



PTG HOLROYD PRECISION

ROTOR & THREAD GRINDING MACHINES

TG Series

SETTING THE STANDARD IN HELICAL ROTOR AND THREAD GRINDING

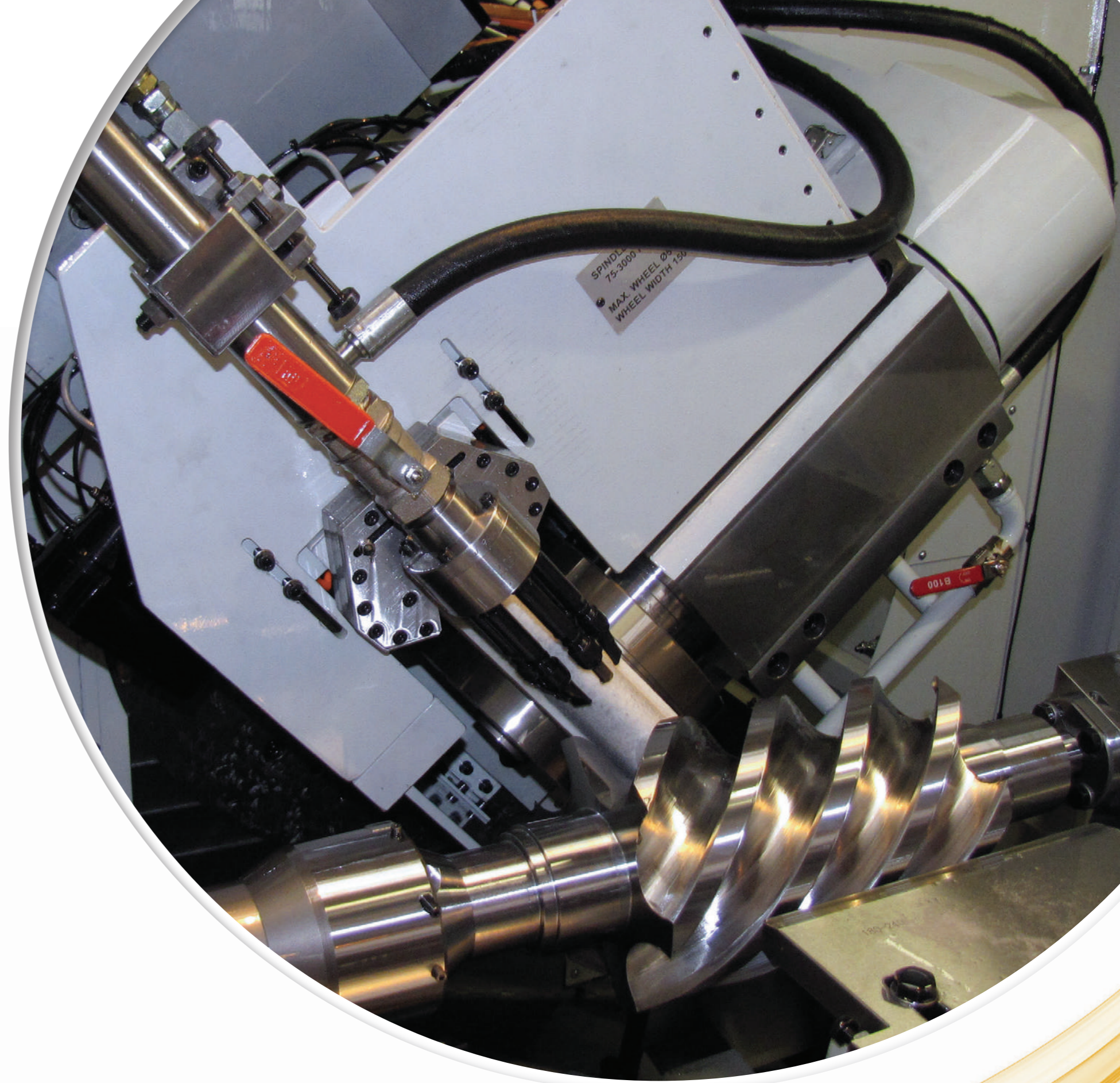
Holroyd TG Series helical rotor and thread grinding machines have long provided the industry benchmark for high levels of accuracy and efficient stock removal. Extremely versatile, these multipurpose grinding solutions are equally suited to prototyping as they are to batch or volume production.

Designed primarily for the finish grinding of helical screw components such as worm screws and rotors, typically after they have been milled to a rough or semi-finished state, TG Series machines can also be used for rough grinding from solid material, if prototypes or low volume production quantities are required.

TG Series machines offer production rates and accuracies to suit precise manufacturing strategies. Fully automated on-machine probing provides 'closed-loop feedback' of corrections to the wheel dresser and, therefore, does not require a high level of operator skill. The result is extremely accurate profiles.

See the TG 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.

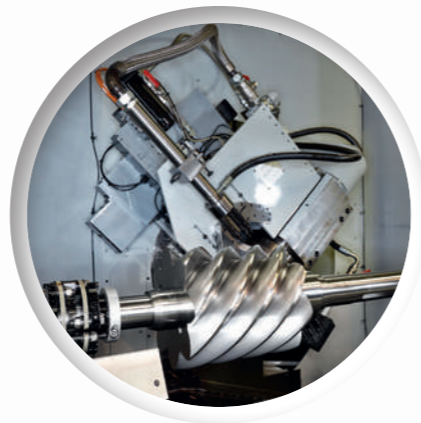
TG Series

HIGHLY ACCURATE, HIGHLY CAPABLE

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

Key features:

- Accelerated and simplified set-up
- Fully automated grinding wheel balancing system
- Powerful, menu-driven touch screen programming
- Unique on-board Holroyd 3D CMM component scanning probe with fully automatic compensation feedback
- High power, high speed grinding spindles
- Optional hollow spindle for longer components
- Advanced in-process dressing systems
- Larger diameter grinding wheels for maximum wheel life
- Optional Holroyd Profile Management System (HPMS) for development and control of profiles for screw rotors, vacuum and pump screws, and worm gears
- Maximum component diameter: from 3mm - 450mm depending on component and profile
- Maximum component weight: from 150kg to 700kg



Zenith 400

Helical profile grinder

We also produce the Zenith 400 helical profile grinder - for rotors up to 420mm diameter and general thread grinding up to 450mm diameter and 2200mm in length. Also the only machine of its kind to offer all three grinding technologies: aluminium oxide, 'diamond hard' plated CBN and vitrified, dressable CBN.

See the Zenith 400 in action at PTG Holroyd on YouTube

TG Series

DESIGNED FOR SPEED AND EFFICIENCY

All TG Series rotor and thread grinding machines are equipped with chucking and work-holding options for quick change tooling and accelerated set-up. A special 3D measurement and correction probe optimises production efficiency by maximising accuracy and improving production rates, removing the need for off-machine inspection. This means that parts can be accurately ground and then measured, with any deviations being automatically corrected before completion of the cycle.

The TG range:

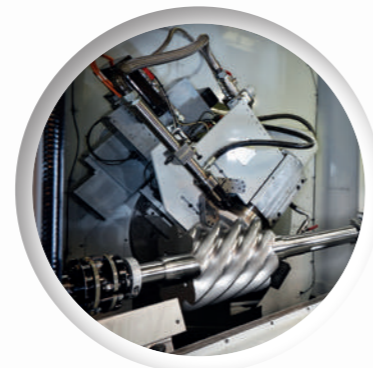
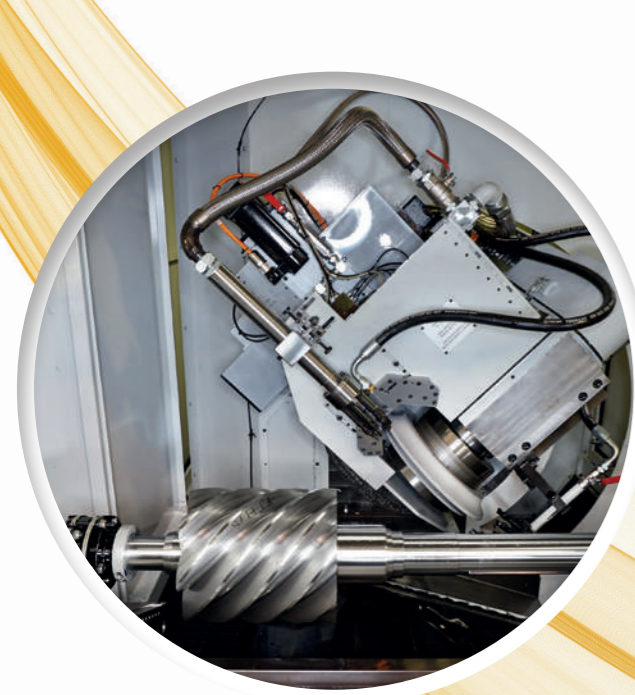
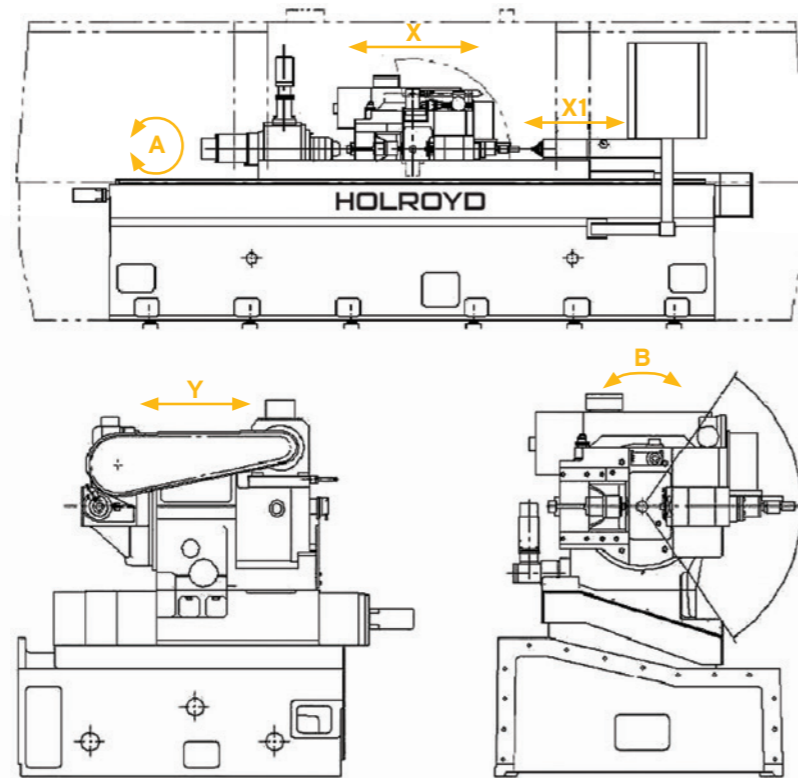
- TG50E for rotors up to 80mm diameter and general thread grinding up to 350mm diameter and 610mm in length
- TG150E - for rotors up to 200mm diameter and general thread grinding up to 400mm diameter and 1180mm in length
- TG350E - for rotors up to 400mm diameter and general thread grinding up to 450mm diameter and 1795mm in length
- TG350E-XL - for rotors up to 400mm diameter and general thread grinding up to 450mm diameter and 2020mm in length



TG 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)
- Hydrostatic in-feed axis
- Absolute optical rotary encoder mounted directly on the work spindle 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 quill with option of programmable tailstock body movement



Workhead

- High precision rotational accuracy
- Variety of work driver options available
- Anti-backlash drive mechanism fitted as standard
- Temperature-controlled hydrostatic bearing system, requiring minimal maintenance
- Hollow spindle option for longer components

Tailstock

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

Work Driver

- Various options of work driver are available - please ask

Grinding Spindle

- High power, high efficiency, high speed
- Fully automatic grinding wheel balancing system
- Power monitoring for Machine Overload Protection
- Large diameter grinding wheels for maximum wheel life

Dressing Unit

- 2-axis CNC controlled wheel dresser
- Operates using two diamond dressing disks (except TG50E)
- Continuous wheel dressing during roughing cycle
- Automatic wheel profile calculation for each dress cycle
- Programmable dressing feed rates for roughing/finishing
- Independent coolant supply to dressing disks
- Optional ultrasonic system to detect grinding wheel contact
- Optional tailstock-mounted rough wheel dressing system

Operating System

- Holroyd TG8 8-axis dual processor CNC system
- Highly user friendly, advanced touch screen interface
- Optional profile scanning system with 'in cycle' component profile measurement, feedback of deviations from reference profile and calculation of modified grinding wheel profile
- Profile input and measurement in either axial or transverse planes
- Full menu-driven data input with on-screen display of component and grinding wheel profiles
- Component data and program file contains all machine set-up data for rapid set-ups of repeat component batches

TG Series IN DETAIL

Optional on-board Scanning, Measurement and Control

- Optional automatic inspection station for mounting measurement and control systems
- Optional Renishaw SP80 scanning probe with a resolution of 1µm in the X, Y and Z axes for measurement of flute position, shaft run out, profile depth, helical lead and profile scan

Pressurised Coolant Filtration System

- High efficiency pressurised system, incorporating full temperature control for grinding and lubrication oil

Ancillary Units

- For oil mist extraction and fire extinguishing system

Additional information for Zenith 400

- Three grinding wheel options: dressable Al2O3, dressable CBN and plated CBN, provide complete flexibility over your production demands

Designed for a totally operator-focused environment, all TG Series machines offer:

Swivel-type Operation Panel

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

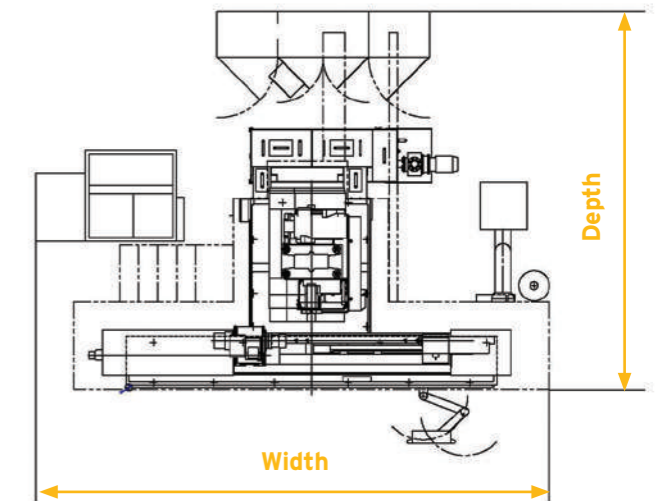
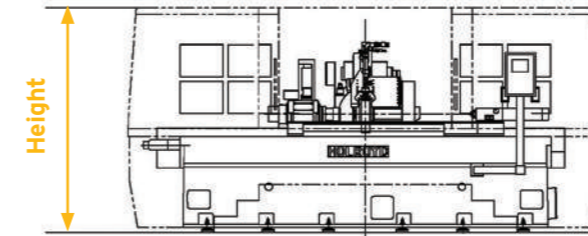
Easy Access Load Area

- Wide door opening for easy set-up and loading of parts

Simplified Maintenance

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

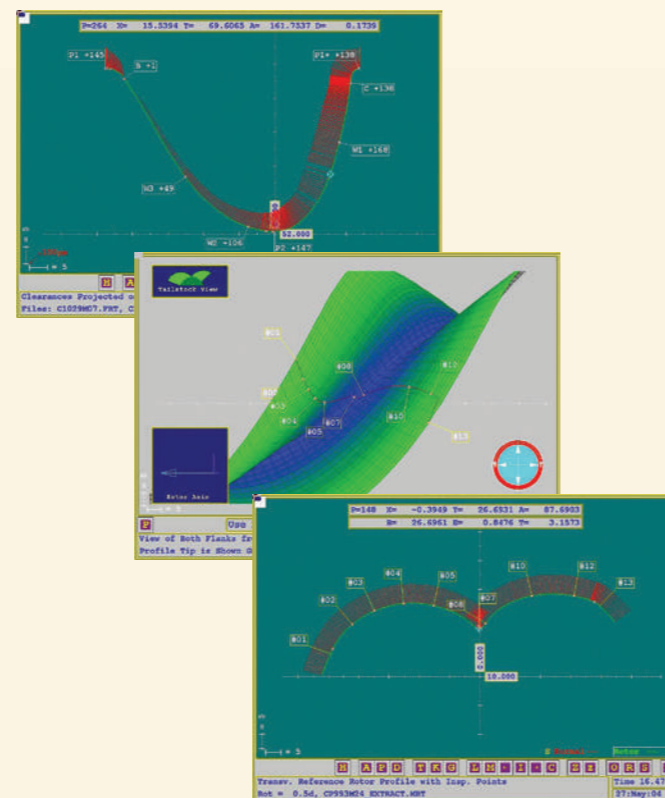
TG Series INSTALLATION DIAGRAMS



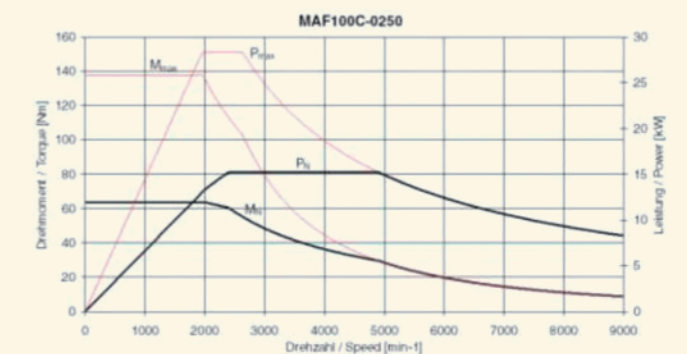
Machine	Width	Depth	Height
TG50E	3900mm	2500mm	2640mm
TG150E	6650mm	4500mm	2800mm
TG350E	6775mm	5000mm	3300mm
TG350E-XL	6775mm	5000mm	3300mm
Zenith 400	6415mm	4620mm	3335mm

HPMS HOLROYD PROFILE MANAGEMENT SYSTEM

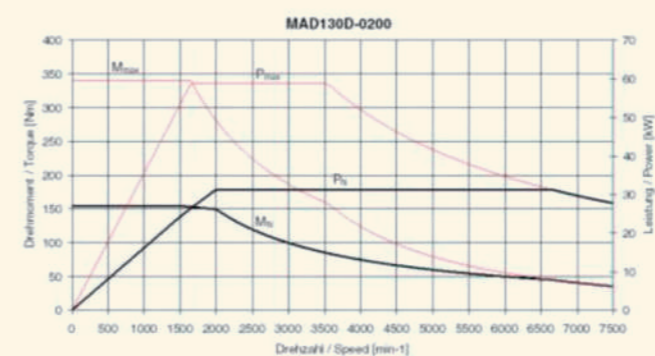
An industry leading development tool, HPMS consists of a family of programs for the manipulation and analysis of profiles for Holroyd profile grinders and cutter management centres. HPMS is used in the development and control of a wide range of helical profiles for screw rotors, vacuum and pump screws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



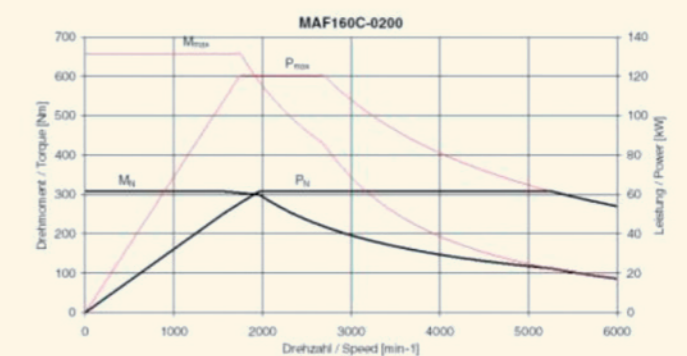
TG Series SPINDLE SPEED/POWER OUTPUT DIAGRAMS



TG50E



TG150E



TG350E / XL

TG Series

MACHINE SPECIFICATION

TG SERIES MACHINE SPECIFICATION						
ITEM	ITEM	TG50E	TG150E	TG350E	TG350E-XL	ZENITH
Workpiece	Minimum Diameter	Zero	Zero	Zero	Zero	Zero
	Maximum Diameter Rotor (Depends on piece max diameter)	100 mm	200 mm	400 mm	400 mm	420 mm
	Swing over Worktable (Diameter)	350 mm	300 mm	500 mm	500 mm	530 mm
	Maximum Component Weight	150 kg	250 kg	500 kg	500 kg	700 kg
	Maximum Component Traverse	750 mm	750 mm	1160 mm	1600 mm	1400 mm
	Maximum Lead Angle from Vertical	90° LH & RH	50° LH & RH	60° LH & RH	60° LH & RH	90° LH & RH
	Minimum Distance from Workspindle Centre to retracted Tailstock Centre	200 mm	270 mm	220 mm	250 mm	500 mm
Maximum Component Length - Distance between Workspindle Centre and retracted Tailstock Centre (Additional component length can be accommodated through hollow Workspindle - Please check with Holroyd)	610 mm	1180 mm	1795 mm	2020 mm	2200 mm	
Workhead	Diameter of Bore in Spindle	25 mm	75 mm	130 mm	130 mm	-
	Spindle Speed (infinitely variable)	0.5 to 100 rpm	0.5 to 100 rpm	0.5 to 100 rpm	0.5 to 100 rpm	-
	Range of Feedrate (along the Helix)	25 mm to 6000 mm/min	25 mm to 6000 mm/min	25 mm to 6000 mm/min	25 mm to 6000 mm/min	-
	Rapid Traverse Rate	12,000 mm/min	10,000 mm/min	10,000 mm/min	10,000 mm/min	15,000 mm/min
	Maximum Wheel Diameter	400 mm	450 mm	500 mm	500 mm	500 mm
Grinding Head & Work-slide	Minimum Wheel Diameter to Root of Profile	200 mm	220 mm	280 mm	280 mm	280 mm
	Maximum Profile Depth	30 mm	90 mm	90 mm	90 mm	90 mm
	Maximum Wheel Width on Machine Spindle	45 mm	70 mm	150 mm	150 mm	-
	Maximum Dressable Wheel Width (depends on profile)	45 mm	110 mm	170 mm	170 mm	180 mm
	Total Dresser Travel	130 mm	130 mm	200 mm	200 mm	-
	Wheel Speed (infinitely variable)	1200 to 7000 rpm	75 to 4000 rpm	75 to 3000 rpm	75 to 3000 rpm	75 to 6500 rpm
	Maximum Infeed Rate	6,000 mm/min	10,000 mm/min	5,000 mm/min	5,000 mm/min	10,000 mm/min
Tailstock	Minimum Distance from Component Centre Line to centre line of grinding wheel	140 mm	150 mm	200 mm	200 mm	180 mm
	Maximum Distance from Component Centre Line to centre line of grinding wheel	400 mm	450 mm	530 mm	530 mm	590 mm
	Quill Traverse	100 mm	100 mm	150 mm	150 mm	-
Machine Accuracies	Auto-Travel of Tailstock Body (Optional)	-	-	1370 mm	1370 mm	-
	Infeed position repeatability	0.002 mm	0.002 mm	0.002 mm	0.002 mm	0.001 mm
	Angular Positional Accuracy (Divide)	8 Arc Seconds	10 Arc Seconds	16 Arc Seconds	16 Arc Seconds	16 Arc Seconds
Motor Power	Lead linearity of Machine in 300 mm	0.007 mm	0.008 mm	0.010 mm	0.010 mm	0.003 mm
	The accuracies can only be achieved if the machine is located in a temperature controlled environment within ± 2° C					
	Wheel Spindle	10 Kw @ 1500 - 7000 rpm	22 Kw @ 1500 - 4000 rpm	45 Kw @ 1500 - 3000 rpm	45 Kw @ 1500 - 3000 rpm	-
	Work Rotation	8 Nm @ 4800 rpm	12 Nm @ 2800 rpm	12 Nm @ 4500 rpm	12 Nm @ 4500 rpm	Torque
	Wheel Head Infeed ø 63 mm Ballscrew	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	6.6 Nm @ 3000 rpm
Power Supply	Wheel Spindle Swivel	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	Torque
	Work Traverse ø 63 mm Ballscrew	8 Nm @ 4800 rpm	8 Nm @ 4800 rpm	18 Nm @ 4800 rpm	18 Nm @ 4800 rpm	6.6 Nm @ 3000 rpm
Tank Capacity	Electric Power Supply	71 kVA, 230 V @ 0.25 VA	170 kVA, 230 V @ 0.25 VA	205 kVA, 230 V @ 0.25 VA	205 kVA, 230 V @ 0.25 VA	-
	Compressed Air Supply	6 Litres @ 6 Bar	6 Litres @ 6 Bar	6 Litres @ 6 Bar	6 Litres @ 6 Bar	-
Machine Size	Coolant Tank Capacity	TBA	TBA	TBA	TBA	-
	Machine Height (from floor)	2640 mm	2800 mm	3300 mm	3300 mm	-
	Floor Space (width x depth)	3900 mm x 2500 mm	6650 mm x 4500 mm	6775 mm x 5000 mm	13,180 mm x 4890 mm	-
Misc	Mass of Machine	6,500 kg	12,000 kg	16,000 kg	16,000 kg	20,000 kg
	Other Components	Incl	4300 kg	4300 kg	4300 kg	4300 kg
Standard Paintwork	Standard Paintwork	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021	Dark Grey - RAL 7021
	Standard Paintwork	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

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