

**SIGMA** CNC  
We put innovation into practice



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Agent Stamp



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CNC DOUBLE COLUMN 5-FACE MACHINING CENTER

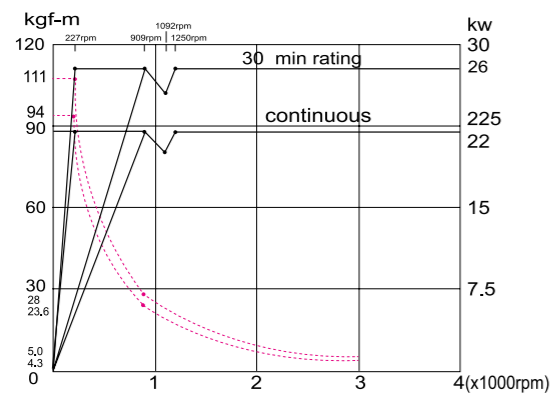
# 5-FACE MACHINING CENTER SERIES

5-Face machining at it's best-get close to your work with a spindle head that swivels horizontally and vertically!

## High rigidity and powerful spindle

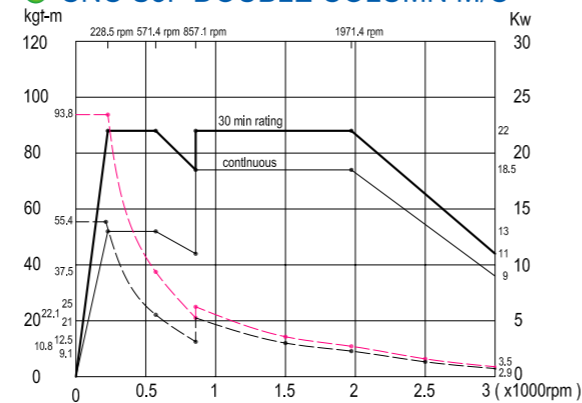
- With Fanuc 26/22kw spindle servo motor.
- Two steps gear box(Germany Z.F)
- Max. torque 1092N-m [111kgf-m(804lb-ft)]
- 30min rating
- Spindle speed 3000rpm (BT-50)
- With Fanuc 22/18.5kw αIP40 Motor (Wide Constant Power Range motor)
- Max. torque 919N-m [93.8kgf-m(678lb-ft)]
- 30min rating
- Spindle speed 3000rpm (BT-50)

### ● CNC S5F DOUBLE COLUMN M/C



Motor 26/22kw BT-50 spindle 3000rpm output power and torque characteristic RATE:(1:6.6,1:1.2)with Z.F gear box 2k250

### ● CNC S5F DOUBLE COLUMN M/C

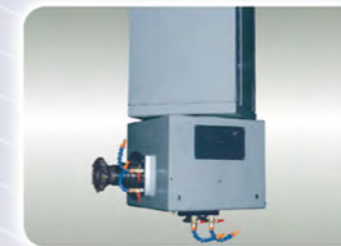


Fanuc αIP40 Motor 22/18.5kw BT-50 spindle 3000rpm output power and torque characteristic RATE: (1:1.75)

## To improve competitive power



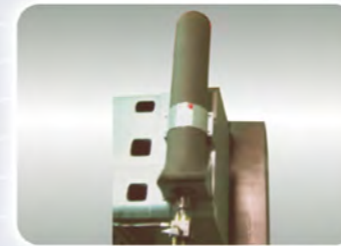
▲ Horizontal machining



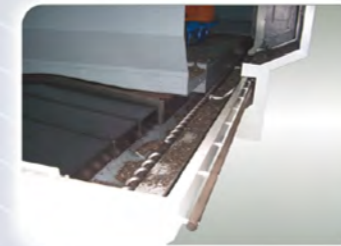
▲ Difference angle machining minimum 5° divided (Opt.)



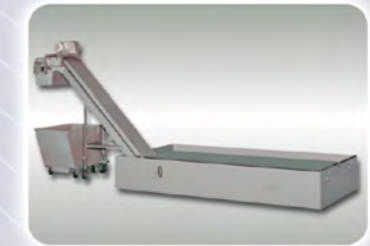
▲ Vertical machining



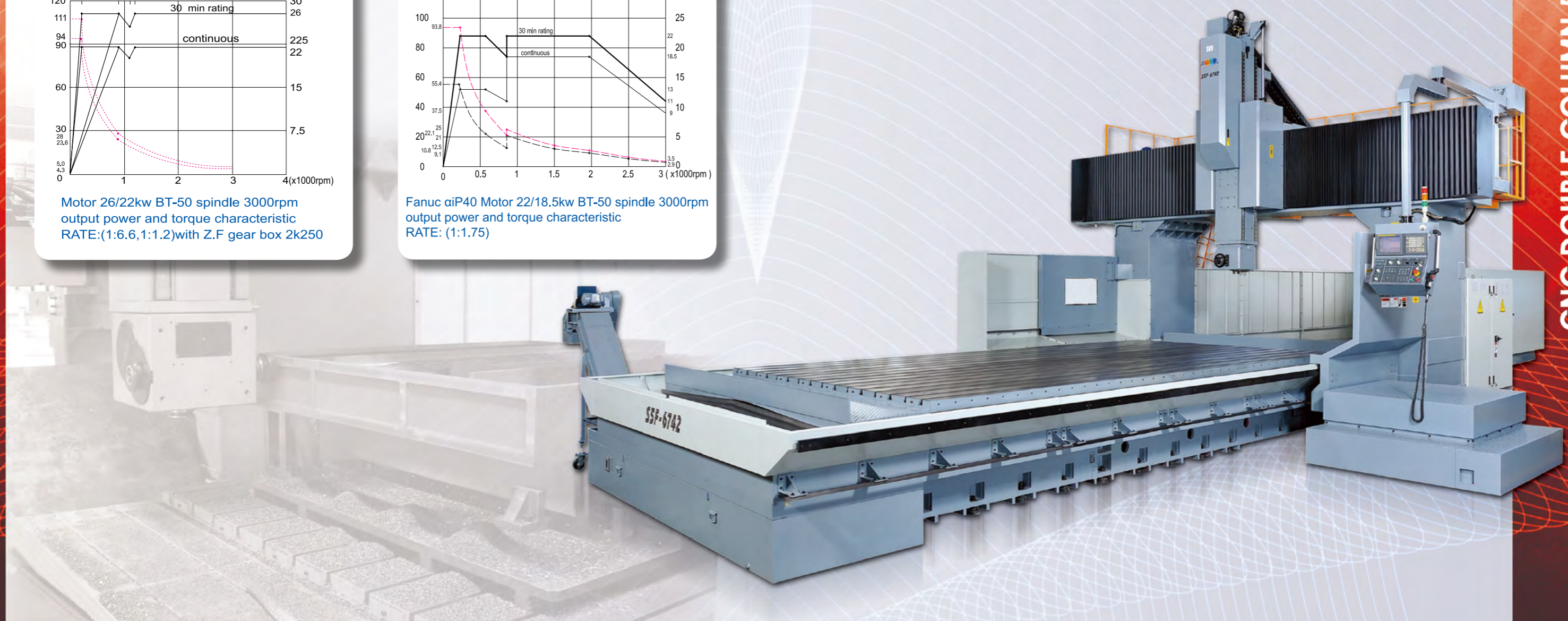
▲ Z-axis balance: close circuit accumulator



▲ Screw type chip conveyer



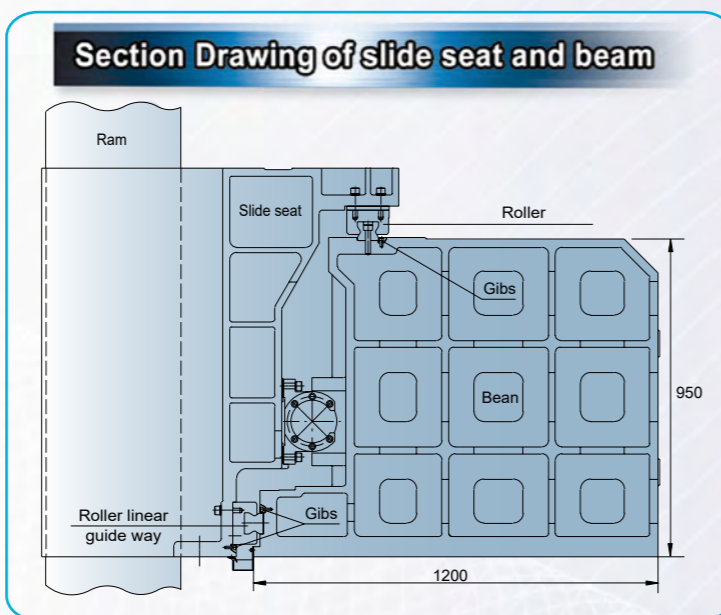
▲ Chain type chip conveyer



CNC DOUBLE COLUMN 5-FACE MACHINING CENTER

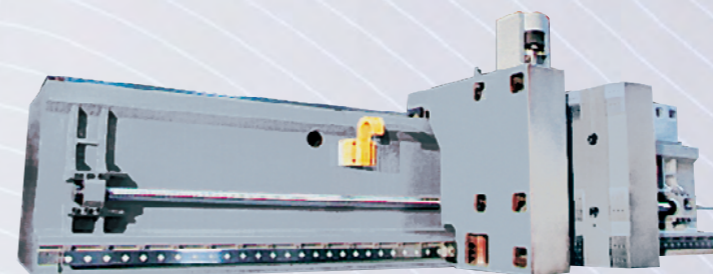
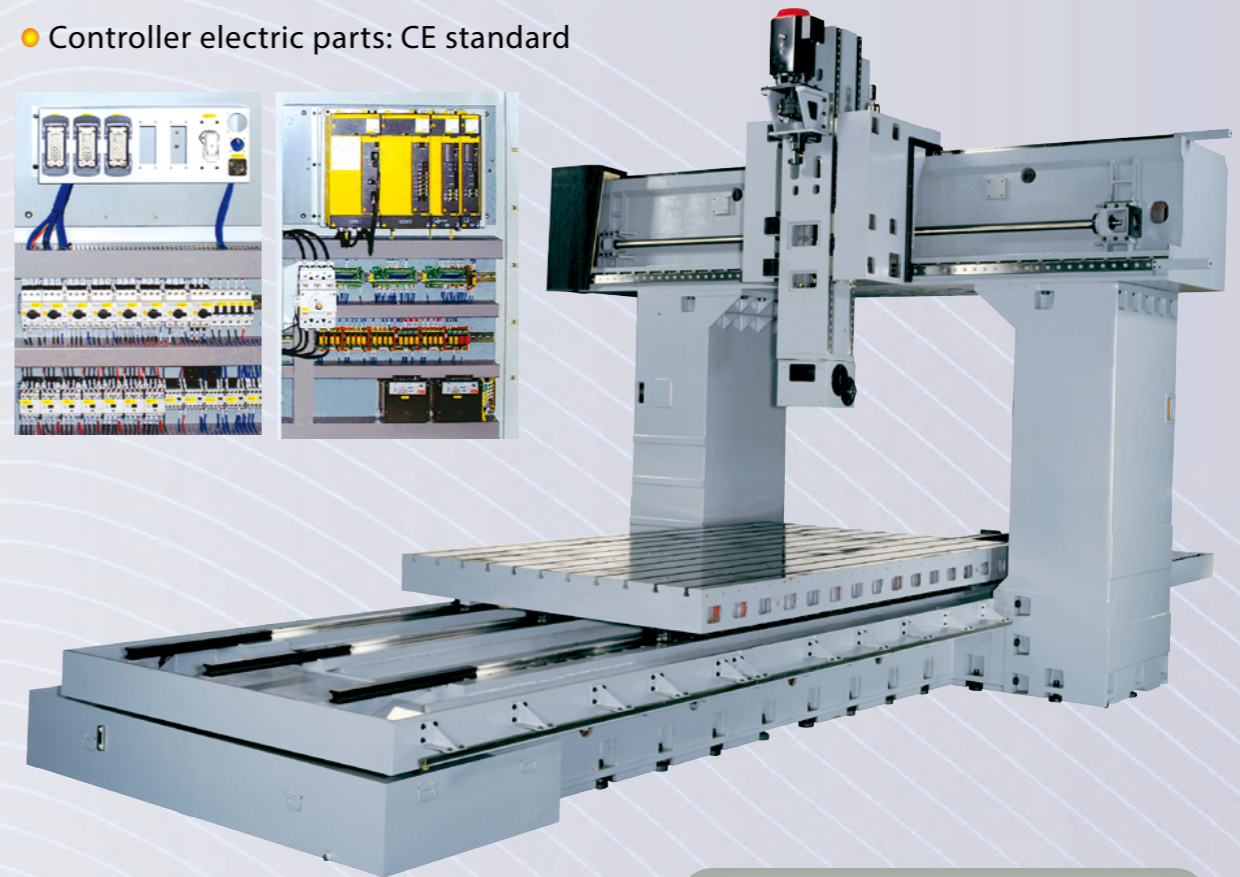
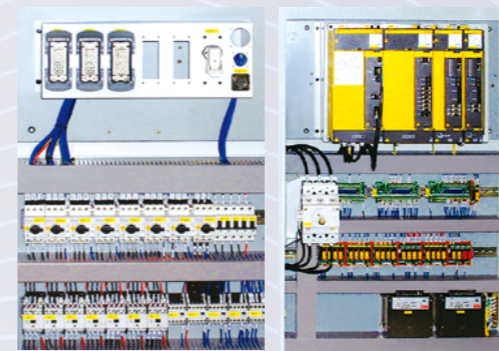
## High Rigidity & High Precision Construction Body

- A. All the structures of the machine are designed in box configuration, and densely supported with ribs in order to obtain an extreme rigidity. Machine is tempered, and won't warp.
- B. An overall support is designed for table travel on X-axis. THK SHS 65 linear guide are employed. There is a bearing block every 500mm so as to keep a high precision at every position. Working table won't suspend or warp.
- C. Working table of each type of the machine has many linear blocks to equally bear the loading-high loading and low wearing. It ensures the machine used over along period of time still has high precision and long service life.
- D. The spindle head stock of Z-axis consists of a design of 4 linear guide and Box in Box square structure. THK SRG 45 roller linear guide bear rails bear weight form equal distance in 4 directions so as to meet the machining demand of high precision and heavy duty cutting.
- E. The high precision vertical/horizontal 5-face head is a one-piece design. Replacing head is unnecessary, and time is saved. Besides, chips easily produced during the replacement of the head can be reduced, too. Chips may effect the machining precision and the tension of the 5-face head. (This 5-face head employs curving couplings with 6000kg/cm<sup>2</sup> tension.)
- F. Special spindle design - spindle motor drives the gear box which drives the middle shaft, while the middle shaft drives the spindle through spline shaft. The driving force does not directly pull/stretch the spindle. Thus, the spindle can keeps its precision, and does not become hot easily. The overall precision and construction won't be effected.
- G. 90mm of vertical/horizontal spindle with slant angle driving ball bearings is able to endure heavy duty cutting, and has high stability of precision.
- H. Driving of the vertical/horizontal spindle is through one set of precision helical gears and one set of spurs. The gears have small gaps and low noises, and are enduring for heavy duty cutting. The spindle meets the demand of high precision machining.
- I. Beam construction of Y-axis is 1200mm wide x 950mm high. The rib section shows a box-shaped construction of 4 layers x 5 layers. Linear guides are vertically and horizontally matched. Such arrangement is more rigid than the parallel arrangement by 25% up, and easier to stabilize the precision.
- J. Linear guide of Y-axis employs the newest patent of THK SRG65 roller bearing guide. The rigidity is increased by 60% if compared with ordinary HSR type. Besides, it has a better stability and longer life.
- K. The section between beam and column is 1200mm x 1000mm which ensures beam stability without sinking or warp.

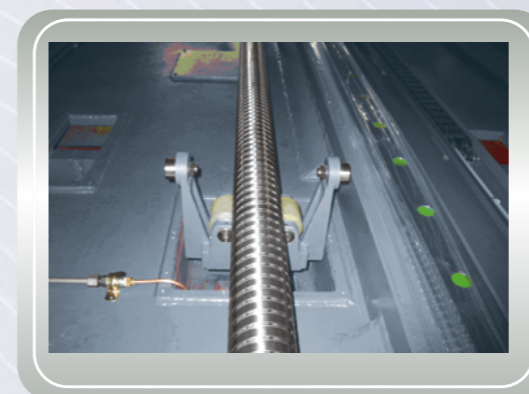


## PATENTED

- Controller electric parts: CE standard



- Mechanism of tool change for Horizontal spindle



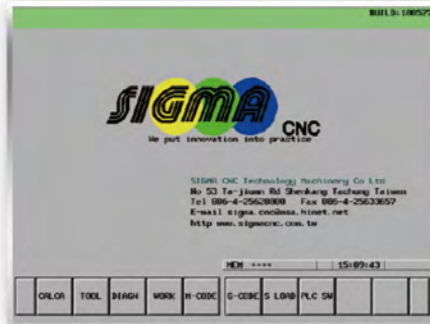
- Supporter for ballscrew on X-axis



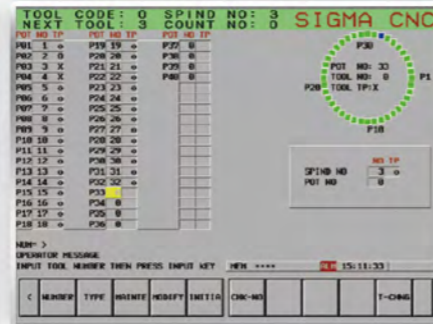
- Supporter for ballscrew on Y-axis

**Special setting & function to operation monitor**

▼ Welcome Page

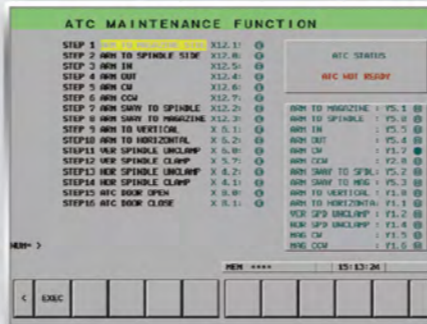


▼ Tool Management



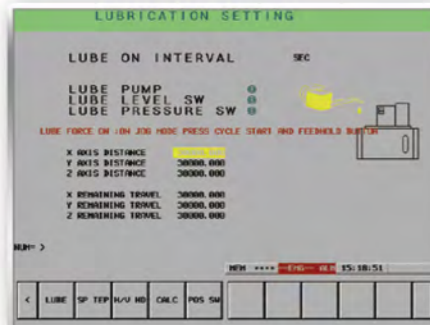
**Tools Setting**

▼ ATC Maintenance Function



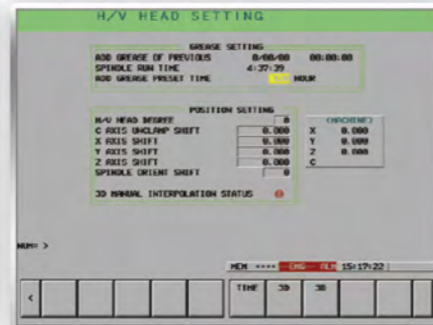
**V & H Tool Change**

▼ Lubrications Setting



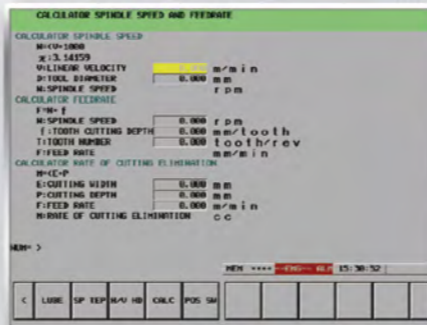
**Lube Condition**

▼ H&V Head Setting

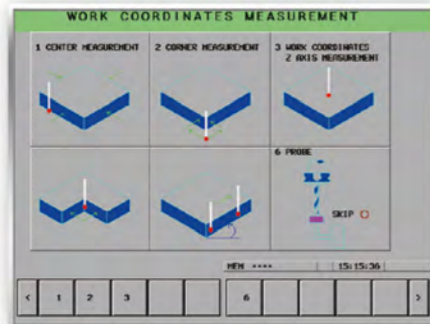


**H&V Head Condition**

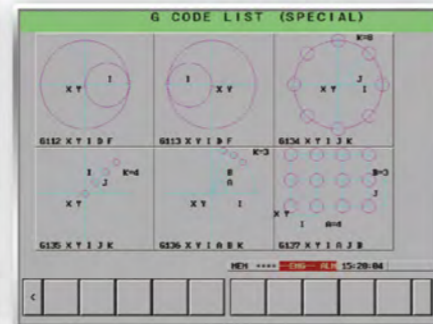
▼ Calculator Spindle Speed and Feedrate



▼ Work Coordinates Measurement



▼ G Code List



**Special**

▼ M Code List

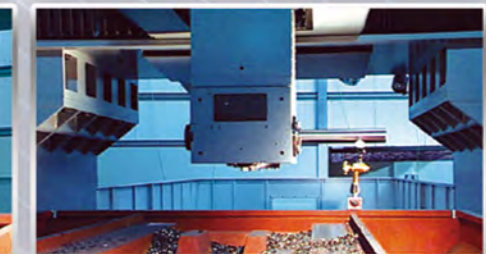


**Accuracy measurement check**

▼ Auto collimator check



▼ Spindle run-out check



▼ Ball screw to correct and proofread

▼ Laser inspection

▼ 90° squareness check



**Example of machining**

Change different spindle direction for different face machining finished machining workpiece of onetime.

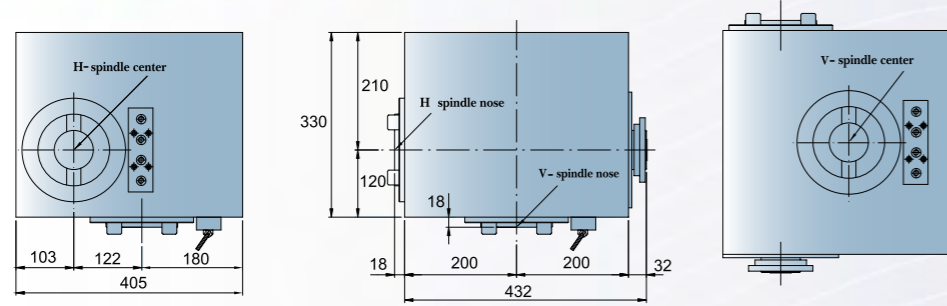
**Vertical machining**



**Different face Horizontal machining**



**Head stock of V&H spindle**

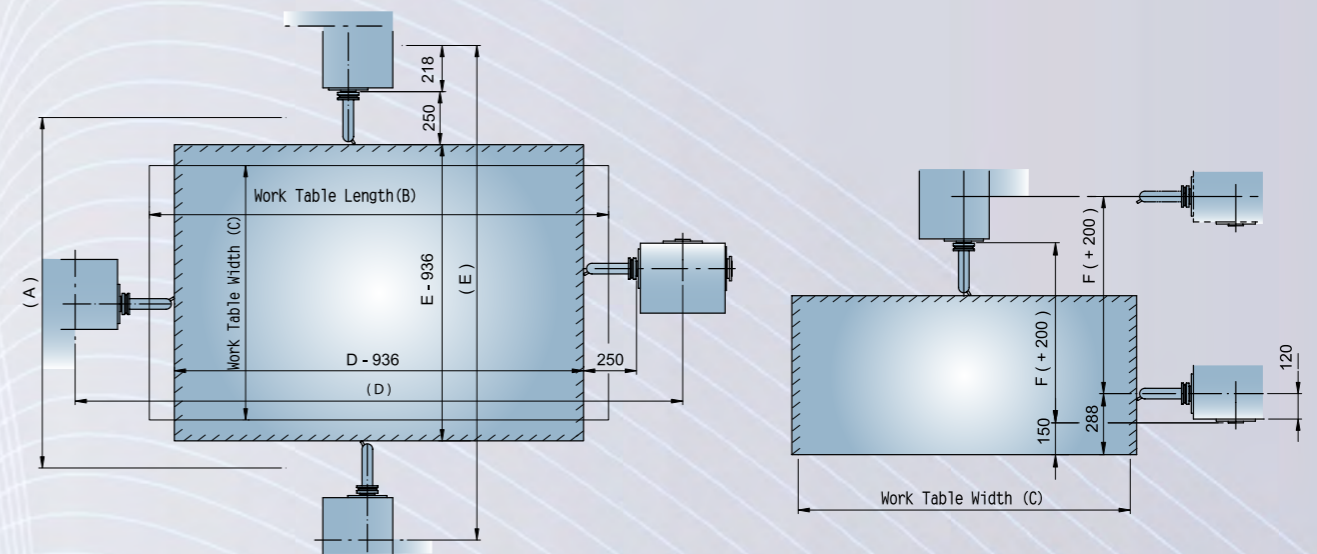


400mm Head with curve coupling

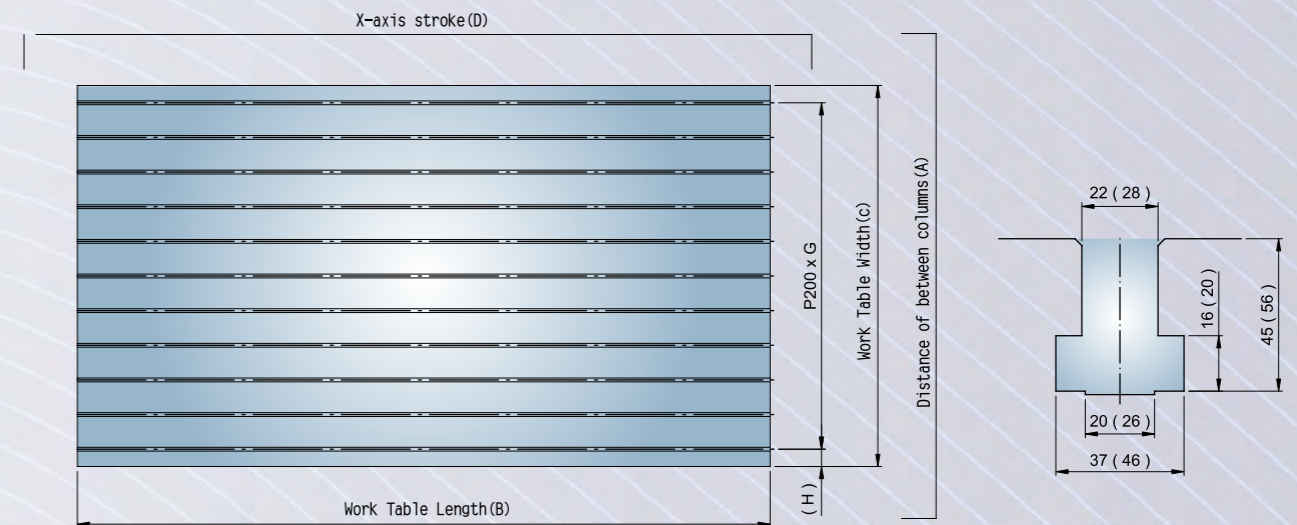
**V&H spindle auto tool change**



**Machining Range: 250mm tool**



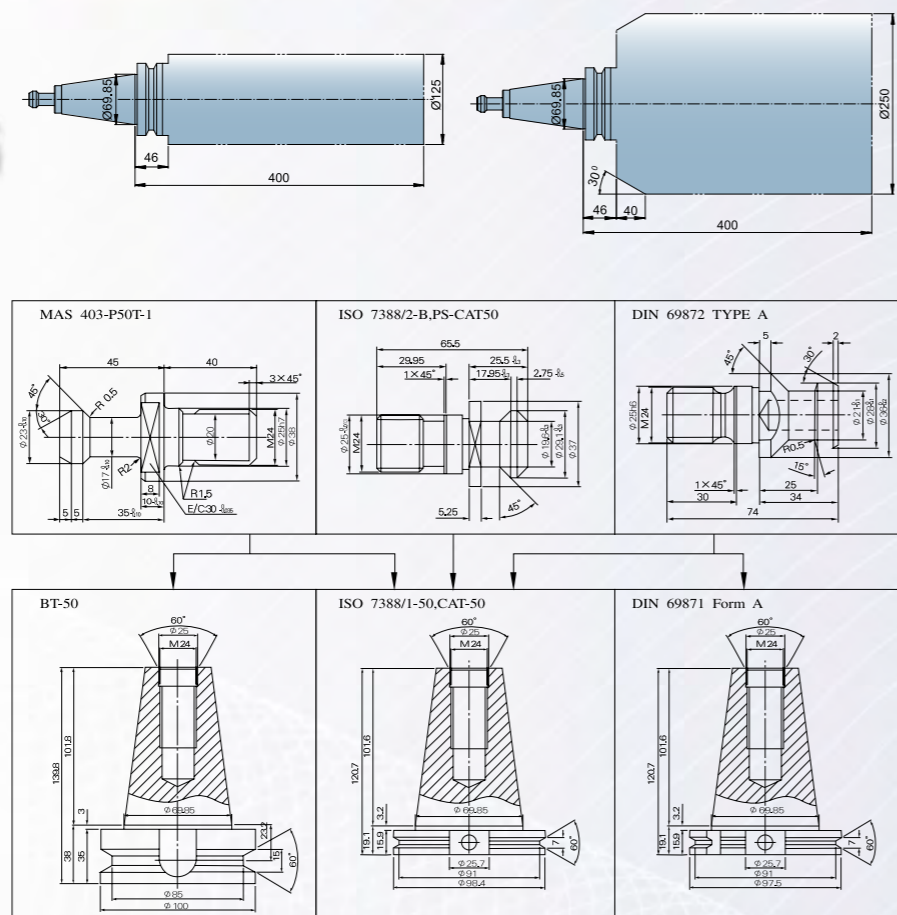
**Table dimension**



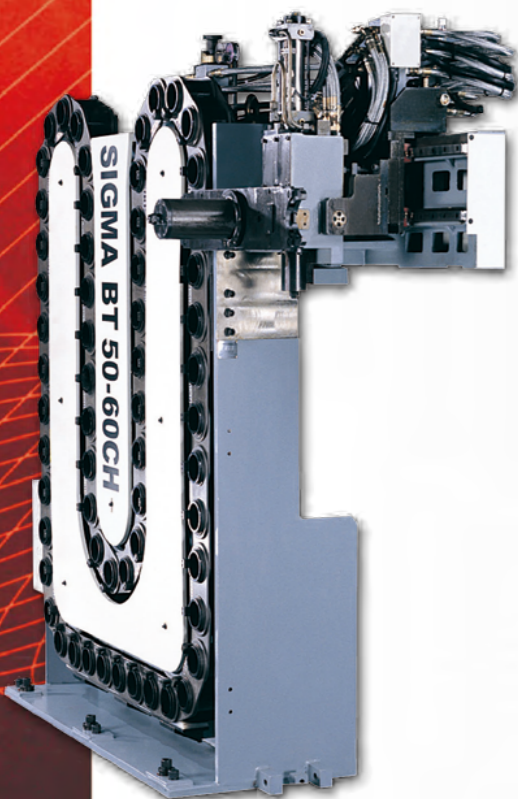
**Tool shank dimension**

max. Tool dimension

Adjacent pockets Empty:



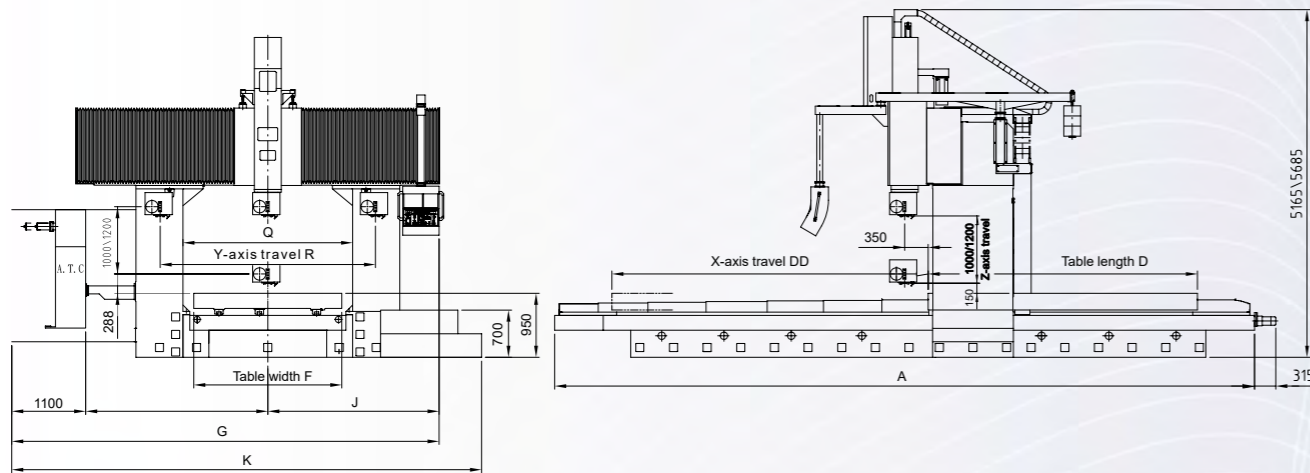
A.T.C. magazine 40(60.80.120 pcs opt)



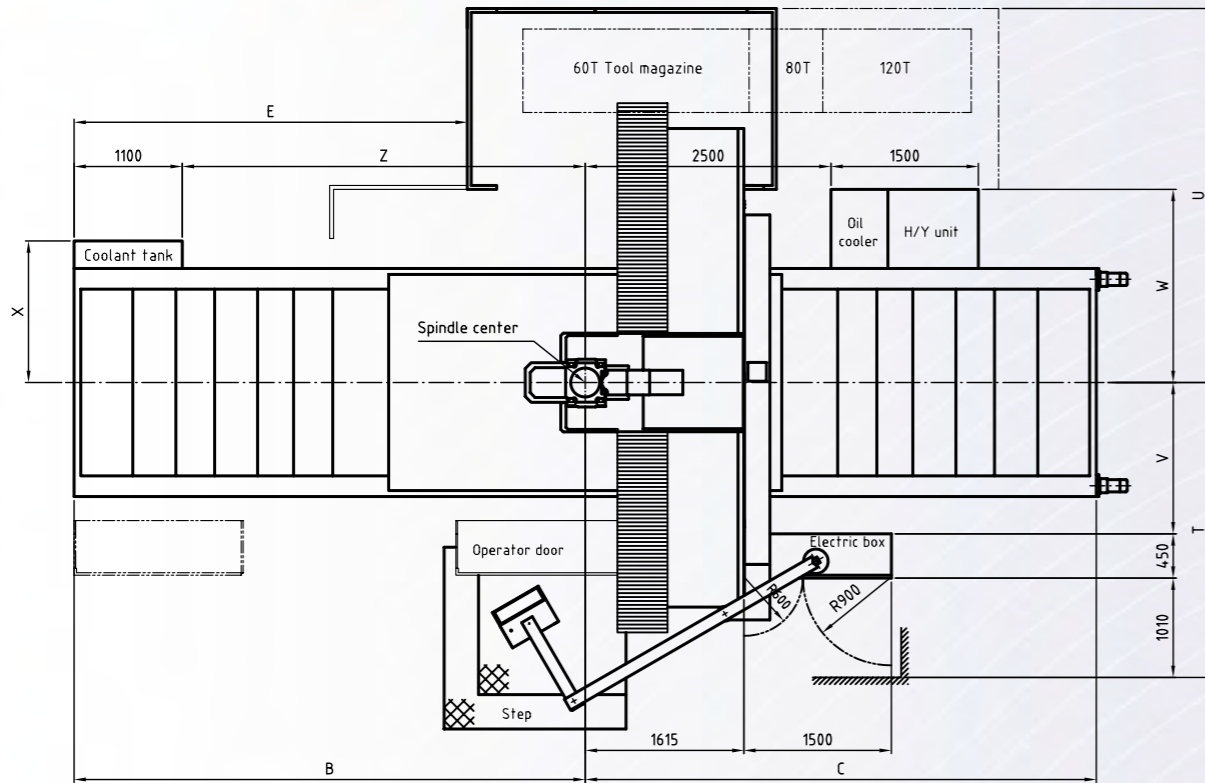
MODEL	A	B	C	D	E	F	G	H
S5F-3732	2500	3000	2200	3700	3200	0~1000	10	100
S5F-4732	2500	4000	2200	4700	3200	0~1000	10	100
S5F-4737	3000		2700		3700	0~1000	12	150
S5F-5732	2500	5000	2200	5700	3200	0~1000	10	100
S5F-5737	3000		2700		3700	0~1000	12	150
S5F-5742	3500		3200		4200	0~1000	15	100
S5F-6737	3000	6000	2700	6700	3700	0~1000	12	150
S5F-6742	3500		3200		4200	0~1000	15	100

(mm)

## Machine floor space



## Operation dimension



	A	B	C	D	DD	E	F	G	I	J	K	Q	R	T	U	V	W	X	Z
S5F-3732	8400	4200	4200	3000	3700	3000	2200	6351	2706	2545	7330	2520	3200	3000	3806	1540	1965	1440	3100
S5F-4732	10400	5200	5200	4000	4700	4000	2200	6351	2706	2545	7330	2520	3200	3000	3806	1540	1965	1440	4100
S5F-4737							2700	6851	2956	2795	7830	3020	3700	3250	4056	1790	2215	1690	
S5F-5732	12400	6200	6200	5000	5700	5000	2200	6351	2706	2545	7330	2520	3200	3000	3806	1540	1965	1440	5100
S5F-5737							2700	6851	2956	2795	7830	3020	3700	3250	4056	1790	2215	1690	
S5F-5742							3200	7351	3206	3045	8330	3520	4200	3500	4306	2040	2465	1940	
S5F-6737	14400	7200	7200	6000	6700	6000	2700	6851	2956	2795	7830	3020	3700	3250	4056	1790	2215	1690	6100
S5F-6742							3200	7351	3206	3045	8330	3520	4200	3500	4306	2040	2465	1940	

## Machining Specifications

ITEM	MODEL	UNIT	S5F-3732	S5F-4732	S5F-4737	S5F-5732	S5F-5737	S5F-5742	S5F-6737	S5F-6742	
X-AXIS TRAVEL	mm	3700	4700		5700			6700			
Y-AXIS TRAVEL	mm	3200		3700	3200	3700	4200	3700	4200		
Z-AXIS TRAVEL	mm	1000 (1200)									
TABLE SIZE	mm	3000x2200	4000x2200	4000x2700	5000x2200	5000x2700	5000x3200	6000x2700	6000x3200		
T-SLOTS DIMENSION	mm	22 (28)									
TABLE LOAD CAPACITY	kgs	12000	15000	17500	17500	20000	22000	22500	24000		
DISTANCE BETWEEN TWO COLUMNS	mm	2500		3000	2500	3000	3500	3000	3500		
DISTANCE FROM SPINDLE NOSE TO TABLE	mm	V-150 ~ 1150 mm (150 ~ 1350 mm) H-288 ~ 1288 mm (288 ~ 1488 mm)									
SPINDLE TAPER · TOOL SHANK		ISO NO.50 · BT-50 · CAT-50 · DIN 69871									
SPINDLE SPEED RANGE	rpm	20 ~ 3000 ZF GEARBOX, TWO STEPS									
MAIN MOTOR OUTPUT (30MIN RATING/CONT)	kw	26 / 22									
RAPID TRAVERSE RATE X AXIS	mm/min	12000			10000 (12000)						
RAPID TRAVERSE RATE Y,Z AXIS	mm/min	10000 (12000)									
CUTTING FEED RATE	mm/min	1 ~ 5000 (1 ~ 8000)									
MINIMUM INPUT INCREMENT	mm/min	0.001									
TOOL MAGAZINE CAPACITY	pcs	40 (60 / 80 / 120)									
MAX. TOOL DIAMETER / ADJACENT POCKETS EMPTY	mm	Ø125 / Ø250									
MAX. TOOL LENGTH (FROM GAUGE LINE)	mm	V - 400 / H - 400									
MAX. TOOL WEIGHT	kgs	20									
TOOL SELECTION METHOD		ABS (Shortest path)									
TOOL CHANGE TIME (T-T) (APPROX)	secs	V - 8 / H - 14									
POWER REQUIREMENT	Kva	60						65	60	65	
FLOOR SPACE REQUIREMENT	mm	10400x8100	12400x8100	12400x8600	14400x8100	14400x8600	14400x9100	16400x8600	16400x9100		
MACHINE HEIGHT FROM FLOOR LEVEL	mm	5165 (5685)									
MACHINE WEIGHT (APPROX)	kgs	48000	58000	65000	68000	71000	75000	78000	85000		
CNC CONTROLLER		Fanuc · Siemens · Heidenhain series etc.									
POSITIONING ACCURACY	mm	JIS B6338 0.01/300, VDI 3441 P0.035									
REPEATABILITY ACCURACY	mm	± 0.005									

NOTE: 1. ( ) Description is optional accessories.

2. To research and improve our company keep the right of changing design and structure at any time, this data is just for reference.

### ◆ STANDARD ACCESSORIES

- HORIZONTAL SPINDLE 90° AUTO DIVIDE (4 POSITION)
- 40 ATC MAGAZINE FOR V AND H TOOL CHANGE
- LUBRICATION SYSTEM
- SEMI-SPLASH GUARD
- SCREW-TYPE CHIP CONVEYOR
- CHAIN-TYPE CHIP CONVEYOR
- COOLANT EQUIPMENT
- SPINDLE OIL COOLER
- Z-AXIS HYDRAULIC BALANCE UNIT
- PNEUMATIC UNIT
- AIR BLOW FOR CHIP
- WORK LAMP
- AUTO POWER-OFF
- M.P.G
- PROGRAM END & ALARM LAMP
- RS-232 INTERFACE
- LEVELING BLOCK AND BOLTS
- TOOL KIT
- MAINTENANCE AND OPERATION MANUAL
- CONTROLLER OPERATION MANUAL AND ELECTRICAL CIRCUIT DIAGRAM
- INSPECTION LIST

### ◆ OPTIONAL ACCESSORIES

- AUXILIARY TABLE (BY ORDER SIZE)
- NC (ROTARY TABLE, INDEX TABLE)
- 60, 80, 120 A.T.C MAGAZINE CAPACITY
- AUTO TOOL LENGTH DIAMETER MEASUREMENT
- AUTO TOUCH PROBE SYSTEM
- LINEAR SCALE FEED BACK
- COOLANT THROUGH SPINDLE SYSTEM (only for vertical)
- COOLANT THROUGH TOOL SHANK DEVICE
- SPINDLE TRANSMISSION GEAR OIL MIST
- HORIZONTAL SPINDLE 5° AUTO DIVIDE
- RAISER BLOCK OF COLUMN (AVAILABLE 300, 400 mm)