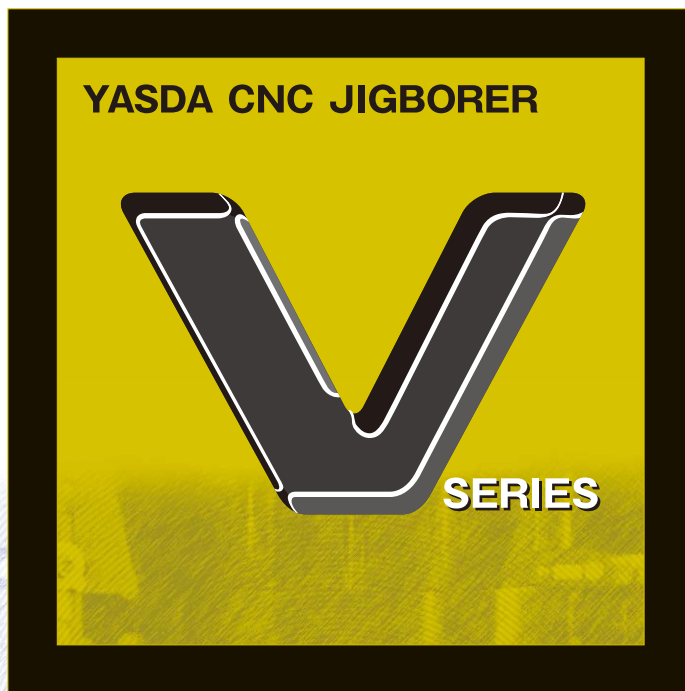


Higher accuracy
produces
greater profitability



MOLD & DIE MILLER

NEW TECHNOLOGY · HIGH SPEED HARD MILLING

MACHINING CENTER

YBM640V_{Ver.III} / YBM950V_{Ver.III} / YBM9150V / YBM1218V

YASDA

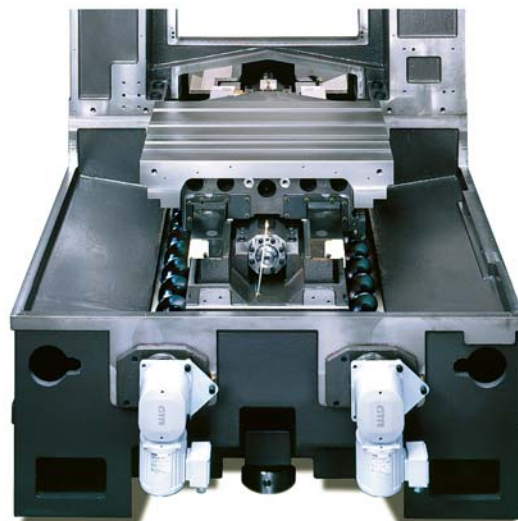


YASDA CNC JIGBORER



**YASDA's mission:
Uncompromising spirit going
for higher precision machining.
Our know-how and skill based on long experience creates
innovative and state-of-the art technologies.**

- YASDA V-series has achieved wide range of machining, from heavy-duty cutting to highly accurate finish cutting at the highest accuracy level achievable in the market. YASDA Preload self-adjusting system ensures high profitability of machining all the time.
- YASDA V-series has Thermal distortion stabilizing system as standard (as option for additional machine components) and it helps sustain the highest accuracy of the machine performance all the time.
- YASDA V-series has high speed machining function HAS-3 (Highly Accurate and Speedy machining system). HAS-3 together with careful manufacturing process of the machine, it becomes possible to finish the final machined work pieces exactly reflecting the program from CNC control.



(YBM640V_{Ver.Ⅲ} / YBM950V_{Ver.Ⅲ})

Outstanding high speed and high precision die and mold machining and high productivity with compact machine design

YASDA CNC JIGBORER **YBM 640V** Ver. III MOLD&DIE MILLER

YBM 640V_{Ver. III} provides the highest accuracy and profitability available in market, showing excellent performance in hard milling of die & mold, highly accurate mold base machining and other versatile purposes.



YASDA CNC JIGBORER **YBM 950V** Ver. III MOLD&DIE MILLER

YBM 950V_{Ver. III} has larger capacity than 640V_{Ver. III} and responds to a broad range of customer needs. YASDA designed options for automation like PLS (Preload Stand) ensures highest accuracy with multiple applications.



YASDA's classical accuracy with larger work area

YASDA CNC JIGBORER

YBM 9150V

MOLD&DIE MILLER

YBM 8120V has excellent performance in mold base application. Its high performance will help reduce total manufacturing time and its process cost a lot.



YASDA CNC JIGBORER

YBM 1218V

MOLD&DIE MILLER

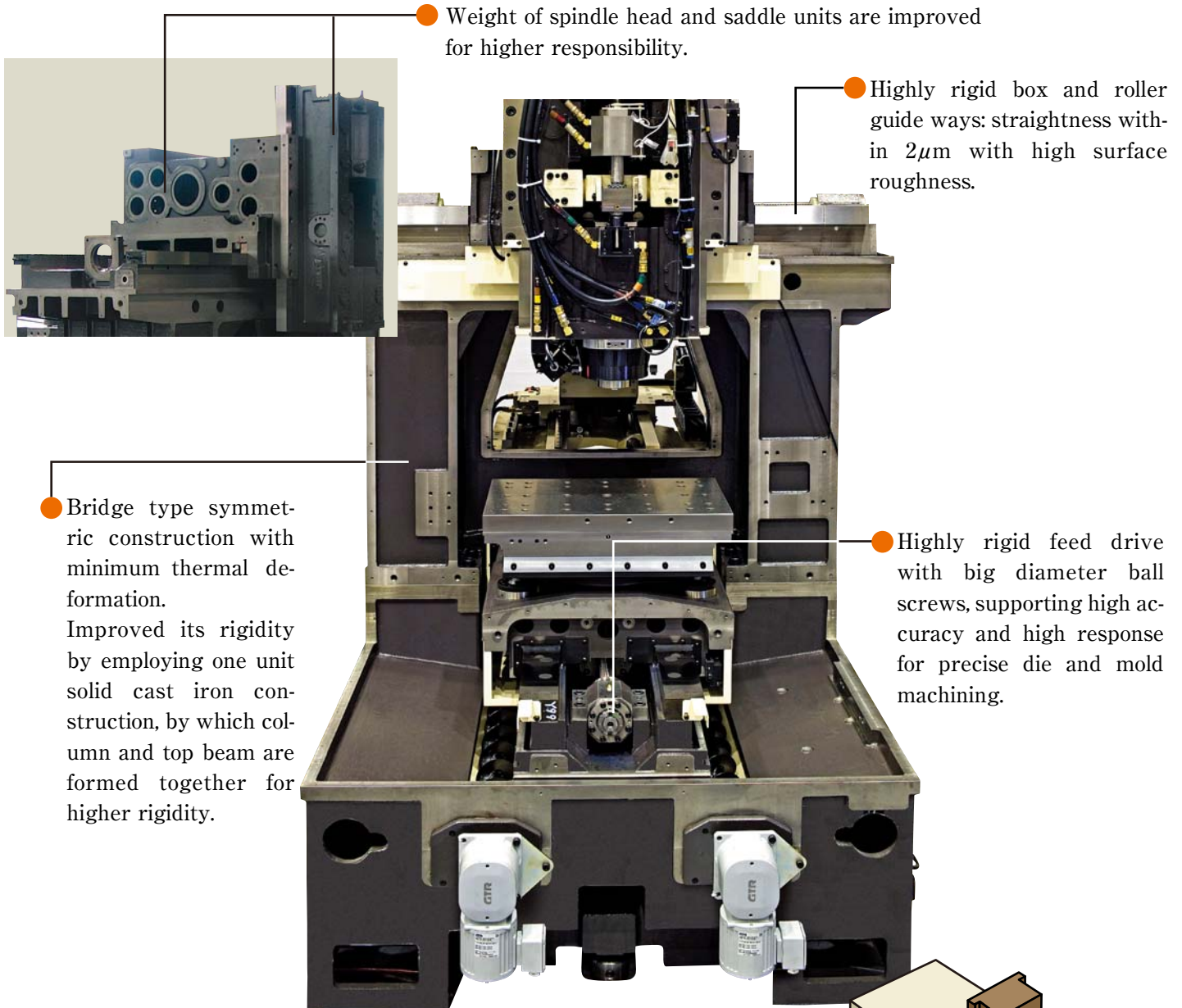
YBM 1218V has BT50 preload self-adjusting system spindle and promise highest accuracy for large size of components. Excellent mechanical design supports stability of the highest accuracy all the time.



■ Mechanical construction of YBM640V_{Ver.III} and YBM950V_{Ver.III}

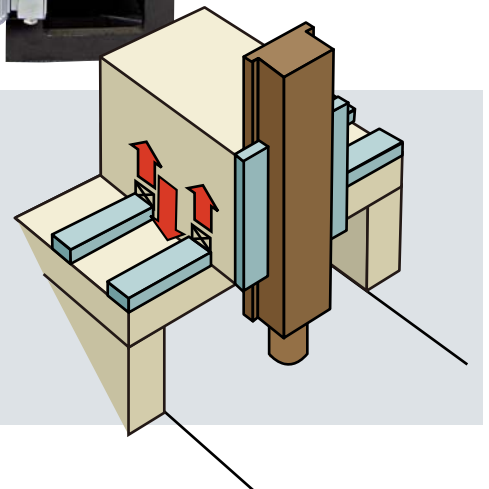
Most rigid bridge type construction with symmetric design

Ideal base structure drawing versatile machining performance with highest accuracy



■ YASDA guide ways are assembled horizontally on top beam, promising highest accuracy all the time due to the two main reasons:

- ① This design is easier to adjust mechanical accuracy.
- ② The center of gravity stays in the top beam, preventing torsion movement of the top beam, and minimizing its posture distortion.



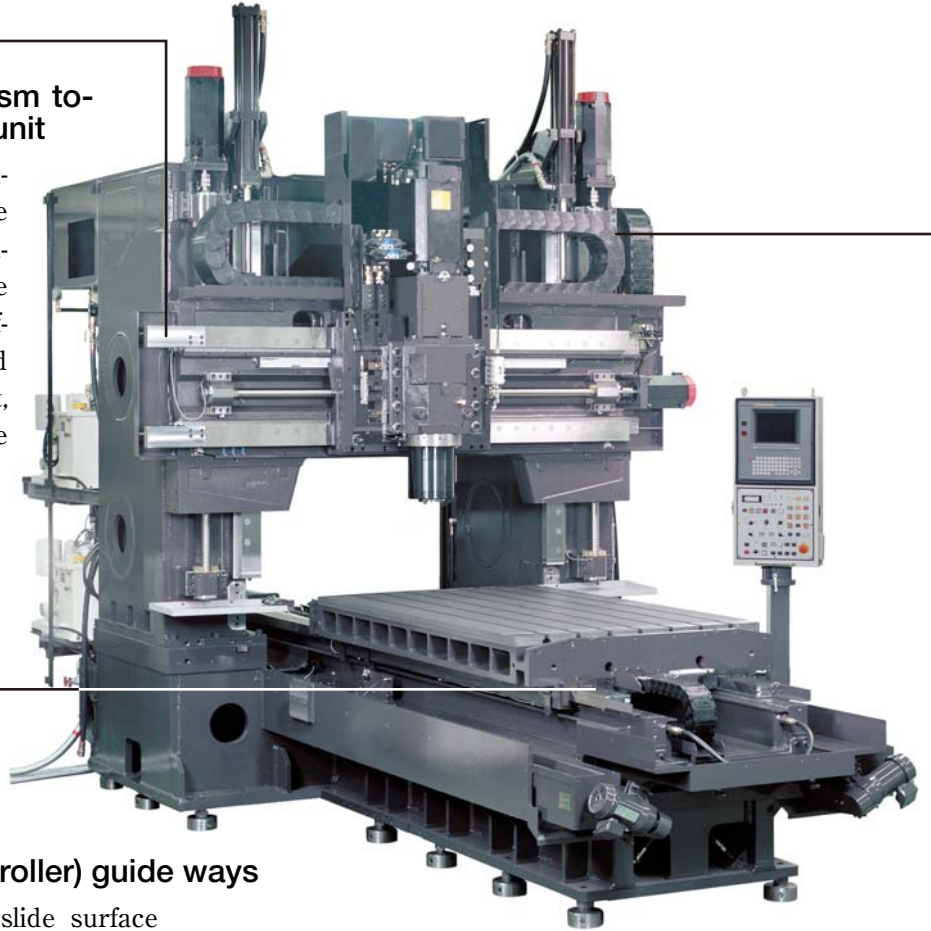
■Mechanical construction of YBM 1218V

Highly rigid construction helps sustain the highest accuracy available in market with BT50 spindle

Improved rigidity of spindle related units, employing YASDA hybrid (box & roller) guide ways

● **Z-axis travel mechanism together with cross rail unit**

In order to sustain the highest accuracy in large size working area, Z-axis mechanism is moved with the cross rail unit, which is different from ram-type head stock seen in market, which has reduced spindle rigidity.



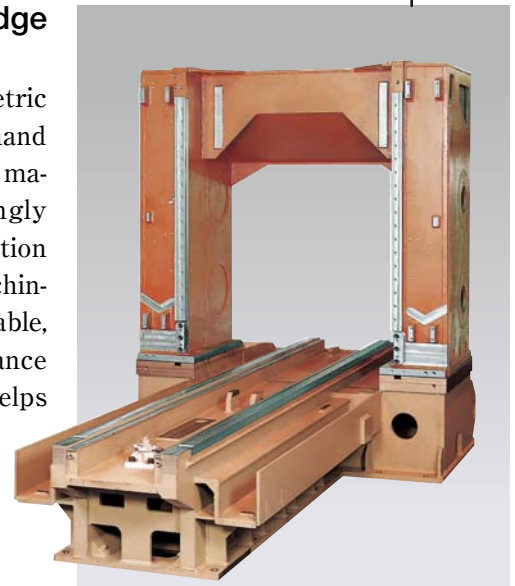
● **YASDA hybrid (box & roller) guide ways**

Excellent combination of slide surface and roller units ensures superb damping capability in high speed and high precision machining. Also high surface roughness on the guide ways ensures high response in 3 dimensional machining.



● **One unit solid bridge construction**

Solid bridge with symmetric design is mounted on hand scraped surface of the machine bed. Outstandingly stiff machine construction supports heavy duty machining with BT50 spindle stable, draws the best performance of cutting tools and helps save total running cost.

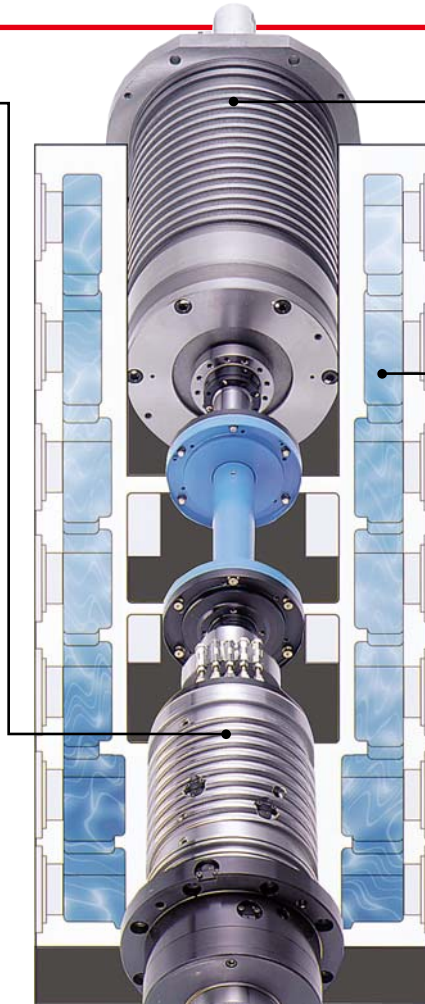


YASDA's original mechanism to ensure high precision rotation for full range of its spindle rotation

Preload self-adjusting system (Model: SA type)

Yasda's exclusive preload self-adjusting system technology provides a large preload at low speed and reduces the preload according to the heat generated by higher speed. This mechanism creates a clearer advantage over the conventional fixed type preload system.

- ① An appropriate preload for full range of the spindle speed achieves both heavy-duty cutting at low rpm, and highly accurate finish cutting at high rpm precise all the time.
- ② Spindle unit and Spindle motor are connected co-axially by a diaphragm coupling, in order to achieve high precision rotation of the spindle throughout the full speed range of the spindle.
- ③ YASDA spindle performs at the best machining condition regardless of various cutting resistances like high helix angle cutting with ball end mill, or back face machining.



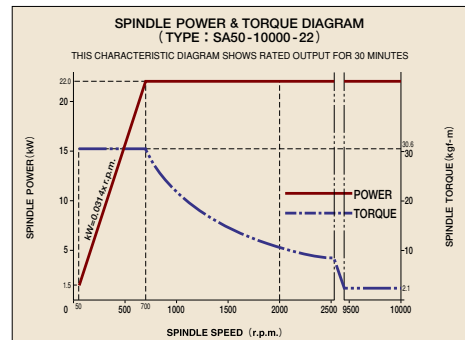
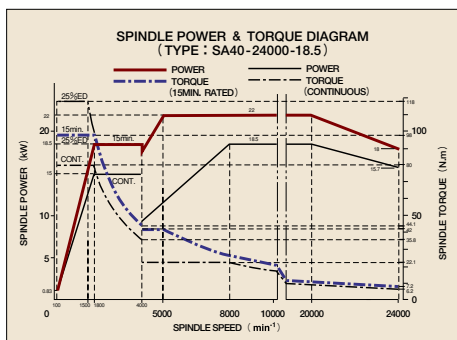
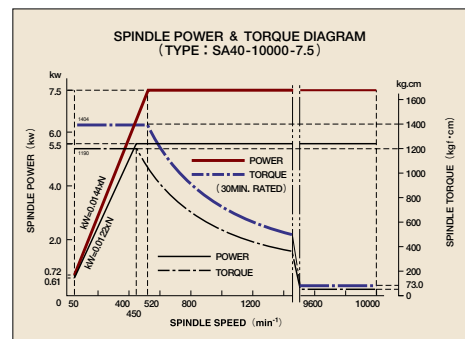
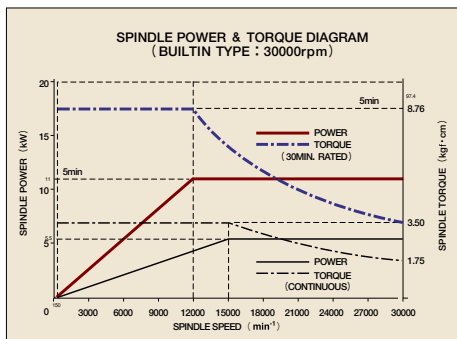
Spindle motor

YASDA spindle motor employs a two coil changeover type winding, and helps high torque drive at both of high and low spindle speeds.

Thermal deformation control system in the spindle head

Spindle head and saddle of the machine contain the largest exothermic parts such as spindle, spindle motor and feed motor. This is why machining centers suffer from thermal distortion which can easily result in inconsistent machining accuracy.

YASDA's design prevents such distortion by circulating heat exchange fluid throughout the spindle head, controlling the temperature of spindle head following the sensor for reference room temperature.



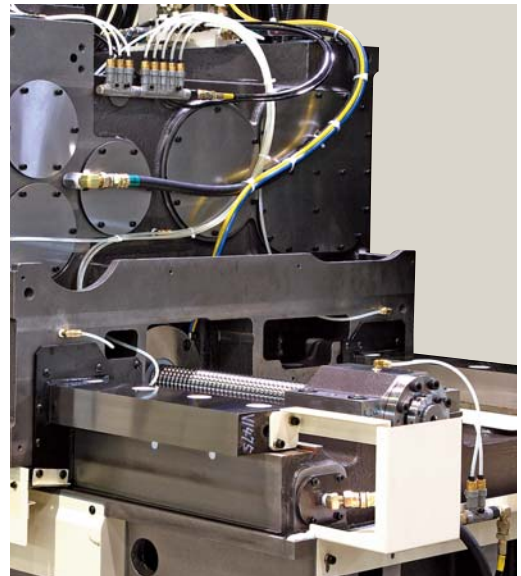
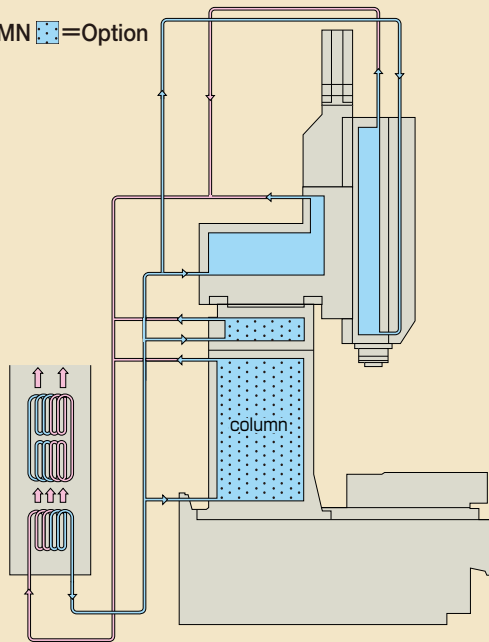
Advanced thermal control system

Thermal distortion stabilizing system

Temperature-controlled ($\pm 0.2^{\circ}\text{C}$ to reference room temperature) heat exchanged fluid circulates throughout the main structure, bridge saddle and spindle head, of the machine. This system is equipped in the spindle head and the saddle unit as standard, and in the bridge as an option.

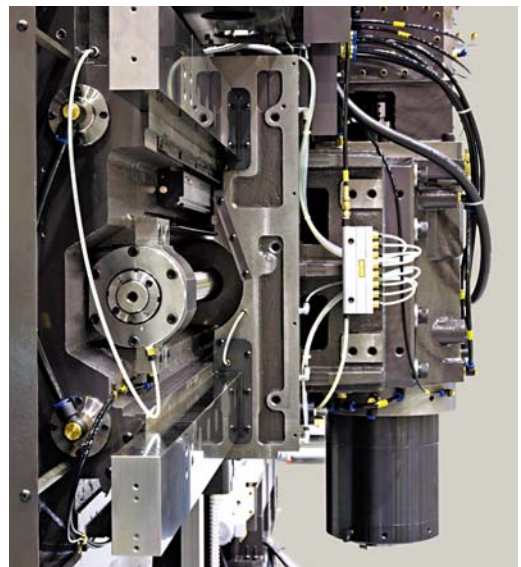
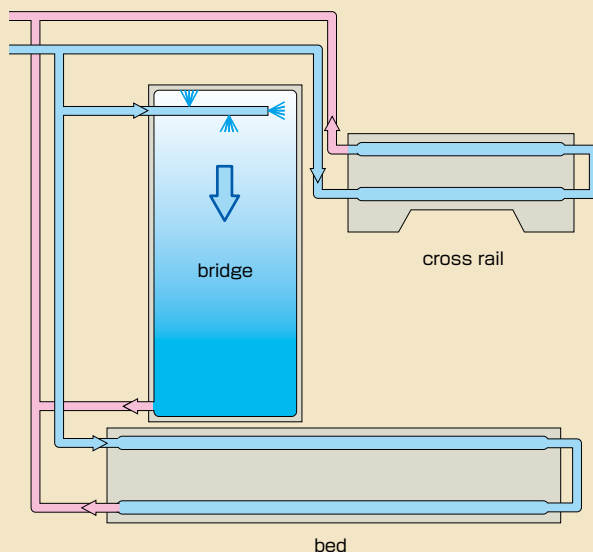
Thermal distortion stabilizing system of YBM640V_{Ver. II}, YBM950V_{Ver. II}

※ COLUMN  =Option



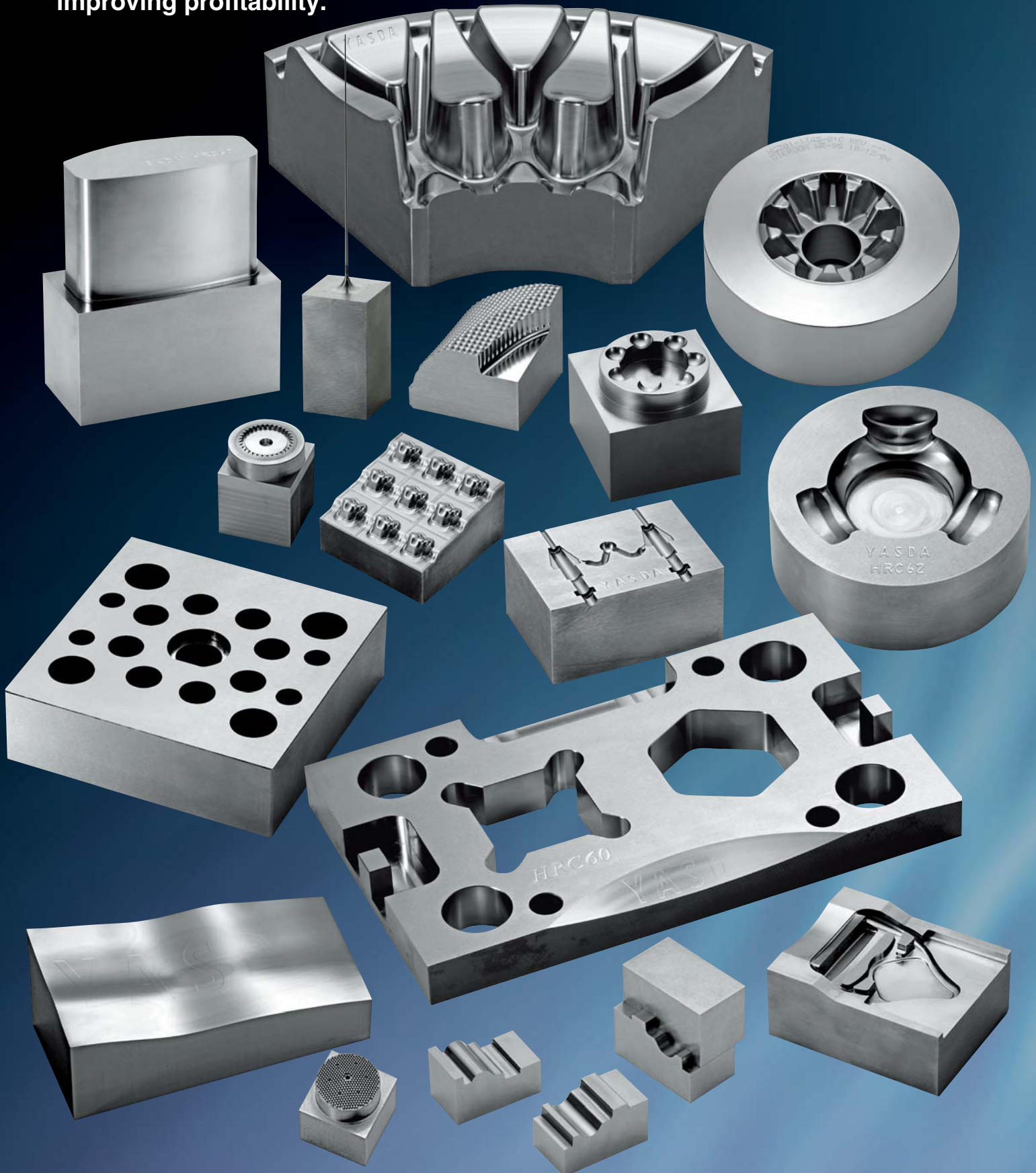
Cooling for ball screw bracket and saddle unit

Thermal distortion stabilizing system of YBM1218V



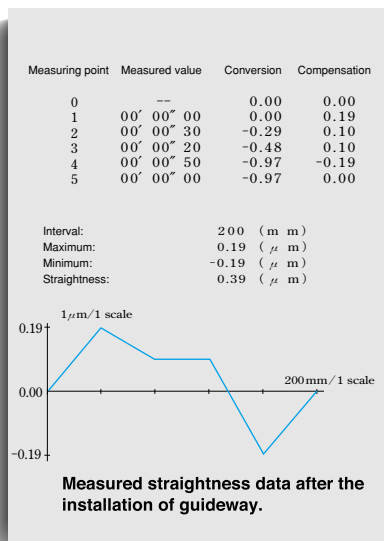
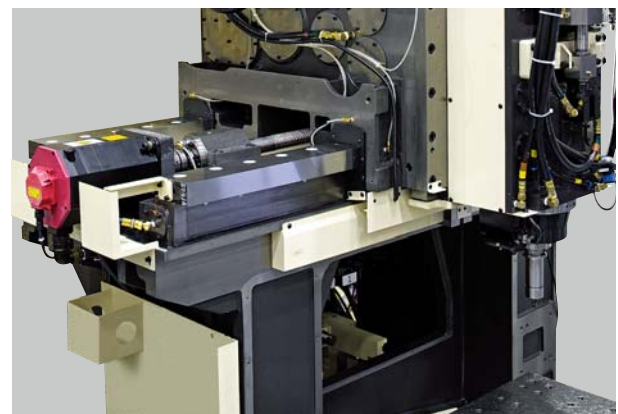
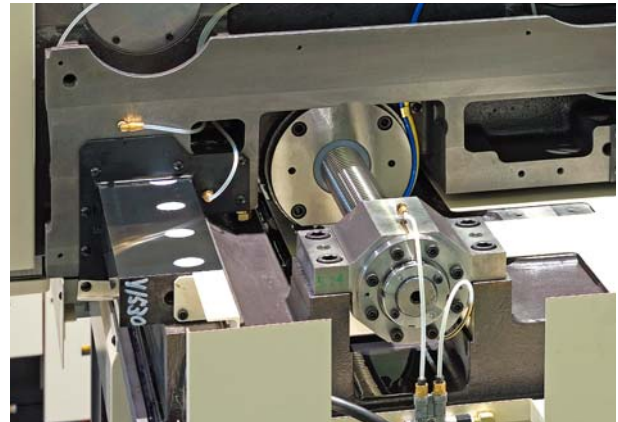
Cooling for ball screw bracket and cross rail unit

Die and Mold samples created by YASDA CNC JIGBORER V SERIES
Hard milling: Machining from solid blocks and finishing high precision dies and molds. This results in saving total processing time and cost as well as improving profitability.



The state of the art: YASDA mechanical construction supporting highest accuracy

● Carefully finished hardened guide ways are mounted precisely on the hand scraped machine base. YASDA commits itself with skilled know-how to finishing perfectly smooth and precise guide ways, and mounting these on the carefully hand-scraped machine base. Guide ways are through hardened and carefully lapped after grinding process to increase its surface roughness.

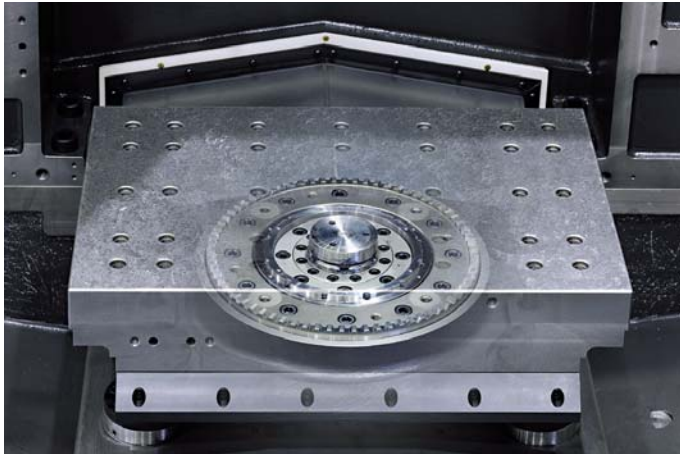


Positioning accuracy

YASDA CNC Jig Borer shows error of positioning accuracy $1\mu\text{m}$ or less in $10\mu\text{m}$ step feed. This accuracy performance proves that each axis is smoothly controlled without stick slip and that the performance of the machines is outstandingly reliable. Longer tool life and smooth finished surface of die and mold components are expected from this excellent result.

Positioning accuracy	
Measured value pitch : 20mm Unit : mm	
X-axis	
0~900	920~1800
Target	Error
0.0000	0.0000
20.0000	0.0004
40.0000	0.0002
60.0000	0.0000
80.0000	-0.0003
100.0000	-0.0001
120.0000	-0.0002
140.0000	0.0002
160.0000	0.0001
180.0000	-0.0002
200.0000	0.0000
220.0000	-0.0001
240.0000	-0.0005
260.0000	-0.0003
280.0000	-0.0001
300.0000	0.0000
320.0000	-0.0001
340.0000	0.0000
360.0000	-0.0002
380.0000	0.0000
400.0000	0.0000

Unit feed (1/100mm Step) Unit : mm		
X-axis	Y-axis	Z-axis
0.0000	0.0000	0.0000
0.0100	0.0100	0.0100
0.0200	0.0200	0.0200
0.0300	0.0300	0.0301
0.0400	0.0400	0.0400
0.0500	0.0500	0.0500
0.0599	0.0600	0.0600
0.0700	0.0700	0.0700
0.0801	0.0800	0.0800
0.0900	0.0900	0.0900
0.1000	0.1000	0.1000
0.0900	0.0900	0.0900
0.0799	0.0801	0.0799
0.0699		



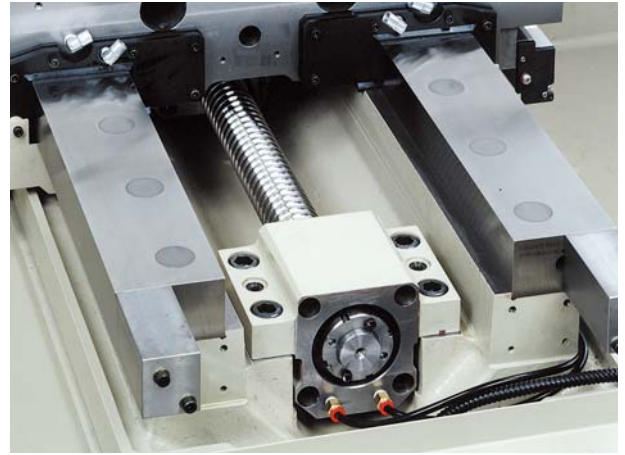
●Pallet chucking mechanism

YASDA pallet chucking system is designed with highly rigid pallet of 120mm thickness (in case of tapped holes surface) and it is supported by a large diameter curvic coupling mechanism (for YBM640V_{Ver.Ⅲ}).

① Top surface of the pallet, made of high quality cast iron, is precisely hand-scraped ensuring highest accuracy. The bottom of the pallet is flat and flexible to use with transporting system like automatic warehouse or FMS systems.

② Curvic coupling with large diameter is employed for pallet chucking system of YBM640V_{Ver.Ⅲ}. This curvic coupling system has 72 teeth with 30 degree engagement angle. When these teeth are engaged, the center of the curvic coupling is automatically located. By this design, high repeatability and rigidity of pallet change is assured.

●Diameter of curvic coupling
640V_{Ver.Ⅲ}.....φ 320mm

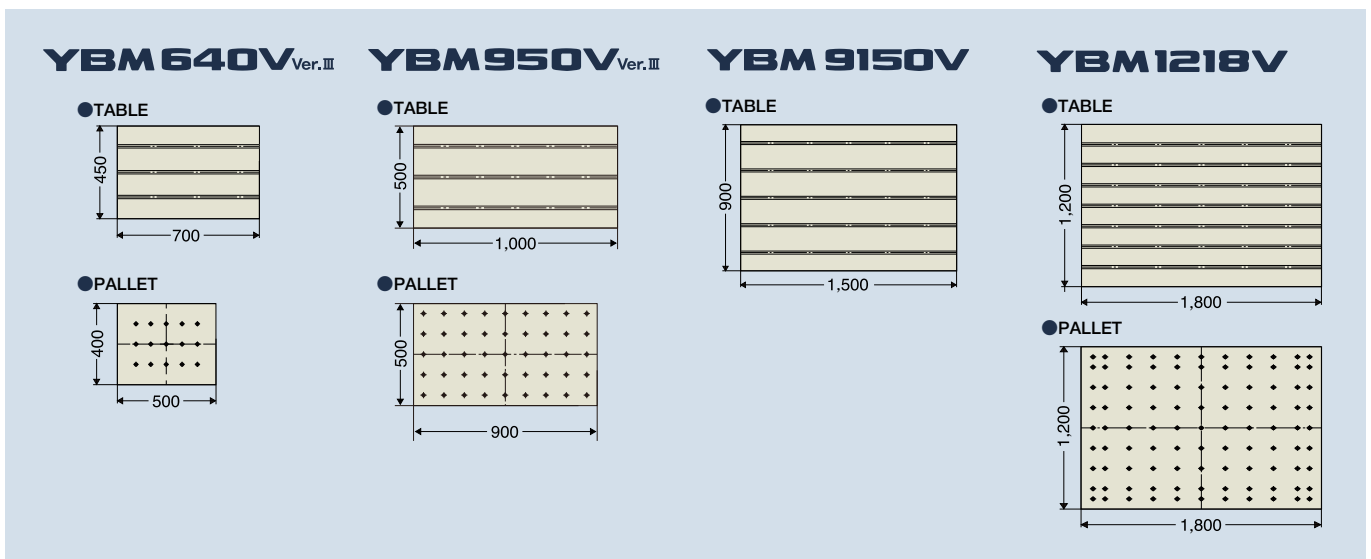


●Ball screw bracket

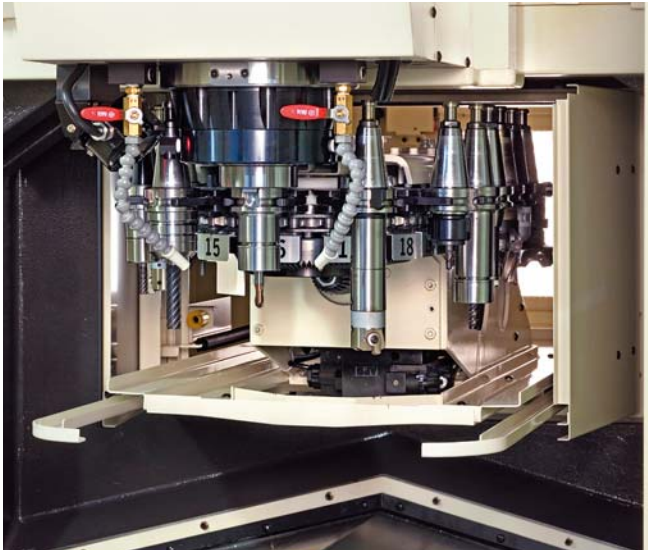
Brackets mating faces for ball screws are carefully hand scraped in order to maintain the ultimately right angle to the guide ways when the ball screws are assembled. By this process, high rigidity of thrust bearings are maintained and ensures outstanding performance with highest accuracy and reliability.

●Optical scale feedback

YASDA employs specially ordered optical scales for highly accurate positioning. These optical scales have minimum increment of 0.0001mm.



ATC (Automatic Tool Changer)



YBM640V Ver.Ⅲ / **950V** Ver.Ⅲ

Simple and armless changing system

Reliable armless tool changing system is employed for NT no. 40 tool change. Tools are changed directly with the stroke of tool magazine itself. Tool magazine is stored inside the machine behind the spindle, and automatic ATC door prevents chips and foreign objects coming to the tool magazine and putting on tool holders.

CHOICE 30 40

YBM1218V

Big tool capacity in a compact size

Maximum 240 tools are possible to store (option), ensuring enough capability in automation like pallet changing system.

CHOICE 32 60 120 180 240



YASDA employs large diameter curvic coupling for APC and ensure highest repeatability in pallet changing all the time, which is vital for automatic pallets management.

PLS (Preload Stand) is designed for easier work setting, and enables managing more works automatically with the same high accuracy.

APC

PLS

YBM640V Ver. III



YBM640V Ver. III
5PLS



YBM950V Ver. III



YBM950V Ver. III
4PLS



SPECIFICATIONS

1. Standard specifications of base machines	YBM640V _{Ver.Ⅲ}	YBM950V _{Ver.Ⅲ}	YBM9150V	YBM1218V
1) Travel				
X-axis travel	600mm	900mm	1,500mm	1,800mm
Y-axis travel	400mm	500mm	900mm	1,200mm
Z-axis travel	350mm	350mm	450mm	600mm
Distance from table surface to spindle nose face	150~500mm	200~550mm	150~600mm	200~800mm
2) Table				
Table working surface	700×450mm	1,000×500mm	1,500×900mm	1,800×1,200mm
Table loading capacity	300kg	800kg	3,000kg	4,000kg
Table surface configuration	width18mm, pitch125mm	width18mm, pitch150mm	width18mm, pitch150mm	width22mm, pitch150mm
3) Spindle				
Type	SA40-24000-18.5 Preload self- adjusting system	SA40-24000-18.5 Preload self- adjusting system	SA40-24000-18.5 Preload self- adjusting system	SA50-10000-22 Preload self- adjusting system
Spindle speed range	100~24,000min ⁻¹	100~24,000min ⁻¹	100~24,000min ⁻¹	50~10,000min ⁻¹
Number of spindle speed ranges	Direct drive	Direct drive	Direct drive	Direct drive
Spindle drive motor	AC18.5/22kW (cont./15min. rating)	AC18.5/22kW (cont./15min. rating)	AC18.5/22kW (cont./15min. rating)	AC22kW (30min. rating)
Spindle nose taper	N.T.No.40	N.T.No.40	N.T.No.40	N.T.No.50
Spindle bearing inner diameter	φ65mm	φ65mm	φ65mm	φ100mm
4) Feedrate				
Rapid traverse rate	X-axis 20,000mm/min Y-axis 20,000mm/min Z-axis 20,000mm/min	X-axis 20,000mm/min Y-axis 20,000mm/min Z-axis 20,000mm/min	X-axis 20,000mm/min Y-axis 20,000mm/min Z-axis 20,000mm/min	X-axis 18,000mm/min Y-axis 18,000mm/min Z-axis 12,000mm/min
Feedrate	1~5,000mm/min	1~5,000mm/min	1~5,000mm/min	1~5,000mm/min
Jog feedrate	1~5,000mm/min	1~5,000mm/min	1~5,000mm/min	1~5,000mm/min
5) Automatic tool changer (ATC)				
Tool number	30 tools	30 tools	60 tools	32 tools
Type of tool shank	MAS BT40	MAS BT40	MAS BT40	MAS BT50
Type of pull stud	MAS P40T-1 (45deg.)	MAS P40T-1 (45deg.)	MAS P40T-1 (45deg.)	MAS P50T-1 (45deg.)
Max. dia. of tool	φ100mm	φ100mm	φ100mm	φ240mm
Max. length of tool	250mm	250mm	300mm	350mm
Max. mass of tool	7kg	7kg	7kg	20kg
6) Spindle head cooling system				
Coolant capacity	6,000W	6,000W	6,000W	6,000W
7) Cutting oil unit				
AA type: Flood nozzle type (2 nozzles)	○	○	○	○

8) Splash guard & Chip conveyor				
Manual door & Roof+Twin screw	○	○	○	○
9) NC unit	FANUC 31i-B5	FANUC 31i-B5	FANUC 31i-B5	FANUC 31i-B5
10) Mass of machine	8,000kg	11,000kg	16,000kg	29,000kg
11) Electric power supply	38kVA	38kVA	41kVA	64kVA

2. Standard equipments	YBM640V_{Ver.Ⅲ}	YBM950V_{Ver.Ⅲ}	YBM9150V	YBM1218V
Optical scale feedback system X, Y & Z axes	○	○	○	○
Hydraulic unit	○	○	○	○
Auto lubricating unit for slideways	○	○	○	○
Auto power unit off	○	○	○	○
Thermal distortion stabilized system	Spindle head,Saddle	Spindle head,Saddle	Spindle head,Saddle	○
Leveling jack screw	○	○	○	○
Spot light	○	○	○	○
Standard machine color RAL 1013 (Oyster white)	○	○	○	○
Disassembling tool	○	○	○	○

3. Optional equipments	YBM640V_{Ver.Ⅲ}	YBM950V_{Ver.Ⅲ}	YBM9150V	YBM1218V
1) High-torque spindle				
Model SA40-10000-11 (Preload self-adjusting system)	—	—	○	—
Spindle speed range 50~10000min ⁻¹	—	—	○	—
2) High-speed spindle				
Model 30-30000-11	○	○	○	—
Spindle speed ranges 150~30000min ⁻¹	○	○	○	—
Spindle drive motor AC5.5/11kW(cont./ 5min. rating)	○	○	○	—
Spindle nose taper N.T.No.30	○	○	○	—
Spindle bearing inner diameter φ50mm	○	○	○	—
3) Automatic pallet changer (APC)				
Mass of unit	1,500kg	2,500kg	5,000kg	7,000kg
Safety guard for pallet changer	○	○	○	○
4) Preload stand (PLS)				
Number of pallet stands	5 stands	4 stands	—	—
Mass of unit	2,500kg	3,000kg	—	—
Automatic program search	○	○	—	—
Safety guard for PLS	○	○	—	—

5) Pallet	○	○	○	○
Pallet size	500×400mm 600×400mm	900×500mm	900×1,500mm	1,200×1,800mm
Pallet surface configuration M16 tapped holes	○	○	○	○
Thickness of pallet	110mm	100mm	120mm	200mm
Mass of pallet	200kg	300kg	1,400kg	2,300kg
6) Pallet chucking device	○	○	○	○
Pallet loading capacity	300kg	400kg	2,500kg	4,000kg
7) Automatic tool changer (ATC)				
Tool number	60 tools	60 tools	100 tools	60~240 tools
Max. dia of tool	φ100mm	φ100mm	φ100mm	φ100mm
Max. length of tool	250mm	250mm	300mm	350mm
Max. mass of tool	7kg	7kg	7kg	20kg
8) Cutting oil unit (AB type)				
AA type+piping for oil hole drill	○	○	○	○
9) High pressure cutting oil unit				
Spindle center through flood coolant type	○	○	○	○
Pump output pressure 6Mpa	○	○	○	○
Pump output pressure 3.5Mpa	○	○	○	○
Spindle flange through flood coolant type				
Pump output pressure 6Mpa	○	○	○	○
Pump output pressure 3.5Mpa	○	○	○	○
Air coolant (Spindle center through type)	○	○	○	○
Micro-fog coolant unit	○	○	○	○
10) Oil shower unit	○	○	○	○
11) Cutting oil temperature control unit	○	○	○	○
12) Automatic tool length compensation system & tool breakage sensing system	○	○	○	○
13) Auto-measuring system	○	○	○	○
14) Splash guard (with Pallet chucking device)				
Auto door+Roof	○	○	○	○
15) Chip conveyor	○	○	○	—
16) Thermal distortion stabilized system	○	○	○	—
17) HAS-3 system / YASDA (Highly Accurate & Speedy machining system)				
Feedrate	1~12,000mm/min	1~12,000mm/min	1~12,000mm/min	1~10,000mm/min

※ All specifications are subject to change without notice.

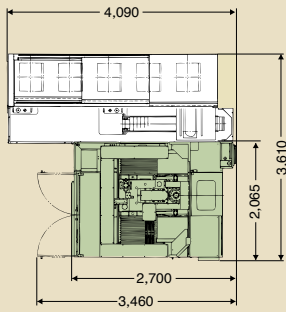
※ The photos appeared in this catalogue may differ from those of standard specifications.

※ Colors of the machines or their parts in this catalogue are not exclusively YASDA's standard.

OUTLINE UNIT : mm

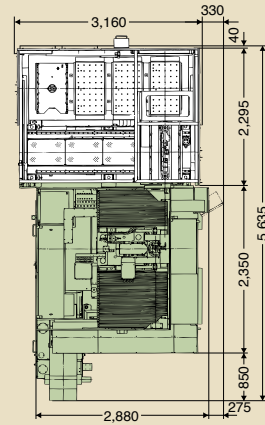
YBM640V_{Ver.Ⅲ}

STANDARD
M/C HIGHT(F.L.) : 3,100mm
5PLS
M/C HIGHT(F.L.) : 3,250mm



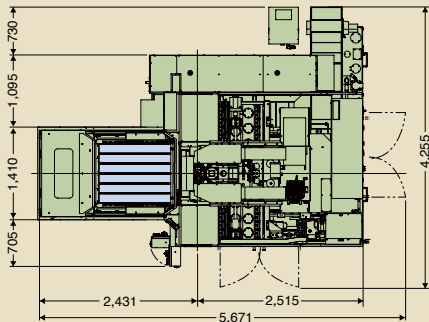
YBM950V_{Ver.Ⅲ}

STANDARD
M/C HIGHT(F.L.) : 3,225mm
4PLS
M/C HIGHT(F.L.) : 3,375mm



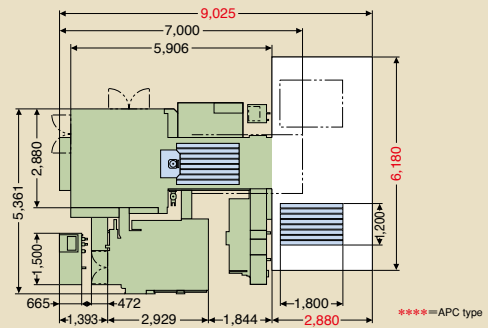
YBM 9150V

STANDARD
M/C HIGHT(F.L.) : 3,385mm
2APC
M/C HIGHT(F.L.) : 3,635mm



YBM1218V

STANDARD
M/C HIGHT(F.L.) : 4,420mm
2APC
M/C HIGHT(F.L.) : 4,841mm



YASDA

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