TAKISAWA TWIN CHUCKER

TT-Series

Parallel Twin-Spindle CNC Lathe

5in

TT-500

TT-500GD

TAKISAWA®

TT-500GD

high-speed mass production and complete machining of small parts.

Takisawa twin chucker **TT-500GD** is a parallel twin-spindle lathe which is equipped with high speed gantry loader and supports mass production with high accuracy in 5″ chuck work.

Flexibly Supporting Any Type of Production

Takisawa twin chucker TT-series supports any type of production such as simultaneous front & back machining, symmetrical machining, and full automatic machining by connecting machines/creating production line, and provides excellent efficiency and high productivity.

ENERGY SAVING SYSTEM

Environment Friendly

- Reduction of power consumption.
  - Regenerative energy system – the energy generated when the motor decelerates returns to the power supply – is applied.
  - Internal lighting shutoff function reduces standby power.
  - Control panel cooling design takes natural radiation amount into account to reduce electric power.
  - Coolant pump runs only when coolant is being used, reducing electric power.
- The amount of coolant mixed in lubricant is reduced thanks to grease lubrication.
- Lubrication consumption is 1/40 of oil lubrication.
- The powder coating machine for environmental concern.

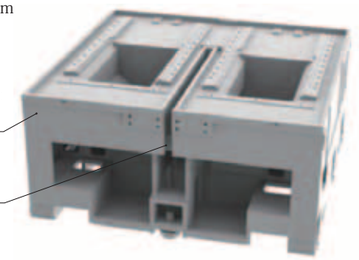
Photo includes options.

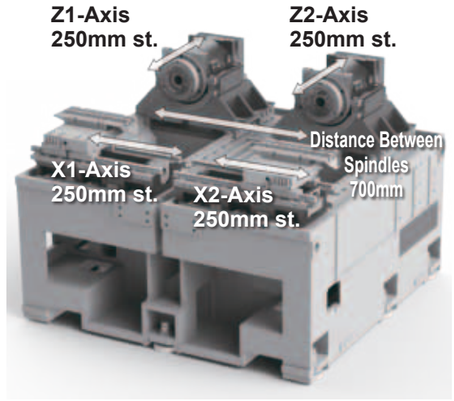
The contents of the catalog are subject to change for improvement without notice. Please make confirmation from our sales representatives when entering into the contract.

Machine Composition

Box structure with minimum displacement and vibration

Highly rigid bed of right and left integrated type exhibiting stable cutting performance.
The vibration-dispersing slit structure suppresses the influence of vibrations occurring between machining points, and the right and left integrated type bed eliminates influence of possible vibration. It has achieved unprecedented long-term stable accuracy.





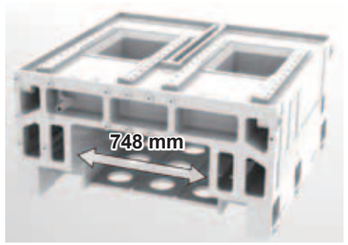
Smooth Chip Discharge

A chute is positioned beneath the chip discharge point which is fixed thanks to the moving spindle. The chip discharge performance is significantly improved and prevents chips from staying.
Chute area is 435×300mm, providing sufficient room for smooth chip discharge.


Chips fall in the chute beneath the machining point.


Tool slide cover is equipped as standard.

The opening at the rear of the bed is 748 mm, widely taken for smooth chip discharge.



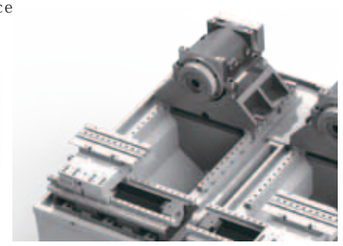
Chip Conveyor (Standard)

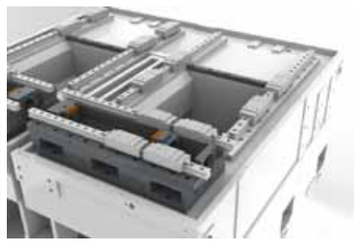
Chuck Airblow (Standard)

Roller Guides on All Axes Realizing High Speed and High Accuracy

The roller guides realize minute surface roughness.
Quadrantal spike is eliminated.

	X-Axis	Z-Axis
Guide Size	25mm	30mm
Rapid Traverse Rate	20m/min	24m/min
Stroke	250mm	300mm

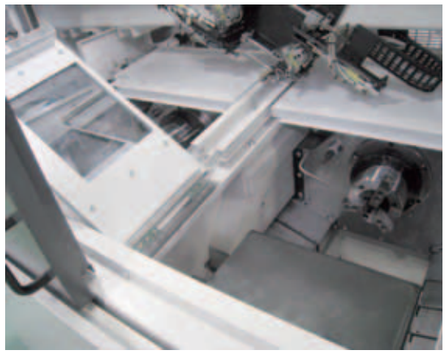




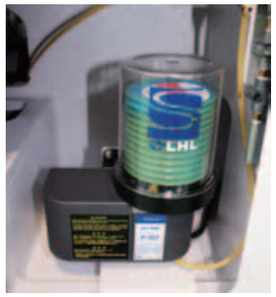
Workability Oriented

Large Maintenance Door

The right and left machining rooms are provided with the front doors to facilitate chip exchange, etc.



Automatic Grease Feeding Unit (Standard)
Maintenance is easy because grease is fed automatically.



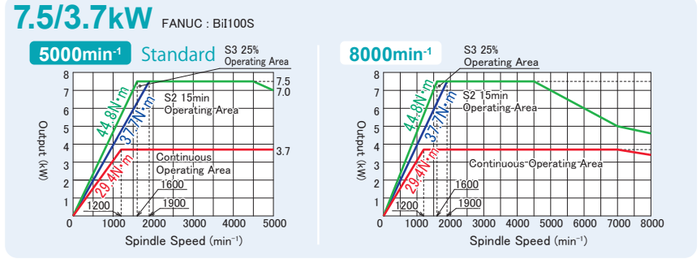
Acrylic Window (Standard)
The work feeder is provided with an acrylic window with high visibility.

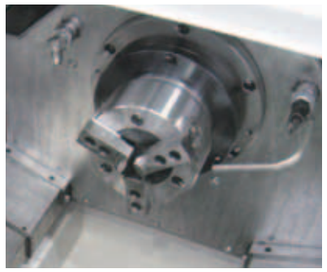
High Speed Spindle with Zero-Center Structure and Built-in Motor

It uses the zero-center structure with excellent thermal displacement resistance and vibration resistance.
The motor is the high power 7.5 kW built-in type.
- Bearing Inside Diameter ϕ65mm, Through-Hole Diameter ϕ27mm
- Spindle Speed 5000min^{-1} (OP. 8000min^{-1})
- High speed acceleration/deceleration of 0.8 sec (0 to 5000min^{-1})
  Non-cutting time is reduced significantly.

5" Chuck Type

7.5/3.7kW FANUC : Bil100S



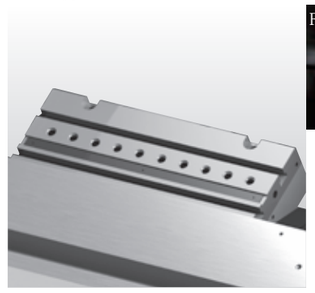


Comb Type Tool Slide Mounting Five Tools

The high accuracy comb type tool slide is equipped.
Non-cutting time can be reduced compared with the turret type. Five tools can be mounted, sufficient for small parts machining.
It also supports air milling (option) for a wide range of workpieces.

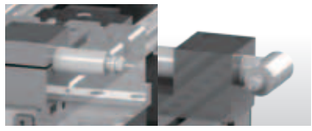
Tool Slide Width	330mm
X-Axis Travel	250mm
Height of Square Tool Shank	□16
Diameter of Boring Bar Shank	ϕ20

Comb Type Tool Slide




Five tools can be mounted.

Air Milling (Optional)



High-Speed Twin Loader

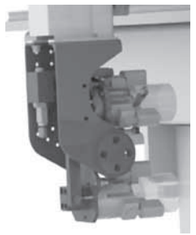
High speed 3-axis twin loader is installed as standard to significantly reduce cycle time.

Minimum Loading Time

2.5 sec

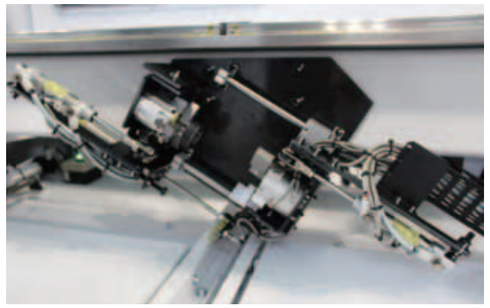
The loader hands can be selected according to the use.

Swivel Type Parallel Hand (standard)



Palletizing Hand (Option)

Quality Chute
The portion to pick workpieces out to check the quality during automatic operation.



The transfer turnover unit is also equipped as standard.
The device allows simultaneous front and back machining.
* Unlike connecting two one-spindle lathes with a reversing device provided between them, even the space efficiency is obvious.

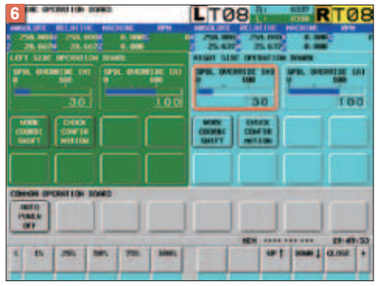
Loader Specification

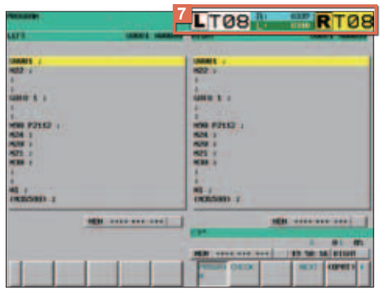
Items		TT-500GD
Target Workpiece	Outside Diameter	ϕ50mm
	Length	50mm
	Weight	0.5kg (×2)
Running Speed	X-Axis (Longitudinal)	200m/min
	Y-Axis (Vertical)	160m/min

Work Feeder Specifications

Items	TT-500GD
Number of Pallets	12
Loading Capacity (1 Pallet)	4kg
Maximum Height	250mm

Pursuing Operability





▲ Program Display

▲ Tool Offset Display

・Dedicated Switch
A dedicated switch to call a desired function to the operation panel with one push is provided for smooth work.

2 Program Reset Function
Left/right/loader programs can be reset and rewound.

3 Zero Point Return Function
It allows left/right X- and Z-axes zero point return and loader X-, Y-, and Z-axes zero point return.*

*) Subject to some conditions. For details, contact us.

Function to minimize inputting error on right and left.

4 Right/Left Selection Button
Operate the machine after selecting right or left with the button. Operation is possible only on the side with the indication lamp turned on. When both of the lamps are turned off, the machine cannot be operated.

Operation on Left Side ▶
The information on the left side is displayed on the screen and you can operate the left side.

Link of Light ▶
The light on the operation side is turned on.

5 Chuck Open/Close Switch

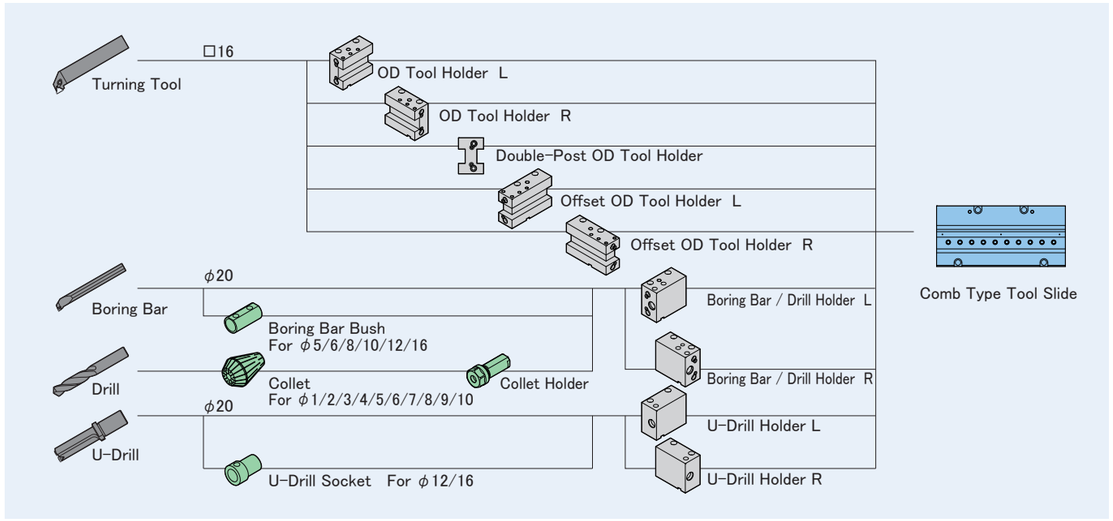
6 Machine Operation Panel Screen
The machine operation panel is displayed on the screen.
Buttons can be added and displayed/undisplayed easily.

7 Information Display Window
"Right/left selection, indexed turret number of right/left machine, and number of workpieces on right/left" can be checked in the upper right of the screen.

・Information on Right and Left is Displayed Simultaneously (Specific Screen)
On the tool offset screen and the workpiece shift screens, inputting errors are avoided by color coding of right/left, the zoom function and simultaneous display.

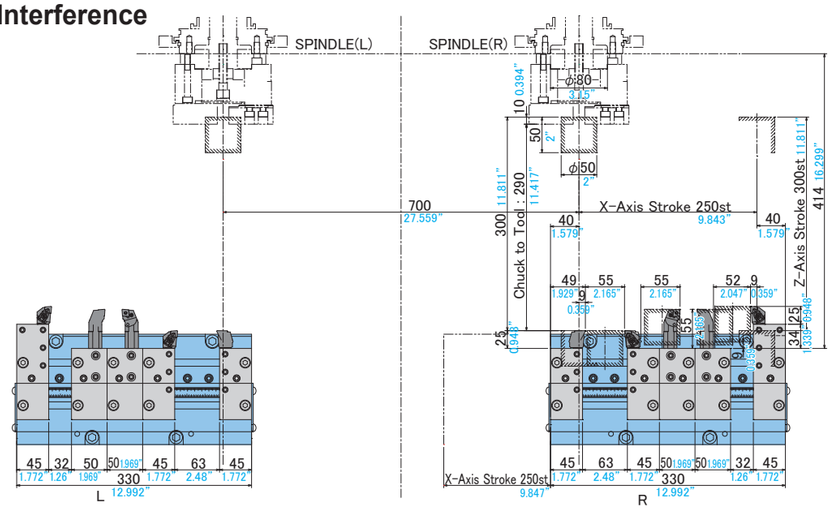
In addition, software pursuing operability is provided as standard to reduce non-productive time during setup work.
Refer to page 9.

Tooling System



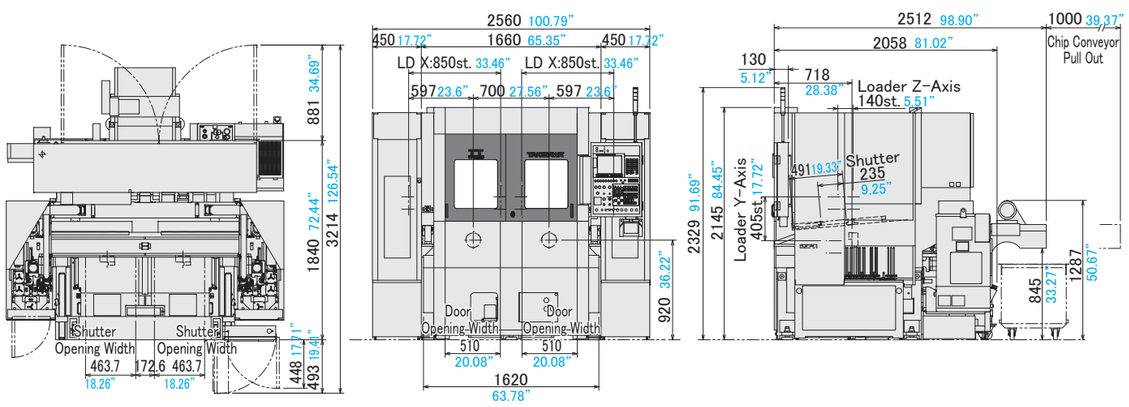
Travel Range and Interference

Unit : mm inch



Machine Dimensions

Unit : mm inch



Machine Specifications

Items			TT-500GD
Capability・Capacity	Distance Between Spindles	mm inch	700 27.56″
	Max. Turning Diameter	mm inch	50 2″
	Max. Turning Length	mm inch	50 2″
Travel	X-Axis Travel	mm inch	250 9.84″
	Z-Axis Travel	mm inch	300 11.81″
Spindle	Number of Spindles		2
	Spindle Speed	min^{-1}	5000 8000
	Spindle Nose (Nominal Code)		ϕ80F
	Through-Hole Diameter	mm inch	27 37 1.06″ 1.46″
	Bearing Inside Diameter	mm inch	65 80 2.56″ 3.15″
Tool Post	Number of Tool Post		2
	Type of Tool Post		Comb Type
	Number of Attachable Tools [width]	[mm inch]	5 [330 12.99″]
	Height of Square Tool Shank	mm inch	16 0.63″
	Diameter of Boring Bar Shank	mm inch	20 0.75″
Feedrate	Rapid Traverse Rate	m/min ipm	X:20/Z:24 X:787.4″/Z:944.88″
	Jog Feedrate	mm/min ipm	X,Z:0 ～ 1260 49.61″
Motor	Main Spindle Motor (15 min/coninuous)	kW HP	7.5/3.7 10/4.9
	Feed Axis Motor	kW HP	X:0.75/Z:1.2 X:1/Z:1.6
	Hydraulic Pump Motor	kW HP	1.5×1 Motor 2×1 Motor
	Coolant Pump Motor	kW HP	0.4×2 Motors 0.5×2 Motors
Required Power	Electric Power	kVA	35
	Air Pressure Source	MPa	0.4
Tank Capacity	Hydraulic Unit Tank	L gal	20 5.28
	Lubricant Tank	L gal	0.7 0.18
	Coolant Tank	L gal	220 58.08
Machine Size	Machine Height	mm inch	2095 82.48″
	Floor to Spindle Center Height	mm inch	920 36.22″
	Machine Width	mm inch	1660 65.35″
	Required Floor Space (D Type)	mm×mm inch×inch	2560×2485 100.79″×97.83″
	Machine Weight	kg lbs.	4300 9460

【Loader Specifications】

			TT-500GD
Target Workpiece	Outside Diameter	mm inch	50 2″
	Length	mm inch	50 2″
	Weight	kg lbs.	0.5×2 1.1×2
Travel	X-Axis (longitudinal)	mm inch	850 33.46″
	Y-Axis (vertical)	mm inch	405 15.94″
	Z-Axis (cross)	mm inch	140 5.51″
Running Speed	X-Axis (longitudinal)	m/min ipm	200 7874.02″
	Y-Axis (vertical)	m/min ipm	160 6299.21″
	Z-Axis (cross)	m/min ipm	80 3149.61″
Hand	Type		3-Jaws
	Stroke	mm inch	16 0.63″

【Work Feeder Specifications】

Target Workpiece		mm inch	12 ～ 50 0.47″ ～ 1.97″
Number of Pallets			12
Loading Capacity	(1 Pallet)	kg lbs.	4 8.8
Max. Height		mm inch	250 9.84″

Red is Optional.

Machine Standard Accessories

Items	Contents		TT-500GD
5″ Solid Chuck and Cylinder	(Proximity Switch)	L&R	○
Chuck Open/Close M-Function	(Proximity)	L&R	○
Chuck Airblow	(with M-Function, Outside Spindle)	L&R	○
Signal Tower Light	(3-Color)	1 Pic	○
Spindle Orientation	(1 Point, No Lock)		○
Chip Conveyor	(Hinged Belt Type, Rear)	1 Set	○
Auto Power-Off System		1 Set	○
Tool Holders	(Selectable for OD Turning, or Boring Bar/Drill)	L&R (Each 3)	○
Twin Gantry Loader *1	(Swivel Type Parallel Hand (standard))		○
Turnover Unit		1 Set	○
Quality Chute		1 Set	○
Work Feeder	(12 Pallets)	L&R	○
Splashguard		L&R	○
Coolant Unit	(400W)	1 Set	○
Lighting Apparatus		1 Set	○
Adjustment Tool		1 Set	○
Instruction Manual		1 Set	○

Machine Optional Accessories

Spindle Speed 8000min^{-1}
Spindle Bearing Inside Diameter ϕ80mm
Spindle Above Coolant
Seating Control
Seating Control Front Attachment
Rotary Joint for Same as Above
Spindle Through Airblow
Spindle Through Coolant
Tool Holder
Offset Tool Holder
Double-Post Tool Holder
Boring Bar / Drill Holder
Boring Bar Bush
Collet Holder (ϕ20mm)
Drill Collet
U-Drill Holder (ϕ20mm)
U-Drill Socket
Work Pusher
Footswitch for Hydraulic Chuck
Coolant Pump (520W)
Chip Bucket
100V Outlet (Single Socket, Capacity 1A)
Reserve M-Function
Circuit Breaker
Lighting Apparatus (10W)
User Special Color
Total Counter
Preset Counter (with M-Function)
Multi Counter
Dial Loader (Out Stocker)
Palletizing Hand

*1) Includes Hand Chuck Jaw/Gantry Door/ Safety Cover/Door Interlock/Loader Pendant

※ For other optional accessories, please contact us.

TT-500GD

NC Unit Specifications

FANUC : 0i-TF

※ Please contact our sales persons for further information.

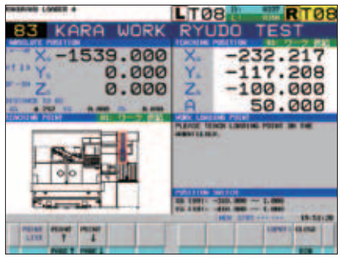
Software

＊The software specifications are subject to change for improvement without notice.

RAKU-RAKU Loader 4

【Standard Accessory】

The loader operation settings can be changed simply by the operation from the dedicated screen without modifying the program.

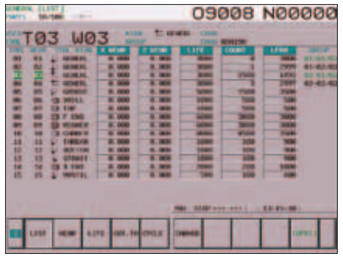


▲ RAKU-RAKU Loader 4

RAKU-RAKU Monitor 3

【Standard Accessory】

Easy and convenient multi-functional softwares which can perform tool life management, cutting load monitoring, group control, and also run information collection, Cp (process capability) calculation, and periodic offset addition.



▲ RAKU-RAKU Monitor 3

Measurement Monitor 3

【Optional Accessory】

This function loads the measured data from a measuring unit and sets automatically the offset value. Also, various convenient functions such as graphical display, Cp (process capability) calculation, and data input/output are included.

Composition

Specifications・Contents	TT-500GD
【NC Unit】	
Screen (10.4″ Color LCD/MDI(Horizontal, Small Type)	●
【Software】	
RAKU-RAKU Loader 4	●
RAKU-RAKU Monitor 3	●
Measurement Monitor 3 *1	◎
【Safety Devices】	
Front Door Interlock	●
Front Door Locking Mechanism	○
Safety Relay	●
Control Panel Breaker with Tripper	●

Main Function List

Specifications・Contents	TT-500GD
【Controlled Axes】	
Least Input Increment *2	●
Maximum Programmable Dimension (±999999.999)	●
Least Input Increment C *3	○
Inch/Metric Selection	●
Interlock	●
Machine Lock *4	○
Emergency Stop	●
Stored Stroke Check 1	●
Stored Stroke Check 2, 3 *5	○
Stroke Limit Check Before Movement	○
Chuck Tailstock Barrie *6	○
Mirror Image (Each Axis)	▲
Chamfering ON/OFF	●
Overload Detection *7	▲
Position Switch	●
【Operation】	
Auto Run (Memory)	●
MDI Run	●
DNC Run *8 *9	○
DNC Run with Memory Card *8 *10	○
Program Number Search	●
Sequence Number Search	●
Sequence Number Collation and Stop	●
Program Restart	◎
Manual Interrupt・Restore	▲
Wrong Operation Preventive	▲
Buffer Register	●
Dry Run	●
Single Block	●
Jog Feed	●
Manual Reference Point Return	●
Dogless Reference Point Setting	●
Manual Handle Feed, 1 Unit	●
【Interpolating Functions】	
Positioning (G00)	●
Exact Stop Mode (G61)	●
Tapping Mode (G63)	●
Cutting Mode (G64)	●
Exact Stop (G09)	●
Linear Interpolation (G01)	●
Circular Interpolation (G02/03)	●
Dwell (G04)	●
Thread Cutting・Synchronous Feed	●
Multiple Thread Cutting	●
Thread Cutting Cycle and Retraction	●
Continuous Thread Cutting	●
Variable Lead Thread Cutting	●
Skip (G31)	◎
Reference Point Return (G28)	●
Reference Point return Check (G27)	●
2nd Reference Point Return (G30)	●
3rd, 4th Reference Point Return	◎
【Feed Functions】	
Rapid Traverse Override(F0,25%,50%,100%)	●
Feed Per Minute	●
Feed Per Revolution	●
Constant Tangential Speed Control	●
Cutting Feedrate Clamp	●
Automatic Acceleration/Deceleration	●
Rapid Traverse Bell-Shaped Accel/Decel	●
Linear Accel/Decel After Feedrate Interpolation	●
Feedrate Override (15 steps)	●
Jog Override (15 steps)	●
Override Cancel	●
Manual Feed Per Revolution	▲
【Program Input】	
Program Code (EIA/ISO Auto Recognition)	●
Label Skip	●
Parity Check	●
Control In/Out	●
Optional Block Skip, 1 Piece	●
Optional Block Skip (2 to 9 Pieces)	◎
Program Number O4 Digits	●
Program File Name 32 Characters	●
Sequence Number N8 Digits	●
Absolute/Incremental Command	●
Decimal Point Input/Pocket Calculator Type Decimal Point Input	●
Diameter/Radius Programming (X-Axis)	●
Rotary Axis Designation	●
Rotary Axis Rollover	●
Coordinate System Setting (G50)	●
Auto Coordinate System Setting	●
Drawing Dimension Direct Input *11	▲
G-Code System A	●
G-Code System B/C	▲
Chamfering/Corner R Programming *12	●
Programmable Data Input(G10)	●
Sub Program Call (10 Levels)	●
Custom Macro	●
Additional Custom Macro Common Variables	●
Single Canned Cycle	●
Combined Canned Cycle	●
Combined Canned Cycle Ⅱ	●
Drilling Canned Cycle	●
Arc Radius Programming	●
Workpiece Coordinate System Shift	●
Workpiece Coordinate System Shift Direct Input	●
【Miscellaneous Functions/Spindle Functions】	
M Function (M3 Digits)	●
Second Miscellaneous Function (B Function)	●
Miscellaneous Functions Instructions (3 Pieces)	●
Spindle Functions (S Function)	●
Constant Surface Speed Control	●
Spindle Override	●
Spindle Orientation	●
Rigid Tap (Spindle Center)	●
【Tool Functions/Tool Offset Functions】	
T Function (T2+2 Digits)	●
Tool Offsets, 128 Pieces (L/R Each 64 Pieces)	●
Tool Position Offset	●
Tool Diameter/Nose R Compensation	●
Tool Geometry/Wear Compensation	●
Tool Offset Counter Input	●
Tool Offset Measured Value Direct Input	●
Tool Life Management *13	○
【Accuracy Offset Functions】	
Backlash Compensation	▲
Backlash Compensation by Rapid Traverse / Feedrate	▲
【Editing】	
Part Program Memory Capacity 1Mbyte *14	●
Part Program Memory Capacity 2Mbyte *14	○
Registrable Programs, 800 Programs *15	●
Program Editing	●
Extended Program Editing	●
Program Protection	●
Playback	◎
Machining Time Stamp	○
Background Editing	●
Multiple-Programs Simultaneous Editing	●
【Setting/Display】	
Status Display	●
Clock Function	●
Current Position Display	●
Program Comment Display (31 Characters)	●
Parameter Setting and Display	●
Alarm Display	●
Alarm Log Display	●
Operation Log Display	▲
Run Hours and Parts Count Display	●
Actual Speed Display	●
Actual Spindle Speed and T Code Display	●
Servo Adjustment Screen	●
Spindle Adjustment Screen	●
Maintenance Information Screen	●
Software Operator's Panel	◎
Data Protection Key, 1 Kind	●
Screen Clear	●
Parameter Setup Support Screen	●
Help Function	●
Self Diagnostic Function	●
Scheduled Maintenance Screen	●
【Display Languages】	
English	●
Other Language *16	▲
Display Language Dynamic Switching	▲
【Data I/O】	
RS-232C Interface for 1ch	○
Data server	◎
External Workpiece Number Search	◎
Memory Card I/O	●
USB Memory I/O	●
One-Touch Macro Call	◎
Auto Data Backup	●
【Communication Function】	
Inclusion Ethernet	●
Fast Ethernet	◎

● : Standard ○ : Optional ◎ : Special — : None
▲ : Parameter setting is required.

(Note: Normally, the parameters need not to be changed. If the parameters are to be set or changed, understand completely the functions of such parameters. Wrong setting could cause the machine to be moved unexpectedly, resulting in machine or workpiece damage or personal injury.)

*1) I/O addition and the PC change are necessary.
*2) 0.001mm, 0.0001inch
*3) IS-C 0.0001mm, 0.0001deg, 0.00001inch.
*4) Addition of switch is required.
*5) Not coexistent with chuck tailstock barrier.
*6) Not coexistent with Stored Stroke Check 2, 3.
*7) Required when RAKU-RAKU Monitor 3 is used.
*8) DNC run mode transfer switch is required.
*9) RS-232C Interface or Data Server is required.
*10) CF card and adaptor is required.
*11) Not coexistent with chamfering/corner R.
*12) Not coexistent with drawing dimension direct input.
*13) Cannot be used when RAKU-RAKU Monitor 3 is installed.
*14) In the case of loader specification, about [262K-byte 655m] is used for program store capacity by RAKU-RAKU loader 4 software.
*15) In the case of loader specification, the 150 program number is used by RAKU-RAKU loader 4 software.
*16) Japanese (Kanji), German, French, Spanish, Italian, Chinese (traditional), Chinese (simplified), Korean, Portuguese, Dutch, Danish, Swedish, Hungarian, Czech, Polish, Russian, Turkish, Romanian, Bulgarian, Slovak, Finnish, Hindi

The contents of the catalog are subject to change for improvement without notice. Please make confirmation from our sales representatives when entering into the contract.

TT-500GD

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Japanese laws prohibit this machine from being used to develop or manufacture "weapons of mass destruction" or "conventional arms", as well as from being used to process parts for them.
Export of the product may require the permission of governmental authorities of the country from where the product is exported.
Should you wish to resell, transfer or export the product, please notify Takisawa Machine Tool Co., Ltd. or our distributor in advance.

*The appearance, specifications, and relevant software of the product are subject to change for improvement without notice.
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