Tools for Small Hole Boring

Small Hole Boring • **ID Indexable Insert Tooling**

The WIDIA™ line of micro boring bars provides accurate holemaking tooling in diameters as small as 1,57mm. These economical, indexable inserts are available in both steel and carbide shanks and are ideal for a wide range of applications, including precision micro boring.

80° Diamond Insert Boring Bars

- Available in shanks as small as 4,0mm to bore >4,57mm diameter.
- Positive rake geometry for free cutting action and better surface finishes.
- Superior, unobstructed chip evacuation.
- Stocked in multiple grades to bore a wide range of materials.

Threading and Grooving Boring Bars

- Easy insert changes for threading and grooving.
- Thread down to a 48 TPI, 1,3mm TP (pitch).
- Thread and groove capabilities to inside a 6,91mm bore diameter.

Multi-application tooling — groove and thread with the same bar.

Inserts available in multiple styles and grades, including polycrystalline diamond tipped, for all machining applications.

0,05mm insert nose radii available; insert repeatability within 0,005mm.

Choose from high-quality steel or carbide shanks with through tool coolant capabilities.

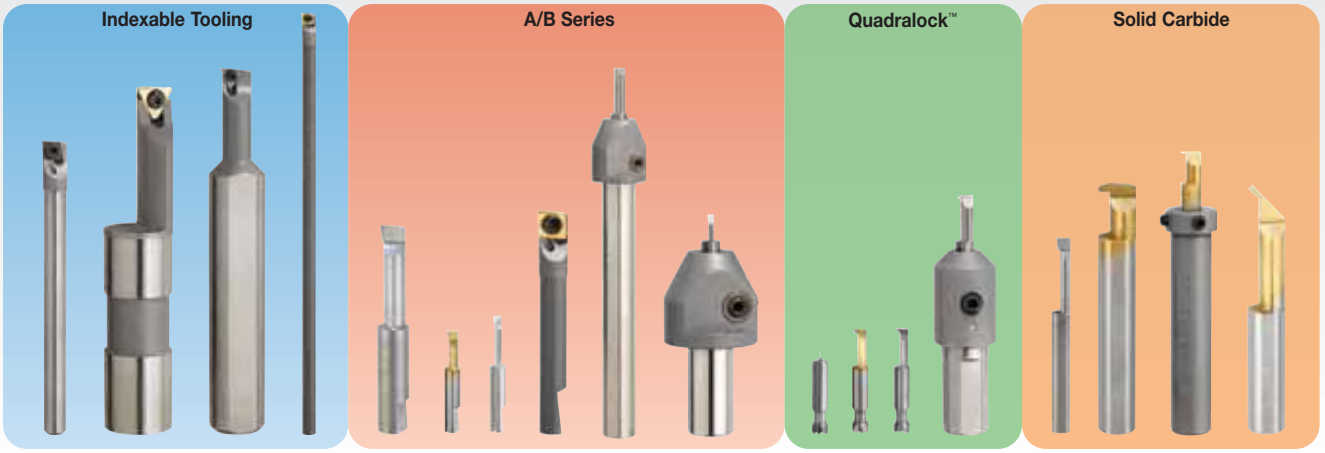
Triangle Insert Boring Bars

- Positive rake geometry to bore holes >6,98mm diameter.
- Designed for less obstruction and greater chip evacuation.
- Stocked in all grades, including diamond-tipped and borazon-tipped styles.
- Stocked in shanks as small as 6,0mm for 7,06mm minimum bore diameter.

The World's Most Comprehensive Boring Solutions

Trust the WIDIA™ full line of boring tools to meet all of your demanding job requirements. Whatever the work at hand, you are sure to find the most appropriate solution in this comprehensive, easy-to-use guide.

We engineer only the BEST boring tools, guaranteed to reduce your machining time, provide superior results, and outperform the competition.



Select the Correct Small Hole Boring Product Platform for Your Application

1 Determine tooling system to be used based on hole size to be bored (Dmin).

NOTE: Proper bar selection will have largest minimum bore dimension under hole size to be bored.

- Indexable Tooling
- A/B Series
- Quadralock
- Solid Carbide Bars

Boring

minimum bore diameter (Dmin)	high performance ◀ ▶ general performance
1	
2	
3	
4	
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34	
35	

Profiling

minimum bore diameter (Dmin)	high performance ◀ ▶ general performance
1	
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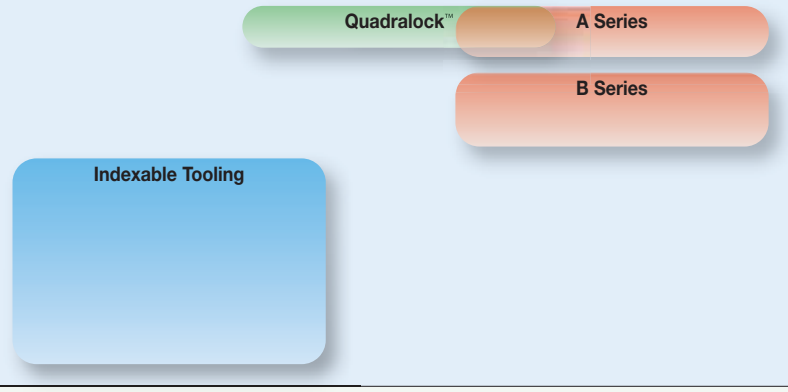

Threading

minimum bore diameter (Dmin)	high performance ◀ ▶ general performance
1	
2	
3	
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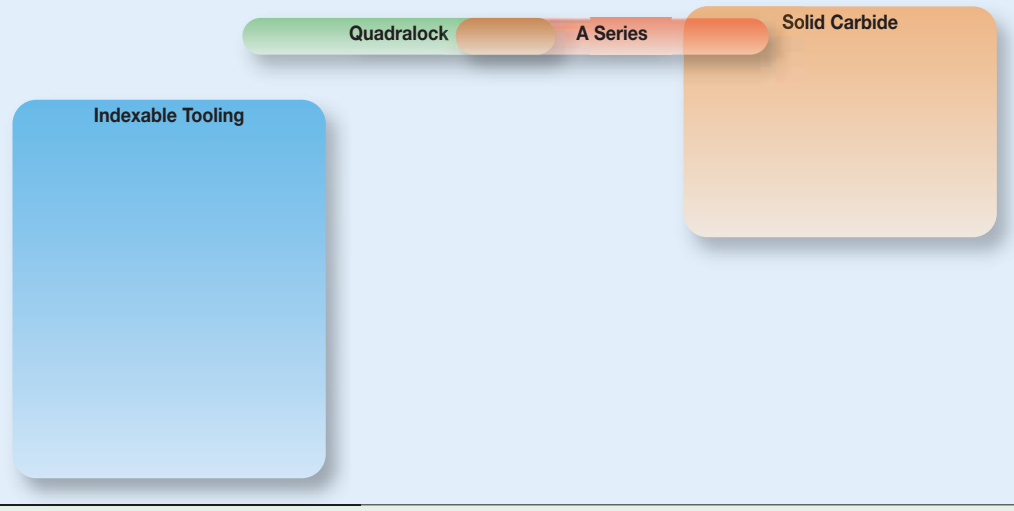
25	



Grooving

minimum bore diameter (Dmin)	high performance ◀ ▶ general performance
1	
2	
3	
4	
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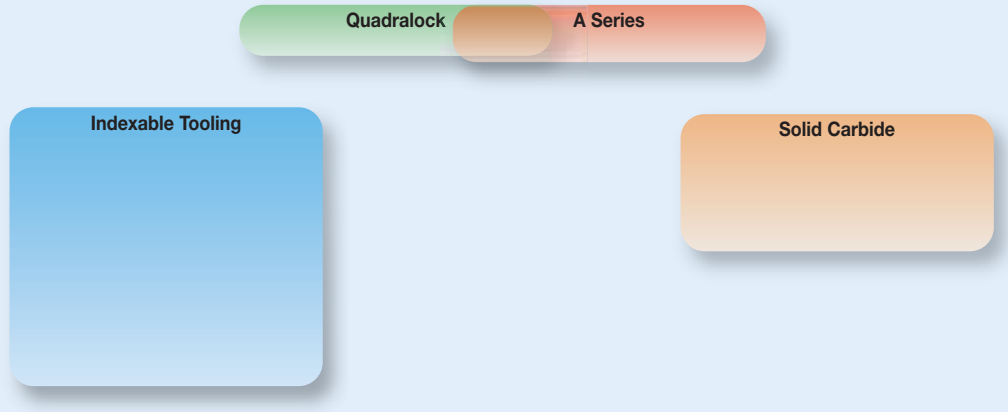
18	
19	
20	



NOTE: Proper bar selection will have largest minimum bore dimension under hole size to be bored.

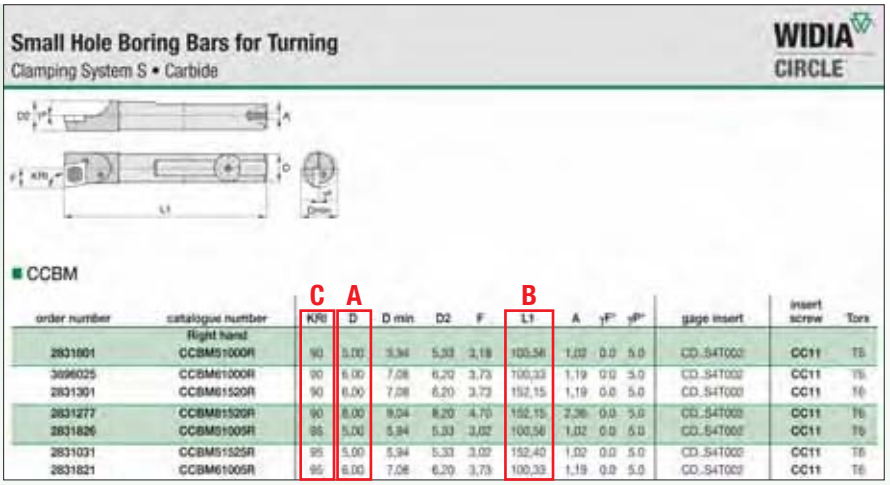
Determine Materials to Be Machined and the Appropriate Insert

2 Determine boring bar (D).

A Select shank size (D) based on your machine's requirements.

B Determine bore depth (how far the boring bar extends from the holder). Multiply bar diameter by 4. If bore depth is less, use a steel bar. If bore depth exceeds 4:1 ratio, use a carbide bar. Use L1 or L4 depending on bar selected. *(See recommended maximum overhang chart on **page 126**.)* For indexable tooling, go to **step 3**. For all other tooling systems, go directly to **step 4**.

C Determine lead angle (KRI). Zero degree lead angle is used when maximum stability is required. Lead angle may vary based on changing conditions, such as boring in a blind hole.



Small Hole Boring Bars for Turning
Clamping System S • Carbide

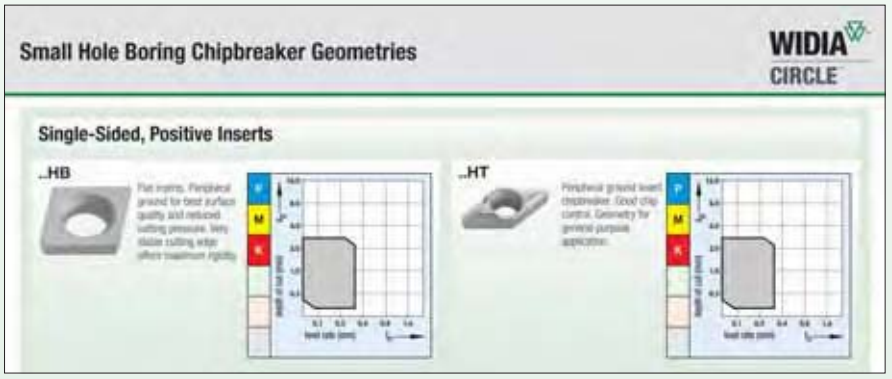
WIDIA CIRCLE

■ CCBM

order number	catalogue number	C KRI	A D	D min	D2	F	B L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
2831801	CCBM51000R	90	5,00	5,94	5,33	3,18	100,56	1,02	0,0	5,0	CD..S4T002	CC11	T6
3096025	CCBM61000R	90	6,00	7,08	6,20	3,73	100,33	1,19	0,0	5,0	CD..S4T002	CC11	T6
2831301	CCBM61520R	90	6,00	7,08	6,20	3,73	152,15	1,19	0,0	5,0	CD..S4T002	CC11	T6
2831277	CCBM81520R	90	8,00	9,04	8,20	4,70	152,15	2,36	0,0	5,0	CD..S4T002	CC11	T6
2831826	CCBM81009R	95	5,00	5,94	5,33	3,02	100,56	1,02	0,0	5,0	CD..S4T002	CC11	T6
2831031	CCBM51525R	95	5,00	5,94	5,33	3,02	152,40	1,02	0,0	5,0	CD..S4T002	CC11	T6
2831821	CCBM61009R	95	6,00	7,08	6,20	3,73	100,33	1,19	0,0	5,0	CD..S4T002	CC11	T6

3 Determine which chipbreaker is best for the material to be machined.

Consult the Small Hole Boring Chipbreaker Geometry charts on **pages C30–C31**.



Small Hole Boring Chipbreaker Geometries

WIDIA CIRCLE

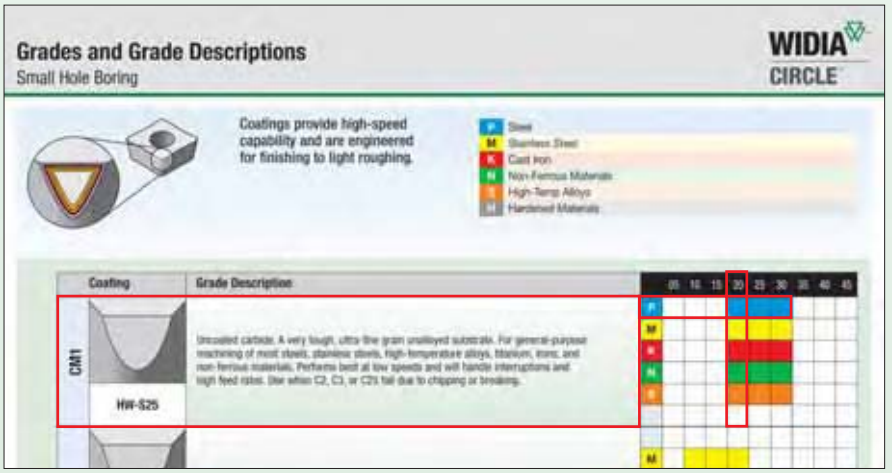
Single-Sided, Positive Inserts

..HB

..HT

4 Determine which grade is best for the material to be machined.

Consult the Grades and Grade Description Chart on **pages C32–C33**.



Grades and Grade Descriptions
Small Hole Boring

WIDIA CIRCLE

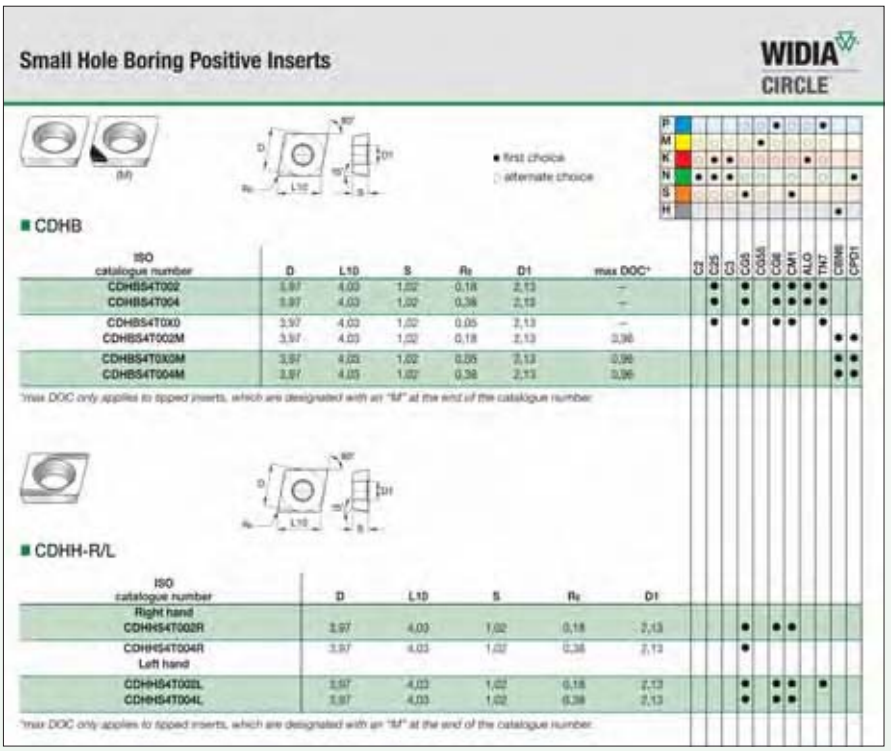
Coatings provide high-speed capability and are engineered for finishing to light roughing.

P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Materials
S High-Temp Alloys
H Hardened Materials

Coating	Grade Description
CM1	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C2S fail due to chipping or breaking.
HW-S25	

Determine Materials to Be Machined and the Appropriate Insert

5 Select the appropriate insert based on style, grade, and geometry.



Small Hole Boring Positive Inserts

WIDIA CIRCLE

■ CDHB

ISO catalogue number	D	L10	S	Rε	D1	max DOC*
CDHBS4T002	3,97	4,03	1,02	0,18	2,13	–
CDHBS4T004	3,97	4,03	1,02	0,38	2,13	–
CDHBS4T0X0	3,97	4,03	1,02	0,05	2,13	–
CDHBS4T002M	3,97	4,03	1,02	0,18	2,13	0,96
CDHBS4T0X0M	3,97	4,03	1,02	0,05	2,13	0,96
CDHBS4T004M	3,97	4,03	1,02	0,38	2,13	0,96

*max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.

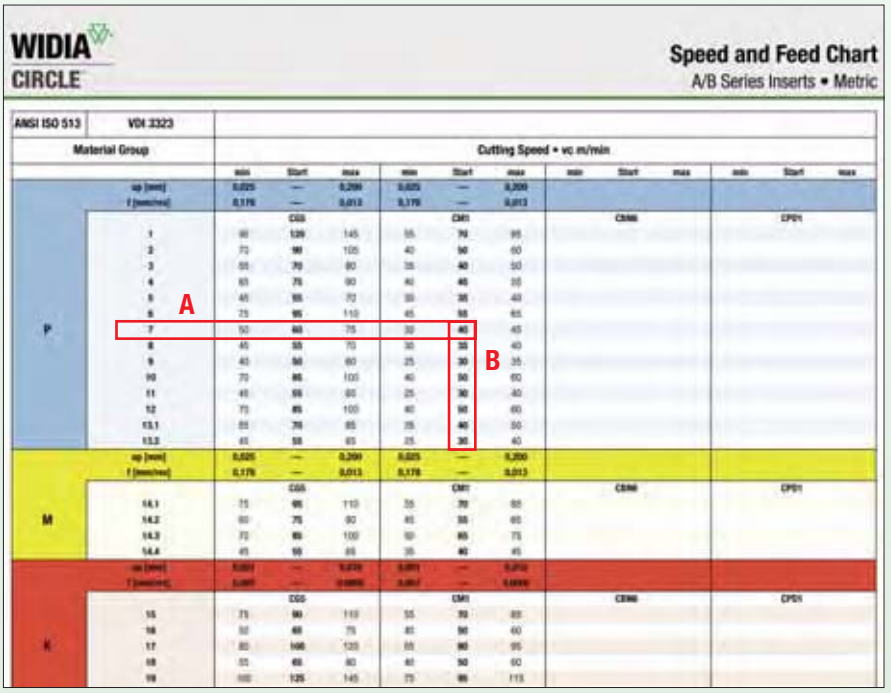
■ CDHH-R/L

ISO catalogue number	D	L10	S	Rε	D1
Right hand					
CDHHS4T002R	3,97	4,03	1,02	0,18	2,13
CDHHS4T004R	3,97	4,03	1,02	0,38	2,13
Left hand					
CDHHS4T002L	3,97	4,03	1,02	0,18	2,13
CDHHS4T004L	3,97	4,03	1,02	0,38	2,13

*max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.

6 Determine the Speed and Feed Chart for the appropriate cutting data.

- **A** Based on grade and edge geometry, identify starting speed (vc) and feed (fz). The first choice starting feed is in **bold**.
- **B** Use the corresponding speed located in the same column below the feed information.



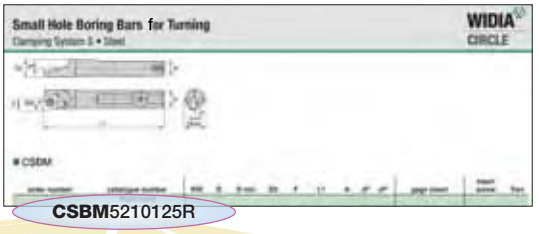
WIDIA CIRCLE

Speed and Feed Chart
A/B Series Inserts • Metric

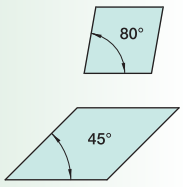
ANSI ISO 513	VDI 3323	Material Group	Cutting Speed • vc m/min											
			min	Start	max	min	Start	max	min	Start	max	min	Start	max
		ap [mm]	0,025	—	0,200	0,025	—	0,200						
		f [mm/rev]	0,178	—	0,013	0,178	—	0,013						
			CG5			CM1			CM6			CP01		
P	1		60	120	145	55	70	85						
P	2		70	90	105	40	50	60						
P	3		55	70	80	35	40	50						
P	4		65	75	90	40	45	55						
P	5	A	45	55	70	30	35	40						
P	6		75	95	110	45	55	65						
P	7		50	60	75	30	**40**	45						
P	8		45	55	70	30	**35**	40						
P	9	B	40	50	60	25	**30**	35						
P	10		70	85	100	40	**50**	60						
P	11		45	55	65	25	**30**	40						
P	12		75	85	100	40	**50**	60						
P	13.1		55	70	85	35	**40**	50						
P	13.2		45	55	65	25	**30**	40						
		ap [mm]	0,025	—	0,200	0,025	—	0,200						
		f [mm/rev]	0,178	—	0,013	0,178	—	0,013						
			CG5			CM1			CM6			CP01		
M	14.1		75	95	110	55	70	85						
M	14.2		60	75	90	45	55	65						
M	14.3		70	85	100	50	65	75						
M	14.4		45	55	65	35	40	45						
		ap [mm]												
		f [mm/rev]												
			CG5			CM1			CM6			CP01		
K	15		75	90	110	55	70	85						
K	16		50	60	75	40	50	60						
K	17		80	100	120	65	80	95						
K	18		55	65	80	40	50	60						
K	19		100	125	145	75	95	115						

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C — Series Type

C


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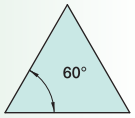
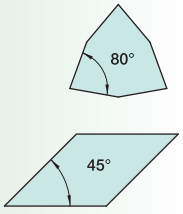
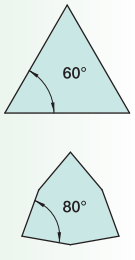
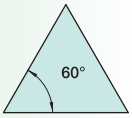
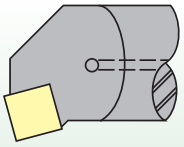


G


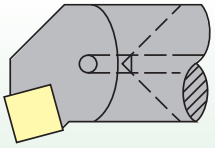
Q


S


S — Bar Type

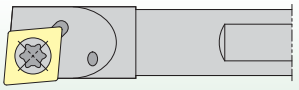


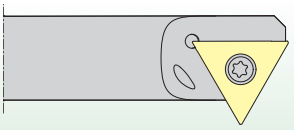
S = Steel
(with coolant)

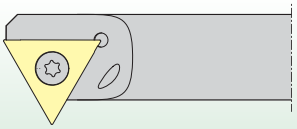


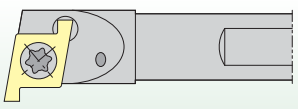
C = Carbide
(with coolant)

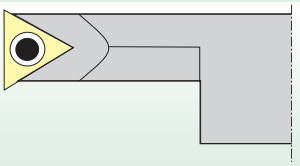
B — Bar Style Designation

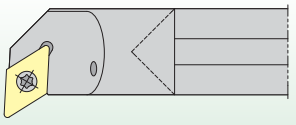
B Boring Bar


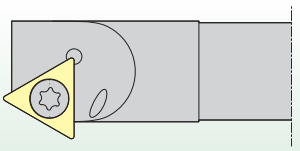
C External Chamfering Bar


I Internal Threading Bar


M Offset Internal Grooving Bar


O Offset Boring Bar


P Profiling Bar


R Reverse Chamfer or Back Chamfer Bar


M — Units

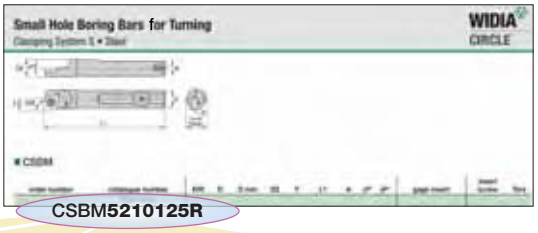
M = Metric

Insert Shape *(optional)*

C


W

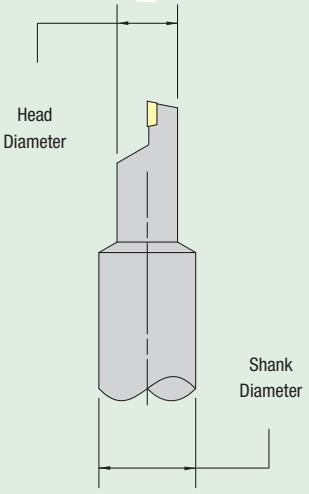

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



52
Head Diameter
shown as "D2"

7	=	6,60mm
8	=	8,18mm
		8,20mm
10	=	9,78mm
13	=	12,70mm
		12,95mm
45	=	4,57mm
48	=	4,80mm
52	=	5,16mm
53	=	5,30mm
64	=	6,60mm
66	=	6,55mm
		6,60mm
82	=	8,15mm
95	=	9,50mm
99	=	9,91mm
159	=	15,88mm

*If blank, value is equal to shank diameter.



NOTE: Only shown on stepped-style bars.

10
Shank Diameter
shown as "D"

4	=	4,00mm
5	=	5,00mm
6	=	6,00mm
8	=	8,00mm
10	=	10,00mm
12	=	12,00mm
16	=	16,00mm

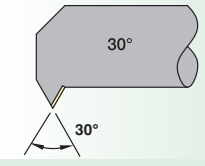
12
Length/Depth
shown as "L1/L4"

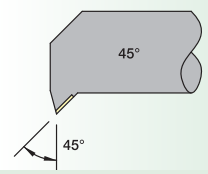
Bore length for step bars

Thread depth for threading bars

Overall length for straight shank bars

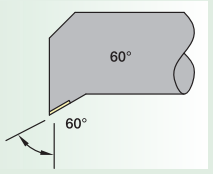
12	=	12,70mm
19	=	19,05mm
22	=	22,23mm
25	=	25,40mm
32	=	31,75mm
38	=	38,10mm
48	=	47,63mm
51	=	50,80mm
63	=	63,50mm
64	=	64,00mm
76	=	76,00mm
79	=	79,38mm
100	=	100,58mm/101,50mm/ 101,60mm
102	=	101,60mm
127	=	127,00mm
152	=	152,00mm/152,40mm
178	=	177,80mm/179,90mm
203	=	203,20mm
254	=	254,00mm

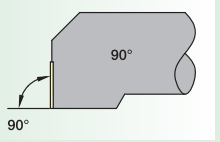


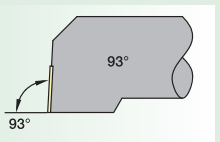


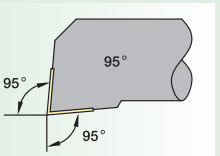
5
Lead Angle
shown as "KRI" for metric bars and "KRA" for inch bars.

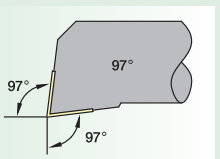
0	=	90° Used for Threading/ Grooving Bars
3	=	93°
5	=	95°
7	=	97°
225	=	67,5°
30	=	30°
45	=	45°
60	=	60°

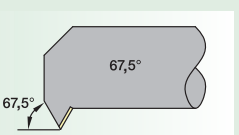










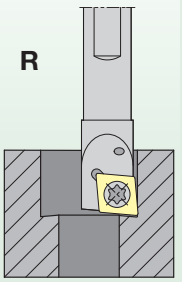


R
Hand of Tool

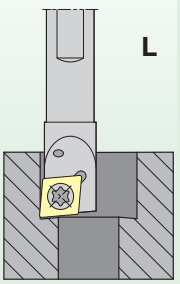
R = Right hand

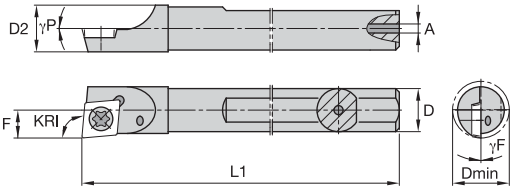
L = Left hand

Right-hand boring bar



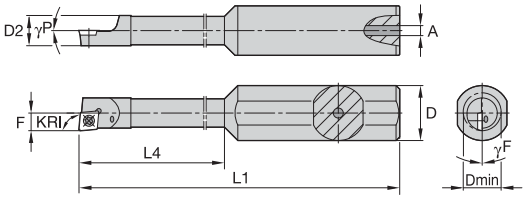
Left-hand boring bar





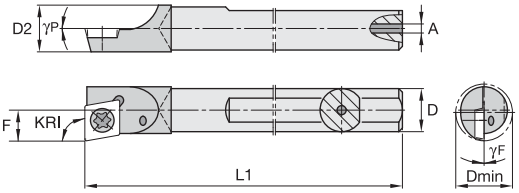
CSBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3896205	**CSBM5650R**	90	5,00	5,94	5,16	3,10	63,50	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831676	**CSBM6650R**	90	6,00	7,09	6,20	3,73	63,50	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
3518693	**CSBM8760R**	90	8,00	9,05	8,18	4,70	76,00	1,52	0.0	5.0	CD..S4T002	**CC11**	T6
2831441	**CSBM5655R**	95	5,00	5,78	5,16	2,95	63,50	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831687	**CSBM6655R**	95	6,00	7,09	6,20	3,73	63,50	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831666	**CSBM8765R**	95	8,00	9,05	8,18	4,70	76,00	1,52	0.0	5.0	CD..S4T002	**CC11**	T6
2831701	**CSBM4657R**	97	4,00	4,57	4,22	2,41	63,50	1,02	0.0	0.0	CD..S4T002	**CC09**	T6
	Left hand												
3896204	**CSBM5650L**	90	5,00	5,94	5,16	3,10	63,50	1,11	0.0	5.0	CD..S4T002	**CC09**	T6
3896207	**CSBM6650L**	90	6,00	7,09	6,20	3,73	63,50	1,11	0.0	5.0	CD..S4T002	**CC11**	T6
3896209	**CSBM8760L**	90	8,00	9,05	8,18	4,70	76,00	1,52	0.0	5.0	CD..S4T002	**CC11**	T6
3896206	**CSBM5655L**	95	5,00	5,78	5,16	2,95	63,50	1,11	0.0	5.0	CD..S4T002	**CC09**	T6
3896208	**CSBM6655L**	95	6,00	7,09	6,20	3,73	63,50	1,11	0.0	5.0	CD..S4T002	**CC11**	T6
3517652	**CSBM8765L**	95	8,00	9,05	8,18	4,70	76,00	1,52	0.0	5.0	CD..S4T002	**CC11**	T6
2831695	**CSBM4657L**	97	4,00	4,57	4,22	2,41	63,50	1,11	0.0	0.0	CD..S4T002	**CC09**	T6



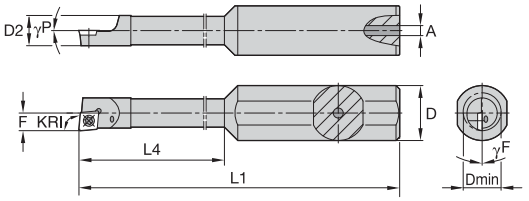
■ CSBM • STEPPED

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2831628	**CSBM5210120R**	90	10,00	5,94	5,16	3,10	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831606	**CSBM5210250R**	90	10,00	5,94	5,16	3,10	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831499	**CSBM5212250R**	90	12,00	5,94	5,16	3,10	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831477	**CSBM6412190R**	90	12,00	7,42	6,60	3,86	70,00	19,05	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831462	**CSBM6412320R**	90	12,00	7,42	6,60	3,86	70,00	31,75	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831661	**CSBM4510125R**	95	10,00	5,18	4,57	2,64	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831651	**CSBM4510255R**	95	10,00	5,18	4,57	2,64	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831639	**CSBM5210125R**	95	10,00	5,78	5,16	2,95	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831615	**CSBM5210255R**	95	10,00	5,78	5,16	2,95	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831595	**CSBM6410195R**	95	10,00	7,24	6,60	3,68	70,00	19,05	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831571	**CSBM6410325R**	95	10,00	7,24	6,60	3,68	70,00	31,75	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831548	**CSBM4512125R**	95	12,00	5,18	4,57	2,64	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831535	**CSBM5212125R**	95	12,00	5,78	5,16	2,95	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831512	**CSBM5212255R**	95	12,00	5,78	5,16	2,95	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831490	**CSBM6412195R**	95	12,00	7,24	6,60	3,68	70,00	19,05	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831468	**CSBM6412325R**	95	12,00	7,24	6,60	3,68	70,00	31,75	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
	Left hand													
2831656	**CSBM4510125L**	95	10,00	5,18	4,57	2,64	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831588	**CSBM6410195L**	95	10,00	7,24	6,60	3,68	70,00	19,05	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
3890853	**CSBM4512125L**	95	12,00	5,18	4,57	2,64	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
3890854	**CSBM4512255L**	95	12,00	5,18	4,57	2,64	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC09**	T6
2831528	**CSBM5212125L**	95	12,00	5,78	5,16	2,95	70,00	12,70	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831505	**CSBM5212255L**	95	12,00	5,78	5,16	2,95	70,00	25,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831483	**CSBM6412195L**	95	12,00	7,24	6,60	3,68	70,00	19,05	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
3890855	**CSBM6412325L**	95	12,00	7,24	6,60	3,68	70,00	31,75	1,02	0.0	5.0	CD..S4T002	**CC11**	T6



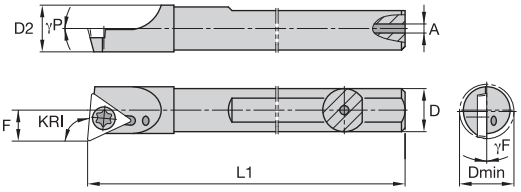
CCBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
2831801	**CCBM51000R**	90	5,00	5,94	5,33	3,18	100,58	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
3896025	**CCBM61000R**	90	6,00	7,08	6,20	3,73	100,33	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
2831301	**CCBM61520R**	90	6,00	7,08	6,20	3,73	152,15	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
2831277	**CCBM81520R**	90	8,00	9,04	8,20	4,70	152,15	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831826	**CCBM51005R**	95	5,00	5,94	5,33	3,02	100,58	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831031	**CCBM51525R**	95	5,00	5,94	5,33	3,02	152,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831821	**CCBM61005R**	95	6,00	7,08	6,20	3,73	100,33	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
2831311	**CCBM61525R**	95	6,00	7,08	6,20	3,73	152,15	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
3520653	**CCBM81005R**	95	8,00	9,04	8,20	4,70	101,60	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831289	**CCBM81525R**	95	8,00	9,04	8,20	4,70	152,15	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831832	**CCBM41007R**	97	4,00	4,57	4,22	2,41	100,33	1,02	0.0	0.0	CD..S4T002	**CC09**	T6
2831324	**CCBM41527R**	97	4,00	4,57	4,22	2,41	152,40	1,02	0.0	0.0	CD..S4T002	**CC09**	T6
	Left hand												
3896023	**CCBM51000L**	90	5,00	5,94	5,33	3,18	100,58	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
3896024	**CCBM61000L**	90	6,00	7,08	6,20	3,73	100,33	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
3896026	**CCBM61520L**	90	6,00	7,08	6,20	3,73	152,15	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
3896028	**CCBM81520L**	90	8,00	9,04	8,20	4,70	152,15	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831807	**CCBM51005L**	95	5,00	5,94	5,33	3,02	100,58	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831025	**CCBM51525L**	95	5,00	5,94	5,33	3,02	152,40	1,02	0.0	5.0	CD..S4T002	**CC11**	T6
2831791	**CCBM61005L**	95	6,00	7,08	6,20	3,73	100,33	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
2831307	**CCBM61525L**	95	6,00	7,08	6,20	3,73	152,15	1,19	0.0	5.0	CD..S4T002	**CC11**	T6
3896027	**CCBM81005L**	95	8,00	9,04	8,20	4,70	101,60	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831283	**CCBM81525L**	95	8,00	9,04	8,20	4,70	152,15	2,36	0.0	5.0	CD..S4T002	**CC11**	T6
2831813	**CCBM41007L**	97	4,00	4,57	4,22	2,41	100,33	1,02	0.0	0.0	CD..S4T002	**CC09**	T6
3896002	**CCBM41527L**	97	4,00	4,57	4,22	2,41	152,40	1,02	0.0	0.0	CD..S4T002	**CC09**	T6



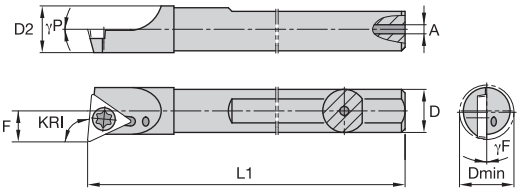
■ CCBM • STEPPED

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2831211	**CCBM5312510R**	90	12,00	6,10	5,30	3,18	88,90	50,80	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831232	**CCBM5312250R**	90	12,00	6,10	5,30	3,18	63,50	25,40	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831127	**CCBM5316510R**	90	16,00	6,10	5,30	3,18	114,30	50,80	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831188	**CCBM6612320R**	90	12,00	7,42	6,55	3,86	69,85	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831175	**CCBM6612630R**	90	12,00	7,42	6,55	3,86	101,60	63,50	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831110	**CCBM6516320R**	90	16,00	7,42	6,55	3,86	95,25	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831255	**CCBM4812485R**	95	12,00	5,28	4,80	2,64	85,73	47,63	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
2831265	**CCBM4812225R**	95	12,00	5,28	4,80	2,64	60,33	22,23	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
3896015	**CCBM4816225R**	95	16,00	5,28	4,80	2,64	85,73	22,23	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
3896017	**CCBM4816485R**	95	16,00	5,28	4,80	2,64	111,13	47,63	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
2831221	**CCBM5312515R**	95	12,00	5,94	5,30	3,02	88,90	50,80	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831244	**CCBM5312255R**	95	12,00	5,94	5,30	3,02	63,50	25,40	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831162	**CCBM5316255R**	95	16,00	5,94	5,30	3,02	88,90	25,40	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831139	**CCBM5316515R**	95	16,00	5,94	5,30	3,02	114,30	50,80	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
3896019	**CCBM6612635R**	95	12,00	7,24	6,55	3,68	101,60	63,50	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831201	**CCBM6612325R**	95	12,00	7,24	6,55	3,68	69,85	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
3896018	**CCBM6516325R**	95	16,00	7,24	6,55	3,68	95,25	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
	Left hand													
2831260	**CCBM4812225L**	95	12,00	5,28	4,80	2,64	60,33	22,23	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
3896016	**CCBM4816485L**	95	16,00	5,28	4,80	2,64	111,13	47,63	3,18	0.0	5.0	CD..S4T002	**CC09**	T6
2831238	**CCBM5312255L**	95	12,00	5,94	5,30	3,02	63,50	25,40	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831132	**CCBM5316515L**	95	16,00	5,94	5,30	3,02	114,30	50,80	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831157	**CCBM5316255L**	95	16,00	5,94	5,30	3,02	88,90	25,40	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831194	**CCBM6612325L**	95	12,00	7,24	6,55	3,68	69,85	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
3896093	**CCBM6612635L**	95	12,00	7,24	6,55	3,68	101,60	63,50	3,18	0.0	5.0	CD..S4T002	**CC11**	T6
2831117	**CCBM6516325L**	95	16,00	7,24	6,55	3,68	95,25	31,75	3,18	0.0	5.0	CD..S4T002	**CC11**	T6



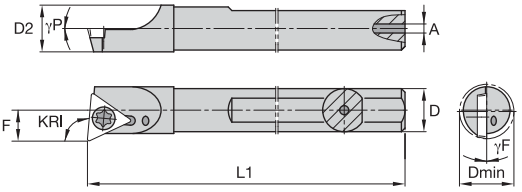
FSBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
2829554	**FSBM61000R**	90	6,00	7,06	6,20	3,71	101,60	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829539	**FSBM81000R**	90	8,00	9,14	8,20	4,80	101,60	1,52	0.0	5.0	TD..07S102	**FC11**	T7
2829566	**FSBM61005R**	95	6,00	7,06	6,20	3,71	101,60	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829548	**FSBM81005R**	95	8,00	9,14	8,20	4,80	101,60	1,52	0.0	5.0	TD..07S102	**FC11**	T7
	Left hand												
3896211	**FSBM61000L**	90	6,00	7,06	6,20	3,71	101,60	1,02	0.0	5.0	TD..07S102	**FC11**	T7
3896213	**FSBM81000L**	90	8,00	9,14	8,20	4,80	101,60	1,52	0.0	5.0	TD..07S102	**FC11**	T7
3896212	**FSBM61005L**	95	6,00	7,06	6,20	3,71	101,60	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829545	**FSBM81005L**	95	8,00	9,14	8,20	4,80	101,60	1,52	0.0	5.0	TD..07S102	**FC11**	T7



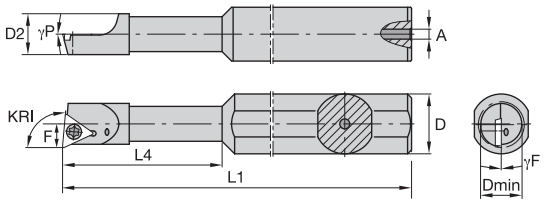
QSBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
2824886	**QSBM121520R**	90	12,00	13,16	12,19	6,81	152,00	2,03	0.0	5.0	TP..110202	**QC26**	T9
3886552	**QSBM101275R**	95	10,00	11,15	10,21	5,79	127,00	2,03	0.0	5.0	TP..110202	**QC21**	T9
2824898	**QSBM121525R**	95	12,00	13,16	12,19	6,81	152,00	2,03	0.0	5.0	TP..110202	**QC26**	T9
	Left hand												
3886550	**QSBM101270L**	90	10,00	11,15	10,21	5,79	127,00	2,03	0.0	5.0	TP..110202	**QC21**	T9
3886943	**QSBM121520L**	90	12,00	13,16	12,19	6,81	152,00	2,03	0.0	5.0	TP..110202	**QC26**	T9
3886551	**QSBM101275L**	95	10,00	11,15	10,21	5,79	127,00	2,03	0.0	5.0	TP..110202	**QC21**	T9



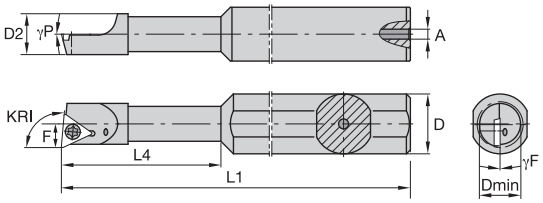
SSBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3886965	**SSBM161780R**	90	16,00	17,20	16,13	8,89	177,80	6,35	0.0	5.0	TP..160302	**SC30**	T10
3886968	**SSBM202030R**	90	20,00	21,23	20,19	10,92	203,20	7,14	0.0	5.0	TP..160302	**SC30**	T10
	Left hand												
3886964	**SSBM161780L**	90	16,00	17,20	16,13	8,89	179,90	6,35	0.0	5.0	TP..160302	**SC30**	T10
3886967	**SSBM202030L**	90	20,00	21,23	20,19	10,92	203,20	7,14	0.0	5.0	TP..160302	**SC30**	T10
3886966	**SSBM161785L**	95	16,00	17,20	16,13	8,89	179,90	6,35	0.0	5.0	TP..160302	**SC30**	T10
3886969	**SSBM202035L**	95	20,00	21,23	20,19	10,92	203,20	7,14	0.0	5.0	TP..160302	**SC30**	T10



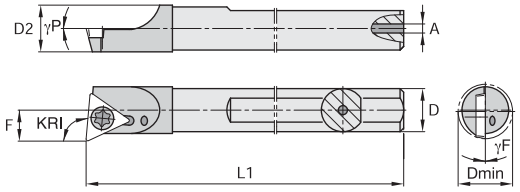
FSBM • STEPPED

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2829496	**FSBM6612190R**	90	12,00	7,52	6,60	3,96	76,00	19,05	1,02	0.0	5.0	TD..07S102	**FC14**	T7
3890858	**FSBM6612320R**	90	12,00	7,52	6,60	3,96	76,00	31,75	1,02	0.0	5.0	TD..07S102	**FC14**	T7
2829472	**FSBM8212250R**	90	12,00	9,09	8,15	4,75	76,00	25,40	1,52	0.0	5.0	TD..07S102	**FC14**	T7
2829448	**FSBM8212380R**	90	12,00	9,09	8,15	4,75	76,00	38,10	1,52	0.0	5.0	TD..07S102	**FC14**	T7
3890860	**FSBM6616190R**	90	16,00	7,52	6,60	3,96	102,00	19,05	1,02	0.0	5.0	TD..07S102	**FC14**	T7
2829408	**FSBM8216380R**	90	16,00	9,09	8,15	4,75	102,00	38,10	1,52	0.0	5.0	TD..07S102	**FC14**	T7
2829533	**FSBM5212125R**	95	12,00	6,99	5,16	3,20	76,00	12,70	1,02	0.0	5.0	TD..07S102	**FC11**	T7
3890857	**FSBM5212255R**	95	12,00	6,99	5,16	3,20	76,00	25,40	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829508	**FSBM6612195R**	95	12,00	7,52	6,60	3,96	76,00	19,05	1,02	0.0	5.0	TD..07S102	**FC14**	T7
3890859	**FSBM6612325R**	95	12,00	7,52	6,60	3,96	76,00	31,75	1,02	0.0	5.0	TD..07S102	**FC14**	T7
2829459	**FSBM8212385R**	95	12,00	9,09	8,15	4,75	76,00	38,10	1,52	0.0	5.0	TD..07S102	**FC14**	T7
3897011	**FSBM5216125R**	95	16,00	6,99	5,16	3,20	102,00	12,70	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829429	**FSBM6616195R**	95	16,00	7,52	6,60	3,96	102,00	19,05	1,02	0.0	5.0	TD..07S102	**FC14**	T7
3890862	**FSBM6616325R**	95	16,00	7,52	6,60	3,96	102,00	31,75	1,02	0.0	5.0	TD..07S102	**FC14**	T7
3890863	**FSBM8216385R**	95	16,00	9,09	8,15	4,75	102,00	38,10	1,52	0.0	5.0	TD..07S102	**FC14**	T7
	Left hand													
2829442	**FSBM8212380L**	90	12,00	9,09	8,15	4,75	76,00	38,10	1,52	0.0	5.0	TD..07S102	**FC14**	T7
3890861	**FSBM6616320L**	90	16,00	7,52	6,60	3,96	102,00	31,75	1,02	0.0	5.0	TD..07S102	**FC14**	T7
3890856	**FSBM5212125L**	95	12,00	6,99	5,16	3,20	76,00	12,70	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829501	**FSBM6612195L**	95	12,00	7,52	6,60	3,96	76,00	19,05	1,02	0.0	5.0	TD..07S102	**FC14**	T7



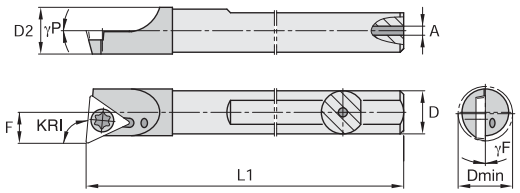
■ QSBM • STEPPED

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2825013	**QSBM9912480R**	90	12,00	11,12	9,91	5,61	95,25	47,63	2,03	0.0	5.0	TP..110202	**QC21**	T9
3890865	**QSBM9916480R**	90	16,00	11,12	9,91	5,61	107,95	47,63	2,03	0.0	5.0	TP..110202	**QC21**	T9
3886946	**QSBM1316630R**	90	16,00	14,30	12,95	7,52	107,95	63,50	2,03	0.0	5.0	TP..110202	**QC26**	T9
3886949	**QSBM15920630R**	90	20,00	17,47	15,88	8,97	114,30	63,50	2,49	0.0	5.0	TP..110202	**QC26**	T9
2825052	**QSBM9912295R**	95	12,00	11,12	9,91	5,61	95,25	28,58	2,03	0.0	5.0	TP..110202	**QC21**	T9
2825024	**QSBM9912485R**	95	12,00	11,12	9,91	5,61	95,25	47,63	2,03	0.0	5.0	TP..110202	**QC21**	T9
3890864	**QSBM9916295R**	95	16,00	11,12	9,91	5,61	107,95	28,58	2,03	0.0	5.0	TP..110202	**QC21**	T9
2824993	**QSBM9916485R**	95	16,00	11,12	9,91	5,61	107,95	47,63	2,03	0.0	5.0	TP..110202	**QC21**	T9
3886945	**QSBM1316385R**	95	16,00	14,30	12,95	7,52	107,95	38,10	2,03	0.0	5.0	TP..110202	**QC26**	T9
3886948	**QSBM1316635R**	95	16,00	14,30	12,95	7,52	107,95	63,50	2,03	0.0	5.0	TP..110202	**QC26**	T9
2824950	**QSBM9920385R**	95	20,00	11,12	9,91	5,61	101,60	38,10	2,03	0.0	5.0	TP..110202	**QC21**	T9
3886950	**QSBM15920635R**	95	20,00	17,47	15,88	8,97	114,30	63,50	2,49	0.0	5.0	TP..110202	**QC26**	T9
	Left hand													
2825019	**QSBM9912485L**	95	12,00	11,12	9,91	5,61	95,25	47,63	2,03	0.0	5.0	TP..110202	**QC21**	T9
3896089	**QSBM9916295L**	95	16,00	11,12	9,91	5,61	107,95	28,58	2,03	0.0	5.0	TP..110202	**QC21**	T9
3886944	**QSBM1316385L**	95	16,00	14,30	12,95	7,52	107,95	38,10	2,03	0.0	5.0	TP..110202	**QC26**	T9
3886947	**QSBM1316635L**	95	16,00	14,30	12,95	7,52	107,95	63,50	2,03	0.0	5.0	TP..110202	**QC26**	T9
2824945	**QSBM9920385L**	95	20,00	11,12	9,91	5,61	101,60	38,10	2,03	0.0	5.0	TP..110202	**QC21**	T9



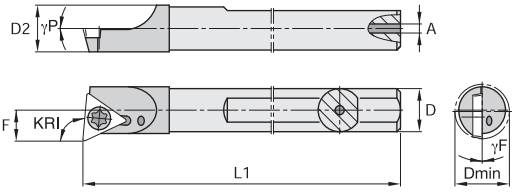
FCBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3896036	**FCBM51000R**	90	5,00	6,98	5,30	3,40	100,58	1,02	0.0	5.0	TD..07S102	**FC11**	T7
3896031	**FCBM61520R**	90	6,00	7,06	6,20	3,70	152,40	1,19	0.0	5.0	TD..07S102	**FC11**	T7
2829356	**FCBM81520R**	90	8,00	9,16	8,20	4,80	152,40	2,36	0.0	5.0	TD..07S102	**FC11**	T7
3896038	**FCBM51005R**	95	5,00	6,98	5,30	3,20	100,58	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829390	**FCBM61525R**	95	6,00	7,06	6,20	3,70	152,40	1,19	0.0	5.0	TD..07S102	**FC11**	T7
2829368	**FCBM81525R**	95	8,00	9,16	8,20	4,80	152,40	2,36	0.0	5.0	TD..07S102	**FC11**	T7
	Left hand												
3896035	**FCBM51000L**	90	5,00	6,98	5,30	3,40	100,58	1,02	0.0	5.0	TD..07S102	**FC11**	T7
3896030	**FCBM61520L**	90	6,00	7,06	6,20	3,70	152,40	1,19	0.0	5.0	TD..07S102	**FC11**	T7
3896032	**FCBM81520L**	90	8,00	9,16	8,20	4,80	152,40	2,36	0.0	5.0	TD..07S102	**FC11**	T7
3896037	**FCBM51005L**	95	5,00	6,98	5,30	3,20	100,58	1,02	0.0	5.0	TD..07S102	**FC11**	T7
2829385	**FCBM61525L**	95	6,00	7,06	6,20	3,70	152,40	1,19	0.0	5.0	TD..07S102	**FC11**	T7
3896033	**FCBM81525L**	95	8,00	9,16	8,20	4,80	152,40	2,36	0.0	5.0	TD..07S102	**FC11**	T7



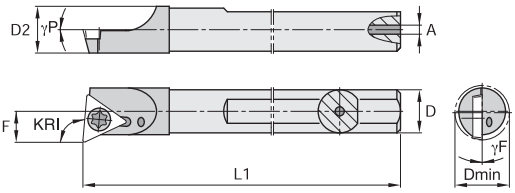
QCBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3854445	**QCBM102540R**	90	10,00	11,15	10,21	5,79	254,00	3,20	0.0	5.0	TP..110202	**QC21**	T9
2824737	**QCBM122540R**	90	12,00	13,16	12,19	6,81	254,00	4,70	0.0	5.0	TP..110202	**QC26**	T9
2824776	**QCBM102545R**	95	10,00	11,15	10,21	5,79	254,00	3,20	0.0	5.0	TP..110202	**QC21**	T9
2824747	**QCBM122545R**	95	12,00	13,16	12,19	6,81	254,00	4,70	0.0	5.0	TP..110202	**QC26**	T9
	Left hand												
3896042	**QCBM102540L**	90	10,00	11,15	10,21	5,79	254,00	3,20	0.0	5.0	TP..110202	**QC21**	T9
3896043	**QCBM122540L**	90	12,00	13,16	12,19	6,81	254,00	4,70	0.0	5.0	TP..110202	**QC26**	T9
2824769	**QCBM102545L**	95	10,00	11,15	10,21	5,79	254,00	3,20	0.0	5.0	TP..110202	**QC21**	T9
3896044	**QCBM122545L**	95	12,00	13,16	12,19	6,81	254,00	4,70	0.0	5.0	TP..110202	**QC26**	T9



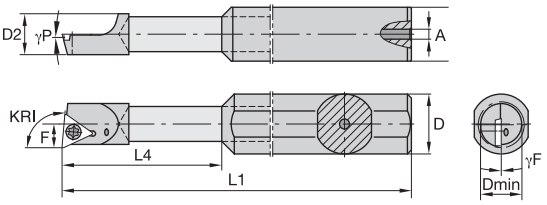
SCBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3895892	**SCBM162540R**	90	16,00	17,25	16,13	8,89	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3897083	**SCBM202540R**	90	20,00	21,25	20,19	10,90	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3896004	**SCBM162545R**	95	16,00	17,25	16,13	8,89	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3896006	**SCBM202545R**	95	20,00	21,25	20,19	10,90	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
	Left hand												
3895891	**SCBM162540L**	90	16,00	17,25	16,13	8,89	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3896005	**SCBM202540L**	90	20,00	21,25	20,19	10,90	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3896003	**SCBM162545L**	95	16,00	17,25	16,13	8,89	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10
3896091	**SCBM202545L**	95	20,00	21,25	20,19	10,90	254,00	5,51	0.0	5.0	TP..160302	**SC30**	T10



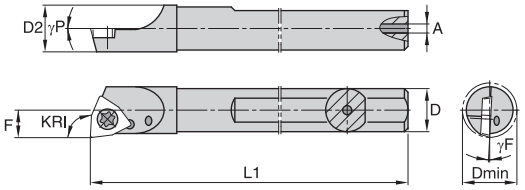
SDBM

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3896011	**SDBM162540R**	90	16,00	17,25	16,13	8,89	254,00	5,54	0.0	5.0	TP..160302	**SC30**	T10
3896014	**SDBM202540R**	90	20,00	21,25	20,19	10,90	254,00	7,11	0.0	5.0	TP..160302	**SC30**	T10
2822085	**SDBM162545R**	95	16,00	17,25	16,13	8,89	254,00	5,54	0.0	5.0	TP..160302	**SC30**	T10
3896092	**SDBM202545R**	95	20,00	21,25	20,19	10,90	254,00	7,11	0.0	5.0	TP..160302	**SC30**	T10
	Left hand												
3896010	**SDBM162540L**	90	16,00	17,25	16,13	8,89	254,00	5,54	0.0	5.0	TP..160302	**SC30**	T10
3896013	**SDBM202540L**	90	20,00	21,25	20,19	10,90	254,00	7,11	0.0	5.0	TP..160302	**SC30**	T10
3896012	**SDBM162545L**	95	16,00	17,25	16,13	8,89	254,00	5,54	0.0	5.0	TP..160302	**SC30**	T10
3897084	**SDBM202545L**	95	20,00	21,25	20,19	10,90	254,00	7,11	0.0	5.0	TP..160302	**SC30**	T10



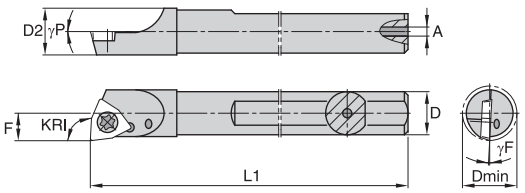
FCBM • STEPPED

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2829339	**FCBM5312250R**	90	12,00	6,98	5,30	3,40	63,50	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
2829309	**FCBM6612320R**	90	12,00	7,52	6,60	3,96	69,85	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896072	**FCBM6612630R**	90	12,00	7,52	6,60	3,96	101,60	63,50	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829289	**FCBM8212380R**	90	12,00	9,09	8,20	4,75	76,20	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829268	**FCBM8212790R**	90	12,00	9,09	8,20	4,75	117,48	79,38	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896069	**FCBM5316250R**	90	16,00	6,98	5,30	3,40	88,90	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
2829253	**FCBM5316510R**	90	16,00	6,98	5,30	3,40	114,30	50,80	3,18	0.0	5.0	TD..07S102	**FC11**	T7
3896084	**FCBM6616320R**	90	16,00	7,52	6,60	3,96	95,25	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896094	**FCBM6616630R**	90	16,00	7,52	6,60	3,96	127,00	63,50	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896086	**FCBM8216380R**	90	16,00	9,09	8,20	4,75	101,60	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896095	**FCBM8216790R**	90	16,00	9,09	8,20	4,75	117,48	79,38	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829350	**FCBM5312255R**	95	12,00	6,98	5,30	3,20	63,50	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
2829323	**FCBM6612325R**	95	12,00	7,52	6,60	3,96	69,85	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896083	**FCBM6612635R**	95	12,00	7,52	6,60	3,96	101,60	63,50	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829301	**FCBM8212385R**	95	12,00	9,09	8,20	4,75	76,20	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829279	**FCBM8212795R**	95	12,00	9,09	8,20	4,75	117,48	79,38	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3897085	**FCBM5316255R**	95	16,00	6,98	5,30	3,20	88,90	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
3896071	**FCBM5316515R**	95	16,00	6,98	5,30	3,20	114,30	50,80	3,18	0.0	5.0	TD..07S102	**FC11**	T7
3790247	**FCBM6616325R**	95	16,00	7,52	6,60	3,96	95,25	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3786518	**FCBM6616635R**	95	16,00	7,52	6,60	3,96	127,00	63,50	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3897086	**FCBM8216385R**	95	16,00	9,09	8,20	4,75	101,60	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3786519	**FCBM8216795R**	95	16,00	9,09	8,20	4,75	117,48	79,38	3,18	0.0	5.0	TD..07S102	**FC14**	T7
	Left hand													
3896067	**FCBM5312510L**	90	12,00	6,98	5,30	3,40	88,90	50,80	3,18	0.0	5.0	TD..07S102	**FC11**	T7
2829344	**FCBM5312255L**	95	12,00	6,98	5,30	3,20	63,50	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
3896068	**FCBM5312515L**	95	12,00	6,98	5,30	3,20	88,90	50,80	3,18	0.0	5.0	TD..07S102	**FC11**	T7
2829319	**FCBM6612325L**	95	12,00	7,52	6,60	3,96	69,85	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
2829295	**FCBM8212385L**	95	12,00	9,09	8,20	4,75	76,20	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896070	**FCBM5316255L**	95	16,00	6,98	5,30	3,20	88,90	25,40	3,18	0.0	5.0	TD..07S102	**FC11**	T7
3896085	**FCBM6616325L**	95	16,00	7,52	6,60	3,96	95,25	31,75	3,18	0.0	5.0	TD..07S102	**FC14**	T7
3896087	**FCBM8216385L**	95	16,00	9,09	8,20	4,75	101,60	38,10	3,18	0.0	5.0	TD..07S102	**FC14**	T7



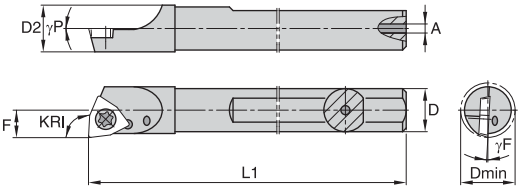
GSBMW

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
2828134	**GSBMW51003R**	93	5,00	6,60	5,72	3,20	101,50	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
2828122	**GSBMW61003R**	93	6,00	6,78	6,20	3,43	101,50	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
3886549	**GSBMW81003R**	93	8,00	8,10	8,18	4,42	101,50	1,02	-3.0	0.0	WP..S30104	**CT15**	T6
	Left hand												
2828130	**GSBMW51003L**	93	5,00	6,60	5,72	3,20	101,50	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
2828116	**GSBMW61003L**	93	6,00	6,78	6,20	3,43	101,50	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
3886548	**GSBMW81003L**	93	8,00	8,10	8,18	4,42	101,50	1,02	-3.0	0.0	WP..S30104	**CT15**	T6



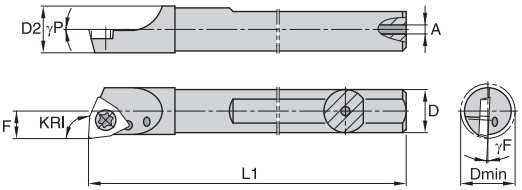
QSBMW

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3886951	**QSBMW101273R**	93	9,99	10,94	10,21	5,59	127,00	2,36	-3.0	0.0	WP..040204	**QTM20**	T7
3393828	**QSBMW121523R**	93	11,99	12,90	12,19	6,55	152,40	2,36	-3.0	0.0	WP..040204	**QTM26**	T7
	Left hand												
3886952	**QSBMW101273L**	93	9,99	10,94	10,21	5,59	127,00	2,36	-3.0	0.0	WP..040204	**QTM20**	T7
3886963	**QSBMW121523L**	93	11,99	12,90	12,19	6,55	152,40	2,36	-3.0	0.0	WP..040204	**QTM26**	T7



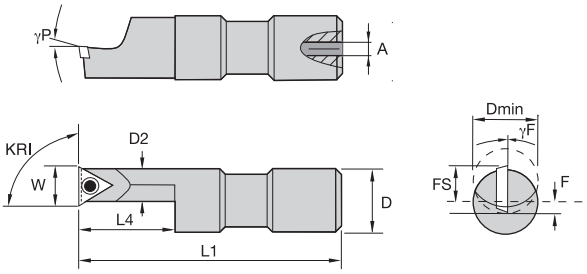
GCBMW

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3896040	**GCBMW51523R**	93	5,00	6,60	5,33	3,20	152,40	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
2827711	**GCBMW61523R**	93	6,00	6,78	6,20	3,43	152,40	1,19	-3.0	0.0	WP..S30104	**CT11**	T6
2827699	**GCBMW81523R**	93	8,00	8,80	8,18	4,42	152,40	2,36	-3.0	0.0	WP..S30104	**CT15**	T6
	Left hand												
3896039	**GCBMW51523L**	93	5,00	6,60	5,33	3,20	152,40	1,02	-3.0	0.0	WP..S30104	**CT11**	T6
2827705	**GCBMW61523L**	93	6,00	6,78	6,20	3,43	152,40	1,19	-3.0	0.0	WP..S30104	**CT11**	T6
3897012	**GCBMW81523L**	93	8,00	8,80	8,18	4,42	152,40	2,36	-3.0	0.0	WP..S30104	**CT15**	T6



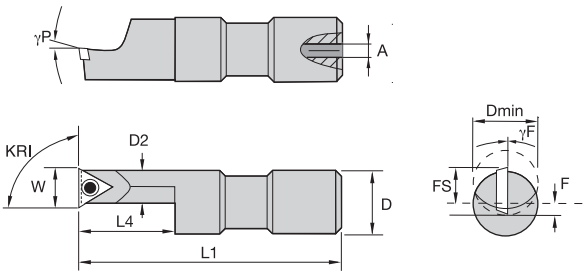
QCBMW

order number	catalogue number	KRI	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand												
3782378	**QCBMW102543R**	93	10,00	10,95	10,21	5,59	254,00	3,20	-3.0	0.0	WP..040204	**QTM20**	T7
	Left hand												
3896045	**QCBMW102543L**	93	10,00	10,95	10,21	5,59	254,00	3,20	-3.0	0.0	WP..040204	**QTM20**	T7
3896046	**QCBMW122543L**	93	12,00	12,90	12,19	6,55	254,00	4,70	-3.0	0.0	WP..040204	**QTM26**	T7



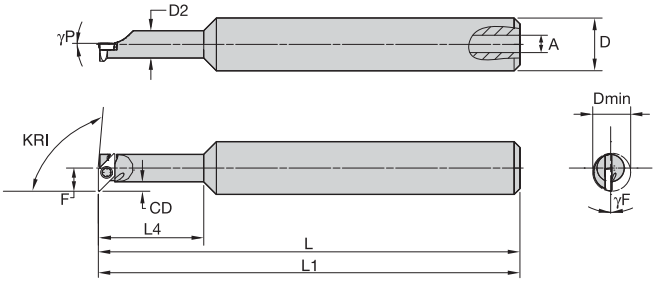
QSOM

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	FS	W	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand															
2824815	**QSOM9516380R**	90	16,00	16,51	9,50	0,64	95,25	38,10	10,10	10,74	2,03	0.0	5.0	TP..110202	**QC26**	T9
2824819	**QSOM9516385R**	95	16,00	16,51	9,50	0,64	95,25	38,10	10,63	10,70	2,03	0.0	5.0	TP..110202	**QC26**	T9

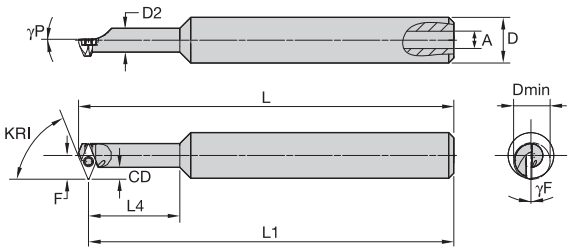


SSOM

order number	catalogue number	KRI	D	D min	D2	F	L1	L4	FS	W	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand															
3896090	**SSOM1325380R**	90	24,99	24,61	12,70	1,78	95,25	38,10	14,46	16,24	3,00	0.0	5.0	TP..160302	**SC30**	T10
3890867	**SSOM1325630R**	90	24,99	24,61	12,70	1,78	120,65	63,50	14,46	16,24	3,00	0.0	5.0	TP..160302	**SC30**	T10
3890866	**SSOM1325385R**	95	24,99	24,61	12,70	1,78	95,25	38,10	14,40	16,18	3,00	0.0	5.0	TP..160302	**SC30**	T10
3890868	**SSOM1325635R**	95	24,99	24,61	12,70	1,78	120,65	63,50	14,40	16,18	3,00	0.0	5.0	TP..160302	**SC30**	T10



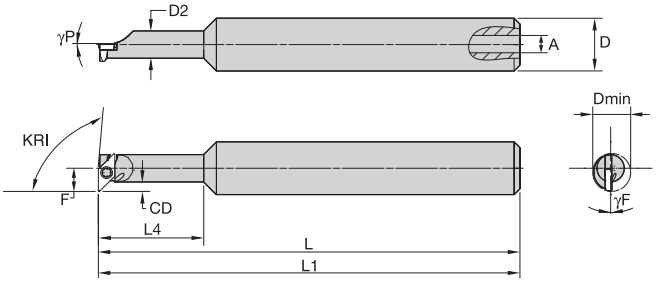
NOTE: KRI shown as 95°.



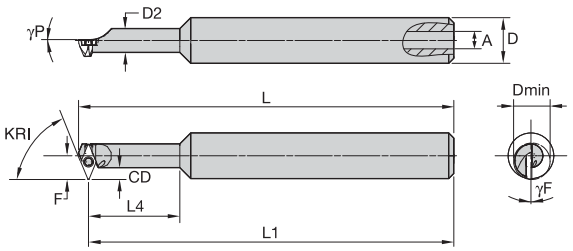
NOTE: KRI shown as 67,5°.

CSPM

order number	catalogue number	KRI	D	D min	D2	F	CD	L	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand															
2831399	**CSPM71225225R**	67.5	12,00	10,16	6,60	6,60	3,30	104,65	101,60	25,40	1,02	0.0	0.0	GC..050102	**CT15**	T6
3758942	**CSPM81232225R**	67.5	12,00	11,37	8,18	7,01	2,92	105,16	101,60	31,75	1,02	0.0	0.0	GC..050102	**CT15**	T6
2831411	**CSPM712255R**	95.0	12,00	9,14	6,60	5,59	2,29	101,60	101,60	25,40	1,02	0.0	0.0	GC..050102	**CT15**	T6
2831390	**CSPM812325R**	95.0	12,00	10,74	8,20	6,38	2,30	101,60	101,60	31,75	1,02	0.0	0.0	GC..050102	**CT15**	T6
	Left hand															
2831394	**CSPM71225225L**	67.5	12,00	10,16	6,60	6,60	3,30	104,65	101,60	25,40	1,02	0.0	0.0	GC..050102	**CT15**	T6
2831378	**CSPM81232225L**	67.5	12,00	11,37	8,18	7,01	2,92	101,60	101,60	31,75	1,02	0.0	0.0	GC..050102	**CT15**	T6
2831405	**CSPM712255L**	95.0	12,00	9,14	6,60	5,59	2,29	101,60	101,60	25,40	1,02	0.0	0.0	GC..050102	**CT15**	T6
2831383	**CSPM812325L**	95.0	12,00	10,74	8,20	6,38	2,30	101,60	101,60	31,75	1,02	0.0	0.0	GC..050102	**CT15**	T6



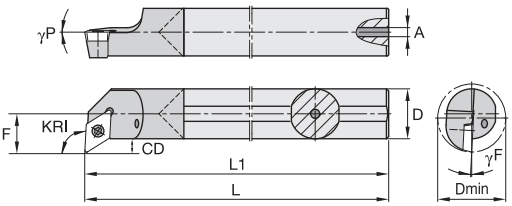
NOTE: KRI shown as 95°.



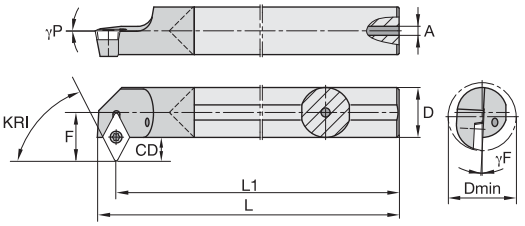
NOTE: KRI shown as 67,5°.

GSPM

order number	catalogue number	KRI	D	D min	D2	F	CD	L	L1	L4	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand															
2827688	**GSPM101638225R**	67.5	16,00	13,72	9,78	8,59	3,70	106,07	101,60	38,10	2,49	0.0	0.0	GC..060202	**GT21**	T7
3897897	**GSPM131651225R**	67.5	16,00	16,89	12,95	10,16	3,68	131,01	127,00	50,80	2,49	0.0	0.0	GC..060202	**GT21**	T7
3025010	**GSPM1016385R**	95.0	16,00	13,08	9,78	7,93	3,04	114,30	114,30	38,10	2,49	0.0	0.0	GC..060202	**GT21**	T7
3518694	**GSPM1316515R**	95.0	16,00	16,00	12,95	9,50	3,02	127,00	127,00	50,80	2,49	0.0	0.0	GC..060202	**GT21**	T7
	Left hand															
3897894	**GSPM101638225L**	67.5	16,00	13,72	9,78	8,59	3,70	106,07	101,60	38,10	2,49	0.0	0.0	GC..060202	**GT21**	T7
3897896	**GSPM131651225L**	67.5	16,00	16,89	12,95	10,16	3,98	131,01	127,00	50,80	2,49	0.0	0.0	GC..060202	**GT21**	T7
3897895	**GSPM1016385L**	95.0	16,00	13,08	9,78	7,93	3,04	114,30	114,30	38,10	2,49	0.0	0.0	GC..060202	**GT21**	T7
3896052	**GSPM1316515L**	95.0	16,00	16,00	12,95	9,50	3,02	127,00	127,00	50,80	2,49	0.0	0.0	GC..060202	**GT21**	T7



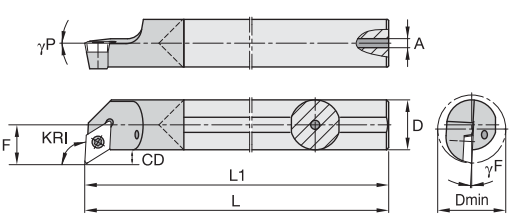
NOTE: KRI shown as 95°.



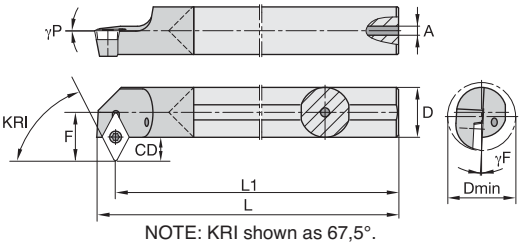
NOTE: KRI shown as 67,5°.

■ CCPM

order number	catalogue number	KRI	D	D min	F	CD	L	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2831010	**CCPM6152225R**	67.5	6,00	10,16	6,60	3,30	155,45	152,40	1,19	0.0	0.0	GP..050102	**CT15**	T6
2830986	**CCPM8152225R**	67.5	8,00	11,38	7,01	2,92	155,96	152,40	2,36	0.0	0.0	GP..050102	**CT15**	T6
2831020	**CCPM61525R**	95.0	6,00	9,14	5,59	2,29	152,40	152,40	1,19	0.0	0.0	GP..050102	**CT15**	T6
3782376	**CCPM81525R**	95.0	8,00	10,74	6,38	2,29	152,40	152,40	2,36	0.0	0.0	GP..050102	**CT15**	T6
	Left hand													
2831004	**CCPM6152225L**	67.5	6,00	10,16	6,60	3,30	155,45	152,40	1,19	0.0	0.0	GP..050102	**CT15**	T6
2830980	**CCPM8152225L**	67.5	8,00	11,38	7,01	2,92	155,96	152,40	2,36	0.0	0.0	GP..050102	**CT15**	T6
3897899	**CCPM61525L**	95.0	6,00	9,14	5,59	2,29	152,40	152,40	1,19	0.0	0.0	GP..050102	**CT15**	T6
3896022	**CCPM81525L**	95.0	8,00	10,74	6,38	2,29	152,40	152,40	2,36	0.0	0.0	GP..050102	**CT15**	T6



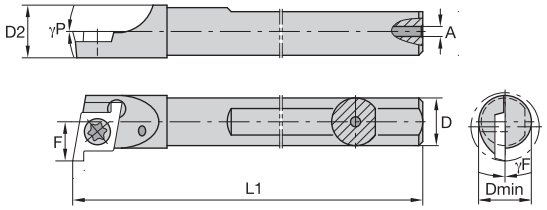
NOTE: KRI shown as 95°.



NOTE: KRI shown as 67,5°.

■ GCPM

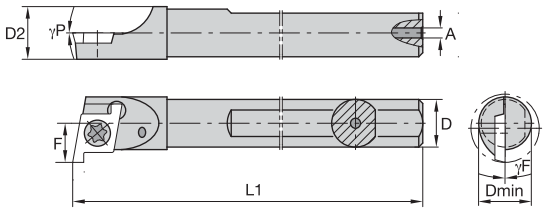
order number	catalogue number	KRI	D	D min	F	CD	L	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand													
2827656	**GCPM10254225R**	67.5	10,00	14,20	8,81	3,68	258,47	254,00	3,20	0.0	0.0	GC..060202	**GT21**	T7
3897906	**GCPM12254225R**	67.5	12,00	16,18	9,80	3,68	257,89	254,00	4,70	0.0	0.0	GC..060202	**GT21**	T7
3896073	**GCPM16254225R**	67.5	16,00	20,07	11,76	3,70	258,01	254,00	5,54	0.0	0.0	GC..060202	**GT21**	T7
3897904	**GCPM102545R**	95.0	10,00	13,54	8,15	3,02	254,00	254,00	3,20	0.0	0.0	GC..060202	**GT21**	T7
3759184	**GCPM122545R**	95.0	12,00	15,52	9,14	3,02	254,00	254,00	4,70	0.0	0.0	GC..060202	**GT21**	T7
3897909	**GCPM162545R**	95.0	16,00	19,43	11,10	3,04	254,00	254,00	5,54	0.0	0.0	GC..060202	**GT21**	T7
	Left hand													
3897903	**GCPM10254225L**	67.5	10,00	14,20	8,81	3,68	258,47	254,00	3,20	0.0	0.0	GC..060202	**GT21**	T7
3897905	**GCPM12254225L**	67.5	12,00	16,18	9,80	3,68	257,89	254,00	4,70	0.0	0.0	GC..060202	**GT21**	T7
3897908	**GCPM16254225L**	67.5	16,00	20,07	11,76	3,70	258,01	254,00	5,54	0.0	0.0	GC..060202	**GT21**	T7
3782377	**GCPM102545L**	95.0	10,00	13,54	8,15	3,02	254,00	254,00	3,20	0.0	0.0	GC..060202	**GT21**	T7
3897907	**GCPM122545L**	95.0	12,00	15,52	9,14	3,02	254,00	254,00	4,70	0.0	0.0	GC..060202	**GT21**	T7
2827644	**GCPM162545L**	95.0	16,00	19,43	11,10	3,04	254,00	254,00	5,54	0.0	0.0	GC..060202	**GT21**	T7



CSMM

order number	catalogue number	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand											
2831054	**CSMM5640R**	5,00	6,91	5,56	3,91	64,00	1,02	0.0	0.0	CD.5..	**CC11**	T6
2831048	**CSMM6760R**	6,00	7,92	6,60	4,45	76,00	1,02	0.0	0.0	CD.5..	**CC11**	T6

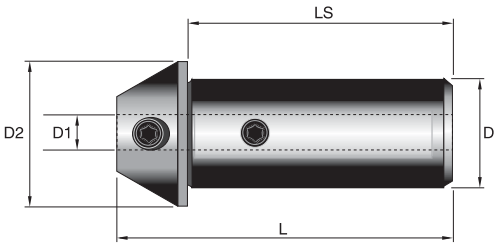
NOTE: Refer to insert design for cutting depth, cutting width, and blind hole limitations.



CCMM

order number	catalogue number	D	D min	D2	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
	Right hand											
2831042	**CCMM51020R**	5,00	6,91	5,56	3,94	101,60	1,02	0.0	0.0	CD.5..	**CC11**	T6
2831036	**CCMM61020R**	6,00	7,92	6,60	4,45	101,60	1,19	0.0	0.0	CD.5..	**CC11**	T6

NOTE: Refer to insert design for cutting depth, cutting width, and blind hole limitations.



CSM

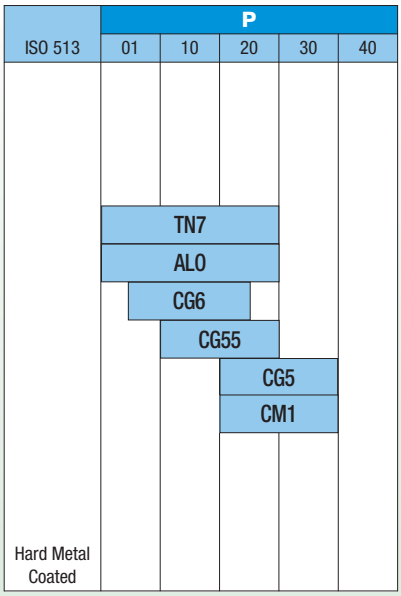
order number	catalogue number	D1	D	D2	LS	L
2832838	**CSM22156**	3,96	22,00	27,94	50,80	63,50
2832832	**CSM22187**	4,75	22,00	27,94	50,80	63,50
2832827	**CSM22250**	6,35	22,00	27,94	50,80	63,50
2832820	**CSM22312**	7,93	22,00	27,94	50,80	63,50
2832813	**CSM22375**	9,53	22,00	27,94	50,80	63,50
2832809	**CSM22500**	12,70	22,00	27,94	50,80	63,50

The WIDIA™ three-step insert selection system makes choosing and applying the most productive tool easy. Tool recommendations are based on six workpiece material groups.

1 Select the Insert Geometry:
Based on the needed depth of cut and feed rate, choose the geometry that best matches your needs.

2 Select the Grade:
Determine your cutting conditions, and choose the proper grade.

TN7–CM1 for Steel



wear resistance = harder

TN7 — High edge strength and wear-resistant cermet. Finishing to semi-finishing of carbon, alloy, and stainless steels at medium to high speeds.

ALO — Can withstand light interruptions. Alumina coating enables higher cutting speeds.

CG6 — High-speed, general-purpose grade for all kinds of steel and cast iron.

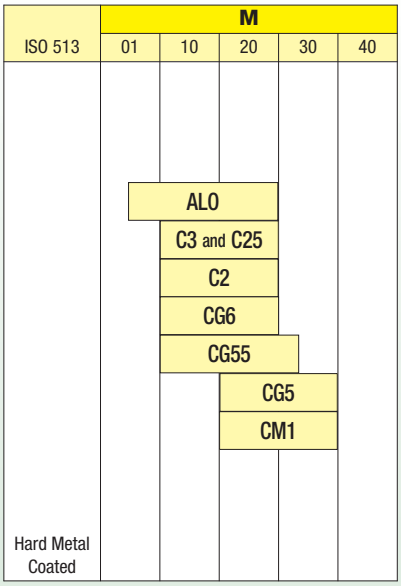
CG55 — High edge strength and wear resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.

CG5 — Best at low speeds. Will handle interruptions and high feed rates.

CM1 — For heavy turning and heavily interrupted cuts.

toughness = softer

ALO–CM1 for Stainless Steel



wear resistance = harder

ALO — Can withstand light interruptions. Alumina coating enables higher cutting speeds.

C3 and C25 — Good wear resistance with some toughness.

C2 — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.

CG6 — High-speed, general-purpose grade for all kinds of steel and cast iron.

CG55 — High edge strength and wear resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.

CG5 — Best at low speeds. Will handle interruptions and high feed rates.

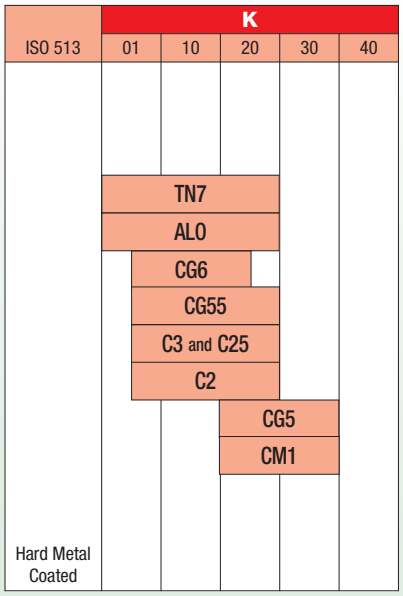
CM1 — For heavy turning and heavily interrupted cuts.

toughness = softer

3 Select the Cutting Speed:
In the foldout speed and feed chart, establish your cutting speed and obtain your optimal starting conditions and range.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

TN7–CM1 for Cast Iron



wear resistance = harder

TN7 — High edge strength and wear-resistant cermet.

ALO — Can withstand light interruptions. Alumina coating enables higher cutting speeds.

CG6 — High-speed, general-purpose grade for all kinds of steel and cast iron.

CG55 — High edge strength and wear resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.

C3 and C25 — Good wear resistance with some toughness.

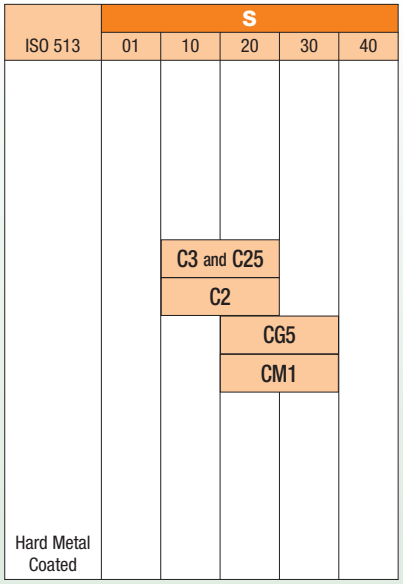
C2 — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.

CG5 — Best at low speeds. Will handle interruptions and high feed rates.

CM1 — For heavy turning and heavily interrupted cuts.

toughness = softer

C3–CM1 for High-Temperature Alloys



wear resistance = harder

C3 and C25 — Good wear resistance with some toughness.

C2 — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.

CG5 — Best at low speeds. Will handle interruptions and high feed rates.

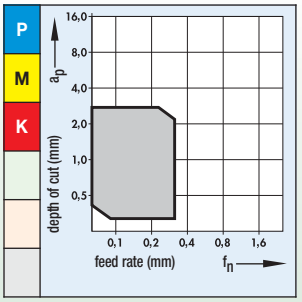
CM1 — For heavy turning and heavily interrupted cuts.

toughness = softer

Single-Sided, Positive Inserts

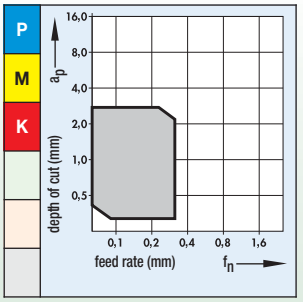
..HB

Flat inserts. Peripheral ground for best surface quality and reduced cutting pressure. Very stable cutting edge offers maximum rigidity.



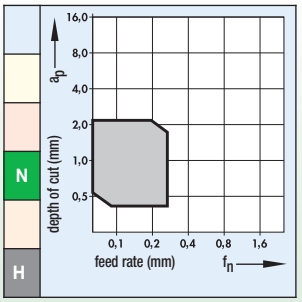
..HT

Peripheral ground insert chipbreaker. Good chip control. Geometry for general-purpose application.



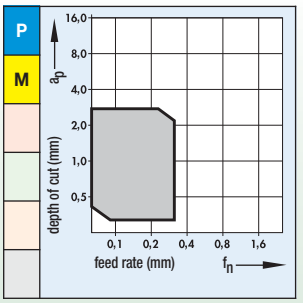
..HB-M

Cubic Boron Nitride (CBN) or Polycrystalline Diamond (PCD) tip for high-temp alloys and non-ferrous machining. Very stable cutting edge offers maximum rigidity.



..LF

Geometry for general-purpose application. Very good chip control. Recommended for general finish machining.



Geometry Selection Criteria

Flat Top-Type Inserts

Chipbreaker geometry ..HB, ..HB-M, ..HW

- Suitable for interrupted cuts.
- Use when chip control is not critical.

Pressed Chipbreaker-Type Inserts

Chipbreaker geometry ..LF

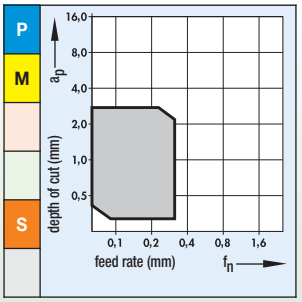
- Suitable for moderate interruption of cuts.
- Use when chip control is a concern.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Single-Sided, Positive Inserts

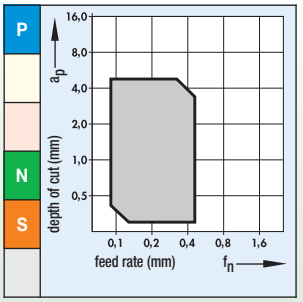
..HH

Peripheral ground for best surface quality and reduced cutting pressure. For fine to medium finishes.



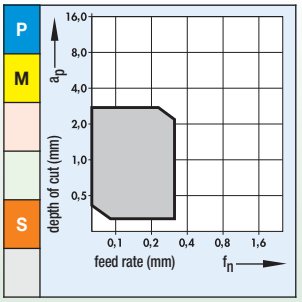
HP

High positive-type chipbreaker. Peripheral ground for best surface quality and reduced cutting pressure. Recommended for high-temp alloys and non-ferrous machining.



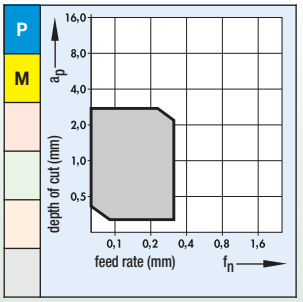
..HH-R/L

Ground-in chipbreaker. Peripheral ground for best surface quality and reduced cutting pressure. *Right-hand inserts used in left-hand bars ONLY. Left-hand inserts used in right-hand bars ONLY.



..HW

Flat insert for profiling. Very stable cutting edge offers maximum rigidity.



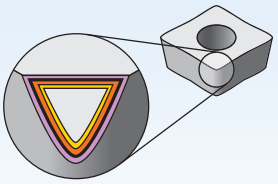
Pressed Chipbreaker-Type Inserts with Ground Periphery
Chipbreaker geometry ..HH, ..HT, HP

- Suitable for light to moderate interruption of cuts.
- Use when chip control is a concern.
- Superior surface finish and closer tolerance on workpiece.

Ground-In Chipbreaker-Type Inserts
Chipbreaker geometry ..HH-R/L

- Suitable for smooth cuts.
- Superior surface finish and closer tolerance on workpiece.

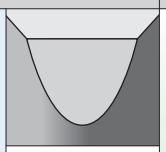
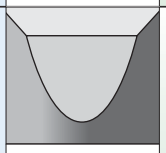
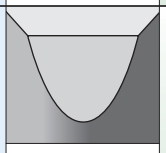
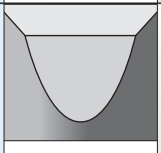
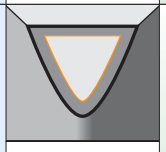
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

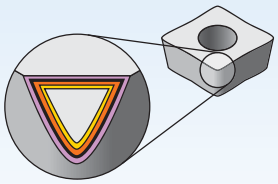


Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade

Coating	Grade Description	05	10	15	20	25	30	35	40	45
CM1  **HW-S25**	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.									
C2  **HW-N15**	Uncoated carbide. A hard, low binder content, unalloyed WC/Co fine-grained grade. General-purpose grade for non-ferrous materials. Has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.									
C3 and C25  **HW-K15**	Uncoated carbide. Has excellent abrasion resistance for machining cast irons, aluminium, and non-ferrous metals. Good wear resistance with some toughness. Harder than C2, resulting in greater edge wear resistance. Suitable for finishing operations.									
TN7  **HT-P15**	A highly wear-resistant (TiC/TiN-based) cermet grade. High edge strength, wear-resistant cermet provides improved tool life over uncoated/coated carbides and resists material build-up on cutting edge. Finishing to semi-finishing of carbon, alloy, and stainless steels at medium to high speeds. Can also be used on non-ferrous materials.									
ALO  **HC-K15**	Coated carbide. CVD — TiCN-TiC-Al_2O_3. A thin alumina coating over a hard, deformation-resistant substrate. High-speed finishing of grey cast irons, and medium-speed finishing of alloy steels that are in a hardness range of 35–50 HRC. Can withstand light interruptions. Alumina coating enables higher cutting speeds.									



Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade

Coating		Grade Description	05	10	15	20	25	30	35	40	45
CG6	HC-P10	Coated carbide. CVD — TiC-TiCN-TiN. Tri-phase coating on a hard, low binder content, fine-grained grade. High-speed, general-purpose grade for all kinds of steel. Gold in colour.	P	P	P						
			M		M	M	M				
			K	K	K	K					
CG5	HC-S25	A PVD TiN-coated grade. Straight 9,5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.				P	P	P			
						M	M	M			
						K	K	K			
						N	N	N			
						S	S	S			
CG55	HC-M20	A PVD TiN-coating over a very wear-resistant, unalloyed carbide substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Grade provides combination of high edge strength and wear resistance. Coating increases wear resistance and reduces problems with built-up edge. The substrate provides superior thermal deformation resistance and depth-of-cut notch resistance.	P	P	P	P					
			M	M	M	M	M				
			K	K	K	K					
			S	S	S	S					
CBN6	BN-H25	PCBN tip brazed onto a carbide insert. Recommended for machining hardened steel (45–65 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings. Can be run both dry and wet.									
			H		H	H	H	H			
CPD1	DP-N10	Polycrystalline diamond (PCD) compact grade provides exceptional hardness and abrasion resistance. CPD1 is a superior finish boring grade that will significantly improve workpiece tolerances, surface finishes, and insert tool life in high-silicon aluminium, copper, aluminium carbon graphite, hard rubber, plastics, and/or wood.									
			N	N	N						

ANSI ISO 513	VDI 3323	Cutting Speed • vc m/min														
Material Group		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
	ap [mm]										0,051	—	0,300	0,025	—	0,300
	f [mm/rev]										0,300	—	0,025	0,300	—	0,025
			C2			C25			C3			CG5**			CG55**	
	1										95	**120**	145	105	**130**	155
	2										70	**90**	105	80	**95**	115
	3										55	**70**	80	60	**75**	90
	4										65	**75**	90	70	**85**	100
	5										45	**55**	70	50	**65**	75
	6										75	**95**	110	85	**105**	125
P	7										50	**60**	75	55	**70**	80
	8										45	**55**	70	50	**65**	75
	9										40	**50**	60	45	**55**	65
	10										70	**85**	100	75	**95**	110
	11										45	**55**	65	50	**60**	70
	12										70	**85**	100	75	**95**	110
	13.1										55	**70**	85	65	**80**	95
	13.2										45	**55**	65	50	**60**	70
	ap [mm]	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300
	f [mm/rev]	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025
			C2**			C25**			C3**			CG5**			CG55	
	14.1	55	**70**	85	60	**75**	90	65	**80**	95	75	**95**	110	85	**105**	125
M	14.2	45	**55**	70	50	**60**	75	50	**65**	75	60	**75**	90	65	**80**	100
	14.3	55	**65**	80	55	**70**	85	60	**75**	90	70	**85**	100	75	**95**	110
	14.4	35	**40**	50	35	**45**	55	40	**45**	55	45	**55**	65	50	**60**	70
	ap [mm]	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300
	f [mm/rev]	0,250	—	0,025	0,250	—	0,025	0,250	—	0,025	0,250	—	0,025	0,250	—	0,025
			C2**			C25			C3			CG5**			CG55**	
	15	65	**80**	95	70	**85**	105	70	**85**	105	75	**90**	110	80	**100**	120
	16	45	**55**	65	50	**60**	75	50	**60**	75	50	**65**	75	55	**70**	85
K	17	75	**90**	110	80	**95**	115	80	**95**	115	80	**100**	120	90	**110**	135
	18	45	**55**	70	50	**65**	75	50	**65**	75	55	**65**	80	60	**75**	90
	19	90	**110**	130	95	**120**	145	95	**120**	145	100	**125**	145	110	**135**	165
	20	50	**65**	75	55	**70**	85	55	**70**	85	55	**70**	85	65	**80**	95
	ap [mm]	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300	0,051	—	0,300
	f [mm/rev]	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025	0,300	—	0,025
			C2			C25			C3			CG5**			CG55**	
	21	405	**505**	605	405	**505**	605	405	**505**	605	405	**505**	605	445	**555**	665
	22	245	**305**	365	245	**305**	365	245	**305**	365	245	**305**	365	270	**335**	400
	23	405	**505**	605	405	**505**	605	405	**505**	605	405	**505**	605	445	**555**	665
	24	245	**305**	370	245	**305**	370	245	**305**	370	245	**305**	370	270	**340**	405
N	25	70	**90**	105	70	**90**	105	70	**90**	105	85	**105**	125	95	**115**	140
	26	320	**400**	480	320	**400**	480	320	**400**	480	145	**180**	215	160	**200**	235
	27	295	**370**	440	295	**370**	440	295	**370**	440	135	**170**	205	150	**185**	225
	28	320	**400**	480	320	**400**	480	320	**400**	480	145	**180**	215	160	**200**	235
	29	150	**185**	220	150	**185**	220	150	**185**	220	180	**220**	265	200	**245**	295
	30	135	**170**	205	135	**170**	205	135	**170**	205	165	**205**	245	180	**225**	270
	ap [mm]	0,025	—	0,510	0,025	—	0,510	0,025	—	0,510	0,025	—	0,510	0,025	—	0,510
	f [mm/rev]	0,127	—	0,025	0,127	—	0,025	0,127	—	0,025	0,127	—	0,025	0,127	—	0,025
			C2**			C25**			C3**			CG5			CG55**	
	31	40	**45**	55	40	**45**	55	40	**45**	55	40	**45**	55	40	**50**	60
	32	25	**35**	40	25	**35**	40	25	**35**	40	25	**35**	40	30	**35**	45
S	33	30	**40**	45	30	**40**	45	30	**40**	45	30	**40**	45	35	**40**	50
	34	20	**25**	35	20	**25**	35	20	**25**	35	20	**25**	35	25	**30**	35
	35	25	**30**	35	25	**30**	35	25	**30**	35	25	**30**	35	25	**35**	40
	36	—	—	—	—	—	—	—	—	—	35	**40**	50	40	**45**	55
	37	—	—	—	—	—	—	—	—	—	25	**35**	40	30	**35**	45
	ap [mm]															
	f [mm/rev]															
			C2			C25			C3			CG5			CG55	
	38.1															
	38.2															
	39.1															
H	39.2															
	40.1															
	40.2															
	41.1															
	41.2															

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

A double asterisk (**) shown after the insert grade name indicates primary grade recommendations for the material shown. Insert grade names shown without the double asterisk are secondary choices.

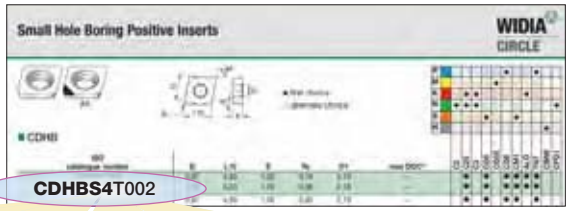
																		VDI 3323	ANSI ISO 513
Cutting Speed • vc m/min																		Material Group	
min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
									0,051	—	0,300	0,025	—	0,300	0,025	—	0,300	ap [mm]	
									0,300	—	0,025	0,300	—	0,025	0,300	—	0,025	f [mm/rev]	
CG6			CM1			ALO			TN7			CBN6			CPD1				
									95	**120**	145	105	**130**	155	105	**130**	155	**1**	
									70	**90**	105	80	**95**	115	80	**95**	115	**2**	
									55	**70**	80	60	**75**	90	60	**75**	90	**3**	
									65	**75**	90	70	**85**	100	70	**85**	100	**4**	
									45	**55**	70	50	**65**	75	50	**65**	75	**5**	
									75	**95**	110	85	**105**	125	85	**105**	125	**6**	
									50	**60**	75	55	**70**	80	55	**70**	80	**7**	P
									45	**55**	70	50	**65**	75	50	**65**	75	**8**	
									40	**50**	60	45	**55**	65	45	**55**	65	**9**	
									70	**85**	100	75	**95**	110	75	**95**	110	**10**	
									45	**55**	65	50	**60**	70	50	**60**	70	**11**	
									70	**85**	100	75	**95**	110	75	**95**	110	**12**	
									55	**70**	85	65	**80**	95	65	**80**	95	**13.1**	
									45	**55**	65	50	**60**	70	50	**60**	70	**13.2**	
0,051	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	ap [mm]	
0,300	**—**	**0,025**	**0,300**	**—**	**0,025**	**0,300**	**—**	**0,025**	**0,300**	**—**	**0,025**	**0,300**	**—**	**0,025**	**0,300**	**—**	**0,025**	f [mm/rev]	
CG6			CM1			ALO			TN7			CBN6			CPD1				
95	**120**	145	55	**70**	85	110	**135**	160	105	**130**	155							**14.1**	
75	**95**	110	45	**55**	65	85	**105**	125	85	**105**	125							**14.2**	M
90	**110**	130	50	**65**	75	100	**120**	145	95	**120**	145							**14.3**	
55	**65**	80	35	**40**	45	65	**75**	90	60	**75**	90							**14.4**	
0,051	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	**0,051**	**—**	**0,300**	ap [mm]	
0,250	**—**	**0,025**	**0,250**	**—**	**0,025**	**0,250**	**—**	**0,025**	**0,250**	**—**	**0,025**	**0,250**	**—**	**0,025**	**0,250**	**—**	**0,025**	f [mm/rev]	
CG6**			CM1**			ALO			TN7**			CBN6			CPD1				
90	**110**	130	55	**70**	85	150	**185**	220	100	**125**	150							**15**	
65	**75**	90	40	**50**	60	105	**130**	155	70	**90**	105							**16**	
100	**125**	150	65	**80**	95	165	**210**	250	110	**140**	165							**17**	K
65	**80**	100	40	**50**	60	110	**135**	165	75	**90**	110							**18**	
120	**150**	180	75	**95**	115	205	**255**	310	140	**170**	205							**19**	
70	**85**	105	45	**55**	65	120	**145**	175	80	**100**	120							**20**	
			0,051	**—**	**0,510**				**0,051**	**—**	**0,510**				**0,051**	**—**	**0,510**	ap [mm]	
			0,200	**—**	**0,025**				**0,200**	**—**	**0,025**				**0,200**	**—**	**0,025**	f [mm/rev]	
CG6			CM1**			ALO			TN7**			CBN6			CPD1				
			405	**505**	605				405	**505**	605				855	**1070**	1285	**21**	
			245	**305**	365				245	**305**	365				735	**915**	1100	**22**	
			405	**505**	605				405	**505**	605				685	**855**	1025	**23**	
			245	**305**	370				245	**305**	370				540	**675**	805	**24**	
			70	**90**	105				85	**105**	125				370	**460**	550	**25**	N
			105	**125**	155				200	**245**	295				330	**415**	495	**26**	
			100	**125**	150				195	**240**	290				320	**400**	480	**27**	
			105	**125**	155				200	**245**	295				330	**415**	495	**28**	
			150	**185**	220				200	**245**	295				345	**430**	515	**29**	
			135	**170**	205				160	**200**	240				330	**415**	495	**30**	
			0,025	**—**	**0,510**													ap [mm]	
			0,127	**—**	**0,025**													f [mm/rev]	
CG6			CM1			ALO			TN7			CBN6			CPD1				
			35	**40**	45													**31**	
			25	**30**	35													**32**	
			25	**35**	40													**33**	S
			20	**25**	30													**34**	
			20	**25**	30													**35**	
			30	**35**	45													**36**	
			25	**30**	35													**37**	
												0,025	**—**	**0,300**				ap [mm]	
												0,127	**—**	**0,025**				f [mm/rev]	
CG6			CM1			ALO			TN7			CBN6			CPD1				
												110	**140**	165				**38.1**	
												105	**130**	155				**38.2**	
												100	**125**	150				**39.1**	
												90	**110**	135				**39.2**	H
												—	—	—				**40.1**	
												—	—	—				**40.2**	
												—	—	—				**41.1**	
												—	—	—				**41.2**	

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

A double asterisk (**) shown after the insert grade name indicates primary grade recommendations for the material shown. Insert grade names shown without the double asterisk are secondary choices.

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C — Insert Shape

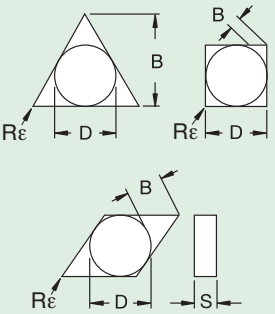
T	60°	
C	80°	80°
G	45°	45°
W	80°	

D — Insert Clearance Angle

B	5°
C	7°
D	15°
P	11°

H — Tolerance Class

Tolerances apply prior to edge prep and coating



D: Theoretical diameter of the insert inscribed circle
S: Thickness
B: See figures below

B — Insert Features

Partly cylindrical hole, 40–60° countersink, single-sided	W	without chipbreaker
	T	with chipbreaker
Partly cylindrical hole, 70–90° countersink, single-sided	B	without chipbreaker
	H	with chipbreaker

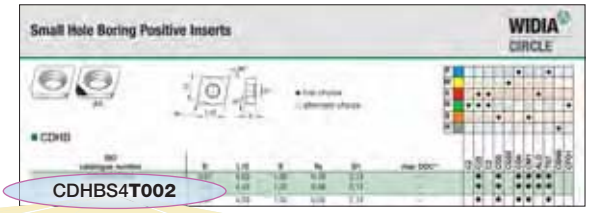
S4 — Size

Code for metric cutting edge length "L10"

"D" mm	C	G	T	W
3,97	S4	05	06	—
4,06	—	—	07	—
4,76	04	06	08	S3
6,35	06	—	11	04
9,53	09	—	16	06
9,80	—	—	17	—

tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
H	±0,013	±0,013	±0,025
HG	±0,025	±0,025	±0,013
M	±0,05	±0,11	±0,013

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



T0
Thickness

symbol	thickness
mm	mm
T0	1,00; 1,02
01	1,59; 1,58
T1	1,98; 1,91
02	2,38; 2,36
03	3,18
T3	3,97
S1	1,19

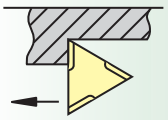
02
Corner Radius "Rε"

symbol	corner radius
mm	mm
X0	0,04; 0,05
01	0,1
02	0,2; 0,18
04	0,4; 0,38
05	0,5
08	0,8
09	0,9
12	1,2
16	1,6

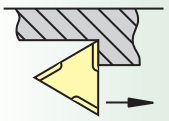
Hand of Insert *(optional)*

R = Right hand

L = Left hand



R



L

Cutting Edge Condition or Chip Control Features *(optional)*

HP High positive

LF Light finishing

Tip Style *(optional)*

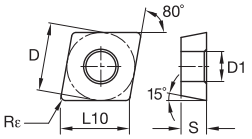
Symbol

M

Usage

Mini tip


(M)



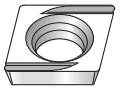
● first choice
○ alternate choice

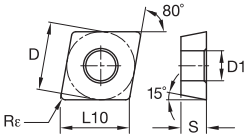
		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

CDHB

ISO catalogue number	D	L10	S	Rε	D1	max DOC*	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CDHBS4T002	3,97	4,03	1,02	0,18	2,13	–		●		●		●	●	●	●		
CDHBS4T004	3,97	4,03	1,02	0,38	2,13	–		●		●		●	●	●	●		
CDHBS4T0X0	3,97	4,03	1,02	0,05	2,13	–		●		●		●	●		●		
CDHBS4T002M	3,97	4,03	1,02	0,18	2,13	0,96										●	●
CDHBS4T0X0M	3,97	4,03	1,02	0,05	2,13	0,96										●	●
CDHBS4T004M	3,97	4,03	1,02	0,38	2,13	0,96										●	●

**max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.*

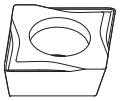


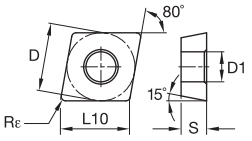


CDHH-R/L

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
Right hand																
CDHHS4T002R	3,97	4,03	1,02	0,18	2,13				●		●	●				
CDHHS4T004R	3,97	4,03	1,02	0,38	2,13				●							
Left hand																
CDHHS4T002L	3,97	4,03	1,02	0,18	2,13				●		●	●		●		
CDHHS4T004L	3,97	4,03	1,02	0,38	2,13				●		●	●				

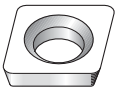
**max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.*

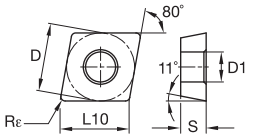




CDHH

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CDHHS4T002	3,97	4,03	1,02	0,18	2,13				●			●				
CDHHS4T004	3,97	4,03	1,02	0,38	2,13				●							



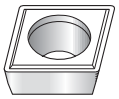


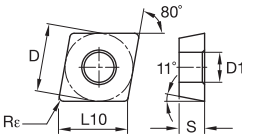
● first choice
○ alternate choice

	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P				○	○	●	○	○	●		
M	○	○	○	○	●	○	○	○	○		
K	○	●	●	○	○	○	○	●	○		
N	●	●	●	○	○		○		○		●
S	○	○	○	●	○		●				
H										●	

■ CPHB

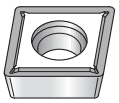
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CPHB06T102	6,35	6,45	1,91	0,18	2,80				●			●				
CPHB06T104	6,35	6,45	1,91	0,38	2,80				●							

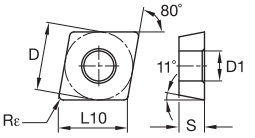




■ CPHH

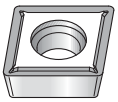
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CPHH06T102	6,35	6,45	1,91	0,18	2,80				●		●	●				
CPHH06T104	6,35	6,45	1,91	0,38	2,80				●		●	●				

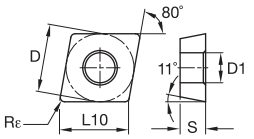




■ CPGT-LF

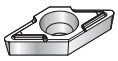
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CPGT09T304LF	9,53	9,67	3,97	0,40	4,40				●							

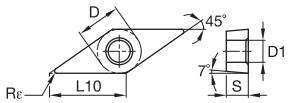




■ CPMT-LF

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
CPMT09T302LF	9,53	9,67	3,97	0,20	4,40				●							
CPMT09T304LF	9,53	9,67	3,97	0,40	4,40				●			●				
CPMT09T308LF	9,53	9,67	3,97	0,80	4,40				●							



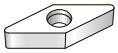


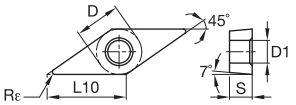
● first choice
○ alternate choice

		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

GCHW

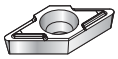
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
GCHW060202	4,76	6,73	2,36	0,18	2,39				●		●	●				
GCHW060204	4,76	6,73	2,36	0,38	2,39				●		●	●				

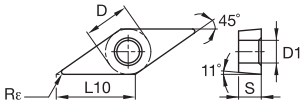




GCHT

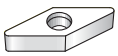
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
GCHT060202	4,83	6,83	2,36	0,18	2,39				●			●				
GCHT060204	4,83	6,83	2,36	0,38	2,39				●			●				

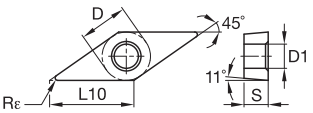




GPHW

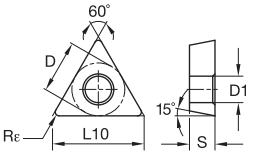
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
GPHW050102	3,97	5,61	1,58	0,18	2,13				●		●	●				
GPHW050104	3,97	5,61	1,58	0,38	2,13				●		●	●				





GPHT

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
GPHT050102	4,08	5,61	1,58	0,18	2,13				●			●				
GPHT050104	4,08	5,61	1,58	0,38	2,13				●			●				



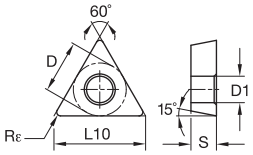
● first choice
○ alternate choice

		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

■ TDHB

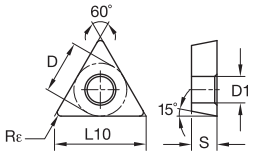
ISO catalogue number	D	L10	S	Rε	D1	max DOC*	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TDHB07S1X0	4,06	7,04	1,19	0,05	2,39	–		●		●		●	●		●		
TDHB07S102	4,06	7,04	1,19	0,18	2,39	–		●		●		●	●	●	●		
TDHB07S104	4,06	7,04	1,19	0,38	2,39	–		●		●		●	●		●		
TDHB07S108	4,06	7,04	1,19	0,79	2,39	–		●		●		●	●				
TDHB07S1X0M	4,06	7,04	1,19	0,05	2,39	1,27										●	●
TDHB07S102M	4,06	7,04	1,19	0,18	2,39	1,27										●	●
TDHB07S104M	4,06	7,04	1,19	0,38	2,39	1,27										●	●
TDHB07S108M	4,06	7,04	1,19	0,79	2,39	1,27										●	●

**max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.*



■ TDHH-R/L

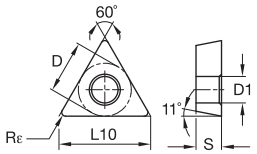
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
Right hand																
TDHH07S102R	4,06	7,04	1,19	0,18	2,39				●			●				
TDHH07S104R	4,06	7,04	1,19	0,38	2,39				●							
Left hand																
TDHH07S102L	4,06	7,04	1,19	0,18	2,39				●		●	●		●		
TDHH07S104L	4,06	7,04	1,19	0,38	2,39				●		●	●		●		



■ TDHH

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TDHH07S102	4,06	7,04	1,19	0,18	2,41				●			●				
TDHH07S104	4,06	7,04	1,19	0,38	2,41				●							

(M)



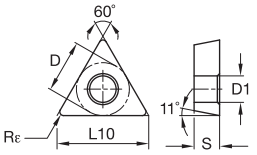
● first choice
○ alternate choice

		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

TPHB

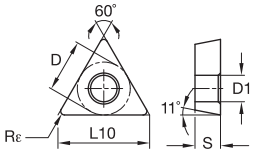
ISO catalogue number	D	L10	S	Rε	D1	max DOC*	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TPHB1102X0	6,35	11,00	2,38	0,05	3,30	–			●	●		●	●		●		
TPHB110202	6,35	11,00	2,38	0,18	3,30	–			●	●		●	●		●		
TPHB110204	6,35	11,00	2,38	0,40	3,30	–			●	●		●	●	●	●		
TPHB110208	6,35	11,00	2,38	0,79	3,30	–			●	●		●	●		●		
TPHB1603X0	9,53	16,50	3,18	0,05	3,30	–	●			●		●	●	●	●		
TPHB160302	9,53	16,50	3,18	0,18	3,30	–	●			●		●	●		●		
TPHB160304	9,53	16,50	3,18	0,38	3,30	–	●			●		●	●	●	●		
TPHB160308	9,53	16,50	3,18	0,79	3,30	–	●			●		●	●		●		
TPHB160316	9,53	16,50	3,18	1,60	3,30	–				●							
TPHB160304M	9,53	16,50	3,18	0,38	3,30	1,98											●
TPHB160308M	9,53	16,50	3,18	0,79	3,30	1,98											●
TPHB1102X0M	6,35	11,00	2,38	0,05	3,30	1,62										●	●
TPHB110202M	6,35	11,00	2,38	0,18	3,30	1,62										●	●
TPHB110204M	6,35	11,00	2,38	0,40	3,30	1,62										●	●
TPHB110208M	6,35	11,00	2,38	0,79	3,30	1,62											●

**max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalogue number.*



TPHH-R/L

ISO catalogue number	D	L10	S	Rε	D1										
Right hand															
TPHH110202R	6,35	11,00	2,38	0,18	3,30				●						
TPHH110204R	6,35	11,00	2,38	0,40	3,30				●		●				
TPHH110208R	6,35	11,00	2,38	0,79	3,30				●			●			
TPHH160302R	9,53	16,50	3,18	0,18	3,30				●			●			
TPHH160304R	9,53	16,50	3,18	0,40	3,30				●		●				
TPHH160308R	9,53	16,50	3,18	0,79	3,30				●						
Left hand															
TPHH110202L	6,35	11,00	2,38	0,18	3,30				●		●	●		●	
TPHH110204L	6,35	11,00	2,38	0,40	3,30				●		●	●		●	
TPHH110208L	6,35	11,00	2,38	0,79	3,30				●		●				
TPHH160302L	9,53	16,50	3,18	0,18	3,30				●		●	●		●	
TPHH160304L	9,53	16,50	3,18	0,40	3,30				●		●	●		●	
TPHH160308L	9,53	16,50	3,18	0,79	0,33				●		●	●			

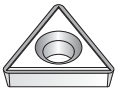


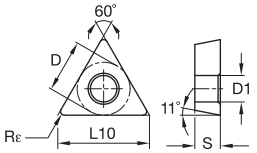
● first choice
○ alternate choice

		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

■ TPHH

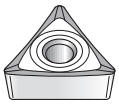
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TPHH110202	6,50	11,00	2,38	0,18	3,30				●		●	●		●		
TPHH110204	6,50	11,00	2,38	0,38	3,30	●			●		●	●		●		

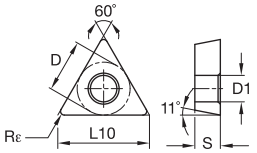




■ TPHH-LF

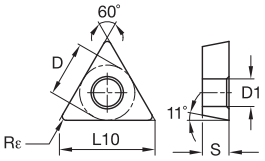
ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TPHH160304LF	9,53	16,50	3,18	0,38	3,30		●		●		●	●	●			
TPHH160308LF	9,53	16,50	3,18	0,79	3,30		●		●		●	●	●	●		
TPHH17T305LF	9,80	16,98	3,96	0,53	3,30						●					
TPHH17T309LF	9,80	16,98	3,96	0,94	3,30				●		●					





■ TPGT-HP

ISO catalogue number	D	L10	S	Rε	D1	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TPGT110202HP	6,35	11,00	2,38	0,20	2,90				●			●				
TPGT110204HP	6,35	11,00	2,38	0,40	2,90				●			●				
TPGT16T304HP	9,53	16,50	3,97	0,40	4,40				●			●				



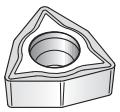
● first choice
○ alternate choice

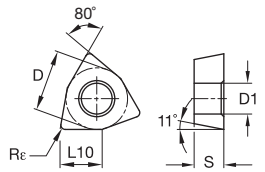
		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
P					○	○	●	○	○	●		
M		○	○	○	○	●	○	○	○	○		
K		○	●	●	○	○	○	○	●	○		
N		●	●	●	○	○		○		○		●
S		○	○	○	●	○		●				
H											●	

■ TPMT-LF

ISO catalogue number	D	L10	S	Rε	D1
TPMT110202LF	6,35	11,00	2,38	0,20	2,80
TPMT110204LF	6,35	11,00	2,38	0,40	2,80
TPMT160304LF	9,53	16,50	3,18	0,40	4,40
TPMT160308LF	9,53	16,50	3,18	0,79	4,40
TPMT160312LF	9,53	16,50	3,18	1,19	4,40

ISO catalogue number	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
TPMT110202LF				●		●					
TPMT110204LF				●		●					
TPMT160304LF				●		●					
TPMT160308LF				●		●					
TPMT160312LF				●							

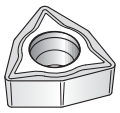


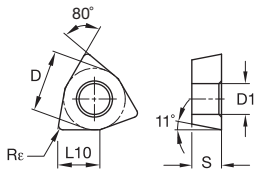


■ WPHT

ISO catalogue number	D	L10	S	Rε	D1
WPHTS30101	4,76	3,26	1,59	0,10	2,13
WPHTS30102	4,76	3,26	1,59	0,20	2,13
WPHTS30104	4,76	3,26	1,59	0,38	2,13
WPHT040201	6,35	4,34	2,38	0,10	2,80
WPHT040202	6,35	4,34	2,38	0,20	2,80
WPHT040204	6,35	4,34	2,38	0,38	2,80

ISO catalogue number	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
WPHTS30101				●			●				
WPHTS30102				●			●				
WPHTS30104				●			●				
WPHT040201				●			●				
WPHT040202				●			●				
WPHT040204				●			●				

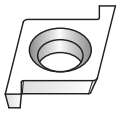


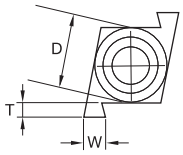


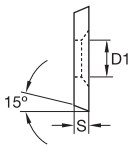
■ WPMT-LF

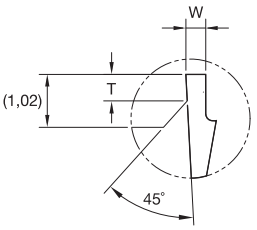
ISO catalogue number	D	L10	S	Rε	D1
WPMTS3T104LF	4,76	3,25	1,98	0,40	2,15
WPMT040204LF	6,35	4,34	2,38	0,40	2,90
WPMT06T304LF	9,53	6,52	3,97	0,40	4,40
WPMT06T308LF	9,53	6,52	3,97	0,80	4,40

ISO catalogue number	C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
WPMTS3T104LF					●						
WPMT040204LF					●						
WPMT06T304LF					●						
WPMT06T308LF					●						









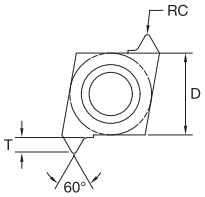
● first choice
○ alternate choice

P		○	●	○	
M		○	○	○	○
K		●	○	○	○
N		●	○		○
S		○	●		●
H					

NOTE: Detail of 0,38 insert.

■ CDG-R/L

ISO catalogue number	D	S	T	W	D1	C25	CG5	CG6	CM1
CDG50152R	3,97	1,27	0,51	0,38	2,13		●		●
CDG50252R	3,97	1,27	1,02	0,64	2,13		●		●
CDG50302R	3,97	1,27	1,02	0,76	2,13		●		●



■ CDT-R/L

ISO catalogue number	D	S	T	RC	D1	TP min	TP max	C25	CG5	CG6	CM1
CDT50022R	3,97	1,27	0,76	0,05	2,11	0,5	1,0		●		●

WIDIA-CIRCLE™ catalogue number	New ISO catalogue number
CDCD	CDHB
CDCG	CDHH
CDCT	CDHH
CPCA	CPHB
CPCM	CPHH
GCCD	GCHW
GCCT	GCHT
GPCD	GPHW
GPCT	GPHT
TD6P	TPHB
TDAB	TDHB
TDAT	TDHH
TDCG	TDHH
TPCB	TPHB
TPCG	TPHH
TPCH	TPHH
TPGH	TPHH
TPMT	TPMT
WPGT	WPHT

Insert Screws

order number	ISO catalogue number	Torx/hex	internal thread
2840098	MSM46	2mm	M4X0.7
2892513	BS832	5/64	#8-32
2840186	AS832	5/64	#8-32
2823227	SC30	T10	#4-40
2823203	STM31	T15	M3.5 X 0.6
2832641	CT15	T16	#1-72
2820981	LTM16	T5	M2X0.4
2832647	CC11	T6	#1-72
2832635	CT11	T6	#1-72
2832655	CC09	T6	#1-72
2825948	QTM26	T7	M2.5X0.45
2825941	QTM20	T7	M2.5X0.45
2830477	FC11	T7	#2-56
2828337	GT21	T7	#2-56
2830471	FC14	T7	#2-56
2826005	QC15	T8	#3-48
2826031	QC26	T9	#4-40
2826038	QC21	T9	#4-40

Wrenches

order number	ISO catalogue number	Torx/hex
2840174	AKEY	5/64
2840094	MKEY	2mm
2823182	SKEY	T10
2823189	STKEY	T15
2828318	GTKEY	T5
2832628	CKEY	T6
2830492	FKEY	T7
2825952	QTKEY	T7
2825973	Q8KEY	T8
2825982	QKEY	T9

Drive Bits

order number	ISO catalogue number	Torx/hex
2840089	MBIT	2mm
2823236	SBIT	T10
2823196	STBIT	T15
2828324	GTBIT	T5
2832661	CBIT	T6
2825963	QTBIT	T7
2830497	FBIT	T7
2825964	Q8BIT	T8
2826045	QBIT	T9

Wedges

order number	ISO catalogue number
2840192	AW250
2836024	BW312

A/B Series Small Hole Tooling

Micro Boring Bar Application Range

Available in steel and carbide shanks, the WIDIA™ line of micro boring bars is an excellent, economical choice for a wide range of applications — from creating small holes in small parts to precision micro boring typically found in large workpieces, such as those manufactured in the Aerospace, Heavy Equipment, and Automotive industries.

A/B Series Micro Boring Bar

Features:

- 1,57mm–3,96mm diameter boring range.
- Unique locking system enables quick, accurate insert changes.
- Insert repeatability guaranteed within ±0,013mm.

Benefits:

- Quick, accurate insert setups.
- Available in multiple styles for machining a wide range of materials.
- Elliptical, ground insert shanks for maximum strength and rigidity.

ABD Type

Replaceable boring insert with coolant slot.

ABD Type

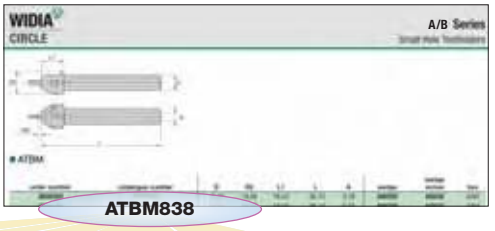
Replaceable boring insert available in coated and uncoated carbide, CBN and PCD tip. A Series has a coolant slot.

BB Type

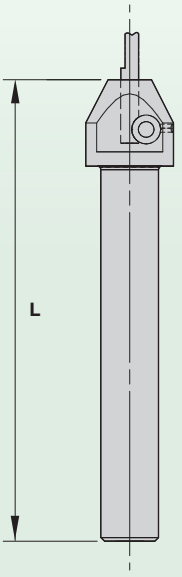
Replaceable boring insert.

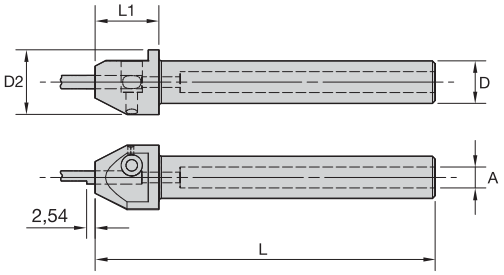
A/B Series Small Hole Tooling

A/B Series Boring Bar Identification System



AT	B	M	8	38
Series Style and Bar Type *Construction Features of the Boring Bar*	Boring Bar	Type	Shank Diameter *shown as "D"*	Length *shown as "L"*
AT = Through Coolant **BS** = No Coolant		**M** = Metric	8 = 8,00mm 10 = 10,00mm 12 = 12,00mm 16 = 16,00mm 20 = 20,00mm	38 = 38,0mm 100 = 100,0mm 102 = 102,0mm 152 = 152,0mm

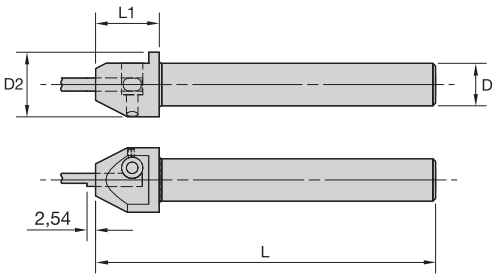




ATBM

order number	catalogue number	D	D2	L	L1	A	wedge	wedge screw	hex
2839222	**ATBM838**	8,00	19,30	38	19	3,18	**AW250**	**AS832**	5/64
3896120	**ATBM1038**	10,00	19,30	38	19	6,25	**AW250**	**AS832**	5/64
3896122	**ATBM1238**	12,00	19,30	38	19	6,25	**AW250**	**AS832**	5/64
3896121	**ATBM12100**	12,00	19,30	102	19	6,25	**AW250**	**AS832**	5/64
2839192	**ATBM1638**	16,00	19,30	38	19	6,25	**AW250**	**AS832**	5/64
3896193	**ATBM16100**	16,00	19,30	102	19	6,25	**AW250**	**AS832**	5/64
3896194	**ATBM20102**	20,00	19,30	102	19	6,25	**AW250**	**AS832**	5/64
3896195	**ATBM25102**	25,00	19,30	102	19	6,25	**AW250**	**AS832**	5/64

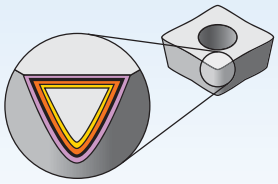
NOTE: These tools will accept any A-Series Solid Carbide Insert (ABD, ABD-M, AGD, APD, and ATD).



BSBM

order number	catalogue number	D	D2	L	L1	wedge	wedge screw	hex
3896196	**BSBM20152**	20,00	25,65	152	29	**BW312**	**BS832**	5/64

NOTE: These tools will accept any B-Series Solid Carbide Insert (BB and BP).



Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade

Coating		Grade Description	05	10	15	20	25	30	35	40	45
CM1	HW-S25	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.	P	P	P	P	P	P			
			M	M	M	M	M	M			
			K	K	K	K	K	K			
			N	N	N	N	N	N			
			S	S	S	S	S	S			
CG5	HC-S25	A PVD-TiN-coated grade. Straight 9,5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.	P	P	P	P	P	P			
			M	M	M	M	M	M			
			K	K	K	K	K	K			
			N	N	N	N	N	N			
			S	S	S	S	S	S			
CBN6	BN-H25	PVD-TiAlN coating over a PCBN tip brazed onto a carbide insert. Recommended for machining hardened steel (45–65 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings. Can be run both dry and wet.	H	H	H	H	H	H			
CPD1	DP-N10	Polycrystalline diamond (PCD) compact grade provides exceptional hardness and abrasion resistance. CPD1 is a superior finish boring grade that will significantly improve workpiece tolerances, surface finishes, and insert tool life in high-silicon aluminium, copper, aluminium carbon graphite, hard rubber, plastics, and/or wood.	N	N	N	N	N	N			

ANSI ISO 513	VDI 3323												
Material Group		Cutting Speed • vc m/min											
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [mm]	0,025	—	0,200	0,025	—	0,200						
	f [mm/rev]	0,178	—	0,013	0,178	—	0,013						
		CG5			CM1			CBN6			CPD1		
	1	95	**120**	145	55	**70**	85						
	2	70	**90**	105	40	**50**	60						
	3	55	**70**	80	35	**40**	50						
	4	65	**75**	90	40	**45**	55						
	5	45	**55**	70	30	**35**	40						
	6	75	**95**	110	45	**55**	65						
	7	50	**60**	75	30	**40**	45						
	8	45	**55**	70	30	**35**	40						
	9	40	**50**	60	25	**30**	35						
	10	70	**85**	100	40	**50**	60						
	11	45	**55**	65	25	**30**	40						
	12	70	**85**	100	40	**50**	60						
	13.1	55	**70**	85	35	**40**	50						
	13.2	45	**55**	65	25	**30**	40						
M	ap [mm]	0,025	—	0,200	0,025	—	0,200						
	f [mm/rev]	0,178	—	0,013	0,178	—	0,013						
		CG5			CM1			CBN6			CPD1		
	14.1	75	**95**	110	55	**70**	85						
	14.2	60	**75**	90	45	**55**	65						
	14.3	70	**85**	100	50	**65**	75						
	14.4	45	**55**	65	35	**40**	45						
K	ap [mm]	0,001	—	0,010	0,001	—	0,010						
	f [mm/rev]	0,007	—	0,0005	0,007	—	0,0005						
		CG5			CM1			CBN6			CPD1		
	15	75	**90**	110	55	**70**	85						
	16	50	**65**	75	40	**50**	60						
	17	80	**100**	120	65	**80**	95						
	18	55	**65**	80	40	**50**	60						
	19	100	**125**	145	75	**95**	115						
	20	55	**70**	85	45	**55**	65						
N	ap [mm]	0,025	—	0,640	0,025	—	0,640				0,013	—	0,760
	f [mm/rev]	0,178	—	0,013	0,178	—	0,013				0,178	—	0,013
		CG5			CM1			CBN6			CPD1		
	21	405	**505**	605	405	**505**	605				855	**1070**	1285
	22	245	**305**	365	245	**305**	365				735	**915**	1100
	23	405	**505**	605	405	**505**	605				685	**855**	1025
	24	245	**305**	370	245	**305**	370				540	**675**	805
	25				70	**90**	105				370	**460**	550
	26	145	**180**	215	105	**125**	155				330	**415**	495
	27	135	**170**	205	100	**125**	150				320	**400**	480
	28	145	**180**	215	105	**125**	155				330	**415**	495
	29	—	—	—	—	—	—				345	**430**	515
	30	—	—	—	—	—	—				330	**415**	495
S	ap [mm]	0,025	—	0,20	0,025	—	0,20						
	f [mm/rev]	0,178	—	0,013	0,178	—	0,013						
		CG5			CM1			CBN6			CPD1		
	31	35	**40**	45	65	**80**	95						
	32	25	**30**	35	45	**55**	70						
	33	25	**35**	40	50	**65**	75						
	34	20	**25**	30	40	**45**	55						
	35	20	**25**	30	40	**50**	60						
	36	35	**40**	50	30	**35**	45						
	37	25	**35**	40	25	**30**	35						
H	ap [mm]							0,025	—	0,200			
	f [mm/rev]							0,004	—	0,0005			
		CG5			CM1			CBN6			CPD1		
	38.1							110	**140**	165			
	38.2							105	**130**	155			
	39.1							100	**125**	150			
	39.2							90	**110**	135			
	40.1							—	—	—			
	40.2							—	—	—			
	41.1							—	—	—			
	41.2							—	—	—			

Our complete portfolio.
Your complete satisfaction.

From turning, holemaking, and indexable milling to solid carbide end milling, solid carbide drilling, and tapping, the most powerful tools in the business now proudly wear WIDIA™ brands. When you buy WIDIA products, you're not just purchasing speed, power, and precision, you're investing in quality and complete satisfaction.

Match the most expansive portfolio of precision-engineered products and custom solution services available today with a global, specialised network of Authorised Distributor partners, and you have the tools you need — and the power that only comes from WIDIA brands. For product information or to schedule an onsite demonstration, visit www.widia.com.

WIDIA™
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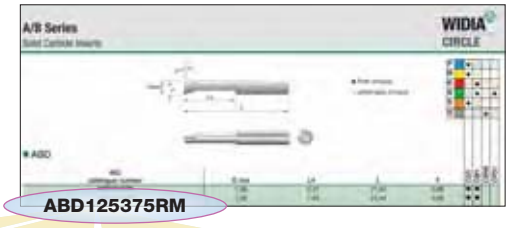
To learn more, contact your local Authorised Distributor or visit **www.widia.com**.

Metric A/B Series
Boring Bar Identification System



ABD
Insert Style

A Series = Through Coolant

ABC = Indexable Boring

ABD = Boring

AGD = Grooving

APD = Profiling

ATD = Threading

B Series = No Coolant

BB = Boring

BP = Profiling

125
Minimum Bore
shown as "D min"

A Series

06	=	1,58mm
09	=	2,39mm
125	=	3,18mm
156	=	3,96mm

(AGD style only)

095	=	2,79mm
125	=	3,56mm
156	=	4,45mm

(ATD style only)

095	=	2,79mm
125	=	3,56mm
156	=	4,45mm

B Series

187	=	4,75mm
250	=	6,35mm
312	=	7,93mm

375
Dimensions
shown as "L4"

Bore Depth

187	=	4,75mm
281	=	7,14mm
312	=	7,93mm
375	=	9,53mm
500	=	12,70mm
600	=	15,24mm
625	=	15,88mm
750	=	19,05mm
825	=	20,96mm
875	=	22,23mm
1000	=	25,40mm
1250	=	31,75mm
1500	=	38,10mm
1750	=	44,45mm
2125	=	53,98mm

Groove Width

(AGD style only)

03	=	0,76mm
04	=	1,02mm
05	=	1,27mm

Thread

(ATD style only)

F2 = 0,05mm

Flat on thread

R
Hand of Tool

R =

Right hand

L =

Left hand

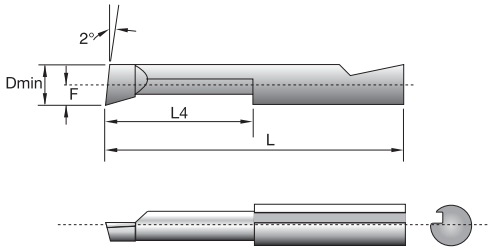
M
Tip Style
(optional)

Symbol

M

Usage

Mini tip

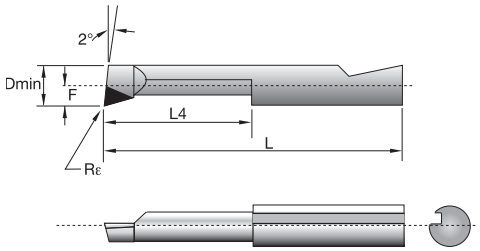


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

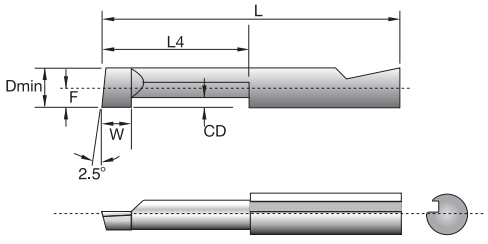
■ ABD

ISO catalogue number	D min	L4	L	F	CG5	CM1	CBN6	CPD1
ABD06187R	1,58	5,41	21,92	0,66	●	●		
ABD06312R	1,58	7,93	24,44	0,66	●	●		
ABD09281R	2,39	7,14	23,65	1,04	●	●		
ABD09500R	2,39	12,70	29,21	1,04	●	●		
ABD125375R	3,18	9,53	26,04	1,45	●	●		
ABD125625R	3,18	15,88	32,39	1,45	●	●		
ABD156500R	3,96	12,70	29,21	1,85	●	●		
ABD156875R	3,96	22,23	38,74	1,85	●	●		



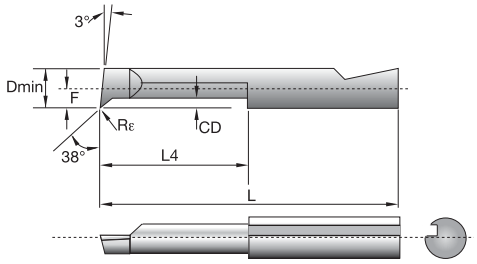
■ ABD-M

ISO catalogue number	D min	L4	L	F	Rε	CG5	CM1	CBN6	CPD1
ABD09500RM	2,39	12,70	29,21	1,04	0,18			●	●
ABD125625RM	3,18	15,88	32,39	1,45	0,18			●	
ABD156875RM	3,96	22,23	38,74	1,85	0,18			●	



■ AGD

ISO catalogue number	D min	L4	L	F	CD	W	CG5	CM1	CBN6	CPD1
AGD09503	2,79	7,93	24,44	1,17	0,76	0,76	●	●		
AGD12504	3,56	9,53	26,04	1,55	0,89	1,02	●	●		
AGD15605	4,45	12,70	29,21	1,93	1,27	1,27	●	●		

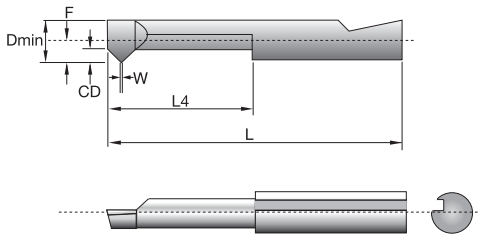


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

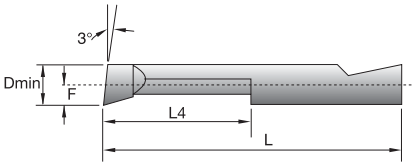
■ APD

ISO catalogue number	D min	L4	L	F	CD	Rε	CG5	CM1	CBN6	CPD1
APD06187R	1,58	4,75	21,26	0,66	0,43	0,18	●			
APD09281R	2,39	7,14	23,65	1,07	0,71	0,18	●	●		
APD125375R	3,18	9,53	26,04	1,45	1,02	0,18	●	●		
APD156500R	3,96	12,70	29,21	1,85	1,27	0,18	●	●		



■ ATD

ISO catalogue number	D min	L4	L	F	CD	W	TP min	TP max				
ATD09560F2	2,79	7,93	24,44	1,17	0,56	0,05	0,80	0,53	●	●		
ATD12560F2	3,56	9,53	26,04	1,55	0,69	0,05	1,06	0,53	●	●		
ATD15660F2	4,45	12,70	29,21	1,93	0,81	0,05	1,27	0,53	●	●		

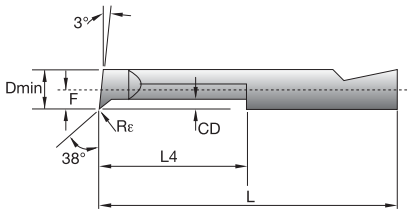


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

■ BB

ISO catalogue number	D min	L4	L	F	CG5	CM1	CBN6	CPD1
BB187750R	4,75	19,05	45,72	2,24	●	●		
BB1871250R	4,75	31,75	58,42	2,24	●			
BB2501000R	6,35	25,40	52,07	3,05	●	●		
BB2501750R	6,35	44,45	71,12	3,05	●	●		
BB3121250R	7,93	53,98	80,65	3,84	●	●		



■ BP

ISO catalogue number	D min	L4	L	F	CD	Rε				
BP187600R	4,75	15,24	41,91	2,24	1,58	0,18	●			
BP250825R	6,35	20,96	47,63	3,05	1,98	0,18	●	●		
BP3121000R	7,93	25,40	52,07	3,84	2,39	0,18	●	●		

Insert Screws

order number	ISO catalogue number	Torx/hex	internal thread
2840098	MSM46	2mm	M4X0.7
2892513	BS832	5/64	#8-32
2840186	AS832	5/64	#8-32
2823227	SC30	T10	#4-40
2823203	STM31	T15	M3.5 X 0.6
2832641	CT15	T16	#1-72
2820981	LTM16	T5	M2X0.4
2832647	CC11	T6	#1-72
2832635	CT11	T6	#1-72
2832655	CC09	T6	#1-72
2825948	QTM26	T7	M2.5X0.45
2825941	QTM20	T7	M2.5X0.45
2830477	FC11	T7	#2-56
2828337	GT21	T7	#2-56
2830471	FC14	T7	#2-56
2826005	QC15	T8	#3-48
2826031	QC26	T9	#4-40
2826038	QC21	T9	#4-40

Wrenches

order number	ISO catalogue number	Torx/hex
2840174	AKEY	5/64
2840094	MKEY	2mm
2823182	SKEY	T10
2823189	STKEY	T15
2828318	GTKEY	T5
2832628	CKEY	T6
2830492	FKEY	T7
2825952	QTKEY	T7
2825973	Q8KEY	T8
2825982	QKEY	T9

Drive Bits

order number	ISO catalogue number	Torx/hex
2840089	MBIT	2mm
2823236	SBIT	T10
2823196	STBIT	T15
2828324	GTBIT	T5
2832661	CBIT	T6
2825963	QTBIT	T7
2830497	FBIT	T7
2825964	Q8BIT	T8
2826045	QBIT	T9

Wedges

order number	ISO catalogue number
2840192	AW250
2836024	BW312

Quadralock™

High-Precision Products for ID Applications

Easy access, quick-change toolholders and inserts perform multiple ID applications for maximum productivity with one toolholder.

The unique cutting tip of the Quadralock™ ID Quick-Change Tooling System can be locked in four different positions, enabling operation in both Swiss-style and conventional machines. Four quick, easy set-up steps and guaranteed insert repeatability within ±0,013mm ensures superior performance.

Quadralock Ultra-Precision Tooling

Features:

- Fixed-limit stop for precise and repeatable cutting edge positioning.
- Tight insert seat pocket ensures secure hold.
- V-slots and limit-stop bolts for increased indexability.

Benefits:

- Internal coolant supply directly lubricates cutting edge.
- Ability to rotate tool at 90° increments.
- For all boring, grooving, profiling, and threading applications.

Boring

Bore holes as small as 0,25mm.

Grooving

Groove in a 2,79mm diameter hole.

Profiling

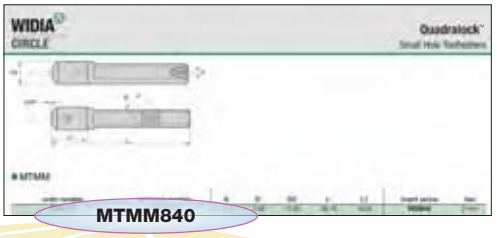
Profile in diameters as small as 1,57mm.

Threading

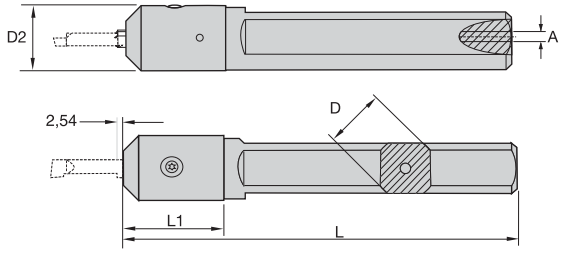
Thread down to a No. 5; 2,54mm.

Quadralock™ Small Hole Tooling

Quadralock Boring Bar Identification System

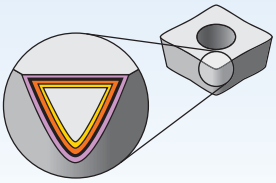


MTM	M	8	40
Quadralock Boring System	Type	Shank Diameter *shown as "D"*	Length *shown as "L"*
	M = Metric	**Metric** 8 = 8,00mm 10 = 10,00mm 12 = 12,00mm 16 = 16,00mm 22 = 22,00mm	**Metric** 40 = 38,1mm 100 = 101,6mm 127 = 127,0mm



MTMM

order number	catalogue number	D	D2	L	L1	A	insert screw	hex
3896202	**MTMM840**	8,00	12,95	38	19	3,00	**MSM46**	2mm
3896198	**MTMM1040**	10,00	12,95	38	19	3,00	**MSM46**	2mm
3896200	**MTMM1240**	12,00	12,95	38	19	3,00	**MSM46**	2mm
3896199	**MTMM12100**	12,00	12,95	102	19	3,00	**MSM46**	2mm
3831788	**MTMM16100**	16,00	12,95	102	19	3,00	**MSM46**	2mm
3896201	**MTMM22127**	22,00	12,95	127	19	3,00	**MSM46**	2mm



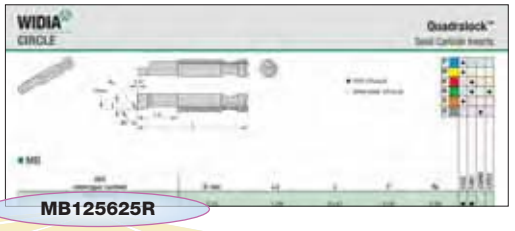
Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade	Coating	Grade Description	05	10	15	20	25	30	35	40	45
CM1	HW-S25	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.									
CG5	HC-S25	A PVD TiN-coated grade. Straight 9,5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.									

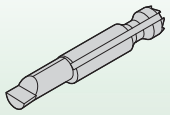
ANSI ISO 513	VDI 3323	Material Group	Cutting Speed • vc m/mm											
			min	Start	max	min	Start	max	min	Start	max	min	Start	max
P		ap [mm]	0,02	—	0,20	0,02	—	0,20						
		f [mm/rev]	0,07	—	0,02	0,07	—	0,02						
				CG5			CM1			CBN6			CPD1	
	1		105	130	155	65	80	100						
	2		80	100	120	50	65	75						
	3		65	75	90	40	50	60						
	4		70	90	105	45	55	65						
	5		55	65	80	35	40	50						
	6		85	105	125	55	70	80						
	7		55	70	85	40	45	55						
	8		55	65	80	35	40	50						
	9		45	55	65	30	35	45						
	10		75	95	115	50	60	75						
	11		50	60	75	35	40	45						
	12		75	95	115	50	60	75						
	13.1		65	80	95	40	50	60						
	13.2		50	60	70	35	40	45						
M		ap [mm]	0,02	—	0,20	0,02	—	0,20						
		f [mm/rev]	0,07	—	0,02	0,07	—	0,02						
				CG5			CM1			CBN6			CPD1	
	14.1		75	95	110	55	70	85						
	14.2		60	75	90	45	55	65						
	14.3		70	85	100	50	65	75						
	14.4		45	55	65	35	40	45						
K		ap [mm]	0,02	—	0,20	0,02	—	0,20						
		f [mm/rev]	0,07	—	0,02	0,07	—	0,02						
				CG5			CM1			CBN6			CPD1	
	15		75	90	110	55	70	85						
	16		50	65	75	40	50	60						
	17		80	100	120	65	80	95						
	18		55	65	80	40	50	60						
	19		100	125	145	75	95	115						
	20		55	70	85	45	55	65						
N		ap [mm]	0,02	—	0,51	0,02	—	0,51				0,02	—	0,51
		f [mm/rev]	0,09	—	0,01	0,09	—	0,01				0,09	—	0,01
				CG5			CM1			CBN6			CPD1	
	21		405	505	605	405	505	605				855	1070	1285
	22		245	305	365	245	305	365				735	915	1100
	23		405	505	605	405	505	605				685	855	1025
	24		245	305	370	245	305	370				540	675	805
	25		—	—	—	70	90	105				370	460	550
	26		145	180	215	105	125	155				330	415	495
	27		135	170	205	100	125	150				320	400	480
	28		145	180	215	105	125	155				330	415	495
	29		—	—	—	—	—	—				345	430	515
	30		—	—	—	—	—	—				330	415	495
S		ap [mm]	0,02	—	0,51	0,02	—	0,51						
		f [mm/rev]	0,06	—	0,02	0,06	—	0,02						
				CG5			CM1			CBN6			CPD1	
	31		35	40	45	65	80	95						
	32		25	30	35	45	55	70						
	33		25	35	40	50	65	75						
	34		20	25	30	40	45	55						
	35		20	25	30	40	50	60						
	36		35	40	50	30	35	45						
	37		25	35	40	25	30	35						
H		ap [mm]							0,02	—	0,20			
		f [mm/rev]							0,0024	—	0,0008			
				CG5			CM1			CBN6			CPD1	
	38.1								110	140	165			
	38.2								105	130	155			
	39.1								100	125	150			
	39.2								90	110	135			
	40.1								—	—	—			
	40.2								—	—	—			
	41.1								—	—	—			
	41.2								—	—	—			

Quadralock Boring Bar Insert Identification System

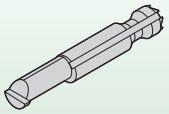


MB
Insert Style

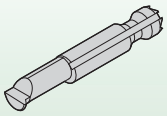
MB = Boring



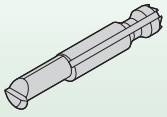
MG = Grooving



MP = Profiling



MT = Threading



125
Minimum Bore
shown as "D min"

010	=	0,25mm
030	=	0,76mm
062	=	1,58mm
094	=	2,39mm
125	=	3,18mm
156	=	3,96mm

(for MG and MT style only)

095	=	2,79mm
125	=	3,56mm
156	=	4,45mm

625
Bore Depth, Groove Width, Flat on Thread
shown as "L4, W"

Bore Depth

062	=	1,58mm
187	=	4,75mm
281	=	7,14mm
312	=	7,93mm
375	=	9,53mm
500	=	12,70mm
625	=	15,88mm
875	=	22,23mm

Groove Width (for MG only)

030	=	0,76mm
040	=	1,02mm
050	=	1,27mm

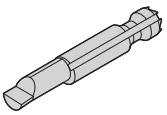
Thread (MT style only)

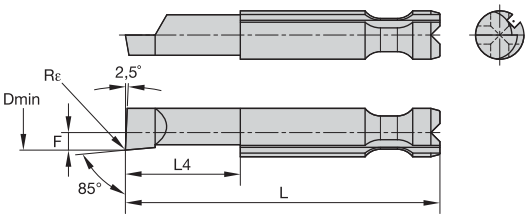
60F2 = 0,05
flat on 60° thread

R
Hand of Insert

R = Right hand

L = Left hand



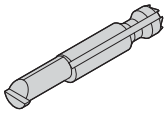


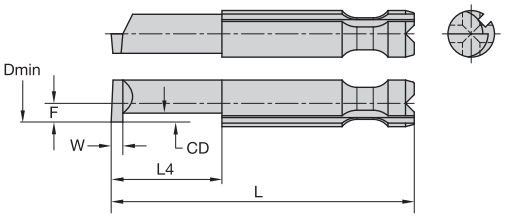
● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ MB

ISO catalogue number	D min	L4	L	F	Rε	CG5	CM1	CBN6	CPD1
Right hand									
MB010062R	0,25	1,58	20,57	0,09	0,03	●	●		
MB030187R	0,76	4,75	21,26	0,34	0,03	●	●		
MB062187R	1,58	5,41	21,92	0,66	0,05	●	●		
MB062312R	1,58	7,93	24,44	0,66	0,05	●	●		
MB094281R	2,39	7,14	23,65	1,04	0,05	●	●		
MB094500R	2,39	12,70	29,21	1,04	0,05	●	●		
MB125375R	3,18	9,53	26,04	1,45	0,10	●	●		
MB125625R	3,18	15,88	32,39	1,45	0,10	●	●		
MB156500R	3,96	12,70	29,21	1,85	0,10	●	●		
MB156875R	3,96	22,23	38,74	1,85	0,10	●	●		
Left hand									
MB010062L	0,25	1,58	20,57	0,09	0,03	●	●		
MB030187L	0,76	4,75	21,26	0,34	0,03	●	●		
MB062187L	1,58	5,41	21,92	0,66	0,05	●	●		
MB062312L	1,58	7,93	24,44	0,66	0,05	●	●		
MB094281L	2,39	7,14	23,65	1,04	0,05	●	●		
MB094500L	2,39	12,70	29,21	1,04	0,05	●	●		
MB125375L	3,18	9,53	26,04	1,45	0,10	●	●		
MB125625L	3,18	15,88	32,39	1,45	0,10	●	●		
MB156500L	3,96	12,70	29,21	1,85	0,10	●	●		
MB156875L	3,96	22,23	38,74	1,85	0,10	●	●		



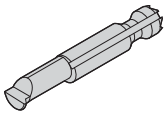


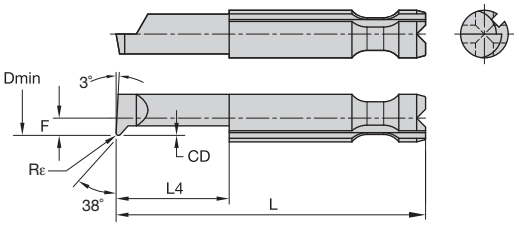
● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

■ MG

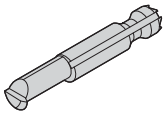
ISO catalogue number	D min	L4	L	F	CD	W	CG5	CM1	CBN6	CPD1
Right hand										
MG095030R	2,79	7,93	24,44	1,17	0,76	0,76	●	●		
MG125040R	3,56	9,53	26,04	1,55	0,89	1,02	●	●		
MG156050R	4,45	12,70	29,21	1,93	1,27	1,27	●	●		
Left hand										
MG095030L	2,79	7,93	24,44	1,17	0,76	0,76	●	●		
MG125040L	3,56	9,53	26,04	1,55	0,89	1,02	●	●		
MG156050L	4,45	12,70	29,21	1,93	1,27	1,27	●	●		

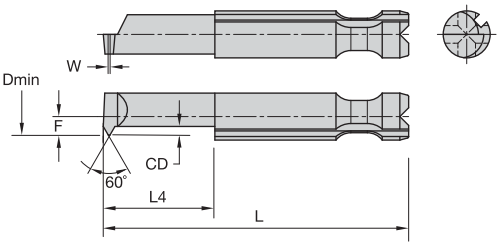




■ MP

ISO catalogue number	D min	L4	L	F	CD	Rε	CG5	CM1	CBN6	CPD1
Right hand										
MP062187R	1,58	4,75	21,26	0,66	0,43	0,10	●	●		
MP094281R	2,39	7,14	23,65	1,07	0,71	0,10	●	●		
MP125375R	3,18	9,53	26,04	1,45	1,02	0,20	●	●		
MP156500R	3,96	12,70	29,21	1,85	1,27	0,20	●	●		
Left hand										
MP062187L	1,58	4,75	21,26	0,66	0,43	0,10	●	●		
MP094281L	2,39	7,14	23,65	1,07	0,71	0,10	●	●		
MP125375L	3,18	9,53	26,04	1,45	1,02	0,20	●	●		
MP156500L	3,96	12,70	29,21	1,85	1,27	0,20	●	●		





■ MT

ISO catalogue number	D min	L4	L	F	CD	W	TP min	TP max	CG5	CM1	CBN6	CPD1
Right hand												
MT09560F2R	2,79	7,93	24,44	1,17	0,56	0,05	0,50	0,80	●	●		
MT12560F2R	3,56	9,53	26,04	1,55	0,69	0,05	0,50	1,05	●	●		
MT15660F2R	4,45	12,70	29,21	1,93	0,81	0,05	0,50	1,27	●	●		
Left hand												
MT09560F2L	2,79	7,93	24,44	1,17	0,56	0,05	0,50	0,80	●	●		
MT12560F2L	3,56	9,53	26,04	1,55	0,69	0,05	0,50	1,05	●	●		
MT15660F2L	4,45	12,70	29,21	1,93	0,81	0,05	0,50	1,27	●	●		

Insert Screws

order number	ISO catalogue number	Torx/hex	internal thread
2840098	MSM46	2mm	M4X0.7
2892513	BS832	5/64	#8-32
2840186	AS832	5/64	#8-32
2823227	SC30	T10	#4-40
2823203	STM31	T15	M3.5 X 0.6
2832641	CT15	T16	#1-72
2820981	LTM16	T5	M2X0.4
2832647	CC11	T6	#1-72
2832635	CT11	T6	#1-72
2832655	CC09	T6	#1-72
2825948	QTM26	T7	M2.5X0.45
2825941	QTM20	T7	M2.5X0.45
2830477	FC11	T7	#2-56
2828337	GT21	T7	#2-56
2830471	FC14	T7	#2-56
2826005	QC15	T8	#3-48
2826031	QC26	T9	#4-40
2826038	QC21	T9	#4-40

Wrenches

order number	ISO catalogue number	Torx/hex
2840174	AKEY	5/64
2840094	MKEY	2mm
2823182	SKEY	T10
2823189	STKEY	T15
2828318	GTKEY	T5
2832628	CKEY	T6
2830492	FKEY	T7
2825952	QTKEY	T7
2825973	Q8KEY	T8
2825982	QKEY	T9

Drive Bits

order number	ISO catalogue number	Torx/hex
2840089	MBIT	2mm
2823236	SBIT	T10
2823196	STBIT	T15
2828324	GTBIT	T5
2832661	CBIT	T6
2825963	QTBIT	T7
2830497	FBIT	T7
2825964	Q8BIT	T8
2826045	QBIT	T9

Wedges

order number	ISO catalogue number
2840192	AW250
2836024	BW312

Solid Carbide Bars

Small Hole Tooling

For exceptional performance in most steels, stainless steels, cast irons, and non-ferrous materials, the tough, economical WIDIA™ solid carbide bars are engineered for outstanding results in most machining applications.

Features:

- Accurate, quick-change tooling and toolholders are ideal for small parts machining applications.
- Strong micro-grain substrate available in coated and uncoated grades.
- Excellent choice for full radius, face, O-ring, and undercut grooving applications.

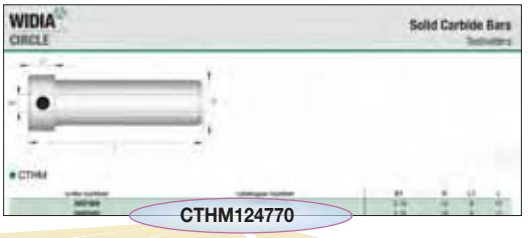
Benefits:

- Exceptional machining versatility and rupture strength.
- Coated tooling for enhanced tool life.
- Specially engineered for outstanding performance and consistent results.

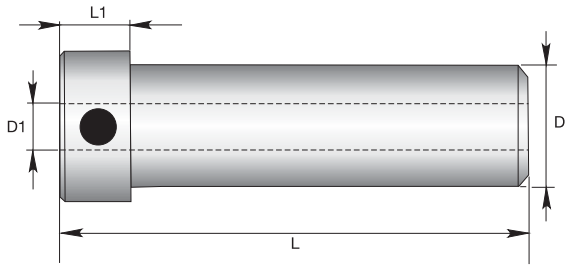
Solid Carbide Bars



Solid Carbide Bar Identification System

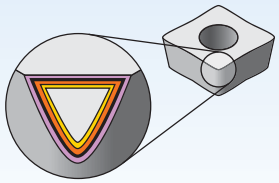


CTH	M	12	47	70
Micro Boring System	Type	Shank Diameter *shown as "D"*	Insert Bore Diameter *shown as "D1"*	Length of Tool *shown as "L"*
	M = Metric	12 = 12,00mm 16 = 16,00mm 20 = 20,00mm	32 = 3,18mm 47 = 4,76mm 64 = 6,35mm 79 = 7,94mm 95 = 9,53mm 127 = 12,70mm	70 = 70,0mm



CTHM

order number	catalogue number	D1	D	L1	L
3897868	CTHM123270	3,18	12	6	70
3897883	CTHM163270	3,18	16	6	70
3897889	CTHM203270	3,18	20	6	70
3897869	CTHM124770	4,76	12	6	70
3897884	CTHM164770	4,76	16	6	70
3897890	CTHM204770	4,76	20	6	70
3897870	CTHM126470	6,35	12	6	70
3897885	CTHM166470	6,35	16	6	70
3897891	CTHM206470	6,35	20	6	70
3897871	CTHM127970	7,94	12	6	70
3897886	CTHM167970	7,94	16	6	70
3897892	CTHM207970	7,94	20	6	70
3897872	CTHM129570	9,53	12	6	70
3897887	CTHM169570	9,53	16	6	70
3897893	CTHM209570	9,53	20	6	70
3897888	CTHM2012770	12,70	20	6	70



Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

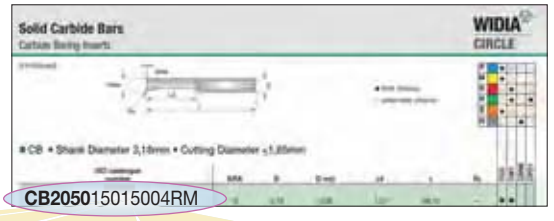
Grade

Coating		Grade Description	05	10	15	20	25	30	35	40	45
CM1	HW-S25	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.	P	P	P	P	P	P			
			M	M	M	M	M	M			
			K	K	K	K	K	K			
			N	N	N	N	N	N			
			S	S	S	S	S	S			
CG5	HC-S25	A PVD-TiN-coated grade. Straight 9,5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.	P	P	P	P	P	P			
			M	M	M	M	M	M			
			K	K	K	K	K	K			
			N	N	N	N	N	N			
			S	S	S	S	S	S			
CBN6	BN-H25	PCBN tip brazed onto a carbide insert. Recommended for machining hardened steel (45–65 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings. Can be run both dry and wet.	H	H	H	H	H	H			
CPD1	DP-N10	Polycrystalline diamond (PCD) compact grade provides exceptional hardness and abrasion resistance. CPD1 is a superior finish boring grade that will significantly improve workpiece tolerances, surface finishes, and insert tool life in high-silicon aluminium, copper, aluminium carbon graphite, hard rubber, plastics, and/or wood.	N	N	N	N	N	N			

ANSI ISO 513	VDI 3323	Material Group	Cutting Speed • vc m/min											
			min	Start	max	min	Start	max	min	Start	max	min	Start	max
P		ap [mm]	0,025	—	0,300	0,025	—	0,300						
		f [mm/rev]	0,127	—	0,025	0,127	—	0,025						
				CG5			CM1			CBN6			CPD1	
	1		105	130	155	65	80	100						
	2		80	100	120	50	65	75						
	3		65	75	90	40	50	60						
	4		70	90	105	45	55	65						
	5		55	65	80	35	40	50						
	6		85	105	125	55	70	80						
	7		55	70	85	40	45	55						
	8		55	65	80	35	40	50						
	9		45	55	65	30	35	45						
	10		75	95	115	50	60	75						
	11		50	60	75	35	40	45						
	12		75	95	115	50	60	75						
	13.1		65	80	95	40	50	60						
	13.2		50	60	70	35	40	45						
M		ap [mm]	0,025	—	0,300	0,025	—	0,300						
		f [mm/rev]	0,127	—	0,025	0,127	—	0,025						
				CG5			CM1			CBN6			CPD1	
	14.1		75	95	110	55	70	85						
	14.2		60	75	90	45	55	65						
	14.3		70	85	100	50	65	75						
	14.4		45	55	65	35	40	45						
K		ap [mm]	0,025	—	0,300	0,025	—	0,300						
		f [mm/rev]	0,127	—	0,025	0,127	—	0,025						
				CG5			CM1			CBN6			CPD1	
	15		75	90	110	55	70	85						
	16		50	65	75	40	50	60						
	17		80	100	120	65	80	95						
	18		55	65	80	40	50	60						
	19		100	125	145	75	95	115						
	20		55	70	85	45	55	65						
N		ap [mm]	0,025	—	0,300	0,025	—	0,300				0,025	—	0,300
		f [mm/rev]	0,127	—	0,025	0,127	—	0,025				0,127	—	0,025
				CG5			CM1			CBN6			CPD1	
	21		440	550	660	405	505	605				855	1070	1285
	22		440	550	660	245	305	365				735	915	1100
	23		415	520	625	405	505	605				685	855	1025
	24		415	520	625	245	305	370				540	675	805
	25		—	—	—	70	90	105				370	460	550
	26		185	230	275	105	125	155				330	415	495
	27		200	245	295	100	125	150				320	400	480
	28		200	245	295	105	125	155				330	415	495
	29		—	—	—	—	—	—				345	430	515
	30		—	—	—	—	—	—				330	415	495
S		ap [mm]	0,025	—	0,300	0,025	—	0,300						
		f [mm/rev]	0,127	—	0,025	0,127	—	0,025						
				CG5			CM1			CBN6			CPD1	
	31		35	40	45	65	80	95						
	32		25	30	35	45	55	70						
	33		25	35	40	50	65	75						
	34		20	25	30	40	45	55						
	35		20	25	30	40	50	60						
	36		35	40	50	30	35	45						
	37		25	35	40	25	30	35						
H		ap [mm]							0,025	—	0,300			
		f [mm/rev]							0,127	—	0,025			
				CG5			CM1			CBN6			CPD1	
	38.1								35	40	45			
	38.2								35	40	50			
	39.1								40	45	55			
	39.2								40	50	55			
	40.1								—	—	—			
	40.2								—	—	—			
	41.1								—	—	—			
	41.2								—	—	—			

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C
Material

C = Carbide

B
Application

B = Boring
H = Helical Boring

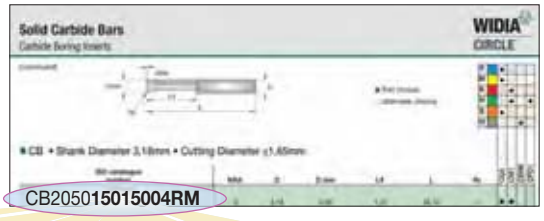
2
Shank Diameter
shown as "D"

2	=	3,18mm
3	=	4,76mm
4	=	6,35mm
5	=	7,94mm
6	=	9,53mm
8	=	12,70mm

050
Minimum Bore
shown as "D min"

015	=	0,38mm
020	=	0,51mm
025	=	0,64mm
030	=	0,76mm
035	=	0,89mm
040	=	1,02mm
045	=	1,14mm
050	=	1,27mm
060	=	1,52mm
070	=	1,78mm
080	=	2,03mm
090	=	2,29mm
100	=	2,54mm
110	=	2,79mm
120	=	3,05mm
135	=	3,43mm
140	=	3,56mm
150	=	3,81mm
160	=	4,06mm
180	=	4,57mm
200	=	5,08mm
210	=	5,33mm
230	=	5,84mm
240	=	6,10mm
290	=	7,37mm
300	=	7,62mm
320	=	8,13mm
360	=	9,14mm
480	=	12,19mm
490	=	12,45mm

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



150

Bore Depth
shown as "L4"

050	=	1,27mm
075	=	1,91mm
100	=	2,54mm
150	=	3,81mm
200	=	5,08mm
250	=	6,35mm
300	=	7,62mm
350	=	8,89mm
400	=	10,16mm
500	=	12,70mm
600	=	15,24mm
700	=	17,78mm
750	=	19,05mm
800	=	20,32mm
900	=	22,86mm
1000	=	25,40mm
1100	=	27,94mm
1150	=	29,21mm
1200	=	30,48mm
1250	=	31,75mm
1300	=	33,02mm
1350	=	34,29mm
1400	=	35,56mm
1500	=	38,10mm
1600	=	40,64mm
1750	=	44,45mm
1800	=	45,72mm
2000	=	50,80mm
2500	=	63,50mm
2600	=	66,04mm
2750	=	69,85mm
3000	=	76,20mm
4000	=	101,60mm
4500	=	114,30mm

1500

Overall Length
shown as "L"

1500	=	38,10mm
2000	=	50,80mm
2500	=	63,50mm
3000	=	76,20mm
4000	=	101,60mm
6000	=	387,09mm

4

Tool Radius
shown as "Rε"

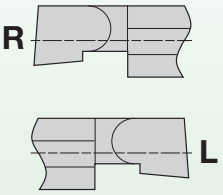
0	=	0,00mm
4	=	0,10mm
6	=	0,15mm

R

Hand of Insert

R = Right hand

L = Left hand



M

Tip Designation

M = Mini tip

WIN WITH WIDIA™

WIDIA-CIRCLE™ Small Hole Tooling Series

The WIDIA™ line of small hole boring tools is an excellent, economical choice for a wide range of applications. Our solid carbide bars provide exceptional machining versatility and rupture strength. Indexable inserts are available in both steel and carbide shanks.

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- Unique locking system enables quick, accurate insert changes.

Quadralock™

- V-slots and limit-stop bolts for increased indexability.

Micro Boring Bars

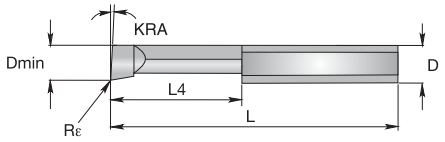
- Free cutting action, better surface finishes, and greater chip evacuation.

Solid Carbide Bars

- Accurate, quick-change tooling and toolholders are ideal for small parts machining applications.

To learn more about our innovations, contact your local Authorised Distributor or visit **www.widia.com**.

WIDIA™
Win with WIDIA™



● first choice
○ alternate choice

P	●	○		
M	●	○		
K	○	●		
N	○	●		●
S	●	○		
H			●	

■ CB • Shank Diameter 3,18mm • Cutting Diameter ≤1,65mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB201505015000R	-5	3,18	0,38	1,27	38,10	–	●	●		
CB202007515000R	-5	3,18	0,51	1,91	38,10	–	●	●		
CB202510015000R	-5	3,18	0,64	2,54	38,10	–	●	●		
CB203010015000R	-5	3,18	0,76	2,54	38,10	–	●	●		
CB203510015000R	-5	3,18	0,89	2,54	38,10	–	●	●		
CB203515015000R	-5	3,18	0,89	3,81	38,10	–	●	●		
CB204010015000R	-5	3,18	1,02	2,54	38,10	–	●	●		
CB204015015000R	-5	3,18	1,02	3,81	38,10	–	●	●		
CB204510015000R	-5	3,18	1,14	2,54	38,10	–	●	●		
CB204515015000R	-5	3,18	1,14	3,81	38,10	–	●	●		
CB205015015004R	-3	3,18	1,27	3,81	38,10	0,10	●	●		
CB205015015000R	-3	3,18	1,27	3,81	38,10	–	●	●		
CB205020015004R	-3	3,18	1,27	5,08	38,10	0,10	●	●		
CB205020015000R	-3	3,18	1,27	5,08	38,10	–	●	●		
CB205030015004R	-3	3,18	1,27	7,62	38,10	0,10	●	●		
CB205030015000R	-3	3,18	1,27	7,62	38,10	–	●	●		
CB205040015000R	-3	3,18	1,27	10,16	38,10	–	●	●		
CB206015015004R	-3	3,18	1,52	3,81	38,10	0,10	●	●		
CB206015015000R	-3	3,18	1,52	3,81	38,10	–	●	●		
CB206020015004R	-3	3,18	1,52	5,08	38,10	0,10	●	●		
CB206020015000R	-3	3,18	1,52	5,08	38,10	–	●	●		
CB206030015004R	-3	3,18	1,52	7,62	38,10	0,10	●	●		
CB206030015000R	-3	3,18	1,52	7,62	38,10	–	●	●		
CB206040015004R	-3	3,18	1,52	10,16	38,10	0,10	●	●		
CB205040015004R	-3	3,18	1,27	10,16	38,10	0,10	●	●		
CB206040015000R	-3	3,18	1,52	10,16	38,10	–	●	●		
CB206050015004R	-3	3,18	1,52	12,70	38,10	0,10	●	●		
CB206050015000R	-3	3,18	1,52	12,70	38,10	–	●	●		

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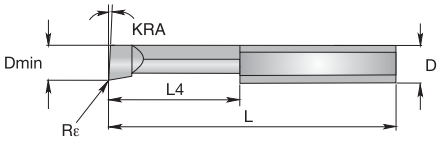
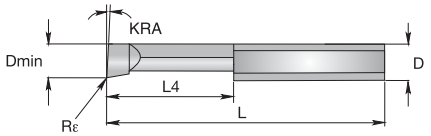


● first choice
○ alternate choice

P		●	○							
M		●	○							
K		○	●							
N		○	●			●				
S		●	○							
H				●						

■ CB • Shank Diameter 3,18mm • Cutting Diameter ≤1,65mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB201505015000L	-5	3,18	0,38	1,27	38,10	–	●	●		
CB202007515000L	-5	3,18	0,51	1,91	38,10	–	●	●		
CB202510015000L	-5	3,18	0,64	2,54	38,10	–	●	●		
CB203010015000L	-5	3,18	0,76	2,54	38,10	–	●	●		
CB203510015000L	-5	3,18	0,89	2,54	38,10	–	●	●		
CB203515015000L	-5	3,18	0,89	3,81	38,10	–	●	●		
CB204010015000L	-5	3,18	1,02	2,54	38,10	–	●	●		
CB204015015000L	-5	3,18	1,02	3,81	38,10	–	●	●		
CB204510015000L	-5	3,18	1,14	2,54	38,10	–	●	●		
CB204515015000L	-5	3,18	1,14	3,81	38,10	–	●	●		
CB205015015004L	-3	3,18	1,27	3,81	38,10	0,10	●	●		
CB205015015000L	-3	3,18	1,27	3,81	38,10	–	●	●		
CB205020015004L	-3	3,18	1,27	5,08	38,10	0,10	●	●		
CB205020015000L	-3	3,18	1,27	5,08	38,10	–	●	●		
CB205030015004L	-3	3,18	1,27	7,62	38,10	0,10	●	●		
CB205030015000L	-3	3,18	1,27	7,62	38,10	–	●	●		
CB205040015004L	-3	3,18	1,27	10,16	38,10	0,10	●	●		
CB205040015000L	-3	3,18	1,27	10,16	38,10	–	●	●		
CB206015015004L	-3	3,18	1,52	3,81	38,10	0,10	●	●		
CB206015015000L	-3	3,18	1,52	3,81	38,10	–	●	●		
CB206020015004L	-3	3,18	1,52	5,08	38,10	0,10	●	●		
CB206020015000L	-3	3,18	1,52	5,08	38,10	–	●	●		
CB206030015004L	-3	3,18	1,52	7,62	38,10	0,10	●	●		
CB206030015000L	-3	3,18	1,52	7,62	38,10	–	●	●		
CB206040015004L	-3	3,18	1,52	10,16	38,10	0,10	●	●		
CB206040015000L	-3	3,18	1,52	10,16	38,10	–	●	●		
CB206050015004L	-3	3,18	1,52	12,70	38,10	0,10	●	●		
CB206050015000L	-3	3,18	1,52	12,70	38,10	–	●	●		



● first choice
○ alternate choice

P	●	○		
M	●	○		
K	○	●		
N	○	●		●
S	●	○		
H			●	

■ CB • Shank Diameter 3,18mm • Cutting Diameter >1,65mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB208015015004R	-3	3,18	2,03	3,81	38,10	0,10	●	●		
CB208015015000R	-3	3,18	2,03	3,81	38,10	–	●	●		
CB208020015004R	-3	3,18	2,03	5,08	38,10	0,10	●	●		
CB208020015000R	-3	3,18	2,03	5,08	38,10	–	●	●		
CB208030015004R	-3	3,18	2,03	7,62	38,10	0,10	●	●		
CB208030015000R	-3	3,18	2,03	7,62	38,10	–	●	●		
CB208040015004R	-3	3,18	2,03	10,16	38,10	0,10	●	●		
CB208040015000R	-3	3,18	2,03	10,16	38,10	–	●	●		
CB208050015004R	-3	3,18	2,03	12,70	38,10	0,10	●	●		
CB208050015000R	-3	3,18	2,03	12,70	38,10	–	●	●		
CB208060015004R	-3	3,18	2,03	15,24	38,10	0,10	●	●		
CB208060015000R	-3	3,18	2,03	15,24	38,10	–	●	●		
CB210015015004R	-3	3,18	2,54	3,81	38,10	0,10	●	●		
CB210015015000R	-3	3,18	2,54	3,81	38,10	–	●	●		
CB210020015004R	-3	3,18	2,54	5,08	38,10	0,10	●	●		
CB210020015000R	-3	3,18	2,54	5,08	38,10	–	●	●		
CB210030015004R	-3	3,18	2,54	7,62	38,10	0,10	●	●		
CB210030015000R	-3	3,18	2,54	7,62	38,10	–	●	●		
CB210040015004R	-3	3,18	2,54	10,16	38,10	0,10	●	●		
CB210040015000R	-3	3,18	2,54	10,16	38,10	–	●	●		
CB210050015004R	-3	3,18	2,54	12,70	38,10	0,10	●	●		
CB210050015000R	-3	3,18	2,54	12,70	38,10	–	●	●		
CB210060015004R	-3	3,18	2,54	15,24	38,10	0,10	●	●		
CB210060015000R	-3	3,18	2,54	15,24	38,10	–	●	●		
CB210070015004R	-3	3,18	2,54	17,78	38,10	0,10	●	●		
CB210070015000R	-3	3,18	2,54	17,78	38,10	–	●	●		
CB211015015004R	-3	3,18	2,79	3,81	38,10	0,10	●	●		
CB211015015000R	-3	3,18	2,79	3,81	38,10	–	●	●		
CB211020015004R	-3	3,18	2,79	5,08	38,10	0,10	●	●		
CB211020015000R	-3	3,18	2,79	5,08	38,10	–	●	●		
CB211030015004R	-3	3,18	2,79	7,62	38,10	0,10	●	●		
CB211030015000R	-3	3,18	2,79	7,62	38,10	–	●	●		
CB211040015004R	-3	3,18	2,79	10,16	38,10	0,10	●	●		
CB211040015000R	-3	3,18	2,79	10,16	38,10	–	●	●		
CB211050015004R	-3	3,18	2,79	12,70	38,10	0,10	●	●		
CB211050015000R	-3	3,18	2,79	12,70	38,10	–	●	●		
CB211060015004R	-3	3,18	2,79	15,24	38,10	0,10	●	●		
CB211060015000R	-3	3,18	2,79	15,24	38,10	–	●	●		
CB211070015004R	-3	3,18	2,79	17,78	38,10	0,10	●	●		
CB211070015000R	-3	3,18	2,79	17,78	38,10	–	●	●		

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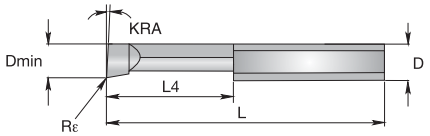
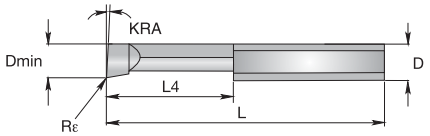


● first choice
○ alternate choice

P		●	○							
M		●	○							
K		○	●							
N		○	●			●				
S		●	○							
H				●						

■ CB • Shank Diameter 3,18mm • Cutting Diameter >1,65mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB208015015004L	-3	3,18	2,03	3,81	38,10	0,10	●	●		
CB208015015000L	-3	3,18	2,03	3,81	38,10	–	●	●		
CB208020015004L	-3	3,18	2,03	5,08	38,10	0,10	●	●		
CB208020015000L	-3	3,18	2,03	5,08	38,10	–	●	●		
CB208030015004L	-3	3,18	2,03	7,62	38,10	0,10	●	●		
CB208030015000L	-3	3,18	2,03	7,62	38,10	–	●	●		
CB208040015004L	-3	3,18	2,03	10,16	38,10	0,10	●	●		
CB208040015000L	-3	3,18	2,03	10,16	38,10	–	●	●		
CB208050015004L	-3	3,18	2,03	12,70	38,10	0,10	●	●		
CB208050015000L	-3	3,18	2,03	12,70	38,10	–	●	●		
CB208060015004L	-3	3,18	2,03	15,24	38,10	0,10	●	●		
CB208060015000L	-3	3,18	2,03	15,24	38,10	–	●	●		
CB210015015004L	-3	3,18	2,54	3,81	38,10	0,10	●	●		
CB210015015000L	-3	3,18	2,54	3,81	38,10	–	●	●		
CB210020015004L	-3	3,18	2,54	5,08	38,10	0,10	●	●		
CB210020015000L	-3	3,18	2,54	5,08	38,10	–	●	●		
CB210030015004L	-3	3,18	2,54	7,62	38,10	0,10	●	●		
CB210030015000L	-3	3,18	2,54	7,62	38,10	–	●	●		
CB210040015004L	-3	3,18	2,54	10,16	38,10	0,10	●	●		
CB210040015000L	-3	3,18	2,54	10,16	38,10	–	●	●		
CB210050015004L	-3	3,18	2,54	12,70	38,10	0,10	●	●		
CB210050015000L	-3	3,18	2,54	12,70	38,10	–	●	●		
CB210060015004L	-3	3,18	2,54	15,24	38,10	0,10	●	●		
CB210060015000L	-3	3,18	2,54	15,24	38,10	–	●	●		
CB210070015004L	-3	3,18	2,54	17,78	38,10	0,10	●	●		
CB210070015000L	-3	3,18	2,54	17,78	38,10	–	●	●		
CB211015015004L	-3	3,18	2,79	3,81	38,10	0,10	●	●		
CB211015015000L	-3	3,18	2,79	3,81	38,10	–	●	●		
CB211020015004L	-3	3,18	2,79	5,08	38,10	0,10	●	●		
CB211020015000L	-3	3,18	2,79	5,08	38,10	–	●	●		
CB211030015004L	-3	3,18	2,79	7,62	38,10	0,10	●	●		
CB211030015000L	-3	3,18	2,79	7,62	38,10	–	●	●		
CB211040015004L	-3	3,18	2,79	10,16	38,10	0,10	●	●		
CB211040015000L	-3	3,18	2,79	10,16	38,10	–	●	●		
CB211050015004L	-3	3,18	2,79	12,70	38,10	0,10	●	●		
CB211050015000L	-3	3,18	2,79	12,70	38,10	–	●	●		
CB211060015004L	-3	3,18	2,79	15,24	38,10	0,10	●	●		
CB211060015000L	-3	3,18	2,79	15,24	38,10	–	●	●		
CB211070015004L	-3	3,18	2,79	17,78	38,10	0,10	●	●		
CB211070015000L	-3	3,18	2,79	17,78	38,10	–	●	●		



● first choice
○ alternate choice

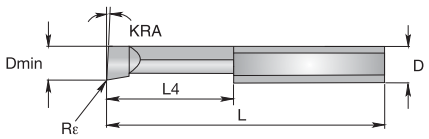
P	●	○		
M	●	○		
K	○	●		
N	○	●		●
S	●	○		
H			●	

■ CB • Shank Diameter 4,76mm • Cutting Diameter ≤3,56mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB312025020006R	-3	4,76	3,05	6,35	50,80	0,15	●	●		
CB312025020000R	-3	4,76	3,05	6,35	50,80	–	●	●		
CB312035020006R	-3	4,76	3,05	8,89	50,80	0,15	●	●		
CB312035020000R	-3	4,76	3,05	8,89	50,80	–	●	●		
CB312050020006R	-3	4,76	3,05	12,70	50,80	0,15	●	●		
CB312050020000R	-3	4,76	3,05	12,70	50,80	–	●	●		
CB312060020006R	-3	4,76	3,05	15,24	50,80	0,15	●	●		
CB312060020000R	-3	4,76	3,05	15,24	50,80	–	●	●		
CB312070020006R	-3	4,76	3,05	17,78	50,80	0,15	●	●		
CB312070020000R	-3	4,76	3,05	17,78	50,80	–	●	●		
CB312080020006R	-3	4,76	3,05	20,32	50,80	0,15	●	●		
CB312080020000R	-3	4,76	3,05	20,32	50,80	–	●	●		
CB314025020006R	-3	4,76	3,56	6,35	50,80	0,15	●	●		
CB314025020000R	-3	4,76	3,56	6,35	50,80	–	●	●		
CB314040020006R	-3	4,76	3,56	10,16	50,80	0,15	●	●		
CB314040020000R	-3	4,76	3,56	10,16	50,80	–	●	●		
CB314050020006R	-3	4,76	3,56	12,70	50,80	0,15	●	●		
CB314050020000R	-3	4,76	3,56	12,70	50,80	–	●	●		
CB314060020006R	-3	4,76	3,56	15,24	50,80	0,15	●	●		
CB314060020000R	-3	4,76	3,56	15,24	50,80	–	●	●		
CB314070020006R	-3	4,76	3,56	17,78	50,80	0,15	●	●		
CB314070020000R	-3	4,76	3,56	17,78	50,80	–	●	●		
CB314075020006R	-3	4,76	3,56	19,05	50,80	0,15	●	●		
CB314075020000R	-3	4,76	3,56	19,05	50,80	–	●	●		
CB314080020006R	-3	4,76	3,56	20,32	50,80	0,15	●	●		
CB314080020000R	-3	4,76	3,56	20,32	50,80	–	●	●		

(continued)

(continued)

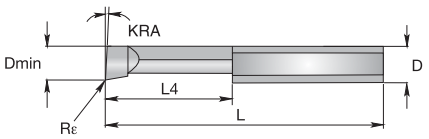


● first choice
○ alternate choice

P		●	○							
M		●	○							
K		○	●							
N		○	●			●				
S		●	○							
H				●						

■ CB • Shank Diameter 4,76mm • Cutting Diameter ≤3,56mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB3120250200 06L	-3	4,76	3,05	6,35	50,80	0,15	●	●		
CB3120250200 00L	-3	4,76	3,05	6,35	50,80	–	●	●		
CB3120350200 06L	-3	4,76	3,05	8,89	50,80	0,15	●	●		
CB3120350200 00L	-3	4,76	3,05	8,89	50,80	–	●	●		
CB3120500200 06L	-3	4,76	3,05	12,70	50,80	0,15	●	●		
CB3120500200 00L	-3	4,76	3,05	12,70	50,80	–	●	●		
CB3120600200 06L	-3	4,76	3,05	15,24	50,80	0,15	●	●		
CB3120600200 00L	-3	4,76	3,05	15,24	50,80	–	●	●		
CB3120700200 06L	-3	4,76	3,05	17,78	50,80	0,15	●	●		
CB3120700200 00L	-3	4,76	3,05	17,78	50,80	–	●	●		
CB3120800200 06L	-3	4,76	3,05	20,32	50,80	0,15	●	●		
CB3120800200 00L	-3	4,76	3,05	20,32	50,80	–	●	●		
CB3140250200 06L	-3	4,76	3,56	6,35	50,80	0,15	●	●		
CB3140250200 00L	-3	4,76	3,56	6,35	50,80	–	●	●		
CB3140400200 06L	-3	4,76	3,56	10,16	50,80	0,15	●	●		
CB3140400200 00L	-3	4,76	3,56	10,16	50,80	–	●	●		
CB3140500200 06L	-3	4,76	3,56	12,70	50,80	0,15	●	●		
CB3140500200 00L	-3	4,76	3,56	12,70	50,80	–	●	●		
CB3140600200 06L	-3	4,76	3,56	15,24	50,80	0,15	●	●		
CB3140600200 00L	-3	4,76	3,56	15,24	50,80	–	●	●		
CB3140700200 06L	-3	4,76	3,56	17,78	50,80	0,15	●	●		
CB3140700200 00L	-3	4,76	3,56	17,78	50,80	–	●	●		
CB3140750200 06L	-3	4,76	3,56	19,05	50,80	0,15	●	●		
CB3140750200 00L	-3	4,76	3,56	19,05	50,80	–	●	●		
CB3140800200 06L	-3	4,76	3,56	20,32	50,80	0,15	●	●		
CB3140800200 00L	-3	4,76	3,56	20,32	50,80	–	●	●		

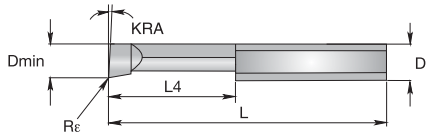


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CB • Shank Diameter 4,76mm • Cutting Diameter >3,81mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB316025020006R	-3	4,76	4,06	6,35	50,80	0,15	●	●		
CB316025020000R	-3	4,76	4,06	6,35	50,80	–	●	●		
CB316040020006R	-3	4,76	4,06	10,16	50,80	0,15	●	●		
CB316040020000R	-3	4,76	4,06	10,16	50,80	–	●	●		
CB316050020006R	-3	4,76	4,06	12,70	50,80	0,15	●	●		
CB316050020000R	-3	4,76	4,06	12,70	50,80	–	●	●		
CB316060020006R	-3	4,76	4,06	15,24	50,80	0,15	●	●		
CB316060020000R	-3	4,76	4,06	15,24	50,80	–	●	●		
CB316075020006R	-3	4,76	4,06	19,05	50,80	0,15	●	●		
CB316075020000R	-3	4,76	4,06	19,05	50,80	–	●	●		
CB316090020006R	-3	4,76	4,06	22,86	50,80	0,15	●	●		
CB316090020000R	-3	4,76	4,06	22,86	50,80	–	●	●		
CB3160100020006R	-3	4,76	4,06	25,40	50,80	0,15	●	●		
CB3160100020000R	-3	4,76	4,06	25,40	50,80	–	●	●		
Left hand										
CB316025020006L	-3	4,76	4,06	6,35	50,80	0,15	●	●		
CB316025020000L	-3	4,76	4,06	6,35	50,80	–	●	●		
CB316040020006L	-3	4,76	4,06	10,16	50,80	0,15	●	●		
CB316040020000L	-3	4,76	4,06	10,16	50,80	–	●	●		
CB316050020006L	-3	4,76	4,06	12,70	50,80	0,15	●	●		
CB316050020000L	-3	4,76	4,06	12,70	50,80	–	●	●		
CB316060020006L	-3	4,76	4,06	15,24	50,80	0,15	●	●		
CB316060020000L	-3	4,76	4,06	15,24	50,80	–	●	●		
CB316075020006L	-3	4,76	4,06	19,05	50,80	0,15	●	●		
CB316075020000L	-3	4,76	4,06	19,05	50,80	–	●	●		
CB316090020006L	-3	4,76	4,06	22,86	50,80	0,15	●	●		
CB316090020000L	-3	4,76	4,06	22,86	50,80	–	●	●		
CB3160100020006L	-3	4,76	4,06	25,40	50,80	0,15	●	●		
CB3160100020000L	-3	4,76	4,06	25,40	50,80	–	●	●		

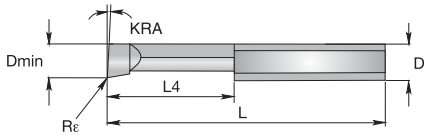


● first choice
○ alternate choice

P	●	○		
M	●	○		
K	○	●		
N	○	●		●
S	●	○		
H			●	

■ CB • Shank Diameter 6,35mm • Cutting Diameter ≤4,57mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB418035025006R	-3	6,35	4,57	8,89	63,50	0,15	●	●		
CB418035025000R	-3	6,35	4,57	8,89	63,50	–	●	●		
CB418050025006R	-3	6,35	4,57	12,70	63,50	0,15	●	●		
CB418050025000R	-3	6,35	4,57	12,70	63,50	–	●	●		
CB418060025006R	-3	6,35	4,57	15,24	63,50	0,15	●	●		
CB418060025000R	-3	6,35	4,57	15,24	63,50	–	●	●		
CB418075025006R	-3	6,35	4,57	19,05	63,50	0,15	●	●		
CB418075025000R	-3	6,35	4,57	19,05	63,50	–	●	●		
CB418090025006R	-3	6,35	4,57	22,86	63,50	0,15	●	●		
CB418090025000R	-3	6,35	4,57	22,86	63,50	–	●	●		
CB4180100025006R	-3	6,35	4,57	25,40	63,50	0,15	●	●		
CB4180100025000R	-3	6,35	4,57	25,40	63,50	–	●	●		
CB4180110025006R	-3	6,35	4,57	27,94	63,50	0,15	●	●		
CB4180110025000R	-3	6,35	4,57	27,94	63,50	–	●	●		
Left hand										
CB418035025006L	-3	6,35	4,57	8,89	63,50	0,15	●	●		
CB418035025000L	-3	6,35	4,57	8,89	63,50	–	●	●		
CB418050025006L	-3	6,35	4,57	12,70	63,50	0,15	●	●		
CB418050025000L	-3	6,35	4,57	12,70	63,50	–	●	●		
CB418060025006L	-3	6,35	4,57	15,24	63,50	0,15	●	●		
CB418060025000L	-3	6,35	4,57	15,24	63,50	–	●	●		
CB418075025006L	-3	6,35	4,57	19,05	63,50	0,15	●	●		
CB418075025000L	-3	6,35	4,57	19,05	63,50	–	●	●		
CB418090025006L	-3	6,35	4,57	22,86	63,50	0,15	●	●		
CB418090025000L	-3	6,35	4,57	22,86	63,50	–	●	●		
CB4180100025006L	-3	6,35	4,57	25,40	63,50	0,15	●	●		
CB4180100025000L	-3	6,35	4,57	25,40	63,50	–	●	●		
CB4180110025006L	-3	6,35	4,57	27,94	63,50	0,15	●	●		
CB4180110025000L	-3	6,35	4,57	27,94	63,50	–	●	●		

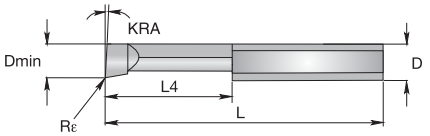


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

CB • Shank Diameter 6,35mm • Cutting Diameter ≥5,08mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB4200400250006R	-3	6,35	5,08	10,16	63,50	0,15	●	●		
CB4200400250000R	-3	6,35	5,08	10,16	63,50	–	●	●		
CB4200500250006R	-3	6,35	5,08	12,70	63,50	0,15	●	●		
CB4200500250000R	-3	6,35	5,08	12,70	63,50	–	●	●		
CB4200600250006R	-3	6,35	5,08	15,24	63,50	0,15	●	●		
CB4200600250000R	-3	6,35	5,08	15,24	63,50	–	●	●		
CB4200700250006R	-3	6,35	5,08	17,78	63,50	0,15	●	●		
CB4200700250000R	-3	6,35	5,08	17,78	63,50	–	●	●		
CB4200800250006R	-3	6,35	5,08	20,32	63,50	0,15	●	●		
CB4200800250000R	-3	6,35	5,08	20,32	63,50	–	●	●		
CB4200900250006R	-3	6,35	5,08	22,86	63,50	0,15	●	●		
CB4200900250000R	-3	6,35	5,08	22,86	63,50	–	●	●		
CB4201000250006R	-3	6,35	5,08	25,40	63,50	0,15	●	●		
CB4201000250000R	-3	6,35	5,08	25,40	63,50	–	●	●		
CB4201100250006R	-3	6,35	5,08	27,94	63,50	0,15	●	●		
CB4201100250000R	-3	6,35	5,08	27,94	63,50	–	●	●		
CB4201200250006R	-3	6,35	5,08	30,48	63,50	0,15	●	●		
CB4201200250000R	-3	6,35	5,08	30,48	63,50	–	●	●		
CB4201300250006R	-3	6,35	5,08	33,02	63,50	0,15	●	●		
CB4201300250000R	-3	6,35	5,08	33,02	63,50	–	●	●		
Left hand										
CB4200400250006L	-3	6,35	5,08	10,16	63,50	0,15	●	●		
CB4200400250000L	-3	6,35	5,08	10,16	63,50	–	●	●		
CB4200500250006L	-3	6,35	5,08	12,70	63,50	0,15	●	●		
CB4200500250000L	-3	6,35	5,08	12,70	63,50	–	●	●		
CB4200600250006L	-3	6,35	5,08	15,24	63,50	0,15	●	●		
CB4200600250000L	-3	6,35	5,08	15,24	63,50	–	●	●		
CB4200700250006L	-3	6,35	5,08	17,78	63,50	0,15	●	●		
CB4200700250000L	-3	6,35	5,08	17,78	63,50	–	●	●		
CB4200800250006L	-3	6,35	5,08	20,32	63,50	0,15	●	●		
CB4200800250000L	-3	6,35	5,08	20,32	63,50	–	●	●		
CB4200900250006L	-3	6,35	5,08	22,86	63,50	0,15	●	●		
CB4200900250000L	-3	6,35	5,08	22,86	63,50	–	●	●		
CB4201000250006L	-3	6,35	5,08	25,40	63,50	0,15	●	●		
CB4201000250000L	-3	6,35	5,08	25,40	63,50	–	●	●		
CB4201100250006L	-3	6,35	5,08	27,94	63,50	0,15	●	●		
CB4201100250000L	-3	6,35	5,08	27,94	63,50	–	●	●		
CB4201200250006L	-3	6,35	5,08	30,48	63,50	0,15	●	●		
CB4201200250000L	-3	6,35	5,08	30,48	63,50	–	●	●		
CB4201300250006L	-3	6,35	5,08	33,02	63,50	0,15	●	●		
CB4201300250000L	-3	6,35	5,08	33,02	63,50	–	●	●		



● first choice
○ alternate choice

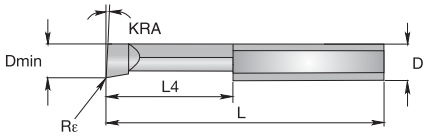
		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CB • Shank Diameter 7,94mm • Cutting Diameter ≤5,84mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB5230400250006R	-3	7,94	5,84	10,16	63,50	0,15	●	●		
CB5230400250000R	-3	7,94	5,84	10,16	63,50	–	●	●		
CB5230500250006R	-3	7,94	5,84	12,70	63,50	0,15	●	●		
CB5230500250000R	-3	7,94	5,84	12,70	63,50	–	●	●		
CB5230600250006R	-3	7,94	5,84	15,24	63,50	0,15	●	●		
CB5230600250000R	-3	7,94	5,84	15,24	63,50	–	●	●		
CB5230700250006R	-3	7,94	5,84	17,78	63,50	0,15	●	●		
CB5230700250000R	-3	7,94	5,84	17,78	63,50	–	●	●		
CB5230800250006R	-3	7,94	5,84	20,32	63,50	0,15	●	●		
CB5230800250000R	-3	7,94	5,84	20,32	63,50	–	●	●		
CB5230900250006R	-3	7,94	5,84	22,86	63,50	0,15	●	●		
CB5230900250000R	-3	7,94	5,84	22,86	63,50	–	●	●		
CB52301000250006R	-3	7,94	5,84	25,40	63,50	0,15	●	●		
CB52301000250000R	-3	7,94	5,84	25,40	63,50	–	●	●		
CB52301150250006R	-3	7,94	5,84	29,21	63,50	0,15	●	●		
CB52301150250000R	-3	7,94	5,84	29,21	63,50	–	●	●		
CB52301200250006R	-3	7,94	5,84	30,48	63,50	0,15	●	●		
CB52301200250000R	-3	7,94	5,84	30,48	63,50	–	●	●		
CB52301250250006R	-3	7,94	5,84	31,75	63,50	0,15	●	●		
CB52301250250000R	-3	7,94	5,84	31,75	63,50	–	●	●		
CB52301400250006R	-3	7,94	5,84	35,56	63,50	0,15	●	●		
CB52301400250000R	-3	7,94	5,84	35,56	63,50	–	●	●		
CB52301500250006R	-3	7,94	5,84	38,10	63,50	0,15	●	●		
CB52301500250000R	-3	7,94	5,84	38,10	63,50	–	●	●		
CB52301600250006R	-3	7,94	5,84	40,64	63,50	0,15	●	●		
CB52301600250000R	-3	7,94	5,84	40,64	63,50	–	●	●		

(continued)

(continued)

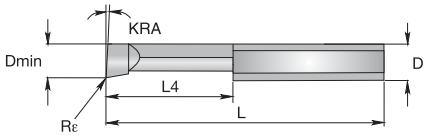


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

■ CB • Shank Diameter 7,94mm • Cutting Diameter ≤5,84mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB5230400250006L	-3	7,94	5,84	10,16	63,50	0,15	●	●		
CB5230400250000L	-3	7,94	5,84	10,16	63,50	–	●	●		
CB5230500250006L	-3	7,94	5,84	12,70	63,50	0,15	●	●		
CB5230500250000L	-3	7,94	5,84	12,70	63,50	–	●	●		
CB5230600250006L	-3	7,94	5,84	15,24	63,50	0,15	●	●		
CB5230600250000L	-3	7,94	5,84	15,24	63,50	–	●	●		
CB5230700250006L	-3	7,94	5,84	17,78	63,50	0,15	●	●		
CB5230700250000L	-3	7,94	5,84	17,78	63,50	–	●	●		
CB5230800250006L	-3	7,94	5,84	20,32	63,50	0,15	●	●		
CB5230800250000L	-3	7,94	5,84	20,32	63,50	–	●	●		
CB5230900250006L	-3	7,94	5,84	22,86	63,50	0,15	●	●		
CB5230900250000L	-3	7,94	5,84	22,86	63,50	–	●	●		
CB52301000250006L	-3	7,94	5,84	25,40	63,50	0,15	●	●		
CB52301000250000L	-3	7,94	5,84	25,40	63,50	–	●	●		
CB52301150250006L	-3	7,94	5,84	29,21	63,50	0,15	●	●		
CB52301150250000L	-3	7,94	5,84	29,21	63,50	–	●	●		
CB52301200250006L	-3	7,94	5,84	30,48	63,50	0,15	●	●		
CB52301200250000L	-3	7,94	5,84	30,48	63,50	–	●	●		
CB52301250250006L	-3	7,94	5,84	31,75	63,50	0,15	●	●		
CB52301250250000L	-3	7,94	5,84	31,75	63,50	–	●	●		
CB52301400250006L	-3	7,94	5,84	35,56	63,50	0,15	●	●		
CB52301400250000L	-3	7,94	5,84	35,56	63,50	–	●	●		
CB52301500250006L	-3	7,94	5,84	38,10	63,50	0,15	●	●		
CB52301500250000L	-3	7,94	5,84	38,10	63,50	–	●	●		
CB52301600250006L	-3	7,94	5,84	40,64	63,50	0,15	●	●		
CB52301600250000L	-3	7,94	5,84	40,64	63,50	–	●	●		

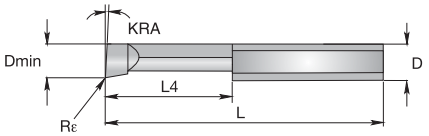


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

■ CB • Shank Diameter 7,94mm • Cutting Diameter ≥7,37mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB529050025006R	-3	7,94	7,37	12,70	63,50	0,15	●	●		
CB529050025000R	-3	7,94	7,37	12,70	63,50	–	●	●		
CB529060025006R	-3	7,94	7,37	15,24	63,50	0,15	●	●		
CB529060025000R	-3	7,94	7,37	15,24	63,50	–	●	●		
CB529075025006R	-3	7,94	7,37	19,05	63,50	0,15	●	●		
CB529075025000R	-3	7,94	7,37	19,05	63,50	–	●	●		
CB529090025006R	-3	7,94	7,37	22,86	63,50	0,15	●	●		
CB529090025000R	-3	7,94	7,37	22,86	63,50	–	●	●		
CB5290100025006R	-3	7,94	7,37	25,40	63,50	0,15	●	●		
CB5290100025000R	-3	7,94	7,37	25,40	63,50	–	●	●		
CB5290110025006R	-3	7,94	7,37	27,94	63,50	0,15	●	●		
CB5290110025000R	-3	7,94	7,37	27,94	63,50	–	●	●		
CB5290125025006R	-3	7,94	7,37	31,75	63,50	0,15	●	●		
CB5290125025000R	-3	7,94	7,37	31,75	63,50	–	●	●		
CB5290135025006R	-3	7,94	7,37	34,29	63,50	0,15	●	●		
CB5290135025000R	-3	7,94	7,37	34,29	63,50	–	●	●		
CB5290150025006R	-3	7,94	7,37	38,10	63,50	0,15	●	●		
CB5290150025000R	-3	7,94	7,37	38,10	63,50	–	●	●		
CB5290160025006R	-3	7,94	7,37	40,64	63,50	0,15	●	●		
CB5290160025000R	-3	7,94	7,37	40,64	63,50	–	●	●		
CB5290175025006R	-3	7,94	7,37	44,45	63,50	0,15	●	●		
CB5290175025000R	-3	7,94	7,37	44,45	63,50	–	●	●		
Left hand										
CB529050025006L	-3	7,94	7,37	12,70	63,50	0,15	●	●		
CB529050025000L	-3	7,94	7,37	12,70	63,50	–	●	●		
CB529060025006L	-3	7,94	7,37	15,24	63,50	0,15	●	●		
CB529060025000L	-3	7,94	7,37	15,24	63,50	–	●	●		
CB529075025006L	-3	7,94	7,37	19,05	63,50	0,15	●	●		
CB529075025000L	-3	7,94	7,37	19,05	63,50	–	●	●		
CB529090025006L	-3	7,94	7,37	22,86	63,50	0,15	●	●		
CB529090025000L	-3	7,94	7,37	22,86	63,50	–	●	●		
CB5290100025006L	-3	7,94	7,37	25,40	63,50	0,15	●	●		
CB5290100025000L	-3	7,94	7,37	25,40	63,50	–	●	●		
CB5290110025006L	-3	7,94	7,37	27,94	63,50	0,15	●	●		
CB5290110025000L	-3	7,94	7,37	27,94	63,50	–	●	●		
CB5290125025006L	-3	7,94	7,37	31,75	63,50	0,15	●	●		
CB5290125025000L	-3	7,94	7,37	31,75	63,50	–	●	●		
CB5290135025006L	-3	7,94	7,37	34,29	63,50	0,15	●	●		
CB5290135025000L	-3	7,94	7,37	34,29	63,50	–	●	●		
CB5290150025006L	-3	7,94	7,37	38,10	63,50	0,15	●	●		
CB5290150025000L	-3	7,94	7,37	38,10	63,50	–	●	●		
CB5290160025006L	-3	7,94	7,37	40,64	63,50	0,15	●	●		
CB5290160025000L	-3	7,94	7,37	40,64	63,50	–	●	●		
CB5290175025006L	-3	7,94	7,37	44,45	63,50	0,15	●	●		
CB5290175025000L	-3	7,94	7,37	44,45	63,50	–	●	●		



● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CB • Shank Diameter 9,53mm • Cutting Diameter ≥8,13mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB632050025006R	-3	9,53	8,13	12,70	63,50	0,15	●	●		
CB632050025000R	-3	9,53	8,13	12,70	63,50	–	●	●		
CB632060025006R	-3	9,53	8,13	15,24	63,50	0,15	●	●		
CB632060025000R	-3	9,53	8,13	15,24	63,50	–	●	●		
CB632075025006R	-3	9,53	8,13	19,05	63,50	0,15	●	●		
CB632075025000R	-3	9,53	8,13	19,05	63,50	–	●	●		
CB632090025006R	-3	9,53	8,13	22,86	63,50	0,15	●	●		
CB632090025000R	-3	9,53	8,13	22,86	63,50	–	●	●		
CB6320100025006R	-3	9,53	8,13	25,40	63,50	0,15	●	●		
CB6320100025000R	-3	9,53	8,13	25,40	63,50	–	●	●		
CB6320110025006R	-3	9,53	8,13	27,94	63,50	0,15	●	●		
CB6320110025000R	-3	9,53	8,13	27,94	63,50	–	●	●		
CB6320125025006R	-3	9,53	8,13	31,75	63,50	0,15	●	●		
CB6320125025000R	-3	9,53	8,13	31,75	63,50	–	●	●		
CB6320150025006R	-3	9,53	8,13	38,10	63,50	0,15	●	●		
CB6320150025000R	-3	9,53	8,13	38,10	63,50	–	●	●		
CB6320160025006R	-3	9,53	8,13	40,64	63,50	0,15	●	●		
CB6320160025000R	-3	9,53	8,13	40,64	63,50	–	●	●		
CB6320180025006R	-3	9,53	8,13	45,72	63,50	0,15		●		
CB6320180025000R	-3	9,53	8,13	45,72	63,50	–	●	●		
CB6320180025006R	-3	9,53	8,13	45,72	63,50	0,15	●			
CB6320200040006R	-3	9,53	8,13	50,80	101,60	0,15	●	●		
CB6320200040000R	-3	9,53	8,13	50,80	101,60	–	●	●		
CB6320250040006R	-3	9,53	8,13	63,50	101,60	0,15	●	●		
CB6320250040000R	-3	9,53	8,13	63,50	101,60	–	●	●		
CB6320300040006R	-3	9,53	8,13	76,20	101,60	0,15	●	●		
CB6320300040000R	-3	9,53	8,13	76,20	101,60	–	●	●		

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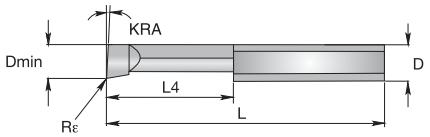
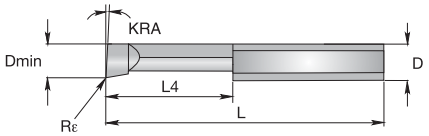


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

■ CB • Shank Diameter 9,53mm • Cutting Diameter ≥8,13mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB6320500250006L	-3	9,53	8,13	12,70	63,50	0,15	●	●		
CB6320500250000L	-3	9,53	8,13	12,70	63,50	–	●	●		
CB6320600250006L	-3	9,53	8,13	15,24	63,50	0,15	●	●		
CB6320600250000L	-3	9,53	8,13	15,24	63,50	–	●	●		
CB6320750250006L	-3	9,53	8,13	19,05	63,50	0,15	●	●		
CB6320750250000L	-3	9,53	8,13	19,05	63,50	–	●	●		
CB6320900250006L	-3	9,53	8,13	22,86	63,50	0,15	●	●		
CB6320900250000L	-3	9,53	8,13	22,86	63,50	–	●	●		
CB63201000250006L	-3	9,53	8,13	25,40	63,50	0,15	●	●		
CB63201000250000L	-3	9,53	8,13	25,40	63,50	–	●	●		
CB63201100250006L	-3	9,53	8,13	27,94	63,50	0,15	●	●		
CB63201100250000L	-3	9,53	8,13	27,94	63,50	–	●	●		
CB63201250250006L	-3	9,53	8,13	31,75	63,50	0,15	●	●		
CB63201250250000L	-3	9,53	8,13	31,75	63,50	–	●	●		
CB63201500250006L	-3	9,53	8,13	38,10	63,50	0,15	●	●		
CB63201500250000L	-3	9,53	8,13	38,10	63,50	–	●	●		
CB63201600250006L	-3	9,53	8,13	40,64	63,50	0,15	●	●		
CB63201600250000L	-3	9,53	8,13	40,64	63,50	–	●	●		
CB63201800250006L	-3	9,53	8,13	45,72	63,50	0,15	●	●		
CB63201800250000L	-3	9,53	8,13	45,72	63,50	–	●	●		
CB63202000400006L	-3	9,53	8,13	50,80	101,60	0,15	●	●		
CB63202000400000L	-3	9,53	8,13	50,80	101,60	–	●	●		
CB63202500400006L	-3	9,53	8,13	63,50	101,60	0,15	●	●		
CB63202500400000L	-3	9,53	8,13	63,50	101,60	–	●	●		
CB63203000400006L	-3	9,53	8,13	76,20	101,60	0,15	●	●		
CB63203000400000L	-3	9,53	8,13	76,20	101,60	–	●	●		



● first choice
○ alternate choice

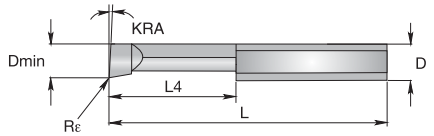
P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

■ CB • Shank Diameter 9,53mm • Cutting Diameter ≥9,14mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB636050025006R	-3	9,53	9,14	12,70	63,50	0,15	●	●		
CB636050025000R	-3	9,53	9,14	12,70	63,50	–	●	●		
CB636060025006R	-3	9,53	9,14	15,24	63,50	0,15	●	●		
CB636060025000R	-3	9,53	9,14	15,24	63,50	–	●	●		
CB636075025006R	-3	9,53	9,14	19,05	63,50	0,15	●	●		
CB636075025000R	-3	9,53	9,14	19,05	63,50	–	●	●		
CB636090025006R	-3	9,53	9,14	22,86	63,50	0,15	●	●		
CB636090025000R	-3	9,53	9,14	22,86	63,50	–	●	●		
CB6360100025006R	-3	9,53	9,14	25,40	63,50	0,15	●	●		
CB6360100025000R	-3	9,53	9,14	25,40	63,50	–	●	●		
CB6360115025006R	-3	9,53	9,14	29,21	63,50	0,15	●	●		
CB6360115025000R	-3	9,53	9,14	29,21	63,50	–	●	●		
CB6360125025006R	-3	9,53	9,14	31,75	63,50	0,15	●	●		
CB6360125025000R	-3	9,53	9,14	31,75	63,50	–	●	●		
CB6360150025006R	-3	9,53	9,14	38,10	63,50	0,15	●	●		
CB6360150025000R	-3	9,53	9,14	38,10	63,50	–	●	●		
CB6360160025006R	-3	9,53	9,14	40,64	63,50	0,15	●	●		
CB6360160025000R	-3	9,53	9,14	40,64	63,50	–	●	●		
CB6360180025006R	-3	9,53	9,14	45,72	63,50	0,15	●	●		
CB6360180025000R	-3	9,53	9,14	45,72	63,50	–	●	●		
CB6360200040006R	-3	9,53	9,14	50,80	101,60	0,15	●	●		
CB6360200040000R	-3	9,53	9,14	50,80	101,60	–	●	●		
CB6360250040006R	-3	9,53	9,14	63,50	101,60	0,15	●	●		
CB6360250040000R	-3	9,53	9,14	63,50	101,60	–	●	●		
CB6360300040006R	-3	9,53	9,14	76,20	101,60	0,15	●	●		
CB6360300040000R	-3	9,53	9,14	76,20	101,60	–	●	●		

(continued)

(continued)

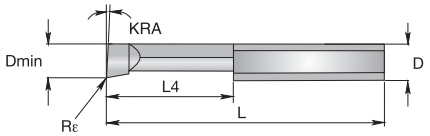


● first choice
○ alternate choice

P		●	○			
M		●	○			
K		○	●			
N		○	●			●
S		●	○			
H				●		

■ CB • Shank Diameter 9,53mm • Cutting Diameter ≥9,14mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB6360500250006L	-3	9,53	9,14	12,70	63,50	0,15	●	●		
CB6360500250000L	-3	9,53	9,14	12,70	63,50	–	●	●		
CB6360600250006L	-3	9,53	9,14	15,24	63,50	0,15	●	●		
CB6360600250000L	-3	9,53	9,14	15,24	63,50	–	●	●		
CB6360750250006L	-3	9,53	9,14	19,05	63,50	0,15	●	●		
CB6360750250000L	-3	9,53	9,14	19,05	63,50	–	●	●		
CB6360900250006L	-3	9,53	9,14	22,86	63,50	0,15	●	●		
CB6360900250000L	-3	9,53	9,14	22,86	63,50	–	●	●		
CB6361000250006L	-3	9,53	9,14	25,40	63,50	0,15	●	●		
CB6361000250000L	-3	9,53	9,14	25,40	63,50	–	●	●		
CB6361150250006L	-3	9,53	9,14	29,21	63,50	0,15	●	●		
CB6361150250000L	-3	9,53	9,14	29,21	63,50	–	●	●		
CB6361250250006L	-3	9,53	9,14	31,75	63,50	0,15	●	●		
CB6361250250000L	-3	9,53	9,14	31,75	63,50	–	●	●		
CB6361500250006L	-3	9,53	9,14	38,10	63,50	0,15	●	●		
CB6361500250000L	-3	9,53	9,14	38,10	63,50	–	●	●		
CB6361600250006L	-3	9,53	9,14	40,64	63,50	0,15	●	●		
CB6361600250000L	-3	9,53	9,14	40,64	63,50	–	●	●		
CB6361800250006L	-3	9,53	9,14	45,72	63,50	0,15	●	●		
CB6361800250000L	-3	9,53	9,14	45,72	63,50	–	●	●		
CB6362000400006L	-3	9,53	9,14	50,80	101,60	0,15	●	●		
CB6362000400000L	-3	9,53	9,14	50,80	101,60	–	●	●		
CB6362500400006L	-3	9,53	9,14	63,50	101,60	0,15	●	●		
CB6362500400000L	-3	9,53	9,14	63,50	101,60	–	●	●		
CB6363000400006L	-3	9,53	9,14	76,20	101,60	0,15	●	●		
CB6363000400000L	-3	9,53	9,14	76,20	101,60	–	●	●		



● first choice
○ alternate choice

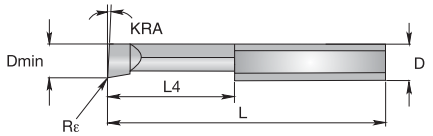
P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

CB • Shank Diameter 12,70mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB849075030006R	-3	12,70	12,45	19,05	76,20	0,15	●	●		
CB849075030000R	-3	12,70	12,45	19,05	76,20	–	●	●		
CB8490100030006R	-3	12,70	12,45	25,40	76,20	0,15	●	●		
CB8490100030000R	-3	12,70	12,45	25,40	76,20	–	●	●		
CB8490125030006R	-3	12,70	12,45	31,75	76,20	0,15	●	●		
CB8490125030000R	-3	12,70	12,45	31,75	76,20	–	●	●		
CB8490150030006R	-3	12,70	12,45	38,10	76,20	0,15	●	●		
CB8490150030000R	-3	12,70	12,45	38,10	76,20	–	●	●		
CB8490200040006R	-3	12,70	12,45	50,80	101,60	0,15	●	●		
CB8490200040000R	-3	12,70	12,45	50,80	101,60	–	●	●		
CB8490250040006R	-3	12,70	12,45	63,50	101,60	0,15	●	●		
CB8490250040000R	-3	12,70	12,45	63,50	101,60	–	●	●		
CB8490260040006R	-3	12,70	12,45	66,04	101,60	0,15	●	●		
CB8490260040000R	-3	12,70	12,45	66,04	101,60	–	●	●		
CB8490275040006R	-3	12,70	12,45	69,85	101,60	0,15	●	●		
CB8490275040000R	-3	12,70	12,45	69,85	101,60	–	●	●		
CB8490300060006R	-3	12,70	12,45	76,20	152,40	0,15	●	●		
CB8490300060000R	-3	12,70	12,45	76,20	152,40	–	●	●		
CB8490350060006R	-3	12,70	12,45	88,90	152,40	0,15	●	●		
CB8490350060000R	-3	12,70	12,45	88,90	152,40	–	●	●		
CB8490400060006R	-3	12,70	12,45	101,60	152,40	0,15	●	●		
CB8490400060000R	-3	12,70	12,45	101,60	152,40	–	●	●		
CB8490450060006R	-3	12,70	12,45	114,30	152,40	0,15	●	●		
CB8490450060000R	-3	12,70	12,45	114,30	152,40	–	●	●		

(continued)

(continued)

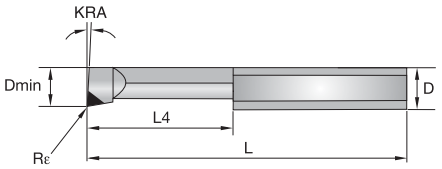


● first choice
○ alternate choice

P	●	○				
M	●	○				
K	○	●				
N	○	●				●
S	●	○				
H				●		

CB • Shank Diameter 12,70mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Left hand										
CB849075030006L	-3	12,70	12,45	19,05	76,20	0,15	●	●		
CB849075030000L	-3	12,70	12,45	19,05	76,20	–	●	●		
CB8490100030006L	-3	12,70	12,45	25,40	76,20	0,15	●	●		
CB8490100030000L	-3	12,70	12,45	25,40	76,20	–	●	●		
CB8490125030006L	-3	12,70	12,45	31,75	76,20	0,15	●	●		
CB8490125030000L	-3	12,70	12,45	31,75	76,20	–	●	●		
CB8490150030006L	-3	12,70	12,45	38,10	76,20	0,15	●	●		
CB8490150030000L	-3	12,70	12,45	38,10	76,20	–	●	●		
CB8490200040006L	-3	12,70	12,45	50,80	101,60	0,15	●	●		
CB8490200040000L	-3	12,70	12,45	50,80	101,60	–	●	●		
CB8490250040006L	-3	12,70	12,45	63,50	101,60	0,15	●	●		
CB8490250040000L	-3	12,70	12,45	63,50	101,60	–	●	●		
CB8490260040006L	-3	12,70	12,45	66,04	101,60	0,15	●	●		
CB8490260040000L	-3	12,70	12,45	66,04	101,60	–	●	●		
CB8490275040006L	-3	12,70	12,45	69,85	101,60	0,15	●	●		
CB8490275040000L	-3	12,70	12,45	69,85	101,60	–	●	●		
CB8490300060006L	-3	12,70	12,45	76,20	152,40	0,15	●	●		
CB8490300060000L	-3	12,70	12,45	76,20	152,40	–	●	●		
CB8490350060006L	-3	12,70	12,45	88,90	152,40	0,15	●	●		
CB8490350060000L	-3	12,70	12,45	88,90	152,40	–	●	●		
CB8490400060006L	-3	12,70	12,45	101,60	152,40	0,15	●	●		
CB8490400060000L	-3	12,70	12,45	101,60	152,40	–	●	●		
CB8490450060006L	-3	12,70	12,45	114,30	152,40	0,15	●	●		
CB8490450060000L	-3	12,70	12,45	114,30	152,40	–	●	●		

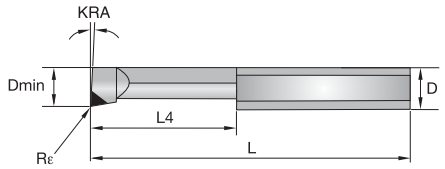


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CB-M • Shank Diameter 3,18mm–4,76mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB210015015004RM	-3	3,18	2,54	3,81	38,10	0,10			●	●
CB210020015004RM	-3	3,18	2,54	5,08	38,10	0,10			●	●
CB210030015004RM	-3	3,18	2,54	7,62	38,10	0,10			●	●
CB210040015004RM	-3	3,18	2,54	10,16	38,10	0,10			●	●
CB210050015004RM	-3	3,18	2,54	12,70	38,10	0,10			●	●
CB210060015004RM	-3	3,18	2,54	15,24	38,10	0,10			●	●
CB210070015004RM	-3	3,18	2,54	17,78	38,10	0,10			●	●
CB211015015004RM	-3	3,18	2,79	3,81	38,10	0,10			●	●
CB211020015004RM	-3	3,18	2,79	5,08	38,10	0,10			●	●
CB211030015004RM	-3	3,18	2,79	7,62	38,10	0,10			●	●
CB211040015004RM	-3	3,18	2,79	10,16	38,10	0,10			●	●
CB211050015004RM	-3	3,18	2,79	12,70	38,10	0,10			●	●
CB211060015004RM	-3	3,18	2,79	15,24	38,10	0,10			●	●
CB211070015004RM	-3	3,18	2,79	17,78	38,10	0,10			●	●
CB312025020006RM	-3	4,76	3,05	6,35	50,80	0,15			●	●
CB312035020006RM	-3	4,76	3,05	8,89	50,80	0,15			●	●
CB312050020006RM	-3	4,76	3,05	12,70	50,80	0,15			●	●
CB312060020006RM	-3	4,76	3,05	15,24	50,80	0,15			●	●
CB312070020006RM	-3	4,76	3,05	17,78	50,80	0,15			●	●
CB312080020006RM	-3	4,76	3,05	20,32	50,80	0,15			●	●
CB314025020006RM	-3	4,76	3,56	6,35	50,80	0,15			●	●
CB314040020006RM	-3	4,76	3,56	10,16	50,80	0,15			●	●
CB314050020006RM	-3	4,76	3,56	12,70	50,80	0,15			●	●
CB314060020006RM	-3	4,76	3,56	15,24	50,80	0,15			●	●
CB314070020006RM	-3	4,76	3,56	17,78	50,80	0,15			●	●
CB314075020006RM	-3	4,76	3,56	19,05	50,80	0,15			●	●
CB314080020006RM	-3	4,76	3,56	20,32	50,80	0,15			●	●
CB316025020006RM	-3	4,76	4,06	6,35	50,80	0,15			●	●
CB316040020006RM	-3	4,76	4,06	10,16	50,80	0,15			●	●
CB316050020006RM	-3	4,76	4,06	12,70	50,80	0,15			●	●
CB316060020006RM	-3	4,76	4,06	15,24	50,80	0,15			●	●
CB316075020006RM	-3	4,76	4,06	19,05	50,80	0,15			●	●
CB316090020006RM	-3	4,76	4,06	22,86	50,80	0,15			●	●
CB3160100020006RM	-3	4,76	4,06	25,40	50,80	0,15			●	●

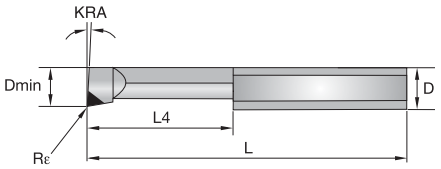


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

CB-M • Shank Diameter 6,35mm–7,94mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB418035025006RM	-3	6,35	4,57	8,89	63,50	0,15			●	●
CB418050025006RM	-3	6,35	4,57	12,70	63,50	0,15			●	●
CB418060025006RM	-3	6,35	4,57	15,24	63,50	0,15			●	●
CB418075025006RM	-3	6,35	4,57	19,05	63,50	0,15			●	●
CB418090025006RM	-3	6,35	4,57	22,86	63,50	0,15			●	●
CB4180100025006RM	-3	6,35	4,57	25,40	63,50	0,15			●	●
CB4180110025006RM	-3	6,35	4,57	27,94	63,50	0,15			●	●
CB420040025006RM	-3	6,35	5,08	10,16	63,50	0,15			●	●
CB420050025006RM	-3	6,35	5,08	12,70	63,50	0,15			●	●
CB420060025006RM	-3	6,35	5,08	15,24	63,50	0,15			●	●
CB420070025006RM	-3	6,35	5,08	17,78	63,50	0,15			●	●
CB420080025006RM	-3	6,35	5,08	20,32	63,50	0,15			●	●
CB420090025006RM	-3	6,35	5,08	22,86	63,50	0,15			●	●
CB4200100025006RM	-3	6,35	5,08	25,40	63,50	0,15			●	●
CB4200110025006RM	-3	6,35	5,08	27,94	63,50	0,15			●	●
CB4200120025006RM	-3	6,35	5,08	30,48	63,50	0,15			●	●
CB4200130025006RM	-3	6,35	5,08	33,02	63,50	0,15			●	●
CB523040025006RM	-3	7,94	5,84	10,16	63,50	0,15			●	●
CB523050025006RM	-3	7,94	5,84	12,70	63,50	0,15			●	●
CB523060025006RM	-3	7,94	5,84	15,24	63,50	0,15			●	●
CB523070025006RM	-3	7,94	5,84	17,78	63,50	0,15			●	●
CB523080025006RM	-3	7,94	5,84	20,32	63,50	0,15			●	●
CB523090025006RM	-3	7,94	5,84	22,86	63,50	0,15			●	●
CB5230100025006RM	-3	7,94	5,84	25,40	63,50	0,15			●	●
CB5230115025006RM	-3	7,94	5,84	29,21	63,50	0,15			●	●
CB5230120025006RM	-3	7,94	5,84	30,48	63,50	0,15			●	●
CB5230125025006RM	-3	7,94	5,84	31,75	63,50	0,15			●	●
CB5230140025006RM	-3	7,94	5,84	35,56	63,50	0,15			●	●
CB5230150025006RM	-3	7,94	5,84	38,10	63,50	0,15			●	●
CB5230160025006RM	-3	7,94	5,84	40,64	63,50	0,15			●	●
CB529050025006RM	-3	7,94	7,37	12,70	63,50	0,15			●	●
CB529060025006RM	-3	7,94	7,37	15,24	63,50	0,15			●	●
CB529075025006RM	-3	7,94	7,37	19,05	63,50	0,15			●	●
CB529090025006RM	-3	7,94	7,37	22,86	63,50	0,15			●	●
CB5290100025006RM	-3	7,94	7,37	25,40	63,50	0,15			●	●
CB5290110025006RM	-3	7,94	7,37	27,94	63,50	0,15			●	●
CB5290125025006RM	-3	7,94	7,37	31,75	63,50	0,15			●	●
CB5290135025006RM	-3	7,94	7,37	34,29	63,50	0,15			●	●
CB5290150025006RM	-3	7,94	7,37	38,10	63,50	0,15			●	●
CB5290160025006RM	-3	7,94	7,37	40,64	63,50	0,15			●	●
CB5290175025006RM	-3	7,94	7,37	44,45	63,50	0,15			●	●

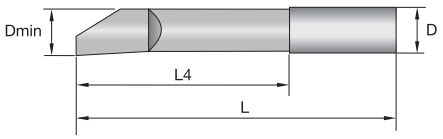


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CB-M • Shank Diameter 9,53mm–12,70mm

ISO catalogue number	KRA	D	D min	L4	L	Rε	CG5	CM1	CBN6	CPD1
Right hand										
CB6320500250006RM	-3	9,53	8,13	12,70	63,50	0,15			●	●
CB6320600250006RM	-3	9,53	8,13	15,24	63,50	0,15			●	●
CB6320750250006RM	-3	9,53	8,13	19,05	63,50	0,15			●	●
CB6320900250006RM	-3	9,53	8,13	22,86	63,50	0,15			●	●
CB6321000250006RM	-3	9,53	8,13	25,40	63,50	0,15			●	●
CB6321100250006RM	-3	9,53	8,13	27,94	63,50	0,15			●	●
CB6321250250006RM	-3	9,53	8,13	31,75	63,50	0,15			●	●
CB6321500250006RM	-3	9,53	8,13	38,10	63,50	0,15			●	●
CB6321600250006RM	-3	9,53	8,13	40,64	63,50	0,15			●	●
CB6321800250006RM	-3	9,53	8,13	45,72	63,50	0,15			●	●
CB6322000400006RM	-3	9,53	8,13	50,80	101,60	0,15			●	●
CB6322500400006RM	-3	9,53	8,13	63,50	101,60	0,15			●	●
CB6323000400006RM	-3	9,53	8,13	76,20	101,60	0,15			●	●
CB6360500250006RM	-3	9,53	9,14	12,70	63,50	0,15			●	●
CB6360600250006RM	-3	9,53	9,14	15,24	63,50	0,15			●	●
CB6360750250006RM	-3	9,53	9,14	19,05	63,50	0,15			●	●
CB6360900250006RM	-3	9,53	9,14	22,86	63,50	0,15			●	●
CB6361000250006RM	-3	9,53	9,14	25,40	63,50	0,15			●	●
CB6361150250006RM	-3	9,53	9,14	29,21	63,50	0,15			●	●
CB6361250250006RM	-3	9,53	9,14	31,75	63,50	0,15			●	●
CB6361500250006RM	-3	9,53	9,14	38,10	63,50	0,15			●	●
CB6361600250006RM	-3	9,53	9,14	40,64	63,50	0,15			●	●
CB6361800250006RM	-3	9,53	9,14	45,72	63,50	0,15			●	●
CB6362000400006RM	-3	9,53	9,14	50,80	101,60	0,15			●	●
CB6362500400006RM	-3	9,53	9,14	63,50	101,60	0,15			●	●
CB6363000400006RM	-3	9,53	9,14	76,20	101,60	0,15			●	●
CB8490750300006RM	-3	12,70	12,45	19,05	76,20	0,15			●	●
CB8491000300006RM	-3	12,70	12,45	25,40	76,20	0,15			●	●
CB8491250300006RM	-3	12,70	12,45	31,75	76,20	0,15			●	●
CB8491500300006RM	-3	12,70	12,45	38,10	76,20	0,15			●	●
CB8492000400006RM	-3	12,70	12,45	50,80	101,60	0,15			●	●
CB8492500400006RM	-3	12,70	12,45	63,50	101,60	0,15			●	●
CB8492600400006RM	-3	12,70	12,45	66,04	101,60	0,15			●	●
CB8492750400006RM	-3	12,70	12,45	69,85	101,60	0,15			●	●
CB8493000600006RM	-3	12,70	12,45	76,20	152,40	0,15			●	●
CB8493500600006RM	-3	12,70	12,45	88,90	152,40	0,15			●	●
CB8494000600006RM	-3	12,70	12,45	101,60	152,40	0,15			●	●
CB8494500600006RM	-3	12,70	12,45	114,30	152,40	0,15			●	●



● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

CHB

ISO catalogue number	D	D min	L4	L	CG5	CM1	CBN6	CPD1
CHB20200621500R	3,18	0,51	1,59	38,10	●	●		
CHB20250621500R	3,18	0,64	1,59	38,10	●	●		
CHB20251251500R	3,18	0,64	3,18	38,10	●	●		
CHB20301251500R	3,18	0,76	3,18	38,10	●	●		
CHB20301871500R	3,18	0,76	4,76	38,10	●	●		
CHB20351251500R	3,18	0,89	3,18	38,10	●	●		
CHB20351871500R	3,18	0,89	4,76	38,10	●	●		
CHB20401871500R	3,18	1,02	4,76	38,10	●	●		
CHB20402501500R	3,18	1,02	6,35	38,10	●	●		
CHB20503121500R	3,18	1,27	7,94	38,10	●	●		
CHB20603751500R	3,18	1,52	9,53	38,10	●	●		
CHB20704371500R	3,18	1,78	11,10	38,10	●	●		
CHB20805001500R	3,18	2,03	12,70	38,10	●	●		
CHB20905001500R	3,18	2,29	12,70	38,10	●	●		
CHB21005621500R	3,18	2,54	14,29	38,10	●	●		
CHB21206251500R	3,18	3,05	15,88	38,10	●	●		
CHB2120100015OOR	3,18	3,05	25,40	38,10	●	●		
CHB31357502000R	4,76	3,43	19,05	50,80	●	●		
CHB313510002000R	4,76	3,43	25,40	50,80	●	●		
CHB315010002000R	4,76	3,81	25,40	50,80	●	●		
CHB315012502000R	4,76	3,81	31,75	50,80	●	●		
CHB318010002000R	4,76	4,57	25,40	50,80	●	●		
CHB318012502000R	4,76	4,57	31,75	50,80	●	●		
CHB318015002000R	4,76	4,57	38,10	50,80	●	●		
CHB421010002500R	6,35	5,33	25,40	63,50	●	●		
CHB421012502500R	6,35	5,33	31,75	63,50	●	●		
CHB421015002500R	6,35	5,33	38,10	63,50	●	●		
CHB424010002500R	6,35	6,10	25,40	63,50	●	●		
CHB424015002500R	6,35	6,10	38,10	63,50	●	●		
CHB424017502500R	6,35	6,10	44,45	63,50	●	●		
CHB530010002500R	7,94	7,62	25,40	63,50	●	●		
CHB530015002500R	7,94	7,62	38,10	63,50	●	●		
CHB530017502500R	7,94	7,62	44,45	63,50	●	●		
CHB636010002500R	9,53	9,14	25,40	63,50	●	●		
CHB636015002500R	9,53	9,14	38,10	63,50	●	●		
CHB636017502500R	9,53	9,14	44,45	63,50	●	●		
CHB636020004000R	9,53	9,14	50,80	101,60	●	●		
CHB636022504000R	9,53	9,14	57,15	101,60	●	●		
CHB636025004000R	9,53	9,14	63,50	101,60	●	●		
CHB848015003000R	12,70	12,19	38,10	76,20	●	●		
CHB848020003000R	12,70	12,19	50,80	76,20	●	●		
CHB848025004000R	12,70	12,19	63,50	101,60	●	●		
CHB848030004000R	12,70	12,19	76,20	101,60	●	●		
CHB848035006000R	12,70	12,19	88,90	152,40	●	●		
CHB848040006000R	12,70	12,19	101,60	152,40	●	●		
CHB848045006000R	12,70	12,19	114,30	152,40	●	●		

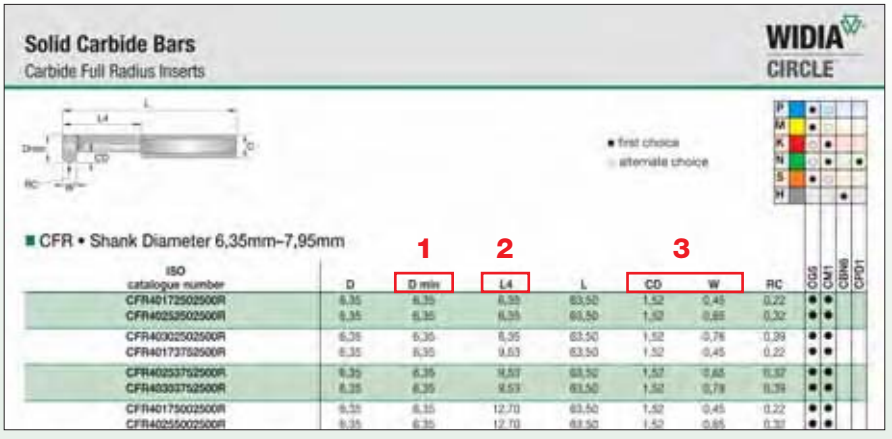
The World's Most Comprehensive Grooving Solutions

How to Choose the Correct Grooving Insert

1 Select tool with the largest D min (minimum bore) for the application.

2 Select tool with the smallest L4 (depth of bore).

3 Select the correct CD (cutting depth) and W (grooving width).



Solid Carbide Bars
Carbide Full Radius Inserts

WIDIA CIRCLE

■ first choice
□ alternate choice

■ CFR • Shank Diameter 6,35mm–7,95mm

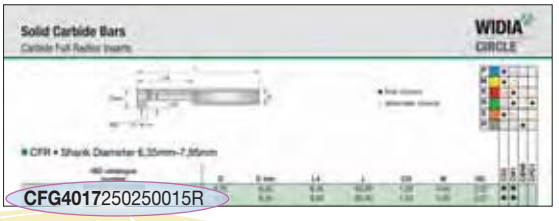
ISO catalogue number	D	1 D min	2 L4	L	3 CD	W	RC	CGS	CM1	CBN6	CPD1
CFR40172502500R	6,35	6,35	6,35	63,50	1,52	0,45	0,22	●	●		
CFR40253502500R	6,35	6,35	6,35	63,50	1,52	0,65	0,30	●	●		
CFR40302502500R	6,35	6,35	6,35	63,50	1,52	0,76	0,39	●	●		
CFR40173752500R	6,35	6,35	9,53	63,50	1,52	0,45	0,22	●	●		
CFR40253752500R	6,35	6,35	9,53	63,50	1,52	0,65	0,30	●	●		
CFR40303752500R	6,35	6,35	9,53	63,50	1,52	0,78	0,39	●	●		
CFR40175002500R	6,35	6,35	12,70	63,50	1,52	0,45	0,22	●	●		
CFR40255002500R	6,35	6,35	12,70	63,50	1,52	0,65	0,30	●	●		

4 Select appropriate grade using grade descriptions on page C74.

5 Select the cutting conditions using speed and feed chart on page C75.

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C
Material

C = Carbide

FG
Groove Style

FG	=	Face Grooving
FR	=	Full Radius
OR	=	O-Ring
RR	=	Retaining Ring
UG	=	Undercut
UPG	=	Undercut/Profile

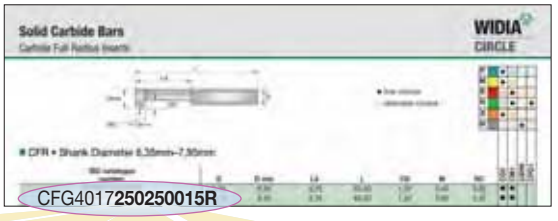
4
Shank Diameter
shown as "D"

4	=	6,35mm
5	=	7,94mm
6	=	9,53mm
8	=	12,70mm
10	=	15,88mm
12	=	19,05mm

017
Groove Width
shown as "W"

017	=	0,43mm/0,45mm
020	=	0,51mm
025	=	0,64mm/0,65mm
030	=	0,76mm/0,78mm
033	=	0,84mm/0,85mm
038	=	0,97mm/0,98mm
040	=	1,02mm
047	=	1,19mm
050	=	1,27mm
056	=	1,42mm
062	=	1,58mm
063	=	1,60mm
070	=	1,78mm
088	=	2,24mm
093	=	2,36mm
094	=	2,39mm
097	=	2,46mm
125	=	3,18mm
126	=	3,20mm
142	=	3,61mm
145	=	3,68mm
157	=	3,99mm
175	=	4,45mm
187	=	4,75mm
188	=	4,78mm
209	=	5,31mm
242	=	6,15mm
250	=	6,35mm

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



250

Bore Depth

shown as "CD" or "L4"

050	=	1,27mm
075	=	1,91mm
100	=	2,54mm
150	=	3,81mm
250	=	6,35mm
375	=	9,53mm
500	=	12,70mm
563	=	14,30mm
625	=	15,88mm
750	=	19,05mm
813	=	20,65mm
938	=	23,83mm
1000	=	25,40mm
1250	=	31,75mm
1500	=	38,10mm

2500

Overall Length

shown as "L"

2500	=	63,50mm
3000	=	76,20mm
4000	=	101,60mm

15

Tool Radius

shown as "Rε/RC"

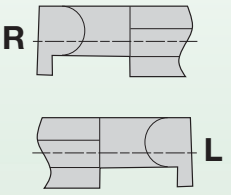
15	=	0,38mm
40	=	1,02mm

R

Hand of Insert

R = Right hand

L = Left hand



WIN WITH WIDIA™

WIDIA™

Victory™ TN5100™ and TN7100™ Series Inserts

Our new WIDIA™ Victory TN Turning Grades provide significant and measurable productivity gains — no matter how challenging your cut.

TN5100

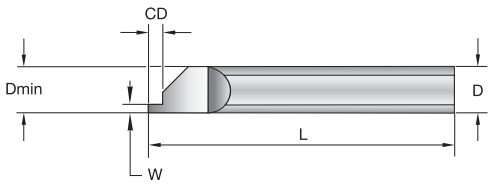
- Drastically reduce cycle times with up to 50% higher speed and feed capability.
- Get exceptional tool life with as much as 50% better wear resistance.
- Engineered specifically for finishing and roughing of cast irons.

TN7100

- Unique multi-layer coating delivers unparalleled high-speed performance.
- Ideal for finishing to heavy roughing of all steels!

WIDIA VICTORY
Win with WIDIA™

To learn more about our innovations, contact your local Authorised Distributor or visit **www.widia.com**.

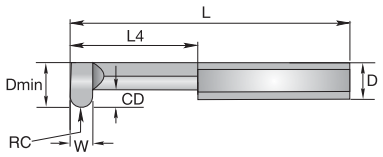


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

CFG

ISO catalogue number	D	D min	L	CD	W	CG5	CM1	CBN6	CPD1
CFG40200502500R	6,35	6,60	63,50	1,27	0,51	●	●		
CFG40300502500R	6,35	6,60	63,50	1,27	0,76	●	●		
CFG40400502500R	6,35	6,60	63,50	1,27	1,02	●	●		
CFG40500502500R	6,35	6,60	63,50	1,27	1,27	●	●		
CFG50300502500R	7,94	8,13	63,50	1,27	0,76	●	●		
CFG50400502500R	7,94	8,13	63,50	1,27	1,02	●	●		
CFG50500502500R	7,94	8,13	63,50	1,27	1,27	●	●		
CFG50620752500R	7,94	8,13	63,50	1,91	1,58	●	●		
CFG60300502500R	9,53	9,78	63,50	1,27	0,76	●	●		
CFG60620752500R	9,53	9,78	63,50	1,91	1,58	●	●		
CFG60931002500R	9,53	9,78	63,50	2,54	2,36	●	●		
CFG61251002500R	9,53	9,78	63,50	2,54	3,18	●	●		
CFG80620753000R	12,70	12,95	76,20	1,91	1,58	●	●		
CFG80931003000R	12,70	12,95	76,20	2,54	2,36	●	●		
CFG81251003000R	12,70	12,95	76,20	2,54	3,18	●	●		
CFG81561003000R	12,70	12,95	76,20	2,54	3,96	●	●		
CFG100620753500R	15,88	16,13	88,90	1,91	1,58	●	●		
CFG100931003500R	15,88	16,13	88,90	2,54	2,36	●	●		
CFG101251003500R	15,88	16,13	88,90	2,54	3,18	●	●		
CFG101561003500R	15,88	16,13	88,90	2,54	3,96	●	●		
CFG101871503500R	15,88	16,13	88,90	3,81	4,75	●	●		
CFG120620754000R	19,05	19,30	101,60	1,91	1,58	●	●		
CFG120931004000R	19,05	19,30	101,60	2,54	2,36	●	●		
CFG121251004000R	19,05	19,30	101,60	2,54	3,18	●	●		
CFG121561004000R	19,05	19,30	101,60	2,54	3,96	●	●		
CFG121871504000R	19,05	19,30	101,60	3,81	4,75	●	●		
CFG122502504000R	19,05	19,30	101,60	6,35	6,35	●	●		

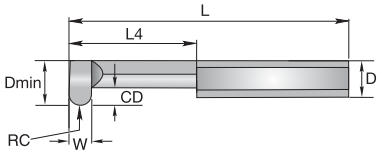


● first choice
○ alternate choice

P		●	○				
M		●	○				
K		○	●				
N		○	●				●
S		●	○				
H				●			

■ CFR • Shank Diameter 6,35mm–7,95mm

ISO catalogue number	D	D min	L4	L	CD	W	RC	CG5	CM1	CBN6	CPD1
CFR40172502500R	6,35	6,35	6,35	63,50	1,52	0,45	0,22	●	●		
CFR40252502500R	6,35	6,35	6,35	63,50	1,52	0,65	0,32	●	●		
CFR40302502500R	6,35	6,35	6,35	63,50	1,52	0,78	0,39	●	●		
CFR40173752500R	6,35	6,35	9,53	63,50	1,52	0,45	0,22	●	●		
CFR40253752500R	6,35	6,35	9,53	63,50	1,52	0,65	0,32	●	●		
CFR40303752500R	6,35	6,35	9,53	63,50	1,52	0,78	0,39	●	●		
CFR40175002500R	6,35	6,35	12,70	63,50	1,52	0,45	0,22	●	●		
CFR40255002500R	6,35	6,35	12,70	63,50	1,52	0,65	0,32	●	●		
CFR40305002500R	6,35	6,35	12,70	63,50	1,52	0,78	0,39	●	●		
CFR40176252500R	6,35	6,35	15,88	63,50	1,52	0,45	0,22	●	●		
CFR40256252500R	6,35	6,35	15,88	63,50	1,52	0,65	0,32	●	●		
CFR40306252500R	6,35	6,35	15,88	63,50	1,52	0,78	0,39	●	●		
CFR50332502500R	7,94	7,93	6,35	63,50	2,79	0,85	0,43	●	●		
CFR50382502500R	7,94	7,93	6,35	63,50	2,79	0,98	0,49	●	●		
CFR50333752500R	7,94	7,93	9,53	63,50	2,79	0,85	0,43	●	●		
CFR50335002500R	7,94	7,93	12,70	63,50	2,79	0,85	0,43	●	●		
CFR50385002500R	7,94	7,93	12,70	63,50	2,79	0,98	0,49	●	●		
CFR50383752500R	7,94	7,93	9,53	63,50	2,79	0,98	0,49	●	●		
CFR50337502500R	7,94	7,93	19,05	63,50	2,79	0,85	0,43	●	●		
CFR50387502500R	7,94	7,93	19,05	63,50	2,79	0,98	0,49	●	●		

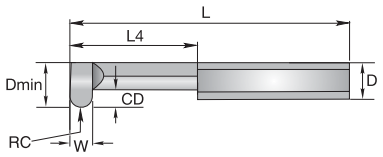


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H				●	

■ CFR • Shank Diameter 9,53mm

ISO catalogue number	D	D min	L4	L	CD	W	RC	CG5	CM1	CBN6	CPD1
CFR60402502500R	9,53	9,53	6,35	63,50	2,79	1,02	0,51	●	●		
CFR60472502500R	9,53	9,53	6,35	63,50	2,79	1,19	0,60	●	●		
CFR60562502500R	9,53	9,53	6,35	63,50	2,79	1,42	0,71	●	●		
CFR60632502500R	9,53	9,53	6,35	63,50	2,79	1,60	0,80	●	●		
CFR60702502500R	9,53	9,53	6,35	63,50	2,79	1,78	0,89	●	●		
CFR60882502500R	9,53	9,53	6,35	63,50	2,79	2,24	1,12	●	●		
CFR60403752500R	9,53	9,53	9,53	63,50	2,79	1,02	0,51	●	●		
CFR60473752500R	9,53	9,53	9,53	63,50	2,79	1,19	0,60	●	●		
CFR60563752500R	9,53	9,53	9,53	63,50	2,79	1,42	0,71	●	●		
CFR60633752500R	9,53	9,53	9,53	63,50	2,79	1,60	0,80	●	●		
CFR60703752500R	9,53	9,53	9,53	63,50	2,79	1,78	0,89	●	●		
CFR60883752500R	9,53	9,53	9,53	63,50	2,79	2,24	1,12	●	●		
CFR60405002500R	9,53	9,53	12,70	63,50	2,79	1,02	0,51	●	●		
CFR60475002500R	9,53	9,53	12,70	63,50	2,79	1,19	0,60	●	●		
CFR60565002500R	9,53	9,53	12,70	63,50	2,79	1,42	0,71	●	●		
CFR60635002500R	9,53	9,53	12,70	63,50	2,79	1,60	0,80	●	●		
CFR60705002500R	9,53	9,53	12,70	63,50	2,79	1,78	0,89	●	●		
CFR60885002500R	9,53	9,53	12,70	63,50	2,79	2,24	1,12	●	●		
CFR60407502500R	9,53	9,53	19,05	63,50	2,79	1,02	0,51	●	●		
CFR60477502500R	9,53	9,53	19,05	63,50	2,79	1,19	0,60	●	●		
CFR60567502500R	9,53	9,53	19,05	63,50	2,79	1,42	0,71	●	●		
CFR60637502500R	9,53	9,53	19,05	63,50	2,79	1,60	0,80	●	●		
CFR60707502500R	9,53	9,53	19,05	63,50	2,79	1,78	0,89	●	●		
CFR60887502500R	9,53	9,53	19,05	63,50	2,79	2,24	1,12	●	●		
CFR604010002500R	9,53	9,53	25,40	63,50	2,79	1,02	0,51	●	●		
CFR604710002500R	9,53	9,53	25,40	63,50	2,79	1,19	0,60	●	●		
CFR605610002500R	9,53	9,53	25,40	63,50	2,79	1,42	0,71	●	●		
CFR606310002500R	9,53	9,53	25,40	63,50	2,79	1,60	0,80	●	●		
CFR607010002500R	9,53	9,53	25,40	63,50	2,79	1,78	0,89	●	●		
CFR608810002500R	9,53	9,53	25,40	63,50	2,79	2,24	1,12	●	●		
CFR604012502500R	9,53	9,53	31,75	63,50	2,79	1,02	0,51	●	●		
CFR604712502500R	9,53	9,53	31,75	63,50	2,79	1,19	0,60	●	●		
CFR605612502500R	9,53	9,53	31,75	63,50	2,79	1,42	0,71	●	●		
CFR606312502500R	9,53	9,53	31,75	63,50	2,79	1,60	0,80	●	●		
CFR607012502500R	9,53	9,53	31,75	63,50	2,79	1,78	0,89	●	●		
CFR608812502500R	9,53	9,53	31,75	63,50	2,79	2,24	1,12	●	●		

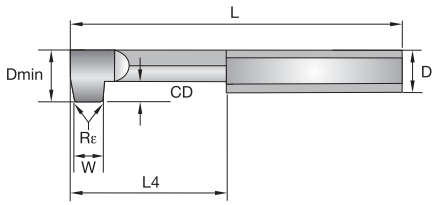


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

CFR • Shank Diameter 12,70mm

ISO catalogue number	D	D min	L4	L	CD	W	RC	CG5	CM1	CBN6	CPD1
CFR80945003000R	12,70	12,70	12,70	76,20	4,06	2,39	1,19	●	●		
CFR81265003000R	12,70	12,70	12,70	76,20	4,06	3,20	1,60	●	●		
CFR81575003000R	12,70	12,70	12,70	76,20	4,06	3,99	1,99	●	●		
CFR81885003000R	12,70	12,70	12,70	76,20	4,06	4,78	2,39	●	●		
CFR82505003000R	12,70	12,70	12,70	76,20	4,06	6,35	3,18	●	●		
CFR80947503000R	12,70	12,70	19,05	76,20	4,06	2,39	1,19	●	●		
CFR81267503000R	12,70	12,70	19,05	76,20	4,06	3,20	1,60	●	●		
CFR81577503000R	12,70	12,70	19,05	76,20	4,06	3,99	1,99	●	●		
CFR81887503000R	12,70	12,70	19,05	76,20	4,06	4,78	2,39	●	●		
CFR82507503000R	12,70	12,70	19,05	76,20	4,06	6,35	3,18	●	●		
CFR809410003000R	12,70	12,70	25,40	76,20	4,06	2,39	1,19	●	●		
CFR812610003000R	12,70	12,70	25,40	76,20	4,06	3,20	1,60	●	●		
CFR815710003000R	12,70	12,70	25,40	76,20	4,06	3,99	1,99	●	●		
CFR818810003000R	12,70	12,70	25,40	76,20	4,06	4,78	2,39	●	●		
CFR825010003000R	12,70	12,70	25,40	76,20	4,06	6,35	3,18	●	●		
CFR809412503000R	12,70	12,70	31,75	76,20	4,06	2,39	1,19	●	●		
CFR812612503000R	12,70	12,70	31,75	76,20	4,06	3,20	1,60	●	●		
CFR815712503000R	12,70	12,70	31,75	76,20	4,06	3,99	1,99	●	●		
CFR818812503000R	12,70	12,70	31,75	76,20	4,06	4,78	2,39	●	●		
CFR825012503000R	12,70	12,70	31,75	76,20	4,06	6,35	3,18	●	●		
CFR809415003000R	12,70	12,70	38,10	76,20	4,06	2,39	1,19	●	●		
CFR812615003000R	12,70	12,70	38,10	76,20	4,06	3,20	1,60	●	●		
CFR815715003000R	12,70	12,70	38,10	76,20	4,06	3,99	1,99	●	●		
CFR818815003000R	12,70	12,70	38,10	76,20	4,06	4,78	2,39	●	●		
CFR825015003000R	12,70	12,70	38,10	76,20	4,06	6,35	3,18	●	●		

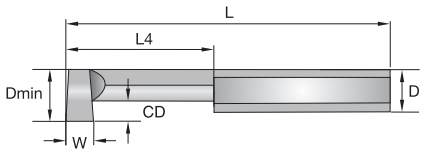


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ COR

ISO catalogue number	D	D min	L4	L	CD	W	Rε	CG5	CM1	CBN6	CPD1
COR4097500250015R	6,35	6,35	12,70	63,50	2,79	2,46	0,38	●	●		
COR4142563250040R	6,35	6,35	14,30	63,50	2,79	3,61	1,02	●	●		
COR4145625250040R	6,35	6,35	15,88	63,50	2,79	3,68	1,02	●	●		
COR6175750250015R	9,53	9,53	19,05	63,50	3,18	4,45	0,38	●	●		
COR6209813250040R	9,53	9,53	20,65	63,50	3,18	5,31	1,02	●	●		
COR6242938250040R	9,53	9,53	23,83	63,50	3,18	6,15	1,02	●	●		

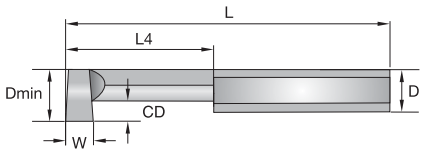


● first choice
○ alternate choice

P	●	○				
M	●	○				
K	○	●				
N	○	●				●
S	●	○				
H				●		

■ CRR • Shank Diameter 6,35mm–7,94mm

ISO catalogue number	D	D min	L4	L	CD	W	CG5	CM1	CBN6	CPD1
CRR40172502500R	6,35	6,35	6,35	63,50	1,52	0,43	●	●		
CRR40252502500R	6,35	6,35	6,35	63,50	1,52	0,64	●	●		
CRR40302502500R	6,35	6,35	6,35	63,50	1,52	0,76	●	●		
CRR40173752500R	6,35	6,35	9,53	63,50	1,52	0,43	●	●		
CRR40253752500R	6,35	6,35	9,53	63,50	1,52	0,64	●	●		
CRR40303752500R	6,35	6,35	9,53	63,50	1,52	0,76	●	●		
CRR40175002500R	6,35	6,35	12,70	63,50	1,52	0,43	●	●		
CRR40255002500R	6,35	6,35	12,70	63,50	1,52	0,64	●	●		
CRR40305002500R	6,35	6,35	12,70	63,50	1,52	0,76	●	●		
CRR40176252500R	6,35	6,35	15,88	63,50	1,52	0,43	●	●		
CRR40256252500R	6,35	6,35	15,88	63,50	1,52	0,64	●	●		
CRR40306252500R	6,35	6,35	15,88	63,50	1,52	0,76	●	●		
CRR50332502500R	7,94	7,94	6,35	63,50	2,79	0,84	●	●		
CRR50382502500R	7,94	7,94	6,35	63,50	2,79	0,97	●	●		
CRR50333752500R	7,94	7,94	9,53	63,50	2,79	0,84	●	●		
CRR50383752500R	7,94	7,94	9,53	63,50	2,79	0,97	●	●		
CRR50335002500R	7,94	7,94	12,70	63,50	2,79	0,84	●	●		
CRR50385002500R	7,94	7,94	12,70	63,50	2,79	0,97	●	●		
CRR50337502500R	7,94	7,94	19,05	63,50	2,79	0,84	●	●		
CRR50387502500R	7,94	7,94	19,05	63,50	2,79	0,97	●	●		

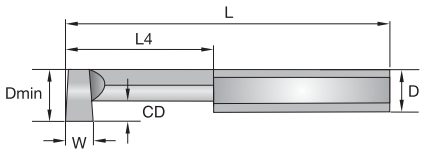


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CRR • Shank Diameter 9,53mm

ISO catalogue number	D	D min	L4	L	CD	W	CG5	CM1	CBN6	CPD1
CRR60402502500R	9,53	9,53	6,35	63,50	2,79	1,02	●	●		
CRR60472502500R	9,53	9,53	6,35	63,50	2,79	1,19	●	●		
CRR60562502500R	9,53	9,53	6,35	63,50	2,79	1,42	●	●		
CRR60632502500R	9,53	9,53	6,35	63,50	2,79	1,60	●	●		
CRR60702502500R	9,53	9,53	6,35	63,50	2,79	1,78	●	●		
CRR60882502500R	9,53	9,53	6,35	63,50	2,79	2,24	●	●		
CRR60403752500R	9,53	9,53	9,53	63,50	2,79	1,02	●	●		
CRR60473752500R	9,53	9,53	9,53	63,50	2,79	1,19	●	●		
CRR60563752500R	9,53	9,53	9,53	63,50	2,79	1,42	●	●		
CRR60633752500R	9,53	9,53	9,53	63,50	2,79	1,60	●	●		
CRR60703752500R	9,53	9,53	9,53	63,50	2,79	1,78	●	●		
CRR60883752500R	9,53	9,53	9,53	63,50	2,79	2,24	●	●		
CRR60405002500R	9,53	9,53	12,70	63,50	2,79	1,02	●	●		
CRR60475002500R	9,53	9,53	12,70	63,50	2,79	1,19	●	●		
CRR60565002500R	9,53	9,53	12,70	63,50	2,79	1,42	●	●		
CRR60635002500R	9,53	9,53	12,70	63,50	2,79	1,60	●	●		
CRR60705002500R	9,53	9,53	12,70	63,50	2,79	1,78	●	●		
CRR60885002500R	9,53	9,53	12,70	63,50	2,79	2,24	●	●		
CRR60407502500R	9,53	9,53	19,05	63,50	2,79	1,02	●	●		
CRR60477502500R	9,53	9,53	19,05	63,50	2,79	1,19	●	●		
CRR60567502500R	9,53	9,53	19,05	63,50	2,79	1,42	●	●		
CRR60637502500R	9,53	9,53	19,05	63,50	2,79	1,60	●	●		
CRR60707502500R	9,53	9,53	19,05	63,50	2,79	1,78	●	●		
CRR60887502500R	9,53	9,53	19,05	63,50	2,79	2,24	●	●		
CRR604010002500R	9,53	9,53	25,40	63,50	2,79	1,02	●	●		
CRR604710002500R	9,53	9,53	25,40	63,50	2,79	1,19	●	●		
CRR605610002500R	9,53	9,53	25,40	63,50	2,79	1,42	●	●		
CRR606310002500R	9,53	9,53	25,40	63,50	2,79	1,60	●	●		
CRR607010002500R	9,53	9,53	25,40	63,50	2,79	1,78	●	●		
CRR608810002500R	9,53	9,53	25,40	63,50	2,79	2,24	●	●		
CRR604012502500R	9,53	9,53	31,75	63,50	2,79	1,02	●	●		
CRR604712502500R	9,53	9,53	31,75	63,50	2,79	1,19	●	●		
CRR605612502500R	9,53	9,53	31,75	63,50	2,79	1,42	●	●		
CRR606312502500R	9,53	9,53	31,75	63,50	2,79	1,60	●	●		
CRR607012502500R	9,53	9,53	31,75	63,50	2,79	1,78	●	●		
CRR608812502500R	9,53	9,53	31,75	63,50	2,79	2,24	●	●		

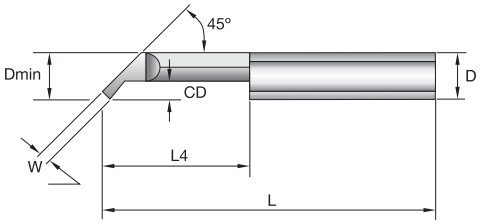


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CRR • Shank Diameter 12,70mm

ISO catalogue number	D	D min	L4	L	CD	W	CG5	CM1	CBN6	CPD1
CRR80945003000R	12,70	12,70	12,70	76,20	4,06	2,39	●	●		
CRR81265003000R	12,70	12,70	12,70	76,20	4,06	3,20	●	●		
CRR81575003000R	12,70	12,70	12,70	76,20	4,06	3,99	●	●		
CRR81885003000R	12,70	12,70	12,70	76,20	4,06	4,78	●	●		
CRR82505003000R	12,70	12,70	12,70	76,20	4,06	6,35	●	●		
CRR80947503000R	12,70	12,70	19,05	76,20	4,06	2,39	●	●		
CRR81267503000R	12,70	12,70	19,05	76,20	4,06	3,20	●	●		
CRR81577503000R	12,70	12,70	19,05	76,20	4,06	3,99	●	●		
CRR81887503000R	12,70	12,70	19,05	76,20	4,06	4,78	●	●		
CRR82507503000R	12,70	12,70	19,05	76,20	4,06	6,35	●	●		
CRR809410003000R	12,70	12,70	25,40	76,20	4,06	2,39	●	●		
CRR812610003000R	12,70	12,70	25,40	76,20	4,06	3,20	●	●		
CRR815710003000R	12,70	12,70	25,40	76,20	4,06	3,99	●	●		
CRR818810003000R	12,70	12,70	25,40	76,20	4,06	4,78	●	●		
CRR825010003000R	12,70	12,70	25,40	76,20	4,06	6,35	●	●		
CRR809412503000R	12,70	12,70	31,75	76,20	4,06	2,39	●	●		
CRR812612503000R	12,70	12,70	31,75	76,20	4,06	3,20	●	●		
CRR815712503000R	12,70	12,70	31,75	76,20	4,06	3,99	●	●		
CRR818812503000R	12,70	12,70	31,75	76,20	4,06	4,78	●	●		
CRR825012503000R	12,70	12,70	31,75	76,20	4,06	6,35	●	●		
CRR809415003000R	12,70	12,70	38,10	76,20	4,06	2,39	●	●		
CRR812615003000R	12,70	12,70	38,10	76,20	4,06	3,20	●	●		
CRR815715003000R	12,70	12,70	38,10	76,20	4,06	3,99	●	●		
CRR818815003000R	12,70	12,70	38,10	76,20	4,06	4,78	●	●		
CRR825015003000R	12,70	12,70	38,10	76,20	4,06	6,35	●	●		

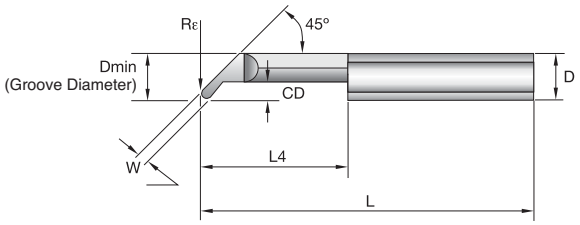


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CUG

ISO catalogue number	D	D min	L4	L	CD	W	CG5	CM1	CBN6	CPD1
CUG40205002500R	6,35	6,60	12,70	63,50	1,02	0,51	●	●		
CUG40305002500R	6,35	6,60	12,70	63,50	1,27	0,76	●	●		
CUG402010002500R	6,35	6,60	25,40	63,50	1,02	0,51	●	●		
CUG403010002500R	6,35	6,60	25,40	63,50	1,27	0,76	●	●		
CUG50505002500R	7,94	8,26	12,70	63,50	2,54	1,27	●	●		
CUG505010002500R	7,94	8,26	25,40	63,50	2,54	1,27	●	●		
CUG506210002500R	7,94	8,26	25,40	63,50	2,54	1,58	●	●		
CUG506212502500R	7,94	8,26	31,75	63,50	2,54	1,58	●	●		
CUG606210002500R	9,53	9,78	25,40	63,50	2,54	1,58	●	●		
CUG609310002500R	9,53	9,78	25,40	63,50	2,54	2,36	●	●		
CUG612510002500R	9,53	9,78	25,40	63,50	2,54	3,18	●	●		
CUG606212502500R	9,53	9,78	31,75	63,50	2,54	1,58	●	●		
CUG609312502500R	9,53	9,78	31,75	63,50	2,54	2,36	●	●		
CUG612512502500R	9,53	9,78	31,75	63,50	2,54	3,18	●	●		
CUG806210003000R	12,70	12,95	25,40	76,20	3,81	1,58	●	●		
CUG809310003000R	12,70	12,95	25,40	76,20	3,81	2,36	●	●		
CUG812510003000R	12,70	12,95	25,40	76,20	3,81	3,18	●	●		
CUG806215003000R	12,70	12,95	38,10	76,20	3,81	1,58	●	●		
CUG809315003000R	12,70	12,95	38,10	76,20	3,81	2,36	●	●		
CUG812515003000R	12,70	12,95	38,10	76,20	3,81	3,18	●	●		



● first choice
○ alternate choice

P	●	○				
M	●	○				
K	○	●				
N	○	●				●
S	●	○				
H				●		

CUPG

ISO catalogue number	D	D min	L4	L	CD	W	Rε	CG5	CM1	CBN6	CPD1
CUPG40205002500R	6,35	6,60	12,70	63,50	1,02	0,51	0,25	●	●		
CUPG40305002500R	6,35	6,60	12,70	63,50	1,27	0,76	0,38	●	●		
CUPG402010002500R	6,35	6,60	25,40	63,50	1,02	0,51	0,25	●	●		
CUPG403010002500R	6,35	6,60	25,40	63,50	1,27	0,76	0,38	●	●		
CUPG50505002500R	7,94	8,26	12,70	63,50	2,54	1,27	0,64	●	●		
CUPG505010002500R	7,94	8,26	25,40	63,50	2,54	1,27	0,64	●	●		
CUPG506210002500R	7,94	8,26	25,40	63,50	2,54	1,58	0,79	●	●		
CUPG506212502500R	7,94	8,26	31,75	63,50	2,54	1,58	0,79	●	●		
CUPG606210002500R	9,53	9,78	25,40	63,50	2,54	1,58	0,79	●	●		
CUPG609310002500R	9,53	9,78	25,40	63,50	2,54	2,36	1,18	●	●		
CUPG612510002500R	9,53	9,78	25,40	63,50	2,54	3,18	1,59	●	●		
CUPG606212502500R	9,53	9,78	31,75	63,50	2,54	1,58	0,79	●	●		
CUPG609312502500R	9,53	9,78	31,75	63,50	2,54	2,36	1,18	●	●		
CUPG612512502500R	9,53	9,78	31,75	63,50	2,54	3,18	1,59	●	●		
CUPG806210003000R	12,70	12,95	25,40	76,20	3,81	1,58	0,79	●	●		
CUPG809310003000R	12,70	12,95	25,40	76,20	3,81	2,36	1,18	●	●		
CUPG812510003000R	12,70	12,95	25,40	76,20	3,81	3,18	1,59	●	●		
CUPG806215003000R	12,70	12,95	38,10	76,20	3,81	1,58	0,79	●	●		
CUPG809315003000R	12,70	12,95	38,10	76,20	3,81	2,36	1,18	●	●		
CUPG812515003000R	12,70	12,95	38,10	76,20	3,81	3,18	1,59	●	●		

WIN WITH WIDIA™

WIDIA™

WIDIA-CIRCLE™ Small Hole Tooling Series

The WIDIA™ line of small hole boring tools is an excellent, economical choice for a wide range of applications. Our solid carbide bars provide exceptional machining versatility and rupture strength. Indexable inserts are available in both steel and carbide shanks.

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- Unique locking system enables quick, accurate insert changes.

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- V-slots and limit-stop bolts for increased indexability.

Micro Boring Bars

- Free cutting action, better surface finishes, and greater chip evacuation.

Solid Carbide Bars

- Accurate, quick-change tooling and toolholders are ideal for small parts machining applications.

To learn more about our innovations, contact your local Authorised Distributor or visit **www.widia.com**.

WIDIA™
Win with WIDIA™

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

C — Material

C	=	Carbide

ATS — Thread Style

ATS	=	Acme Thread Stub Length
ATR	=	Acme Thread Regular Length
IT	=	60° Single Point Thread
TR	=	Thread Relief

4 — Shank Diameter

shown as "D"

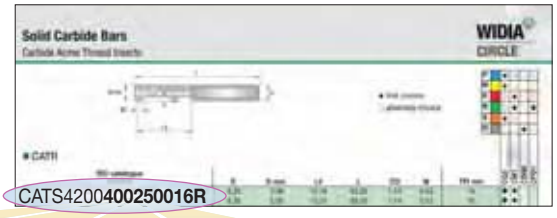
2	=	3,18mm
3	=	4,76mm
4	=	6,35mm
5	=	7,94mm
6	=	9,53mm
8	=	12,70mm

200 — Minimum Bore

shown as "D min"

040	=	1,02mm
050	=	1,27mm
060	=	1,52mm
080	=	2,03mm
100	=	2,54mm
120	=	3,05mm
125	=	3,18mm
140	=	3,56mm
160	=	4,06mm
180	=	4,57mm
187	=	4,75mm
200	=	5,08mm
230	=	5,84mm
235	=	5,97mm
250	=	6,35mm
290	=	7,37mm
312	=	7,93mm
320	=	8,13mm
360	=	9,14mm
375	=	9,53mm
490	=	12,45mm
500	=	12,70mm

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



400

Bore Depth

shown as "L4"

075	=	1,91mm
100	=	2,54mm
150	=	3,81mm
200	=	5,08mm
250	=	6,35mm
300	=	7,62mm
350	=	8,89mm
375	=	9,53mm
400	=	10,16mm
500	=	12,70mm
600	=	15,24mm
750	=	19,05mm
1000	=	25,40mm
1250	=	31,75mm
1500	=	38,10mm
1750	=	44,45mm
1800	=	45,72mm
2000	=	50,80mm

2500

Overall Length

shown as "L"

1500	=	38,10mm
2000	=	50,80mm
2500	=	63,50mm
3000	=	76,20mm

16

Threads

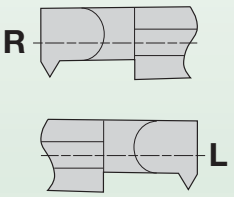
shown as "TP" Pitch or "TPI" Threads per Inch

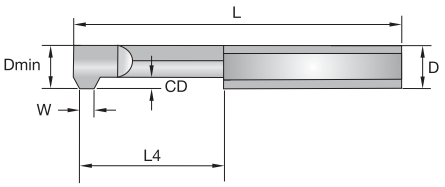
R

Hand of Insert

R = Right hand

L = Left hand



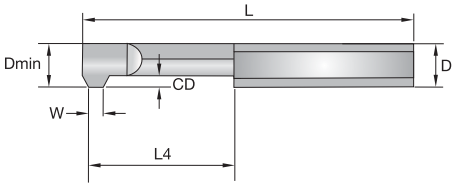


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

CATR

ISO catalogue number	D	D min	L4	L	CD	W	TPI min	CG5	CM1	CBN6	CPD1
CATR4200400250016R	6,35	5,08	10,16	63,50	1,14	0,53	16	●	●		
CATR4200600250016R	6,35	5,08	15,24	63,50	1,14	0,53	16	●	●		
CATR4200750250016R	6,35	5,08	19,05	63,50	1,14	0,53	16	●	●		
CATR42001000250016R	6,35	5,08	25,40	63,50	1,14	0,53	16	●	●		
CATR5235500250014R	7,94	5,97	12,70	63,50	1,78	0,61	14	●	●		
CATR5235750250014R	7,94	5,97	19,05	63,50	1,78	0,61	14	●	●		
CATR52351000250014R	7,94	5,97	25,40	63,50	1,78	0,61	14	●	●		
CATR52351250250014R	7,94	5,97	31,75	63,50	1,78	0,61	14	●	●		
CATR52351750250014R	7,94	5,97	44,45	63,50	1,78	0,61	14	●	●		
CATR6360500250012R	9,53	9,14	12,70	63,50	2,16	0,71	12	●	●		
CATR6360750250012R	9,53	9,14	19,05	63,50	2,16	0,71	12	●	●		
CATR63601000250012R	9,53	9,14	25,40	63,50	2,16	0,71	12	●	●		
CATR63601250250012R	9,53	9,14	31,75	63,50	2,16	0,71	12	●	●		
CATR63601800250012R	9,53	9,14	45,72	63,50	2,16	0,71	12	●	●		
CATR8490750300010R	12,70	12,45	19,05	76,20	3,05	0,81	10	●	●		
CATR849075030008R	12,70	12,45	19,05	76,20	3,05	1,04	8	●	●		
CATR849075030006R	12,70	12,45	19,05	76,20	3,05	1,45	6	●	●		
CATR849075030005R	12,70	12,45	19,05	76,20	3,05	1,75	5	●	●		
CATR84901500300010R	12,70	12,45	38,10	76,20	3,05	0,81	10	●	●		
CATR8490150030008R	12,70	12,45	38,10	76,20	3,05	1,04	8	●	●		
CATR8490150030006R	12,70	12,45	38,10	76,20	3,05	1,45	6	●	●		
CATR8490150030005R	12,70	12,45	38,10	76,20	3,05	1,75	5	●	●		
CATR84902000300010R	12,70	12,45	50,80	76,20	3,05	0,81	10	●	●		
CATR8490200030008R	12,70	12,45	50,80	76,20	3,05	1,04	8	●	●		
CATR8490200030006R	12,70	12,45	50,80	76,20	3,05	1,45	6	●	●		
CATR8490200030005R	12,70	12,45	50,80	76,20	3,05	1,75	5	●	●		

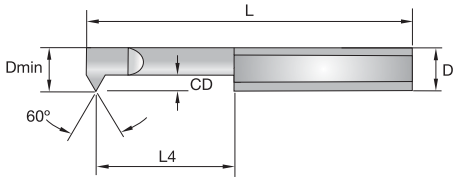


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

CATS

ISO catalogue number	D	D min	L4	L	CD	W	TPI min	CG5	CM1	CBN6	CPD1
CATS4200400250016R	6,35	5,08	10,16	63,50	1,14	0,61	16	●	●		
CATS4200600250016R	6,35	5,08	15,24	63,50	1,14	0,61	16	●	●		
CATS4200750250016R	6,35	5,08	19,05	63,50	1,14	0,61	16	●	●		
CATS42001000250016R	6,35	5,08	25,40	63,50	1,14	0,61	16	●	●		
CATS5235500250014R	7,94	5,97	12,70	63,50	1,78	0,71	14	●	●		
CATS5235750250014R	7,94	5,97	19,05	63,50	1,78	0,71	14	●	●		
CATS52351000250014R	7,94	5,97	25,40	63,50	1,78	0,71	14	●	●		
CATS52351250250014R	7,94	5,97	31,75	63,50	1,78	0,71	14	●	●		
CATS52351750250014R	7,94	5,97	44,45	63,50	1,78	0,71	14	●	●		
CATS52907502500014R	7,94	7,37	19,05	63,50	1,78	0,71	14	●	●		
CATS52901000250014R	7,94	7,37	25,40	63,50	1,78	0,71	14	●	●		
CATS6360500250012R	9,53	9,14	12,70	63,50	2,16	0,84	12	●	●		
CATS6360750250012R	9,53	9,14	19,05	63,50	2,16	0,84	12	●	●		
CATS63601000250012R	9,53	9,14	25,40	63,50	2,16	0,84	12	●	●		
CATS63601250250012R	9,53	9,14	31,75	63,50	2,16	0,84	12	●	●		
CATS63601800250012R	9,53	9,14	45,72	63,50	2,16	0,84	12	●	●		
CATS8490750300010R	12,70	12,45	19,05	76,20	3,05	0,94	10	●	●		
CATS849075030009R	12,70	12,45	19,05	76,20	3,05	1,07	9	●	●		
CATS849075030008R	12,70	12,45	19,05	76,20	3,05	1,22	8	●	●		
CATS849075030007R	12,70	12,45	19,05	76,20	3,05	1,40	7	●	●		
CATS849075030006R	12,70	12,45	19,05	76,20	3,05	1,65	6	●	●		
CATS849075030005R	12,70	12,45	19,05	76,20	3,05	2,01	5	●	●		
CATS84901500300010R	12,70	12,45	38,10	76,20	3,05	0,94	10	●	●		
CATS8490150030009R	12,70	12,45	38,10	76,20	3,05	1,07	9	●	●		
CATS8490150030008R	12,70	12,45	38,10	76,20	3,05	1,22	8	●	●		
CATS8490150030007R	12,70	12,45	38,10	76,20	3,05	1,40	7	●	●		
CATS8490150030006R	12,70	12,45	38,10	76,20	3,05	1,65	6	●	●		
CATS8490150030005R	12,70	12,45	38,10	76,20	3,05	2,01	5	●	●		
CATS84902000300010R	12,70	12,45	50,80	76,20	3,05	0,94	10	●	●		
CATS8490200030009R	12,70	12,45	50,80	76,20	3,05	1,07	9	●	●		
CATS8490200030008R	12,70	12,45	50,80	76,20	3,05	1,22	8	●	●		
CATS8490200030007R	12,70	12,45	50,80	76,20	3,05	1,40	7	●	●		
CATS8490200030006R	12,70	12,45	50,80	76,20	3,05	1,65	6	●	●		
CATS8490200030005R	12,70	12,45	50,80	76,20	3,05	2,01	5	●	●		

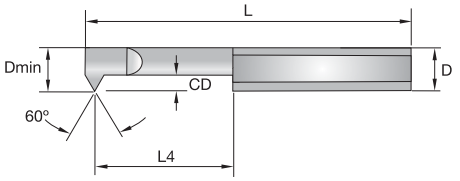


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CIT • Shank Diameter 6,35mm–7,94mm

ISO catalogue number	D	D min	L4	L	CD	TP max	TP min	CG5	CM1	CBN6	CPD1
Right hand											
CIT41803502500R	6,35	4,57	8,89	63,50	1,02	0,5	1,4	●	●		
CIT41805002500R	6,35	4,57	12,70	63,50	1,02	0,5	1,4	●	●		
CIT41807502500R	6,35	4,57	19,05	63,50	1,02	0,5	1,4	●	●		
CIT418010002500R	6,35	4,57	25,40	63,50	1,02	0,5	1,4	●	●		
CIT42004002500R	6,35	5,08	10,16	63,50	1,14	0,6	1,6	●			
CIT42006002500R	6,35	5,08	15,24	63,50	1,14	0,6	1,6	●	●		
CIT42007502500R	6,35	5,08	19,05	63,50	1,14	0,6	1,6	●	●		
CIT420010002500R	6,35	5,08	25,40	63,50	1,14	0,6	1,6	●	●		
CIT52304002500R	7,94	5,84	10,16	63,50	1,40	0,6	1,8	●	●		
CIT52306002500R	7,94	5,84	15,24	63,50	1,40	0,6	1,8	●	●		
CIT52307502500R	7,94	5,84	19,05	63,50	1,40	0,6	1,8	●	●		
CIT523010002500R	7,94	5,84	25,40	63,50	1,40	0,6	1,8	●	●		
CIT523015002500R	7,94	5,84	38,10	63,50	1,40	0,6	1,8	●	●		
CIT52905002500R	7,94	7,37	12,70	63,50	1,78	0,6	2,1	●	●		
CIT52907502500R	7,94	7,37	19,05	63,50	1,78	0,6	2,1	●	●		
CIT529010002500R	7,94	7,37	25,40	63,50	1,78	0,6	2,1	●	●		
CIT529012502500R	7,94	7,37	31,75	63,50	1,78	0,6	2,1	●	●		
CIT529017502500R	7,94	7,37	44,45	63,50	1,78	0,6	2,1	●	●		
Left hand											
CIT41803502500L	6,35	4,57	8,89	63,50	1,02	0,5	1,4	●	●		
CIT41805002500L	6,35	4,57	12,70	63,50	1,02	0,5	1,4	●	●		
CIT41807502500L	6,35	4,57	19,05	63,50	1,02	0,5	1,4	●	●		
CIT418010002500L	6,35	4,57	25,40	63,50	1,02	0,5	1,4	●	●		
CIT42004002500L	6,35	5,08	10,16	63,50	1,14	0,6	1,6	●			
CIT42006002500L	6,35	5,08	15,24	63,50	1,14	0,6	1,6	●	●		
CIT42007502500L	6,35	5,08	19,05	63,50	1,14	0,6	1,6	●	●		
CIT420010002500L	6,35	5,08	25,40	63,50	1,14	0,6	1,6	●	●		
CIT52304002500L	7,94	5,84	10,16	63,50	1,40	0,6	1,8	●	●		
CIT52306002500L	7,94	5,84	15,24	63,50	1,40	0,6	1,8	●	●		
CIT52307502500L	7,94	5,84	19,05	63,50	1,40	0,6	1,8	●	●		
CIT523010002500L	7,94	5,84	25,40	63,50	1,40	0,6	1,8	●	●		
CIT523015002500L	7,94	5,84	38,10	63,50	1,40	0,6	1,8	●	●		
CIT52905002500L	7,94	7,37	12,70	63,50	1,78	0,6	2,1	●	●		
CIT52907502500L	7,94	7,37	19,05	63,50	1,78	0,6	2,1	●	●		
CIT529010002500L	7,94	7,37	25,40	63,50	1,78	0,6	2,1	●	●		
CIT529012502500L	7,94	7,37	31,75	63,50	1,78	0,6	2,1	●	●		
CIT529017502500L	7,94	7,37	44,45	63,50	1,78	0,6	2,1	●	●		



● first choice
○ alternate choice

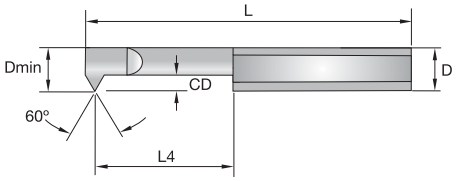
		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CIT • Shank Diameter 3,18mm–4,76mm

ISO catalogue number	D	D min	L4	L	CD	TP max	TP min	CG5	CM1	CBN6	CPD1
Right hand											
CIT20400751500R	3,18	1,02	1,91	38,10	0,38	0,3	0,6	●	●		
CIT20401001500R	3,18	1,02	2,54	38,10	0,38	0,3	0,6	●	●		
CIT20401501500R	3,18	1,02	3,81	38,10	0,38	0,3	0,6	●	●		
CIT20501001500R	3,18	1,27	2,54	38,10	0,51	0,3	0,6	●	●		
CIT20501501500R	3,18	1,27	3,81	38,10	0,51	0,3	0,6	●	●		
CIT20502001500R	3,18	1,27	5,08	38,10	0,51	0,3	0,6	●	●		
CIT20602001500R	3,18	1,52	5,08	38,10	0,51	0,3	0,6	●	●		
CIT20602501500R	3,18	1,52	6,35	38,10	0,51	0,3	0,6	●	●		
CIT20603001500R	3,18	1,52	7,62	38,10	0,51	0,3	0,6	●	●		
CIT20802501500R	3,18	2,03	6,35	38,10	0,51	0,3	0,8	●	●		
CIT20803501500R	3,18	2,03	8,89	38,10	0,51	0,3	0,8	●	●		
CIT20805001500R	3,18	2,03	12,70	38,10	0,51	0,3	0,8	●	●		
CIT21002501500R	3,18	2,54	6,35	38,10	0,64	0,4	0,8	●	●		
CIT21003501500R	3,18	2,54	8,89	38,10	0,64	0,4	0,8	●	●		
CIT21005001500R	3,18	2,54	12,70	38,10	0,64	0,4	0,8	●	●		
CIT21006001500R	3,18	2,54	15,24	38,10	0,64	0,4	0,8	●	●		
CIT31202502000R	4,76	3,05	6,35	50,80	0,76	0,5	1,1	●	●		
CIT31204002000R	4,76	3,05	10,16	50,80	0,76	0,5	1,1	●	●		
CIT31205002000R	4,76	3,05	12,70	50,80	0,76	0,5	1,1	●	●		
CIT31206002000R	4,76	3,05	15,24	50,80	0,76	0,5	1,1	●	●		
CIT31207502000R	4,76	3,05	19,05	50,80	0,76	0,5	1,1	●	●		
CIT31402502000R	4,76	3,56	6,35	50,80	0,89	0,5	1,3	●	●		
CIT31404002000R	4,76	3,56	10,16	50,80	0,89	0,5	1,3	●	●		
CIT31405002000R	4,76	3,56	12,70	50,80	0,89	0,5	1,3	●	●		
CIT31407502000R	4,76	3,56	19,05	50,80	0,89	0,5	1,3	●	●		
CIT31602502000R	4,76	4,06	6,35	50,80	1,02	0,5	1,4	●	●		
CIT31604002000R	4,76	4,06	10,16	50,80	1,02	0,5	1,4	●	●		
CIT31605002000R	4,76	4,06	12,70	50,80	1,02	0,5	1,4	●	●		
CIT31607502000R	4,76	4,06	19,05	50,80	1,02	0,5	1,4	●	●		
CIT316010002000R	4,76	4,06	25,40	50,80	1,02	0,5	1,4	●	●		

(continued)

(continued)

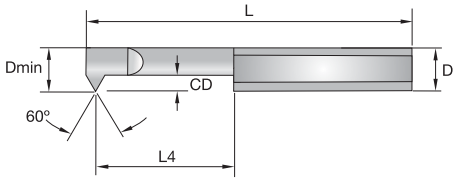


● first choice
○ alternate choice

P	●	○			
M	●	○			
K	○	●			
N	○	●			●
S	●	○			
H			●		

■ CIT • Shank Diameter 3,18mm–4,76mm

ISO catalogue number	D	D min	L4	L	CD	TP max	TP min	CG5	CM1	CBN6	CPD1
Left hand											
CIT20400751500L	3,18	1,02	1,91	38,10	0,38	0,3	0,6	●	●		
CIT20401001500L	3,18	1,02	2,54	38,10	0,38	0,3	0,6	●	●		
CIT20401501500L	3,18	1,02	3,81	38,10	0,38	0,3	0,6	●	●		
CIT20501001500L	3,18	1,27	2,54	38,10	0,51	0,3	0,6	●	●		
CIT20501501500L	3,18	1,27	3,81	38,10	0,51	0,3	0,6	●	●		
CIT20502001500L	3,18	1,27	5,08	38,10	0,51	0,3	0,6	●	●		
CIT20602001500L	3,18	1,52	5,08	38,10	0,51	0,3	0,6	●	●		
CIT20602501500L	3,18	1,52	6,35	38,10	0,51	0,3	0,6	●	●		
CIT20603001500L	3,18	1,52	7,62	38,10	0,51	0,3	0,6	●	●		
CIT20802501500L	3,18	2,03	6,35	38,10	0,51	0,3	0,8	●	●		
CIT20803501500L	3,18	2,03	8,89	38,10	0,51	0,3	0,8	●	●		
CIT20805001500L	3,18	2,03	12,70	38,10	0,51	0,3	0,8	●	●		
CIT21002501500L	3,18	2,54	6,35	38,10	0,64	0,4	0,8	●	●		
CIT21003501500L	3,18	2,54	8,89	38,10	0,64	0,4	0,8	●	●		
CIT21005001500L	3,18	2,54	12,70	38,10	0,64	0,4	0,8	●	●		
CIT21006001500L	3,18	2,54	15,24	38,10	0,64	0,4	0,8	●	●		
CIT31202502000L	4,76	3,05	6,35	50,80	0,76	0,5	1,1	●	●		
CIT31204002000L	4,76	3,05	10,16	50,80	0,76	0,5	1,1	●	●		
CIT31205002000L	4,76	3,05	12,70	50,80	0,76	0,5	1,1	●	●		
CIT31206002000L	4,76	3,05	15,24	50,80	0,76	0,5	1,1	●	●		
CIT31207502000L	4,76	3,05	19,05	50,80	0,76	0,5	1,1	●	●		
CIT31402502000L	4,76	3,56	6,35	50,80	0,89	0,5	1,3	●	●		
CIT31404002000L	4,76	3,56	10,16	50,80	0,89	0,5	1,3	●	●		
CIT31405002000L	4,76	3,56	12,70	50,80	0,89	0,5	1,3	●	●		
CIT31407502000L	4,76	3,56	19,05	50,80	0,89	0,5	1,3	●	●		
CIT31602502000L	4,76	4,06	6,35	50,80	1,02	0,5	1,4	●	●		
CIT31604002000L	4,76	4,06	10,16	50,80	1,02	0,5	1,4	●	●		
CIT31605002000L	4,76	4,06	12,70	50,80	1,02	0,5	1,4	●	●		
CIT31607502000L	4,76	4,06	19,05	50,80	1,02	0,5	1,4	●	●		
CIT3160100002000L	4,76	4,06	25,40	50,80	1,02	0,5	1,4	●	●		

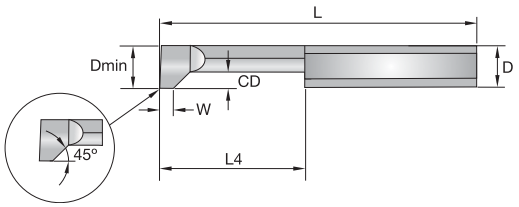


● first choice
○ alternate choice

		CG5	CM1	CBN6	CPD1
P		●	○		
M		●	○		
K		○	●		
N		○	●		●
S		●	○		
H				●	

■ CIT • Shank Diameter 9,53mm–12,70mm

ISO catalogue number	D	D min	L4	L	CD	TP max	TP min	CG5	CM1	CBN6	CPD1
Right hand											
CIT63205002500R	9,53	8,13	12,70	63,50	1,91	0,8	2,5	●	●		
CIT63207502500R	9,53	8,13	19,05	63,50	1,91	0,8	2,5	●	●		
CIT632010002500R	9,53	8,13	25,40	63,50	1,91	0,8	2,5	●	●		
CIT632012502500R	9,53	8,13	31,75	63,50	1,91	0,8	2,5	●	●		
CIT632018002500R	9,53	8,13	45,72	63,50	1,91	0,8	2,5	●	●		
CIT63605002500R	9,53	9,14	12,70	63,50	2,16	0,8	2,5	●	●		
CIT63607502500R	9,53	9,14	19,05	63,50	2,16	0,8	2,5	●	●		
CIT636010002500R	9,53	9,14	25,40	63,50	2,16	0,8	2,5	●	●		
CIT636012502500R	9,53	9,14	31,75	63,50	2,16	0,8	2,5	●	●		
CIT636018002500R	9,53	9,14	45,72	63,50	2,16	0,8	2,5	●	●		
CIT84907503000R	12,70	12,45	19,05	76,20	3,05	0,8	3,2	●	●		
CIT849015003000R	12,70	12,45	38,10	76,20	3,05	0,8	3,2	●	●		
CIT849020003000R	12,70	12,45	50,80	76,20	3,05	0,8	3,2	●	●		
Left hand											
CIT63205002500L	9,53	8,13	12,70	63,50	1,91	0,8	2,5	●	●		
CIT63207502500L	9,53	8,13	19,05	63,50	1,91	0,8	2,5	●	●		
CIT632010002500L	9,53	8,13	25,40	63,50	1,91	0,8	2,5	●	●		
CIT632012502500L	9,53	8,13	31,75	63,50	1,91	0,8	2,5	●	●		
CIT632018002500L	9,53	8,13	45,72	63,50	1,91	0,8	2,5	●	●		
CIT63605002500L	9,53	9,14	12,70	63,50	2,16	0,8	2,5	●	●		
CIT63607502500L	9,53	9,14	19,05	63,50	2,16	0,8	2,5	●	●		
CIT636010002500L	9,53	9,14	25,40	63,50	2,16	0,8	2,5	●	●		
CIT636012502500L	9,53	9,14	31,75	63,50	2,16	0,8	2,5	●	●		
CIT636018002500L	9,53	9,14	45,72	63,50	2,16	0,8	2,5	●	●		
CIT84907503000L	12,70	12,45	19,05	76,20	3,05	0,8	3,2	●	●		
CIT849015003000L	12,70	12,45	38,10	76,20	3,05	0,8	3,2	●	●		
CIT849020003000L	12,70	12,45	50,80	76,20	3,05	0,8	3,2	●	●		



● first choice
○ alternate choice

P	●	○				
M	●	○				
K	○	●				
N	○	●				●
S	●	○				
H				●		

CTR

ISO catalogue number	D	D min	L4	L	CD	W	CG5	CM1	CBN6	CPD1
CTR21253751500R	3,18	3,18	9,53	38,10	1,27	1,58	●	●		
CTR31873752000R	4,76	4,75	9,53	50,80	1,27	1,98	●	●		
CTR31877502000R	4,76	4,75	19,05	50,80	1,27	1,98	●	●		
CTR42505002500R	6,35	6,35	12,70	63,50	1,52	2,39	●	●		
CTR425010002500R	6,35	6,35	25,40	63,50	1,52	2,39	●	●		
CTR53127502500R	7,94	7,93	19,05	63,50	2,16	2,39	●	●		
CTR531212502500R	7,94	7,93	31,75	63,50	2,16	2,39	●	●		
CTR63757502500R	9,53	9,53	19,05	63,50	2,79	3,18	●	●		
CTR637512502500R	9,53	9,53	31,75	63,50	2,79	3,18	●	●		
CTR850010003000R	12,70	12,70	25,40	76,20	3,43	3,96	●	●		
CTR850015003000R	12,70	12,70	38,10	76,20	3,43	3,96	●	●		

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Whether your operation is turning, milling, or holemaking, WIDIA brands are the high-performance tooling you need.
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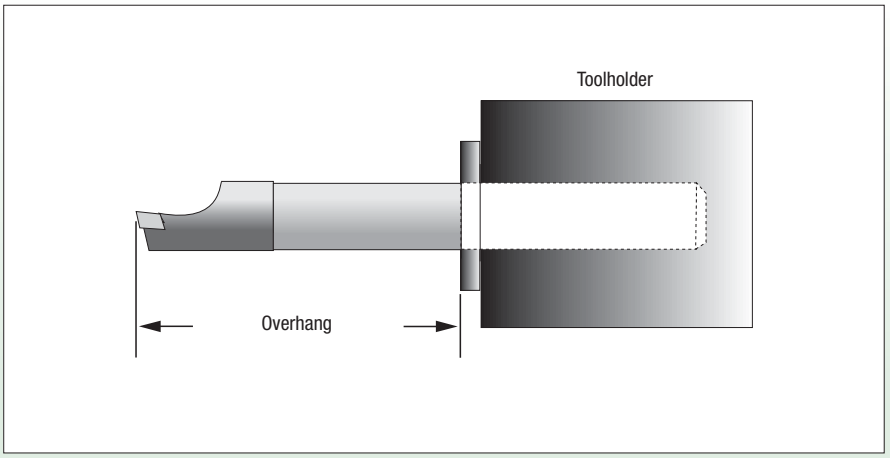
Set-Up Recommendations for Bar Overhang

WIDIA-CIRCLE™ cutting tools are the finest quality boring, grooving, profiling, and threading tools available. For over 50 years, WIDIA-CIRCLE has become the industry leader in solving small-diameter hole machining problems in major manufacturing plants worldwide.

A common problem associated with any cutting tool is extending the tool beyond its support point. This condition of excessive overhang can cause chatter, poor finishes, or inadequate tool life.



We recommend a 4:1 ratio (4 times bar diameter) overhang when using steel shank bars and up to a 10:1 (10 times bar diameter) overhang when using carbide shank bars. The overhang ratios are affected by many factors:

- Type(s) of materials being machined.
- Depth of cut(s).
- Feed rate(s).

Recommended conditions may prove to be unsatisfactory because of chatter. Chatter can be induced by non-rigid setups or harmonics from the machine or machining conditions. In many cases, changing the RPM of the machine can reduce chatter.

shank diameter	steel shank (ratio 4:1)	carbide shank (ratio 10:1)
4,00mm	16,00mm	40,00mm
5,00mm	20,00mm	50,00mm
6,00mm	24,00mm	60,00mm
8,00mm	32,00mm	80,00mm
10,00mm	40,00mm	100,00mm
12,00mm	48,00mm	120,00mm
16,00mm	64,00mm	160,00mm
20,00mm	80,00mm	200,00mm
25,00mm	100,00mm	250,00mm
32,00mm	128,00mm	320,00mm

Set-Up Information and Recommendations

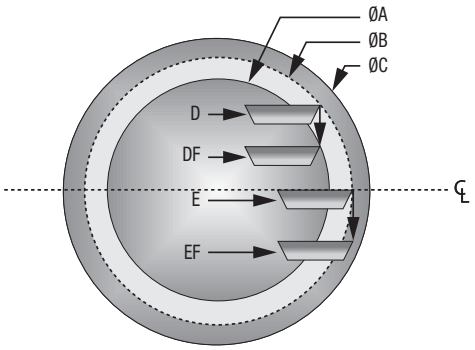
Tool "D" (above centerline)

Set ØB is deflected to position "DF", relieving the load by deflecting to a smaller bore, ØA. Tool "D" cannot "dig in" because the cut (load) becomes lighter as it deflects.

Tool "E" (on centerline or below)

Set ØB "digs in" and is deflected toward position "EF" and bore ØC. The larger the load, the larger the deflection.

Tip of the Insert
This enables the end user to hold closer tolerances, produce a better finish, and avoid chatter.

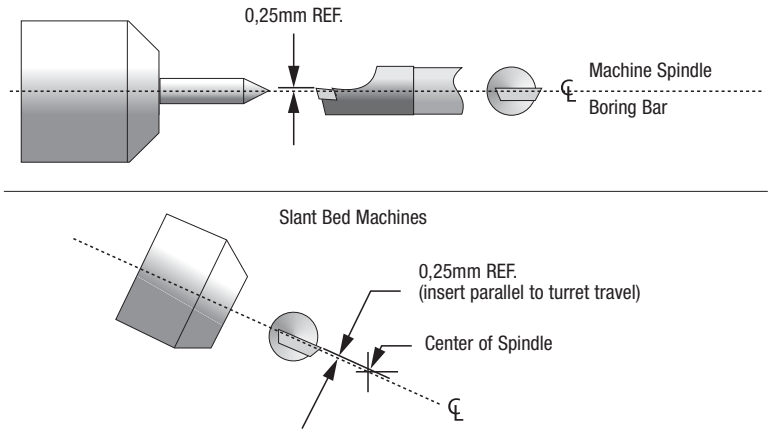


Built-in geometries of WIDIA-CIRCLE™ precision boring bars are based on the concept that the boring bar shank will always be positioned on the machine spindle centerline. The cutting point will be slightly high (against direction of rotation) except when facing to centerline or cutting on outside diameters.

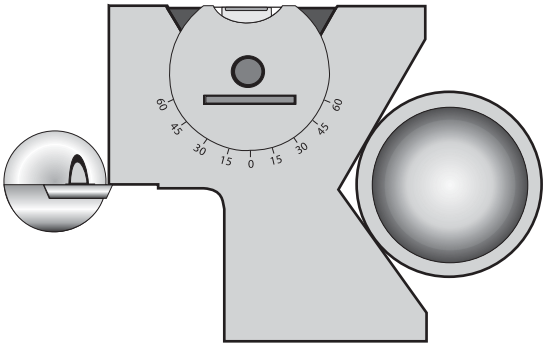
Use WIDIA-CIRCLE precision set-up level or:

1. Use center height gage and position insert as show in illustration.
2. If center point is unavailable, mark the center of the bar stock with a centering punch or square. Position the insert as shown in illustration.
3. Lay a straight edge on the insert to help in positioning the insert parallel to the travel or centerline.

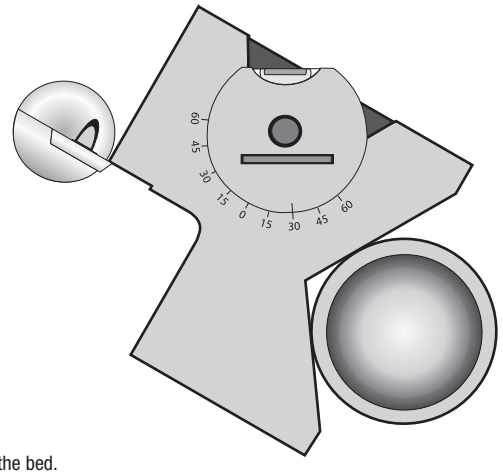
NOTE: In some cases, to help reduce chatter or taper, the insert may need to be rotated less than 0,25mm, but more than 0,05mm, above center.



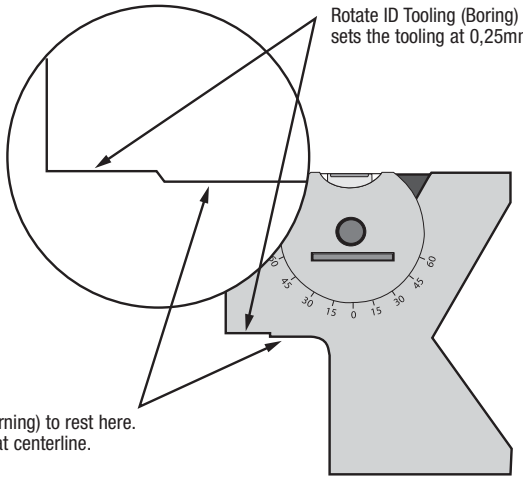
Uni-Level Precision Set-Up Level



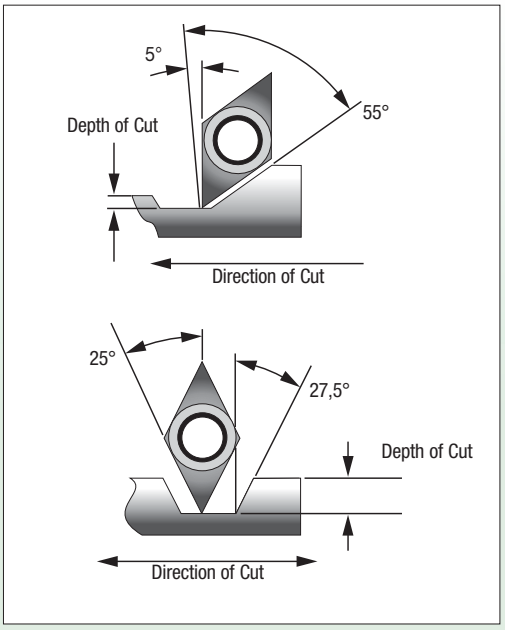
For most machines:
Set the dial to the 0° mark.



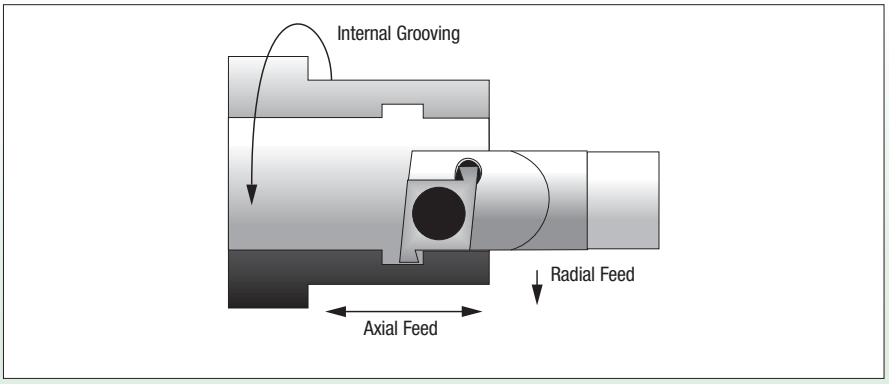
For slant bed-type machines:
Set the dial to the degree of the bed.



Set-Up Information and Recommendations for Boring and Profiling



Set-Up Information and Recommendations for Grooving



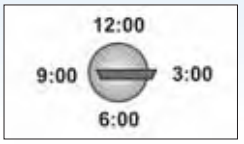
CDG Indexable-Type Grooving Inserts

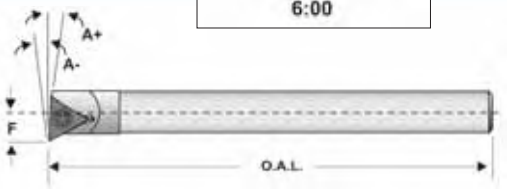
safe overhang conditions:	steel (ratio 4:1)	carbide (ratio 10:1)
surface footage(s):	see pages C34–C35	
radial feeds:	C-Series = 0,008–0,025mm Q-Series = 0,008–0,051mm	
axial feeds:	C-Series = 0,013–0,051mm Q-Series = 0,013–0,127mm	

For more than 50 years, WIDIA-CIRCLE™ has offered the most reliable, highest-quality small hole boring bars available.

Although our extensive product line covers most machining applications, we understand that a custom solution tool may be required.

Flat Location(s)





Straight Shank-Type Boring Bars
Steel or Carbide

Date / /

Customer-Specified Dimensions

	= **O.A.L. (Overall Length)**	From 3x bar diameter to catalogue length.
	= **"F" Dimension**	+0,254mm from basic dimension shown in catalogue triangle insert bars only.
	= **"A" Dimension**	+10° to -10° triangle insert bars only.
	= **Flat Location(s)**	1 Flat — no charge (see illustration above).

Special Instructions
(please make any necessary notes or sketches in the box at right)

Closest Catalogue Standard

Customer

Distributor

Shipping Requirements

☐ Ground ☐ Next Day Air ☐ 2nd Day Air ☐ 3rd Day Air

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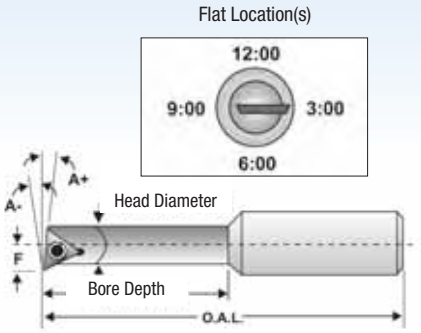
Use this worksheet to modify any of our existing products to meet your own specifications. If your special requirements do not fit any of these categories, contact us directly.



Step-Down Shank-Type Boring Bars

Steel or Carbide

Date / /

Customer-Specified Dimensions

	= **Bore Depth**	19,05mm to 6x diameter steel; 19,05mm to 10x diameter carbide.
	= **O.A.L. (Overall Length)**	Steel; smaller than O.A.L. listed in catalogue, carbide, bore depth, and standard sleeve length.
	= **"F" Dimension**	±0,254mm from basic dimension shown in catalogue triangle insert bars only.
	= **"A" Dimension**	+10 to -10 triangle insert bars only.
	= **Flat Location(s)**	1 Flat — no charge (see illustration above).

Special Instructions
(please make any necessary notes or sketches in the box at right)

Closest Catalogue Standard

Customer

Distributor

Shipping Requirements

☐ Ground ☐ Next Day Air ☐ 2nd Day Air ☐ 3rd Day Air

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