

WY-100II

NAKAMURA-TOME  
PRECISION INDUSTRY CO.,LTD.

# WY-100II

**High Productivity Multitasking Machine**  
From diversified small-lot production to mass production

Nakamura-Tome

Innovation Technology

Creating Value

## Compact Machine with Powerful Machining Capabilities

### One hit machining

Finished parts, complete in one set up

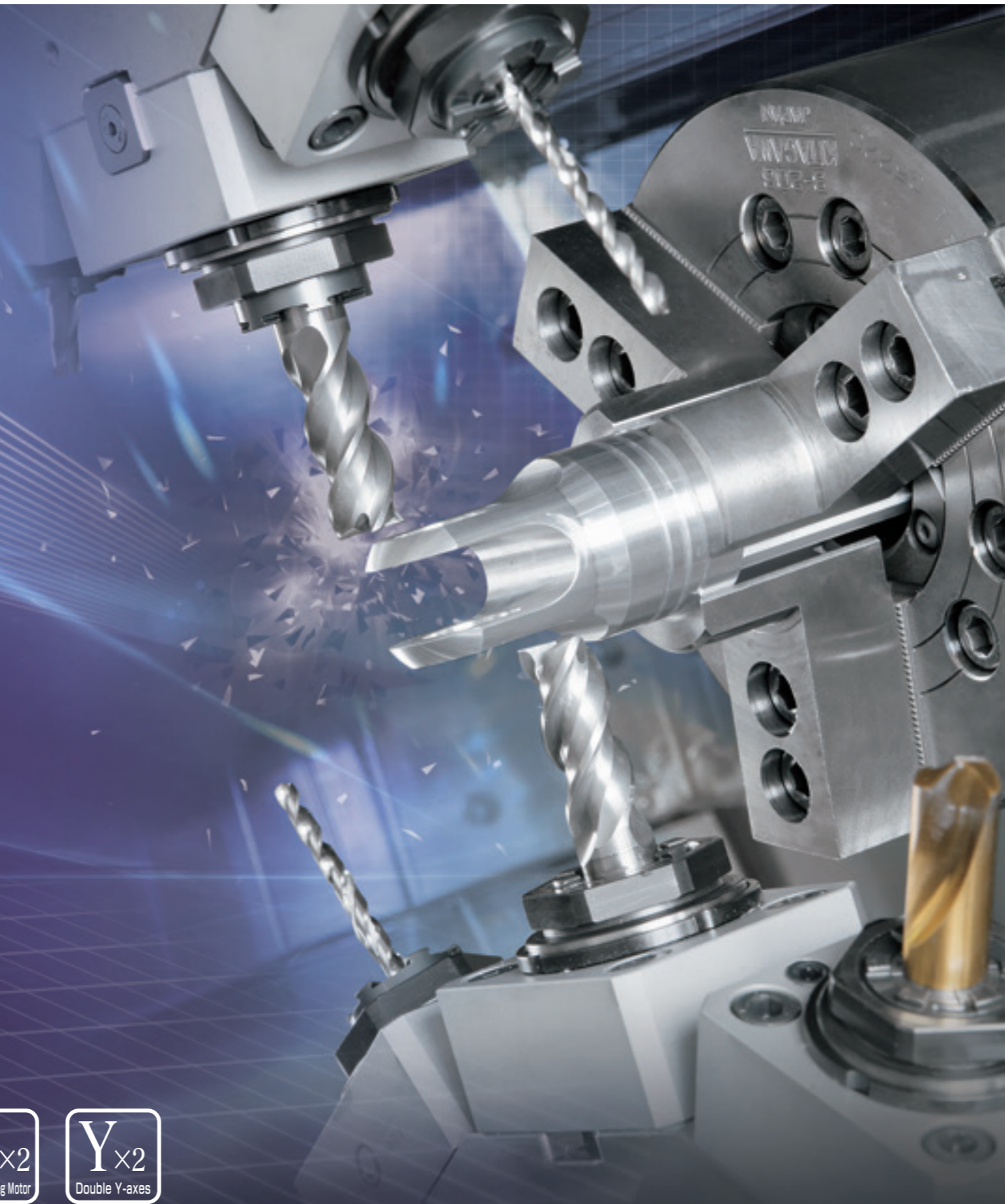
15  
15-Station

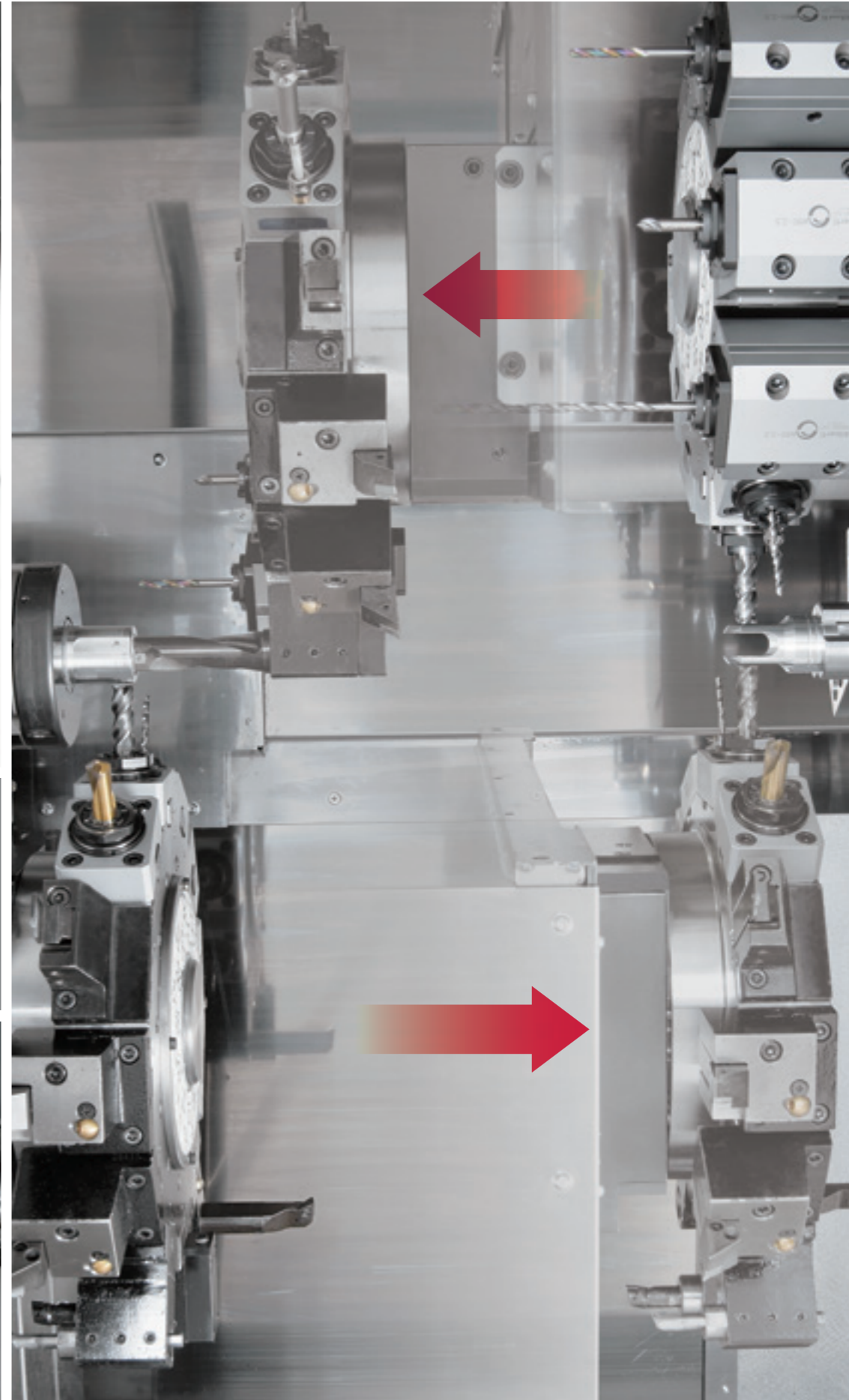
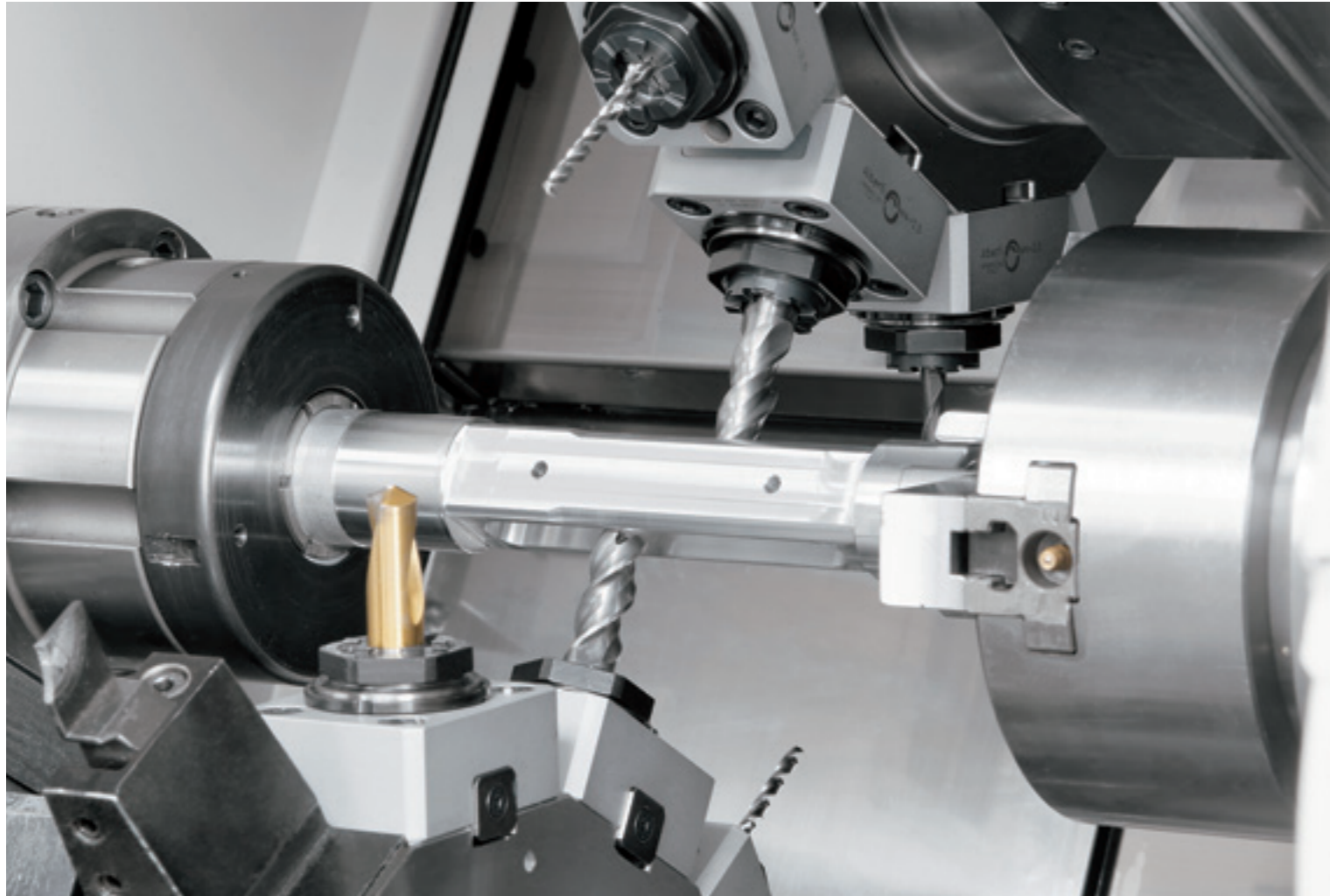
12  
24-Station



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

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





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

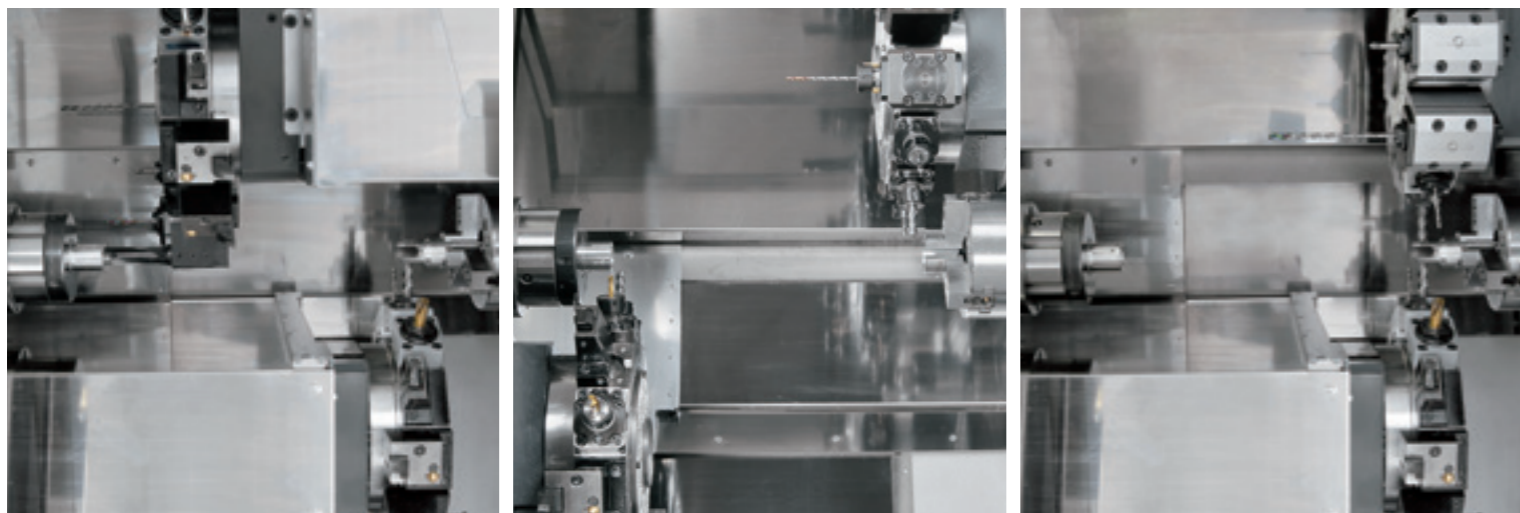
$Y_{\times 2}$

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

# High Productivity

Top Leader of One-hit Machining

No Work in Process  
Less setup time  
Complete in one setup



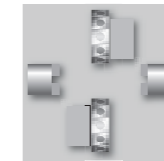
# WY-100II Both Turrets Equipped with Y-axis

WY-100II



19"  
Color LCD  
Touch Panel

NT  
Smart  
X



T×2  
Double turret

M×2  
Double Milling Motor

Y×2  
Double Y-axes

S×2  
Twin-Spindle

C×2  
C-axes

Capacity		φ42mm	φ51mm (op.)	φ65mm (op.)
Max. turning diameter / 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

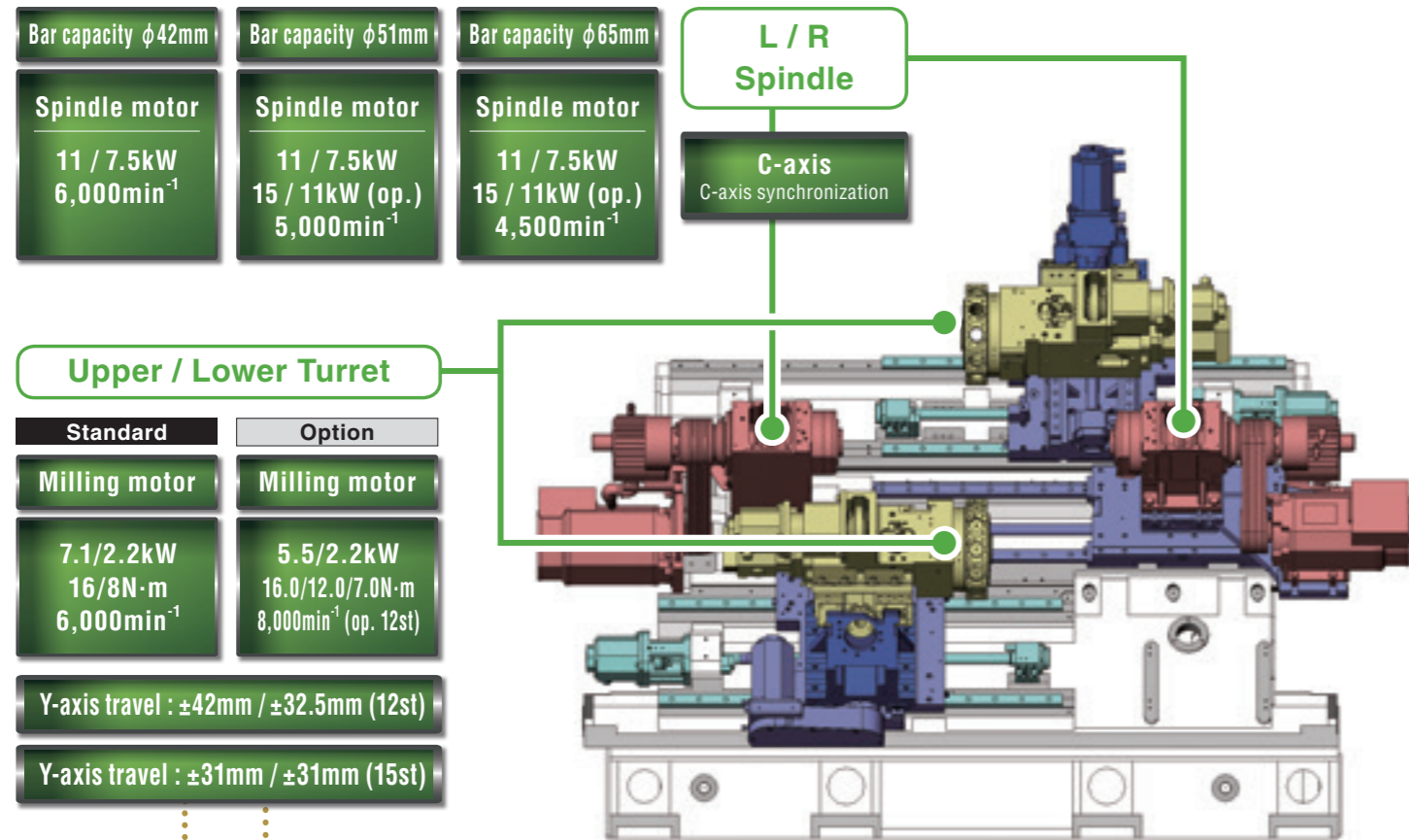
Turrets			
Number of turrets		2	
Driven-tool spindle speed		6,000min <sup>-1</sup> (op. 8,000min <sup>-1</sup> Only for 12-station turret)	
Drive motor		7.1/2.2kW (op. 5.5/2.2kW)	
Type of turret head / Number of indexing pos.	12st.	Dodecagonal drum turret / 24	
	15st.	15-station turret / 15	
Drive type / Number of 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						
L Spindle motor	Bar capacity	Spindle motor output		φ42		φ51		φ65		
		Spindle speed	Spindle speed	11/7.5kW	6,000min <sup>-1</sup>	11/7.5kW	5,000min <sup>-1</sup>	11/7.5kW	15/11kW	4,500min <sup>-1</sup>
				φ42	11/7.5kW	6,000min <sup>-1</sup>	○	○	○	○
φ51	11/7.5kW	5,000min <sup>-1</sup>	15/11kW	○	○	○	○	○	○	
			11/7.5kW	○	○	○	○	○	○	
φ65	11/7.5kW	4,500min <sup>-1</sup>	15/11kW	○	○	○	○	○	○	
			15/11kW	○	○	○	○	○	○	

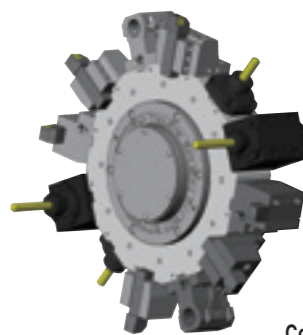
# WY-100II Evolution into High Productivity Multitasking Machines

# WY-100II Various applications and increased productivity



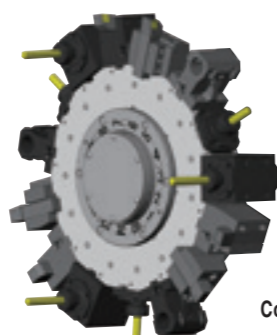
48 stations

30 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



### 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

## 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

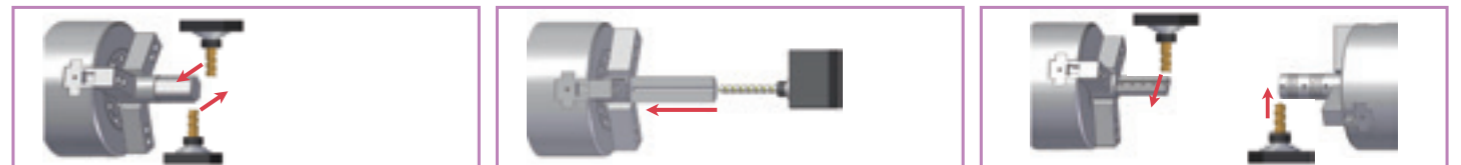


■ Balance cutting

■ Individual OD machining

■ Individual ID machining

### Milling

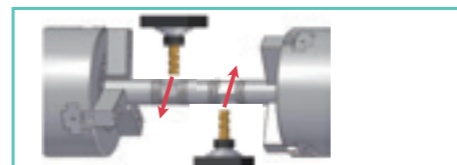


■ Simultaneous dual milling

■ Deep drilling

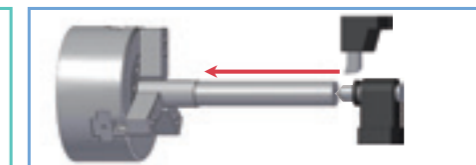
■ Individual milling on the left and right spindles

### Work-holding with 2 chucks



■ Simultaneous Y-axis milling with upper and lower tools

### Work-holding with Center support



■ OD cutting with Center support.

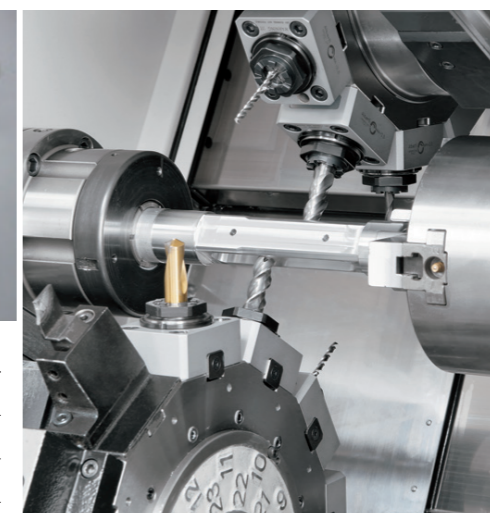


■ Increase work rigidity by PULL-Tension for Weak parts



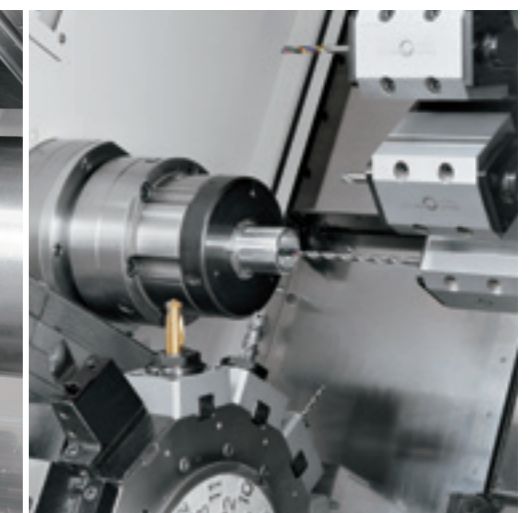
### Description

<b>Work name</b>	Yoke
<b>Type of industry</b>	Aeronautics industry
<b>Machining time</b>	11 min 30 sec
<b>Material</b>	Duralumin
<b>Material dimensions</b>	$\phi 42\text{mm}$ bar stock



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

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



deep hole milling operation

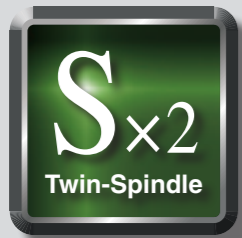
● **Type:** 20WHSB0600-SD  
 ● **Dia:**  $\phi 6\text{mm}$   
 ● **rpm:** 6000min<sup>-1</sup>  
 ● **Feed:** 0.35mm/rev  
 ● **Speed:** 113m/min  
 ● **Cutting depth:** 120mm(20D)  
 ● **Process time:** 7sec



# High-Performance Turning and

# Milling Motors.

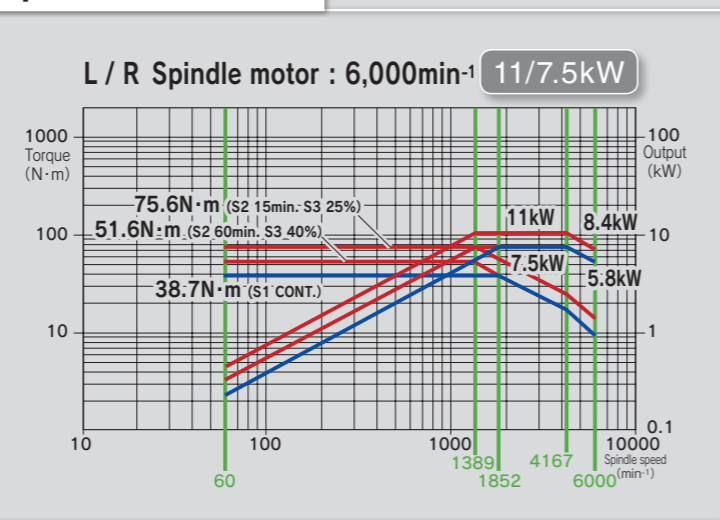
From simple to complex parts  
One hit machining from raw material to finished part



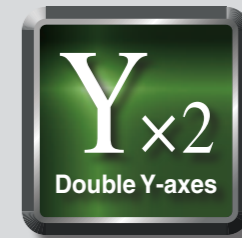
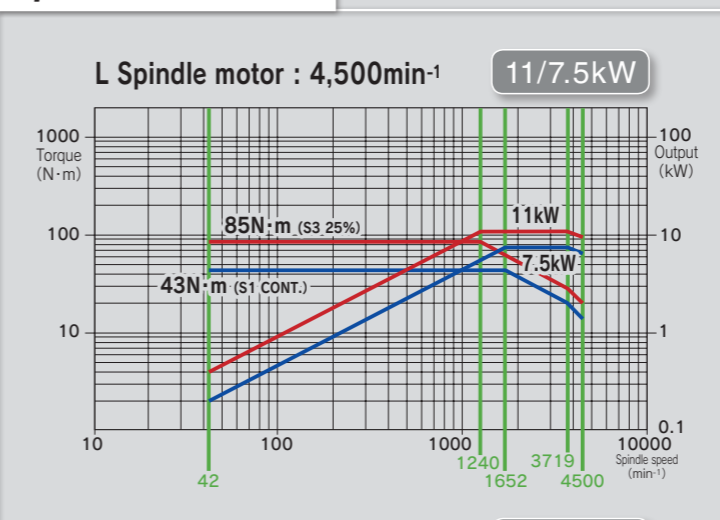
## WY-100II

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

φ 42mm **Standard**

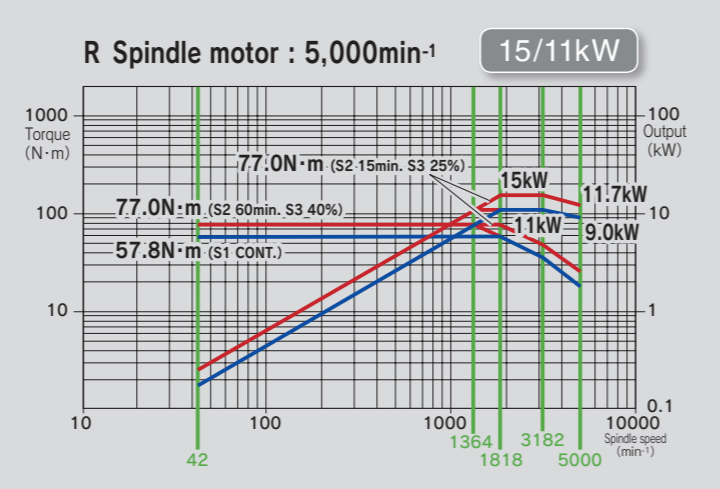
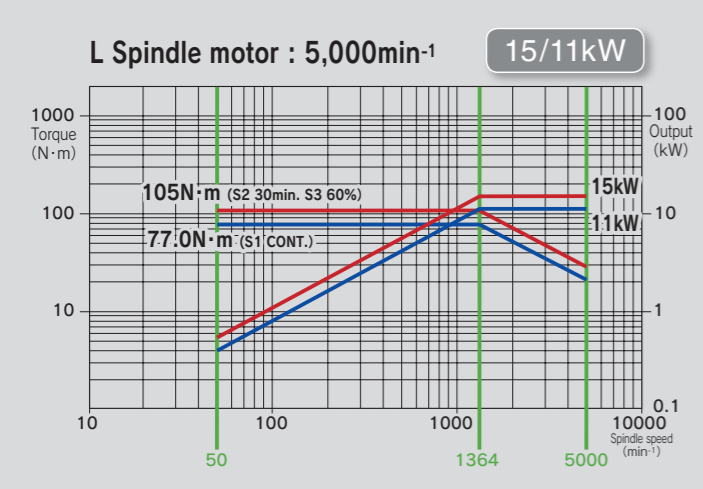
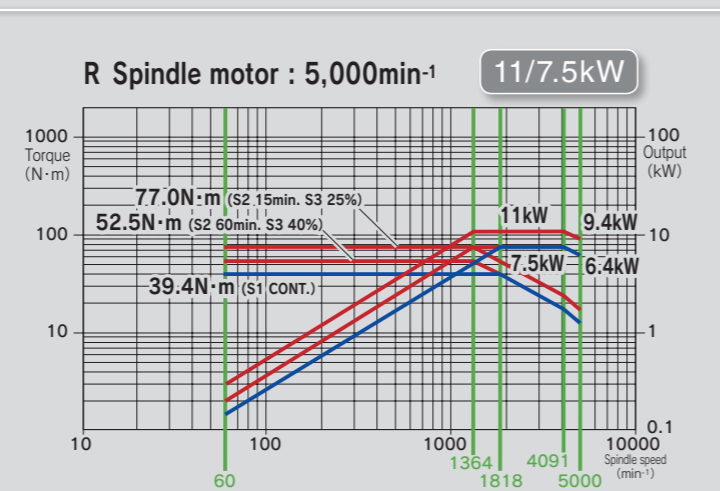
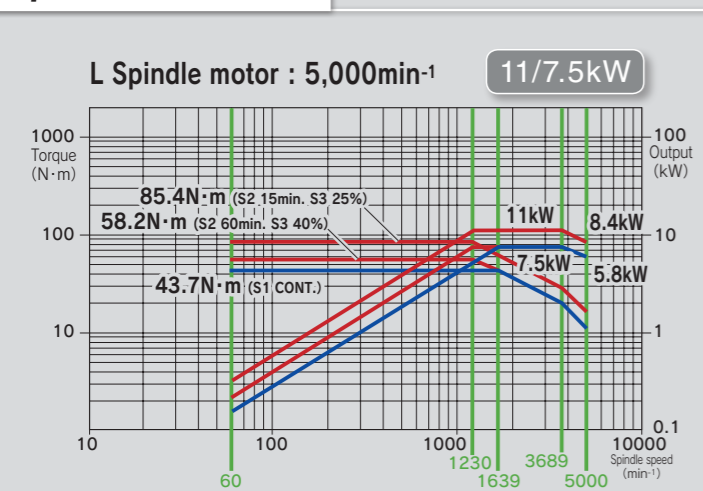


φ 65mm **Option**

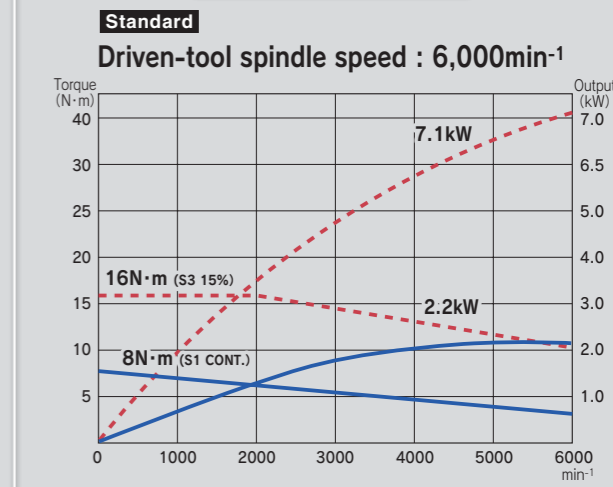


### Upper & Lower Milling Motors

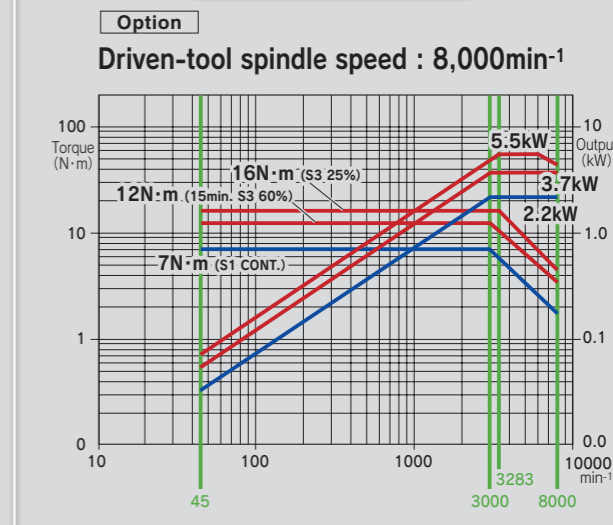
φ 51mm **Option**



**7.1 / 2.2kW**



**5.5 / 2.2kW**



# 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 x 2

Program storage length	Total 256Kbyte (640m)	Total 512Kbyte (1,280m)	Total 1Mbyte (2,560m)	Total 2Mbyte (5,120m)	Total 24Mbyte (10,240m)	Total 28Mbyte (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.

**Start Up Conditions [ UPPER ]**  
 W301 : FRONT DOOR IS NOT CLOSED  
 W303 : RETURN THE Y-AXIS ZERO POS.  
 W304 : MS-SETTING OF PROGRAM NO SEARCH  
 W306 : TURRET IS NOT CLAMPED  
 W307 : INTERLOCK OF THE BAR-FEEDER  
 W331 : TOOL IS NOT CLAMPED(TOOL-SPINDLE)

**Driven-tool Rotating Speed**  
 Cycle start condition is popping up by pressing reference position LED.  
 Color of perimeter becomes white when override setting is 100%.

**Waiting tool number for upper turret**  
**Spindle Status**  
 Selected head shown in blue color

**Work counter**  
 Remaining count Value

**Turret status display**  
**Machine status display**  
**Load status display**

**Reference position LED**  
 • Blue : Index ready  
 • Green : Reference position return  
 • Green Flashing : 2nd Reference position return  
 • Blue : Cycle start ready

**Spindle RPM**  
 Waiting tool number for lower turret

**Operating status display**  
 • Green : Automatic operation  
 • White : Feed hold  
 • Yellow : Warning  
 • Red flashing : Alarm

**Auxiliary information display**  
 Counter and Remaining counter information are displayed. Ticker can be stopped by touching the screen.

**Spindle load meter**  
 • Red : 120% -  
 • Yellow : 100% -120%  
 • Green : 0 -100%

**Load meter**  
 • Red : 120% -  
 • Yellow : 100% -120%  
 • Green : 0 -100%

**Shortcut bar**  
 Most used Icons can be registered at right side of display.

**Legend:**  
 Blank  
 Middle pf process  
 Part complete  
 Remnant  
 Quill

**Mode Indicators:**  
 Coolant status, Automatic mode, Manual mode, Manual mode

### G131 Soft work pusher

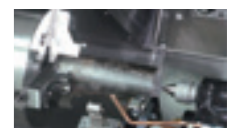
This cycle is used during part transfer from left to right side spindle. Once part contact with the jaws or stopper of the right side spindle has been confirmed, the right side spindle servo axis stops.



- 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



## 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.



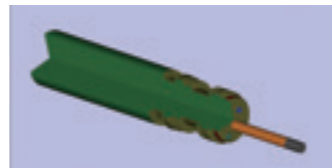
Simulation is performed to check the programs without running the machine. This helps prevent machine collisions due to programming or setup errors.

"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.

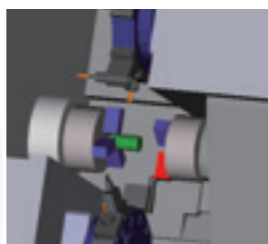
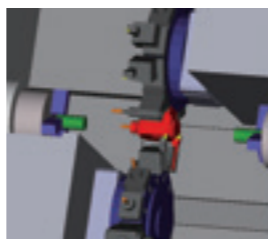
### NT Collision Guard



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.

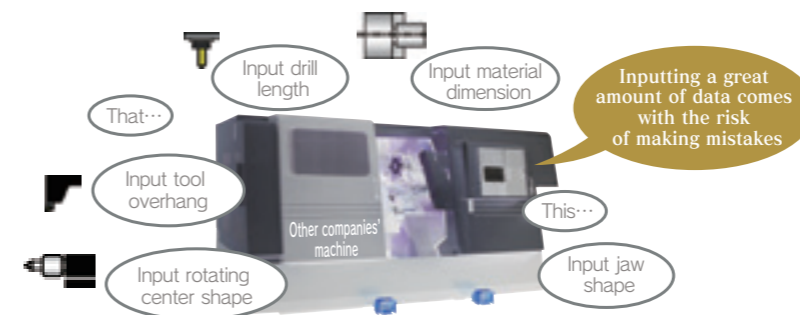


### Airbag (Overload detection)

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

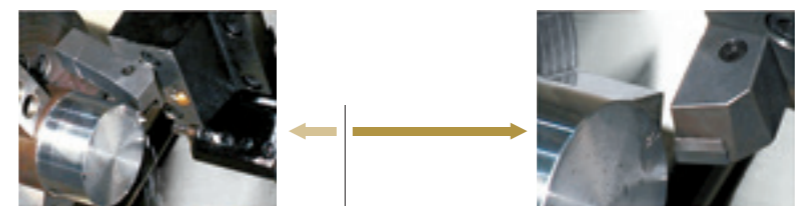
Even with barrier function, machine collisions may occur

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.

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.



▲ Video

\* This feature does not mean zero impact.

### NT Work Navigator

New Navigator for X-axis and Y-axis

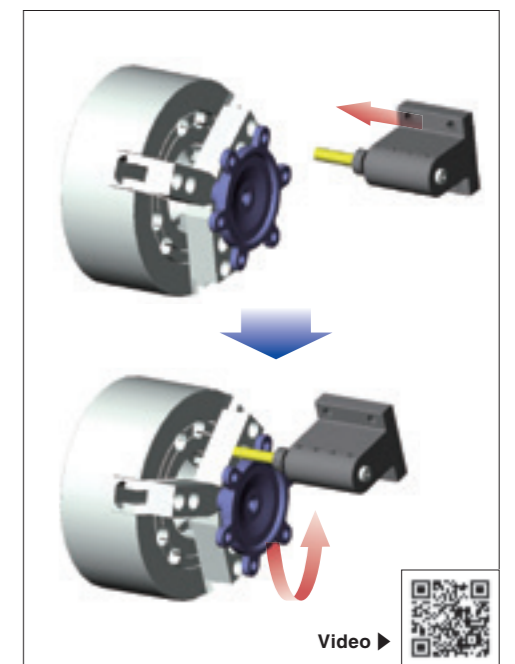


• Advanced NT Work Navigator !

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.



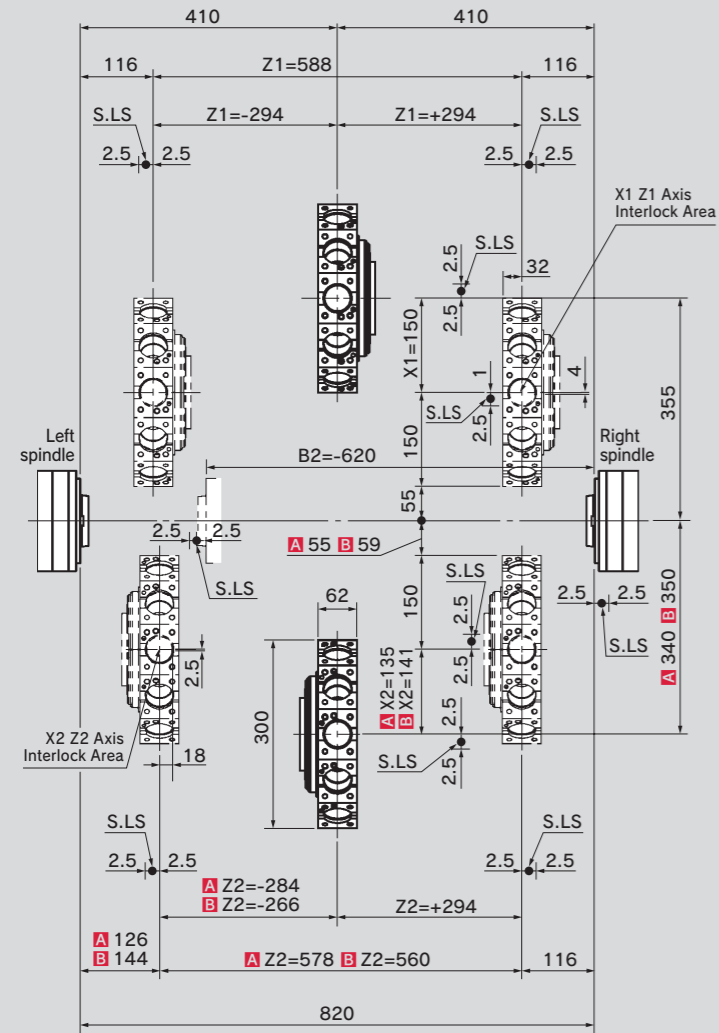
Video ▶





## Slide Travel Range

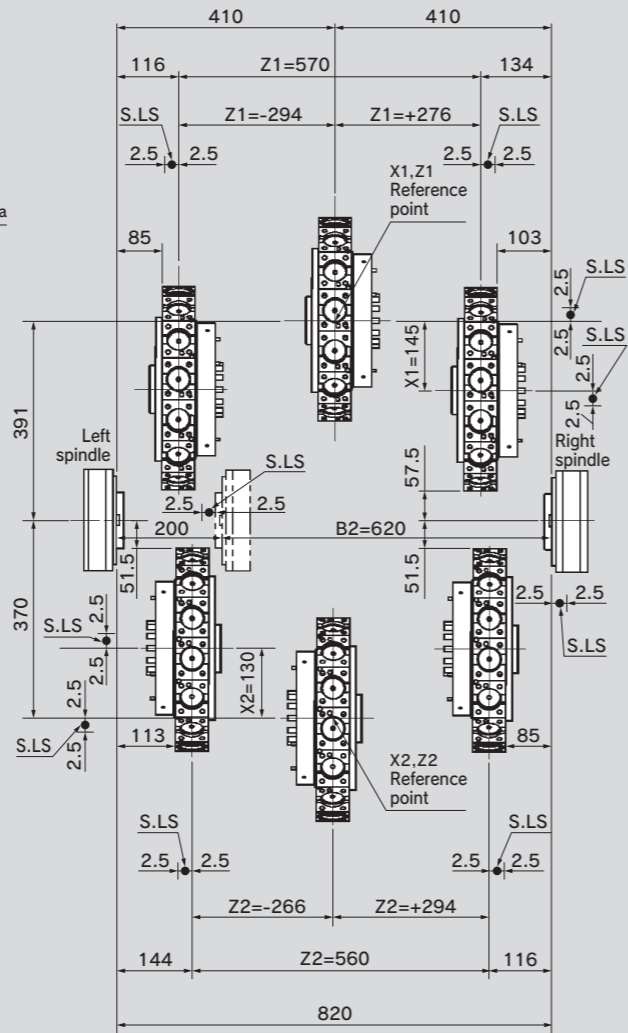
### 12 / 24 - Station



**A** : L, R  $\phi 42$   
**B** : L  $\phi 51, \phi 65$  / R  $\phi 42, \phi 51, \phi 65$

unit : mm

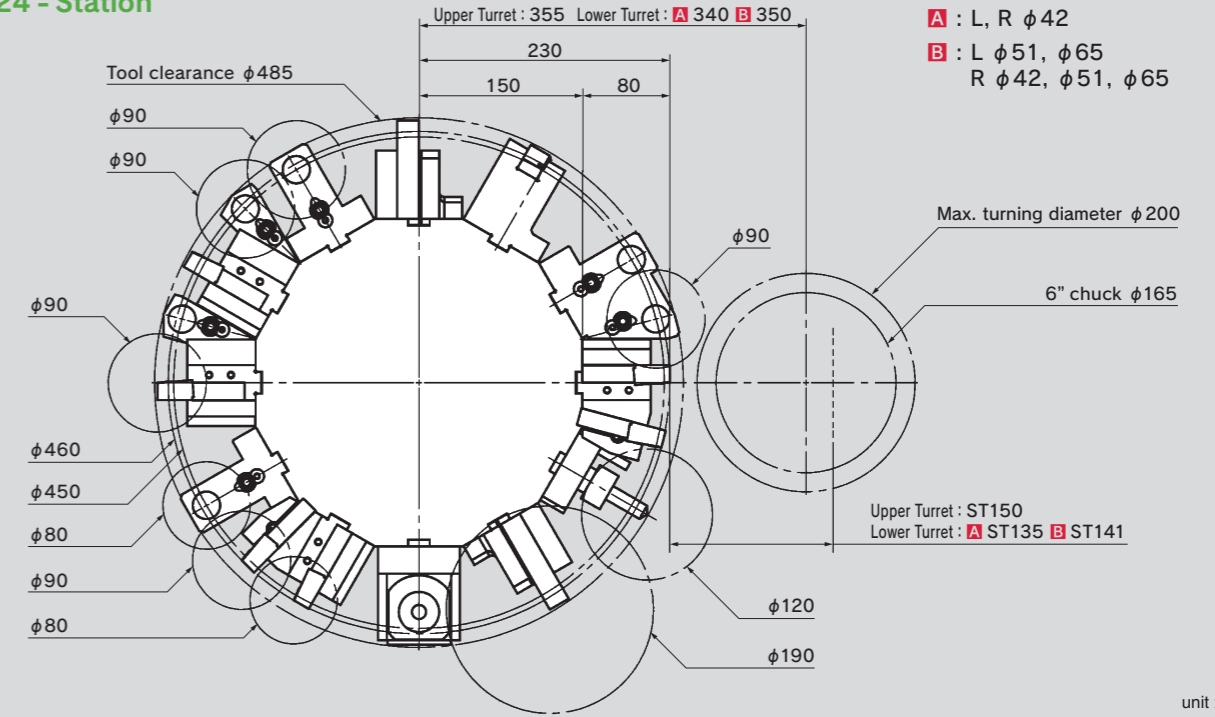
### 15 - Station



unit : mm

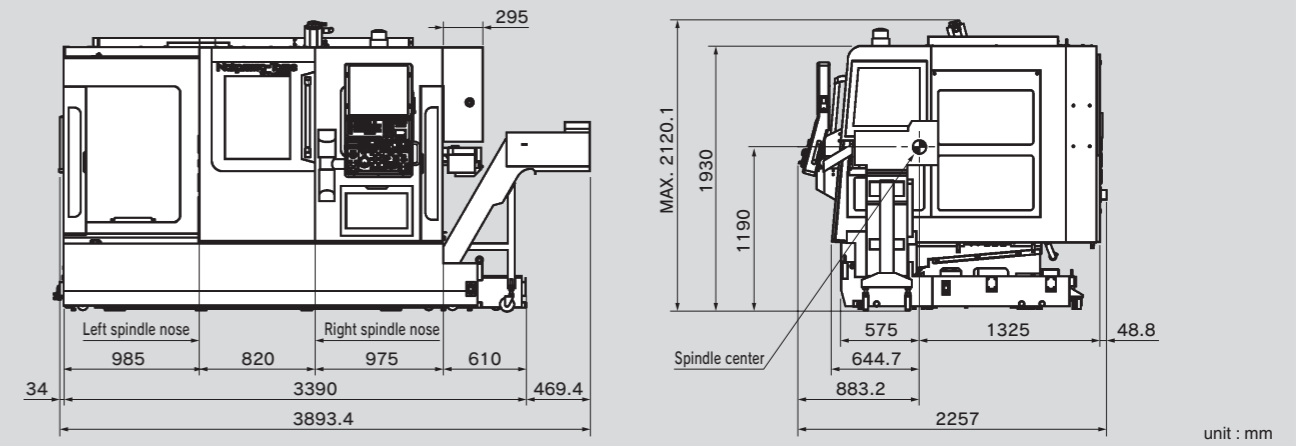
## Tool Interference

### 12 / 24 - Station



unit : mm

## Machine Dimensions



unit : mm

**WY** 2 Turret  
2 Spindle  
**S E R I E S**



WY-100II



WY-150



WY-250



WY-250L

$\phi 42$

6"

Standard Bar Capacity

Standard Chuck Size

$\phi 65$

8"





## **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 August, 2017. 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.