ISO 9001
ISO 14001 CE

SIGMA®

Website

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SMV-1050 | SMV-1350 | SMV-1650

MISSION SERIES
Vertical Machining Center

SIGMA®

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Optimum Structural Design

For high-speed, high-precision industrial processing

Since 1983, FFG has acquired dozens of companies around the world. FFG started product gap complementation and international division of labor within the group. The Italian brand SIGMA, established in 1950, is an innovative vertical machining machine manufacturer that produces highly modern 3-axis/5-axis machining centers with high flexibility, precision, high power, and high productivity for use in various industries.

With the cooperation between FFG FEELER and SIGMA, the machine is manufactured in Taiwan and sold worldwide under the SIGMA brand. Moreover, the quality and precision of the machine have been verified and approved by Italy SIGMA . The newly launched MISSION vertical machining center is specially designed for high-speed, high-precision machining in various industries. With excellent rigidity of the machine structure, fast feed rate, and excellent cutting quality, which can significantly reduce machining time and further increase productivity.

Mold & Die

Wing Ribs / Aerospace

Wheels / Automotive

Micro Fabrication / Electronics

Dental Mold / Medical

MISSION

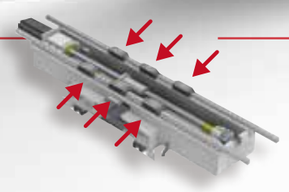
SMV-1050

MISSION SMV-1350/1650

Excellent Structure Design

- One-piece Column design, the interior is reinforced by cross rib. Increase torque resistant and rigidity of the column
- No counter weight design which avoids vibration of the chain. This outstanding design also avoids oscillation caused by counter weight that may affect movement stability on Z-axis.

DDS Spindle. Eliminates backlash and vibration problems caused by belt or gear drive, improve processing efficiency and quality. Equipped with a spindle oil cooler, it takes away the heat source generated by the spindle, reduces thermal expansion, and maintains a certain degree of repetitive positioning accuracy over long periods of operation.

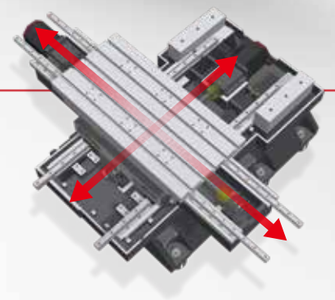


The linear guideway of the worktable is equipped with 6 sliding blocks. Enable the machine more stable during high-speed movements.

Linear Scales (Option)：Absolute high-precision linear scales for effective high-precision positioning.

The three-axis servo motor directly drives the ball screw without backlash, providing high speed efficiency and accuracy.

The three-axis feed screw bearing lubrication increase the bearing service life. It can share the interface with the LUBE-LHL lubrication system.



X / Y-axis linear guideways extension design, improve the telescope cover life with smoother movement. (SMV-1050/1350)

Tool Magazine

Cam type ATC for faster tool change, shorter machining time and higher productivity.

No. of Tool：30T(SMV-1050/1350)/40T(SMV-1650)

Tool changing time：1.7 sec

Max. tool diameter：Ø75

Max. tool diameter(w/o adjacent tool)：Ø150

Max. tool length:300 mm

Max. tool weight：8 kg

The automatic tool magazine door is driven by the pneumatic cylinder providing reliable and stable movement. It effectively prevents chips and cutting fluid from entering the tool magazine.

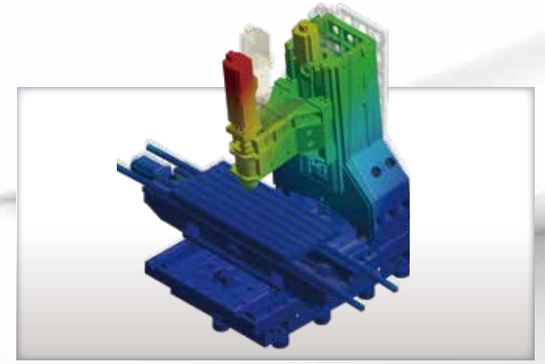
Cutting Tool Management System (SMV—1650)

- Manual tool magazine rotation function.
- Read and Write tool data.
- Specially designed for tool management and tool magazine rotation operations, directly linked to the CNC controller.
- Easy to use with color LCD touch panel.

LHL Lubricant

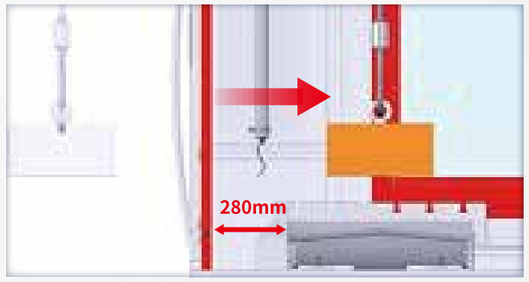
- Reducing the abrasion of machine parts.
- Reducing lubricant consumption.
- Preventing the deterioration and decom position of cutting fluid.

Streamlined large window design. Easy to observe the internal operation of the machine. Convenient for the operator to clean and maintain the machine.



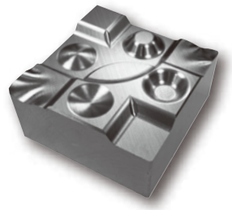
Sigma's machine structure is designed and analyzed using advanced Finite Element Analysis software for dynamic simulation and structural analysis. The design method assures optimum structural rigidity, machine accuracy and reliability.

Two side chip screws and powerful flushing system in the machine can quickly and efficiently remove the metal chips. With the chip conveyor, the chip removal performance will be increased,which reducing the non-cutting time and improve the production efficiency of the machine. (Optional)



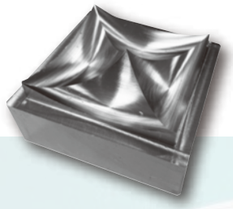
The distance from the table to the telescopic cover is 280 mm, and the table is close to the operator, which is convenient for workpiece installation and jig adjustment.（SMV-1650）

Modern rear appearance design, movable double side windows. The cable is well organized and clear line distribution. Easy for inspection and maintenance.



Model Chosen

Based on workpiece to choose high C/P value and good efficiency machine model to meet processing requirements

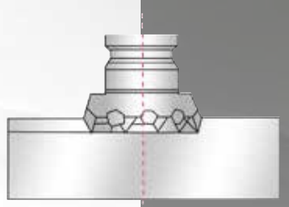


Engineering Analysis

Assisting to do cycle time, tooling and fixture evaluation.

Automation/Turn-key Project

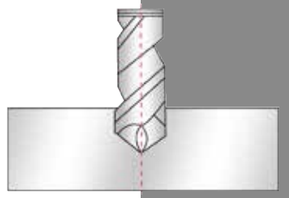
Assisting automation /Turn-key project evaluation and engineering application.



Removal Rate
459 cc/min

Face Milling S45C

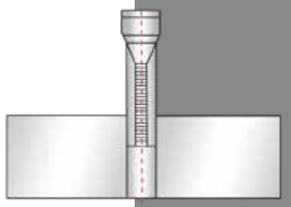
Tool	mm	Ø 80 x 4T
Spindle Speed	mm	1194 rpm
Feed Rate	mm	1433 mm/min
Cutting Width*Depth	mm	80 *4 mm



Tool Diameter
50 mm

Drilling S45C

Tool	mm	Ø 50 x 1T
Spindle Speed	mm	263 rpm
Feed Rate	mm	26 mm/min
Cutting Depth	mm	60 mm



Tapping
M27

Tapping S45C

Tool	mm	M27 x P3.0
Spindle Speed	mm	160 rpm
Feed Rate	mm	480 mm/min
Cutting Depth	mm	40 mm

※Model : SMV-1050

Equipment Monitoring and Production Management (Optional)

We provide three management functions such as production monitoring, equipment status, and alarm push notification. Each function includes the whole factory, production line, and single machine modes. Customers can choose the most suitable dashboard according to their needs and know the factory status of equipment and production immediately.

- Equipment efficiency monitoring
- Active push notification
- Production real-time status
- Cloud management platform
- CNC intelligent function
- Multi-platform software

Production Monitoring

Factory capacity

Single machine capacity

- Capacity query
- Target number
- Amount completed
- Capacity progress
- Utilization rate
- Manufacturing state

Equipment Status

Factory equipment monitoring

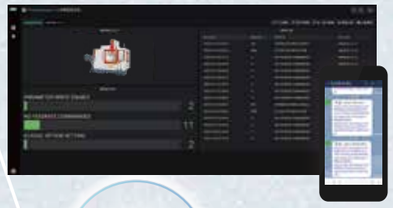
Single machine monitoring

- Machine status monitoring
- Main program/mode/spindle feed/cutting/statistics of machine production quantity
- Time/cycle time statistics of machine production quantity

Alarm Monitoring | Alarm Push Notification

Factory Alarm Overview

Equipment-alarm searching



- Real-time alarm statistics
- Alert list
- Alert category ranking Alarm historical query
- Push notification of abnormal alarms

Line-Switching Management System (Optional)

The shop-floor management dashboard can show the real-time information of the Line-Switching Management system

The shop-floor management dashboard can show the real-time information of the Line-Switching Management system

Shop-Floor Management - Line-Switching

Manager

1. Work Dispatching List
- Instant progress display
- Task assignment setting

2. To-Do dispatch
- Task acceptance
- Task delegate

3. History records query
- First Article Inspection record
- Abnormal Record & report
- Download operation time report

Operator (on-site)

START

Log-in

To-Do Dispatching

Binding Work Order

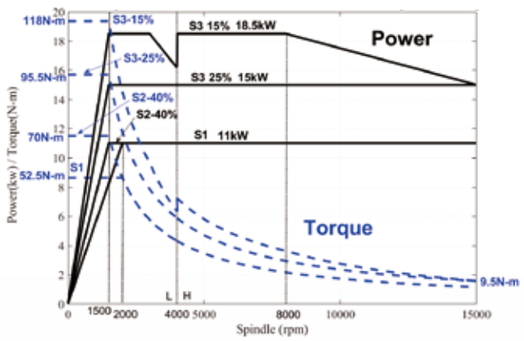
Completed

First Article Inspection Record

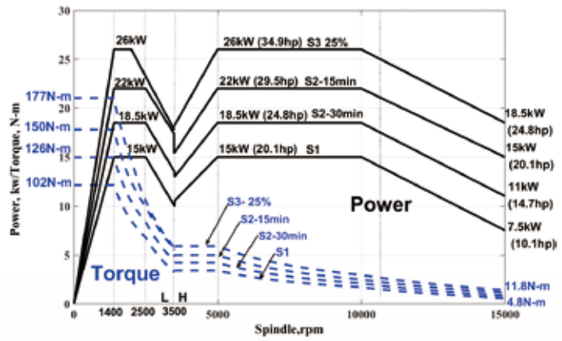
Tool/Fixture Installation and Parameter Check

Binding Machine

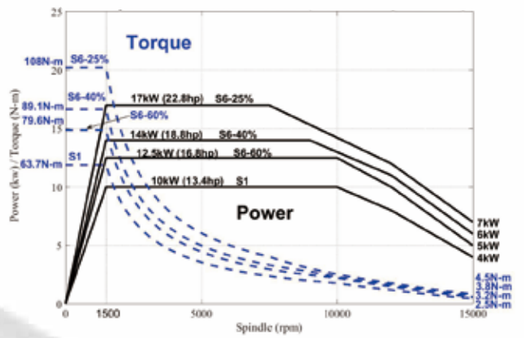
FANUC aT8/15000-B-SOV for spindle 15000rpm



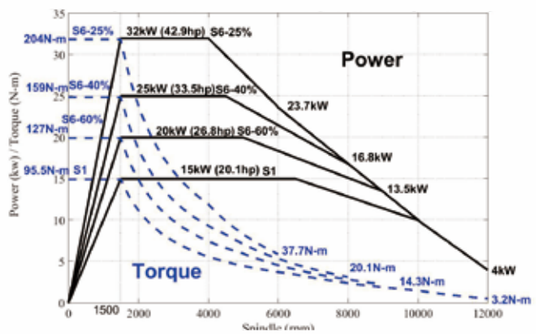
FANUC ailT15/15000 for spindle 15000rpm



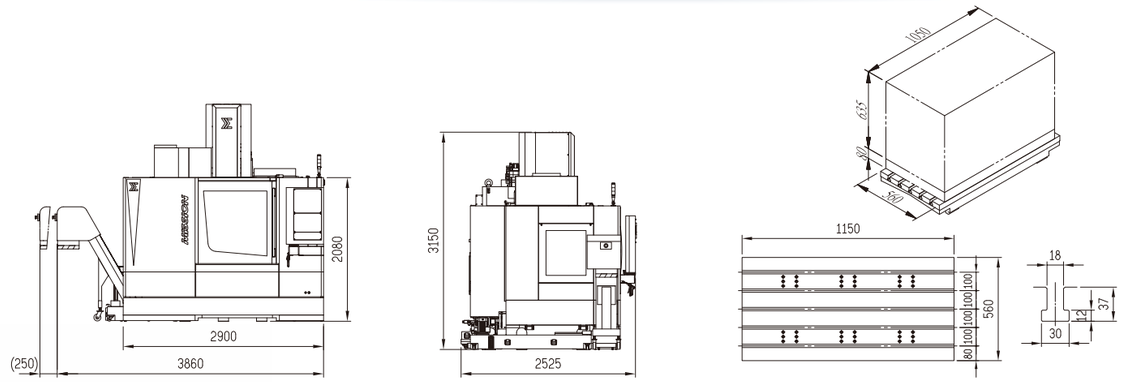
HEIDENHAIN QAN200UH for spindle 15000rpm



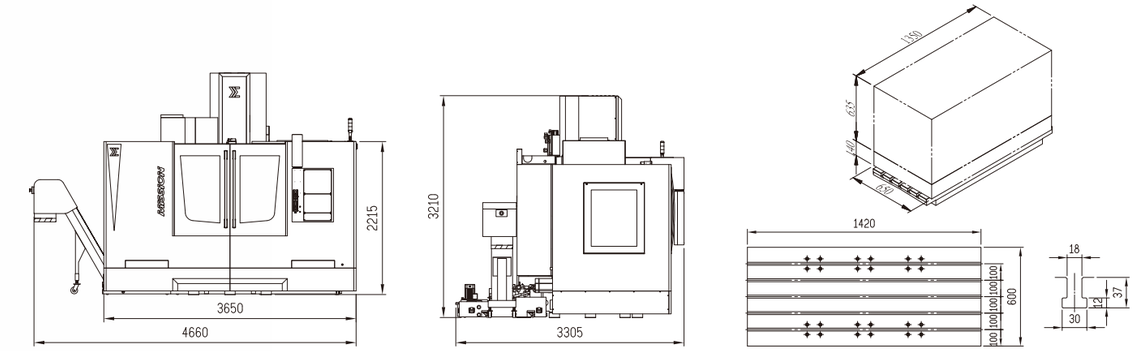
HEIDENHAIN QAN260MH for spindle 12000rpm



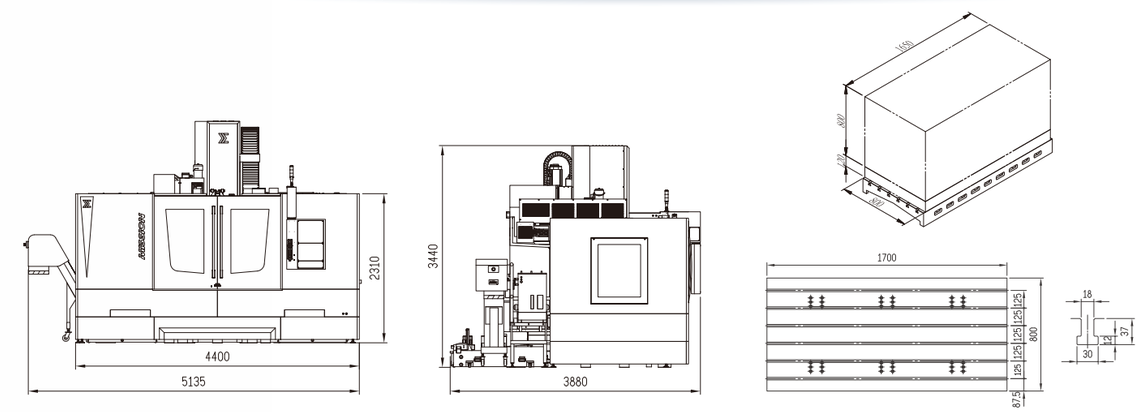
SMV—1050



SMV—1350



SMV—1650



Machine Specifications

MODEL		UNIT	SMV-1050	SMV-1350	SMV-1650
TRAVEL					
X-axis travel		mm	1050	1350	1650
Y-axis travel		mm	560	650	800
Z-axis travel		mm	635	635	800
Spindle nose to table surface		mm	80~715	100~735	120~920
Spindle Center to Column surface		mm	623	758	882
Table surface to floor		mm	985	1025	1080
TABLE					
Table dimensions		mm	1150x560	1420X600	1700X800
Max.Loading Weight		Kg	800	1500	1500
T-slots (W×NO.×P)		mm	18x5×100	18x5×100	18x6×125
SPINDLE					
Spindle speed		rpm	15000	15000	15000
Spindle taper		-	7/24 taper NO.40	7/24 taper NO.40	7/24 taper NO.40
DIA. OF Spindle		mm	ø70	ø70	ø70
Spindle Motor (power requirements)	FANUC	Kw	15/25 (S1/S3_25%)	15/25 (S1/S3_25%)	15/25 (S1/S3_25%)
	HEIDENHAIN		10/17(S1/S6_25%)	10/17(S1/S6_25%)	10/17(S1/S6_25%)
FEED RATE					
X-axis rapid traverse		m/min	48	48	36
Y-axis rapid traverse		m/min	48	48	36
Z-axis rapid traverse		m/min	36	30	24
ATC (AUTOMATIC TOOL CHANGER)					
No. of Tools		-	30	30	40
Pull stud		-	P-40T (45°)	P-40T (45°)	P-40T (45°)
Max. Tool weight		Kg	8	8	8
Max. Tool length		mm	300	300	300
Max. Tool diameter		mm	ϕ75	ϕ75	ϕ75
Max. Tool diameter (No adjacent tool)		mm	ϕ150	ϕ150	ϕ150
Tool changing time (Tool-to-Tool)		sec	1.7sec/60Hz	1.7sec/60Hz	1.7sec/60Hz
OTHER					
FLOOR SPACE		mm	3860×2525	4660×3305	5135×3880
MACHINE WEIGHT (N.W.)		Kg	7200	7800	13000
MAX. MACHINE HEIGHT		mm	3150	3210	3440
POWER CAPACITY	FANUC	KVA	35	35	35
	HEIDENHAIN		40	50	50
AIR SOURCE		bar	6~8	6~8	6~8

*Specifications are subject to change without prior notice.

Machine Accessories

NO.	ITEM	SMV-1050	SMV-1350	SMV-1650
1	Full Enclosure	●	●	●
2	Working Light X2	●	●	●
3	Alarm Light	●	●	●
4	Rigid Tapping	●	●	●
5	3-Axis Pre-Tensioned Ballscrew	●	●	●
6	Spindle Air Seal System	●	●	●
7	Grease Lubrication System	●	●	●
8	Spindle Air Blow(M Code)	●	●	●
9	Spindle Coolant Ring	●	●	●
10	Front Position Chip Disposal	●	○	○
11	Rear position Chip Disposal	○	●	●
12	Water-Oil Separator	●	●	●
13	Oil Skimmer	○	○	○
14	Air Gun	●	●	●
15	Coolant Gun	●	●	●
16	Flushing System	●	●	●
17	Spindle System Oil Cooler	●	●	●
18	Coolant Through Spindle Interface	●	●	●
19	CTS & Filtering System	○	○	○
20	Top Roof	●	●	●
21	Magazine Capacity 30T	●	●	○
22	Magazine Capacity 40T	○	○	●
23	ATC Anti-Chip Automatic Door	●	●	●
24	Dust-Tight Electrical Cabinet	●	●	●
25	Air Conditioning for Electrical Cabinet	●	●	●
26	Direct-Drive Spindle_12000rpm	○	○	○
27	Direct-Drive Spindle_15000rpm	●	●	●
28	Linear Scale on X/Y/Z-Axis	○	○	○
29	Tool Length Measurement	○	○	○
30	Workpiece Measurement	○	○	○
31	Chip Conveyor+Chip Cart	●	●	●
32	2-Sided Chip Screws on Y Axis	○	○	○
33	4th Axis Preparation or Rotary Table	○	○	○
34	Tool Management System	-	-	●
35	Auto Power Off	●	●	●
36	3 Axes Roller Type Linear Guideway	●	●	●
37	Ethernet Interface	●	●	●

● Standard ○ Optional - Not applicable