



# PTG HOLROYD PRECISION

## ZENITH 400 HELICAL PROFILE GRINDER

# ZENITH 400

## Absolute precision in helical profile grinding

Welcome to the future of helical profile grinding. Welcome to the Zenith 400 from Holroyd Precision Limited.

The Holroyd name has long been a benchmark for superior, ultra-precise grinding solutions amongst screw compressor rotor manufacturers.

Now, with the Zenith 400, we bring even greater levels of capability, flexibility and efficiency to your manufacturing strategies.

Developed to precision grind components weighing up to 700kg, and measuring up to 420mm in diameter and 2.2 metres in length, the Zenith 400 provides exceptional versatility.

In addition to being a high-precision, helical profile grinding machine, the Zenith 400 also offers high stock removal rates and aggressive semi-finishing, with production rates and accuracies tailored to your precise needs.

The Zenith 400 is also the only helical profile grinding machine to offer all three grinding technologies: aluminium oxide, 'diamond hard' plated CBN (Cubic Boron Nitride) and vitrified, dressable CBN.

To see the Zenith 400 in action, visit: **PTG Holroyd on YouTube**

[www.holroyd.com](http://www.holroyd.com)

# PTG

## The first name in precision

Holroyd Precision Limited 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.



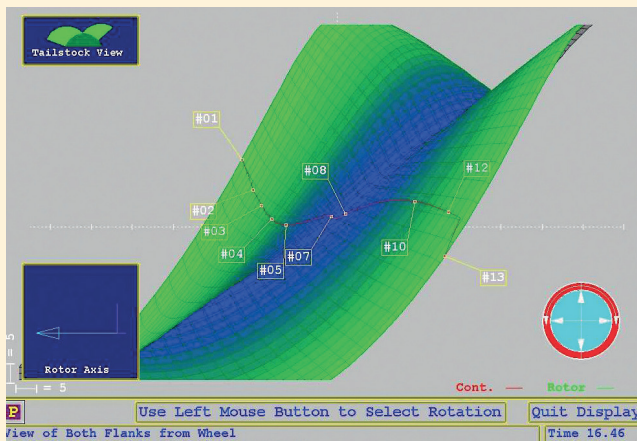
# ZENITH 400

HELICAL PROFILE GRINDER



## Key features

- Accelerated and simplified set-up
- Fully automated grinding wheel balancing system
- Three grinding wheel options: vitrified  $Al_2O_3$ , vitrified CBN and plated CBN
- 420mm maximum diameter grinding capability
- 700kg maximum component weight
- 2.2-metre maximum component length
- Powerful, menu-driven touch screen programming for exceptional ease of use
- High stock removal rates, aggressive semi-finishing and precision fine finishing
- Twin operating functions: simplified production or development
- Holroyd 3D CMM component scanning probe with fully automatic compensation feedback for class-leading accuracy
- Advanced in-process dressing systems
- Engineered for complete integration with automated parts handling systems



## Holroyd Profile Management System (HPMS)

An industry-leading development tool, HPMS consists of a family of sub-programs that allow the manipulation and analysis of profiles for Holroyd profile grinders.

HPMS is used in the development and control of a wide range of helical profiles for screw rotors, vacuum and pump screws.

Available as an additional option with the Zenith 400, HPMS can also be used to assist control of the profile during production.

# SPECIFICATION

## General information

### Workhead

- Torque motors and roller bearings on rotary axes
- Large capacity bore
- Integral work ejector system

### Tailstock

- Full movement control through CNC

### Work Loading

- Built-in non-contact, high-accuracy inductive sensors for checking journal run-outs

### Grinding Spindle

- High-efficiency, high-speed spindle
- Interchangeable arbour system with HSK interface
- Radio Frequency Information tags for accelerated set-up
- Vitrified  $Al_2O_3$ , vitrified CBN or electro-plated CBN wheels
- Fully automatic machine balancing system
- Optional ultrasonic contact detection of dressing disc to grinding wheel (ensures full dress of wheel)

### Dressing Unit

- CNC controlled wheel dresser
- Operates using two diamond dressing disks
- Automatic wheel profile calculation for each dress cycle
- Optional ultrasonic system to detect grinding wheel contact
- Optional rough wheel dressing system

### Automatic Inspection Station

Renishaw SP80 scanning probe; resolution 1 micrometre in X, Y and Z axes for measurement of the following features:

- Flute position
- Shaft run out
- Profile depth
- Helical lead
- Profile scan

### CNC

- Holroyd X8 8-axis CNC system
- Advanced touch screen interface
- Integrated profile management system
- Intuitive dialogue programming option (Wizard)

## Grinding wheel options

### Dressable Aluminium Oxide

- High levels of profile accuracy
- Dress with the correct profile for every component
- The 'low cost' solution
- Suited to 'high-variety' rotor production

### Electro-Plated Cubic Boron Nitride (CBN)

- Suited to volume production
- Dressing time is eliminated
- Profile is 'fixed' for the lifetime of the wheel
- Automatic compensation for wheel wear

### Vitrified Cubic Boron Nitride (CBN)

- Extended wheel life
- Highly cost-effective
- Dressable to achieve the accuracy required
- Only infrequent dressing needed



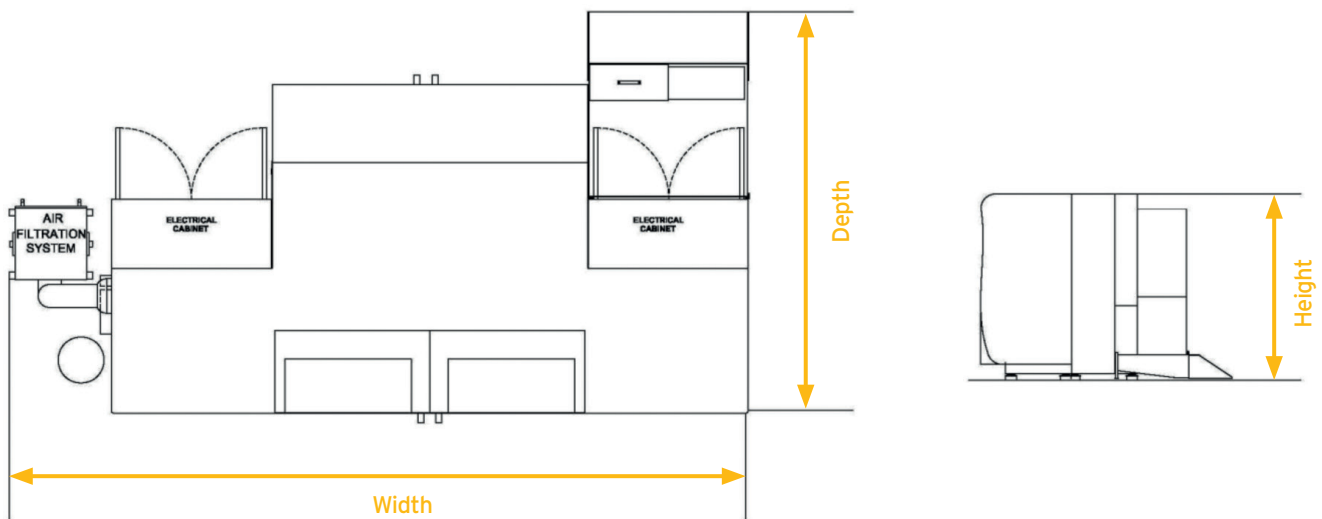
ABSOLUTE PRECISION MAKES ALL THE DIFFERENCE

# MACHINE PROGRAMMING

- Profile input and measurement in either axial or transverse planes
- Suitable for rotor, worm or screw grinding
- Fully automatic programmable cycles, including:
  - Dressing with full compensation for dressing disk wear
  - Profile grinding, with optional probing and profile measurement with full feedback for in-cycle profile adjustment
  - Repeat cycles with nesting up to 99 times
- Grinding during forward and/or return stroke
- Component indexing at left-hand, right-hand or both ends of grinding stroke
- Linear lead adjustment via CNC input
- Programmable constant peripheral grinding wheel speed, based on actual wheel diameter

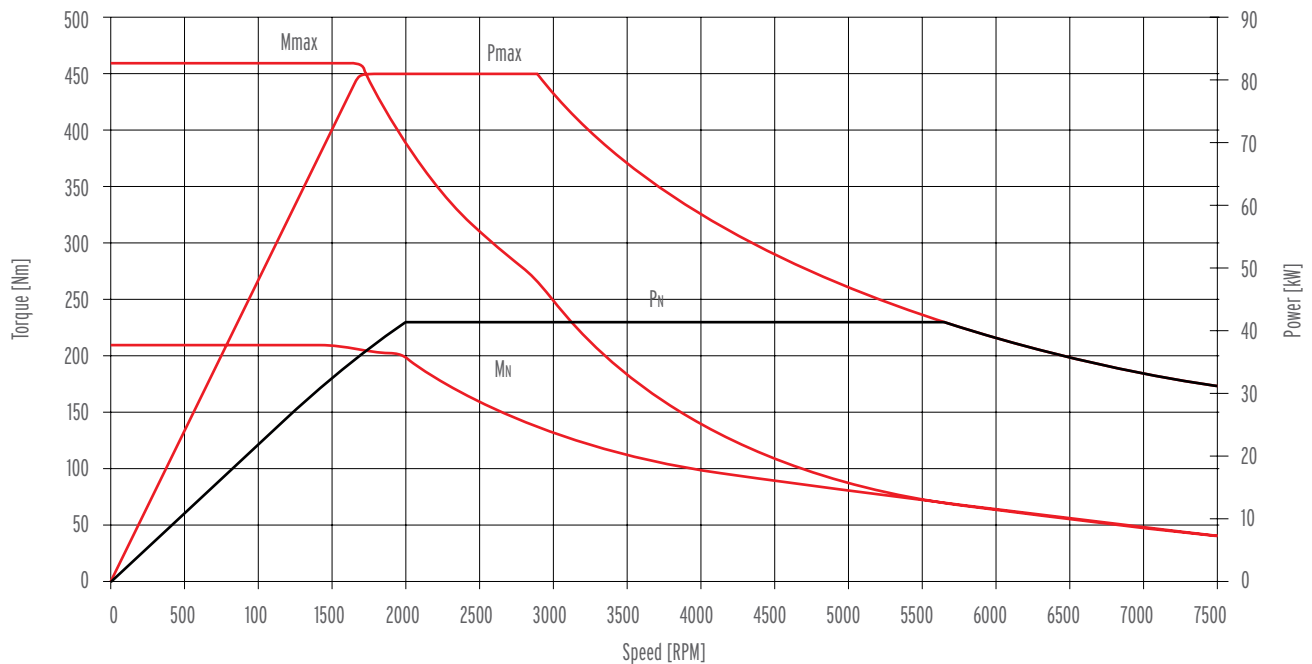


# INSTALLATION DIAGRAMS



DIMENSIONS			
Model	Width	Depth	Height
Zenith 400	6415mm	4620mm	3335mm

# SPINDLE SPEED TORQUE/POWER



## ZENITH 400 SPECIFICATION

WORKPIECE		GRINDING HEAD AND WORKSLIDE	
Maximum diameter	Ø 420mm	Range of Feedrate (along the Helix)	25mm to 4000mm/min
Maximum diameter with component loading table	Ø 400mm	Rapid traverse rate	15000 mm/min
Swingover worktable (diameter)	Ø 530mm	Maximum wheel diameter	Ø 500mm
Minimum diameter	Zero	Minimum wheel diameter to root of profile	Ø 250mm
Maximum component weight	700kg	Maximum dressable profile depth	100mm
Maximum component traverse	1400mm	Wheel shift axis stroke	260mm
Maximum lead angle from vertical	-90°/+90°	Maximum wheel width on machine spindle	200mm
Maximum component length - the distance between work spindle centre and retracted tailstock centre	2200mm	Maximum dressable wheel width (depends on profile)	200mm
Minimum distance from work spindle centre to retracted tailstock centre	200mm	Wheel speed (infinitely variable)	1000 to 6500 RPM
WORKHEAD		Maximum in-feed rate	7500mm/min
Diameter of bore in spindle	Ø 130mm	Maximum distance from component centre line to centre line of grinding wheel	600mm
Spindle speed (infinitely variable)	0,5 to 50 RPM	Minimum distance from component centre line to centre line of grinding wheel	200mm
MOTOR POWER		GUARANTEED MACHINE ACCURACIES	
Wheel spindle	42kW	In-feed position repeatability	0,002mm
-	-	Divide accuracy of machine on 250mm (80 ↔ rad)	0,010mm
-	-	Lead linearity of machine in 300mm	0,003mm

# A WORLD OF ABSOLUTE PRECISION

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

[holroyd.com](http://holroyd.com)



FM 09259

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

Holroyd Precision Limited.  
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