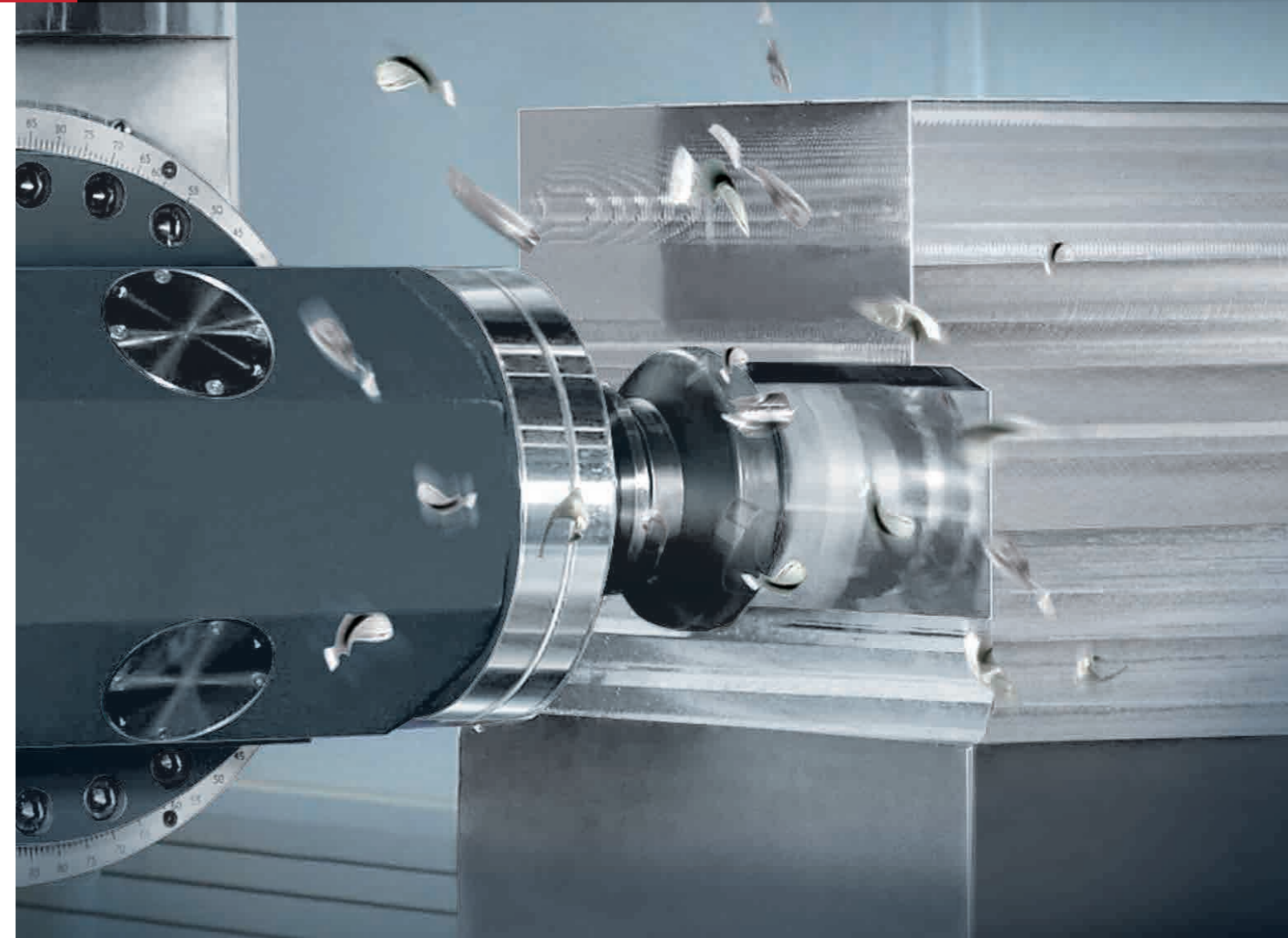


HTP
series

HTP SERIES

Super Rigid Bridge Type Machining Centers



AWEA MECHANTRONIC CO.,LTD.

HEADQUARTERS

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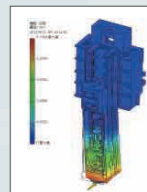


The highly rigid HTP series is equipped with a high torque spindle for outstanding heavy cutting performance. It can easily increase the chip removal rate, reduce cycle time and complete tough material machining easily.

Strong spindle unit structure

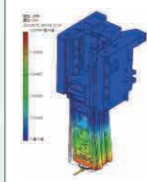
- The U-shaped saddle design with four linear guideways and ten sliding blocks supporting the Z-axis gives the spindle head firm support. Even with the Z-axis fully extended, the machine can still maintain excellent machining accuracy.

The rigidity of the head structure has been increased by **40%↑**



Standard Machine

- Load : 5,000N
- Max. displacement : 0.1269 mm



AWEA HTP Series Machines

- Load : 5,000N
- Max. displacement : 0.0744 mm

Best linear guideway arrangement

- High quality 4 linear guideways supporting the X-axis and 3 guideways supporting the Y-axis allow the HTP series to easily surpass its competition in structural rigidity, table load and accuracy.

Flexible multi-face machining capability

- An automatic head changer and a two positions ATC system are optional upgrades for improved multi-face machining.
- A new generation of in-house made attachment heads is available now. (see P. 9)

Exceptional capability of chip removal and cooling

- Standard two coil type chip augers and a caterpillar type chip conveyor efficiently remove chips. The 1000L coolant tank effectively reduces cutting fluid heating, thus ensuring better machining accuracy.



(HTP-4025Y with optional universal A / C axes milling head)

Finite Element Analysis

Employing the Finite Element Analysis (FEA) in the design process assures optimal rigidity and helps reducing the machine weight.

Precision hand scraping

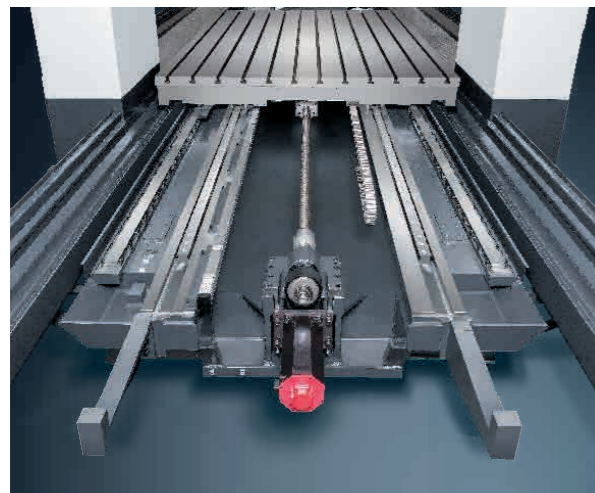
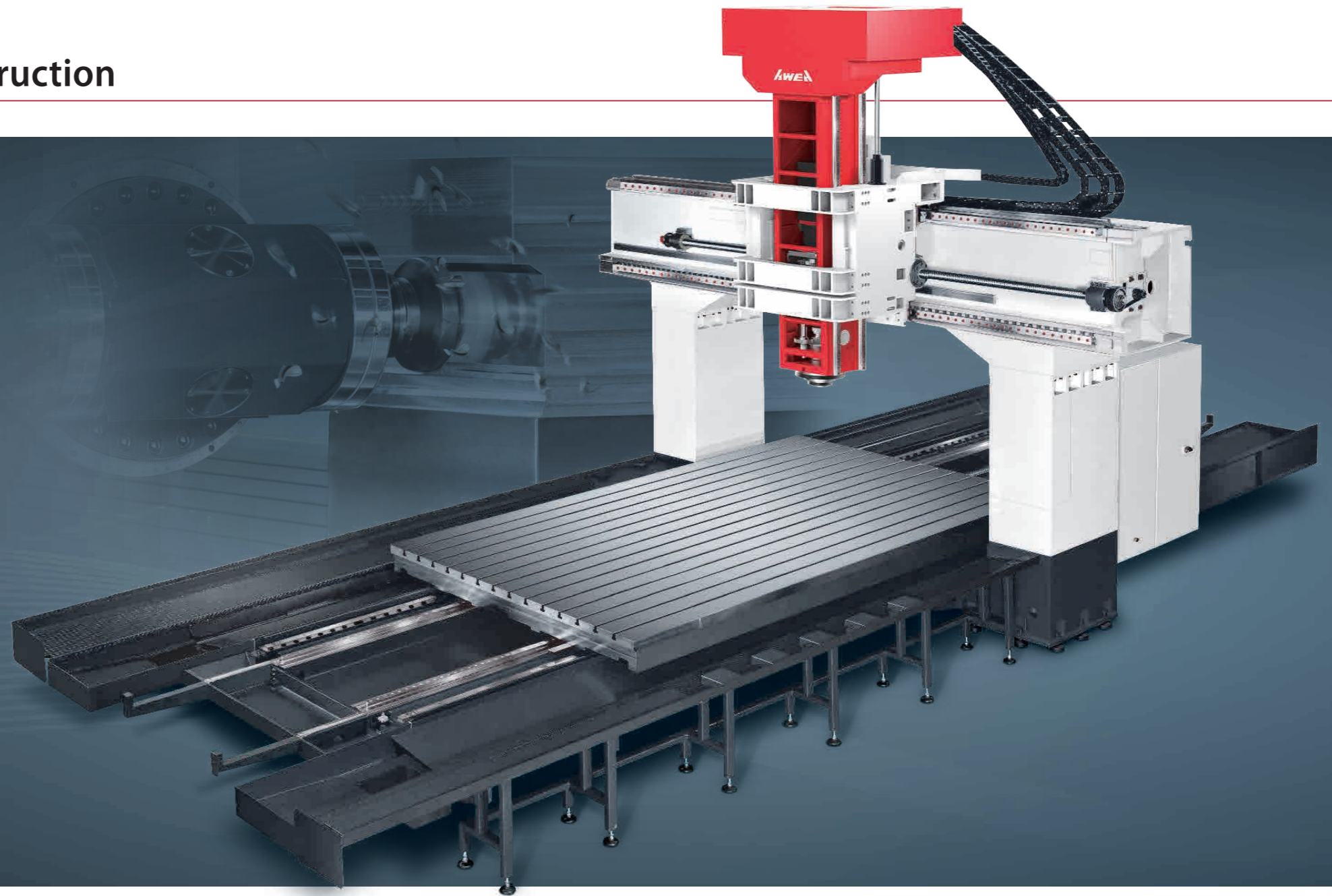
The contact surfaces of column, base, cross beam and all sliding members are precision hand scraped to provide maximum assembly precision, structural rigidity, and optimal load distribution.

Roller type linear guide ways

Super rigid roller type linear guide ways on all three axes provide support for heavy-duty cutting and fast, low friction movements.

Precision feedback system

The semi-closed loop system with encoders directly connected to the ball screws ensures high repeatability and positioning accuracy.



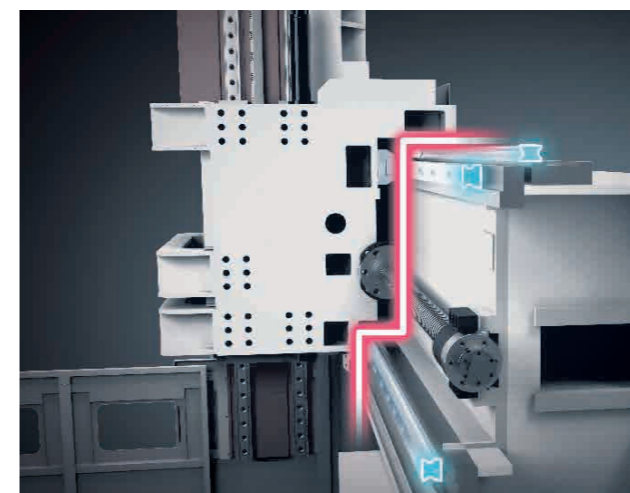
4 guide ways on base

4 guideways on base (X-axis)

Compound 4 guideways design for maximum structural support and to reduced work table over hang.

Symmetric support center-driven table

Wide span symmetrical center-driven X-axis design with the ball screw placed in the center of the table to provide high precision axial feeding.



Three guide ways headstock support

3 guideways Y-axis support

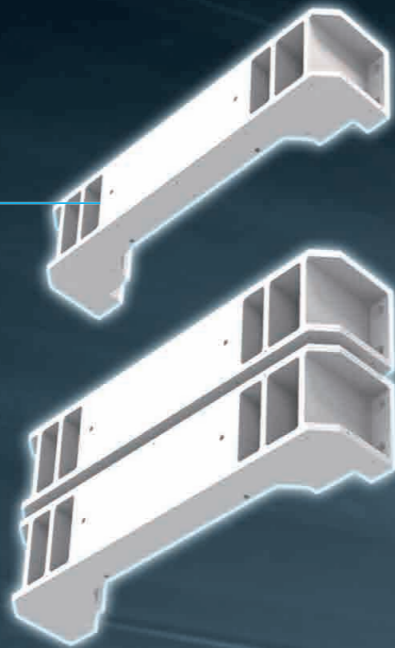
The stepped offset three guideways design of the Y-axis further enhance the rigidity. The new design effectively reduces the distortion due to headstock weight and significantly improves the rigidity for heavy cutting.

Closed loop counterbalance unit

The environmentally friendly closed loop hydraulic counterbalance system enables excellent dynamic movements.

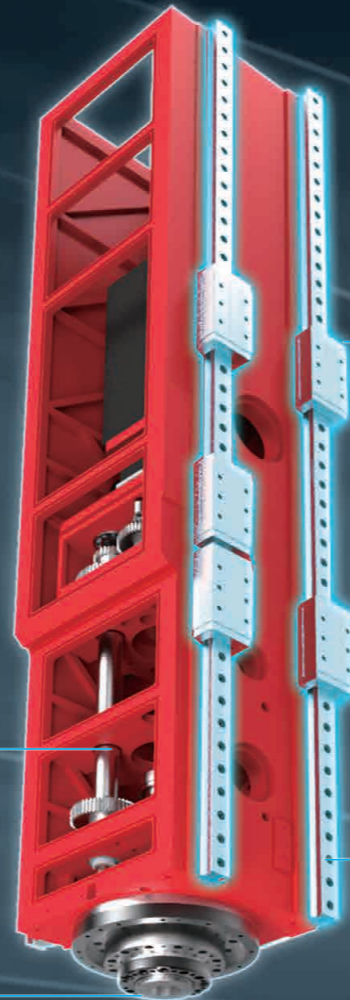
Saddle fixture

The saddle fixture provides additional support to prevent saddle deformation during heavy cutting.



Short transmission design

The gear head spindle is equipped with a newly designed short, highly rigid transmission shaft, enabling efficient power transmission suitable for heavy cutting.

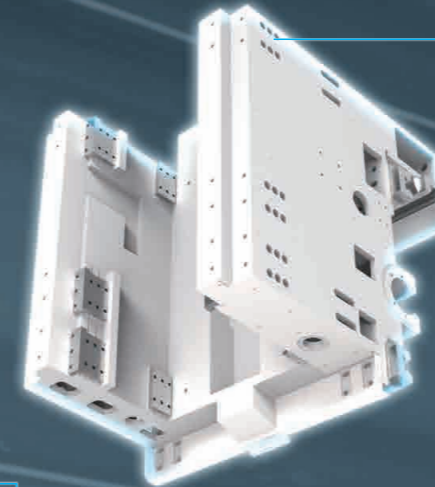


Position feedback

The linear guideway is equipped with a built-in high resolution magnetic encoder for ensuring accurate positioning.

U-shaped saddle

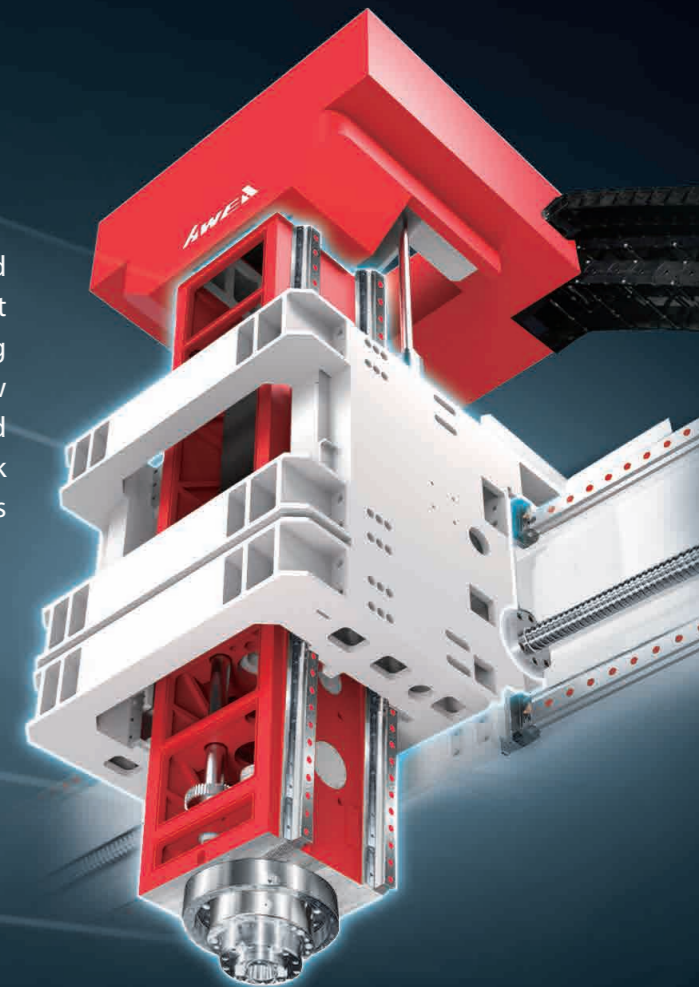
The newly designed U-shaped saddle is cast in one piece with strong ribbing to provide low weight, highly rigid support for the headstock that easily outperforms traditional designs.



Z-axis 4 linear guideway

There are two highly rigid roller type linear guideways on both sides of the headstock. They ensure the machine can still maintain excellent machining accuracy even when the Z-axis is fully extended.

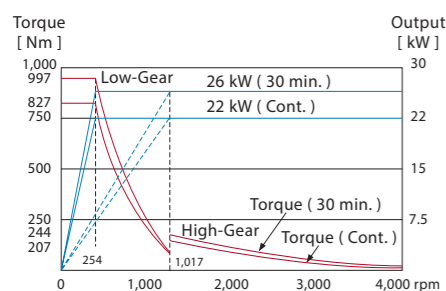
Super rigid spindle headstock structure



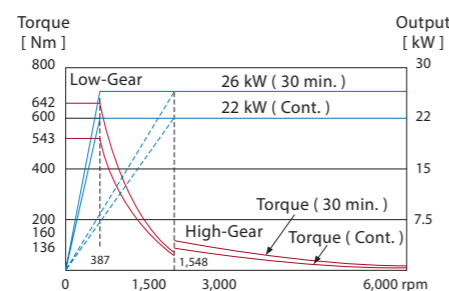
BBT dual contact spindle

The BBT dual contact spindle ensures the spindle taper and face maintain contact with the tool holder to better meet the needs of heavy cutting.

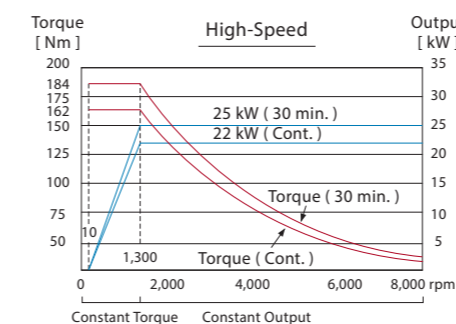
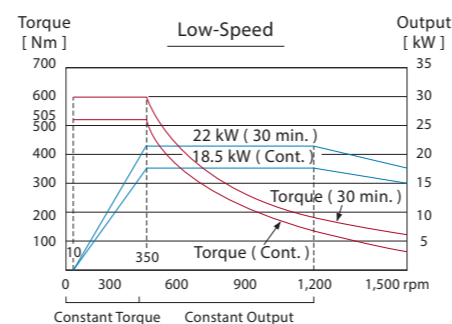
4,000 rpm Gear Spindle



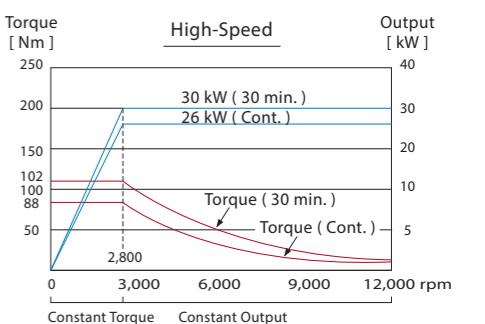
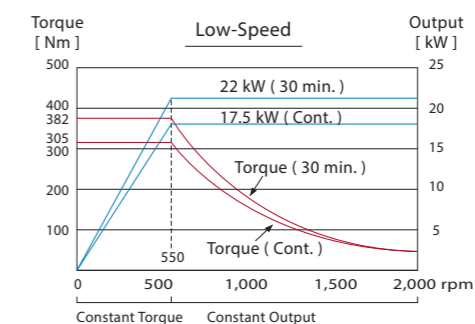
6,000 rpm Gear Spindle



8,000 rpm Built-in Motorized Spindle



12,000 rpm Built-in Motorized Spindle



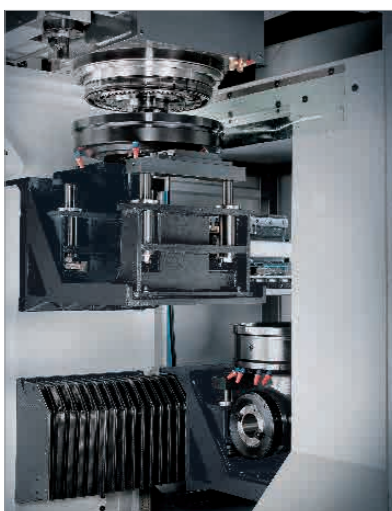
The optional automatic head changer and the vertical / horizontal ATC system enable the machine to perform highly efficient multi-face machining.

High efficiency automatic head storage magazine

- The two station automatic head storage system accommodates one cover and one 90° angle head. The system adopts linear guideways to achieve precise and fast head exchanges.
- The head changing system is attached to the column, thus reducing floor space.
- The magazine has an independent auto door that only opens during head exchanges to avoid chip and coolant contamination.

High reliability automatic vertical / horizontal ATC system

- The vertical / horizontal ATC system provides quick tool changes.
- Sensors and sequence scanning ensure safety and reliability.
- Standard 32 tools magazine; 40T / 60T / 90T / 120T magazine optional.



Automatic head storage compartment



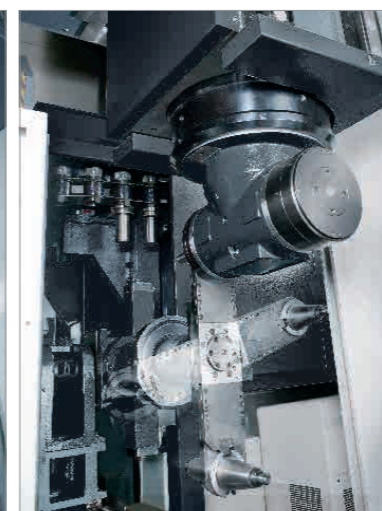
Automatic head storage compartment



Swing type head storage



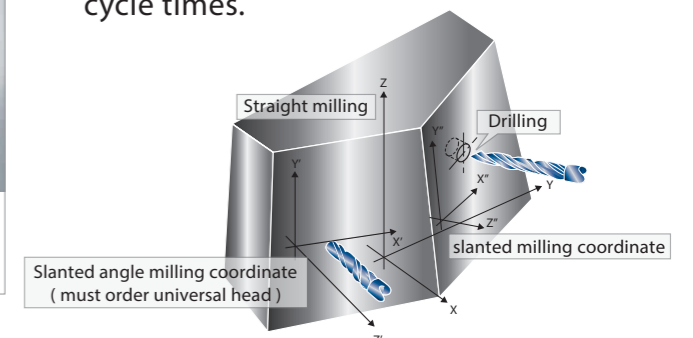
Vertical ATC



Horizontal ATC

Multi-face 3D coordinate rotation

The standard 3D coordinate transform function can adjust the coordinate system to fit different machining orientations according to machining requirements. This helps to reduce cycle times.





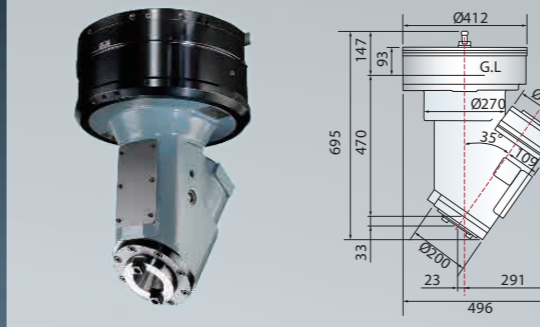
NEW GENERATION Automatic Milling Heads

The new generation milling heads designed and made by AWEA have comprehensive specifications and enhanced performance. Designed and built by AWEA for making seamless compatibility with the machines, enhancing reliability, performance, and accuracy all at the same time.

- Higher rpm options and increased max. speed
- Auto head changing and tool clamping available for the whole series
- CTS available for the whole series

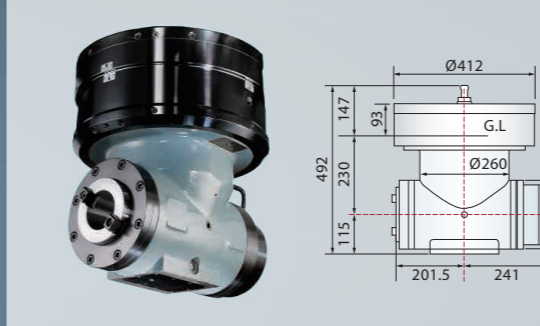
35° Head

(Unit : mm)



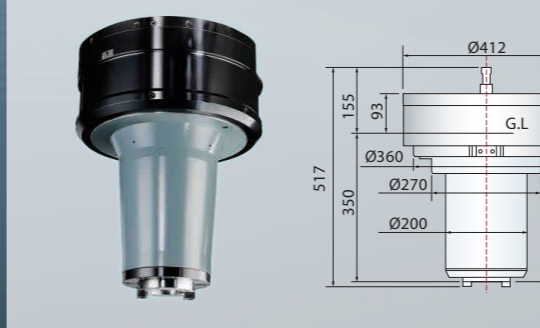
Automatic head clamp / tool clamp
C-axis automatic 5° / 2.5° indexing
Max. speed : 3,000 rpm / 4,500 rpm
Max. output : 22 kW (30 HP)
Optional CTS

90° Head



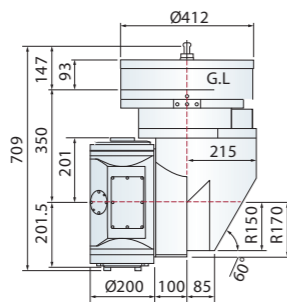
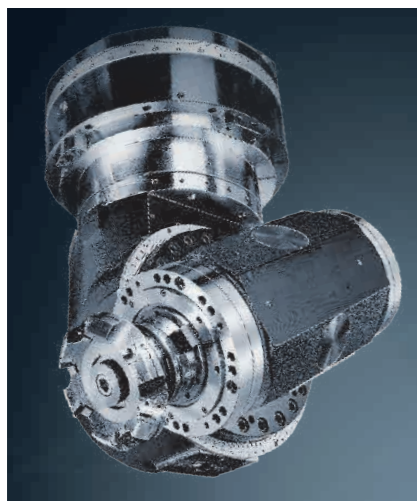
Automatic head clamp / tool clamp
C-axis automatic 5° / 2.5° indexing
Max. speed : 3,000 rpm / 4,500 rpm
Max. output : 22 kW (30 HP)
Optional CTS

Extension Head



Automatic head clamp / tool clamp
Max. speed : 3,000 rpm / 6,000 rpm
Max. output : 22 kW (30 HP)
Optional CTS

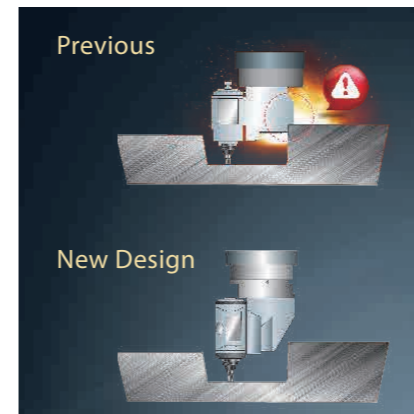
A / C axes automatic universal head



- Automatic head clamp / tool clamp
- Max. speed : 3,000 rpm / 4,500 rpm
- Max. output : 22 kW (30 HP)
- Optional CTS

| | A-axis | C-axis |
|--------------|---------------------|---------------------------------|
| Indexing | Auto 1° / 2.5° / 5° | |
| Rotary angle | ± 110° | 0° ~ 360° (Non-continuous) |

Compact layout design



The compact design reduces the interference between head and workpiece.

Finer degree indexing



A-axis degree indexing

5° [Std.] 2.5° / 1° [Opt.]

Better cooling and chip removal



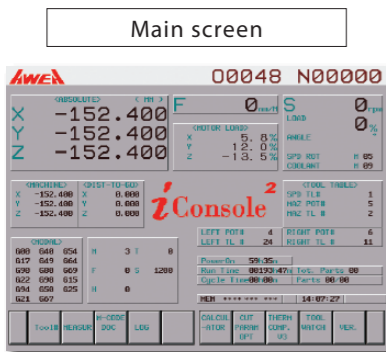
Coolant nozzle around spindle [Std.]

Coolant through spindle [Opt.]

i Console Optional

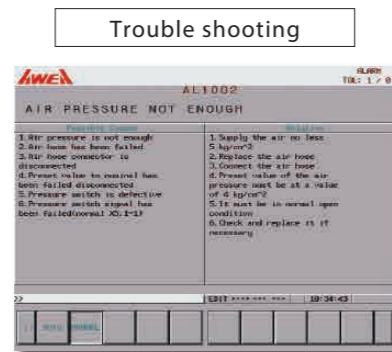
AWEA's self-developed *i Console* intelligent software enhancement system provides you with a user-friendly interface, real-time machine status information and diagnosis functions. It not only effectively reduces complex working processes but also enables intelligent machining abilities.

(For 10.4" LCD only)



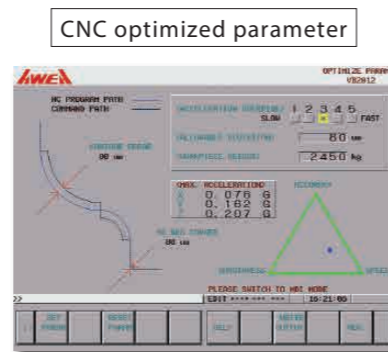
Main screen

- Instant messaging system **OPT.**
- Tool list
- Work-piece measurement
- M code
- Calculator
- CNC parameter optimization
- Spindle thermal compensation
- Adoptive feed control (AFC)



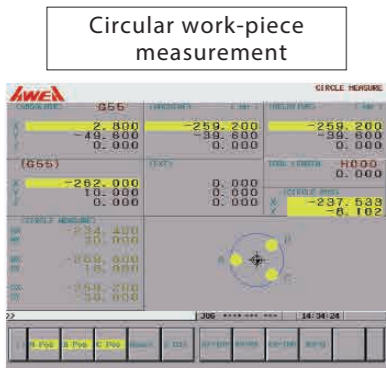
Trouble shooting

When an alarm appears, the program will display the cause for the alarm and a suitable troubleshooting procedure. Users can easily troubleshoot minor problems to avoid down time.



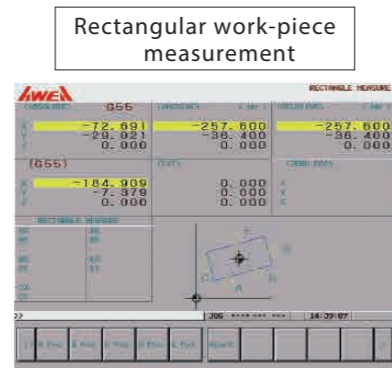
CNC optimized parameter

From rough cutting to fine machining, users can select different work modes, define the allowable tolerances and enter the weight of the work piece. Based on this input the *i Console* program will modify machining parameters to reduce machining time.



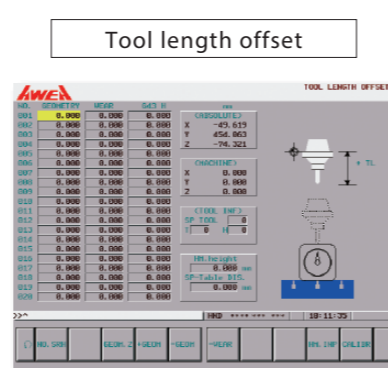
Circular work-piece measurement

By measuring the A, B, C three points coordinates the circular work-piece's center point can be correctly calculated.



Rectangular work-piece measurement

By measuring the A, B, C, D, and E five points coordinates, the rectangular work-piece's center point and slant angle can be calculated. Then the center point coordinate can be entered in the work-piece coordinate system.(G54 - G59)



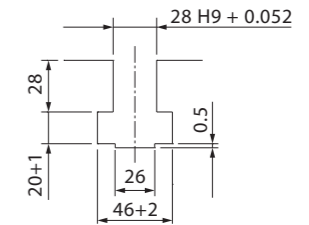
Tool length offset

After manually measuring the tool length, the controller will automatically calculate the tool tip position and enter the data into the tool length offset table.

Table Dimensions

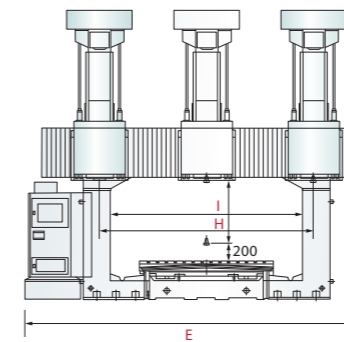
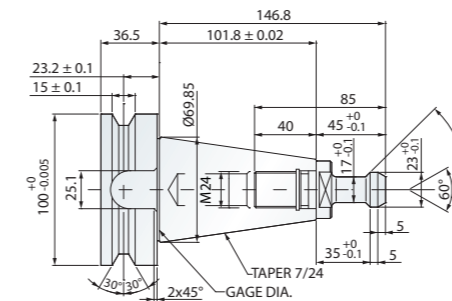


T-slot Dimensions

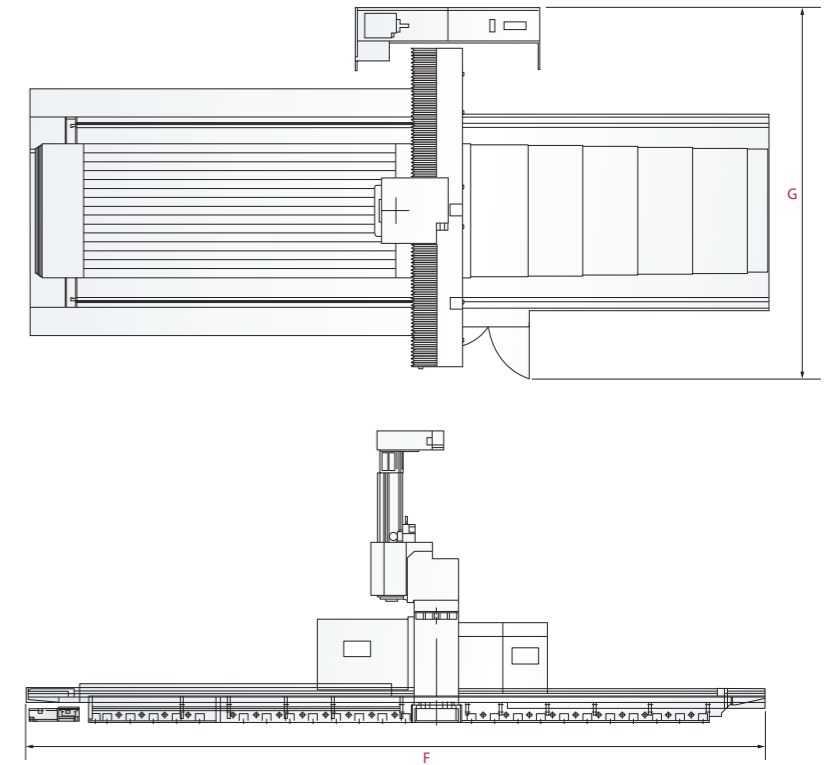


Tool Shank Dimensions

BBT50



Machine Dimensions



| Models | A | B | C | D | E | F | G | H | I |
|----------|-------|-------|-----|----|-------|--------|-------|-------|-------|
| HTP-4025 | 4,020 | 2,400 | 200 | 11 | 5,300 | 10,580 | 5,400 | 2,500 | 2,700 |
| HTP-5025 | 5,020 | 2,400 | 200 | 11 | 5,300 | 12,680 | 5,400 | 2,500 | 2,700 |
| HTP-6025 | 6,020 | 2,400 | 200 | 11 | 5,300 | 14,680 | 5,400 | 2,500 | 2,700 |
| HTP-4033 | 4,020 | 3,010 | 200 | 14 | 6,100 | 10,580 | 6,200 | 3,300 | 3,500 |
| HTP-5033 | 5,020 | 3,010 | 200 | 14 | 6,100 | 12,680 | 6,200 | 3,300 | 3,500 |
| HTP-6033 | 6,020 | 3,010 | 200 | 14 | 6,100 | 14,680 | 6,200 | 3,300 | 3,500 |
| HTP-7033 | 7,020 | 3,010 | 200 | 14 | 6,100 | 16,630 | 6,200 | 3,300 | 3,500 |
| HTP-4041 | 4,020 | 3,010 | 200 | 14 | 6,900 | 10,580 | 7,000 | 4,100 | 4,300 |
| HTP-5041 | 5,020 | 3,010 | 200 | 14 | 6,900 | 12,680 | 7,000 | 4,100 | 4,300 |
| HTP-6041 | 6,020 | 3,010 | 200 | 14 | 6,900 | 14,680 | 7,000 | 4,100 | 4,300 |
| HTP-7041 | 7,020 | 3,010 | 200 | 14 | 6,900 | 16,630 | 7,000 | 4,100 | 4,300 |

The information in this document is subject to change without notice.

HTP series | Specifications

| | | HTP-4025 | HTP-5025 | HTP-6025 | HTP-4033 | HTP-5033 | HTP-6033 | HTP-7033 | HTP-4041 | HTP-5041 | HTP-6041 | HTP-7041 |
|--|--------------------|--|-------------------------|-------------------------|-------------------------|------------------------------|-------------------------|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| SPECIFICATIONS | | | | | | | | | | | | |
| X-axis travel | mm | 4,000 | 5,000 | 6,000 | 4,000 | 5,000 | 6,000 | 7,000 | 4,000 | 5,000 | 6,000 | 7,000 |
| Y-axis travel | mm | 2,500 (3,200 Opt.) | | | 3,300 (4,000 Opt) | | | | 4,100 (4,800 Opt.) | | | |
| Z-axis travel | mm | 1,000 (1,200 / 1,400 Opt.) | | | | 1,000 (1,200 / 1,400 Opt.) | | | | | | |
| Dist. between columns | mm | 2,700 | | | 3,500 | | | | 4,300 | | | |
| Dist. from spindle nose to table top | mm | 200 ~ 1,200 (200 ~ 1,400 / 200 ~ 1,600 Opt.) | | | | | | | | | | |
| TABLE | | | | | | | | | | | | |
| Table size (X x Y) | mm | 4,020 x 2,400 | 5,020 x 2,400 | 6,020 x 2,400 | 4,020 x 3,000 | 5,020 x 3,000 | 6,020 x 3,000 | 7,020 x 3,000 | 4,020 x 3,000 | 5,020 x 3,000 | 6,020 x 3,000 | 7,020 x 3,000 |
| Table load capacity | kg | 15,000 | 18,000 | 20,000 | 15,000 | 18,000 | 20,000 | 20,000 | 15,000 | 18,000 | 20,000 | 20,000 |
| SPINDLE | | | | | | | | | | | | |
| Spindle taper | | BBT 50 (ISO 50) | | | | | | BBT 50 (ISO 50) | | | | |
| Spindle motor (Cont. / 30 min.) | kW | 22 / 26 (30 / 37 Opt.) | | | | | | 22 / 26 (30 / 37 Opt.) | | | | |
| Spindle speed | rpm | Gear Spindle 4,000 | | | | | | Gear Spindle 4,000 | | | | |
| FEED RATE | | | | | | | | | | | | |
| X-axis rapids feed rate | m/min. | 15 | 10 | 10 | 15 | 10 | 10 | 7.5 | 15 | 10 | 10 | 7.5 |
| Y / Z axes rapid feed rate | m/min. | 12 | | | | | | 10 | | | | |
| Cutting feed rate | m/min. | 1 ~ 10 | | 1 ~ 5 | | 1 ~ 10 | | 1 ~ 5 | | 1 ~ 10 | | 1 ~ 5 |
| TOOL MAGAZINE | | | | | | | | | | | | |
| Tool magazine capacity | T | 32 (40 / 60 / 90 / 120 Opt.) | | | | | | 32 (40 / 60 / 90 / 120 Opt.) | | | | |
| Max. tool length | mm | 350 | | | | | | 350 | | | | |
| Max. tool weight | kg | 20 | | | | | | 20 | | | | |
| Max. tool diameter / adj. pocket empty | mm | Ø127 / Ø215 | | | | | | Ø127 / Ø215 | | | | |
| ACCURACY | | | | | | | | | | | | |
| Positioning accuracy (JIS B 6338) | mm | ± 0.015 / Full Travel | | | | | | | | | | |
| Positioning accuracy (VDI 3441) | mm | P ≤ 0.030 / Full Travel | P ≤ 0.040 / Full Travel | P ≤ 0.050 / Full Travel | P ≤ 0.030 / Full Travel | P ≤ 0.040 / Full Travel | P ≤ 0.050 / Full Travel | P = 0.040 / Full Travel | P ≤ 0.030 / Full Travel | P ≤ 0.040 / Full Travel | P ≤ 0.050 / Full Travel | P = 0.040 / Full Travel |
| Repeatability (JIS B 6338) | mm | ± 0.003 | | | | | | | | | | |
| Repeatability (VDI 3441) | mm | Ps ≤ 0.025 | Ps ≤ 0.030 | Ps ≤ 0.035 | Ps ≤ 0.025 | Ps ≤ 0.030 | Ps ≤ 0.035 | Ps = 0.030 | Ps ≤ 0.025 | Ps ≤ 0.030 | Ps ≤ 0.035 | Ps = 0.030 |
| GENERAL | | | | | | | | | | | | |
| Coolant tank capacity | liter | 1,000 | | | | | | 1,000 | | | | |
| Lubrication oil tank capacity | liter | 6 | | | | | | 6 | | | | |
| Hydraulic tank capacity | liter | 100 | | | | | | 100 | | | | |
| Pneumatic pressure requirement | kg/cm ² | 5 ~ 8 | | | | | | 5 ~ 8 | | | | |
| Power requirement | | AC 220 ± 10 % Vac | | | | | | AC 220 ± 10 % Vac | | | | |
| Machine weight | kg | 41,000 | 45,000 | 49,000 | 43,000 | 47,000 | 51,000 | 61,000 | 45,000 | 49,000 | 53,000 | 64,000 |

Specifications are subject to change without notice.

Standard Accessories

- Spindle 2-step gear box
- Spindle air curtain
- Centralized automatic lubricating system
- 4 pcs splash guard
- Twin hydraulic counter weight cylinders
- Three axes anti-crash mechanism
- Three axes external codec semiclosed feedback
- Coolant system with pump and tank
- Two coil type chips augers
- Caterpillar type chip conveyor and bucket
- Rigid tapping
- Spindle oil-air lubricant collecting device
- Foundation bolt kit
- Footswitch for tool clamping
- RS232 interface

Optional Accessories

- Status signal lamp
- Air gun
- Automatic power-off system
- 5,000 / 6,000 rpm gear spindle
- 6,000 / 8,000 / 12,000 rpm built-in motorized spindle
- Z travel extension : 1,200 / 1,400 mm
- Attachment head (Automatic) : 35° / 90° / Extension / Universal Head
- Spindle thermal compensation
- Coolant through spindle (Form A)
- Automatic tool length measurement
- Automatic work-piece measurement