JX-200

NAKAMURA-TOME
PRECISION INDUSTRY CO.,LTD.

Multitasking machine with ATC, Tool spindle, and Lower turret

Change the IMPOSSIBLE to POSSIBLE

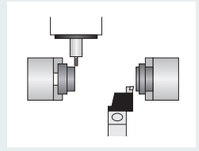
Innovative Technology
～Creating new values～

JX-200

Ultra-modern 6 to 10-inch chuck multitasking machine. With tool spindle and a lower turret equipped with a standard Y-axis featuring the "NT Smart Cube", the shortest tool spindle in its class. The machining area can be used effectively, thus covering a wide range of machining needs. Additionally, a full range of Nakamura-Tome user-friendly software is available.

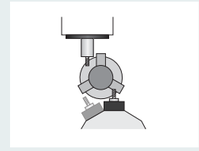
Change the IMPOSSIBLE to POSSIBLE

The world's shortest tool spindle in its class, "NT Smart Cube" allows for more effective use of its large machining area. By combining the Lower turret, various machining operations can be supported, such as simultaneous machining with L/R spindles, simultaneous machining with Upper and Lower turrets, and center support on the Lower turret. With the ability to handle a workpiece covering the entire volume zone and a flexible unit configuration that enables any types of process. These are some examples of the various operations that this machine can do.



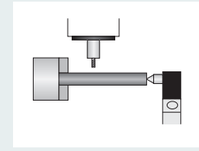
Flexible machining with L/R spindles

Flexible machining with L/R spindles to reduce the cycle time.



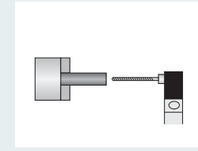
Simultaneous Y-axis vertical machining

Wide variety of milling operations, thanks to its Y-axis travel of ± 105mm on the tool spindle and ± 35mm on the lower turret.



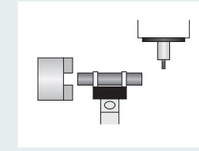
Turret Center-support

The center support on the Lower turret is ideal for long workpieces.



Long drill machining

Enables the use of long drills that do not fit in the ATC magazine.



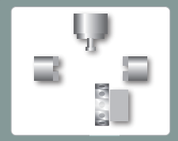
Semi-automatic

Loading/Unloading workpieces by the work rest on the turret.

Machining Capabilities

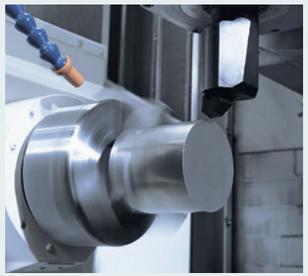
POSSIBLE to perform several different processes with just one machine!

S×2 Twin Spindle | M×2 Milling Motor | B1 Tool Spindle | A ATC | TR R-Lower Turret
C×2 C-axes | Y×2 Y-axis | B2 R spindle



- "NT Smart Cube" is one of the world's shortest tool spindles in its class
- ATC tool spindle motor 15/11kW Tool spindle speed 12,000min-1 (op. 18,000min-1)
- The number of ATC tools:80 (op. 40,120)
- 5.5/3.7kW milling motor on the lower turret rotation speed 6,000min-1 (op. 8,000min-1)
- Increased stability thanks to a heavy-duty column structure
- Floor space 2,925mm ×5,250mm(including standard coolant tank)
- Extensive variety of Nakamura-Tome user-friendly software

Tool spindle swings from -95° to +95°, and the Lower turret with Y-axis flexibly handles small to large diameter workpieces, long workpieces, and complex shapes.



L-spindle

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

R-spindle

- Spindle motor
  - 11/7.5kW
  - 15/11kW(op.)
- Spindle speed
  - 6,000min-1
  - 4,500min-1(op.)

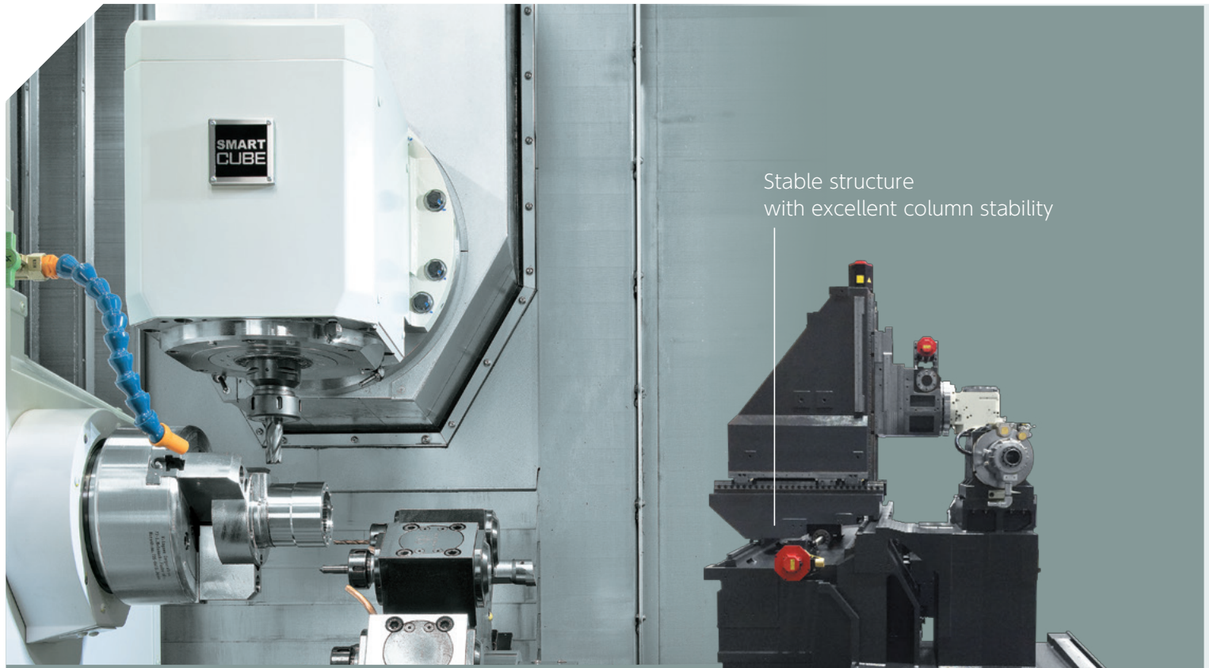
Turning (Tool spindle)

Common cutting condition

	L-spindle	R-spindle
Material	S45C	
Cutting speed	120m/min	
Cutting cross section	3.6mm²	2.65mm²
Depth of cut	6mm	5mm
Feed	0.6mm/rev	0.53mm/rev

	L-spindle	R-spindle
Material	S45C	
Cutting speed	100m/min	
Groove width	8mm	5mm
Feed	0.1mm/rev	0.1mm/rev

Machining Capabilities



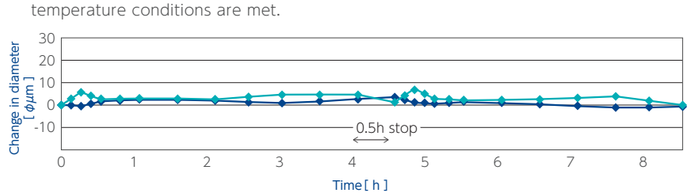
Stable structure
with excellent column stability

Stable and High Precision ATC multitasking machine

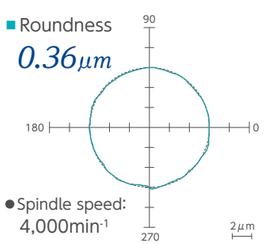
The JX-200 was developed on the concept of ATC multitasking machine that can stably process good-quality products with good precision. Since a tool spindle column is allocated vertically to a horizontal bed and the center of gravity is designed in an optimal position, the machine has a strong structure against load from any direction. Therefore, the machine preserves stability and can process even difficult to machine materials or handle heavy cutting with accuracy. Moreover, to minimize the impact of distortion caused by heat, the frame structure was also redesigned. In combination with the thermal growth compensation system “NT Thermo Navigator AI”, the machine will achieve high-precision machining.
Nakamura-Tome multitasking machines are not only known for their high machining capabilities but are also known for "high rigidity" and "high precision".

■ Thermal displacement amount Upper *7.3μm* Lower *4.8μm*

* Actual Values shown here are obtained when ambient temperature conditions are met.



■ Roundness
0.36μm

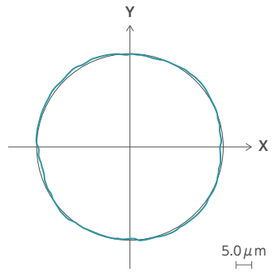


● Spindle speed: 4,000min^{-1}
● Material:BsBM(JIS)

Contour machining accuracy

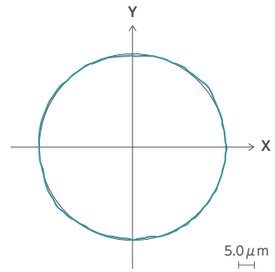
X-Y plane

■ Roundness
1.9μm



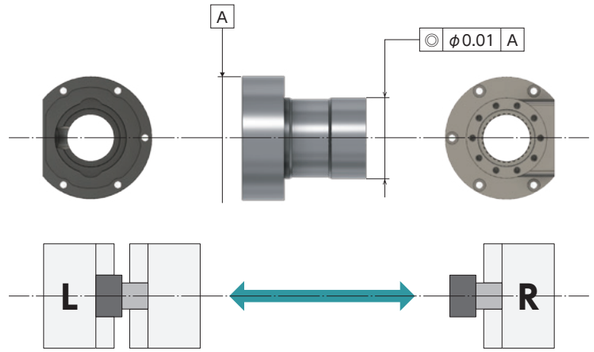
Y-Z plane

■ Roundness
1.9μm



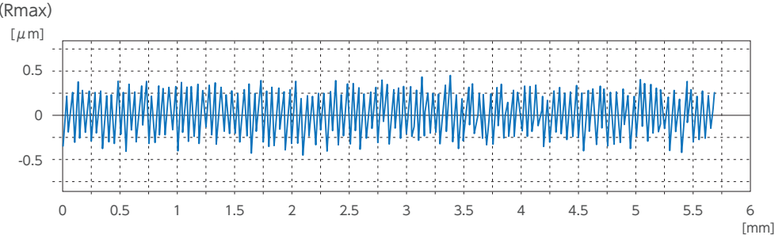
Transferring Accuracy

■ Coaxiality
φ6.0μm
(Required accuracy:φ10μm)



Turning surface roughness

■ Surface roughness (Rmax)
0.91μm



* The actual measured values shown in this catalog are for reference only and may differ depending on cutting conditions and specifications.

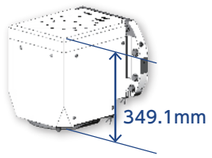
The world's shortest tool spindle in its class※

NT Smart Cube

■Tool Spindle (NT Smart Cube)

Length	*349.1mm*
Y-axis slide travel	*±105mm*
Tool spindle motor	*15/11kW* *12,000min-1* *18,000min-1(op.)*

* The length is 428.6mm in case the tool spindle speed is 18,000min-1



■L-spindle

Standard

Bar capacity	*ϕ65mm*
L-spindle motor	*15/11kW* *4,500min-1*

Option

Bar capacity	*ϕ80mm*
L-spindle motor	*18.5/15kW* *3,500min-1*

* Specification of Φ51mm bar capacity is not available on R-spindle when Φ80mm bar capacity is selected on L-spindle.

■R-spindle

Standard

Bar capacity	*ϕ51mm*
R-spindle motor	*11/7.5kW* *6,000min-1*

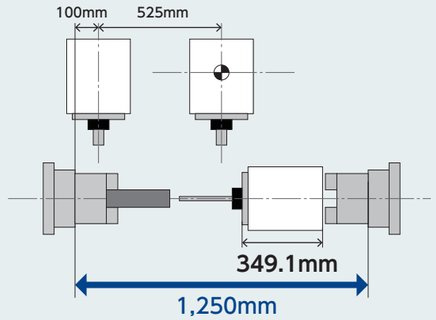
Option

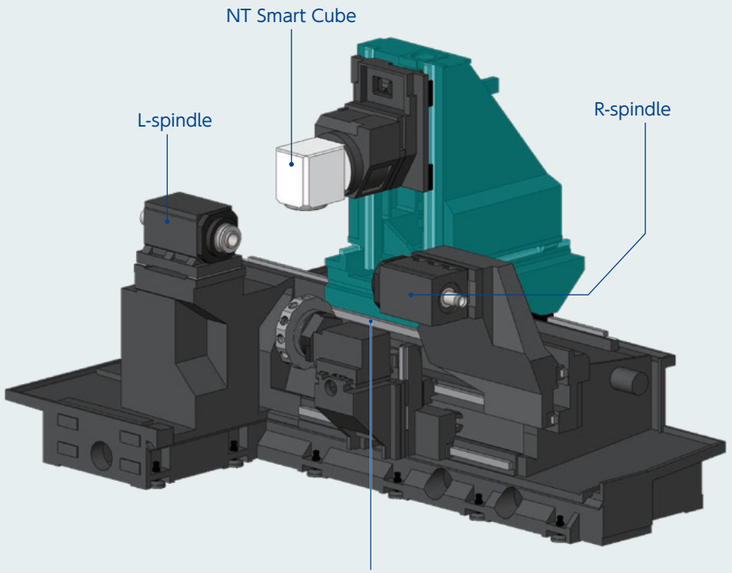
Bar capacity	*ϕ65mm*
R-spindle motor	*15/11kW* *4,500min-1*

Large machining area

The world's shortest tool spindle in its class!
Thanks to the ultra-compact size of the Tool Spindle, the interference is reduced, and it ensures a larger machining area.

* Based on our survey in the multitasking machine market



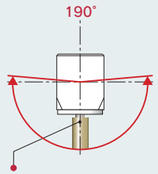


Stable and rigid structure with less vibration

144 stations

Up to 144 tools available!

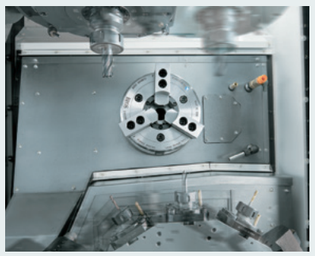
In addition to 120 ATC tools(op.) for the Tool Spindle, 24 tools(half index) can be mounted on the Lower Turret.



Max.tool diameter /
Without adjacent tool : ϕ90 / ϕ130mm
Max.tool length : 300mm

High accuracy milling

Thanks to its long Y-axis travel and 50mm X-axis travel below the spindle center, various machining operations can be performed without rotating the C-axis. Among them, square milling in the X-Y plane or deep hole drilling in the X-axis direction ensuring faster cycle time and higher precision.



■R-lower turret

Y-axis slide travel	*±35mm*
Milling motor	*5.5/3.7kW* *6,000min-1* *8,000min-1(op.)*

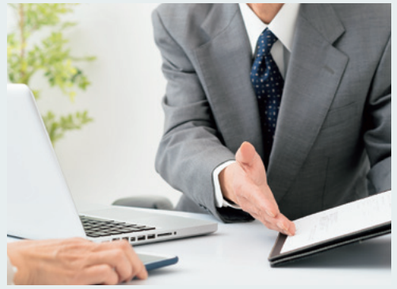
ATC Maintenance Navigator

In addition to information about the ATC status and position of the Tool Changer arm, the step-by-step ATC recovery guidance screen ensures fast ATC recovery and shorter machine downtime.

Parts catcher type G		Φ65	Φ80
Workpiece size	Diameter (mm)	Φ12-65	Φ31-80
	Length (mm)	15-150	
	Weight (kg)	3.0	
Ejecting method		Belt conveyor & Chute	

Various Options to Meet our Customer's Needs. Total Provider for Peripheral Equipment.

Whether it is machine setup, 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 using our vast experience, Nakamura-Tome offers complete solutions, including Multitasking Machines complemented with a great variety of peripheral equipment.



And many others.
For items not listed, please feel free to contact your Nakamura-Tome representative.

Parts catcher type A

Tool setter

Coolant pump

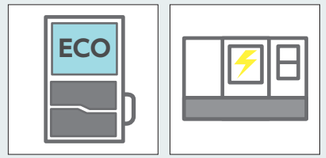
Chip conveyor

Bar feeder

Han-Bei (In-process measuring system)

Initiatives in our products

Addition of Eco-mode Function to NT SmartX Software
Improvement of Power Control System



Cut down power consumption by approx.68%

* When ECO mode is enabled

Inverter-Driven Hydraulic Power Unit

Cut down power consumption by approx.45%

* Compared with Super NTJX on standby mode

Reduction of Oil Consumption by Changing from Oil to Grease Lubricating

Cut down lubricating oil consumption by approx.98%

* Compared with Super NTJX

Switching the power source is expected to reduce annual CO_2 emissions by approximately 6,563 tons. (* 1)

Cedar trees

Approx. 468,000 pcs (* 2)

CO_2 reduction

(* 1) Actual values from April 2019 to March 2020
(* 2) Each cedar tree absorbs 14 kg of CO_2 per year. (Source: Forestry Agency)

Nakamura-Tome is committed to the environment as an eco-friendly manufacturer.

Advanced Production System
NT SmartX

Setup Support
- Status Screen
- Setup Screen
- Geometry Navigator (op.)
- Path Checker
- Simple Call
- One Touch Production (op.)
- Digital Chuck Interlock

Programming Support
- Smart Support
- 3D Smart Pro AI
- 3D Smart Pro
- NT Manual Guide i
- Drop Converter

Machining Support
- NT Thermo Navigator AI
- Warm-Up Function
- NT NURSE
- Program Optimizer
- Chatter Canceller
- Oscillation Cutting (op.)
- Smart Tuning (op.)
- NT WORK NAVIGATOR

Dual Safety
- Airbag
- NT Machine Simulation
- NT Collision Guard

Maintenance
- ATC Maintenance Navigator
- Regular Maintenance Function
- Productivity Monitoring Function
- Operation Level Management Function
- Trouble Guidance
- Drive Recorder

Customer Support
- NT Update

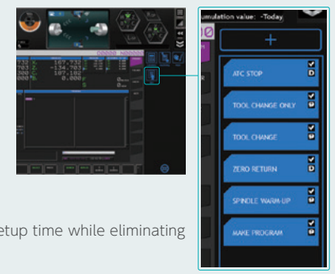
Nakamura-Tome AI

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

Digital Chuck Interlock
Set the Chuck Open and Close detection position easily.
The chuck open/close position is set up on the NT SmartX screen.
Setup time and machining cycle time are reduced.

One Touch MDI
This function is to register frequently used program blocks or cycles, such as zero return or tool change, and call them again with one touch.

Reduce programming and setup time while eliminating input errors.



NT Smart Sign
Nakamura-Tome IoT software

■ Monitoring

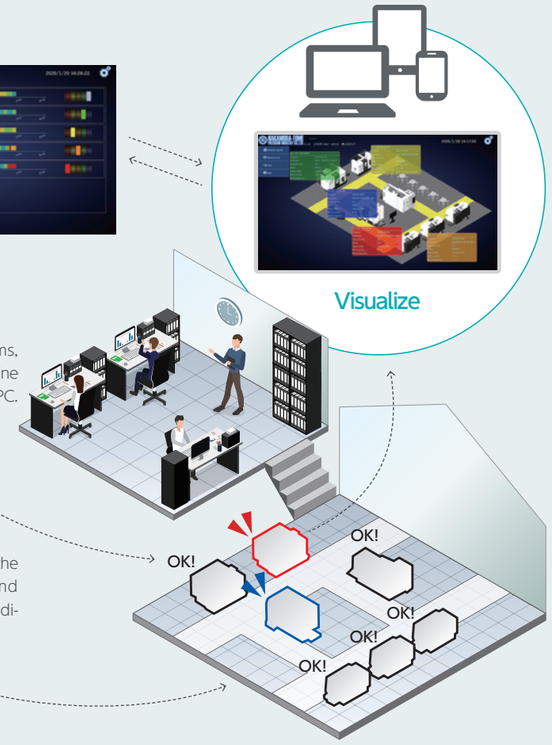
Real-Time Monitoring of machine running conditions, in addition to visualizing alarm history and past events.

■ 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.

① Time
② Measured Dimensions
③ Retrieval of Wear Offset Data

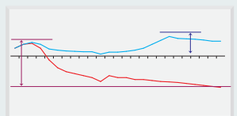
Acquired Data analyzed with NT Thermo Navigator AI

Feedback

Standard for NT SmartX

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.

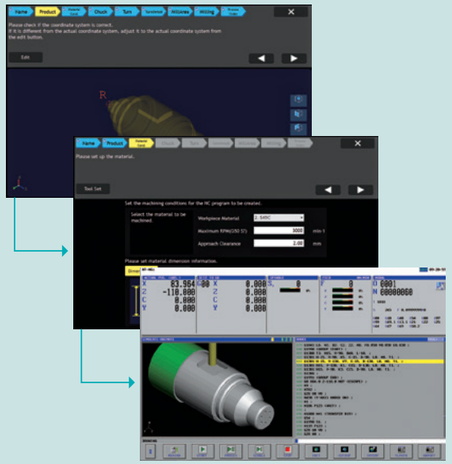


— Pre-correction thermal displacement data
— Thermal displacement data after correction

3D Smart Pro AI

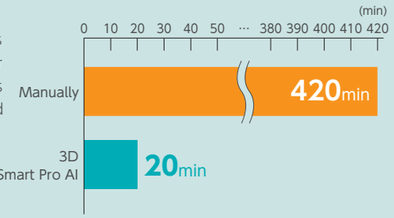
AI Analysis NC Programming Support Function

This function analyzes 3D CAD model data and generates an NC program for processing from blank to finished parts.
Simply follow the displayed guidance and enter the required information to create the program.



Operators can also set detailed machining methods.

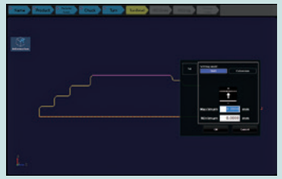
It drastically reduces man-hours required for creating NC programs and improves set up and production efficiency.



* NC programming level : Beginner engineer

Transfer Setting

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



Tolerance Setting

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

Optimization of Machining Processes

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

Tool Guide

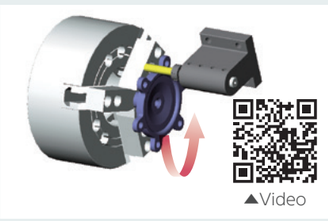
If the tool configuration is incomplete, the AI analyzes the CAD model data and provide the necessary tool information.

NT WORK NAVIGATOR

X Y Z B C

No fixtures required

Machining parts with non-round shapes, such as forgings or castings require that the raw part coordinates be recognized by the CNC control.
It works just by touching the part with a simple inexpensive probe (mostly a 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 WORK NAVIGATOR is eliminating the need for positioning fixtures and special clamping devices.



▲Video

Double safety features for maximum protection

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

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

NT Machine Simulation

Machine collisions are avoidable with Preventive safety technology!

Interference checks can be carried out based on the machining paths obtained from the NC program. By simulating machine operations before starting machining, it is possible to reduce the risk of machining errors and interference.

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

It is possible to override the settings for rapid 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

NT Machine Simulation is synchronized with the machine operation, allowing the machine to be operated while performing interference checks. Available in automatic and manual mode. If interference is detected, the machine will stop just before the collision.

Image shown here is of a Tool spindle machine

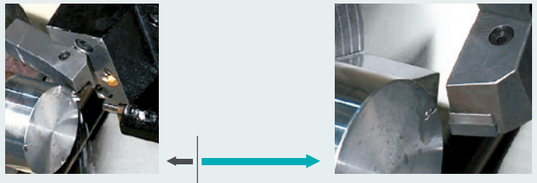
Airbag (Overload detection)

The software's barrier system is not foolproof. Making a data input mistake will result in a machine collision. However, Nakamura-Tome machines will not break even after the machine collision.

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

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

Barrier?
Even with barrier function, machine collisions may occur



Without Airbag

Machines will not stop immediately.
The slide continues to move even after a collision.

With Airbag

Retraction within 0.001 sec

Crash?
Within one millisecond after a collision, the servo motor direction is reversed, and the machine stops in EMG mode.

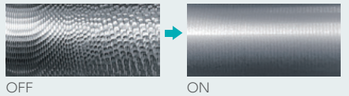
Crash!

▲Video

* It is not a function that guarantees the prevention of machine break. This function does not eliminate the impact on the machine.

Chatter Canceller

Reduce the chatter and vibration by changing the spindle speed up/down continuously during cutting. This function can be turned ON/OFF simply by M-code.



OFF ON

* It does not guarantee that the function works without chatter and vibration.
* Chatter and vibration reduction depend on the setup and the cutting condition.

Oscillation cutting (op.)

By oscillating the tool for a certain period, the chips are cut into small pieces. It can be activated easily by using a simple Fanuc G-code and resolve workpiece damage issues caused by chips twined around the part.

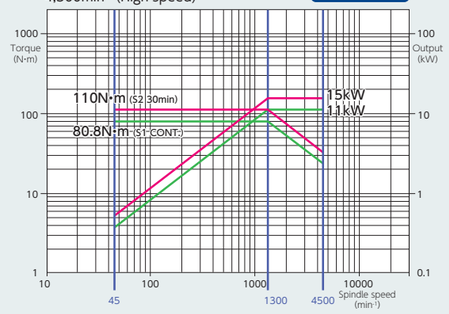
Material : Aluminum
Cutting speed : 200mm/min
Cutting feed : 0.1mm/rev
Cutting depth : 1.0mm

Torque/Output Chart

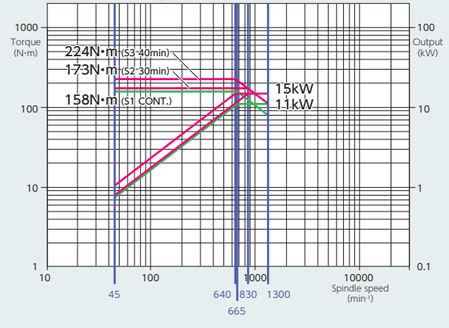
L-spindle motor

Bar capacity Φ65mm 15/11kW

Max Rotational Speed : 4,500min-1 (High speed) — Standard

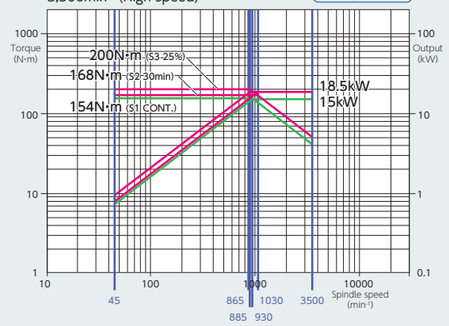


Max Rotational Speed : 4,500min-1 (Low speed) — Standard

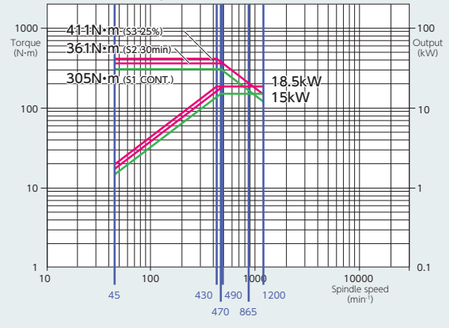


Bar capacity ϕ80mm 18.5/15kW

Max Rotational Speed : 3,500min-1 (High speed) — Option

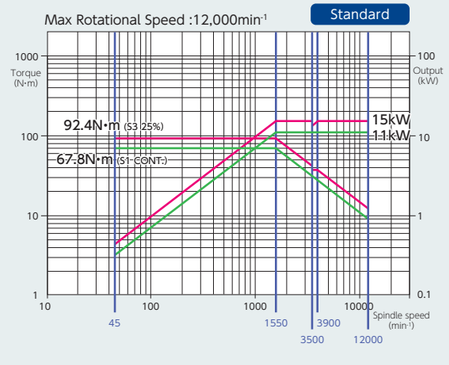


Max Rotational Speed : 3,500min-1 (Low speed) — Option

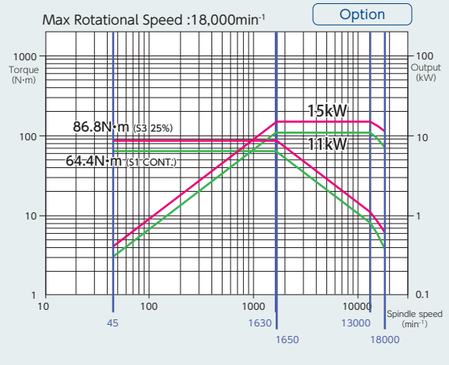


Tool spindle motor

Max Rotational Speed :12,000min-1 — Standard



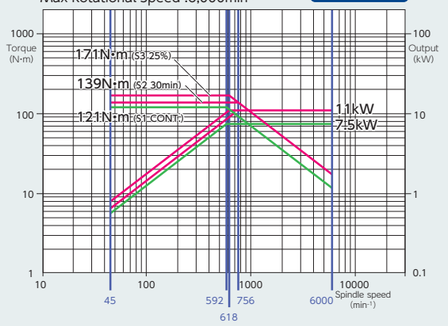
Max Rotational Speed :18,000min-1 — Option



R-spindle motor

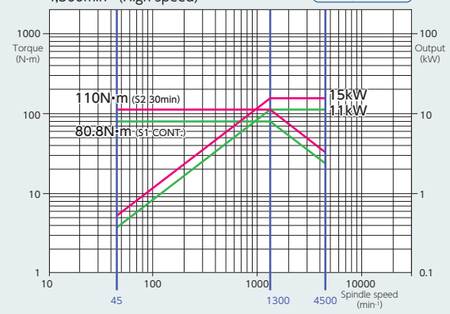
Bar capacity ϕ51mm 11/7.5kW

Max Rotational Speed :6,000min-1 — Standard

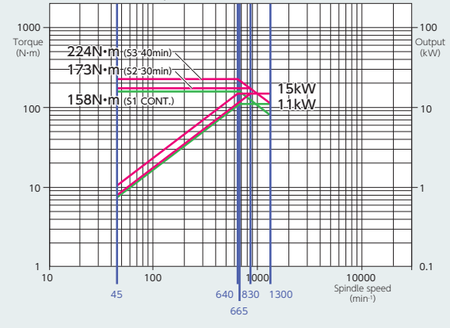


Bar capacity ϕ65mm 15/11kW

Max Rotational Speed : 4,500min-1 (High speed) — Option

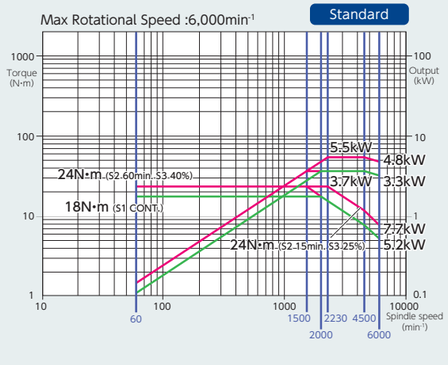


Max Rotational Speed : 4,500min-1 (Low speed) — Option

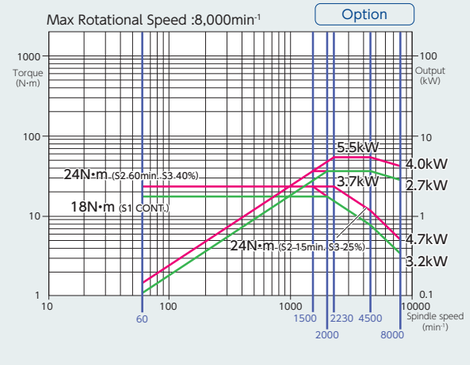


Milling motor

Max Rotational Speed :6,000min-1 — Standard



Max Rotational Speed :8,000min-1 — Option



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

Hydro chuck adapter
(CoroChuck® 930)
For heavy cutting
930-C6-HD-20-084 (1.7kg)
930-C6-HD-25-087 (2.1kg)
930-C6-HD-32-091 (2.6kg)

Chamfering cutter

Straight collet

393.CG-20xx52 (φ3-16 Without shields)
393.CG-25xx56 (φ3-20 Without shields
393.CG-32xx60 (φ6-25 Without shields)
393.CGS-20xx52 (φ3-18 With shields)
393.CGS-25xx56 (φ3-20 With shields)
393.CGS-32xx60 (φ8-25 With shields)

Slim type
930-C6-S-12-082 (1.2kg)
930-C6-S-20-091 (1.4kg)
930-C6-S-25-098 (1.7kg)

Pencil type
930-C6-P-06-091 (0.9kg)
930-C6-P-12-107 (1.0kg)
930-C6-P-12-142 (1.1kg)
930-C6-P-12-192 (1.4kg)
930-C6-P-20-155 (1.6kg)

Drill

Drill with oil hole

Straight collet

★AS 16-d (φ6-12)
★AS 20-d (φ6-16)
★AS5 20-d (φ6-16 Including adjust bolts)

Milling chuck adapter
★AC6-TRX16-70 (1.2kg)
★AC6-TRX20-75 (1.4kg)
★AC6-TRX25-80 (1.7kg)
★AC6-TRX32-90 (2.4kg)
★AC6-TRX40-100 (3.5kg)

Reamer

ER/AR collet

393.14-16/20/25/32d (φ1-20)
393.15-16/20/25/32d (φ3-20 With shields)
※Commercially available ER/AR collets can be used instead.

Collet chuck adapter
C6-391.14-20 060 (0.8kg)
C6-391.14-25 060 (0.9kg)
C6-391.14-32 060 (0.9kg)
C6-391.14-40 065 (1.2kg)

Tap

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.

Tap adapter
(CoroChuck® 970)
970-C6-20-105 (1.2kg)
970-C6-25-124 (1.6kg)
970-C6-40-154 (2.8kg)

Tap (with coolant hole)

End mill

CORO MILL 390

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

Delta Drill

Coromant U drill

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)

Cutting head
R/L 570 type

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

Sleeve
132N-25xx (φ6,8,10,16,20)
132N-40xx (φ20,25,32)

Steel cutting tool for ID

Carbide cutting tool for ID
ExxX-STFCR/L xx-R

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)

CoroDrill® DS20
DS20-DxxxxxDMxx-xx (φ15-40,
MDI size, L/D 04 OR 07)

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)

Metric
Inch

Turret Head

24ST

B1011202-01
B1012202-01
Turning Holder(A)
CW

B1211202-01
B1212202-01
Turning Holder(A)
CCW

B1111202-01
B1112202-01
Cut-off Holder
CW

B1311202-01
B1312202-01
Cut-off Holder
CCW

B1021201-01
B1022201-01
Turning Holder(AL)
CW

B1221202-01
B1222202-01
Turning Holder(AL)
CCW

B1031201-01
B1032201-01
Turning Holder(AS)

Qualified Tool
□20×95
□19.05×95

Qualified Tool
□20×125
□19.05×125

AC1310
Cross Holder
(MAX.φ16)

AG1393
Straight Holder
(MAX.φ16)

B1021252-01
B1022252-01
Turning Holder(AL)
CW

B1221252-01
B1222252-01
Turning Holder(AL)
CCW

B1031251-01
B1032251-01
Turning Holder(AS)

Qualified Tool
□25×150
□25.4×150

B1061251-01
B1062251-01
Double Turning Holder(ALD)

Qualified Tool
□20×125
□19.05×125

B1041201-01
B1042201-01
Turning Holder(B)

Qualified Tool
□25×150
□25.4×150

B1041251-01
B1042251-01
Turning Holder(B)

B1081201-01
B1082201-01
Quadruple Turning Holder(AL)
(□20)(□19.05)

R145102
R145103
Clamp piece

Qualified Tool
□20×95
□19.05×95

B1101252-01
B1102252-01
Turning Boring Holder(AL)
(□20,φ25)(□19.05,φ25.4)

N3170(φ25)
N3180(φ25.4)
Set Ring

M2112(φ25-φ12)
M2113(φ25-φ10)
M2508(φ25-φ8)
M2506(φ25-φ6)
M2122(φ25.4-φ12.7)
M2123(φ25.4-φ9.525)
Tool Holder

B1431252-01
B1432252-01
Double Boring Holder(B)
(φ25)(φ25.4)

M2110(φ25-φ20)
M2111(φ25-φ16)
M2120(φ25.4-φ19.05)
M2121(φ25.4-φ15.875)
Round Hole Bushing

B1411252-01
B1412252-01
Boring Holder
(φ25)(φ25.4)

Z1910(φ25-φ20)
Z1911(φ25-φ16)
Z1920(φ25.4-φ19.05)
Z1921(φ25.4-φ15.875)
Reduction bush

B1411252-12
B1412252-12
Boring Holder
(Coolant through)
(φ25)(φ25.4)

B1411322-01
B1412322-01
Boring Holder
(φ32)(φ31.75)

N3171(φ32)
N3181(φ31.75)
Set Ring

HS134(φ32-φ16)
HS133(φ32-φ12)
HS132(φ32-φ10)
HS131(φ32-φ8)
HS130(φ32-φ6)
M2682(φ31.75-φ12.7)
M2688(φ31.75-φ9.525)
Tool Holder

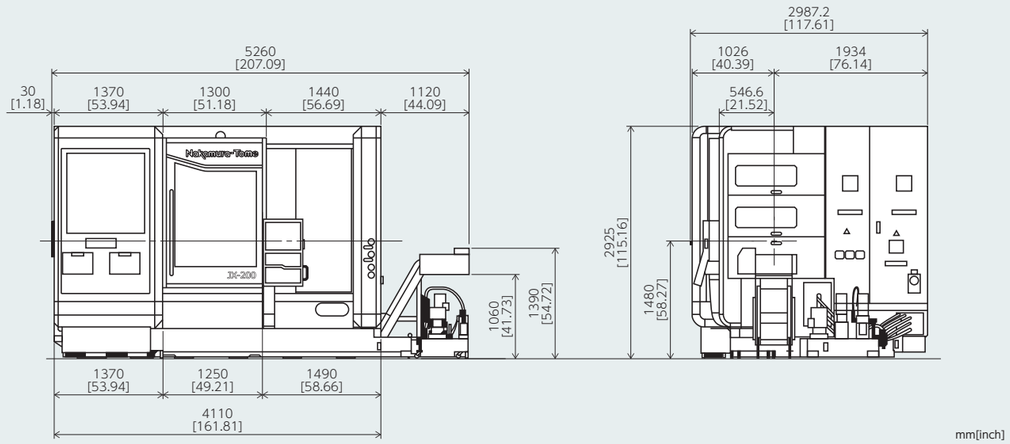
B1411322-12
B1412322-12
Boring Holder
(Coolant through)
(φ32)(φ31.75)

N1154(φ32-φ25)
N1152(φ32-φ20)
N1160(φ31.75-φ25)
Round Hole Bush

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

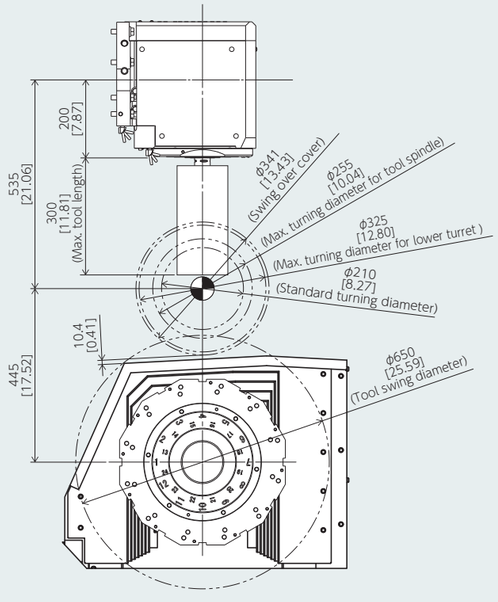
Machine Dimensions ／ Travel Range ／ Maximum Tool Diameter

Machine Dimensions



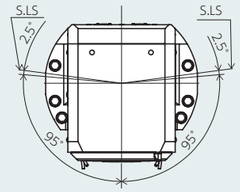
mm[inch]

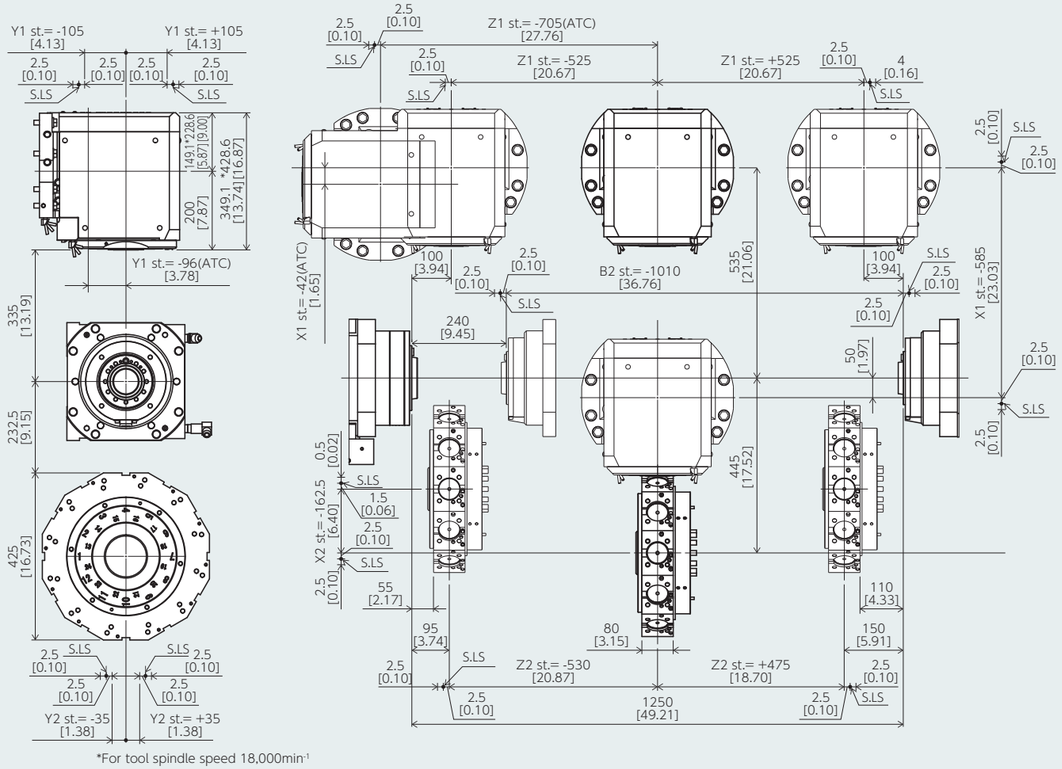
Maximum Tool Diameter



mm[inch]

Travel Range





*For tool spindle speed 18,000min-1

mm[inch]

■ Capacity

	φ51	φ65	φ80*
Max. turning diameter (Tool spindle / Lower turret)	325mm / 255mm		
Distance between spindles	max.1,250mm / min.240mm		
Max. turning length	1,058mm		
Bar capacity	φ51mm	φ65mm	φ80mm
Chuck size	6" / 8" / 10"		

■ Axis travel

X1-Axis slide travel	585mm
X2-Axis slide travel	162.5mm
Z1-Axis slide travel	1,050mm (at ATC+180mm)
Z2-Axis slide travel	1,005mm
Y1-Axis slide travel	±105mm
Y2-Axis slide travel	±35mm
B2-Axis slide travel	1,010mm

■ Rapid feed

X1-Axis rapid feed rate	30m/min
X2-Axis rapid feed rate	16m/min
Z1-Axis rapid feed rate	40m/min
Z2-Axis rapid feed rate	40m/min
Y1-Axis rapid feed rate	16m/min
Y2-Axis rapid feed rate	6m/min
B2-Axis rapid feed rate	40m/min

■ L-spindle

		φ65	φ80(op.)*
Spindle speed	-	4,500min^{-1}	3,500min^{-1}
Spindle speed range	-	Stepless	Stepless
Spindle nose	-	A2-6	A2-8
Hole through spindle	-	80mm	90mm
I.D. of front bearing	-	120mm	130mm
Hole through draw tube	-	66mm	81mm

■ R-spindle

	φ51	φ65(op.)	
Spindle speed	6,000min^{-1}	4,500min^{-1}	-
Spindle speed range	Stepless	Stepless	-
Spindle nose	A2-5	A2-6	-
Hole through spindle	63mm	80mm	-
I.D. of front bearing	100mm	120mm	-
Hole through draw tube	52mm	66mm	-

* Specification of φ51mm bar capacity is not available on R-spindle when φ80mm bar capacity is selected on L-spindle.

●Safety quality specifications

Various interlocks, such safety fences, auto extinguisher devices, and other safety related equipment may be required. These have to be selected during the configuration of the machine.

① Safety devices include electromagnetic door lock, chuck interlock, hydraulic pressure switch, air pressure switch, short circuit breaker and quill interlock.
(Door interlock and chuck interlock are standard equipment.)

② In the case of automation, various safety fences may be required, such as work stocker safety fences, robot safety fences, etc.

During the configuration of machine specifications, please discuss these requirements with the Nakamura-Tome machine sales representative.

■ ATC Tool spindle

Tool spindle speed	12,000min^{-1} / 18,000min^{-1} (op.)
Swiveling range	190° (±95°)
Tool coupling type	CAPTO C6 / HSK-T63(op.)
Number of tools	80, (40, 120 op.)
Max. tool diameter / Without adjacent tool	90mm / 130mm
Max. tool length	300mm

■ Lower turret

Type of turret head	Dodecagonal drum turret
Number of tool stations	12 (Max.24)
Number of Indexing positions	24
Tool size (square shank)	□25mm
Tool size (round shank)	φ32mm

■ Milling

Rotary system	Individual rotation
Milling spindle speed	6,000min^{-1} / 8,000min^{-1}(op.)
Spindle speed range	Stepless
Number of milling stations	12
Tool size	Straight holder φ1mm-φ16mm
	Cross holder φ1mm-φ16mm

■ Drive motor

	φ51	φ65	φ80*
L-spindle	-	15/11kW	18.5/15kW(op.)
R-spindle	11/7.5kW	15/11kW(op.)	-
Tool Spindle	15/11kW		
Milling (Lower turret)	5.5/3.7kW		

■ General

Height		2,925mm
Floor space (L x W)		5,250mm ×2,987.2mm
Machine weight (incl. control)	ATC 80	23,000kg
	ATC 40(op.)	22,500kg
	ATC 120(op.)	24,000kg

■ Power requirements

Power supply	59.5kVA(63.5kVA) (L-spindle 15/11kW, R-spindle 11/7.5kW)
	62.5kVA(66.5kVA) (L-spindle 15/11kW, R-spindle 15/11kW)
	66.1kVA(70.1kVA) (L-spindle 18.5/15kW, R-spindle 15/11kW)

●Precautions on the use of cutting fluids and lubricating oils

Some types of cutting fluids (coolant) are harmful to machine components, causing damages such as peeling of paint, cracking of resin, expansion of rubber, corrosion, and rust build-up on aluminum and copper.

To avoid causing damage to the machine, never use synthetic coolants, or any coolants containing chlorine. In addition, never use coolants and lubricating oils which contain organic solvents such as butane, pentane, hexane, and octane.

■ Items

Control Type	FANUC 31i-B5 Plus(2-PATH)

■ Controlled axes

Controlled axes	10 axes	
Simultaneously Controlled axes	Upper	5 axes(X1, Z1, C1(C2), Y1, B1 axis)
	Lower	5 axes(X2, Z2, C2(C1), Y2. B2 axis)

■ Input command

Least input increment	X,Z,Y,B2 : 0.001mm/0.0001inch (diameter for X-axis), C,B1 : 0.001°
Least command increment	X : 0.0005mm / Z,Y,B2 : 0.001mm / C,B1 : 0.001°
Max. programmable dimension	±999999.999mm / ±39370.0787in , ±999999.999°
Absolute/ Incremental programming	X, Z, Y, C, B(absolute only for B) / U, W, V, H
Decimal input	Standard
Inch / Metric conversion	G20 / G21
Programmable data input	G10

■ Feed function

Cutting feed	feed/min X, Z : 1-8000mm/min, 0.01-315inch/min (1-4800mm/min, 0.01-188inch/min) Y1 : 1-8000mm/min, 0.01-315inch/min (1-4800mm/min, 0.01-188inch/min) Y2 : 1-6000mm/min, 0.01-236inch/min (1-4800mm/min, 0.01-188inch/min) C : 1-4800°/min B1 : 1-8000°/min (1-4800°/min) B2 : 1-8000mm/min, 0.01-315inch/min (1-4800mm/min, 0.01-188inch/min) feed/rev 0.0001-8000.0000mm/rev (0.0001-4800.0000mm/rev) 0.000001-50.000000inch/rev The maximum cutting feed rate is the value in AI contour control mode. In normal operation, it is enabled 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
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
Rapid feed override	Low/25/50/100% (can be set from 0-100 in 10% intervals on NT Setting screen)
Cutting feedrate override	0-150%, 10% (each 10%)
AI contouring control I	G5.1
L- Spindle override	50%-120% Set every 10%
R-Spindle override	50%-120% Set every 10%
Tool Spindle override	50%-120% Set every 10%

■ Program memory

Part program storage length / Number of registrable programs	4Mbyte Total 10240m	4000
	8Mbyte Total 20480m(op.)	
Parts program editing	delete, insert, change	
Program number search	Standard	
Sequence number search	Standard	
Address search	Standard	
Program storage memory	Battery backup	
Background editing	Standard	
DNC operation through memory card	Standard (Not including memory card)	
Extended part program editing	Standard	

■ Operation and display

HMI (Human Machine Interface)	NT SmartX
Operation panel : Display	19-inch color SXGA LCD touch panel
Operation panel : Keyboard	QWERTY keyboard

■ Programming assist functions

Circular interpolation R programming	Standard
Direct drawing dimension programming or Chamfering/ Corner R	Standard (Direct drawing dimension programming is standard)
Canned cycles	G90, G92, G94
Multiple repetitive canned cycles	G70-G76
Multiple repetitive canned cycles II	G71, G72
Canned cycles for drilling	G80-G89
Sub program	Standard
Custom macro	Standard (common variables #100 - #149, #500 - #549)
Additional custom macro variables	Standard (After addition, #100 - #199, #500 - #999, #98000 - #98499)
Luck-bei Ⅱ / NT Manual Guide i	Standard
Abnormal load detection function	Standard
NT Work Navigator	Standard(not including contact bar)
NT NURSE	Standard

■ Machine support functions

Rigid tapping	Standard
Spindle synchronized control	Standard
C-axis synchronized control	Standard(G496 C1. rapid feed positioning)
Spindle orientation	Standard
Tool spindle orientation	Standard : 4 positions (4×90°)(M785/M786/M787/M788)
	Maximum : 12 positions(12×30°)(G419)

■ ECO functions

Servo motor power off	Standard(Switch on Power Saving Mode in NT Setting screen)
Control of motor output during acceleration and deceleration	Standard(Switch on Power Saving Mode in NT Setting screen)
G-code for servo motor energy-saving during acceleration and deceleration	G356/G357
Automatic light off	Standard(Switch on Power Saving Mode in NT Setting screen)
Automatic monitor off	Standard(Switch on Power Saving Mode in NT Setting screen)

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