

SM SERIES



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SM-E-202305

SM SERIES

High Efficiency Double Column Machining Center



SM Machining Center

Vision Wide's **SM** is the 3rd generation in a family of top quality high performance bridge machines, the heavy duty structural design ensures years of incredible accuracies and cutting capacities for all types of industries.

- ▶ Large precision ground table work area
- ▶ Enhanced positioning and repeatability accuracies
- ▶ Larger Y-Axis travels
- ▶ Higher performance cutting and rapid feedrates
- ▶ Gear type spindle torque 1,163 Nm (15/18.5 kW)
- ▶ Spindle speed: Gear type : 6,000 rpm
Direct driven: 10,000 / 15,000 rpm
Built-in: 10,000 rpm
- X axis travel : 1.6 / 2.1 / 2.6 / 3.1 / 4.1 / 5.1 / 6.1 Meters
- Y axis travel : 1.3 / 1.8 / 2.2 / 2.3 / 2.7 Meters
- Z axis travel : 800 / 1,000 mm



SM Compact Structure

● High Strength Casting Structure

All Mechanical structural castings are heat treated and stress relieved, providing for a highly rigid machine with optimal machining performances.



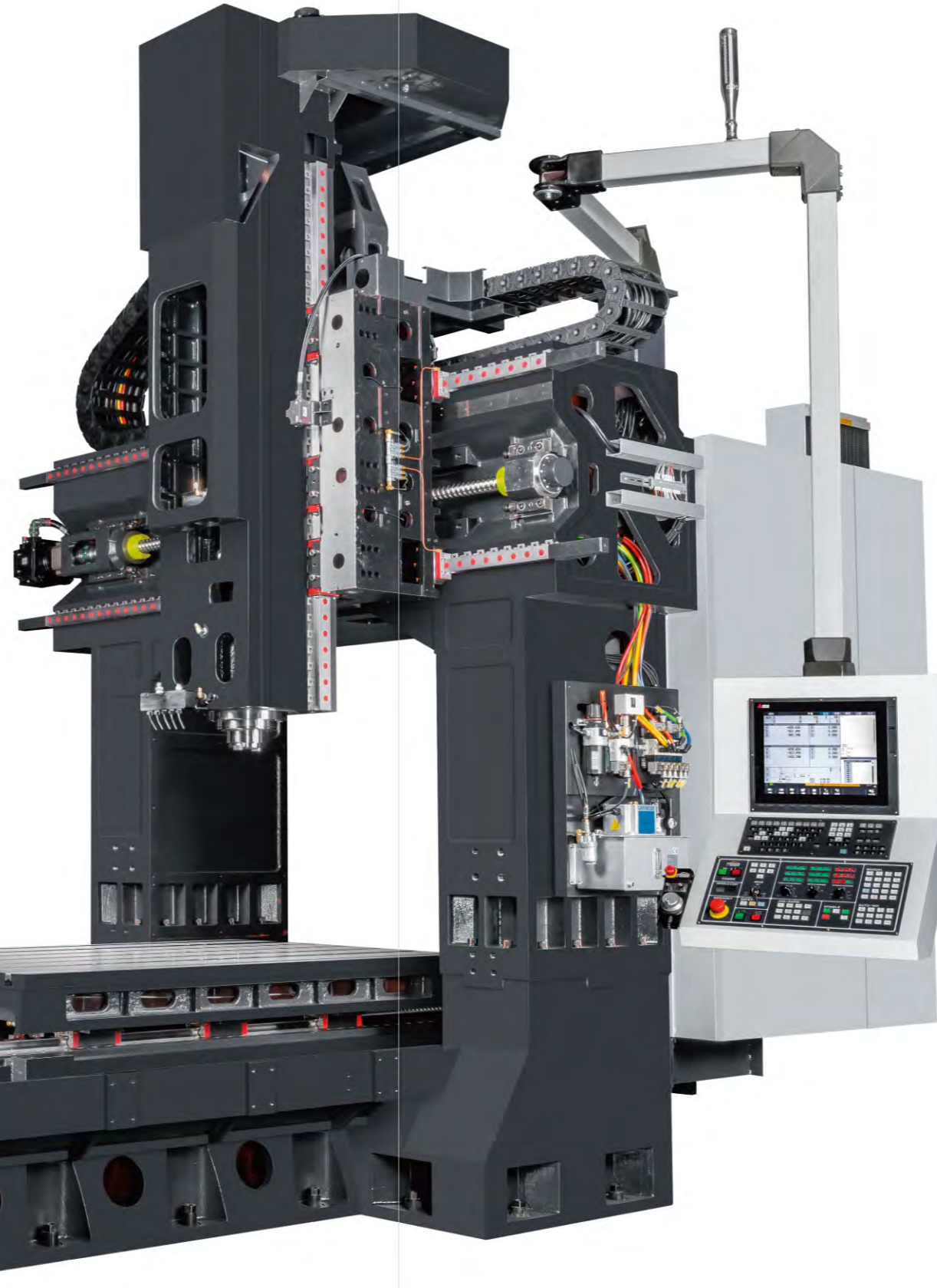
● Inverted W-shaped Structure Base

Lowering the center of the gravity of the main base casting increases the anti-vibration performance, this provides for the highest level of structural dynamic rigidity under any cutting loads.

● High Efficiency Chip Removal

Integrated with larger chip chutes with high speed augers allow for a very efficient chip removal with no coolant leaks.

(SM-xx13 / xx18 series)



● Optimized Structure

SM-xx13 / xx18 series the Base and lower columns structure are of one piece construction which improves the thermal deformation of the machine contributing to greater accuracies.

SM-xx22 series the extra wide base and columns are built utilizing a wedge type design this ensures that there is no tilting of the columns during heavy machining resulting in a very stable and accurate machine.



Optimal Rigid Structure Configuration



- **Heavy Loading Capacity**

Oversized heavy duty roller type linear way spaced at 500mm increments improves table loading capacity along with dynamic accuracy, rigidity and high feed cutting stability.



- **Z-axis Design**

SM is designed with no mechanical or hydraulic counterbalance, this ensures axis movements that are highly responsive and stable guarantying better surfacing and machining accuracies.

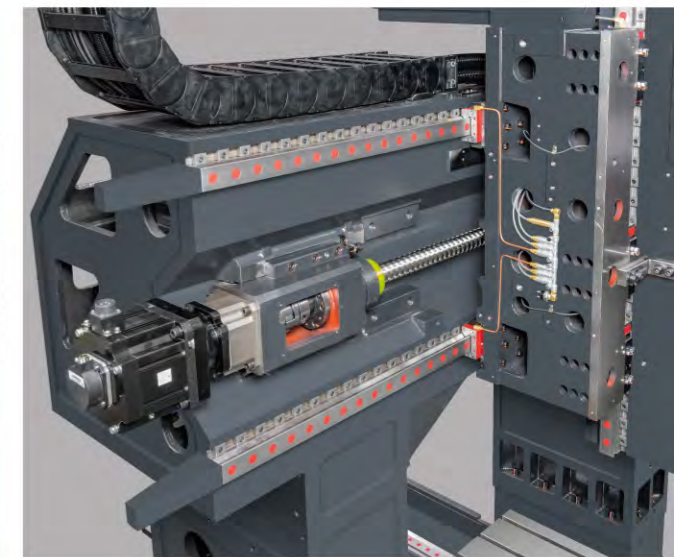
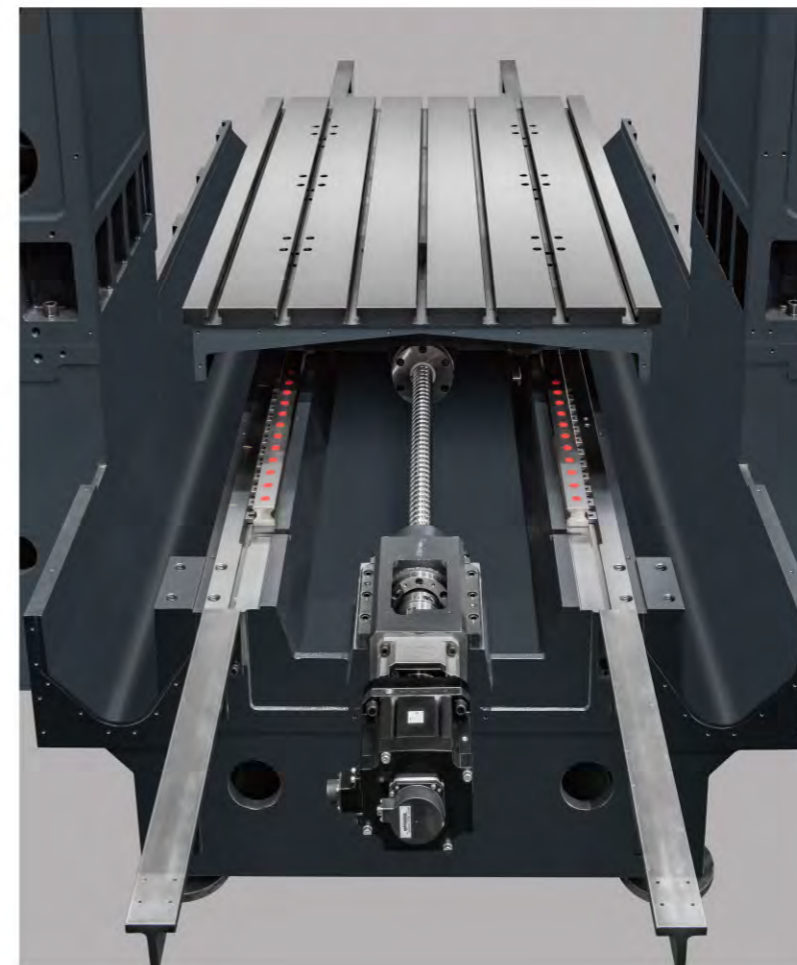
- **Spindle Design**

A long spindle nose is used for greater access and less interference to machine deep pockets.

- **Cross Rail Design**

Y axis utilizes 2 heavy duty roller ways with 6 roller trucks for superior performance.

Z axis utilizes 4 roller way system with 8 trucks for increased rigidity while head is at full extension. (Gear type)

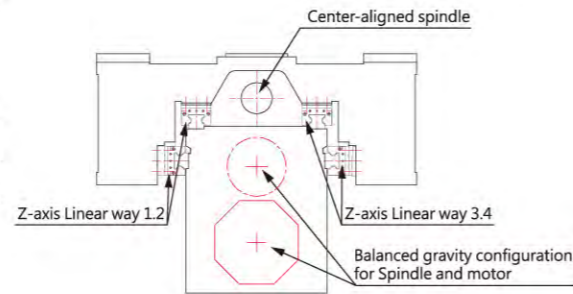


- **Direct Drive Design**

All 3 axes ballscrews are directly driven by a zero backlash servo gear reducer for greater torque, better acceleration and deceleration and higher accuracies.

Symmetric Spindle System Design. Strong, Stable, Durable and Rigid.

- 4 linear roller guide ways with 8 sliding blocks: optimum Z-axis rigidity.
- Spindle centerline, the configuration of the Z-axis ballscrew, spindle gears and spindle motor in this box type structure create very little overhang ensuring that the cutting forces are kept as close to the ways as possible.
- Spindle Gears are made from Japan-made JIS-0 grade.
- 2-step gear transmission provides high torque and high speed characteristics to ensure heavy cutting and the ability of fine surface finishes.



Heavy Cutting Capacity



Face milling:
Tool dia.: 125mm
Cutting feed: 1,000mm
Cutting width: 100mm
Cutting depth: 5mm
Removal rate: 500cc/min



High feed milling:
Tool dia.: 40mm x 4
Cutting speed: 2,400rpm
Cutting feed : 10,000mm/min
Cutting depth: 1mm
Cutting width: 30mm
Removal rate: 300cc/min



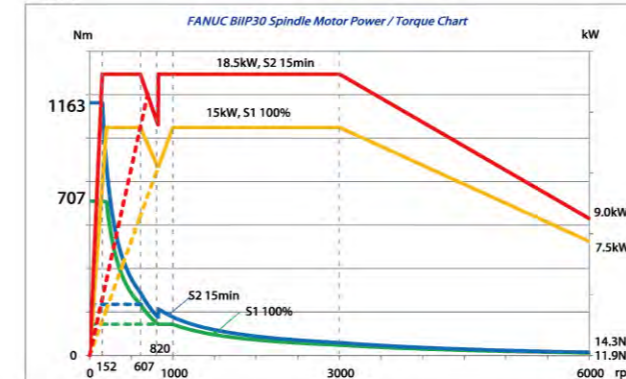
Indexable insert drilling:
Tool dia.: 32mm
Cutting speed: 1,500rpm
Cutting feed : 400mm/min
Removal rate: 320cc/min
Coolant through spindle

- Spindle power=22/26 kW , Speed=6,000rpm, Material=S45C(mid carbon steel), Position=1/2x(Z axis travel)

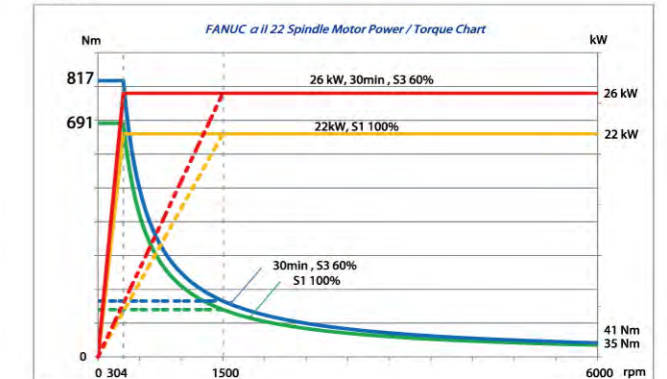
Spindle Power and Torque Charts (FANUC)

Pic. No.	Motor type	Spindle speed(rpm)	Drive type	Power(kW)	Torque(Nm)	Tool type	Note.
1	FANUC β iIP 30	6,000	2-step gear type	15/18.5	707/1,163	#50	● SM-xx13 STD. ● Only for SM-xx13 series
2	FANUC α iI 22	6,000	2-step gear type	22/26	691/817	#50	● SM-xx18/22 STD.
3	FANUC β iI 160LL	12,000	Built-in	L: 18.5/22 H: 30/37	L: 352/420 H: 120/147	#50	
4	FANUC α iI 22 FANUC α iIT 22	10,000	Direct driven	22/26	L: 140/166 H: 53/62	#50	● CTS. unavailable ● OPT.CTS. available
5	FANUC α iI 26	10,000 15,000	Direct driven	L: 15/22 H: 26/30	L: 239/350 H: 99/115	#50 #40	
6	FANUC α iIT 15	15,000	Direct driven	15/18.5	102/126	#40	

Pic.1



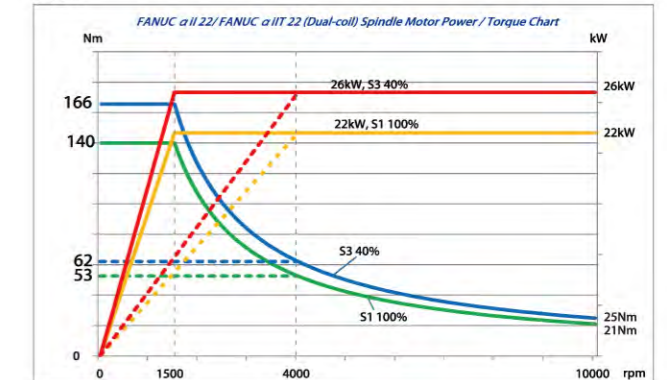
Pic.2



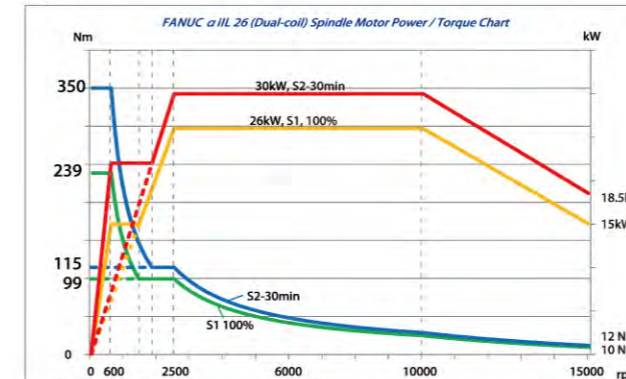
Pic.3



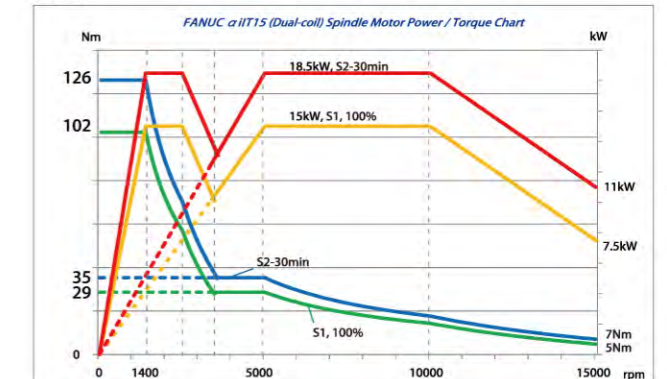
Pic.4



Pic.5



Pic.6



Auto Pallet Change

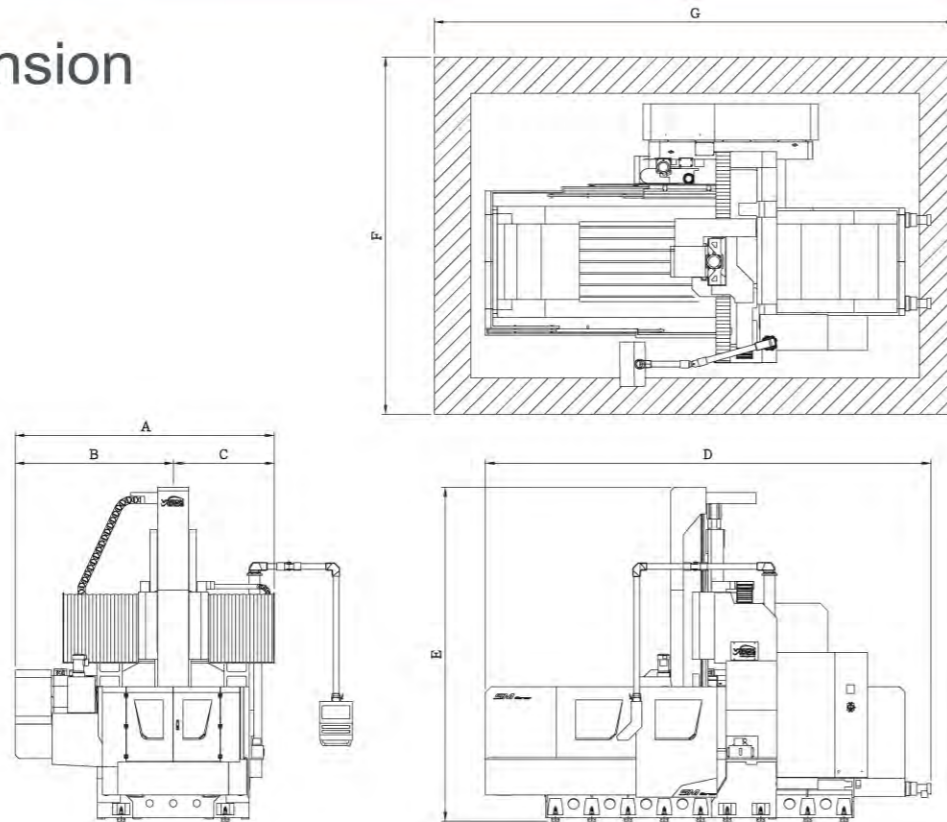
- Loading / unloading / inspecting parts outside the machine and machining components inside the machine at same time.
- Quickly workpiece positioning with touch probe.
- Fully integrated with CNC machine by using 3 M-Functions.
- Pallet repeat positioning accuracy ± 0.05 mm.
- Max. APC table load 5,500 kg.



MODEL	Unit	SM-1613	SM-2113	SM-2613	SM-1618	SM-2118	SM-2618	SM-3118
APC worktable dimension	mm	1,600 x 1,100	2,100 x 1,100	2,600 x 1,100	1,500 x 1,500	2,000 x 1,500	2,500 x 1,500	3,000 x 1,500
T-bolt (Size x pitch)-X.Y axis direction	mm	M16x100x100	M16x100x100	M16x100x100	M16x100x100	M16x100x100	M16x100x100	M16x100x100
Max. APC worktable load	kg	3,400	4,400	5,000	3,400	4,400	5,000	5,500
Clamping force	kg	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Federate	m/min	12	12	12	12	12	12	12
Change time	sec	38	38	47	38	38	47	56
Distance from spindle nose to APC table	mm	150~710	150~710	150~710	150~710	150~710	150~710	150~700

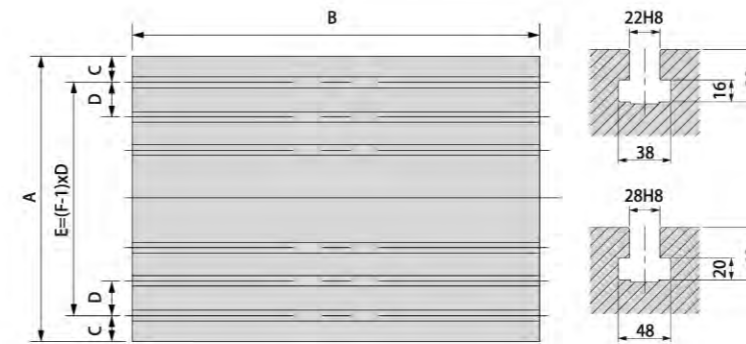
● Please contact sales for more details.

Machine Dimension



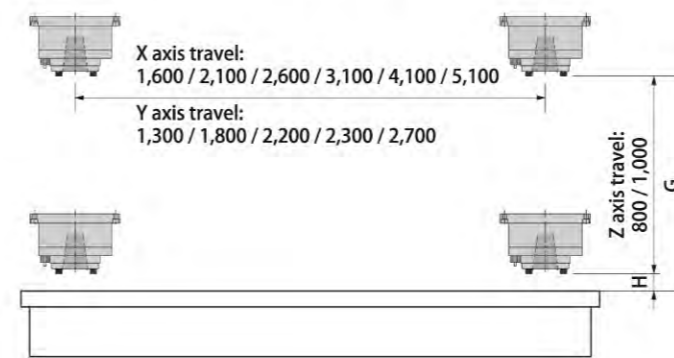
Model	A	B	C	D	E	F	G
SM-1613	4,000	2,550	1,450	5,200	Z:800=4,300 Z:1,000=4,700	5,500	6,800
SM-2113				6,200			7,800
SM-2613				7,500			9,000
SM-1618	4,600	2,900	1,700	5,800		6,000	7,500
SM-2118				6,800			8,300
SM-2618				8,000			9,500
SM-3118	5,200	3,200	2,000	9,000		6,600	10,800
SM-2118Y				6,800			8,300
SM-2618Y				8,000			9,500
SM-3118Y	5,200	3,300	1,900	9,000		Z:800=4,300 Z:1,000=4,700	10,800
SM-2622				7,800	10,500		
SM-3122				9,000	11,500		
SM-4122	5,900	3,700	2,200	11,500	7,200		13,800
SM-5122				13,500			16,000
SM-6122				14,800			18,500
SM-2622Y	5,900	3,700	2,200	7,800	7,200		10,500
SM-3122Y				9,000			11,500
SM-4122Y				11,500			14,000
SM-5122Y	5,900	3,700	2,200	13,500	7,200		16,000
SM-6122Y				14,800		18,500	
SM-2622E				7,800		10,500	
SM-3122E	5,900	3,700	2,200	9,000	7,200	11,500	
SM-4122E				11,500		14,000	
SM-5122E				13,500		16,000	
SM-6122E				14,800		18,500	

Dimension of Table & T-slot



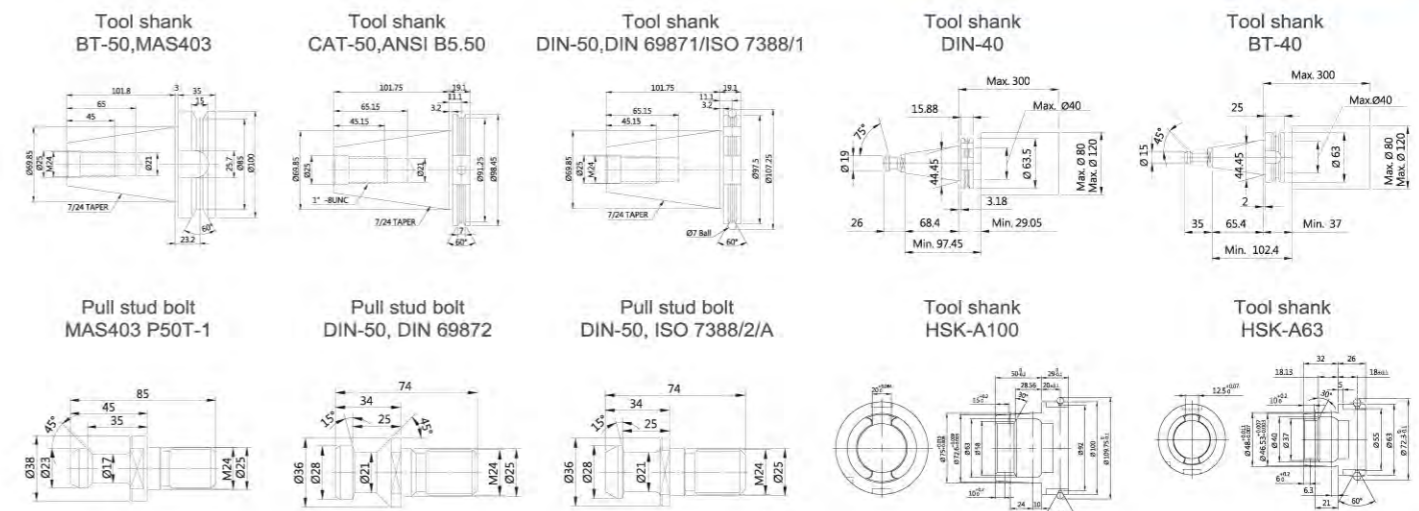
Model	T-slot	A	B	C	D	E	F
SM-1613	T22	1,100	1,800	70	160	960	7pcs
SM-2113	T22	1,100	2,300	70	160	960	7pcs
SM-2613	T22	1,100	2,800	70	160	960	7pcs
SM-1618	T22	1,600	1,800	160	160	1,280	9pcs
SM-2118(Y)	T22	1,600	2,300	160	160	1,280	9pcs
SM-2618(Y)	T22	1,600	2,800	160	160	1,280	9pcs
SM-3118(Y)	T22	1,600	3,300	160	160	1,280	9pcs
SM-2622(Y)/SM-2622E	T28	2,100	2,800	150	180	1,800	11pcs
SM-3122(Y)/SM-3122E	T28	2,100	3,300	150	180	1,800	11pcs
SM-4122(Y)/SM-4122E	T28	2,100	4,300	150	180	1,800	11pcs
SM-5122(Y)/SM-5122E	T28	2,100	5,300	150	180	1,800	11pcs
SM-6122(Y)/SM-6122E	T28	2,100	6,300	150	180	1,800	11pcs

Working Range



Z axis travel	Spindle	H	G
800	2-step gear 50#	200	1,000
	Built-in type 50#	160	960
	Direct-Driven 40#	215	1,015
	Direct-Driven 50#	200	1,000
1,000	2-step gear 50#	200	1,200
	Built-in type 50#	160	1,160
	Direct-Driven 40#	215	1,215
	Direct-Driven 50#	200	1,200

Tool Shank & Pull Stud



SM Specification

Model	Unit	SM-1613	SM-2113	SM-2613	SM-1618	SM-2118	SM-2618	SM-3118	SM-2118Y	SM-2618Y	SM-3118Y
Travel											
X axis travel	mm	1,600	2,100	2,600	1,600	2,100	2,600	3,100	2,100	2,600	3,100
Y axis travel	mm	1,300			1,800			2,300			
Z axis travel	mm	800 / 1,000(Opt.)			800 / 1,000(Opt.)			800 / 1,000(Opt.)			
Distance from spindle nose to table	2-step gear	Z axis travel=800	200~1,000			200~1,000			200~1,000		
		Z axis travel=1,000	200~1,200(Opt.)			200~1,200(Opt.)			200~1,200(Opt.)		
Distance from spindle center to column	mm	450			450			450			
Distance between columns (port width)	mm	1,350			1,800			1,800			
Table											
Table size	mm	1,800x1,100	2,300x1,100	2,800x1,100	1,800x1,600	2,300x1,600	2,800x1,600	3,300x1,600	2,300x1,600	2,800x1,600	3,300x1,600
T-slot (width x number x pitch)	mm	22 x 7 x 160			22 x 9 x 160			22 x 9 x 160			
Max. table load	Kg	6,000	8,000	10,000	7,000	8,000	10,000	12,000	8,000	10,000	12,000
Spindle											
Spindle power (cont. / 30 min.)	kW	15 / 18.5			22 / 26			22 / 26			
Spindle torque (cont. / 30 min.)	Nm	700 / 1,163			691 / 817			691 / 817			
Spindle speed	rpm	6,000			6,000			6,000			
Spindle taper	-	BBT-50			BBT50			BBT50			
Feed											
Cutting feed rate	mm/min	1~15,000			1~15,000			1~15,000			
Rapid traverse (X/Y/Z)	m/min	20 / 20 / 15			20 / 20 / 15			20 / 20 / 15			
3 axis motor power (FANUC) (X/Y/Z)	kW	3 / 3 / 5.5			3 / 3 / 5.5			3 / 3 / 5.5			
ATC*											
Tool magazine capacity Vertical type tool change	pcs	24 / 32(Opt.) / 40(Opt.)			24 / 32(Opt.) / 40(Opt.)			24 / 32(Opt.) / 40(Opt.)			
Max. tool diameter (full / next pockets empty)	mm	Φ125 / Φ250			Φ125 / Φ250			Φ125 / Φ250			
Max. tool length	mm	400			400			400			
Max. tool weight	kg	18			18			18			
Tool shank	-	BBT-50			BBT50			BBT50			
Accuracy											
Positioning accuracy (JIS B6333)	mm	±0.010 / Full travel			±0.010 / Full travel			±0.010 / Full travel			
Positioning accuracy (ISO-230-2 & VDI 3441)	mm	P0.009			P0.012			P0.012			
Repeatability (JIS B6333)	mm	±0.003			±0.003			±0.003			
Repeatability (ISO-230-2 & VDI 3441)	mm	Ps0.006			Ps0.010			Ps0.010			
General											
Power requirement	kVA	50			50			50			
Pneumatic requirement	kg/cm ²	6			6			6			
Machine net weight	kg	17,500	19,000	20,500	21,000	23,300	25,300	27,500	23,900	25,900	28,100
Floor space (LxWxH)	m	6.8x5.5x4.3	7.8x5.5x4.3	9.0 x5.5x4.3	7.5x6.0x4.3	8.3x6.0x4.3	9.5 x6.0x4.3	10.8x6.0x4.3	8.3x6.6x4.3	9.5x6.6x4.3	10.8x6.6x4.3

*1 Max. tool length(#40): 300 mm, Max. support torque: 0.8 kgf-m *2 Max. tool length(#50): 400 mm, Max. support torque: 2.5 kgf-m

Standard Accessory

- | | | |
|---|--|--|
| 1 FANUC 0i MF PLUS Controller | 10 Cutting fluid cooling system | 20 RJ45 interface |
| 2 Linear way 6,000 rpm 2-step gear type spindle | 11 Centralized auto lubrication system | 21 Working lamp |
| 3 Z axis travel 800 mm | 12 Wash gun and pneumatic interface | 22 Operation cycle finish and alarm light |
| 4 Spindle overloading protected by software | 13 Enclosed sheet metal guard (without roof) | 23 Remote monitoring software (standard) |
| 5 XYZ-axis travel hard limits protection | 14 Screw type chip conveyor on table sides | 24 Foundation pads and bolts kits |
| 6 XYZ-axis absolute pulse coder feedback | 15 Caterpillar type chip conveyor / Water tank | 25 Adjustment tool and tool kits |
| 7 Air blast through spindle | 16 Swiveling arm type operation panel | 26 Technical manuals (operation, maintenance manual and circuit diagram) |
| 8 Spindle oil cooling system | 17 Movable manual pulse generator | |
| 9 Footswitch for tool clamping | 18 Heat exchanger for electrical cabinet | |
| | 19 Auto power off function | |

* All specifications and designs are subject to change without notice.

Optional Accessory & Function

- FANUC 31 iB Controller / SIEMENS / HEIDENHAIN Controller
- Linear way 10,000 rpm built-in spindle
Linear way 10,000 rpm direct driven spindle
Linear way 15,000 rpm direct driven spindle
- Z axis travel 1,000 mm
- SM-xx13/18 (Y) series
200 mm higher column
SM-xx22 (Y) (E) series
200 / 300 / 400 / 500 mm higher column
- Thermal compensation system

Model	Unit	SM-2622	SM-3122	SM-4122	SM-5122	SM-6122	SM-2622Y	SM-3122Y	SM-4122Y	SM-5122Y	SM-6122Y	SM-2622E	SM-3122E	SM-4122E	SM-5122E	SM-6122E
Travel																
X axis travel	mm	2,600	3,100	4,100	5,100	6,100	2,600	3,100	4,100	5,100	6,100	2,600	3,100	4,100	5,100	6,100
Y axis travel	mm	2,200			2,700			2,700			2,700					
Z axis travel	mm	800 / 1,000(Opt.)			800 / 1,000(Opt.)			800 / 1,000(Opt.)			800 / 1,000(Opt.)					
Distance from spindle nose to table	2-step gear	Z axis travel=800	200~1,000			200~1,000			200~1,000			200~1,000				
		Z axis travel=1,000	200~1,200(Opt.)			200~1,200(Opt.)			200~1,200(Opt.)			200~1,200(Opt.)				
Distance from spindle center to column	mm	450			450			450			450					
Distance between columns (port width)	mm	2,350			2,350			2,350			2,750					
Table																
Table size	mm	2,800x2,100	3,300x2,100	4,300x2,100	5,300x2,100	6,300x2,100	2,800x2,100	3,300x2,100	4,300x2,100	5,300x2,100	6,300x2,100	2,800x2,100	3,300x2,100	4,300x2,100	5,300x2,100	6,300x2,100
T-slot (width x number x pitch)	mm	28x11x160			28x11x160			28x11x160			28x11x160					
Max. table load	Kg	12,000	14,000	16,000	18,000	20,000	12,000	14,000	16,000	18,000	20,000	12,000	14,000	16,000	18,000	20,000
Spindle																
Spindle power (cont. / 30 min.)	kW	22 / 26			22 / 26			22 / 26			22 / 26					
Spindle torque (cont. / 30 min.)	Nm	691 / 817			691 / 817			691 / 817			691 / 817					
Spindle speed	rpm	6,000			6,000			6,000			6,000					
Spindle taper	-	BBT50			BBT50			BBT50			BBT50					
Feed																
Cutting feed rate	mm/min	1~15,000			1~15,000			1~15,000			1~15,000					
Rapid traverse (X/Y/Z)	m/min	20 / 20 / 15			15/20/15			20 / 20 / 15			15/20/15					
3 axis motor power (FANUC) (X/Y/Z)	kW	3/3/5.5			5.5/4.5/5.5			3/3/5.5			5.5/4.5/5.5					
ATC*																
Tool magazine capacity Vertical type tool change	pcs	24 / 32 (Opt.) / 40 (Opt.)			24 / 32 (Opt.) / 40 (Opt.)			24 / 32 (Opt.) / 40 (Opt.)			24 / 32 (Opt.) / 40 (Opt.)					
Max. tool diameter (full / next pockets empty)	mm	Φ125 / Φ250			Φ125 / Φ250			Φ125 / Φ250			Φ125 / Φ250					
Max. tool length	mm	400			400			400			400					
Max. tool weight	kg	18			18			18			18					
Tool shank	-	BBT50			BBT50			BBT50			BBT50					
Accuracy																
Positioning accuracy (JIS B6333)	mm	±0.010 / Full travel			±0.010 / Full travel			±0.010 / Full travel			±0.010 / Full travel					
Positioning accuracy (ISO-230-2 & VDI 3441)	mm	P0.018			P0.018			P0.018			P0.018					
Repeatability (JIS B6333)	mm	±0.003			±0.003			±0.003			±0.003					
Repeatability (ISO-230-2 & VDI 3441)	mm	Ps0.015			Ps0.015			Ps0.015			Ps0.015					
General																
Power requirement	kVA	55			55			55			55					
Pneumatic requirement	kg/cm ²	6			6			6			6					
Machine net weight	kg	28,500	31,000	35,600	40,000	46,000	29,200	31,700	36,300	40,700	46,500	30,000	32,000	37,000	41,000	47,000
Floor space (LxWxH)	m	10.5x6.6x4.3	11.5x6.6x4.3	14x6.6x4.3	16x6.6x4.3	18.5x6.6x4.3	10.5x7.2x4.3	11.5x7.2x4.3	14x7.2x4.3	16x7.2x4.3	18.5x7.2x4.3	10.5x7.2x4.3	11.5x7.2x4.3	14x7.2x4.3	16x7.2x4.3	18.5x7.2x4.3

*1 Max. tool length(#40): 300 mm, Max. support torque: 0.8 kgf-m *2 Max. tool length(#50): 400 mm, Max. support torque: 2.5 kgf-m

Manual Head Attachments

- | | |
|---|--|
| 6 Spindle load hardware protection | 16 Air conditioner for electrical cabinet |
| 7 Interface reserved for fourth axis | 17 Auto workpiece coordinate measurement |
| 8 Spindle nose ring cutting coolant system | 18 Auto tool length measurement |
| 9 Coolant through spindle system 20 / 70 bar | 19 XYZ-axis linear scale |
| 10 The interface of coolant through spindle | 20 Auto warm up |
| 11 Oil skimmer | 21 Tool axis retract function at power failure |
| 12 Enclosed sheet metal guard with roof | 22 Remote monitoring software (professional) |
| 13 Tool magazine with arm type ATC 24 / 32 / 40 tools | 23 Oil mist recycle device |
| 14 Helical bladed screw conveyor on table sides | 24 CE Regulation |
| 15 Chip cart | |



Over 20 different head attachment options, please contact sales for more details.