

CNC 1 Spindle 2 Turret
Precision Lathe

X-S7000

CNC PRECISION LATHE X-S700

TAKAMAZ

With the twin turret design,
the ultimate shaft machining is achieved.

CNC 1 Spindle 2 Turret Precision Lathe

X-S700

This is a space saving machine and suitable for machining camshaft and crankshaft.

With the adoption of 1-spindle and 2-turret design,
it is a unique structure that provides uniform and high accuracy machining by balance cutting.



※The photo shows new TAKAMAZ standard color. Environmentally friendly powder coating is employed.

FEATURE

Demonstrates high productivity machine for machining shaft configurations

With original 1-spindle and 2-turret concept, and tailstock that is servo controlled, this machine configuration for shaft machining of various workpieces. The Z-Axis has stroke of 650mm and a Max.700mm* long shaft machining is possible. In addition, X-Axis, with a 115mm stroke, can also support crankshaft machining. Through symmetrical twin turret design, balance cutting, simultaneous left and right individual cutting are possible resulting in individual shorter cutting times of different shapes.

The adoption of more rigid 10-station turret, more tooling is available. The vertical X, Z axis slides use a rigid square box-way slide, and in combination with large spindle: $\phi 120\text{mm}$ bearing bore (B specification) the heavy machining on the cutting area of 2.0mm^2 is made easy.

※When OD holder is used in a $\phi 100$ spindle, up and down individual cutting is possible.

Heavy Cutting on an are of 2.0mm^2

(Cutting amount $5\text{mm} \times$ Feedrate 0.4mm/rev.)



Through symmetrical twin turret design, shorter cutting time is achieved.



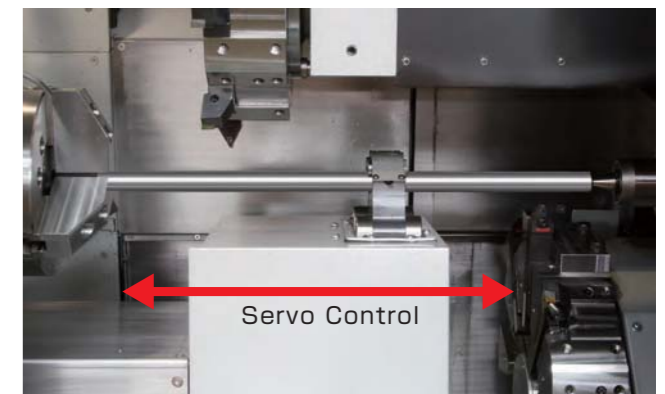
Balance Cutting



Left and Right individual Cutting

Multi-programmable control for workpiece batches in small quantities

With servo-controlled tailstock, servo driven work anti-vibration system, by just changing a program, different types of works can be handled and time for tool change is shorter.



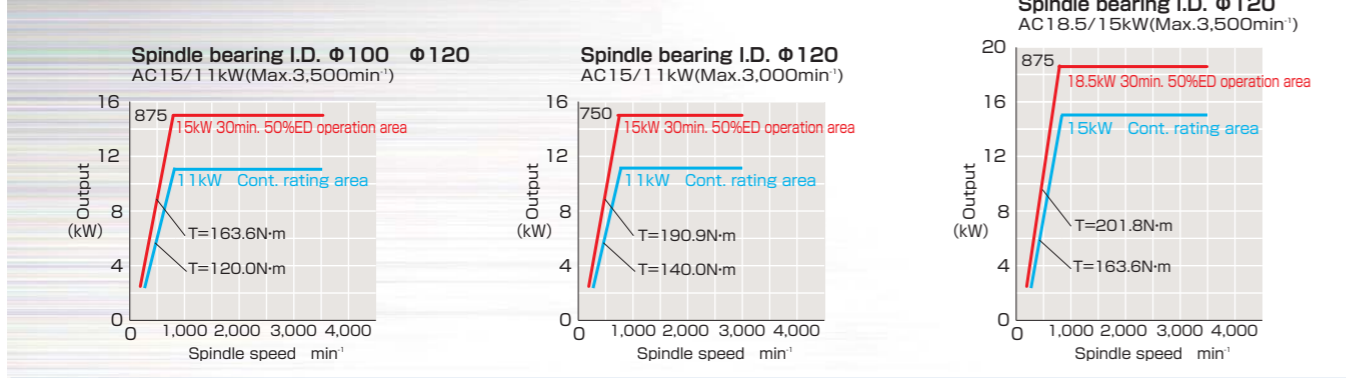
Self Centering Steady Rests system (option) can be installed, and handle face and ID cutting

2 Types to choose from per requirement

	Max.bar diameter	Chuck size	Spindle motor	Tailstock
A type [Spindle bearing I.D.Φ100]	Φ51	8inch	AC15/11kW	MT-4
B type [Spindle bearing I.D.Φ120]	Φ65	8inch (10inch)	AC15/11kW (AC18.5/15kW)	MT-5

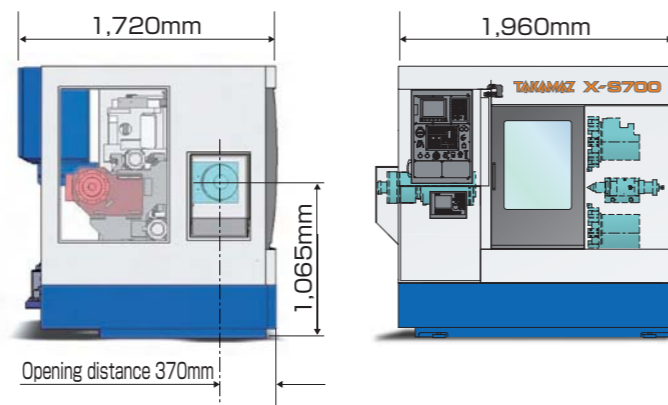
() : Option

Spindle motor output characteristics diagram



Space Saving

To accommodate a long shaft machining and heavy crankshafts, the machine is equipped with spindle with capability of up to 10-inch chuck, 2 symmetrical turrets that can cut up to 700mm workpiece in length, and configured with MT-5 (B specification) tailstock. Still, the machine has only a machine width of 1,960mm, and floor area of 3.4m². As compared with previous shaft cutting machines, this machine has approximately 25% less floor area while increasing manufacturing frequency by cutting with 2 turrets.



Emphasis on Workability

The distance from the front center of the machine to the center of the spindle is 370mm, and the distance until the turret holder mounting face is 190mm. This is a good structured design. Therefore, tool changing is reasonably easy to perform. This square design is also focused on maintenance and also achieves a high safety.



Excellent Chip Discharge through better structure



Focused on Ease in Operation with New Controller

This machine is equipped with the newest controller, Fanuc "Oi-TD". The tool counter and other devices of TAKAMAZ custom screen that are standard, improve operation during cutting through ease of use and also improve maintenance functions.

「ΣGT700」 is exclusively mounted for X-S700

New Loader to transport 10kg (Max.20kg with option)

By utilizing our wide range of expertise on Automation Know How, we are proudly able to automate max. 10kg (20kg with option) of workpiece by developing the new 3-Axis Servo Loader 「ΣGT700」. Through automation of the transport of crankshaft and other heavy workpieces, a higher productivity is achieved.

Weight of loading workpiece: 10kg (20kg with option)



Hand type exclusive for crankshaft workpiece



Hand used for shaft workpiece (Pendulum Type)

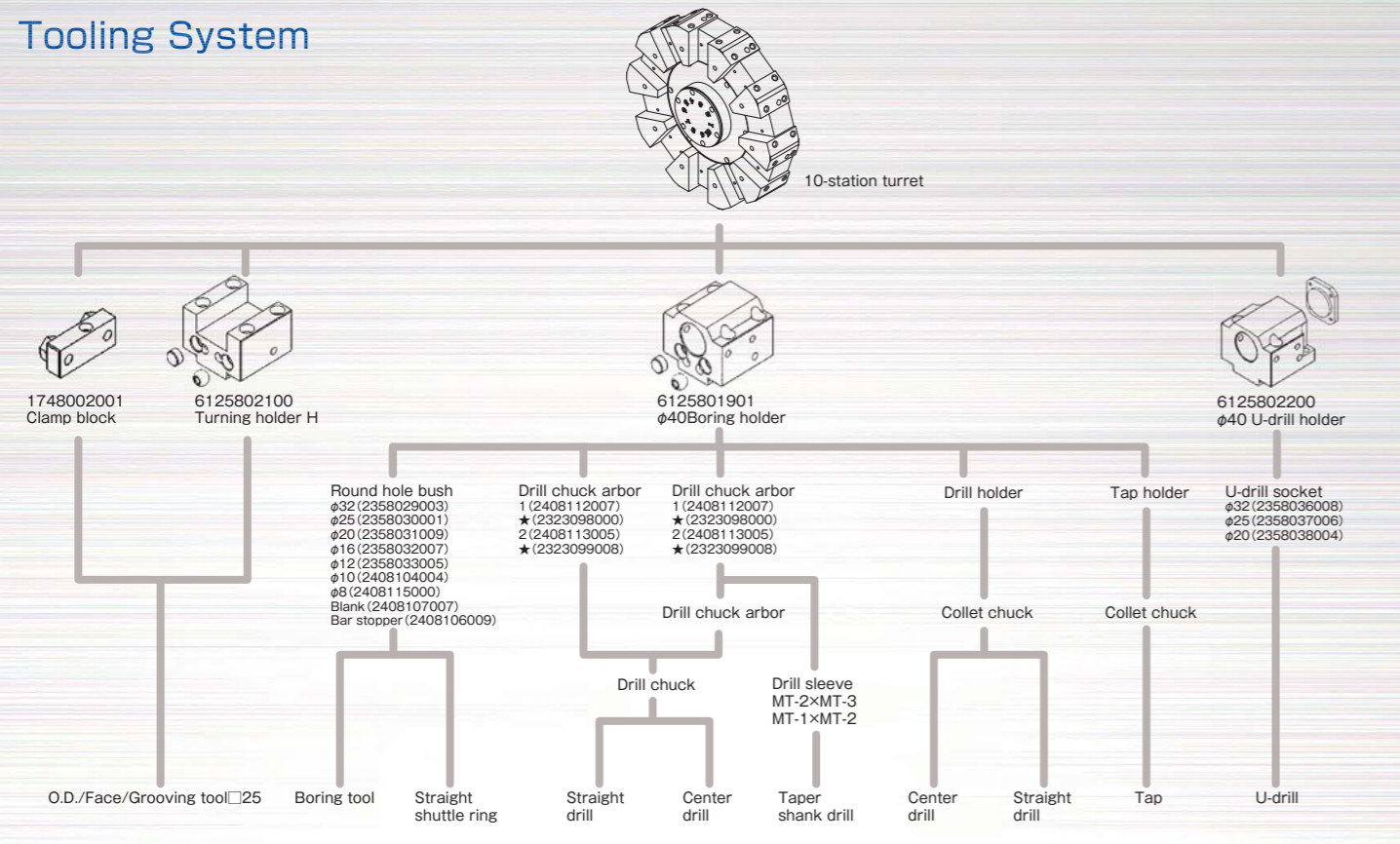
Item		Unit	The new 3-Axis Σ loader(ΣGT700)
Workpiece dimension	Workpiece diameter	mm	φ20~φ55(~φ70) *1
	Weight capacity (One side)	kg	10(20) *2
	Workpiece length	mm	400~700 *1
Loader	Drive system	—	Servomotor(rack and pinion)
	Stroke	mm	X:260 Y:1000 Z:Depends on spec.
	Rapid traverse rate	m/min	X:50 Y:90 Z:90
	Drive motor	kW	X:0.75 Y:1.5 Z:1.5
Hand rotation *3	Drive system	—	Air cylinder
	Rotation angle	deg.	—
	Jaw stroke	mm	25

*1 The diameter depends on the workpiece weight and length.

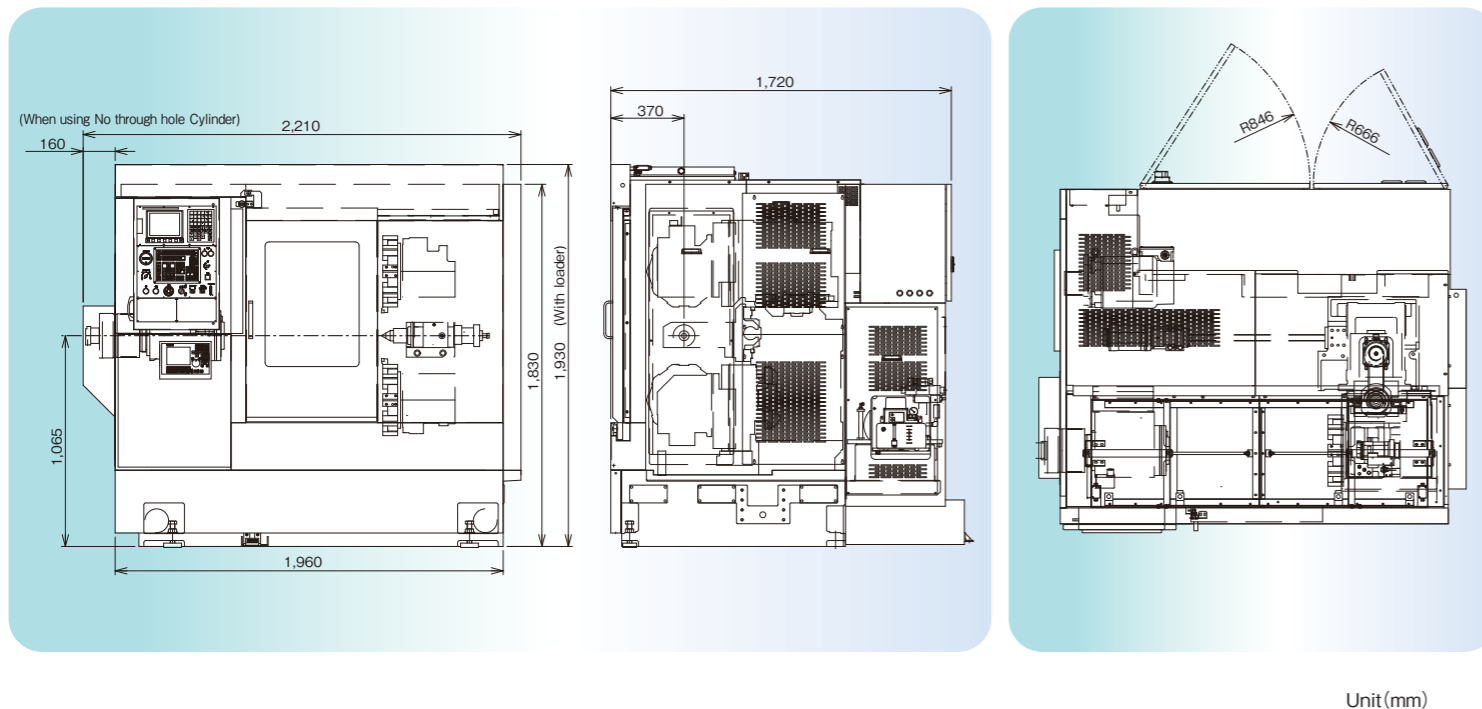
*2 The standard loader specification can transport 10kg workpiece. The maximum specification is 20kg and is offered as an option.

*3 The shape of the hand depends on the form of the workpiece.

Tooling System



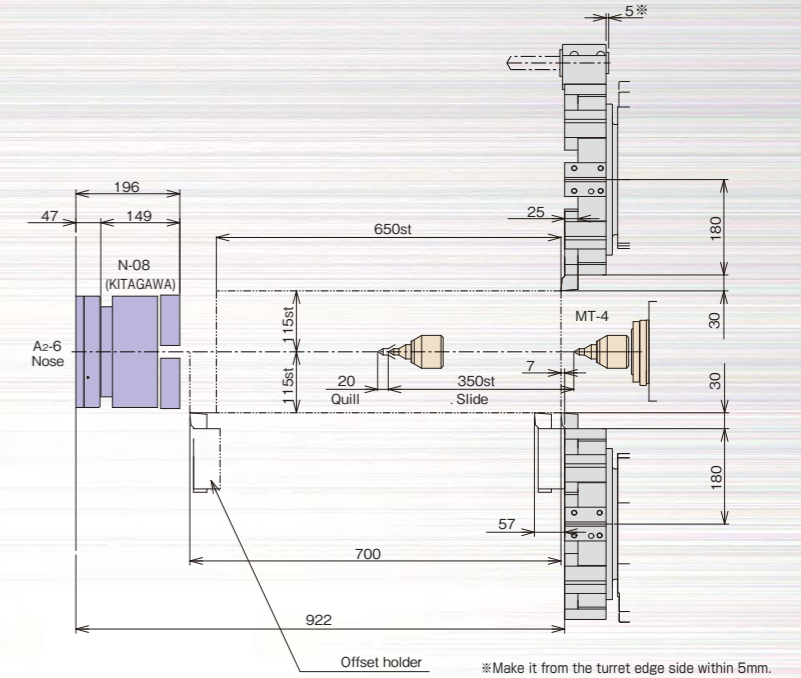
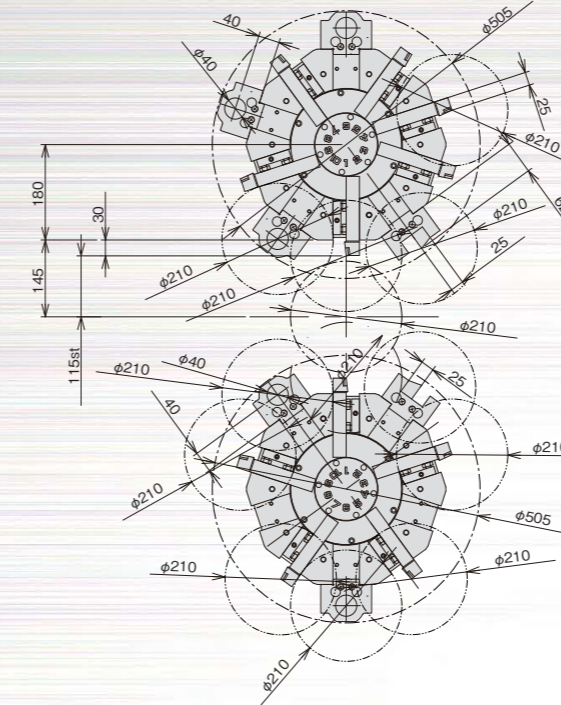
Floor Space



Turret Interference Drawing

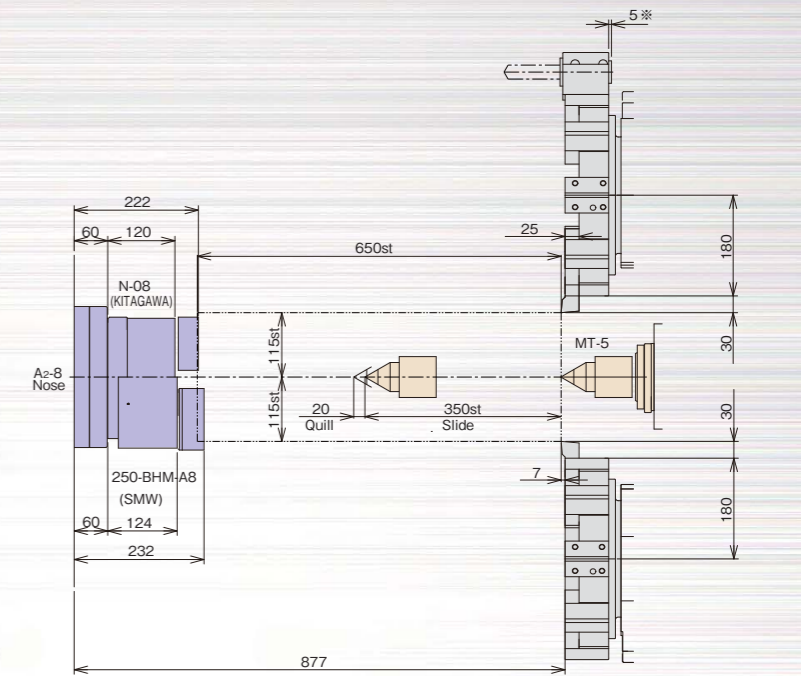
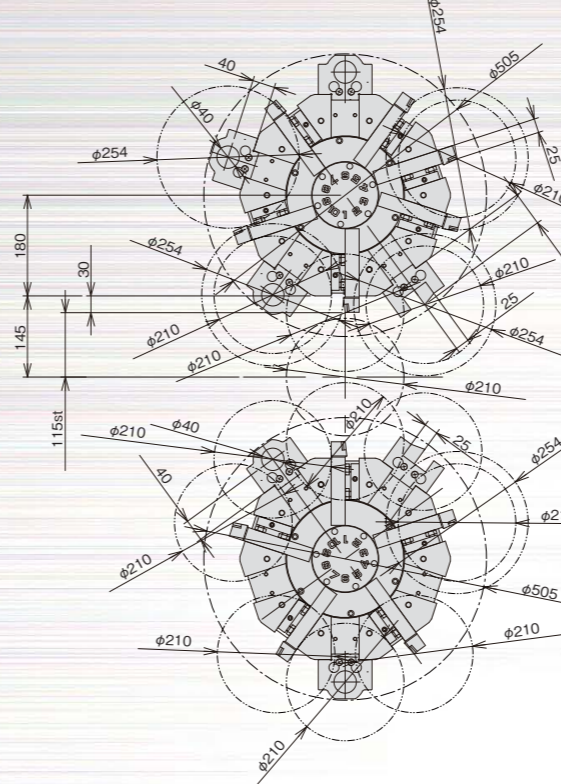
Stroke-Related Diagram

Spindle Bearing I.D. [$\phi 100$]



Unit (mm)

Spindle Bearing I.D. [$\phi 120$]



Unit (mm)

Machine Specifications

Item	Unit	X-S700	
		A type	B type
Capacity			
Max. turning diameter	mm	φ225	
Max. turning length	mm	700 *1	625
Max. bar diameter	mm	(φ51)	(φ65)
Chuck size	inch	8	8 (10)
Spindle			
Spindle nose	JIS	A2-6	A2-8
Spindle bearing I.D.	mm	φ100	φ120
Through-hole on spindle	mm	φ52	φ66
Spindle speed	min ⁻¹	Max.3,500	Max.3,500(3,000)
Tool post			
Type		10-station x2	
Tool shank	mm	□25	
Boring holder I.D.	mm	φ40	
Max. stroke	mm	X : 115	Z : 650
Rapid traverse rate	m/min	X : 16 Z : 30	
Motors			
Spindle motor	kW	AC15/11	AC15/11(18.5/15)*2
Feed motor	kW	X : AC1.4 Z : AC1.8	
Coolant motor	kW	AC0.25 x3	
Hydraulic motor	kW	AC0.75 x2	
Tail motor	kW	AC1.4	
Size			
L x W x H	mm	1,960 x 1,720 x 1,830	
Machine weight	kg	5,400	5,500
Total electric capacity	KVA	34	34(40)

*1 Possible through separate vertical machining when using a shift O.D. holder in a φ100 spindle. () : Option
 *2 A spindle motor of AC18.5/15kW is mounted for the 3,500min⁻¹ spindle.

Standard Accessories

- Clamp block 20sets
- Coolant block(For reverse cutting tools) ... 20sets
- Hydraulic power chuck(8"Solid) ... 1set
- Hydraulic chucking cylinder 1set
- Tailstock 1set
- Hydraulic unit 2sets
- Thread cutting unit 1set
- Coolant unit(110lit.) 1set
- Set service tool kit 1set
- Instruction manual 1set

Optional Accessories

- Tool holder
- Chucking system
- Clamp holder (Vibration-suppressing alloy)
- Special spindle speed(3,000min⁻¹)
- Center rest unit
- Storage-type work rest device
- Spindle indexing device(Electrical/Mechanical)
- Chuck clamp detector
- Automatic door system (Auto door / Shutter)
- Front air blower
- Automatic power shut-off device
- Rear coolant unit
- Cycle end signal light(1-color / 2-color / 3-color)
- TAKAMAZ loader system
- Chip conveyor(Rear)
(Floor type / Spiral type)
- Special coolant pump
- Special color
- Others

* For more information on attachments, consult our sales representative.

Tail stock

Item	Unit	A type	B type
Front taper		MT-4	MT-5
Quill O.D.	mm	φ90	
Quill stroke	mm	20(Oil pressure)	
Tailstock stroke	mm	350(Servo motor)	
Rapid traverse rate	min ⁻¹	12	
Max.thrust	kN	4	

Item	TAKAMAZ & FANUC Oi-TD
Controlled axes	5 axes (X1, X2, Z1, Z2, A)
Simultaneously controllable axes	Simultaneous 2 axes (x2)
Least input increment	0.001mm (X in diameter)
Least command increment	X : 0.0005mm Z : 0.001mm
Auxiliary function	M-code 3 digit
Spindle function	S-code 4 digit
Tool function	T-code 4 digit
Tap code	EIA(RS232C)/ISO(840) automatic recognition
Cutting feedrate	1~5.000mm/min
Command system	Incremental / Absolute
Linear interpolation	G01
Circular interpolation	G02, G03
Cutting feedrate override	0~150%
Rapid traverse override	FO, 100%
Program number	4 digits
Backlash compensation	0~9999μm
Program memory capacity	1Mbyte (2,560m)
Tool offsets	128 sets
Registered programs	800 pcs.
Tool geometry / Wear offset	Standard
Canned cycle	G90, G92, G94
Radius designation on arc	Standard
Tool offset measurement input	Standard
Background editing	Standard
Direct drawing dimension programming	Standard
Custom macro B	Standard
Additional custom macro common variables	#100~#199, #500~#999
Pattern data input	Standard
Nose R compensation	G40, G41, G42
Inch / Metric conversion	G20 / G21
Programmable data input	G10
Run hour / Parts count display	Standard
Extended part program editing	Standard
Multiple repetitive cycle	G70~G76
Multiple repetitive cycle II	Pocket-shaped
Canned drilling cycle	Standard
Constant surface speed control	G96, G97
Continuous thread cutting	G32
Variable lead thread cutting	G34
Thread cutting retract	Standard
Clock function	Standard
Help function	Standard
Alarm history display	50 pcs.
Self-diagnosis function	Standard
Sub-program call	Up to 10 loops
Decimal point input	Standard
2nd reference point return	G30
Work coordinate system setting	G50, G54~G59
Stored stroke check 1	Standard
Stored stroke check 2, 3	Standard
Input / Output interface	RS232C, Memory card, Easer net
Alarm message	Standard
Graphic display	Standard
Conversational programming with graphic function	Standard
Abnormal load detection	Standard
Balance cut	G68, G69
Manual handle trace	Standard
Automatic data backup	Max. 3
Automatic screen deletion function	Standard
TAKAMAZ option functions	Work / Tool counter, Tool load monitor
TAKAMAZ maintenance functions	Standard
FANUC set of manuals	CD-ROM

Optional Controller Specifications

Tool life management	
Spindle orientation	
Multiple M codes in one block	Max. 3
Dynamic graphic function	
Manual guide "Oi"	
FANUC instruction manual	Bound



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