

NSV 106A/AM

Ultra High Performance Vertical Machining Center



YCM[®]

NSV 106A/AM

The Beauty in Machining

The **NSV 106A/AM** ultra high performance vertical machining center represents exquisite workmanship on superb cutting performance. With robust construction, the advanced technology offers the highest level of rigidity and accuracy that is tailor-made for high productivity requirements and die & mold application.







| Motorcycle Frame |

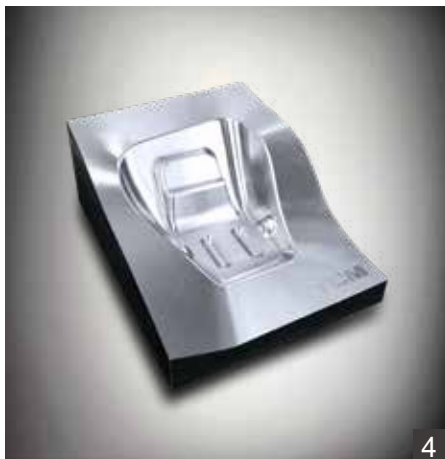
High Performance Applications

NSV 106AS

- 48 / 48 / 48 m/min. X / Y / Z Rapid Feedrate
- 1 g Axial Acceleration (Fanuc)

NSV 106AM

- Perfect for die & mold, aerospace and automotive applications.
- Ultra-high controllability and stability.



| 1-2. Motorcycle Frame | 2-3. Motorcycle Part | 4. Light Mold | 5. Pipe Mold | 6. Clutch Part |

NSV 106A/AM

NSV 106A/AM vertical machining center is specially designed for high speed and high efficiency machining applications. **NSV 106A/AM** is built with a large delta machine column and wide base to ensure the highest stability during high speed movement.



NSV 106A

12,000rpm
(15,000rpm)

NSV 106AS

15,000rpm

NSV 106AM

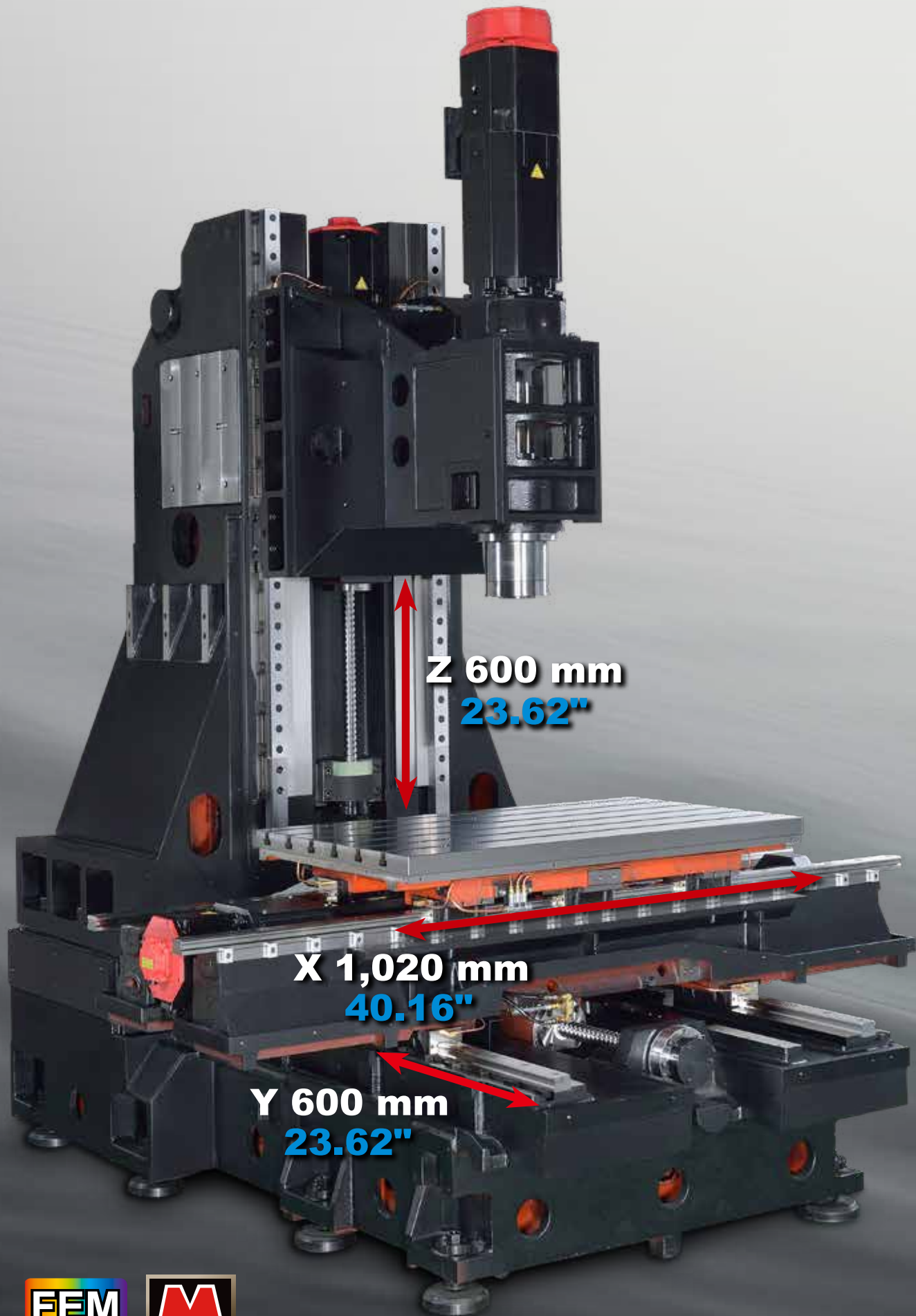
12,000rpm
(15,000rpm)

NSV 106AMS

12,000rpm
(15,000rpm)

| | | | | |
|----------|------------------------|------------------------|----------------------|----------------------|
| X | 48 m/min. 1,890 ipm | 48 m/min. 1,890 ipm | 24 m/min. 945 ipm | 24 m/min. 945 ipm |
| Y | 48 m/min. 1,890 ipm | 48 m/min. 1,890 ipm | 24 m/min. 945 ipm | 24 m/min. 945 ipm |
| Z | 32 m/min. 1,260 ipm | 48 m/min. 1,890 ipm | 16 m/min. 630 ipm | 24 m/min. 945 ipm |



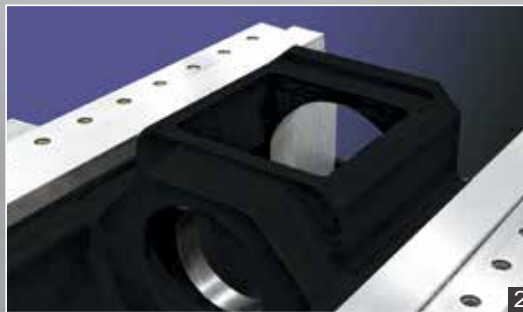
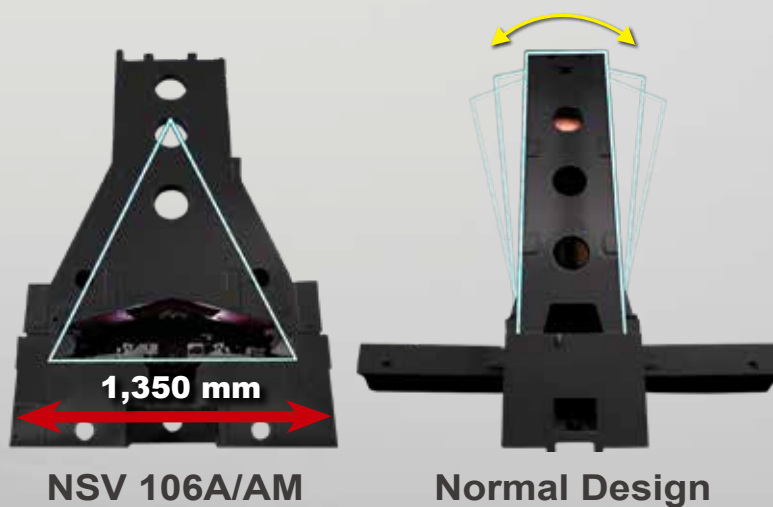


Z 600 mm
23.62"

X 1,020 mm
40.16"

Y 600 mm
23.62"

- Large delta machine column and base ensure the highest stability during high speed movement.
- Wide span of axial guideways.
- All roller type guideways (**NSV 106AS**) and wide ball screw are designed for maximum aluminum chip disposal
- Advanced FEM analysis strengthens the structure while reduces the weight to provide the best cutting rigidity.



- | 1. All roller type guideways (**NSV 106AS**) | 2. One-piece Motor Housing |
- | 3. Auto tool change(T-T): 1.8 Sec. | 4. 24T (30T opt.) Disk Type |
- | 5. 48T (opt.) Chain Type | 6. Standard ATC Door (**NSV 106AS**) |

HIGH SPEED HIGH PRECISION SPINDLES

IDD PLUS Spindle Design

- The unique IDD spindle design offers smooth reliability at high speed.
- Ceramic bearings avoid the effect of spindle thermal growth.
- Maximize both spindle and tool life under hard milling conditions
- Provide low spindle vibration and optimal heat isolation that result in excellent surface finish.
- The perfect and robust axes fulfill constant machining requirement for chip removal while milling, drilling and tapping.



Cutting Capacity **BBT40** 12,000rpm Fanuc System

| FACE MILL | S45C Steel |
|-----------------------|--------------------|
| Material Removal Rate | 648 cc/min. |
| Tool | ø63 mm x 5T |
| Spindle Speed | 1,500 rpm |
| Feedrate | 4,500 mm/min. |
| Width of Cut | 60 mm |
| Depth of Cut | 2.4 mm |

| FACE MILL | S45C Steel |
|---------------|---------------|
| Depth of Cut | 6.5 mm |
| Tool | ø80 mm x 5T |
| Spindle Speed | 600 rpm |
| Feedrate | 450 mm/min. |
| Width of Cut | 60 mm |

| END MILL | S45C Steel |
|---------------|--------------|
| Depth of Cut | 10 mm |
| Tool | ø32 mm x 3T |
| Spindle Speed | 500 rpm |
| Feedrate | 225 mm/min. |
| Width of Cut | 32 mm |

| U-DRILL | S45C Steel |
|-----------------|---------------|
| Cutter Diameter | ø49 mm |
| Tool | ø49 mm x 1T |
| Spindle Speed | 1,500 rpm |
| Feedrate | 150 mm/min. |
| Depth of Cut | 25 mm |

| TAP | S45C Steel |
|---------------|-------------|
| Tapping | M24 |
| Tool | M24 x 3P |
| Spindle Speed | 80 rpm |
| Feedrate | 240 mm/min. |
| Depth of Cut | 24 mm |

| RIGID TAP | A6061 Aluminum |
|---------------|----------------|
| Tapping | M1.2 |
| Tool | M1.2 x 0.25P |
| Spindle Speed | 1,200 rpm |
| Feedrate | 300 mm/min. |

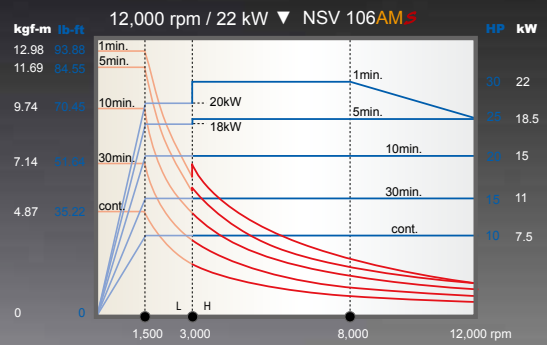
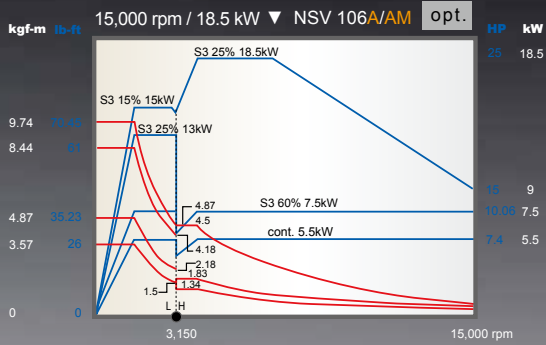
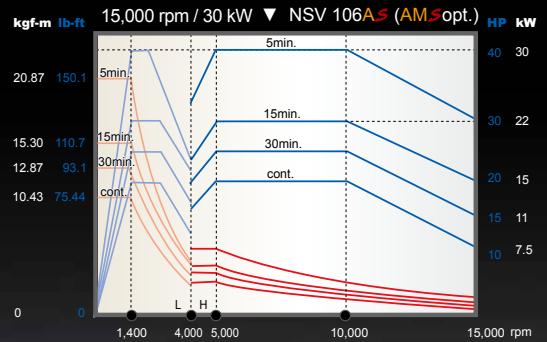
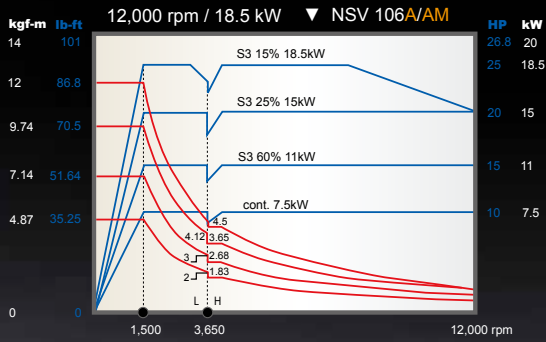
Note: Above cutting test was performed by NSV 106A with 12,000 rpm spindle. Cutting test data for reference only. All cutting tests are designed to demonstrate maximum machining capabilities without preserving tool life.

Power Chart

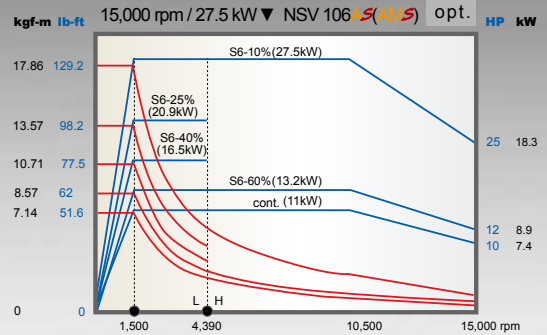
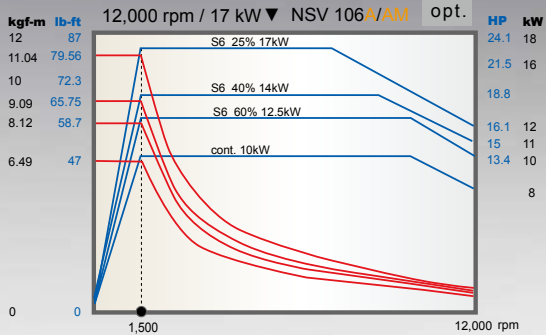
POWER

TORQUE

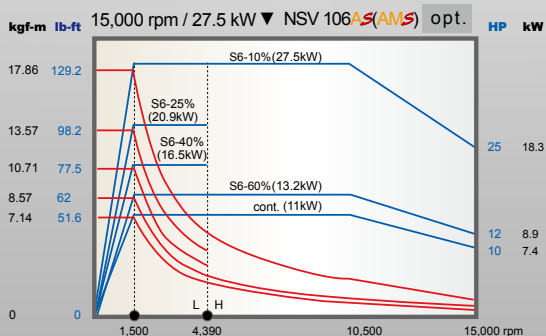
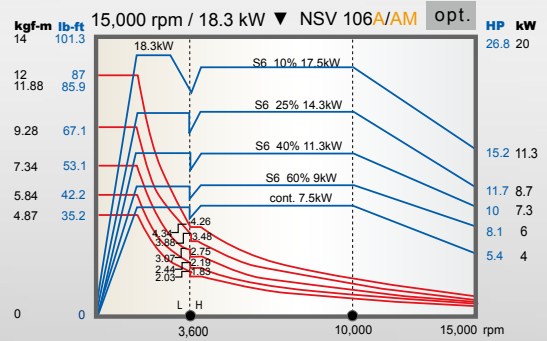
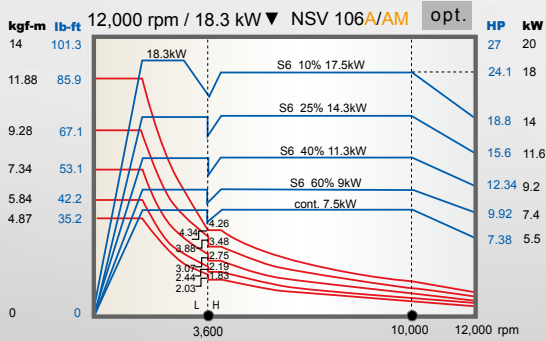
FANUC SYSTEM



HEIDENHAIN SYSTEM



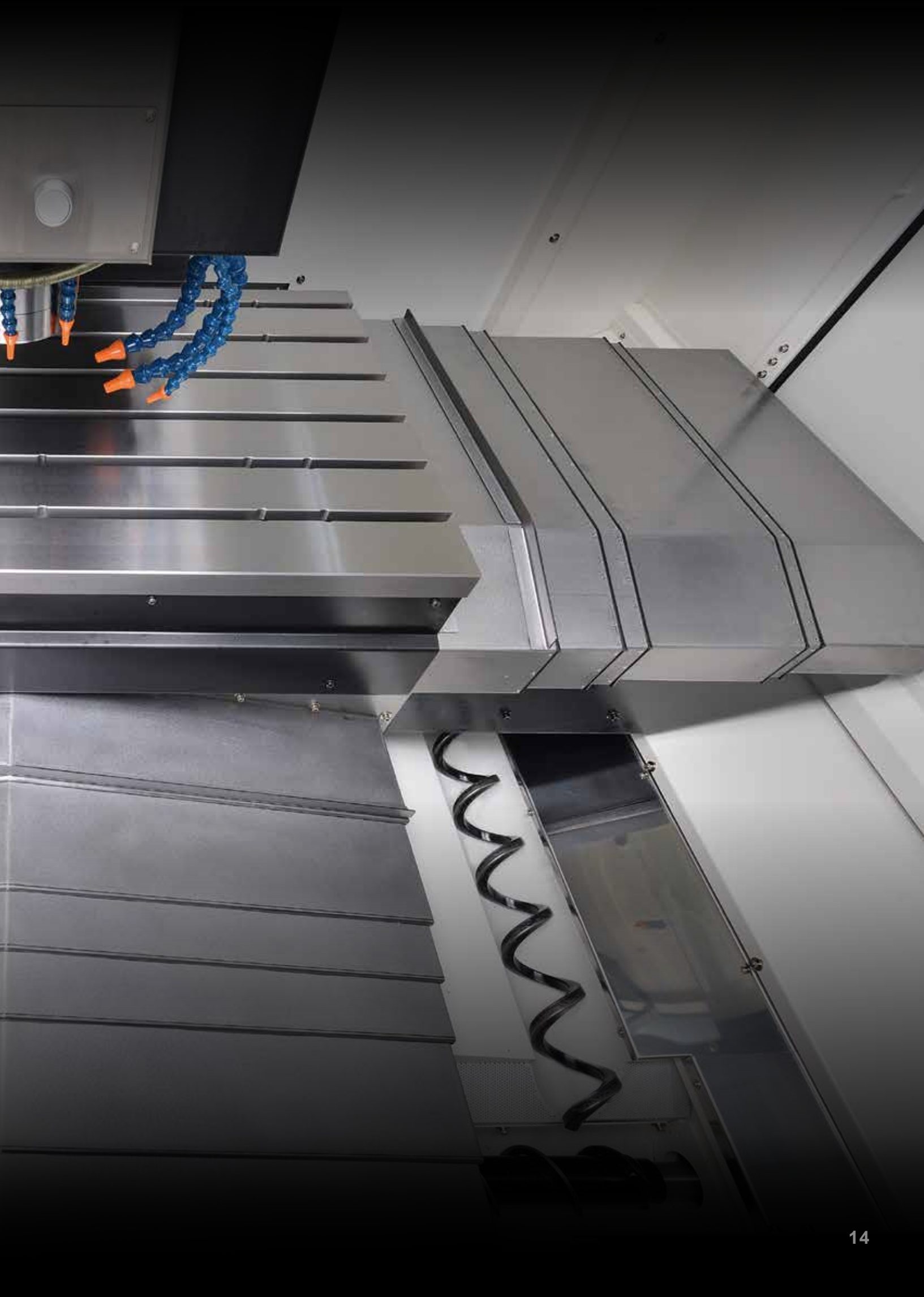
SIEMENS SYSTEM





Efficient Chip Removal System

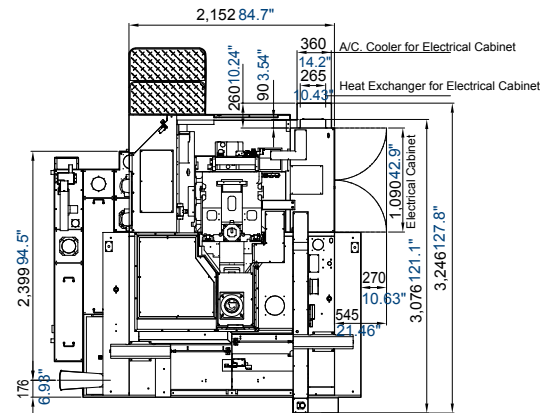
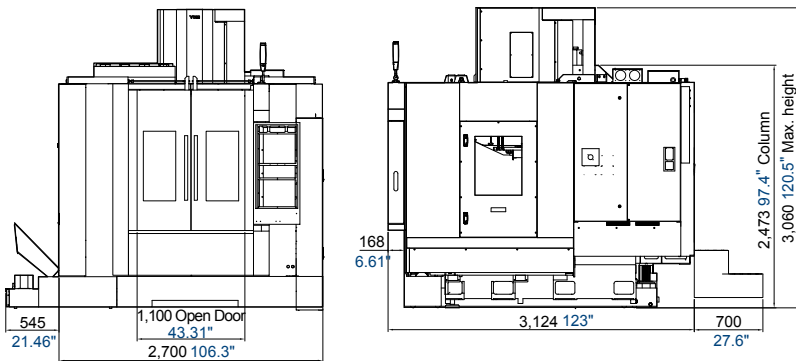
For diverse machining requirements,
NSV 106AS equipped with screw type chip conveyor
definitely help maximize the efficiency of chip removal.



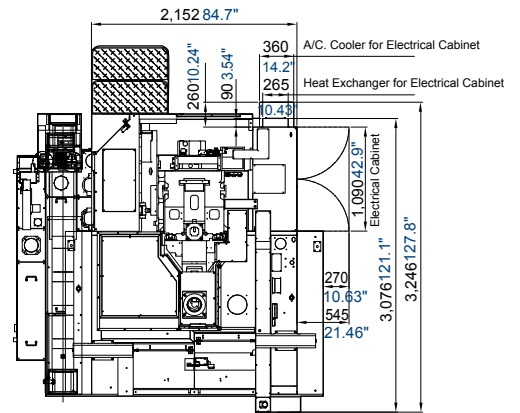
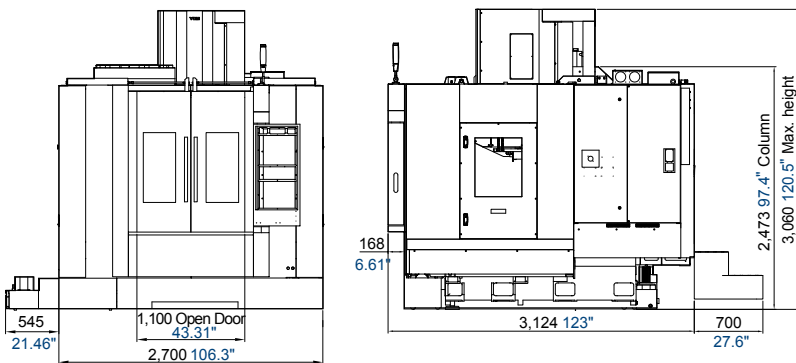


■ 48T

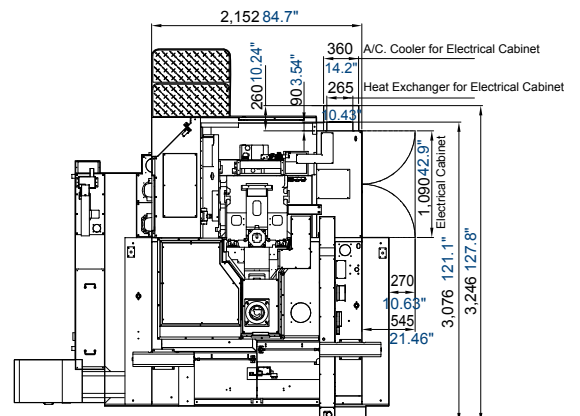
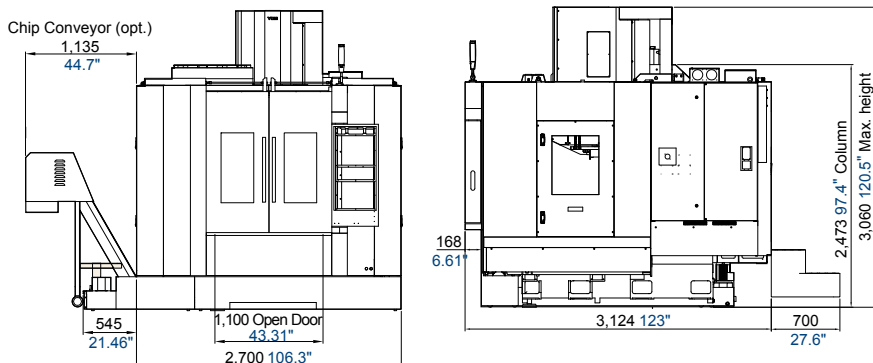
■ Triple-Chip Auger with 45° Pipe



■ Triple-Chip Auger with Rear Side Chip



■ Dual-Chip Auger with Left-Hand



Specifications

| | NSV 106A | NSV 106AS | NSV 106AM | NSV 106AMS |
|--|--|--|--|---|
| SPINDLE | | | | |
| Spindle Speed (opt.) | 12,000 rpm (15,000 rpm) | 15,000 rpm | 12,000 rpm (15,000 rpm) | 12,000 rpm (15,000 rpm) |
| Spindle Power (opt.) | 7.5 / 11 / 15 / 18.5 kW (5.5 / 7.5 / 18.5 kW) 10 / 15 / 20 / 25 HP (7.4 / 10 / 25 HP) | 15 / 18.5 / 22 / 30 kW 20 / 25 / 30 / 40HP | 7.5 / 11 / 15 / 18.5 kW (5.5 / 7.5 / 18.5 kW) 10 / 15 / 20 / 25 HP (7.4 / 10 / 25 HP) | 7.5 / 11 / 15 / 18.5 / 22 kW (15.5 / 18.5 / 22 / 30 kW) 10 / 15 / 20 / 25 / 30 HP (20.8 / 25 / 30 / 40 HP) |
| Spindle Taper | BBT40 | | | |
| TRAVEL | | | | |
| X / Y / Z -axis Travel | 1,020 mm / 600 mm / 600 mm 40.16" / 23.62" / 23.62" | | | |
| Distance Between Spindle Nose & Table Top | 100~700 mm 3.94"~27.56" | | | |
| TABLE | | | | |
| Table Size | 1,120 x 650 mm 44.09" x 25.59" | | | |
| No. T-slots x Size x Pitch | 6 x 18 mm x 100 mm 6 x 0.71" x 3.94" | | | |
| Max. Load on Table | 700 kg 1,543lb | 1,000 kg 2,205 lb | 700 kg 1,543lb | 1,000 kg 2,205 lb |
| FEEDRATE | | | | |
| Rapid Feedrate (X/Y/Z) | 48 / 48 / 32 m/min. 1,890 / 1,890 / 1,260 ipm | 48 / 48 / 48 m/min. 1,890 / 1,890 / 1,890 ipm | 24 / 24 / 16 m/min. 945 / 945 / 630 ipm | 24 / 24 / 24 m/min. 945 / 945 / 945 ipm |
| Cutting Feedrate | 1~20,000 mm/min. 0.04 ~787 ipm | | X / Y:1~20,000 mm/min. Z:1~16,000 mm/min. X / Y:0.04 ~787 ipm Z:0.04 ~630 ipm | 1~20,000 mm/min. 0.04 ~787 ipm |
| ACCURACY | | | | |
| | ISO 10791-4 | | YCM* | |
| Axial Travel | Full Length | | | |
| Positioning (X / Y / Z) A | 0.032 / 0.025 / 0.025 mm 0.00126" / 0.00098" / 0.00098" | | 0.01 / 0.01 / 0.01 mm 0.00039" / 0.00039" / 0.00039" | |
| Repeatability (X / Y / Z) R | 0.018 / 0.015 / 0.015 mm 0.0007" / 0.00059" / 0.00059" | | 0.007 / 0.007 / 0.007 mm 0.00028" / 0.00028" / 0.00028" | |
| *All values shown above are measured for the machine in good air-conditioned environments. | | | | |
| ATC | | | | |
| Tool Magazine Capacity (opt.) | 24T (30T / 48T) | 30T (48T) | 24T (30T / 48T) | 24T (30T / 48T) |
| Max. Tool Weight (per piece) | 6kg 13.2 lb | | | |
| Max. Tool Dimensions | ø76 x 300 mm ø3" x 11.8" | | | |
| Max. Tool Dimensions (w/o adjacent tools) | ø125 x 300 mm ø4.9" x 11.8" | | | |
| Tool Change Method | Arm Type | | | |
| Tool Selection Method | Random | | | |
| GENERAL | | | | |
| Pneumatic Supplier | 6 kg/cm ² 78.2 psi | | | |
| Machine Weight | 7,000 kg 15,432 lb | | | |

Note: Above specifications may vary depending on the machine and the surrounding environment.
The manufacturer reserves the right to modify the design, specifications, mechanisms, etc., to improve the performance of the machine without notice.
The test data provided in this catalog is performed under specific test procedures and environmental conditions.

Accessories

● : Standard ○ : Option - : None

| | NSV 106A | NSV 106AS | NSV 106AM | NSV 106AMS |
|--|----------------------|-------------------|----------------------|--------------------|
| | 12,000rpm 18.5 kW | 15,000rpm 30kW | 12,000rpm 18.5 kW | 12,000rpm 22 kW |
| Tool Kit / Work Lamp / Pilot Lamp | ● | ● | ● | ● |
| Coolant Gun | ● | ● | ● | ● |
| Air Gun | ● | ● | ● | ● |
| Coolant Equipment System | ● | ● | ● | ● |
| Cutting Air Blast | ● | ● | ● | ● |
| Spindle Air Blast | ● | ● | ● | ● |
| Spindle Air Seal | ● | ● | ● | ● |
| Oil Skimmer | ● | ● | ● | ● |
| CTS (Coolant through Spindle)(20 Bar) | ○ | ● | ○ | ○ |
| Spindle Cooling System | ○ | ● | ● | ● |
| Oil-mist Cutting System | ○ | ○ | ○ | ○ |
| Circular Coolant Nozzle | ● | ● | ● | ● |
| Heavy Duty Coolant Pump | ● | ● | ● | ● |
| Chip Conveyor | ○ | ● (Chain Type) | ○ | ○ |
| Triple-Chip Augers | ● | - | ● | ● |
| Dual-Chip Augers | ○ | ● | ○ | ○ |
| Guideway Cover (X / Y / Z) | ● | ● | ● | ● |
| STC Plus | ○ | ○ | ○ | ○ |
| Automatic Power Off | ● | ● | ● | ● |
| Automatic Door | ○ | ○ | ○ | ○ |
| ATC Door | ○ | ● | ○ | ○ |
| Safety Door | ● | ● | ● | ● |
| Heat Exchanger for Electrical Cabinet | ● | ● | ● | ● |
| A/C. Cooler for Electrical Cabinet | ○ | ○ | ○ | ○ |
| Mechanical, Electrical and Operating Manuals | ● | ● | ● | ● |
| Foundation Bolts | ○ | ○ | ○ | ○ |
| Leveling Blocks & Screws | ● | ● | ● | ● |
| Optical Scale | ○ | ○ | ○ | ○ |
| Auto Tool Length Measurement System | ○ | ○ | ○ | ○ |
| Automatic Workpiece Measurement System | ○ | ○ | ○ | ○ |
| Oil-mist Collector | ○ | ○ | ○ | ○ |
| Full Chip Enclosure | ● | ● | ● | ● |
| Full Chip Enclosure (Back Cover) | ○ | ○ | ○ | ○ |
| CE | ○ | ○ | ○ | ○ |
| CNC Control : MXP-200FA | ● | ● | ● | - |
| CNC Control : MXP-200FB | ○ | ○ | ○ | ● |
| CNC Control : MXP-200FC | - | ○ | - | ○ |
| CNC Control: HEIDENHAIN TNC620 | ○ | ○ | ○ | ○ |
| CNC Control: HEIDENHAIN TNC640 | - | ○ | - | ○ |
| CNC Control: SIEMENS 828D | ○ | ○ | ○ | ○ |

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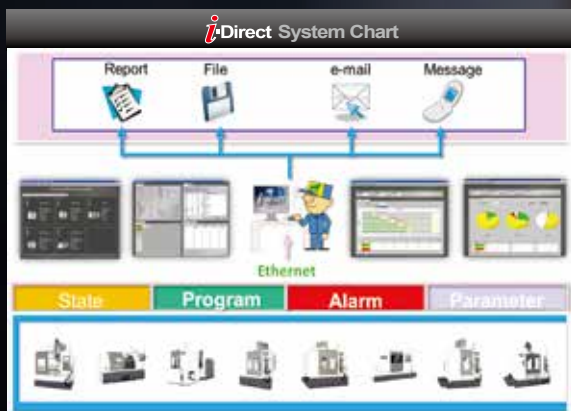
MXP-200 FA / FB

YCM CONTROL
by FANUC

- High Response AC Digital Servo & Spindle Drives with High Definition
- AICC II High Speed High Accuracy with Manual / Auto Switching on/off Machining
- JERK Control Function (MXP-200 FA opt.)
- High Rigidity Tapping, Helical Interpolation
- Custom Marco B and Tool Path Graphics
- Manual Guide i with large Screen Display .
- Program File Management for Easy Program Classifying
- USB Interface for Easy Parameters & CNC Programs Transfer
- 512KB Memory
- High Speed Positioning Function (opt.)
- Memory Card Program Edit & Operation
- NANO Smoothing Function (opt.)
- 400 Pairs Tool Offset, 400 Total Registered Programs
- 48 Pairs of Workpieces Coordinate System
- Extended Parts Program Editing (Cut, Copy, and Paste. Maximum 4,000 Characters)

i-Direct A remote monitoring system

The YCM Production Line Monitoring System i-Direct overcomes the limitations of time and distance. This software provides plant operators with instant production status, including production value, output, standby, alarm time, status display and malfunction records of the machine. These data could be browsed online and printed. When incidents occur, i-Direct will automatically warn plant operators through e-mail or MMS message. With i-Direct Production Line Monitoring System the plant operators can easily keep track of production statuses regardless of time and distance.



Intelligent Production Management



Machine Status Diagram



Factory Alarm Analysis



Shop Floor Reporting



Machine Status History



Work Time Chart

i-OPERATION Plus II

Software Enhancement Exclusively from YCM



Pre-machining Preparation

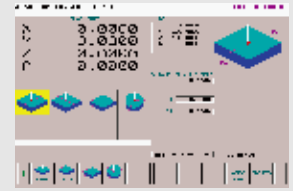
Intelligent Tool Data Management
Comprehensive tool data management function allows operators to monitor and manage all positions in tool magazine



Tool Length Measurement
Graphic measuring interface provides automatic tool length measurement function



Workpiece Coordinate Calculation
Conversational operating window provides convenient and fast setup of workpiece coordinates



RENISHAW GUI System (Conversational Graphic Operating Interface)

Tool measurement & measurement correction



Workpiece measurement



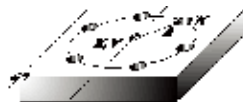
Programming



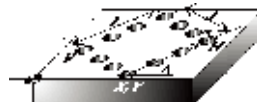
i_PATTERN



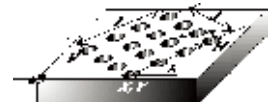
15 sets of machining cycle program
Reduces program input and memory time
Graphic interface & conversational command input



CIRCULAR HOLE PATTERN
(G120 P1) Function



RECTANGULAR HOLE PATTERN
(G120 P4) Function



GRID HOLE PATTERN
(G120 P5) Function

Machining

High Performance Machining Mode M300

With 5 sets of parameter settings, the users choose the most suitable mode for optimum machining



High Speed Machining Mode M400

Increases drilling and tapping speed, reduces machining time for job shop and precision mold machining



Tool Load Management

Instant tool load monitoring with alarm function



Multi-display Function

Displays 4 statuses simultaneously with configurable status display



Tool Life Management

Indicates tool status of each group with tool life alert



Instant Message Alert

Pop-up Alarm Display



Instantly provides troubleshooting procedure
Quick response to alarm

Smart control panel (iPANEL)



Easy to set up and operate important functions

Maintenance

Intelligent Maintenance



Provide users with periodic maintenance options and descriptions

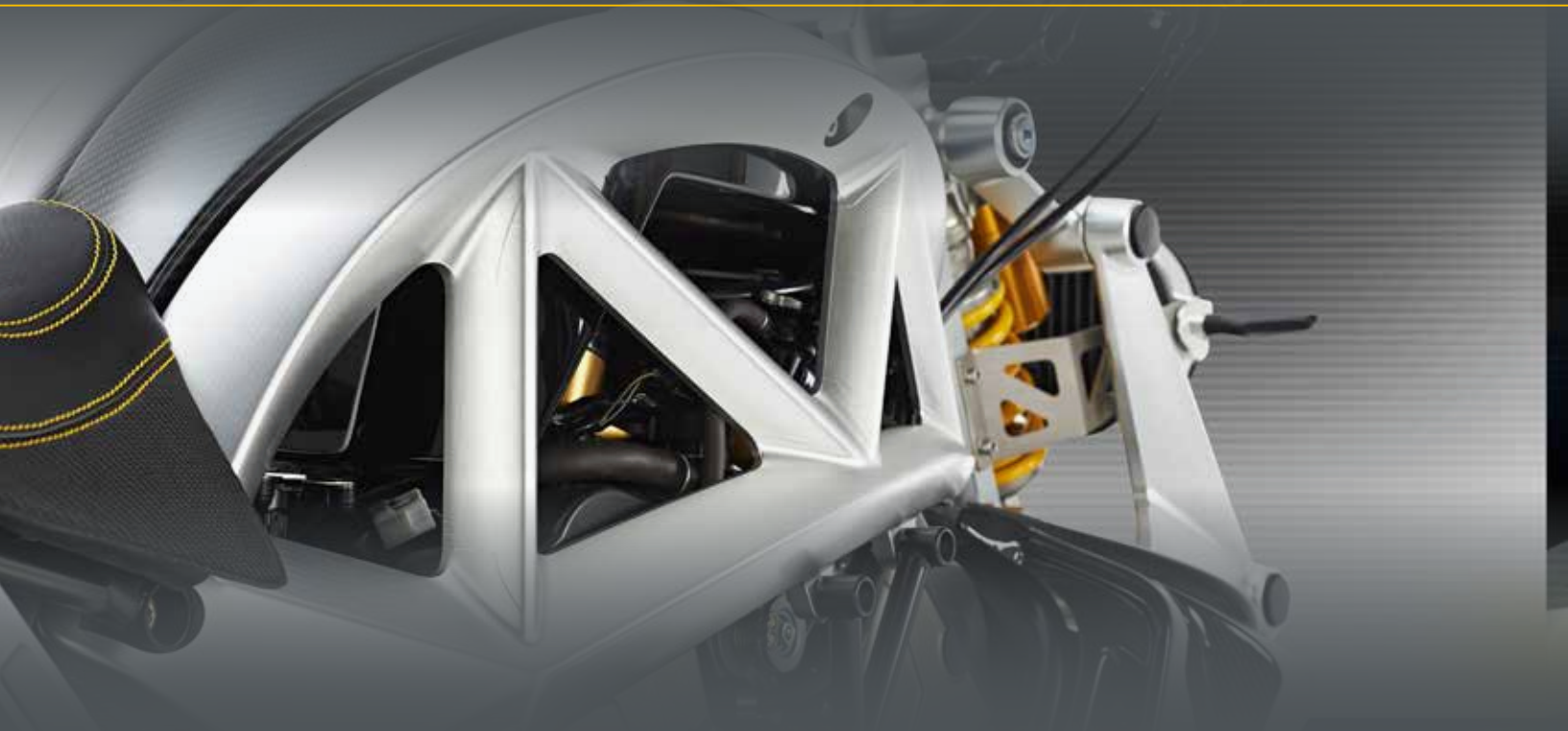
Instantly provide users with maintenance notifications

Counter Function



Allow users to keep count of workpieces with the function of overtime cycle alarm provides easy control over machining cycle time

1. Main Counter
2. Periodical Counter
3. Daily Counter
4. Over Cycle Alarm



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