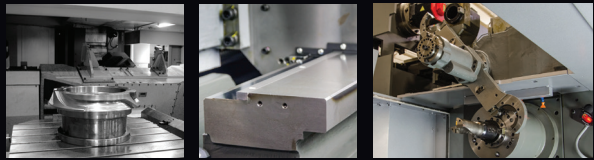


**TOYODA**



# FA1050-5AXIS

Five-Axis Horizontal Machining Center



**JTEKT**  
Koyo | **TOYODA**

## Built For RELIABILITY

### Solid Platform Construction

To ensure a machine's cutting accuracy, Toyoda engineers follow a simple approach when it comes to construction: Minimize displacement caused by external forces. The FA1050 5-axis withstands heavy cutting resistance and inertial forces of feed acceleration and deceleration. This incomparable platform assures long-term accuracy and durability.

### Designed for Performance

Forged at JTEKT's casting facilities, the column provides a highly rigid structure for heavy cutting. Rapid feed rates and quick acceleration is achieved with the column's design, which has a lower center of gravity than traditional castings.

### Minimized Thermal Displacement

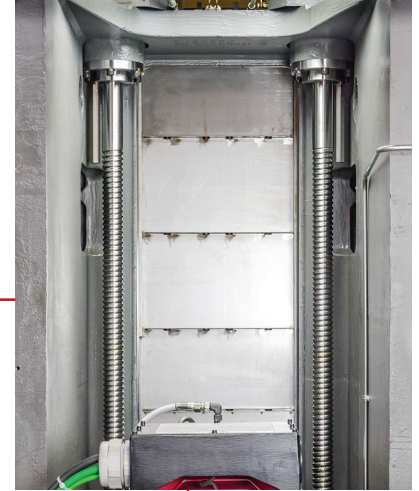
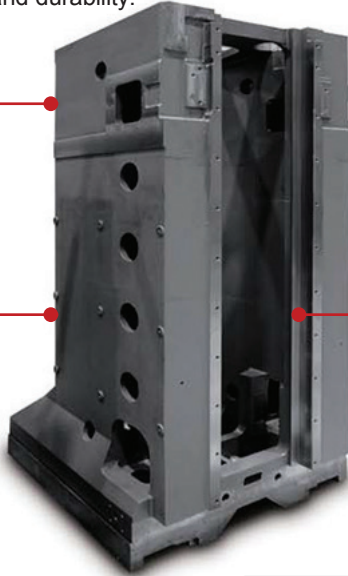
The FA1050 5-axis column is a symmetrical box casting. This structure minimizes displacement caused by thermal expansion for increased machining accuracy.

### Thick Bed Walls

The cast iron bed has a thick-walled box structure to support heavy workloads and suppress thermal expansion.

### Integrated Bed and Guideways

The FA1050 5-axis's box guideways are built into the structure of the bed, providing increased stability and rigidity during machining.



### Dual Y-Axis Ballscrews

The high-performance spindle is supported by dual ballscrews and motors on the Y axis. The tandem control function ensures the dual servomotors drive the ballscrews in perfect synchronization. This design sustains rapid acceleration and constant accuracy without putting any oscillating force on the Y axis.



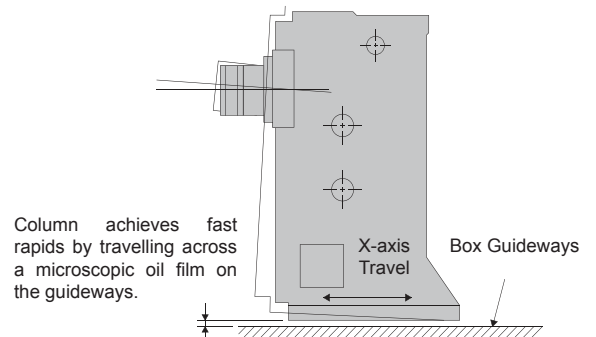
### Boxway Construction

The FA1050 5-axis is equipped with box guideways in the X, Y, and Z axes. The Y-axis guideways are scraped concavely. This technique allows for uniform pressure across the spindle face, which increases rigidity during powerful cuts.



### Precision Guideway Technology

JTEKT's unique static guideway technology minimizes uplift on the column as feed rates increase. This design maintains accuracy over long periods of heavy cutting.



## Built For POWER

### High-Torque Spindle for Heavy-Duty Cutting

The FA1050 5-axis spindle is designed for hard and heavy cuts. The standard configuration is a 6,000 RPM geared-head spindle with 60 hp and 963 ft-lb of torque. Other options include an 8,000 RPM high-torque and 15,000 RPM spindle.

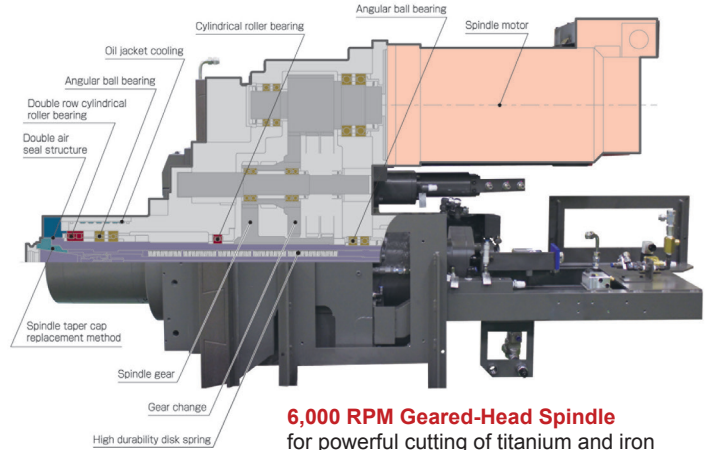
### Geared Head Spindle

The 6,000 RPM spindle is equipped with a double row of cylindrical roller bearings that are located near the taper. The large radial load capacity of these bearings make it possible to withstand heavy loads and powerful cuts.

#### Sample Application:

Aircraft Brackets

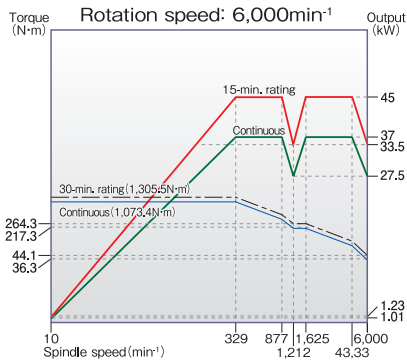
Workpiece Material: Ti-6Al-4V



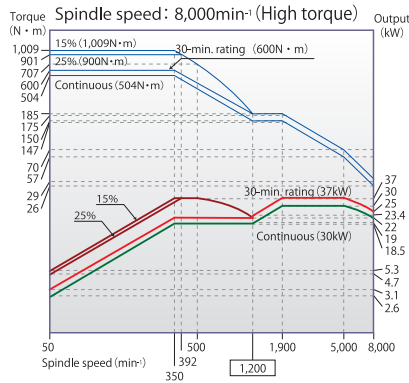
**6,000 RPM Geared-Head Spindle**  
for powerful cutting of titanium and iron

Available Spindles:	STANDARD	OPTIONAL	OPTIONAL
Spindle Speed	6,000 RPM	8,000 RPM	15,000 RPM
Spindle Taper	CAT50	CAT50	CAT50
Spindle Drive Motor	45 kW (60 hp) for 30 min. / 37 kW (50 hp) cont.	37 kW (50 hp) for 30 min. / 30 kW (40 hp) cont.	30 kW (40 hp) for 30 min. / 25 kW (34 hp) cont.
Max. Spindle Torque	1,305 Nm (963 ft-lb)	1,009 Nm (744 ft-lb)	263 Nm (194 ft-lb)
Spindle Bearing Diameter	Ø 110 mm (Ø 4.3")	Ø 110 mm (Ø 4.3")	Ø 110 mm (Ø 4.3")

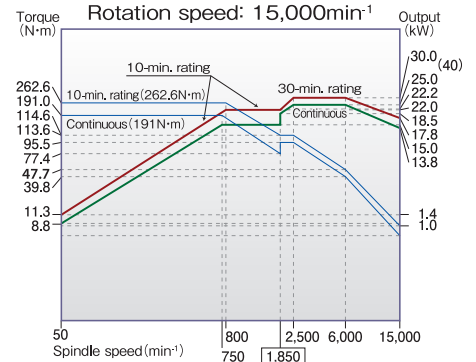
#### 6,000 RPM Geared Head Standard Spindle



#### 8,000 RPM Optional Spindle

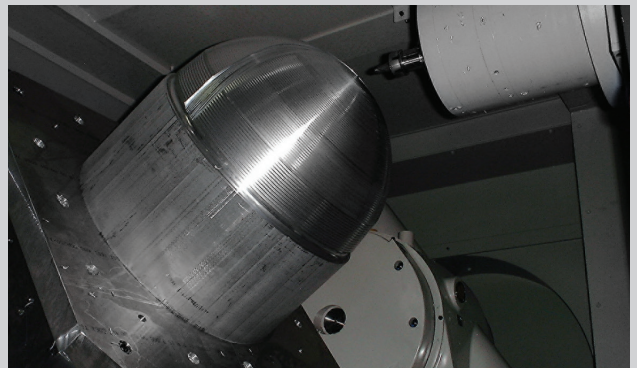
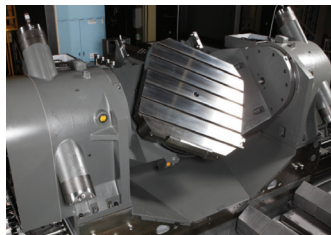


#### 15,000 RPM Optional Spindle



### Five-Axis Capabilities

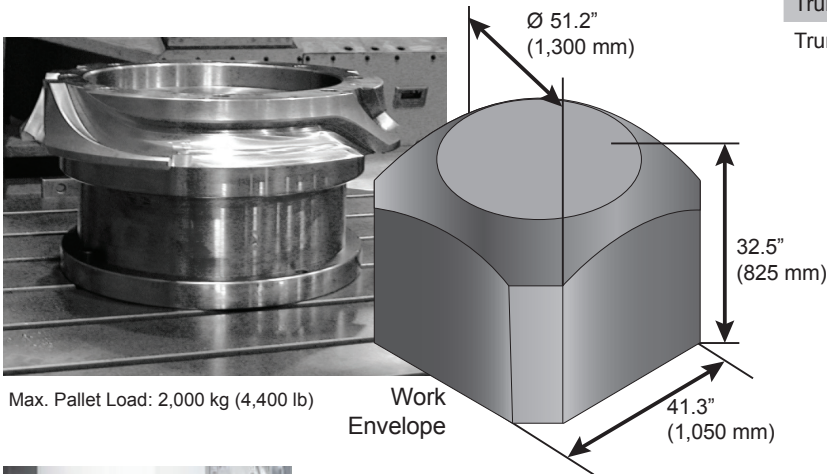
Five-axis machining is achieved with a trunnion table. Dual-drive mechanisms support heavy workpieces, while the high-resolution rotary encoders ensure precise positioning during simultaneous five-axis applications.



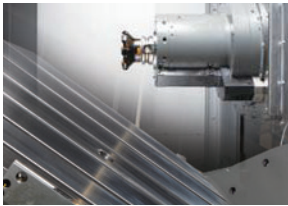
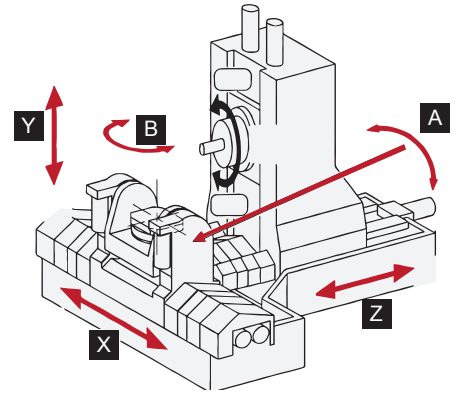
## Built For **CAPACITY**

### Large Work Envelope and Tilt Angle

The FA1050 5-axis offers one of the largest work envelopes in its class and a wide range of tilt angles on the A-axis — from 15° to -100° — to access difficult-to-reach workpiece features.



Work Area	FA1050 5-Axis
X-axis Travel (table)	1,500 mm (59.1")
Y-axis Travel (spindle head)	1,400 mm (55.1")
Z-axis Travel (column)	1,150 mm (45.2")
Trunnion Table Index Increment (A)	.001° (15° to -100°)
Trunnion Table Index Increment (B)	.001°

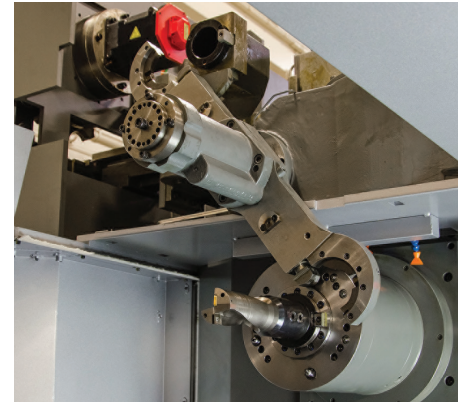
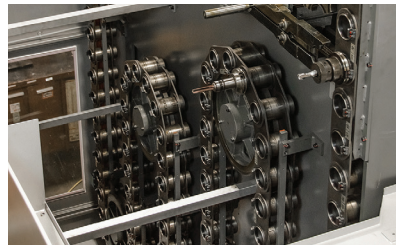


### Small Deadband

The FA1050 5-axis offers a Z-axis deadband of 250 mm (9.8"). This distance allows for the use of shorter tools during machining.

### Expanded Tool Storage

The standard servo-driven, random access, bi-directional magazine carries 120 tools standard, and has optional magazine capacities of 190, 240, and 384 tools.



### Automation Systems

The FA1050 5-axis can be integrated into a Toyota automation system to further increase production.

- Multi-level flexible manufacturing system (FMS) with rail-guided vehicle (RGV)
- Single- or multi-level pallet pool
- Robot loading with rail-guided, pedestal, or gantry robotic pallet management



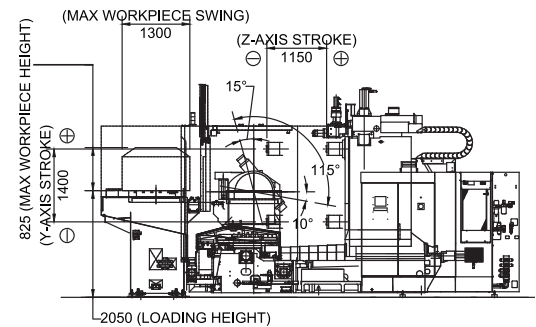
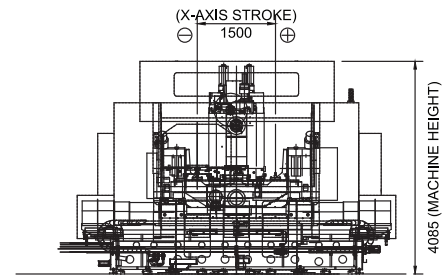
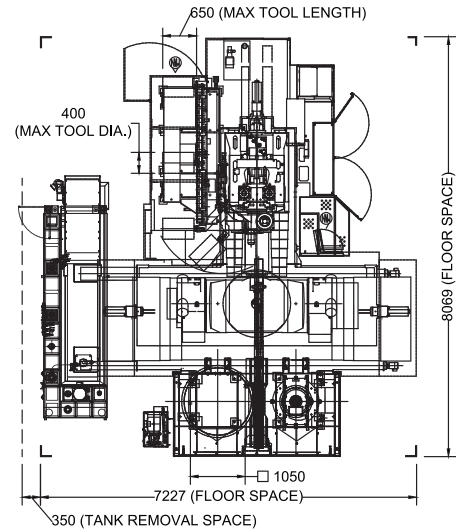
Specifications subject to change

## SPECIFICATIONS

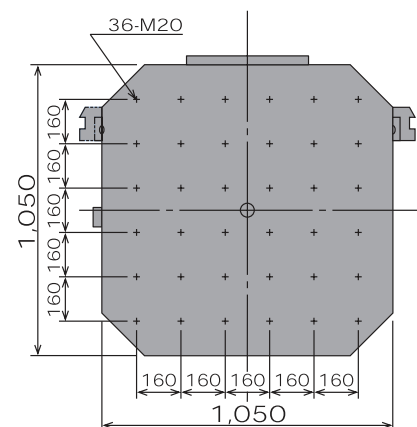
Work Area	Units	FA1050 5-Axis
X-axis Travel (table)	mm (in)	1,500 (59.1)
Y-axis Travel (spindle head)	mm (in)	1,400 (55.1)
Z-axis Travel (column)	mm (in)	1,150 (45.2)
Trunnion Table Index Increment (A)	deg	.001 (15° to -100°)
Trunnion Table Index Increment (B)	deg	.001
Spindle Gauge Line to B-Axis Table Center (A axis: 0°)	mm (in)	250 - 1,400 (9.8 - 55.1)
Spindle Center Line to Top Face of Pallet (A axis: 0°)	mm (in)	-575 - 825 (-22.6 - 32.5)
Spindle Gauge Line to B-Axis Table Center (A axis: 90°)	mm (in)	-575 - 825 (-22.6 - 32.5)
Spindle Center Line to Top Face of Pallet (A axis: 90°)	mm (in)	250 - 1,400 (9.8 - 55.1)
Max. Work Envelope	mm (in)	∅ 1,300 x 825 (∅ 51.2 x 32.5)
Spindle		
Spindle Speed	RPM	6,000
Bearing Diameter	mm (in)	∅ 110 (∅ 4.3)
Spindle Motor (15 min. / cont.)	kW (hp)	45 / 37 (60 / 50)
Spindle Output Torque	Nm (ft-lb)	1,305 (963)
Table and Pallet		
Pallet Size	mm (in)	1,050 x 1,050 (41.3 x 41.3)
Pallet Height from the Floor	mm (in)	2,025 (79.7)
Pallet Changing Time	sec	52
Max. Pallet Load	kg (lb)	2,000 (4,400)
Feeds		
Cutting Feed Rate (X, Y, Z)	m/min (ipm)	15 (590)
Cutting Feed Rate (A)	deg/min	360
Cutting Feed Rate (B)	deg/min	1,440
Accuracy		
Linear Positioning Accuracy	mm (in)	± 0.002 (± .00008)
Linear Repeatability	mm (in)	± 0.001 (± 0.00004)
Rotary Positioning Accuracy (A, B)	arc sec	± 5
Linear Repeatability (A, B)	arc sec	± 3
Automatic Tool Change		
Magazine Capacity	—	120 (Opt. 190, 240, 384)
Max. Tool Weight	kg (lb)	35 (77)
Max. Tool Size	mm (in)	∅ 120 x 650 (∅ 4.7 x 25.6)
Tool Change Time (chip to chip)	sec	9
Dimensions		
Machine Height	mm (in)	4,085 (160.8)
Floor Space (width x length)	mm (in)	7,230 x 8,070 (284.6 x 317.7)
Weight	kg (lb)	51,000 (112,400)
Control		
		Fanuc 31i MB5

Specifications subject to change

### MACHINE LAYOUT



### PALLET





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

Corporate Headquarters  
316 W. University Drive  
Arlington Heights, IL 60004  
Tel: (847) 253-0340  
Fax: (847) 253-0540  
E-mail: [info@toyoda.com](mailto:info@toyoda.com)

Toyoda Northeast Tech Center  
577 Hartford Turnpike, Suite B  
Shrewsbury, MA 01545

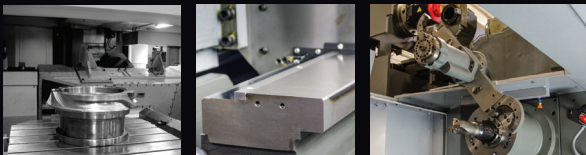
Toyoda Upper Midwest Tech Center  
711 5th Street SW, Suite 2  
New Brighton, MN 55112

Remanufactured Products Division  
51300 W. Pontiac Trail  
Wixom, MI 48393

Toyoda Machinery Mexico  
Ave. Gonzalitos 460 Sur Local 27  
Col. San Jeronimo  
Monterrey, N.L.  
C.P. 64640  
Tel: 01152(81) 81231116

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