

WY-150

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

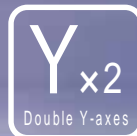
WY-150

High Productivity Multitasking Machine

From diversified small-lot production to mass production

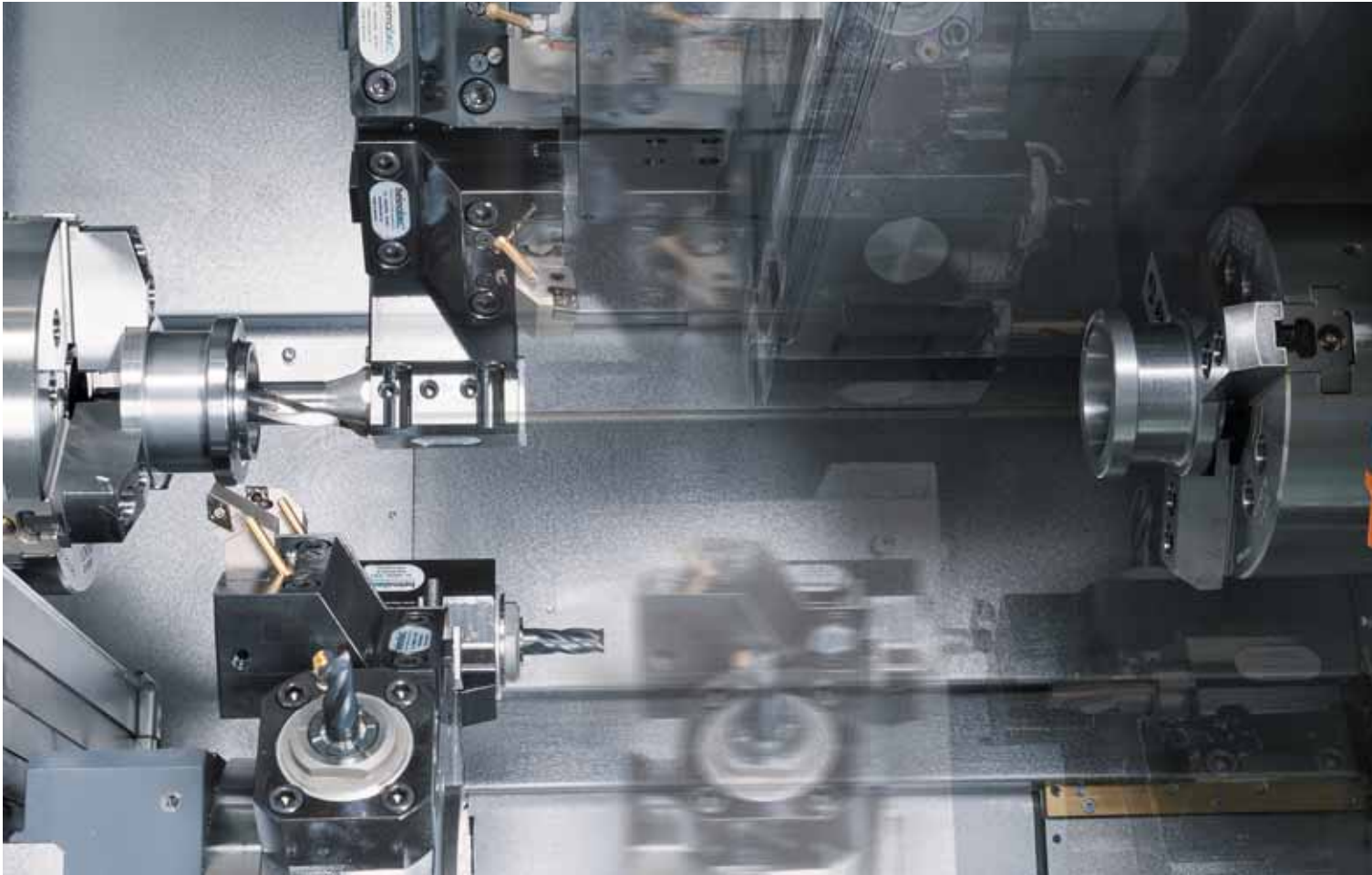
2 Turrets 2 Y-axes

One hit machining
Finished parts, complete in one setup



Compact Machine with Powerful Machining Capabilities





Simultaneous Drilling and OD Turning: Turning tool 25mm, boring bar Dia. 32mm

High Productivity

Top Leader of One-hit Machining

No work in process

Less setup time

Complete in one setup



48

12 / 24 - Station Turret

24 + 24

Up to 48 tool stations for turning and 24 tool stations for milling.

Double Performance!

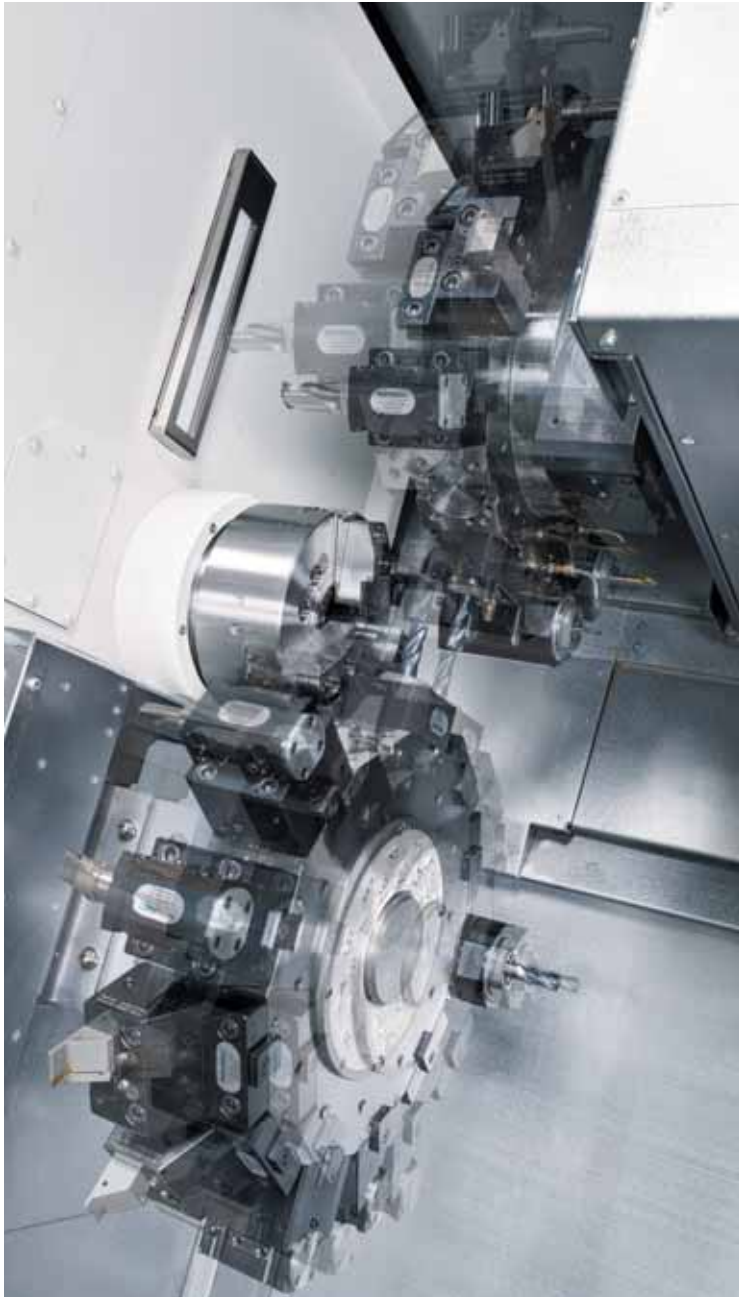
M_{x2}

Milling-tool motor
5.5/3.7kW × 2

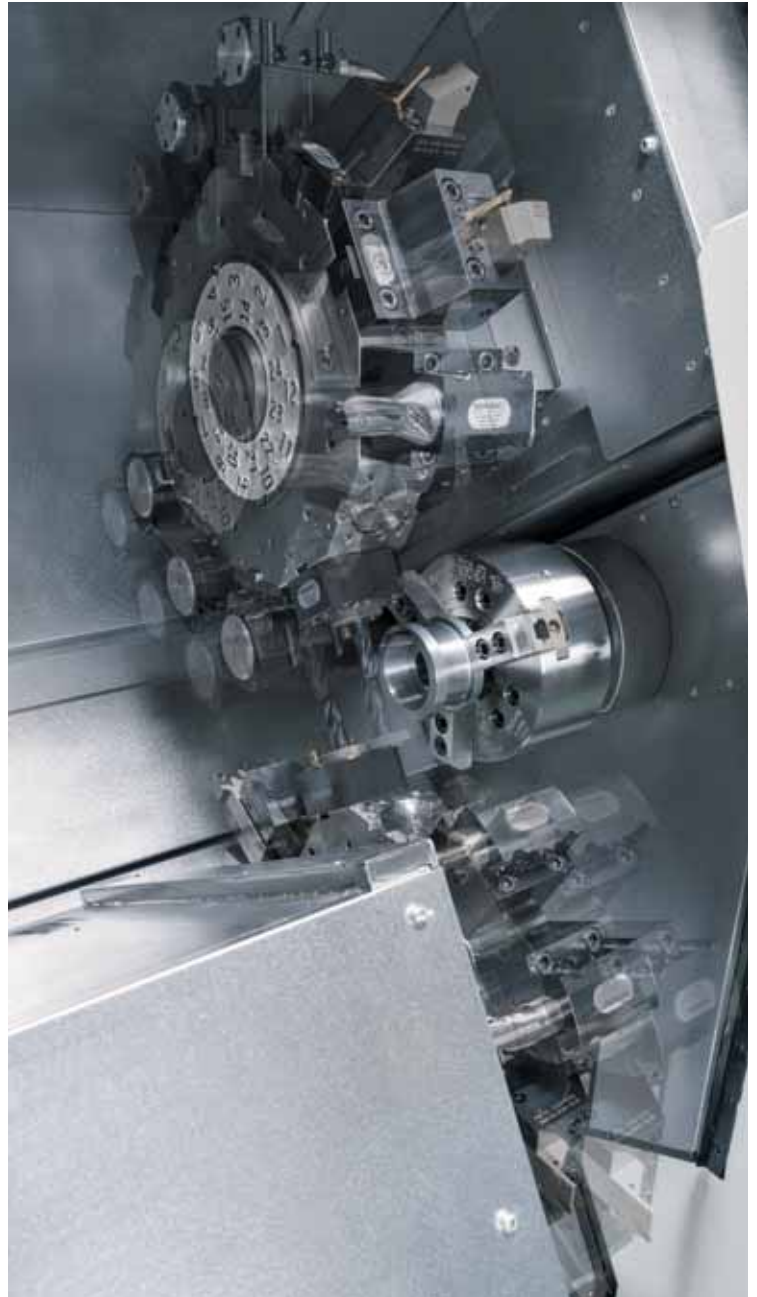
Y-axis on upper and lower turrets

Y_{x2}

Y-axis travel
Upper : ±45mm
Lower : ±35mm



Simultaneous milling with upper and lower turrets.



Milling tool : Dia 16mm

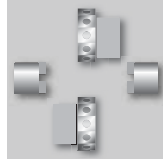
WY-150 High-Performance Milling Capabilities



State-of-the art Multitasking machine

19"
Color LCD
Touch Panel

NT
Smart
X



T_{x2}
Double turret

M_{x2}
Double Milling Motor

Y_{x2}
Double Y-axes

S_{x2}
Twin-Spindle

C_{x2}
C-axes

B₂
B-axis

Capacity	51mm	65mm (op.)
Max. turning diameter	225mm	
Max. turning length	565mm	
Distance between spindles	max. 850mm / min. 200mm	
Bar capacity	51mm	65mm (L only)
Chuck size	165mm (6")	
Axis travel		
Slide travel (X1 / X2)	160.5 / 160.5mm	
Slide travel (Z1 / Z2)	565 / 565mm	
Slide travel (Y1 / Y2)	±45 / ±35mm	
Slide travel (B)	650mm	
Spindle L, R		
Spindle speed	5,000min ⁻¹	4,500min ⁻¹
Spindle motor output (L / R)	15/11kW / 11/7.5kW (op.15/11kW)	
Turrets		
Number of turrets (Upper / Lower)	1 / 1	
Driven-tool spindle speed	6,000min ⁻¹	
Drive motor	5.5/3.7kW	
Type of turret head / Number of indexing pos.	Dodecagonal drum turret / 24	
Drive type / Number of driven-tool stations	Individual rotation / 12	
General		
Floor space (L×W×H)	3,814mm × 2,218mm × 2,010mm	
Machine Weight (incl.control)	9,500kg	

WY-150

WY-150 Machine Structure

48 stations

High-rigidity turrets

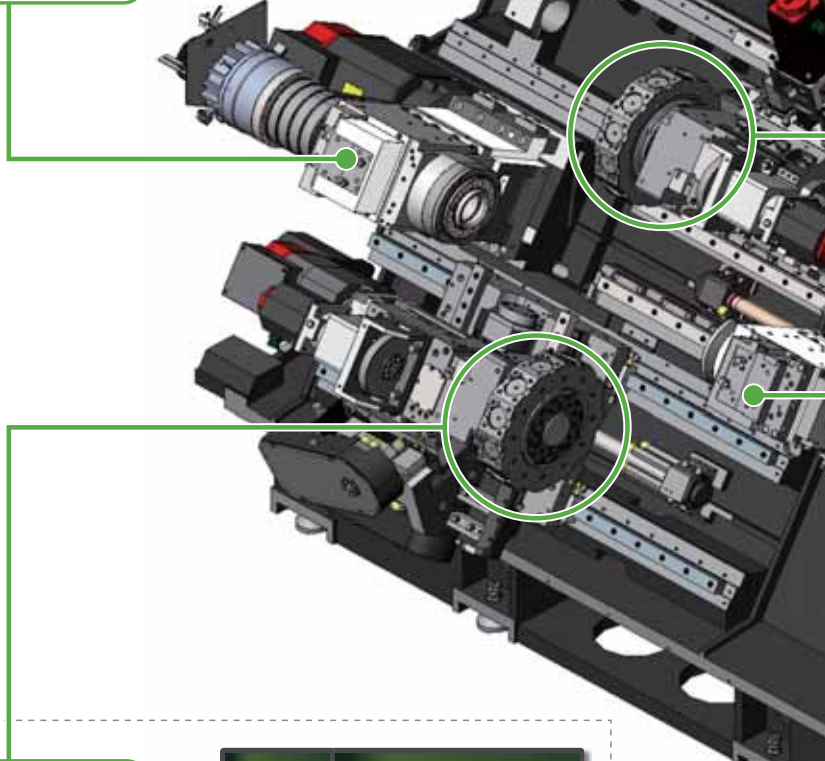
Bar capacity 51mm	Bar capacity 65mm
Spindle motor 15 / 11kW 5000min ⁻¹	Spindle motor 15 / 11kW 4500min ⁻¹
C-axis C-axis synchronisation	C-axis C-axis synchronisation
Standard	Option

Upper Turret



Lower Turret

Left Spindle



Lower Turret

12 / 24 station turret
Number of driven-tool stations : 12
Servo-driven turret

Milling motor	5.5/3.7kW 24/16N·m 6000min ⁻¹
Y-axis travel ±35mm	
Standard	

Ensures Stable Accuracy

12 / 24 station turret

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

Milling motor
5.5/3.7kW
24/16N·m
6000min⁻¹

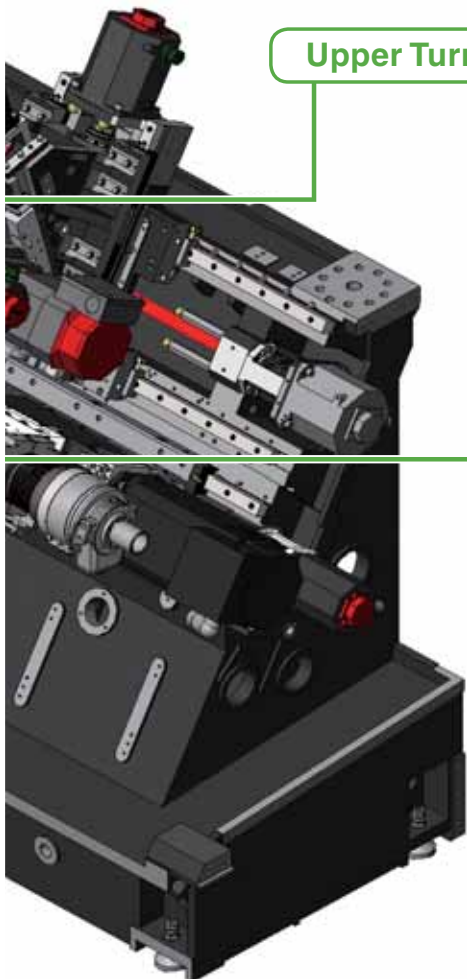
Y-axis travel ±45mm

Standard



Larger window ensures better visibility

Upper Turret



Right Spindle

Bar capacity 51mm

Spindle motor

11 / 7.5kW
5000min⁻¹

C-axis

C-axis synchronisation

Standard

Bar capacity 51mm

Spindle motor

15 / 11kW
5000min⁻¹

C-axis

C-axis synchronisation

Option



Parts catcher G

Option

Method		Swing / Gripper
Workpiece size	Diameter [mm]	12 - 65
	Length [mm]	15 - 150
	Weight [kg]	3.0
Ejecting method		Belt conveyor & Chute



WY-150

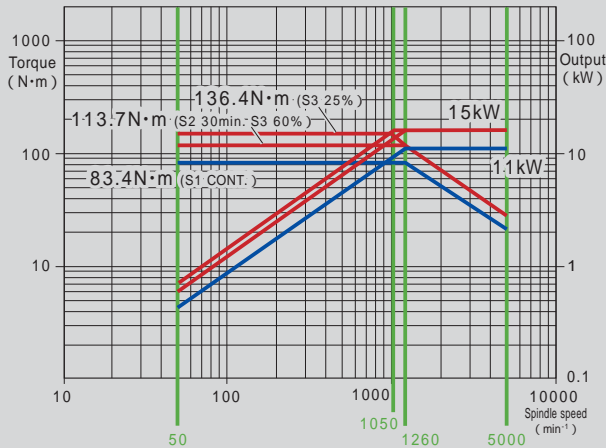
Simultaneous machining with synchronized left and right spindles contributes to faster cycle times.

Left Spindle Motors

15 / 11kW

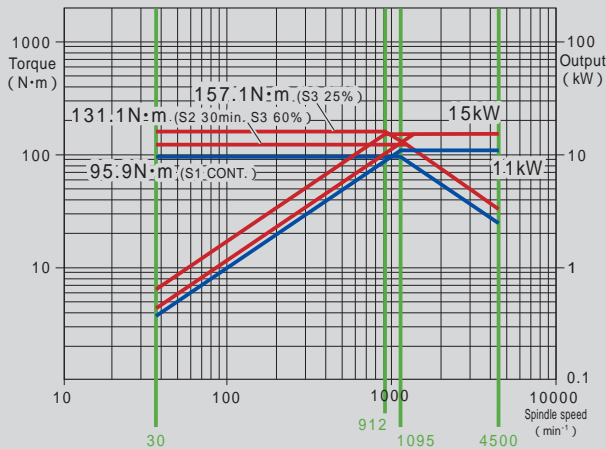
Standard

Rotating speed : 5,000min⁻¹ 51mm



Option

Rotating speed : 4,500min⁻¹ 65mm

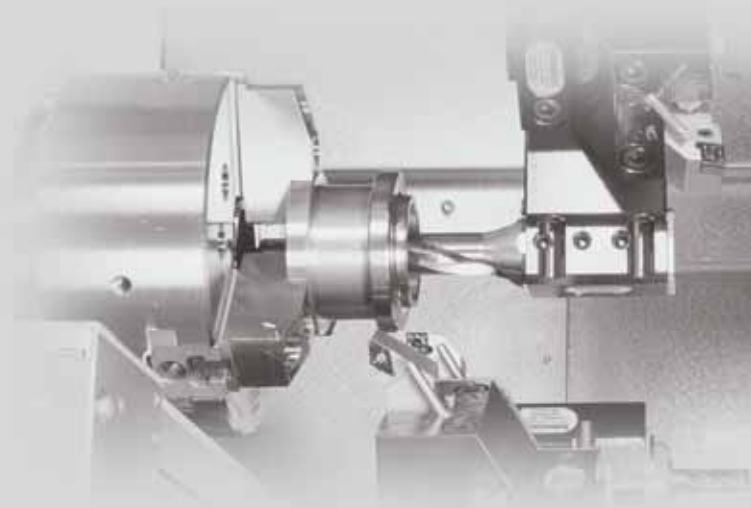
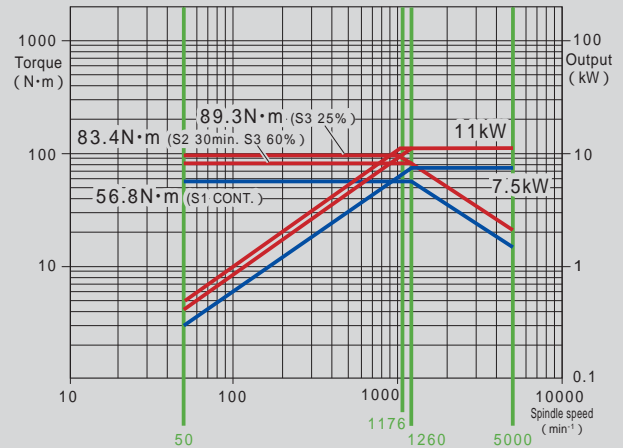


Right Spindle Motors

11 / 7.5kW

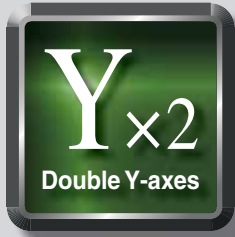
Standard

Rotating speed : 5,000min⁻¹ 51mm



Milling Motors.

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

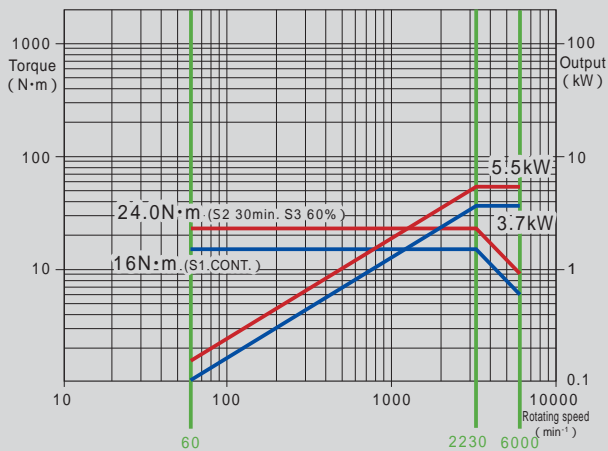


Upper & Lower Milling Motors

5.5 / 3.7kW

Standard

Rotating speed : 6,000min⁻¹



Advanced Production System



Cut-in Check

- 19 inch color LCD Touch panel • PC memory 8GB • QWERTY Key board • Windows 8 • Touch Pad • USB 2.0 port × 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 (op. Total 999)					

Standard / Option

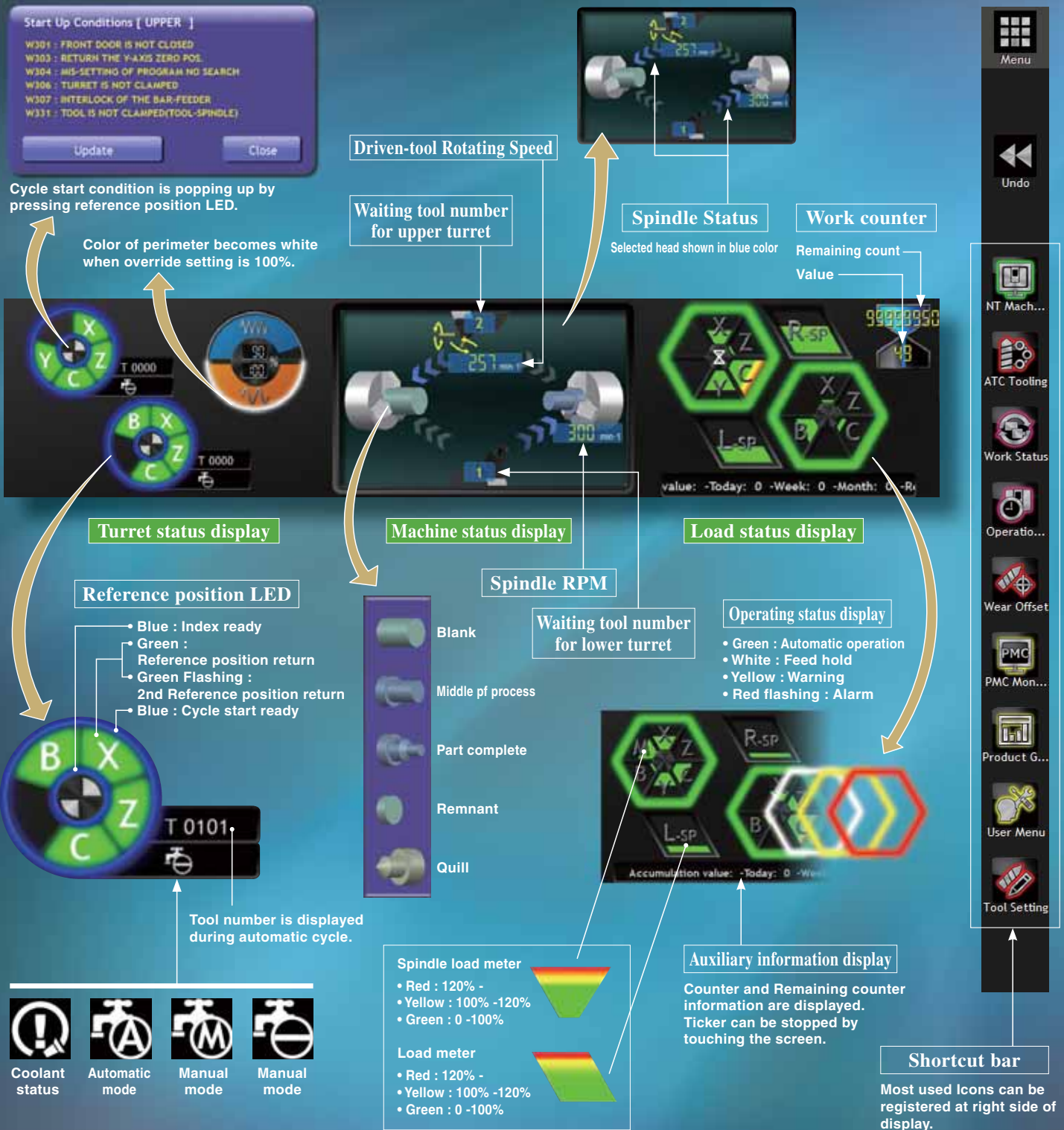
Main features

- 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

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 the collision due to tooling, chuck, and 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.

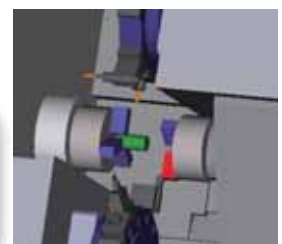
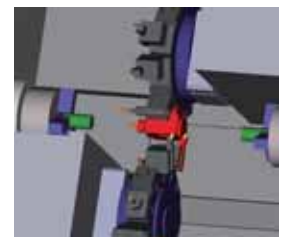
NT Collision Guard



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.



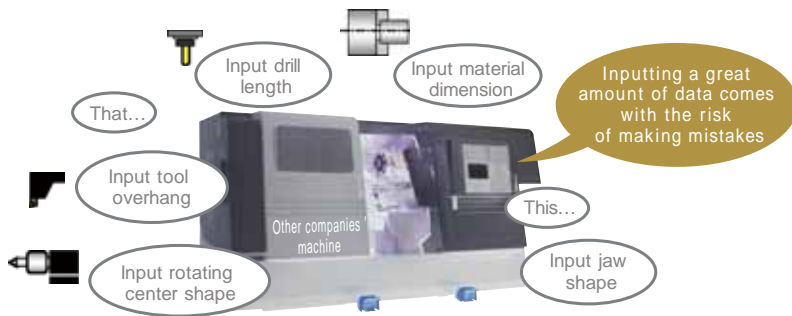


Airbag (Overload detection)

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.

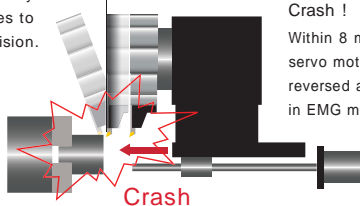
All Nakamura-Tome machines are equipped with a safety feature called "airbag" (overload detection), which will greatly reduce the impact force and prevent heavy damage to the machine.



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

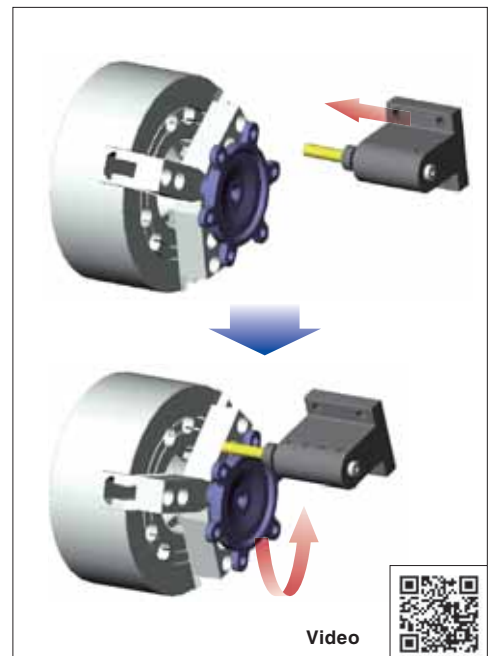


• Advanced NT Work Navigator !

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

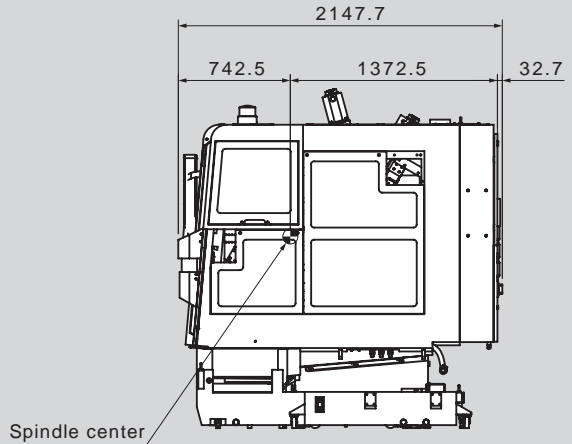
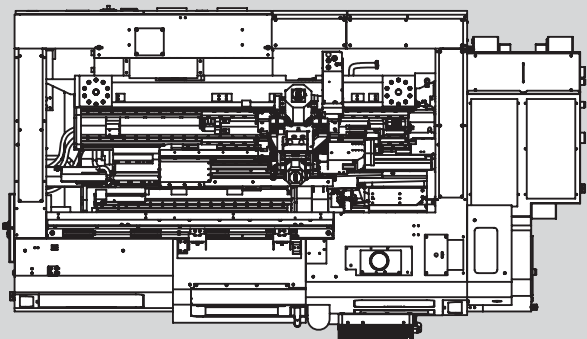
Machining parts with non-round shapes, such as forgings or castings requires that the raw part coordinates be recognized by the CNC control. In order to achieve this without requiring extra cost or additional options, the NT Navigator is used. It works just by touching the part with a simple inexpensive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



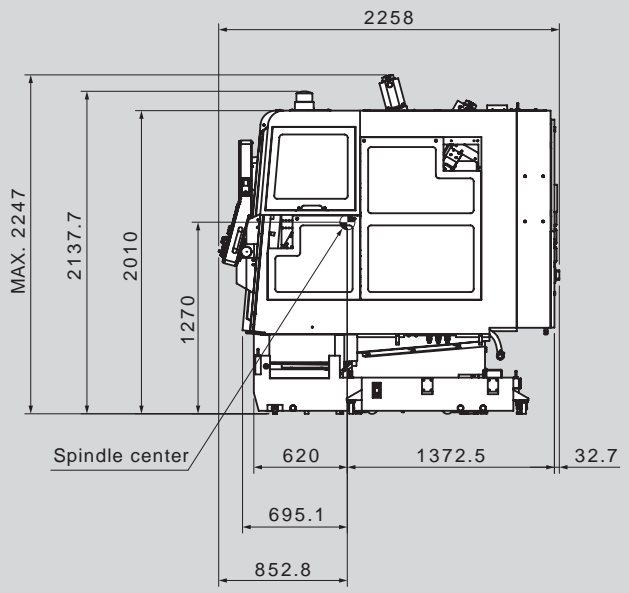
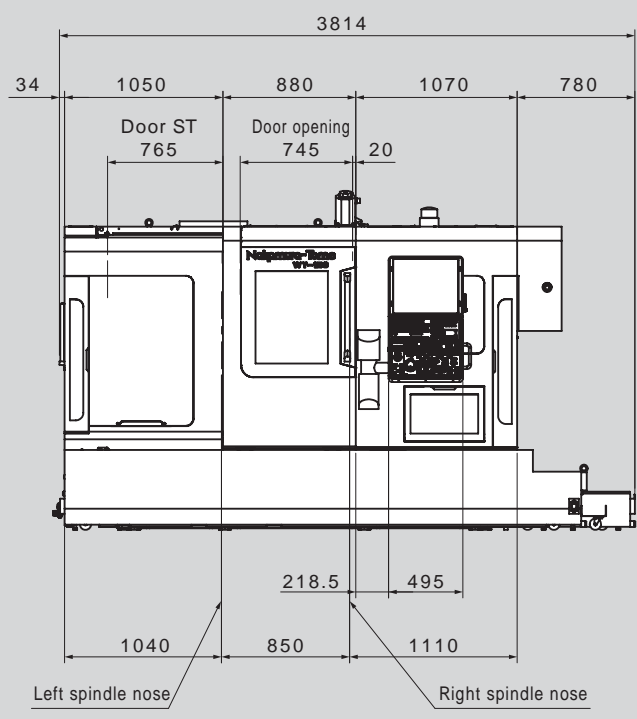
Video



Machine Dimensions



Dimensions : when control panel is stored away for transport.

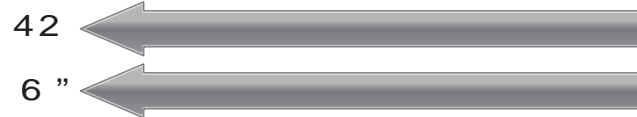


Unit : mm

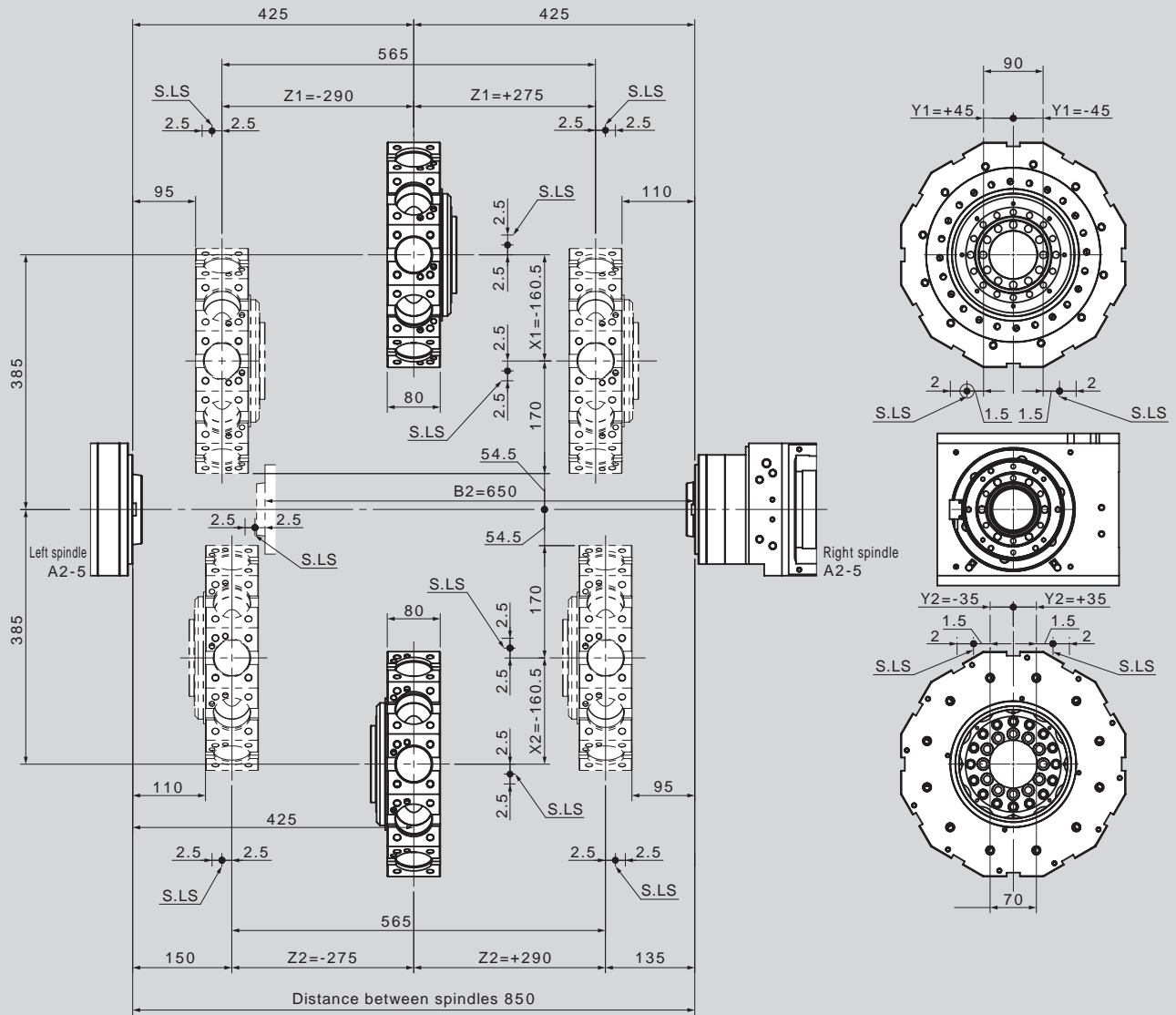
WY 2T 2Y
S E R I E S



WY-100II



Slide Travel Range



Unit : mm



WY-150



WY-250



WY-250L

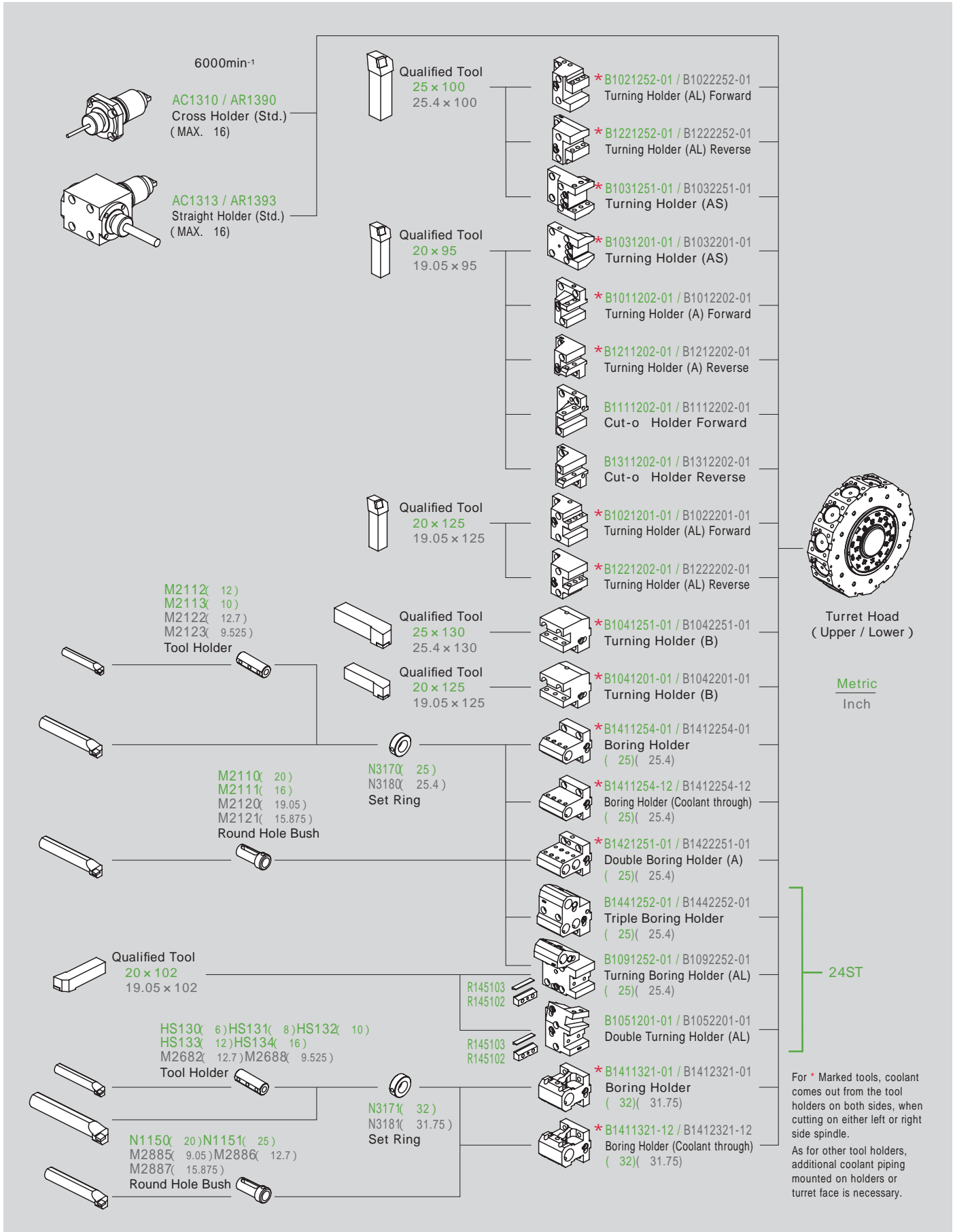
Standard Bar Capacity

80

Standard Chuck Size

8"

Tooling System Diagram



Machine Specifications

Capacity	51mm	65mm (op.)
Max. turning diameter	225mm	
Standard turning diameter	150	
Distance between spindles	max. 850mm / min. 200mm	
Max. turning length	565mm	
Bar capacity	51mm	65mm (L only)
Chuck size	165mm (6")	
Axis travel		
Slide travel (X1 / X2)	160.5mm / 160.5mm	
Slide travel (Z1 / Z2)	565mm / 565mm	
Slide travel (Y1 / Y2)	±45mm / ±35mm	
Slide travel (B2)	650mm	
Rapid feed X1 / X2	20m/min ⁻¹	
Rapid feed Z1 / Z2	40m/min ⁻¹	
Rapid feed B2 axis	40m/min ⁻¹	
Rapid feed Y1 / Y2	8m/min ⁻¹	
Left and right spindles		
Spindle speed	5000min ⁻¹	4500min ⁻¹
Spindle speed range	Stepless	
Spindle nose	A2-5	A2-6
Hole through spindle	65mm	80mm
I.D. of front bearing	90mm	110mm
Hole through draw tube	52mm	66mm
C-axis		
Least input increment	0.001°	
Least command increment	0.001°	
Rapid index speed	600min ⁻¹	
Cutting feed rate	1- 4800°/min	
C-axis clamp	Disk clamp	
C-axis connecting time	1.5 sec.	
Upper & Lower turrets		
Type of turret head	Dodecagonal drum turret	
Number of driven-tool stations	12	
Number of index positions	24	
Tool size (square shank)	25mm	
Tool size (round shank)	32mm	
Rotating tool		
Rotary system	Individual rotation	
Driven-tool spindle speed	6000min ⁻¹	
Spindle speed range	Stepless	
Number of driven-tool station	12	
Tool shank	Straight holder 1mm - 16mm	Cross holder 1mm - 16mm
Drive motor		
L-spindle	15/11kW	
R-spindle	11/7.5kW (op.15/11kW)	
Driven tools	5.5/3.7kW	
General		
Height	2,200mm	
Floor space (L x W)	3,814mm x 2,218mm	
Machine weight (incl. control)	9,500kg	
Power requirements		
power supply	37.7kVA	
Air supply	360 - 410NL/min, 0.5 - 0.7MPa	

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 Specifications

items	
Control type	FANUC 31i-B 2-PATH
Controlled axes	
Controlled axes	9axes
Least command increment	Upper : 4axes (X1, Z1, C1 [C2], Y1) Lower : 4axes (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	±999999.999mm / ±39370.0787inch, ±999999.999°
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	
feed / min X	1 - 8000mm/min, 0.01 - 314in/min (1 - 4800mm/min, 0.01 - 188in/min)
Z	1 - 8000mm/min, 0.01 - 314in/min (1 - 4800mm/min, 0.01 - 188in/min)
C	1 - 4800°/min
Y	1 - 8000mm/min, 0.01 - 314in/min (1 - 4800mm/min, 0.01 - 188in/min)
B2	1 - 8000mm/min, 0.01 - 314in/min (1 - 4800mm/min, 0.01 - 188in/min)
feed / rev	0.0001 - 8000.0000mm/rev (0.0001 - 4800.0000mm/rev) 0.000001 - 50.00000in/rev
The maximum cutting feed rate is the value in AI contour control mode. 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) (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
Axis recomposition	Standard (used for L C-axis control - R C-axis control from the lower side)
Sub program	Standard
Balance cut	G68, G69
Custom macro	Standard (common variable#100 - #149, #500 - #549)
Additional customer macro 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 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



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