

# NTJ-100

**NAKAMURA-TOME**  
PRECISION INDUSTRY CO.,LTD.

# NTJ-100 **Leading the industry in**



**One-hit Machining**

**MINIMIZED LEAD TIME**

All in one as standard



NT Work Navigator

NT Collision Guard

Airbag

NT Manual Guide i

NT Nurse

NT-IPS

NT Multitasking Office (op.)

# Multitasking Technology

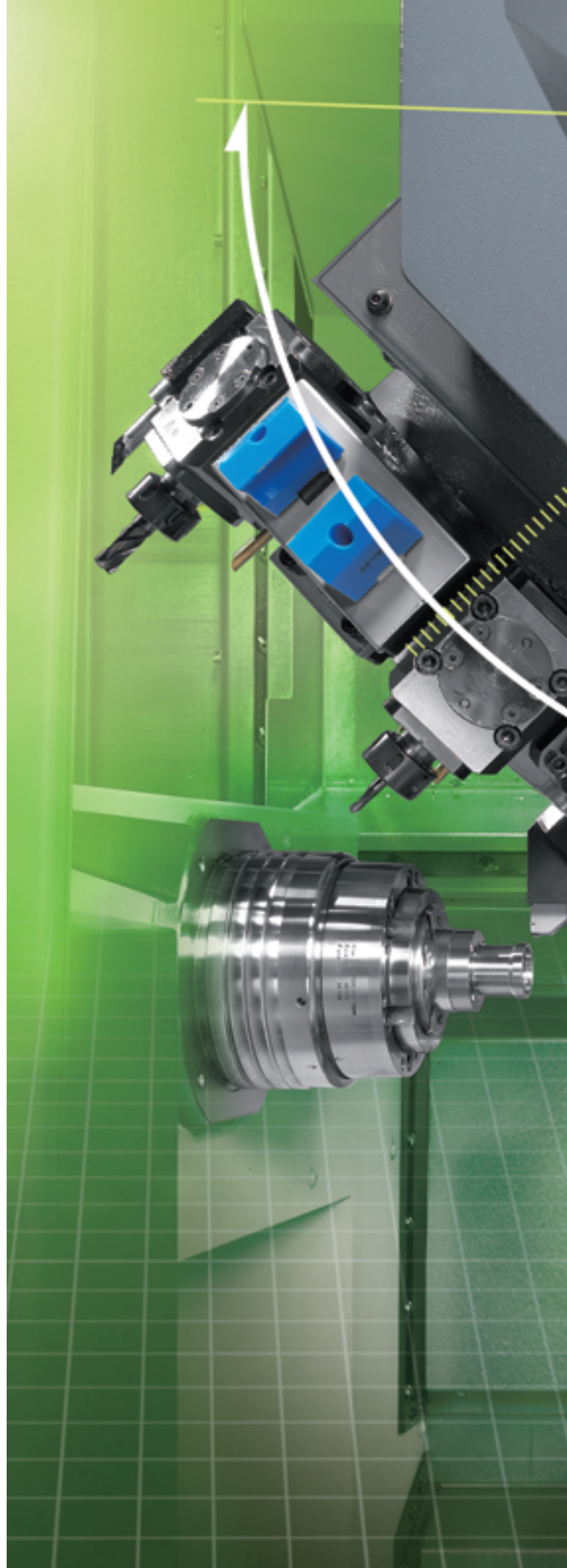
# ULTIMATE

From diversified small lot production to mass production



# B -axis

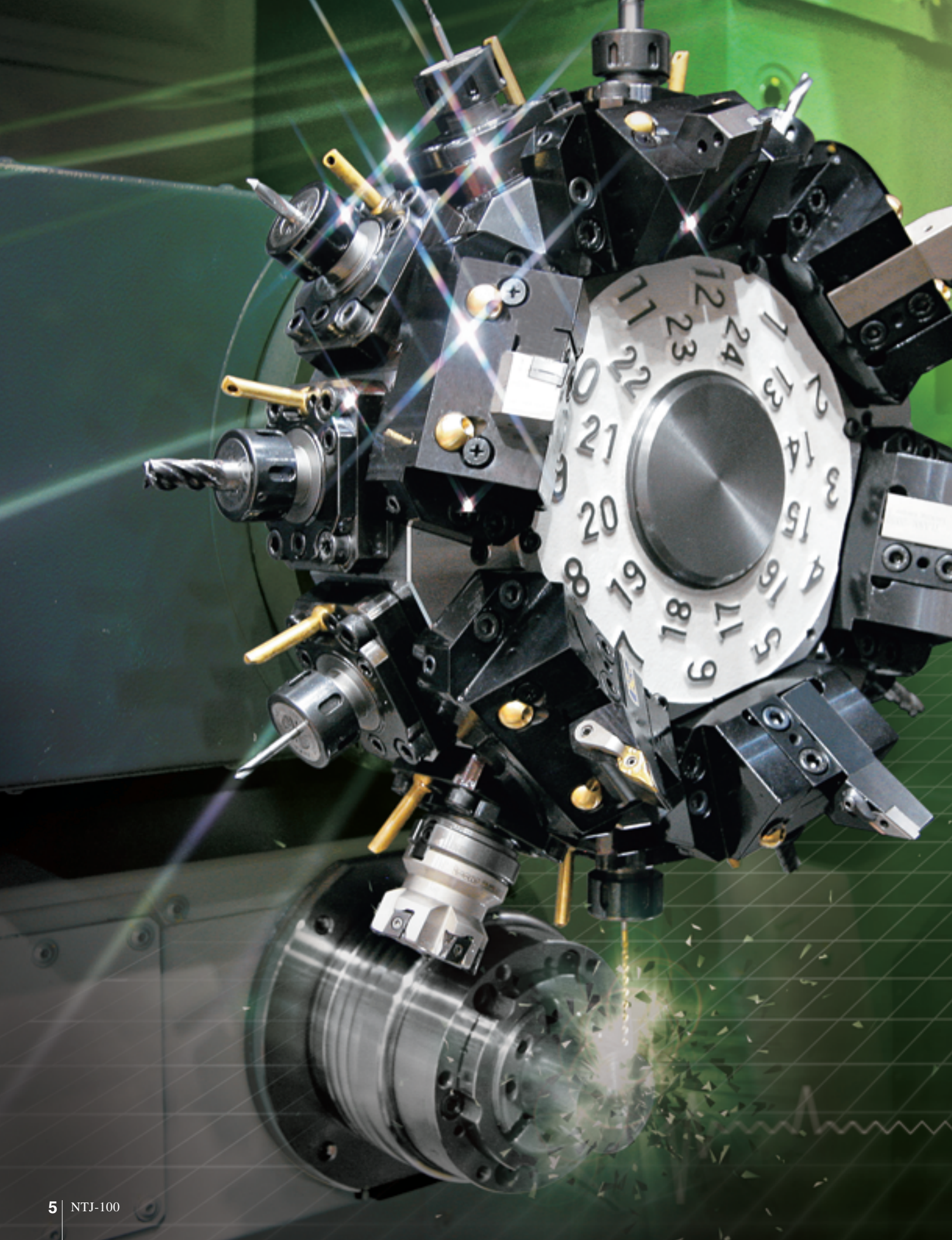
With milling-tools  
and Y-axis offered  
as standard equipment





Swiveling range **182 deg.**







# 54

**24 + 24 + 6**

Up to 54 tool stations  
for Turning, 24 tool stations  
for milling tools

**M<sub>x2</sub>**

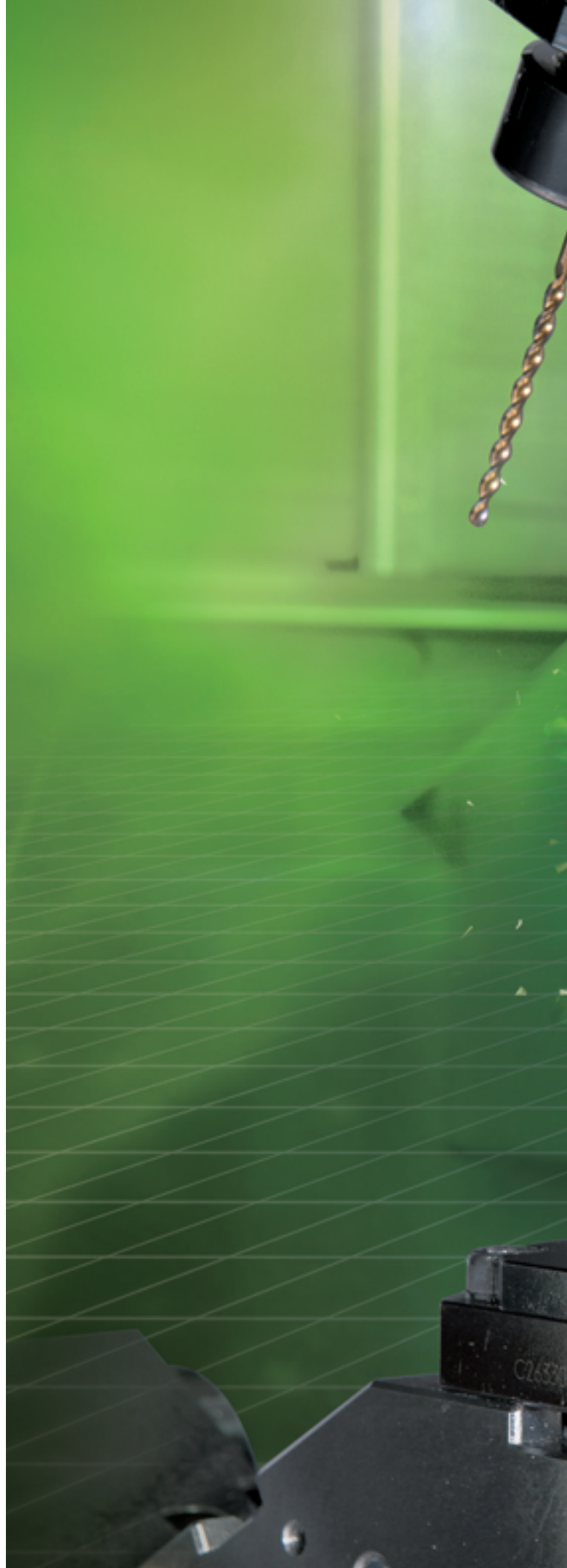
Double Performance!

**Milling-tool motor  
7.1 / 2.2kW × 2**

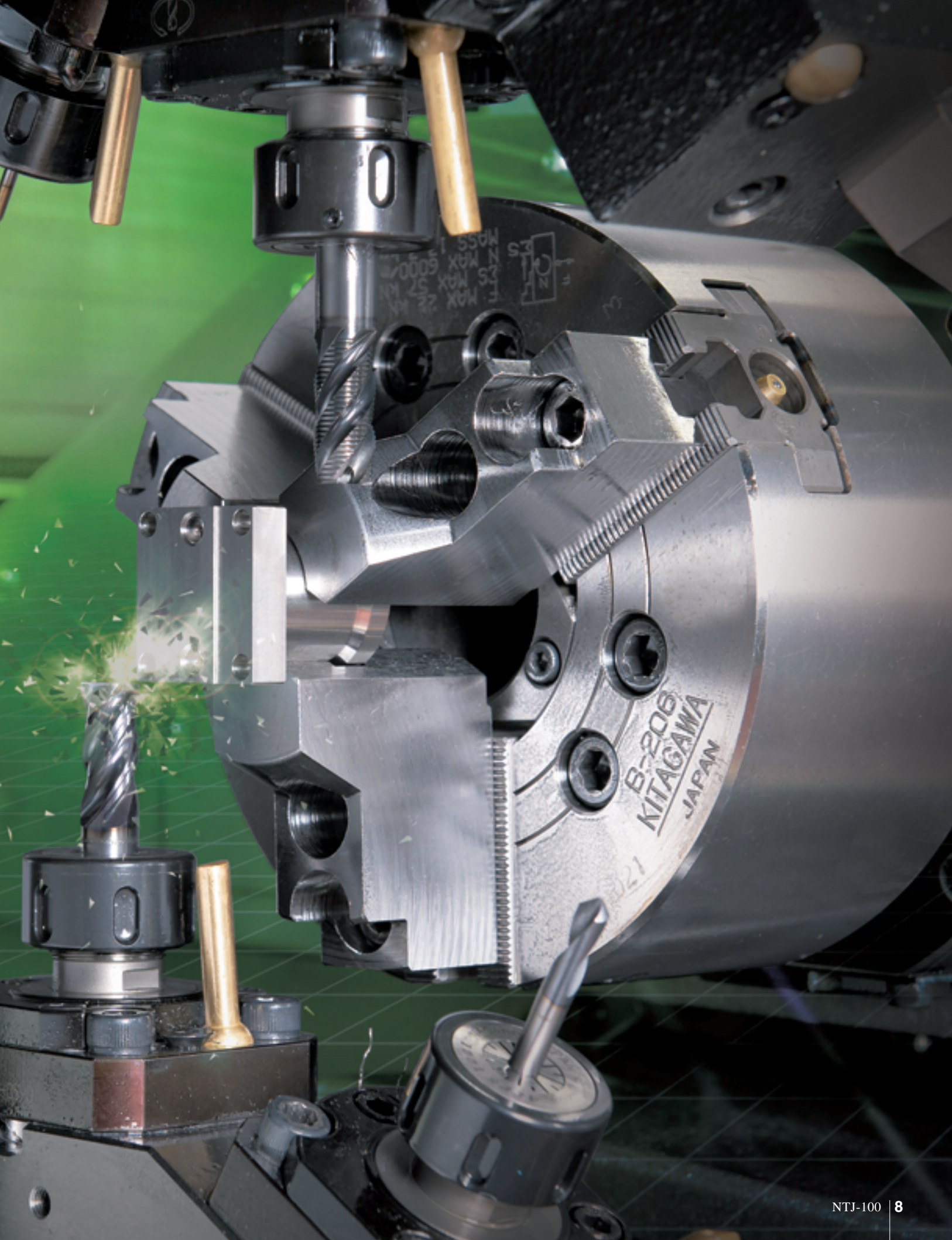
**Y<sub>x2</sub>**

Y-axis on upper and lower turret

**Y-axis stroke  
Upper / 80mm, Lower / 65mm**







**NTJ-100**

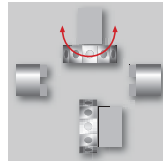
**B-axis** Swiveling range : 182 deg.



# Productivity superior to that of a machining center!

19"  
Color LCD  
Touch Panel

NT  
IPS



T<sub>×2</sub>  
Two turret

M<sub>×2</sub>  
Two Milling Motor

B  
B-axis

Y<sub>×2</sub>  
Two Y-axes

S<sub>×2</sub>  
Twin-Spindle

C<sub>×2</sub>  
C-axes

Capacity	φ 42mm	φ 51mm (op.)	φ 65mm (op.)
Max. turning diameter / Max. turning length	175mm / 678mm		
Distance between centers	max.910mm / min.200mm		
Bar capacity	42mm	51mm	65mm
Chuck size	6" 165mm		

## Axis travel

Slide travel (X1/X2)	330mm / 127.5mm
Slide travel (Z1/Z2/B2)	1040mm / 678mm / 710mm
Slide travel (Y1/Y2)	±40mm / ±32.5mm

## Left and Right spindles

Spindle speed	6,000min <sup>-1</sup>	5,000min <sup>-1</sup>	4,500min <sup>-1</sup>
Left spindle	11/7.5kW		
Right spindle	11/7.5kW		

## B1-axis (Swiveling axis for upper turret)

Swing range	182degree (±91degree)
Swing mechanism	Servo motor + Roller cam
Clamp function	Curvic coupling (5degree), Brake (0.001degree)

## Upper turret

Number of tools	24 + 6
Type of turret head	Dodecagonal drum turret
Number of Indexing position	24
Milling system	Individual rotation
Number of milling stations	12
Milling speed	6000min <sup>-1</sup>
Milling motor power and torque	7.1/2.2kW 16/8N·m

## Lower turret

Number of tools	24
Type of turret head	Dodecagonal drum turret
Number of Indexing position	24
Milling system	Individual rotation
Number of milling stations	12
Milling speed	6000min <sup>-1</sup>
Milling motor power and torque	7.1/2.2kW 16/8N·m

## General

Floor space (L × W × H)	3,799mm × 2,100mm × 2,565mm
Machine weight	10,000kg



**54**  
stations

**High-rigidity turret**

**Upper turret**



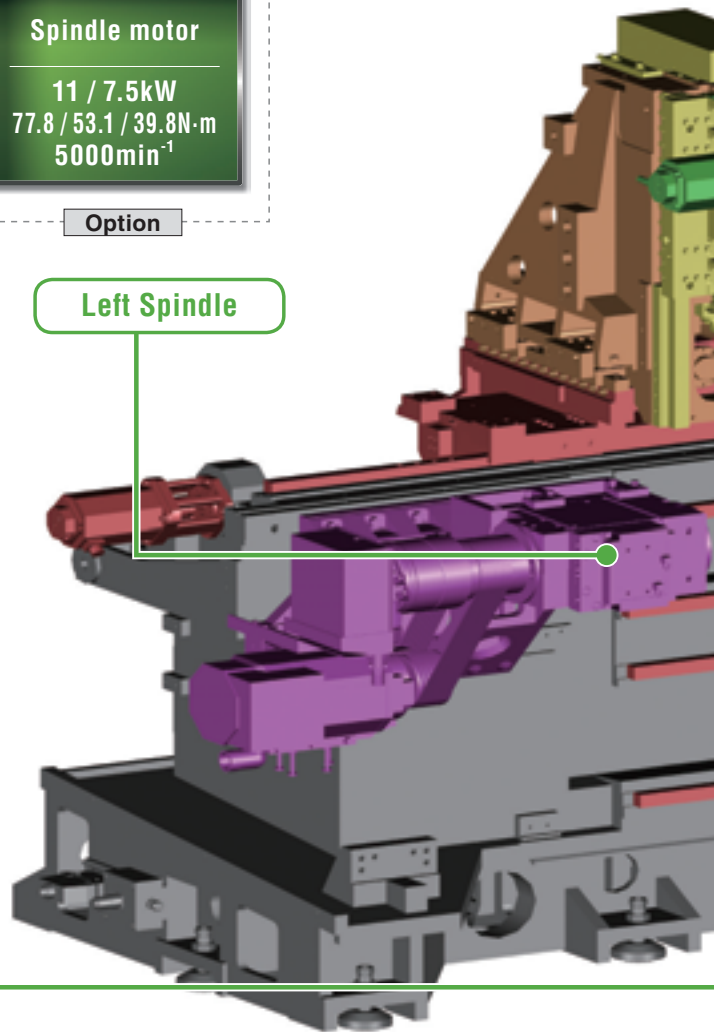
**Lower turret**

Bar capacity $\phi 51\text{mm}$	Bar capacity $\phi 65\text{mm}$
Spindle motor 11 / 7.5kW 75.4 / 51.4 / 38.6N·m 5000min <sup>-1</sup>	Spindle motor 11 / 7.5kW 77.8 / 53.1 / 39.8N·m 5000min <sup>-1</sup>

**Option**

Bar capacity $\phi 42\text{mm}$
Spindle motor 11 / 7.5kW 75.4 / 38.6N·m 6000min <sup>-1</sup>
<b>C-axis</b> C-axis synchronization

**Standard**



**Left Spindle**

<b>Lower turret</b>	Milling 7.1 / 2.2kW 16 / 8N·m 6000min <sup>-1</sup>
<b>Dodecagonal / 24-station</b> ◆ Number of milling stations : 12 ◆ Servo-driven turret	<b>Y-axis stroke 65mm</b>

**Standard**



# Stable Accuracy Ensured

## Upper turret

### Dodecagonal / 24-station

- ◆ Number of milling stations : 12
- ◆ Servo-driven turret

Milling	7.1 / 2.2kW
	16 / 8N·m
	6000min <sup>-1</sup>

Y-axis stroke 80mm

Swiveling range (B1) 182° / ±91°

Swing mechanism Servo motor + Roller cam

Clamp function Curvic coupling (5degree)  
Brake (0.001degree)

Number of tools 24 + 6

Standard

## Larger window ensures better visibility



## Right spindle

Bar capacity  $\phi$  42mm

### Spindle motor

11 / 7.5kW  
75.4 / 38.6N·m  
6000min<sup>-1</sup>

### C-axis

C-axis synchronization

Standard

Bar capacity  $\phi$  51mm

### Spindle motor

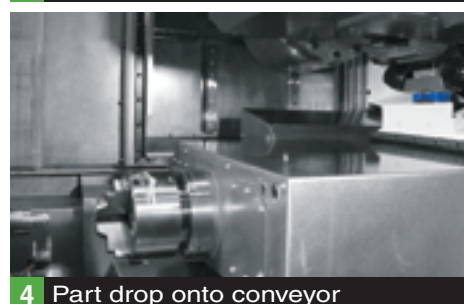
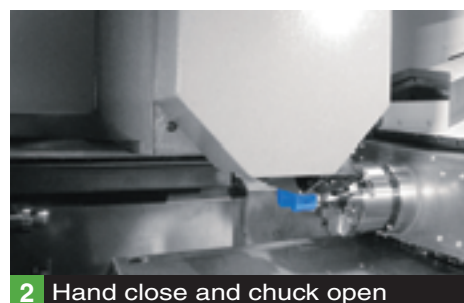
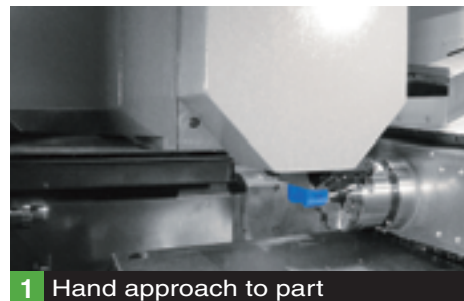
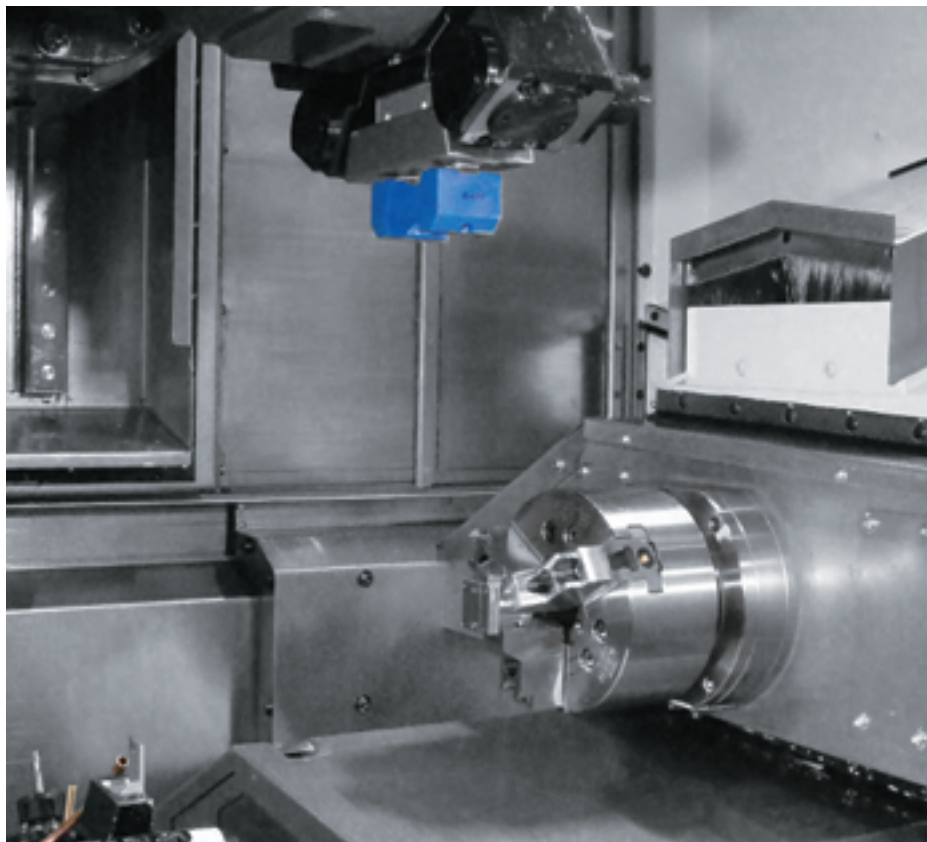
11 / 7.5kW  
79.2 / 54.0 / 40.5N·m  
5000min<sup>-1</sup>

Bar capacity  $\phi$  65mm

### Spindle motor

11 / 7.5kW  
77.8 / 53.1 / 39.8N·m  
5000min<sup>-1</sup>

Option



## Turret Servo Gripper type

Option

Unloading Time **2.6 sec.**

\* 2.6 sec. is 1 to 3

Method		Hand
Part size	Diameter	φ 12 - 65mm
	Length	150mm
	Weight	3kg
Ejection method		Conveyor + Chute type
Drive	Hand Open / Close	Used with Milling drive on Turret
	Traverse	Used with axis drive
	Shutter	Air Cylinder

Patent pending

**Part catcher is a device to unload the workpiece and bring it out of the machine.**



## ● Part catcher A / Bucket type

**Unloading Time 4 sec.**

Option

Method	Swing-in Bucket	
Part size	Diameter	φ 15 - 65mm
	Length	20 - 150mm
	Weight	3kg
Parts outlet	Stocker type Outlet chute type	



## ● Part catcher G / Gripper type

**Unloading Time 4.8 sec.**

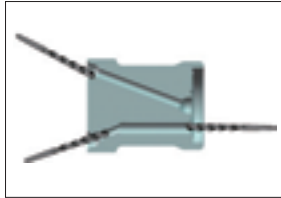
Option

Method	Hand	
Part size	Diameter	φ 12 - 65mm
	Length	15 - 200mm
	Weight	1.5kg
Ejection method	Conveyor + Chute type	

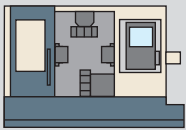
**NTJ-100**

# Substantially Higher Productivity

<b>Machining time</b>	8min.2sec.
<b>Material</b>	SUS303 (JIS)
<b>Blank</b>	Bar / $\phi$ 50mm



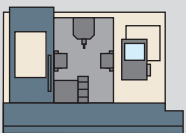
## ■ Cycle time comparison

**NTJ-100**

**NTJ-100 482sec.** ← Time reduction 85 sec. →

Lathe : 120sec. Milling : 346sec.

Cycle time of workpiece transfer 16sec.

**ATC-Machine**

**2 spindle multitasking machine 567sec.**

Lathe : 145sec. Milling : 406sec.

Cycle time of workpiece transfer 16sec.

## ■ Production monthly

(20h × 25day × 85%)

**NTJ-100 3,174pcs**

**ATC-Machine 2,698pcs**

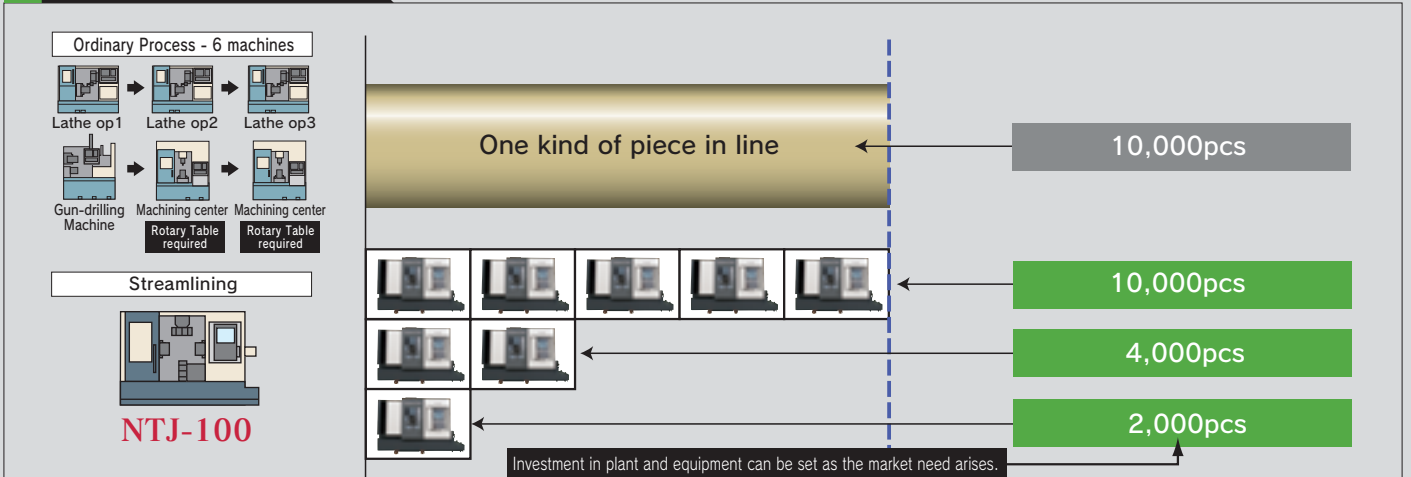
0 500 1000 1500 2000 2500 3000 (pce)



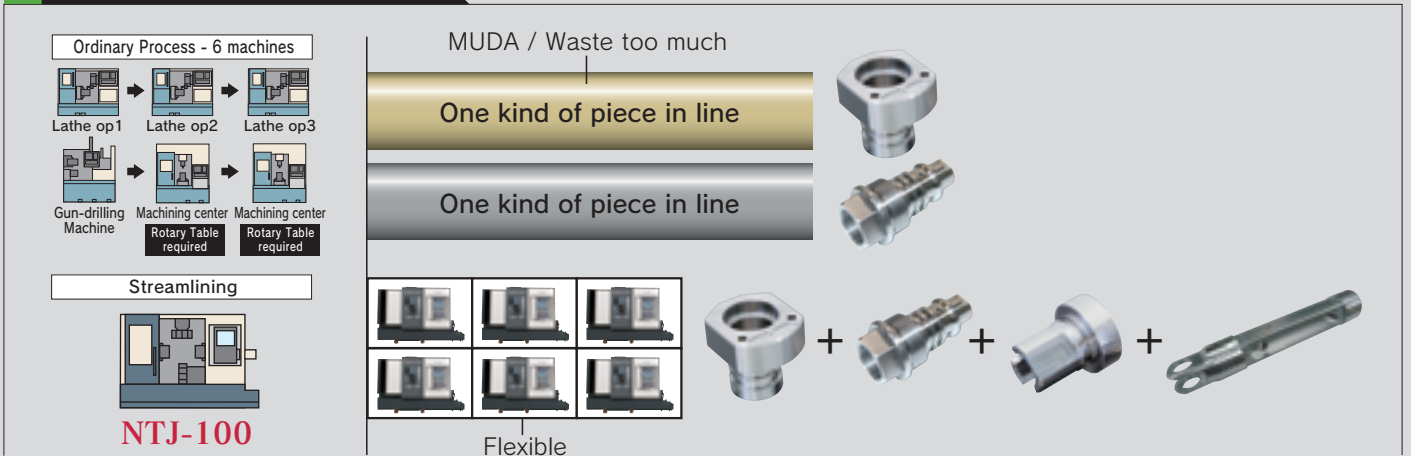
**New Era of Multitasking!**  
**A machine featuring the fastest cycle-time ever!**

**Cell Production System**

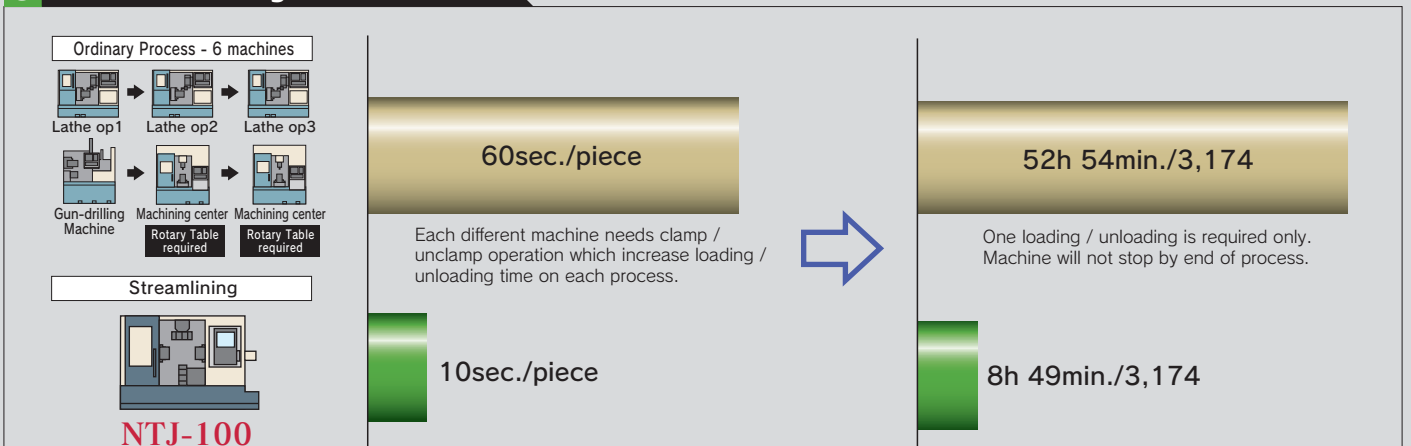
**1 Risk of Investment**

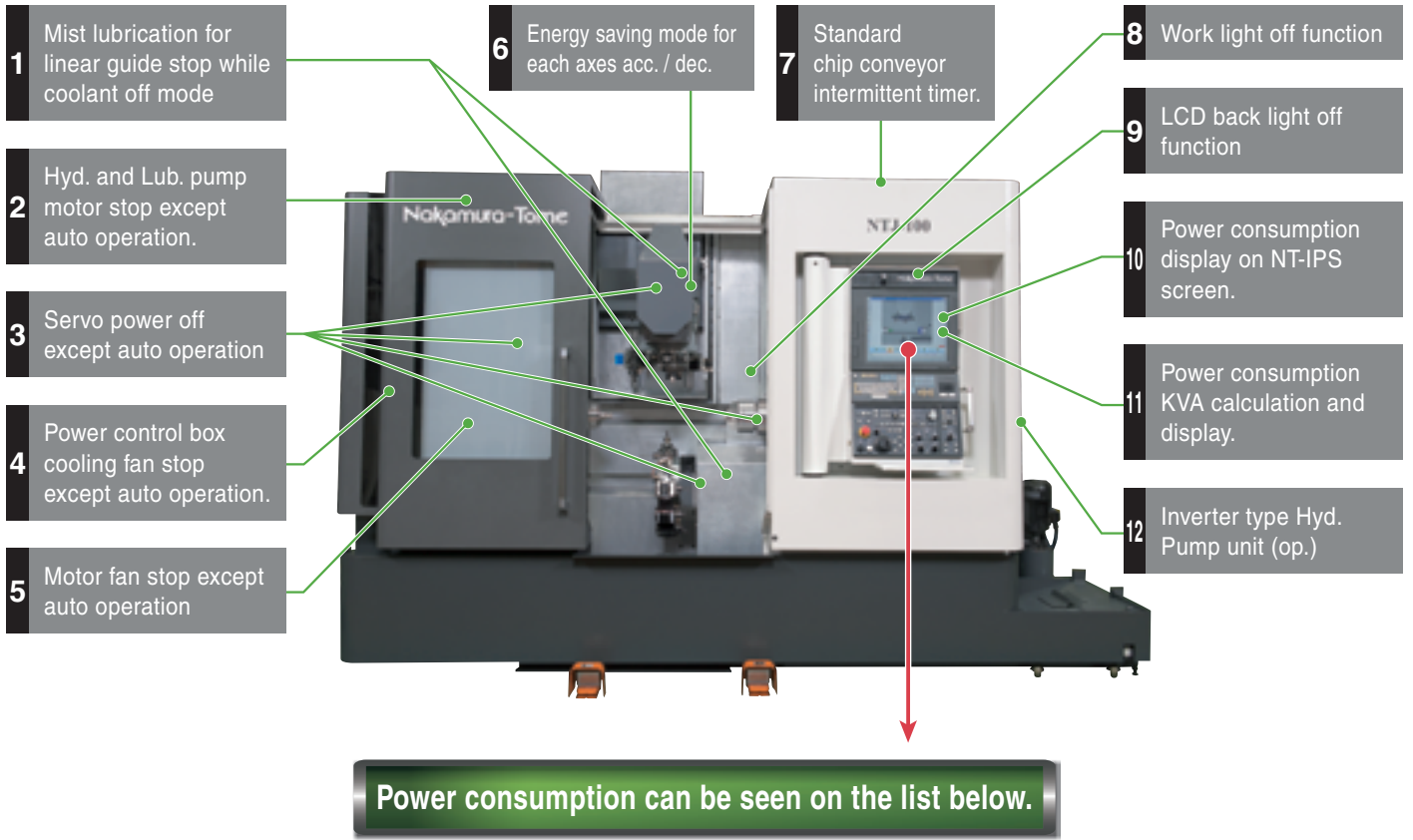


**2 Scale of Production Space**

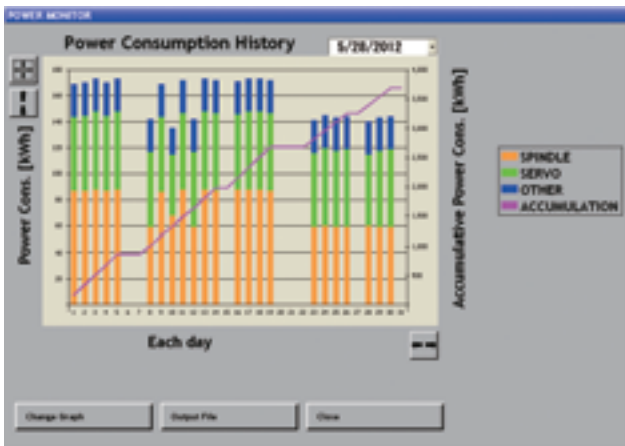


**3 Reduce Chucking time for a line**





## POWER Consumption history on NT-IPS screen.



Power consumption history. Daily power consumption kWh each day as a bar graph. Accumulative power consumption as a line graph

POWER MONITOR  
Power Consumption History 5/28/2012

Date	SPINDLE [kWh]	SERVO [kWh]	OTHER [kWh]	ACCUMULATION [kWh]
2012/5/28	120	80	50	250
2012/5/27	110	70	40	180
2012/5/26	100	60	30	110
2012/5/25	90	50	20	40
2012/5/24	80	40	10	0
2012/5/23	70	30	0	0
2012/5/22	60	20	0	0
2012/5/21	50	10	0	0
2012/5/20	40	0	0	0
2012/5/19	30	0	0	0
2012/5/18	20	0	0	0
2012/5/17	10	0	0	0
2012/5/16	0	0	0	0
2012/5/15	0	0	0	0
2012/5/14	0	0	0	0
2012/5/13	0	0	0	0
2012/5/12	0	0	0	0
2012/5/11	0	0	0	0
2012/5/10	0	0	0	0
2012/5/9	0	0	0	0
2012/5/8	0	0	0	0
2012/5/7	0	0	0	0
2012/5/6	0	0	0	0
2012/5/5	0	0	0	0
2012/5/4	0	0	0	0
2012/5/3	0	0	0	0
2012/5/2	0	0	0	0
2012/5/1	0	0	0	0

Change Graph Output File Close

Power consumption history with numerical value. Spindle, Servo and Others are shown each day.

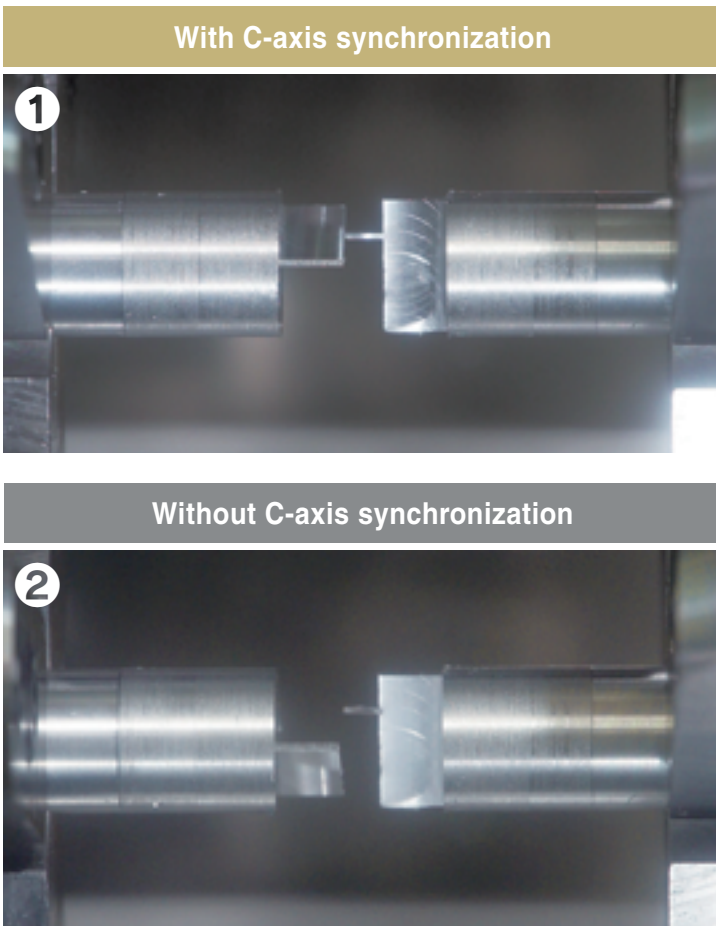
■ C-axis

C-axis indexing speed : 600min<sup>-1</sup>

180° indexing : 0.3sec.

360° indexing : 0.38sec.

Left and right C-axis synchronization for parts clamped by the left and right side chucks simultaneously



Picture 1 shows 1mm-thick rectangular segment in the middle.  
Picture 2 shows segment-fracture due to no C-axis synchronization

Comparison of C-axis indexing time

With C-axis synchronization

G00H180.

⇒ 0.3sec.

Without C-axis synchronization

G98G01H180.F4000

⇒ 2.9sec.

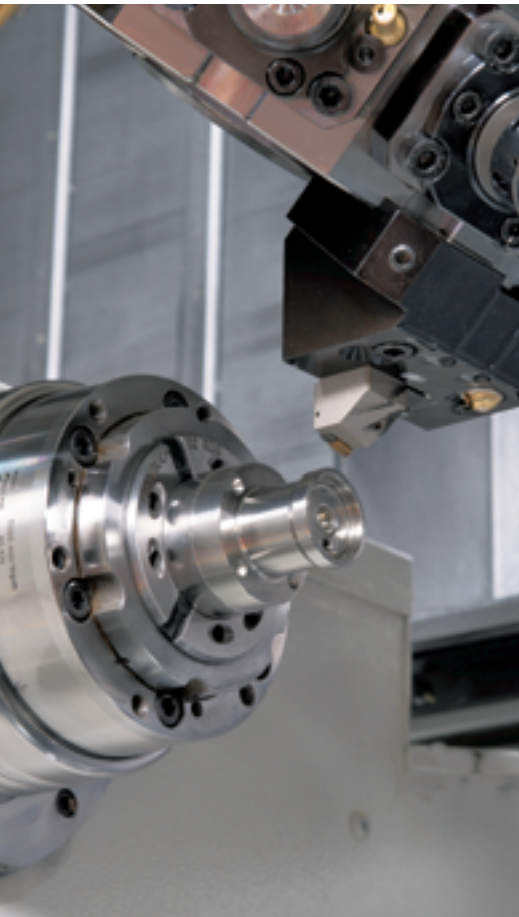
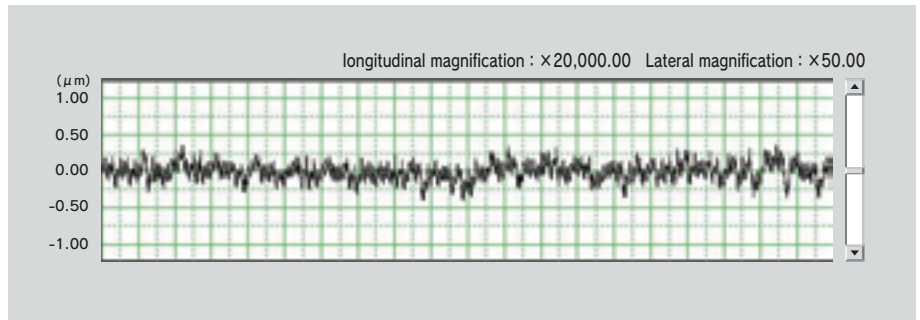
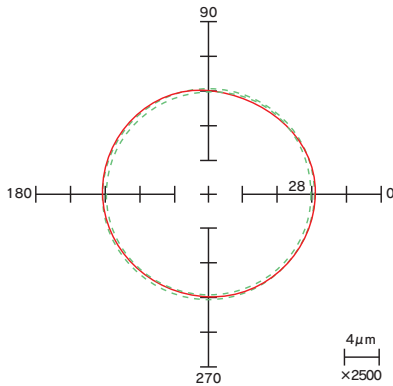
In case of no C-axis synchronization  
1) Open the chuck on one side or the other  
2) Close the chuck, and then rotate the spindle slowly

## Turning Accuracy (Actual value)

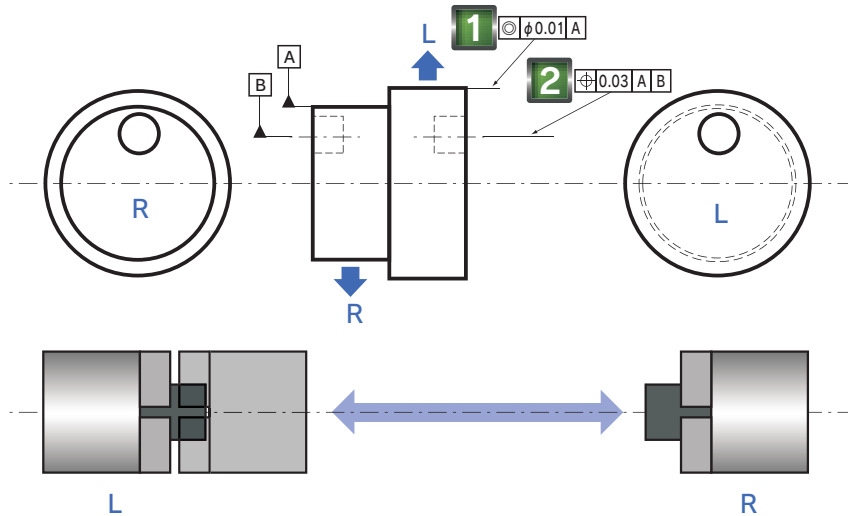
Roundness  
**0.46  $\mu\text{m}$**

Surface roughness (Ra)  
**0.09  $\mu\text{m}$**

- Cutting condition  
Spindle speed : 3,000min<sup>-1</sup>  
Feed : 0.05mm/rev  
Depth : 0.05mm
- Material : C3604 (BSBM)
- Tool : Diamond nose R0.8



## Transferring Accuracy (Actual value)



\* Actual value data indicated in this catalog is for reference, and may vary depending on cutting environment and specifications.

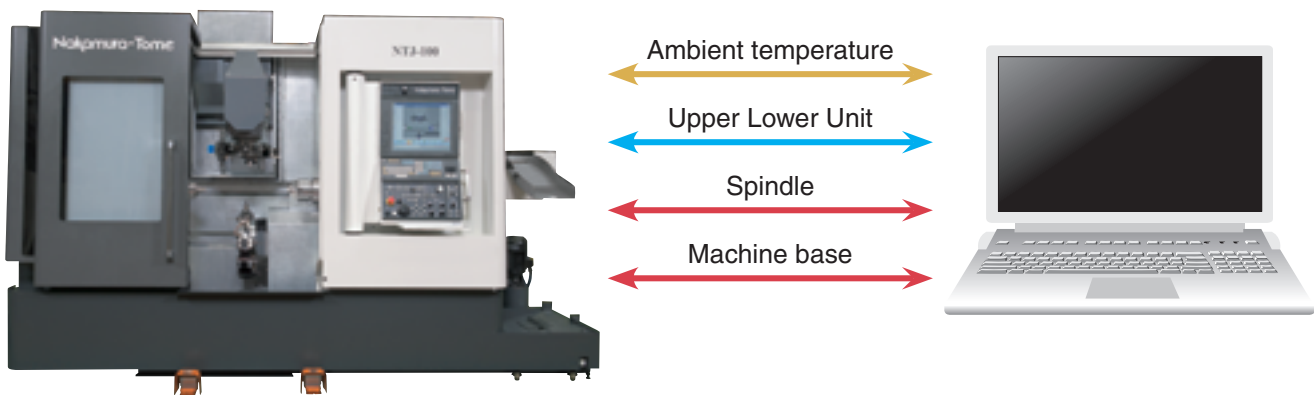
<b>1</b> Outside turning coaxiality	
Required accuracy	$\phi 0.01 \text{ mm}$
Actual value	<b><math>\phi 0.005 \text{ mm}</math></b>

<b>2</b> Hole positioning accuracy	
Required accuracy	$\phi 0.03 \text{ mm}$
Actual value	<b><math>\phi 0.009 \text{ mm}</math></b>

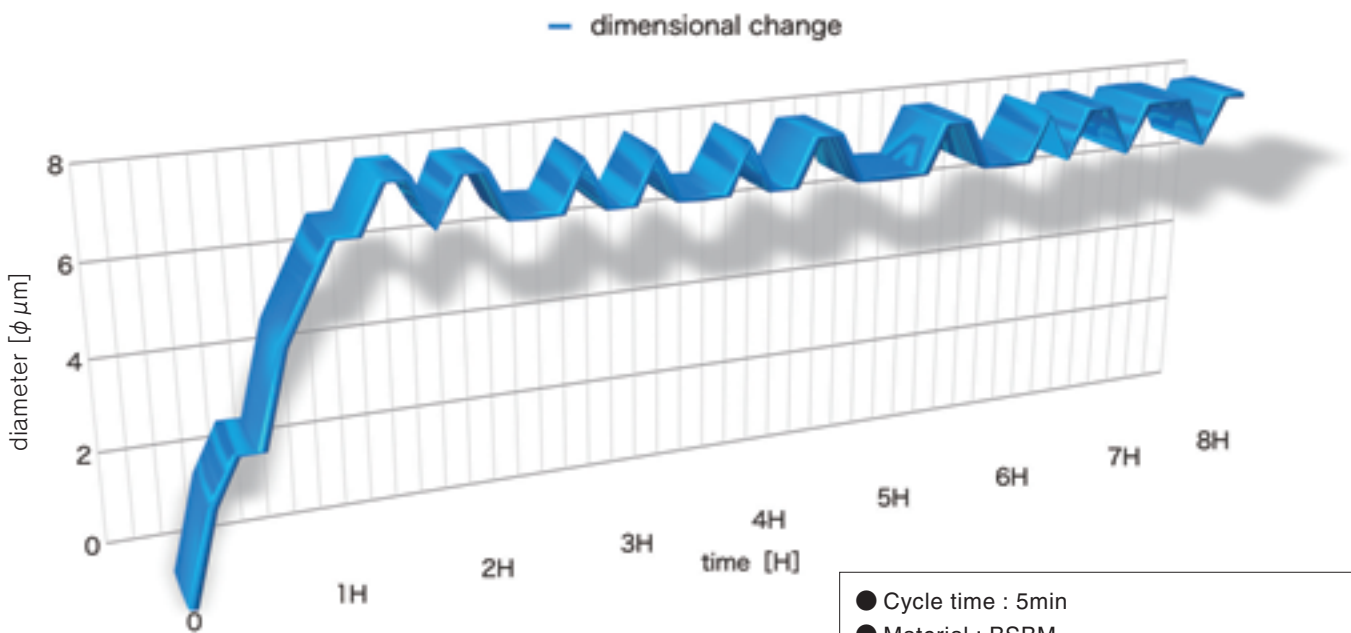


## ● NT thermal compensation

Every machine compensates for thermal growth by using a CNC software compensation technique for automatically correcting thermal errors. Deflections caused by thermal growth can be predicted, based on input from sensors placed on various components in the machine.



## ● 8μm dimensional change (actual value)



\* Actual value data indicated here is for reference. Depending on machining conditions and specifications, there is a possibility these values are not reached.

- Cycle time : 5min
- Material : BSBM
- Coolant : Water soluble coolant
- Room temp change : less than 5 degrees

# Combining Turning and Milling Capabilities



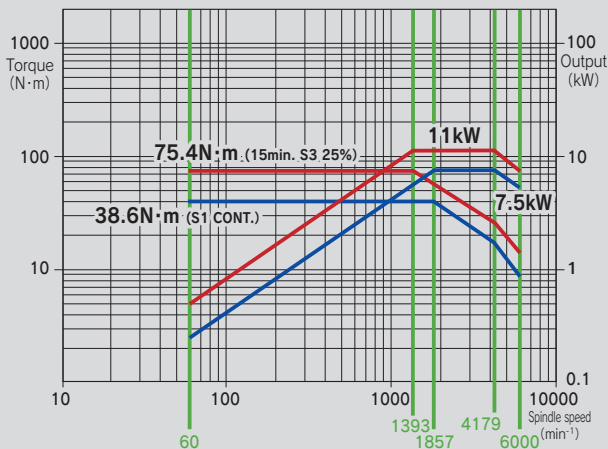
## NTJ-100

By introducing faster motor acceleration / deceleration, machining efficiency was improved.

### Spindle motors

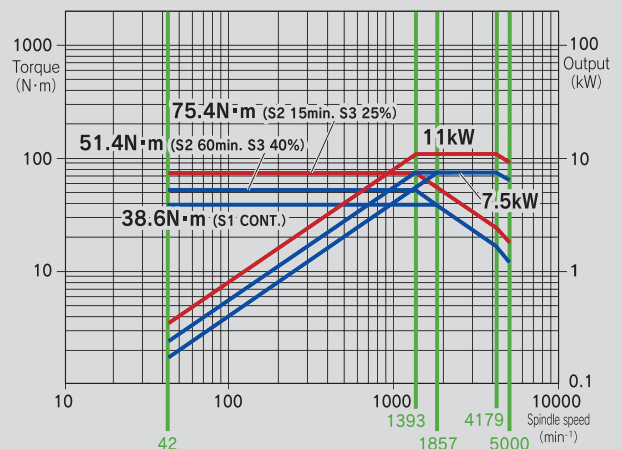
#### dia. 42mm 11/7.5kW

**Standard** L / R Spindle motor  
Spindle speed : 6,000min<sup>-1</sup>

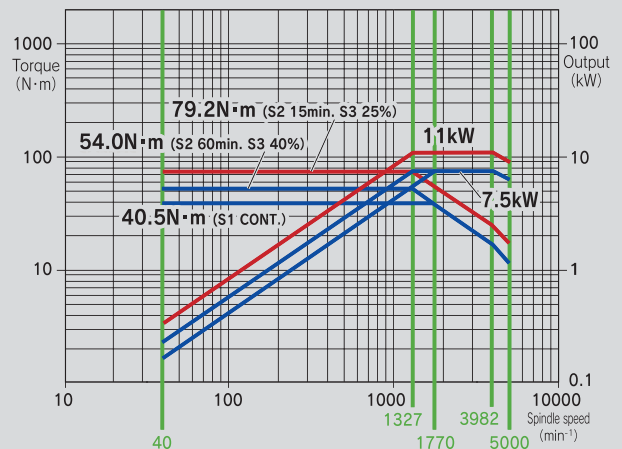


#### dia. 51mm 11/7.5kW

**Option** L Spindle motor  
Spindle speed : 5,000min<sup>-1</sup>



**Option** R Spindle motor  
Spindle speed : 5,000min<sup>-1</sup>



# From diversified small-lot production to mass production

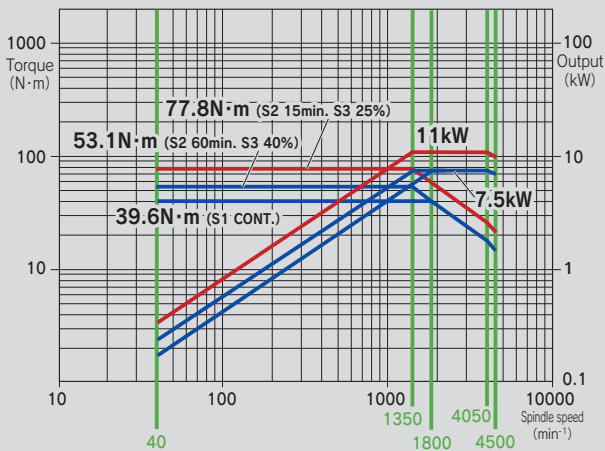


NTJ-100

Milling motor

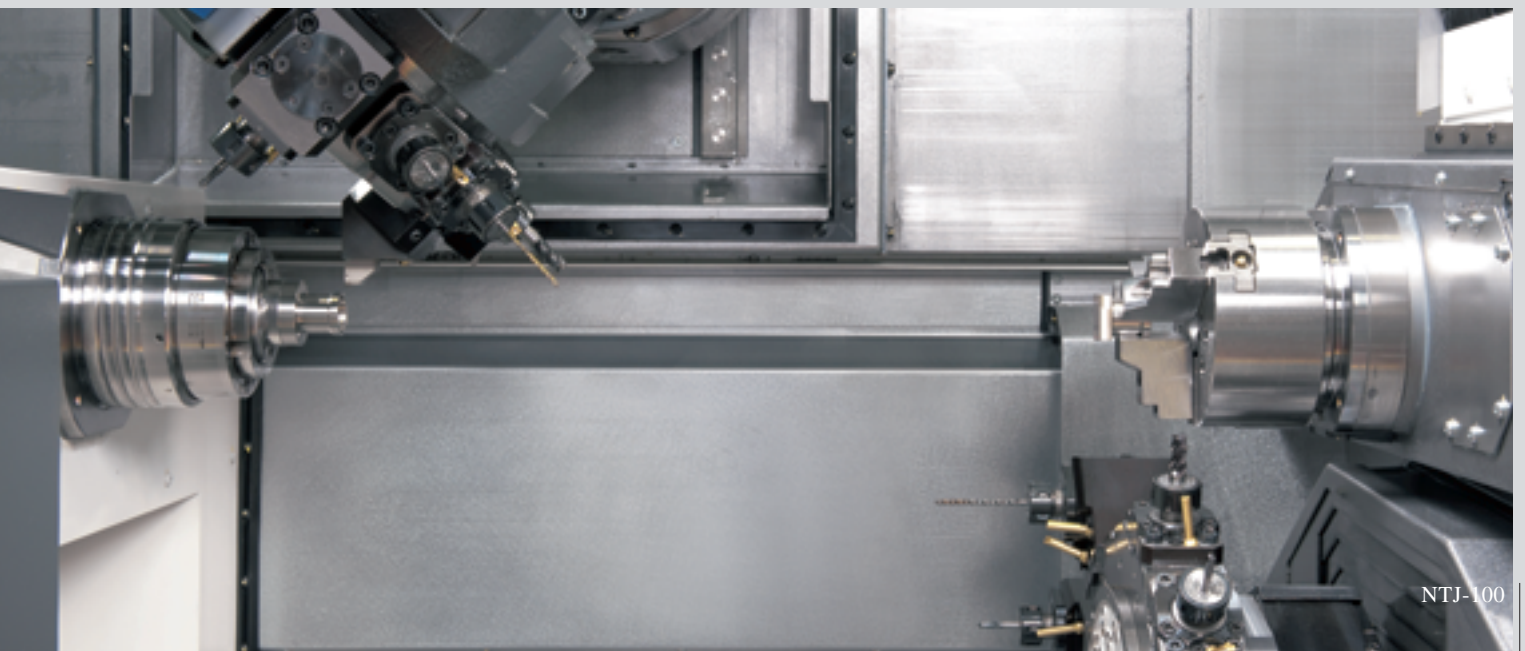
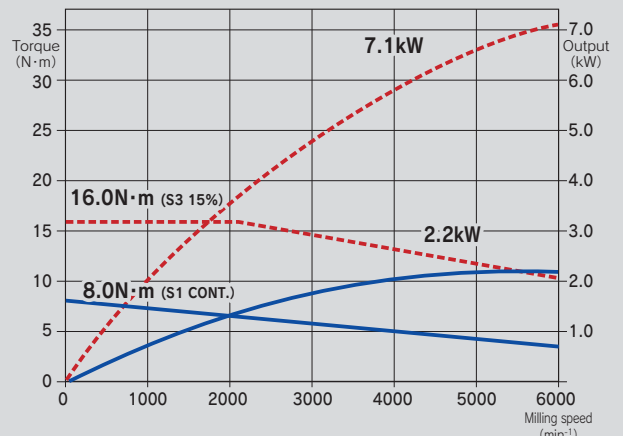
dia. 65mm 11/7.5kW

Option L / R Spindle motor  
Spindle speed : 4,500min<sup>-1</sup>



7.1 / 2.2kW

Standard Upper / Lower  
Milling speed : 6,000min<sup>-1</sup>





## Largest Display : 19" Touch Panel

- NT NURSE
  - LUCK-BEI II
  - AIRBAG
  - NT Work Navigator
  - NT Collision Guard
  - Manual Handle Retrace
- (option)

### 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

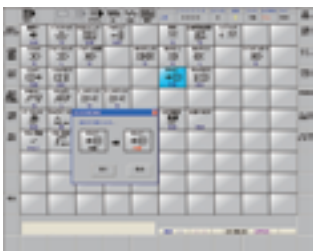
Several original screens developed by Nakamura-Tome, such as Tool Setting Screen and Work-piece Status Screen, are featured on this machine to ensure ease of set up and ease of operation with loading / unloading devices.



● CNC SCREEN



● PROGRAM CHECK



● NT SETTING



● TOOL SETTING



Program storage length	2560mm	5120mm	10240mm	20480mm
Program registered number	2000	4000		
Tool offset pairs	99+ 99			

Standard      Option

## Full operator support for more ease of 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.



Spindle override switch

Feed-rate override switch

### 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

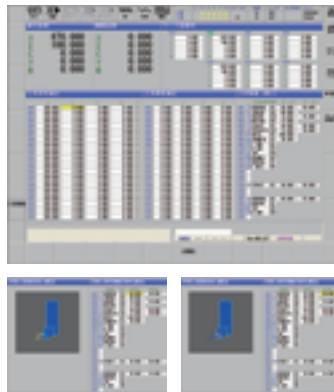
Coolant setting screen pops up by pushing one button on the control panel. Easy to see! Easy to use!



TOOL INFORMATION

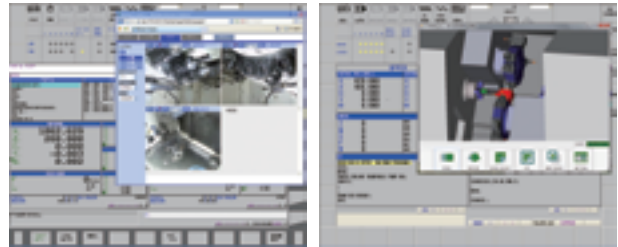
#### Coordinate and tool setting integrated in one Screen

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



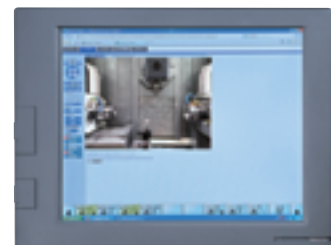
### Pop up display

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.



**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.

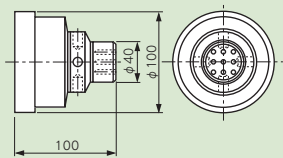
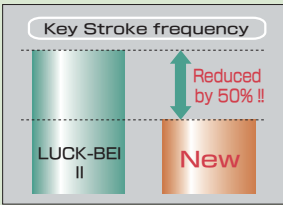


## Automatic Cutting-Condition Setting Function

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



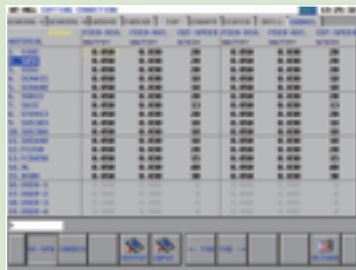
By selecting the material, cutting conditions are automatically input.



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.



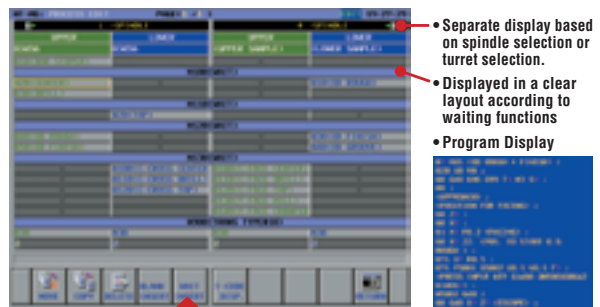
By setting the surface roughness, machining conditions are automatically input



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.



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

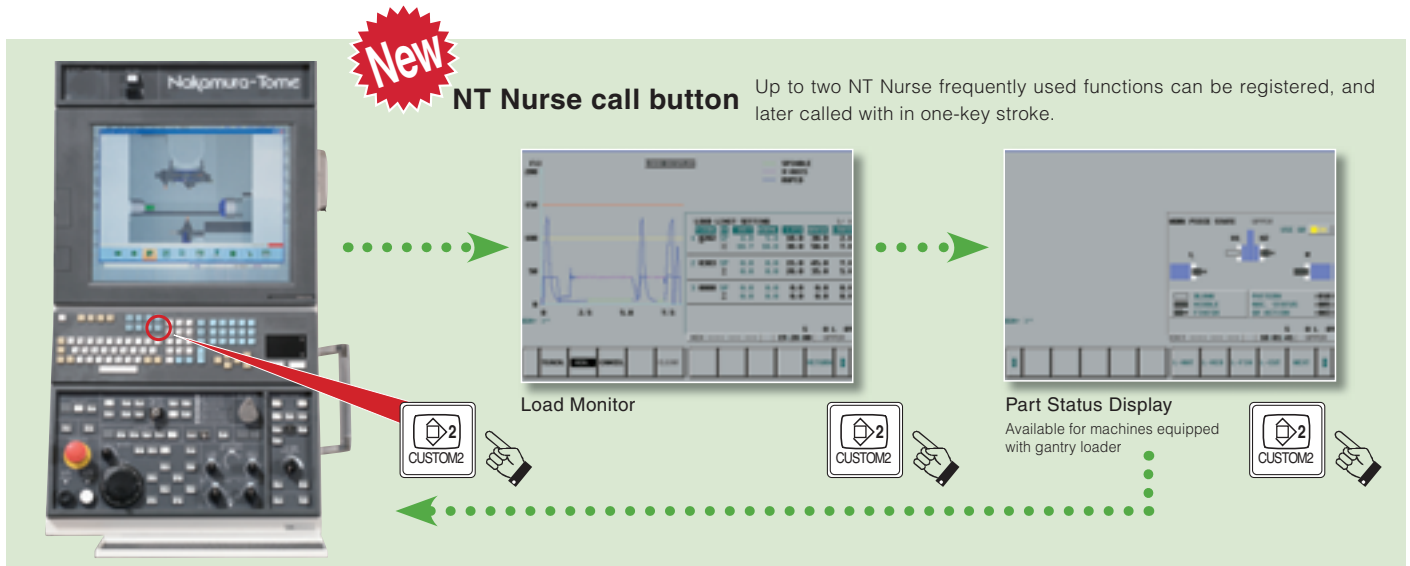
–Generous User-friendly Support System–



Full operator support for more ease of 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 19 NT Nurse user support functions.



● B-axis machine large display



● Menu screen



● Condition display



● Alarm detail display



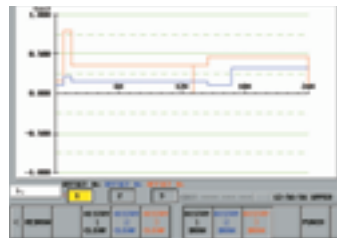
● Spare tool call-up



● Tool counter



● Power saving function



● Offset history



● Data Input / Output to Memory Card

- Tool Counter
- Tool Life Management
- Cutting conditions
- Quick offset / wear offset
- Setting switch
- Operation Condition Display
- Load Monitor
- Menu Display
- Gantry screen (op.)
- Work stoker screen (op.)
- Soft work pusher screen
- In-process measurement Han-bei (op.)
- Chucking condition confirmation by pneumatic device (op.)
- B-axis machine large display
- Work-Piece Status screen
- Periodical maintenance screen
- Data Input / Output Function
- Power-Saving Setting screen
- Offset History screen

← 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.

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

## Dual safety

NT Collision Guard



Airbag

# Double safety features

## NT Collision Guard

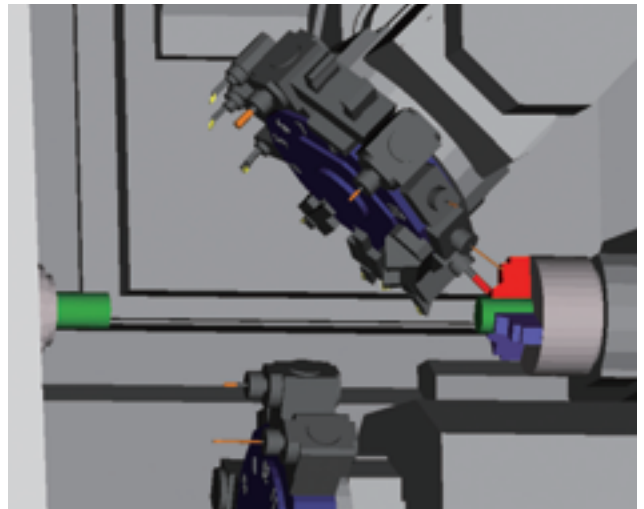
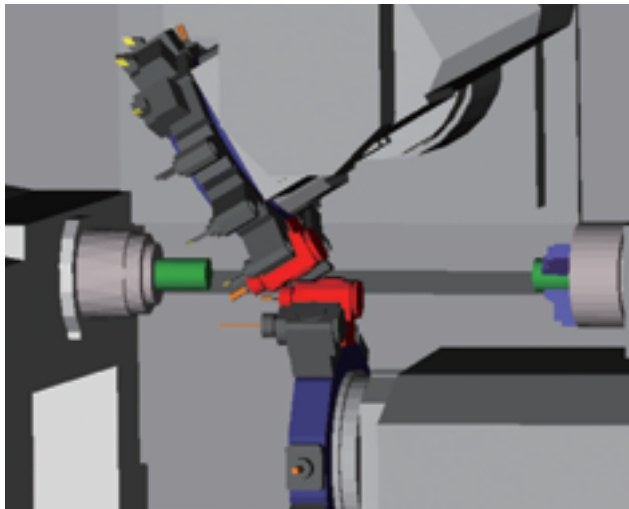
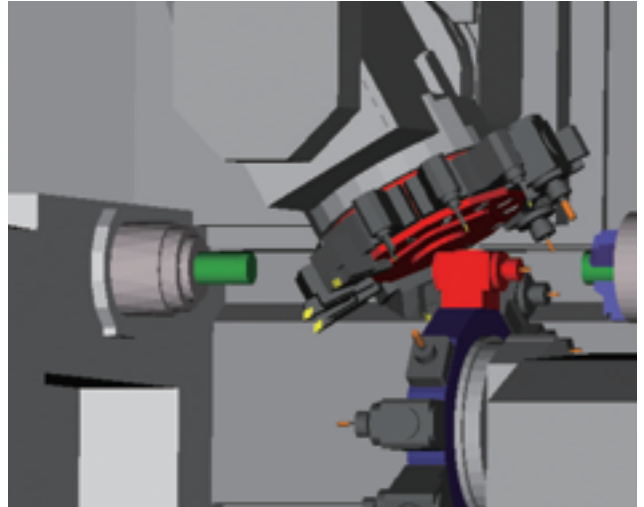
ACTIVE SAFETY

New

### Preventive safety technology – Machine collisions are avoidable!

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

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



# Jig less! Set-up less! Skill less!

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

ACTIVESAFETY

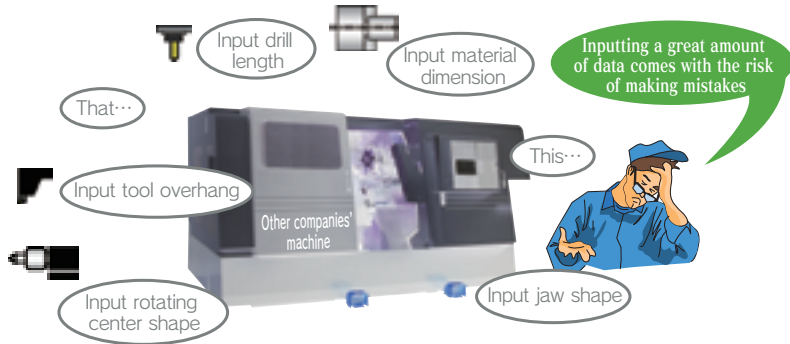
**X Y Z B C**

- Advanced NT Work Navigator !
- No fixtures required

# for maximum machine protection

Full operator support for more ease of use and reliability

## Airbag (Overload detection) PASSIVE SAFETY

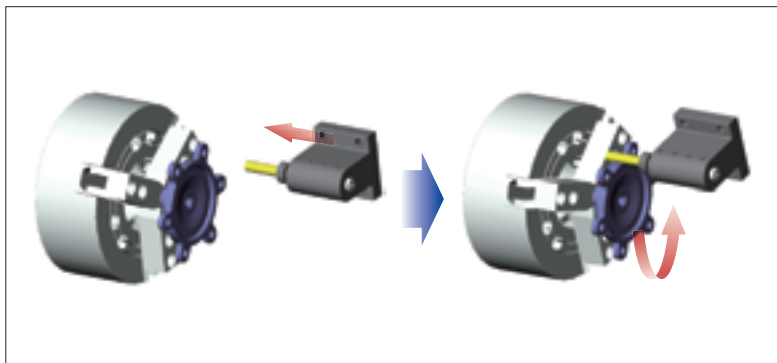
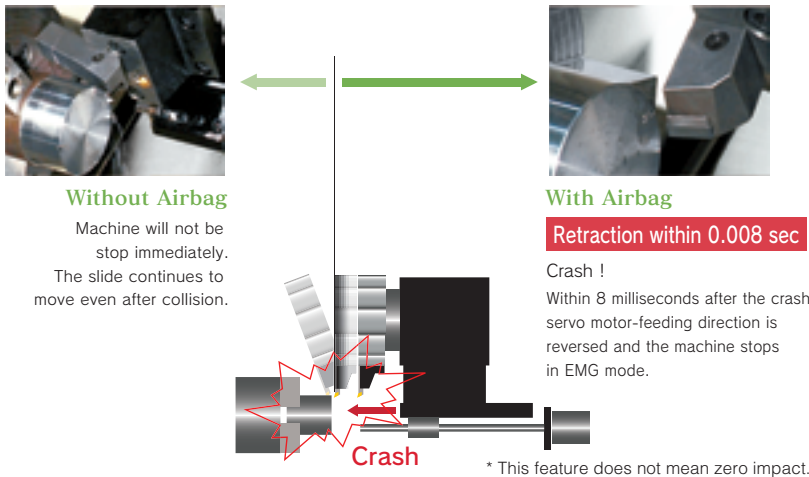


**Even with barrier function, machine collisions may occur**

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.



- 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.)



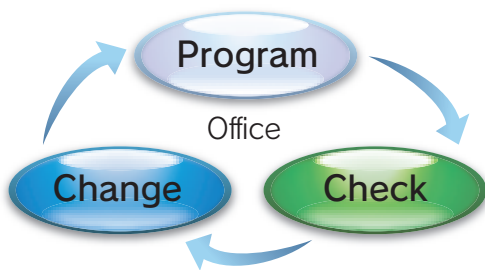
# NT Multitasking Office



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, Multitasking Office enables virtual planning and verification of the production process.

Efficient Programming for Higher productivity

Shorter set-up times

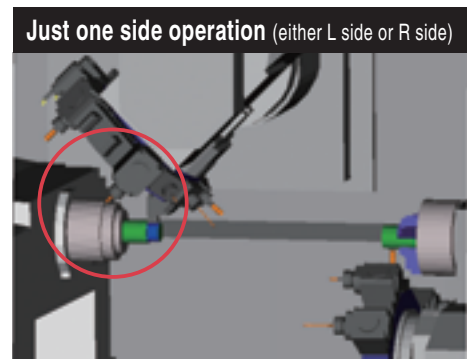
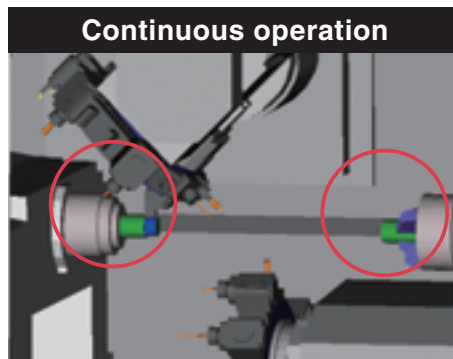
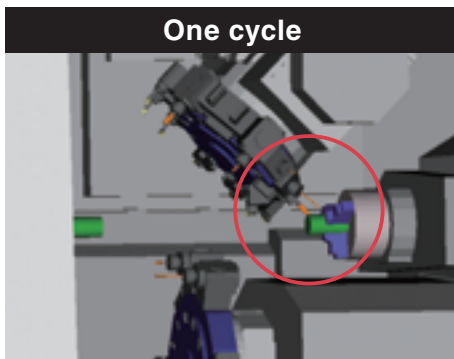


## Drastically reducing set-up time leads to higher productivity

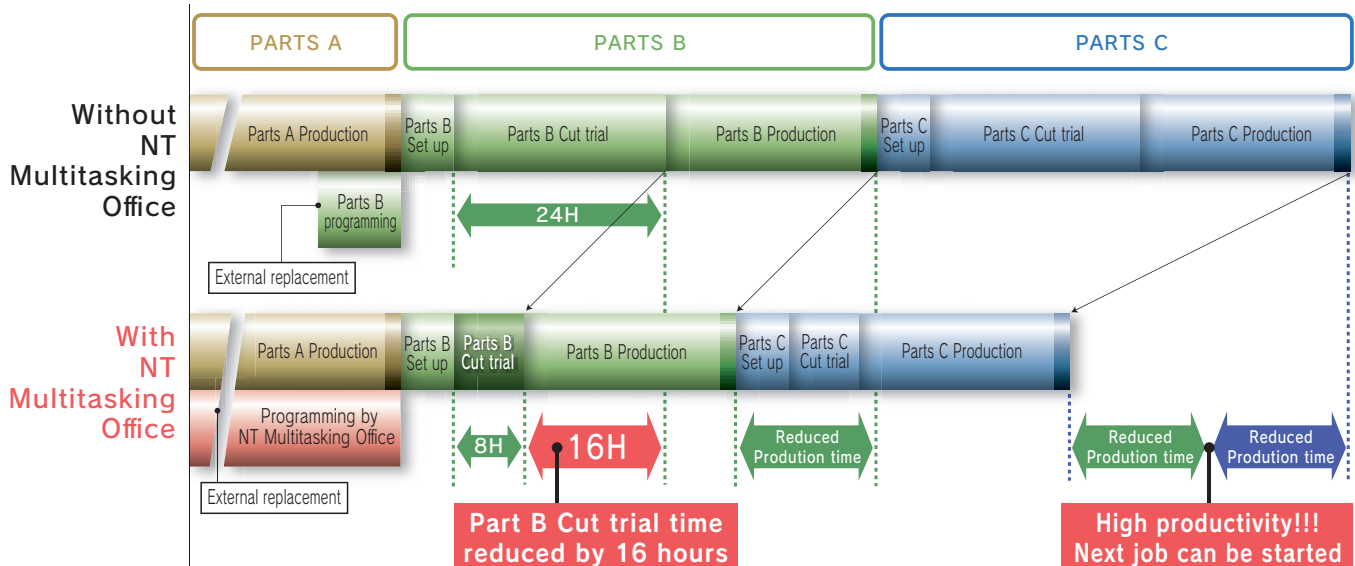
Virtual simulation of the machining processes using 3D solid models of the machine, chucks, tool holders and tools, coupled with all the features of NT-Manual guide I, contribute to not only high efficiency programming and reduced cycle times, but also prevent collisions and reduce set up time.

### 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, ...etc.
- 3 Simulation of programs using Jump programming function (G411) is available as well.

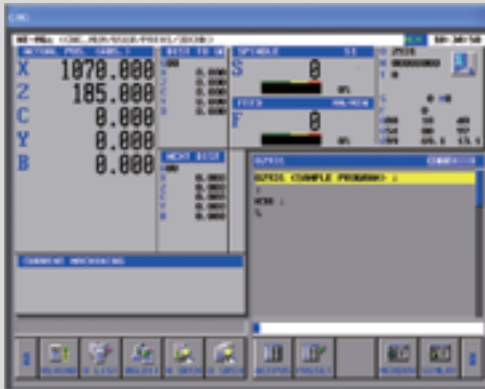


## Effect of NT Multitasking Office

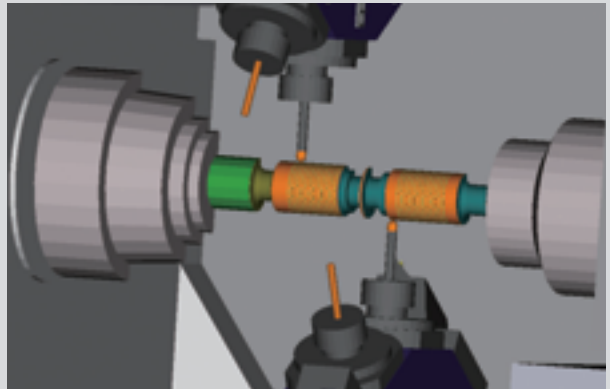


# Programming and machining simulation can be done in the office.

## ● NT Multitasking Office ●

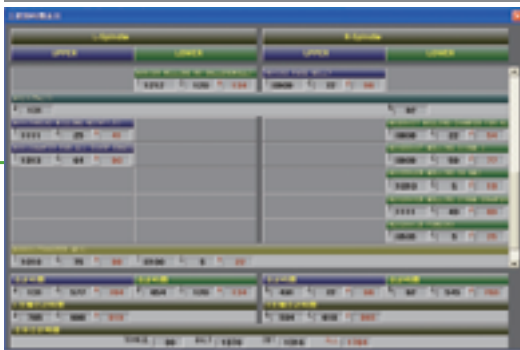


Programming software

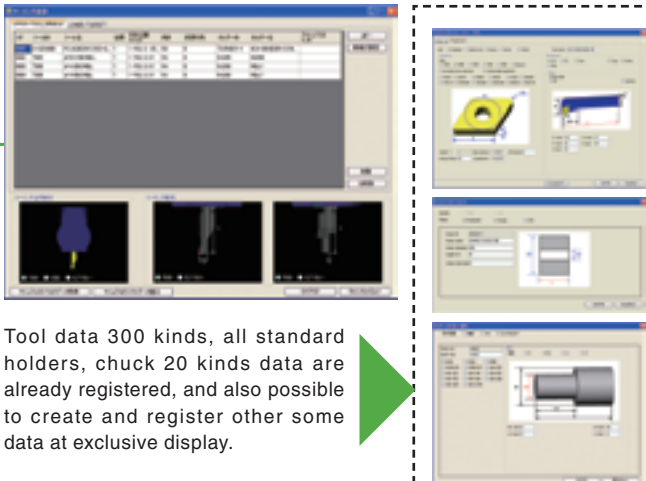


Simulation software

### Process split display function

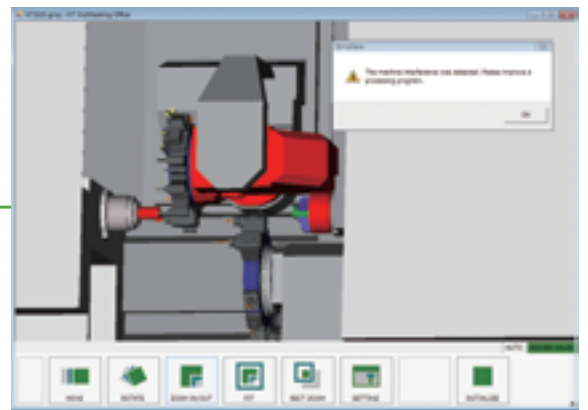


### Tool setting display



Tool data 300 kinds, all standard holders, chuck 20 kinds data are already registered, and also possible to create and register other some data at exclusive display.

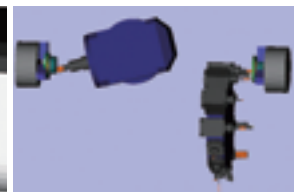
### Interference check



### Mechanical structural simulation



### Workpiece simulation



### Workpiece cutting simulation

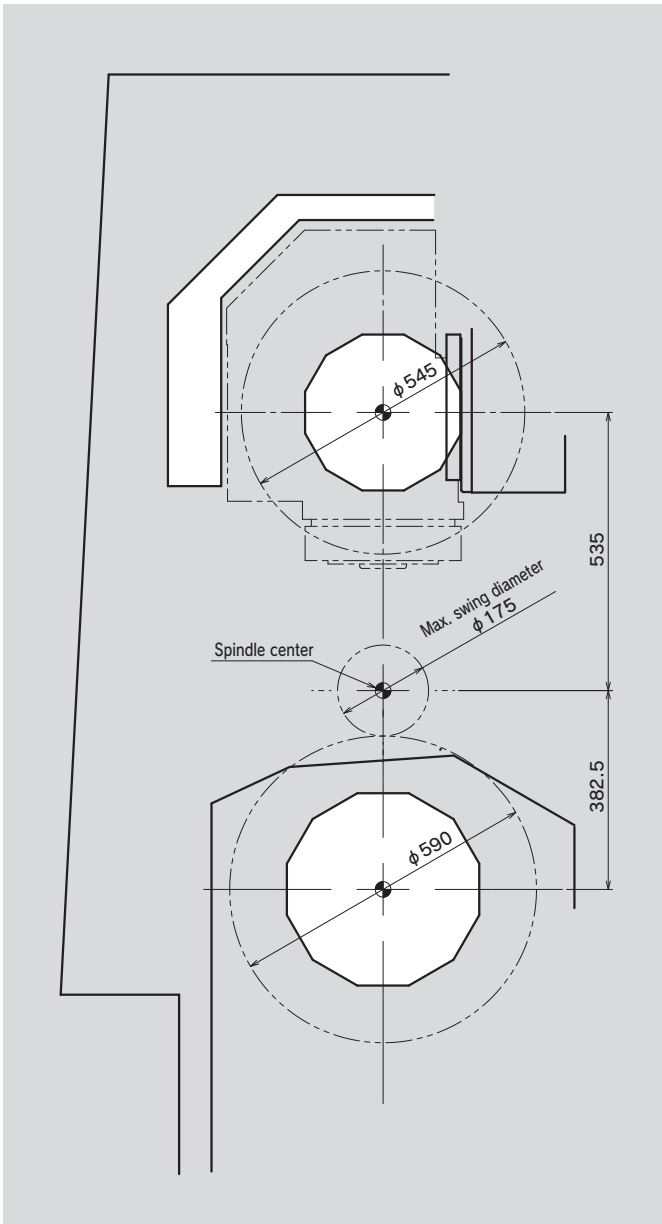


\* Other PC is required when working this function.

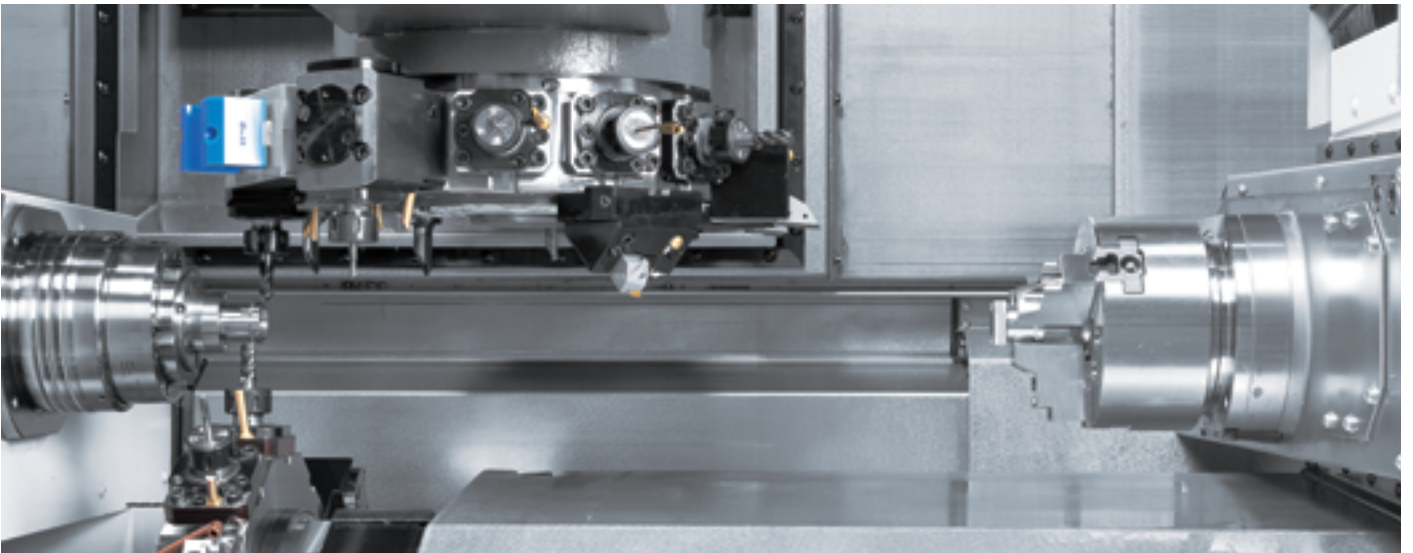
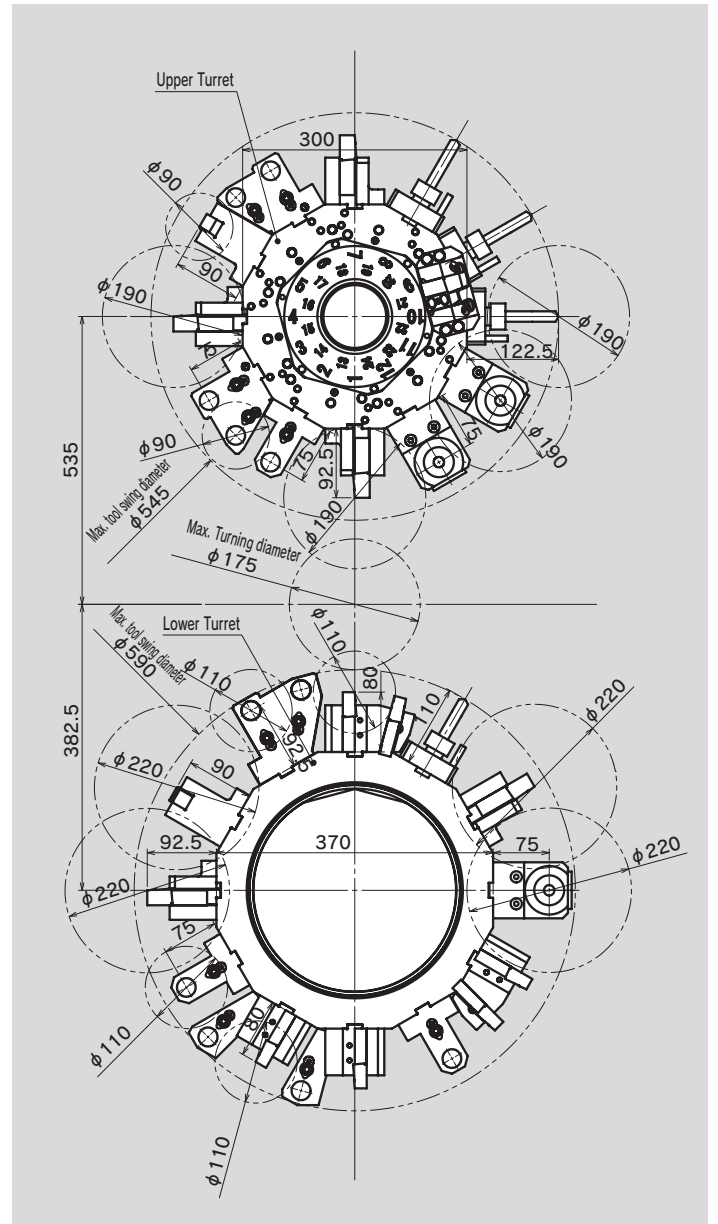




## Maximum Tool Diameter



## Tool interference

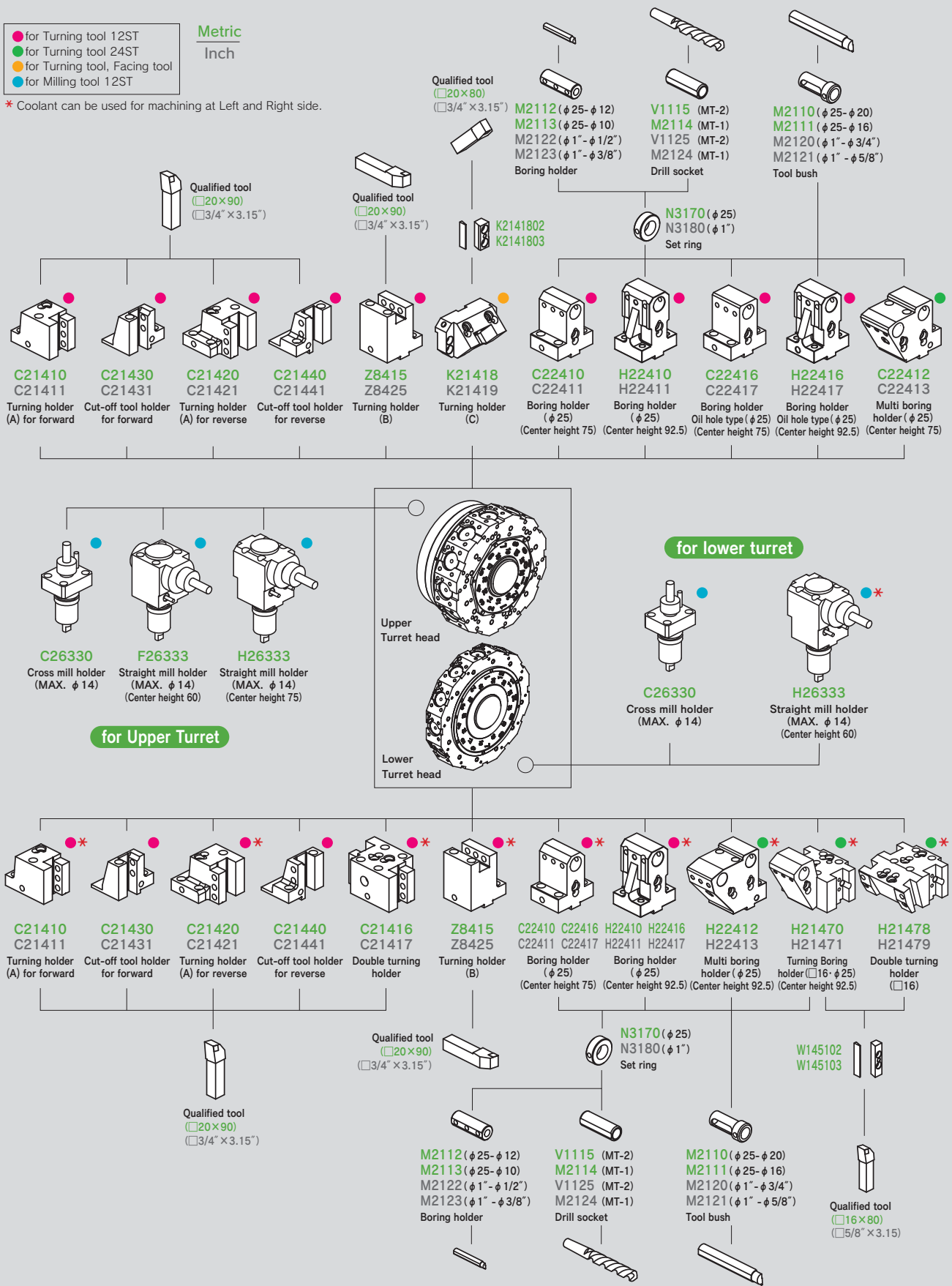


# Tooling System Diagram

- for Turning tool 12ST
- for Turning tool 24ST
- for Turning tool, Facing tool
- for Milling tool 12ST

Metric  
Inch

\* Coolant can be used for machining at Left and Right side.



## Machine Specification

### Capacity

Max. turning diameter	175mm		
Standard turning diameter	170mm		
Distance between spindles	max.910mm / min.200mm		
Max. turning length	678mm		
Bar capacity	42mm	51mm (op.)	65mm (op.)
Chuck size	165mm (6")		

### Axis travel

Slide travel (X1 / X2)	330 / 127.5mm		
Slide travel (Z1 / Z2)	1040 / 678mm		
Slide travel (Y1 / Y2)	±40mm / ±32.5mm		
Slide travel (B2-axis)	710mm		
Rapid feed X1 / X2	20m/min		
Rapid feed Z1 / Z2	40m/min		
Rapid feed B2 axis	40m/min		
Rapid feed Y1 / Y2	6m/min		

### Left and Right spindles

Spindle speed	6000min <sup>-1</sup>	5000min <sup>-1</sup>	4500min <sup>-1</sup>
Spindle speed range	Stepless		
Spindle nose	A2-5	A2-5	A2-6
Hole through spindle	56mm	63mm	80mm
I.D. of front bearing	80mm	90mm	110mm
Hole through draw tube	43mm	52mm	66mm

### C-axis

Least input increment	0.001°
Least command increment	0.001°
Rapid index speed	600min <sup>-1</sup>
Cutting feed rate	1 - 4800°/min
C-axis clamp	Disk clamp
C-axis connecting time	1.5sec.

### B1-axis (Swiveling axis for upper turret)

Swing range	182degree (±91degree)
Swing mechanism	Servo motor + Roller cam
Clamp function	Curvic coupling (5degree), Brake (0.001degree)

### Upper turret

Number of tools	24 + 6
Type of turret head	Dodecagonal drum turret
Number of indexing position	24
Milling system	Individual rotation
Number of milling stations	12
Milling speed	6000min <sup>-1</sup>
Milling motor power and torque	7.1/2.2kW 16/8N·m
Tool size (Square shank)	□ 20mm
Tool size (Round shank)	φ 25mm
Tool size (Milling collet)	Straight / Cross holder φ 1 - 14mm

### Lower turret

Number of tools	24
Type of turret head	Dodecagonal drum turret
Number of indexing position	24
Milling system	Individual rotation
Number of milling stations	12
Milling speed	6000min <sup>-1</sup>
Milling motor power and torque	7.1/2.2kW 16/8N·m
Tool size (Square shank)	□ 20mm, □ 16mm
Tool size (Round shank)	φ 25mm
Tool size (Milling collet)	Straight / Cross holder φ 1 - 14mm

### Drive motor

L-spindle	11/7.5kW
R-spindle	11/7.5kW

### General

Machine height	2,565mm
Floor space	3,799mm × 2,100mm
Machine weight	10000kg
Power supply	38.2kVA
Air supply	200NL/min, 0.5 - 0.7MPa
Hydraulic unit / Coolant	50L / 350L
Lubrication	4.6L

● 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.

## Control Specification

### Items

Control type	FANUC 31i-B 2-PATH
--------------	--------------------

### Controlled axes

Controlled axes	10axes
-----------------	--------

Simultaneously controlled axes	4axes (Upper X1, Z1, C1 [C2], Y1, B1) + 4axes (Lower X2, Z2, C2 [C1], Y2, B2)
--------------------------------	---

### Input command

Least input increment	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
Inch / Metric conversion	G20 / G21
Programmable data input	G10

### Feed function

Cutting feed	feed / min X : 1 - 8000mm/min, 0.01 - 314inch/min (1 - 4800mm/min, 0.01 - 188inch/min) Z : 1 - 8000mm/min, 0.01 - 314inch/min (1 - 4800mm/min, 0.01 - 188inch/min) Y : 1 - 6000mm/min, 0.01 - 236inch/min (1 - 4800mm/min, 0.01 - 188inch/min) C : 1 - 4800degree/min, B2 : 1 - 8000mm/min, 0.01 - 314inch/min (1 - 4800mm/min, 0.01 - 188inch/min) feed / rev X, Z, B2 : 0.0001 - 8000.0000mm/rev (0.0001 - 4800.0000mm/rev) Y : 0.0001 - 6000.0000mm/rev 0.000001 - 50.00000in/rev Note) Max.cutting feed is the value when AI contouring mode.
--------------	---

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, 0.001/0.01/0.1° (per pulse)
Automatic acceleration / deceleration	Standard
Linear accel. / decel. After cutting feed interpolation	Standard
Rapidfeed override	F0 / 25 / 50 / 100%
Cutting feedrate override	0 - 150% (each 10%)
AI contouring control I	G5.1

### Program memory

Part program storage length	2560m
Part program editing	delete,insert,change
Program number search	Standard
Sequence number search	Standard
Address search	Standard
Number of registerable programs	2000programs
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)

### Operation and display

Operation panel : Display	19" color SXGA LCD touch panel
: keyboard	QWERTY keyboard

### 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	G71, G72
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 (#100-#149, #500-#549)
Addition to custom macro common variables	Standard (After addition, #100-#199, #500-#999)
Helical interpolation	Standard
Luck-bei II / NT Manual Guide i	Standard
Abnormal load detection function	Standard
NT Work Navigator (torque type)	Standard (not including contact bar)
NT Nurse	Standard
NT Collision Guard	Standard

### NT-IPS

O/S	Windows XP Embedded
Pointing device	Touch pad

### 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 city, Ishikawa, 920-2195 Japan**

**Phone : +81 76 273 8100 Fax : +81 76 273 4312**

**E-mail : [nt-jpn@nakamura-tome.co.jp](mailto:nt-jpn@nakamura-tome.co.jp)**

---

\* This catalog was published in September, 2012. Specifications, illustrations and data given herein are subject to change without notice.

\* The products in this catalog are controlled based on Japan's "Foreign Exchange and Foreign Trade Law". The export of the products are subject to an export license by the Japanese government.