



CRANFIELD PRECISION TTOG

Ultimate flexibility and performance
in a compact twin turret
configuration

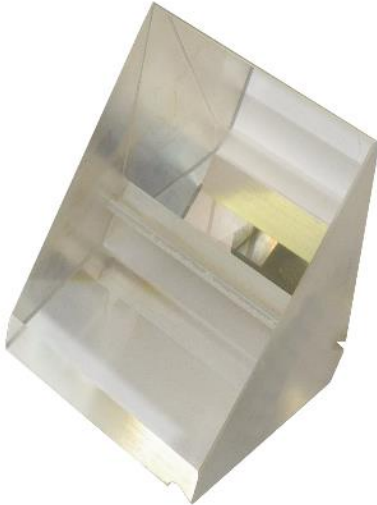
Twin turret grinder

Flexibility and precision technology on a small footprint

- Ideal for optical, medical and aerospace applications
- Patented twin turret base design
- Oil hydrostatic guideways
- Linear motors on linear and rotary axes
- Spindle speeds up to 60,000 RPM available
- 350 mm diameter capacity
- Positioning with 0.01 μm glass scales
- Advanced CNC6400 touch screen control



Typical components



Specifications

Grinding capacity	
Max. grinding diameter (OD)	350 mm (13.8")
Linear axis stroke	150 mm (5.9")
Max. workpiece weight	25 kg (55 lb)
Tool spindle turret	
Swivel range	+/- 135 deg
Turret bearing	hydrostatic
Max. number of spindles	4
Grinding spindle bearings	Air
Max. wheel Ø	140 mm (5.7")
Max. wheel width	12 mm (0.5")
Wheel surface speed	100 m/sec (328 ft/sec)
Max. grinding spindle power	16 kW
Max. grinding spindle speed	80,000 rev/min

Work spindle turret	
Swivel range	+/- 135 deg
Turret bearing	hydrostatic
C-axis	hydrostatic (air option)
Workhead speed	1 - 3,000 rev/min
Linear axes travel (infeed)	150 mm (5.9")
Dimensions	
Dimensions (W x D x H)	1,800 x 1,950 mm (5.9' x 6.4')
Machine weight	3,500 kg (7,716 lb)

Sample application: BK7 ground asphere

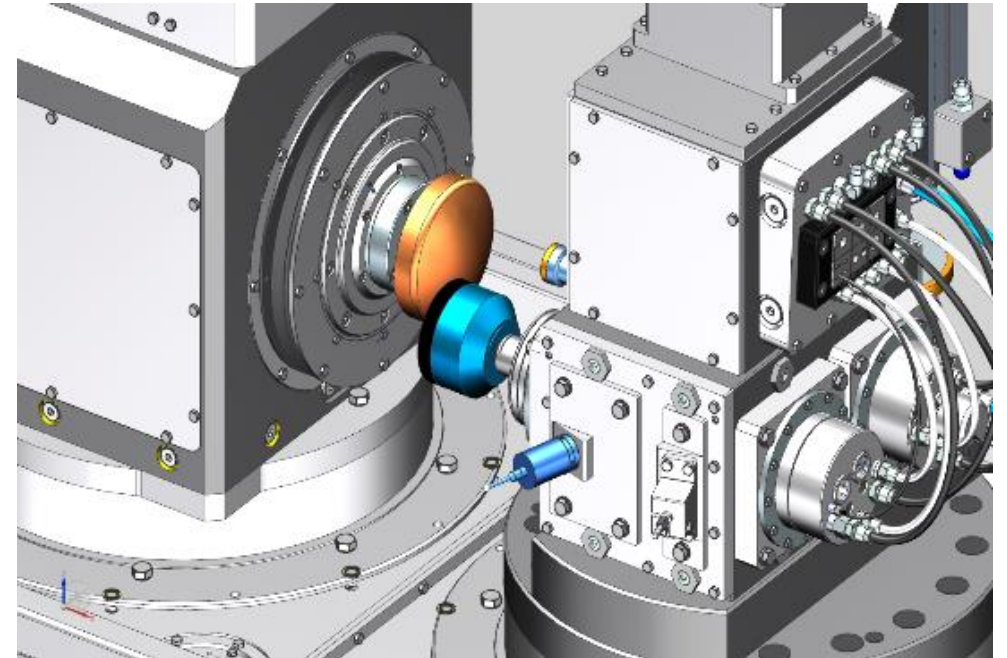


Process and Results

- Wheel Spec – Metal bond diamond
- Wheel speed – up to 60,000 rev/min
- Work speed – up to 2000 rev/min
- Tool normal traverse grind
- Edge grinding and lens surface in one setup
- Surface Finish – $< 0.5\text{nm Ra}$
- Profile accuracy – $< 300\text{ nm PV}$

Machine capabilities

- < 300 nm / 60 mn diameter P-V form accuracy
- < 0.5 nm Ra surface texture capability
- < 1 arc sec turret accuracy
- Cranfield Precision CNC 6400 control system
- Hydrostatic turret bearings and workhead
- Air bearing grinding spindles
- Patented configuration
- Thermally isolated machine base
- Multiple grinding spindle configurations
- 'Tool Normal' or axis perpendicular grinding capability



Machine process options

- Plunge mode: Plano, spheres (concave / convex)
- Generate mode: concave / convex aspheres, spheres
- Freeform mode: Surface generation
- Edging: Circular boundary
- Edging: Non symmetrical edge profiling
- Chamfering: (circular boundary)
- Coring
- Flat Milling
- Scooping
- Slicing and dicing
- Prism cutting/grinding
- Milling
- Diamond turning
- Hard turning
- Pre-polishing

