

# Welcome to Rigibore®

Manufacturers of high quality tooling for precision hole boring

Rigibore's use of technology in manufacturing means we deliver our products, even complex multi-edge cutting tools, quicker than the competition.

We pride ourselves on our enquiry response time, our attention to detail, product quality and our commitment to customer satisfaction.

Our bespoke design and manufacturing system delivers high quality boring tools in the shortest delivery times.

Rigibore® is an award winning company recognised for its use of technology and commitment to customer focus.

## What our customers say about us...

*"Rigibore's quality and on-time delivery performance is outstanding and considered to be Best-in-Class."*

*"The product, coupled with their knowledge of difficult boring applications has proven to be the perfect partner for a world class metalworking solutions provider."*

*"Rigibore® has customised their software and manufacturing services to fit our every need (and more importantly our customer's needs). Their flexibility is unparalleled."*

### Experience Matters

Our design experience guarantees that we can offer you the best tool solution for your boring application.



Hayle, UK



Mukwonago, USA

# Innovation, technology and quality in design and manufacture

# Smartbore® Cartridges

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

Use the Smartbore® Digital Torx Wrench to plug in to the Smartbore® Cartridge, rotate the Torx Wrench handle to make your adjustment and retract from Cartridge... *it's that easy!*

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

### Ease and accuracy of adjustment

Reduces time pre-setting.

### Single or multi-point cartridge systems

Feature any number of Smartbore® cartridges per Smartbore® 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

### Smartbore® Cartridge Data

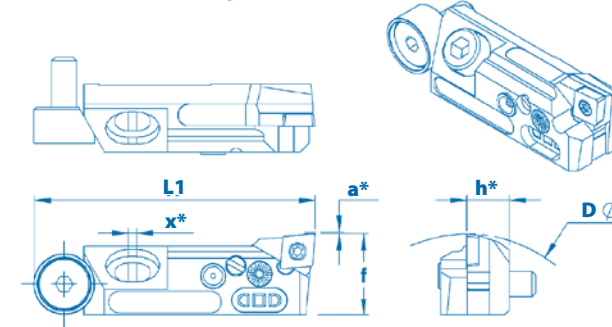
	Part Number	D (Min Bore Ø)	f	L1	Insert	Datum Rad
<b>STANDARD</b>						
	SB-UFP0695 SB-UFP0695LH	mm 28.0	mm 16.0	mm 55.5	CC..0602..	mm 0.4
	SB-UFP07120 SB-UFP07120LH	mm 28.0	mm 16.0	mm 58.5	DC..0702..	mm 0.4
	SB-UFP1195 SB-UFP1195LH	mm 36.0	mm 20.0	mm 55.5	TC..1102..	mm 0.4
	SB-UFP1290	mm 75.0	mm 32.0	mm 107.0	CC..1204..	mm 0.8
	SB-UFP1690	mm 75.0	mm 32.0	mm 107.0	TC..16T3..	mm 0.8

To order Global (excl. USA and Mexico) Call +44 (0) 1736 755 355

To order in USA and Mexico Call 262 363 3922

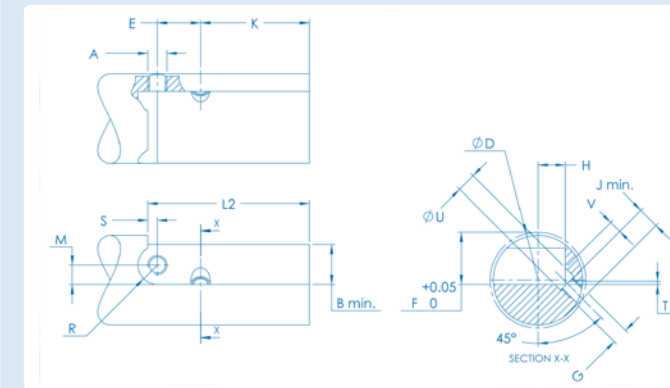
## Smartbore® Cartridges Technical Specification

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 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 mm	B (min.) mm	H mm	L2 mm	R mm	S mm	K mm
<b>STANDARD</b>	M5 x 0.8	12.5	8.5	47.5	6.1	3.0	34.0
<b>LARGE</b>	M8 x 1.25	24.6	18.0	98.0	10.1	3.0	63.0

UFP	G mm	T mm	U (Dia.) mm	V mm	J (Min.) mm	E mm	M mm
<b>STANDARD</b>	M5 x 0.8	1.0	6.0	4.0	5.0	13.5	6.1
<b>LARGE</b>	M10 x 1.5	1.4	11.0	8.0	10.0	32.0	10.0

### Smartbore® 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	Country	Smartbore Adjuster (Digital Torx Wrench)	RF Smartbore Remote Reader	Smartbore Battery Re-charger
Standard	WS360	R58	WS359	WP311	RS2560	R37	UFGP_00	R48	R57 (T10)	Europe, North America, Australia, New Zealand	SB – ADJ912	SB – RDA912	SB -CHR02
Large 1290 1690	WS1035	R108	WS830	WP411	RS40120 RS4084	R87 R77	UFGP_00	R88	R57 (T10)	All other Countries	SB – ADJ433	SB – RDA433	SB -CHR02

# UFP Cartridges

A wide range of adjustable cartridges for finish boring.

Ideal for high productivity situations where close-tolerances on size 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/0.24".

### 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 Cartridges Technical Specification

UFP Cartridge Data						
	Part Number	D (Min Bore Ø)	f	L1	Insert	Datum Rad
STANDARD						
	UFP-0390 UFP-0390LH	mm 28.0	mm 16.0	mm 55.5	WCGX 03 02 ..	mm 0.4
	UFP-0690 UFP-0690LH	mm 28.0	mm 16.0	mm 55.5	CC or CP 06 02 ..	mm 0.4
	UFP-0695 UFP-0695LH	mm 28.0	mm 16.0	mm 55.5	CC or CP 06 02 ..	mm 0.4
	UFP-0690BB	mm 36.0	mm 20.0	mm 46.0	CC or CP 06 02 ..	mm 0.4
	UFP-07120 UFP-07120LH	mm 36.0	mm 16.0	mm 58.5	DC 07 02 ..	mm 0.4

To order Global (excl. USA and Mexico) Call +44 (0) 1736 755 355

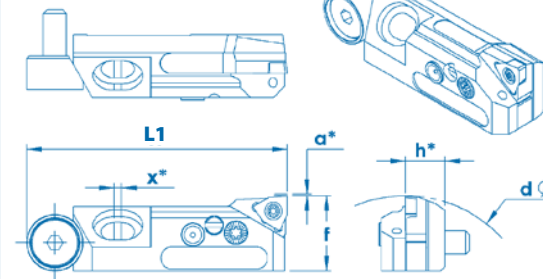
To order in USA and Mexico Call 262 363 3922

## UFP Cartridge Data

	Part Number	D (Min Bore Ø)	f	L1	Insert	Datum Rad
STANDARD						
	UFP-1190 UFP-1190LH	mm 36.0	mm 20.0	mm 55.5	TC or TP 11 02 ..	mm 0.4
	UFP-1195 UFP-1195LH	mm 36.0	mm 20.0	mm 55.5	TC or TP 11 02 ..	mm 0.4
	UFP-1290	mm 75.0	mm 32.0	mm 107.0	CC or CP 12 04 ..	mm 0.8
	UFP-1690	mm 75.0	mm 32.0	mm 107.0	TC or TP 16 03 ..	mm 0.8

## UFP 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 18.0 on UFP 12-16  
x\* = 1.0 on UFP 06-11 1.6 on UFP 12-16

For Mounting Dimensions, please refer to Smartbore® Cartridge Mounting Dimensions on page 3.

## Smartbore 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 (RS2055 for WC Insert)	R37 (R27 for WC Insert)	UFPG_00	R48	R57
Large 1290 1690	WS1035	R108	WS830	WP411	RS40120 RS4084	R87 R77	UFPG_00	R68	R57

# 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 in stock.

**Outstanding value**

Telephone today for best price and delivery times.

**Minimum bore**

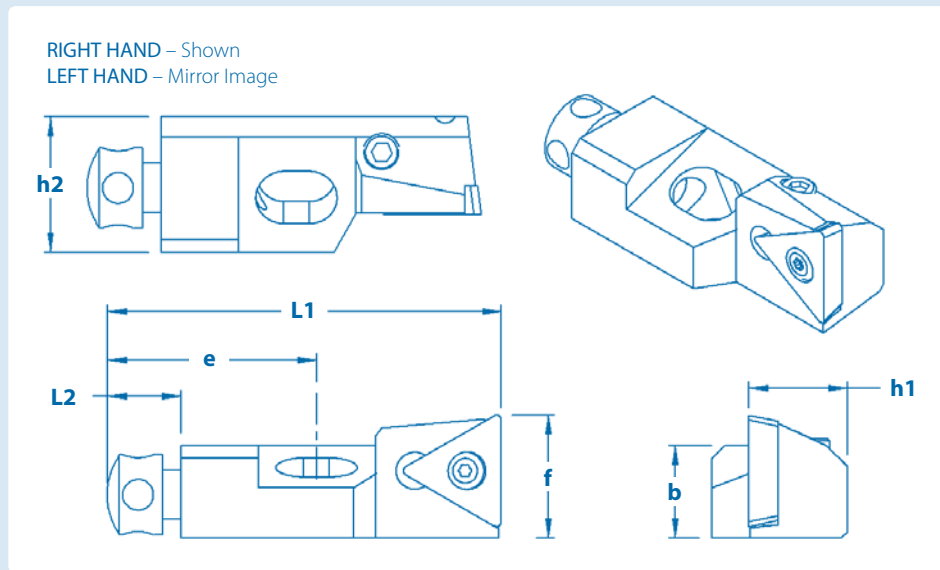
15.6mm/0.614"



● Tools for building-in

● Full range available

## ISO and Small Cartridges Technical Specification



06CA X7 = +/- 0.5  
 10CA = +/- 1.0

AXIAL ADJUSTMENT (mm)

06CA = +/- 0.5  
 12CA = +/- 1.0

08CA = +/- 1.0  
 16CA = +/- 1.5

## ISO and Small Cartridges Technical Specification

### ISO and Small Cartridge Data

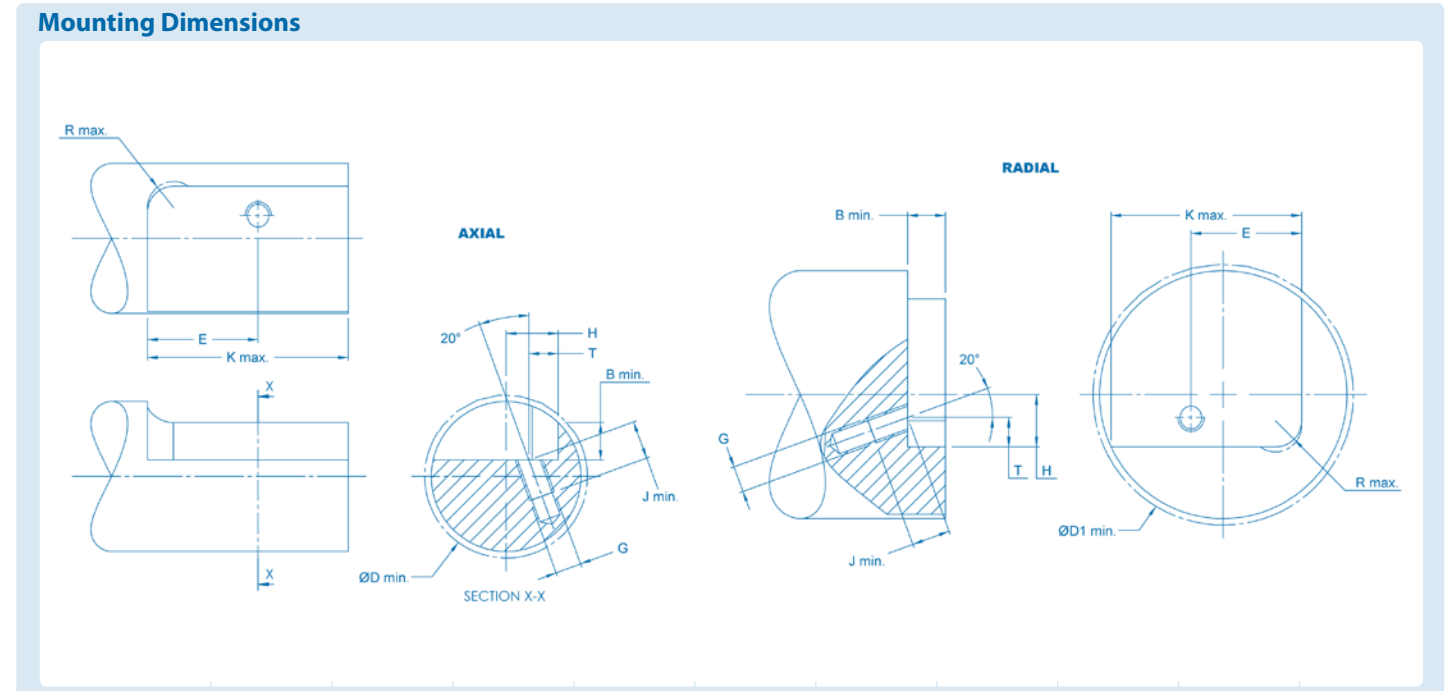
	PART NUMBER	L1 mm	L2 mm	b mm	h1 mm	h2 mm	f mm	e mm	INSERT	DATUM RAD mm
	STFCR/L 06CA-06X7	24.5	4.5	4.5	6.0	6.0	7.0	12.0	TC06..T1..	0.2
	STFCR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	8.0	12.0	TC06..T1..	0.4
	STFPR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	8.0	12.0	TP06..T1..	0.4
	STFCR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	STFPR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TP..0902..	0.4
	STFCR/L 10CA-11	50.0	8.0	11.0	10.0	15.0	14.0	20.0	TC..1102..	0.4
	STFPR/L 10CA-11	50.0	8.0	11.0	10.0	15.0	14.0	20.0	TP..1102..	0.4
	STFCR/L 12CA-16	55.0	8.0	15.0	12.0	20.0	20.0	20.0	TC..16T3..	0.8
STFPR/L 12CA-16	55.0	8.0	15.0	12.0	20.0	20.0	20.0	TP..16T3..	0.8	
STFCR/L 16CA-16	63.0	8.0	20.0	16.0	20.0	25.0	25.0	TC..16T3..	0.8	
STFPR/L 16CA-16	63.0	8.0	20.0	16.0	20.0	25.0	25.0	TP..16T3..	0.8	
	STTCR/L 06CA-06X7	24.5	4.5	4.5	6.0	6.0	3.7	12.0	TC..16T3..	0.2
	STTCR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	5.5	12.0	TC..06T1..	0.4
	STTPR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	5.5	12.0	TP..06T1..	0.4
	STTCR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	6.0	17.0	TC..0902..	0.4
	STTPR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	6.0	17.0	TP..0902..	0.4
	STTCR/L 10CA-11	50.0	8.0	11.0	10.0	15.0	9.0	20.0	TC..1102..	0.4
	STTPR/L 10CA-11	50.0	8.0	11.0	10.0	15.0	9.0	20.0	TP..1102..	0.4
	STTCR/L 12CA-16	55.0	8.0	15.0	12.0	20.0	13.0	20.0	TC..16T3..	0.8
STTPR/L 12CA-16	55.0	8.0	15.0	12.0	20.0	13.0	20.0	TP..16T3..	0.8	
	STSCR/L 06CA-06X7	24.5	4.5	4.5	6.0	6.0	7.0	12.0	TC..06T1..	0.2
	STSCR/L 06CA-06	21.0	4.5	5.0	6.0	8.0	8.0	12.0	TC..06T1..	0.4
	STSPR/L 06CA-06	21.0	4.5	5.0	6.0	8.0	8.0	12.0	TP..06T1..	0.4
	STSCR/L 08CA-09	28.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	STSPR/L 08CA-09	28.0	6.0	7.5	8.0	11.0	10.0	17.0	TP..0902..	0.4
	STSCR/L 10CA-11	44.0	8.0	11.0	10.0	15.0	14.0	20.0	TC..1102..	0.4
STSPR/L 10CA-11	44.0	8.0	11.0	10.0	15.0	14.0	20.0	TP..1102..	0.4	
STSCR/L 12CA-16	47.0	8.0	15.0	12.0	20.0	20.0	25.0	TC..16T3..	0.8	
STSPR/L 12CA-16	47.0	8.0	15.0	12.0	20.0	20.0	25.0	TP..16T3..	0.8	
	STRCR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	7.8	17.0	TC..0902..	0.4
	STRPR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	7.8	17.0	TP..0602..	0.4
	STUCR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	STUCR/L	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	STKCR/L 06CA-06X7	24.5	4.5	4.5	6.0	6.0	7.0	12.0	TC..06T1..	0.2
	STKCR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	8.0	12.0	TC..06T1..	0.4
	STKPR/L 06CA-06	25.0	4.5	5.0	6.0	8.0	8.0	12.0	TP..06T1..	0.4
	STKCR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	STKPR/L 08CA-09	32.0	6.0	7.5	8.0	11.0	10.0	17.0	TP..0902..	0.4

**ISO and Small Cartridges Technical Specification**

**ISO and Small Cartridge Data Continued**

	PART NUMBER	L1 mm	L2 mm	b mm	h1 mm	h2 mm	f mm	e mm	INSERT	DATUM RAD mm
	STLCL/L 06CA-06X7	24.5	4.5	4.5	6.0	6.0	7.0	12.0	TC06..T1..	0.2
	STWCR/L 06CA-06X7	21.0	4.5	4.5	6.0	6.0	7.0	12.0	TC06..T1..	0.2
	STWCR/L 06CA-06	21.0	4.5	5.0	6.0	8.0	8.0	12.0	TC06..T1..	0.4
	STWPR/L 06CA-06	21.0	4.5	5.0	6.0	8.0	8.0	12.0	TP06..T1..	0.4
	STWCR/L 08CA-09	28.0	6.0	7.5	8.0	11.0	10.0	17.0	TC..0902..	0.4
	SCLCR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CC..0602..	0.4
	SCLPR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CP..0602..	0.4
	SCFCR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CC..0602..	0.4
	SCFPR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CP..0602..	0.4
	SCFCR/L 10CA-09	50.0	8.0	11.0	10.0	15.0	14.0	20.0	CC..09T3..	0.8
	SCFPR/L 10CA-09	50.0	8.0	11.0	10.0	15.0	14.0	20.0	CP..09T3..	0.8
	SCKCR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CC..0602..	0.4
	SCRCR/L 08CA-06	32.0	6.0	7.5	8.0	11.0	10.0	17.0	CC..0602..	0.4
	SSKCR/L 10CA-09	50.0	8.0	11.0	10.0	15.0	14.0	20.0	SC..09T3..	0.8
	SSKPR/L 10CA-09	50.0	8.0	11.0	10.0	15.0	14.0	20.0	SP..09T3..	0.8
	SSKCR/L 12CA-12	55.0	8.0	15.0	12.0	20.0	20.0	20.0	SC..1204..	0.8
	SSKPR/L 12CA-12	55.0	8.0	15.0	12.0	20.0	20.0	20.0	SP..1204..	0.8

**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
06CA-06X7	15.6	30.0	12.0	23.5	M3 x 0.5	5.5	5.5	2.5	4.0	2.5
06CA-06	20.0 <sup>1</sup>	31.0	12.0	24.0	M3.5 x 0.5	6.0	6.0	3.5	5.0	2.5
08CA	25.0 <sup>2</sup>	38.0	17.0	30.5	M4 x 0.7	6.5	8.0	4.5	5.8	4.0
10CA	40.0	55.0	20.0	48.5	M6 x 1.0	14.0	10.0	5.0	9.0	4.0
12CA	50.0	75.0	20.0	48.5	M6 x 1.0	14.0	12.0	6.0	13.0	5.0
16CA	55.0	75.0	25.0	61.0	M8 x 1.25	16.0	15.0	0(@45°)	16.5	6.0

**ISO Cartridge Spares and Accessories**

CARTRIDGE	INSERT SCREW	TORX WRENCH	TORX DRIVER	MOUNTING SCREW	HEXAGON WRENCH (MTG)	AXIAL ADJ SCREW	RADIAL ADJ SCREW	HEXAGON WRENCH (RADA AJD)
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

**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)

# Qualified Roughing Cartridges

Wide range of cartridges available and direct from stock.

Rigibore® Roughing Cartridges are available in a range of styles including:

10CX • 12CX

## Standard Roughing Cartridges.

### Outstanding performance

No adjustment needed, provides rigidity and reliability.

### Minimum bore

30mm/1.181"

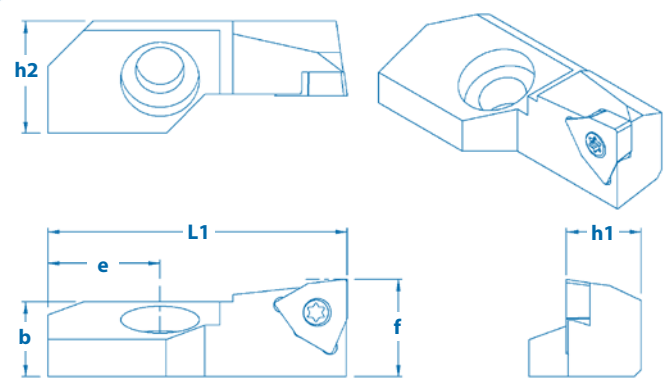


● Standard Roughing Cartridge



● Negative CX Cartridge

## Roughing Cartridges Technical Specification



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

## Roughing Cartridges Technical Specification

	PART NUMBER	L1 mm	b mm	h1 mm	h2 mm	f mm	e mm	INSERT	DATUM RAD mm
	SWFCR 08CX-03	25.0	6.5	8.0	11.0	9.0	10.0	WCGX0302..	0.4
	SWFCR 10CX-05	40.0	10.0	10.0	15.0	13.0	15.0	WCGX0503..	0.4
	SWFCR 10CX-05-HD							WCGX05T3..	
	SWFCR 12CX-06	44.0	13.0	12.0	20.0	18.0	14.0	WCGX0603..	0.4
	SWFCR 12CX-06-HD							WCGX06T3..	
	SWFCR 12CX-07	44.0	13.0	12.0	20.0	18.0	14.0	WCGX0703..	0.4
	SWFCR 12CX-07-HD							WCGX0704..	
	SWFCR 16CX-09	50.0	18.0	16.0	21.0	23.0	17.0	WCGX0904..	0.4
	SWFCR 16CX-09-HD							WCGX0905..	

## Roughing Cartridges Technical Specification

### Roughing Cartridge Data

	PART NUMBER	L1 mm	b mm	h1 mm	h2 mm	f mm	e mm	INSERT	DATUM RAD mm
	SWXCR 08CX-03	25.0	6.5	8.0	11.0	9.0	10.0	WCGX0302..	0.4
	SWXCR 10CX-05	40.0	10.0	10.0	15.0	13.0	15.0	WCGX0503..	0.4
	SWXCR 10CX-05-HD							WCGX05T3..	
	SWXCR 12CX-06	44.0	13.0	12.0	20.0	18.0	14.0	WCGX0603..	0.4
	SWXCR 12CX-06-HD							WCGX06T3..	
	SWXCR 12CX-07	44.0	13.0	12.0	20.0	18.0	14.0	WCGX0703..	0.4
SWXCR 12CX-07-HD	WCGX0704..								
SWXCR 16CX-09	50.0	18.0	16.0	21.0	23.0	17.0	WCGX0904..	0.4	
SWXCR 16CX-09-HD							WCGX0905..		
	STFGR 10CX-11	40.0	10.0	10.0	15.0	13.0	15.0	TC..1102..	0.4
	STFPR 10CX-11							TP..1102..	
	STFGR 12CX-16	44.0	13.0	12.0	20.0	18.0	14.0	TC..16T3..	0.8
	STFPR 12CX-16							TP..16T3..	
	SSYCR 10CX-09	40.0	10.0	10.0	15.0	13.0	15.0	SC..09T3..	0.4
	SSYCR 12CX-12	44.0	13.0	12.0	20.0	18.0	14.0	SC..1204..	0.8
	STGCR 12CX-16	44.0	13.0	12.0	20.0	18.0	14.0	TC..16T3..	0.8

### Negative CX Style Roughing Cartridges

	PART NUMBER	L1 mm	b mm	h1 mm	h2 mm	f mm	e mm	INSERT	DATUM RAD mm
<b>NEGATIVE</b>									
	MTFNR 10CX-11	40.0	10.0	10.0	18.8	13.0	15.0	TN..1103..	0.4
	MTFNR 12CX-16	44.0	13.0	12.0	23.5	18.0	14.0	TN..1604..	0.8
	MSYNR 10CX-09	40.0	10.0	10.0	20.4	13.0	15.0	SN..0903..	0.8
	MSYNR 12CX-12	44.0	13.0	12.0	23.6	18.0	14.0	SN..1204..	0.8
	MCFNR 10CX-09	40.0	10.0	10.0	18.9	13.0	15.0	CN..09T3..	0.8
	MCFNR 12CX-12	44.0	13.0	12.0	23.6	18.0	14.0	CN..1204..	0.8

Roughing Cartridge Mounting Dimensions – see page 9 for details

## Roughing Cartridge Mounting Dimensions (see page 9 for details)

**Roughing Cartridge Data**


Cartridge	D Min	E	K Max	G	H	T	B Min	R Max
	mm	mm	mm	mm	mm	mm	mm	mm
08CX	30.0	11.0	24.5	M4 x 0.7	8.0	4.5	4.8	4.0
10CX	40.0	15.0	38.5	M6 x 1.0	10.0	5.0	9.5	5.0
12CX	50.0	14.0	42.0	M6 x 1.0	12.0	6.0	13.5	5.0
16CX	60.0	17.0	47.0	M8 x 1.25	16.0	0(@45°)	18.0	5.0

## 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 – 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

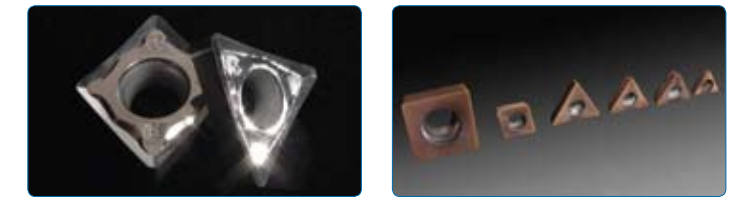
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## Inserts by Rigibore®

**Durability and Performance**  
 All areas of production catered for including low speed roughing, interrupted cuts and optimised machining of specialist materials.  
 Ground to ISO H tolerance, long lasting, fast metal removal.

## Finishing

**Choice of geometries • Uncoated and coated grades**  
 Inserts for Cast Iron, Aluminium, 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 speeds & high feeds	Micro-grain uncoated	Cast Iron Ferrous materials, & heat resisting titanium alloy & aircraft materials & plastics aluminium

## Chipbreaker Geometries

**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 Aluminium

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



TCHX



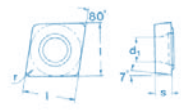
TCHW



CCHX



CCHW



Inserts for All Uses L = Left hand (Boring) R = Right hand (turning)

Size	Order Code	Available Grades R217 R22 R71	TOP RAKE (deg)	d (I.C)		l*		d1		s		r	
				inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
06	TCHW 06 T1 02	RC217, R22	0	.156	3.97	.270	6.87	.087	2.2	.078	1.98	.008	0.2
	TCHW 06 T1 04	RC217, R22	0									.016	0.4
	TCHW 06 T1 08	RC217	0									.031	0.8
	TCHX 06 T1 01 - L22	R22	22									.004	0.1
	TCHX 06 T1 02 - L08	R71	8									.008	0.2
	TCHX 06 T1 02 - L14	R71	14									.008	0.2
	TCHX 06 T1 02 - L22	R22	22									.008	0.2
	TCHX 06 T1 04 - L08	R71	8									.016	0.4
09	TCHW 09 02 02	RC217, R22	0	.219	5.56	.379	9.63	.098	2.5	.094	2.38	.008	0.2
	TCHW 09 02 04	RC217, R22	0									.016	0.4
	TCHW 09 02 08	RC217, R22	0									.031	0.8
	TCHX 09 02 01 - L22	R22	22									.008	0.2
	TCHX 09 02 02 - L14	R71	14									.008	0.2
	TCHX 09 02 02 - L22	R22	22									.008	0.2
	TCHX 09 02 04 - L08	R71	8									.016	0.4
	TCHX 09 02 04 - L14	R71	14									.016	0.4
11	TCHW 11 02 02	RC217, R22	0	.250	6.35	.433	11.0	.110	2.8	.094	2.38	.008	0.2
	TCHW 11 02 04	RC217, R22	0									.016	0.4
	TCHW 11 02 08	RC217, R22	0									.031	0.8
	TCHX 11 02 01 - L22	R22	22									.004	0.1
	TCHX 11 02 02 - L08	R71	8									.008	0.2
	TCHX 11 02 04 - L08	R71	8									.016	0.4
TCHX 11 02 04 - L14	R71	14									.016	0.4	
16	TCHW 16 T3 02	R22	0	.375	9.525	.650	16.5	.173	4.4	.156	3.97	.008	0.2
	TCHW 16 T3 04	RC217, R22	0									.016	0.4
	TCHW 16 T3 08	RC217, R22	0									.031	0.8
	TCHW 16 T3 12	RC217, R22	0									.047	1.2
	TCHX 16 T3 04 - L14	R71	14									.016	0.4
	TCHX 16 T3 08 - L22	R22	22									.031	0.8
06	CCHW 06 02 04	RC217, R22	0	.250	6.35	.250	6.35	.110	2.8	.094	2.38	.016	0.4
	CCHW 06 02 08	RC217	0									.031	0.8
	CCHX 06 02 04 - L14	RC217	14									.008	0.2
	CCHX 06 02 02 - L22	R22	22									.008	0.2
	CCHX 06 02 04 - L08	RC217, R22, R71	8									.016	0.4
	CCHX 06 02 04 - R08	R22	8									.016	0.4
	CCHX 06 02 04 - L14	R71	14									.016	0.4
09	CCHW 09 T3 04	RC217, R22	0	.375	9.525	.375	9.525	.173	4.4	.156	3.97	.016	0.4
	CCHW 09 T3 08	RC217	0									.031	0.8
	CCHX 09 T3 02 - L08	RC217	8									.008	0.2
	CCHX 09 T3 04 - L08	RC217, R71	8									.016	0.4
	CCHX 09 T3 08 - L08	RC217	8									.031	0.8
12	CCHW 12 04 08	RC217	0	.500	12.7	.500	12.7	.216	5.5	.187	4.74	.031	0.8
04	CPHW 04 T1 04	RC217, R22	0	.187	4.76	.189	4.8	.085	2.15	.078	1.98	.016	0.4

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RIGIBORE

# Inserts by Rigibore®

## Durability and Performance

All areas of production catered for including low speed roughing, interrupted cuts and optimised machining of specialist materials. Ground to ISO H tolerance, long lasting, fast metal removal.

RIGIBORE

## Roughing

### Choice of geometries • Uncoated and coated grades

Inserts for Cast Iron, Aluminium, Steel, Brass, Bronze and Titanium Alloys.



### Rigibore Grades for WCGX Inserts - for rough boring

Grade	I.S.O	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 & rough boring	Multi-coated	Steel, Cast Steel, High Alloy Steels
RC54A	P20-P45 M20-M45	C5-C6	Medium to extreme roughing conditions in steel, high alloy steels & cast steels Recommended for unstable set-ups where vibration is likely to occur. Suitable for roughing & interrupted cuts in boring; for inboard & outboard inserts in drills	Multi Coated	Steel, Cast Steels 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 & Maable cast iron
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 & 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 & 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

### WC 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 difficult materials and applications



### WCGX - Regular

Size	Order Code	AVAILABLE GRADES		d (I.C)		l*		d1		s		r	
		Coated Grades	Uncoated Grades										
		RC62A, RC54A, RC22A	R56, R54, R22, R19	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
03	WCGX 03 02 04 S	RC62A, RC54A,	R56, R54, R22	.236	6.0	.156	3.97	.110	2.8	.098	2.5	.016	0.4
	WCGX 03 02 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
05	WCGX 05 03 04 S	RC62A, RC54A	R56, R54, R22	.315	8.0	.208	5.29	.110	2.8	.118	3.0	.016	0.4
	WCGX 05 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
06	WCGX 06 03 04 S	RC62A, RC54A	R56, R54, R22	.394	10.0	.260	6.62	.154	3.9	.118	3.0	.016	0.4
	WCGX 06 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
07	WCGX 07 03 04 S	RC62A, RC54A	R56, R54, R22	.472	12.0	.312	7.94	.181	4.6	.150	3.8	.016	0.4
	WCGX 07 03 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										
09	WCGX 09 04 04 S	RC62A, RC54A	R54, R22	.591	15.0	.390	9.92	.189	4.8	.169	4.3	.016	0.4
	WCGX 09 04 04 E	RC62A, RC54A, RC22A	R56, R54, R22, R19										

### WCGX - Heavy Duty (HD)

Size	Order Code	AVAILABLE GRADES		d (I.C)		l*		d1		s		r	
		Coated Grades	Uncoated Grades										
		RC62A, RC54A, RC22A	R56, R54, R22, R19	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
05	WCGX 05 T3 04 S-HD	RC54A	R56, R54, R22	.315	8.0	.208	5.29	.110	2.8	.150	3.8	.016	0.4
	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	.394	10.0	.260	6.62	.154	3.9	.150	3.8	.016	0.4
	WCGX 06 T3 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										
07	WCGX 07 04 04 S-HD	RC54A	R54, R22	.472	12.0	.312	7.94	.181	4.6	.189	4.8	.016	0.4
	WCGX 07 04 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										
09	WCGX 09 05 04 S-HD	RC54A	R54, R22	.591	15.0	.390	9.92	.189	4.8	.209	5.3	.016	0.4
	WCGX 09 05 04 E-HD	RC62A, RC54A, RC22A	R56, R54, R22, R19										