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**MANFORD**  
POWER & DETERMINATION

# 5-AXIS

SIMULTANEOUS MACHINING CENTER

VG-800 ▶

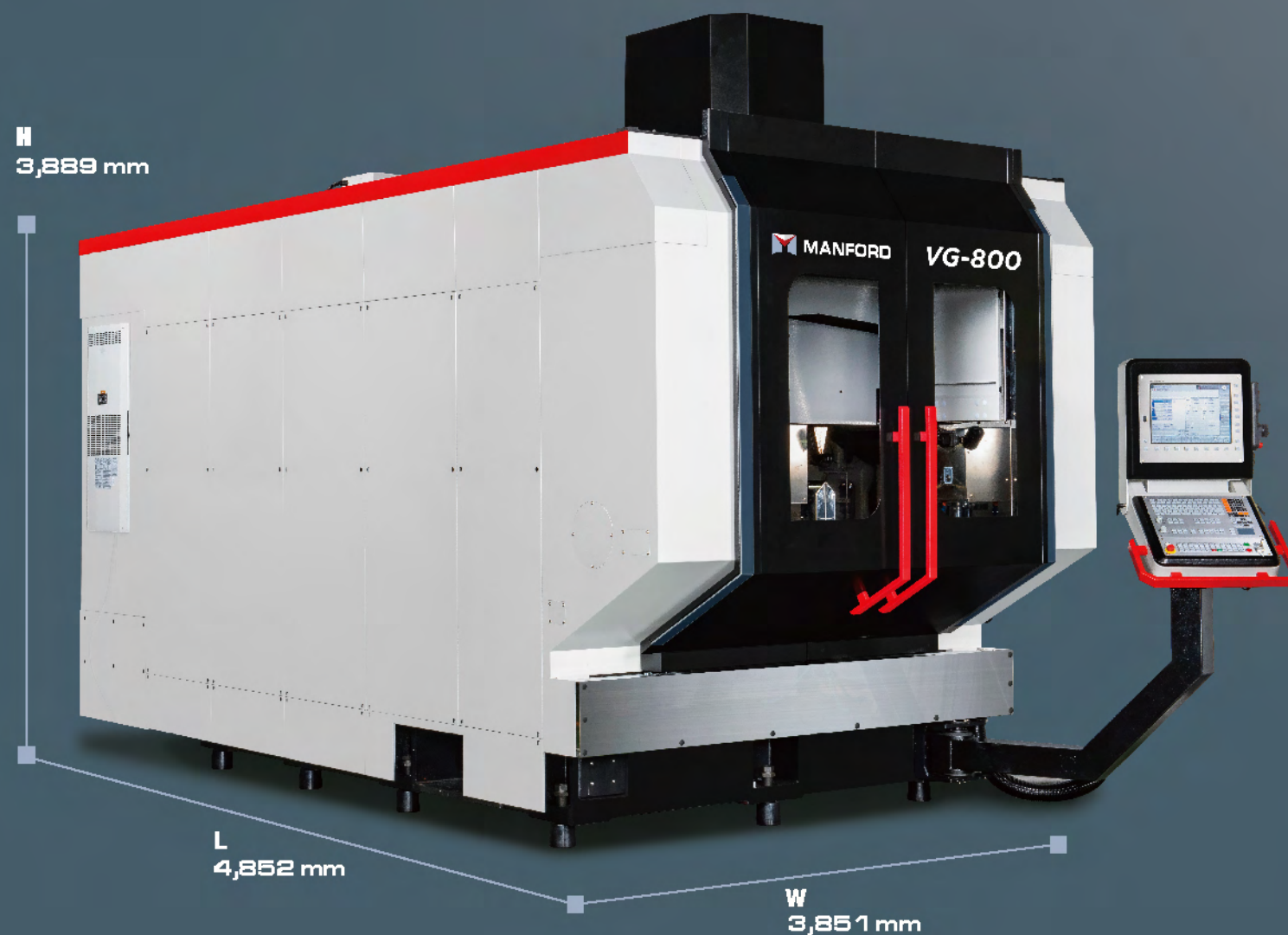
## VG-800

### About VG-800

When it comes to efficient and precise machining of complex parts, a 5-axis gantry design machining center is a perfect solution. With equipped outstanding spindle and rotary table, 5-axis simultaneous, high precision and high efficiency machining on complex parts can be achieved with a single setup of the workpiece. This reduces production time considerably.

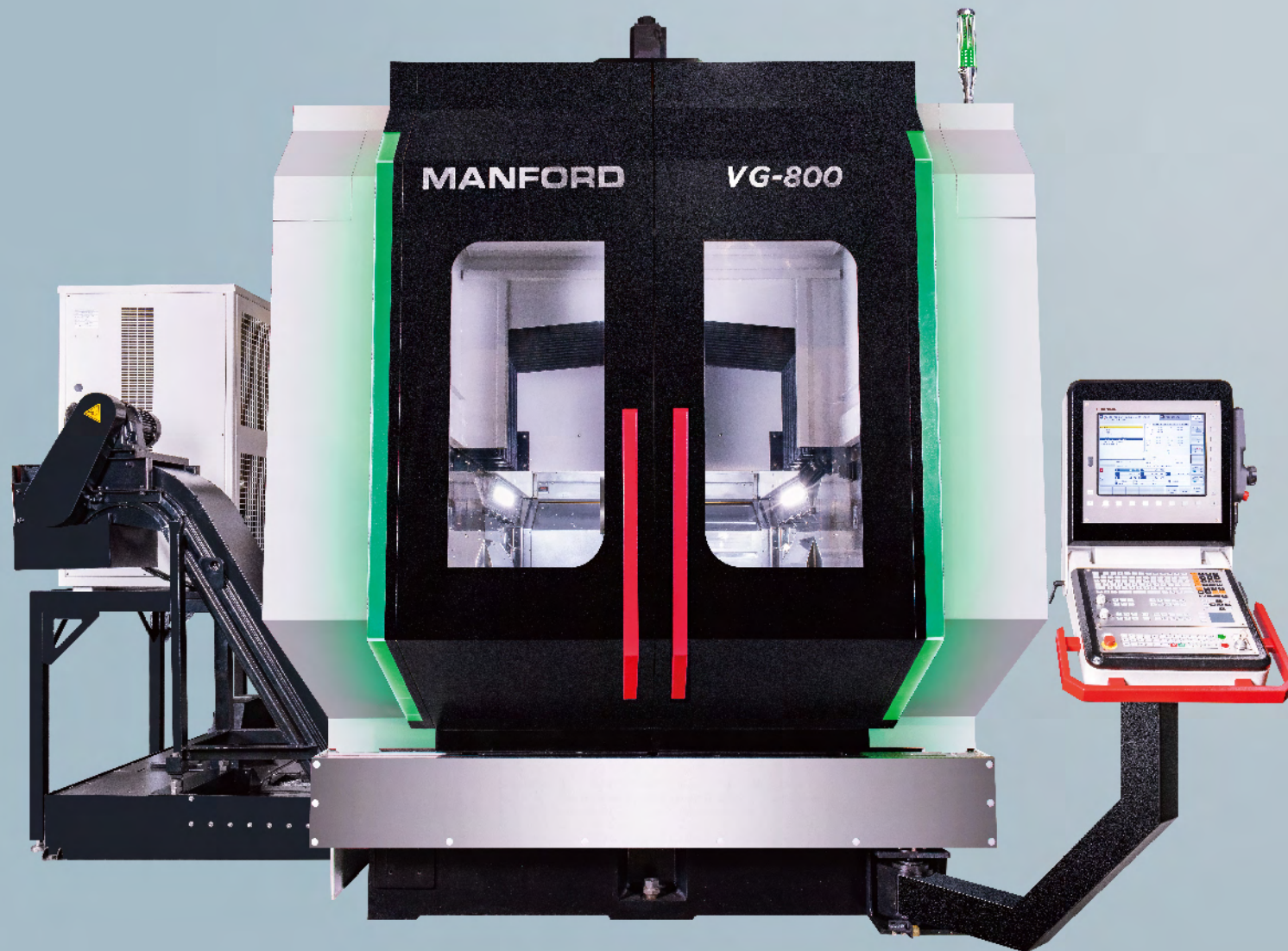
### Machining Application

- Mold making industry
- Optical industry
- Medical equipment industry
- Aerospace industry
- High precision machine parts industry
- Automotive and motorcycle parts industries



## OPTIMIZED STRUCTURE DESIGN

### STABILITY ▶



## VG-800

The VG-800 Gantry Type 5-Axis Machining Center fully exhibits extraordinary stability in high speed machining. Its gantry type structure combined with high rigid swiveling rotary table makes 5-axis machining more stable and smoother.

- Gantry type structure enhances the efficiency and stability of machining.
- Step deployed linear ways on cross beam (X-axis).
- Synchronized transmission on Y1 & Y2 axis.
- Linear guideways on X/Y/Z axis.
- 15,000 RPM built-in type high speed spindle.
- Massive base provides solid support.
- 32 tools (single side) or 64 tools (both side).



# THE EFFICIENCY AND STABILITY OF MACHINING

## GANTRY TYPE STRUCTURE ▶

### Step Deployed Linear Ways

- The linear guideways on the X-axis are step deployed, assuring high stability for the spindle head during in high speed cutting.
- Extra wide span between linear guideways on X-axis increases cutting stability.

### Roller Type Linear Guideways

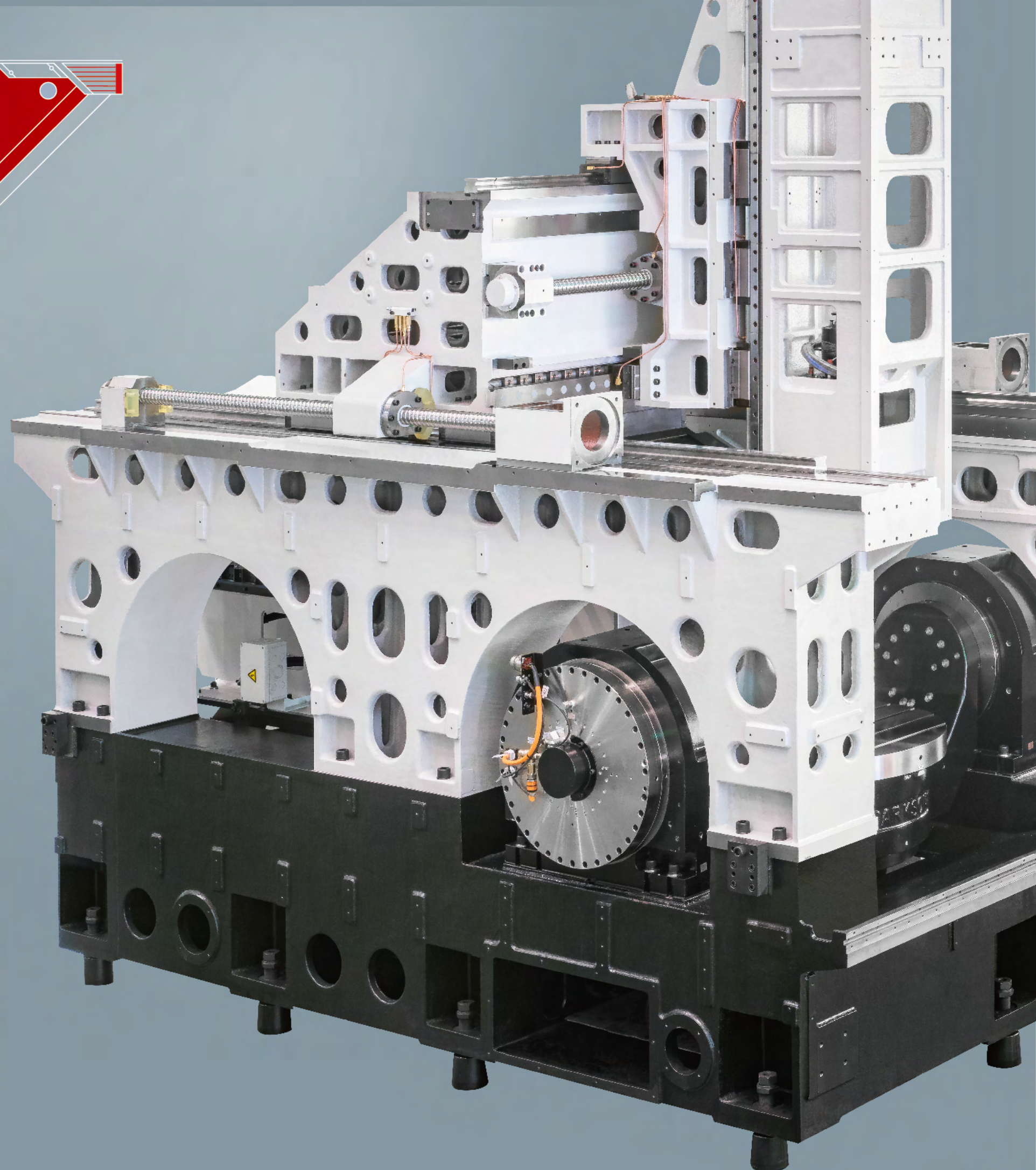
- X/Y/Z axis are fitted with heavy duty roller type linear guideways. Featuring low stick-slip and low coefficient of friction to achieve high positioning accuracy.
- Rapid traverse rates on X/Y/Z axis can reach 48 m/min.

### Extra Stable Gantry Type Structure

- With the gantry type machine structure, the workpiece can be fixed firmly during machining.
- The spindle head moves on the X & Y axis, positioning accuracy is fully supported and not affected by the weight of workpiece.

### Synchronized Transmission on Twin Y Axis (Y1, Y2)

- The twin Y axis are directly driven by an independent servo motor. With the outstanding mechanism accuracy in combination with the control function, twin Y axis (Y1, Y2) synchronous movement is ensured.



## Coolant Jets Around Spindle

- The coolant jets around spindle are used to remove heat from the cutting tool and the workpiece during cutting, this ensuring high cutting accuracy.

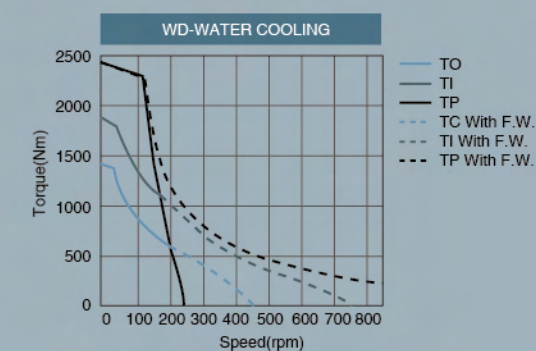
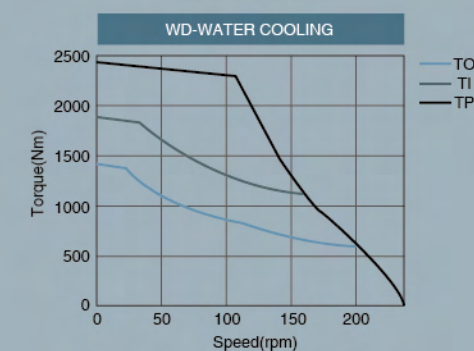
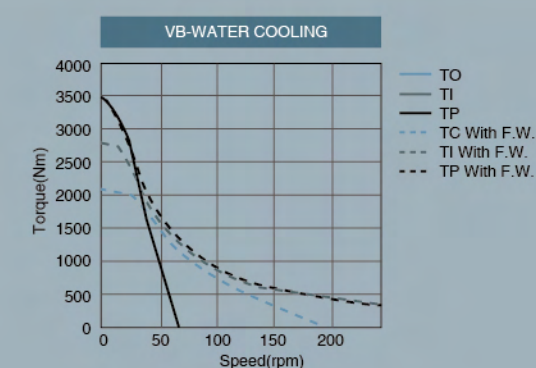
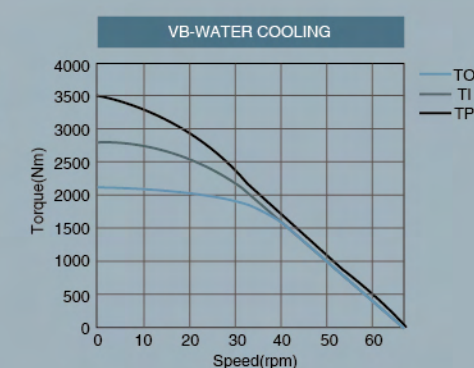
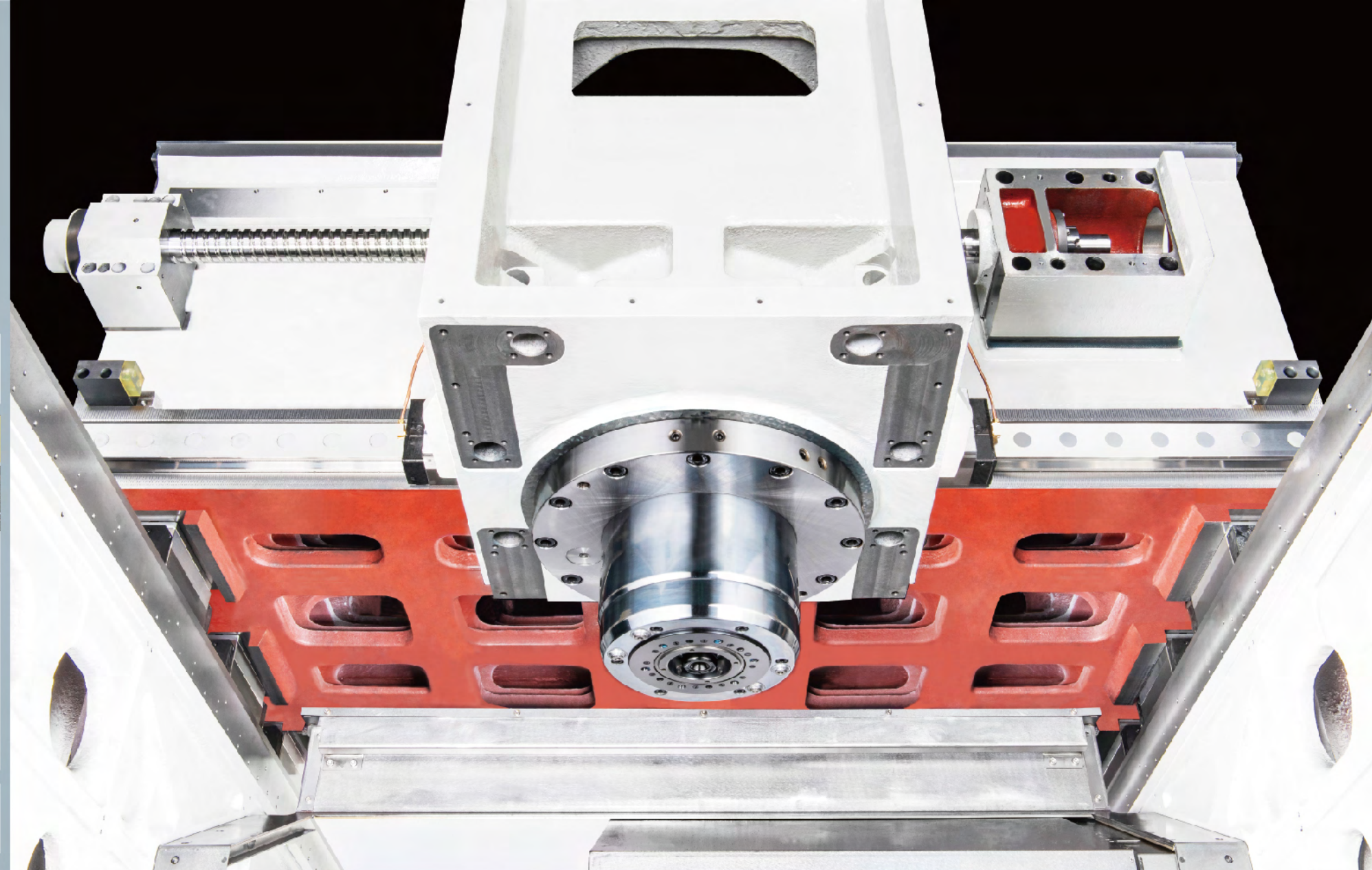
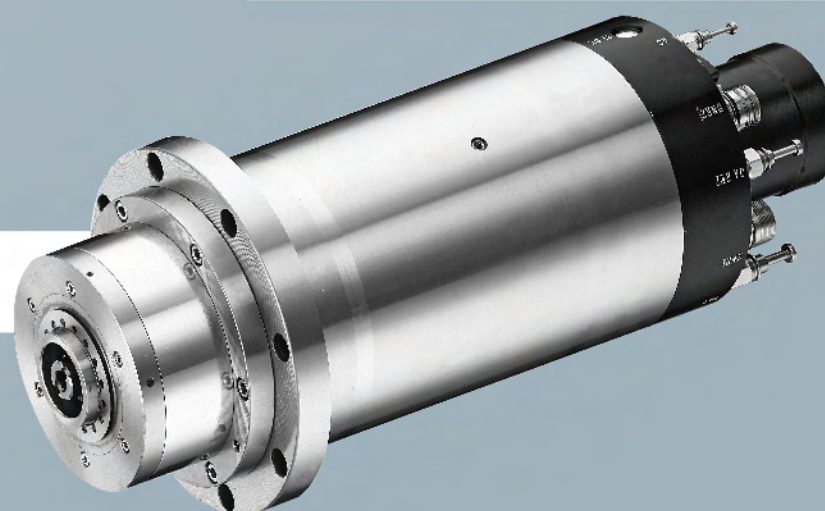


## 15,000 RPM Built-in Type Spindle (Standard)

- The Manford VG-800 comes standard with a 15,000 RPM built-in type spindle, making the machine ideal for high speed machining with outstanding finish on machined surfaces. The built-in type spindle features compact structure, light weight, low vibration, and low noise.

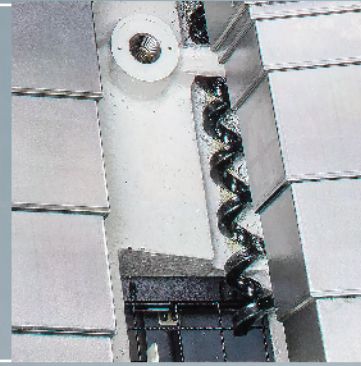
## 20,000 RPM Built-in Spindle (Optional)

- This type of spindle is directly driven by built-in motor, which can eliminate the problems of backlash or vibration that normally occur on a belt-driven or gear-driven spindle.



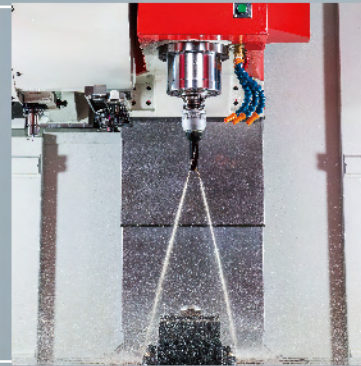
## Double Chip Augers on Base

- The double chip augers deliver chips out of machine during cutting that prevent chips from depositing themselves in the machine. Another benefit is to save time and labor cost in chip removing by operator.



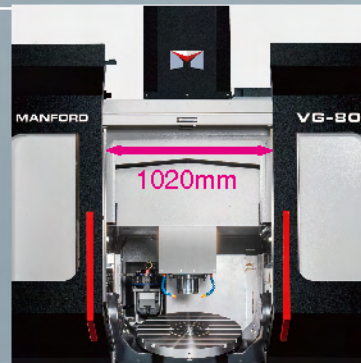
## 30/70 Bar Coolant Through Spindle (Optional)

- The coolant through spindle device (CTS) employs powerful cutting fluid that flow through the center of the spindle for cooling the cutting tool and the workpiece. This not only increases the machining surface accuracy and machining efficiency but also dramatically extends the service life of the cutting tools.



## Open Type Top Guard

- The top guard of the machine can be opened, allowing the operator to use an electric hoist to load/unload workpieces from the top of the machine.
- Manual opening of top guard is standard.
- Automatic opening of top guard is optional.



## LHL Lubrication System

- With excellent penetration between mechanical parts, LHL is a great idea of maintaining machinery life, preventing the deterioration and decomposition of cutting fluid, and reduce the abrasion of machine parts. Low consumption and eco-friendly characteristic optimized the using experiences of LHL.



## Thermal Compensation

- A developed thermal compensation function for VG800. After machine temperature rise curve is established for a long time, a mathematical formula is used to transfer compensation value to the CNC controller, which can reduce the thermal elongation caused by raised spindle machining temperature and keep the cutting accuracy within a certain range. And the accuracy of the machine is even improved after having the readings of three-axis linear scale.



## CNC CONTROL



Manford VG-800 provides two types of CNC controllers to select. Heidenhain TNC-640 is standard. Siemens 840DSL is optional.

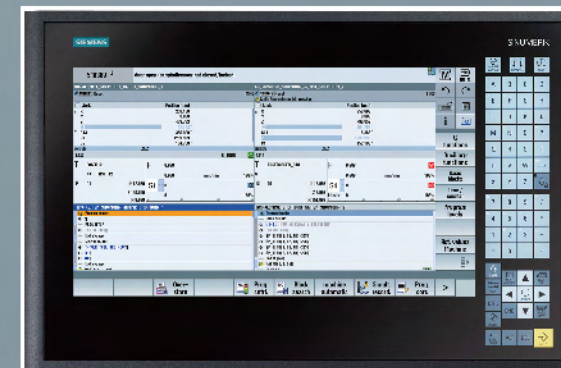
### HEIDENHAIN TNC-640

HEIDENHAIN TNC-640 is particularly suitable for 5-axis machineries. The workshop oriented and versatile control features numerous functions. The optimized user interface of the TNC-640 gives a fast overview: various color coding, standardized table editors and smartSelect—the dialog-guided fast selection of functions—aid you at your work. It features optimized motion control, short block processing times and special control strategies. Together with its uniform digital design and its integrated digital drive control including inverters, it enables you to reach very high machining speeds and the best possible contour accuracy—particularly when machining 3-D contours.



### SIEMENS 840DSL

SIEMENS 840 control is also available for selection.

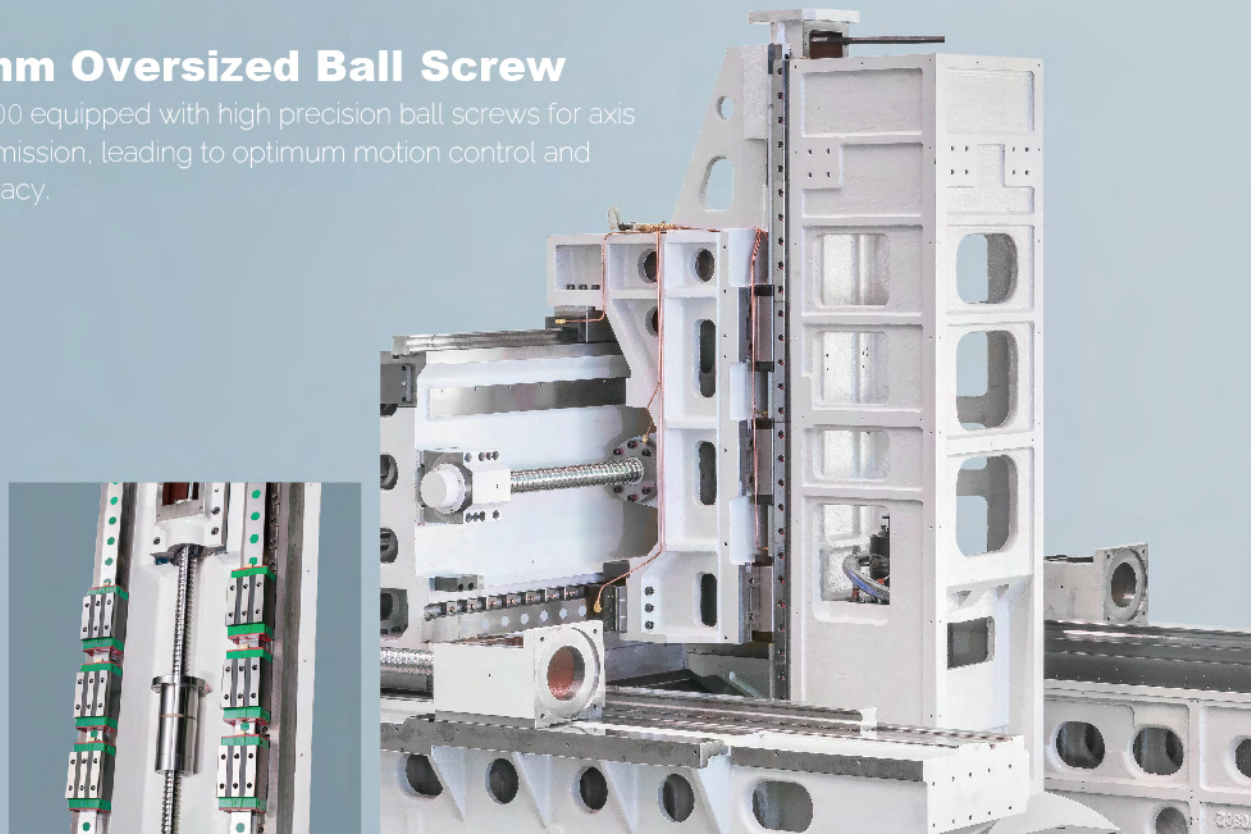


## 6 Blocks on Linear Ways of Column

- The column is fitted with 6 blocks that provide firm support for the spindle head. During high speed machining, the spindle head presents the highest stability.

## 50 mm Oversized Ball Screw

- VG-800 equipped with high precision ball screws for axis transmission, leading to optimum motion control and accuracy.



## 24 - 120 Tools Chain Type Magazine

- Magazine with double tool loading capacity (32/64/96/120 tools) is available.
- The tool magazine accommodates HSK A63 tool shank as standard.  
Tool shanks BBT40, CAT40, and DIN40 are optional.
- Magazine rotation driven by motor is standard, and driven by servomotor is optional.



## Coolant Through Ballscrew (Optional)

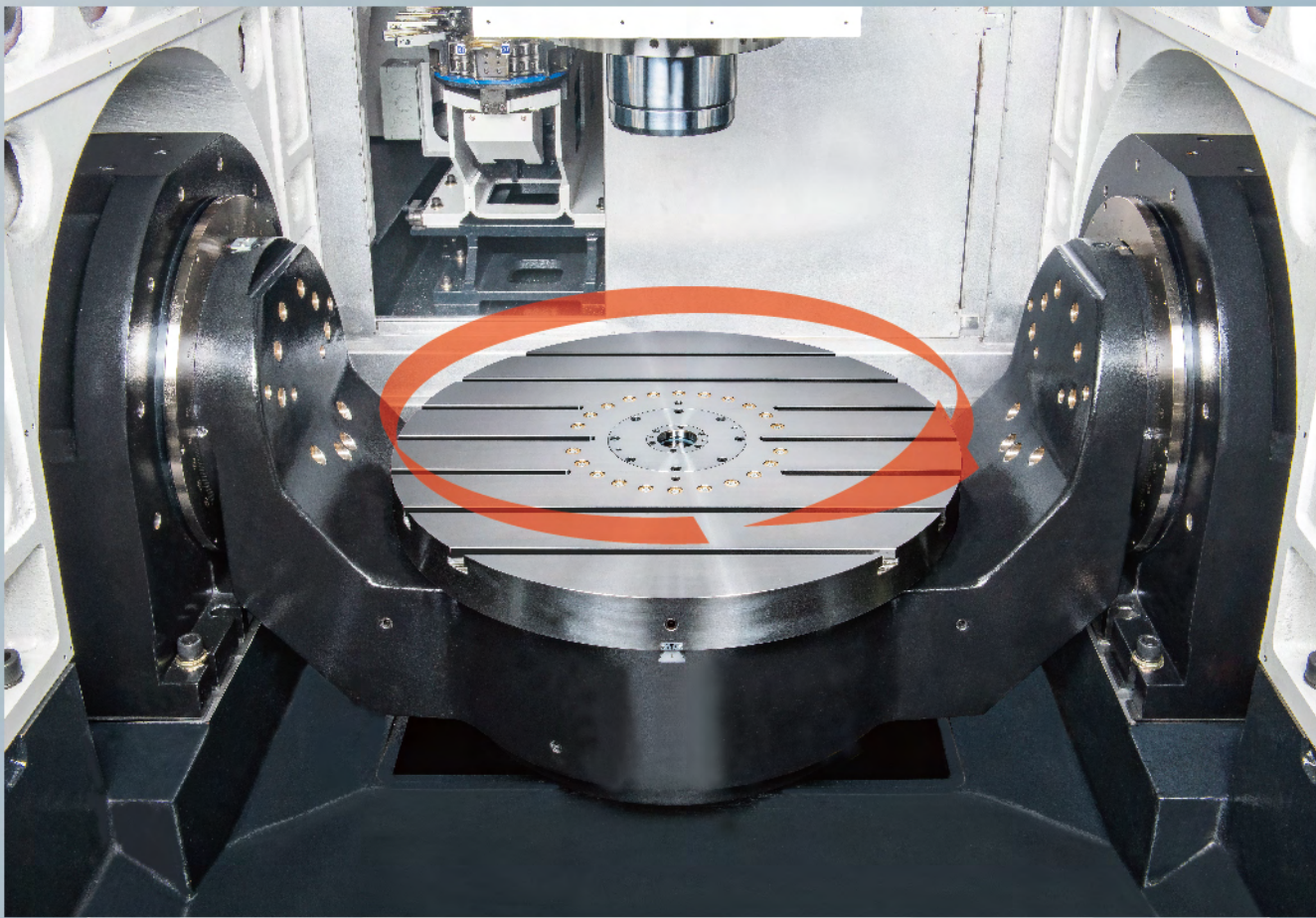
- Cooling system is available for cooling the ballscrew and bearing on the X and Y axis. This cooling device can effectively suppress thermal deformation on the ballscrews, while ensuring high positioning accuracy even under heavy loads.
- Only nut cooling is allowed on the Z-axis.

## Swiveling Rotary Table (A and C Axis)

- The swiveling axis can swivel in the range of -120° ~ +30° along the A-axis.
- The rotating axis can rotate 360° along the C-axis.
- Both A and C axis are directly driven by an independent DD motor, featuring high positioning and repeatability accuracy.
- Positioning accuracy on A/C axis: 10 sec.
- Repeatability accuracy on A/C axis: 8/6 sec.

## Encoders on A/C Axis

- The A & C axis on the swiveling rotary table are equipped with independent encoders, ensuring high indexing accuracy on the A & C axis.



# Specifications



| Model               |                                             | UNIT   | VG 800                                  |
|---------------------|---------------------------------------------|--------|-----------------------------------------|
| Travel              | X travel                                    | mm     | 800                                     |
|                     | Y travel                                    | mm     | 1245 ( 510~+390+345 Tool change travel) |
|                     | Z travel                                    | mm     | 620                                     |
|                     | Distance from spindle nose to table surface | mm     | 100 ~ 720                               |
| Table               | Work table dimension                        | mm     | Ø800                                    |
|                     | Max. table load (Horizontal/Tilting)        | kg     | 1000 / 500                              |
|                     | T slot (No. x Slot width x Dist)            | mm     | 7 X 14 X 100                            |
| Spindle             | Spindle                                     | rpm    | 12,000                                  |
|                     | Spindle taper                               |        | Build in<br>HSK A63 (Opt BBT 40)        |
|                     | Spindle motor ( S1/100% / S6/40%)           | kW     | 21 / 25                                 |
|                     | Spindle torque ( S1/100% / S6/40%)          | N m    | 69.2 / 83.2                             |
| A axis              | A axis                                      |        | D.D.M                                   |
|                     | Tilt degree                                 | degree | 120° ~ +30°                             |
|                     | Max. speed                                  | rpm    | 50                                      |
|                     | Minimum split angle                         | degree | 0.001                                   |
| C axis Rotary Table | C axis                                      |        | D.D.M                                   |
|                     | Tilt degree                                 | degree | 360°                                    |
|                     | Max. speed                                  | rpm    | 100                                     |
|                     | Minimum split angle                         | degree | 0.001                                   |
| ATC                 | Tool amount                                 |        | 32T (Opt. up to 120T)                   |
|                     | Taper type                                  |        | HSK A63 (Opt BBT 40)                    |
|                     | Max tool dimension Partial Load / Full Load | mm     | 125 / 75                                |
|                     | Max tool length                             | mm     | 300                                     |
| Feed System         | Max tool weight                             | kg     | 8                                       |
|                     | Rapid feed rate X / Y / Z                   | m/min  | 48 / 48 / 48                            |
|                     | Cutting feed rate                           | mm/min | 1 ~ 20000                               |
| Other               | Machine dimension                           | mm     | 3,851 x 4,852 x 3,889                   |
|                     | Machine weight                              | kgs    | 18,000                                  |

- NOTE: Specifications are subject to change without notice.

## Standard Accessories



- LHL lubrication system
- Spindle / AC axis coolant system
- Linear scale A/C axis
- Pneumatic system
- Spindle outside air spray 2 outputs
- Spindle coolant pump
- Chain type chip conveyor
- Air gun
- Water gun
- Remote handwheel
- Work light
- 3 Colors alarm light

## Optional Accessories



- 20,000 rpm build-in spindle
- Control Siemens 840 DSL
- Tool length measurement
- Work piece measurement
- CTS 30 / 70 bars
- Spindle outside air spray 4 outputs
- Pneumatic system - SMC / Mindman
- X Y Z Linear scales
- Thermal compensation

## Machine Dimensions

