

GV-780 SERIES

Ultra Performance Vertical CNC Turning Centers



WOODWAY
GV-780



G.LINC 350

New Generation Intelligent Control System

Mechatronics
Integration

Customer
Needs

Introducing the brand new model with
Innovative Intelligent Technology,
Brand New Appearance,
Customer Applicative Request.

Mechanical
Aesthetic



ULTRA PERFORMANCE VERTICAL CNC TURNING CENTER

Packed with the latest machine tools technology and high precision turning capabilities, the GOODWAY GV-780 series ultra performance vertical CNC turning center combines a high rigidity structure and precision roller linear guideways with a servo indexing turret and powerful spindle (max. torque up to 1,050 N-m). These series features a compact machine size with heavy duty turning capabilities. The optional live tooling turret, C-axis, dual-face turning holders and work-piece balancing analyzer allows the GV-780 series to be able to complete turning, milling, drilling, tapping, dual-face machining and work-piece balancing analyzing in one single machine.

- ▶ Spacious machining range with advanced multi-tasking capabilities can meet the needs of all sorts of machining applications.
- ▶ The rear discharge type chip conveyor provides excellent chip removal efficiency while increasing floor space usage.



(GV-780M Model shown.)

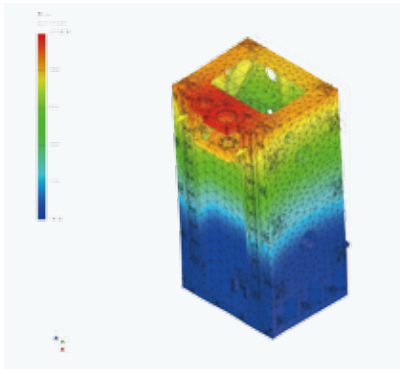


- ▶ The optional self developed G.LINC 350 intelligent control system reduces man power while increasing production efficiency.*1



- ▶ Work-piece balancing analyzing (Opt.)

*1 Please contact Goodway sales for further information.



- ▶ By using Finite Element Methods (FEM), optimal reinforced ribbings are directly casted into the one-piece bed and column structure. Mechanical rigidity has been increased by 30% when compared to conventional designs. The GV-780 series is capable of performing heavy-duty turning and maintain long-term high-precision accuracy. More rigidity also means extended tool life.

- ▶ The servo motor of each axis feed system uses FANUC αi series components to ensure peak machining performance and accuracy.

- ▶ X & Z axes uses high rigidity roller linear guideways which provides rigidity for heavy cutting and fast movement low abrasion advantages. The rigidity and controllability are greatly increased.

- ▶ Extra wide slant surface chip disposal design allows easy chip removal, preventing the heat from influencing machining accuracy.

- ▶ Built to withstand years and years of rigorous high production turning, the heavily ribbed, one-piece thermally balanced bed and column casting components are of " MEEHANITE " casting.



- ▶ Contact surfaces on the bed and column are precision hand scraped to provide maximum assembly accuracy, structural rigidity and load distribution.



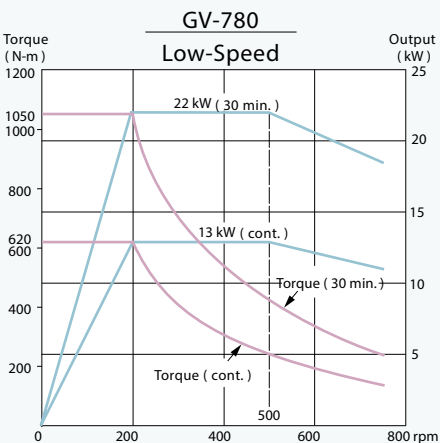
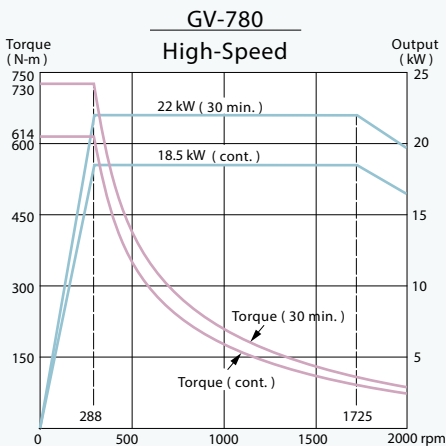
(Casting structure of GV-780 series model shown.)

ULTIMATE TURNING POWER

- ▶ P4 grade double row roller bearings and angular ball bearings are directly assembled for maximum level of support and precision. Bearing configuration is designed for super heavy-duty cutting with ultra-smooth performance and long term durability with a higher level of accuracy.
- ▶ The A/C, constant output, wide-range FANUC α P40 series motor can generate twice the torque output of standard motors. This double bind 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.
- ▶ Maximum horse power can reach up to 22 kW (30 HP) [30 min.] which provides heavy cutting capabilities.

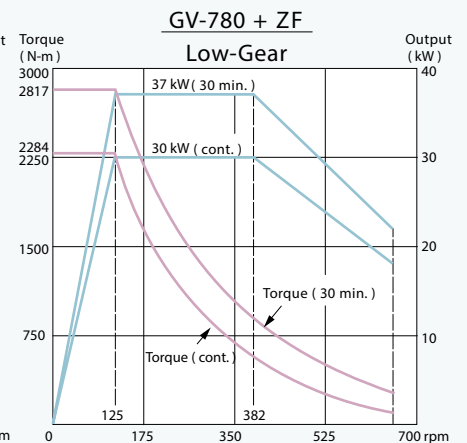
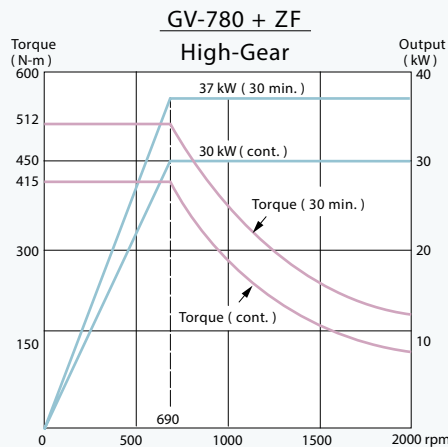


Spindle Output



Optional ZF Gear Box Output

- ▶ Optional GERMAN made oil bath gear box is also available, providing maximum torque of 2,817 N-m.



ADVANCED TURRET TECHNOLOGY

5

6

Standard Turret

- ▶ The super heavy-duty servo indexing turret features the latest non-lifting turret disk technology, achieving 0.2 second indexing for adjacent stations and 0.5 second for stations at the opposite end of the disk.
- ▶ The Japanese super high precision curvic couplings accurately position the turret disk and 3,620 Kg (7,240 lbs.) of clamping force ensures abundant turret rigidity for all cutting conditions.
- ▶ The curvic couplings features auto-centering, auto-cleaning and a large size tooth flank which are superior to traditional curvic couplings and are greatly used in our products.



Optional Live Tooling Turret

- ▶ Live tooling turret and C-axis control capabilities on the GV-780 series allows the machine to perform multi-tasks on a work-piece, such as turning, milling, drilling and tapping. This eliminates manpower and cycle time, while reducing accuracy lost, which will occur if the part is moved from machine to machine.
- ▶ Each station of the live tooling turret can be equipped with live tooling (live tooling tools rotate in working position only) and features a non-lifting turret disk.
- ▶ Goodway's live tooling turret utilizes advanced servo indexing technology to achieve 0.2 second indexing for adjacent stations and 0.5 second for stations at the opposite end of the disk.

Optional Dual-face Turning Holder

The Goodway dual-face turning holder allows both sides of a work-piece to be machined at the same time while ensuring parallel precision of the surface, which is applicable for disk brakes or automotive related components.

- ▶ The cutting time is 50% shorter than when using regular tools.
- ▶ The servo motor driven dual face tool holder provides more flexibility to various working conditions, overcoming hydraulic driven disadvantages, thus, saving tool adjustment time and increasing production efficiency.



WOR-KPIECE BALANCING ANALYZER (WBA)

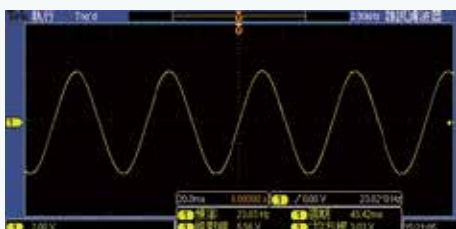
High efficiency, High precision, Suitable for short / thin workpieces



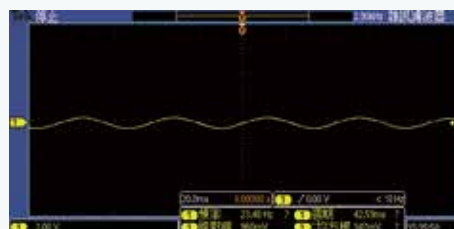
Increasing productive efficiency and streamlining operations have always been Goodway's research and development concept. The Goodway Work-piece Balancing Analyzer (WBA) is based on the developing foundation of our multi-tasking turning centers and University - Industry Cooperation. And now we combine them together to accomplish for a higher level of efficiency and streamlining.

The WBA is mainly applied to "Dissymmetrical parts" and "work-pieces that needed to be balanced after machining". The sensor installed inside the machine can pick up the vibration signal caused by the centrifugal force under high speed rotation from the work-piece. For dissymmetrical parts, the machine is able detect the unbalanced position and weight and provide information for the user to design the appropriate tooling. For work-pieces that needed to be balanced after machining, by using our multi-tasking turning centers (more than 3 axes machines), the unbalanced position and weight can be detected online and be eliminated by the live tooling turret during the machining.

Before / After correction comparison chart



▶ Before WBA correction



▶ After WBA correction

Vibration
↓ 88%

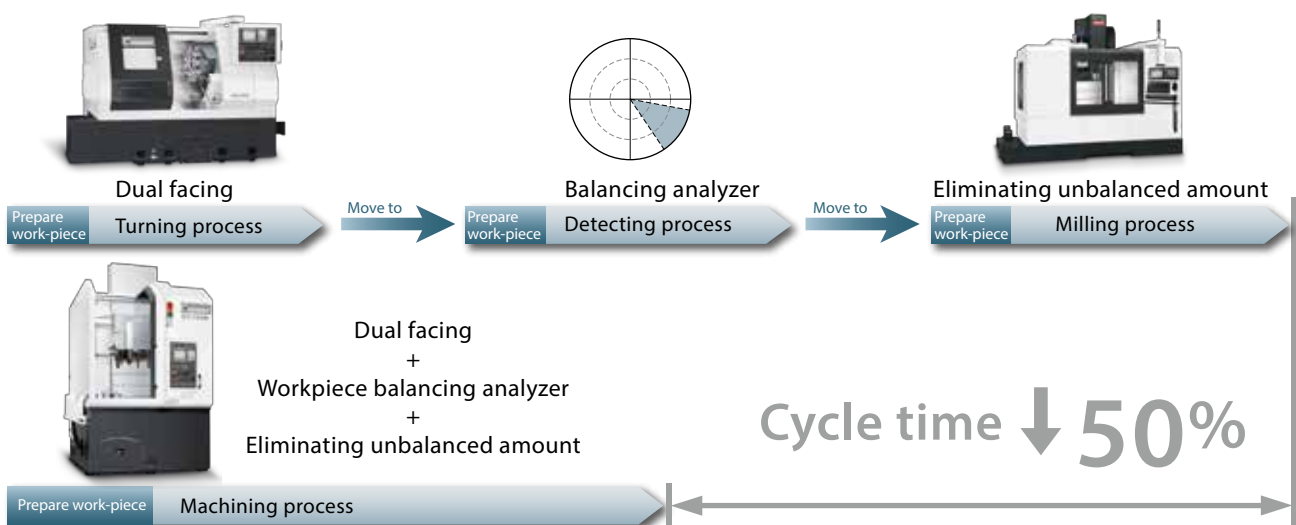
Applications

7

Take disk brake as an example, most companies use offline balancing analyzer method, which the machine needs to be stopped after the disk is finished, then move to the balancing analyzer for detection. When the detection is done, then move the disk to a machining center to eliminate the unbalance amount. It costs unwanted time by just loading and unloading the disk from one place to another, it can also cause accuracy error.

8

Therefore, we created the concept of installing the WBA into the vertical multi-tasking turning center. When the disk brake is finished, it can be evaluated online, then use C-axis to eliminate the unbalanced amount. This can save lots of loading and unloading time and also prevent accuracy error from the process. With the combination of the WBA and multi-tasking turning procedure, we can bring multi-tasking advantages into the next level.



The interface of the WBA can be customized based on customer's needs, which is easy to use. Take disk as an example, the standard work-piece only takes 2 minutes to setup. First insert the disk data, then insert machining parameters. After the setup is done, it only needs one button to begin the entire procedure (turning, detecting, milling) which the cycle time is only 3 ~ 4 minutes.



▶ Insert disk data

▶ Insert machining parameters

Work-piece balancing analyzing specifications

| Capacity | WBA |
|-----------------------|------------------------|
| Disk diameter | Ø 286 ~ 355 mm |
| Disk thickness | 28 ~ 32 mm |
| Disk friction surface | 60 mm |
| Correction method | Single side correction |
| Unbalance amount | 1,650 ~ 14,850 g·mm |
| Sensitivity | 0.001g |
| Balancing grades | ISO 1940, G2.5 |

Specifications are subject to change without notice.



▶ WBA displayed in G.LINC 350 (opt.)

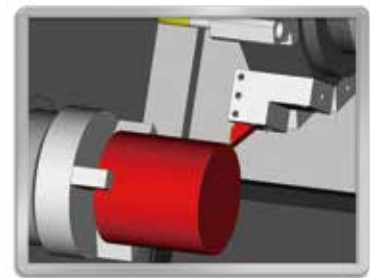
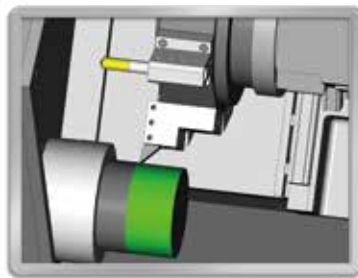


G.LINC 350

Advanced hardware combined with intelligent software, makes your machine smarter

SVI Inspection

Brand New Inspection Strategy for Safer and More Efficient Working Experience (Optional)



Create Simulation

Simulation Inspection

Interference Inspection

General Production Process

Setting

Test-Run

Actual Production

Using 3D Simulation Inspection

Setting

Test-Run

Actual Production

Utilization Rate **30 %**

The 3D simulation inspection can greatly reduce test-run time and improve overall utilization rate

NEW GENERATION INTELLIGENT CONTROL SYSTEM

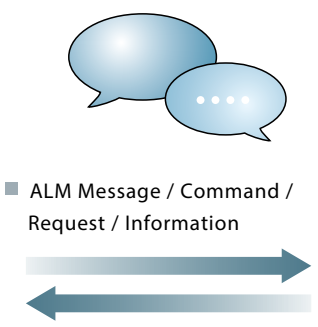
Features

- Advanced Hardware
- Reliable Continuous Operation
- Outstanding Operability
- Shortened Troubleshooting Time
- Streamlined Programming
- Improved Utilization Rate
- High Security and Shortened Machining Setting



MT-Line Messages

Monitoring machine condition in real time



High Intelligent Machine Control

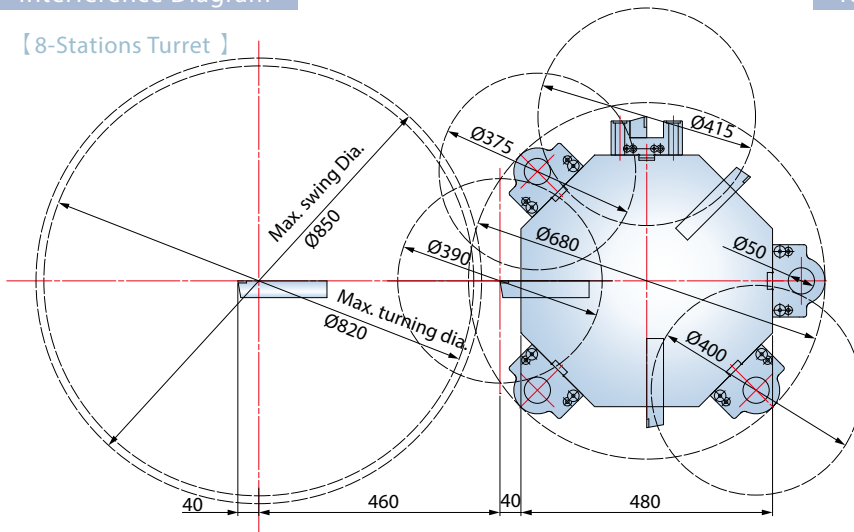
- 3D Check
- Tool Management
- Senesor Status
- Load Monitor
- Tool Build
- Alarm Detail
- Productive Management
- Position Screen



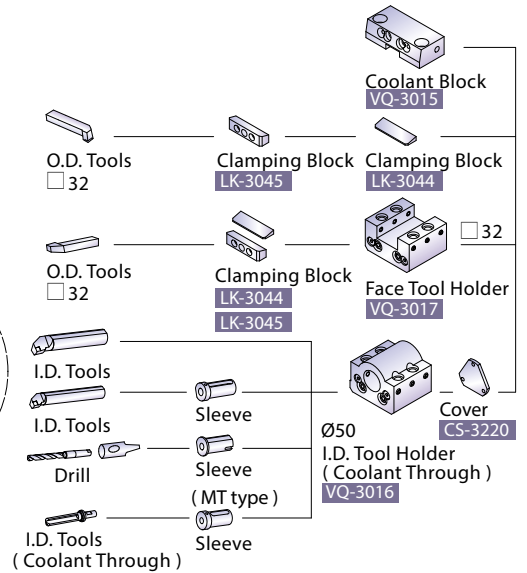
GENERAL DIMENSION

Interference Diagram

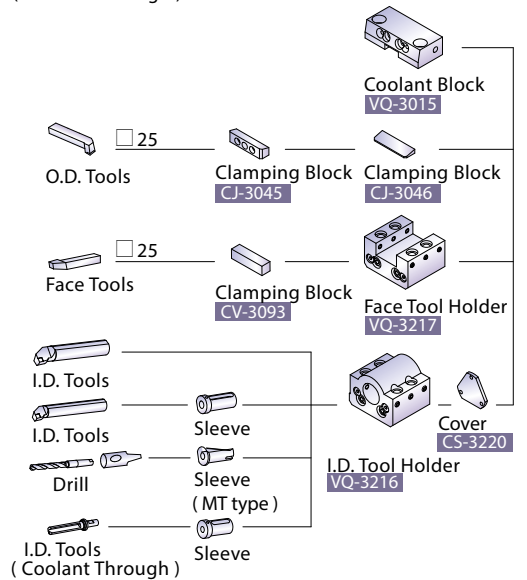
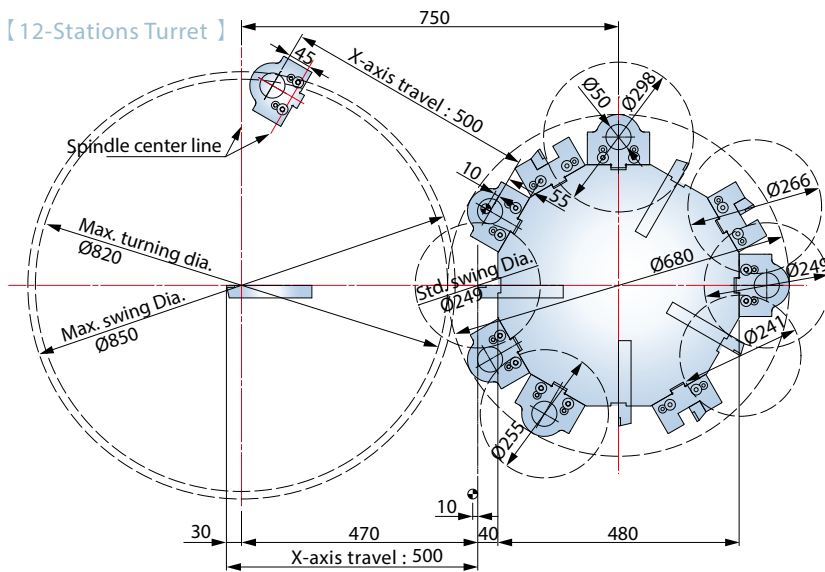
[8-Stations Turret]



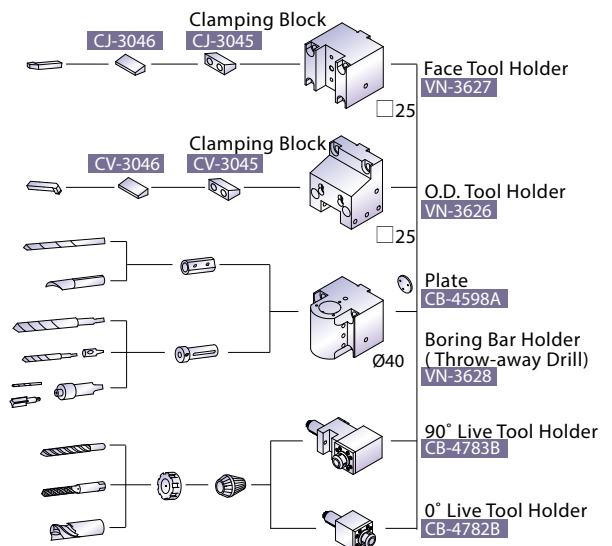
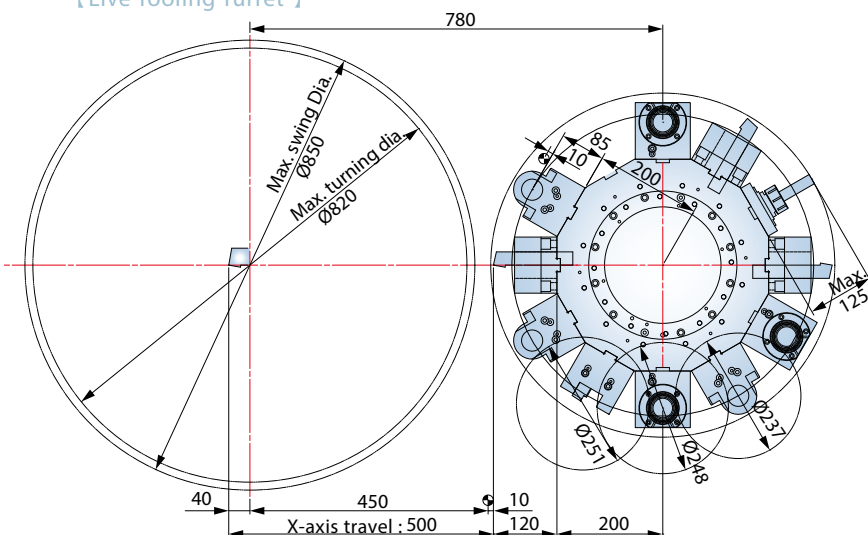
Tooling System



[12-Stations Turret]



[Live Tooling Turret]



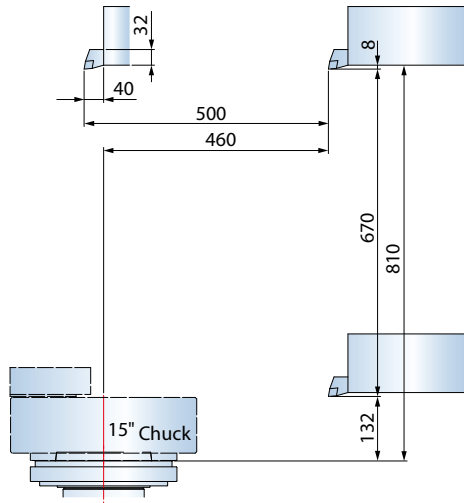
Specifications are subject to change without notice.

Unit : mm

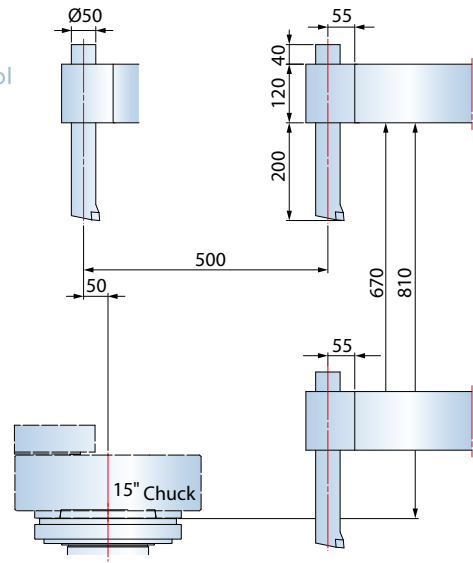
Work Range

[8-Stations Turret / 12-Stations Turret]

O.D. Tool

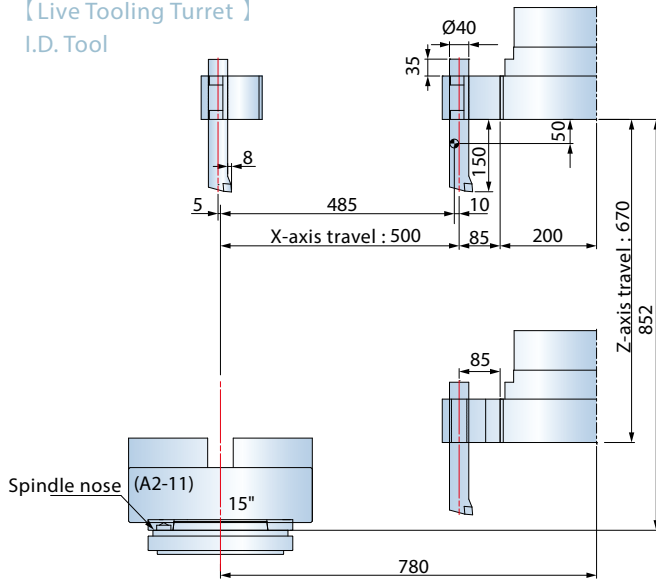


I.D. Tool

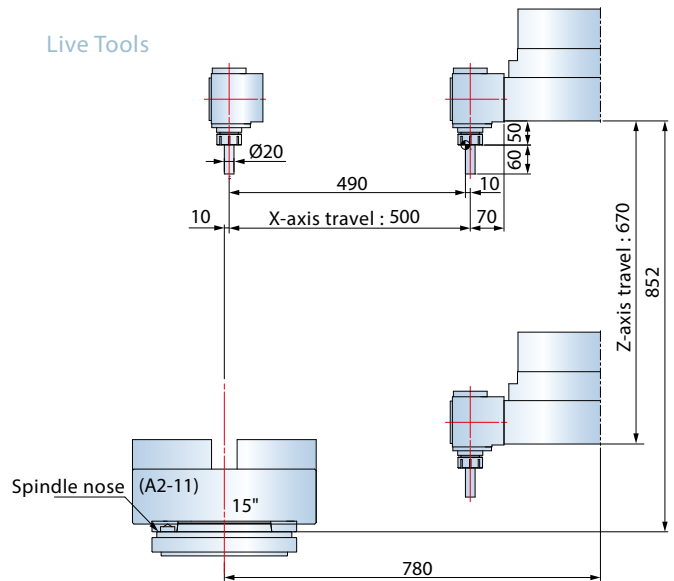


[Live Tooling Turret]

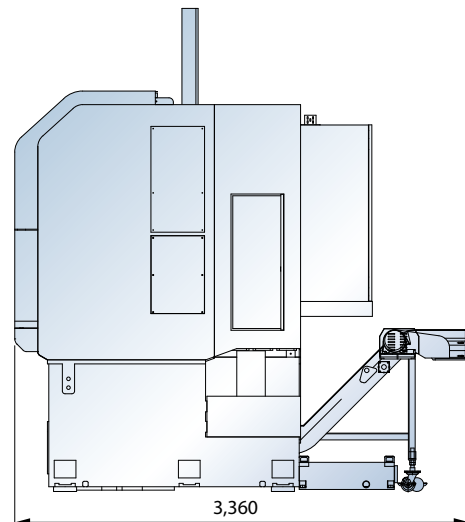
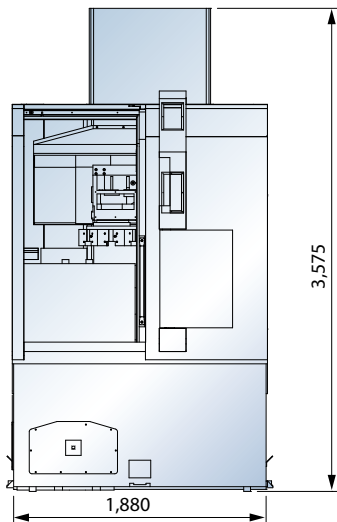
I.D. Tool



Live Tools



Machine Layout



Unit : mm

Specifications are subject to change without notice.

STANDARD & OPTIONAL FEATURES

S : Standard O : Option
 - : Not available C : Contact GOODWAY

| SPINDLE | | GV-780 |
|---|-----------------------|--------|
| Main spindle configuration | Two-speed | S |
| ZF gear box | | O |
| Rigid tapping | | S |
| Cs-axis & disk brake for main spindle | | O |
| WORK HOLDING | | |
| Solid 3-jaws chuck & hydraulic solid cylinder for chuck | 15" | S |
| | 18" | O |
| Manual chuck | | O |
| Hard jaws | 1 set | O |
| Soft jaws | 1 set | S |
| Special work holding chuck | | C |
| Foot switch for chuck operation | Single | S |
| | Double | O |
| TURRET | | |
| 8-station turret | | O |
| 12-station turret | | S |
| 12-station live tooling turret | | O |
| Tool holder & sleeve package | | S |
| Dual-Face Turning Holder | | O |
| Live tooling tool holders | | O |
| MEASUREMENT | | |
| Tool presetter | | O |
| COOLANT | | |
| Coolant pump | 5 Kg/cm ² | S |
| High-pressure coolant system | 20 Kg/cm ² | O |
| Roll-out coolant tank | | S |
| Oil skimmer | | O |
| Coolant level switch | | O |
| Coolant intercooler system | | O |
| CHIP DISPOSAL | | |
| Chip conveyor with auto timer | | S |
| Chip cart with coolant drain | Rear discharge | O |
| Coolant gun | | O |
| Oil mist collector | | O |
| AUTOMATIC OPERATION SUPPORT | | |
| Auto door | | O |
| Automatic load & unloading system | | — |
| Parts flipping device | | — |
| SAFETY | | |
| Fully enclosed guarding | | S |
| Door interlock (incl. Mechanical lock) | | S |
| Impact resistant viewing window | | S |
| Chuck cylinder check valve | | S |
| Low hydraulic pressure detection switch | | O |
| Over travel (soft limit) | | S |
| Load monitoring function | | S |

| OTHERS | | GV-780 | |
|---|---------------------------------------|--------|---|
| Tri-color operation status signal light tower | | S | |
| Florescent work light | | S | |
| Electrical cabinet | Heat exchanger | S | |
| | A/C cooling system | O | |
| Complete hydraulic system | | S | |
| Advanced auto lubrication system | | S | |
| Emergency maintenance electrical part package | | S | |
| Operation & maintenance manuals | | S | |
| FANUC CONTROL FUNCTIONS | | | |
| PMC system | O ⁱ -TD PMC : 25n sec/step | S | — |
| | 31 ⁱ PMC : 25n sec/step | — | S |
| Display | 8.4" color LCD | S | — |
| | 10.4" color LCD | O | S |
| Graphic function | Standard | S | — |
| | Dynamic | O | S |
| Full keypad | Small - 44 keys | S | — |
| | Large - 56 keys | O | S |
| Part program storage length | 512 K byte | S | — |
| | 1M byte | — | S |
| | 2M byte | — | O |
| | 4M byte | — | O |
| Registerable programs | 8M byte | — | O |
| | 400 | S | — |
| | 1,000 | — | S |
| Tool offset pairs | 4,000 | — | O |
| | 64 | S | — |
| | 99 | O | S |
| | 400 | — | O |
| | 499 | — | O |
| Servo control | 999 | — | O |
| | 2000 | — | O |
| Conversational programming | HRV2 (3) | S | S |
| | Manual Guide O ⁱ | S | — |
| Servo motors | Manual Guide ⁱ | O | S |
| | α ⁱ | S | S |
| Spindle motors | α ⁱ | S | S |
| | Run hour & parts counter | S | S |
| Auto power off function | | S | S |
| Custom macro B | | S | S |
| RS-232 port | | S | S |
| Memory card input/output | | S | S |
| Ethernet | | S | S |
| Fast ethernet | | O | O |

Specifications are subject to change without notice.

MACHINE SPECIFICATIONS

13

14

| CAPACITY | | GV-780 |
|--|--|--|
| Max. swing diameter | | Ø 850 mm |
| Swing over saddle | | Ø 660 mm |
| Max. turning diameter | | Ø 820 mm |
| Std. turning diameter | | Ø 390 mm |
| Max. turning length | | 660 mm |
| Hydraulic chuck size | | 15" (Opt.18") |
| SPINDLE | | |
| Spindle bearing diameter | | Ø 160 mm |
| Spindle nose | | A2-11 |
| Motor output (cont. / 30 min.) | | 18.5 / 22 kW (30 / 37 kW , Optional ZF Gear box) |
| Motor full output speed | | 575 rpm |
| Spindle drive system | | Belt-drive |
| Spindle speed range | | 2,000 rpm |
| Spindle full output speed | | 288 rpm |
| Spindle torque (cont. / 30 min.) | | 620 / 1,050 N-m (2,817 N-m, Optional ZF Gear box) |
| X / Z AXES | | |
| Slide way type | | Roller linear guideways |
| Max. X-axis travel | | 500 (-50 ~ +450) mm |
| Max. Z-axis travel | | 670 mm |
| X / Z axes rapids | | 20 / 20 m/min. |
| X / Z axes servo motor | | 3 / 4 kW |
| TURRET | | |
| Stations | | 8 / 12 (Opt.) |
| Index speed | | 0.2 sec. (Adjacent) |
| O.D. tool shank size | | <input type="checkbox"/> 32 mm |
| I.D. tool shank size | | Ø 50 mm |
| LIVE TOOLING TURRET (OPT.) | | |
| Stations | | 12 |
| Live tooling drive motor | | 4.5 kW (Opt. : 7 kW) |
| Index speed | | 0.2 sec. Adjacent / 0.5 sec. 180 degrees (Single step) |
| O.D. tool shank size | | <input type="checkbox"/> 25 mm (Opt. : <input type="checkbox"/> 32 mm) |
| I.D. tool shank size | | Ø 40 mm (Opt. : Ø 50 mm) |
| Live tooling shank size | | ER 32 (Opt. : ER 40) |
| Live tooling RPM range | | 40 ~ 4,000 rpm (Opt. : 30 ~ 3,000 rpm) |
| DUAL-FACE TURNING HOLDER (OPT.) | | |
| O.D. tool shank size | | <input type="checkbox"/> 20 mm |
| Distance between tool holders | | 7 ~ 100 mm |
| B-axis drive motor | | 0.75 kW |
| Disk turning length | | 100 mm |
| GENERAL | | |
| Control | | FANUC Oi-TD |
| Dimensions (L x W x H) | | 1,880 x 3,360 x 3,575 mm |
| Machine weight | | 9,000 Kg |

Specifications are subject to change without notice.



GOODWAYCNC.com

GOODWAY MACHINE CORP.

HEADQUARTERS

No.13, 5th Road,
Taichung Industrial Park,
Taichung City, 407, Taiwan, R.O.C.
E-mail : goodway@goodwaycnc.com

CENTRAL TAIWAN SCIENCE PARK BRANCH

No. 38, Keyuan Road,
Central Taiwan Science Park.Taichung,
Taichung City, 407, Taiwan, R.O.C.
TEL : + 886-4-2463-6000
FAX : + 886-4-2463-9600

GOODWAY MACHINE (WUJIANG) CO.,LTD

No. 4888, East Lake Taihu Avenue, Wujiang
Economic and Technological Development Zone,
Jiangsu, China
TEL : + 86-512-8286-8680
FAX : + 86-512-8286-8620
E-mail : goodway.wj@goodwaycnc.com