

KAFO

VERTICAL MACHINING CENTER

| SV/SVM SERIES

| VMC/VMM SERIES

| CV/CVM DV/DVM SERIES



Vision

Hearing

Smell

Touch

Taste

Heart

The design idea of KAFO new catalogues is providing comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart.

Vision: Visual Design Master creates designs covering all aspects

We create innovative designs covering every aspect to develop perfect machines.

Hearing: Hear your needs from every corner of the world

We hear and comprehend customers' needs actively from every corner of the world, and we practice thoroughly to exceed customers' expectations.

Smell: Smell the market demand offers well-thought-out plans

We have superior market insights and perfect strategic ability to be the strong support of customers.

Touch: Pursue excellent quality to achieve high performance

We focus on the enhancement of top core technologies and capabilities, and develop solidly to achieve excellent quality.

Taste: Taste good service by our professional and efficient team

We provide efficient, professional, and comprehensive services, and establish permanent and deep relationships with customers.

Heart: Feel our Heart that always sticks to perfection

We manage business with all our heart, and stick to perfection, to create maximum benefits for customers.

KAFO



Kao Fong Machinery Co., Ltd.

No.16, Keya Rd., Daya Dist., Taichung City 42881, Taiwan

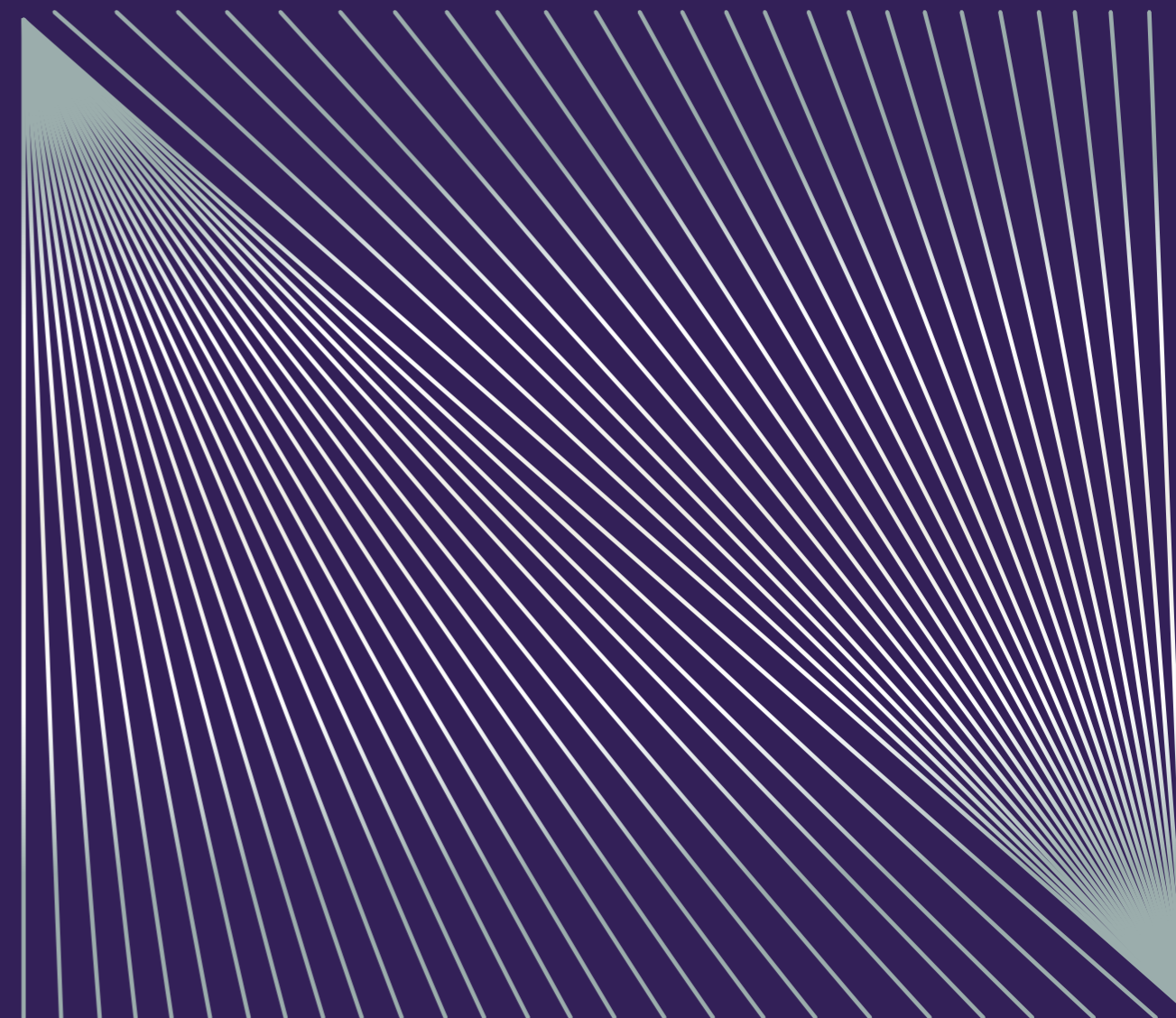
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Version: February, 2019



*Pursue excellent quality
to achieve high performance*

www.kafo.com.tw



Over fifty years, KAFO has become the leading brand in Die & Molds field and Machining field based on its solid foundation of superior technology. "Steady Research & Development, Quality Control, Accumulate Experience" exceed customers' expectations and think globally, act locally.

We provide you comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart. As a visual design master, we create innovative designs covering all aspects. We understand and meet customers' needs from every corner of the world. Additionally, we smell the market demand and offer well-thought-out plans. Through strict quality control, we pursue excellent quality to achieve high and steady performance. Moreover, our professional team offer efficient 24/7 service which is worth experiencing. Operating with our Heart, we always stick to perfection. By means of accumulating experience, intensifying the know-how, focusing on the upgrading core competency of technology, and continuously improving the manufacturing process, KAFO realizes the commitment to customers for best quality products and also being rated as the benchmark of the industry.

David Shen

KAO FONG MACHINERY CO., LTD.
President & CEO
SHEN, KUO-JUNG (DAVID SHEN)



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Kao Fong Machinery Co. Ltd.



Vertical Machining Center Production Line



Horizontal & Double Column Machining Center Production Line

SPINDLE

POWERFUL / HIGH SPEED AND PRECISION



/ #40

- GEAR HEAD SPINDLE 6,000 rpm
- BELT HEAD SPINDLE 10,000 rpm
- DIRECT-DRIVEN SPINDLE 15,000 rpm



/ #50

- GEAR HEAD SPINDLE 6,000 rpm
- DIRECT-DRIVEN SPINDLE 10,000 rpm

TOOL MAGAZINE

FAST AND RELIABLE ATC UNIT

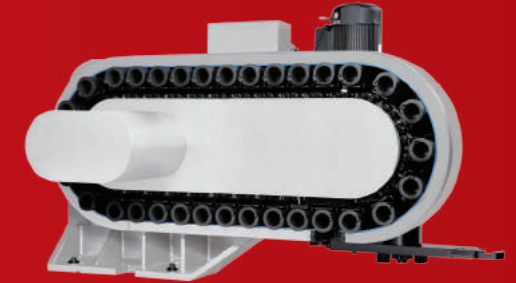
/ TOOL 24



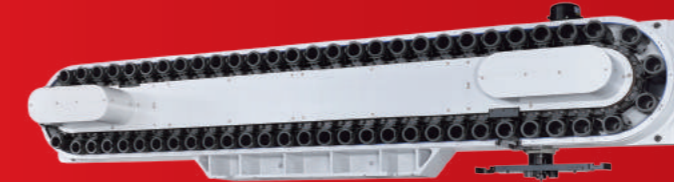
/ TOOL 30



/ TOOL 32



/ TOOL 60



/ AUTO TOOL CHANGER

TOOL CHANGE TIME:
BT-40 2.0 SEC. / BT-50 2.8 SEC. (T to T)
/ TOOL CAPACITY
STANDARD: 24 / OPTION: 20, 30, 32, 40, 60

ASSEMBLY



• Spindle assembly and adjustment in clean room with constant temperature and humidity.



• Assembly KAFO gear box and head unit in clean room.



• Spindle, gear box, and spindle motor balance test.



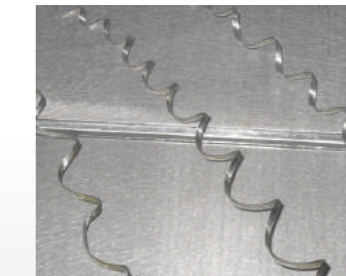
• World class spindle bearings.



• Scraping-The difference from other brand, with the KAFO line of Machining Centers, every component surface is finished by hand-scraping for a proper fit, ensuring that the machine itself is geometrically correct and long lasting.

The hand-scraping process is labor intensive and must be performed by skilled craftsman who are trained in the technique. Machine components must be placed then removed up to 5 times to confirm that the machine base in both level and square.

CUTTING PERFORMANCE



/ FACE MILLING	/ DRILLING	/ TAPPING	/ TAPPING
Workpiece Material S45C(SAE 1045)	S45C(SAE 1045)	S45C(SAE 1045)	S45C(SAE 1045)
Tool Used Ø80mm face mill	Ø50mm insert drill	M42x4.5P tap	M2x0.4P tap
Spindle Speed 700rpm	1,500rpm	200rpm	2,400rpm
Cutting Speed 2,000mm / min	180mm/min	900mm/min	960mm/min
Depth/Width of Cut 4mm / 70mm	-	-	-
Metal Removal Rate 560cm ³ / min	353cm ³ / min	-	-

Spindle spec: #50 Gear Head 6000rpm, Motor Fanuc a15/8000i(15/18.5kW)

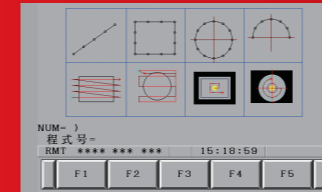
CUSTOMIZED CALCULATOR SOFTWARE FEATURES (OPTION)



MULTI-FUNCTION STATE DISPLAY

- Spindle/Axis Load
- Tools State Display
- Controller Running Timer
- Feed Rate State
- Spindle Speed State
- Coordinate State
- Work Pieces Counter
- Date/Time State
- Machining Time State
- Soft-Key Function

G-MENU



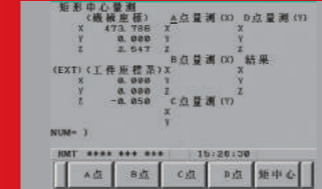
- The G-menu function, easy-processing module for customer.

CALCULATING FUNCTION



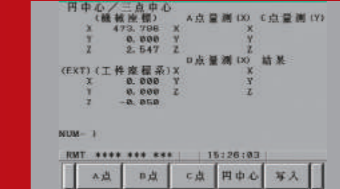
- Calculating function provided customers with fast calculation and completion of the workpiece coordinate corrections and setting.

CENTER OF RECTANGLE FUNCTION



- Measured rectangular workpiece four-point and calculate the rectangular center of the workpiece coordinates and tilt angle.

CENTER OF CIRCLE FUNCTION



- Provide customers with three points to find the center of the circle, user-friendly setting mold.

TOOL LENGTH MEASUREMENT AND SETTING



- Manually setting tool length and compensating numbers. After finishing the measurement, it could change to next tool.

TOOL LENGTH MEASUREMENT AND SETTING



- Manually setting tool length and compensating numbers. After finishing the measurement, it could change to next tool.

INTELLIGENT ATC SYSTEM MANAGEMENT



- Displaying of the tool number, tool pot number and preparation tool number can be pre-set the tool type in the form.

INTELLIGENT ATC SYSTEM MANAGEMENT



- Check and set of user-friendly tool storage, and display the program number, feed rate and spindle speed, allowing users to catch processing states.

RIGOROUS TESTS AND INSPECTION, GUARANTEED QUALITY CONTROL UPON KEY COMPONENTS



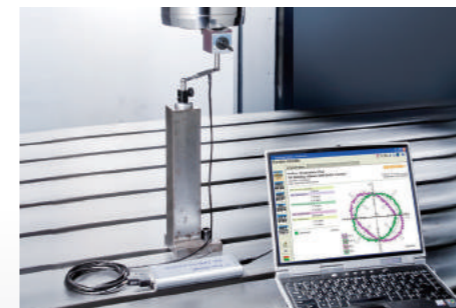
/ 3D PROBE SYSTEM QUALITY ASSURANCE (CMM)



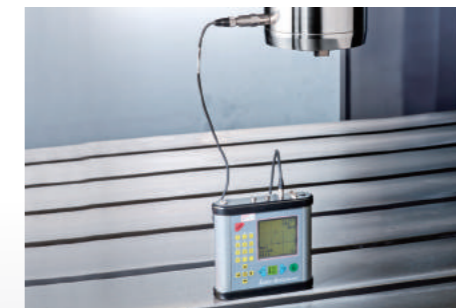
/ LASER INSPECTION



/ 3D CIRCULAR BALL MILLING



/ BALL BAR INSPECTION

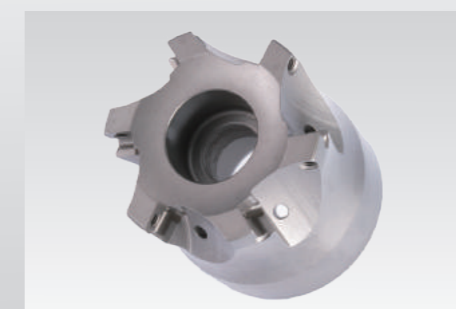
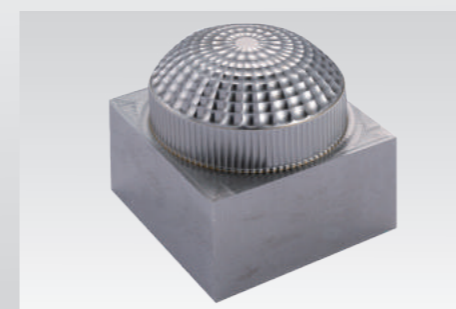
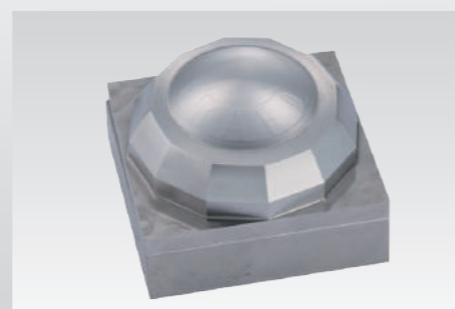
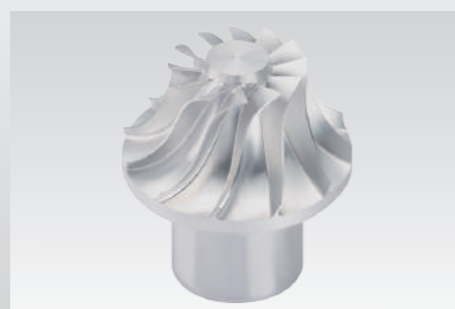


/ VIBRATION TEST



/ RIGIDITY TEST

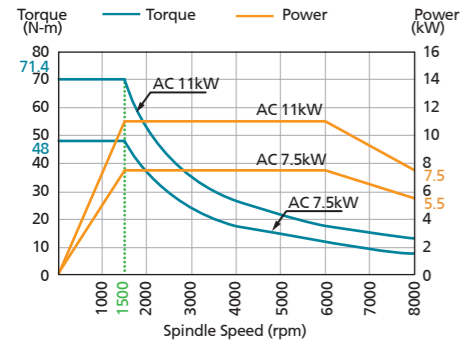
MACHINING PRODUCTS



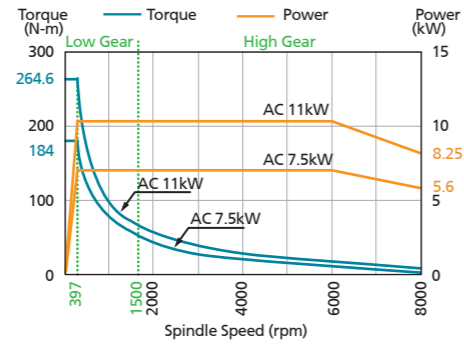
VERTICAL MACHINING CENTER

SPINDLE POWER-TORQUE DIAGRAM

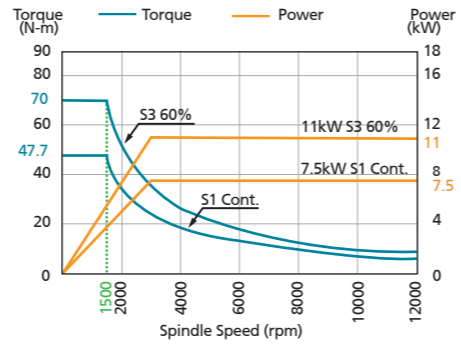
/ FANUC a8/8000i (BELT HEAD)



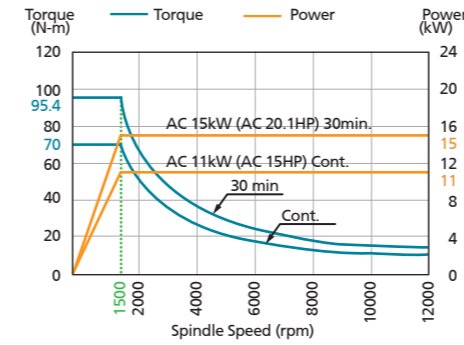
/ FANUC a8/8000i (GEAR HEAD, #40)



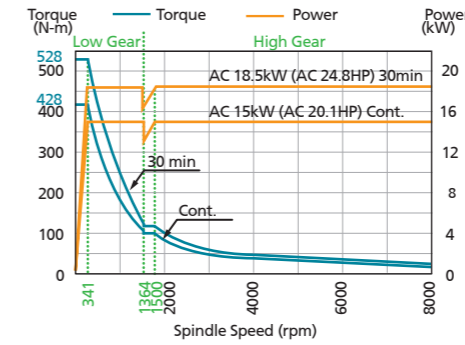
/ FANUC a8/12000i (DIRECT-DRIVEN)



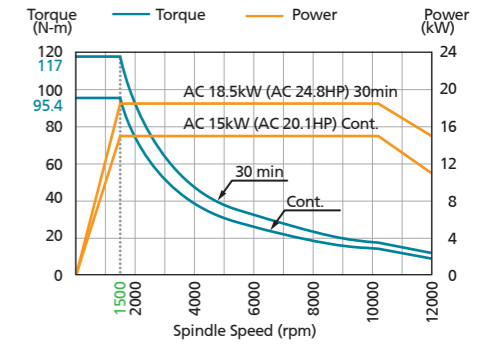
/ FANUC a12/12000i (DIRECT-DRIVEN)



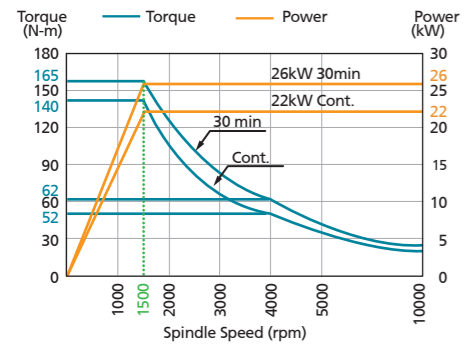
/ FANUC a15/8000i (GEAR HEAD, #50)



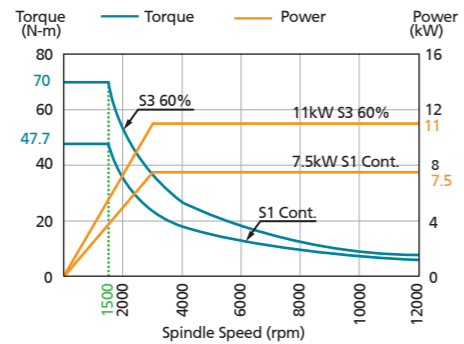
/ FANUC a15/12000i (DIRECT-DRIVEN)



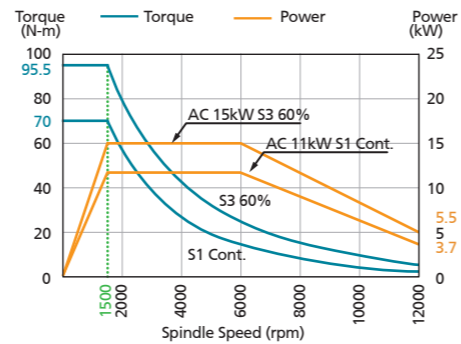
/ FANUC a22/10000i (DIRECT-DRIVEN)



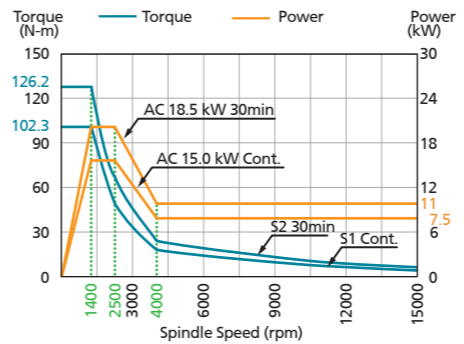
/ FANUC aT8/12000i (DIRECT-DRIVEN)



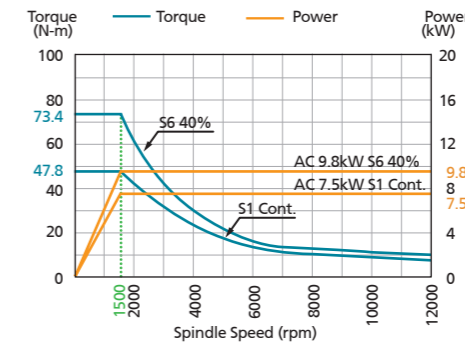
/ FANUC aT12/12000i (DIRECT-DRIVEN)



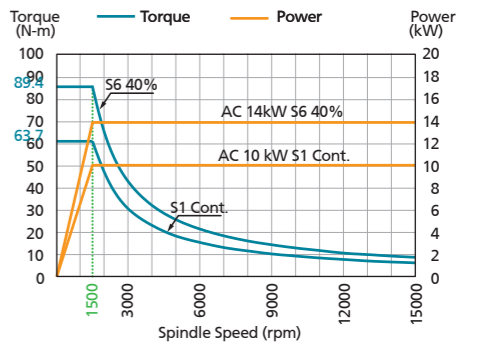
/ FANUC aT15/15000i (DIRECT-DRIVEN)



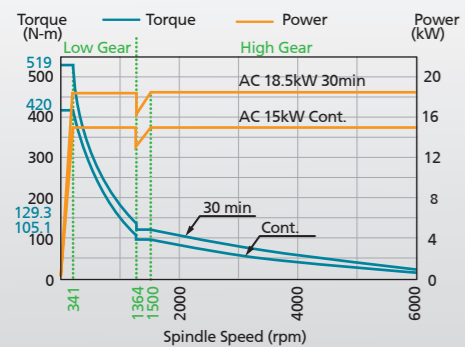
/ HEIDENHAIN QAN200L 12000rpm (DIRECT-DRIVEN)



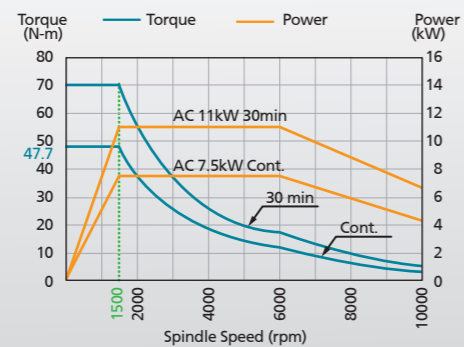
/ HEIDENHAIN QAN200UH 15000rpm (DIRECT-DRIVEN)



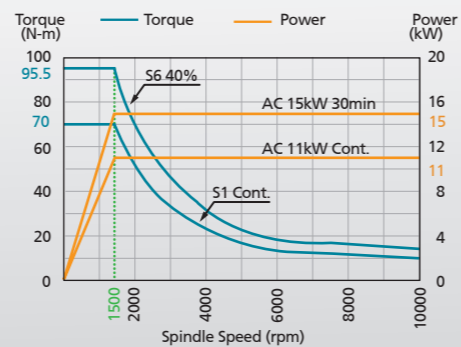
/ MITSUBISHI SJ-D18.5/80-01-C 6000rpm (GEAR HEAD)



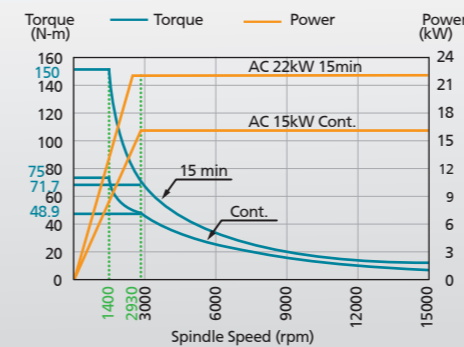
/ MITSUBISHI SJ-DG11/100-03T 10000rpm (DIRECT-DRIVEN)



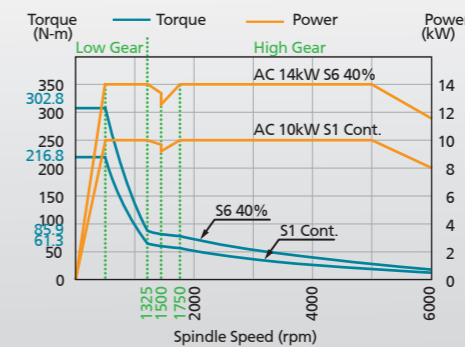
/ MITSUBISHI SJ-V22-06ZT 10000rpm (DIRECT-DRIVEN)



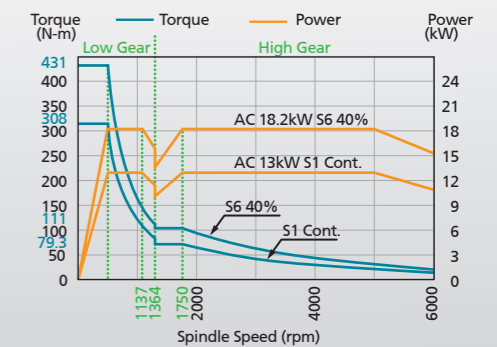
/ MITSUBISHI SJ-VKS30-16FZF505 15000rpm (DIRECT-DRIVEN)



/ SIEMENS 1PH8107 6000rpm (GEAR HEAD, #40)



/ SIEMENS 1PH8131 6000rpm (GEAR HEAD, #50)

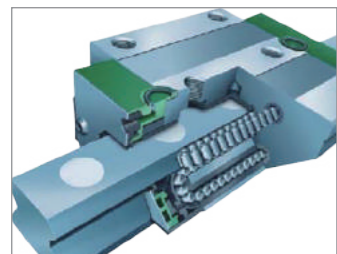


SV/SVM CV/CVM DV/DVM SERIES

VERTICAL MACHINING CENTER

CV/DV SERIES FEATURES

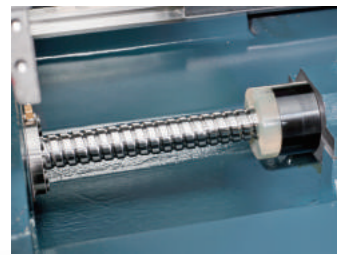
- CV/DV series was designed for the high-efficiency processing demand industrial of models from KAO FONG machinery, most suitable for mass components production of Vehicle parts, 3C and IT industry processing, also applicable to all kinds of precision molds production and processing.



/ ROLLER-TYPE LINEAR GUIDEWAY



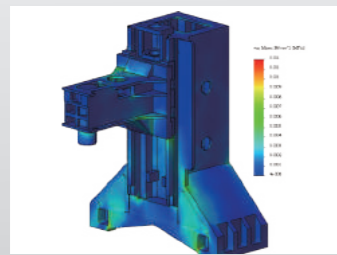
/ BALLSCREW COOLANT SYSTEM



/ DIRECT DRIVEN WITH AXES SERVER MOTOR



/ Z-AXIS WITHOUT COUNTER WEIGHT BLOCKS

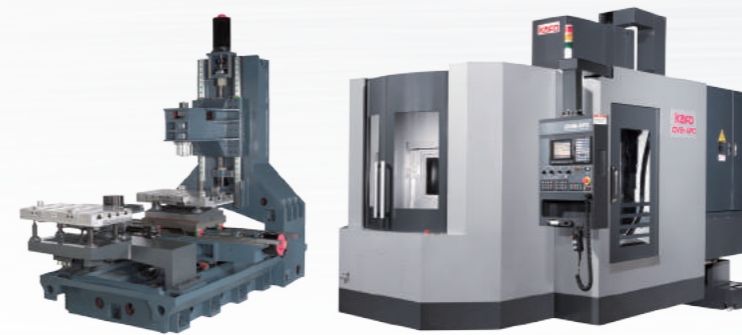


/ STRESS ANALYZE OF CASTING

/ CV-7A



/ CV-9B APC



FEATUERS

- CV-9B APC is a C-type machining center with #40 taper and Auto Pallet Changer system (APC) as standard.
- It is high precision and high efficiency for machining parts, mainly used for mass production of Automotive Industry, Electronics Industry and Aerospace Industry.

/ SV-1000



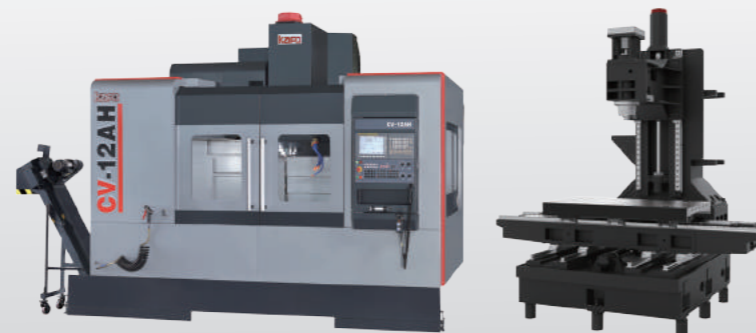
/ CV-14AH



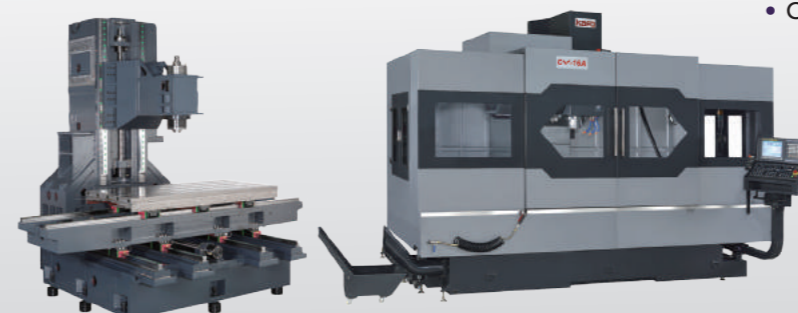
CV-14/CV-16 FEATUERS

- Y axis with 1400mm distance between guideways.
- 3 axes adopt 45mm type precise roller linear guides, provides superior rigidity, heavy-loading capacity, low friction and excellent performance.
- The machine bed, column, spindle head, cross slides and table are all analyzed and optimized by FEM tests. This design assures high stability and cutting rigid performance, and choosing of center cooling system through ballscrews can reduce the thermal compensation and enhance the accuracy.

/ CV-12AH



/ CV-16A



OPTION: #50

- CV-14AH
- CV-16AH

CV/CVM DV/DVM SERIES VERTICAL MACHINING CENTER

/ DV-9B



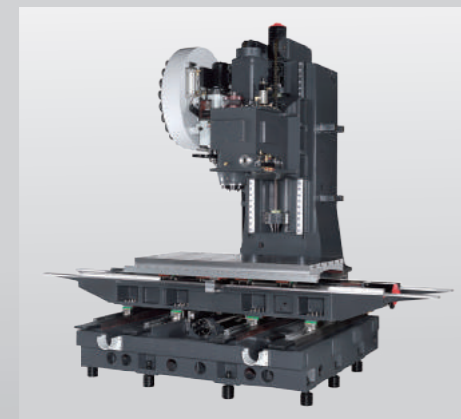
/ DV-11B



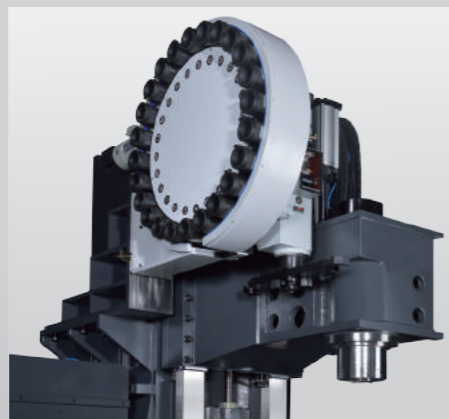
/ DV-12CH



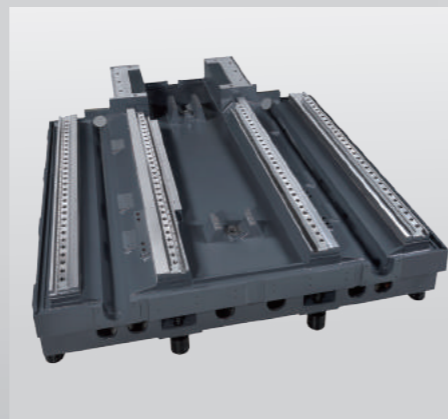
CV/DV-168 FEATUERS



• CV-168



• DV-168



• CV/DV-168

• Linear guide way of X-axis is 45mm, Y-axis/Z-axis are 55mm, or Z-axis with box way. This type can adopt the #50 Direct-Driven or Built-in type 10,000rpm spindle.

• Y-axis with 4 large spans linear guide way design, and all of them are 55mm roller linear guides. The travel enlarge to 850mm, which can satisfy the processing demand of mold & die industry and also provide the excellent cutting performance.

/ DV-168



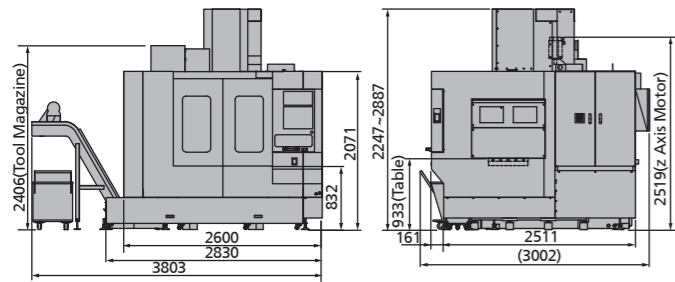
OPTION

OPTION

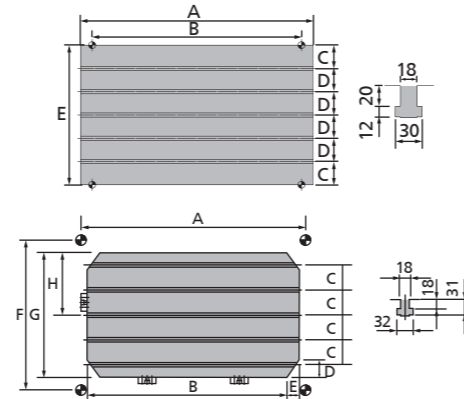
SV/SVM CV/CVM DV/DVM SERIES VERTICAL MACHINING CENTER

TABLE SIZE AND MACHINE LAYOUT

/ SV-1000



/ SV CV/DV



unit : mm

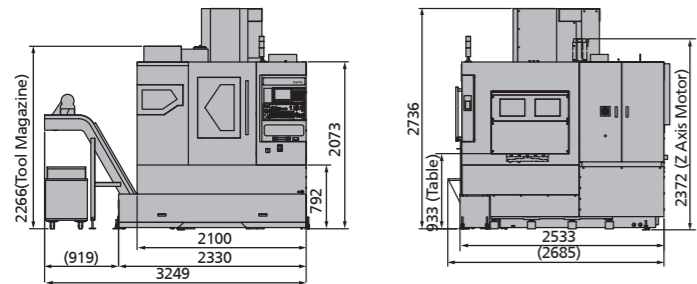
TABLE SIZE

	A	B	C	D	E
SV-1000	1150	1020	60		520
CV-7	860	760		100	
CV/DV -9	1000	900	100		600
CV/DV-11	1200	1100			650
CV/DV-12	1350	1270	125		700
CV-14	1550	1400		150	
CV-16	1750	1600	50		850
CV/DV-168	1700				

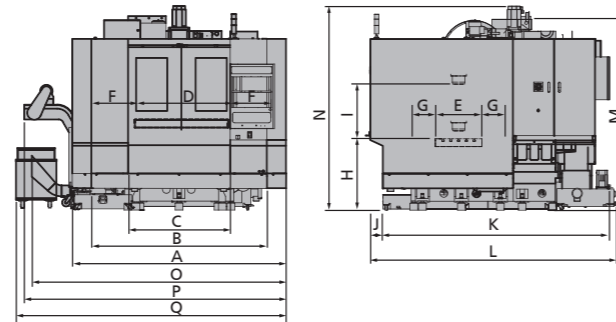
TABLE SIZE

	A	B	C	D	E	F	G	H
CV-9 APC	900	850	100	70	50	600	500	250

/ CV-7



/ CV/DV-9/11



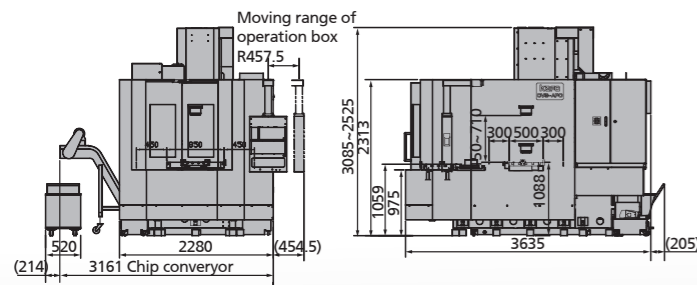
unit : mm

/ CV/DV-9/11

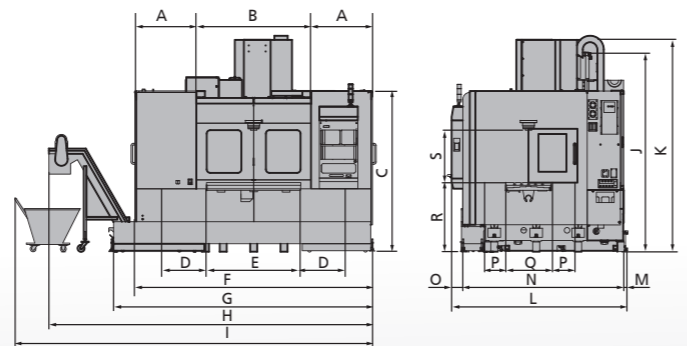
MACHINE LAYOUT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
CV-9A/B											2909	3150	2360-2960	2615	3004	3127	3235
DV-9A/B	-	2250	1150	1000	600	450	300	980	100-700	160	2949	3190	2380-2980				
DV-9C																	
CV-11A/B											2909	3150	2360-2960	2615	3260	3360	3460
DV-11A/B	2740	2250	1310	1200	600	550	300	980	100-700	160	2949	3190	2380-2980				
DV-11C/CH																	

/ CV-9 APC



/ CV/DV-12



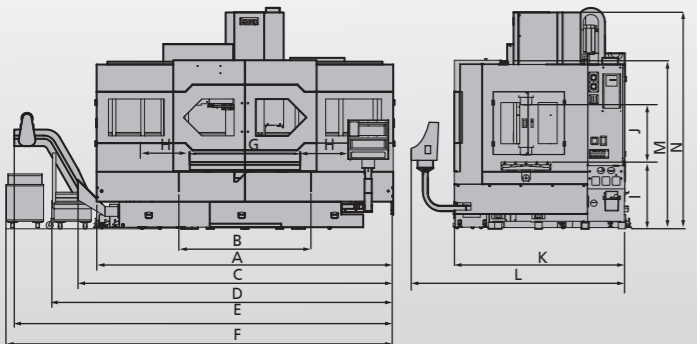
unit : mm

/ CV/DV-12

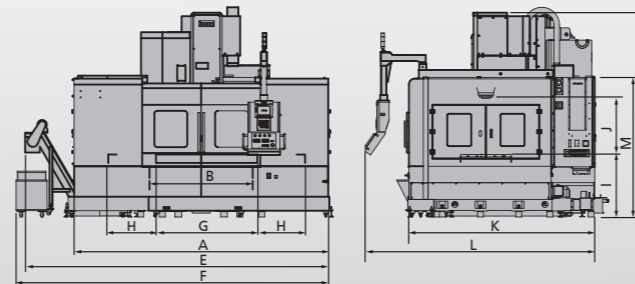
MACHINE LAYOUT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
CV-12A/B											2400-3050								
CV-12AH											2445-3095								
DV-12A/B	880	1640	2315	635	1400	3400	3705	4630	5120	2865	2400-3050	2502	60	2282	160	325	650	1003	750
DV-12C											2200-2850								
DV-12AH											2445-3095								
DV-12CH											2200-2850								

/ CV-14/16



/ CV/DV-168



unit : mm

/ CV-14/16, CV/DV-168

MACHINE LAYOUT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
CV-14A/B	3686	1652	4358	4690	4820	4930	1550	700	933	100-800	2386	3230	2358	2584-3030
CV-14AH														2833-3072
CV-16A/B	4152	1850	4820	5120	5270	5380	1750	800	933	100-800	2386	3230	2358	2584-3030
CV-16AH														2833-3072
CV/DV-168	4300	1730	-	-	5105	5255	1700		1047	950	3115	3850	2340	2650-3450

SV/SVM CV/CVM SERIES VERTICAL MACHINING CENTER

SPECIFICATION

Max. Tool Diameter (without adjacent tool) #40 (Cam Type) = Ø125

CV (CVM)-12AH is with #50 spindle taper

MODEL		SV-1000 SVM-1000	CV-7A CVM-7A	CV-7B CVM-7B	CV-9A CVM-9A	CV-9B CVM-9B	CV-11A CVM-11A	CV-11B CVM-11B	CV-12A(*CV-12AH) CVM-12A(*CVM-12AH)	CV-12B CVM-12B	
Travel											
X-axis	mm	1020	760		900		1100		1270		
Y-axis	mm	520				600				650	
Z-axis	mm	640	480	480			600		650		
Guide Way(X/Y/Z)	type	35mm Ball-Type Linear Guide Way(Roller-Type)					45mm Roller-Type Linear Guide Way				
Distance From Spindle Nose To Table Surface	mm	100~740		100~580				100~700		100~750	
Distance From Spindle Center To The Track Surface Of Z-axis	mm	580(550)				669(610)				740(675)	
Table											
Table Dimension	mm	1150x520		860x520		1000x600		1200x600		1350x650	
Max. Loading Capacity	kg	600		300		650		800		1000	
T-Slots(number x width x pitch)	no x mm	5x18mmx100mm					5x18mmx100mm				
Spindle											
Spindle Speed(ST)	rpm	Belt Head 8000		Direct-Driven 10000	Belt Head 8000	Direct-Driven 10000	Belt Head 8000	Direct-Driven 10000	Belt Head 8000	Direct-Driven 10000	
Spindle Speed(OP)	rpm	Belt Head 10000 / Direct-Driven 10000/12000/15000		12000/15000	10000	12000/15000	10000	12000/15000	10000	12000/15000(*N/A)	
Spindle Taper	type	#40				#40		#40		#40(*#50)	
Spindle Bearing Bore Diameter	mm	Ø70				Ø70		Ø70		Ø70(*Ø90)	
Feed											
Rapid Travel Rate(X/Y/Z)	m/min	36/36/36(*48/48/48)		48/48/48	36/36/36	48/48/48	36/36/36	48/48/48	36/36/36	48/48/48(*ST: 48/48/24, OP: 36/36/24)	
Cutting Rate	m/min	10						10			
Manual JOG Feed Rate	m/min	4(20 steps)						4(20 steps)			
ATC											
Tool Shank Type	type	MAS BT-40 (*CAT-40/*DIN-40)				MAS BT-40 (*CAT-40/*DIN-40)		MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)		MAS BT-40 (*CAT-40/*DIN-40)	
Pull Stud	type	MAS BT-40/P40-T-1 (*CAT-40/*DIN-40)				MAS BT-40/P40-T-1 (*CAT-40/*DIN-40)		MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)		MAS BT-40/P40-T-1 (*CAT-40/*DIN-40)	
Auto Tool Change System		SVM Series do not support ATC		CVM Series do not support ATC				CVM Series do not support ATC			
Magazine Capacity(ST)	tools	24(Cam Type)						24(Cam Type)			
Magazine Capacity(OP)	tools	30(Cam Type)		N/A		30/32/40(Cam Type)		30/32/40(Cam Type)(*30 Cam Type)		30/32/40(Cam Type)	
Max. Tool Diameter(with adjacent tool)	mm	Ø75				Ø75		Ø75(*Ø108)		Ø75	
Max. Tool Diameter(without adjacent tool)	mm	Ø150				Ø150(*Ø125)		Ø150(*Ø216)		Ø150	
Max. Tool Length	mm	300						300			
Max. Tool Weight	kg	7				7		7(*15)		7	
Tool Change Time(tool to tool)	sec	2				2		2(*2.8)		2	
Tool Change Time(time to time)	sec	4.4				4.5		4.5(*6)		4.5	
Motor (FANUC)											
Spindle Motor(cont./30min) (ST)	kW	7.5/11				7.5/11		7.5/11 (*15/18.5)		7.5/11	
Spindle Motor(cont./30min) (OP)	kW	11/15, 15/18.5				11/15, 15/18.5		11/15, 15/18.5 (*22/26)			
Feed Motor(X/Y/Z)	kW	3/3/4						3/4/7			
Coolant Motor	kW	0.75						0.75			
Power Supply											
Power Supply	kVA	20						20			
Compressed Air Supply	MPa, l/min	0.6, 500						0.6, 500			
Coolant Tank Capacity	L	365		350		420		520			
Controller		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN					FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN				
External Dimension											
Width	mm	3803		3249		3235		3460		5120	
Length	mm	3002		2685				3150		2502	
Height	mm	2887		2736				2960			
Net Weight	kg	5500		5100/4800		6750/6400		6950/6600		8450/8100(*8700/8350)	
Accuracy (following values were tested in the temperature-controlled room)											
ISO 10791 Accuracy	Positioning	mm	0.012		0.010				0.012		
	Repeatability	mm	0.009		0.008		0.009		0.010		
JIS 6338 Accuracy	Positioning (within 300mm)	mm	±0.004						±0.004		
	Repeatability (within 300mm)	mm	±0.002						±0.002		
Packing For Export		40' HQ						40' HQ			

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3. The temperature of machine installing environment must be 5~40 degrees, the surrounding temperature difference should be within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.

4. As for more details, please refer to operating manual or contact with KAFO sales.

CV/CVM SERIES VERTICAL MACHINING CENTER

SPECIFICATION

Max. Tool Diameter (without adjacent tool) #40 (Cam Type) = Ø125 | CV (CVM)-14/16AH is with #50 spindle taper

MODEL		CV-14A(*CV-14AH) CVM-14A(*CVM-14AH)	CV-14B CVM-14B	CV-16A(*CV-16AH) CVM-16A(*CVM-16AH)	CV-16B CVM-16B	CV-168 CVM-168	CV-9A APC	CV-9B APC	
Travel									
X-axis	mm	1400		1600		1600		900	
Y-axis	mm	700		700		850		600	
Z-axis	mm	700		700		800		600	
Guide Way(X/Y/Z)	type	45mm Roller-Type Linear Guide Way		45mm Roller-Type Linear Guide Way		X: 45mm, Y/Z: 55mm Roller-Type Linear Guide Way		45mm Roller-Type Linear Guide Way	
Distance From Spindle Nose To Table Surface	mm	100-800		100-800		150-950		110-710	
Distance From Spindle Center To The Track Surface Of Z-axis	mm	809(740)		809(740)		940(875.5)		669(610)	
Table									
Table Dimension	mm	1550x700		1750x700		1750x850		850x500(*2)	
Max. Loading Capacity	kg	1000		1000		1500		300(*2)	
T-Slots(number x width x pitch)	no x mm	5x18mmx150mm		5x18mmx150mm		5x18mmx150mm		5x18mmx100mm	
Spindle									
Spindle Speed(ST)	rpm	Direct-Driven 10000		Belt Head 8000		Direct-Driven 10000		Belt Head 8000	
Spindle Speed(OP)	rpm	12000/15000(*N/A)		10000		12000/15000(*N/A)		10000	
Spindle Taper	type	#40(*#50)		#40		#40		#50	
Spindle Bearing Bore Diameter	mm	Ø70(*Ø90)		Ø70		Ø70		Ø90	
Feed									
Rapid Travel Rate(X/Y/Z)	m/min	40/40/36 (*ST: 40/40/24, OP: 36/36/24)		36/36/30		40/40/36 (*ST: 40/40/24, OP: 36/36/24)		36/36/30	
Cutting Rate	m/min	10		10		10		10	
Manual JOG Feed Rate	m/min	4(20 steps)		4(20 steps)		4(20 steps)		4(20 steps)	
ATC									
Tool Shank Type	type	MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)		MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)		MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)		MAS BT-50(*CAT-50/*DIN-50)	
Pull Stud	type	MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)		MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)		MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)		MAS BT-50/P50-T-1(*CAT-50/*DIN-50)	
Auto Tool Change System		CVM Series do not support ATC		CVM Series do not support ATC		CVM Series do not support ATC		CVM Series do not support ATC	
Magazine Capacity(ST)	tools	24(Cam Type)		24(Cam Type)		24(Cam Type)		24(Cam Type)	
Magazine Capacity(OP)	tools	30/32/40(Cam Type)(*30 Cam Type)		30/32/40(Cam Type)		30/32/40(Cam Type)(*30 Cam Type)		30/32/40(Cam Type)	
Max. Tool Diameter(with adjacent tool)	mm	Ø75(*Ø108)		Ø75		Ø75(*Ø108)		Ø75	
Max. Tool Diameter(without adjacent tool)	mm	Ø150(*Ø216)		Ø150(*Ø125)		Ø150(*Ø216)		Ø150(*Ø125)	
Max. Tool Length	mm	300		300		300		300	
Max. Tool Weight	kg	7(*15)		7		7(*15)		7	
Tool Change Time(tool to tool)	sec	2(*2.8)		2		2(*2.8)		2	
Tool Change Time(time to time)	sec	5(*6)		5		5(*6)		4.5	
Motor (FANUC)									
Spindle Motor(cont./30min)(ST)	kW	7.5/11(*15/18.5)		7.5/11		7.5/11(*15/18.5)		7.5/11	
Spindle Motor(cont./30min)(OP)	kW	11/15, 15/18.5(*22/26)		11/15, 15/18.5		11/15, 15/18.5(*22/26)		11/15, 15/18.5	
Feed Motor(X/Y/Z)	kW	4/4/7		4/4/7		4/4/7		3/3/7	
Coolant Motor	kW	0.75		0.75		0.75		0.75	
Power Supply									
Power Supply	kVA	35		35		35		20	
Compressed Air Supply	MPa, l/min	0.6, 500		0.6, 500		0.6, 500		0.6, 500	
Coolant Tank Capacity	L	496.5		496.5		496.5		420	
Controller		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN	
External Dimension									
Width	mm	4930		5380		5380		5255	
Length	mm	3230		3230		3230		3850	
Height	mm	3030(*3072)		3030		3030(*3072)		3450	
Net Weight	kg	9540/9190(*9740/9040)		9540/9190		10540/10190(*10740/10040)		16000/15200	
Accuracy (following values were tested in the temperature-controlled room)									
ISO 10791 Accuracy	Positioning	mm	0.012		0.014		0.014		0.012
	Repeatability	mm	0.010		0.012		0.012		0.009
JIS 6338 Accuracy	Positioning (within 300mm)	mm	±0.004		±0.004		±0.004		±0.004
	Repeatability (within 300mm)	mm	±0.002		±0.002		±0.002		±0.002
Packing For Export		40' HQ		40' HQ		40' HQ		40' HQ	

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3. The temperature of machine installing environment must be 5-40 degrees, the surrounding temperature difference should be within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.

4. As for more details, please refer to operating manual or contact with KAFO sales.

DV/DVM SERIES VERTICAL MACHINING CENTER

SPECIFICATION

Max. Tool Diameter (without adjacent tool) #40 (Cam Type) = Ø125

DV (DVM)-11CH/ DV(DVM)-12AH/CH is with #50 spindle taper

MODEL	DV-9A DVM-9A	DV-9B DVM-9B	DV-9C DVM-9C	DV-11A DVM-11A	DV-11B DVM-11B	DV-11C(*DV-11CH) DVM-11C(*DVM-11CH)	DV-12A(*DV-12AH) DVM-12A(*DVM-12AH)	DV-12B DVM-12B	DV-12C(*DV-12CH) DVM-12C(*DVM-12CH)	DV-1370 DVM-1370	DV-168 DVM-168	
Travel												
X-axis	mm	900		1100		1100		1270		1400	1600	
Y-axis	mm			600		600		650		700	850	
Z-axis	mm			600		600		650		700	800	
Guide Way(X/Y/Z)	type	X/Y: 45mm Roller-Type Linear Guide Way, Z: Box Way					X/Y: 45mm Roller-Type Linear Guide Way, Z: Box Way			X: 45mm Roller-Type, Y: 55mm Roller-Type, Z: Box Way		
Distance From Spindle Nose To Table Surface	mm			100~700			100~700		100~750		200~900	150~950
Distance From Spindle Center To The Track Surface Of Z-axis	mm			650(620)			650(620)		740(675)		750(705)	905(875.5)
Table												
Table Dimension	mm	1000x600		1200x600		1200x600		1350x650		1550x700	1700x850	
Max. Loading Capacity	kg	650		800		800		1000		1500		
T-Slots(number x width x pitch)	no x mm	5x18mmx100mm						5x18mmx100mm		5x18mmx150mm		
Spindle												
Spindle Speed(ST)	rpm	Direct-Driven 10000	Belt Head 8000	Gear Head 6000	Direct-Driven 10000	Belt Head 8000	Gear Head 6000	Direct-Driven 10000	Belt Head 8000	Gear Head 6000		
Spindle Speed(OP)	rpm	12000/15000	10000	7000/8000	12000/15000	10000	7000(8000#40)	12000/15000(*N/A)	10000	7000(8000#40)	Gear Head 7000/8000, Direct-Driven10000	Gear Head 7000 Direct-Driven/Built-in 10000
Spindle Taper	type			#40			#40(*#50)		#40	#40(*#50)	#50	
Spindle Bearing Bore Diameter	mm	Ø70		Ø75		Ø70	Ø75(*Ø85)	Ø75(*Ø90)	Ø70	Ø75(*Ø85)	Ø90	
Feed												
Rapid Travel Rate(X/Y/Z)	m/min	48/48/24	36/36/24		48/48/24	36/36/24	36/36/24	48/48/24(*ST: 48/48/24, OP: 36/36/24)	36/36/24		30/30/20	30/30/15
Cutting Rate	m/min			10					10			
Manual JOG Feed Rate	m/min			4(20 steps)					4(20 steps)			
ATC												
Tool Shank Type	type	MAS BT-40(*CAT-40/*DIN-40)					MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)	MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)	MAS BT-40(*CAT-40/*DIN-40) MAS BT-50(*CAT-50/*DIN-50)	MAS BT-50(*CAT-50/*DIN-50)		
Pull Stud	type	MAS BT-40/P40-T-1(*CAT-40/*DIN-40)					MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)	MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)	MAS BT-40/P40-T-1(*CAT-40/*DIN-40) MAS BT-50/P50-T-1(*CAT-50/*DIN-50)	MAS BT-50/P50-T-1(*CAT-50/*DIN-50)	MAS BT-40/P40-T-1(*CAT-40/*DIN-40)	
Auto Tool Change System		DVM Series do not support ATC					DVM Series do not support ATC					
Magazine Capacity(ST)	tools	24 (Cam Type)					24(Cam Type)					
Magazine Capacity(OP)	tools	30/32/40(Cam Type)					30/32/40(Cam Type)(*N/A)	30/32/40(Cam Type)(*30 Cam Type)			30/40(Cam Type)	
Max. Tool Diameter(with adjacent tool)	mm			Ø75			Ø75(*Ø108)		Ø75	Ø75(*Ø108)	Ø108(*Ø125)	
Max. Tool Diameter(without adjacent tool)	mm			Ø150(*Ø125)			Ø150(*Ø216)		Ø150	Ø150(*Ø216)	Ø216(*Ø250)	
Max. Tool Length	mm			300					300			
Max. Tool Weight	kg			7			7 (*15)		7	7 (*15)	15	
Tool Change Time(tool to tool)	sec			2			2(2.8)		2	2(2.8)	2.8	
Tool Change Time(time to time)	sec			4.5			4.5 (*6)		4.5	4.5 (*6)	6	
Motor (FANUC)												
Spindle Motor(cont./30min)(ST)	kW			7.5/11			7.5/11(*15/18.5)			15/18.5		
Spindle Motor(cont./30min)(OP)	kW	11/15	11/15	15/18.5	11/15	11/15,15/18.5 (*22/26)			11/15,15/18.5	11/15,15/18.5(*22/26)		22/26
Feed Motor(X/Y/Z)	kW			3/4/3			3/4/3		3/4/7	4/4/7		
Coolant Motor	kW			0.75					0.75			
Power Supply												
Power Supply	kVA			20			20			35		
Compressed Air Supply	MPa, l/min			0.6, 500			0.6, 500					
Coolant Tank Capacity	L			420			420		520	620	700	
Controller		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN					FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN					
External Dimension												
Width	mm	3235		3460		3460		3705		4700	5255	
Length	mm			3190		3190		2502		3740	3850	
Height	mm	2960		2980	2960	2980	3050 (*3095)	3050	2850	3300	3450	
Net Weight	kg	7750/7400		7850/7500		7950/7600	8050/7700(*8350/7650)	8600/8250(*8850/8500)	8600/8250	8600/8250(*8850/8500)	12000	16000/15200
Accuracy (following values were tested in the temperature-controlled room)												
ISO 10791 Accuracy	Positioning			0.012			0.012			0.014		
	Repeatability			0.009			0.009			0.010		
JIS 6338 Accuracy	Positioning(within 300mm)			±0.004			±0.004			±0.004		
	Repeatability(within 300mm)			±0.002			±0.002			±0.002		
Packing For Export				40' HQ			40' HQ			20' FR		

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VMC/VMM SERIES

VERTICAL MACHINING CENTER

SUPERIOR STRUCTURE DESIGN

- Ultra-wide A-shaped Column Design
- Full support Base Design
- Ultra-wide Y-axis Design
- Best Supporting BESSEL Point Design
- One-Piece Coolant Collect Frame Design
- 3 axis Direct Coupled Servo Motors
- 3 axis Pretensioned Ball Screws
- Large Size Heavy Duty Working Table
- Robust Cast Iron Headstock
- Built-in Screw Type Chip Conveyor

/ VMC-116A/B



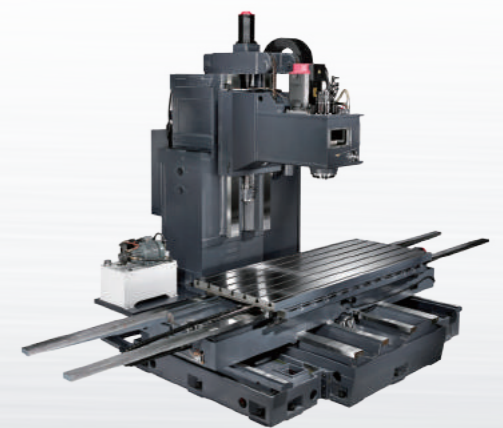
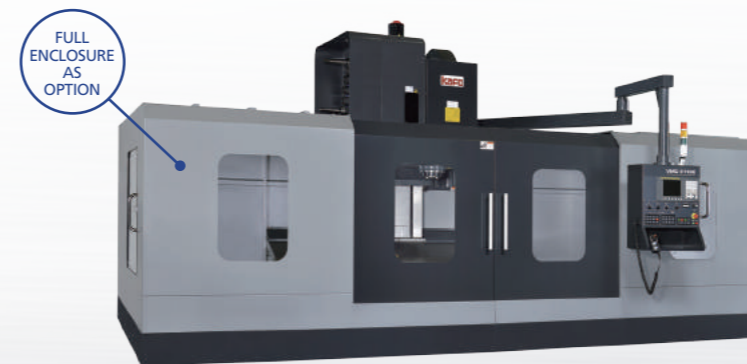
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/ VMC-126



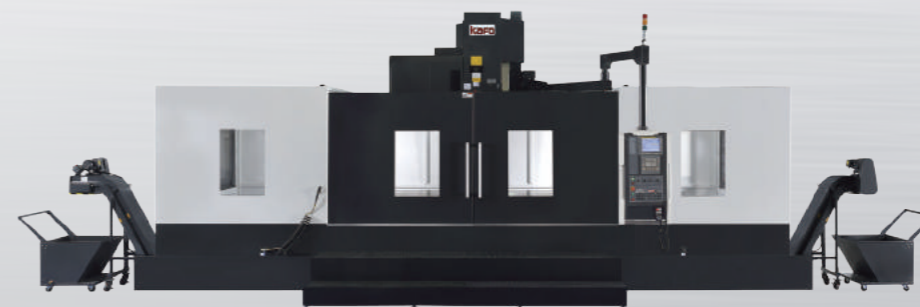
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/ VMC-1370



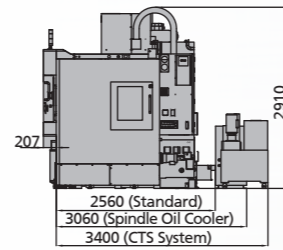
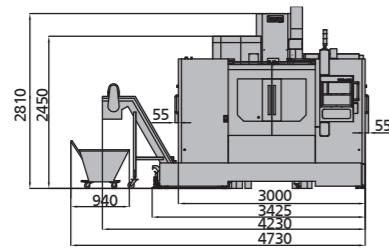
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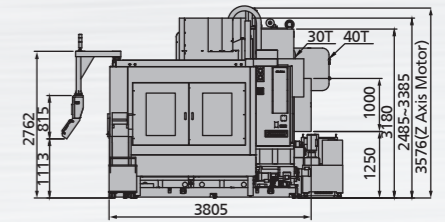
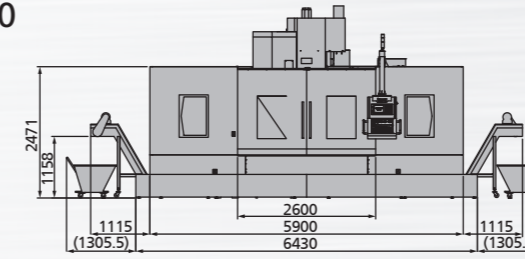
VMC/VMM SERIES VERTICAL MACHINING CENTER

TABLE SIZE AND MACHINE LAYOUT

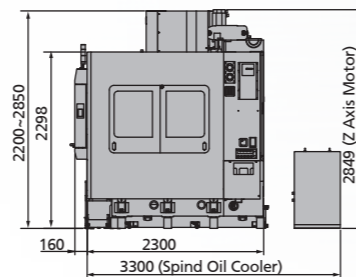
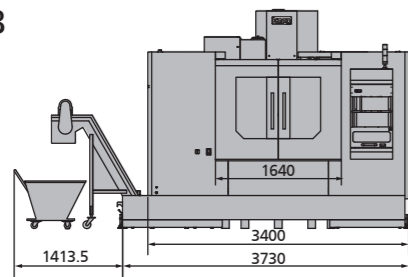
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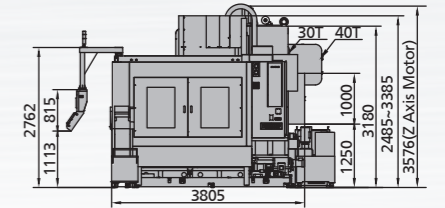
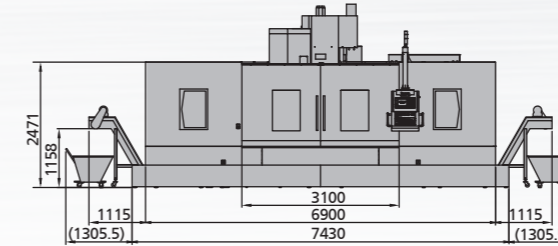
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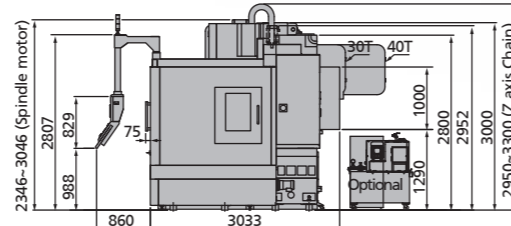
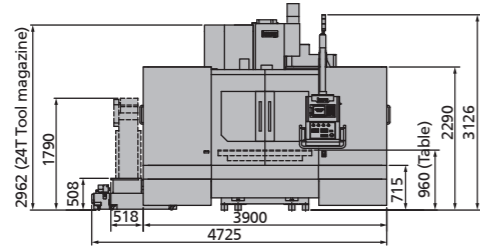
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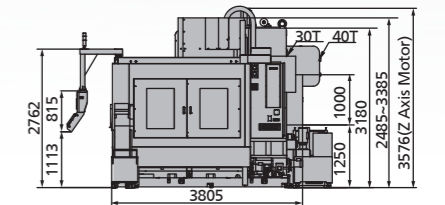
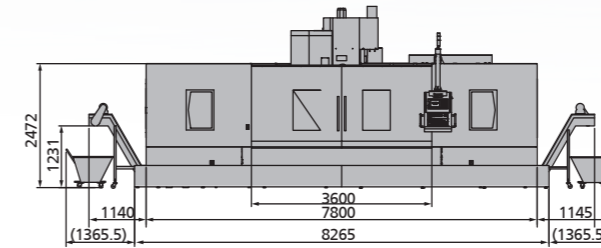
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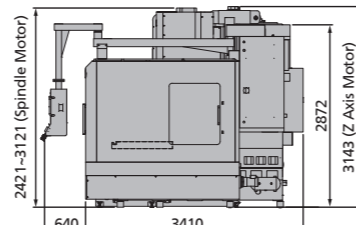
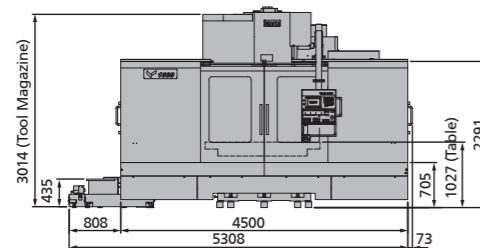
/ VMC-1370



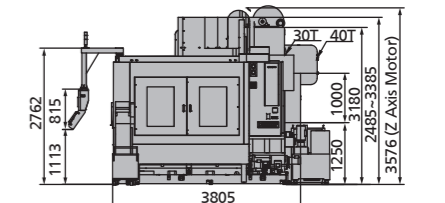
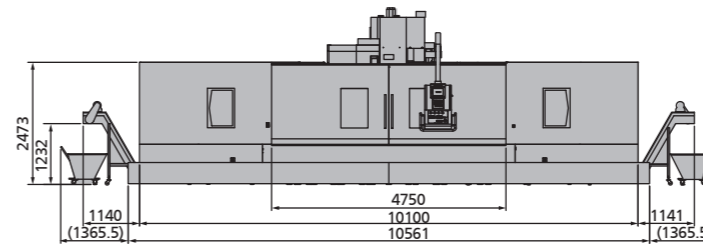
/ VMC-3100



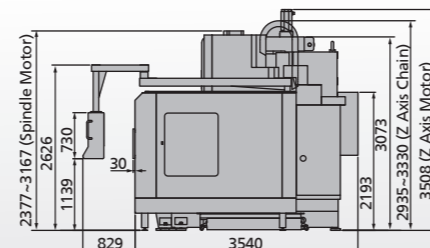
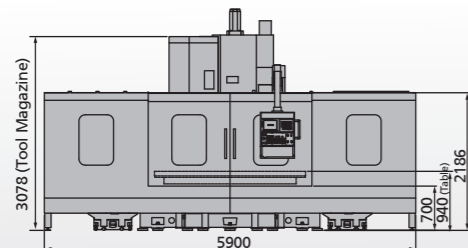
/ VMC-1688



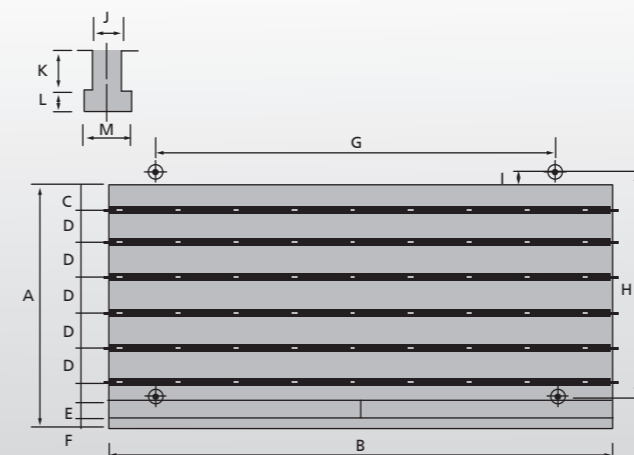
/ VMC-4100



/ VMC-21100+



VMC TABLE VIEW



VMC TABLE SIZE

unit : mm

Model \ Item	A	B	C	D	E	F	G	H	I	J	K	L	M
VMM/VMC-116A/B	600	1250	50				1100	600	-				
VMM/VMC-126A/B	650	1350	75				1150	650	-	18	24	12	30
VMM/VMC-1370	700	1500	100				125	1300	700	-			
VMM/VMC-1688	950	1800	65		45	25	1600	880	-				
VMM/VMC-21100+		2400						2200		8			
VMM/VMC-2100		2100						1900					
VMM/VMC-2600	1000	2600	50	150	-	-	2400	1000			22	29	16
VMM/VMC-3100		3100						2900					
VMM/VMC-4100		4100						3900					

VMC/VMM SERIES VERTICAL MACHINING CENTER

SPECIFICATION

MODEL		VMC-116A VMM-116A	VMC-116B VMM-116B	VMC-126A VMM-126A	VMC-126B VMM-126B	VMC-1370 VMM-1370	VMC-1688 VMM-1688	VMC-21100+ VMM-21100+	VMC-2100 VMM-2100	VMC-2600 VMM-2600	VMC-3100 VMM-3100	VMC-4100 VMM-4100	
Travel													
X-axis	mm	1100		1270		1400	1600	2150	2100	2600	3100	4100	
Y-axis	mm	600		650		700	880	1000		1020			
Z-axis	mm	635		650		700		790		900/1070			
Guide Way(X/Y/Z)	type		Box Way						Box Way				
Distance From Spindle Nose To Table Surface	mm	100-735		100-750		200-900		250-1040		100-1000/100-1170			
Distance From Spindle Center To The Track Surface Of Z-axis	mm	650(620)		725(695)		750(705)	935(897)	1042		1070(1010)			
Table													
Table Dimension	mm	1250 x 600		1350 x 650		1500 x 700	1800 x 950	2400x1000	2100 x 1000	2600 x 1000	3100 x 1000	4100 x 1000	
Max. Loading Capacity	kg		1200			1500	2500		3000		4000	5500	
T-Slots(number x width x pitch)	no x mm		5x18mmx125mm			5x18mmx125mm	7x22mmx125mm			7x22mmx150mm			
Spindle													
Spindle Speed(ST)	rpm		Gear Head 6000						Gear Head 6000				
Spindle Speed(OP)	rpm	Gear Head 7000/8000 Direct-Driven 10000/12000 Belt Head 8000/10000	Gear Head 7000/8000	Gear Head 7000/8000 Direct-Driven 10000/12000 Belt Head 8000/10000	Gear Head 7000/8000 Direct-Driven 10000		Gear Head 7000/8000 Direct-Driven 10000				Gear Head 4000/7000 Direct-Driven 10000		
Spindle Taper	type	#40	#50	#40	#50				#50				
Spindle Bearing Bore Diameter	mm	Ø70(Belt Head/Direct-Driven)Ø75(Gear Head)	Ø85	Ø70(Belt Head/Direct-Driven)Ø75(Gear Head)	Ø85(Gear Head) Ø90(Direct-Driven)				Ø90				
Feed													
Rapid Travel Rate(X/Y/Z)	m/min		24/24/20			24/24/20	20/20/15	12/12/10		10/10/10		8/8/8	
Cutting Rate	m/min		10				10			7		5	
Manual JOG Feed Rate	m/min		4(20steps)						4(20steps)				
ATC													
Tool Shank Type	type	MAS BT-40 (*CAT-40/*DIN-40)	MAS BT-50 (*CAT-50/*DIN-50)	MAS BT-40 (*CAT-40/*DIN-40)	MAS BT-50 (*CAT-50/*DIN-50)					MAS BT-50(*CAT-50/*DIN-50)			
Pull Stud	type	MAS BT-40/P40-T-1 (*CAT-40/*DIN-40)	MAS BT-50/P50-T-1 (*CAT-50/*DIN-50)	MAS BT-40/P40-T-1 (*CAT-40/*DIN-40)	MAS BT-50/P50-T-1 (*CAT-50/*DIN-50)					MAS BT-50/P50-T-1(*CAT-50/*DIN-50)			
Auto Tool Change System		VMM Series do not support ATC						VMM Series do not support ATC					
Magazine Capacity(ST)	tools	24(Cam Type)						24(Cam Type)					
Magazine Capacity(OP)	tools	*32/*40(Cam Type)	-	*30/*32(Cam Type)			*30/*40(Cam Type)				*30/*40/*60(Cam Type)		
Max. Tool Diameter(with adjacent tool)	mm	Ø75	Ø108	Ø75	Ø108					Ø105			
Max. Tool Diameter(without adjacent tool)	mm	Ø150	Ø216	Ø150	Ø216					Ø210			
Max. Tool Length	mm	300						300					
Max. Tool Weight	kg	7	15	7	15					15			
Tool Change Time(tool to tool)	sec	2	2.8	2	2.8					2.8			
Tool Change Time(time to time)	sec	5.8	6	4.5	6					6			
Motor (FANUC)													
Spindle Motor(cont./30min)(ST)	kW	7.5/11	15/18.5	7.5/11	15/18.5					15/18.5			
Feed Motor(X/Y/Z)	kW	3.0/3.0/3.0		3.0/4.0/7.0		4.0/4.0/7.0		7.0/7.0/7.0		7.0/(7.0/7.0)/7.0		6.0/(7.0/7.0)/7.0	
Coolant Motor	kW	0.75		0.75*2						0.75			
Power Supply													
Power Supply	kVA	20				35				55			
Compressed Air Supply	MPa, l/min	0.6, 500				0.6, 500				0.6, 500			
Coolant Tank Capacity	L	443		520		420	420	320		770			
Controller		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN						FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN					
External Dimension													
Width	mm	4730		5120		4725	5381	5900	9041	10041	10996	13292	
Length	mm	2560		2460		3893	4050	4369		3805			
Height	mm	2910		2850		3300	3121	3508		3576/3746			
Net Weight	kg	8250/8600		8500/8850		12700/13500	16200/17000	17650/18500	20500/21000	22000/22500	23000/23500	27500/28000	
Accuracy (following values were tested in the temperature-controlled room)													
ISO 10791 Accuracy	Positioning	mm		0.012		0.012	0.014		0.022		0.025	0.030	
	Repeatability	mm	0.009		0.010	0.010	0.012		0.017		0.020	0.025	
JIS 6338 Accuracy	Positioning(within 300mm)	mm		±0.005				±0.005		±0.008		±0.01	
	Repeatability(within 300mm)	mm		±0.002				±0.003		±0.005		±0.008	
Packing For Export			40' HQ				20' F/R			20' F/R+40' H/Q		20' F/R+40' H/Q	

1. The specification is for reference only. KAFO remains the right to modify machine specification, design or property and without prior notice.

2. The positioning accuracy inspection is only allowed to execute in KAFO's factory, may not provide inspection at other time after leaving.

3. The temperature of machine installing environment must be 5-40 degrees, the surrounding temperature difference should be within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.

4. As for more details, please refer to operating manual or contact with KAFO sales.

ACCESSORIES

● : Standard Specification ○ : Optional Specification ★ : Consulting Required - : Inadaptable

SPECIFICATION / MODEL	VMC-116A VMM-116A	VMC-116B VMM-116B	VMC-126A VMM-126A	VMC-126B VMM-126B	VMC-1370 VMM-1370	VMC-1688 VMM-1688	VMC-21100+ VMM-21100+	VMC-2100 VMM-2100	VMC-2600 VMM-2600	VMC-3100 VMM-3100	VMC-4100 VMM-4100
Spindle											
BT-40 Belt Head 8000/10000 rpm (7.5/11kW)											
BT-40 Direct-Driven 10000/12000 rpm (11/15kW, 15/18.5kW)	○		○								
BT-40 Gear Head 6000 rpm (7.5/11kW)	●		●								
BT-40 Gear Head 7000/8000 rpm (7.5/11kW)	○		○								
BT-40 Gear Head 6000/7000/8000 rpm (15/18.5kW)											
BT-50 Gear Head 6000 rpm (15/18.5kW)		●		●	●	●	●	●	●	●	●
BT-50 Gear Head 7000 rpm (15/18.5kW)		○		○							
BT-50 Gear Head 6000/7000 rpm (22/26kW)					○	○	○	○	○	○	○
BT-50 Direct-Driven 10000 rpm (15/18.5kW)											
BT-50 Direct-Driven 10000 rpm (22/26kW)											
Tool Magazine											
Magazine Capacity											
24 Tools (Cam Type)	●	●	●	●	●	●	●	●	●	●	●
30 Tools (Cam Type)	-				○	○	○	○	○	○	○
32 Tools (Cam Type)	○										
40 Tools (Cam Type)					○	○	○	○	○	○	○
60 Tools (Cam Type)											
Tool											
Tool Shank											
MAS BT-40	●		●								
CAT-40	○		○								
DIN-40											
MAS BT-50		●		●	●	●	●	●	●	●	●
CAT-50		○		○	○	○	○	○	○	○	○
DIN-50											
Pull Stud											
MAS BT-40/P40-T-1	●	●	●	●	●	●	●	●	●	●	●
MAS BT-50/P50-T-1											
Coolant											
Coolant System	●	●	●	●	●	●	●	●	●	●	●
Coolant Through Spindle	○	○	○	○	○	○	○	○	○	○	○
Coolant Through Tool And Tool Holder							○				
Oil Skimmer	●	●	●	●	●	●		○	○	○	○
Oil-Mist Coolant System	○	○	○	○	○	○					
Chip Flush Coolant System											
Coolant Gun	●	●	●	●	●	●	●	●	●	●	●
Chip Disposal System											
Lift-up Chip Conveyor (Chain Type)	○	○	○	○	○	○	○	○	○	○	○
Lift-up Chip Conveyor (Scrape Type)											
Screw Type Chip Conveyor (front of base)	●	●			●						
Screw Type Chip Conveyor (behind of table)							●				
Screw Type Chip Conveyor (on either sides and center of base)						●					
Air Blast Function For Workpiece (M07)	●	●	●	●	●	●	●	●	●	●	●
Spindle Air Blast											
Oil-Mist Collection System	○	○	○	○	○	○	○	○	○	○	○
Measurement System											
Tool Length Measurement	○	○	○	○	○	○	○	○	○	○	○
Workpiece Measurement											
Operation Support											
Auto Power Off (M30)	●	●	●	●	●	●	●	●	●	●	●
Automatic Door	★	★	★	★	★	★	★	★	★	★	★
Manual Pulse Generator (MPG)	●	●	●	●	●	●	●	●	●	●	●
High Accuracy Control											
Liner Scales (axis X/Y/Z)	○	○	○	○	○	○	○	○	○	○	○
Safety System											
Full Enclosure	●	●	●	●	●	●	○	●	●	●	●
L Type Splash Guard					○	○	○				
Splash Guard For Table							○				
Air Pressure Detection System	●	●	●	●	●	●	●	●	●	●	●
Others											
Interior Lighting Lamp (Fluorescent Lamp*1)							○				
Work Light & Tri-Color Status Light	●	●	●	●	●	●	●	●	●	●	●
Leveling Bolts & Pads											
Tool Box											
4th Axis Interface											
Rotary Table 4th Axis	○	○	○	○	○	○	○	○	○	○	○
Air Conditioner Unit For Electric Cabinet											
KAFO Customized Calculator Software Function											
Z-axis Riser	★	★	★	★	★	★	★	○	○	○	○
Z-axis Travel Extend		○ (Z-axis 785mm)		○ (Z-axis 850mm)						○ (Z-axis 1070mm)	

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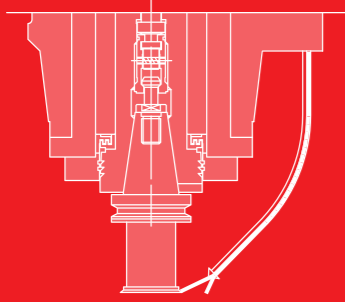
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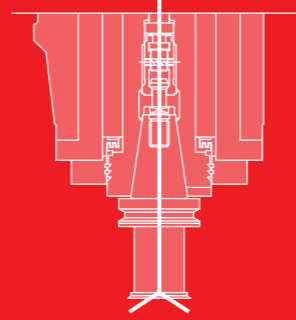
4. As for more details, please refer to operating manual or contact with KAFO sales.

TOOL SHANK & PULL STUD SPEC

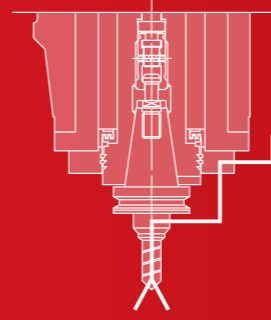
/ STANDARD COOLANT NUZZLE



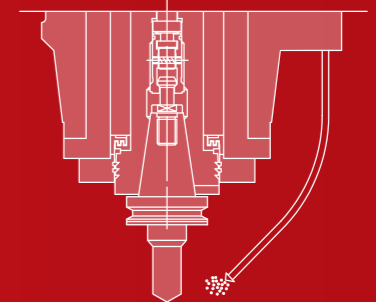
/ SPECIAL TYPE COOLANT THROUGH SPINDLE



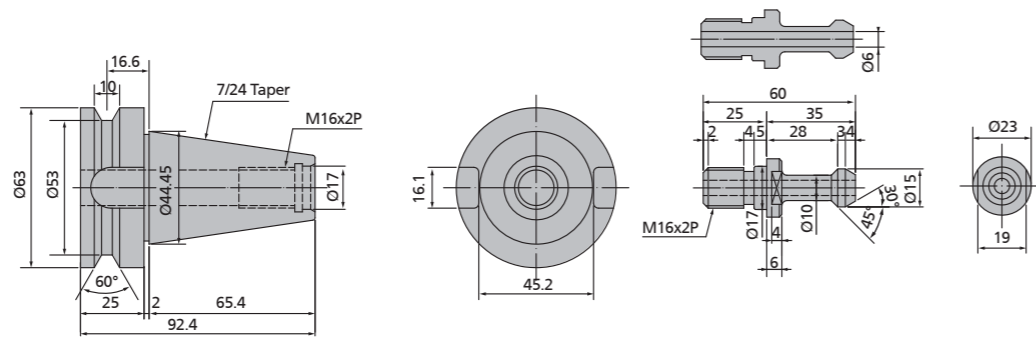
/ SPECIAL TYPE COOLANT THROUGH TOOL AND TOOL HOLDER



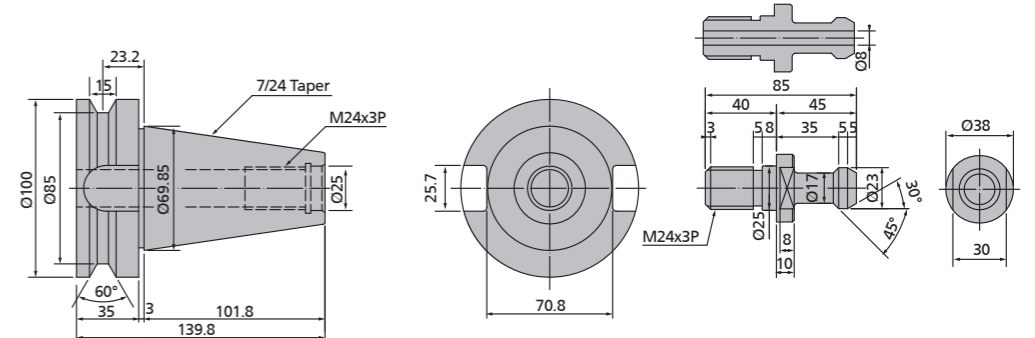
/ SPECIAL TYPE OIL-MIST COOLANT SYSTEM



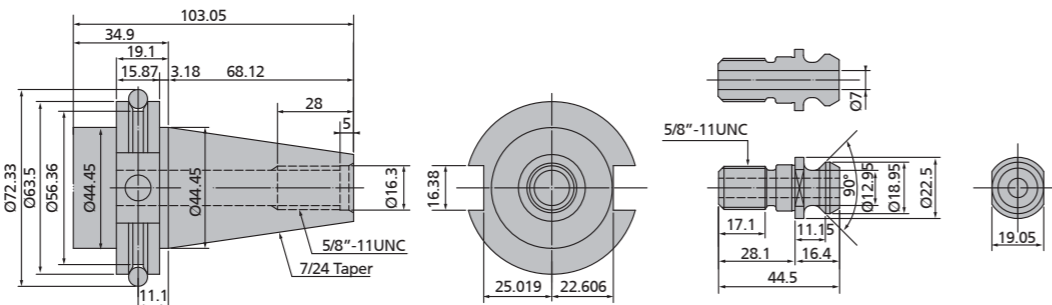
/ MAS BT-40+ MAS P40T Tooling Dim. (CTS)



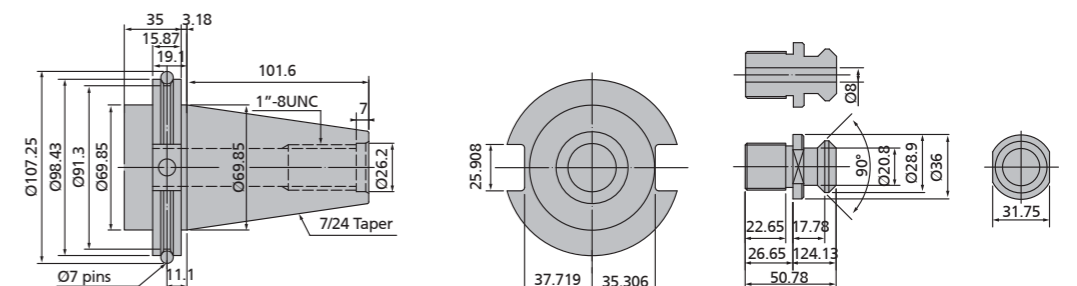
/ MAS BT-50+ MAS P50T Tooling Dim. (CTS)



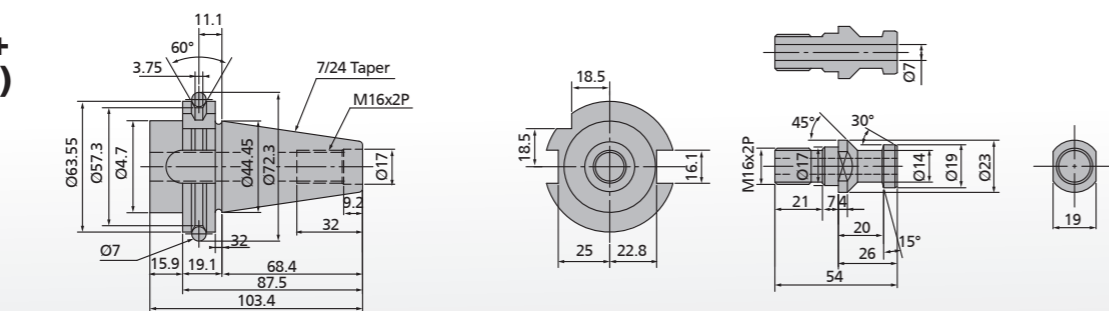
/ V-Flange CAT-40+ V-Flange CAT-40 Tooling Dim. (CTS)



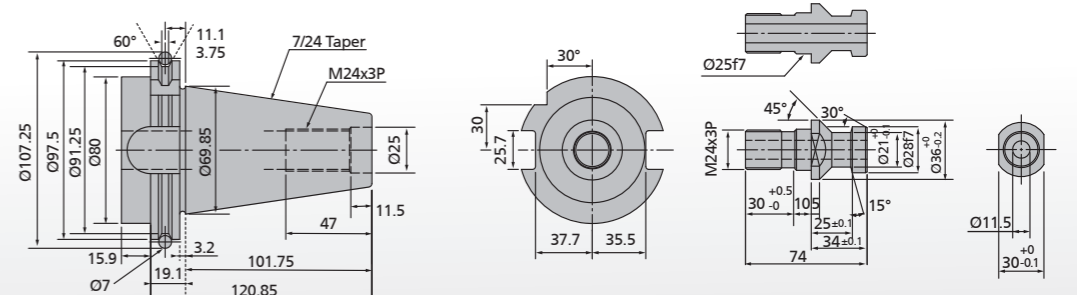
/ V-Flange CAT-50+ V-Flange CAT-50 Tooling Dim. (CTS)



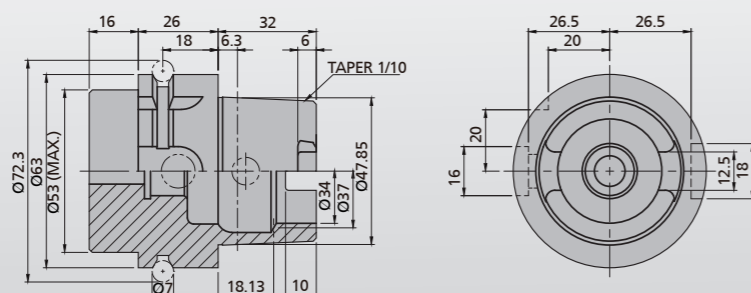
/ DIN69871(#40) + DIN69872-B(#40) Tooling Dim. (CTS)



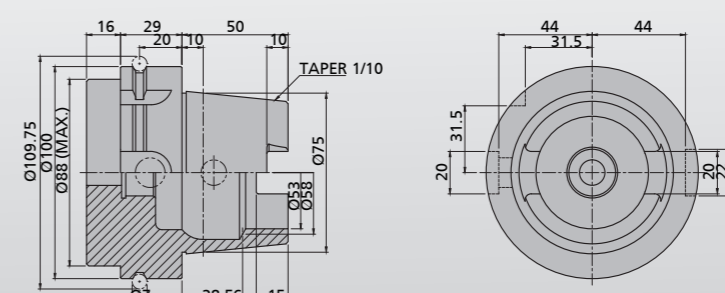
/ DIN69871A(#50)+ DIN69872-A(#50) Tooling Dim. (CTS)



/ HSK 63A (ISO-12164-1) (CTS)



/ HSK 100A (ISO-12164-1) (CTS)



KAO FONG

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