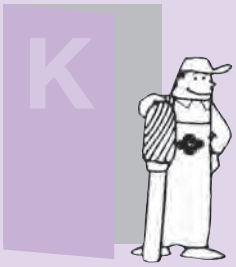
Carbide Materials
Brazed Tools
K1 to K13

K



Stock Markings and Symbols

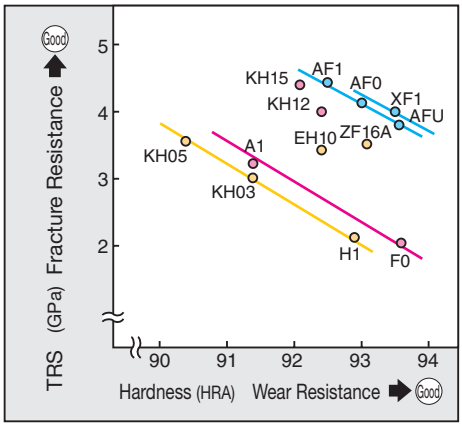
● ● mark: Standard stocked item
● mark: To be replaced with the new item featured on the same page
▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
* mark: Semi-standard stock (please confirm stock availability)
○ mark: Stock or planned stock (please confirm stock availability)
Blank: Made-to-order item
– mark: Not available

Cemented Carbide Material Features and Applications

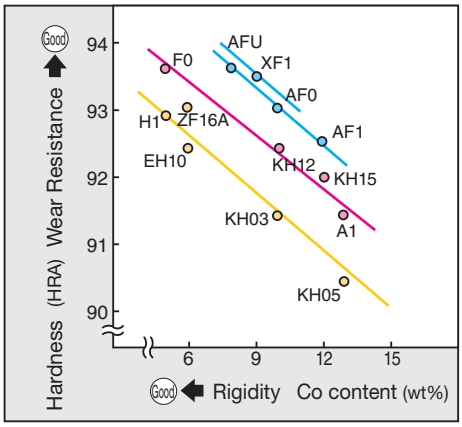
- Stringent selection of high purity and high quality raw materials
- Consistent quality and shorter delivery with the latest production facilities and techniques
- Fully equipped with a system that ensures the highest quality
- Constant R&D to develop the latest grades

■ Grade Map

● Hardness and Transverse Rupture Strength



● Co Content vs Hardness



■ Grade Properties and Features

Classification	Grade	Properties					Features	Applications
		Grain Size *1 (μm)	Co Content (wt%)	Transverse Rupture Strength *2 (GPa)	Hardness (HRA)	Hardness HV (GPa)		
Ultra-fine Grained Carbide	**XF1**	0.2	9.0	4.0	93.5	20.4	Ultra-fine grained carbide with the world's finest grains	Microdrills, Very Small Diameter Drills
	AF1	0.5	12.0	4.4	92.5	17.3	World's toughest ultra-fine grained carbide	PCB Microdrills, Mini-tools, Punches
	AF0	0.5	10.0	4.1	93.0	18.1	Tough, wear-resistant ultra-fine grained carbide	Material Dedicated for Microdrills and Routers
	AFU	0.5	8.0	3.8	93.6	19.4	Wear-resistant ultra-fine grained carbide	PCB Drills, Endmills for High-Hardness Materials
Micro-fine grained carbide	**A1**	0.7	13.0	4.2	91.4	15.6	Tough micro-fine grained carbide	Endmills, Taps, Drills for Cast Iron, Punches
	KH12	0.7	10.0	4.0	92.4	17.0	Micro-fine grained carbide with excellent wear resistance and toughness	Endmills, Drills for Steel
	KH15	0.7	12.0	4.4	92.0	16.3	Micro-fine grained carbide with a balance of hardness and strength	Endmills for Exotic Alloys
	F0	0.7	5.0	3.6	93.6	20.1	Micro-fine grained carbide with superior wear resistance	PCB Drills, Routers
Micro-grained carbide	**KH03**	1.0	10.0	3.8	91.4	15.2	Micro-grained carbide with excellent strength and toughness	Molds/Dies, Drills, Endmills
	KH05	1.0	13.0	3.5	90.4	13.6	Tough, micro-grained carbide	Molds/Dies
	H1	1.0	5.0	3.3	93.2	17.7	Micro-grained carbide with superior wear resistance	Drills for Cast Iron and High-Hardness, Reamers
	EH10	1.2	6.0	3.4	92.4	17.3	Micro-grained carbide with a balance of hardness and strength	Drills for Exotic Alloy, Reamers
	ZF16A	1.0	6.0	3.5	93.0	17.6	Wear- and chipping-resistant micro-grained carbide for high-speed machining	Material Dedicated for PCB Drills

*1 Grain size shown is the average grain size of the WC (tungsten carbide) material. *2 Transverse rupture strength differs for round bar and sheet metal.

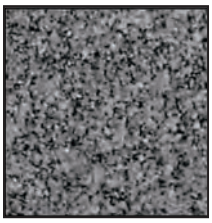
Cemented Carbide Material Features and Applications

■ Structure

● Ultra-fine Grained Carbide

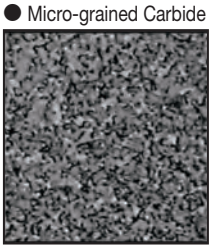
AF1
Average Grain Size: 0.5μm

● Micro-fine Grained Carbide



KH12
Average Grain Size: 0.7μm

● Micro-grained Carbide



KH03
Average Grain Size: 1.0μm

■ Recommended Grades by Application and Work Material (◎: Best, ○: Good)

Grade	Applications					Work Material								
	Endmills	Drill	Reamers	PCB Drills/ Routers	Non-cutting Tool Use	Mild Steel	General Steel	Hardened Steel	Stainless Steel	Titanium Alloy	Inconel	Cast Iron	Aluminum Alloy	Copper Alloy
XF1	●	●				○	○	◎	◎		◎			
				●		Refer to page K7 for the recommended grades for PCB drills and routers.								
AF1	●	●			●	○	○							
				●		Refer to page K7 for the recommended grades for PCB drills and routers.								
AF0				●		Refer to page K7 for the recommended grades for PCB drills and routers.								
AFU	●					○	○	◎						
				●		Refer to page K7 for the recommended grades for PCB drills and routers.								
A1	●	●			●	○	○		○					
			●			○	○							
KH12	●	●				◎	◎	○	○	○	○	○	○	○
KH15	●					◎	◎	○	◎	◎	◎			
F0				●		Refer to page K7 for the recommended grades for PCB drills and routers.								
KH03	●					○	○	○	○	◎	◎			
		●				◎	◎	○	○	◎	◎	◎		
KH05					●	Cannot be used as cutting tool material.								
H1	●	●										◎	◎	◎
			●			○	○	○	○			◎	◎	◎
EH10	●	●						○	○	◎	◎	◎	◎	◎
			●			○	○	○	○	◎	◎	◎	○	○
ZF16A				●		Refer to page K7 for the recommended grades for PCB drills and routers.								

Plate Blanks

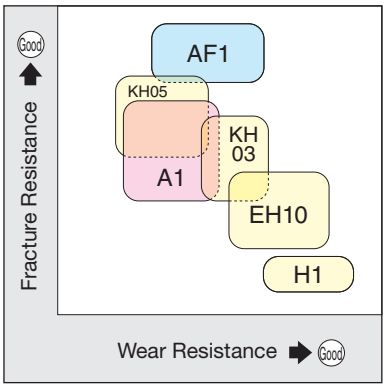
A comprehensive stocked range of grades in carbide plate blanks for mold and die materials, as well as carbide rods for drill or reamer materials.

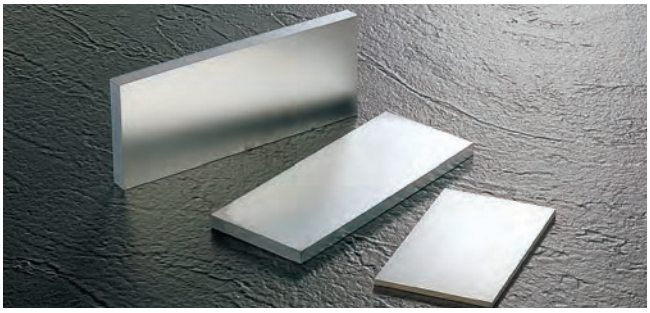
■ Grades

- **AF1 Ultra-fine grained Carbide**
  With grains finer than that of conventional grades, an excellent balance of high toughness and high hardness as well as superior edge sharpness is achieved.
- **A1 Micro-fine Grained Carbide**
  Micro-fine grained carbide A1 is a best-selling general-purpose grade with high wear resistance and toughness.
- **Micro-grained Carbide H1**
  Reliable grade for machining non-ferrous metals.
- **Basic Carbide EH10**
  Highly evaluated grade for general machining of cast iron and exotic alloys. Perfect for drills and reamers.
- **KH Series**
  · KH03: Has strength (transverse rupture strength) and hardness similar to A1, with greatly improved chipping resistance that is comparable to ultra-fine grained grades.
  · KH05: With a higher cemented carbide binder content than KH03, this grade has even greater strength (transverse rupture strength) and chipping resistance.

■ Properties and Applications

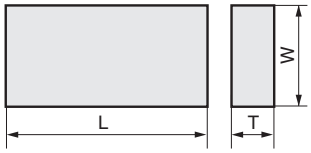
Grade	Hardness		Transverse Rupture Strength	Applications	
	HRA	HV(GPa)	TRS(GPa)		
A1	91.4	15.6	3.3	Endmills	IT Mold Punches
AF1	92.5	17.3	4.4	Small Drills	
KH03	91.4	15.2	3.3	Molds/Dies	
KH05	90.4	13.6	3.5		
EH10	92.4	17.3	3.4	Drills, Reamers	
H1	93.2	17.7	2.4		





Ultra-fine grained carbide (AF1) is specially developed for the manufacturing of carbide mold parts (punches) with a variety of sizes in stock.

Fig 1



■ Stock

Dimensions (mm)

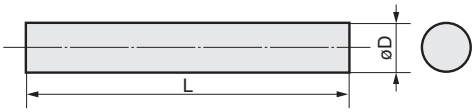
Cat. No.	T		L		W		Grade				Fig
	Nominal Size	Tolerance	Nominal Size	Tolerance	Nominal Size	Tolerance	A1	AF1	KH03	KH05	
0B10060012	1.2	+0.5 +0.2	100	+1.5 0	60	+1.0 0	●	●	●	●	1
0B10060015	1.5						●	●	●	●	1
0B10060020	2.0						●	●	●	●	1
0B10060025	2.5						●	●	●	●	1
0B10060030	3.0						●	●	●	●	1
0B10060040	4.0						●	●	●	●	1
0B15060020	2.0	+0.5 +0.2	150	+1.5 0	60	+1.0 0	●	●	●	●	1
0B15060025	2.5						●	●	●	●	1
0B15060030	3.0						●	●	●	●	1
0B15060035	3.5						●	●	●	●	1
0B15060040	4.0						●	●	●	●	1
0B15060045	4.5						●	●	●	●	1
0B15060050	5.0						●	●	●	●	1
0B15060055	5.5						●	●	●	●	1
0B15060060	6.0						●	●	●	●	1
0B15060070	7.0						●	●	●	●	1
0B15060080	8.0						●	●	●	●	1
0B15060090	9.0						●	●	●	●	1
0B15060100	10.0						●	●	●	●	1

Plates with top and bottom faces ground can be made to order.

Rod Blanks

IGETALLOY grades ideal for applications such as endmills, drills and reamers where edge strength, toughness and wear resistance are essential.

Fig 1



Stock

● Length L = 310

Dimensions (mm)

Cat. No.	ø D		L		Grade				Fig
	Nominal Size	Tolerance	Nominal Size	Tolerance	A1	AF1	EH10	H1	
AR010310	1.0	+0.3 +0.2	310	+6.0 0	*	*	*	*	1
AR015310	1.5				*	*	*	*	1
AR020310	2.0				*	*	*	*	1
AR025310	2.5				*	*	*	*	1
AR030310	3.0	+0.5 +0.3			*	*	*	*	1
AR035310	3.5				*	*	*	*	1
AR040310	4.0				*	*	*	*	1
AR045310	4.5				*	*	*	*	1
AR050310	5.0				*	*	*	*	1
AR055310	5.5				*	*	*	*	1
AR060310	6.0				*	*	*	*	1
AR065310	6.5				*	*	*	*	1
AR070310	7.0				*	*	*	*	1
AR075310	7.5				*	*	*	*	1
AR080310	8.0				*	*	*	*	1
AR090310	9.0	+0.6 +0.3			*	*	*	*	1
AR100310	10.0				*	*	*	*	1
AR110310	11.0				*	*	*	*	1
AR120310	12.0				*	*	*	*	1
AR130310	13.0								1
AR140310	14.0				*	*	*	*	1
AR150310	15.0								1
AR160310	16.0	+0.7 +0.3			*	*	*	*	1
AR170310	17.0								1
AR180310	18.0				*	*	*	*	1
AR190310	19.0								1
AR200310	20.0				*	*	*	*	1

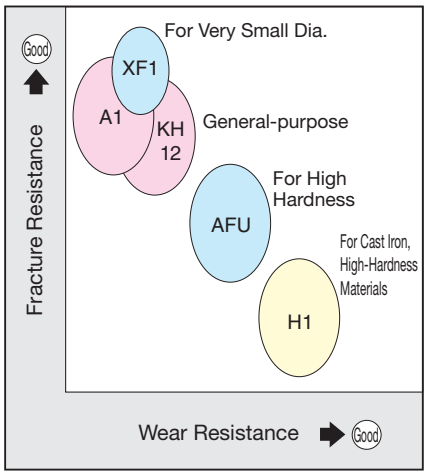
Ground rods can be made to order.

Items marked * are semi-standard stock.
Please inquire about stock availability when ordering.

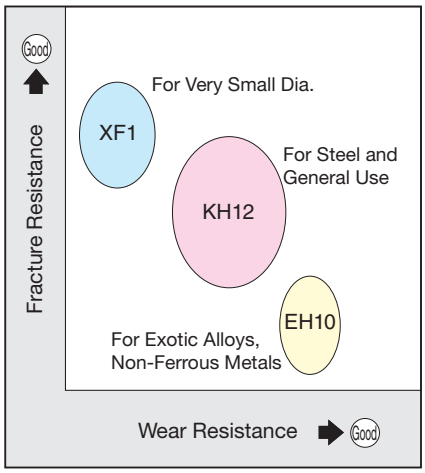
· For length requirements other than L=310mm, refer to "Special Rod Blanks" on page K6 for the available made-to-order specifications.

Special Rod Blanks

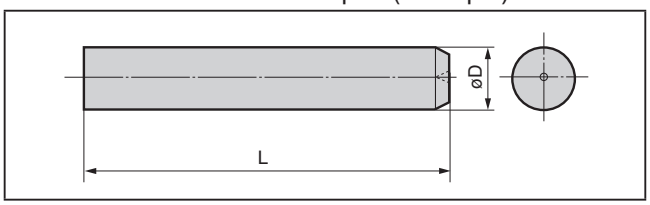
Endmill Blanks



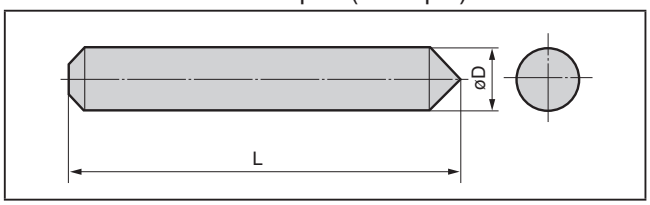
Drill Blanks



Endmill Mill-scale Blank Shapes (Example)



Drill Mill-scale Blank Shapes (Example)



O.D.

Dimensions (mm)

øD	Tolerance
1.0 ≤ D < 3.0	+ 0.3 + 0.2
3.0 ≤ D ≤ 8.0	+ 0.5 + 0.3
8.0 < D ≤ 15.0	+ 0.6 + 0.3
15.0 < D ≤ 25.0	+ 0.7 + 0.3

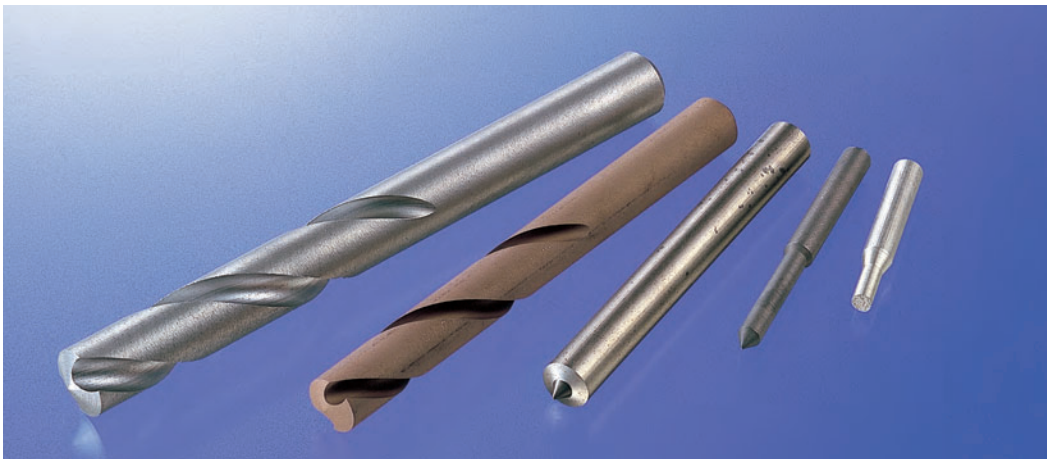
Rods with steps can be made to order.
*XF1 is available up to ≤ ø16.

Overall Length

Dimensions (mm)

L	Tolerance	Warpage
40 ≤ L < 310	Overall Length ± 0.5%	0.15
310 ≤ L ≤ 330	Overall Length + 6.0 0	

Ground rods can be made to order.

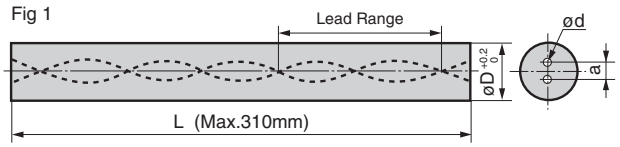


Special Rod Blanks

Drill Blanks with Oil Holes

Shape (Example)

Fig 1

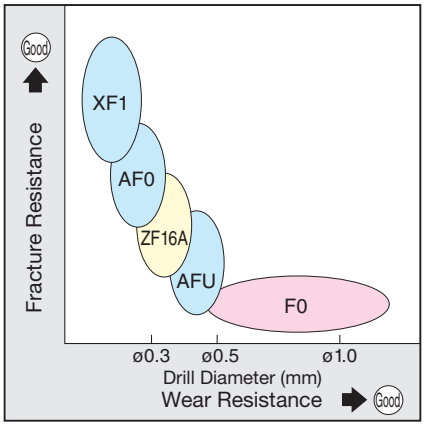


Right-hand Helix 30°, 2 Holes

Dimensions (mm)

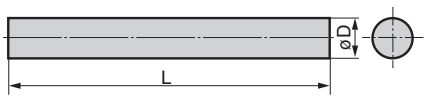
Applications	External øD	Core Diameter øD1	Hole Dia. ød	Oil Hole Pitch a	Lead Range	Grade KH12	Grade KH03	Fig
For Straight Drills	3.6	3.3	0.47±0.05	1.5 $^{0}_{-0.1}$	15.7 to 17.0			1
	4.6	4.3	0.59 $^{+0.05}_{-0.1}$	1.7 $^{0}_{-0.2}$	20.9 to 22.7			1
	5.6	5.3	0.71±0.1	2.4 $^{0}_{-0.3}$	26.2 to 28.4			1
	6.6	6.3	0.83±0.1	2.8±0.2	31.4 to 34.0			1
	7.6	7.3	0.95±0.1	3.2±0.2	36.6 to 39.7			1
	8.6	8.3	1.06±0.1	3.6±0.2	41.9 to 45.4			1
	9.6	9.3	1.18±0.2	4.0±0.2	47.1 to 51.0			1
	10.6	10.3	1.30±0.2	4.4±0.2	52.3 to 56.7			1
	11.6	11.3	1.30±0.2	4.4±0.2	57.5 to 62.4			1
	12.6	12.3	1.42±0.2	4.8±0.2	62.8 to 68.1			1
	13.6	13.3	1.54±0.2	5.2±0.2	68.0 to 73.7			1
	14.6	14.3	1.66±0.2	5.6±0.2	73.2 to 79.4			1
	15.6	15.3	1.77±0.2	6.0±0.2	78.5 to 85.1			1
	16.6	16.3	1.89±0.2	6.4±0.2	83.7 to 90.7			1
	17.6	17.3	1.75±0.2	8.5±0.2	88.9 to 96.3	—		1
	17.6	17.3	2.01±0.2	6.8±0.2	88.9 to 96.3		—	1
	18.6	18.3	2.00±0.2	9.2±0.2	94.1 to 102.0	—		1
	18.6	18.3	2.13±0.2	7.2 ±0.2	94.1 to 102.0		—	1
	19.6	19.3	2.00±0.2	9.7±0.2	99.3 to 107.7	—		1
	19.6	19.3	2.28±0.2	7.6 ±0.2	99.3 to 107.7		—	1
	20.6	20.3	2.00±0.2	9.9±0.2	104.6 to 113.4	—		1
	20.6	20.3	2.36±0.2	8.0±0.2	104.6 to 113.4		—	1
For Stepped Drills	3.6	3.3	0.23±0.05	0.8 $^{-0.1}_{-0.2}$	15.7 to 17.0			1
	3.6	3.3	0.35±0.05	1.2 $^{0}_{-0.2}$	15.7 to 17.0			1
	4.6	4.3	0.35±0.05	1.2 $^{0}_{-0.2}$	20.9 to 22.7			1
	5.6	5.3	0.47±0.05	1.5 $^{0}_{-0.3}$	26.2 to 28.4			1
	6.6	6.3	0.47±0.1	2.0±0.2	31.4 to 34.0			1
	7.6	7.3	0.59±0.1	2.0±0.2	36.6 to 39.7			1
	8.6	8.3	0.71±0.1	2.4±0.2	41.9 to 45.4			1
	9.6	9.3	0.83±0.1	2.8±0.2	47.1 to 51.0			1
	10.6	10.3	0.95±0.1	3.2±0.2	52.3 to 56.7			1
	11.6	11.3	0.95±0.1	3.2±0.2	57.5 to 62.4			1
	12.6	12.3	1.06±0.1	3.6±0.2	62.8 to 68.1			1
	13.6	13.3	1.06±0.1	3.6±0.2	68.0 to 73.7			1
	14.6	14.3	1.18±0.2	4.0±0.2	73.2 to 79.4			1
	15.6	15.3	1.30±0.2	4.4±0.2	78.5 to 85.1			1
	16.6	16.3	1.42±0.2	4.8±0.2	83.7 to 90.7			1

PCB Drill Blanks



Shape (Example)

Fig 2



Solid Type

Dimensions (mm)

øD	L	Fig
2.15 ±0.05	32.0 $^{+0.9}_{+0.4}$	2
3.25 ±0.02	38.1 $^{+1.0}_{+0.4}$	2

Other sizes can be made to order.

Composite Type (Rough Ground)

Dimensions (mm)

øD	L	Fig
1.0 to 1.8 ±0.05	333 $^{+2.0}_{0}$	2

Consult us about dimensions.
Centreless grinding can be performed.

Grade Application (◎: Best, ○: Good)

·By Tool Diameter

Dimensions (mm)

Grade	Very Small Diameter (up to ø0.15)	Small Diameters (up to ø0.45)	General Diameters (ø0.50 up)
XF1	◎	○	
AF0	○	◎	
AFU		◎	
ZF16A		○	○
F0			◎

·By Application

Grade	Hardened Steel	High-speed Machining	Stacked Plates	For Routers
XF1		○		○
AF0		○	◎	○
AFU	◎	○	○	
ZF16A	○	◎		
F0	◎		○	◎

JIS Type Inserts for Carbide Tool Holders

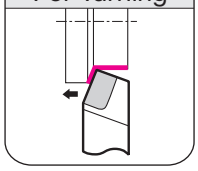
Dimensions (mm)

Shape	Cat. No.	Carbide: P (Steel) P10 ST10P	P20 ST20E	P30 ST30E	P40 ST40E	M (Stainless Steel) M20 U2	M40 A40	K (Cast Iron) K01 H3	K01 H2	K10 H1	K20 G10E	K20 G2	A	B	C	RE	Typical Applicable Holders	Fig
01 Type Fig 1	01-0	●	●	●		●	●		●	●	●	●	10	6	3	4	31 Type 32 Type 45 Type 46 Type	1
	01-1	●	●	●		●	●	●	●	●	●	●	13	9	3	5		1
	01-2	●	●	●		●	●	●	●	●	●	●	16	11	4	5		1
	01-3	●	●	●		●	●	●	●	●	●	●	19	13	5	5		1
	01-4	●	●	●		●	●	●		●	●	●	22	15	6	8		1
	01-5												25	17	7	8		1
	01-6												30	20	8	8		1
02 Type Fig 2	02-0	●	●	●		●	●	●	●	●	●	●	10	6	3	—	41 Type 42 Type	2
	02-1	●	●	●		●	●	●	●	●	●	●	13	9	3	—		2
	02-2	●	●	●	●	●	●	●	●	●	●	●	16	11	4	—		2
	02-3	●	●	●	●	●	●	●	●	●	●	●	19	13	5	—		2
	02-4	●	●	●		●	●	●	●	●	●	●	22	15	6	—		2
	02-5												25	17	7	—		2
	02-6												30	20	8	—		2
03 Type Fig 3	03-0	●	●								●		10	—	3	—	37 Type 38 Type 47 Type 48 Type	3
	03-1	●	●			●	●	●	●	●	●	●	12	—	3	—		3
	03-2	●	●	●		●	●	●	●	●	●	●	15	—	4	—		3
	03-3	●	●	●		●	●	●	●	●	●		18	—	5	—		3
	03-4		●	●		●	●			●	●		24	—	6	—		3
	03-5												24	—	7	—		3
	03-6												28	—	8	—		3
Fig 4 04 Type	04-0	●	●	●		●	●	●	●	●	●	●	10	6	3	4	33 Type 34 Type	4
	04-1	●	●	●		●	●	●	●	●	●	●	13	9	3	5		4
	04-2	●	●	●		●	●	●	●	●	●	●	16	11	4	5		4
	04-3	●	●	●		●	●	●	●	●	●	●	19	13	5	5		4
	04-4	●	●	●		●	●	●		●	●	●	22	15	6	8		4
	04-5												25	17	7	8		4
	04-6												30	20	8	8		4
Fig 5 05 Type	05-1	●	●	●		●	●	●	●	●	●	●	5	8	3	—	49 Type 50 Type 51 Type 52 Type	5
	05-2	●	●	●		●	●	●	●		●	●	6	10	4	—		5
	05-3	●	●	●		●	●		●	●	●	●	7	12	5	—		5
	05-4	●	●	●			●		●		●	●	9	16	6	—		5
	05-5												10	18	7	—		5
	05-6												11	20	8	—		5
Fig 6 06 Type	06-0	●	●	●		●	●	●	●	●	●	●	10	10	3	2	36 Type 39 Type 40 Type	6
	06-1	●	●	●		●	●	●	●	●	●	●	13	13	3	2.5		6
	06-2	●	●	●		●	●	●	●	●	●	●	16	16	4	3		6
	06-3	●	●	●		●	●	●	●	●	●	●	19	19	5	4		6
	06-4	●	●	●		●	●	●	●	●	●	●	22	22	6	4		6
	06-5												25	25	7	5		6
	06-6												30	30	8	6		6
Fig 7 07 Type	07-0	●	●			●	●	●	●	●	●	●	10	10	3	—	35 Type	7
	07-1	●	●	●		●	●		●	●	●		13	13	3	—		7
	07-2	●	●	●		●	●	●	●	●	●	●	16	16	4	—		7
	07-3	●	●			●	●	●	●	●	●	●	19	19	5	—		7
	07-4	●	●						●	●		●	25	20	6	—		7
	07-5												25	22	7	—		7
	07-6												30	25	8	—		7
Fig 8 08 Type	08-1	●	●	●		●	●	●	●	●	●	●	3	8	3	—	43 Type	8
	08-3	●	●	●		●	●	●	●	●	●	●	4	13	4	—		8
	08-4	●	●	●	●	●	●	●	●	●	●	●	5	15	5	—		8
	08-5									●			6	17	6	—		8
	08-6									●			8	20	8	—		8

JIS Type Carbide Tool Holders

Dimensions (mm)

31 Type (Right-handed)
32 Type (Left-handed)
For Turning



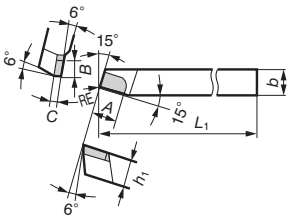
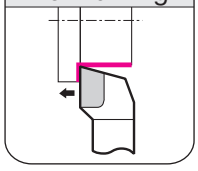


Figure shows Right-handed tool.

Cat. No.	Cermet T1200A	Carbide P (Steel) P10 ST10P	P20 ST20E	P30 ST30E	P40 ST40E	M (Stainless Steel) M20 U2	M40 A40	K (Cast Iron) K01 H3	K01 H2	K10 H1	K20 G10E	K20 G2	Shank b	h_1	L_1	e	a_r	Insert Part A	B	C	RE	Applicable Insert
31-1		●	●	●			●				●		13	13	100	—	—	13	9	3	0.5	01-1
31-2			●	●		●	●			●	●		16	16	120	—	—	16	11	4	0.5	01-2
31-3		●	●	●		●	●		●	●	●		19	19	140	—	—	19	13	5	0.5	01-3
31-4	*	●	●	●	●	●	●		●		●	●	25	25	160	—	—	22	15	6	1	01-4
31-5	—												25	30	180	—	—	25	17	7	1	01-5
31-6	—												30	35	200	—	—	30	20	8	1	01-6
32-1			●	●			●				●		13	13	100	—	—	13	9	3	0.5	01-1
32-2			●	●			●						16	16	120	—	—	16	11	4	0.5	01-2
32-3			●	●		●	●		●		●		19	19	140	—	—	19	13	5	0.5	01-3
32-4	*		●	●			●		●		●	●	25	25	160	—	—	22	15	6	1	01-4
32-5	—												25	30	180	—	—	25	17	7	1	01-5
32-6	—												30	35	200	—	—	30	20	8	1	01-6

33 Type (Right-handed)
34 Type (Left-handed)
For Turning



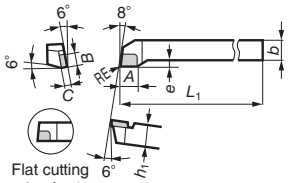
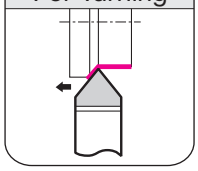
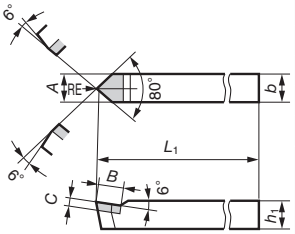


Figure shows Right-handed tool.

Cat. No.	Cermet T1200A	Carbide P (Steel) P10 ST10P	P20 ST20E	P30 ST30E	P40 ST40E	M (Stainless Steel) M20 U2	M40 A40	K (Cast Iron) K01 H3	K01 H2	K10 H1	K20 G10E	K20 G2	Shank b	h_1	L_1	e	a_r	Insert Part A	B	C	RE	Applicable Insert
33-0		●	●	●			●		●	●	●	●	10	10	80	0	—	10	6	3	0.3	04-0
33-1		●	●	●			●	●	●	●	●	●	13	13	100	4	—	13	9	3	0.5	04-1
33-2	●	●	●	●			●	●	●	●	●	●	16	16	120	4	—	16	11	4	0.5	04-2
33-3	●	●	●	●	●		●	●	●	●	●	●	19	19	140	5	—	19	13	5	0.5	04-3
33-4	*	●	●	●	●		●	●	●	●	●	●	25	25	160	5	—	22	15	6	1	04-4
33-5	—												25	30	180	6	—	25	17	7	1	04-5
33-6	—												30	35	200	6	—	30	20	8	1	04-6
34-0			●	●			●		●	●	●	●	10	10	80	0	—	10	6	3	0.3	04-0
34-1		●	●	●			●	●	●	●	●	●	13	13	100	4	—	13	9	3	0.5	04-1
34-2	●	●	●	●			●	●	●	●	●	●	16	16	120	4	—	16	11	4	0.5	04-2
34-3	●	●	●	●	●		●	●	●	●	●	●	19	19	140	5	—	19	13	5	0.5	04-3
34-4	*	●	●	●	●		●	●	●	●	●	●	25	25	160	5	—	22	15	6	1	04-4
34-5	—												25	30	180	6	—	25	17	7	1	04-5
34-6	—												30	35	200	6	—	30	20	8	1	04-6

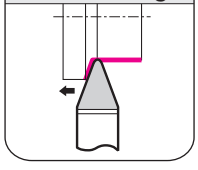
35 Type
For Turning

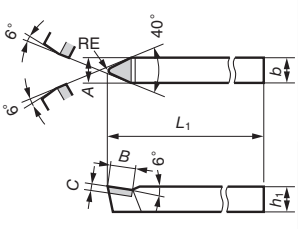




Cat. No.	Cermet T1200A	Carbide P (Steel) P10 ST10P	P20 ST20E	P30 ST30E	P40 ST40E	M (Stainless Steel) M20 U2	M40 A40	K (Cast Iron) K01 H3	K01 H2	K10 H1	K20 G10E	K20 G2	Shank b	h_1	L_1	e	a_r	Insert Part A	B	C	RE	Applicable Insert
35-0		●	●				●		●	●	●	●	10	10	80	—	—	10	10	3	0.3	07-0
35-1		●	●	●		●	●		●	●	●	●	13	13	100	—	—	13	13	3	0.5	07-1
35-2		●	●	●		●	●		●	●	●	●	16	16	120	—	—	16	16	4	0.5	07-2
35-3		●	●	●		●	●		●	●	●	●	19	19	140	—	—	19	19	5	0.5	07-3
35-4	*		●	●		●	●		●		●	●	25	25	160	—	—	22	20	6	1	07-4
35-5	—												25	30	180	—	—	25	22	7	1	07-5
35-6	—												30	35	200	—	—	30	25	8	1	07-6

36 Type
For Turning





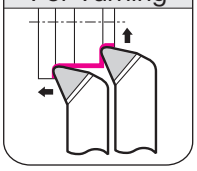
Cat. No.	Cermet T1200A	Carbide P (Steel) P10 ST10P	P20 ST20E	P30 ST30E	P40 ST40E	M (Stainless Steel) M20 U2	M40 A40	K (Cast Iron) K01 H3	K01 H2	K10 H1	K20 G10E	K20 G2	Shank b	h_1	L_1	e	a_r	Insert Part A	B	C	RE	Applicable Insert
36-0		●	●	●					●	●	●		10	10	80	—	—	10	10	3	2	06-0
36-1		●	●	●		●	●	●	●	●	●	●	13	13	100	—	—	13	13	3	2	06-1
36-2	●	●	●	●		●	●	●	●	●	●	●	16	16	120	—	—	16	16	4	3	06-2
36-3	●	●	●	●	●	●	●	●	●	●	●	●	19	19	140	—	—	19	19	5	4	06-3
36-4	*	●	●	●		●	●		●	●	●	●	25	25	160	—	—	22	22	6	4	06-4
36-5	—												25	30	180	—	—	25	25	7	5	06-5
36-6	—												30	35	200	—	—	30	30	8	5	06-6

Items marked * follow the insert dimensions of the ○○**-3** type (one size smaller) in their category. <Made to order>

JIS Type Carbide Tool Holders

Dimensions (mm)

37 Type (Right-handed)
38 Type (Left-handed)
For Turning



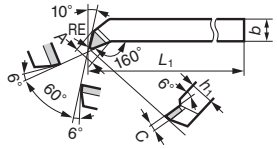
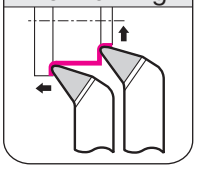


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide: P (Steel)						Carbide: M (Stainless Steel)		Carbide: K (Cast Iron)					Shank					Insert Part				Applicable Insert
		P10	P20	P30	P40			M20	M40	K01	K01	K10	K20	K20										
	T1200A	ST10P	ST20E	ST30E	ST40E			U2	A40	H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
37-1			●	●								●	●		13	13	100	—	—	12	—	3	0.5	03-1
37-2		●	●	●				●	●		●	●	●	●	16	16	120	—	—	15	—	4	0.5	03-2
37-3		●	●	●				●	●		●	●	●	●	19	19	140	—	—	18	—	5	0.5	03-3
37-4	*	●	●	●				●			●		●		25	25	160	—	—	24	—	6	1	03-4
37-5	—														25	30	180	—	—	24	—	7	1	03-5
37-6	—														30	35	200	—	—	28	—	8	1	03-6
38-1		●	●										●		13	13	100	—	—	12	—	3	0.5	03-1
38-2			●	●								●	●		16	16	120	—	—	15	—	4	0.5	03-2
38-3		●	●	●				●				●	●	●	19	19	140	—	—	18	—	5	0.5	03-3
38-4	*		●	●								●	●		25	25	160	—	—	24	—	6	1	03-4
38-5	—														25	30	180	—	—	24	—	7	1	03-5
38-6	—														30	35	200	—	—	28	—	8	1	03-6

39 Type (Right-handed)
40 Type (Left-handed)
For Turning



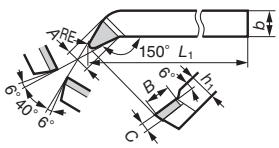
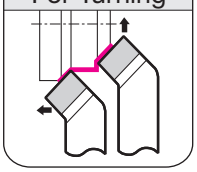


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide: P (Steel)						Carbide: M (Stainless Steel)		Carbide: K (Cast Iron)					Shank					Insert Part				Applicable Insert
		P10	P20	P30	P40			M20	M40	K01	K01	K10	K20	K20										
	T1200A	ST10P	ST20E	ST30E	ST40E			U2	A40	H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
39-0			●	●				●	●			●	●		10	10	80	—	—	10	10	3	2	06-0
39-1		●	●	●				●	●	●	●	●	●	●	13	13	100	—	—	13	13	3	2	06-1
39-2	●	●	●	●				●	●	●	●	●	●	●	16	16	120	—	—	16	16	4	3	06-2
39-3	●	●	●	●	●			●	●	●	●	●	●	●	19	19	140	—	—	19	19	5	4	06-3
39-4	*	●	●	●	●			●	●		●	●	●	●	25	25	160	—	—	22	22	6	4	06-4
39-5	—														25	30	180	—	—	25	25	7	5	06-5
39-6	—														30	35	200	—	—	30	30	8	5	06-6
40-0			●									●	●		10	10	80	—	—	10	10	3	2	06-0
40-1		●	●	●					●			●	●	●	13	13	100	—	—	13	13	3	2	06-1
40-2		●	●	●				●	●			●	●	●	16	16	120	—	—	16	16	4	3	06-2
40-3		●	●	●				●	●		●	●	●	●	19	19	140	—	—	19	19	5	4	06-3
40-4	*	●	●	●				●	●		●	●	●	●	25	25	160	—	—	22	22	6	4	06-4
40-5	—														25	30	180	—	—	25	25	7	5	06-5
40-6	—														30	35	200	—	—	30	30	8	5	06-6

41 Type (Right-handed)
42 Type (Left-handed)
For Turning



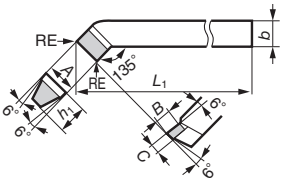
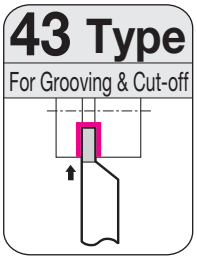
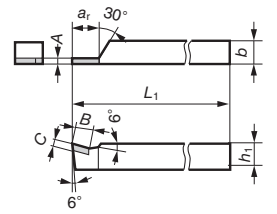


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide: P (Steel)						Carbide: M (Stainless Steel)		Carbide: K (Cast Iron)					Shank					Insert Part				Applicable Insert
		P10	P20	P30	P40			M20	M40	K01	K01	K10	K20	K20										
	T1200A	ST10P	ST20E	ST30E	ST40E			U2	A40	H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
41-1		●	●	●					●			●	●	●	13	13	100	—	—	13	9	3	0.5	02-1
41-2		●	●	●				●	●		●		●		16	16	120	—	—	16	11	4	0.5	02-2
41-3		●	●	●				●	●		●	●	●	●	19	19	140	—	—	19	13	5	0.5	02-3
41-4	*	●	●	●					●			●	●	●	25	25	160	—	—	22	15	6	1	02-4
41-5	—														25	30	180	—	—	25	17	7	1	02-5
41-6	—														30	35	200	—	—	30	20	8	1	02-6
42-1			●	●									●		13	13	100	—	—	13	9	3	0.5	02-1
42-2			●	●					●				●		16	16	120	—	—	16	11	4	0.5	02-2
42-3		●	●	●				●	●				●	●	19	19	140	—	—	19	13	5	0.5	02-3
42-4	*		●	●					●			●	●	●	25	25	160	—	—	22	15	6	1	02-4
42-5	—														25	30	180	—	—	25	17	7	1	02-5
42-6	—														30	35	200	—	—	30	20	8	1	02-6

43 Type
For Grooving & Cut-off





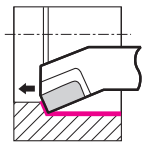
Cat. No.	Cermet	Carbide: P (Steel)						Carbide: M (Stainless Steel)		Carbide: K (Cast Iron)					Shank					Insert Part				Applicable Insert
		P10	P20	P30	P40			M20	M40	K01	K01	K10	K20	K20										
	T1200A	ST10P	ST20E	ST30E	ST40E			U2	A40	H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
43-1		●	●	●				●	●		●	●	●	●	10	16	100	—	13	3	8	3	—	08-1
43-2		●	●	●				●	●		●	●	●		13	19	120	—	16	3	8	3	—	08-1
43-3	●	●	●	●				●	●		●	●	●	●	16	22	140	—	19	4	13	4	—	08-3
43-4	*	●	●	●				●	●		●	●	●	●	19	25	160	—	25	5	15	5	—	08-4
43-5	—														22	32	180	—	30	6	17	6	—	08-5
43-6	—														25	38	200	—	40	8	20	8	—	08-6

Items marked * follow the insert dimensions of the ○○**-3** type (one size smaller) in their category. <Made to order>

JIS Type Carbide Tool Holders

Dimensions (mm)

45 Type (Right-handed)
46 Type (Left-handed)
For Internal Boring



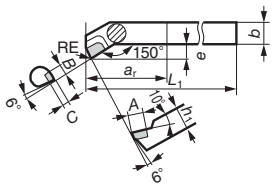
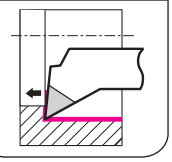


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide P (Steel)							Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
	T1200A	ST10P	ST20E	ST30E	ST40E				U2	A40		H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
45-1																	13	13	140	7	50	10	6	3	0.5	01-0
45-2			●														16	16	160	9	60	13	9	3	0.5	01-1
45-3			●														19	19	190	11	80	16	11	4	0.5	01-2
45-4			●														25	25	230	13	100	19	13	5	1	01-3
46-1																	13	13	140	7	50	10	6	3	0.5	01-0
46-2																	16	16	160	9	60	13	9	3	0.5	01-1
46-3																	19	19	190	11	80	16	11	4	0.5	01-2
46-4																	25	25	230	13	100	19	13	5	1	01-3

47 Type (Right-handed)
48 Type (Left-handed)
For Boring



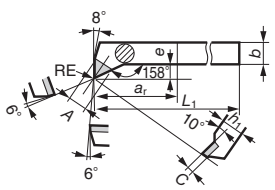
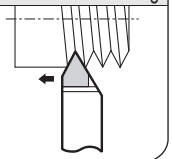


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide P (Steel)							Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
	T1200A	ST10P	ST20E	ST30E	ST40E				U2	A40		H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
47-1		●	●												●		13	13	140	7	50	10	—	3	0.5	03-0
47-2		●	●												●		16	16	160	8	60	12	—	3	0.5	03-1
47-3		●	●												●		19	19	190	9	80	15	—	4	0.5	03-2
47-4		●	●												●		25	25	230	10	100	18	—	5	1	03-3
48-1																	13	13	140	7	50	10	—	3	0.5	03-0
48-2																	16	16	160	8	60	12	—	3	0.5	03-1
48-3																	19	19	190	9	80	15	—	4	0.5	03-2
48-4																	25	25	230	10	100	18	—	5	1	03-3

49 Type (Right-handed)
50 Type (Left-handed)
For External Threading



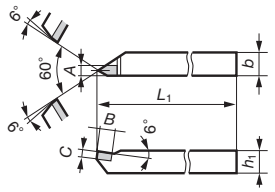
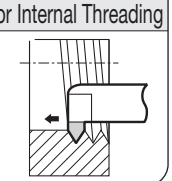


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide P (Steel)							Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
	T1200A	ST10P	ST20E	ST30E	ST40E				U2	A40		H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
49-1			●														13	13	100	—	—	5	8	3	—	05-1
49-2		●	●												●		16	16	120	—	—	6	10	4	—	05-2
49-3		●	●	●					●						●		19	19	140	—	—	7	12	5	—	05-3
49-4		●	●	●					●						●		25	25	160	—	—	9	16	6	—	05-4
50-1																	13	13	100	—	—	5	8	3	—	05-1
50-2																	16	16	120	—	—	6	10	4	—	05-2
50-3																	19	19	140	—	—	7	12	5	—	05-3
50-4																	25	25	160	—	—	9	16	6	—	05-4

51 Type (Right-handed)
52 Type (Left-handed)
For Internal Threading



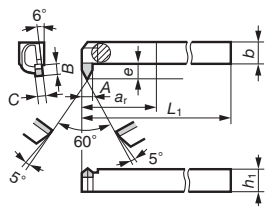
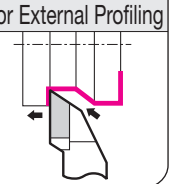
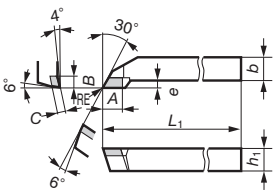


Figure shows Right-handed tool.

Cat. No.	Cermet	Carbide P (Steel)							Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
	T1200A	ST10P	ST20E	ST30E	ST40E				U2	A40		H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
51-1		●	●												●		13	13	140	8	50	5	8	3	—	05-1
51-2			●														16	16	160	10	60	6	10	4	—	05-2
51-3			●						●						●		19	19	190	12	80	7	12	5	—	05-3
51-4			●														25	25	230	16	100	9	16	6	—	05-4
52-1																	13	13	140	8	50	5	8	3	—	05-1
52-2																	16	16	160	10	60	6	10	4	—	05-2
52-3																	19	19	190	12	80	7	12	5	—	05-3
52-4																	25	25	230	16	100	9	16	6	—	05-4

95 Type
For External Profiling



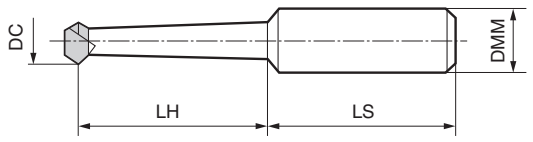


Cat. No.	Cermet	Carbide P (Steel)							Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
	T1200A	ST10P	ST20E	ST30E	ST40E				U2	A40		H3	H2	H1	G10E	G2	b	h_1	L_1	e	a_r	A	B	C	RE	
95-1		●															25	25	160	5	—	20	10	7	1.7	09-E

IJB Type

Through-Boring Type

Fig 1

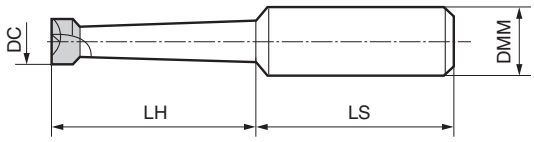


Dimensions (mm)

Cat. No.	Grade	Diameter	Head	Shank Dia.	Shank Length	Fig
	H1	DC	LH	DMM	LS	
IJB 4017	▲	1.7	6.5	4	20	1
IJB 4019		1.9	4.5			1
IJB 4022	▲	2.2	9.0			1
IJB 4026	▲	2.6	13.0			1
IJB 4030	▲	3.0	13.5			1
IJB 4035		3.5	14.0			1
IJB 4040	▲	4.0	18.0			1
IJB 4050		5.0	22.0			1
IJB 8019	▲	1.9	7.5	8	25	1
IJB 8030	▲	3.0	13.5			1
IJB 8035		3.5	14.0			1
IJB 8040	▲	4.0	18.0			1
IJB 8050	▲	5.0	22.0			1
IJB 8060	▲	6.0	25.0			1
IJB 8070	▲	7.0	27.0			1
IJB 8080	▲	8.0	30.0			1
IJB 8090	▲	9.0	33.0			1
IJB 8100	▲	10.0	38.0			1
IJB 8110		11.0	43.0			1
IJB 8120	▲	12.0	48.0			1
IJB 1005	▲	5.0	22.0	10	30	1
IJB 1006	▲	6.0	25.0			1
IJB 1007	▲	7.0	27.0			1
IJB 1008	▲	8.0	30.0			1
IJB 1009		9.0	33.0			1
IJB 1010	▲	10.0	38.0			1
IJB 1011		11.0	43.0			1
IJB 1012	▲	12.0	48.0			1
IJB 1015	▲	15.0	65.0			1

Shoulder Milling Type

Fig 2



Dimensions (mm)

Cat. No.	Grade	Diameter	Head	Shank Dia.	Shank Length	Fig
	H1	DC	LH	DMM	LS	
IJB 4017C		1.7	7.0	4	20	2
IJB 4019C		1.9	8.0			2
IJB 4022C	▲	2.2	9.5			2
IJB 4026C	▲	2.6	13.5			2
IJB 4030C	▲	3.0	14.0			2
IJB 4035C	▲	3.5	14.5			2
IJB 4040C	▲	4.0	19.0			2
IJB 4050C	▲	5.0	23.0			2
IJB 8019C	▲	1.9	8.0	8	25	2
IJB 8030C	▲	3.0	14.0			2
IJB 8035C	▲	3.5	14.5			2
IJB 8040C	▲	4.0	19.0			2
IJB 8050C	▲	5.0	23.0			2
IJB 8060C	▲	6.0	26.0			2
IJB 8070C	▲	7.0	28.5			2
IJB 8080C	▲	8.0	31.5			2
IJB 8090C		9.0	35.0			2
IJB 8100C	▲	10.0	40.0			2
IJB 8110C		11.0	45.0			2
IJB 8120C		12.0	50.0			2
IJB 1005C	▲	5.0	23.0	10	30	2
IJB 1006C		6.0	26.0			2
IJB 1007C	▲	7.0	28.5			2
IJB 1008C	▲	8.0	31.5			2
IJB 1009C	▲	9.0	35.0			2
IJB 1010C	▲	10.0	40.0			2
IJB 1011C		11.0	45.0			2
IJB 1012C	▲	12.0	50.5			2
IJB 1015C	▲	15.0	68.0			2

▲mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability.)

M E M O