



GV-1 SERIES

Maximum Performance Vertical Turning Centers

GOODWAY MACHINE CORP.

MAXIMUM PERFORMANCE VERTICAL TURNING CENTERS

Packed with industry leading technology and top quality components, the Goodway GV-1 series vertical turning centers combine incredible power, strong constructions, and heavy duty cutting capabilities to bring you The Ultimate Machining Power®. These maximum performance machines will easily accomplish the demanding turning applications of today and tomorrow. With maximum turning diameter up to 1,800 mm, maximum weight load up to 8,000 kg, and available live tooling spindle & Cf-axis capabilities, turning, milling, contour milling and drilling applications may be completed in one single machine.

| Models | GV-1200 | GV-1600 |
|-----------------------|------------|------------|
| Max. swing diameter | Ø 1,600 mm | Ø 2,000 mm |
| Max. turning diameter | Ø 1,350 mm | Ø 1,800 mm |
| Max. turning length | 1,300 mm | 1,300 mm |
| Max. weight load | 5,000 Kg | 8,000 Kg |
| Live tooling spindle | Optional | Optional |

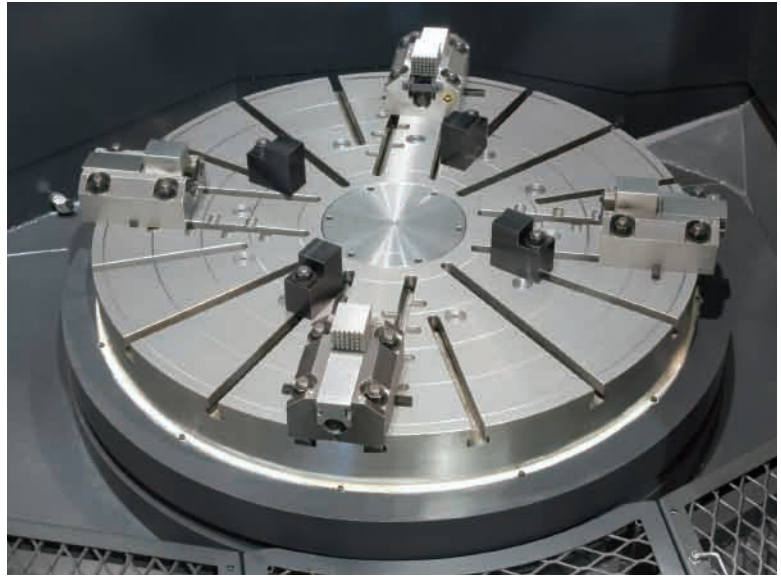
- ▶ The high-rigidity vertical turning center construction, can easily overcome horizontal turning centers' problems when machining large-diameter, heavy-weight and non-symmetrical work pieces.



(GV-1600M model shown with Fancu Oi-TD control)

- ▶ Fully enclosed splashguards keep chips and coolant contained for a safe clean working environment.
- ▶ Extra wide door width up to 2,100 mm (GV-1200 : 1,800 mm) enables large size work pieces to be loaded onto the work table with a crown block providing easy loading and unloading operations.

- ▶ High rigidity work table with a standard 4-jaws individual manual chuck provides easy operation and outstanding heavy-duty cutting capability.
- ▶ With the outstanding chip disposal design, chips can be easily brought out through the coolant tank and chip conveyor to the chip cart.



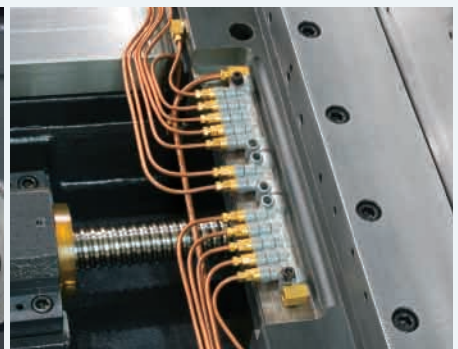
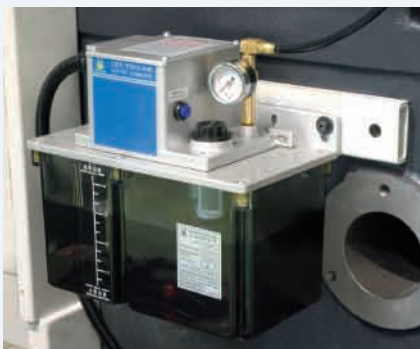
- ▶ Super large 900L coolant tank capacity allows smooth coolant circulation which tremendously improves the machine's overall accuracy by lowering thermal expansion effects to a minimum.

- ▶ The coolant system features a roll-out coolant tank for easy maintenance.
- ▶ Right discharge chip conveyor can be equipped with a programmable controller to minimize coolant loss and increase chip disposal efficiency.



- ▶ Standard BT-50 16-tool umbrella type ATC with fully enclosed guarding can be equipped with various turning, milling, and drilling tools based on different turning applications.

- ▶ The auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components. Distribution is automatically shut off during idling to prevent waste.



HIGH RIGIDITY CONSTRUCTION

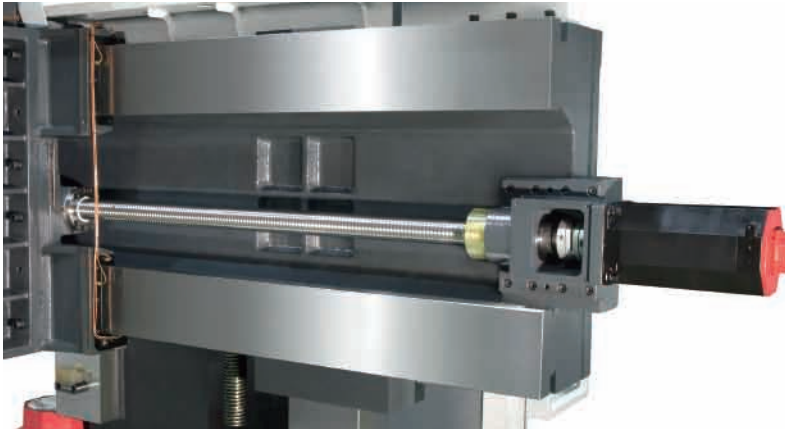
- ▶ Built to endure years and years of rigorous high production turning, the heavily ribbed, thermally balanced, high-rigidity bed and column are of Meehanite casting. It is capable of withstanding much greater stress without deforming and provides maximum vibration dampening, which result in a machine that will outlast and outperform the competition.
- ▶ By using Finite Element Methods (FEM), optimal reinforce ribbings are directly cast into the bed and column structure. Mechanical rigidity has been increased by more than 30% when compared to conventional designs. The GV-1 series is capable of performing super heavy-duty turning and maintain long-term super high-precision accuracy. More rigidity also means extended tool life.
- ▶ Spindle and servo motors of each axis rapid systems are Fanuc αi series components to ensure peak machining performance and accuracy.



- ▶ Contact surfaces of all slides, spindles, and ball screw bearing housings with the machine bed are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.



(Casting structure of GV-1600M series shown)



- ▶ Extremely rigid crossrail is designed with box-shaped structure to prevent thermal displacement and assure machine stability during turning operations.
- ▶ Crossrail can be moved up and down as desired to meet your requirements. W-axis travel is up to 750 mm for better machining flexibility.
- ▶ Pretension on all ground ball screws with extra wide ground box ways provide high rigidity for heavy-duty cutting.

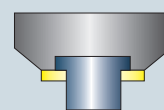
- ▶ Crossrail is mounted with 4 sets of up/down-positioning mechanism providing strong locking-positioning at each point which strengthens the overall rigidity of the crossrail and tooling spindle, thus assuring high accuracy for these series.



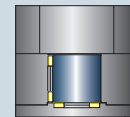
- ▶ The column is adopted with the high-low box way design to firmly support the crossrail while minimizing structural distortion and increasing rigidity.
- ▶ X / Z axes slide ways are bonded with "Turcite B" to eliminate stick-slip, minimize wear and maintain long term accuracy.



- ▶ The ram feed is balanced with 2 sets of hydraulic cylinder weights to minimize the workload of the servo motor and extend the service life of ball screws and bearings.



Semi-closed Type Square Ram



Closed-type Square Ram

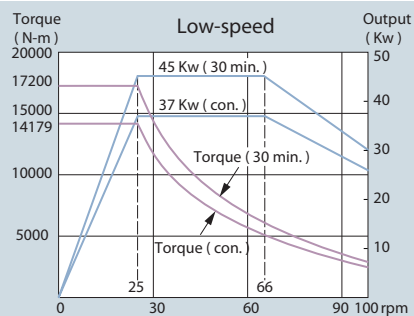
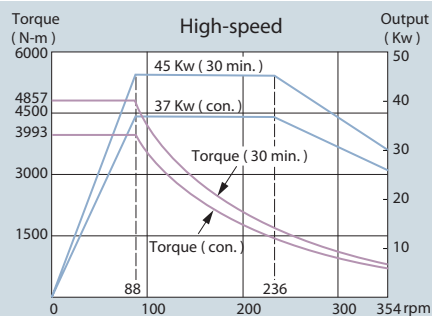
- ▶ The square ram on the tooling spindle is adopted with a closed-type design and fixed with 4 sets of powerful wedges. This gives the GV-1 series with greater structural rigidity and machining accuracy compared to peer models with a semi-closed type square ram structure.

ULTIMATE TURNING POWER

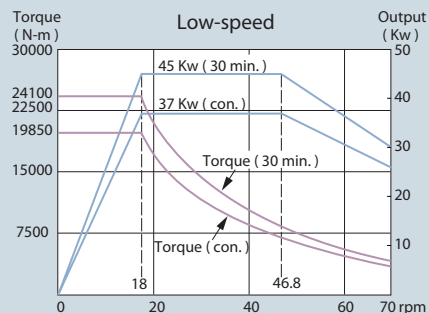
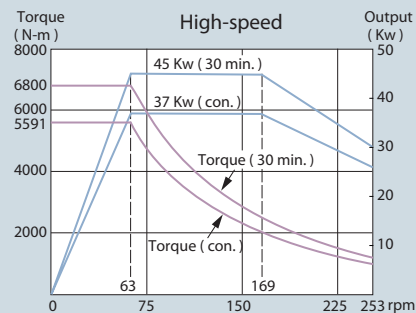


Work Piece Spindle Output

GV-1200 Series



GV-1600 Series

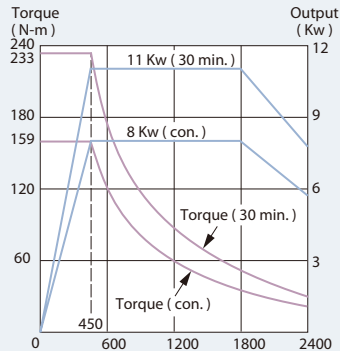


Tooling Spindle

▶ Ø 90 mm big diameter NN TYPE high-precision roller bearings provide high-rigidity and low-wear advantages.

▶ High precision gear-box and pulley-deceleration mechanism provide high torque output when machining in low-speed range.

Max. speed range : 2,400 rpm
 Max. output speed : 450 rpm
 Max. torque : 233 N-m



Work Piece Spindle



▶ Generating twice the torque output of standard motors, the A/C constant output, wide-range Fanuc α 40/6,000 high torque *i* series motor is rated at 45 Kw (30 min). This double wound motor is designed to reach full output at 1/2 the RPM of standard motors, providing the ability to take heavier cuts in the lower RPM ranges.

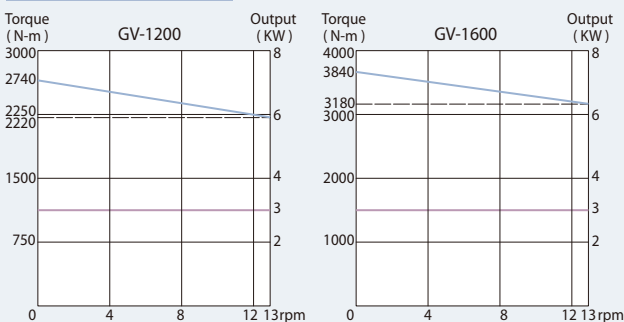


▶ The high rigidity, high rotation accuracy cross roller bearing can sustain radial, axial and torque compound loads to ensure machining accuracy under long-term heavy work loads and extend the service life of the spindle.

▶ Standard high-speed ratio, high-torque 2-speed gear box mated with α 40/6,000*i* series spindle motor provides ample power output for heavy-duty cutting.

Ultimate C-axis Spindle (Optional)

Cf-axis motor output

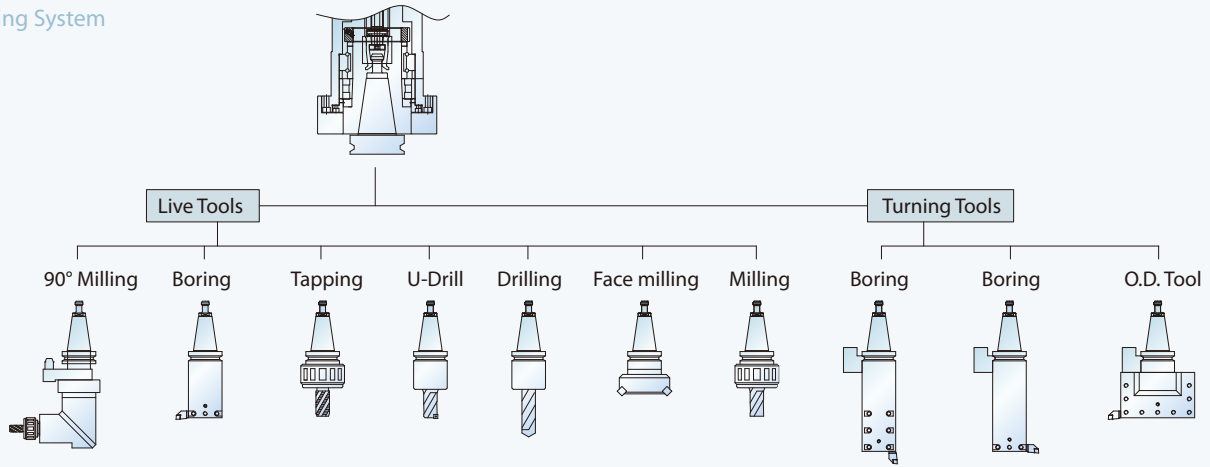


▶ The optional Cf-axis and disk brake system available on the GV-1 series provide the most rigid and powerful type of C-axis on the market today. It is adopted with worm gear drive system for high accuracy transmission and easy backlash adjustment. The indexing accuracy is up to 0.001°.

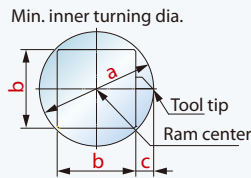
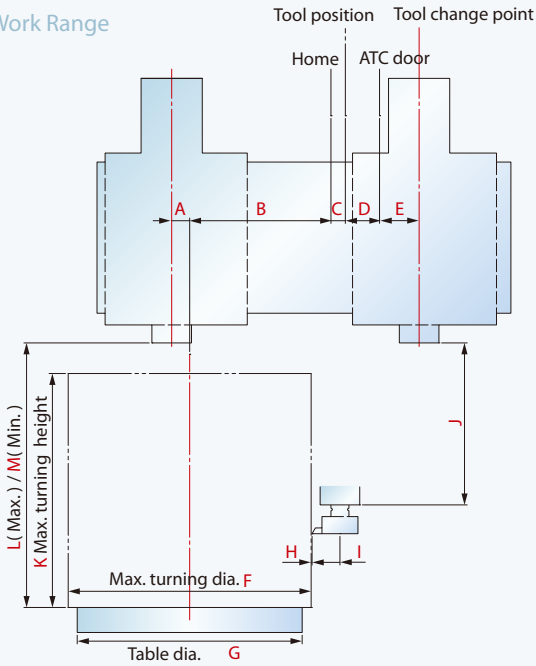
▶ Working with the live tooling turret, the Cf-axis and disk brake system enables the machine to perform multiple tasks, such as drilling, tapping, and milling operations, including cylindrical and polar coordinate interpolations.

▶ With the Fanuc servo motor generating an ultra high resolution of 100 million pulses per spindle rotation and 3,840 N-m (GV-1600), 2,743 N-m (GV-1200) of torque, machined surfaces finishes are much superior than Cs-axis (driven by spindle motor) equipped machines.

Tooling System



Work Range



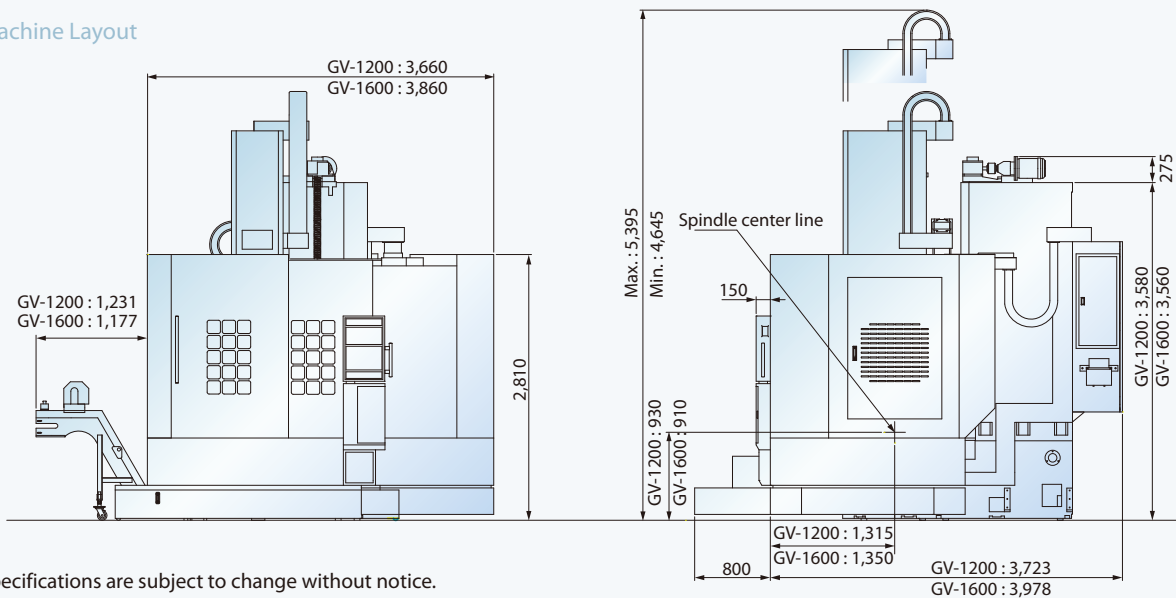
Unit : mm

| Model | a | b | c |
|---------|------|-----|----|
| GV-1200 | Ø320 | 220 | 50 |
| GV-1600 | Ø320 | 220 | 50 |

| Model | A | B | C | D | E | F |
|---------|-----|-------|----|-----|-----|--------|
| GV-1200 | 100 | 835 | 40 | 180 | 220 | Ø1,350 |
| GV-1600 | 100 | 1,060 | 40 | 180 | 220 | Ø1,800 |

| Model | G | H | I | J | K | L | M |
|---------|--------|---|-----|-----|-------|-------|-----|
| GV-1200 | Ø1,250 | 5 | 155 | 900 | 1,300 | 1,470 | 720 |
| GV-1600 | Ø1,600 | 5 | 155 | 900 | 1,300 | 1,470 | 720 |

Machine Layout



Specifications are subject to change without notice.

Unit : mm

FEATURES

S: Standard
--: Not available

O: Option
C: Contact Goodway

| | GV-1200 | GV-1600 | |
|---|-----------------------|---------|---|
| WORK PIECE SPINDLE | | | |
| Main spindle | S | S | |
| Rigid tapping | S | S | |
| Cf-axis | O | O | |
| Disk brake for main spindle | O | O | |
| Lubrication system | S | S | |
| WORK HOLDING | | | |
| 4-jaws manual chuck | S | S | |
| TOOLING SPINDLE | | | |
| BT-50 spindle | S | S | |
| Spindle Coolant | O | O | |
| Coolant through spindle (CTS) | S | S | |
| Drilling & milling function | O | O | |
| 16-tool magazine | S | S | |
| 24-tool magazine | O | O | |
| MRSUREMENT | | | |
| Tool presetter | O | O | |
| X & Z axes linear scales | O | O | |
| COOLANT | | | |
| Coolant pump | 5 Kg/cm ² | S | S |
| High-pressure coolant system | 20 Kg/cm ² | O | O |
| Oil skimmer | | O | O |
| Coolant flow switch | | O | O |
| Coolant level switch | | O | O |
| Coolant intercooler system | | O | O |
| CHIP DISPOSAL | | | |
| Chip conveyor with auto timer | | O | O |
| Chip cart | | O | O |
| Coolant gun | | O | O |
| Oil mist collector | | O | O |
| SAFETY | | | |
| Fully enclosed guarding | | S | S |
| Door interlock (incl. Mechanical lock) | | S | S |
| Impact resistant viewing window | | S | S |
| Low hydraulic pressure detection switch | | S | S |
| Over travel (soft limit) | | S | S |
| Auto power-off device | | S | S |
| OTHERS | | | |
| Tri-color operation status signal light tower | | S | S |
| Florescent work light | | S | S |
| Electrical cabinet | Heat exchanger | S | S |
| | A/C cooling system | O | O |

| | GV-1200 | GV-1600 |
|---|---------|---------|
| OTHERS | | |
| Complete hydraulic system | S | S |
| Advanced auto lubrication system | S | S |
| Emergency maintenance electrical part package | S | S |
| Operation & maintenance manuals | S | S |

S: Standard
--: Not available

O: Option
C: Contact Goodway

| | | Oi-TD | 18i-TB |
|--------------------------------|--------------------------|-------|--------|
| FANUC CONTROL FUNCTIONS | | | |
| PMC system | SB7:0.033 μ sec/step | - | S |
| | Oi-D PMC 25 nsec/step | S | - |
| Display | 8.4" color LCD | S | - |
| | 10.4" color LCD | - | S |
| Graphic function | | S | S |
| Full keypad | Small - 44 key | S | - |
| | Large - 56 key | - | S |
| Part program storage length | 640m | S | O |
| | 1,280m | - | S |
| Registerable programs | 2,560m | - | O |
| | 400 | S | S |
| Tool offset pairs | 1,000 | - | O |
| | 64 | S | S |
| Servo control | 99 | - | O |
| | 400 | - | O |
| Conversational programming | 999 | - | O |
| | HRV2 (3) | S | S |
| Servo motors | Manual Guide Oi | S | - |
| | Manual Guide i | O | S |
| Spindle motors | CAP i-T | - | O |
| | Beta i | - | - |
| Load monitor function | Alpha i | S | S |
| | Beta i | - | - |
| Run hour & parts counter | Alpha i, iP | S | S |
| Auto power off function | | O | O |
| Custom macro B | | S | S |
| RS-232 port | | S | S |
| Memory card input/output | | S | S |
| Ethernet | | O | S |
| Fast ethernet | | O | O |

Specifications are subject to change without notice.

MACHINE SPECIFICATIONS

| CAPACITY | GV-1200 | GV-1600 |
|-------------------------------------|---|--------------------------|
| Table diameter | Ø 1,250 mm | Ø 1,600 mm |
| Max. swing diameter | Ø 1,600 mm | Ø 2,000 mm |
| Max. turning diameter | Ø 1,350 mm | Ø 1,800 mm |
| Max. turning length | 1,300 mm | |
| Max. table load | 5,000 Kg | 8,000 Kg |
| WORK PIECE SPINDLE | | |
| Spindle bearing diameter | Ø 423 mm | Ø 580 mm |
| Spindle motor type | Fanuc α 40 / 6,000i | |
| Motor output (Con.) | 37 Kw | |
| Motor output (30 min.) | 45 Kw | |
| Gear step | 2 | |
| Spindle speed range | 2 ~ 350 rpm | 2 ~ 250 rpm |
| Max. spindle torque | 17,200 N-m | 24,100 N-m |
| TOOLING SPINDLE (OPTIONAL) | | |
| Spindle motor type | Fanuc α 8 / 8,000i | |
| Motor output (Con.) | 7.5 Kw | |
| Motor output (30 min.) | 11 Kw | |
| Spindle speed range | 24 ~ 2,400 rpm | |
| CF-AXIS | | |
| Cf-axis motor | Fanuc α 12 / 3,000i | |
| Motor output | 3 Kw | |
| Cf-axis speed range | 13 rpm | 9 rpm |
| Cf-axis torque output | 2,740 N-m | 3,840 N-m |
| X & Z AXES | | |
| Max. X-axis travel | 935 mm | 1,165 mm |
| Max. Z-axis travel | 900 mm | |
| Max. W-axis travel | 750 mm | |
| X / Z axes rapids | 12 / 10 m / min. | |
| X-axis servo motor | Fanuc α 30 / 3,000i | |
| Z-axis servo motor | Fanuc α 40 / 3,000i | |
| X-axis servo motor output | 7 Kw | |
| Z-axis servo motor output | 6 Kw | |
| ATC | | |
| Magazine capacity | 16 | |
| Spindle taper | BT-50 | |
| Max. tool size | 280 x 150 x 400 mm | |
| Max. tool weight | 50 Kg | |
| Max. magazine load | 360 Kg | |
| Tool change time | 40 sec. | |
| GENERAL | | |
| Positioning accuracy | ±0.007 / 500 mm | |
| Repeatability | ± 0.005 mm | |
| Standard CNC control | FANUC Oi -TD | |
| Voltage / Power requirement | AC200 / 220 + 10 % to -15 % 3 phase / 100 KVA | |
| Hydraulic capacity | 70 L | |
| Coolant tank capacity | 900 L | |
| Machine weight | 23,500 Kg | 25,500 Kg |
| Dimensions L x W x H | 3,660 x 3,873 x 5,395 mm | 3,860 x 4,128 x 5,395 mm |

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