Opposed Twin-Spindle CNC Lathe

TCY Series

Next Generation Standard for Small Parts Machining
Process Integration for the Combination Machining of Small Precision Components

A superior grade machine, the TAKISAWA TCY incorporates a variety of "EASY TO USE" machining. Features for improving the production rate of small high precision components.
The standard model “YS” is equipped with a “Y-Axis” and subspindle enabling the machining of complicated profiles and this also enables facing and back machining when utilising the subspindle. This machine is easily integrated into state of the art gantry loaded and bar feeder systems utilising TAKISAWA’s extensive knowledge of full turnkey packages and extended unmanned production solutions. The NC system supports the interactive programming system “TiwaP-1” allowing programmes created by this system to control all the machining directly reducing lead times.

The “TCY” series offers effective solutions to meet global manufacturing requirements, proven by excellent performance:

TCY-160/TCY-200

Environment Friendly

- Highly efficient latest technology servo motors reducing power consumption.
- Automatic worklight off function used only when operator intervention is required.
- Control panel cooling system designed for power saving by utilising the natural heat dissipation.
- With the coolant pump only running when required for use in programs unnecessary power consumption is avoided.
- The built-in oil and coolant separator extends the coolant properties and coolant life.

TCY concerns for the environment.

<table>
<thead>
<tr>
<th>Composition</th>
<th>2 Spindle Type</th>
<th>1 Spindle Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YS</strong></td>
<td>YS</td>
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<tr>
<td>Right Spindle Stock</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Tailstock</td>
<td>-</td>
<td>-</td>
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<tr>
<td>C-Axis (L)</td>
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<td>-</td>
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<tr>
<td>C-Axis (R)</td>
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<td>-</td>
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<tr>
<td>Milling</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Y-Axis</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Subspindle</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

+1 NC Servo Tailstock

**Notes:**
- Standard
- Optional
- None

ENERGY SAVING SYSTEM

L3

L5
**Powerful High Performance Milling Turret**

The 12 station turret allows for the milling holders to be mounted in all stations. Each holder is clamped and rigidly bolted in position on the turret to ensure the effective processing of the component by using either milling, drilling, or turning tools.

- **Rotary Tool Spindle Speed**: 6000 min⁻¹
- **Height of Square Tool Shank**: 25mm
- **Diameter of Boring Bar Shank**: 32mm
- **Tool Spindle Taper Hole**: AR20
- **Max. Tool Shank Diameter**: 13mm

**Thermal Balance**

This cast machine bed is designed with rigid solid box slideways and incorporates a coolant tank within its base with interconnecting passages allowing the coolant to circulate dissipating any heat and restricting thermal displacement.

- **Coolant Tank**: L3 200L, L5 250L

**Y-Axis**

The machine is designed with a low centre of gravity incorporating a 30 degree Y-Axis slideway. This solid box slideway construction ensures maximum durability and rigidity and the “designed in” optimum balanced slideway configuration ensures for high grade machining accuracy.

**Tailstock**

The high performance servo motor driving the tailstock ensures that the designated thrust 1.0 kN ~ 4.0 kN can be applied and changed in programm to suit the component being machined.

- **Tailstock Travel**: L3 380mm, L5 580mm
- **Quill Taper**: MT.3 (for TCY-160), MT.4 (for TCY-200)

**Chip Conveyor**

Side entry draw, or rear entry draw chip conveyors for ensuring chip management flexibility. Chip conveyors to suit the customers machine layout and the machine working environment.

**Process Integration Flow Chart**

Demonstrates the efficiency / advantages of one multi purpose machine against a cell of lathes and machining centres and highlights the advantages.

1. **Shortened Lead Time**
2. **Reduced Equipment Machines**
3. **Effective Use of Floor Space**

**Contribution to Cost Reduction**

The contents of the catalog are subject to change for improvement without notice. Please make confirmation from our sales representatives when entering into the contract.
Y-Axis Turning & Milling Model (YS/Y), Turning & Milling Model (CS/C), Turning Model (S)

**Machine Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chip Pan Pull Out</td>
<td></td>
<td>66.73&quot;</td>
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<tr>
<td>Chip Pan Pull Out</td>
<td></td>
<td>70.63&quot;</td>
</tr>
<tr>
<td>Chip Pan Pull Out</td>
<td></td>
<td>66.93&quot;</td>
</tr>
<tr>
<td>Chip Pan Pull Out</td>
<td></td>
<td>71.00&quot;</td>
</tr>
</tbody>
</table>

**Spindle**

This FANUC driven high performance spindle, with an inner bearing diameter of 90mm offers excellent rigid support for the combined heavy duty milling and turning forces found when processing a variety of component materials. The spindle has a maximum turning diameter of 220mm dia and a bar machining capacity of 42mm.

**Left Spindle**

**Spindle Motor**
- **5.5/3.7kW**
  - Standard: 4000min⁻¹
  - Optional: 7.5/5.5kW
- **3.7/2.2kW**
  - Spindle Motor
  - Spindle Speed: 4000min⁻¹
  - Optional: 6000min⁻¹

**Right Spindle**

**Spindle Motor**
- **5.5/3.7kW**
  - Spindle Speed: 4000min⁻¹
  - Optional: 7.5/5.5kW

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Y-Axis Turning & Milling Mode (YS/Y), Turning & Milling Mode (CS/C), Turning Mode (S)

Machine Specifications

- Chuck Size: 8in
- Max. Turning Dia.: φ220mm (8.66")
- Max. Turning Length: 254mm (10")
- Bar Capacity: φ51mm (2.0")

Spindle

This FANUC driven high performance spindle, with an inner bearing diameter of 100mm offers excellent rigid support for the combined heavy duty milling and turning forces found when processing a variety of components the spindle has a maximum turning diameter of 220mm dia and a bar capacity of 51mm.

- Left Spindle
  - Spindle Motor: 7.5/5.5kW
  - Spindle Speed: 3200min⁻¹

- Right Spindle
  - Spindle Motor: 3.7/2.2kW
  - Spindle Speed: 4000min⁻¹

The left spindle on YS/CS models is furnished with Co control to carry out the combined machining processing of the component back face.

Machine Dimensions

- Unit: mm
- 3JHIU4QJOEMF: Spindle
- 7.5/5.5kW: Output (kW)
- 3200min⁻¹: Spindle Speed (min⁻¹)
- φ140 Flat: Sub Main (A2-6)
- 5000min⁻¹: FANUC : βiI6
- 11/7.5kW: Output (kW)
- 3200min⁻¹: Spindle Speed (min⁻¹)
- φ140 Flat: Sub Main (A2-6)
- 5000min⁻¹: FANUC : βiI6
- 3.7/2.2kW: Output (kW)
- 4000min⁻¹: Spindle Speed (min⁻¹)
- φ140 Flat: Sub Main (A2-6)
- 6000min⁻¹: FANUC : βiI6

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Photo is TCY-200YSL5 "TiwaP-1 Type".
TCY-160/TCY-200

Travel Range  
Unit: mm

[ ] dimension are L5. Left Spindle: B206 ; TCY-160, B-208 : TCY-200

with Right Spindle

Travel Range

with Right Spindle, Tailstock

Travel Range

with Tailstock

Travel Range

Interference

Unit: mm

with Y-Axis

Interference

with Y-Axis

Interference

without Y-Axis

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Automation

The optimum automated production system is easily achievable by using TAKISAWA's technical expertise, gained over many years developing gantry loaded machining solutions from a single gantry loaded cell to multiple units linked in a line for full turnkey solutions of billeted or casting parts for the gantry loaded systems there are three main types available A, B, and C. These consist of one gantry work feeder delivering raw material components to, and finished machined components from the machining platform back for loading into the work stocker type a and b one have work stocker located to the left or right of the machine.

In the case of the C type one work feeder has a work stocker located either side of the machine to facilitate the extended unmanned working hours available. In process gauging systems and also quality checking can be programmed in to select samples for quality auditing delivered to a chute whilst the machine is running by program for example every 20 parts.

<table>
<thead>
<tr>
<th>Model</th>
<th>YS</th>
<th>C5</th>
<th>C6</th>
<th>Y</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tooling System</td>
<td>Turning &amp; Milling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turning Tool</td>
<td>OD Tool Holder</td>
<td>Facing Holder</td>
<td>Double OD Tool Holder</td>
<td>Cut-Off Tool</td>
<td>Cut-Off Holder</td>
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<tr>
<td>Cut-Off Tool</td>
<td>φ32</td>
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<tr>
<td>Boring Bar</td>
<td>Boring Bar Bush For φ 6/8/10/12/14/16/18/20/25</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Drill</td>
<td>Drill Socket For MT. No.1/2/3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>φ32</td>
<td>Double Boring Bar / Drill Holder</td>
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</tr>
<tr>
<td>U-Drill</td>
<td>U-Drill Socket For φ 20/25</td>
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</tr>
<tr>
<td>Tap</td>
<td>Tapping Collet For 4/5/6/8/10/12</td>
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</tr>
</tbody>
</table>

For the Turning Tool

- TCY-160 TCY-200
- Maximum Height mm
- Loading Capacity kg
- Loading Capacity (Per Pallet) kg
- Target Workpiece Dimensions mm
- Running Speed m/min
- Number of Pallets
- Maximum Height mm
- Chip Conveyor

Bar Feeder Automation

The bar capacities of TCY-160 42mm and TCY-200 51mm can be fully utilized by using various bar feeder manufacturers products which can easily be interfaced into the machine control this can be enhanced by using magazine bar feeder equipment which will extend the unmanned hours that the machine can run.

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### Machine Composition

- Right Spindle Stock
- Tablestock
- C-Axis (Left)
- C-Axis (Right)
- Milling

*Standard: O | Optional: — | None

### Machine Specifications

<table>
<thead>
<tr>
<th>TTY-160YS</th>
<th>TTY-160CS</th>
<th>TTY-160Y</th>
<th>TTY-160Y</th>
<th>TTY-160C</th>
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<tbody>
<tr>
<td>Max. Swing</td>
<td>mm/min</td>
<td>240</td>
<td>12.39</td>
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<tr>
<td>Max. Turning Diameter*</td>
<td>mm/min</td>
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<tr>
<td>Spindle Nose to Nose Maximum Distance</td>
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<tr>
<td>Spindle Cap. (Left Spindle)</td>
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<td>—</td>
</tr>
<tr>
<td>X-Axis Travel (Turret)</td>
<td>mm/min</td>
<td>185</td>
<td>7.28</td>
<td>—</td>
</tr>
<tr>
<td>Tool Spindle Taper Hole (Type, Number)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rapid Traverse (Right Spindle Stock)</td>
<td>mm/min</td>
<td>250</td>
<td>9.85</td>
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<td>—</td>
<td>—</td>
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<tr>
<td>Spindle-Through Hole Diameter</td>
<td>mm/inch</td>
<td>50</td>
<td>2.00</td>
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</tr>
<tr>
<td>Lubricant Tank L/gal</td>
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## Overseas Network

![Network Map](image)

### Sales Department Overseas Sales Section

**TAKISAWA Machine Tool Co., Ltd.**

**Representative Office**

- **Japan**
  - Tokyo Office: +81 (0)3-6825-2501
  - Osaka Office: +81 (0)6-6346-5015

- **Thailand**
  - Bangkok Office: +66 (0)2-254-9060

- **Indonesia**
  - Jakarta Office: +62 (0)21-522-2501

- **China**
  - Shanghai Office: +86 21-6346-5015

- **USA**
  - New York Office: +1 212-664-1250

- **Germany**
  - Munich Office: +49 89-6346-5015

- **Other Countries**
  - Please contact your nearest sales representatives.

### Domestic Network

**TAKISAWA Machine Tool Co., Ltd.**

**Representative Office**

- **Japan**
  - Osaka Office: +81 (0)6-6346-5015

- **Other Countries**
  - Please contact your nearest sales representatives.

---

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Knowledge of G-codes is not required to make programs. Anybody can make the Program easily.

Utilizing G code knowledge, TiwaP-I creates a program of complicated processes.

Further, TiwaP-I enables the interactive program to perform machining in cooperation with an NC program.

1. NC program “can be called (set) in the interactive (TiwaP-1) program.
2. NC program converted into NC statements by interactive operation (TiwaP-1) can be called (set) in the NC program edited manually.

*1: File name to which NC programs edited manually or created by CAD/CAM have been registered.
*2: O number call.

Further, TiwaP-I enables the interactive program to perform machining in cooperation with an NC program.

- File name to which NC programs edited manually or created by CAD/CAM have been registered.
- O number call.

### Easy to See

Takisawa's original "Process fold/unfold function" and lucid icons improve visibility. Operator-friendly and easy to see screen is realized.

- Interactive Program Edit Screen
- NC Program Edit Screen

### Easy to Use

During preparing Program, "Reliable Guide Function" provides support.

- "Reliable Guide Function" on the operating table.
- "Tag" will be arranged in the optimum order automatically by interacting with the machine and selecting the required program.
- It is easy for beginners to use interactive data inputting with guiding figures & icons. Symbolic soft key on the exclusive window helps inputting complicated arbitrary shapes.

- By "Reliable Guide Function" Process Tag will be made automatically.

### Speed Up

When inserting a new processing data through interactivity, there is much less items to enter due to Takisawa Standard Initial Value & Tooling/Material Data.

- "Reliable Guide Function"
- Process Tag will be made automatically

### Stored Number of Program

Available for max 999 Process on each program (incl. last process) and available max 99 Cutting Configurations.

### Machining Simulation

- Tool passes can be certainly checked before test cuttings by "3D Animation" or "Tool Tracking".

- 3D Animated Cartoon
- Tool Trace display

- Takisawa's original "Process fold/unfold function" and lucid icons improve visibility. Operator-friendly and easy to see screen is realized.

- 3D Animated Cartoon
- Tool Trace display

- Takisawa Standard Initial Value can be customized with your know-how.

- "Reliable Guide Function"
- Cutting parameters (cutting speed, feed rate, and depth of cut) are automatically selected and suggested to the operator by the combination of work piece and the material of inserted tool.
- It is a great assist for set-up programs.

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- Cutting parameters (cutting speed, feed rate, and depth of cut) are automatically selected and suggested to the operator by the combination of work piece and the material of inserted tool.
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### NC Unit Specifications

**Composition**

<table>
<thead>
<tr>
<th>Control Axes</th>
<th>Operation Panel</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
</tbody>
</table>

**Control Axes**

- Number of Control Axes: 6
- Simultaneous Number of Control Axes: 4

**Operation Panel**

- 8.4" Color LCD/MDI
- MMI/Hand Control
- RASU 3-axis/4-axis
- External Data I/O

**Software**

- FANUC 0i-TD
- Specifications - Contents

### Main Function List

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
</tbody>
</table>

**Control Axis**

- Linear/Rotation Axes
- Linear/Rotation Axes

**Operation Panel**

- Jogging Function
- Absolute/Incremental Command
- Tool Change
- Drive Mode
- Spindle Speed
- Spindle Operation
- Coolant Operation

**Software**

- Specifications - Contents
- FANUC 0i-TD
- Specifications - Contents

### Specifications

- Model Specifications
- Functional Specifications
- Control Specifications
- Accessory Specifications
- Optional Accessory Specifications

### Accessories

- Cables
- Cables
- Cables
- Cables

### Optional Accessory Specifications

- Accessories
- Accessories
- Accessories
- Accessories

### Measurement Monitor 3

- Measurement Monitor 3
- Measurement Monitor 3
- Measurement Monitor 3
- Measurement Monitor 3
Japanese laws prohibit this machine from being used to develop or manufacture “weapons of mass destruction” or “conventional arms”, as well as from being used to process parts for them. Export of the product may require the permission of governmental authorities of the country from where the product is exported. Should you wish to resell, transfer or export the product, please notify Takisawa Machine Tool Co., Ltd. or our distributor in advance.

*The appearance, specifications, and relevant software of the product are subject to change for improvement without notice.

*Please make an inquiry to our sales representatives for details of the product.