RIGIBORE

Cartridges

High precision fine boring and roughing

Product range

UFP with zero backlash
Smartbore with zero backlash
ISO
Roughing

Rigibore® The Most Accurately Adjustable Boring Tools in the World

RIGIBORE

Smartbore Cartridges

Supports high precision finishing and semi-finishing applications; offers a more accurate method of adjustment on the machine spindle

Use the Smartbore adjuster to plug in to the Smartbore cartridge, rotate the adjuster handle to make your adjustment and retract from cartridge

Accurate to just 1 micron; fast, easy adjustment using our digital torx wrench

Easy and accurate adjustment
Reduces time presetting

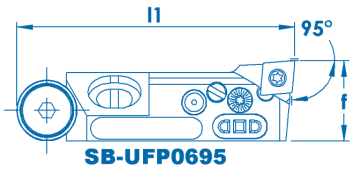
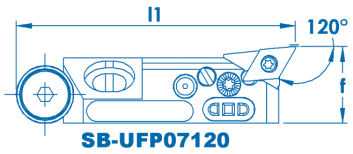
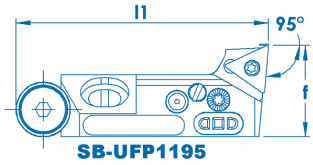
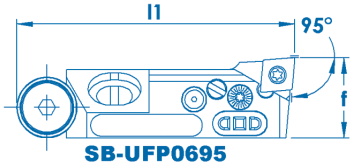
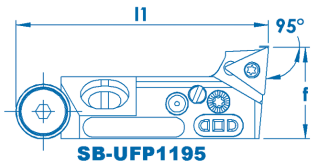
Single or multi point cartridge systems
Feature any number of Smartbore cartridges per tool

Easily replaceable cartridges
If the cartridge gets damaged you just replace the cartridge and not the complete tool!

Excellent repeatability and rigidity
A consistent preload maintains accuracy in the toughest of applications

* **Minimum bore:** 28mm (cartridge) 16mm (built-in)

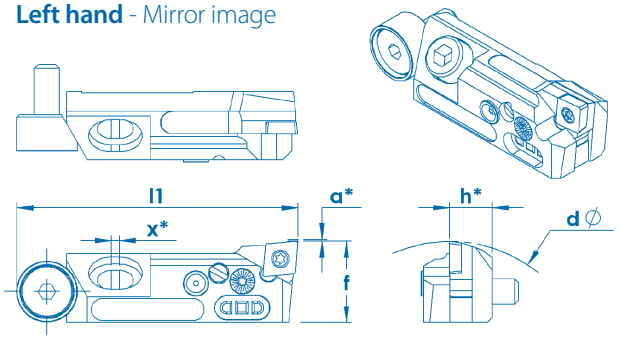
Smartbore Cartridges Technical Specification

	Part Number	D (Min Bore ø)		f		L1		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch		mm	inch
	SB-UFP0695 SB-UFP0695LH	28.0	1.102	16.0	0.630	55.5	2.185	CC..0602..	0.4	0.016
	SB-UFP07120 SB-UFP07120LH	28.0	1.102	16.0	0.630	58.5	2.303	DC..0702..	0.4	0.016
	SB-UFP1195 SB-UFP1195LH	36.0	1.417	20.0	0.787	55.5	2.185	TC..1102..	0.4	0.016
	SB-UFP1290	75.0	2.953	32.0	1.260	107.0	4.213	CC..1204..	0.8	0.031
	SB-UFP1690	75.0	2.953	32.0	1.260	107.0	4.213	TC..16T3..	0.8	0.031

Smartbore Cartridges Technical Specification

Right hand - Shown

Left hand - Mirror image



a* - 0.3 adjustment on all UFP's, adjustment = 0.005mm per division on diameter

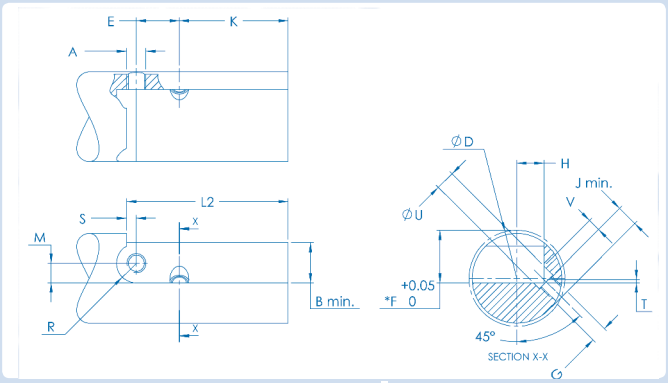
h* - 8.5 on UFP 06-11

h* - 18.0 on UFP 12-16

x* - 1.0 on UFP 06-11

x* - 1.6 on UFP 12-16

Smartbore & UFP Cartridges Mounting Dimensions



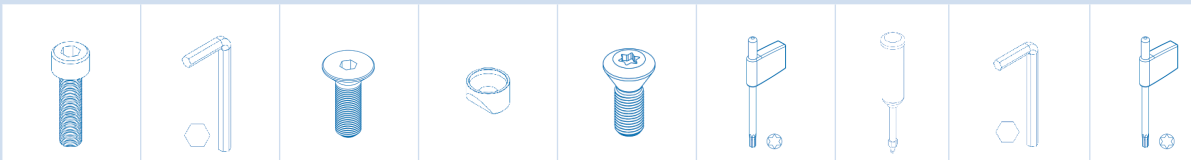
No machine spindle modification required. Smartbore bars can be carried in a standard magazine and tool management system.

Smartbore cartridges are easily replaceable.

UFP	A	B (min)		H		L2		R		S		K	
	metric	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Standard	M5 x 0.8	12.5	0.492	8.5	0.334	47.5	1.870	6.1	0.240	3.0	0.118	34.0	1.338
Large	M8 x 1.25	24.6	0.968	18.0	0.708	98.0	3.858	10.1	0.397	3.0	0.118	63.0	2.480

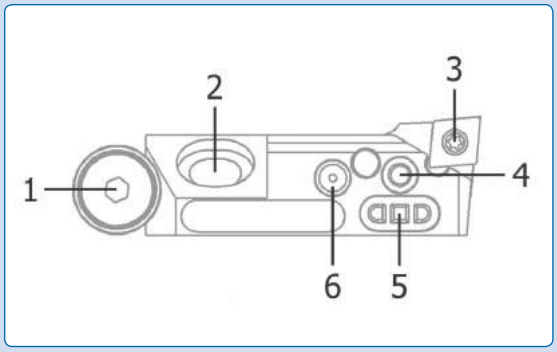
UFP	G	T		U (diam.)		V		J (min)		E		M	
	metric	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Standard	M5 x 0.8	1.0	0.039	6.0	0.236	4.0	0.157	5.0	0.196	13.5	0.531	6.1	0.240
Large	M10 x 1.5	1.4	0.055	11.0	0.433	8.0	0.314	10.0	0.393	32.0	1.259	10.0	0.393

Smartbore Cartridges Spares and Accessories

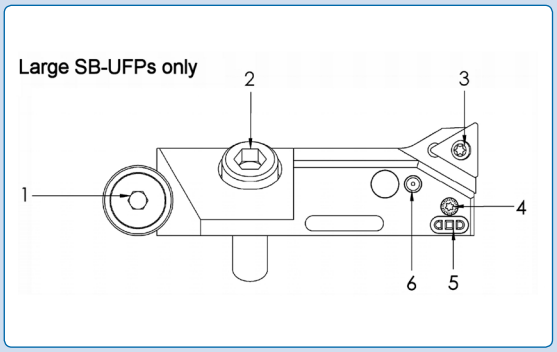


UFP	Clamp Screw	Hexagon Wrench for Clamp Screw	Axial Adjusting Screw	Axial Wedge	Insert Screw	Torx Wrench for Insert Screw	Grease Gun	Hexagon Wrench for Axial Screw	Torx Wrench for Adjustment Screw
Standard	WS360	R58	WS359	WP311	RS2560	R37	UFPG_00	R48	R57 (T10)
Large (1290, 1690)	WS1035	R108	WS830	WP411	RS40120	R87 R77		R88	

Smartbore Cartridge Technical Information



1. **Axial adjustment (1 mm) by wedge component**
   (Use screw/wedge WS359/WP311)
2. **Use clamping screw WS360 (5-6 Nm)**
3. **Use insert screw RS2560 (RS2055 for WC insert)**
4. **Micron adjustment (use Smartbore adjuster)**
   0.001 mm on diameter
   Radial adjustment 0.3 mm
5. **Smartbore electronic interface**
   The internal electronic transducer is activated when the Smartbore adjuster is connected
6. **Lubrication point**
   Lubrication with a high quality teflon based grease should be used in accordance with the maintenance schedule overleaf.



1. **Axial adjustment (1 mm) by wedge component**
   (Use screw/wedge WS830/WP411)
2. **Use clamping screw WS1035**
3. **Use insert screw RS4084 (RS40120 for CC12)**
4. **Micron adjustment (use Smartbore adjuster)**
   0.001 mm on diameter
   Radial adjustment 0.3 mm
5. **Smartbore electronic interface**
   The internal electronic transducer is activated when the Smartbore adjuster is connected
6. **Lubrication point**
   Lubrication with a high quality teflon based grease should be used in accordance with the maintenance schedule overleaf.

Smartbore & ActiveEdge Cartridge Maintenance

ActiveEdge and Smartbore cartridges require regular maintenance to ensure optimal performance and durability, especially when machining cast iron.

The greasing process is designed to flush out small chips and machining dust that may build up in the cartridge mechanism. Grease should be pumped into the cartridge until it emerges clean from around the slide.

Recommended Greasing Intervals

Material/Usage	Heavy	Medium	Light
Ferrous (cast iron) - no coolant	3/week	2/week	1/week
Ferrous (cast iron)	2/week	1/week	1/week
Ferrous (steel)	1/week	1-2 weeks	1/month
Non-ferrous	1-2 weeks	1/month	6/year
The correct operation and micron accuracy of the adjustment will be negatively affected unless the above schedule is adhered to			

RIGIBORE

UFP Cartridges

A wide range of adjustable cartridges for finish boring

Ideal for productivity situations where close tolerances on sizes are required. Features include fine graduations and interchangeable components

Accurate, ultra-fine precision cartridges

Fine tolerance adjustment

Rigibore UFP Cartridges feature zero backlash and are graduated to 5 microns/0.0002" per division on diameter over a range of 0.6mm/0.024".

Axial Positional Adjustment for length tolerances

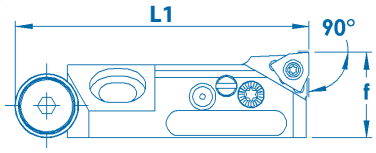
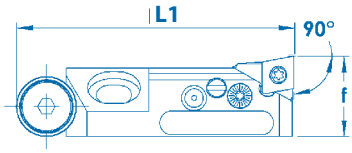
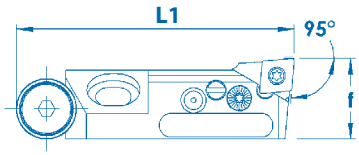
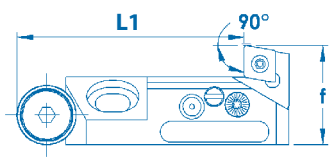
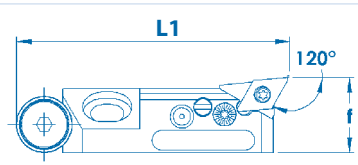
Special tools are easily adjusted to extremely high levels of accuracy.

Outstanding value

Maintaining close tolerances more consistently over longer periods of time means productivity increases significantly.

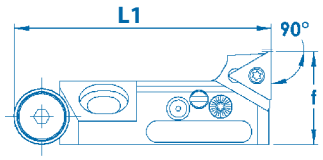
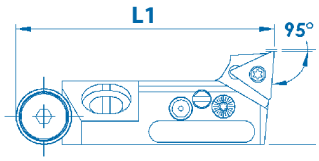
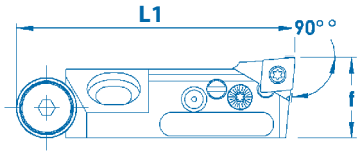
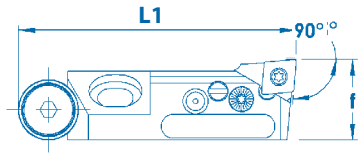
Available for 'heavy' duty finishing

UFP Cartridge Technical Data

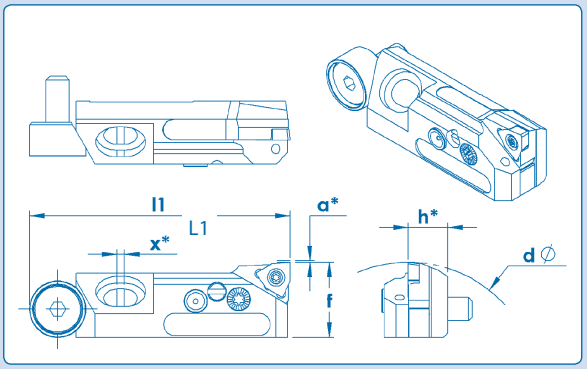
	Part Number	D (min bore Ø)		f		L1		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch		mm	inch
	UFP-0390 UFP-0390LH	28.0	1.102	16.0	0.629	55.5	2.185	WCGX 03 02 ..	0.4	0.016
	UFP-0690 UFP-0690LH	28.0	1.102	16.0	0.629	55.5	2.185	CC or CP 06 02 ..	0.4	0.016
	UFP-0695 UFP-0695LH	28.0	1.102	16.0	0.629	55.5	2.185	CC or CP 06 02 ..	0.4	0.016
	UFP-0690BB	36.0	1.417	20.0	0.787	46.0	1.811	CC or CP 06 02 ..	0.4	0.016
	UFP-07120 UFP-07120LH	36.0	1.417	16.0	0.629	58.5	2.303	DC 07 02 ..	0.4	0.016

Continued...

Continued...

	Part Number	D (min bore Ø)		f		L1		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch		mm	inch
	UFP-1190 UFP-1190LH	36.0	1.417	20.0	0.787	55.5	2.185	TC or TP 11 02 ..	0.4	0.016
	UFP-1195 UFP-1195LH	36.0	1.417	20.0	0.787	55.5	2.185	TC or TP 11 02 ..	0.4	0.016
	UFP-1290	75.0	2.953	32.0	1.260	107.0	4.213	CC or CP 12 04 ..	0.8	0.031
	UFP-1690	75.0	2.953	32.0	1.260	107.0	4.213	TC or TP 16 03 ..	0.8	0.031

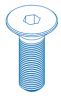
UFP Cartridges Technical Specification



- **a*** - 0.3 adjustment on all UFP's, adjustment = 0.005mm per division on diameter
- **h*** - 8.5 on UFP 06-11, 18.0 on UFP 12-16
- **x*** - 1.0 on UFP 06-11, 1.6 on UFP 12-16

For mounting dimensions please see the '**Smartbore & UFP Mounting Dimensions**' section on page 6.

UFP Cartridges Spares & Accessories

									
UFP	Clamp Screw	Hexagon Wrench for Clamp Screw	Axial Adjusting Screw	Axial Wedge	Insert Screw	Torx Wrench for Insert Screw	Grease Gun	Hexagon Wrench for Axial Screw	Torx Wrench for Adjustment Screw
Standard	WS360	R58	WS359	WP311	RS2560	R37	UFPG_00	R48	R57 (T10)
Large (1290, 1690)	WS1035	R108	WS830	WP411	RS40120	R87 R77		R88	

RIGIBORE

ISO and Small Cartridges

Rigibore ISO (lay in) cartridges are available in a wide range of styles and sizes for all applications, including:

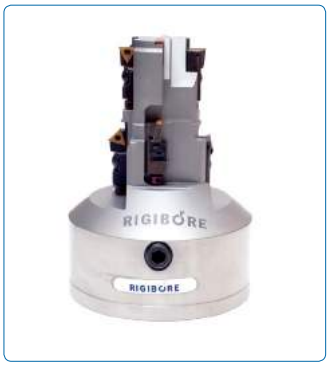
06CAx7, 06CA, 08CA, 10CA, 12CA (16CA available to order)

Standard stocked ISO and small cartridges

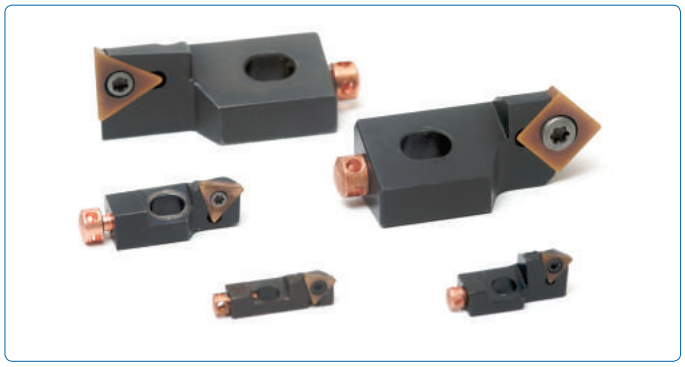
Great choice
Complete range held in stock

Outstanding value
Phone today or send an enquiry through our website for best prices and delivery times

Minimum bore
15.6mm/0.614"



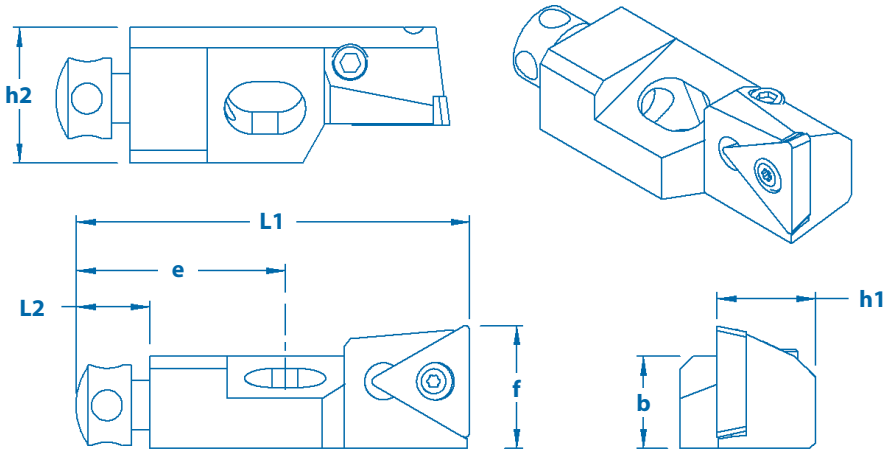
● Tools for building-in



● Full range available

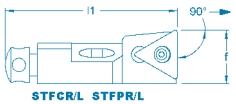
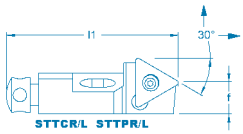
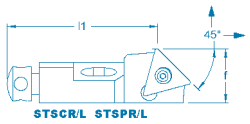
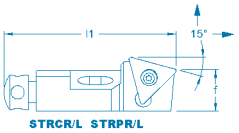
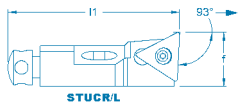
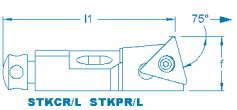
ISO and Small Cartridges Technical Specification

Right hand – Shown
Left hand – Mirror image



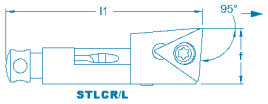
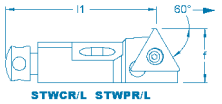
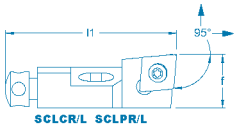
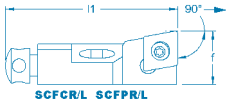
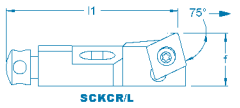
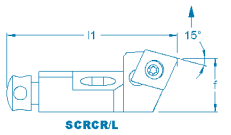
Style/Size	Axial Adjustment	
	mm	inch
06CAx7	± 0.5	± 0.0197
06CA	± 0.5	± 0.0197
08CA	± 1.0	± 0.0394
10CA	± 1.0	± 0.0394
12CA	± 1.0	± 0.0394
16CA	± 1.5	± 0.0591

ISO and Small Cartridges Technical Specification

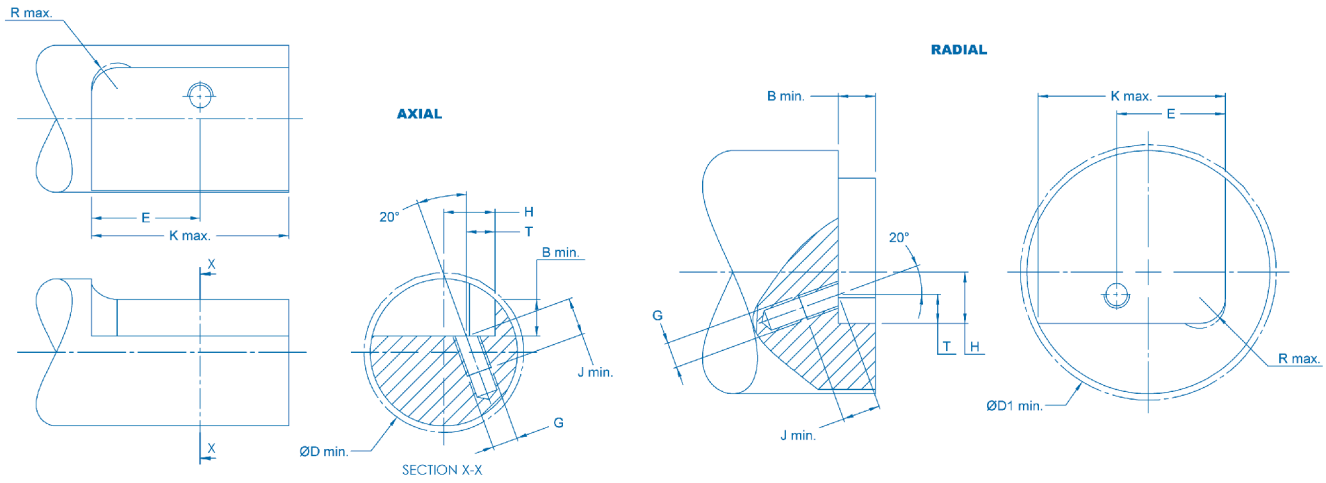
	Part Number	L1		L2		b		h1		h2		f		e		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
 STFCR/L STFPR/L	STFCR/L 06CA-06X7	24.5	0.965	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	7.0	0.276	12.0	0.472	TC06..T1..	0.2	0.008
	STFCR/L 06CA-06	25.0	0.984	4.5	0.177	5.0	0.197	6.0	0.236	8.0	0.315	8.0	0.315	12.0	0.472	TC06..T1..	0.4	0.016
	STFPR/L 06CA-06															TP06..T1..		
	STFCR/L 08CA-09	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	TC..0902..	0.4	0.016
	STFPR/L 08CA-09															TP..0902..		
	STFCR/L 10CA-11	50.0	1.969	8.0	0.315	11.0	0.433	10.0	0.394	15.0	0.591	14.0	0.551	20.0	0.787	TC..1102..	0.4	0.016
	STFPR/L 10CA-11															TP..1102..		
	STFCR/L 12CA-16	55.0	2.165	8.0	0.315	15.0	0.591	12.0	0.472	20.0	0.787	20.0	0.787	20.0	0.787	TC..16T3..	0.8	0.031
	STFPR/L 12CA-16															TP..16T3..		
	STFCR/L 16CA-16	63.0	2.480	8.0	0.315	20.0	0.787	16.0	0.630	20.0	0.787	25.0	0.984	25.0	0.984	TC..16T3..	0.8	0.031
	STFPR/L 16CA-16															TP..16T3..		
 STTCR/L STTPR/L	STTCR/L 06CA-06X7	24.5	0.965	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	3.7	0.146	12.0	0.472	TC..16T3..	0.2	0.008
	STTCR/L 06CA-06	25.0	0.984	4.5	0.177	5.0	0.197	6.0	0.236	8.0	0.315	5.5	0.217	12.0	0.472	TC..06T1..	0.4	0.016
	STTPR/L 06CA-06															TP..06T1..		
	STTCR/L 08CA-09	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	6.0	0.236	17.0	0.669	TC..0902..	0.4	0.016
	STTPR/L 08CA-09															TP..0902..		
	STTCR/L 10CA-11	50.0	1.969	8.0	0.315	11.0	0.433	10.0	0.394	15.0	0.591	9.0	0.354	20.0	0.787	TC..1102..	0.4	0.016
	STTPR/L 10CA-11															TP..1102..		
	STTCR/L 12CA-16	55.0	2.165	8.0	0.315	15.0	0.591	12.0	0.472	20.0	0.787	13.0	0.512	20.0	0.787	TC..16T3..	0.8	0.031
	STTPR/L 12CA-16															TP..16T3..		
 STSCR/L STSPR/L	STSCR/L 06CA-06X7	24.5	0.965	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	7.0	0.276	12.0	0.472	TC..06T1..	0.2	0.008
	STSCR/L 06CA-06	21.0	0.827	4.5	0.177	5.0	0.197	6.0	0.236	8.0	0.315	8.0	0.315	12.0	0.472	TC..06T1..	0.4	0.016
	STSPR/L 06CA-06															TP..06T1..		
	STSCR/L 08CA-09	28.0	1.102	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	TC..0902..	0.4	0.016
	STSPR/L 08CA-09															TP..0902..		
	STSCR/L 10CA-11	44.0	1.732	8.0	0.315	11.0	0.433	10.0	0.394	15.0	0.591	14.0	0.551	20.0	0.787	TC..1102..	0.4	0.016
	STSPR/L 10CA-11															TP..1102..		
	STSCR/L 12CA-16	47.0	1.850	8.0	0.315	15.0	0.591	12.0	0.472	20.0	0.787	20.0	0.787	25.0	0.984	TC..16T3..	0.8	0.031
	STSPR/L 12CA-16															TP..16T3..		
 STRCR/L STRPR/L	STRCR/L 08CA-09	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	7.8	0.307	17.0	0.669	TC..0902..	0.4	0.016
	STRPR/L 08CA-09															TP..0602..		
 STUCR/L	STUCR/L 08CA-09	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	TC..0902..	0.4	0.016
 STKCR/L STKPR/L	STKCR/L 06CA-06X7	24.5	0.965	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	7.0	0.276	12.0	0.472	TC..06T1..	0.2	0.008
	STKCR/L 06CA-06	25.0	0.984	4.5	0.177	5.0	0.197	6.0	0.236	8.0	0.315	8.0	0.315	12.0	0.472	TC..06T1..	0.4	0.016
	STKPR/L 06CA-06															TP..06T1..		
	STKCR/L 08CA-09	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	TC..0902..	0.4	0.016
	STKPR/L 08CA-09															TP..0902..		

Continued...

Continued...

	Part Number	L1		L2		b		h1		h2		f		e		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
	STLCR/L 06CA-06X7	24.5	0.965	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	7.0	0.276	12.0	0.472	TC06..T1..	0.2	0.008
	STWCR/L 06CA-06X7	21.0	0.827	4.5	0.177	4.5	0.177	6.0	0.236	6.0	0.236	7.0	0.276	12.0	0.472	TC06..T1..	0.2	0.008
	STWCR/L 06CA-06	21.0	0.827	4.5	0.177	5.0	0.197	6.0	0.236	8.0	0.315	8.0	0.315	12.0	0.472	TC06..T1..	0.4	0.016
	STWPR/L 06CA-06															TP06..T1..		
	STWCR/L 08CA-09	28.0	1.102	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	TC..0902..	0.4	0.016
	STWPR/L 08CA-09															TP..0902..		
	SCLCR/L 08CA-06	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	CC..0602..	0.4	0.016
	SCLPR/L 08CA-06															CP..0602..		
	SCFCR/L 08CA-06	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	CC..0602..	0.4	0.016
	SCFPR/L 08CA-06															CP..0602..		
	SCFCR/L 10CA-09	50.0	1.969	8.0	0.315	11.0	0.433	10.0	0.394	15.0	0.591	14.0	0.551	20.0	0.787	CC..09T3..	0.8	0.031
	SCFPR/L 10CA-09															CP..09T3..		
	SCKCR/L 08CA-06	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	CC..0602..	0.4	0.016
	SCRCR/L 08CA-06	32.0	1.260	6.0	0.236	7.5	0.295	8.0	0.315	11.0	0.433	10.0	0.394	17.0	0.669	CC..0602..	0.4	0.016
	SSKCR/L 10CA-09	50.0	1.969	8.0	0.315	11.0	0.433	10.0	0.394	15.0	0.591	14.0	0.551	20.0	0.787	SC..09T3..	0.8	0.031
	SSKPR/L 10CA-09															SP..09T3..		
	SSKCR/L 12CA-12	55.0	2.165	8.0	0.315	15.0	0.591	12.0	0.472	20.0	0.787	20.0	0.787	20.0	0.787	SC..1204..	0.8	0.031
	SSKPR/L 12CA-12															SP..1204..		

ISO and Small Cartridges Mounting Dimensions



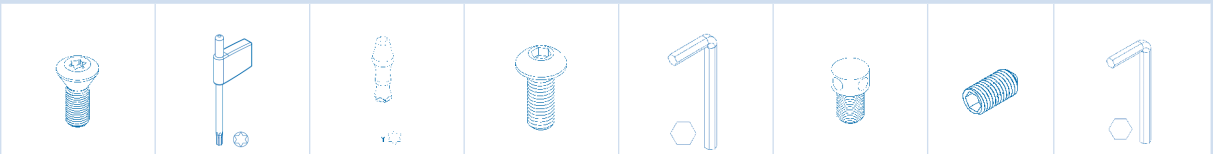
Cartridge	D Min		D1		E		K Max		G	J Min		H		T +0-0.15		B Min		R Min	
	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
06CA-06X7	15.6	0.614	30.0	1.181	12.0	0.472	23.5	0.925	M3 x 0.5	5.5	0.217	5.5	0.217	2.5	0.098	4.0	0.157	2.5	0.098
06CA-06	20.0 [1]	0.787	31.0	1.220	12.0	0.472	24.0	0.945	M3.5 x 0.5	6.0	0.236	6.0	0.236	3.5	0.138	5.0	0.197	2.5	0.098
08CA	25.0 [2]	0.984	38.0	1.496	17.0	0.669	30.5	1.201	M4 x 0.7	6.5	0.256	8.0	0.315	4.5	0.177	5.8	0.228	4.0	0.157
10CA	40.0	1.575	55.0	2.165	20.0	0.787	48.5	1.909	M6 x 1.0	14.0	0.551	10.0	0.394	5.0	0.197	9.0	0.354	4.0	0.157
12CA	50.0	1.969	75.0	2.953	20.0	0.787	48.5	1.909	M6 x 1.0	14.0	0.551	12.0	0.472	6.0	0.236	13.0	0.512	5.0	0.197
16CA	55.0	2.165	75.0	2.953	25.0	0.984	61.0	2.402	M8 x 1.25	16.0	0.630	15.0	0.591	0(@45°)	0.000	16.5	0.650	6.0	0.236

Note: the following are required for the 16CA-16 cartridge – SHIM RS4129 - SHIM SCREW RSS2471 - SHIM WRENCH R118

[1] D (Min) = 20.0 when H = 6.0 to ISO (but D (Min) = 19.0 is achievable with H = 5.5)

[2] D (Min) = 25.0 when H = 8.0 to ISO (but D (Min) = 20.0 is achievable with H = 7.0)

ISO and Small Cartridges Mounting Dimensions



Cartridge	Insert Screw	Torx Wrench	Torx Driver	Mounting Screw	Hexagon Wrench (MTG)	Axial Adjustment Screw	Radial Adjust-ment Screw	Hexagon Wrench (Rada Adjustment)
06CA-06X7	RS2045	R27	R27D	C06X7/5	R28	C06X7/7	C06X7/8	C06X7/9
06CA-06	RS2045	R27	R27D	C06X8/14	R38	C06X7/7	C06X7/8	C06X7/9
08CA-09	RS2263	R37	R37D	C08X10/5	R38	C08X10/7	C08X10/8	C06X7/9
08CA-06	RS2560	R37	R37D	C08X10/5	R38	C08X10/7	C08X10/8	C06X7/9
10CA-09	RS4084	R77	R77D	C10X14/5	R58	C10X14/7	C10X14/8	R28
10CA-11	RS2560	R37	R37D	C10X14/5	R58	C10X14/7	C10X14/8	R28
12CA-12	RS40120	R87	R87D	C12X20/5	R58	C10X14/7	C12X20/8	R38
12CA-16	RS35100	R77	R77D	C12X20/5	R58	C10X14/7	C12X20/8	R38
16CA-16	RS35100	R77	R77D	C16X25/5	C16X25/6	C10X14/7	C16X20/8	R38

RIGIBORE

Qualified Roughing Cartridges

Wide range of cartridges available and direct from stock

Rigibore roughing cartridges are available in a range of styles including 10CX and 12CX

Standard Roughing Cartridge

Negative CX Cartridge

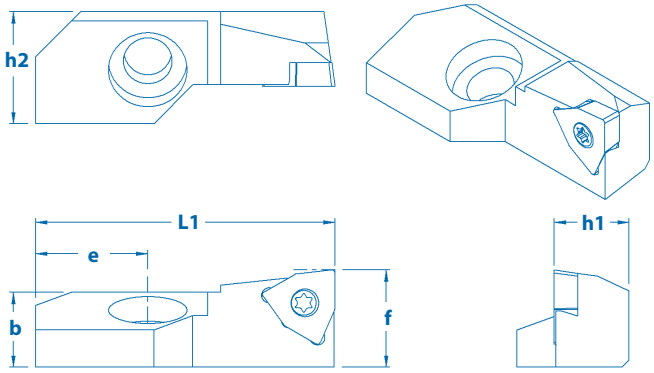
Standard roughing cartridges

Outstanding performance
No adjustment needed, provides rigidity and reliability

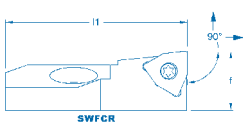
Minimum bore
30mm/1.181"

Available in stock
10CX and 12CX roughing cartridges are kept in stock and are available to order

Roughing Cartridges Technical Data

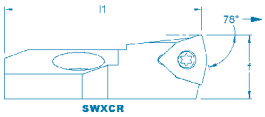
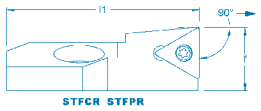
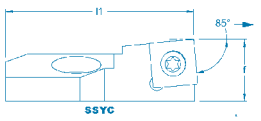
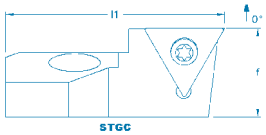


h2* - Over Insert Clamp on Negative Rake CX Style Roughing Cartridges

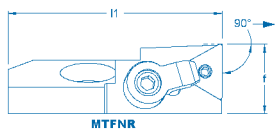
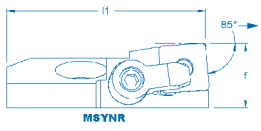
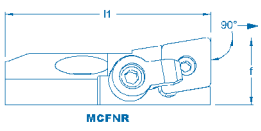
	Part Number	L1		b		h1		h2		f		e		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
	SWFCR 08CX-03	25	0.984	6.5	0.256	8	0.315	11	0.433	9	0.354	10	0.394	WCGX0302..	0.4	0.016
	SWFCR 10CX-05	40	1.575	10	0.394	10	0.394	15	0.591	13	0.512	15	0.591	WCGX0503..	0.4	0.016
	SWFCR 10CX-05-HD													WCGX05T3..		
	SWFCR 12CX-06	44	1.732	13	0.512	12	0.472	20	0.787	18	0.709	14	0.551	WCGX0603..	0.4	0.016
	SWFCR 12CX-06-HD													WCGX06T3..		
	SWFCR 12CX-07	44	1.732	13	0.512	12	0.472	20	0.787	18	0.709	14	0.551	WCGX0703..	0.4	0.016
	SWFCR 12CX-07-HD													WCGX0704..		
	SWFCR 16CX-09	50	1.969	18	0.709	16	0.630	21	0.827	23	0.906	17	0.669	WCGX0904..	0.4	0.016
	SWFCR 16CX-09-HD													WCGX0905..		

Continued...

Continued...

	Part Number	L1		b		h1		h2		f		e		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
 SWXCR	SWXCR 08CX-03	25.0	0.984	6.5	0.256	8.0	0.315	11.0	0.433	9.0	0.354	10.0	0.394	WCGX0302..	0.4	0.016
	SWXCR 10CX-05	40.0	1.575	10.0	0.394	10.0	0.394	15.0	0.591	13.0	0.512	15.0	0.591	WCGX0503..	0.4	0.016
	SWXCR 10CX-05-HD													WCGX05T3..		
	SWXCR 12CX-06	44.0	1.732	13.0	0.512	12.0	0.472	20.0	0.787	18.0	0.709	14.0	0.551	WCGX0603..	0.4	0.016
	SWXCR 12CX-06-HD													WCGX06T3..		
	SWXCR 12CX-07	44.0	1.732	13.0	0.512	12.0	0.472	20.0	0.787	18.0	0.709	14.0	0.551	WCGX0703..	0.4	0.016
	SWXCR 12CX-07-HD													WCGX0704..		
	SWXCR 16CX-09	50.0	1.969	18.0	0.709	16.0	0.630	21.0	0.827	23.0	0.906	17.0	0.669	WCGX0904..	0.4	0.016
	SWXCR 16CX-09-HD													WCGX0905..		
 STFCR STFPR	STFCR 10CX-11	40.0	1.575	10.0	0.394	10.0	0.394	15.0	0.591	13.0	0.512	15.0	0.591	TC..1102..	0.4	0.016
	STFPR 10CX-11													TP..1102..		
	STFCR 12CX-16	44.0	1.732	13.0	0.512	12.0	0.472	20.0	0.787	18.0	0.709	14.0	0.551	TC..16T3..	0.8	0.031
	STFPR 12CX-16													TP..16T3..		
 SSYC	SSYCR 10CX-09	40.0	1.575	10.0	0.394	10.0	0.394	15.0	0.591	13.0	0.512	15.0	0.591	SC..09T3..	0.4	0.016
	SSYCR 12CX-12	44.0	1.732	13.0	0.512	12.0	0.472	20.0	0.787	18.0	0.709	14.0	0.551	SC..1204..	0.8	0.031
 STGC	STGCR 12CX-16	44.0	1.732	13.0	0.512	12.0	0.472	20.0	0.787	18.0	0.709	14.0	0.551	TC..16T3..	0.8	0.031

Negative CX Style Roughing Cartridges Technical Data

	Part Number	L1		b		h1		h2		f		e		Insert	Datum Rad	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
 MTFNR	MTFNR 10CX-11	40.0	1.575	10.0	0.394	10.0	0.394	18.8	0.740	13.0	0.512	15.0	0.591	TN..1103..	0.4	0.016
	MTFNR 12CX-16	44.0	1.732	13.0	0.512	12.0	0.472	23.5	0.925	18.0	0.709	14.0	0.551	TN..1604..	0.8	0.031
 MSYNR	MSYNR 10CX-09	40.0	1.575	10.0	0.394	10.0	0.394	20.4	0.803	13.0	0.512	15.0	0.591	SN..0903..	0.8	0.031
	MSYNR 12CX-12	44.0	1.732	13.0	0.512	12.0	0.472	23.6	0.929	18.0	0.709	14.0	0.551	SN..1204..	0.8	0.031
 MCFNR	MCFNR 10CX-09	40.0	1.575	10.0	0.394	10.0	0.394	18.9	0.744	13.0	0.512	15.0	0.591	CN..09T3..	0.8	0.031
	MCFNR 12CX-12	44.0	1.732	13.0	0.512	12.0	0.472	23.6	0.929	18.0	0.709	14.0	0.551	CN..1204..	0.8	0.031

Roughing Cartridges Mounting Dimensions (see page 9 for details)

Cartridge	D Min		E		K Max		G	H		T		B Min		R Max	
	mm	inch	mm	inch	mm	inch		mm	inch	mm	inch	mm	inch	mm	inch
08CX	30.0	1.181	11.0	0.433	24.5	0.965	M4 x 0.7	8.0	0.315	4.5	0.177	4.8	0.189	4.0	0.157
10CX	40.0	1.575	15.0	0.591	38.5	1.516	M6 x 1.0	10.0	0.394	5.0	0.197	9.5	0.374	5.0	0.197
12CX	50.0	1.969	14.0	0.551	42.0	1.654	M6 x 1.0	12.0	0.472	6.0	0.236	13.5	0.531	5.0	0.197
16CX	60.0	2.362	17.0	0.669	47.0	1.850	M8 x 1.25	16.0	0.630	0(@45°)	0 (@45°)	18.0	0.709	5.0	0.197

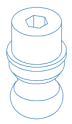
CX Style Cartridges Spares and Accessories



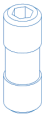


Cartridge	Insert Screw	Torx Wrench	Torx Driver	Mounting Screw	Hexagon Wrench
08CX-03	RS2055	R27	R27D	CX8X4/10	R48
10CX-05	RS2560	R37	R37D	CX10X6/16	R88
10CX-05-HD	RS2560	R37	R37D	CX10X6/16	R88
10CX-09	RS3580	R77	R77D	CX10X6/16	R88
10CX-11	RS2560	R37	R37D	CX10X6/16	R88
12CX-06	RS3590	R77	R77D	CX12X6/16	R88
12CX-06-HD	RS3590	R77	R77D	CX12X6/16	R88
12CX-07	RS4095	R77	R77D	CX12X6/16	R88
12CX-07-HD	RS4095	R77	R77D	CX12X6/16	R88
12CX-12	RS40120	R87	R87D	CX12X6/16	R88
12CX-16	RS3580	R77	R77D	CX12X6/16	R88
16CX-09	RS4095	R77	R77D	CX16X8/20	R78
16CX-09-HD	RS4095	R77	R77D	CX16X8/20	R78

Negative CX Style Cartridges Spares and Accessories






Part Number	Lock Pin	Hexagon Wrench	Mounting Screw	Hexagon Wrench (MTG)	Insert Clamp	Clamp Screw	Hexagon Wrench (Clamp)
MTFNR 10CX-11	PM01	C06X7/9	CX10X6/16	R88	CM22	SM04	R38
MTFNR 12CX-16	PM02	R28	CX12X6/16	R88	CM02	SM04	R38
MSYNR 10CX-09	PM02	R28	CX10X6/16	R88	CM02	SM04	R38
MSYNR 12CX-12	PM06	R28	CX12X6/16	R88	CM02	SM04	R38
MCFNR 10CX-09	PM02	R28	CX10X6/16	R88	CM22	SM04	R38
MCFNR 12CX-12	PM06	R28	CX12X6/16	R78	CM02	SM04	R38

RIGIBORE

Inserts by Rigibore®

All areas of production catered for, including low speed roughing, interrupted cuts and optimised machining of specialised materials

Ground to ISO H tolerance, long lasting, fast metal removal

Finishing

Choice of geometries - Uncoated and coated grades

Inserts for cast iron, aluminum, steel, brass, bronze and titanium alloys

Rigibore Insert Grades

Grade	I.S.O	ANSI	Description	Coating	Materials
RC217	M10 - M25 K05 - K25	C2-C3	High-speed finishing. Exceptional resistance to wear, oxidation & thermal shock	PVD composite coated	Cast iron heat-resisting titanium alloy
R71	P05-P25 M10-M20	P6-P7	Light roughing & finishing. High cutting speeds with moderate feeds. High resistance to wear & thermal shock	Uncoated	Steel, cast steel
R22	K10-K25 M10-M30	C2-C3	Wide range of applications. High resistance to wear & good edge sharpness. Moderate cutting	Micro-grain uncoated	Cast Iron, ferrous materials, heat resisting titanium alloy & aircraft aluminum

Chipbreaker Geometries

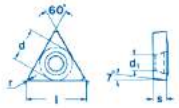
A choice of 4 geometries is available to suit most applications Ultra-precision ground to I.S.O. "H" tolerance for indexing within .0005"/0.013mm	
0 ° T.R.	Brass, S.G. Cast Iron, hardened steel, short-chipping Bronze
8 °T.R.	Alloy steels, tool steels, some bronzes, some grey cast irons & tougher materials
14 ° T.R.	Mild steels, stainless steels, some tool steels, heat-resisting steel alloys, hard plastics
22 ° T.R.	Aluminum, aluminum alloys, soft plastics, rubber, magnesium alloys, copper

Inserts for Aluminum

Size	Order Code	Available Grades	d (I.C)		l*		d1		s		r	
			mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
06-16	TCHT 06 11 04 FN-AL	R22	3.97	.156	6.87	.27	2.2	.087	1.98	.078	0.4	.016
	TCHT 09 02 04 FN-AL		5.56	.22	9.63	.38	2.5	.098	2.38	.094		
	TCHT 11 02 04 FN-AL		6.35	.25	11.0	.43	2.8	.11	2.38	.094		
	TCHT 16 T3 08 FN-AL		9.525	.375	16.5	.65	4.4	.17	3.97	.156	0.8	.031
06-12	CCHT 06 02 04 FN-AL		6.35	.25	6.35	.25	2.8	.11	2.38	.094	0.4	.016
	CCHT 09 T3 08 FN-AL		9.525	.375	9.525	.375	4.4	.17	3.97	.156	0.8	.031
	CCHT 12 02 08 FN-AL		12.7	.5	12.7	.5	5.5	.217	4.74	.187		

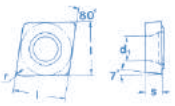

TCHX


TCHW




CCHX


CCHW



Inserts for all uses

L = Left hand (boring), R = Right hand (turning)

Size	Order Code	Available Grades	Top Rake	d (I.C)		l*		d1		s		r	
			(deg)	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
06	TCHW 06 T1 02	RC217, R22	0	3.97	0.156	6.87	0.27	2.2	0.087	1.98	0.078	0.2	0.008
	TCHW 06 T1 04											0.4	0.016
	TCHW 06 T1 08	RC217										0.8	0.031
	TCHX 06 T1 01 - L22	R22	22									0.1	0.004
	TCHX 06 T1 02 - L08	R71	8									0.2	0.008
	TCHX 06 T1 02 - L14		14										
	TCHX 06 T1 02 - L22	R22	22										
	TCHX 06 T1 04 - L08	R71	8									0.4	0.016
09	TCHW 09 02 02	RC217, R22	0	5.56	0.219	9.63	0.379	2.5	0.098	2.38	0.094	0.2	0.008
	TCHW 09 02 04											0.4	0.016
	TCHW 09 02 08											0.8	0.031
	TCHX 09 02 01 - L22	R22	22									0.2	0.008
	TCHX 09 02 02 - L14	R71	14										
	TCHX 09 02 02 - L22	R22	22									0.2	0.008
	TCHX 09 02 04 - L08	R71	8									0.4	0.016
	TCHX 09 02 04 - L14		14										
11	TCHW 11 02 02	RC217, R22	0	6.35	0.25	11	0.433	2.8	0.11	2.38	0.094	0.2	0.008
	TCHW 11 02 04											0.4	0.016
	TCHW 11 02 08											0.8	0.031
	TCHX 11 02 01 - L22	R22	22									0.1	0.004
	TCHX 11 02 02 - L08	R71	8									0.2	0.008
	TCHX 11 02 04 - L08											0.4	0.016
	TCHX 11 02 04 - L14		14										
16	TCHW 16 T3 02	R22	0	9.525	0.375	16.5	0.65	4.4	0.173	3.97	0.156	0.2	0.008
	TCHW 16 T3 04	RC217, R22										0.4	0.016
	TCHW 16 T3 08											0.8	0.031
	TCHW 16 T3 12											1.2	0.047
	TCHX 16 T3 04 - L14	R71	14									0.4	0.016
	TCHX 16 T3 08 - L22	R22	22									0.8	0.031
06	CCHW 06 02 04	RC217, R22	0	6.35	0.25	6.35	0.25	2.8	0.11	2.38	0.094	0.4	0.016
	CCHW 06 02 08	RC217										0.8	0.031
	CCHX 06 02 04 - L14		14									0.2	0.008
	CCHX 06 02 02 - L22	R22	22										
	CCHX 06 02 04 - L08	RC217, R22, R71	8									0.4	0.016
	CCHX 06 02 04 - R08	R22											
	CCHX 06 02 04 - L14	R71	14										
09	CCHW 09 T3 04	RC217, R22	0	9.525	0.375	9.525	0.375	4.4	0.173	3.97	0.156	0.4	0.016
	CCHW 09 T3 08	RC217										0.8	0.031
	CCHX 09 T3 02 - L08		8									0.2	0.008
	CCHX 09 T3 04 - L08	RC217, R71										0.4	0.016
	CCHX 09 T3 08 - L08	RC217										0.8	0.031
12	CCHW 12 04 08	RC217	0	12.7	0.5	12.7	0.5	5.5	0.216	4.74	0.187	0.8	0.031
04	CPHW 04 T1 04	RC217, R22	0	4.76	0.187	4.8	0.189	2.15	0.085	1.98	0.078	0.4	0.016

RIGIBORE

Inserts by Rigibore®

All areas of production catered for, including low speed roughing, interrupted cuts and optimised machining of specialised materials

Ground to ISO H tolerance, long lasting, fast metal removal

Roughing

Choice of geometries - Uncoated and coated grades

Inserts for cast iron, aluminum, steel, brass, bronze and titanium alloys

Rigibore Grades for WCGX Inserts Rough Boring

Grade	ISO	ANSI	Description	Coating	Materials
RC62A	P10-P35 M15-M35	C6-C7	Medium to heavy machining. Combines wear resistance to deformation at higher cutting speeds. A multi purpose grade for use as the outboard insert for drills and rough boring.	Multi coated	Steel Cast steel High alloy steels
RC54A	P20-P45 M20-45	C5-C6	Medium to extreme roughing conditions in steel, high alloy steels & cast steels. Recommended for unstable setups where vibration is likely to occur. Suitable for roughing & interrupted cuts in boring. For inboard & outboard inserts in drills	Multi coated	Steel Cast steel High alloy steels
RC22A	K05-K25 M10-M25	C2-C3	Excellent wear resistance. For use at higher cutting speeds. Primarily a grade for cast iron but also a supplementary grade to RC26A where greater abrasion resistance is required. Not for use on aluminium or its alloys.	Multi coated	Cast iron Abrasive materials
R56	P15-P35 M15-M35	C6	Drilling and boring in steels. Recommended for inboard insert of drills in stable conditions.	Uncoated	Cast steels Alloy steels Stainless steel Heat resisting steels Alloyed grey iron modular
R54	P30-P50 M30-M40	C5	Roughing & interrupted cuts at lower cutting speeds. High toughness, high strength & resistance to mechanical shock. Recommended as the inboard insert on drills in unstable conditions.	Uncoated	Steels Cast steels
R22	K10-K25 M10-M30	C2-C3	High resistance to wear and good edge sharpness. Rough boring and drilling. Moderate cutting speeds & high feeds. Recommended for both inboard & outboard insert when drilling cast iron and non-ferrous materials.	Micrograin uncoated	Cast iron Non ferrous materials Heat resisting titanium alloys Alloys and plastics
R19	M10-M20 K15-K35	C1-C2	Good abrasion and shock resistance. Recommended for the drilling and boring of high nickel materials & tools steels at low to medium speeds & feeds. Suitable for both inboard & outboard inserts in drills	Micrograin uncoated	High nickel materials Tool steels

Indexable Inserts

Cutting Edges - A choice of 2 cutting edges is available

- E - Lightly honed edge - more positive cutting edge for lower cutting forces, used in stable conditions
- S - Negative land & lightly honed edge - reinforced for more difficult materials and unstable working conditions

Thicknesses - A choice of 2 insert thicknesses is available

- Regular - the standard insert which is recommended for most boring applications in drilling and rough boring
- Heavy duty (HD) - A thicker insert used on more di cult materials and applications

WCGX - Regular

Size	Order Code	Available Grades (Coated)	Available Grades (Uncoated)	d (I.C)		l*		d1		s		r	
				mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
03	WCGX 03 02 04 S	RC62A, RC54A	R56, R54, R22	6.0	.236	3.97	.156	2.8	.110	2.5	.098	0.4	0.016
	WCGX 03 02 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
05	WCGX 05 03 04 S	RC62A, RC54A	R56, R54, R22	8.0	.315	5.29	.208	2.8	.110	3.0	.118	0.4	0.016
	WCGX 05 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
06	WCGX 06 03 04 S	RC62A, RC54A	R56, R54, R22	10.0	.394	6.62	.260	3.9	.154	3.0	.118	0.4	0.016
	WCGX 06 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
07	WCGX 07 03 04 S	RC62A, RC54A	R56, R54, R22	12.0	.472	7.94	.312	4.6	.181	3.8	.150	0.4	0.016
	WCGX 07 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
09	WCGX 09 04 04 S	RC62A, RC54A	R54, R22	15.0	.591	9.92	.390	4.8	.189	4.3	.169	0.4	0.016
	WCGX 09 04 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										

WCGX - Heavy Duty (HD)

Size	Order Code	Available Grades (Coated)	Available Grades (Uncoated)	d (I.C)		l*		d1		s		r	
				mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
05	WCGX 05 T3 04 S-HD	RC54A	R56, R54, R22	8.0	.315	5.29	.208	2.8	.110	3.8	.150	0.4	0.016
	WCGX 05 T3 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										
06	WCGX 06 T3 04 S-HD	RC62A, RC54A	R56, R54, R22	10.0	.394	6.62	.260	3.9	.154	3.8	.150	0.4	0.016
	WCGX 06 T3 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										
07	WCGX 07 04 04 S-HD	RC54A	R54, R22	12.0	.472	7.94	.312	4.6	.181	4.8	.189	0.4	0.016
	WCGX 07 04 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										
09	WCGX 09 05 04 S-HD	RC54A	R54, R22	15.0	.591	9.92	.390	4.8	.189	5.3	.209	0.4	0.016
	WCGX 09 05 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										