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FFG FEELER®



FMH SERIES

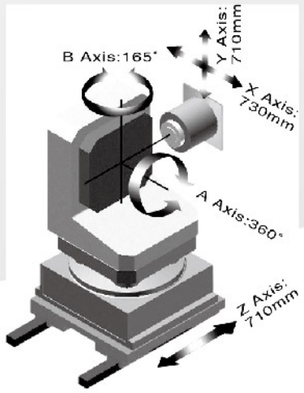
Horizontal Machining Center

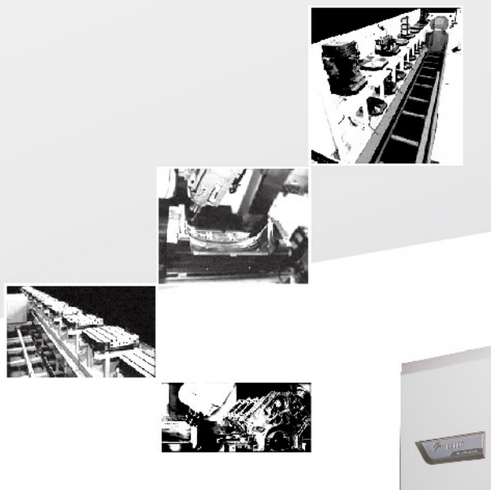


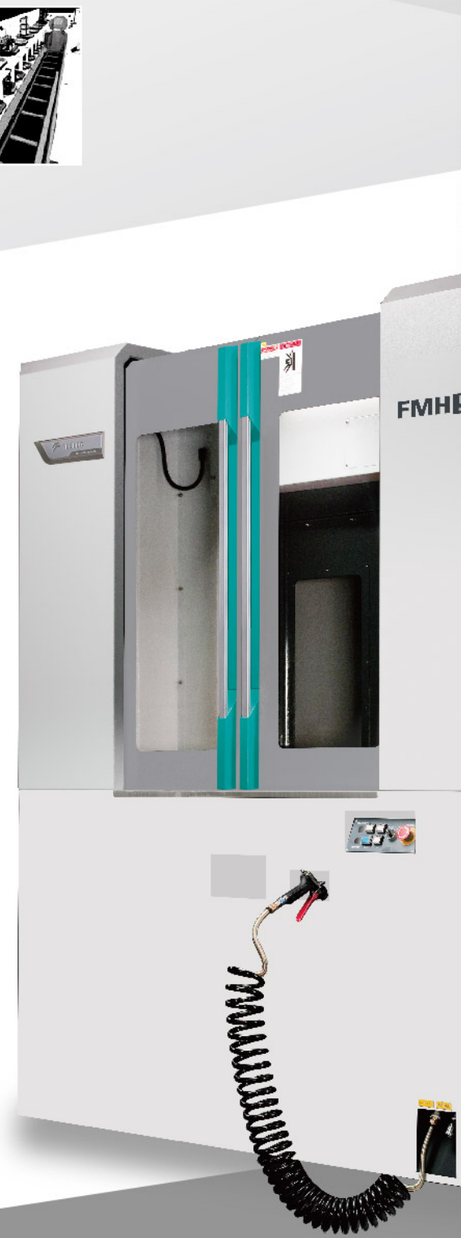
HORIZONTAL MACHINING CENTER

FMH-500







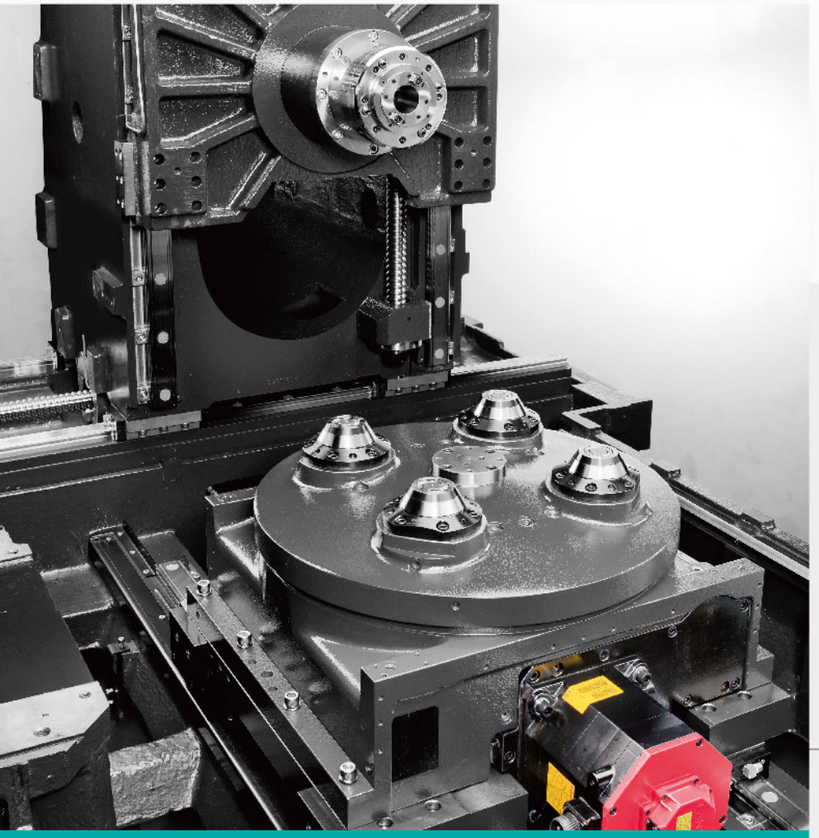


No matter whether it is precision parts machining or general mold machining, the new generation FMH Series horizontal machining center from FEELER will provide you with the outstanding performance that you've came to expect. The FMH Series is carefully designed and engineered for the utmost accuracy.

EXCELLENT FOR DIVERSIFIED INDUSTRIES:

- Precision (profiled) Parts Machining
- General Mold Machining
- Automotive and Motorcycle Part Machining
- 3C Industries
- Aerospace Part Machining
- Semi-conductor Industry
- FMC & FMS Unmanned Production Lines

Quality Features of FMH-500



OPTIMAL MACHINE STRUCTURE

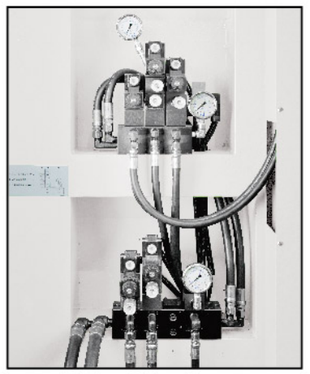
OPTIMAL MACHINE STRUCTURE

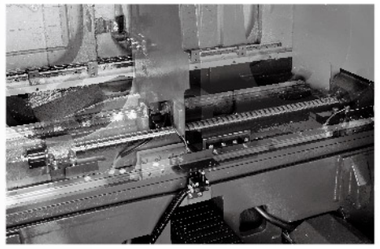
- The major structural pars are manufactured from high quality cast iron with extremely uniform metallurgy.
- The T-shaped base is an integrated box-type construction, featuring maximum stability.
- The 3 axes travels are fully supported without overhang problem. This results in outstanding loading capacity and extremely stable workpiece movement.



HYDRAULIC SYSTEM

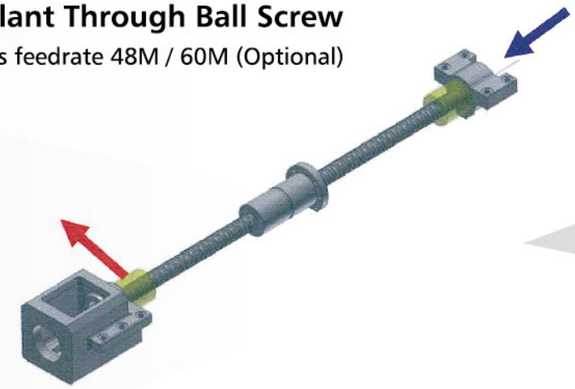
All hydraulic parts are centralized to facilitate adjustment and maintenance.

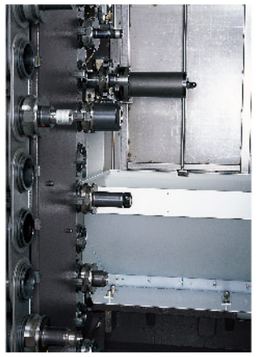




Coolant Through Ball Screw

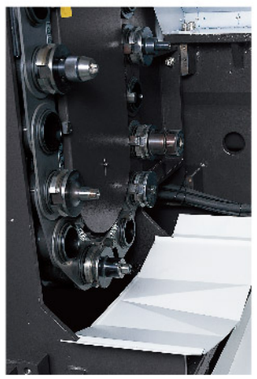
3 axes feedrate 48M / 60M (Optional)





SPECIAL RETURN FLOW TILTING CHANNEL

When tool change is accomplished, the oil dust and chips will flow back to the machine base via the specially designed tilting channel. This may eliminate environmental pollution problem.



OIL / FLUID RETURN FLOW SHEET METAL

The oil / fluid return flow sheet metal is provided under the ATC system that guides oil / fluid return flow to a collection tank. This return flow sheet metal ensures a clean interior and meets environmental protection requirement.

CHAIN TYPE MAGAZINE

- The No.50 magazine is driven by cylindrical cam and follower roller, that features low noise rotation and minimum trouble.
- Max. tool weight is 20 kgs. Max. tool length is 500 mm. Max. tool diameter (without adjacent tool) is 220 mm.
- Tool change mechanism employs hydraulic cylinder to drive rack for simplified construction and maximum dependability.
- Tool change time is 8 seconds. (tool to tool)
- The magazine also allows for manual tool unloading.

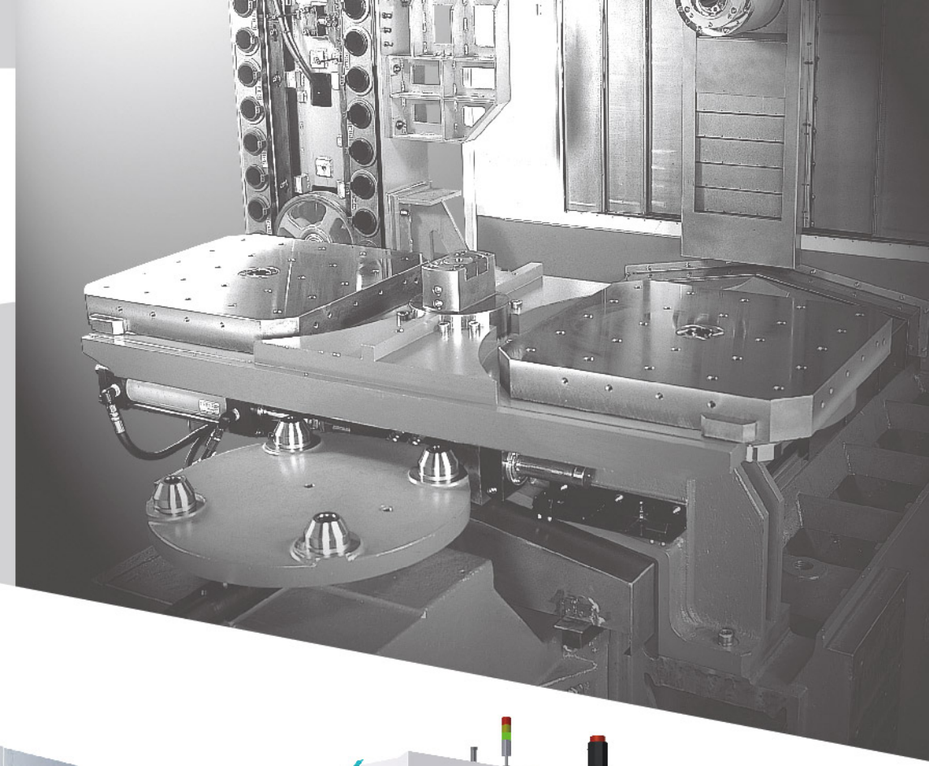
CONVENIENT ATC SERVICING

- The ATC mechanism has sufficient space left for convenient repair and maintenance.



HORIZONTAL MACHINING CENTER

FMH-630





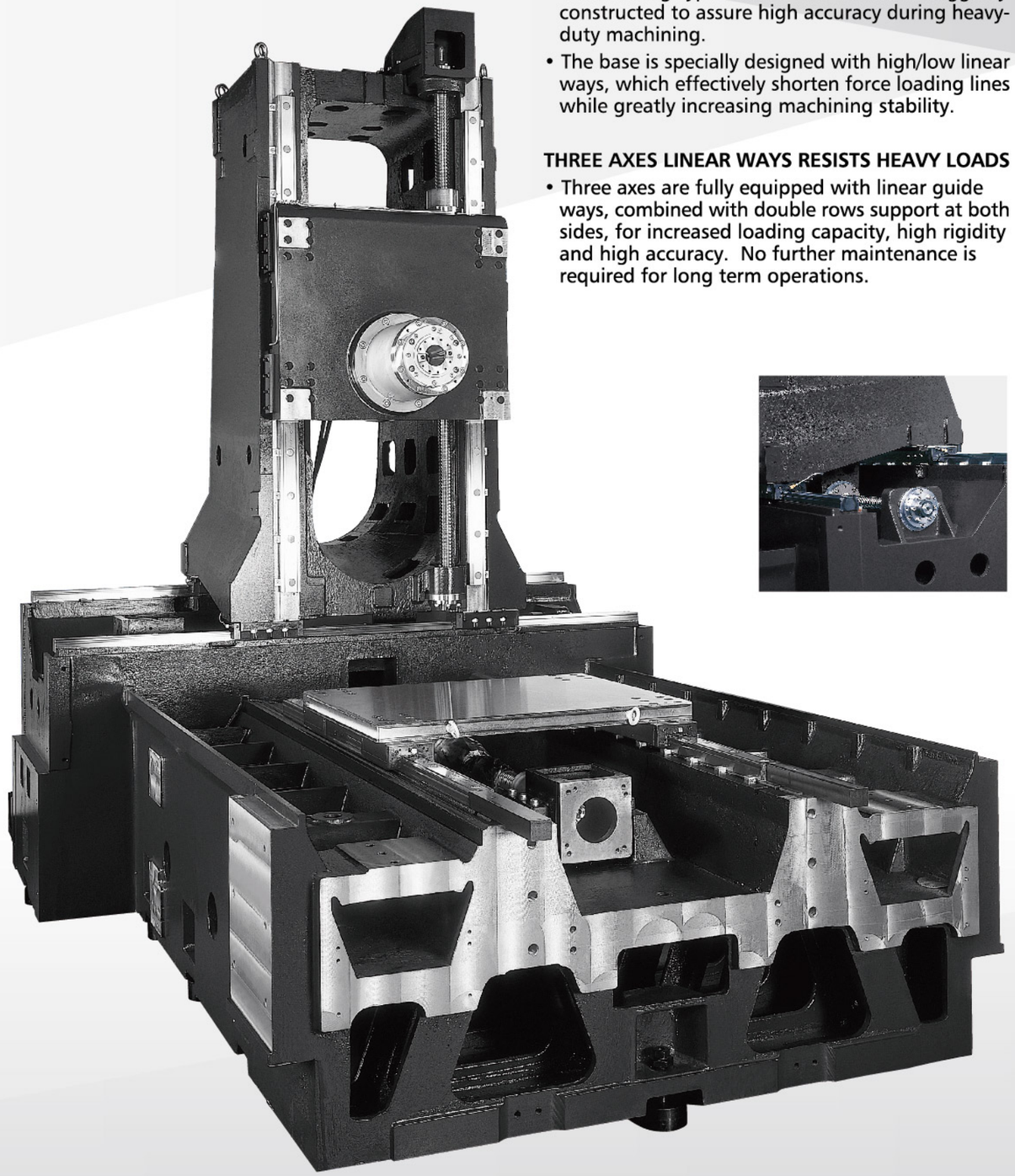


NEW MODEL

The Feeler FMH-630 is designed and engineered with efficiency, stability and heavy duty in mind. It is a machining center excellent for precision mold machining and heavy parts machining.

The brand new design concept of FMH series horizontal machining centers are dedicated to machine both mass production parts and general molds with high accuracy. The outstanding performance of FMH series machines from FEELER brings you the utmost cutting efficiency as well as maximum profitability.

Quality Features of FMH-630

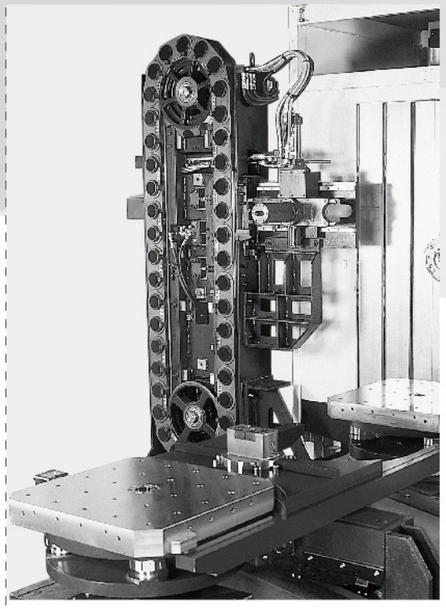


SPECIAL HIGH/LOW LINEAR WAYS CONSTRUCTION

- The T-shaped base is an integrated 3-layer box-type construction combined with rib reinforcement to maximize the rigidity and stability of the machine.
- The housing-type double-wall column is ruggedly constructed to assure high accuracy during heavy-duty machining.
- The base is specially designed with high/low linear ways, which effectively shorten force loading lines while greatly increasing machining stability.

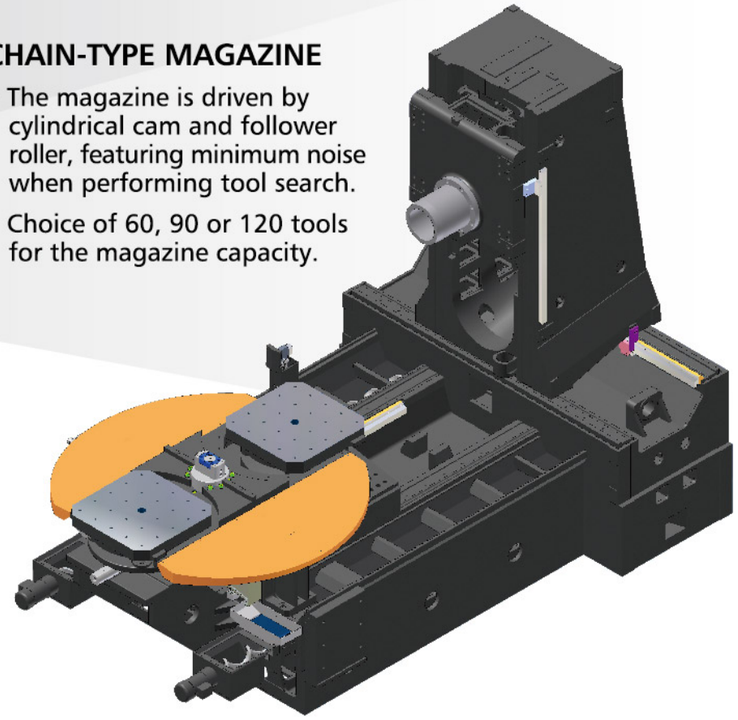
THREE AXES LINEAR WAYS RESISTS HEAVY LOADS

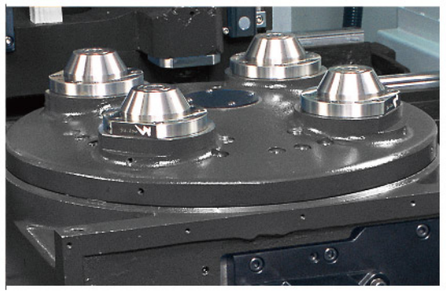
- Three axes are fully equipped with linear guide ways, combined with double rows support at both sides, for increased loading capacity, high rigidity and high accuracy. No further maintenance is required for long term operations.



CHAIN-TYPE MAGAZINE

- The magazine is driven by cylindrical cam and follower roller, featuring minimum noise when performing tool search.
- Choice of 60, 90 or 120 tools for the magazine capacity.





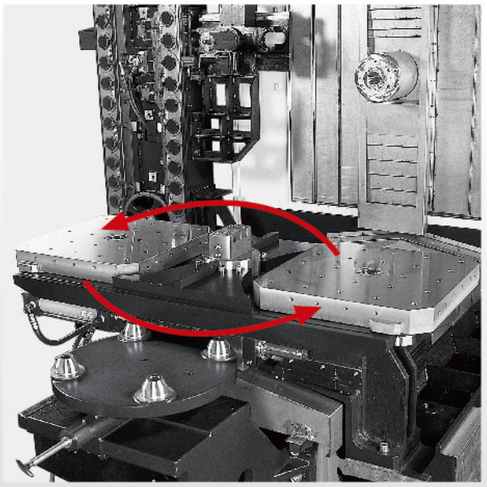
OVERSIZED TAPERED CONES

The B axis movement and Z axis cross movement are equipped with oversized tapered cones for extremely accurate pallet positioning. This assures outstanding machining accuracy.

SWING-TYPE AUTOMATIC PALLET CHANGER (APC)

Designed with one-to-one swing-type automatic pallet change. The APC features rigid construction, high positioning accuracy and fast change.

- Maximum table loading capacity up to 1,200 kg.
- Maximum table diameter Ø950 mm.
- Fastest change time is 10 seconds.



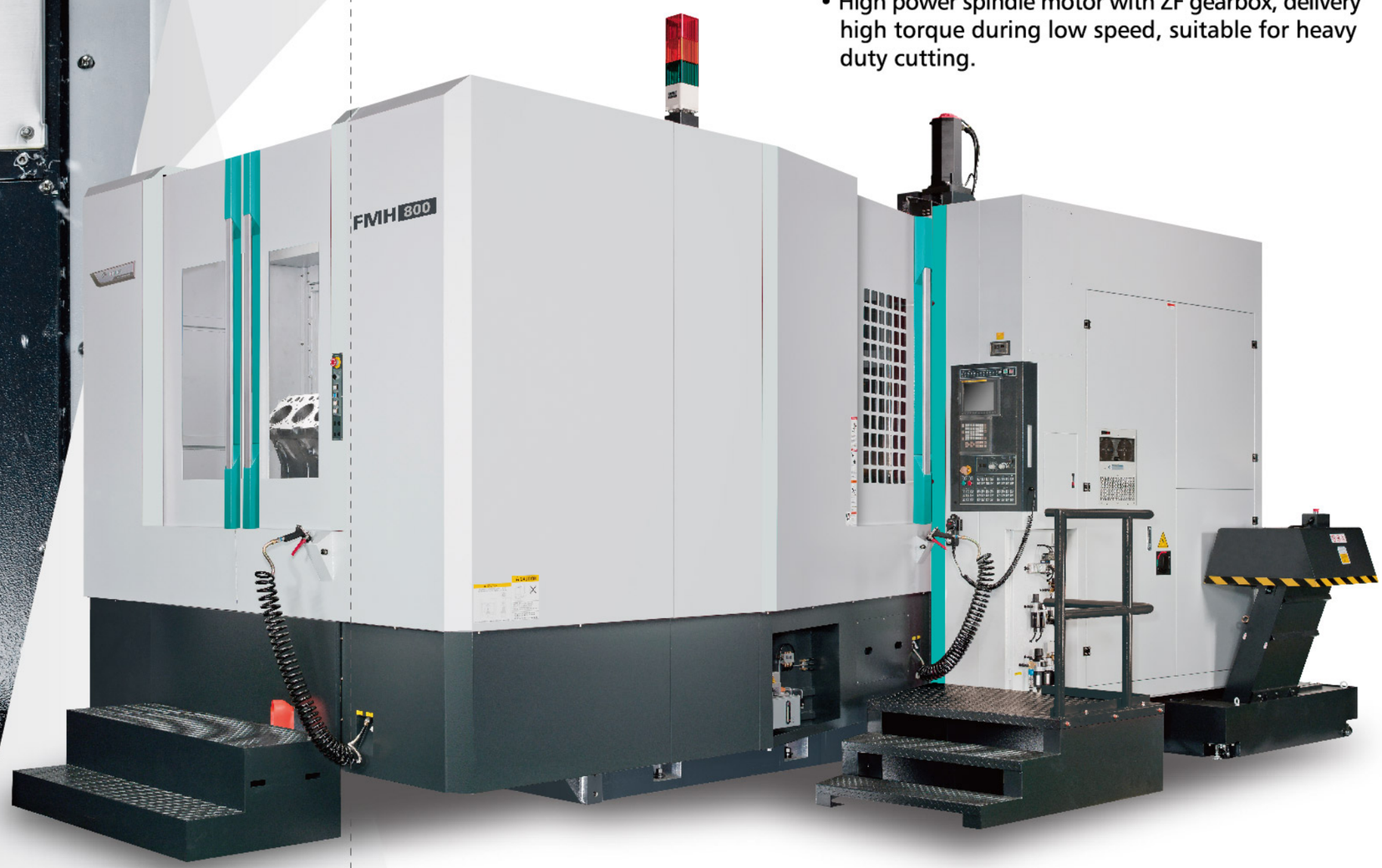


HORIZONTAL MACHINING CENTER

FMH-800

Machine Features:

- T-Shaped base structure deploying linear guideways at Hi-Low step arrangement, 3 axes adopts linear roller guideways.
- Auto Pallet Changer is driven by servo motor, APC speed can be adjusted according to pallet load.
- Auto Tool Changer is driven via cam mechanism and servo motor, ATC speed can be adjusted according to tool weight.
- High power spindle motor with ZF gearbox, delivery high torque during low speed, suitable for heavy duty cutting.



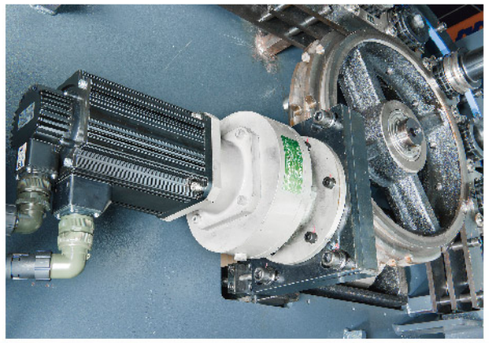
PRECISION RIGID SPINDLE



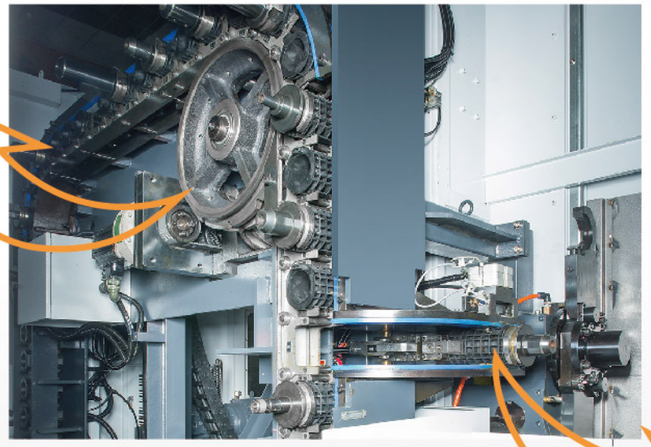
- Air jet around spindle nose.
- High rigidity large span layout.
- Special treatment for critical parts.
- High accuracy tool draw mechanism.
- Double anti-leak design.
- High precision labyrinth-type locknut.
- High rigidity quill.
- Optimal span from spindle nose to front bearing.



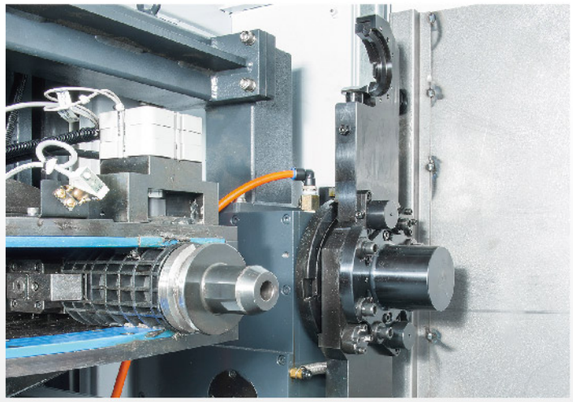
60 Tools of ATC features:



Drive sprocket driven by servo motor with characteristic high precision and high speed that allows the next one preliminary tool rapid positioning to reduce tool waiting time.



Unique C-shaped chain type architectureand minimalist design of a sprocket drivethat facilitates tool pocket to quickly swing 90 degrees to reach ahead of tool change preparation.



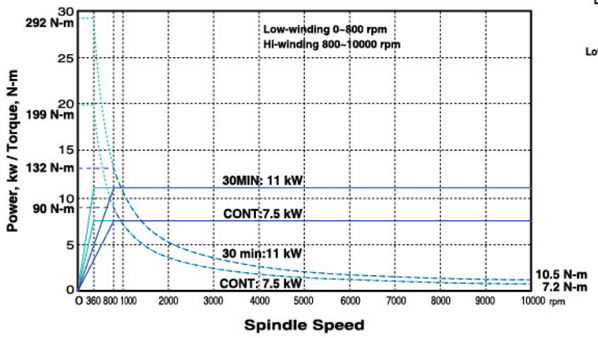
Cam-type servo ATC provides quick tool change and anti-out tool device making itfast and safe tool change process that engages with light / heavy tool differences in function to stabilize the tool change.

SPINDLE SPEED/OUTPUT DIAGRAM

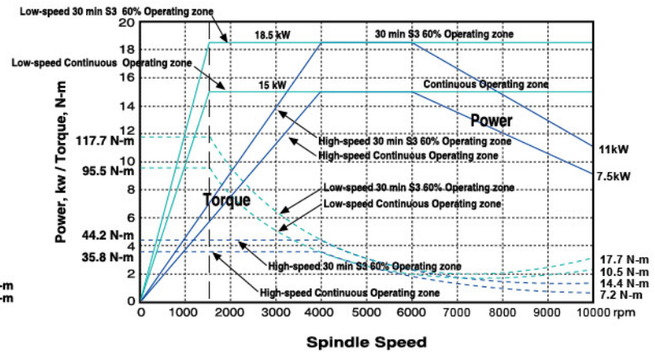
Low speed winding torque

High speed winding torque

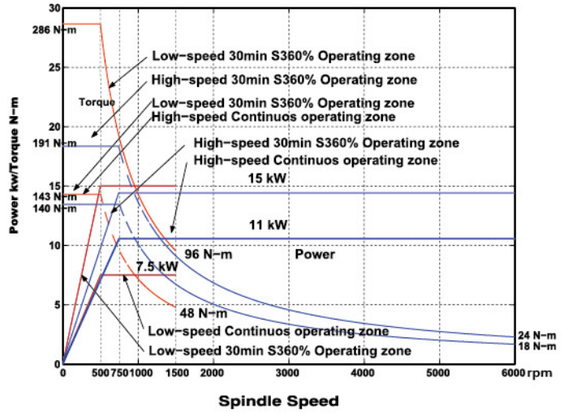
Power / Torque characteristics of FANUC αβ160L/Built-in Type (STD for FMH-400 / 500 #40)



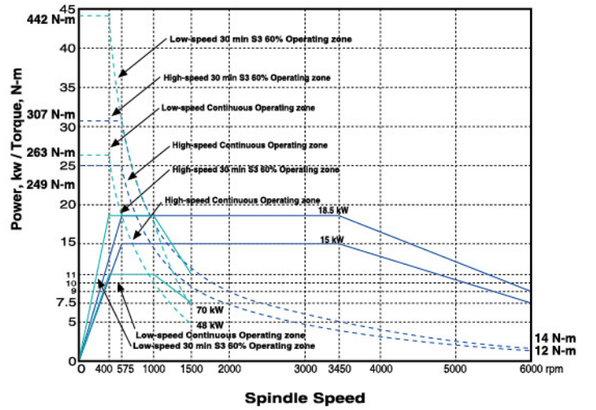
Power / Torque characteristic of FANUC αT15 / 10000i Spindle 10000 rpm (DDS for FMH-400 / 500)



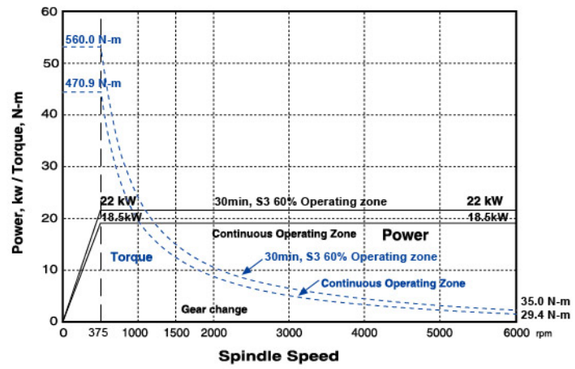
Power / Torque characteristic of FANUC αp22i/6000i Spindle 6000rpm (BELT TYPE for FMH-500#50)



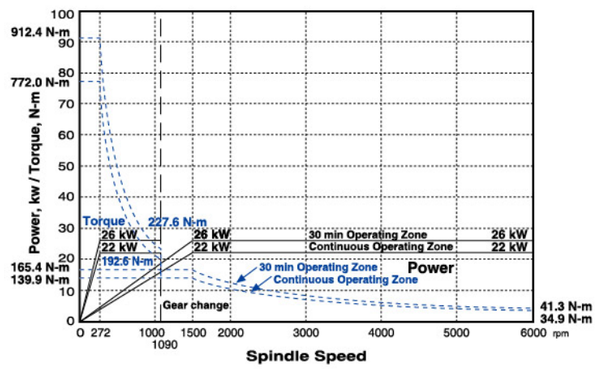
Power / Torque characteristic of FANUC αP30 / 6000i Spindle 6000 rpm (BELT TYPE, STD for FMH-630)



Power/Torque characteristic of FANUC α18/7000i for ZF 2K250 GearBox and spindle 6000rpm



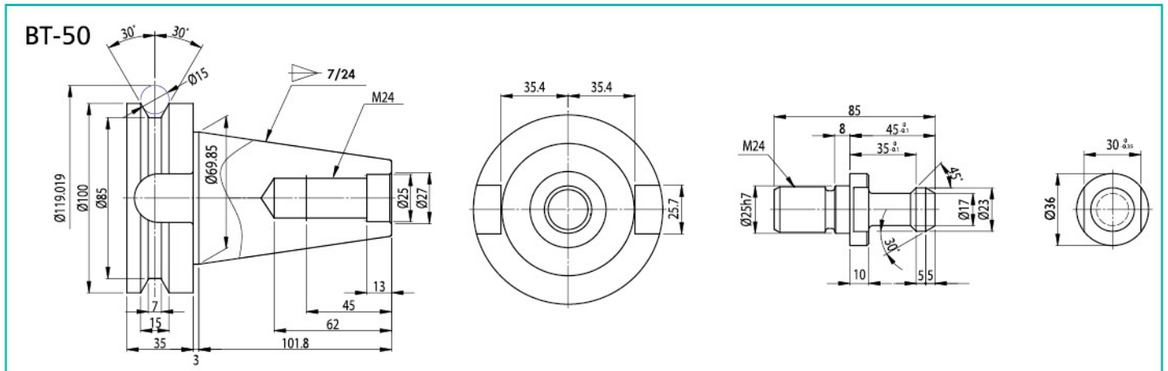
Power / Torque characteristics of 6k spindle with α22 / 7000i FANUC motor and ZF gear bax (1:5.5) (STD for FMH-800)



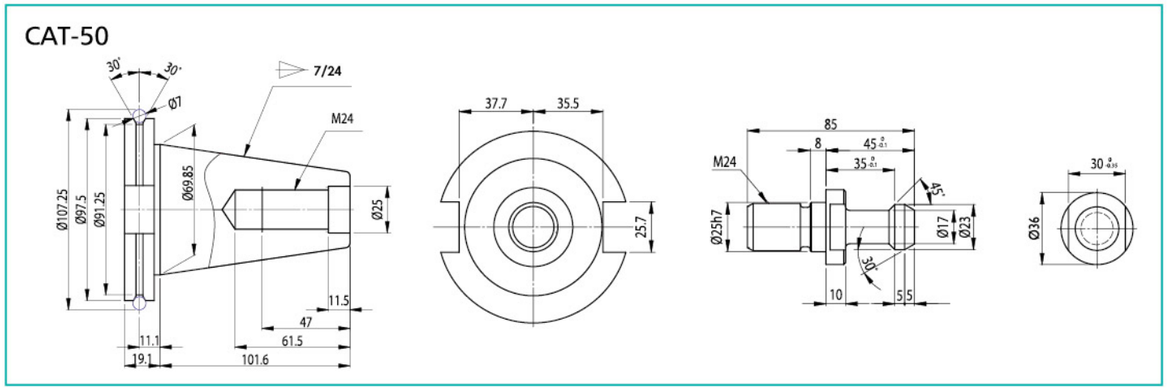


Tool Shank Specifications

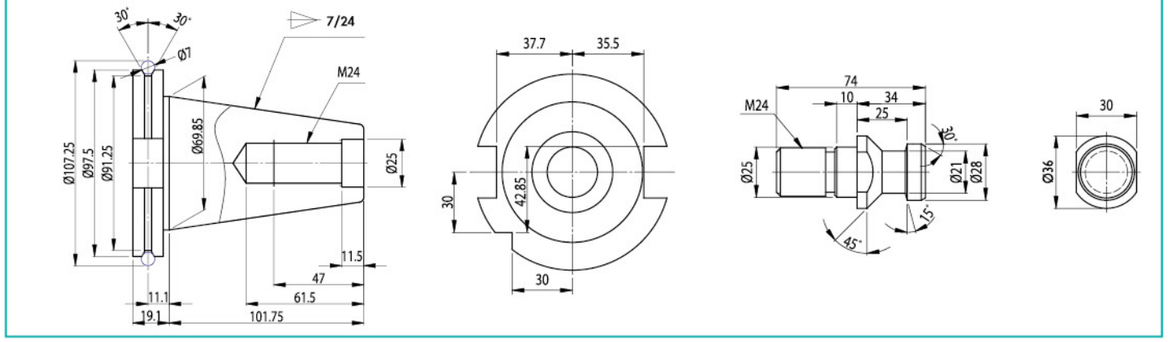
BT-50



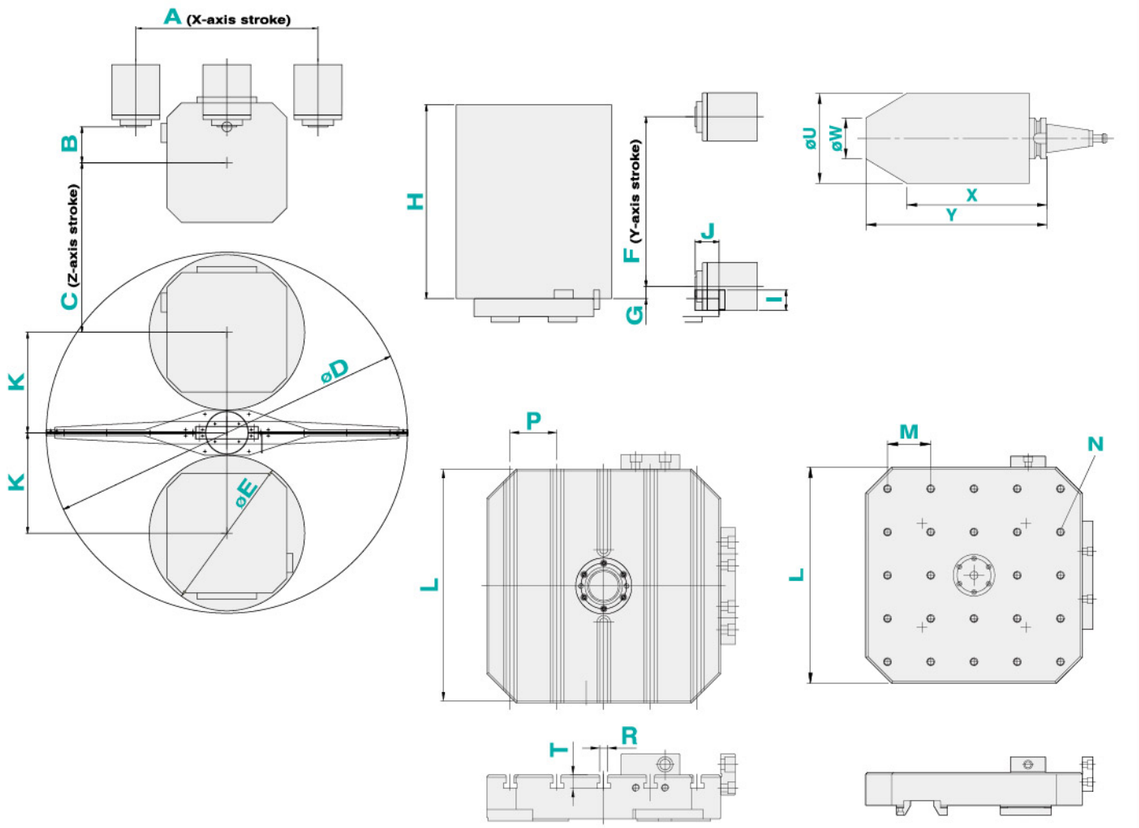
CAT-50



DIN-50 DIN69871 + DIN 69872 PULL STUD



THREE AXES TRAVEL RANGE

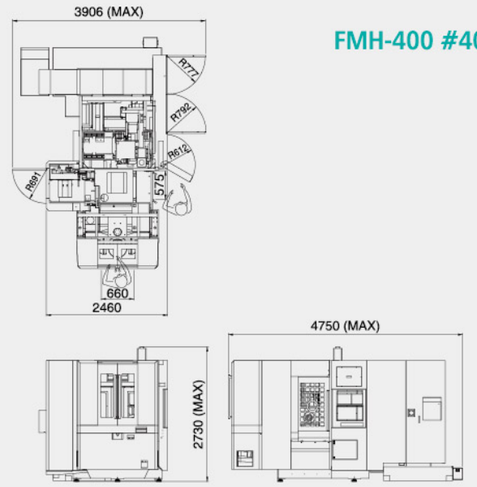


Unit: mm

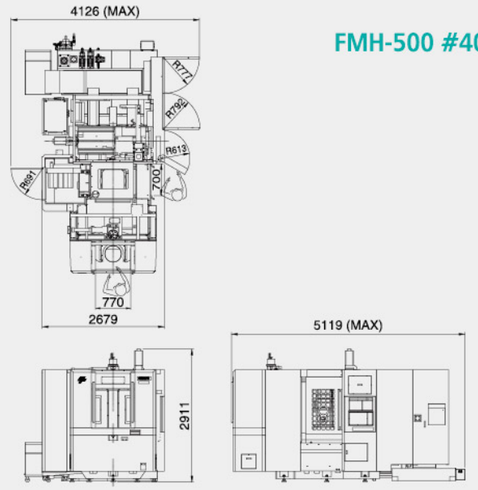
	FMH-400	FMH-500#40	FMH-500#50	FMH-630	FMH-800
A	610	762	730	1000	1300
B	130	150	100	200	150
C	560	710	710	850	1100
D	1285	1510	1510	2070	2900
E	600	650	650	950	1300
F	560	710	710	850	1020
G	50	50	50	50	100
H	660	810	810	950	1200
I	86	86	110	113	80
J	95	100	50	115	285
K	335	420	420	560	800
L	400 x 400	500 x 500	500 x 500	630 x 630	800 x 800
M	80	100	100	125	160
N	24-M16 x 2.0P	24-M16 x 2.0P	24-M16 x 2.0P	24-M16 x 2.0P	24-M16 x 2.0P
P	80	100	100	125	160
R	14	14	14	18	22
T	23	23	23	30	42
U	140	140	220	220	250
W	-	-	100	125	-
X	-	-	400	480	-
Y	300	300	500	500	500

MACHINE DIMENSIONS

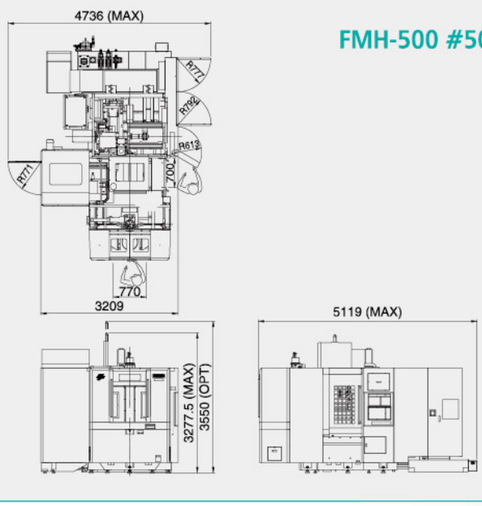
FMH-400 #40



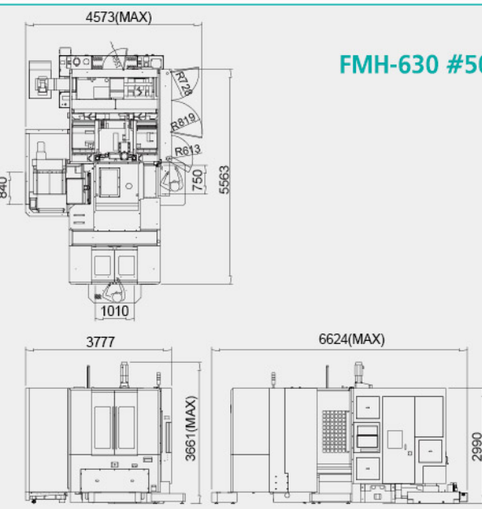
FMH-500 #40



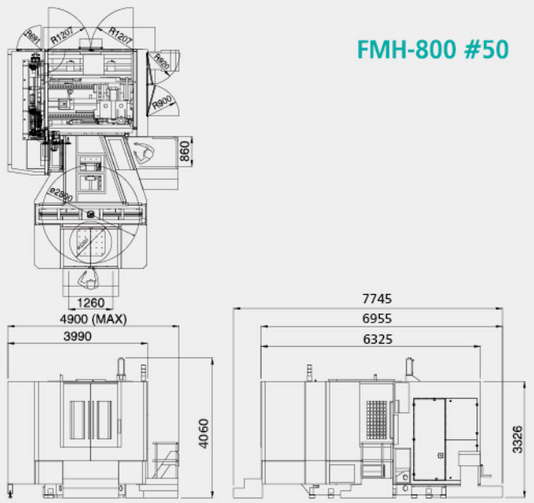
FMH-500 #50



FMH-630 #50



FMH-800 #50





MACHINE SPECIFICATIONS

MODEL / TRAVEL	FMH-400	FMH-500			FMH-630	FMH-800
	No.40	No.40	No.50 (DDS)	No.50	No.50	No.50
X Axis Travel	610 mm	762 mm	730 mm	730 mm	1,000 mm	1,300 mm
Y Axis Travel	560 mm	710 mm			850 mm	1,020 mm
Z Axis Travel	560 mm	710 mm			850 mm	1,100 mm
Spindle Center to Table Surface	50 mm~610 mm	50 mm~760 mm			50 mm~900 mm	100 ~ 1,120 mm
Spindle Nose to Table Center	130 mm~690 mm	150~860 mm	100~810 mm	200~910mm	200~1,050 mm	150 ~ 1,250 mm
Table Surface to Floor	1,140 mm	1,200 mm			1,300 mm	1,475 mm
TABLE						
Table Dimensions	400 mm x 400 mm	500 mm x 500 mm			630 mm x 630 mm	800 mm x 800 mm
Max. Loading Weight	400 kg	1°:500 kg / 0.001°:600 kg			1,200 kg	2,000 kg
Screw Specifications	M16 x P2	M16 x P2			M16 x P2	M16 x P2
Min. Indexing Degree	1°/ (opt: 0.001°)	1°/ (opt: 0.001°)			1°/ (opt: 0.001°)	1°/ (opt: 0.001°/5°)
SPINDLE						
Spindle Speed	8,000 rpm / 10,000 rpm (opt)	8,000 rpm / 10,000 rpm(opt)	6,000 rpm / 8,000 rpm(opt)	6,000 rpm / 8,000 rpm(opt)	6,000 rpm / 8,000 rpm (opt)	6,000 rpm / 8,000 rpm (opt)
Spindle Nose Taper	7/24 Taper No.40	7/24 Taper No.40	7/24 Taper No.50	7/24 Taper No.50	/24 Taper No.50	7/24 Taper No.50
Dia. of Spindle	Ø85 mm	Ø85 mm	Ø90 mm	Ø100mm	Ø100 mm	Ø110 mm
Spindle Motor	Built in 7.5/11 kW	Built in 7.5/11 kW	15/18.5 kW	7.5 / 15 kW	11/18.5 kW	22/26 kW
FEEDRATE						
X Axis Rapid Traverse	30 (60) m/min		30(48) m/min	30(48) m/min	24(42/48) m/min	42 m/min
Y Axis Rapid Traverse	30 (60) m/min		30(48) m/min	30(48) m/min	24(42/48) m/min	42 m/min
Z Axis Rapid Traverse	30 (60) m/min		30(48) m/min	30(48) m/min	24(42/48) m/min	42 m/min
Cutting Feedrate	20 m/min		20 m/min	20 m/min	15 (20) m/min	20 m/min
AUTOMATIC TOOL CHANGER						
No. of Tools	40 : 60/120 (opt)		40 : 60/90 (opt)		40 : 60/90 (opt)	60 : 90/120 (opt)
Pull Stud (degree)	P40T-1	P40T-1	P50T-1	P50T-1	P50T-1	P50T-1
Max. Tool Weight	8 kg	8 kg	20 kg	20 kg	20 kg	0kg~15kg/15kg~25kg
Max. Tool Length	300 mm	300 mm	500 mm	400 mm	500 mm	500 mm
Max. Tool Diameter	Ø85 mm	Ø85 mm	Ø125 mm	Ø125 mm	Ø125 mm	Ø125 mm
Max. Tool Diameter (no adjacent tool)	Ø140 mm	Ø140 mm	Ø220 mm	Ø220 mm	Ø220 mm	Ø250 mm
Tool Changing Time (tool to tool)	2 sec (60 Hz)	2 sec (60 Hz)	8 sec (60 Hz)	8 sec (60 Hz)	8 sec (60 Hz)	3.5sec(60 Hz) / Heavy Tool=4.7sec(60 Hz)
Number of Pallets	2		2		2	2
Method of Pallet Change	ROTARY		ROTARY		ROTARY	ROTARY
Pallet Changing Time	8 sec (60 Hz)		8 sec (60 Hz)		10 sec (60 Hz)	20 sec (60 Hz)
Floor Space	2,610mm x4,750mm	2,680 x 5,120 mm	3,210 x 5,120 mm	3,723 x 3,950mm	3,777 x 6,624mm	4,900 x 7,745 mm
Machine Weight (net)	8,500 kg	13,500 kg	15,000 kg	16,000 kg	19,000 kg	30,000 kg
Max. Machine Height	2,730 mm	2,915 mm	3,280 mm	3,171mm	3,661mm	4,060 mm
Power Capacity	40 KVA		40 KVA		65KVA	70 KVA
Air Source	6~8 bar (85 psi)		6~8 bar (85 psi)		6~8 bar (85 psi)	6~8 bar (85 psi)

- Specifications are subject to change without prior notice.
- Heavy Tool definition = Over 15kg Tool.

STANDARD ACCESSORIES

- Bulit-in type 8,000 rpm spindle #40
- Belt type 6,000 rpm spindle #50 (FMH500,630)
- Belt type 6,000 rpm spindle #50 with gear box (FMH800)
- Rotary type automatic pallet changer
- Chip conveyor with bucket
- 1° indexing table
- 3-color signal light
- Spindle oil cooler
- Heat exchanger
- Working lamp
- Top flushing
- 2 sided chip screws
- Coolant gun

OPTIONAL ACCESSORIES

- B-axis 0.001 degree rotary table
- Coolant through spindle with filter system 20/50 bar
- B-axis rotary table with linear scale
- 60, 80, 90, 120 tools chain type ATC (Hydraulic Motor)
- Direct drive spindle
- Air condition for electric cabinet
- Spindle speed 10,000 rpm / BT-40
- Spindle speed 12,000 rpm / BT-40
- Spindle speed 8,000 rpm / BT-50
- Auto tool length measurement and breakage detection
- Touch probe workpiece measurement
- Auto power off
- T-slot pallet
- 3 axes linear scales
- Transformer
- CE modification
- 3 Axes Hollow ballscrew coolant
- Hydraulic interface for fixture
- Oil skimmer
- Single Pallet
- Mist collector