

# WY-100II



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



# WY-100II

High Productivity Multitasking Machine

From diversified small-lot production to mass production

One hit machining

Finished parts, complete in one set up

15

15-Station

12

24-Station



Compact Machine with Powerful Machining Capabilities

Nakamura-Tome

Innovation Technology

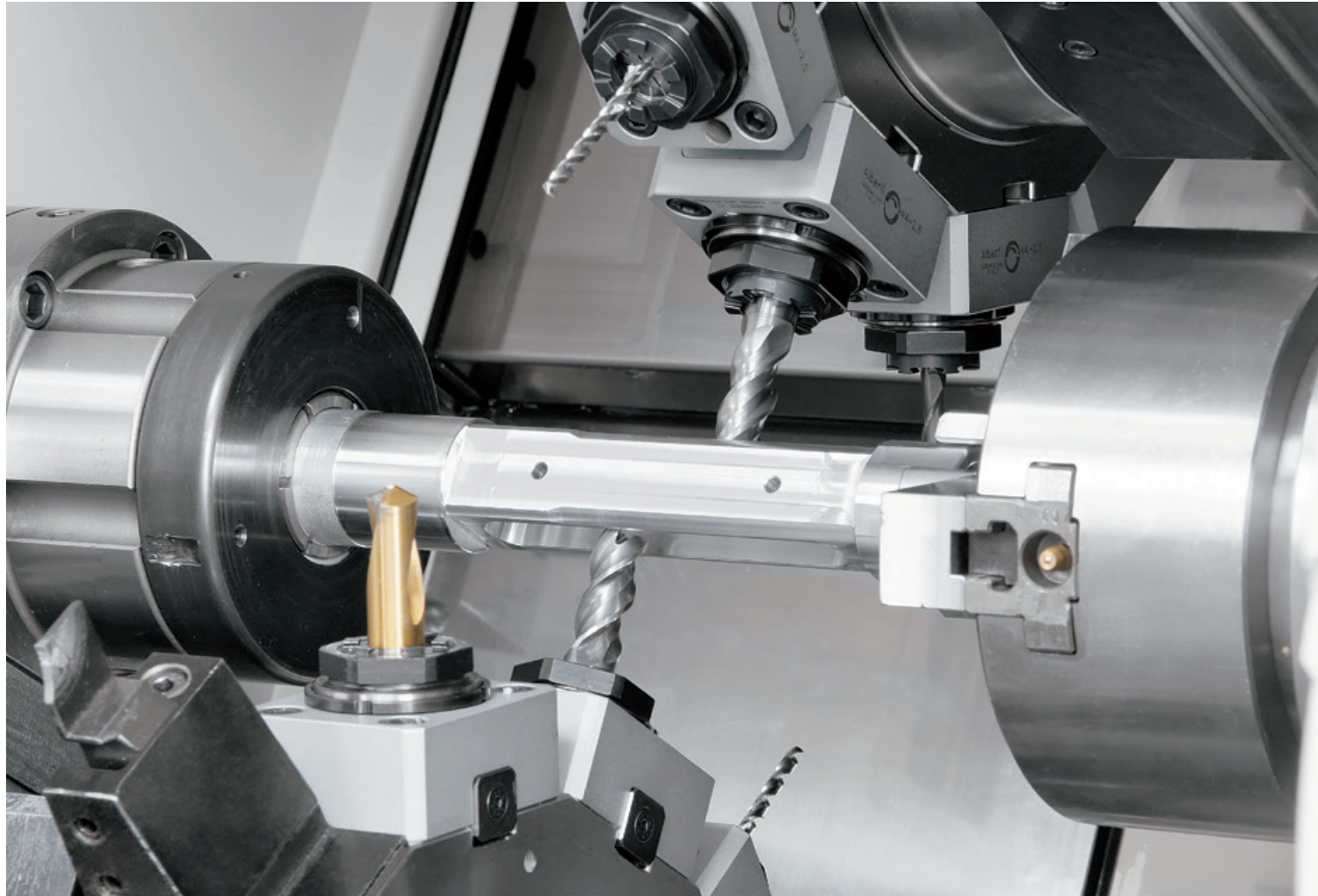
Creating Value

M<sub>x2</sub>  
Double Milling Motor

Y<sub>x2</sub>  
Double Y-axes



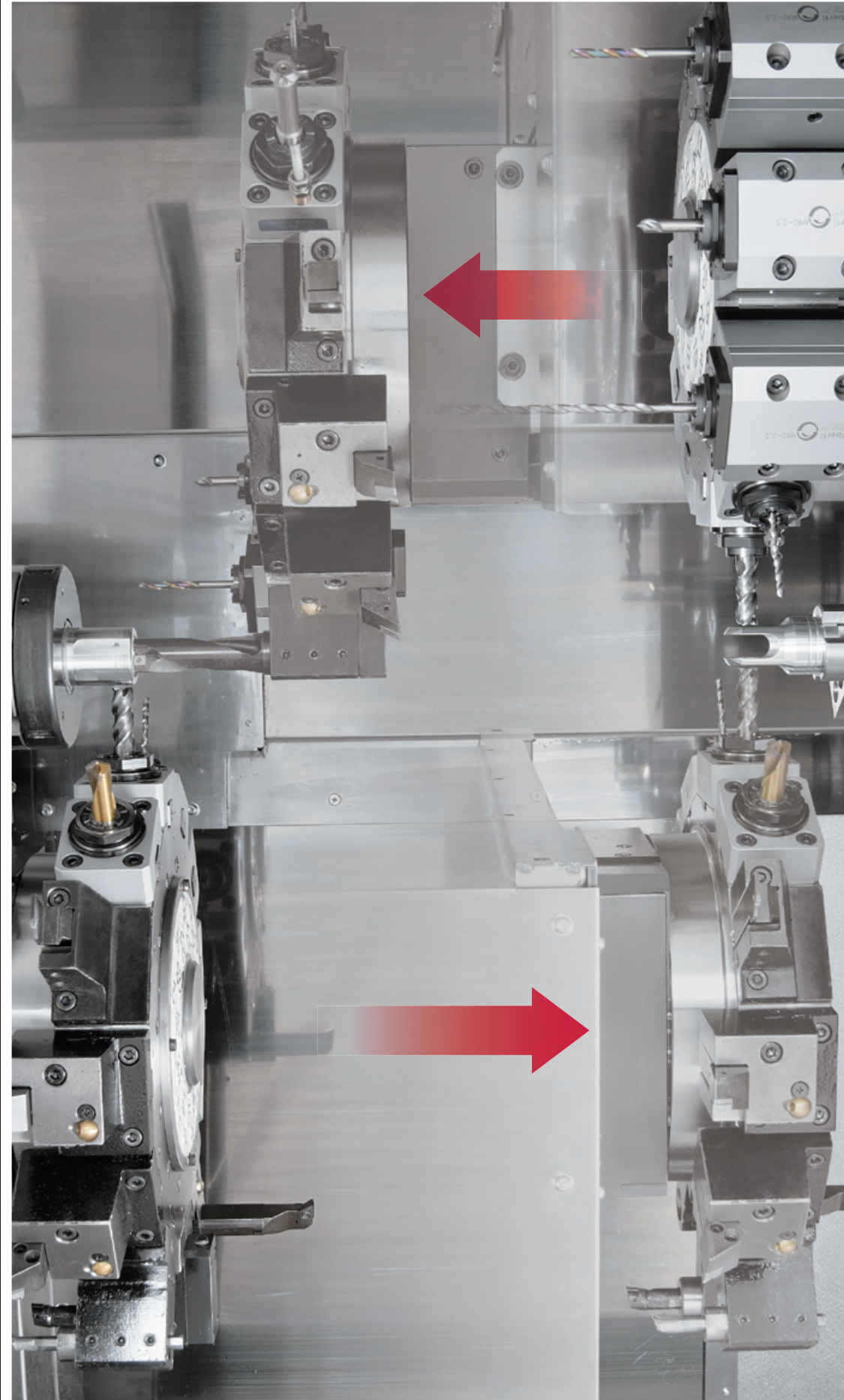
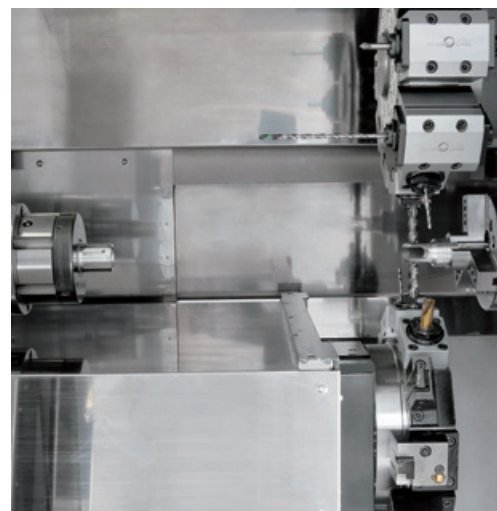
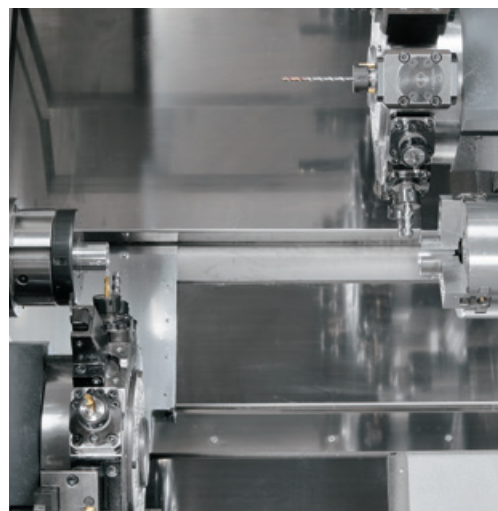
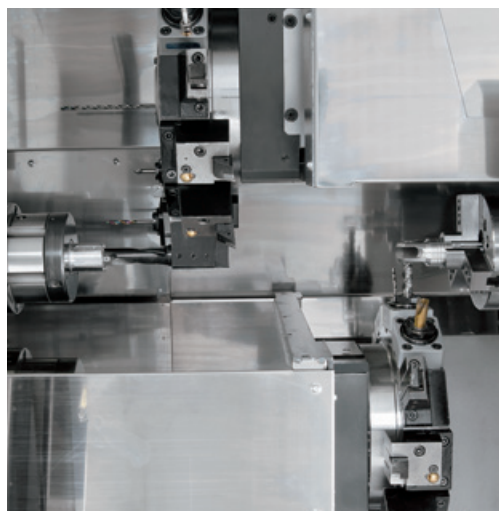




# High Productivity

**Top Leader of One-hit Machining**

No Work in Process  
Less setup time  
Complete in one setup



12-Station Turret

48

12 / 24 - Station

24 + 24

15-Station Turret

30

15 - Station

15 + 15

Double Performance!

$M \times 2$

Milling-tool motor  
7.1/2.2kW (6,000min<sup>-1</sup>)

Milling-tool motor (op.)  
5.5/2.2kW (8,000min<sup>-1</sup>)

Y-axis on upper  
and lower turrets

$Y \times 2$

Y-axis travel  
±42 / ±32.5mm (12st)  
±31 / ±31mm (15st)





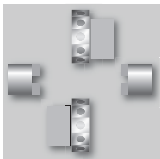
# Both Turrets Equipped with Y-axis



19"  
Color LCD  
Touch Panel

NT  
Smart  
X

## WY-100II



T×2  
Double turret

M×2  
Double Milling Motor

Y×2  
Double Y-axes

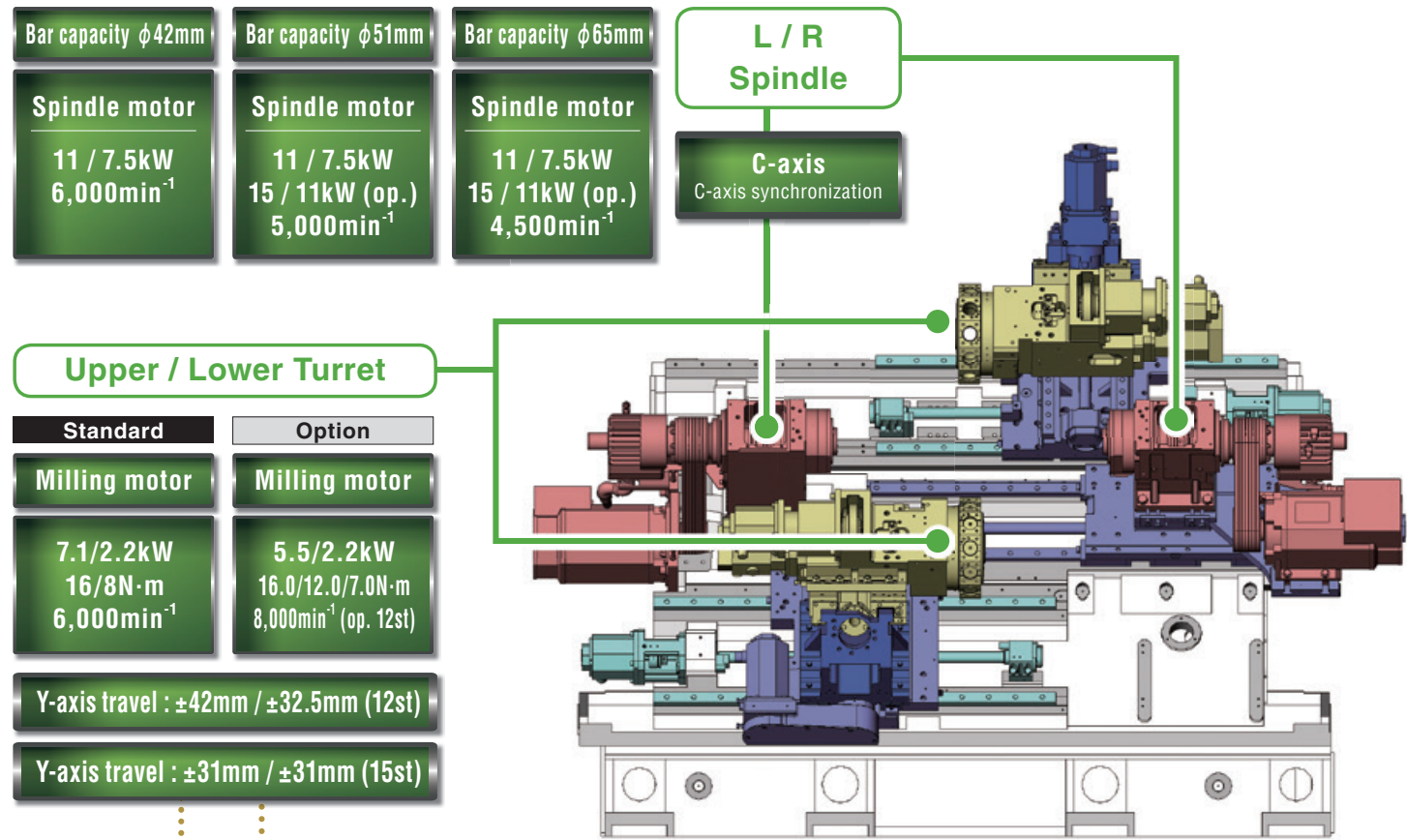
S×2  
Twin-Spindle

C×2  
C-axes

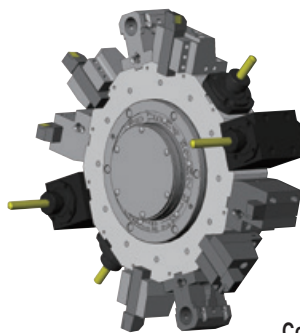
| Capacity                                         |       | φ 42mm                                                                         | φ 51mm (op.)           | φ 65mm (op.)           |
|--------------------------------------------------|-------|--------------------------------------------------------------------------------|------------------------|------------------------|
| Max. turning diameter /<br>Max. turning length   | 12st. | 175mm / 588mm                                                                  | 200mm / 570mm          |                        |
|                                                  | 15st. |                                                                                | 190mm / 570mm          |                        |
| Distance between spindles                        |       | max. 820mm / min. 200mm                                                        |                        |                        |
| Bar capacity                                     |       | φ 42mm                                                                         | φ 51mm                 | φ 65mm                 |
| Chuck size                                       |       | 165mm (6")                                                                     |                        |                        |
| Axis travel                                      |       |                                                                                |                        |                        |
| Slide travel (X1 / X2)                           | 12st. | 150mm / 135mm                                                                  | 150mm / 141mm          |                        |
|                                                  | 15st. | 130mm / 130mm                                                                  |                        |                        |
| Slide travel (Z1 / Z2)                           | 12st. | 588mm / 560mm                                                                  | 570mm / 560mm          |                        |
|                                                  | 15st. | 570mm / 560mm                                                                  |                        |                        |
| Slide travel (Y1 / Y2)                           | 12st. | ±42mm / ±32.5mm                                                                |                        |                        |
|                                                  | 15st. | ±31mm / ±31mm                                                                  |                        |                        |
| Slide travel (B)                                 |       | 620mm                                                                          |                        |                        |
| Spindle L, R                                     |       |                                                                                |                        |                        |
| Spindle speed                                    |       | 6,000min <sup>-1</sup>                                                         | 5,000min <sup>-1</sup> | 4,500min <sup>-1</sup> |
| Spindle motor output (L / R)                     |       | 11/7.5kW                                                                       | 11/7.5kW               | 15/11kW (op.)          |
| Spindle motor torque (L / R)                     |       | 76/39N·m                                                                       | 77/39.4N·m             | 85/43N·m               |
| Turrets                                          |       |                                                                                |                        |                        |
| Number of turrets                                |       | 2                                                                              |                        |                        |
| Driven-tool spindle speed                        |       | 6,000min <sup>-1</sup> (op. 8,000min <sup>-1</sup> Only for 12-station turret) |                        |                        |
| Drive motor                                      |       | 7.1/2.2kW (op. 5.5/2.2kW)                                                      |                        |                        |
| Type of turret head /<br>Number of indexing pos. | 12st. | Dodecagonal drum turret / 24                                                   |                        |                        |
|                                                  | 15st. | 15-station turret / 15                                                         |                        |                        |
| Drive type / Number of<br>driven-tool stations   | 12st. | Individual rotation / 12                                                       |                        |                        |
|                                                  | 15st. | Individual rotation / 15                                                       |                        |                        |
| General                                          |       |                                                                                |                        |                        |
| Floor space (L×W×H)                              |       | 3,424mm × 2,257mm × 1,930mm                                                    |                        |                        |
| Machine Weight (incl.control)                    |       | 8,500kg                                                                        |                        |                        |

| Bar Capacity and spindle motor configurations |                      |               |                        | R Spindle motor        |         |                        |         |   |
|-----------------------------------------------|----------------------|---------------|------------------------|------------------------|---------|------------------------|---------|---|
|                                               | Bar capacity         |               |                        | φ 42                   | φ 51    |                        | φ 65    |   |
|                                               | Spindle motor output | Spindle speed | 11/7.5kW               | 11/7.5kW               | 15/11kW | 11/7.5kW               | 15/11kW |   |
|                                               |                      |               | 6,000min <sup>-1</sup> | 5,000min <sup>-1</sup> |         | 4,500min <sup>-1</sup> |         |   |
| L Spindle motor                               | φ 42                 | 11/7.5kW      | 6,000min <sup>-1</sup> | ○                      | —       |                        | —       |   |
|                                               | φ 51                 | 11/7.5kW      | 5,000min <sup>-1</sup> | ○                      | ○       | —                      | —       |   |
|                                               |                      | 15/11kW       | ○                      | ○                      | ○       | —                      |         |   |
|                                               | φ 65                 | 11/7.5kW      | 4,500min <sup>-1</sup> | ○                      | —       |                        | ○       | — |
|                                               |                      | 15/11kW       |                        | ○                      | —       |                        | ○       | ○ |

# WY-100II Evolution into High Productivity Multitasking Machines



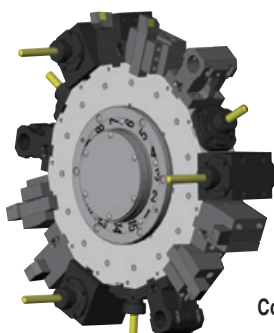
48 stations



## 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 : 6,000min<sup>-1</sup> (op. 8,000min<sup>-1</sup>)  
 O.D. turning tool : □ 20/16mm  
 I.D. Boring : dia.25mm  
 Collet diameter for driven tools : 1mm to 14mm

30 stations



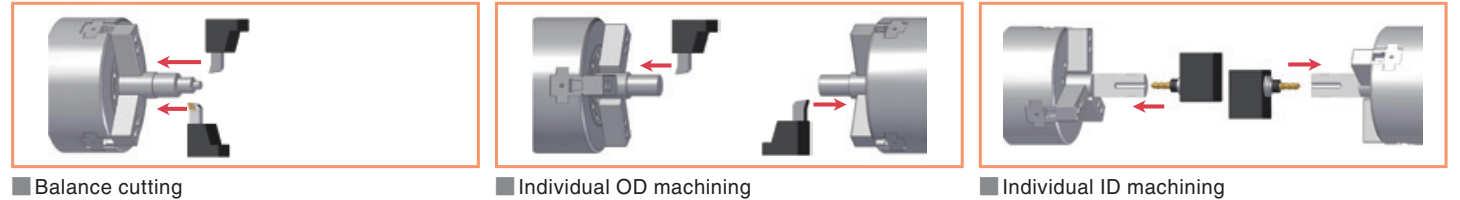
## 15 - Station Turret

Turret type : 15 - station turret  
 Number of tools : 15  
 Number of indexing pos. : 15  
 Number of driven-tools : 15  
 Max. Speed of driven tools : 6,000min<sup>-1</sup>  
 O.D. turning tool : □ 20/16mm  
 I.D. Boring : dia.25mm  
 Collet diameter for driven tools : 1mm to 14mm

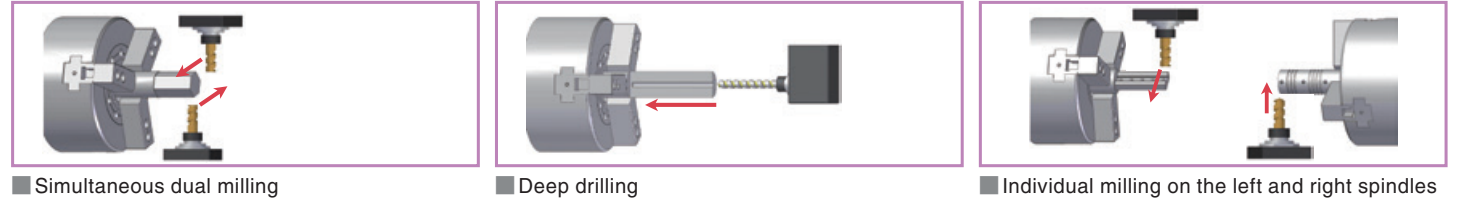
# WY-100II Various applications and increased productivity

**Perfect Flexibility!** Whether machining from bar stock, shaft work, castings or forged parts, the most suitable process combination can be made, thanks to maximum flexibility. In spite of its compact floor space, this machine priding itself for high productivity is the latest in multitasking technology.

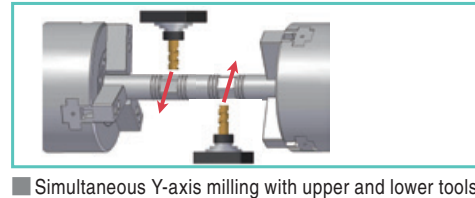
## TURNING PROCESS



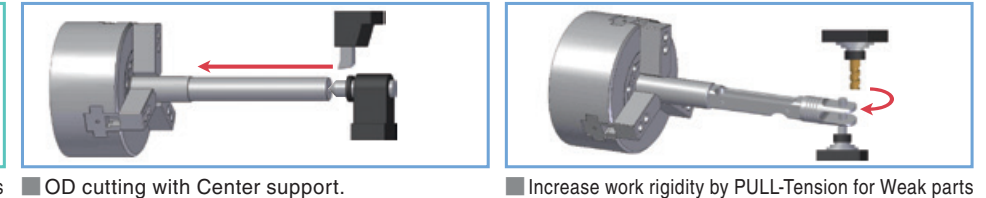
## Milling



## Work-holding with 2 chucks

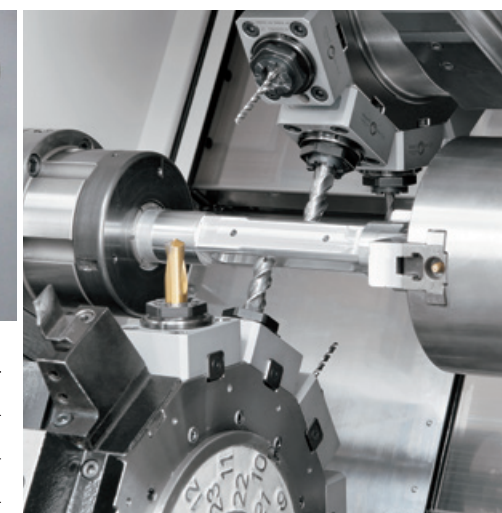


## Work-holding with Center support



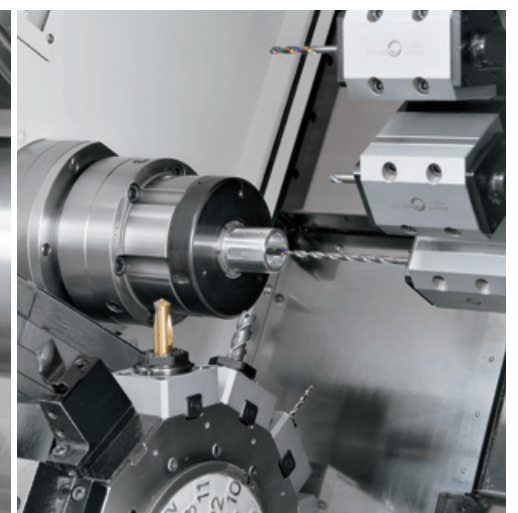
## Description

|                     |                       |
|---------------------|-----------------------|
| Work name           | Yoke                  |
| Type of industry    | Aeronautics industry  |
| Machining time      | 11 min 30 sec         |
| Material            | Duralumin             |
| Material dimensions | $\phi$ 42mm bar stock |



Upper & lower simultaneous Y-axis machining with main & sub spindle work-holding (Complete C axis synchronization)

● Type : Endmill EPP3160-CS  
 ● Dia :  $\phi$  16mm  
 ● rpm : 1200min<sup>-1</sup>  
 ● Feed : 0.45mm/rev (Rough)  
 ● Cutting depth : 5mm  
 ● Process time : 90sec



## deep hole milling operation

● Type : 20WHNSB0600-SD  
 ● Dia :  $\phi$  6mm  
 ● rpm : 6000min<sup>-1</sup>  
 ● Feed : 0.35mm/rev  
 ● Speed : 113m/min  
 ● Cutting depth : 120mm(20D)  
 ● Process time : 7sec





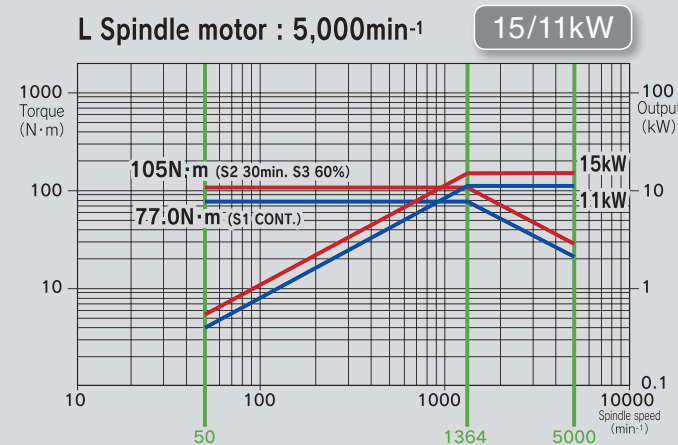
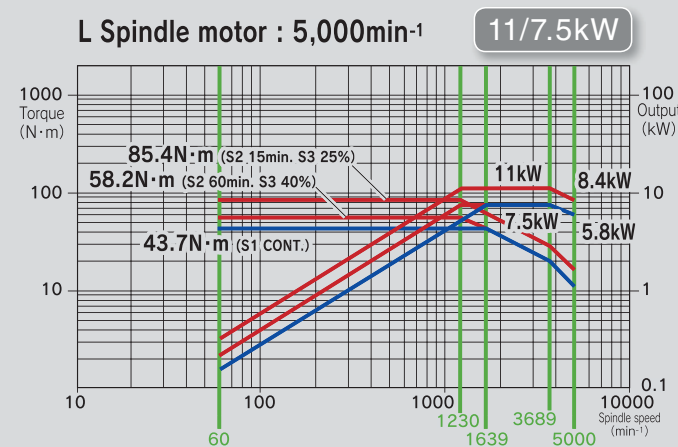
# High-Performance Turning and



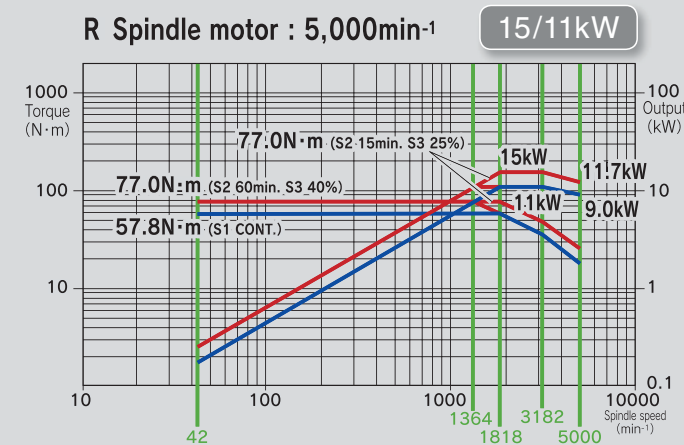
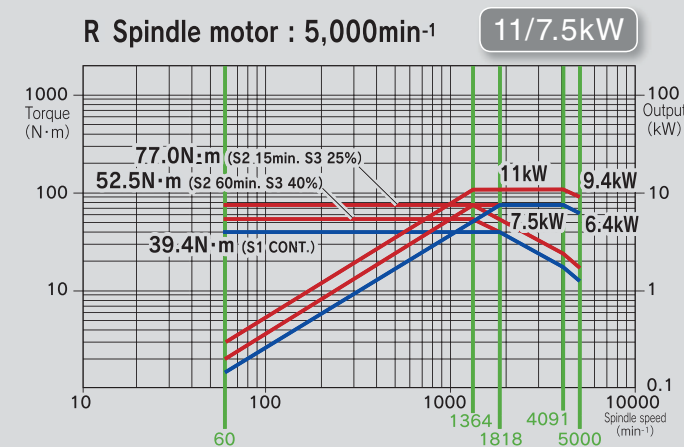
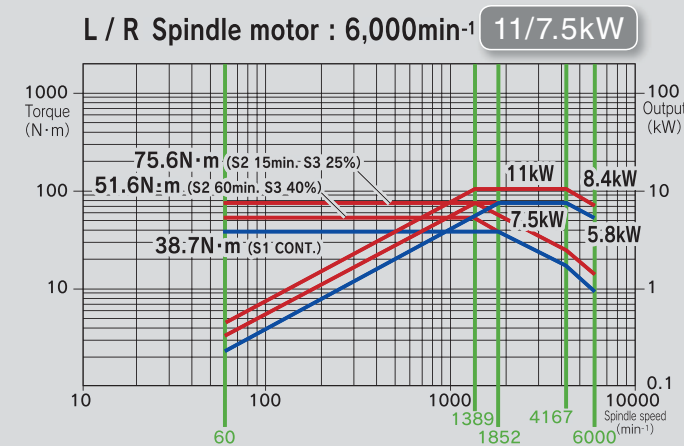
WY-100II

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

φ 51mm **Option**

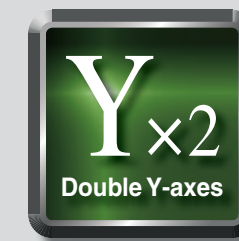


φ 42mm **Standard**



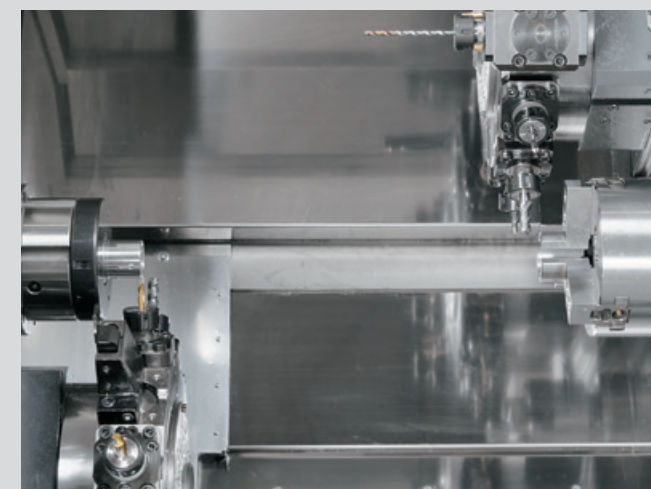
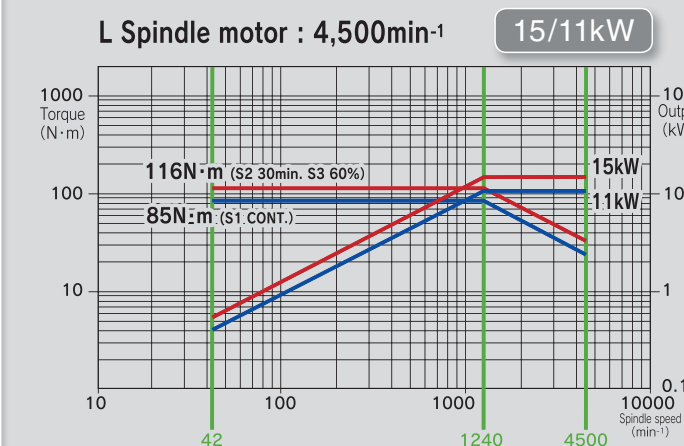
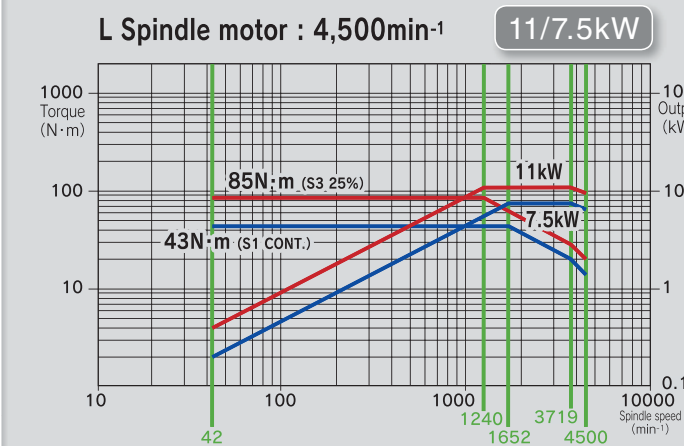
# Milling Motors.

From simple to complex parts  
One hit machining from raw material to finished part



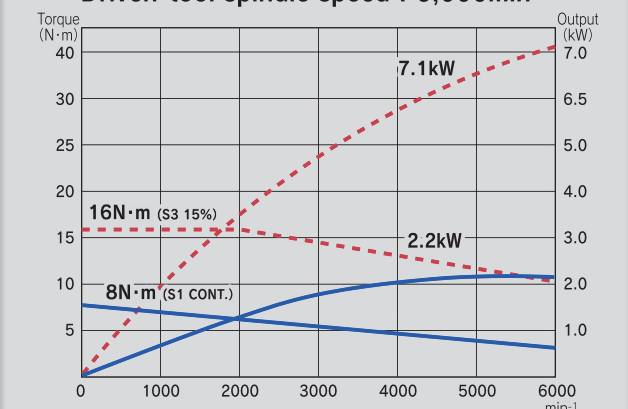
Upper & Lower Milling Motors

φ 65mm **Option**



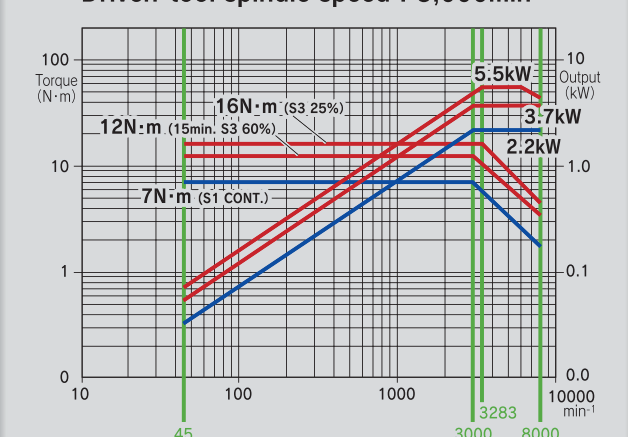
**Standard**

Driven-tool spindle speed : 6,000min<sup>-1</sup>



**Option**

Driven-tool spindle speed : 8,000min<sup>-1</sup>





# NT Smart X

## Advanced Production System

- 3D Smart PRO
- Original Menu Screen
- Voice Guidance
- Multiple-Touch screen
- Windows 8.1

- 19 inch color LCD Touch panel
- PC memory 8GB
- QWERTY Key board
- Windows 8.1
- Touch Pad
- USB 2.0 port × 2

|                           |                          |                            |                            |                            |                            |                            |
|---------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Program storage length    | Total 256Kbyte<br>(640m) | Total 512Kbyte<br>(1,280m) | Total 1Mbyte<br>(2,560m)   | Total 2Mbyte<br>(5,120m)   | Total 24Mbyte<br>(10,240m) | Total 28Mbyte<br>(20,480m) |
| Program registered number | Total 500                | Total 1,000                | Total 1,000 or Total 2,000 | Total 1,000 or Total 4,000 |                            |                            |
| Tool offset pairs         | 99 + 99                  | Standard / Option          |                            |                            |                            |                            |

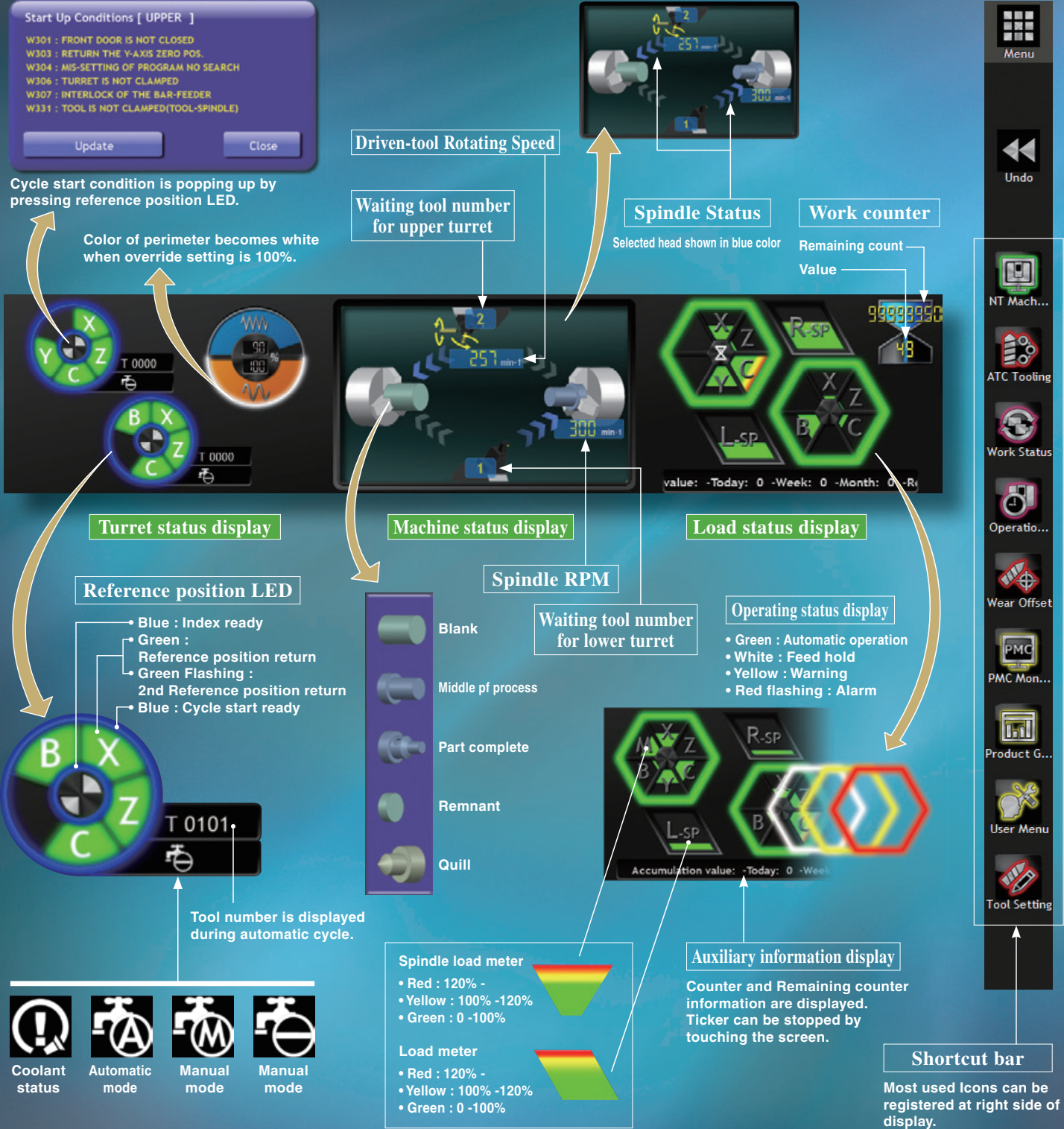
### Main features

- NT Manual Guide i
- NT Work Navigator
- Airbag (Overload detection)
- Advanced NT Nurse
- Status Display Function
- Setup Display
- Trouble Guidance
- Productivity Function
- Operation Level Control Function
- Warm up Function
- Built-in Loading Device Setting Screen (op.)
- Parts Catcher G Operation Function (op.)
- NT Machine Simulation
- NT Collision Guard
- NT Multitasking Office (op.)
- Net Monitor (op.)
- 3D Smart PRO



#### Cut-in Check

The machine can be stopped immediately while in automatic cycle. After reading G00 command in the machining program, the Spindle, Tool spindle, Axis Feeding and Coolant will stop. It is faster than M01 optional stop. After checking the machine internal status, the machining can be restarted by pressing "Program restart" button.



### G131 Soft work pusher

This cycle is used during part transfer from left to right side spindle. Once part contact with the jaws or stopper of the right side spindle has been confirmed, the right side spindle servo axis stops.



- Contact force can be changed in the program.
- It is possible to set OK/ NG range as well.
- An additional work pusher for the right side is not required and cycle time can be reduced.

### G376 Soft quill pusher cycle

Thrust force of center support can be set in the program by using servo motor technology, which helps keeping a constant pushing thrust during cutting.



- It is available for Z axis and B2 axis.
- Quill thrust force can be changed in the program.
- It is possible to set OK/ NG range as well.



## Dual safety

NT Machine Simulation / NT Collision Guard + Airbag

# Dual safety

NT Work Navigator

## Double safety features for maximum protection

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

## NT Machine Simulation

Prevent collision due to tooling, chucks, or program.



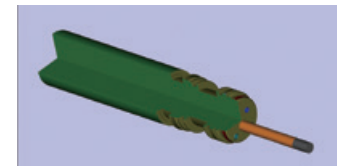
Simulation is performed to check the programs without running the machine. This helps prevent machine collisions due to programming or setup errors.

"Distance to go" and "Modal information" can be checked during with simulation.

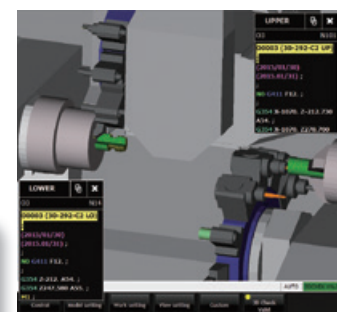
Rapid feed and Cutting feed can be adjusted using override setting. It is possible to make Simulation of each process, or to use single block.

Process

Single block



Simulation of part machining. There are several view screen display settings, such as machine display, turret display and tooling display.



It is possible to choose between "with" or "without" program display. The color of the program block being simulated can be set to be displayed in a different color.

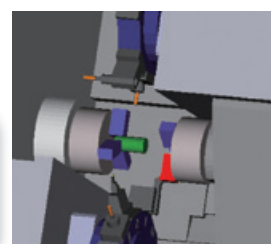
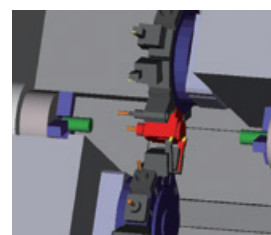
## NT Collision Guard



## Preventive safety technology - Machine collisions are avoidable!

This function is available in automatic mode and manual mode. Collisions can be prevented, especially after modifying the program, or changing the tool geometry offset. Registered machine data, chucks, tools, holders, and parts are used to monitor the machine during automatic, manual or jog movement, and recognize in advance collisions before they happen. Even turret indexing is monitored to avoid collisions, drastically reducing machine collision risks, especially during set up.

• Model setup was simplified.  
Type of tool being indexed is automatically sorted out from the program, and the tool model can be selected from a displayed list.

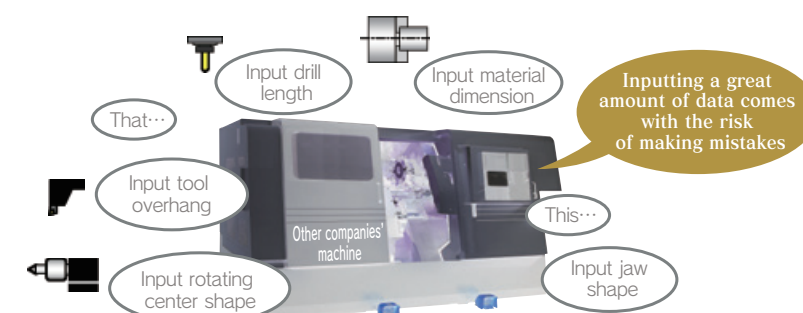


## Airbag (Overload detection)

Nakamura-Tome machines will not break for the slightest collision, as other machines do. The function minimize damage in case of collision.

## 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.



### Without Airbag

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



▲ Video



### 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.

Crash

\* This feature does not mean zero impact.

## NT Work Navigator

## New Navigator for X-axis and Y-axis

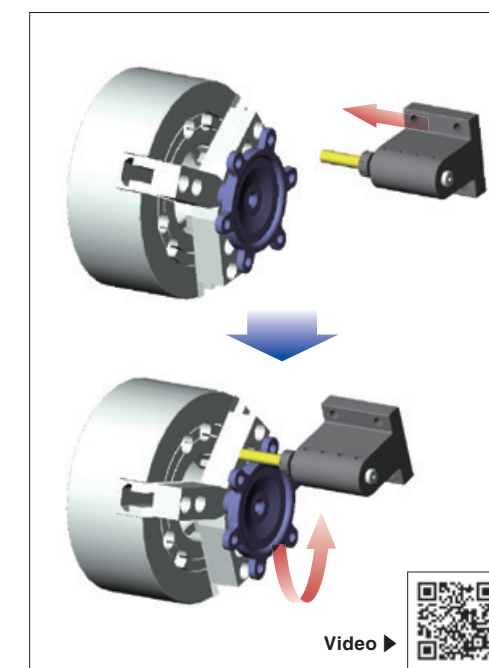
X Y Z B C

### • Advanced NT Work Navigator !

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

### • No fixtures required

Machining parts with non-round shapes, such as forgings or castings requires that the raw part coordinates be recognized by the CNC control. In order to achieve this without requiring extra cost or additional options, the NT Navigator is used. It works just by touching the part with a simple inexpensive probe (mostly round 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.



Video ▶

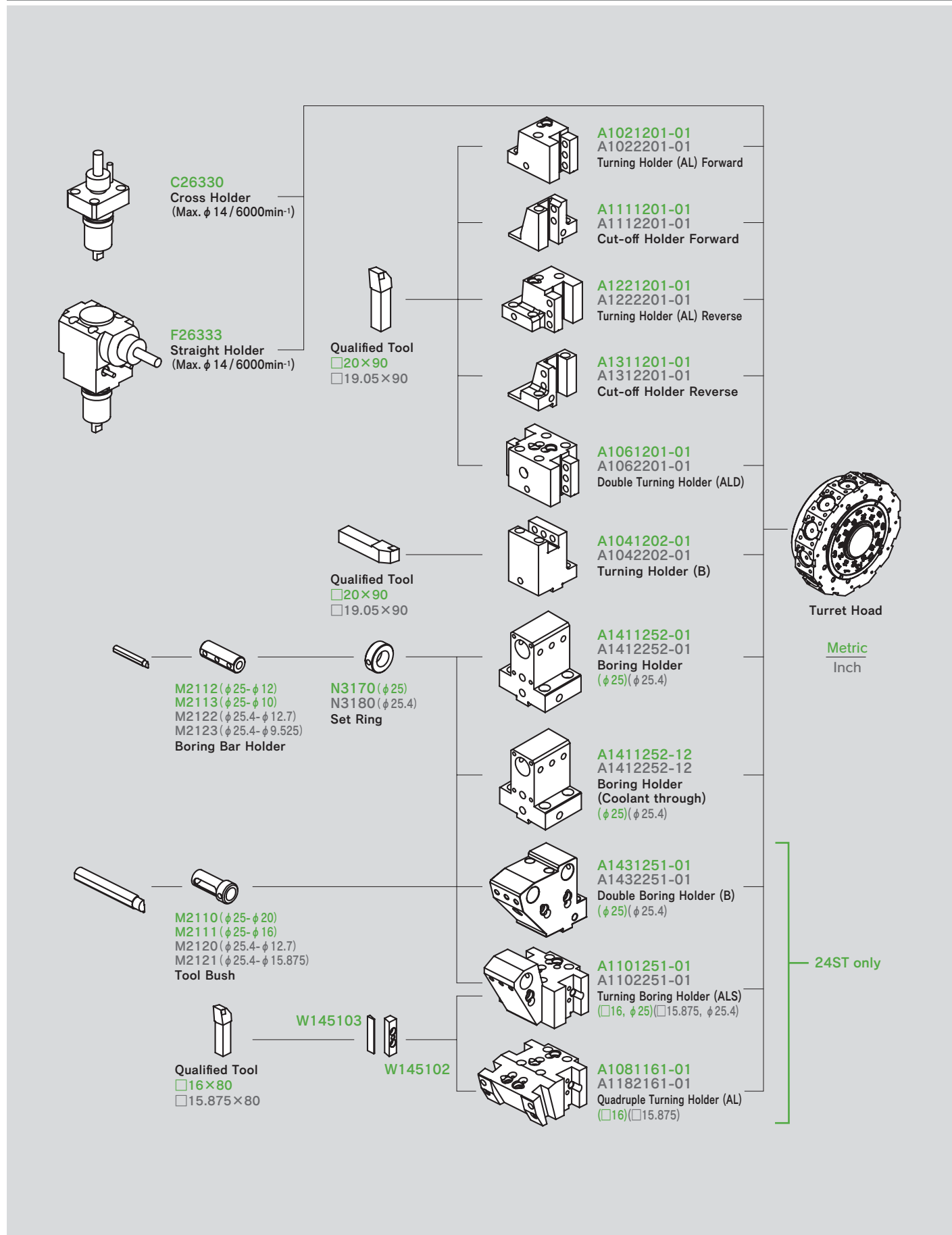








Tooling System Diagram (15/24 station)



Machine Specification

| Capacity                       | $\phi$ 42mm                                                                                 | $\phi$ 51mm (op.)      | $\phi$ 65mm (op.)      |
|--------------------------------|---------------------------------------------------------------------------------------------|------------------------|------------------------|
| Max. turning diameter          | 12st 175mm<br>15st 190mm                                                                    | 200mm                  |                        |
| Standard turning diameter      | 170mm                                                                                       |                        |                        |
| Distance between centers       | max.820mm / min.200mm                                                                       |                        |                        |
| Max. turning length            | 588mm                                                                                       | 570mm                  |                        |
| Bar capacity                   | 42mm                                                                                        | 51mm                   | 65mm                   |
| Chuck size                     | 165mm (6")                                                                                  |                        |                        |
| Axis travel                    |                                                                                             |                        |                        |
| Slide travel (X1 / X2)         | 12st 150mm/135mm<br>15st 130mm / 130mm                                                      | 150mm / 141mm          |                        |
| Slide travel (Z1 / Z2)         | 12st 588mm/578mm<br>15st 570mm / 560mm                                                      | 588mm / 560mm          |                        |
| Slide travel (Y1 / Y2)         | 12st $\pm 42$ mm / $\pm 32.5$ mm<br>15st $\pm 31$ mm / $\pm 31$ mm                          |                        |                        |
| Slide travel (B)               | 620mm                                                                                       |                        |                        |
| Rapid feed X1 / X2             | 20m/min                                                                                     |                        |                        |
| Rapid feed Z1 / Z2             | 40m/min                                                                                     |                        |                        |
| Rapid feed B axis              | 40m/min                                                                                     |                        |                        |
| Rapid feed Y1 / Y2             | 8m/min                                                                                      |                        |                        |
| Left and right spindles        |                                                                                             |                        |                        |
| Spindle speed                  | 6,000min <sup>-1</sup>                                                                      | 5,000min <sup>-1</sup> | 4,500min <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- 4,800"/min                                                                               |                        |                        |
| C-axis clamp                   | Disk clamp                                                                                  |                        |                        |
| C-axis connecting time         | 1.5sec.                                                                                     |                        |                        |
| Upper & Lower turrets          |                                                                                             |                        |                        |
| Type of turret head            | 12st Dodecagonal drum turret<br>15st 15 station turret                                      |                        |                        |
| Number of driven-tool stations | 12st 12<br>15st 15                                                                          |                        |                        |
| Number of index positions      | 12st 24<br>15st 15                                                                          |                        |                        |
| Tool size (square shank)       | $\square 20$ mm                                                                             |                        |                        |
| Tool size (round shank)        | $\phi 25$ mm                                                                                |                        |                        |
| Rotating tool                  |                                                                                             |                        |                        |
| Rotary system                  | Individual rotation                                                                         |                        |                        |
| Driven-tool spindle speed      | 6,000min <sup>-1</sup><br>(op. 8,000min <sup>-1</sup> available only for 12-station turret) |                        |                        |
| Spindle speed range            | Stepless                                                                                    |                        |                        |
| Number of driven-tool stations | 12st 12 $\times$ 2<br>15st 15 $\times$ 2                                                    |                        |                        |
| Tool shank                     | Straight holder $\phi 1$ mm - $\phi 14$ mm<br>Cross holder $\phi 1$ mm - $\phi 14$ mm       |                        |                        |
| Drive motor                    |                                                                                             |                        |                        |
| Spindle motor output (L / R)   | 11/7.5kW                                                                                    | 11/7.5kW (op. 15/11kW) |                        |
| Spindle motor torque (L / R)   | 76/39N·m                                                                                    | 77/39.4N·m             | 85/43N·m               |
| Driven tools                   | 7.1/2.2kW (op. 5.5/2.2kW)                                                                   |                        |                        |
| General                        |                                                                                             |                        |                        |
| Height                         | 1,930mm                                                                                     |                        |                        |
| Floor space (L $\times$ W)     | 3,424mm $\times$ 2,257mm                                                                    |                        |                        |
| Machine weight (incl. control) | 8,500kg                                                                                     |                        |                        |
| Power requirements             |                                                                                             |                        |                        |
| power supply                   | 32.3kVA                                                                                     |                        |                        |
| Air supply                     | 360 - 410NL/min, 0.5 - 0.7MPa                                                               |                        |                        |

(NOTE) Both GR and Parts catcher G are not available on same machine.

● 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-B 2-PATH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Controlled axes                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Controlled axes                                             | 9 axes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Least command increment                                     | Upper : 4 axes (X1, Z1, C1 [C2], Y1)<br>Lower : 4 axes (X2, Z2, C2 [C1], Y2, B2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Input command                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Least input increment                                       | 0.001mm / 0.0001inch (diameter for X-axis), 0.001°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Least command increment                                     | X:0.0005mm, Z:0.001mm, C:0.001°, B2:0.001mm, Y:0.001mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Max. programmable dimension                                 | $\pm 999999.999$ mm / $\pm 39370.0787$ inch, $\pm 999999.999^\circ$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Absolute / incremental programming                          | X, Z, C, Y, B2 (absolute only for B2) / U, W, 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 - 315in/min (1 - 4800mm/min, 0.01 - 188in/min)<br>Z : 1 - 8000mm/min, 0.01 - 315in/min (1 - 4800mm/min, 0.01 - 188in/min)<br>C : 1 - 4800°/min<br>Y : 1 - 8000mm/min, 0.01 - 315in/min (1 - 4800mm/min, 0.01 - 188in/min)<br>B2 : 1 - 8000mm/min, 0.01 - 315in/min (1 - 4800mm/min, 0.01 - 188in/min)<br>feed / rev : 0.0001 - 8000.0000mm/rev (0.0001 - 84800.0000mm/rev)<br>0.000001 - 850.00000in/rev<br>The maximum cutting feed rate is the value in AI contour control mode.<br>It is also on with G316 command. The values in parentheses are normal values. |
| Dwell                                                       | G04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Feed per minute / Feed per revolution                       | G98 / G99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Thread cutting                                              | G32F designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Thread cutting retract                                      | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Continuous thread cutting                                   | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Variable lead threading                                     | G34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Handle feed                                                 | Manual pulse generator 0.001/ 0.01/ 0.1mm,°(per pulse)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Automatic acceleration / deceleration                       | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Linear accel./decel. After cutting feed interpolation       | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Rapidfeed override                                          | F0, 25, 50, 100% (changeable to every 10% by switch)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Cutting feedrate override                                   | 0 - 150% (each 10%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| AI contouring control I                                     | G5.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Spindle override                                            | 50% - 120% Set every 10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Program memory                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Part program storage length                                 | 256kbyte (Total 640m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Part program editing                                        | delete, insert, change                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Program number search                                       | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sequence number search                                      | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Address search                                              | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Number of registerable programs                             | 500 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)<br>(not including memory card)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Extended part program editing                               | Standard (Replacement of word, address, cut & paste for word / character, cancel operation, copy or move the program)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Operation and display                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| HMI (Human Machine Interface)                               | NT Smart X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Operation panel:Display                                     | 19" color SXGA LCD touch panel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Operation panel:keyboard                                    | QWERTY keyboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Programming assist function                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Polar coordinate interpolation                              | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Cylindrical interpolation                                   | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Helical interpolation                                       | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Axis recomposition                                          | Standard (R side C-axis control from upper side / L side C-axis control from lower side)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sub program                                                 | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Balance cut                                                 | G68, G69                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Custom macro                                                | Standard (common variable#100 - #149, #500 - #549)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Addition to custom macro common variables                   | Standard (After addition, #100 - #199, #500 - #999)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FS15 tape format                                            | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Luck-bei II NT Manual Guide i                               | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Abnormal load detection function                            | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NT Work Navigator                                           | Standard (not including contact bar)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NT Nurse                                                    | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NT Machine Simulation Functions                             | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NT Collision Guard                                          | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Mechanical support                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Rigid type                                                  | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Spindle synchronised control                                | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| C axis synchronised control                                 | Standard (G496 C1, fast forward positioning)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Spindle orientation                                         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NT Smart X                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| O/S                                                         | Windows Embedded 8.1 Industry PRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pointing device                                             | Touch pad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Memory                                                      | 8GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |