

# HD

## SY Series

HD2200Y/SY | HD2600Y/SY | HD2600LY/LSY | HD3100YA/SYA | HD3100Y/SY

WIA Machine Tools Y-Axis Turning Center



# Technical Leader

The CNC Turning Center HD-SY Series, designed with WIA Machine tools's engineering expertise to maximize productivity by enhancing rigidity and accuracy of machining.

| ITEM      | Main Chuck |     |     | Sub Chuck |    | Bed (Z-Axis)     |                  |                    |                    | Mill Turret |       |
|-----------|------------|-----|-----|-----------|----|------------------|------------------|--------------------|--------------------|-------------|-------|
|           | 8"         | 10" | 12" | 5"        | 6" | 680mm<br>(26.8") | 830mm<br>(32.7") | 1,100mm<br>(43.3") | 1,350mm<br>(53.1") | BMT55       | BMT65 |
| HD2200Y   | ●          |     |     |           |    | ●                |                  |                    |                    | ●           |       |
| HD2200SY  | ●          |     |     | ●         |    | ●                |                  |                    |                    | ●           |       |
| HD2600Y   |            | ●   |     |           |    | ●                |                  |                    |                    | ●           |       |
| HD2600SY  |            | ●   |     | ●         |    | ●                |                  |                    |                    | ●           |       |
| HD2600LY  |            | ●   |     |           |    |                  |                  | ●                  |                    | ●           |       |
| HD2600LSY |            | ●   |     | ●         |    |                  |                  | ●                  |                    | ●           |       |
| HD3100YA  |            | ●   |     |           |    |                  | ●                |                    |                    |             | ●     |
| HD3100SYA |            | ●   |     |           | ●  |                  | ●                |                    |                    |             | ●     |
| HD3100Y   |            |     | ●   |           |    |                  | ●                |                    |                    |             | ●     |
| HD3100SY  |            |     | ●   |           | ●  |                  | ●                |                    |                    |             | ●     |
| HD3100LY  |            |     | ●   |           |    |                  |                  |                    | ●                  |             | ●     |
| HD3100LYA |            | ●   |     |           |    |                  |                  |                    | ●                  |             | ●     |

●: Standard ○: Option

# HD

## SY Series

Lathe with Y-axis & Box Guideways for Heavy Cutting

- Box guideways for heavy duty cutting
- 30° slanted one-piece bed structure for high rigidity
- Stabilized Unit Structure to minimize thermal displacement
- Integrated processing through synchronized control of Main/Sub spindle ('SY' Type)
- Multi-tasking operation with wedge type Y-axis BMT turret
- Excellent rapid traverse rate: 30m/min [1,181ipm] (Z-axis)
- Ergonomic design for convenient access to chuck and tool



# Y-AXIS TURNING CENTER



# APPLICATIONS & PARTS

WORM SHAFT



## Reduced machining time by multi-tasking operation

HD-SY Series with Y-axis makes it possible to work high-valued product with integrated processing using sub spindle and various rotary tools in short time.

WHEEL  
HUB



COOLING  
ADAPTER



HUB  
SHAFT



DRIVE  
GEAR



# 01 BASIC STRUCTURE

Which Can Cover All Machining Process with Only One Initial Setting

## Mill Turret

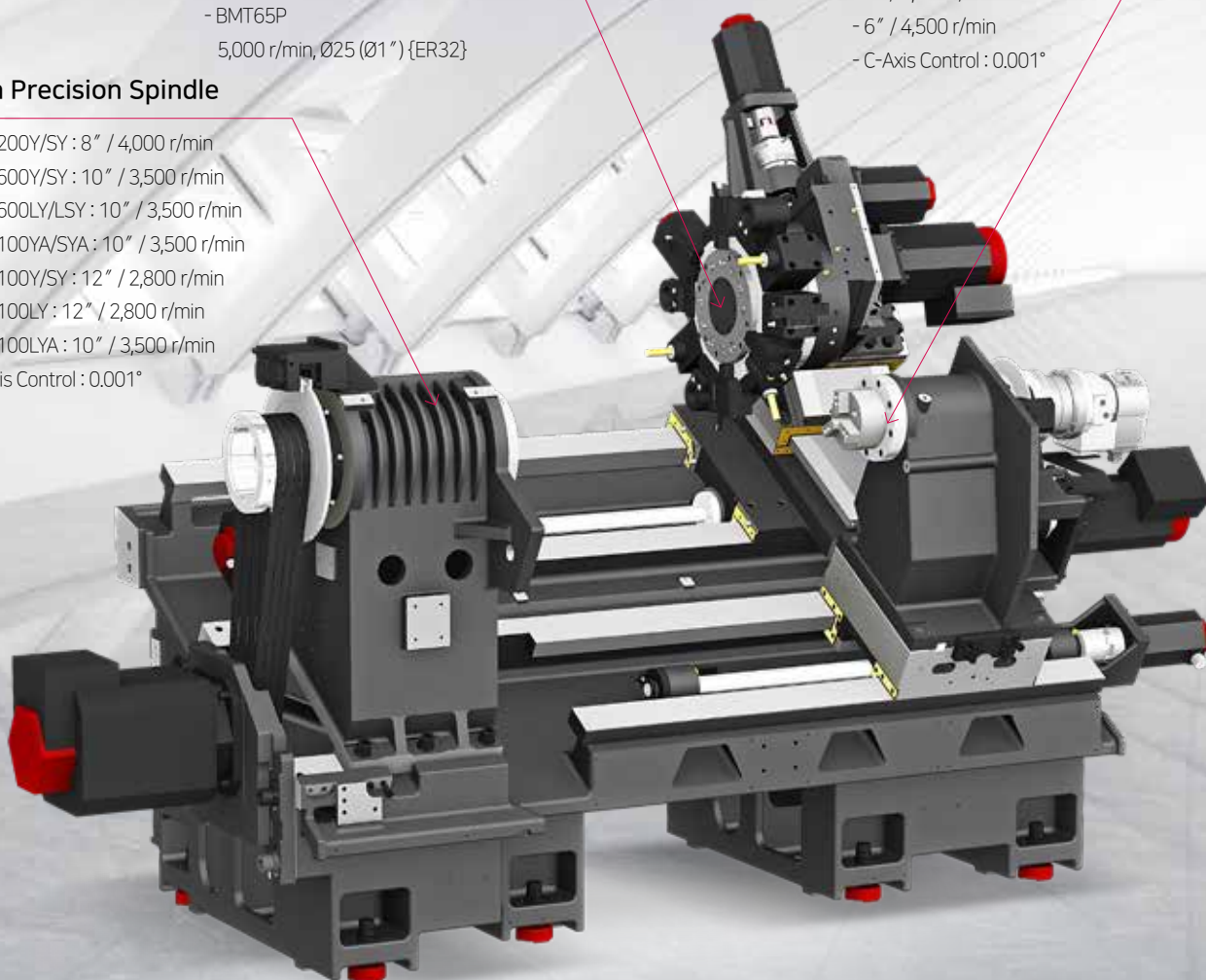
- BMT55P  
6,000 r/min, Ø16 (Ø5/8") {ER25}
- BMT65P  
5,000 r/min, Ø25 (Ø1") {ER32}

## Sub Spindle

- 5" / 6,000 r/min
- 6" / 4,500 r/min
- C-Axis Control : 0.001°

## High Precision Spindle

- HD2200Y/SY : 8" / 4,000 r/min
- HD2600Y/SY : 10" / 3,500 r/min
- HD2600LY/LSY : 10" / 3,500 r/min
- HD3100YA/SYA : 10" / 3,500 r/min
- HD3100Y/SY : 12" / 2,800 r/min
- HD3100LY : 12" / 2,800 r/min
- HD3100LYA : 10" / 3,500 r/min
- C-Axis Control : 0.001°



# REDUCTION OF NON-CUTTING TIME BY FAST RAPID SPEED

## ALL-IN-ONE TYPE OF BED

### Optimal Structural Analysis

Structural analysis was applied to the design of the machine to increase the tool post body and reduce the machine's height so as to maintain the bed's dynamic rigidity even during heavy-duty cutting.

In addition, the HD-SY Series bed slope is pitched at 30 degrees to ensure more stable machining.



### Integrated Coolant Tank

The structure is designed with the coolant tank installed at the bed front for improved convenience. Chips can be removed from the right side of the machine.

## GUIDEWAY

### Box Guideway

All axis of HD-SY Series are designed with Box Guideways for better travel ability. Box Guideways show great performance in offsetting vibrations caused by heavy duty cutting.

### Sealed GIB Structure

X-axis of HD2200 is designed to minimize the damage of turcite from chips by applying the sealed GIB structure.



6-Face constraint design for improved travel capacity

### Rapid Traverse Rate (X/Y/Z/ZB)

#### HD2200Y/SY | HD2600Y/SY

**215/110/680/680** mm  
(8.5" / 4.3" / 26.8" / 26.8")

#### HD3100YA/SYA, HD3100Y/SY

**265/120/830/830** mm  
(10.4" / 4.7" / 32.7" / 32.7")

#### HD2600LY/LSY

**265/110/1,100/1,100** mm  
(10.4" / 4.3" / 43.3" / 43.3")

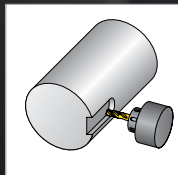
#### HD3100LYA/LY

**265/120/1,350/1,350** mm  
(10.4" / 4.7" / 53.1" / 53.1")

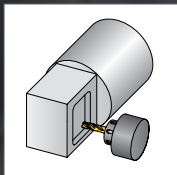
# 02 Y-AXIS FUNCTION

The Y-Axis Function, Cutting for Complex Shaped Work-piece

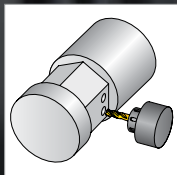
## HIGH PERFORMANCE Y-AXIS



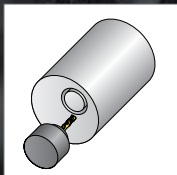
Keyway Milling



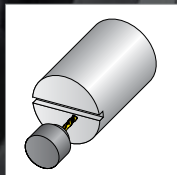
Multi-sided machining



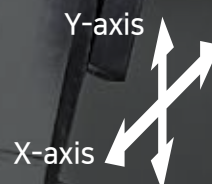
Eccentric hole machining



X+Y axis circular interpolation



Fine Grooving



# MACHINING PROCESS WITH ONLY ONE INITIAL SETTING

## Y-AXIS

### Wedge Type Y-Axis Structure

The HD-SY Series is designed with a wedge type Y-axis that is transferred by the simultaneous operation of the Ys-axis and the X-axis. In addition, excellent rigidity makes it possible to perform superb quality when machining a heavy-duty cutting.

### Y-axis Rapid Traverse Rate

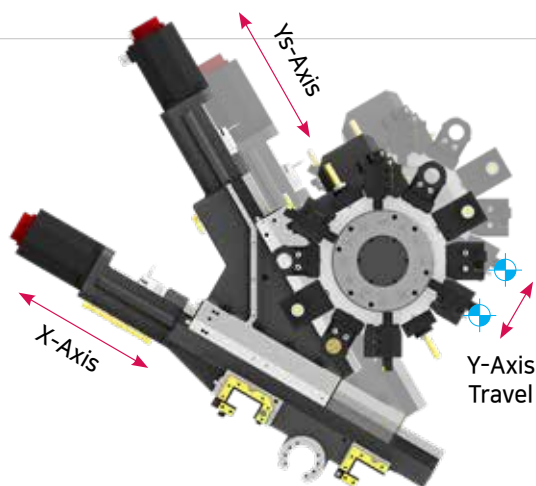
10 m/min (394 ipm)

### Y-axis Travel

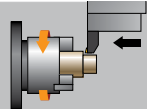
**HD2200Y Series** : 110 (±55) mm (4.3")

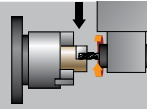
**HD2600Y Series** : 110 (±55) mm (4.3")

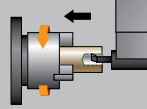
**HD3100Y Series** : 120 (±60) mm (4.7")

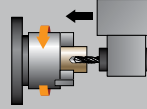


### HD3100Y (12") Machining Capability

|  <b>O.D Turning</b><br>(Material : S45C) |             |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|
| Machining Dia.                                                                                                              | Ø172        |
| Machining depth                                                                                                             | 7.5 mm      |
| Spindle rpm                                                                                                                 | 389 r/mim   |
| Cutting speed                                                                                                               | 210 m/mim   |
| Forwarding speed                                                                                                            | 0.55 mm/rev |
| Chip discharging amount                                                                                                     | 866 cc/min  |

|  <b>End Mill</b><br>(Material : S45C) |             |
|---------------------------------------------------------------------------------------------------------------------------|-------------|
| Tool Dia.                                                                                                                 | Ø20 mm      |
| Spindle rpm                                                                                                               | 675 r/mim   |
| Forwarding speed                                                                                                          | 0.15 mm/rev |
| Cutting speed                                                                                                             | 86 m/mim    |
| Machining depth                                                                                                           | 10 mm       |
| Machining thickness                                                                                                       | 20 mm       |

|  <b>I.D Turning</b><br>(Material : S45C) |             |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|
| Tool Dia.                                                                                                                   | Ø76.4       |
| Machining depth                                                                                                             | 10 mm       |
| Spindle rpm                                                                                                                 | 750 r/mim   |
| Cutting speed                                                                                                               | 180 m/mim   |
| Forwarding speed                                                                                                            | 0.12 mm/rev |

|  <b>U-Drill</b><br>(Material : S45C) |             |
|--------------------------------------------------------------------------------------------------------------------------|-------------|
| Tool Dia.                                                                                                                | Ø63         |
| Machining depth                                                                                                          | 15 mm       |
| Spindle rpm                                                                                                              | 1,011 r/mim |
| Cutting speed                                                                                                            | 200 m/mim   |
| Forwarding speed                                                                                                         | 0.29 mm/rev |

※ The above result might be different by types of processing circumstances.

# 03 HIGH PRECISION SPINDLE

Long Lasting, High Accuracy & Excellent Performance CNC Turning Center

## Spindle Specifications

[ ] : Option

| ITEM             | Spindle Speed     | Motor (Max./Cont.)          | Torque (Max./Cont.)                    | Type |
|------------------|-------------------|-----------------------------|----------------------------------------|------|
| HD2200Y/SY       | 4,000 (FANUC)     | 18.5/15 kW (25/20 HP)       | 206.2/125.4 N·m (152.1/92.5 lbf·ft)    | BELT |
|                  | [4,000 (FANUC)]   | [18.5/15 kW (25/20 HP)]     | [353.5/215 N·m (260.7/158.6 lbf·ft)]   |      |
|                  | [4,000 (SIEMENS)] | [22.5/15 kW (30/20 HP)]     | [215/143.3 N·m (158.6/105.7 lbf·ft)]   |      |
| HD2600Y/SY       | 3,500 (FANUC)     | 18.5/15 kW (25/20 HP)       | 400.7/243.7 N·m (295.5/179 lbf·ft)     |      |
|                  | [3,500 (SIEMENS)] | [32.3/17 kW (43.3/22.8 HP)] | [524.7/276.1 N·m (703.6/203.6 lbf·ft)] |      |
| HD2600LY/LSY     | 3,500 (FANUC)     | 18.5/15 kW (25/20 HP)       | 400.7/243.7 N·m (295.5/179 lbf·ft)     |      |
| HD3100YA/SYA/LYA | 3,500 (FANUC)     | 26/18.5 kW (35/25 HP)       | 734/522 N·m (541.4/385 lbf·ft)         |      |
| HD3100Y/SY/LY    | 2,800 (FANUC)     | 26/18.5 kW (35/25 HP)       | 1,051/672 N·m (775.2/495.6 lbf·ft)     |      |

# HEAVY DUTY CUTTING & HIGH ACCURACY

## SPINDLE

### Spindle for Heavy Cutting

The main spindle is designed with the same structure as that often found in larger sized machines. The combination of double cylindrical roller bearings and angular contact ball bearings leads to excellent heavy duty cutting performance. Also, machining performance is enhanced by applying ribstar belt to minimize noise and belt slipping problems.

### C-Axis Control

C-axis of HD-SY Series can be controlled to 0.001° which makes it possible to process various shapes.



### Sub Spindle ('SY' Type)

The Belt-type sub spindle is designed to minimize thermal displacement during the continuous machining, offering from the heavy-duty cutting to the high-speed machining.

HD2200SY/2600SY/LSY    **5"** (6,000 r/min)

HD3100SYA/3100SY    **6"** (4,500 r/min)



## TAIL STOCK

The HD-Y series is fitted with tailstocks as a standard for excellent machining quality. In addition, the travel distance of quill can be as long as 120mm(4.7"), thus expanding the support area.

HD2200Y/2600Y    **MT#4** {Travel : 680 mm} (26.8")

HD2600LY    **MT#4** {Travel : 1,100 mm} (43.3")

HD3100YA/3100Y    **MT#5** {Travel : 830 mm} (32.7")

HD3100LYA/3100LY    **MT#5** {Travel : 1,350 mm} (53.1")



HD-SY SERIES

# 04 BMT TURRET

High speed, High Accuracy, Highly Reliable Servo Turret



# VARIOUS DRIVEN PRECISION BMT TOOL HOLDERS

## TURRET

### Mill Turret

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.

**BMT 55P** (HD2200Y/SY | HD2600Y/SY)

- Speed (rpm) : 6,000 r/min
- Collet size :  $\varnothing 16$  ( $\varnothing 5/8$ " ) {ER25}
- Indexing Time : 0.2 sec/step

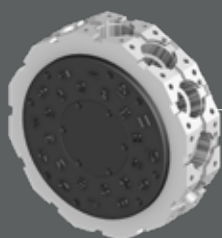
**BMT 65P** (HD3100YA/SYA | HD3100Y/SY)

- Speed (rpm) : 5,000 r/min
- Collet size :  $\varnothing 25$  ( $\varnothing 1$ " ) {ER32}
- Indexing Time : 0.2 sec/step

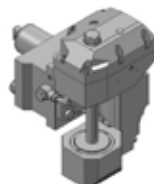
## SPECIAL TOOL

**OPTION**

With the Y-axis, the HD-SY series can process high value-added products using a variety of rotating tools. In particular, there is a multi-holder for attaching a variety of tools to one holder, and an eccentric rotary tool for handling eccentric parts without additional axis travel, which can realize integration of process with one machine.



ANGLE HEAD



GEAR HOBBING HEAD



DOUBLE TYPE HEAD

※ Consultation needed when ordering these options.

# 05 USER CONVENIENCE

Various Devices for User Friendly

## BAR FEEDER SYSTEM

### Bar Feeder

Bar feeder system enables automation which leads to efficiency improvement.



#### Parts Catcher

An optional parts catcher collects finished parts without the need to open the door, adding productivity, especially when a bar feeder is attached.



#### Parts Conveyor

The parts conveyor transfers the finished workpiece unloaded by the parts catcher for user convenience.



#### Auto Door

Using M-code, the doors can be automatically opened and closed which brings productivity and convenience for automation.



#### Auto Shutter

Using auto shutter, automation system with gantry loader is possible without opening the machine's door.

## HIGH PRECISION SYSTEM



### Automatic Q-Setter

Cutting tools are calibrated quickly and accurately with the addition of a q-setter. Each tool tip is touched off manually using a sensor that inputs the position automatically.



### Linear Scale

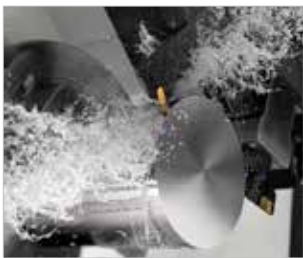
Linear scales increase positioning accuracy and reduce distortion caused by thermal growth, thus ensuring a more accurate finished part



### Work Probe

Workpiece coordinate values can be set automatically using the optional spindle probe.

# COOLANT UNIT



Standard Coolant (Nozzle)



Chuck Coolant (Upper Chuck)



Chuck Air Blow (Upper Chuck)



Gun Coolant

# CHIP DISPOSAL SOLUTION

## Chip Conveyor

Timely and effective disposal of chips will enhance productivity as well as the working environment.



|               |                                                                                     |                                  |                          |
|---------------|-------------------------------------------------------------------------------------|----------------------------------|--------------------------|
| Hinge         | Chip Type : Roughing Chip, Long Chip, Chip complex                                  | Material : SS41, 45C, Cast Steel | Front-Right<br>Direction |
|               | Highly efficient when disposing a lot of chips. Capable of handling stringy chips.. |                                  |                          |
| Scraper       | Chip Type : Finely broken chip blown out                                            | Material : cast Iron, Nonferrous |                          |
|               | Convenient for shortly cut chips.                                                   |                                  |                          |
| ※ Drum Filter | Chip Type : Powder, Micro Chip                                                      | Material : AL                    |                          |
|               | Advantageous in precision, as the chips do not flow in to the coolant nozzle.       |                                  |                          |

※ When ordering a drum filter chip conveyor, prior consult with hyudai wia’s sales person.

# 06 FANUC - SMART PLUS

The Compatible All-round Control



15" Touch-type Monitor as a standard

Smart Machine Control

Conversational Program

i-HMI

Part Program Storage

No. of Registerable Programs

Fast Cycle Time Technology

Fine Surface Technology

Smart Servo Control Technology

SmartGuide-i

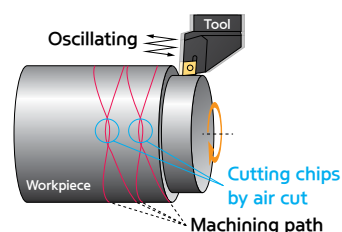
Machining-aid Function

5120M (2MB)

1000 EA

## Servo Learning Oscillation Function for ChipBreaking **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.)

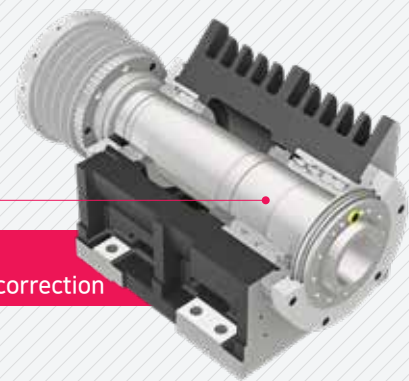
## 8Ch. Thermal displacement compensation **OPTION**



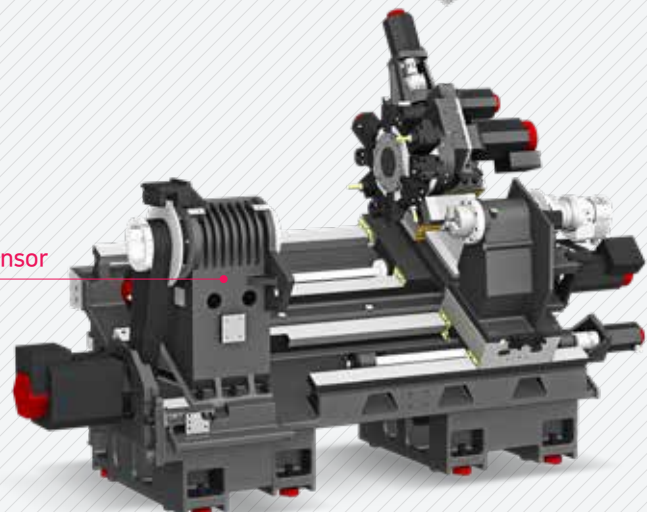
Control Software

Thermal Sensor

Spindle thermal displacement error correction



Thermal Sensor



Structure thermal displacement error correction

Machine tools generate thermal displacement due to heat during machining.

WIA machine tools detect thermal changes through thermal sensors installed on the main thermal sources of the machine.

In addition, a thermal displacement compensation device that predicts the amount of thermal displacement according to the amount of thermal change and provides a command to the motor with a compensated value to maintain consistent precision is provided as an option.

## 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                                                          |                                  | HD2200Y/SY | HD2600Y/SY | HD2600LY/LSY |
|------------------------------------------------------------------|----------------------------------|------------|------------|--------------|
| Main Spindle                                                     | 8"                               | ●          | -          | -            |
| Hollow Chuck 3 Jaw                                               | 10"                              | -          | ●          | ●            |
| Main Spindle                                                     | 8"                               | -          | -          | -            |
| Solid Chuck 3 Jaw                                                | 10"                              | -          | -          | -            |
| Sub SP. Hollow Chuck 3 Jaw                                       | 5"                               | -/●        | -/●        | -/●          |
| Sub Sp. Solid Chuck 3 Jaw                                        | 5"                               | -          | -          | -            |
| Standard Soft Jaw (1set)                                         |                                  | ●          | ●          | ●            |
| Chuck Clamp Foot Switch                                          |                                  | ●          | ●          | ●            |
| 2 Steps Hyd. Pressure Device                                     |                                  | ○          | ○          | ○            |
| Spindle Inside Stopper                                           |                                  | ☆          | ☆          | ☆            |
| Cs-Axis (0.001")                                                 |                                  | ●          | ●          | ●            |
| Chuck Open/Close Confirmation Device                             |                                  | ●          | ●          | ●            |
| 2 Steps Chuck Foot Switch                                        |                                  | ○          | ○          | ○            |
| Sub Spindle Foot Switch                                          |                                  | -/●        | -/●        | -/●          |
| Turret                                                           |                                  |            |            |              |
| Tool Holder                                                      |                                  | ●          | ●          | ●            |
| Mill Turret                                                      | BMT                              | ●          | ●          | ●            |
|                                                                  | 12 Tool                          | ●          | ●          | ●            |
|                                                                  | 24 Tool                          | ○          | ○          | ○            |
| Straight Milling Head                                            | Collet Type, 2ea                 | ●          | ●          | ●            |
| Angular Milling Head                                             | Collet Type, 2ea                 | ●          | ●          | ●            |
| Straight Milling Head                                            | Adapter Type                     | ○          | ○          | ○            |
| Angular Milling Head                                             | Adapter Type                     | ○          | ○          | ○            |
| Boring Sleeve                                                    |                                  | ●          | ●          | ●            |
| Drill Socket                                                     |                                  | ○          | ○          | ○            |
| U-Drill Holder                                                   |                                  | ●          | ●          | ●            |
| U-Drill Holder Sleeve                                            |                                  | ●          | ●          | ●            |
| Angle Head                                                       |                                  | ☆          | ☆          | ☆            |
| Tail Stock & Steady Rest                                         |                                  |            |            |              |
| Quill Tail Stock                                                 | MT#4                             | ●/-        | ●/-        | ●/-          |
|                                                                  | MT#5                             | -          | -          | -            |
| Built-in Tail Stock                                              |                                  | ○/-        | ○/-        | ○/-          |
| Programmable Tail Stock                                          |                                  | ○/-        | ○/-        | ○/-          |
| Manual Hyd. Steady Rest                                          |                                  | -          | -          | -            |
| Standard Live Center                                             |                                  | ●/-        | ●/-        | ●/-          |
| High Precision Live Center                                       |                                  | ☆/-        | ☆/-        | ☆/-          |
| 2 Steps Tail Stock Pressure System                               |                                  | ☆/-        | ☆/-        | ☆/-          |
| Quill Forward/Reverse Confirmation Device                        |                                  | ○/-        | ○/-        | ○/-          |
| Tail Stock Foot Switch                                           |                                  | ○/-        | ○/-        | ○/-          |
| Coolant & Air Blow                                               |                                  |            |            |              |
| Standard Coolant (Nozzle)                                        |                                  | ●          | ●          | ●            |
| Chuck Coolant (Upper Chuck)                                      |                                  | ○          | ○          | ○            |
| Gun Coolant                                                      |                                  | ○          | ○          | ○            |
| Through Spindle Coolant (Only for Special Chuck)                 |                                  | ☆          | ☆          | ☆            |
| Turnmill Through Coolant                                         |                                  | -          | -          | -            |
| Chuck Air Blow                                                   | Main SP.                         | ○          | ○          | ○            |
|                                                                  | Sub SP.                          | -/○        | -/○        | -/○          |
| Tail Stock Air Blow (Upper Tail Stock)                           |                                  | ○/-        | ○/-        | ○/-          |
| Turret Air Blow                                                  |                                  | ☆          | ☆          | ☆            |
| Air Gun                                                          |                                  | ○          | ○          | ○            |
| Through Spindle Air Blow (Only for Special Chuck)                |                                  | -          | -          | -            |
| High Pressure Coolant                                            | 0.5Bar                           | ●          | ●          | ●            |
|                                                                  | 6Bar                             | ○          | ○          | ○            |
|                                                                  | 20Bar                            | ○          | ○          | ○            |
|                                                                  | 70Bar                            | ○          | ○          | ○            |
| Power Coolant System (For Automation)                            |                                  | ☆          | ☆          | ☆            |
| Coolant Chiller<br>(When selecting Sub Tank Type, Chip Conveyor) |                                  | -          | -          | -            |
| Chip Disposal                                                    |                                  |            |            |              |
| Coolant Tank                                                     | Right                            | ●          | ●          | ●            |
|                                                                  | Rear                             | ☆          | ☆          | ☆            |
| Chip Conveyor<br>(Hinge/Scraper)                                 | Front (Right)                    | ○          | ○          | ○            |
|                                                                  | Rear (Rear)                      | ☆          | ☆          | ☆            |
| Special Chip Conveyor (Drum Filter)                              |                                  | -          | -          | -            |
| Chip Wagon                                                       | Standard<br>(180 ℓ [47.5 gal])   | ○          | ○          | ○            |
|                                                                  | Swing<br>(200 ℓ [52.8 gal])      | ○          | ○          | ○            |
|                                                                  | Large Size<br>(330 ℓ [87.2 gal]) | ○          | ○          | ○            |
|                                                                  | Customized                       | ☆          | ☆          | ☆            |
| Safety Device                                                    |                                  |            |            |              |
| Front Door Interlock                                             |                                  | ●          | ●          | ●            |
| Total Splash Guard                                               |                                  | ●          | ●          | ●            |
| Chuck Hydraulic Pressure Maintenance Interlock                   |                                  | ☆          | ☆          | ☆            |

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

| Electric Device                                            |                                 | HD2200Y/SY | HD2600Y/SY | HD2600LY/LSY |
|------------------------------------------------------------|---------------------------------|------------|------------|--------------|
| 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                                         | 6EA                             | ○          | ○          | ○            |
|                                                            | 9EA                             | ○          | ○          | ○            |
| Electric Circuit Breaker                                   | FANUC                           | ○          | ○          | ○            |
|                                                            | SIEMENS                         | -          | -          | -            |
| AVR (Auto Voltage Regulator)                               |                                 | ☆          | ☆          | ☆            |
| Transformer                                                | 30kVA                           | ○/-        | ○/-        | ○/-          |
|                                                            | 35kVA                           | -/○        | -/○        | -/○          |
| Auto Power Off                                             |                                 | ○          | ○          | ○            |
| Measurement                                                |                                 |            |            |              |
| Manual Q-Setter (Basic)                                    |                                 | ○          | ○          | ○            |
| Manual Q-Setter (Renishaw)                                 |                                 | ○          | ○          | ○            |
| Automatic Q-Setter (Renishaw)                              |                                 | ○          | ○          | ○            |
| Work Close Confirmation Device<br>(Only for Special Chuck) | TACO                            | ○          | ○          | ○            |
|                                                            | SMC                             | ○          | ○          | ○            |
| Work Setter                                                |                                 | ○          | ○          | ○            |
| Linear Scale                                               | X/Y/Z axis                      | ○          | ○          | ○            |
| Coolant Level Sensor (Only for Chip Conveyor)              |                                 | ☆          | ☆          | ☆            |
| Environment                                                |                                 |            |            |              |
| Air Conditioner                                            |                                 | ○          | ○          | ○            |
| Dehumidifier                                               |                                 | ○          | ○          | ○            |
| Oil Mist Collector                                         |                                 | ☆          | ☆          | ☆            |
| Oil Skimmer (Only for Chip Conveyor)                       |                                 | ○          | ○          | ○            |
| MQL (Minimal Quantity Lubrication)                         |                                 | ☆          | ☆          | ☆            |
| Fixture & Automation                                       |                                 |            |            |              |
| Auto Door                                                  |                                 | ○          | ○          | ○            |
| Auto Shutter (Only for Automatic System)                   |                                 | ☆          | ☆          | ☆            |
| Sub Operation Pannel                                       |                                 | ☆          | ☆          | ☆            |
| Bar Feeder Interface                                       |                                 | ○          | ○          | ○            |
| Bar Feeder                                                 |                                 | ☆          | ☆          | ☆            |
| Work Pusher (Spring Type)                                  |                                 | ○          | ○          | ○            |
| Work Ejector (Pneumatic Type)                              |                                 | ☆          | ☆          | ☆            |
| Extra M-Code 4ea                                           |                                 | ○          | ○          | ○            |
| Automation Interface                                       |                                 | ☆          | ☆          | ☆            |
| I/O Extension (IN & OUT)                                   | 16 Contact                      | ○          | ○          | ○            |
|                                                            | 32 Contact                      | ○          | ○          | ○            |
| Parts Catcher                                              | Main SP.                        | ○          | ○          | ○            |
|                                                            | Sub SP.                         | -/○        | -/○        | -/○          |
| Turret Work Pusher (For Automation)                        |                                 | ☆          | ☆          | ☆            |
| Parts Conveyor (Required Main Parts Catcher)               |                                 | ☆          | ☆          | ☆            |
| Semi Automation System                                     |                                 | ☆          | ☆          | ☆            |
| Hyd. Device                                                |                                 |            |            |              |
| Standard Hyd. Cylinder                                     | Hollow                          | ●          | ●          | ●            |
| Standard Hyd. Unit                                         | 35bar(507.6psi) / 30 ℓ (7.9gal) | ●          | ●          | ●            |
| S/W                                                        |                                 |            |            |              |
| Dialogue Program (HW-DPRO) : FANUC                         |                                 | ○          | ○          | ○            |
| DNC software (HW-eDNC)                                     |                                 | ○          | ○          | ○            |
| Smart Guide-i : FANUC                                      |                                 | ●          | ●          | ●            |
| Smart S/W                                                  |                                 | ☆          | ☆          | ☆            |
| ETC                                                        |                                 |            |            |              |
| Tool Box                                                   |                                 | ●          | ●          | ●            |
| Customized Color                                           | Need Munsel No.                 | ☆          | ☆          | ☆            |
| CAD & CAM                                                  |                                 | ☆          | ☆          | ☆            |
| Thermal displacement compensation                          |                                 | ○          | ○          | ○            |

※ 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.

# SPECIFICATIONS

## Standard & Optional

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

| Spindle                                                          |                                  | HD3100YA/SYA | HD3100Y/SY |
|------------------------------------------------------------------|----------------------------------|--------------|------------|
| Main Spindle                                                     | 10"                              | ●            | -          |
| Hollow Chuck 3 Jaw                                               | 12"                              | -            | ●          |
| Main Spindle                                                     | 10"                              | -            | -          |
| Solid Chuck 3 Jaw                                                | 12"                              | -            | -          |
| Sub SP. Hollow Chuck 3 Jaw                                       | 6"                               | -/●          | -/●        |
| Sub Sp. Solid Chuck 3 Jaw                                        | 6"                               | -            | -          |
| Standard Soft Jaw (1set)                                         |                                  | ●            | ●          |
| Chuck Clamp Foot Switch                                          |                                  | ●            | ●          |
| 2 Steps Hyd. Pressure Device                                     |                                  | ○            | ○          |
| Spindle Inside Stopper                                           |                                  | ☆            | ☆          |
| Cs-Axis (0.001")                                                 |                                  | ●            | ●          |
| Chuck Open/Close Confirmation Device                             |                                  | ●            | ●          |
| 2 Steps Chuck Foot Switch                                        |                                  | ○            | ○          |
| Sub Spindle Foot Switch                                          |                                  | -/●          | -/●        |
| Turret                                                           |                                  |              |            |
| Tool Holder                                                      |                                  | ●            | ●          |
| Mill Turret                                                      | BMT                              | ●            | ●          |
|                                                                  | 12 Tool                          | ●            | ●          |
|                                                                  | 24 Tool                          | -            | -          |
| Straight Milling Head                                            | Collet Type, 2ea                 | ●            | ●          |
| Angular Milling Head                                             | Collet Type, 2ea                 | ●            | ●          |
| Straight Milling Head                                            | Adapter Type                     | ○            | ○          |
| Angular Milling Head                                             | Adapter Type                     | ○            | ○          |
| Boring Sleeve                                                    |                                  | ●            | ●          |
| Drill Socket                                                     |                                  | ○            | ○          |
| U-Drill Holder                                                   |                                  | ●            | ●          |
| U-Drill Holder Sleeve                                            |                                  | ●            | ●          |
| Angle Head                                                       |                                  | ☆            | ☆          |
| Tail Stock & Steady Rest                                         |                                  |              |            |
| Quill Tail Stock                                                 | MT#4                             | -            | -          |
|                                                                  | MT#5                             | ●/-          | ●/-        |
| Built-in Tail Stock                                              |                                  | ○/-          | ○/-        |
| Programmable Tail Stock                                          |                                  | ○/-          | ○/-        |
| Manual Hyd. Steady Rest                                          |                                  | -            | -          |
| Standard Live Center                                             |                                  | ●/-          | ●/-        |
| High Precision Live Center                                       |                                  | ☆/-          | ☆/-        |
| 2 Steps Tail Stock Pressure System                               |                                  | ☆/-          | ☆/-        |
| Quill Forward/Reverse Confirmation Device                        |                                  | ○/-          | ○/-        |
| Tail Stock Foot Switch                                           |                                  | ○/-          | ○/-        |
| Coolant & Air Blow                                               |                                  |              |            |
| Standard Coolant (Nozzle)                                        |                                  | ●            | ●          |
| Chuck Coolant (Upper Chuck)                                      |                                  | ○            | ○          |
| Gun Coolant                                                      |                                  | ○            | ○          |
| Through Spindle Coolant (Only for Special Chuck)                 |                                  | ☆            | ☆          |
| Turnmill Through Coolant                                         |                                  | -            | -          |
| Chuck Air Blow                                                   | Main SP.                         | ○            | ○          |
|                                                                  | Sub SP.                          | -/○          | -/○        |
| Tail Stock Air Blow (Upper Tail Stock)                           |                                  | ○/-          | ○/-        |
| Turret Air Blow                                                  |                                  | ☆            | ☆          |
| Air Gun                                                          |                                  | ○            | ○          |
| Through Spindle Air Blow (Only for Special Chuck)                |                                  | -            | -          |
| High Pressure Coolant                                            | 0.5Bar                           | ●            | ●          |
|                                                                  | 6Bar                             | ○            | ○          |
|                                                                  | 20Bar                            | ○            | ○          |
|                                                                  | 70Bar                            | ○            | ○          |
| Power Coolant System (For Automation)                            |                                  | ☆            | ☆          |
| Coolant Chiller<br>(When selecting Sub Tank Type, Chip Conveyor) |                                  | -            | -          |
| Chip Disposal                                                    |                                  |              |            |
| Coolant Tank                                                     | Right                            | ●            | ●          |
|                                                                  | Rear                             | ☆            | ☆          |
| Chip Conveyor<br>(Hinge/Scraper)                                 | Front (Right)                    | ○            | ○          |
|                                                                  | Rear (Rear)                      | ☆            | ☆          |
| Special Chip Conveyor (Drum Filter)                              |                                  | -            | -          |
| Chip Wagon                                                       | Standard<br>(180 t [47.5 gal])   | ○            | ○          |
|                                                                  | Swing<br>(200 t [52.8 gal])      | ○            | ○          |
|                                                                  | Large Size<br>(330 t [87.2 gal]) | ○            | ○          |
|                                                                  | Customized                       | ☆            | ☆          |
| Safety Device                                                    |                                  |              |            |
| Front Door Interlock                                             |                                  | ●            | ●          |
| Total Splash Guard                                               |                                  | ●            | ●          |
| Chuck Hydraulic Pressure Maintenance Interlock                   |                                  | ☆            | ☆          |

| Electric Device                                            |                                                                                                                      | HD3100YA/SYA | HD3100Y/SY |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------|------------|
| Call Light                                                 | 1Color : <span style="color: yellow;">■</span>                                                                       | ●            | ●          |
| Call Light & Buzzer                                        | 3Color : <span style="color: green;">■</span> <span style="color: red;">■</span> <span style="color: blue;">■</span> | ○            | ○          |
| Electric Cabinet Light                                     |                                                                                                                      | ○            | ○          |
| Remote MPG                                                 |                                                                                                                      | ○            | ○          |
| Work Counter                                               | Digital                                                                                                              | ○            | ○          |
| Total Counter                                              | Digital                                                                                                              | ○            | ○          |
| Tool Counter                                               | Digital                                                                                                              | ○            | ○          |
| Multi Tool Counter                                         | 6EA                                                                                                                  | ○            | ○          |
|                                                            | 9EA                                                                                                                  | ○            | ○          |
| Electric Circuit Breaker                                   |                                                                                                                      | ○            | ○          |
| AVR (Auto Voltage Regulator)                               |                                                                                                                      | ☆            | ☆          |
| Transformer                                                | 30kVA                                                                                                                | ○/-          | ○/-        |
|                                                            | 39kVA                                                                                                                | -/○          | -/○        |
| Auto Power Off                                             |                                                                                                                      | ○            | ○          |
| Measurement                                                |                                                                                                                      |              |            |
| Manual Q-Setter (Basic)                                    |                                                                                                                      | ○            | ○          |
| Manual Q-Setter (Renishaw)                                 |                                                                                                                      | ○            | ○          |
| Automatic Q-Setter (Renishaw)                              |                                                                                                                      | ○            | ○          |
| Work Close Confirmation Device<br>(Only for Special Chuck) | TACO                                                                                                                 | ☆            | ☆          |
|                                                            | SMC                                                                                                                  | ☆            | ☆          |
| Work Setter                                                |                                                                                                                      | ☆            | ☆          |
| Linear Scale                                               | X/Y/Z axis                                                                                                           | ☆            | ☆          |
| Coolant Level Sensor (Only for Chip Conveyor)              |                                                                                                                      | ☆            | ☆          |
| Environment                                                |                                                                                                                      |              |            |
| Air Conditioner                                            |                                                                                                                      | ○            | ○          |
| Dehumidifier                                               |                                                                                                                      | ○            | ○          |
| Oil Mist Collector                                         |                                                                                                                      | ☆            | ☆          |
| Oil Skimmer (Only for Chip Conveyor)                       |                                                                                                                      | ○            | ○          |
| MQL (Minimal Quantity Lubrication)                         |                                                                                                                      | ☆            | ☆          |
| Fixture & Automation                                       |                                                                                                                      |              |            |
| Auto Door                                                  |                                                                                                                      | ○            | ○          |
| Auto Shutter (Only for Automatic System)                   |                                                                                                                      | ☆            | ☆          |
| Sub Operation Pannel                                       |                                                                                                                      | ☆            | ☆          |
| Bar Feeder Interface                                       |                                                                                                                      | ○            | ○          |
| Bar Feeder                                                 |                                                                                                                      | ☆            | ☆          |
| Work Pusher (Spring Type)                                  |                                                                                                                      | ○            | ○          |
| Work Ejector (Pneumatic Type)                              |                                                                                                                      | ☆            | ☆          |
| Extra M-Code 4ea                                           |                                                                                                                      | ○            | ○          |
| Automation Interface                                       |                                                                                                                      | ☆            | ☆          |
| I/O Extension (IN & OUT)                                   | 16 Contact                                                                                                           | ○            | ○          |
|                                                            | 32 Contact                                                                                                           | ○            | ○          |
| Parts Catcher                                              | Main SP.                                                                                                             | ○            | ○          |
|                                                            | Sub SP.                                                                                                              | -/○          | -/○        |
| Turret Work Pusher (For Automation)                        |                                                                                                                      | ☆            | ☆          |
| Parts Conveyor (Required Main Parts Catcher)               |                                                                                                                      | ☆            | ☆          |
| Semi Automation System                                     |                                                                                                                      | ☆            | ☆          |
| Hyd. Device                                                |                                                                                                                      |              |            |
| Standard Hyd. Cylinder                                     | Hollow                                                                                                               | ●            | ●          |
| Standard Hyd. Unit                                         | 35bar(507.6psi) / 30 t (7.9gal)                                                                                      | ●            | ●          |
| S/W                                                        |                                                                                                                      |              |            |
| Dialogue Program (H-W-DPRO) : FANUC                        |                                                                                                                      | ○            | ○          |
| DNC software (H-W-eDNC)                                    |                                                                                                                      | ○            | ○          |
| Smart Guide-1 : FANUC                                      |                                                                                                                      | ●            | ●          |
| Smart S/W                                                  |                                                                                                                      | ☆            | ☆          |
| ETC                                                        |                                                                                                                      |              |            |
| Tool Box                                                   |                                                                                                                      | ●            | ●          |
| Customized Color                                           | Need Munsel No.                                                                                                      | ☆            | ☆          |
| CAD & CAM                                                  |                                                                                                                      | ☆            | ☆          |
| Thermal displacement compensation                          |                                                                                                                      | ○            | ○          |

※ 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.

# SPECIFICATIONS

## Standard & Optional

| Spindle                                                          |                                  | HD3100LYA | HD3100LY |
|------------------------------------------------------------------|----------------------------------|-----------|----------|
| Main Spindle                                                     | 10"                              | ●         | -        |
| Hollow Chuck 3 Jaw                                               | 12"                              | -         | ●        |
| Main Spindle                                                     | 10"                              | -         | -        |
| Solid Chuck 3 Jaw                                                | 12"                              | -         | -        |
| Sub SP. Hollow Chuck 3 Jaw                                       | 6"                               | -         | -        |
| Sub Sp. Solid Chuck 3 Jaw                                        | 6"                               | -         | -        |
| Standard Soft Jaw (1set)                                         |                                  | ●         | ●        |
| Chuck Clamp Foot Switch                                          |                                  | ●         | ●        |
| 2 Steps Hyd. Pressure Device                                     |                                  | ○         | ○        |
| Spindle Inside Stopper                                           |                                  | ☆         | ☆        |
| Cs-Axis (0.001")                                                 |                                  | ●         | ●        |
| Chuck Open/Close Confirmation Device                             |                                  | ●         | ●        |
| 2 Steps Chuck Foot Switch                                        |                                  | ○         | ○        |
| Sub Spindle Foot Switch                                          |                                  | -         | -        |
| Turret                                                           |                                  |           |          |
| Tool Holder                                                      |                                  | ●         | ●        |
| Mill Turret                                                      | BMT                              | ●         | ●        |
|                                                                  | 12 Tool                          | ●         | ●        |
|                                                                  | 24 Tool                          | -         | -        |
| Straight Milling Head                                            | Collet Type, 2ea                 | ●         | ●        |
| Angular Milling Head                                             | Collet Type, 2ea                 | ●         | ●        |
| Straight Milling Head                                            | Adapter Type                     | ○         | ○        |
| Angular Milling Head                                             | Adapter Type                     | ○         | ○        |
| Boring Sleeve                                                    |                                  | ●         | ●        |
| Drill Socket                                                     |                                  | ○         | ○        |
| U-Drill Holder                                                   |                                  | ●         | ●        |
| U-Drill Holder Sleeve                                            |                                  | ●         | ●        |
| Angle Head                                                       |                                  | ☆         | ☆        |
| Tail Stock & Steady Rest                                         |                                  |           |          |
| Quill Tail Stock                                                 | MT#4                             | -         | -        |
|                                                                  | MT#5                             | ●         | ●        |
| Built-in Tail Stock                                              |                                  | ○         | ○        |
| Programmable Tail Stock                                          |                                  | ○         | ○        |
| Manual Hyd. Steady Rest                                          |                                  | -         | -        |
| Standard Live Center                                             |                                  | ●         | ●        |
| High Precision Live Center                                       |                                  | ☆         | ☆        |
| 2 Steps Tail Stock Pressure System                               |                                  | ☆         | ☆        |
| Quill Forward/Reverse Confirmation Device                        |                                  | ○         | ○        |
| Tail Stock Foot Switch                                           |                                  | ○         | ○        |
| Coolant & Air Blow                                               |                                  |           |          |
| Standard Coolant (Nozzle)                                        |                                  | ●         | ●        |
| Chuck Coolant (Upper Chuck)                                      |                                  | ○         | ○        |
| Gun Coolant                                                      |                                  | ○         | ○        |
| Through Spindle Coolant (Only for Special Chuck)                 |                                  | ☆         | ☆        |
| Turnmill Through Coolant                                         |                                  | -         | -        |
| Chuck Air Blow                                                   | Main SP.                         | ○         | ○        |
|                                                                  | Sub SP.                          | -         | -        |
| Tail Stock Air Blow (Upper Tail Stock)                           |                                  | ○         | ○        |
| Turret Air Blow                                                  |                                  | ☆         | ☆        |
| Air Gun                                                          |                                  | ○         | ○        |
| Through Spindle Air Blow (Only for Special Chuck)                |                                  | -         | -        |
| High Pressure Coolant                                            | 0.5Bar                           | ●         | ●        |
|                                                                  | 6Bar                             | ○         | ○        |
|                                                                  | 20Bar                            | ○         | ○        |
|                                                                  | 70Bar                            | ○         | ○        |
| Power Coolant System (For Automation)                            |                                  | ☆         | ☆        |
| Coolant Chiller<br>(When selecting Sub Tank Type, Chip Conveyor) |                                  | -         | -        |
| Chip Disposal                                                    |                                  |           |          |
| Coolant Tank                                                     | Right                            | ●         | ●        |
|                                                                  | Rear                             | ☆         | ☆        |
| Chip Conveyor<br>(Hinge/Scraper)                                 | Front (Right)                    | ○         | ○        |
|                                                                  | Rear (Rear)                      | ☆         | ☆        |
| Special Chip Conveyor (Drum Filter)                              |                                  | -         | -        |
| Chip Wagon                                                       | Standard<br>(180 ℓ [47.5 gal])   | ○         | ○        |
|                                                                  | Swing<br>(200 ℓ [52.8 gal])      | ○         | ○        |
|                                                                  | Large Size<br>(330 ℓ [87.2 gal]) | ○         | ○        |
|                                                                  | Customized                       | ☆         | ☆        |
| Safety Device                                                    |                                  |           |          |
| Front Door Interlock                                             |                                  | ●         | ●        |
| Total Splash Guard                                               |                                  | ●         | ●        |
| Chuck Hydraulic Pressure Maintenance Interlock                   |                                  | ☆         | ☆        |

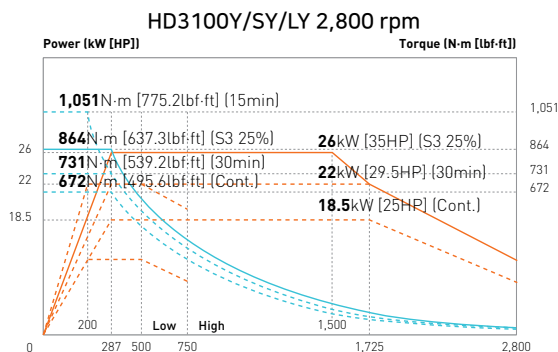
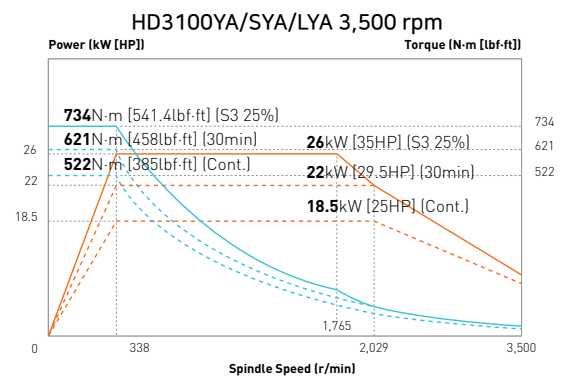
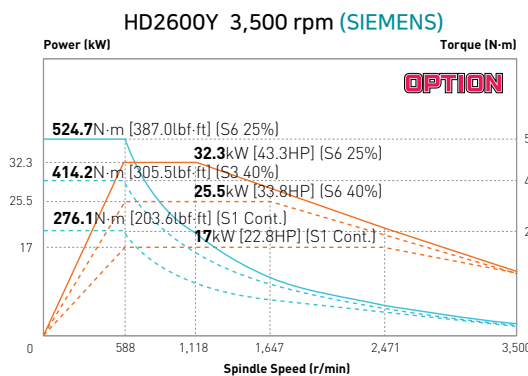
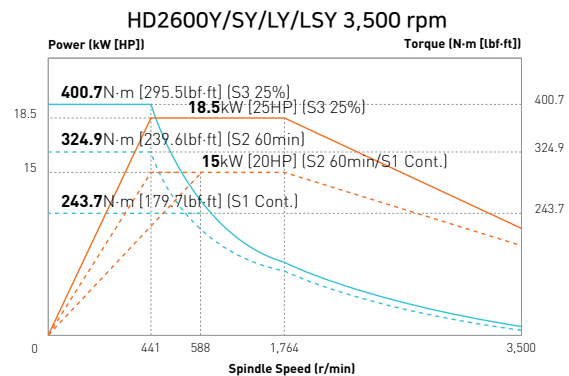
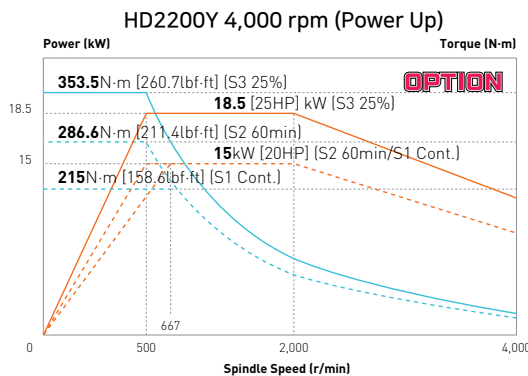
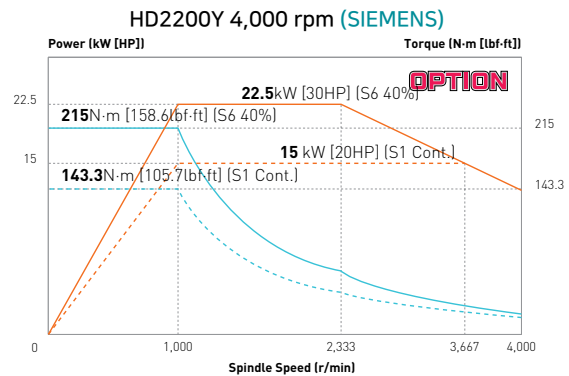
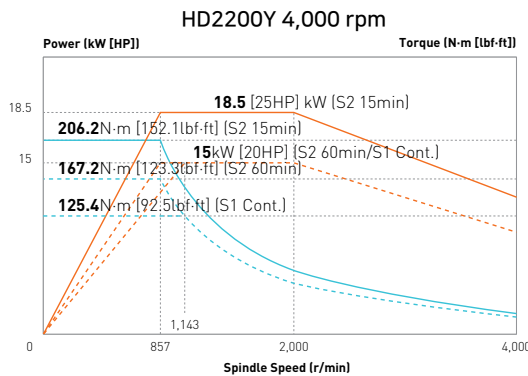
● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

| Electric Device                                            |                                    | HD3100LYA | HD3100LY |
|------------------------------------------------------------|------------------------------------|-----------|----------|
| 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                                         | 6EA                                | ○         | ○        |
|                                                            | 9EA                                | ○         | ○        |
| Electric Circuit Breaker                                   |                                    | ○         | ○        |
| AVR (Auto Voltage Regulator)                               |                                    | ☆         | ☆        |
| Transformer                                                | 30kVA                              | ○         | ○        |
|                                                            | 35kVA                              | -         | -        |
| Auto Power Off                                             |                                    | ○         | ○        |
| Measurement                                                |                                    |           |          |
| Manual Q-Setter (Basic)                                    |                                    | ○         | ○        |
| Manual Q-Setter (Renishaw)                                 |                                    | ○         | ○        |
| Automatic Q-Setter (Renishaw)                              |                                    | ○         | ○        |
| Work Close Confirmation Device<br>(Only for Special Chuck) | TACO                               | ☆         | ☆        |
|                                                            | SMC                                | ☆         | ☆        |
| Work Setter                                                |                                    | ☆         | ☆        |
| Linear Scale                                               | X/Y/Z axis                         | ☆         | ☆        |
| Coolant Level Sensor (Only for Chip Conveyor)              |                                    | ☆         | ☆        |
| Environment                                                |                                    |           |          |
| Air Conditioner                                            |                                    | ○         | ○        |
| Dehumidifier                                               |                                    | ○         | ○        |
| Oil Mist Collector                                         |                                    | ☆         | ☆        |
| Oil Skimmer (Only for Chip Conveyor)                       |                                    | ○         | ○        |
| MLL (Minimal Quantity Lubrication)                         |                                    | ☆         | ☆        |
| Fixture & Automation                                       |                                    |           |          |
| Auto Door                                                  |                                    | ○         | ○        |
| Auto Shutter (Only for Automatic System)                   |                                    | ☆         | ☆        |
| Sub Operation Pannel                                       |                                    | ☆         | ☆        |
| Bar Feeder Interface                                       |                                    | ○         | ○        |
| Bar Feeder                                                 |                                    | ☆         | ☆        |
| Work Pusher (Spring Type)                                  |                                    | ○         | ○        |
| Work Ejector (Pneumatic Type)                              |                                    | ☆         | ☆        |
| Extra M-Code 4ea                                           |                                    | ○         | ○        |
| Automation Interface                                       |                                    | ☆         | ☆        |
| I/O Extension (IN & OUT)                                   | 16 Contact                         | ○         | ○        |
|                                                            | 32 Contact                         | ○         | ○        |
| Parts Catcher                                              | Main SP.                           | ○         | ○        |
|                                                            | Sub SP.                            | -         | -        |
| Turret Work Pusher (For Automation)                        |                                    | ☆         | ☆        |
| Parts Conveyor (Required Main Parts Catcher)               |                                    | ☆         | ☆        |
| Semi Automation System                                     |                                    | ☆         | ☆        |
| Hyd. Device                                                |                                    |           |          |
| Standard Hyd. Cylinder                                     | Hollow                             | ●         | ●        |
| Standard Hyd. Unit                                         | 35bar(507.6psi) /<br>30 ℓ (7.9gal) | ●         | ●        |
| S/W                                                        |                                    |           |          |
| Dialogue Program (HW-DPRO) : FANUC                         |                                    | ○         | ○        |
| DNC software (HW-eDNC)                                     |                                    | ○         | ○        |
| Smart Guide-1 : FANUC                                      |                                    | ●         | ●        |
| Smart S/W                                                  |                                    | ☆         | ☆        |
| 기타                                                         |                                    |           |          |
| Tool Box                                                   |                                    | ●         | ●        |
| Customized Color                                           | Need Munsel No.                    | ☆         | ☆        |
| CAD & CAM                                                  |                                    | ☆         | ☆        |
| Thermal displacement compensation                          |                                    | ○         | ○        |

※ 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.

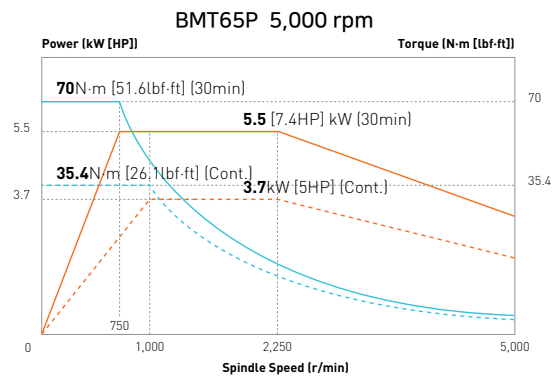
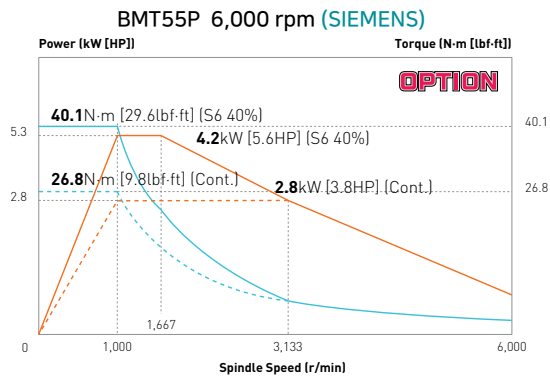
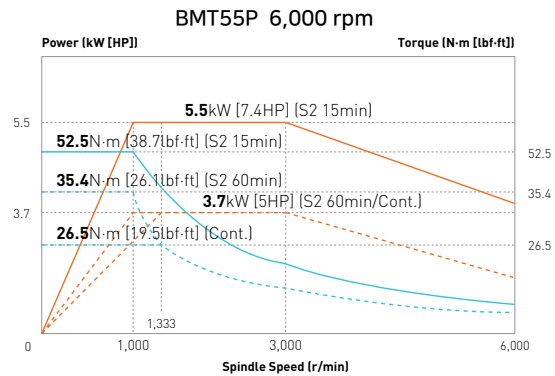
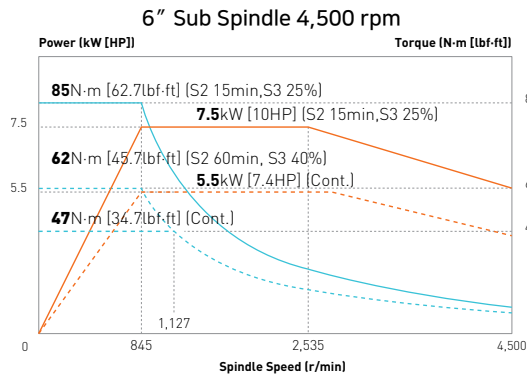
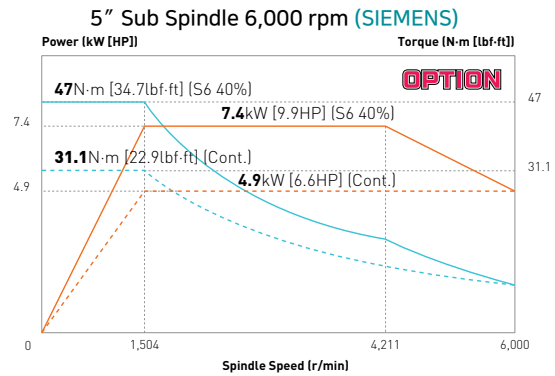
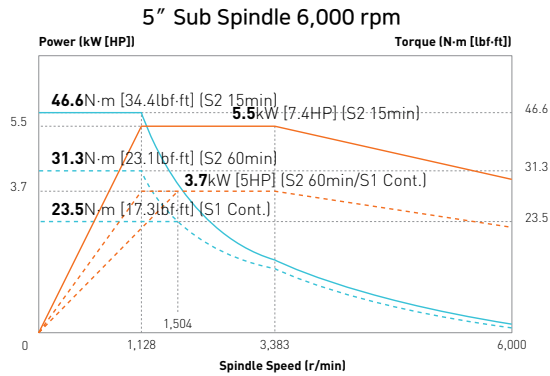
# SPECIFICATIONS

## Spindle Output/Torque Diagram



# SPECIFICATIONS

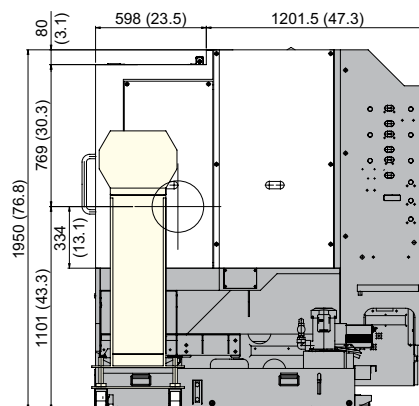
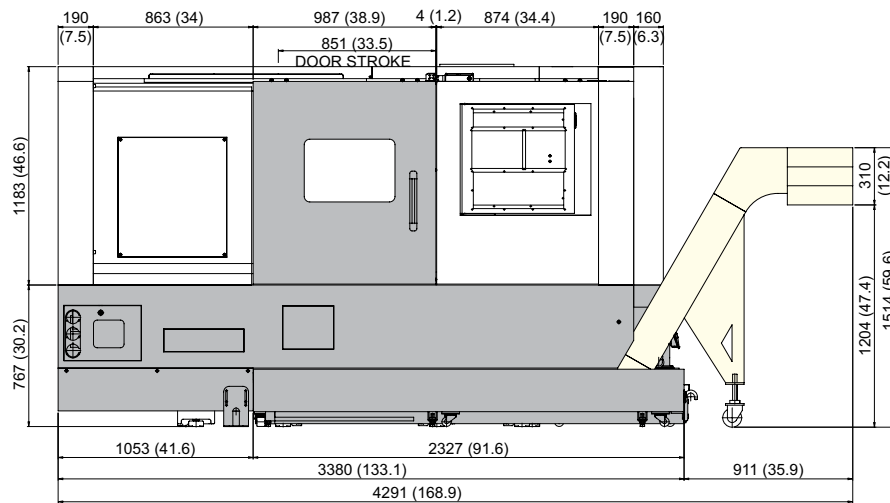
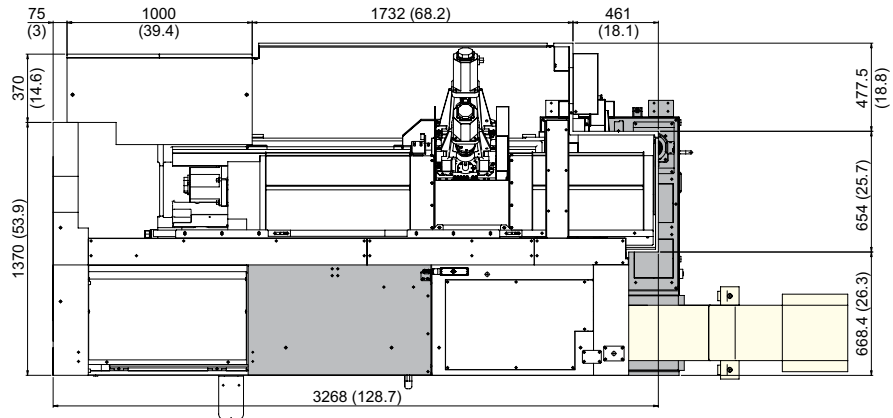
## Spindle Output/Torque Diagram



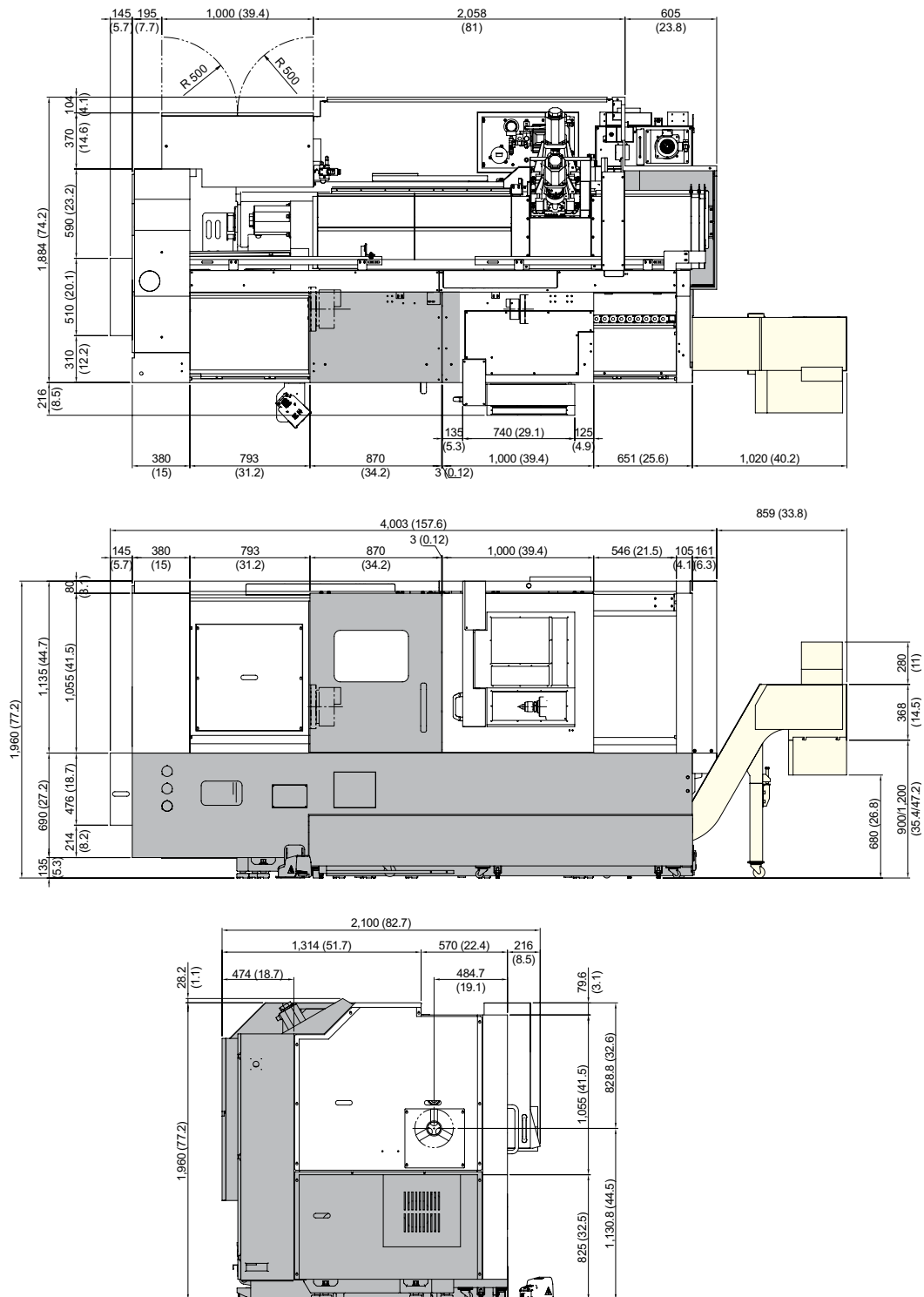
# SPECIFICATIONS

## External Dimensions (HD2200Y/SY | HD2600Y/SY)

unit : mm(in)



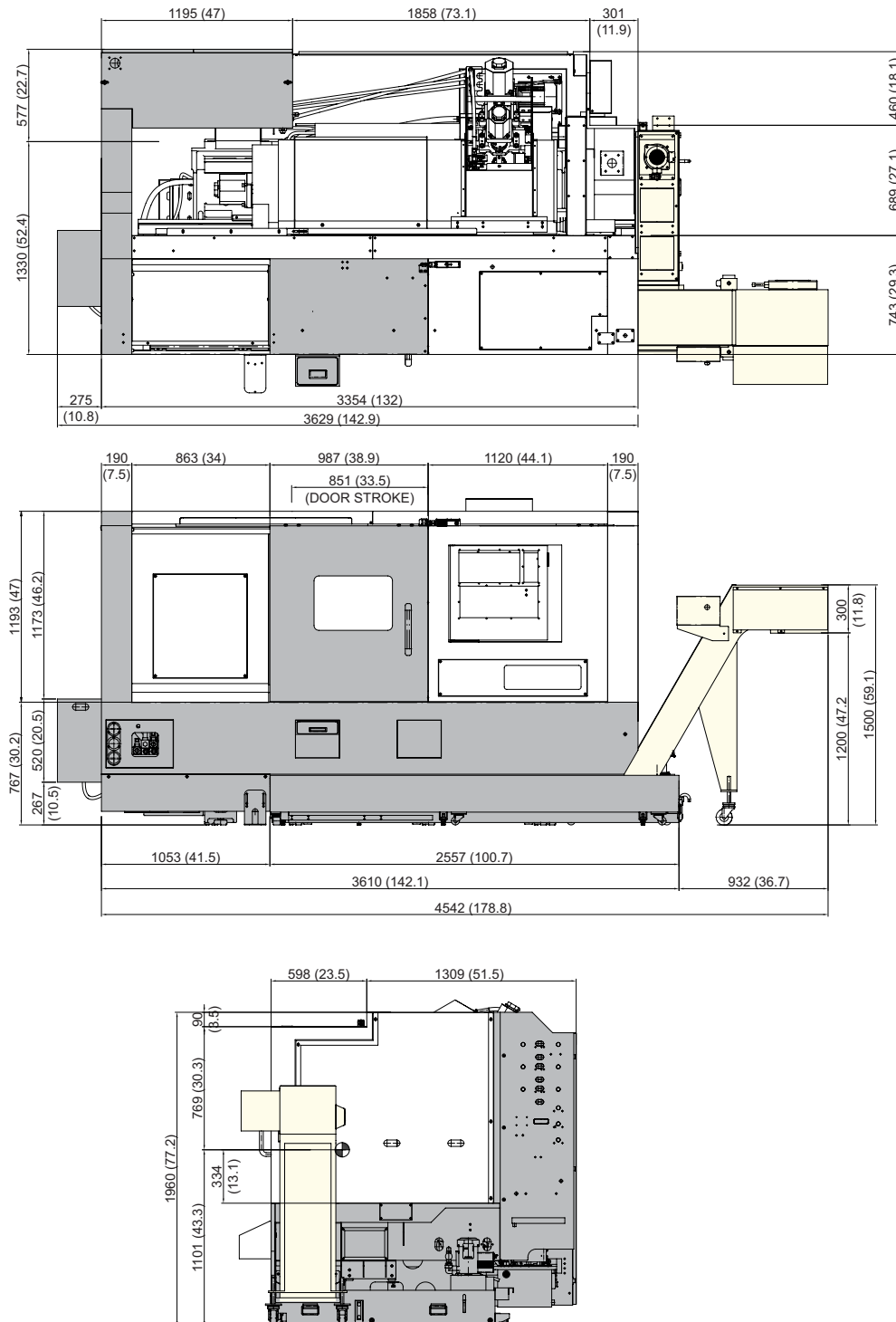
unit : mm(in)



# SPECIFICATIONS

## External Dimensions (HD3100YA/SYA | HD3100Y/SY)

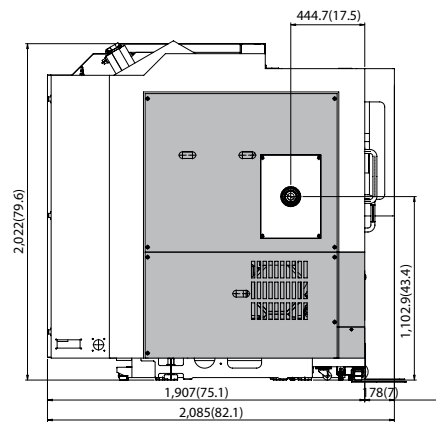
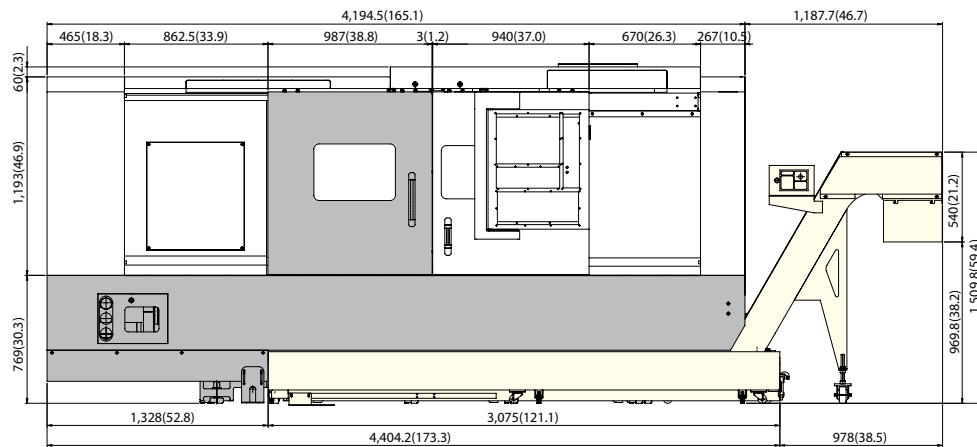
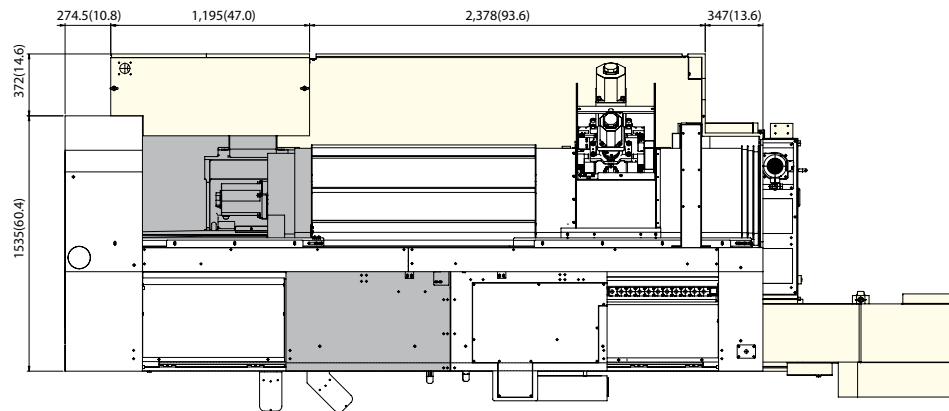
unit : mm(in)



# SPECIFICATIONS

## External Dimensions (HD3100LY/LYA)

unit : mm(in)

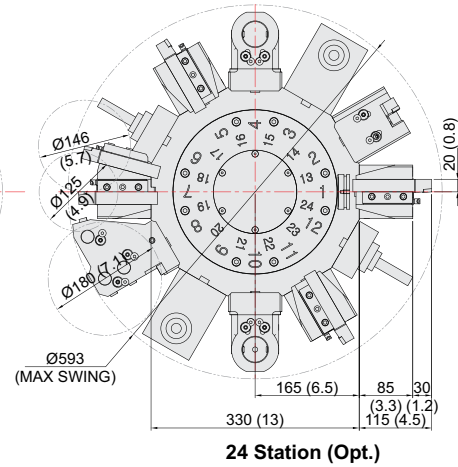
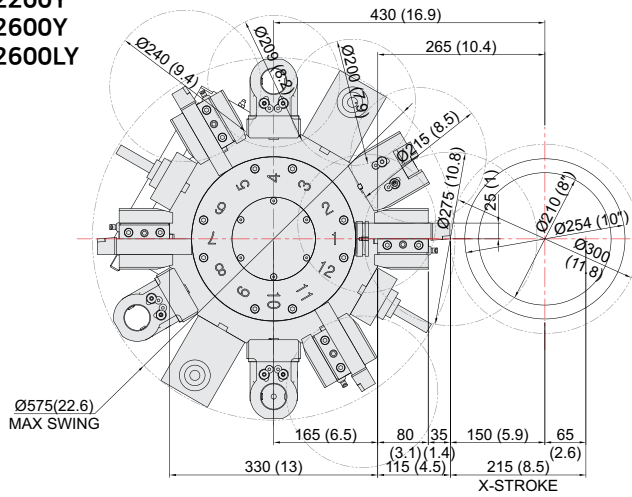


# SPECIFICATIONS

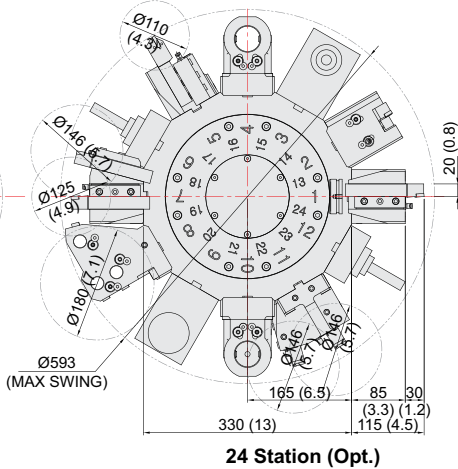
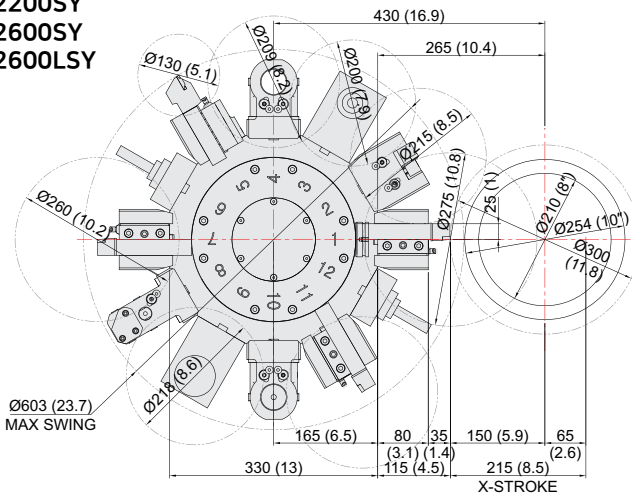
## Interference

unit : mm(in)

HD2200Y  
HD2600Y  
HD2600LY



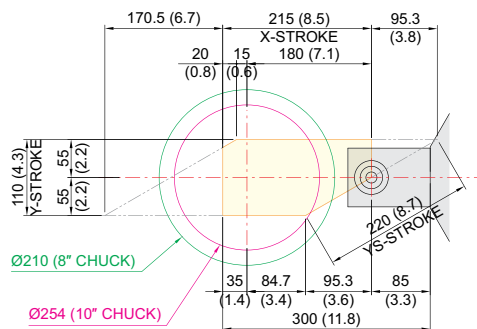
HD2200SY  
HD2600SY  
HD2600LSY



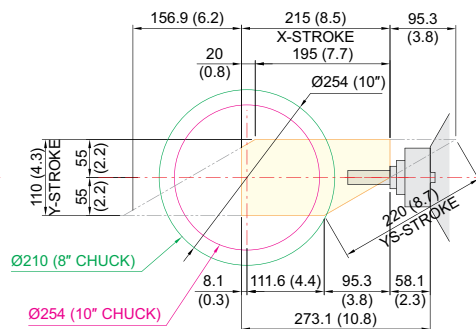
## Y-axis Travel Range

unit : mm(in)

### ANGULAR



### STRAIGHT

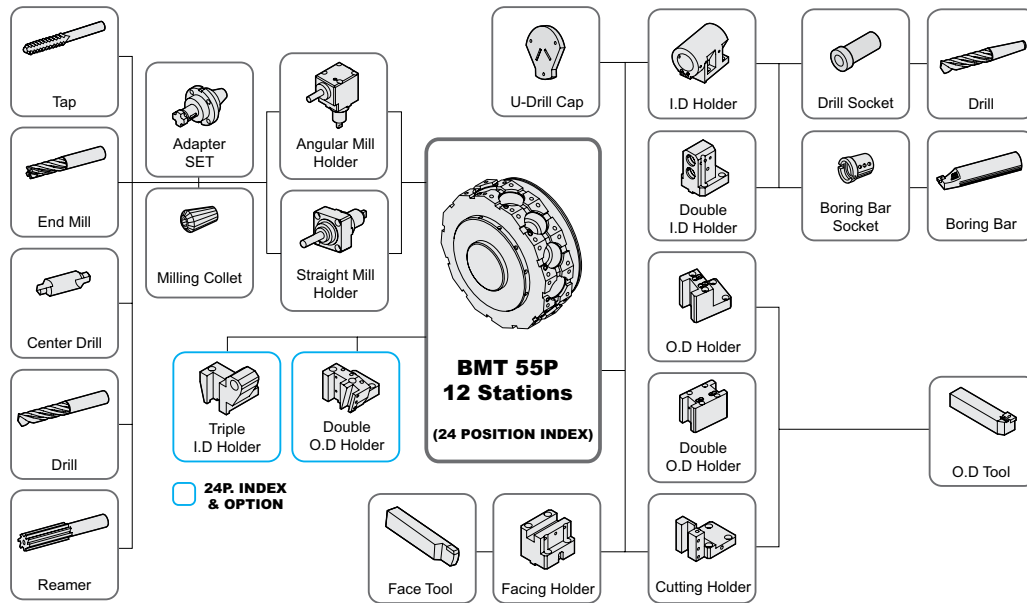




# SPECIFICATIONS

Tooling System (HD2200Y | HD2600Y | HD2600LY)

unit : mm(in)



## Tooling Parts Detail

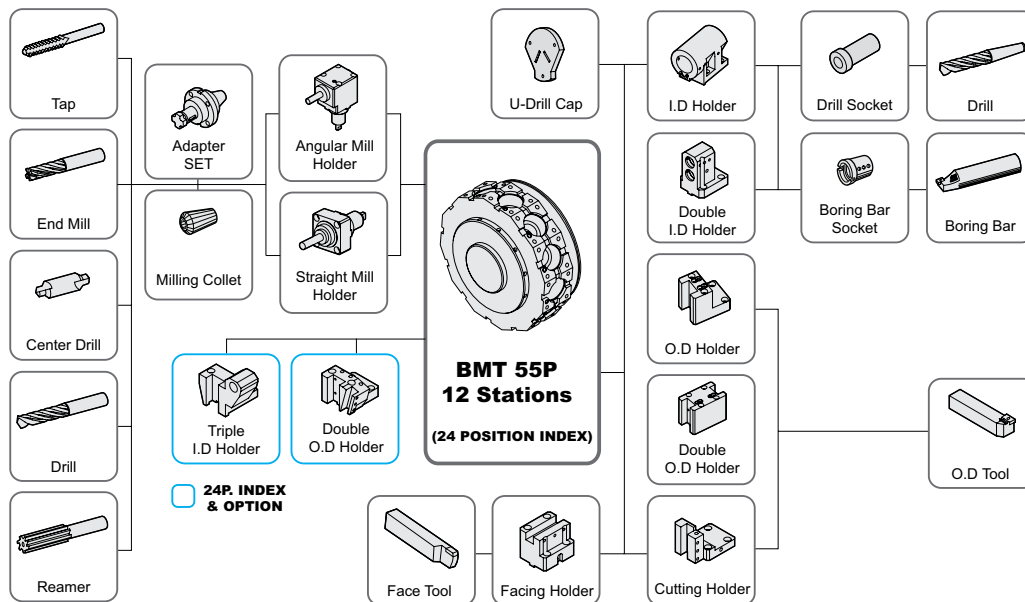
| ITEM           |                      |                    | Y Type (12P) |           | Y Type (24P : Opt.) |           |
|----------------|----------------------|--------------------|--------------|-----------|---------------------|-----------|
|                |                      |                    | mm Unit      | inch Unit | mm Unit             | inch Unit |
| Turning Holder | O.D Holder           | Right/Left         | 4            | 4         | 3                   | 3         |
|                |                      | Double             | -            | -         | -                   | -         |
|                |                      | Double (24P, Main) | -            | -         | 1                   | 1         |
|                |                      | Double (24P, Sub)  | -            | -         | -                   | -         |
|                | Facing Holder        |                    | 1            | 1         | 1                   | 1         |
|                | Cutting Holder       |                    | -            | -         | -                   | -         |
| Boring Holder  | I.D Holder           | Single             | 3            | 3         | 2                   | 2         |
|                |                      | Double             | -            | -         | -                   | -         |
|                |                      | Triple             | -            | -         | 1                   | 1         |
|                | U-Drill Holder       | Cap                | 1            | 1         | 1                   | 1         |
| Driven Holder  | Straight Mill Holder | Standard           | 2            | 2         | 2                   | 2         |
|                | Angular Mill Holder  | Standard           | 2            | 2         | 2                   | 2         |
| Socket         | Boring               | Ø10 (Ø3/8")        | 1            | 1         | 1                   | 1         |
|                |                      | Ø12 (Ø1/2")        | 1            | 1         | 1                   | 1         |
|                |                      | 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         |
|                | Sub Boring           | Ø8 (5/16")         | -            | -         | -                   | -         |
|                |                      | Ø12 (1/2")         | -            | -         | -                   | -         |
|                |                      | Ø16 (5/8")         | -            | -         | -                   | -         |
|                | Drill                | MT 2               | -            | -         | -                   | -         |
|                |                      | MT 3               | -            | -         | -                   | -         |
|                |                      | MT 4               | -            | -         | -                   | -         |
|                | ER Collet            |                    | 1 Set        | 1 Set     | 1 Set               | 1 Set     |
|                | Adapter Set          |                    | Opt.         | Opt.      | Opt.                | Opt.      |

Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

Tooling System (HD2200SY | HD2600SY | HD2600LSY)

unit : mm(in)



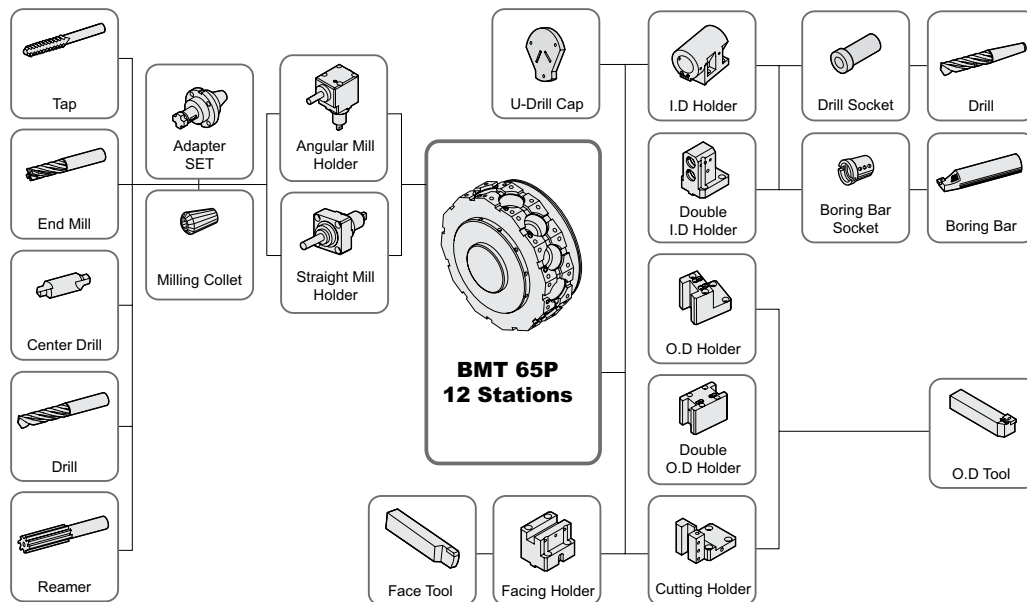
## Tooling Parts Detail

| ITEM           |                      |                    | SY Type (12P) |           | SY Type (24P : Opt.) |           |
|----------------|----------------------|--------------------|---------------|-----------|----------------------|-----------|
|                |                      |                    | mm Unit       | inch Unit | mm Unit              | inch Unit |
| Turning Holder | O.D Holder           | Right/Left         | 2             | 2         | 2                    | 2         |
|                |                      | Double             | 1             | 1         | -                    | -         |
|                |                      | Double (24P, Main) | -             | -         | 1                    | 1         |
|                |                      | Double (24P, Sub)  | -             | -         | 1                    | 1         |
|                | Facing Holder        |                    | 1             | 1         | 1                    | 1         |
| Boring Holder  | I.D Holder           | Single             | 2             | 2         | 2                    | 2         |
|                |                      | Double             | 1             | 1         | -                    | -         |
|                |                      | Triple             | -             | -         | 1                    | 1         |
|                | U-Drill Holder       | Cap                | 1             | 1         | 1                    | 1         |
| Driven Holder  | Straight Mill Holder | Standard           | 2             | 2         | 2                    | 2         |
|                | Angular Mill Holder  | Standard           | 2             | 2         | 2                    | 2         |
| Socket         | Boring               | Ø10 (Ø3/8")        | 1             | 1         | 1                    | 1         |
|                |                      | Ø12 (Ø1/2")        | 1             | 1         | 1                    | 1         |
|                |                      | 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         |
|                | Sub Boring           | Ø8 (5/16")         | 1             | 1         | 1                    | 1         |
|                |                      | Ø12 (1/2")         | 1             | 1         | 1                    | 1         |
|                |                      | Ø16 (5/8")         | 1             | 1         | 1                    | 1         |
|                | Drill                | MT 2               | -             | -         | -                    | -         |
|                |                      | MT 3               | -             | -         | -                    | -         |
|                |                      | MT 4               | -             | -         | -                    | -         |
|                | ER Collet            |                    | 1 Set         | 1 Set     | 1 Set                | 1 Set     |
|                | Adapter Set          |                    | Opt.          | Opt.      | Opt.                 | Opt.      |

# SPECIFICATIONS

Tooling System (HD3100YA/SYA | HD3100Y/SY)

unit : mm(in)



## Tooling Parts Detail

| ITEM           |                      |                    | Y Type (12P) |           | SY Type (12P) |           |
|----------------|----------------------|--------------------|--------------|-----------|---------------|-----------|
|                |                      |                    | mm Unit      | inch Unit | mm Unit       | inch Unit |
| Turning Holder | O.D Holder           | Right/Left         | 4            | 4         | 2             | 2         |
|                |                      | Double             | -            | -         | 1             | 1         |
|                |                      | Double (24P, Main) | -            | -         | -             | -         |
|                |                      | Double (24P, Sub)  | -            | -         | -             | -         |
|                | Facing Holder        |                    | 1            | 1         | 1             | 1         |
|                | Cutting Holder       |                    | -            | -         | 1             | 1         |
| Boring Holder  | I.D Holder           | Single             | 3            | 3         | 2             | 2         |
|                |                      | Double             | -            | -         | 1             | 1         |
|                |                      | Triple             | -            | -         | -             | -         |
|                | U-Drill Holder       | Cap                | 1            | 1         | 1             | 1         |
| Driven Holder  | Straight Mill Holder | Standard           | 2            | 2         | 2             | 2         |
|                | Angular Mill Holder  | Standard           | 2            | 2         | 2             | 2         |
| Socket         | Boring               | Ø12 (Ø3/8")        | 1            | 1         | 1             | 1         |
|                |                      | 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         |
|                | Sub Boring           | Ø12 (Ø3/8")        | -            | -         | 1             | 1         |
|                |                      | Ø16 (Ø5/8")        | -            | -         | 1             | 1         |
|                |                      | Ø20 (Ø3/4")        | -            | -         | 1             | 1         |
|                | Drill                | MT 2               | Opt.         | Opt.      | Opt.          | Opt.      |
|                |                      | MT 3               | Opt.         | Opt.      | Opt.          | Opt.      |
|                |                      | MT 4               | Opt.         | Opt.      | Opt.          | Opt.      |
|                | ER Collet            |                    | 1 Set        | 1 Set     | 1 Set         | 1 Set     |
|                | Adapter Set          |                    | Opt.         | Opt.      | Opt.          | Opt.      |

Specifications are subject to change without notice for improvement.

HD-SY Series  
Y-Axis Turning Center

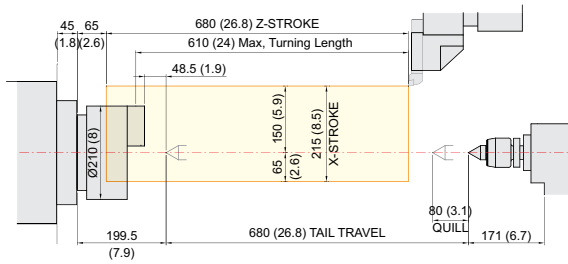
30  
+  
31

# SPECIFICATIONS

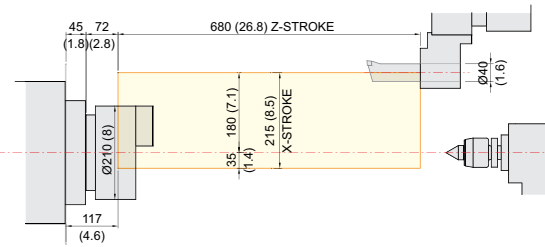
Tooling Travel Range (HD2200Y)

unit : mm(in)

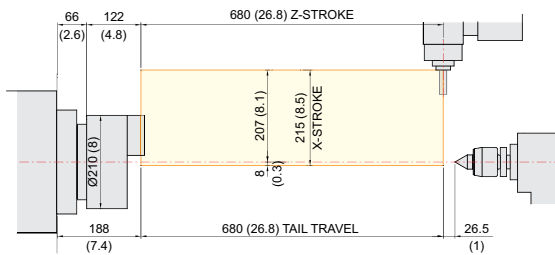
**O.D. Tool holder**



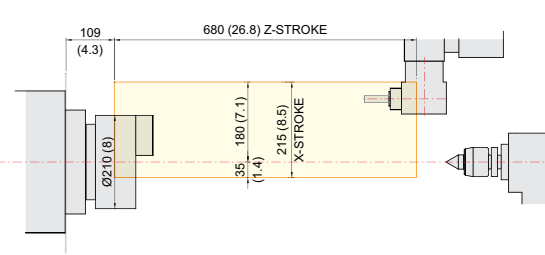
**I.D. Tool holder**



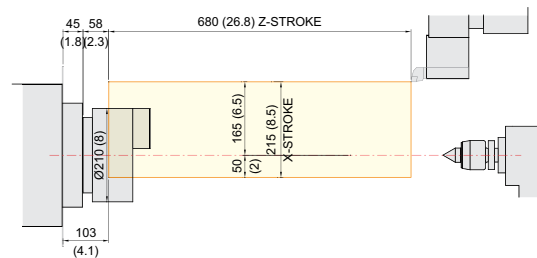
**Straight Mill Holder**



**Angular Mill Holder**



**Face Tool holder**

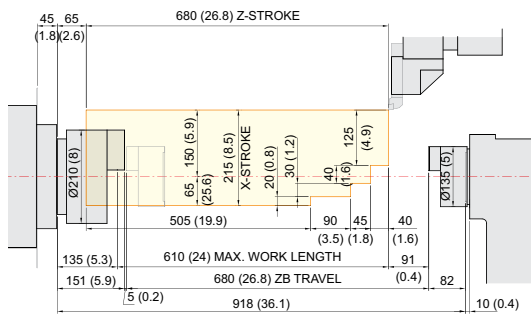


# SPECIFICATIONS

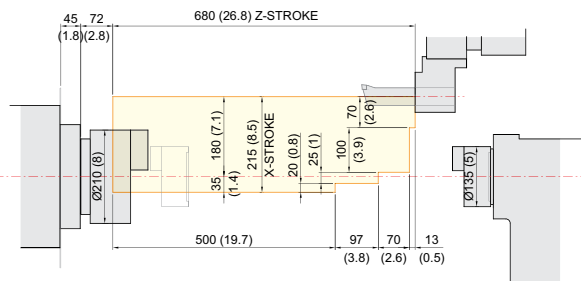
Tooling Travel Range (HD2200SY)

unit : mm(in)

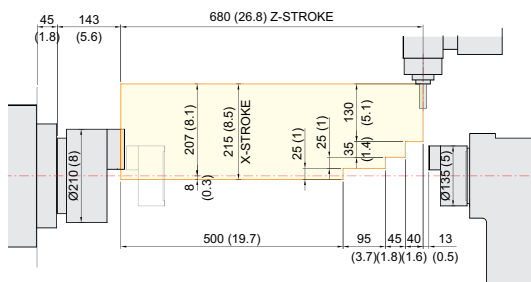
**O.D. Tool holder**



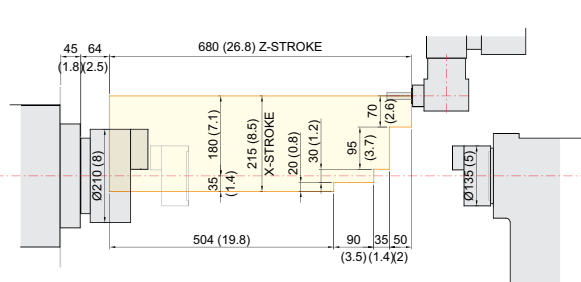
**I.D. Tool holder**



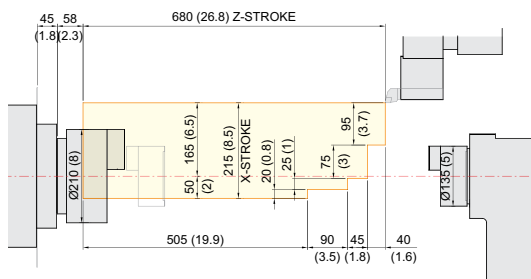
**Straight Mill Holder**



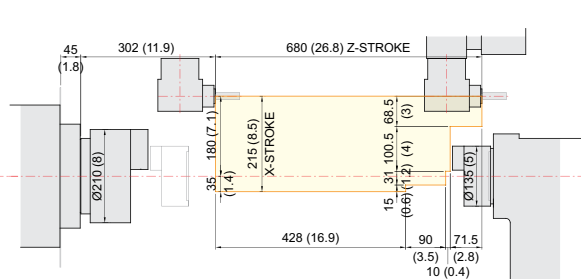
**Angular Mill Holder**



**Face Tool holder**



**Sub Sp. Angular Mill Holder**

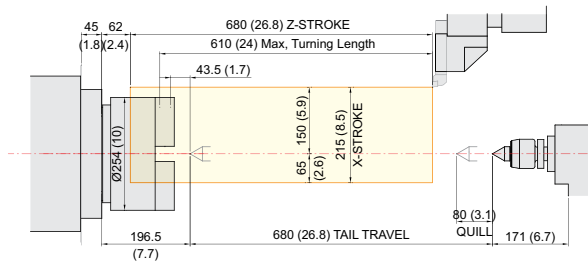


# SPECIFICATIONS

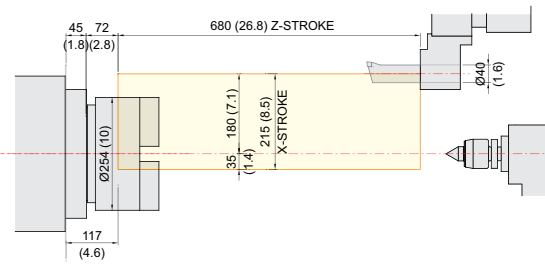
Tooling Travel Range (HD2600Y)

unit : mm(in)

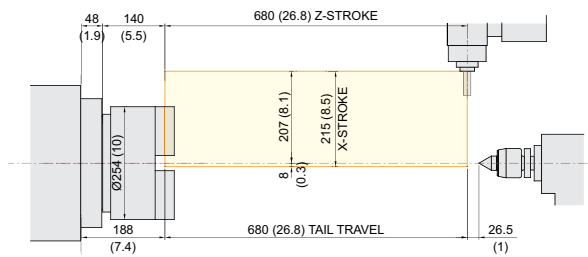
**O.D. Tool holder**



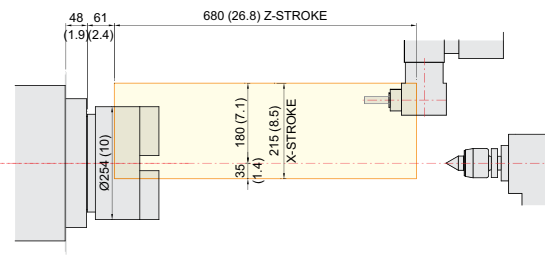
**I.D. Tool holder**



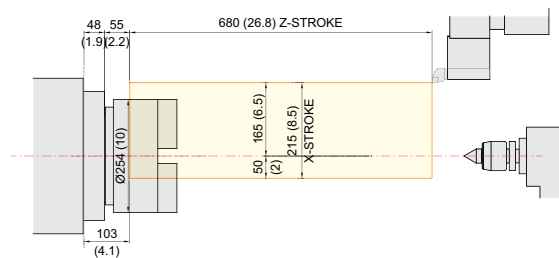
**Straight Mill Holder**



**Angular Mill Holder**



**Face Tool holder**

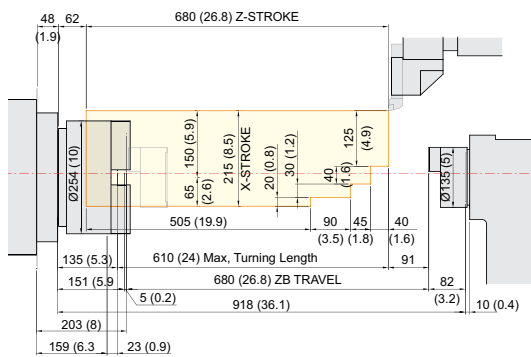


# SPECIFICATIONS

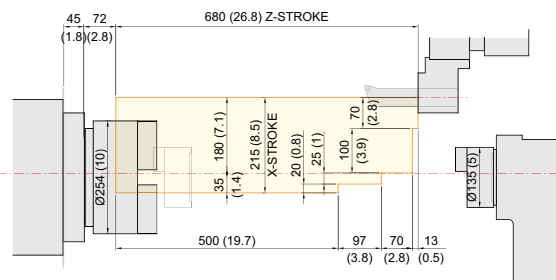
Tooling Travel Range (HD2600SY)

unit : mm(in)

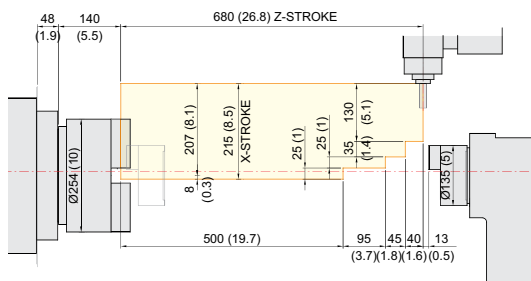
## O.D. Tool holder



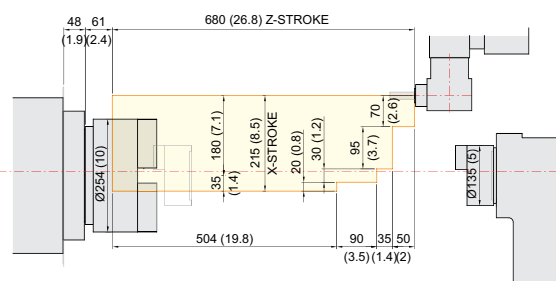
## I.D. Tool holder



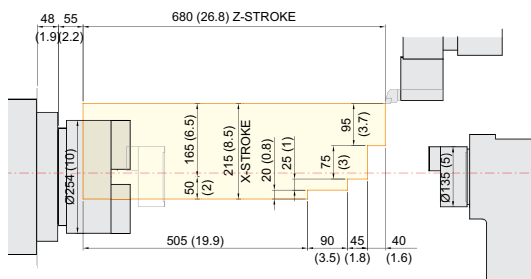
## Straight Mill Holder



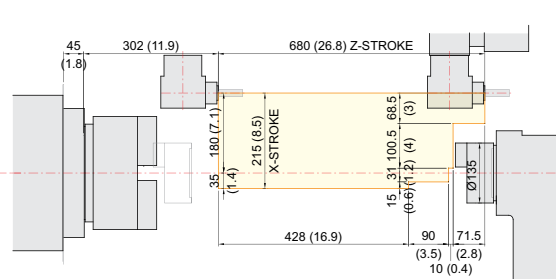
## Angular Mill Holder



## Face Tool holder



## Sub Sp. Angular Mill Holder



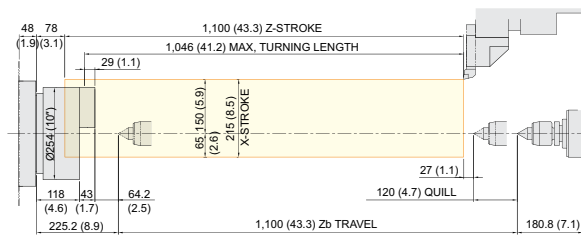
# SPECIFICATIONS

Tooling Travel Range (HD2600LY)

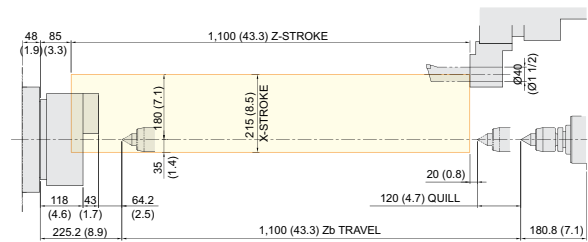
unit : mm(in)

## HD2600Y

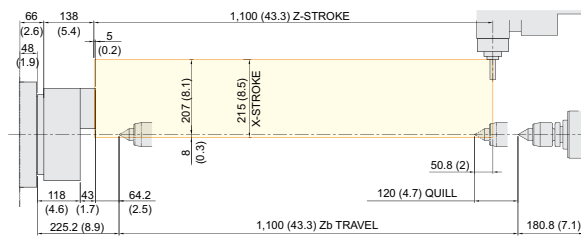
### O.D. Tool holder



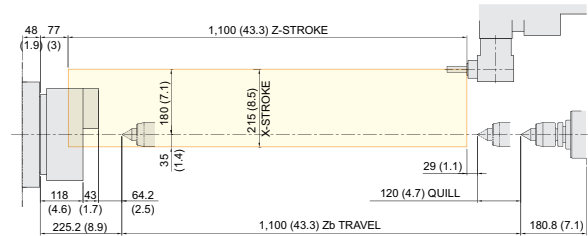
### I.D. Tool holder



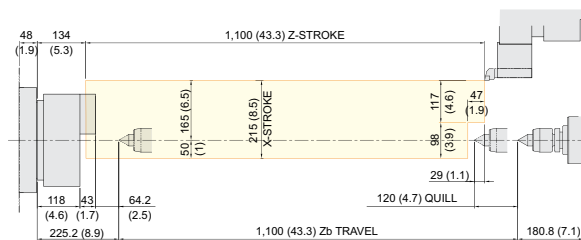
### Straight driven Tool holder



### Angular driven Tool holder



### Face Tool holder

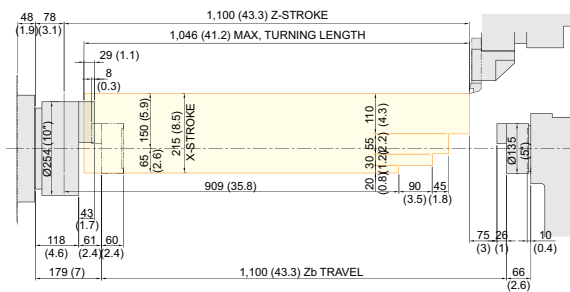


# SPECIFICATIONS

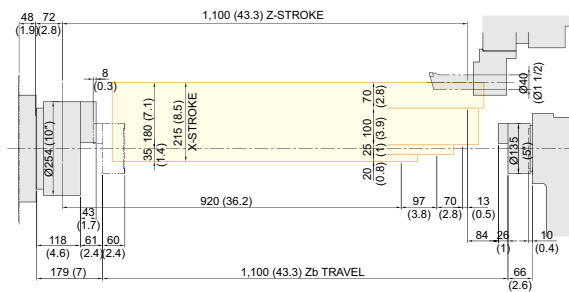
## Tooling Travel Range (HD2600LSY)

unit : mm(in)

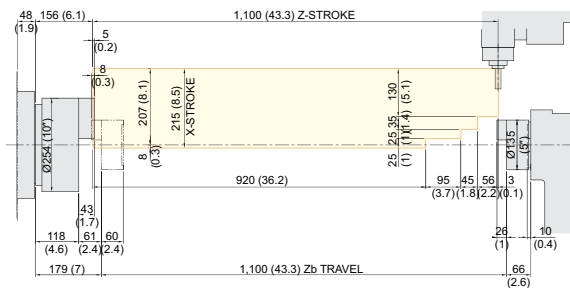
### O.D. Tool holder



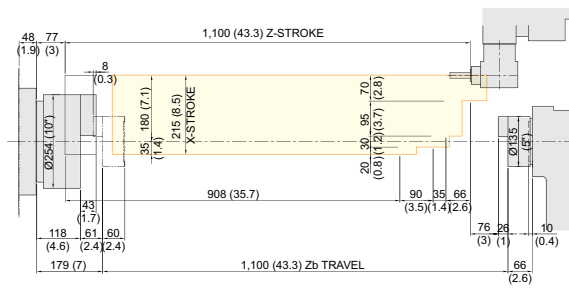
### I.D. Tool holder



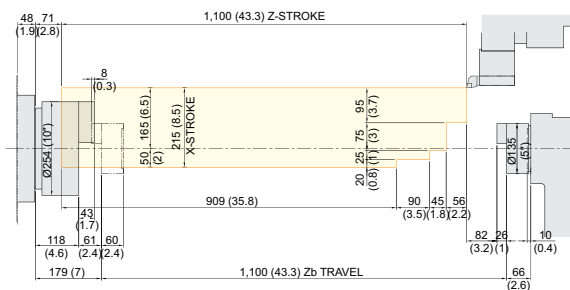
### Straight driven Tool holder



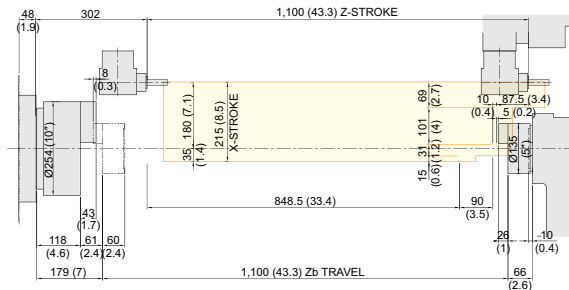
### Angular driven Tool holder



### Face Tool holder



### Angular driven Tool holder

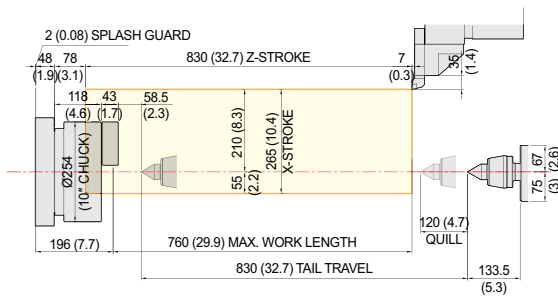


# SPECIFICATIONS

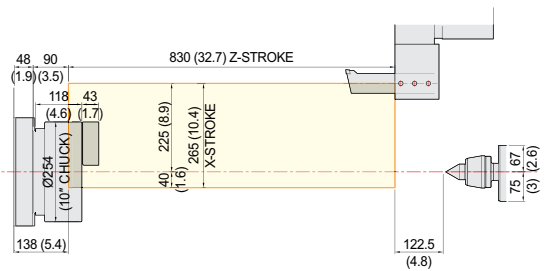
Tooling Travel Range (HD3100YA)

unit : mm(in)

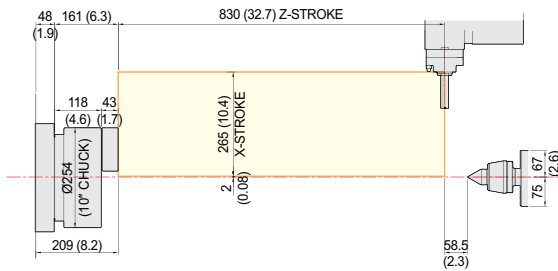
**O.D. Tool holder**



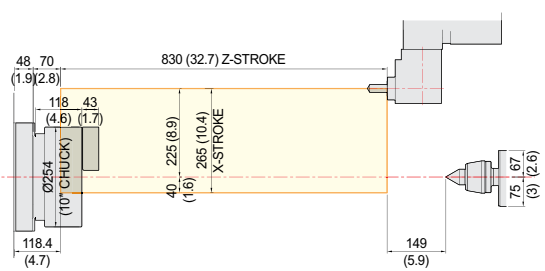
**I.D. Tool holder**



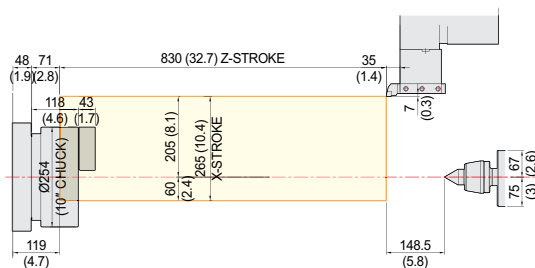
**Axial driven Tool holder**



**Angular driven Tool holder**



**Face Tool holder**

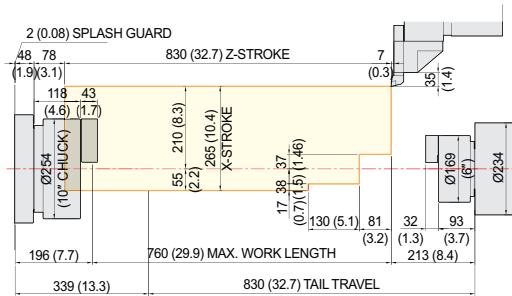


# SPECIFICATIONS

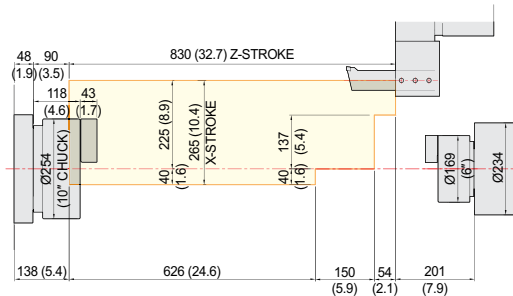
## Tooling Travel Range (HD3100SYA)

unit : mm(in)

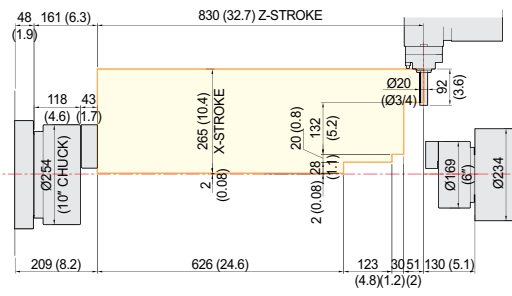
### O.D. Tool holder



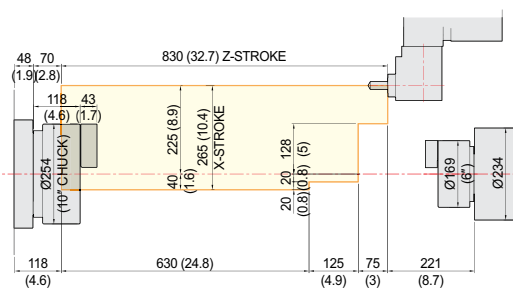
### I.D. Tool holder



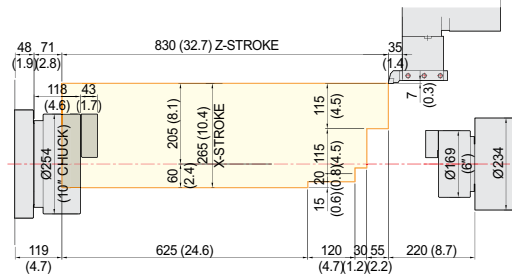
### Axial driven Tool holder



### Angular driven Tool holder



### Face Tool holder

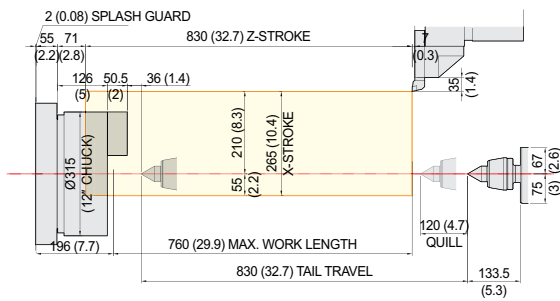


# SPECIFICATIONS

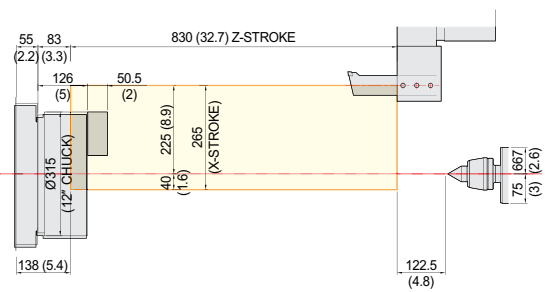
## Tooling Travel Range (HD3100Y)

unit : mm(in)

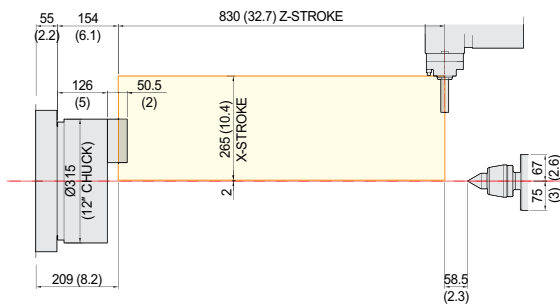
### O.D. Tool holder



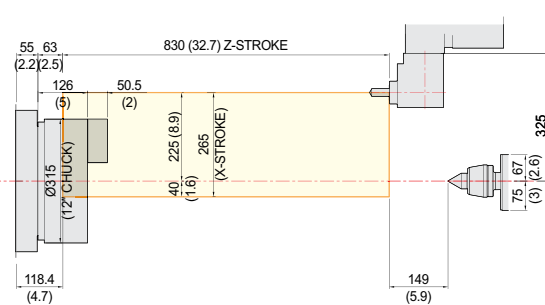
### I.D. Tool holder



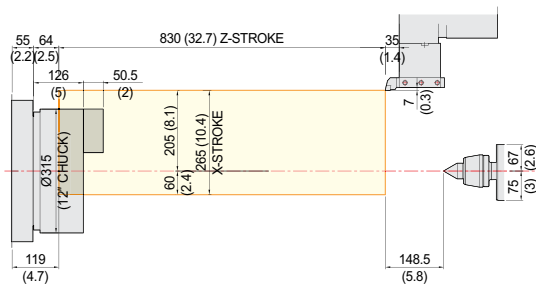
### Axial driven Tool holder



### Angular driven Tool holder



### Face Tool holder

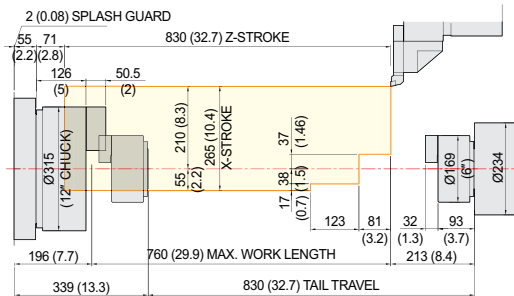


# SPECIFICATIONS

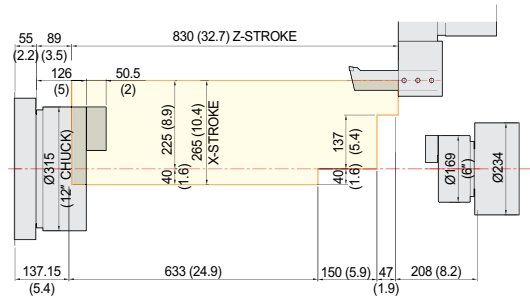
## Tooling Travel Range (HD3100Y)

unit : mm(in)

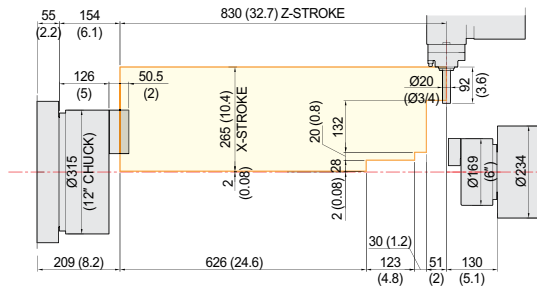
### O.D. Tool holder



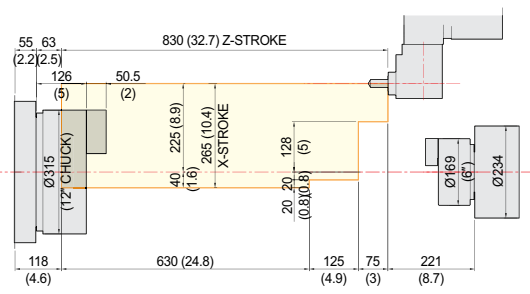
### I.D. Tool holder



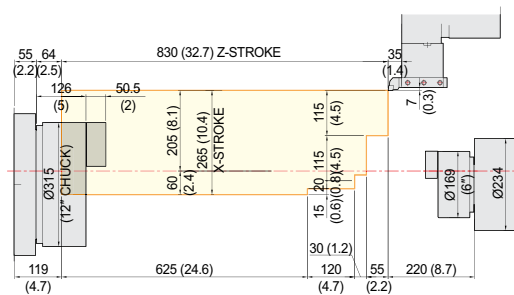
### Axial driven Tool holder



### Angular driven Tool holder



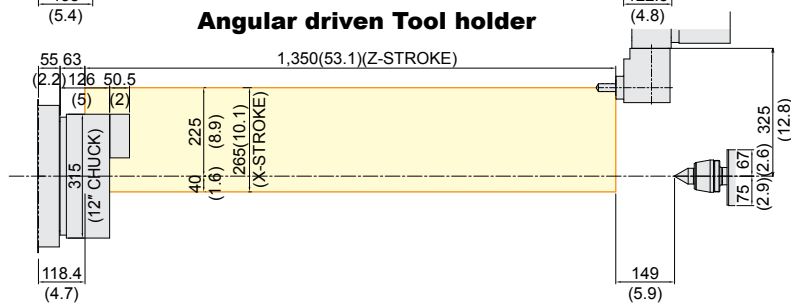
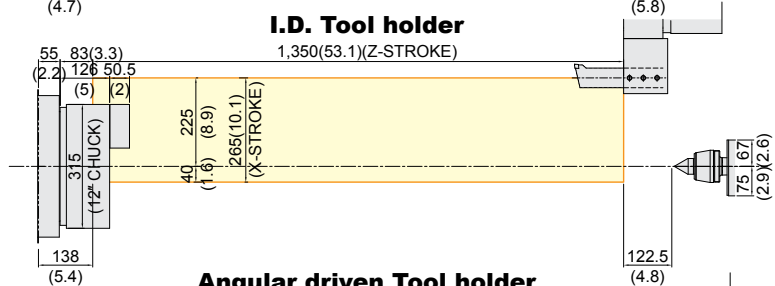
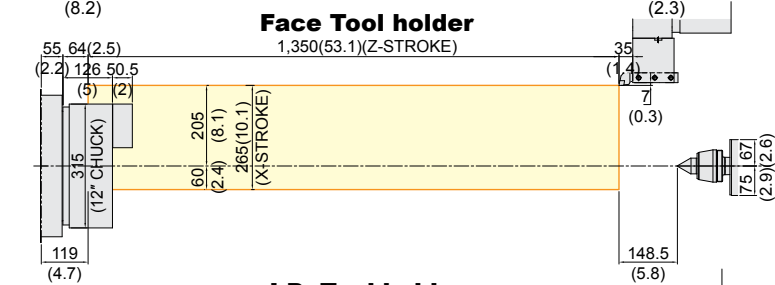
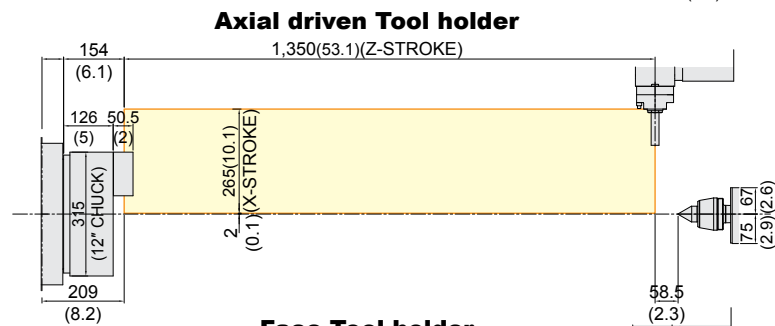
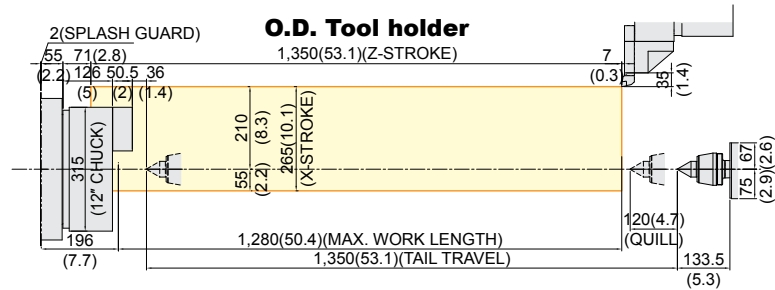
### Face Tool holder



# SPECIFICATIONS

Tooling Travel Range (HD3100LY)

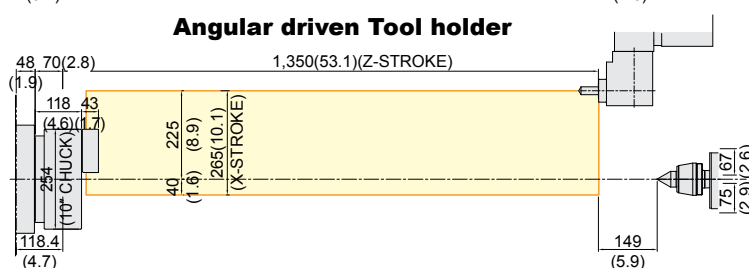
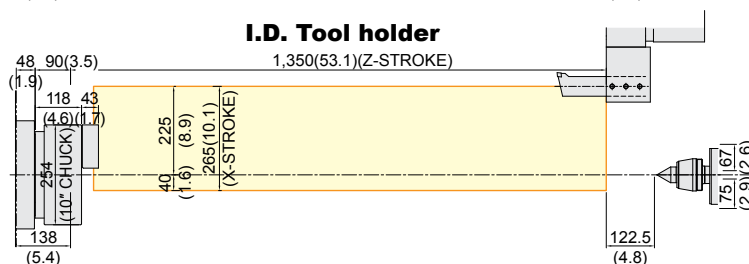
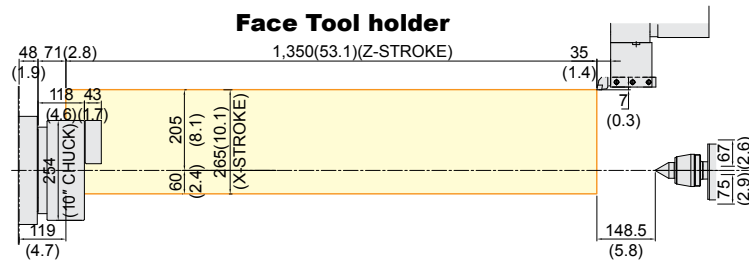
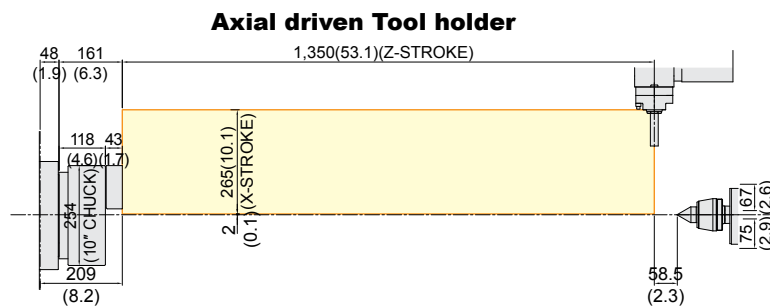
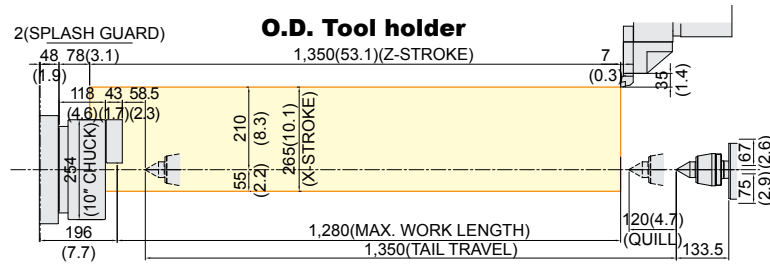
unit : mm



# SPECIFICATIONS

## Tooling Travel Range (HD3100LYA)

unit : mm



\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[ ] : Option

| ITEM          |                          |        |             | HD2200Y                                                                            | HD2200SY                                    |
|---------------|--------------------------|--------|-------------|------------------------------------------------------------------------------------|---------------------------------------------|
| CAPACITY      | Swing Over the Bed       | mm(in) |             | Ø820 (Ø32.3")                                                                      |                                             |
|               | Swing Over the Carriage  | mm(in) |             | Ø650 (Ø25.6")                                                                      |                                             |
|               | Max. Turning Dia.        | mm(in) |             | Ø300 (Ø11.8")                                                                      |                                             |
|               | Max. Turning Length      | mm(in) |             | 610 (24")                                                                          |                                             |
|               | Bar Capacity             | Main   | mm(in)      | Ø65 (Ø2.6")                                                                        |                                             |
| SPINDLE       |                          | Sub    | mm(in)      | -                                                                                  | Ø32 (Ø1.3")                                 |
|               | Chuck Size               | Main   | inch        | 8"                                                                                 |                                             |
|               |                          | Sub    | inch        | -                                                                                  | 5"                                          |
|               | Spindle Bore             | Main   | mm(in)      | Ø76 (Ø3")                                                                          |                                             |
|               |                          | Sub    | mm(in)      | -                                                                                  | Ø43 (Ø1.7")                                 |
|               | Spindle Speed (rpm)      | Main   | r/min       | 4,000 [4,000] [4,000]                                                              |                                             |
|               |                          | Sub    | r/min       | -                                                                                  | 6,000 [6,000]                               |
|               | Motor (Max/Cont.)        | Main   | kW(HP)      | 18.5/15 (25/20) [18.5/15 (25/20)] [22.5/15 (30/20)]                                |                                             |
|               |                          | Sub    | kW(HP)      | -                                                                                  | 5.5/3.7 (7.4/5) [7.4/4.9 (9.9/6.6)]         |
|               | Torque (Max/Cont.)       | Main   | N.m (lb.ft) | 206.2/125.4 (152/92.5) [353.5/215 (260.7/158.6)] [215/143.3 (158.6/105.7)]         |                                             |
|               |                          | Sub    | N.m (lb.ft) | -                                                                                  | 46.6/23.5 (34.4/17.3) [47/31.1 (34.7/22.9)] |
|               | Spindle Type             | Main   | -           | BELT                                                                               |                                             |
|               |                          | Sub    | -           | -                                                                                  | BELT                                        |
|               | Spindle Nose             | Main   | -           | A2-6                                                                               |                                             |
|               |                          | Sub    | mm(in)      | -                                                                                  | FLAT Ø110 (4.3")                            |
|               | C-axis Indexing          |        | deg         | 0.001°                                                                             |                                             |
| FEED          | Travel                   | X/Y    | mm(in)      | 215/110 {±55} (8.5"/4.3" {±2.17"})                                                 |                                             |
|               |                          | Z/ZB   | mm(in)      | 680 (26.8")                                                                        | 680/680 (26.8"/26.8")                       |
|               | Rapid Traverse Rate      | X/Y    | m/min(ipm)  | 24/10 (944/394)                                                                    |                                             |
|               |                          | Z/ZB   | m/min(ipm)  | 30 (1,181)                                                                         | 30/24 (1,181/994)                           |
|               | Slide Type               |        | -           | BOX GUIDE                                                                          |                                             |
| TURRET        | No. of Tools             |        | ea          | 12 [24]                                                                            |                                             |
|               | Tool Size                | O.D    | mm(in)      | □25 (□1") [24 Tool : □20 (□3/4")]                                                  |                                             |
|               |                          | I.D    | mm(in)      | Ø40 (Ø1 1/2") [24T : SINGLE Ø40 (Ø1 1/2"), DOUBLE Ø20 (Ø3/4"), TRIPLE Ø20 (Ø3/4")] |                                             |
|               | Indexing Time            |        | sec/step    | 0.2                                                                                |                                             |
|               | Y-Axis Type              |        | -           | WEDGE TYPE                                                                         |                                             |
| LIVE TOOL     | Milling Tool Speed (rpm) |        | r/min       | 6,000 [6,000]                                                                      |                                             |
|               | Motor (Max/Cont.)        |        | kW(HP)      | 5.5/3.7 (7.4/5) [4.2/2.8 (5.6/4)]                                                  |                                             |
|               | Torque (Max/Cont.)       |        | N.m (lb.ft) | 52.5/26.5 (38.7/19.5) [40.1/26.8 (29.6/19.8)]                                      |                                             |
|               | Collet Size              |        | mm(in)      | Ø16 (Ø5/8") {ER25}                                                                 |                                             |
|               | Type                     |        | -           | BMT55                                                                              |                                             |
| TAIL STOCK    | Taper                    |        | -           | MT#4                                                                               | -                                           |
|               | Quill Dia.               |        | mm(in)      | Ø80 (Ø3.1")                                                                        | -                                           |
|               | Quill Travel             |        | mm(in)      | 120 (4.7")                                                                         | -                                           |
|               | Travel                   |        | mm(in)      | 680 (26.8")                                                                        | -                                           |
| TANK CAPACITY | Coolant Tank             |        | ℓ (gal)     | 200 (52.8)                                                                         |                                             |
|               | Lubricating Tank         |        | ℓ (gal)     | 2 (0.5)                                                                            |                                             |
| POWER SUPPLY  | Electric Power Supply    |        | kVA         | 27                                                                                 | 32                                          |
|               | Thickness of Power Cable |        | mm²         | Over 25                                                                            |                                             |
|               | Voltage                  |        | V/Hz        | 220/60 (200/50*)                                                                   |                                             |
| MACHINE       | Floor Space (L×W)        |        | mm(in)      | 3,380×1,800 (133.1"×70.9")                                                         |                                             |
|               | Height                   |        | mm(in)      | 1,950 (76.8")                                                                      |                                             |
|               | Weight                   |        | kg(lb)      | 4,700 (10,362)                                                                     | 4,900 (10,803)                              |
| CNC           | Controller               |        | -           | FANUC i Series - Smart Plus [SIEMENS 828D]                                         |                                             |

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[ ] : Option

| ITEM          |                          |        | HD2600Y     | HD2600SY                                                                           | HD2600LY                                    | HD2600LSY                  |                          |
|---------------|--------------------------|--------|-------------|------------------------------------------------------------------------------------|---------------------------------------------|----------------------------|--------------------------|
| CAPACITY      | Swing Over the Bed       |        | mm(in)      | Ø820 (Ø32.3")                                                                      |                                             |                            |                          |
|               | Swing Over the Carriage  |        | mm(in)      | Ø650 (Ø25.6")                                                                      |                                             |                            |                          |
|               | Max. Turning Dia.        |        | mm(in)      | Ø300 (Ø11.8")                                                                      |                                             |                            |                          |
|               | Max. Turning Length      |        | mm(in)      | 610 (24")                                                                          |                                             | 1,046 (41.2")              |                          |
|               | Bar Capacity             | Main   | mm(in)      | Ø81 (Ø3.2")                                                                        |                                             |                            |                          |
| Sub           |                          | mm(in) | -           | Ø32 (Ø1.3")                                                                        | -                                           | Ø32 (Ø1.3")                |                          |
| SPINDLE       | Chuck Size               | Main   | inch        | 10"                                                                                |                                             |                            |                          |
|               |                          | Sub    | inch        | -                                                                                  | 5"                                          | -                          | 5"                       |
|               | Spindle Bore             | Main   | mm(in)      | Ø91 (Ø3.6")                                                                        |                                             |                            |                          |
|               |                          | Sub    | mm(in)      | -                                                                                  | Ø43 (Ø1.7")                                 | -                          | Ø43 (Ø1.7")              |
|               | Spindle Speed (rpm)      | Main   | r/min       | 3,500 [3,500]                                                                      |                                             | 3,500                      |                          |
|               |                          | Sub    | r/min       | -                                                                                  | 6,000 [6,000]                               | -                          | 6,000                    |
|               | Motor (Max/Cont.)        | Main   | kW(HP)      | 18.5/15 (25/20) [23.8 /17 (31.9/22.8)]                                             |                                             | 18.5/15 (25/20)            |                          |
|               |                          | Sub    | kW(HP)      | -                                                                                  | 5.5/3.7 (7.4/5) [7.4/4.9 (9.9/6.6)]         | -                          | 5.5/3.7 (7.4/5)          |
|               | Torque (Max/Cont.)       | Main   | N.m (lbfft) | 400.7/243.7 (294.5/179.7) [679/357.4 (910.5/479.3)]                                |                                             | 400.7/243.7 (294.5/179.7)  |                          |
|               |                          | Sub    | N.m (lbfft) | -                                                                                  | 46.6/23.5 (34.4/17.3) [47/31.1 (34.6/22.9)] | -                          | 46.6/23.5 (34.4/17.3)    |
|               | Spindle Type             | Main   | -           | BELT                                                                               |                                             |                            |                          |
|               |                          | Sub    | -           | -                                                                                  | BELT                                        | -                          | BELT                     |
|               | Spindle Nose             | Main   | -           | A2-8                                                                               |                                             |                            |                          |
|               |                          | Sub    | mm(in)      | -                                                                                  | FLAT Ø110 (4.3")                            | -                          | FLAT Ø110 (4.3")         |
|               | C-axis Indexing          |        |             | deg                                                                                | 0.001°                                      |                            |                          |
| FEED          | Travel                   | X/Y    | mm(in)      | 215/110 {±55} (8.5"/4.3" {±2.17"})                                                 |                                             |                            |                          |
|               |                          | Z/ZB   | mm(in)      | 680 (26.8")                                                                        | 680/680 (26.8"/26.8")                       | 1,100 (43.3")              | 1,100/1,100(43.3"/43.3") |
|               | Rapid Traverse Rate      | X/Y    | m/min(ipm)  | 24/10 (944/394)                                                                    |                                             |                            |                          |
|               |                          | Z/ZB   | m/min(ipm)  | 30 (1,181)                                                                         | 30/24 (1,181/994)                           | 30 (1,181)                 | 30/24 (1,181/994)        |
|               | Slide Type               |        |             | -                                                                                  | BOX GUIDE                                   |                            |                          |
| TURRET        | No. of Tools             |        | ea          | 12 [24]                                                                            |                                             |                            |                          |
|               | Tool Size                | O.D    | mm(in)      | □25 (□1") [24 Tool : □20 (□3/4")]                                                  |                                             |                            |                          |
|               |                          | I.D    | mm(in)      | Ø40 (Ø1 1/2") [24T : SINGLE Ø40 (Ø1 1/2"), DOUBLE Ø20 (Ø3/4"), TRIPLE Ø20 (Ø3/4")] |                                             |                            |                          |
|               | Indexing Time            |        |             | sec/step                                                                           | 0.2                                         |                            |                          |
| Y-Axis Type   |                          |        | -           | WEDGE TYPE                                                                         |                                             |                            |                          |
| LIVE TOOL     | Milling Tool Speed (rpm) |        | r/min       | 6,000 [6,000]                                                                      |                                             | 6,000                      |                          |
|               | Motor (Max/Cont.)        |        | kW(HP)      | 5.5/3.7 (7.4/5) [4.2/2.8 (5.6/4)]                                                  |                                             | 5.5/3.7 (7.4/5)            |                          |
|               | Torque (Max/Cont.)       |        | N.m (lbfft) | 52.5/26.5 (38.7/19.5) [40.1/26.8 (29.6/19.8)]                                      |                                             | 52.5/26.5 (38.7/19.5)      |                          |
|               | Collet Size              |        | mm(in)      | Ø16 (Ø0.6") {ER25}                                                                 |                                             |                            |                          |
|               | Type                     |        | -           | BMT55                                                                              |                                             |                            |                          |
| TAIL STOCK    | Taper                    |        | -           | MT#4                                                                               | -                                           | MT#4                       | -                        |
|               | Quill Dia.               |        | mm(in)      | Ø80 (Ø3.1")                                                                        | -                                           | Ø80 (Ø3.1")                | -                        |
|               | Quill Travel             |        | mm(in)      | 120 (4.7")                                                                         | -                                           | 120 (4.7")                 | -                        |
|               | Travel                   |        | mm(in)      | 680 (26.8")                                                                        | -                                           | 1,100 (43.3")              | -                        |
| TANK CAPACITY | Coolant Tank             |        | ℓ (gal)     | 200 (52.8)                                                                         |                                             |                            |                          |
|               | Lubricating Tank         |        | ℓ (gal)     | 2 (0.5)                                                                            |                                             |                            |                          |
| POWER SUPPLY  | Electric Power Supply    |        | kVA         | 27 [32]                                                                            | 32 [36]                                     | 27                         | 32                       |
|               | Thickness of Power Cable |        | mm²         | Over 25                                                                            |                                             |                            |                          |
|               | Voltage                  |        | V/Hz        | 220/60 (200/50*)                                                                   |                                             |                            |                          |
| MACHINE       | Floor Space (L×W)        |        | mm(in)      | 3,380×1,800 (133.1"×70.9")                                                         |                                             | 4,003×2,100 (157.6"×82.7") |                          |
|               | Height                   |        | mm(in)      | 1,950 (76.8")                                                                      |                                             | 1,960 (77.2")              |                          |
|               | Weight                   |        | kg(lb)      | 4,800 (10,582)                                                                     | 5,000 (11,023)                              | 6,950 (15,322)             | 7,000 (15,432)           |
| CNC           | Controller               |        | -           | FANUC i Series - Smart Plus [SIEMENS 828D]                                         |                                             |                            |                          |

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

Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[ ] : Option

| ITEM          |                          |        |             | HD3100YA                                                 | HD3100SYA             | HD3100Y                 | HD3100SY              |
|---------------|--------------------------|--------|-------------|----------------------------------------------------------|-----------------------|-------------------------|-----------------------|
| CAPACITY      | Swing Over the Bed       |        | mm(in)      | Ø800 (Ø31.5")                                            |                       |                         |                       |
|               | Swing Over the Carriage  |        | mm(in)      | Ø670 (Ø26.4")                                            |                       |                         |                       |
|               | Max. Turning Dia.        |        | mm(in)      | Ø420 (Ø16.5")                                            |                       |                         |                       |
|               | Max. Turning Length      |        | mm(in)      | 760 (Ø29.9")                                             |                       |                         |                       |
|               | Bar Capacity             | Main   | mm(in)      | Ø81 (Ø3.2")                                              |                       | Ø102 (Ø4")              |                       |
| Sub           |                          | mm(in) | -           | Ø51 (Ø2")                                                | -                     | Ø51 (Ø2")               |                       |
| SPINDLE       | Chuck Size               | Main   | inch        | 10"                                                      |                       | 12"                     |                       |
|               |                          | Sub    | inch        | -                                                        | 6"                    | -                       | 6"                    |
|               | Spindle Bore             | Main   | mm(in)      | Ø91 (Ø3.6")                                              |                       | Ø115 (Ø4.5")            |                       |
|               |                          | Sub    | mm(in)      | -                                                        | Ø62 (Ø2.4")           | -                       | Ø62 (Ø2.4")           |
|               | Spindle Speed (rpm)      | Main   | r/min       | 3,500                                                    |                       | 2,800                   |                       |
|               |                          | Sub    | r/min       | -                                                        | 4,500                 | -                       | 4,500                 |
|               | Motor (Max/Cont.)        | Main   | kW(HP)      | 26/18.5 (35/25)                                          |                       | 26/18.5 (35/25)         |                       |
|               |                          | Sub    | kW(HP)      | -                                                        | 7.5/5.5 (10/7.4)      | -                       | 7.5/5.5 (10/7.4)      |
|               | Torque (Max/Cont.)       | Main   | N.m (lbfft) | 734/522 (541.4/385)                                      |                       | 1,051/672 (775.2/495.6) |                       |
|               |                          | Sub    | N.m (lbfft) | -                                                        | 85/47 (62.7/34.7)     | -                       | 85/47 (62.7/34.7)     |
|               | Spindle Type             | Main   | -           | BELT                                                     |                       |                         |                       |
|               |                          | Sub    | -           | -                                                        | BELT                  | -                       | BELT                  |
|               | Spindle Nose             | Main   | -           | A2-8                                                     |                       | A2-11                   |                       |
|               |                          | Sub    | mm(in)      | -                                                        | A2-5                  | -                       | A2-5                  |
|               | C-axis Indexing          |        |             | deg                                                      | 0.001°                |                         |                       |
| FEED          | Travel                   | X/Y    | mm(in)      | 265/120 {±60} (10.4"/4.7" {±2.4"})                       |                       |                         |                       |
|               |                          | Z/ZB   | mm(in)      | 830 (32.7")                                              | 830/830 (32.7"/32.7") | 830 (32.7")             | 830/830 (32.7"/32.7") |
|               | Rapid Traverse Rate      | X/Y    | m/min(ipm)  | 24/10 (944/394)                                          |                       |                         |                       |
|               |                          | Z/ZB   | m/min(ipm)  | 30 (1,181)                                               | 30/30 (1,181/1,181)   | 30 (1,181)              | 30/30 (1,181/1,181)   |
|               | Slide Type               |        |             | -                                                        | BOX GUIDE             |                         |                       |
| TURRET        | No. of Tools             |        | ea          | 12                                                       |                       |                         |                       |
|               | Tool Size                | O.D    | mm(in)      | □25 (1") [24Tool : □20 (3/4")]                           |                       |                         |                       |
|               |                          | I.D    | mm(in)      | Ø50 (Ø2") [24T : SINGLE - Ø50 (Ø2"), TRIPLE - Ø25 (Ø1")] |                       |                         |                       |
|               | Indexing Time            |        |             | sec/step                                                 | 0.2                   |                         |                       |
| Y-Axis Type   |                          |        | -           | WEDGE TYPE                                               |                       |                         |                       |
| LIVE TOOL     | Milling Tool Speed (rpm) |        | r/min       | 5,000                                                    |                       |                         |                       |
|               | Motor (Max/Cont.)        |        | kW(HP)      | 5.5/3.7 (7.4/5)                                          |                       |                         |                       |
|               | Torque (Max/Cont.)       |        | N.m (lbfft) | 70/35.4 (51.6/26.1)                                      |                       |                         |                       |
|               | Collet Size              |        | mm(in)      | Ø25 (Ø1") {ER32}                                         |                       |                         |                       |
|               | Type                     |        | -           | BMT65P                                                   |                       |                         |                       |
| TAIL STOCK    | Taper                    |        | -           | MT#5                                                     | -                     | MT#5                    | -                     |
|               | Quill Dia.               |        | mm(in)      | Ø100 (Ø3.9")                                             | -                     | Ø100 (Ø3.9")            | -                     |
|               | Quill Travel             |        | mm(in)      | 120 (4.7")                                               | -                     | 120 (4.7")              | -                     |
|               | Travel                   |        | mm(in)      | 830 (32.7")                                              | -                     | 830 (32.7")             | -                     |
| TANK CAPACITY | Coolant Tank             |        | ℓ (gal)     | 200 (52.8)                                               |                       |                         |                       |
|               | Lubricating Tank         |        | ℓ (gal)     | 1.8                                                      |                       |                         |                       |
| POWER SUPPLY  | Electric Power Supply    |        | kVA         | 30                                                       | 39                    | 30                      | 39                    |
|               | Thickness of Power Cable |        | mm²         | Over 25                                                  |                       |                         |                       |
|               | Voltage                  |        | V/Hz        | 220/60 (200/50*)                                         |                       |                         |                       |
| MACHINE       | Floor Space (L×W)        |        | mm(in)      | 3,630×1,910 (142.9"×75.2")                               |                       |                         |                       |
|               | Height                   |        | mm(in)      | 1,960 (77.2")                                            |                       |                         |                       |
|               | Weight                   |        | kg(lb)      | 6,200 (13,669)                                           |                       | 6,300 (13,889)          |                       |
| CNC           | Controller               |        | -           | FANUC i Series - Smart Plus                              |                       |                         |                       |

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors, (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[ ] : Option

| ITEM          |                          |                 | HD3100LYA                                                | HD3100LY                |
|---------------|--------------------------|-----------------|----------------------------------------------------------|-------------------------|
| CAPACITY      | Swing Over the Bed       | mm(in)          | Ø800 (Ø31.5")                                            |                         |
|               | Swing Over the Carriage  | mm(in)          | Ø670 (Ø26.4")                                            |                         |
|               | Max. Turning Dia.        | mm(in)          | Ø420 (Ø16.5")                                            |                         |
|               | Max. Turning Length      | mm(in)          | 1,280 (50.43")                                           |                         |
|               | Bar Capacity             | mm(in)          | Ø81 (Ø3.2")                                              | Ø102 (Ø4")              |
| SPINDLE       | Chuck Size               | inch            | 10"                                                      | 12"                     |
|               | Spindle Bore             | mm(in)          | Ø91 (Ø3.6")                                              | Ø115 (Ø4.5")            |
|               | Spindle Speed (rpm)      | r/min           | 3,500                                                    | 2,800                   |
|               | Motor (Max/Cont.)        | kW(HP)          | 26/18.5 (34.8/24.8)                                      |                         |
|               | Torque (Max/Cont.)       | N.m (lbft)      | 734/522 (541.4/385)                                      | 1,051/672 (775.2/395.6) |
|               | Spindle Type             | -               | BELT                                                     |                         |
|               | Spindle Nose             | -               | A2-8                                                     | A2-11                   |
|               | C-axis Indexing          | deg             | 0.001°                                                   |                         |
| FEED          | Travel                   | XY/Z mm(in)     | 265/120(±60)/1,350 (10.4"/4.7" {±2.36"}/54.1)            |                         |
|               | Rapid Traverse Rate      | XY/Z m/min(ipm) | 24/10/30 (944/394/1,181)                                 |                         |
|               | Slide Type               | -               | BOX GUIDE                                                |                         |
| TURRET        | No. of Tools             | ea              | 12                                                       |                         |
|               | Tool Size                | O.D mm(in)      | □25 (1") [24Tool : □20 (3/4")]                           |                         |
|               |                          | I.D mm(in)      | Ø50 (Ø2") [24T : SINGLE - Ø50 (Ø2"), TRIPLE - Ø25 (Ø1")] |                         |
|               | Indexing Time            | sec/step        | 0.2                                                      |                         |
|               | Y-Axis Type              | -               | WEDGE TYPE                                               |                         |
| LIVE TOOL     | Milling Tool Speed (rpm) | r/min           | 5,000                                                    |                         |
|               | Motor (Max/Cont.)        | kW(HP)          | 5.5/3.7 (7.4/5)                                          |                         |
|               | Torque (Max/Cont.)       | N.m (lbft)      | 70/35.4 (51.6/26.1)                                      |                         |
|               | Collet Size              | mm(in)          | Ø25 (Ø1") (ER32)                                         |                         |
|               | Type                     | -               | BMT65                                                    |                         |
| TAIL STOCK    | Taper                    | -               | MT#5 [Built-in : MT#4]                                   |                         |
|               | Quill Dia.               | mm(in)          | Ø100 (Ø3.94")                                            |                         |
|               | Quill Travel             | mm(in)          | 120 (4.7")                                               |                         |
|               | Travel                   | mm(in)          | 1,350 (Ø53.1")                                           |                         |
| TANK CAPACITY | Coolant Tank             | ℓ (gal)         | 220 (58.1)                                               |                         |
|               | Lubricating Tank         | ℓ (gal)         | 1.8 (0.47)                                               |                         |
| POWER SUPPLY  | Electric Power Supply    | kVA             | 30                                                       |                         |
|               | Thickness of Power Cable | mm <sup>2</sup> | Over 25                                                  |                         |
|               | Voltage                  | V/Hz            | 220/60 (200/50)                                          |                         |
| MACHINE       | Floor Space (L×W)        | mm(in)          | 4,404×2,085 (173.4"×82.1")                               |                         |
|               | Height                   | mm(in)          | 2,022 (79.6")                                            |                         |
|               | Weight                   | kg(lb)          | 7,350 (16,203)                                           | 7,400 (16,314)          |
| CNC           | Controller               | -               | FANUC i Series - Smart Plus                              |                         |

# 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)<br>5 axis (X, Z, B, C, A) / 6 axis (X, Z, Y, B, C, A)<br>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)<br>C, A axis : 0.001 deg                                                                                |
| Least input increment                             | X, Z, Y, B axis : 0.001 mm (0.0001 inch)<br>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<br>(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<br>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<br>Jog : 0~2,000 mm/min (79 ipm)<br>Manual handle : x1, x10, x100 pulses<br>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                            | Smart Guide-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<br>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                       |                                                    |
| Look-ahead Block                            | 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.

# CONTROLLER

## SIEMENS 828D

[ ] : Option ☆ Needed technical consultation

### Controlled axis / Display / Accuracy Compensation

|                                |                                                                           |
|--------------------------------|---------------------------------------------------------------------------|
| Control axis                   | 2 axis (X, Z) - Std.                                                      |
|                                | 3 axis (X, Z, C) - Mill                                                   |
|                                | 4 axis (X, Z, Y, C) - Y                                                   |
|                                | 5 axis (X, Z, B, C, A) - MS                                               |
|                                | 6 axis (X, Z, Y, B, C, A) - SY                                            |
| Simultaneously controlled axis | Max. 4 axis                                                               |
| Least setting Unit             | X, Z, Y, B axis : 0.001 mm (0.0001 inch)<br>C, A axis : 1 deg [0.001] deg |
| Least input increment          | X, Z, Y, B axis : 0.001 mm (0.0001 inch)<br>C, A axis : 1 deg [0.001] deg |
| Inch / Metric changeover       | G70 (inch) / G71 (metric)                                                 |
| Interlock                      | All axis / Each axis                                                      |
| Backlash compensation          |                                                                           |
| Pitch error compensation       | Leadscrew pitch error compensation                                        |
| LCD / MDI                      | 10.4 inch color LCD<br>[15 inch color LCD (With Touch panel)]             |
| Keyboard                       | QWERTY full keyboard                                                      |
| Stored stroke check            | Over travel                                                               |

### Operation

|                        |                                        |
|------------------------|----------------------------------------|
| Automatic operation    |                                        |
| MDI operation          |                                        |
| Program restart        |                                        |
| Program check function | Dry run / Program check / Machine lock |
| Single block           |                                        |
| Block search           | Block search                           |
| Reposition             |                                        |
| Working area limit     | Working area limitations               |

### Interpolation functions

|                            |                                                                     |
|----------------------------|---------------------------------------------------------------------|
| Positioning                | G00                                                                 |
| Linear interpolation       | G01                                                                 |
| Circular interpolation     | Circular interpolation CW (G02)<br>Circular interpolation CCW (G03) |
| Exact position stop        | Single block exact stop (G09)<br>Exact stop G60 (G601, G602, G603)  |
| Dwell                      | Dwell (G04)                                                         |
| Reference position return  | Return to reference point<br>Return to 2nd reference point          |
| Helical interpolation      |                                                                     |
| Thread synchronous cutting |                                                                     |
| Thread cutting retract     |                                                                     |
| Spline interpolation       | Non-uniform rational B splines                                      |

### Feed function / Acc. & Dec. control

|                         |                           |
|-------------------------|---------------------------|
| Manual feed             | Rapid traverse            |
|                         | Jog                       |
|                         | Manual handle             |
|                         | Reference position return |
| Cutting feed command    | Direct input F code       |
| Feedrate override       | 0 ~ 200% (10% Unit)       |
| Rapid traverse override | 1%, 25%, 50%, 100%        |
| Feed per minute         | G94                       |
| Feed per revolution     | G95                       |
| Look-ahead block        | 1 block                   |

### Program input

|                             |                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO support                 | G291 (ISO) / G290 (SIEMENS)<br>(ISO G Code system-A)                                                                                                               |
| Optional block skip         | 2                                                                                                                                                                  |
| Program stop / end          | M00, M01 / M02, M30                                                                                                                                                |
| Maximum command unit        | ± 999,999,999 mm, ± 99,999,999 inch                                                                                                                                |
| Plane selection             | X-Y : G17, X-Z : G18, Y-Z : G19<br>G54 ~ G57, G505~G549<br>G500 (Basic frame - setable zero offset)<br>G53 (Work offset non modal)<br>G153 (basic frame non modal) |
| Workpiece coordinate system |                                                                                                                                                                    |
| Sub program call            | 11 folds nested                                                                                                                                                    |
| G code preventing buffering | STOPRE                                                                                                                                                             |
| Turning cycle               | Turning programming (Cycle 93, 94, 95, 97)                                                                                                                         |
| User cycle                  |                                                                                                                                                                    |
| 3D simulation               |                                                                                                                                                                    |
| Real time simulation        |                                                                                                                                                                    |
| Shop Turn                   | Machining step programming for turning                                                                                                                             |

### Auxiliary function / Spindle speed function

|                                |                      |
|--------------------------------|----------------------|
| Auxiliary function             | M Code 4 digit       |
| Spindle speed function         | S Code 5 digit       |
| Spindle override               | 0% ~ 150% (10% Unit) |
| Spindle orientation            | SPOS                 |
| Rigid tapping                  |                      |
| Automatic mode interchange     | Spindle / Axis mode  |
| Constant surface speed control | G96, G97             |
| Spindle speed limitation       | LIMS                 |

### Tool function / Tool compensation

|                               |                                                  |
|-------------------------------|--------------------------------------------------|
| Tool function                 | Tool number & Tool name<br>Tool : T + Offset : D |
| Tool life management          |                                                  |
| Tools in tool list            | 128 ea : Std.                                    |
|                               | 256 ea : Mill                                    |
|                               | 768 ea : Y, MS, SY                               |
| Cutting Edges in tool list    | 256 ea : Std.                                    |
|                               | 512 ea : Mill                                    |
|                               | 1,536 ea : Y, MS, SY                             |
| Tool nose radius compensation | ISO (G40, G41, G42)                              |
| Geometry / Wear compensation  |                                                  |
| Measurement of tool length    |                                                  |
| Tool management function      |                                                  |

### Editing function

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Part program storage size     | 3MB - Std.<br>5MB - Mill<br>10MB - Y, MS, SY<br>750 ea |
| No. of registerable programs  |                                                        |
| External Storage devices      | Local network, Server, USB, Flash drive                |
| 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 interface (ONLY 10.4")<br>USB memory interface<br>Embedded Ethernet memory interface |
| Screenshot    |                                                                                              |

### 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.<br>Support 9 languages<br>Chinese (Simplified/Traditional), English,<br>French, German, Italian, Korean,<br>Portuguese, Spanish<br>[☆ Support 22 languages : Inquiry need] |
| Multi language display            |                                                                                                                                                                                                      |
| LCD Screen Saver                  | Screen saver & Motion sensing                                                                                                                                                                        |

### Function for machine type

|                                  |                       |
|----------------------------------|-----------------------|
| Cs contour control (C & A axis)  | Mill, MS, Y, SY model |
| Polar coordinate interpolation   | Mill, MS, Y, SY model |
| Cylindrical interpolation        | Mill, MS, Y, SY model |
| Canned cycle for drilling        | Mill, MS, Y, SY model |
| [Polygon turning (CP-Basic)]     | Mill, MS, Y, SY model |
| [Hobbing / Skybing (CP-Comfort)] | Mill, MS, Y, SY model |
| Spindle synchronous control      | MS, SY model          |
| Servo tailstock function         | MS, SY model          |

### Option

|                                |    |
|--------------------------------|----|
| Additional optional block skip | 10 |
| Contour handwheel              |    |

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