HOLROYD PRECISION

PTG HOLROYD PRECISION

GTG2 SMART GEAR GRINDING CENTRE

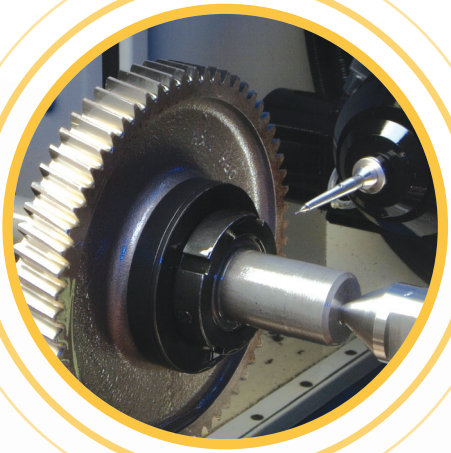
GTG2 HELICAL GRINDER

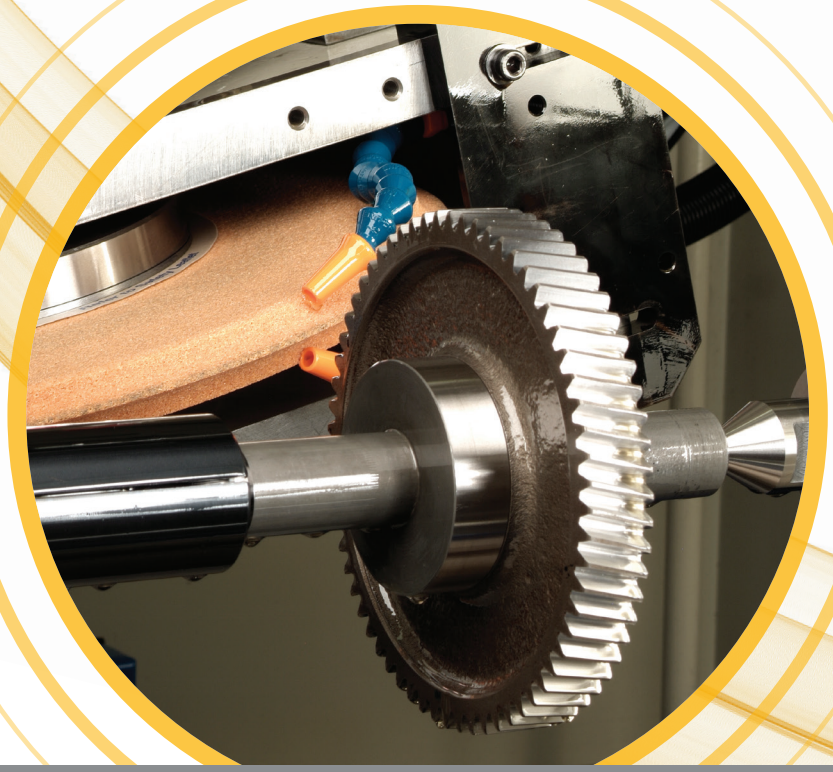
Setting new benchmarks in the production of precision helical gears.

Emphasising Holroyd's commitment to innovation is the GTG2 helical grinder, a machine that is setting new benchmarks in the production of ultra- high precision helical gears in diameters up to 350mm.

Designed and developed in the UK, GTG2 is basically a production cell within one machine, it combines high power for deep grinding operations with ultra-high levels of accuracy of finish (approaching DIN1) and the ability for fast set-ups to optimise production and operating costs.

GTG2's advanced and highly integrated design enables an operator to take a typical design drawing and enter the specification – including such parameters as helix angle, pressure angle and module number of teeth – directly into the grinder control, after which the machine performs its production cycle automatically. Optimising the production efficiency of the machine are 3D measurement and correction probes.
These improve production rates by removing the need for off-machine inspection. As a result, parts can be placed in the machine, accurately ground and then measured, and any deviations automatically corrected before completion of the cycle.





GTG2 'SMART' GEAR GRINDING CENTRE

CNC

- Holroyd HTG 8 Axis CNC System with Advanced Touch Screen Interface and Integrated Profile Management System
- 1.4GHz processor with 1 Gbyte RAM, supplied with DVD-Rom drive and MODEM as standard
- Interfaced to the axis drive system using a CNC rack with a 1.4GHz processor running QNX real-time operating system
- HDD hard drive for profile and program data storage. (A typical part program including profiles equals around 80kb)

Programming

- Fully automatic programmable cycles including
- Dressing with full compensation for dressing disk wear via optional probing system
- Gear tooth grinding with optional probing and form measurement
- Repeat cycles with nesting up to 99 times
- Fillet radius or trochoid root form
- Gear crowning cycle for modified tooth forms
- Lead crowning by bob crowning or by adjusting the lead or combination of both
- Programmable constant peripheral grinding wheel speed, based on actual wheel diameter
- Optional programmable component taper correction

Grinding Spindle

- Fully automatic grinding wheel balancing system built in to machine spindle
- Power monitoring on grinding spindle for machine overload protection.
- Optional ultra-sonic contact detection of dressing disc to grinding wheel, to ensure full dress of wheel

Dressing Unit

- 2 axis CNC controlled wheel dresser, operating with diamond dressing disk
- Automatic wheel profile calculation for each dress cycle
- Programmable dressing cycles for rough and finish grinding

Automatic Inspection Station

- Optional Renishaw SP80 Scanning Probe. Resolution 1µm in X, Y and Z axes for measurement of the following features: Tooth position, shaft run-out, tooth depth, helical lead, tooth form scan, tooth thickness and automatic stock division

Axes

- Digital drives to all CNC servo axes, incorporating fibre optic Serial Real-time Communications System (S.E.R.C.O.S.) Digital closed loop feed back, integral within each axis drive.
- Optical linear scales on all linear axes – axis resolution 9.76nm = 0.000001mm)
- Optical rotary encoder mounted directly on work spindle and grinding spindle swivel – axis resolution 0.04 Arc second
- Work piece indexing by means of hydro-static rotary CNC axis
- Tailstock with CNC controlled hydraulic quill

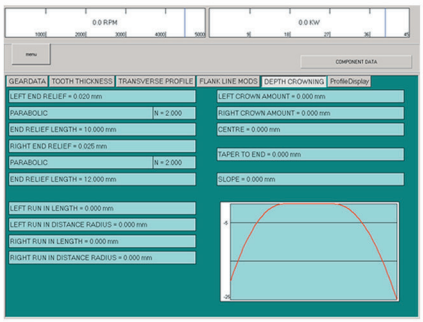
Machine Systems

- Optional, choice of gravity, vacuum or pressurised coolant filtration systems.
- Free standing hydraulic unit for machine systems and hydro-static axes. Automatic centralised lubrication system
- Dry and lubricated Air purging systems for scales, motors, dresser unit and tailstock
- Fully enclosed machine guarding with oil mist extraction and easy access to work area
- Automatic fire suppression system

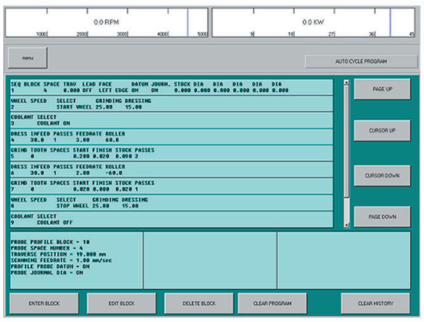
CNC CONTROL

The graphical menu driven interface enables the operator to take data from a gear drawing, in a wide variety of representations, to produce profiles and grinding paths to generate the gear.

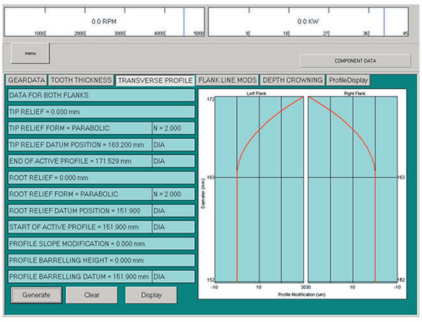
Transverse profile modifications and flank line (helix) modifications can be applied to the gear in any combination of the following forms. The control has the ability to enter data for both flanks together or each flank independently, allowing the operator to apply different corrections to each flank if required.



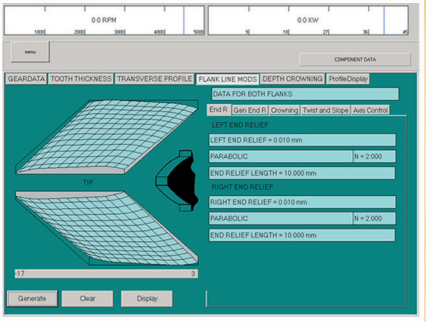
Transverse profile modifications



Flank line modifications



Depth crowning

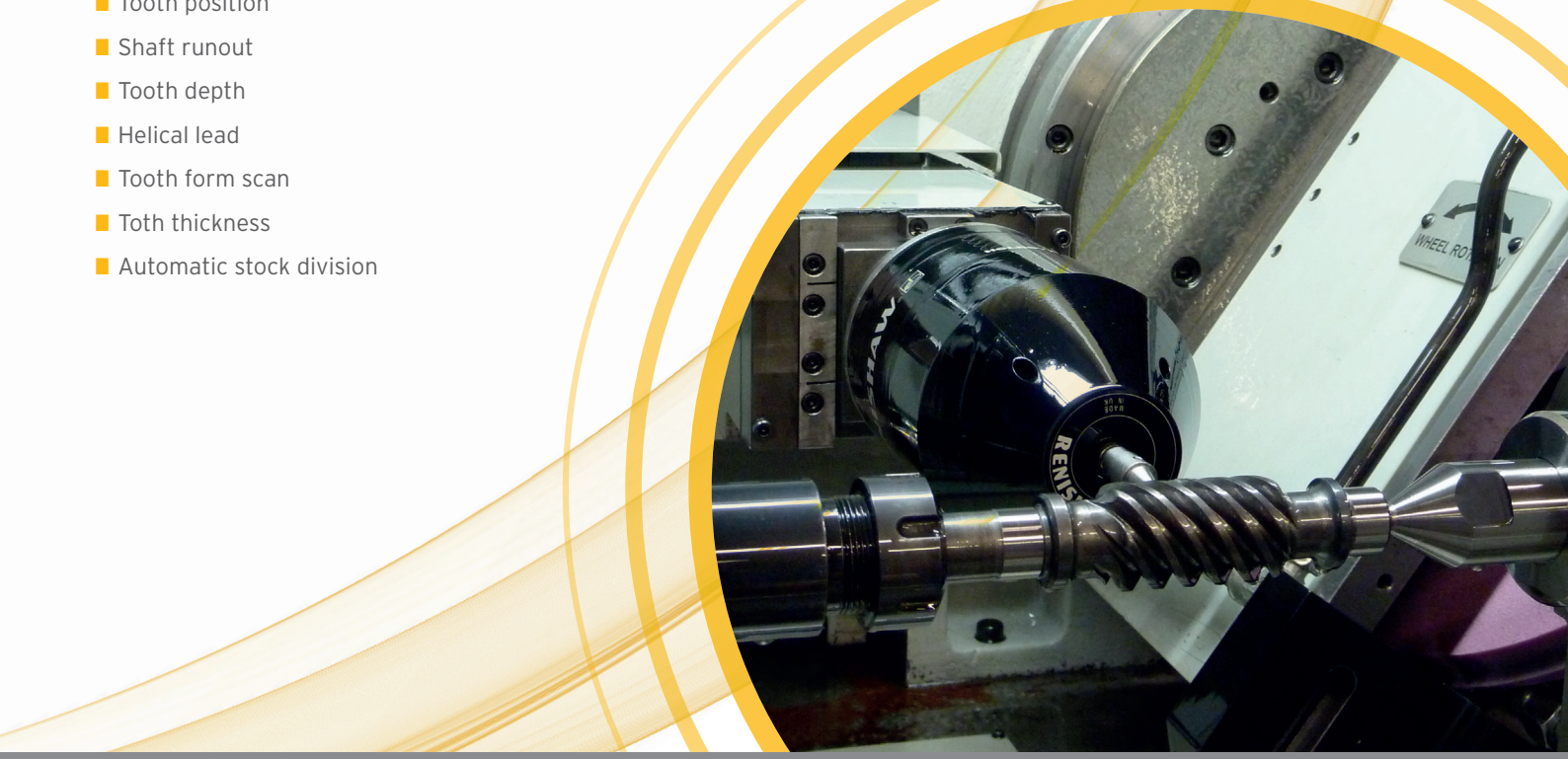


Depth crowning 2

AUTOMATIC INSPECTION STATION

This unique feature, as illustrated in the following pictures uses a scanning probe with a resolution of 1 micron in the X, Y and Z axes for measurement and adjustment of the following features:

- Tooth position
- Shaft runout
- Tooth depth
- Helical lead
- Tooth form scan
- Toth thickness
- Automatic stock division



PTG Deutschland GmbH (Europe)
Pilsener Straße 9, D-86199 Augsburg
Germany
Tel: +49 821 908983 0
Fax: +49 821 908983 20
Email: info@ptgltd.com

PTG Asia (Shanghai)
Room 2507
No. 500 Xiangyang South Road
Xuhui District, Shanghai, 200031
China
Tel: +86 1365 1819693
Tel: +86 1801 8675757
Email: info@holroyd.com

PTG Asia (Beijing)
Beijing
China
Tel: +86 136 0 1351260
Email: info@holroyd.com

PTG Russia
Bulat Galeev
Moscow
Russia
Tel: +7 903 109 09 23
Fax: +7 903 109 09 23
Email: info@holroyd.com

PTG India
RSM Associates
Chennai
India
Tel: +91 98431 19525
Email: info@holroyd.com

PTG Japan
CKB Corporation
Tokyo
Japan
Tel: +81 3 3498 2131
Email: info@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 526590
Fax: +44 (0)1706 353350
Email: info@holroyd.com

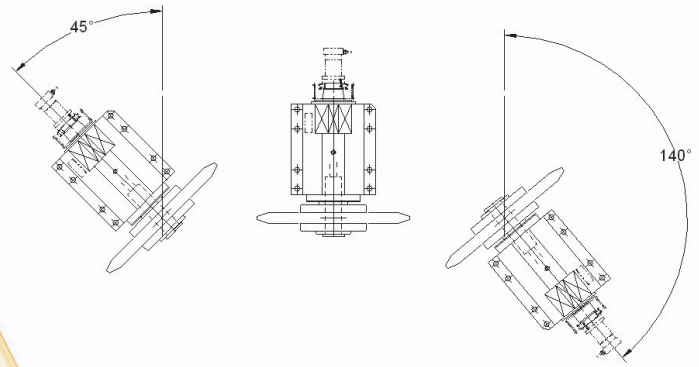
EXCELLENCE IN GEAR GRINDING TECHNOLOGY

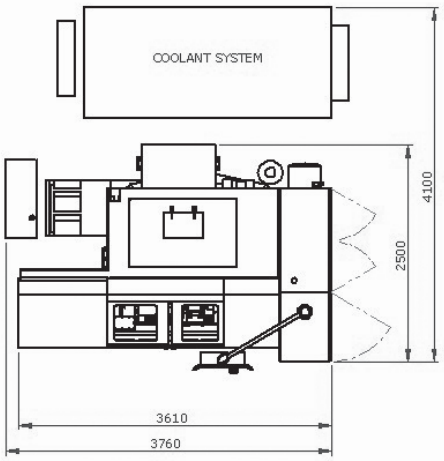
The Holroyd GTG2 gear grinder is a full CNC machine for accurate grinding of helical and spur gears. The machine has been manufactured to the highest engineering standards, developed over many years by a company with a long experience in the design and manufacture of precision machine tools. Our strict quality assurance system ensures that detailed inspection has been carried out at key stages in the manufacture and assembly of this machine.

The completed machine is subjected to a rigorous final inspection and test programme, with selected tests repeated after installation at the customer's site.

Holroyd machines are in constant use in our own factory for volume production work, and our technical service staff is therefore well qualified to support our customers worldwide after their purchase, and help them get the best from their investment.

Grinding Head – Maximum Left and Right Angles from Vertical





GTG2 SPECIFICATION		
Motor Power	Wheel spindle	11Kw (S1 duty)
Tailstock	Tailstock centre	No. 4 MT
	Quill traverse	100mm
Workpiece	Minimum diameter	Zero
	Maximum diameter	350mm
	Maximum face width	160mm
	Metric module	0.5-10
	Maximum component weight	150Kg
	Maximum component traverse	750mm
	Maximum lead angle from vertica	+90º
	Maximum component length	610mm
Workhead	Spindle speed (infinitely variable)	0 to 100 RPM
Grinding Head and Workslide	Range of feedrate (along the helix)	25mm to 6m/min
	Rapid traverse rate	12m/min
	Maximum wheel diameter	406mm
	Minimum wheel diameter ro root of profile	200mm
	Maximum profile depth	30mm
	Maximum wheel width	45mm
	Wheel speed (infinitely variable)	1700 to 7000 RPM
	Maximum infeed rate	6m/min