

USA MADE

Large Frame Heavy Duty American Made Machine Tools



MODULAR DESIGN AND MANUFACTURED IN THE USA



Design & Engineering Welding & Blasting Large-Part Machining Painting & Finishing Assembly & Inspection Wiring & Programming

MACHINE MODELS



MP Series (Moving Portal)

MG Series (Moving Gantry)





MT Series (Moving Table)

MACHINE MODELS



FRT Series (Fixed Rotary Table)

MRT Series (Moving Rotary Table)





HEAD-SPINDLE CHOICE



3-Axis Spindles, both direct-drive and belt-driven available

3+2 Indexing Head, infinite position with direct-drive spindle (non-contouring)

Single and Dual Yoke, direct-drive multi-axis heads (contouring/5-Axis)

Tooling choices include 50-Taper, HSK63A, and HSK100A, some with Big-Plus option.

RPM Ranges from 4,000 RPM to 20,000 RPM

BUILT TO LAST



Heavy weldments and proprietary castings, all thermally stressrelieved prior to blast

Marine-grade zinc-rich under coating with mastic seal coat prior to machining

Multi-step, precision machining processes and custom fixturing yield great results

High-solids two-part urethane top coating after machining

Assembly and wiring following best practices, and using the best hardware.

IN HOUSE MANUFACTURING IN THE USA









HEXRAM products are manufactured in our 195,000 square-foot facility in Cincinnati, Ohio. All fabrication and machining, along with assembly, paint, and final run-off are performed in this facility.

Additionally, we house on-site service and application technicians which see to the final assembly and quality inspections before leaving for your facility.

Our Electrical Engineers design, install, and oversee the build of all electrical services for each machine.

MADE IN THE USA

HIGH-TECH ADVANTAGE



Proprietary, precision drive systems; including precision-ground, pre-loaded, rotary-nut ballscrews Box-In-Box (dual-beam gantry) on all 5-Axis machines with dual-servo, Eco-Lift technology on the Z-Axis Rigid, proprietary Ram & Carriage Systems for robust and accurate Y-Travel Preloaded, precision cross-roller guides with rail-lock on all axis' Housed, pressurized, absolute encoders with 1micron resolution, 5-micron accuracy class

FANUC CONTROL



FANUC 30i-Model B on all complex machines

FANUC 0i-Model F+ on all 3 and 4 axis machines

FANUC iHMI Pro 19-Inch Touchscreen & HMOP (Deluxe MPG)

All-FANUC Servo and Spindle Drives and Amplifiers

I/O Link & Remote I/O on entire machine – cables only, with quick-connect; no point-to-point field wiring.

OPTIONS



Probing systems & software, including Tool-Probes and Part-Probes

Various ATC sizes and styles are available, including large-capacity chain, rotary-disk, and fixed-rack.

Many table options are available, including T-Slot, Fixtured, Insert, Rotary and can be customized with a pallet-clamping positioning-system

Coolant options include thru-tool and flood (halo)

Coolant management options include filtration systems with high-pressure return, sumps, and guttering.

Chip management options include chip conveyor systems and chip collection.

Cross Roller Guide-Ways

This type of return allows high loading capacity, with shorter and more rigid ball nuts. Shown below is a single start nut for illustration. Hexram uses a custom double start opposing helix to again, almost double the capacity. Backlash is eliminated in the screw system via the use of over-sized ground-ball pre-loaded 4-point contact arrangement. This allows for long-term running precision in a self-contained unit.



Absolute Linear Encoders (Heidenhain)

All Linear axis' are precisely controlled via absolute linear encoders. All encoders are 1um resolution, absolute, with housing wipers, and pressurized with filtered, dry air to repel debris and maintain lasting performance.



Coolant Equipment

The machine is supplied with coolant tank and motor-pump for the outside coolant, consisting in orientable pipes/nozzles in the nose of the spindle. The machine will be supplied with coolant through the spindle and controlled by a manual Variable Frequency control on the CNC panel.

- Filter Paper System with 394 Gal coolant capacity.
- 116 psi & 6.6Gal/min pump for external coolant nozzles.
- Security cartridge filters with dirty detector.
- Tank to transfer the coolant from the bed to the filtering unit.
- 725 psi (50 Bar) and 6.6 Gal/min (25 l/min) for CTS, frequency controller for pressure adjusting, oil band skimmer, magnetic drum filtering.



Hexram's Milling-Class CNC's includes a high power/torque 12000 Rpm, Straight spindle with CAT 50 Big Plus Taper suitable for high speed milling applications. Automatic tool changing and indexing is made possible by the integrated positioning encoders and draw bar actuation.

The standard taper:	ISO-50 DIN 69871A Big Plus System
The standard pull stud: ISO	7388/2-A
Maximum Spindle speed:	12000 rpm
Continuous Power:	100 Hp (75 Kw)

Max 100 Hp (75Kw) 494 ft-lb (670 Nm)



Closed Loop Servo Drive with Ground Ball screw on Z Axes

High-strength alloy ground ball screws are used on the Z-Axis. Z-Axis drive screws are 2" (50mm) OD with a 0.8" (20mm) lead, <u>and with double starts</u>. This results in dynamic and static capacities up to 20 times that of some competitive equipment in the Machine Tool market.

Internal tangential pickups are the optimal approach. In this case the balls make several turns around the shaft before being returned to the starting point and begin the cycle again. This operation is particularly smooth and quiet thanks to the tangential detachment of the balls from the race, with just one entry and exit of balls from the ball nut. The balls deflected from the insert return to their starting point via a longitudinal hole realized inside the ball nut body.



Dual-Servo High-Precision Helical Drive

Precise travel along the X and Y-Axis is facilitated by use of servo pre-loaded, highprecision (DIN 3) helical rack and pinion drive systems. In each case, both servos are bidirectionally mapped to ensure precise location from the loaded direction. This is done in lieu of the typical approach of just applying spring pre-load torque on the second drive, thus achieving a more accurate and efficient machine.



In addition, the position is determined by a linear encoder that works along with the closed-loop servo system to assure high repeatability. Automatic lubrication is provided to a third idler-pinion to reduce wear as part of each system.



The Part Probing system comes complete with standard software, tool holder, calibration sphere, and wireless transmission system. Optional, additional macros and interface screens can be designed, additional charges would apply.

Tool Probing

The Renishaw Tool Setter (RTS) system is a fast and accurate solution for machine tool detection for tool size and runnout, lost insert, broken tool, and tool wear. High speed, patented, and precise; the optical internal elements ensure reliable and consistent measurement.



The Hexram Tool Probing System comes complete with standard software, tool holder with calibration tool, and transmission system. Optional, additional macros and interface screens can be designed, additional charges may apply.

Table		MT85FT	MT1-1005FT3	MT1610FT	MT2012FT	MT2616FT			
Table Size	IN	96" x 60"	120" x 60"	192" x 120"	240" x 144"	312" x 144"			
T-Slot Dimension	IN/MM	M18 on 12" Centers **							
Max. Load On Table	LBS	12,000 lbs 33,000 lbs 55,000 lbs				00 lbs			
Dist. From Floor to Table	IN	0"-36" Depending on Configuration **							
Distance Between Column	IN	72"		136"	156"				
Capacity									
X-Axis Travel	IN	96"	120"	192"	240"	312"			
Y-Axis Travel	IN	60"	60"	120"	144"	144"			
Z-Axis Travel	IN	36"	39"		39"-72"				
Spindle Face to Table	IN	4	7"	The second second	47"-84"				
Rapid Traverse (X&Y)	IN	A STATE OF THE PARTY OF THE PAR	and	984 in / min	A BARREN				
Rapid Traverse (Z)	IN			787 in / min					
Cutting Feed Rate	IN	1.0 004	119-	600 in / min					
Main Spindle									
Spindle Motor Speed	RPM	6,000 STD. (12,000 & 20,000 Optional)							
Spindle Motor Power	HP	57 HP STD 6,000 RPM (100 HP - 12,000 RPM & 40 HP - 20,000)							
Spindle Taper		Cat-50 Big Plus STD. (HSK63A & HSK100A Optional)							
Automatic Tool Changer									
No. of Tools	Pater	24 STD. (40,60,80,120 optional)							
Max. Tool Dia (Adj. Empty)	IN	9.4" **							
Tool Dia. (All Pockets Full)	IN	4.92" **							
Max. Tool Length	IN	15" **							
Max. Tool Weight	IN		and the second s	44lbs **	MAN DE				
Accuracy									
Positioning Uncertainty	IN	0.0005"/40"							
Repeatability	IN	.00016"/40"							
Linear Encoders on X, Y, and Z	197	Absolute, enclosed, pressurized 1um res							
Other Data									
Machine Power			40	50 / 3PH (FLA = TBD)					
Air Requirements		80 PSI @ 5 GPM (Clean and Dry)							
Chip Conveyors (X2)		Steel Hinge-Belt (X2)							
Controller (FANUC)		30i-Model B							
Control Interface (FANUC)		iHMI PRO 19 inch Touch-Screen							

** Different configurations upon request



UNITED PRECISION

United Precision Services, Inc. was formed in 1999 as a service and parts arm for a German horizontal boring mill manufacturer. Due to the vast knowledge in maintaining and operating machine tools, United Precision was started to support the growing number of machines at our "sister" companies, as well as the 300+ machines still in operation in North America today.

We are one of the few companies where you can see the machine, or a similar machine, working in an actual manufacturing showroom. United Precision also offers full turnkey solutions unlike any other in the industry. As of today, we represent MTE (Spain), BOST (Spain), Matec (Germany), Romi (Brazil), Mausa (Brazil), Hexram (USA) and Huron (France).

At United Precision Services, we are one of the few Global companies that can do importation and distribution of large frame machines, while featuring a working showroom.



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