

# 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

TEL : +886-4-25662116

FAX : +886-4-25671001

E-Mail : kafo@kafo.com.tw

www.kafo.com.tw

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

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

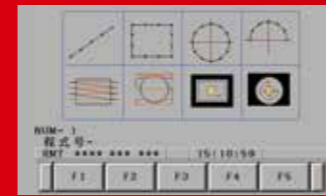
# CUSTOMIZED CALCULATOR SOFTWARE FEATURES (OPTION)



## 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



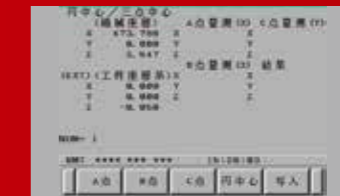
- Calculating function provided customers with fast calculation and completion of the workpiece coordinate corrections and setting.

## 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



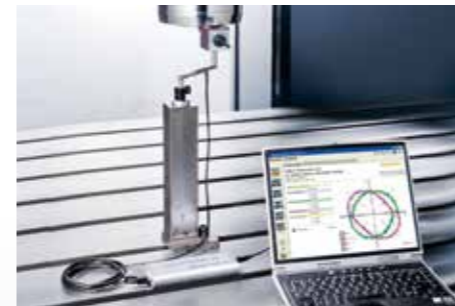
/ 3D PROBE SYSTEM QUALITY ASSURANCE (CMM)



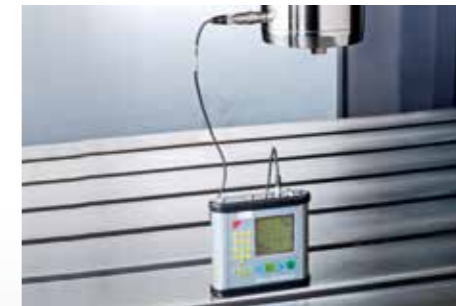
/ LASER INSPECTION



/ 3D CIRCULAR BALL MILLING



/ BALL BAR INSPECTION

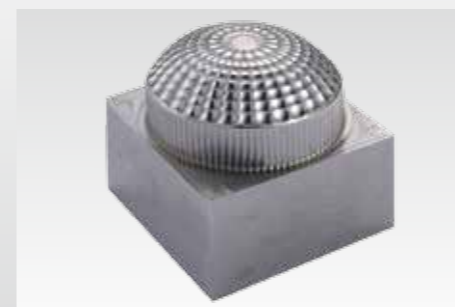
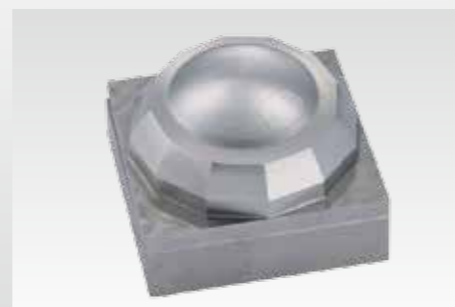


/ VIBRATION TEST



/ RIGIDITY TEST

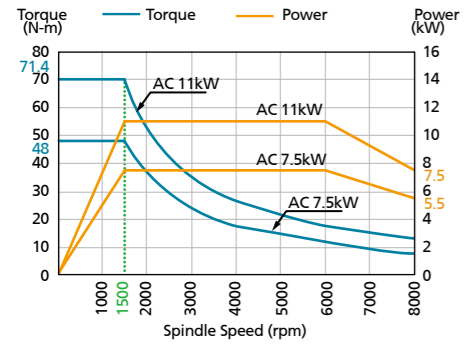
# MACHINING PRODUCTS



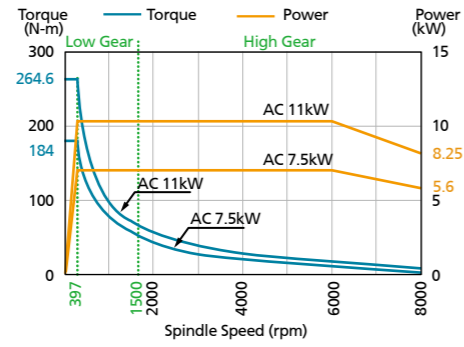
# VERTICAL MACHINING CENTER

## SPINDLE POWER-TORQUE DIAGRAM

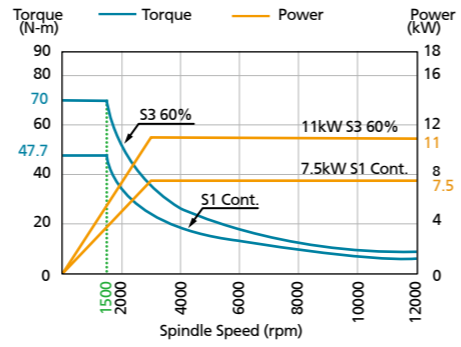
**/ FANUC a8/8000i (BELT HEAD)**



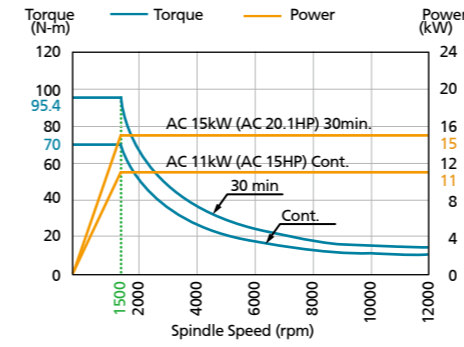
**/ FANUC a8/8000i (GEAR HEAD, #40)**



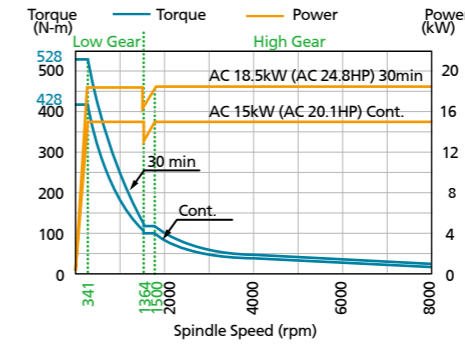
**/ FANUC a8/12000i (DIRECT-DRIVEN)**



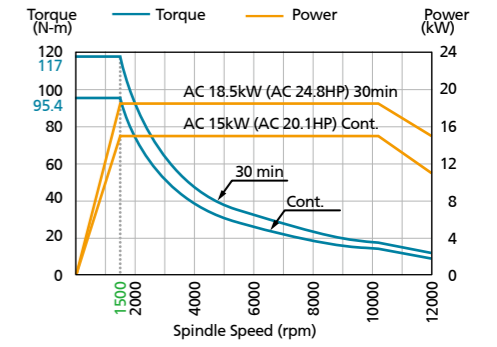
**/ FANUC a12/12000i (DIRECT-DRIVEN)**



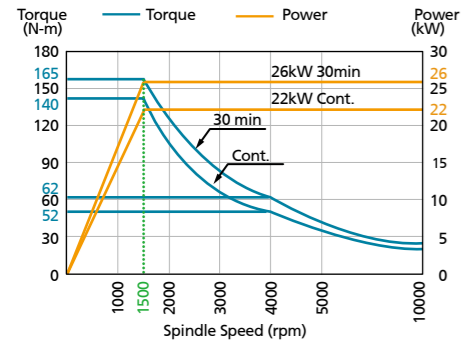
**/ FANUC a15/8000i (GEAR HEAD, #50)**



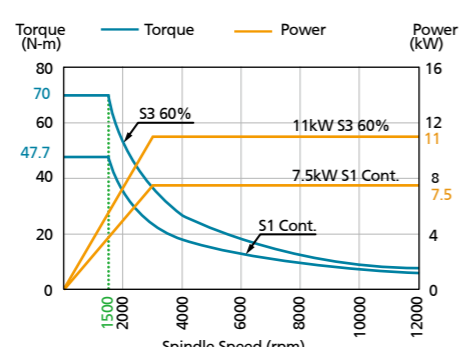
**/ FANUC a15/12000i (DIRECT-DRIVEN)**



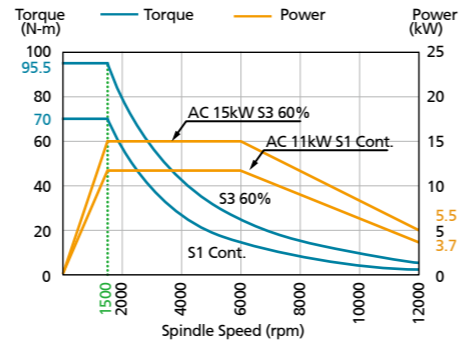
**/ FANUC a22/10000i (DIRECT-DRIVEN)**



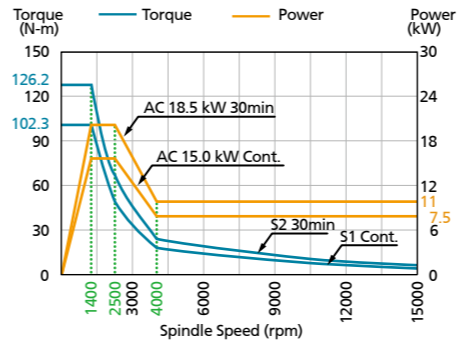
**/ FANUC aT8/12000i (DIRECT-DRIVEN)**



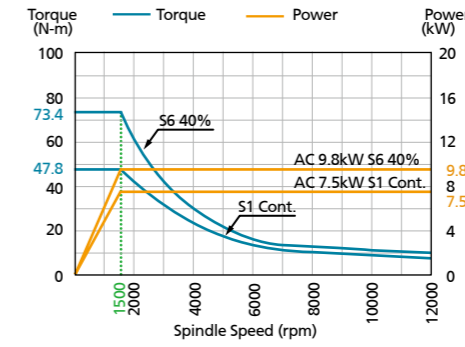
**/ FANUC aT12/12000i (DIRECT-DRIVEN)**



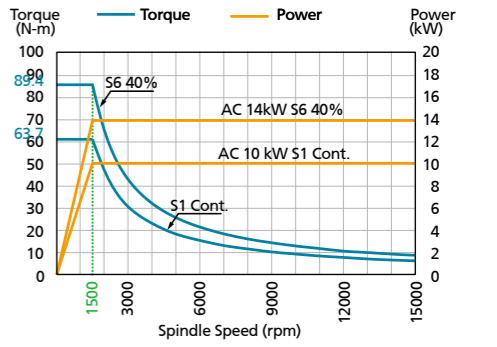
**/ FANUC aT15/15000i (DIRECT-DRIVEN)**



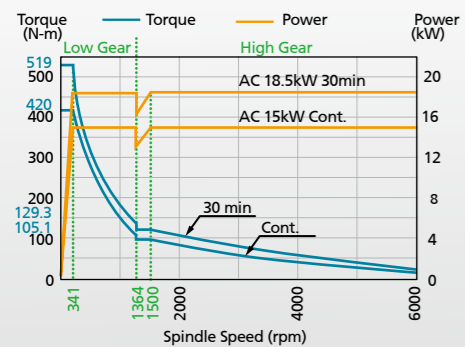
**/ HEIDENHAIN QAN200L 12000rpm (DIRECT-DRIVEN)**



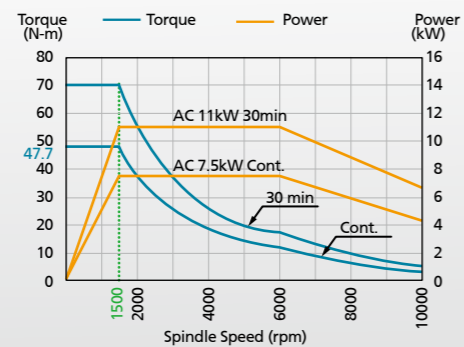
**/ HEIDENHAIN QAN200UH 15000rpm (DIRECT-DRIVEN)**



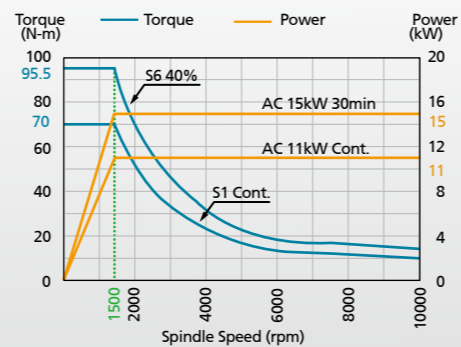
**/ MITSUBISHI SJ-D18.5/80-01-C 6000rpm (GEAR HEAD)**



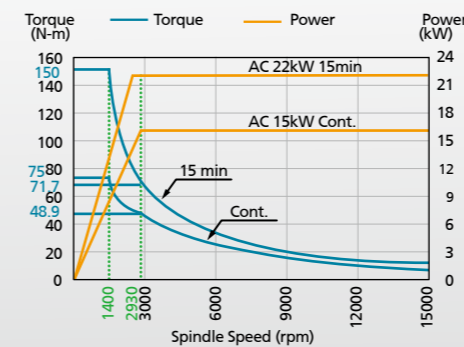
**/ MITSUBISHI SJ-DG11/100-03T 10000rpm (DIRECT-DRIVEN)**



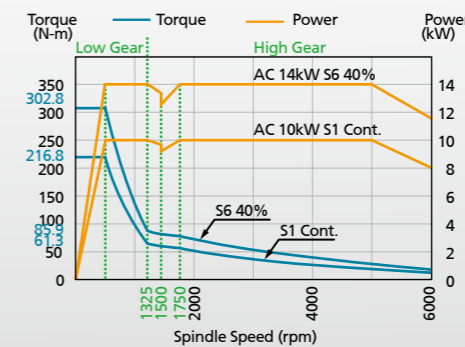
**/ MITSUBISHI SJ-V22-06ZT 10000rpm (DIRECT-DRIVEN)**



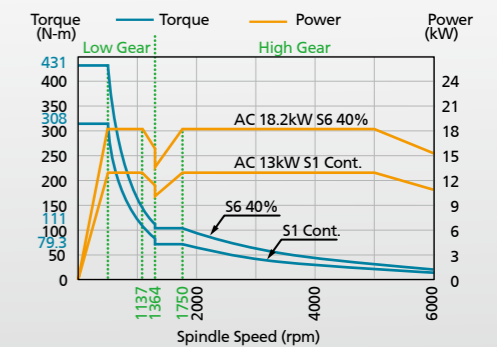
**/ MITSUBISHI SJ-VKS30-16FZF505 15000rpm (DIRECT-DRIVEN)**



**/ 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**



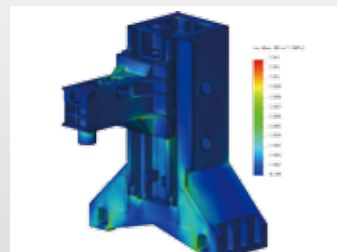
**/ BALLSCREW COOLANT SYSTEM**



**/ 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



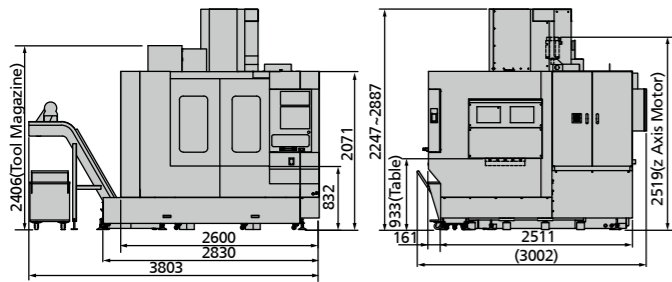
OPTION

OPTION

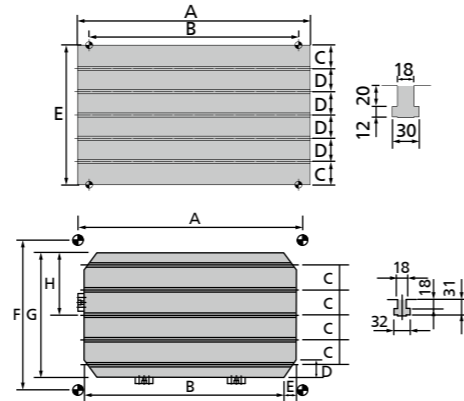
# SV/SVM CV/CVM DV/DVM SERIES VERTICAL MACHINING CENTER

## TABLE SIZE AND MACHINE LAYOUT

### / SV-1000



### / SV CV/DV



unit : mm

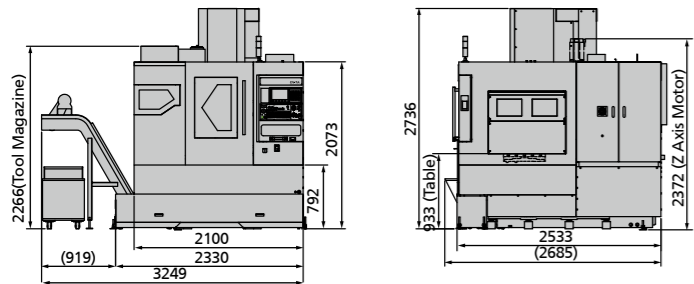
#### TABLE SIZE

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

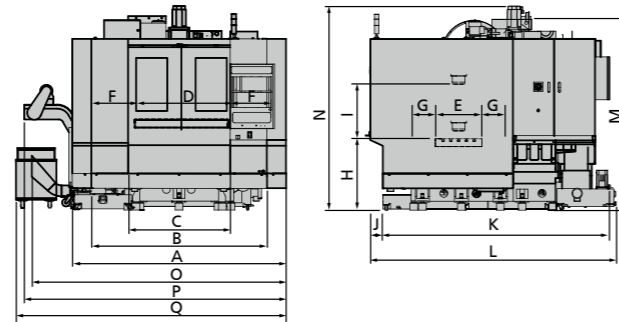
#### TABLE SIZE

	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



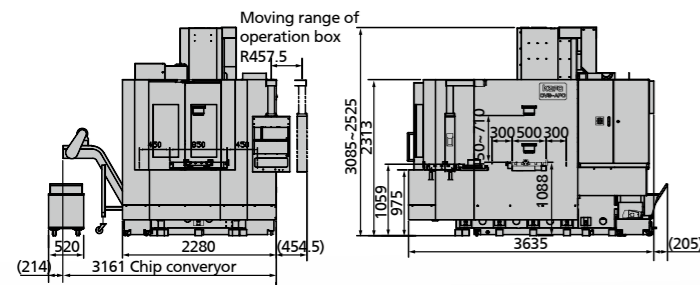
### / CV/DV-9/11

#### MACHINE LAYOUT

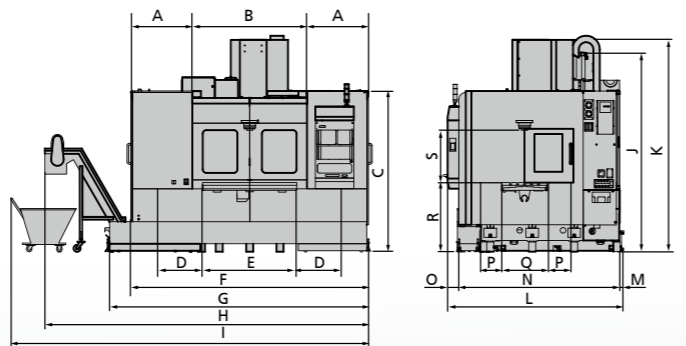
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
CV-9A/B											2909	3150	2360-2960	2615	3004	3127	3235
DV-9A/B	-	2250	1150	1000	600	450	300	980	100-700	160	2949	3190	2380-2980				
DV-9C													2380-2980				
CV-11A/B											2909	3150	2360-2960	2615	3260	3360	3460
DV-11A/B	2740	2250	1310	1200	600	550	300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

unit : mm

### / CV-9 APC



### / CV/DV-12



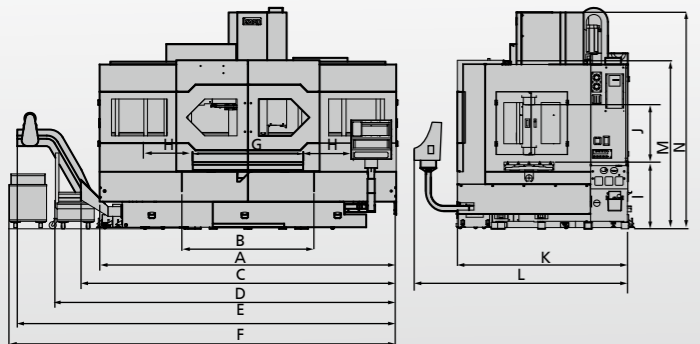
### / CV/DV-12

#### MACHINE LAYOUT

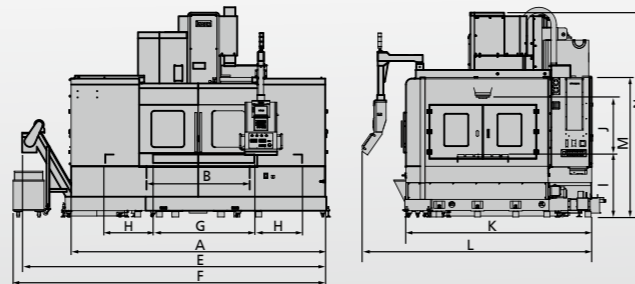
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
CV-12A/B											2400-3050								
CV-12AH											2445-3095								
DV-12A/B	880	1640	2315	635	1400	3400	3705	4630	5120	2865	2400-3050	2502	60	2282	160	325	650	1003	750
DV-12C											2200-2850								
DV-12AH											2445-3095								
DV-12CH										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

unit : mm

### / CV-14/16



### / CV/DV-168



### / 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

unit : mm



# 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	
<b>Travel</b>											
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)	
<b>Table</b>											
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				
<b>Spindle</b>											
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)	
<b>Feed</b>											
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				10	
Manual JOG Feed Rate	m/min	4(20 steps)				4(20 steps)				4(20 steps)	
<b>ATC</b>											
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		VMM 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	
<b>Motor (FANUC)</b>											
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			
<b>Power Supply</b>											
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				
<b>External Dimension</b>											
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)	
<b>Accuracy (following values were tested in the temperature-controlled room)</b>											
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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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.

# 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
<b>Travel</b>							
X-axis	mm	1400	1600	1600	1600	900	900
Y-axis	mm		700	700	850	600	600
Z-axis	mm		700	700	800	600	600
Guide Way(X/Y/Z)	type	45mm Roller-Type Linear Guide Way		45mm 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)	
<b>Table</b>							
Table Dimension	mm	1550x700	1750x700	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		5x18mmx100mm	
<b>Spindle</b>							
Spindle Speed(ST)	rpm	Direct-Driven 10000	Belt Head 8000	Direct-Driven 10000	Belt Head 8000	Gear Head 6000	Direct-Driven 10000
Spindle Speed(OP)	rpm	12000/15000(*N/A)	10000	12000/15000(*N/A)	10000	Gear Head 7000, Direct-Driven / Built-in 10000	12000/15000
Spindle Taper	type	#40(*#50)	#40	#40(*#50)	#40	#50	#40
Spindle Bearing Bore Diameter	mm	Ø70(*Ø90)	Ø70	Ø70(*Ø90)	Ø70	Ø90	Ø70
<b>Feed</b>							
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	30/30/24	48/48/48
Cutting Rate	m/min	10		10		10	
Manual JOG Feed Rate	m/min	4(20 steps)		4(20 steps)		4(20 steps)	
<b>ATC</b>							
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-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)
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-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)
Auto Tool Change System		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	30/32/40(Cam Type)(*30 Cam Type)	30/32/40(Cam Type)	30/32/40(Cam Type)(*30 Cam Type)	30/32/40(Cam Type)	30/32/40(Cam Type)	
Max. Tool Diameter(with adjacent tool)	mm	Ø75(*Ø108)	Ø75	Ø75(*Ø108)	Ø75	Ø108(*Ø125)	Ø75
Max. Tool Diameter(without adjacent tool)	mm	Ø150(*Ø216)	Ø150(*Ø125)	Ø150(*Ø216)	Ø150(*Ø125)	Ø216(*Ø250)	Ø150(*Ø125)
Max. Tool Length	mm		300			300	
Max. Tool Weight	kg	7(*15)	7	7(*15)	7	15	7
Tool Change Time(tool to tool)	sec	2(*2.8)	2	2(*2.8)	2	2.8	2
Tool Change Time(time to time)	sec	5(*6)	5	5(*6)	5	6	4.5
<b>Motor (FANUC)</b>							
Spindle Motor(cont./30min)(ST)	kW	7.5/11(*15/18.5)	7.5/11	7.5/11(*15/18.5)	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	22/26	11/15, 15/18.5
Feed Motor(X/Y/Z)	kW		4/4/7			4/4/7	3/3/7
Coolant Motor	kW		0.75			0.75	
<b>Power Supply</b>							
Power Supply	kVA		35			35	20
Compressed Air Supply	Mpa, l/min		0.6, 500			0.6, 500	
Coolant Tank Capacity	L		496.5		496.5	700	420
Controller		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN			FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN		
<b>External Dimension</b>							
Width	mm	4930		5380	5380	5255	3375
Length	mm		3230		3230	3850	3840
Height	mm	3030(*3072)	3030	3030(*3072)	3030	3450	3085
Net Weight	kg	9540/9190(*9740/9040)	9540/9190	10540/10190(*10740/10040)	10540/10190	16000/15200	8300
<b>Accuracy (following values were tested in the temperature-controlled room)</b>							
ISO 10791 Accuracy	Positioning	mm	0.012	0.014	0.014	0.012	0.012
	Repeatability	mm	0.010	0.012	0.012	0.012	0.009
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	20' FR	40' HQ

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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.

# 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		
<b>Travel</b>													
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)		
<b>Table</b>													
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			
<b>Spindle</b>													
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		
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	
<b>Feed</b>													
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											
Manual JOG Feed Rate	m/min	4(20 steps)											
<b>ATC</b>													
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-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-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-50/*DIN-50)
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	
<b>Motor (FANUC)</b>													
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						
<b>Power Supply</b>													
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						
<b>External Dimension</b>													
Width	mm	3235		3460		3460		3705		4700	5255		
Length	mm			3190		3190		2502		3740	3850		
Height	mm	2960		2980		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
<b>Accuracy (following values were tested in the temperature-controlled room)</b>													
ISO 10791 Accuracy	Positioning	mm					0.012					0.014	
	Repeatability	mm					0.009					0.010	0.012
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					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



/ VMC-1688



/ VMC-126



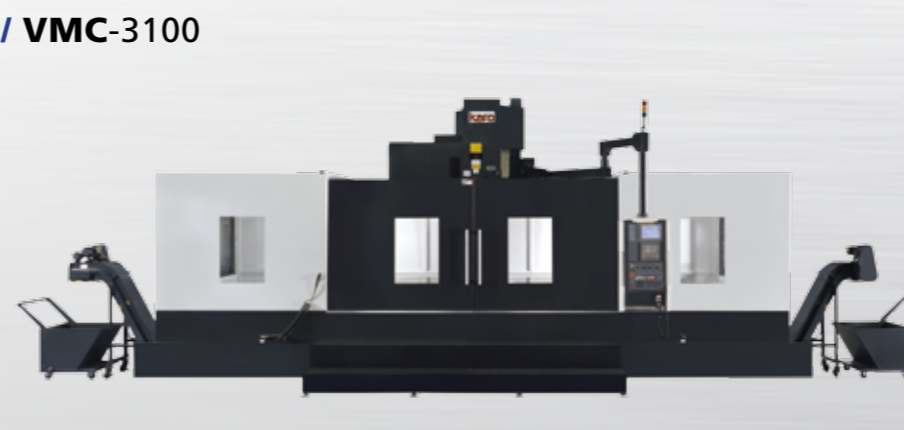
/ VMC-21100+



/ VMC-1370



/ VMC-3100



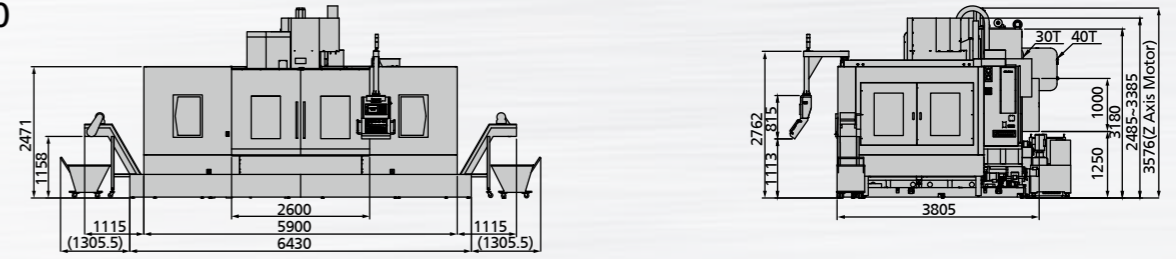
# VMC/VMM SERIES VERTICAL MACHINING CENTER

## TABLE SIZE AND MACHINE LAYOUT

/ VMC-116A/B



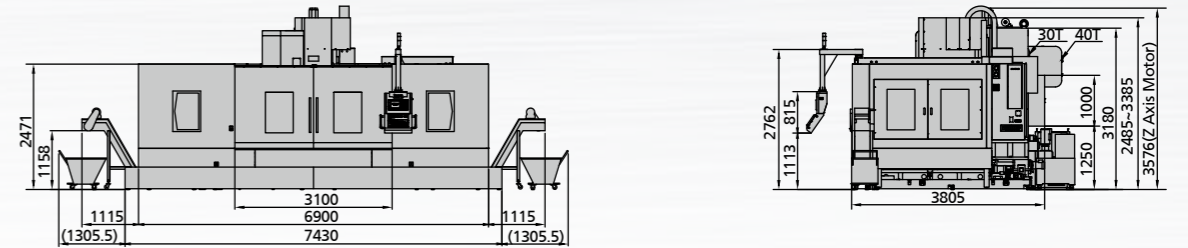
/ VMC-2100



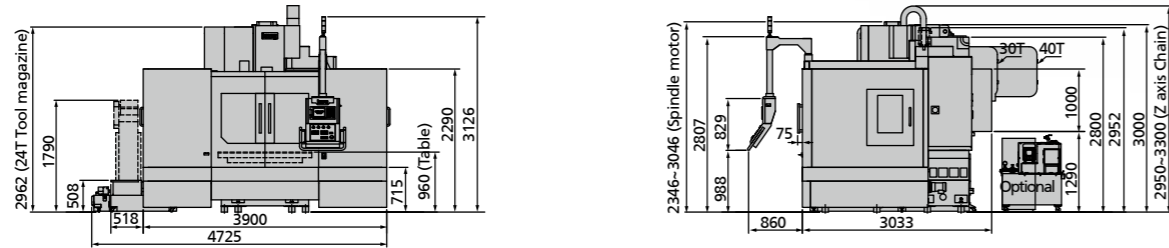
/ VMC-126A/B



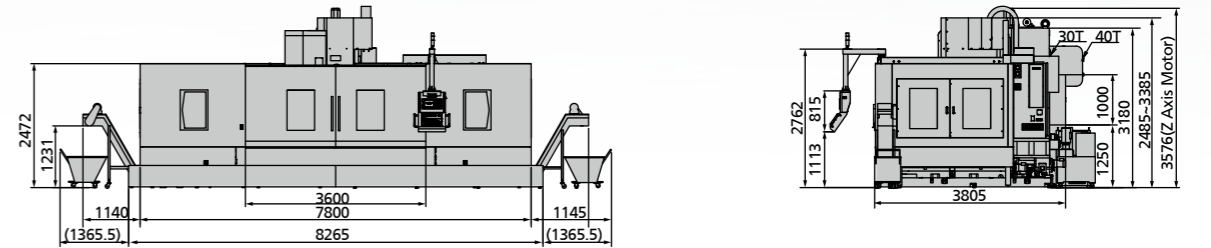
/ VMC-2600



/ VMC-1370



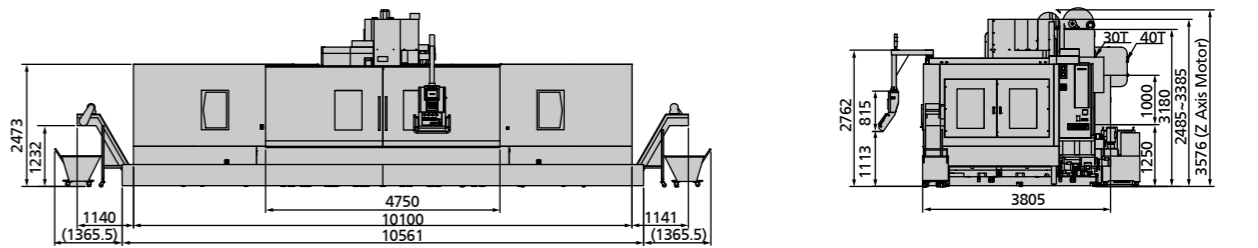
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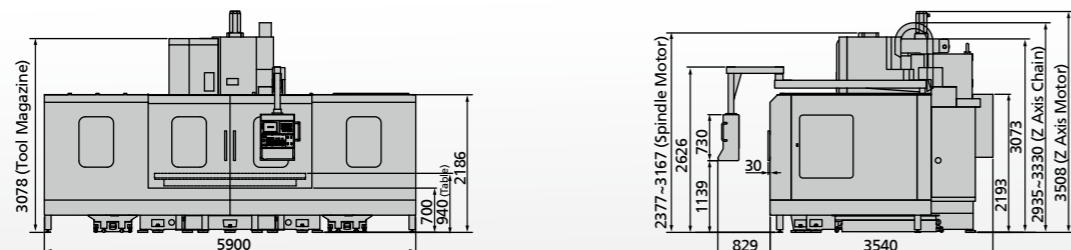
/ VMC-1688



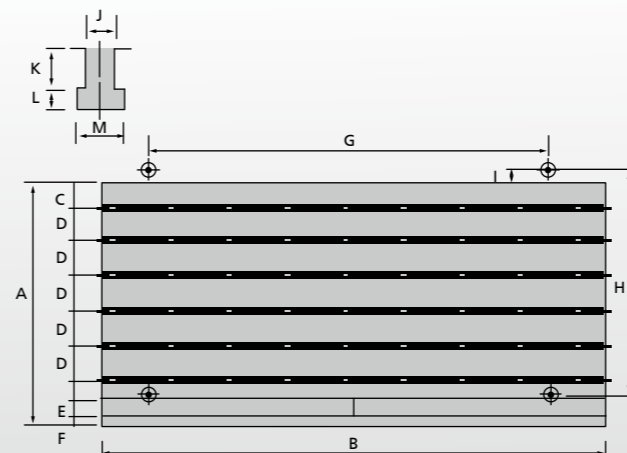
/ VMC-4100



/ 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	125	-	-	1150	650	-	18	24	12	30
VMM/VMC-1370	700	1500	100				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	37
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		
<b>Travel</b>														
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)				
<b>Table</b>														
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				
<b>Spindle</b>														
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					
<b>Feed</b>														
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)					
<b>ATC</b>														
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					
<b>Motor (FANUC)</b>														
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					
<b>Power Supply</b>														
Power Supply	kVA	20						35			55			
Compressed Air Supply	Mpa, l/min	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						
<b>External Dimension</b>														
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		
<b>Accuracy (following values were tested in the temperature-controlled room)</b>														
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

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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
<b>Spindle</b>												
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)					○		○		○		○	○
<b>Tool Magazine</b>												
Magazine Capacity												
24 Tools (Cam Type)		●	●	●	●	●	●	●	●	●	●	●
30 Tools (Cam Type)				○	○	○	○	○	○	○	○	○
32 Tools (Cam Type)		○										
40 Tools (Cam Type)						○	○	○	○	○	○	○
60 Tools (Cam Type)							○	○	○	○	○	○
<b>Tool</b>												
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			●		●		●		●		●	●
<b>Coolant</b>												
Coolant System		●	●	●	●	●	●	●	●	●	●	●
Coolant Through Spindle		○	○	○	○	○	○	○	○	○	○	○
Coolant Through Tool And Tool Holder								○		○		○
Oil Skimmer		●	●	●	●	●	●		○		○	○
Oil-Mist Coolant System		○	○	○	○	○	○					
Chip Flush Coolant System				●	●							
Coolant Gun		●	●		●	●	●	●	●	●	●	●
<b>Chip Disposal System</b>												
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		○	○	○	○	○	○	○	○	○	○	○
<b>Measurement System</b>												
Tool Length Measurement		○	○	○	○	○	○	○	○	○	○	○
Workpiece Measurement												
<b>Operation Support</b>												
Auto Power Off (M30)		●	●	●	●	●	●	●	●	●	●	●
Automatic Door		★	★	★	★	★	★	★	★	★	★	★
Manual Pulse Generator (MPG)		●	●	●	●	●	●	●	●	●	●	●
<b>High Accuracy Control</b>												
Liner Scales (axis X/Y/Z)		○	○	○	○	○	○	○	○	○	○	○
<b>Safety System</b>												
Full Enclosure		●	●	●	●	●	●	○	●	●	●	●
L Type Splash Guard						○	○	○				
Splash Guard For Table								○				
Air Pressure Detection System		●	●	●	●	●	●	●	●	●	●	●
<b>Others</b>												
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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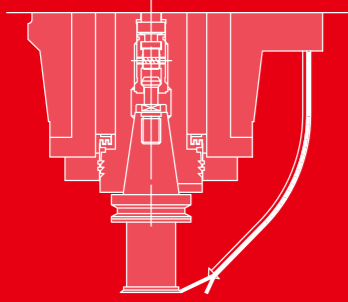
3. The temperature of machine installing environment must be 5-40 degrees, the surrounding temperature difference should be within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.

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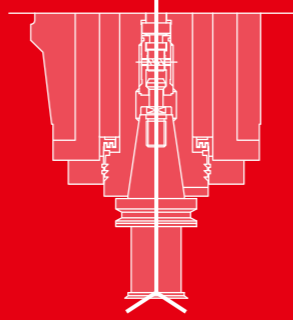


# TOOL SHANK & PULL STUD SPEC

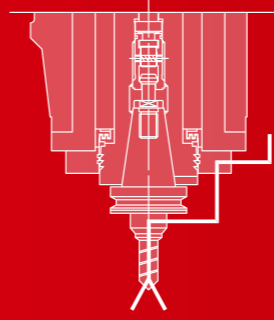
## / STANDARD COOLANT NUZZLE



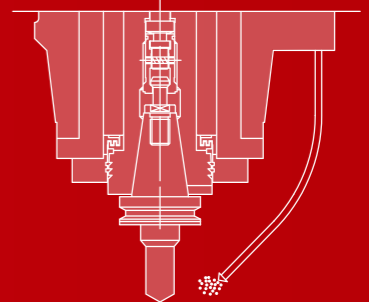
## / SPECIAL TYPE COOLANT THROUGH SPINDLE



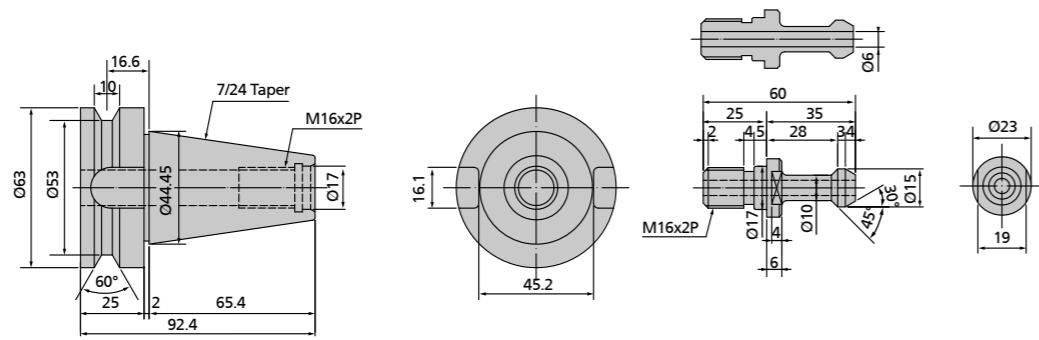
## / SPECIAL TYPE COOLANT THROUGH TOOL AND TOOL HOLDER



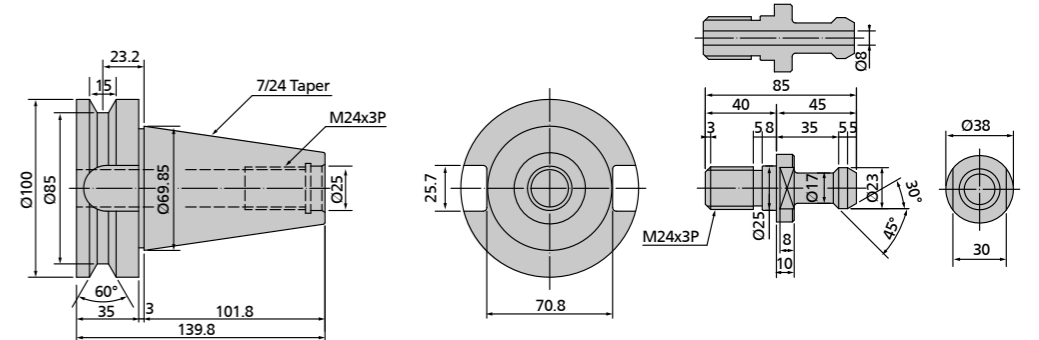
## / SPECIAL TYPE OIL-MIST COOLANT SYSTEM



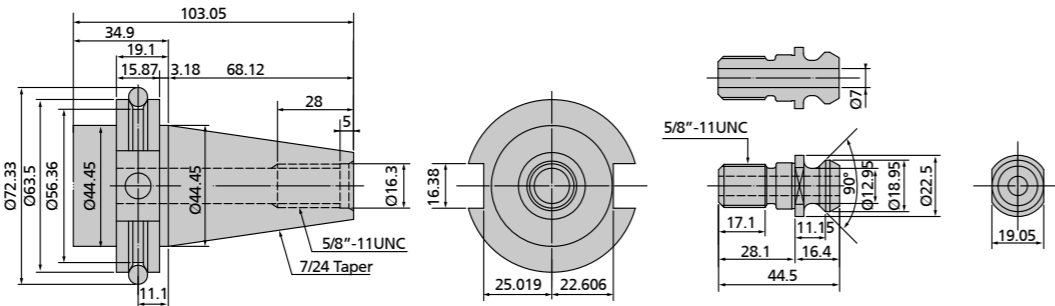
### / MAS BT-40+ MAS P40T Tooling Dim. (CTS)



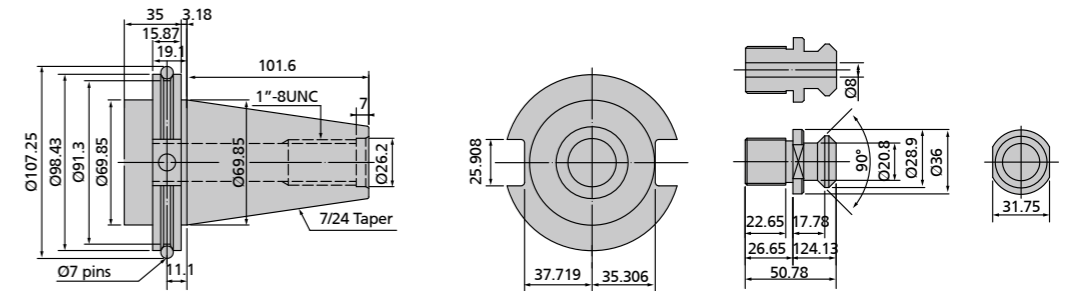
### / MAS BT-50+ MAS P50T Tooling Dim. (CTS)



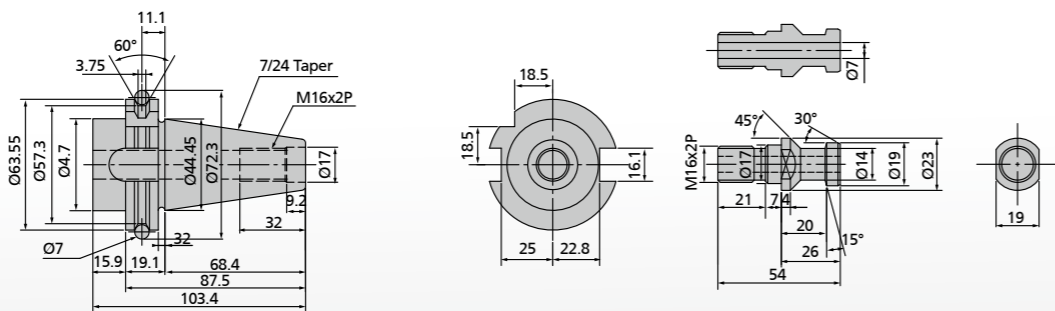
### / V-Flange CAT-40+ V-Flange CAT-40 Tooling Dim. (CTS)



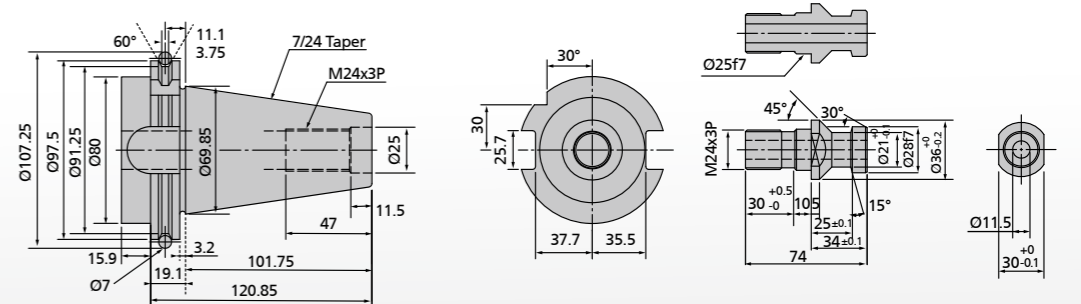
### / V-Flange CAT-50+ V-Flange CAT-50 Tooling Dim. (CTS)



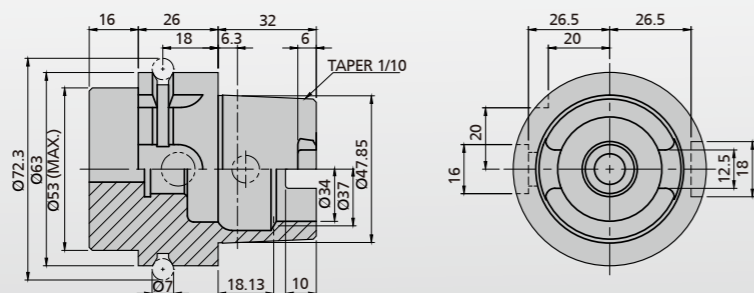
### / DIN69871(#40) + DIN69872-B(#40) Tooling Dim. (CTS)



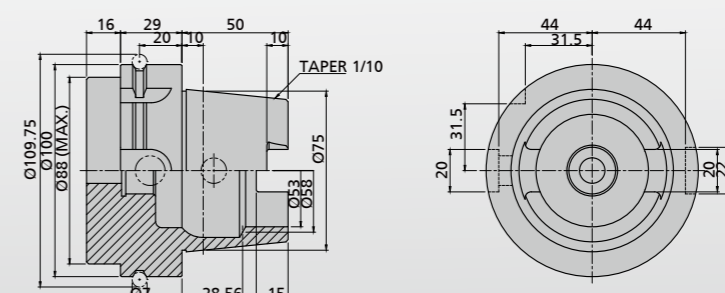
### / DIN69871A(#50)+ DIN69872-A(#50) Tooling Dim. (CTS)



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



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



# KAO FONG

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- ▶ Meet customer's processing demand
- ▶ Achieve customer's required quantity production
- ▶ Carry out automation processing
- ▶ Flexibly used in various products

## PROFESSIONAL ENGINEERING TEAM

- ▶ Having the most state-of-the-art software and hardware provides customers with the proposal to increase the production efficiency.
- ▶ Improving the processing efficiency through the work analysis, construction method and application test.



## PERFECT MACHINE PLANNING AND INSEPARABLE TECHNICAL NETWORK GIVES BEST BENEFICIAL RESULT



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- Through worldwide service to give supports to all customers
- With experienced and qualified technicians for routine maintenance



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- Office : Tainan City, Taiwan TEL : +886-6-2238661
- Agent : Taipei, Taoyuan, Tainan, Kaohsiung
- Mainland China
- Worldwide



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#### Kao Fong Customized Calculator Software Features

- G-menu
- Calculating Function
- Center of Rectangle Function
- Center of Circle Function
- Tool length Measurement and Setting
- Intelligent ATC System Management



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