Super NTJX

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

Innovation Technology
Creating Value

Nakamura-Tome

Double Performance!

Y-axis on very rigid lower turret

Y×2 Double Y-axis

One-hit machining

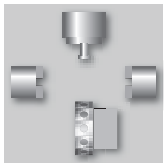
Powerful capabilities at hand.

When a Y-Axis is introduced on a lower turret featuring very rigid tools, machining limitations are further reduced.

By using the Y-Axis for simultaneous machining with the Upper Tool Spindle and Lower Turret, machining process layout optimization becomes a reality. Whether machining with multiple tools simultaneously on one side, or on both sides, cycle time is dramatically reduced

The Super NTJX is a High Productivity Multitasking Turning Center, that is at the cutting edge of speed.

Super NTJX Double performance! Y-axis on very



A ATC | B1 Tool spindle | T turret | M Milling Motor | Y×2 Double Y-axes | S×2 Twin-Spindle | C×2 C-axes | B2 Sub spindle

Capacity

Max. turning diameter / max. turning length	245mm / 1090mm
Distance between spindles	max. 1290mm / min. 210mm
Bar capacity	51mm (op. L : 65mm)
Chuck size	170mm (6”)

Axis travel

Slide travel (X1 / X2 / Z1 / Z2 / B2)	455 / 222.5 / 1090 / 1005 / 1008mm
Slide travel (Y1 / Y2)	±70 / +20, -50mm

Spindle L, R

Spindle speed	6000min^{-1} (op. L : 4500min^{-1})
L spindle motor	15/11kW, 221.5/162.5N·m
R spindle motor	11/7.5kW, 208/115N·m

Tool spindle

Tool spindle speed	8000min^{-1} (op. 12000min^{-1})
Tool spindle motor	7.5/3.7kW, Max54N·m
Tool shank type	KM63 (op. CAPTO C6, HSK-A63)
ATC, Number of tools	40pcs. (op. 80, 120)
Max. tool diameter / No adjacent tools	70mm / 90mm
Max. tool length / Max. tool weight	280mm / 8kg
Orientation function	90 degree indexing
B-axis positioning range	190° (±95°)

Lower turret

Driven-tool spindle speed	6000min^{-1}
Drive motor	5.5/3.7kW, Max. 24N·m
Type of turret / Number of indexing pos.	Dodecagonalk / 24st
Drive type / Number of driven-tool stations	Indivisual rotattion / 12

General

Floor space (L × W × H)	4,718mm × 2,922mm × 2,445mm
Machine weight (incl.control)	14,000kg

Super NTJX

Super NTJX Machine Structure

64 stations

Very-rigid turret

Tool spindle

Lower turret

Left Spindle

Bar capacity ϕ51mm

Spindle motor
15 / 11kW
221.5 / 162.5N·m
6000min^{-1}

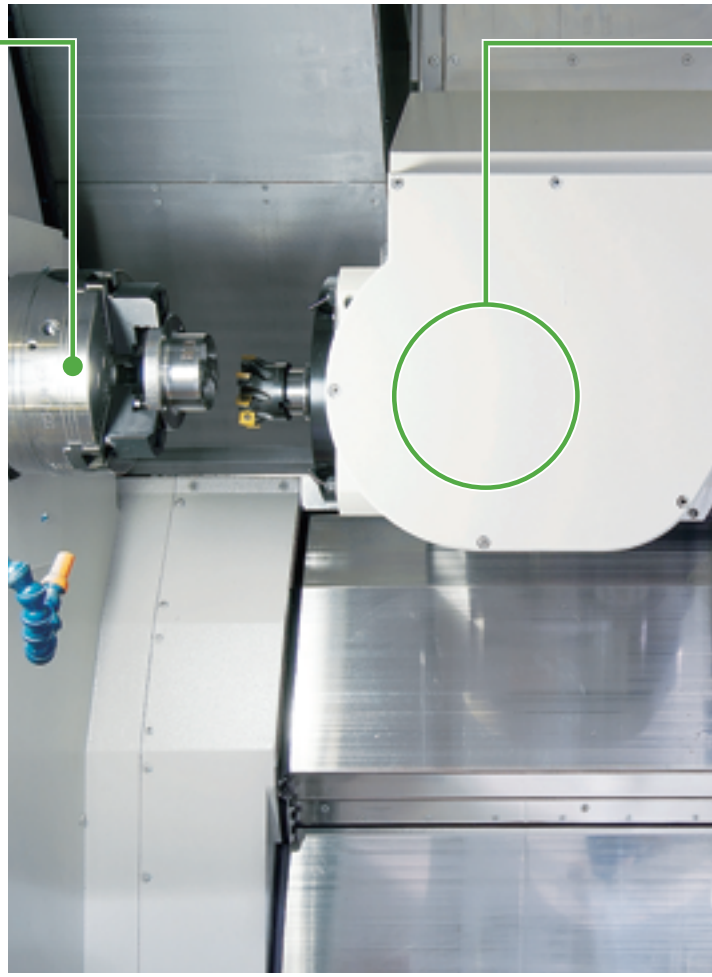
C-axis
C-axis synchronous control

Standard

Bar capacity ϕ65mm

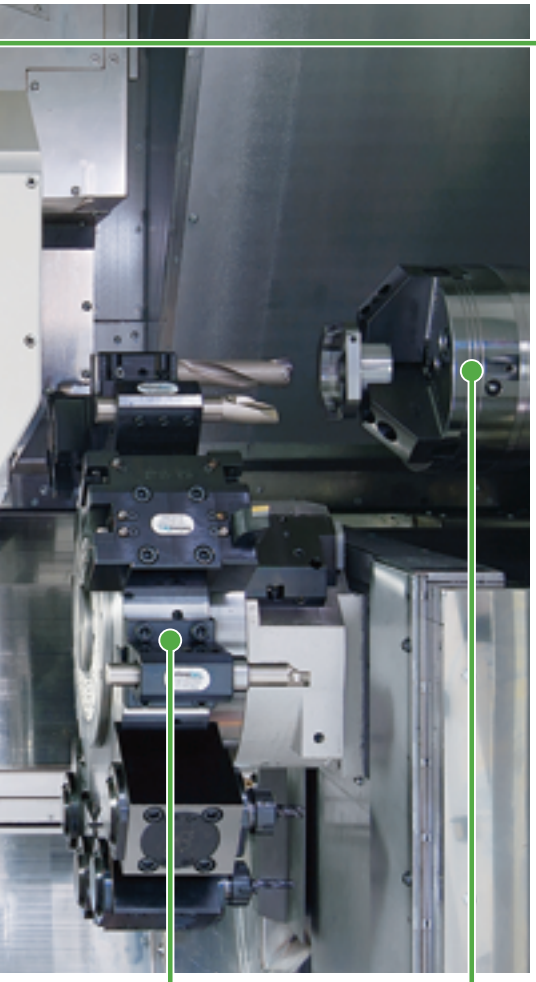
Spindle motor
15 / 11kW
221.5 / 162.5N·m
4500min^{-1}

Option



- Y-axis on upper and lower slides! Y-axis stroke Upper 140mm, Lower70mm
- Tool spindle power 7.5/3.7kW, Lower turret driven-tool power 5.5/3.7kW
- Servo driven ATC, 40 Tool magazine [op. 80, 120]
- B-axis positioning range 190° [±95°]
- Up to 26/18.5kW cutting power available for turning shaft-work with synchronized spindles.
  Motor power L : 15/11kW R : 11/7.5kW]
- Upper tool spindle / lower turret and opposed two-spindle construction contribute to balancing and reducing cycle time.
- More tooling (up to 24) by half turret index with combination holder.

Accuracy Ensured



Tool spindie

8000min^{-1}

7.5 / 3.7kW
Low speed
54 / 36 / 22N·m
High speed
18 / 8.8N·m

Y-axis stroke
±70mm

Standard

12000min^{-1}

7.5 / 3.7kW
Low speed
54 / 36 / 22N·m
High speed
18 / 8.8N·m

Option

- ATC : 40 tools op. 80, 120
- Tool to Tool 1.3sec.
  Chip to Chip 7.0sec.

Lower turret

Dodecagonal / 24-station

- Number of driven-tool stations : 12
- Servo-driven turret

Milling
5.5/3.7kW
24/16N·m
6000min^{-1}

Y-axis stroke +20mm -50mm

Standard

Right spindle

Bar capacity ϕ51mm

Spindle motor
11 / 7.5kW
208 / 115N·m
6000min^{-1}

C-axis
C-axis synchronous control

Standard

Large window ensures better visibility

Parts catcher G — Option

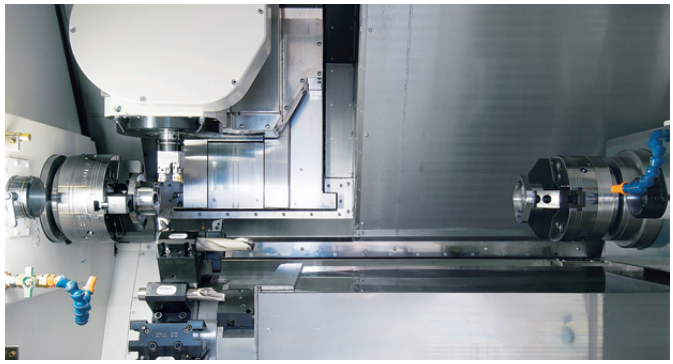
Method		Swing / Hand
Workpiece size	Diameter [Dia.mm]	ϕ12 - 65
	Length [mm]	15 - 150
	Weight [kg]	3
Cycle time [sec.]		6.1
Ejecting method		Belt conveyor & Chute

Super NTJX High productivity Multitasking

The compact design of the tool spindle and the between spindle center distance of 1290mm, minimize tooling interference and provide a wide working area for a variety of parts such as shaft, bar or flange work. Furthermore, each saddle has its owns independent slide, eliminating any limitations in slide movement.

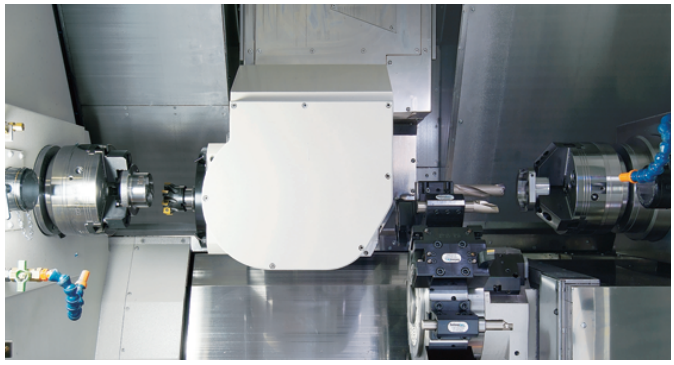
Milling with Tool Spindle on Right hand side Spindle, Machining with Lower Turret on Left hand side.

Through compact turret and tool spindle, tooling interference is minimized.



Simultaneous Turning with upper and Lower Tools.

Thanks to tool spindle orientation, a multi-tool holder can be used.



Milling on Tool Spindle / Drilling on Lower Turret.

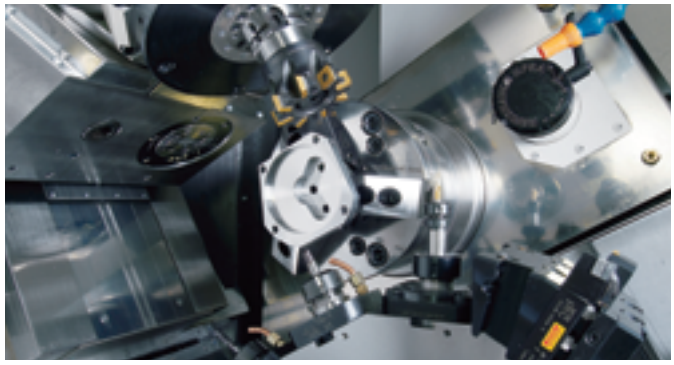
With a large between spindle distance and compact tool spindle, drilling with the lower turret during machining on tool spindle can be achieved.

Turning with Tool Spindle on Right hand side, Lower Tool on Left hand side Spindle.

Adjustment of the center height of cutting tool, using Y-axis positioning on upper and lower turrets, provides the possibility for high accuracy machining.

Parts Transfer Process

By directly chucking the work piece, a highly accurate positioning and phase synchronization is obtained.



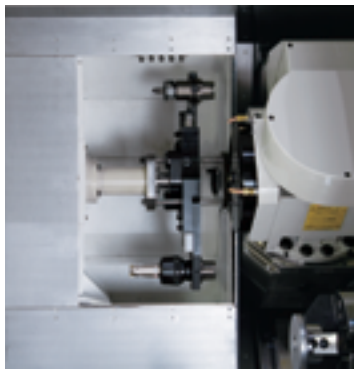
Simultaneous Y-axis machining with Upper and Lower tools.

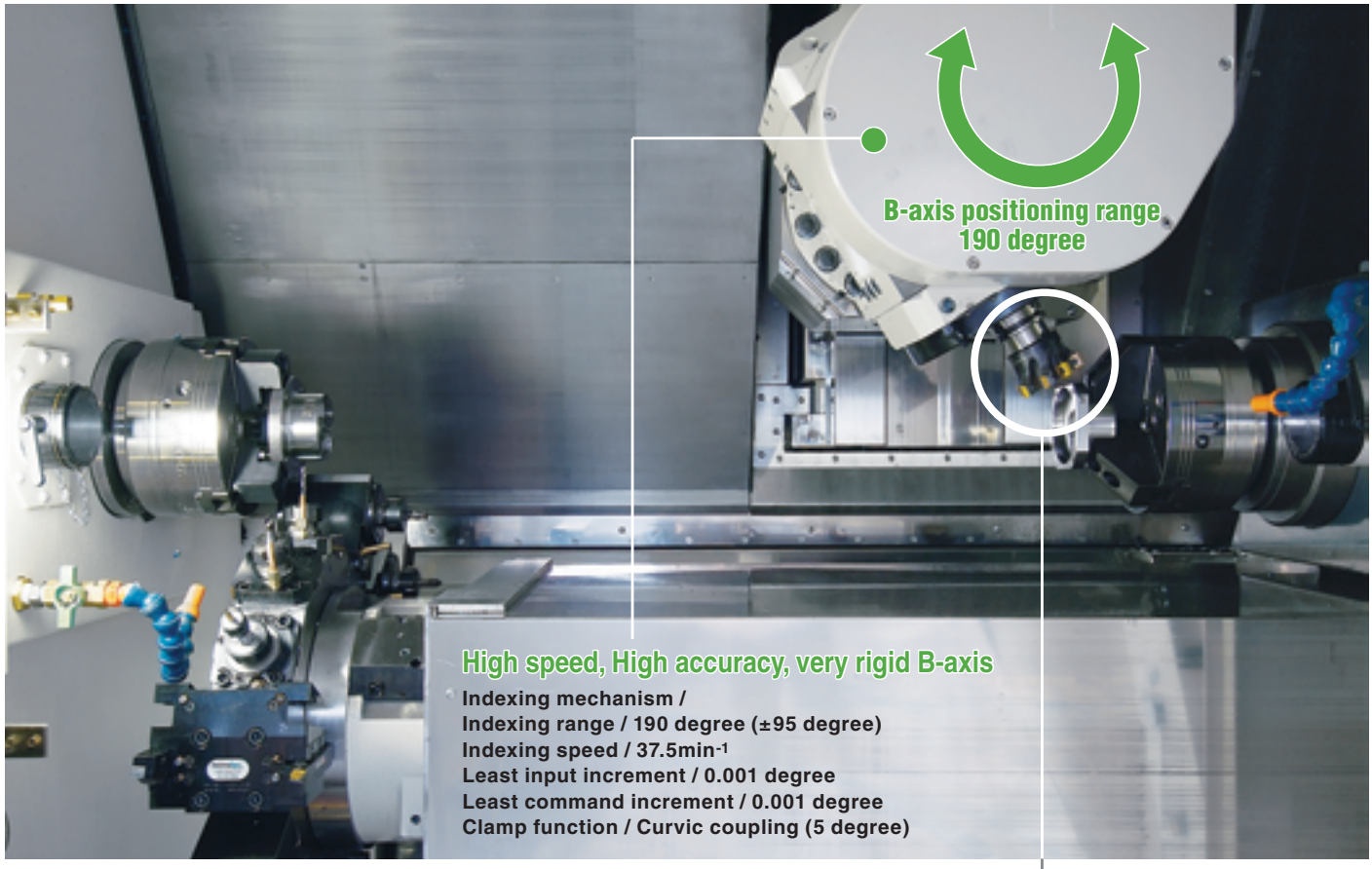
Tool spindle ±70mm, Lower turret +20mm, -50mm

Quiet, servo driven ATC

Tool to Tool 1.3sec.

Tool magazine / 40 tools (op.80, 120 tools)
Max. tool diameter / 70mm
Max. tool diameter (without adjacent tool) / 90mm
Max. tool length / 280mm
Max. tool weight / 8kg





High speed, High accuracy, very rigid B-axis

Indexing mechanism /
Indexing range / 190 degree (±95 degree)
Indexing speed / 37.5min^{-1}
Least input increment / 0.001 degree
Least command increment / 0.001 degree
Clamp function / Curvic coupling (5 degree)


HSK-A63


CAPTO C6 Sandvik


KM63 Kennametal

Super NTJX Combining Turning and Milling

Super NTJX

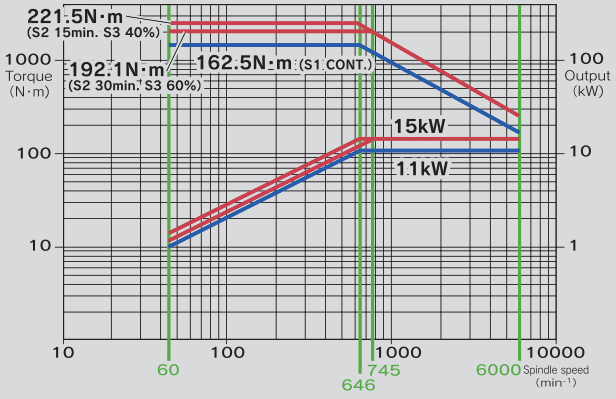
Cycle time reduced through simultaneous machining on Left and Right hand spindles.

L spindle motor

15 / 11kW

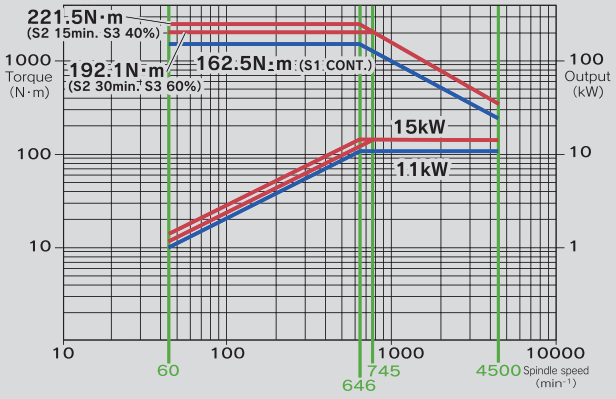
Standard

Rotating speed : 6,000min^{-1} / dia.51mm



Option

Rotating speed : 4,500min^{-1} / dia.65mm

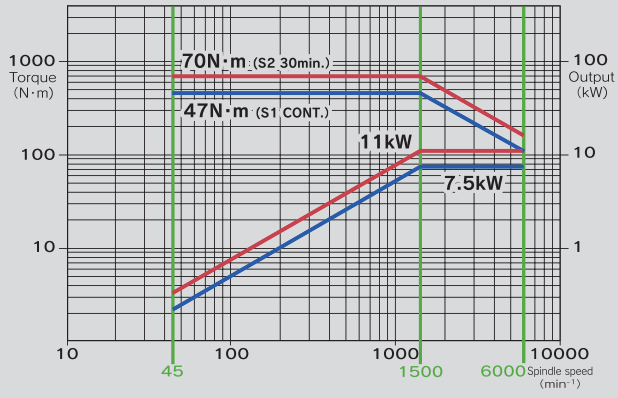


R spindle motor

15 / 11kW

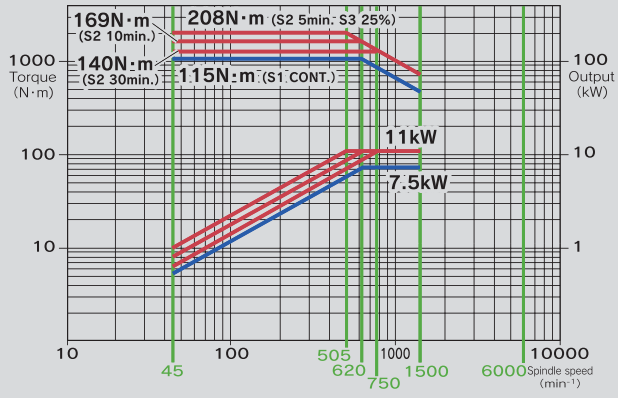
Standard Higher speed

Rotating speed : 6,000min^{-1} / dia.51mm



Standard Lower speed

Rotating speed : 6,000min^{-1} / dia.51mm



Capabilities

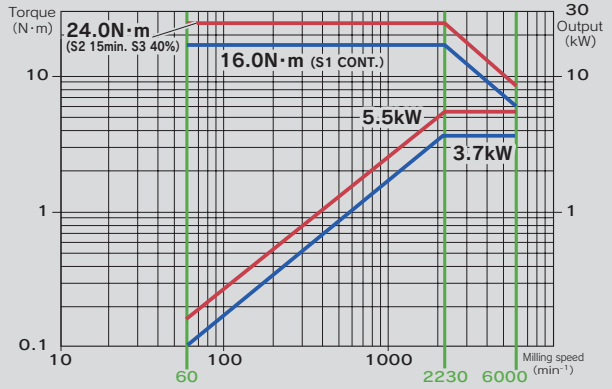
From diversified small-lot production to mass production

Driven-tool motor

Standard

Rotating speed : 6,000min-1

5.5/3.7kW

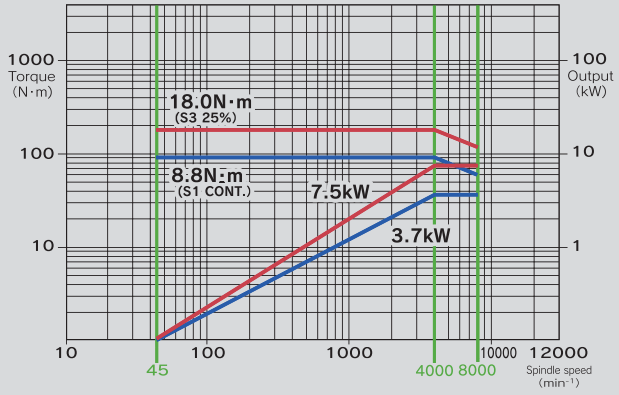


Tool spindle motor

7.5 / 3.7kW

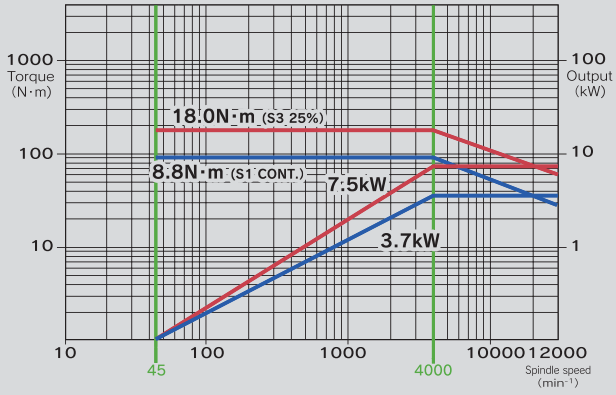
Standard **Higher speed**

Rotating speed : 8,000min-1



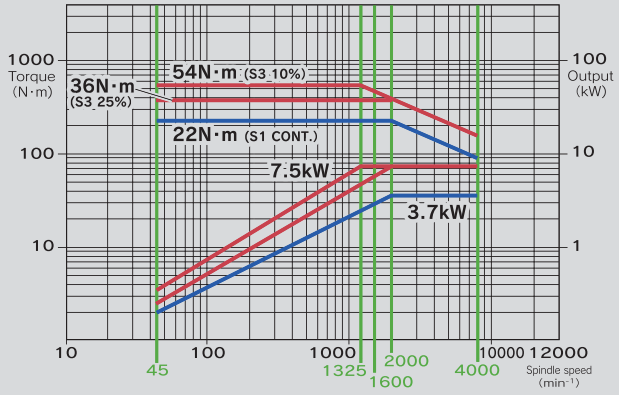
Option **Higher speed**

Rotating speed : 12,000min-1



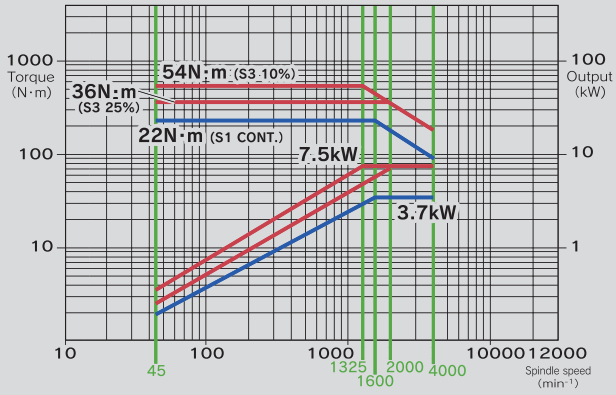
Standard **Lower speed**

Rotating speed : 8,000min-1



Option **Lower speed**

Rotating speed : 12,000min-1



NT-IPS
NAKAMURA-TOME INTELLIGENT PRODUCTION SYSTEM

Graphical User Interface

Easy to See. Easy to Understand. Easy to Use.

Large Display : 19” Touch Panel

Automatic Tool Offset | Tool ID System | On machine 3D Simulation | NT Multitasking Office | NT Navi | NT Nurse | Airbag & Collision Guard | Smartphone NT App | ECO | Vibration monitoring

19" Color LCD Monitor

With the user in mind, a large high-resolution (19” SXGA 1280x1024) color LCD is introduced. Nakamura-Tome’s original screens are featured on a large CNC display unit. Switch between machine status screen and load graph screen by pressing a single button, or return to the previous NT screen by simply pressing the NT screen button.

STATUS DISPLAY

LOAD GRAPH

Open CNC

Several original screens developed by Nakamura-Tome, such as Tool Setting Screen and Work-piece Status Screen, are featured on this machine to ensure ease of set up and ease of operation with loading / unloading devices.

CNC SCREEN

PROGRAM CHECK

NT SETTING

TOOL SETTING

Program storage length	1Mbyte (2560mm)	2Mbyte (5120mm)	4Mbyte (10240mm)	8Mbyte (20480mm)
Program registered number	2000	4000		
Tool offset pairs	99 + 99	300 + 99	400 + 99	

Standard Option

Evolution of User Interface for Improved Support

NT-IPS

Full operator support easier use and reliability

Illuminated Switches

LED light switches are introduced on the operation panel.
When machine power is on, a backlight makes it possible to see the switch even in a dark condition. When pressed, the switch is fully illuminated. When the spindle, tool spindle or feed override rotary switches are set to 100%, the lit LED switches enable the operator to see the override condition from a distance.

NT-Original screen

Setting and operation integrated in one screen

Switches on the control panel, NT-setting screen commands and other buttons were all put together in one screen. All setting operations can be done from within one screen, which is displayed by pushing one button, ensuring easy operation.

NT SETTING

All required information displayed on one screen

Set up can be easily performed without changing screens. Graphic displays of working-area units, such as chucks, parts, tool spindle, ...etc, are great visual aids to ensure ease of understanding.

TOOL SETTING

Coolant setting screen

Coolant setting screen pops up by pushing one button on the control panel. Easy to see! Easy to use!

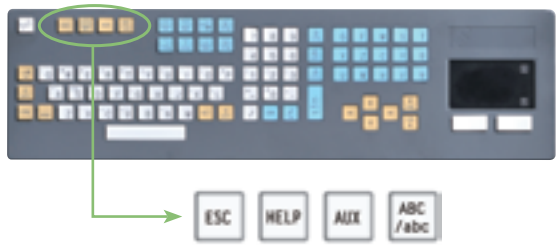
Coordinate and tool setting integrated in one Screen

Geometry & wear offsets, work coordinates and Manual Guide i tool information were all put together in one screen. Easy to see! Easy to use!

TOOL INFORMATION

Pop up display

By pressing the AUX key, registered screens subsequently pop up, showing machine conditions on several screens. Thanks to the NTIPS large screen, it became possible to look at the NC program while watching 3D interference check, or to look at the CNC coordinates while watching the machining area through a video camera, ... etc. Easy to see! Easy to understand! Easy to use!



Monitoring System (op.)

It is possible to mount an external CCD camera inside the machine. Using the screen controller, the video camera can be panned, tilted or zoomed. Additionally, it is possible to pre-register up to 6 camera positions, which can be quickly recalled later by simply pressing the “AUX” key. Full screen display is also available by pressing the provided “ ☐ ” button, similar to several Windows applications.

NT Manual Guide i

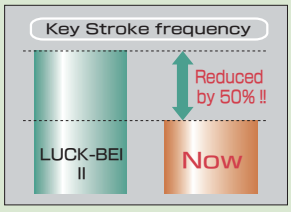
NT MGi

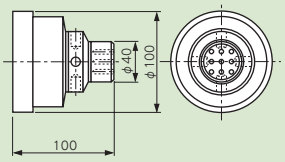
Featuring new functions!

A programming guidance system with the ability to generate NC programs (ISO/EIA G-code programs) easily. Processes created in conversational mode can be cut, copied or moved ensuring flexibility. Additionally, several cycles such as part-transfer cycle, requiring waiting M-codes, are readily made with the "NC program editing support function". The "NC program simulation function" can be used to check created- programs by tool-path simulation or solid-model animation.

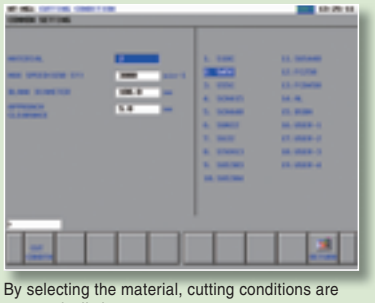
Automatic Cutting-Condition Setting Function

By setting the material type and required surface roughness, cutting conditions are automatically generated. These can be also changed depending on customer's experience.

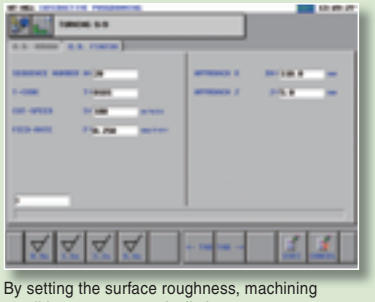




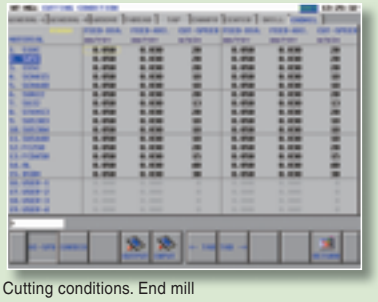
By introducing the "automatic cutting condition setting function", the number of key strokes required to make a program were reduced by 50% reduced, compared with the previous NT-Manual guide version.



By selecting the material, cutting conditions are automatically input.



By setting the surface roughness, machining conditions are automatically input



Cutting conditions. End mill

Process Editing

A function that automatically recognizes and extracts the name and order of all machining processes, then displays them in table layout. Machining processes can be moved, copied or swapped easily. In addition, waiting M-codes can be added with the click of a button.

- Separate display based on spindle selection or turret selection.
- Displayed in a clear layout according to waiting functions
- Program Display

Waiting function is easily input with the push of a button

Fixed Forms

Generous fixed forms with over 600 patterns (10 times more than before) are standard.
Fixed forms are easily selected from a menu.
Additional custom made programs can be registered.

Machining Cycle (conversational) Function

In addition to Nakamura-Tome's original NT Work Navigator, which is essential for multitasking, "soft quill pusher" and other NT-Nurse functions can be programmed easily.

Work navigator programming screen

Soft work pusher programming screen

Advanced NT Nurse

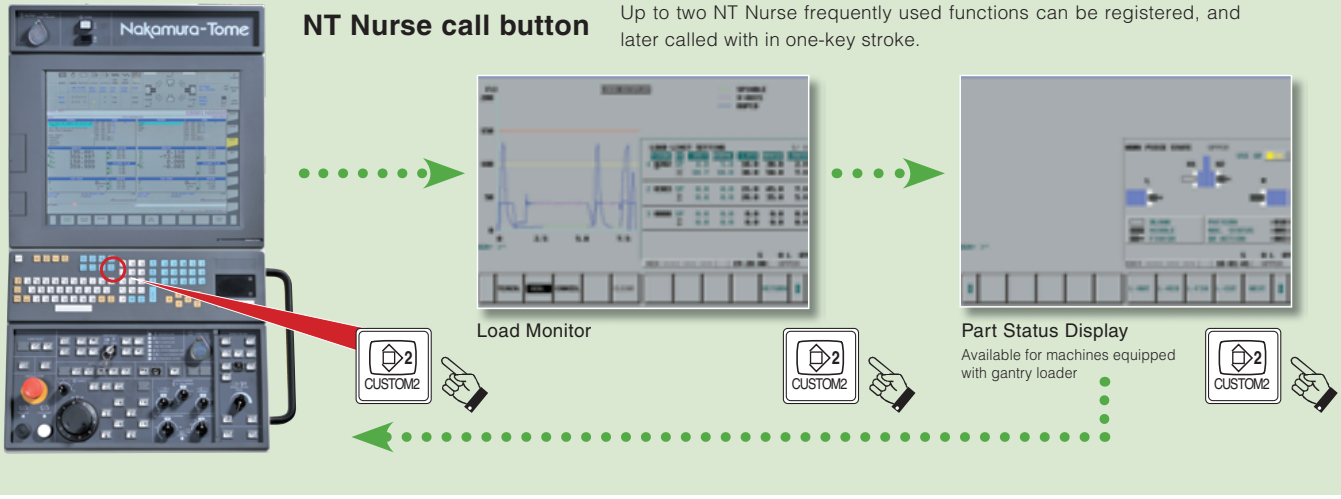
–Generous User-friendly Support System–

NT Nurse

Full operator support easier use and reliability

For Increased Productivity!

"NT Nurse" which is standard on all machines, has a new function called "Screen registration". NT Nurse Functions that are frequently used can be registered, and later called up with one-key stroke. More than 34 NT Nurse functions are available to support improving your productivity.



These are only a few of the available 20 NT Nurse user support functions.

Menu screen

Condition display

Alarm detail display

Spare tool call-up

Power saving function

In case of 19-inch screen, Auto Monitor-off function is not available.
Power saving function for PC can be used.

Tool counter

Offset history

Data Input / Output to Memory Card

Program data, tool offsets, coordinate offsets, NT-Nurse data and all other part related-data, can be easily transferred to one single folder on the memory card with one single stroke, making machining data for one single part easy to manage and to recall. A memory card is required for data input/output.

- TOOL COUNTER
- TOOL LIFE (Spare tool call-up)
- OPERATION CONDITION
- QUICK OFFSET INPUT
- SETTING (SWITCH)
- OPERATION MESSAGE
- LOAD DISPLAY
- GUIDANCE
- GR : LOADER PROGRAM CHECK
- WS : WORK STOCKER POSITION
- GR : SETTING
- SOFT WORK PUSHER
- HAN-BEI (IN PROCESS MEASUREMENT)
- CHUCKING CHECK
- B-AXIS DIMENTION SETTING
- WORK-PIECE MACHINING STATUS
- DATA READ/WRITE
- POWER-SAVE SETTING
- OFFSET HISTORY
- ATC DATA SETTING

Dual safety

NT Collision Guard + Airbag

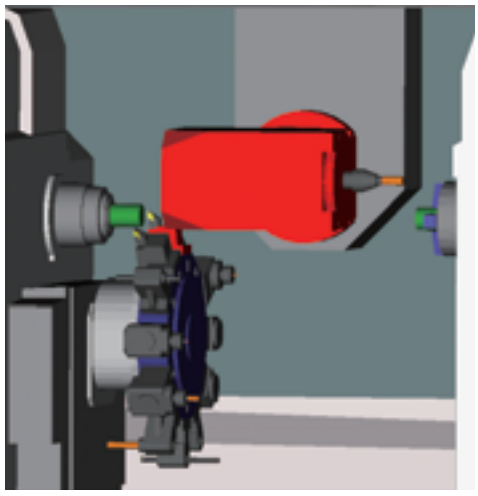
Double safety features

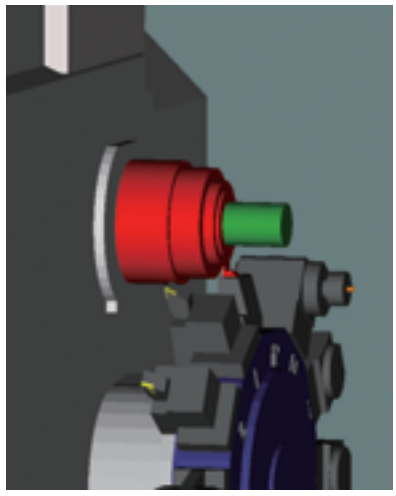
NT Collision Guard

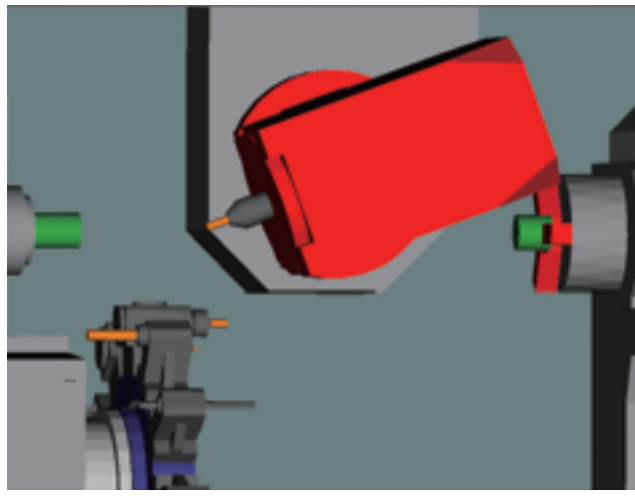
Safety Technology –
Machine collisions are avoidable!

NT Collision Guard to avoid machine collision and Air bag function (Abnormal load detection) to minimize damage even in case of collision.

If interference is detected, the machine stops with the affected area highlighted in red on the CNC display.







This essential function for multitasking machines is standard.

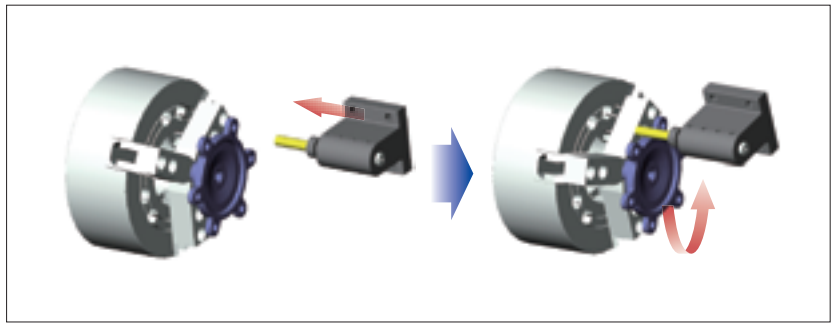
Jig less! Set-up less! Skill less!

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 X Y Z B C

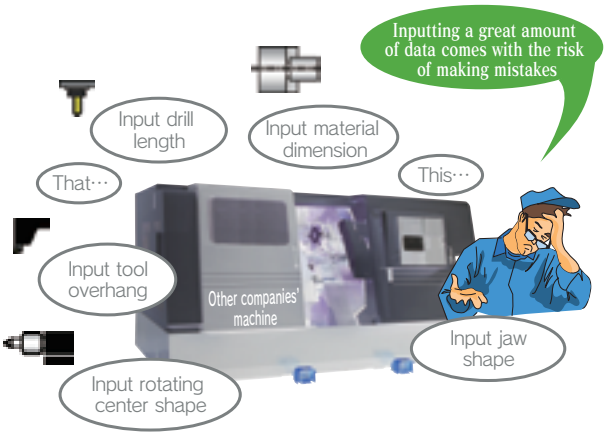
• Advanced NT Work Navigator ! • No fixtures required

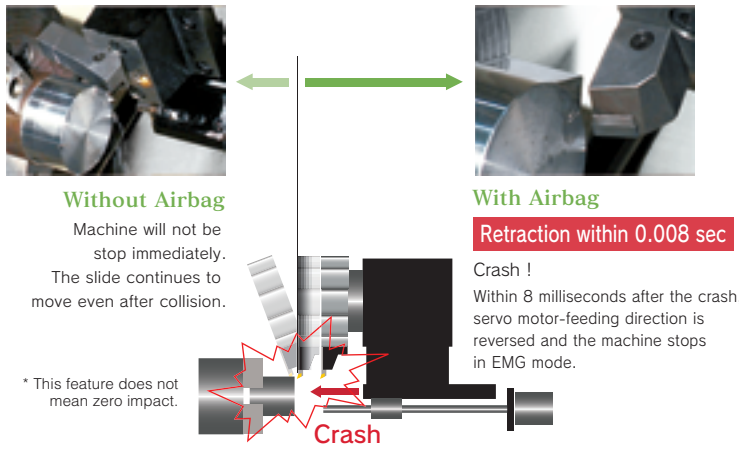


for maximum protection

Airbag (Overload detection)

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





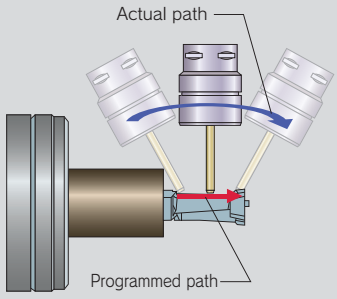
Even with barrier function, machine collisions may occur

Soft barrier function is not perfect. If wrong data is input, a collision will occur.

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.

Software to Support Five-axis Control (option)



Tool Center Point Control

Tool center point control facilitates programming, when the tool axis direction changes during machining. The path and feed rate of the tool tip are automatically controlled to move at the path and feed rate specified in the program, eliminating the need for short line segments that are following the tool-axis center rotation.

AI High Precision Contour Control II

The use of powerful look-ahead performance enables high-speed high-precision milling of free-form curved surfaces that are specified in consecutive tiny blocks.

Jerk Control

Even if the part has a smooth shape with no abrupt corners, jerk control recognizes vibrations at corners before they occur and automatically controls the feed rates accordingly. Enhanced smooth motion reduces mechanical shock and improves surface finish.

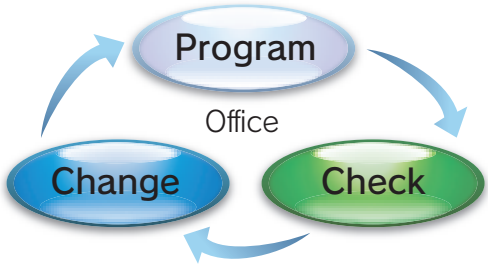
- Air Cutting Mode
- Index Speed override
  Machine set-up essentials
- Jump Programming (G411)
  Continuous-machining essentials
- Axis Torque Limit Function (G359)
- Cut-in Check
- Program Resume Function
- Manual Handle Retrace (op.)

NT Multitasking Office

By integrating 3D CAD models of the machine, chucks, tools and part, with the dynamics of the real machine (parameter settings) as well as guided programming, Multi-Tasking Office enables virtual planning and verification of the production process.

Efficient Programming for Higher productivity

Shorter set-up times

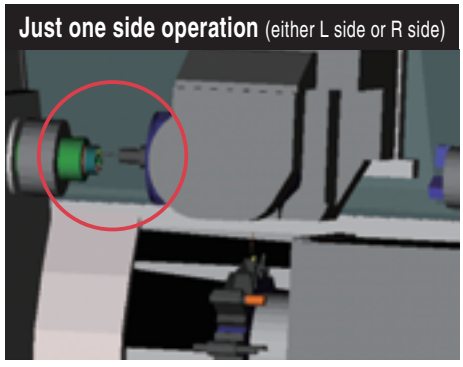


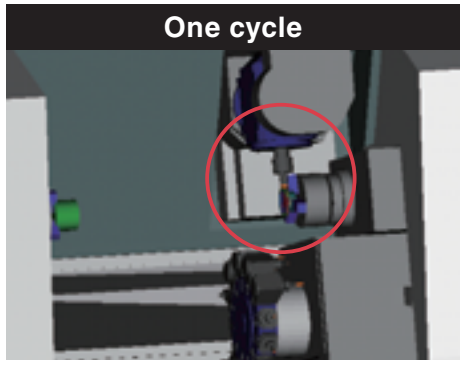
Drastically reducing set-up time leads to higher productivity

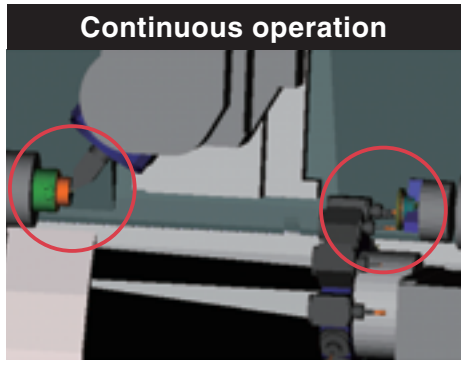
Virtual simulation of the machining processes using 3D solid models of the machine, chucks, tool holders and tools, coupled with all the features of NT-Manual guide I, contribute to not only high efficiency programming and reduced cycle times, but also prevent collisions and reduce set up time.

Features

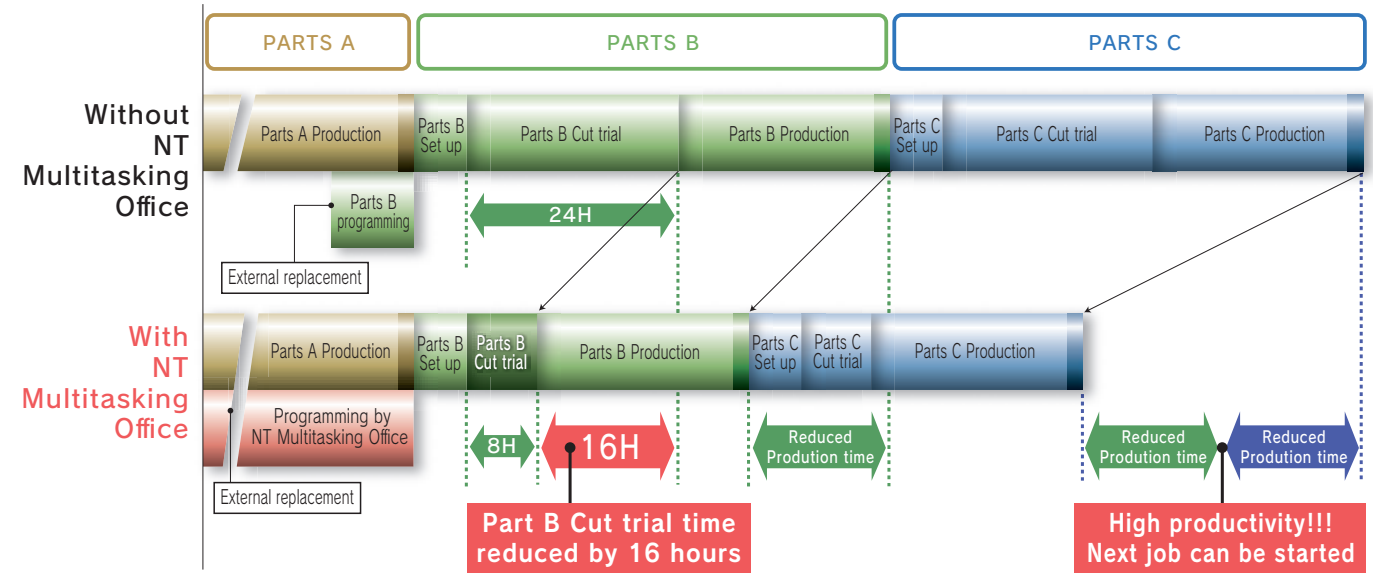
1. **Simulation is possible either from Manual guide program (including 4-digit G-codes), or from ISO NC program.**
2. **Simulation of Canned cycles such as G71, G83 and NT-Nurse, NT-Navi, codes.**
3. **Simulation of programs using Jump programming function (G411) is available as well.**





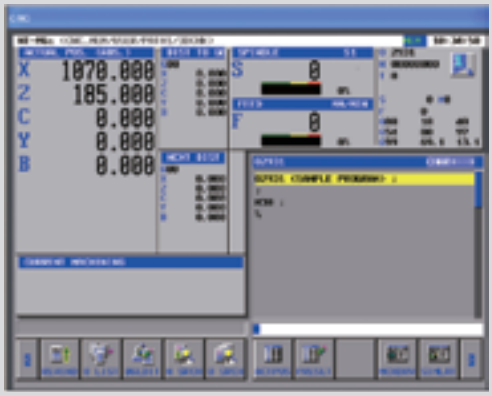


NT Multitasking Office merit



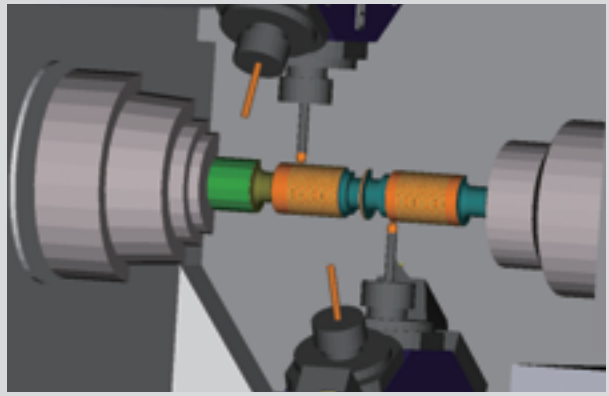
Programming and machining simulation can be easily done in the office.

NT Multitasking Office



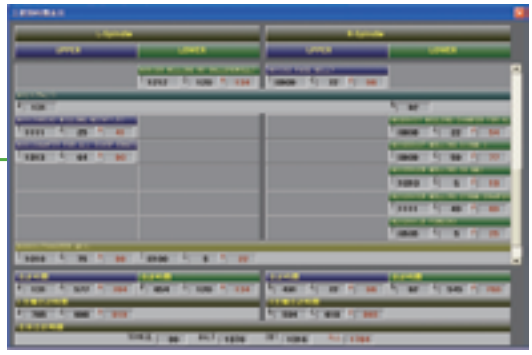
Programming software

+

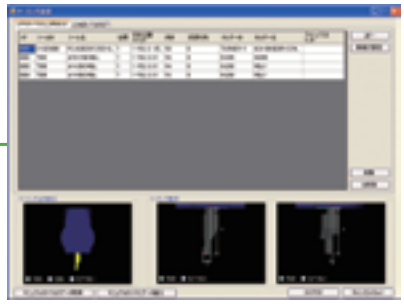


Simulation software

Process split display function

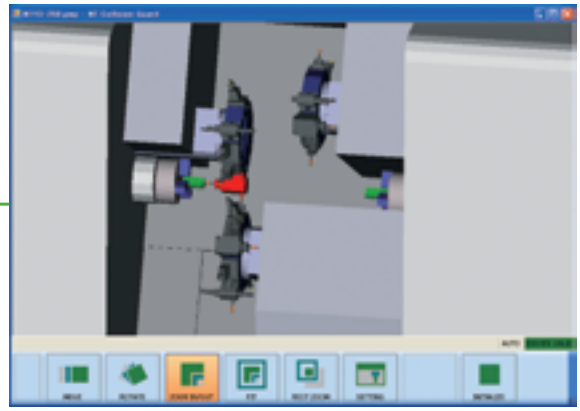


Tool setting display

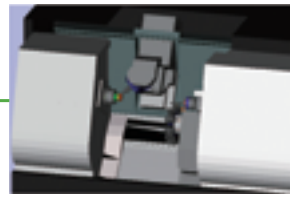


Include more than 300 tools data, all standard holders and 20 different chucks. You can also create your own tool.

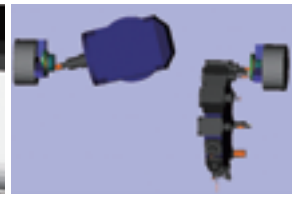
Interference check



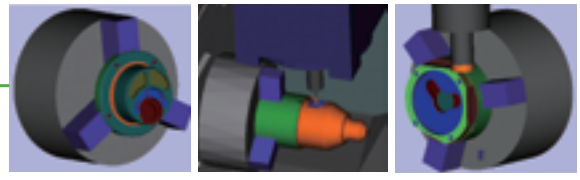
Machine



Cutting area

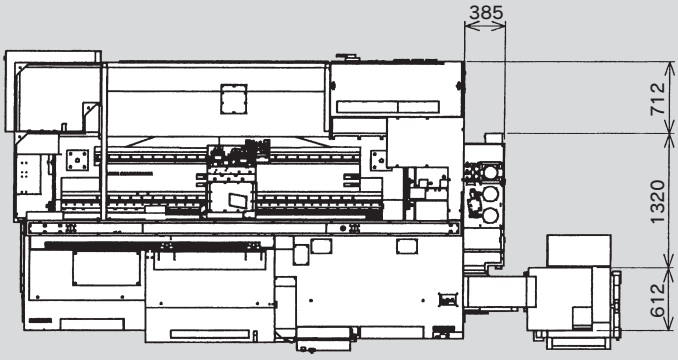


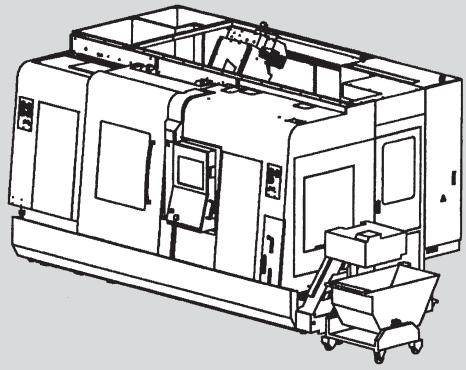
Zoom cutting area

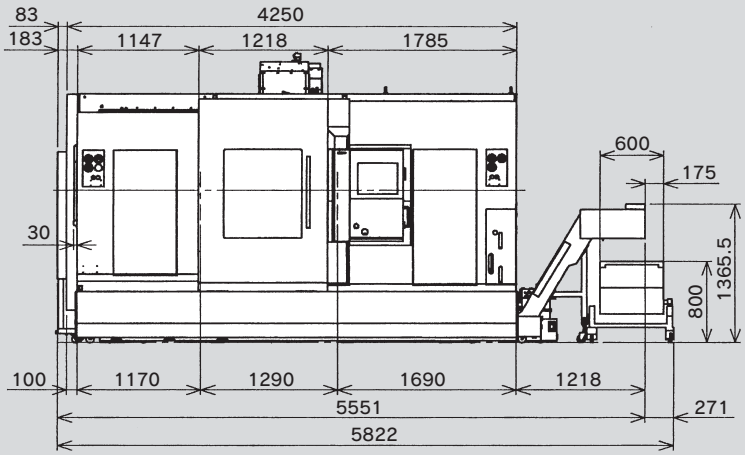


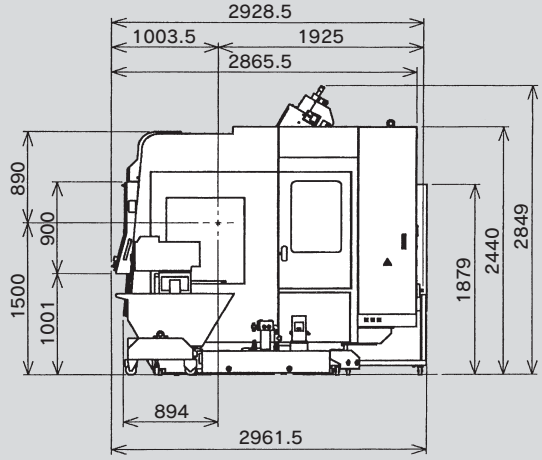
* Other PC is required when working this function.

Machine Dimensions









Unit mm

Super Multi-Tasking Machine with ATC

ATC Series

Super NTMX

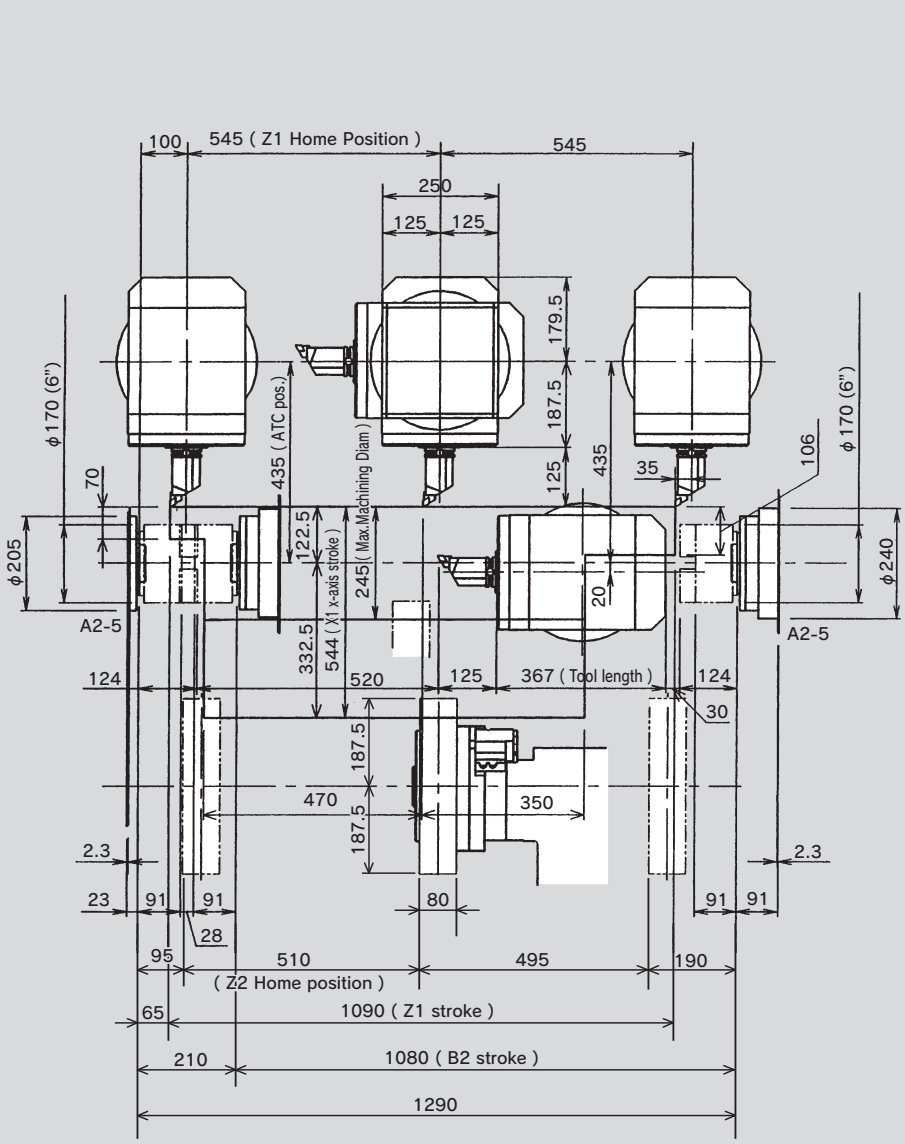
Super NTMXL

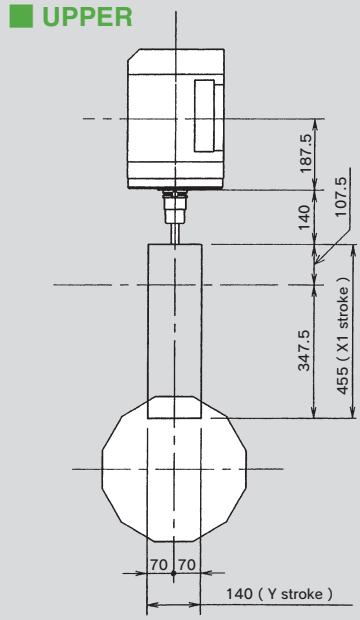
Super NTJX

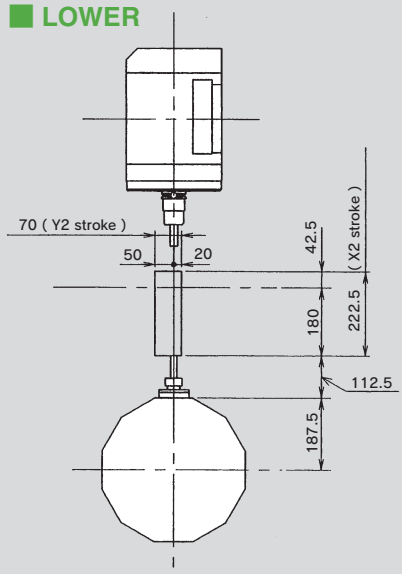
980mm

6”

Slide Travel Range







Unit mm

Super NTX (w) (s)

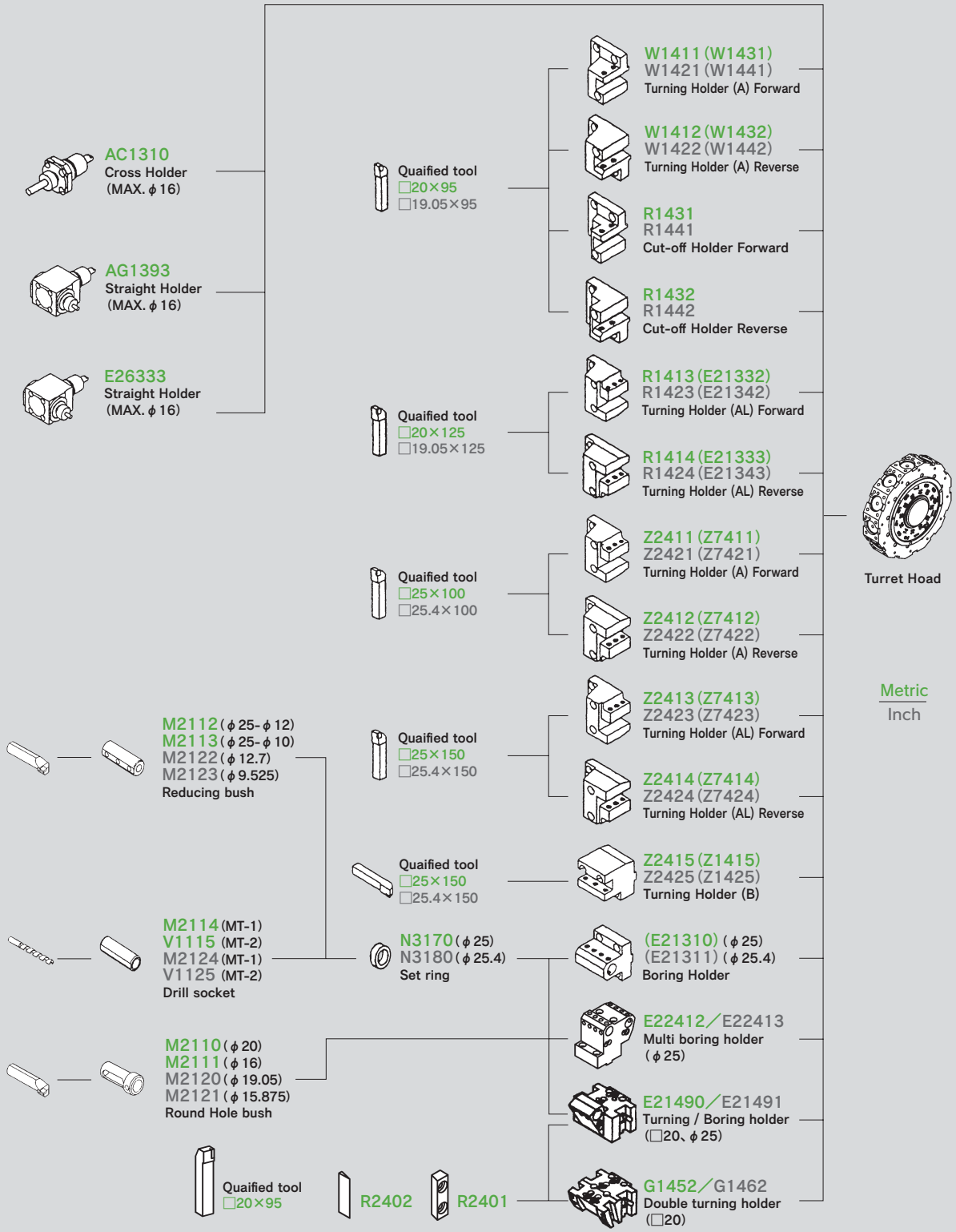
Super NTX-II

STW-40 / STS-40

Super NTXL

Distance Between Spindies	2300mm
Standard Chuck size	21"

Tooling System Diagram



Machine Specification

■ Capacity	
Max. turning diameter	245mm
Standard turning diameter	170mm
Distance between centers	max.1290mm / min.210mm
Max. turning length	1090mm
Bar capacity	51mm (op. L65mm)
Chuck size	170mm (6")
■ Axis travel	
Slide travel (X1 / X2)	455mm / 222.5mm
Slide travel (Z1 / Z2)	1090mm / 1005mm
Slide travel (Y1 / Y2)	±70mm / +20mm -50mm
Slide travel (B2-axis)	1080mm
Rapid feed X1 / X2	16m/min
Rapid feed Z1 / Z2	40m/min
Rapid feed B2 axis	40m/min
Rapid feed Y1 / Y2	16m/min / 6m/min
■ Left and Right spindles	
Spindle speed	6000min^{-1} 4500min^{-1} (op.)
Spindle speed range	Stepless
Spindle nose	A2-5 (op. L / A2-6)
Hole through spindle	63mm (op. L / 80mm)
I.D. of front bearing	100mm (op. L / 110mm)
Hole through draw tube	52mm (op. L / 65mm)
■ 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.
■ Tool spindle	
Tool spindle speed	8000min^{-1} (op. 12000min^{-1})
Tool shank type	KM63, CaptoC6, HSK-A63
Number of tool stock	40 (op. 80, 120)
Max. tool diameter / without adjacent tool	70mm / 90mm
Max. tool length / Max.tool weight	280mm / 8kg
ATC time (Tool to tool)	1.3sec
Orientation function	90 degree positioning
■ Tool spindle B1-axis	
Indexing range	190 degree (±95 degree)
Indexing mechanism	Servo motor + cam
Clamp function	Curvic coupling (5 degree) Brake (0.001 degree)
■ Lower turret	
Type of turret head	Dodecagonal drum turret
Number of Tool station / Number of Indexing	24/24
Tool size (square shank)	□ 20mm, □ 25mm
Tool size (round shank)	ϕ 25mm
■ Rotating tool	
Rotary system	Indivisual rotation
Spindle speed	6000min^{-1}
Number of rotation tool station	12
Tool shank	Straight holder ϕ 2 - 16mm Cross holder ϕ 2 - 16mm
■ Drive motor	
L-spindle	15/11kW, 221.5/162.5N·m
R-spindle	11/7.5kW, 208/115N·m
Rotating tool spindle (Tool spindle)	7.5/3.7kW, Max.54N·m
Rotating tool spindle (Lower turret)	5.5/3.7kW, Max.24N·m
■ General	
Machine height	2,445mm
Floor space	4,718mm × 2,922mm
Machine weight	14000kg
power supply / Air supply	60.2kVA / 150 - 200NL/min, 0.5 - 0.7MPa
Hydroulic unit / LubricationOil cooler / Coolant	80L/4.6L (3.3L/10L) 350L

- 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.

Control Specification

■ items	
Control type	FANUC 31i-A 2-PATH
■ Controlled axes	
Controlled axes	10axes
Simultaneously controlled axes	4axes (Upper X, Z, C, Y, B1) + 4 axes (Lower turret X, Z, C, Y, B2)
■ Input command	
Least input increment	X, Z, Y, B2 : 0.001mm / 0.0001inch (diameter for X-axis)
Least command increment	X : 0.0005mm, Z, Y, B2 : 0.001mm, C, B1 : 0.001°
Max.programmable dimension	±999999.999mm / ±39370.0787in, ±999999.999°
Absolute / incremental programming	X, Z, C, Y, B1, B2 (absolute only for B1, B2) / U, W, V, H
Decimal input	Standard
Program code	EIA / ISO automatic recognition
Inch / Metric conversion	G20 / G21
Programmable data input	G10
■ Feed function	
Cutting feed	feed / min X, Z, Y1 : 1 - 8000mm/min, 0.01 - 314inch/min B1 : 1 - 8000degree/min Y2 : 1 - 6000mm/min, 0.01 - 236in/min C : 1 - 4800degree/min B2 : 1 - 4800mm/min, 0.01 - 188in/min feed/rev X, Z, Y1 : 0.0001 - 8000.0000mm/rev, 0.000001 - 50,000000in/rev Y2 : 0.0001 - 6000.0000mm/rev, 0.000001 - 50.000000in/rev B2 : 0.0001 - 4800.0000mm/rev, 0.000001 - 50.000000in/rev
Note)	Max.cutting feed is the value when AI contouring mode. Max.cutting feed except AI contouring mode is : feed/min X,Z,U,B2: 1 - 4800mm/min,0.01 - 188inch/min C,B1: 1 - 4800degree/min feed/rev 0.0001 - 4800.0000mm/rev, 0.000001 - 50,000000in/rev
Dwell	G04
Feed per minute / Feed per revolution	G98 / G99
Thread cutting	G32
Thread cutting retract	Standard
Continuous thread cutting	Standard
Handle feed	Manual pulse generator 0.001/0.01/0.1mm, °(per pulse)
Automatic acceleration / decelaration	Standard
Linear accel. / decel. After cutting feed interpolation	Standard
Rapidfeed override	F0 / 25 / 100% (changeable to every 10% by switch)
Cutting feedrate override	0 - 150% (each 10%)
AI contouring control I	G5.1
■ Program memory	
Part program storage length	1Mbyte
Part program editing	delete, insert, change
Program number search	Standard
Sequence number search	Standard
Address search	Standard
Number of registerable programs	2000 programs
Program storage memory	Backed up by battery
Multiple program simultaneous editing	Standard
DNC operation through memory card	Standard (Only one turret can access memory card at a time) (not including memory card)
Extended part program editing	Standard
■ Operation and display	
Operation panel : Display	19" color LCD
Operation panel : keyboard	Separate type MDI unit (standard keys)
■ Program support	
circular interpolation R programming	Standard
Direct drawing dimension programming or Chamfering / Corner R	Standard (Direct drawing dimension programming is standard)
Canned cycle	G90, G92, G94
Multiple repetitive canned cycle	G70 - G76
Multiple repetitive canned cycle II	Standard
Canned cycle for drilling	G80 - G89
Axis recomposition	Standard (used for C axis control from Lower)
Sub program	Standard
Balance cut	G68, G69
Custom macro	Standard
Addition to custom macro common variables	Standard (After addition, #100-#199, #500-#999)
3-D coodinate convert	Standard
3-D rigid tap	Standard
Helical interpolation	Standard
Luck-bei II	Standard
Abnormal Load detection	Standard
NT Work Navigator	Standard (not including contact bar)
NT Nurse	Standard
NT Collision Guard	Standard
■ Mechanical support	
Rigid type	Standard
Spindle synchronised control	Standard
C axis synchronised control	Standard
Spindle orientation	Standard
■ NT-IPS	
O/S	Windows XP Embedded
Pointing device	Touch pad

NAKAMURA-TOME PRECISION INDUSTRY CO., LTD.

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