

EA-600/A-10L

Vertical Machining Center

EA-600 -The Highest Capability/Price Ratio Vertical Machining Center.
A-10L -Performance and Speed Beyond Expectation, Extended Y&Z Travese.



EA-600

Vertical Machining Center

AGMA once again presents high speed A-series machining centers to a foresighted customer like you with industry-leading scraping technology of hardened box way and the technological capacity of manufacturing process. This series of machines are based on high-rigidity Meehanite cast iron and adopt 10,000/12,000/15,000RPM direct driven spindle. Three axes adopt high precision linear guideways and ball screws. Other optional accessories which fully comply with a variety of cutting demand are also available.



EA-600

X/Y/Z Traverse 600/410/460mm

ATC type/Arm type 24 tools magazine

Direct Driven 10,000/12,000/15,000RPM

High-Rigidity Structure Design

Synchronously adopt the European & Japanese design

- Wide-span rigid column
- Taiwan-made PMI extra-large 30mm precise roller-rail linear guide way (option)
- Adopt high-end direct motors and high rigidity couplings in three axes
- High quality full-length enclosed splash guard, elegant appearance, well-executed, and in good taste

Extra-large Z-axis motor

3.0KW (no counter balance design)

High reliable and high accuracy ballscrew design

Ø30mm high class double nut provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

Extra wide door design

The width of door reaches 725mm for conveniently loading and unloading the fixture and workpiece.

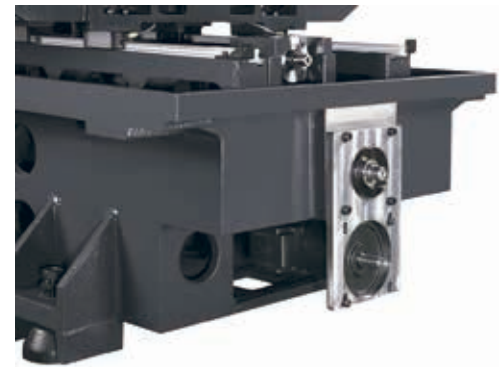
Stable air supply equipment

The gas storage barrel assists to acquire steady air source to increase equipment utility rate.

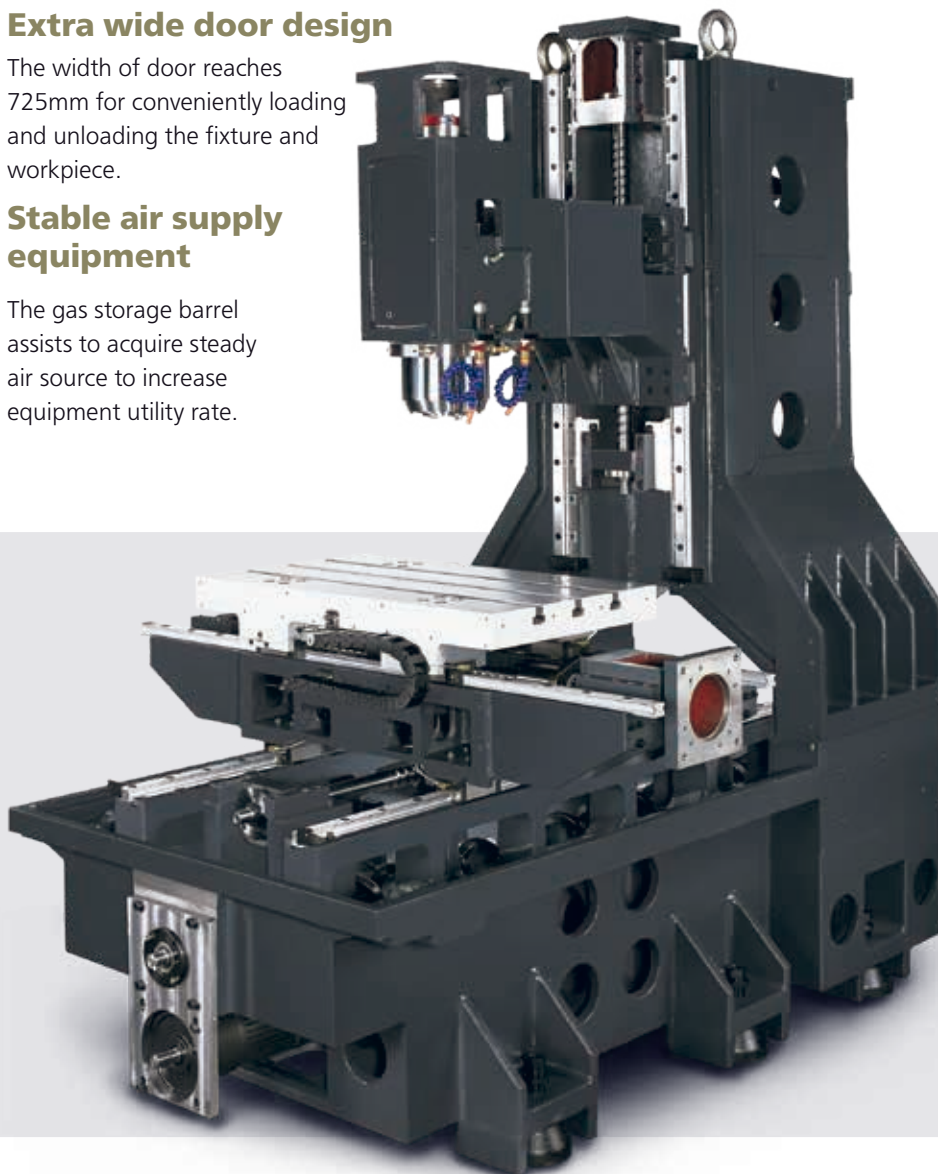


Unique Column Design

Single central screw type chip auger collocates left and right sides flush to remove the chip from front to back.



Chip Auger motor shrinks within to reduce the distance of the front sheet metal for ergonomics improvement on the ease of workpieces loading and unloading.



A-10L

Vertical Machining Center

AGMA once again presents high speed A-series machining centers to a foresighted customer like you with industry-leading scraping technology of hardened box way and the technological capacity of manufacturing process. This series of machines are based on high-rigidity Meehanite cast iron and adopt 8,000~10,000RPM belt driven spindle or 10,000 ~15,000RPM direct driven spindle. Three axes adopt high precision linear guideways and ball screws. Other optional accessories which fully comply with a variety of cutting demand are also available.



A-10L

X/Y/Z Traverse 1020/600/600mm

ATC type/Arm type 24 tools magazine

Belt Driven 8,000/10,000RPM

Direct Driven 10,000/12,000/15,000RPM

High-Rigidity Structure Design

Synchronously adopt the European & Japanese design

- Wide-span rigid column
- Japan-made NSK extra-large 45mm precise roller-rail linear guide way (option)
- Adopt high-end direct motors and high rigidity couplings in three axes
- High quality full-length enclosed splash guard, elegant appearance, well-executed, and in good taste

Extra-large Z-axis motor

7.0KW (no counter balance design)

High reliable and high accuracy ballscrew design

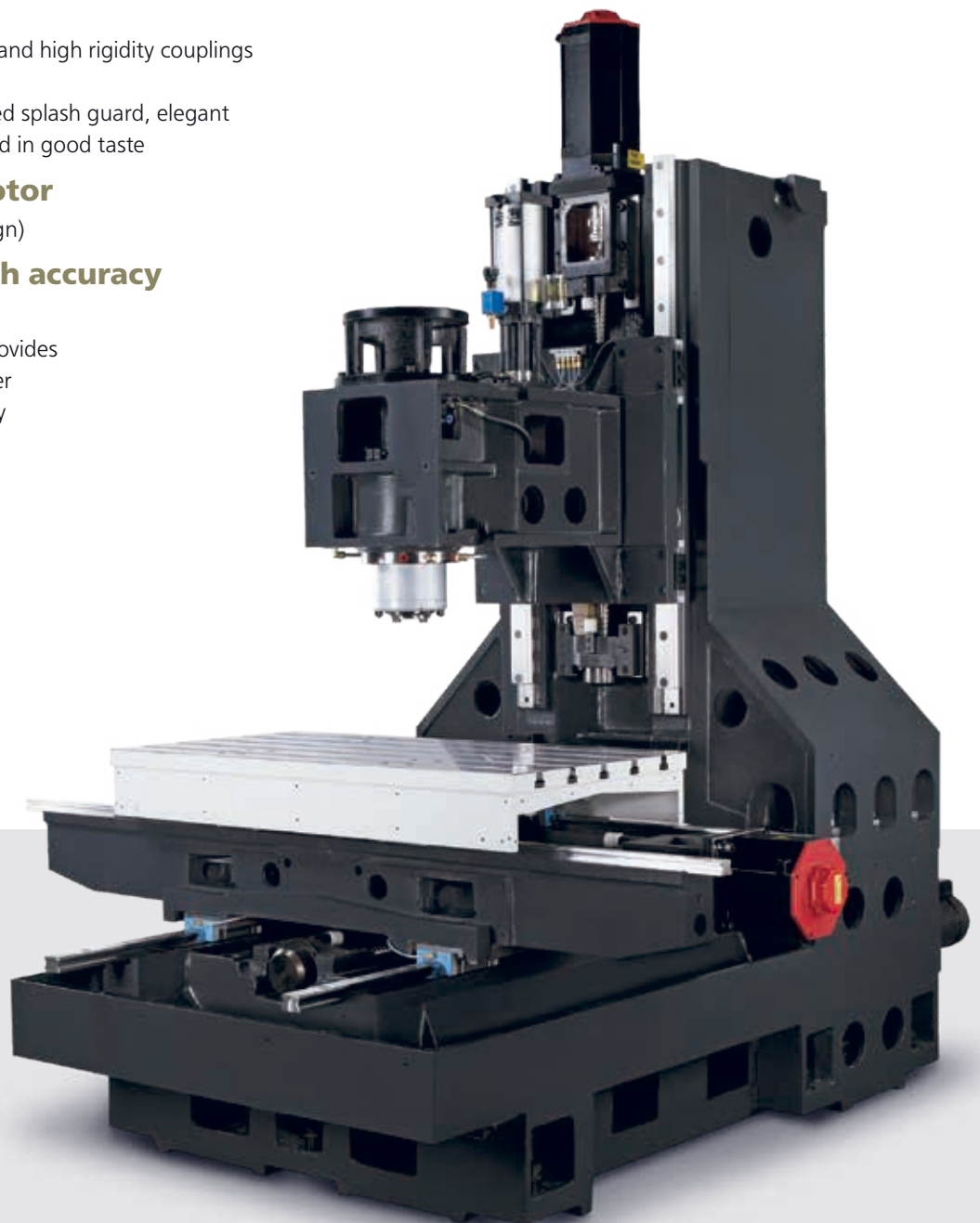
ø40mm high class double nut provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

Extra wide door design

The width of door reaches 1160mm for conveniently loading and unloading the fixture and workpiece.

Stable air supply equipment

The gas storage barrel assists to acquire steady air source to increase equipment utility rate.



EA-600/A-10L

Standard and special accessories

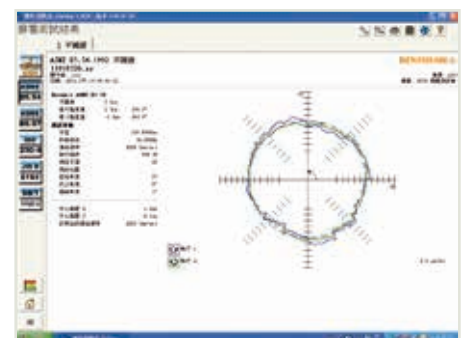


Renishaw Ballbar System

Carry out a three dimension circular test and optimal adjustment.

Calibration with Laser Interferometer was Performed and Certified by PMC

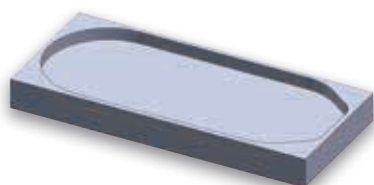
Agma authorizes PMC to conduct 100% inspection to full travel length of three axes. Standard VDI 3441 3 δ is employed to ensure the machine accuracy and righteousness of the inspection. For each axis, inspection along full axial travel length backwards and forwards for 6 times is conducted.



Ballbar Test Figure

Each machine goes through telescoping ball-bar tests to check contouring accuracy and uncover any geometric errors. This testing ensures the machine structure is both square and parallel.

Cutting Capability(for A-10L only)



Workpiece Material : A6061 T6
Spindle Speed : 12,000rpm
Cutting Feedrate : **10,000mm/min.**
Cutter : $\phi 12 \times 3$ Flutes End Mill for Aluminum
Depth of cut : 12 mm
Width of cut : 1.8 mm



Workpiece Material : P20
Spindle Speed : 7,000rpm
Cutting Feedrate : **6,500mm/min.**
Cutter : $\phi 12 \times 4$ Flutes End mill
Depth of cut : 18 mm
Width of cut : 0.8 mm

Cutting Capability (Tapping cutting parameters for EA-600 only)

Model: EA-600
Controller: Mitsubishi M70
Cutting Material: AL6061
Cutting Data Material: total 132 holes

Model: EA-600
Controller: FANUC 0i-MD
Cutting Material: AL6061
Cutting Data Material: total 132 holes

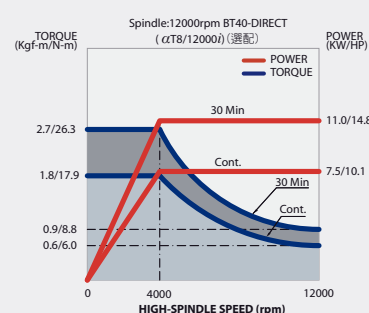
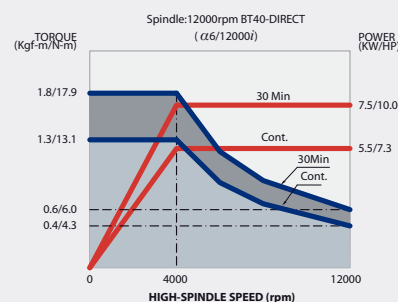
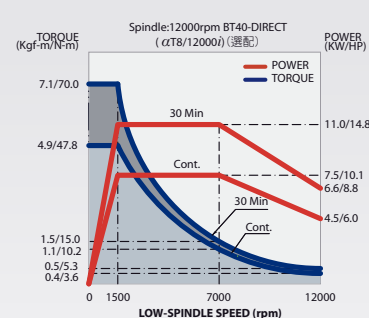
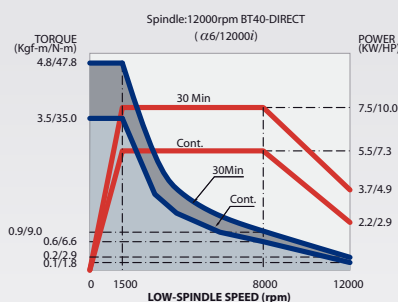
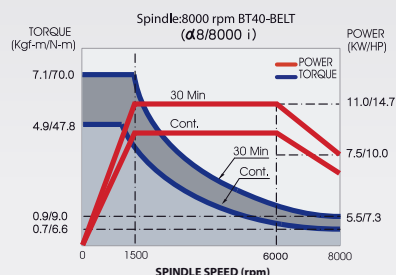
	CUTTING TOOLS	SPINDLE SPEED	CUTTING FEEDRATE	CUTTING FEEDRATE	NOTE
1	D1.8	4000rpm	150mm/min.	28m37s	Command G73; each knife 1 mm ; depth 10 mm
2	M2 (TAP)	1000rpm	400mm/min.	6m46s	Command G84; 6 mm depth

	CUTTING TOOLS	SPINDLE SPEED	CUTTING FEEDRATE	CUTTING FEEDRATE	NOTE
1	D1.8(Drill)	4000rpm	150mm/min.	20m09s	Command G73; each knife 1 mm ; depth 10 mm
2	M2 (TAP)	1000rpm	400mm/min.	04m00s	Command G84; depth 6 mm

FANUC Spindle Torque Drawing

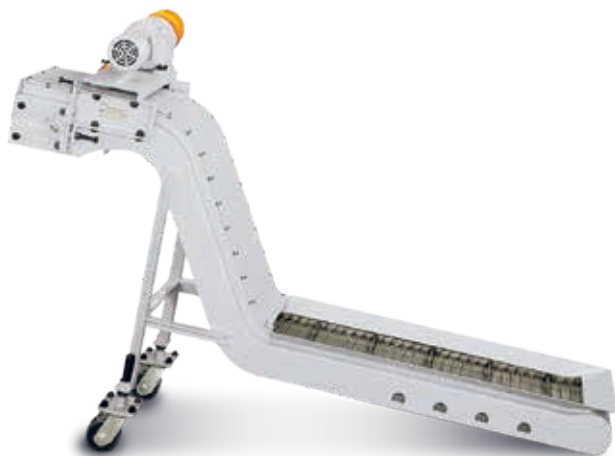
α 8i Belt-Driven Spindle

α Direct-Driven Spindle

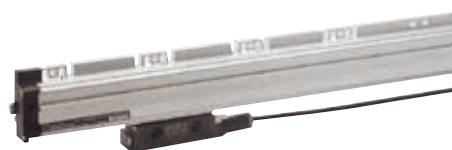


EA-600/A-10L

Standard and special accessories



Hinge Type Chip Conveyor



X/Y/Z-Axis Optical Linear Scale (Special Accessories)



Spindle ring sprinkler



Thin-film panel (for A-10L)



Thin-film panel (for EA-600)

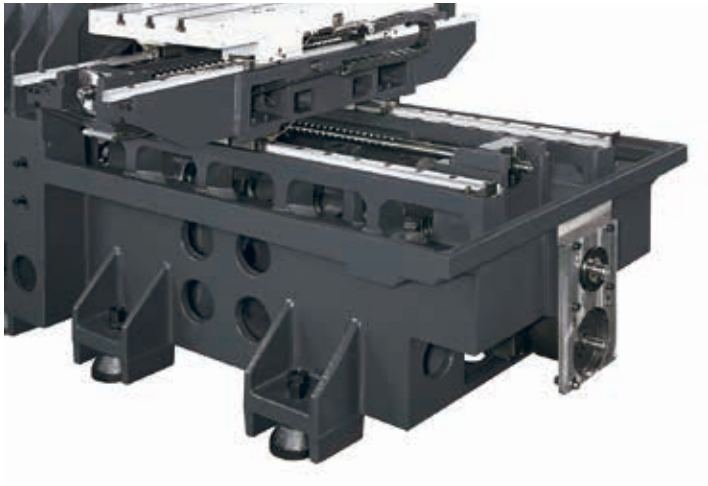


Oil Circulating Coolant System for Spindle

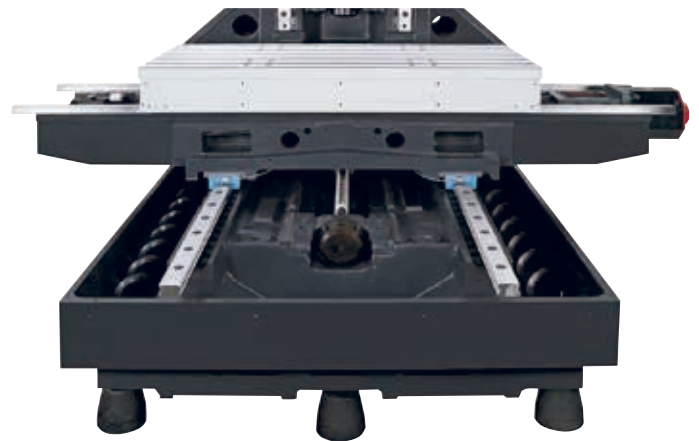


Fluorescent Light & Quartz Work Light

The fluorescent light is installed with the fully enclosed splash guard and it is located on the left hand corner, and the quartz work light is installed on the right hand upper corner to provide a well-lit table area.



Single Screw Type Chip Auger on Y axis central (EA-600)



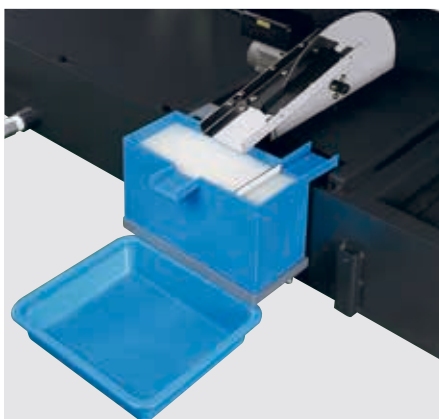
Y-Axis Screw Type Chip Augers (2 pcs) (A-10L only)



Precision Ball-Rail or Roller Rail (option) Linear Guideways and C3 Class Ball Screws for Three Axes

Linear Guide ways are used on all three axes. Because of their high rigidity, low noise, and low friction, this helped to achieve high-speed rapid movement and excellent circular accuracy.

Double nut C3 class precision ballscrews are used on all three axes. Along with pretension double nut and supports to minimize the backlash and to compensate for error caused by temperature differences in order to maintain positioning accuracy.



Oil Skimmer (Special Accessories)



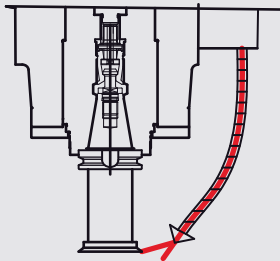
Chassis Chip flushing



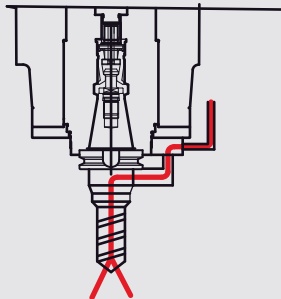
Tool Setep Probe (Tool Setter)

EA-600/A-10L

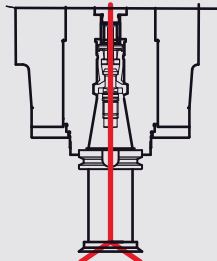
Std.-Directional Pipe
Purpose-General



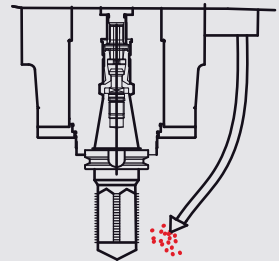
Opt.-Oil Hole Holder
Purpose-Drilling, Boring, etc.



Opt.-Coolant Through Spindle (C.T.S.)
Purpose-Drilling, Boring, etc.

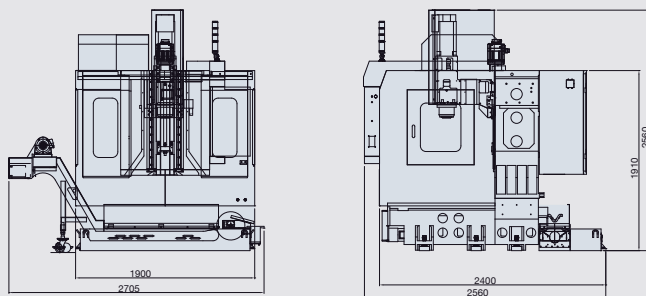


Opt.- Oil Mist
Purpose-Tapping, Reaming, etc.

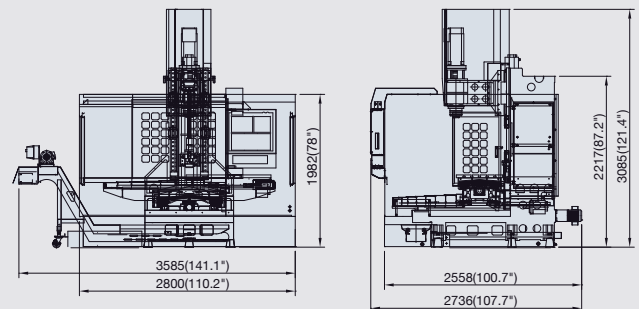


Machine Layout

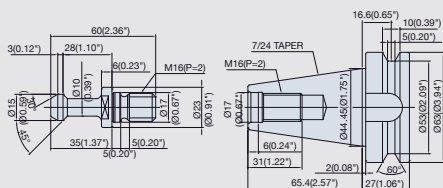
EA-600



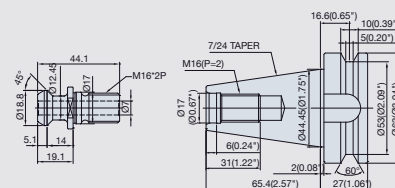
A-10L



BT-40 Toolholder Figure



MAZAK BT-40 Toolholder Figure
(coolant through spindle)



CAT-40 Toolholder Figure
(coolant through spindle)

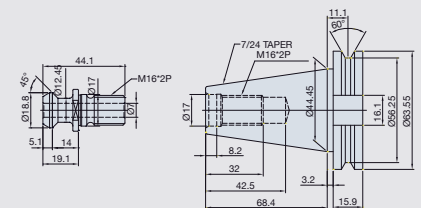
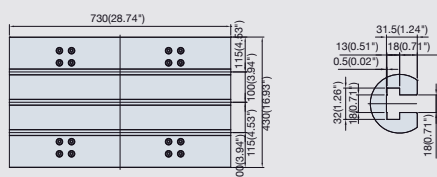
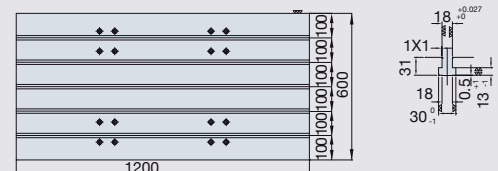


Table Dimension

EA-600



A-10L



Model	Unit	EA-600	A-10L
Spindle			
SPINDLE TAPER		NO.40	NO.40
TRANSMISSION		DIRECT DRIVE	BELT DRIVEN
SPINDLE SPEED	r.p.m.	10000	8000
SPINDLE DIAMETER	mm	120	150
Table			
TABLE SIZE	mm	730 x 430	1200 x 600
T-SLOT	mm	18 x 3 x 100	18 x 5 x 100
WORK AREA		600 x 410	1020 x 600
MAX. TALBE LOAD	kgs	300	700
Travel & Feedrate			
X AXIS	mm	600	1020
Y AXIS	mm	410	600
Z AXIS	mm	460	600
DISTANCE FROM SPINDLE NOSE TO TABLE	mm	150 ~ 610	150 ~ 750
DISTANCE FROM SPINDLE CENTER TO SURFACE OF COLUMN WAY	mm	494	655
RAPID TRAVERSE (X/Y/Z)	mm/min	X,Y,Z : 48,000	X,Y,Z : 32 / 32 / 28
CUTTING FEEDRATE	mm/min	X,Y,Z : 1~10,000	X,Y,Z : 1 ~ 12,000
ATC			
TOOL SHANK		BT - 40	BT - 40
PULL STUD		MAS P30T-1 (45°)	MAS P40T-1 (45°)
MAGAZINE CAPACITY	pcs	24	24
MAX. TOOL DIAMETER (FULL STORAGE)	mm	ψ 80	ø80
MAX. TOOL LENGTH	mm	250	300
MAX. TOOL WEIGHT	kgs	7	7
ATC TYPE		ARM TYPE	ARM TYPE
Motor			
FOR SPINDLE (CONT./30 min.)	Kw	5.5 / 7.5	7.5/11 (10/15)
X/Y/Z AXIS	Kw	FANUC : 3/3/3 MITSUBISHI : 1.5 2.2/3	3/3/7 (4/4/10)
FOR CTTING	HP	1	0.86
Misc.			
MACHINE HEIGHT	mm	2560	3085
MACHINE SPACE	mm	1900 x 2560	2800 x 2736
MACHINE WEIGHT	kgs	3000 ~ 3300	7000
CONTROLLER (FANUC/MITSUBISHI)		0iMD 8.4" / M70V	0iMD 8.4"

• Specification is subject to change without further notice.

Standard Accessories :

- 1.FANUC 0iMD 8.4" Controller
- 2.Heat Exchanger for Electric Cabinet
- 3.Program Executiion/End/Abnormal Three Color Indite Light
- 4.Quartz Work Lamp
- 5.Fluorescent Lamp
- 6.RS-232 Interface
- 7.Oil Circulating Coolant System for Spindle
- 8.Spindle Air Blast
- 9.Automatic Lubrication Equipment
- 10.Protection Device for Three Axes Slide Ways
- 11.Full Splash Guard
- 12.Rigid Tapping
- 13.Auto Power Off
- 14.Single Screw Type Equipement on Y Axis Central (EA-600 only)
- 15.Y-Axis Screw Type Chip auger (2 pcs) (A-10L only)
- 16.Tool Box w/Leveling Bolt
- 17.Machine and Electric Operation Manual
- 18.(380/220V) Transformer (Exclude India, USA and Canada)
- 19.CE/CSA Electrical Specification (For European/Canada Only)

Optional Accessories :

- 1.FANUC 31iMB Controller
- 2.Mitsubishi 70/720/730M controller
- 3.Belt Driven Spindle 10,000RPM (A-10L only)
- 4.Direct Driven Spindle 10,000/12,000/15,000RPM
- 5.Armless Type 16 tools ATC. (A-10L only)
- 6.Hinge Type Chip Conveyor
- 7.Taiwan made PMI roller-rail linear guideway
- 8.Japan made THK/NSK ball-rail/roller-rail linear guideways (A-10L only)
- 9.Coolant-thru tool holder
- 10.Three Axes Optical Linear Scale
- 11.Oil Mist
- 12.Oil Mist Collector
- 13.Coolant Through Spindle A Type (20 Bars)
- 14.Renishaw TS-27R Tool Setup Probe (Tool Setter)
- 15.Disc Type Oil Skimmer
- 16.CNC Rotary Table
- 17.Air Conditioning Equipment for Electric Cabinet
- 18.4Th Axis Interface



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