JTEKT

Horizontal machining centers

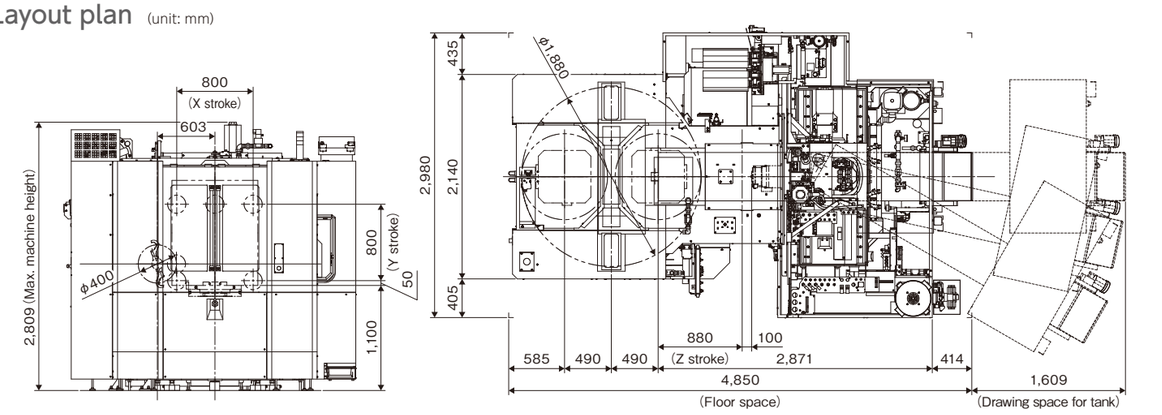
## FH5000 Series

# FH5000S-i
# FH5500S-i
# FH5500SX-i

FH5000 SERIES

JTEKT

### Layout plan (unit: mm)




*This layout plan is for FH5000S-i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MIX
Paper from responsible sources
FSC® C011109

Type of Machinery: Machining Center
Model Number: FH5000 Series


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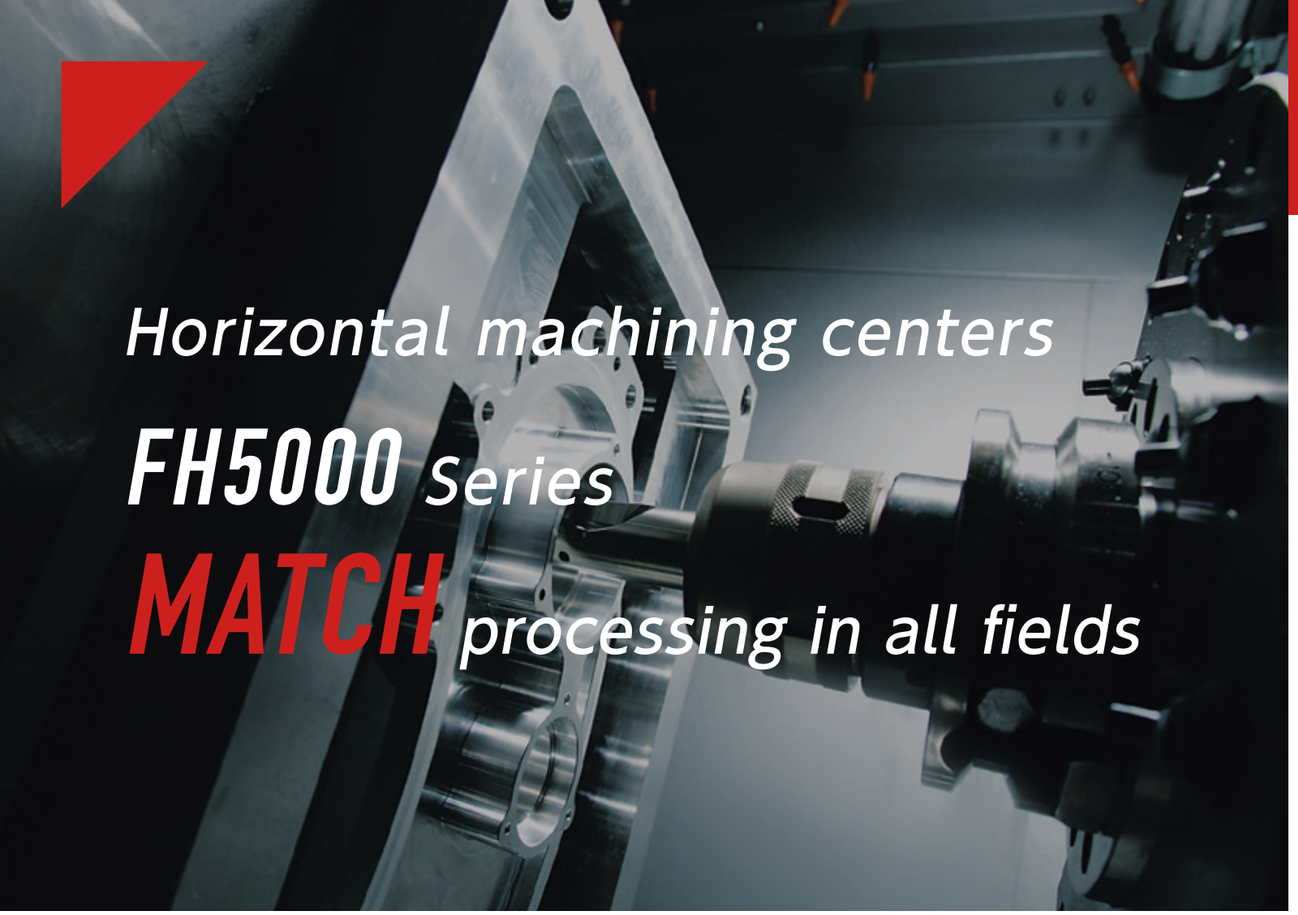
Home page

YouTube channel



# Horizontal machining centers

# FH5000 Series

# MATCH processing in all fields

**M**ore efficient machining of various parts

**A**ppropriate support for setup work

**T**hermal Matrix design error reduction

**C**hip removal more quickly and thoroughly

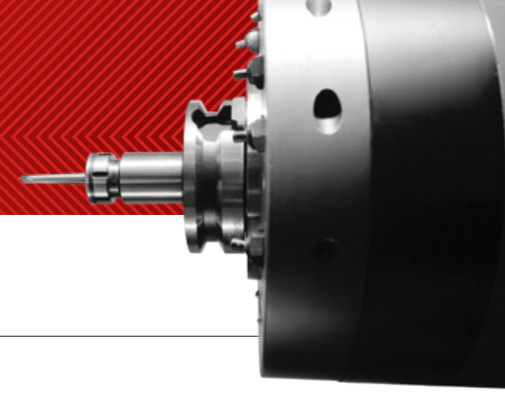
**H**igh-performance by smart stable operation


Horizontal machining centers

**FH5000 SERIES**



## Product characteristics



## More efficient machining of various parts

### Spindle

Achieving both environment and productivity high-speed spindle with grease lubrication
FH5000S-i #40

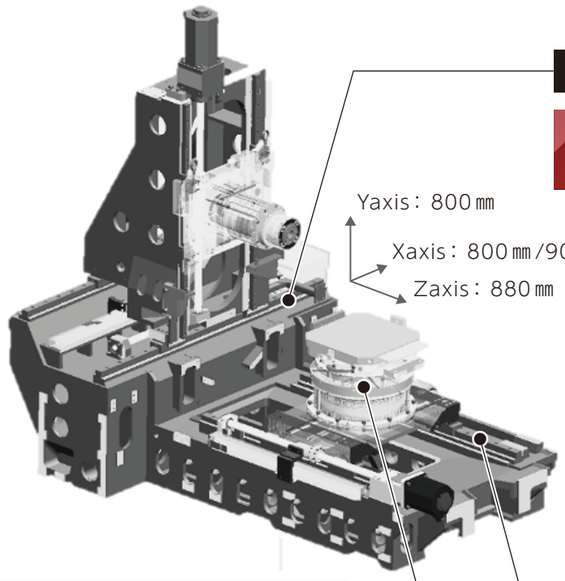
Air consumption of spindle ▲80%

Shortening non-cutting time
Ultra-high acceleration for aluminum processing
FH5000S-i #40 55N・m Option

Acceleration 0.5sec
(0→15,000min⁻¹)

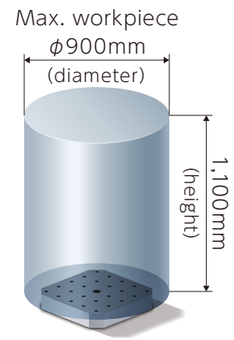
Fitting cast iron processing
High speed × high torque spindle
FH5500SX-i #50

Max. torque 530N・m
(15,000min⁻¹)




### Stroke

Largest among the same class machine




### DD table

DD (Direct Drive) table that is driven directly by a built-in motor. High-precision indexing with zero backlash and equipping with a high-resolution encoder.

Fastest among the same class machine

90° indexing:
**0.7sec** (～ 500kg)

Max load on pallet :
**1,000kg**

### Tradition and innovation Platform

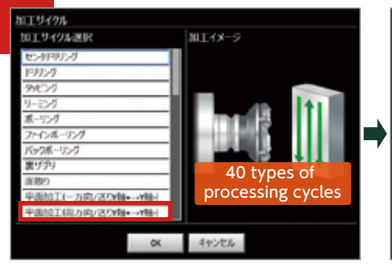
Beds, columns, and tables, which have complicated shapes and are large parts, are all manufactured in-house in order to control quality.

# Appropriate support for setup work

## Easy for programming

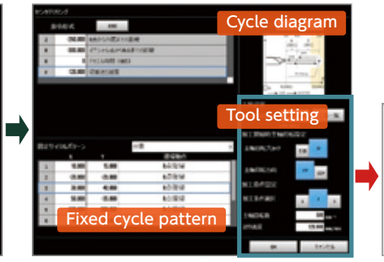
—Simple, safe and connectable—

**TOYOPUC-Touch**

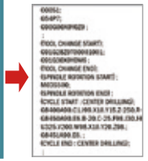



Select cycle while looking at the image

Enter required dimensions while looking at the cycle diagram




Input according to the number of holes, work shape, etc.



Create automatically

## Equipped with touch magazine operation panel as standard


Tool information can be set・checked and called

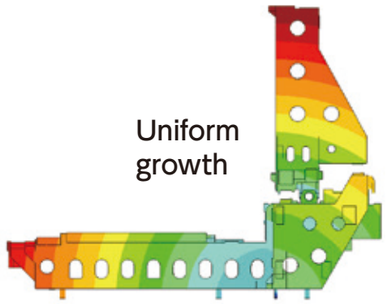
Magazine indexing operation is possible while looking at tool information


Editing work such as tool life and offset is possible at the tool change position.

# Thermal Matrix design error reduction

## Rigid platform (minimizes YZ right angle change)

In addition to conventional mechanical design, further evolved low thermal displacement platform is adopted. Designed with CAE analysis, heat capacity of bed and column is optimized, and displacement of entire machine is reduced even during long-term machining and temperature changes.



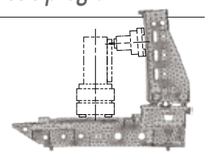

## THERMAL MATRIX Option

Generates 3D model based on temperature information sensed from each part of machine. Accuracy is stabilized by calculating and controlling the position of tool tip displacement in real time. It is possible to reduce troublesome measurement correction and correction processing work.

**TOYOPUC-Touch**

*JTEKT's original high-speed arithmetic program*

Real-time analysis of complex thermal deformations using FEM analysis logic



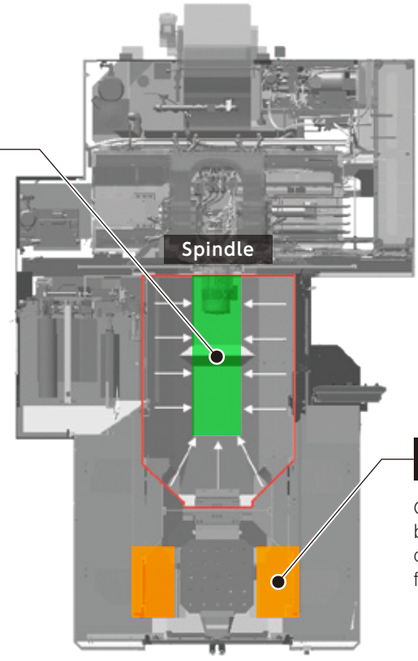
thermal displacement temperature change by 20℃ ▲80% reduction



# Chip removal more quickly and thoroughly

## Double center trough

A chip disposal port located in the center of the bed makes for a chip disposal. Trough area has been increased by 70%. Chip collection time is halved.



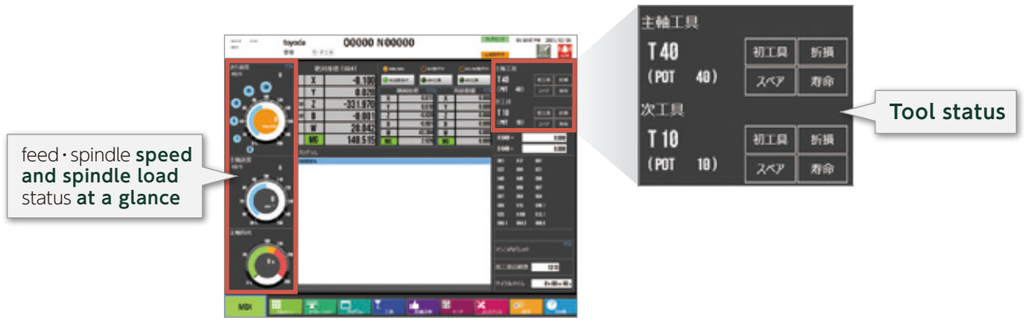

## APC cover

Chip scattering area is minimized because of APC cover design. Eliminates dead space and significantly reduces the flow rate of chip flow coolant.

# High-performance by smart stable operation

Visualize various data such as operating status, operation / processing results, and periodic inspections.

**TOYOPUC-Touch**




feed・spindle **speed and spindle load** status **at a glance**

Tool status


**operating status** of each process **at a glance**

**Easy external output** of actual machine data

Daily operation status

# Initiatives for carbon neutrality

JTEKT's products and technologies are directly and indirectly linked to environmental measures for our customers' products and manufacturing processes.

## ■Energy visualization

Collective monitoring of electric power consumption and $CO_2$ emission

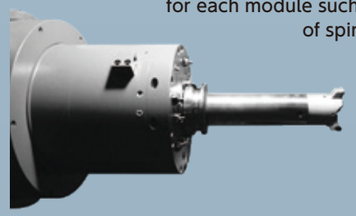
## $CO_2$ emission 40% reduction*

## ■Adoption of energy-saving products

Hydraulic unit with inverter (Recommend)

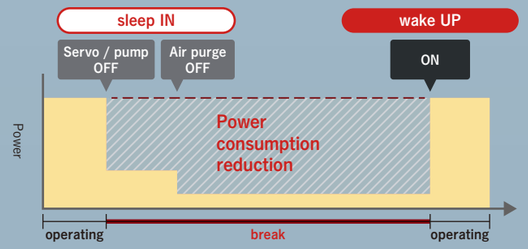
## ■Reduction of operating energy

Technology improvement and evolution for each module such as reduction of spindle purge air



## ■Power reduction of [non-processing time]

Equipped with sleep IN and wake UP mode




*Depends on JTEKT measurement method.

## Machine specifications

[ ] is special specifications

| Item | | Unit | FH5000S-i | FH5500S-i | FH5500SX-i |
|---|---|---|---|---|---|
| Table & Pallet | Table dimensions (pallet dimensions) | mm | □550 [□500] | | |
| | Rotary table indexing angle | ° | 0.001 : DD | | |
| | Pallet height (from floor) | mm | 1,100 | 1,100 (1,200 RGV) | |
| | Max load on pallet | kg | 1,000 | | |
| | Table indexing time (90° indexing) | sec | 0.7sec (500kg) , 1.0sec (1000kg) | | |
| | Pallet change time | sec | 10.5 | | |
| Stroke | X-axis | mm | 800 | 900 | |
| | Y-axis | mm | 800 | | |
| | Z-axis | mm | 880 | | |
| | Distance between spindle nose and table center | mm | 100～980 | | |
| | Distance between spindle center and top of pallet | mm | 50～850 | | |
| | Max. workpiece swing x Max. workpiece height | mm | φ900×1,100 | | |
| Feeds | Rapid feed rate (X, Y and Z) | m/min | 60 | | |
| | Cutting feed rate (X, Y and Z) | m/min | 0.001～60 | | |
| | Rapid acceleration (X, Y and Z) | G | 1/1/0.7~1.2*1 | 1/1/0.7~1.2*1 | 0.7/0.7/0.7~1.2*1 |
| Spindle | Spindle speed | $min^{-1}$ | 15,000 | | |
| | Spindle diameter (front bearing bore) | mm | φ85 [φ70] | φ120 | |
| | Spindle nose shape | | BT No.40 | BT No.50 | |
| | Spindle motor, short-time/continuous | kW | 37/22kW [30/18.5kW] | 37/22kW | 45/30kW |
| | Max. spindle torque, short-time/continuous | N・m | 303/119 [55/26] | 303/119 | 530/239 |
| | Spindle lubrication method | | Oil air/Grease | Oil air | |
| ATC | Tool holding capacity | Tool | 60 [119/180/240/320] | 45 [60/121/180/240/320] | |
| | Tool selection | | Absolute address | | |
| | Tool (dia. × length) | mm | φ75×510 | φ120×545 | |
| | Tool mass | kg | 8 | 27 | |
| | Tools Holder | | MAS BT40 | MAS BT50 | |
| | Pull stud | | MAS P40T-1 | MAS P50T-1 | |
| Dimensions | Floor space (width × depth) | mm | 2,980×4,850 | 3,550×4,850 | |
| | Machine height | mm | 2,809 | 3,180 | |

*1: Variable depending on load weight



## Accessories

●Standard ／ □Option ／ — unavailable

| Item | Equipment name | | FH5000S-i | FH5500S-i | FH5500SX-i |
|---|---|---|---|---|---|
| Table and pallet | Indexing table | DD table (with encoder) | ● | ● | ● |
| | Pallet | Standard pallet screw hole □550 | ● | ● | ● |
| | | Pallet screw hole □500 | □ | □ | □ |
| | | Edge locator for pallets (2 per set) | □ | □ | □ |
| | Addition of pallet | Single piece screw hole | □ | □ | □ |
| Spindle relations | Speed | 15,000 $min^{-1}$ 〈303/119N・m (10%ED/continuous)〉 〈37/22kW (25%ED/continuous)〉 | ● | ● | — |
| | | 15,000 $min^{-1}$ 〈55/26N・m (10%ED/continuous)〉 〈30/18.5kW (25%ED/continuous)〉 〈High-speed type〉 | □ | — | — |
| | | 15,000 $min^{-1}$ 〈530/119N・m (10%ED/continuous)〉 〈37/22kW (25%ED/continuous)〉 | — | — | ● |
| | | Positioning block for angle head holder | □ | □ | □ |
| | | BT40 | ● | — | — |
| | | BT50 | — | ● | ● |
| | | BIG PLUS specifications | □ | □ | □ |
| | | HSK specifications | □ | □ | □ |
| Tool magazine | Tool capacity | 45 tools | — | ● | ● |
| | | 60 tools | ● | □ | □ |
| | | 119/121/180/240/320 tools | □ | □ | □ |
| Coolant relations | Coolant supply unit | Coolant supply unit (scraper type) | ● | ● | ● |
| | | Coolant supply unit (2-tank type) | □ | □ | □ |
| | | Non-sludge coolant tank | □ | □ | □ |
| | Spindle-through | Spindle-through coolant spec/1MPa through pump | □ | □ | □ |
| | | Spindle-through coolant spec/2MPa through pump | ● | ● | ● |
| | | Spindle-through coolant spec/3MPa through pump | □ | □ | □ |
| | | Spindle-through coolant spec/7MPa through pump | □ | □ | □ |
| | Magnet separator | | □ | □ | □ |
| | External nozzle coolant | | ● | ● | ● |
| | External nozzle coolant | Simultaneous discharge with external nozzle coolant | ● | ● | ● |
| | | Individual discharge | □ | □ | □ |
| | Coolant cooling | | □ | □ | □ |
| | Oil skimmer | Belt type | □ | □ | □ |
| | Chip box | | □ | □ | □ |
| | Splash gun (at APC) | | □ | □ | □ |
| | Mist collector | | □ | □ | □ |
| | Air blower | External nozzle type | □ | □ | □ |
| | | Holder type | □ | □ | □ |
| Splash guard | Enclosure guard | | ● | ● | ● |
| | Door interlock at operating position | Electromagnetic lock type | ● | ● | ● |
| | APC door interlock | Electromagnetic lock type | ● | ● | ● |
| | Magazine door interlock | Electromagnetic lock type | ● | ● | ● |
| | Internal lighting | | ● | ● | ● |
| Operation control function, others | Ground fault interrupter | | □ | □ | □ |
| | Cooler for control cabinet inside | | □ | □ | □ |
| | Automatic fire extinguisher | | □ | □ | □ |
| | Signal light | | □ | □ | □ |
| | Portable manual pulse generator (with handle enable button) | | ● | ● | ● |
| | Air dryer | | □ | □ | □ |
| Labor saving function | Pallet changer (APC) | Shift type | ● | ● | ● |
| | Flexible Manufacturing Cell (FMC) | 6/12/18 pieces | □ | □ | □ |
| Support for high accuracy | Spindle cooling unit | | ● | ● | ● |
| | BTS (Ballscrew Thermo Stabilizer) function | | ● | ● | ● |
| | Scale feedback (X-, Y- and Z-axes) | | □ | □ | □ |
| | Touch sensor function | Optical type (without energization) ; with alignment and datum face correction functions | □ | □ | □ |
| | Automatic tool length measurement function | | □ | □ | □ |
| | Tool breakage detection unit inside the magazine | Touch switch type | □ | □ | □ |
| | Spindle thermo stabilizer function | | □ | □ | □ |