

SMART
MACHINE TOOL

SV2

**Installation
Packet**

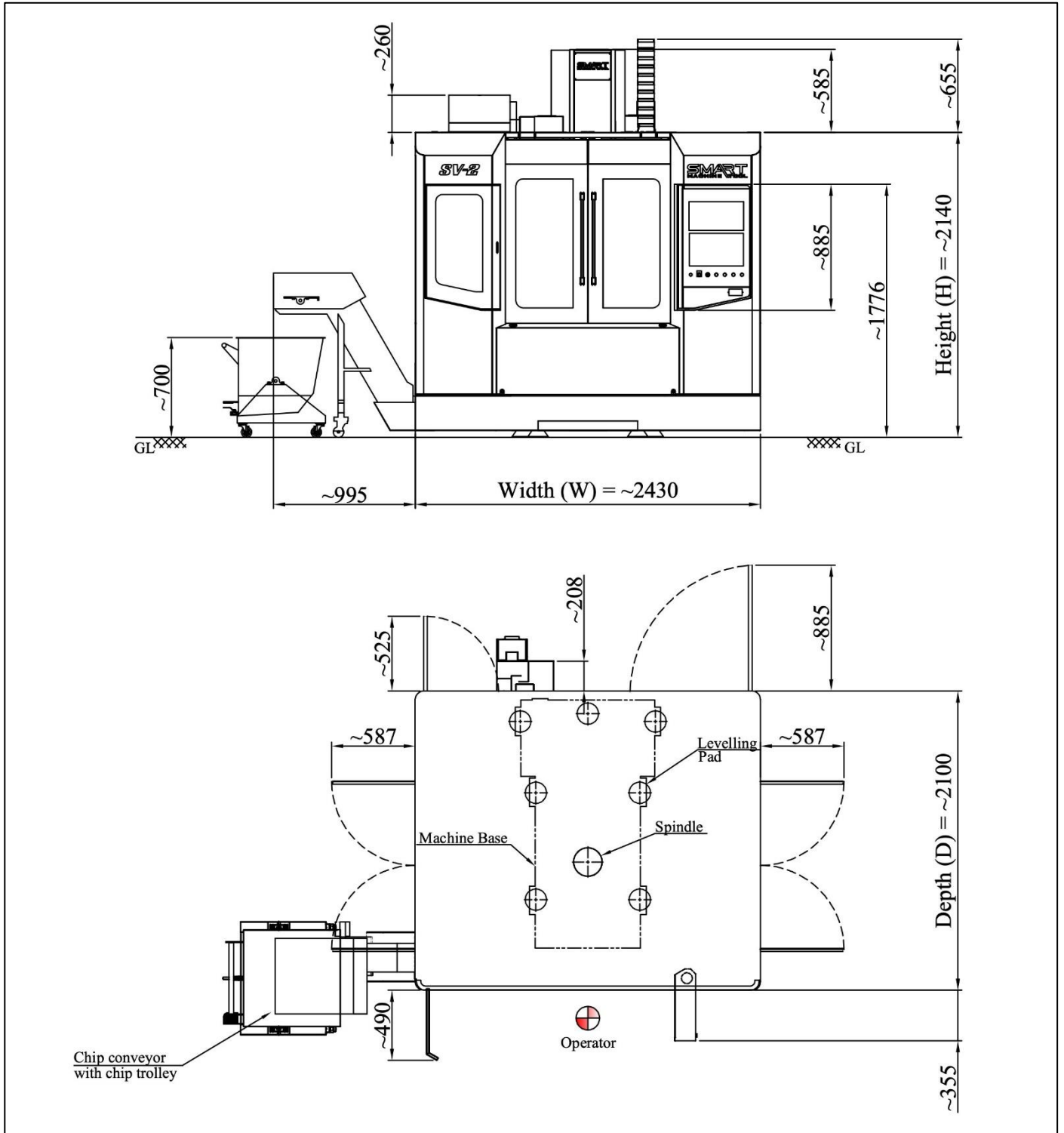
Important !

- The input voltage to the machine should be 3-phase, 220V, 60 Hz.
- A power transformer will be required if the machine voltage is other than 220 V AC.
- A voltage stabiliser is necessary if the machine is used in situations where the fluctuations in the input voltage are more than 5% of the specified voltage.
- Cooling of the control cabinet by means of an AC or HEAT EXCHANGER unit (as per surrounding temperature) is recommended for ensuring better performance of the system.

NOTE: ALL MACHINES ARE DELIVERED WITH FLUIDS IN THEM. PLEASE CHECK TO VERIFY AT INSTALLATION.

EXCEPTION: MACHINES THAT ARE DELIVERED WITHOUT THE CHILLER UNIT INSTALLED WILL REQUIRE CHILLER FLUID.

SV-2 Floor Space Diagram with chip conveyor For reference only



Foundation (Refer to Sheet)

When the ground is level and sufficiently strong, special foundation work is not necessary for installing the machine. Special foundation is necessary in the following cases:

- (a) The ground is weak and may cause sinking or inclination of the ground.
- (b) Higher accuracy and performance is required.
- (c) High-accuracy machining is to be retained for a long time.
- (d) It is recommended to check every year or every 6-8 months after installation that the concrete foundation is stable.
- (e) After installation of the machine, the flatness and straightness of the work table must be checked and corrected using spirit level. Permissible values are 0.020 mm.
- (f) Move work table and saddle to middle stroke position. Keep the spirit level at the centre of the work table and adjust the screws if required. Correct the Squareness between spindle and work table.

Once levelled properly, the machine can maintain the accuracy and assure normal working.

Air source

| | |
|--|--|
| Air Quality | ISO 8573-1 Class 4 Clean, Dry, NO OIL, NO WATER |
| Minimum pressure From Air Dryer | 6 bar (87 psi) |
| Max Air Consumption | 5.5 CFM / 150 LPM |

Removal of axis lock plates



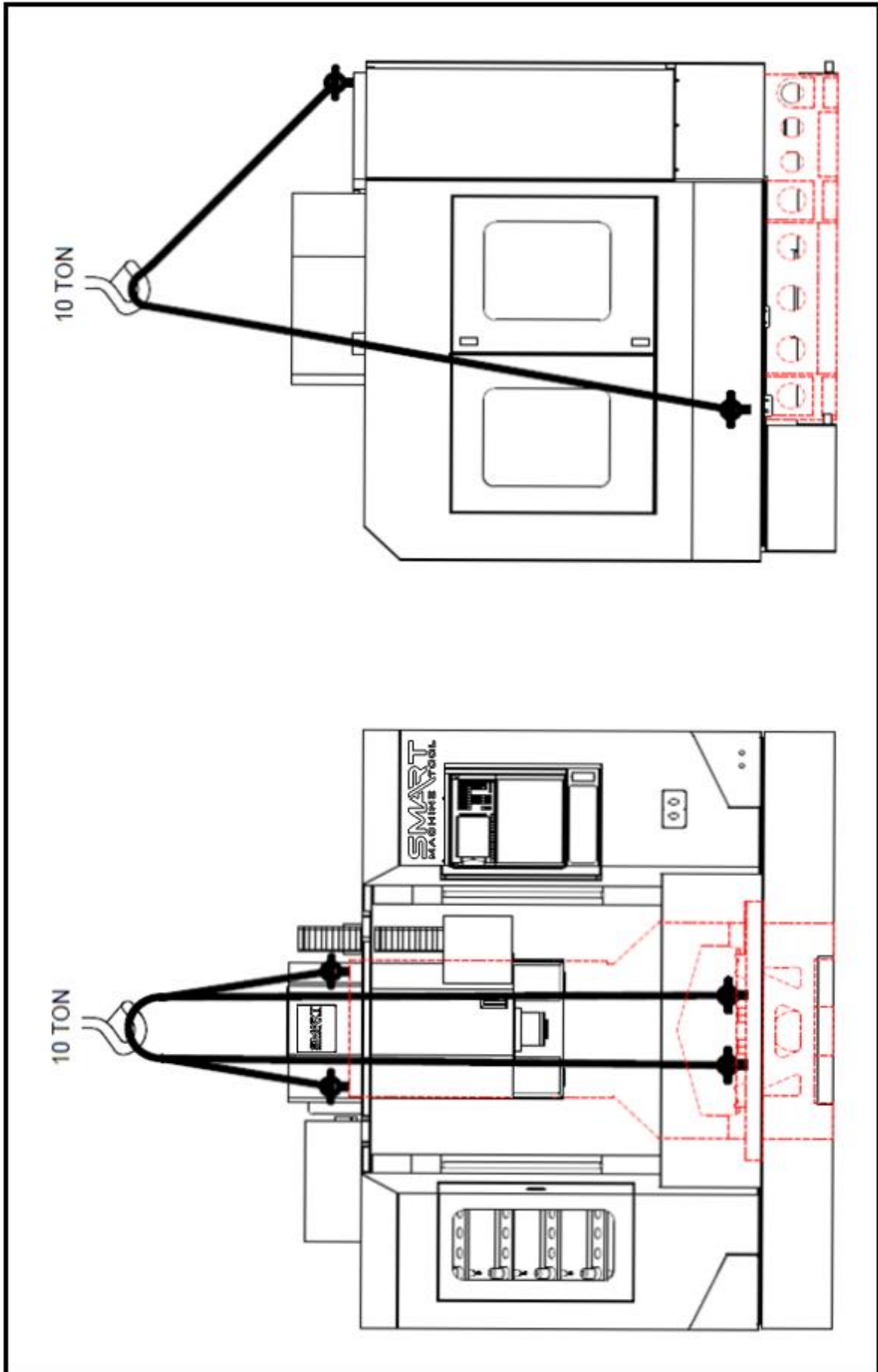
CAUTION

- Remove the axis lock plates from the slides before turning the power On.
- Upon delivery, the axis lock plates are used for transportation. Ensure that they are removed before operating the machine. These lock plates can be retained and reused whenever the machine is moved again.

Lifting diagram

While lifting the machine, refer details as given below:-

| Model | Unit | SV-1 | SV-2 | SV-3 | SV-5 |
|------------|------|------|------|------|------|
| Net Weight | Kg | 3400 | 4800 | 6100 | 8500 |



Electrical wiring and power connection

Use the following primary power source and cables:

(a) Supply voltage:

220 V, 60Hz, 3-phase. Refer 2.9 for detailed information.

If a different power supply voltage is in service in a country where the machine is being installed, then a suitable transformer must be provided.

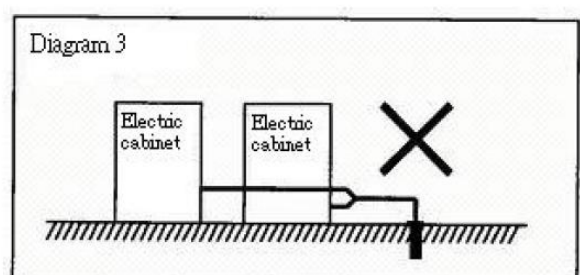
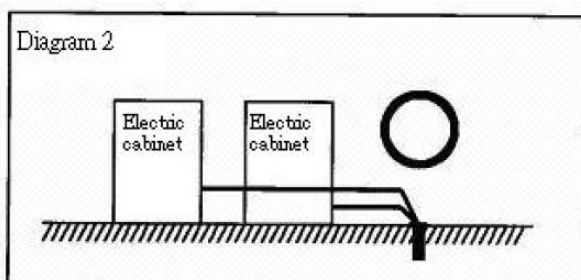
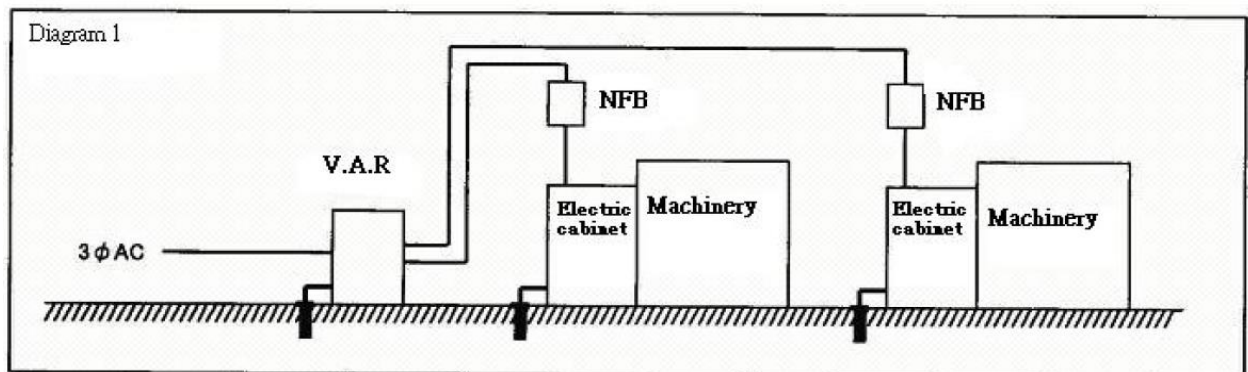
(b) Cable (from the primary power source to the electric cabinet of the machine):

Cable size: Refer 2.9 for detailed information.

The voltage between neutral and earth must be less than 3V.

(c) Grounding:

- Grounding must be done only by officially qualified electricians.
- Use only one grounding conductor for one cable. As a rule, always connect ground cables as shown in the figure below, as otherwise, serious accidents might be caused.
- Never share grounding with any equipment that may generate noise.
- Always ground separately.
- Type C / D Chemical Earth



Installation instructions for the machine




WARNING

- Only qualified personnel are authorised to carry out power connections.
- In order to prevent anyone from turning Power on by mistake during power connection, place a tag or placard reading “Never turn Power On” at a prominent place.

1. Connect the mains cable to R, Y, B and PE.

| | |
|---|--|
| Input Voltage | 220V, 3 Phase AC |
| Maximum voltage fluctuation | ± 5% |
| Maximum line to line fluctuation | 5% |
| Frequency | 60Hz |
| Type of Earthing | Type C / D Chemical Earthing |
| Voltage Stabilizer | Required. Refer the below table for capacity |
| Isolation Switch for Stabilizer | 100 A as per capacity |

| Machine Model | Power Capacity | Cable Size | Rating of Isolation Switch |
|---------------|----------------|--------------------|----------------------------|
| SV-1 | 20 KVA | 10 mm ² | 50 A |
| SV-2 | 25 KVA | 16 mm ² | 100 A |
| SV-3 | 25 KVA | 16 mm ² | 100 A |
| SV-5 | 35 KVA | 16 mm ² | 100 A |

2. Connect ground terminal to PE.
3. Coolant Motor, Flush Coolant Motor, Coolant through tool motor arrange as per drawing of coolant tank & make electrical connection for the same.
4. Perform checking as follows:
 - Check for proper earth connections and 3-phase input supply connection.
 - Check for the 3-phase input supply.
 - Put on the Main Switch.
 - Press NC ON push button.  The display appears.
 - Release all Emergency Stops (on the machine operator panel and chip conveyor panel if available).
 - Now the machine is ready for operation.

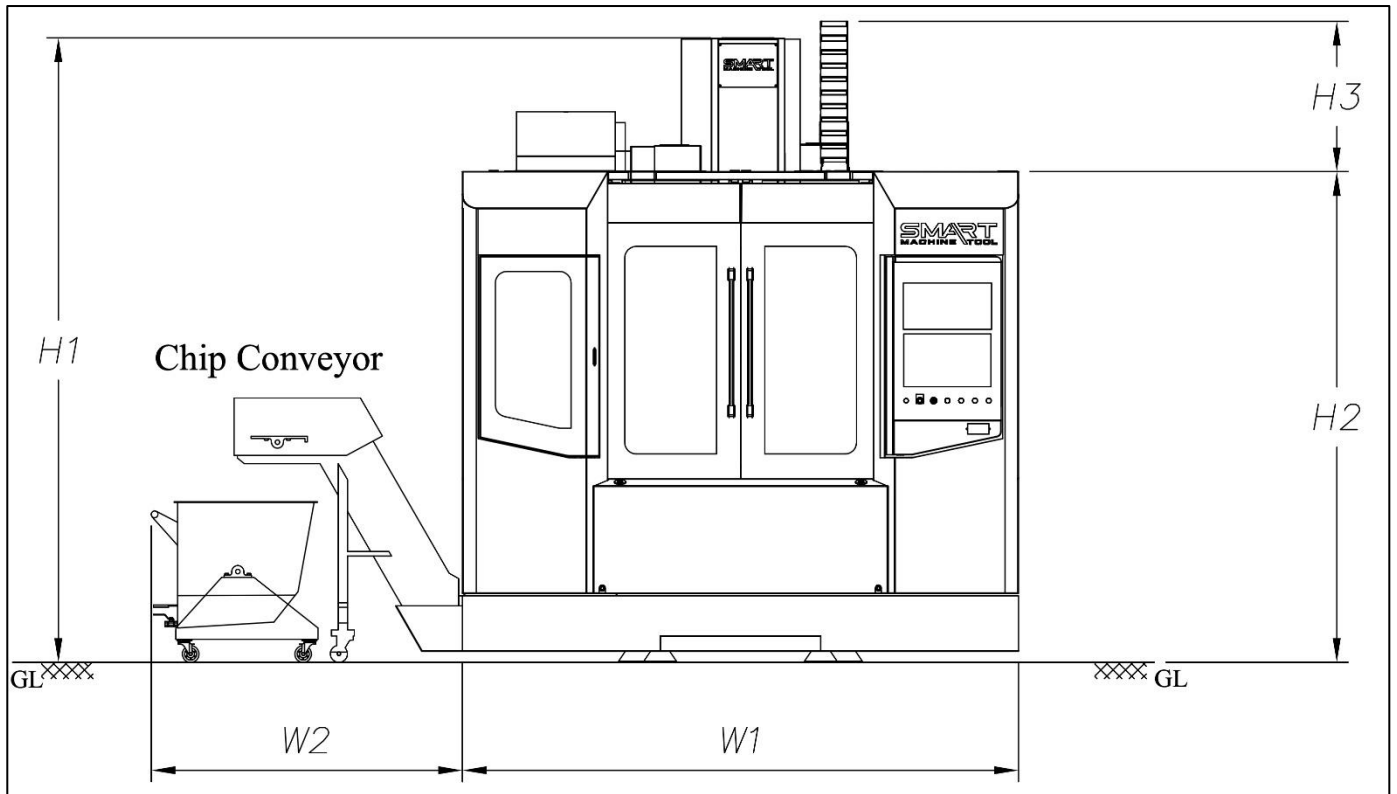
Installation, Operation & Maintenance Manual

Machine specifications

| Machine Specifications - All Machines – SV Series | | | | | |
|---|-----------|-----------------|-----------------|-----------------|-----------------|
| Specifications | Unit | SV-1 | SV-2 | SV-3 | SV-5 |
| Traverse | | | | | |
| X-Axis Travel | mm | 600 | 800 | 1100 | 1300 |
| Y-Axis Travel | mm | 450 | 500 | 600 | 700 |
| Z-Axis Travel | mm | 500 | 500 | 600 | 700 |
| Spindle nose to table surface | mm | 100-600 | 100-600 | 150-750 | 150-850 |
| Spindle Centre to Z-Axis Telescopic Cover | mm | 475 | 520 | 650 | 715 |
| Table | | | | | |
| Table Dimension | mm x mm | 750 X 450 | 1000 X 500 | 1250 X 600 | 1450 X 650 |
| Table Loading Capacity | Kg | 300 | 500 | 1000 | 1500 |
| No./Width/CD of T-Slots | No./mm/mm | 5/18/80 | 5/18/100 | 5/18/100 | 5/18/125 |
| Spindle | | | | | |
| Spindle Speed | rpm | 10000 | 10000 | 10000 | 10000 |
| Spindle speed (optional) | rpm | 12000 | 12000 | 12000 | 12000 |
| Spindle Power (Fanuc) | kW | 7.5/11/15 | 11/15/18.5 | 11/15/18.5 | 11/15/18.5 |
| Taper | - | Big Plus CAT 40 | Big Plus CAT 40 | Big Plus CAT 40 | Big Plus CAT 40 |
| Axis Drive | | | | | |
| Rapid Traverse X/Y/Z Axes | m/min. | 48/48/48 | 48/48/48 | 36/36/36 | 30/30/30 |
| Cutting Feed rates | m/min. | 10 | 10 | 10 | 10 |
| Auto Tool Changer (ATC) BT40 (BT50) | | | | | |
| ATC Type | - | Arm Type | Arm Type | Arm Type | Arm Type |
| No. of Tools | No's | 24 | 30 | 30 | 30 |
| Max. Tool Length | mm | 250 | 250 | 250 | 250 |
| Max. Tool Weight | Kg | 7 | 7 | 7 | 7 |
| Tool Diameter (with adjacent tool) | mm | 75 | 75 | 75 | 75 |
| Tool Diameter (without adjacent tool) | mm | 150 | 150 | 150 | 150 |
| Tool Changing Time (Tool to Tool) | Sec. | 2.5 | 2.5 | 2.5 | 2.5 |
| Accuracy | | | | | |
| Positioning Accuracy | mm | 0.01 | 0.01 | 0.01 | 0.01 |
| Repeatability | mm | ± 0.003 | ± 0.003 | ± 0.003 | ± 0.003 |

Installation, Operation & Maintenance Manual

| Specifications | Unit | SV-1 | SV-2 | SV-3 | SV-5 |
|---|--------------|--------------------|--------------------|--------------------|--------------------|
| Installation Data | | | | | |
| Floor Space (including basic coolant system) | W x D | 2060 x 1990 | 2430 x 2100 | 2900 x 2350 | 3500 x 2580 |
| Floor Space (with Lift Up Conveyor) | W x D | 2060 x 2920 | 3420 x 2100 | 3890 x 2350 | 4990 x 2580 |
| Net Weight (with ATC) | Kg | 3400 | 4800 | 6100 | 8500 |
| Power Capacity (Fanuc) | kVA | 20 | 25 | 25 | 35 |
| Air Supply (Pressure Flow rate) | - | 6 Bar 200LPM | 6 Bar 200LPM | 6 Bar 200LPM | 6 Bar 200LPM |
| Power Supply | - | 220V, 60Hz, 3Phase | 220V, 60Hz, 3Phase | 220V, 60Hz, 3Phase | 220V, 60Hz, 3Phase |



Machine Dimension - SV Series

| | SV-1 | SV-2 | SV-3 | SV-5 |
|--|------|------|------|------|
| W1 | 1940 | 2430 | 2890 | 3500 |
| W2 | - | 1410 | 1410 | 1410 |
| H1 | 2625 | 2725 | 2950 | 2700 |
| H2 | 1955 | 2140 | 2255 | 2400 |
| H3 | 820 | 655 | 880 | 800 |
| DEPTH | 2990 | 2450 | 2700 | 2800 |
| All Dimensions in mm | | | | |
| Note : Dimension don't include accessories & space for maintenance | | | | |

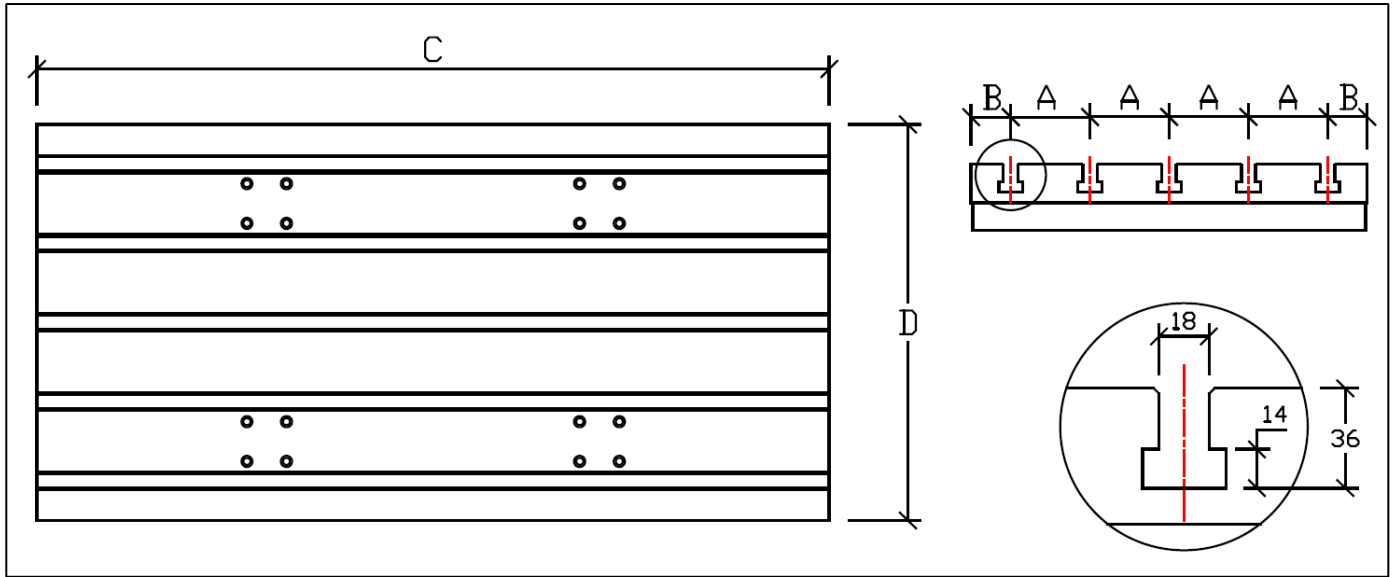


Table Dimension - SV Series

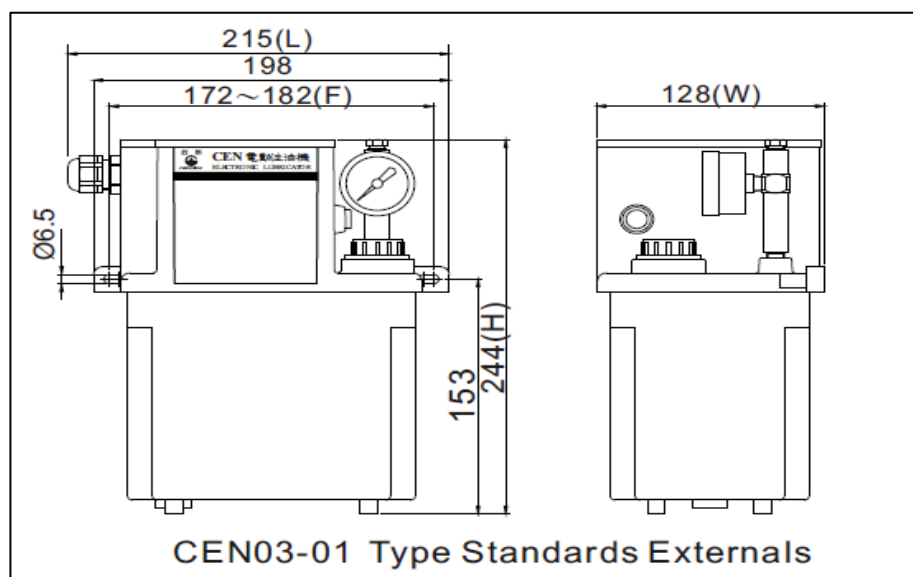
| | SV-1 | SV-2 | SV-3 | SV-5 |
|----------|-------------|-------------|-------------|-------------|
| A | 80 | 100 | 100 | 125 |
| B | 65 | 50 | 100 | 75 |
| C | 750 | 1000 | 1250 | 1450 |
| D | 450 | 500 | 600 | 650 |

Points to be lubricated and brands of oil

| Sl. No. | Parts to be lubricated | ISO Grade | IOC | HP | CASTROL | BPCL |
|---------|---|-----------|---------------------|-------------------|------------------|-------------------|
| 01 | X/Y/ Z - axis Guideways & Ball screws | VG68 | SERVO WAY 68 | WAY LUB 68 | Meghna BD 68 | Motomol 68 |
| 02 | Spindle Oil chiller | VG32 | SERVO SYSTEM 32 SER | ENKLO 32 | Hyspin AWS 32 | Hydrol S 32 |
| 03 | ATC gearbox | VG150 | SERVO MESH SP150 | Parthen EP 150 | Alpha SP 150 | Amocam oil 150 |
| 04 | 4th Axis | VG150 | SERVO MESH SP150 | Parthen EP 150 | Alpha SP 150 | Amocam oil 150 |
| 05 | FRL | VG32 | SERVO SYSTEM 32 SER | ENKLO 32 | Hyspin AWS 32 | Hydrol S 32 |

Lubrication System

- Centralized is used for lubrication on for LM guide and ball screw of all 3 axes.
- Interval for lubrication: Controlled by PLC (Settable by user).



Yearly check-ups

| No. | Check point | Check item | Remarks |
|-----|-----------------------|---|---------|
| 01 | Lubrication pump unit | Replace the suction filter | |
| 02 | Electrical cabinet | Replace dry batteries. Also replace it upon receiving the “Battery Low” | |

Pneumatic Circuit check-ups

1. Main Pressure switch setting: 5 to 6 kg/cm²
2. Spindle labyrinth blast setting should be 2 kg/cm²
3. Air Input: Dry and clean air 200 LPM and with 6 to 7 kg/cm² (use std. air drier)
4. Lubricator: VG 32 oil - Fill whenever empty.

Spindle oil chiller:

Specification:

| Sr. No. | Parameter | All SV Models |
|---------|---------------|-----------------------------------|
| 1 | Name | Spindle Oil Chiller |
| 2 | Make | Advance Cooling Systems Pvt. Ltd. |
| 3 | Model | DO 4PTSA |
| 7 | Refrigerant | R134a / 0.35 kg |
| 8 | Tank capacity | 13 litre, 76 Kg |

Temp. Setting Range:

- Fixed Temperature control: 10° C ~40° C
- Differential temperature control: -5° C ~ +5° C