

# FX-800

TWIN TURRET TWIN SPINDLE **CNC Turning Center**

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# FX-800

Twin turrets turning center for process integration and high productivity.

FX-800 is a multi-purpose, high-productivity, twin spindles, twin turrets turning center. The upper and lower turrets are T16 powered turret, and the upper turret is equipped with Y axis, which can perform complex turning and milling and greatly improve production efficiency.



Both spindle equipped with built-in motor, The bed features highly rigid structure and excellent thermal displacement performance, which can meet the processing requirements of heavy duty and high precision machining.

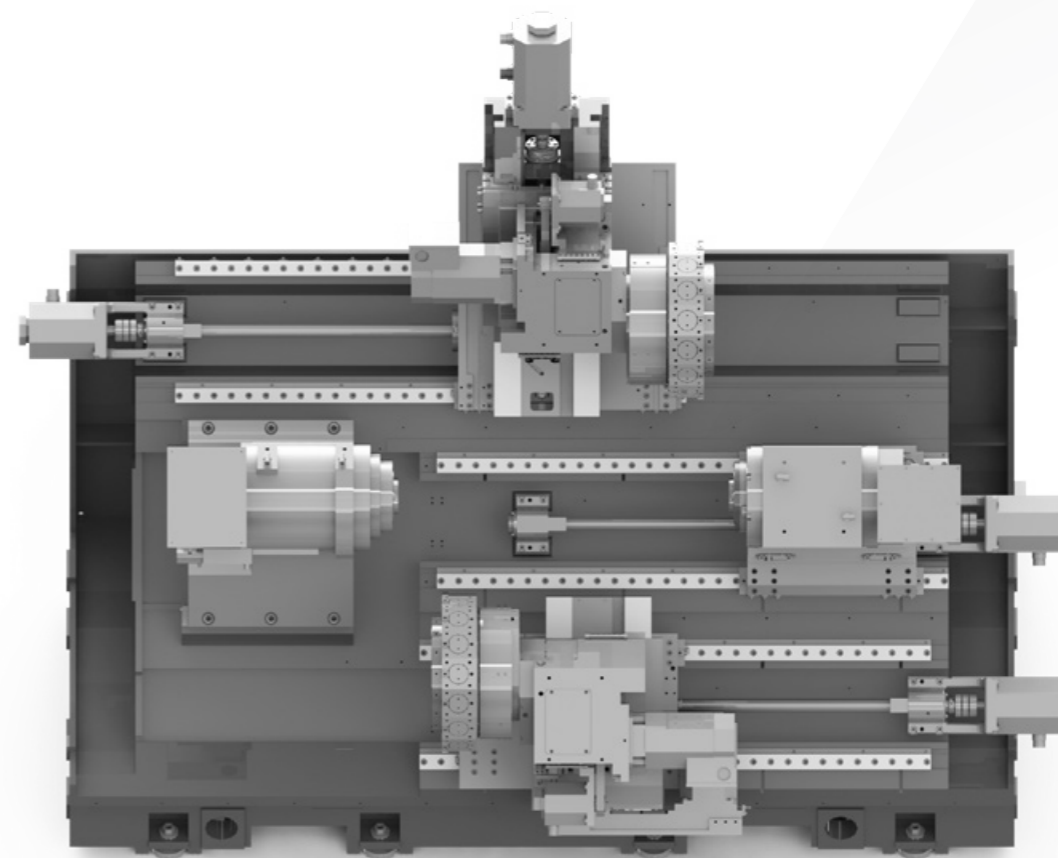
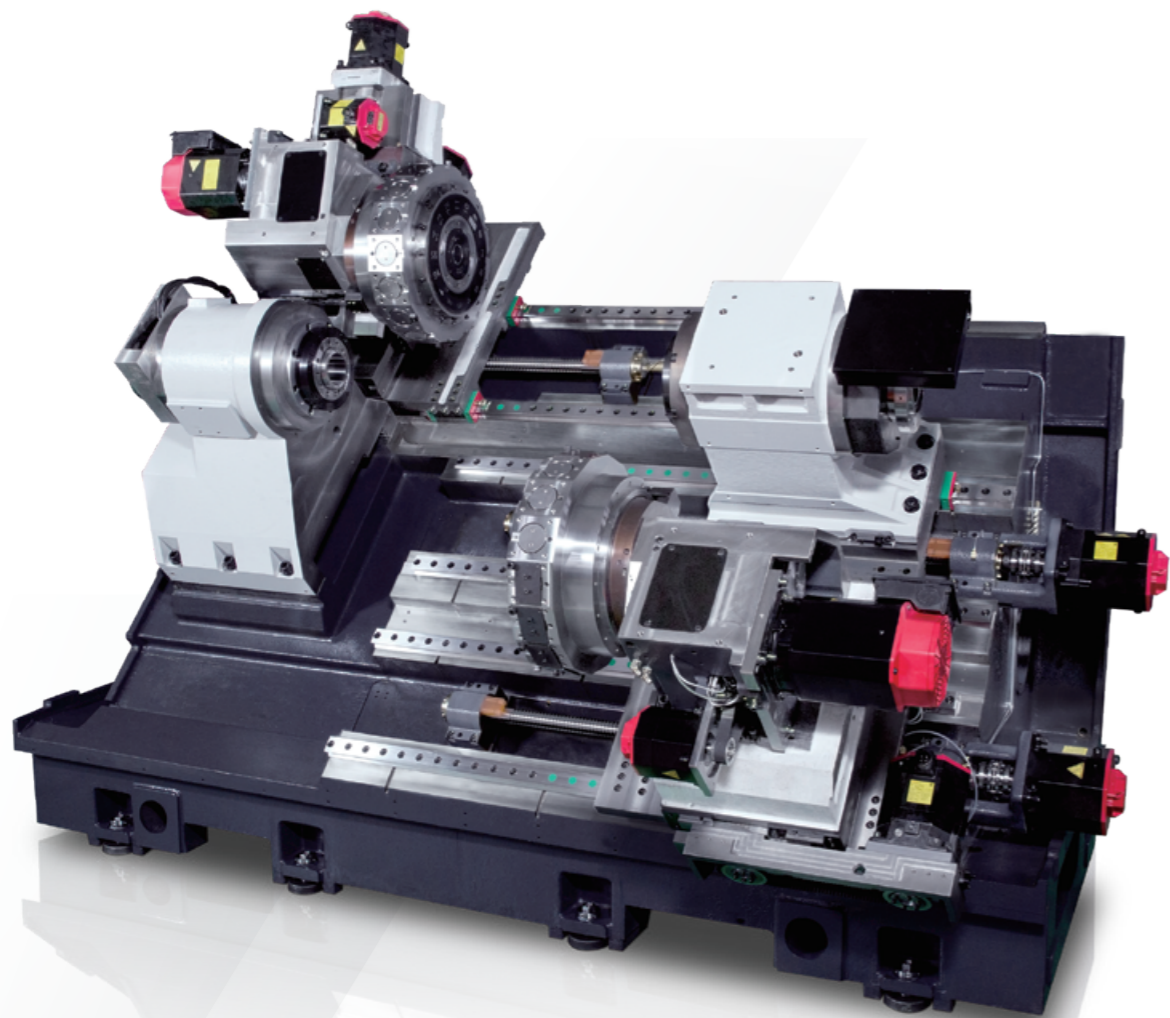
The new generation of FX-800 increases the working range and the speed of feed axes according to the feedback of customers' experience. The evolved interior covers make daily maintenance easier.

## 01 Workpiece Size

|                                 | FX-800  |    |
|---------------------------------|---------|----|
| Max. Turning Diameter           | 310     | mm |
| Max. Turning Length             | 657     | mm |
| Max. Bar Work Capacity Diameter | 65 / 52 | mm |



Both turret can mill or drill on one spindle at the same time, which means users can flexibly use the tool configuration of the upper and lower turrets, to reduce non-processing time and improve production efficiency.

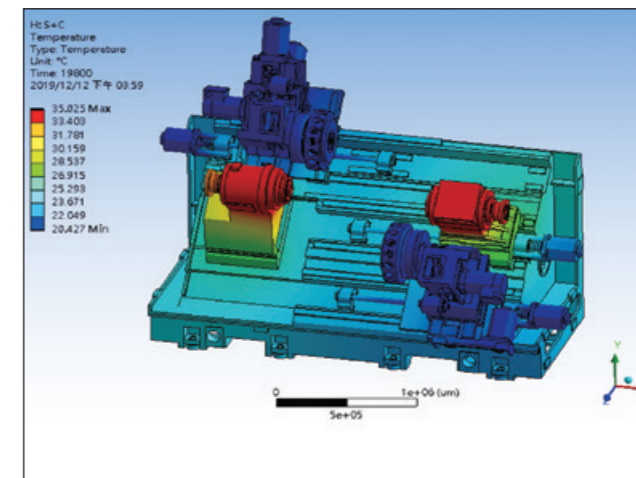
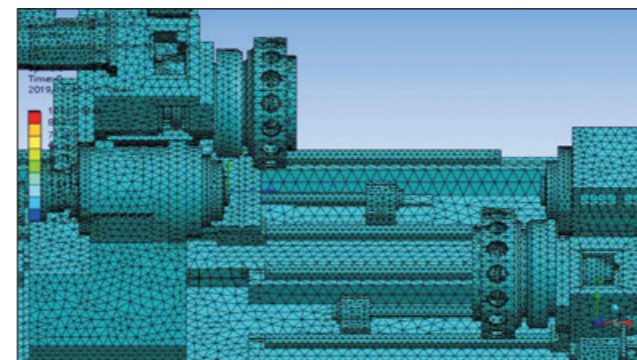
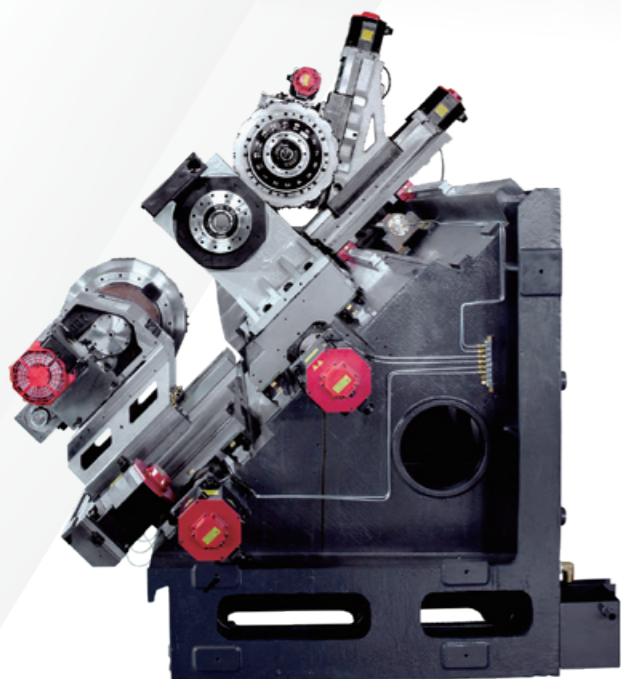


- The upper turret, lower turret and right spindle adopt independent linear slide rails. Since the lower turret and the right spindle are not in the same pair of railway, the rigidity of the right spindle can be improved. In addition, both turret can cut on the left spindle and right spindle, which greatly improves the flexibility and efficiency of use.

## 02 Travel & Rapid Traverse

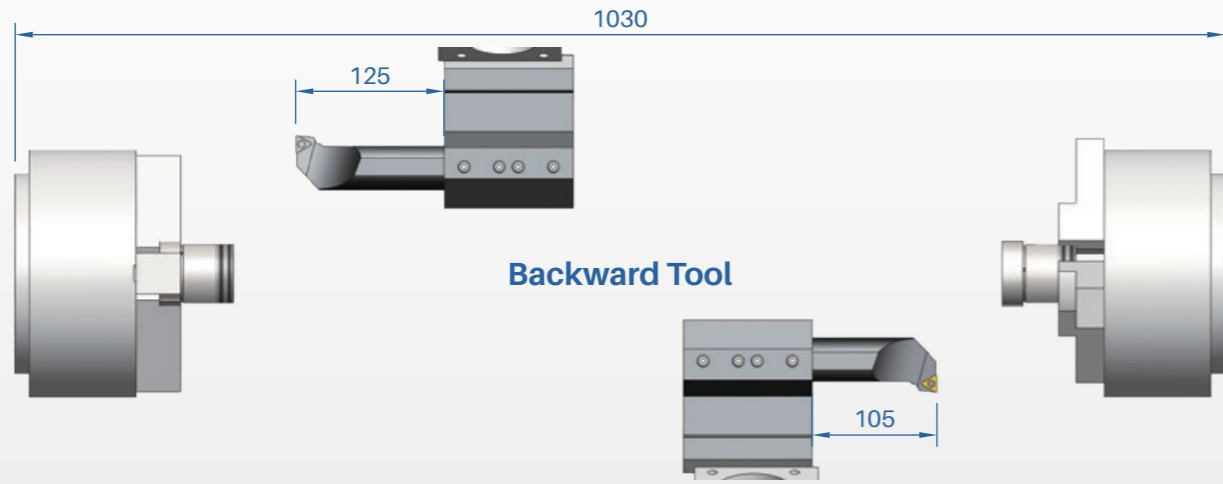
|                           | FX-800    |         |
|---------------------------|-----------|---------|
| X1/X2-Axis Travel         | 215 / 215 | mm      |
| X1/X2-Axis Rapid Traverse | 20 / 20   | m / min |
| Z1/Z2-Axis Travel         | 750 / 745 | mm      |
| Z1/Z2-Axis Rapid Traverse | 20 / 20   | m / min |
| Y-Axis Travel             | ± 50      | mm      |
| Y-Axis Rapid Traverse     | 10        | m / min |
| B-Axis Travel             | 730       | mm      |
| B-Axis Rapid Traverse     | 20        | m / min |

- The guideways introduce the concept of hybrid design. The X-axes and Y-axis with box ways which provide good vibration attenuation and dynamic rigidity. The Z-axes and B-axis with roller linear guides to achieve high precision, high rigidity and high speed.

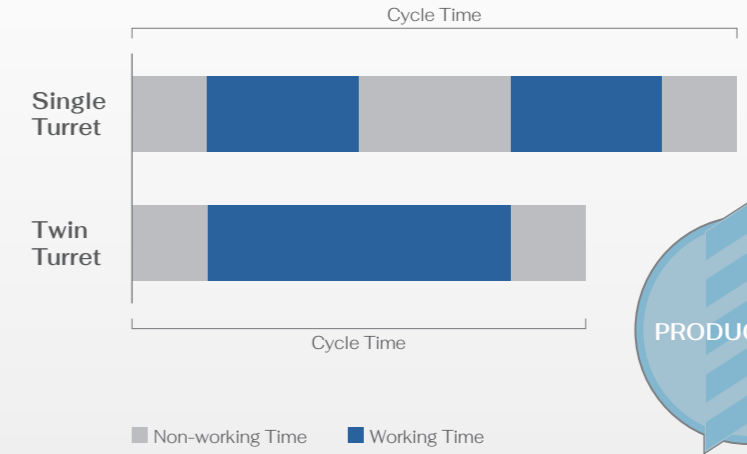
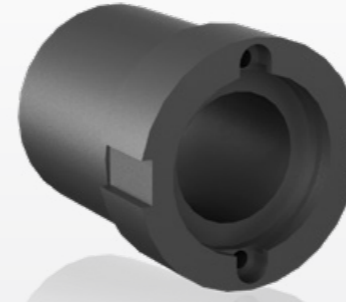


- TAIWAN TAKISAWA is committed to the basic research of machinery, through the finite element method (FEM) analysis to achieve higher machine rigidity and excellent thermal deformation performance.

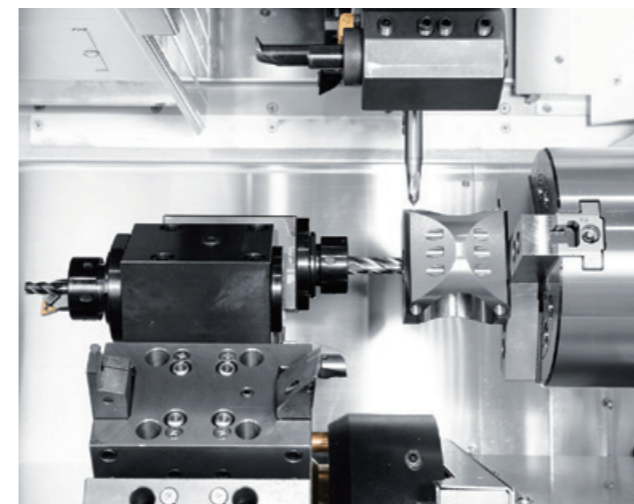
# 03 Working Area



Sample Workpiece (S45C Ø56 x L63)



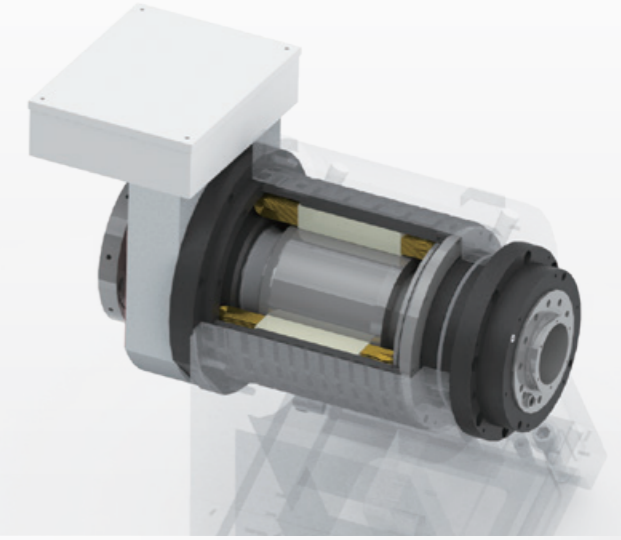
# 04 Simultaneous Turning and Milling with Upper and Lower Turret



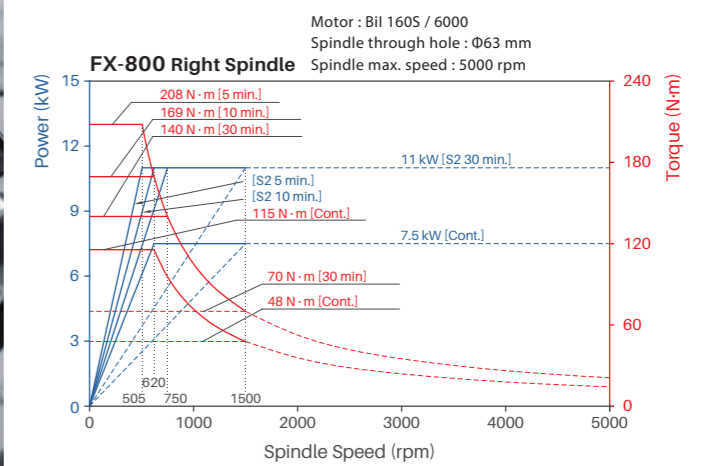
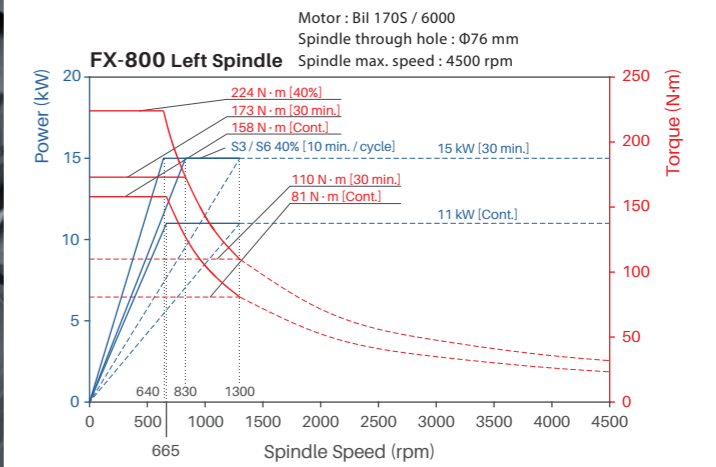
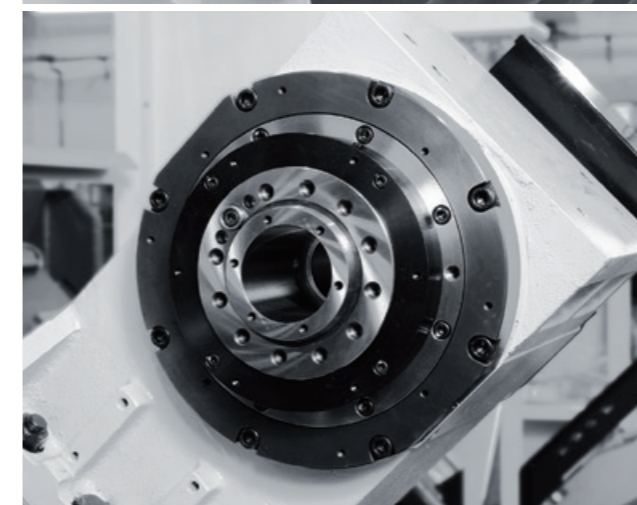
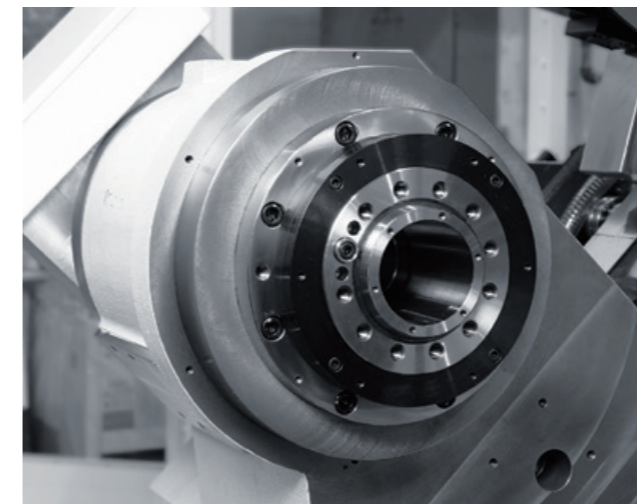
# Spindle

The left and right spindles are equipped with built-in motors for high precision, low vibration and low noise, which provide better surface roughness of the workpiece.

|                         | Left Spindle | Right Spindle |      |
|-------------------------|--------------|---------------|------|
| Spindle Nose            | A2-6         | A2-6          |      |
| Spindle Speed           | 4500         | 5000          | rpm  |
| Through Hole Diameter   | 76           | 63            | mm   |
| Bearing Inside Diameter | 110          | 100           | mm   |
| Motor Output            | 15 / 11      | 11 / 7.5      | kW   |
| Max. Torque             | 224          | 208           | N·m  |
| Standard Chuck Size     | 8            | 8             | inch |

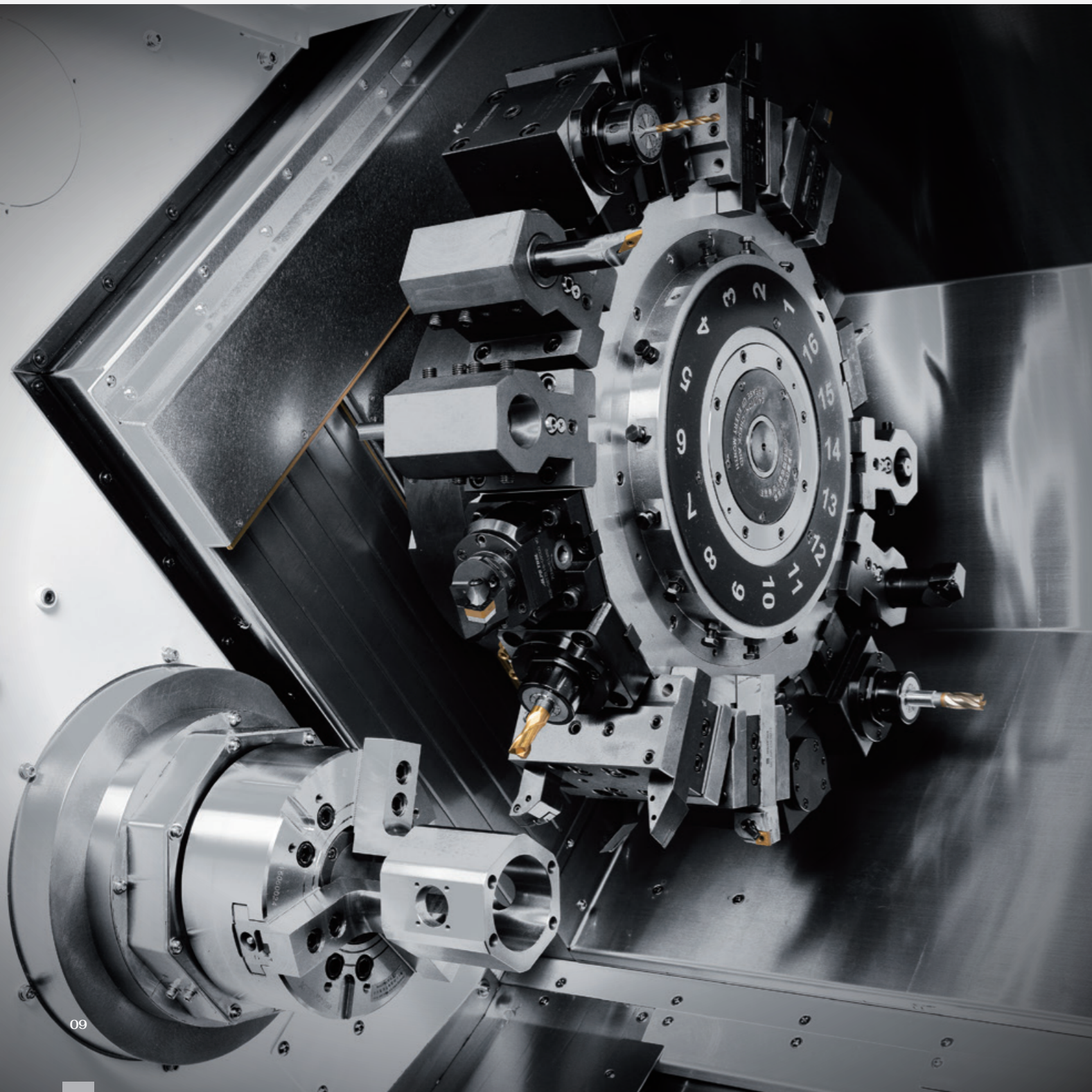


## Spindle Output Diagram



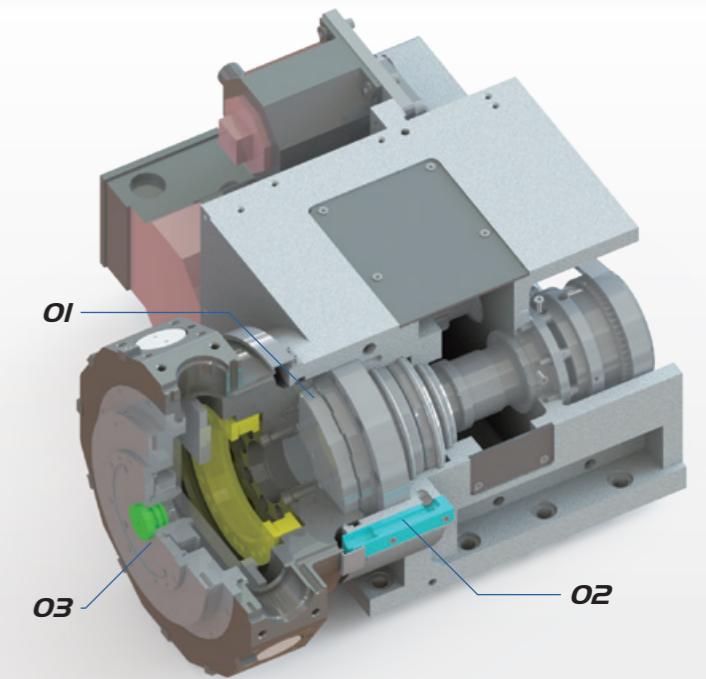
# Turret

Equipped with 16 stations power turrets, which can handle combined machining such as milling, drilling and tapping. Inside the turret, the large diameter of coupling gear set with curvic tooth profile provides high rigidity and high accuracy.



## Turret Structure

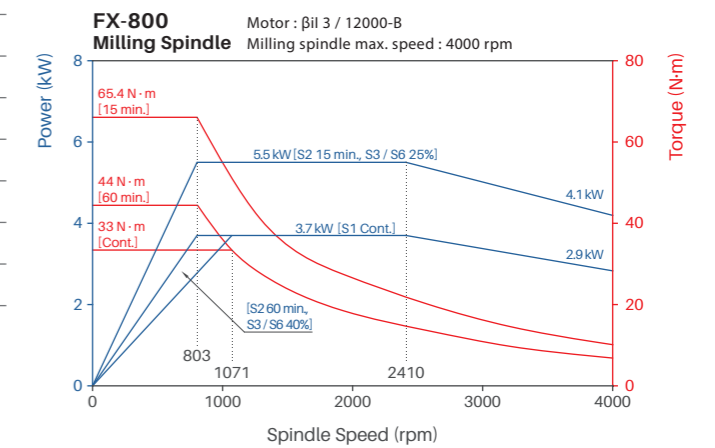
- 01** Curvic Coupling O.D. 280 mm performs high rigidity and accuracy
- 02** Ready for 70 bar hi-pressure coolant
- 03** Easy to grease up



## T16 Turret

|                         |           |     |
|-------------------------|-----------|-----|
| Number of Tools         | 16        |     |
| OD Tool Shank Dimension | 25        | mm  |
| ID Tool Shank Diameter  | 40        | mm  |
| Milling Shank Diameter  | 20        | mm  |
| Milling Spindle Speed   | 4000      | rpm |
| Motor Output            | 5.5 / 3.7 | Kw  |
| Max. Torque             | 65.4      | N·m |

## Spindle Output Diagram



## Special Tool Holders



**01**  
Gear Hobbing



**02**  
Broaching

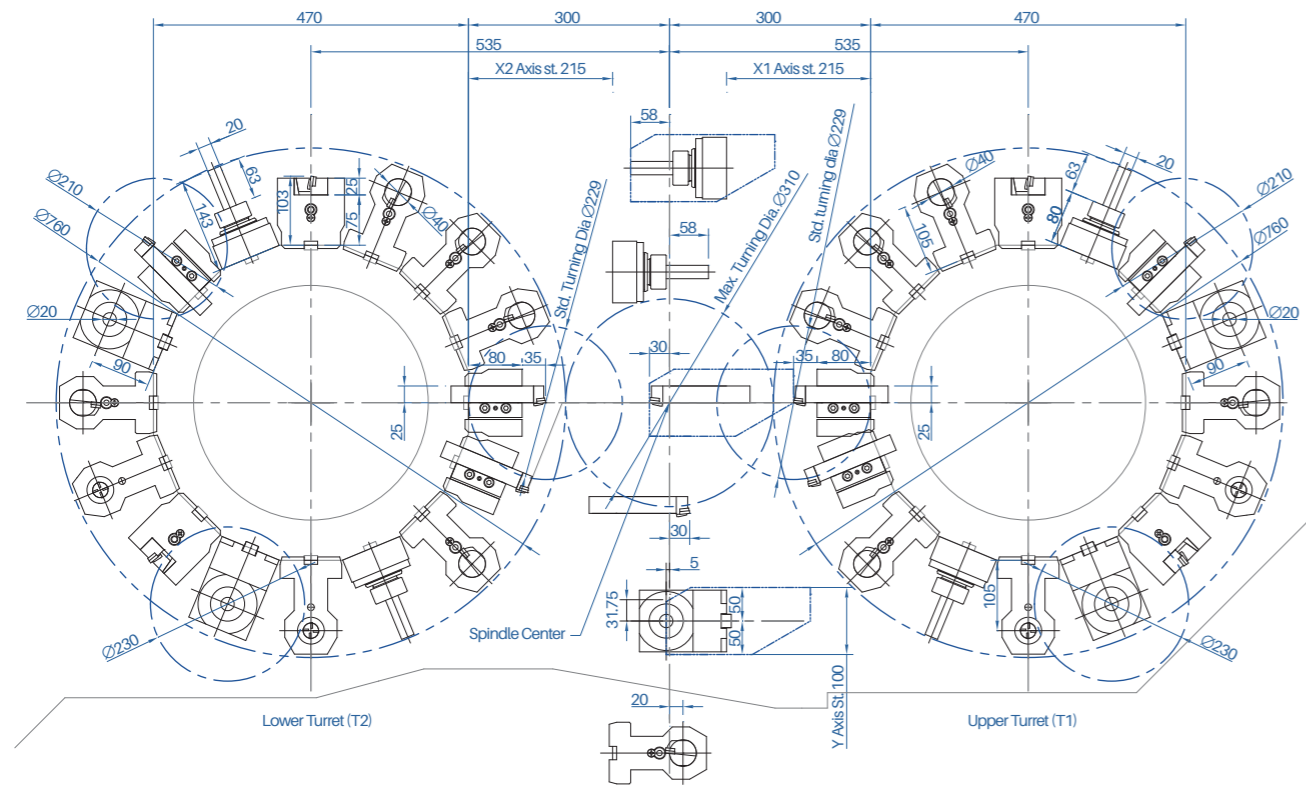


**03**  
Power Skiving

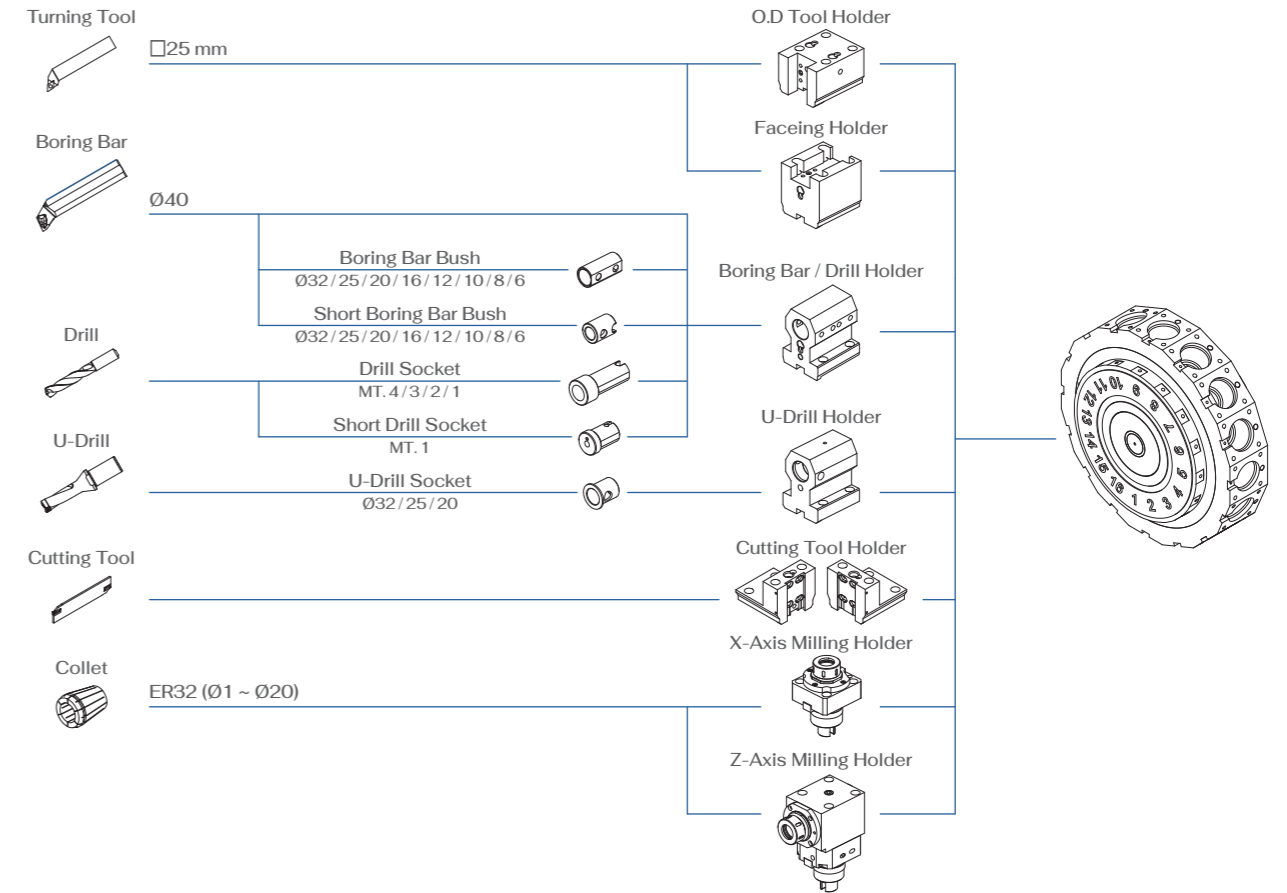


**04**  
Adjustable Angle Milling

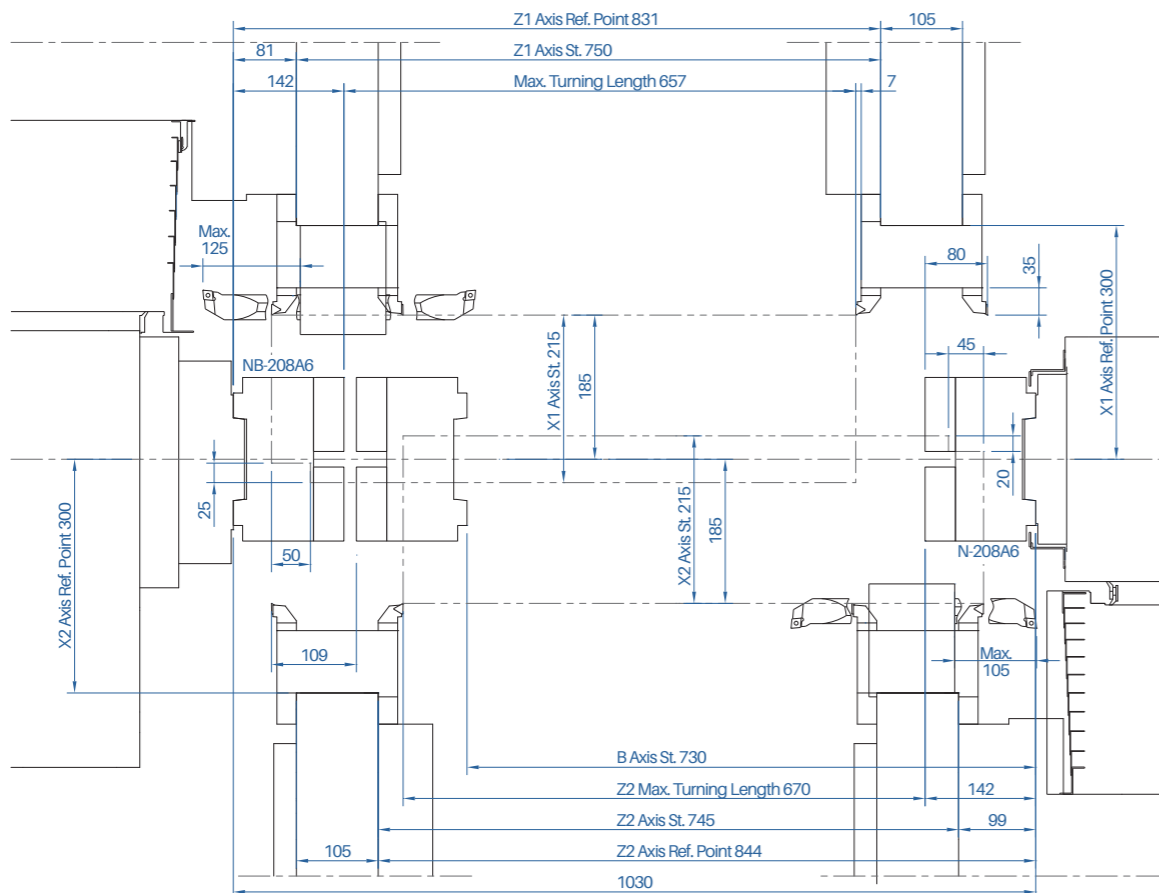
## Interference



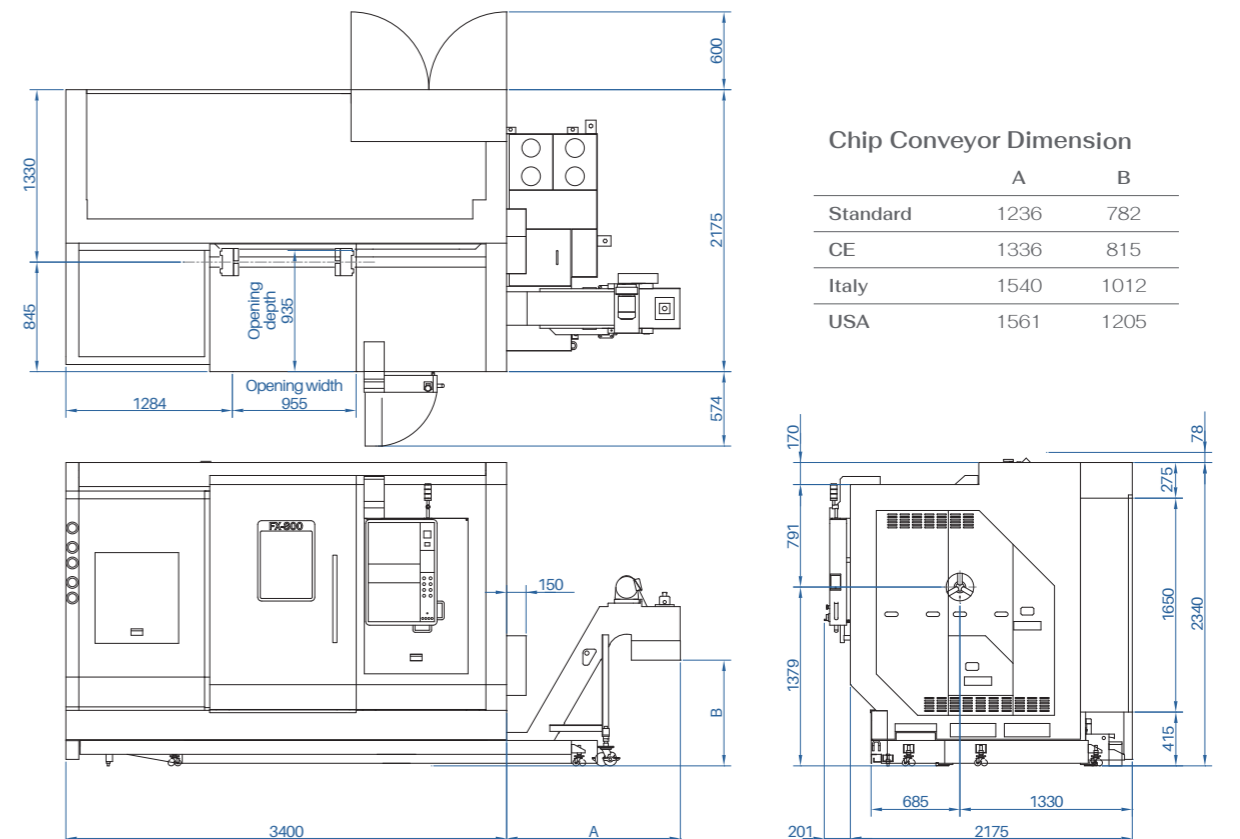
## Tooling System



## Travel Range



## Machine Dimensions



## Machine Specifications

| Item          |                           | FX-800 |           |
|---------------|---------------------------|--------|-----------|
| Capacity      | Max. Swing                | mm     | 310       |
|               | Standard Turning Diameter | mm     | 229       |
|               | Max. Turning Diameter     | mm     | 310       |
|               | Max. Turning Length       | mm     | 657       |
|               | Max. Bar Work Capacity    | mm     | 65 / 52   |
|               | Dist. Between Centers     | mm     | 1030      |
| Travel        | X1/X2-Axis Travel         | mm     | 215 / 215 |
|               | Z1/Z2-Axis Travel         | mm     | 750 / 745 |
|               | Y-Axis Travel             | mm     | ±50       |
|               | B-Axis Travel             | mm     | 730       |
| Left Spindle  | Spindle Speed             | rpm    | 4500      |
|               | Spindle Nose              |        | A2-6      |
|               | Through Hole Diameter     | mm     | 76        |
|               | Bearing Diameter          | mm     | 110       |
| Right Spindle | Spindle Speed             | rpm    | 5000      |
|               | Spindle Nose              |        | A2-6      |
|               | Through Hole Diameter     | mm     | 63        |
|               | Bearing Diameter          | mm     | 100       |
| Turret        | Number of Tools           |        | T16 + T16 |
|               | OD Tool Shank Dimension   |        | 25        |
|               | ID Tool Shank Diameter    | mm     | 40        |
|               | Milling Shank Diameter    | mm     | 20        |
|               | Spindle Speed             |        | 4000      |
| Feedrate      | X1/X2-Axis Rapid Traverse | m/min  | 20 / 20   |
|               | Z1/Z2-Axis Rapid Traverse | m/min  | 20 / 20   |
|               | Y-Axis Rapid Traverse     | m/min  | 10        |
|               | B-Axis Rapid Traverse     | m/min  | 20        |
| Motor         | Left Spindle Motor        | kW     | 15 / 11   |
|               | Right Spindle Motor       | kW     | 11 / 7.5  |
|               | Milling Spindle Motor     | kW     | 5.5 / 3.7 |
|               | Index Motor               | kW     | 1.2       |
|               | X1/X2-Axis Servo Motor    | kW     | 3.0 / 2.5 |
|               | Z1/Z2-Axis Servo Motor    | kW     | 2.5 / 2.5 |
|               | Y-Axis Servo Motor        | kW     | 2.5       |
|               | B-Axis Servo Motor        | kW     | 2.5       |
| Machine Size  | Height                    | mm     | 2340      |
|               | Width                     | mm     | 3550      |
|               | Depth                     | mm     | 2334      |
|               | Weight                    | kg     | 11000     |

## Standard and Optional Accessories

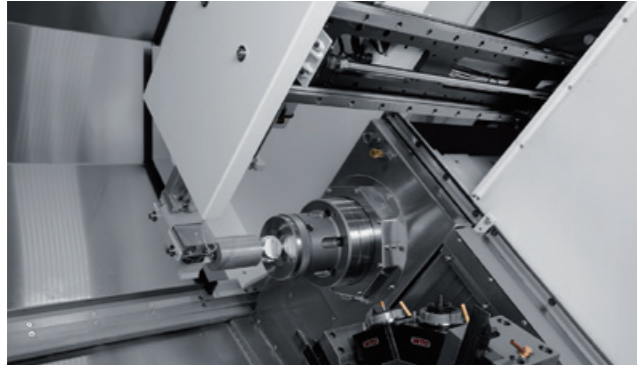
| Accessories                                | FX-800 |
|--|--------|
| Built-In Motor Left Spindle                | ●      |
| Built-In Motor Right Spindle               | ●      |
| O.D Tool Holder (2 PCS)                    | ●      |
| Face Tool Holder (2 PCS)                   | ●      |
| U-Drill Tool Holder (2 PCS)                | ●      |
| Boring Bar Tool Holder (8 PCS)             | ●      |
| Boring Bar Bush (Ø6, Ø8, Ø10, Ø12)         | ●      |
| Boring Bar Bush (Ø16, Ø20, Ø25, Ø32)       | ●      |
| U-Drill Bush (Ø20, Ø25, Ø32)               | ●      |
| Short Boring Bar Bush (Ø6, Ø8, Ø10, Ø12)   | ●      |
| Short Boring Bar Bush (Ø16, Ø20, Ø25, Ø32) | ●      |
| Drill Bush (MT.1, MT.2, MT.3, MT.4)        | ◎      |
| Short Drill Bush (MT.1)                    | ◎      |
| X-Axis Milling Holder (2 PCS)              | ●      |
| Z-Axis Milling Holder (2 PCS)              | ●      |
| Automatic Tool Setter                      | ◎      |
| Manual Tool Setter                         | ◎      |
| Linear Scales                              | ◎      |
| Coolant Pump (400W)                        | ●      |
| Coolant Pump (400W, 550W, 750W, 1100W)     | ◎      |
| Coolant Chiller                            | ◎      |
| Nut Cooling Ball Screw                     | ◎      |
| Hydraulic System                           | ●      |
| Hydraulic Oil Cooling                      | ◎      |
| Hydraulic Pressure Sensor                  | ●      |
| Lubrication System                         | ●      |
| Hydraulic Chuck                            | ●      |
| Collet Chuck                               | ◎      |
| Foot Switch                                | ●      |
| LED Interior Light                         | ●      |
| LED Signal Tower                           | ●      |
| Chip Cart                                  | ●      |
| Right Side Chip Conveyor                   | ●      |
| Parts Catcher                              | ◎      |
| Automatic Bar Feeder and Interface         | ◎      |
| Auto Door                                  | ◎      |
| Safety Door Switch                         | ◎      |
| Safety Light Curtain                       | ◎      |
| Air Blow                                   | ◎      |
| Oil Skimmer                                | ◎      |
| Oil Mist Collector                         | ◎      |
| Parts Counter                              | ◎      |
| Automatic Power-Off                        | ◎      |

● Standard ◎ Optional - Nope

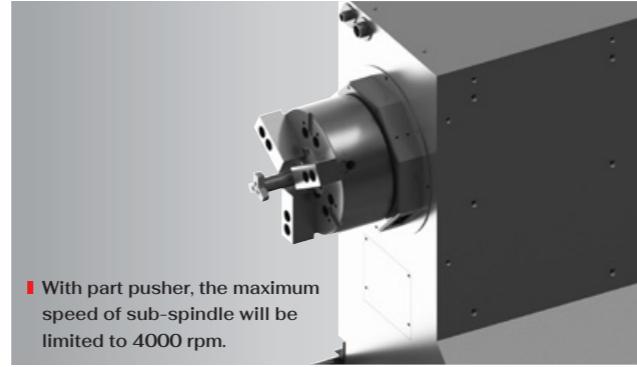


## Special Specification Example

### Parts Catcher

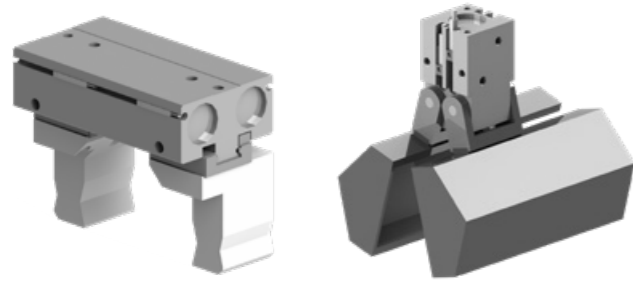


### Parts Pusher



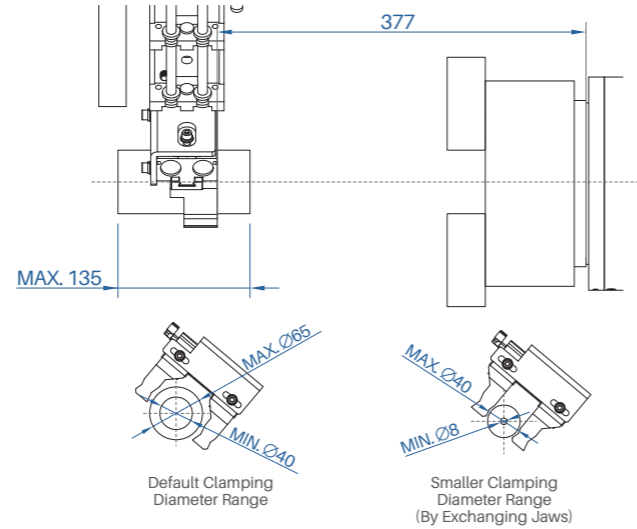
### Part Catcher Specifications

|                   |     |    |
|-------------------|-----|----|
| Max. Parts Dia.   | 65  | mm |
| Max. Parts Length | 135 | mm |
| Max. Parts Weight | 3.5 | kg |



Option to use jaws or boxes

### Part Catcher Working Range



## Highly Accurate Optional Equipment

There are special requirements for precise machining accuracy and it is necessary to use approved high-precision optional equipment.

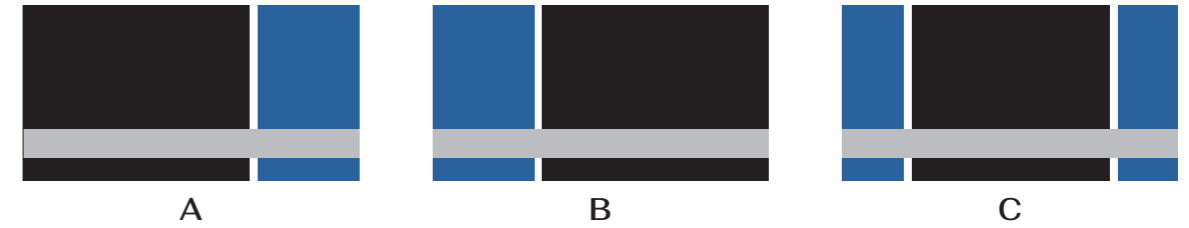
Please contact us for advice on these options.

- 01 Linear Scales
- 02 Automatic | Manual Tool Setter
- 03 Nut Cooling Ball Screw
- 04 Cutting Fluid Cooling
- 05 High Pressure Coolant
- 06 Hydraulic Oil Cooling

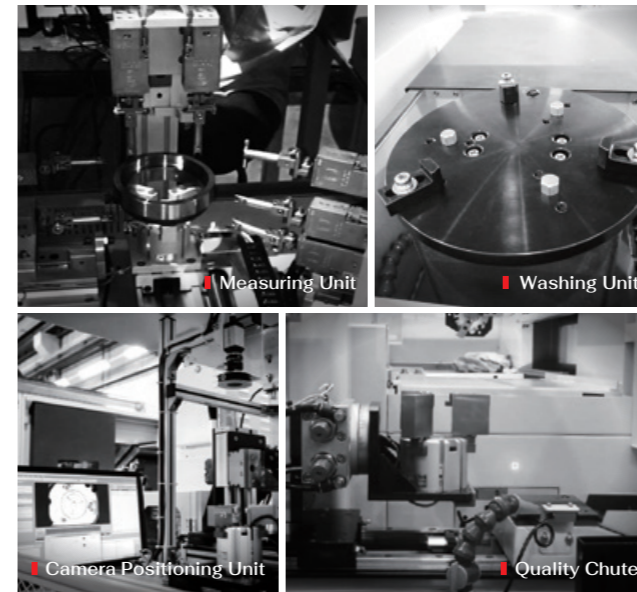


## High Speed Gantry Loader System

### Layout Variations



### Peripheral Equipment



### Gantry Loader Specifications

| Feedrate              |        |         |
|-----------------------|--------|---------|
| X-Axis Rapid Traverse | 180    | m / min |
| Z-Axis Rapid Traverse | 150    | m / min |
| Working Size          |        |         |
| O.D                   | 160    | mm      |
| Length                | 100    | mm      |
| Weight                | 3 (x2) | kg      |

### Work Feeder Specifications

|                     |     |     |
|---------------------|-----|-----|
| Pallet              | 16  | pcs |
| Loading Weight      | 40  | kg  |
| Max. Height         | 450 | mm  |
| Worker Feeder Width | 610 | mm  |

## Turn-Key Solution



## NC Unit Specifications

| Specifications · Contents                        | FX-800 |
|--|--------|
| <b>Controller</b>                                |        |
| Oi-TF  | ●      |
| <b>NC Unit</b>                                   |        |
| 8.4" Color LCD                                   | -      |
| 10.4" Color LCD                                  | -      |
| 15" Color LCD                                    | ●      |
| <b>Safety Device</b>                             |        |
| Front Door Interlock                             | ◎      |
| Front Door Locking Mechanism                     | ◎      |
| Safety Relay                                     | ◎      |
| Control Panel Breaker with Tripper               | ◎      |
| <b>Controlled Axes</b>                           |        |
| Least Input Increment                            | ●      |
| Maximum Programmable Dimension (± 999999.999)    | ●      |
| Least Input Increment C                          | ▲      |
| Inch / Metric Conversion                         | ●      |
| Interlock  | ●      |
| Machine Lock                                     | ◎      |
| Emergency Stop                                   | ●      |
| Stored Stroke Check 1                            | ●      |
| Stored Stroke Check 2, 3                         | ●      |
| Stored Limit Check Before Move                   | ▲      |
| Chuck and Tailstock Barrier                      | ▲      |
| Mirror Image (Each Axis)                         | ▲      |
| Chamfering ON / OFF                              | ●      |
| Unexpected Disturbance Torque Detection Function | ●      |
| Position Switch                                  | ●      |
| <b>Operation</b>                                 |        |
| Automatic Operation                              | ●      |
| MDI Operation                                    | ●      |
| DNC Operation                                    | ●      |
| DNC Operation with Memory Card                   | ●      |
| Program Number Search                            | ●      |
| Sequence Number Search                           | ●      |
| Sequence Number Comparison and Stop              | ●      |
| Wrong Operation Prevention                       | ▲      |
| Buffer Register                                  | ●      |
| Dry Run  | ●      |
| Single Block                                     | ●      |
| Manual Continuous Feed (JOG)                     | ●      |
| Manual Reference Position Return                 | ●      |
| Reference Position Setting Without DOG           | ●      |
| Manual Handle Feed 1-unit                        | ●      |
| <b>Interpolation Functions</b>                   |        |
| Positioning (G00)                                | ●      |
| Exact Stop Mode (G61)                            | ●      |
| Tapping Mode (G63)                               | ●      |
| Cutting Mode (G64)                               | ●      |
| Exact Stop Mode (G09)                            | ●      |
| Linear Interpolation (G01)                       | ●      |
| Circular Interpolation (G02 / G03)               | ●      |
| Dwell (G04)                                      | ●      |
| Polar Coordinate Interpolation                   | ●      |
| Cylindrical Interpolation                        | ●      |
| Thread Cutting                                   | ●      |
| Multi Threading                                  | ●      |
| Thread Cutting Retract                           | ●      |
| Continuous Threading                             | ●      |
| Variable Lead Thread Cutting                     | ●      |
| Reference Position Return (G28)                  | ●      |
| Reference Position Return Check (G27)            | ●      |
| 2nd Reference Position Return (G30)              | ●      |
| 3rd, 4th Reference Position Return               | ●      |

| Specifications · Contents  | FX-800 |
|--|--------|
| <b>Feed Function</b>   |        |
| Rapid Traverse Override (F0, 25%, 50%, 100%)                                 | ●      |
| Feed Per Minute  | ●      |
| Feed Per Revolution  | ●      |
| Tangential Speed Constant Control  | ●      |
| Cutting Feedrate Clamp   | ●      |
| Automatic Acceleration / Deceleration  | ●      |
| Rapid Traverse Bell-Shaped Acceleration / Deceleration                       | ●      |
| Linear Acceleration / Deceleration After Cutting Feed Interpolation          | ●      |
| Feedrate Override (15 Steps)   | ●      |
| Jog Override (15 Steps)  | ●      |
| Override Cancel  | ●      |
| Manual Per Revolution Feed   | ▲      |
| <b>Program Input</b>   |        |
| Tape Code (EIA / ISO Auto Recognition)                                       | ●      |
| Label Skip   | ●      |
| Parity Check   | ●      |
| Control In / Out   | ●      |
| Optional Block Skip, 1 Piece   | ●      |
| Optional Block Skip (2 to 9 Pieces)  | ⊕      |
| Program Number 04 Digits   | ●      |
| Program File Name (32 Characters)  | ●      |
| Sequence Number (N5 Digit)   | -      |
| Sequence Number (N8 Digit)   | ●      |
| Absolute/Incremental Programming   | ●      |
| Decimal Point Programming / Pocket Calculator Type Decimal Point Programming | ●      |
| Diameter / Radius Programming (X-Axis)                                       | ●      |
| Coordinate System Setting (G50)  | ●      |
| Automatic Coordinate System Setting  | ●      |
| Direct Drawing Dimension Programming   | ●      |
| G-Code System A  | ●      |
| G-Code System B / C  | ▲      |
| Chamfering / Corner R  | ●      |
| Programmable Data Input  | ●      |
| Sub Program Call (10 Levels)   | ●      |
| Custom Macro   | ●      |
| Addition of Custom Macro Common Variables                                    | ●      |
| Canned Cycle   | ●      |
| Multiple Repetitive Cycles   | ●      |
| Multiple Repetitive Cycles II  | ●      |
| Canned Cycle for Drilling  | ●      |
| Circular Interpolation by R Programming                                      | ●      |
| Macro Executor   | ◎      |
| Coordinate System Shift  | ●      |
| Direct Input Of Coordinate System Shift                                      | ●      |
| <b>Auxiliary / Spindle Speed Function</b>                                    |        |
| Auxiliary Function (M3 Digits)   | ●      |
| 2nd Auxiliary Function (B Function)  | -      |
| Spindle Speed Function (S4 Digits)   | ●      |
| Constant Surface Speed Control   | ●      |
| Spindle Orientation  | ●      |
| Rigid Tap (Spindle Center)   | ●      |
| Rigid Tap (Rotary Tool)  | ●      |
| <b>Data Input / Output</b>   |        |
| RS-232C Interface (Channel 1)  | ●      |
| Fast Data Server   | ⊕      |
| External Message   | ●      |
| External Workpiece Number Search   | ◎      |
| Memory Card Input / Output   | ●      |

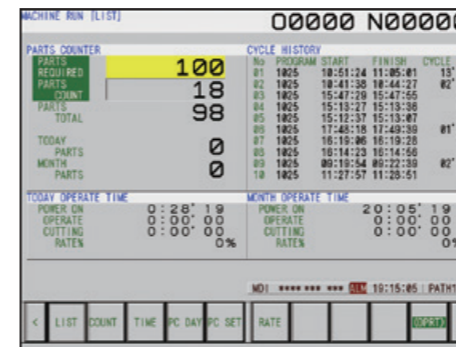
| Specifications · Contents                                      | FX-800 |
|--|--------|
| <b>Tool Function / Tool Compensation</b>                       |        |
| T Function (T2 + 2 Digits)                                     | ●      |
| Tool Offsets, 32 Pieces  | -      |
| Tool Offsets, 64 Pieces  | ●      |
| Tool Offsets, 99 Pieces  | ◎      |
| Tool Offsets, 200 Pieces                                       | ◎      |
| Tool Offsets, 400 Pieces                                       | -      |
| Tool Geometry Size Data, 100 Pieces                            | ◎      |
| Tool Offset  | ●      |
| Tool Radius - Tool Nose Radius Compensation                    | ●      |
| Tool Geometry / Wear Compensation                              | ●      |
| Tool Offset Value Counter Input                                | ●      |
| Direct Input of Tool Offset Value Measured                     | ●      |
| Direct Input of Offset Value Measured B                        | ◎      |
| Tool Life Management   | ▲      |
| <b>Accuracy Compensation Function</b>                          |        |
| Backlash Compensation  | ●      |
| Backlash Compensation for each Rapid Traverse and Cutting Feed | ●      |
| <b>Editing Operation</b>                                       |        |
| Part Program Storage Size 128K byte (320 m)                    | -      |
| Part Program Storage Size 320K byte (800 m)                    | -      |
| Part Program Storage Size 512K byte (1280 m)                   | -      |
| Part Program Storage Size 1M byte                              | ●      |
| Part Program Storage Size 2M byte                              | ◎      |
| Number of Registerable Programs, 400 Programs                  | -      |
| Number of Registerable Programs, 800 Programs                  | ●      |
| Number of Registerable Programs, 1000 Programs                 | ◎      |
| Part Program Editing   | ●      |
| Program Protect  | ●      |
| Extended Part Program Editing                                  | ●      |
| Background Editing   | ●      |

| Specifications · Contents                          | FX-800 |
|--|--------|
| <b>Setting and Display</b>                         |        |
| Status Display                                     | ●      |
| Clock Function                                     | ●      |
| Current Position Display                           | ●      |
| Program Comment Display (31 Characters)            | ●      |
| Parameter Setting and Display                      | ●      |
| Alarm Display                                      | ●      |
| Alarm History Display                              | ●      |
| Operator Message History Display                   | ●      |
| Operation Message History Display                  | ●      |
| Run Hour and Parts Count Display                   | ●      |
| Actual Cutting Feedrate Display                    | ●      |
| Display of Spindle Speed and T Code at All Screens | ●      |
| Directory Display of Floppy Cassette               | ●      |
| Optional Path Name Display                         | ●      |
| Servo Setting Screen                               | ●      |
| Maintenance Information Screen                     | ●      |
| Data Protection Key, 1 Type                        | ●      |
| Help Function                                      | ●      |
| Self-Diagnosis Function                            | ●      |
| Periodic Maintenance Screen                        | ●      |
| Display of Hardware and Software Configuration     | ●      |
| Graphic Function                                   | ●      |
| Dynamic Graphic Display Function                   | ◎      |
| <b>Display Languages</b>                           |        |
| English  | ●      |
| Japanese (Kanji)                                   | ▲      |
| Other Language                                     | ▲      |
| Dynamic Display Language Switching                 | ●      |

● Standard ◎ Optional ⊕ Special  
▲ Parameter Setting is Required - None

## Smart Work Manager (Option)

01



It provides simple operation and convenient function.

### 01 Tool Life Manager

This function can set tool life and wear limit to manage all tools.

### 02 Load Monitor

Detecting max load to check tool status.

### 03 Parts and Machine Manager

It offers parts counter, program history, operate time for today or this month.

02



03

