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**KAO MING**  
ONE MORE STEP TO EXCELLENCE

## HIGH-TECH OF KAO MING

## POWER FOR TOMORROW

" I have a dream that one day the rough places will be made plain, and the crooked places will be made straight," Martin Luther King, Jr. said. Foresighted industrial innovation is always based on the constructive thinking of "dare to dream."

Kao Ming Machinery Industrial Co., LTD. perseveres in its efforts with innovative and revolutionary ideas to develop advanced technology and professional products in the related industrial field. Nowadays, it is the very moment for advanced industry to improve human beings' lives through all who dare to dream. Let's take the opportunity to succeed with Kao Ming.

**KMC- 3000SV**

**KMC-SV Series**  
2000SV  
3000SV  
4000SV  
5000SV  
6000SV  
8000SV  
(with various options)

/ SV exterior appearance: Arc modeling in front  
/ Z axis stroke: 850 mm  
/ Spindle nose: Extended Spindle  
/ Workpieces: Mid-sided / Large-scale / Deep hole & Concave slot machining

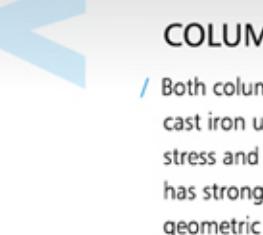
**MACHINE FEATURES**

- / SV series is designed from the SD series with 33.5" (850 mm) Z axis travel to accommodate taller parts.
- / The X, Y & Z axis are fully support by rigid box ways.
- / All models with the longer distances between the columns, utilize a total of 4 box ways on the X axis for enhanced rigidity.
- / The table never travels overhang hereby ensuring the rigidity throughout the entire travel of all axes.
- / The Y axis utilizes a superior design where by the lower slideway is offset a full 2.76" (70 mm) forward from the upper slideway. This greatly enhances the rigidity of the headstock by bringing the center of gravity back into the upper support.
- / Only a distance of 3.35" (85 mm) from spindle center to Z axis slideway
- / Two gear ranges, helical and spur gears support the spindle transmission system for machining large cavities at low RPM.
- / Extended spindle (SD Series opt.) is standard accessories (SV Series) that applies to deep hole drilling and concave milling.



# Yesterday's Honor Today Leaps

CONSTRUCTION



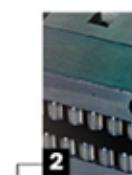
columns and crossbeam are also constructed with Meehanite undergoing annealing process. This reliefs the internal

FOUR GU



**Scraping** Large piece parts machining will require heavy loading so from "D" model and up (distance between two columns (2300 mm)), machine base equips four box way to support a combined designed of slide rolling. Center box way for support is hardened and ground, with Turcite-B which stronger absorb ability to keep dynamic rigidity during cutting. And 2 sides box way the same as center only have all the same function but having to take other factors into consideration.



This design can minimize loading pressure during move increase efficient. The table's 2 end-front and rear of slide surface also equips roller-type recirculating bearing to precision adjustment for the geometry accuracy. To assemble recirculating bearing, hardness of box way surface must be higher than HRC58°. Therefore we make box way either tight casting base or welded on the fabricated base.



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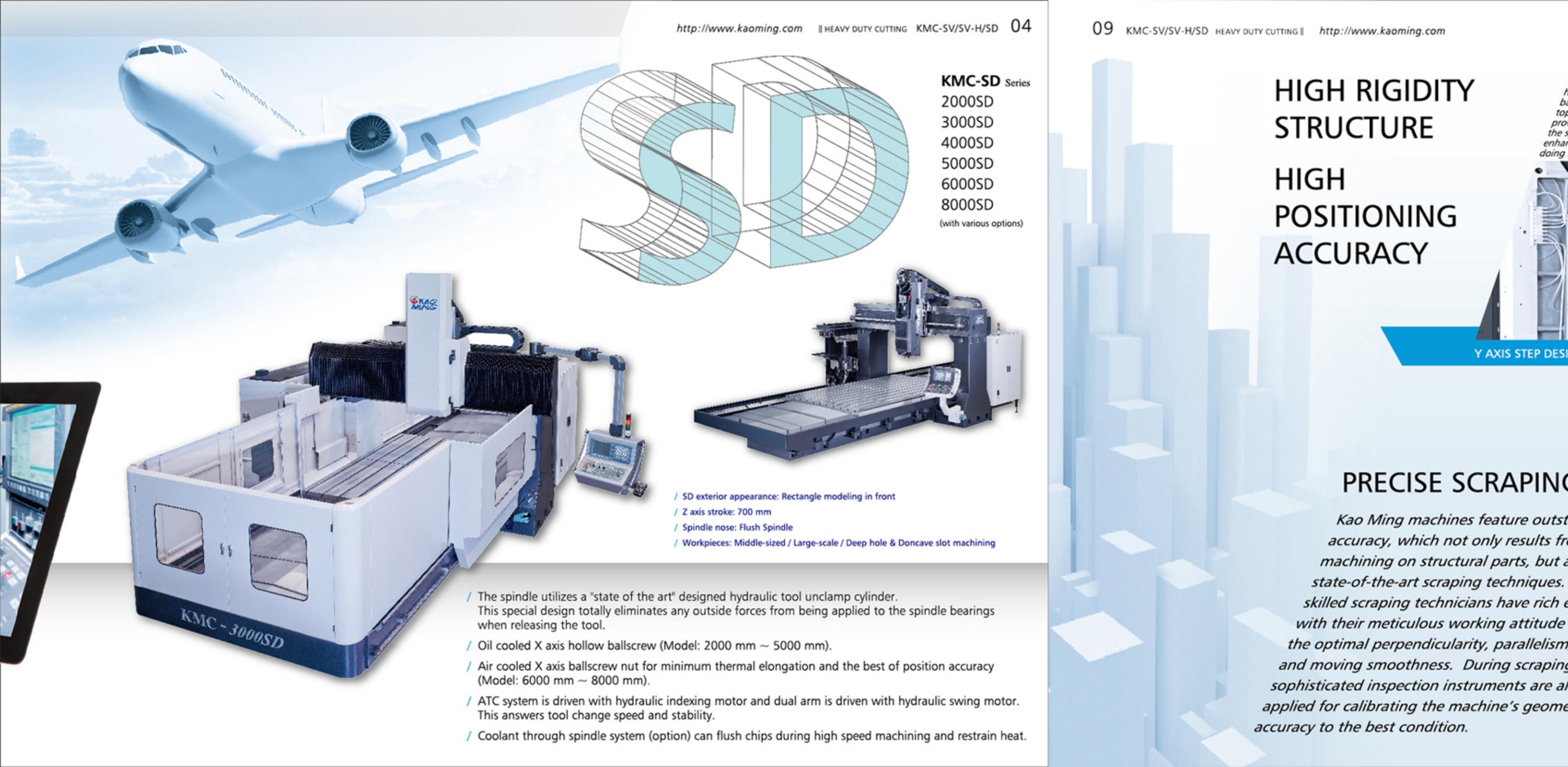


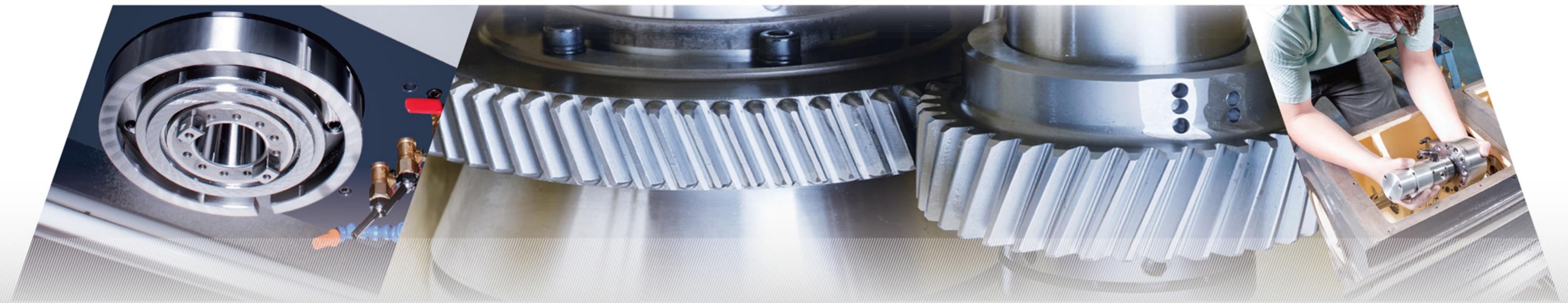
A close-up photograph of a precision-machined metal part, possibly a bearing housing. The part has a central circular bore with a ribbed inner ring. The outer surface features several machined faces and a flange with mounting holes. The material appears to be a light-colored metal, and the surfaces are smooth and reflective.



The image consists of two photographs. On the left is a close-up, low-angle shot of a jet engine's fan blades, showing their dark, metallic texture and the flow of air. On the right is a photograph of a white commercial airplane flying against a bright blue sky, viewed from below.



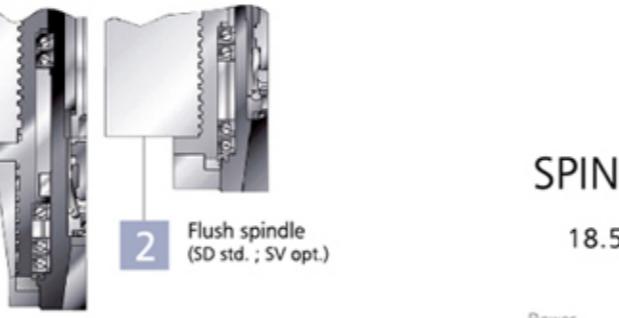
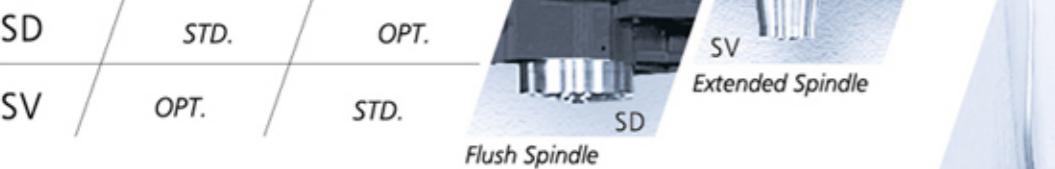




## RIGID POWERFUL SPINDLE HEAD

The spindle transmission incorporates both helical and spur gears for driving the spindle. Therefore, even at 6 rpm, the machine can easily perform boring large diameter holes. The "SV" series spindle is supported by a total of 5 precision class (P4) angular contact bearings. The "SD" series spindle is supported by 4 precision class (P4) angular contact bearings. Both designs are enclosed with grease lubricant. The entire spindle and transmission units are cooled by a constant circulation of oil in order to maintain a constant operational temperature. The headstock assembly is counter balanced by a single hydraulic cylinder. This answers smooth movement of z-axis.

## SV/SD SPINDLE NOSE SELECTION



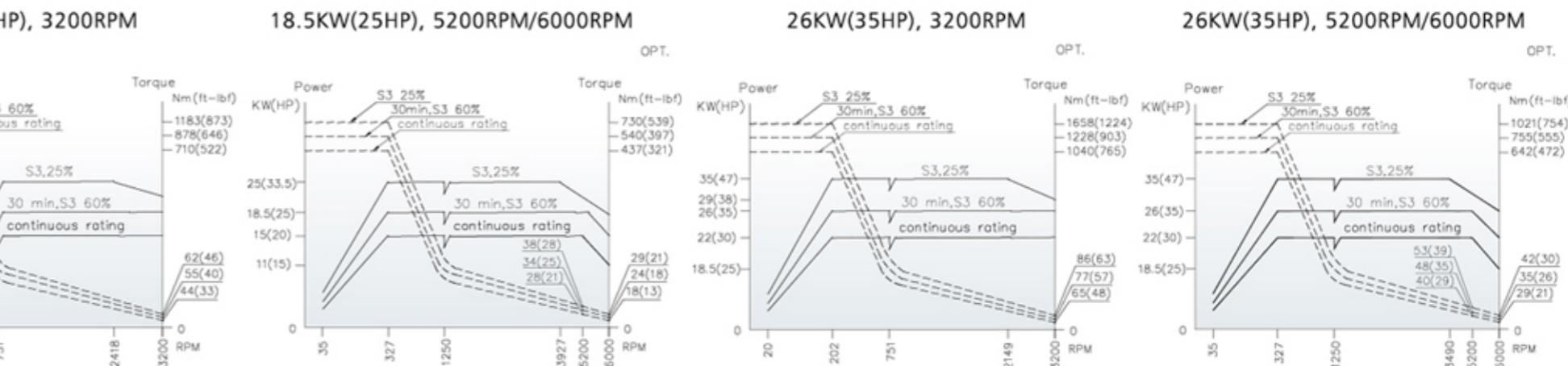
## FLOATING TYPE TOOL CHANGE CYLINDER

The spindle also utilizes a "state-of-the-art" designed hydraulic cylinder. This special design allows the cylinder to slightly float thereby eliminating any outside forces from being applied to the spindle bearings when changing tools.

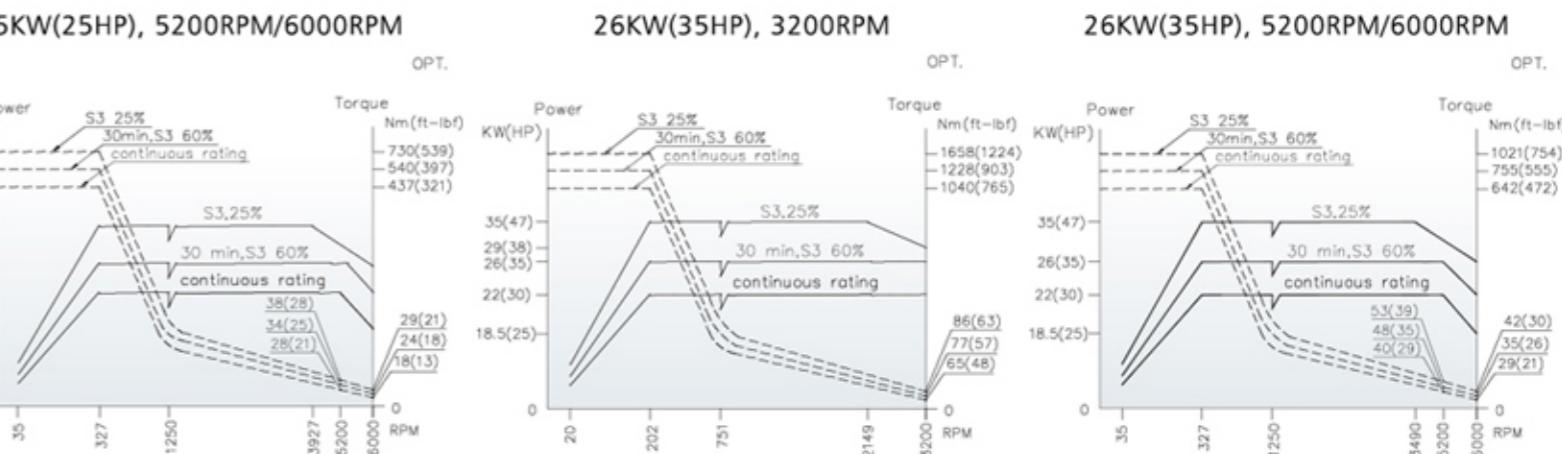
- / Powerful spindle motor and high torque output spindle on BT-50 taper machines.
- / High-grade materials: Spindle, gears, splines, etc., are CNC machined and out of alloy steel hardened and ground.
- / High precision spindle bearings: ISO class P4 quality.
- / 2 Step gear transmission: Spindle provides high torque output at low rpm for heavy-duty machining.

## SPINDLE OUTPUT AND TORQUE (FANUC Spindle motor)

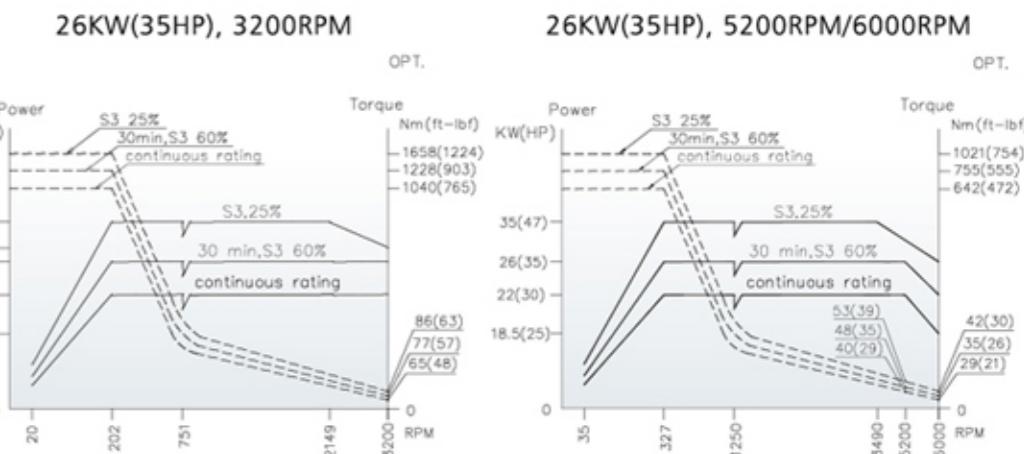
18.5KW(25HP), 3200RPM



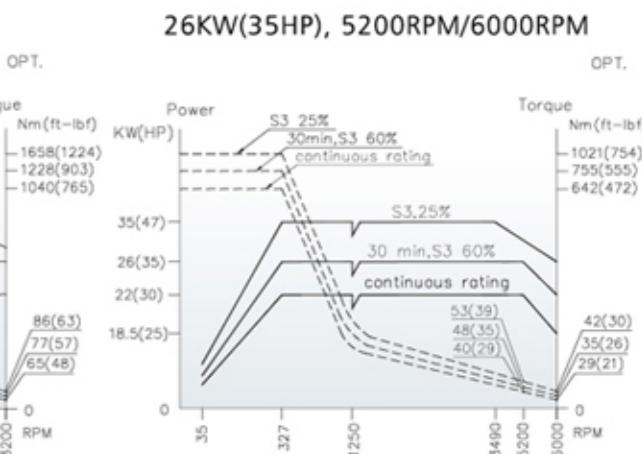
18.5KW(25HP), 5200RPM/6000RPM



26KW(35HP), 3200RPM



26KW(35HP), 5200RPM/6000RPM



## OUTSTANDING CUTTING CAPACITY

**1099 c.c / min (S45c)**

### FACE MILLING

Tool: ø125mm Cutting Width: 90mm Spindle Speed: 650rpm Feedrate: 2444mm/min Cutting Depth: 5mm Cutting Capacity: 1099 c.c/min Material: S45C  
Tool: ø125mm Cutting Width: 100mm Spindle Speed: 550rpm Feedrate: 1400mm/min Cutting Depth: 5.5mm Cutting Capacity: 770 c.c/min Material: Mold steel(Hardness HRC 32°)

### DRILLING

KUB KUB Rapid Drill: ø88mm Spindle Speed: 360rpm Feedrate: 54mm/min Cutting Depth: 328c.c/min Material: KTSN3A (Plastic mold steel, HardnessHRC28°)

### End Milling

End Milling Tool: ø50mm Spindle Speed: 777rpm Feedrate: 390mm/min Cutting Depth: 35mm Cutting Depth: 682c.c/min Material: S45C

### Tapping

Tapping Tool: M52xP5 Spindle Speed: 50rpm Feedrate: 250mm/min Material: S45C

**Spindle Motor: 30HP / 35HP**

## OPTIONALLY AVAILABLE



Angle Head (Opt.)



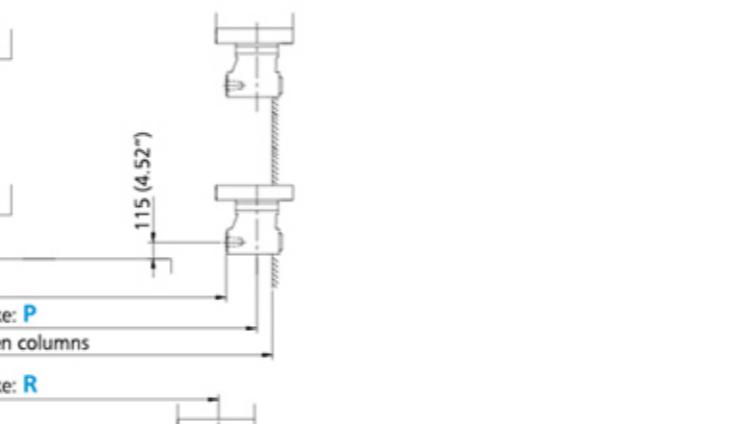
Universal Head (Opt.)

### CUTTING CAPACITY EXAMPLE

**Spindle Motor: 20HP / 25HP**

	Tool	Workpiece Material	Spindle Speed	Cutting Width	Cutting Depth	Feedrate	Cutting Capacity
Angle Head	Face Milling	S45C (1045)	500 rpm	90 mm (3.54")	5 mm	825 mm/min (32.4 ipm)	371 cc/min (22.6 cu.in/min)
Universal Head			350 rpm	80 mm (3.15")	1200 mm/min (47.2ipm)	480 cc/min (29.2 cu.in/min)	
Angle Head			150 rpm	-	-	40 mm/min (32.4ipm)	
Universal Head			120 rpm	-	-	42 mm/min (1.65ipm)	

## MACHINING RANGE / MANUAL ANGLE HEAD



Size	M	N	O	P	Q	R	S
SD	Z Axis Stoke 900 (35.43")	570 (22.44")	Y Axis Stoke	Y Axis Stoke-384	X Axis Stoke	X Axis Stoke-384	
SV	Z Axis Stoke 1050 (41.33")	720 /*850 28.34"/*33.46"	Y Axis Stoke	Y Axis Stoke-384	X Axis Stoke	X Axis Stoke-384	

## HIGH EFFICIENCY ATC



### POWERFUL, HIGH SPEED ATC

The standard tool magazine is equipped with 30 tool capacity, and can be upgraded to a 40, 50, 60, or 90 tool capacity. The unique double-arm tool change design, powered by a durable, high speed motor, greatly reduces tool change time to less than 6 sec.(T to T). The tool change storage and retrieval system is accomplished by a high quality, high performance, bi-directional hydraulic index motor which further enhances the ATC.



### AUTOMATIC TOOL MAGAZINE DOOR

The tooling within the magazine is well protected from chips, coolant, and other debris by a fully programmable door. The door operates in conjunction with the ATC, eliminating the need to program it separately.

### CONVENIENT TOOL LOADING SYSTEM

Tool loading and unloading can be performed at either the spindle or tool storage magazine. A foot pedal is provided at both locations allowing for easy handling of even larger tools.



# ON & CY

- 



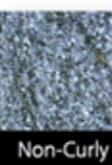
## INVEYORS SELECTION (OPTION)



1



## **IC Chip**



### Non-*s*



10

## CHIP CONVEYORS



TYPE CHIP CONVEYORS (Suitable for dry chips under 60mm)



**ARD  
CCESSORIES**

- 12. Automatic Power Off
  - 13. Operation Finish Lamp
  - 14. Screw-type Chip Container
  - 15. Transformer (Except 10kV)
  - 16. Inner Cooled Ballscrew
  - 17. Slideway Covers
  - 18. Magazine Safety Guard
  - 19. Electrical Cabinet Light
  - 20. Manual Tool Change
  - 21. Reinforced Foot-Stand
  - 22. Electrical Cabinet Cooling (Air Conditioner)

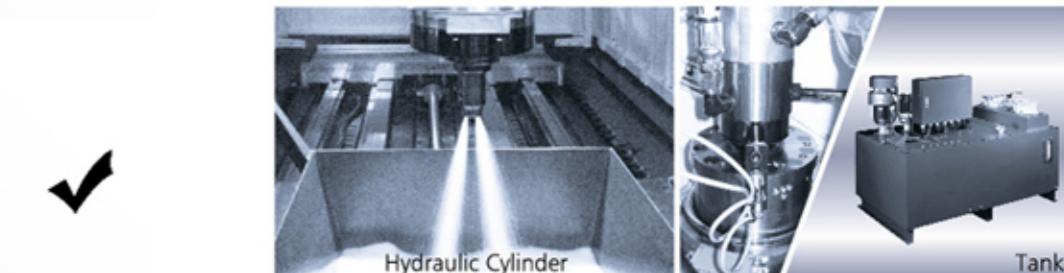
OPT

- 1. Chip Conveyor
  - 2. Mist Coolant Unit
  - 3. NC Rotary Table
  - 4. Angle Head (Manual)
  - 5. Universal Head (Manual)
  - 6. Oil Hole Drills Interface
  - 7. Linear Scale Feedback System
  - 8. Automatic Tool Length Measuring System
  - 9. Automatic Touch Probe Centering System
  - 10. Coolant Through Spindle System (A,B Type)
  - 11. CAT50, DIN50, ISO50 Tool Shank
  - 12. KMTCS-Kao Ming Thermal Compensation System
  - 13. Larger Capacity Coolant Tank
  - 14. Anchoring Alignment System
  - 15. Fully Enclosed Splash Guard
  - 16. Coolant Purifying System
  - 17. Coolant Cooling System
  - 18. Hydraulic Cooling System
  - 19. Paper(Belt)filter System
  - 20. Oil Skimmer System
    - Electrical Cabinet Cooling System
  - 21. (Up to 45°C Capacity)
  - 22. Specified Sub Table, T-slot, Machine Color
  - 23. Extra Load Capacity

#### COOLANT THROUGH SPINDLE SYSTEM

 Curly Aluminum Chip  
CTS (optional) comes with 600L coolant tank, high pressure pump, dual filtration and unique design for coolant hose. The system can tooling effectively to minimize machining temperature and chip stuck.

	Medium Pressure	High Pressure	
Pressure (kg/cm <sup>2</sup> )	20 (284psi)	40 (568psi)	70 (994psi)
Quantity (l/min)	30(7.92gal/min)	30(7.92gal/min)	30(7.92gal/min)





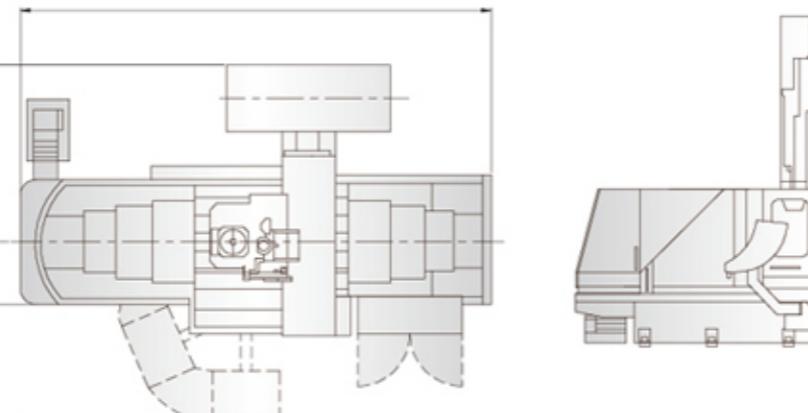
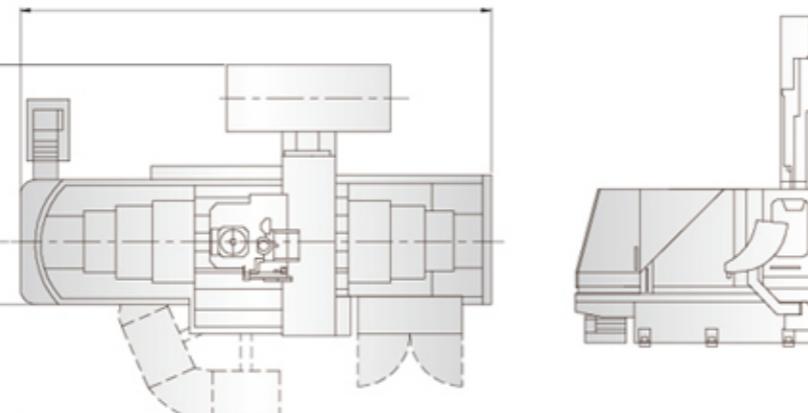
SD

## FLOOR SPACE

6130 / 8130 / 10130 / 12130 / 14130 / 18730  
(2000SD / 3000SD / 4000SD / 5000SD / 6000SD / 8000SD)

SV

## FLOOR SPACE

6130 / 8130 / 10130 / 12130 / 14130 / 18730  
(2000SV / 3000SV / 4000SV / 5000SV / 6000SV / 8000SV)

New column design increases contact surface with crossbeam and also with the ground foundation. The machine is stable because this structure.

## SPECIFICATIONS

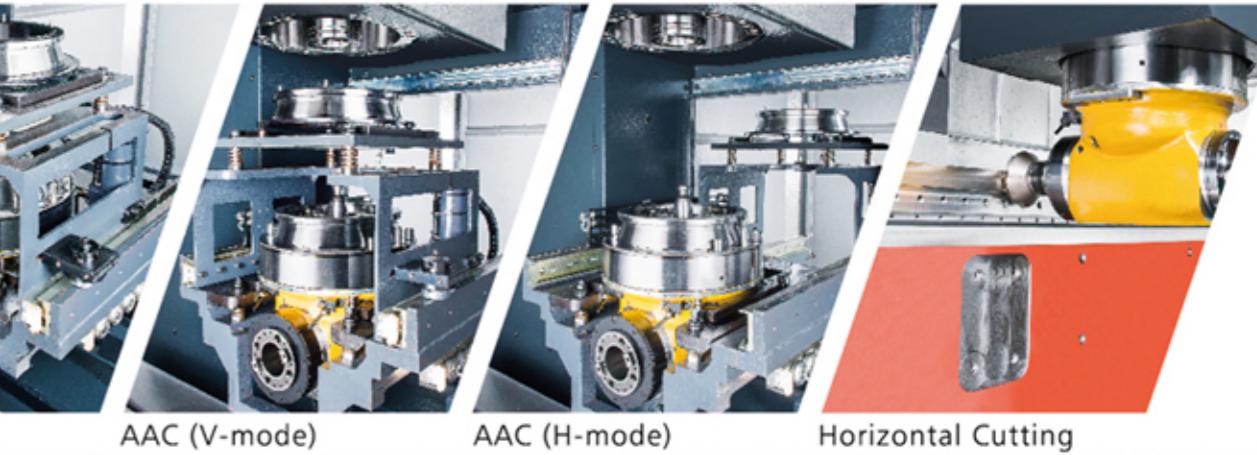
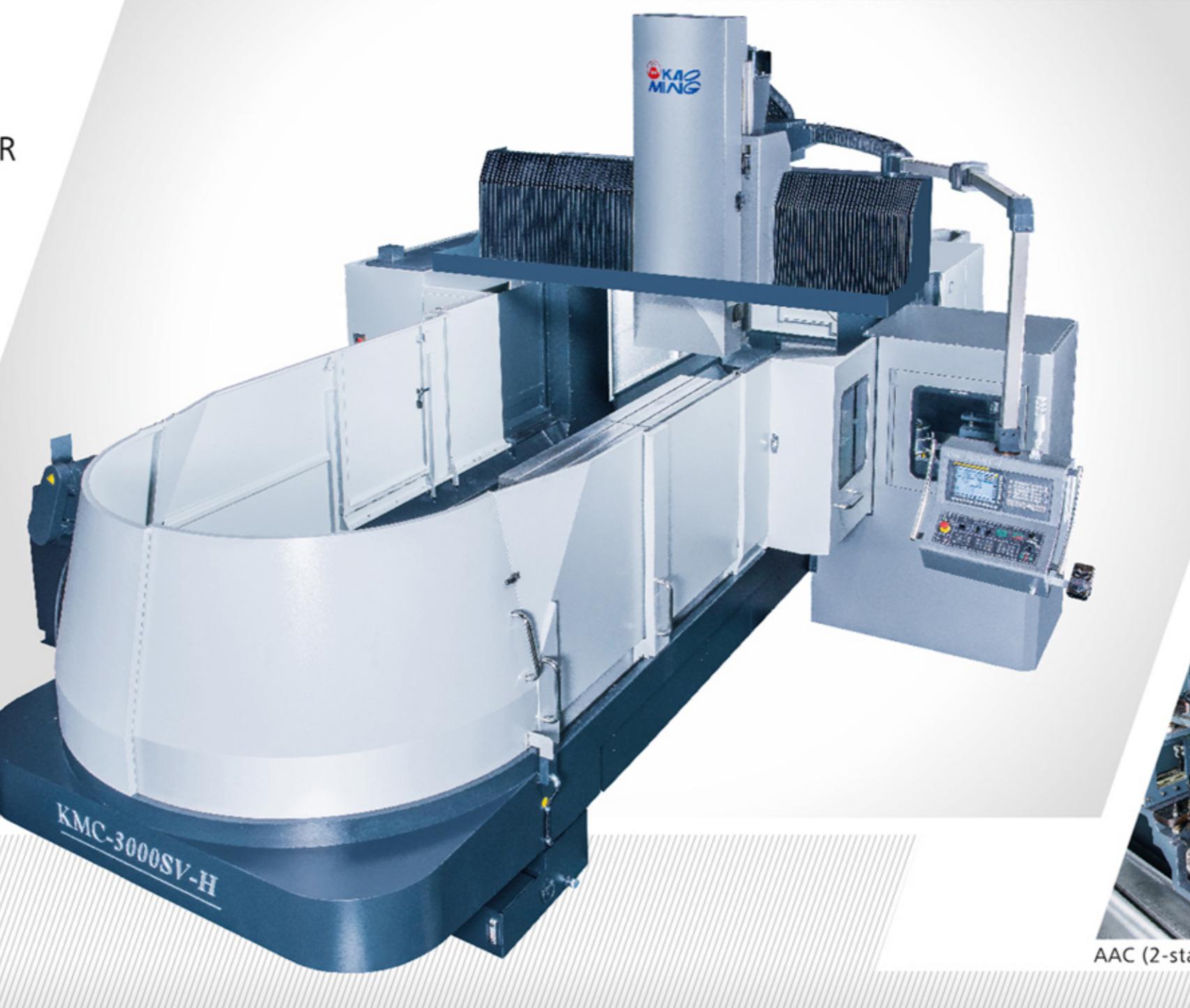
ITEM	KMC-2000SV/SD						KMC-3000SV/SD						KMC-4000SV/SD						KMC-5000SV/SD						KMC-6000SV/SD						KMC-8000SV/SD											
	A	B	C	D	E	F	1500	1800	2100	2300	2500	2800	1500	1800	2100	2300	2500	2800	1500	1800	2100	2300	2500	2800	1500	1800	2100	2300	2500	2800	1500	1800	2100	2300	2500	2800						
Distance Between Two Columns	A	B	C	D	E	F	1500 (59.05")	1800 (70.86")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	1500 (59.05")	1800 (70.86")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	1500 (59.05")	1800 (70.86")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	1500 (59.05")	1800 (70.86")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	1500 (59.05")	1800 (70.86")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")						
Table Size	A	B	C	D	E	F	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")	1250 (49.21")	1650 (64.96")	1650 (64.96")	2000 (78.74")	2000 (78.74")	2400 (94.5")
Load Capacity	A	B	C	6000 kg (13200 lb)			9000 kg (19800 lb)			11000 kg (24200 lb)			13000 kg (28600 lb)			15000 kg (30000 lb)			17000 kg (37400 lb)			15000 kg (30000 lb)			18000 kg (39600 lb)			20000 kg (44000 lb)			20000 kg (44000 lb)											
X axis Table Travel (Forth and Back)	A	B	C	2230 (87.8")			3230 (127.16")			4230 (166.53")			5230 (205.90")			6230 (245.27")			8230 (324.01")			8230 (324.01")			8230 (324.01")			8230 (324.01")			8230 (324.01")											
Y axis Spindle Head Travel (Left And Right)	A	B	C	D	E	F	1400 (55.11")	1700 (66.92")	2000 (78.74")	—	—	1400 (55.11")	1700 (66.92")	2000 (78.74")	2200 (86.6")	2400 (94.5")	2700 (106.3")	1400 (55.11")	1700 (66.92")	2000 (78.74")	2200 (86.6")	2400 (94.5")	2700 (106.3")	1400 (55.11")	1700 (66.92")	2000 (78.74")	2200 (86.6")	2400 (94.5")	2700 (106.3")	1400 (55.11")	1700 (66.92")	2000 (78.74")	2200 (86.6")	2400 (94.5")	2700 (106.3")							
Z-axis Spindle Head Travel (Up and Down)	SV						SD						SV						850 (33.46")						700 (27.65")						200 - 1050 (7.87" - 41.34")											
Distance From Spindle Nose To Table Top	SV						SD						SV						200 - 900 (7.87" - 35.43")						ISO 50						20 - 3200 (*35 - 6000 rpm)											
Spindle Taper																			Infinite variable, 2 steps												8000 (315ipm)											
Spindle Speed																			8000 (315ipm)						8000 (315ipm)						7000 (276ipm)											
No. of spindle speed																																										
Rapid Traverse Rate (X)	mm/min						15000 (590ipm)						15000 (590ipm)						12000 (472ipm)						8000 (315ipm)						8000 (315ipm)						7000 (276ipm)					
Rapid Traverse Rate (Y)	mm/min						15000 (590ipm)						12000 (472ipm)						15000 (590ipm)						12000 (472ipm)						15000 (590ipm)											

# KMC-SV-H

DOUBLE COLUMN TYPE  
FIVE-FACE MACHINING CENTER  
(HORIZONTAL ANGULAR ATTACHMENT)

## MAIN FEATURES

- / Based on SV construction and new features.
- / Combines the advantages of machining all 4 sides with angular attachment and machining the top face with vertical spindle head in one set-up.
- / AAC (Automatic Attachment Changer) is designed for improving productivity.
- / 2-station AAC magazine is located at the CRT side includes an automatic opening door, protecting the attachments from chips and coolant.
- / Since the spindle is driven by a powerful 26 KW (35 HP) spindle motor and through two-speed transmission by gears, the maximum spindle torque is a powerful 780 Nm (575 ft-lb), allowing heavy-duty cutting.
- / The spindle head is hydraulically clamped to the curvic coupling.
- / Tool can be easily unloaded/loaded from the horizontal spindle by operating a foot-switch.
- / Horizontal spindle employed high-precision hardened and ground spiral bevel gears that could reduce shocks and noises effectively to ensure running stability
- / 22 KW / 3,500 rpm angular attachment can be indexed to four positions in 90° increments. It is indexed by the shortest path.
- / For complex workpieces, indexing to 72 positions in 5° increment is optional.
- / Five-face machining pattern software is standard.



## HORIZONTAL HEAD SPINDLE SPIRAL BEVEL GEAR TRANSMISSION

Horizontal-head spindle provides high precision spiral bevel gears, hardened and ground. This features reduce vibration and noise.

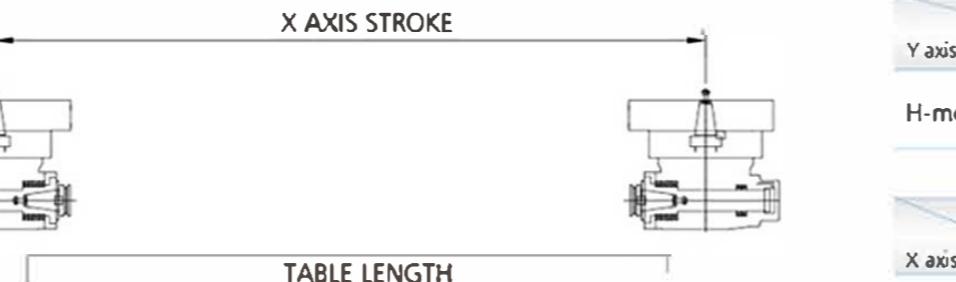
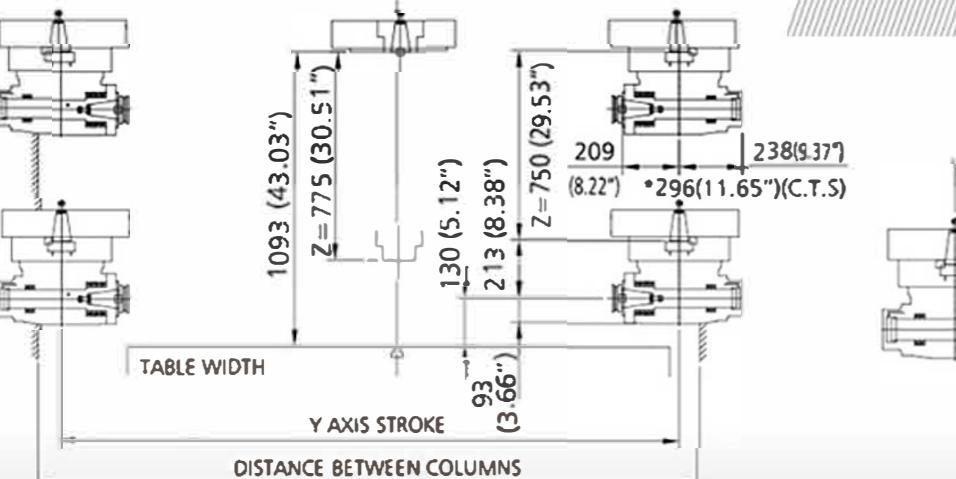


# KMC-SV-H

## HORIZONTAL ANGULAR ATTACHMENT

Cutting Example (Test in the best environment)	
Face Mill Cutter	Ø125
Work Material	S45C
Spindle Speed	400 rpm
Cutting Width	100 mm
Cutting Depth	5 mm
Feedrate	880 mm/min
Cutting Capacity	440 cm <sup>3</sup> /min

### MACHINING RANGE (SV-H):



ITEM	KMC-3000SV-H	KMC-4000SV-H	KMC-5000SV-H	KMC-6000SV-H	KMC-8000SV-H
X axis stroke	2100(C)	2300(D)	2500(E)	2800(F)	
H-mode	1800mm (70.87")	2000mm (78.74")	2200mm (86.61")	2500mm (98.43")	



### SPECIFICATIONS (with AAC-angular attachment changer)

ITEM	KMC-3000SV-H				KMC-4000SV-H				KMC-5000SV-H				KMC-6000SV-H				KMC-8000SV-H																			
Distance Between Columns	C	D	E	F	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")	2100 (82.6")	2300 (90.55")	2500 (98.43")	2800 (110.2")																
Table Size	C	D	E	F	1650 x 3000 (64.96" x 118.11")	2000 x 3000 (78.74" x 118.11")	2000 x 3000 (94.5" x 118.11")	2400 x 4000 (64.96" x 152.48")	1650 x 4000 (78.74" x 152.48")	2000 x 4000 (94.5" x 152.48")	2600 x 5000 (64.96" x 196.85")	1650 x 5000 (78.74" x 196.85")	2000 x 6000 (64.96" x 236.22")	2400 x 8000 (78.74" x 236.22")	1650 x 8000 (94.5" x 314.96")	2000 x 8000 (78.74" x 314.96")	2000 x 8000 (94.5" x 314.96")	2400 x 8000 (78.74" x 314.96")	1650 x 8000 (94.5" x 314.96")	2000 x 8000 (78.74" x 314.96")	2400 x 8000 (94.5" x 314.96")	1650 x 8000 (94.5" x 314.96")														
Load Capacity	C	9000 kg (19800 lb)				11000 kg (24200 lb)				13000 kg (28600 lb)				15000 kg (33000 lb)				17000 kg (37400 lb)																		
X axis Table Travel	V	E	H		3230 (127.16")				4230 (166.53")				5230 (205.90")				6230 (245.27")																			
Y axis Spindle Head Travel	V	1950 (76.77")	2150 (84.64")	2350 (92.51")	2650 (104.3")	1950 (76.77")	2150 (84.64")	2350 (92.51")	2650 (104.3")	1950 (76.77")	2150 (84.64")	2350 (92.51")	2650 (104.3")	1950 (76.77")	2150 (84.64")	2350 (92.51")	2650 (104.3")	1950 (76.77")	2150 (84.64")	2350 (92.51")	2650 (104.3")															
Z axis Spindle Head Travel	V	775 (30.51")				750 (29.53")																														
Spindle Taper (V / H)	ISO 50																																			
Spindle Speed	V	4400 rpm (*6000 rpm)				3500 rpm																														
No. Of Spindle Speed	Infinite variable, 2 steps																																			
Rapid Traverse Rate (X,Y,Z)	mm/min	(15,15,12)	(15,12,12)	(12,15,12)	(12,12,12)	(8,15,12)	(8,12,12)	(8,15,12)	(8,12,12)	(7,15,12)	(7,12,12)	(7,15,12)	(7,12,12)	(7,15,12)	(7,12,12)	(7,15,12)	(7,12,12)	(7,15,12)	(7,12,12)	(7,15,12)																
Main Spindle Motor (Continuous / 30 min)	AC 22 kw / 26 kw (30 HP / 35 HP)																																			
Tool Magazine Capacity	30 (*40,*50,*60,*90)																																			
Positioning Accuracy	±0.005 / 300(±0.002"/12")				±0.005 / 300(±0.0002"/12")				±0.005 / 300(±0.0002"/12")				±0.005 / 300(±0.0002"/12")				±0.005 / 300(±0.0002"/12")																			
Repeatability Accuracy	±0.003 (±0.0001")																																			
Attachment Indexing	90°×4 (*5°×72)																																			
Index Repeatability	± 3 Sec																																			
OPTION	/ Design and specification are subject to change without notice. / Distance between columns C=2100 mm(82.6"), D=2300 mm(90.55"), E=2500 mm(98.43"), F=2800 mm(110.2")																																			



KAO MING MACHINERY INDUSTRIAL CO., LTD.

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No.67, Ln. 209, Sec.2, Sanfong Rd., Fongyuan Dist., Taichung City 42054, Taiwan (R.O.C.)

CTSP  
No.53, Houke S. Rd., Houli District, Taichung City, 42152 Taiwan.  
TEL: +886-4-25577650 FAX: +886-4-25577630  
E-MAIL: km@kaoming.com.tw



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