Accessories	SMC-5	SMC-7
Item		
1. Full Enclosure Guard with Top Cover Sheet Metal	●	●
2. Cooling System Unit	●	●
3. Spindle Air Blow Device	●	●
4. Work Light (Single)	●	●
5. Work Light (Double)	○	○
6. Leveling Bolts and Pads	●	●
7. Tool Kit	●	●
8. Operation & Maintenance Manual (Including Electrical Diagrams)	●	●
9. Machining Completion Indicator Light	●	●
10. Inverter-Driven Turret-Type 14-Tool Magazine	●	●
11. Servo-Driven 14-Tool Turret Magazine	○	○
12. Servo-Driven 21-Tool Turret Magazine	○	○
13. Table Side Air Blow Device	●	●
14. Spindle Air Curtain	●	●
15. Chip Removal Device	●	●
16. 10,000 rpm Direct-Drive Spindle (FANUC)	●	●
17. 12,000 rpm Direct-Drive Spindle (Mitsubishi)	●	●
18. 15,000 rpm Direct-Drive Spindle	○	○
19. 20,000 rpm Direct-Drive Spindle (Low-Inertia Motor, Mitsubishi)	○	○
20. 24,000 rpm Direct-Drive Spindle	○	○
21. Column Height Extension: 150 mm / 300 mm	○	○
22. Automatic Tool Measurement System	○	○
23. Automatic Workpiece Measurement System	○	○
24. Tool Breakage Detection System	○	○
25. NC Rotary Table	○	○
26. Oil-Temperature Spindle Chiller (Standard for ≥15,000 rpm)	○	○
27. Oil Mist Cooling System	○	○
28. Oil Mist Collector	○	○
29. Automatic Power-Off Function	○	○
30. Through-Spindle Coolant System (20 bar)	○	○
31. Coolant Gun	○	○
32. Air Gun	○	○
33. RS-232 Interface	○	○
34. Electrical Cabinet Heat Exchanger	○	○
35. Pre-Tensioned Ballscrews on 3 Aixs	○	○

Standard ● Optional ○

Hartford

Vertical Machining Center

SMC Series

SMC-5

SMC-7

Hartford

Hartrol · Smartcenter · Robocell

Only High-Quality Intelligent Machines

SHE HONG INDUSTRIAL CO., LTD.

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CAT.No.：20260113 - E13

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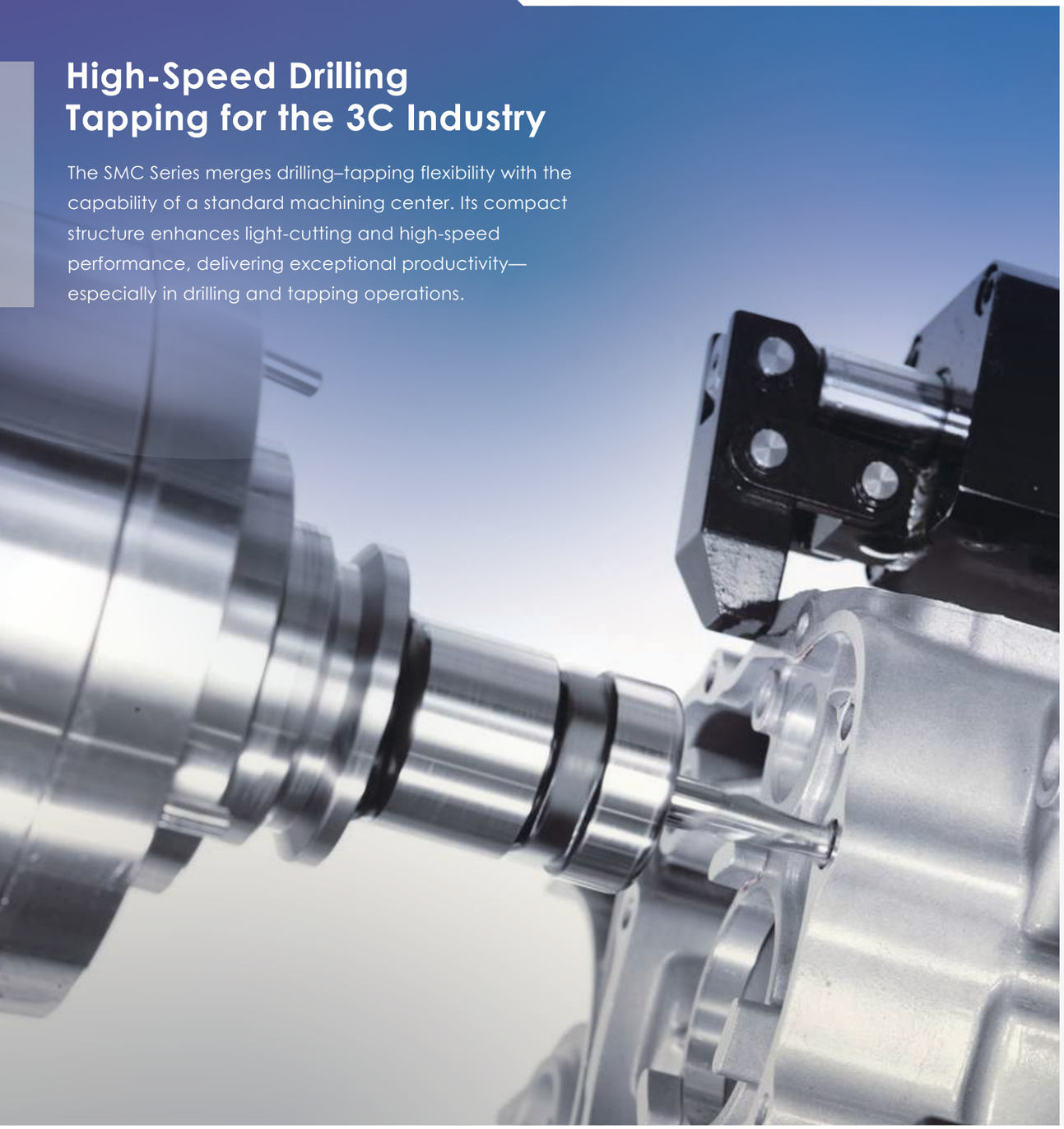
Website

01 Workpiece Machining Applications

High-Speed Drilling Tapping for the 3C Industry

The SMC Series merges drilling–tapping flexibility with the capability of a standard machining center. Its compact structure enhances light-cutting and high-speed performance, delivering exceptional productivity—especially in drilling and tapping operations.



1

2

3

4

1	2
3	4

Precision Machinery

1 Hardware parts

Motorcycle

2 Engine block

3C Electronics

3 Heatsink parts

Bicycle

4 Bicycle parts

02 Machine Structure Features

Multi-Function Fast Tool Change Mechanism

1. **Standard :** 14-tool inverter-type ATC
2. **Optional :** 14 / 21-tool servo-type ATC

Z-axis Rapid Traverse : 60m/min

Significantly reduces non-cutting time and boosts overall productivity. The X/Y/Z axis accelerations reach **1.4 / 1.4 / 1.2 G**, fully meeting the demands of high-productivity operations.

Reduced Footprint Design

1. Compact full-enclosure design reduces the footprint by **23%**.
2. Modular CTS design requires no additional space and allows easier maintenance and servicing.

Eco-Friendly, Energy-Saving, Low-CarbonGrease Lubrication Design opt.

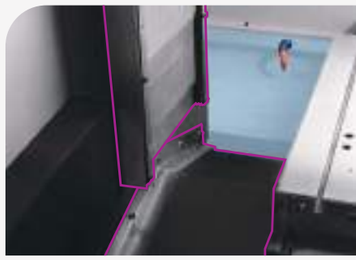
The feed axis uses low-amount grease lubrication to meet environmental rules, extend grease and cutting fluid life, reduce maintenance costs, avoid waste oil problems, and ensure stable operation and good product quality.

Z-Axis Servo Direct-Drive with Counterweight-Free Design

The Z-axis uses a servo direct-drive ballscrew, eliminating belt backlash and lag. With a counterweight-free design, it achieves faster response and higher control accuracy.

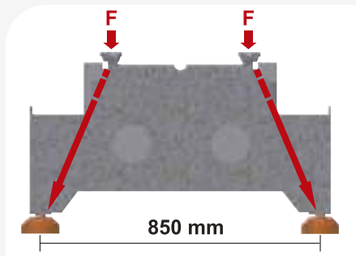
Y、Z-Axis Integrated Metal Way Cover Design

It effectively prevents coolant intrusion, protecting the ballscrews and linear guideways from damage. It is designed for high-speed movement and offers low noise and vibration-free operation.



Low-Gravity Center Base Design

Made of Meehanite cast iron for excellent material stability, the structure features a wide-span design that greatly reduces vibration during machining.



5 YEAR Warranty on Guideways for All Models

Warranty coverage will not apply under following conditions :

1.Improper operation(collision)

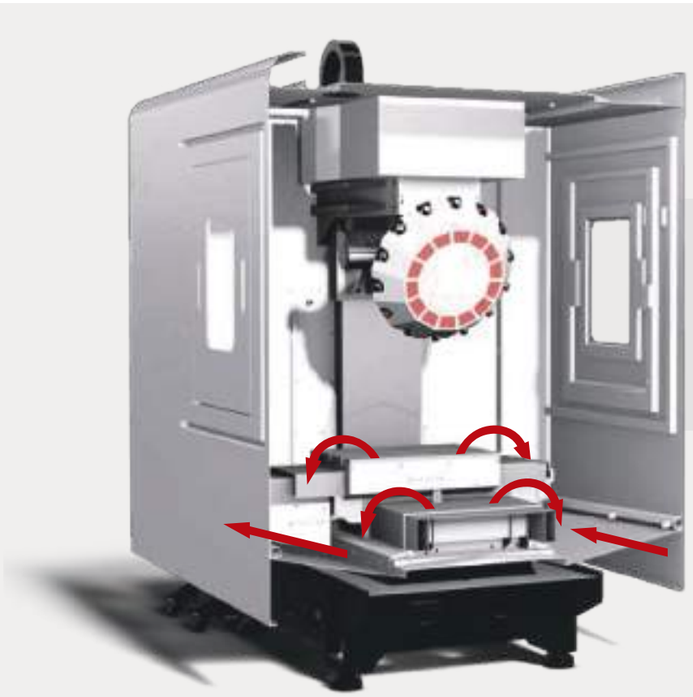
2.Lack of regular cleaningof accumulated debris causing damage to the linear rails &carriages.

02 Machine Structure Features

Turret-Type Tool Changer

Servo-Driven

The turret-type tool magazine offers flexible storage options of 14 or 21 tools. Paired with a non-arm tool changer, it delivers ultra-fast tool change performance—
only 1.5sec for 14 tools and 1.91sec for 21 tools.

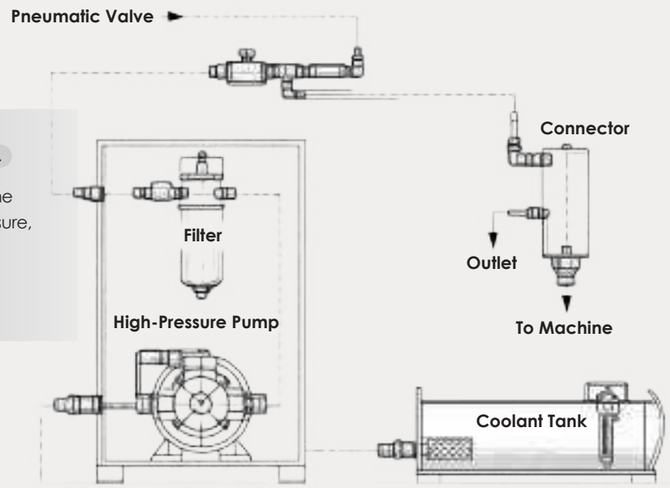


Bottom Chip-Flushing Design

To improve accuracy and minimize thermal influence, the design allows chips to flow smoothly into the collection trough, keeping the workpiece and tool at a stable temperature. Combined with the standard enclosure top cover, it effectively reduces oil mist contamination.

20 BAR Through-Spindle Coolant opt.

Comprising a filter and a high-pressure coolant pump, the system delivers coolant to the cutting edge at high pressure, extending tool life. It is ideal for high-speed machining, deep-hole drilling, and pocket milling. The maximum coolant pressure is measured at the pump outlet.



03 Smart Factory / Intelligent Automation

One unit capable of connectingup to 10 or 20 machines

Smart i-Factory System with Superbox (Opt.)

Through i-Factory, all machinery and equipment in the factory can be connected, and the machine connections are no longer limited to Hartford. Machines from other manufacturers can also be connected for real-time visualization and management. The system is composed of five key components: real-time monitoring, production planning, alert notifications, data analysis, and remote connectivity, allowing you to move away from traditional management models and embrace a simpler and more convenient approach to factory management.

Tailored one-to-many automation planning

Intelligent Automated Production Line Unit (Opt.)

Customizing an automated factory just for you,
effectively reducing costs and enhancing competitiveness.

Easy to get started
Hartford Robocell provides you a professional robot training and rich automation experience, to let you quickly learn and easily operate your automation systems.

Quality control monitoring
Automation systems have to pass all the strict Quality Control tests at every stage like design, assembly, testing, final inspection and shipment, complete quality control processes for all the products.

Professional analysis
Robocell Machining optimization service, to let you be on the top by using professional machining methods.

Design

Testing

Product inspection

Detailed specifications please contact our sales staff.

Hartrol Premium

Hartford Smartcenter APPS

1 Automation & Smart Factory

- Autopilot V2 Package
- Real-time Monitor Package
- Efficiency Improvement Package
- Smart Lubrication System
- Machine Play – Smartphone Remote Operation
- Wireless Network Function (Wi-Fi)

2 Monitoring & Energy Management

- Real-time Monitor Package (CCD Monitor / IP Camera)
- Energy Monitoring

3 Tool Protection & Machining Stability

- Tool Protection Suite (TPS)
- AFC – Automatic Feed Control
- Rigid Tapping Automatic Learning

4 CNC Control & Operation Enhancement

- Handwheel Simulation Mode
- HP Level R1–R10 Parameter Package

5 High-Speed / High-Accuracy Machining

- SSS High-speed High-accuracy Control
- High-speed High-accuracy Control III (G5P20000)
- High Speed Milling

6 Programming & User Interface

- Conversational Programming (HCP)

24 HR

Online Update System

Keep your operating system in optimal condition and stay up to date with the latest features from Hartford.

Hartford ZDT

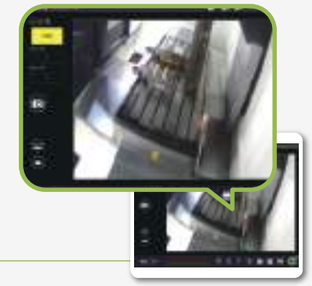
Early warning before machine failure helps reduce unexpected downtime, minimizing productivity loss and cost.

Controller Support :

The SMC series supports only the Hartford Hartrol Premium 3 controller and is not compatible with other controller specifications.

CCD Monitor Opt.

The high-resolution CCD system enables safe, real-time monitoring and prevents door-opening when visibility is low. It offers photo capture and 30-second alarm playback for quick issue review, while remote parameter checks can reduce error costs by up to 20%.



Direct Access to Electrical and Global Service Engineers Opt.

It provides secure online support and alarm analysis, with new login credentials each session. The system sends automatic alerts and enables faster troubleshooting, reducing downtime and improving alarm response by 20%.

Position Opt.

When performing workpiece measurement with Hartrol Premium and Fanuc 15" IPC, operators can simply enter values through the intuitive guided interface—no need to memorize complex measurement commands, making the process effortless.

Tool Database Opt.

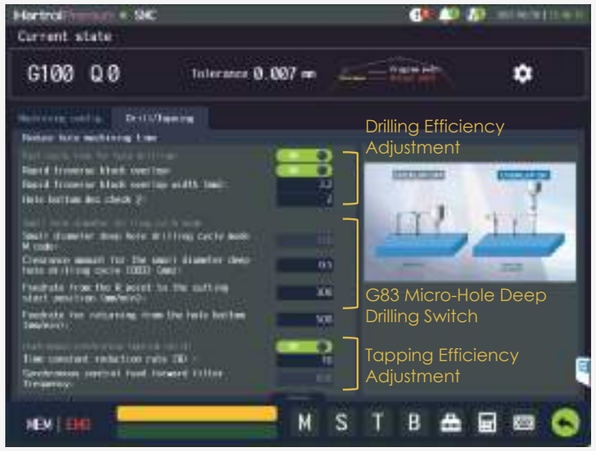
The system automatically activates the nozzle, coolant, and air blow based on the tool table, with no extra programming required. It also provides protection features by limiting spindle speed for probes and allowing only CTS-compatible tool holders to enable the CTS circuit, preventing line damage.

Automatically enhance tapping rigidity and machining efficiency

Smart Machining Condition Selection (Opt.)

Users can choose the required parameter set directly in the program based on machining needs, without switching back to the parameter page. After optimization, drilling efficiency improved by 8.2% and rigid tapping efficiency by 8.4%.

10 Parameter Sets for Machining	
G100Q1	Speed Priority (Level 100%)
G100Q2	Speed Priority (Level 90%)
G100Q3	Speed Priority (Level 80%)
G100Q4	Accuracy Priority (Level 100%)
G100Q5	Accuracy Priority (Level 90%)
G100Q6	Accuracy Priority (Level 80%)
G100Q7	Smoothness Level (Level 100%)
G100Q8	Smoothness Level (Level 90%)
G100Q9	Smoothness Level (Level 80%)
G100Q10	Load Priority



■ **Fanuc G183 Special Peck Drilling Cycle Test**

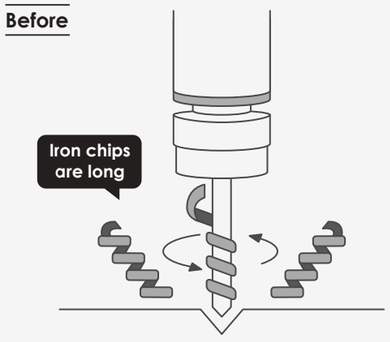
Drilling Conditions	Before (G83)	After (G183)	Efficiency Improvement
Fanuc G183 Total Holes: 5 Total Drilling Depth: 9 mm Pecking Depth per Cycle: 0.6 mm Feed Rate: 150 mm/min	142.592 (sec)	84.869 (sec)	40.5%
Total Holes: 3 Total Drilling Depth: 7 mm Pecking Depth per Cycle: 0.3 mm Feed Rate: 150 mm/min	115.808 (sec)	57.728 (sec)	50.2%

Solve the problem of chips wrapping around your cutting tool

Drilling Chip Breaker Feature (Opt.)

In deep-hole machining, the lack of effective chip-breaking can lead to issues like chips wrapping around the tool, scratching the workpiece, and making chips cleaning difficult. With Hartford's exclusive chips breaking for drilling function, chips are finely broken down, preventing them from wrapping around the tool. This ensures the workpiece remains intact, chips are easily cleaned, productivity is increased.

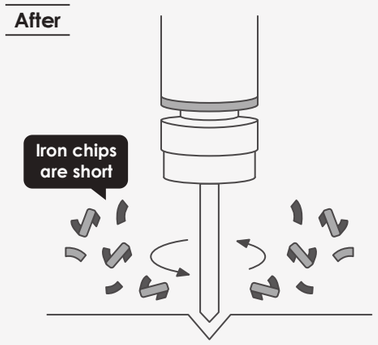
Before



▲ **Function Off**

Long iron chips cannot be effectively broken into manageable chips.

After



▲ **Function On**

Effectively breaks long chips into short chips for improved chip control.

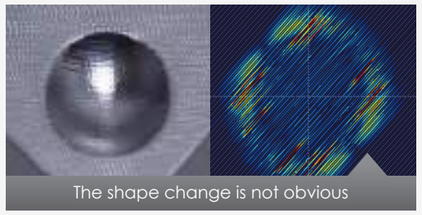
Eliminate interference and mechanical collision issues during the machining process

Digital Transformation (Opt.)

Digital Twin-NCVS software combines workpiece CAD, tools, and machine parameters to simulate the machining process in advance. It accurately reflects real conditions, going beyond traditional CAD/CAM by including machine data. The system verifies CNC parameter settings, analyzes part geometry and machine travel limits, and ensures alignment between programmed data and actual machine performance.. This helps prevent interference and collisions, ensuring safe, stable machining and better productivity.

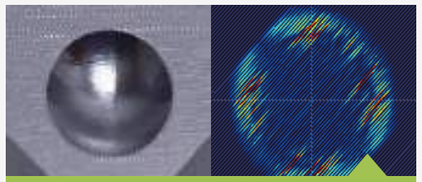
▪ Simulation vs. Actual Machining Results

OFF



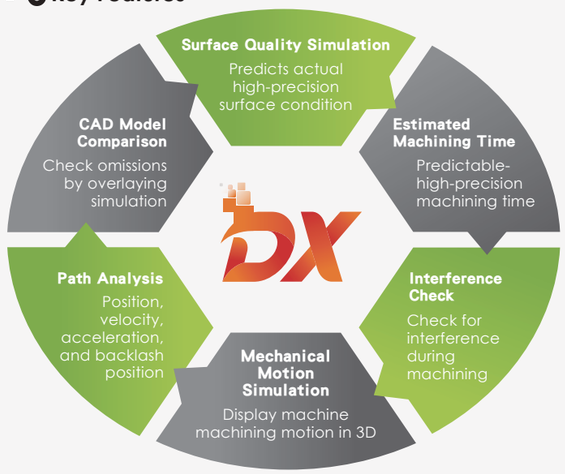
The shape change is not obvious

NO



The shape can be clearly identified

▪ 6 Key Features



Eco-Friendly Solutions for Energy Management

ECO and Energy Monitoring Dashboard (Opt.)

- All lighting equipment is LED
- FEM analysis for structural lightweight design

Energy Monitoring Dashboard

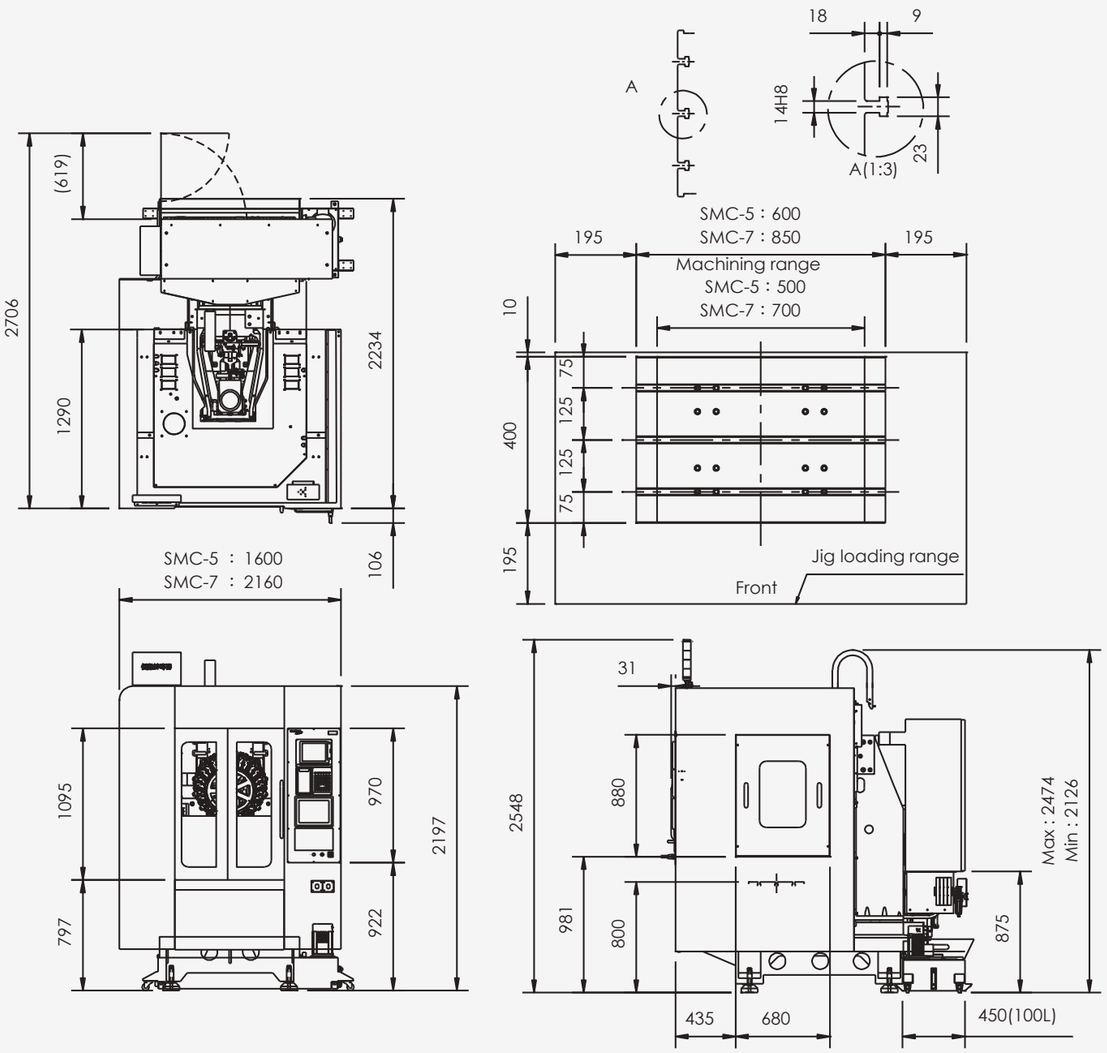
Real-time monitoring of energy consumption for each electrical component of the machine, with the ability to query historical energy consumption data and generate reports.

Eco Mode

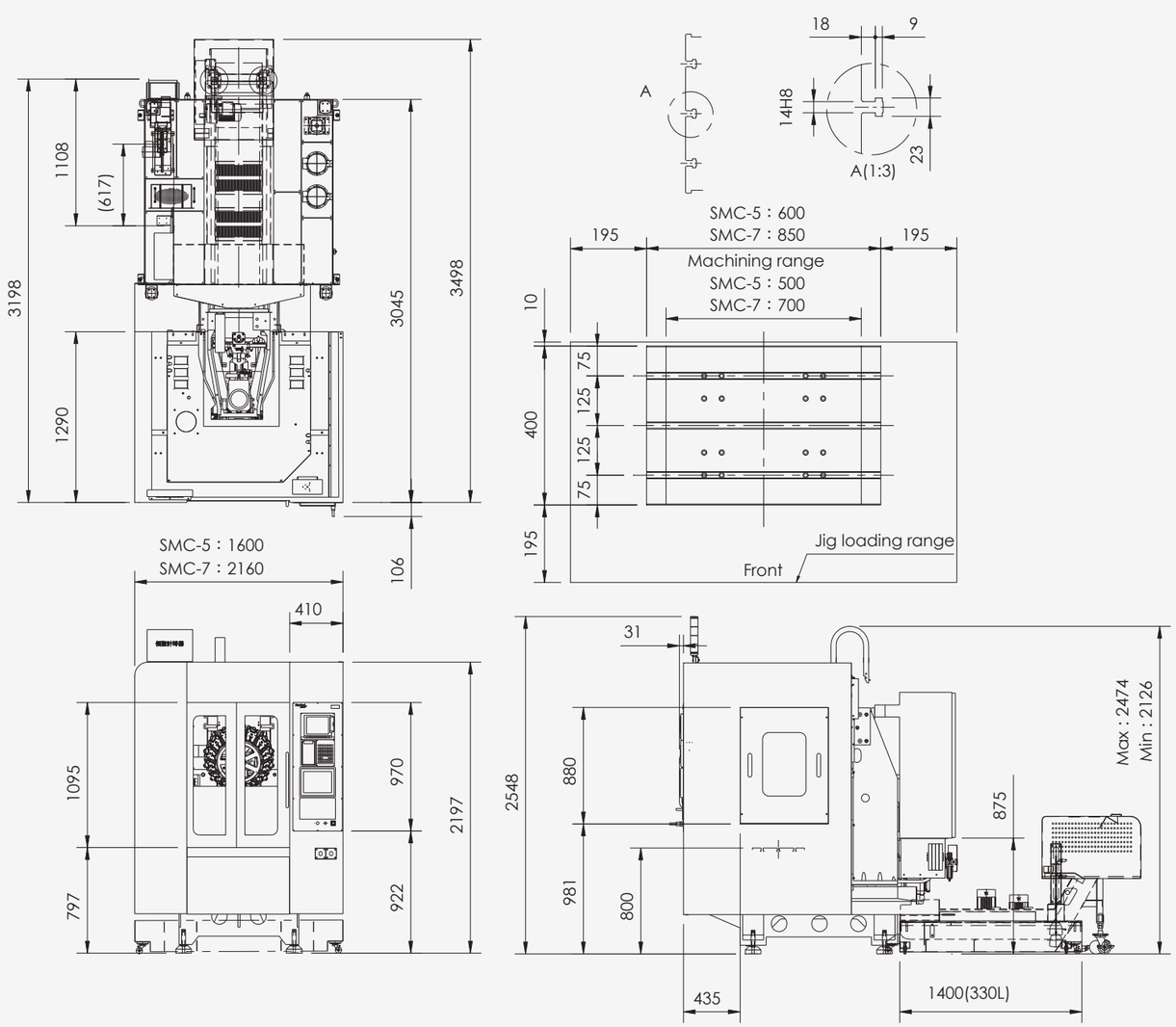
Helps you control five peripheral devices, including the hydraulic motor, oil cooler, mist collector, work lights, and chip conveyor, to prevent unnecessary energy consumption when the machine is idle.

05 Machine Dimension

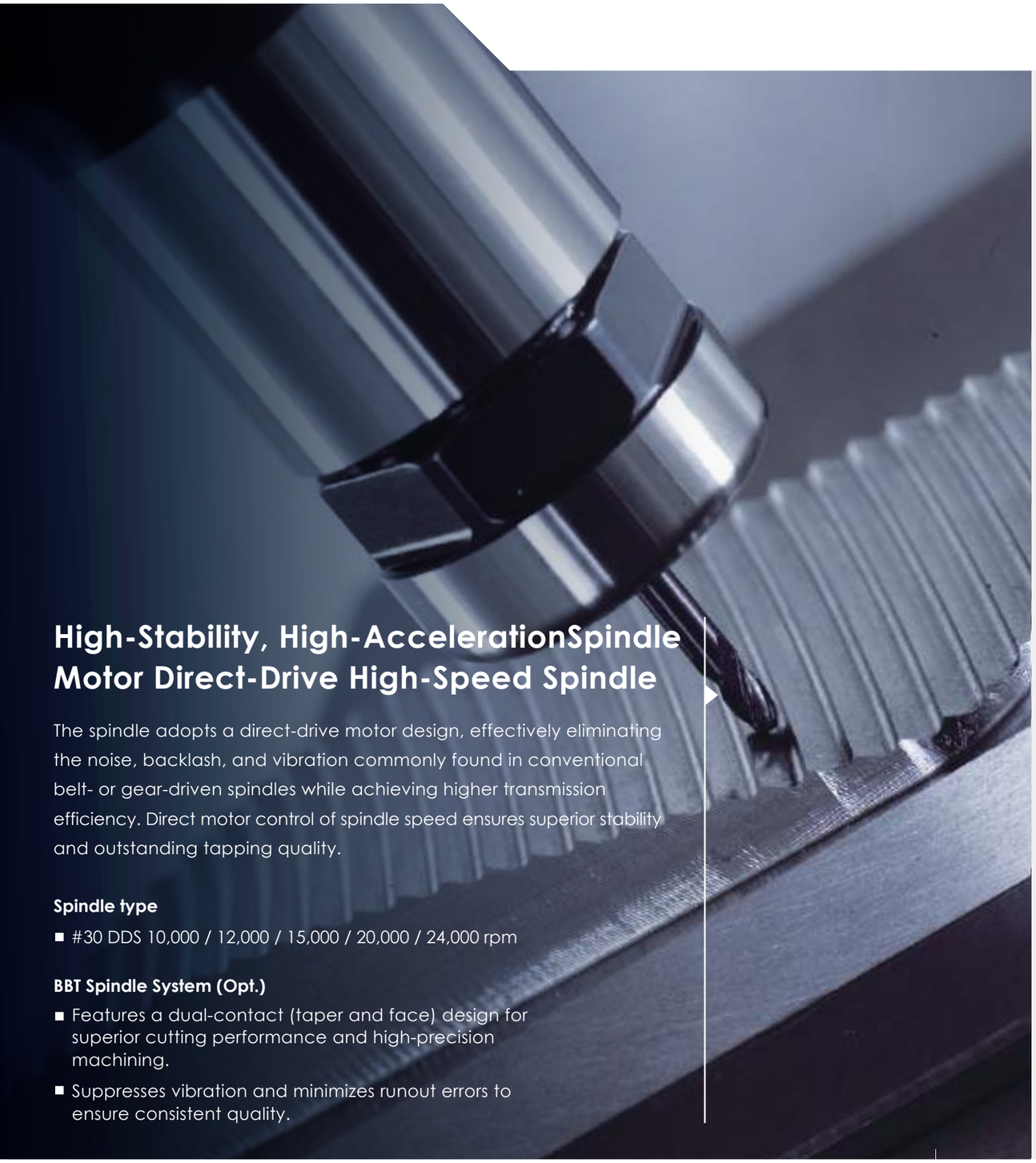
■ Chip collecting tank type



■ Chip Conveyor tank type



06 Spindle Design Package



High-Stability, High-AccelerationSpindle Motor Direct-Drive High-Speed Spindle

The spindle adopts a direct-drive motor design, effectively eliminating the noise, backlash, and vibration commonly found in conventional belt- or gear-driven spindles while achieving higher transmission efficiency. Direct motor control of spindle speed ensures superior stability and outstanding tapping quality.

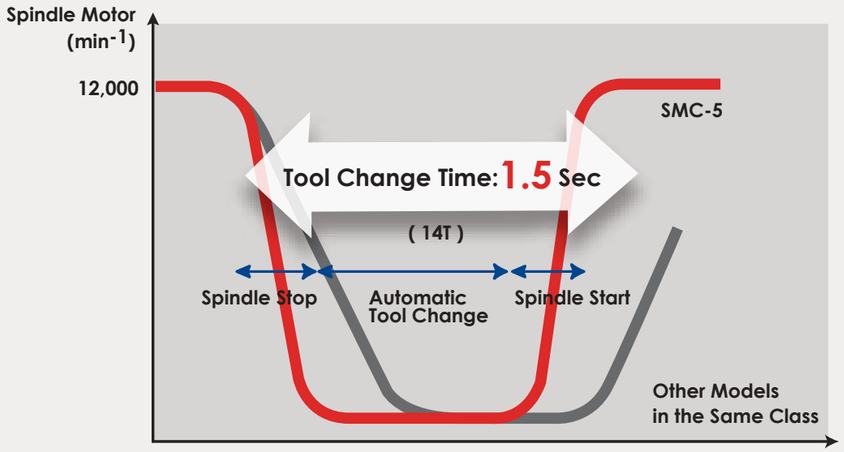
Spindle type

- #30 DDS 10,000 / 12,000 / 15,000 / 20,000 / 24,000 rpm

BBT Spindle System (Opt.)

- Features a dual-contact (taper and face) design for superior cutting performance and high-precision machining.
- Suppresses vibration and minimizes runout errors to ensure consistent quality.

Verification Items	Measured Data
Rapid Traverse Speed	50m/min
X-axis Acceleration	1.4G
Y-axis Acceleration	1.4G
Z-axis Acceleration	1.2G
Tool Change Time	1.5 sec (14T)/1.91sec(21T) (T to T)
Acceleration Time	1.5 sec (S0→S12000)
Deceleration Time	2.2 sec (S12000+SO)
Spindle Orientation	3.9 sec (S12000→m19)



Mitsubishi M80 / M800 Controller ▲

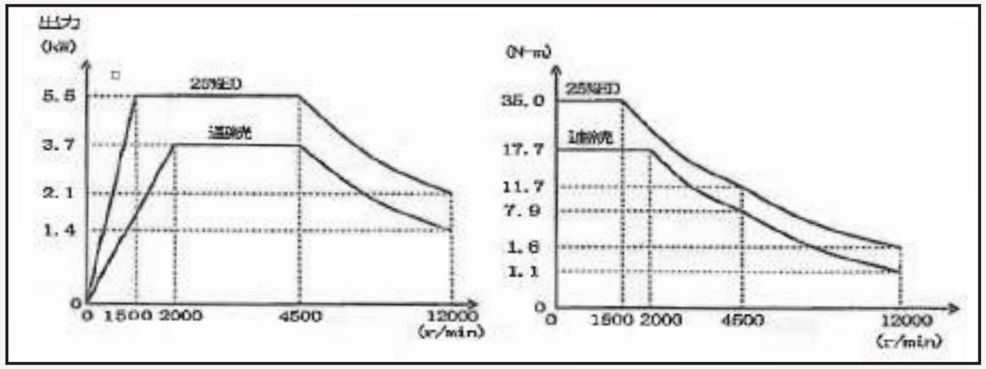
Disclaimer / Performance Note

Disclaimer regarding Performance Data
All test data contained in this catalog was produced under controlled, rigorous conditions in a specialized facility.
Actual results may vary depending on specific operating conditions, environmental factors, and non-ideal testing parameters.

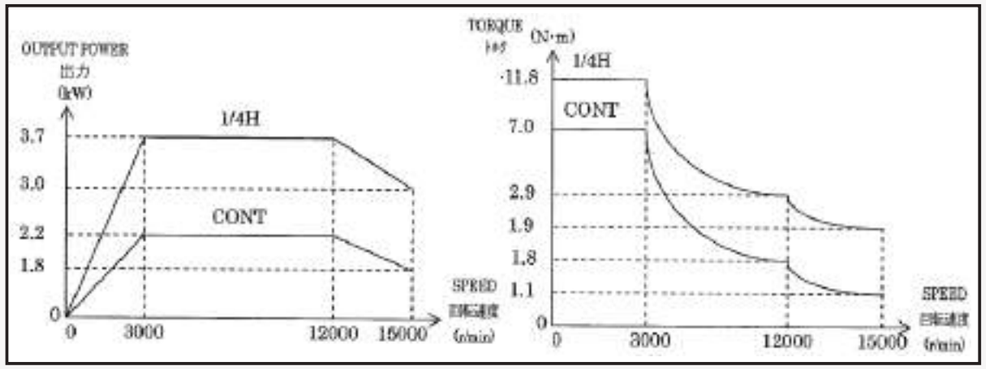
07 Spindle Torque Diagrams

Spindle torque diagrams

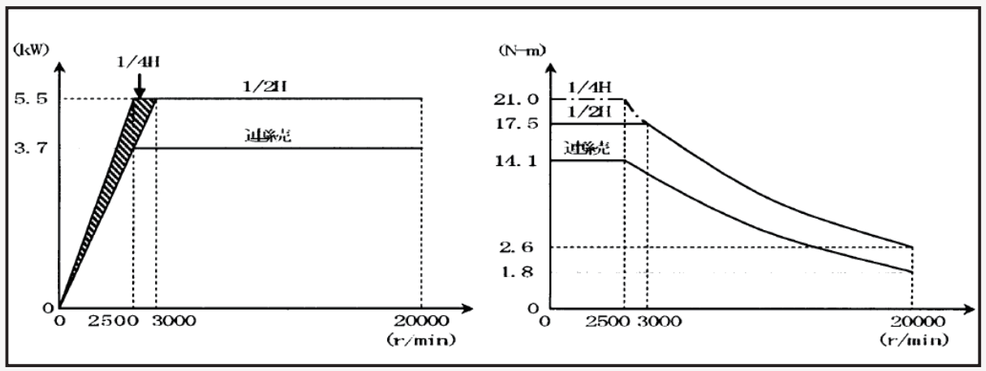
Mitsubishi_SJ-D5.5/120-01*12000 rpm



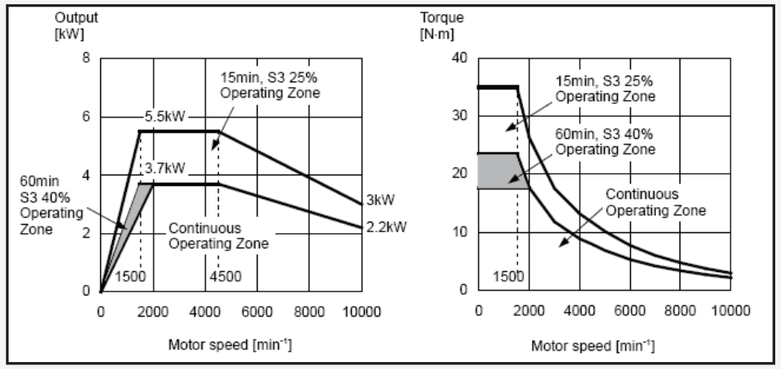
Mitsubishi_SJ-V3.7-02FZT*15000 rpm



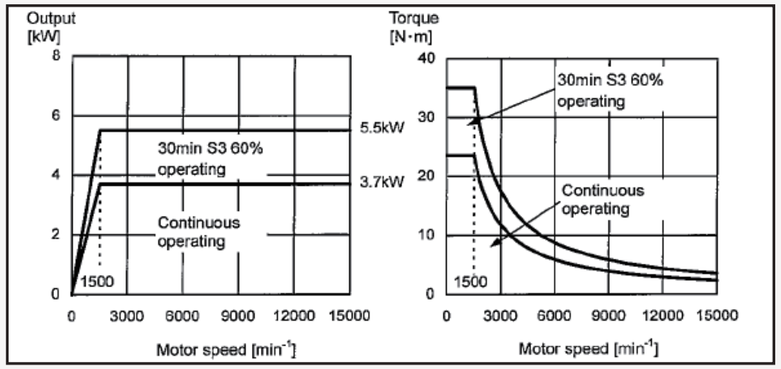
Mitsubishi_SJ-DL5.5/200-01T-S*20000 rpm



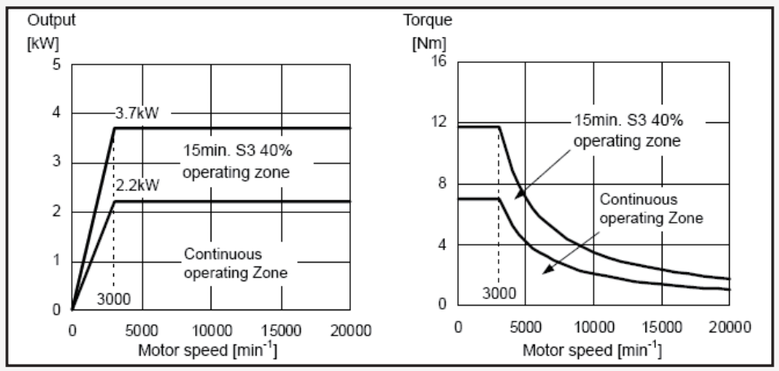
Fanuc_β3*10000i rpm



Fanuc_αiIT3*15000 rpm

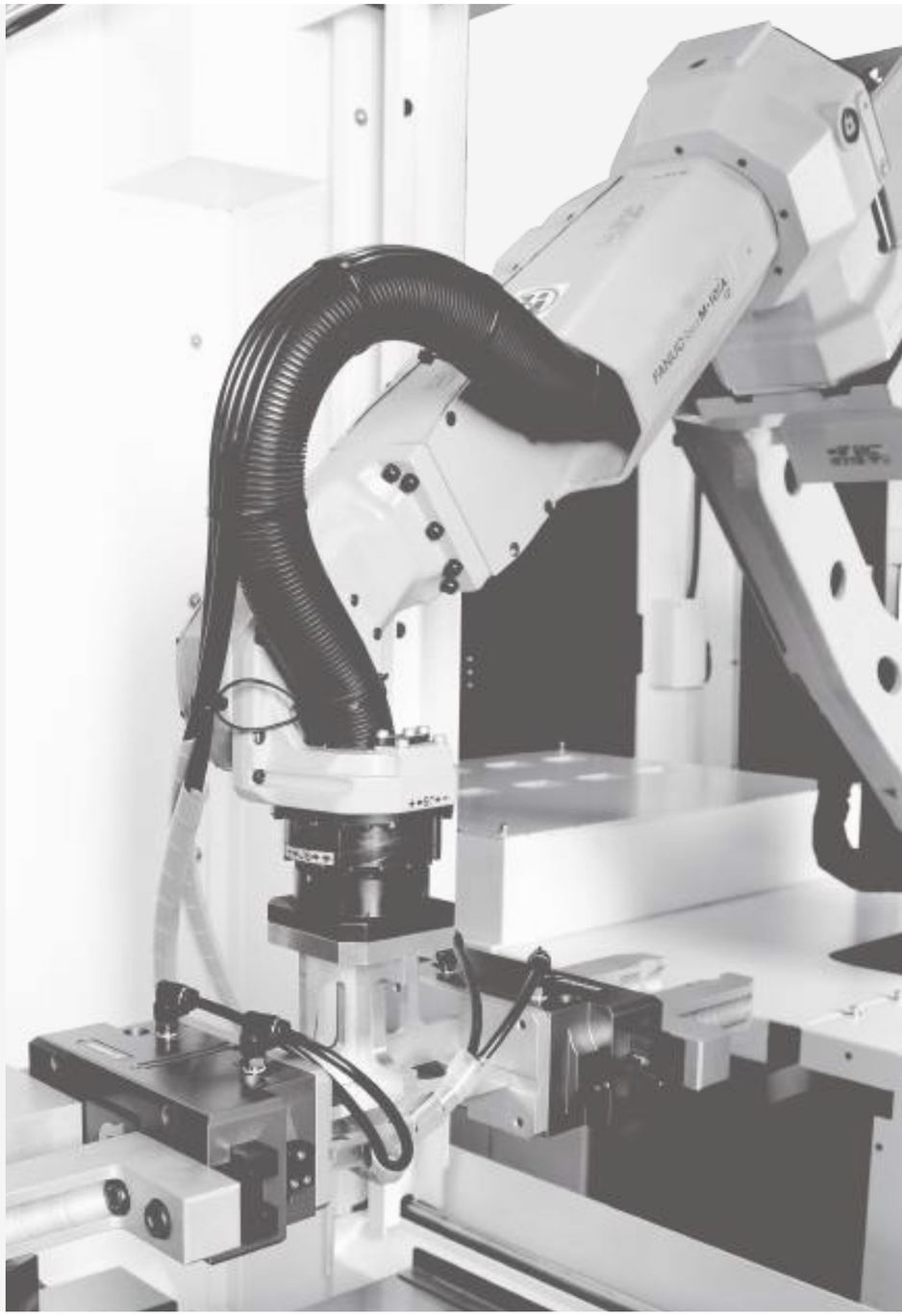


Fanuc_αiI2/20000 rpm



08 Machine Specifications

		Unit	SMC-5	SMC-7
Table	Working surface	mm	600 X 400	850 X 400
	T-slot Width x pitch (number)	mm	14 X 125(3)	14 X 125(3)
	Max. load (Average)	kg	250	250
Travel	X -axis travel	mm	500	700
	Y -axis travel	mm	400	400
	Z -axis travel	mm	300	300
	Distance from spindle to table	mm	180~480	180~480
	Distance from spindle center to column	mm	440	440
Spindle	Spindle nose taper	rpm	BT30	BT30
	Spindle speed (DDS)	rpm	**Mitsubishi :** 12000 opt.15000 / 20000 / 24000 **FANUC :** 10000 opt.15000 / 20000	**Mitsubishi :** 12000 opt.15000 / 20000 / 24000 **FANUC :** 10000 opt.15000 / 20000
Feed	Cutting feedrate (X / Y / Z)	m/min	20 / 20 / 20	20 / 20 / 20
	Rapid traverse rate (X / Y / Z)	m/min	**Mitsubishi :** 50 / 50 / 60 **FANUC :** 48 / 48 / 60	Mitsubishi : 50 / 50 / 60 FANUC : 48 / 48 / 60
ATC	Capacity	pcs	14	14
	Max. tool weight	kg	3	3
	Max. tool size (dia.x length)	mm	Ø60x250L	A:Ø60x250L
	Tool shank		BT30	BT30
	Pull stub bolt		P30T-1	P30T-1
	Tool change time (T to T)	sec	1.5s(14T SV) / 2.7s(14T INV) / 1.9s(21T SV)	1.5s(14T SV) / 2.7s(14T INV) / 1.9s(21T SV)
Motor	Spindle drive motor (cont./15 min)	kW	**Mistubishi :** 2.2 / 3.7 opt.3.7 / 5.5 **FANUC :** 3.7 / 5.5	**Mistubishi :** 2.2 / 3.7 opt.3.7 / 5.5 **FANUC :** 3.7 / 5.5
Positioning Accuracy	Positioning accuracy (JIS B6330), without linear scale	mm	±0.008	±0.008
	Repeatability (JIS B6330), without linear scale	mm	±0.002	±0.002
	Positioning accuracy (JIS B6330), with linear scale	mm	±0.006	±0.006
	Repeatability (JIS B6330), with linear scale	mm	±0.002	±0.002
	Positioning accuracy (VDI 3441), without linear scale	mm	±0.010	±0.010
	Repeatability(VDI 3441), without linear scale	mm	±0.007	±0.007
	Positioning accuracy (VDI 3441), with linear scale	mm	±0.008	±0.008
	Repeatability(VDI 3441), with linear scale	mm	±0.006	±0.006
Other	Required air pressure	kg/cm^2	6.5	6.5
	Electric power requirement	KVA	15	15
	Machine weight	kg	2100	2450
	Coolant tank (standard)	L	100	100
	Machine dimension(L x W x H)	mm	1600 x 2234 x 2548	2160 X 2234 X 2548
	Floor space (standard tank)	mm	1600 x 2340	2160 X 2340



Disclaimer / Performance Note
Specifications and dimensions are subject to change without notice.
For actual weight, the shipped product shall prevail.