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

www.newaycnc.com

NEWAY

Vertical Machine Center
VM Series

Cat.NO.:E-VM-2022-01

Neway Vertical Machine Center

Neway' s diverse VMC models meet the world class processing needs of 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, the solid base and extremely rigid column ensure the stability of machine while processing parts;
- Large span, widened and hardened thick guide way mounting surface guarantee the excellent machine accuracy over the long term;
- The three-axis ball screw adopt a pre-tensioned process to ensure good positioning and repeatability accuracy while eliminating backlash;
- The whole series VMC provides a convenient one-button reset function for more convenient problem solving like tool magazine recovery. Some models 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;
- Vibration test and dynamic balance control tests minimize harmonics while ensuring assembly accuracy and motion performance. This improves the parts surface finishing and extends the working life of the machine.

Processing case:

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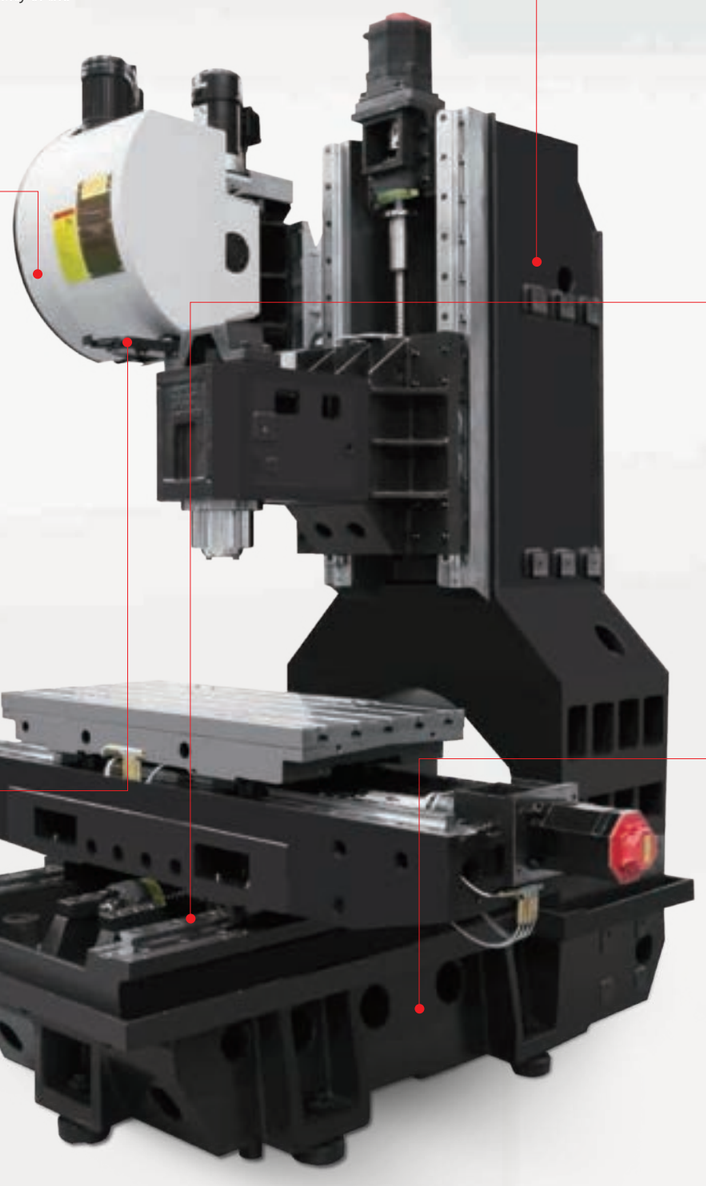
01 High Stability

- Integrated stress-relieved Meehanite casting iron guarantee the high rigidity of whole machine;
- 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%;
- Some models 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

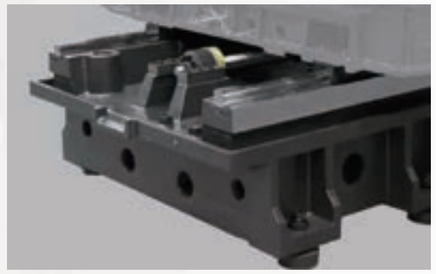
The machine has undergone thousands of tool change tests before leaving the factory to ensure smooth and reliable tool change.

3 Inverse-Y column

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

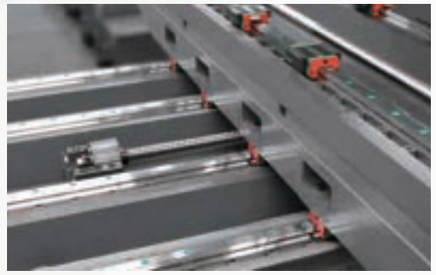
4 Basic design

Solid bed and rigid base, which is suitable for heavy cutting, high-strengthgray cast iron with shock-absorbing capacity, through finiteelement analysis to ensure the machine stability and reliability.



5 Four-guideway design

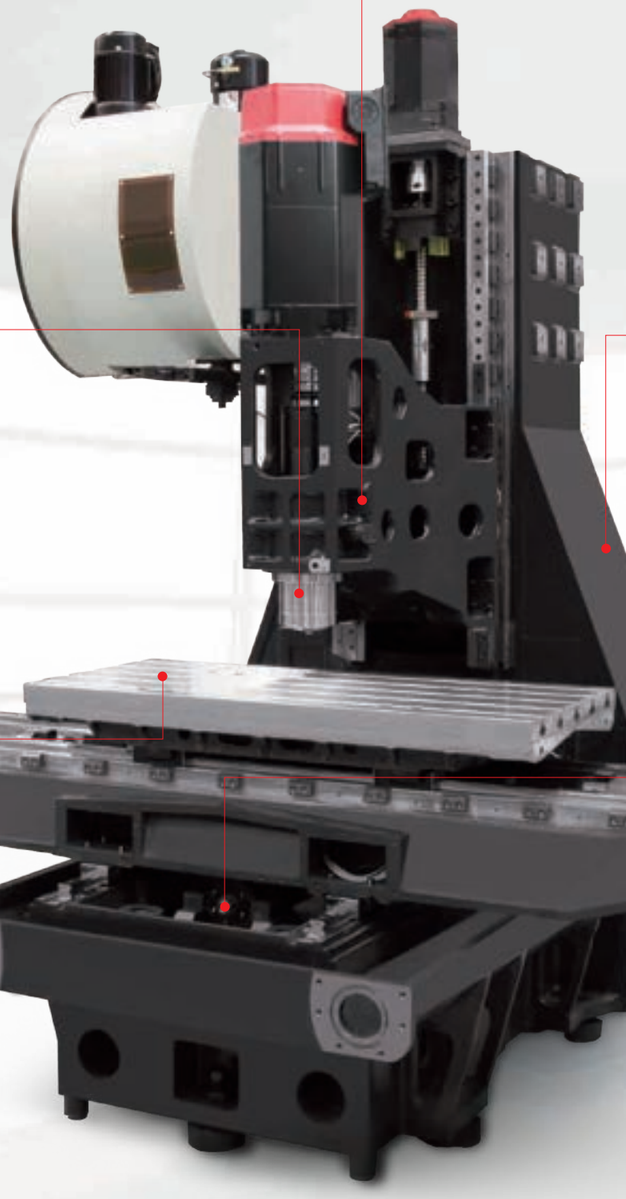
Some machines adopt four-guideway design, which effectively reduces the saddle deformation caused by the offset of the table and improves heavy load capacity during processing.



02 High-Speed

- Some models are designed with lightweight moving parts to reduce the load and improve the response speed of the whole machine, thereby greatly improving the machining efficiency.

- 12000RPM or 15000RPM direct drive spindle to improve the finish of surface as well as the processing efficiency.

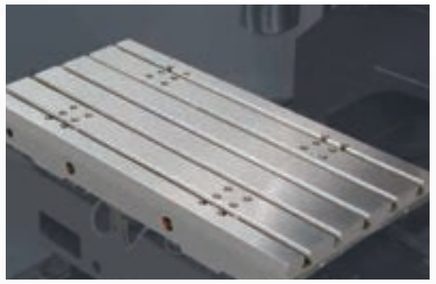


1 High speed direct drive spindle

- 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 or chips enter into the spindle, effectively extending the life-span of the spindle.

2 High speed moving parts

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



3 Spindle oil cooling system

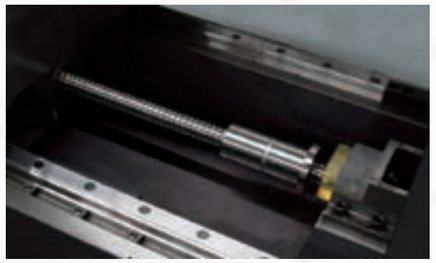
The high-speed VMC is equipped with spindle oil chiller as standard, which can effectively control the thermal deformation of the spindle and ensure the high-speed cutting performance of the spindle.

4 Large-span inverse-Y column

It adopts the wider-span column structure design, which has higher stability, improve the high speed moving performance of the machine and make machine more stable during high-speed cutting.

5 High speed movement units

Equipped with high speed & silent ball screw and linear guide way to realize stable movement without crawl.

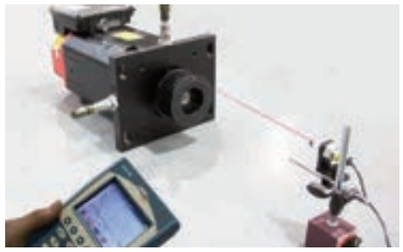


03 High Precision

During the production and assembly process of the machine tool, dynamic balance test, temperature rise test, online vibration detection and ball screw pre-stretching process are carried out.Through a variety of quantifiable process methods, the machine tool accuracy and accuracy retention can be guaranteed.

1 Dynamic balance test

The dynamic balance test is carried out during the assembly 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 connection 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 high-speed pre-load silent ball screws offering no backlash, high precision, high speed.

5 Pre-stretch

The ball screw adopts the pre-stretch process, which effectively reduces the backlash in the ball screw and helps reduce the heat transmission. This process improves the accuracy and strengthens the rigidity and avoid heat deformation.

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 machining performance.

04 Research & Development

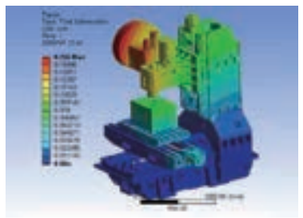
With 7 R&D departments all with specific expertise and 150+ R&D engineers. Neway strives to deliver up to 20+ new design and improvement products per year. 10+ continuous improvement projects in fundamental areas, using the PLM full lifecycle management system to enhance R&D efficienc.

Ongoing continuously improving quality refining projects:

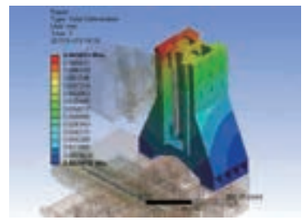
- Static stiffness testing and research of machine tools
- Research on vibration and dynamic stiffness of machine tools
- Research on spectrum analysis of machine tools
- Finite element analysis of complete machine and components
- Thermal deformation analysis of entire machine and components
- Research and application of high-speed ball screw center cooling system
- 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.



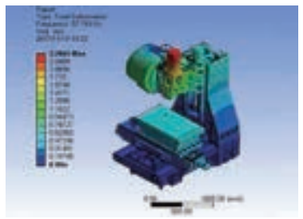
• Machine deformation analysis



• Column rigidity analysis

2 Dynamic analysis

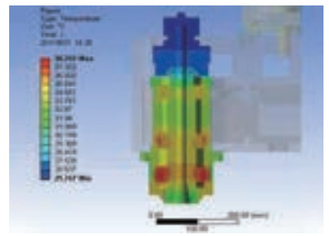
Through dynamic performance balancing analysis, improves the natural frequency and vibration resistance of the machine.



• Dynamic analysis

3 Thermal analysis

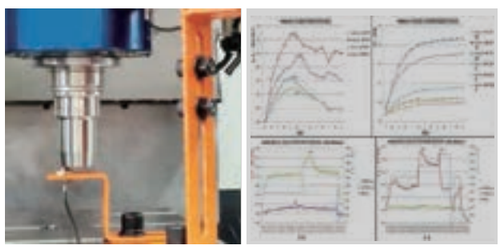
Thermal analysis of the spindle components reduces or controls the thermal deformation.



• Thermal analysis of 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 the vibration research and analysis of the main drive system, it can provide effective reference for structural improvement and process improvement, and reduce theimpact of vibration on machine tool using 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.

- Large front sliding door opening: to meet the large workpiece loading and unloading operations
- Machine top has pneumatic cylinder installation position reservation: easy to add auto functions
- Rotatable operation panel: can be rotated to the best viewing angle position for smoother operation
- Network and power integrated interface: convenient for machine tool networking and external power supply
- External air source processing unit: easy to observe and maintain
- External lubrication pump: easy for maintenance
- Chip conveyor: easy to clean up chips and reduce manual labor
- Internal tool magazine protection: reduce tool magazine failures and improve tool magazine reliability
- Tools platform: easy for tool changing and maintenance
- Ring-mounted water spray: enhanced cooling ability

06 Industry Application

Complete product lines and rich options & configurations ensure Neway machines are widely applied in various industries.

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	Rough cutting	Processing machine	VM1580

Orbiting scroll

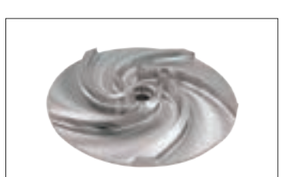
Industry	Compressor	Processing site	Vortex line
Material	Aluminum	Processing time	12min
Feature	High precision,High speed	Processing machine	VM1160

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 environmental conditions 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-efficiency Vertical Machining Center

- This series of models are designed with high rigidity, which can meet most machining applications requirements;
- 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 optional accessories 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		VM740SA/HA	VM1050S/H	VM1160S/H	VM1370S/H	VM1580S/H	VM1880S/H
Worktable size	mm	750×420	1000×520	1100×600	1400×700	1500×800	1800×800
Axis travel X/Y/Z	mm	650/420/500	850/520/560	1000/600/560	1300/700/700	1350/800/680	1700/850/700
Axis rapid travel X/Y/Z	m/min	40/40/30	36/36/36	36/36/30	30/30/24(H) 24/24/20(S)	30/30/24(H) 24/24/20(S)	24/24/20
Max. spindle speed	rpm	10000(belt)	8000(belt)	8000(belt)	8000(belt)	6000(belt)	6000(belt)
Number of tools	Pc	20	24	24	24	24	24

.....

1 Four-guideway design

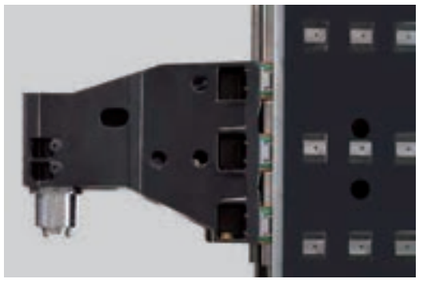
Some models are with four-guideway design (VM13 and bigger models),which can effectively reduce the saddle deformation caused by the overhang of the table, and ensure the heavy load capacity during processing. The anti-deflection rigidity of the saddle is high, the carrying capacity is strong. And the excellent design of the guideway span can ensure the supporting rigidity of the casting for a long time.

2 Casting structure design

The strong support structure is more in line with the principle of structural mechanics. After the computer finite element analysis, the reinforcement ribs are arranged reasonably, and the circular openings in casting can reduce the weight of the castings, reduce the deformation of the castings, and reduce thestress 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.



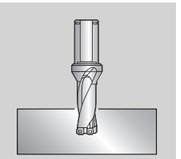
4 Automatic oil pump

Automatic oil pump and quantitative lubrication system 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 can be applied as option.

VM1050S/H processing capacity

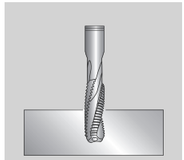
Face milling tool

Diameter D(mm)	Φ80	Spindle speed S(RPM)	800
Cutting depth Dp(mm)	2.5	Number of tool teeth	6
Cutting width Ae(mm)	64	Cutting feed F(mm/min)	576



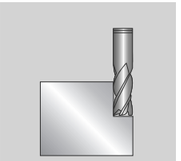
U drill

Diameter D(mm)	Φ40	Spindle speed S(RPM)	1200
Cutting depth Dp(mm)	/	Number of tool 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 tool teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	750



End milling tool

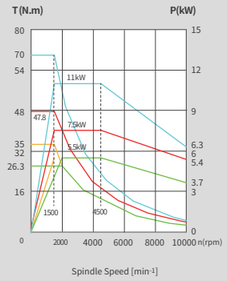
Diameter D(mm)	Φ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	10	Number of tool teeth	4
Cutting width Ae(mm)	20	Cutting feed F(mm/min)	200

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

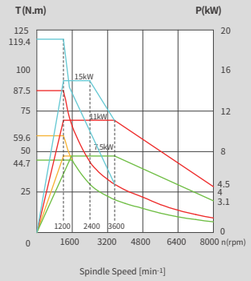
Spindle Power Torque Diagram

(Unit: mm)

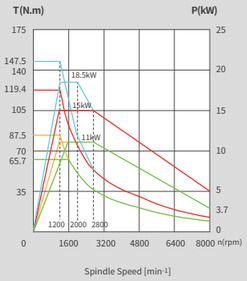
VM740SA/HA



VM1050S/H、VM1150S/H、VM1160S/H



VM1260S/H



VM1370S

VM1370H

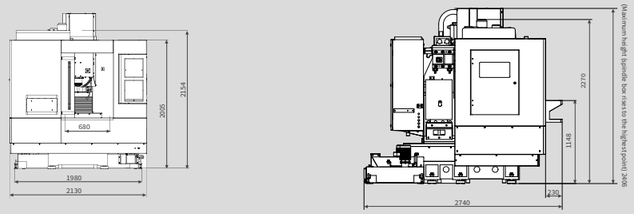
VM1580S、VM1780S、VM1880S

VM1580H、VM1780H、VM1880H

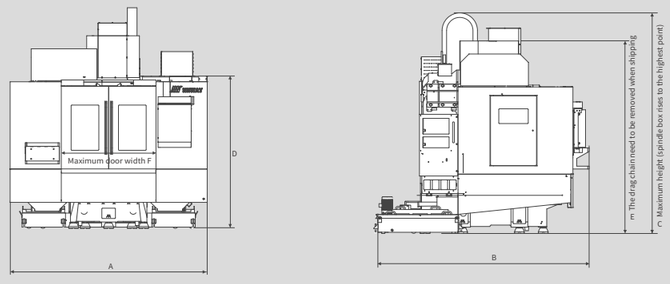
External Dimensions

(Unit: mm)

VM740SA/HA

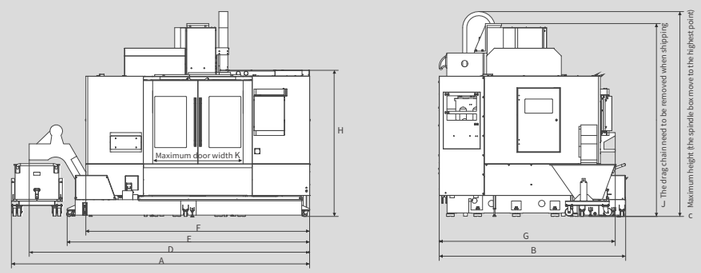


VM1050S/H、VM1150S/H、VM1160S/H



Equipment	A	B	C	D	E	F
VM1050S/H	2530	2900	2880	2100	2458	1000
VM1150S/H	2810	2950	3160	2090	2560	1100
VM1160S/H	2810	3069	3146	2090	2560	1100

VM1260S/H、VM1370S/H、VM1580S/H、VM1780S/H、VM1880S/H



Equipment	A	B	C	D	E	F	G	H	J	k
VM1260S/H	4380	2640	3140	4000	3400	3050	2460	2310	2610	1200
VM1370S/H	4650	2900	3400	4400	3800	3500	2750	2300	3000	1350
VM1580S/H	5000	3150	3650	4750	3950	3500	2950	2370	3150	1450
VM1780S/H	5350	3150	3650	5100	4350	3900	2950	2370	3150	1600
VM1880S/H	5750	3200	3650	5550	4750	4300	3200	2380	3150	1800

Item		Unit	VM740S/H	VM1050S/H	VM1150S/H	VM1160S/H	VM1260S/H	VM1370S/H	VM1580S/H	VM1780S/H	VM1880S/H
Worktable	Worktable size	mm	750×420	1000×520	1100×520	1100×600	1200×600	1400×700	1500×800	1700×800	1800×800
	Max. worktable loading	kg	350	650	750	750	800	1100	1250	1500	1750
Axis travel	Axis travel X/Y/Z	mm	650/420/500	850/520/560	1000/520/560	1000/600/560	1050/600/600	1300/700/700	1350/800/680	1500/800/680	1700/850/700
	Spindle terminal to worktable	mm	120～620	150～710	150～710	150～710	140～740	120～820	150～830	150～830	140～840
	Spindle center to column guideway	mm	485	580	590	660	649	773	868	868	900
Rapid travel	Axis rapid travel X/Y/Z	m/min	40/40/30	36/36/36	36/36/30	36/36/30	30/30/24[36/36/30]	24/24/20(S) 30/30/24(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 11/15	7.5/11 11/15	7.5/11 11/15	7.5/11 11/15	11/15	15/18.5	15/18.5	15/18.5
	Max. spindle speed	rpm	10000(belt)	8000(belt)	8000(belt)	8000(belt)	8000(belt)	8000(belt)	6000(belt)	6000(belt)	6000(belt)
	Spindle taper	-	7:24taper NO.40	7:24taper NO.40	7:24taper NO.40 [7:24taper NO.50]	7:24taper NO.40 [7:24taper NO.50]	7:24taper NO.40 [7:24taper NO.50]	7:24taper NO.40 [7:24taper 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
Tool magazine	Number of tools	Pc	20	24	24	24	24	24	24	24	24
	Tool shank	-	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 P50T-1	MAS403 P50T-1	MAS403 P50T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ80/300/8	Φ80/300/8	Φ80/300/8	Φ80/300/8	Φ80/300/8	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	2.5	2.5	2.5
	Drilling(normalized mild steel)	mm	Φ30	Φ40	Φ40	Φ40	Φ45	Φ45	Φ50	Φ50	Φ50
	Tapping(normalized mild steel)	mm	M16	M20	M20	M20	M24	M24	M30	M30	M30
	Milling(normalized mild steel)	cm^3/min	150	200	200	200	250	250	300	300	300
Others	Auto chip conveyer	-	Rear[Sideway]	Rear[Sideway]	Rear[Sideway]	Rear[Sideway]	Sideway	Sideway	Sideway	Sideway	Sideway
	Auto lubrication system	-	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	Electrical cabinet air conditioner	-	Option	Option	Option	Option	Option	Option	Option	Option	Option
Accuracy	Positioning accuracy(X/Y/Z)	mm	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	0.012/0.010/0.010
	Repeatability accuracy(X/Y/Z)	mm	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	0.008/0.006/0.006
	CNC controller	-	NEWAY FANUC［SIEMENS、Mitsubishi］						NEWAY FANUC［SIEMENS、Mitsubishi］		
Others	General power	KVA	20	25	25	25	35	35	40	40	40
	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
	Machine weight	kg	3800	5600	6500	6800	7200	9500	11000	13000	14200
	Machine dimension(L×W×H)	mm	2130×2740×2660	2530×2900×2880	2810×3020×3160	4350×2650×3140	4350×2650×3140	4500×2950×3280	5000×3150×3650	5350×3100×3650	5750×3200×3650

Basic configurations:

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 ball screws are per-stretched to ensure the good positioning accuracy and repeatability accuracy of the machine and virtually eliminates backlash;
- The integrated headstock design ensures fast response of Z-axis and better rigidity.

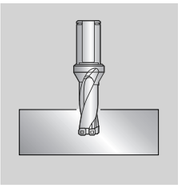
Main parameters

		VM740SL/HL	VM950SL/HL	VM1050SL/HL	VM1150SL/HL
Worktable size	mm	750×420	950×520	1000×520	1100×520
Axis travel X/Y/Z	mm	650/420/500	850/520/560	850/520/560	1000/520/560
Axis rapid travel X/Y/Z	m/min	48/48/48	40/40/30	48/48/48	40/40/30
Max. spindle speed	rpm	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]	12000(direct connection) [15000(direct connection)]
Number of tools	Pc	20	24	24	24

VM950SL processing capacity

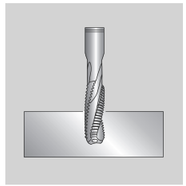
Face milling tool

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



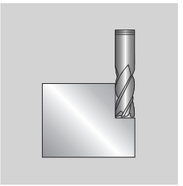
U drill

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 tool teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	650



End milling tool

Diameter D(mm)	ϕ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	8	Number of tool 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 environmental conditions 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

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

2 Lightweight moving parts

The lightweight design of moving parts makes the machining response better, and conducive to high-speed interpolation processing.

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.

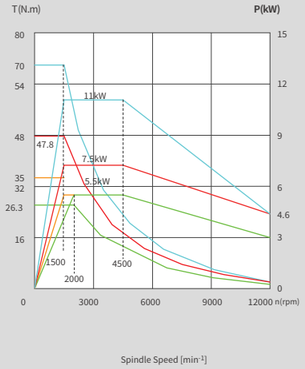
4 Integrated spindle box

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

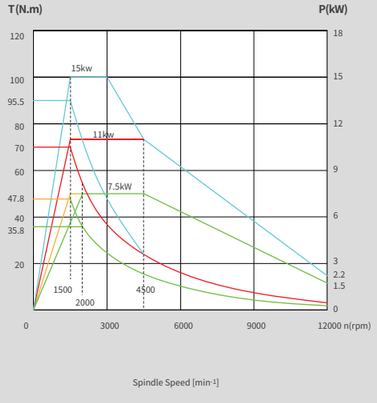
Spindle Power Torque Diagram

(Unit: mm)

VM740SL/HL



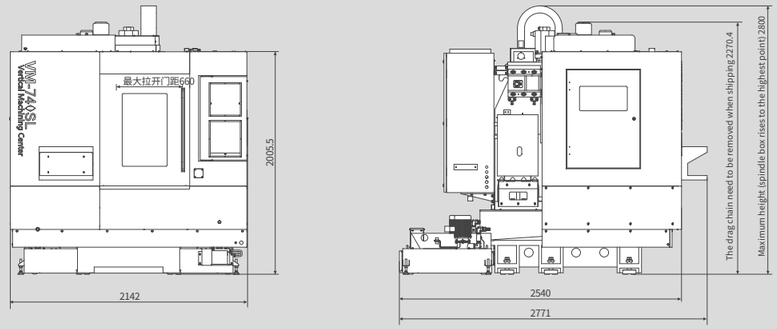
VM950SL/HL、VM1050SL/HL、VM1150SL/HL



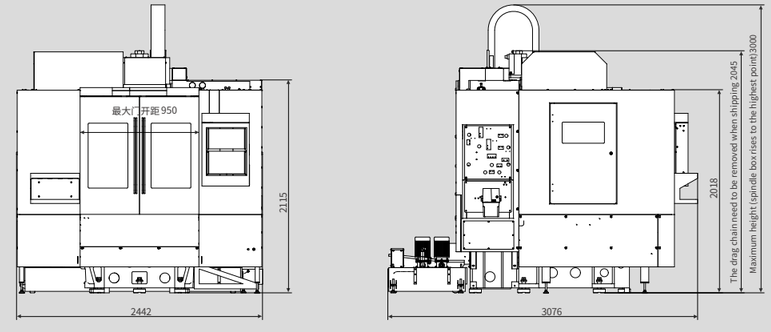
External Dimensions

(Unit: mm)

VM740SL/HL



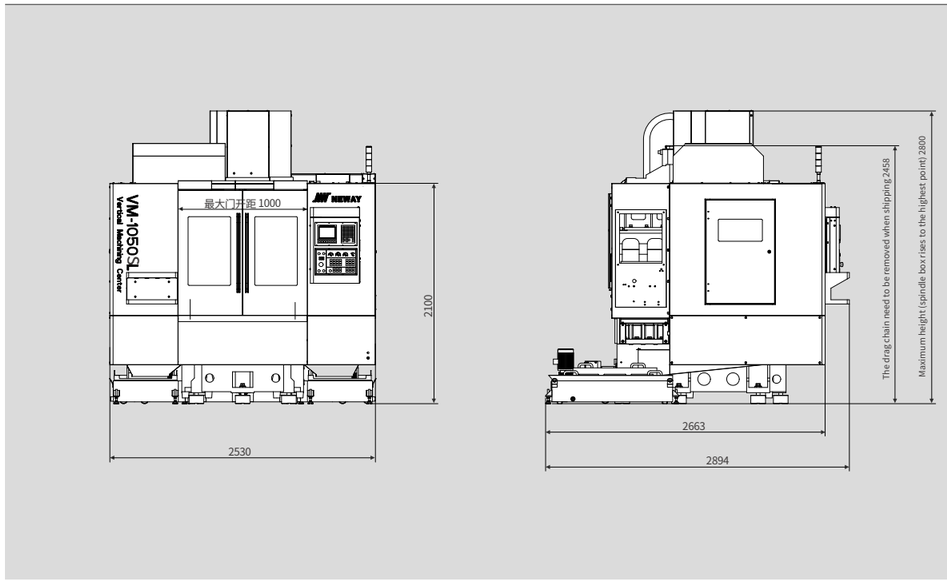
VM950SL/HL



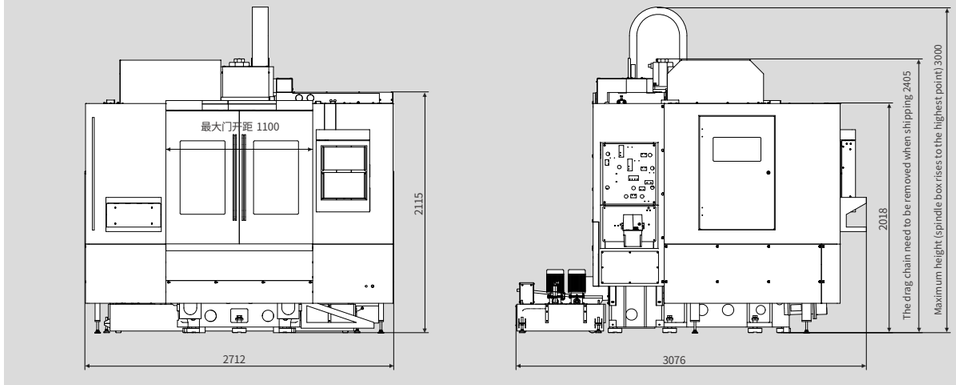
External Dimensions

(Unit: mm)

VM1050SL/HL



VM1150SL/HL



Item		Uint	VM740SL/HL	VM950SL/HL	VM1050SL/HL	VM1150SL/HL
Worktable	Worktable size	mm	750×420	950×520	1000×520	1100×520
	Max. worktable loading	kg	350	500	550	600
Axis travel	Axis travel X/Y/Z	mm	650/420/500	850/520/560	850/520/560	1000/520/560
	Spindle terminal to worktable	mm	120～620	120～680	120～680	120～680
	Spindle center to column guideway	mm	485	575	580	575
Rapid travel	Axis rapid travel X/Y/Z	m/min	48/48/48	40/40/30	48/48/48	40/40/30
Spindle	Spindle motor power	kW	5.5/7.5	7.5/11	7.5/11	7.5/11
	Max. spindle speed	rpm	12000(direct driver)[15000(direct driver)]			
	Spindle taper	-	7:24taper NO.40	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	20	24	24	24
	Tool shank	-	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT40
	Pull stud	-	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ80/300/8	Φ80/300/8	Φ80/300/8	Φ80/300/8
	Tool change time (T-T)	s	1.7	1.8	1.8	1.8
Machining capacity	Drilling(normalized mild steel)	mm	Φ30	Φ40	Φ40	Φ40
	Tapping(normalized mild steel)	mm	M16	M20	M20	M20
	Milling(normalized mild steel)	cm^3/min	150	200	200	200
Others	Auto chip conveyer	-	Option	Option	Option	Option
	Auto lubrication system	-	Standard	Standard	Standard	Standard
	Electrical cabinet air conditioner	-	Option	Option	Option	Option
Accuracy	Positioning accuracy(X/Y/Z)	mm	0.008	0.008	0.008	0.008
	Repeatability accuracy(X/Y/Z)	mm	0.005	0.005	0.005	0.005
System	CNC controller	-	NEWAY FANUC［SIEMENS、Mitsubishi］			
Others	General power	KVA	20	25	25	25
	Air flow（L/min)/ pressure(bar)	-	280/6～8	280/6～8	280/6～8	280/6～8
	Machine weight	kg	3800	5000	5600	5600
	Machine dimension(L×W×H)	mm	2130×2740×2660	2442×3076×3000	2530×2900×2800	2712×3076×3000

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 –
Heavy-duty Vertical Machining Center

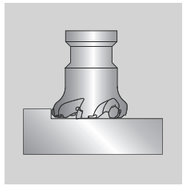
- This series adopt box guideway design with strong carrying capacity;
- Full turcite B coated guideway surface with good vibration absorption and low friction;
- The high-torque spindle motor is well equipped with stronger cutting capacity;
- Gear drive spindle box can be equipped to realize higher rigidity.

Main parameters

		VM950HR/SR	VM1150HR/SR	VM1260HR	VM1260RZ
Worktable size	mm	950×520	1100×520	1250×600	1250×600
Axis travel X/Y/Z	mm	850/520/560	1000/520/560	1050/600/600	1050/600/600
Axis rapid travel X/Y/Z	m/min	20/20/18	20/20/18	20/20/18	20/20/18
Max.spindle speed	rpm	8000	8000	8000	6000(gear box)
Number of tools	Pc	24	24	24	24

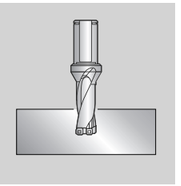
.....

VM1580HR processing capacity



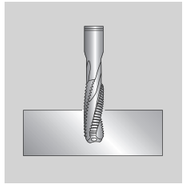
Face milling tool

Diameter D(mm)	ф80	Spindle speed S(RPM)	800
Cutting depth Dp(mm)	2.5	Number of tool teeth	6
Cutting width Ae(mm)	64	Cutting feed F(mm/min)	576



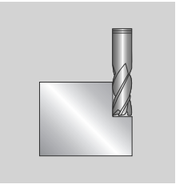
U drill

Diameter D(mm)	ф50	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	/	Number of tool teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	120



Tapping

Diameter D(mm)	M20	Spindle speed S(RPM)	220
Cutting depth Dp(mm)	/	Number of tool teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	770



End milling tool

Diameter D(mm)	ф20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	20	Number of tool 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 environmental conditions are different, the above-listed data may not be achieved. Care must be taken to match feeds and speeds to optimize results.

1 Box guideway

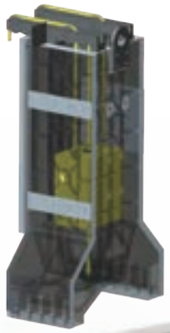
Three-axis sliding boxway with strong cutting performance and carrying capacity. High damping cast iron material and Turcite layer, wide guideway surface can quickly absorb the vibration generated by strong cutting, ensure good machining surface of the workpiece ad extend tool using life.

2 Three-axis drive

The three-axes are directly connected to the feed ball screw by the servo motor through the gapless elastic coupling. High-speed ball screw, which are pre-stretched during assembly. This improves the stability and rigidity of the ball screw, ensure excellent machining accuracy.

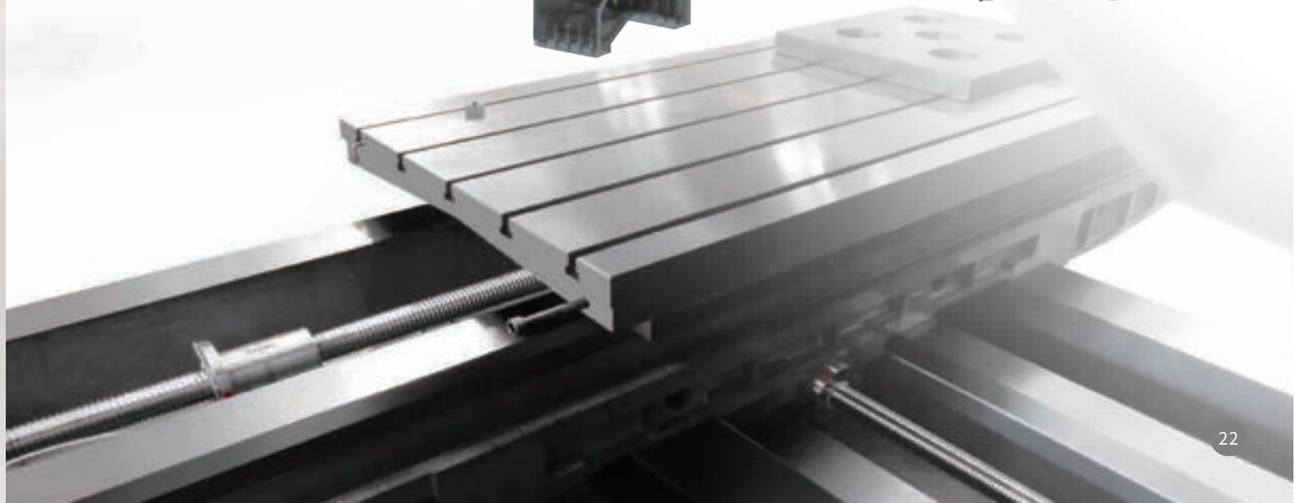
3 Z-axis-mechanical counterbalance device

Central guidance, high-speed moving without swaying,and the weight ratio of the counterweight to the spindle box is accurate, which makes the Z-axis drive motor have good loading capacity.



4 Gear spindle box

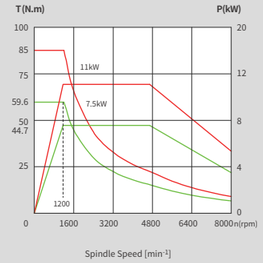
The main drive can choose gear transmission, which has stable transmission chain, rigid gear, good cutting p erformance and high precision; and it is closed drive with hardening surface gear, which is with high strength and oil lubricated so that the precision life is much longer.



Spindle Power Torque Diagram

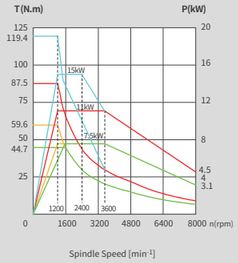
(Unit: mm)

VM950HR、VM1150HR



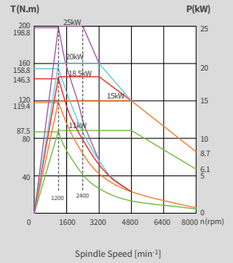
Spindle Speed [min-1]

VM950SR、VM1150SR



Spindle Speed [min-1]

VM1260HR、VM1360HR



Spindle Speed [min-1]

VM1580HR、VM1780HR

Spindle Speed [min-1]

VM1260RZ、VM1360RZ

Spindle Speed [min-1]

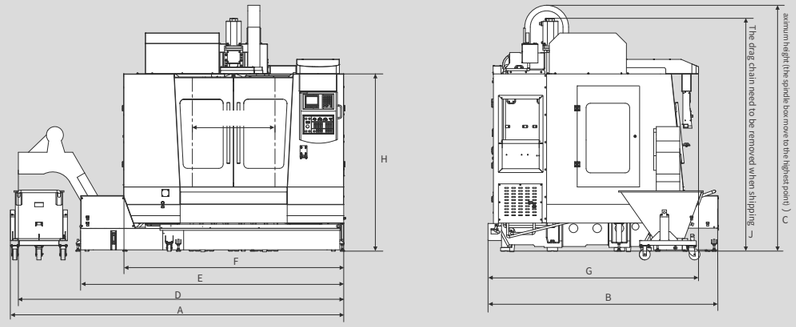
VM1580RZ、VM1780RZ

Spindle Speed [min-1]

Spindle Speed [min-1]

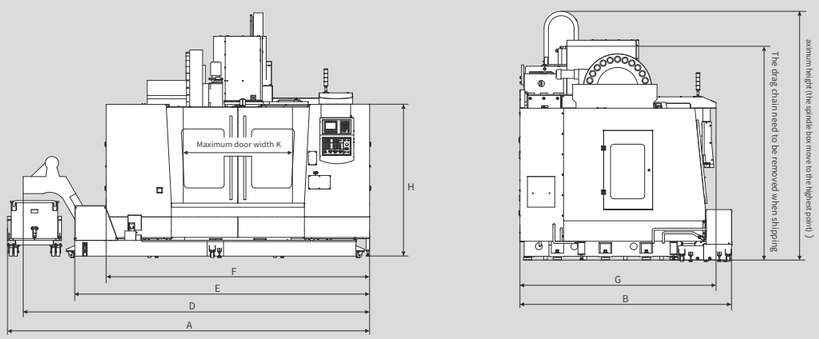
External Dimensions

VM950SR/HR、VM1150SR/HR、VM1260HR/RZ



Equipment	A	B	C	D	E	F	G	H	J	k
VM950SR/HR	2650	3120	3750	3030	2530	2500	2050	2050	2680	950
VM1150SR/HR	2600	2850	3750	3300	2820	2500	2130	2130	2650	1080
VM1260HR/RZ	3750	3160	4150	3570	2910	2600	2130	2130	2750	1200

VM1360HR/RZ、VM1580HR/RZ、VM1780HR/RZ



Equipment	A	B	C	D	E	F	G	H	J	k
VM1360HR/RZ	4640	2769	3160	4338	3785	3130	2503	2130	2736	1300
VM1580HR/RZ	4940	3120	3542	4715	3950	3500	2891	2245	2971	1480
VM1780HR/RZ	5350	3120	3542	5075	4310	3860	2893	2245	2971	1600

Item		单位	VM950HR/SR	VM1150HR/SR	VM1260HR	VM1260RZ	VM1360HR	VM1360RZ	VM1580HR	VM1580RZ	VM1780HR	VM1780RZ(齿轮传动)
Worktable	Worktable size	mm	950×520	1100×520	1250×600	1250×600	1350×600	1350×600	1500×800	1500×800	1700×800	1700×800
	Max. worktable loading	kg	600	750	1000	1000	1000	1000	1250	1250	1500	1500
Axis travel	Axis travel X/Y/Z	mm	850/520/560	1000/520/560	1050/600/600	1050/600/600	1200/600/600	1200/600/600	1350/800/680	1350/800/680	1500/800/680	1500/800/680
	Spindle terminal to worktable	mm	150～710	150～710	150～750	120~720	150～750	120~720	150～830	150～830	150～830	150～830
	Spindle center to column guideway	mm	590	590	665	665	665	665	868	880	868	880
Rapid travel	Axis rapid travel X/Y/Z	m/min	20/20/18	20/20/18	20/20/18	20/20/18	20/20/18	20/20/18	18/18/15	18/18/15	18/18/15	18/18/15
Spindle	Spindle motor power	kW	7.5/11	7.5/11	11/15	11/15	11/15	11/15	15/18.5	15/18.5	15/18.5	15/18.5
	Max. spindle speed	rpm	8000	8000	8000	6000(gear box)	8000	6000(gear box)	6000	6000(gear box)	6000	6000(gear box)
	Spindle taper	-	7:24 taper NO.40	7:24 taper NO.40	7:24 taper NO.40	7:24 taper NO.50	77:24 taper NO.40	7:24 taper NO.50	7:24 taper NO.50	7:24 taper NO.50	7:24 taper NO.50	7:24 taper 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	24	24	24	24	24	24	24	24	24	24
	Tool shank	-	MAS403 BT40	MAS403 BT40	MAS403 BT40	MAS403 BT50	MAS403 BT40	MAS403 BT50	MAS403 BT50	MAS403 BT50	MAS403 BT50	MAS403 BT50
	Pull stud	-	MAS403 P40T-1	MAS403 P40T-1	MAS403 P40T-1	MAS403 P50T-1	MAS403 P40T-1	MAS403 P50T-1	MAS403 P50T-1	MAS403 P50T-1	MAS403 P50T-1	MAS403 P50T-1
	Max. tool dia./length/weight	mm/mm/kg	Φ80/300/8	Φ80/300/8	Φ80/300/8	Φ110/350/15	Φ80/300/8	Φ110/350/15	Φ110/350/15	Φ110/350/15	Φ110/350/15	Φ110/350/15
	Tool change time (T-T)	s	1.8	1.8	1.8	2.5	1.8	2.5	2.5	2.5	2.5	2.5
Machining capacity	Drilling（normalized mild steel）	mm	Φ40	Φ40	Φ45	Φ65	Φ45	Φ65	Φ50	Φ80	Φ50	Φ80
	Tapping（normalized mild steel）	mm	M20	M20	M24	M40	M24	M40	M30	M50	M30	M50
	Milling（normalized mild steel）	cm^3/min	200	200	250	360	250	360	300	420	300	420
Others	Auto chip conveyer	-	sideway	sideway	sideway	sideway	sideway	sideway	sideway	sideway	sideway	sideway
	Auto lubrication system	-	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Electrical cabinet air conditioner	-	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Accuracy	Positioning accuracy（X/Y/Z）	mm	0.012/0.010/0.010	0.012/0.010/0.010	0.012/0.010/0.010	0.012/0.010/0.010	0.012/0.010/0.010	0.012/0.010/0.010	0.015/0.012/0.012	0.015/0.012/0.012	0.015/0.012/0.012	0.015/0.012/0.012
	Repeatibility accuracy（X/Y/Z）	mm	0.008	0.008	0.008	0.008	0.008	0.008	0.010/0.010/0.010	0.010/0.010/0.010	0.010/0.010/0.010	0.010/0.010/0.010
CNC controller	CNC controller	-	NEWAY FANUC [SIEMENS、Mitsubishi]						NEWAY FANUC [SIEMENS、Mitsubishi]			
Others	General power	KVA	25	25	35	35	35	35	40	40	40	40
	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	6000	7000	8000	8300	9000	9300	11000	11300	13000	13300
	Machine dimension (L×W×H)	mm	3850×2650×3120	4050×2650×3120	4450×2750×3200	4450×2750×3200	4650×2800×3200	4650×2800×3200	4950×3085×3495	4950×3085×3495	5350×3120×3550	5350×3120×3550

Basic configurations:

Auto 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:

Mitsubishi M80 CNC controller, SIMENS 828D CNC controller, 4th axis, 5th axis, column height increase, ZF gear box (not available for RZ), coolant through spindle, oil-water s eparater, special fixtures, various chip conveyers.

[ ]Option

VM Series-
Portal Vertical Machine Center

- This series of model adopts mechatronic design, reasonable structure, and convenient use;
- The three axes adopt 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 precise processing of complex workpieces such as a box, board, plate, and casing;
- Equipped with ZF gear box, 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 travel between the column, and the travel of X-axis is 1200mm.

2 Powerful drilling and milling

the whole machine has good rigidity, tiny vibration in powerful cutting, it can be used for ϕ80mm drilling processing

3 Big machining area

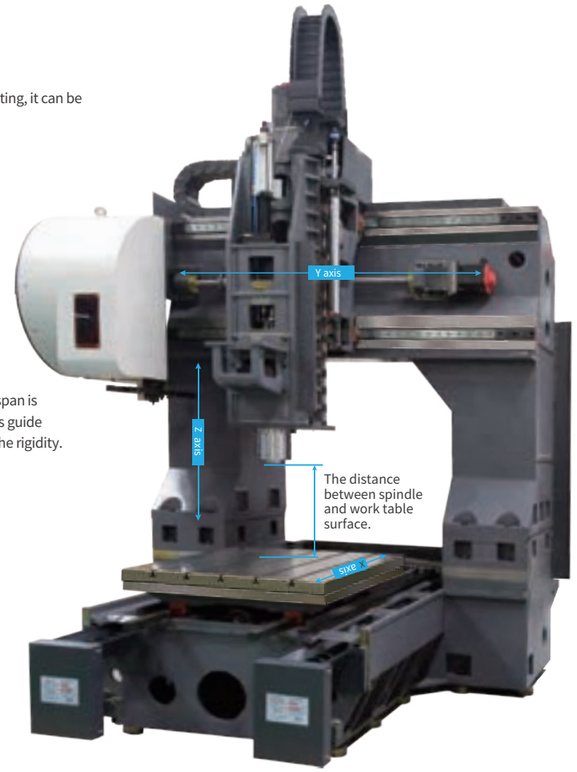
- It is suitable for processing ϕ1200mm round parts and 1200X1200mm square parts.
- Standard work table: 1200X1000mm
  Optional work table: 1400X1200mm

4 Stepped column

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

5 Integral heightening column (option)

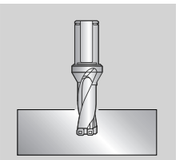
- Column heightens 200mm:
  The distance between spindle and work table surface is 400 ~ 1000 mm.
- Column heightens 400mm:
  The distance between spindle and work table surface is 600 ~ 1200 mm, which is suitable for the processing of large size workpiece.



VM12100B processing capacity

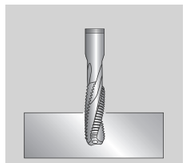
Face milling tool

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



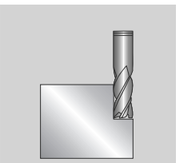
U drill

Diameter D(mm)	ϕ45	Spindle speed S(RPM)	1100
Cutting depth Dp(mm)	/	Number of tool 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 tool teeth	1
Cutting width Ae(mm)	/	Cutting feed F(mm/min)	805



End milling tool

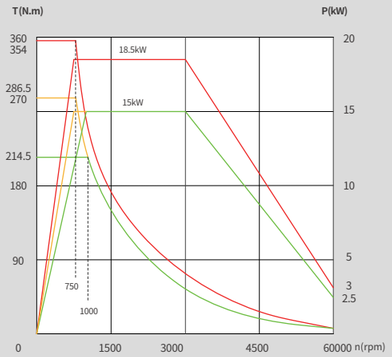
Diameter D(mm)	ϕ20	Spindle speed S(RPM)	1000
Cutting depth Dp(mm)	20	Number of tool teeth	4
Cutting width Ae(mm)	20	Cutting feed F(mm/min)	200

Attention: The above data are all from actual use cases. When the cutting conditions and environmental conditions 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)

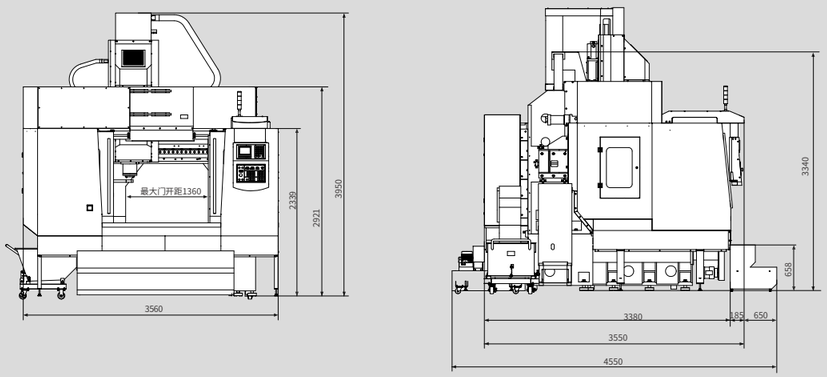
VM12100B



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	-	sideway
	Auto lubrication system	-	Standard
	Electrical cabinet air conditioner	-	Option
Accuracy	Positioning accuracy（X/Y/Z）	mm	0.O10/0.010/0.008
	Repeatability accuracy（X/Y/Z）	mm	0.O06/0.006/0.005
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	3560×4550×3950

Basic configurations:

Double spiral chip conveyer and chain type chip conevyer, 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.

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 5-axis vertical machining center, which can realize 5-axis interpolation 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. They are widely applied for military, mold, aerospace, power generation and shipbuilding industries.

- It is equipped with DDR spindle or built-in motor spindle, which are with little temperature rise and thermal 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 5-axis linear scale to improve the machining accuracy;
- 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;
- Main key parts, such as bed, cross beam, sliding saddle and spindle box are all made of phenolic resin molding, high-strength and goodquality cast iron which ensures good stability;
- Adopting the international advanced machine design concept, the structure is reasonable and reliable.

1 Direct drive spindle

Standard direct drive spindle can effectively control thermal deformation 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 interpolation.

3 Full linear scale design

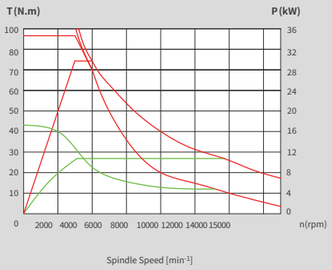
The machine adopts full grating design to ensure the good processing effect.

Spindle Power Torque Diagram

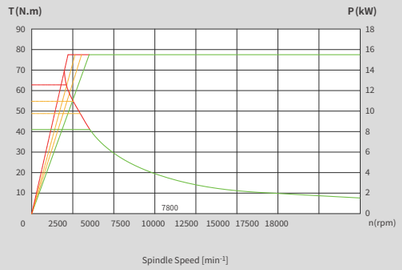
External Dimensions

(Unit: mm)

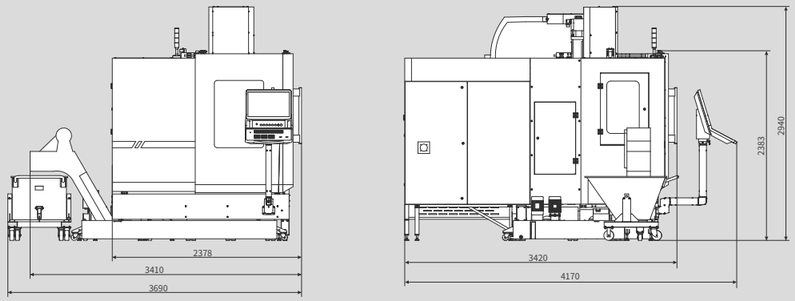
VM450F



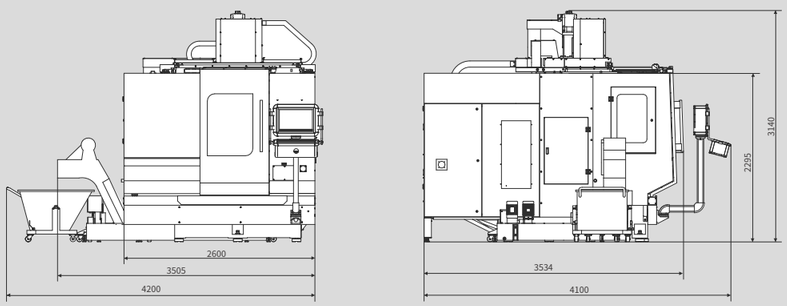
VM650F



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	175~675
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	-	Water 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	-	Standard	Standard
	Electrical cabinet air conditioner	-	Standard	Standard
Accuracy	Positioning accuracy（X/Y/Z）	mm/sec	0.006/10	0.006/10
	Repeatability 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 driver 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.

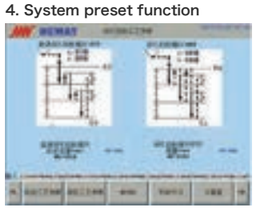
2. M code

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



Uses the system preset function and visualized man-machine dialogue to set processing parameters, which simplifies programming.

5. Lubrication system

Lubrication precautions and input and output signals related to lubrication.

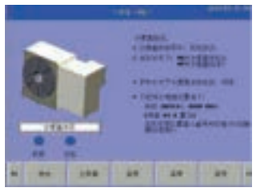
6. Alarm system

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. 4th axis management



4th axis management interface, customer optional function management

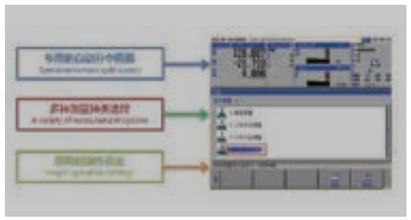
Some functions need to be implemented in conjunction with system functions:

1 High-speed memory card solution

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

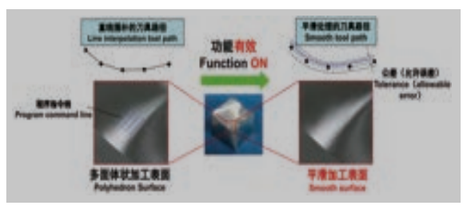
2 Preparation support before processing

- 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 selection

- 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 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

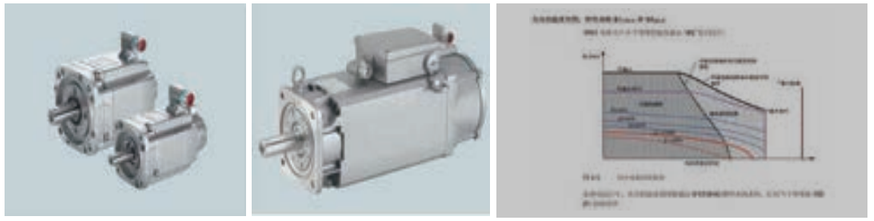
Some parts of the machine such as lubrication and chip conveyor can be set and adjusted according to specific machining requirements.

1 Fine surface

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

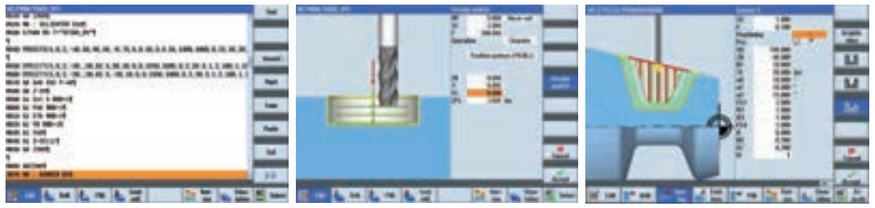
2 Three times overload

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

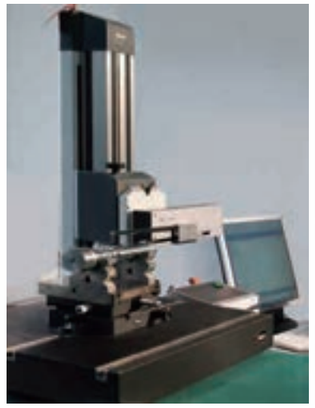


3 Program guide

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



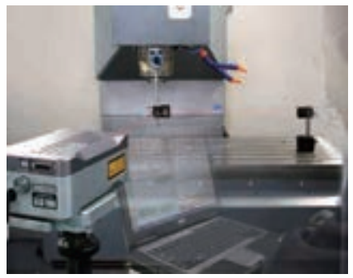
Neway Quality Control Manufacturing and Measurement



• Contour detection

• Roundness detection

• Three-coordinate detection



• Laser interferometer accuracy detection

• Scraping

• Torque wrench

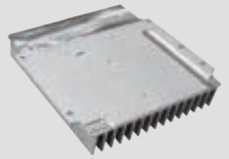
Auto machining lines

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# steel
Industry: Automobile

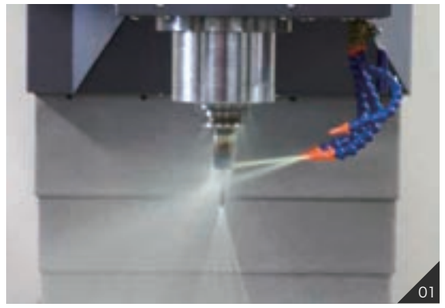
VM740

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

VM950

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

Optional Configurations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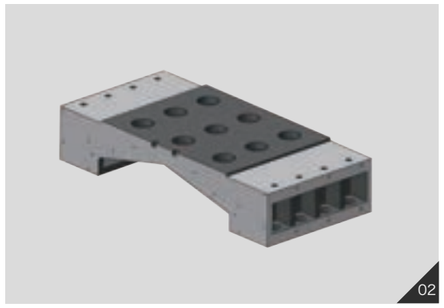
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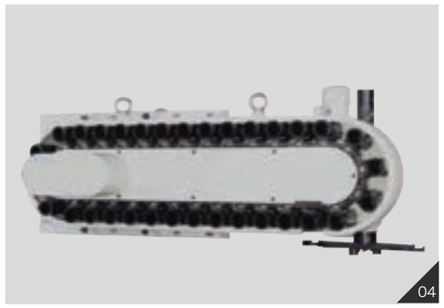
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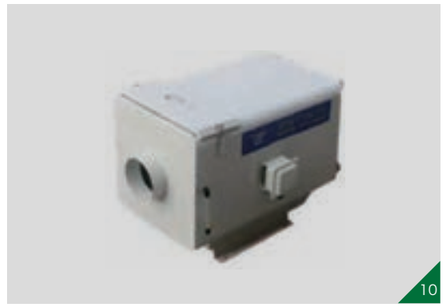
01 Coolant through spindle
02 Heightening column
03 ZF gear box
04 Chain-type tool magazine
05 Oil chiller / cabinet air conditioner
06 5-axis rotary table
07 4th axis
06 Grating scale


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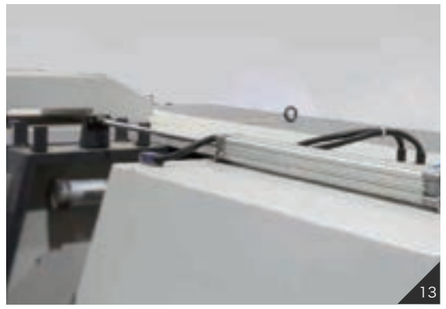
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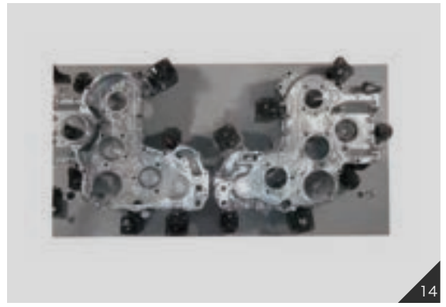
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09 Oil-water separator
10 Oil mist collector
11 Double back chip conveyor
12 Rollers, scrapers,magnetic scrapers chip conveyer
13 Auto-door
14 Special fixture
15 Workpiece measurement
16 Tool setter
17 Angle head