

JX-250

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

In pursuit of
genuine Multitasking

Innovation
Technology

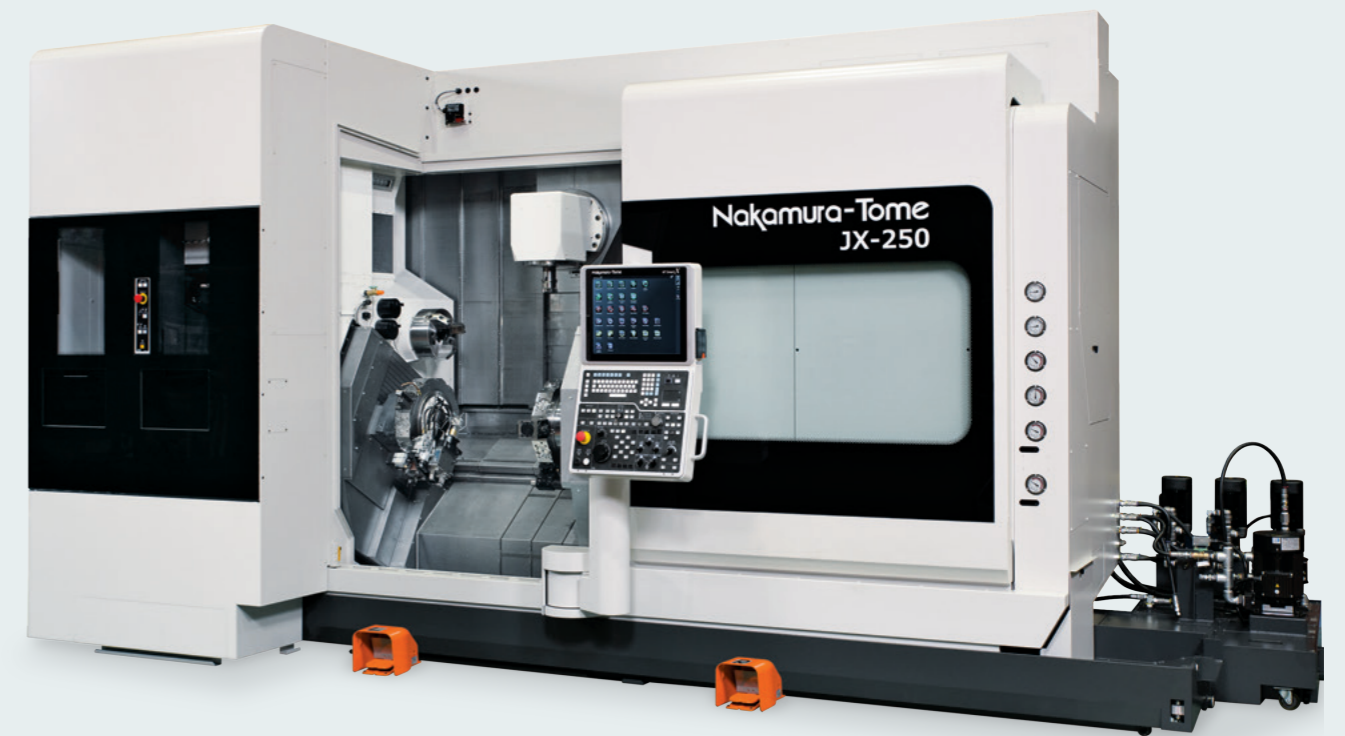
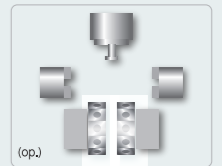
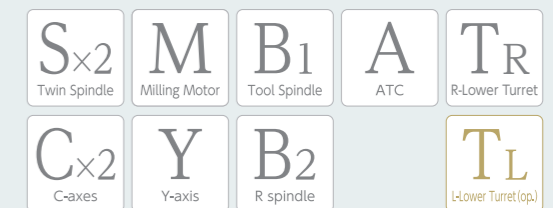
~ Creation of new values ~

JX-250

State-of-the-art Multitasking machine with tool spindle, ATC and two lower turrets* with Y-axis. Featuring a rich software portfolio and "Smart Cube", the world's most-compact Tool Spindle in its class, this machine responds to the most complex machining needs.

* L side turret (op.)

- "NT Smart Cube" is the World's Shortest Tool-Spindle in its class
- ATC tool spindle motor 22/15kW
Tool spindle speed 12,000min⁻¹ (op. 20,000min⁻¹)
- Number of tools 80 (op. 40,120)
- X-axis travel below spindle center is 125mm
Y-axis travel is +/-125mm from the spindle center
- Milling and Y axis are standard on the left and right side lower turrets (left side lower turret is op.)
The two-turret machine features a lower Z-axis cross-over stroke (R:490mm, L:140mm), responding to a wider machining range, especially for longer parts.
- 5.5/3.7kW milling motor on the lower turret
Rotation speed 6,000min⁻¹
- Floor space 5,550mm × 3,257.7mm (including standard coolant tank)
- Substantial software lineup



Having the world's most compact tool spindle in its class, this machine is featuring phenomenal machining capabilities

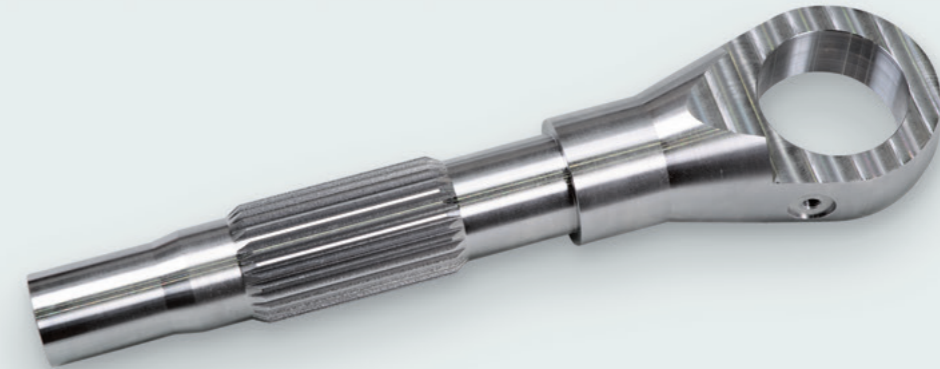


With NT Smart Cube, the world's most compact tool spindle in its class, this machine was developed to make effective use of a wide machining area. Additionally, it is featuring high performance Tool Spindle motors with up to 22/15kW (op.), an ATC with a capacity of up to 120 tools (op.), twin-turrets* (2nd turret op.) equipped with Y-axis as standard, as well as crossover stroke on the lower Z-axis, which together contribute to unprecedented machining capabilities for a wide range of complex parts.

In addition, the user friendly "NT Thermo Navigator AI" provides precise thermal compensation settings, resulting in stable high-accuracy machining.

Nakamura-Tome multitasking machines are not only known for high machining capabilities, but are also admired for their "high rigidity" and "high precision".

* (L side turret op.)



Turning



L-Spindle

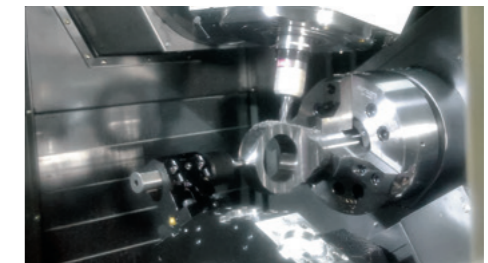
- Spindle motor **15/11kW**
18.5/15kW(op.)
- Spindle speed **4,500min⁻¹**
3,500min⁻¹(op.)

R-Spindle

- Spindle motor **15/11kW**
- Spindle speed **4,500min⁻¹**

-
- Cutting cross section **3.3mm²/rev**
 - Depth of cut **6mm**
 - Feed **0.55mm/rev**
 - Cutting speed **120m/min**

Milling



Tool spindle

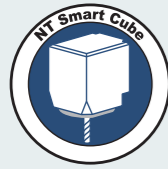
- Spindle motor **22/15kW**
- Tool spindle speed **12,000min⁻¹**
20,000min⁻¹(op.)

- B-axis swivelling range **±120°**

- Y-axis travel **±125mm**

Lower turret

- Motor power **5.5/3.7kW**
- Milling spindle speed **6,000min⁻¹**



The World's Machine Structure Tool-Spindle*
NT Smart Cube

The world's shortest tool spindle in its class. Thanks to the ultra-compact size of the Tool Spindle, interference is reduced, and a wider machining area is ensured.
* Based on our survey in the multitasking machine market

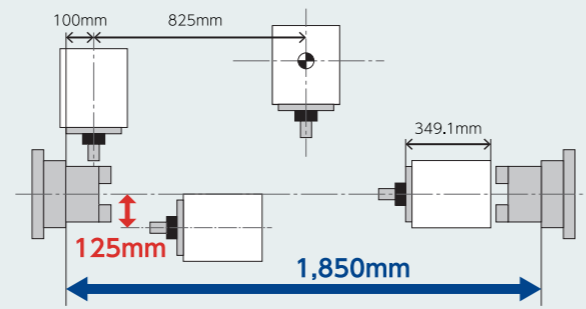
■ Tool Spindle (NT Smart Cube)

Length **349.1mm**

Tool spindle motor **22/15kW**
12,000min⁻¹
20,000min⁻¹ (op.)

Max.tool diameter (without adjacent tool): **Φ130mm**
Max.tool length: **300mm**

240° rotation



■ L-spindle Φ65 / Φ71 (op.) / Φ80mm (op.)

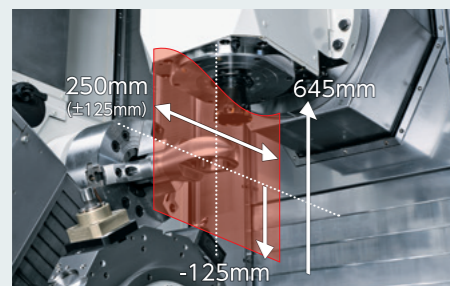
L-spindle motor **15/11kW**
18.5/15kW (op.)
*For φ80, only 18.5/15kW.
4,500min⁻¹
3,500min⁻¹ (op.)

■ R-spindle Φ65 / Φ71mm (op.)

R-spindle motor **15/11kW**
4,500min⁻¹

■ L-lower turret(op.) & R-lower turret

Milling spindle motor **5.5/3.7kW**
6,000min⁻¹

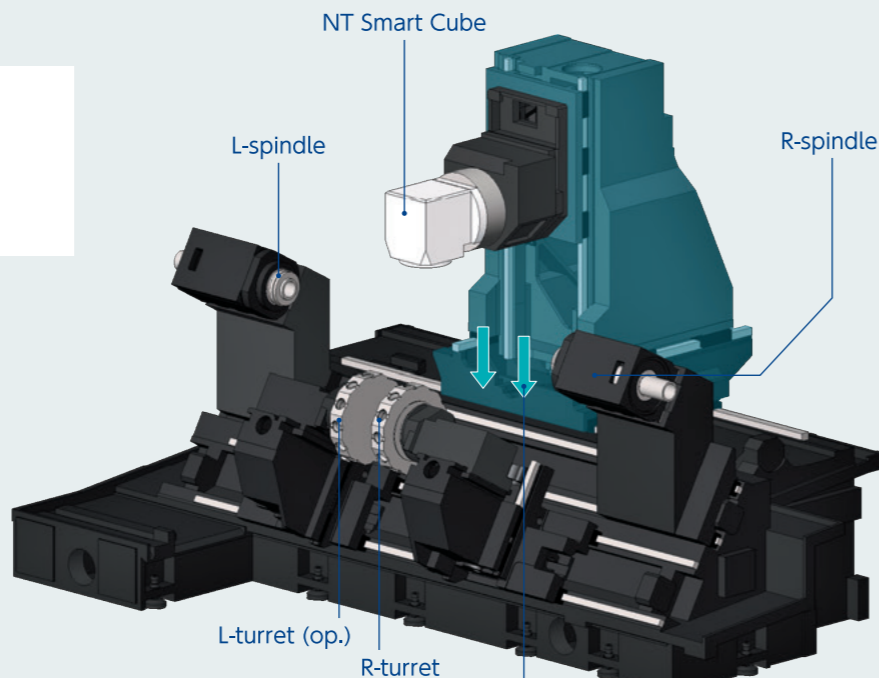


High accuracy milling

Thanks to large Y-axis travel and 125mm X-axis travel beyond the spindle center, various machining operations can be performed without rotating the C-axis, such as square milling in the X-Y plane or deep hole drilling in the X-axis direction, ensuring faster cycle time and higher precision.

Vertical column structure

Strong and stable structure, where the load is evenly applied.



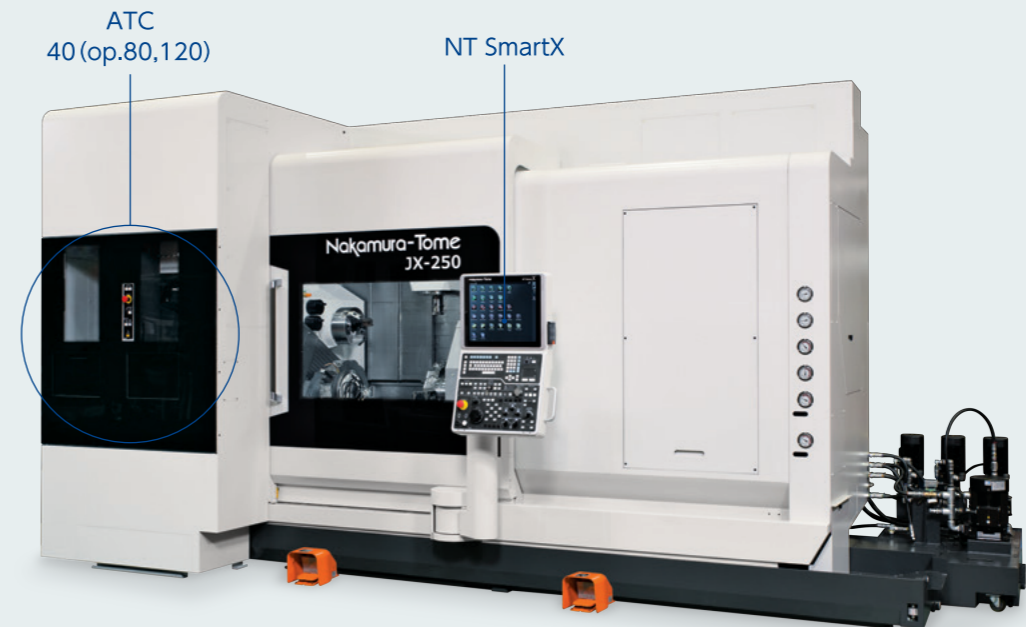
168stations
Up to 168 tools available !

In addition to 120 qualified ATC tools (op.) for the Tool Spindle, up to 24x2 tools can be mounted on the lower turrets.



ATC Maintenance Navigator

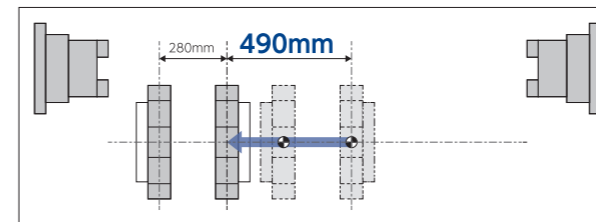
In addition to information about the ATC status and position of the Alarm, the step by step ATC recovery guidance screen ensures fast ATC recovery and shorter machine down time.



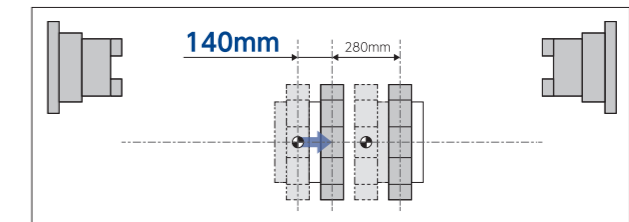
Cross Over Travel for Lower Z-axis (op. L lower turret)

When one turret is retracted in the Z-axis direction, the other turret can be advanced beyond its Z-Axis reference point, ensuring a larger Z-axis travel. This greatly increases the machining range of the lower turrets.

■ R-lower turret / Z2 stroke



■ L-lower turret / Z3 stroke

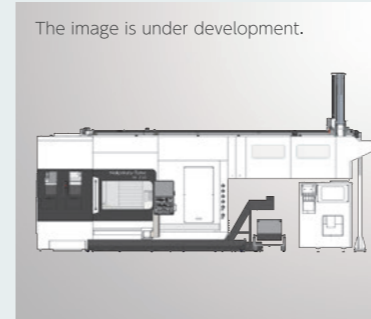


Various Options to Meet Customers Needs. Total Provider for Peripheral Equipment.

Whether it is machine set up, cutting chip management, higher efficiency or improved productivity, Nakamura-Tome offers top class peripheral equipment, which boosts the performance of our Multitasking Machines. As a total solution provider with numerous achievements, Nakamura-Tome offers complete solutions, including Multitasking Machines complemented with a variety of peripheral equipment.



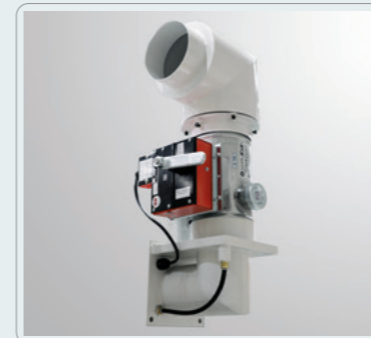
Image steady rest is optional



The image is under development.
Gantry Loader (GR-210 High-Speed)
※Right outlet only



Work stocker(W5-442W/445W)



Fire protection damper



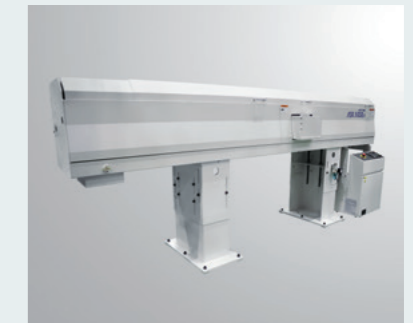
Connection Duct for Oil Mist Collector



Han-Bei (In-process measuring system)



Chip conveyor



Bar feeder



Signal tower



Coolant pump



Tool setter

and many others ...
For not Listed Items, please contact your Nakamura-Tome representative.

NT Smart X

Full Operator Support from Ease of Use to Reliability

Main features of NT SmartX

Standard

- NT Work Navigator
- Airbag (Overload detection)
- NT Nurse function
- Status Display Function
- Setup Display
- Trouble Guidance
- Productivity Function
- Warm up Function
- Parts Catcher G Operation Function
- NT Machine Simulation
- NT Collision Guard
- NT Multitasking Office (op.)
- NT Thermo Navigator AI
- NT Smart Sign
- Digital Chuck interlock
- One touch MDI function

- 19 inch color LCD touch panel
- QWERTY keyboard
- PC memory 8 GB
- Original Menu screen
- Voice Guidance
- Multiple-Touch screen
- Touch pad



- Powered by AI as standard equipment
- NT Thermo Navigator AI
- 3D Smart Pro AI



Cut in check

NT Smart Sign

Nakamura-Tome IoT software

※Please refer to the NT Smart Sign exclusive catalog for details.

■ Monitoring



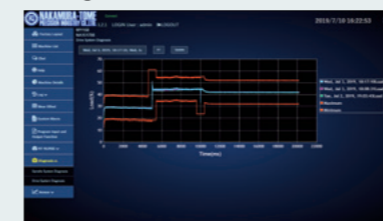
Real Time Monitoring of machine running conditions, in addition to visualizing alarm history and past events.

■ Data Input / Output

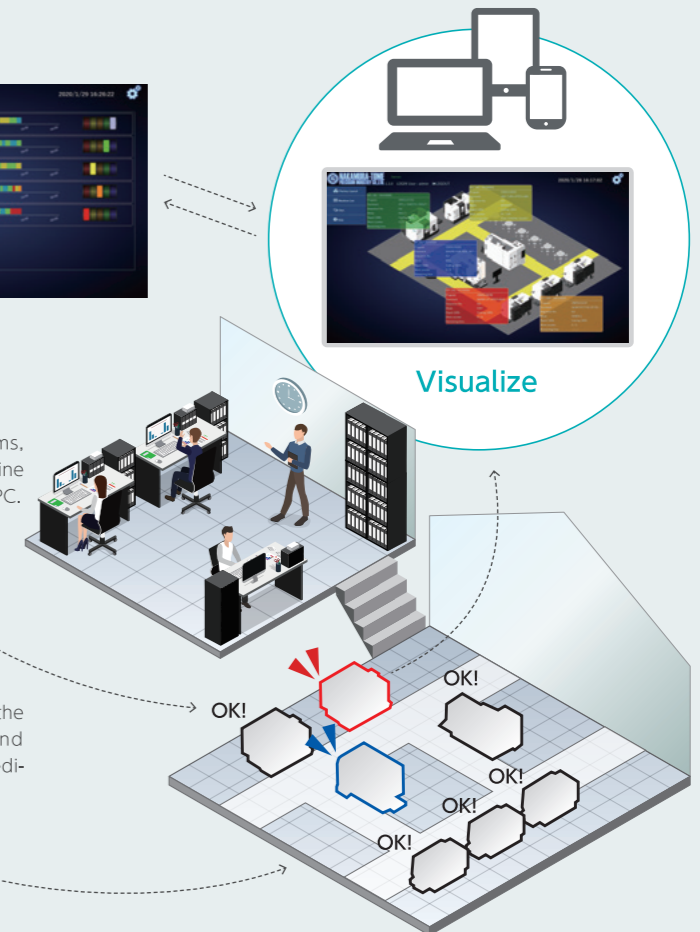


Input and output programs, tool data and other machine data from the monitoring PC.

■ Diagnosis



Diagnose problems with the machine servo drives and spindle drives, using a dedicated program.



NT Thermo Navigator AI

Thermal Growth Compensation using AI.

Compensation model built using AI machine learning.

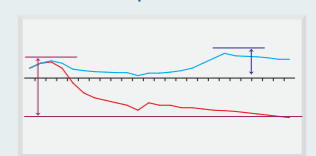
Powered by AI

Time and measured dimension data are input into a dedicated AI Learning software, to build an optimized thermal growth compensation model.



High Precision Thermal Growth Compensation

The compensation value is calculated from acquired data. The more data is input, the more accurate is the compensation value.



— Pre-correction thermal displacement data
— Thermal displacement data after correction

- ① Time
- ② Measured Dimensions
- ③ Retrieval of Wear Offset Data

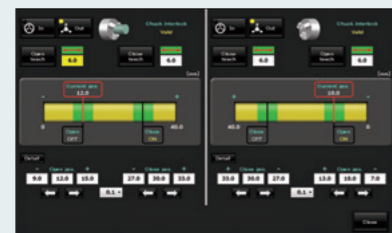


Acquired Data analyzed with NT Thermo Navigator AI

Feedback



Standard for NT Smart X



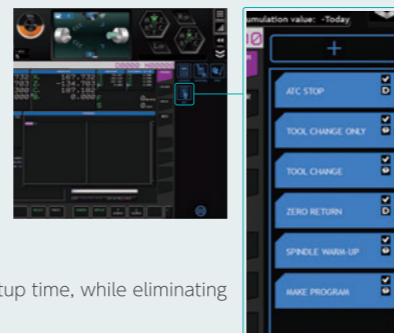
Digital Chuck Interlock

Set the detection position of open end and closed end of chuck arbitrarily. The chuck open / close position is set on the NT Smart X screen. Setup time and machining cycle time are reduced.

One Touch MDI

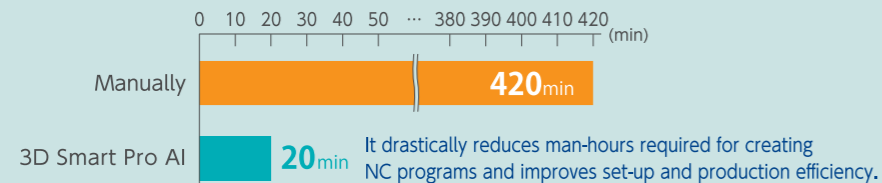
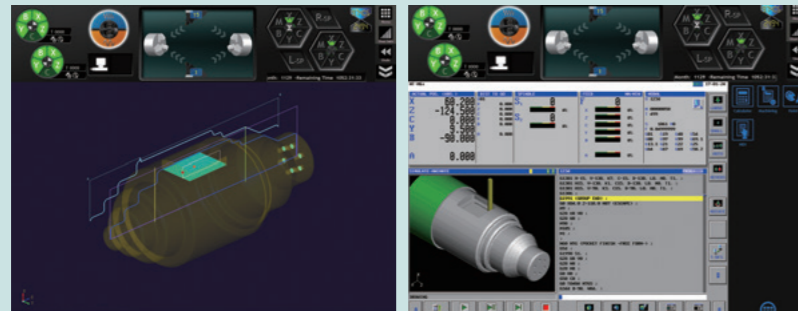
This function is to register in advance frequently used cycle programs such as home position return and tool exchange, and call with one touch.

Reduce programming and setup time, while eliminating input errors.



3D Smart Pro AI AI analysis NC programming support function

From the 3D CAD drawing, AI automatically analyzes "model geometry", "machining path", "machining tools", "machining conditions", and "machining process sequence", to create NC programs for all processes from raw material to finished product.



3 useful features available with 3D Smart Pro AI

1. Transfer setting

Once the transfer position is set, the machining area and transfer program are created.



2. Optimization of machining processes

In addition to defining the required machining processes, AI proposes a suitable machining process sequence.



3. Tolerance setting

Once tolerance value is input, target value for machining can be set.



NT Work Navigator



Advanced NT Work Navigator!

A new upgrade makes it possible to navigate with the X and Y-axes. Many parts with irregular outer surfaces, requiring coordinate recognition with X or Y-Axis, become within the range of NT Work Navigator.

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.

Double safety features for maximum protection

NT Machine Simulation / NT Collision Guard + Airbag (Overload detection)

The machine is protected with dual safety features: "NT Machine Simulation / NT Collision Guard" prevent collision beforehand, and the "Airbag Function" minimizes damage to the machine in case of collision.

NT Machine Simulation

Preventive safety technology - Machine collisions are avoidable!

By checking in advance for interference between chucks and tools, or between tools and covers, ...etc., in addition to checking the machining processes, the risk of a machine collision is drastically reduced, and the machining processes can be optimized.



Simulation is performed while checking the remaining movement amount and modal information.

It is possible to override the settings for rapid feed and cutting feed individually. Additionally, simulation by process or by single block is possible.

By process
Single feed

Image shown here is of a 2-turret machine

NT Collision Guard

Available in automatic mode or in manual mode. Using registered 3D models of machine, chucks, tools, holders and parts, machine collisions can be monitored and prevented in real time during automatic, manual or jog movements. Even turret indexing is monitored to prevent collisions, drastically reducing collision risks, especially during machine setup.



Image shown here is of a Tool spindle machine

Airbag (Overload detection)

Compared to other machines, Nakamura-Tome machine will not break after the slightest collision. The "Airbag Function" minimizes the damage that may occur during a collision.

If a machine collision occurs, there is good reason to be assured: Airbag!

When the machine collides, there is no reason to panic.

The Airbag (Overload detection) of the machine tool greatly reduces the impact of a collision, and protects the machine.



Without Airbag

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



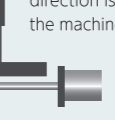
▲Video



With Airbag

Retraction within 0,001 sec

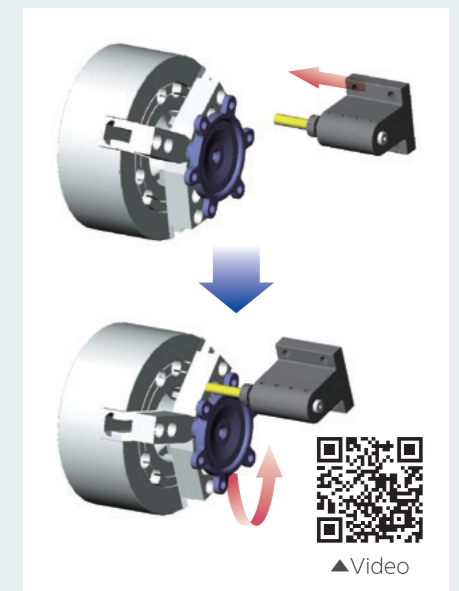
Crash! Within 1 milliseconds after the crash, servo motor-feeding direction is reversed and the machine stops in EMG mode.



▲Video

Barrier? Even with barrier function, machine collisions may occur

* This feature does not mean zero impact

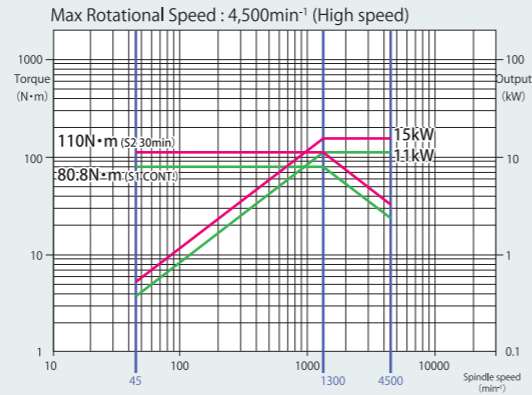
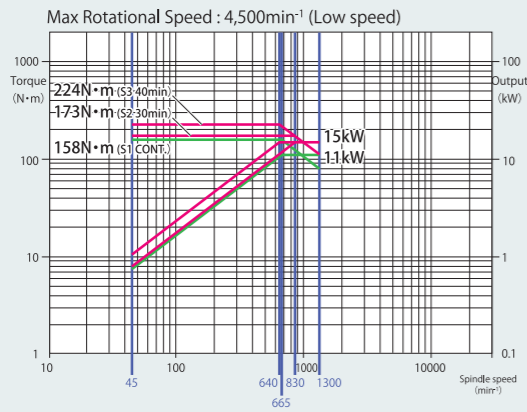


Torque/Output Chart

L- Spindle motor

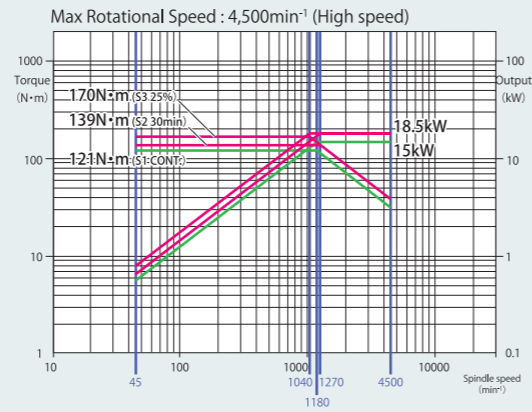
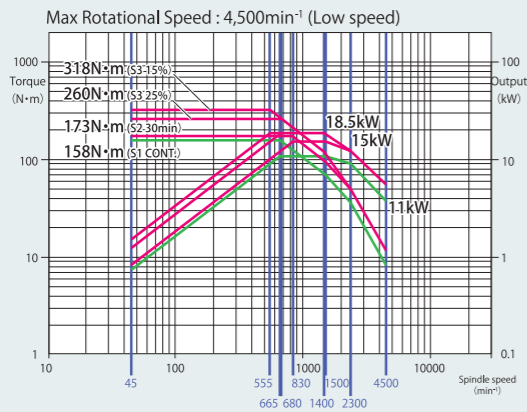
Bar capacity
 $\phi 65,71\text{mm}$
 15/11kW

Standard



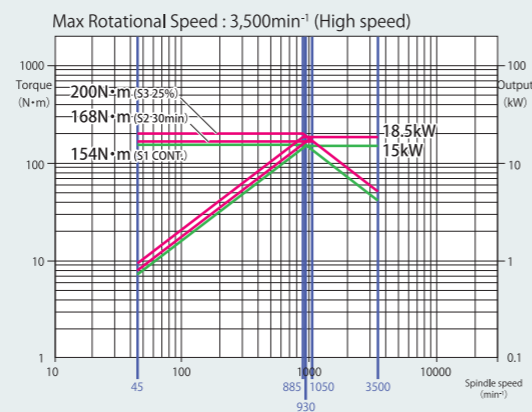
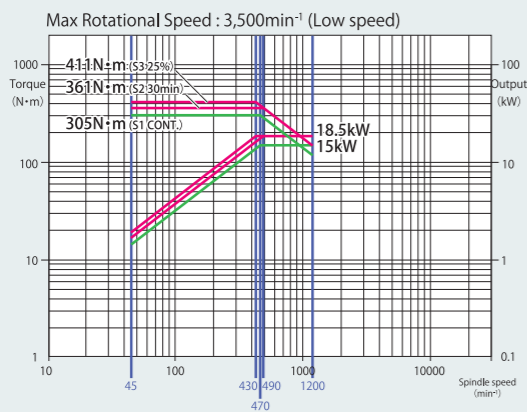
Bar capacity
 $\phi 65,71\text{mm}$
 18.5/15kW

Option



Bar capacity
 $\phi 80\text{mm}$
 18.5/15kW

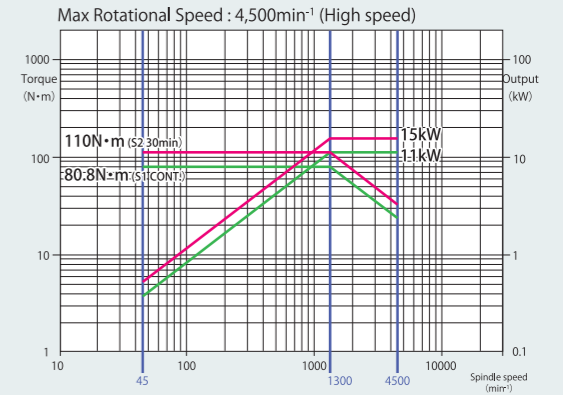
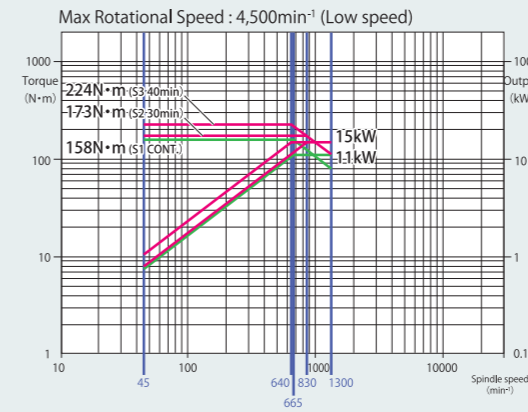
Option



R- Spindle motor

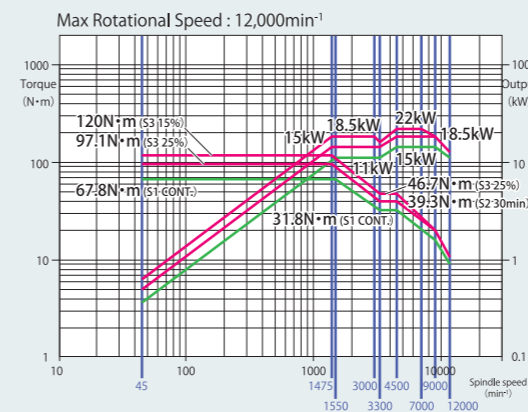
Bar capacity
 $\phi 65,71\text{mm}$
 15/11kW

Standard



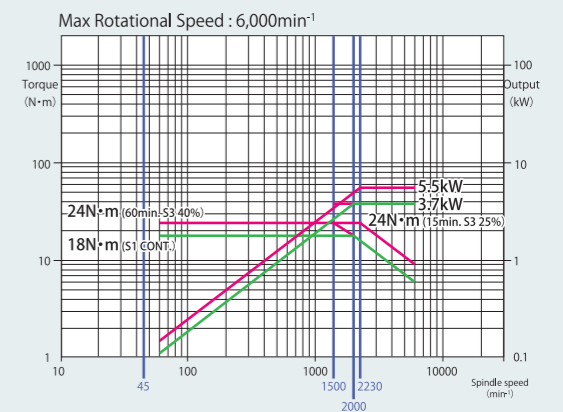
Tool spindle motor

Standard



Milling motor

Standard



Tooling System

Sandvik Coromant Capto C6

φ50-100 Milling cutter



Face milling adapter
C6-391.05C-22 025M (0.9kg)
C6-391.05C-27 025M (1.0kg)
C6-391.05C-32 025M (1.1kg)

φ50-100 Side cutter



Side cutter arbor
C6-391.10-27 030 (1.1kg)
C6-391.10-32 025 (1.1kg)

End mill



Chamfering cutter



Drill



Drill with oil hole



Reamer



Tap



Tap (with coolant hole)



End mill



CORO MILL 390



Delta Drill



Coromant U drill



Straight collet



393.CG-20xx52 (φ 3-16 Without shields)
393.CG-25xx56 (φ 3-20 Without shields)
393.CG-32xx60 (φ 6-25 Without shields)
393.CG-20xx52 (φ 3-18 With shields)
393.CG-25xx56 (φ 3-20 With shields)
393.CG-32xx60 (φ 8-25 With shields)

Straight collet



★ A5 16-d (φ 6-12)
★ A5 20-d (φ 6-16)
★ A55 20-d (φ 6-16 Including adjust bolts)

ER/AR collet



393.14-16/20/25/32d (φ 1-20)
393.15-16/20/25/32d (φ 3-20 With shields)
※Commercially available ER/AR collets can be used instead.

Tap collet



393.14-20 DxxxXxxx (M3-M14)
393.14-25 DxxxXxxx (M5-M20)
393.14-20 DxxxXxxx (M20-M22)
※Commercially available ER/AR collets can be used instead.

Weldon shank adapter
C6-391.20-20 065 (1.5kg)
C6-391.20-25 080 (1.9kg)
C6-391.20-32 090 (2.4kg)

ISO9766 shank adapter
C6-391.27-16 070 (1.1kg)
C6-391.27-20 070 (1.1kg)
C6-391.27-25 070A (1.1kg)
C6-391.27-32 070 (1.3kg)
C6-391.27-40 085 (1.7kg)

Extension adapter
C6-391.01-63 100A (2.3kg)
C6-391.01-63 140A (3.3kg)
C6-391.01-63 185 (3.8kg)
C6-391.01-62 060
(1.3kg short type / Bolt type not possible.)

Reduction adapter
C6-391.02-32 070A (1.1kg) (C6⇒C3)
C6-391.02-32 185 (2.8kg) (C6⇒C3)
C6-391.02-40 080A (1.3kg) (C6⇒C4)
C6-391.02-40 185 (3.0kg) (C6⇒C4)
C6-391.02-50 080A (1.5kg) (C6⇒C5)
C6-391.02-50 110 (2.2kg) (C6⇒C5)

★Alps tool type AS-AC



Cutting head "CoroTurn" Prime* for OD Face turning
C6-CP-30AR/L-45065-11C (1.3kg)
C6-CP-25BR/L-45065-11B (1.3kg)

CORO TURN® RC
C6-DCLNR/L-45065-12/16/19 (1.3kg)
C6-PCLNR/L-45065-12HP/16HP/19HP (1.3kg)
C6-DDJNR/L-45065-1504 (1.1kg)
C6-PDJNR/L-45065-1504HP (1.2kg)
C6-SCLNR/L-45065-09/12 (1.1kg)
C6-SCLNR/L-45065-12HPA (1.2kg)
C6-SDJCR/L-45065-11 (1.1kg)
C6-SDJCR/L-45065-11HPA (1.2kg)

Cutting head for grooving / cut off turning
CORO CUT® 1-2
C6-R/LF123G10-45065B (3.0kg)
C6-R/LF123H13-45065B (4.0kg)
C6-R/LF123J13-45065B (4.0kg)
C6-R/LF123K16-45065B (5.2kg)
C6-R/LF123L16-45065B (5.5kg)

Cutting head for OD thread
C6-266R/LFG-45065-16/22/27 (1.3kg)

Cutting head for ID boring
C6-DCLNR/L-27240-12/-27140-16 (0.9/1.7kg)
C6-PCLNR/L-27240-12HP/-27140-12HP (1.0/1.7kg)
C6-DDUNR/L-27140-15 (1.7kg)
C6-DDUNR/L-27140-15HP (1.7kg)

Cutting head for ID thread
C6-266R/LKF-14070-16 (1.0kg)
C6-266R/LKF-17075-16 (1.0kg)
C6-266R/LKF-22090-16 (1.2kg)
C6-266R/LKF-27105-16 (1.6kg)

Head cartridge type boring bar (steel)
C6-570-2C 16 056 (0.9kg)
C6-570-2C 20 068 (1.0kg)
C6-570-2C 25 082 (1.0kg)
C6-570-2C 32 081 (1.2kg)
C6-570-2C 40 092 (1.5kg)
C6-570-2C 40 105 (2.4kg)

Head cartridge type boring bar (vibration absorption)
C6-570-3C 16 088 (1.0kg)
C6-570-3C 20 108 (1.0kg)
C6-570-3C 25 230 (1.7kg)
C6-570-3C 32 224 (2.1kg)
C6-570-3C 40 198 (2.6kg)
C6-570-3C 50 239 (4.2kg)

Adapter for cylindrical shank with flat
C6-131-00098-25 (2.4kg)
C6-131-00112-40 (3.5kg)

Rectangular shank adapter (type B)
A C6-ASHR/L-105-20HP (2.3kg)
C6-ASHR/L-122-25HP (2.9kg)
B C6-ASHA-070-20HP (1.8kg)

MDI adapter (*MDI = Modular Drilling Interface)
C6-DM20-N-033 (1.0kg)
C6-DM25-N-030 (1.0kg)
C6-DM32-N-030 (1.0kg)
C6-DM40-N-040 (1.4kg)

Extension adapter
C6-391.01-63 100A (2.3kg)
C6-391.01-63 140A (3.3kg)
C6-391.01-63 185 (3.8kg)
C6-391.01-62 060 (1.3kg short type / Bolt type not possible.)

Reduction adapter
C6-391.02-32 070A (1.1kg) (C6⇒C3)
C6-391.02-32 185 (2.8kg) (C6⇒C3)
C6-391.02-40 080A (1.3kg) (C6⇒C4)
C6-391.02-40 185 (3.0kg) (C6⇒C4)
C6-391.02-50 080A (1.5kg) (C6⇒C5)
C6-391.02-50 110 (2.2kg) (C6⇒C5)



Cutting head R/L 570 type



Sleeve 132N-25xxx (φ 6,8,10,16,20)
132N-40xxx (φ 20,25,32)



Steel cutting tool for ID



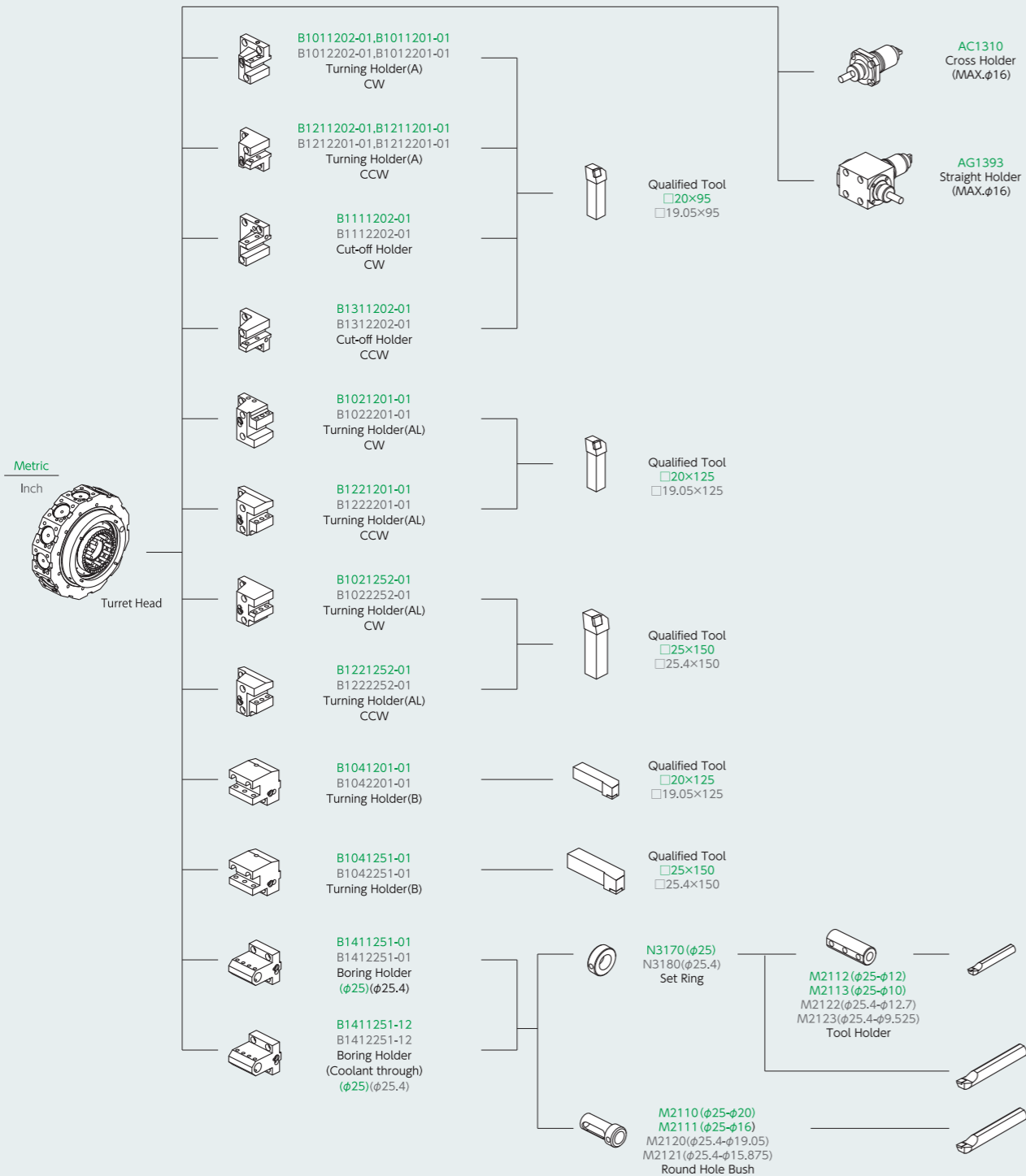
Carbide cutting tool for ID Exxx-STFCR/L xxxR



CoroDrill® DS20 DS20-DxxxxDMxx-xx (φ 15-40, MDI size, L/D 04 OR 07)

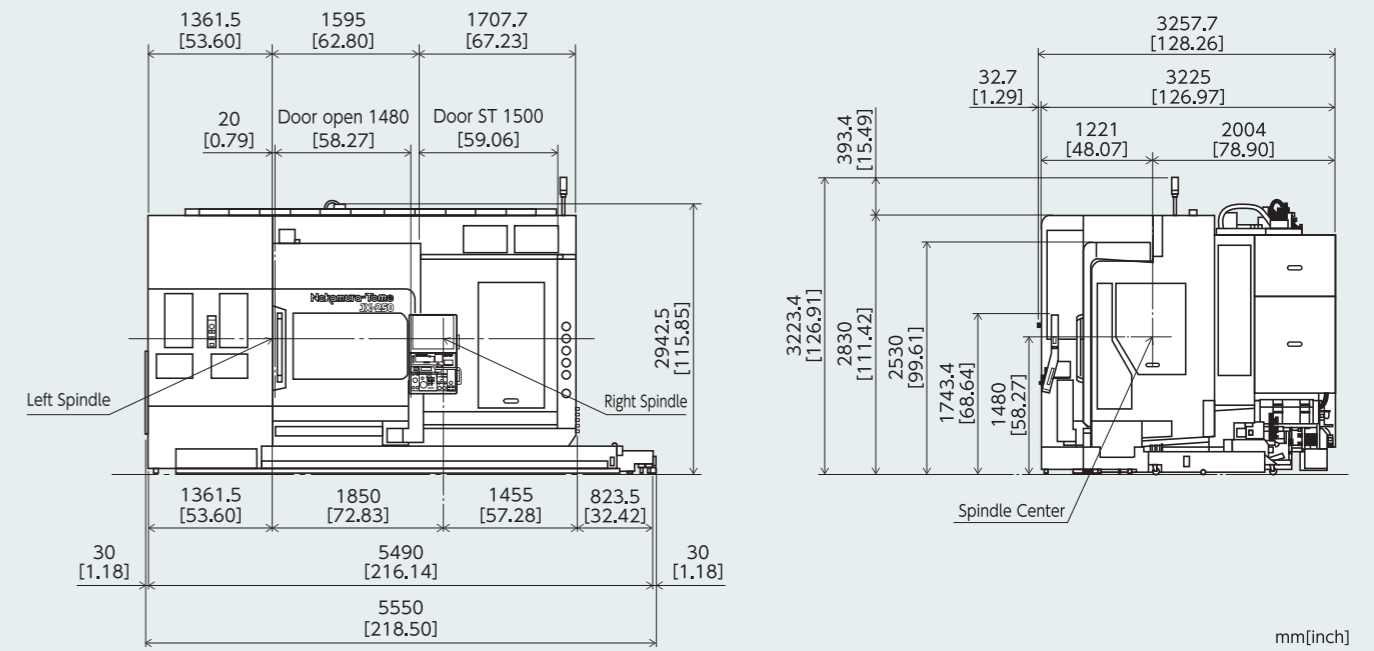
* For details, refer to the Sandvik Coromant Tooling Catalog.

Tooling System

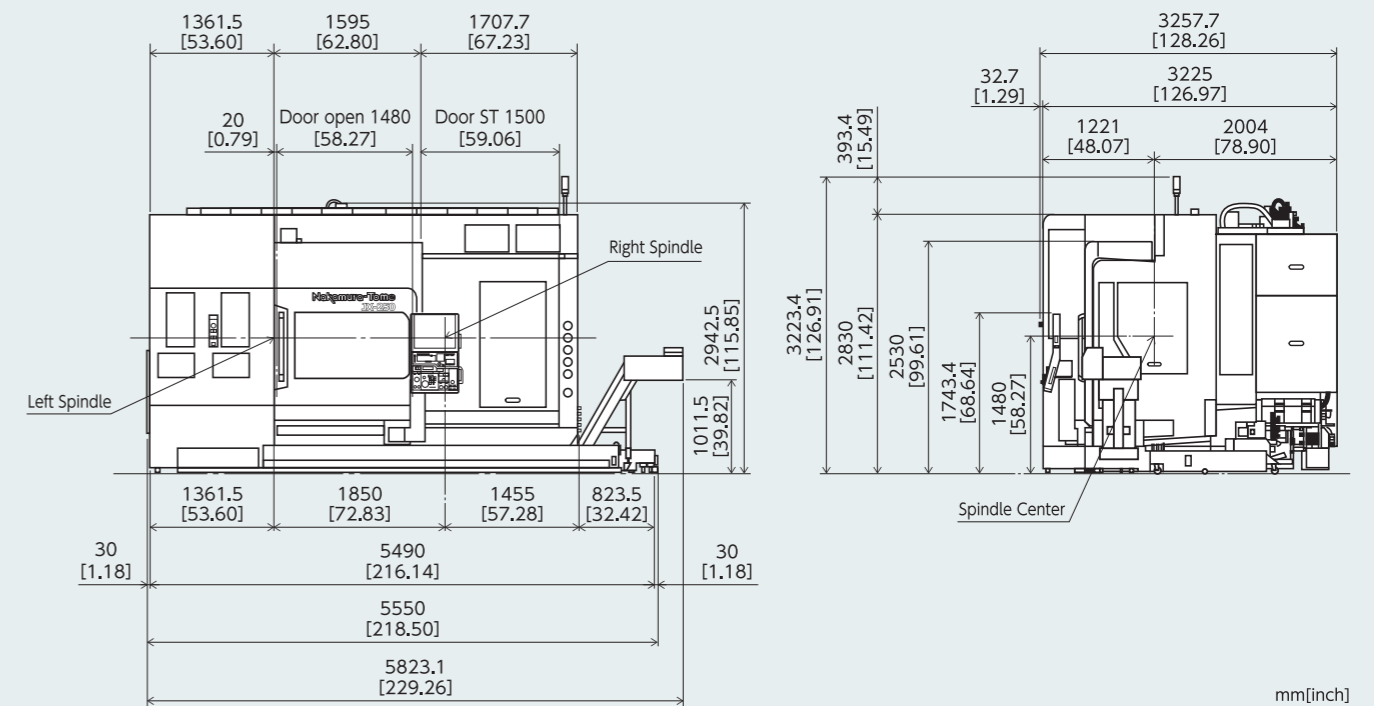


Floor Space

Standard

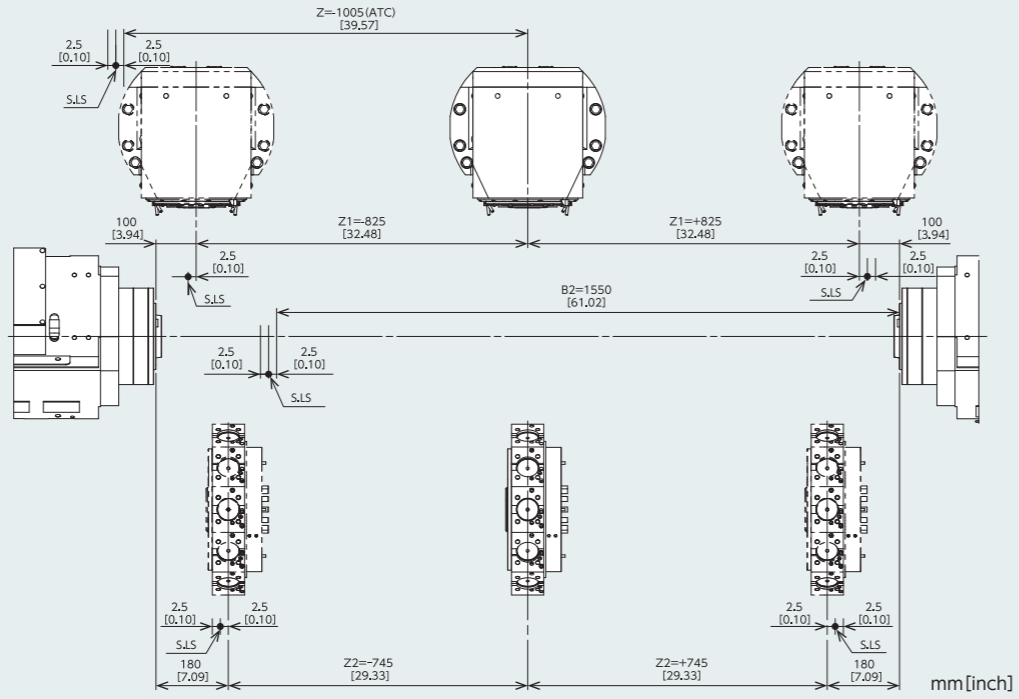


Chip conveyor right side outlet type

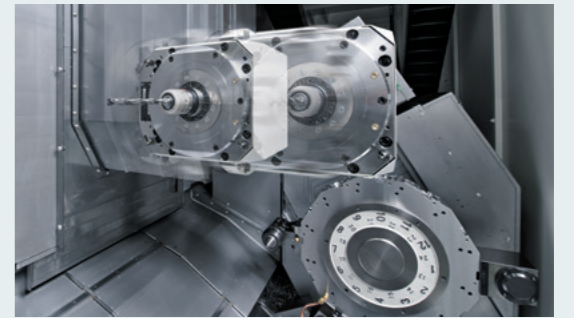
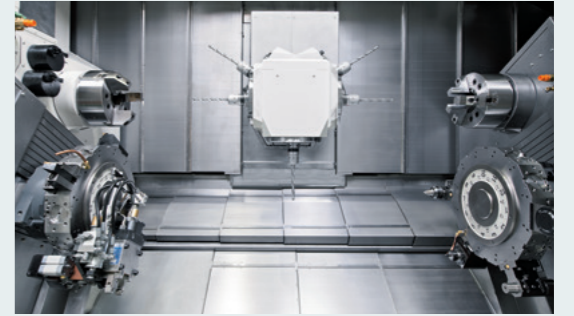
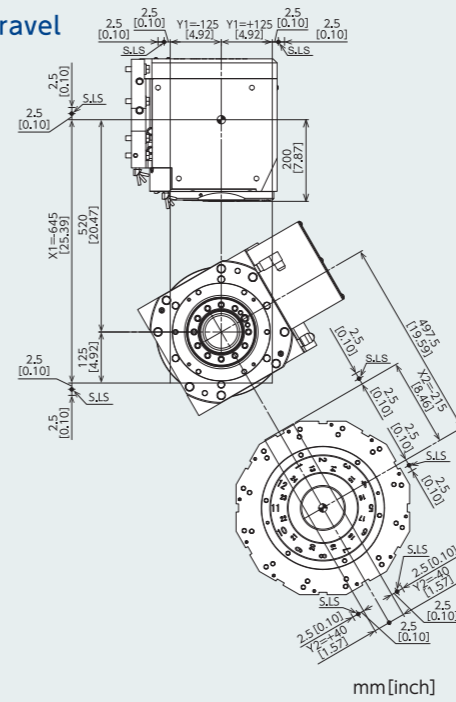


Travel Range

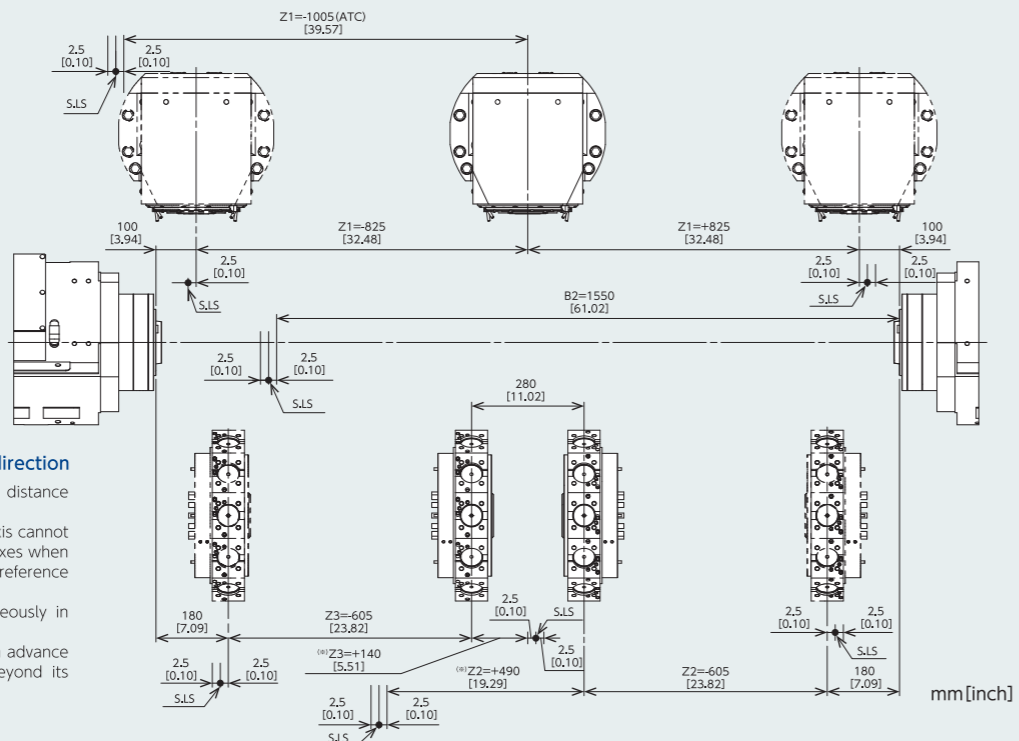
Single turret



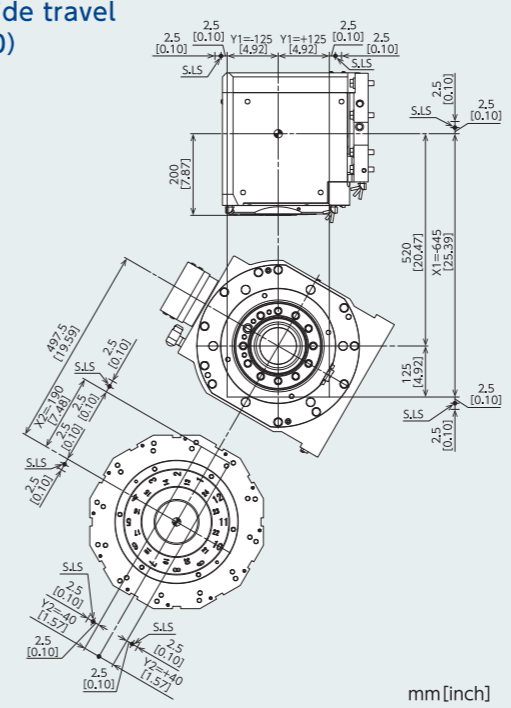
X-Y Axis slide travel



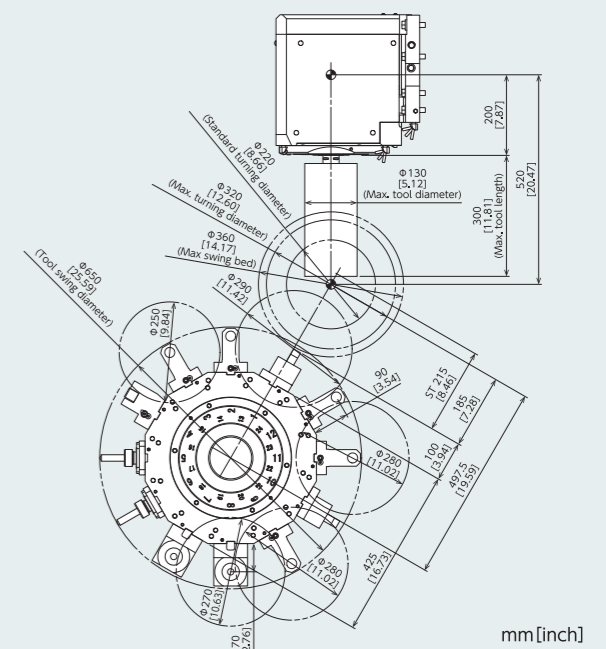
Twin turret



X-Y Axis slide travel (L side φ80)



Tool Interference



※Z2-axis and Z3-axis travel in plus direction

An interlock is applied to keep a relative distance between Z2-axis and Z3-axis. The distance between the Z2-axis and Z3-axis cannot get closer than the distance between both axes when they are at 2.5mm beyond their respective reference points. Z2-axis and Z3-axis cannot move simultaneously in plus direction. Z3-axis shall be moved in minus direction in advance before moving Z2-axis in plus direction beyond its reference point, and vice versa.



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