

TCV50/11 Series

Flexible, Productive Automation System Vertical Turning Center

SG WIA Vertical Turning Center

Technical Leader

Flexible, Productive Automation System Vertical Turning Center

The CNC Turning Center TCV50/11 Series, designed by SGWIA with years of expertise and the latest technology, is designed to maximize productivity by high speed and accurate performance.

| | | TCV50 Series | TCV11 Series |
|-------------------------------------|--------|---|-------------------------|
| Max. Turning Dia. | mm(in) | Ø550 (21.7") | Ø1,160 (45.7") |
| Max. Turning Length | mm(in) | 600 (23.6") | 1,000 (39.4") |
| Chuck Size | inch | 15" [18"] | 32" [40"] |
| Spindle Speed | r/min | 2,000 | 800 [630] |
| Spindle Motor (10min./30min./Cont.) | kW(HP) | 26/18.5 (35/25) [30/22 (40/30)] [30/22 (40/30)] | 65/55/45 (87/74/60) |
| Travel (X/Z) | mm(in) | 325/625 (12.8"/24.6") | 620/1,000 (24.4"/39.4") |
| No. of Tools | EA | 8 [12], BMT : 12 | 12 |

[] : Option

- Stable spindle structure with excellent heavy duty cutting ability
- 2 step chuck pressure mechanism adopted to minimize workpiece deformation
- Various peripheral equipment can be used for optimized machining
- Designed for optimal chip disposal
- “Right” and “Left” structure for practical automation construction (TCV50 Series)



01 BASIC STRUCTURE

High Productivity, State-of-the-art Vertical CNC Turning Center

Fixed Type Column

TCV50 Series

Moving Column

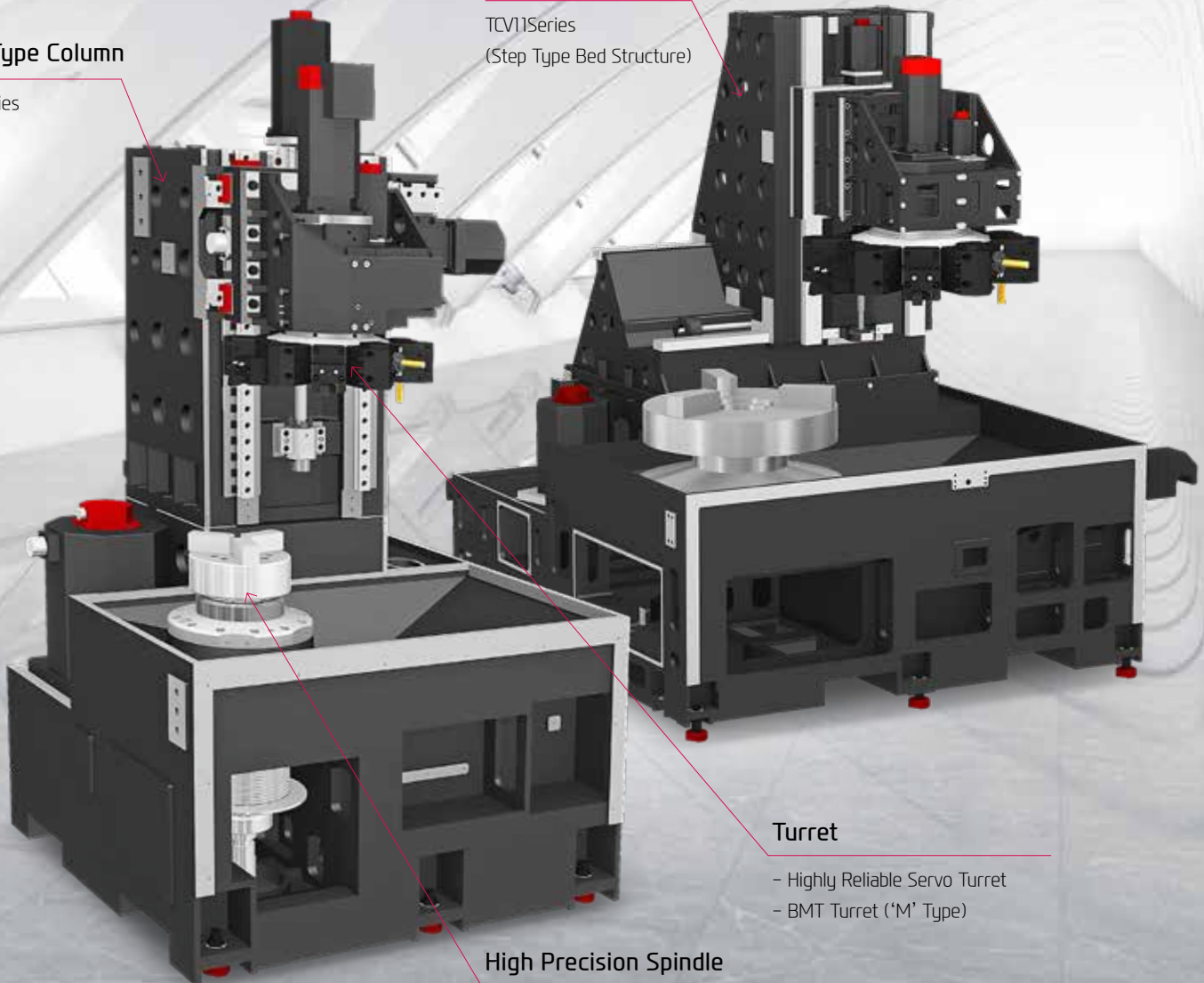
TCV11Series
(Step Type Bed Structure)

Turret

- Highly Reliable Servo Turret
- BMT Turret ('M' Type)

High Precision Spindle

- 2 Step Pressure Chucking Device
- Various Spindle Configurations by Model
- C-Axis Control : 0.001° ('M' Type)



STRUCTURE FOR HEAVY CUTTING & HIGH PRECISION

HIGH-PRECISION STRUCTURE

Right and Left Machine Structure

The TCV50 Series consists of Left and Right machine configuration, allowing for more efficient automation options. (Except TCV11)

Front Operation Structure

The power supply, hydraulic device and lubrication device are all designed to be controlled on the front side of the machine, leading to enhanced user convenience.



COLUMN

Fixed Type Column (TCV50 Series)

The TCV50 Series is designed with a fixed column to minimize vibration during axial movements.

Moving Column (TCV11 Series)

The TCV11 Series Features a traveling column to maintain superior accuracy when turning larger work pieces.

Step Type Bed Structure

For the TCV11 Series, the column feed unit of the bed is designed to form steps, so that the load generated in the front during machining operations may be minimized. Also, by optimizing the weight of the column, feed stability is enhanced.

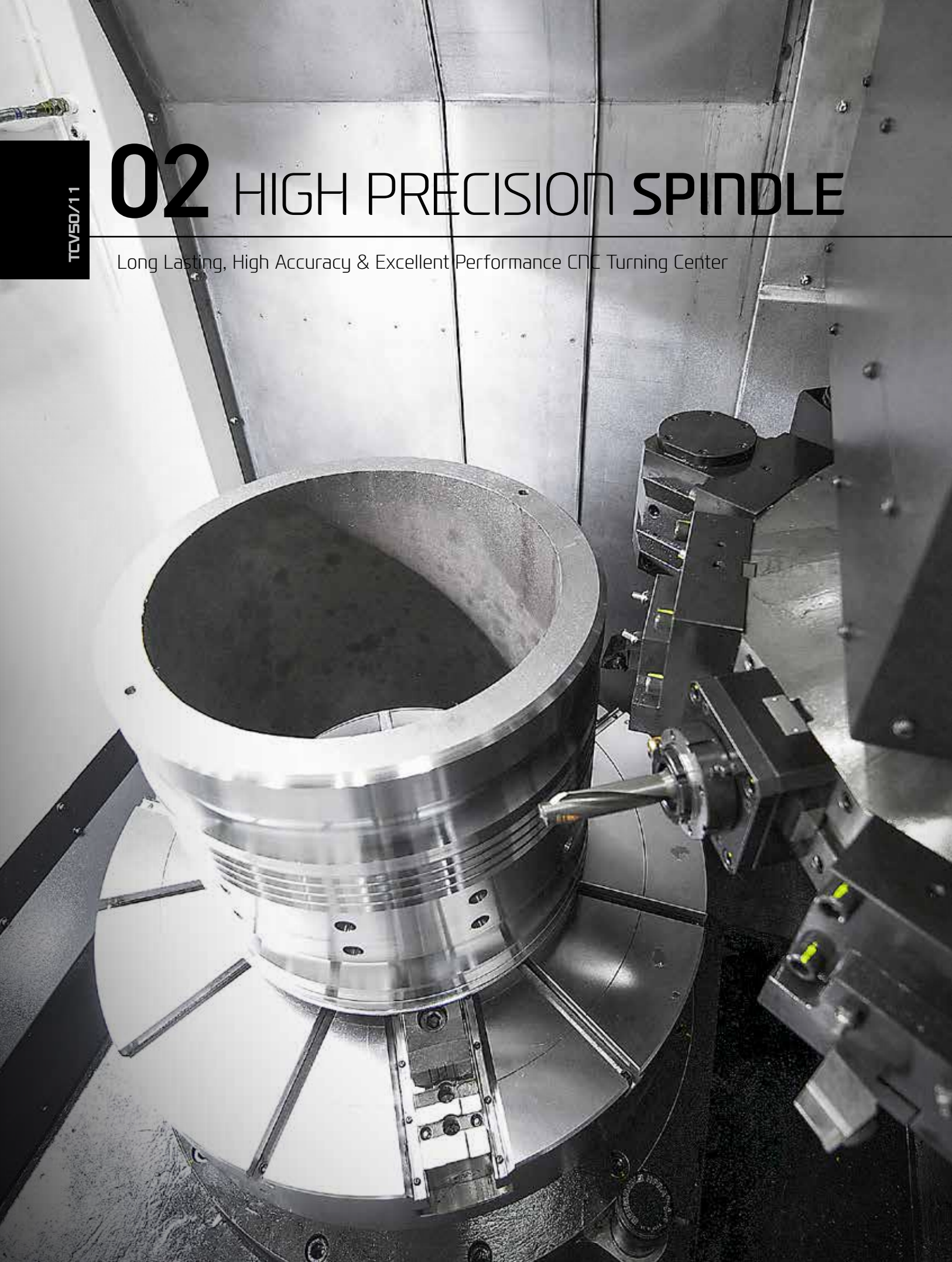
Guideway

| ITEM | TCV50 Series | TCV11 Series |
|---------------------------|--------------------------|----------------------------|
| Slide Type | LM Guide | Box Guide |
| Travel (X/Z) | 325/625 mm (12.8"/24.6") | 620/1,000 mm (24.4"/39.4") |
| Rapid Traverse Rate (X/Z) | 20/18 m/min | 24/24 m/min |

TCV50/11

02 HIGH PRECISION SPINDLE

Long Lasting, High Accuracy & Excellent Performance CNC Turning Center



HEAVY DUTY CUTTING & HIGH ACCURACY

SPINDLE

Spindle for Heavy Cutting

The use of both cylindrical roller bearings and angular contact bearings provide high speed and rigidity. This enables machining of heavy workpieces. Also, TCV11 Series is with a gear box spindle, which provides high torque at low rpm and stability at high rpm.



C-Axis Control ('M' Type)

The C-axis is capable of 0.001° control when milling turret is applied. Machining capability is strengthened with turning and milling operations.

2 Step Pressure Chucking Device

The 2 step pressure chucking system enables high pressure chucking during rough cutting and low pressure chucking during precision cutting.

Spindle Specifications

[] : Option

| Model | Spindle Speed | Motor (Max./Cont.) | Torque (Max./Cont.) | Type |
|--------------|-----------------|-----------------------|---|----------|
| TCV50 Series | 2,000 r/min | 26/18.5 kW (35/25 HP) | 975/693 N·m (719.1/511.1 lbft·ft) | Belt |
| | [2,000 r/min] | [30/22 kW (40/30 HP)] | [1,124/824 N·m (829/607.8 lbft·ft)] | |
| | [2,000 r/min] | [30/22 kW (40/30 HP)] | [1,619/1,188 N·m (1,194.1/876.2 lbft·ft)] | |
| TCV11 Series | 800 [630] r/min | 65/45 kW (87/60 HP) | 7,671/5,310 N·m (5,657.8/3,916.5 lbft·ft) | Gear Box |

CHIP INFLUX PROTECTION

The TCV Series is incorporated with a protection device to keep chips and other foreign materials from entering the main spindle, ensuring long term high precision performance.

Chute Structure

The sloped bed design improves chip flow and disposal of cutting fluids minimizing thermal displacement.



03 SERVO TURRET

High speed, High Accuracy, Highly Reliable Servo Turret

Servo Turret

[] : Option

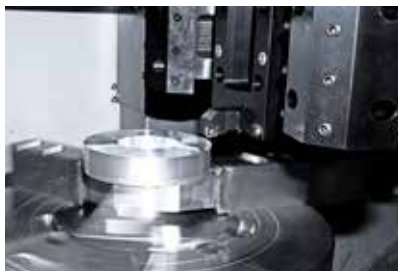
| Model | No. of Tools | Tool Size (O.D/i.D) | Indexing Time |
|--------------|--------------|----------------------------|---------------|
| TCV50R/L | 8 [12] EA | □ 32/Ø50 mm (□ 1.3"/Ø2") | 0.2 sec |
| TCV50RM/LM | 12 EA | | |
| TCV11 Series | 12 EA | □ 32/Ø80 mm (□ 1.3"/Ø3.1") | 0.6 sec |

Mill Turret

| Model | Speed | Motor (Max./Cont) | Torque (Max./Cont) | Type |
|--------------|-------------|----------------------|-----------------------------------|-------|
| TCV50 Series | 3,000 r/min | 3.7/2.2 kW (5/3 HP) | 58.9/35 N·m (43.4/25.8 lbft·ft) | BMT75 |
| TCV11 Series | 3,000 r/min | 11/7.5 kW (15/10 HP) | 140/95.4 N·m (103.3/70.4 lbft·ft) | BMT85 |

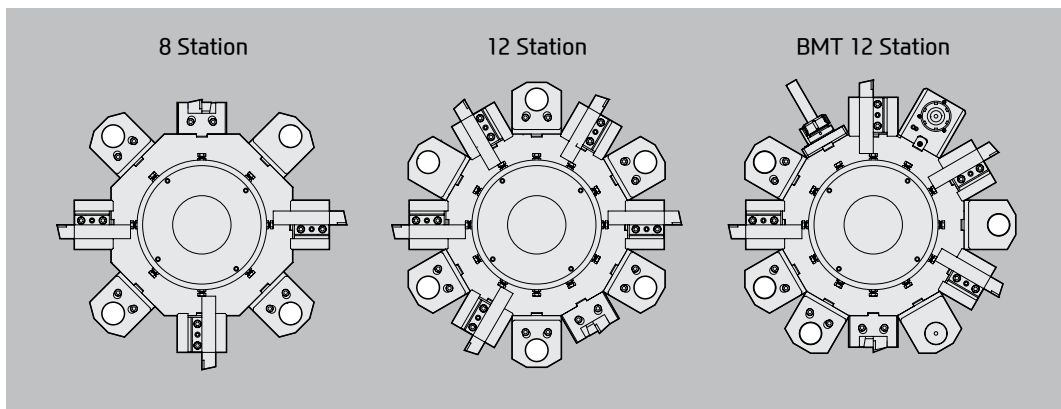
VARIOUS DRIVEN PRECISION BMT TOOL HOLDERS

SERVO TURRET



Servo Turret

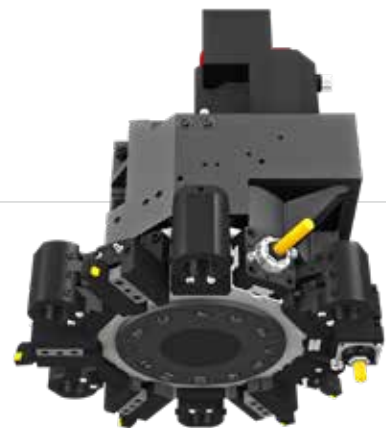
The TCV50/11 Series' machining reliability is enhanced by incorporating a high performance AC servo motor to the turret drive mechanism. Also, the turrets are installed with 3 piece couplings to improve indexing accuracy. Powerful hydraulic tool clamping exhibits great heavy duty machining performance by minimizing tool tip deviation due to work load.



MILL TURRET

BMT Turret ('M' Type)

The BMT turret secures the tool with four bolts and key on the tool mounting surface of the turret, making it possible to powerfully fix the tool, ensuring high reliability in rigidity and precision.



STRAIGHT MILLING HEAD



ANGULAR MILLING HEAD



Mill Tool Holder

Machining capability has increased with the addition of straight milling head tool holder, which can machine workpieces from the side, and angular milling head tool holder, which can perform I.D. operations.

04 FANUC – Smart Plus

The Compatible All-round Control

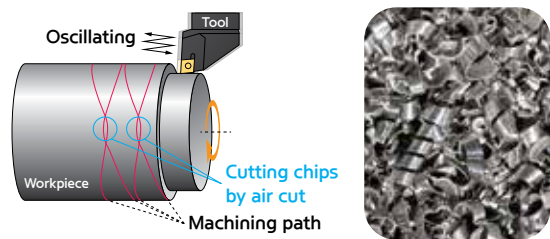


15" Touch-type Monitor as a standard

| | | |
|--------------------------------------|------------------------|-------------------------|
| Fast Cycle Time Technology | Smart Machine Control | Fine Surface Technology |
| Smart Servo Control Technology | Conversational Program | SmartGuide-i |
| Machining-aid Function | i-HMI | 5120M (2MB) |
| No. of Registerable Programs 1000 EA | Part Program Storage | |

Servo Learning Oscillation Function for Chip Breaking **OPTION**

- Machining Method : he tool cuts the workpiece moving in a zigzag pattern. (Oscillating) → Air cut section occurs → Long chips break
- Advantage : Increase tool life, Enhance surface finishing, Improve chip disposal
- Machine : All turning centers with FANUC controller (Option)



(Developed special screen page for servo learning oscillation function / Even when this function is applied, the cycle time remains same.)

MMS (Machine Monitoring System)



MMS Cloud

A cloud server-based equipment monitoring system for collecting and analyzing facility operation data.

Manufacturing big data solution with design, manufacturing, and intelligence technology of SG-WIA
(Big data collection/Analysis/Visualization)

SMART CNC (FANUC Smart Plus)



1. Dialogue Program (Smart Guide-i)

This software offers the maximum user convenience through dialogue manipulation from setup to processing. This includes writing processing programs and simulation checks.

2. LAUNCHER

This software offers shortcuts for quick access to specialized features and frequently used features.

SPECIFICATIONS

Standard & Optional

| Spindle | | TCV50 | TCV11 |
|--|-----------------------------------|------------|------------|
| Main Spindle Hollow Chuck 3 Jaw | | - | - |
| | 12" | - | - |
| Main Spindle | 15" | ● | - |
| Solid Chuck 3 Jaw | 18" | ○ | - |
| | 32" | - | ● |
| | 40" | - | ○ |
| Standard Soft Jaw (1set) | | ● | ● |
| Chuck Clamp Foot Switch | | ● | ● |
| 2 Steps Hyd. Pressure Device | | ● | ● |
| Spindle Inside Stopper | | - | - |
| 5" Index | | ☆ | ☆ |
| Cs-Axis (0.001") | | - (M : ●) | - (M : ●) |
| 2 Steps Chuck Foot Switch | | ○ | ○ |
| Chuck Open/Close Confirmation Device | | ○ (CE : ●) | ○ (CE : ●) |
| High Power Main Spindle | 30/22kW (40.2/29.5 HP) | ○ | - |
| Turret | | | |
| Tool Holder | | ● | ● |
| 8 station Turret | | ● | - |
| 12 station Turret | | ○ | ● |
| Mill Turret | BMT | - (M : ●) | - (M : ●) |
| Straight Milling Head | Collet Type, 1ea | - (M : ●) | - (M : ●) |
| Angular Milling Head | Collet Type, 1ea | - (M : ●) | - (M : ●) |
| Straight Milling Head | Adapter Type | - (M : ○) | - (M : ○) |
| Angular Milling Head | Adapter Type | - (M : ○) | - (M : ○) |
| Boring Sleeve | | ● | ● |
| Drill Socket | | ● | ● |
| Angle Head | | - (M : ☆) | - (M : ☆) |
| Coolant & Air Blow | | | |
| Standard Coolant (Nozzle) | | ● | ● |
| Bed Flushing Coolant | | ○ | ● |
| Jet Coolant System | | ○ | ○ |
| Chuck Coolant (Upper Chuck) | | ○ | ○ |
| Gun Coolant | | ○ | ○ |
| Though Spindle Coolant (Only for Special Chuck) | | - | - |
| Thru Coolant for Live Tool | | - (M : ☆) | - (M : ☆) |
| Chuck Air Blow (Upper Chuck) | | ○ | ○ |
| Turret Air Blow | | ☆ | ☆ |
| Air Gun | | ○ | ○ |
| Though Spindle Air Blow (Only for Special Chuck) | | ☆ | ☆ |
| High Pressure Coolant | 0.5Bar | ● | - |
| | 6Bar | ○ | ● |
| | 20Bar | ○ | ☆ |
| | 30Bar | ☆ | ☆ |
| | 70Bar | ○ | ☆ |
| Power Coolant System (For Automation) | | ☆ | ☆ |
| Coolant Chiller | | ☆ | ☆ |
| Chip Disposal | | | |
| Coolant Tank | 300 ℓ (79.3 gal) | ● | - |
| | 340 ℓ (89.8 gal) | - | - |
| | 420 ℓ (111 gal) | - | ● |
| Chip Conveyor (Hinge/Scraper) | Front (Side) | ○ | ○ |
| | Rear (Rear) | ○ | ○ |
| Special Chip Conveyor (Drum Filter) | | ☆ | ☆ |
| Chip Wagon | Standard (180 ℓ [47.5 gal]) | ○ | ○ |
| | Swing (200 ℓ [52.8 gal]) | ○ | ○ |
| | Large Swing (290 ℓ [76.6 gal]) | ○ | ○ |
| | Large Size (330 ℓ [87.2 gal]) | ○ | ○ |
| | Customized | ☆ | ☆ |
| Safety Device | | | |
| Total Splash Guard | | ● | ● |
| Chuck hydraulic pressure maintenance interlock | | ○ (CE : ●) | ○ (CE : ●) |

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

| Electric Device | | TCV50 | TCV11 |
|---|-----------------------|----------------|----------------|
| Call Light | 1Color : ● | ● | ● |
| Call Light & Buzzer | 3Color : ● ■ ■ B | ○ | ○ |
| Electric Cabinet Light | | ○ | ○ |
| Remote MPG | | ○ | ○ |
| Work Counter | Digital | ○ | ○ |
| Total Counter | Digital | ○ | ○ |
| Tool Counter | Digital | ○ | ○ |
| Multi Tool Counter | Digital | ○ | ○ |
| Electric Circuit Breaker | | ○ | ○ |
| AVR (Auto Voltage Regulator) | | ☆ | ☆ |
| Transformer | 30kVA | - | - |
| | 35kVA | ○ | - |
| | 60kVA | - | ○ |
| Auto Power Off | | ○ | ○ |
| Measurement | | | |
| Q-Setter | Removable Type | ○ | ○ |
| Automatic Q-Setter | | - | - |
| Work Close Confirmation Device | TACO | ☆ | ☆ |
| | SMC | ☆ | ☆ |
| Work Setter | | ☆ | ☆ |
| Linear Scale | X Axis | ○ | ○ |
| | Z Axis | ☆ | ○ |
| Coolant Level Sensor (Only for Chip Conveyor) | | ☆ | ☆ |
| Environment | | | |
| Air Conditioner | | ○ | ○ |
| Oil Mist Collector | | ☆ | ☆ |
| Oil Skimmer (Only for Chip Conveyor) | | ○ | ○ |
| MLQ (Minimal Quantity Lubrication) | | ☆ | ☆ |
| Fixture & Automation | | | |
| Auto Door | Standard | ○ | ○ |
| | High Speed | ☆ | ☆ |
| Auto Shutter (Only for Automatic System) | | - | - |
| Sub Operation Pannel | | ☆ | ☆ |
| Extra M-Code 4ea | | ○ | ○ |
| Automation Interface | | ☆ | ☆ |
| I/O Extension (IN & OUT) | 16 Contact | ○ | ○ |
| | 32 Contact | ○ | ○ |
| Turret Work Pusher (For Automation) | | ☆ | ☆ |
| Hyd. Device | | | |
| Standard Hyd. Cylinder | Solid | ● | ● |
| | 35bar/14 ℓ (3.7 gal) | - | - |
| | 60bar/20 ℓ (5.3 gal) | - | ● |
| | 70bar/50 ℓ (13.2 gal) | ● | - |
| Standard Hyd. Unit | | | |
| | | | |
| | | | |
| | | | |
| S/W | | | |
| Dialogue Program (HW-DPRO) | | ○ | ○ |
| DNC software (HW-eDNC) | | ○ | ○ |
| Machine Monitoring System (HW-MMS Cloud) | | ☆ | ☆ |
| Smart Guide-i : FANUC | | ● (F32i-B : ☆) | ● (F32i-B : ☆) |
| Smart S/W | | ☆ | ☆ |
| ETC | | | |
| Tool Box | | ● | ● |
| Customized Color | Need Munsel No. | ☆ | ☆ |
| CAD & CAM | | ☆ | ☆ |
| Special Level Seat | Only with Air Zero | ☆ | ☆ |

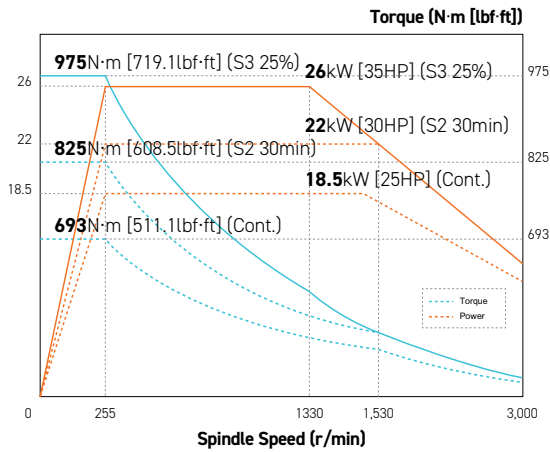
◆ 4 channel of TDC(Thermal Displacement Compensation) device is recommended, when more than 6 bar of high pressure coolant is applied, for the high quality machining.

Specifications are subject to change without notice for improvement. / Please refer to the S/W catalog (iRIS) for details by S/W product.

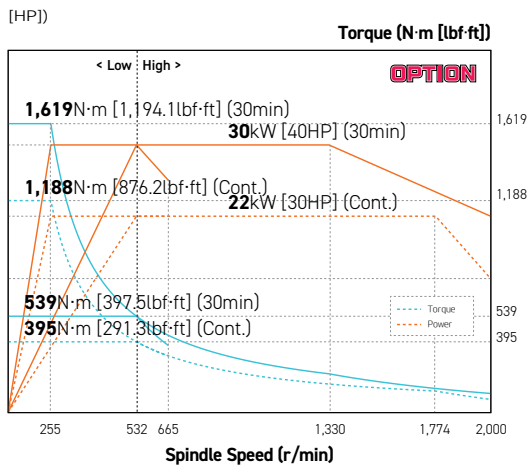
SPECIFICATIONS

Spindle Output/Torque Diagram

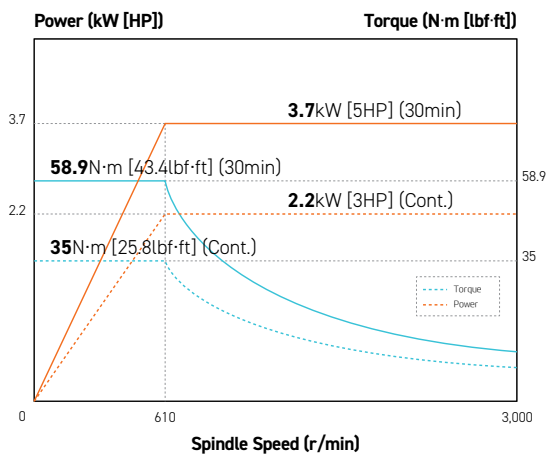
TCV50 Series 2,000rpm (Belt) Power (kW [HP])



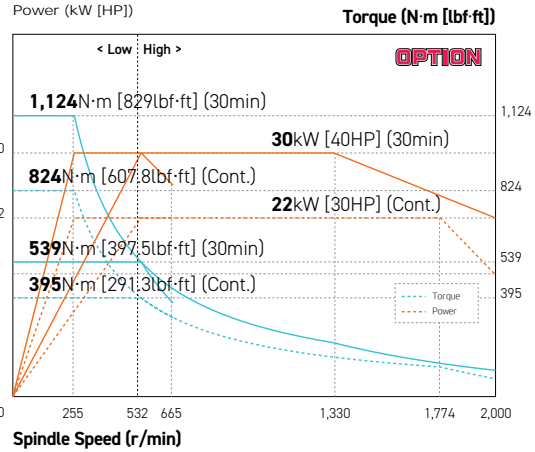
TCV50 Series 2,000rpm (Belt) Power (kW [HP])



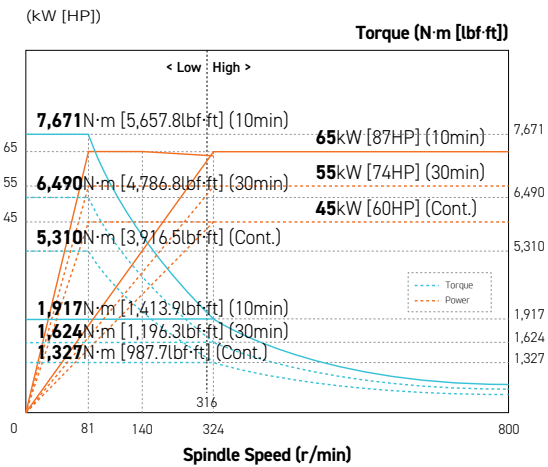
TCV50 Series 3,000rpm (Mill Turret)



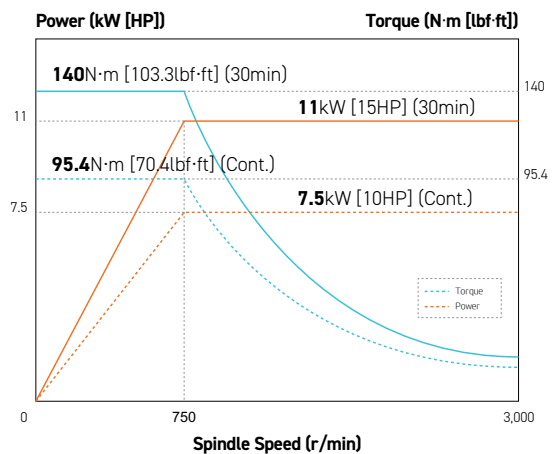
TCV50 Series 2,000rpm (Belt)



TCV11 Series 800rpm (Gear) Power (kW [HP])



TCV11 Series 3,000rpm (Mill Turret)

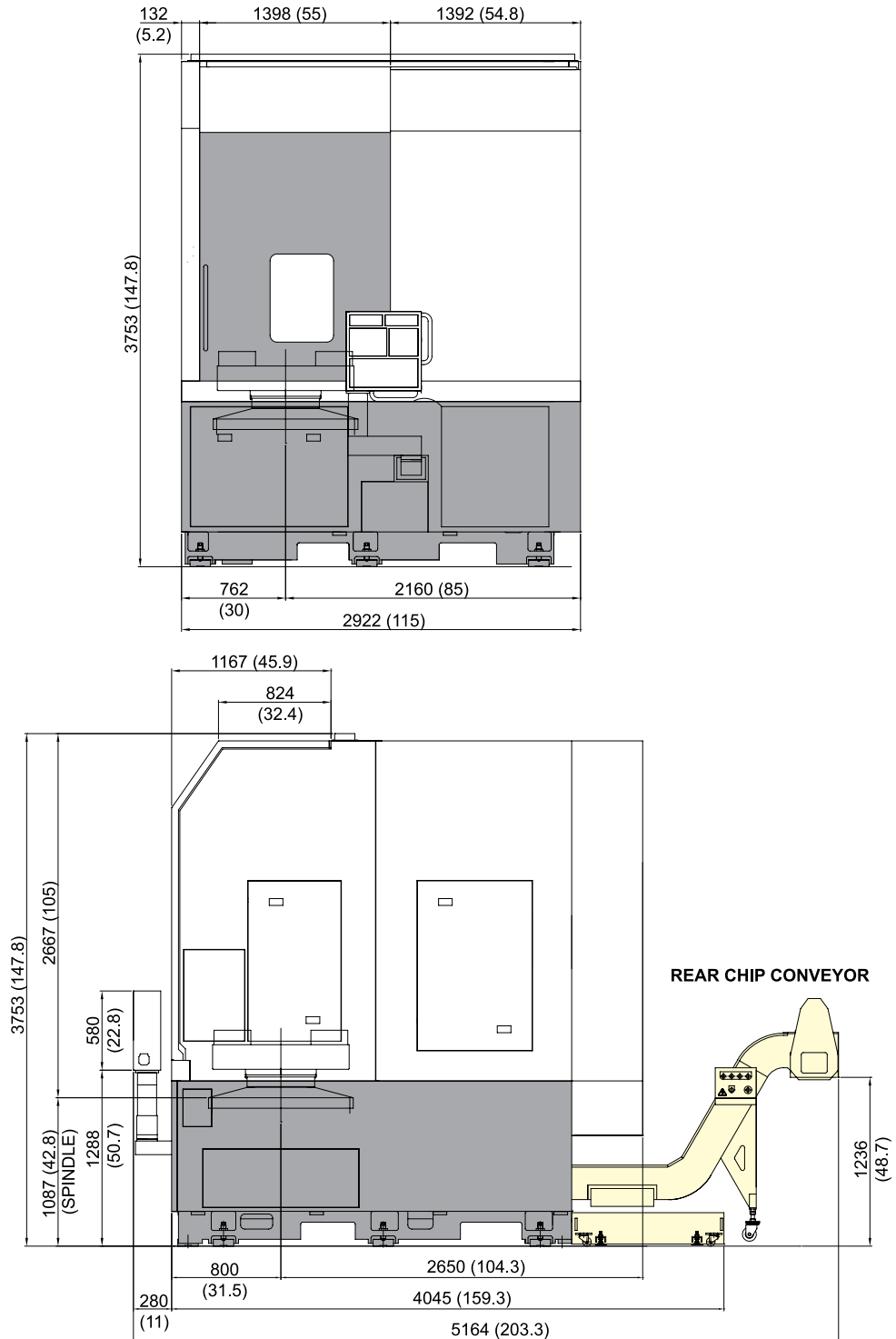


SPECIFICATIONS

External Dimensions

unit : mm(in)

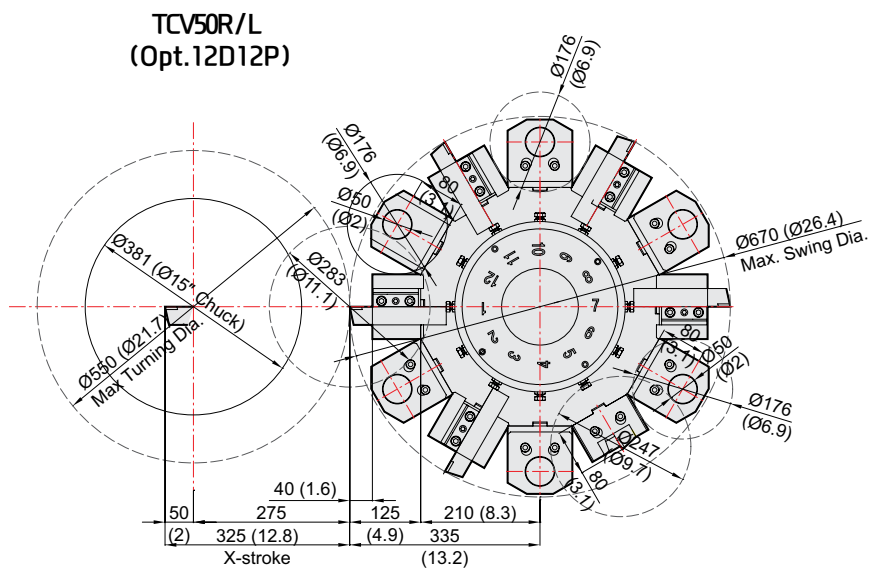
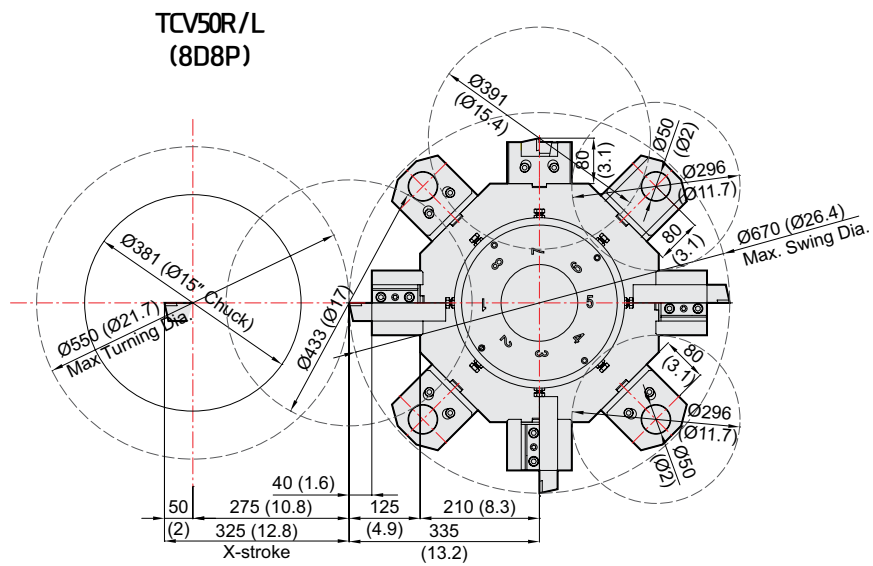
TCV11RM



SPECIFICATIONS

Interference

unit : mm(in)

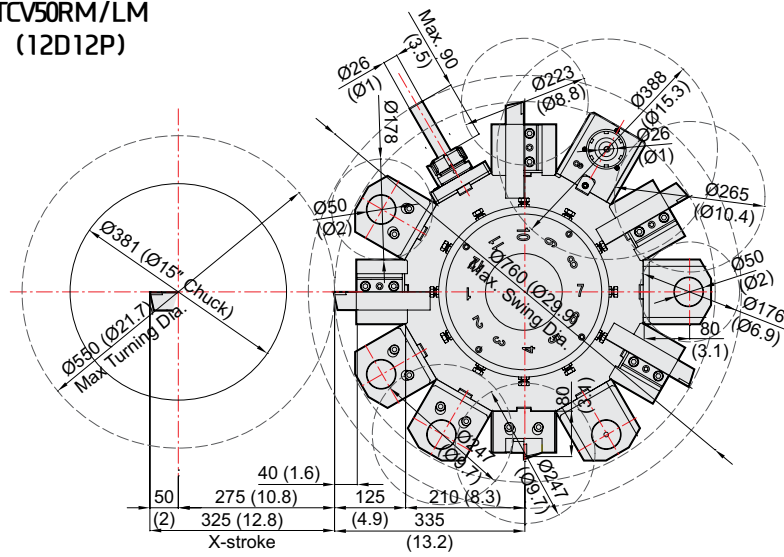


SPECIFICATIONS

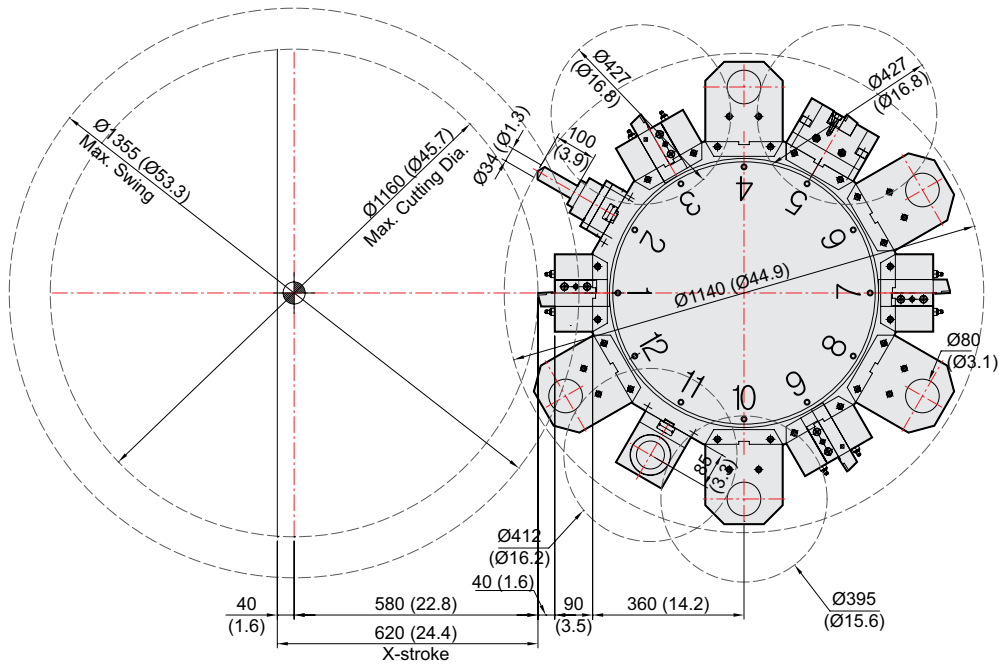
Interference

unit : mm(in)

**TCV50RM/LM
(12D12P)**



**TCV11RM
(12D12P)**

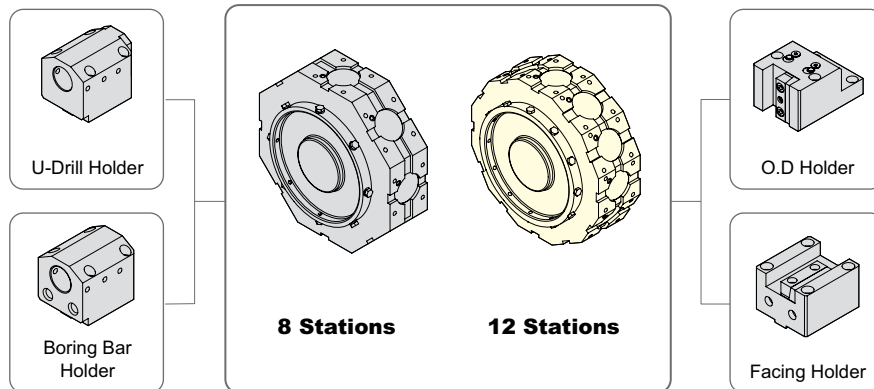


SPECIFICATIONS

Tooling System

unit : mm(in)

TCV50R/L



Tooling Parts Detail

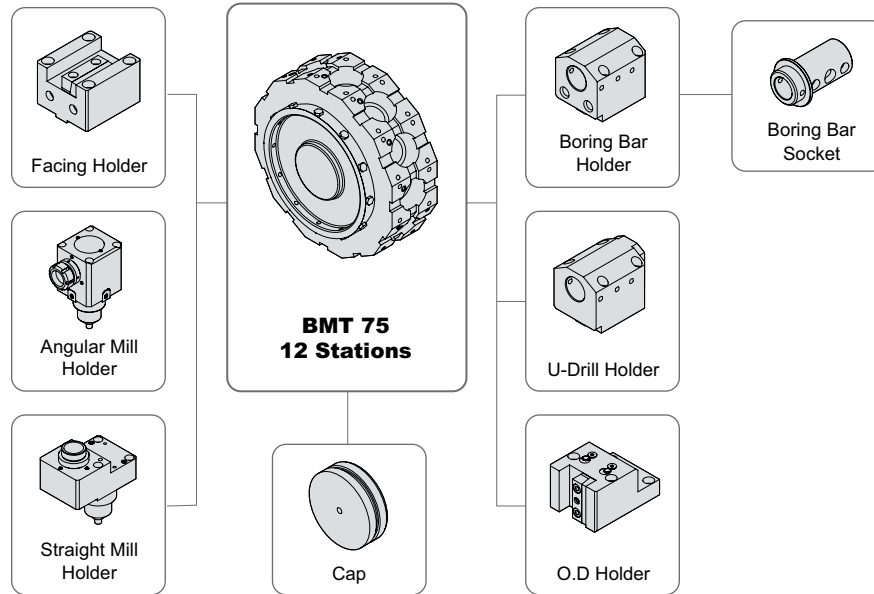
| ITEM | | | TCV50R/L (8 Station) | | TCV50R/L (12 Station) | | |
|----------------|----------------------|---------------|----------------------|-----------|-----------------------|-----------|---|
| | | | mm Unit | inch Unit | mm Unit | inch Unit | |
| Turning Holder | O.D Holder | Right/Left | 3 | 3 | 5 | 5 | |
| | Facing Holder | | 1 | 1 | 1 | 1 | |
| Boring Holder | I.D Holder | Single | 3 | 3 | 5 | 5 | |
| | U-Drill Holder | Tool Holder | 1 | 1 | 1 | 1 | |
| Driven Holder | Straight Mill Holder | Standard | - | - | - | - | |
| | Angular Mill Holder | Standard | - | - | - | - | |
| Socket | Boring | Ø16 (Ø5/8") | 1 | 1 | 1 | 1 | |
| | | Ø20 (Ø3/4") | 1 | 1 | 1 | 1 | |
| | | Ø25 (Ø1") | 1 | 1 | 1 | 1 | |
| | | Ø32 (Ø1 1/4") | 1 | 1 | 1 | 1 | |
| | | Ø40 (Ø1 1/2") | 1 | 1 | 1 | 1 | |
| | Drill | MT 2 | | 1 | 1 | 1 | 1 |
| | | MT 3 | | 1 | 1 | 1 | 1 |
| | | MT 4 | | 1 | 1 | 1 | 1 |
| | ER Collet | | - | - | - | - | |

SPECIFICATIONS

Tooling System

unit : mm(in)

TCV50RM/LM



Tooling Parts Detail

| ITEM | | | TCV50RM/LM | | |
|----------------|----------------------|---------------|------------|-----------|---|
| | | | mm Unit | inch Unit | |
| Turning Holder | O.D Holder | Right/Left | 4 | 4 | |
| | Facing Holder | | 1 | 1 | |
| Boring Holder | I.D Holder | Single | 4 | 4 | |
| | U-Drill Holder | Tool Holder | 1 | 1 | |
| Driven Holder | Straight Mill Holder | Standard | 1 | 1 | |
| | Angular Mill Holder | Standard | 1 | 1 | |
| Socket | Boring | Ø16 (Ø5/8") | 1 | 1 | |
| | | Ø20 (Ø3/4") | 1 | 1 | |
| | | Ø25 (Ø1") | 1 | 1 | |
| | | Ø32 (Ø1 1/4") | 1 | 1 | |
| | | Ø40 (Ø1 1/2") | 1 | 1 | |
| | Drill | MT 2 | | 1 | 1 |
| | | MT 3 | | 1 | 1 |
| | | MT 4 | | 1 | 1 |
| | ER Collet | | - | - | |

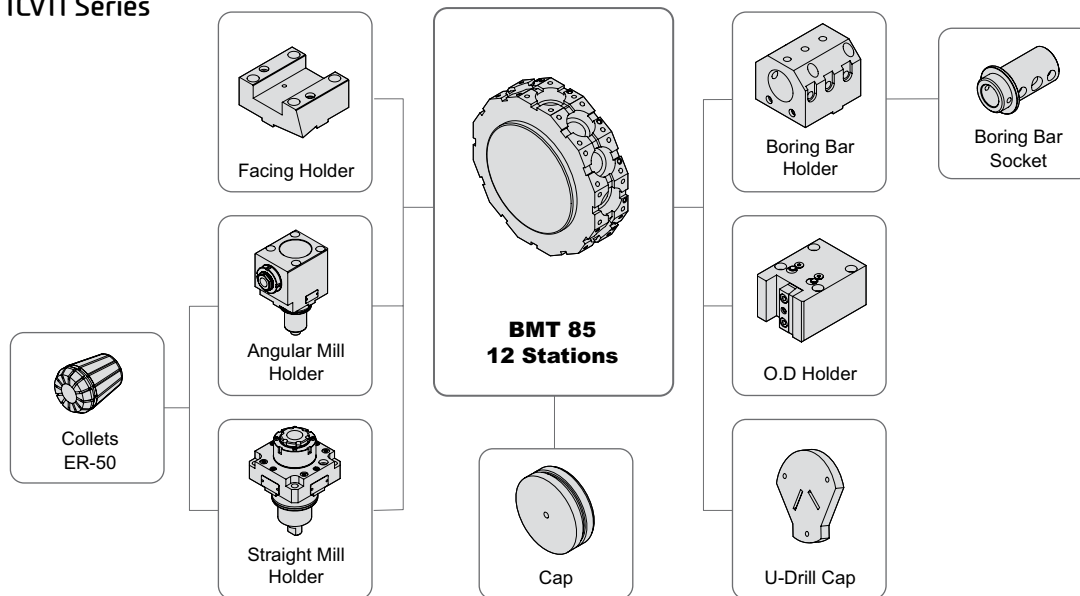
Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Tooling System

unit : mm(in)

TCV11 Series



Tooling Parts Detail

| ITEM | | | TCV11R/L | | TCV11RM/LM | | |
|----------------|----------------------|---------------|----------|-----------|------------|-----------|---|
| | | | mm Unit | inch Unit | mm Unit | inch Unit | |
| Turning Holder | O.D Holder | Right/Left | 5 | 5 | 4 | 4 | |
| | Facing Holder | | 1 | 1 | 1 | 1 | |
| Boring Holder | I.D Holder | Single | 6 | 6 | 5 | 5 | |
| | U-Drill Holder | Cap | 1 | 1 | 1 | 1 | |
| Driven Holder | Straight Mill Holder | Standard | - | - | 1 | 1 | |
| | Angular Mill Holder | Standard | - | - | 1 | 1 | |
| Socket | Boring | Ø20 (Ø3/4") | 1 | 1 | 1 | 1 | |
| | | Ø25 (Ø1") | 1 | 1 | 1 | 1 | |
| | | Ø32 (Ø1 1/4") | 1 | 1 | 1 | 1 | |
| | | Ø40 (Ø1 1/2") | 1 | 1 | 1 | 1 | |
| | | Ø50 (Ø2") | 1 | 1 | 1 | 1 | |
| | | Ø60 (Ø2 1/4") | 1 | 1 | 1 | 1 | |
| | Drill | MT 3 | | 1 | 1 | 1 | 1 |
| | | MT 4 | | 1 | 1 | 1 | 1 |
| | | MT 5 | | 1 | 1 | 1 | 1 |
| | Adapter Set | | - | - | 1 Set | 1 Set | |
| | ER Collet | | - | - | 1 Set | 1 Set | |

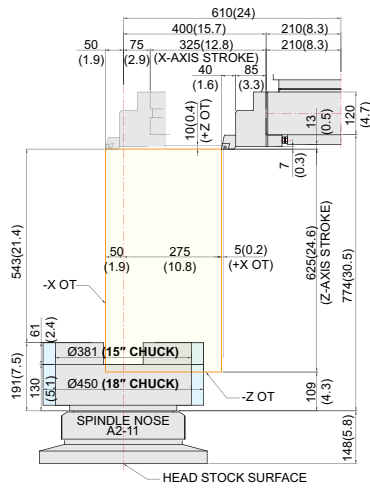
SPECIFICATIONS

Tooling Travel Range

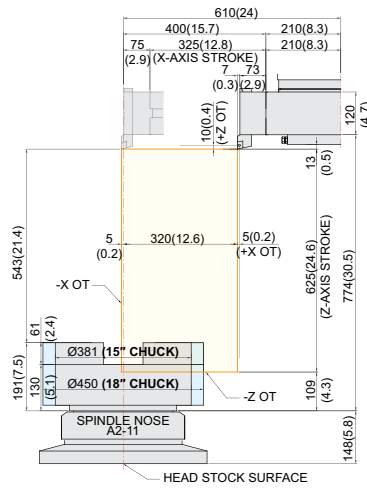
unit : mm(in)

TCV50R/L

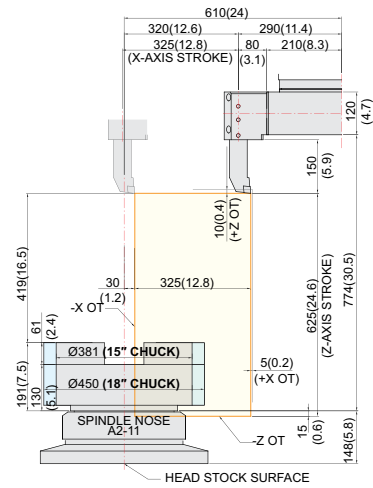
(O.D TURNING HOLDER)



(FACING HOLDER)

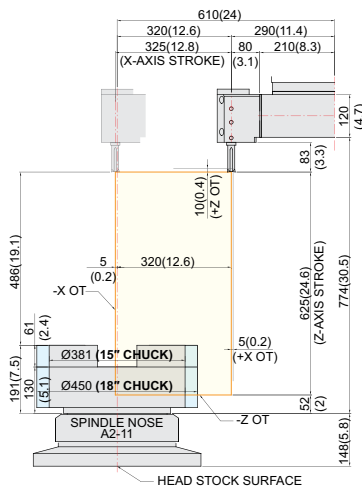


(BORING BAR HOLDER)

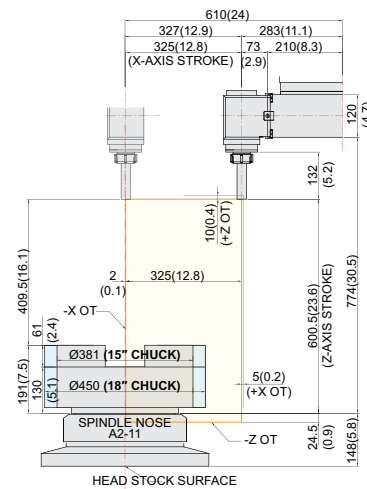


TCV50RM/LM

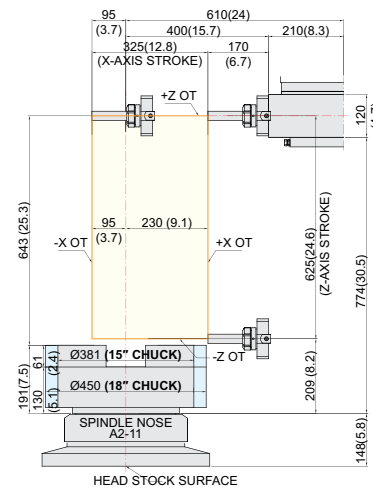
(U-DRILL HOLDER)



(ANGULAR MILLING HEAD)



(STRAIGHT MILLING HEAD)



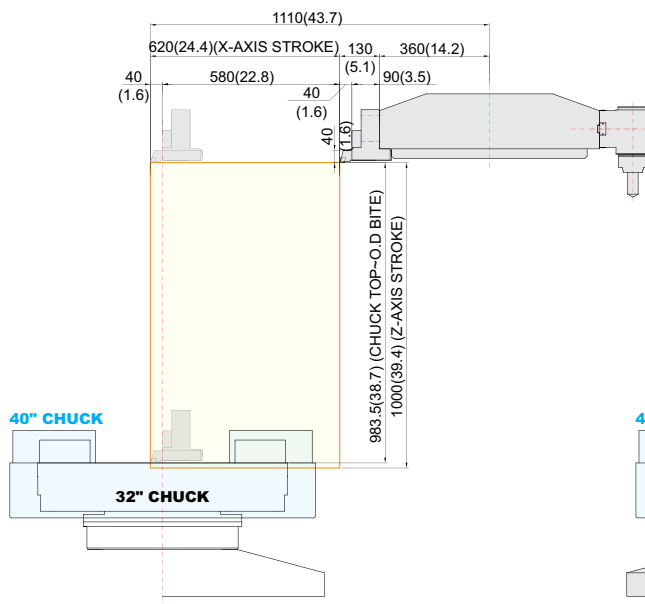
SPECIFICATIONS

Tooling Travel Range

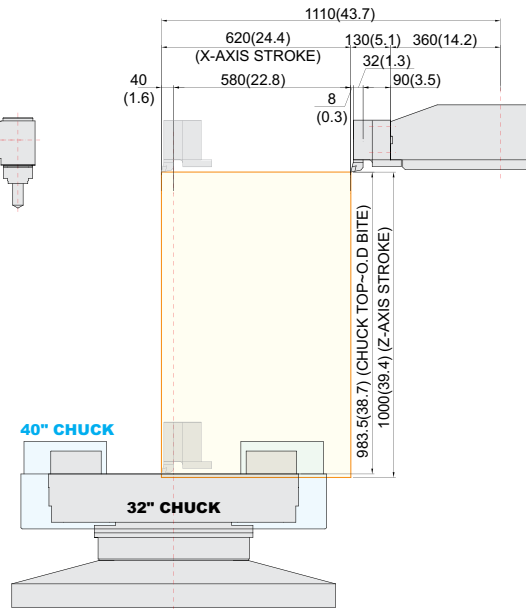
unit : mm(in)

TCV11RM

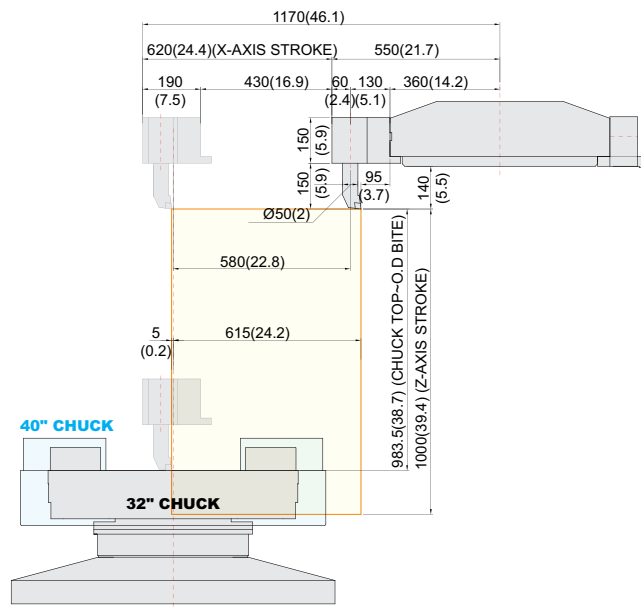
(O.D. HOLDER)



(FACING HOLDER)



(I.D. HOLDER)



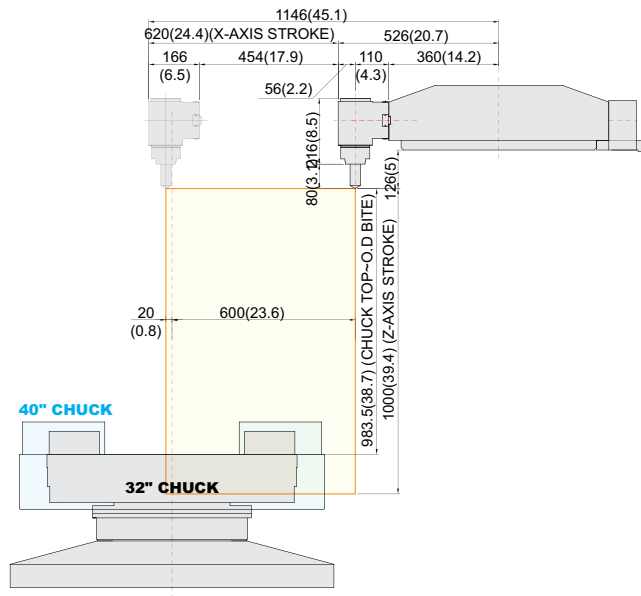
SPECIFICATIONS

Tooling Travel Range

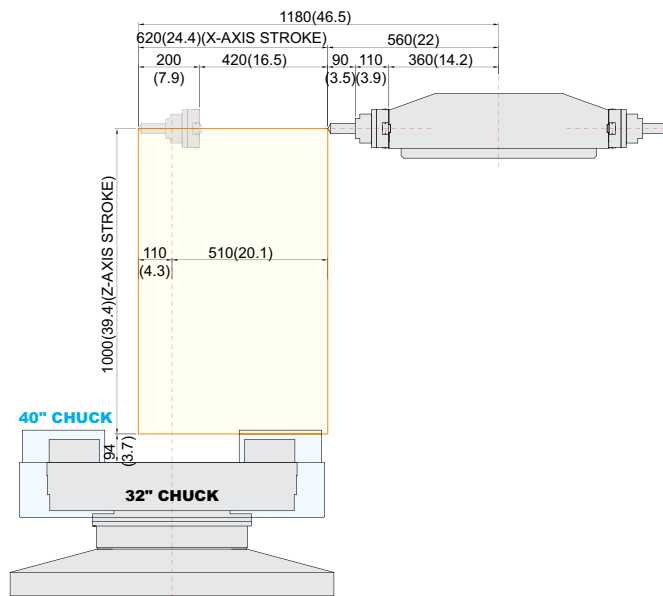
unit : mm(in)

TCV11RM

(ANGULAR MILLING HEAD)



(STRAIGHT MILLING HEAD)



SPECIFICATIONS

Specifications

[] : Option

| ITEM | | TCV50R/L | TCV50RM/LM | |
|---------------|---------------------------|-----------------|---|---------------------------|
| CAPACITY | Swing Over the Bed | mm(in) | Ø760 (29.9") | |
| | Swing Over the Carriage | mm(in) | Ø560 (22") | |
| | Max. Turning Dia. | mm(in) | Ø550 (21.7") | |
| | Max. Turning Length | mm(in) | 600 (23.6") | |
| SPINDLE | Chuck Size | inch | 15" [18"] | |
| | Spindle Bore | mm(in) | Ø100 (3.9") | |
| | Spindle Speed (rpm) | r/min | 2,000 | |
| | Motor (Max/Cont.) | kW(HP) | 26/18.5 (35/25) [30/22 (40/30)] [30/22 (40/30)] | |
| | Torque (Max/Cont.) | N·m(lbf·ft) | 975/693 (719.1/511.1) [1,124/824 (829/607.8)] [1,619/1,188 (1,194.1/876.2)] | |
| | Spindle Type | - | Belt | |
| | Spindle Nose | - | A2-11 | |
| | C-axis Indexing | deg | - | 0.001° |
| FEED | Travel (X/Z) | mm(in) | 325/625 (12.8"/24.6") | |
| | Rapid Traverse Rate (X/Z) | m/min(ipm) | 20/18 (787/709) | |
| | Slide Type | - | LM GUIDE | |
| TURRET | No. of Tools | EA | 8 [12] | |
| | Tool Size | OD | mm(in) | □ 32 (1.3") |
| | | ID | mm(in) | Ø50 (2") |
| | Indexing Time | sec/step | | 0.2 |
| LIVE TOOL | Motor (Max/Cont.) | kW(HP) | - | 3.7/2.2 (5/3) |
| | Milling Tool Speed (rpm) | r/min | - | 3,000 |
| | Torque (Max/Cont.) | N·m(lbf·ft) | - | 58.9/35 (43.4/25.8) |
| | Collet Size | mm(in) | - | Ø26 (1") (ER40) |
| | Type | - | - | BMT75 |
| TANK CAPACITY | Coolant Tank | ℓ (gal) | 300 (79.3) | |
| | Lubricating Tank | ℓ (gal) | 2 (0.5) | |
| POWER SUPPLY | Electric Power Supply | kVA | 29 | 32 |
| | Thickness of Power Cable | mm ² | | Over 25 |
| | Voltage | V/Hz | | 220/60 (200/50*) |
| MACHINE | Floor Space (L×W) | mm(in) | 1,855×2,842 (73"×111.9") | <Excluding Chip Conveyor> |
| | Height | mm(in) | 2,930 (115.4") | |
| | Weight | kg(lb) | 10,000 (22,046) | |
| NC | Controller | - | FANUC 32i-B [FANUC i Series - Smart Plus] | |

*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)

Prior consultation is required when applying spindle contouring control for gear driven spindle.
Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Specifications

[] : Option

| ITEM | | | TCV11R | TCV11RM |
|---------------|------------------------------|-----------------|---|-----------------------|
| CAPACITY | Swing Over the Bed | mm(in) | Ø1,355 (53.3") | |
| | Swing Over the Carriage | mm(in) | Ø1,250 (49.2") | |
| | Max. Turning Dia. | mm(in) | Ø1,160 (45.7") | |
| | Max. Turning Length | mm(in) | 1,000 (39.4") | |
| SPINDLE | Chuck Size | inch | 32" [40"] | |
| | Spindle Bore | mm(in) | Ø110 (4.3") | |
| | Spindle Speed (rpm) | r/min | 800 [630] | |
| | Motor (10min./30min./Cont.) | kW(HP) | 65/55/45 (87/74/60) | |
| | Torque (10min./30min./Cont.) | N·m(lbf·ft) | 7,671/6,490/5,310 (5,657.8/4,786.8/3,916.5) | |
| | Spindle Type | - | Gear Box | |
| | Spindle Nose | - | Ø380 (15") Flat | |
| | C-axis Indexing | deg | - | 0.001° |
| FEED | Travel (X/Z) | mm(in) | 620/1,000 (24.4"/39.4") | |
| | Rapid Traverse Rate (X/Z) | m/min(ipm) | 24/24 (945/945) | |
| | Slide Type | - | Box Guide | |
| TURRET | No. of Tools | EA | 12 | |
| | Tool Size | OD | □ 32 (1.3") | |
| | | ID | Ø80 (3.1") | |
| | Indexing Time | sec/step | 0.6 | |
| LIVE TOOL | Motor (Max/Cont.) | kW(HP) | - | 11/7.5 (15/10) |
| | Milling Tool Speed (rpm) | r/min | - | 3,000 |
| | Torque (Max/Cont.) | N·m(lbf·ft) | - | 140/95.4 (103.3/70.4) |
| | Collet Size | mm(in) | - | Ø34 (1.3") (ER50) |
| | Type | - | - | BMT85 |
| TANK CAPACITY | Coolant Tank | ℓ (gal) | 420 (111) | |
| | Lubricating Tank | ℓ (gal) | 4 (1.1) | |
| POWER SUPPLY | Electric Power Supply | kVA | 61 | 70 |
| | Thickness of Power Cable | mm ² | Over 50 | |
| | Voltage | V/Hz | 220/60 (200/50*) | |
| MACHINE | Floor Space (L×W) | mm(in) | 2,922×4,325 (115"×170.3") <Excluding Chip Conveyor> | |
| | Height | mm(in) | 3,776 (148.7") | |
| | Weight | kg(lb) | 22,000 (48,502) | |
| PC | Controller | - | FANUC 32i-B [FANUC i Series - Smart Plus] | |

*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)

※ Prior consultation is required when applying spindle contouring control for gear driven spindle.

Specifications are subject to change without notice for improvement.

CONTROLLER

FANUC 32i-B

[] : Option

| Controlled axis / Display / Accuracy Compensation | |
|---|--|
| Control axis | 2 axis (X, Z) / 3 axis (X, Z, C) / 4 axis (X, Z, Y, C) 5 axis (X, Z, B, C, A) / 6 axis (X, Z, Y, B, C, A) |
| Simultaneously controlled axis | 2 axis [Max. 4 axis] |
| Designation of spindle axis | 4 axis (1 path), 6 axis (2 path Total) |
| Least setting Unit | X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg |
| Least input increment | X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg |
| Inch / Metric conversion | G20 / G21 |
| High response vector control | |
| Interlock | All axis / Each axis |
| Machine lock | All axis |
| Backlash compensation | ± 0 ~ 9999 pulses (Rapid traverse / Cutting feed) |
| Position switch | |
| LCD / MDI | 10.4 inch color LCD |
| Feedback | Absolute motor feedback |
| Stored stroke check 1 | Over travel |
| Stored stroke check 2, 3 | |
| PMC axis control | |
| Operation | |
| Automatic operation (Memory) | |
| MDI operation | |
| DNC operation | Needed DNC software / CF card |
| Program restart | |
| Wrong operation prevention | |
| Program check function | Dry run, Program check |
| Single block | |
| Search function | Program Number / Sequence Number |
| Interpolation functions | |
| Nano interpolation | |
| Positioning | G00 |
| Linear interpolation | G01 |
| Circular interpolation | G02, G03 |
| Exact stop mode | Single : G09, Continuous : G61 |
| Dwell | G04, 0 ~ 9999.9999 sec |
| Skip | G31 |
| Reference position return | 1st reference : G28 2nd reference : G30 Ref. position check : G27 |
| Thread synchronous cutting | |
| Thread cutting retract | |
| Variable lead thread cutting | |
| Multi / Continuous threading | |
| Feed function / Acc. & Dec. control | |
| Manual feed | Rapid traverse Jog : 0~2,000 mm/min (79 ipm) Manual handle : x1, x10, x100 pulses Reference position return |
| Cutting Feed command | Direct input F code |
| Feedrate override | 0 ~ 200% (10% Unit) |
| Rapid traverse override | F1%, F25%, 50%, F100% |
| Override cancel | |
| Feed per minute | G98 |
| Feed per revolution | G99 |
| Look-ahead block | 1 block |
| Program input | |
| Tape Code | EIA / ISO |
| Optional block skip | 1 ea |
| Program stop / end | M00, M01 / M02, M30 |
| Maximum command unit | ± 999,999,999 mm (± 99,999,9999 inch) |
| Plane selection | X-Y : G17 / Z-X : G18 / Y-Z : G19 |
| Workpiece coordinate system | G52, G53, 6 pairs (G54 ~ G59) |
| Manual absolute | Fixed ON |
| Programmable data input | G10 |
| Sub program call | 10 folds nested |
| Custom macro | #100 ~ #149, #500 ~ #549 |
| G code system | A |
| Programmable mirror image | G51.1, G50.1 |
| G code preventing buffering | G4.1 |
| Multiple repetitive cycles I, II | |

| | |
|--|--|
| Program input | |
| Canned cycle for turning | |
| Manual Guide i | Conversational auto program |
| Auxiliary function / Spindle speed function | |
| Auxiliary function | M 4 digit |
| Level-up M Code | High speed / Multi / Bypass M code |
| Spindle speed function | S 4 digit, Binary output |
| Spindle override | 0% ~ 150% (10% Unit) |
| Multi position spindle orientation | M19 |
| Rigid tapping | |
| Constant surface speed control | G96, G97 |
| Tool function / Tool compensation | |
| Tool function | T 2 digit + Offset 2 digit |
| Tool life management | |
| Tool offset pairs | 32 pairs |
| Tool nose radius compensation | G40, G41, G42 |
| Geometry / Wear compensation | |
| Direct input of offset measured B | |
| Editing function | |
| Part program storage size | 640m (256KB) |
| No. of registerable programs | 500 ea |
| Program protect | |
| Background editing | |
| Extended part program editing | Copy, move and change of NC program |
| Memory card program edit | |
| Data input / output & Interface | |
| I/O interface | CF card, USB memory Embedded Ethernet interface |
| Screen hard copy | |
| External message | |
| External key input | |
| External workpiece number search | |
| Automatic data backup | |
| Setting, display and diagnosis | |
| Self-diagnosis function | |
| History display & Operation | Alarm & Operator message & Operation |
| Run hour / Parts count display | |
| Maintenance information | |
| Actual cutting feedrate display | |
| Display of spindle speed / T code | |
| Graphic display | |
| Operating monitor screen | Spindle / Servo load etc. |
| Power consumption monitoring | Spindle & Servo |
| Spindle / Servo setting screen | |
| Multi language display | Support 20 languages |
| Display language switching | Selection of 5 optional Languages |
| LCD Screen Saver | Screen saver |
| Unexpected disturbance torque | BST (Back spin torque limit) |
| Function for machine type | |
| Cs contour control (C & A axis) | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Polar coordinate interpolation | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Cylindrical interpolation | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Canned cycle for drilling | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Spindle orientation expansion | MS, SY TTS, TTMS, TTSY |
| Spindle synchronous control | MS, SY TTS, TTMS, TTSY |
| Torque control | MS, SY TTS, TTMS, TTSY |
| Y axis offset | Y, SY, TTSY |
| Arbitrary angular control | Y, SY, TTSY |
| Composite / Superimposed control | MS, SY TTS, TTMS, TTSY |
| Balance cutting | MS, SY TTS, TTMS, TTSY |
| Option | |
| Additional optional block skip | 9 ea |
| Fast ethernet | Needed option board |
| Data server | Needed option board |
| Protection of data at 8 levels | |
| Tool offset pairs | 64 pairs / 99 pairs / 200 pairs |
| Part program storage size | 1280 m (512KB) / 2560m (1MB) |
| Polygon turning (2 Spindles) | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Helical interpolation | |
| Dynamic graphic display | |
| Direct drawing dimension program | Including Chamfering / Corner R |

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.

CONTROLLER

FANUC i Series – Smart Plus

[] : Option

| Controlled axis / Display / Accuracy Compensation | |
|---|---|
| Control axis | 2 axis (X, Z) / 3 axis (X, Z, C) / 4 axis (X,Z,Y,C) 5 axis (X, Z, B, C, A) / 6 axis (X, Z, Y, B, C, A) 7 axis (X1/Z1, X2/Z2, B2, C1/C2) |
| Simultaneously controlled axis | 2 axis [Max. 4 axis] |
| Designation of spindle axis | 3 axis [Max. 4 axis] |
| Least setting Unit | X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg |
| Least input increment | X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg |
| Inch / Metric conversion | G20 / G21 |
| High response vector control | |
| Interlock | All axis / Each axis |
| Machine lock | All axis |
| Backlash compensation | ± 0~9999 pulses (exc.Rapid traverse / Cutting feed) |
| Position switch | |
| LCD / MDI | 15 inch LCD unit (with Touch Panel) |
| Feedback | Absolute motor feedback |
| Stored stroke check 1 | Over travel |
| Stored stroke check 2, 3 | |
| PMC axis control | |
| Operation | |
| Automatic operation (Memory) | |
| MDI operation | |
| DNC operation | Needed DNC software / CF card |
| Program restart | |
| Wrong operation prevention | |
| Program check function | Dry run |
| Single block | |
| Search function | Program Number / Sequence Number |
| Interpolation functions | |
| Nano interpolation | |
| Positioning | G00 |
| Linear interpolation | G01 |
| Circular interpolation | G02, G03 |
| Exact stop mode | Single : G09, Continuous : G61 |
| Dwell | G04, 0 ~ 9999.9999 sec |
| Skip | G31 |
| Reference position return | 1st reference : G28, 2nd reference : G30 Ref. position check : G27 |
| Thread synchronous cutting | G33 |
| Thread cutting retract | |
| Variable lead thread cutting | |
| Multi / Continuous threading | |
| Feed function / Acc. & Dec. control | |
| Manual feed | Rapid traverse Jog : 0~2,000 mm/min (79 ipm) Manual handle : x1, x10, x100 pulses Reference position return |
| Cutting Feed command | Direct input F code |
| Feedrate override | 0 ~ 200% (10% Unit) |
| Rapid traverse override | 1%, F25%, 50%, 100% |
| Override cancel | |
| Feed per minute | G98 |
| Feed per revolution | G99 |
| Look-ahead block | 1 block |
| Program input | |
| Tape Code | EIA / ISO |
| Optional block skip | 9 ea |
| Program stop / end | M00, M01 / M02, M30 |
| Maximum command unit | ± 999,999.999 mm (± 99,999.9999 inch) |
| Plane selection | X-Y : G17 / Z-X : G18 / Y-Z : G19 |
| Workpiece coordinate system | G52, G53, 6 pairs (G54 ~ G59) |
| Manual absolute | Fixed ON |
| Programmable data input | G10 |
| Sub program call | 10 folds nested |
| Custom macro | #100 ~ #199, #500 ~ #999 |
| G code system | A, B/C |
| Programmable mirror image | G51.1, G50.1 |
| G code preventing buffering | G4.1 |
| Direct drawing dimension program | Including Chamfering / Corner R |
| Conversational Program | SmartGuide-i |

| Program input | |
|---|--|
| Multiple repetitive cycles | I, II |
| Canned cycle for turning | |
| Auxiliary function / Spindle speed function | |
| Auxiliary function | M & 4 digit |
| Level-up M Code | High speed / Multi / Bypass M code |
| Spindle speed function | S & 5 digit, Binary output |
| Spindle override | 0% ~ 150% (10% Unit) |
| Multi position spindle orientation | M19 (S##) |
| Rigid tapping | |
| Constant surface speed control | G96, G97 |
| Tool function / Tool compensation | |
| Tool function | T & 2 digit + Offset 2 digit |
| Tool life management | |
| Tool offset pairs | 128 pairs |
| Tool nose radius compensation | G40, G41, G42 |
| Geometry / Wear compensation | |
| Direct input of offset measured B | |
| Editing function | |
| Part program storage size | 5,120m (2MB) |
| No. of registerable programs | 1,000 ea |
| Program protect | |
| Background editing | |
| Extended part program editing | Copy, move and change of NC program |
| Memory card program edit | |
| Data input / output & Interface | |
| I/O interface | CF card, USB memory Embedded Ethernet interface |
| Screen hard copy | |
| External message | |
| External key input | |
| External workpiece number search | |
| Automatic data backup | |
| Setting, display and diagnosis | |
| Self-diagnosis function | |
| History display & Operation | Alarm & Operator message & Operation |
| Run hour / Parts count display | |
| Maintenance information | |
| Actual cutting feedrate display | |
| Display of spindle speed / T code | |
| Graphic display | |
| Operating monitor screen | Spindle / Servo load etc. |
| Power consumption monitoring | Spindle & Servo |
| Spindle / Servo setting screen | |
| Multi language display | Support 24 languages |
| Display language switching | Selection of 5 optional Languages |
| LCD Screen Saver | Screen saver |
| Unexpected disturbance torque | BST (Back spin torque limit) |
| Function for machine type | |
| Cs contour control (C & A axis) | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Polar coordinate interpolation | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Cylindrical interpolation | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Polygon turning (2 Spindles) | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Canned cycle for drilling | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY |
| Spindle orientation expansion | MS, SY, TTS, TTMS, TTSY |
| Spindle synchronous control | MS, SY, TTS, TTMS, TTSY |
| Torque control | MS, SY, TTS, TTMS, TTSY |
| Y axis offset | Y, SY, TTSY |
| Arbitrary angular control | Y, SY, TTSY |
| Composite / Superimposed control | MS, SY, TTS, TTMS, TTSY |
| Balance cutting | TTS, TTMS, TTSY |
| Option | |
| Fast ethernet | Needed option board |
| Data server | Needed option board |
| Protection of data at 8 levels | |
| Tool offset pairs | 200 pairs |
| Helical interpolation | |
| Optional block skip | 40 ea, 200 ea (AICC II) |

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.