

TUE-100

Shibaura Machine



TUE-100

Vertical Boring and Turning Mill

Shibaura Machine

View the Future with You



ISO 9001



GOTEMBA plant

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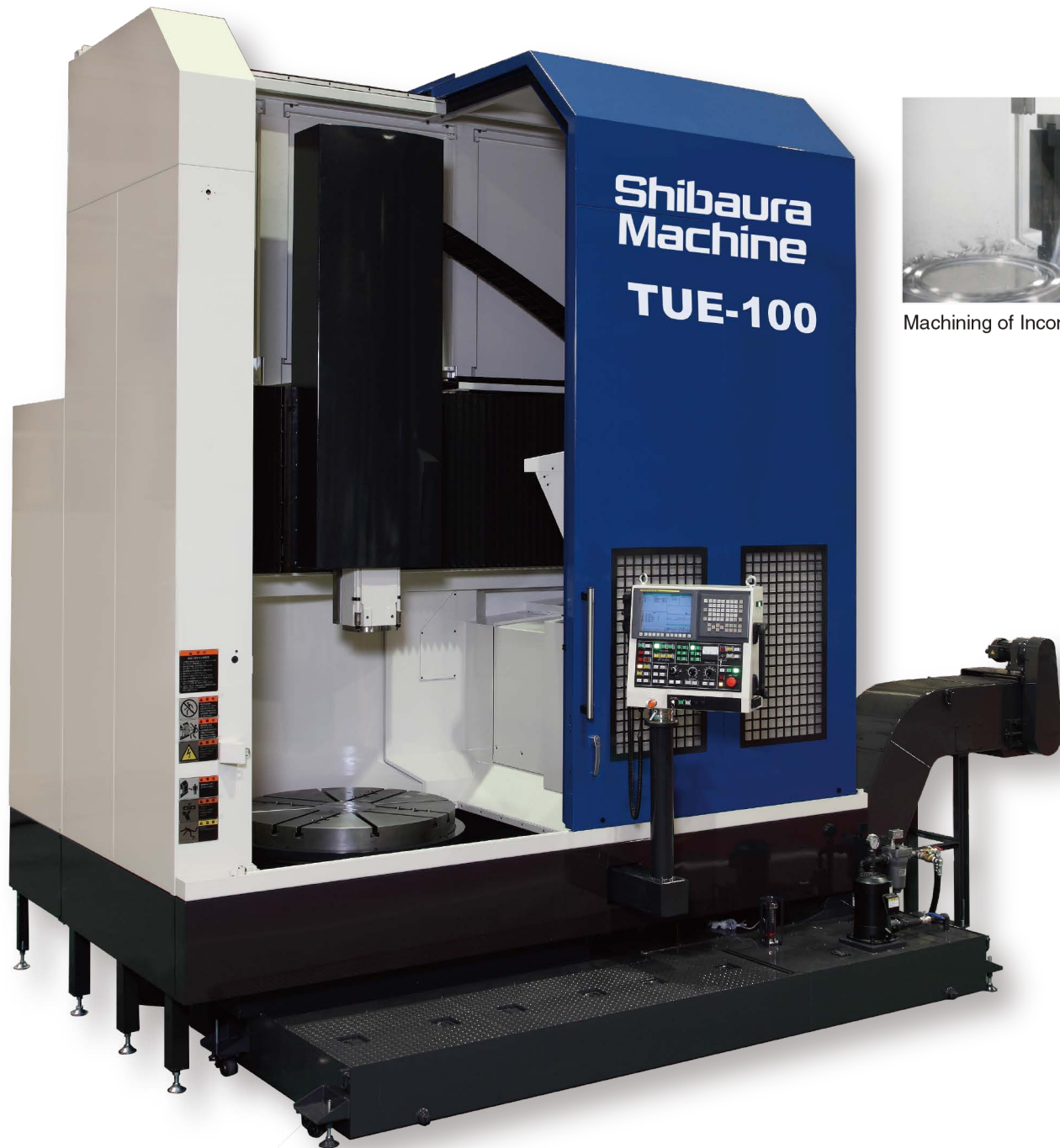
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* We reserve the right to change any of specifications in this catalog without notice in order to effect improvements.

TUE-100

Further expanding our VTL lineup Excellent cutting ability which is born from High power Vertical lathe creating new added value



Machining of Inconel

■ Features

- Identical Ram Cross-Section as Larger model Ensures Heavy Duty Cutting Capability
- Wide Range of Table Speeds for Exceptional Surface Finishes on Various Materials.
- Highest Rapid Rate Available in its Class, Reduces Cycle Time.
- A full enclosure with door interlocks is Standard Allowing for Cleaner Working Environment.
- 100(S) type machine equipped with a live spindle reduces the amount of setups, in order to achieve a more efficient process.



*OP: HALF COVER

Mechanical structure to allow powerful cutting

Main structure is made up using a thick high-quality cast iron.

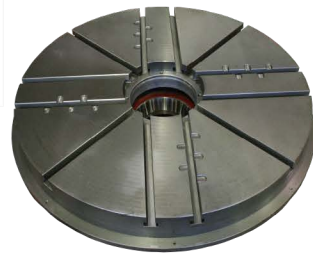
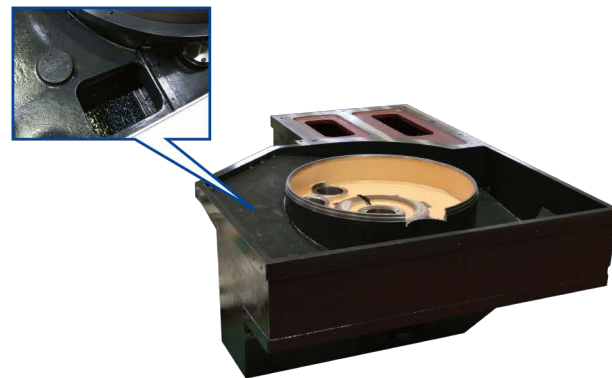
Column

The wall-type column with a large cross-sectional shape and the cross rail are a single casting designed to reach out to the table center. This type construction firmly supports the rail-head for high-precision, high speed positioning, and heavy cutting.



Bed

The bed, made of cast iron, was engineered for maximum support of the Table and Column. By design, the chips efficiently flow down the slope shape of the bed into the standard chip conveyor with the aid of a shower type coolant.



Table

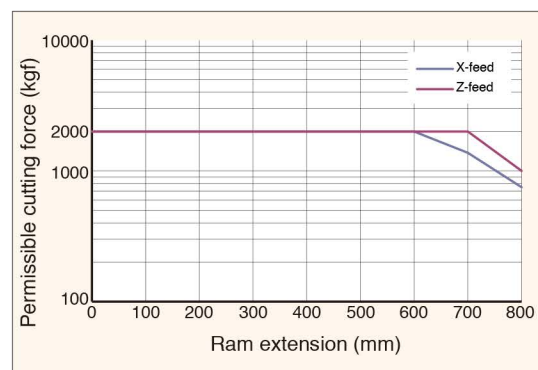
The table is supported by a combination of 2 different types of bearings, a tapered roller bearing which bears the radial load and a large diameter thrust ball bearing which bears the axial load. This combination makes high-speed and heavy cutting possible.

Railhead & Ram

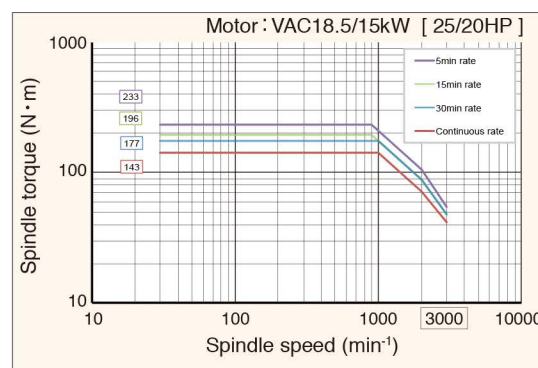
The Railhead and Ram create a hybrid system of motion utilizing large diameter ball screws with linear roller guide ways for the X axis and Hardened and Ground box slide ways for the Z axis making it possible for high-precision and high speed positioning to coexist with heavy cutting.

Tool can be clamped/unclamped automatically in the Spindle (ISO taper No.50) with the collet type pull stud and the spindle is driven by the AC type motor located at the top of the ram.

Cutting force diagram

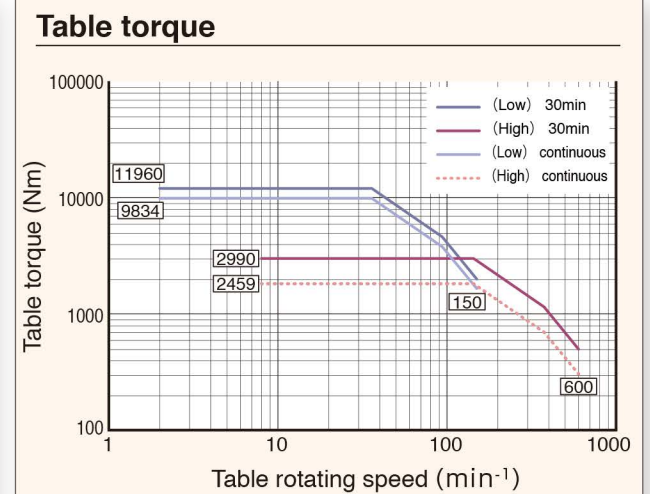
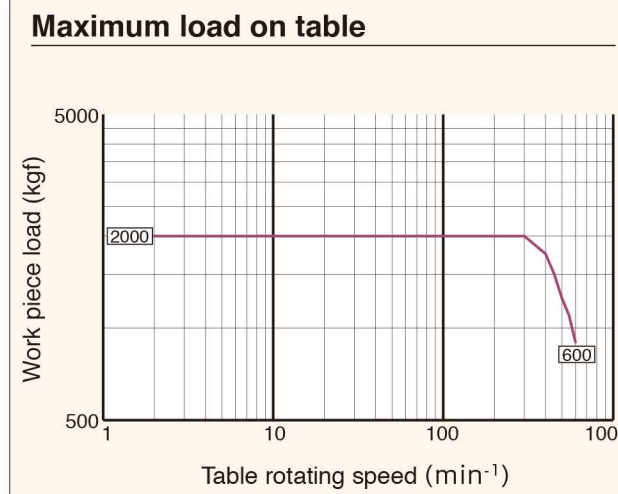


Live Spindle torque diagram



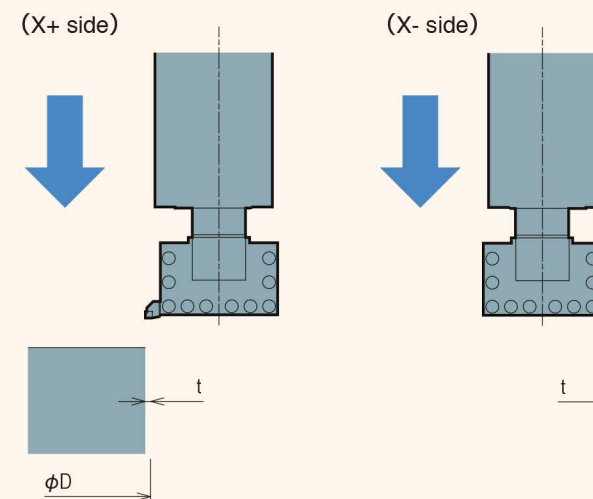
Machine capability

Table capability diagram



Machining capability (Material: AISI 1055)

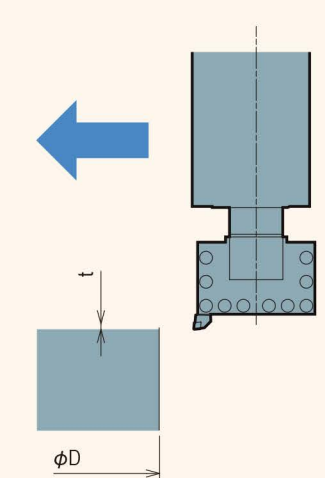
Outer Cutting



Ram Ext.	: 700 ~ 722mm
Dia.: D	: ϕ 408mm
Depth: t	: 10mm
Feed: F	: 1.0mm/rev
Cutting force	: 2ton

Ram Ext.	: 700 ~ 725mm
Dia.: D	: ϕ 420mm
Depth: t	: 10mm
Feed: F	: 1.0mm/rev
Cutting force	: 2ton

Facing

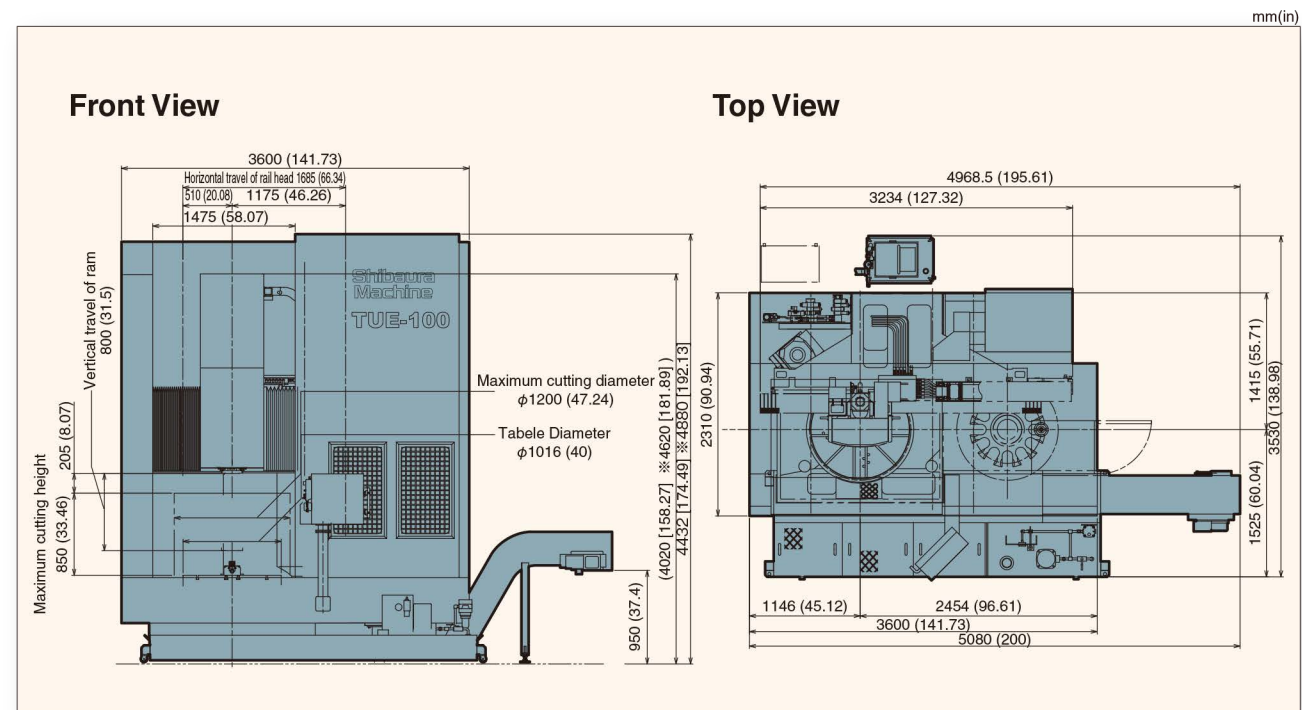


Ram Ext.	: 650mm
Dia.: D	: ϕ 445 ~ 220mm
Depth: t	: 10mm
Feed: F	: 1.0mm/rev
Cutting force	: 2ton

Note) This data may not be achieved due to a variety of different factors such as - method of work holding, type of tool holder, type of cutting tool, etc...

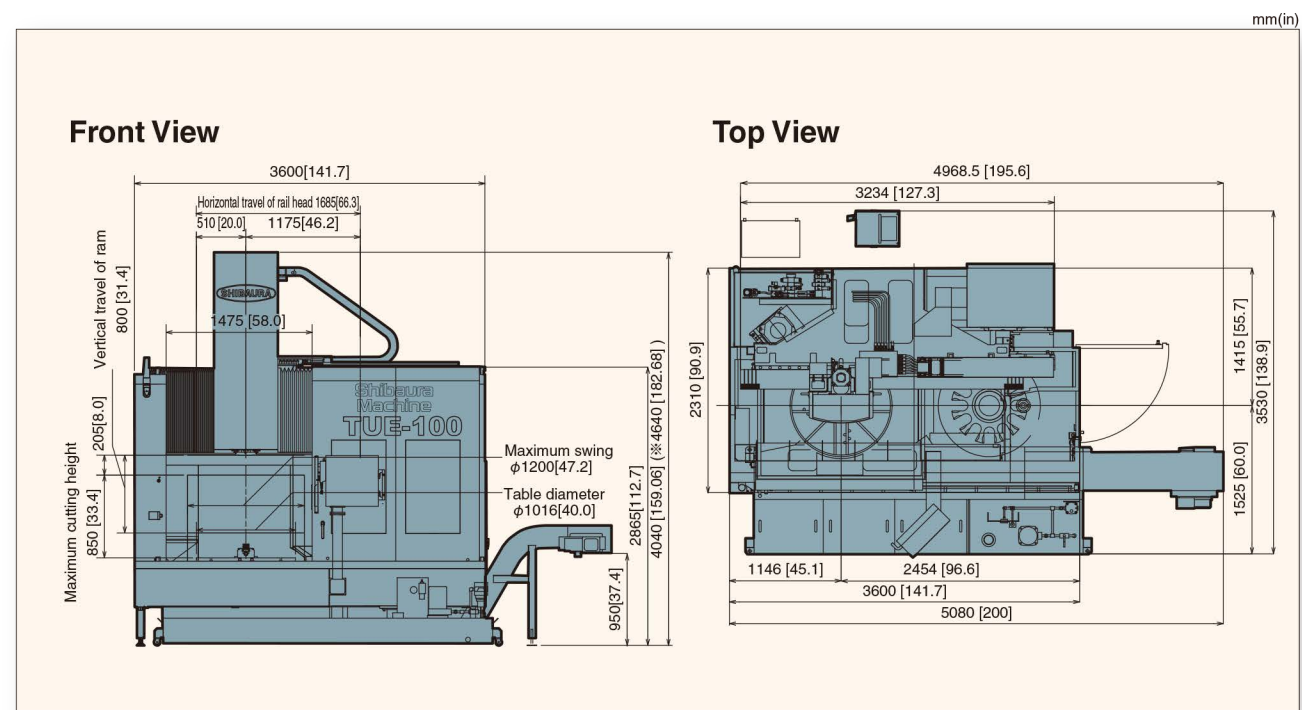
Machine General View

FULL COVER



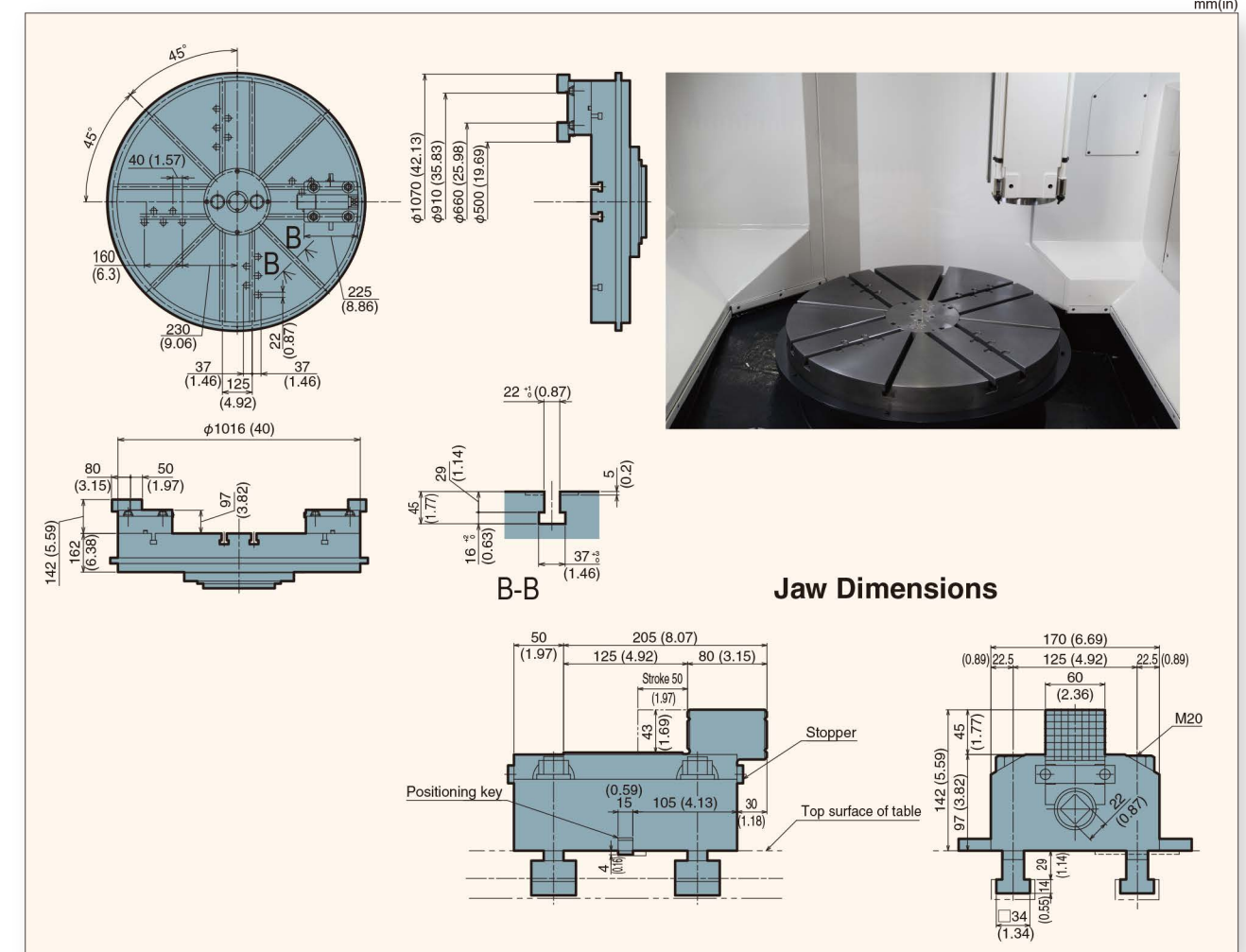
※100(S)

HALF COVER

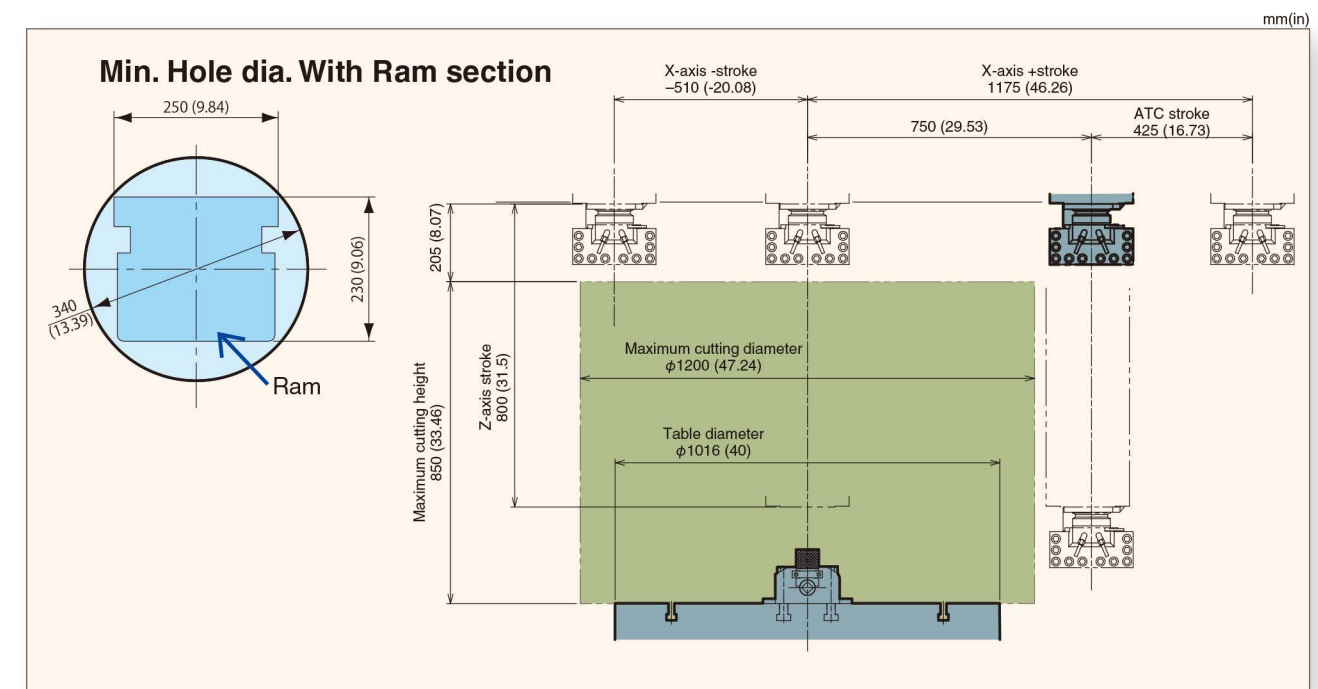


※100(S)

Table Dimensions



Machine Area



Machine specifications

Capability and capacity	Table diameter	mm[in]	1 016 [40.0]
	Maximum swing	mm[in]	1 200 [47.2]
	Maximum height from table top to ram bottom	mm[in]	1 055 [41.5]
	Maximum cutting height	mm[in]	850 [33.4]
	Maximum cutting diameter	mm[in]	1 200 [47.2]
	Maximum cutting force of ram	N[lbf]	19 600 [4 406]
Travel	Maximum load on table	kg[lb]	2 000 [4 400]
	Horizontal travel of rail head(X-axis)	mm[in]	-510 ~ 750 [-20.0 ~ 29.5]
Table	Vertical travel of ram(Z-axis)	mm[in]	800 [31.4]
	Rotation speed(2 ranges)	Low High	min ⁻¹ min ⁻¹
Live Spindle [100(S)]	Maximum torque	N·m[lbf·ft]	9 834 [7 253] (at 36min ⁻¹)
	Rotation speed	min ⁻¹	15 ~ 3 000
Feed rate	Maximum torque	N·m[lbf·ft]	233 [171.8]
	Rapid traverse rate of rail head	m/min[ipm]	15 [590.5]
	Rapid traverse rate of ram	m/min[ipm]	12 [472.4]
Ram	Feed rate	mm/min[ipm]	1 ~ 2 000 [0.04 ~ 78.7]
	Type		Square ram type
	Guideways		Dual parallel
Tool	Section	mm[in]	250 × 230 [9.84 × 9.06]
	Type of tool shank		7/24 taper No.50
	Type of retention knob		JIS 50 PU
Motor	Automatic tool changer(ATC)		Tool storage capacity : 12 tools
	Table drive motor(30min./Continuous rating)	kW[hp]	VAC 45/37 [60/50]
Machine size	Height	mm[in]	4 432 [174.4] [4 880] [192.1] ※4 040 [159] [4 640] [182.6]
	Floor area	mm[in]	5 080 × 3 530 [200 × 138.9]
	Machine weight	kg[lb]	11 000 [24 200] [11 500] [25 300] ※ 10 300 [22 700] [10 800] [23 800]
Accuracy	Positioning accuracy	mm[in]	X and Z axis : ±0.007 per 500 [±0.0003 per 20] X-axis : ±0.015/(0~1 000)[±0.0006/(0~39.3)] Z-axis : ±0.015/(0~800)[±0.0006/(0~31.4)]
	Positioning repeatability accuracy	mm[in]	±0.003 [±0.00012]
Painting color	Exterior painting		Munsell 5Y8.4/0.5(R4-383) and Munsell N2.5
	Interior painting		Munsell 10YR8/4

※HALF COVER
[] 100(S)

Standard Accessory

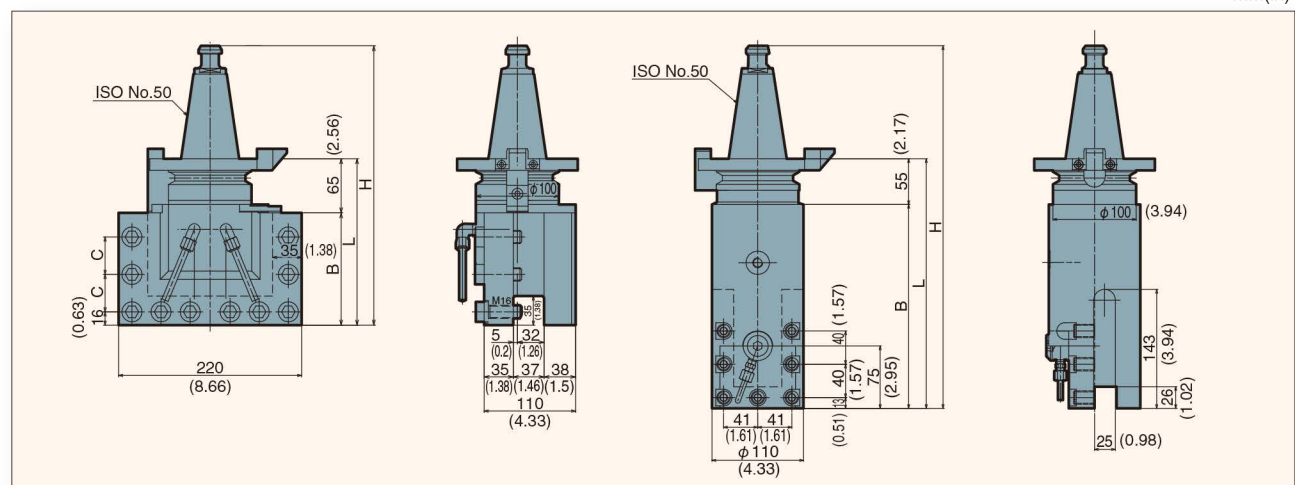
1 Installations parts	1set	5 Telescopic crossrail slide cover	1set
2 Special service tools	1set	6 Splash cover (Full-closed type)	1set
3 Automatic slideway lubricating unit	1set	7 Coolant through spindle	1set
4 Four (4) independent manually-operated jaws	1set		

Optional Accessory

<p>Turning basic package</p> <p>(1) Automatic tool changer (ATC) Tool storage capacity : 12 tools (※18 tools) Type of tool shank for turning : 7/24 taper No.50 Maximum tool size : 350W×150T×400L mm {13.8W×5.9T×15.7L inch} Maximum tool weight : 40 kg (88 lb) Method of tool selection : Soft tool pot address</p> <p>(2) Work light (LED) 10 Watt x 2 piece, Located inside of splash cover</p> <p>(3) Operator call lamp (This lamp is mounted on top of the arm right side.) Green : Illuminated during automatic operation. Yellow : Illuminated when M00, M01, M02, M30 or M52 has been executed. Red : Illuminated at NC alarm or machine alarm generation.</p> <p>(4) Table lubricant oil cooling unit</p> <p>(5) Automatic power OFF</p> <p>(6) Chip conveyor with tank / coolant unit Used to discharge chips recovered by the chip scraper from the machine. Not available to operate by inputting M-code (only manual push button). Coolant tank capacity : 550 L [145.3 gal] Standard type : Motor : AC 4P, 0.2kW [0.27 HP]</p> <p>(7) Additional table center hole and tap hole Table center hole for fixture : Dia. 100 mm [3.94"] Tap size : M24×pitch 3.0 [1-8UNC]</p>	<p>User Option</p> <p>(8) High type independent manually-operated jaw set (4 pieces)</p> <p>(9) Separate type independent manually-operated Soft jaw set (4 pieces)</p> <p>(10) Separate type independent manually-operated Hard jaw set (4 pieces)</p> <p>(11) Special stroke type independent manually-operated jaws set (4 pieces) Jaw stroke : 100 mm [3.94"]</p> <p>(12) Tool holder (see below)</p> <p>(13) X-axis linear scale feedback</p> <p>(14) Automatic diameter and step difference measuring device (Included automatic tool compensation function) This consists of "touch probe from Renishaw" and measuring software for it. Printer is not included in this option.</p> <p>(15) Automatic tool tip measuring device (Included automatic tool compensation function) This consists of "tool eye (with a cross type feeler) from Renishaw" and measuring software for it. Printer is not included in this option.</p> <p>(16) ATC jib crane Maximum lifting load : 50 kg (110lb)</p> <p>(17) HALF COVER</p>
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※100(S)

Tool holder (Optional Accessory)



	L	H	B	C
FMS50A-ST(3232)-160-JH	160(6.3)	295.8(11.65)	95(3.74)	30(1.18)
FMS50A-ST(3232)-200-JH	200(7.87)	335.8(13.22)	135(5.31)	45(1.77)
FMS50A-ST(3232)-250-JH	250(9.84)	385.8(15.19)	185(7.28)	45(1.77)
FMS50A-BFP110-250-JH	250(9.84)	385.8(15.19)	195(7.68)	-
FMS50A-BFP110-300-JH	300(11.81)	435.8(17.16)	245(9.65)	-
FMS50A-BFP110-350-JH	350(13.78)	485.8(19.13)	295(11.61)	-

CNC FANUC Series Oi-TF



CNC FANUC Series Oi-TF

Most advanced CNC controller of FANUC series Oi-TF is applied on the machine.

Most of functions including optional functions in Fanuc's classification are specified as standard.

In addition to common operational functions, the machine is provided with such operator friendly functions as help function, alarm display, and display of operation status to assist operator.

Manual operation

The "TUE series machine can be operated in manual very easily, in addition to automatic operation.

Many operation buttons to be used in manual mode are located on the operation panel, which are "Table CW/CCW" including jogging, Feed selection switch for X and Z including jogging, "Table speed overrideswitch", "Feed override switch" "Operation mode selection buttons", and Manual pulse generator (MPG)".

Basic Specifications

1. Axis control	
Controlled path	1 path
Controlled axis (total)	2 axis (※3 axis)
Simultaneous controllable axis	2 axis (※3 axis)
Axis name	X, Z and C
Spindle	1 unit
Least input increment	0.001mm (※0.001 deg), 0.0001inch
Flexible feed gear	Optional DMR
Inch/metric conversion	
Interlock	All axes / each axis / each direction / block start / cutting block start
Machine lock	All axes/each axis
Emergency stop	
Over travel	
Stored stroke check 1	
Stored stroke check 2	
Stored stroke check 2,3	
Stroke limit check before move	
Chuck and tail stock barrier	
Mirror image	Each axis
Follow-up	
Servo off	
Chamfering on/off	
Backlash compensation	
Backlash compensation for each rapid traverse and cutting feed	
Stored pitch error compensation	
Position switch	
Unexpected disturbance torque detection function	
2. Operation	
Automatic operation (memory)	
DNC operation	
DNC operation with Memory card	CF card and PCMCIA Card attachment is required
MDI operation	
Schedule function	
Program number search	
Sequence number search	
Sequence number comparison and stop	
Program restart	
Buffer register	
Dry run	
Single block	
JOG feed	
Manual reference position return	
Reference position return speed set	
Manual handle feed	1 unit
Manual handle feedrate	x1, x10, x100
Manual handle interruption	
3. Interpolation functions	
Positioning	G00
Linear interpolation	G01
Circular interpolation	G02, G03
Dwell	G04
Polar coordinate interpolation	
Cylindrical interpolation	
Thread cutting, synchronous cutting	
Multi threading	
Thread cutting retract	
Continuous threading	
Variable lead threading	
Skip	G31
High speed skip	
Reference position return	G28
Reference position return check	G27
4. Feed function	
Rapid traverse rate	X: 15m/min, Z: 12m/min
Rapid traverse override	0~100%, 10% step
Feed per minute	
Feed per revolution	
Cutting feedrate clamp	
Automatic acceleration/deceleration	Rapid traverse: linear, Cutting feed: exponential
Rapid traverse bell-shaped acceleration/deceleration	
Linear acceleration/deceleration after cutting feed interpolation	
Feedrate override	0~200%, 10% step
Jog override	
Override cancel	
Manual per revolution feed	
External deceleration	
5. Program input	
Program code	EIA / ISO
Label skip	
Parity check	Horizontal and vertical parity
Control in/out	
Optional block skip	max. 9 pieces
Max. programmable dimension	-9 ~ +9 digit
Program file name	32 characters
Sequence number	N8 digit
Absolute/incremental programming	Combined use in the same block
Decimal point programming/ pocket calculator type decimal point programming	
Diameter/radius programming (X axis)	
※Plane selection	G17, G18, G19
※Rotary axis designation	
Coordinate system setting	
Automatic coordinate system setting	
Coordinate system shift	
Workpiece coordinate system	G52~G59
Workpiece coordinate system preset	
Direct input of workpiece origin offset value measured	
Direct drawing dimension programming	
G code system	A (※B)
Chamfering/corner R	
Programmable data input	G10
Sub program call	4 folds nested
Custom macro	
Addition of custom macro common variables	#100~#199, #500~#999
Canned cycles	
Multiple repetitive cycle	
Multiple repetitive cycle 2	pocket profile
※Canned cycles for drilling	
Circular interpolation by R programming	
Coordinate system rotation	
Programmable mirror image	G50.1/G51.1
G code preventing buffering	
Program format for FANUC Series 10/11	
Coordinate system shift	
Direct input of coordinate system shift	
Pattern data input	
Conversational programming with graphic function	
6. Auxiliary/Spindle speed function	
Auxiliary function	M2-digit
Auxiliary function lock	
Multiple command of auxiliary function	3
Spindle speed function	S5-digit
Spindle serial output	S5-digit, serial output
Constant surface speed control	
Spindle override	50~120 %, 5% step
Actual spindle speed output	
Spindle orientation	All spindle
※Multi spindle control	
※Rigid tapping	
Spindle speed fluctuation detection	
7. Tool function/Tool compensation	
Tool function	T4-digit
Tool offset pairs	99 pairs
Tool offset	
Tool nose radius compensation	
Tool geometry/wear compensation	
Tool offset value counter input	
Automatic tool offset	
Direct input of tool offset value measured	
Direct input of tool offset value measured B	
Tool life management	
Extended tool life management	
8. Editing operation	
Part program storage size	512kbyte
Number of registerable programs	400
Part program editing	
Extended part program editing	
Program protect	
Password function	
Playback	
Background editing	
Multi part program editing	
Memory card program edit & operation	
9. Setting and display	
Status display	
Clock function	
Current position display	
Program comment display	Program name 31 characters
Parameter setting and display	
Parameter check sum function	
Self-diagnosis function	
Alarm display	
Alarm history display	
Operator message history display	
Operation history display	
Help function	
Run hour and parts count display	
Actual cutting feedrate display	
Display of spindle speed and T code at all screens	
Directory display of floppy cassette	
Operating monitor screen	
Servo setting screen	
Spindle setting screen	
Servo waveform display	
Display of hardware and software configuration	
Periodic maintenance screen	
Maintenance information screen	
Trouble diagnosis	
Software operator's panel	
Software operator's panel general purpose switch	
Extended software operator's panel general purpose switch	
Multi-language display	English, Japanese, Chinese, Spanish, Portuguese, etc.
Dynamic display language switching	
Data protection key	
Erase CRT screen display	
Parameter setting support screen	
Servo information screen	
Spindle information screen	
Graphic display	
10. Data input/output	
RS232C Interface	Channel 1
Memory card input/output	
USB Memory input/output	
Screen hard copy	
Power mate CNC manager	
Optional Accessories (to be selected by users)	
1 Dynamic Graphic display	The function is not allowed to be selected together with "Manual guide" listed below.
2 Data server	The function is not allowed to be selected together with "Fast Ethernet" listed below.
3 FAST Ethernet	
4 Manual guide i	
	Manual guide i basic
	Manual guide i turning cycle
	※ Manual guide i milling cycle
	Manual guide i animation
5 ※Helical interpolation	
6 Part program storage size	2Mbyte ※ 100(S)