TORNOS PROVIDES SOLUTIONS TO HIGH-TECH INDUSTRIES SPECIALISING IN THE FOLLOWING SECTORS

AUTOMOTIVE

MEDICAL

 ELECTRONICS

MICROMECHANICS
SWISS ST 26 IN A FEW WORDS
High performance Swiss type lathe

Productivity
- Up to 3 tools cutting simultaneously.
- The most dynamic spindles in its class.
- Balanced turning and milling operations are possible.

Performance
- Up to 25.4 mm capacity (with bar prep).
- The most powerful spindles in its class.
- Designed to work with or without guide bush.
- Unique modular tooling system.
- Up to 37 tools.

Accessibility
- Large work zone allowing easy access to the tools from both sides of the machine.
- Ergonomics designed with the operator in mind.
- Open design for excellent chip evacuation into the large chip container.

Machining example Swiss ST 26
Material: Al Eco62Sn 9 Ø 22 mm
Production: 43.2 sec/part
Double slide allowing simultaneous drilling in main operation.
Face burnished in counter operations.
SWISS ST 26

High performance Swiss type lathe with modular tooling concept

Performance
- 23 mm capacity, up to 25.4 mm with bar end preparation.
- Up to 37 tools.
- Up to 20 rotating tools.
- Possible to work with or without guide bush.
- The 2 independant platens add flexibility and machinability for operations such as milling, slotting or balanced turning.
- The most powerful and dynamic main spindle and counter spindle in its class.
- Wide selection of attachments and accessories.

Productivity
- 2 completely independent tool systems allows optimisation of machining in main operations.
- 7 linear axes and 2 C axes.
- Highly dynamic spindles: 0 to 10000 rpm in only 0.9 seconds.
Accessibility
- Large machining area accessible from both sides of the machine.
- Ergonomic design.
- Control panel is mounted on a swivelling arm for easy access.
- Unique modular tooling system.

Autonomy
- Open design for excellent chip evacuation.
- Large coolant tank.
- Large chip container allowing for extended running.
- Automatic central lubricating system.
New motor spindle technology
- 100% Swiss design and manufacture by Tornos in Moutier, Switzerland.
- Identical main spindle and counter spindle with high performance synchronous motors.
- Heat exchanger keeps the spindles thermally stable assuring high precision.
- Powered spindles offer high output and high torque.
- Reduction in idle time (stopping, indexing, acceleration, deceleration), from 0 to 10,000 rpm in 0.9 sec.
- Reduced noise and maintenance.
- Best power in its class.

Working with or without a guide bush
- Possible to switch between the guide-bush type and guide-bushless type, the most suitable system for the part can be chosen.
- Quick change over in less than 30 min.
- Lower quality bar material required and shorter bar end (short bar remnant).

«Done in one»
Finish the part! This has been the challenge for Tornos engineers since the company was founded.
We have constantly introduced innovative machining solutions in order to avoid secondary operations.

For example:
- Internal and external thread whirling
- Gear hobbing
- Torx milling
- Deep boring
- Angled milling for main operations and counter operations
- Thread cutting
- Thread rolling
- Stamping
- Roller burnishing
- Micro milling with high frequency spindles
Ergonomics
The wide machining area enables the operator to access the tools easily for short setup times. User friendly thanks to the latest Fanuc control, embedded in an ergonomic panel, and mounted on a swivelling arm that can be accessed from both sides of the machine.

Un-manned operation
To improve the machine's profitability, the Swiss ST 26 has been designed to run unattended for long periods of time with no human intervention.
Swiss ST 26 is available in 3 packages all feature:

- Unique modular tooling arrangements allow machine to accommodate value added operations like polygon turning, thread whirling, deep drilling, etc.
- 7 axes with 2 independent tool platens, 37 tool positions.
- Up to 20 positions can accept rotating tools.
- Every Swiss ST package includes the C axis in main (C1) and counter operations (C4).

[Images of tooling arrangements and tool holders]

- Tool platen 1
- Tool platen 2
- Counter operations
- Counter spindle

- Thread whirling unit
  max. 5700 min⁻¹
  angle ±15°
  Ø max. 10 mm

- Polygon milling unit
  max. 6000 min⁻¹
  polygon tool Ø 80 mm
THE GUARANTEE OF HIGH FLEXIBILITY

- Tool holder for 5 turning tools
- Tool holder with 2 end working positions
- Drill/milling attachment with spindle for ESX 20 (15 mm offset)
- Drill/milling attachment with ESX 20 collet (6 mm offset)
- Milling attachment (63 mm saw)
- Base with 3 bores to accept steady holders for work in counter operations
- Offset tool block with 8 bores to accept holders for work in main (4x) and counter operations (8x)
- Tool block with 2 bores to accept drill holders for deep drilling. Mounts on the left side of the counter spindle. Maximum drilling length: 160 mm. Fitted with connection for high pressure coolant.
**SWISS ST 26**

Swiss type lathe with 7 linear axes

<table>
<thead>
<tr>
<th>Axis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1</td>
<td>Sliding headstock</td>
</tr>
<tr>
<td>C1</td>
<td>Sliding headstock C axis</td>
</tr>
<tr>
<td>S1</td>
<td>Main spindle</td>
</tr>
<tr>
<td>X1 / Y1</td>
<td>Platen 1</td>
</tr>
<tr>
<td>S11</td>
<td>Rotating spindle on guide bush</td>
</tr>
<tr>
<td>X2 / Y2</td>
<td>Platen 2</td>
</tr>
<tr>
<td>S21</td>
<td>Rotating spindle on guide bush</td>
</tr>
<tr>
<td>X4 / Z4</td>
<td>Counter spindle</td>
</tr>
<tr>
<td>C4</td>
<td>Counter spindle C axis</td>
</tr>
<tr>
<td>S21</td>
<td>Rotating spindle on counter operations</td>
</tr>
<tr>
<td>S4</td>
<td>Counter spindle</td>
</tr>
<tr>
<td>S41</td>
<td>Rotating spindle on the counter spindle slide</td>
</tr>
</tbody>
</table>

[Diagram showing the layout of the machine with axes and components labeled]

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**Swiss ST 26**
## TECHNICAL SPECIFICATIONS

### Main Spindle (headstock) (Z1 / S1 / C1)
- Maximum bar capacity: 23 (25.4) mm
- Standard part length with a rotating guide bushing: 220 mm
- Max. rpm of the spindle: 10,000 rpm
- Spindle output: 9,5 (11) kW
- Max constant torque: 17 Nm
- Spindle stop or start time from 0 to 10,000 rpm: 0,9 sec
- Drilling capacity in free machining steel: 10 mm
- Tapping capacity in free machining steel: M10

### Tool platen (X1 / Y1 / S2) (X2 / Y2)
- Number of tool positions in main operations: 18
- Cross section of the turning tools: 12 x 12 mm or ½ x ½
- Number of positions for rotating tools: 8
- Max rpm of the rotating tools: 6,000 rpm
- Output of the rotating tools: 1 kW
- Drilling capacity in free machining steel: 8 mm
- Tapping capacity in free machining steel: M6

### Counter spindle (X4 / Z4 / S4 / C4)
- Maximum bar capacity: 23 (25.4) mm
- Max. rpm of the spindle: 0 to 10,000 t / min
- Spindle output: 9,5 (11) kW
- Max constant torque: 17 Nm
- Spindle stop or start time from 0 to 10,000 rpm: 0,9 sec
- Drilling capacity in free machining steel: 10 mm
- Tapping capacity in free machining steel: M10
- Maximum number of tools: 37
- Breakdown of tools between main and counter operations: 20 / 17
- Type of control: Fanuc 31i-B
- Feedback of the motor-encoder axes: Absolute pulse encoders
- Type of motors (axes and spindles): Synchronous (AC)
- Resolution of the axes: 0.1 µm

## NC SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC unit</td>
<td>Fanuc 31i-B</td>
</tr>
<tr>
<td>Controllable axes</td>
<td>X1, Z1, Y1, X2, Y2, C1, X4 (X8), Z4, C4</td>
</tr>
<tr>
<td>Least input increment</td>
<td>0,0001 mm</td>
</tr>
<tr>
<td>Interpolation method</td>
<td>Linear / circular</td>
</tr>
<tr>
<td>Rapid traverse rate</td>
<td>35 m / min Y1, Y2; 30 m / min Z1, X4, Z4; 20 m / min X1, X2</td>
</tr>
<tr>
<td>Cutting feed rate</td>
<td>1 to 6,000 mm / min</td>
</tr>
<tr>
<td>Feed rate override</td>
<td>0 to 150%, 10% step</td>
</tr>
<tr>
<td>No. of tool offsets</td>
<td>100</td>
</tr>
<tr>
<td>LCD/MDI</td>
<td>10,4&quot; Color LCD</td>
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<tr>
<td>Part program storage size</td>
<td>1 Mb</td>
</tr>
</tbody>
</table>
GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. length mm</td>
<td>2778</td>
</tr>
<tr>
<td>Max. width mm</td>
<td>1200</td>
</tr>
<tr>
<td>Height mm</td>
<td>2304</td>
</tr>
<tr>
<td>Weight kg</td>
<td>3720</td>
</tr>
<tr>
<td>Coolant tank capacity l</td>
<td>220 (+80)</td>
</tr>
<tr>
<td>Power of the coolant pump W</td>
<td>1000</td>
</tr>
<tr>
<td>Max. pressure bars</td>
<td>3</td>
</tr>
<tr>
<td>Max output of the coolant pump l / min</td>
<td>80</td>
</tr>
<tr>
<td>Colours: RAL 9006 grey, RAL 9011 black</td>
<td></td>
</tr>
</tbody>
</table>

BASE MACHINE EQUIPMENT

- Rotating guide bushing
- S1 motorisation for rotating tools on the front tool platen
- S2 motorisation for rotating tools on the rear tool platen
- S4 motorisation for the rotating tools in counter operations
- Axes C1 + C4
- Pneumatic part ejector + cleaning of the counter spindle collet with coolant
- Central lubrication system
- 3 colors light tower
- Coolant pump with self cleaning filter
- High pressure pump, 20 bars – 20 l / min
- High pressure pump, 60 bars – 20 l / min option
- Timer to pre-heat the coolant
- Interface for a fire-fighting device option

MAIN STANDARD NC FUNCTIONS

- Ethernet
- USB
- Rigid tapping
- Constant surface speed control
- Spindle synchronous control
- Direct drawing dimension (DDD)
- Custom macro
- Chamfering/corner R
- Inch/metric conversion
- Multiple repetitive cycles
- Tool radius – Tool nose radius compensation
- Tool geometry / wear compensation
- Background editing
- Manual handle retrace
- Canned cycle drilling
- Run time/parts number display
WHICHEVER SWISS ST YOU CHOOSE:
YOU ALWAYS CHOOSE SWISS MADE QUALITY

**STARTER PACK**

**Main operation**
- Tool holder for 5 turning tools
- Tool holder for 3 turning tools
- Offset tool block with 8 bores to accept holders for work in main (4x) and counter operations (8x)
- 3 drill/milling attachments with ESX 20 collet
- Tool block with 2 bores to accept drill holders for deep drilling; mounts on the left side of the counter spindle

**Counter operation**
- Tool holder for 3 turning tools
- 2 tool holders for end working positions with ESX 20 collet

**ADVANCED PACK**

**Main operation**
- Tool holder for 5 turning tools
- Tool holder for 3 turning tools
- Offset tool block with 8 bores to accept holders for work in main (4x) and counter operations (8x)
- 5 drill/milling attachments with ESX 20 collet
- Tool block with 2 bores to accept drill holders for deep drilling; mounts on the left side of the counter spindle

**Counter operation**
- Tool holder for 3 turning tools
- 2 tool holders for end working positions with ESX 20 collets
- 5 drill/milling attachments with ESX 20 collets

**MEDTECH PACK**

**Main operation**
- Tool holder for 5 turning tools
- Tool holder for 3 turning tools
- Offset tool block with 8 bores to accept holders for work in main (4x) and counter operations (8x)
- 3 drill/milling attachments with ESX 20 collet
- 1 thread whirling unit
- Tool block with 2 bores to accept drill holders for deep drilling; mounts on the left side of the counter spindle

**Counter operation**
- Tool holder for 3 turning tools
- 2 tool holders for end working positions with ESX 20 collets
- 5 drill/milling attachments with ESX 20 collets
SWISS ST 26 ADVANCED PACK

SWISS ST 26 MEDTECH PACK
Conforms to the European CE/CEM Safety Standards
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