~160m/min		80~120m/min		60~90m/min		80~120m/min		60~100m/min		40~80m/min		30~60m/min	
Drill Dia. mm	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev	Speed min^{-1}	Feed mm/rev
3	10600	0.06~0.12	10600	0.06~0.12	10600	0.06~0.12	7400	0.06~0.12	10600	0.06~0.12	8500	0.06~0.12	6400	0.06~0.12	4800	0.06~0.09
4	8000	0.08~0.16	8000	0.08~0.16	8000	0.08~0.16	5600	0.08~0.16	8000	0.08~0.16	6400	0.08~0.16	4800	0.08~0.16	3600	0.08~0.12
5	6400	0.1~0.2	6400	0.1~0.2	6400	0.1~0.2	4500	0.1~0.2	6400	0.1~0.2	5100	0.1~0.2	3800	0.1~0.2	2900	0.1~0.15
6	5300	0.12~0.24	5300	0.12~0.24	5300	0.12~0.24	3700	0.12~0.24	5300	0.12~0.24	4200	0.12~0.24	3200	0.12~0.24	2400	0.12~0.18
7	4500	0.14~0.26	4500	0.14~0.26	4500	0.14~0.26	3200	0.14~0.26	4500	0.14~0.26	3600	0.14~0.26	2700	0.14~0.26	2000	0.14~0.21
8	4000	0.16~0.28	4000	0.16~0.28	4000	0.16~0.28	2800	0.16~0.28	4000	0.16~0.28	3200	0.16~0.28	2400	0.16~0.28	1800	0.16~0.24
9	3500	0.18~0.3	3500	0.18~0.3	3500	0.18~0.3	2500	0.18~0.3	3500	0.18~0.3	2800	0.18~0.3	2100	0.18~0.3	1600	0.18~0.27
10	3200	0.2~0.3	3200	0.2~0.3	3200	0.2~0.3	2200	0.2~0.3	3200	0.2~0.3	2500	0.2~0.3	1900	0.2~0.3	1400	0.2~0.3
11	2900	0.2~0.3	2900	0.2~0.3	2900	0.2~0.3	2000	0.2~0.3	2900	0.2~0.3	2300	0.2~0.3	1700	0.2~0.3	1300	0.2~0.3
12	2700	0.21~0.3	2700	0.21~0.3	2700	0.21~0.3	1900	0.21~0.3	2700	0.21~0.3	2100	0.21~0.3	1600	0.21~0.3	1200	0.21~0.3
13	2400	0.21~0.33	2400	0.21~0.33	2400	0.21~0.33	1700	0.21~0.33	2400	0.21~0.33	2000	0.21~0.33	1500	0.21~0.33	1100	0.21~0.33
14	2300	0.22~0.35	2300	0.22~0.35	2300	0.22~0.35	1600	0.22~0.35	2300	0.22~0.35	1800	0.22~0.35	1400	0.22~0.35	1000	0.22~0.35
16	2000	0.25~0.36	2000	0.25~0.36	2000	0.25~0.36	1400	0.25~0.36	2000	0.25~0.36	1600	0.25~0.36	1200	0.25~0.36	900	0.25~0.36
18	1800	0.28~0.38	1800	0.28~0.38	1800	0.28~0.38	1200	0.28~0.38	1800	0.28~0.38	1400	0.28~0.38	1100	0.28~0.38	800	0.28~0.38
20	1600	0.3~0.4	1600	0.3~0.4	1600	0.3~0.4	1100	0.3~0.4	1600	0.3~0.4	1300	0.3~0.4	1000	0.3~0.4	700	0.3~0.4

1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
3. When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
4. These conditions are for drilling depth under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet that does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

WERNER

CD- GENERAL DRILLS(STRAIGHT SHANK)

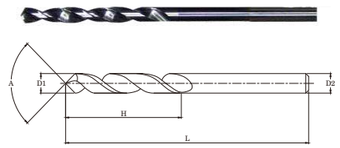


Tool dia: D0.04-D12.0mm

Dia tolerance: 0,-0.005mm

Micro Grain Tungsten Carbide

Suitable for precision hole machining of soft materials such as engineering plastics and ordinary steel



Work Material																			
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	Hardess steel ~60 HRC	Hardess steel ~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
○	○	○				○	○	○	◎	◎	◎	◎	◎	◎					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CD0400	○	0.40	5.0	0.40	50
CD0450	○	0.45	5.0	0.45	50
CD0500	○	0.50	5.0	0.50	50
CD0550	○	0.55	5.0	0.55	50
CD0600	○	0.60	7.0	0.60	50
CD0650	○	0.65	7.0	0.65	50
CD0700	○	0.70	10.0	0.70	50
CD0750	○	0.75	10.0	0.75	50
CD0800	○	0.80	10.0	0.80	50
CD0850	○	0.85	10.0	0.85	50
CD0900	○	0.90	10.0	0.90	50
CD0950	○	0.95	10.0	0.95	50
CD1000	○	1.00	12.0	1.00	50
CD1050	○	1.05	12.0	1.05	50
CD1100	○	1.10	12.0	1.10	50
CD1150	○	1.15	12.0	1.15	50
CD1200	○	1.20	12.0	1.20	50
CD1250	○	1.25	15.0	1.25	60
CD1300	○	1.30	15.0	1.30	60
CD1350	○	1.35	15.0	1.35	60
CD1400	○	1.40	15.0	1.40	60
CD1450	○	1.45	15.0	1.45	60
CD1500	○	1.50	15.0	1.50	60
CD1550	○	1.55	15.0	1.55	60
CD1600	○	1.60	15.0	1.60	60
CD1650	○	1.65	15.0	1.65	60
CD1700	○	1.70	18.0	1.70	60
CD1750	○	1.75	18.0	1.75	60
CD1800	○	1.80	18.0	1.80	60
CD1850	○	1.85	18.0	1.85	60
CD1900	○	1.90	18.0	1.90	60
CD1950	○	1.95	18.0	1.95	60
CD2000	○	2.00	18.0	2.00	60
CD2050	○	2.05	20.0	2.05	60
CD2100	○	2.10	20.0	2.10	60
CD2150	○	2.15	20.0	2.15	60
CD2200	○	2.20	20.0	2.20	60
CD2250	○	2.25	20.0	2.25	60
CD2300	○	2.30	20.0	2.30	60
CD2350	○	2.35	20.0	2.35	60
CD2400	○	2.40	20.0	2.40	60
CD2450	○	2.45	20.0	2.45	60

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CD2500	○	2.50	20.0	2.50	60
CD2550	○	2.55	20.0	2.55	60
CD2600	○	2.60	20.0	2.60	60
CD2650	○	2.65	20.0	2.65	60
CD2700	○	2.70	20.0	2.70	60
CD2750	○	2.75	20.0	2.75	60
CD2800	○	2.80	20.0	2.80	60
CD2850	○	2.85	20.0	2.85	60
CD2900	○	2.90	20.0	2.90	60
CD2950	○	2.95	20.0	2.95	60
CD3000	○	3.00	25.0	3.00	75
CD3050	○	3.05	25.0	3.05	75
CD3100	○	3.10	25.0	3.10	75
CD3150	○	3.15	25.0	3.15	75
CD3200	○	3.20	25.0	3.20	75
CD3250	○	3.25	25.0	3.25	75
CD3300	○	3.30	25.0	3.30	75
CD3350	○	3.35	25.0	3.35	75
CD3400	○	3.40	25.0	3.40	75
CD3450	○	3.45	25.0	3.45	75
CD3500	○	3.50	25.0	3.50	75
CD3550	○	3.55	25.0	3.55	75
CD3600	○	3.60	25.0	3.60	75
CD3650	○	3.65	27.0	3.65	75
CD3700	○	3.70	27.0	3.70	75
CD3750	○	3.75	27.0	3.75	75
CD3800	○	3.80	27.0	3.80	75
CD3850	○	3.85	27.0	3.85	75
CD3900	○	3.90	27.0	3.90	75
CD3950	○	3.95	27.0	3.95	75
CD4000	○	4.00	27.0	4.00	75
CD4050	○	4.05	27.0	4.05	75
CD4100	○	4.10	30.0	4.10	100
CD4150	○	4.15	30.0	4.15	100
CD4200	○	4.20	30.0	4.20	100
CD4250	○	4.25	30.0	4.25	100
CD4300	○	4.30	30.0	4.30	100
CD4350	○	4.35	30.0	4.35	100
CD4400	○	4.40	30.0	4.40	100
CD4450	○	4.45	30.0	4.45	100
CD4500	○	4.50	30.0	4.50	100
CD4550	○	4.55	30.0	4.55	100

CD- GENERAL DRILLS(STRAIGHT SHANK)

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CD4600	○	4.60	30.0	4.60	100
CD4650	○	4.65	30.0	4.65	100
CD4700	○	4.70	30.0	4.70	100
CD4750	○	4.75	30.0	4.75	100
CD4800	○	4.80	30.0	4.80	100
CD4850	○	4.85	30.0	4.85	100
CD4900	○	4.90	30.0	4.90	100
CD4950	○	4.95	30.0	4.95	100
CD5000	○	5.00	40.0	5.00	100
CD5050	○	5.05	40.0	5.05	100
CD5100	○	5.10	40.0	5.10	100
CD5150	○	5.15	40.0	5.15	100
CD5200	○	5.20	40.0	5.20	100
CD5250	○	5.25	40.0	5.25	100
CD5300	○	5.30	40.0	5.30	100
CD5350	○	5.35	40.0	5.35	100
CD5400	○	5.40	40.0	5.40	100
CD5450	○	5.45	40.0	5.45	100
CD5500	○	5.50	40.0	5.50	100
CD5550	○	5.55	40.0	5.55	100
CD6000	○	6.00	40.0	6.00	100
CD6050	○	6.05	40.0	6.05	100
CD6100	○	6.10	40.0	6.10	100
CD6150	○	6.15	40.0	6.15	100
CD6200	○	6.20	40.0	6.20	100
CD6250	○	6.25	40.0	6.25	100
CD6300	○	6.30	40.0	6.30	100
CD6350	○	6.35	40.0	6.35	100
CD6400	○	6.40	40.0	6.40	100
CD6450	○	6.45	40.0	6.45	100
CD6500	○	6.50	40.0	6.50	100
CD6550	○	6.55	40.0	6.55	100
CD6600	○	6.60	40.0	6.60	100
CD6650	○	6.65	40.0	6.65	100
CD6700	○	6.70	40.0	6.70	100
CD6750	○	6.75	40.0	6.75	100
CD6800	○	6.80	40.0	6.80	100
CD6850	○	6.85	40.0	6.85	100
CD6900	○	6.90	40.0	6.90	100
CD6950	○	6.95	40.0	6.95	100
CD7000	○	7.00	40.0	7.00	100
CD7050	○	7.05	40.0	7.05	100
CD7100	○	7.10	40.0	7.10	100
CD7150	○	7.15	40.0	7.15	100
CD7200	○	7.20	40.0	7.20	100
CD7250	○	7.25	40.0	7.25	100
CD7300	○	7.30	40.0	7.30	100
CD7350	○	7.35	40.0	7.35	100
CD7400	○	7.40	40.0	7.40	100
CD7450	○	7.45	40.0	7 45	100
CD7500	○	7.50	40.0	7.50	100
CD7550	○	7.55	40.0	7.55	100
CD7600	○	7.60	40.0	7.60	100
CD7650	○	7.65	40.0	7.65	100
CD7700	○	7.70	40.0	7.70	100
CD7750	○	7.75	40.0	7.75	100
CD7800	○	7.80	40.0	7.80	100

Model	Stock	Dia	Flute length H	Shank	Total length L
CD7850	○	7.85	40.0	7.85	100
CD7900	○	7.90	40.0	7.90	100
CD7950	○	7.95	40.0	7.95	100
CD8000	○	8.00	40.0	8.00	100
CD8050	○	8.05	40.0	8.05	100
CD8100	○	8.10	40.0	8.10	100
CD8150	○	8.15	40.0	8.15	100
CD8200	○	8.20	40.0	8.20	100
CD8250	○	8.25	40.0	8.25	100
CD8300	○	8.30	40.0	8.30	100
CD8350	○	8.35	40.0	8.35	100
CD8400	○	8.40	40.0	8.40	100
CD8450	○	8.45	40.0	8.45	100
CD8500	○	8.50	40.0	8.50	100
CD8550	○	8.55	40.0	8.55	100
CD9000	○	9.00	40.0	9.00	100
CD9050	○	9.05	40.0	9.05	100
CD9100	○	9.10	40.0	9.10	100
CD9150	○	9.15	40.0	9.15	100
CD9200	○	9.20	40.0	9.20	100
CD9250	○	9.25	40.0	9.25	100
CD9300	○	9.30	40.0	9.30	100
CD9350	○	9.35	40.0	9.35	100
CD9400	○	9.40	40.0	9.40	100
CD9450	○	9.45	40.0	9.45	100
CD9500	○	9.50	40.0	9.50	100
CD9550	○	9.55	40.0	9.55	100
CD9600	○	9.60	40.0	9.60	100
CD9650	○	9.65	40.0	9.65	100
CD9700	○	9.70	40.0	9.70	100
CD9750	○	9.75	40.0	9.75	100
CD9800	○	9.80	40.0	9.80	100
CD9850	○	9.85	40.0	9.85	100
CD9900	○	9.90	40.0	9.90	100
CD9950	○	9.95	40.0	9.95	100
CD10000	○	10.00	50.0	10.00	120
CD10100	○	10.10	50.0	10.10	120
CD10200	○	10.20	50.0	10.20	120
CD10300	○	10.30	50.0	10.30	120
CD10400	○	10.40	50.0	10.40	120
CD10500	○	10.50	50.0	10.50	120
CD10600	○	10.60	50.0	10.60	120
CD10700	○	10.70	50.0	10.70	120
CD10800	○	10.80	50.0	10.80	120
CD10900	○	10.90	50.0	10.90	120
CD11000	○	11.00	50.0	11.00	120
CD11100	○	11.10	50.0	11.10	120
CD11200	○	11.20	50.0	11.20	120
CD11300	○	11.30	50.0	11.30	120
CD11400	○	11.40	50.0	11.40	120
CD11500	○	11.50	50.0	11.50	120
CD11600	○	11.60	50.0	11.60	120
CD11700	○	11.70	50.0	11.70	120
CD11800	○	11.80	50.0	11.80	120
CD11900	○	11.90	50.0	11.90	120
CD12000	○	12.00	50.0	12.00	120

WERNER

HD- COATING DRILLS(STRAIGHT SHANK)



Tool dia: D0.04-D12.0mm

Dia tolerance: 0,-0.005mm

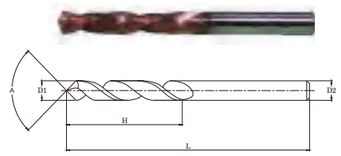
D1≤1.0mm 118°

D1>1.0mm 135°

Micro Grain Tungsten Carbide

Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit

Suitable for hole machining of stainless steel, heat resistant alloy and other materials



Work Material																		
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎			◎	◎	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
HD0400	○	0.40	5.0	0.40	50
HD0450	○	0.45	5.0	0.45	50
HD0500	○	0.50	5.0	0.50	50
HD0550	○	0.55	5.0	0.55	50
HD0600	○	0.60	7.0	0.60	50
HD0650	○	0.65	7.0	0.65	50
HD0700	○	0.70	10.0	0.70	50
HD0750	○	0.75	10.0	0.75	50
HD0800	○	0.80	10.0	0.80	50
HD0850	○	0.85	10.0	0.85	50
HD0900	○	0.90	10.0	0.90	50
HD0950	○	0.95	10.0	0.95	50
HD1000	○	1.00	12.0	1.00	50
HD1050	○	1.05	12.0	1.05	50
HD1100	○	1.10	12.0	1.10	50
HD1150	○	1.15	12.0	1.15	50
HD1200	○	1.20	12.0	1.20	50
HD1250	○	1.25	15.0	1.25	60
HD1300	○	1.30	15.0	1.30	60
HD1350	○	1.35	15.0	1.35	60
HD1400	○	1.40	15.0	1.40	60
HD1450	○	1.45	15.0	1.45	60
HD1500	○	1.50	15.0	1.50	60
HD1550	○	1.55	15.0	1.55	60
HD1600	○	1.60	15.0	1.60	60
HD1650	○	1.65	15.0	1.65	60
HD1700	○	1.70	18.0	1.70	60
HD1750	○	1.75	18.0	1.75	60
HD1800	○	1.80	18.0	1.80	60
HD1850	○	1.85	18.0	1.85	60
HD1900	○	1.90	18.0	1.90	60
HD1950	○	1.95	18.0	1.95	60
HD2000	○	2.00	18.0	2.00	60
HD2050	○	2.05	20.0	2.05	60
HD2100	○	2.10	20.0	2.10	60
HD2150	○	2.15	20.0	2.15	60
HD2200	○	2.20	20.0	2.20	60
HD2250	○	2.25	20.0	2.25	60
HD2300	○	2.30	20.0	2.30	60
HD2350	○	2.35	20.0	2.35	60
HD2400	○	2.40	20.0	2.40	60
HD2450	○	2.45	20.0	2.45	60

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
HD2500	○	2.50	20.0	2.50	60
HD2550	○	2.55	20.0	2.55	60
HD2600	○	2.60	20.0	2.60	60
HD2650	○	2.65	20.0	2.65	60
HD2700	○	2.70	20.0	2.70	60
HD2750	○	2.75	20.0	2.75	60
HD2800	○	2.80	20.0	2.80	60
HD2850	○	2.85	20.0	2.85	60
HD2900	○	2.90	20.0	2.90	60
HD2950	○	2.95	20.0	2.95	60
HD3000	○	3.00	25.0	3.00	75
HD3050	○	3.05	25.0	3.05	75
HD3100	○	3.10	25.0	3.10	75
HD3150	○	3.15	25.0	3.15	75
HD3200	○	3.20	25.0	3.20	75
HD3250	○	3.25	25.0	3.25	75
HD3300	○	3.30	25.0	3.30	75
HD3350	○	3.35	25.0	3.35	75
HD3400	○	3.40	25.0	3.40	75
HD3450	○	3.45	25.0	3.45	75
HD3500	○	3.50	25.0	3.50	75
HD3550	○	3.55	25.0	3.55	75
HD3600	○	3.60	25.0	3.60	75
HD3650	○	3.65	27.0	3.65	75
HD3700	○	3.70	27.0	3.70	75
HD3750	○	3.75	27.0	3.75	75
HD3800	○	3.80	27.0	3.80	75
HD3850	○	3.85	27.0	3.85	75
HD3900	○	3.90	27.0	3.90	75
HD3950	○	3.95	27.0	3.95	75
HD4000	○	4.00	27.0	4.00	75
HD4050	○	4.05	27.0	4.05	75
HD4100	○	4.10	30.0	4.10	100
HD4150	○	4.15	30.0	4.15	100
HD4200	○	4.20	30.0	4.20	100
HD4250	○	4.25	30.0	4.25	100
HD4300	○	4.30	30.0	4.30	100
HD4350	○	4.35	30.0	4.35	100
HD4400	○	4.40	30.0	4.40	100
HD4450	○	4.45	30.0	4.45	100
HD4500	○	4.50	30.0	4.50	100
HD4550	○	4.55	30.0	4.55	100

HD- COATING DRILLS(STRAIGHT SHANK)

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
HD4600	○	4.60	30.0	4.60	100
HD4650	○	4.65	30.0	4.65	100
HD4700	○	4.70	30.0	4.70	100
HD4750	○	4.75	30.0	4.75	100
HD4800	○	4.80	30.0	4.80	100
HD4850	○	4.85	30.0	4.85	100
HD4900	○	4.90	30.0	4.90	100
HD4950	○	4.95	30.0	4.95	100
HD5000	○	5.00	40.0	5.00	100
HD5050	○	5.05	40.0	5.05	100
HD5100	○	5.10	40.0	5.10	100
HD5150	○	5.15	40.0	5.15	100
HD5200	○	5.20	40.0	5.20	100
HD5250	○	5.25	40.0	5.25	100
HD5300	○	5.30	40.0	5.30	100
HD5350	○	5.35	40.0	5.35	100
HD5400	○	5.40	40.0	5.40	100
HD5450	○	5.45	40.0	5.45	100
HD5500	○	5.50	40.0	5.50	100
HD5550	○	5.55	40.0	5.55	100
HD6000	○	6.00	40.0	6.00	100
HD6050	○	6.05	40.0	6.05	100
HD6100	○	6.10	40.0	6.10	100
HD6150	○	6.15	40.0	6.15	100
HD6200	○	6.20	40.0	6.20	100
HD6250	○	6.25	40.0	6.25	100
HD6300	○	6.30	40.0	6.30	100
HD6350	○	6.35	40.0	6.35	100
HD6400	○	6.40	40.0	6.40	100
HD6450	○	6.45	40.0	6.45	100
HD6500	○	6.50	40.0	6.50	100
HD6550	○	6.55	40.0	6.55	100
HD6600	○	6.60	40.0	6.60	100
HD6650	○	6.65	40.0	6.65	100
HD6700	○	6.70	40.0	6.70	100
HD6750	○	6.75	40.0	6.75	100
HD6800	○	6.80	40.0	6.80	100
HD6850	○	6.85	40.0	6.85	100
HD6900	○	6.90	40.0	6.90	100
HD6950	○	6.95	40.0	6.95	100
HD7000	○	7.00	40.0	7.00	100
HD7050	○	7.05	40.0	7.05	100
HD7100	○	7.10	40.0	7.10	100
HD7150	○	7.15	40.0	7.15	100
HD7200	○	7.20	40.0	7.20	100
HD7250	○	7.25	40.0	7.25	100
HD7300	○	7.30	40.0	7.30	100
HD7350	○	7.35	40.0	7.35	100
HD7400	○	7.40	40.0	7.40	100
HD7450	○	7.45	40.0	7 45	100
HD7500	○	7.50	40.0	7.50	100
HD7550	○	7.55	40.0	7.55	100
HD7600	○	7.60	40.0	7.60	100
HD7650	○	7.65	40.0	7.65	100
HD7700	○	7.70	40.0	7.70	100
HD7750	○	7.75	40.0	7.75	100
HD7800	○	7.80	40.0	7.80	100

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
HD7850	○	7.85	40.0	7.85	100
HD7900	○	7.90	40.0	7.90	100
HD7950	○	7.95	40.0	7.95	100
HD8000	○	8.00	40.0	8.00	100
HD8050	○	8.05	40.0	8.05	100
HD8100	○	8.10	40.0	8.10	100
HD8150	○	8.15	40.0	8.15	100
HD8200	○	8.20	40.0	8.20	100
HD8250	○	8.25	40.0	8.25	100
HD8300	○	8.30	40.0	8.30	100
HD8350	○	8.35	40.0	8.35	100
HD8400	○	8.40	40.0	8.40	100
HD8450	○	8.45	40.0	8.45	100
HD8500	○	8.50	40.0	8.50	100
HD8550	○	8.55	40.0	8.55	100
HD9000	○	9.00	40.0	9.00	100
HD9050	○	9.05	40.0	9.05	100
HD9100	○	9.10	40.0	9.10	100
HD9150	○	9.15	40.0	9.15	100
HD9200	○	9.20	40.0	9.20	100
HD9250	○	9.25	40.0	9.25	100
HD9300	○	9.30	40.0	9.30	100
HD9350	○	9.35	40.0	9.35	100
HD9400	○	9.40	40.0	9.40	100
HD9450	○	9.45	40.0	9.45	100
HD9500	○	9.50	40.0	9.50	100
HD9550	○	9.55	40.0	9.55	100
HD9600	○	9.60	40.0	9.60	100
HD9650	○	9.65	40.0	9.65	100
HD9700	○	9.70	40.0	9.70	100
HD9750	○	9.75	40.0	9.75	100
HD9800	○	9.80	40.0	9.80	100
HD9850	○	9.85	40.0	9.85	100
HD9900	○	9.90	40.0	9.90	100
HD9950	○	9.95	40.0	9.95	100
HD10000	○	10.00	50.0	10.00	120
HD10100	○	10.10	50.0	10.10	120
HD10200	○	10.20	50.0	10.20	120
HD10300	○	10.30	50.0	10.30	120
HD10400	○	10.40	50.0	10.40	120
HD10500	○	10.50	50.0	10.50	120
HD10600	○	10.60	50.0	10.60	120
HD10700	○	10.70	50.0	10.70	120
HD10800	○	10.80	50.0	10.80	120
HD10900	○	10.90	50.0	10.90	120
HD11000	○	11.00	50.0	11.00	120
HD11100	○	11.10	50.0	11.10	120
HD11200	○	11.20	50.0	11.20	120
HD11300	○	11.30	50.0	11.30	120
HD11400	○	11.40	50.0	11.40	120
HD11500	○	11.50	50.0	11.50	120
HD11600	○	11.60	50.0	11.60	120
HD11700	○	11.70	50.0	11.70	120
HD11800	○	11.80	50.0	11.80	120
HD11900	○	11.90	50.0	11.90	120
HD12000	○	12.00	50.0	12.00	120

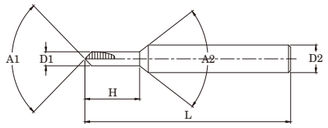
WERNER

CHSD- MULTI-FUNCTION SPOTTING MICRO DRILLS





Tool dia: D0.04-D10.0mm
Dia tolerance: 0,-0.005mm
Micro Grain Tungsten Carbide
Newly developed composite coating to enhance the fatigue resistance and wear resistance of drill bit
Suitable for hole machining of stainless steel, heat resistant alloy and other materials



Work Material																		
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	◎	◎		◎	◎	○	○	○	○	○	○	○					

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHSD0010-90	○	0.1	0.5	3	38
CHSD0015-90	○	0.15	1.0	3	38
CHSD0020-90	○	0.2	1.0	3	38
CHSD0030-90	○	0.3	2.0	3	38
CHSD0040-90	○	0.4	2.0	3	38
CHSD0050-90	○	0.5	3.0	3	38
CHSD0060-90	○	0.6	3.0	3	38
CHSD0070-90	○	0.7	3.0	3	38
CHSD0080-90	○	0.8	3.0	3	38
CHSD0090-90	○	0.9	3.0	3	38
CHSD0100-90	○	1.0	3.0	3	38
CHSD0150-90	○	1.5	3.0	3	38
CHSD0200-90	○	2.0	3.0	3	38
CHSD0250-90	○	2.5	3.0	3	38
CHSD0300-90	○	3.0	3.0	3	38
CHSD0350-90	○	3.5	5.0	4	50
CHSD0400-90	○	4.0	5.0	4	50
CHSD0450-90	○	4.5	5.0	6	50
CHSD0500-90	○	5.0	5.0	6	50
CHSD0550-90	○	5.5	5.0	6	50
CHSD0600-90	○	6.0	5.0	6	50
CHSD0650-90	○	6.5	8.0	8	80
CHSD0700-90	○	7.0	8.0	8	80
CHSD0750-90	○	7.5	8.0	8	80
CHSD0800-90	○	8.0	8.0	8	80
CHSD0850-90	○	8.5	8.0	10	80
CHSD0900-90	○	9.0	8.0	10	80
CHSD0950-90	○	9.5	8.0	10	80
CHSD1000-90	○	10.0	8.0	10	80

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHSD0010-120	○	0.1	0.5	3	38
CHSD0015-120	○	0.15	1.0	3	38
CHSD0020-120	○	0.2	1.0	3	38
CHSD0030-120	○	0.3	2.0	3	38
CHSD0040-120	○	0.4	2.0	3	38
CHSD0050-120	○	0.5	3.0	3	38
CHSD0060-120	○	0.6	3.0	3	38
CHSD0070-120	○	0.7	3.0	3	38
CHSD0080-120	○	0.8	3.0	3	38
CHSD0090-120	○	0.9	3.0	3	38
CHSD0100-120	○	1.0	3.0	3	38
CHSD0150-120	○	1.5	3.0	3	38
CHSD0200-120	○	2.0	3.0	3	38
CHSD0250-120	○	2.5	3.0	3	38
CHSD0300-120	○	3.0	3.0	3	38
CHSD0350-120	○	3.5	5.0	4	50
CHSD0400-120	○	4.0	5.0	4	50
CHSD0450-120	○	4.5	5.0	6	50
CHSD0500-120	○	5.0	5.0	6	50
CHSD0550-120	○	5.5	5.0	6	50
CHSD0600-120	○	6.0	5.0	6	50
CHSD0650-120	○	6.5	8.0	8	80
CHSD0700-120	○	7.0	8.0	8	80
CHSD0750-120	○	7.5	8.0	8	80
CHSD0800-120	○	8.0	8.0	8	80
CHSD0850-120	○	8.5	8.0	10	80
CHSD0900-120	○	9.0	8.0	10	80
CHSD0950-120	○	9.5	8.0	10	80
CHSD1000-120	○	10.0	8.0	10	80

Standard Drilling Conditions

Work Material	Carbon Steel			Alloy Steel			Heat treated Steel			Stainless Steel		
Drill Dia. mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm	Rotation min^{-1}	Feed mm/min	Q mm
0.04-0.09	10000~20000	10~30	0.001~0.0015	10000~20000	10~30	0.001~0.0015	10000~20000	10~20	0.001	10000~20000	5~20	0.0005~0.001
0.1-0.29	15000~10000	15~70	0.0015~0.007	15000~10000	15~70	0.0015~0.007	13000~8800	13~35	0.001~0.004	10000~5000	10~15	0.001~0.003
0.3-0.49	10000~9500	70~95	0.007~0.01	10000~9500	70~95	0.007~0.01	8800~6500	26~32	0.003~0.005	5000~4500	5~22	0.001~0.005
0.5-0.99	9500~7700	95~154	0.01~0.02	9500~7700	95~154	0.01~0.02	6500~4800	32~48	0.005~0.01	4500~3200	22~32	0.005~0.01
1.0-1.99	7700~5100	154~255	0.02~0.05	7700~5100	154~255	0.02~0.05	3100~2400	31~72	0.01~0.03	3200~2400	32~72	0.01~0.03
2.0-3.0	5100~4200	300	0.06	5100~4200	300	0.06	2400~1600	48~64	0.02~0.04	2400~1800	72~90	0.03~0.05

CHSXD- COATING LEFT ROTATION SPOTTING DRILLS



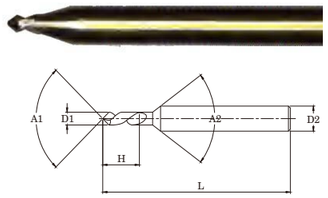
Tool dia：D0.15-D3.0mm

Dia tolerance：0,-0.003mm

Micro Grain Tungsten Carbide

The specially designed left-hand groove is suitable for hole processing of automatic lathe

Universal coating, suitable for hole machining of stainless steel, titanium alloy and other materials



Work Material																			
S45C S55C Carbon Steel	SK·SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎	○			◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	○	

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHSXD0500	○	0.5	2.0	3	30
CHSXD0600	○	0.6	2.0	3	30
CHSXD0700	○	0.7	2.0	3	30
CHSXD0800	○	0.8	2.0	3	30
CHSXD0900	○	0.9	2.0	3	30
CHSXD1000	○	1.0	2.0	3	30
CHSXD1250	○	1.25	2.5	3	30
CHSXD1300	○	1.3	2.5	3	30
CHSXD1330	○	1.33	2.5	3	30
CHSXD1350	○	1.35	2.5	3	30
CHSXD1380	○	1.38	2.5	3	30
CHSXD1400	○	1.40	2.5	3	30

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CHSXD1500	○	1.50	2.5	3	30
CHSXD1550	○	1.55	2.5	3	30
CHSXD1600	○	1.60	2.5	3	30
CHSXD1650	○	1.65	2.5	3	30
CHSXD1700	○	1.70	2.5	3	30
CHSXD1750	○	1.75	2.5	3	30
CHSXD1800	○	1.80	2.5	3	30
CHSXD1850	○	1.85	2.5	3	30
CHSXD1900	○	1.90	2.5	3	30
CHSXD2000	○	2.00	2.5	3	30
CHSXD2500	○	2.50	2.5	3	30
CHSXD3000	○	3.00	2.5	3	30

CND- CARBIDE CENTER DRILLS

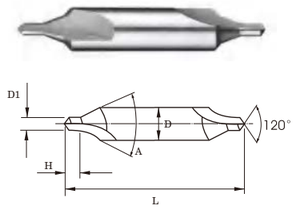


Tool dia：D1.0-D5.0mm

Dia tolerance：0,-0.005mm

Micro Grain Tungsten Carbide

High precision tolerance control, excellent cutting force and chip removal



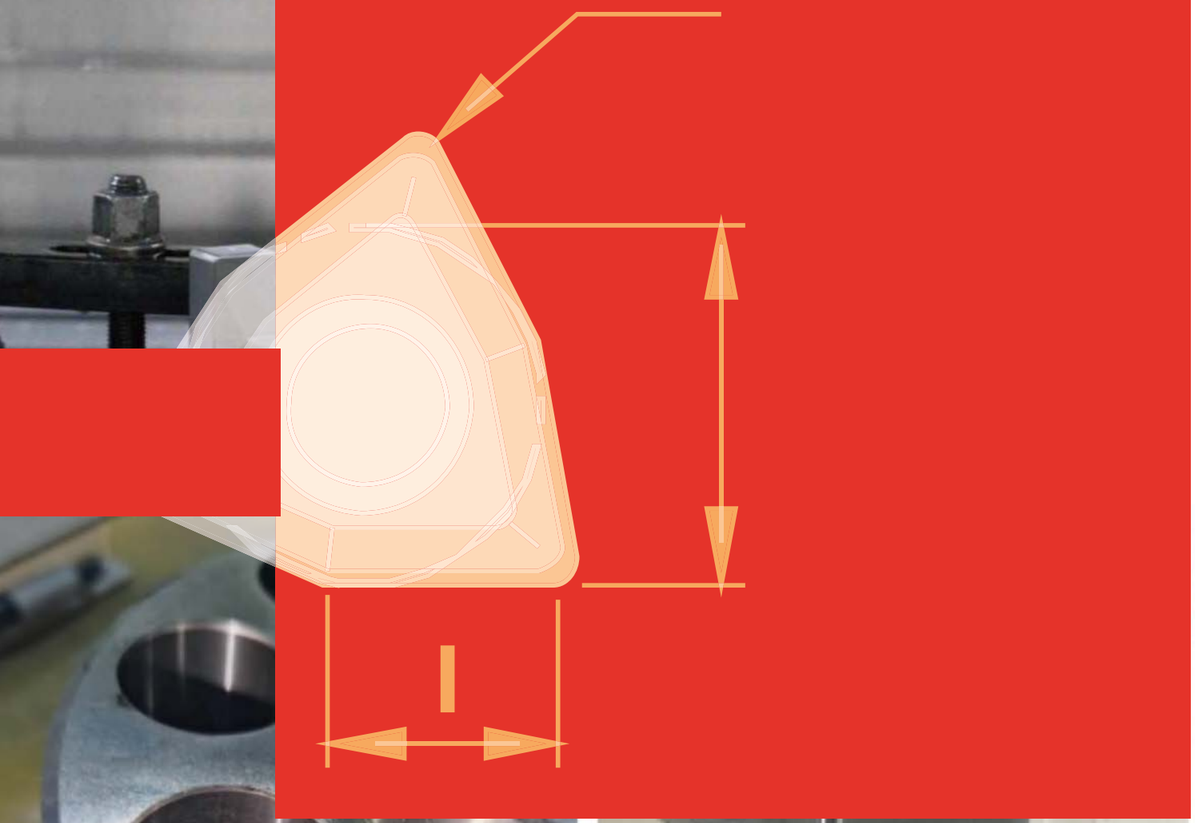
Work Material																			
S45C S55C Carbon Steel	SK SCM SUS Alloy Steel	NAK HPM Pre-Hardened Steel	Hardess steel ~55 HRC	~60 HRC	~70 HRC	Cast iron	Titanium Alloy	Heat Resistant Alloy	Copper Alloy	Aluminum Alloy	Resin	Plastics	Glass Fiber	Bakelite	Graphite	Zirconium oxide	Silicon	Ceramic	Carbon Fiber
◎	◎	◎				◎	◎	○	○	○	○	○	○	○			◎	○	

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CND0100-60	○	1.0	1.6	3	32
CND0125-60	○	1.25	1.9	3	32
CND0160-60	○	1.6	2.4	4	32
CND0200-60	○	2.0	2.9	5	40
CND0250-60	○	2.5	3.6	6	45
CND0300-60	○	3.0	3.9	8	60
CND0315-60	○	3.15	3.9	8	60
CND0400-60	○	4.0	5.0	10	75
CND0500-60	○	5.0	6.3	12	75

Model	Stock	Dia D1	Flute length H	Shank D	Total length L
CND0100-90	○	1.0	1.6	3	32
CND0125-90	○	1.25	1.9	3	32
CND0160-90	○	1.6	2.4	4	32
CND0200-90	○	2.0	2.9	5	40
CND0250-90	○	2.5	3.6	6	45
CND0300-90	○	3.0	3.9	8	60
CND0315-90	○	3.15	3.9	8	60
CND0400-90	○	4.0	5.0	10	75
CND0500-90	○	5.0	6.3	12	75



Reamers







Reamers
N1 - N10

N

REAMER WITH REMOVABLE HEAD N01

Tool rod N02

MODULAR RIGID CONNECTION SYSTEM N03

The main handle N04

Diameter of the series N05

Cutting head N06

Check the head N07

Adjustable ring N08

Cutting head screw N09

Puller N10

WERNER

REAMER WITH REMOVABLE HEAD

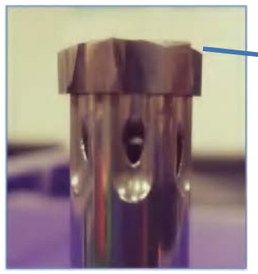
Infrastructure:

Tool rod head

Connection structure:

High precision repeat positioning mechanism

High-precision simple repeat positioning mechanism, simple operation, easy to replace, ensure the precision of tool replacement - compliance
Replace the traditional integral structure reamer, reduce the cost
Replace traditional welding reamer coating problem, improve tool life, reduce cost
The runout is not adjustable, the tool precision is guaranteed by the machine tool and the existing tool system



High precision repeatable positioning mechanism

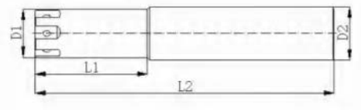


Range of application

■ Replace the traditional solid carbide,
Welding reamer, improve tool changing accuracy,
Reduce cost and improve tool life.
Replace boring cutter process, improve efficiency,
Adapt to industrial scale production.

Tool rod





Tool head range /mm	L1	L2	D1	D2	The order no.	inventory
φ15≤φ≤φ16	40	100	14	16	QPBD9.0-16-L40-L100	○
	70	120	14	16	QPBD9.0-16-L70-L120	○
	100	150	14	16	QPBD9.0-16-L100-L150	○
φ16≤φ≤φ19	54	100	15	20	QPBD10.4(5)-20-L54-L100	○
	80	130	15	20	QPBD10.4(5)-20-L80-L130	○
	120	170	15	20	QPBD10.4(5)-20-L120-L170	○
φ19≤φ≤φ23	54	120	18	20	QPBD12-20-L54-L120	○
	95	150	18	20	QPBD12-20-L95-L150	○
	150	200	18	20	QPBD12-20-L150-L200	○
φ23≤φ≤φ28	30	120	22	20	QPBD15-20-L120	○
	30	150	22	20	QPBD15-20-L150	○
	30	200	22	20	QPBD15-20-L200	○
φ28≤φ≤φ33	30	120	27	25	QPBD17-25-L120	○
	30	150	27	25	QPBD17-25-L150	○
	30	200	27	25	QPBD17-25-L200	○
φ33≤φ≤φ38.5	According to the square stability system					
φ38.5≤φ≤φ44.5						
φ44.5≤φ≤φ51						

MODULAR RIGID CONNECTION SYSTEM

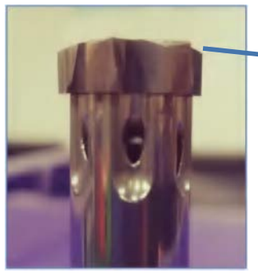
Three major infrastructures

Main handle, connecting head, tool head

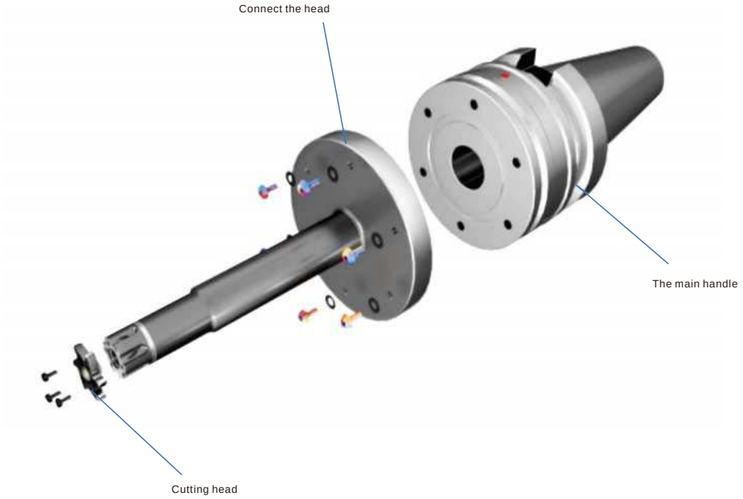
Two connected structures

Adjustable rigid connection mechanism,
High precision repeat positioning mechanism

- High precision simple repeat positioning mechanism for intelligent manufacturing, professional manufacturing to provide the basis
- Simple operation, the customer to "0 "basic requirements, 5 minutes can master adjustment, replacement and other use



High precision repeatable positioning mechanism



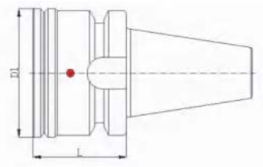
Range of application

- Suitable for diameter, roundness, cylindrical special requirements of hole finishing.
- The system can be adjusted, high precision, stable, easy to adjust,
Adapt to large-scale, assembly line, intelligent production.

The main handle

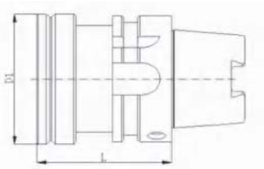
BT series





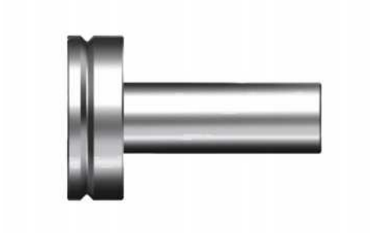
size	D1	L	The order number	inventory
BT30	50	52	QPA50-BT30	○
BT40	65	57	QPA65-BT40	○
BT50	65	60	QPA65-BT50	○
BT50	80	60	QPA80-BT50	○

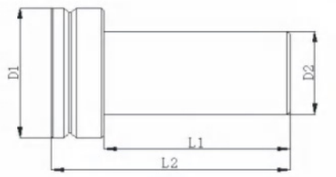
HSK series



size	D1	L	The order number	inventory
HSK40A	50	52	QPA50-HSK40A	○
HSK50A	50	59	QPA50-HSK50A	○
HSK63A	65	59	QPA65-HSK65A	○
HSK80A	65	59	QPA65-HSK80A	○
HSK100A	80	62	QPA80-HSK100A	○

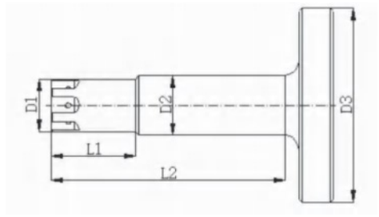
Diameter of the series





D1	D2	L1	L2	The order number	inventory
50	20	60	77	QPA50-20	○
50	25	60	77	QPA50-25	○
50	32	60	77	QPA50-32	○

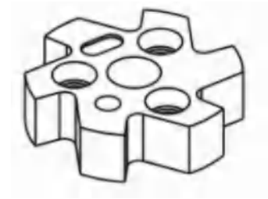
Integral connection head



Tool head range /mm	D1	D2	D3	L1	L2	The order no.	inventory
φ15≤φ≤φ16	14	20	65	40	82	QPB9.0-65-L40-L100-15	○
φ16≤φ≤φ19	15	20	65	48	82	QPB10.4-65-L48-L100-15	○
φ19≤φ≤φ23	18	25	65	54	82	QPB12-65-L54-L100-18	○
φ23≤φ≤φ28	22	22	65	-	82	QPB15-65-L82-L100-22	○
φ28≤φ≤φ33	27	27	65	-	92	QPB17-65-L92-L110-27	○
φ33≤φ≤φ38.5	32	32	65	-	95	QPB22-65-L95-L110-32	○
φ38.5≤φ≤φ44.5	37	37	65	-	115	QPB24-65-L115-L130-37	○
φ44.5≤φ≤φ51	43	40	65	30	115	QPB27-65-L115-L130-43	○
φ51≤φ≤φ58	48	55	80	30	115	QPB34 -80-L115-L130-48	○
φ58≤φ≤φ68	55	55	80	30	115	QPB42-80-L115-L130-55	○
φ68≤φ≤φ78	65	55	80	30	115	QPB52-80-L115-L130-65	○
φ78≤φ≤φ89	76	55	80	30	115	QPB62-80-L115-L130-75	○
The other specifications are customized according to the scheme							
φ89≤φ≤φ100	According to the square stability system						
φ100≤φ≤φ140	According to the square stability system						

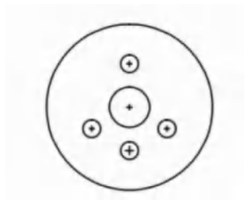
Cutting head

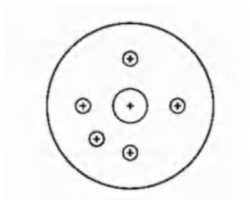




item / The name	Head diameter	Stock	The thickness	The blade number	Minimum order quantity/tablet	The order number	The material
	φ12≤φ≤φ15	○	6.5	6	10	15T1-φ	Metal ceramic
	φ15 <φ≤φ16	○	6.6	6	10	16T1-φ	
	φ16 <φ≤φ19	○	6.78	6	10	19T1-φ	
	φ19<φ≤φ23	○	8.33	6	10	23T1-φ	
	φ23 <φ≤φ28	○	8.33	6	10	28T1-φ	
	φ28 <φ≤φ33	○	8.33	8	5	33T1-φ	
	φ33 <φ≤φ38.5	○	10	8	5	38.5T1-φ	
	φ38.5<φ≤φ44.5	○	10	8	2	44.5T1-φ	
	φ44.5<φ≤φ51	○	10.3	8	2	51T1-φ	
	φ51 <φ≤φ58	○	11.3	8	2	58T1-φ	
	φ58 <φ≤φ68	○	13.0	8	2	68T1-φ	
	φ68 <φ≤φ78	○	13.0	8	2	78T1-φ	
	φ78<φ≤φ89	○	15.5	8	2	89T1-φ	
	φ89 <φ≤φ100	○	15.5	10	2	100T1-φ	
	φ100<φ≤φ140	According to the square stability system					
	φ12≤φ≤φ15	○	6.5	6	10	15H3-φ	carbide
	φ15 <φ≤φ16	○	6.6	6	10	16H3-φ	
	φ16 <φ≤φ19	○	6.78	6	10	19H3-φ	
	φ19<φ≤φ23	○	8.33	6	10	23H3-φ	
	φ23 <φ≤φ28	○	8.33	6	10	28H3-φ	
	φ28 <φ≤φ33	○	8.33	8	5	33H3-φ	
	φ33 < φ≤φ38.5	○	10	8	5	38.5H3-φ	
	φ38.5<φ≤φ44.5	○	10	8	2	44.5H3-φ	
	φ44.5<φ≤φ51	○	10.3	8	2	51H3-φ	
	φ51 <φ≤φ58	○	11.3	8	2	58H3-φ	
	φ58 <φ≤φ68	○	13.0	8	2	68H3-φ	
	φ68 <φ≤φ78		13.0	8	2	78H3-φ	
	φ78>φ>φ89		15.5	8	2	89H3-φ	
	φ89>φ> φ100		15.5	10	2	100H3-φ	
	φ100>φ> φ140	According to the square stability system					

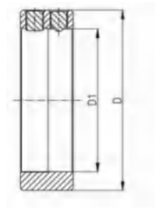
Connection head

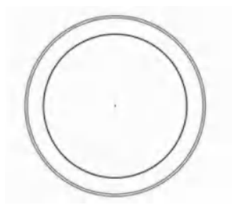




Fit knife head diameter	The order no.	inventory
φ15≤φ≤φ16	QPDB16	○
φ16 <φ≤φ19	QPDB19	○
φ19 <φ≤φ23	QPDB23	○
φ23 <φ≤φ28	QPDB28	○
φ28 <φ≤φ33	QPDB33	○
φ33 <φ≤φ38.5	QPDB38.5	○
φ38.5 <φ≤φ44.5	QPDB44.5	○
φ44.5<φ≤φ51	QPDB51	○
φ51 <φ≤φ58	QPDB58	○
φ58 <φ≤φ68	QPDB68	○
φ68 <φ≤φ78	QPDB78	○
φ78<φ≤φ89	QPDB89	○
φ89<φ≤φ100	QPDB100	○

Adjustable ring





Adjustable ring	D	D1	Matches the primary handle code	Supporting the wrench	inventory
QPE50	65	50	QPA50-20 QPA50-25 QPA50-32Q PA50-BT30 QPA50-HSK40 QPA50-HSK50	L (type) 4x140	○
QPE65	82	65	QPA65-BT40 QPA65-BT50 QPA65-HSK63 QPA65-HSK80		○
QPE80	100	80	QPA80-BT50 QPA80-HSK100		○

Cutting head wrench



Spanner type	Batch of head type	Corresponding screw	Corresponds to the torque value	inventory
1/4 0.4－2.6N.m	T6	M2.0x8	0.65-0.7N.m	○
	T8	M2.5x8	1.25-1.3N.m	○
	T10	M3.0x10	2.1-2.2N.m	○

Cutting head screw



Fit knife head diameter	The order no.	The order no.	inventory
φ15≤φ≤φ16	M2.5x8	T8	○
φ16 <φ≤φ19	M2.0x8	T6	○
φ19 <φ≤φ23	M2.5x8	T8	○
φ23 <φ≤φ28			○
φ28 <φ≤φ33			○
φ33 <φ≤φ38.5	M3.0x10	T10	○
φ38.5 <φ≤φ44.5			○
φ44.5<φ≤φ51			○
φ51 <φ≤φ58	M4x10	4x70	○
φ58 <φ≤φ68			○
φ68 <φ≤φ78			○
φ78<φ≤φ89			○
φ89<φ≤φ100			○

puller



Fit knife head diameter	The order no.	The order no.	inventory
φ15≤φ≤φ16	φ4x4φ30x95	φ50x15xφ9.5	○
φ16 <φ≤φ19			○
φ19 <φ≤φ23	φ5x4xφ30x95		○
φ23 <φ≤φ28			○
φ28 <φ≤φ33			○
φ33 <φ≤φ38.5			○
φ38.5 <φ≤φ44.5			○
φ44.5<φ≤φ51			○
φ51 <φ≤φ58			○
φ58 <φ≤φ68			○
φ68 <φ≤φ78			○
φ78<φ≤φ89			○
φ89<φ≤φ100			○

Taps
O1 - O44

JIS METRIC COARSE SPIRAL TAPS O03
JIS METRIC FINE SPIRAL TAPS O04
JIS METRIC FINE SPIRAL O05
JIS UNC COARSE SPIRAL TAPS O06
JIS UNF FINE SPIRAL TAPS O07
JIS INCH COARSE SPIRAL TAPS O08
JIS METRIC COARSE GUN TAPS O09
JIS METRIC FINE GUN TAPS O10
JIS METRIC FINE GUN TAPS O11
JIS UNC COARSE GUN TAPS O12
JIS UNF FINE GUN TAPS O13
JIS INCH COARSE GUN TAPS O14
JIS METRIC LEFT HANDED GUN TAPS O15
JIS SPIRAL TAP FOR CAST IRON O16
JIS SPIRAL TAPS FOR STAINLESS STEEL O17
JIS SPIRAL TAPS FOR COPPER ALUNMINUM O18
JIS SPIRAL TAPS FOR GUN TAP O19
JIS FORMING TAPS O21
JIS UNC FORMING TAPS O22
JIS METRIC SPIRAL TAPS FOR POWDER METALLURGY O23
JIS METRIC GUN TAPS FOR POWDER METALLARGY O24
JIS METRIC COAVSE HAND TAPS O25
JIS METRIC FINE HAND TAPS O26
JIS UNC COARSE HAND TAPS O27
JIS UNF FINE HAND TAPS O28
ISO 2284 PARALLEL PIPE TAPS O29
ISO 2284 TAPER PIPE TAPS O30
JIS INCH COARSE HAND TAPS O31
JIS INCH FINE HAND TAPS O32
JIS INCH TAPER SPIRAL TAPS O33
JIS SPIRAL FLUTED TAPS O34
JIS METRIC LONG SPIRAL TAPS O35
JIS METRIC LONG GUN TAPS O36
DIN 371/376 SPIRAL TAPS O37
DIN 371/376 GUN TAPS O38
JIS CARBIDE STRAIGHT FLUTED TAPS O39
JIS CARBIDE SPRIRAL FLUTED TAPS O40
JIS CARDIDE GUN TAPS O41
JIS CARBIDE FORMING TAPS O42
JIS PIPE THREAD CARBIDE TAPS O43
JIS PIPE THREAD CARBIDE SHORT SPIRAL TAPS O44

Taps identification



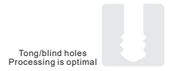
JIS METRIC COARSE SPIRAL TAPS

M JIS 35° HSS-Co 6H 60° 2.5

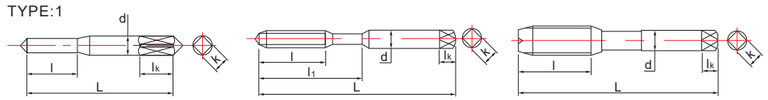
- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Magnesium aluminum alloy, etc.



TYPE:2



TYPE:1



Model		Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M1.0x0.25-SFT-PE-J		M1	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.1x0.25-SFT-PE-J		M1.1	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.2x0.25-SFT-PE-J		M1.2	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.4x0.30-SFT-PE-J		M1.4	0.30	36	8.0		3.0	2.5	5	1	2
TNH-M1.6x0.35-SFT-PE-J		M1.6	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M1.7x0.35-SFT-PE-J		M1.7	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M1.8x0.35-SFT-PE-J		M1.8	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M2.0x0.40-SFT-PE-J		M2	0.40	42	9.5	15	3.0	2.5	5	2	2
TNH-M2.2x0.45-SFT-PE-J		M2.2	0.45	42	9.5	15	3.0	2.5	5	2	2
TNH-M2.3x0.40-SFT-PE-J		M2.3	0.40	42	9.5	15	3.0	2.5	5	2	2
TNH-M2.5x0.45-SFT-PE-J		M2.5	0.45	44	9.5	16	3.0	2.5	5	2	2
TNH-M2.6x0.45-SFT-PE-J		M2.6	0.45	44	9.5	16	3.0	2.5	5	2	2
TNH-M3.0x0.50-SFT-PE-J		M3	0.50	46	11	18	4.0	3.2	6	2	3
TNH-M3.5x0.60-SFT-PE-J		M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TNH-M4.0x0.70-SFT-PE-J		M4	0.70	52	13	20	5.0	4.0	7	2	3
TNH-M4.5x0.75-SFT-PE-J		M4.5	0.75	55	13	21	5.0	4.0	7	2	3
TNH-M5.0x0.80-SFT-PE-J		M5	0.80	60	16	25	5.5	4.5	7	2	3
TNH-M5.5x0.90-SFT-PE-J		M5.5	0.90	60	16	25	5.5	4.5	7	2	3
TNH-M6.0x1.00-SFT-PE-J		M6	1.00	62	19	28	6.0	4.5	7	2	3
TNH-M7.0x1.00-SFT-PE-J		M7	1.00	65	19	30	6.2	5.0	8	3	3
TNH-M8.0x1.25-SFT-PE-J		M8	1.25	70	22		6.2	5.0	8	3	3
TNH-M9.0x1.25-SFT-PE-J		M9	1.25	72	22		7.0	5.5	8	3	3
TNH-M10x1.5-SFT-PE-J		M10	1.50	75	24		7.0	5.5	8	3	3
TNH-M11x1.5-SFT-PE-J		M11	1.50	80	25		8.0	6.0	9	3	3
TNH-M12x1.75-SFT-PE-J		M12	1.75	82	29		8.5	6.5	9	3	3
TNH-M14x2.0-SFT-PE-J		M14	2.00	88	30		10.5	8.0	11	3	3
TNH-M15x2.0-SFT-PE-J		M15	2.00	90	30		10.5	8.0	11	3	3
TNH-M16x2.0-SFT-PE-J		M16	2.00	95	32		12.5	10	13	3	3
TNH-M18x2.5-SFT-PE-J		M18	2.50	100	37		14.0	11	14	3	4
TNH-M20x2.5-SFT-PE-J		M20	2.50	105	37		15.0	12	15	3	4
TNH-M22x2.5-SFT-PE-J		M22	2.50	115	38		17.0	13	16	3	4
TNH-M24x3.0-SFT-PE-J		M24	3.00	120	45		19.0	15	18	3	4
TNH-M26x3.0-SFT-PE-J		M26	3.00	125	45		20.0	15	18	3	4
TNH-M27x3.0-SFT-PE-J		M27	3.00	130	45		20.0	15	18	3	4
TNH-M30x3.5-SFT-PE-J		M30	3.50	135	48		23.0	17	20	3	4
TNH-M33x3.5-SFT-PE-J		M33	3.50	145	51		25.0	19	22	3	4
TNH-M36x4.0-SFT-PE-J		M36	4.00	155	57		28.0	21	24	3	4
TNH-M39x4.0-SFT-PE-J		M39	4.00	165	60		30.0	23	26	3	4
TNH-M42x4.5-SFT-PE-J		M42	4.50	175	60		32.0	26	30	3	4
TNH-M45x4.5-SFT-PE-J		M45	4.50	180	67		35.0	26	30	3	4
TNH-M48x5.0-SFT-PE-J		M48	5.00	185	67		38.0	29	32	3	4

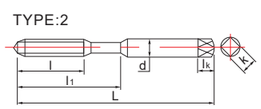
JIS METRIC FINE SPIRAL TAPS

MF JIS 35° HSS-Co 6H 60° 2.5

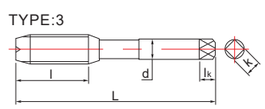
- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Magnesium aluminum alloy, etc.



TYPE:2



TYPE:3



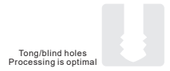
Model		Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M2x0.25-SFT-BE-J		M2	0.25	42	7.0	15	3.0	2.5	5	2	2
TNH-M2.3x0.25-SFT-BE-J		M2.3	0.25	42	7.0	15	3.0	2.5	5	2	2
TNH-M2.5x0.35-SFT-BE-J		M2.5	0.35	44	8.0	16	3.0	2.5	5	2	2
TNH-M2.6x0.35-SFT-BE-J		M2.6	0.35	44	8.0	16	3.0	2.5	5	2	2
TNH-M3x0.6-SFT-BE-J		M3	0.60	46	11	18	4.0	3.2	6	2	3
TNH-M3x0.35-SFT-BE-J		M3	0.35	46	9.5	18	4.0	3.2	6	2	3
TNH-M3.5x0.35-SFT-BE-J		M3.5	0.35	48	9.5	20	4.0	3.2	6	2	3
TNH-M4x0.75-SFT-BE-J		M4	0.75	52	13	21	5.0	4.0.	7	2	3
TNH-M4x0.5-SFT-BE-J		M4	0.50	52	13	21	5.0	4.0	7	2	3
TNH-M4.5x0.5-SFT-BE-J		M4.5	0.50	55	13	21	5.0	4.0	7	2	3
TNH-M5x0.5-SFT-BE-J		M5	0.50	55	13	25	5.5	4.5	7	2	3
TNH-M5x0.75-SFT-BE-J		M5	0.75	60	16	25	5.5	4.5	7	2	3
TNH-M6x0.75-SFT-BE-J		M6	0.75	62	19	30	6.0	4.5	7	2	3
TNH-M6x0.5-SFT-BE-J		M6	0.50	55	13	25	6.0	4.5	7	2	3
TNH-M7x0.75-SFT-BE-J		M7	0.75	65	19	30	6.2	5.0	8	3	3
TNH-M7x0.5-SFT-BE-J		M7	0.50	55	13	25	6.2	5.0	8	3	3
TNH-M8x1.0-SFT-BE-J		M8	1.00	70	22		6.2	5.0	8	3	3
TNH-M8x0.75-SFT-BE-J		M8	0.75	70	22		6.2	5.0	8	3	3
TNH-M9x1.0-SFT-BE-J		M9	1.00	72	22		7.0	5.5	8	3	3
TNH-M9x0.75-SFT-BE-J		M9	0.75	72	22		7.0	5.5	8	3	3
TNH-M9x0.5-SFT-BE-J		M9	0.50	72	22		7.0	5.5	8	3	3
TNH-M10x1.25-SFT-BE-J		M10	1.25	75	24		7.0	5.5	8	3	3
TNH-M10x1.0-SFT-BE-J		M10	1.00	75	24		7.0	5.5	8	3	3
TNH-M10x0.75-SFT-BE-J		M10	0.75	75	22		7.0	5.5	8	3	3
TNH-M10x0.5-SFT-BE-J		M10	0.50	75	22		7.0	5.5	8	3	3
TNH-M11x1.25-SFT-BE-J		M11	1.25	80	25		8.0	6.0	9	3	3
TNH-M11x1.0-SFT-BE-J		M11	1.00	80	25		8.0	6.0	9	3	3
TNH-M11x0.75-SFT-BE-J		M11	0.75	75	22		8.0	6.0	9	3	3
TNH-M12x1.5-SFT-BE-J		M12	1.50	82	29		8.5	6.5	9	3	3
TNH-M12x1.25-SFT-BE-J		M12	1.25	82	29		8.5	6.5	9	3	3
TNH-M12x0.75-SFT-BE-J		M12	0.75	75	22		8.5	6.5	9	3	3
TNH-M12x0.5-SFT-BE-J		M12	0.50	75	22		8.5	6.5	9	3	3
TNH-M13x1.75-SFT-BE-J		M13	1.75	85	29		9.5	7.0	10	3	3
TNH-M13x1.5-SFT-BE-J		M13	1.50	85	29		9.5	7.0	10	3	3
TNH-M14x1.5-SFT-BE-J		M14	1.50	88	30		10.5	8.0	11	3	3
TNH-M14x1.25-SFT-BE-J		M14	1.25	88	30		10.5	8.0	11	3	3
TNH-M14x1.0-SFT-BE-J		M14	1.00	88	30		10.5	8.0.	11	3	3
TNH-M15x1.5-SFT-BE-J		M15	1.50	90	30		10.5	8.0	11	3	3
TNH-M15x1.0-SFT-BE-J		M15	1.00	90	30		10.5	8.0	11	3	3
TNH-M16x1.5-SFT-BE-J		M16	1.50	95	32		12.5	10	13	3	3
TNH-M16x1.0-SFT-BE-J		M16	1.00	95	32		12.5	10	13	3	3
TNH-M17x1.5-SFT-BE-J		M17	1.50	95	32		13.0	10	13	3	4
TNH-M17x1.0-SFT-BE-J		M17	1.00	95	32		13.0	10	13	3	4
TNH-M18x2.0-SFT-BE-J		M18	2.00	1 00	37		14.0	11	14	3	4
TNH-M18x1.5-SFT-BE-J		M18	1.50	1 00	37		14.0	11	14	3	4
TNH-M18x1.25-SFT-BE-J		M18	1.25	95	30		14.0	11	14	3	4
TNH-M18x1.0-SFT-BE-J		M18	1.00	95	30		14.0	11	14	3	4
TNH-M19x1.5-SFT-BE-J		M19	1.50	105	37		14.0	11	14	3	4
TNH-M19x1.0-SFT-BE-J		M19	1.00	95	30		14.0	11	14	3	4
TNH-M20x2.0-SFT-BE-J		M20	2.00	105	37		15.0	12	15	3	4
TNH-M20x1.5-SFT-BE-J		M20	1. 50	1 05	37		15.0	12	15	3	4
TNH-M22x2.0-SFT-BE-J		M22	2.00	115	38		17.0	13	16	3	4
TNH-M22x1.5-SFT-BE-J		M22	1.50	115	38		17.0	13	16	3	4
TNH-M22x1.0-SFT-BE-J		M22	1.00	95	30		17.0	13	16	3	4

JIS METRIC FINE SPIRAL

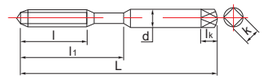
MF JIS 35° HSS-Co 6H 60° 2.5

- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Magnesium aluminum alloy, etc.

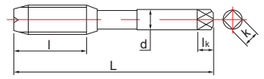




TYPE:2



TYPE:3



Model		Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M23x1.5-SFT-BE-J		M23	1.50	115	38		18.0	14	17	3	4
TNH-M24x2.0-SFT-BE-J		M24	2.00	120	45		19.0	15	18	3	4
TNH-M24x1.5-SFT-BE-J		M24	1.50	120	45		19.0	15	18	3	4
TNH-M25x2.0-SFT-BE-J		M25	2.00	125	45		19.0	15	18	3	4
TNH-M25x1.5-SFT-BE-J		M25	1. 50	125	45		19.0	15	18	3	4
TNH-M26x2.0-SFT-BE-J		M26	2.00	125	45		20.0	15	18	3	4
TNH-M26x1.5-SFT-BE-J		M26	1.50	125	45		20.0	15	18	3	4
TNH-M27x2.0-SFT-BE-J		M27	2.00	130	45		20.0	15	18	3	4
TNH-M27x1.5-SFT-BE-J		M27	1.50	130	45		20.0	15	18	3	4
TNH-M28x2.0-SFT-BE-J		M28	2.00	130	45		21.0	17	20	3	4
TNH-M28x1.5-SFT-BE-J		M28	1.50	130	45		21.0	17	20	3	4
TNH-M30x3.0-SFT-BE-J		M30	3.00	135	48		23.0	17	20	3	4
TNH-M30x2.0-SFT-BE-J		M30	2.00	135	45		23.0	17	20	3	4
TNH-M32x3.0-SFT-BE-J		M32	3.00	145	51		24.0	19	22	3	4
TNH-M32x2.0-SFT-BE-J		M32	2.00	135	45		24.0	19	22	3	4
TNH-M33x1.5-SFT-BE-J		M33	1.50	135	45		25.0	19	22	3	4
TNH-M33x1.0-SFT-BE-J		M33	1.00	110	30		25.0	19	22	3	4
TNH-M33x3.0-SFT-BE-J		M33	3.00	145	51		25.0	19	22	3	4
TNH-M33x2.0-SFT-BE-J		M33	2.00	135	45		25.0	19	22	3	4
TNH-M34x3.0-SFT-BE-J		M34	3.00	145	51		26.0	21	24	3	4
TNH-M34x2.0-SFT-BE-J		M34	2.00	135	45		26.0	21	24	3	4
TNH-M34x1.5-SFT-BE-J		M34	1.50	135	45		26.0	21	24	3	4
TNH-M34x1.0-SFT-BE-J		M34	1.00	110	30		26.0	21	24	3	4
TNH-M35x3.0-SFT-BE-J		M35	3.00	155	57		26.0	21	24	3	4
TNH-M35x2.0-SFT-BE-J		M35	2.00	135	45		26.0	21	24	3	4
TNH-M35x1.5-SFT-BE-J		M35	1.50	135	45		26.0	21	24	3	4
TNH-M36x3.0-SFT-BE-J		M36	3.00	155	57		28.0	21	24	3	4
TNH-M36x2.0-SFT-BE-J		M36	2.00	135	45		28.0	21	24	3	4
TNH-M36x1.5-SFT-BE-J		M36	1.50	135	45		28.0	21	24	3	4
TNH-M39x3.0-SFT-BE-J		M39	3.00	165	60		30.0	23	26	3	4
TNH-M39x2.0-SFT-BE-J		M39	2.00	135	45		30.0	23	26	3	4
TNH-M39x1.5-SFT-BE-J		M39	1.50	135	45		30.0	23	26	3	4
TNH-M40x3.0-SFT-BE-J		M40	3.00	165	60		30.0	23	26	3	4
TNH-M40x2.0-SFT-BE-J		M40	2.00	135	45		30.0	23	26	3	4
TNH-M40x1.5-SFT-BE-J		M40	1.50	135	45		30.0	23	26	3	4
TNH-M42x3.0-SFT-BE-J		M42	3.00	175	60		32.0	26	30	3	4
TNH-M42x2.0-SFT-BE-J		M42	2.00	135	45		32.0	26	30	3	4
TNH-M42x1.5-SFT-BE-J		M42	1.50	135	45		32.0	26	30	3	4
TNH-M45x3.0-SFT-BE-J		M45	3.00	180	67		35.0	26	30	3	4
TNH-M45x2.0-SFT-BE-J		M45	2.00	140	45		35.0	26	30	3	4
TNH-M45x1.5-SFT-BE-J		M45	1.50	140	45		35.0	26	30	3	4
TNH-M48x4.0-SFT-BE-J		M48	4.00	185	67		38.0	29	32	3	4
TNH-M48x3.0-SFT-BE-J		M48	3.00	185	67		38.0	29	32	3	4
TNH-M48x2.0-SFT-BE-J		M48	2.00	140	45		38.0	29	32	3	4
TNH-M48x1.5-SFT-BE-J		M48	1.50	140	45		38.0	29	32	3	4

JIS UNC COARSE SPIRAL TAPS

UNC JIS 35° HSS-Co 6H 60° 2.5

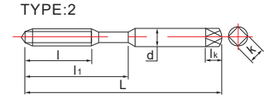
- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper,



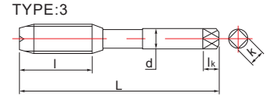
Magnesium aluminum alloy, etc.



TYPE:2



TYPE:3



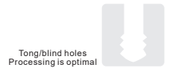
Model		UNC									
T303		Size	Nominal Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-No.2- 56UNC-SFT-PE-J		No.2- 56UNC	2.184	42	9.5	15	3.0	2.5	5	2	2
TNH-No.3- 48UNC-SFT-PE-J		No.3- 48UNC	2.515	44	9.5	16	3.0	2.5	5	2	2
TNH-No.4- 40UNC-SFT-PE-J		No.4- 40UNC	2.845	44	9.5	16	3.0	2.5	5.	2	2
TNH-No.5- 40UNC-SFT-PE-J		No.5- 40UNC	3.175	46	11	18	4.0	3.2	6	2	3
TNH-No.6-32UNC-SFT-PE-J		No.6-32UNC	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-32UNC-SFT-PE-J		No.8-32UNC	4.1 66	52	13	21	5.0	4.0	7	2	3
TNH-No.10-24UNC-SFT-PE-J		No.10-24UNC	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-24UNC-SFT-PE-J		No.12-24UNC	5.486	60	16	25	5.5	4.5	7	2	3
TNH-1/4-20UNC-SFT-PE-J		1/4-20UNC	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-18UNC-SFT-PE-J		5/16-18UNC	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8-1 6LJNC-SFT-PE-J		3/8-1 6LJNC	9.525	75	24		7.0	5.5	8	3	3
TNH-7/16-14UNC-SFT-PE-J		7/16-14UNC	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2-13UNC-SFT-PE-J		1/2-13UNC	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16-12UNC -SFT-PE-J		9/16-12UNC .	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8-11UNC-SFT-PE-J		5/8-11UNC	15.875	95	32		12.0	9.0	12	3	3
TNH-3/4-10UNC-SFT-PE-J		3/4-10UNC	19.050	105	37		14.0	11	14	3	4
TNH-7/8- 9UNC-SFT-PE-J		7/8- 9UNC	22.225	115	38		17.0	13	16	3	4
TNH-1-8UNC-SFT-PE-J		1-8UNC	25.400	125	45		20.0	15	18	3	4
TNH-11/8-7UNC-SFT-PE-J		11/8-7UNC	28.575	135	48		22.0	17	20	3	4
TNH-11/4-7UNC-SFT-PE-J		11/4-7UNC	31.750	145	51		24.0	19	22	3	4
TNH-13/8-6UNC-SFT-PE-J		13/8-6UNC	34.925	155	57		26.0	21	24	3	4
TNH-11/2-61JNC-SFT-PE-J		11/2-61JNC	38.100	160	60		30.0	23	26	3	4
TNH-13/4-5UNC-SFT-PE-J		13/4-5UNC	44.450	175	67		35.0	26	30	3	4
TNH-2- 41/2UNC-SFT-PE-J		2- 41/2UNC	50.800	195	70		40.0	32	35	3	4

JIS UNF FINE SPIRAL TAPS

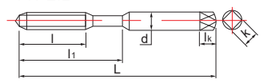
UNC JIS 35° HSS-Co 6H 60° 2.5

- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Magnesium aluminum alloy, etc.

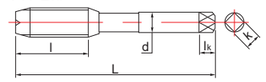




TYPE:2



TYPE:3



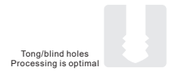
Model		UNC Size	Nominal Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-No.2-64UNF-SFT-BE-J		No.2-64UNF	2.184	42	9.5	15	3.0	2.5	5	2	2
TNH-No.3-56UNF-SFT-BE-J		No.3-56UNF	2.515	44	9.5	16	3.0	2.5	5	2	2
TNH-No.4-484JNF-SFT-BE-J		No.4-484JNF	2.845	44	9.5	16	3.0	2.5	5	2	2
TNH-No.5-44UNF -SFT-BE-J		No.5-44UNF	3.175	46	11	18	4.0	3.2	6	2	3
TNH-No.6- 40UNF-SFT-BE-J		No.6- 40UNF	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-36UNF-SFT-BE-J		No.8-36UNF	4.166	52	13	21	5.0	4.0	7	2	3
TNH-No.10-32UNF-SFT-BE-J		No.10-32UNF	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-28JNF-SFT-BE-J		No.12-28JNF	5.486	60	16	25	5.5	4.5	7	2	3
TNH-1/4-28UN F-SFT-BE-J		1/4-28UN F	6.350	62	19	30	6.0	4.5	7	3	3
TNH-1/4- 32UNEF-SFT-BE-J		1/4- 32UNEF	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-24UNF-SFT-BE-J		5/16-24UNF	7.938	70	22		6.1	5.0	8	3	3
TNH-5/16-32LJNEF-SFT-BE-J		5/16-32LJNEF	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8-24UNF-SFT-BE-J		3/8-24UNF	9.525	75	24		7.0	5.5	8	3	3
TNH-3/8-32UNEF-SFT-BE-J		3/8-32UNEF	9.525	75	22		7.0	5.5	8	3	3
TNH-7/16-20UNF-SFT-BE-J		7/16-20UNF	11.112	80	25		8.0	6.0	9	3	3
TNH-7/16-28UNEF-SFT-BE-J		7/16-28UNEF	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2-20UN F-SFT-BE-J		1/2-20UN F	12.700	85	29		9.0	7.0	10	3	3
TNH-1/2-28UNEF -SFT-BE-J		1/2-28UNEF	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16-18UNF-SFT-BE-J		9/16-18UNF	14.288	90	30		10.5	8.0	11	3	3
TNH-9/16-244JNEF-SFT-BE-J		9/16-244JNEF	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8-18UNF-SFT-BE-J		5/8-18UNF	15.875	95	32		12.0	9.0	12	3	3
TNH-5/8-24UNEF-SFT-BE-J		5/8-24UNEF	15.875	95	32		12.0	9.0	12	3	3

JIS INCH COARSE SPIRAL TAPS

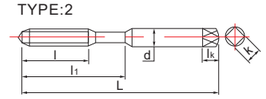
BSW JIS 35° HSS-Co 6H 55° 2.5

- High carbon steel ni-Cr alloy with tensile strength of 600-900N/MM2 Alloy tools, bronze, cast iron, etc.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Magnesium aluminum alloy, etc.

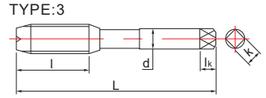




TYPE:2



TYPE:3



Model		BSW Size	Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/8W40BSW-SFT-PE-J		1/8W40	3.175	46	11	18	4.0	3.2	6	2	3
TNH-5/32W32BSW-SFT-PE-J		5/32W32	3.969	52	13	21	5.0	4.0	7	2	3
TNH-3/16W24BSW-SFT-PE-J		3/16W24	4.762	60	16	25	5.5	4.5	7	2	3
TNH-7/32W24BSW-SFT-PE-J		7/32W24	5.556	60	16	25	5.5	4.5	7	2	3
TNH-1/4W20BSW-SFT-PE-J		1/4W20	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16W18BSW-SFT-PE-J		5/16W18	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8W16BSW-SFT-PE-J		3/8W16	9.525	75	24		7.0	5.5	8	3	3
TNH-7/16W14BSW-SFT-PE-J		7/16W14	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2W12BSW-SFT-PE-J		1/2W12	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16W12BSW-SFT-PE-J		9/16W12	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8W1 1BSW-SFT-PE-J		5/8W1 1	15.875	95	32		12.0	9.0	12	3	3
TNH-3/4W10BSW-SFT-PE-J		3/4W10	19.050	105	37		14.0	11	14	3	4
TNH-7/8W9BSW-SFT-PE-J		7/8W9	22.225	115	38		17.0	13	16	3	4
TNH-1W8BSW-SFT-PE-J		1W8	25.400	125	45		20.0	15	18	3	4
TNH-11/8W7BSW-SFT-PE-J		11/8W7	28.575	135	48		22.0	17	20	3	4
TNH-11/4W7BSW-SFT-PE-J		11/4W7	31.750	145	51		24.0	19	22	3	4
TNH-13/8W6BSW-SFT-PE-J		13/8W6	34.925	155	57		26.0	21	24	3	4
TNH-11/2W6BSW-SFT-PE-J		11/2W6	38.100	165	60		30.0	23	26	3	4
TNH-15/8W5BSW-SFT-PE-J		15/8W5	41.275	170	60		32.0	26	30	3	4
TNH-13/4W5BSW-SFT-PE-J		13/4W5	44.450	175	67		35.0	26	30	3	4
TNH-17/8W41/2BSW-SFT-PE-J		17/8W41/2	47.625	185	67		38.0	29	32	3	4
TNH-2W41/2BSW-SFT-PE-J		2W41/2	50.800	195	70		40.0	32	35	3	4

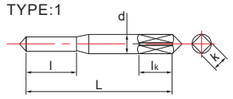
JIS METRIC COARSE GUN TAPS

M | JIS | Spira point | HSS-Co | 6H | 55° | 2.5

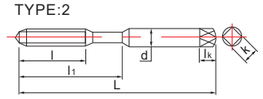
- Suitable for cutting materials: stainless steel, carbon steel, alloy steel, Non-ferrous metals.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



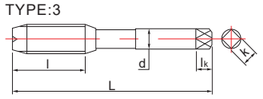
TYPE:1



TYPE:2



TYPE:3



Hole processing

Model		Size	Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TNH-M1.0X0.25-POT-PE-J		M1	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.1X0.25-POT-PE-J		M1.1	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.2X0.25-POT-PE-J		M1.2	0.25	32	5.5		3.0	2.5	5	1	2
TNH-M1.4X0.3-POT-PE-J		M1.4	0.30	36	8.0		3.0	2.5	5	1	2
TNH-M1.6X0.35-POT-PE-J		M1.6	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M1.7X0.35-POT-PE-J		M1.7	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M1.8X0.35-POT-PE-J		M1.8	0.35	36	8.0		3.0	2.5	5	1	2
TNH-M2.0X0.4-POT-PE-J		M2	0.40	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.2X0.45-POT-PE-J		M2.2	0.45	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.3X0.4-POT-PE-J		M2.3	0.40	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.5X0.45-POT-PE-J		M2.5	0.45	44	9.5	16	3.0	2.5	5	2	3
TNH-M2.6X0.45-POT-PE-J		M2.6	0.45	44	9.5	16	3.0	2.5	5	2	3
TNH-M3.0X0.5-POT-PE-J		M3	0.50	46	11	18	4.0	3.2	6	2	3
TNH-M3.5X0.6-POT-PE-J		M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TNH-M4.0X0.7-POT-PE-J		M4	0.70	52	13	20	5.0	4.0	7	2	3
TNH-M4.5X0.75-POT-PE-J		M4.5	0.75	52	13	21	5.0	4.0	7	2	3
TNH-M5.0X0.8-POT-PE-J		M5	0.80	60	16 .	25	5.5	4.5	7	2	3
TNH-M5.5X0.9-POT-PE-J		M5.5	0.90	60	16	25	5.5	4.5	7	2	3
TNH-M6.0X1.0-POT-PE-J		M6	1.00	62	19	28	6.0	4.5	7	2	3
TNH-M7.0X1.0-POT-PE-J		M7	1.00	65	19	30	6.2	5.0	8	3	3
TNH-M8.0X1.25-POT-PE-J		M8	1.25	70	22		6.2	5.0	8	3	3
TNH-M9.0X1.25-POT-PE-J		M9	1.25	72	22		7.0	5.5	8	3	3
TNH-M10.0X1.5-POT-PE-J		M10	1.50	75	24		7.0	5.5	8	3	3
TNH-M11X1.5-POT-PE-J		M11	1.50	80	25		8.0	6.0	9	3	3
TNH-M12X1.75-POT-PE-J		M12	1.75	82	29		8.5	6.5	9	3	3
TNH-M14X2.0-POT-PE-J		M14	2.00	88	30		10.5	8.0	11	3	3
TNH-M15X2.0-POT-PE-J		M15	2.00	90	30		10.5	8.0	11	3	3
TNH-M16X2.0-POT-PE-J		M16	2.00	95	32		12.5	10	13	3	3
TNH-M17X2.0-POT-PE-J		M17	2.00	95	32		13.0	10	13	3	3
TNH-M18X2.5-POT-PE-J		M18	2.50	100	37		14.0	11	14	3	3
TNH-M20X2.5-POT-PE-J		M20	2.50	105	37		15.0	12	15	3	3
TNH-M22X2.5-POT-PE-J		M22	2.50	115	38		17.0	13	16	3	3
TNH-M24X3.0-POT-PE-J		M24	3.00	120	45		19.0	15	18	3	3
TNH-M26X3.0-POT-PE-J		M26.	3.00	125	45		20.0	15	18	3	4
TNH-M27X3.0-POT-PE-J		M27	3.00	130	45		20.0	15	18	3	4
TNH-M30X3.5-POT-PE-J		M30	3.50	135	48		23.0	17	20	3	4
TNH-M33X3.5-POT-PE-J		M33	3.50	145	51		25.0	19	22	3	4
TNH-M36X4.0-POT-PE-J		M36	4.00	1 55	57		28.0	21	24	3	4
TNH-M39X4.0-POT-PE-J		M39	4.00	165	60		30.0	23	26	3	4
TNH-M42X4.5-POT-PE-J		M42	4.50	175	60		32.0	26	30	3	4

The outer diameter conversion speed of American teeth is shown in table

	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.8	No.10	No.12
	0.06	0.073	0.086	0.099	0.112	0.125	0.138	0.164	0.19	0.216
mm	1.524	1.854	2.184	2.515	2.845	3.175	3.505	4.166	4.826	5.486

The outer diameter conversion speed of the British musculature is shown in table

	1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1
mm	3.175	3.9687	4.763	6.35	7.938	9.525	11.11	12.7	14.29	15.88	17.46	19.05	22.23	25.4

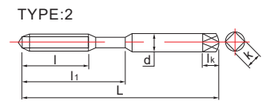
JIS METRIC FINE GUN TAPS

MF | JIS | Spira point | HSS-Co | 6H | 60° | 2.5

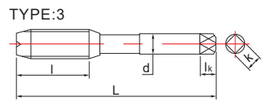
- Suitable for cutting materials: carbon steel, alloy steel, non-iron metal.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



TYPE:2



TYPE:3



Hole processing

Model		MF Size	MF Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TNH-M2.0x0.25-POT-BE-J		M2	0.25	42	7.0	15	3.0	2.5	5	2	3
TNH-M2.2x0.25-POT-BE-J		M2.2	0.25	42	7.0	15	3.0	2.5	5	2	3
TNH-M2.5x0.35-POT-BE-J		M2.5	0.35	44	8.0	16	3.0	2.5	5	2	3
TNH-M2.6x0.35-POT-BE-J		M2.6	0.35	44	8.0	16	3.0	2.5	5	2	3
TNH-M3.0x0.6-POT-BE-J		M3	0.60	46	11	18	4.0	3.2	6	2	3
TNH-M3.0x0.35-POT-BE-J		M3	0.35	46	9.5	18	4.0	3.2	6	2	3
TNH-M3.5x0.35-POT-BE-J		M3.5	0.35	48	9.5	20	4.0	3.2	6	2	3
TNH-M4.0x0.75-POT-BE-J		M4	0.75	52	13	21	5.0	4.0	7	2	3
TNH-M4.0x0.5-POT-BE-J		M4	0.50	52	13	21	5.0	4.0	7	2	3
TNH-M4.5x0.5-POT-BE-J		M4.5	0.50	55	13	21	5.0	4.0	7	2	3
TNH-M5.0x0.5-POT-BE-J		M5	0.50	55	13	25	5.5	4.5	7	2	3
TNH-M5.5x0.75-POT-BE-J		M5.5	0.75	60	16	25	5.5	4.5	7	2	3
TNH-M6.0x0.75-POT-BE-J		M6	0.75	62	19	30	6.0	4.5	7	3	3
TNH-M6.0x0.5-POT-BE-J		M6	0.50	55	13	25	6.0	4.5	7	3	3
TNH-M7.0x0.75-POT-BE-J		M7	0.75	65	19	30	6.2	5.0	8	3	3
TNH-M7.0x0.5-POT-BE-J		M7	0.50	55	13	25	6.2	5.0	8	3	3
TNH-M8.0x1.0-POT-BE-J		M8	1.00	70	22		6.2	5.0	8	3	3
TNH-M8.0x0.75-POT-BE-J		M8	0.75	70	22		6.2	5.0	8	3	3
TNH-M9.0x1.0-POT-BE-J		M9	1.00	72	22		7.0	5.5	8	3	3
TNH-M9.0x0.75-POT-BE-J		M9	0.75	72	22		7.0	5.5	8	3	3
TNH-M9.0x0.5-POT-BE-J		M9	0.50	72	22		7.0	5.5	8	3	3
TNH-M10x1.25-POT-BE-J		M10	1.25	75	24		7.0	5.5	8	3	3
TNH-M10x1.0-POT-BE-J		M10	1.00	75	24		7.0	5.5	8	3	3
TNH-M10x0.75-POT-BE-J		M10	0.75	75	22		7.0	5.5	8	3	3
TNH-M10x0.5-POT-BE-J		M10	0.50	75	22		7.0	5.5	8	3	3
TNH-M11x1.25-POT-BE-J		M11	1.25	80	25		8.0	6.0	9	3	3
TNH-M11x1.0-POT-BE-J		M11	1.00	80	25		8.0	6.0	9	3	3
TNH-M11x0.75-POT-BE-J		M11	0.75	75	22		8.0	6.0	9	3	3
TNH-M12x1.5-POT-BE-J		M12	1.50	82	29		8.5	6.5	9	3	3
TNH-M12x1.25-POT-BE-J		M12	1.25	82	29		8.5	6.5	9	3	3
TNH-M12x0.75-POT-BE-J		M12	0.75	75	22		8.5	6.5	9	3	3
TNH-M12x0.5-POT-BE-J		M12	0.50	75	22		8.5	6.5	9	3	3
TNH-M13x1.75-POT-BE-J		M13	1.75	85	29		9.5	7.0	10	3	3
TNH-M13x1.5-POT-BE-J		M13	1.50	85	29		9.5	7.0	10	3	3
TNH-M14x1.5-POT-BE-J		M14	1.50	88	30		10.5	8.0	11	3	3
TNH-M14x1.25-POT-BE-J		M14	1.25	88	30		10.5	8.0	11	3	3
TNH-M14x1.0-POT-BE-J		M14	1.00	88	30		10.5	8.0	11	3	3
TNH-M15x1.5-POT-BE-J		M15	1.50	90	30		10.5	8.0	11	3	3
TNH-M15x1.0-POT-BE-J		M15	1.00	90	30		10.5	8.0	11	3	3
TNH-M16x1.5-POT-BE-J		M16	1.50	95	32		12.5	10	13	3	3
TNH-M16x1.0-POT-BE-J		M16	1.00	95	32		12.5	10	13	3	3
TNH-M17x1.5-POT-BE-J		M17	1.50	95	32		13.0	10	13	3	3
TNH-M17x1.0-POT-BE-J		M17	1.00	95	32		13.0	10	13	3	3
TNH-M18x2.0-POT-BE-J		M18	2.00	100	37		14.0	11	14	3	3
TNH-M18x1.5-POT-BE-J		M18	1.50	100	37		14.0	11	14	3	3
TNH-M18x1.25-POT-BE-J		M18	1.25	95	30		14.0	11	14	3	3
TNH-M18x1.0-POT-BE-J		M18	1.00	95	30		14.0	11	14	3	3
TNH-M19x1.5-POT-BE-J		M19	1.50	105	37		14.0	11	14	3	3
TNH-M19x1.0-POT-BE-J		M19	1.00	95	30		14.0	11	14	3	3
TNH-M20x2.0-POT-BE-J		M20	2.00	105	37		15.0	12	15	3	3
TNH-M20x1.5-POT-BE-J		M20	1.50	105	37		15.0	12	15	3	3
TNH-M22x2.0-POT-BE-J		M22	2.00	115	38		17.0	13	16	3	3
TNH-M22x1.5-POT-BE-J		M22	1.50	115	38		17.0	13	16	3	3
TNH-M22x1.0-POT-BE-J		M22	1.00	95	30		17.0	13	16	3	3

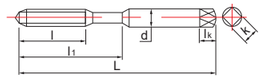
JIS METRIC FINE GUN TAPS

MF JIS Spira point HSS-Co 6H 60° 2.5

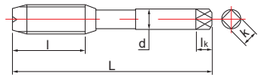
- Suitable for cutting materials: carbon steel, alloy steel, non-iron metal.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



TYPE:2



TYPE:3



Hole processing

Model		MF									
T402		Size	Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TNH-M23x1.5-POT-BE-J		M23	1.50	115	38		18.0	14	17	3	3
TNH-M24x2.0-POT-BE-J		M24	2.00	120	45		19.0	15	18	3	3
TNH-M24x1.5-POT-BE-J		M24	1.50	120	45		19.0	15	18	3	3
TNH-M25x2.0-POT-BE-J		M25	2.00	125	45		19.0	15	18	3	3
TNH-M25x1.5-POT-BE-J		M25	1.50	125	45		19.0	15	18	3	4
TNH-M26x2.0-POT-BE-J		M26	2.00	125	45		20.0	15	18	3	4
TNH-M26x1.5-POT-BE-J		M26	1.50	125	45		20.0	15	18	3	4
TNH-M27x2.0-POT-BE-J		M27	2.00	130	45		20.0	15	18	3	4
TNH-M27x1.5-POT-BE-J		M27	1.50	130	45		20.0	15	18	3	4
TNH-M28x2.0-POT-BE-J		M28	2.00	130	45		21.0	17	20	3	4
TNH-M28x1.5-POT-BE-J		M28	1.50	130	45		21.0	17	20	3	4
TNH-M30x3.0-POT-BE-J		M30	3.00	135	48		23.0	17	20	3	4
TNH-M30x2.0-POT-BE-J		M30	2.00	135	45		23.0	17	20	3	4
TNH-M32x3.0-POT-BE-J		M32	3.00	145	51		24.0	19	22	3	4
TNH-M32x2.0-POT-BE-J		M32	2.00	135	45		24.0	19	22	3	4
TNH-M33x1.5-POT-BE-J		M33	1.50	135	45		25.0	19	22	3	4
TNH-M33x1.0-POT-BE-J		M33	1.00	110	30		25.0	19	22	3	4
TNH-M33x3.0-POT-BE-J		M33	3.00	145	51		25.0	19	22	3	4
TNH-M33x2.0-POT-BE-J		M33	2.00	135	45		25.0	19	22	3	4
TNH-M34x3.0-POT-BE-J		M34	3.00	145	51		26.0	21	24	3	4
TNH-M34x2.0-POT-BE-J		M34	2.00	135	45		26.0	21	24	3	4
TNH-M34x1.5-POT-BE-J		M34	1.50	135	45		26.0	21	24	3	4
TNH-M34x1.0-POT-BE-J		M34	1.00	110	30		26.0	21	24	3	4
TNH-M35x3.0-POT-BE-J		M35	3.00	155	57		26.0	21	24	3	4
TNH-M35x2.0-POT-BE-J		M35	2.00	135	45		26.0	21	24	3	4
TNH-M35x1.5-POT-BE-J		M35	1.50	135	45		26.0	21	24	3	4
TNH-M36x3.0-POT-BE-J		M36	3.00	155	57		28.0	21	24	3	4
TNH-M36x2.0-POT-BE-J		M36	2.00	135	45		28.0	21	24	3	4
TNH-M36x1.5-POT-BE-J		M36	1.50	135	45		28.0	21	24	3	4
TNH-M39x3.0-POT-BE-J		M39	3.00	165	60		30.0	23	26	3	4
TNH-M39x2.0-POT-BE-J		M39	2.00	135	45		30.0	23	26	3	4
TNH-M39x1.5-POT-BE-J		M39	1.50	135	45		30.0	23	26	3	4
TNH-M40x3.0-POT-BE-J		M40	3.00	165	60		30.0	23	26	3	4
TNH-M40x2.0-POT-BE-J		M40	2.00	135	45		30.0	23	26	3	4
TNH-M40x1.5-POT-BE-J		M40	1.50	135	45		30.0	23	26	3	4
TNH-M42x3.0-POT-BE-J		M42	3.00	175	60		32.0	26	30	3	4
TNH-M42x2.0-POT-BE-J		M42	2.00	135	45		32.0	26	30	3	4
TNH-M42x1.5-POT-BE-J		M42	1, 50	135	45		32.0	26	30	3	4
TNH-M45x3.0-POT-BE-J		M45	3.00	180	67		35.0	26	30	3	4
TNH-M45x2.0-POT-BE-J		M45	2.00	140	45		35.0	26	30	3	4
TNH-M45x1.5-POT-BE-J		M45	1.50	140	45		35.0	26	30	3	4
TNH-M48x4.0-POT-BE-J		M48	4.00	185	67		38.0	29	32	3	4
TNH-M48x3.0-POT-BE-J		M48	3.00	185	67		38.0	29	32	3	4
TNH-M48x3.0-POT-BE-J		M48	2.00	140	45		38.0	29	32	3	4
TNH-M48x1.5-POT-BE-J		M48	1.50	140	45		38.0	29	32	3	4

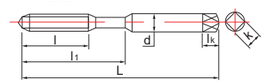
JIS UNC COARSE GUN TAPS

UNC JIS Spira point HSS-Co 6H 60° 2.5

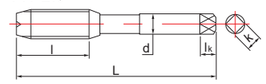
- Suitable for cutting materials: stainless steel, carbon steel, alloy steel, Non-ferrous metals.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



TYPE:2



TYPE:3



Hole processing

Model		UNC									
T403		Size	Nominal Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-No.2-56UNC-POT-PE-J		No.2-56UNC	2.184	42	9.5	15	3.0	2.5	5	2	2
TNH-No.3-48UNC-POT-PE-J		No.3-48UNC	2.515	44	9.5	16	3.0	2.5	5	2	2
TNH-No.4-40UNC -POT-PE-J		No.4-40UNC	2.845	44	9.5	16	3.0	2.5	5	2	2
TNH-No.5-40UNC-POT-PE-J		No.5-40UNC	3.175	46	11	18	4.0	3.2	6	2	3
TNH-No.6-32UNC-POT-PE-J		No.6-32UNC	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-32UNC-POT-PE-J		No.8-32UNC	4.166	52	13	21	5.0	4.0	7	2	3
TNH-No.10-24UNC-POT-PE-J		No.10-24UNC	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-24UNC-POT-PE-J		No.12-24UNC	5.486	60	16	25	5.5	4.5	7	2	3
TNH-1/4- -20UNC-POT-PE-J		1/4- -20UNC	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-18UNC-POT-PE-J		5/16-18UNC	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8-16UNC-POT-PE-J		3/8-16UNC	9.525	75	24		7.0	5.5	8	3	3
TNH-7/16-14UNC-POT-PE-J		7/16-14UNC	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2-13UNC-POT-PE-J		1/2-13UNC	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16-12UNC-POT-PE-J		9/16-12UNC	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8-11UNC-POT-PE-J		5/8-11UNC	15.875	95	32		12.0	9.0	12	3	3
TNH-3/4-10UNC-POT-PE-J		3/4-10UNC	19.050	105	37		14.0	11	14	3	3
TNH-7/8-9UNC-POT-PE-J		7/8-9UNC	22.225	115	38		17.0	13	16	3	3
TNH-1-8UNC-POT-PE-J		1-8UNC	25.400	125	45		20.0	15	18	3	3
TNH-11/8-7UNC-POT-PE-J		11/8-7UNC	28.575	135	48		22.0	17	20	3	4
TNH-11/4-7UNC-POT-PE-J		11/4-7UNC	31.750	145	51		24.0	19	22	3	4
TNH-13/8-6UNC -POT-PE-J		13/8-6UNC	34.925	155	57		26.0	21	24	3	4
TNH-11/2-6UNC-POT-PE-J		11/2-6UNC	38.100	160	60		30.0	23	26	3	4
TNH-13/4-5UNC-POT-PE-J		13/4-5UNC	44.450	175	67		35.0	26	30	3	4

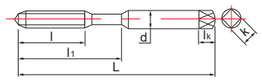
JIS UNF FINE GUN TAPS

UNC JIS Spira point HSS-Co 6H 60° 2.5

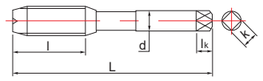
- Suitable for cutting materials: stainless steel, carbon steel, alloy steel, Non-ferrous metals.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



TYPE:2



TYPE:3



Hole processing

Model		UNC Size	Nominal Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-No.2-64UNF-POT-BE-J		No.2-64UNF	2.184	42	9.5	15	3.0	2.5	5	2	2
TNH-No.3-56UNF-POT-BE-J		No.3-56UNF	2.515	44	9.5	16	3.0	2.5	5	2	2
TNH-No.4-48UNF -POT-BE-J		No.4-48UNF	2.845	44	9.5	16	3.0	2.5	5	2	2
TNH-No.5-44UNF-POT-BE-J		No.5-44UNF	3.175	46	11	18	4.0	3.2	6	2	3
TNH-No.6-400UNF-POT-BE-J		No.6-400UNF	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-36UNF-POT-BE-J		No.8-36UNF	4.166	52	13	21	5.0	4.0	7	2	3
TNH-No.10-32UNF -POT-BE-J		No.10-32UNF	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-28UNF-POT-BE-J		No.12-28UNF	5.486	60	16	25	5.5	4.5	7	2	3
TNH-1/4-28UN F-POT-BE-J		1/4-28UN F	6.350	62	19	30	6.0	4.5	7	3	3
TNH-1/4-32UNF-POT-BE-J		1/4-32UNF	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-24UNF-POT-BE-J		5/16-24UNF	7.938	70	22		6.1	5.0	8	3	3
TNH-5/16-32UNF-POT-BE-J		5/16-32UNF	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8-24UNF-POT-BE-J		3/8-24UNF	9.525	75	24		7.0	5.5	8	3	3
TNH-3/8-32UNF-POT-BE-J		3/8-32UNF	9.525	75	22		7.0	5.5	8	3	3
TNH-7/16-20UNF-POT-BE-J		7/16-20UNF	11.112	80	25		8.0	6.0	9	3	3
TNH-7/16-28UNF-POT-BE-J		7/16-28UNF	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2-20UN F-POT-BE-J		1/2-20UN F	12.700	85	29		9.0	7.0	10	3	3
TNH-1/2-28UNF-POT-BE-J		1/2-28UNF	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16-18UNF-POT-BE-J		9/16-18UNF	14.288	90	30		10.5	8.0	11	3	3
TNH-9/16-244UNF-POT-BE-J		9/16-244UNF	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8-18UNF-POT-BE-J		5/8-18UNF	15.875	95	32		12.0	9.0	12	3	3
TNH-5/8-24UNF-POT-BE-J		5/8-24UNF	15.875	95	32		12.0	9.0	12	3	3
TNH-3/4-16UNF-POT-BE-J		3/4-16UNF	19.050	105	37		14.0	11.0	14	3	3
TNH-3/4-20UNF-POT-BE-J		3/4-20UNF	19.050	95	30		14.0	11.0	14	3	3

WERNER

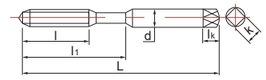
JIS INCH COARSE GUN TAPS

BSW JIS Spira point HSS-Co 6H 55° 2.5

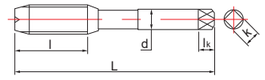
- Suitable for cutting materials: stainless steel, carbon steel, alloy steel, Non-ferrous metals.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



TYPE:2



TYPE:3



Hole processing

Model		BSW Size	Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/8W40BSW-POT-PE-J		1/8W40	3.175	46	11	18	4.0	3.2	6	2	3
TNH-5/32W32BSW-POT-PE-J		5/32W32	3.969	52	13	21	5.0	4.0	7	2	3
TNH-3/16W24BSW-POT-PE-J		3/16W24	4.762	60	16	25	5.5	4.5	7	2	3
TNH-7/32W24BSW-POT-PE-J		7/32W24	5.556	60	16	25	5.5	4.5	7	2	3
TNH-1/4W20BSW-POT-PE-J		1/4W20	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16W18BSW-POT-PE-J		5/16W18	7.938	70	22		6.1	5.0	8	3	3
TNH-3/8W16BSW-POT-PE-J		3/8W16	9.525	75	24		7.0	5.5	8	3	3
TNH-7/16W14BSW-POT-PE-J		7/16W14	11.112	80	25		8.0	6.0	9	3	3
TNH-1/2W12BSW-POT-PE-J		1/2W12	12.700	85	29		9.0	7.0	10	3	3
TNH-9/16W12BSW-POT-PE-J		9/16W12	14.288	90	30		10.5	8.0	11	3	3
TNH-5/8W1 1BSW-POT-PE-J		5/8W1 1	15.875	95	32		12.0	9.0	12	3	3
TNH-3/4W10BSW-POT-PE-J		3/4W10	19.050	105	37		14.0	11	14	3	3
TNH-7/8W9BSW-POT-PE-J		7/8W9	22.225	115	38		17.0	13	16	3	3
TNH-1W8BSW-POT-PE-J		1W8	25.400	125	45		20.0	15	18	3	3
TNH-11/8W7BSW-POT-PE-J		11/8W7	28.575	135	48		22.0	17	20	3	4
TNH-11/4W7BSW-POT-PE-J		11/4W7	31.750	145	51		24.0	19	22	3	4
TNH-13/8W6BSW-POT-PE-J		13/8W6	34.925	155	57		26.0	21	24	3	4
TNH-11/2W6BSW-POT-PE-J		11/2W6	38.100	165	60		30.0	23	26	3	4
TNH-15/8W5BSW-POT-PE-J		15/8W5	41.275	170	60		32.0	26	30	3	4
TNH-13/4W5BSW-POT-PE-J		13/4W5	44.450	175	67		35.0	26	30	3	4
TNH-17/8W41/2BSW-POT-PE-J		17/8W41/2	47.625	185	67		38.0	29	32	3	4
TNH-2W41/2BSW-POT-PE-J		2W41/2	50.800	195	70		40.0	32	35	3	4

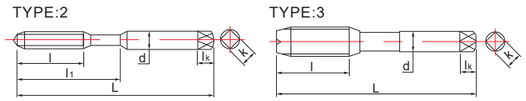
JIS METRIC LEFT HANDED GUN TAPS

M | JIS | Spira point | 35° | HSS-Co | 6H | 60° | 5

- Suitable for cutting materials: stainless steel, carbon steel, alloy steel, Non-ferrous metals.
- Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum magnesium alloy, etc.



Hole processing



Model	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M3.0x0.5-POT-LE-J	M3	0.50	46	11	18	4.0	3.2	6	2	3
TNH-M3.0x0.35-POT-LE-J	M3	0.35	46	9.5	18	4.0	3.2	6	2	3
TNH-M4.0x0.7-POT-LE-J	M4	0.70	52	13	20	5.0	4.0	7	2	3
TNH-M4.0x0.5-POT-LE-J	M4	0.50	52	13	21	5.0	4.0	7	2	3
TNH-M5.0x0.8-POT-LE-J	M5	0.80	60	16	25	5.5	4.5	7	2	3
TNH-M5.0x0.5-POT-LE-J	M5	0.50	55	13	25	5.5	4.5	7	2	3
TNH-M6.0x1.0-POT-LE-J	M6	1.00	62	19	28	6.0	4.5	7	2	3
TNH-M6.0x0.75-POT-LE-J	M6	0.75	62	19	30	6.0	4.5	7	2	3
TNH-M6.0x0.5-POT-LE-J	M6	0.50	55	13	25	6.0	4.5	7	2	3
TNH-M8.0x1.25-POT-LE-J	M8	1.25	70	22		6.2	5.0	8	3	3
TNH-M8.0x1.0-POT-LE-J	M8	1.00	70	22		6.2	5.0	8	3	3
TNH-M8.0x0.75-POT-LE-J	M8	0.75	70	22		6.2	5.0	8	3	3
TNH-M10x1.5-POT-LE-J	M10	1.50	75	24		7.0	5.5	8	3	3
TNH-M10x1.25-POT-LE-J	M10	1.25	75	24		7.0	5.5	8	3	3
TNH-M10x1.0-POT-LE-J	M10	1.00	75	24		7.0	5.5	8	3	3
TNH-M10x0.75-POT-LE-J	M10	0.75	75	22		7.0	5.5	8	3	3
TNH-M12x1.75-POT-LE-J	M12	1.75	82	29		8.5	6.5	9	3	3
TNH-M12x1.5-POT-LE-J	M12	1.50	82	29		8.5	6.5	9	3	3
TNH-M14x2.0-POT-LE-J	M14	2.00	88	30		10.5	8.0	11	3	3
TNH-M16x2.0-POT-LE-J	M16	2.00	95	32		12.5	10.0	13	3	3
TNH-M16x1.5-POT-LE-J	M16	1.50	95	32		12.5	10.0	13	3	3
TNH-M16x1.0-POT-LE-J	M16	1.00	95	32		12.5	10.0	13	3	3

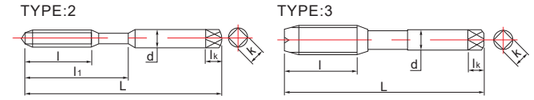
JIS SPIRAL TAP FOR CAST IRON

M | JIS | 35° | HSS-Co | 6H | 60° | 2.5

- Suitable for cutting materials: cast iron, spherical graphite cast iron, strong edge cast iron, etc.
- hardening treatment, forged steel HRC35°≥20°







Model	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TKH-M2.0x0.4-SFT-PE-J	M2	0.40	42	9.5	15	3.0	2.5	5	2	2
TKH-M2.2x0.45-SFT-PE-J	M2.2	0.45	42	9.5	15	3.0	2.5	5	2	2
TKH-M2.5x0.45-SFT-PE-J	M2.5	0.45	44	9.5	16	3.0	2.5	5	2	2
TKH-M2.6x0.45-SFT-PE-J	M2.6	0.45	44	9.5	16	3.0	2.5	5	2	2
TKH-M3.0x0.5-SFT-PE-J	M3	0.50	46	11	18	4.0	3.2	6	2	3
TKH-M4.0x0.7-SFT-PE-J	M4	0.70	52	13	20	5.0	4.0	7	2	3
TKH-M5.0x0.8-SFT-PE-J	M5	0.80	60	16	25	5.5	4.5	7	2	3
TKH-M6.0x1.0-SFT-PE-J	M6	1.00	62	19	28	6.0	4.5	7	2	3
TKH-M8.0x1.25-SFT-PE-J	M8	1.25	70	22		6.2	5.0	8	3	3
TKH-M10x1.5-SFT-PE-J	M10	1.50	75	24		7.0	5.5	8	3	3
TKH-M12x1.75-SFT-PE-J	M12	1.75	82	29		8.5	6.5	9	3	3
TKH-M14x2.0-SFT-PE-J	M14	2.00	88	30		10.5	8.0	11	3	3
TKH-M16x2.0-SFT-PE-J	M16	2.00	95	32		12.5	10	13	3	3
TKH-M18x2.5-SFT-PE-J	M1 8	2.50	100	37		14.0	11	14	3	4
TKH-M20x2.5-SFT-PE-J	M20	2.50	105	37		15	12	15	3	4
TKH-M22x2.5-SFT-PE-J	M22	2.50	115	38		17	13	16	3	4
TKH-M24x3.0-SFT-PE-J	M24	3.00	120	45		19	15	18	3	4
TKH-M26x3.0-SFT-PE-J	M26	3.00	125	45		20	15	18	3	4
TKH-M27x3.0-SFT-PE-J	M27	3.00	130	45		20	15	18	3	4
TKH-M30x3.5-SFT-PE-J	M30	3.50	135	48		23	17	20	3	4
TKH-M33x3.5-SFT-PE-J	M33	3.50	145	51		25	19	22	3	4
TKH-M36x4.0-SFT-PE-J	M36	4.00	1 55	57		28	21	24	3	4

JIS SPIRAL TAPS FOR STAINLESS STEEL

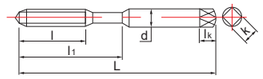
M JIS 35° HSS-Co 6H 60° 2.5

- Suitable for cutting materials: tensile strength of 750N/MM2 or less Stainless steel, carbon steel, alloy steel, iron steel and tempered steel.
- Recommended for tapping depth 1.5 times and 2 times of tapping diameter The tooth holes.

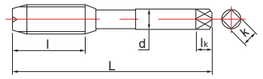


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model		Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TMH-M2.0x0.4-SFT-PE-J		M2	0.40	42	4.0	15	3.0	2.5	5	2	2
TMH-M2.5x0.45-SFT-PE-J		M2.5	0.45	44	4.5	16	3.0	2.5	5	2	2
TMH-M2.6x0.45-SFT-PE-J		M2.6	0.45	44	4.5	16	3.0	2.5	5	2	2
TMH-M3.0x0.5-SFT-PE-J		M3	0.50	46	5.0	18	4.0	3.2	6	2	3
TMH-M4.0x0.7-SFT-PE-J		M4	0.70	52	7.0	20	5.0	4.0	7	2	3
TMH-M5.0x0.8-SFT-PE-J		M5	0.80	60	8.0	25	5.5	4.5	7	2	3
TMH-M6.0x1.0-SFT-PE-J		M6	1.00	62	11	28	6.0	4.5	7	2	3
TMH-M8.0x1.25-SFT-PE-J		M8	1.25	70	12		6.2	5.0	8	3	3
TMH-M10x1.5-SFT-PE-J		M10	1.50	75	13		7.0	5.5	8	3	3
TMH-M12x1.75-SFT-PE-J		M12	1.75	82	15		8.5	6.5	9	3	3
TMH-M14x2.0-SFT-PE-J		M14	2.00	88	18		10.5	8.0	11	3	3
TMH-M16x2.0-SFT-PE-J		M16	2.00	95	18		12.5	10	13	3	3
TMH-M18x2.5-SFT-PE-J		M18	2.50	100	20		14.0	11	14	3	4
TMH-M20x2.5-SFT-PE-J		M20	2.50	105	20		15.0	12	15	3	4
TMH-M22x2.5-SFT-PE-J		M22	2.50	115	20		17.0	13	16	3	4
TMH-M24x3.0-SFT-PE-J		M24	3.00	120	25		19.0	15	18	3	4

JIS SPIRAL TAPS FOR COPPER ALUNMINUM

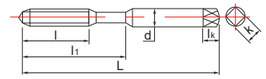
M JIS 35° HSS-Co 6H 60° 2.5

- Suitable for cutting materials: aluminum, zinc, die-casting alloy and other non-iron The metal.
- Note: the symbol ※ is more suitable for MACHINE/CNC automatic Tempered tapping.

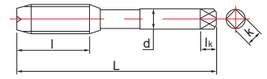


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model		Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TAH-M2.0x0.4-SFT-PE-J		M2	0.40	42	4.0	15	3.0	2.5	5	2	2
TAH-M2.5x0.45-SFT-PE-J		M2.5	0.45	44	4.5	16	3.0	2.5	5	2	2
TAH-M2.6x0.45-SFT-PE-J		M2.6	0.45	44	4.5	16	3.0	2.5	5	2	2
TAH-M3.0x0.5-SFT-PE-J		M3	0.50	46	5.0	18	4.0	3.2	6	2	3
TAH-M4.0x0.7-SFT-PE-J		M4	0.70	52	7.0	20	5.0	4.0	7	2	3
TAH-M5.0x0.8-SFT-PE-J		M5	0.80	60	8.0	25	5.5	4.5	7	2	3
TAH-M6.0x1.0-SFT-PE-J		M6	1.00	62	11	28	6.0	4.5	7	2	3
TAH-M8.0x1.25-SFT-PE-J		M8	1.25	70	12		6.2	5.0	8	3	3
TAH-M10x1.5-SFT-PE-J		M10	1.50	75	13		7.0	5.5	8	3	3
TAH-M12x1.75-SFT-PE-J		M12	1.75	82	15		8.5	6.5	9	3	3
TAH-M14x2.0-SFT-PE-J		M14	2.00	88	18		10.5	8.0	11	3	3
TAH-M16x2.0-SFT-PE-J		M16	2.00	95	18		12.5	10	13	3	3
TAH-M18x2.5-SFT-PE-J		M18	2.50	100	20		14.0	11	14	3	4
TAH-M20x2.5-SFT-PE-J		M20	2.50	105	20		15.0	12	15	3	4
TAH-M22x2.5-SFT-PE-J		M22	2.50	115	20		17.0	13	16	3	4
TAH-M24x3.0-SFT-PE-J		M24	3.00	120	25		19.0	15	18	3	4

JIS SPIRAL TAPS FOR GUN TAP



- Suitable for cutting materials: tensile strength of 750N/MM2 or less Stainless steel, carbon steel, alloy steel, iron steel and tempered steel.
- Recommended for tapping depth 1.5 times and 2 times of tapping diameter The tooth holes.

Model		Size	Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TMH-M2.0x0.40-POT-PE-J		M2	0.40	42	9.5	15	3.0	2.5	5	2	2
TMH-M2.5x0.45-POT-PE-J		M2.5	0.45	44	9.5	16	3.0	2.5	5	2	2
TMH-M3x0.50-POT-PE-J		M3	0.50	46	11	18	4.0	3.2	6	2	3
TMH-M3.5x0.60-POT-PE-J		M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TMH-M4.0x0.70-POT-PE-J		M4	0.70	52	13	20	5.0	4.0	7	2	3
TMH-M5.0x0.80-POT-PE-J		M5	0.80	60	16	25	5.5	4.5	7	2	3
TMH-M6.0x1.00-POT-PE-J		M6	1.00	62	19	28	6.0	4.5	7	2	3
TMH-M8.0x1.25-POT-PE-J		M8	1.25	70	22		6.2	5.0	8	3	3
TMH-M10x1.50-POT-PE-J		M10	1.50	75	24		7.0	5.5	8	3	3
TMH-M12x1.75-POT-PE-J		M12	1.75	82	29		8.5	6.5	9	3	3
TMH-M14x2.00-POT-PE-J		M14	2.00	88	30		10.5	8.0	11	3	3
TMH-M16x2.00-POT-PE-J		M16	2.00	95	32		12.5	10	13	3	3
TMH-M18x2.50-POT-PE-J		M18	2.50	100	37		14.0	11	14	3	3
TMH-M20x2.50-POT-PE-J		M20	2.50	105	37		15.0	12	15	3	3
TMH-M22x2.50-POT-PE-J		M22	2.50	115	48		17.0	13	16	3	3
TMH-M24x3.00-POT-PE-J		M24	3.00	120	45		19.0	15	18	3	3

WERNER

JIS FORMING TAPS

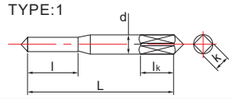
M JIS Spira point HSS-Co 6H 60° 5

- Suitable for processing: copper, brass, aluminum zinc alloy material, die casting Plastic non - ferrous alloys.
- Low carbon steel with tensile strength up to 750N/MM2 Gold steel, stainless steel, etc...

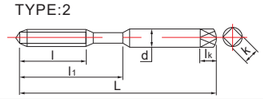


Tong/blind holes Processing is optimal

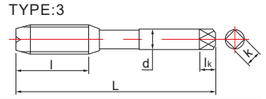
TYPE:1



TYPE:2



TYPE:3



Model		Size	Pitch		L	l	l_1	d	k	l_k	Type
TNH-M1.0x0.25-KRT-J-H4		M1	0.25	H4	32	5.5		3.0	2.5	5	1
TNH-M1.0x0.25-KRT-J-H5				H5							
TNH-M1.2x0.25-KRT-J-H4		M1.2	0.25	H4	32	5.5		3.0	2.5	5	1
TNH-M1.2x0.25-KRT-J-H5				H5							
TNH-M1.4x0.3-KRT-J-H4		M1.4	0.30	H4	36	8.0		3.0	2.5	5	1
TNH-M1.4x0.3-KRT-J-H5				H5							
TNH-M1.6x0.35-KRT-J-H4		M1.6	0.35	H4	36	8.0		3.0	2.5	5	1
TNH-M1.6x0.35-KRT-J-H5				H5							
TNH-M1.7x0.35-KRT-J-H4		M1.7	0.35	H4	36	8.0		3.0	2.5	5	1
TNH-M1.7x0.35-KRT-J-H5				H5							
TNH-M2.0x0.4-KRT-J-H4		M2	0.40	H4	42	9.5		3.0	2.5	5	2
TNH-M2.0x0.4-KRT-J-H5				H5							
TNH-M2.0x0.4-KRT-J-H6				H6							
TNH-M2.3x0.4-KRT-J-H4		M2.3	0.40	H4	42	9.5	15	3.0	2.5	5	2
TNH-M2.5x0.45-KRT-J-H5		M2.5	0.45	H5	44	9.5	15	3.0	2.5	5	2
TNH-M2.5x0.45-KRT-J-H6				H6							
TNH-M2.6x0.45-KRT-J-H5		M2.6	0.45	H5	44	9.5	16	3.0	2.5	5	2
TNH-M2.6x0.45-KRT-J-H6				H6							
TNH-M3.0x0.5-KRT-J-H5		M3	0.50	H5	46	11	16	4.0	3.2	6	2
TNH-M3.0x0.5-KRT-J-H6				H6							
TNH-M3.0x0.5-KRT-J-H7				H7							
TNH-M3.5x0.6-KRT-J-H5		M3.5	0.60	H5	48	13	18	4.0	3.2	6	2
TNH-M3.5x0.6-KRT-J-H6				H6							
TNH-M3.5x0.6-KRT-J-H7				H7							
TNH-M4.0x0.7-KRT-J-H6		M4	0.70	H6	52	13	20	5.0	4.0	7	2
TNH-M4.0x0.7-KRT-J-H7				H7							
TNH-M5.0x0.8-KRT-J-H6		M5	0.80	H6	60	16	21	5.5	4.5	7	2
TNH-M5.0x0.8-KRT-J-H7				H7							
TNH-M6.0x1.0-KRT-J-H6		M6	1.00	H6	62	19	25	6.0	4.5	7	2
TNH-M6.0x1.0-KRT-J-H7				H7							
TNH-M8.0x1.25-KRT-J-H7		M8	1.25	H7	70	22	30	6.2	5.0	8	3
TNH-M8.0x1.25-KRT-J-H8				H8							

WERNER

JIS UNC FORMING TAPS

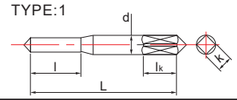
UNC JIS HSS-Co 6H 60°

- Suitable for processing: copper, brass, aluminum zinc alloy material, die casting Plastic non - ferrous alloys.
- Low carbon steel with tensile strength up to 750N/MM2 Gold steel, stainless steel, etc...

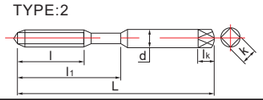


Tong/blind holes Processing is optimal

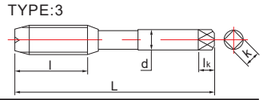
TYPE:1



TYPE:2



TYPE:3



Model		UNC Size	Nominal Dia.		L	l	l_1	d	k	l_k	Type
TNH-No.0-800JNF-KRT-J-H4		No.0-800JNF	1.524	H4	36	8		3.0	2.5	5	1
TNH-No.1-72UNF-KRT-J-H4		No.1-72UNF	1. 854	H4	36	8		3.0	2.5	5	1
TNH-No.1-72UNF-KRT-J-H5				H5							
TNH-No.2-56UNC-KRT-J-H4		No.2-56UNC	2.184	H4	42	9.5	15	3.0	2.5	5	2
TNH-No.2-56UNC-KRT-J-H5				H5							
TNH-No.4-400JNC-KRT-J-H5		No.4-400JNC	2.845	H5	44	9.5	16	3.0	2.5	5	2
TNH-No.4-400JNC-KRT-J-H6				H6							
TNH-No.4-400JNC-KRT-J-H7				H7							
TNH-No.5-401JNC-KRT-J-H4		No.5-401JNC	3.175	H4	46	11	18	4.0	3.2	6	2
TNH-No.6-32UNC-KRT-J-H5		No.6-32UNC	3.505	H5	48	13	20	4.0	3.2	6	2
TNH-No.6-32UNC-KRT-J-H6				H6							
TNH-No.6-32UNC-KRT-J-H7				H7							
TNH-No.8-32UNC-KRT-J-H6		No.8-32UNC	4.166	H6	52	13	21	5.0	4.0	7	2
TNH-No.8-32UNC-KRT-J-H7				H7							
TNH-No.8-32UNC-KRT-J-H8				H8							
TNH-No.10-24UNC-KRT-J-H6		No.10-24UNC	4.826	H6	60	16	25	5.5	4.5	7	2
TNH-No.10-24UNC-KRT-J-H7				H7							
TNH-No.10-32UNF-KRT-J-H6		No.10-32UNF	4.826	H6	60	16	25	5.5	4.5	7	2
TNH-No.10-32UNF-KRT-J-H7				H7							
TNH-1/4-20UNC-KRT-J-H6		1/4-20UNC	6.350	H6	62	19	30	6.0	4.5	7	3
TNH-1/4-20UNC-KRT-J-H7				H7							
TNH-1/4-20UNC-KRT-J-H8				H8							
TNH-1/4-28UNF-KRT-J-H6		1/4-28UNF	6.350	H6	62	19	30	6.0	4.5	7	3
TNH-1/4-28UNF-KRT-J-H7				H7							
TNH-5/16-18UNC-KRT-J-H7		5/16-18UNC	7.938	H7	70	22		6.1	5.0	8	3
TNH-5/16-18UNC-KRT-J-H8				H8							
TNH-5/16-24UNF-KRT-J-H7		5/16-24UNF	7.938	H7	70	22		6.1	5.0	8	3
TNH-5/16-24UNF-KRT-J-H8				H8							
TNH-3/8-16UNC-KRT-J-H7		3/8-16UNC	9.525	H7	75	24		7.0	5.5	8	3
TNH-3/8-16UNC-KRT-J-H8				H8							
TNH-3/8-24UNF-KRT-J-H7		3/8-24UNF	9.525	H7	75	24		7.0	5.5	8	3
TNH-3/8-24UNF-KRT-J-H8				H8							

JIS METRIC SPIRAL TAPS FOR POWDER METALLURGY

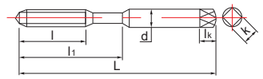
M JIS 35° CPM 6H 60° 2.5

- Suitable for cutting materials: heat-resistant copper, cast iron, spherical graphite Cast iron, strong edge cast iron, etc.
- Tensile strength under 750N/MM2 medium and low carbon steel, copper, aluminum Magnesium alloys.

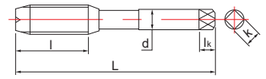


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNP-M2.0x0.4-SFT-J	O	M2	0.40	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.2x0.45-SFT-J	O	M2.2	0.45	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.3x0.4-SFT-J	O	M2.3	0.40	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.5x0.45-SFT-J	O	M2.5	0.45	44	9.5	16	3.0	2.5	5	2	2
TNP-M2.6x0.45-SFT-J	O	M2.6	0.45	44	9.5	16	3.0	2.5	5	2	2
TNP-M3.0x0.5-SFT-J	O	M3	0.50	46	11	18	4.0	3.2	6	2	3
TNP-M3.5x0.6-SFT-J	O	M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TNP-M4.0x0.7-SFT-J	O	M4	0.70	52	13	20	5.0	4.0	7	2	3
TNP-M4.5x0.75-SFT-J	O	M4.5	0.75	55	13	21	5.0	4.0	7	2	3
TNP-M5.0x0.8-SFT-J	O	M5	0.80	60	16	25	5.5	4.5	7	2	3
TNP-M6.0x1.0-SFT-J	O	M6	1.00	62	19	28	6.0	4.5	7	2	3
TNP-M7.0x1.0-SFT-J	O	M7	1.00	65	19	30	6.2	5.0	8	3	3
TNP-M8.0x1.25-SFT-J	O	M8	1.25	70	22		6.2	5.0	8	3	3
TNP-M9.0x1.25-SFT-J	O	M9	1.25	72	22		7.0	5.5	8	3	3
TNP-M10x1.5-SFT-J	O	M10	1.50	75	24		7.0	5.5	8	3	3
TNP-M11x1.5-SFT-J	O	M11	1.50	80	25		8.0	6.0	9	3	3
TNP-M12x1.75-SFT-J	O	M12	1.75	82	29		8.5	6.5	9	3	3
TNP-M14x2.0-SFT-J	O	M14	2.00	88	30		10.5	8.0	11	3	3
TNP-M15x2.0-SFT-J	O	M15	2.00	90	30		10.5	8.0	11	3	3
TNP-M16x2.0-SFT-J	O	M16	2.00	95	32		12.5	10	13	3	3
TNP-M18x2.5-SFT-J	O	M18	2.50	100	37		14.0	11	14	3	4
TNP-M20x2.5-SFT-J	O	M20	2.50	105	37		15.0	12	15	3	4
TNP-M22x2.5-SFT-J	O	M22	2.50	115	38		17.0	13	16	3	4
TNP-M24x3.0-SFT-J	O	M24	3.00	120	45		19.0	15	18	3	4

JIS METRIC GUN TAPS FOR POWDER METALLARGY

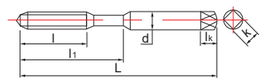
M JIS Spira point CPM 6H 60° 5

- Suitable to be cut material: hardness HRC40 stainless steel, Carbon steel, alloy steel, quenched and tempered steel, heat resistant steel, etc.

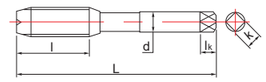


Hole processing

TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNP-M2.0x0.4-POT-J	O	M2	0.40	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.2x0.45-POT-J	O	M2.2	0.45	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.3x0.4-POT-J	O	M2.3	0.40	42	9.5	15	3.0	2.5	5	2	2
TNP-M2.5x0.45-POT-J	O	M2.5	0.45	44	9.5	16	3.0	2.5	5	2	2
TNP-M2.6x0.45-POT-J	O	M2.6	0.45	44	9.5	16	3.0	2.5	5	2	2
TNP-M3.0x0.5-POT-J	O	M3	0.50	46	11	18	4.0	3.2	6	2	3
TNP-M3.5x0.6-POT-J	O	M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TNP-M4.0x0.7-POT-J	O	M4	0.70	52	13	20	5.0	4.0	7	2	3
TNP-M4.5x0.75-POT-J	O	M4.5	0.75	55	13	21	5.0	4.0	7	2	3
TNP-M5.0x0.8-POT-J	O	M5	0.80	60	16	25	5.5	4.5	7	2	3
TNP-M6.0x1.0-POT-J	O	M6	1.00	62	19	28	6.0	4.5	7	2	3
TNP-M7.0x1.0-POT-J	O	M7	1.00	65	19	30	6.2	5.0	8	3	3
TNP-M8.0x1.25-POT-J	O	M8	1.25	70	22		6.2	5.0	8	3	3
TNP-M9.0x1.25-POT-J	O	M9	1.25	72	22		7.0	5.5	8	3	3
TNP-M10x1.5-POT-J	O	M10	1.50	75	24		7.0	5.5	8	3	3
TNP-M11x1.5-POT-J	O	M1 1	1.50	80	25		8.0	6.0	9	3	3
TNP-M12x1.75-POT-J	O	M12	1.75	82	29		8.5	6.5	9	3	3
TNP-M14x2.0-POT-J	O	M14	2.00	88	30		10.5	8.0	11	3	3
TNP-M15x2.0-POT-J	O	M15	2.00	90	30		10.5	8.0	11	3	3
TNP-M16x2.0-POT-J	O	M1 6	2.00	95	32		12.5	10	13	3	3
TNP-M18x2.5-POT-J	O	M18	2.50	100	37		14.0	11	14	3	3
TNP-M20x2.5-POT-J	O	M20	2.50	105	37		15.0	12	15	3	3
TNP-M22x2.5-POT-J	O	M22	2.50	115	38		17.0	13	16	3	3
TNP-M24x3.0-POT-J	O	M24	3.00	120	45		19.0	15	18	3	3

JIS METRIC COAVSE HAND TAPS

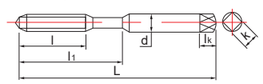
M JIS Traight Flute HSS 6H 60° 2.5

● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.

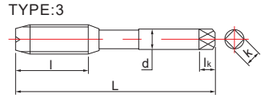
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TYPE:2



TYPE:3



Tong/blind holes
Processing is optimal

Model	Stock	Size	Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TNH-M2.0x0.4-HT-PE-J	O	M2	0.40	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.2x0.4-5HT-PE-J	O	M2.2	0.45	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.3x0.4-HT-PE-J	O	M2.3	0.40	42	9.5	15	3.0	2.5	5	2	3
TNH-M2.5x0.45-HT-PE-J	O	M2.5	0.45	44	9.5	16	3.0	2.5	5	2	3
TNH-M2.6x0.45-HT-PE-J	O	M2.6	0.45	44	9.5	16	3.0	2.5	5	2	3
TNH-M3.0x0.5-HT-PE-J	O	M3	0.50	46	11	18	4.0	3.2	6	2	3
TNH-M3.5x0.6-HT-PE-J	O	M3.5	0.60	48	13	20	4.0	3.2	6	2	3
TNH-M4.0x0.7-HT-PE-J	O	M4	0.70	52	13	20	5.0	4.0	7	2	3
TNH-M4.5x0.75-HT-PE-J	O	M4.5	0.75	55	13	21	5.0	4.0	7	2	3
TNH-M5.0x0.8-HT-PE-J	O	M5	0.80	60	16	25	5.5	4.5	7	2	3
TNH-M5.5x0.9-HT-PE-J	O	M5.5	0.90	60	16	25	5.5	4.5	7	2	3
TNH-M6.0x1.0-HT-PE-J	O	M6	1.00	62	19	28	6.0	4.5	7	2	3
TNH-M7.0x1.0-HT-PE-J	O	M7	1.00	65	19	30	6.2	5.0	8	3	4
TNH-M8.0x1.25-HT-PE-J	O	M8	1.25	70	22		6.2	5.0	8	3	4
TNH-M10x1.5-HT-PE-J	O	M10	1.50	75	24		7.0	5.5	8	3	4
TNH-M11x1.5-HT-PE-J	O	M1 1	1.50	80	25		8.0	6.0	9	3	4
TNH-M12x1.75-HT-PE-J	O	M12	1.75	82	29		8.5	6.5	9	3	4
TNH-M14x2.0-HT-PE-J	O	M14	2.00	88	30		10.5	8.0	11	3	4
TNH-M15x2.0-HT-PE-J	O	M15	2.00	90	30		10.5	8.0	11	3	4
TNH-M16x2.0-HT-PE-J	O	M1 6	2.00	95	32		12.5	10	13	3	4
TNH-M18x2.5-HT-PE-J	O	M18	2.50	100	37		14.0	11	14.	3	4
TNH-M20x2.5-HT-PE-J	O	M20	2.50	105	37		15.0	12	15	3	4
TNH-M22x2.5-HT-PE-J	O	M22	2.50	115	38		17.0	13	16	3	4
TNH-M24x3.0-HT-PE-J	O	M24	3.00	120	45		19.0	15	18	3	4

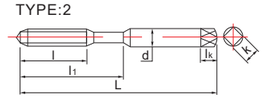
JIS METRIC FINE HAND TAPS

MF JIS Traight Flute HSS 6H 60° 2.5

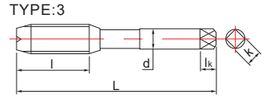
● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.



TYPE:2



TYPE:3



Tong/blind holes
Processing is optimal

Model	Stock	MF Size	MF Pitch	L	l	l_1	d	k	l_k	Type	Flutes
TNH-M2.0x0.25-HT-BE-J	O	M2	0.25	42	7	15	3.0.	2.5	5	2	3
TNH-M2.3x0.25-HT-BE-J	O	M2.3	0.25	42	7	15	3.0	2.5	5	2	3
TNH-M2.5x0.35-HT-BE-J	O	M2.5	0.35	44	8	16	3.0	2.5	5	2	3
TNH-M2.6x0.35-HT-BE-J	O	M2.6	0.35	44	8	16	3.0	2.5	5	2	3
TNH-M3.0x0.6-HT-BE-J	O	M3	0.60	46	11	18	4.0	3.2	6	2	3
TNH-M3.0x0.35-HT-BE-J	O	M3	0.35	46	9.5	18	4.0	3.2	6	2	3
TNH-M3.5x0.35-HT-BE-J	O	M3.5	0.35	48	9.5	20	4.0	3.2	6	2	3
TNH-M4.0x0.75-HT-BE-J	O	M4	0.75	52	13	20	5.0	4.0	7	2	3
TNH-M4.0x0.5-HT-BE-J	O	M4	0.50	52	13	20	5.0	4.0	7	2	3
TNH-M4.5x0.5-HT-BE-J	O	M4.5	0.50	55	13	21	5.0	4.0	7	2	3
TNH-M5.0x0.5-HT-BE-J	O	M5	0.50	55	13	25	5.5	4.5	7	2	3
TNH-M5.0x0.75-HT-BE-J	O	M5	0.75	60	16	25	5.5	4.5	7	2	3
TNH-M6.0x0.75-HT-BE-J	O	M6	0.75	62	19	28	6.0	4.5	7	2	3
TNH-M6.0x0.50-HT-BE-J	O	M6	0.50	55	13	25	6.0	4.5	7	2	3
TNH-M7.0x0.75-HT-BE-J	O	M7	0.75	65	19	30	6.2	5.0	8	3	4
TNH-M7.0x0.5-HT-BE-J	O	M7	0.50	55	13	25	6.2	5.0	8	3	4
TNH-M8.0x1.0-HT-BE-J	O	M8	1.00	70	22		6.2	5.0	8	3	4
TNH-M8.0x0.75-HT-BE-J	O	M8	0.75	70	22		6.2	5.0	8	3	4
TNH-M9.0x1.0-HT-BE-J	O	M9	1.00	72	22		7.0	5.5	8	3	4
TNH-M10x1.25-HT-BE-J	O	M10	1.25	75	24		7.0	5.5	8	3	4
TNH-M10x1.0-HT-BE-J	O	M10	1.00	75	24		7.0	5.5	8	3	4
TNH-M10x0.75-HT-BE-J	O	M10	0.75	75	22		7.0	5.5	8	3	4
TNH-M10x0.5-HT-BE-J	O	M10	0.50	55	13		7.0	5.5	8	3	4
TNH-M11x1.25-HT-BE-J	O	M11	1.25	80	25		8.0	6.0	9	3	4
TNH-M11x1.0-HT-BE-J	O	M11	1.00	80	25		8.0	6.0	9	3	4
TNH-M11x0.75-HT-BE-J	O	M11	0.75	75	22		8.0	6.0	9	3	4
TNH-M12x1.5-HT-BE-J	O	M12	1.50	82	29		8.5	6.5	9	3	4
TNH-M12x1.25-HT-BE-J	O	M12	1.25	82	29		8.5	6.5	9	3	4
TNH-M13x1.75-HT-BE-J	O	M13	1.75	85	29		9.5	7.0	10	3	4
TNH-M13x1.5-HT-BE-J	O	M13	1.50	85	29		9.5	7.0	10	3	4
TNH-M14x1.5-HT-BE-J	O	M14	1.50	88	30		10.5	8.0	11	3	4
TNH-M14x1.25-HT-BE-J	O	M14	1.25	88	30		10.5	8.0	11	3	4
TNH-M14x1.0-HT-BE-J	O	M14	1.00	88	30		10.5	8.0	11	3	4
TNH-M15x1.5-HT-BE-J	O	M15	1.50	90	30		10.5	8.0	11	3	4
TNH-M15x1.0-HT-BE-J	O	M15	1.00	90	30		10.5	8.0	11	3	4
TNH-M16x1.5-HT-BE-J	O	M1 6	1.50	95	32		12.5	10	13	3	4
TNH-M16x1.0-HT-BE-J	O	M16	1.00	95	32		12.5	10	13	3	4
TNH-M17x1.5-HT-BE-J	O	M17	1.50	95	32		13.0	10	13	3	4
TNH-M17x1.0-HT-BE-J	O	M17	1.00	95	32		13.0	10	13	3	4
TNH-M18x2.0-HT-BE-J	O	M18	2.00	100	37		14.0	11	14	3	4
TNH-M18x1.5-HT-BE-J	O	M18	1.50	100	37		14.0	11	14	3	4
TNH-M18x1.0-HT-BE-J	O	M18	1.00	95	30		14.0	11	14	3	4
TNH-M19x1.5-HT-BE-J	O	M19	1.50	105	37		14.0	11	14	3	4
TNH-M19x1.0-HT-BE-J	O	M19	1.00	95	30		14.0	11	14	3	4
TNH-M20x2.0-HT-BE-J	O	M20	2.00	105	37		15.0	12	15	3	4
TNH-M20x1.5-HT-BE-J	O	M20	1.50	105	37		15.0	12	15	3	4
TNH-M22x2.0-HT-BE-J	O	M22	2.00	115	38		17.0	13	16	3	4
TNH-M22x1.5-HT-BE-J	O	M22	1.50	115	38		17.0	13	16	3	4
TNH-M22x1.0-HT-BE-J	O	M22	1.00	95	30		17.0	13	16	3	4
TNH-M23x1.5-HT-BE-J	O	M23	1.50	115	38		18.0	14	17	3	4
TNH-M24x2.0-HT-BE-J	O	M24	2.00	120	45		19.0	15	18	3	4
TNH-M24x1.5-HT-BE-J	O	M24	1.50	120	45		19.0	15	18	3	4

JIS UNC COARSE HAND TAPS

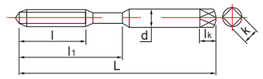
UNC JIS Traight Flute HSS 6H 60° 2.5

● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.

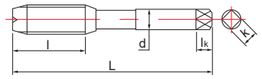


Tong/blind holes
Processing is optimal

TYPE:2

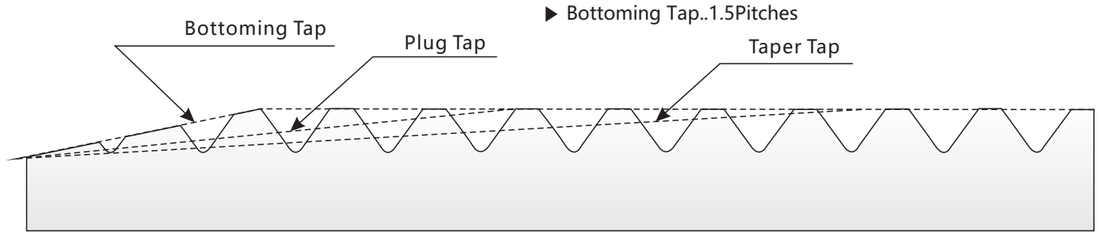


TYPE:3



Model	Stock	UNC Size	Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-No.2-56UNC-HT-PE-J	O	No.2-56UNC	2.184	42	9.5	15	3.0	2.5.	5	2	3
TNH-No.3-48UNC-HT-PE-J	O	No.3-48UNC	2.515	44	9.5	16	3.0	2.5	5	2	3
TNH-No.4-40UNC-HT-PE-J	O	No.4-40UNC	2.845	44	9.5	16	3.0	2.5	5	2	3
TNH-No.5-40UNC-HT-PE-J	O	No.5-40UNC	3.1 75	46	11	18	4.0	3.2	6	2	3
TNH-No.6-32UNC-HT-PE-J	O	No.6-32UNC	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-32UNC-HT-PE-J	O	No.8-32UNC	4.166	52	13	21	5.0	4.0	7	2	3
TNH-No.10-24LJNC-HT-PE-J	O	No.10-24LJNC	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-241JNC-HT-PE-J	O	No.12-241JNC	5.486	60	16	26	5.5	4.5	7	2	3
TNH-1/4-20UNC-HT-PE-J	O	1/4-20UNC	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-18UNC-HT-PE-J	O	5/16-18UNC	7.938	70	22		6.1	5.0	8	3	4
TNH-3/8-16UNC-HT-PE-J	O	3/8-16UNC	9.525	75	24		7.0	5.5	8	3	4
TNH-7/16-14UNC-HT-PE-J	O	7/16-14UNC	11.112	80	25		8.0	6.0	9	3	4
TNH-1/2-13UNC-HT-PE-J	O	1/2-13UNC	12.700	85	29		9.0	7.0	10	3	4
TNH-9/16-12UNC-HT-PE-J	O	9/16-12UNC	14.288	90	30		10.5	8.0	11	3	4
TNH-5/8-11UNC-HT-PE-J	O	5/8-11UNC	15.875	95	32		12.0	9.0	12	3	4
TNH-3/4-10UNC-HT-PE-J	O	3/4-10UNC	19.050	105	37		14.0	11	14	3	4
TNH-7/8-9UNC-HT-PE-J	O	7/8-9UNC	22.225	115	38		17.0	13	16	3	4
TNH-1-8UNC-HT-PE-J	O	1-8UNC	25.400	125	45		20.0	15	18	3	4
TNH-11/8-7UNC-HT-PE-J	O	11/8-7UNC	28.575	135	48		22.0	17	20	3	4
TNH-11/4- 7UNC-HT-PE-J	O	11/4- 7UNC	31.750	145	51		24.0	19	22	3	4
TNH-13/8-6UNC-HT-PE-J	O	13/8-6UNC	34.925	155	57		26.0	21	24	3	4
TNH-11/2-6UNC-HT-PE-J	O	11/2-6UNC	38.100	160	60		30.0	23	26	3	4
TNH-13/4-5UNC-HT-PE-J	O	13/4-5UNC	44.450	175	67		35.0	26	30	3	4
TNH-2-41/2UNC-HT-PE-J	O	2-41/2UNC	50.800	195	70		40.0	32	35	3	4

Description of cutting edge of tapping end face cutting:



- ▶ Taper Tap...9 Pitches
- ▶ Plug Tap...5 pitches
- ▶ Bottoming Tap..1.5Pitches

- ▶ Specially slow spiral design
- ▶ Tialn coating for good performance and long life
- ▶ JIS standard
- ▶ Made of HSS-CQ steel
- ▶ Ideal for use on Casting Iron

WERNER

JIS UNF FINE HAND TAPS

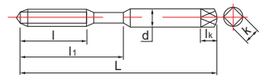
UNC JIS Traight Flute HSS 6H 60° 2.5

● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.

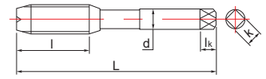


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model	Stock	UNC Size	Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-No.2- 64UNF-HT-BE-J	O	No.2- 64UNF	2.184	42	9.5	15	3.0	2.5	5	2	3
TNH-No.3-56UNF-HT-BE-J	O	No.3-56UNF	2.515	44	9.5	16	3.0	2.5	5	2	3
TNH-No.4-48UNF-HT-BE-J	O	No.4-48UNF	2.845	44	9.5	16	3.0	2.5	5	2	3
TNH-No.5-44UNF-HT-BE-J	O	No.5-44UNF	3.175	46	11	18	4.0	3.2	6	2	3
TNH-No.6-40UNF-HT-BE-J	O	No.6-40UNF	3.505	48	13	20	4.0	3.2	6	2	3
TNH-No.8-36UNF -HT-BE-J	O	No.8-36UNF	4.1 66	52	13	21	5.0	4.0	7	2	3
TNH-No.10-32LJNF-HT-BE-J	O	No.10-32LJNF	4.826	60	16	25	5.5	4.5	7	2	3
TNH-No.12-28UNF-HT-BE-J	O	No.12-28UNF	5.486	60	16	26	5.5	4.5	7	2	3
TNH-1/4-28UNF -HT-BE-J	O	1/4-28UNF	6.350	62	19	30	6.0	4.5	7	3	3
TNH-1/4-32UNEF-HT-BE-J	O	1/4-32UNEF	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-24UNF-HT-BE-J	O	5/16-24UNF	7.938	70	22		6.1	5.0	8	3	4
TNH-5/16-32UNEF-HT-BE-J	O	5/16-32UNEF	7.938	70	22		6.1	5.0	8	3	4
TNH-3/8-24UNF-HT-BE-J	O	3/8-24UNF	9.525	75	24		7.0	5.5	8	3	4
TNH-3/8-32UNEF-HT-BE-J	O	3/8-32UNEF	9.525	75	22		7.0	5.5	8	3	4
TNH-7/16-20UNF-HT-BE-J	O	7/16-20UNF	11.112	80	25		8.0	6.0	9	3	4
TNH-7/16-28JNEF-HT-BE-J	O	7/16-28JNEF	11.112	80	25		8.0	6.0	9	3	4
TNH-1/2-20UN F-HT-BE-J	O	1/2-20UN F	12.700	85	29		9.0	7.0	10	3	4
TNH-1/2-28UNEF-HT-BE-J	O	1/2-28UNEF	12.700	85	29		9.0	7.0	10	3	4.
TNH-9/16-18UNF-HT-BE-J	O	9/16-18UNF	14.288	90	30		10.5	8.0	11	3	4
TNH-9/16-24UNEF-HT-BE-J	O	9/16-24UNEF	14.288	90	30		10.5	8.0	11	3	4
TNH-5/8-18UNF-HT-BE-J	O	5/8-18UNF	15.875	95	32		12.0	9.0	12	3	4
TNH-5/8-24UNEF-HT-BE-J	O	5/8-24UNEF	15.875	95	32		12.0	9.0	12	3	4
TNH-3/4-16UNF-HT-BE-J	O	3/4-16UNF	19.050	105	37		14.0	11.0	14	3	4

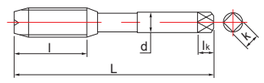
ISO 2284 PARALLEL PIPE TAPS

BSPG (PF) | ISO 2284 | Traight Flute | HSS | ISO 2 6H | 55° | 2.5



- Suitable for pipe internal thread machining.
- Tensile strength of 850N/MM2 or less die steel, carbon steel, Copper aluminum alloy.

TYPE:3



Model	Stock	BSPG Size	BSPG Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/16-28BSPG-HT-I	O	1/16-28	7.723	52	14		5.6	4.5	7	3	4
TNH-1/8-28BSPG-HT-I	O	1/8-28	9.728	59	15		8.0	6.3	9	3	4
TNH-1/4-19BSPG-HT-I	O	1/4-19	13.157	67	19		10.0	8.0	11	3	4
TNH-3/8-19BSPG-HT-I	O	3/8-19	16.662	75	21		12.5	10.0	13	3	4
TNH-1/2-14BSPG-HT-I	O	1/2-14	20.955	87	26		16.0	12.5	16	3	4
TNH-3/4-14BSPG-HT-I	O	3/4-14	26.441	96	28		20.0	16.0	20	3	4
TNH-1-11BSPG-HT-I	O	1-11	33.249	109	33		25.0	20.0	24	3	4

NPS | ISO 2284 | Traight Flute | HSS | ISO 2 6H | 60° | 2.5

Model	Stock	NPS Size	NPS Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/8-27NPS-HT-I	O	1/8-27	10.272	59	15		8.0	6.3	9	3	4
TNH-1/4-18NPS-HT-I	O	1/4-18	13.571	67	19		10.0	8.0	11	3	4
TNH-3/8-18NPS-HT-I	O	3/8-18	17.054	75	21		12. 5	10.0	13	3	4
TNH-1/2-14NPS-HT-I	O	1/2-14	21.224	87	26		16.0	12.5	16	3	4
TNH-3/4-14NPS-HT-I	O	3/4-14	26.568	96	28		20.0	16.0	20	3	4
TNH-1-111/2NPS-HTT-I	O	1-111/2	33.228	109	33		25.0	20.0	24	3	4
TNH-11/4-111/2NPS-HT-I	O	11/4-111/2	41.986	119	36		31.5	25.0	28	3	6
TNH-11/2-111/2NPS-HT-I	O	11/2-111/2	48.054	125	37		35.5	28.0	31	3	6

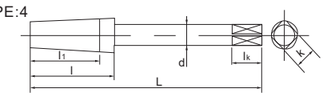
ISO 2284 TAPER PIPE TAPS

BSPT (Rc) | ISO 2284 | Traight Flute | HSS | ISO 2 6H | 55° | 2.5



- Suitable for pipe internal thread machining.
- Tensile strength of 850N/MM2 or less die steel, carbon steel, Copper aluminum alloy.

TYPE:4



Model	Stock	BSPT Size	BSPT Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/16-28BSPT-HT-I	O	1/16-28	7.723	52	14	10.1	5.6	4.5	7	4	4
TNH-1/8-28BSPT-HT-I	O	1/8-28	9.728	59	15	10.1	8.0	6.3	9	4	4
TNH-1/4-19BSPT-HT-I	O	1/4-19	13.157	67	19	15.0	10.0	8.0	11	4	4
TNH-3/8-19BSPT-HT-I	O	3/8-19	16.662	75	21	15.4	12.5	10.0	13	4	4
TNH-1/2-14BSPT-HT-I	O	1/2-14	20.955	87	26	20.5	16.0	12.5	16	4	4
TNH-3/4-14BSPT-HT-I	O	3/4-14	26.441	96	28	21.8	20.0	16.0	20	4	4
TNH-1-11BSPT-HT-I	O	1-11	33.249	109	33	26.0	25.0	20.0	24	4	4

NPT | ISO 2284 | Traight Flute | HSS | ISO 2 6H | 60° | 2.5

Model	Stock	NPT Size	NPT Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNH-1/8-27NPT-HT-I	O	1/8-27	10.272	59	15	7.9	8.0	6.3	9	4	4
TNH-1/4-18NPT-HT-I	O	1/4-18	13.571	67	19	11.9	10.0	8.0	11	4	4
TNH-3/8-18NPT-HT-I	O	3/8-18	17.054	75	21	11.5	12. 5	10.0	13	4	4
TNH-1/2-14NPT-HT-I	O	1/2-14	21.224	87	26	14.7	16.0	12.5	16	4	4
TNH-3/4-14NPT-HT-I	O	3/4-14	26.568	96	28	14.4	20.0	16.0	20	4	4
TNH-1-111/2NPT-HT-I	O	1-111/2	33.228	109	33	17.2	25.0	20.0	24	4	4
TNH-11/4-111/2NPT-HT-I	O	11/4-111/2	41.986	119	36	17.4	31.5	25.0	28	4	6
TNH-11/2-111/2NPT-HT-I	O	11/2-111/2	48.054	125	37	17.8	35.5	28.0	31	4	6

JIS INCH COARSE HAND TAPS

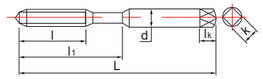
BSW JIS Traight Flute HSS 6H 55° 2.5

● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.

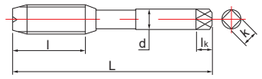


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model	Stock	BSW		L	l	l_1	d	k	l_k	Type	Flutes
		Size	Basic Major Dia.								
TNH-1/8W40BSW-HT-PE-J	○	1/8W40	3.175	46	11	18	4.0	3.2	6	2	3
TNH-5/32W32BSW-HT-PE-J	○	5/32W32	3.969	52	13	21	5.0	4.0	7	2	3
TNH-3/16W24BSW-HT-PE-J	○	3/16W24	4.762	60	16	25	5.5	4.5	7	2	3
TNH-7/32W24BSW-HT-PE-J	○	7/32W24	5.556	60	16	25	5.5	4.5	7	2	3
TNH-1/4W20BSW-HT-PE-J	○	1/4W20	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16W18BSW-HT-PE-J	○	5/16W18	7.938	70	22		6.1	5.0	8	3	4
TNH-3/8W16BSW-HT-PE-J	○	3/8W16	9.525	75	24		7.0	5.5	8	3	4
TNH-7/16W14BSW-HT-PE-J	○	7/16W14	11.112	80	25		8.0	6.0	9	3	4
TNH-1/2W12BSW-HT-PE-J	○	1/2W12	12.700	85	29		9.0	7.0	10	3	4
TNH-9/16W12BSW-HT-PE-J	○	9/16W12	14.288	90	30		10.5	8.0	11	3	4
TNH-5/8W11BSW-HT-PE-J	○	5/8W11	15.875	95	32		12.0	9.0	12	3	4
TNH-3/4W10BSW-HT-PE-J	○	3/4W10	19.050	105	37		14.0	11	14	3	4
TNH-7/8W9BSW-HT-PE-J	○	7/8W9	22.225	115	38		17.0	13	16	3	4
TNH-1W8BSW-HT-PE-J	○	1W8	25.400	125	45		20.0	15	18	3	4
TNH-11/8W7BSW-HT-PE-J	○	11/8W7	28.575	135	48		22.0	17	20	3	4
TNH-11/4W7BSW-HT-PE-J	○	11/4W7	31.750	145	51		24.0	19	22	3	4
TNH-13/8W6BSW-HT-PE-J	○	13/8W6	34.925	155	57		26.0	21	24	3	4
TNH-11/2W6BSW-HT-PE-J	○	11/2W6	38.100	165	60		30.0	23	26	3	4
TNH-15/8W5BSW-HT-PE-J	○	15/8W5	41.275	170	60		32.0	26	30	3	4
TNH-13/4W5BSW-HT-PE-J	○	13/4W5	44.450	175	67		35.0	26	30	3	4
TNH-17/8W41/2BSW-HT-PE-J	○	17/8W41/2	47.625	185	67		38.0	29	32	3	4
TNH-2W41/2BSW-HT-PE-J	○	2W41/2	50.800	195	70		40.0	32	35	3	4

JIS INCH FINE HAND TAPS

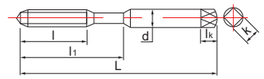
BSF JIS Traight Flute HSS 6H 55° 2.5

● Suitable for cutting materials: cast iron, bronze, cast aluminum, medium Low carbon steel, die steel.

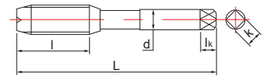


Tong/blind holes
Processing is optimal

TYPE:2



TYPE:3



Model	Stock	BSW		L	l	l_1	d	k	l_k	Type	Flutes
		Size	Basic Major Dia.								
TNH-3/16-32BSW-HT-BE-J	○	3/16-32	4.762	60	16	25	5.5	4.5	7	2	3
TNH-7/32-28BSW-HT-BE-J	○	7/32-28	5.556	60	16	25	5.5	4.5	7	2	3
TNH-1/4-28BSW-HT-BE-J	○	1/4-28	6.350	62	19	30	6.0	4.5	7	3	3
TNH-5/16-22BSW-HT-BE-J	○	5/16-22	7.938	70	22		6.1	5.0	8	3	4
TNH-3/8-20BSW-HT-BE-J	○	3/8-20	9.525	75	24		7.0	5.5	8	3	4
TNH-7/16-18BSW-HT-BE-J	○	7/16-18	11.112	80	25		8.0	6.0	9	3	4
TNH-1/2-16BSW-HT-BE-J	○	1/2-16	12.700	85	29		9.0	7.0	10	3	4
TNH-9/16-16BSW-HT-BE-J	○	9/16-16	14.288	90	30		10.5	8.0	11	3	4
TNH-5/8-14BSW-HT-BE-J	○	5/8-14	15.825	95	32		12.0	9.0	12	3	4
TNH-3/4-12BSW-HT-BE-J	○	3/4-12	1 9.050	105	32		14.0	11.0	14	3	4
TNH-7/8-11BSW-HT-BE-J	○	7/8-11	22.225	115	37		17.0	13.0	16	3	4
TNH-1-10BSW-HT-BE-J	○	1-10	25.400	125	38		20.0	15.0	18	3	4

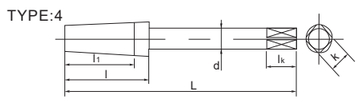
JIS INCH TAPER SPIRAL TAPS

PT | JIS | 35° | HSS | ISO 2 6H | 55° | 2.5



- T801 is suitable for the purpose of extremely tight combination of internal thread machining, T804 is suitable for internal thread machining for mechanical bonding purposes.
- Tensile strength of 850N/MM2 or less die steel, carbon steel, Copper aluminum alloy.

TYPE:4



Model	Stock	PT Size	PT Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-1/16-28PT-POT-J	○	1/16-28	7.723	55	19	13	8	6	9	4	3
TNH-1/8-28PT-POT-J	○	1/8-28	9.728	55	19	13	8	6	9	4	3
TNH-1/4-19PT-POT-J	○	1/4-19	13.157	62	28	21	11	9	12	4	3
TNH-3/8-19PT-POT-J	○	3/8-19	16.662	65	28	21	14	11	14	4	3
TNH-1/2-14PT-POT-J	○	1/2-14	20.955	80	35	25	18	14	17	4	4
TNH-3/4-14PT-POT-J	○	3/4-14	26.441	85	35	25	23	17	20	4	4
TNH-1-11PT-POT-J	○	1-11	33.249	95	45	32	26	21	24	4	4

NPT | JIS | 35° | HSS | ISO 2 6H | 60° | 2.5

Model	Stock	NPT Size	NPT Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-1/16-27NPT-POT-J	○	1/16-27	7.770	54	17	12.00	8	6	9	4	3
TNH-1/8-27NPT-POT-J	○	1/8-27	10.117	55	19	12.05	8	6	9	4	3
TNH-1/4-18NPT-POT-J	○	1/4-18	13.426	62	28	17.45	11	9	12	4	3
TNH-3/8-18NPT-POT-J	○	3/8-18	16.866	65	28	17.65	14	11	14	4	3
TNH-1/2-14NPT-POT-J	○	1/2-14	20.980	80	35	22.85	18	14	17	4	4
TNH-3/4-14NPT-POT-J	○	3/4-14	26.325	85	35	22.95	23	17	20	4	4
TNH-1-111/2NPT-POT-J	○	1-111/2	32.934	95	45	27.40	26	21	24	4	4

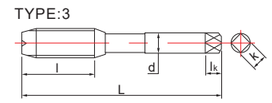
JIS SPIRAL FLUTED TAPS

PS (Rp) | JIS | 35° | HSS | ISO 2 6H | 55° | 2.5



- T802 is suitable for extremely tight combination for the purpose of internal thread machining,T803 is suitable for internal thread machining for mechanical bonding purposes.
- Tensile strength of 850N/MM2 or less die steel, carbon steel, Copper aluminum alloy.

TYPE:3



Model	Stock	PS Size	PS Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-1/8-28PS-SFT-J	○	1/8-28	9.728	55	19		8	6	9	3	3
TNH-1/4-19PS-SFT-J	○	1/4-19	13.157	62	28		11	9	12	3	3
TNH-3/8-19PS-SFT-J	○	3/8-19	16.662	65	28		14	11	14	3	3
TNH-1/2-14PS-SFT-J	○	1/2-14	20.955	80	35		18	14	17	3	4
TNH-3/4-14PS-SFT-J	○	3/4-14	26.441	85	35		23	17	20	3	4
TNH-1-11PS-SFT-J	○	1-11	33.249	95	45		26	21	24	3	4
TNH-11/4-11PS-SFT-J	○	11/4-11	41.910	105	45		32	26	30	3	4

PF | JIS | 35° | HSS | ISO 2 6H | 55° | 2.5

Model	Stock	NPT Size	NPT Basic Major Dia.	L	l	l1	d	k	lk	Type	Flutes
TNH-1/8-28NPT-SFT-J	○	1/8-28	9.728	55	19		8	6	9	3	3
TNH-1/4-19NPT-SFT-J	○	1/4-19	13.157	62	28		11	9	12	3	3
TNH-3/8-19NPT-SFT-J	○	3/8-19	16.662	65	28		14	11	14	3	3
TNH-1/2-14NPT-SFT-J	○	1/2-14	20.955	80	35		18	14	17	3	4
TNH-3/4-14NPT-SFT-J	○	3/4-14	26.441	85	35		23	17	20	3	4
TNH-1-11NPT-SFT-J	○	1-11	33.249	95	45		26	21	24	3	4
TNH-11/4-11NPT-SFT-J	○	11/4-11	41.910	105	45		32	26	30	3	4

JIS METRIC LONG SPIRAL TAPS

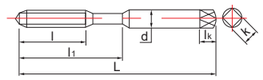
M JIS 35° HSS-E 6H 60° 2.5

- Suitable for deep hole thread machining.

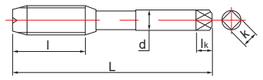




TYPE:2



TYPE:3



● L=100mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M3x0.5-SFT-L100-J	O	M3x0.5	11	4.0	3.2	6	3
TNH-M4x0.7-SFT-L100-J	O	M4x0.7	13	5.0	4.0	7	3
TNH-M5x0.8-SFT-L100-J	O	M5x0.8	16	5.5	4.5	7	3
TNH-M6x 1-SFT-L100-J	O	M6x 1	19	6.0	4.5	7	3
TNH-M8x 1.25-SFT-L100-J	O	M8x 1.25	22	6.2	5.0	8	3
TNH-M10x 1.5-SFT-L100-J	O	M10x 1.5	24	7.0	5.5	8	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M10x1.25-SFT-L100-J	O	M10x1.25	24	7.0	5.5	8	3
TNH-M12x1.75-SFT-L100-J	O	M12x1.75	29	8.5	6.5	9	3
TNH-M12x1.5-SFT-L100-J	O	M12x1.5	29	8.5	6.5	9	3
TNH-M12x1.25-SFT-L100-J	O	M12x1.25	29	8.5	6.5	9	3
TNH-M14x2-SFT-L100-J	O	M14x2	30	10.5	8.0	11	3
TNH-M14x1.5-SFT-L100-J	O	M14x1.5	30	10.5	8.0	11	3

● L=150mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M3x0.5-SFT-L150-J	O	M3x0.5	11	4.0	3.2	6	3
TNH-M4x0.7-SFT-L150-J	O	M4x0.7	13	5.0	4.0	7	3
TNH-M5x0.8-SFT-L150-J	O	M5x0.8	16	5.5	4.5	7	3
TNH-M6x1-SFT-L150-J	O	M6x1	19	6.0	4.5	7	3
TNH-M8x1.25-SFT-L150-J	O	M8x1.25	22	6.2	5.0	8	3
TNH-M10x1.5-SFT-L150-J	O	M10x1.5	24	7.0	5.5	8	3
TNH-M10x1.25-SFT-L150-J	O	M10x1.25	24	7.0	5.5	8	3
TNH-M12x1.75-SFT-L150-J	O	M12x1.75	29	8.5	6.5	9	3
TNH-M12x1.5-SFT-L150-J	O	M12x1.5	29	8.5	6.5	9	3
TNH-M12x1.25-SFT-L150-J	O	M12x1.25	29	8.5	6.5	9	3
TNH-M14x2-SFT-L150-J	O	M14x2	30	10.5	8.0	11	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M14x1.5-SFT-L150-J	O	M14x1.5	30	10.5	8	11	3
TNH-M16x2-SFT-L150-J	O	M16x2	32	12.5	10	13	3
TNH-M16x1.5-SFT-L150-J	O	M16x1.5	32	12.5	10	13	3
TNH-M18x2.5-SFT-L150-J	O	M18x2.5	37	14.0	11	14	4
TNH-M20x2.5-SFT-L150-J	O	M20x2.5	37	15.0	12	15	4
TNH-M20x1.5-SFT-L150-J	O	M20x1.5	37	15.0	12	15	4
TNH-M22x2.5-SFT-L150-J	O	M22x2.5	38	17.0	13	16	4
TNH-M22x1.5-SFT-L150-J	O	M22x1.5	38	17.0	13	16	4
TNH-M24x3-SFT-L150-J	O	M24x3	45	19.0	15	18	4
TNH-M24x1.5-SFT-L150-J	O	M24x1.5	45	19.0	15	18	4

● L=200mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M8x1.25-SFT-L200-J	O	M8x1.25	22	6.2	5.0	5.0	3
TNH-M10x1.5-SFT-L200-J	O	M10x1.5	24	7.0	5.5	5.5	3
TNH-M10x1.25-SFT-L200-J	O	M10x1.25	24	7.0	5.5	5.5	3
TNH-M12x1.75-SFT-L200-J	O	M12x1.75	29	8.5	6.5	6.5	3
TNH-M12x1.5-SFT-L200-J	O	M12x1.5	29	8.5	6.5	6.5	3
TNH-M12x1.25-SFT-L200-J	O	M12x1.25	29	8.5	6.5	6.5	3
TNH-M14x2-SFT-L200-J	O	M14x2	30	10.5	8.0	8.0	3
TNH-M14x1.5-SFT-L200-J	O	M14x1.5	30	10.5	8.0	8.0	3
TNH-M16x2-SFT-L200-J	O	M16x2	32	12.5	10.0	10.0	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M16x1.5-SFT-L200-J	O	M16x1.5	32	12.5	10	13	3
TNH-M18x2.5-SFT-L200-J	O	M18x2.5	37	14.0	11	14	4
TNH-M18x1.5-SFT-L200-J	O	M18x1.5	37	14.0	11	14	4
TNH-M20x2.5-SFT-L200-J	O	M20x2.5	37	15.0	12	15	4
TNH-M20x1.5-SFT-L200-J	O	M20x1.5	37	15.0	12	15	4
TNH-M22x2.5-SFT-L200-J	O	M22x2.5	38	17.0	13	16	4
TNH-M22x1.5-SFT-L200-J	O	M22x1.5	38	17.0	13	16	4
TNH-M24x3-SFT-L200-J	O	M24x3	45	19.0	15	18	4
TNH-M24x1.5-SFT-L200-J	O	M24x1.5	45	19.0	15	18	4

JIS METRIC LONG GUN TAPS

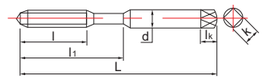
M JIS 35° HSS-E 6H 60° 2.5

- Suitable for deep hole thread machining.

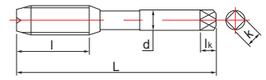




TYPE:2



TYPE:3



● L=100mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M3x0.5-POT-L100-J	O	M3x0.5	11	4.0	3.2	6	3
TNH-M4x0.7-POT-L100-J	O	M4x0.7	13	5.0	4.0	7	3
TNH-M5x0.8-POT-L100-J	O	M5x0.8	16	5.5	4.5	7	3
TNH-M6x 1-POT-L100-J	O	M6x 1	19	6.0	4.5	7	3
TNH-M8x 1.25-POT-L100-J	O	M8x 1.25	22	6.2	5.0	8	3
TNH-M10x 1.5-POT-L100-J	O	M10x 1.5	24	7.0	5.5	8	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M10x1.25-POT-L100-J	O	M10x1.25	24	7.0	5.5	8	3
TNH-M12x1.75-POT-L100-J	O	M12x1.75	29	8.5	6.5	9	3
TNH-M12x1.5-POT-L100-J	O	M12x1.5	29	8.5	6.5	9	3
TNH-M12x1.25-POT-L100-J	O	M12x1.25	29	8.5	6.5	9	3
TNH-M14x2-POT-L100-J	O	M14x2	30	10.5	8.0	11	3
TNH-M14x1.5-POT-L100-J	O	M14x1.5	30	10.5	8.0	11	3

● L=150mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M3x0.5-POT-L150-J	O	M3x0.5	11	4.0	3.2	6	3
TNH-M4x0.7-POT-L150-J	O	M4x0.7	13	5.0	4.0	7	3
TNH-M5x0.8-POT-L150-J	O	M5x0.8	16	5.5	4.5	7	3
TNH-M6x1-POT-L150-J	O	M6x1	19	6.0	4.5	7	3
TNH-M8x1.25-POT-L150-J	O	M8x1.25	22	6.2	5.0	8	3
TNH-M10x1.5-POT-L150-J	O	M10x1.5	24	7.0	5.5	8	3
TNH-M10x1.25-POT-L150-J	O	M10x1.25	24	7.0	5.5	8	3
TNH-M12x1.75-POT-L150-J	O	M12x1.75	29	8.5	6.5	9	3
TNH-M12x1.5-POT-L150-J	O	M12x1.5	29	8.5	6.5	9	3
TNH-M12x1.25-POT-L150-J	O	M12x1.25	29	8.5	6.5	9	3
TNH-M14x2-POT-L150-J	O	M14x2	30	10.5	8.0	11	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M14x1.5-POT-L150-J	O	M14x1.5	30	10.5	8	11	3
TNH-M16x2-POT-L150-J	O	M16x2	32	12.5	10	13	3
TNH-M16x1.5-POT-L150-J	O	M16x1.5	32	12.5	10	13	3
TNH-M18x2.5-POT-L150-J	O	M18x2.5	37	14.0	11	14	4
TNH-M20x2.5-POT-L150-J	O	M20x2.5	37	15.0	12	15	4
TNH-M20x1.5-POT-L150-J	O	M20x1.5	37	15.0	12	15	4
TNH-M22x2.5-POT-L150-J	O	M22x2.5	38	17.0	13	16	4
TNH-M22x1.5-POT-L150-J	O	M22x1.5	38	17.0	13	16	4
TNH-M24x3-POT-L150-J	O	M24x3	45	19.0	15	18	4
TNH-M24x1.5-POT-L150-J	O	M24x1.5	45	19.0	15	18	4

● L=200mm

Model	Stock	M	l	d	k	lk	Flutes
TNH-M8x1.25-POT-L200-J	O	M8x1.25	22	6.2	5.0	5.0	3
TNH-M10x1.5-POT-L200-J	O	M10x1.5	24	7.0	5.5	5.5	3
TNH-M10x1.25-POT-L200-J	O	M10x1.25	24	7.0	5.5	5.5	3
TNH-M12x1.75-POT-L200-J	O	M12x1.75	29	8.5	6.5	6.5	3
TNH-M12x1.5-POT-L200-J	O	M12x1.5	29	8.5	6.5	6.5	3
TNH-M12x1.25-POT-L200-J	O	M12x1.25	29	8.5	6.5	6.5	3
TNH-M14x2-POT-L200-J	O	M14x2	30	10.5	8.0	8.0	3
TNH-M14x1.5-POT-L200-J	O	M14x1.5	30	10.5	8.0	8.0	3
TNH-M16x2-POT-L200-J	O	M16x2	32	12.5	10.0	10.0	3

Model	Stock	M	l	d	k	lk	Flutes
TNH-M16x1.5-POT-L200-J	O	M16x1.5	32	12.5	10	13	3
TNH-M18x2.5-POT-L200-J	O	M18x2.5	37	14.0	11	14	4
TNH-M18x1.5-POT-L200-J	O	M18x1.5	37	14.0	11	14	4
TNH-M20x2.5-POT-L200-J	O	M20x2.5	37	15.0	12	15	4
TNH-M20x1.5-POT-L200-J	O	M20x1.5	37	15.0	12	15	4
TNH-M22x2.5-POT-L200-J	O	M22x2.5	38	17.0	13	16	4
TNH-M22x1.5-POT-L200-J	O	M22x1.5	38	17.0	13	16	4
TNH-M24x3-POT-L200-J	O	M24x3	45	19.0	15	18	4
TNH-M24x1.5-POT-L200-J	O	M24x1.5	45	19.0	15	18	4

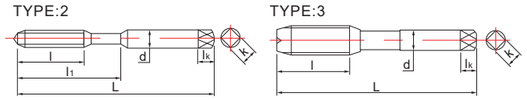
DIN 371/376 SPIRAL TAPS

M DIM 35° HSS-E 6H 60° 2.5

● High carbon steel nickel base with tensile strength of 600-900N/MM2 Alloy, alloy tools, bronze, cast iron, etc.

● Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum, magnesium alloy.







Model T101	Stock	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M3.0x0.5-SFT-D	O	M3	0.50	56	11	18	3.5	2.7	6.0	2	3
TNH-M3.5x0.6-SFT-D	O	M3.5	0.60	56	13	20	4.0	3.0	6.0	2	3
TNH-M4.0x0.7-SFT-D	O	M4	0.70	63	13	21	4.5	3.4	6.0	2	3
TNH-M5.0x0.8-SFT-D	O	M5	0.80	70	16	25	6.0	4.9	8.0	2	3
TNH-M6.0x1.0-SFT-D	O	M6	1.00	80	19	30	6.0	4.9	8.0	2	3
TNH-M8.0x1.25-SFT-D	O	M8	1.25	90	22	35	8.0	6.2	9.0	3	3
TNH-M10x1.5-SFT-D	O	M10	1.50	100	24	39	10	8.0	11.0	3	3
TNH-M12x1.75-SFT-D	O	M12	1.75	110	29		9.0	7.0	10.0	3	3
TNH-M14x2.0-SFT-D	O	M14	2.00	110	30		11	9.0	12.0	3	4
TNH-M16x2.0-SFT-D	O	M16	2.00	110	32		12	9.0	12.0	3	4
TNH-M18x2.5-SFT-D	O	M18	2.50	125	34		14	11.0	14.0	3	4
TNH-M20x2.5-SFT-D	O	M20	2.50	140	34		16	12.0	15.0	3	4
TNH-M22x2.5-SFT-D	O	M22	2.50	140	34		18	14.5	17.0	3	4
TNH-M24x3.0-SFT-D	O	M24	3.00	160	38		18	14.5	17.0	3	4

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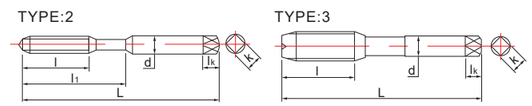
DIN 371/376 GUN TAPS

M DIM Traight Flute 直槽 HSS-E 6H 60° 5

● High carbon steel nickel base with tensile strength of 600-900N/MM2 Alloy, alloy tools, bronze, cast iron, etc.

● Medium and low carbon steel with tensile strength up to 750N/MM2, copper, Aluminum, magnesium alloy.





Model	Stock	Size	Pitch	L	l	l1	d	k	lk	Type	Flutes
TNH-M3.0x0.5-POT-D	O	M3	0.50	56	11	18	3.5	2.7	6.0	2	3
TNH-M3.5x0.6-POT-D	O	M3.5	0.60	56	13	20	4.0	3.0	6.0	2	3
TNH-M4.0x0.7-POT-D	O	M4	0.70	63	13	21	4.5	3.4	6.0	2	3
TNH-M5.0x0.8-POT-D	O	M5	0.80	70	16	25	6.0	4.9	8.0	2	3
TNH-M6.0x1.0-POT-D	O	M6	1.00	80	19	30	6.0	4.9	8.0	2	3
TNH-M8.0x1.25-POT-D	O	M8	1.25	90	22	35	8.0	6.2	9.0	3	3
TNH-M10x1.5-POT-D	O	M10	1.50	100	24	39	10	8.0	11.0	3	3
TNH-M12x1.75-POT-D	O	M12	1.75	110	29		9.0	7.0	10.0	3	3
TNH-M14x2.0-POT-D	O	M14	2.00	110	30		11	9.0	12.0	3	4
TNH-M16x2.0-POT-D	O	M16	2.00	110	32		12	9.0	12.0	3	4
TNH-M18x2.5-POT-D	O	M18	2.50	125	34		14	11.0	14.0	3	4
TNH-M20x2.5-POT-D	O	M20	2.50	140	34		16	12.0	15.0	3	4
TNH-M22x2.5-POT-D	O	M22	2.50	140	34		18	14.5	17.0	3	4
TNH-M24x3.0-POT-D	O	M24	3.00	160	38		18	14.5	17.0	3	4

JIS CARBIDE STRAIGHT FLUTED TAPS

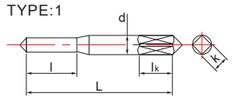
M ISO Straight fluted Carbide 6H 60° 2.5

- Suitable for high production with high precision in automatic machines , It is ideal for tapping materials such as ordinary cast iron ,ductile cast iron , thermosetting plastics and brass castings.

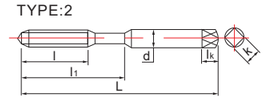


Hole processing

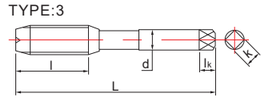
TYPE:1



TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	d	k	l_k	Type
TNC-M0.8X0.2-OTT-JIS	O	M0.8	0.2	38/45	4.5	3.0	2.5	5.0	2
TNC-M0.9X0.225-OTT-JIS	O	M0.9	0.225	38/45	4.5	3.0	2.5	5.0	2
TNC-M1.0X0.25-OTT-JIS	O	M1.0	0.25	38/45	5.0	3.0	2.5	5.0	2
TNC-M1.2X0.25-OTT-JIS	O	M1.2	0.25	38/45	5.0	3.0	2.5	5.0	2
TNC-M1.4X0.3-OTT-JIS	O	M1.4	0.3	38/45	6.0	3.0	2.5	5.0	2
TNC-M1.6X0.35-OTT-JIS	O	M1.6	0.35	38/45	6.0	3.0	2.5	5.0	2
TNC-M2.0X0.4-OTT-JIS	O	M2.0	0.4	45	7.0	3.0	2.5	5.0	2
TNC-M2.5X0.45-OTT-JIS	O	M2.5	0.45	45	8.0	3.0	2.5	5.0	2
TNC-M3.0X0.5-OTT-JIS	O	M3.0	0.5	45	9.0	3.2	2.5	5.0	3
TNC-M3.5X0.6-OTT-JIS	O	M3.5	0.6	45	10.0	3.6	2.8	5.0	3
TNC-M4.0X0.7-OTT-JIS	O	M4.0	0.7	52	11.0	4.0	3.2	6.0	3
TNC-M5X0.8-OTT-JIS	O	M5	0.8	55	15.0	5.0	4.0	7.0	3
TNC-M6X1.0-OTT-JIS	O	M6	1.0	64	17.0	6.0	4.5	7.0	3
TNC-M8X1.25-OTT-JIS	O	M8	1.25	70	19.0	6.2	5.0	8.0	3
TNC-M8X1.0-OTT-JIS	O	M8	1.0	70	19.0	6.2	5.0	8.0	3
TNC-M10X1.5-OTT-JIS	O	M10	1.5	75	23.0	8.0	6.3	9.0	3
TNC-M10X1.25-OTT-JIS	O	M10	1.25	75	19.0	8.0	6.3	9.0	3
TNC-M10X1.0-OTT-JIS	O	M10	1.0	75	19.0	8.0	6.3	9.0	3
TNC-M12X1.75-OTT-JIS	O	M12	1.75	82	28.0	9.0	7.1	10.0	3
TNC-M12X1.5-OTT-JIS	O	M12	1.5	82	25.0	9.0	7.1	10.0	3
TNC-M12X1.25-OTT-JIS	O	M12	1.25	82	25.0	9.0	7.1	10.0	3
TNC-M12X1.0-OTT-JIS	O	M12	1.0	82	20.0	9.0	7.1	10.0	3
TNC-M14X2.0-OTT-JIS	O	M14	2.0	88	32.0	11.2	9.0	12.0	3
TNC-M14X1.5-OTT-JIS	O	M14	1.5	88	30.0	11.2	9.0	12.0	
TNC-M14X1.25-OTT-JIS	O	M14	1.25	88	25.0	11.2	9.0	12.0	
TNC-M14X1.0-OTT-JIS	O	M14	1.0	88	20.0	11.2	9.0	12.0	
TNC-M16X2.0-OTT-JIS	O	M16	2.0	95	32.0	12.5	10.0	13.0	
TNC-M16X1.5-OTT-JIS	O	M16	1.5	95	28.0	12.5	10.0	13.0	
TNC-M16X1.0-OTT-JIS	O	M16	1.0	95	20.0	12.5	10.0	13.0	

JIS CARBIDE SPRIRAL FLUTED TAPS

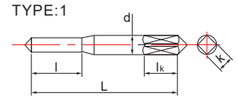
M ISO Spira fluted Carbide 6H 60° 2.5

- This tap is suitable for numerous operations with high precision in automatic machines. it is ideal for tapping materials such as aluminum alloys, magnesium alloys , copper alloys and thermoplastics.

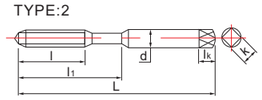


Hole processing

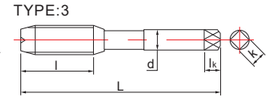
TYPE:1



TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	d	k	l_k	Type
TNC-M0.8X0.2-SFT-JIS	O	M0.8	0.2	38/45	4.5	3.0	2.5	5.0	2
TNC-M0.9X0.225-SFT-JIS	O	M0.9	0.225	38/45	4.5	3.0	2.5	5.0	2
TNC-M1.0X0.25-SFT-JIS	O	M1.0	0.25	38/45	5.0	3.0	2.5	5.0	2
TNC-M1.2X0.25-SFT-JIS	O	M1.2	0.25	38/45	5.0	3.0	2.5	5.0	2
TNC-M1.4X0.3-SFT-JIS	O	M1.4	0.3	38/45	6.0	3.0	2.5	5.0	2
TNC-M1.6X0.35-SFT-JIS	O	M1.6	0.35	38/45	6.0	3.0	2.5	5.0	2
TNC-M2.0X0.4-SFT-JIS	O	M2.0	0.4	45	7.0	3.0	2.5	5.0	2
TNC-M2.5X0.45-SFT-JIS	O	M2.5	0.45	45	8.0	3.0	2.5	5.0	2
TNC-M3.0X0.5-SFT-JIS	O	M3.0	0.5	45	9.0	3.2	2.5	5.0	3
TNC-M3.5X0.6-SFT-JIS	O	M3.5	0.6	45	10.0	3.6	2.8	5.0	3
TNC-M4.0X0.7-SFT-JIS	O	M4.0	0.7	52	11.0	4.0	3.2	6.0	3
TNC-M5X0.8-SFT-JIS	O	M5	0.8	55	15.0	5.0	4.0	7.0	3
TNC-M6X1.0-SFT-JIS	O	M6	1.0	64	17.0	6.0	4.5	7.0	3
TNC-M8X1.25-SFT-JIS	O	M8	1.25	70	19.0	6.2	5.0	8.0	3
TNC-M8X1.0-SFT-JIS	O	M8	1.0	70	19.0	6.2	5.0	8.0	3
TNC-M10X1.5-SFT-JIS	O	M10	1.5	75	23.0	8.0	6.3	9.0	3
TNC-M10X1.25-SFT-JIS	O	M10	1.25	75	19.0	8.0	6.3	9.0	3
TNC-M10X1.0-SFT-JIS	O	M10	1.0	75	19.0	8.0	6.3	9.0	3
TNC-M12X1.75-SFT-JIS	O	M12	1.75	82	28.0	9.0	7.1	10.0	3
TNC-M12X1.5-SFT-JIS	O	M12	1.5	82	25.0	9.0	7.1	10.0	3
TNC-M12X1.25-SFT-JIS	O	M12	1.25	82	25.0	9.0	7.1	10.0	3
TNC-M12X1.0-SFT-JIS	O	M12	1.0	82	20.0	9.0	7.1	10.0	3
TNC-M14X2.0-SFT-JIS	O	M14	2.0	88	32.0	11.2	9.0	12.0	3
TNC-M14X1.5-SFT-JIS	O	M14	1.5	88	30.0	11.2	9.0	12.0	
TNC-M14X1.25-SFT-JIS	O	M14	1.25	88	25.0	11.2	9.0	12.0	
TNC-M14X1.0-SFT-JIS	O	M14	1.0	88	20.0	11.2	9.0	12.0	
TNC-M16X2.0-SFT-JIS	O	M16	2.0	95	32.0	12.5	10.0	13.0	
TNC-M16X1.5-SFT-JIS	O	M16	1.5	95	28.0	12.5	10.0	13.0	
TNC-M16X1.0-SFT-JIS	O	M16	1.0	95	20.0	12.5	10.0	13.0	

JIS CARDIDE GUN TAPS

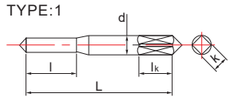
M ISO SpiraL pointed Carbide 6H 60° 2.5

- Suitable for high production with high precision in automatic machines , It is ideal for tapping materials such as ordinary cast iron ,ductile cast iron , thermosetting plastics and brass castings.

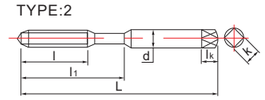


Hole processing

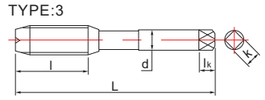
TYPE:1



TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	d	k	l_k	Type		Weight g
TNC-M0.8X0.2-POT-JIS	O	M0.8	0.2	38/45	4.5	3.0	2.5	5.0	2		4
TNC-M0.9X0.225-POT-JIS	O	M0.9	0.225	38/45	4.5	3.0	2.5	5.0	2		4
TNC-M1.0X0.25-POT-JIS	O	M1.0	0.25	38/45	5.0	3.0	2.5	5.0	2		4
TNC-M1.2X0.25-POT-JIS	O	M1.2	0.25	38/45	5.0	3.0	2.5	5.0	2		4
TNC-M1.4X0.3-POT-JIS	O	M1.4	0.3	38/45	6.0	3.0	2.5	5.0	2		4
TNC-M1.6X0.35-POT-JIS	O	M1.6	0.35	38/45	6.0	3.0	2.5	5.0	2		4
TNC-M2.0X0.4-POT-JIS	O	M2.0	0.4	45	7.0	3.0	2.5	5.0	2		4
TNC-M2.5X0.45-POT-JIS	O	M2.5	0.45	45	8.0	3.0	2.5	5.0	2		5
TNC-M3.0X0.5-POT-JIS	O	M3.0	0.5	45	9.0	3.2	2.5	5.0	3		7
TNC-M3.5X0.6-POT-JIS	O	M3.5	0.6	45	10.0	3.6	2.8	5.0	3		10
TNC-M4.0X0.7-POT-JIS	O	M4.0	0.7	52	11.0	4.0	3.2	6.0	3		13
TNC-M5X0.8-POT-JIS	O	M5	0.8	55	15.0	5.0	4.0	7.0	3		18
TNC-M6X1.0-POT-JIS	O	M6	1.0	64	17.0	6.0	4.5	7.0	3		21
TNC-M8X1.25-POT-JIS	O	M8	1.25	70	19.0	6.2	5.0	8.0	3		30
TNC-M8X1.0-POT-JIS	O	M8	1.0	70	19.0	6.2	5.0	8.0	3		30
TNC-M10X1.5-POT-JIS	O	M10	1.5	75	23.0	8.0	6.3	9.0	3		43
TNC-M10X1.25-POT-JIS	O	M10	1.25	75	19.0	8.0	6.3	9.0	3		43
TNC-M10X1.0-POT-JIS	O	M10	1.0	75	19.0	8.0	6.3	9.0	3		43
TNC-M12X1.75-POT-JIS	O	M12	1.75	82	28.0	9.0	7.1	10.0	3		68
TNC-M12X1.5-POT-JIS	O	M12	1.5	82	25.0	9.0	7.1	10.0	3		68
TNC-M12X1.25-POT-JIS	O	M12	1.25	82	25.0	9.0	7.1	10.0	3		68
TNC-M12X1.0-POT-JIS	O	M12	1.0	82	20.0	9.0	7.1	10.0	3		68
TNC-M14X2.0-POT-JIS	O	M14	2.0	88	32.0	11.2	9.0	12.0	3		72
TNC-M14X1.5-POT-JIS	O	M14	1.5	88	30.0	11.2	9.0	12.0			72
TNC-M14X1.25-POT-JIS	O	M14	1.25	88	25.0	11.2	9.0	12.0			72
TNC-M14X1.0-POT-JIS	O	M14	1.0	88	20.0	11.2	9.0	12.0			72
TNC-M16X2.0-POT-JIS	O	M16	2.0	95	32.0	12.5	10.0	13.0			102
TNC-M16X1.5-POT-JIS	O	M16	1.5	95	28.0	12.5	10.0	13.0			102
TNC-M16X1.0-POT-JIS	O	M16	1.0	95	20.0	12.5	10.0	13.0			102

WERNER

JIS CARBIDE FORMING TAPS

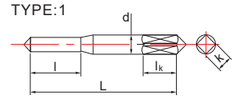
M ISO SpiraL pointed Carbide 6H 60° 2.5

- Suitable for high production with high precision in automatic machines, this tap is ideal for tapping materials such as aluminum alloys, magnesium alloys and copper alloys, stable and continuous operation is possible because no chips are generated during deformation

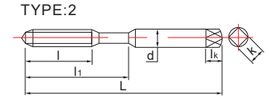


Hole processing

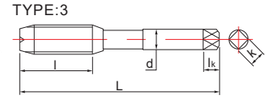
TYPE:1



TYPE:2



TYPE:3



Model	Stock	Size	Pitch	L	l	d	k	l_k	Type		Weight g
TNC-M0.8X0.2-NRT-JIS	O	M0.8	0.2	38/45	4.5	3.0	2.5	5.0	2		4
TNC-M0.9X0.225-NRT-JIS	O	M0.9	0.225	38/45	4.5	3.0	2.5	5.0	2		4
TNC-M1.0X0.25-NRT-JIS	O	M1.0	0.25	38/45	5.0	3.0	2.5	5.0	2		4
TNC-M1.2X0.25-NRT-JIS	O	M1.2	0.25	38/45	5.0	3.0	2.5	5.0	2		4
TNC-M1.4X0.3-NRT-JIS	O	M1.4	0.3	38/45	6.0	3.0	2.5	5.0	2		4
TNC-M1.6X0.35-NRT-JIS	O	M1.6	0.35	38/45	6.0	3.0	2.5	5.0	2		4
TNC-M2.0X0.4-NRT-JIS	O	M2.0	0.4	45	7.0	3.0	2.5	5.0	2		4
TNC-M2.5X0.45-NRT-JIS	O	M2.5	0.45	45	8.0	3.0	2.5	5.0	2		5
TNC-M3.0X0.5-NRT-JIS	O	M3.0	0.5	45	9.0	3.2	2.5	5.0	3		7
TNC-M3.5X0.6-NRT-JIS	O	M3.5	0.6	45	10.0	3.6	2.8	5.0	3		10
TNC-M4.0X0.7-NRT-JIS	O	M4.0	0.7	52	11.0	4.0	3.2	6.0	3		13
TNC-M5X0.8-NRT-JIS	O	M5	0.8	55	15.0	5.0	4.0	7.0	3		18
TNC-M6X1.0-NRT-JIS	O	M6	1.0	64	17.0	6.0	4.5	7.0	3		21
TNC-M8X1.25-NRT-JIS	O	M8	1.25	70	19.0	6.2	5.0	8.0	3		30
TNC-M8X1.0-NRT-JIS	O	M8	1.0	70	19.0	6.2	5.0	8.0	3		30
TNC-M10X1.5-NRT-JIS	O	M10	1.5	75	23.0	8.0	6.3	9.0	3		43
TNC-M10X1.25-NRT-JIS	O	M10	1.25	75	19.0	8.0	6.3	9.0	3		43
TNC-M10X1.0-NRT-JIS	O	M10	1.0	75	19.0	8.0	6.3	9.0	3		43
TNC-M12X1.75-NRT-JIS	O	M12	1.75	82	28.0	9.0	7.1	10.0	3		68
TNC-M12X1.5-NRT-JIS	O	M12	1.5	82	25.0	9.0	7.1	10.0	3		68
TNC-M12X1.25-NRT-JIS	O	M12	1.25	82	25.0	9.0	7.1	10.0	3		68
TNC-M12X1.0-NRT-JIS	O	M12	1.0	82	20.0	9.0	7.1	10.0	3		68
TNC-M14X2.0-NRT-JIS	O	M14	2.0	88	32.0	11.2	9.0	12.0	3		72
TNC-M14X1.5-NRT-JIS	O	M14	1.5	88	30.0	11.2	9.0	12.0			72
TNC-M14X1.25-NRT-JIS	O	M14	1.25	88	25.0	11.2	9.0	12.0			72
TNC-M14X1.0-NRT-JIS	O	M14	1.0	88	20.0	11.2	9.0	12.0			72
TNC-M16X2.0-NRT-JIS	O	M16	2.0	95	32.0	12.5	10.0	13.0			102
TNC-M16X1.5-NRT-JIS	O	M16	1.5	95	28.0	12.5	10.0	13.0			102
TNC-M16X1.0-NRT-JIS	O	M16	1.0	95	20.0	12.5	10.0	13.0			102

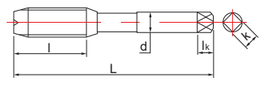
JIS PIPE THREAD CARBIDE TAPS

PS (Rp) | JIS | Straight fluted | Carbide | ISO 2 6H | 55° | 2.5

● T802 is suitable for extremely tight combination for the purpose of internal thread machining, T803 is suitable for internal thread machining for mechanical bonding purposes.

● Tensile strength of 850N/MM2 or less die steel, carbon steel, Copper aluminum alloy.

TYPE:3





Model	Stock	Size	Basic Major Dia.	L	l	d	k	l_k	Type		Weight g
TNC-1/8-28PS-OTT-J	O	1/8-28	9.728	55	19	8	6	9	3		
TNC-1/4-19PS-OTT-J	O	1/4-19	13.157	62	28	11	9	12	3		
TNC-3/8-19PS-OTT-J	O	3/8-19	1 6.662	65	28	14	11	14	3		
TNC-1/2-14PS-OTT-J	O	1/2-14	20.955	80	35	18	14	17	3		
TNC-3/4-14PS-OTT-J	O	3/4-14	26.441	85	35	23	17	20	3		
TNC-1-11PS-OTT-J	O	1-11	33.249	95	45	26	21	24	3		
TNC-11/4-11PS-OTT-J	O	11/4-11	41.910	105	45	32	26	30	3		

PF | JIS | Straight fluted | Carbide | ISO 2 6H | 55° | 2.5

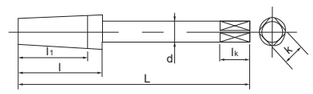
Model	Stock	NPT Size	NPT Basic Major Dia.	L	l	d	k	l_k	Type		Weight g
TNC-1/8-28NPT-OTT-J	O	1/8-28	9.728	55	19	8	6	9	3		
TNC-1/4-19NPT-OTT-J	O	1/4-19	13.157	62	28	11	9	12	3		
TNC-3/8-19NPT-OTT-J	O	3/8-19	16.662	65	28	14	11	14	3		
TNC-1/2-14NPT-OTT-J	O	1/2-14	20.955	80	35	18	14	17	3		
TNC-3/4-14NPT-OTT-J	O	3/4-14	26.441	85	35	23	17	20	3		
TNC-1-11NPT-OTT-J	O	1-11	33.249	95	45	26	21	24	3		
TNC-11/4-11NPT-OTT-J	O	11/4-11	41.910	105	45	32	26	30	3		

JIS PIPE THREAD CARBIDE SHORT SPIRAL TAPS

PT | JIS | Traight Flute | Carbide | 6H | 55° | 2.5

● Suitable for cutting materials: suitable for close combination Push-pull inner pipe thread processing.

● Tensile strength up to 850N/MM2 Alloy.



Model	Stock	PS Size	PS Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNC-1/16-28PS-SFT-L-J	O	1/16-28	7.723	54	14.0	10.1	8.0	6.0	9.0	4	4
TNC-1/8-28PS-SFT-L-J	O	1/8-28	9.728	55	16.5	10.5	8.0	6.0	9.0	4	4
TNC-1/4-19PS-SFT-L-J	O	1/4-19	13.157	62	19.5	12.5	11.0	9.0	12.0	4	4
TNC-3/8-19PS-SFT-L-J	O	3/8-19	16.662	65	21.0	14.0	14.0	11.0	14.0	4	4
TNC-1/2-14PS-SFT-L-J	O	1/2-14	20.955	80	27.0	17.0	18.0	14.0	17.0	4	4
TNC-3/4-14PS-SFT-L-J	O	3/4-14	26.441	85	29.0	19.0	23.0	17.0	20.0	4	4
TNC-1-11PS-SFT-L-J	O	1-11	33.249	95	35.0	22.0	26.0	24.0	24.0	4	4

NPT | JIS | Traight Flute | Carbide | 6H | 60° | 2.5

Model	Stock	NPT Size	NPT Basic Major Dia.	L	l	l_1	d	k	l_k	Type	Flutes
TNC-1/16-27NPT-SFT-L-J	O	1/16-27	7.770	54	14.0	10.1	8.0	6.0	9.0	4	4
TNC-1/8-27NPT-SFT-L-J	O	1/8-27	10.117	55	16.5	10.5	8.0	6.0	9.0	4	4
TNC-1/4-18NPT-SFT-L-J	O	1/4-18	13.426	62	19.5	12.5	11.0	9.0	12.0	4	4
TNC-3/8-18NPT-SFT-L-J	O	3/8-18	16. 866	65	21.0	14.0	14.0	11.0	14.0	4	4
TNC-1/2-14NPT-SFT-L-J	O	1/2-14	20.980	80	27.0	17.0	18.0	14.0	17.0	4	4
TNC-3/4-14NPT-SFT-L-J	O	3/4-14	26.325	85	29.0	19.0	23.0	17.0	20.0	4	4
TNC-1-111/2NPT-SFT-L-J	O	1-111/2	32.934	95	35.0	22.0	26.0	24.0	24.0	4	4

Tooling Systems

P1 - P80

P

Contents

Contents P01-P02

Toolholder Selection Guide

SK P03-P18

GB10944 / DIN69871 / ISO7388/1
Hydraulic handle

GB10944 / DIN69871 / ISO7388/1
Milling Chucks

GB10944 / DIN69871 / ISO7388/1
Side Lock Holders-Stub

2° (GB10944 / DIN69871 / ISO7388/1)
2° Side Lock Holders

ER (GB10944 / DIN69871 / ISO7388/1)
ER Collet Chucks

GB10944 / DIN69871 / ISO7388/1
Morse Taper Holders

GB10944 / DIN69871 / ISO7388/1
Integral Drill chuck Holders

GB10944 / DIN69871 / ISO7388/1
Shell Mill Holders-Inch

GB10944 / DIN69871 / ISO7388/1
Facel Mill Holders

GB10944 / DIN69871 / ISO7388/1
Slotting cutter Holders

BT P19-P34

JIS B6339
Hydraulic Chucks

JIS B6339
Milling Chucks

JIS B6339
Side Lock Holders

ER (JIS B6339)
ER Collet Chucks

JIS B6339
Morse Taper Holders Without Tang

JIS B6339
Integral Drill chuck Holders

JIS B6339
Shell Mill Holders - Inch

JIS B6339
Face Mill Holders

JIS B6339
Stub Mill Holders

Straight Shank Tooling System P35-P37

Spring rod

Shank with straight spring collet

HSK Tooling System Arrangement Plan

HSK P38-P48

HSK Hydraulic Shank (DIN 69893)

HSK Milling Chucks

HSK Side Lock Holders

HSK Side Lock Holders 2°

HSK ER Collet Chucks

HSK Morse Taper Holders With Tang

HSK Shell Mill Holders

HSK Slotting Cutter Holders

Shrink Fit Tooling System P49-P66

Heat set of principles

Hot charging handle

Accessories P69-P80

Pull Studs BT / DIN 69872 / JIS

Pull Studs (MAZAK / CAT)

ER Collets

Straight Collets

Hydraulic Collets

Internal turning blocks

Z-axis setters

Point Probes

7:24 Test Bars

Spindle Wipes

HSK Coolant Tubes & Coolant Tube Wrenches

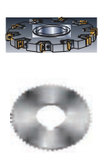
ER Chuck Nuts

Washer for Slotting Cutter Holder

WERNER

Tooling System Range

Side fixed Holder	2° side Holder	ER spring collet Holder	Strong collet Holder	Holder for sleeve end milling cutter	Holder for face milling cutter
					
					

Holder for face and side milling cutter	Holder for side milling cutter	With flat tail MOE taper hole	MOE taper hole without flat tail	Integral drill collet holder	Holder for drill collet
					
					

WERNER

Toolholder Selection Guide

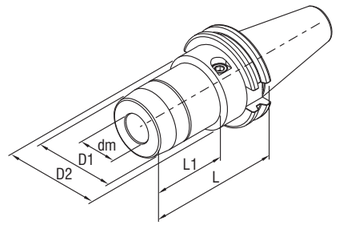
Machining center	drilling							
	preference				preference			
	Hot charging handle	Strong collet shank	Spring collet shank	Integral drill collet shank	2° side solid shank	There's a flat-tailed Mo Shank with taper hole	Shank for drill collet	
7:24 Tool system								
SK40	P10	P10	P10	P10	P10	P10	P10	
SK50	P10	P10	P10	P10	P10	P10	P10	
BT30	P10	P10	P10	P10	P10	P10	P10	
BT40	P10	P10	P10	P10	P10	P10	P10	
BT50	P10	P10	P10	P10	P10	P10	P10	
	P10	P10	P10	P10	P10	P10	P10	
	P10	P10	P10	P10	P10	P10	P10	
Straight handle tool system								
	–	-	P10	–	P10	–	–	-
HSK tool system								
HSK40A	P10	P10	P10	–	P10	–	P10	P10
HSK50A	P10	P10	P10	–	P10	–	P10	P10
HSK63A	P10	P10	P10	–	P10	–	P10	P10
HSK100A	P10	P10	P10	–	P10	–	P10	P10

drilling							
preference				preference			
Hot charging handle	Strong collet shank	Side fixed shank	Spring collet shank	No flat tail mo Shank with taper hole		Shank of side milling cutter	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
P10	P10	P10	P10	P10	P10	P10	
–	P10	P10	P10	–	–	–	
P10	P10	P10	P10	P10	–	P10	
P10	P10	P10	P10	P10	–	P10	
P10	P10	P10	P10	P10	–	P10	
P10	P10	P10	P10	P10	–	P10	

GB10944 / DIN69871 / ISO7388/1

Hydraulic Holders





Model	Stock	dm	d1	d2	L1	L	Type	
SK40-HC06-75	O	06	26	50	35	75	40	HC06
SK40-HC08-75	O	08	28	50	35	75	40	HC08
SK40-HC10-75	O	10	32	50	35	75	40	HC10
SK40-HC12-80	O	12	35	50	43	80	40	HC12
SK40-HC14-90	O	14	38	50	51	90	40	HC14
SK40-HC16-90	O	16	38	50	51	90	40	HC16
SK40-HC20-90	O	20	42	50	52	90	40	HC20
SK40-HC25-120	O	25	57	70	63	120	40	HC25
SK40-HC32-120	O	32	64	70	65	120	40	HC32
SK50-HC06-75	O	06	26	50	35	75	40	HC06
SK50-HC08-75	O	08	28	50	35	75	40	HC08
SK50-HC10-75	O	10	32	50	35	75	50	HC10
SK50-HC12-80	O	12	35	50	43	80	50	HC12
SK50-HC14-90	O	14	38	50	51	90	50	HC14
SK50-HC16-90	O	16	38	50	51	90	50	HC16
SK50-HC20-90	O	20	42	50	52	90	50	HC20
SK50-HC25-100	O	25	57	70	63	100	50	HC25
SK50-HC32-100	O	32	64	70	65	100	50	HC32
	O							

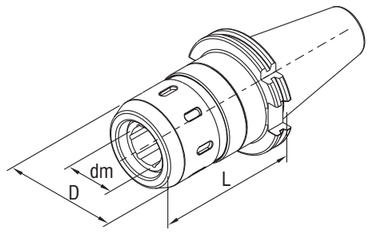
Accessories	dm= 6	dm= 8	dm= 10	dm= 12	dm= 14	dm= 16	dm= 20	dm= 25	dm= 32
wrench	WHC06	WHC08	WHC10	WHC12	WHC14	WHC16	WHC20	WHC25	WHC32

WERNER

GB10944 / DIN69871 / ISO7388/1

Milling Chucks





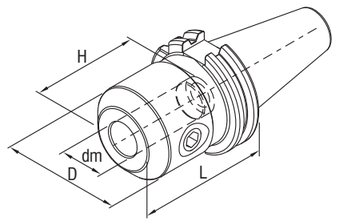
Model	Stock	Type	dm	D	L	
SK40-C20-75	O	40	20	55	75	C20
SK40-C20-105	O	40	20	55	105	C20
SK40-C20-120	O	40	20	55	120	C20
SK40-C22-95	O	40	22	58	95	C22
SK40-C25-90	O	40	25	62	90	C25
SK40-C25-105	O	40	25	62	105	C25
SK40-C25-120	O	40	25	62	120	C25
SK40-C32-90	O	40	32	72	90	C32
SK40-C32-105	O	40	32	72	105	C32
SK40-C32-120	O	40	32	72	120	C32
SK50-C20-105	O	50	20	55	105	C20
SK50-C20-135	O	50	20	55	135	C20
SK50-C20-165	O	50	20	55	165	C20
SK50-C22-105	O	50	22	58	105	C22
SK50-C25-105	O	50	25	62	105	C25
SK50-C25-135	O	50	25	62	135	C25
SK50-C25-165	O	50	25	62	165	C25
SK50-C32-105	O	50	32	72	105	C32
SK50-C32-135	O	50	32	72	135	C32
SK50-C32-165	O	50	32	72	165	C32
SK50-C42-105	O	50	42	87	105	C32
SK50-C42-135	O	50	42	87	135	C32
SK50-C42-165	O	50	42	87	165	C32

Accessories	C20	C22	C25	C32
wrench	WER32	WER32	WER40	WER40

GB10944 / DIN69871 / ISO7388/1

Side Lock Holders





Model	Stock	Type	dm	D	L	H
SK40-XP06-50	O	40	6	25	50	36
SK40-XP06-100	O	40	6	25	100	36
SK40-XP06-160	O	40	6	25	160	36
SK40-XP08-50	O	40	8	28	50	40
SK40-XP08-100	O	40	8	28	100	40
SK40-XP08-160	O	40	8	28	160	40
SK40-XP10-50	O	40	10	35	50	44
SK40-XP10-100	O	40	10	35	100	44
SK40-XP10-160	O	40	10	35	160	44
SK40-XP12-50	O	40	12	42	50	49
SK40-XP12-100	O	40	12	42	100	49
SK40-XP12-160	O	40	12	42	160	49
SK40-XP16-63	O	40	16	48	63	52
SK40-XP16-75	O	40	16	48	75	52
SK40-XP16-100	O	40	16	48	100	52
SK40-XP16-160	O	40	16	48	160	52
SK40-XP20-63	O	40	20	52	63	54
SK40-XP20-75	O	40	20	52	75	54
SK40-XP20-100	O	40	20	52	100	54
SK40-XP20-160	O	40	20	52	160	54
SK40-XP25-100	O	40	25	65	100	66
SK40-XP25-160	O	40	25	65	160	66
SK40-XP32-100	O	40	32	72	100	70
SK40-XP32-160	O	40	32	72	160	70

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXP06	SXP08	SXP10	SXP12	SXP16	SXP20	SXP25	SXP32	SXP40

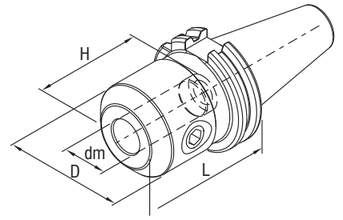
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

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GB10944 / DIN69871 / ISO7388/1

Side Lock Holders





Model	Stock	Type	dm	D	L	H
SK50-XP06-63	O	50	6	25	63	36
SK50-XP06-100	O	50	6	25	100	36
SK50-XP06-160	O	50	6	25	160	36
SK50-XP08-63	O	50	8	28	63	40
SK50-XP08-100	O	50	8	28	100	40
SK50-XP08-160	O	50	8	28	160	40
SK50-XP10-63	O	50	10	35	63	44
SK50-XP10-100	O	50	10	35	100	44
SK50-XP10-160	O	50	10	35	160	44
SK50-XP12-63	O	50	12	42	63	49
SK50-XP12-100	O	50	12	42	100	49
SK50-XP12-160	O	50	12	42	160	49
SK50-XP16-63	O	50	16	48	63	52
SK50-XP16-100	O	50	16	48	100	52
SK50-XP16-160	O	50	16	48	160	52
SK50-XP20-63	O	50	20	52	63	54
SK50-XP20-100	O	50	20	52	100	54
SK50-XP20-160	O	50	20	52	160	54
SK50-XP25-80	O	50	25	65	80	66
SK50-XP25-160	O	50	25	65	160	66
SK50-XP32-100	O	50	32	72	100	70
SK50-XP32-160	O	50	32	72	160	70
SK50-XP40-110	O	50	40	84	110	80
SK50-XP40-160	O	50	40	84	160	80

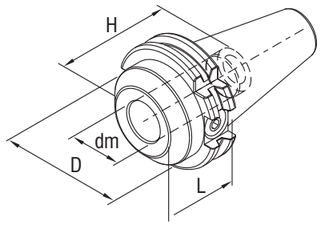
Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXP06	SXP08	SXP10	SXP12	SXP16	SXP20	SXP25	SXP32	SXP40

Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

GB10944 / DIN69871 / ISO7388/1

Side Lock Holders-Stub





Model	Stock	Type	dm	D	L	H
SK40-XP16-35	O	40	16	48	35	52
SK40-XP20-35	O	40	20	50	35	54
SK40-XP25-60	O	40	25	50	60	66
SK40-XP32-75	O	40	32	72	75	70
SK50-XP16-35	O	50	16	48	35	52
SK50-XP20-35	O	50	20	52	35	54
SK50-XP25-60	O	50	25	65	60	66
SK50-XP32-63	O	50	32	72	63	70

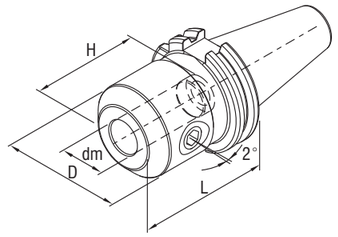
Spare Parts		dm=16	dm=20	dm=25	dm=32
	screw	SXP16	SXP20	SXP16A,SXP25A	SXP16A,SXP32

Accessories		dm=16	dm=20	dm=25	dm=32
	wrench	S6	S8	S6,S8	S6,S10

2° (GB10944 / DIN69871 / ISO7388/1)

2° Side Lock Holders





Model	Stock	Type	dm	D	L	H
SK40-XPD06-50	O	40	6	25	50	36
SK40-XPD06-100	O	40	6	25	100	36
SK40-XPD06-160	O	40	6	25	160	36
SK40-XPD08-50	O	40	8	28	50	40
SK40-XPD08-100	O	40	8	28	100	40
SK40-XPD08-160	O	40	8	28	160	40
SK40-XPD10-50	O	40	10	35	50	44
SK40-XPD10-100	O	40	10	35	100	44
SK40-XPD10-160	O	40	10	35	160	44
SK40-XPD12-50	O	40	12	42	50	49
SK40-XPD12-100	O	40	12	42	100	49
SK40-XPD12-160	O	40	12	42	160	49
SK40-XPD16-63	O	40	16	48	63	52
SK40-XPD16-100	O	40	16	48	100	52
SK40-XPD16-160	O	40	16	48	160	52
SK40-XPD20-63	O	40	20	52	63	52
SK40-XPD20-100	O	40	20	52	100	54
SK40-XPD20-160	O	40	20	52	160	54
SK40-XPD25-100	O	40	25	65	100	54
SK40-XPD25-160	O	40	25	65	160	54
SK40-XPD32-100	O	40	32	72	100	66
SK40-XPD32-160	O	40	32	72	160	66

*The screw that needs center to pass oil, please indicate when ordering.

*The delivery includes corresponding spare parts.

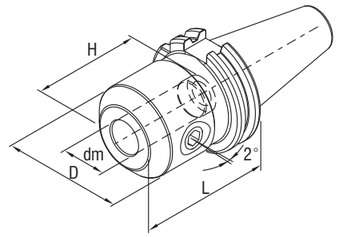
Spare Parts		dm=6	dm=8	dm=10	dm=12	dm=16	dm=20	dm=25	dm=32	dm=40
	screw	SXPD06	SXPD08	SXPD10	SXPD12	SXPD16	SXPD20	SXPD25	SXPD32	SXPD40

Accessories		dm=6	dm=8	dm=10	dm=12	dm=16	dm=20	dm=25	dm=32	dm=40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

2° (GB10944 / DIN69871 / ISO7388/1)

2° Side Lock Holders





Model	Stock	Type	dm	D	L	H
SK50-XPD06-63	O	50	6	25	63	
SK50-XPD06-100	O	50	6	25	100	
SK50-XPD06-160	O	50	6	25	160	
SK50-XPD08-63	O	50	8	28	63	
SK50-XPD08-100	O	50	8	28	100	
SK50-XPD08-160	O	50	8	28	160	
SK50-XPD10-63	O	50	10	35	63	
SK50-XPD10-100	O	50	10	35	100	
SK50-XPD10-160	O	50	10	35	160	
SK50-XPD12-63	O	50	12	42	63	
SK50-XPD12-100	O	50	12	42	100	
SK50-XPD12-160	O	50	12	42	160	
SK50-XPD16-63	O	50	16	48	63	
SK50-XPD16-100	O	50	16	48	100	
SK50-XPD16-160	O	50	16	48	160	
SK50-XPD20-63	O	50	20	52	63	
SK50-XPD20-100	O	50	20	52	100	
SK50-XPD20-160	O	50	20	52	160	
SK50-XPD25-80	O	50	25	65	80	
SK50-XPD25-160	O	50	25	65	160	
SK50-XPD32-100	O	50	32	72	100	
SK50-XPD32-160	O	50	32	72	160	
SK50-XPD40-110	O	50	40	84	110	
SK50-XPD40-160	O	50	40	84	160	

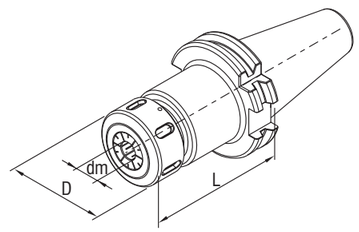
*The screw that needs center to pass oil, please indicate when ordering.
*The delivery includes corresponding spare parts.

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXPD06	SXPD08	SXPD10	SXPD12	SXPD16	SXPD20	SXPD25	SXPD32	SXPD40
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

ER (GB10944 / DIN69871 / ISO7388/1)

ER Collet Chucks





Model	Stock	Type	dm	D	L	circlip
SK40-ER11-70	O	40	0.5~7	23	70	ER11
SK40-ER11-100	O	40	0.5~7	23	100	ER11
SK40-ER11-150	O	40	0.5~7	23	150	ER11
SK40-ER11-200	O	40	0.5~7	23	200	ER11
SK40-ER16-70	O	40	0.5~10	32	70	ER16
SK40-ER16-100	O	40	0.5~10	32	100	ER16
SK40-ER16-150	O	40	0.5~10	32	150	ER16
SK40-ER16-200	O	40	0.5~10	32	200	ER16
SK40-ER20-70	O	40	1.0~12	34	70	ER20
SK40-ER20-100	O	40	1.0~12	34	100	ER20
SK40-ER20-150	O	40	1.0~12	34	150	ER20
SK40-ER20-200	O	40	1.0~12	34	200	ER20
SK40-ER25-70	O	40	1.0~16	42	70	ER25
SK40-ER25-100	O	40	1.0~16	42	100	ER25
SK40-ER25-150	O	40	1.0~16	42	150	ER25
SK40-ER25-200	O	40	1.0~16	42	200	ER25
SK40-ER32-70	O	40	2.0~20	50	70	ER32
SK40-ER32-100	O	40	2.0~20	50	100	ER32
SK40-ER32-150	O	40	2.0~20	50	150	ER32
SK40-ER32-200	O	40	2.0~20	50	200	ER32
SK40-ER40-70	O	40	3.0~26	63	70	ER40
SK40-ER40-100	O	40	3.0~26	63	100	ER40
SK40-ER40-150	O	40	3.0~26	63	150	ER40
SK40-ER40-200	O	40	3.0~26	63	200	ER40

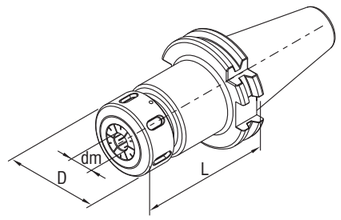
*The screw that needs center to pass oil, please indicate when ordering.
*The delivery includes corresponding spare parts.

Spare Parts		ER11	ER16	ER20	ER25	ER32	ER40
	screw	NER11	NER16	NER20	NER25	NER32	NER40
	nut	SER11	SER16	SER20	SER25	SER32	SER40
Accessories		ER11	ER16	ER20	ER25	ER32	ER40
	wrench	WER11	WER16	WER20	WER25	WER32	WER40

ER (GB10944 / DIN69871 / ISO7388/1)

ER Collet Chucks





Model	Stock	Type	dm	D	L	
SK50-ER11-70	O	50	0.5~7	23	70	ER11
SK50-ER11-100	O	50	0.5~7	23	100	ER11
SK50-ER11-150	O	50	0.5~7	23	150	ER11
SK50-ER11-200	O	50	0.5~7	23	200	ER11
SK50-ER16-70	O	50	0.5~10	32	70	ER16
SK50-ER16-100	O	50	0.5~10	32	100	ER16
SK50-ER16-150	O	50	0.5~10	32	150	ER16
SK50-ER16-200	O	50	0.5~10	32	200	ER16
SK50-ER20-70	O	50	1.0~12	34	70	ER20
SK50-ER20-100	O	50	1.0~12	34	100	ER20
SK50-ER20-150	O	50	1.0~12	34	150	ER20
SK50-ER20-200	O	50	1.0~12	34	200	ER20
SK50-ER25-70	O	50	1.0~16	42	70	ER25
SK50-ER25-100	O	50	1.0~16	42	100	ER25
SK50-ER25-150	O	50	1.0~16	42	150	ER25
SK50-ER25-200	O	50	1.0~16	42	200	ER25
SK50-ER32-100	O	50	2.0~20	50	100	ER32
SK50-ER32-150	O	50	2.0~20	50	150	ER32
SK50-ER32-200	O	50	2.0~20	50	200	ER32
SK50-ER40-100	O	50	3.0~26	63	100	ER40
SK50-ER40-150	O	50	3.0~26	63	150	ER40
SK50-ER40-200	O	50	3.0~26	63	200	ER40

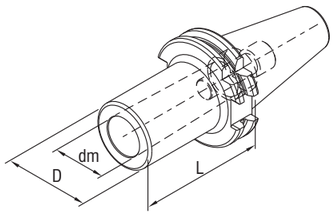
Spare Parts		ER11	ER16	ER20	ER25	ER32	ER40
	screw	NER11	NER16	NER20	NER25	NER32	NER40
	nut	SER11	SER16	SER20	SER25	SER32	SER40

Accessories		ER11	ER16	ER20	ER25	ER32	ER40
	wrench	WER11	WER16	WER20	WER25	WER32	WER40

GB10944 / DIN69871 / ISO7388/1

Morse Taper Holders Without Tang





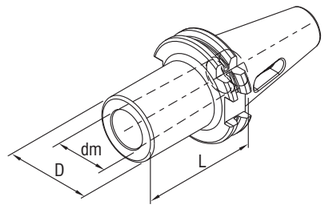
Model	Stock	Type		dm	D	L	H
SK40-MW1-50	O	40	MT1	6-12	12.065	27	50
SK40-MW2-50	O	40	MT2	14-20	17.780	32	50
SK40-MW3-70	O	40	MT3	22-36	23.825	40	70
SK40-MW4-95	O	40	MT4	32-56	31.267	50	95
SK50-MW1-45	O	50	MT1	6-12	12.065	27	45
SK50-MW2-60	O	50	MT2	14-20	17.780	32	60
SK50-MW3-65	O	50	MT3	22-36	23.825	40	65
SK50-MW4-70	O	50	MT4	32-56	31.267	50	70
SK50-MW5-105	O	50	MT5	40-63	44.399	78	105

Spare Parts		MT1	MT2	MT3	MT4	MT5
	Set screw	SMW1	SMW2	SMW3	SMW4	SMW5

GB10944 / DIN69871 / ISO7388/1

Morse Taper Holders With Tang





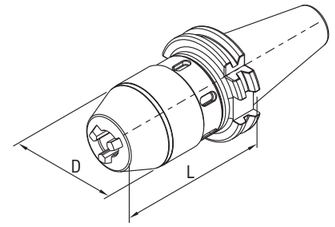
Model	Stock	Type			dm	D	L
SK40-M1-50	O	40	MT1	3-14	12.065	25	50
SK40-M1-120	O	40	MT1	3-14	12.065	25	120
SK40-M2-60	O	40	MT2	14.25-23	17.780	32	60
SK40-M2-120	O	40	MT2	14.25-23	17.780	32	120
SK40-M3-75	O	40	MT3	23.25-31.75	23.825	40	75
SK40-M3-135	O	40	MT3	23.25-31.75	23.825	40	135
SK40-M4-95	O	40	MT4	32-50.5	31.267	48	95
SK40-M4-165	O	40	MT4	32-50.5	31.267	48	165
SK50-M1-45	O	50	MT1	3-14	12.065	25	45
SK50-M1-120	O	50	MT1	3-14	12.065	25	120
SK50-M1-180	O	50	MT1	3-14	12.065	25	180
SK50-M2-60	O	50	MT1	14.25-23	17.780	32	60
SK50-M2-135	O	50	MT1	14.25-23	17.780	32	135
SK50-M2-180	O	50	MT2	14.25-23	17.780	32	180
SK50-M3-65	O	50	MT2	23.25-31.75	23.825	40	65
SK50-M3-150	O	50	MT2	23.25-31.75	23.825	40	150
SK50-M3-180	O	50	MT3	23.25-31.75	23.825	40	180
SK50-M4-75	O	50	MT3	32-50.5	31.267	48	75
SK50-M4-180	O	50	MT4	32-50.5	31.267	48	180
SK50-M5-105	O	50	MT5	51-76	44.399	63	105

WERNER

GB10944 / DIN69871 / ISO7388/1

Integral Drill chuck Holders





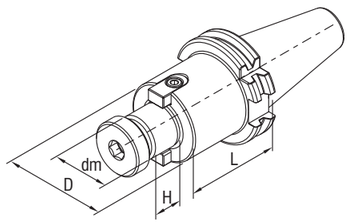
Model	Stock	Type		D	L
SK40-DC08 -70	O	40	0.5~8	37.5	70
SK40-DC13 -90	O	40	0.5~13	50.5	90
SK40-DC16 -105	O	40	3~16	57	105
SK50-DC08 -70	O	50	0.5~8	37.5	70
SK50-DC13 -85	O	50	0.5~13	50.5	85
SK50-DC16 -90	O	50	3~16	57	90

Spare Parts		DC08	DC13	DC16
	Set screw	WER20	WER32	WER32

GB10944 / DIN69871 / ISO7388/1

Shell Mill Holders





Model	Stock	Type	dm	D	L	H
SK40-XM16-60	O	40	16	32	60	17
SK40-XM16-120	O	40	16	32	120	17
SK40-XM16-150	O	40	16	32	150	17
SK40-XM16-200	O	40	16	32	200	17
SK40-XM22-60	O	40	22	40	60	19
SK40-XM22-120	O	40	22	40	120	19
SK40-XM22-150	O	40	22	40	150	19
SK40-XM22-200	O	40	22	40	200	19
SK40-XM27-60	O	40	27	48	60	21
SK40-XM27-105	O	40	27	48	105	21
SK40-XM32-75	O	40	32	58	75	24
SK40-XM40-75	O	40	40	70	75	27
SK50-XM16-75	O	50	16	32	75	17
SK50-XM16-120	O	50	16	32	120	17
SK50-XM16-150	O	50	16	32	150	17
SK50-XM16-200	O	50	16	32	200	17
SK50-XM22-75	O	50	22	40	75	19
SK50-XM22-120	O	50	22	40	120	19
SK50-XM22-150	O	50	22	40	150	19
SK50-XM22-200	O	50	22	40	200	19
SK50-XM22-250	O	50	22	40	250	19
SK50-XM27-60	O	50	27	48	60	21
SK50-XM27-105	O	50	27	48	105	21
SK50-XM27-200	O	50	27	48	200	21
SK50-XM27-250	O	50	27	48	250	21
SK50-XM27-300	O	50	27	48	300	21
SK50-XM32-45	O	50	32	58	45	24
SK50-XM32-75	O	50	32	58	75	24
SK50-XM40-45	O	50	40	70	45	27
SK50-XM40-75	O	50	40	70	75	27

* The delivery includes corresponding spare parts

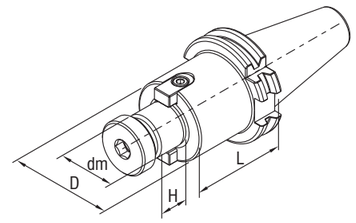
Spare Parts		dm=16	dm=22	dm=27	dm=32	dm=40
	Set screw	SXM16	SXM22	SXM27	SXM32	SXM40
	key	KXM16	KXM22	KXM27	KXM32	KXM40
Accessories		**dm=16**	**dm=22**	**dm=27**	**dm=32**	**dm=40**
	wrench	S6	S8	S10	S14	S17

WERNER

GB10944 / DIN69871 / ISO7388/1

Shell Mill Holders-Inch





Model	Stock	Type	dm	D	L	H
SK40-XM12.7-45	O	40	12.70	35	45	14
SK40-XM12.7-75	O	40	12.70	35	75	14
SK40-XM19.05-60	O	40	19.05	50	60	17
SK40-XM19.05-105	O	40	19.05	50	105	17
SK40-XM19.05-150	O	40	19.05	50	150	17
SK40-XM25.4-60	O	40	25.40	60	60	17
SK40-XM25.4-105	O	40	25.40	60	105	17
SK40-XM25.4-150	O	40	25.40	60	150	17
SK40-XM31.75-60	O	40	31.75	73	60	17
SK40-XM38.1-60	O	40	38.10	96	60	23.5
SK50-XM12.7-45	O	50	12.70	35	45	14
SK50-XM12.7-105	O	50	12.70	35	105	14
SK50-XM19.05-45	O	50	19.05	50	45	17
SK50-XM19.05-105	O	50	19.05	50	105	17
SK50-XM19.05-150	O	50	19.05	50	150	17
SK50-XM25.4-45	O	50	25.40	60	45	17
SK50-XM25.4-105	O	50	25.40	60	105	17
SK50-XM25.4-150	O	50	25.40	60	150	17
SK50-XM31.75-60	O	50	31.75	73	60	17
SK50-XM31.75-105	O	50	31.75	73	105	17
SK50-XM31.75-150	O	50	31.75	73	150	17
SK50-XM38.1-60	O	50	38.10	96	60	23.5
SK50-XM38.1-105	O	50	38.10	96	105	23.5
SK50-XM50.8-60	O	50	50.80	111	60	23.5

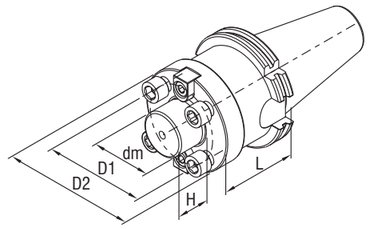
* The delivery includes corresponding spare parts

Spare Parts		dm=12.7	dm=19.05	dm=25.4	dm=31.75	dm=38.1	dm=50.8
	Set screw	SXM12	SXM19	SXM25	SXM31	SXM38	SXM50
	key	KXM12	KXM19	KXM25	KXM31	KXM38	KXM50
Accessories		**dm=12.7**	**dm=19.05**	**dm=25.4**	**dm=31.75**	**dm=38.1**	**dm=50.8**
	wrench	S1/4"	S5/16"	S3/8"	S1/2"	S5/8"	S3/4"

GB10944 / DIN69871 / ISO7388/1

Facel Mill Holders





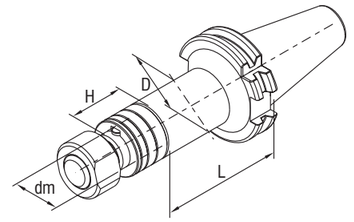
Model	Stock	Type	dm	D1	D2	L	H
SK40-XMC40-60	O	40	40	66.7	89	60	27
SK50-XMC40-75	O	50	40	66.7	89	75	27
SK50-XMC60-75	O	50	60	101.6	129	75	38
SK50-XM63.5-75	O	50	63.5	101.6	127	75	30

Spare Parts		dm=40	dm=60	dm=63.5
	Set screw	SM12045(4)	SM16045(4)	SM16045(4)
	key	KXMC40	KXMC60	KXMC63
Accessories		**dm=40**	**dm=60**	**dm=63.5**
	wrench	S10	S14	S14

GB10944 / DIN69871 / ISO7388/1

Slotting cutter Holders



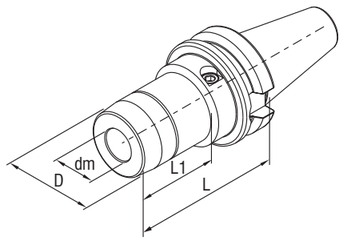


Model	Stock	Type	dm	D	L	H		
SK40-XS13-60	O	40	13	20	60	15	-	50
SK40-XS13-90	O	40	13	20	90	15	-	50
SK40-XS16-75	O	40	16	26	75	16	50	63
SK40-XS16-105	O	40	16	26	105	16	50	63
SK40-XS22-75	O	40	22	34	75	21	63	80,100,125
SK40-XS22-120	O	40	22	34	120	21	63	80,100,125
SK40-XS27-75	O	40	27	40	75	25	80	-
SK40-XS27-120	O	40	27	40	120	25	80	-
SK40-XS32-90	O	40	32	46	90	30	100	160,200,250
SK50-XS13-75	O	50	13	20	75	15	-	50
SK50-XS13-105	O	50	13	20	105	15	-	50
SK50-XS16-90	O	50	16	26	90	16	50	63
SK50-XS16-120	O	50	16	26	120	16	50	63
SK50-XS22-90	O	50	22	34	90	21	63	80,100,125
SK50-XS22-135	O	50	22	34	135	21	63	80,100,125
SK50-XS27-90	O	50	27	40	90	25	80	80~125
SK50-XS27-135	O	50	27	40	135	25	80	80~125
SK50-XS32-90	O	50	32	46	90	30	100,125	160,200,250
SK50-XS32-135	O	50	32	46	135	30	100,125	160,200,250
SK50-XS40-90	O	50	40	55	90	36	160,200	315
SK50-XS40-135	O	50	40	55	135	36	160,200	315

Spare Parts		dm=13	dm=16	dm=22	dm=27	dm=32	dm=40
	Set screw	NXS13	NXS16	NXS22	NXS27	NXS32	NXS40
	key	DXS13	DXS16	DXS22	DXS27	DXS32	DXS40
	The gasket	KXS13	KXS16	KXS22	KXS27	KXS32	KXS40
Accessories		**dm=13**	**dm=16**	**dm=22**	**dm=27**	**dm=32**	**dm=40**
	wrench	-	-	-	-	-	-

JIS B6339
Hydraulic Chucks





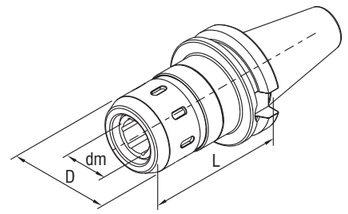
Model	Stock	Type	dm	d1	d2	L1	L	
BT30-HC06-80	O	30	06	26	50	35	80	HC06
BT30-HC08-80	O	30	08	28	50	35	80	HC08
BT30-HC10-80	O	30	10	32	50	35	80	HC10
BT30-HC12-85	O	30	12	35	50	43	85	HC12
BT30-HC14-95	O	30	14	38	50	51	95	HC14
BT30-HC16-95	O	30	16	38	50	51	95	HC16
BT30-HC20-95	O	30	20	42	50	52	95	HC20
BT40-HC06-85	O	40	06	26	50	35	85	HC06
BT40-HC08-85	O	40	08	28	50	35	85	HC08
BT40-HC10-85	O	40	10	32	50	35	85	HC10
BT40-HC12-90	O	40	12	35	50	43	90	HC12
BT40-HC14-95	O	40	14	38	50	51	95	HC14
BT40-HC16-95	O	40	16	38	50	51	95	HC16
BT40-HC20-95	O	40	20	42	50	52	95	HC20
BT40-HC25-110	O	40	25	57	70	63	110	HC25
BT40-HC32-110	O	40	32	64	70	65	110	HC32
BT50-HC06-95	O	50	06	26	50	35	95	HC06
BT50-HC08-95	O	50	08	28	50	35	95	HC08
BT50-HC10-95	O	50	10	32	50	35	95	HC10
BT50-HC12-100	O	50	12	35	50	43	100	HC12
BT50-HC14-105	O	50	14	38	50	51	105	HC14
BT50-HC16-105	O	50	16	38	50	51	105	HC16
BT50-HC20-105	O	50	20	42	50	52	105	HC20
BT50-HC25-120	O	50	25	57	70	63	120	HC25
BT50-HC32-120	O	50	32	64	70	65	120	HC32

Accessories	dm= 6	dm= 8	dm= 10	dm= 12	dm= 14	dm= 16	dm= 20	dm= 25	dm= 32
wrench	WHC06	WHC08	WHC10	WHC12	WHC14	WHC16	WHC20	WHC25	WHC32

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JIS B6339
Milling Chucks



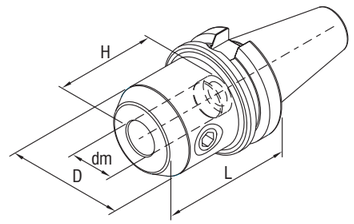


Model	Stock	Type	dm	D	L	
BT30-C20-70	O	30	20	55	70	C20
BT30-C22-95	O	30	22	58	95	C22
BT40-C20-75	O	40	20	55	75	C20
BT40-C20-105	O	40	20	55	105	C20
BT40-C20-120	O	40	20	55	120	C20
BT40-C22-95	O	40	22	58	95	C22
BT40-C25-90	O	40	25	62	90	C25
BT40-C25-105	O	40	25	62	105	C25
BT40-C25-120	O	40	25	62	120	C25
BT40-C32-90	O	40	32	72	90	C32
BT40-C32-105	O	40	32	72	105	C32
BT40-C32-120	O	40	32	72	120	C32
BT50-C20-105	O	50	20	55	105	C20
BT50-C20-135	O	50	20	55	135	C20
BT50-C20-165	O	50	20	55	165	C20
BT50-C22-105	O	50	22	58	105	C22
BT50-C25-105	O	50	25	62	105	C25
BT50-C25-135	O	50	25	62	135	C25
BT50-C25-165	O	50	25	62	165	C25
BT50-C32-105	O	50	32	72	105	C32
BT50-C32-135	O	50	32	72	135	C32
BT50-C32-165	O	50	32	72	165	C32
BT50-C42-105	O	50	42	87	105	C32
BT50-C42-135	O	50	42	87	135	C32
BT50-C42-165	O	50	42	87	165	C32

Accessories	C20	C22	C25	C32
wrench	WER32	WER32	WER40	WER40

JIS B6339
Side Lock Holders





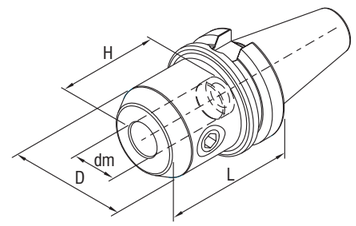
Model	Stock	Type	dm	D	L	H
BT30-XP06-60	○	30	6	25	60	36
BT30-XP08-60	○	30	8	28	60	40
BT30-XP10-60	○	30	10	35	60	44
BT30-XP12-60	○	30	12	40	60	49
BT30-XP16-60	○	30	16	45	60	52
BT30-XP20-75	○	30	20	50	75	54
BT40-XP06-75	○	40	6	25	75	36
BT40-XP06-105	○	40	6	25	105	36
BT40-XP06-165	○	40	6	25	165	36
BT40-XP08-75	○	40	8	28	75	40
BT40-XP08-105	○	40	8	28	105	40
BT40-XP08-165	○	40	8	28	165	40
BT40-XP10-75	○	40	10	35	75	44
BT40-XP10-105	○	40	10	35	105	44
BT40-XP10-165	○	40	10	35	165	44
BT40-XP12-75	○	40	12	42	75	49
BT40-XP12-105	○	40	12	42	105	49
BT40-XP12-165	○	40	12	42	165	49
BT40-XP16-75	○	40	16	48	75	52
BT40-XP16-105	○	40	16	48	105	52
BT40-XP16-165	○	40	16	48	165	52
BT40-XP20-75	○	40	20	52	75	54
BT40-XP20-105	○	40	20	52	105	54
BT40-XP20-165	○	40	20	52	165	54
BT40-XP25-90	○	40	25	65	90	66
BT40-XP25-165	○	40	25	65	165	66
BT40-XP32-105	○	40	32	72	105	
BT40-XP32-165	○	40	32	72	165	

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXP06	SXP08	SXP10	SXP12	SXP16	SXP20	SXP25	SXP32	SXP40
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

WERNER

JIS B6339
Side Lock Holders





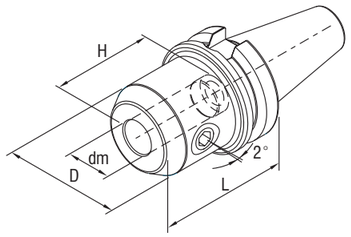
Model	Stock	Type	dm	D	L	H
BT50-XP06-75	○	50	6	25	75	36
BT50-XP06-105	○	50	6	25	105	36
BT50-XP06-165	○	50	6	25	165	36
BT50-XP08-75	○	50	8	28	75	40
BT50-XP08-105	○	50	8	28	105	40
BT50-XP08-165	○	50	8	28	165	40
BT50-XP10-75	○	50	10	35	75	44
BT50-XP10-105	○	50	10	35	105	44
BT50-XP10-165	○	50	10	35	165	44
BT50-XP12-90	○	50	12	42	90	49
BT50-XP12-105	○	50	12	42	105	49
BT50-XP12-165	○	50	12	42	165	49
BT50-XP16-90	○	50	16	48	90	52
BT50-XP16-105	○	50	16	48	105	52
BT50-XP16-165	○	50	16	48	165	52
BT50-XP20-90	○	50	20	52	90	54
BT50-XP20-105	○	50	20	52	105	54
BT50-XP20-165	○	50	20	52	165	54
BT50-XP25-105	○	50	25	65	105	66
BT50-XP25-165	○	50	25	65	165	66
BT50-XP32-105	○	50	32	72	105	70
BT50-XP32-165	○	50	32	72	165	70
BT50-XP40-120	○	50	40	84	120	80
BT50-XP40-180	○	50	40	84	180	80

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXP06	SXP08	SXP10	SXP12	SXP16	SXP20	SXP25	SXP32	SXP40
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10

2° (JIS B6339)

2° Side Lock Holders





Model	Stock	Type	dm	D	L	H
BT30-XPD06-60	O	30	6	25	60	
BT30-XPD08-60	O	30	8	28	60	
BT30-XPD10-60	O	30	10	35	60	
BT30-XPD12-60	O	30	12	40	60	
BT30-XPD16-60	O	30	16	45	60	
BT30-XPD20-75	O	30	20	50	75	
BT40-XPD06-75	O	40	6	25	75	
BT40-XPD06-105	O	40	6	25	105	
BT40-XPD06-165	O	40	6	25	165	
BT40-XPD08-75	O	40	8	28	75	
BT40-XPD08-105	O	40	8	28	105	
BT40-XPD08-165	O	40	8	28	165	
BT40-XPD10-75	O	40	10	35	75	
BT40-XPD10-105	O	40	10	35	105	
BT40-XPD10-165	O	40	10	35	165	
BT40-XPD12-75	O	40	12	42	75	
BT40-XPD12-105	O	40	12	42	105	
BT40-XPD12-165	O	40	12	42	165	
BT40-XPD16-75	O	40	16	48	75	
BT40-XPD16-105	O	40	16	48	105	
BT40-XPD16-165	O	40	16	48	165	
BT40-XPD20-75	O	40	20	52	75	
BT40-XPD20-105	O	40	20	52	105	
BT40-XPD20-165	O	40	20	52	165	
BT40-XPD25-90	O	40	25	65	90	
BT40-XPD25-165	O	40	25	65	165	
BT40-XPD32-105	O	40	32	72	105	
BT40-XPD32-165	O	40	32	72	165	

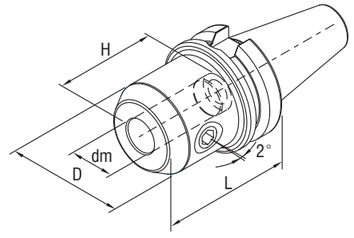
Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	screw	SXPD06	SXPD08	SXPD10	SXPD12	SXPD16	SXPD20	SXPD25	SXPD32
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	wrench	S3	S4	S5	S6	S6	S8	S8	S10

WERNER

2° (JIS B6339)

2° Side Lock Holders





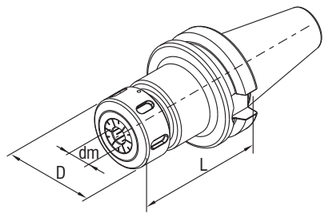
Model	Stock	Type	dm	D	L	H
BT50-XPD06-75	O	50	6	25	75	
BT50-XPD06-105	O	50	6	25	105	
BT50-XPD06-165	O	50	6	25	165	
BT50-XPD08-75	O	50	8	28	75	
BT50-XPD08-105	O	50	8	28	105	
BT50-XPD08-165	O	50	8	28	165	
BT50-XPD10-75	O	50	10	35	75	
BT50-XPD10-105	O	50	10	35	105	
BT50-XPD10-165	O	50	10	35	165	
BT50-XPD12-90	O	50	12	42	90	
BT50-XPD12-105	O	50	12	42	105	
BT50-XPD12-165	O	50	12	42	165	
BT50-XPD16-90	O	50	16	48	90	
BT50-XPD16-105	O	50	16	48	105	
BT50-XPD16-165	O	50	16	48	165	
BT50-XPD20-90	O	50	20	52	90	
BT50-XPD20-105	O	50	20	52	105	
BT50-XPD20-165	O	50	20	52	165	
BT50-XPD25-105	O	50	25	65	105	
BT50-XPD25-165	O	50	25	65	165	
BT50-XPD32-105	O	50	32	72	105	
BT50-XPD32-165	O	50	32	72	165	

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	screw	SXPD06	SXPD08	SXPD10	SXPD12	SXPD16	SXPD20	SXPD25	SXPD32
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	wrench	S3	S4	S5	S6	S6	S8	S8	S10

ER (JIS B6339)

ER Collet Chucks





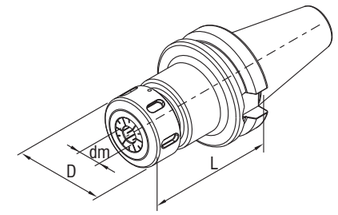
Model	Stock	Type	dm	D	L	
BT30-ER11-60	O	30	0.5~7	23	60	ER11
BT30-ER16-60	O	30	0.5~10	32	60	ER16
BT30-ER20-60	O	30	1.0~12	34	60	ER20
BT30-ER25-60	O	30	1.0~16	42	60	ER25
BT40-ER11-60	O	40	0.5~7	23	60	ER11
BT40-ER11-90	O	40	0.5~7	23	90	ER11
BT40-ER11-120	O	40	0.5~7	23	120	ER11
BT40-ER11-150	O	40	0.5~7	23	150	ER11
BT40-ER11-180	O	40	0.5~7	23	180	ER11
BT40-ER16-60	O	40	0.5~10	32	60	ER16
BT40-ER16-90	O	40	0.5~10	32	90	ER16
BT40-ER16-120	O	40	0.5~10	32	120	ER16
BT40-ER16-150	O	40	0.5~10	32	150	ER16
BT40-ER16-180	O	40	0.5~10	32	180	ER16
BT40-ER20-60	O	40	1.0~12	34	60	ER20
BT40-ER20-90	O	40	1.0~12	34	90	ER20
BT40-ER20-120	O	40	1.0~12	34	120	ER20
BT40-ER20-150	O	40	1.0~12	34	150	ER20
BT40-ER20-180	O	40	1.0~12	34	180	ER20
BT40-ER25-75	O	40	1.0~16	42	75	ER25
BT40-ER25-90	O	40	1.0~16	42	90	ER25
BT40-ER25-120	O	40	1.0~16	42	120	ER25
BT40-ER25-150	O	40	1.0~16	42	150	ER25
BT40-ER25-180	O	40	1.0~16	42	180	ER25
BT40-ER32-75	O	40	2.0~20	50	75	ER32
BT40-ER32-90	O	40	2.0~20	50	90	ER32
BT40-ER32-120	O	40	2.0~20	50	120	ER32
BT40-ER32-150	O	40	2.0~20	50	150	ER32
BT40-ER32-180	O	40	2.0~20	50	180	ER32
BT40-ER40-90	O	40	3.0~26	63	90	ER40
BT40-ER40-120	O	40	3.0~26	63	120	ER40
BT40-ER40-150	O	40	3.0~26	63	150	ER40
BT40-ER40-180	O	40	3.0~26	63	180	ER40

WERNER

ER (JIS B6339)

ER Collet Chucks



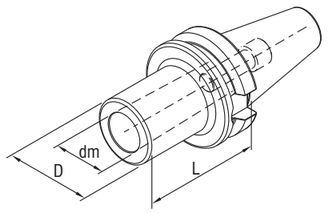


Model	Stock	Type	dm	D	L	
BT50-ER11-90	O	50	0.5~7	23	90	ER11
BT50-ER11-105	O	50	0.5~7	23	105	ER11
BT50-ER11-120	O	50	0.5~7	23	120	ER11
BT50-ER11-150	O	50	0.5~7	23	150	ER11
BT50-ER11-180	O	50	0.5~7	23	180	ER11
BT50-ER16-90	O	50	0.5~10	32	90	ER16
BT50-ER16-105	O	50	0.5~10	32	105	ER16
BT50-ER16-120	O	50	0.5~10	32	120	ER16
BT50-ER16-135	O	50	0.5~10	32	135	ER16
BT50-ER16-165	O	50	0.5~10	32	165	ER16
BT50-ER16-195	O	50	0.5~10	32	195	ER16
BT50-ER20-90	O	50	1.0~12	34	90	ER20
BT50-ER20-105	O	50	1.0~12	34	105	ER20
BT50-ER20-120	O	50	1.0~12	34	120	ER20
BT50-ER20-135	O	50	1.0~12	34	135	ER20
BT50-ER20-165	O	50	1.0~12	34	165	ER20
BT50-ER20-195	O	50	1.0~12	34	195	ER20
BT50-ER25-90	O	50	1.0~16	42	90	ER25
BT50-ER25-105	O	50	1.0~16	42	105	ER25
BT50-ER25-120	O	50	1.0~16	42	120	ER25
BT50-ER25-135	O	50	1.0~16	42	135	ER25
BT50-ER25-165	O	50	1.0~16	42	165	ER25
BT50-ER25-195	O	50	1.0~16	42	195	ER25
BT50-ER32-90	O	50	2.0~20	50	90	ER32
BT50-ER32-105	O	50	2.0~20	50	105	ER32
BT50-ER32-120	O	50	2.0~20	50	120	
BT50-ER32-135	O	50	2.0~20	50	135	ER32
BT50-ER32-165	O	50	2.0~20	50	165	ER32
BT50-ER32-195	O	50	2.0~20	50	195	ER32
BT50-ER40-90	O	50	3.0~26	63	90	ER40
BT50-ER40-105	O	50	3.0~26	63	105	ER40
BT50-ER40-120	O	50	3.0~26	63	120	ER40
BT50-ER40-135	O	50	3.0~26	63	135	ER40
BT50-ER40-165	O	50	3.0~26	63	165	ER40
BT50-ER40-195	O	50	3.0~26	63	195	ER40

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Morse Taper Holders Without Tang





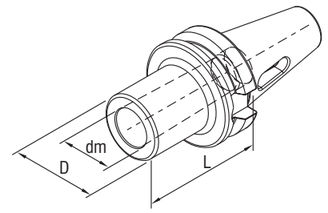
Model	Stock	Type	Taper	Tool	dm	D	L
BT40-MW1-45	O	40	MT1	6-12	12.065	27	45
BT40-MW2-60	O	40	MT2	14-20	17.780	32	60
BT40-MW3-75	O	40	MT3	22-36	23.825	40	75
BT40-MW4-105	O	40	MT4	32-56	31.267	50	105
BT50-MW1-45	O	50	MT1	6-12	12.065	27	45
BT50-MW2-45	O	50	MT2	14-20	17.780	32	45
BT50-MW3-60	O	50	MT3	22-36	23.825	40	60
BT50-MW4-75	O	50	MT4	32-56	31.267	50	75
BT50-MW5-105	O	50	MT5	40-63	44.399	78	105

Spare Parts		MT1	MT2	MT3	MT4	MT5
	Set screw	SMW1	SMW2	SMW3	SMW4	SMW5

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Morse Taper Holders With Tang



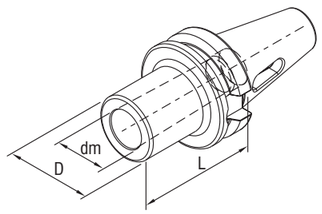


Model	Stock	Type	Taper	Tool	dm	D	L
BT30-M1-45	O	30	MT1	3-14	12.065	25	45
BT30-M2-60	O	30	MT2	14.25-23	17.780	32	60
BT40-M1-45	O	40	MT1	3-14	12.065	25	45
BT40-M1-120	O	40	MT1	3-14	12.065	25	120
BT40-M2-60	O	40	MT2	14.25-23	17.780	32	60
BT40-M2-120	O	40	MT2	14.25-23	17.780	32	120
BT40-M3-75	O	40	MT3	23.25-31.75	23.825	40	75
BT40-M3-135	O	40	MT3	23.25-31.75	23.825	40	135
BT40-M4-95	O	40	MT4	32-50.5	31.267	48	95
BT40-M4-165	O	40	MT4	32-50.5	31.267	48	165
BT50-M1-45	O	50	MT1	3-14	12.065	25	45
BT50-M1-120	O	50	MT1	3-14	12.065	25	120
BT50-M1-180	O	50	MT1	3-14	12.065	25	180
BT50-M2-45	O	50	MT2	14.25-23	17.780	32	45
BT50-M2-135	O	50	MT2	14.25-23	17.780	32	135
BT50-M2-180	O	50	MT2	14.25-23	17.780	32	180
BT50-M3-75	O	50	MT3	23.25-31.75	23.825	40	75
BT50-M3-150	O	50	MT3	23.25-31.75	23.825	40	150
BT50-M3-180	O	50	MT3	23.25-31.75	23.825	40	180
BT50-M4-75	O	50	MT4	32-50.5	31.267	48	75
BT50-M4-180	O	50	MT4	32-50.5	31.267	48	180
BT50-M5-105	O	50	MT5	51-76	44.399	63	105
BT50-M5-210	O	50	MT5	51-76	44.399	63	210

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Morse Taper Holders With Tang



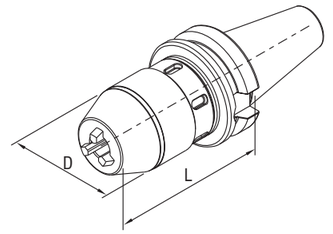


Model	Stock	Type	Taper	Tool	dm	D	L
BT30-M1-45	O	30	MT1	3-14	12.065	25	45
BT30-M2-60	O	30	MT2	14.25-23	17.780	32	60
BT40-M1-45	O	40	MT1	3-14	12.065	25	45
BT40-M1-120	O	40	MT1	3-14	12.065	25	120
BT40-M2-60	O	40	MT2	14.25-23	17.780	32	60
BT40-M2-120	O	40	MT2	14.25-23	17.780	32	120
BT40-M3-75	O	40	MT3	23.25-31.75	23.825	40	75
BT40-M3-135	O	40	MT3	23.25-31.75	23.825	40	135
BT40-M4-95	O	40	MT4	32-50.5	31.267	48	95
BT40-M4-165	O	40	MT4	32-50.5	31.267	48	165
BT50-M1-45	O	50	MT1	3-14	12.065	25	45
BT50-M1-120	O	50	MT1	3-14	12.065	25	120
BT50-M1-180	O	50	MT1	3-14	12.065	25	180
BT50-M2-45	O	50	MT2	14.25-23	17.780	32	45
BT50-M2-135	O	50	MT2	14.25-23	17.780	32	135
BT50-M2-180	O	50	MT2	14.25-23	17.780	32	180
BT50-M3-75	O	50	MT3	23.25-31.75	23.825	40	75
BT50-M3-150	O	50	MT3	23.25-31.75	23.825	40	150
BT50-M3-180	O	50	MT3	23.25-31.75	23.825	40	180
BT50-M4-75	O	50	MT4	32-50.5	31.267	48	75
BT50-M4-180	O	50	MT4	32-50.5	31.267	48	180
BT50-M5-105	O	50	MT5	51-76	44.399	63	105
BT50-M5-210	O	50	MT5	51-76	44.399	63	210

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Integral Drill chuck Holders



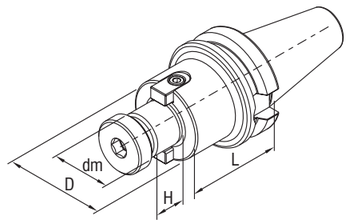


Model	Stock	Type	Tool	D	L
BT30-DC08-75	O	30	0.5~8	37.5	75
BT30-DC 13-110	O	30	0.5~13	50.5	110
BT30-DC 16-115	O	30	3~16	57	115
BT40- DC08 -80	O	40	0.5~8	37.5	80
BT40- DC13 -95	O	40	0.5~13	50.5	95
BT40- DC13 -150	O	40	0.5~13	50.5	150
BT40- DC16 -100	O	40	3~16	57	100
BT40- DC16 -150	O	40	3~16	57	150
BT50- DC08 -90	O	50	0.5~8	37.5	90
BT50- DC13 -105	O	50	0.5~13	50.5	105
BT50- DC13 -180	O	50	0.5~13	50.5	180
BT50- DC16 -110	O	50	3~16	57	110
BT50- DC16 -180	O	50	3~16	57	180

Spare Parts	DC08	DC13	DC16
wrench	WER20	WER32	WER32

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Shell Mill Holders





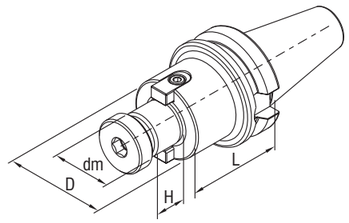
Model	Stock	Type	dm	D	L	H
BT30-XM16-45	O	30	16	32	45	17
BT30-XM16-60	O	30	16	32	60	17
BT30-XM22-45	O	30	22	40	45	19
BT30-XM22-60	O	30	22	40	60	19
BT30-XM27-45	O	30	27	48	45	21
BT30-XM27-60	O	30	27	48	60	21
BT40-XM16-60	O	40	16	32	60	17
BT40-XM16-120	O	40	16	32	120	17
BT40-XM16-150	O	40	16	32	150	17
BT40-XM16-200	O	40	16	32	200	17
BT40-XM22-60	O	40	22	40	60	19
BT40-XM22-120	O	40	22	40	120	19
BT40-XM22-150	O	40	22	40	150	19
BT40-XM22-200	O	40	22	40	200	19
BT40-XM27-45	O	40	27	48	45	21
BT40-XM27-60	O	40	27	48	60	21
BT40-XM27-105	O	40	27	48	105	21
BT40-XM32-45	O	40	32	58	45	24
BT40-XM32-75	O	40	32	58	75	24
BT40-XM40-60	O	40	40	70	60	27
BT50-XM16-75	O	50	16	32	75	17
BT50-XM16-120	O	50	16	32	120	17
BT50-XM16-150	O	50	16	32	150	17
BT50-XM16-200	O	50	16	32	200	17
BT50-XM22-75	O	50	22	40	75	19
BT50-XM22-120	O	50	22	40	120	19
BT50-XM22-150	O	50	22	40	150	19
BT50-XM22-200	O	50	22	40	200	19
BT50-XM27-60	O	50	27	48	60	21
BT50-XM27-105	O	50	27	48	105	21
BT50-XM27-200	O	50	27	48	200	21
BT50-XM27-250	O	50	27	48	250	21
BT50-XM27-300	O	50	27	48	300	21
BT50-XM32-45	O	50	32	58	45	24
BT50-XM32-75	O	50	32	58	75	24
BT50-XM32-105	O	50	32	58	105	24
BT50-XM40-75	O	50	40	70	75	27
BT50-XM40-105	O	50	40	70	105	27

Spare Parts		dm= 16	dm= 22	dm= 27	dm= 32	dm= 40
	Set screw	SXM16	SXM22	SXM27	SXM32	SXM40
	key	KXM16	KXM22	M12	KXM32	KXM40
Accessories		**dm= 16**	**dm= 22**	**dm= 27**	**dm= 32**	**dm= 40**
	wrench	S6	S8	S10	S14	S17

WERNER

JIS B6339
Shell Mill Holders - Inch





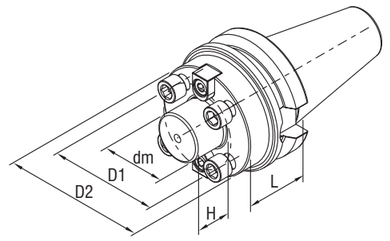
Model	Stock	Type	dm	D	L	H
BT30-XM12.7-45	O	30	12.70	35	45	14
BT30-XM19.05-45	O	30	19.05	50	45	17
BT30-XM25.4-45	O	30	25.40	60	45	17
BT40-XM12.7-45	O	40	12.70	35	45	14
BT40-XM12.7-105	O	40	12.70	35	105	14
BT40-XM19.05-45	O	40	19.05	50	45	17
BT40-XM19.05-105	O	40	19.05	50	105	17
BT40-XM19.05-150	O	40	19.05	50	150	17
BT40-XM25.4-45	O	40	25.40	60	45	17
BT40-XM25.4-75	O	40	25.40	60	75	17
BT40-XM25.4-150	O	40	25.40	60	150	17
BT40-XM31.75-60	O	40	31.75	73	60	17
BT40-XM38.1-60	O	40	38.10	96	60	23.5
BT50-XM12.7-60	O	50	12.70	35	60	14
BT50-XM19.05-60	O	50	19.05	50	60	17
BT50-XM25.4-60	O	50	25.40	60	60	17
BT50-XM25.4-105	O	50	25.40	60	105	17
BT50-XM25.4-150	O	50	25.40	60	150	17
BT50-XM31.75-60	O	50	31.75	73	60	17
BT50-XM31.75-105	O	50	31.75	73	105	17
BT50-XM31.75-150	O	50	31.75	73	150	17
BT50-XM38.1-60	O	50	38.10	96	60	23.5
BT50-XM38.1-105	O	50	38.10	96	105	23.5
BT50-XM50.8-60	O	50	50.80	111	60	23.5

Spare Parts		dm= 12.7	dm= 19.05	dm= 25.4	dm= 31.75	dm= 38.1	dm= 50.8
	Set screw	SXM12	SXM10	SXM27	SXM32	SXM40	SXM50
	key	KXM12	KXM19	KXM25	KXM31	KXM38	KXM50
Accessories		**dm= 12.7**	**dm= 19.05**	**dm= 25.4**	**dm= 31.75**	**dm= 38.1**	**dm= 50.8**
	wrench	S1/4"	S5/16"	S3/8"	S1/2"	S5/8"	S3/4"

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Face Mill Holders





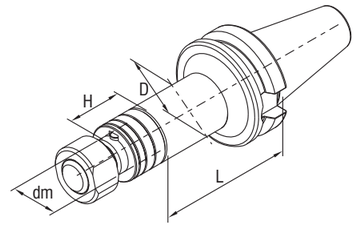
Model	Stock	Type	dm	D1	D2	L	H
BT40-XMC40-60	O	40	40	66.7	89	60	27
BT50-XMC40-75	O	50	40	66.7	89	75	27
BT50-XMC60-75	O	50	60	101.6	129	75	38
BT50-XM63.5-75	O	50	63.5	101.6	127	75	30

Spare Parts		dm=40	dm=60	dm=63.5
	Set screw	SM12045(4)	SM16045(4)	SM16045(4)
	key	KXMC40	KXMC60	KXMC63
Accessories		**dm=40**	**dm=60**	**dm=63.5**
	wrench	S10	S14	S14

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Stub Mill Holders



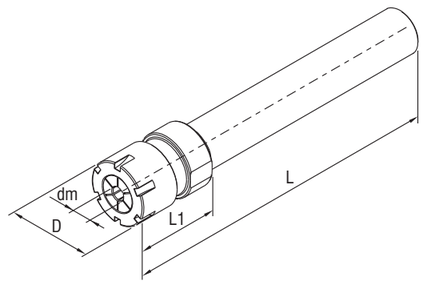


Model	Stock	Type	dm	D	L	H		
BT30-XS13-75	O	30	13	20	75	15	-	50
BT30-XS16-75	O	30	16	26	75	16	50	63
BT30-XS22-75	O	30	22	34	75	21	63	80,100,125
BT40-XS13-60	O	40	13	20	60	15	-	50
BT40-XS13-90	O	40	13	20	90	15	-	50
BT40-XS16-75	O	40	16	26	75	16	50	63
BT40-XS16-105	O	40	16	26	105	16	50	63
BT40-XS22-75	O	40	22	34	75	21	63	80,100,125
BT40-XS22-120	O	40	22	34	120	21	63	80,100,125
BT40-XS27-75	O	40	27	40	75	25	80	-
BT40-XS27-120	O	40	27	40	120	25	80	-
BT40-XS32-90	O	40	32	46	90	30	100	160,200,250
BT50-XS13-75	O	50	13	20	75	15	-	50
BT50-XS13-105	O	50	13	20	105	15	-	50
BT50-XS16-90	O	50	16	26	90	16	50	63
BT50-XS16-120	O	50	16	26	120	16	50	63
BT50-XS22-90	O	50	22	34	90	21	63	80,100,125
BT50-XS22-135	O	50	22	34	135	21	63	80,100,125
BT50-XS27-90	O	50	27	40	90	25	80	80~125
BT50-XS27-135	O	50	27	40	135	25	80	80~125
BT50-XS32-90	O	50	32	46	90	30	100,125	160,200,250
BT50-XS32-135	O	50	32	46	135	30	100,125	160,200,250
BT50-XS40-90	O	50	40	55	90	36	160,200	315
BT50-XS40-135	O	50	40	55	135	36	160,200	315

Spare Parts		dm=13	dm=16	dm=22	dm=27	dm=32	dm=40
	Set screw	NXS13	NXS16	NXS22	NXS27	NXS32	NXS40
	key	DXS13	DXS16	DXS22	DXS27	DXS32	DXS40
	The gasket	KXS13	KXS16	KXS22	KXS27	KXS32	KXS40
Accessories		**dm=13**	**dm=16**	**dm=22**	**dm=27**	**dm=32**	**dm=40**
	wrench	-	-	-	-	-	-

Spring rod



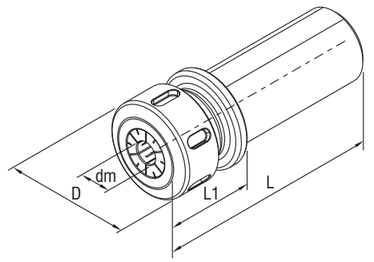


Model	Stock	dm	D	L1	L	
C16-ER11-50(M)	O	16	16	50	77	ER11
C16-ER11-100(M)	O	16	16	100	127	ER11
C20-ER11-50(M)	O	20	22	50	85	ER16
C20-ER11-100(M)	O	20	22	100	135	ER16
C20-ER11-150(M)	O	20	22	150	185	ER16
C20-ER20-50(M)	O	20	28	50	88	ER20
C20-ER20-100(M)	O	20	28	100	138	ER20
C20-ER20-150(M)	O	20	28	150	188	ER20
C25-ER20-50(M)	O	25	28	50	88	ER20
C25-ER20-100(M)	O	25	28	100	138	ER20
C25-ER20-150(M)	O	25	28	150	188	ER20

Spare Parts		ER11	ER16	ER20
	nut	NER11M	NER16M	NER20M
	screw	SER11M	SER16M	SER20M
Accessories		**ER11**	**ER16**	**ER20**
	wrench	WER11M	WER16M	WER20M

Shank with straight spring collet





Model	Stock	dm	D	L1	L	
C32-ER16-100	O	32	32	30	100	ER16
C32-ER20-100	O	32	34	30	100	ER20
C32-ER25-105	O	32	42	35	105	ER25
C32-ER32-120	O	32	50	50	120	ER32
C32-ER40-130	O	32	63	60	130	ER40
C40-ER16-100	O	40	32	30	100	ER16
C40-ER20-100	O	40	34	30	100	ER20
C40-ER25-105	O	40	42	35	105	ER25
C40-ER32-105	O	40	50	35	105	ER32
C40-ER40-130	O	40	63	60	130	ER40

Spare Parts		ER16	ER20	ER25	ER32	ER40
	nut	NER16	NER20	NER25	NER32	NER40
	screw	SER16	SER20	SER25	SER32	SER40
Accessories		**ER16**	**ER20**	**ER25**	**ER32**	**ER40**
	wrench	WER16	WER20	WER25	WER32	WER40

HSK Tooling System Arrangement Plan

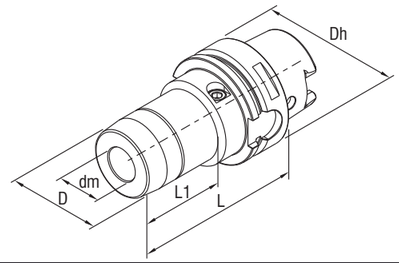
HSK ER spring collet shank	HSK side fixed shank	HSK 2° side solid handle	HSK strong chuck shank	HSK hydraulic shank	
					
					

Shank for HSK sleeve end milling cutter	Shank for side milling cutter Sleeve end milling cutter and	Shank for side milling cutter	HSK TMG21 main handle module		
					
					

HSK (DIN 69893)

HSK Hydraulic Shank (DIN 69893)





Model	Stock		Dh	dm	d1	d2	L1	L	
HSK63A-HC06-80	O	HSK-A63	63	06	26	50	35	80	HC06
HSK63A-HC08-80	O	HSK-A63	63	08	28	50	35	80	HC08
HSK63A-HC10-80	O	HSK-A63	63	10	32	50	35	80	HC10
HSK63A-HC12-90	O	HSK-A63	63	12	35	50	43	90	HC12
HSK63A-HC14-95	O	HSK-A63	63	14	38	50	51	95	HC14
HSK63A-HC16-95	O	HSK-A63	63	16	38	50	51	95	HC16
HSK63A-HC20-95	O	HSK-A63	63	20	42	50	52	95	HC20
HSK63A-HC25-125	O	HSK-A63	63	25	57	70	63	125	HC25
HSK63A-HC32-125	O	HSK-A63	63	32	64	70	65	125	HC32
HSK100A-HC06-85	O	HSK-A100	100	06	26	50	35	85	HC06
HSK100A-HC08-85	O	HSK-A100	100	08	28	50	35	85	HC08
HSK100A-HC10-85	O	HSK-A100	100	10	32	50	35	85	HC10
HSK100A-HC12-95	O	HSK-A100	100	12	35	50	43	95	HC12
HSK100A-HC14-100	O	HSK-A100	100	14	38	50	51	100	HC14
HSK100A-HC16-100	O	HSK-A100	100	16	38	50	51	100	HC16
HSK100A-HC20-105	O	HSK-A100	100	20	42	50	52	105	HC20
HSK100A-HC25-110	O	HSK-A100	100	25	57	70	63	110	HC25
HSK100A-HC32-110	O	HSK-A100	100	32	64	70	65	110	HC32

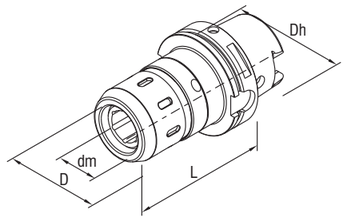
* For other types or specifications of HSK products, please contact us.
* HSK A standard product does not include manual tool change hole and data hole, if necessary, please specify when ordering.
* The delivery includes corresponding spare parts

Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 14	dm= 16	dm= 20	dm= 25	dm= 32
	wrench	WHC06	WHC08	WHC10	WHC12	WHC14	WHC16	WHC20	WHC25	WHC32
	Coolant casing	TU-HSK40	Dh=40 ;TU-HSK50		Dh=50 ; TU-HSK63		Dh=63 ; TU-HSK100		Dh=100	
	wrench	W-HSK40	Dh=40 ;W-HSK50		Dh=50 ; W-HSK63		Dh=63 ; W-HSK100		Dh=100	

HSK (DIN 69893)

HSK Milling Chucks





Model	Stock		Dh	dm	D	L	
HSK40A-C20-105	O	HSK-A40	40	40	52	105	C20
HSK40A-C22-105	O	HSK-A40	40	40	58	105	C20
HSK40A-C25-105	O	HSK-A40	40	40	62	105	C25
HSK50A-C20-105	O	HSK-A50	50	50	52	105	C20
HSK50A-C22-105	O	HSK-A50	50	50	58	105	C22
HSK50A-C25-105	O	HSK-A50	50	50	62	105	C25
HSK63A-C20-105	O	HSK-A63	63	63	52	105	C20
HSK63A-C20-135	O	HSK-A63	63	63	52	135	C20
HSK63A-C22-105	O	HSK-A63	63	63	58	105	C22
HSK63A-C22-135	O	HSK-A63	63	63	58	135	C22
HSK63A-C25-105	O	HSK-A63	63	63	62	105	C25
HSK63A-C25-135	O	HSK-A63	63	63	62	135	C25
HSK63A-C32-120	O	HSK-A63	63	63	72	120	C32
HSK63A-C32-150	O	HSK-A63	63	63	72	150	C32
HSK100A-C20-110	O	HSK-A100	100	100	52	110	C20
HSK100A-C20-150	O	HSK-A100	100	100	52	150	C20
HSK100A-C22-110	O	HSK-A100	100	100	58	110	C22
HSK100A-C22-150	O	HSK-A100	100	100	58	150	C22
HSK100A-C25-110	O	HSK-A100	100	100	62	110	C25
HSK100A-C25-150	O	HSK-A100	100	100	62	150	C25
HSK100A-C32-120	O	HSK-A100	100	100	72	120	C32
HSK100A-C32-150	O	HSK-A100	100	100	72	150	C32

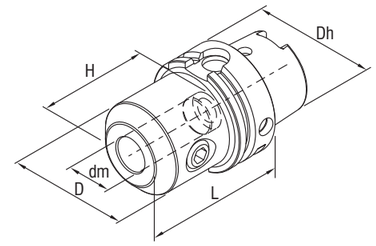
* For other types or specifications of HSK products, please contact us.
* HSK A standard product does not include manual tool change hole and data hole, if necessary, please specify when ordering.
* The delivery includes corresponding spare parts

Accessories		C20	C22	C25	C32
	wrench	WER32	WER32	WER40	WER40
	Coolant casing	TU-HSK40 Dh=40 ;TU-HSK50 Dh=50 ; TU-HSK63 Dh=63 ; TU-HSK100 Dh=100			
	wrench	W-HSK40 Dh=40 ;W-HSK50 Dh=50 ; W-HSK63 Dh=63 ; W-HSK100 h=100			

HSK (DIN 69893)

HSK Side Lock Holders





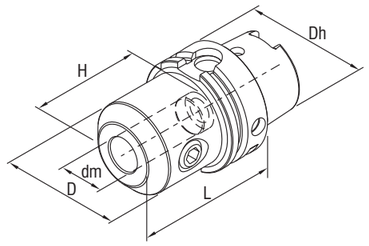
Model	Stock		Dh	dm	D	L
HSK40A-XP06-60	O	HSK-A40	40	6	25	60
HSK40A-XP08-60	O	HSK-A40	40	8	28	60
HSK40A-XP10-60	O	HSK-A40	40	10	35	60
HSK40A-XP12-70	O	HSK-A40	40	12	42	70
HSK40A-XP16-75	O	HSK-A40	40	16	48	75
HSK50A-XP06-65	O	HSK-A50	50	6	25	65
HSK50A-XP08-65	O	HSK-A50	50	8	28	65
HSK50A-XP10-65	O	HSK-A50	50	10	35	65
HSK50A-XP12-80	O	HSK-A50	50	12	42	80
HSK50A-XP16-80	O	HSK-A50	50	16	48	80
HSK50A-XP20-80	O	HSK-A50	50	20	50	80
HSK63A-XP06-65	O	HSK-A63	63	6	25	65
HSK63A-XP06-120	O	HSK-A63	63	6	25	120
HSK63A-XP06-160	O	HSK-A63	63	6	25	160
HSK63A-XP08-65	O	HSK-A63	63	8	28	65
HSK63A-XP08-120	O	HSK-A63	63	8	28	120
HSK63A-XP08-160	O	HSK-A63	63	8	28	160
HSK63A-XP10-65	O	HSK-A63	63	10	35	65
HSK63A-XP10-120	O	HSK-A63	63	10	35	120
HSK63A-XP10-160	O	HSK-A63	63	10	35	160
HSK63A-XP12-80	O	HSK-A63	63	12	42	80
HSK63A-XP12-120	O	HSK-A63	63	12	42	120
HSK63A-XP12-160	O	HSK-A63	63	12	42	160
HSK63A-XP16-80	O	HSK-A63	63	16	48	80
HSK63A-XP16-120	O	HSK-A63	63	16	48	120
HSK63A-XP16-160	O	HSK-A63	63	16	48	160
HSK63A-XP20-80	O	HSK-A63	63	20	52	80
HSK63A-XP20-120	O	HSK-A63	63	20	52	120
HSK63A-XP20-160	O	HSK-A63	63	20	52	160
HSK63A-XP25-110	O	HSK-A63	63	25	65	110
HSK63A-XP25-160	O	HSK-A63	63	25	65	160
HSK63A-XP32-110	O	HSK-A63	63	32	72	110
HSK63A-XP32-160	O	HSK-A63	63	32	72	160

* The delivery includes corresponding spare parts

HSK (DIN 69893)

HSK Side Lock Holders





Model	Stock		Dh	dm	D	L	H
HSK100A-XP06-80	O	HSK-A100	100	6	25	80	
HSK100A-XP06-120	O	HSK-A100	100	6	25	120	
HSK100A-XP06-160	O	HSK-A100	100	6	25	160	
HSK100A-XP08-80	O	HSK-A100	100	8	28	80	
HSK100A-XP08-120	O	HSK-A100	100	8	28	120	
HSK100A-XP08-160	O	HSK-A100	100	8	28	160	
HSK100A-XP10-80	O	HSK-A100	100	10	35	80	
HSK100A-XP10-120	O	HSK-A100	100	10	35	120	
HSK100A-XP10-160	O	HSK-A100	100	10	35	160	
HSK100A-XP12-80	O	HSK-A100	100	12	42	80	
HSK100A-XP12-120	O	HSK-A100	100	12	42	160	
HSK100A-XP12-160	O	HSK-A100	100	12	42	160	
HSK100A-XP16-100	O	HSK-A100	100	16	48	100	
HSK100A-XP16-160	O	HSK-A100	100	16	48	160	
HSK100A-XP20-100	O	HSK-A100	100	20	52	100	
HSK100A-XP20-160	O	HSK-A100	100	20	52	160	
HSK100A-XP25-100	O	HSK-A100	100	25	65	100	
HSK100A-XP25-160	O	HSK-A100	100	25	65	160	
HSK100A-XP32-100	O	HSK-A100	100	32	72	100	
HSK100A-XP32-160	O	HSK-A100	100	32	72	160	
HSK100A-XP40-120	O	HSK-A100	100	40	84	120	
HSK100A-XP40-160	O	HSK-A100	100	40	84	160	

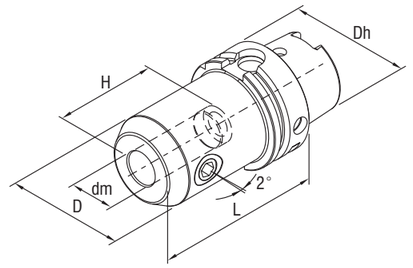
* The delivery includes corresponding spare parts

Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	screw	SXP06	SXP08	SXP10	SXP12	SXP16	SXP20	SXP25	SXP32	SXP40
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32	dm= 40
	wrench	S3	S4	S5	S6	S6	S8	S8	S10	S10
	Coolant casing	TU-HSK40 Dh=40;TU-HSK50 Dh=50 ; TU-HSK63 Dh=63 ; TU-HSK100 Dh=100								
	wrench	W-HSK40 Dh=40 ;W-HSK50 Dh=50 ; W-HSK63 Dh=63 ; W-HSK100 Dh=100								

HSK 2° (DIN 69893)

HSK 2° Side Lock Holders





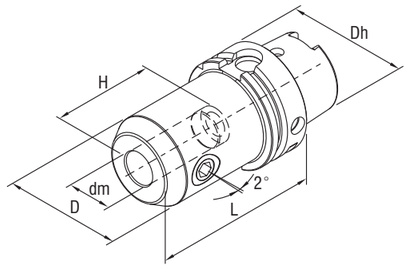
Model	Stock		Dh	dm	D	L	H
HSK40A-XPD06-80	O	HSK-A40	40	6	25	80	
HSK40A-XPD08-80	O	HSK-A40	40	8	28	80	
HSK40A-XPD10-80	O	HSK-A40	40	10	35	80	
HSK40A-XPD12-90	O	HSK-A40	40	12	42	90	
HSK40A-XPD16-90	O	HSK-A40	40	16	48	90	
HSK50A-XPD06-80	O	HSK-A50	50	6	25	80	
HSK50A-XPD08-80	O	HSK-A50	50	8	28	80	
HSK50A-XPD10-80	O	HSK-A50	50	10	35	80	
HSK50A-XPD12-90	O	HSK-A50	50	12	42	90	
HSK50A-XPD16-90	O	HSK-A50	50	16	48	90	
HSK50A-XPD20-100	O	HSK-A50	50	20	52	100	
HSK63A-XPD06-80	O	HSK-A63	63	6	25	80	
HSK63A-XPD06-120	O	HSK-A63	63	6	25	120	
HSK63A-XPD06-160	O	HSK-A63	63	6	25	160	
HSK63A-XPD08-80	O	HSK-A63	63	8	28	80	
HSK63A-XPD08-120	O	HSK-A63	63	8	28	120	
HSK63A-XPD08-160	O	HSK-A63	63	8	28	160	
HSK63A-XPD10-80	O	HSK-A63	63	10	35	80	
HSK63A-XPD10-120	O	HSK-A63	63	10	35	120	
HSK63A-XPD10-160	O	HSK-A63	63	10	35	160	
HSK63A-XPD12-90	O	HSK-A63	63	12	42	90	
HSK63A-XPD12-120	O	HSK-A63	63	12	42	120	
HSK63A-XPD12-160	O	HSK-A63	63	12	42	160	
HSK63A-XPD16-100	O	HSK-A63	63	16	48	100	
HSK63A-XPD16-160	O	HSK-A63	63	16	48	160	
HSK63A-XPD20-100	O	HSK-A63	63	20	52	100	
HSK63A-XPD20-160	O	HSK-A63	63	20	52	160	
HSK63A-XPD25-110	O	HSK-A63	63	25	65	110	
HSK63A-XPD25-160	O	HSK-A63	63	25	65	160	
HSK63A-XPD32-110	O	HSK-A63	63	32	72	110	
HSK63A-XPD32-160	O	HSK-A63	63	32	72	160	

* The delivery includes corresponding spare parts

HSK 2° (DIN 69893)

HSK 2°Side Lock Holders





Model	Stock		Dh	dm	D	L	H
HSK100A-XPD06-90	O	HSK-A100	100	6	25	90	
HSK100A-XPD06-120	O	HSK-A100	100	6	25	120	
HSK100A-XPD06-160	O	HSK-A100	100	6	25	160	
HSK100A-XPD08-90	O	HSK-A100	100	8	28	90	
HSK100A-XPD08-120	O	HSK-A100	100	8	28	120	
HSK100A-XPD08-160	O	HSK-A100	100	8	28	160	
HSK100A-XPD10-90	O	HSK-A100	100	10	35	90	
HSK100A-XPD10-120	O	HSK-A100	100	10	35	120	
HSK100A-XPD10-160	O	HSK-A100	100	10	35	160	
HSK100A-XPD12-100	O	HSK-A100	100	12	42	100	
HSK100A-XPD12-160	O	HSK-A100	100	12	42	160	
HSK100A-XPD16-100	O	HSK-A100	100	16	48	100	
HSK100A-XPD16-160	O	HSK-A100	100	16	48	160	
HSK100A-XPD20-110	O	HSK-A100	100	20	52	110	
HSK100A-XPD20-160	O	HSK-A100	100	20	52	160	
HSK100A-XPD25-120	O	HSK-A100	100	25	65	120	
HSK100A-XPD25-160	O	HSK-A100	100	25	65	160	
HSK100A-XPD32-120	O	HSK-A100	100	32	72	120	
HSK100A-XPD32-160	O	HSK-A100	100	32	72	160	

* The delivery includes corresponding spare parts

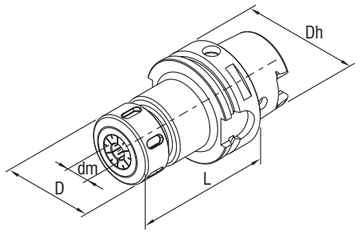
Spare Parts		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	screw	SXPD06	SXPD08	SXPD10	SXPD12	SXPD16	SXPD20	SXPD25	SXPD32
Accessories		dm= 6	dm= 8	dm= 10	dm= 12	dm= 16	dm= 20	dm= 25	dm= 32
	wrench	S3	S4	S5	S6	S6	S8	S8	S10
	Coolant casing	TU-HSK 40 Dh=40 ; TU-HSK50 Dh=50 ; TU-HSK63 Dh=63 ; TU-HSK100 Dh=100							
	wrench	W-HSK40 Dh=40 ; W-HSK50 Dh=50 ; W-HSK63 Dh=63 ; W-HSK100 Dh=100							

WERNER

HSK ER (DIN 69893)

HSK ER Collet Chucks





Model	Stock		Dh	dm	D	L	卡簧
HSK40A-ER11-80	O	HSK-A40	40	0.5~7	23	80	ER11
HSK40A-ER11-100	O	HSK-A40	40	0.5~7	23	100	ER11
HSK40A-ER16-80	O	HSK-A40	40	0.5~10	32	80	ER16
HSK40A-ER16-100	O	HSK-A40	40	0.5~10	32	100	ER16
HSK40A-ER20-80	O	HSK-A40	40	1.0~12	34	80	ER20
HSK40A-ER20-100	O	HSK-A40	40	1.0~12	34	100	ER20
HSK40A-ER25-80	O	HSK-A40	40	1.0~16	42	80	ER25
HSK40A-ER25-100	O	HSK-A40	40	1.0~16	42	100	ER25
HSK40A-ER32-80	O	HSK-A40	40	2.0~20	50	80	ER32
HSK40A-ER32-100	O	HSK-A40	40	2.0~20	50	100	ER32
HSK50A-ER11-80	O	HSK-A50	50	0.5~7	23	80	ER11
HSK50A-ER11-100	O	HSK-A50	50	0.5~7	23	100	ER11
HSK50A-ER11-120	O	HSK-A50	50	0.5~7	23	120	ER11
HSK50A-ER16-80	O	HSK-A50	50	0.5~10	32	80	ER16
HSK50A-ER16-100	O	HSK-A50	50	0.5~10	32	100	ER16
HSK50A-ER16-120	O	HSK-A50	50	0.5~10	32	120	ER16
HSK50A-ER20-80	O	HSK-A50	50	1.0~12	34	80	ER20
HSK50A-ER20-100	O	HSK-A50	50	1.0~12	34	100	ER20
HSK50A-ER20-120	O	HSK-A50	50	1.0~12	34	120	ER20
HSK50A-ER25-80	O	HSK-A50	50	1.0~16	42	80	ER25
HSK50A-ER25-100	O	HSK-A50	50	1.0~16	42	100	ER25
HSK50A-ER25-120	O	HSK-A50	50	1.0~16	42	120	ER25
HSK50A-ER32-80	O	HSK-A50	50	2.0~20	50	80	ER32
HSK50A-ER32-100	O	HSK-A50	50	2.0~20	50	100	ER32
HSK50A-ER32-120	O	HSK-A50	50	2.0~20	50	120	ER32

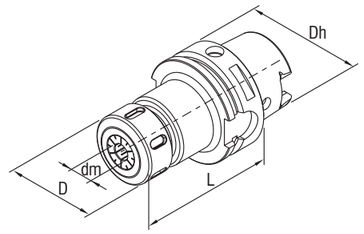
* The delivery includes corresponding spare parts
* The screw that needs center to pass oil, please indicate when ordering.

Spare Parts		ER11	ER16	ER20	ER25	ER32	ER40
	nut	NER11	NER16	NER20	NER25	NER32	NER40
	screw	SER11	SER16	SER20	SER25	SER32	SER40
Accessories		ER11	ER16	ER20	ER25	ER32	ER40
	wrench	WER11	WER16	WER20	WER25	WER32	WER40
	Coolant casing	TU-HSK40 Dh=40 ;TU-HSK50 Dh=50 ; TU-HSK63 Dh=63 ; TU-HSK100 Dh=100					
	wrench	W-HSK40 Dh=40 ;W-HSK50 Dh=50 ; W-HSK63 Dh=63 ; W-HSK100 Dh=100					

HSK ER (DIN 69893)

HSK ER Collet Chucks





Model	Stock		Dh	dm	D	L	
HSK63A-ER11-75	O	HSK-A63	63	0.5~7	23	75	ER11
HSK63A-ER16-80	O	HSK-A63	63	0.5~10	32	80	ER16
HSK63A-ER16-100	O	HSK-A63	63	0.5~10	32	100	ER16
HSK63A-ER16-120	O	HSK-A63	63	0.5~10	32	120	ER16
HSK63A-ER16-160	O	HSK-A63	63	0.5~10	32	160	ER16
HSK63A-ER20-80	O	HSK-A63	63	1.0~12	34	80	ER20
HSK63A-ER20-100	O	HSK-A63	63	1.0~12	34	100	ER20
HSK63A-ER20-120	O	HSK-A63	63	1.0~12	34	120	ER20
HSK63A-ER20-160	O	HSK-A63	63	1.0~12	34	160	ER20
HSK63A-ER25-80	O	HSK-A63	63	1.0~16	42	80	ER25
HSK63A-ER25-100	O	HSK-A63	63	1.0~16	42	100	ER25
HSK63A-ER25-120	O	HSK-A63	63	1.0~16	42	120	ER25
HSK63A-ER25-160	O	HSK-A63	63	1.0~16	42	160	ER25
HSK63A-ER32-80	O	HSK-A63	63	2.0~20	50	80	ER32
HSK63A-ER32-100	O	HSK-A63	63	2.0~20	50	100	ER32
HSK63A-ER32-120	O	HSK-A63	63	2.0~20	50	120	ER32
HSK63A-ER32-160	O	HSK-A63	63	2.0~20	50	160	ER32
HSK63A-ER40-80	O	HSK-A63	63	3.0~26	63	80	ER40
HSK63A-ER40-100	O	HSK-A63	63	3.0~26	63	100	ER40
HSK63A-ER40-120	O	HSK-A63	63	3.0~26	63	120	ER40
HSK63A-ER40-160	O	HSK-A63	63	3.0~26	63	160	ER40
HSK100A-ER16-100	O	HSK-A100	100	0.5~10	32	100	ER16
HSK100A-ER16-120	O	HSK-A100	100	0.5~10	32	120	ER16
HSK100A-ER16-160	O	HSK-A100	100	0.5~10	32	160	ER16
HSK100A-ER20-100	O	HSK-A100	100	1.0~12	34	100	ER20
HSK100A-ER20-120	O	HSK-A100	100	1.0~12	34	120	ER20
HSK100A-ER20-160	O	HSK-A100	100	1.0~12	34	160	ER20
HSK100A-ER25-100	O	HSK-A100	100	1.0~16	42	100	ER25
HSK100A-ER25-120	O	HSK-A100	100	1.0~16	42	120	ER25
HSK100A-ER25-160	O	HSK-A100	100	1.0~16	42	160	ER25
HSK100A-ER32-100	O	HSK-A100	100	2.0~20	50	100	ER32
HSK100A-ER32-120	O	HSK-A100	100	2.0~20	50	120	ER32
HSK100A-ER32-160	O	HSK-A100	100	3.0~26	63	160	ER32
HSK100A-ER40-100	O	HSK-A100	100	3.0~26	63	100	ER40
HSK100A-ER40-120	O	HSK-A100	100	3.0~26	63	120	ER40
HSK100A-ER40-160	O	HSK-A100	100	3.0~26	63	160	ER40

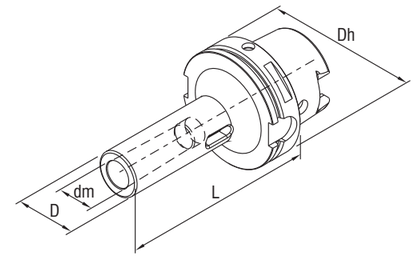
* The delivery includes corresponding spare parts
* The screw that needs center to pass oil, please indicate when ordering.

Spare Parts		ER11	ER16	ER20	ER25	ER32	ER40
	nut	NER11	NER16	NER20	NER25	NER32	NER40
	screw	SER11	SER16	SER20	SER25	SER32	SER40
Accessories		**ER11**	**ER16**	**ER20**	**ER25**	**ER32**	**ER40**
	wrench	WER11	WER16	WER20	WER25	WER32	WER40
	Coolant casing	TU-HSK40 Dh=40 ;TU-HSK50 h=50 ; TU-HSK63 Dh=63 ; TU-HSK100 Dh=100					
	wrench	W-HSK40 Dh=40 ;W-HSK50 Dh=50 ; W-HSK63 Dh=63 ; W-HSK100 Dh=100					

HSK (DIN 69893)

HSK Morse Taper Holders With Tang





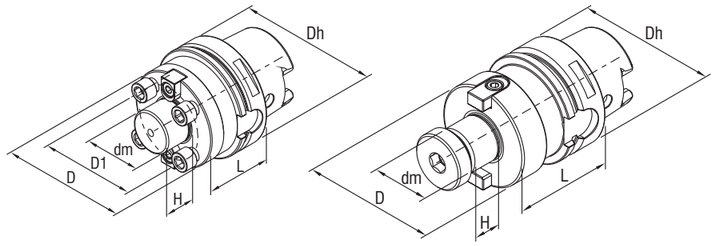
Model	Stock		Taper	Tool	Dh	dm	D	L
HSK40A-M1-90	O	HSK-A40	MT1	3-14	40	25	12.065	90
HSK40A-M2-105	O	HSK-A40	MT2	14-23	40	32	17.780	105
HSK50A-M1-100	O	HSK-A50	MT1	3-14	50	25	12.065	100
HSK50A-M2-120	O	HSK-A50	MT2	14-23	50	32	17.780	120
HSK50A-M3-140	O	HSK-A50	MT3	23-32	50	40	23.825	140
HSK63A-M1-100	O	HSK-A63	MT1	3-14	63	25	12.065	100
HSK63A-M2-120	O	HSK-A63	MT2	14-23	63	32	17.780	120
HSK63A-M3-140	O	HSK-A63	MT3	23-32	63	40	23.825	140
HSK63A-M4-160	O	HSK-A63	MT4	32-50	63	48	31.267	160
HSK100A-M1-110	O	HSK-A100	MT1	3-14	100	25	12.065	110
HSK100A-M2-120	O	HSK-A100	MT2	14-23	100	32	17.780	120
HSK100A-M3-150	O	HSK-A100	MT3	23-32	100	40	23.825	150
HSK100A-M4-170	O	HSK-A100	MT4	32-50	100	48	31.267	170
HSK100A-M5-200	O	HSK-A100	MT5	50-57	100	63	44.399	200

Accessories		Dh= 40	Dh= 50	Dh= 63	Dh= 100
	Coolant casing	TU-HSK40	TU-HSK50	TU-HSK63	TU-HSK100
	wrench	W-HSK40	W-HSK50	W-HSK63	W-HSK100

HSK (DIN 69893)

HSK Shell Mill Holders





Model	Stock		Dh	dm	D	D1	L	H
HSK40A-XM16-50	O	HSK-A40	40	16	40	-	50	17
HSK40A-XM22-50	O	HSK-A40	40	22	50	-	50	19
HSK40A-XM27-60	O	HSK-A40	40	27	60	-	60	21
HSK50A-XM16-50	O	HSK-A50	50	16	40	-	50	17
HSK50A-XM22-60	O	HSK-A50	50	22	50	-	60	19
HSK50A-XM27-60	O	HSK-A50	50	27	60	-	60	21
HSK63A-XM16-50	O	HSK-A63	63	16	40	-	50	17
HSK63A-XM16-100	O	HSK-A63	63	16	40	-	100	17
HSK63A-XM16-145	O	HSK-A63	63	16	40	-	145	17
HSK63A-XM22-50	O	HSK-A63	63	22	50	-	50	19
HSK63A-XM22-100	O	HSK-A63	63	22	50	-	100	19
HSK63A-XM22-160	O	HSK-A63	63	22	50	-	160	19
HSK63A-XM27-60	O	HSK-A63	63	27	60	-	60	21
HSK63A-XM27-100	O	HSK-A63	63	27	60	-	100	21
HSK63A-XM27-160	O	HSK-A63	63	27	60	-	160	21
HSK63A-XM32-60	O	HSK-A63	63	32	78	-	60	24
HSK63A-XM32-100	O	HSK-A63	63	32	78	-	100	24
HSK63A-XM32-160	O	HSK-A63	63	32	78	-	160	24
HSK63A-XM40-60	O	HSK-A63	63	40	89	66.7	60	27
HSK100A-XM22-50	O	HSK-A100	100	22	50	-	50	19
HSK100A-XM22-100	O	HSK-A100	100	22	50	-	100	19
HSK100A-XM27-50	O	HSK-A100	100	27	60	-	50	21
HSK100A-XM27-100	O	HSK-A100	100	27	60	-	100	21
HSK100A-XM27-160	O	HSK-A100	100	27	60	-	160	21
HSK100A-XM32-50	O	HSK-A100	100	32	78	-	50	24
HSK100A-XM32-100	O	HSK-A100	100	32	78	-	100	24
HSK100A-XM32-160	O	HSK-A100	100	32	78	-	160	24
HSK100A-XM40-60	O	HSK-A100	100	40	89	66.7	60	27
HSK100A-XM40-100	O	HSK-A100	100	40	89	66.7	100	27
HSK100A-XM40-160	O	HSK-A100	100	40	89	66.7	160	27

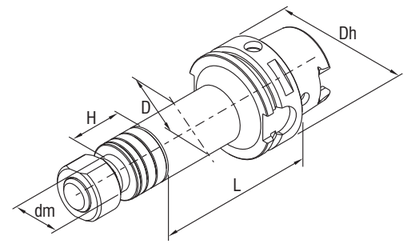
Spare Parts		dm= 16	dm= 22	dm= 27	dm= 32	dm= 40
	Set screw	SXM16	SXM22	SXM27	SXM32	SXM40
	key	KXM16	KXM22	KXM27	KXM32	KXM40

Accessories		dm= 16	dm= 22	dm= 27	dm= 32	dm= 40
	wrench	S6	S8	S10	S14	S17

HSK (DIN 69893)

HSK Slotting Cutter Holders





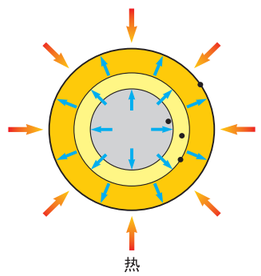
Model	Stock		Dh	dm	D	L	H
HSK40A-XS13-75	O	HSK-A40	40	13	20	75	15
HSK40A-XS16-75	O	HSK-A40	40	16	26	75	16
HSK40A-XS22-75	O	HSK-A40	40	22	34	75	21
HSK50A-XS13-75	O	HSK-A50	50	13	20	75	15
HSK50A-XS16-75	O	HSK-A50	50	16	26	75	16
HSK50A-XS22-75	O	HSK-A50	50	22	34	75	21
HSK63A-XS13-75	O	HSK-A63	63	13	20	75	15
HSK63A-XS13-105	O	HSK-A63	63	13	20	105	15
HSK63A-XS16-90	O	HSK-A63	63	16	26	90	16
HSK63A-XS16-120	O	HSK-A63	63	16	26	120	16
HSK63A-XS22-90	O	HSK-A63	63	22	34	90	21
HSK63A-XS22-135	O	HSK-A63	63	22	34	135	21
HSK63A-XS27-90	O	HSK-A63	63	27	40	90	25
HSK63A-XS27-135	O	HSK-A63	63	27	40	135	25
HSK63A-XS32-90	O	HSK-A63	63	32	46	90	30
HSK63A-XS32-135	O	HSK-A63	63	32	46	135	30
HSK100A-XS13-75	O	HSK-A100	100	13	20	75	15
HSK100A-XS13-105	O	HSK-A100	100	13	20	75	15
HSK100A-XS16-90	O	HSK-A100	100	16	26	90	16
HSK100A-XS16-120	O	HSK-A100	100	16	26	120	16
HSK100A-XS22-90	O	HSK-A100	100	22	34	90	21
HSK100A-XS22-135	O	HSK-A100	100	22	34	135	21
HSK100A-XS27-90	O	HSK-A100	100	27	40	90	25
HSK100A-XS27-135	O	HSK-A100	100	27	40	135	25
HSK100A-XS32-90	O	HSK-A100	100	32	46	90	30
HSK100A-XS32-135	O	HSK-A100	100	32	46	135	30
HSK100A-XS40-90	O	HSK-A100	100	40	55	90	36
HSK100A-XS40-135	O	HSK-A100	100	40	55	135	36

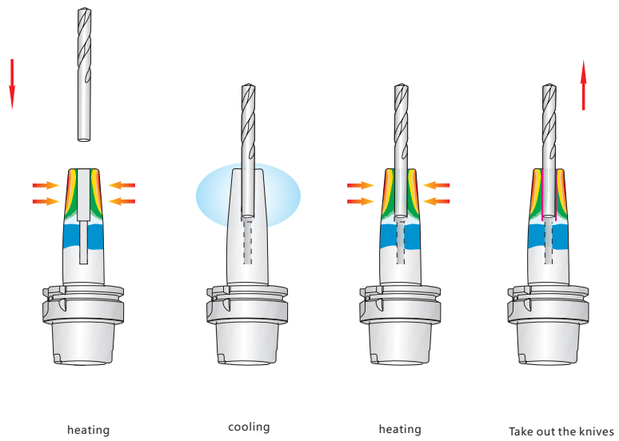
* The delivery includes corresponding spare parts

Spare Parts		dm= 13	dm= 16	dm= 22	dm= 27	dm= 32	dm= 40
	Set screw	NXS13	NXS16	NXS22	NXS27	NXS32	NXS40
	key	DXS13	DXS16	DXS22	DXS27	DXS32	DXS40
	The gasket	KXS13	KXS16	KXS22	KXS27	KXS32	KXS40

Accessories		dm= 13	dm= 16	dm= 22	dm= 27	dm= 32	dm= 40
	wrench	-	-	-	-	-	-

Heat set of principles





Concept:
The mouth hot charging tool system makes use of the principle of thermal expansion and cold contraction,
and uses the thermal sensing device to make the clamping part of the handle in a short time
The inner diameter of the heated handle expands accordingly, at which point the cutter is immediately loaded into the handle. When the shank is cooled and contracted. You can assign
■ Uniform pressure on the tool clamping surface, resulting in a high radial clamping force to firmly grip the tool.
The cutting tool and =There is no mechanical clamping part between the shank.
O Hot loading tool systems address the critical balance in high speed and high finish machining.
Vibration precision and clamping strength and other problems.

Advantages of hot loading handle:

Uniform clamping force makes the cutter jump very high (≤0.003mm).

Clamping force is big

Compact and symmetrical structure, small size

Can adapt to high speed rotation

Suitable for finishing and rough machining.

The tool shank part is firmly connected between the jacket, coolant can only be from

The cooling hole flows to the cutter.

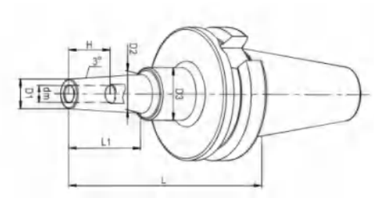
Hot clamping technology can increase cutting speed and feed rate while improving

Roughness of machined surface. Increase the life of the tool and spindle.

Hot charging handle

Tolerance
h6



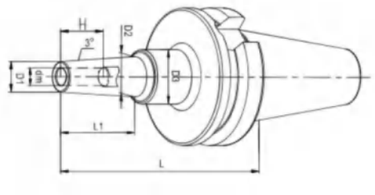


Model JIS B6339-AD	Stock		dm	L	L1	D1	D2	D3	H
BT30-ST03EA42-95	O	30	3	95	42	6	10.4	25	9
BT30-ST03EA67-120	O	30	3	120	67	6	13	25	9
BT30-ST04EA42-95	O	30	4	95	42	7	11.4	25	12
BT30-ST04EA67-120	O	30	4	120	67	7	14	25	12
BT30-ST06EA42-95	O	30	6	95	42	9	13.4	25	18
BT30-ST06EA67-120	O	30	6	120	67	9	16	25	18
BT30-ST08EA42-95	O	30	8	95	42	11	15.4	25	24
BT30-ST08EA67-120	O	30	8	120	67	11	18	32	24
BT30-ST10EA42-95	O	30	10	95	42	13	17.4	25	30
BT30-ST10EA67-120		30	10	120	67	13	20	32	30

Hot charging handle

Tolerance
h6





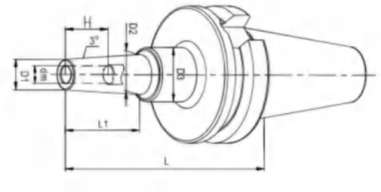
Model JIS B6339-AD	Stock		dm	L	L1	D1	D2	D3	H
BT40-ST03EA42-95	O	40	3	95	42	6	10.4	25	9
BT40-ST03EA67-120	O	40	3	120	67	6	13	25	9
BT40-ST03XA42-95	O	40	3	95	42	7.5	11.9	25	9
BT40-ST03XA67-120	O	40	3	120	67	7.5	14.5	25	9
BT40-ST04EA42-95	O	40	4	95	42	7	11.4	25	12
BT40-ST04EA67-120	O	40	4	120	67	7	14	25	12
BT40-ST04EA97-150	O	40	4	150	97	7	17.2	25	12
BT40-ST04EA97-1 80	O	40	4	180	97	7	17.2	25	12
BT40-ST04XA42-95	O	40	4	120	67	10	14.4	25	12
BT40-ST04XA67-120	O	40	4	150	97	10	17	25	12
BT40- -ST04XA97-150	O	40	4	180	127	10	20.2	25	12
BT40- -ST04XA127-180	O	40	4	120	67	10	23.3	32	12
BT40-ST06EA42-95	O	40	6	95	42	9	13.4	25	18
BT40-ST06EA67-120	O	40	6	120	67	9	16	25	18
BT40-ST06EA97-150	O	40	6	150	97	9	19.2	32	18
BT40-ST06EA97-1 80	O	40	6	180	97	9	19.2	32	18
BT40-ST06EB42-95	O	40	6	95	42	10	14.4	25	18
BT40-ST06EB67-120	O	40	6	120	67	10	17	25	18
BT40-ST06EB97-1 50	O	40	6	150	97	10	20.2	32	18
BT40-ST06EB127-180	O	40	6	180	127	10	23.2	32	18
BT40-ST08EA42-95	O	40	8	95	42	11	15.4	25	24
BT40-ST08EA67-120	O	40	8	120	67	11	18	32	24
BT40- -ST08EA97-150	O	40	8	1 50	97	11	21.2	32	24
BT40-ST08EA97-180	O	40	8	180	97	11	21.2	32	24
BT40-ST08EB42-95	O	40	8	95	42	13	17.4	32	24

WERNER

Hot charging handle

Tolerance
h6



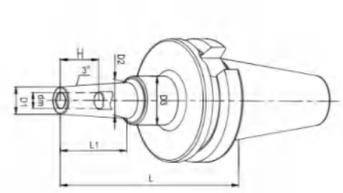


Model JIS B6339-AD	Stock		dm	L	L1	D1	D2	D3	H
BT40-ST08EB67-120	O	40	8	120	67	13	20	32	24
BT40- ST08EB97-150	O	40	8	150	97	13	23.2	32	24
BT40-ST08EB127-180	O	40	8	180	127	13	26.3	32	24
BT40-ST10EA42-95	O	40	10	95	42	13	17.4	25	30
BT40-ST10EA67-120	O	40	10	120	67	13	20	32	30
BT40-ST10EA97-150	O	40	10	150	97	13	23.2	32	30
BT40-ST10EA97-180	O	40	10	180	97	13	23.2	32	30
BT40-ST10EB42-95	O	40	10	95	42	16	20.4	25	30
BT40-ST10EB67-120	O	40	10	120	67	16	23	25	30
BT40-ST10EB97-150	O	40	10	150	97	16	26.2	32	30
BT40-ST10EB127-180	O	40	10	180	127	16	29.3	42	30
BT40-ST12EA42-95	O	40	12	95	42	15	19.4	32	30
BT40-ST12EA67-120	O	40	12	120	67	15	22	32	30
BT40-ST12EA97-150	O	40	12	150	97	15	25.2	32	30
BT40-ST12EA97-180	O	40	12	180	97	15	25.2	32	30
BT40-ST12EB42-95	O	40	12	95	42	19	23.4	25	30
BT40-ST12EB67-120	O	40	12	120	67	19	26	25	30
BT40-ST12EB97-150	O	40	12	150	97	19	29.2	32	30
BT40-ST12EB127-180	O	40	12	180	127	19	32.3	42	30

Hot charging handle

Tolerance
h6





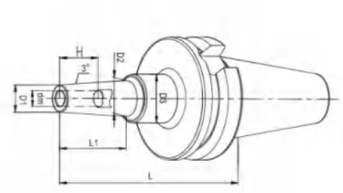
Model JIS B6339-AD	Stock		dm	L	L1	D1	D2	D3	H
BT50-ST03EA42-110	O	50	3	110	42	6	10.4	25	9
BT50-ST03EA67-135	O	50	3	135	67	6	13	25	9
BT50-ST03XA42-110	O	50	3	110	42	7.5	11.9	25	9
BT50- ST03XA67-135	O	50	3	135	67	7.5	14.5	25	9
BT50- -ST04EA42-110	O	50	4	110	42	7	11.4	25	12
BT50-ST04EA67-135	O	50	4	135	67	7	14	25	12
BT50-ST04EA97-165	O	50	4	165	97	7	17.2	25	12
BT50-ST04EA97-195	O	50	4	195	97	7	17.2	25	12
BT50-ST04XA42-110	O	50	4	195	67	10	14.4	25	12
BT50-ST04XA67-135	O	50	4	110	97	10	17	25	12
BT50-ST04XA97-165	O	50	4	135	127	10	20.2	25	12
BT50-ST04XA127-195	O	50	4	165	67	10	23.3	32	12
BT50- -ST06EA42-110	O	50	6	195	42	9	13.4	25	18
BT50- -ST06EA97-165	O	50	6	135	97	9	19.2	32	18
BT50- -ST06EA97-195	O	50	6	165	97	9	19.2	32	18
BT50-ST06EB42-110	O	50	6	195	42	10	14.4	25	18
BT50- -ST06EB67-135	O	50	6	110	67	10	17	25	18
BT50- ST06EB97-1 65	O	50	6	135	97	10	20.2	32	18
BT50- ST06EB127-195	O	50	6	165	127	10	23.2	32	18
8T50-ST08EA42-110	O	50	8	195	42	11	15.4	25	24
BT50- -ST08EA67-135	O	50	8	110	67	11	18	32	24
BT50-ST08EA97-165	O	50	8	135	97	11	21.2	32	24
BT50-ST08EA97-195	O	50	8	165	97	11	21.2	32	24
BT50- -ST08EB42-110	O	50	8	195	42	13	17.4	32	24

WERNER

Hot charging handle

Tolerance
h6



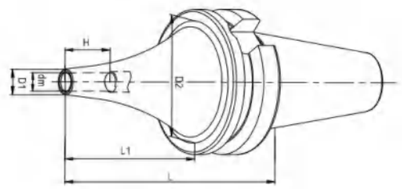


Model JIS B6339-AD	Stock		dm	L	L1	D1	D2	D3	H
BT50-ST08EB67-135	O	50	8	135	67	13	20	32	24
BT50-ST08EB97-165	O	50	8	165	97	13	23.2	32	24
BT50-ST08EB127-195	O	50	8	195	127	13	26.3	32	24
BT50-ST10EA42-110	O	50	10	110	42	13	17.4	25	30
BT50-ST10EA67-135	O	50	10	135	67	13	20	32	30
BT50-ST10EA97-165	O	50	10	165	97	13	23.2	32	30
BT50-ST10EA97-195	O	50	10	195	97	13	23.2	32	30
BT50-ST10EB42-110	O	50	10	110	42	16	20.4	25	30
BT50-ST10EB67-135	O	50	10	135	67	16	23	25	30
BT50-ST10EB97-165	O	50	10	165	97	16	26.2	32	30
BT50-ST 10EB127-195	O	50	10	195	127	16	29.3	42	30
BT50-ST12EA42-110	O	50	12	110	42	15	19.4	32	30
BT50-ST12F A67-135	O	50	12	135	67	15	22	32	30
BT50-ST12E A97-165	O	50	12	165	97	15	25.2	32	30
BT50-ST12E A97-195	O	50	12	195	97	15	25.2	32	30
BT50-ST12EB42-110	O	50	12	110	42	19	23.4	25	30
BT50-ST12EB67-135	O	50	12	135	67	19	26	25	30
BT50-ST12EB97-1 G5	O	50	12	165	97	19	29.2	32	30
BT50-ST12EB127-1 95	O	50	12	195	127	19	32.3	42	30

Hot charging handle

Tolerance
h6



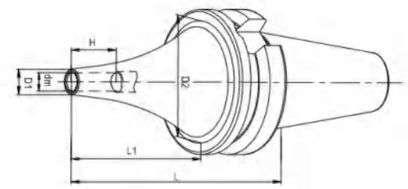


Model JIS B6339-AD	Stock		dm	L1	L2	D1	D2	H
BT30-ST04EA-90Q	○	30	4	90	68	7	34	12
BT30-ST04EA-120Q	○	30	4	120	98	7	34	12
BT30-ST06EA-90Q	○	30	6	90	68	9	34	18
BT30-ST06EA-120Q	○	30	6	120	98	9	34	18
BT30-ST08EA-90Q	○	30	8	90	68	11	34	24
BT30-ST10EA-90Q	○	30	10	90	68	13	34	30
BT40-ST04EA-90Q	○	40	4	90	63	7	53	12
BT40-ST04EA-120Q	○	40	4	120	93	7	53	12
BT40-ST04EA-150Q	○	40	4	150	123	7	53	12
BT40-ST04EA-1 80Q	○	40	4	180	153	7	53	12
BT40-ST06EA-90Q	○	40	6	90	63	9	53	18
BT40-ST06EA-120Q	○	40	6	120	93	9	53	18
BT40-ST06EA-150Q	○	40	6	150	123	9	53	18
BT40-ST06EA-180Q	○	40	6	180	153	9	53	18
BT40-ST08EA-90Q	○	40	8	90	63	11	53	24
BT40-ST08EA-120Q	○	40	8	120	93	11	53	24
BT40-ST08EA-150Q	○	40	8	150	123	11	53	24
BT40-ST08EA-180Q	○	40	8	180	153	11	53	24
BT40-ST10EA-90Q	○	40	10	90	63	13	53	30
BT40-ST10EA-120Q	○	40	10	120	93	13	53	30
BT40-ST10EA-150Q	○	40	10	150	123	13	53	30
BT40-ST10EA-180Q	○	40	10	180	153	13	53	30
BT40-ST12EA-90Q	○	40	12	90	63	15	53	30
BT40-ST12EA-120Q	○	40	12	120	93	15	53	30
BT40-ST12EA-150Q	○	40	12	150	123	15	53	30

Hot charging handle

Tolerance
h6



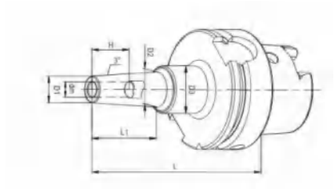


Model JIS B6339- AD	Stock		dm	L1	L2	D1	D2	H
BT40-ST12EA-1 80Q	○	40	12	180	153	15	53	30
BT50-ST04EA-165Q	○	50	4	165	127	7	85	12
BT50-ST04EA-225Q	○	50	4	225	187	7	85	12
BT50-ST06EA-165Q	○	50	6	165	127	9	85	18
BT50-ST06EA-225Q	○	50	6	225	187	9	85	18
BT50-ST08EA-165Q	○	50	8	165	127	11	85	24
BT50-ST08EA-225Q	○	50	8	225	187	11	85	24
BT50-ST10EA-165Q	○	50	10	165	127	13	85	30
BT50-ST10EA-225Q	○	50	10	225	187	13	85	30
BT50-ST12EA-165Q	○	50	12	165	127	15	85	30
BT50-ST12EA-225Q	○	50	12	225	187	15	85	30

Hot charging handle

Tolerance
h6





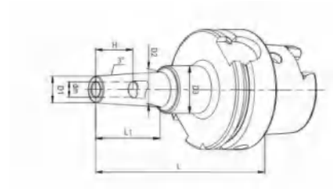
Model DIN69893-A	Stock		dm	L	L1	D1	D2	D3	H
HSK63A-ST03EA42-95	O	63	3	95	42	6	10.4	25	9
HSK63A-ST03EA67-120	O	63	3	120	67	6	13	25	9
HSK63A-ST03XA42-95	O	63	3	95	42	7.5	11.9	25	9
HSK63A-ST03XA67-120	O	63	3	120	67	7.5	14.5	25	9
HSK63A-ST04EA42-95	O	63	4	95	42	7	11.4	25	12
HSK63A-ST04EA67-120	O	63	4	120	67	7	14	25	12
HSK63A-ST04EA97-150	O	63	4	150	97	7	17.2	25	12
HSK63A-ST04EA97-180	O	63	4	180	97	7	17.2	25	12
HSK63A-ST04XA42-95	O	63	4	120	67	10	14.4	25	12
HSK63A-ST04XA67-120	O	63	4	150	97	10	17	25	12
HSK63A-ST04XA97-150	O	63	4	180	127	10	20.2	25	12
HSK63A-ST04XA127-180	O	63	4	120	67	10	23.3	32	12
HSK63A-ST06EA42-95	O	63	6	95	42	9	13.4	25	18
HSK63A-ST06EA97-150	O	63	6	150	97	9	19.2	32	18
HSK63A-ST06EA97-180	O	63	6	180	97	9	19.2	32	18
HSK63A-ST06EB42-95	O	63	6	95	42	10	14.4	25	18
HSK63A-ST06EB67-120	O	63	6	120	67	10	17	25	18
HSK63A-ST06EB97-1 50	O	63	6	150	97	10	20.2	32	18
HSK63A-ST06EB127-180	O	63	6	180	127	10	23.2	32	18
HSK63A-ST08EA42-95	O	63	8	95	42	11	15.4	25	24
HSK63A-ST08EA67-120	O	63	8	120	67	11	18	32	24
HSK63A-ST08EA97-1 50	O	63	8	150	97	11	21.2	32	24
HSK63A-ST08EA97-180	O	63	8	180	97	11	21.2	32	24
HSK63A-ST08EB42-95	O	63	8	95	42	13	17.4	32	24

WERNER

Hot charging handle

Tolerance
h6



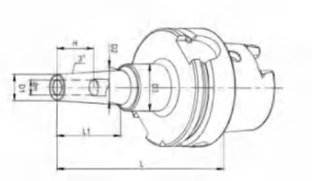


Model DIN69893-A	Stock		dm	L	L1	D1	D2	D3	H
HSK63A-ST08EB67-120	O	63	8	120	67	13	20	32	32
HSK63A-ST08EB97-150	O	63	8	150	97	13	23.2	32	32
HSK63A-ST08EB127-180	O	63	8	180	127	13	26.3	32	32
HSK63A-ST10EA42-95	O	63	10	95	42	13	17.4	25	25
HSK63A-ST 10EA67-120	O	63	10	120	67	13	20	32	32
HSK63A-ST10EA97-1 50	O	63	10	150	97	13	23.2	32	32
HSK63A-ST10EA97-180	O	63	10	180	97	13	23.2	32	32
HSK63A-ST10EB42-95	O	63	10	95	42	16	20.4	25	25
HSK63A-ST10EB67-120	O	63	10	120	67	16	23	25	25
HSK63A-ST 10EB97-150	O	63	10	150	97	16	26.2	32	32
HSK63A-ST10EB127-180	O	63	10	180	127	16	29.3	42	42
HSK63A-ST12EA42-95	O	63	12	95	42	15	19.4	32	32
HSK63A-ST12EA67-120	O	63	12	120	67	15	22	32	32
HSK63A-ST12EA97-150	O	63	12	150	97	15	25.2	32	32
HSK63A-ST12EA97-180	O	63	12	180	97	15	25.2	32	32
HSK63A-ST12EB42-95	O	63	12	95	42	19	23.4	25	25
HSK63A-ST12EB67-120	O	63	12	120	67	19	26	25	25
HSK63A-ST12EB97-1 50	O	63	12	150	97	19	29.2	32	32
HSK63A-ST 12EB 127-180	O	63	12	180	127	19	32.3	42	42

Hot charging handle

Tolerance
h6





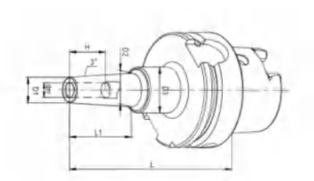
Model DIN69893-A	Stock		dm	L	L1	D1	D2	D3	H
HSK 100A-ST03EA42-110	O	100	3	110	42	6	10.4	25	9
HSK100A-ST03EA67-135	O	100	3	135	67	6	13	25	9
HSK 100A- ST03XA42-110	O	100	3	110	42	7.5	11.9	25	9
HSK100A-ST03XA67-135	O	100	3	135	67	7.5	14.5	25	9
HSK100A-ST04EA42-110	O	100	4	110	42	7	11.4	25	12
HSK 100A-ST04EA67-135	O	100	4	135	67	7	14	25	12
HSK100A-ST04EA97-165	O	100	4	165	97	7	17.2	25	12
HSK 100A-ST04EA97-195	O	100	4	195	97	7	17.2	25	12
HSK 100A-ST04XA42-110	O	100	4	110	67	10	14.4	25	12
HSK 100A-ST04XA67-135	O	100	4	135	97	10	17	25	12
HSK 100A- ST04XA97-165	O	100	4	165	127	10	20.2	25	12
HSK100A-ST04XA127-195	O	100	4	195	67	10	23.3	32	12
HSK 100A-ST06EA42-110	O	100	6	110	42	9	13.4	25	18
HSK 100A-ST06EA67-135	O	100	6	135	67	9	16	25	18
HSK 100A-ST06EA97-165	O	100	6	165	97	9	19.2	32	18
HSK 100A-ST06EA97-195	O	100	6	195	97	9	19.2	32	18
HSK100A-ST06EB42-110	O	100	6	110	42	10	14.4	25	18
HSK100A-ST06EB67-135	O	100	6	135	67	10	17	25	18
HSK 100A- ST06EB97-165	O	100	6	165	97	10	20.2	32	18
HSK100A-ST06EB127-195	O	100	6	195	127	10	23.2	32	18
HSK100A-ST08EA42-110	O	100	8	110	42	11	15.4	25	25
HSK 100A-ST08EA67-135	O	100	8	135	67	11	18	32	25
HSK100A-ST08EA97-165	O	100	8	165	97	11	21.2	32	25
HSK100A-ST08EA97-195	O	100	8	195	97	11	21.2	32	25
HSK100A-ST08EB42-110	O	100	8	110	42	13	17.4	32	25

WERNER

Hot charging handle

Tolerance
h6



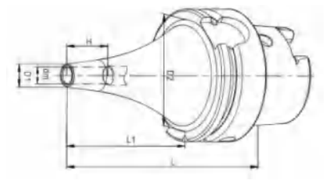


Model DIN69893-A	Stock		dm	L	L1	D1	D2	D3	H
HSK 100A-ST08EB67-135	O	100	8	135	67	13	20	32	24
HSK 100A-ST08EB97-165	O	100	8	165	97	13	23.2	32	24
HSK 100A-ST08EB127-195	O	100	8	195	127	13	26.3	32	24
HSK100A-ST10EA42-110	O	100	10	110	42	13	17.4	25	30
HSK100A-ST10EA67-135	O	100	10	135	67	13	20	32	30
HSK100A-ST10EA97-165	O	100	10	165	97	13	23.2	32	30
HSK 100A-ST10EA97-195	O	100	10	195	97	13	23.2	32	30
HSK 100A-ST10EB42-110	O	100	10	110	42	16	20.4	25	30
HSK 100A-ST10EB67-135	O	100	10	135	67	16	23	25	30
HSK 100A-ST10EB97-165	O	100	10	165	97	16	26.2	32	30
HSK 100A- ST 10EB127-195	O	100	10	195	127	16	29.3	42	30
HSK100A-ST12EA42-110	O	100	12	110	42	15	19.4	32	30
HSK100A-ST12EA67-135	O	100	12	135	67	15	22	32	30
HSK100A-ST12EA97-1 65	O	100	12	165	97	15	25.2	32	30
HSK 100A-ST12EA97-195	O	100	12	195	97	15	25.2	32	30
HSK100A-ST12EB42-110	O	100	12	110	42	19	23.4	25	30
HSK 100A-ST12EB67-135	O	100	12	135	67	19	26	25	30
HSK 100A-ST12EB97-165	O	100	12	165	97	19	29.2	32	30
HSK100A-ST12EB127-195	O	100	12	195	127	19	32.3	42	30

Hot charging handle

Tolerance
h6



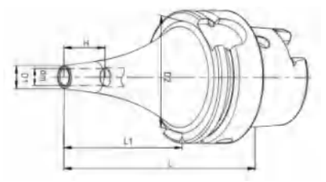


Model DIN69893-A	Stock		dm	L1	L2	D1	D2	H
HSK63A-ST04EA-90Q	O	63	4	90	64	7	53	12
HSK63A-ST04EA- 120Q	O	63	4	120	94	7	53	12
HSK63A-ST04 EA-150Q	O	63	4	150	124	7	53	12
HSK63A-ST04EA-1 80Q	O	63	4	180	154	7	53	12
HSK63A-ST06EA-90Q	O	63	6	90	64	9	53	18
HSK63A-ST06EA-120Q	O	63	6	120	94	9	53	18
HSK63A-ST06EA-1 50Q	O	63	6	150	124	9	53	18
HSK63A-ST06EA-180Q	O	63	6	180	154	9	53	18
HSK63A-ST08EA-90Q	O	63	8	90	64	11	53	24
HSK63A-ST08EA- 120Q	O	63	8	120	94	11	53	24
HSK63A-ST08EA-1 50Q	O	63	8	150	124	11	53	24
HSK63A-ST08EA-180Q	O	63	8	180	154	11	53	24
HSK63A-ST10EA-90Q	O	63	10	90	64	13	53	30
HSK63A-ST10EA- 120Q	O	63	10	120	94	13	53	30
HSK63A-ST10EA-1 50Q	O	63	10	150	124	13	53	30
HSK63A-ST10EA-180Q	O	63	10	180	154	13	53	30
HSK63A-ST12EA-90Q	O	63	12	90	64	15	53	30
HSK63A-ST12EA-120Q	O	63	12	120	94	15	53	30
HSK63A-ST12EA-150Q	O	63	12	150	124	15	53	30
HSK63A-ST12EA-180Q	O	63	12	180	154	15	53	30

Hot charging handle

Tolerance
h6



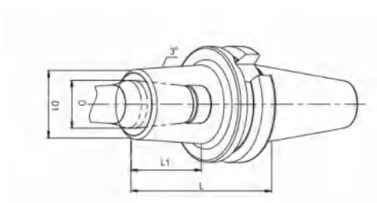


Model DIN69893-A	Stock		dm	L1	L2	D1	D2	H
HSK100A-ST04EA-1 65Q	O	100	4	165	136	7	85	12
HSK100A-ST04EA-225Q	O	100	4	225	196	7	85	12
HSK100A-ST06EA-1 65Q	O	100	6	165	136	9	85	18
HSK100A-ST06E A-225Q	O	100	6	225	196	9	85	18
HSK100A-ST08EA-165Q	O	100	8	165	136	11	85	24
HSK100A-ST08EA-225Q	O	100	8	225	196	11	85	24
HSK100A-ST10EA-165Q	O	100	10	165	136	13	85	30
HSK100A-ST10EA-225Q	O	100	10	225	196	13	85	30
HSK100A-ST12EA-1 65Q	O	100	12	165	136	15	85	30
HSK100A-ST12E A-225Q	O	100	12	225	196	15	85	30

Hot charging handle

Tolerance
h6





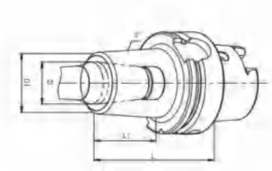
Model JIS B6339-AD	Stock		D	L	L1	D1
BT40-STK26-75	O	40	26	75	48	38
BT40-STK26-135	O	40	26	135	108	38
BT50-STK26-105	O	50	26	105	67	38
BT50-STK26-135	O	50	26	135	97	38

WERNER

Hot charging handle

Tolerance
h6



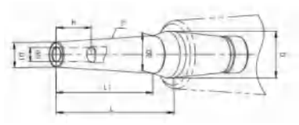


Model DIN69893-A	Stock		D	L	L1	D1
HSK63A-STK26-75	O	63	26	75	49	38
HSK63A-STK26-135	O	63	26	135	109	38
HSK100A-STK26-105	O	100	26	105	76	38
HSK 100A-STK26-135	O	100	26	135	106	38

Hot charging handle

Tolerance
h6



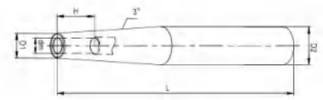


Model	Stock	dm	D	L	L1	D1	D2	H
CE26-ST03-80	O	3	26	80	67	6	13.1	9
CE26-ST03-110	O	3	26	110	97	6	16.2	9
CX26-ST03-80	O	3	26	80	67	7.5	14.6	9
CE26-ST04-80	O	4	26	80	67	7	14.1	12
CE26-ST04-110	O	4	26	110	97	7	17.2	12
CX26-ST04-80	O	4	26	80	67	10	17.1	12
CE26-ST06-80	O	6	26	80	67	9	16.1	18
CE26-ST06-110	O	6	26	110	97	9	19.2	18
CX26-ST06-80	O	6	26	80	67	12	19.1	18
CE26-ST08-80	O	8	26	80	67	11	18.1	24
CE26-ST08-110	O	8	26	110	97	11	21.2	24
CX26-ST08-80	O	8	26	80	67	14	21.1	24
CE26-ST10-80	O	10	26	80	67	13	20.1	30
CE26-ST10-110	O	10	26	110	97	13	23.2	30
CX26-ST10-80	O	10	26	80	67	16	23.1	30
CE26-ST12-80	O	12	26	80	67	15	22.1	30
CE26-ST12-110	O	12	26	110	97	15	/	30
CX26-ST12-80	O	12	26	80	67	20	/	30

Hot charging handle

Tolerance
h6

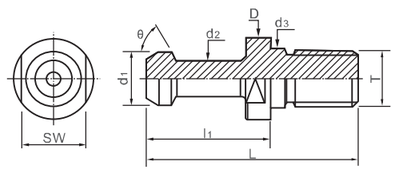




Model	Stock	dm	L	D1	D2	H
C10-ST04EA-80	O	4	80	7	10	12
C10-ST04EA-80	O	4	80	7	10	12
C16-ST06EA-140	O	6	140	9	16	18
C16-ST06EB-140	O	6	140	10	16	18
C16-ST08EA-115	O	8	115	11	16	24
C20-ST06EA-175	O	6	175	9	20	18
C20-ST06EB-1 75	O	6	175	10	20	18
C20-ST08EA-1 75	O	8	175	11	20	24
C20-ST08EB-145	O	8	145	13	20	24
C20-ST10EA-145	O	10	145	13	20	30
C20-ST10EB-120	O	10	120	16	20	30
C20-ST12EA-120	O	12	120	15	20	30

Pull Studs



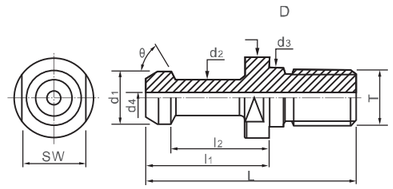


Model	Stock	D	d1	d2	d3	L	l1	T
BT30-45°	O	16.5	11	7	12.5	42	23	M12
BT40-45°	O	23	15	10	17	60	35	M16
BT50-45°	O	38	23	17	25	85	45	M24
BT30-60°	O	16.5	11	7	12.5	43	23	M12
BT40-60°	O	23	15	10	17	60	35	M16
BT50-60°	O	38	23	17	25	85	45	M24
BT30-90°	O	16.5	11	7	12.5	43	23	M12
BT40-90°	O	23	15	10	17	60	35	M16
BT50-90°	O	38	23	17	25	85	45	M24

- There is no cooling hole in conventional manufacturing, if there is a cooling hole, please specify when ordering.

BT Pull stud(centre through coolant)





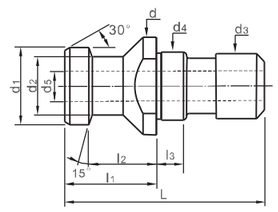
Model	Stock	D	D1	D2	D3	D4	L	L1	L2	T
BT40-45° W	O	23	15	10	17	4	60	35	28	M16
BT40-60° W	O	23	15	10	17	4	60	35	28	M16
BT40-90° W	O	23	15	10	17	4	60	35	28	M16
BT50-45° W	O	38	23	17	25	5	85	45	35	M24
BT50-60° W	O	38	23	17	25	5	85	45	35	M24
BT50-90° W	O	38	23	17	25	5	85	45	35	M24

- There is no cooling hole in conventional manufacturing, if there is a cooling hole, please specify when ordering.

DIN (69872)

Pull Studs



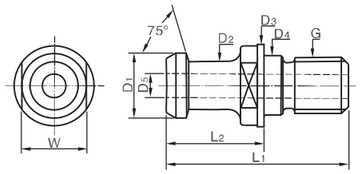


Model	Stock	L	L1	L2	L3	d	d1	d2	d3	d4	d5
DIN69872-30	O	44	24	19	5	17	13	9	M12	13	-
DIN69872-40(A)	O	54	26	20	7	23	19	14	M16	17	7.0
DIN69872-50(A)	O	74	34	25	10	36	28	21	M24	25	11.5

- There is no cooling hole in conventional manufacturing, if there is a cooling hole, please specify when ordering.

JIS Pull stud





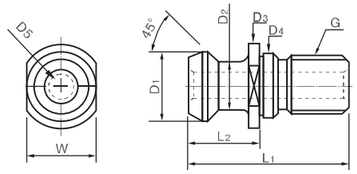
Model	Stock	l1	l2	D1	D2	D3	D4	D5	W	G
JIS B6339-40P	O	54	29	19	14	23	17	7	19	M16
JIS B6339-50P	O	74	34	28	21	38	25	10	30	M24

- There is no cooling hole in conventional manufacturing, if there is a cooling hole, please specify when ordering.

(MAZAK)

Pull Studs



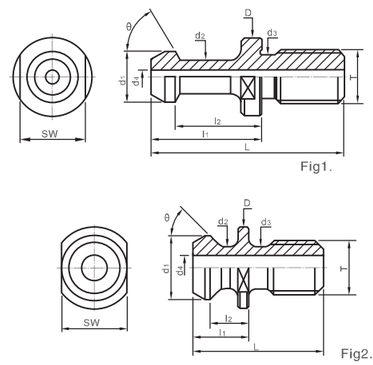


Model	Stock	L1	L2	D1	D2	D3	D4	D5	W	G
MAZAK-BT40	O	44.1	19.1	18.8	12.45	22	17	7	19	M16
MAZAK-BT50	O	65.2	25.2	29	20.83	37	25	10	30	M24

- There is no cooling hole in conventional manufacturing, if there is a cooling hole, please specify when ordering.

CAT



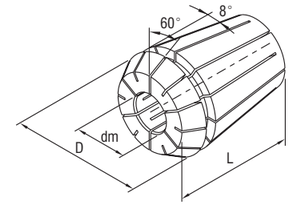


Model	Stock	D	d1	d2	d3	d4	L	l1	l2	SW	T-UNG	Fig
CAT30-45° - ANSI	O	0.65	0.25	0.385	0.385	-	1.10	0.460	0.320	0.53	1/2"-13	2
CAT40-45° -ANSI	O	0.94	0.74	0.490	0.490	-	1.50	0.460	0.440	0.75	5/8"-11	
CAT50-45° - ANSI	O	1.44	1.14	0.820	0.820	-	2.30	1.00	0.700	1.25	1"- 8	
CAT40-45° -W	O	0.94	0.74	0.490	0.490	0.281	1.50	0.640	0.440	0.75	5/8"-11	
CAT50-45° - W	O	1.44	1.14	0.820	0.820	0.468	2.30	1.00	0.400	1.25	1"-8	
CAT40-45° -MAS	O	0.905	0.590	0.394	0.512	-	2.25	1.266	0.99	0.748	5/8"-11	1
CAT40-60° -MAS	O	0.905	0.590	0.394	0.512	-	2.25	1.266	0.99	0.748	5/8"-11	
CAT40-90° -MAS	O	0.905	0.590	0.394	0.512	-	2.25	1.266	0.99	0.748	5/8"-11	
CAT50- 45° - MAS	O	1.102	0.906	0.669	0.827	-	3.346	-	1.378	1.181	1"-8	
CAT50- 60° - MAS	O	1.102	0.906	0.669	0.827	-	3.346	-	1.378	1.181	1"-8	
CAT50-90° -MAS	O	1.102	0.906	0.669	0.827	-	3.346	-	1.378	1.181	1"-8	
CTA40-45°	O	0.905	0.590	0.394	0.512	0.157	2.25	1.266	0.99	0.748	5/8"-11	
CTA40-60°	O	0.905	0.590	0.394	0.512	0.157	2.25	1.266	0.99	0.748	5/8"-11	
CTA40-90°	O	0.905	0.590	0.394	0.512	0.157	2.25	1.266	0.99	0.748	5/8"-11	
CTA50- 45°	O	1.102	0.906	0.669	0.827	0.256	3.346	1.722	1.378	1.181	1"-8	
CTA50- 60°	O	1.102	0.906	0.669	0.827	0.256	3.346	1.722	1.378	1.181	1"-8	
CTA50-90°	O	1.102	0.906	0.669	0.827	0.256	3.346	1.722	1.378	1.181	1"-8	
CAT30-45° -M	O	0.65	0.52	0.385	0.385	-	1.10	0.460	0.320	0.53	M12x1.75P	
CAT40-45° -M	O	0.94	0.74	0.490	0.490	-	1.50	0.640	0.440	0.75	M16x2.0P	2
CAT50-45° -M	O	1.44	1.140	0.820	0.820	-	2.30	1.00	0.700	1.25	M2.4x3.0P	

ER(DIN6499)

ER Collets



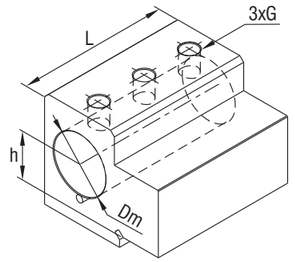


Matters needing attention:
- Cutting tool clamping less than 2/3 of the hole length of the spring will cause permanent damage to the spring.
- The best clamping accuracy and clamping force can be obtained by clamping equal to the length of the hole in the clamping spring.
- The diameter of the clamping tool shall not be greater than the maximum clamping diameter of the clamping spring.

	ER11	ER16	ER20	ER25	ER32	ER40	
dm	L/D (mm)	L/D (mm)	L/D (mm)	L/D (mm)	L/D (mm)	L/D (mm)	dm
(mm)	18.5/11.5	27.5/17.0	31.5/21.0	34.0/26.0	40.0/33.0	46.0/41.0	(mm)
1.0-0.5	ER11-1	ER16-1					1.0-0.5
1.5-1.0	ER11-1.5						1.5-1.0
2.0-1.5	ER11-2	ER16-2	ER20-2	ER25-2			2.0-1.5
2.5-2.0	ER11-2.5						2.5-2.0
3.0-2.5	ER11-3	ER16-3	ER20-3	ER25-3	ER32-3		3.0-2.5
3.5-3.0	ER11-3.5						3.5-3.0
4.0-3.5	ER11-4	ER16-4	ER20-4	ER25-4	ER32-4	ER40-4	4.0-3.5
4.5-4.0	ER11-4.5						4.5-4.0
5.0-4.5	ER11-5	ER16-5	ER20-5	ER25-5	ER32-5	ER40-5	5.0-4.5
5.5-5.0	ER11-5.5						5.5-5.0
6.0-5.5	ER11-6	ER16-6	ER20-6	ER25-6	ER32-6	ER40-6	6.0-5.5
6.5-6.0	ER11-6.5						6.5-6.0
7.0-6.5	ER11-7						7.0-6.5
7.0-6.0	ER11-1.5	ER16-7	ER20-7	ER25-7	ER32-7	ER40-7	7.0-6.0
8.0-7.0		ER16-8	ER20-8	ER25-8	ER32-8	ER40-8	8.0-7.0
9.0-8.0	ER11-1.5	ER16-9	ER20-9	ER25-9	ER32-9	ER40-9	9.0-8.0
10.0-9.0		ER16-10	ER20-10	ER25-10	ER32-10	ER40-10	10.0-9.0
11.0-10.0	ER11-1.5		ER20-11	ER25-11	ER32-11	ER40-11	11.0-10.0
12.0-11.0			ER20-12	ER25-12	ER32-12	ER40-12	12.0-11.0
13.0-12.0	ER11-1.5		ER20-13	ER25-13	ER32-13	ER40-13	13.0-12.0
14.0-13.0				ER25-14	ER32-14	ER40-14	14.0-13.0
15.0-14.0	ER11-1.5			ER25-15	ER32-15	ER40-15	15.0-14.0
16.0-15.0				ER25-16	ER32-16	ER40-16	16.0-15.0
17.0-16.0	ER11-1.5				ER32-17	ER40-17	17.0-16.0
18.0-17.0					ER32-18	ER40-18	18.0-17.0
19.0-18.0	ER11-1.5				ER32-19	ER40-19	19.0-18.0
20.0-19.0					ER32-20	ER40-20	20.0-19.0
21.0-20.0	ER11-1.5					ER40-21	21.0-20.0
22.0-21.0						ER40-22	22.0-21.0
23.0-22.0	ER11-1.5					ER40-23	23.0-22.0
24.0-23.0						ER40-24	24.0-23.0
25.0-24.0	ER11-1.5					ER40-25	25.0-24.0
26.0-25.0						ER40-26	26.0-25.0
	h8	h8	h8	h8	h8	h8	

Internal turning blocks





Model	DmH7	h±0.1	L	G	Sleeve	
EF16.20.75	20	16	75	M8	RS08012	S4
EF20.25.80	25	20	80	M10	RS10012	S5
EF25.32.80	32	25	80	M12	RS12016	S6
EF32.40.100	40	32	100	M12	RS12016	S6

● Ordering examing:1 piece EF20.25.80

The transition of

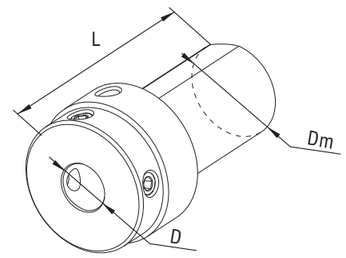


Fig 1

(Suitable for steel boring bar)

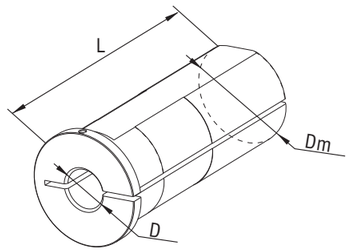


Fig 2

(Suitable for alloy boring bar)

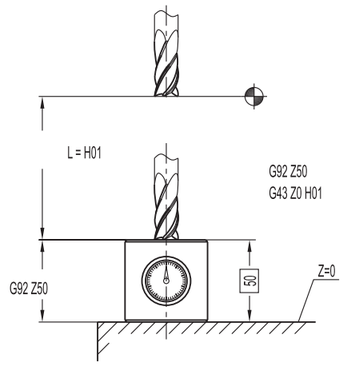
Model	Dm	D	L	
RES20-	20	10,12,16	85	
RES25-	25	10,12,16,20	85	
RES32-	32	10,12,16,20,25	85	Fig 1
RES40-	40	12,16,20,25,32	100	
REB20-	20	10,12,16	75	
REB25-	25	10,12,16,20	80	
REB32-	32	10,12,16,20,25	80	Fig 2
REB40-	40	12,16,20,25,32	100	

● Ordering examing:1 piece EF20.25.80

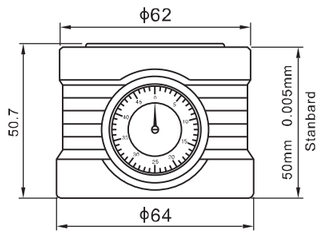
Z-axis setters

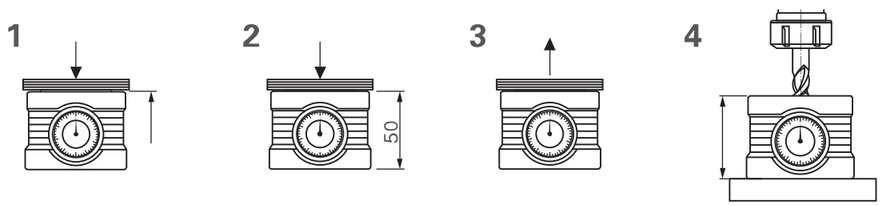


Instructions: Place THE ZDS-50 on the workpiece, and slowly contact the tool with the detection surface to adjust the tool.Height, set the table to zero. At this point, the tool offset is 500.005.



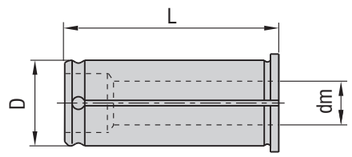
Model	H
ZDI-50A	50





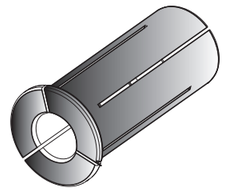
Straight Collets

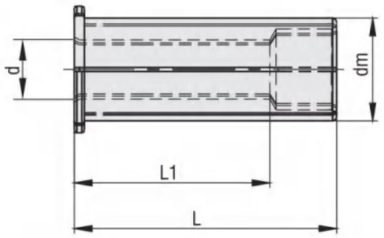




dm	C20 L/D (mm) 55/20	C22 L/D (mm) 55/22	C25 L/D (mm) 60/25	C32 L/D (mm) 64/32	dm
4	C20-4	C22-4	C25-4	C32-4	4
5	C20-5	C22-5	C25-5	C32-5	5
6	C20-6	C22-6	C25-6	C32-6	6
8	C20-8	C22-8	C25-8	C32-8	8
10	C20-10	C22-10	C25-10	C32-10	10
12	C20-12	C22-12	C25-12	C32-12	12
14	C20-14	C22-14	C25-14	C32-14	14
16	C20-16	C22-16	C25-16	C32-16	16
18		C22-18	C25-18	C32-18	18
20		C22-20	C25-20	C32-20	20
25			C25-25	C32-25	25
	h6	h6	h6	h6	

Hydraulic Collets



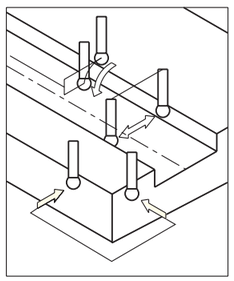


Model	Stock	dm	d	L	L1
HC10-3C	O	10	3	42	25
HC10-4C	O	10	4	42	25
HC10-5C	O	10	5	42	25
HC10-6C	O	10	6	42	32
HC10-7C	O	10	7	42	33
HC10-8C	O	10	8	42	33
HC16-3C	O	16	3	52	24
HC16-4C	O	16	4	52	24
HC16-5C	O	16	5	52	24
HC16-6C	O	16	6	52	32
HC16-7C	O	16	7	52	33
HC16-8C	O	16	8	52	33
HC16-9C	O	16	9	52	34
HC16-10C	O	16	10	52	36
HC16-12C	O	16	12	52	36
	O	16	14	52	41
HC25-3C	O	25	3	63	25
HC25-4C	O	25	4	63	25
HC25-5C	O	25	5	63	25
HC25-6C	O	25	6	63	33
HC25-7C	O	25	7	63	33
HC25-8C	O	25	8	63	33
HC25-9C	O	25	9	63	33
HC25-10C	O	25	10	63	36
HC25-12C	O	25	12	63	41
HC25-14C	O	25	14	63	42
HC25-16C	O	25	16	63	44
HC25-18C	O	25	18	63	45
HC25-20C	O	25	20	63	46
HC25-22C	O	25	22	63	46

Model	Stock	dm	d	L	L1
HC12-3C	O	12	3	42	25
HC12-4C	O	12	4	42	25
HC12-5C	O	12	5	42	25
HC12-6C	O	12	6	42	32
HC12-7C	O	12	7	42	33
HC12-8C	O	12	8	42	33
HC12-9C	O	12	9	42	33
HC12-10C	O	12	10	42	36
HC20-3C	O	20	3	52	24
HC20-4C	O	20	4	52	24
HC20-5C	O	20	5	52	24
HC20-6C	O	20	6	52	32
HC20-7C	O	20	7	52	33
HC20-8C	O	20	8	52	33
HC20-9C	O	20	9	52	34
HC20-10C	O	20	10	52	36
HC20-12C	O	20	12	52	36
HC20-14C	O	20	14	52	41
HC20-16C	O	20	16	52	41
HC20-18C	O	20	18	52	44
HC32-6C	O	32	6	63	33
HC32-7C	O	32	7	63	33
HC32-8C	O	32	8	63	33
HC32-9C	O	32	9	63	33
HC32-10C	O	32	10	63	36
HC32-12C	O	32	12	63	41
HC32-14C	O	32	14	63	42
HC32-16C	O	32	16	63	44
HC32-18C	O	32	18	63	45
HC32-20C	O	32	20	63	46
HC32-22C	O	32	22	63	46
HC32-25C	O	32	25	63	47

* coolant pressure up to 80bar.
* The hydraulic spring must be fully inserted into the hydraulic handle aperture until the shoulder meets the front end of the hydraulic handle.
* The cutting tool must have full contact length L1Cavity, otherwise onAnd permanent damage to the handle.Hydraulic circlipHydraulic circlip
* The shank diameter tolerance class of cutting tools is H6 and the surface roughness is 1.6Ra 0.4 or higher.p

Point Probes



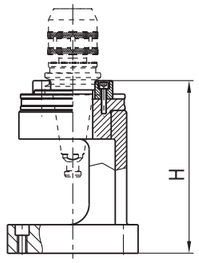


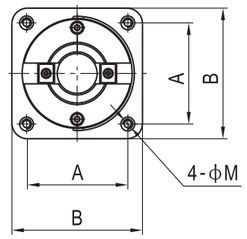
Model	D	L1	L2
OP20	20	155	10
OP32	32	155	10

Warning:
Please approach the workpiece slowly to avoid damage to the probe or inaccurate measurement!

Tooling Setup Fixtures



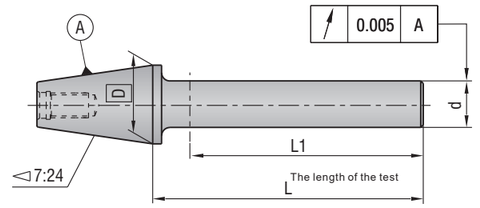




Model		A	B	H	M	Apply to the handle
T-M30	30	90	120	144	M12	JT30/BT30
T-M40	40	90	120	147	M12	JT40/BT40
T-M50	50	124	160	224	M12	JT50/BT50

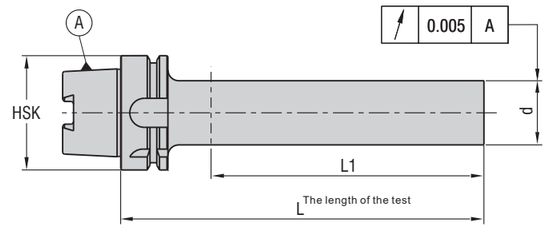
WERNER

7:24 Test Bars



Model		D	d	L1	L
JT40-TB40-300	40	44.45	40	265	300
JT50-TB50-350	50	69.85	50	300	350
BT40-TB40-300	50	44.45	40	265	300
BT50-TB50-350	50	69.85	50	300	350

HSK Test Bars

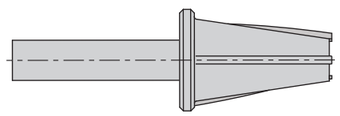


Model		d	L	L1
HSK40-TB25-180	HSK-40	25	180	150
HSK50-TB32-235	HSK-50	32	235	200
HSK63-TB40-245	HSK-63	40	345	300
HSK100-TB40-350	HSK-100	40	350	300

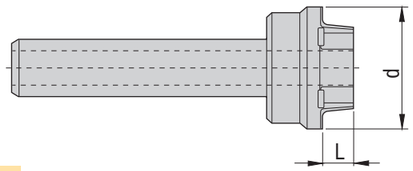
Spindle Wipes

7:24

Model	
W30	40
W40	40
W50	50



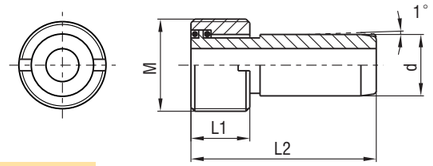
HSK



Model		d	L1
HSK40W	HSK-40	45	14
HSK50W	HSK-50	53	17
HSK63W	HSK-63	66	22
HSK100W	HSK-100	103	35

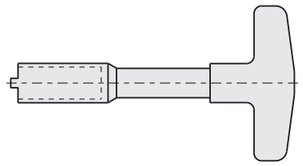
HSK Coolant Tubes & Coolant Tube Wrenches

HSK Coolant Tubes

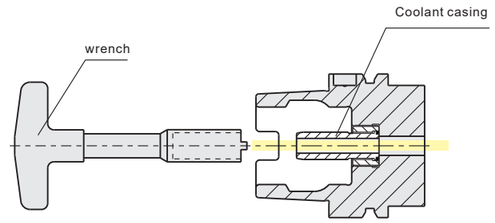


Model		M	d	L1	L2
TU-HSK40	HSK-40	M12X1	8	7.5	29.5
TU-HSK50	HSK-50	M16X1	10	9.5	33
TU-HSK63	HSK-63	M18X1	12	11.5	36.5
TU-HSK100	HSK-100	M24X1.5	16	15.5	44.5

HSK Coolant Tube Wrenches

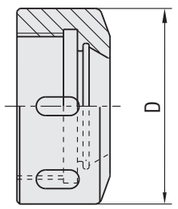


Model	
W-HSK40	HSK-40
W-HSK50	HSK-50
W-HSK63	HSK-63
W-HSK100	HSK-100



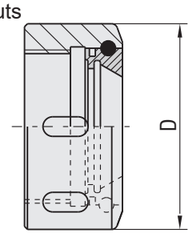
ER Chuck Nuts

ER Chuck Nuts



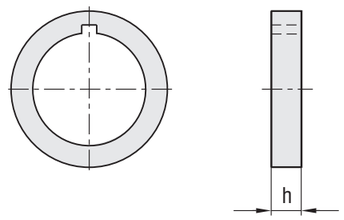
Model	D	Description
NER11	23	ER11
NER16	32	ER16
NER20	34	ER20
NER25	42	ER25
NER32	50	ER32
NER40	63	ER40
NER11M	16	ER11
NER16M	22	ER16
NER20M	28	ER20

ER Ball Bearing Nuts



Model	D	Description
NER16P	32	ER16
NER20P	34	ER20
NER25P	42	ER25
NER32P	50	ER32
NER40P	63	ER40

Washer for Slotting Cutter Holder



Model	D	Description
DXS12	3,5,7,8,10,12	12.7mm
DXS13	3,5,7,8,10,12	-13mm
DXS15	3,5,7,8,10,12	-15.875mm
DXS16	3,5,7,8,10,12	-16mm
DXS22	3,5,7,8,10,12	-22mm
DXS22A	3,5,7,8,10,12	-22.225mm
DXS25	3,5,7,8,10,12	-25.40mm
DXS27	3,5,7,8,10,12	-27mm
DXS31	3,5,7,8,10,12	-31.75mm
DXS32	3,5,7,8,10,12	-32 mm
DXS38	3,5,7,8,10,12	-38.1mm
DXS40	3,5,7,8,10,12	-40mm

Model	D	Description
NER16P	32	ER16
NER20P	34	ER20
NER25P	42	ER25
NER32P	50	ER32
NER40P	63	ER40

SI Unit Conversion Table

Bold lined units marked with gray background are SI Units

• Force

N	Kgf	dyn
1	$1.01972X10^{-1}$	$1X10^{5}$
9.080665	1	$9.80665X10^{5}$
$1X10^{-5}$	$1.01972X10^{-6}$	1

• Stress

1pa=1N/m², 1Mpa=1N/mm²

Pa or N/m^2	MPa or N/mm^2	kgf/mm^2	kgf/cm^2	kgf/m^2
1	$1X10^{-6}$	$1.01972X10^{-7}$	$1.01972X10^{-5}$	$1.01972X10^{-1}$
$1X10^{6}$	1	$1.01972X10^{-1}$	1.01972X10	$1.01972X10^{5}$
$9.80665X10^{6}$	9.80665	1	$1X10^{2}$	$1X10^{6}$
$9.80665X10^{4}$	$9.80665X10^{-2}$	$1X10^{-2}$	1	$1X10^{4}$
9.80665	$9.80665X10^{-6}$	$1X10^{-6}$	$1X10^{-4}$	1

• Pressure

1pa=1N/m²

Pa	Kpa	Mpa	Bar	kgf/cm^2
1	$1X10^{-3}$	$1X10^{-6}$	$1X10^{-5}$	$1.01972X10^{-5}$
$1X10^{3}$	1	$1X10^{-3}$	$1X10^{-2}$	$1.01972X10^{-2}$
$1X10^{6}$	$1X10^{3}$	1	1X10	1.01972X10
$1X10^{5}$	$1X10^{2}$	$1X10^{-1}$	1	1.01972
$9.80665X10^{4}$	9.80665X10	$9.80665X10^{-2}$	$9.80665X10^{-1}$	1

Extracted from JIS Handbook"steel"

Hardness Conversion Table

Vickers Hardness (HV)	Brinell Hardness (HB)		Rockwell Hardness			Shore Hardness (HS)	Tensile Strength Mpa*
	Standard Ball	Tungsten Carbide Ball	A Scale Load: 60kgf Diamond point (HRA)	B Scale Load: 100kgf 1.6mm Dia.Ball (HRB)	C Scale Load:150kgf Diamond Point (HRC)		
940	-	-	85. 6	-	68. 0	97	-
920	-	-	85. 3	-	67. 5	96	-
900	-	-	85. 0	-	67. 0	95	-
880	-	767	84. 7	-	66. 4	93	-
860	-	757	84. 4	-	65. 9	92	-
840	-	745	84. 1	-	65. 3	91	-
820	-	733	83. 8	-	64. 7	90	-
800	-	722	83. 4	-	64. 0	88	-
780	-	710	83. 0	-	63. 3	87	-
760	-	698	82. 6	-	62. 5	86	-
740	-	684	82. 2	-	61. 8	84	-
720	-	670	81. 8	-	61. 0	83	-
700	-	656	81. 3	-	60. 1	81	-
690	-	647	81. 1	-	59. 7	-	-
680	-	638	80. 8	-	59. 2	80	-
670	-	630	80. 6	-	58. 8	-	-
660	-	620	80. 3	-	58. 3	79	-
650	-	611	80. 0	-	57. 8	-	-
640	-	601	79. 8	-	57. 3	77	-
630	-	591	79. 5	-	56. 8	-	-
620	-	582	79. 2	-	56. 3	75	-
610	-	573	78. 9	-	55. 7	-	-
600	-	564	78. 6	-	55. 2	74	-
590	-	554	78. 4	-	54. 7	-	2055
580	-	545	78. 0	-	54. 1	72	2020
570	-	535	77. 8	-	53. 6	-	1985
560	-	525	77. 4	-	53. 0	71	1950
550	-	517	77. 0	-	52. 3	-	1905
540	-	507	76. 7	-	51. 7	69	1860
530	-	497	76. 4	-	51. 1	-	1825
520	-	488	76. 1	-	50. 5	67	1795
510	-	479	75. 7	-	49. 8	-	1750
500	-	471	75. 3	-	49. 1	66	1705
490	-	460	74. 9	-	48. 4	-	1660
480	-	452	74. 5	-	47. 7	64	1620
470	-	442	74. 1	-	46. 9	-	1570
460	-	433	73. 6	-	46. 1	62	1530
450	-	425	73. 3	-	45. 3	-	1495
440	-	415	72. 8	-	44. 5	59	1460
430	-	405	72. 3	-	43. 6	-	1410
420	-	397	71. 8	-	42. 7	57	1370
410	-	288	71. 4	-	41. 8	-	1330
400	-	379	70. 8	-	40. 8	55	1290
390	-	369	70. 3	-	39. 8	-	1240
380	-	360	69. 8	(110.0)	38. 8	52	1205
370	-	350	69. 2	-	37. 7	-	1170
360	-	341	68. 7	(109.0)	36. 6	50	1130
350	-	331	68. 1	-	35. 5	-	1095
340	-	322	67. 6	(108.0)	34. 4	47	1070
330	-	313	67. 0	-	33. 3	-	1035

Hardness Conversion Table

Vickers Hardness (HV)	Brinell Hardness (HB)		Rockwell Hardness			Shore Hardness (HS)	Tensile Strength Mpa*
	Standard Ball	Tungsten Carbide Ball	A Scale Load 60kgf Diamond point (HRA)	B Scale Load 100kgf 1.6 mm Dia Ball (HRB)	C Scale Load 150kgf Diamond point (HRC)		
320	303	303	66.4	(107.0)	32.2	45	1005
310	294	294	65.8	-	31	-	980
300	284	284	65.2	-105.5	29.8	42	950
295	280	280	64.8	-	29.2	-	935
290	275	275	64.5	-104.5	28.5	41	915
285	270	270	64.2	-	27.8	-	905
280	265	265	63.8	103.5	27.1	40	890
275	261	261	63.5	-	26.4	-	875
270	256	256	63.1	102	25.6	38	855
265	252	252	62.7	-	24.8	-	840
260	247	247	62.4	(101.0)	24.0	37	825
255	243	243	62.0	-	23.1	-	805
250	238	238	61.6	99.5	22.2	36	795
245	233	233	61.2	-	21.3	-	780
240	228	228	60.7	98.1	20.3	34	765
230	219	219	-	96.7	(18.0)	33	730
220	209	209	-	95.0	(15.7)	32	695
210	200	200	-	93.4	(13.4)	30	670
200	190	190	-	91.5	(11.0)	29	635
190	181	181	-	89.5	(8.5)	28	605
180	171	171	-	87.1	(6.0)	26	580
170	162	162	-	85.0	(3.0)	25	545
160	152	152	-	81.7	(0.0)	24	515
150	143	143	-	78.7	-	22	490
140	133	133	-	75.0	-	21	455
130	124	124	-	71.2	-	20	425
120	114	114	-	66.7	-	-	390
110	105	105	-	62.3	-	-	-
100	95	95	-	56.2	-	-	-
95	90	90	-	52.0	-	-	-
90	86	86	-	48.0	-	-	-
85	81	81	-	41.0	-	-	-

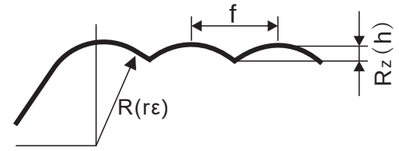
Extracted from JIS Handbook “Iron & Steel”(SAE J 417)
Note(1)1MPa=1N/mm^2

(2)Value in ( ) is not in practical use, but reference only

Surface Roughness

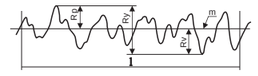
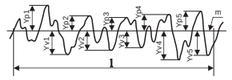
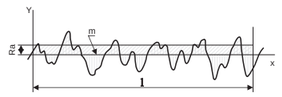
Theoretical (Geometrical) surface Roughness

$$-R_z[h] = \frac{f^2}{8XR[r\varepsilon]} \times 1{,}000$$



- $R_z(h)$: Theoretical Surface Roughness(um)
- f: Feed Rare(mm/rev)
- R(rε): Corner Radius of Insert (mm)

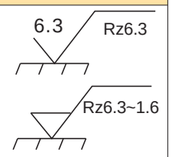
How to Obtain Surface Roughness Values

Type	Symbol	How to obtain	Explanation
Max.Height Roughness	R_z	Rz is a mean value in micron meter obtained from the distance of the highest peaks and the lowest valleys within the range of sampled reference lengths(l) in the direction of the center line of the roughness curve. $Rz=R_p+R_v$	
Ten Points Mean Roughness	R_{ZJIS}	Rz is a mean value in micron meter obtained from the distance of 5 highest peaks (YP) and the 5 lowest valleys (YV) measured from the center line of the roughness curve within the range of sampled reference length(l) $RZJIS=\frac{(YP1+YP2+YP3+YP4+YP5)+(YV1+YV2+YV3+YV4+YV5)}{5}$	 Yp1,Yp2,Yp3,Yp4,Yp5: Distance from the mean line to highest 5 peaks in the range of sampled reference length(l) Yv1,Yv2,Yv3,Yv4,Yv5: Distance from the mean line to the lowest 5 valleys in the range of sampled reference length(l)
Arithmetical Mean Roughness	R_a	Ra is obtained from the following formula inmicron meter, the roughness curve is expressed by y=f(x),the X-axis is in the direction of the center line and the Y-axis is the vertical magnification of the roughness curve in the range of sampled reference lengths(l). $Ra=\frac{1}{l}\int_0^l \{f(x)\}dx$	

Relationship with Triangle Symbol

Arithmetical Mean Roughness R_a(um)	Max.Height Roughness R_z(um)	Ten Points Mean Roughness R_zJIS(um)	Triangle Note
0.025 0.05 0.1 0.2	0.1 0.2 0.3 0.4 0.8	0.1 0.2 0.4 0.8	
0.4 0.8 1.6	1.6 3.2 6.3	1.6 3.2 6.3	
3.2 6.3	12.5 25	12.5 25	
12.5 25	50 100	50 100	

Indication in JIS Standard

Example of Ra Indication	Example of Rz Indication
①When indication the upper limit only (when upper limit is 6.3umRa)  ②When indication both lower and upper limit (when upper limit is 6.3umRa,lower limit is 1.6umRa) 	①When indication upper limit only indicate suface roughness following the parameter symbol.  ②When indication both lower and upper limit indication surface roughness as (upper limit ~lower limit) following the paramenter symbol.

Note:The indications of R_a and R_z are different.

Surface Roughness Symbol Caution

The above information is based on JIS B 0601-2001. However,some symbols were revised as shown in the right table in accordance with ISO standard from JIS B 0601-2001 version.

Type	Symbol (JIS B 0601-1994)	Symbol (JIS B 0601-2001)
Max.Height Roughness	R_y →	R_z
Ten Points Mean Roughness	R_z →	($R_z$jis)
Arithmetical Mean Roughness	R_a →	R_a

Basic Formylas of Turning

Power Requirement

$$P_C = \frac{K_s X V_c X a_p X f}{6120 X \eta}$$

$$P_{HP} = \frac{K_s X V_c X a_p X f}{4500 X \eta}$$

- P_c: Power Requirement (KW)
- P_{HP}: Power Requirement (HP)
- V_c: Cutting Speed (m/min)
- f: Feed (mm/rev)
- a_p: Depth of cut (mm)
- K_s: Specific Cutting Resistance (kgf/mm²)
- η: Mechanical Efficiency (0.7-0.8)

$f = \frac{l}{n}$ — l (mm/min): Length of cut per minute

Approximate value of K_s

Aluminum: 800MPa
General Steel:2,500~3,000MPa
Cast Iron:1500MPa

Low Carbon Steel	190	High Alloy Steel	245
Medium Carbon Steel	210	Cast Iron	93
High Carbon Steel	240	Malleable Cast Iron	120
Low Alloy Steel	190	Bronze, Brass	70

Cutting Speed

$$V_c = \frac{\pi X D_m X n}{1000}$$

- V_c: Cutting Speed (m/min)
- n: Spindle rotation (rev/min)
- D_m: Workpiece diameter (mm)

Surface Roughness

$$R_z = h = \frac{f^2}{8XR(\gamma\varepsilon)} X1000$$

- R_z=h Theoretical Surface Roughness(um)
- f: Feed Rate(mm/rev)
- R(γε): Corner Radius of Insert(mm)

Actual Surface Roughness	steel:Theoretical Surface Roughness(Rz)X1.5~3 Cast Iron:Theoretical Surface Roughness(Rz)X3~5

Basic Formylas of Milling

Power Requirement

$$P_C = \frac{K_s X Q}{6120 X \eta}$$

$$= \frac{K_s X a_e X V_f X a_p}{6120000 X \eta}$$

$$= \frac{K_s X a_e X f_z X z X n X a_p}{6120000 X \eta}$$

$$P_{HP} = \frac{6120}{4500} Pc$$

- P_C: Power Requirement(KW)
- P_{HP}: Power Requirement(Horse Power)(HP)
- a_e: Width of Cut(mm)
- V_f: Table Feed(mm/min)
- fz: Feed per Tooth(mm/t)
- Z: Number of Inserts(pcs)
- n: Spindle Revolution(min^{-1})
- a_p: Depth of Cut(mm)
- Ks: Specific Cutting Resistance(kgf/mm^2)
- η: Mechanical Efficiency(0.7~0.8)
- Q: Chip Removal Volume(cm^3/min)
- Ks approximate value of K_s

Aluminum: 800MPa
General Steel:2,500~3,000MPa
Cast Iron:1500MPa

Low Carbon Steel	190	High Alloy Steel	245
Medium Carbon Steel	210	Cast Iron	93
High Carbon Steel	240	Malleable Cast Iron	120
Low Alloy Steel	190	Bronze,Brass	70

Chip Removal Volume

$$Q = \frac{a_c X v_f X a_p}{1000}$$

$$= \frac{a_e X f_z X z x n x a_p}{1000}$$

- Q: Chip Removal Volume($cm /min)^3$
- a_e: Width of Cut(mm)
- V_f: Table Feed(mm/min)
- f_z: Feed per Tooth(mm/t)
- Z: Number of Inserts(pcs)
- n: Spindle Revolution(min^{-1})
- a_p: Depth of Cut(mm)

Table Feed & Per Touth

$$f_z = \frac{V_f}{z x n}$$

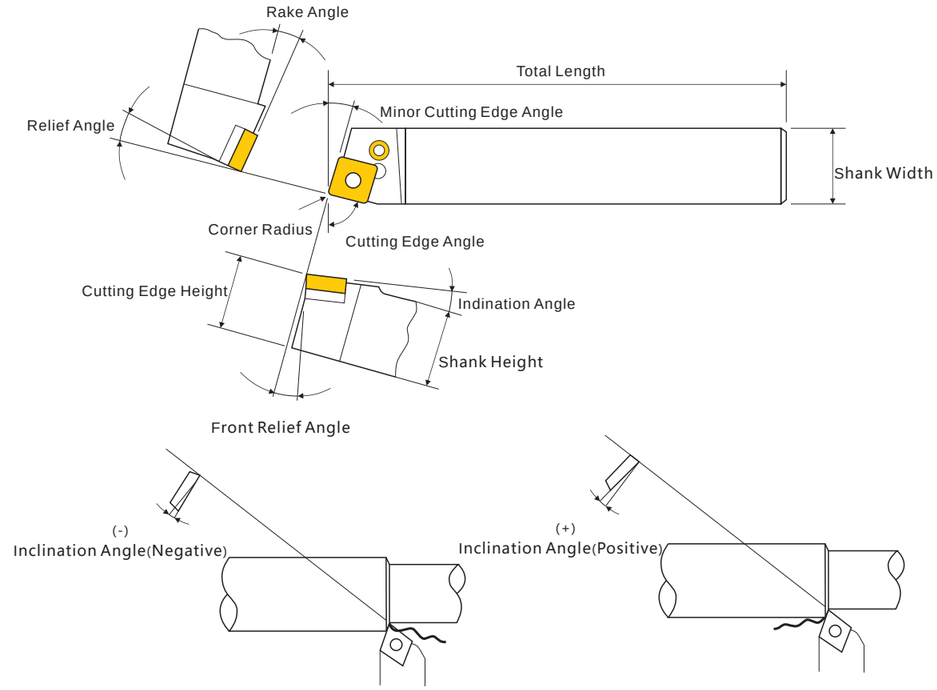
- f_z: Feed per Tooth(mm/t)
- V_f: Table Feed(mm/min)
- Z: Number of Inserts(pcs)
- n Spindle Revolution(min^{-1})

Cutting Speed

$$V_c = \frac{\pi X D_s X n}{1000}$$

- V_c: Cutting Speed(m/min)
- n: Spindle Revolution(min^{-1})
- D_s Cutter Diameter(mm)

Terms and Angles of Turning Toolholder

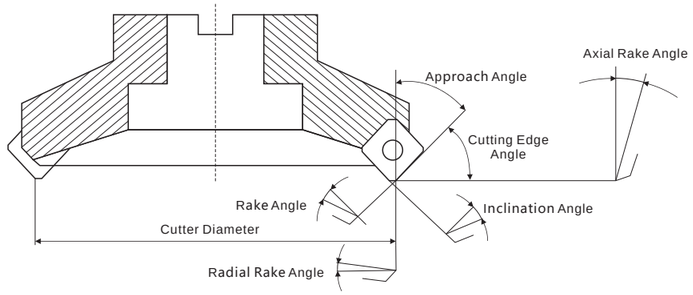


Function of Tool Angle

Tool Angle	Function	Effect
Rake Angle	● Affects cutting force,cutting heat,chip evacuation and tool life.	● When it is positive (+) angle,sharper cutting performance is obtained,less cutting resitance but less edge strength. ● Positive(+) angle is recommended for easy to machine workpieces or thin workpieces. ● Smaller rake angle or negative(-) angle is recommended when a stronger edge is required like scale cutting or interrupted cutting.

Tool Angle	Function	Effect
Inclination Angle	● The corner will bear a strong impact when heavy cutting ● It needs a suitable cutting edge inclination angle to prevent fracture	● When it is negative---chip flows to the workpiece and vice versa. ● When it is positive---cutting edge strength improves, but the back cutting force also increases and it is inclined to produce vibration. ● Recommended values: Turning 3°~5°,Milling10°~15°.
Relief Angle	● Prevents the tool's contact to the workpiece surface,except the cutting edge	● When it is small,the cutting edge strength improves,but the wear at relief face increases,and tool life may decreases.
Cutting Edge Angle	● Affects chip control and the direction of cutting force	● When it is large,chip thickness becomes thick and chip control improves.
Minor Cutting Edge Angle	● Prevents friction between cutting edge and work surface	● When it is small,the cutting edge strength will improve,but the tip is heated. ● When it is small,back cutting force increases and it is inclined to produce cutting vibration. ● It should be smaller for routh finishing,while it can be larger for rough finishing. Recommended values:5°~15°.
Corner Radius	● Affects tool nose strength and roughness of the finished surface	● Recommended values:2~3 times of feed rate.

Terms and Angles of Milling Cutter

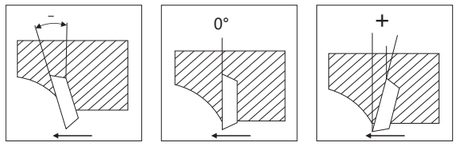


Function of Tool Angle

Tool Angle	Function	Effect
Axial Rake Angle	● Controls chip flow direction and cutting force	● When it is positive---Good cutting performance and less chip welding
Radial Rake Angle	● Controls chip flow direction and cutting force	● When it is negetive---Good chip evacuation
Rake Angle	● Determines the real sharp degree of tool edge	● When it is positive---Good cutting performance and less chip welding,but lower edge strength ● When it is negative---Higher edge strength but easier to weld
Approach Angle	● Controls chip thickness and chip flow direction	● When it is large---Thinner chip thickness and lower cutting load
Inclination Angle	● Controls chip flow direction	● When it is positive---Good chip evacuation,less cutting resistance and lower edge stability of the corner part

Characteristics Of Different Rake Angle Combination

• Positive /Negative Rake Angle



• Characteristics Of Different Rake Angle Combination

Combination of Rake Angles		Positive Axial Rake angle (+) Positive Radia Rake angle Double Positive	Negative Axial Rake angle (-) Negative Radial Rake Angle Double Negative	Positive Axial Rake angle (+) Negative Radial Rake Angle Positive +Negative
Axial Rake Angle		Positive (+)	Negative (-)	Positive (+)
Radial Rake Angle		Positive (+)	Negative (-)	Nagative (-)
Tool Style		Positive Angle (Single Side Used)	Negative Angle (Double Side Used)	Positive Angle (Single Side Used)
Workpiece Material	Steel	●	—	●
	Cast Iron	—	●	●
	Light Alloy	●	—	—
	Difficult-to-machine Material	●	—	●

Trouble Shooting (Turning)

Trouble	Trouble Item	Measures: change to harder grade	change to tougher grade	More thermal shock resistant grade	Change to more welding resistant grade	Cutting Conditions: Cutting speed (Vc)	Feed rate (fz)	Depth of cut (ap)	Tool path review	Coolant: Usage of mist	Coolant: Dry	Tool Geometry: Chipbreaker review	Rake angle	Corner-R	Approach angle	Edge strength honing	Change to higher tolerance	Tool hoder rigidity	Setting/Machine: Workpiece/tool installation	Over hang length	Power, rigidity
						Higher(Larger) ↑ / Lower(Smaller) ↓							Increase ↑ / Decrease ↓								
Unstable dimension	Unstable workpiece dimension	Unsuitable insert tolerance															●				
		Tool or workpiece evacuation										●	●↑	●↓	●↓			●	●	●	●
	Frequent offset during cutting	Flank wear increase	●											●↑							
		Unsuitable cutting conditions				●↓	●↑														
		Built-up edge			●	●↑															
Surface roughness	Poor surface roughness	Poor cutting by tool wear	●		●	●↓				●		●	●↑	●↑		●↓	●				
		Chipping		●			●↓	●↓				●		●↑		●↑			●	●	●
		Welding , built-up edge			●	●↑				●		●	●↑	●↑		●↓	●				
		Unsuitable cutting conditions				●↑	●↓	●↓		●											
		Unsuitable tool geometry/geometry										●		●↑		●↓	●				
		Vibration,chattering		●		●↓	●(1)↓	●↓				●	●↑	●↑	●↓	●↓		●	●	●	●
Heat	Deterioration of accuracy or tool life by cutting heat	Unsuitable cutting conditions				●↓	●↓	●↓		●											
		Unsuitable tool geometry/geometry	●									●	●↑			●↓					
Burr, Chipping , Scuffing	Steel, Aluminium - Burr	Unsuitable cutting conditions				●↓	●↑		●	●											
		Unsuitable tool geometry/geometry	●									●	●↑	●↓	●↓	●↓					
	Cast iron workpiece chip off	Unsuitable cutting conditions					●↓	●↓	●												
		Unsuitable tool geometry/geometry	●									●	●↑	●↑	●↑	●↓		●	●	●	●
	Mild steel scuffing	Unsuitable cutting conditions				●↑	●(2)↓			●											
		Unsuitable tool geometry/geometry	●		●							●	●↑			●↓					
Edge damage	Wear increase at relief face rake face	Flank wear	●				●↓			●		●	●↑	●↑		●↓					
		Rake face wear	●				●↓	●↓	●↓	●		●	●↑		●↑						
	Notching	Notching				●	●↓			●											
	Chipping	Vibration ,chattering		●			●↓	●↓				●			●↑	●↑		●	●	●	●
	Crack	Unsuitable tool grade/cutting conditions		●	●		●↓	●↓				●		●↑	●↑	●↑		●	●	●	●
	Thermal Crack	Unsuitable tool grade/cutting conditions			●	●↓	●↓	●↓			●	●	●↑			●↓					
	Edge nose deformation	Edge nose deformation during interrupted cutting	●				●↓	●↓	●↓			●	●↓	●↑	●↑	●↑					
	Built-up edge	Unsuitable tool grade/cutting conditions				●	●↑	●↑		●		●	●↑			●↓	●				
Chip control	Long, tangling chips	Unsuitable cutting conditions					●↓	●↑	●↑	●		●									
		Unsuitable tool geometry											●		●↓	●↓					
	Chips scattering	Unsuitable cutting conditions						●↓	●↓		●										
		Unsuitable tool geometry											●		●↑	●↑					

(1) To prevent chattering, the higher f may be suitable
(2) To prevent scuffing, the higher f may be suitable

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Trouble Shooting (Milling)

Trouble	Trouble Item	Measures	Insert Grade: change to harder grade	Insert Grade: change to tougher grade	Insert Grade: More thermal shock resistant grade	Insert Grade: Change to more welding resistant grade	Cutting Conditions: Vc Cutting speed (Higher(Larger) / Lower(Smaller))	Cutting Conditions: fz Feed rate (Higher(Larger) / Lower(Smaller))	Cutting Conditions: ap Depth of cut (Higher(Larger) / Lower(Smaller))	Cutting Conditions: Cutter Dia cutting width review	Cutting Conditions: Tool path review	Cutting Conditions: Coolant: Usage of mist	Cutting Conditions: Coolant: Dry	Tool Geometry: Insert with chip breaker	Tool Geometry: Relief angle (Increase / Decrease)	Tool Geometry: Corner angle (Increase / Decrease)	Tool Geometry: Edge strength honing (Increase / Decrease)	Tool Geometry: Insert number (Increase / Decrease)	Tool Geometry: Insert pocket	Tool Geometry: Wiper edge (relief angle) review	Tool Geometry: Insert run out check	Tool Geometry: Cutter rigidity	Setting/ Machine: Workpiece/tool installation	Setting/ Machine: Over hang length	Setting/ Machine: Power, rigidity
Edge damage	Flank wear increase	Unsuitable cutting conditions					●↓						●													
		Unsuitable tool geometry	●													●↑		●↓			●					
	Rake face wear increase	Unsuitable cutting conditions					●↓	●↓	●↓				●													
		Unsuitable tool geometry	●													●↑	●↑	●↓								
	Chipping cracking	Unsuitable cutting conditions						●↓	●↓	●		●														
		Unsuitable tool geometry		●												●↓	●	●↑			●	●	●	●	●	●
	Edge breakage by thermal shock	Unsuitable cutting conditions					●↓	●↓	●↓					●												
		Unsuitable tool geometry			●											●↑		●↓								
	Built-up edge	Unsuitable cutting conditions					●↑	●↑					●													
		Unsuitable tool geometry				●										●↑		●↓								
Machining accuracy	Poor surface finish	Unsuitable cutting conditions					●↑	●↓	●↓				●													
		Unsuitable tool geometry	●			●												●↓	●↓		●	●		●	●	
	Burr	Unsuitable cutting conditions					●↓	●↓	●↓	●		●														
		Unsuitable tool geometry														●↑	●↓	●↓			●					
	Workpiece chip off	Unsuitable cutting conditions																								
		Unsuitable tool geometry														●↑	●↑	●↓	●↑		●					
	Poor planeness parallelness	Tool or workpiece evacuation						●↓	●↓				●1		●	●↑	●↓	●↓	●↓			●	●	●	●	●
Others	Heavy chattering vibration	Unsuitable cutting conditions installation					●↓	●↓2	●↓3	●		●4			●	●↑	●↓	●↓	●↓					●	●	●
	Damaging chips	Unsuitable cutting conditions					●↑	●↓5		●			●6	●												
		Unsuitable tool geometry													●	●↑			●↓	●						

(1) If the surface is warped by cutting heat

(2) To prevent chattering , the higher fz may be suitable

(3) To prevent chattering , the larger ap may be suitable

(4) Down-cut method is recommended for helical end milling

(5) Higher fz may be suitable

(6) Compressed air is recommended