

NC Unit Specification/FANUC Series

● : Standard    ○ : Option

| ITEM                                         |                                           | Specification                           | 0i-MF Plus  |
|----------------------------------------------|-------------------------------------------|-----------------------------------------|-------------|
| Controlled axis                              | Controlled axes                           |                                         | 3 (X, Y, Z) |
|                                              | Additional control axes                   | 5 axes (Max.)                           | ○           |
|                                              | Simultaneously controlled axes            |                                         | 4 axes      |
|                                              | Least input increment                     | 0.001mm (0.0001 inch) / 0.001 deg       | ●           |
| Operation functions                          | DNC operation                             | Included in RS232C interface            | ●           |
|                                              | DNC operation with memory card            | CF card is required                     | ●           |
|                                              | Wrong operation prevention                |                                         | ●           |
|                                              | Dry run                                   |                                         | ●           |
|                                              | Single block                              |                                         | ●           |
| Interpolation functions                      | Linear interpolation                      | G01                                     | ●           |
|                                              | Circular interpolation                    | G02, G03                                | ●           |
|                                              | Dwell                                     | G04                                     | ●           |
|                                              | Cylindrical interpolation                 | G07.1                                   | ●           |
|                                              | Helical Interpolation                     | Circular + Linear 2 axes (Max.)         | ●           |
|                                              | Fine surface machining                    |                                         | ●           |
|                                              | Single direction positioning              | G60                                     | ●           |
|                                              | Reference position return                 | 1st reference, G28 / 2nd reference, G30 | ●           |
| Feed function                                | Reference position return check           | G27                                     | ●           |
|                                              | Rapid traverse rate override              | 0%, 25%, 50%, 100%                      | ●           |
|                                              | Feedrate override                         | 0 ~ 200%                                | ●           |
|                                              | Manual handle feed                        | X1, X10, X100                           | ●           |
|                                              | Feed per minute                           | G94                                     | ●           |
|                                              | Feed per revolution                       | G95                                     | ●           |
|                                              | Override cancel                           |                                         | ●           |
|                                              | AI contour control (AICC) II              | 200 Block                               | ●           |
| Auxiliary / Spindle function                 | Spindle override                          | 0 ~ 150%                                | ●           |
|                                              | Spindle orientation                       |                                         | ●           |
|                                              | Rigid tapping                             |                                         | ●           |
|                                              | Retraction for rigid tapping              |                                         | ●           |
| Program input                                | Optional block skip                       | 9EA                                     | ●           |
|                                              | Absolute/incremental programming          | G90/G91                                 | ●           |
|                                              | Max. programmable dimension               | ±999,999.999mm (±99,999.9999 inch)      | ●           |
|                                              | Custom macro                              |                                         | ●           |
|                                              | Canned cycle for drilling                 |                                         | ●           |
|                                              | Programmable data input                   | G10                                     | ●           |
|                                              | Additional workpiece coordinate system    | G54.1, P1~48 (48 pairs)                 | ●           |
| Tool function / Tool & Accuracy compensation | Tool offset pairs                         | 400 pairs                               | ●           |
|                                              | Tool life management                      |                                         | ●           |
|                                              | Tool radius/Tool nose radius compensation |                                         | ●           |
|                                              | Tool length measurement                   |                                         | ●           |
|                                              | Backlash compensation                     |                                         | ●           |
| Data input / output & Interface              | Memory card and USB interface             |                                         | ●           |
|                                              | Embedded Ethernet                         |                                         | ●           |
|                                              | Data server                               |                                         | ○           |
|                                              | Fast Ethernet                             |                                         | ○           |
| Others                                       | Manual guide <i>i</i>                     |                                         | ●           |
|                                              | iHMI with machining cycle                 |                                         | ●           |
|                                              | Part program storage size                 | 5120m (2 MB)                            | ●           |
|                                              | No. of registerable programs              | 1000 ea                                 | ●           |
|                                              | Display unit                              | 15" color LCD with Touch Panel          | ●           |



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Best technology and know-how



SVM Series  
Vertical Machining Center





# Basic Structure

High Rigidity Body Structure for highest stability



**Spindle to Table Distance**  
SVM 550 : 120~670mm (4.72"~26.38")  
SVM 550L : 120~670mm (4.72"~26.38")  
SVM 650 : 120~720mm (4.72"~28.35")  
SVM 650L : 120~720mm (4.72"~28.35")

## ① Direct Drive Spindle

12,000 rpm directly coupled spindle with oil cooling system as standard, allows high-speed processing with low vibration and noise, increase machining accuracy and quality.

## ② ATC Magazine

Fast tool change twin arm type ATC and the 30 tools magazine as standard to cover a wide range of tools selection ensure flexible machining conditions.

## ③ Table

SVM550: 1,000 x 550mm (39.37" x 21.65")  
SVM550L: 1,200 x 550mm (47.24" x 21.65")  
SVM650: 1,200 x 650mm (47.24" x 25.59")  
SVM650L: 1,600 x 650mm (62.99" x 25.59")

## ④ Extra Wide Column

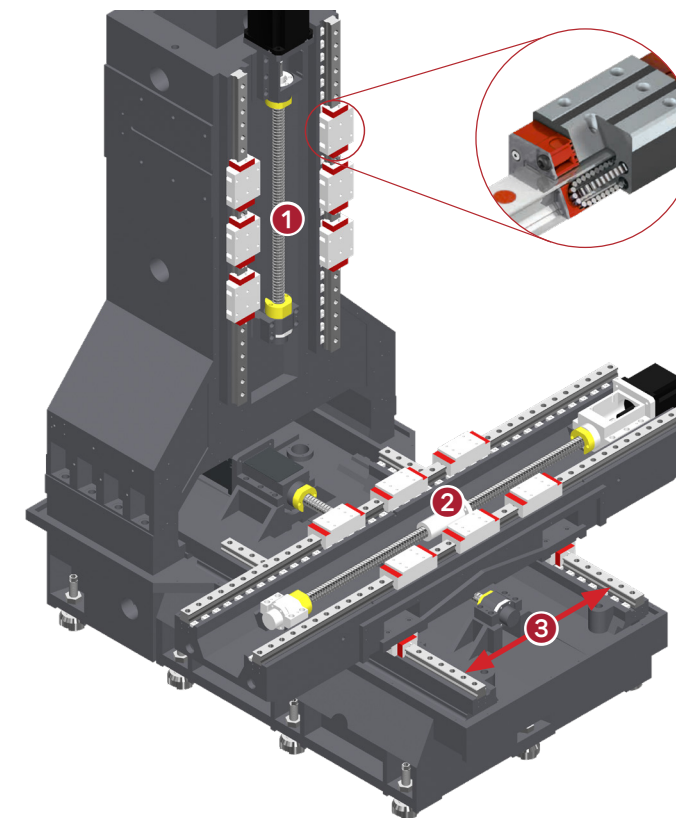
The extra-wide base of the column enhances vibration absorption and improves machining stability.

## ⑤ One-Piece Casting Bed

Low centered one-piece bed made out of GC300 gray iron casting offers high tensile strength, excellent vibration damping, and low thermal expansion.

## ⑥ Travel (X/Y/Z)

SVM550: 850/550/550 (33.46"/21.65"/21.65")  
SVM550L: 1,000/550/550 (47.24"/21.65"/21.65")  
SVM650: 1,200/670/600 (47.24"/26.38"/23.62")  
SVM650L: 1,500/670/600 (59.06"/26.38"/23.62")



## Guideway

High-rigidity roller-type LM guideways are applied to all axis feeds, ensuring superior rigidity, high accuracy, and fast axis movement while also enhancing load capacity. Additional LM blocks mounted on the X-axis and Z-axis enhance machining rigidity and stability.

### ① Z-axis LM Blocks

SVM 550 : 6 LM blocks  
SVM 550L : 6 LM blocks  
SVM 650 : 6 LM blocks  
SVM 650L : 6 LM blocks

### ② X-axis LM Blocks

SVM 550 : 4 LM blocks  
SVM 550L : 6 LM blocks  
SVM 650 : 6 LM blocks  
SVM 650L : 6 LM blocks

### ③ Wide Guideway Span on Y-Axis

SVM 550 : 2 rows LM guide  
SVM 550L : 2 rows LM guide  
SVM 650 : 2 rows LM guide  
SVM 650L : 4 rows LM guide

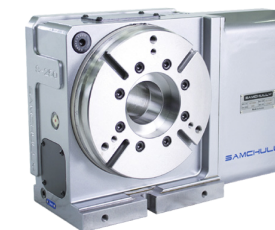


## Automatic Grease Lubrication System **Std.**

The standard grease lubrication reduces maintenance time and cost compared to oil lubrication. Since no lubrication oil mixes into the coolant tank, coolant life is significantly extended, eliminates the need for an oil skimmer.

## 4th Axis Rotary Table **Opt.**

High precision and high speed systems with its compact and highly rigid body design, eliminate multiple setups that are required for complex machining applications.



## 15 inch Touchscreen monitor **Std.**

SVM series operation panel enhances operating convenience by providing 15 inch touchscreen monitor with QWERTY keyboard layout as standard. Additionally, Manual Guide i (MGI) and iHMI are included as standard features (only for Fanuc controller).



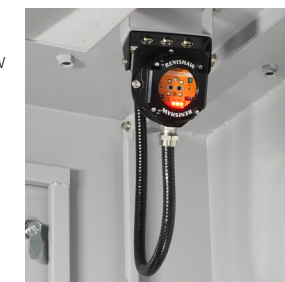
## Tool and Workpiece Measurement Device **Opt.**

Tool measurement device automatically set tool lengths and diameters. And also can be used for broken tool detection. Workpiece measurement device offers users up to 90% reduction in workpiece set-up time.



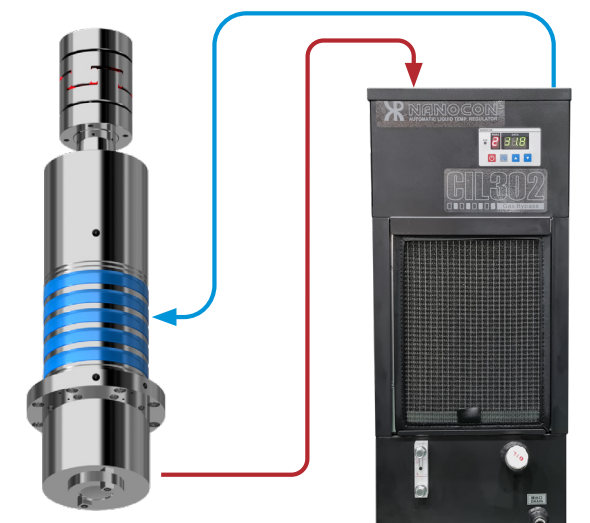
## Renishaw Probe Ready **Opt.**

Renishaw optical receiver and Renishaw GUI software are installed for user convenience. Make it easier for users to connect their existing Renishaw measuring devices to SMART machine.



## Spindle Cooling System **Std.**

The Spindle cooling system minimizes thermal displacement, ensure maximum machining accuracy even during a long period of machining.





## I Standard & Option Specifications

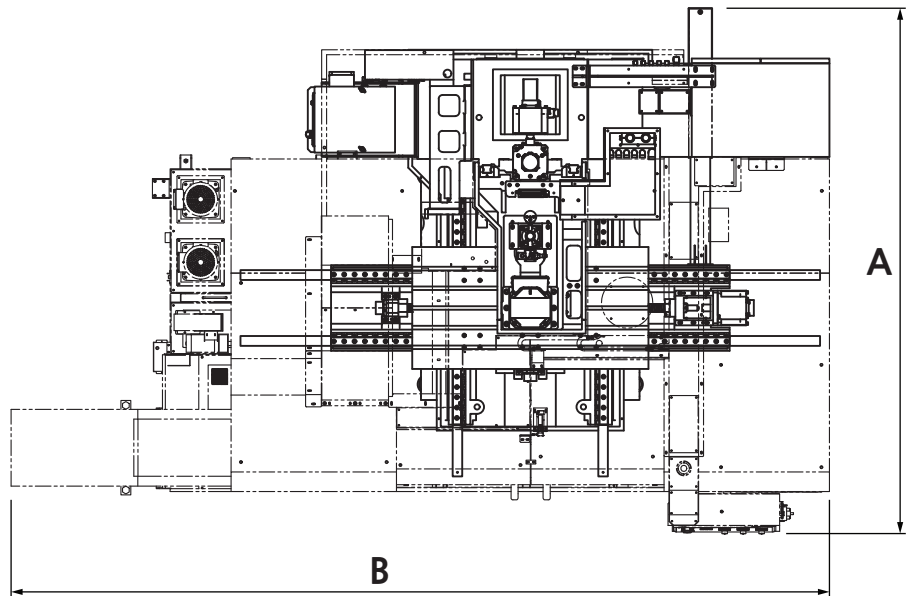
|                                              |                               | ● : Standard   ○ : Option   X : Not applicable |          |         |          |
|----------------------------------------------|-------------------------------|------------------------------------------------|----------|---------|----------|
|                                              |                               | SVM 550                                        | SVM 550L | SVM 650 | SVM 650L |
| <b>Spindle</b>                               |                               |                                                |          |         |          |
| 12,000 rpm (Direct)                          | 18.5 kW, 117.8 N.m            | ●                                              | ●        | ●       | ●        |
| 15,000 rpm (Direct)                          | 18.5 kW, 117.8 N.m            | ○                                              | ○        | ○       | ○        |
| Spindle Cooling System                       |                               | ●                                              | ●        | ●       | ●        |
| <b>ATC</b>                                   |                               |                                                |          |         |          |
| Magazine Storage Capacity                    | 30 ea                         | ●                                              | ●        | ●       | ●        |
|                                              | 40 ea                         | ○                                              | ○        | ○       | ○        |
| Tool Shank Type                              | BIG PLUS BT40                 | ●                                              | ●        | ●       | ●        |
|                                              | BIG PLUS CAT40                | ○                                              | ○        | ○       | ○        |
| <b>Table</b>                                 |                               |                                                |          |         |          |
| T-Slot Table                                 | 18H8x5                        | ●                                              | ●        | ●       | ●        |
| NC Rotary Table                              | 4th axis, 4th & 5th axis      | ○                                              | ○        | ○       | ○        |
| <b>Coolant System</b>                        |                               |                                                |          |         |          |
| Std. Coolant (Spindle nozzle)                | 1.1 kW                        | ●                                              | ●        | ●       | ●        |
| Through Spindle Coolant (TSC)                | 20 bar (290 psi)              | ○                                              | ○        | ○       | ○        |
|                                              | 30 bar (435 psi)              | ○                                              | ○        | ○       | ○        |
|                                              | 70 bar (1,015 psi)            | ○                                              | ○        | ○       | ○        |
| Bed Flushing                                 |                               | ○                                              | ○        | ○       | ○        |
| Shower Coolant                               |                               | ○                                              | ○        | ○       | ○        |
| Coolant Chiller                              |                               | ○                                              | ○        | ○       | ○        |
| Paper Filtering System                       | Integrated to coolant tank    | ○                                              | ○        | ○       | ○        |
| <b>Chip Disposal</b>                         |                               |                                                |          |         |          |
| Chip Conveyor                                | Hinge type (Side)             | ○                                              | ○        | ○       | ○        |
|                                              | Scraper type (Side)           | ○                                              | ○        | ○       | ○        |
|                                              | Screw type (Side)             | ○                                              | ○        | ○       | ○        |
| Internal Screw Conveyor                      | Left + Right                  | ○                                              | ○        | ○       | ○        |
| Chip Bucket                                  |                               | ○                                              | ○        | ○       | ○        |
| <b>Measurement &amp; Automatic Operation</b> |                               |                                                |          |         |          |
| Tool Measuring System                        | Renishaw                      | ○                                              | ○        | ○       | ○        |
| Workpiece Measuring System                   | Renishaw                      | ○                                              | ○        | ○       | ○        |
| Renishaw Optical Receiver (With GUI)         | OMI-2T                        | ○                                              | ○        | ○       | ○        |
| Linear Scale                                 | X / Y / Z axis                | ○                                              | ○        | ○       | ○        |
| Auto Door                                    |                               | ○                                              | ○        | ○       | ○        |
| Auto Power Off                               |                               | ○                                              | ○        | ○       | ○        |
| <b>Accessories &amp; Others</b>              |                               |                                                |          |         |          |
| Portable MPG                                 | 1 ea                          | ●                                              | ●        | ●       | ●        |
| Air Gun                                      |                               | ○                                              | ○        | ○       | ○        |
| Coolant Gun                                  |                               | ○                                              | ○        | ○       | ○        |
| Air Blower                                   |                               | ○                                              | ○        | ○       | ○        |
| Mist Collector                               |                               | ○                                              | ○        | ○       | ○        |
| Air Conditioner                              |                               | ○                                              | ○        | ○       | ○        |
| Oil Skimmer                                  |                               | ○                                              | ○        | ○       | ○        |
| 4-Axis Interface Preparation                 | Pneumatic or hydraulic piping | ○                                              | ○        | ○       | ○        |
| Through Spindle Air (TSA)                    |                               | ○                                              | ○        | ○       | ○        |
| Work Light                                   | LED lamp                      | ●                                              | ●        | ●       | ●        |
| 3 Color Signal Tower                         |                               | ●                                              | ●        | ●       | ●        |
| Door Interlock                               |                               | ●                                              | ●        | ●       | ●        |
| Transformer                                  |                               | ○                                              | ○        | ○       | ○        |
| Leveling Block and Bolts                     |                               | ●                                              | ●        | ●       | ●        |

※ Specifications are subject to change without notice for improvement.

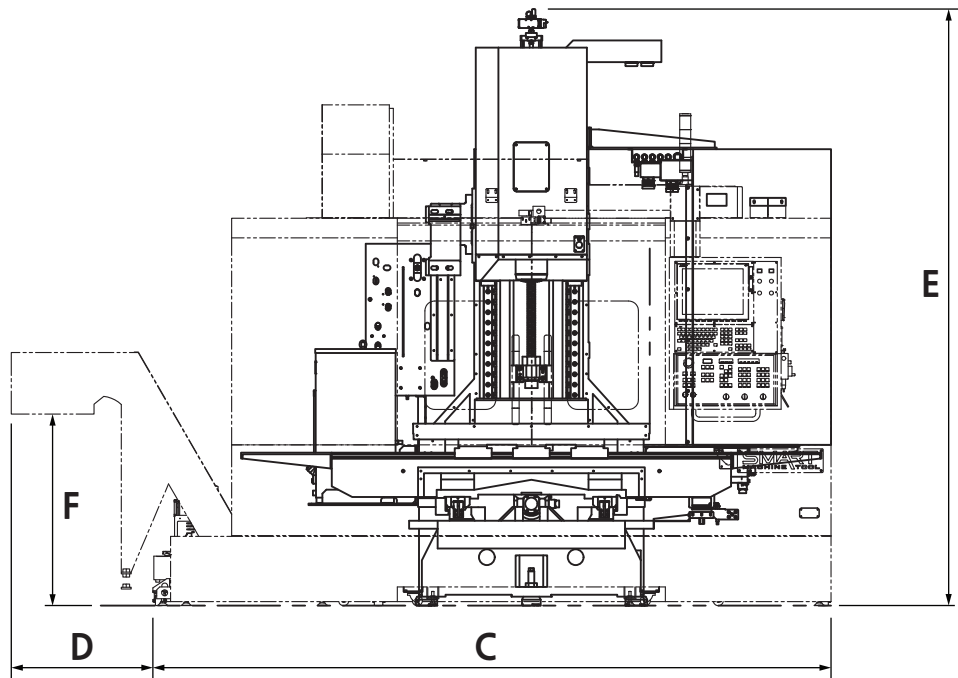
※※ Please contact Smart Machine Tool for detailed specification.

## I Machine Dimensions

Top View



Front View



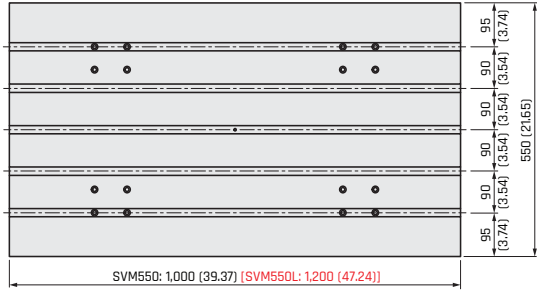
Unit : mm (inch)

| Model    | A<br>(Width)   | B<br>(Length)  | C              | D           | E<br>(Height)  | F<br>(Chip conveyor<br>height) |  |
|----------|----------------|----------------|----------------|-------------|----------------|--------------------------------|--|
| SVM 550  | 2,458 (96.77)  | 3,638 (143.23) | 2,920 (114.96) | 718 (28.26) | 2,949 (116.1)  | 971 (38.23)                    |  |
| SVM 550L |                | 3,838 (151.1)  | 3,120 (122.83) |             |                |                                |  |
| SVM 650  | 2,708 (106.61) | 4,158 (163.7)  | 3,440 (135.43) |             | 3,025 (119.09) |                                |  |
| SVM 650L |                | 4,558 (179.45) | 3,840 (151.18) |             |                |                                |  |

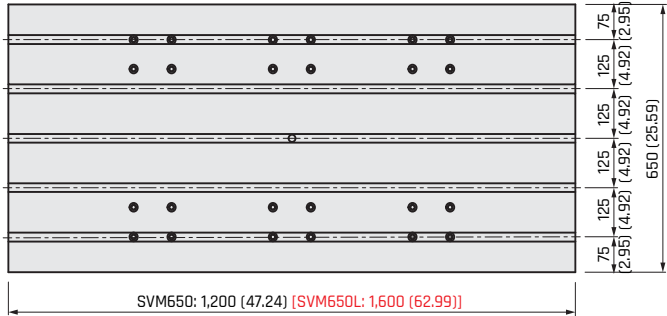
I Table & Tool Shank Dimensions

Table

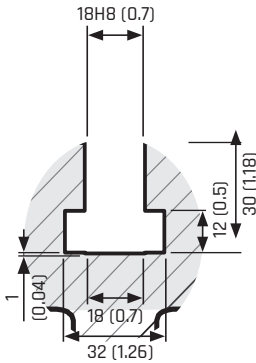
SVM 550/L



SVM 650/L

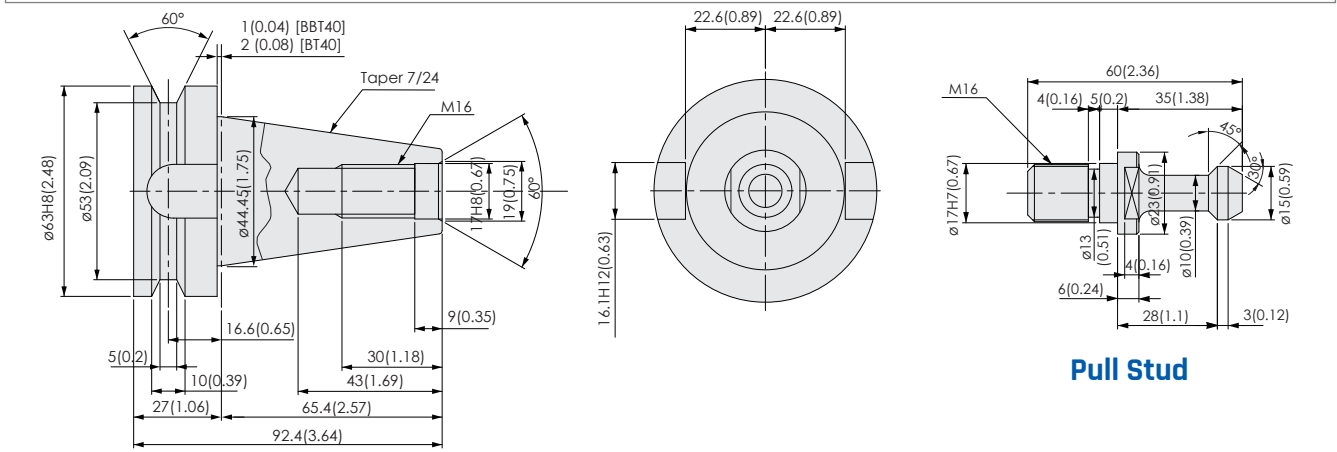


T-Slot

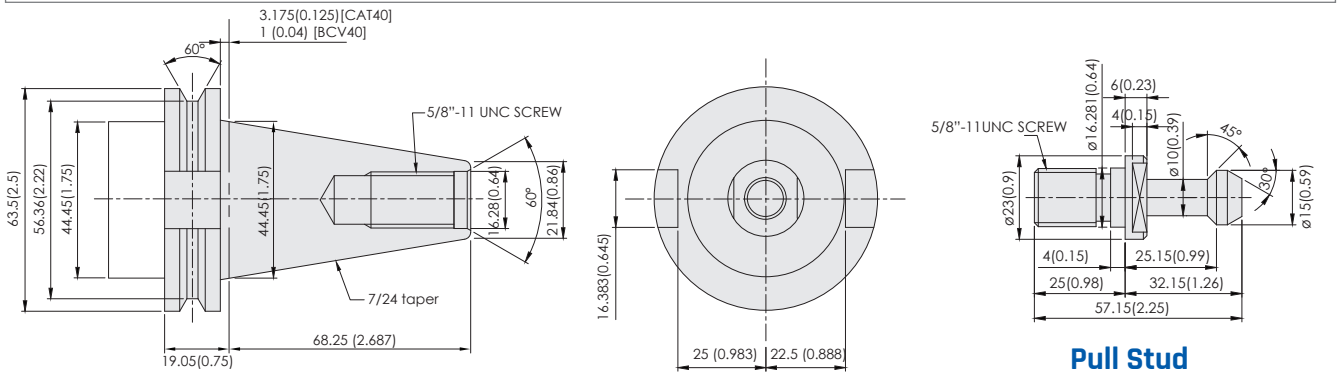


Tool Shank

BBT40



CAT40



Pull Stud

Pull Stud

I Machine Specifications

[ ] : Option

| DESCRIPTION       |                                         |                        |             | SVM 550                             | SVM 550L                       | SVM 650                        | SVM 650L                       |
|-------------------|-----------------------------------------|------------------------|-------------|-------------------------------------|--------------------------------|--------------------------------|--------------------------------|
| FEED              | Travel Distance                         | X axis                 | mm(inch)    | 850 (33.46)                         | 1,000 (39.37)                  | 1,200 (47.24)                  | 1,500 (59.06)                  |
|                   |                                         | Y axis                 | mm(inch)    | 550 (21.65)                         | 550 (21.65)                    | 670 (26.38)                    | 670 (26.38)                    |
|                   |                                         | Z axis                 | mm(inch)    | 550 (21.65)                         | 550 (21.65)                    | 600 (23.62)                    | 600 (23.62)                    |
|                   | Rapid Traverse Rate                     | X axis                 | m/min(ipm)  | 36 (1,417)                          |                                |                                |                                |
|                   |                                         | Y axis                 | m/min(ipm)  | 36 (1,417)                          |                                |                                |                                |
|                   |                                         | Z axis                 | m/min(ipm)  | 36 (1,417)                          |                                |                                |                                |
|                   | Distance From Spindle Nose to Table Top |                        | mm(inch)    | 120 - 670 (4.72 - 26.38)            |                                | 120 - 720 (4.72 - 28.35)       |                                |
|                   | Slide Type                              |                        | -           | LM Roller Guide                     |                                |                                |                                |
| TABLE             | Table Size                              |                        | mm(inch)    | 1,000 x 550<br>(39.37 x 21.65)      | 1,200 x 550<br>(47.24 x 21.65) | 1,200 x 650<br>(47.24 x 25.59) | 1,600 x 650<br>(62.99 x 25.59) |
|                   | Table Loading Capacity                  |                        | kg(lb)      | 600 (1,323)                         | 800 (1,764)                    | 900 (1,984)                    | 1,200 (2,646)                  |
|                   | T Slot (WxP / No. of Slots)             |                        | mm(inch)    | 18 x 90 (0.7 x 3.54) - 5 ea         |                                | 18 x 125 (0.7 x 4.92) - 5 ea   |                                |
| SPINDLE           | Taper                                   |                        | -           | ISO #40                             |                                |                                |                                |
|                   | Max. Spindle Speed                      |                        | rpm         | 12,000                              |                                |                                |                                |
|                   | Spindle Output                          |                        | kW(Hp)      | 18.5 / 15 / 11 (24.8 / 20.1 / 14.8) |                                |                                |                                |
|                   | Max. Spindle Torque                     |                        | N.m(ft.lbs) | 117.8 (86.9)                        |                                |                                |                                |
| ATC               | Type of Tool Shank                      |                        | -           | BBT 40 [CAT 40]                     |                                |                                |                                |
|                   | Tool Storage Capacity                   |                        | ea          | 30                                  |                                |                                |                                |
|                   | Max. Tool Diameter                      | Continuous             | mm(inch)    | ø80 (3.15)                          |                                |                                |                                |
|                   |                                         | Without Adjacent Tools | mm(inch)    | ø125 (4.92)                         |                                |                                |                                |
|                   | Max. Tool length                        |                        | mm(inch)    | 300 (11.81)                         |                                |                                |                                |
|                   | Max. Tool Weight                        |                        | kg(lb)      | 8 (17.64)                           |                                |                                |                                |
|                   | Method of Tool Selection                |                        | -           | Memory Random                       |                                |                                |                                |
|                   | Tool Changing Time                      | Tool-to-Tool           | sec         | 1.3                                 |                                |                                |                                |
|                   |                                         | Chip-to-Chip           | sec         | 3.7                                 |                                |                                |                                |
| POWER SUPPLY      | Electric Power Supply                   |                        | kVA         | 40                                  |                                |                                |                                |
| MACHINE DIMENSION | Height                                  |                        | mm(inch)    | 2,949 (116.1)                       | 2,949 (116.1)                  | 3,025 (119.09)                 | 3,025 (119.09)                 |
|                   | Length                                  |                        | mm(inch)    | 3,638 (143.23)                      | 3,838 (151.1)                  | 4,158 (163.70)                 | 4,558 (179.45)                 |
|                   | Width                                   |                        | mm(inch)    | 2,458 (96.77)                       | 2,458 (96.77)                  | 2,708 (106.61)                 | 2,708 (108.61)                 |
|                   | Weight                                  |                        | kg(lb)      | 5,800 (12,787)                      | 6,200 (13,669)                 | 7,200 (15,873)                 | 8,500 (18,739)                 |
| Control           | NC System                               |                        | -           | Fanuc Oi-MF Plus [Mitsubishi 80VA]  |                                |                                |                                |