

Planoform[®] 650 ultra

Up to 3-axes
X, Z (standard) C (optional)



Heavy-duty machine platform designed for single point diamond flycutting of plano surfaces in non-ferrous materials requiring optical quality surface and flatness characteristics.

Guaranteed Performance:

- Diamond Flycutting 100 mm diameter part
- Form accuracy: ≤ 0.15 micron ($\lambda/4$)PV
- Surface roughness ≤ 1.5 nanometer Ra

Machine Overview:

X-Travel	650 mm	Z-Travel Vertical	300 mm
Tool Swing	300 mm 450 optional	Heel Angle Adjust	-5 to 25 degrees
Spindle Speed	5000 rpm	CNC Controller	Precitech UPx

Machine Features:

- QNx[®] real time Operating System for advanced programming capability
- Sealed natural granite base provides exceptional long term machine tool stability
- Self leveling dual chamber isolation system
- Traversing axis is a linear motor driven, hydrostatic oil bearing slideway with optimized stiffness characteristics
- Positioning axis is ball screw driven with a mechanical roller bearing design
- Standard tilt-head adjustment feature allows for manufacturing cylindrical C02 laser optics
- High Performance HD-160 spindle with industry leading thermal stability characteristics

Designed and Manufactured by PRECITECH INC.

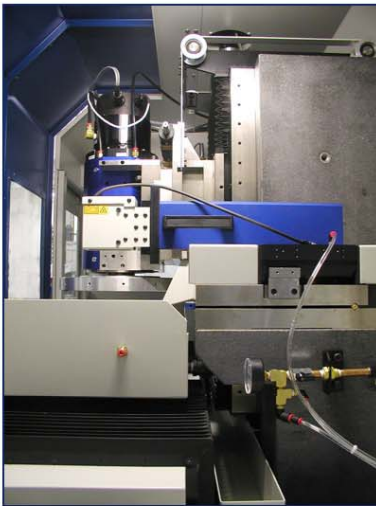
- Hydrostatic oil bearing slideways with optimized stiffness and damping characteristics
- Liquid cooled slides for thermal stability
- Motorized air bearing spindles with 3 year warranty

Process Capabilities:

Diamond Flycutting X,Z • Cylindrical Machining X,Z

Machine Options:

- Air temperature control system
- Custom designed flycutting wheels
- Chip extraction
- Digital readout of heel angle
- Electronic gage amplifier
- General purpose vacuum chucks
- On machine metrology system
- On machine gage & amplifier
- Thermal enclosure
- Tip/Tilt work holding table
- Spray mist coolant system



On-machine metrology



Facing a vacuum chuck



Flycutting a flat

Machine Base	Description
Type	Natural, high-stability, sealed granite
Vibration Isolation	TMC Self leveling dual chamber vibration isolation system
Machine Linear Slideways	Description
Type	X Hydrostatic oil bearing box-type slideway Z Needle Roller Slideway
Material	DuraBar cast iron
Travel	X (horizontal) 650 mm (26 inch) Z (vertical) 300 mm (12 inch)
Max X-axis Feedrate	1500 mm/minute
Drive System	X Linear Motor Z Preloaded ball screw assembly w/brushless DC motor, brake & counterbalance
Position Feedback	34 Pico Meter
X-axis Straightness	Horizontal: 0.50 micron/460 mm Vertical: 0.1micron/100 mm over central 460 mm
Z-axis Pitch, Yaw	Pitch: 5 arc-sec/300 mm Yaw: 5 arc-sec/300 mm
Flycutting spindle	Heavy Duty HD-160 spindle
Type	Slot-type thrust bearing
Material	Steel shaft/Bronze journal
Tool Swing Capacity	305 mm (12 inch) diameter Optional: 450 mm (18 inch) + 152 mm (6 inch) diameter
Motor	Integral DC brushless motor
Axial Stiffness	261 N/micron (1,500,000 pounds/inch)
Radial Stiffness	105 N/micron (600,000 pounds/inch)
Motion Accuracy	Axial/Radial \leq 50 nm (2 micro inch) through dynamic range
Thermal Control	Liquid cooled motor housing and Journal bearing (optional chiller required)
Spindle Max Speed	5000 RPM
Heel Angle Adjustment	-5 to 25 degrees
Flycutting Toolholder	Description
Wheel Diameter	355mm (14 inch) diameter
Tool Location	Approx. at 305 mm (12 inch) diameter of rotation
Tool Capacity	2 available
Tool Adjustment	Rake, roll, azimuth, depth of cut (4 total adjustment options)
Control System	UPx™ Control System
Operating System	QNX-real time operating system
Programming Resolution	0.01 nm
Axis Interface Cards	PMDI
Optional Equipment	
Electronic Gage Head and Amplifier	
Digital Readout of Heel Angle	
Thermal Enclosure - Doors provide access to four sides.	
Air Shower Temperature Control +/- 0.1 degree C	
Tip/Tilt Work Holding Table	
Facility Requirements	Planoform® 650
Power	208 or 230 VAC -1 phase - 50/60 Hz
Air supply	Typical: 10 SCFM @100 PSIG
Floor space	1829 mm x 1143 mm x 2032 mm (72 inch x 45 inch x 80 inch)