AS-200

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

AS-200 High productivity World Leader

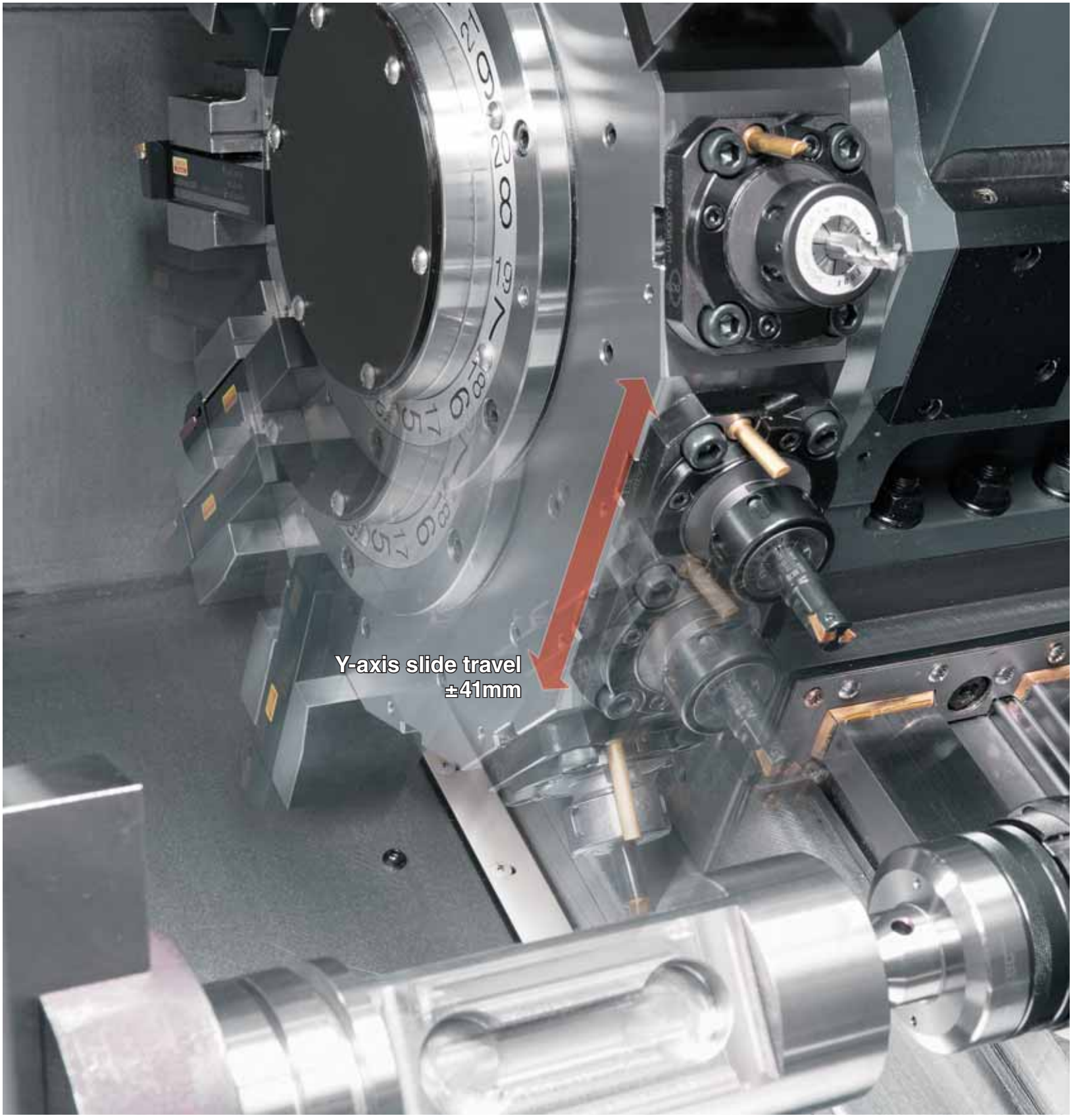
in Cost Performance!

High Performance Milling and Y-axis

All in One

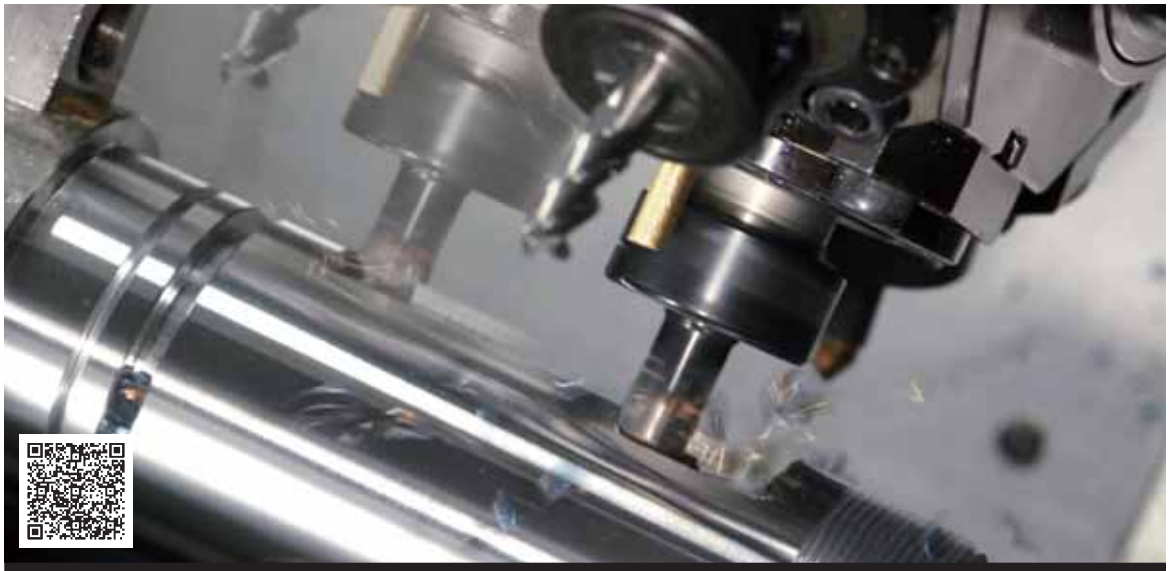
Powerful milling drive, high-speed high-accuracy C-axis and 82mm-stroke Y-axis ensure production of finished parts, abolishing secondary operations, such as deburring, milling and drilling, as well as eliminating re-positioning fixtures.

AS-200 Y-axis, Milling Standard



Highest Machining Capabilities in its Class

Machining with Y-axis! **Turning and Milling with full power!**

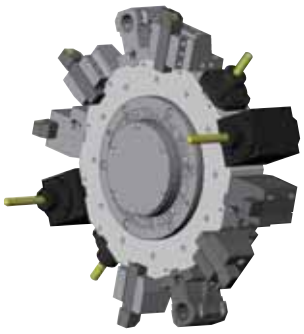


Milling
• Tool diameter : 16mm • Depth : 5mm • Feed : 0.2mm/rev
• Speed : 200m/min • Spindle speed : 4000min^{-1}

Turning
• Machined diameter : 72mm • Depth : 4mm • Feed : 0.35mm/rev
• Speed : 180m/min • Spindle speed : 796min^{-1}

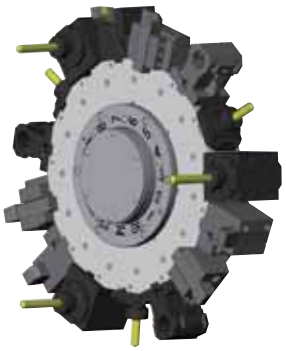
Drilling
• Drill diameter : 50mm • Feed : 0.12mm/rev
• Speed : 150m/min • Spindle speed : 955min^{-1}

AS-200 Machine Structure



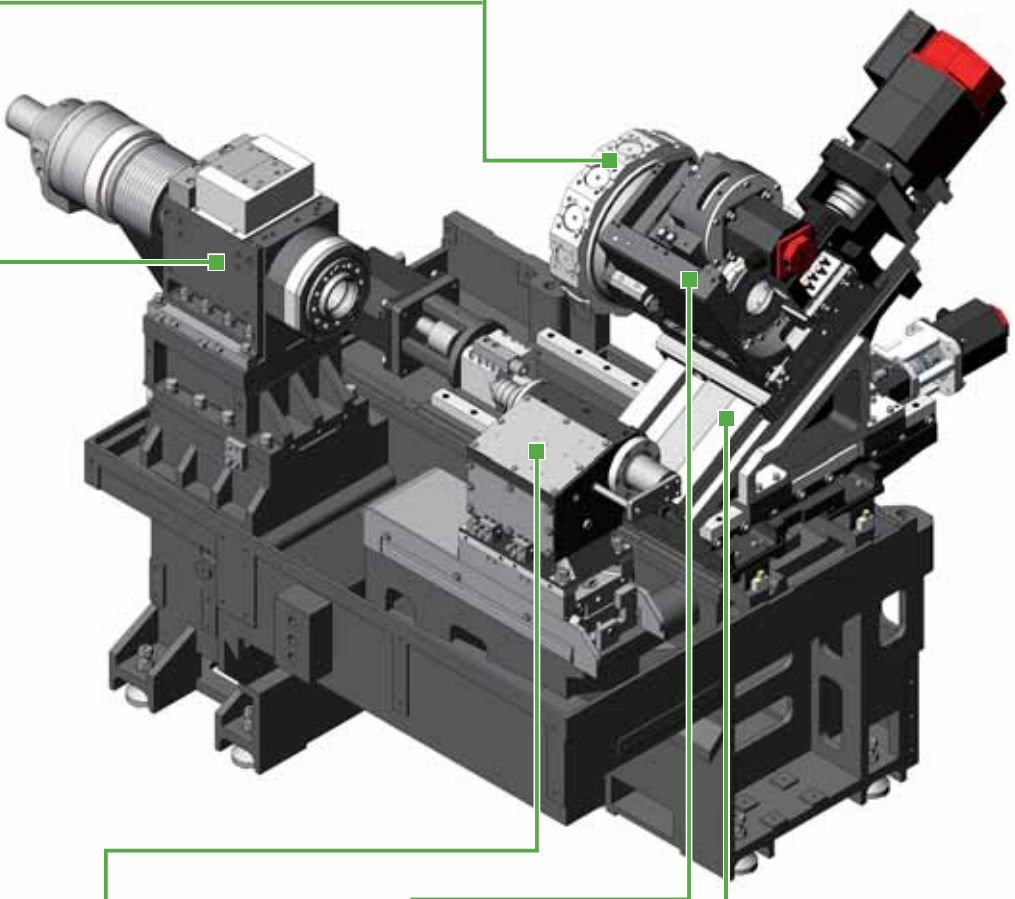
12 / 24- station turret

Turret type: Dodecagonal
Number of tools : 24
Number of indexing pos. : 24
Number of driven-tools : 12
Max. Speed of driven tools : 6000min^{-1}
O.D. turning tool □20/25mm, I.D. Boring dia.32mm
Collet diameter for driven tools : 1mm to 16mm
Tool swing diameter : 570mm
Max. turning diameter : 340mm



15-station turret

Turret type : 15-station turret
Number of tools : 15
Number of indexing pos. : 15
Number of driven tools : 15
Max. Speed of driven tools : 6000min^{-1}
O.D. turning tools □20/25mm, I.D. Boring dia.32mm
Collet diameter of driven tools : 1mm to 16mm
Tool swing diameter : 620mm
Max. turning diameter : 280mm



Spindle motor
15 / 11kW
110 / 61N·m
4500min^{-1}

C-axis
Rapid index speed : 600min^{-1}

Standard

Spindle motor
15 / 11kW
258 / 218N·m
4500min^{-1}

Spindle motor
15 / 11kW
143 / 79N·m
3000min^{-1}

Option

Bar capacity ϕ65mm

Standard

Bar capacity ϕ71mm

Option

Tailstock
MT-4
Quill diameter : ϕ70mm
Quill stroke : 80mm

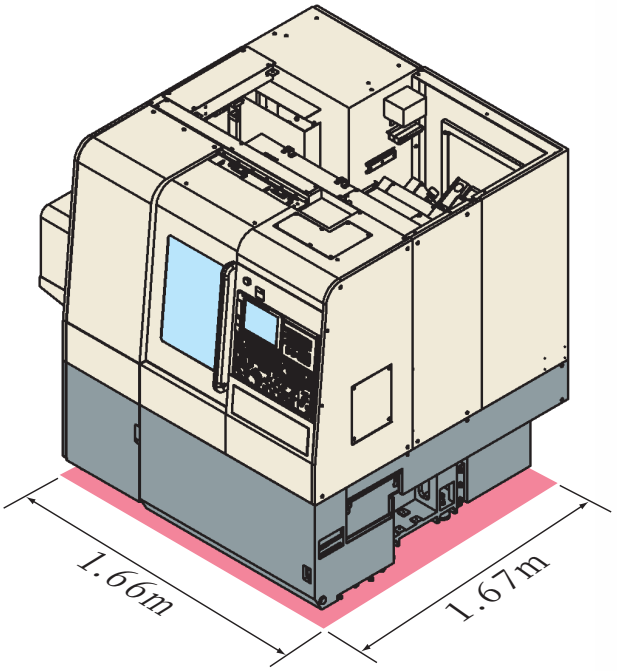
Option

Milling
5.5 / 3.7kW
24 / 18N·m
6000min^{-1}

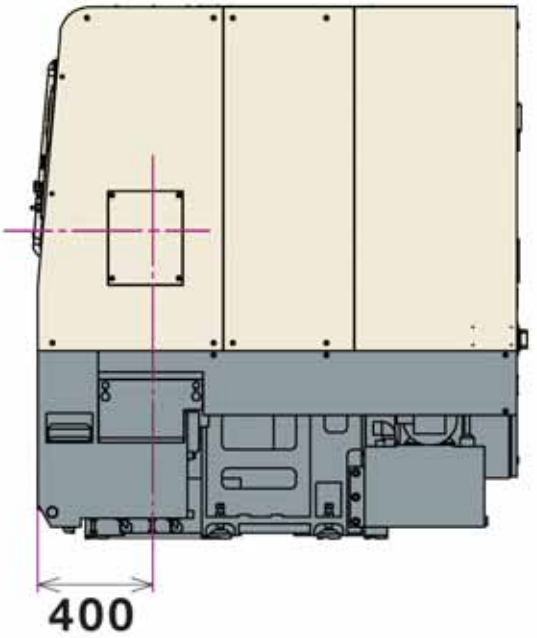
Y-axis stroke
±41mm

Stable Accuracy Ensured

Compact!
Smallest in class floor space.



Operator Friendly,
Front distance to-spindle 400mm



Larger window ensures better visibility

Eco-friendly: Energy Saving Functions

1	Hyd. and Lub. pump motor stop except auto operation.
2	Servo power off except auto operation
3	Power control box cooling fan stop except auto operation.
4	Motor fan stop except auto operation
5	Energy saving mode for each axes acc. / dec.
6	Standard chip conveyor intermittent timer. (op.)
7	Work light off function
8	LCD back light off function
9	Inverter type Hyd. Pump unit (op.)

AS-200 Turning and Milling in one Compact

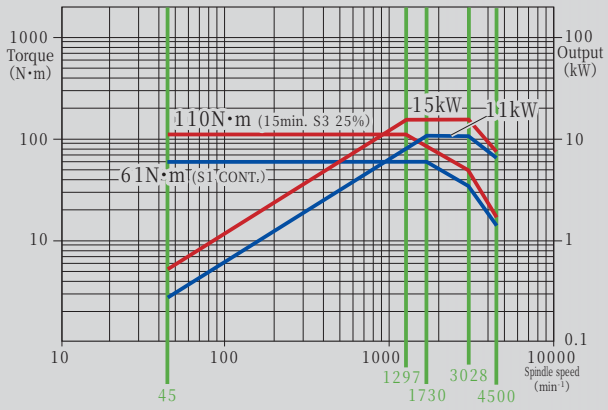
AS-200

Spindle motors

15/11kW 110/51N·m

Standard

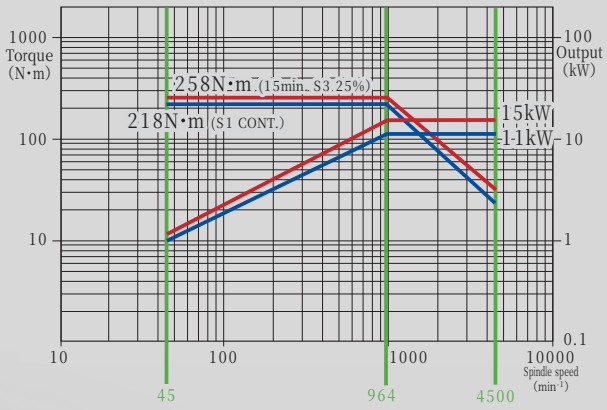
Rotating speed : 4,500min-1



15/11kW 258/218N·m

Option High torque specification

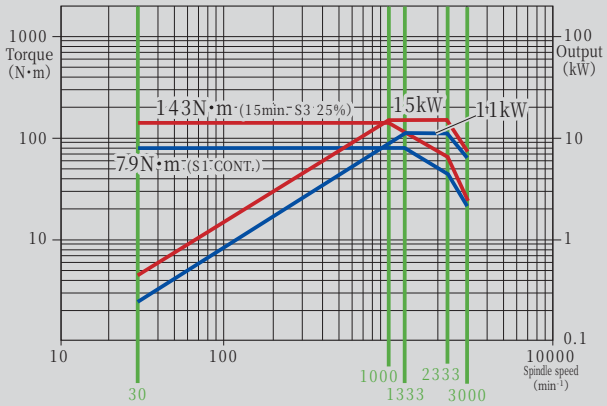
Rotating speed : 4,500min-1



15/11kW 143/79N·m

Option High torque specification

Rotating speed : 3,000min-1



Machine

From diversified small-lot quantities to mass production

M
Milling Motor

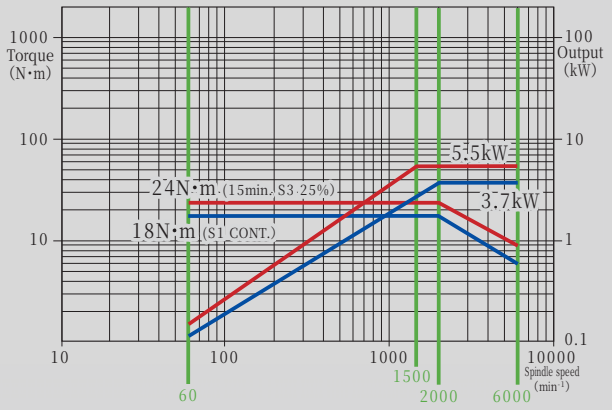
AS-200

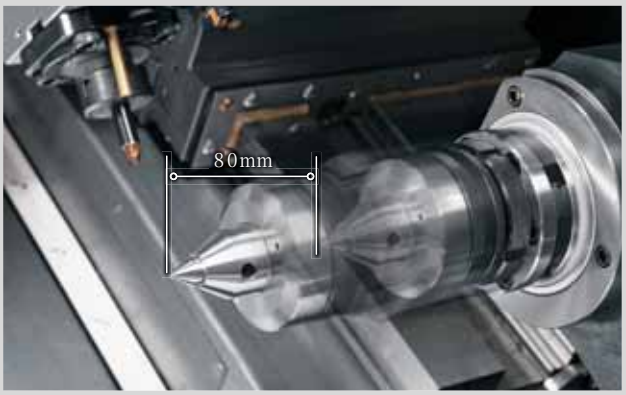
Milling-tool motor

5.5/3.7kW 24/18N·m

Standard

Milling speed : 6,000min^{-1}





■ Tailstock

- Quill diameter : Dia. 70mm • Type of Quill : MT4
- Quill stroke : 80mm

■ Tool Setter

- Operation : Automatic • Drive : Hydraulic

■ Parts Catcher

- Swing bucket
- Size of Work piece
  Diameter : 65mm Length : 150mm Weight : 3kg
- Unloading time: 5sec.

No more Jigs! Set-up Free! Easy to use!

This essential function for multitasking machines is standard.

Safety Technology

"Program and setup is difficult...." "If the machine stops during the process...." "Costly jigs and fixtures for Complex parts...." You may have similar production concerns. Having the NT Nurse system, NT Work Navigator and Overload detection, reduces manufacturing headaches and provides precious production support.

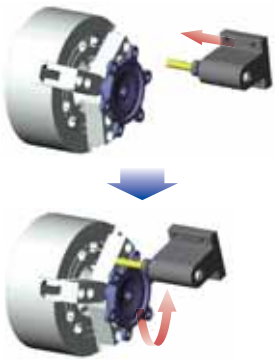
NT Work Navigator

ACTIVE SAFETY

● Advanced NT Work Navigator ! Z B C

Navigation function is expanded to also include the X and Y-axis. Coordinate Recognition can made the part's outer surface in the X or Y-Axis direction.

● No fixtures required



Machining parts with non-round shapes, such as forgings or castings requires that the raw part coordinates be recognized by the CNC control. In order to achieve this without requiring extra cost or additional options, the NT Navigator is used. It works just by touching the part with a simple inexpensive probe (mostly around bar mounted on a tool holder) and using the torque control feature of the servo-motor, which is to record required coordinates in the CNC. The NT Navigator is a cost cutting feature in multitasking machines, eliminating the need for positioning fixtures and special clamping devices.

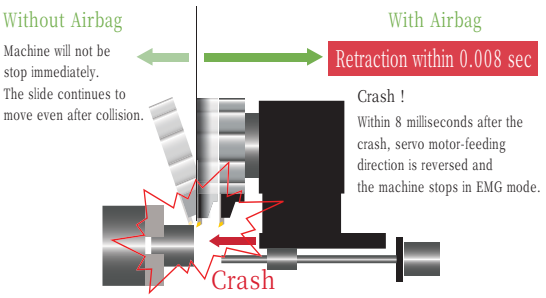
Airbag (Overload detection)

PASSIVE SAFETY

Nakamura-Tome machines will not break for the slightest collision, as other machines do.

● No need to panic

When unavoidable human error results in machine collision, there is no reason to panic. All Nakamura-Tome machines are equipped with a safety feature called "airbag" (overload detection), which will greatly reduce the impact force and prevent heavy damage to the machine.



* This feature does not mean zero impact.

NT Nurse II

● All-in-one Software Package

NT Nurse is software that provides the operator with user-friendly support for operation, programming and production on the machine. Among vital features are phase recognition (a must for multitasking), direct chucking to prevent positioning error during transfer, and perfect synchronization of the left and right hand spindles. Among other features, are the load monitor for detecting tool wear and tool breakage, tool life management, operation condition monitoring, in addition to many other features to simplify programming, set up, operation and production, all offered in one single package.

DNC operation using memory card. The FANUC card (sold separately) can be completely inserted inside the provided slot, making operation with a closed card slot possible.

10.4" color display LCD

Program storage length	512Kbyte (1280m)	
Program registered number	400	
Tool offset pairs	64	99

Standard Option

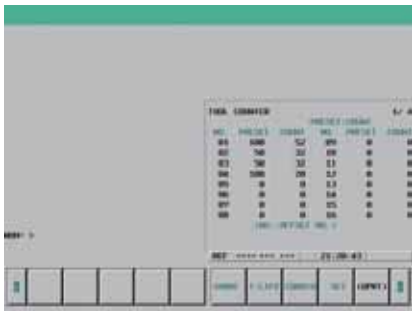
Standard features AIRBAG | NT Work Navigator | NT NURSE II | LUCK-BEI II

(Option)

The NT Nurse with user-friendly features

24 total functions

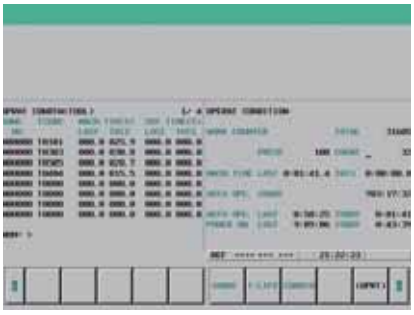
Menu display



Tool counter

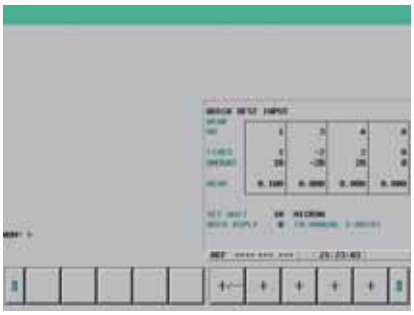
Tool life (Spare tool call-up)

Ecology setting



Operation condition by tool number

Operation message



Quick offset input

Load monitor

Luck-bei II (op.) NT Manual Guide i

A programming system for creating NC programs (ISO/EIA G-code programs) easily. Among its features are: creating machining cycles (conversational function), cutting, copying, pasting and moving already-programmed machining processes, setting waiting M-codes, as well as simulating NC programs using tool path or solid models.

Simulation

Real machining simulation possible through a 3D solid model is possible for both turning and milling processes.

Fixed form function

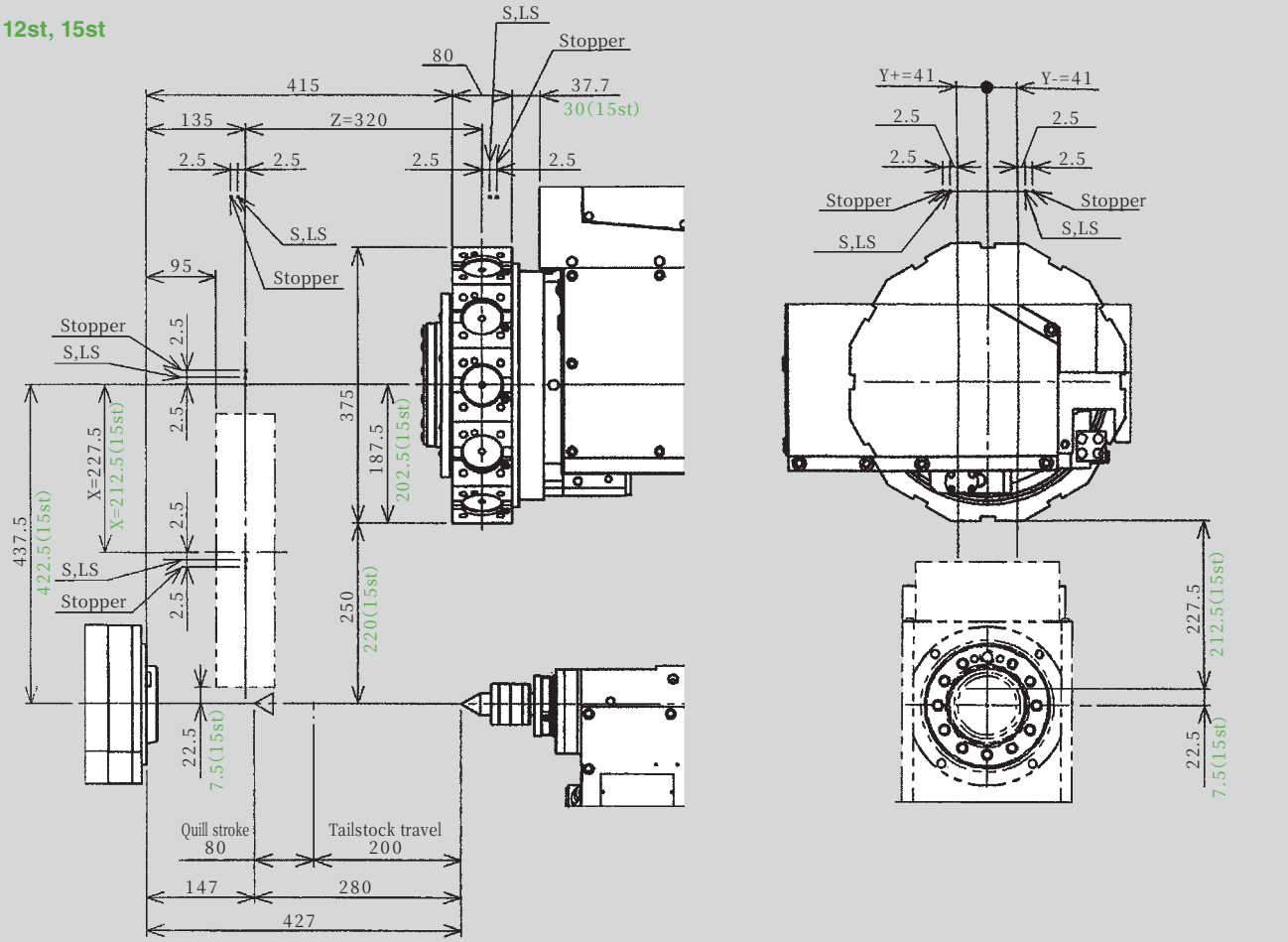
Over 300 fixed forms are now standard and the fixed forms can be easily selected from a menu.

Process editing function

A function that automatically recognizes and extracts the name and order of all machining processes, then displays them in a table layout. Machining processes can moved and copied easily.

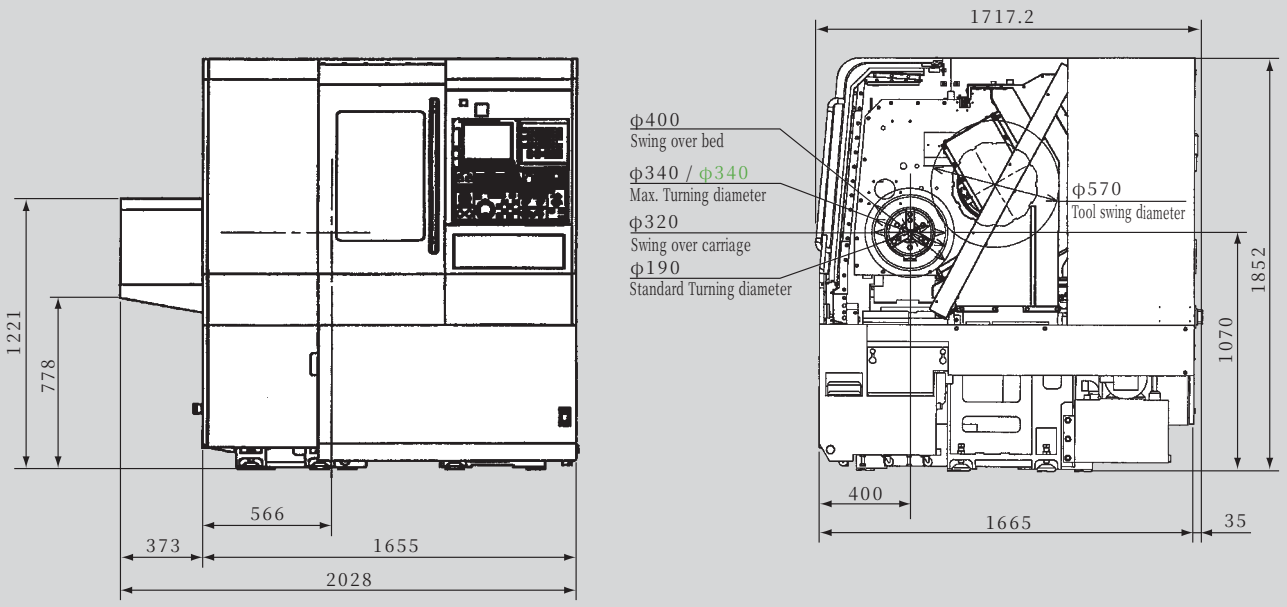
Slide Travel Range

■ 12st, 15st



12st
15st unit : mm

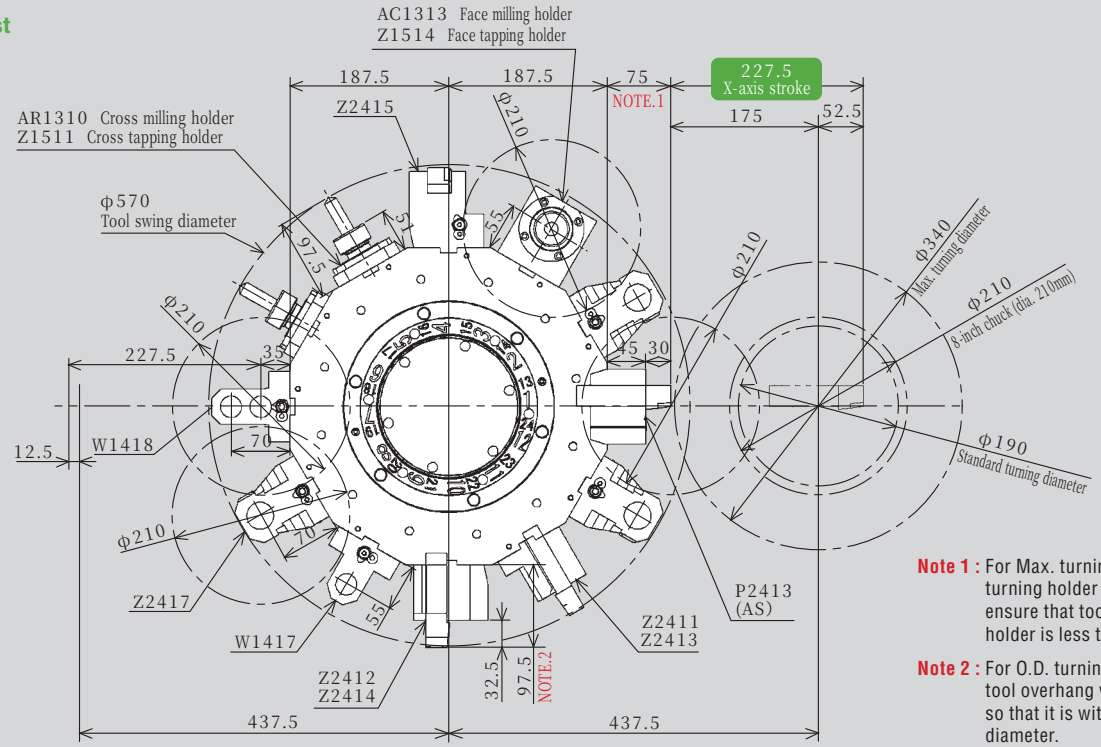
Machine Dimensions / Maximum Tool Diameter



12st / 15st unit : mm

Tool Interference

12st

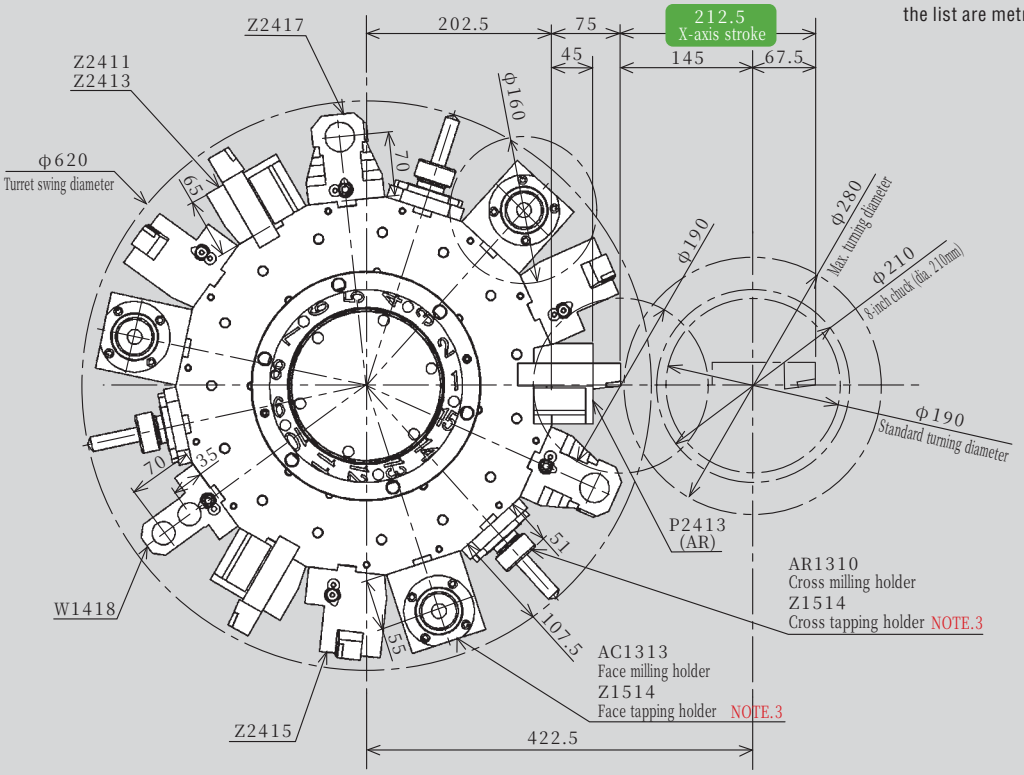


Note 1 : For Max. turning diameter, use turning holder (P2413) and ensure that tool overhang from holder is less than 30mm.

Note 2 : For O.D. turning tool, please set tool overhang within 97.5mm so that it is within tool swing diameter.

Note 3 : Tool Holder's Numbers shown in the list are metric (unit: mm).

15st

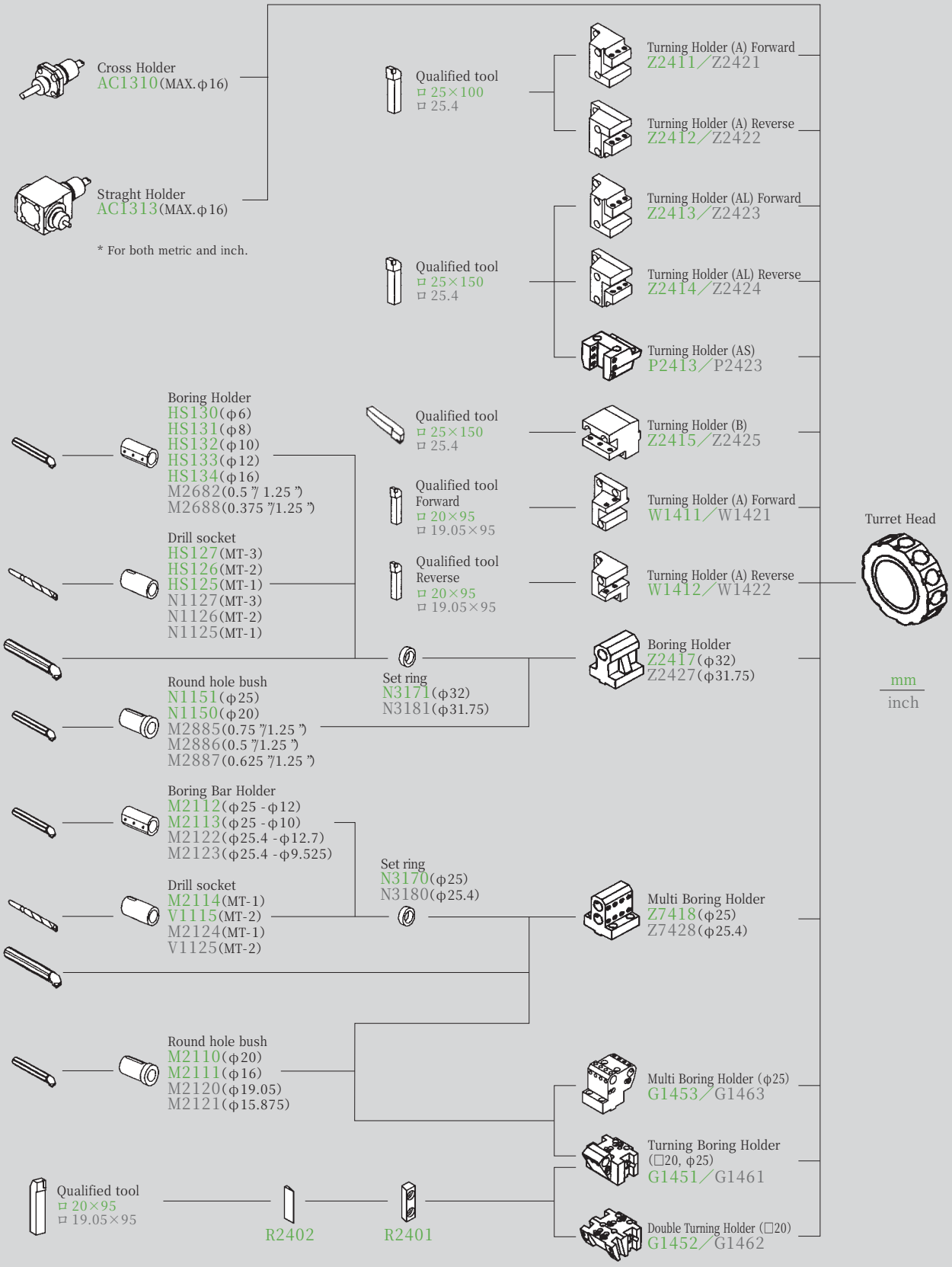


unit : mm

Tool station	12st		15st
Max. turning diameter	340mm	290mm*	280mm
Max. tool swing diameter	570mm	620mm*	620mm
X-axis stroke	227.5mm	202.5mm*	212.5mm
Tool overhang length	97.5mm	122.5mm*	107.5mm

* Parameter change is required.

Tooling System Diagram



Machine Specification

■ Capacity	12/24-station turret	15-station turret
Swing over bed	400mm	
Max. workpiece swing diameter	320mm	
Max. turning diameter	340mm	280mm
Standard turning diameter	190mm	
Distance between centers	427mm	
Max. turning length	300mm	
Bar capacity	65mm 71mm (op.)	
Chuck size	8-inch	

■ Axis travel		
Slide travel (X)	227.5mm	212.5mm
Slide travel (Z)	320mm	
Slide travel (Y)	±41mm	
Rapid feed (X)	24m/min	
Rapid feed (Z)	36m/min	
Rapid feed (Y)	6m/min	

■ Spindles	
Spindle speed	0 - 4500min^{-1}
Spindle speed range	Stepless
Spindle nose	A2-6
Hole through spindle	80mm
I.D. of front bearing	110mm
Hole through draw tube	66mm 71mm (op.)

■ C-axis	
Least input increment	0.001°
Least command increment	0.001°
Rapid index speed	600min^{-1}
Cutting feed rate	1 - 4800°/min
C-axis clamp	Disk clamp
C-axis connecting time	1.5sec.

■ Turret		
Type of turret head	Dodecagonal drum turret	15 station turret
Number of Tool stations	24	15
Number of Indexing positions	24	15
Tool size (square shank)	□ 20mm, □ 25mm	
Tool size (round shank)	ϕ 32mm	

■ Driven tools		
Rotary system	Individual rotation	
Spindle speed	6000min^{-1}	
Spindle speed range	Stepless	
Number of driven-tool stations	12	15
Collet size	AR25	
Tool shank	Straight holder ϕ 1mm - ϕ 16mm Cross holder ϕ 1mm - ϕ 16mm	

■ Tailstock (op.)	
Quill diameter	ϕ 70mm
Quill taper	MT-4
Quill stroke	80mm
Travel	200mm

■ Drive motor power		
Main spindle	Standard	15/11kW 110/61N·m 4,500min^{-1}
	Option	15/11kW 258/218N·m 4,500min^{-1}
	Option	15/11kW 143/79N·m 3,000min^{-1}
Driven-tool spindle		5.5/3.7kW

■ General	
Machine height	1850mm
Floor space	1650mm × 1600mm
Machine weight	3200kg

■ Power supply	
Power supply	

Control Specification

■ Items	
Control	NAKAMURA-TOME FANUC

■ Controlled axes	
Controlled axes	4 axes : X, Z, C, Y
Simultaneously controlled axes	4 axes : X, Z, C, Y

■ Input command	
Least input increment	0.001mm/0.0001in (X in diameter)
Least command increment	X : 0.0005mm, Z : 0.001mm
Max. programmable dimension	±99999.999mm / ±39370.078inch
Absolute / incremental programming	X, Z, C, Y / U, W, H, V
Decimal input	standard
Inch / Metric conversion	G20 / G21
Programmable data input	G10

■ Interpolation	
Positioning	G00
Linear interpolation	G01
Circular interpolation	G02 / 03, CW / CCW
Polar coordinate interpolation	G12.1 is available as option when the machine is equipped with Milling
Cylindrical interpolation	G07.1 is available as option when the machine is equipped with Milling

■ Feed function	
Cutting feed	Feed mm/min. X-axis : 1 - 8000mm/min, 0.01 - 188in/min Z-axis : 1 - 4800mm/min, 0.01 - 188in/min Feed mm/rev 0.0001 - 500.0000mm/rev 0.000001 - 9.999999inch/rev
Dwell	G04
Feed per minute / Feed per revolution	G98 / G99
Thread cutting	G32+F
Thread cutting retract	standard
Handle feed Manual pulse generator	Manual pulse generator × 1 (0.001/0.01/0.1mm)
Automatic acceleration/ deceleration	standard
Linear acceleration/ deceleration after cutting feed interpolation	standard
Rapid feed override	Low range/25/50/100%
Cutting feed-rate override	0 - 150%
Look ahead control	G08

■ Program memory	
Part program storage length	512Kbyte (1280m)
Part program edit	Delete, insert, change
Program number search	standard
Sequence number search	standard
Address search	standard
Number of registerable programs	400 programs
Program storage memory	Backed up by battery
Multiple program simultaneous editing	standard
DNC operation through memory card	standard (not including memory card)
Extended part program editing	standard

■ Program support	
Circular interpolation R programming	standard
Direct drawing dimension programming or Chamfering / Corner R	standard
Canned cycle	G90, G92, G94
Multiple repetitive canned cycle	G70 - G76
Multiple repetitive canned cycle II	G71, G72
Canned cycle for drilling	G80 - G89
Sub program	standard
Help Function	standard
Custom macro	standard
NT Work Navigator (torque type)	standard
NT NURSE	standard
Z-axis Abnormal Load detection	standard

- Safety devices such as various interlocks, fences for robotics, auto loading device, work stocker, automatic fire extinguisher etc. are available as options which can be included in your purchase package. Please contact our local distributor and dealer for your specific requirements.

Precautions about the use of cutting coolant

Synthetic Coolants are Damaging to Machine Components. Concerning the use of cutting fluids, cautions have to be taken on the type of coolant being used. Among coolants available in the market, some types are damaging to machine components and should be avoided. Typical damages are turcite wear, peeling of paint, cracking and damage to plastics and polymers, expansion of rubber parts, corrosion and rust build up on aluminum and copper. To prevent such damages, coolants that are synthetic, or containing chlorine have to be avoided. Machine warranty terms do not apply to any claims or damage arising from the use of improper coolant.

NAKAMURA-TOME PRECISION INDUSTRY CO., LTD.

http://www.nakamura-tome.co.jp

Netsuno 15, Hakusan, Ishikawa, 920-2195 Japan
Phone : +81 76 273 8100 Fax : +81 76 273 4312
E-mail : nt-jpn@nakamura-tome.co.jp

Cat.No.0124E01011307N