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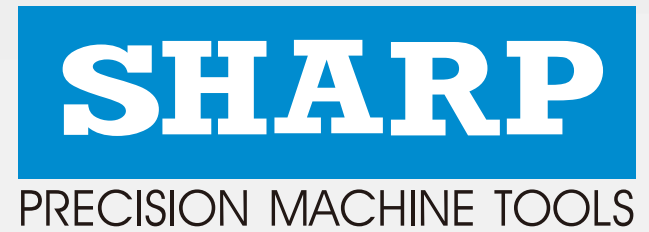
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2018.09.5000



**SV-2517**  
Vertical Machining Center  
Box Ways Construction

#### Box Ways on Three Axes

- The saddle, table and spindle head travels on hardened and ground box ways. These ways are ground and hand scraped to very high accuracy level so that they match precisely.
- The matching surfaces are coated with TURCITE-B material that are wear resistant and at the same time, retains oil.

#### Benefits of Box Ways

- Featuring higher dynamic stiffness, the box ways have vastly superior vibration damping capacity and can be used on severe machining applications.
- They can increase the life of carbide and ceramic tooling by dampening the vibration that can break tooling.
- During a crash, they are less susceptible to damage due to large contact surface.

#### Trap Z

- Trap Z at the back of spindle head casting that wraps around the vertical column box ways ensures the head travel maintains its accuracy alone the Z-axis travel.

#### No Table Overhang

- Table overhang is avoided with the extra-wide saddle that supports the worktable through its travel.

#### Double Anchored Ball Screw

- The pre-tensioned, double anchored ball screw at both ends with high precision angular contact bearings eliminates play and chatter that can lead to inaccuracy.

#### Meehanite Cast Iron

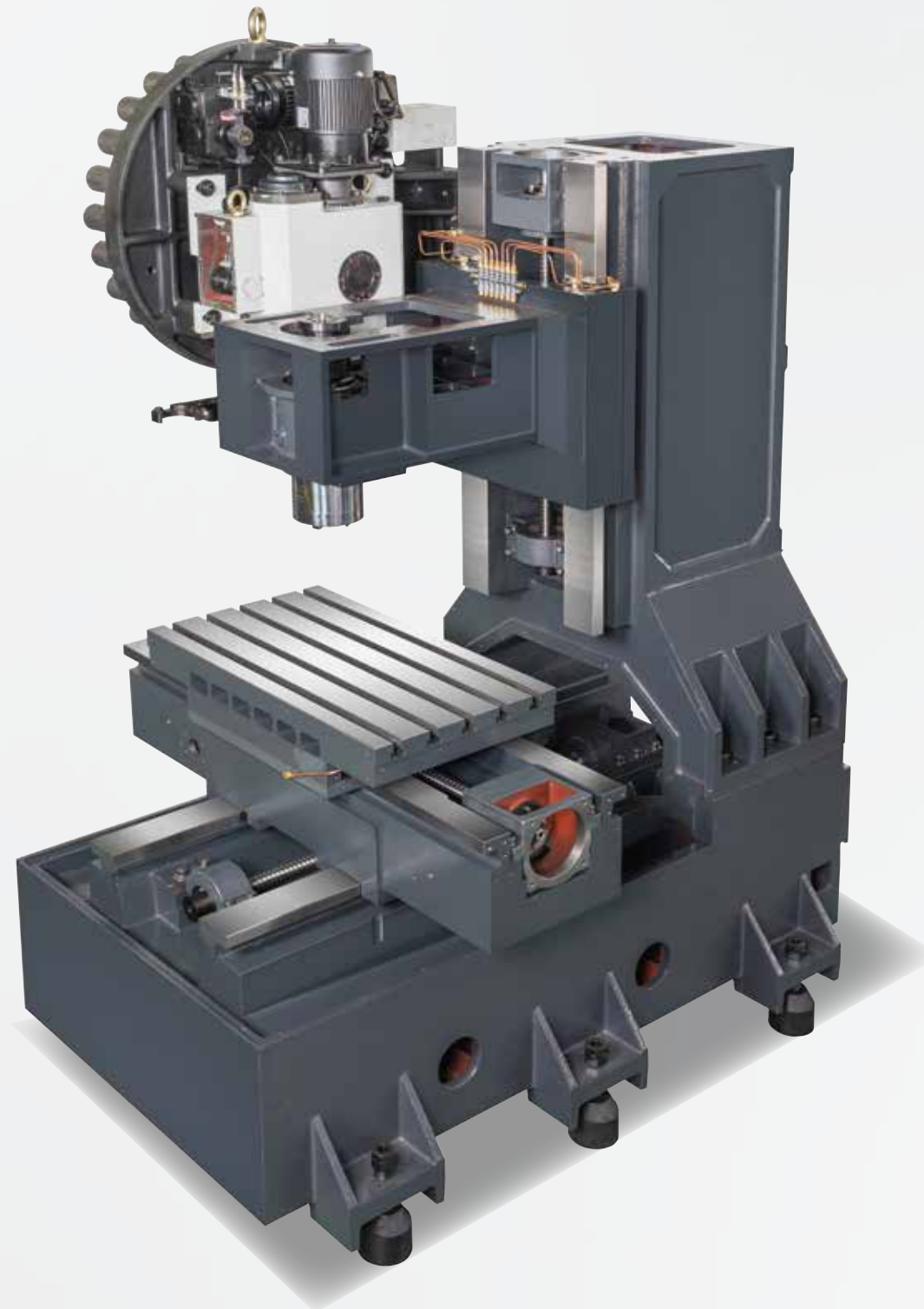
- SHARP machine castings are produced in Meehanite licensed foundry to specific requirements for consistent physical and mechanical properties and dependable performance in machining.

#### Stress Relieved For Deformation-Free Performance

- Finished castings are further aged and annealed. Annealing will relieve internal stress of casting. In addition, annealing also has the advantage of producing great vibration dampening, superior wear-resistant characters, low rate of thermal expansion, high machinability and high lubrication retention rate.

#### Internal Ribbing

- All major structural parts of SHARP machine are rib reinforced to increase stiffness and strength of the structure.



## SV-2517S-F 、SV-2517SE-F 、SV-2517SZ-F

- Box ways on 3 axes
- 16 Tool Carousel-type ATC (S-F model)
- 24 Tool Arm-type ATC (SE-F and SZ-F models)
- Rapid traverse rates - 787 ipm (20 m/min)
- BIG PLUS dual contact spindle system
- 8,000 rpm belt-drive spindle
- CAT 40 spindle taper



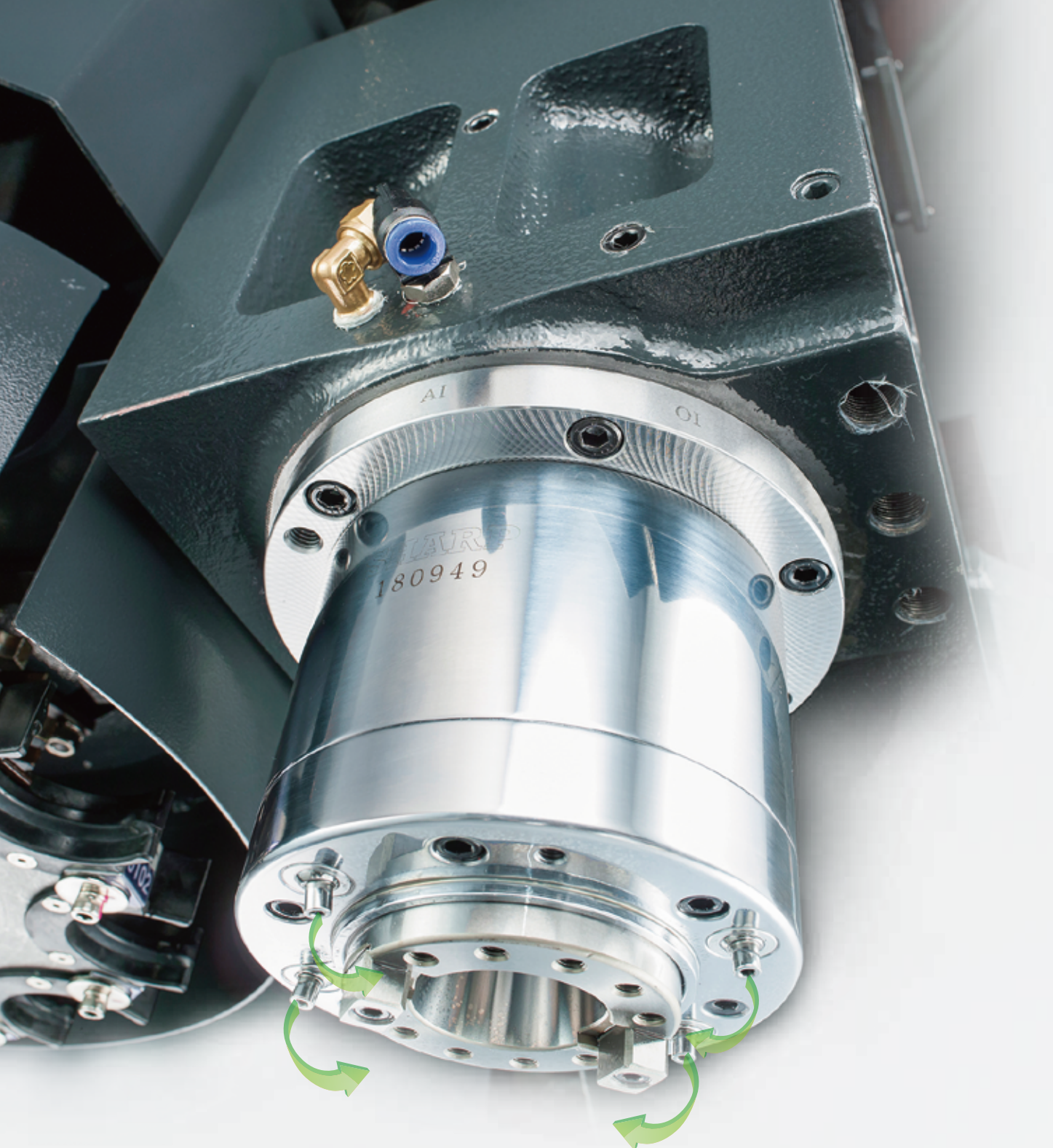
#### Massive Base

- The base is a box-type construction, which provides solid support for the table and is capable of resisting heavy loads without deformation.

#### Robust Column

- The column bottom is reinforced so that it can firmly support the weight of the automatic tool changer and the spindle head as well as disperse the cutting force from the spindle head.
- With the oversized column structure, the machine will present outstanding stability when performing heavy cutting.





#### Two Adjustable Coolant Nozzles

- The coolant nozzles direct flood coolant at desired locations.

#### One Adjustable Air Nozzle

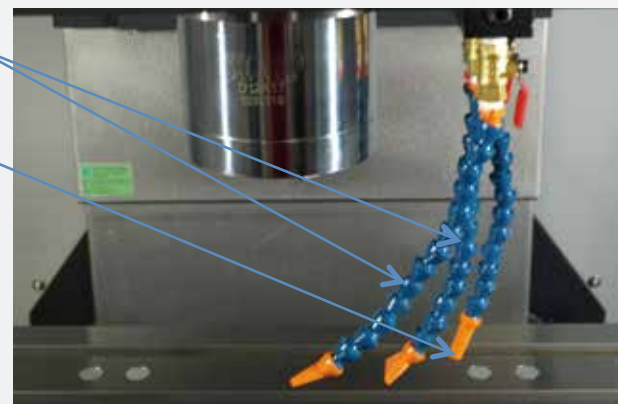
- It directs air at desired location for dry cutting or cleaning.

#### Air Purge System

- The air purge system inside the spindle blows out embedded chips at each tool change motion.

#### Air Curtain

- It blows out air from spindle to protect spindle bearings from up-splashing coolants.



#### High Precision Spindle

- The rigid spindle is mounted on two matched pairs of high precision (ABEC 7) angular contact bearings and one ball bearing at the rear. These angular contact bearings are able to withstand both axial and radial loads.
- Belt driven spindle 8,000 rpm.

#### BIG PLUS Spindle System

- The BIG PLUS spindle system provides dual contact between the spindle face and the flange face of BIG PLUS tooling.
- With the use of BIG PLUS spindle system, it will dramatically increase tool rigidity, reduce run-out to a minimum while increasing machining efficiency and productivity.



#### 16 Tools Carousel, Type Magazine (S-F model)

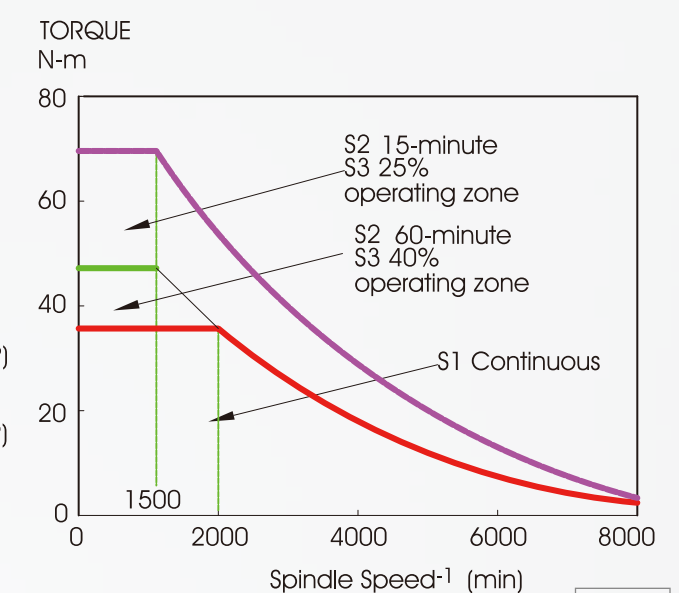
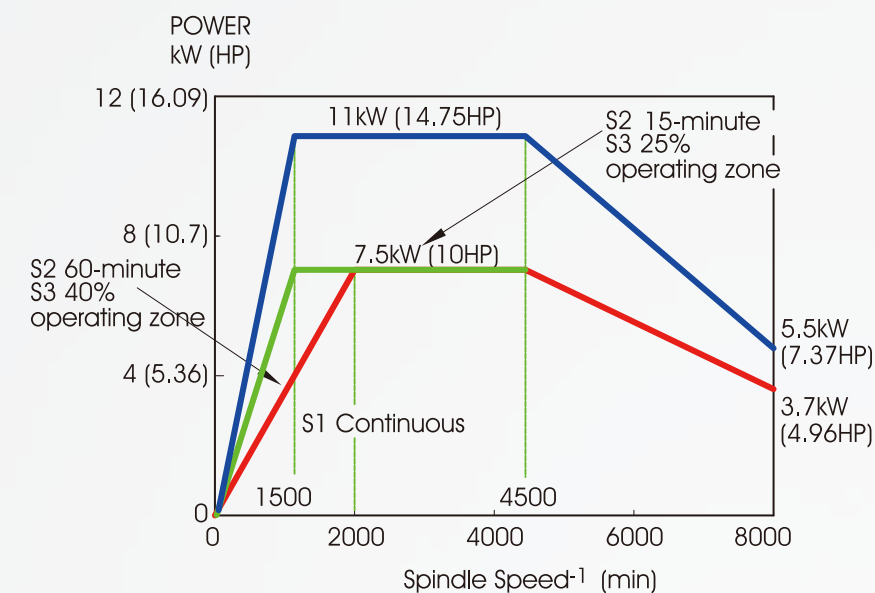
- An armless type tool magazine.
- Tool selection by sequence.



#### 24 Tools Arm Type Magazine (SE-F and SZ-F models)

- An arm type side-mount tool magazine.
- Bi-directional random tool selection provides quick tool change.
- Tool change time: 2 sec. (tool to tool), 6 sec. (chip to chip)

#### SPINDLE MOTOR OUTPUT - $\beta$ 8/8000







#### 4 Coolant Openings

- In addition to the 2 adjustable coolant nozzles, the underside of the spindle has 4 coolant openings that can also deliver coolant on to the workpiece. This is necessary in the event the nozzles interfere with the workpiece movements.



#### Chip Wash Nozzles

- The chip wash nozzles are installed for disposing chips efficiently. This model has 3 nozzles are mounted at two sides of the base instead of at the back.

#### State-Of-The-Art Hand Scraping

- Geometric features of machine tools, such as straightness and parallelism of travel, squareness and flatness, are fundamental to produce repeatable volumetric positioning and accuracy in the machining envelope. This is only achieved by hand scraping and fitting of the machine tool components. As such, SHARP has paid special efforts in scraping technique.

#### Hand Scraping Meets High Standards

- SHARP's well-trained scraping technicians perform scraping according to the rigorous standards, so that the scraping surfaces can last for longer life than competitive models.



#### FANUC 0i-MF CNC Control

- The FANUC 0i-MF CNC Control and servo drive motors are used for their world-renowned reliability and legendary service.
- Two Year Parts and Labor Warranty for all FANUC components is standard on SHARP machines.
- The portable electronic handwheel (MPG) allows operator to get close to machine parts or tools during feed adjustment.



#### Comprehensive Interface

- Embedded Ethernet, RS232 port, USB port and Flash drive port are all standard features on the CNC control. They greatly increase the ease and speed in data-transfer.





#### Air And Coolant Guns

- The air and coolant guns are conveniently located at the front of the machine for easy access by the operator to blow off or flush off chips.



#### Pneumatic Accumulator

- The pneumatic accumulator for stability of incoming air pressure and volume is equipped with a safety sensor, which triggers an alarm if pressure is not maintained.
- This feature ensures safe and reliable operation of the pneumatic system during tool change.

#### Ball Bar Testing

- Each SHARP VMC is also inspected using an advanced ball bar test device. This allows the user to inspect and calibrate circularity and geometric accuracy. Such inspection may ensure cutting accuracy and circle smoothness.



#### Laser Inspection

- An advanced laser interferometer is used for inspection and calibration of screw pitch error, backlash, positioning accuracy and repeatability.

#### High Accurate Positioning and Repeatability

- Positioning accuracy (full travel): 0.0002" (0.005 mm)
- Repeatability accuracy (full travel): 0.00016" (0.004 mm)

## Machine Features

#### Standard features

- Box way construction
- Removable side doors
- Full metal sliding way covers
- FANUC Oi-MF control , drives
- Big Plus, CAT-40 spindle
- 16 tool ATC (S-F model) / 24 tool ATC (SE-F & SZ-F models)
- Rigid tapping
- Flood coolant nozzles (2)
- Air blow nozzle (1) for cutting dry
- Coolant openings under spindle
- Air curtain
- Air blast at each tool change
- Pull out style chip cabinet
- Heat exchange system for electrics
- Coolant gun
- Air gun
- Pneumatic accumulator
- Fluorescent work light
- Interlock doors

#### Optional features

- Chip conveyor (scraper) w/ bucket
- Chip conveyor (hinge) w/ bucket
- Chip auger
- Oil skimmer
- Indexer - 4th or 5th axis
- Rotary table - 4th axis or 4+1 axis
- 4th Axis Preparation
- 4th Axis installed with rotary table
- Coolant through spindle (CTS) prepped
- CTS systems up to 1,000 psi
- FANUC memory and control options

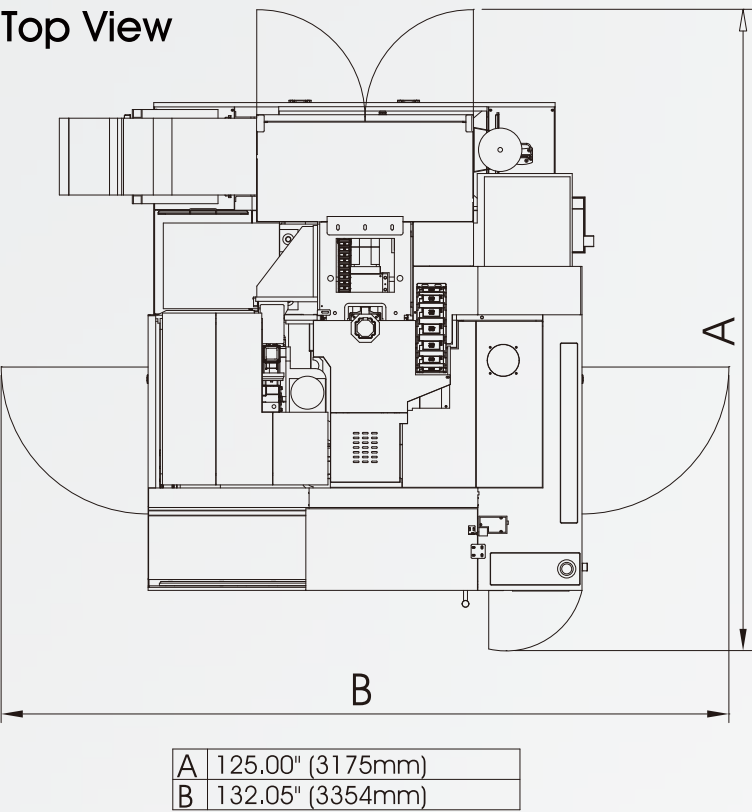
Specifications

Model		SV-2517S-F	SV-2517SE-F	SV-2517SZ-F
CNC Control		Fanuc Oi-MF	Fanuc Oi-MF	Fanuc Oi-MF
Guideway Type		Box way	Box way	Box way
Work Capacity	Unit			
X axis travel	in(mm)	25.2 (640)	25.2 (640)	25.2 (640)
Y axis travel	in(mm)	16.9 (430)	16.9 (430)	16.9 (430)
Z axis travel	in(mm)	18.11 (460)	18.11 (460)	18.11 (460)
Spindle nose to table	in(mm)	3.1-21.2(80-540)	3.1-21.2 (80-540)	3.9-27.6 (100-700)
Spindle center to column	in(mm)	19.3(490)	19.3 (490)	19.3 (490)
Worktable				
Table area	in(mm)	27.5×16.5 (700×420)	27.5×16.5 (700×420)	27.5×16.5 (700×420)
Max workpiece weight	lb(kg)	770 (350)	770 (350)	770 (350)
T-slot (no. x width x pitch)		5×0.7×3.14 (5×18×80)	5×0.7×3.14 (5×18×80)	5×0.7×3.14 (5×18×80)
Spindle				
Spindle taper		CAT 40 Big Plus	CAT 40 Big Plus	CAT 40 Big Plus
Spindle speed	rpm	8,000	8,000	8,000
Spindle motor-cont/30 min	hp(kw)	10/15 (7.5/11)	10/15 (7.5/11)	10/15 (7.5/11)
Transmission		belt drive	belt drive	belt drive
Spindle oil chiller		no	no	no
Automatic Tool Changer				
Type		Armless type	Arm type	Arm type
Tool capacity		16	24	24
Max. tool diameter with adjacent tool	in(mm)	3.66 (93)	2,9 (75)	2,9 (75)
Max. tool diameter without adjacent tool	in(mm)	7.2 (183)	5.9 (150)	5.9 (150)
Max tool length	in(mm)	11.8 (300)	11.8 (300)	11.8 (300)
Max tool weight	lbs(kg)	15.4 (7)	15.4 (7)	15.4 (7)
Pull stud / retention knob		CAT-40 45A	CAT-40 45A	CAT-40 45A
Tool change time (t-t)	sec	7	2	2
Tool change time (c-c)	sec	8	6	6
Method of tool selection		set tool number	random	random
Air blast at tool change		yes	yes	yes
Air blow nozzle for cutting dry		yes	yes	yes
Air curtain to protect bearings		yes	yes	yes
Motion				
Rapid traverse	ipm(mm/min)	X/Y: 787 (20,000) / Z 590 (15,000)	X/Y: 787 (20,000) / Z 590 (15,000)	X/Y: 787 (20,000) / Z 590 (15,000)
Cutting feed rate	ipm(mm/min)	0.04-393 (1-10,000)	0.04-393 (1-10,000)	0.04-393 (1-10,000)
Feed motor X / Y / Z	hp(kw)	1.6/1.6/2.4 (1.2/1.2/1.6)	1.6/1.6/2.4 (1.2/1.2/1.6)	1.6/1.6/2.4 (1.2/1.2/1.6)
Accuracy				
Positioning accuracy (full travel)	in(mm)	±0.00020" (0.005)	±0.00020" (0.005)	±0.00020" (0.005)
Repeatability accuracy (full travel)	in(mm)	±0.00016" (0.004)	±0.00016" (0.004)	±0.00016" (0.004)
Coolant system				
Coolant tank capacity	gal(L)	42 gal (160 L)	42 gal (160 L)	42gal (160 L)
No. of adjustable coolant nozzles		2	2	2
No. of air blow nozzle		1	1	1
Spindle bottom coolant flow		yes	yes	yes
General				
Floor space (without chip conveyor)				
Width	in(mm)	78.74" (2000 mm)	78.74" (2000 mm)	78.74" (2000 mm)
Depth	in(mm)	100.67" (2557 mm)	100.67" (2557 mm)	100.67" (2557 mm)
Height	in(mm)	99.4" (2525 mm)	99.4" (2525 mm)	115.59" (2936 mm)
Weight	lbs(kg)	8,272 lbs (3750 kgs)	8,272 lbs (3750 kgs)	8,492 lbs (3860 kgs)
Door opening	in(mm)	28.4" (720 mm)	28.4" (720 mm)	28.4" (720 mm)
Power Requirements				
Electrical	V/Hz/Ph	220V/60/3Ø, 20 KVA	220V/60 /3Ø, 20 KVA	220V/60/3Ø, 20 KVA
Air	psi(cfm)	88 (6)	88 (6)	88 (6)

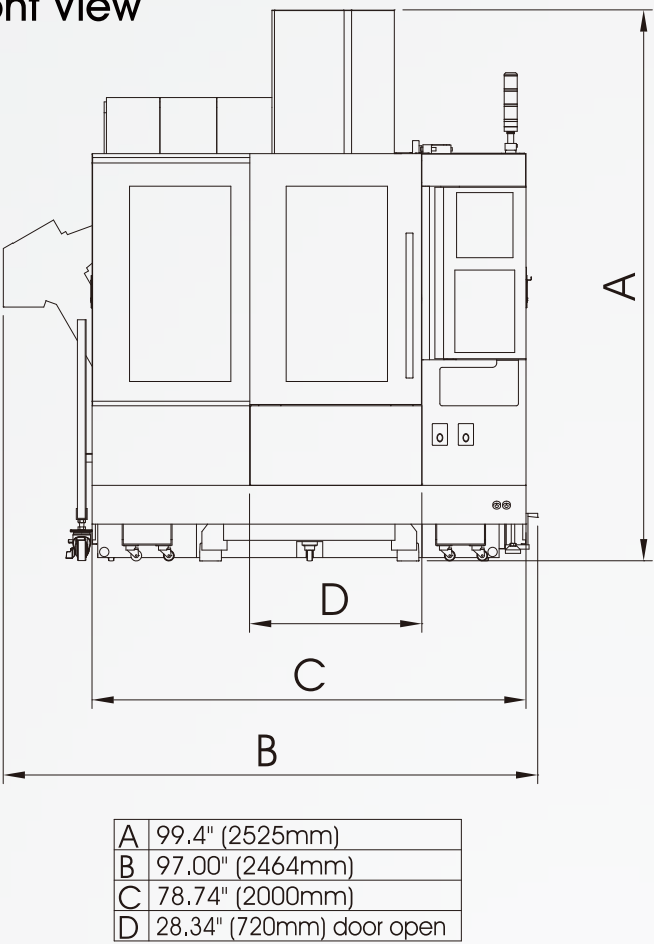
\* Power Foundation and environmental controls are required.

SV-2517S-F 、SV-2517SE-F 、SV-2517SZ-F

Top View



Front View



Side View

