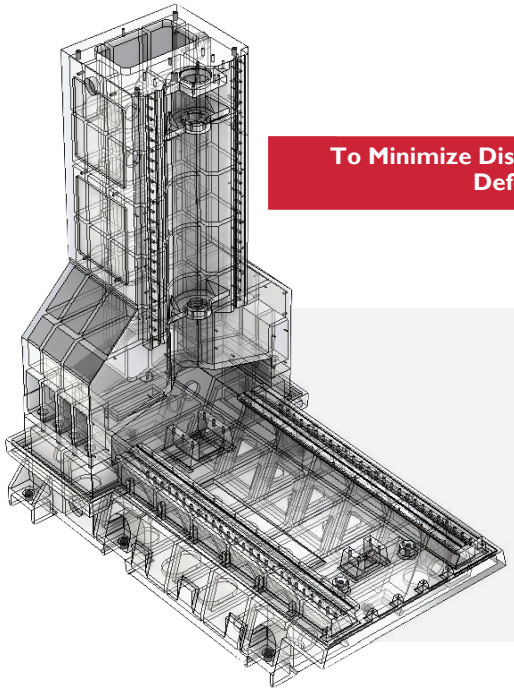
SMART MACHINE TOOL

SV Series

High Performance Vertical Machining Center

Machine Structure

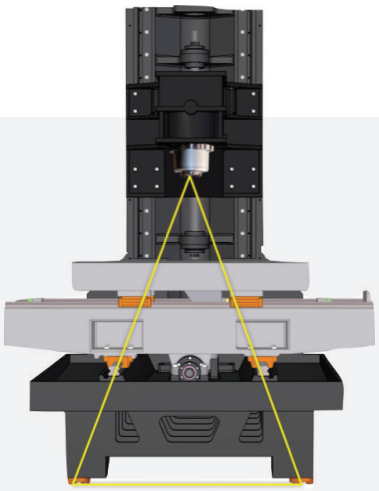
Built like
a tank



To Minimize Distortion & Deformation

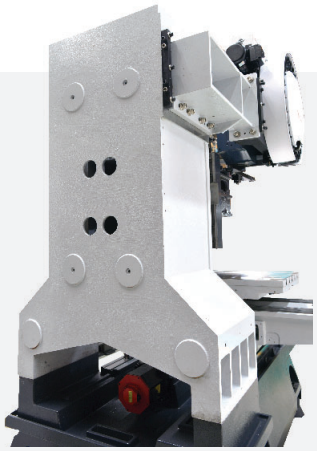
Densely Ribbed Casting

High quality FG260 grade cast iron for all stuctural elements. Another critical element resulting in great surface finish and high stability during high speed machining is the ribbed pockets. The result is excellent vibration dampening and improved tool life.



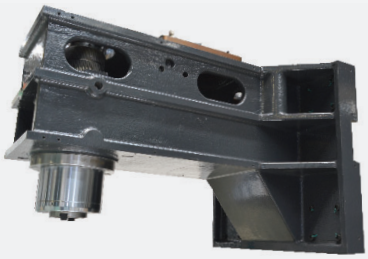
Golden Triangular Frame Design

Ensure maximum bed width for superior kinematics. This design lowers the center of gravity thus improving the stability during cutting. This results in chatter free surface finish and increased tool life.



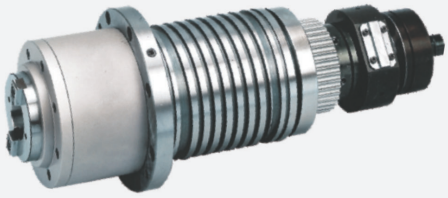
Wide A-Shaped Column

Extra wide base of column. This delivers enhanced stability and efficient cutting force absorption without deflection, resulting in better cutting dynamics.



Extended Headstock Guides

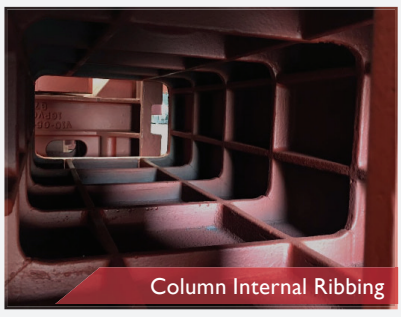
Extended A:B ratio ensures you can put bigger components on the machine table. It also improves the headstock rigidity during fast high feed cutting. Helps retain spindle accuracy by preventing headstock sag.



High Quality Spindle

Cartridge Type Spindle provides excellent performance with minimum run out and great cutting torque. All our spindles undergo dynamic balancing and thermal deformation testing.

Base Internal Ribbing



Column Internal Ribbing

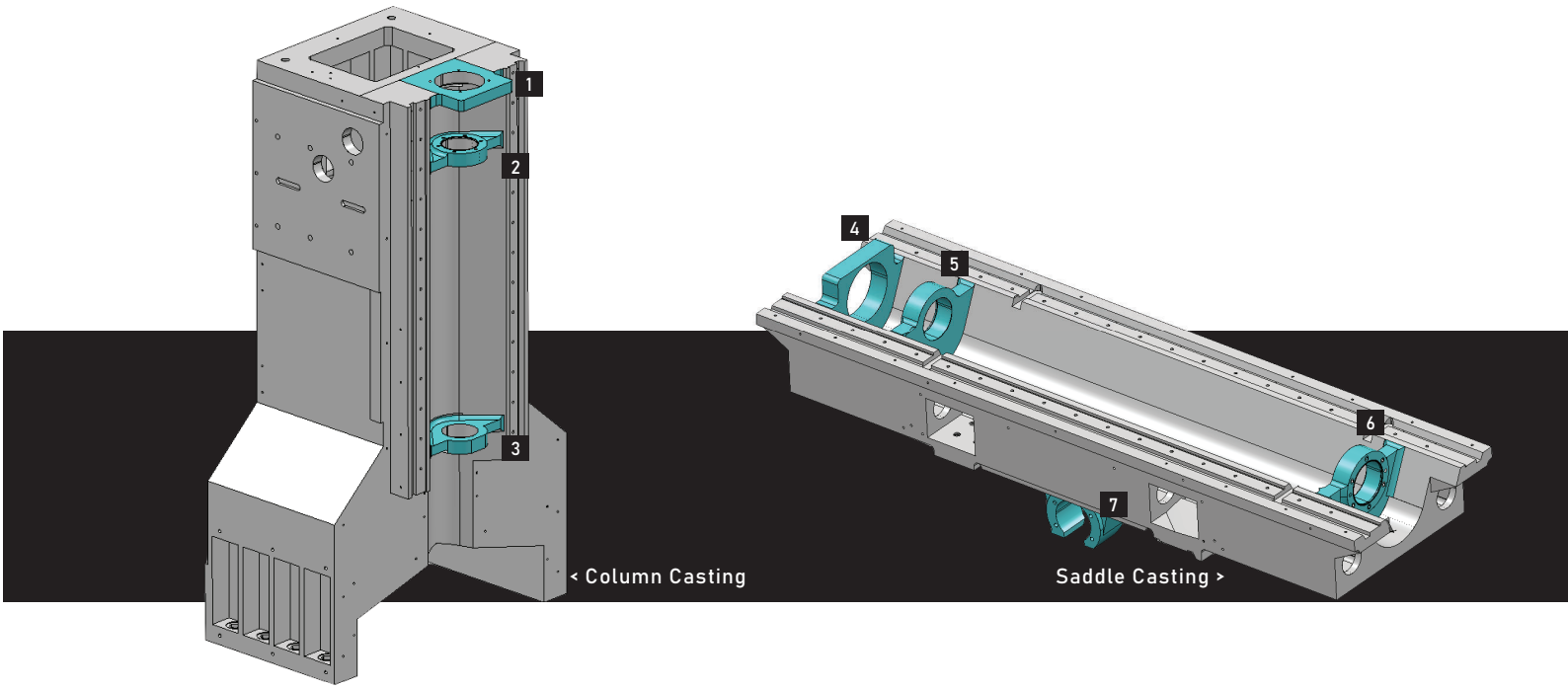
Column Casting

Unity Structure

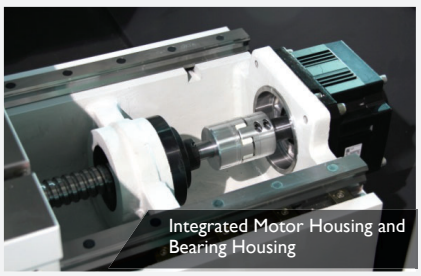
Improved Machine Construction Technique

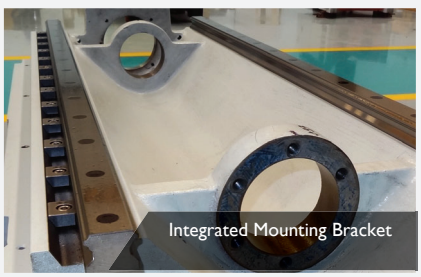
What is Unity Construction?

We have integrated some key parts like ballscrew housing mounting brackets, motor mounting brackets and ballscrew nut housing into the main casting. By doing so, we minimize the number of subassemblies resulting in a superior UNITY design structure.




PCD Mounting of Ballscrew Bearing Housing


Integrated Motor Housing and Bearing Housing


Integrated Mounting Bracket

1 2 3 4 5 6

Integrated Motor and Bearing Mounts

RESULT IS

- Improved alignment of axis drive motor and ballscrew.
- Excellent parallelism of ballscrew with LM guideways.
- These integrated mounts act as ribs to strengthen the casting.

BENEFITS

- Eliminating misalignment and bolt-on housing brackets.
- Fine control of cutting path possible due to reduced resistance.
- Higher cutting load/thrust can be applied due to strong construction.
- Bearing housing support which counter all the axial thrust loads have a rigid mount for stability.

Key Benefits of UNITY STRUCTURE

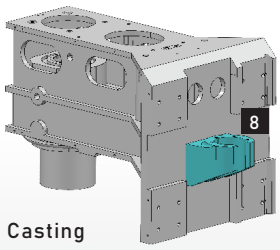
Enhanced Productivity

Longer Machine Life

Enhanced Accuracy & Finishing

When Unity Structure Plays a Key Role

- During High Speed Machining, due to high acceleration and deceleration, the ballscrew support bearing encounter large amounts of physical and thermal stress.
- Frequent rapid movements during machining of production components results in a large amount of jerks.
- During cutter engagement, with interrupted cuts, casting deformities & improper material, the machine gets overloaded and higher impacts occur. The unity structure handles these conditions efficiently.



Head Casting

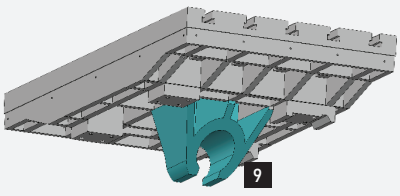
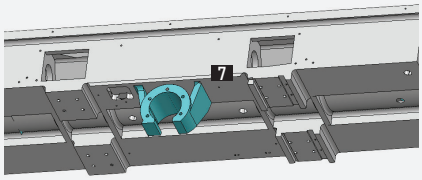


Table Casting



Saddle Casting

7 8 9

Integrated Ballnut Housing

All ballscrew-nut housings are integrated into the casting making the moving part and the housing a single rigid part. This enhances the dynamic stiffness of the Table, Headstock and Saddle, which are the main moving parts of the machine.

BENEFIT

- Ensures smooth, jerk free cutting movement especially during direction change or reversals.
- Supports high acceleration and deceleration of the machine.
- Ultimately increases the machine service life.

Machine Features

High Visibility Front Doors

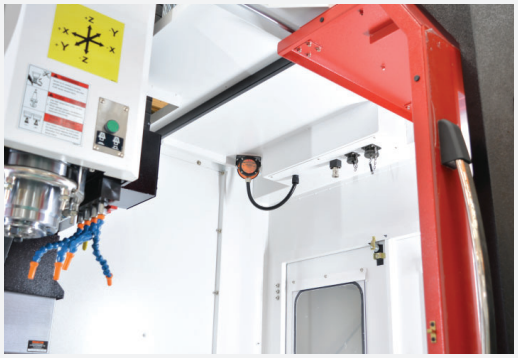
Front doors are made with heavy duty shatterproof polycarbonate. The large window allows the operator to monitor machining easily.

Easy Access Maintenance

Improved machine manageability by easy access window to key peripheral devices that require checking.

Holster for your Guns

Coolant and air gun are neatly holstered in the stainless steel panel. No paint scratches. No accidental drops. No dripping coolant.



Renishaw Receiver

All machines are fitted with Renishaw receiver for quick future interfacing of Tool Presetter and Work Piece Probe.

Excellent Chip Disposal

Steeply slanted telescopic sliding covers provide excellent chip disposal performance.

Illuminated Design

Even in low light, the machine will provide sufficient light for operator.

- Dual Worklamp - White LED
- 3 Color Tower Lamp
- Ambient Light in Tool Cabinet
- Illuminated Machine Name

Easy Access Side Doors

Big access side doors ensure easy access into the machine. The level of these doors are kept lower than the table height of extended use.

360 Layout of Machine

All 4 faces of the machine are smooth and flushed design. This gives you freedom to place the machine in your factory in any orientation. Looks good all around.

Laser Calibration

100% Laser calibration of all machines. We use state-of-the-art equipment used by leading world manufacturers. We assure you repeatablility with accuracy.

Positioning Accuracy within 10 micron
Repeatability within ±3 micron

Ballbar Calibration

100% Ballbar calibration of all machines. We ensure servo motors are perfectly tuned for perfect simultaneous movement, resulting in circularity of below 10 micron.

Circularity within 10 micron

Productivity Booster

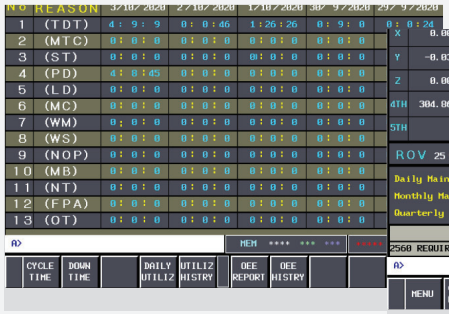
Performance Boosting Features

Smart User Interface (Standard Feature)

- Machine Downtime for Record & Report
- Smart HOME-SCREEN
- Tool Load & Life Monitoring
- Maintenance Checklist with Alert
- OEE & Utilization Reports On-Machine
- Alarm Assistance
- Calculator

and many more features!

Machine Downtime Analytics



Downtime History

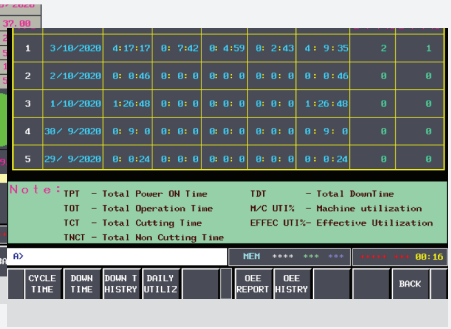
Downtime Entry

Downtime List

Reports On Demand

Detailed OEE Report

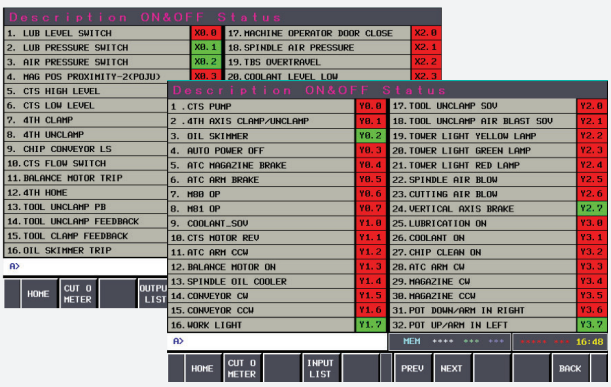
OEE History Report



Utilization Report

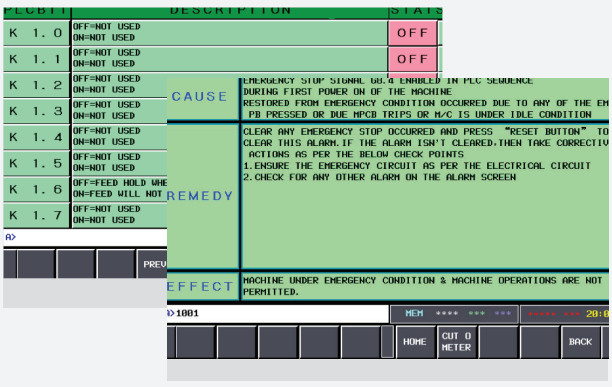
Smart Diagnosis

Visual management of I/O List



Easy Alarm Resolution

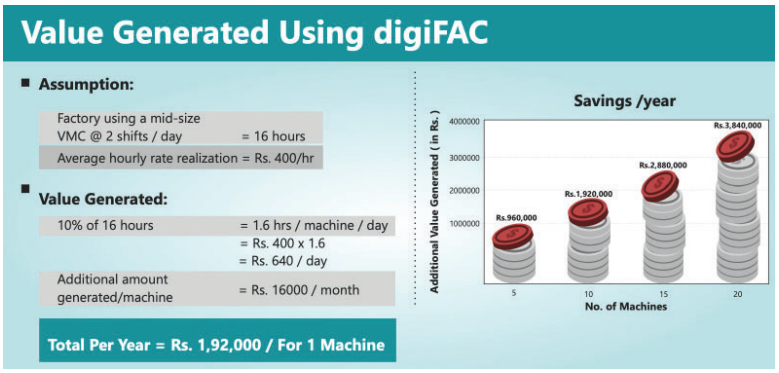
Alarm resolution made easy by providing guidance for alarm resolution.



Optional Features

Factory Productivity Monitoring solution, Industry 4.0 - digiFAC

Our digiFAC is an IIOT platform that connects multiple CNC Machines to collect machine operational data in realtime. With digiFAC, you get the real control data directly from the machine without human interference.



1. Improved manufacturing efficiency
2. Reduced production wastage
3. Real-time shop floor visibility
4. Automatic data collection and analytics
5. Increased overall equipment efficiency
6. Shop-floor alerts and notifications

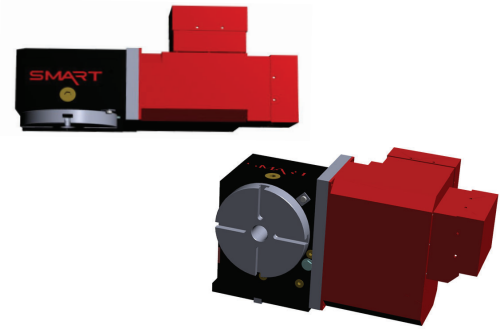
Tool and Workpiece Measuring Solutions

All SV series machines are prepped for Tool and Work piece setter integration.

Benefits

- Minimize the mistakes in tool offset
- Speed up tool setting time
- Tool breakage detection
- Tool wear correction
- Minimize need for CMM

4th Axis Tables

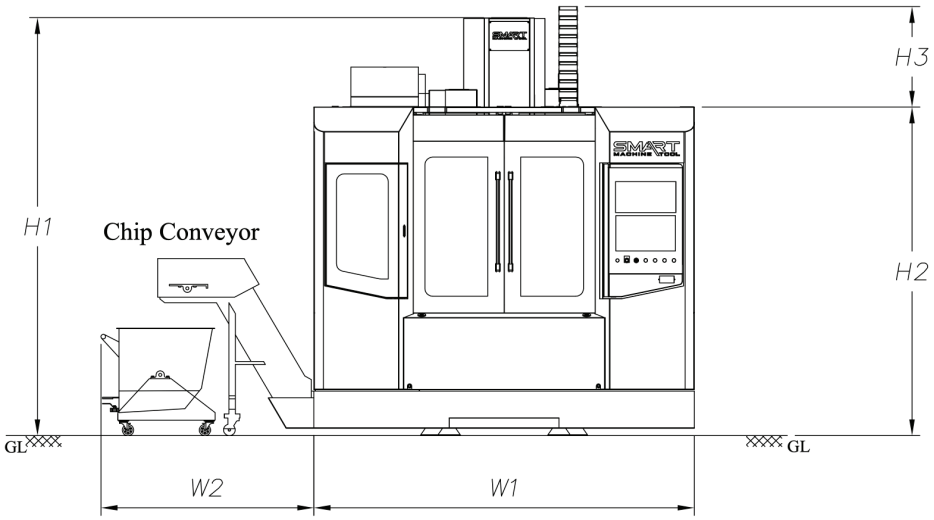


Reliable solution for demanding application

- Table size 7.87" up to 12.60"
- Worm gear / worm wheel solutions for high torque
- Production system, cradle arrangment also available
- Torque motor and roller-cam solutions for higher speeds

Machine Specifications

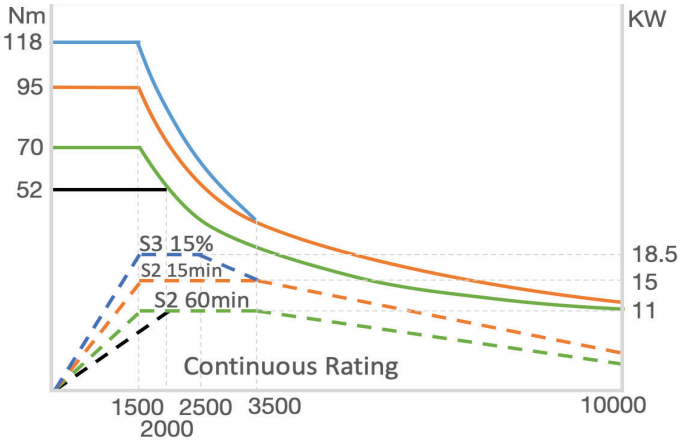
Machine Layout



	W1	W2	H1	H2	H3	DEPTH
SV - 1	75.98	N/A	109.25	76.97	32.28	109.45
SV - 2	95.43	55.51	110.04	84.25	25.78	82.68
SV - 3	109.06	55.51	120.28	99.80	20.47	106.30
SV - 4	129.92	55.51	128.15	104.52	23.62	93.66
SV - 5	137.80	55.51	122.68	92.40	30.28	110.24

Torque Power Diagram

SV-2, SV-3, SV-4, SV-5
Power 11/15/18.5 kw
Torque 118 Nm
10000 rpm



Our Partner for Key Machine Parts

Machine Part	Country	Manufacturer
Controller	Japan	Fanuc
Spindle	Taiwan	Kenturn
Spindle Bearing	Japan	NSK / NTN
Axis Bearing	Japan	NSK
X, Y, Z Axis Ballscrew	Taiwan	PMI
X, Y, Z Axis Guideway	Japan	THK
	Switzerland	Schneeberger
Axis Couplings	Germany	KTR
Pneumatic System	Japan	SMC Japan
Lubrication Unit	Taiwan	Chenying
Telescopic Covers	Taiwan	Key Arrow
Heat Exchanger	Taiwan	Habor
Automatic Tool Changer	Taiwan	Poju
Tool Declamp Cylinder	Taiwan	Poju
Coolant Pump	India	Rajmane / Lubi

Specifications

Description	Unit	SV - 1	SV - 2	SV - 3	SV - 4	SV - 5
X-Axis Travel	inch	23.62	31.50	41.34	51.18	51.18
Y-Axis Travel	inch	17.72	19.69	20.47	25.59	27.56
Z-Axis Travel	inch	19.69	19.69	20.47	23.62	27.56
Spindle Nose to Table Surface (Daylight)	inch	3.94-23.62	3.94-23.62	4.92-25.39	5.51-29.13	5.91-33.46
Spindle Center to Z-Axis Telescopic Cover	inch	18.50	20.47	20.47	25.67	28.15
Table Dimension	inch	29.53 x 17.72	39.37 x 19.69	45.28 x 19.69	57.09 x 23.62	57.09 x 25.59
Max. Safe Load on Table	lbs	661	1322	1764	2205	3307
No/Width/CD of T-Slots	no./inch/ inch	5/39.68/220.46	5/39.68/220.46	5/39.68/220.46	5/39.68/220.46	5/39.68/275.58
Spindle Speed	rpm	8000	8000(12000)	12000	12000	12000
Spindle Motor Power (Fanuc)	hp	10/15/20	15/20/25	15/20/25	15/20/25	15/20/25
Spindle Taper	-	Big Plus CAT 40	Big Plus CAT 40	Big Plus CAT 40	Big Plus CAT 40	Big Plus CAT 40
Rapid Traverse X/Y/Z Axes	ipm	1890/1890/1890	1890/1890/1890	1417/1417/1417	1181/1181/1181	1181/1181/1181
Cutting Feedrates	ipm	394	394	394	394	394
ATC Type	-	Arm Type	Arm Type	Arm Type	Arm Type	Arm Type
No. of Tools	nos	24	30	30	30	30
Max. Tool Length	inch	9.84	9.84	9.84	9.84	9.84
Max. Tool Weight	lbs	17.6	15.4	17.64	17.64	15.4
Tool Diameter (with adjacent tool)	inch	3.15	2.95	3.15	3.15	2.95
Tool Diameter (without adjacent tool)	inch	5.91	5.91	5.91	5.91	5.91
Tool Changing Time (Tool to Tool)	sec.	2.5	2.5	2.5	2.5	2.5
Positioning Accuracy	inch	0.0004	0.0004	0.0004	0.0004	0.0004
Repeatability	inch	+/- 0.0001	+/- 0.0001	+/- 0.0001	+/- 0.0001	+/- 0.0001
Floor Space (with Lift Up Conveyor)	inch	N/A	134.65 x 82.68	148.23 x 83.50	169.09 x 93.66	196.46 x 110.24
Net Weight (with ATC)	lbs	7496	10582	11023	15432	18742
Power Supply Rated Capacity (Fanuc)	kVA	20	25	35	35	330
Air Supply Supply (Pressure | Flowrate)	0	6 Bar | 200LPM	6 Bar | 200LPM	6 Bar | 200LPM	6 Bar | 200LPM	6 Bar | 200LPM
Power Supply	-	220 V | 60 Hz | 3 Phase	220 V | 60 Hz | 3 Phase	415 V | 50 Hz | 3 Phase	415 V | 50 Hz | 3 Phase	220 V | 60 Hz | 3 Phase

Standard Features

- Fanuc 0iMF Plus
- Ethernet for Program Transfer
- 30 Tool Arm Type Tool Changer
- Belt Drive Spindle
- Z-Axis Servo Brake
- LM Guideways on All Axes
- Full Splash Guard
- Rigid Tapping
- Portable MPG
- Heat Exchanger for Electrical Panel
- Air and Coolant Gun
- Automatic Lubrication System
- Coolant System
- Chip Conveyor
- Chip Flushing
- 4th Axis Interface Preparation
- Oil Coolant Seperator
- Chip Tray
- Operation Lamp
- Work Lamp
- Leveling Pad
- Maintenance Kit
- Operation and Maintenance Manual

Optional Features

- 12000 rpm Spindle
- BBT 40 Spindle Taper
- 20 Bar Coolant through Spindle (CTS)
- Spindle Oil Chiller
- Air Conditioning for Electrical Panel
- 4th Axis Rotary Table

*The specifications and information above-mentioned may change without prior notice.

SMART
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