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**FAIR FRIEND ENTERPRISE CO., LTD.**

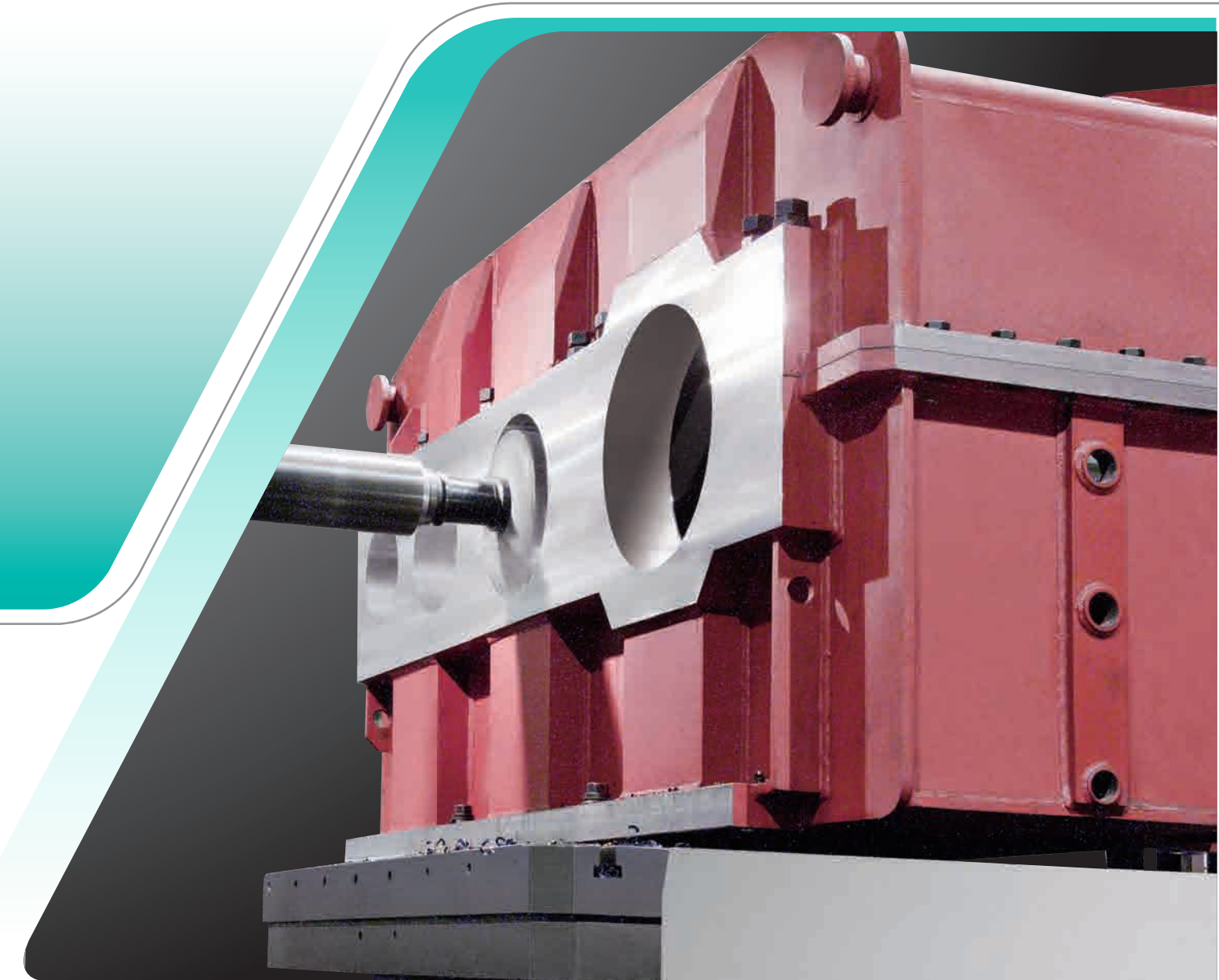
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# SHB *SERIES*

CNC Horizontal Boring &  
Milling Machine

# Boring and Milling Machine A Tradition of Excellence

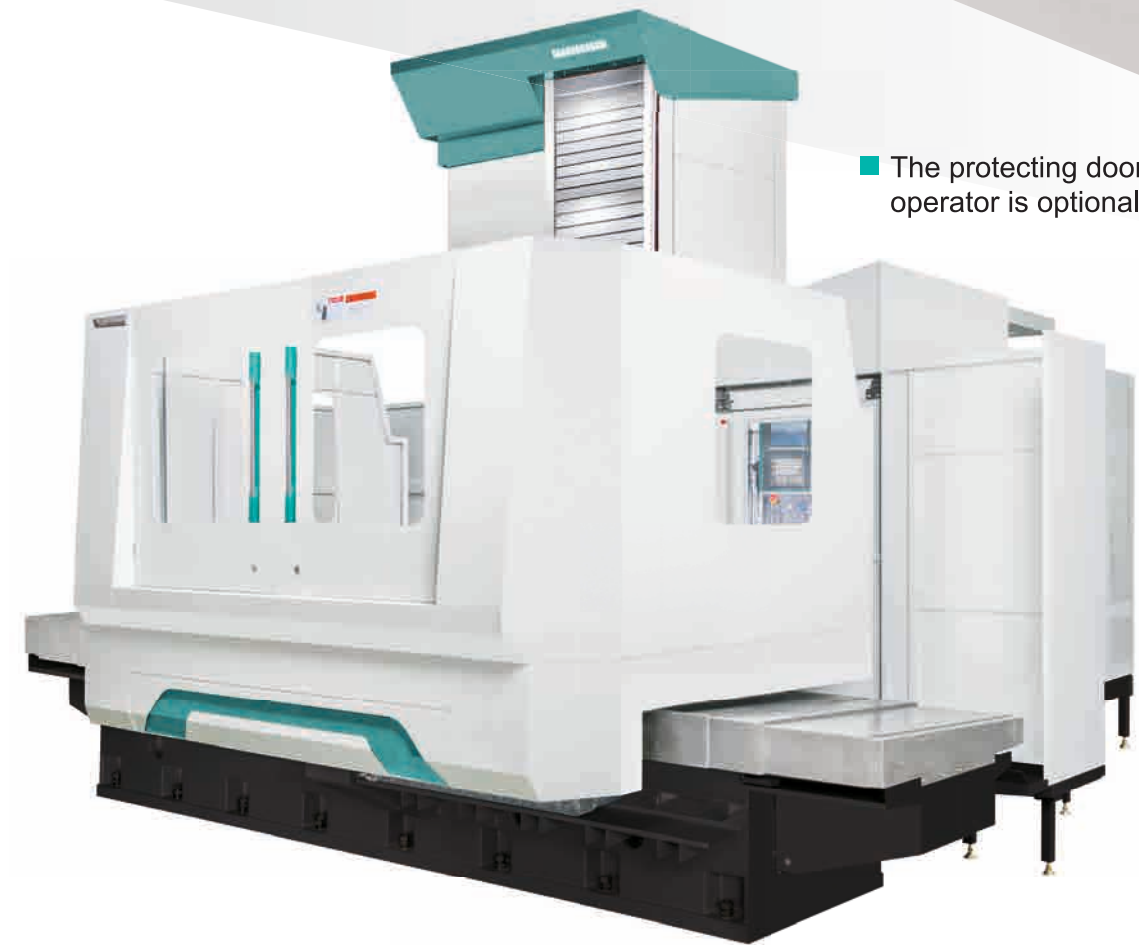
Full range of boring machine could meet customer demands,  
each machine has customer expected features!



■ The protecting door for operator is optional.

## SHM-11020RF

- Column fixed
- Rotary table 0.001°
- Table size 1200 x 1000 mm
- W-axis travel 400 mm
- Three axis box way



■ The protecting door for operator is optional.

## SHB-130XXRS/RM/RL

- W=130mm
- Column Moving
- Rotary table 0.001°
- Table size
  - RS: 1600 x 1400 mm
  - RM: 2000 x 1800 mm
  - RL: 3200 x 1800 mm
- W-axis travel 700mm (Opt. 900) mm

## SHB-110XXRS/RM

- W=110mm
- Column Moving
- Rotary table 0.001°
- Table size
  - RS: 1600x1400mm
  - RM: 2000x1800mm
- W-axis travel
  - RS: 500mm (Opt.: 700mm)

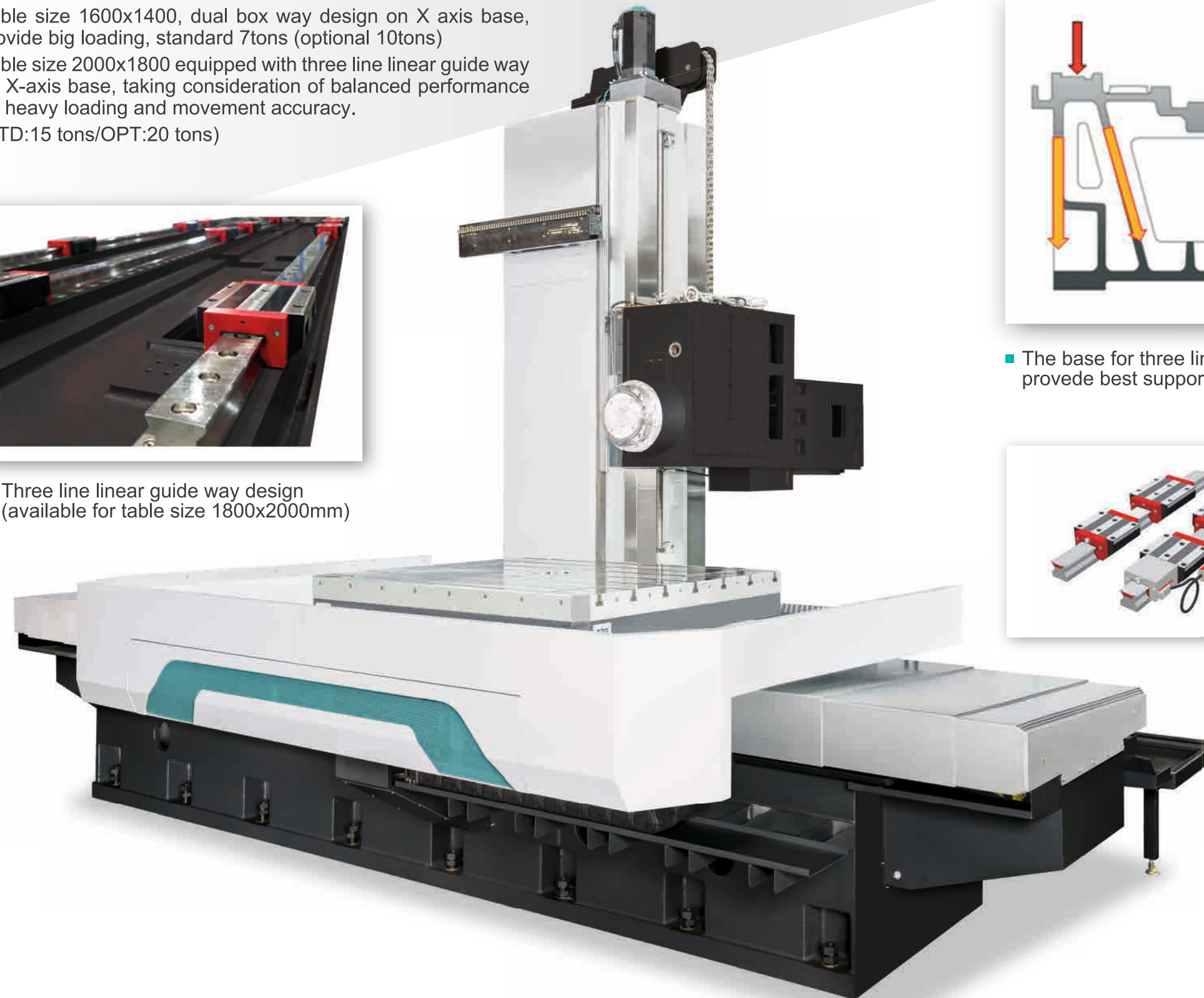
# Stable Base Structure

## Provide Steady Suport of Heavy Loading

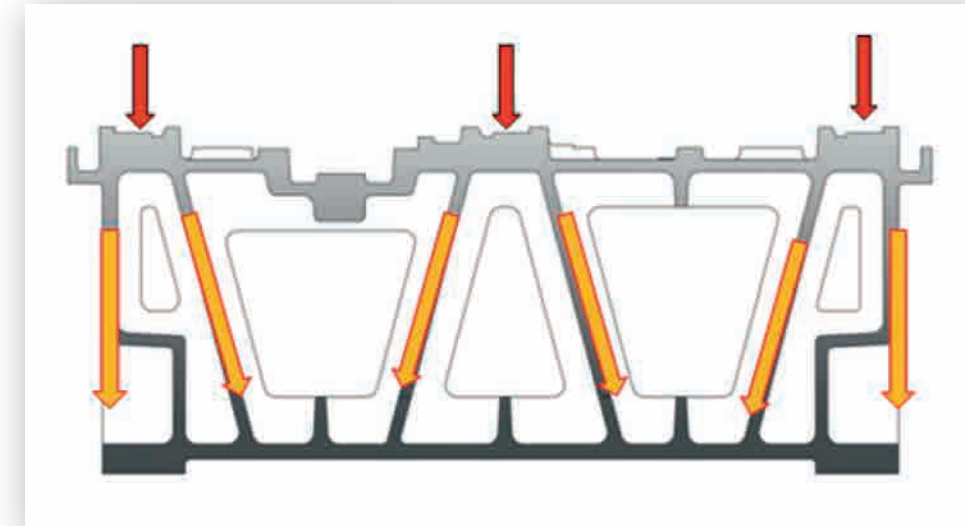
- Full structure with casting iron to meet all kinds of using demands
- Table size 1600x1400, dual box way design on X axis base, provide big loading, standard 7tons (optional 10tons)
- Table size 2000x1800 equipped with three line linear guide way on X-axis base, taking consideration of balanced performance on heavy loading and movement accuracy. (STD:15 tons/OPT:20 tons)



- Three line linear guide way design (available for table size 1800x2000mm)



- Modularize design to meet various demands
- With years of experience, Sanco R&D team improved detail design (include chip conveyor unit, drain(coolant), installation and commission, transportation and rigidity)



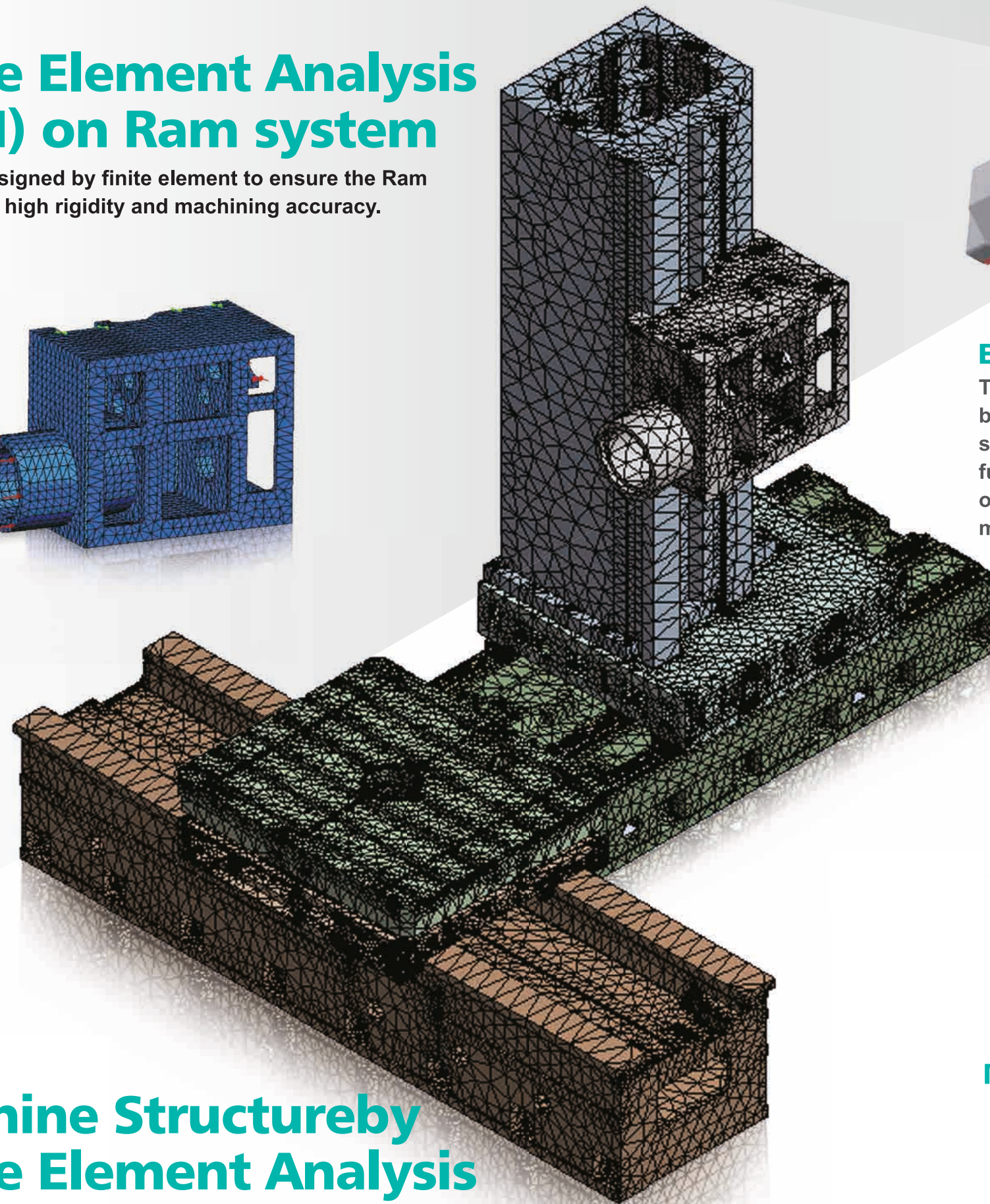
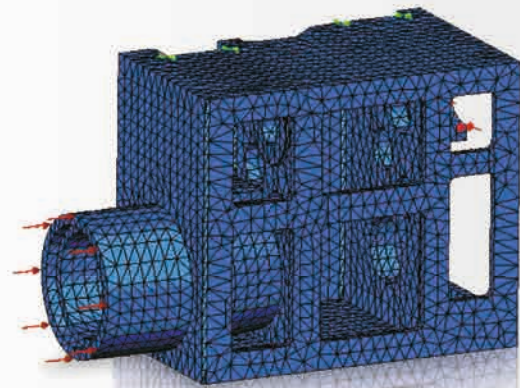
- The base for three line linear guide way use "3A" design, provide best support and strength. ( table size:2000mmx1800mm)



- X/Y/Z axis and rotary table equip with optical linear scale feedback system to ensure the accuracy. (Std.)

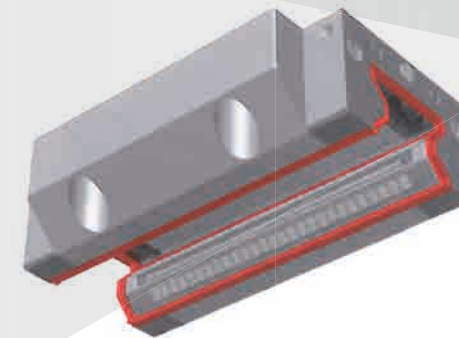
# Finite Element Analysis (FEM) on Ram system

The Ram designed by finite element to ensure the Ram system with high rigidity and machining accuracy.



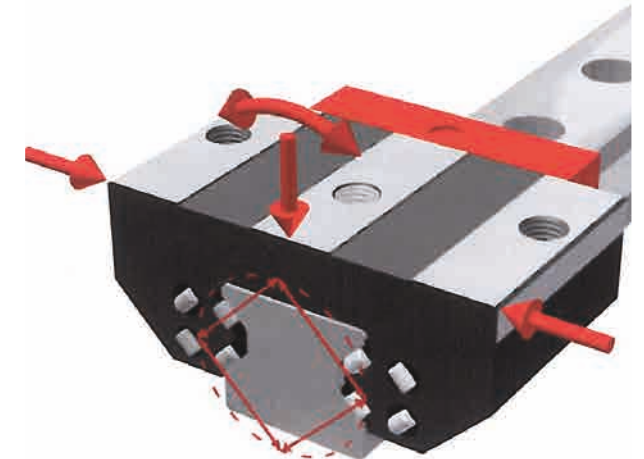
# Machine Structureby Finite Element Analysis

Horizontal Boring & Milling Machine, the main structural design all through Finite Element Analysis (FEM), ensure each machine with excellent rigidity, stability and good accuracy for long time.

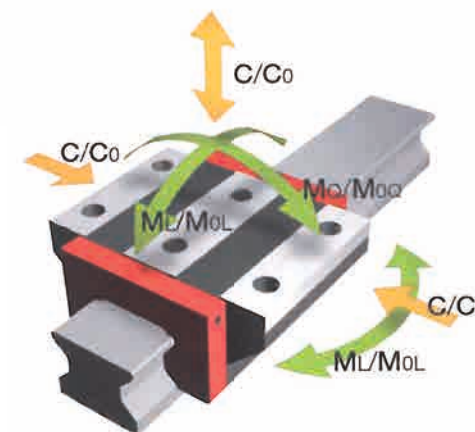


## Excellent Dust-proof Effects

The gap between front panel and body is protected by protective sheet, which provide a sealing function and prevent dust.Reduce oil consumption and extend the machine life.



## Features of the heavy linear guide way -Schneeberger (Swiss brand)



## MR65 Rated Load Chart

## Linear guide way use unique "O" type configuration

- Advanced "o" type configuration structure make the loading surface have better internal spacing. 90 ° offsets on roller guide way could absorb the force from all direction, and best support capacity to increase the movement rigidity.
- More blocks to be used to increase the loading capacity . Far superior to similar products.
- The dimension of each block(LxW): 251x126mm ( each line with 4 blocks on Z axis)

# Spindle System with High Dynamic Performance (SHB-SERIES)

FEELER horizontal boring machine can make machine to be universal, to complete the complex boring and milling job.

Spindle (W-axis) Material Processing capacity with extreme precision rendering



W axis and bearing system lubricated and cooled by Oil & Air system



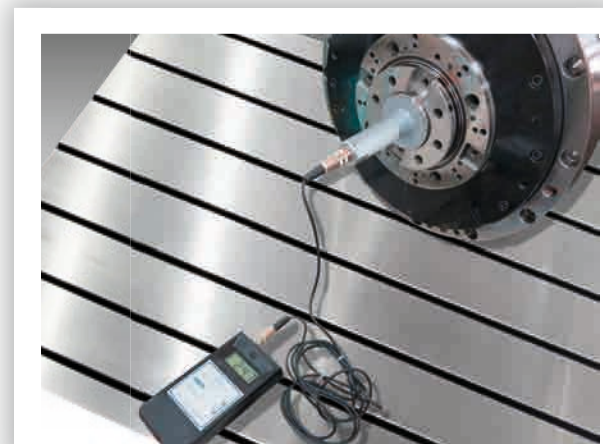
- New high dynamic spindle system equipped with oil & air lubrication system to reach high accuracy and long life.
- Lubrication system transmit lowest quantity of new oil to each bearing, thus inhibit bearing temperature rise and ensure long life of the spindle.

## Available for high dynamic spindle

Following years of professional experiences and skills on producing boring & milling machine, Feeler developed high movement speed, high-precision, long-life spindle system. Both Spindle and W-axis through Nitriding treatment, grinding and polishing to mirror grade, W axis heat distortion is hence minimized during running, particularly suitable for high speed and high dynamic applications.



■ The hardness test of W axis



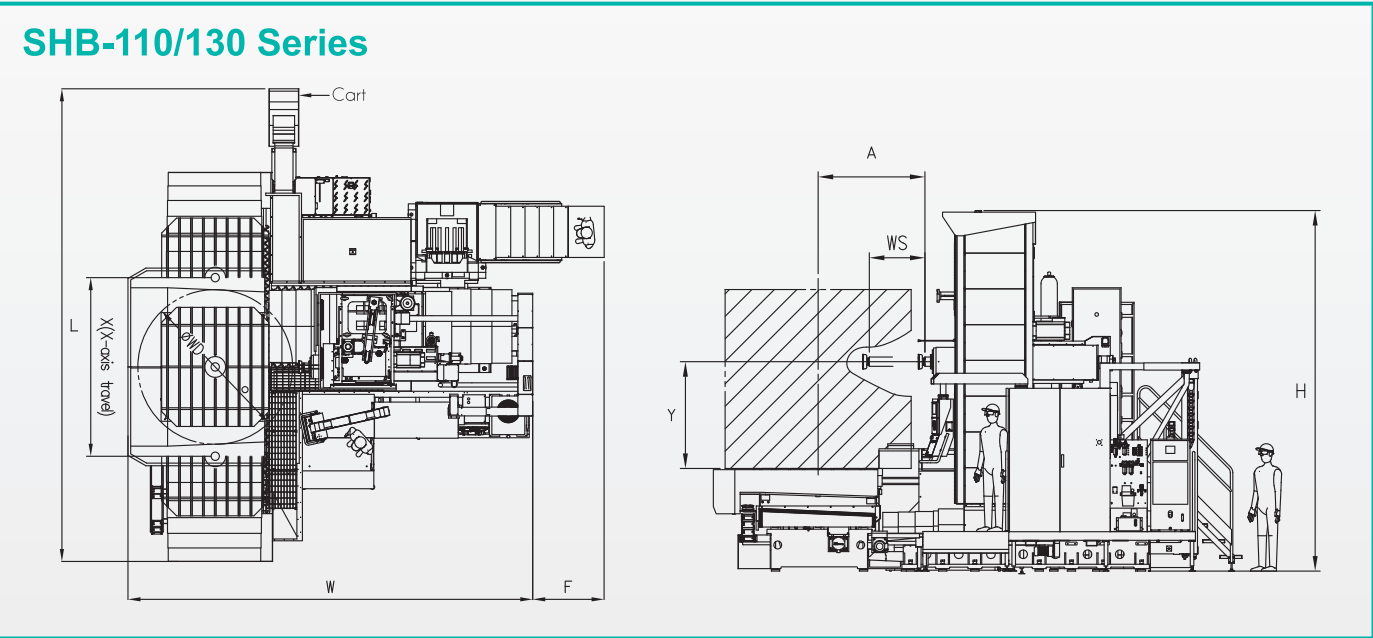
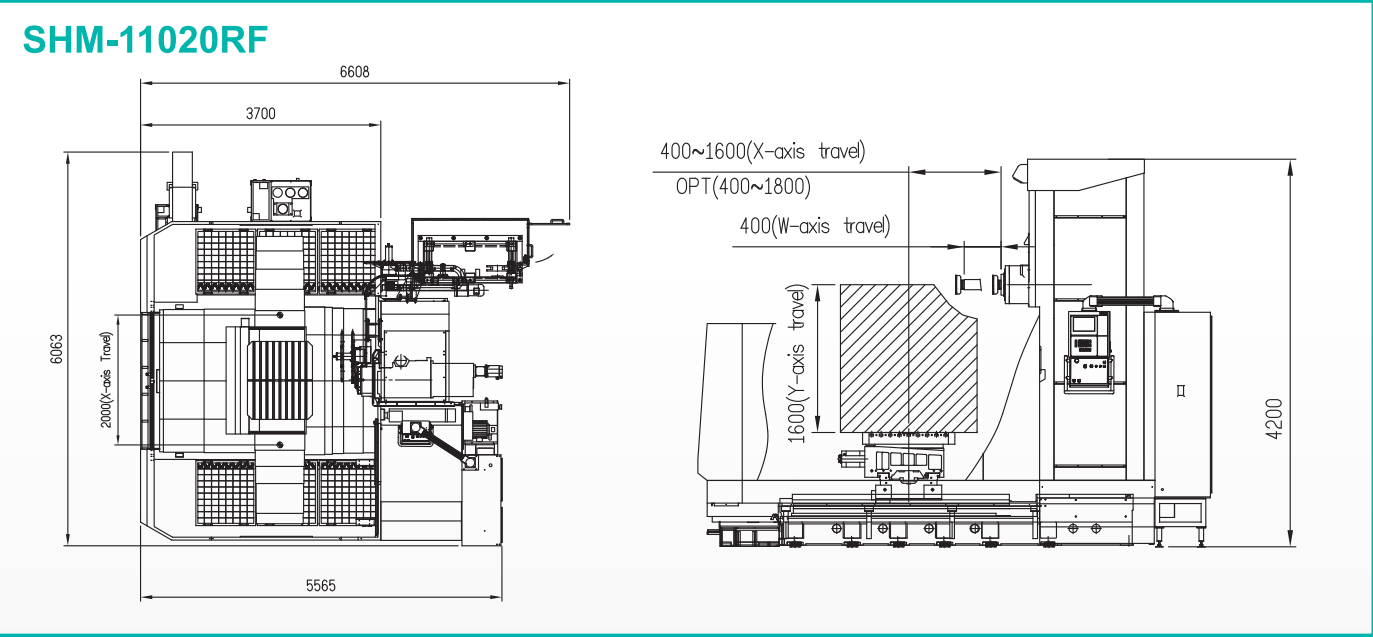
■ Pull force of W axis



■ W axis surface roughness test

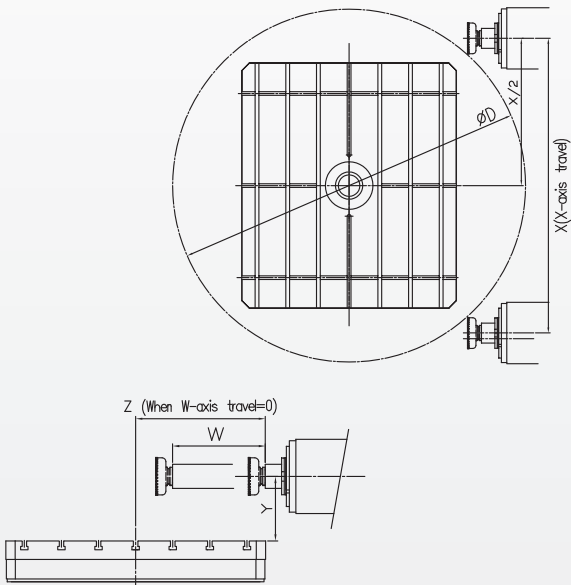
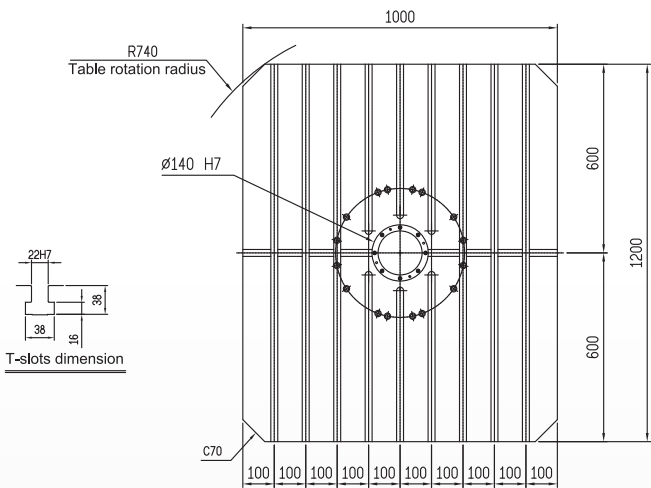


Machine Layout

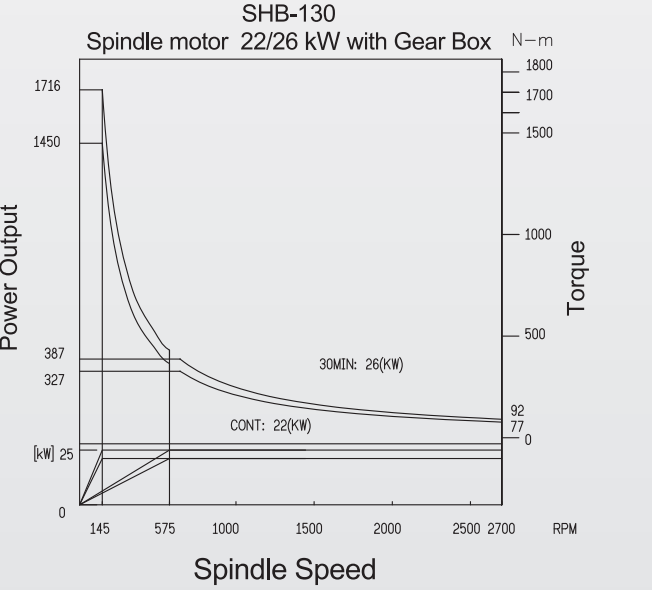
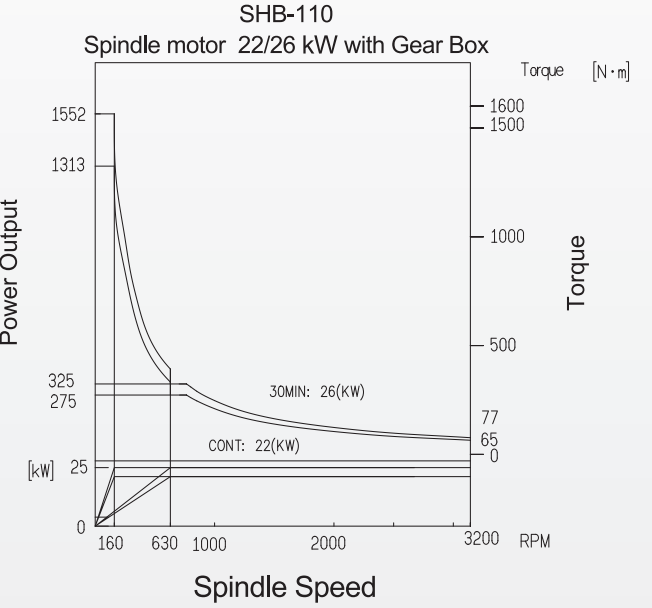
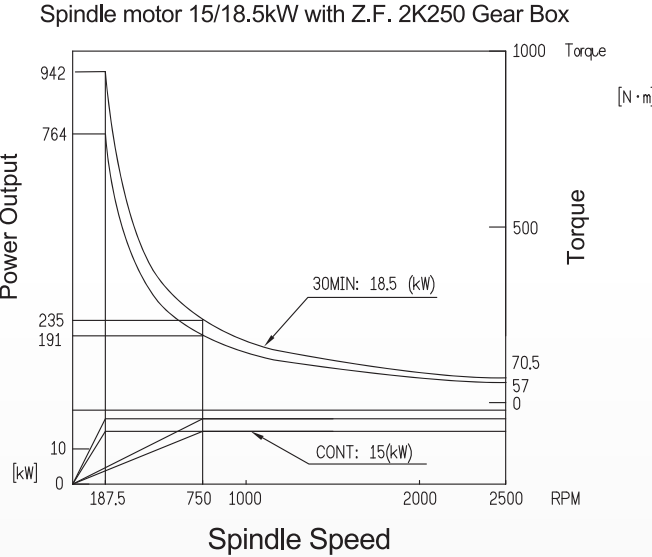


| SHB-Model | X-axis travel | Table Size  | W-axis travel=0 |           | Distance from table top to spindle center | Max. workpiece rotating diameter | W-axis travel |
|-----------|---------------|-------------|-----------------|-----------|-------------------------------------------|----------------------------------|---------------|
|           | X             |             |                 | Z=1,500   | Z=1,700                                   | Y-axis travel                    | WD            |
| 11025RS   | 2,500         | 1,600X1,400 | 500~2,000       | 500~2,200 | 1,800<br><br>(opt:2,000/2,300/2,500)      | Ø 2300                           | 500(700)      |
| 11030RS   | 3,000         |             |                 |           |                                           |                                  |               |
| 11040RS   | 4,000         |             |                 |           |                                           |                                  |               |
| 11030RM   | 3,000         | 2,000X1,800 | 785~2,285       | 785~2,485 |                                           | Ø 2,600                          | 700           |
| 11040RM   | 4,000         |             |                 |           |                                           |                                  |               |
| 13025RS   | 2,500         | 1,600X1,400 | 585~2,085       | 585~2,285 |                                           | Ø 2,300                          | 700(900)      |
| 13030RS   | 3,000         |             |                 |           |                                           |                                  |               |
| 13040RS   | 4,000         |             |                 |           |                                           |                                  |               |
| 13030RM   | 3,000         | 2,000X1,800 | 785~2,285       | 785~2,485 |                                           | Ø 2,600                          |               |
| 13040RM   | 4,000         |             |                 |           |                                           |                                  |               |
| 13030RL   | 3,000         | 3,200X1,800 |                 |           |                                           | Ø 2,600                          |               |
| 13040RL   | 4,000         |             |                 |           |                                           |                                  |               |

Table Size

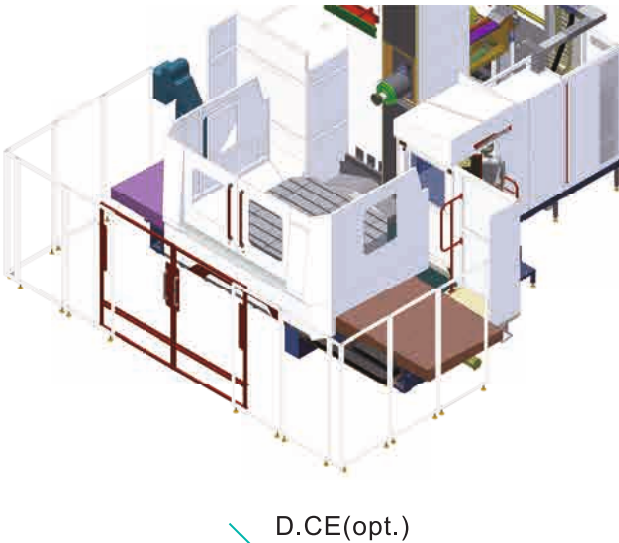
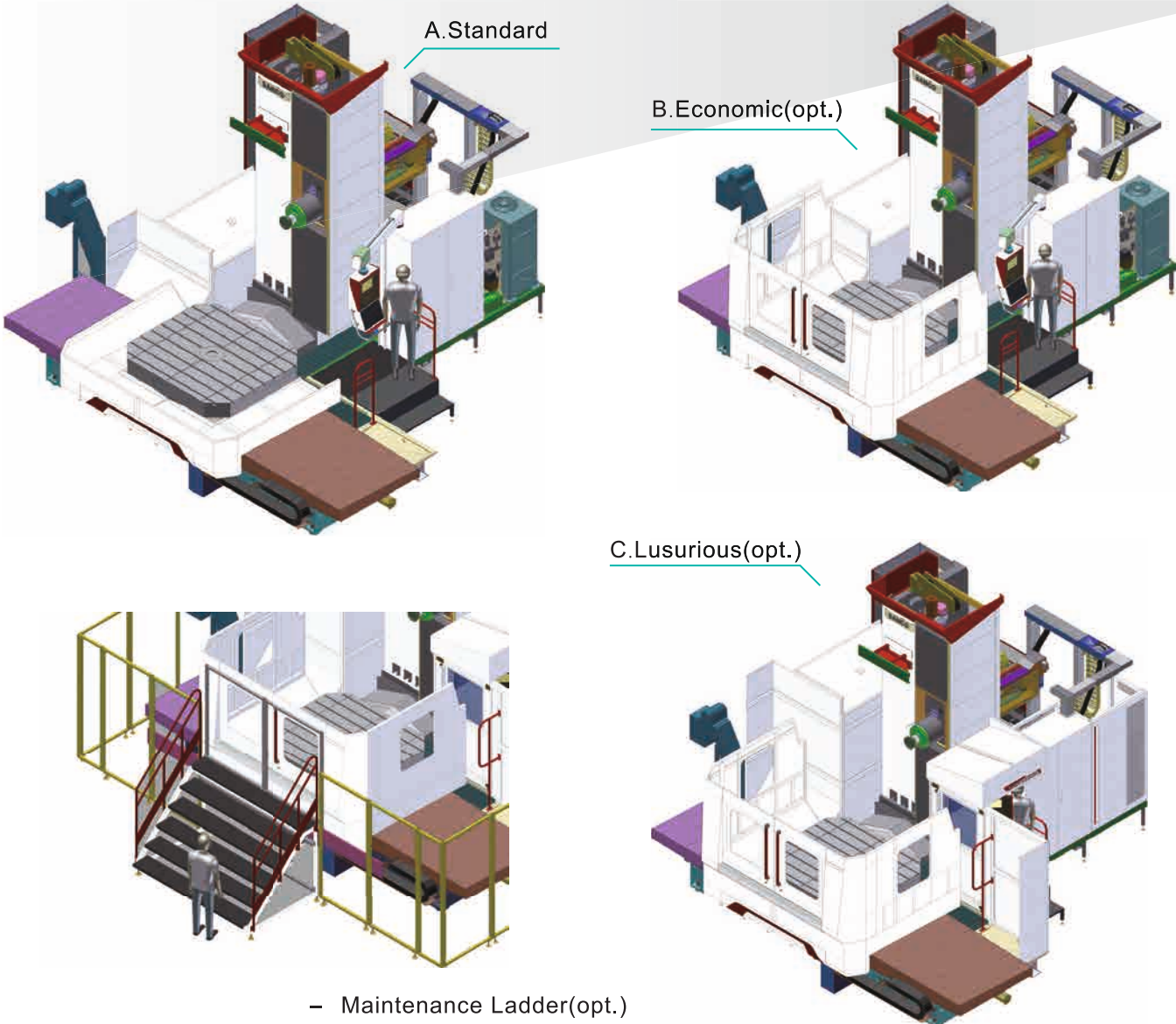


Spindle Power Output Diagram



| SHB-Model | Length | Height                         |         | Width   |  |
|-----------|--------|--------------------------------|---------|---------|--|
|           |        | Y=1,800(OPT:2,000/2,300/2,500) | Z=1,500 | Z=1,700 |  |
| 11025RS   | 7,184  | 4,125(OPT:4,325/4,625/4,825)   | 6,526   | 6,726   |  |
| 11030RS   | 7,734  |                                |         |         |  |
| 11040RS   | 8,834  |                                |         |         |  |
| 11030RM   | 7,940  | 4,340(OPT:4,540/4,840/5,040)   | 6,834   | 6,834   |  |
| 11040RM   | 9,040  |                                |         |         |  |
| 13025RS   | 7,184  | 4,125(OPT:4,325/4,625/4,825)   | 6,475   | 6,522   |  |
| 13030RS   | 7,734  |                                |         |         |  |
| 13040RS   | 8,834  |                                |         |         |  |
| 13030RM   | 7,940  | 4,340(OPT:4,540/4,840/5,040)   | 6,682   | 6,882   |  |
| 13040RM   | 9,040  |                                |         |         |  |
| 13030RL   | 9,040  |                                |         |         |  |
| 13040RL   | 10,140 |                                |         |         |  |

# Splash Guardov

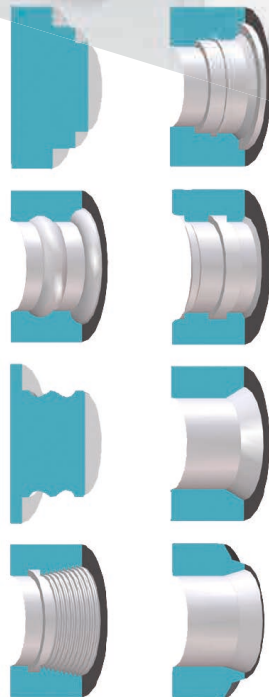
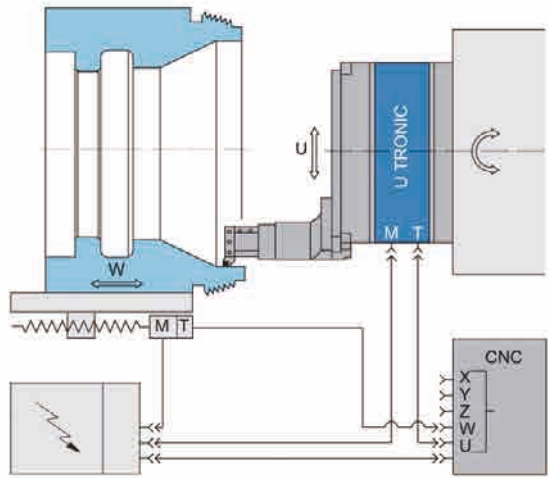


| Splash Guard & Cover List                    |             |             |              |         |
|----------------------------------------------|-------------|-------------|--------------|---------|
|                                              | A. Standard | B. Economic | C. Luxurious | D. CE   |
| Applicable Cutting Patterns                  | Dry         | Dry/Wet     | Dry/Wet      | Dry/Wet |
| CE                                           | X           | X           | ○            | ●       |
| Track-type Operation Box                     | ○           | ○           | ○            | ○       |
| Chip Tray Table Bbelow (not expandable)      | ●           | X           | X            | X       |
| Chip Tray Table Below                        | X           | ●           | ●            | ●       |
| Splash Guard Around Table                    | X           | ●           | ●            | ●       |
| X-axis Dual Automatic Chip                   | X           | X           | X            | X       |
| X-axis Rear of the Automatic Chip            | ●           | ●           | ●            | ●       |
| Z-axis Side of the Automatic Chip            | ●           | ●           | ●            | ●       |
| Standard Operational Area(dry cutting only)  | ●           | X           | X            | X       |
| Waterproof Operational area                  | X           | ●           | X            | X       |
| Waterproof and Splash Proof Operational Area | X           | X           | ●            | ●       |
| Fully Closed Splash Guard Operation Area     | X           | X           | X            | X       |
| Chain Type Chip Conveyor                     | ●           | ●           | ●            | ●       |
| Water Tank                                   | ●           | ●           | ●            | ●       |

●:STANDARD ○:OPTIONAL X:NOT AVAILABLE

# Optional Accessory

- Opt. U axis (facing head)  
 U axis feature:  
 U-axis (servo control) travel: 200mm
- 1.The maximum machining diameter 1250mm (with Specify Tools)
  - 2.The max. speed : 250rpm
  - 3.Toolholder shank end face double contact for high precision heavy cutting force



# Optional Accessories



Square Block  
600x600x900mm



Square Block  
800x500x800mm



90° Milling Head



Manual Univetsal Milling Head



Spindle Extension Sleeve

# Movable Column Type Horizontal Boring Machine-long Table

Long table

Rotary table size :

1.2000x1400(mm) , X axis travel 2000mm

2.3000x1400(mm) , X axis travel 3000mm

3.4000x1400(mm) , X axis travel 4000mm



■ Optional: external rotary table



Remark: X axis linear guide way with long table

| SPECIFICATIONS                                 |        | SHB-11020S                            | SHB-11030S       | SHB-11040S  | SHB-13030S       | SHB-13040S  |
|------------------------------------------------|--------|---------------------------------------|------------------|-------------|------------------|-------------|
| TABLE                                          |        |                                       |                  |             |                  |             |
| Overall size                                   | mm     | 2,000x1,400                           | 3,000x1,400      | 4,000x1,400 | 3,000x1,400      | 4,000x1,400 |
| Maximum load                                   | ton    | 8                                     | 10               | 12          | 10               | 12          |
| T-Slots                                        | mm     | Long table (T-slot 22X9)              |                  |             |                  |             |
| Height from ground                             | mm     | 1,228                                 |                  |             |                  |             |
| TRAVEL                                         |        |                                       |                  |             |                  |             |
| X axis travel                                  | mm     | 2,000                                 | 3,000            | 4,000       | 3,000            | 4,000       |
| Y axis travel                                  | mm     | 1,800 (2,000/2,300/2,500)             |                  |             |                  |             |
| Z axis travel                                  | mm     | 1,500 (1,700)                         |                  |             |                  |             |
| W axis travel                                  | mm     | 500(700)                              |                  |             | 700(900)         |             |
| Distance from table center to spindle nose     | mm     | 500~2,000 (2,200)                     |                  |             |                  |             |
| Distance from table top to spindle center      | mm     | 15~1,800(2,015/2,315/2,515)           |                  |             |                  |             |
| SPINDLE                                        |        |                                       |                  |             |                  |             |
| W spindle diameter                             | mm     | 110                                   |                  |             | 130              |             |
| Spindle speeds                                 | rpm    | 3,200                                 |                  |             | 2,700            |             |
| Taper                                          | mm     | TAPER 7/24                            |                  |             |                  |             |
| FEED RATE                                      |        |                                       |                  |             |                  |             |
| X/Y/Z/W rapid feedrate                         | m/min  | 10 / 10 / 10 / 5                      | 10 / 10 / 10 / 5 |             | 10 / 10 / 10 / 5 |             |
| Cutting feedrate                               | mm/min | 1~5,000                               | 1~5,000          |             | 1~5,000          |             |
| Motor                                          |        |                                       |                  |             |                  |             |
| Spindle (30min. / cont.)                       | kW     | 22/26 (30/37)                         |                  |             |                  |             |
| X/Y/Z/W/B axis feed motor                      | kW     | 7/7/7/3/7                             | 7/7/7/3/7        |             | 7/7/7/3/7        |             |
| ATC                                            |        |                                       |                  |             |                  |             |
| No. of tools                                   | tools  | 40(60)                                |                  |             |                  |             |
| Taper                                          | -      | BT-50                                 |                  |             |                  |             |
| Pull stud.                                     | -      | MAS403-P50T-1                         |                  |             |                  |             |
| Tool selection                                 | -      | fixed type                            |                  |             |                  |             |
| Diameter of Max. tool (with adjacent tools)    | mm     | Ø125                                  |                  |             |                  |             |
| Diameter of Max. tool (without adjacent tools) | mm     | Ø245                                  |                  |             |                  |             |
| Max tool weight                                | kg     | 35                                    |                  |             |                  |             |
| Max tool length                                | mm     | 400                                   |                  |             |                  |             |
| MISCELLANEOUS                                  |        |                                       |                  |             |                  |             |
| Power supply                                   | kVA    | 45                                    | 45               | 45          | 70               | 70          |
| Hydraulic oil tank                             | L      | 110                                   | 110              | 110         | 110              | 110         |
| Coolant tank                                   | L      | 500                                   | 500              | 500         | 500              | 500         |
| Lubricant tank                                 | L      | 8                                     | 8                | 8           | 8                | 8           |
| Machine weight (approx.)                       | kg     | 34,0000                               | 38,000           | 40,000      | 39,000           | 41,000      |
| CNC control                                    | -      | FANUC/ MITSUBISH/ SIEMENS/ HEIDENHAIN |                  |             |                  |             |
| FLOOR SPACE                                    |        |                                       |                  |             |                  |             |
| Machine heigh                                  | mm     | 4,125(4,325/4,625/4,825)              |                  |             |                  |             |
| Machine length                                 | mm     | 60,500                                | 80,500           | 10,500      | 80,500           | 15,500      |
| Machine width                                  | mm     | 6,526(6,726)                          |                  |             | 6,676(6,876)     |             |

\*Specifications are subject to change without notice.

Machine Specifications

| SPECIFICATIONS                                   |        | SHM-11020RF                           | SHB-110XXR                           |             |             |                          |             | SHB-130XXR                            |             |             |                           |             |             |             |
|--------------------------------------------------|--------|---------------------------------------|--------------------------------------|-------------|-------------|--------------------------|-------------|---------------------------------------|-------------|-------------|---------------------------|-------------|-------------|-------------|
| MODEL                                            | UNIT   | SHM-11020RF                           | SHB-11025RS                          | SHB-11030RS | SHB-11040RS | SHB-11030RM              | SHB-11040RM | SHB-13025RS                           | SHB-13030RS | SHB-13040RS | SHB-13030RM               | SHB-13040RM | SHB-13030RL | SHB-13040RL |
| TABLE                                            |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| Overall size                                     | mm     | 1,000x1,200                           | 1,400x1,600 (1,600x1,800)            |             |             | 1,800x2,000              |             | 1,400x1,600 (1,600x1,800)             |             |             | 1,800x2,000               |             | 3,200x1,800 |             |
| Maximum load                                     | ton    | 5                                     | 7(10)                                |             |             | 15(20)                   |             | 7(10)                                 |             |             | 15(20)                    |             |             |             |
| T-Slots                                          | mm     | 22x9                                  | 24x7                                 |             |             | 28x9                     |             | 24x7                                  |             |             | 28x9                      |             |             |             |
| Height from ground                               | mm     | 1,236                                 | 1,228                                |             |             | 1,440                    |             | 1,228                                 |             |             | 1,440                     |             |             |             |
| B-Axis min. increment                            | °      | 0.001°                                | 0.001° 、±5"                          |             |             |                          |             | 0.001° 、±5"                           |             |             |                           |             |             |             |
| TRAVEL                                           |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| X axis travel                                    | mm     | 2,000                                 | 2,500                                | 3,000       | 4,000       | 3,000                    | 4,000       | 2,500                                 | 3,000       | 4,000       | 3,000                     | 4,000       | 3,000       | 4,000       |
| Y axis travel *1                                 | mm     | 1,600                                 | 1,800 (2,000/2,300/2,500)            |             |             |                          |             | 1,800 (2,000 / 2,300 / 2,500)         |             |             |                           |             |             |             |
| Z axis travel                                    | mm     | 1,200(1,400)                          | 1,500 (1,700)                        |             |             |                          |             | 1,500 (1,700)                         |             |             |                           |             |             |             |
| W axis travel                                    | mm     | 400                                   | 500 (700)                            |             |             | 700                      |             | 700(900)                              |             |             |                           |             |             |             |
| Distance from table center to spindle nose       | mm     | 400~1,600                             | 500~2,000 (2,200)                    |             |             | 785~2,285 (2,485)        |             | 585~2,085 (2,285)                     |             |             | 785~2,285 (2,485)         |             |             |             |
| SPINDLE                                          |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| W spindle diameter                               | mm     | 110                                   | 110                                  |             |             |                          |             | 130                                   |             |             |                           |             |             |             |
| Spindle speeds                                   | rpm    | 5~2,500                               | 3,200(2,500)(without W axis : 6,000) |             |             |                          |             | 2,700(2,000)(without W axis : 6,000)  |             |             |                           |             |             |             |
| Taper                                            | mm     | TAPER 7/24                            | TAPER 7/24                           |             |             |                          |             | TAPER 7/24                            |             |             |                           |             |             |             |
| FEED RATE                                        |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| X/Y/Z/W rapid feedrate                           | m/min  | 10 / 10 / 10 / 5                      | 10 / 12 / 12 / 5                     |             |             |                          |             | 10 / 12 / 12 / 5                      |             |             |                           |             |             |             |
| Cutting feedrate                                 | mm/min | 1~5,000                               |                                      |             |             |                          | 1~5,000     |                                       |             |             |                           |             |             |             |
| Motor                                            |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| Spindle (30min. / cont.)                         | kW     | 15 / 18.5 (22 / 26)                   | 22 / 26 (30 / 37)                    |             |             |                          |             | 22 / 26 (30 / 37)                     |             |             |                           |             |             |             |
| X/Y/Z/W/B axis feed motor                        | kW     | 7 / 7 / 7 / 3 / 7                     | 7 / 7 / 9 / 3 / 7                    |             |             | 9 / 7 / 9 / 3 / 7        |             | 7 / 7 / 9 / 3 / 7                     |             |             | 9 / 7 / 9 / 3 / 7         |             |             |             |
| ATC                                              |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| No. of tools                                     | tools  | 40(60)                                | 40(60)                               |             |             |                          |             | 40(60)                                |             |             |                           |             |             |             |
| Taper                                            | -      | BT-50                                 | BT50(CAT50/DIN50)                    |             |             |                          |             | BT50(CAT50/DIN50)                     |             |             |                           |             |             |             |
| Pull stud.                                       | -      | MAS403-P50T-1                         | MAS403-P50T-1(CAT50/DIN50)           |             |             |                          |             | MAS403-P50T-1(CAT50/DIN50)            |             |             |                           |             |             |             |
| Tool selection                                   | -      | fixed type                            | fixed type                           |             |             |                          |             | fixed type                            |             |             |                           |             |             |             |
| "Diameter of Max. tool (with adjacent tools)"    | mm     | φ 125                                 | φ 125                                |             |             |                          |             | φ 125                                 |             |             |                           |             |             |             |
| "Diameter of Max. tool (without adjacent tools)" | mm     | φ 245                                 | φ 245                                |             |             |                          |             | φ 245                                 |             |             |                           |             |             |             |
| Max tool weight                                  | kg     | 35                                    | 35                                   |             |             |                          |             | 35                                    |             |             |                           |             |             |             |
| Max tool length                                  | mm     | 400                                   | 400                                  |             |             |                          |             | 400                                   |             |             |                           |             |             |             |
| MISCELLANEOUS                                    |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| Power supply                                     | kVA    | 60                                    | 60                                   |             |             | 70                       |             | 60                                    |             |             | 70                        |             |             |             |
| Hydraulic oil tank                               | L      | 70                                    | 110                                  |             |             |                          |             | 110                                   |             |             |                           |             |             |             |
| Coolant tank                                     | L      | 520                                   | 500                                  |             |             |                          |             | 500                                   |             |             |                           |             |             |             |
| Lubricant tank                                   | L      | 8                                     | 8                                    |             |             |                          |             | 8                                     |             |             |                           |             |             |             |
| Machine weight (approx.)                         | kg     | 21,000                                | 32,000                               | 33,000      | 34,000      | 33,000                   | 34,000      | 40,000                                | 42,000      | 46,000      | 42,000                    | 46,000      | 47,000      | 51,000      |
| CNC tontrol                                      | -      | FANUC/ MITSUBISH/ SIEMENS/ HEIDENHAIN |                                      |             |             |                          |             | FANUC/ MITSUBISH/ SIEMENS/ HEIDENHAIN |             |             |                           |             |             |             |
| FLOOR SPACE                                      |        |                                       |                                      |             |             |                          |             |                                       |             |             |                           |             |             |             |
| Machine heigh                                    | mm     | 4,200                                 | 4,125(4,325/4,625/4,825)             |             |             | 4,340(4,540/4,840/5,040) |             | 4,125 (4,325/4,625/4,825)             |             |             | 4,238 (4,538/4,838/5,038) |             |             |             |
| Machine length                                   | mm     | 6,063                                 | 7,184                                | 7,734       | 8,834       | 7,490                    | 9,040       | 7,184                                 | 7,734       | 8,834       | 7,490                     | 9,040       | 9,040       | 10,140      |
| Machine width                                    | mm     | 6,608                                 | 6,526 (6,726)                        |             |             | 6,834 (6,834)            |             | 6,475 (6,522)                         |             |             | 6,682 (6,882)             |             |             |             |

\*SHB-130xxRS & SHB-110xxRS - If the rotary table with simultaneously function, the Y-axis travel will reduce 40mm.  
\*Specifications are subject to change without notice.

Standard Accessories

- SPINDLE AIR BLAST SYSTEM
- PROGRAMMABLE COOLANT SYSTEM
- AUTOMATIC LUBRICATION SYSTEM
- HYDRAULIC SYSTEM
- M.P.G.
- HEAT EXCHANGER IN CABINET
- AUTOMATIC POWER OFF
- WORKING LAMP & ALARM LAMP
- SCREW AUGER & CHAIN TYPE CHIP CONVEYORS & CART
- MACHINE & CONTROLLER MANU-ALS
- LEVELLING BOLTS & PADS
- TOOLS BOX FOR MACHINE ADJUSTMENT
- RS-232C & RJ-45 TERMINAL INTERFACE
- AICC II ( 200 Block / 30m)
- X/Y/Z AXES LINEAR SCALES

Optional Accessories

- AUXILIARY WORK TABLE
- AIR CONDITIONER AT CABINET
- SPINDLE EXTENSION SLEEVE 300/500mm
- 90° MILLING HEAD
- FACING HEAD
- MANUAL UNIVERSAL MILLING HEAD
- ATC WITH 60, 90
- SPLASH GUARD
- ECONOMIC TYPE(SPLASH GUARD AROUND TABLE)
- LUXURIOUS TYPE(SPLASH GUARD AROUND TABLE+PRO-TECTING DOOR FOR OPERA-TOR+EXTENDED COVER ON ATC)
- CE TYPE(SPLASH GUARD AROUND TABLE+PROTECTING DOOR FOR OPERATOR+EX-TENDED COVER ON ATC+PRO-TECTING FENCE IN FRONT OF MACHINE)