

AS-200/200L

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

AS-200

High productivity

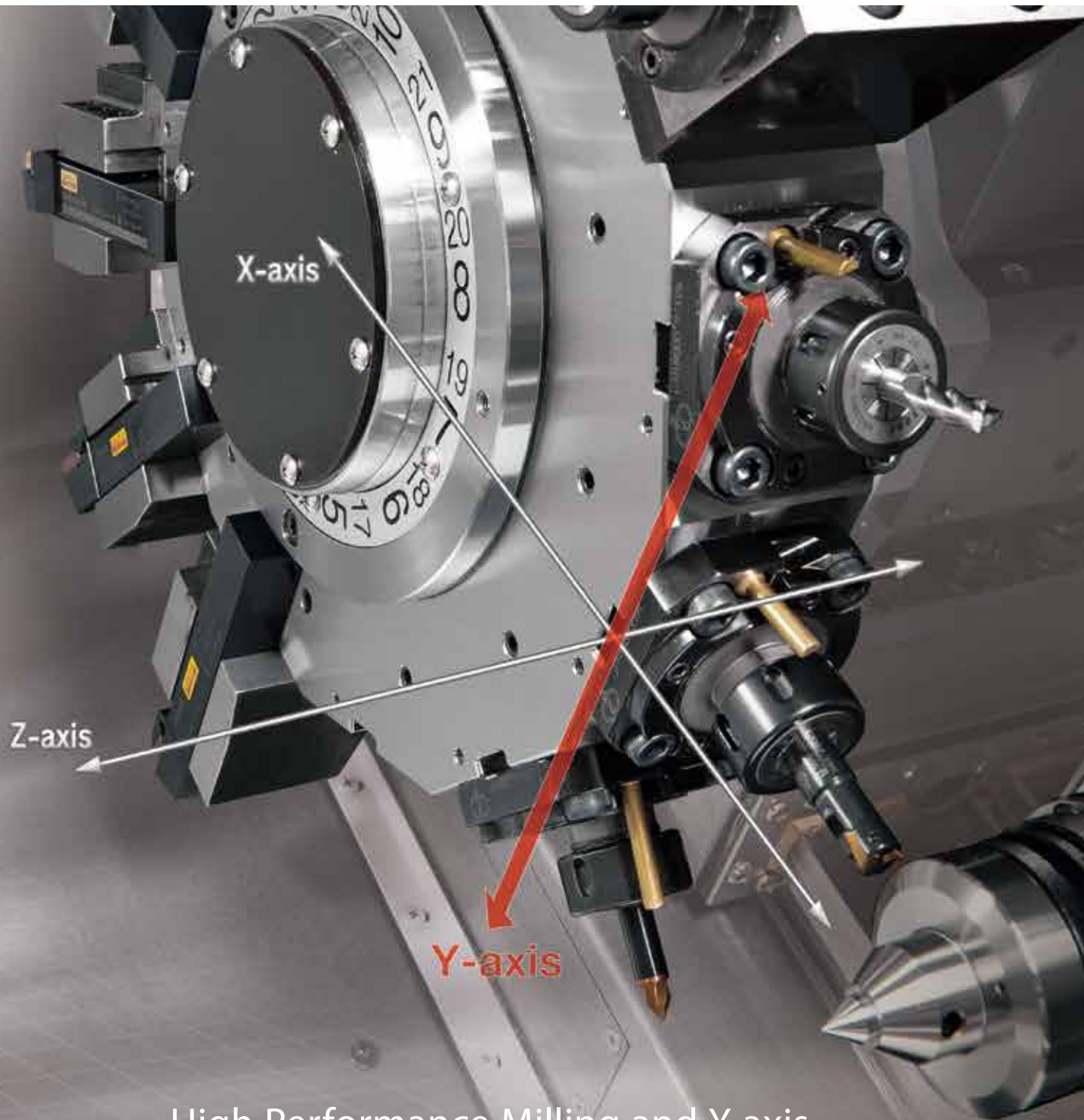
World Leader



Y-axis, Milling and C-axis Standard



in Cost Performance!



All in One

High Performance Milling and Y-axis

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-200L

High productivity

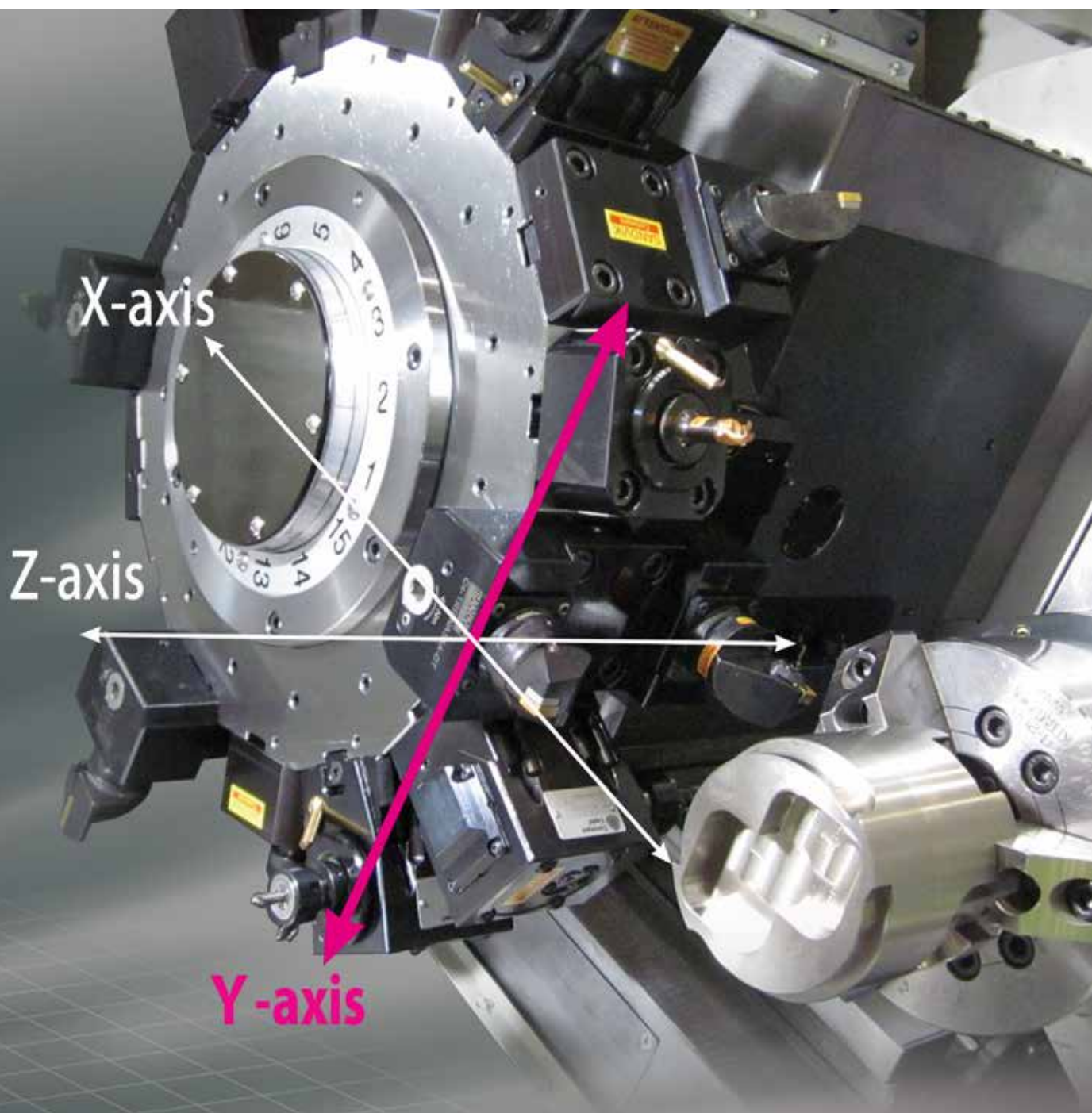
World Leader



Y-axis, Milling and C-axis Standard



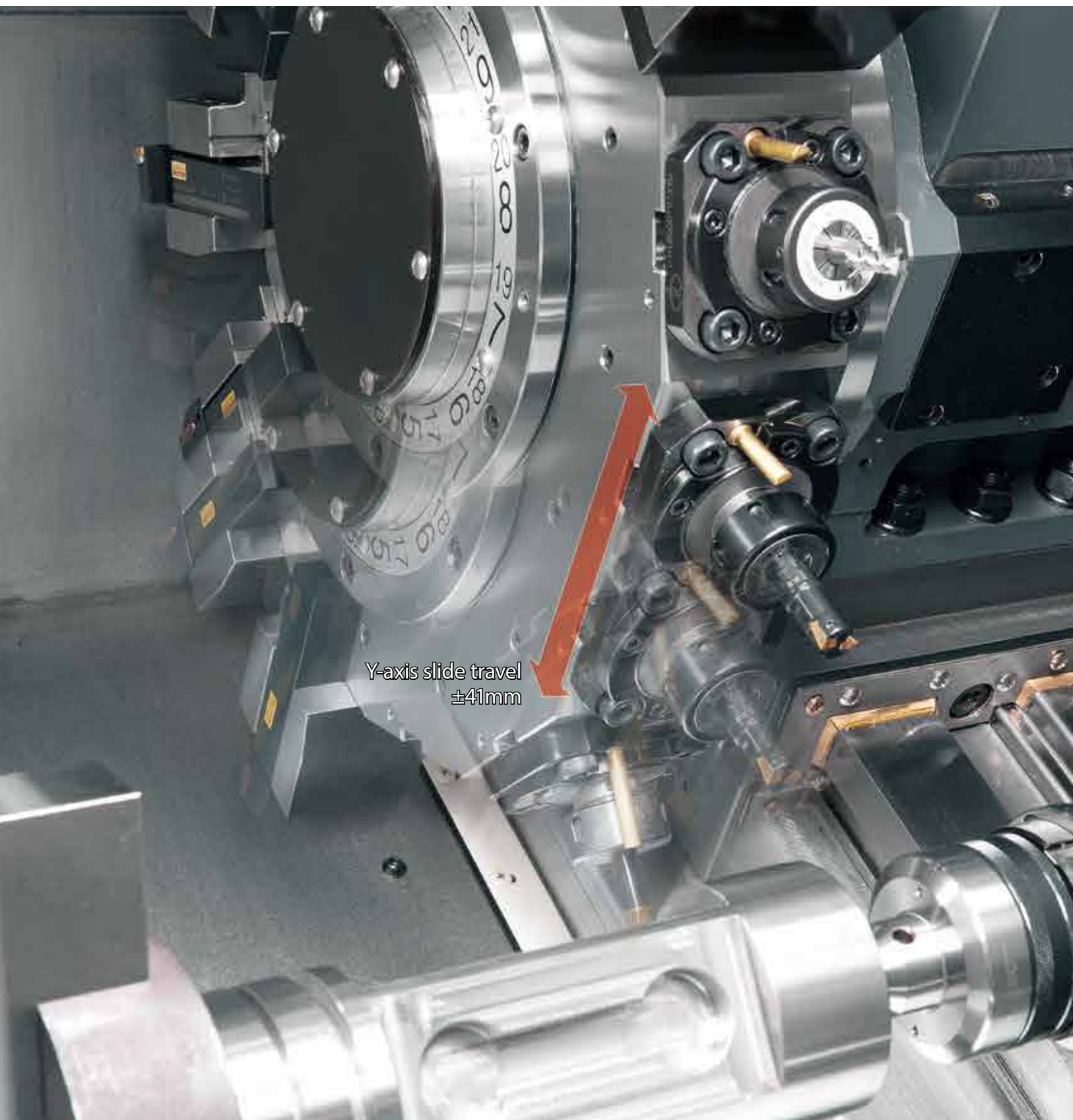
in Cost Performance!



High Performance Milling and Y-axis

All in One

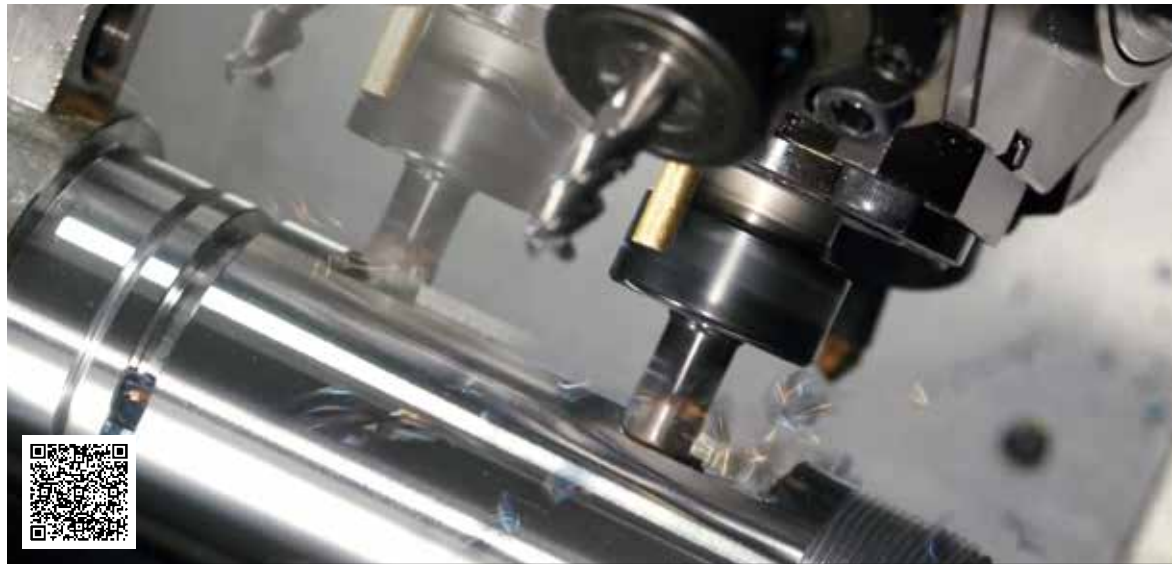
Powerful milling drive, high-speed high-accuracy C-axis and 82mm-stroke Y-axis ensure production of finished parts, abolishing secondary operations, such as deburring, milling and drilling, as well as eliminating re-positioning fixtures.



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-200L

Y-axis, Milling Standard

12/24-station turret

15/15-station turret

Milling

5.5 / 3.7kW

24 / 18N.m

6000min-1

Spindle motor

15 / 11kW

110 / 61N.m

4500min-1

Tool overhang length **110**mm

Distance between spindle noses: **800**mm

(Distance between centers: 760mm)

Highest Machining Capabilities in its Class



Sub spindle

7.5 / 5.5kW

61 / 34N.m

6000min⁻¹

Machining with Y-axis!

Turning and Milling with full power!



Turning

• Machined diameter : 72mm • Depth : 4mm • Feed : 0.32mm/rev
• Speed : 180m/min • Spindle speed : 796min⁻¹



Milling

• Tool diameter : 16mm • Depth : 5mm • Feed : 0.2mm/rev
• Speed : 200m/min • Spindle speed : 4000min⁻¹



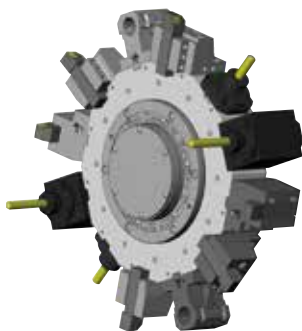
Turning

• Machined diameter : 72mm • Depth : 3mm • Feed : 0.35mm/rev
• Speed : 180m/min • Spindle speed : 1146min⁻¹



Milling

• Tool diameter : 16mm • Depth : 5mm • Feed : 0.2mm/rev
• Speed : 200m/min • Spindle speed : 4000min⁻¹



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

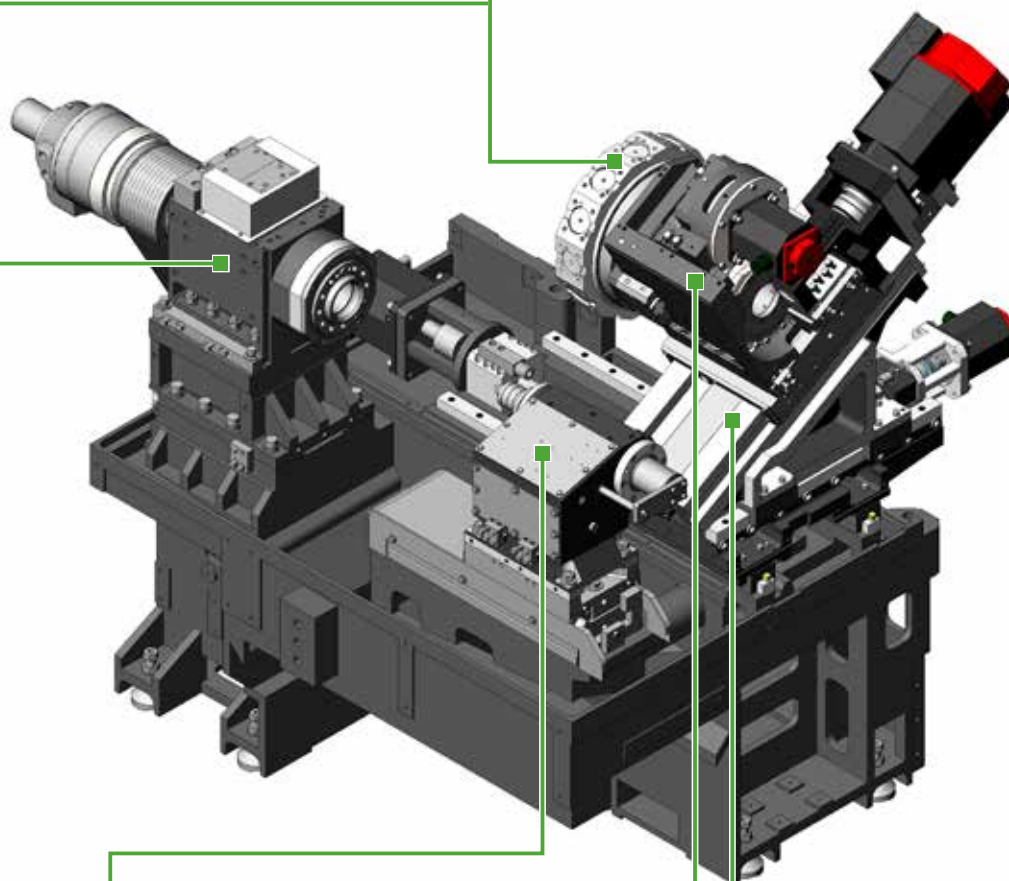
Option

Bar capacity φ65mm

Standard

Bar capacity φ71mm

Option



Tailstock

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

Option

Milling

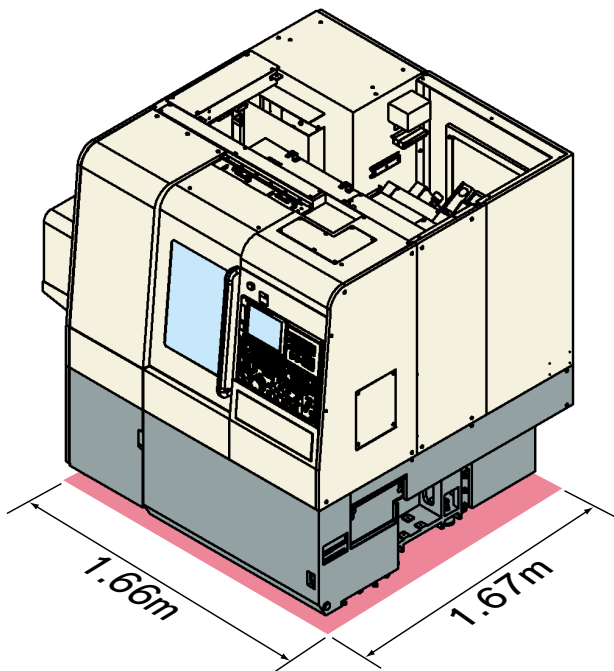
5.5 / 3.7kW
 24 / 18N·m
 6000min⁻¹

Y-axis stroke

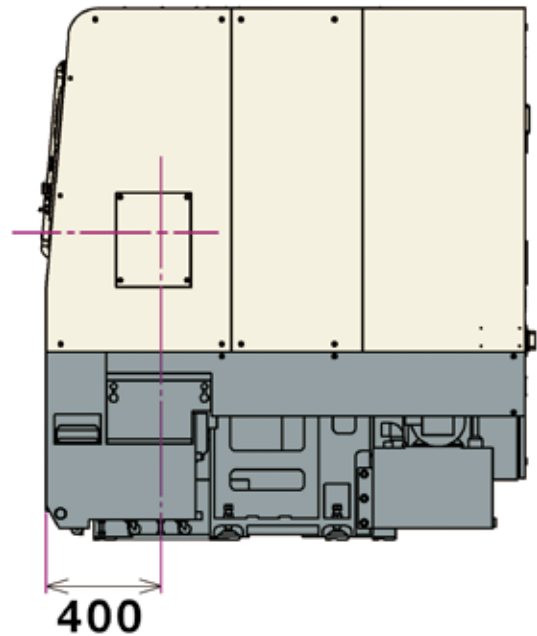
±41mm

Stable Accuracy Ensured

Compact!
Smallest in class floor space.



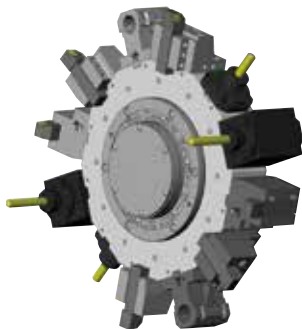
Operator Friendly,
Front distance to-spindle 400mm



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.)



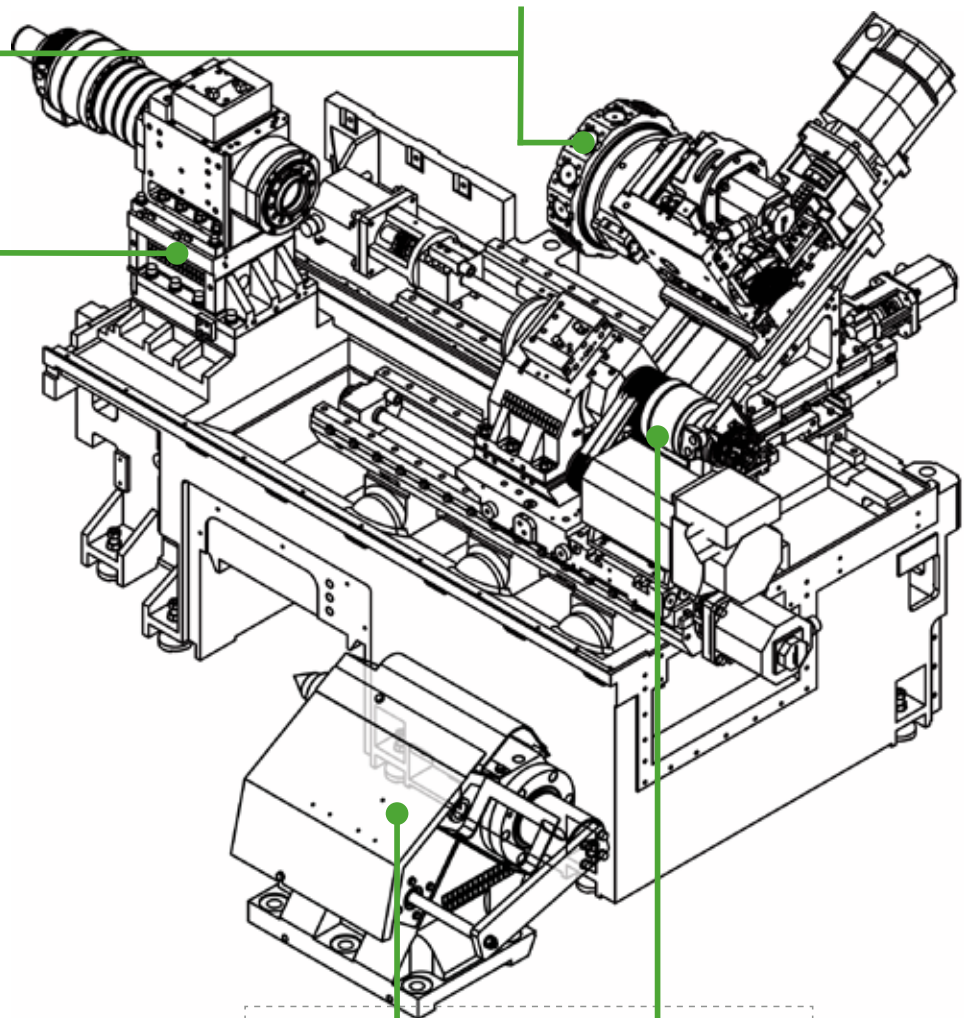
12 / 24- station turret

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 $\square 20/25\text{mm}$, 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 $\square 20/25\text{mm}$, 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 $\phi 65\text{mm}$

Standard

Bar capacity $\phi 71\text{mm}$

Option

Milling

5.5 / 3.7kW
 24 / 18N·m
 6000min^{-1}

Tailstock

MT-4
 Quill diameter : $\phi 80\text{mm}$
 Quill stroke : 80mm

Sub spindle motor

7.5 / 5.5kW
 61 / 34N·m
 6000min^{-1}

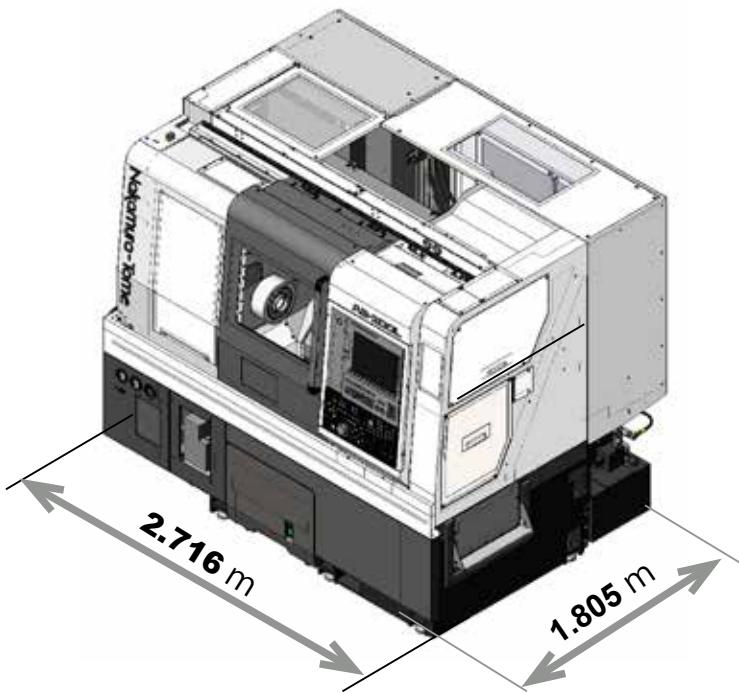
Y-axis stroke

$\pm 41\text{mm}$

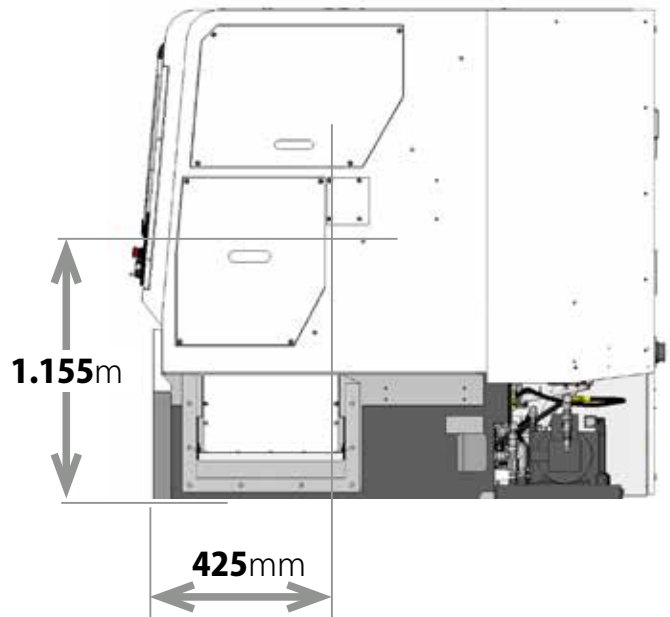
Option

Stable Accuracy Ensured

Compact!
Smallest in class floor space.



Operator Friendly,
Front distance to-spindle



Larger window ensures better visibility

Eco-friendly: Energy Saving Functions

- 1 Hyd. and Lub. pump motor stop except auto operation.
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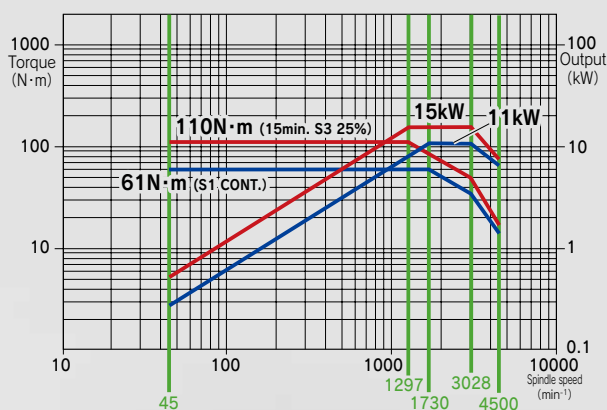
AS-200/200L

Spindle motors

15/11kW 110/51N·m

Standard

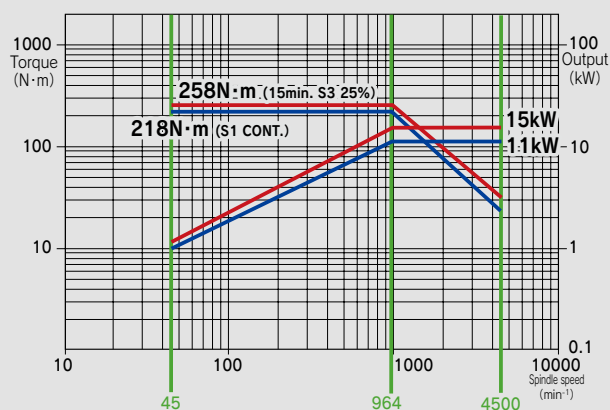
Rotating speed : 4,500min⁻¹



15/11kW 258/218N·m

Option High torque specification

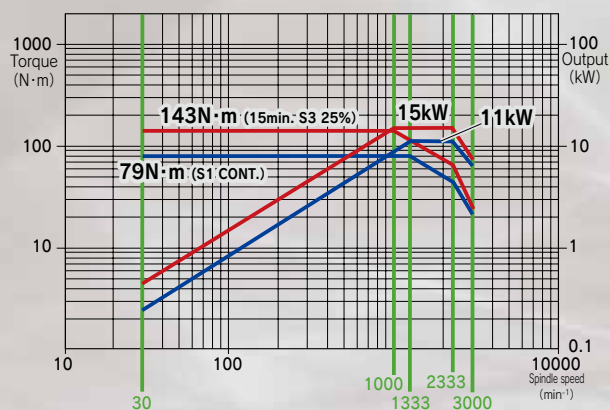
Rotating speed : 4,500min⁻¹



15/11kW 143/79N·m

Option High torque specification

Rotating speed : 3,000min⁻¹



Machine

From diversified small-lot quantities
to mass production



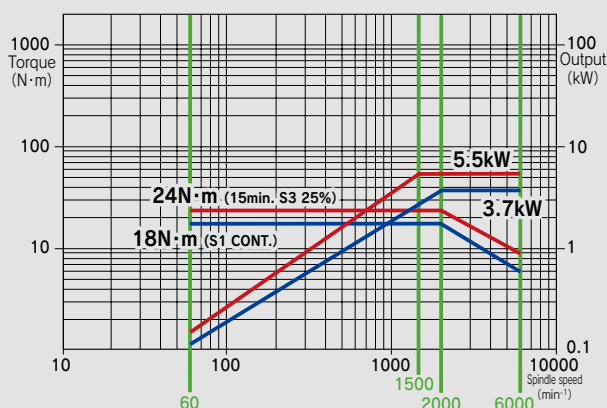
AS-200/200L

Milling-tool motor

5.5/3.7kW 24/18N·m

Standard

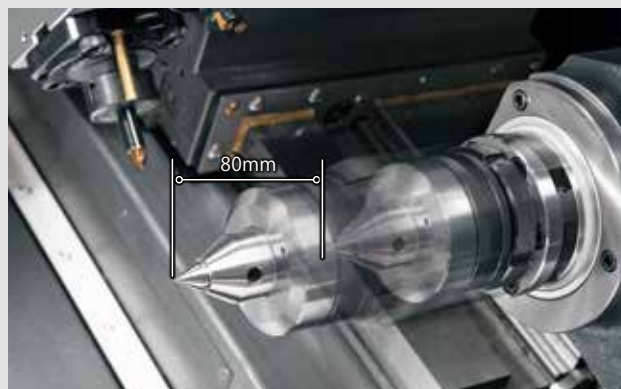
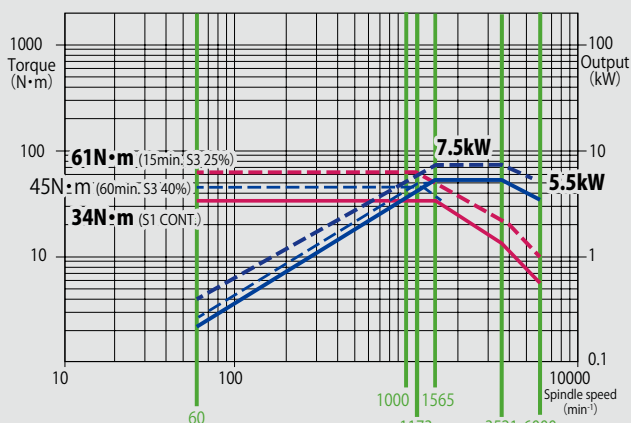
Milling speed : 6,000min⁻¹



Sub spindle motor (AS-200L:op.)

7.5/5.5kW 61/34N·m

Spindle 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.

Full operator support for more ease of use and reliability

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

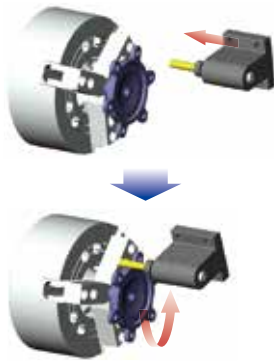
● Advanced NT Work Navigator !

Z B C

Navigation function is expanded to also include the X and Y-axis. Coordinate Recognition can make 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

● No need to panic

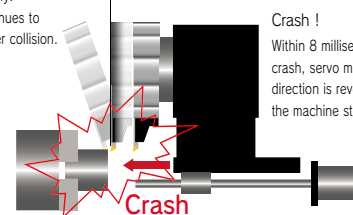
When unavoidable human error results in machine collision, there is no reason to panic. All Nakamura-Tome machines are equipped with a safety feature called "airbag" (overload detection), which will greatly reduce the impact force and prevent heavy damage to the machine.

Without Airbag

Machine will not be stop immediately. The slide continues to move even after collision.

With Airbag

Retraction within 0.008 sec



Crash !
Within 8 milliseconds after the crash, servo motor-feeding direction is reversed and the machine stops in EMG mode.

* 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.



15" color display LCD

Program storage length	512Kbyte (1280m)	1 Mbyte (2560m)
Program registered number	400	800
Tool offset pairs	64	99

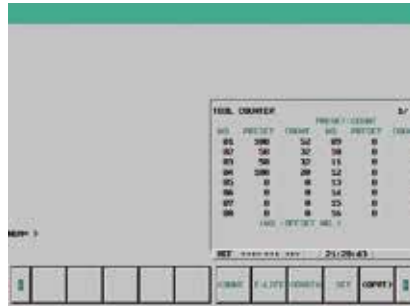
Standard Option Sub spindle
* AS-200L

The NT Nurse with user-friendly features

24 total functions



Menu display



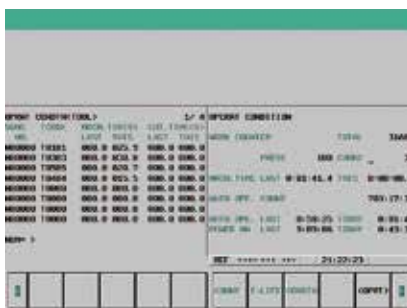
Tool counter



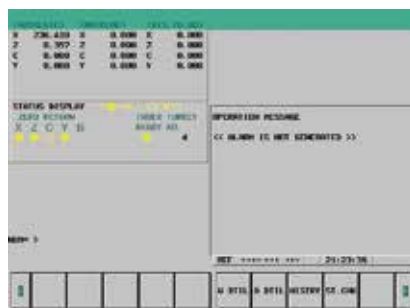
Tool life (Spare tool call-up)



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.



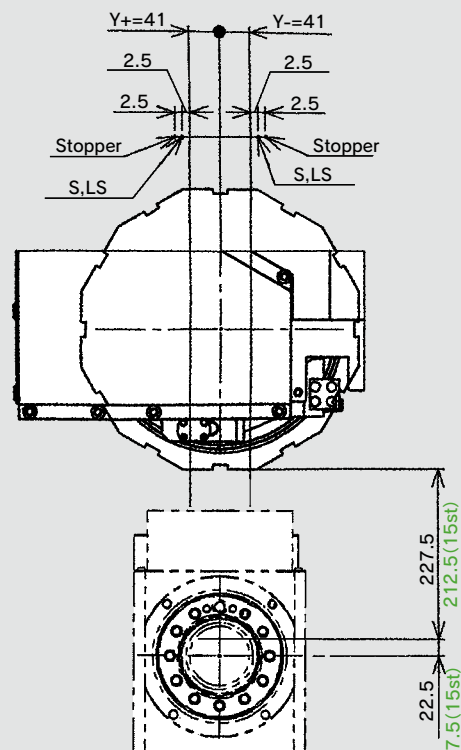
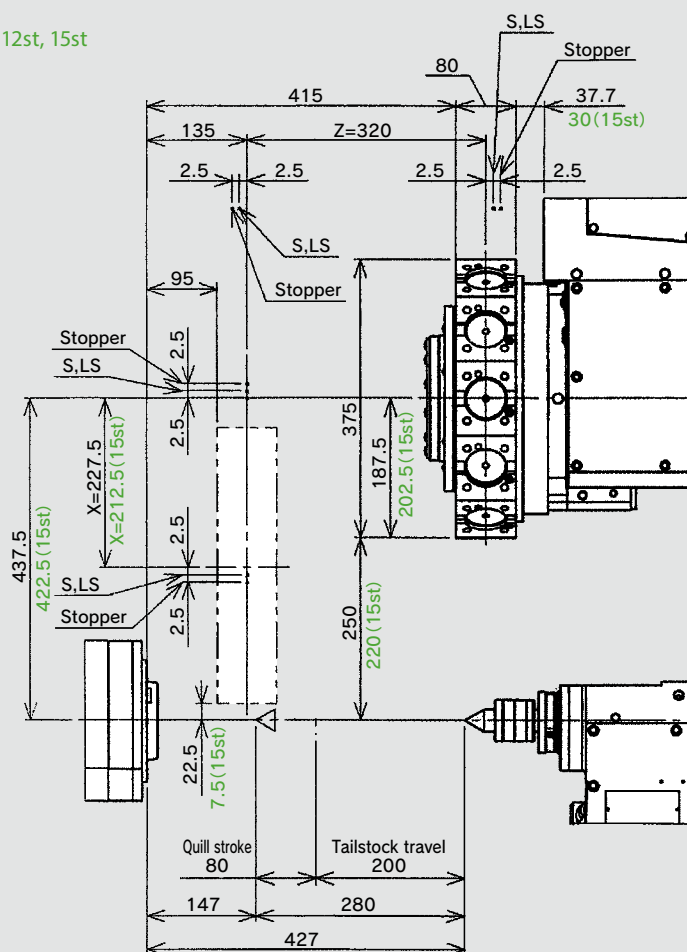
Process editing function

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 be moved and copied easily.



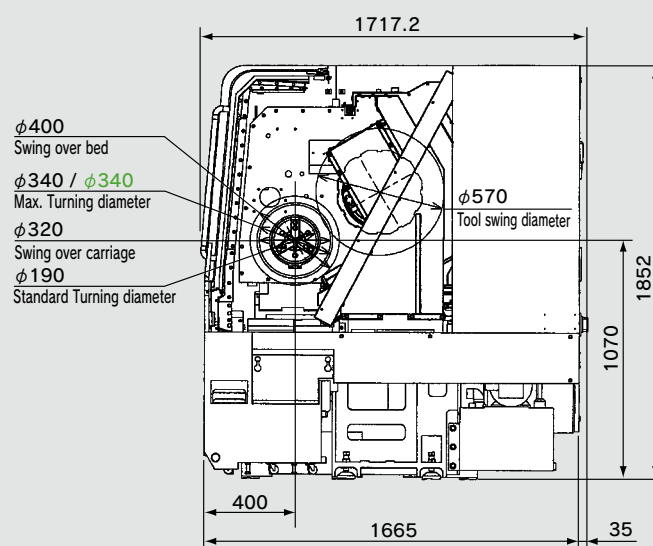
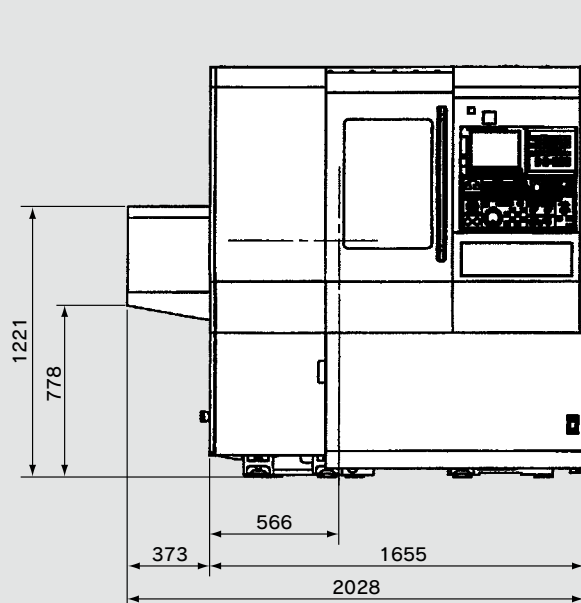
Slide Travel Range

■ 12st, 15st



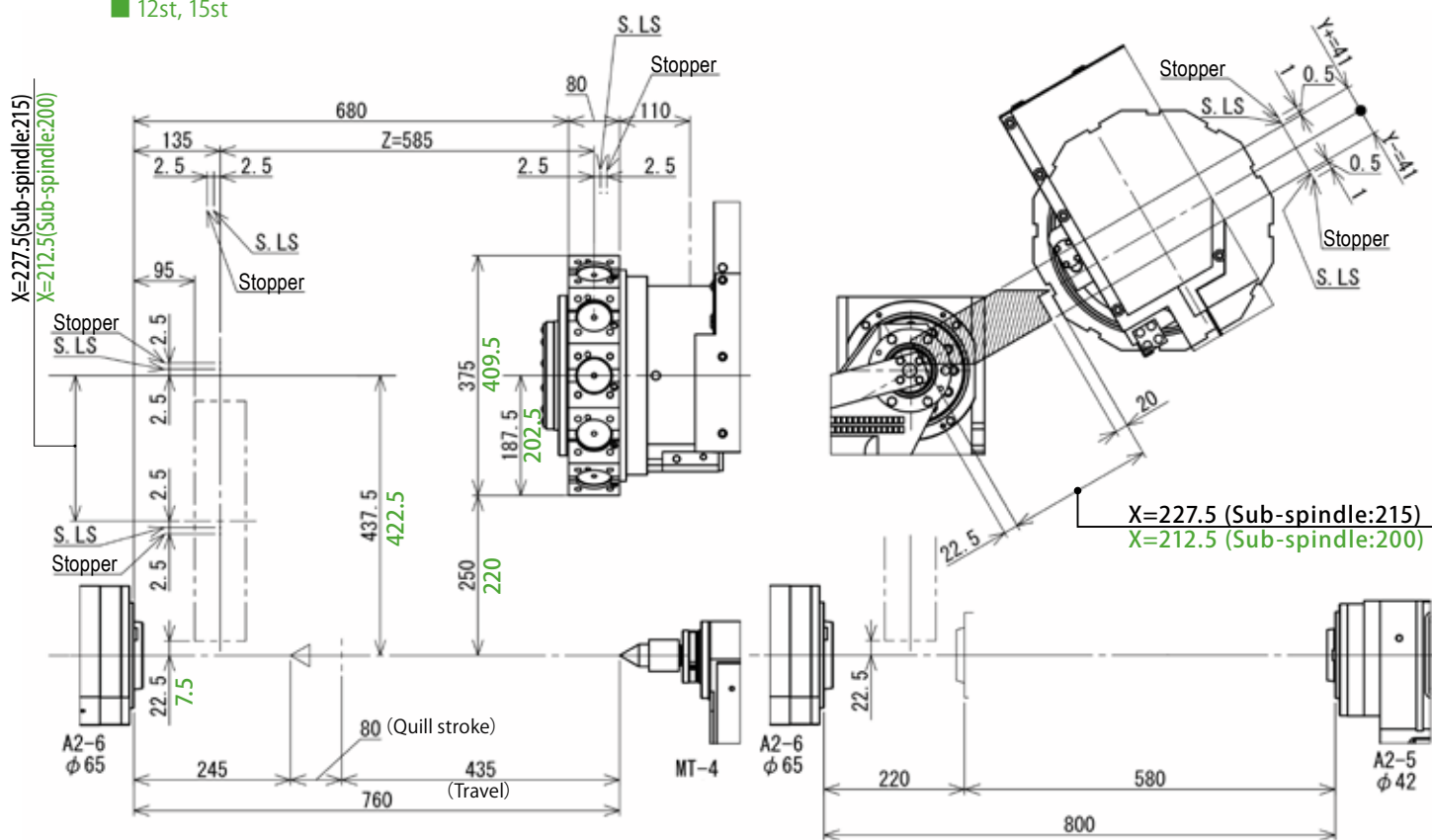
12st
15st unit : mm

Machine Dimensions / Maximum Tool Diameter

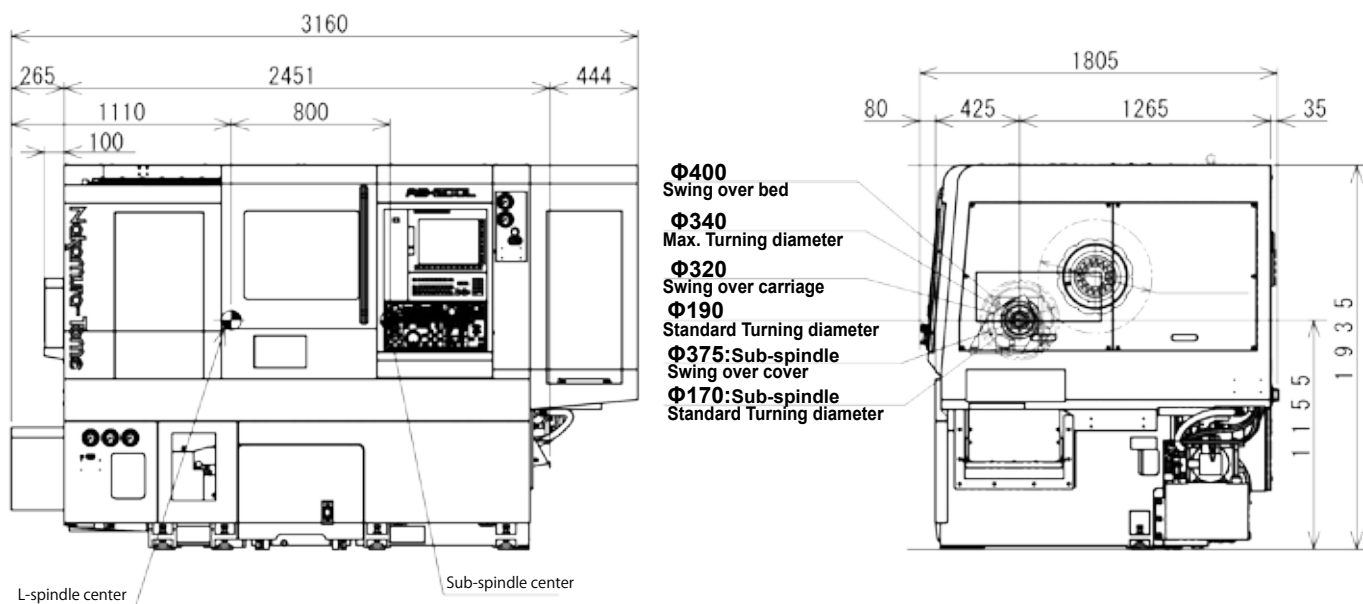


12st / 15st unit : mm

■ 12st, 15st


$$\frac{12\text{st}}{15\text{st}} \quad \text{unit mm}$$

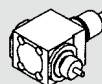
Machine Dimensions / Maximum Tool Diameter



12st / 15st unit : mm



Cross Holder
AC1310 (MAX. ϕ 16)



Straght Holder
AC1313 (MAX. ϕ 16)

* For both metric and inch.



Qualified tool
 $\square$ 25 $\times$ 100
 $\square$ 25.4



Turning Holder (A) Forward
Z2411/**Z2421**



Turning Holder (A) Reverse
Z2412/**Z2422**



Turning Holder (AL) Forward
Z2413/**Z2423**



Turning Holder (AL) Reverse
Z2414/**Z2424**



Turning Holder (AS)
P2413/**P2423**



Qualified tool
 $\square$ 25 $\times$ 150
 $\square$ 25.4



Turning Holder (B)
Z2415/**Z2425**



Turning Holder (A) Forward
W1411/**W1421**



Turning Holder (A) Reverse
W1412/**W1422**



Qualified tool
 $\square$ 25 $\times$ 150
 $\square$ 25.4



Qualified tool
Forward
 $\square$ 20 $\times$ 95
 $\square$ 19.05 $\times$ 95



Qualified tool
Reverse
 $\square$ 20 $\times$ 95
 $\square$ 19.05 $\times$ 95

Boring Holder

HS130 (ϕ 6)
HS131 (ϕ 8)
HS132 (ϕ 10)
HS133 (ϕ 12)
HS134 (ϕ 16)
M2682 (0.5"/1.25")
M2688 (0.375"/1.25")

Drill socket

HS127 (MT-3)
HS126 (MT-2)
HS125 (MT-1)
N1127 (MT-3)
N1126 (MT-2)
N1125 (MT-1)

Round hole bush

N1151 (ϕ 25)
N1150 (ϕ 20)
M2885 (0.75"/1.25")
M2886 (0.5"/1.25")
M2887 (0.625"/1.25")

Boring Bar Holder

M2112 (ϕ 25 - ϕ 12)
M2113 (ϕ 25 - ϕ 10)
M2122 (ϕ 25.4 - ϕ 12.7)
M2123 (ϕ 25.4 - ϕ 9.525)

Drill socket

M2114 (MT-1)
V1115 (MT-2)
M2124 (MT-1)
V1125 (MT-2)



Set ring
N3171 (ϕ 32)
N3181 (ϕ 31.75)

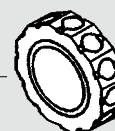


Set ring
N3170 (ϕ 25)
N3180 (ϕ 25.4)



Boring Holder
Z2417 (ϕ 32)
Z2427 (ϕ 31.75)

Turret Head



mm
inch



Qualified tool
 $\square$ 20 $\times$ 95
 $\square$ 19.05 $\times$ 95

R2402



R2401



Multi Boring Holder
Z7418 (ϕ 25)
Z7428 (ϕ 25.4)



Multi Boring Holder (ϕ 25)
G1453/**G1463**



Turning Boring Holder
($\square$ 20, ϕ 25)
G1451/**G1461**



Double Turning Holder ($\square$ 20)
G1452/**G1462**

Machine Specification



		AS-200		AS-200L	
■ Capacity		12/24-station turret		12/24-station turret	
Swing over bed		400mm		400mm	
Max. workpiece swing diameter		320mm		320mm	
Max. turning diameter		340mm	280mm	340mm	280mm
Standard turning diameter		190mm		190mm	
Distance between centers	Tailstock	427mm		760mm	
	Sub spindle	—		800mm	
Max. turning length		300mm		570mm	
Bar capacity		65mm 71mm (op.)		65mm	
Chuck size		8"		8"	
■ Axis travel					
Slide travel (X)		227.5mm	212.5mm	227.5mm	212.5mm
Slide travel (Z)		320mm		585mm	
Slide travel (Y)		±41mm		±41mm	
Rapid feed (X)		24m/min		24m/min	
Rapid feed (Z)		36m/min		36m/min	
Rapid feed (Y)		6m/min		6m/min	
■ Spindles					
Spindle speed		0 ~ 4500min ⁻¹		0 ~ 4500min ⁻¹	
Spindle speed range		Stepless		Stepless	
Spindle nose		A2-6		A2-6	
Hole through spindle		80mm		80mm	
I.D. of front bearing		110mm		110mm	
Hole through draw tube		66mm 71mm (op.)		66mm	
■ 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	Dodecagonal drum turret	15 station turret
Number of Tool stations		24	15	24	15
Number of Indexing positions		24	15	24	15
Tool size (square shank)		□20mm, □25mm		□20mm, □25mm	
Tool size (round shank)		φ32mm		φ32mm	
■ Driven tools					
Rotary system		Individual rotation		Individual rotation	
Spindle speed		6000min ⁻¹		6000min ⁻¹	
Spindle speed range		Stepless		Stepless	
Number of driven-tool stations		12	15	12	15
Collet size		AR25		AR25	
Tool shank		Straight holder φ1mm ~ φ16mm Cross holder φ1mm ~ φ16mm		Straight holder φ1mm ~ φ16mm Cross holder φ1mm ~ φ16mm	
■ Tailstock (op.)					
Quill diameter		φ70mm		Φ80mm	
Quill taper		MT-4		MT-4	
Quill stroke		80mm		80mm	
Travel		200mm		435mm	
■ Sub spindle (op.)					
Spindle speed		—		0 ~ 6000min ⁻¹	
Spindle speed range		—		Stepless	
Spindle nose		—		A2-5	
Hole through spindle		—		56mm	
I.D. of front bearing		—		80mm	
Hole through draw tube		—		43mm	
■ Drive motor power					
Main spindle	Standard	15/11kW 110/61N·m 4,500min ⁻¹		15/11kW 125/69N·m 4,500min ⁻¹	
	Option	15/11kW 258/218N·m 4,500min ⁻¹		15/11kW 258/218N·m 4,500min ⁻¹	
	Option	15/11kW 143/79N·m 3,000min ⁻¹		15/11kW 151/83N·m 3,000min ⁻¹	
Sub spindle (op.)		—		7.5/5.5kW	
Driven-tool spindle		5.5/3.7kW		5.5/3.7kW	
■ General					
Machine height		1850mm		1935mm	
Floor space		1650mm ×1600mm		2716mm ×1805mm (Standard) 3160mm ×1805mm (Sub spindle)	
Machine weight		3200kg		5000kg	
Power supply		20.6kVA		19.8kVA (Standard) 23kVA(Sub spindle)	



■ Items

Control	NAKAMURA-TOME FANUC
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■ 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/0.0001inch (X in diameter) ,0.001°
Least command increment	X : 0.0005mm, Z : 0.001mm, C:0.001°
Max. programmable dimension	±999999.999mm/ ±39370.078inch, ±999999.999°
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
Cylindrical interpolation	G07.1
Helical	standard

■ Feed function

Cutting feed	feed / min	X, Z : 1 ~ 8000mm/min, 0.01 ~ 314inch/min (1~4800mm/min 0.01~188inch/min) Y : 1 ~ 6000mm/min, 0.01 ~ 236in/min (1~4800mm/min 0.01~188inch/min) C : 1 ~ 4800° /min Z : 1 ~ 4800mm/min, 0.01 ~ 188in/min
	feed / 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
Continuous thread cutting		standard
Variable lead threading		G34
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		F0 / 25 / 50 / 100% (Changeable to every 10% by switch)
Cutting feed-rate override		0 ~ 150% each 10%
AI contouring controll		G5.1
Spindle speed override		50% ~ 120% each 10%

■ Program memory

Part program storage length	standard	512Kbyte (1280m)
	sub spindle	1Mbyte (2560m)
Part program edit		Delete, insert, change
Program number search		standard
Sequence number search		standard
Address search		standard
Number of registerable programs	standard	400 programs
	sub spindle	800 programs
Program storage memory		Backed up by battery
Background 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 (#100 ~ #149, #500 ~ #549)
Addition to custom macro common variables	standard (After addition, #100 ~ #199, #500 ~ #999)
NT Work Navigator (torque type)	standard
NT NURSE	standard
Z-axis Abnormal Load detection	standard

■ Operation / Display

Operation panel	Display	15inch color LCD unit
	Operation	separated MDI unit / standard key



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

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- 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.