



Super Vertical Machining Centers



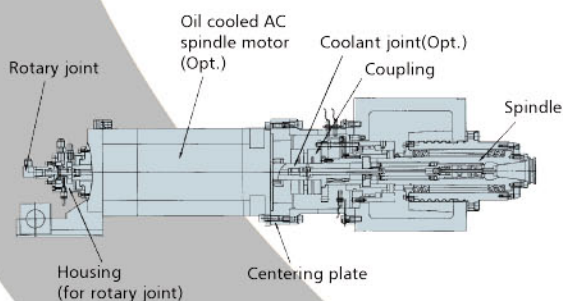
SV-33/41/48
SV-33H/41H/48H

Super Vertical Machining Center

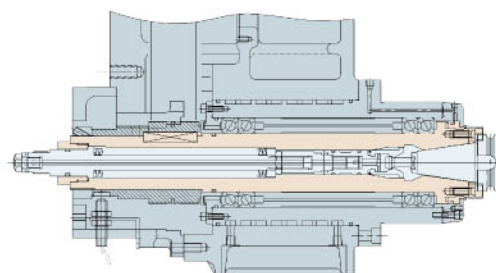


SV-33 / 41

Four Guideways on
and Dynamic Accur
Rapid Traverse: X/Y

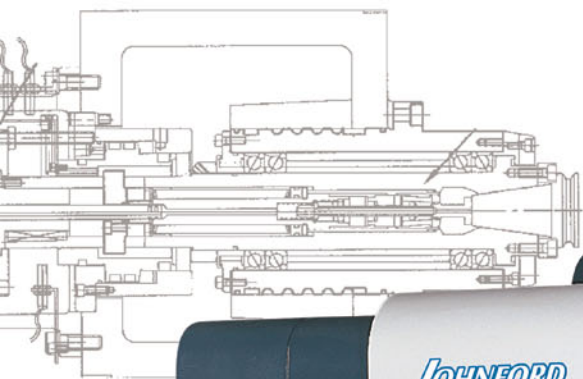


Direct Driving Spindle
Spindle taper: BBT-40
Spindle Speed: 15000 rpm



Cartridge Spindle
Spindle taper: BT / CAT / BBT
Spindle Speed: Std. 10000 rpm (No.40); 6000 rpm (No.50)
Opt. 12000 rpm (No.40); 8000/10000 rpm (No.50)

Item	Model
Table working surface	
Longitudinal travel (X)	
Cross travel (Y)	
Vertical travel (Z)	
Spindle motor (cont. / 30 min)	
Table load capacity	
Machine dimensions (LxWxH)	
Machine weight	

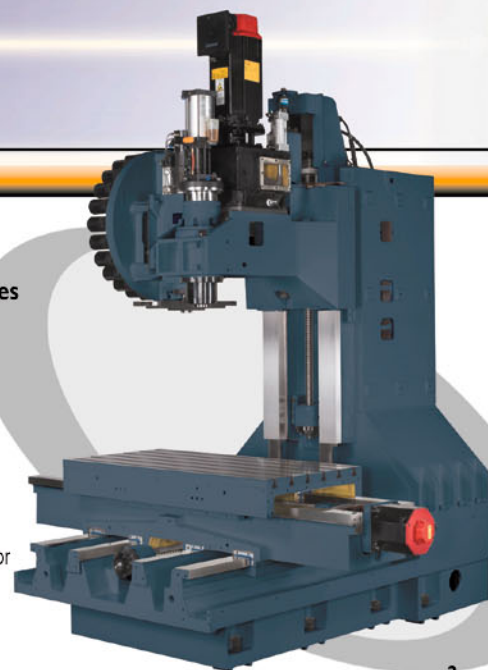


The Base for Rigid with Excellent Static
acy.
/Z 30/30/20 m/min Turcite-B on 3 Axes

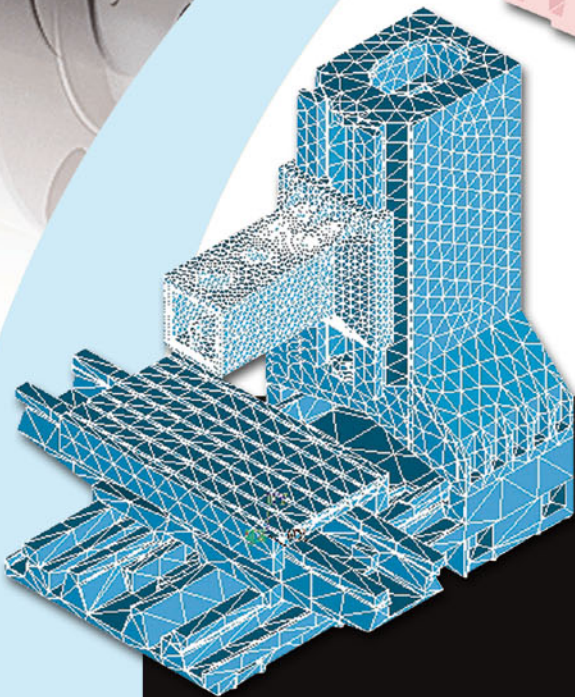
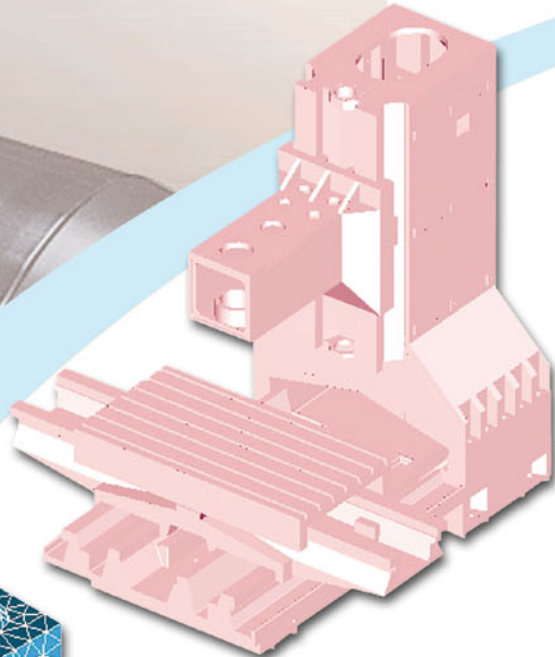
SV-33	SV-33H	SV-41	SV-41H
1000x600 mm (39.4"x23.6")		1200x600 mm (47.2"x23.6")	
850 mm (33.5")		1050 mm (41.3")	
610 mm (24")		610 mm (24")	
610 mm (24")		610 mm (24")	
9/11 kW P motor (Std.) 7.5/11 kW Hi-Lo Gear (Opt.)	11/15 kW Hi-Lo Gear box (Std.)	9/11 kW P motor(Std.) 7.5/11 kW Hi-Lo Gear (Opt.)	11/15 kW Hi-Lo Gear box (Std.)
1200 kg (2640 lb)			
2680x3420x2888 mm (105.5"x134.6"x113.7")	2680x3420x2982 mm (117.7"x134.6"x117.4")	2990x3420x2888 mm (117.7"x134.6"x113.7")	2990x3420x2982 mm (117.7"x134.6"x117.4")
6500 kg (14300 lb)	7000 kg(15400 lb)	7000 kg (15400 lb)	7500 kg (16500 lb)

➔ Super Advanced Features

- Water-cooled headstock
- No Offset gearbox
- Four guideways on the base
- Zero table overhang
- Hydraulic counter balance
- Y-axis rear mount for servo motor
- Direct driving ball screws
- Twin chip removal system



Super Vertical Machining Center



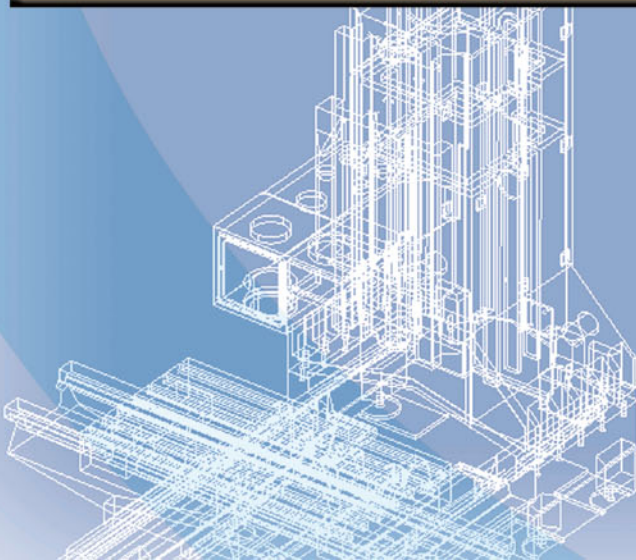
Optimal Structure Design

Built Right.....Built to Last JOHNFORN Super Verticals are built in classic style. Meehanite cast iron, cast extra heavy for rigidity and damping, precision ground ways induction hardened to 58-62Rc, and hand scraped turcite-B applied to all mating surfaces ensure fit, precision, and long term performance. It is the only way to do it ! Performance you see in your finishes and feel in your wallet.

The structures have been designed with finite element analysis (FEA).

- Four guideways on base
- Zero table overhang
- Turcite-B on 3 axes
- Rapid traverse X,Y,Z: 24/24/24 m/min.

SV-48 / 48H



Item	Model
Table working surface	
Longitudinal travel (X)	
Cross travel (Y)	
Vertical travel (Z)	
Spindle motor (cont. / 30 min)	
Table load capacity	
Machine dimensions (LxWxH)	
Machine weight	



SV-48	SV-48H
1300x700 mm (51.2"x27.6")	1300x700 mm (51.2"x27.6")
1220 mm (48")	1220 mm (48")
710 mm (28")	710 mm (28")
630 mm (24.8")	630 mm (24.8")
7.5/11 kW (No. 40)	11/15 kW (No. 50)
1500 kg (3300 lb)	1500 kg (3300 lb)
3200x3900x3090 mm (126"x154"x122")	3200x3900x3090 mm (126"x154"x122")
9500 kg (20900 lb)	10000 kg (22000 lb)

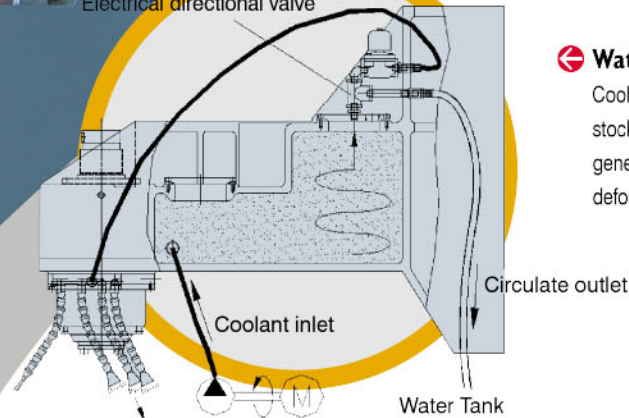
High Performance Cartridge Spindle

- With all of that torque, machines have to have a great spindle. These are spindles flexible enough for high-torque, heavy-duty cutting, and high-speed machining operation.



Advanced Structure

Electrical directional valve



Water-cooled Headstock

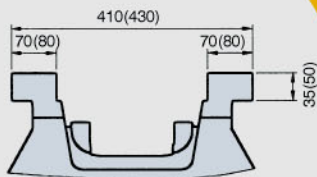
Coolant is circulated in the head stock for removing the spindle-generated heat. No thermal deformation and bending

No Off-set Gearbox

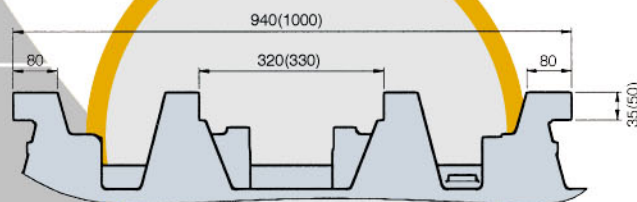
All the mechanical structures on the head stock are symmetrical on the Z-axis centerline without an off-set gearbox. It means the Z-axis movement is steadier and the torsion on the head stock is smaller.

Zero Table Overhang

- Super wide guide way arrangement allows the weight of the table and the work piece to be kept within the travel of saddle.
- Super wide guide way arrangement provides rigidity and accuracy.



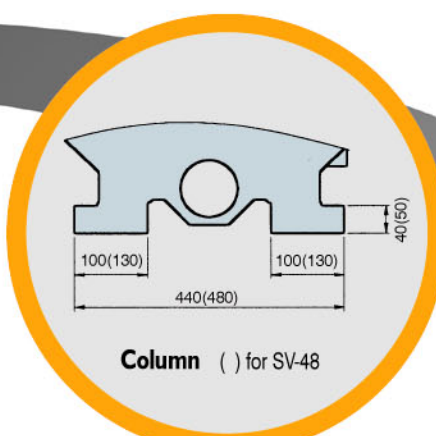
Saddle () for SV-48



Base () for SV-48

Four Guideways on Base

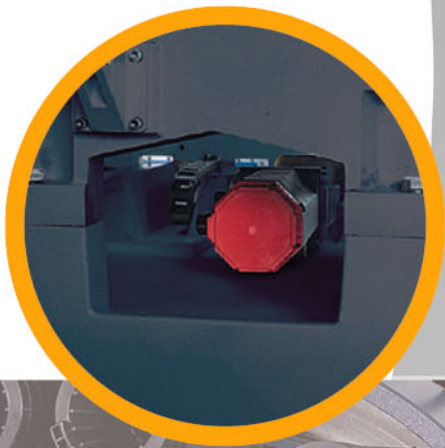
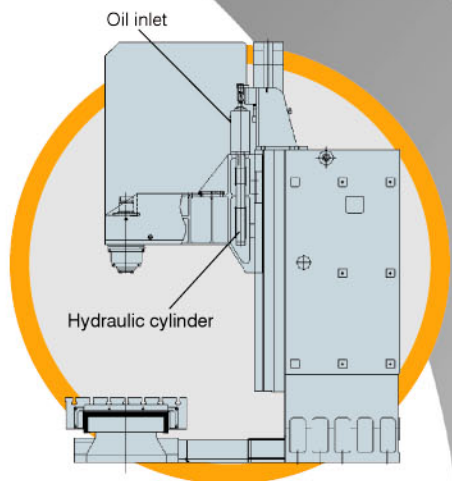
- Solid box way construction with 24m/min rapid rates= speed and rigidity.
- Ultra rigid and heavy meehanite cast iron construction =dampening and strength.



Column () for SV-48

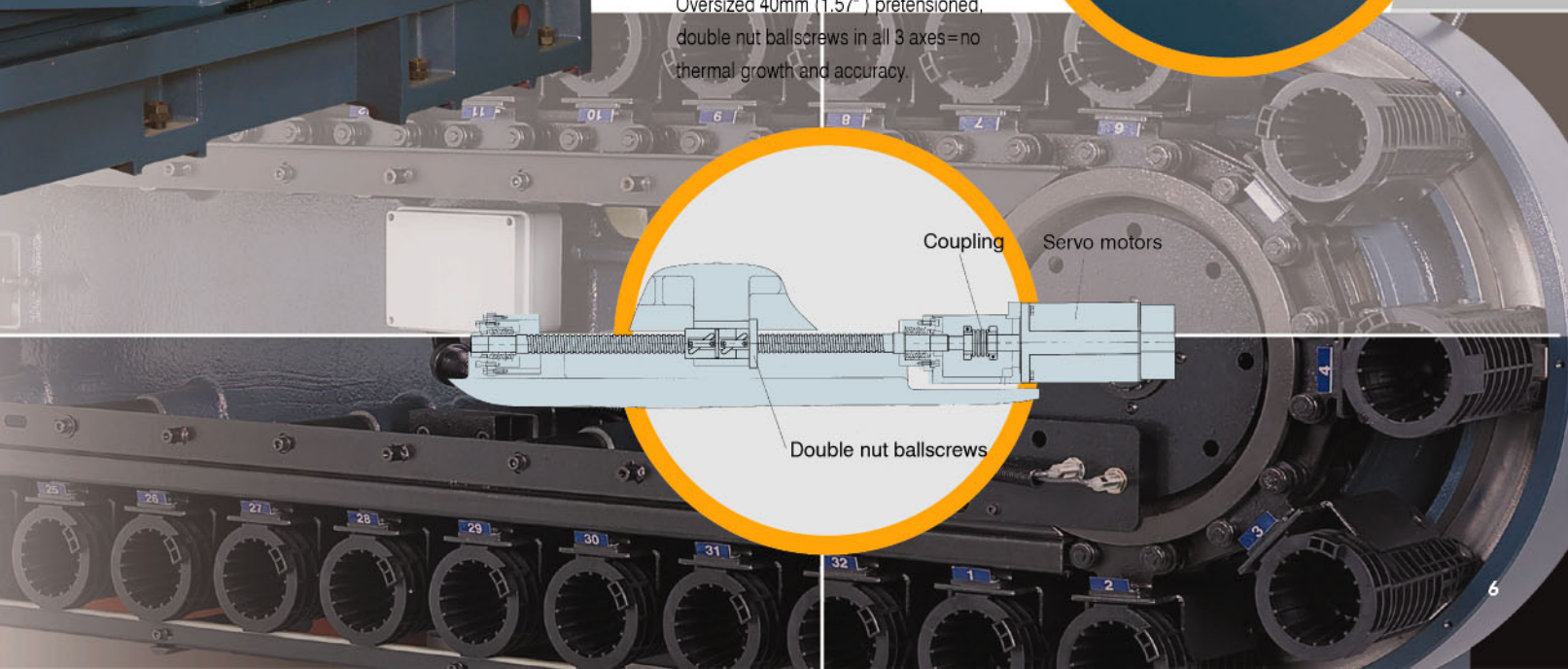
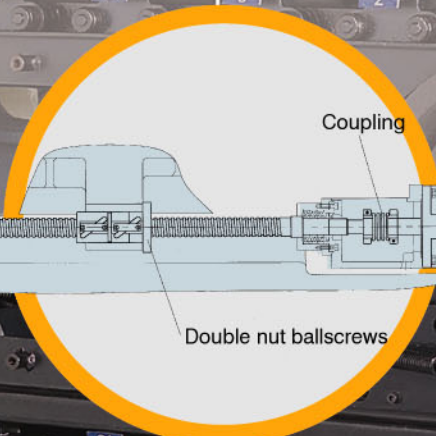
Hydraulic Counter Balance

Hydraulic counter weight provides smooth Z axis movement in rapid traverse.



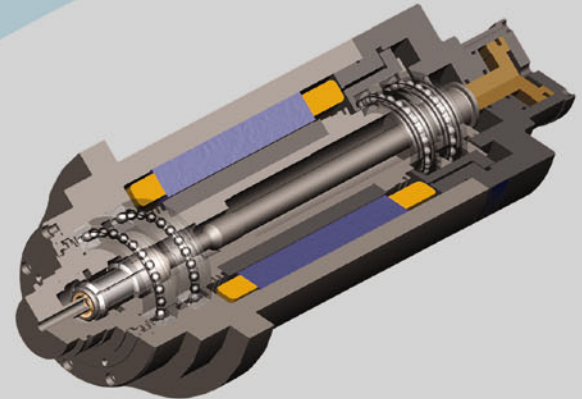
Direct Driving Ballscrews

Servo motors direct coupled to ballscrews=accuracy and precision.
Oversized 40mm (1.57") pretensioned, double nut ballscrews in all 3 axes=no thermal growth and accuracy.



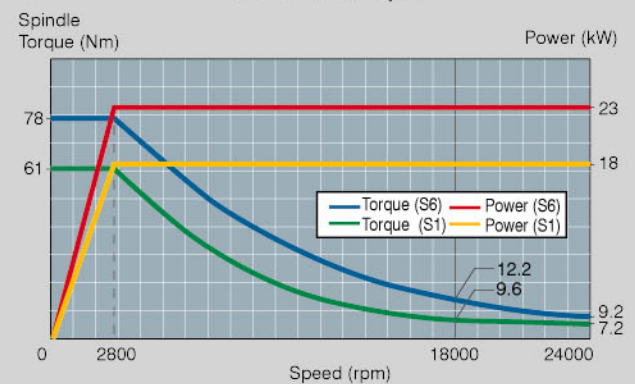
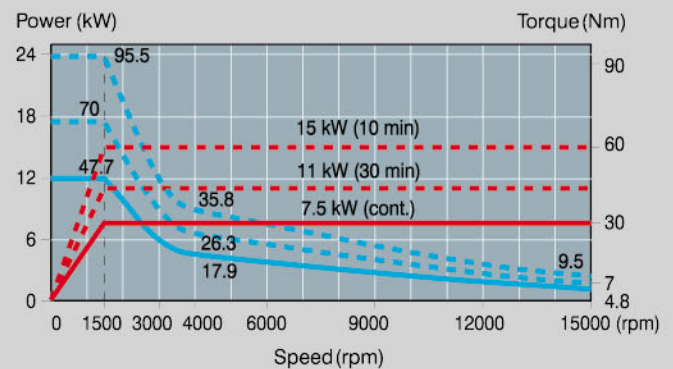
Spindle Power & Torque Chart





High Speed Spindle (Opt.)(Built-In Motor)

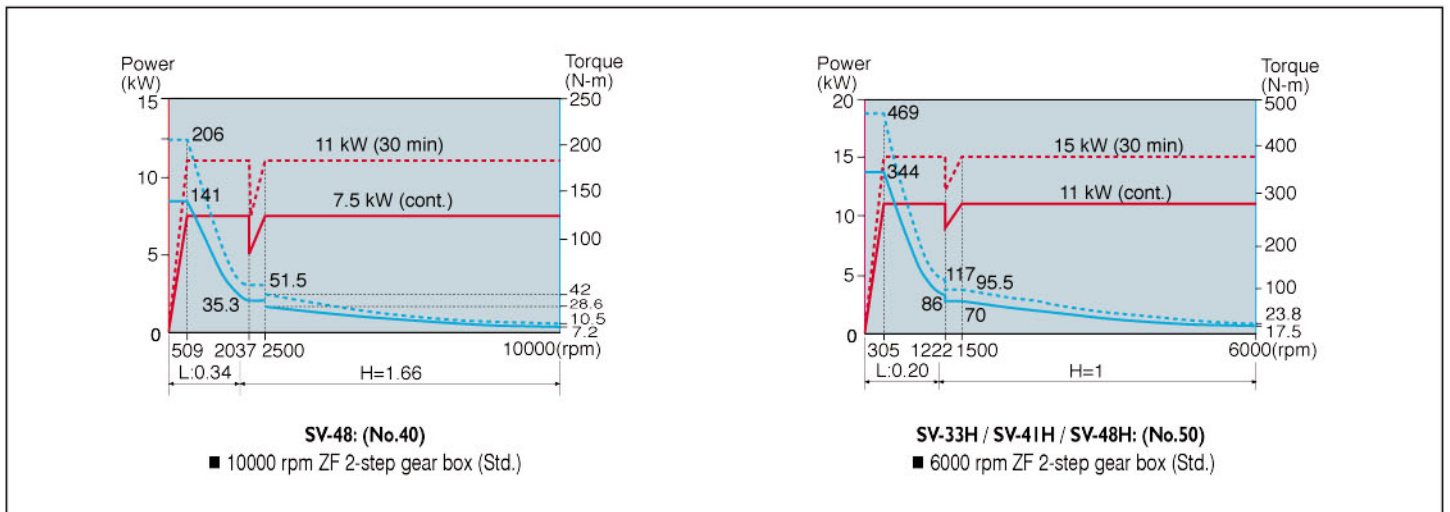
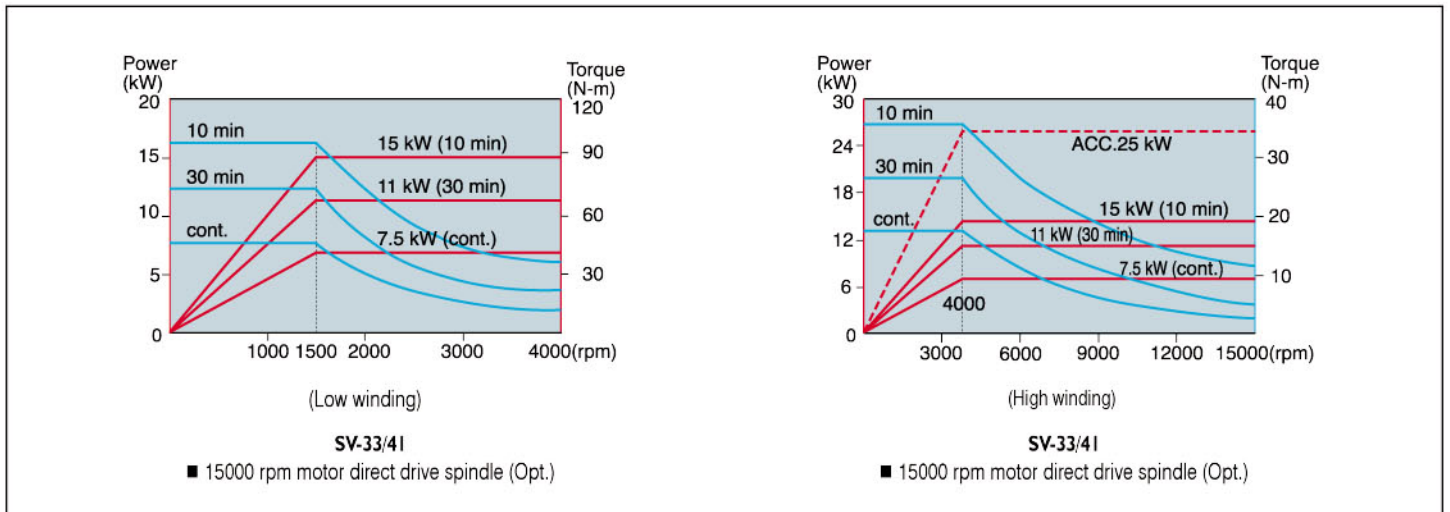
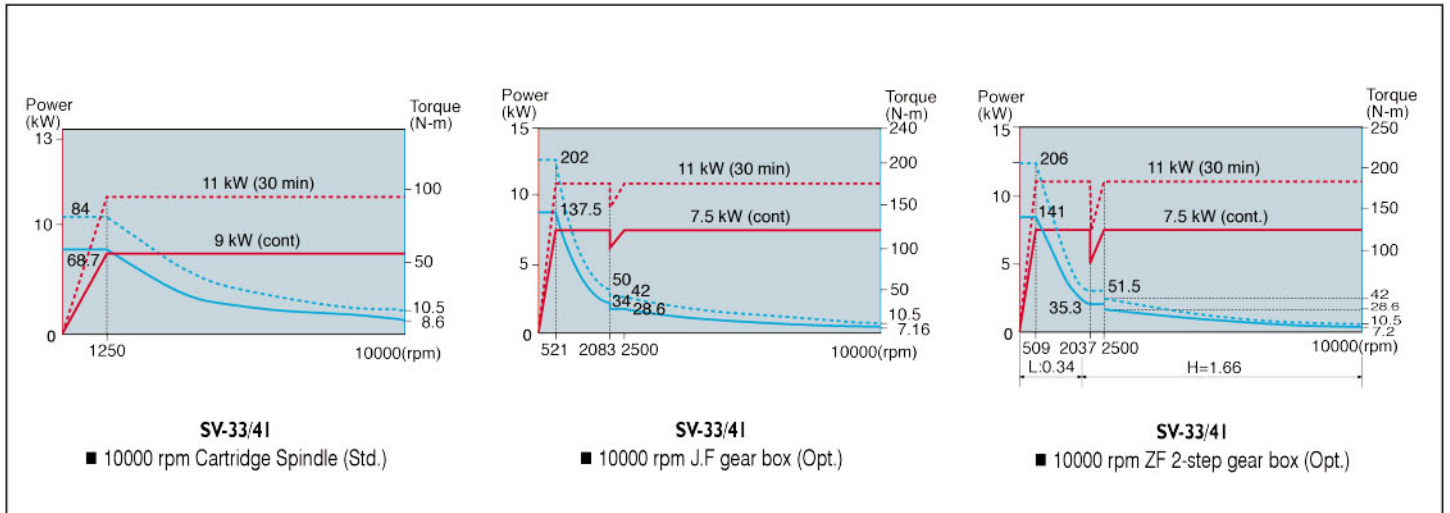


Technical Data

Drive Layout		
Tool system	BBT-40	HSK A63
Power (cont. / 30 min)	7.5 / 11 kW	18 / 23 kW
Nominal speed	1500 rpm	2,800 rpm
Max. Torque	95.5 Nm	78 Nm
Max. Speed	15000 rpm	24,000 rpm
Control	Fanuc / Siemens	Fanuc/Siemens/Heidenhain
Voltage	200V	230V / 380V
Max. Current	56 A	90 A / 54A
Driver	-	-
Clamping system	Hydro-mechanical	Spring-mechanical+ Power-mechanical
Clamping Force	10 kN	18 kN
Tool cleaning	Central + Surrounding	Central + Surrounding
Spindle bearings	4 x ϕ 65 Ceramic Balls	2 x ϕ 70 Hybrid
Bearing rigidity	350 N/ μ m	Sr 310.2 N/ μ m
Bearing lubrication	Grease	Oil-air mist
Spindle cooling	Oil	Water glycol
Cooling performance	2 kW	2.5 kW
Cooling temperature	22-25°	The same as machine
Cooling volume approx	10 ℓ / min	12 ℓ / min
Tool Cooling		
Internal coolant flow	Optional	Optional
Max. Pressure	70 bar	80 bar
Suitable for dry operation	Yes	Yes
Air	Possible	Possible
Min. quantities of cooling lubricant	Optional	Optional

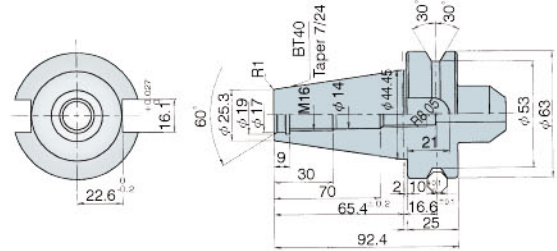
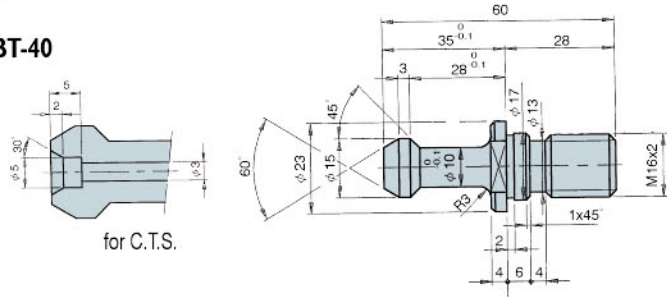


Metal Removal Rate	Milling 	Milling 	Drilling 	Threading 
Tool system	BBT-40 / HSK A63	BBT-40 / HSK A63	BBT-40 / HSK A63	BBT-40 / HSK A63
Power	17 kW	17 kW	17 kW	17 kW
Material	Steel 60-70 kg/mm ²	Aluminum	Steel 60-70 kg/mm ²	Steel 60-70 kg/mm ²
Machining volume (cm ³ /min)	300	1056	259	-
Tool/edges (ϕ mm)	ϕ 50 / 4	ϕ 80 / 6	ϕ 30	M24
Rotational speed (min ⁻¹)	2300	3800	2440	500
Cutting speed (m/min)	360	955	230	37
Cutting B x T (mm)	40 x 4	60 x 4	-	-
Feed (mm/min)	1840	4400	366	500

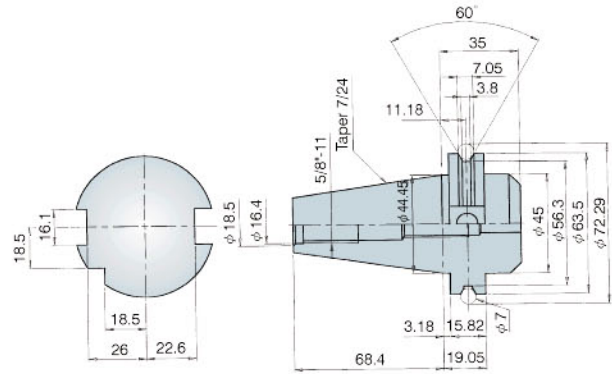
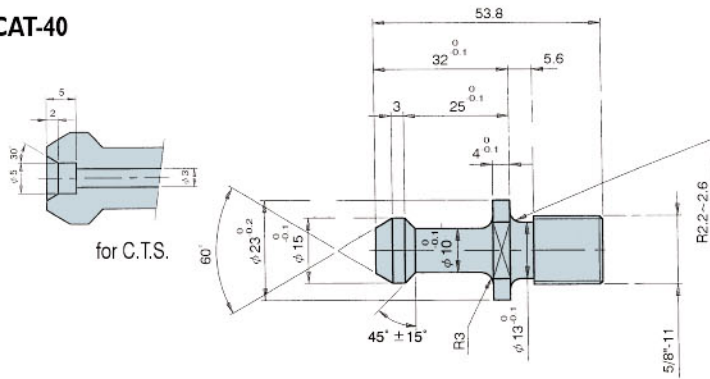


Tool System

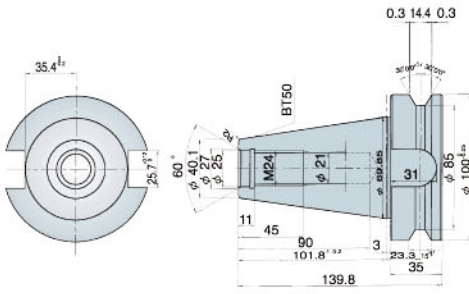
BT-40



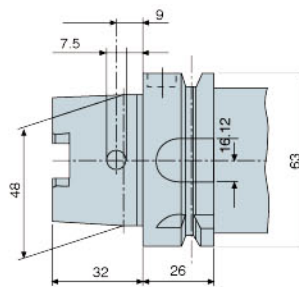
CAT-40



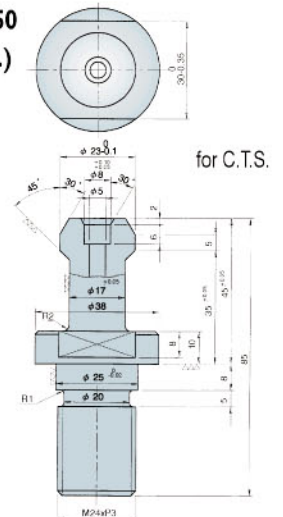
BT-50



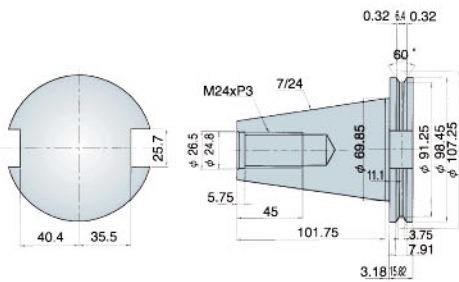
HSK-A63



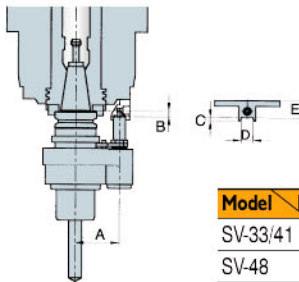
For BT-50/CAT-50 Tool shank (Std.)



CAT-50

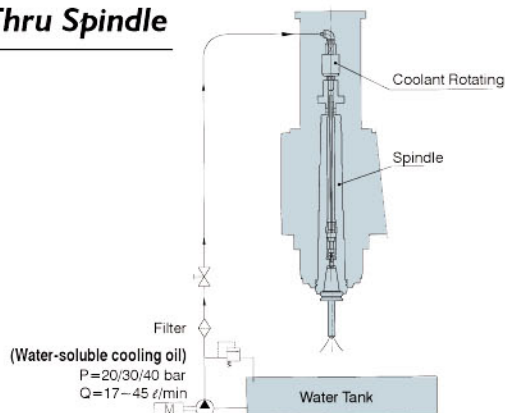


Coolant Thru Tool Tip



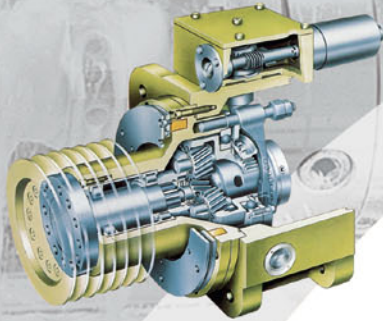
Model	Item	Taper No.	A	B	C	D	E
SV-33/41		No.40	65	8	5	18	18
SV-48		No.40	65	9	5	18	25.5
SV-48H		No.50	80	7.5	5	18	36.5

Coolant Thru Spindle



Different Accessories for Your Choice

Gear Box



- Delivers high torque.
- ZF 2 speed automatic gear box.
- No noise generated.
- No heat transmitted.
- No gear vibration.
- High efficiency (over 95%)

Cooler



- High efficiency.
- Powerful cooling performance.

ATC Units



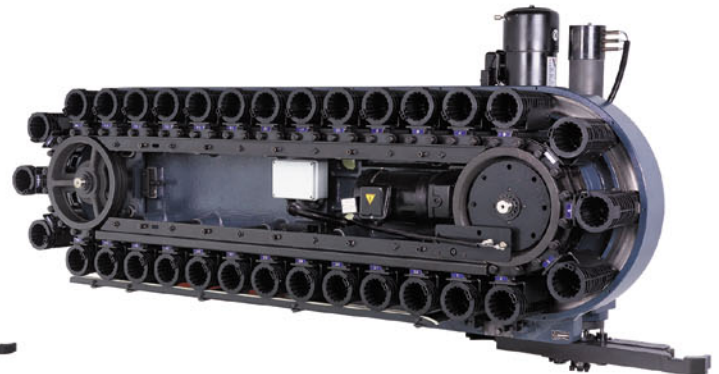
Armless Type

- 24 tools for BT/CAT-40
- 20 tools for BT/CAT-50



Arm Type

- 24 tools for
BT / CAT / BBT-40, HSK A63
BT / CAT / BBT-50, HSK A100



Arm Type

- 32 tools for
BT / CAT / BBT-40, HSK A63
BT / CAT / BBT-50, HSK A100

Standard Features-Great Equipment



Rigid tapping



High pressure coolant
(P:3.5 kg/cm², Q:100 l/min)



Automatic chip removal
(Screw type chip conveyor)



Remote handwheel

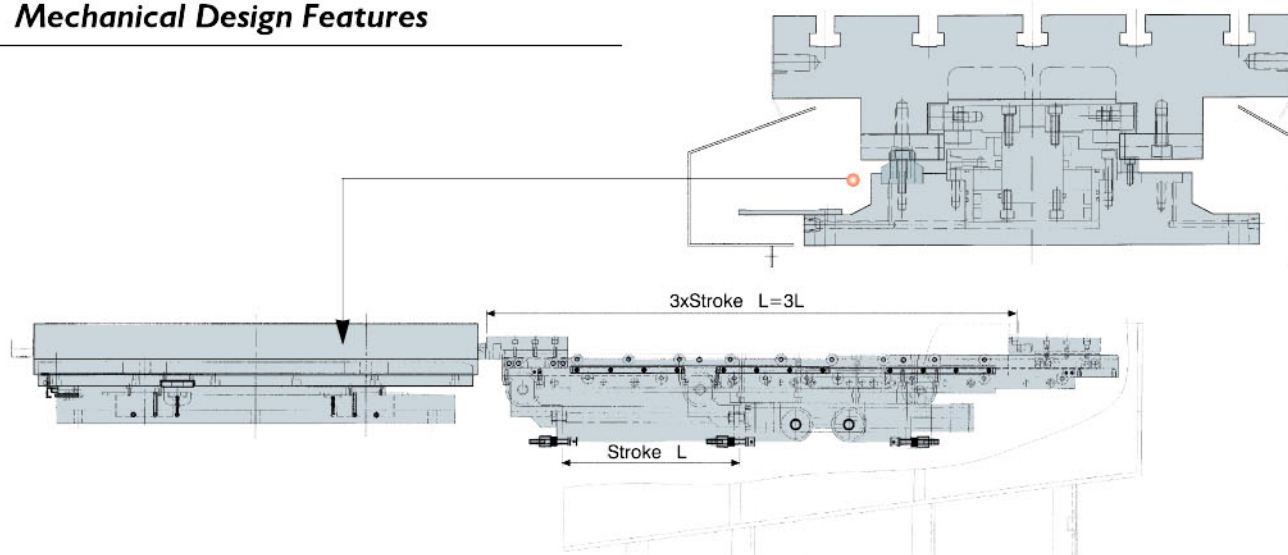
Automatic Pallet Changer

Chain Type (Patented)

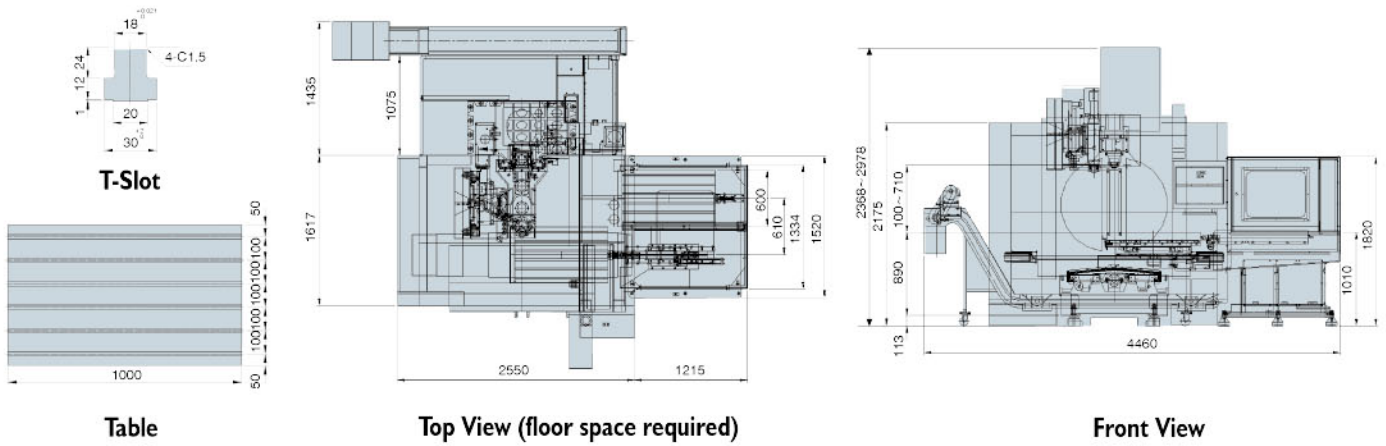
JOHNFORD designed, built and integrated APC is the best you will find. Our side load twin Pallet system is fast, yet heavy duty. A complete pallet exchange takes only 15 seconds, yet our heavy mechanism provides plenty of beef for fixtures and a load of parts. Our pallets are made of cast iron and are available T-slotted or drilled and tapped. Our hydraulic clamping mechanism provides twin large diameter cylinders for clamping. The pallets locate on precision ground hardened steel pins and bushings. Repeatability is excellent at .0001" !



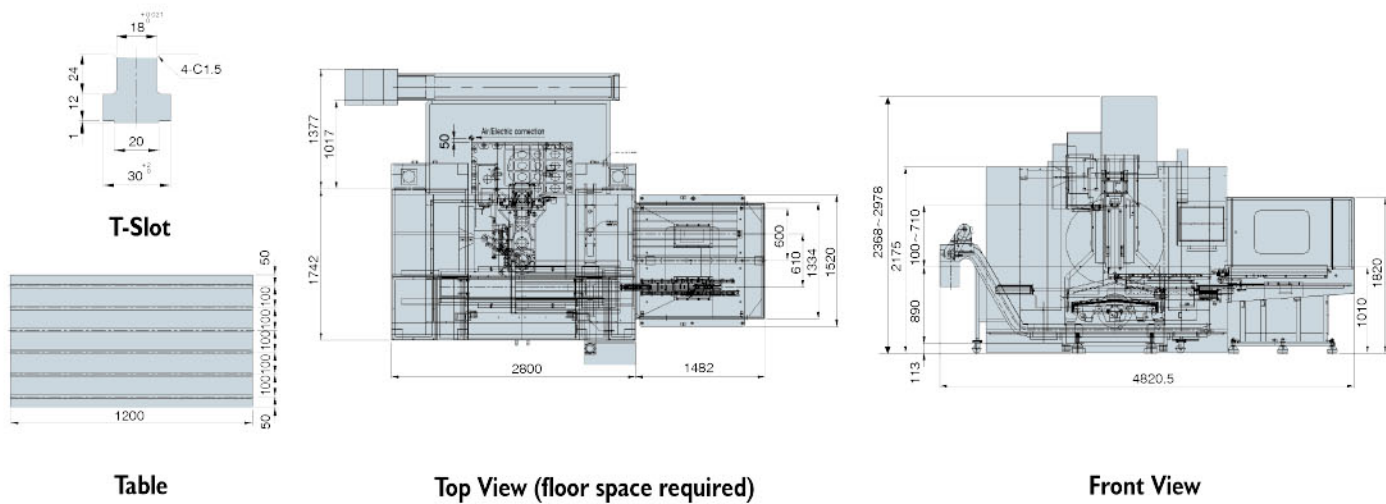
Mechanical Design Features



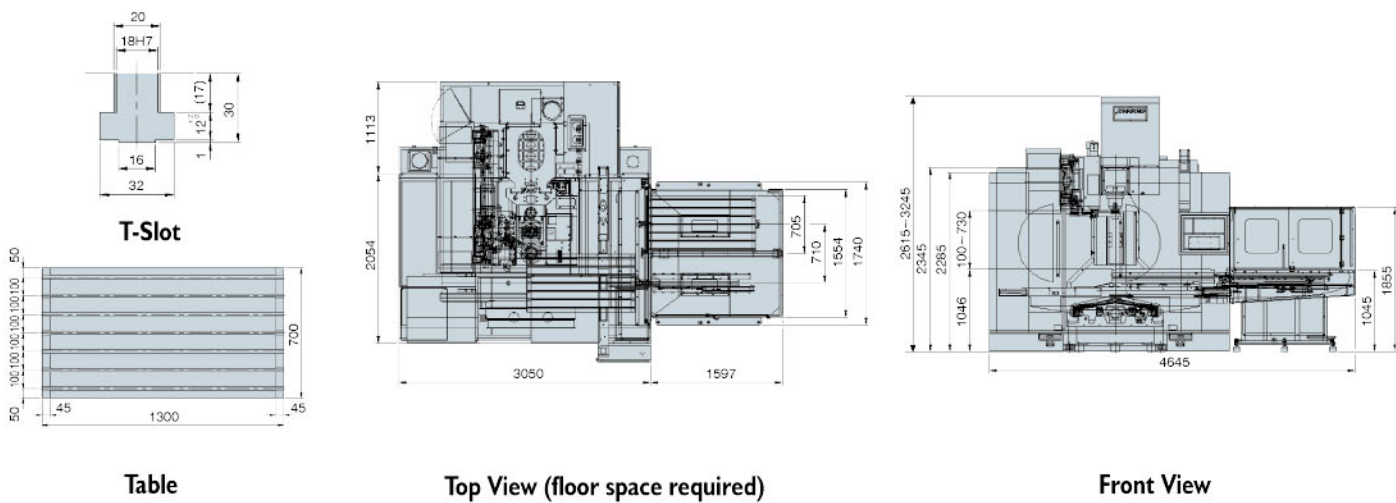
SV-33+APC Dimensions



SV-41+APC Dimensions



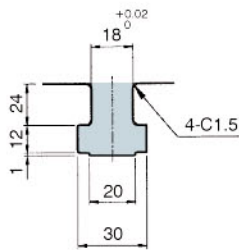
SV-48 / 48H+APC Dimensions



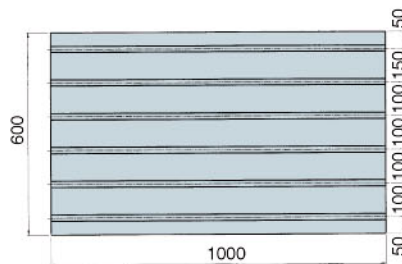
Dimensions

SV-33 / 33H

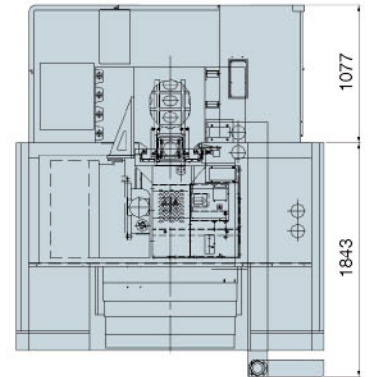
() For SV-33H



T-Slot



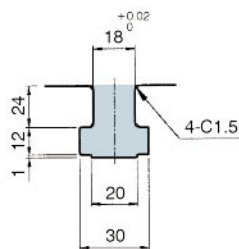
Table



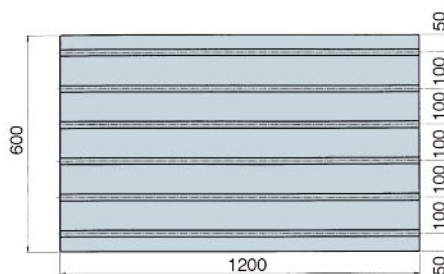
Top View (floor space required)

SV-41 / 41H

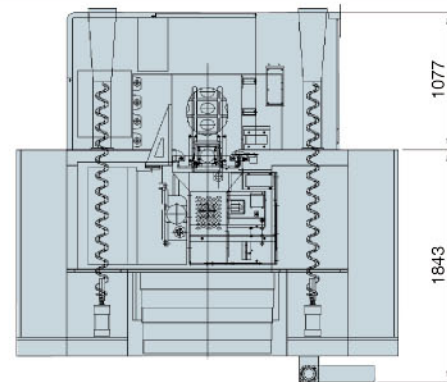
() For SV-41H



T-Slot

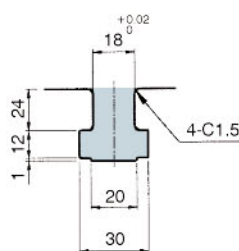


Table

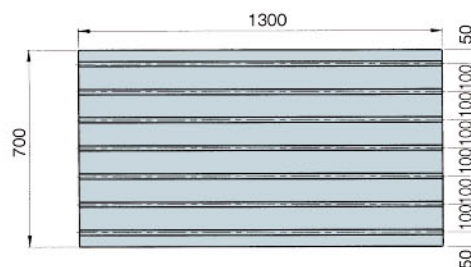


Top View (floor space required)

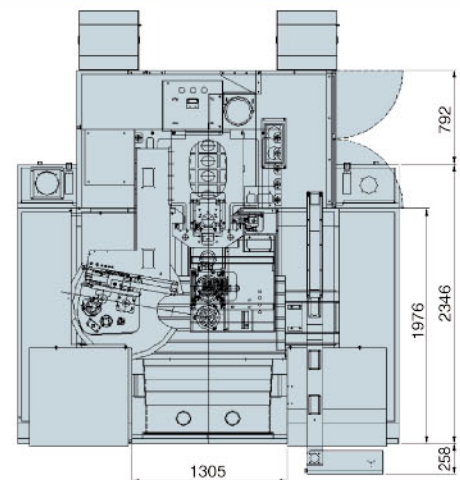
SV-48/48H



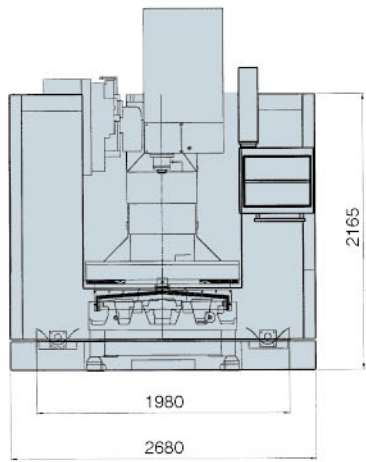
T-Slot



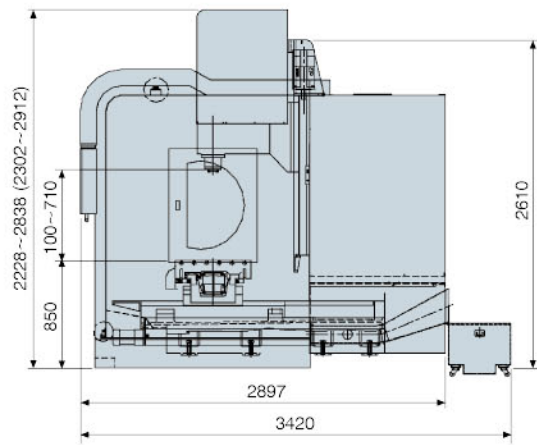
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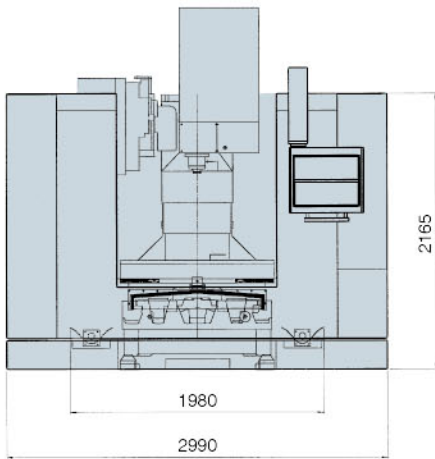
Top View (floor space required)



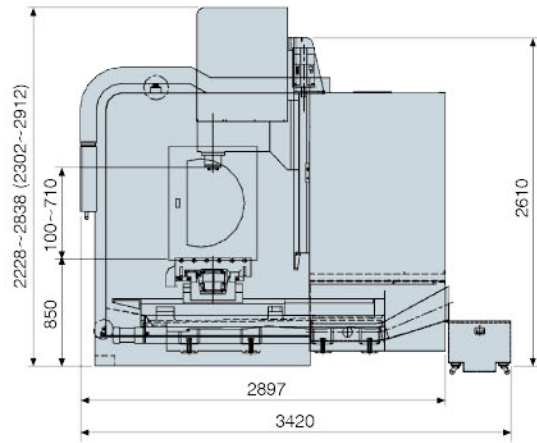
Front View



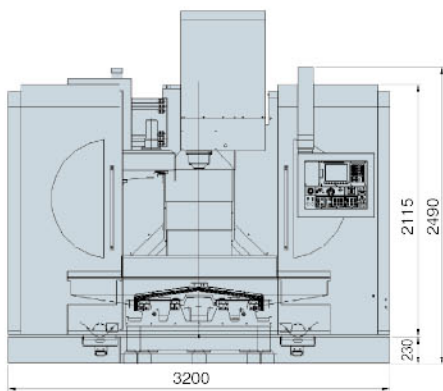
Side View



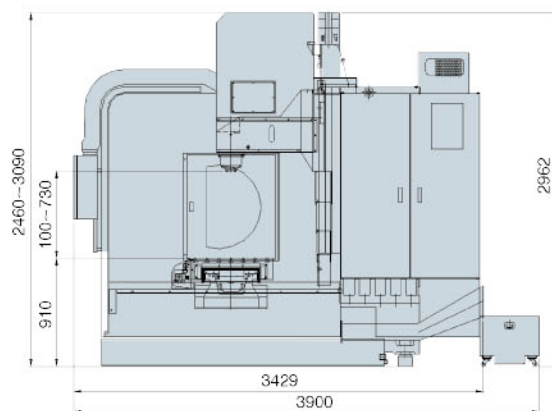
Front View



Side View



Front View



Side View

Specifications

Item	Model	SV-33	SV-33H	SV-41	SV-41H	SV-48	SV-48H
Table working surface (mm)		1000 x 600 (39.4" x 23.6")		1200 x 600 (47.2" x 23.6")		1300x700 (51.2" x 27.6")	
Longitudinal travel (X) (mm)		850 (33.5")		1050 (41.3")		1220 (48")	
Cross travel (Y) (mm)		610 (24")				710 (28")	
Vertical travel (Z) (mm)		610 (24")				630 (24.8")	
Spindle nose to table (mm)		100~710 (3.94"~28")				100 ~ 730 (3.94"~28.7")	
Spindle to column (mm)		640 (25.2")				740 (29.1")	
Spindle speed & taper (rpm)	Std.	60~10000 (BT / CAT-40)	60~6000 (BT / CAT-50)	60~10000 (BT / CAT-40)	60~6000 (BT / CAT-50)	60~10000 (BT / CAT-40)	60~6000 (BT / CAT-50)
	Opt.	①Cartridge 12000 (BT/CAT/BBT-40) ②Direct drive 15000 (BBT-40) ③Built-in 15000/18000/24000 (HSK A63)	Cartridge 8000/10000 (BT/CAT/BBT-50)	①Cartridge 12000 (BT/CAT/BBT-40) ②Direct drive 15000 (BBT-40) ③Built-in 15000/18000/24000 (HSK A63)	Cartridge 8000/10000 (BT/CAT/BBT-50)	①Cartridge 12000 (BT/CAT/BBT-40) ②Direct drive 15000 (BBT-40) ③Built-in 15000/18000/24000 (HSK A63)	Cartridge 8000/10000 (BT/CAT/BBT-50)
Spindle motor (cont. / 30 min) (kW)	Std.	9 / 11 P motor	11 / 15 Hi-Lo Gear	9 / 11 P motor	11 / 15 Hi-Lo Gear	7.5 / 11 Hi-Lo Gear	11 / 15 Hi-Lo Gear
	Opt.	① 7.5 / 11 Hi-Lo Gear (12000 rpm) ② 7.5 / 11 (15000 rpm, BBT-40) ③ 18 / 23 (15000/18000/24000 rpm)	Power larger than 11 / 15 with Hi-Lo Gear	① 7.5 / 11 Hi-Lo Gear (12000 rpm) ② 7.5 / 11 (15000 rpm, BBT-40) ③ 18 / 23 (15000/18000/24000 rpm)	Power larger than 11 / 15 with Hi-Lo Gear	① 7.5 / 11 Hi-Lo Gear (12000 rpm) ② 7.5 / 11 (15000 rpm, BBT-40) ③ 18 / 23 (15000/18000/24000 rpm)	Power larger than 11/15 with Hi-Lo Gear
X-Y-Z Rapid traverse (m/min)		30-30-20				24-24-24	
Cutting feed (m/min)		1~12000					
Tool selection		Bi-direction random type, Shortest path					
No. of tools		Armless 24	Armless 20	Armless 24	Armless 20	Armless 24	Armless 20
		Arm type 24 / 32 (Opt.)				Arm type 24 / 32 (Opt.)	Arm type 24 / 32 (Opt.)
Max. tool diameter		75 (3")	125 (5")	75 (3")	125 (5")	75 (3")	125 (5")
<Without adjacent tools> (mm)		<100 (4")>	<250 (9.8")>	<100 (4")>	<250 (9.8")>	<100 (4")>	<250 (9.8")>
Max. tool length (mm)		320 (12.6")	400 (15.7")	320 (12.6")	400 (15.7")	320 (12.6")	400 (15.7")
Max. tool weight (kg)		10 (22 lb)	15 (33 lb)	10 (22 lb)	15 (33 lb)	10 (22 lb)	15 (33 lb)
Table load capacity (kg)		1200 (2640 lb)				1500 (3300 lb)	
Machine weight (kg)		6500 (14300 lb)	7000 (15400 lb)	7000 (15400 lb)	7500 (16500 lb)	9500 (20900 lb)	10000 (22000 lb)
Machine dimensions (LxWxH) (mm)		2680 x 3420 x 2888 (105.5"x134.6" x113.7")	2680 x 3420 x 2982 (117.7"x134.6" x117.4")	2990 x 3420 x 2888 (117.7"x134.6" x113.7")	2990 x 3420 x 2982 (117.7"x134.6" x117.4")	3200 x 3900 x 3090 (126"x154"x122")	
Cutting capacity (S45C) (mm)	Milling	180 cc/min	270 cc/min	180 cc/min	270 cc/min	180 cc/min	270 cc/min
	Drilling	φ 40	φ 52	φ 40	φ 52	φ 40	φ 52
	Tapping	M30 x P3.5	M42 x P4.5	M30 x P3.5	M42 x P4.5	M30 x P3.5	M42 x P4.5

■ All data subject to change without notice.

■ All the specifications are listed with the FANUC CNC system.

Standard Accessories:

- Coolant system
- Spindle air blast
- Auto lubrication with alarm
- Tools, tool box and various manuals
- Halogen working lamp and leveling pads
- Screw type chip conveyor
- Chip flushing coolant
- Full enclosure splash guard
- FANUC Oi-MC controller

Optional Accessories:

- Contact tool setting system (Renishaw TS-27R or BULM NT-A2 / NT-A3)
- CNC Rotary table
- Automatic pallet changer (A.P.C.)
- High pressure coolant thru tool tip
- High pressure coolant thru spindle (20bar/30bar or more)
- Arm type ATC 24/32 tools (No.40, No.50, HSK)
- Chain type chip conveyor
- Cartridge spindle (12000 rpm for BT/CAT/BBT-40)
- Direct drive spindle (15000 rpm for BBT-40)
- Built-in spindle (15000/18000/24000 rpm for HSK A63)
- Cartridge spindle (8000/10000 rpm for BT/CAT/BBT-50)
- Internal cooling ballscrew
- Manual guide *i* / *0i* (*0i*MC) ; Manual guide *i* (18*i*MB/21*i*MB)
- Electronic compensation of thermal expansion
- Workpiece measuring system (OMP-60)

CNC Control Specs

O: Std. Δ: Opt. -: Nil

Item	Function	Specifications	HEIDENHAIN		FANUC			SIEMENS	
			TNC410	iTNC530	18iMB	21iMB	0iMC	810D	840D
Control axes	Standard number of control axes	axes	4	3	3	3	3	4	4
	No. of simultaneously controlled axes	axes	3	3	3	3	3	4	4
Input commands	Least detection increment	1μ	1μ	0.1μ	1μ	1μ	1μ	1μ	1μ
	Least programmable increment	1μ	1μ	0.1μ	1μ	1μ	1μ	1μ	1μ
	Inch/metric conversion	G20/G21	0	0	0	0	0	0	0
	Absolute/incremental command	G90/G91	0	0	0	0	0	0	0
	Input buffer	word/characters	1024	unlimited	6	6	1	unlimited	unlimited
	Pre-read buffer (No-of block)	block	30	256	180	80	20	100	300
	ISO/EIA automatic identification		0	0	0	0	0	0	0
Interpolation	RS232-C interface		0	0	0	0	0	0	0
	Positioning (interpolation)	G00	0	0	0	0	0	0	0
	Linear interpolation	G01	0	0	0	0	0	0	0
	Circular interpolation	G02/G03	0	0	0	0	0	0	0
	Helical interpolation		0	0	0	0	0	0	0
Program	Rigid Tapping		0	0	0	0	0	0	0
	Memory capacity		256 KB	6 GB	640M	640M	640M	1.5MB	2.5MB
	No. of programs stored		100	unlimited	200	200	200	unlimited	unlimited
	Background editing		0	0	0	0	0	0	0
Spindle functions	S code output 4-digit BCD-binary	S4BCD	0	0	0	0	0	0	0
	Spindle rate	%	0-150		50-150			50-200	50-200
Feed	Per-minute		0	0	0	0	0	0	0
	Rapid traverse rate	low25%,50%,100%	-	-	0	0	0	0	0
	Cutting feed rate	0%-150%	0	0	0-200			0	0
	Handle feed rate	x1,x10,x100	-	-	0	0	0	0	0
Miscellaneous function	M-code	M2(BCD)	0	0	0	0	0	0	0
Coordinate system	Automatic coordinate system setting		-	-	0	0	0	0	0
	Machine coordinate system		0	0	0	0	0	0	0
	Work coordinate system	G54-G59	0	0	0	0	0	0	0
	Coordinate system setting	G92	0	0	0	0	0	0	0
	Manual reference point return		0	0	0	0	0	0	0
	Automatic reference point return	G28/G29	-	-	0	0	0	0	0
	2nd reference point return	G30	-	-	0	0	0	0	0
Tool function	Reference point return verify	G27	-	-	0	0	0	0	0
	Tool command	T2 BCD	0	0	0	0	0	0	0
	Tool length offset	G43/G44/G49	-	-	0	0	0	0	0
	Cutter compensation C	G40/G41/G42	0	0	0	0	0	0	0
Operation	Number of offset sets		999	999	400	400	400	unlimited	unlimited
	Single block		0	0	0	0	0	0	0
	Block skip		0	0	0	0	0	0	0
	Dry run		0	0	0	0	0	0	0
	Machine lock		Δ	Δ	0	0	0	Δ	Δ
	Option stop	M01	0	0	0	0	0	0	0
	Miscellaneous function lock	M.S.T.lock	0	0	0	0	0	0	0
	Manual/Absolute ON/OFF		0	0	0	0	0	0	0
Programming support function	PLC switch		0	0	0	0	0	0	0
	Sub-program control	M98, M99	0	0	0	0	0	0	0
	Corner chamfering/corner rounding		0	0	Δ	Δ	0	0	0
	Canned cycle for drilling	G80-G89	0	0	0	0	0	0	0
	Automatic corner override		0	0	Δ	Δ	0	0	0
	User macro		0	0	0	0	0	0	0
	No. of variable command sets		unlimited	unlimited	500	500	500	unlimited	unlimited
	Backlash compensation		0	0	0	0	0	0	0
	Memory-type pitch error compensation		0	0	0	0	0	0	0
	Coordinate system rotation	G68/G69	0	0	Δ	Δ	0	0	0
Measurement function	Scaling	G50/G51	0	0	Δ	Δ	0	0	0
	Polar coordinate command	G15/G16	0	0	Δ	Δ	0	0	0
	Skip function		0	0	0	0	0	0	0
Safe protect	Tool length automatic measurement		0	0	Δ	Δ	Δ	0	0
	Emergency stop		0	0	0	0	0	0	0
	Travel protected		0	0	0	0	0	0	0
Other	Program protected		0	0	0	0	0	0	0
	CRT		10.4" LCD	15" LCD	10.4"LCD	10.4"LCD	7.2"MON LCD	10.4"LCD	10.4"LCD
	MDI	Full key	0	0	0	0	small type	0	0
	Languages	English/Japaness	10	10	7	7	7	7	7
	Parts count		0	0	0	0	0	-	-
	Run hour display and parts count		0	0	0	0	0	-	-
	Graphic display		0	0	0	0	0	0	0
	4th axis interface		0	Δ	0	0	0	0	0
	Menu programming		0	0	0	0	0	0	0
	Conversational programming with graphic function	Manual guide	0	0	Δ	Δ	Δ	Δ	Δ
	Mirror function		0	0	0	0	0	0	0
	Chinese. French. German. Italian. Spanish		0	0	0	0	0	0	0
	High-precision contour control	64 bit RISC	-	Δ	Δ	-	-	Δ	Δ
	Data server (HD)		-	0	Δ	Δ	Δ	Δ	Δ
ETHERNET		-	0	0	0	Δ	Δ	Δ	

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