



PTG HOLROYD PRECISION EX SERIES ROTOR MILLING MACHINES

EX Series

SETTING THE STANDARD IN CNC PROFILE MILLING

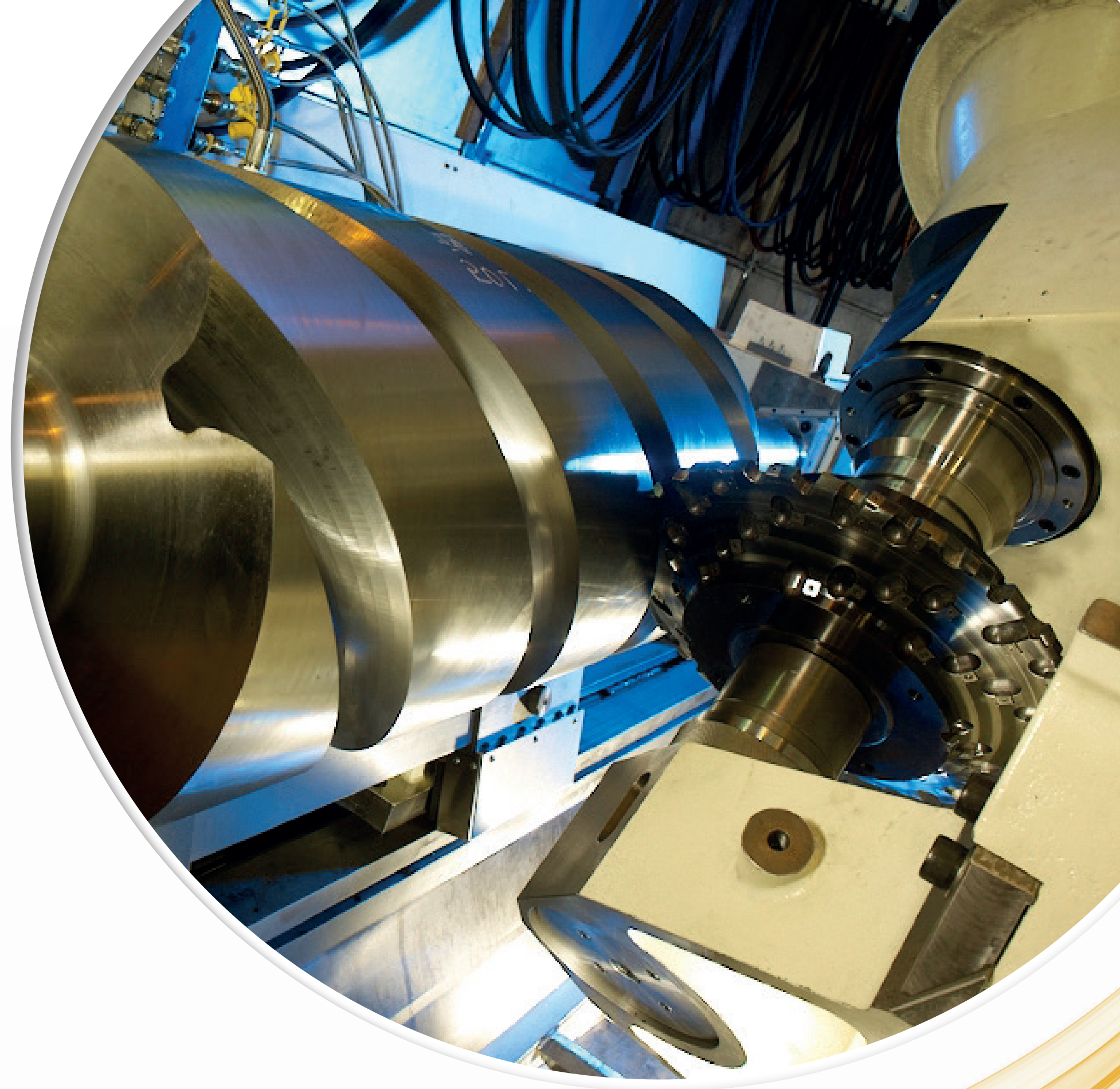
Holroyd EX Series CNC rotor milling machines have earned global acclaim for their high speed, high precision and unrivalled build quality. Delivering class-leading performance and reliability, 'standard' EX models can cut rotor or worm profiles in blanks of up to 850mm in diameter. Where 850mm is too small, we also offer a bespoke machine that can perform the same functions on blanks exceeding one metre in diameter.

Whichever EX Series machine you invest in, you will find it provides exacting levels of performance and repeatability. This is due in no small part to advanced technology - such as our on-machine probing and dry milling techniques for some materials.

The flexibility of EX Series rotor milling machines means they are equally efficient at producing complex components with helical screw profiles, as they are at milling gear parts such as worm shafts.

See the EX Series in action at PTG Holroyd on YouTube.

www.holroyd.com



PTG

The first name in precision

Holroyd Precision is a member of the Precision Technologies Group (PTG) - an organisation that has established itself at the forefront of high-precision machine tool design, build and supply.

The PTG range includes ultra-precision grinding machines for rotor, thread and gear operations; rotor milling machines; heavy duty lathes; deep hole boring machines; friction stir welding machines and special purpose machine tools for the manufacture of precision components.

EX Series

HIGHLY ACCURATE, HIGHLY CAPABLE

Uncompromising performance, reliability and efficiency are essential in today's production environments. Offering high accuracy and aggressive stock removal capabilities, EX Series rotor milling machines can reduce overall machining requirements and provide production rates tailored to individual manufacturing strategies. Built to Holroyd's uncompromising standards, EX Series machines combine robust, reliable performance with advanced production technologies.

Key features:

- Designed for vastly improved productivity
- Powerful, menu-driven touch screen CNC programming
- Quick change tooling for accelerated set-up
- High precision rotational accuracy
- High efficiency, high power milling spindle
- Outstanding metal removal rates
- Hollow spindle for longer components
- Range of chucking and work holding options
- Engineered for complete integration with automated parts handling systems



EX Series

DESIGNED FOR SPEED AND EFFICIENCY

All EX Series CNC rotor milling machines are offered with chucking and work-holding options for quick change tooling and accelerated set-up. An optional automatic inspection station provides the opportunity for mounting additional measurement and control systems.

An optional Renishaw LP2 Double Diaphragm Probe System can be specified to enhance high accuracy finish profile cutting. It is both flute position and depth capable.

The EX Series range:

- 1EX for parts up to 150mm diameter
- 2EX for parts up to 250mm diameter
- 3EX-R for parts up to 350mm diameter
- 5EX for parts up to 550mm diameter
- 6EX for parts up to 650mm diameter
- 8EX for parts up to 850mm diameter

Also available:

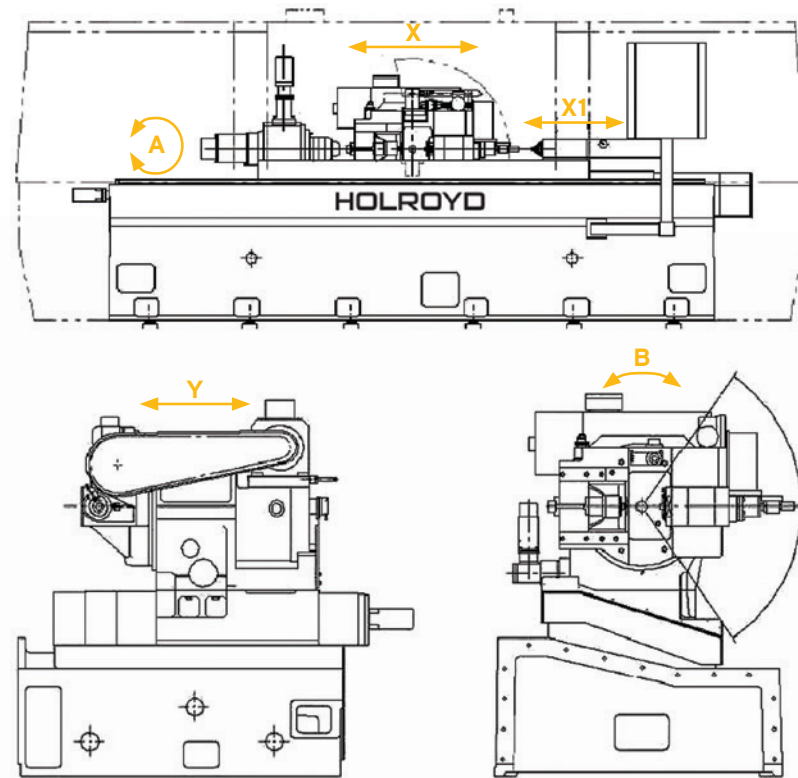
- 10EX for parts exceeding one metre diameter



EX Series IN DETAIL

Axes

- Digital drives to all CNC servo axes
- Latest fibre optic SERial Real-time COmmunications System (S.E.R.C.O.S.) for digital closed loop feedback - integral within each axis drive
- Absolute optical linear scales on all linear axes - axis resolution 9.76nm (1nm = 0.000001mm)
- Absolute optical rotary encoder mounted directly on the workspindle and grinding spindle swivel - axis resolution 0.04arc/second
- Work piece indexing by means of Hydrostatic rotary CNC axis - number of starts 1 - 99
- Hydraulically operated tailstock with an option of programmable tailstock body movement



Workhead

- High precision rotational accuracy
- Various work driver options available
- Anti-backlash drive fitted as standard
- Hollow spindle option for longer components

Milling Spindle

- High efficiency, high speed milling spindle
- Cutting tool mount via ISO or HSK tapers
- Power monitoring for machine overload protection
- Options for 'climb' or conventional milling
- Designed to accept replaceable carbide insert roughing cutters or full- or half-blade precision finishing cutters

Tailstock

- Hydraulic actuated tailstock quill
- Optional automatic tailstock body adjustment
- Fine adjustment for component parallelism
- Hand-scraped seating faces for accuracy and reliability
- Easily changed centres for special applications

Milling Spindle Support

- Cutter support is hydraulically moved along its guide-way, locating on a taper in the cutter spindle, it is then clamped hydraulically in position
- Work piece support aids the rigidity of the part against the forces created when cutting

Chucking and Work Drivers

- All EX Series CNC rotor milling machines are offered with chucking and work-holding options for quick change tooling and accelerated set-up.

Options include:

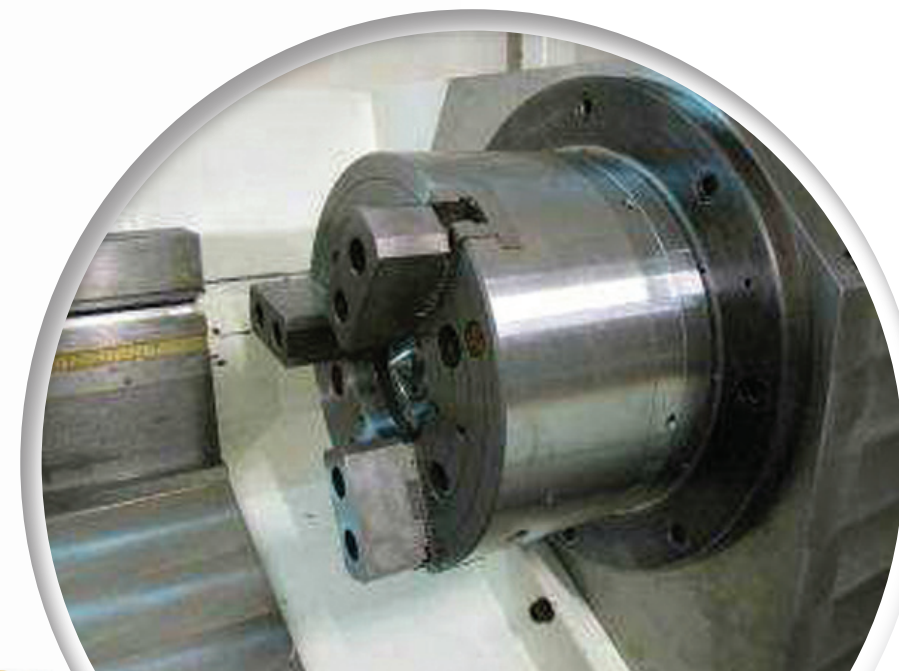
- Automatically operated collapsible sleeve collet chuck with replaceable collets to suit different gripping diameters for roughing or finishing operations
- Automatically operated floating 3-jaw chuck with replaceable jaws, suitable for roughing or finishing operations
- Manually operated collet chuck
- Holroyd-style traditional manual tang drivers



Hydraulic Chuck



Tang Driver



3-Jaw Chuck

EX Series IN DETAIL

Optional on-board Measurement and Control

- An optional automatic inspection station provides the facility for mounting additional measurement and control systems. The optional Renishaw LP2 Double Diaphragm Probe System can be specified to enhance high accuracy finish profile cutting. It is both flute position and depth capable

Coolant Filtration System

- Gravity fed coolant system for use with water-based coolants. Oil-based options are available on request

Ancillary Units

- Swarf conveyor(s) efficiently remove cutting chips
- Oil mist extraction system

Designed to provide a totally operator-focused environment, all EX Series machines offer:

Swivel-type Operation Panel

- Operation panel with swivel range of 330° and separate MPG handwheel for improved operability and visibility

Easy Access Load Area

- Wide door opening for easy machine set-up and component loading

Simplified Maintenance

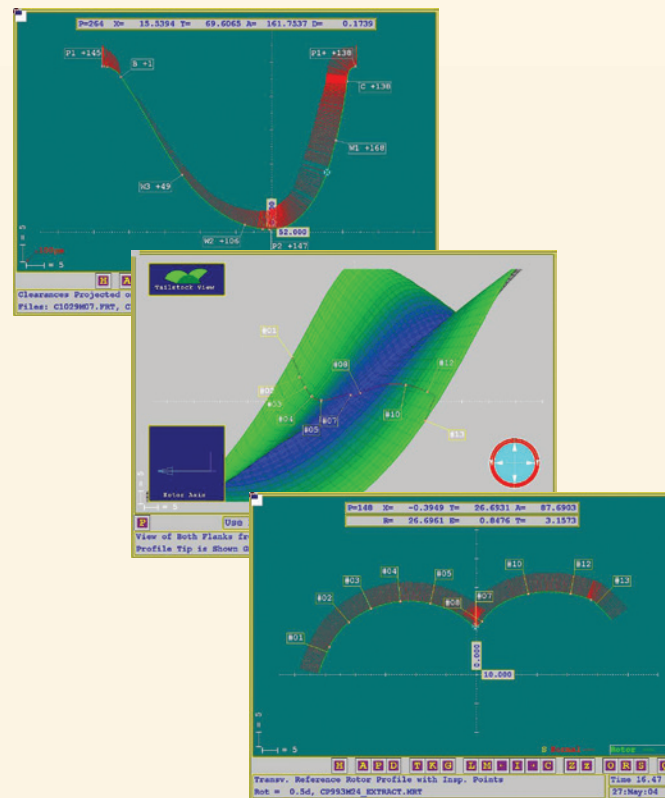
- Conveniently located oil cooler, hydraulic unit and pneumatic instruments for easy accessibility

Operating System

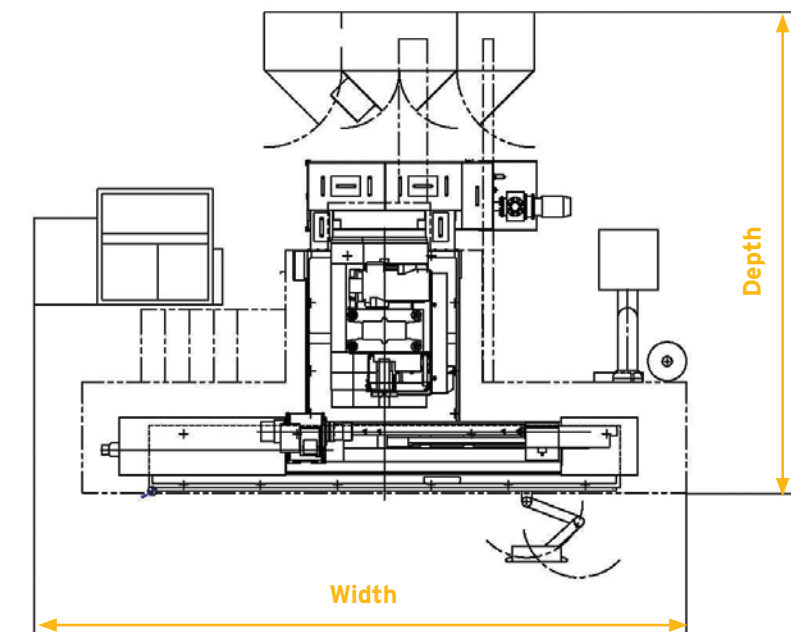
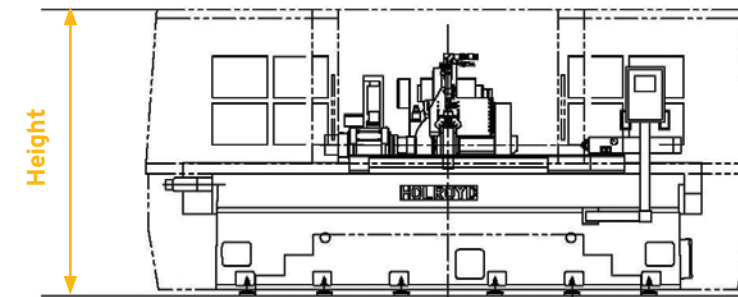
- Holroyd MC4 4-axis CNC system. Optional Fanuc or Siemens CNC systems
- Highly user friendly, advanced touch screen interface
- Dual processor CNC system running Real time QNX OS MS Windows® interface
- Program storage: HDD, Ethernet, LAN & USB
- Software for remote machine diagnostics and software updates
- Full menu-driven data input with on-screen display

HPMS HOLROYD PROFILE MANAGEMENT SYSTEM

An industry leading development tool, HPMS consists of a family of programs for the manipulation and analysis of profiles for Holroyd profile grinders and cutter management centres. HPMS is used in the development and control of a wide range of helical profiles for screw rotors, vacuum and pump screws and worm gears. Available as an additional cost option with EX Series machines, HPMS can also be used to assist control of the profile during production.



EX Series INSTALLATION DIAGRAMS



Machine	Width	Depth	Height
1EX	6415mm	4620mm	3335mm
2EX	7750mm	5410mm	3300mm
3EX-R	7750mm	5410mm	3300mm
5EX	14000mm	5500mm	3890mm
6EX	14000mm	5500mm	3890mm
8EX	14000mm	5500mm	3890mm

EX Series MACHINE SPECIFICATION

EX SERIES MACHINE SPECIFICATION							
ITEM	ITEM	1EX	2EX	3EX-R	5EX	6EX	8EX
Workpiece	Minimum Diameter	-	-	-	250 mm	250 mm	250 mm
	Maximum Diameter	150 mm	250 mm	350 mm	550 mm	650 mm	850 mm
	Swing over Worktable (Diameter)	300 mm	540 mm	540 mm	900 mm	900 mm	900 mm
	Maximum Component Weight	125 kg	500 kg	500 kg	8200 kg *	8200 kg *	8200 kg *
	Maximum Component Traverse	750 mm	1160 mm	1160 mm	2300 mm	2800 mm	2800 mm
	Maximum Lead Angle from vertical	50° LH & RH	55° LH & RH	55° LH & RH	60° LH & RH	60° LH & RH	60° LH & RH
	Maximum Component Length - Distance between Workspindle Centre and retracted Tailstock Centre (Additional component length can be accommodated through hollow Workspindle - Please check with Holroyd)	900 mm	1200 mm	1200 mm	2650 mm	3000 mm	3000 mm
Workhead	Diameter of Bore in Spindle	-	130 mm	130 mm	230 mm	230 mm	230 mm
	Spindle Speed (infinitely variable)	0.5 to 30 rpm	0.5 to 10 rpm	0.5 to 10 rpm	2.7 rpm	2.7 rpm	2.7 rpm
Cutter Head & Workslide	Rapid Traverse Rate	12,000 mm/min	10,000 mm/min	10,000 mm/min	3,000 mm/min	3,000 mm/min	3,000 mm/min
	Maximum Cutter Diameter	250 mm	350 mm	350 mm	700 mm	700 mm	700 mm
	Recommended Cutter Diameter	-	275 mm	275 mm	600 mm	600 mm	600 mm
	Cutter Arbour Interface	ISO 40 Taper	HSK-100	HSK-100	HSK-160	HSK-160	HSK-160
	Maximum Cutter Width	100 mm	160 mm	160 mm	300 mm	300 mm	300 mm
	Cutter Speed (infinitely variable) (uni-directional)	50 to 1000 rpm	80 to 500 rpm	80 to 500 rpm	15 to 200 rpm	15 to 200 rpm	15 to 200 rpm
	Maximum Infeed Rate	10,000 mm/min	7,500 mm/min	7,500 mm/min	3,000 mm/min	3,000 mm/min	3,000 mm/min
	Minimum Distance from Component Centre Line to centre line of cutter	100 mm	160 mm	160 mm	250 mm	250 mm	250 mm
	Maximum Distance from Component Centre Line to centre line of cutter	450 mm	460 mm	460 mm	800 mm	800 mm	800 mm
	Tailstock	Quill Traverse	100 mm	150 mm	150 mm	100 mm	100 mm
Auto-Travel of Tailstock Body (Optional)		850 mm	1370 mm	1370 mm	NA	NA	NA
Machine Accuracies	Infeed position repeatability	0.005 mm	0.005 mm	0.005 mm	0.010 mm	0.010 mm	0.010 mm
	Angular Positional Accuracy (Divide)	16 Arc Seconds	16 Arc Seconds	16 Arc Seconds	16 Arc Seconds	16 Arc Seconds	16 Arc Seconds
	Lead linearity of Machine in 300 mm	0.010 mm	0.010 mm	0.010 mm	0.010 mm	0.010 mm	0.010 mm
	The accuracies can only be achieved if the machine is located in a temperature controlled environment within ± 2° C						
Motor Power	Cutter Spindle	22 Kw @ 1500 - 7500 rpm	37 Kw Fanuc Alpha 40	62.2Kw @ 1500 - 6000 rpm	45 Kw Fanuc Alpha 60	45 Kw Fanuc Alpha 50	60 Kw Fanuc Alpha 60
	Work Rotation	38.9 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max	17.5 Nm @ 4698 rpm Max	22 Nm @ 4000 rpm Max	22 Nm @ 4000 rpm Max	22 Nm @ 4000 rpm Max
	Cutter Head Infeed ø 63 mm Ballscrew	20.5 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max	17.5 Nm @ 4698 rpm Max	12 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max
	Cutter Spindle Swivel	20.5 Nm @ 3000 rpm Max	8 Nm @ 3000 rpm Max	8 Nm @ 5200 rpm Max	22 Nm @ 4000 rpm Max	22 Nm @ 4000 rpm Max	22 Nm @ 4000 rpm Max
	Work Traverse ø 63 mm Ballscrew	20.5 Nm @ 3000 rpm Max	22 Nm @ 4000 rpm Max	17.5 Nm @ 4500 rpm Max	12 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max	12 Nm @ 3000 rpm Max
Power Supply	Electrical Power Supply	75 kVA	115 kVA	140 kVA	160 kVA	130 kVA	150 kVA
	Compressed Air Supply	3 Litres @ 6 Bar	3 Litres @ 6 Bar	3 Litres @ 6 Bar	3 Litres @ 6 Bar	3 Litres @ 6 Bar	3 Litres @ 6 Bar
Tank Capacity	Coolant Tank Capacity	TBA	TBA	TBA	TBA	TBA	TBA
Machine Size	Machine Height (from floor)	3335 mm	3300 mm	3300 mm	3890 mm	3890 mm	3890 mm
	Floor Space (width x depth)	6415 mm x 4620 mm	7750 mm x 5410 mm	7750 mm x 5410 mm	14,000 mm x 5500 mm	14,000 mm x 5500 mm	14,000 mm x 5500 mm
	Mass of Machine	12,000 kg	12,500 kg	12,500 kg	30,000 kg	30,000 kg	30,000 kg
	Other Components	4,300 kg	4,300 kg	4,300 kg	-	-	-
Misc	Standard Paintwork	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021
		Light Grey - RAL 7035	Light Grey - RAL 7035	Light Grey - RAL 7035	Light Grey - RAL 7035	Light Grey - RAL 7035	Light Grey - RAL 7035



A WORLD OF ABSOLUTE PRECISION

PTG Holroyd Precision has a global network of sales agents.
To find your nearest representative, please visit:

holroyd.com



FM 09259

PTG operate a quality management system which complies with the requirements of BS EN ISO 9001:2008

Holroyd Precision Limited.
Registered in England and Wales.
Registration No. 05844176



Holroyd Precision Ltd

Harbour Lane North
Milnrow, Rochdale
Lancashire OL16 3LQ
United Kingdom

Tel: +44 (0)1706 526 590

Fax: +44 (0)1706 353 350

Email: info@holroyd.com