



INTRODUCING
The world of ZX



No Horizontal Boring Mill is complete without the
ZX TOOLING SYSTEM

INCREASE PRODUCTIVITY

cogsdill.com

Turn your boring machine into a lathe

The Cogsdill ZX range of Facing / Contouring Heads and Modular Boring tools allow relatively simple 2-axis CNC programs to perform a variety of machining operations by converting linear motion into radial slide movement by mechanical actuation.

No need for an additional electronic interface, expensive software or hardware.

Part changes can be accommodated quickly and easily with program changes. Operations that were previously performed manually can be converted to CNC Control, thus improving productivity, accuracy, part to part repeatability and improved surface finish.

MODULAR BORING TOOL

BONNET

FACING / CONTOURING HEAD



PERFORM LATHE-TYPE OPERATIONS

Many customers who have changed to the ZX Tooling System from conventional tooling report productivity increases of up to

500%



Multiple Functions. Maximum Flexibility.

The most versatile solution to increase the productivity of your HBM.

As used in manufacturing applications:

- Oil Valves
- Blowout Preventers
- Gearboxes
- Pump Housings
- Compressors
- Frac Pumps
- Engine Housings
- Aerospace Components
- Landing Gear
- Tubing Hangers
- Large Castings
- Machine Manufacturing
- Heavy Equipment Components
- And many more...

The ZX Tooling System is comprised of two basic styles of tools:

- **Facing / Contouring Heads**
featuring a single slide onto which various top tooling can be installed.
- **Modular Boring Tools (MBT)**
used primarily in boring operations inside bores.



By programming simultaneous movement of two CNC axes (typically 'W' and 'Z'), complex turning features can be machined on a Horizontal Boring Mill (HBM) allowing you to realise the full potential of your machine tool.

Cogsdill's ZX Tooling System provides the ultimate solution in terms of productivity, flexibility, and accuracy for machining large parts that require multiple operations.

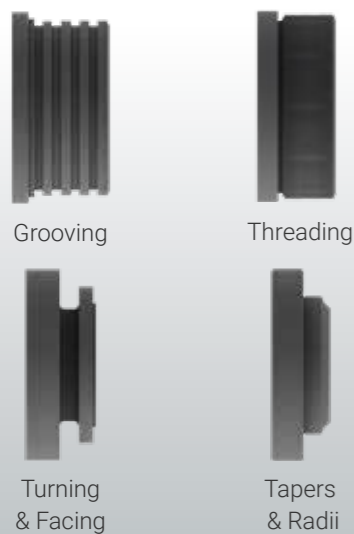
ZX benefits over conventional tooling:

- Improved accuracy
- Repeatability from part to part
- Superior part quality
- Enhanced surface finish
- Backlash-free actuation mechanism
- Extremely rigid design for roughing and finishing
- Modular design for maximum application flexibility
- A wide array of solutions to suit a variety of applications

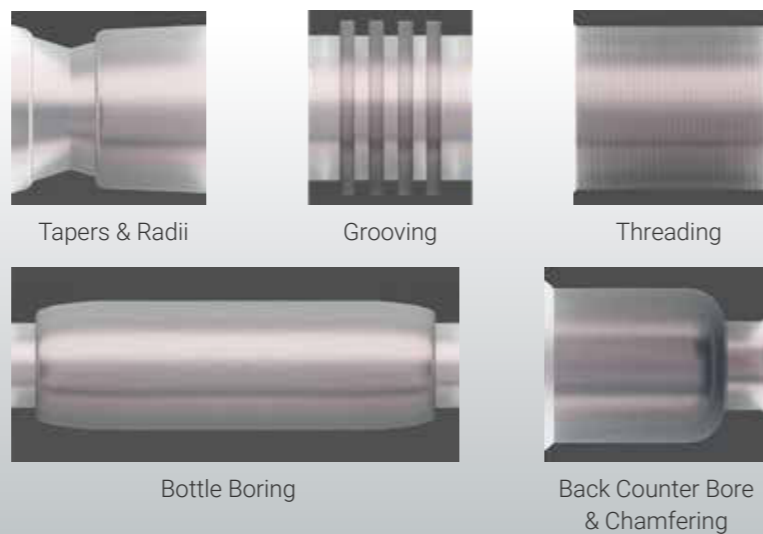
TYPICAL OPERATIONS	FACING HEAD	BORING TOOL
Boring	●	●
Facing (inc. Phonographic)	●	○
Contouring	●	●
Threading	●	●
Taper Boring	●	●
Deep Cavity Boring		●
Grooving	●	●
Profiling	●	●
Back Spot Facing	●	●
Ring Grooving	●	
Chamfering	●	●
Bottle Boring	○	●
Overturning	●	
Radii	●	●

Other operations are possible.

External operations



Internal operations



Compatible with CNC HBMs

The ZX tooling system requires the use of a Horizontal Boring Mill (HBM)* with a programmable inner spindle that rotates in unison with the outer spindle, or milling sleeve.

The axial movement of the inner spindle is converted within the tool into radial cutting stroke for diameter control. Movement of the table, or machine column, on a parallel axis controls the axial location of the cutting edge relative to the part. In most horizontal boring mills, these two axes are referred to as 'W' and 'Z'.

- Controlled inner spindle movement is converted into radial cutter movement
- Independently controlled column or table movement parallel to spindle
- **Easy programming:** Internal ZX mechanism with 2:1 (or 1:1) ratio.



"No HBM is complete without the ZX Tooling System"

* Did you know?

Certain CNC lathes can be retrofitted with a Cogsdill Drive Box to incorporate the ZX Tooling System.



See Drive Box section for more info

Machine tool spindle requirements

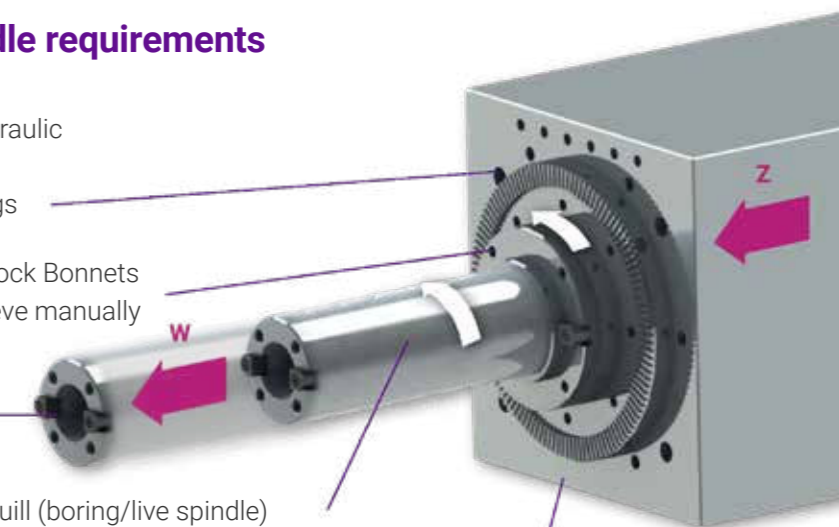
Location of automatic hydraulic clamping & pick up device utilised by Rotary Couplings

Location to bolt on Cam Lock Bonnets on the rotating milling sleeve manually

Connection to ZX tool shank

Rotating CNC-controlled quill (boring/live spindle) provides linear moving motion to the ZX mechanism where it is converted into radial stroke.

For all ZX Tools a quill (live spindle) is essential.



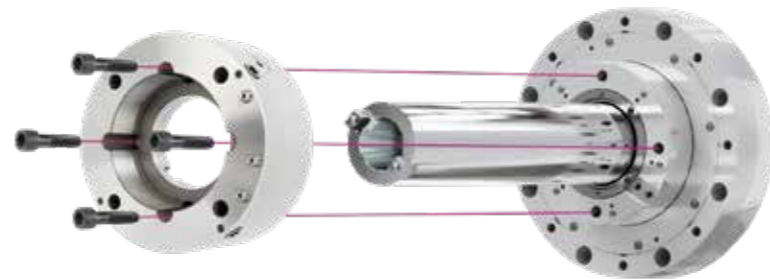
Linear moving Horizontal Boring Mill column or RAM. (In some case the machine table moves parallel to the spindle).

Cam Lock Bonnets

More flexibility. Extra support.

The ZX tooling system includes a quick release mounting interface called a Cam Lock bonnet.

This precisely machined bonnet is designed to fit the specific HBM onto which it will be installed and utilises our quick-release Cam Lock mechanism, designed to minimise production downtime.



The bonnet securely bolts to the outer spindle of the machine.



Attach the bonnet

1

Load the head / tool

2

3

Secure Cam Locks

THREE SIMPLE STEPS

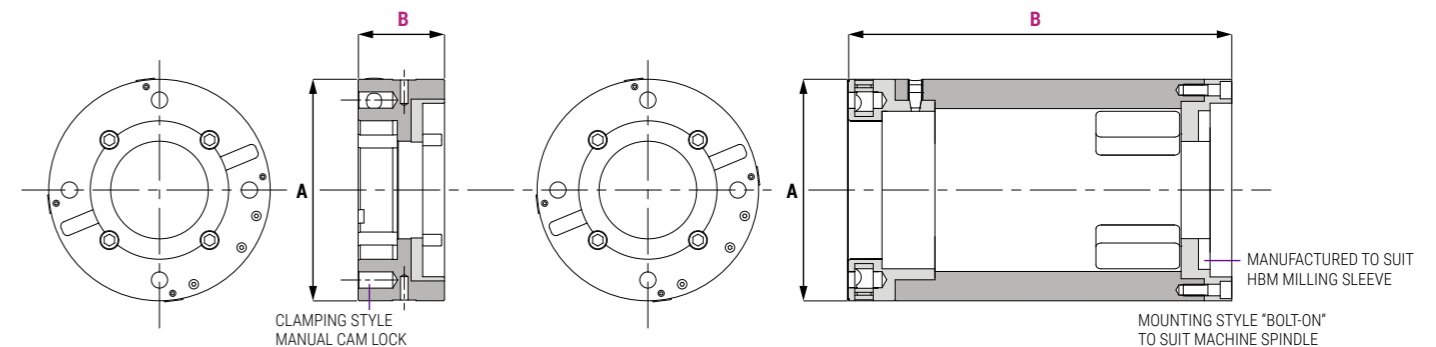
Optional enhancements available:

- Chip cover plates with wiper seals to keep the mounting surfaces clean
- Integral proximity switches to activate software on compatible machines
- Extended length bonnets are also available



Standard Length Cam Lock Bonnet

Extended Length Cam Lock Bonnet



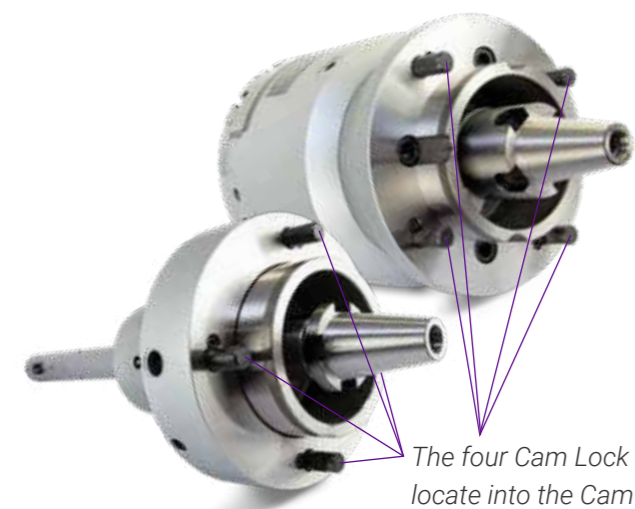
SIZE COMPARISON	UNITS	STANDARD BONNET	BONNET EXT. 250	BONNET EXT. 500	BONNET EXT. 750
A - Diameter	mm	ø305	ø305	ø305	ø305
B - Length	mm	90	250	500	750
Maximum Speed	RPM	800	500	300	200
Weight	KG	50	75	120	164

Maximum speed may vary with the size of the ZX Head / Tool mounted on the extended bonnet.

Maximum speed is for bonnet only on the spindle, see specifications of Facing / Contouring Heads or Modular Boring Tools for their maximum speeds.

Once installed, the bonnet seamlessly functions as part of the machine, providing a substantial engagement surface for the ZX tool. This ensures maximum support and rigidity while negating any loads on spindle bearings.

The Cam Lock system allows for effortless exchange of various heads and tools onto the bonnet by aligning four points and locking with an Allen key (hex wrench). This feature is standard across all our ZX tooling systems, and offers the ability to quickly change tooling applications with ease.



The four Cam Lock studs that locate into the Cam Locks on the bonnet

Cam Locks are simple to lock / unlock with an Allen key (hex wrench)





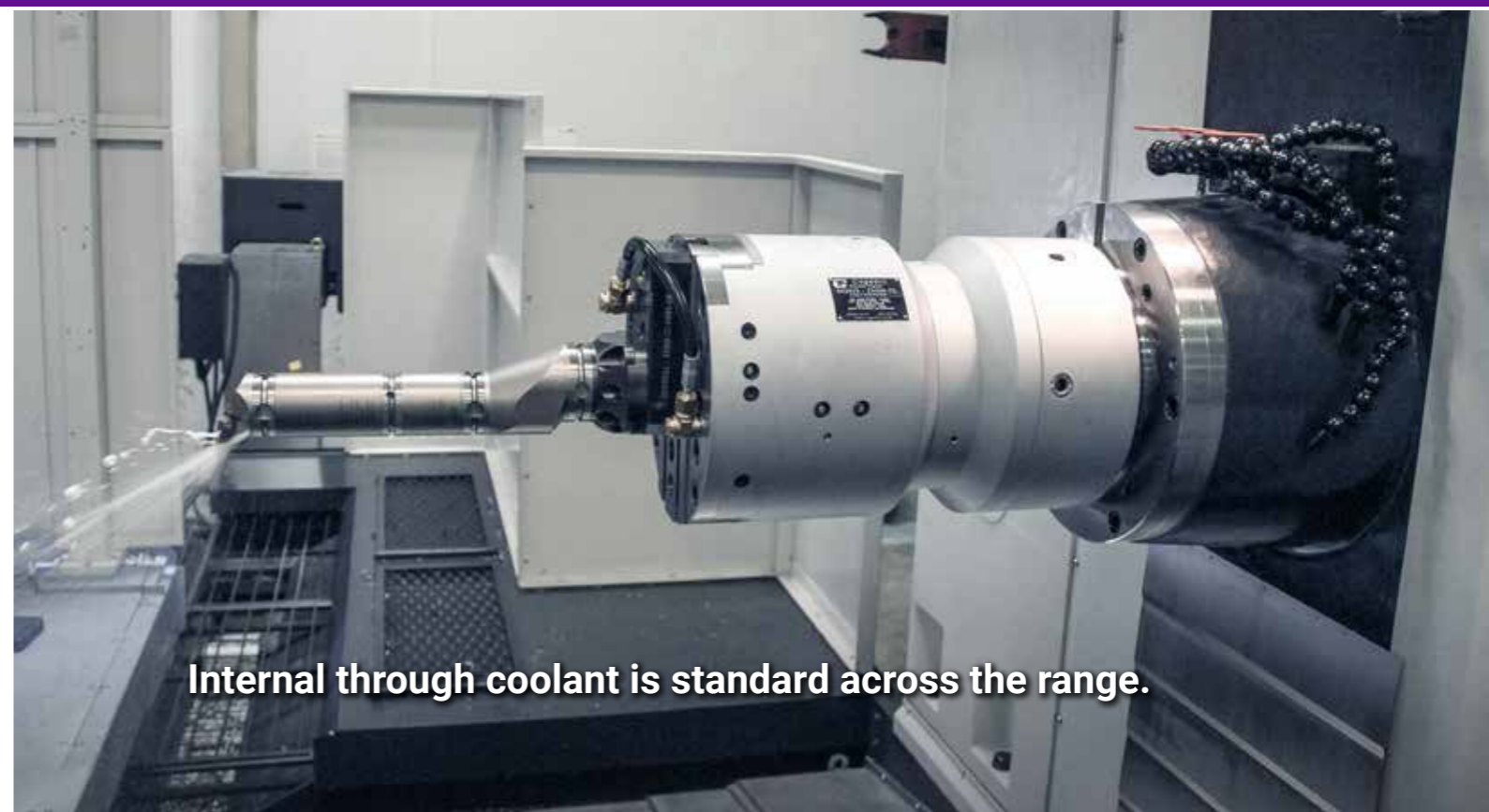
We're talking heads

A complete range of ZX heads featuring Cam Lock studs for manual connection to Cam Lock bonnets or Rotary Couplings.

ZX Facing / Contouring heads offer the greatest versatility within the Cogsdill ZX tooling range. These mechanically actuated heads are designed to perform internal and external contouring, having a single tool slide onto which top tooling is mounted into qualified locating holes. This provides for repeatable set-ups.

With appropriate top tooling, these robust heads can perform boring, facing, turning, grooving, taper boring, radius forming, chamfering, recessing, and threading.

Large parts can be machined without having to remove the work piece!



Internal through coolant is standard across the range.

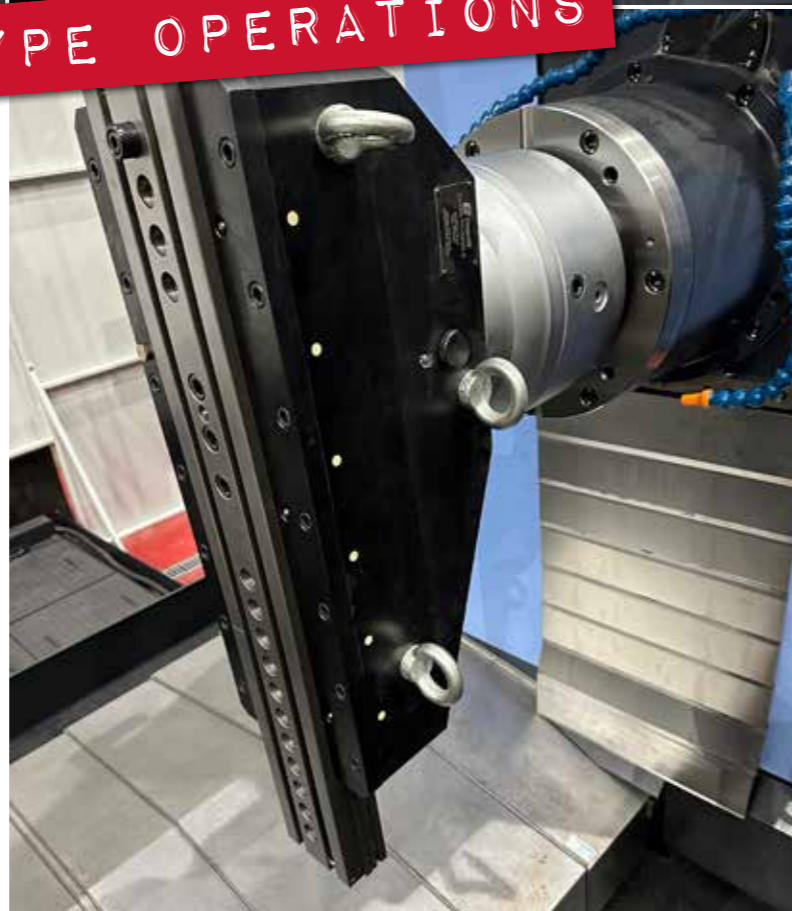


PERFORM LATHE-TYPE OPERATIONS

Operation capabilities:

- Boring
- Facing
- Contouring
- Turning
- Threading
- Taper Boring
- Grooving
- Profiling
- Back-spotfacing
- Chamfering
- Ring Grooving
- Overturning
- Radii
- Phonographic Facing
- Other operations

Standard stock sizes range from 200mm to 900mm slide lengths.

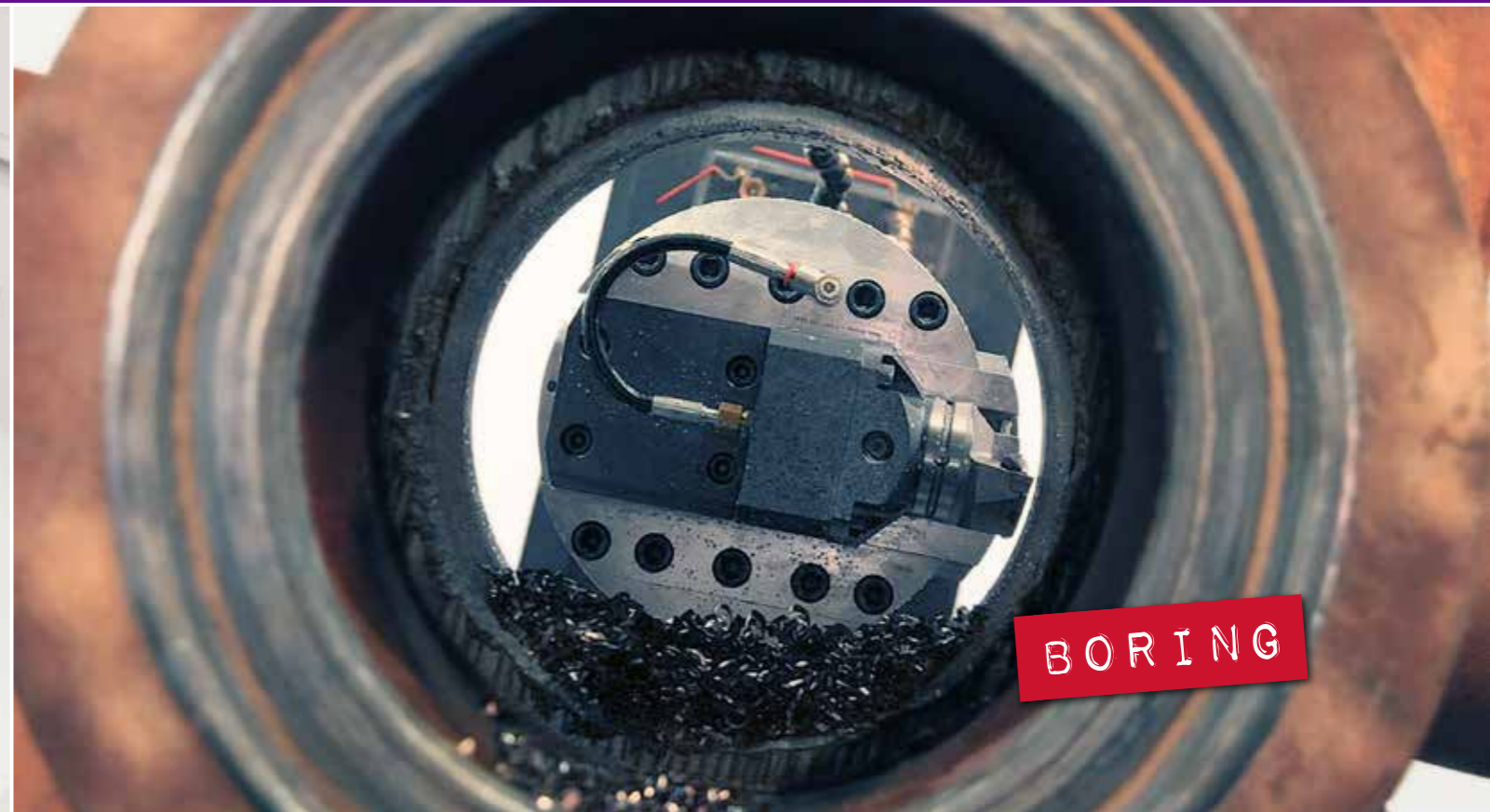


All ZX heads incorporate four Cam Lock studs that locate into the bonnet, providing exceptional rigidity.

Product features:

- Perform Lathe-type operations on boring mills
- Maximum application flexibility – machine I.D.s, O.D.s, faces, tapers, radii, and contours
- Large Diameter Range (from 0mm to 1700mm on ZX900)
- Accepts industry-standard top tooling and inserts (Modular tooling packages also available)
- Qualified tool location points in tool slide for accurate and repeatable set-ups
- Extremely rigid and durable design
- High material removal rates
- Backlash-free operation

The most versatile solution to increase the productivity of your HBM



Multiple Functions. Maximum Flexibility.





ZX 200

ZX200-TC Facing and Contouring Head

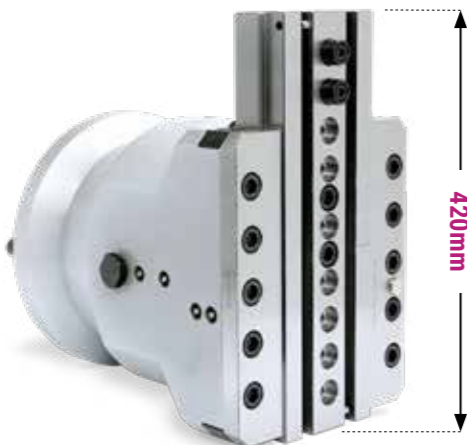
ZX200-TC	SPECIFICATIONS
Slide Length	200mm
Maximum Stroke	38.1mm
Maximum Cut Diameter	ø500mm
Maximum Speed	800 RPM



ZX 300

ZX300-TC Facing and Contouring Head

ZX300-TC	SPECIFICATIONS
Slide Length	300mm
Maximum Stroke	76.2mm
Maximum Cut Diameter	ø800mm
Maximum Speed	500 RPM



ZX 420

ZX420-TC Facing and Contouring Head

ZX420-TC	SPECIFICATIONS
Slide Length	420mm
Maximum Stroke	101.6mm
Maximum Cut Diameter	ø980mm
Maximum Speed	350 RPM



ZX 500

ZX500-TC Facing and Contouring Head

ZX500-TC	SPECIFICATIONS
Slide Length	500mm
Maximum Stroke	101.6mm
Maximum Cut Diameter	ø1060mm
Maximum Speed	300 RPM



ZX 700

ZX700-TC Facing and Contouring Head

ZX700-TC	SPECIFICATIONS
Slide Length	700mm
Maximum Stroke	127mm
Maximum Cut Diameter	ø1330mm
Maximum Speed	250 RPM



ZX 900

ZX900-TC Facing and Contouring Head

ZX900-TC	SPECIFICATIONS
Slide Length	900mm
Maximum Stroke	127mm
Maximum Cut Diameter	ø1700mm
Maximum Speed	150 RPM

See Specials for ways to further increase diameters.

Endless possibilities

Increase the capability of your Horizontal Boring Mill (HBM). Discover the latest in facing and contouring head systems, as used by leading machine tool manufacturers.



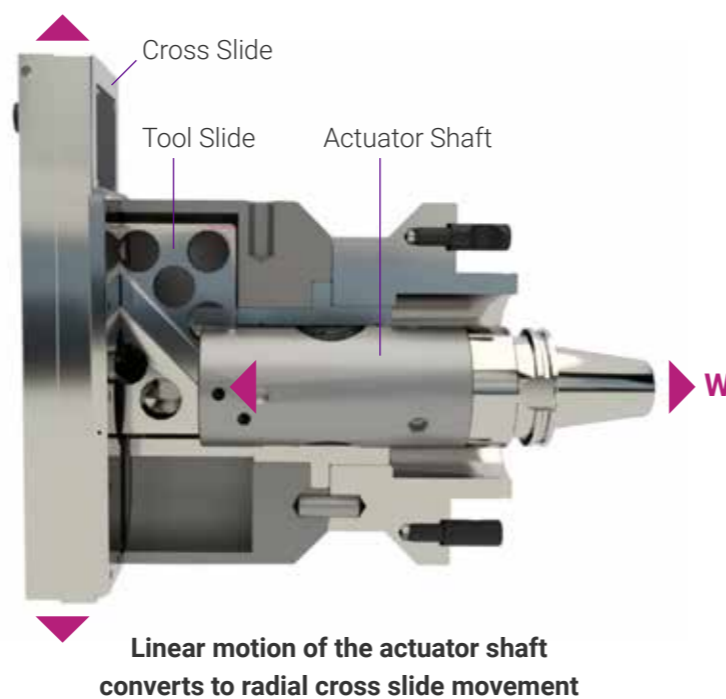
Operating principles

ZX Tools convert the W-axis quill (live spindle) motion on a Horizontal Boring Mill (HBM) into backlash-free radial movement.

Inside each head is an actuator shaft with an inclined key that precisely mates with a slot in a tool slide.

Quill extension pushes the actuator shaft and causes the tool slide to move outward, increasing the diameter of the rotating cutting edge. Conversely, quill retraction decreases the cutting diameter.

Programming a contouring head is simply a matter of coordinating the machine's W and Z axes to guide the cutting edge. By a relatively simple program of the simultaneous movement of the two CNC axes, you can perform a variety of machining operations, and complex turning geometries can be machined.



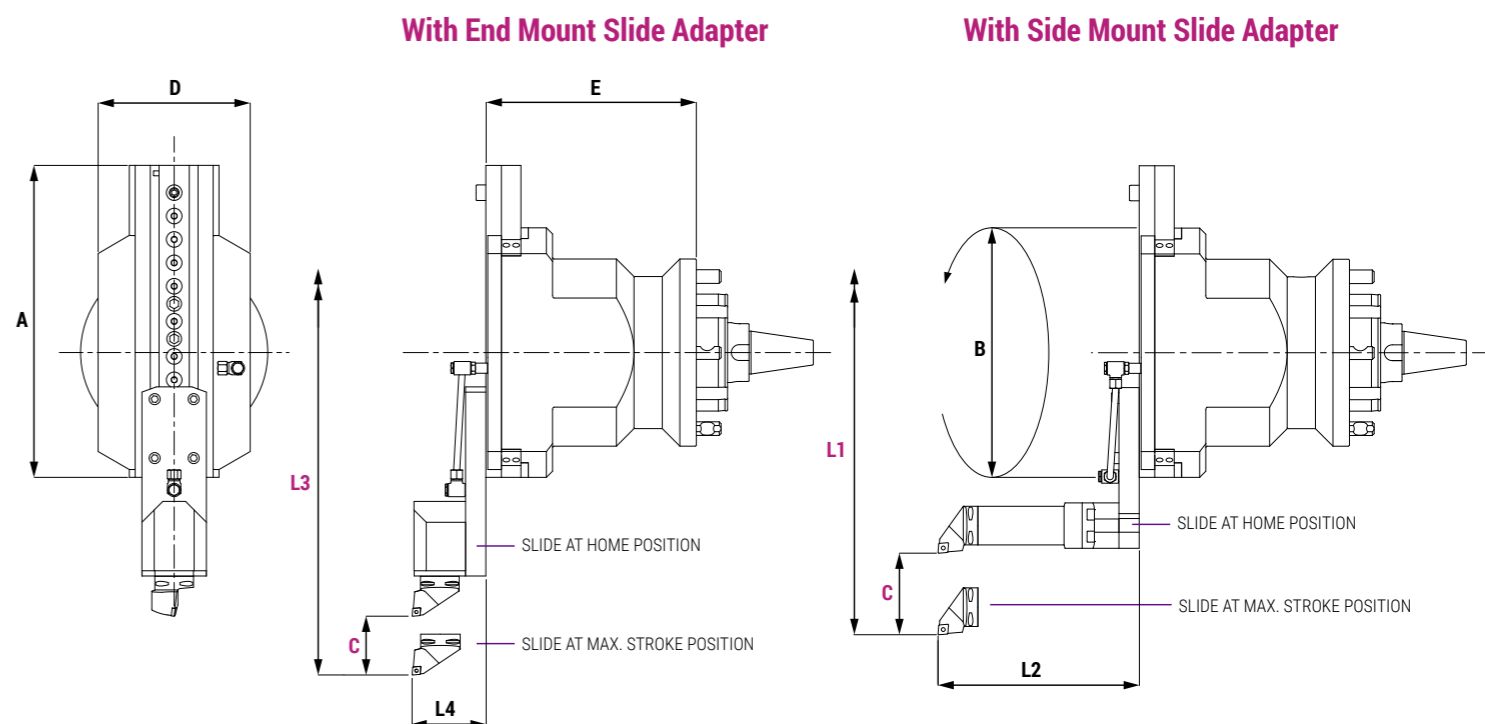
ZX Facing / Contouring heads offer the greatest diameter range of movement (up to 254mm / 10.0 inches) from one set-up.

Modular tool slide adapters are available to meet the machining requirements of most components. These adapters are also offered in a range of commercially available tooling systems such as Capto®, KM® and others.

Special heads are available on request to accommodate unique part requirements.

For example:

- Facing can be performed by moving the quill (and thus, the cutting edge) while the machine's table remains stationary.
- Keeping the quill stationary and moving the table enables boring and turning operations.
- Combined quill and table movements can generate features such as radii, chamfers, tapers and complex ID or OD contours..



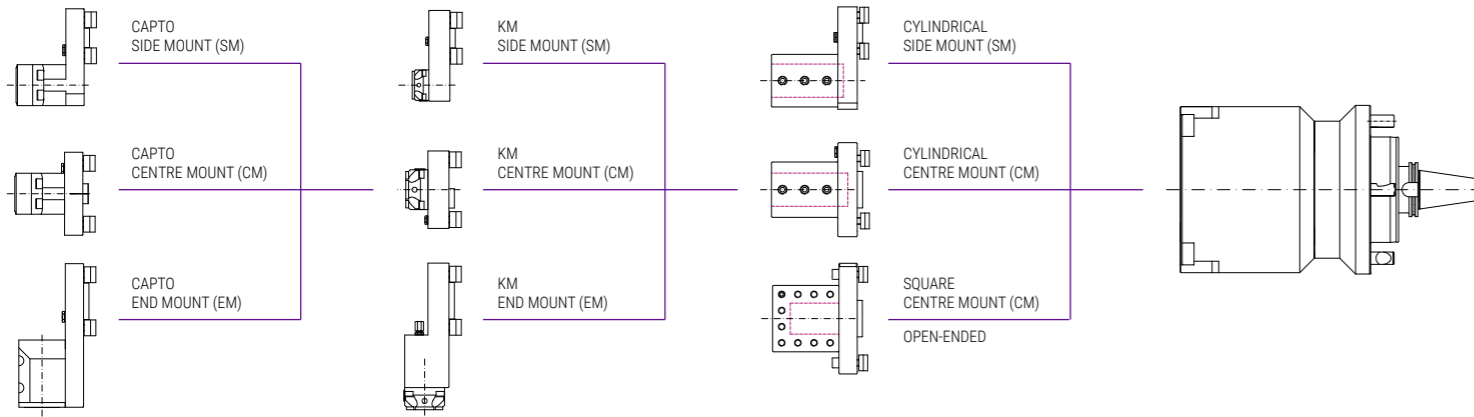
TECHNICAL DATA	UNITS	ZX 200-TC	ZX300-TC	ZX 420-TC	ZX 500-TC	ZX 700-TC	ZX 900-TC
A – Tool Slide Length	mm	200	300	420	500	700	900
B – Body Diameter	mm	200	300	305	400	500	700
C – Maximum Radial Stroke	mm	38.1	76.2	101.6	101.6	127.0	127.0
D – Facing Head Width	mm	200	300	248	248	250	250
E – Facing Head Length	mm	307	343	343	343	370	370
L1 – Maximum Boring Diameter	mm	ø381	ø650	ø770	ø850	ø1120	ø1500
L2 – Maximum Boring Tool Length	mm	210	270	310	310	310	310
L3 – Maximum Facing Diameter	mm	ø500	ø800	ø980	ø1060	ø1330	ø1700
KM/CAPTO ADAPTORS							
L4 – Tool Slide Adapter Width	mm	65	102	102	102	102	102
Maximum Speed	RPM	800	500	350	300	250	150
Stroke Ratio		2 to 1	1 to 1	1 to 1	1 to 1	1 to 1	1 to 1
Feed	mm/Rev	0.4	0.4	0.4	0.4	0.4	0.4
Maximum Torque	da Nm	100	800	800	800	1000	1000
Weight	Kg	107	168	175	205	170	200
Repeatability Accuracy	mm	0.003	0.003	0.003	0.003	0.003	0.003
Backlash	mm	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025
Boring Accuracy		H7	H7	H7	H7	H7	H7

MAX. CHIP REMOVAL ON 080M46 STEEL							
Facing	D.O.C./mm	3	4	4	6	6	6
Boring	D.O.C./mm	3	4	4	6	6	6
Rapid Traverse	M/min	0.4	0.4	0.4	0.4	0.5	0.5
Surface Finish	Ra	1.6	1.6	1.6	1.6	1.6	1.6

Expand your options

A single slide adapter onto which various top tooling can be installed

Modular tool slide adapters are available to meet the machining requirements of most components. These adapters are also offered in a range of commercially available tooling systems such as Capto®, KM® and others. External turning, grooving, taper boring, radius forming, chamfering, recessing and threading can all be finished in one set-up without removing the component from the machining table.



Special tool slide adapter

Side mount 'KM63'

End mount 'KM63'

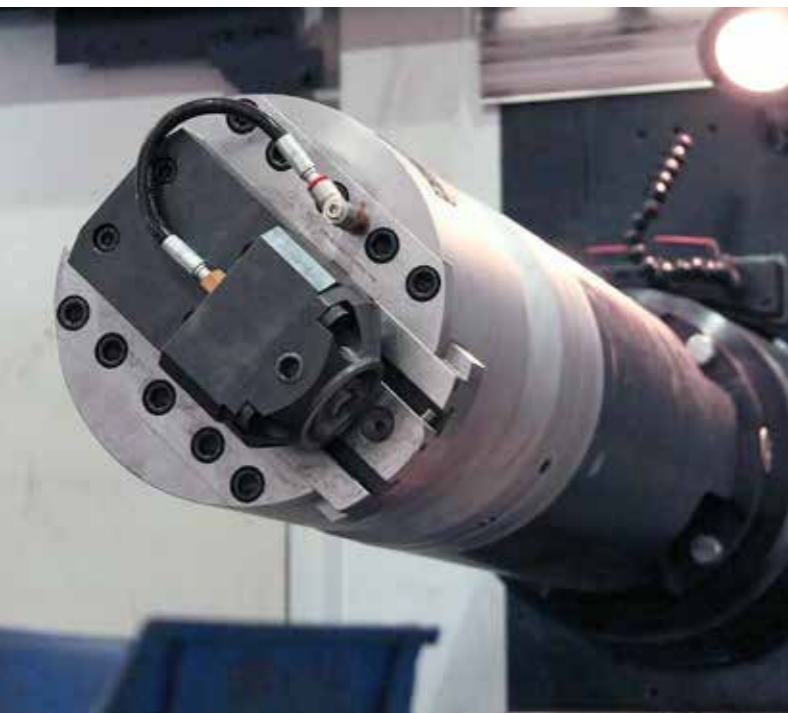
Tool slide extension plate

Did you know?

By using a square shank slide adapter, you can utilise your existing lathe tooling.



Side mount Capto C6



End mount 'KM63'



Centre mount open-ended 25mm square shank



Central mount 'KM'

End mount 'KM'

Side mount 'KM'

Central mount open-ended square shank

Side mount cylindrical shank

Central mount cylindrical shank

ZX TOOL	CAPTO			KM TOOLING			CYLINDRICAL				SQUARE 25mm
	C5	C6	C8	KM50	KM63	KM80	32mm	40mm	50mm	60mm	
ZX200-TC	●			●			●	●	●		
ZX300-TC		●	●		●	●			●	●	
ZX420-TC		●	●		●	●			●	●	●
ZX500-TC		●	●		●	●			●	●	●
ZX700-TC		●	●		●	●			●	●	●
ZX900-TC		●	●		●	●			●	●	●

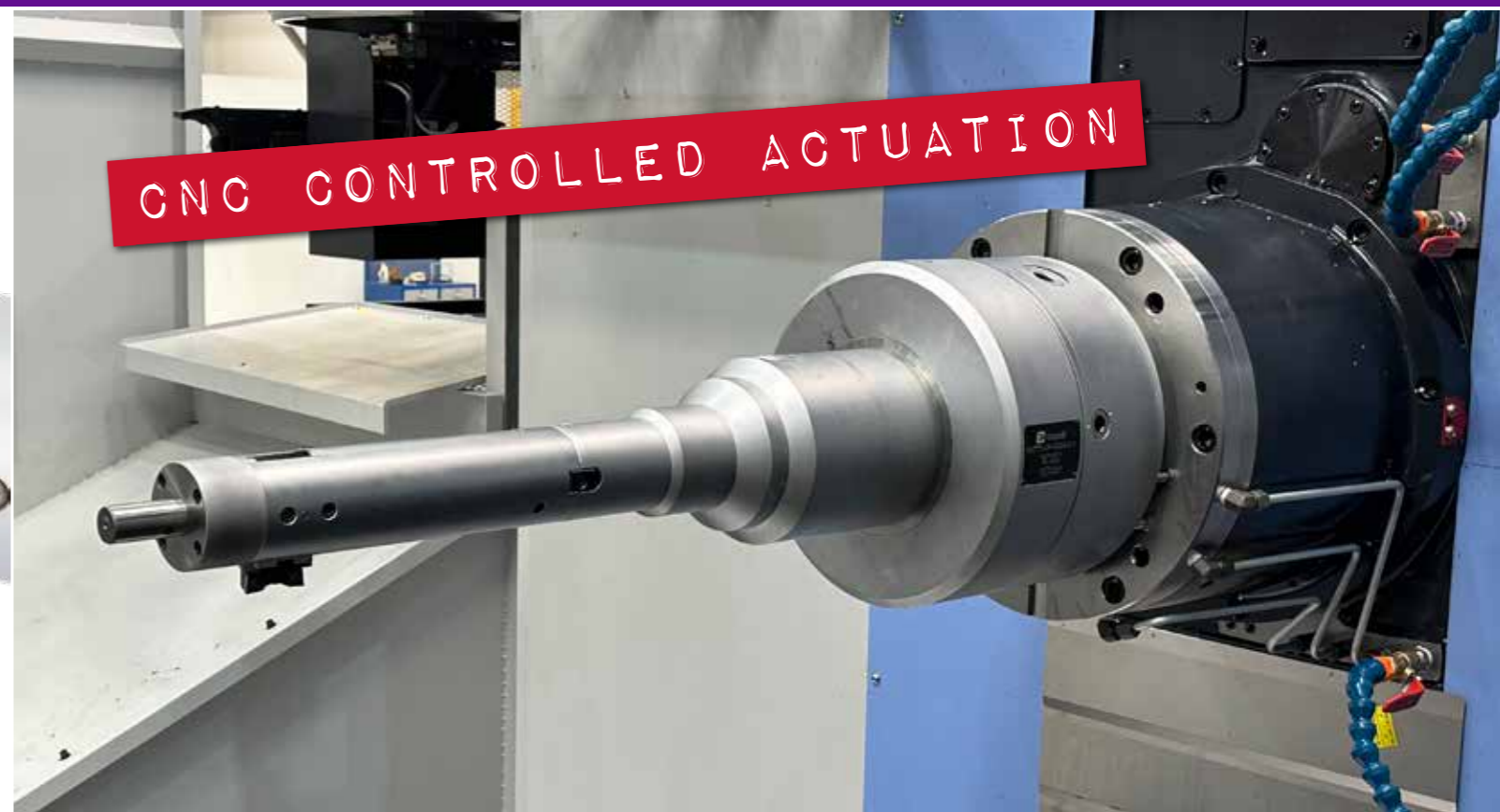
Many different types of top tooling are available on demand, such as tool slide extension plates to extend the diameter range of your ZX Head.

Boring just became interesting

Modular Boring Tools offer versatility and economy when machining complex contours inside large components that require multiple operations in one set-up.

Modular Boring Tools (MBT) are used primarily in boring operations inside parts that require multiple operations in one set-up. Eliminate the need for several different tools with an easy modular system, that not only increases productivity but also reduces costly machine downtime.

Conventional cutting tools are set to machine a specific diameter. A tool change is normally required to change diameters, or to machine a different feature. With the ZX Tooling System, the same tool can perform a wide variety of operations; **no tool change required.**



Multiple operations

MBT covers a wide diameter range with its long tool slide stroke. Accuracy is maintained as the tool slide adjusts for various diameters whilst the tool stays on the same bore centreline offering exceptional concentricity.

The tools can perform versatile forward and back boring operations, such as back counter-boring, internal grooving, taper boring, radius forming, chamfering, recessing, threading, bottle boring and more. All without the need for tool changes.

Features that were previously performed manually can be converted to CNC Control by a simple two-axis program. All MBT tools feature 2:1 actuation ratio for easy programming.

The MBT series comes as a single-slide (MBT-S) as standard, with an optional twin-slide (MBT-T) version available upon request.

Increased capacity

Combined with the appropriate tool slide and cartridge, large parts can be machined without having to remove the work piece thus improving part to part repeatability and enhanced quality.





Modular Design. Increased Functionality.

From short bores to long components with one extendible modular system.

The unique modular design makes adjustment of length and configuration not only fast and easy, but cost effective too. The MBT range can simply be converted for valve seat pocket machining, bottle boring or other extended-reach applications with the addition of extensions and pilot supports – adding to their versatility and adaptability, whilst eliminating the need for additional tools.



Sliding inclined wedge

The MBT mounts to a HBM via a Cam Lock bonnet, providing the rotational drive for the cutting edges.

The actuator shaft is attached to the W-axis quill (live spindle) via a typical machine tool shank (e.g. CAT 50). The inclined actuator key is a lapped fit into a corresponding key slot in the tool slide.

Quill extension pushes the actuator shaft and causes the tool slide to move outward, increasing the diameter of the rotating cutting edge. Conversely, quill retraction moves the slide inwards, decreasing the cutting diameter.

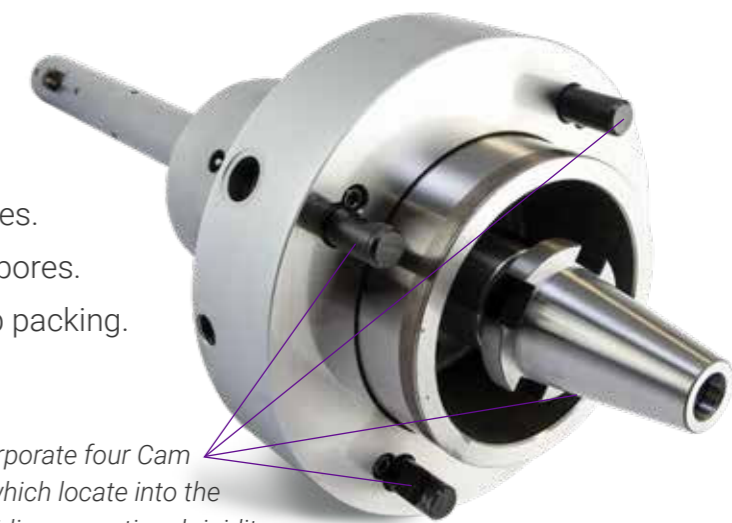
By programming a simultaneous movement of the machine's W and Z axes, a variety of machining operations – including complex boring profiles – can be machined.

MBT convert the axial motion of the live spindle into radial motion at the cutting edge.

BACKLASH-FREE OPERATION

Product features:

- Modular design makes adjustment of length and configuration fast and easy.
- Large sliding load-bearing surfaces provide extremely rigid tool performance.
- Wide keys and deep key slots ensure long wear life under heavy cutting loads.
- Internal through-tool coolant is standard across the range.
- Quick change cartridge and tool slide for varying operations.
- Can be converted for extended-reach applications with piloted support.
- High cutting speeds and material removal rates.
- Bottoming-style assembly available for blind bores.
- Fully enclosed actuation mechanism: No chip packing.
- Internal forward hard stop and anti-torque features for tool protection.



All MBT incorporate four Cam Lock studs which locate into the bonnet, providing exceptional rigidity.



MBT 50



MBT-50-S		THROUGH END CAP	BOTTOMING END CAP
Tool Diameter		ø50mm	ø50mm
Maximum Stroke		23mm	18
Standard Capacity (default configuration)		ø50-96mm	ø68-104mm
Maximum Capacity (extended cartridge/slide)		ø72-118mm	ø76-112mm
Work Length	L1 øA	305mm : ø50mm	340mm : ø68mm
	L4 øD	520mm : ø155mm	555mm : ø155mm

MBT 75



MBT-75-S		THROUGH END CAP	BOTTOMING END CAP
Tool Diameter		ø75mm	ø75mm
Maximum Stroke		32mm	22mm
Standard Capacity (default configuration)		ø75-139mm	ø75-119mm
Maximum Capacity (extended cartridge/slide)		ø150-214mm	ø150-194mm
Work Length	L1 øA	350mm : ø75mm	386mm : ø75mm
	L2 øB	414mm : ø86mm	450mm : ø86mm
	L3 øC	454mm : ø125mm	490mm : ø125mm
	L4 øD	622mm : ø155mm	658mm : ø155mm

MBT 100

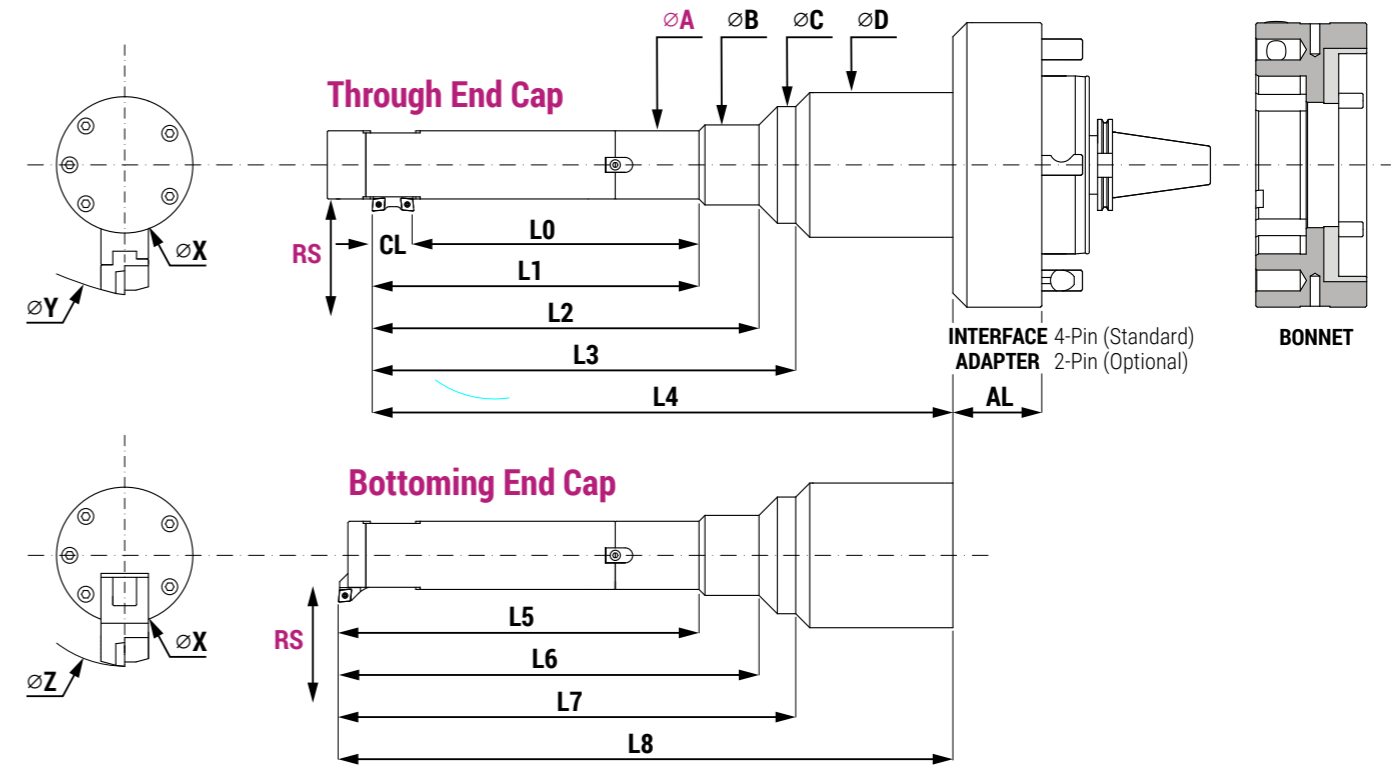


MBT-100-S		THROUGH END CAP	BOTTOMING END CAP
Tool Diameter		ø100mm	ø100mm
Maximum Stroke		45mm	23mm
Standard Capacity (default configuration)		ø100-190mm	ø100-146mm
Maximum Capacity (extended cartridge/slide)		ø184-274mm	ø184-230mm
Work Length	L1 øA	454mm : ø100mm	483mm : ø100mm
	L2 øB	486mm : ø125mm	515mm : ø125mm
	L4 øD	654mm : ø155mm	684mm : ø155mm

MBT 125



MBT-125-S		THROUGH END CAP	BOTTOMING END CAP
Tool Diameter		ø125mm	ø125mm
Maximum Stroke		54mm	30mm
Standard Capacity (default configuration)		ø125-233mm	ø125-185mm
Maximum Capacity (extended cartridge/slide)		ø212-320mm	ø212-272mm
Work Length	L1 øA	524mm : ø125mm	556mm : ø125mm
	L4 øD	692mm : ø155mm	725mm : ø155mm



TECHNICAL DATA	UNITS	MBT50	MBT75	MBT100	MBT125				
øA : Nominal Tool Diameter	mm	49.8	73.0	100.0	123.8				
øB : Tool Diameter (first stage)	mm	-	86	-	-				
øC : Tool Diameter (second stage)	mm	-	125	125	-				
øD : Tool Diameter (third stage)	mm	155	155	155	155				
RS : Max. Radial Stroke (through / bottoming)	mm	23	18	32	22	45	23	54	30
øX : Min. Standard Capacity (through / bottoming)	mm	50	68	75	75	100	100	125	125
øY (through) / øZ (bottom) : Max. Extended Range *	mm	118 *	112 *	214 *	194 *	274 *	230 *	320 *	272 *
CL : Cartridge Length	mm	35.0	44.4	50.8	63.5				
L0 : Max. Back Boring Work Length øA (through-type)	mm	280	305.6	403.2	460.5				
L1 (through) / L5 (bottom) : Max. Working Length øA	mm	305	340	350	386	454	483	524	556
L2 (through) / L6 (bottom) : Max. Working Length øB	mm	-	-	414	450	486	515	-	-
L3 (through) / L7 (bottom) : Max. Working Length øC	mm	-	-	454	490	N/A	-	-	-
L4 (through) / L8 (bottom) : Max. Working Length øD	mm	520	555	622	658	654	684	692	725
AL : Adapter Length 4-pin (standard) / 2-pin (option)	mm	95.3	104.3	95.3	104.3	95.3	104.3	95.3	104.3
Maximum Speed	RPM	800	800	800	800				
Stroke Ratio		2 to 1	2 to 1	2 to 1	2 to 1				
Repeatability Accuracy	mm	0.003	0.003	0.003	0.003				
Backlash	mm	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025				
Boring Accuracy		H7	H7	H7	H7				
MAX. CHIP REMOVAL ON 080M46 STEEL									
Facing	D.O.C./mm	3	3	3	3				
Boring	D.O.C./mm	3	6	7	7				
Rapid Traverse	M/min	100	100	100	100				
Roughness	Ra	0.8	0.8	0.8	0.8				

Special MBT Tools are also available in larger and smaller diameter sizes or equipped with special tool slides operating in bi-directional ways (for roughing and finishing without need to change the cartridge). * Maximum Range requires cartridge and tool slide changes (see Cartridge charts).

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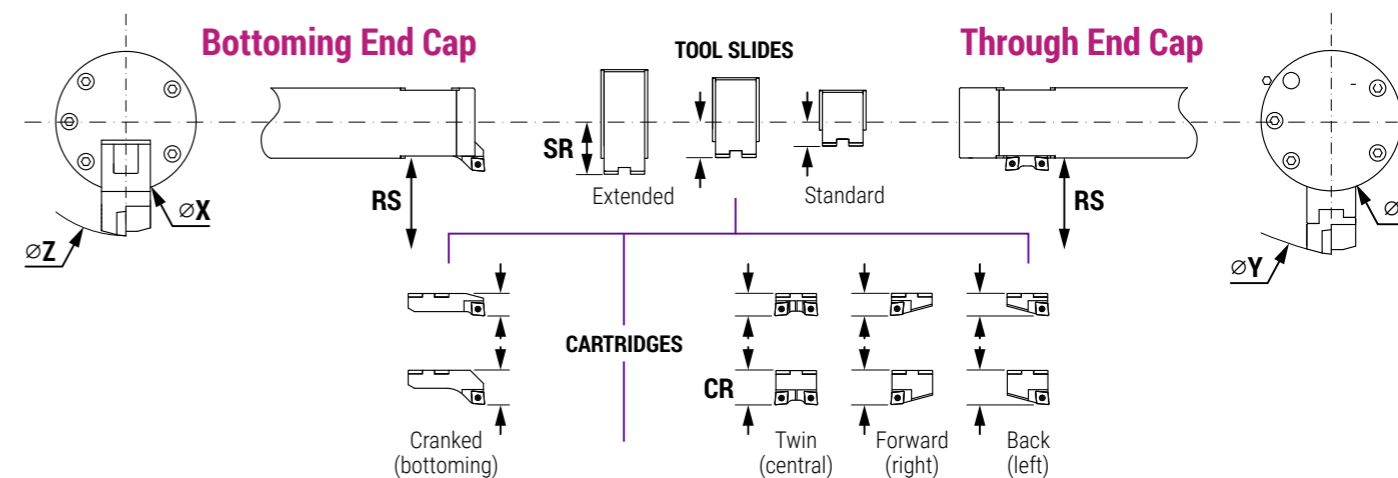
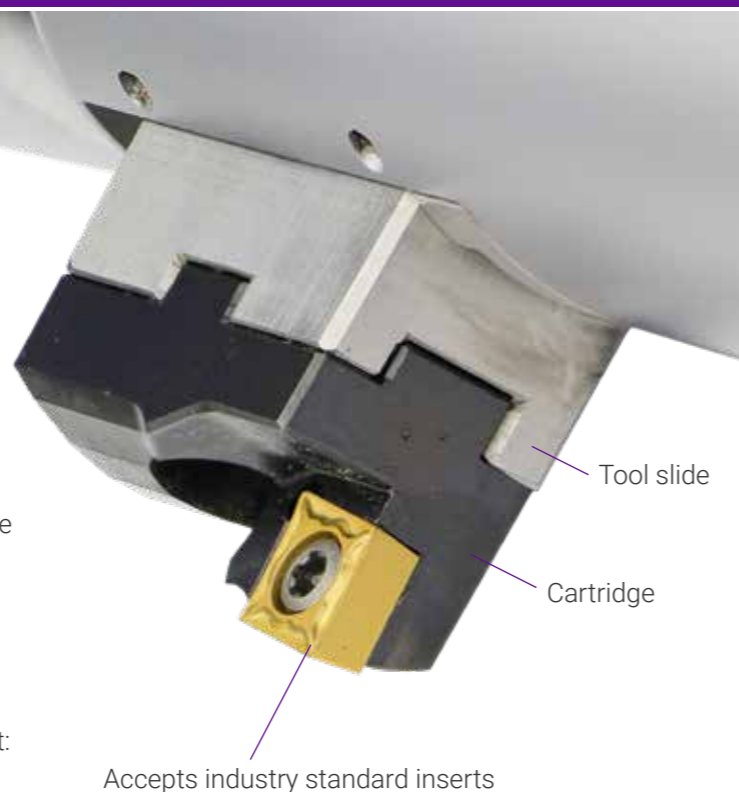
To guarantee the accuracy and performance of your MBT, always use genuine Cogsdill manufactured slides and cartridges.

Each Modular Boring Tool has a long tool slide stroke that is supplemented by using different cartridges and tool slides to cover an ever wider diameter range.

Whether front boring, back boring or seat pocket machining, we have the right combination of cartridge and tool slide to suit, making this the most flexible boring system on the market.

No need to remove the tool from the machine when replacing cartridges or tool slides.

Other special cartridge / tool slide designs available on request: e.g. Burnishing tool slide for valve seat pockets.



TECHNICAL DATA	MBT50	MBT75	MBT100	MBT125
CL : Cartridge Length	35.0mm	44.4mm	50.8mm	63.5mm
RS : Max. Radial Stroke (Through End Cap)	23mm	32mm	45mm	54mm
RS : Max. Radial Stroke (Bottoming End Cap)	18mm	22mm	23mm	30mm

Through End Cap Minimum to Maximum Diameter Range ($\phi X - \phi Y$)

SR : TOOL SLIDE SLIDE RADIUS	CR : CARTRIDGE CUT RADIUS							
	MBT50		MBT75		MBT100		MBT125	
	16.5mm	21mm	23mm	35.5mm	23mm	35.5mm	27mm	44mm
8.5mm	50-96mm	59-105mm						
15.0mm	63-109mm	72-118mm						
14.5mm			75-139mm	100-164mm				
27.0mm			100-164mm	125-189mm	100-190mm	125-215mm		
39.5mm			125-189mm	150-214mm	125-215mm	150-240mm		
56.5mm					159-249mm	184-274mm		
35.5mm							125-233mm	159-267mm
52.5mm							159-267mm	193-301mm
62.0mm							178-286mm	212-320mm

Bottoming End Cap Minimum to Maximum Diameter Range ($\phi X - \phi Z$)

SR : TOOL SLIDE SLIDE RADIUS	CR : CARTRIDGE CUT RADIUS							
	MBT50		MBT75		MBT100		MBT125	
	19.0mm	23mm	23mm	35.5mm	23mm	35.5mm	23mm	44mm
15.0mm	68-104mm	76-112mm						
14.5mm			75-119mm	100-144mm				
27.0mm			100-144mm	125-169mm	100-146mm	125-171mm		
39.5mm			125-169mm	150-194mm	125-171mm	150-196mm		
56.5mm					159-205mm	184-230mm		
35.5mm							125-185mm	159-219mm
52.5mm							159-219mm	193-253mm
62.0mm							178-238mm	212-272mm



A broad range of standard sizes and geometries to cover the most popular applications are available from stock.



Reach beyond

Increase the working length of your MBT with our standard extension couplings.

Not only modular in terms of diameters via tools slides and cartridges, MBT can also easily be adapted for longer lengths with extension couplings, further increasing capabilities and opening up application opportunities.

Modular Boring Tools are already supplied with a generous stub-length, but are designed as standard to be readily extended. To maximise the flexibility, we hold a range of interchangeable extensions in stock; in 200mm, 300mm, 400mm and 500mm lengths, with other variations available upon request.

There is no limit on the number of extensions you can add, as we also offer collet pilot support and damper units to ensure vibration-free machining for extreme length applications.



For extreme length applications, a damper unit assembly is also available to reduce vibrations during cutting.

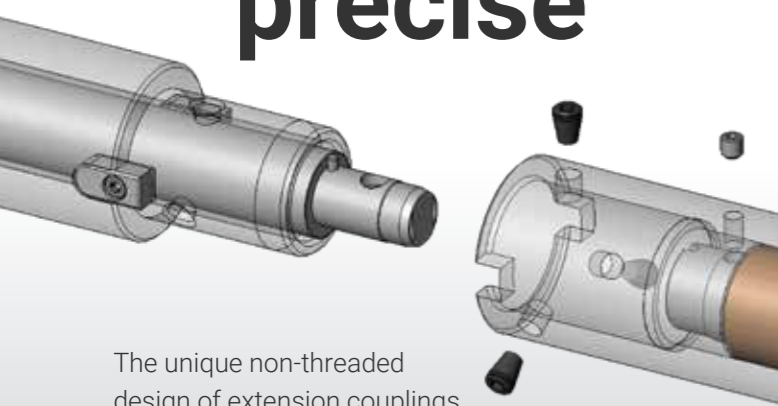


Modular design and construction: Makes adjustment of length and configuration fast and easy, greatly enhancing the versatility of the tool.

INCREASE CAPABILITIES

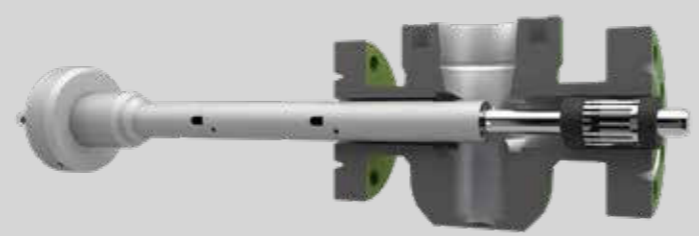
with no need to buy a new tool

Fast, easy and precise



The unique non-threaded design of extension couplings, with incorporated hardened and ground inner push rods, ensures exceptional repeatability.

In conjunction with three taper lock screws, the tool can easily be extended and shortened with no loss of precision, in many cases without the tool needing to be removed from the machine.



Typical application

For longer reach applications, ZX Modular Extensions are the ideal solution, especially when combined with a collet pilot.

Ideal for valve seat pockets



Valve Seat Pocket Tools

Specially adapted ZX Modular Boring Tools feature piloted cutter support for use in machining seat pocket areas in oil valves and other extended reach applications.

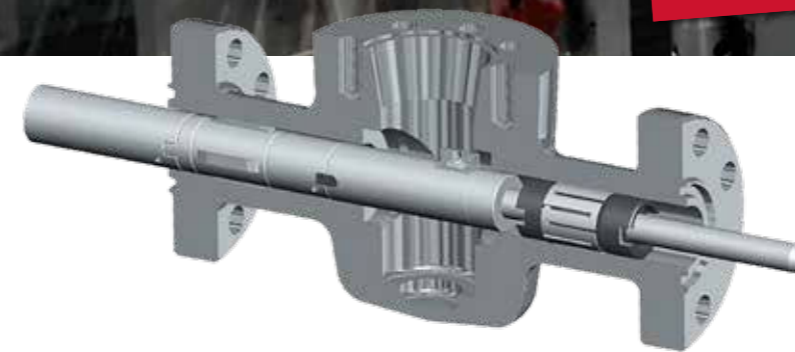
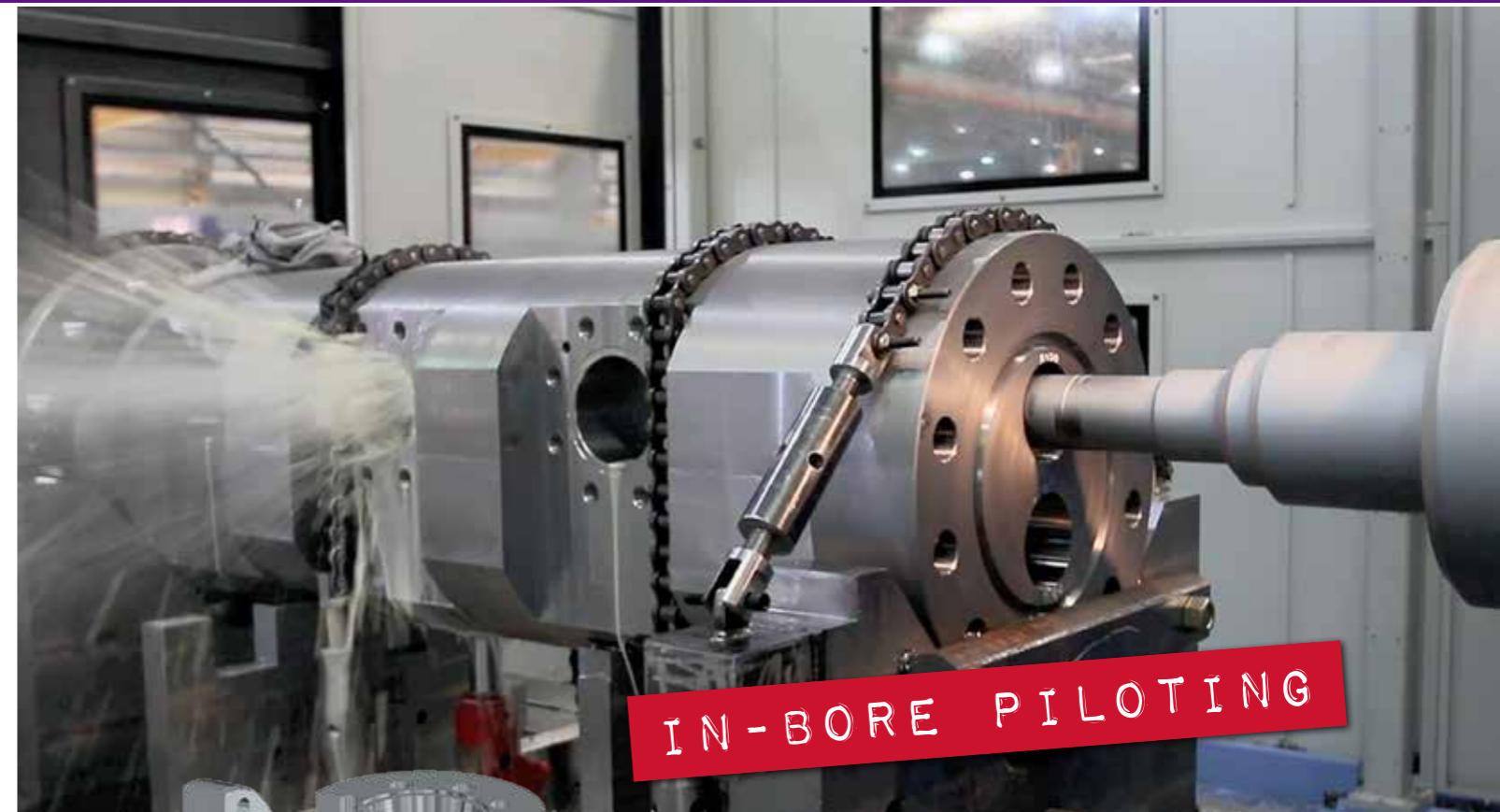
Extended and supported long-reaching ZX Modular Boring Tools called Valve Seat Pocket Tools are dedicated to machine cavities or different profiles inside deep bores. Valve Seat Pocket Tools feature an end cap mounted pilot shaft which feeds inside a collet pilot, mounted inside the bore for accurate support during machining operation.

ZX Valve Seat Pocket Tools have enough stroke and strength to rough-machine pre-clad seat pocket cavities and, using the same tool, to finish-machine the pocket in Inconel after cladding. Non-clad pockets can also be machined.

Seat pocket tools are commonly used in steel, stainless steel, and Inconel.

All tools feature 2:1 actuation ratio for easy programming.

Interchangeable collets are available in a variety of sizes



Did you know?

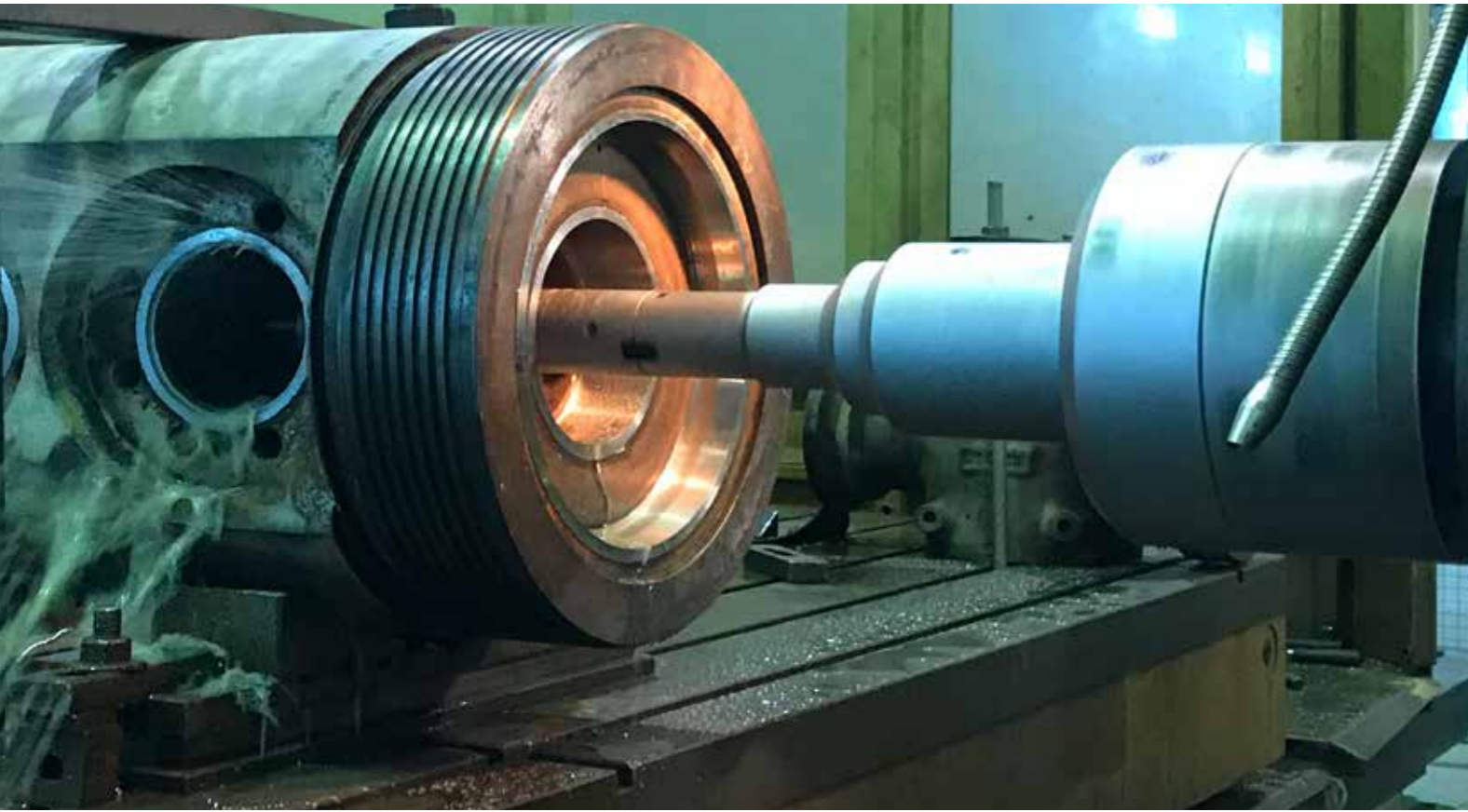
For even better surface finishes with lower Ra value for seat pockets, we also offer our own patented roller burnishing tool slides.



Product features:

- In-bore piloting for rigid cutter support.
- Available in standard flow bore sizes.
- Supplemental tool slides and cartridges available to increase diameter range in special applications.
- Support collet pilots with wrench sets are included on medium and long-reach tools.
- Longest tool slide strokes available, for maximum diameter range.
- Internal through-tool coolant is standard.
- Internal forward hard stop and anti-torque features.
- Modular damper units available to reduce vibrations.
- Fully enclosed actuation mechanism. No chip packing.
- Conversion kits provide ability to easily change tool for use in valves of various sizes.

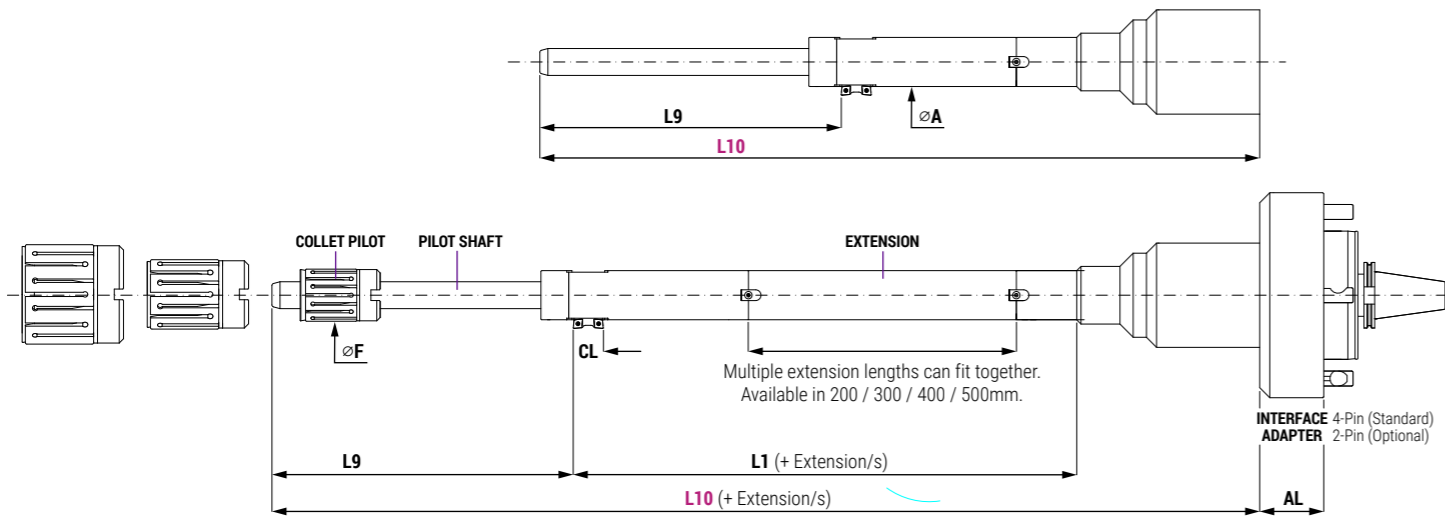
The ultimate solution for valve seat pocket machining



Complexity simplified. Flexibility extended.



Valve Seat Pocket Tools



TECHNICAL DATA	MBT50		MBT75		MBT100		MBT125	
øA : Tool diameter	49.8mm		73.0mm		100.0mm		123.8mm	
L1 : Max. Length øA	305mm		350mm		451mm		524mm	
L9 : Pilot length	325mm		448mm		608mm		564mm	
L10 : Tool clearance	825mm		972mm		1263mm		1256mm	
AL : 4-pin / 2-pin	95.25mm	104.30mm	95.25mm	104.30mm	95.25mm	104.30mm	95.25mm	104.30mm
CL : Cartridge length	35.0mm		44.4mm		50.8mm		63.5mm	
COLLET PILOT (øF)	MBT50		MBT75		MBT100		MBT125	
2.060" (52.32mm)	2.050–2.130" (52.07–54.10mm)							
2.560" (65.02mm)	2.550–2.630" (64.77–66.80mm)							
3.000" (76.20mm)			2.990–3.070" (75.95–77.98mm)					
4.060" (103.12mm)			4.050–4.129" (102.87–104.87mm)		4.050–4.129" (102.87–104.87mm)			
5.125" (130.18mm)			5.110–5.188" (129.79–131.79mm)		5.110–5.188" (129.79–131.79mm)		5.110–5.188" (129.79–131.79mm)	
6.375" (161.93mm)					6.360–6.440" (161.54–163.54mm)		6.360–6.440" (161.54–163.54mm)	
7.060" (179.32mm)							7.050–7.130" (179.07–181.10mm)	
TOOL SLIDE (SR) SLIDE RADIUS	MBT50		CARTRIDGE (CR) CUT RADIUS				MBT125	
	16.5mm	21mm	MBT75		MBT100		27mm	44.0mm
			23mm	35.5mm	23mm	35.5mm		
8.5mm	50–96mm	59–105mm						
15.0mm	63–109mm	72–118mm						
14.5mm			75–139mm	100–164mm				
27.0mm			100–164mm	125–189mm	100–190mm	125–215mm		
39.5mm			125–189mm	150–214mm	125–215mm	150–240mm		
56.5mm					159–249mm	184–274mm		
35.5mm							125–233mm	159–267mm
52.5mm							159–267mm	193–301mm
62.0mm							178–286mm	212–320mm



total control under pressure

Zero backlash for ultimate precision

Our ZX facing, contouring and modular boring systems have become the oil and gas industry's preference for reliable and efficient production. The latest advances are not only designed to be strong, durable and consistent, but offer unrivalled accuracy and quality to meet the most stringent demands.

No HBM is complete without the ZX tooling system

SEE OUR TOOLS IN ACTION ON YouTube



St. George's Way, Nuneaton CV10 7JS

cogsdill.co.uk

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Critical support

Produce internal extended reach cavities, seat pockets and bottle-shaped contours.

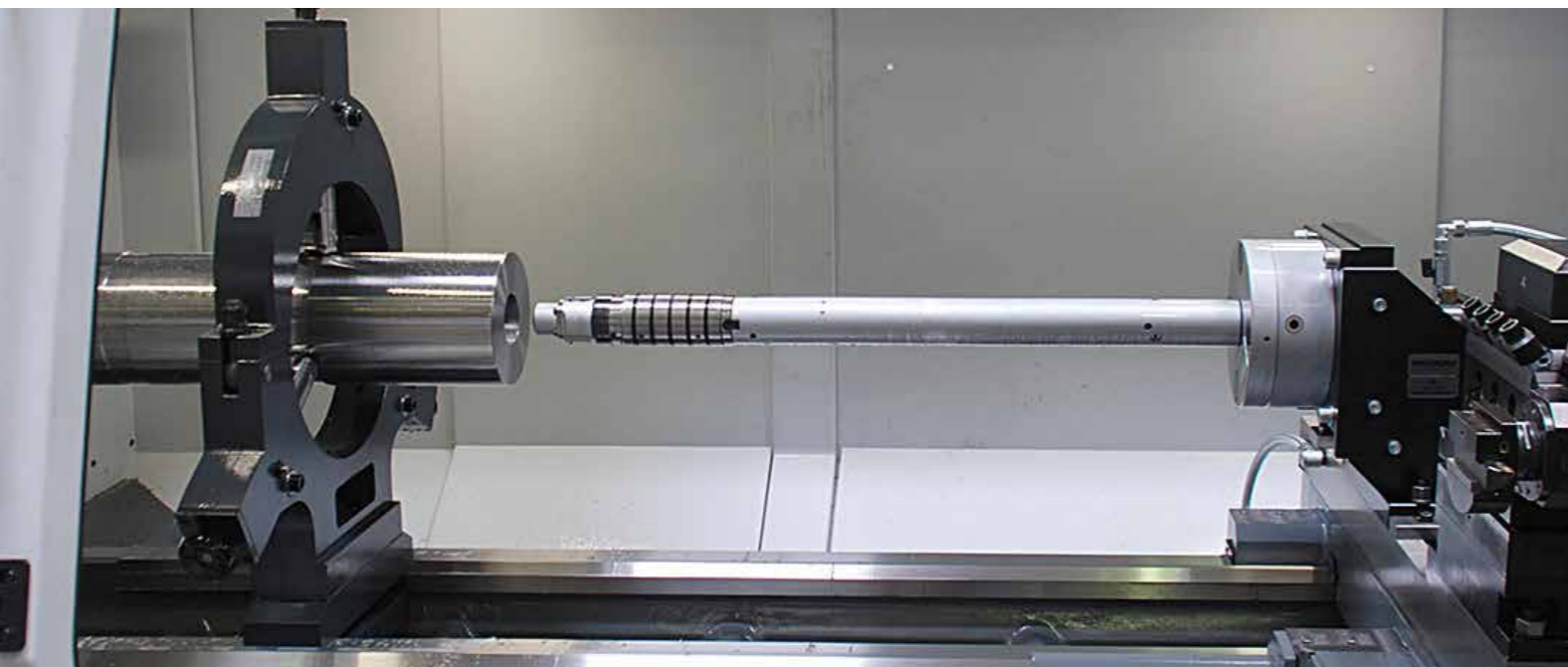
Bottle boring, also known as internal profiling or chamber boring, is a cutting operation where the tool expands and contracts within a bore to create internal contours. This allows for machining complex shapes, transitions, and undercuts, reducing the weight of critical components without compromising surface integrity, such as landing gear or turbine shafts.

Rotating O-ring pilot assembly.

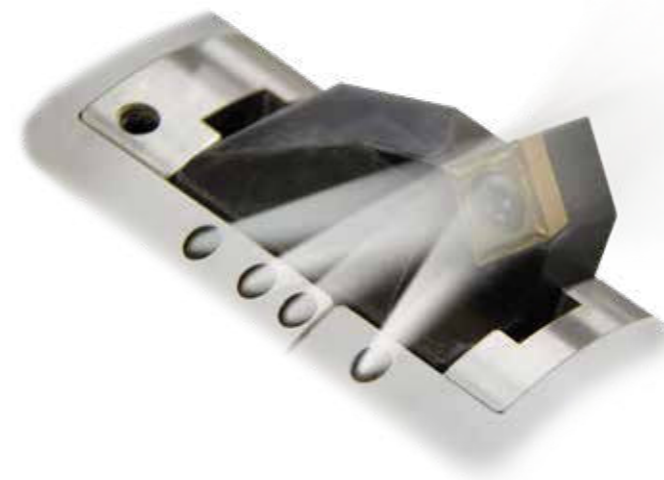
These characteristics often exceed the capabilities of single-point boring bars due to their depth and complexity. CNC controls are essential for simultaneously coordinating multiple axes to achieve the desired internal hole profiles, as the dimensions within the part are larger than at the entry or exit diameters.



Cogsdill's ZX Bottle Boring Tool is backed by a proven pilot system. It utilises a rotating O-ring pilot assembly designed to effectively repel coolant and chips from the tool body or by the use of coated carbide wear pads. Both styles guarantee a vibration-free operation and deliver superior surface finishes. These pads/pilots are engineered to endure minimal wear while safeguarding the base material of the component.



VIBRATION FREE OPERATION



ZX Bottle Boring Tools are the perfect choice for HBM Machines and large components that cannot be machined on a lathe. These versatile tools can also be adapted to suit Deep-Hole-Drilling machines, Mill turn machines and Horizontal and Vertical lathes. They are designed to produce internal extended reach cavities, seat pockets, and bottle shaped contours, and can handle roughing and finishing operations in a single setup.

Swarf removal

In bottle boring, removing swarf can be tough. For through holes, swarf can be flushed out with the workpiece spindle through the coolant system.

However, for blind holes and tough materials like nickel-based alloys or titanium, high pressure coolant is needed to break up the swarf and evacuate through suitable channels.

ZX Bottle Boring Tools are specifically designed to use ISO inserts within cartridges or to be directly fitted into the tool slide. This provides the customer with the flexibility to use the latest technology and grades of inserts, depending on the materials to be machined.



Small bore?

Bottle boring tools can be used even in the smallest of bores.

Just talk to us about your requirements.

Rotary Couplings



Enable Ram-type HBMs to pick up and attach ZX Tools and Rotary Coupling assemblies automatically.

Horizontal boring mills commonly feature a rectangular sliding ram in addition to the standard quill (live spindle), particularly on heavy duty machines. These machines can easily be adapted to utilise the ZX Tooling System by making use of a Cogsdill Rotary Coupling.

Whilst most of Cogsdill's ZX Tools conventionally attach via our Cam Lock connection, a fully automated hydraulic clamping version is also available.

Hydraulic clamping Rotary Couplings offer greater automation for specific machine set-ups.



Product features:

- **More versatile:** Expanding the capabilities of your Ram-type Boring mill.
- **Wide industry applications:** Larger components for oil and gas, mining, rail, aerospace, marine, etc.
- **Broad machine spectrum:** Such as Soralue, Mazak, DMG Mori, DN Solutions and many others.

Rotary Couplings are available in both conventional spindle configuration or a rectangular Ram interface, depending on machine specification.



Making machine tool automation beautifully simple.

With modern machining strategies moving towards greater automation, combined with increasingly larger tools and components, Rotary Couplings can provide a fully automated solution.

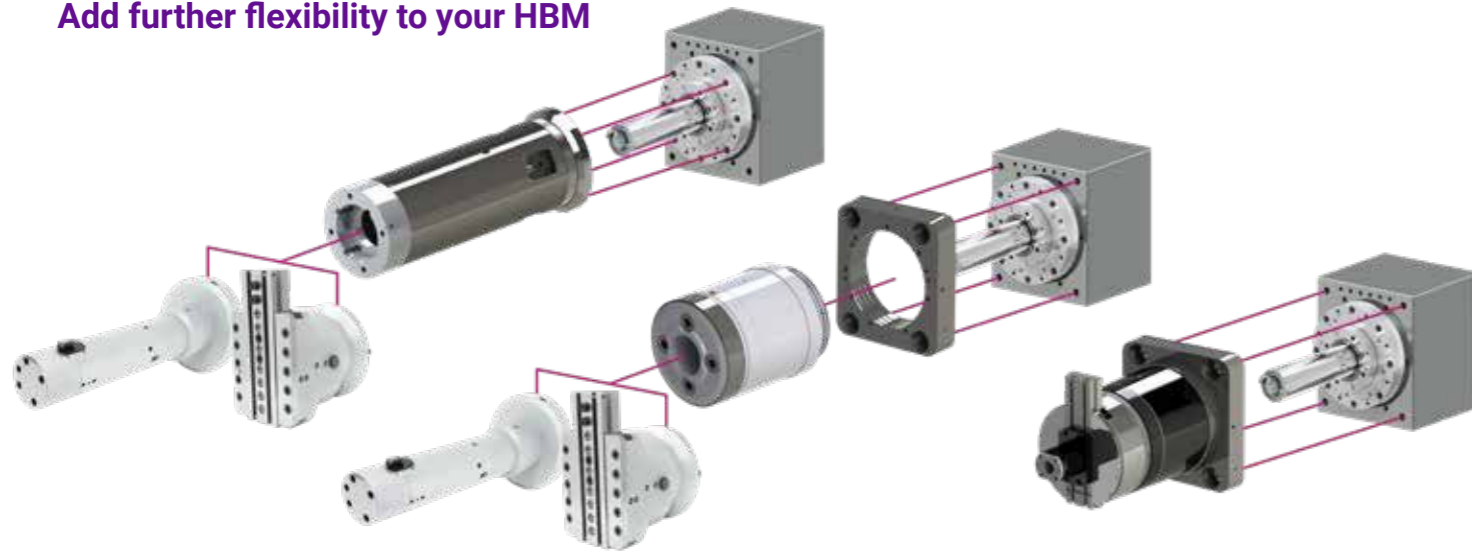
Utilising the latest hydraulic capabilities, the ZX Tooling System can synchronise in unison with your multi-tasking machine. When coupled with robotics, your tools can automatically be picked up and loaded from a complementary rail stack system.

AUTOMATED PICK-UP

Automated tool pick-up system removes the necessity of an operator and crane to load and unload the tooling.



Add further flexibility to your HBM



Rotary couplings are available in varying lengths to suit different machine types, example (conventional boring spindle or Ram-type). Ram-type Rotary Couplings are attached via a spindle adapter plate, usually provided by the machine manufacturer.

For dedicated applications, Integrated Facing / Contouring Heads are also available.

IF YOU ARE LOOKING FOR GREATER FLEXIBILITY
we go beyond expectations



All together now

ZX-RC Facing / Contouring Head range features an integrated Rotary Coupling for automatic pick up and clamping – tailored for RAM-type HBM machine spindles.



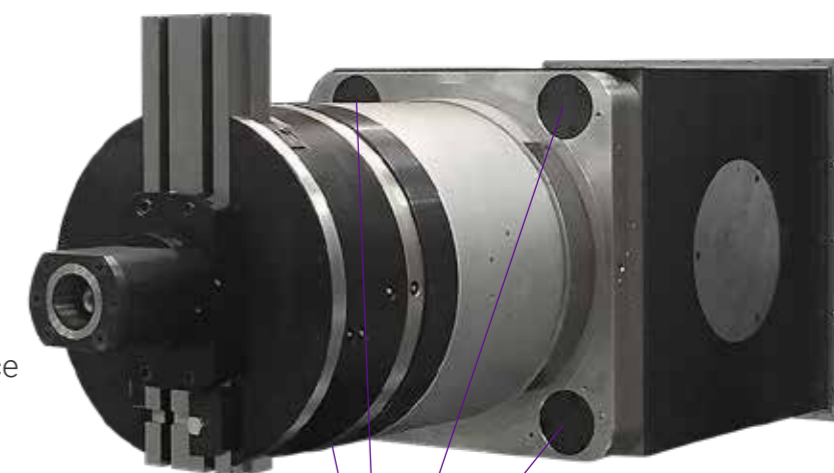
The ZX-RC Facing / Contouring Head is a compact all in one solution for Ram-type HBM machines featuring a live spindle. These Heads can be stored in the tool stacker or in the pick-up station used for milling head auto exchange.

Regardless of RC Head type, the proven mechanical ZX actuation mechanism converts linear quill (live spindle) motion into radial cutter movement. This sturdy design is based on the "sliding inclined wedge" principle for backlash-free operation; no gears or bell cranks are used.

INTEGRATED AUTOMATION

Product features:

- All parts are hardened and ground for lasting accuracy and durability.
- All ZX-RC Integrated Heads feature through coolant facility.
- The ZX-RC Contouring Heads are connected to the spindle adapter plate with Cam Locks.
- ZX-RC integrated heads easily interface to square Ram spindle adapters, supplied by the machine tool builder..
- All ZX-RC Heads feature heavy duty machine spindle bearings to ensure long wear life under heavy loads.
- A special version of the ZX-RC Head, with a hydraulic fully automated top tool change facility, is available.



RC Integrated heads incorporate four location points, providing exceptional rigidity.

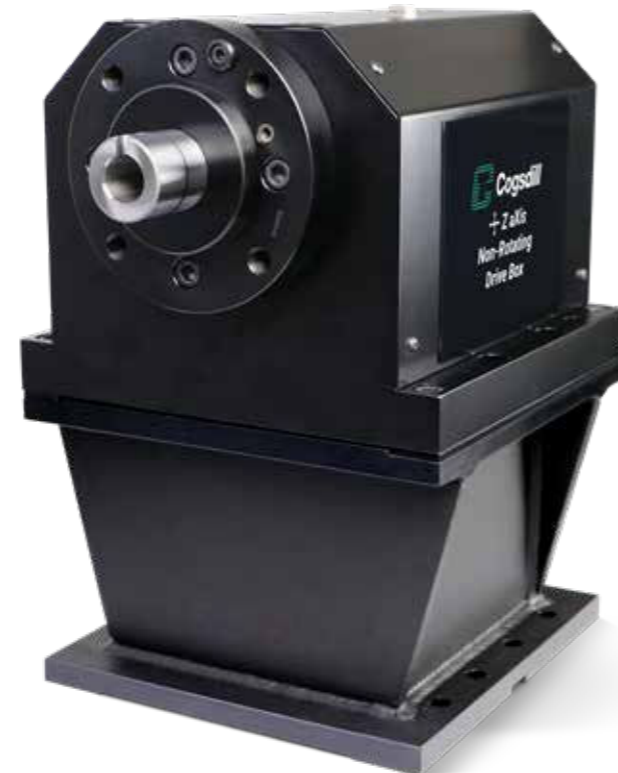
Gain another axis

Adding more flexibility to your manufacturing facility.

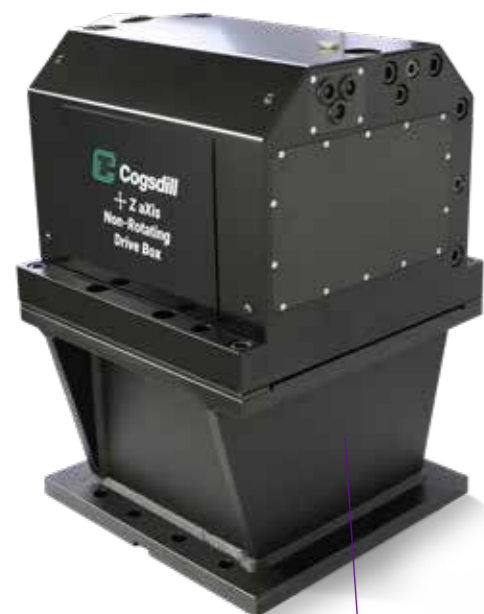
Unlock the potential of your CNC lathe with the Cogsdill ZX Modular Boring Tool system. If your machine features a FANUC control system* and maintains precise accuracy, we can seamlessly integrate an additional axis, with the integration of a Cogsdill Drive Box, eliminating the need for a costly separate boring machine!

With a simple single-plug design and easy one-touch button connection, the operator can effortlessly remove and attach the tool as needed. This additional axis, which functions as a parallel Y axis to the X axis, facilitates the creation of interpolated contours and incremental moves.

* Certain software requirements apply.



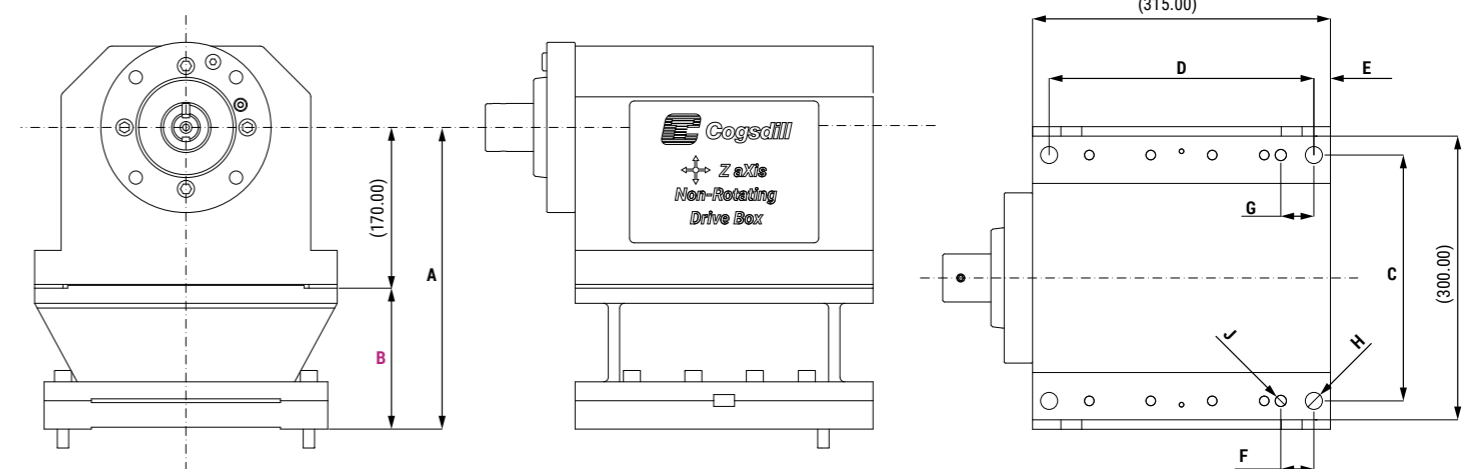
Increasing the capabilities of your lathe



All plinths are designed specifically to match your machine spindle centreline.



Combined with standard modular extensions, the ability to machine components with your CNC lathe is now endless.



TECHNICAL DATA	DEFAULTS
A – Saddle to Spindle Centreline	Customer Specified
B – Plinth Height (A - 170mm)	Customer Specified
C – Bolt Hole Centres (Plinth to Saddle)	260mm*
D – Bolt Hole Centres (Plinth to Saddle)	280mm*
E – Dimension from Side of Plinth ((315mm - D) / 2)	17.5mm*

TECHNICAL DATA	DEFAULTS
F – Distance from Bolt Hole to Dowel	35mm*
G – Distance from Bolt Hole to Dowel	35mm*
H – Bolt Size	M16
J – Dowel Diameter	∅12mm

* Different dimensions can be accommodated if required.

Special Tooling Division

In addition to our standard tools, we offer special tooling and drive boxes for bespoke applications

At Cogsdill, we already offer the most extensive range of Facing / Contouring heads and Modular Boring Tools on the market.

Yet, we understand that sometimes you need something truly unique.

Just ask us.



Need to take your ZX head beyond the norm?
ZX900 with extended length slide adapter (3 metre capability)

Bi-directional boring tool



Seat pocket roughing tool



Bottle boring tool with Drive box



Extended bottle boring tool



Bottle boring tool
with Drive box



Overturning tool

If we can't solve it, nobody can.

We take great pride in our ability to design and manufacture bespoke solutions for specialised applications.

No matter the project or challenge, we can provide tailor-made solutions based on the mechanical actuation principle.

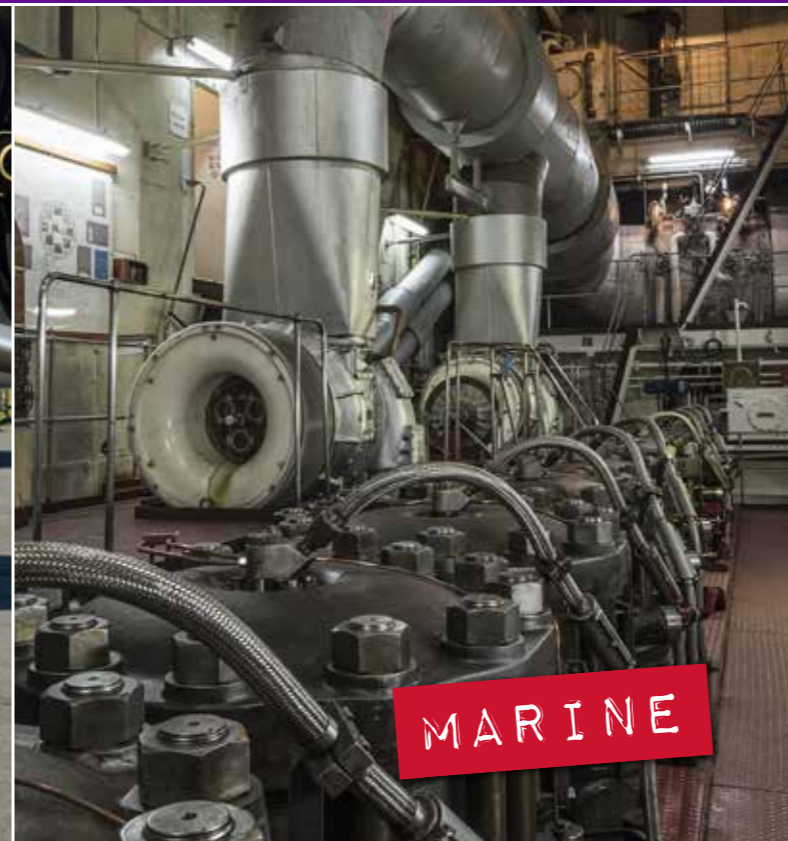


Splining tool



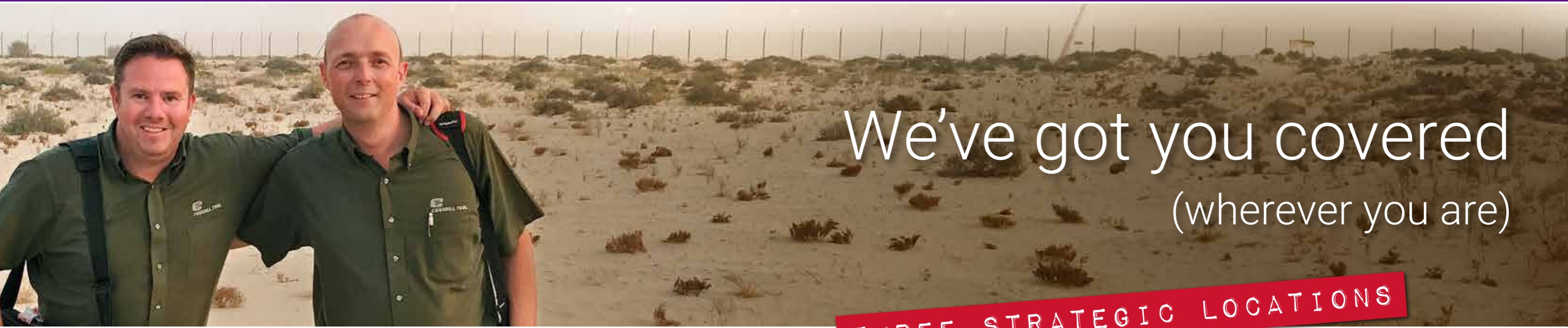
Front piloted boring tool

Covering Major Industries



Whatever the industry, **ZX is the solution.**





We've got you covered
(wherever you are)

THREE STRATEGIC LOCATIONS

Your safety. Our priority.

Backed by our network of global authorized distributors, we offer full technical support across the world.



Here at Cogsdill, we believe that the safe operation of all ZX tools is paramount and our main priority is the safety of your engineers and operators.

By requesting a training and installation induction, we will take you through the safe handling and interfacing of the tools to your machine, which will prevent any potential damage through incorrect use. It includes the set-up initialisation procedures and highlights operational functions and modular options – correctly preparing the tools ready for your engineers to program.

To ensure longevity and accuracy of the tools, we will go through the required maintenance procedures with your engineers, covering lubrication, tool storage and best practices.

Keeping you operational

We understand that sometimes our tools can be used in arduous conditions or with demanding materials. For added peace of mind, we also offer preventative maintenance schemes, conducted by our own qualified technicians and using genuine Cogsdill parts, at one of our manufacturing facilities. Planning an annual service schedule keeps your tools in optimal condition, helps prevent downtime, and comes with the added benefit of increasing your manufacturer's warranty.



We're always ready to help support you

Universal Diamond Burnishing Tools (UDBT)

Did you know?

By combining Cogsdill's premium range of burnishing tools with ZX Facing Heads, you can now achieve low Ra surface finishes in one pass. The proven diamond technology of the UDBT further enables you to achieve results not attainable from any other metal removal process.

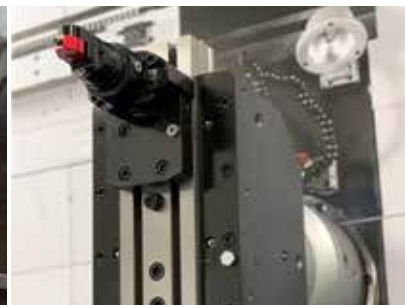
UDBT are designed to be adjustable through 180 degrees, which makes them the ideal choice tool for lower volume batch components where a designated orientated tool is not required. Offers flexibility for burnishing large bores, outside diameters, tapers and faces – and a superior finish compared to turning alone.

The quick and simple castellated adjustment makes this the most versatile diamond burnishing tool on the market, with simple set-up and no special operator skills required.



Three Capto sizes and 25mm Square Shank as standard with optional shanks available:

- UDBT-C4, -C5 and -C6 – integrated Capto Shank supplied with through coolant capability
- 25mm Square Shank – supplied with external coolant capability
- KM50 and KM63 – integrated KM with through coolant capability available upon request



For conventional slide adapters

The DB Series offers enhanced flexibility for high-volume applications or when adjustable spring pressure is required.

Utilising our unique and proven diamond geometry, but designed for use in conventional open-ended square shank slide adapters.



See our tools in action on



Connect with us



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