SC-300II/300IIL

Nakamura-Tome
SC-300II/300IIL

High-Rigidity, High-Precision!
Powerful Single Turret Machine

## High-Rigidity, High-Precision!

Innovative
Technology

~ Creating new values ~

SC-300II
SC-300IIL

We offer 10-inch and 12-inch class, single turret machines equipped with highly rigid box-way slides on all axes to enhance machining rigidity and stability. The SC-300II and SC-300IIL come standard with Milling and Y-axis, catering to a wide range of machining operations.

The machine structure achieves "rigidity, accuracy, and usability" providing extensive support to our customers' production.

- Highly rigid design with box-way slides on all axes.
- Equipped with Milling and Y-axis as standard.
- Y-axis slide stroke 120mm (±60mm).
- Milling motor output 7.5/3.7kW(12 stations), 5.5/3.7kW(16 stations).
- Available choice of Sub-spindle (MATA-BEI) or Tailstock on the Right side.
- Spindle motor output on the Left side 22/18.5kW, Spindle speed 3,500min^{-1}.
- Sub spindle motor output on the Right side 15/11kW, Sub spindle speed 5,000min^{-1}.
- Floor space 3,996mm×2,130mm(SC-300II), 4,902mm×2,130mm(SC-300IIL).
- Equipped with an Inverter-controlled Hydraulic Power Unit (HPU) as a standard, Eco-friendly specification.
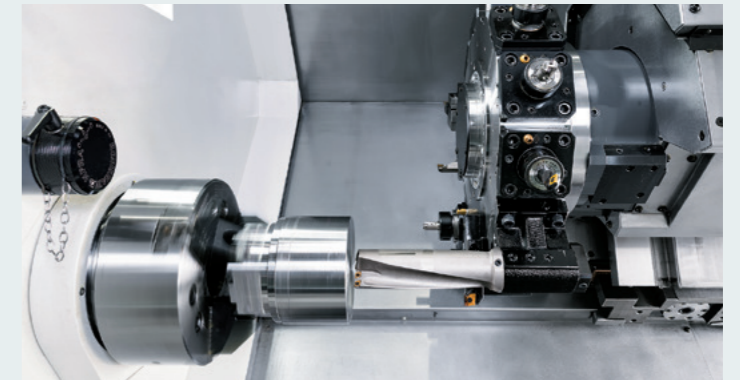
Main spindle		
C — C-axis	M — Milling Motor	Y — Y-axis

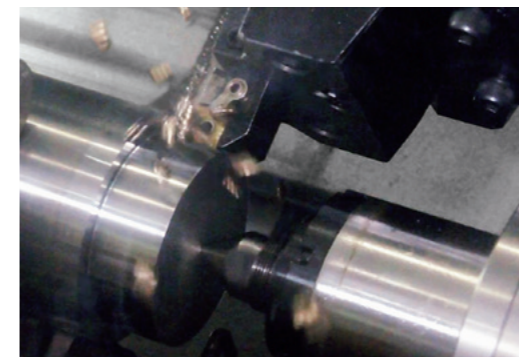| Sub spindle		
C — C-axis	B — Sub spindle	B — NC Tail stock

(op.)
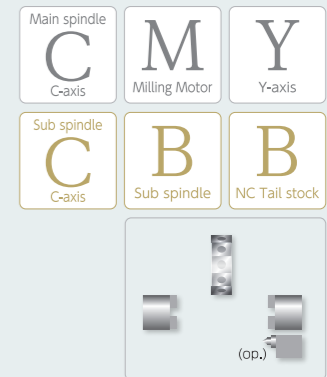
Best in Class Machining Capabilitie

High-rigidity machine structure realizes machining of difficult-to-cut materials as well as high-hardness materials!

Turning

- Cutting sectional area 4.95 mm²/rev
- Metal Removal Rate 594 cm³/min

- Cutting depth $9mm$ (Max.)
- Feed $0.55mm/rev$
- Cutting speed $120m/min$

Milling

- Y-axis slide travel ±60 mm
- Spindle speed $6,000$ min⁻¹

φ20 End mill
- Cutting blade $\phi20$
- Cutting depth $5mm$
- Feed $0.14mm/rev$
- Cutting speed $140m/min$

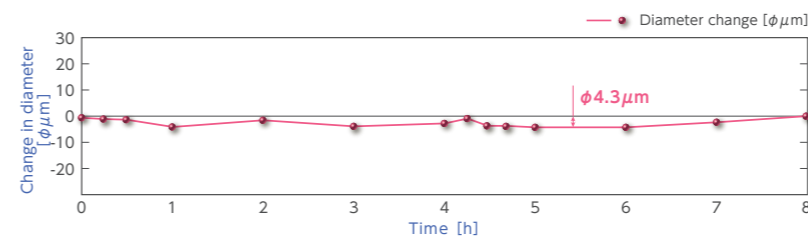#### φ22 End mill
- Cutting blade $\phi22$ (*1)
- Cutting depth $1mm$
- Feed $2.0mm/rev$
- Cutting speed $100m/min$

SC-300Ⅱ/300ⅡL is equipped with milling and Y-axis as standard, allowing various machining operations despite being a single turret machine. In addition, the frame structure, which is the foundation of the machine, has been improved to further enhance the rigidity of the machine. Each unit is mounted on a sturdy frame, enabling stronger and more stable machining.
A full range of software is also available, such as programming support, tool-management, and setup support. This machine supports customers' production in terms of both hardware and software.

NT Thermo Navigator
- Amount of Thermal displacement amount $\phi4.3\mu m$

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

— Diameter change [φμm]

Change in diameter [φμm]

$\phi4.3\mu m$

30
20
10
0
10
-20

0   1   2   3   4   5   6   7   8
Time [h]

Circularity
$0.48\mu m$

90
180
0
270
5μm
×2000

- Spindle speed $2,350$ min⁻¹
- Material $BsBM$
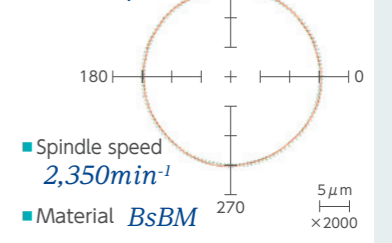
*1 Double-edged blade

*2 These data may change depending on actual cutting and environmental conditions.

Powerful Single Turret Machine
Milling and Y-axis are Equipped as Standard.

L-spindle

Standard

Bar capacity	ϕ71mm
Spindle motor	22/18.5kW 3,500min^{-1}

Option

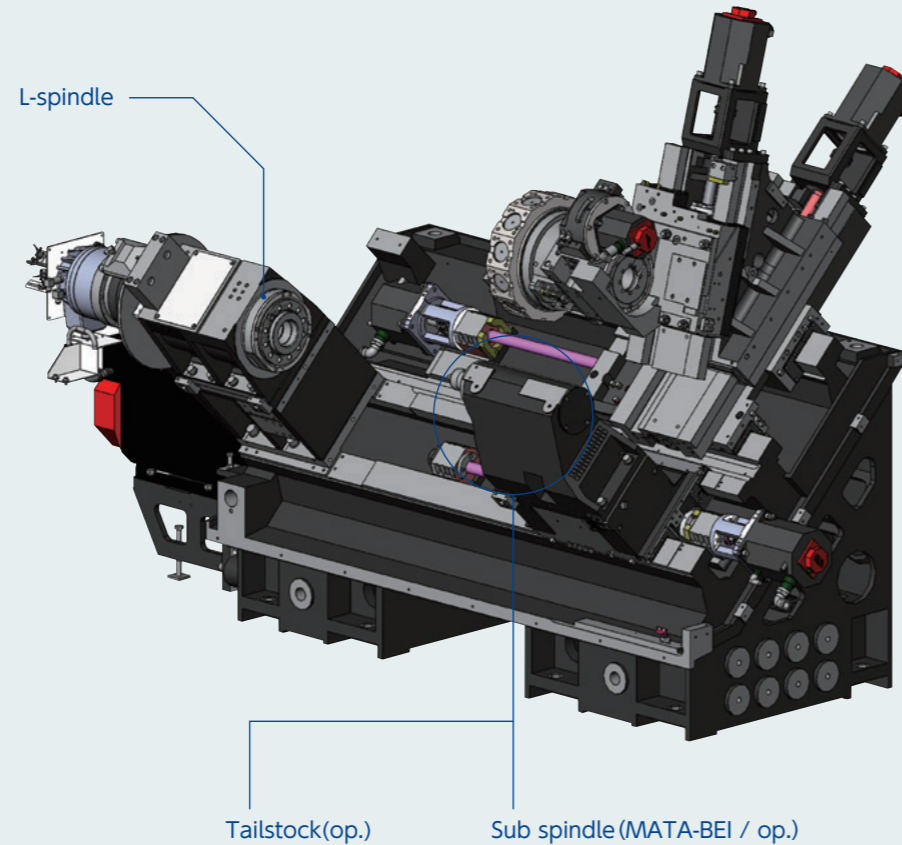|	
Bar capacity	ϕ89mm
Spindle motor	22/18.5kW 3,500min^{-1}

Sub spindle (MATA-BEI)

Option

Bar capacity	ϕ51mm
Spindle motor	15/11kW 5,000min^{-1}

L-spindle

Tailstock(op.)   Sub spindle (MATA-BEI / op.)

NC tailstock

The Tailstock body movement is program controlled by the NC control servo drive. The setting can be easily done on the NT NURSE screen for a maximum of 12 settings.
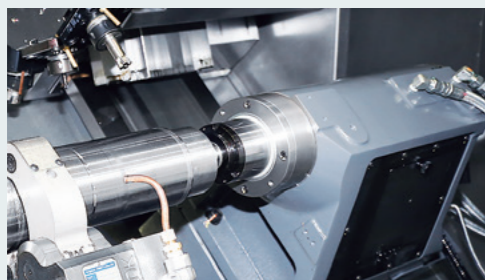
Tailstock

Option

Driving system	NC control servo-driven type
Quill taper	MT-5(Rotating center), MT-4(Built-in center)
Range of thrust force	2.5kN-6.5kN

Option(SC-300ⅡL)

Driving system	Z-axis slide (knock type)
Quill taper	MT-5(Rotating center), MT-4(Built-in center)
Quill diameter / Quill stroke	ϕ90mm / 100mm
Range of thrust force	1.3kN-7.85kN

Turret

Dodecagonal drum turret

Standard

Type of turret head	Dodecagon
Number of milling stations / Number of indexing positions	12/24
Y-axis slide travel	±60mm
Milling motor	7.5/3.7kW 6,000min^{-1}

16-station turret

Option

Type of turret head	Hexadecagon
Number of milling stations / Number of indexing positions	16/16
Y-axis slide travel	±60mm
Milling motor	5.5/3.7kW 6,000min^{-1}

▼ SC-300ⅡL

Turret
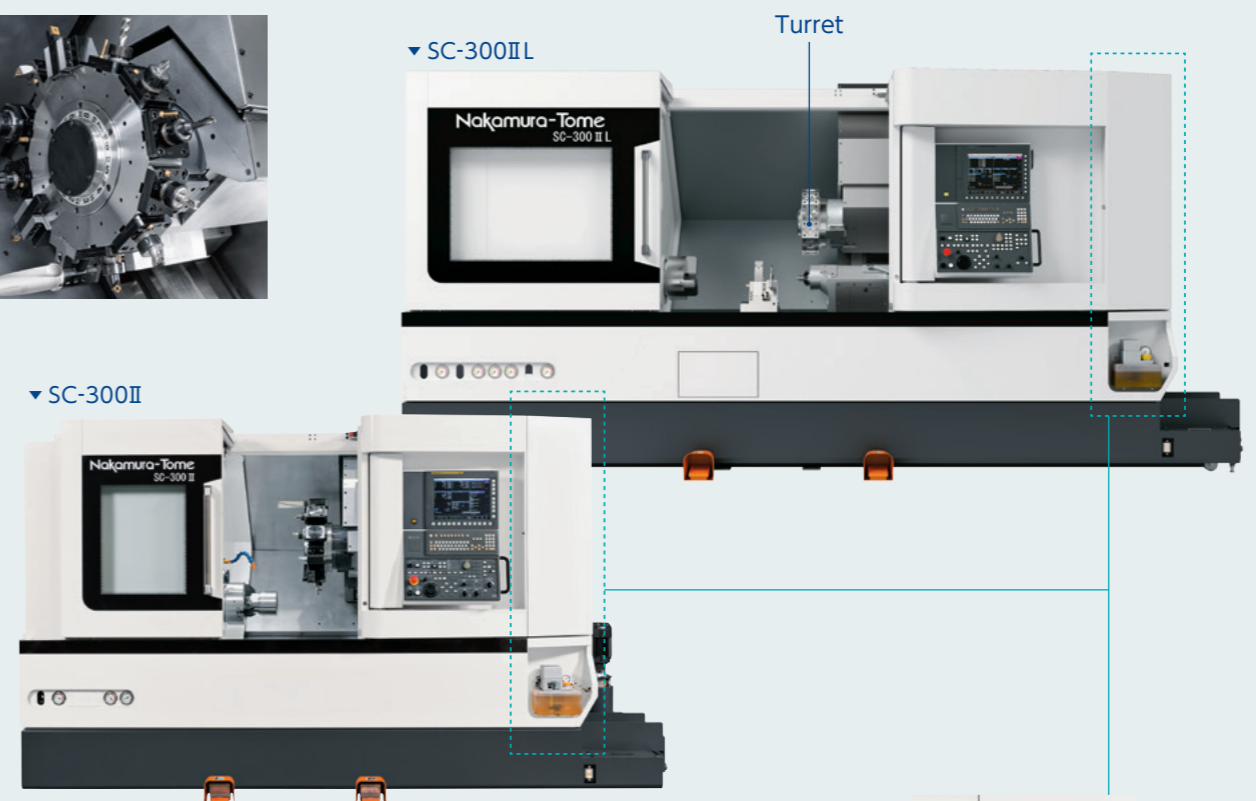
▼ SC-300Ⅱ

Eco Friendly!

An inveter-type hydraulic unit reduces power consumption.

Power consumption reduction **21%**※

* This value may change depending on actual machining conditions.

User Friendly

Easy to refill lubrication oil.

SC-300Ⅱ

15-inch color LCD display

The Ergonomically designed operation panel with swiveling function ensures maximum operator support and comfort during machine set up and operation.

Less floor space with compact design

Floor space (included chiptank)

Standard
W3,996mm × D2,130mm × H2,300mm

■ GR-210 High-Speed (op.) Automation of loading and unloading with a high-speed gantry loader significantly improves your productivity.

Speed		10kg	20kg(op.)
Loading/Unloading time	sec	6.0/6.0	10.5/10.5

Hand				
Workpiece diameter	Flange	mm	φ20-φ220	
	Shaft		φ20-φ100	
Workpiece length	Flange	mm	20-100	
	Shaft		50-200	
Hand turning	Flange	—	0.75sec/180°	3sec/180°
	Shaft		1.8sec/180°	
Workpiece weight	Flange	kg	10×2	20×1
	Shaft			
Jaw stroke	Flange	mm	φ40	φ32
	Shaft		φ30	

SC-300ⅡL

Package proposals

We offer three different types of specifications suitable for processing long workpieces.
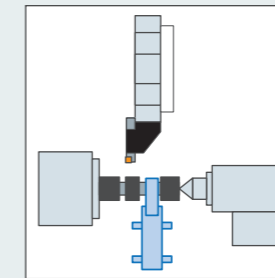
NC steady rest+ Tailstock(knock type)
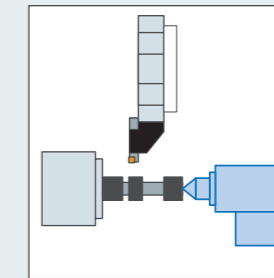
NC tailstock
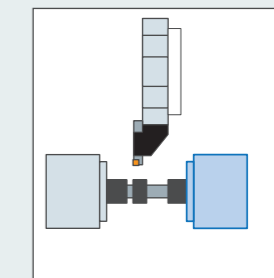
Sub spindle(MATA-BEI)

15-inch color LCD display

The Ergonomically designed operation panel with swiveling function ensures maximum operator support and comfort during machine set up and operation.

NC steady rest(op.)

■ NC steady rest

Option(SC-300 Ⅱ L)

Driving system	*NC control servo-driven type*
Model	*SLU-X3.1*
Centering range	*φ20mm-φ165mm*
Travel	*750mm*

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.

GR-210 High-Speed (SC-300II)
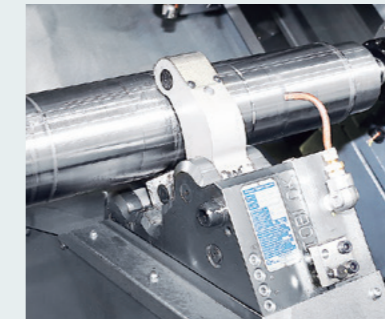
NC steady rest (SC-300IIL)
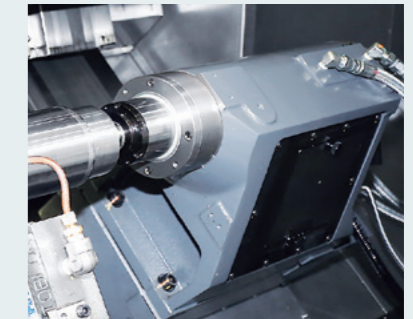
Tailstock(NC/knock type)
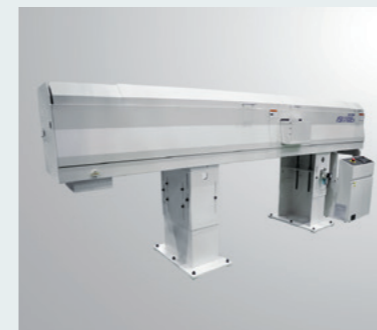
Bar feeder

Shaft loader

Shaft unloader

HAN-BEI (In-process measuring system)

Chip conveyor
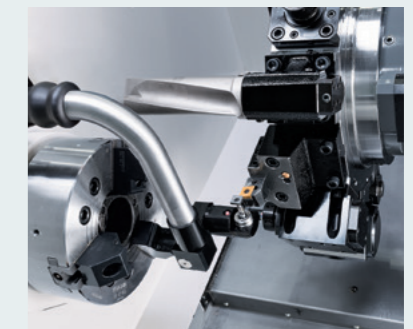
Tool setter

Automatic fire extinguisher+
Fire prevention damper

Duct for Mist collector

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

Full Operator Support :
User-Friendly and Highly Reliable

Jig-less!
Setup-less!
Skill-less!

This essential function for multitasking machines is standard.

Main Features

Standard
NT WORK NAVIGATOR
Airbag (Overload detection)
Advanced NT NURSE
NT Smart Sign
Digital Chuck Interlock

Option
NT Manual Guide i (LUCK-BEI II)

Digital Chuck Interlock

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

Airbag (Overload detection)

Compared to other machines, Nakamura-Tome machines 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 confident: Airbag!

Barrier?
Even with barrier function, machine collisions may occur

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.
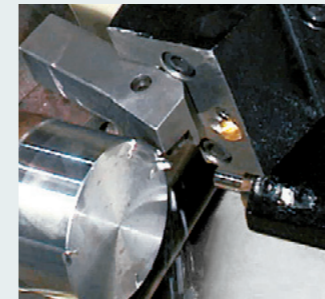
Without Airbag
Machines will not stop immediately.
The slide continues to move even after a collision.
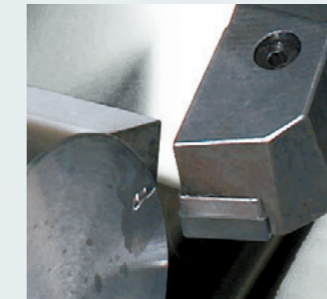
With Airbag
Retraction within 0.001 sec
Crash? Within one millisecond after a collision, the servo motor direction is reversed, and the machine stops in EMG mode.

Crash!

▲Video
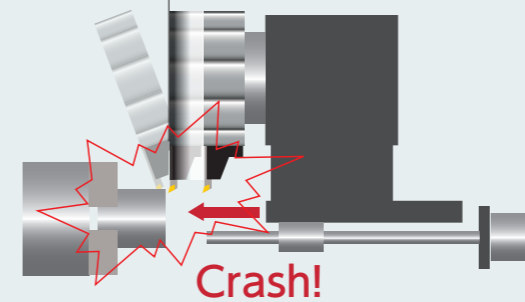
* This feature does not mean zero impact

NT WORK NAVIGATOR

X Y Z C B

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

Advanced NT WORK NAVIGATOR!

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.

No fixtures required
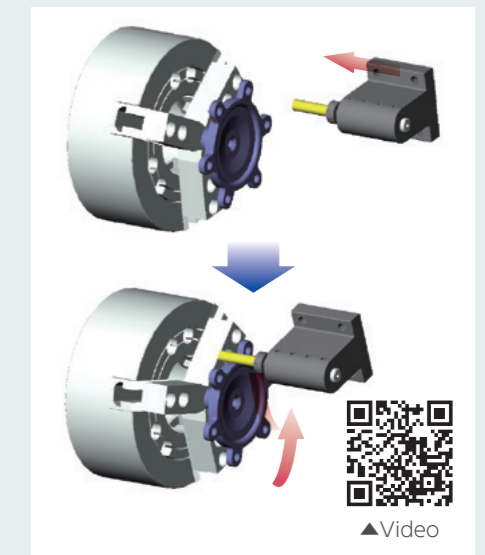
▲Video

Featuring Functions to Make Efficient Programs, Faster

Advanced NT NURSE

※Depending on machine specifications, some functions are not available.

All-in-one software!

NT NURSE is software that provides the operator with user-friendly support for operation, programming and production on the machine. Among vital features are phase recognition (a must for multitasking), direct chucking to prevent positioning error during transfer, and perfect synchronization of the left and right hand spindles. Among other features, are the load monitor for detecting tool wear and tool breakage, tool life management, operation condition monitoring, in addition to many other features to simplify programming, set up, operation and production, all offered in one single package.

Useful functions
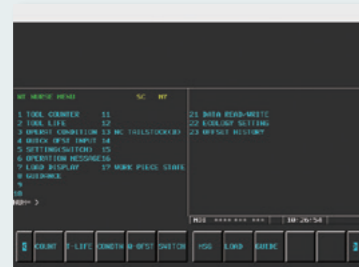
Menu Screen
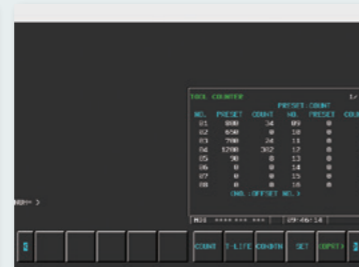
Tool Counter
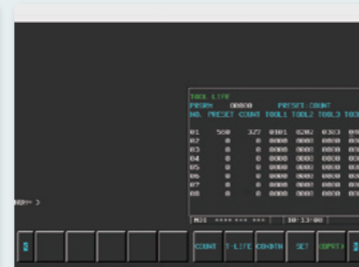
Tool Life
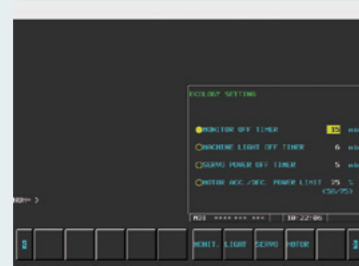
Energy Saving
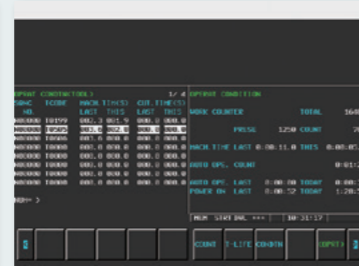
Operation Condition of each Tool
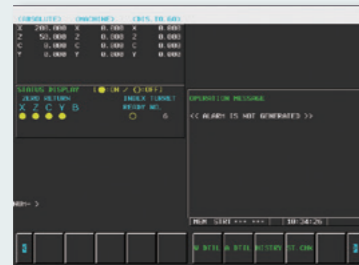
Operation Message

Quick Offset

NT NURSE Call Button

NT Manual Guide i (LUCK-BEI II)

A programming guidance system with the ability to generate NC programs (ISO/EIA G-code programs) easily. Processes created in conversational mode can be cut, copied or pasted ensuring flexibility. Additionally, several cycles such as part-transfer cycle, requiring waiting M-codes, are readily made with the "NC program editing support function". The "NC program simulation function" can be used to check created-programs by tool-path simulation or solid-model animation.
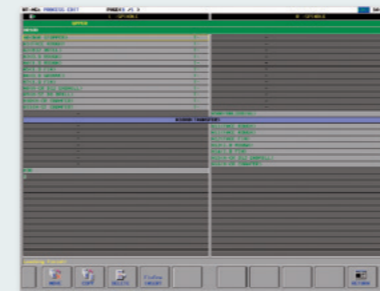
▲ Process Editing Function
NT Manual Guide i automatically recognizes each process and lists all processes. Operator can easily change and optimize the program by moving processes, copying processes or adding waiting-functions.

▲ Fixed-form sentence function
NT Manual Guide i contains more than 300 types of fixed form sentences. Operator can select these fixed form sentences for the program from a menu screen.
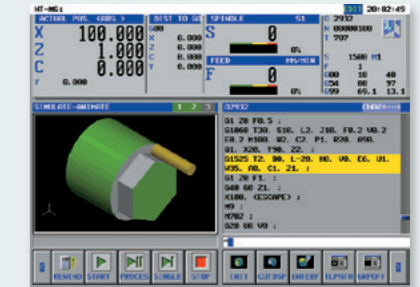
▲ Simulation
Accurate simulation of turning and milling operations using a 3D solid model.

By introducing the "automatic cutting condition setting function", the number of key strokes required to make a program were reduced by 50% reduced, compared with the previous NT-Manual guide version.

Key Stroke frequency
Reduced by 50%!!
Conventional / NT Manual Guide i LUCK-BEI Ⅱ
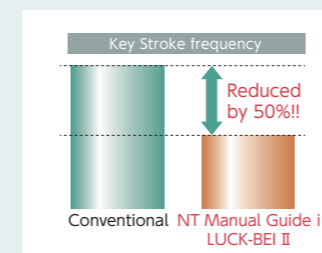
Automatic Cutting-Condition Setting Function

By setting the material type and required surface roughness, cutting conditions are automatically generated. These can be also changed depending on customer's experience.
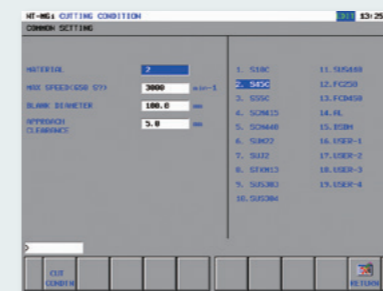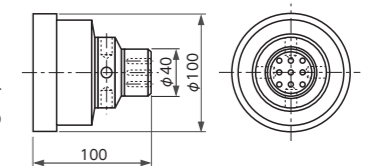
By selecting the material, cutting conditions are automatically input.
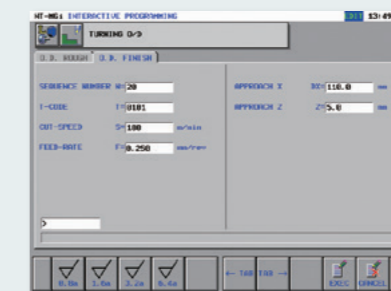
By setting the surface roughness, machining conditions are automatically input.

Cutting conditions of End mill

Torque/Output Chart

L-spindle motor   Standard

Bar capacity φ71 / φ89(op.)
22/18.5kW

Max Rotational Speed : 3,500min^{-1}

1000 Torque (N·m)
500.2N·m (S2 30min. S3 60%)
420.6N·m (S1 CONT.)
22kW
18.5kW
100
100 Output (kW)
10
10
1
0.1
10   100   1000   10000 Spindle speed (min^{-1})
35   420   2518   3500
420   3500

Sub spindle(MATA-BEI) motor   Option

Bar capacity φ51
15/11kW

Max Rotational Speed : 5,000min^{-1}

1000 Torque (N·m)
125.1N·m (S2 15min. S3 25%)
91.8N·m (S2 60min. S3 40%)
15kW
10.8kW
68.8N·m (S1 CONT.)
11kW
8.5kW
100
100 Output (kW)
10
10
1
0.1
10   100   1000   10000 Spindle speed (min^{-1})
50   1145   2672   5000
1527   5000

Milling motor   Standard

Dodecagonal drum turret
7.5/3.7kW

Max Rotational Speed : 6,000min^{-1}

1000 Torque (N·m)
7.5kW
40N·m (S3 15%)
3.7kW
17.7N·m (S1 CONT.)
100
100 Output (kW)
10
10
1
0.1
10   100   1000   10000 Spindle speed (min^{-1})
45   2000   4500   6000
1791   3500   6000

Milling motor   Option

16-station turret
5.5/3.7kW

Max Rotational Speed : 6,000min^{-1}

1000 Torque (N·m)
5.5kW
24N·m (60min. S3 40%)
3.7kW
24N·m (15min. S3 25%)
18N·m (S1 CONT.)
100
100 Output (kW)
10
10
1
0.1
10   100   1000   10000 Spindle speed (min^{-1})
60   2230   6000
1500   2000
6000

Machine Dimensions

SC-300II

45.6 [1.80] 203.7*1 [8.02] 1107.3 [43.59] 391.8 [15.43] (op.)
2125 [83.66] 2225*2 [87.60]
56.0 [22.05]
1062.8 [41.84]
257 [10.12]
1061 [41.77]
1075 [42.32]
2300 [90.55]
210 [8.27] 260*1 [10.24]
L-spindle   910*2 [35.83]   Sub spindle(op.)
3207.3 [126.27]
3995.9 [157.32]   4045.9*1 [159.29]
4480.1 [176.38]   4530.1*1 [178.35]
544.4 [21.43]   1586 [62.44]
2130.4 [83.87]

*1 L-spindle(φ89) specifications
*2 Sub spindle(MATA-BEI) specifications

mm[inch]

SC-300II L

45.6 [1.80] 1407.3 [55.41] 1270 [50.00] (Door open) 391.8 [15.43] (op.)
2225 [87.60]
1061 [41.77]
1075 [42.32]
2300 [90.55]
L-spindle   4277.3 [168.40]   578.6 [22.78]
4901.5 [192.97]
5380.7 [211.84]   1057.8 [41.65]
544.8 [21.45]   1585.7 [62.43]
2130.4 [83.87]

mm[inch]

SC-300Ⅱ

Tailstock

Z ST=-635 [25.00]
2.5 [0.10] 2.5 [0.10]
S.LS
X ST=-232.5 [9.15]
2.5 [0.10] S.LS
2.5 [0.10]
477.5 [18.80]
391 [15.39]
282 [11.10]
2.5 [0.10] 2.5 [0.10]
S.LS
100 [3.94]
S.LS 2.5 [0.10]
S.LS 2.5 [0.10] 2.5 [0.10]
2.5 [0.10]
163 [6.42]
Tailstock ST=-500 [19.69]
713.5 [28.09]
798 [31.42]

mm[inch]

Sub spindle

Z ST=-635 [25.00]
2.5 [0.10] 2.5 [0.10]
S.LS
X ST=-215 [8.46]
2.5 [0.10] S.LS
2.5 [0.10]
477.5 [18.80]
391 [15.39]
282 [11.10]
2.5 [0.10] 2.5 [0.10]
S.LS
100 [3.94]
2.5 [0.10]
S.LS
163 [6.42] 2.5 [0.10] 2.5 [0.10]
S.LS 2.5 [0.10] 2.5 [0.10]
798 [31.42]
310 [12.20]
B ST=600 [23.62]
910 [35.83]

mm[inch]

SC-300Ⅱ L

NC steady rest+Tailstock

1298 [51.10]
Z ST=-1135 [44.69]
2.5 [0.10] 2.5 [0.10]
S.LS
X ST=-232.5 [9.15]
2.5 [0.10] S.LS
2.5 [0.10]
477.5 [18.80]
391 [15.39]
282 [11.10]
2.5 [0.10] 2.5 [0.10]
S.LS
100 [3.94]
SMW SLU-X3.1
256 [10.08] 57.5 [2.26]
2.5 [0.10] 2.5 [0.10] NC steady rest ST=750 [29.53] 2.5 [0.10] 2.5 [0.10]
S.LS Tailstock(knock type) ST =900 [35.43] S.LS
Quill ST=100 [3.94] NC tailstock ST =-1000 [39.37]
1213.5 [47.78]

mm[inch]

Sub spindle

1298 [51.10]
Z ST=-1135 [44.69]
2.5 [0.10] 2.5 [0.10]
S.LS
X ST=-215 [8.46]
2.5 [0.10] S.LS
2.5 [0.10]
477.5 [18.80]
391 [15.39]
282 [11.10]
2.5 [0.10] 2.5 [0.10]
S.LS
100 [3.94]
2.5 [0.10] 2.5 [0.10]
S.LS
310 [12.20] 2.5 [0.10] 2.5 [0.10]
S.LS 2.5 [0.10] 2.5 [0.10]
B ST=1000 [39.37]
S.LS
1310 [51.57]

mm[inch]

Dodecagonal drum turret

Turret Head

Metric
Inch

Cross Holder
C1513251-02
(Max.φ25/AR40)
(Max.6000min⁻¹)

Straight Holder
C1613251-02
(Max.φ25/AR40)
(Max.6000min⁻¹)

Qualified Tool
□25×150
□25.4×150

Qualified Tool
□25×150
□25.4×150

Qualified Tool
□20×112
□19.05×112

C1021252-01
C1022252-01
Turning Holder(AL)CW
(□25) (□25.4)

C1221252-01
C1222252-01
Turning Holder(AL)CCW
(□25) (□25.4)

C1041252-01
C1042252-01
Turning Holder(B)
(□25) (□25.4)

C1111201-01
C1112201-01
Cut-off Holder CW
(□20) (□19.05)

C1311201-01
C1312201-01
Cut-off Holder CCW
(□20) (□19.05)

C1411401-01
C1412401-01
Boring Holder
(φ40) (φ38.1)

C1411401-12
C1412401-12
Boring Holder (Coolant through)
(φ40) (φ38.1)

C1421251-01※
C1422251-01
Double Boring Holde (A)
(φ25) (φ25.4)

C1431251-01
C1432251-01
Double Boring Holde (B)
(φ25/24ST) (φ25.4/24ST)

C1091252-01
C1092252-01
Turning Boring Holder (AL)
(□20, φ25/24ST)
(□19.05, φ25.4/24ST)

C1051202-01
C1052202-01
Double Turning Holder (AL)
(□20/24ST) (□19.05/24ST)

C1071252-01
C1072252-01
Double Turning Holder (ALS)
(□25) (□25.4)

M3679 (φ40-φ12)
M3678 (φ40-φ16)
N 2141 (φ38.1-φ12.7)
N 2142 (φ38.1-φ15.875)
Tool Holder

N3173 (φ40)
N3182 (φ38.1)
Set Ring

M3877 (φ40-φ20)   N 2160 (φ38.1-φ19.05)
M3176 (φ40-φ25)   N 2161 (φ38.1-φ25.4)
M3175 (φ40-φ32)   N 2162 (φ38.1-φ31.75)
Round Hole Bushing

M2112 (φ25-φ12)
M2113 (φ25-φ10)
M 2122 (φ25.4-φ12.7)
M 2123 (φ25.4-φ9.525)
Tool Holder

N3170 (φ25)
N3180 (φ25.4)
Set Ring

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

Qualified Tool
□20×102
□19.05×102

Clamp piece
R145102
R145103

Qualified Tool
□25×150
□25.4×150

Cover plate
W245302
(□24)

Tools marked by ※ is not available when sub spindle (MATA-BEI) is applied because the lower hole cannot the spindle center.

16-station turret

Cross Holder
AC1310
(Max.φ16/AR25)
(Max.6000min⁻¹)

Straight Holder
AC1313
(Max.φ16/AR25)
(Max.6000min⁻¹)

Qualified Tool
□25×100
□25.4×100

Qualified Tool
□20×95
□19.05×95

Qualified Tool
□20×125
□19.05×125

Qualified Tool
□25×130
□25.4×130

Qualified Tool
□20×125
□19.05×125

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

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

B1031251-01
B1032251-01
Turning Holder(AS)

B1031201-01
B1032201-01
Turning Holder(AS)

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

B1041251-01
B1042251-01
Turning Holder(B)

B1041201-01
B1042201-01
Turning Holder(B)

B1411253-01
B1412253-01
Boring Holder
(φ25) (φ25.4)

B1411253-12
B1412253-12
Boring Holder (Coolant through)
(φ25) (φ25.4)

B1421251-01※
B1422251-01
Double Boring Holde (A)
(φ25) (φ25.4)

B1411321-01
B1412321-01
Boring Holder
(φ32) (φ31.75)

B1411321-12
B1412321-12
Boring Holder (Coolant through)
(φ32) (φ31.75)

Turret Head

Metric
Inch

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

N3170 (φ25)
N3180 (φ25.4)
Set Ring

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

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

N3171 (φ32)
N3181 (φ31.75)
Set Ring

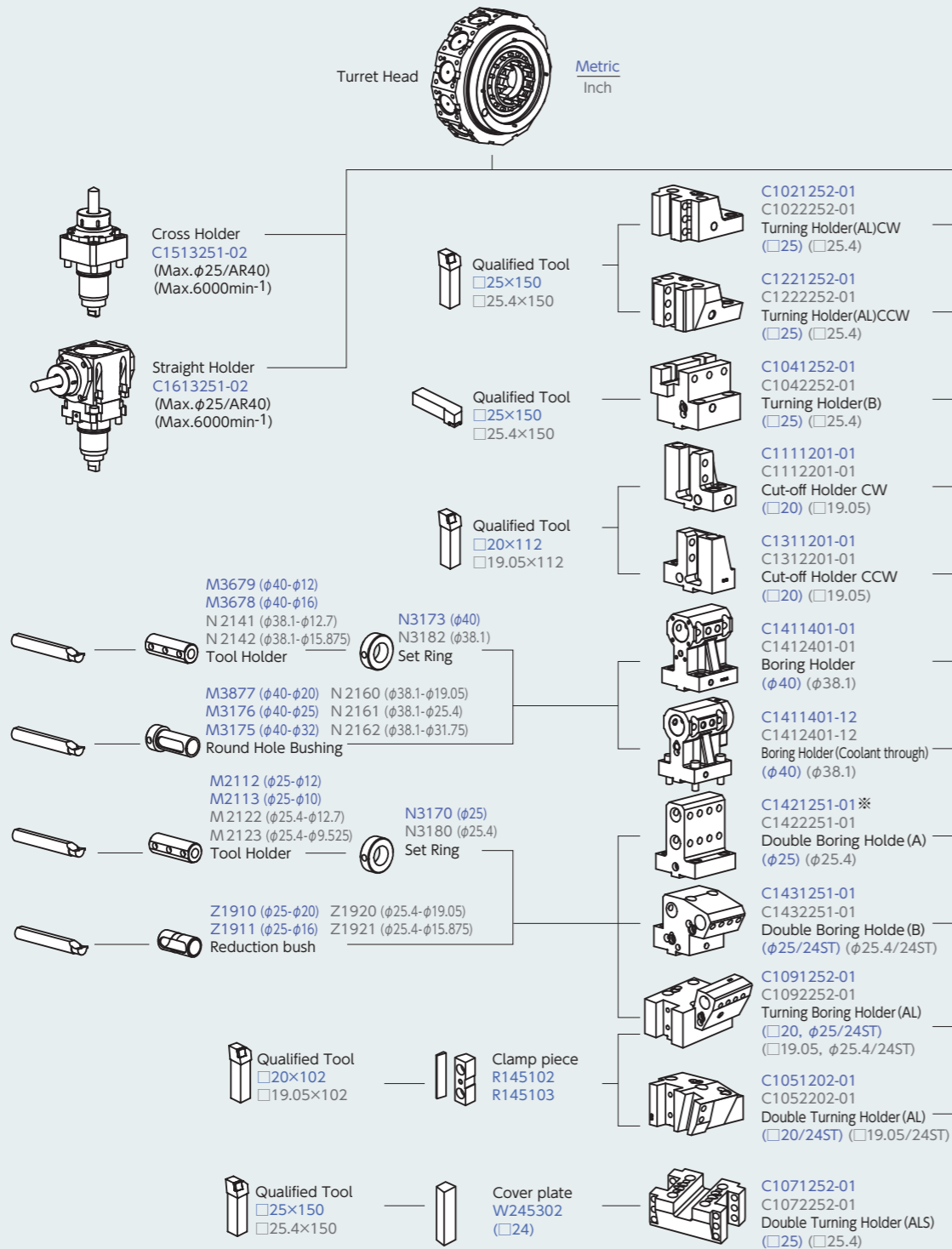N1152 (φ32-φ20) M2885 (φ31.75-φ19.05) M2886 (φ31.75-φ12.7)
N1154 (φ32-φ25)   M2887 (φ31.75-φ15.875)
Round Hole Bushing
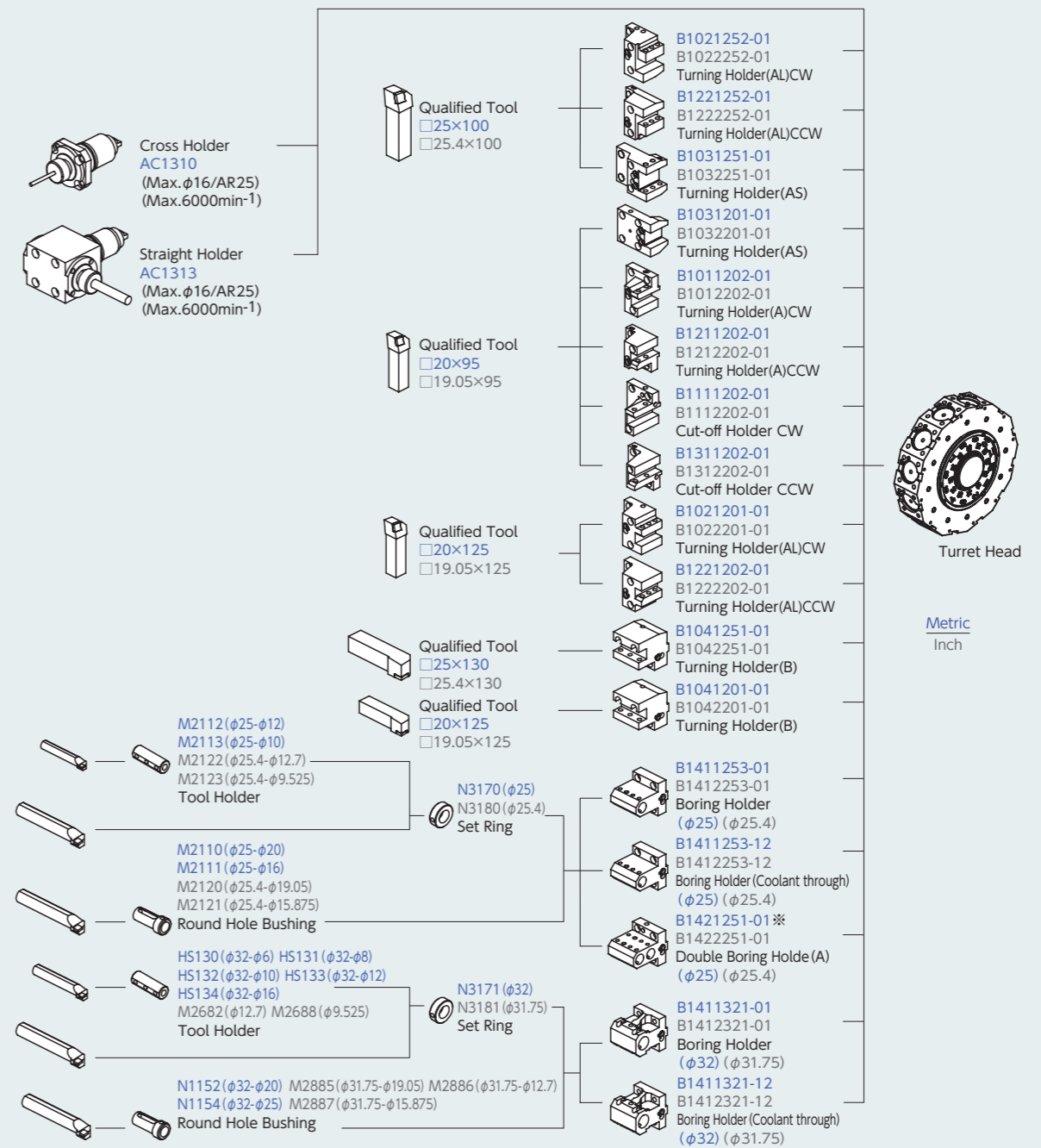
Tools marked by ※ is not available when sub spindle (MATA-BEI) is applied because the lower hole cannot the spindle center.

SC-300Ⅱ/300ⅡL

Machine・Control Specifications

■ Capacity

		φ71	φ89(op.)	φ51(op.)
Max. turning diameter		360mm		
Distance between Spindles(op.)	SC-300Ⅱ	max.910mm / min.310mm(Sub spindle)		
	SC-300Ⅱ L	max.1,310mm / min.310mm(Sub spindle)		
Distance between centers(op.)	SC-300Ⅱ	max.713.5mm / min.213.5mm(Tailstock)		
	SC-300Ⅱ L	max.1,213.5mm / min.213.5mm(Tailstock)		
Max. turning length	SC-300Ⅱ	635mm(Sub spindle), 600mm(Tailstock)		
	SC-300Ⅱ L	1,135mm(Sub spindle), 1,100mm(Tailstock)		
Bar capacity	L	φ71mm	φ89mm	-
	R	-		φ51mm
Chuck size	L	10" / 12"		-
	R	-		6" / 8"

■ Axis travel

X-axis slide travel	232.5mm / 215mm(Sub spindle)	
Z-axis slide travel	SC-300Ⅱ	635mm
	SC-300Ⅱ L	1,135mm
Y-axis slide travel	±60mm	
B-axis slide travel(op.)	SC-300Ⅱ	600mm(Sub spindle)
	SC-300Ⅱ L	1,000mm(Sub spindle)

■ Rapid feed

X-axis rapid feed rate	25m/min
Z-axis rapid feed rate	30m/min
Y-axis rapid feed rate	12.5m/min
B-axis rapid feed rate(op.)	20m/min(Sub spindle)

■ Main spindle

Spindle speed	3,500min⁻¹	3,500min⁻¹	-
Spindle speed range	Stepless	Stepless	-
Spindle nose	A2-8	A2-8	-
Hole through spindle	85mm	100mm	-
I.D. of front bearing	120mm	140mm	-
Hole through draw tube	72mm	90mm	-

■ Sub spindle

Spindle speed	-	-	5,000min⁻¹
Spindle speed range	-	-	Stepless
Spindle nose	-	-	A2-5
Hole through spindle	-	-	63mm
I.D. of front bearing	-	-	90mm
Hole through draw tube	-	-	52mm

●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.

■ C-axis

Least input increment	0.001°
Least command increment	0.001°
Rapid speed	200min⁻¹
Cutting feed rate	1-4,800° /min
C-axis clamp	Disk clamp
C-axis connecting time	1.5s

■ Turret

Type of turret head	12st	Dodecagonal
	16st(op.)	Hexadecagon
Number of Indexing positions	12st	24
	16st(op.)	16
Tool size (square shank)	12st	□25mm
	16st(op.)	□20mm
Tool size (round shank)	12st	φ40mm
	16st(op.)	φ32mm

■ Milling

Rotary system	Individual rotation	
Milling spindle speed	6,000min⁻¹	
Spindle speed range	Stepless	
Number of milling stations	12st	12
	16st(op.)	16
Tool size	12st	φ1- φ25mm
	16st(op.)	φ1- φ16mm

■ Tailstock (op.)

	Tailstock(knock type)	NC tailstock
Driving system	Z-axis slide(knock type)	NC control servo-driven type
Travel	SC-300Ⅱ	-	500mm
	SC-300Ⅱ L	900mm	1,000mm
Quill taper	MT-5(Rotating center), MT-4(Built-in center)	
Quill diameter / Quill stroke	φ90mm/100mm	-
Range of thrust force	1.3-7.85kN	2.5-6.5kN

■ Steady rest (op. SC-300Ⅱ L)

Driving system	NC control servo-driven type
Travel	750mm
Model	SLU-X3.1
Centering range	φ20- φ165mm

■ Drive motor

Main spindle	22/18.5kW	
Sub spindle	15/11kW	
Milling	12st	7.5/3.7kW
	16st(op.)	5.5/3.7kW

■ General

Height	2,300mm	
Floor space (W x D)	SC-300Ⅱ	3,996mm ×2,130mm
	SC-300Ⅱ L	4,902mm ×2,130mm
Machine weight (incl. control)	SC-300Ⅱ	9,000kg
	SC-300Ⅱ L	11,000kg

■ Power requirements

Power supply	31.0kVA
	39.2kVA (Sub spindle)

■ Items

Control Type	Nakamura-Tome FANUC(0i-TF)

■ Controlled axes

Controlled axes	4 axes(X, Z, C, Y axis)
Simultaneously Controlled axes	4 axes

■ Input command

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

■ Feed function

Cutting feed	feed/min X, Z： 1～8000mm/min, 0.01～314inch/min (1～4800mm/min, 0.01～188inch/min) Y： 1～8000mm/min, 0.01～314inch/min (1～4800mm/min, 0.01～188inch/min) C1： 1～4800°/min feed/rev 0.0001～500.0000mm/rev 0.000001～9.999999inch/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
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
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% (each 10%)
AI contouring control I	G5.1
Spindle override	50% -120% Set every 10%

●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.

■ Program memory

Part program storage length / Number of registrable programs	Standard	512Kbyte Total 1280m	400
			1000(op.)
		2Mbyte Total 5120m	400(op.)
			1000(op.)
	Sub spindle(op.)	1Mbyte Total 2560m	800
			1000(op.)
		2Mbyte Total 5120m	800(op.)
			1000(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

Operation panel : Display	15-inch color LCD
Operation panel : Keyboard	Separate type MDI unit(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)
LUCK-BEI Ⅱ / NT Manual Guide i	Option
Abnormal load detection function	Standard
NT WORK NAVIGATOR	Standard(not including contact bar)
NT NURSE	Standard

■ Machine support functions

Spindle rigid tapping	Standard
Spindle orientation	Standard(any angle is available within 360°, Control unit: 0.088°)
Milling rigid tapping	Standard
Polygon function	Standard

■ 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
Fan motor stop	Standard
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)

Nakamura-Tome

https://www.nakamura-tome.com

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