NEWAY

NEWAY CNC Equipment (Suzhou) Co.,Ltd
No 69 Xunyangjiang Road,Suzhou New District, P.R.China
Tel: 86-512-6239 2186
Fax: 86-512-6607 1116
E-mail: cncsale@neway.com.cn
www.newaycnc.com

NEWAY CNC (USA),INC.
9757 Stafford Centre Drive
Strafford,Texas 77477 USA
Tel: +1 281-969-5800
Fax: +1 281-969-5903
www.newaycnc.us

NEWAY CNC EQUIPMENT SDN BHD
47, Jalan Mutiara Emas 5/16,
Taman Mount Austin,
81100 Johor Bahru, Johor, Malaysia
Tel: +607 352 1355

www.newaycnc.com

• The content of the catalogue is subject to change without notice.

CREATION FOREVER

NEWAY

Vertical Machine Center
VM Series

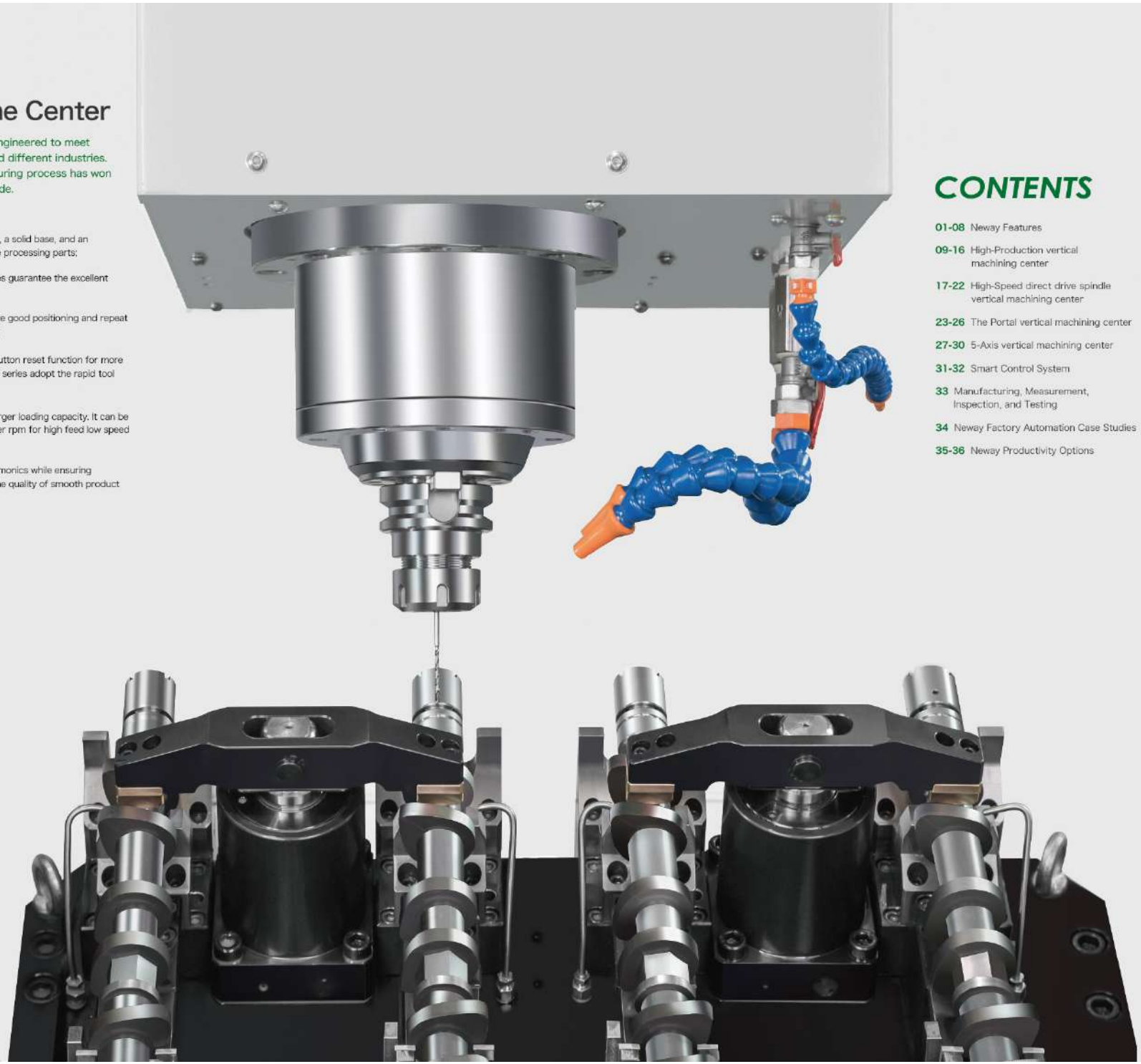
Cat.NO.: E-VM-2019-01

Neway Vertical Machine Center

Neway' s diverse New model line-up is designed and engineered to meet the World Class processing needs of several unique and different industries. The uniqueness of many of their zero-defect manufacturing process has won the trust and praise of many repeat customers worldwide.

- Finite Element Analysis designed castings provide high rigidity, a solid base, and an extremely rigid column to ensure the stability of machine while processing parts;
- Large span Ways and widened and hardened thick rail surfaces guarantee the excellent machine accuracy over the long haul;
- The three-axis screw adopts a pre-tensioned process to ensure good positioning and repeat positioning accuracy without droop while eliminating backlash;
- The whole series of this machine provides a convenient one-button reset function for more convenient problem solving like tool magazine recovery. Some series adopt the rapid tool change system, which greatly reduces the tool change time;
- Some series have four guideways on the Y-axis, which have larger loading capacity. It can be equipped with a gearbox to improve the cutting torque at lower rpm for high feed low speed machining;
- Vibration test and dynamic balance control tests minimize harmonics while ensuring assembly accuracy and motion performance. This improves the quality of smooth product processing and extends the working life of the machine.

Processing case:



CONTENTS

01-08 Neway Features

09-16 High-Production vertical machining center

17-22 High-Speed direct drive spindle vertical machining center

23-26 The Portal vertical machining center

27-30 5-Axis vertical machining center

31-32 Smart Control System

33 Manufacturing, Measurement, Inspection, and Testing

34 Neway Factory Automation Case Studies

35-36 Neway Productivity Options

01 High Stability

- Properly-seasoned stress-relieved Meehanite castings Integrated cast iron, designed for high rigidity;
- The base is designed with a large span support foot and has better stability through computer finite element analysis which adds additional support to areas that need it;
- The guideway adopts large span design to improve the anti-overturning ability of the work surface;
- The column adopts an Inverse-Y design to increase the span, which improves the anti-torsion and anti-overturning ability of the machine by more than 30%;
- Many machines have four guideways on the Y axis.

1 Tool magazine

The tool magazine has a pre-selected function. In other words, the tool required for the next process is prepared (staged) at the same time while the machine is processing. This greatly improves the machining efficiency and reduces the waiting time of the machine.

2 Tool change Testing

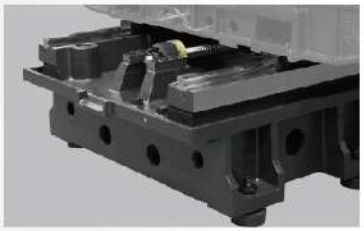
The machine has undergone thousands of tool change tests before leaving the factory to ensure smooth and reliable tool change.

3 Inverse-Y column

It has an Inverse-Y column structure, large rectangular section design, unique internal reinforcement structure, better deflection resistance, torsion resistance, and ultra-high rigidity, all connected with a strong bed to meet the rigidity requirements of strong cutting.

4 Basic design

The bed has high rigidity and suitable for heavy-cutting bases. It adopts high-strength gray cast iron with shock-absorbing capacity, and finite element analysis to ensure stability and reliability.

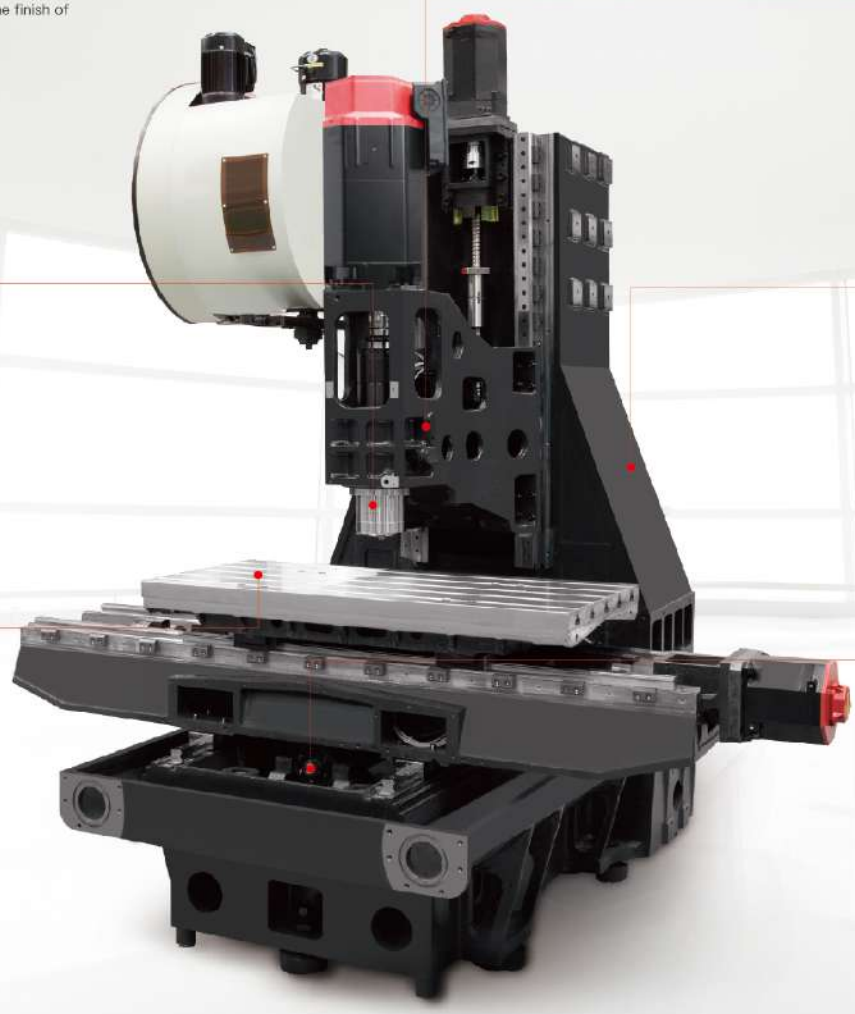


5 Four-guideway design

some machines adopt four-guideway design, which effectively reduces the saddle deformation caused by the offset of the table and improves heavy load capacity during processing.

02 High-speed

- Machining center adopts the high speed design of moving parts, reduce load and improve the speed of the whole system, thus greatly improving the machining speed and efficiency.
- The spindle adopts 12000RPM or 15000RPM direct drive spindle to improve the finish of surface as well as the processing efficiency.



1 High speed direct drive spindle

- The high-speed direct drive spindle has a shorter transmission chain, which effectively reduces the vibration of the spindle and reduce the thermal expansion as well.
- The spindle adopts a labyrinth seal structure to prevent containment from cutting environment, effectively extending the life-span of the spindle.

2 High speed moving parts

Lighter weight moving parts design, which makes machine performance better, is conducive to high-speed differential machining.

3 Spindle oil cooling system

The high-speed machine is equipped with a standard spindle oil chiller, which can effectively control the thermal growth or deformation of the spindle and ensure the high-speed cutting performance of the spindle.

4 Large-span inverse-Y column

It adopts the Wider-span column structure design, which has stronger stability and can improve the performance of the machine to make it more stable during high-speed cutting.

5 Large-span inverse-Y column

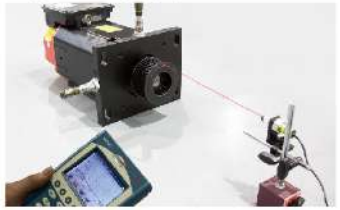
It adopts the Wider-span column structure design, which has stronger stability and can improve the performance of the machine to make it more stable during high-speed cutting.

03 High Precision

In the production assembly process, the machine has carried out a dynamic balance test, temperature test, vibration test and screw Pre-load process.

1 Dynamic balance test

The dynamic balance test is carried out during the matching process, which effectively reduces the vibration during rotation and greatly improves the surface finish.



2 Vibration test

The machine performs vibration tests during the assembly process to ensure that high-standard machining finish requirements are met.

3 Torque Wrench

All major surface locking screws are locked by specially calibrated torque wrenches according to process standards to ensure the stability and long-term reliability of the connection.

4 Double-nut Ball Screw

Double-nut which features high-speed pre-load silent ball screws offering no backlash, high precision, and speedy rapids.

5 Pre-load

The ball screw adopts the pre-load process, which effectively reduces the back lash in the ball screw and helps reduce the heat transfer and friction. This improves the accuracy and strengthens the rigidity and heat deformation resistance.

6 Fine Craftsmanship

The surface is meticulously hand scraped in order to achieve maximum assembly accuracy, rigid structure, and balanced load on all mating surfaces. This costs more but it ensures longer life and a perfect matched finish.

04 Research & Development

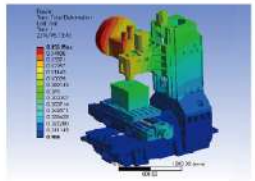
With 7 R&D departments all with specific expertise and 150+ R&D engineers, Neway strives to deliver up to 20+ new design and improvement products per year. 10+ continuous improvement projects in fundamental areas, using the PLM full lifecycle management system to enhance R&D efficiency are always ongoing.

Ongoing continuously improving quality refining projects:

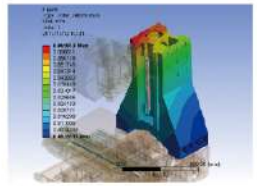
- Static stiffness testing and research of machine tools
- Research on Vibration and Dynamic Stiffness of Machine Tools
- Research on Spectrum Analysis of Machine Tools
- Finite Element Analysis of complete Machine and Components
- Thermal deformation analysis of entire machine and components
- High-Speed Ball Screw Cooling System is Continuously improving.
- Research on Intelligent Development and Application of CNC Machine Tools
- High-pressure chip breaking test and application of the protective seal

1 Finite Element Analysis

The essential parts are all based on finite element analysis. The layout of the optimized structure is cast from high-quality cast iron materials with high stability and excellent shock absorption.



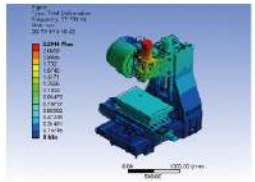
• Machine deformation analysis



• Column rigidity analysis

2 Dynamic Analysis

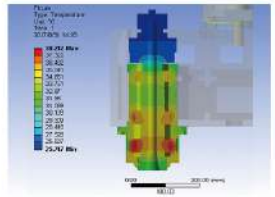
Through dynamic performance balancing analysis, harmonics are greatly reduced that improves the natural frequency and vibration resistance of the machine.



• Dynamic analysis

3 Thermal analysis

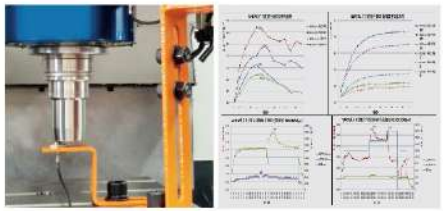
Thermal analysis of the spindle components reduces the thermal deformation and or growth of the spindle.



• Thermal analysis of the vertical spindle

4 Temperature rise research

Through temperature rise research, we can effectively improve the machining accuracy and extend the life-span of machines, as well as reduce the precision error caused by temperature.



5 Vibration research

Through Vibration research, we can effectively improve structure and processing reference, as well as reduce the impact of vibration on machine life and machining accuracy.

05 Friendly Design

Careful attention to design detail along with, constant optimization, ease of operation, convenient location of keyboard and ease of maintenance make our machines a favorite.

- **External sliding door structure design:**
  No iron inclusions, easy to clean no chip buildup.
- **Auto doors reservation for the future automation:**
  Easy to add automatic functions.
- **Swivel control pendant with remote MPG:**
  Conveniently rotates to an optimal viewing position.
- **R232, integrated power interface.**
- **Convenient foot-step water tank for easy clean up.**
- **Easy to observe the external pneumatic unit.**
- **Large side window for easy to maintain and observe.**
- **External large capacity lubrication pump.**

06 Industry application

These examples of completed product specifications and case studies show abundant choices and versatile configurations.
Neway machines are applied to a wide range of end users and industries. These are examples of some of the products produced.

Engine connecting rod

Industry	Car	Processing site	Fine boring head hole
Material	40Cr	Processing time	2min
Feature	High precision	Processing machine	VM1150

Rear-axle housing

Industry	Car	Processing site	Milling, tapping and boring hole
Material	20#	Processing time	10min
Feature	Large rough cuttings	Processing machine	VM1580

Orbiting scroll

Industry	Compressor	Processing site	Vortex line
Material	Aluminum	Processing time	12min
Feature	High precision,High speed	Processing machine	VM1160

Forging steel valve

Industry	Valve	Processing site	Surface, hole, thread
Material	Steel forging	Processing time	5min
Feature	High speed,High rigidity	Processing machine	VM950

PC's Cover

Industry	Electronic	Processing site	Surface, hole, thread
Material	Aluminum	Processing time	8.5min
Feature	High speed,High efficiency	Processing machine	VM950HL

Pump guide impeller

Industry	Water pump	Processing site	Blade surface Runner surface
Material	316L	Processing time	30min
Feature	Multi-axis interpolation	Processing machine	VM650F

Attention: The above data are all from actual use cases. When the cutting conditions and environmentalconditions are different, the above-listed data may not be achieved. Care must be taken to match feeds and speeds to optimize results.

VM Series
High-Production Vertical Machining Center

- This series of models are designed with high rigidity, which can be satisfied for most applications;
- The solid base and column adopt Neway's unique rib arrangement, which effectively guarantees the rigidity of the machine;
- Diversified development of the system and abundant selection of optional items to facilitate customer use and meet processing needs easily;
- Some models adopt four-guideway design, large-span, and high-rigidity structure design, and can perform high-torque cutting, effectively reducing the saddle deformation caused by the overhang of the table and ensuring the load capacity during processing.

Main parameters		VM740S/H	VM950S/H	VM1160S/H	VM1580S/H	VM1780S/H
Worktable size	mm	750×420	950×520	1100×600	1500×800	1700×800
Axis travel X/Y/Z	mm	650/420/500	850/520/560	1000/600/560	1350/800/680	1500/800/680
Axis rapid travel X/Y/Z	m/min	40/40/30	30/30/24[36/36/30]	30/30/24 [36/36/30]	24/24/20(S) 36/36/24(H)	24/24/20(S) 36/36/24(H)
Max. spindle speed	rpm	10000(belt)[12000 (direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	6000[8000(belt)]	6000[8000(belt)]
Number of tools	PC	20	24	24	24	24

1 Four-guideway design

Part of machines is four-guideway design (model 13 or above), which can effectively reduce the saddle deformation caused by the overhang of the table, and ensure the heavy load capacity during processing. The machines anti-deflection rigidity of the saddle is high, the carrying capacity is strong, and the excellent design of the guideway span can ensure the rigidity of the casting for a long time.

2 Casting structure design

A strong support structure, designed with structural mechanics, through finite element analysis ensures the proper arrangement of reinforcing ribs providing a more rigid machine. Moreover, this analysis reduces casting weight, deformation and stress concentration.

3 Reinforced slider connecting structure

It adopts reinforced slider connecting structure, and some models adopt the 6-slide structure, which effectively improves the rigidity of the headstock.

4 Automatic oil pump

Automatic oil pump provides lubrication to the guide ways and ball screws which precisely controls the volume of oil to these critical components. A low-level alarm reminds operator before machine stop. The grease type lubrication is an optional, which is thought by some to be more environmentally friendly.

VM950S/H Processing capacity

Face milling cutter

Diameter D(mm)	ϕ80	Spindle speed S(RPM)	800
Cutting depth Dp(mm)	2.5	Number of cutter teeth	6
Cutting width Ae(mm)	64	Cutting feed F(mm/min)	576

U drill

Diameter D(mm)	ϕ40	Spindle speed S(RPM)	1200
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	120

Tapping

Diameter D(mm)	M20	Spindle speed S(RPM)	300
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	750

End milling cutter

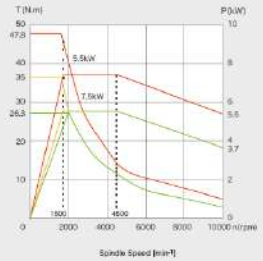
Diameter D(mm)	ϕ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	10	Number of cutter teeth	4
Cutting width Ae(mm)	20	Cutting feed F(mm/min)	200

Attention: The above data are all from actual use cases. When the cutting conditions and environmentalconditions are different, the above-listed data may not be achieved. Care must be taken to match feeds and speeds to optimize results.

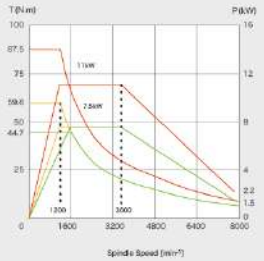
Spindle Power Torque Diagram

(Unit: mm)

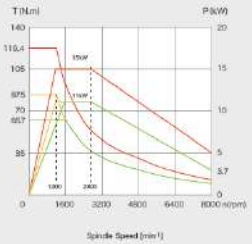
VM740S/H



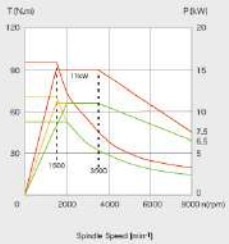
VM950S/H、VM1150S/H、VM1160S/H



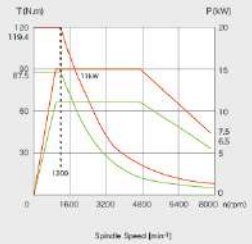
VM1260S/H



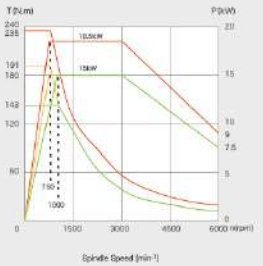
VM1360S



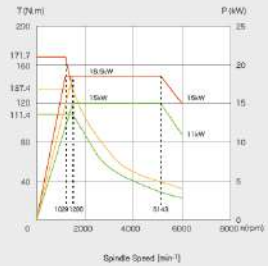
VM1360H



VM1580S、VM1780S、VM1880S



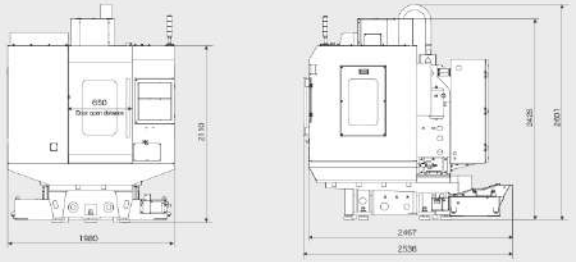
VM1580H、VM1780H、VM1880H



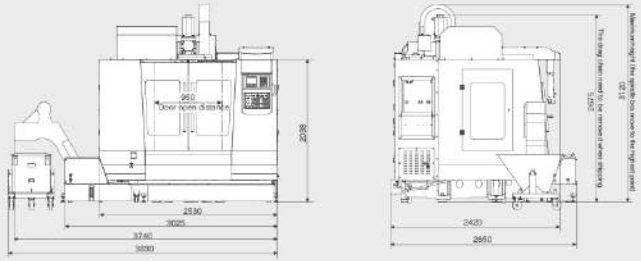
External Dimensions

(Unit: mm)

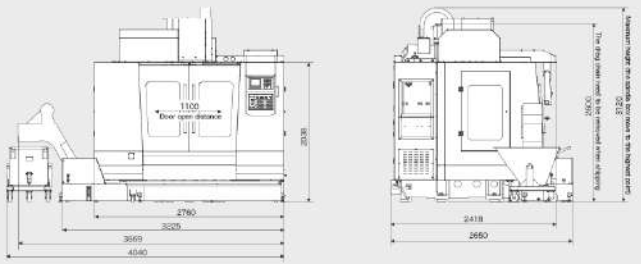
VM740S/H



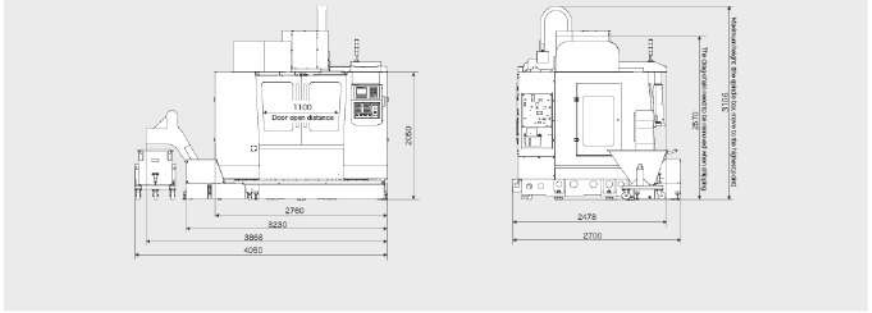
VM950S/H



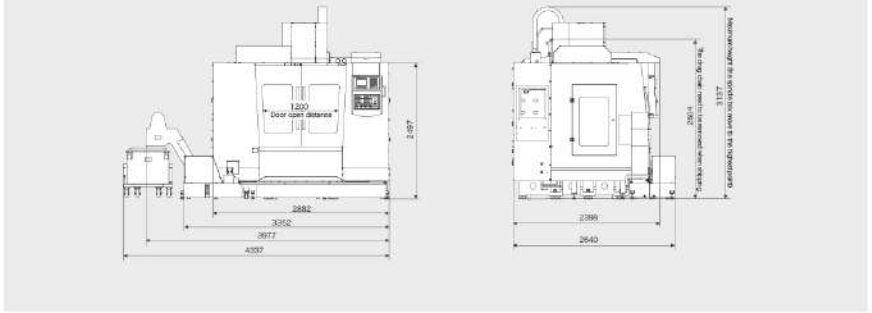
VM1150S/H



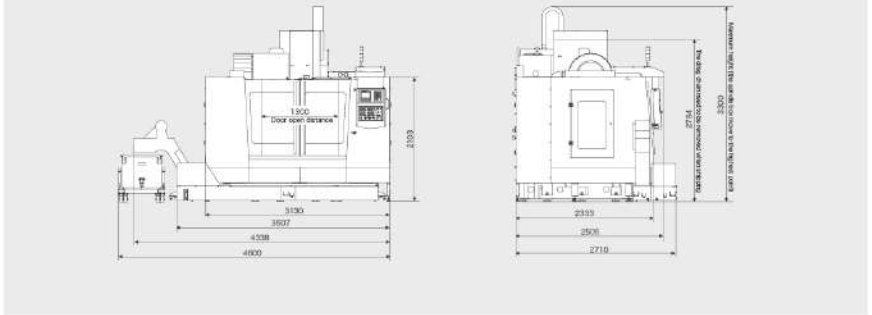
VM1160S/H



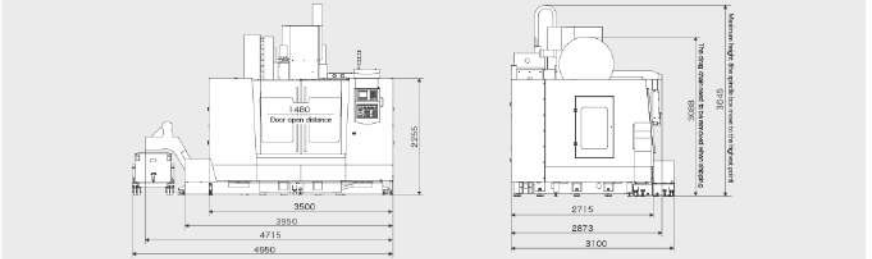
VM1260S/H



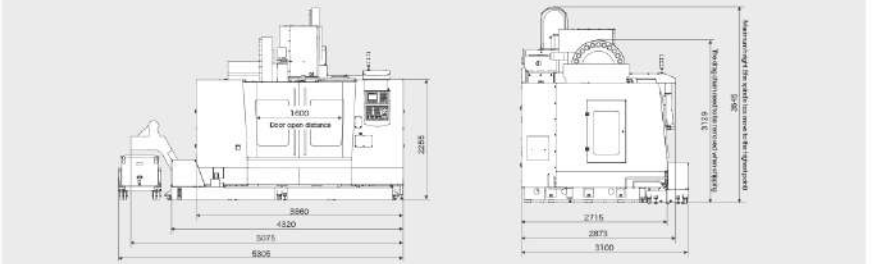
VM1360S/H



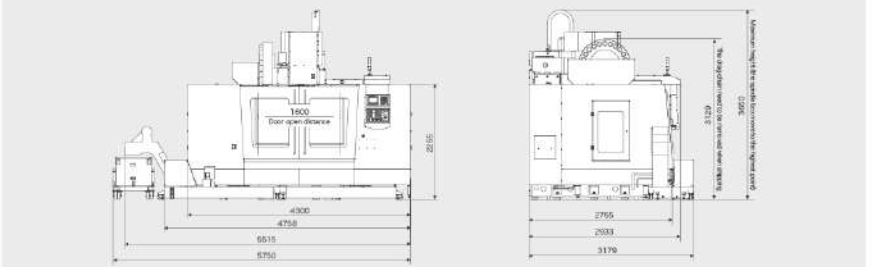
VM1580S/H



VM1780S/H



VM1880S/H



	Item	Unit	VM740S/H	VM950S/H	VM1050S/H	VM1150S/H	VM1160S/H	VM1260S/H	VM1360S/H	VM1580S/H	VM1780S/H	VM1880S/H
Worktable	Worktable size	mm	750×420	950×520	1000×520	1100×520	1100×600	1200×600	1350×600	1500×800	1700×800	1800×800
	Max. worktable loading	kg	350	600	650	750	750	800	1000	1250	1500	1750
Axis travel	Axis travel X/Y/Z	mm	650/420/500	850/520/560	850/520/560	1000/520/560	1000/600/560	1050/600/600	1200/600/600	1350/800/680	1500/800/680	1700/850/700
	Spindle terminal to worktable	mm	120~620	150~710	150~710	150~710	150~710	140~740	150~750	150~830	150~830	140~840
	Spindle center to column guideway	mm	485	590	580	590	659	649	665	868	868	900
Rapid travel	Axis rapid travel X/Y/Z	m/min	40/40/30	30/30/24[36/36/30]	36/36/36	30/30/24[36/36/30]	30/30/24[36/36/30]	30/30/24[36/36/30]	24/24/20(S) 36/36/24(H)	24/24/20(S) 36/36/24(H)	24/24/20(S) 30/30/24(H)	24/24/20
Spindle	Spindle motor power	kW	5.5/7.5[7.5/11]	7.5/11[11/15]	7.5/11[11/15]	7.5/11[11/15]	7.5/11[11/15]	11/15[15/18.5]	11/7.5[15/18.5]	15/18.5	15/18.5	15/18.5
	Max. spindle speed	rpm	10000(belt) [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	8000(belt) [10000(belt)] [12000(direct connection)]	6000[8000(belt)]	6000[8000(belt)]	6000[8000(belt)]
	Spindle taper	-	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40 [Option7:24taper NO.50]	7:24taper NO.40 [Option7:24taper NO.50]	7:24taper NO.50	7:24taper NO.50	7:24taper NO.50
	Spindle temperature control	-	Oil chiller	[Oil chiller]	[Oil chiller]	[Oil chiller]	[Oil chiller]	[Oil chiller]	[Oil chiller]	Oil chiller	Oil chiller	Oil chiller
Tool magazine	Number of tools	Pc	20	24	24	24	24	24	24	24	24	24
	Tool shank	-	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT50	MAS403 BT50	MAS403 BT50
	Pull stud	-	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P50T-1	MAS403 P50T-1	MAS403 P50T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ80/300/8	Φ78/300/8	Φ78/300/8	Φ78/300/8	Φ78/300/8	Φ78/300/8	Φ80/300/8	Φ110/350/15	Φ110/350/15	Φ110/350/15
Machining capacity	Tool change time (T-T)	s	1.7	1.8	1.8	1.8	1.8	1.8	1.8	2	2	2
	Drilling(normalized mild steel)	mm	Φ30	Φ40	Φ40	Φ40	Φ40	Φ45	Φ45	Φ50	Φ50	Φ50
	Tapping(normalized mild steel)	mm	M16	M20	M20	M20	M20	M24	M24	M30	M30	M30
	Milling(normalized mild steel)	cm^3/min	150	200	200	200	200	250	250	300	300	300
Others	Auto chip conveyer	-	[Rear/sideway]	Sideway	Sideway	Sideway	Sideway	Sideway	Sideway	Sideway	Sideway	Sideway
	Auto lubrication system	-	Bijur	Bijur	Bijur	Bijur	Bijur	Bijur	Bijur	Bijur	Bijur	Bijur
	Electrical cabinet air conditioner	-	Option	Option	Option	Option	Option	Option	Standard	Standard	Standard	Standard
Accuracy	Positioning accuracy(X/Y/Z)	mm	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012/0.010/0.010	0.012/0.010/0.010	0.012/0.010/0.010
	Repeatibility accuracy(X/Y/Z)	mm	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.008/0.006/0.006	0.008/0.006/0.006	0.008/0.006/0.006
System	CNC controller	-	NEWAY FANUC [SIEMENS、Mitsubishi]						NEWAY FANUC [SIEMENS、Mitsubishi]			
Others	General power	KVA	20	25	25	25	25	35	35	35	35	35
	Air flow (L/min)/ pressure(bar)	-	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8	280/6~8
	Machine weight	kg	4000	5600	5800	6600	7000	7500	9000	11000	13000	13000
	Machine dimension(L×W×H)	mm	2000×2550×2650	3850×2650×3120	3850×2650×3120	4050×2650×3120	4050×2700×3150	4350×2650×3140	4600×2710×3300	5000×3100×3650	5300×3100×3650	5750×3180×3200

Basic configurations:

chip conveyer with left pedel, coolant system, chip flush system, central lubrication system, full enclosure, air resource unit, spindle air curtain, air blow, air gun, three color lamp

Optional accessories:

Mitsubishi M80 CNC controller, SIMENS 828D CNC controller, 4th axis, 5th axis, column height increase, ZF gear box, coolant through spindle, oil-water separater, special fixtures, various chip conveyers.

[ ]option

VM Series
High-Speed Vertical Machining Center

- This series of models adopt high-speed direct drive spindle and lightweight design, which improves the overall response speed of the machine and shorten the cycle time;
- The large-span base and high-rigidity column make the machine vibration greatly reduced during high-speed movement;
- All ballscrews are pre-loaded ensure the good positioning accuracy and repeat positioning accuracy of the machine and virtually eliminates backlash;
- The integrated headstock design ensures fast response of Z-axis and better rigidity.

Main parameters		VM640D	VM740SL/HL	VM950SL/HL	VM1150SL/HL
Worktable size	mm	650x400	750×420	950×520	1100×520
Axis travel X/Y/Z	mm	510/400/350	650/420/500	850/520/560	1000/520/560
Axis rapid travel X/Y/Z	m/min	60/60/60	48/48/48	40/40/30	40/40/30
Max. spindle speed	rpm	20000(direct connection)	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]
Number of tools	Pc	16(front location/servo)	20	24	24

VM950SL Processing capacity

Face milling cutter

Diameter D(mm)	ϕ80	Spindle speed S(RPM)	800
Cutting depth Dp(mm)	2	Number of cutter teeth	6
Cutting width Ae(mm)	64	Cutting feed F(mm/min)	576

U drill

Diameter D(mm)	ϕ40	Spindle speed S(RPM)	1200
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	120

Tapping

Diameter D(mm)	M20	Spindle speed S(RPM)	260
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	650

End milling cutter

Diameter D(mm)	ϕ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	8	Number of cutter teeth	4
Cutting width Ae(mm)	20	Cutting feed F(mm/min)	200

Attention: The above data are all from actual use cases. When the cutting conditions and environmentalconditions are different, the above-listed data may not be achieved. Care must be taken to match feeds and speeds to optimize results.

1 High-speed direct drive spindle

It adopts advanced assembly technology and effective test methods to ensure the minimum vibration of the spindle during high-speed motion, greatly improving the accuracy of the machine and the surface finish quality of the workpiece.

2 Lightweight moving parts

The large-span design owns high rigidity, which can effectively resist the overturning moment in fast movement and increase the stability of the whole machine.

3 Large-span design

The large-span design owns high rigidity, which can effectively resist the overturning moment in fast movement and increase the stability of the whole machine.

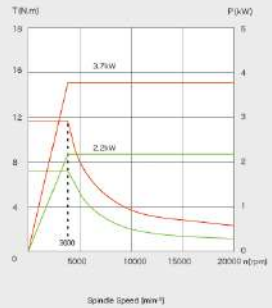
4 Integrated spindle box

it ensures that Z-axis can respond quickly with better rigidity and good dynamic response.

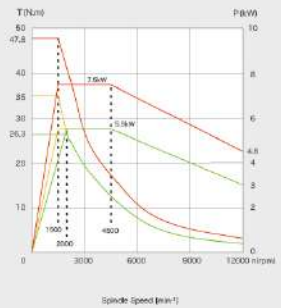
Spindle Power Torque Diagram

(Unit: mm)

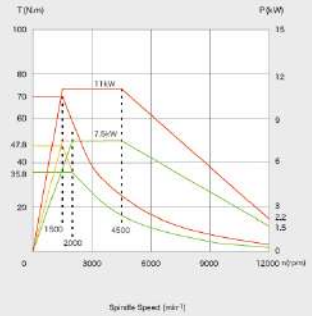
VM640D



VM740SL/HL



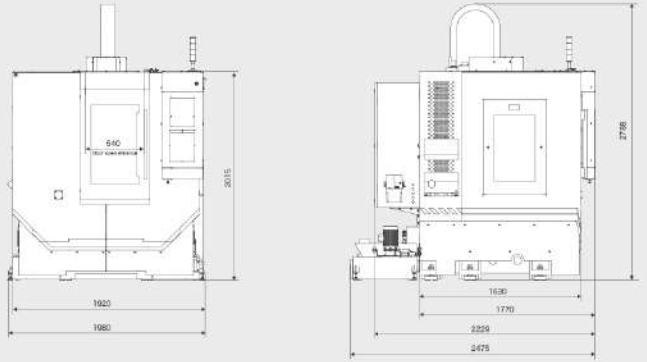
VM950SL/HL、VM1150SL/HL



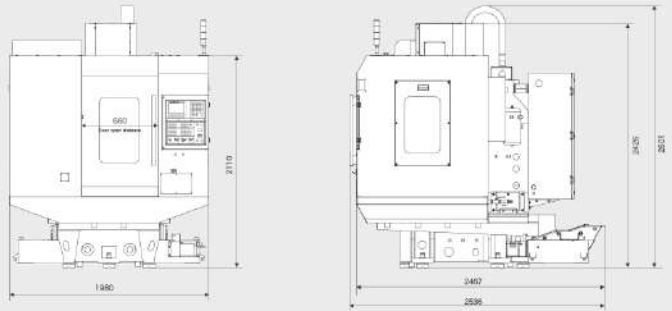
External Dimensions

(Unit: mm)

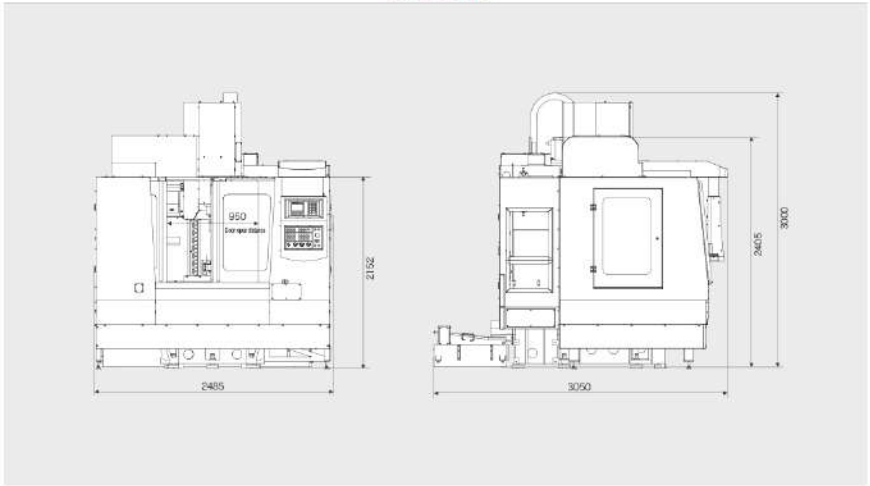
VM640D



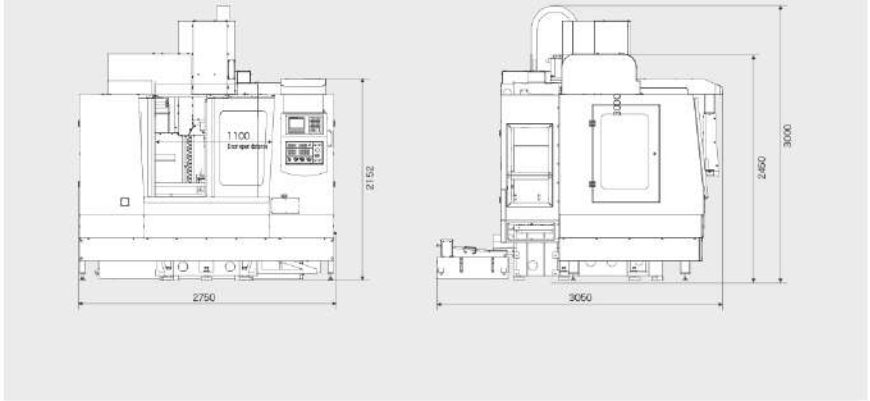
VM740SL/HL



VM950SL/HL



VM1150SL/HL



Item		Uint	VM640D	VM740SL/HL	VM950SL/HL	VM1150SL/HL
Worktable	Worktable size	mm	650x400	750×420	950×520	1100×520
	Max. worktable loading	kg	250	350	500	600
Axis travel	Axis travel X/Y/Z	mm	510/400/350	650/420/500	850/520/560	1000/520/560
	Spindle terminal to worktable	mm	150~500	120~620	120~680	120~680
	Spindle center to column guideway	mm	458	485	575	575
Rapid travel	Axis rapid travel X/Y/Z	m/min	60/60/60	48/48/48	40/40/30	40/40/30
Spindle	Spindle motor power	kW	2.2/3.7	5.5/7.5 [7.5/11]	7.5/11	7.5/11
	Max. spindle speed	rpm	20000 (direct connection)	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]
	Spindle taper	-	7:24taper NO.30	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40
	Spindle temperature control	-	Oil chiller	Oil chiller	Oil chiller	Oil chiller
Tool magazine	Number of tools	Pc	16(front locating/servo)	20	24	24
	Tool shank	-	MAS403 BT30	MAS403 BT40	MAS403 BT40	MAS403 BT40
	Pull stud	-	MAS403 P30T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ100/250/3	Φ80/300/8	Φ78/300/8	Φ78/300/8
	Tool change time (T-T)	s	1.6	1.7	1.8	1.8
Machining capacity	Drilling(normalized mild steel)	mm	Φ16	Φ30	Φ40	Φ40
	Tapping(normalized mild steel)	mm	M10	M16	M20	M20
	Milling(normalized mild steel)	cm^3/min	60	150	200	200
Others	Auto chip conveyer	-	[Rear/sideway]	[Rear/sideway]	[Rear/sideway]	[Rear/sideway]
	Auto lubrication system	-	Bijur	Bijur	Bijur	Bijur
	Electrical cabinet air conditioner	-	Option	Standard	Standard	Standard
Accuracy	Positioning accuracy(X/Y/Z)	mm	0.008	0.008	0.008	0.008
	Repeatibility accuracy(X/Y/Z)	mm	0.005	0.005	0.005	0.005
System	CNC controller	-	NEWAY FANUC [SIEMENS、Mitsubishi]			
Others	General power	KVA	15	20	25	25
	Air flow (L/min)/ pressure(bar)	-	280/6~8	280/6~8	280/6~8	280/6~8
	Machine weight	kg	3000	4000	5000	6000
	Machine dimension(L×W×H)	mm	2050×2500×2850	2020×2550×2700	2500×3050×3000	2800×3050×3000

Basic configurations:
Direct connection spindle, rear chip tank, coolant system, chip flush system, spindle oil chiller system, central lubrication system, full enclosure, air resource unit, spindle air curtain, air blow, air gun, three color lamp, oil collecter.

Optional accessories:
Mitsubishi M80 CNC controller, SIMENS 828D CNC controller, 4th axis, column height increase, coolant through spindle, oil-water separater, special fixtures, various chip conveyers.

[ ]Option

VM Series-
CNC Portal Vertical Machining Center

- This series of models adopt mechatronic design, reasonable structure, and convenient use;
- The coordinate of the three axes adopts linear roller guideway, which has small vibration during a high-speed feed, and there is no creep during a low-speed feed, ensuring high precision and stability;
- High-rigidity, high-precision bearings ensure high precision for long-term machining;
- It is suitable for the processing of complex precision workpieces such as a box, board, plate, and casing;
- Equipped with ZF retarder, coolant through the spindle, and heightening column, it is suitable for high-efficiency machining of valve parts.

Main parameters		VM12100B
Worktable size	mm	1200x1000
Axis travel X/Y/Z	mm	1200/1200/600
Axis rapid travel X/Y/Z	m/min	30/30/24
Max. spindle speed	rpm	5000
Number of tools	Pc	24(Disc type)

1 Gantry frame structure design

The structure is reasonable, with high rigidity, high torque, and good dynamic characteristics. The worktable can pass through the middle of the column, and the travel of X-axis is 1200mm.

2 Stepped column

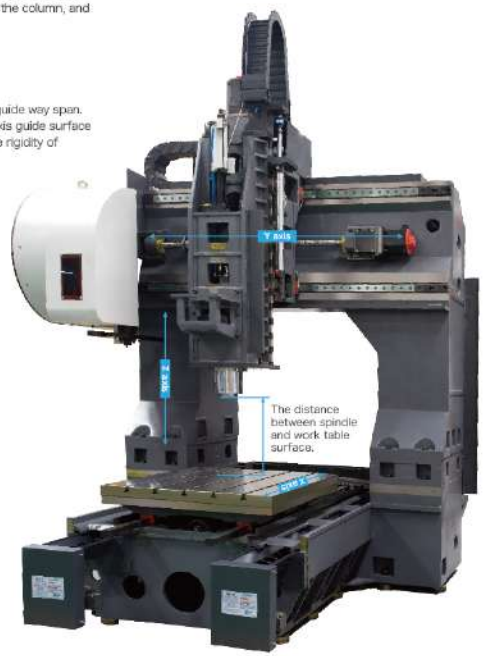
- The stepped column has good structural rigidity and large guide way span. The distance between the center of the spindle and the Z-axis guide surface is short, which reduces the turning torque and improves the rigidity of the machine tool;
- The distance between the center of the spindle and the X-axis guide surface is 426mm.

3 The working area is expanding

- It is suitable for processing ϕ1200mm round and 1200X1200mm square parts.
- Standard work table: 1200X1000mm
  Optional work table: 1400X1200mm

4 Integral heightening column

- Column heightens 200mm:
  The distance between spindle and work table surface is 400 - 1000 mm.
- Column heightens 400mm:
  The distance between spindle and work table surface is 600 ~ 1200 mm, which is suitable for the processing of large size workpiece.



VM12100B Processing capacity

Face milling cutter

Diameter D(mm)	ϕ80	Spindle speed S(RPM)	800
Cutting depth Dp(mm)	4	Number of cutter teeth	6
Cutting width Ae(mm)	64	Cutting feed F(mm/min)	576

U drill

Diameter D(mm)	ϕ45	Spindle speed S(RPM)	1100
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	110

Tapping

Diameter D(mm)	M30	Spindle speed S(RPM)	230
Cutting depth Dp(mm)	/	Number of cutter teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	805

End milling cutter

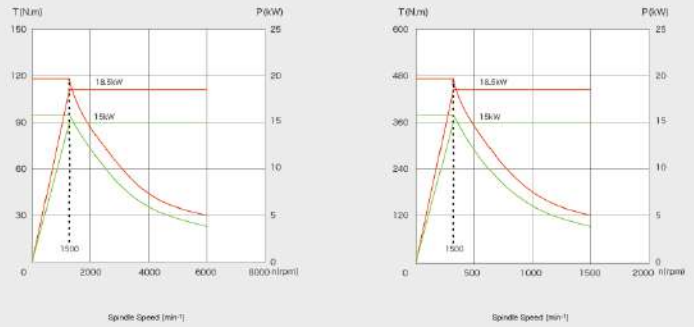
Diameter D(mm)	ϕ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	20	Number of cutter teeth	4
Cutting width Ae(mm)	20	Cutting feed F(mm/min)	200

Attention: The above data are all from actual use cases. When the cutting conditions and environmentalconditions are different, the above-listed data may not be achieved. Care must be taken to match feeds and speeds to optimize results.

Spindle Power Torque Diagram

(Unit: mm)

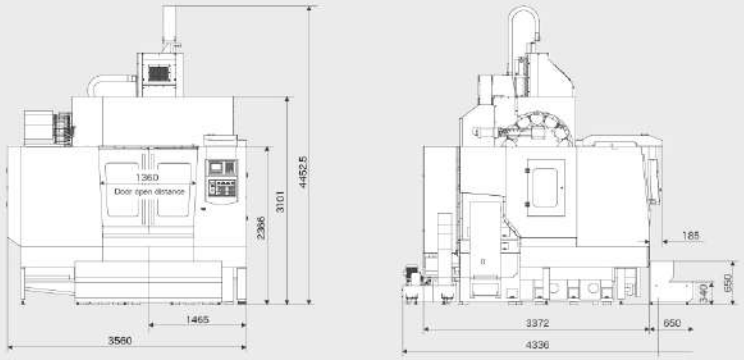
VM12100B



External Dimensions

(Unit: mm)

VM12100B



Item		Unit	VM12100B
Worktable	Worktable size	mm	1200x1000
	Max. worktable loading	kg	2000
Axis travel	Axis travel X/Y/Z	mm	1200/1200/600
	Spindle terminal to worktable	mm	200~800 (400~1000) (600~1200)
	Spindle center to column guideway	mm	426
Rapid travel	Axis rapid travel X/Y/Z	m/min	30/30/24
Spindle	Spindle motor power	kW	15/18.5
	Max. spindle speed	rpm	5000
	Spindle taper	-	7:24taper NO.50
	Spindle temperature control	-	Oil chiller
Tool magazine	Number of tools	Pc	24(Disc type)
	Tool shank	-	MAS403 BT50
	Pull stud	-	MAS403 P50T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ110/350/15
	Tool change time (T-T)	s	2.5
Machining capacity	Drilling(normalized mild steel)	mm	Φ60
	Tapping(normalized mild steel)	mm	M36
	Milling(normalized mild steel)	cm^3/min	350
Others	Auto chip conveyer	-	Rear/sideway
	Auto lubrication system	-	Bijur
	Electrical cabinet air conditioner	-	Standard
Accuracy	Positioning accuracy (X/Y/Z)	mm	0.010/0.010/0.008
	Repeatibility accuracy (X/Y/Z)	mm	0.006/0.006/0.005
System	CNC controller	-	NEWAY FANUC (SIEMENS、Mitsubishi)
Others	General power	KVA	35
	Air flow (L/min)/ pressure (bar)	-	280/6~8
	Machine weight	kg	15000
	Machine dimension (L×W×H)	mm	3560×4340×4450

Basic configurations:
Direct connection spindle, rear chip tank, coolant system, chip flush system, spindle oil chiller system, central lubrication system, full enclosure, air resource unit, spindle air curtain, air blow, air gun, three color lamp, oil collecter.

Optional accessories:
Mitsubishi M80 CNC controller, SIMENS 828D CNC controller, 4th axis, column height increase, coolant through spindle, oil-water separater, special fixtures, various chip conveyers.

[ ]Option

VM Series
Five-axis vertical machining center

This series of models are five-axis vertical machining center, which can realize 5-axis linkage of X, Y, Z, B and C axes at the same time. It is especially suitable for machining parts with complex curved surfaces such as impeller, blade, mold and spatial cam. It is fit for military, mold, aerospace, power generation and shipbuilding industries.

- It is equipped with a direct/inside spindle with little temperature rise and deformation, suitable for precision cutting.
- It can configure the mechanical rotary table and direct drive table to ensure the accuracy of the machining surface.
- All of them configurate five-axis gratings to improve the accuracy of the machine.
- The integrated headstock design ensures fast response of Z-axis and better rigidity.

Main parameters		VM450F	VM650F
Worktable size	mm	ϕ450	ϕ650
Axis travel X/Y/Z	mm	450/400/400	650/550/500
Axis rapid travel X/Y/Z	m/min	48/48/40	48/48/40
Max. spindle speed	rpm	15000	18000
Number of tools	Pc	30(disc typer)	30(disc typer)

- Gantry type structure with high rigidity, integrated cast iron of machine bed and column, a small distance from spindle center to the Z-axis, which reduces spindle box overturn moment, improves machine precision and stability.
- Bed, cross beam, sliding saddle and spindle box are made of phenolic resin molding, high-strength and good-quality cast iron which ensures good stability;
- Adopting the international advanced machine design concept, the structure is reasonable and reliable.

1 Direct connecting spindle

Standard direct connecting spindle can effectively control thermal elongation and vibration to ensure machining accuracy.

2 Two-axis rotary table

Standard cradle-type two-axis rotary table can make the machine realize five-axis linkage.

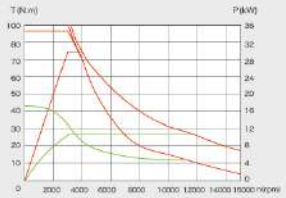
3 Full grating design

The machine adopts full grating design to ensure the good processing effect.

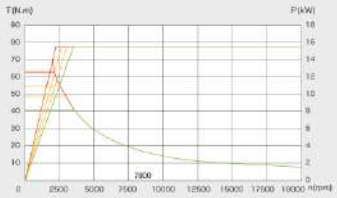
Spindle Power Torque Diagram External Dimensions

(Unit: mm)

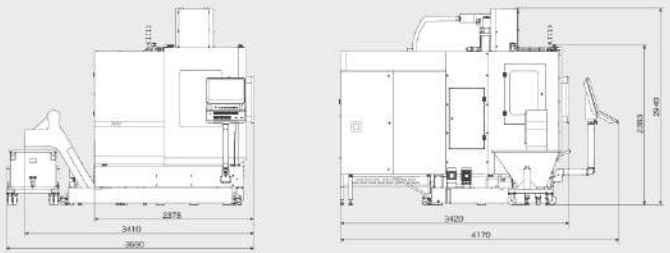
VM450F



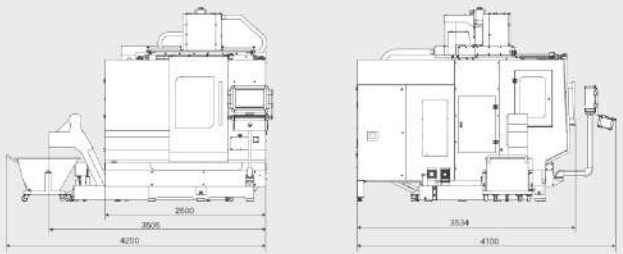
VM650F



VM450F



VM650F



Item		Unit	VM450F	VM650F
Worktable	Worktable size	mm	ϕ450	ϕ650
	Max. worktable loading	kg	200	300
Axis travel	Axis travel X/Y/Z	mm	450/400/400	650/550/500
	B/C axis rotation angle	mm	±110° /360°	±110° /360°
	Spindle terminal to worktable	mm	140-540	150-650
Rapid travel	Axis rapid travel X/Y/Z	m/min	48/48/40	48/48/40
Spindle	Spindle motor power	kW	10.6	15.5
	Max. spindle speed	rpm	15000	18000
	Spindle taper	-	7:24taper NO.40	HSK A63
	Spindle temperature control	-	Oil chiler	Water chiler
Tool magazine	Number of tools	PC	30 (disc type)	30 (disc type)
	Tool shank	-	MAS403 BT40	HSK A63
	Max. tool dia./length/weight	mm/mm/kg	Φ76/300/8	Φ76/300/8
	Tool change time (T-T)	s	1.8	1.8
Machining capacity	Drilling (normalized mild steel)	mm	Φ30	Φ40
	Tapping (normalized mild steel)	mm	M16	M20
	Milling (normalized mild steel)	cm^3/min	150	200
Others	Auto chip conveyer	-	Sideway	Sideway
	Auto lubrication system	-	Bijur	Bijur
	Electrical cabinet air conditioner	-	Standard	Standard
Accuracy	Positioning accuracy (X/Y/Z)	mm/sec	0.006/10	0.006/10
	Repeatibility accuracy (X/Y/Z)	mm/sec	0.004/5	0.004/5
System	CNC controller	-	SIEMENS 840D sl	SIEMENS 840D sl
Others	General power	KVA	35	35
	Air flow (L/min)/ pressure (bar)	—	280/6~8	280/6~8
	Machine weight	kg	8000	12000
	Machine dimension (L×W×H)	mm	3690×4170×2940	4200×4100×3140

Basic configurations:
High speed direct connection spindle, 5 axis with optical scales, chain type chip conveyer, coolant system, chip flush system, central lubrication system, full enclosure, air resource unit, spindle air curtain, air blow, air gun, three color lamp.

Optional accessories:
Coolant through spindle, special fixtures, built-in spindle 18000-24000, direct drive worktable, various chip conveyers.

[ ]Option

Control System

The combination of powerful system functions and secondary function development greatly improves the easy use of the machine; the secondary development of the system brings convenience to customers regarding machine use, commissioning, safety alarm elimination, and maintenance.

FANUC system function and secondary development content display:

1. Machine Maintenance

Convenient machine maintenance precautions and related tips.

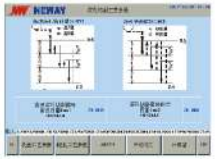
2. M code

M code query makes the machine more intuitive and convenient.

3. I/O status query

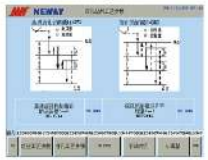
It can query the machine's input and output signal status, making it convenient for maintenance personnel to find the signal.

4. System preset function



It uses the system preset function and image to set processing parameters, which simplifies programming.

5. Lubrication system



Lubrication precautions and input and output signals related to lubrication.

6. Alarm system

Concise English alarm information, more convenient to find the cause of the alarm.

7. Tool magazine management

Tool magazine management interface which is convenient for tool management.

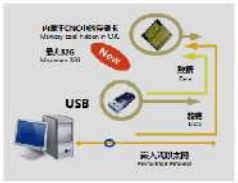
8. Four-axis management

Four-axis management interface and customer optional function management.

Some functions need to be implemented in conjunction with system functions:

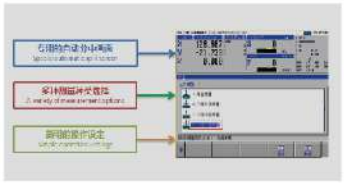
1 High-speed USB and convenient PCMIA memory card solution

- The CNC program can be transferred from USB to CF card.
- It can transfer program to CF card via embedded Ethernet.



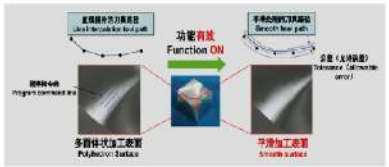
2 Preparation support before processing

- Saves the manual calculation steps, simplifying the operation.



3 Smooth tolerance + control

- Process the tool travel consisting of tiny line segments to improve the quality of the machining surface.



4 Processing conditions

- According to the processing requirements, choose different "precision grades" to meet the processing efficiency and accuracy requirements.

SIEMENS system functions and secondary development content display:

1. Function selection

For the commonly used function, customers only need to open the corresponding option when debugging.

2. Tool magazine is debugging

It can debug the single step and troubleshoot at this interface in order to monitor some signals of the tool magazine.

3. Alarm setting

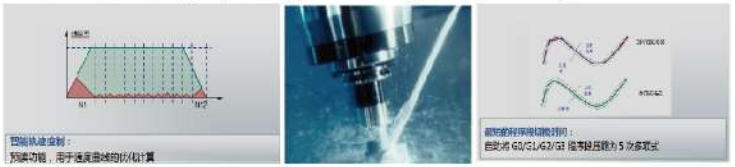
Some alarms on the machine can be temporarily shielded to allow for any maintenance work.

4. Machine setting

Some parts of the machine such as lubrication and chip conveyor can be set and adjusted according to specific machining requirements.

1 Fine surface

Fine surface can achieve the highest processing speed while ensuring excellent track accuracy.

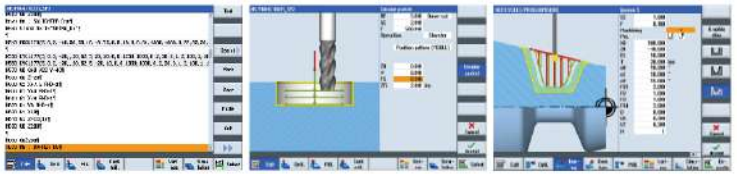


2 Three times overload

The main motor and servo motor have three times overload capacity, which can be used for short-time or Peak heavy cutting.

3 programGUIDE

The machining cycle function significantly increases the productivity and flexibility of high-volume workpiece machining.

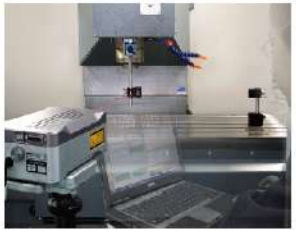


Neway Quality Control
Manufacturing and Measurement

• Contour detection

• Roundness detection

• Three-coordinate detection



• Laser interferometer accuracy detection

• Scraping

• Torque wrench

Production Automation Lines

VM1260

Workpiece Name: Retarder housing
Workpiece Material: Aluminum
Industry: Automobile

VM1150

Workpiece Name: Radiator
Workpiece Material: Aluminum
Industry: Automobile

VM950

Workpiece Name: Input axis
Workpiece Material: 20#
Industry: Automobile

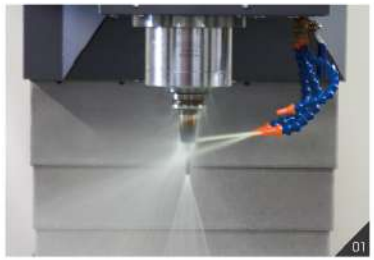
VM740

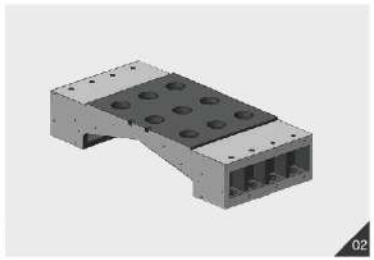
Workpiece Name: Garden machinery
Workpiece Material: Aluminum
Industry: Garden

VM950

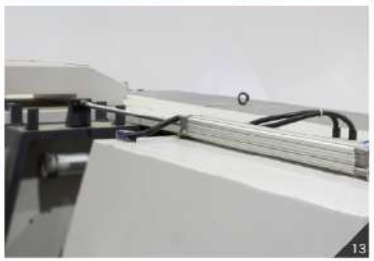
Workpiece Name: Heat exchanger
Workpiece Material: ZL104
Industry: Garden

Additional Productivity Options





01 Coolant through spindle
02 Heightening column
03 ZF retarder
04 Chain-type tool magazine
05 Oil cooler/cabinet air conditioning
06 5-axis rotary table
07 The fourth axis
06 Grating scale



09 Oil-water separator
10 Oil mist collector
11 Double back chip conveyor
12 Rollers, scrapers, magnetic scrapers
13 Auto-door
14 Special fixture
15 Workpiece measurement
16 Tool test
17 Angle head