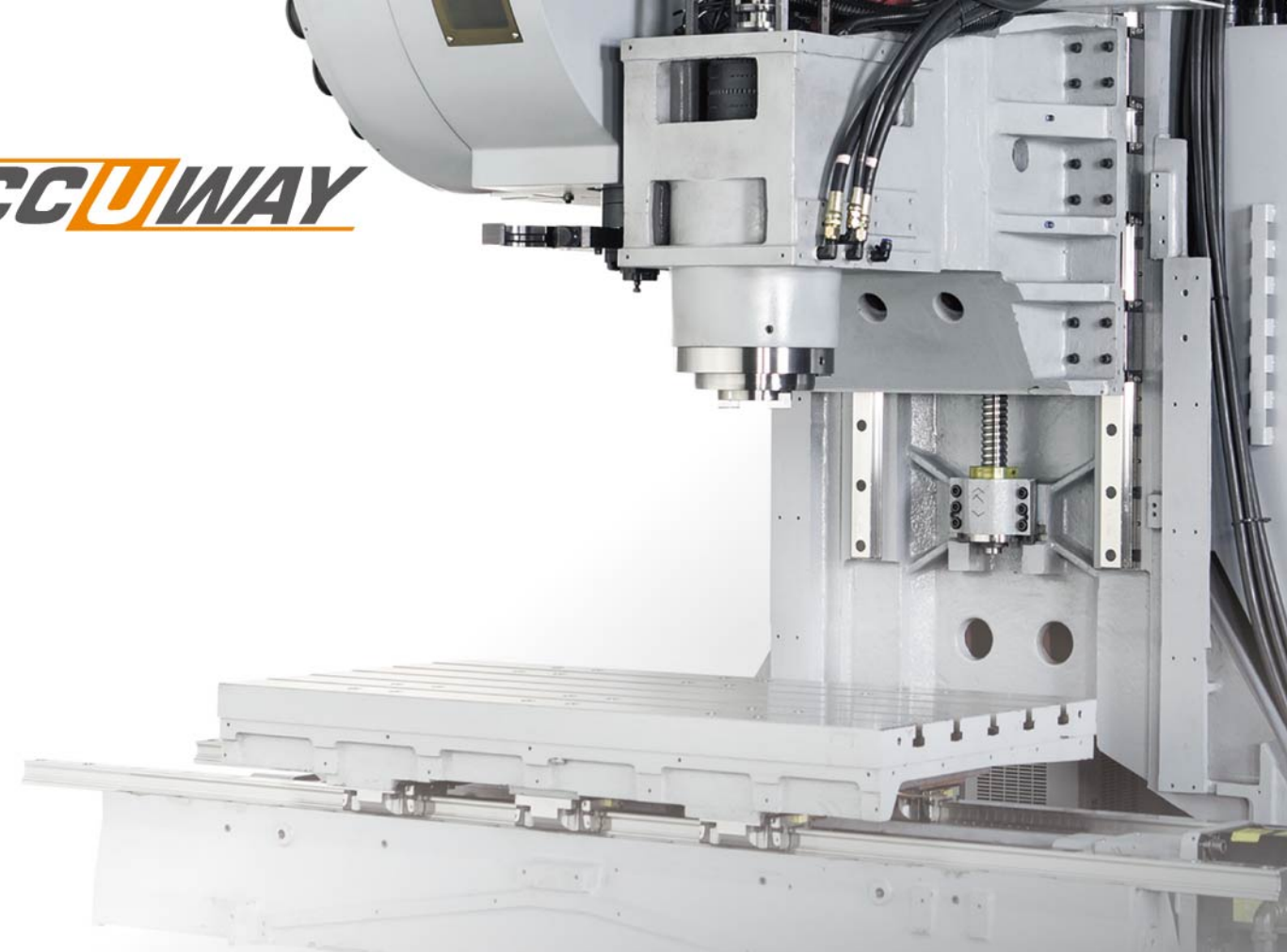




ACCUWAY

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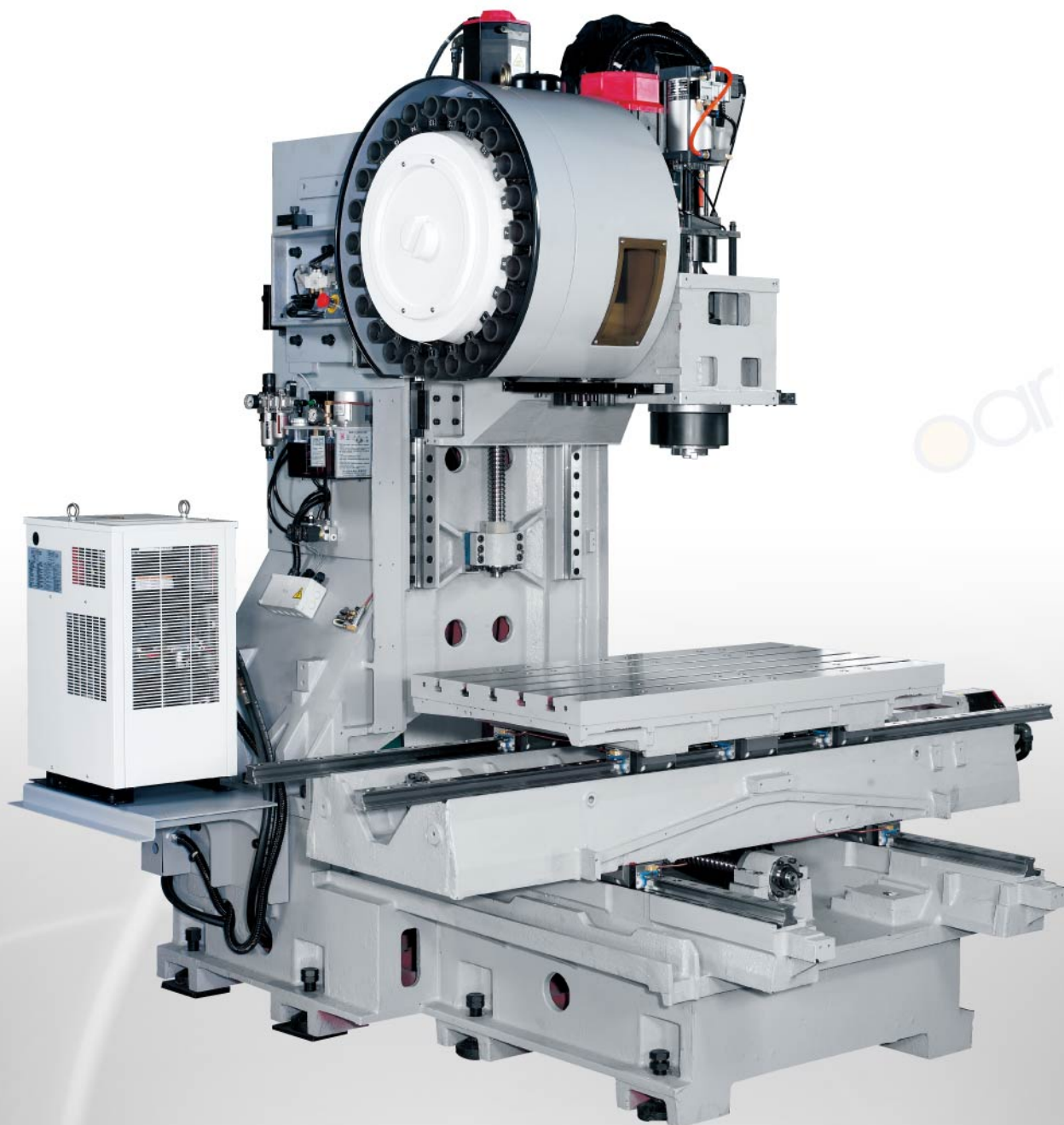
ISO 9001
FM 583077



UM Series
Vertical Machining Center

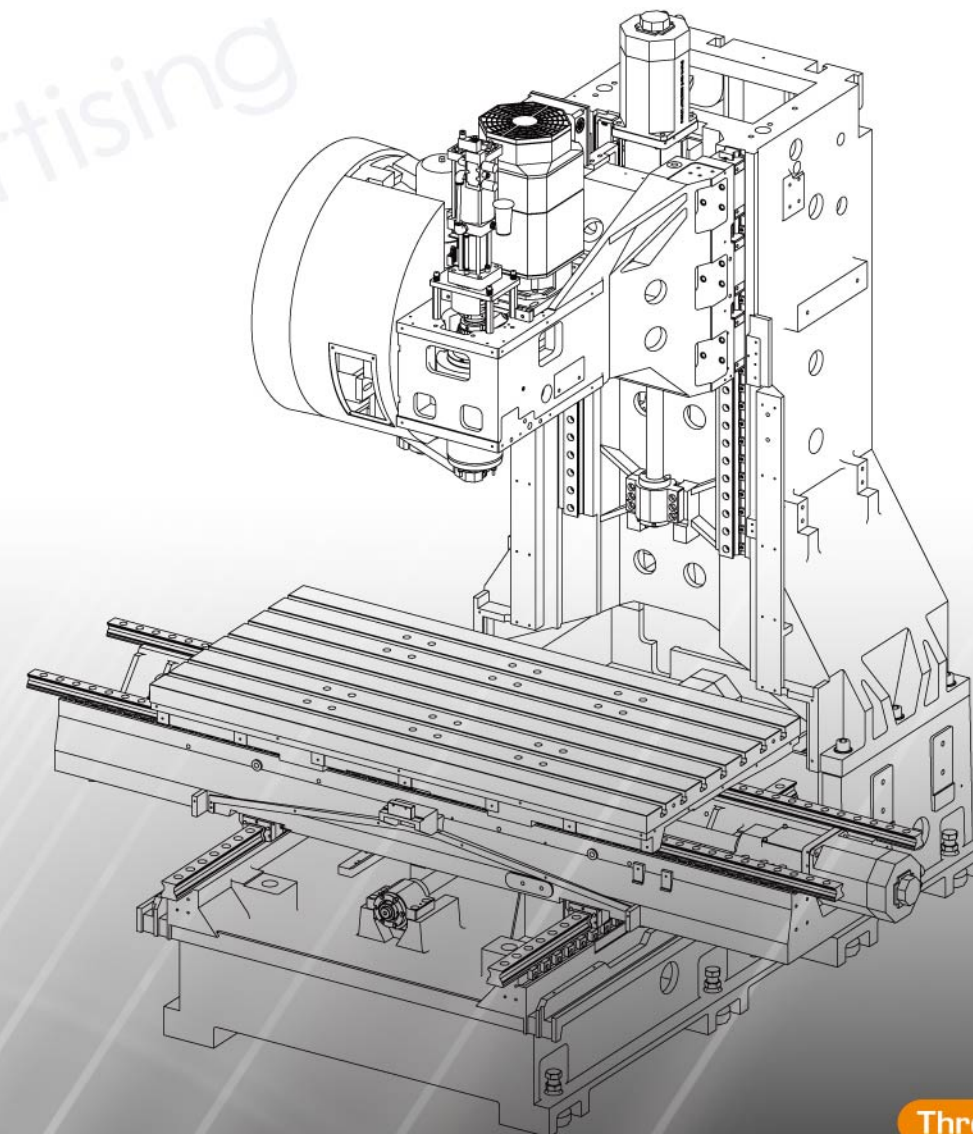
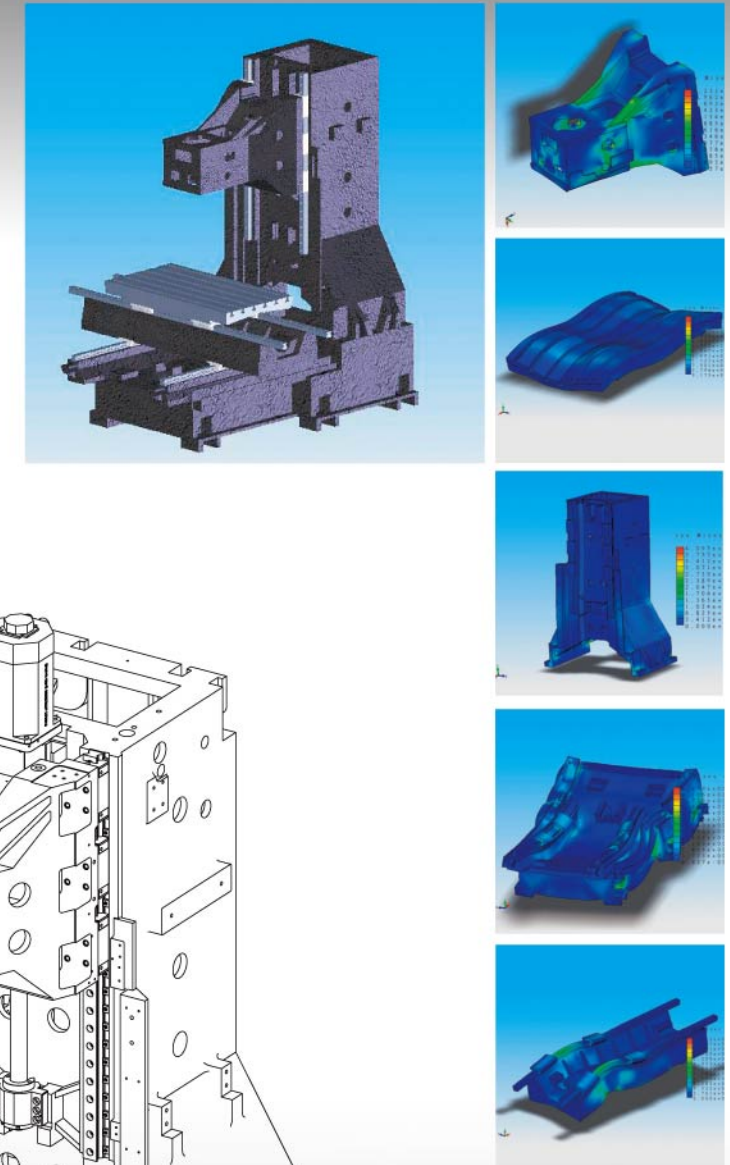


- Material cast with Meehanite to upgrade bending resistance and shock absorption, heat-treated so as to eliminate instability within castings. Resists creep and/or metal fatigue under a variety of operating conditions, can maintain mechanical strength and high-speed cutting precision over long periods of time.
- Casting structure undergoes repeated analysis by elasticity theory principles to attain optimal span and section modulus for symmetrical support design. Bed and saddle box configuration uniformly distributes machine load stress; column with honeycomb ribs resists bending and torsion for maximum span and minimum deflection.



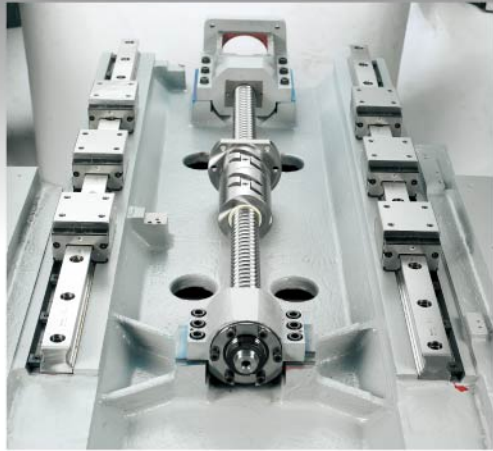
Finite element analysis

- Advanced finite element analysis (FEA) can simulate various cutting loads; bed structure reinforced ribs distribution is optimized and alleviates weight on the machine.
- Three-dimensional model simulates the machine dynamic characteristics for greater understanding of mechanical frame distortion and shock during actual cutting process so as to shorten time from design to manufacture. Also permits maximum freedom of axial motion, widens space for effective processing.



Three-dimensional solid model

Spindle Designed For High Speed and Accuracy



- Spindle uses P4-class precision angular ceramic bearings for strong axial resistance against cutting force. Spindle head is equipped with labyrinthine and air blower to prevent penetration by chips or liquid.

- Cartridge and headstock with box design can withstand heavy cutting force, thus optimizing performance. Floating-type retracted tool design absorbs gravitational force and maintains long-term process precision.

Spindle circulatory cooling system



- Coolant ring on spindle nose synchronize washing, cooling, and lubricating to raise productivity, and cutting precision.

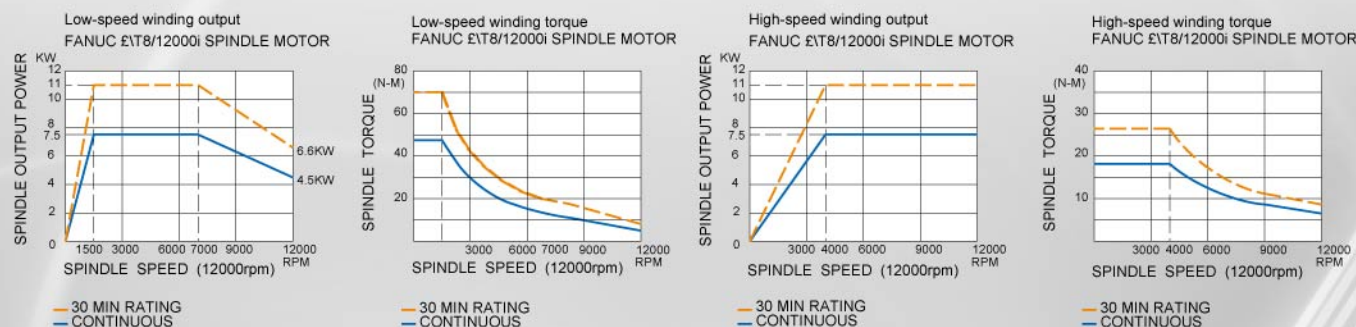
Through-spindle coolant system



- Deep, small-diameter holes for precision cutting can use coolant subjected to 20 bar and passing through the center of the spindle, then directly injected into cutting position to extract fine chips that can damage tools. It can be fitted with a centrifugal filtering system to avoid particles entering the spindle and minimize wear on it.

Spindle motor torque power chart

Spindle Speed (12000 rpm)



High-Accuracy Feeding System

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- All three axes can be adapted to linear scale and air sprayer to detect thermal elongation in machine structure and feedback to controller for compensation and enhanced repeat accuracy.

FANUC Oi -T controller

- C3 grade precision ballscrews are preloaded by 1/3 of their maximum axial loading and pre-tension by 3 temperature rise to reduce backlash, increase stiffness, and counter thermal displacement.
- Servomotor and ballscrews are directly coupled for backlash-free transmission to keep low inertia and high efficiency output, offering excellent dynamic precision during contour machining.



Linear guideways

- Heavy-duty linear guideways feature wide rail, larger contact surface, and superior frame rigidity.
- Z-axis servo brake eliminates typical cast iron counterweight and reduces machine weight to ensure machining accuracy within the specified tolerance during rapid feed





- Tool magazine has a capacity of 24 tools, fitted with quick and accurate automatic tool changing mechanism. Tool change requires only two to three seconds, which saves cutting time and augments work efficiency.
- PLC program design can manage a tool change for large diameter cutting tool inside the tool magazine.
- Fully enclosed metal cover can check penetration by chips and thereby keep the cutter clean, such that spindle nose precision is unhindered.
- Integrated interface is equipped with 4th and 5th axes for simultaneous complex machining, reducing errors during jig change as well as processing time.



Oil mist collector

- Suck cutting oil fume inside metal enclosure to provide clean operating environment.



Heidenhain iTNC530

- Movable control panel with 90 ° swivel angle and detachable manual pulse generator (MPG).



Tool setting system

- Can be installed on a worktable for checking tool length and diameter, compensate tool data, reduce tool setting and machine idle time.



Air filter/Regulator/Lubricator unit

- High-quality air filter/regulator/lubricator unit eliminates dust and moisture from compressed air while supplying oil mist to extend service life of pneumatic components and stabilize air pressure for smoother mechanical operation.



Rear chip discharge system

- Rear chip discharge system motorized with high-pressure coolant to flush out chips from the bottom. Inverted V-shaped telescoping cover can prevent accumulation of chips.



Oil skimmer

- Separates coolant from dirty particles and lubricant to maintain coolant function and extend service life.



Mold Machining Samples & Quality Inspection

Ball bar test & Accuracy Standard

Ball bar circularity testing

- The Best choice for high-precision, high-efficiency mold and die machining.
- Three-dimensional circularity inspection optimizes servo control parameter.



Laser interferometer measurement and calibration

- Applying VDI 3441 measurement procedure with laser interferometer to calibrate and compensate positioning and repeat accuracy.



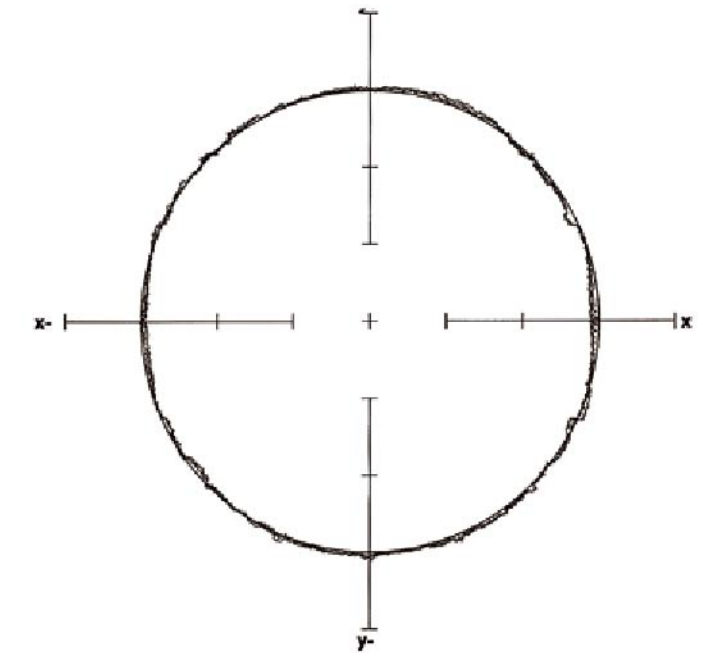
Ball bar test

ISO230-4 results

Circular Deviation G, 1.cw : 3.5 μ m

Circular Deviation G, 2.ccw : 4.1 μ m

Circularity LSC : 4.5 μ m



/CW

/CCW

Scale 20.0 μ m

Cellular phone mold



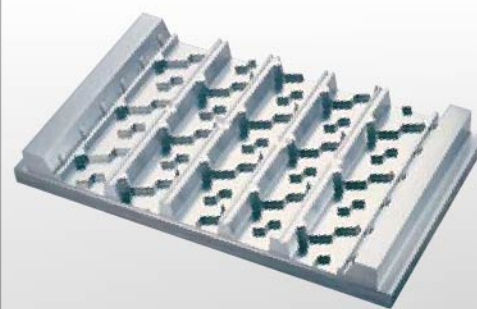
- Dimensions : 140 × 80 × 25 mm
- Material : Starvax
- Hardness : HRC 52
- Cutting Parameters
- Tool : R 0.5 BEM (total 7 tools)
- Speed : 12000 rpm
- Feed rate : 840 mm/min

Machining test model



- Dimensions : 184 × 134 × 60 mm
- Material : A7075
- Cutting Parameters
- Tool : R 3 BEM (total 2 tools)
- Speed : 12000 rpm
- Feed rate : 3000 mm/min

Rubber tire mold



- Dimensions : 300 × 180 × 50 mm
- Material : A7075
- Cutting Parameters
- Tool : R 0.5 BEM (total 10 tools)
- Speed : 12000 rpm
- Feed rate : 1500 mm/min

Accuracy Standard

- ACCURACY Bi-directional (ISO 10791-4/ISO 230-2)

Machine Model	UNIT	ISO	UM-85H	UM-110H	UM-85	UM-110	ISO	UM-130	UM-160
Positioning Full stroke -without Scales	X	32	8	8	8	8	42	10	15
	μ m Y	25	8	8	8	8	25	10	15
	Z	25	8	8	8	8	25	10	15
Positioning Full stroke -without Scales	X	18	6	6	6	6	20	7	8
	μ m Y	15	6	6	6	6	15	7	8
	Z	15	6	6	6	6	15	7	8
Circularity ($\varnothing$ 300mm F1000)	μ m Y	N/A	6	6	6	6	N/A	6	10

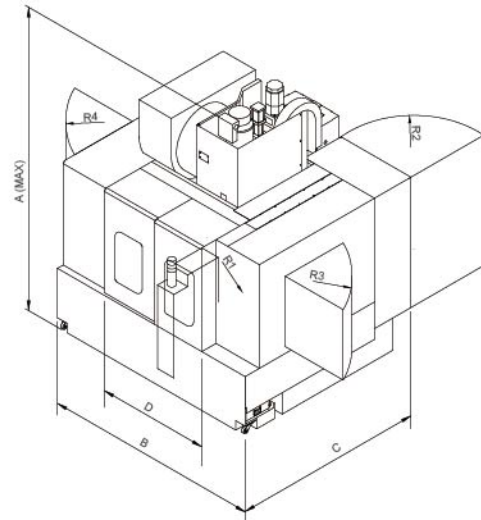
Machine Outline Drawing

Working Ranga Diagram

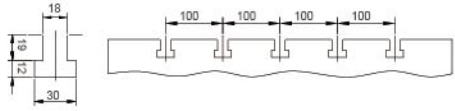
Unit:mm

Machine dimensions

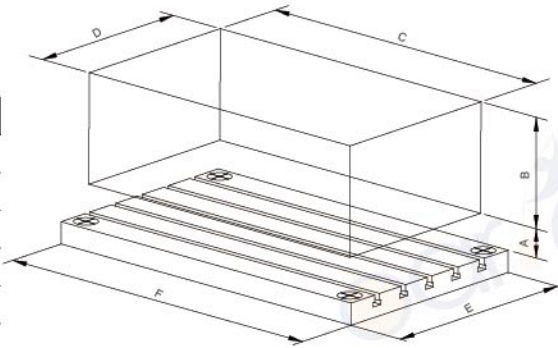
UM Series						
	60	75	85/ 85H	110/ 110H	130	160
A	2855	2855	2950	2950	2950	3220
B	2000	2300	2660	2950	3300	4400
C	2160	2160	2160	2612	2162	3000
D	830	920	1165	1270	1480	2000
R1	550	550	540	580	700	475
R2	-	-	886	886	886	1040
R3	850	850	880	880	880	840
R4	850	850	880	880	880	840



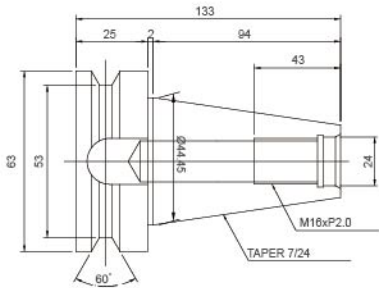
Axial Travel Strokes



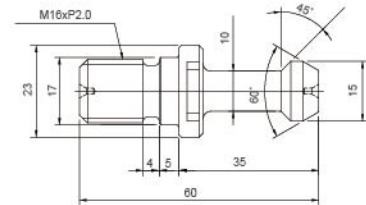
	A	B	C	D	E	F
UM-60	120	510	600	510	560	900
UM-75	120	510	750	510	560	1050
UM-85/ 85H	150	550	850	550	600	1100
UM-100/ 110H	150	550	1100	550	600	1200
UM-130	150	550	1300	650	650	1500
UM-160	120	850	1600	850	878	1700



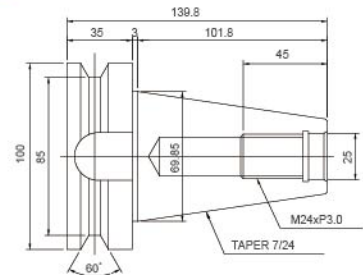
Pull Stud And Tool Shank



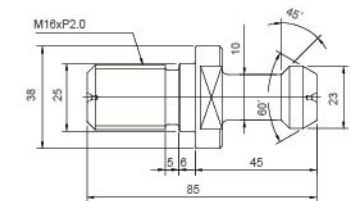
■ BT-40



■ MAS-P40T-1



■ BT-50



■ MAS-P50T-1

UM Series

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Item / Model	UM-85H	UM-110H	UM-60	UM-85	UM-110	UM-130	UM-160
Controller	FANUC 0i-M						
FANUC Controller							
FANUC 18i-MB	●	●	○	-	-	○	○
FANUC 0i-MC	-	-	●	●	●	●	●
Data server [128 MB]	●	●	○	○	○	○	○
AI NANO	●	●	-	-	-	-	-
AICC	-	-	●	●	●	●	●
HPCC	○	○	○	-	-	○	○
8.4" LCD monitor + manual guide 0i	-	-	●	●	●	●	●
10.4" LCD monitor + manual guide i	●	●	○	○	○	○	○
Detachable MPG	●	●	●	●	●	●	●
RS-232 interface	●	●	●	●	●	●	●
Rigid tapping	●	●	●	●	●	●	●
Heat exchanger for electric cabinet	●	●	●	●	●	●	●
Heidenhain Controller – iTNC 530	○	○	-	○	○	○	○
Spindle							
8000 rpm	-	-	●	●	●	●	-
10000 rpm	○	○	○	○	○	○	-
12000 rpm	●	●	○	-	-	-	-
15000 rpm	○	○	○	-	-	-	-
40 taper spindle	●	●	●	●	●	●	-
50 taper spindle	-	-	-	-	○	○	●
Spindle motor power 15/18.5kW <Con./30 min>	○	○	-	○	○	●	●
Spindle oil cooling system	●	●	○	●	●	●	●
Through-spindle coolant system	○	○	○	○	○	○	○
Machinery Accessories							
Lubrication system	●	●	●	●	●	●	●
Standard coolant pump system	●	●	●	●	●	●	●
Cutter air blast	●	●	●	●	●	●	●
16-position Geneva type tool magazine	-	-	○	-	-	-	-
32-position tool magazine	○	○	-	○	○	○	○
Rear chip wash down system	●	●	●	●	●	●	●
Chip conveyor & chip cart	○	○	○	○	○	○	○
Rear side dual chip conveyor	-	○	○	-	○	○	○
Spray gun	●	●	●	●	●	●	●
Three-color work condition light	●	●	●	●	●	●	●
Linear scale [Heidenhain]	○	○	○	○	○	○	○
Tool setter [Renishaw, Metrol]	○	○	○	○	○	○	○
Interface for 4th and 5th axes rotary table	○	○	○	○	○	○	○
Oil mist collector	○	○	○	○	○	○	○
Oil mist cutting system	○	○	○	○	○	○	○
Oil skimmer	○	○	○	○	○	○	○
Z-axis travel 740 mm	○	○	-	○	○	○	○
ZF gear box [50taper]	-	-	-	-	○	○	●
4th-axis Rotary Table							
200 mm 4th axis rotary table	○	○	○	○	○	-	-
250 mm 4th axis rotary table	○	○	○	○	○	○	○
320 mm 4th axis rotary table	○	○	-	○	○	○	○

●: Standard ○: Optional : Not available

Specification

Item / Model		UM-85H	UM-110H	UM-60	UM-85
Controller		FANUC 0i-M			
Spindle					
Spindle speed	rpm	12000[15000]	12000[15000]	8000[10000]	8000[10000]
Spindle hole taper		BT40			
Bearing inner diameter	mm	70			
Drive system		Direct		Belt[Direct]	
Travels					
X-axis	mm	850	1100	600	850
Y-axis	mm	550	550	510	550
Z-axis	mm	550	550	510	550
Spindle nose to table	mm	150	150	150	150
Table					
Table dimension	mm	1100 x 600	1200 x 600	900 x 560	1100 x 600
T-slot [No. of T-slot x width x pitch]	mm	5 x 18 x 100			
Max. weight on table	kg	1000	1200	500	1000
Feed Rate					
Rapid traverse rate [X/Y/Z]	m/min	42 / 42 / 30	42 / 42 / 30	36 / 36 / 30	30 / 30 / 30
Cutting feed rate	m/min	12	12	12	12
Ball screw diameter	mm	45	45	40	45
Automatic Tool Change System					
Capacity	pcs	24			
Max. tool weight	kg	7			
Max. tool diameter	mm	80			
Max. tool diameter Without adjacent tools	mm	150			
Method of tool exchange		Arm type			
Max. tool length	mm	300			
Controller					
Type		FANUC 18i-MB		FANUC 0i-M	
High speed high precision		AI NANO CC		AICC	
Data server		128MB		-	
Motor					
Spindle motor <Cont. / 30 min>	kW	7.5 / 117.5 / 11		5.5 / 7.5 (7.5 / 11)	7.5 / 11
X/Y/Z feed motor	kW	3 / 3 / 4			
Coolant pump <50Hz/60Hz>	kW	0.53 + 0.85 / 0.75 + 1.27			
Others					
Air supply	kg/cm ²	5.5			
Machine weight	kg	7000	7500	4500	7000
Machine dimension [LxWxH]	m	2.7 x 2.2 x 3.0	3.0 x 2.2 x 3.0	2.0 x 2.3 x 2.6	2.7 x 2.2 x 3.0

Specification

Item / Model		UM-110		UM-130		UM-160	
Controller		FANUC 0i-M					
Spindle							
Spindle speed	rpm	8000[10000]	6000	8000[10000]	6000	6000	
Spindle hole taper		BT40	BT50	BT40	BT50	BT50	
Bearing inner diameter	mm	70	90	70	90	90	
Drive system		Belt[Direct]	Belt	Belt	Belt	2-speed gear	
Travels							
X-axis	mm	1100		1300		1600	
y-axis	mm	550		650		850	
Z-axis	mm	550		550		850	
Spindle nose to table	mm	150		150		200	
Table							
Table dimension	mm	1200 x 600		1500 x 650		1700 x 880	
T-slot(No. of T-slot x width x pitch)mm		5 x 18 x 100					
Max. weight on table	kg	1200		1200		2000	
Feed Rate							
Rapid traverse rate (X/Y/Z)	m/ min	30 / 30 / 30		30 / 30 / 30		15 / 15 / 15	
Cutting feed rate	m/ min	12		12			
Ball screw diameter	mm	45		45		50	
Automatic Tool CHANGE sYSTEM							
Capacity	pcs	24	24	24	24	24	
Max. tool weight	kg	7	15	7	15	15	
Max. tool diameter	mm	80	110	80	110	110	
Max. tool diameter Without adjacent tools	mm	150	200	150	200	200	
Method of tool exchange		Arm type					
Max. tool length	mm	300		300		300	
Controller							
Type		FANUC 0i-M					
High speed high precision		AICC					
Motor							
Spindle motor<Cont./30min	kW	7.5 / 11	15 / 18.5	15 / 18.5			
X/Y/Z feed motor	kW	3 / 3 / 4	3 / 3 / 7	4 / 4 / 7			
Coolant pump<50Hz/60Hz>	kW	0.53 + 0.85 / 0.75 + 1.27					
Others							
Air supply	kg/cm ²	5.5					
machine weight	kg	7500 / 8000		9000 / 10500		15000	
Machine dimension(LxWxH)	m	3.0 x 2.2 x 3.0		3.3 x 2.7 x 3.0		4.4 x 3.2 x 3.2	