Nidec
All for dreams

Vertical Machining Center

VB53α

www.nidec.com/en/nidec-okk/

NIDEC OKK CORPORATION

Vertical Machining Center that Realizes High-quality Machining of Dies and Precision Parts

VB53α

Main Specification

Spindle speed	100 to 20000min^{-1}	Number of stored tools	30 tools
Rapid traverse rate (X×Y×Z)	20×20×20m/min (787×787×787 ipm)	Tool exchange time (tool-to-tool)	2 sec

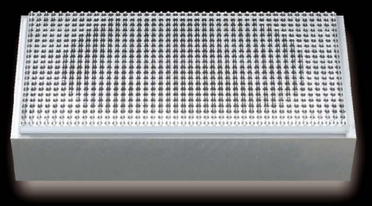
For Higher Accuracy and Higher Quality

It improves quality of machined surfaces and reduces machining time by minimizing residual vibration at the time of high-speed machining.

Automobile interior part
Material:NAK80

Sample die
Material:NAK80

It incorporates the environmental thermal displacement correction "Soft Scale Cube" that responds to the changes in temperature in the general factories' environment and supports stabilization of the machining accuracy.

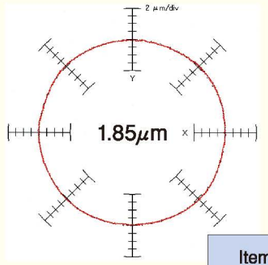


Loudspeaker
Material:NAK80

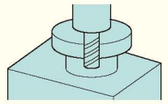
Its standard specification includes the linear scale, the high-resolution (small-lead) ball screw, the Hyper HQ Control, and the large-capacity data server and supports the high-speed and high-quality machining of dies.

Accuracy

Circular Cutting Accuracy



F:2500mm/min(98.43ipm)
Diameter:φ80mm(3.15")
Workpiece material:A7075



(mm)

Item	Nidec OKK tolerance	Actual value example
Circularity	0.0050 (0.00020")	0.00185 (0.000073")

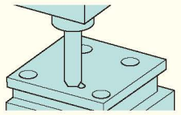
Positioning Accuracy

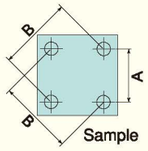
(mm)

Item	Nidec OKK tolerance
Positioning accuracy	XYZ standard ±0.0010/full stroke
Repeated positioning accuracy	XYZ standard ±0.0005/full stroke

With linear scale

Machined Position Accuracy





(mm)

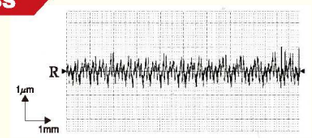
A	150 (5.91")
B	212.132 (8.35165")

(mm)

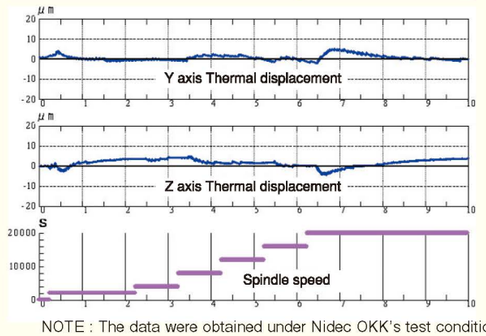
Item	Nidec OKK tolerance	Actual value example
Axial direction	0.015(0.00059")	-0.004(-0.00016")
Diagonal direction	0.015(0.00059")	-0.006(-0.00024")
Hole diameter error	0.010(0.00039")	0.005(0.00020")

Notes: 1. The data show example which obtained in short run. It may differ from data obtained in continuous run.
2. The data were obtained under Nidec OKK's test cutting conditions. The data may differ due to conditions of cutting tools, fixtures, cutting speed and room temperature.
3. The above accuracies are subject to machine installed according to Nidec OKK specifications and constant temperature environment. Accuracy are based on Nidec OKK inspection standard.

Surface roughness



Soft Scale Ⅱm Thermal displacement data



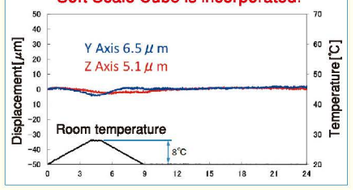
NOTE : The data were obtained under Nidec OKK's test conditions. The data may differ due to conditions.

Environmental Thermal Displacement Correction Soft Scale Cube

The environmental thermal displacement correction "Soft Scale Cube" that is included in the standard specification improves further the machining accuracy by correcting displacement of the machining point on a real-time basis based on the data of change in temperature obtained from a sensor installed on the machine.

Results of measurement of environmental thermal displacement

8μm/8℃ is achieved when the Soft Scale Cube is incorporated!



High-speed Spindle

The standard specification includes a 20000min-1 Dual-contact spindle.
The lightweight spindle head section achieves agile response.

Lubrication

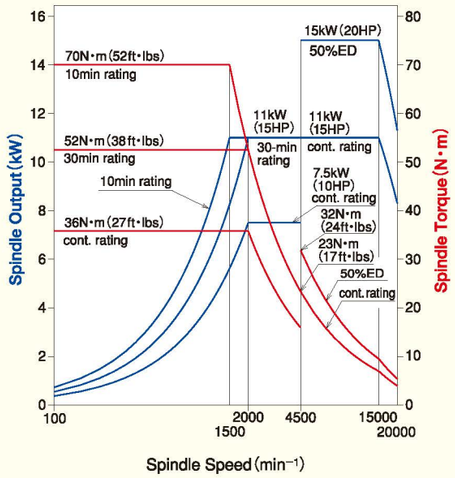
The spindle bearing utilizes an oil-air lubrication method delivering stable lubricationproperty throughout the speed range.

Cooling

Working together the forced cooling oil is circulated in the bearing section and an air-cooling system circulates around the spindle motor to suppress heat and minimize the spindle's thermal displacement.

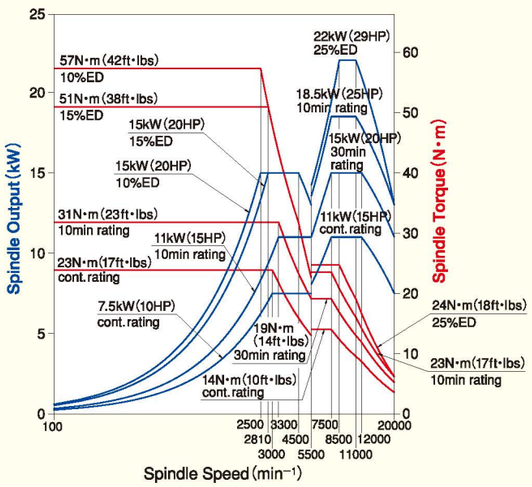
MITSUBISHI

Spindle motor specification	Low speed:100～4500min-1		High speed:4501～20000min-1	
Output	Continuous rating	7.5kW(10HP)	Continuous rating	11kW(15HP)
	30min rating	11kW(15HP)	50%ED	15kW(20HP)
	10min rating	11kW(15HP)		
Torque	Continuous rating	36N·m(27ft·lbs)	Continuous rating	23N·m(17ft·lbs)
	30min rating	52N·m(38ft·lbs)	50%ED	32N·m(24ft·lbs)
	10min rating	70N·m(52ft·lbs)		



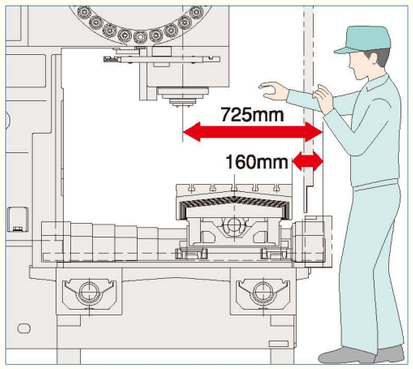
FANUC

Spindle motor specification	Low speed:100～5500min-1		High speed:5501～20000min-1	
Output	Continuous rating	7.5kW(10HP)	Continuous rating	11kW(15HP)
	10min rating	11kW(15HP)	30min rating	15kW(20HP)
	15%ED	15kW(20HP)	10min rating	18.5kW(25HP)
	10%ED	15kW(20HP)	25%ED	22kW(29HP)
Torque	Continuous rating	23N·m(17ft·lbs)	Continuous rating	14N·m(10ft·lbs)
	10min rating	31N·m(23ft·lbs)	30min rating	19N·m(14ft·lbs)
	15%ED	51N·m(38ft·lbs)	10min rating	23N·m(17ft·lbs)
	10%ED	57N·m(42ft·lbs)	25%ED	24N·m(18ft·lbs)



High Accessibility

Excellent operator accessibility to the machines work space reduces the operator's load.

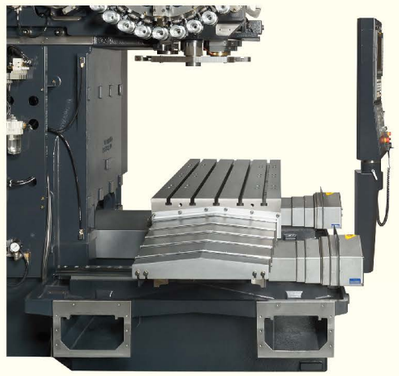


Powerfully Smooth Feed

The machine secures powerfully smooth feed operation by using the wide linear roller guides and high-resolution ball screws.

Chip Removability

The coil-type chip conveyors [Standard] are installed on the back and front of the table delivering excellent chip evacuation and space-savings.



Easy Maintenance

The lubrication unit and the pneumatic unit are centrally located on the machine's outside to facilitate the machine's maintenance work.

Peripheral Equipment (Optional Equipment)

Lift-up Chip Conveyor & Chip Bucket [Option]

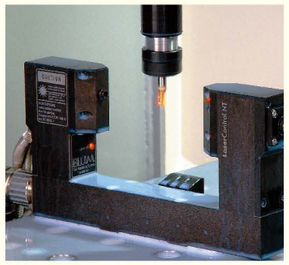
Suitable Lift-up Chip Conveyor according to Type of Chips

◎ : Most suitable; ○ : Usable; △ : Conditionally usable; × : Not usable; – : Not applicable

Type of chip conveyor				Hinged type		Scraper typ		Magnet scraper type		Scraper type with drum filter		Magnet scraper type with drum filter	
Use or not use of coolant oil				Use	Not use	Use	Not use	Use	Not use	Use	Not use	Use	Not use
Type of chips	Magnetizable chips	Steel	Short curl	◎	◎	○	○	◎	◎	○	-	◎	-
			Spiral	◎	◎	△*2	△*2	△*2	△*2	×	-	×	-
			Long	◎	◎	×	×	×	×	×	-	×	-
			Needle shape	×	△*1	×	○	○*3	○	○	-	◎	-
			Powder or small lump	×	△*1	×	○	○*3	○	○	-	◎	-
		Cast iron	Needle shape	×	△*1	×	○	○*3	○	○	-	◎	-
			Powder or small lump	×	△*1	×	○	○*3	○	△*3	-	◎	-
	Non-magnetizable chips	Aluminum	Short curl	×	◎	△*4	○	-	-	◎	-	◎	-
			Spiral	○	◎	○	○	-	-	△*5	-	△*5	-
			Long	○	◎	○	○	-	-	△*5	-	△*5	-
			Needle shape	×	△*1	×	○	-	-	◎	-	◎	-
			Powder or small lump	×	△*1	×	○	-	-	◎	-	◎	-

*1: Minute chips can enter the conveyor casing through a gap between hinged plates. Therefore, cleaning inside the conveyor frequently is needed.
*2: Long chips can easily be caught by a scraper. Therefore, measures for shortening the chips such as the step feed and removing the caught chips are needed.
*3: If the coolant flow rate is large, chips can flow out of the conveyor casing and cause clogging of filters. Therefore, combined use of a magnet plate is recommended.
*4: If the coolant flow rate is large, chips can flow out of the conveyor casing and cause clogging of filters. Therefore, cleaning filters frequently is needed.
*5: Long chips can easily be caught by a scraper. Therefore, removing them regularly is needed. Drum filters are damaged if they are not removed.

Measurement with Laser [Option]



Use of the laser sensor enables high-accuracy measurement of the tool length and diameter even for the ball-end mill with very small diameter.

Coolant Cooler [Option]

Increase in temperature of the cutting oil is a major cause of the thermal displacement.
The coolant cooler suppresses cutting oil temperature fluctuations caused by the machining operation and stablizes machining accuracy.
The coolant cooler is recommended particularly when using oil-based cutting oil.

MQL (Oil-mist Lubricator) [Option]

The MQL is the machining method that applies minimal quantity of the cutting oil to the cutting tool. Since quantity of the oil used for machining is very small, it leads reduction in costs and is also environment-friendly.

MQL : Minimal Quantity Lubrication

Touch Sensor System [Option]

T1-A: Automatic workpiece measurement / compensation

The touch sensor attached to the spindle is moved to a workpiece in the automatic operation until it contacts the workpiece then based on the travel distance at that time, the required compensation amount is calculated and set as the data for the workpiece coordinate system.
The measurement and compensation program is created according to the specified format and then executed.

T0: Manual workpiece measurement

This is helpful for the workpiece centering operation and the tool length measurement. The sensor can be moved to the desired measurement point by using handle mode. The machine starts measurement automatically when the sensor contacts the workpiece. The result of the measurement can be set as the data for the desired workpiece coordinate system or tool offset number in a simple operation.

Air-through Spindle [Option]

It is used when machining a deep hole, etc.

Coolant-through Spindle [Option]

It is used when machining a deep hole, etc.

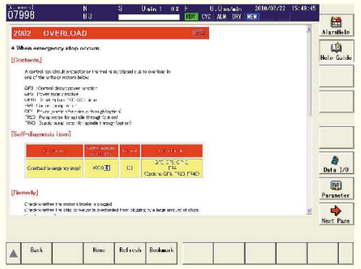
Nidec OKK's Dedicated Control Functions

Maintenance Functions

Help Guidance [Standard]

It displays detailed information regarding the machine alarms and the method to recover when a problem occurs on the machine. It also displays a list of G-codes and description of the M signals.

Description of Alarm Display Screen



Maintenance and Inspection Screen

The screen will display machine inspection details, status, and time.
Supporting machine maintenance work.

HQ Tuner [Option]

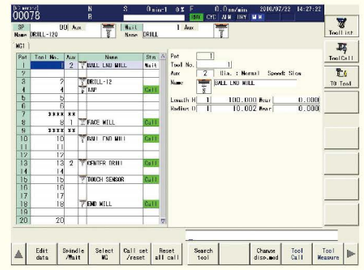
It enables adjusting the parameters for the hyper HQ control according to the machining conditions.
The hyper HQ control can be adjusted according to the process. For example, for roughing, the machining time can be reduced while focusing on the machining speed, and, for finishing, geometric accuracy of corners and arcs is improved by focusing on accuracy.

Setup Support Function

Tool Support [Standard]

You can manage each tool's various information such as the tool name, schematic and offset number comprehensively through a single screen. It contains the functions that are convenient for the set-up operation. For example the tool measurement is also available by just switching the menu.

Tool Setup Screen



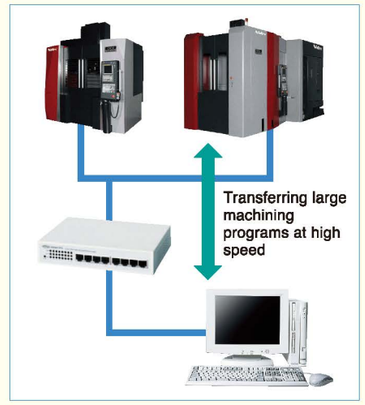
Network Function

Data Server (F31i-B Standard Function)

Large machining programs can be transferred to the data server through the network connected to the host computer at high speed.
The transferred machining programs are executed as the main program or the sub program called up with the M198.

Hard Disc Mode (N830 Standard Function)

Large machining programs can be transferred to the hard disc installed in the machine through the network connected to the host computer at high speed.
The transferred machining programs are executed as the main program or the sub program.

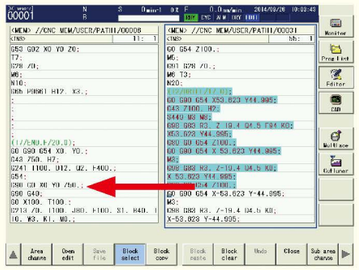


Programming Support Function

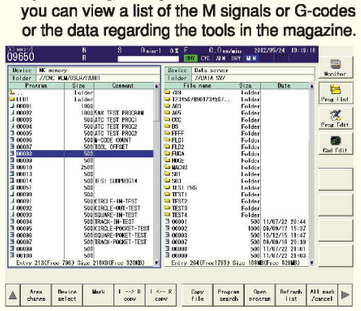
Program Editor [Standard]

It enables editing of the programs in the NC memory, data server (or hand disc) and memory card. It also enables managing the programs i.e. copying, deleting, changing the program name, etc.

- Two programs can be displayed side by side.
- Batch conversion of certain characters in a program is possible.
  (Example:Change from "F1000" to "F1200")
- The data of the multiple lines in one program can be copied easily to another program.



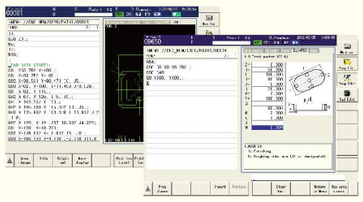
- By switching the right-side reference screen, you can view a list of the M signals or G-codes or the data regarding the tools in the magazine.



- You can easily copy and delete the programs and change the program name.
- By using the multiple file batch copy function, you can easily make backup copies of the NC memory's or had disc's programs in a memory card.

EasyPRO [Standard]

You can display the interactive guide screen and, while referring to the displayed guide charts and description, you can input the programs such as the macro programs for machining and measuring. The incorporated easy-to-operate CAD functions can be used for the input of coordinates, contour machining, etc.



Specifications

●Main Specifications

Item	Unit	Specification
Travel on X axis (Table right / left)	mm	1050 (41.34")
Travel on Y axis (Saddle back / forth)	mm	530 (20.87")
Travel on Z axis (Spindle head up / down)	mm	510 (20.08")
Distance from table top surface to spindle nose	mm	150 (5.91") ~ 660 (25.98")
Distance from column front to spindle center	mm	616 (24.25")
Table work surface area (X-axis direction × Y-axis direction)	mm	1260 (49.61") × 600 (23.62")
Max. workpiece weight loadable on table	kg	1200 (2646 lbs)
Table work surface configuration (T-slot nominal dimension × spacing × number of T slots)	mm	18 (0.71") × 110 (4.33") × 5 slots
Distance from floor to table work surface	mm	900 (35.43")
Spindle speed	min⁻¹	100 ~ 20000
Number of spindle speeds		Electric 2 steps (MS)
Spindle nose (nominal number)		7/24-tapered No.40
Spindle bearing bore diameter	mm	ϕ65 (2.56")
Rapid traverse rate	m/min	X/Y/Z : 20 (787 ipm)
Cutting feed rate	mm/min	X/Y/Z : 1 ~ 20000 (0.04 to 787ipm) ※1
Automatic Tool Changer (ATC)		
Type of Tool shank		BT40 (Dual-contact BT type)
Type of Pull stud		MAS 403 P40T-1
Number of stored tools	tools	30
Max. tool diameter (with tools in adjacent pots)	mm	ϕ 80 (3.15")
Max. tool diameter (with no tools in adjacent pots)	mm	ϕ 110 (4.33")
Max. tool length (from gauge line)	mm	350 (13.78")
Max. tool mass [moment]	kg [N·m]	10 (22 lbs) [9.8 (7.2ft·lbs)]
Tool selection method		Memory random method
Tool exchange time (tool-to-tool)	sec	2.0
Tool exchange time (cut-to-cut)	sec	5.5
Motor		
Spindle motor	kW	MITSUBISHI 15/11 (20/15HP)
		FANUC 22/18.5/15/11 (30/25/20/15HP)
Feed motors	kW	MITSUBISHI X/Y : 3 (4HP) Z : 3.5 (4.7HP)
		FANUC X/Y : 3 (4HP) Z : 4 (5.4HP)
Coolant pump motor	kW	0.4 (0.5HP)
Spindle head cooling pump motor	kW	0.4 (0.5HP)
Motor for coil-type chip conveyor	kW	0.1 (0.13HP) × 2
Motor for ATC	kW	0.4 (0.5HP)
Required power sources		
Power supply	kVA	MITSUBISHI 31
		FANUC 29
Supply voltage	V	AC200V±10% AC220V±10%
Supply frequency	Hz	50/60Hz±1Hz 60Hz±1Hz
Compressed air supply pressure	MPa	0.4 ~ 0.6 (58 ~ 87 psi) ※2
Compressed air supply flow rate	L/min (ANR)	650 (172 gpm) ※2 ※3
Spindle cooling oil tank capacity	L	50 (13 gal)
Coolant tank capacity	L	260 (69 gal)
Machine height (from floor surface)	mm	2,910 (114.57")
Floor space required for operation (width × depth)	mm	2,885 (113.58") × 3,050 (120.08")
Required floor space incl. maintenance area (width × depth)	mm	3,900 (153.54") × 4,100 (161.42")
Machine weight	kg	7,300 (16094 lbs)
Operation environment temperature	℃	5 ~ 40
Operation environment humidity	%	10 ~ 90 (No dew)

※1: The rate under the HQ or hyper HQ control
※2: The value for the standard specification It may vary with added options.
※3: Purity of the supplied air should be equivalent to Class 3.5.4 specified in ISO 8573-1/JIS B8392-1 or higher.

●Standard Accessories

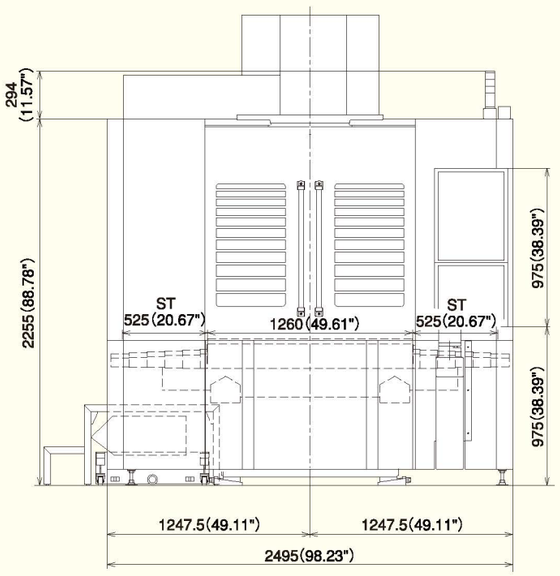
Item	Qty	Remark
Lighting equipment	1 set	Two LED lamps
Linear scale	1 set	For X, Y and Z axes
Coolant unit (Separately-installed coolant tank)	1 set	Tank capacity: 260L
Overall machine cover (Splash guard)	1 set	Including front door and electromagnetic lock
Top cover	1 set	
Magazine safety cover	1 set	Including electromagnetic lock
Sliding surface protection steel sliding cover for X / Y axes	1 set	
Spindle head lubrication oil temperature controller	1 set	
Coil-type chip conveyor (with reverse rotation function)	1 set	1 unit for each of front and rear sides
Air blower	1 set	
Signal lamp	1 set	Three-lamp type with buzzer
Workpiece flushing gun	1 set	Shower gun (Medium pressure)
Leveling block	1 set	
Parts for machine transfer	1 set	
Automatic power-off unit (for M02 and M30)	1 set	
Electrical spare parts (fuses)	1 set	
Instruction manual (Specification, Maintenance Manual, Foundation & Installation Manual)	2 set	
Electrical instruction manuals (including electrical diagrams)	1 set	

●Special Accessories

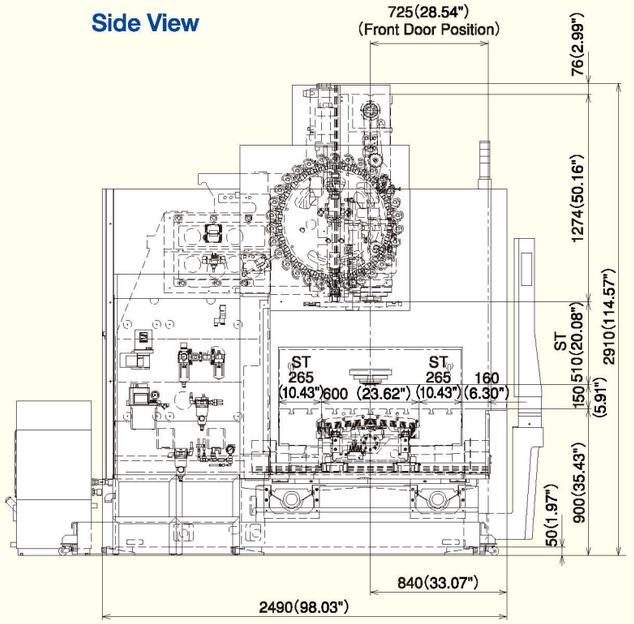
Item	Specification
Compatibility with two-surface locking tool	HSK-A63
Number of storable tools	36
Column raise (Column-up)	250mm (9.84")
Signal lamp	Two-lamp type with / without buzzer
Flushing chips with coolant	400W (Standard: Coil-type chip conveyor)
Lift-up type chip conveyor	Hinged type / Scraper type / Scraper type with floor magnet / Backwashing filtration type for aluminum chips
Compatibility with through-spindle	2MPa / 7MPa / Air
Oil-mist blower	
Minimal quantity coolant supply system	
ATC shutter	
Foundation parts	Bond anchoring method
Bond for foundation work	330ml (11.16us fl oz)
Sub-table	T-slot type / Specified by customer
NC rotary table	Rotary table type
Mist collector	2.2kW, installed separately
Coolant cooler	Separately installed type / High-pressure unit integrated type (High-pressure unit is required separately)
Touch Sensor system	Workpiece measurement / Tool length measurement / Tool break detection

Dimensions

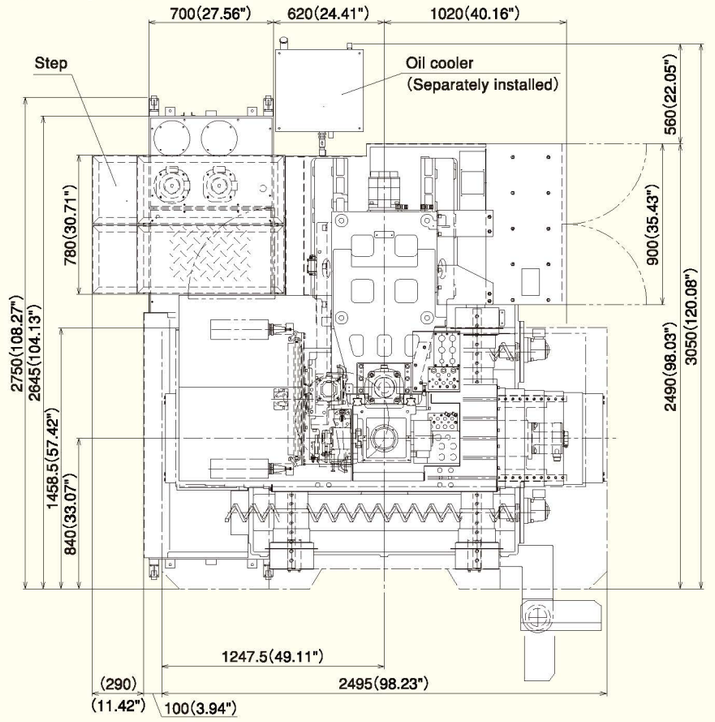
Front View



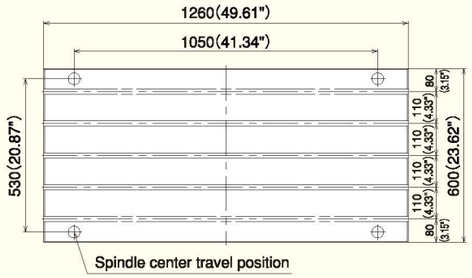
Side View



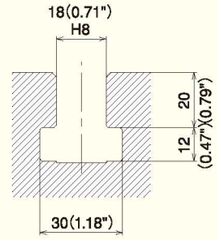
Floor Space



Table



T-slot



N830 (Windows 8-installed Open CNC)

Standard Specification

No. of controlled axes: 3 axes (X, Y, Z)
No. of simultaneously controlled axes: 3 axes
Least input increment: 0.001 mm / 0.0001"
Max. programmable dimension:
±99999.999 mm / ±9999.9999"
Inch / Metric conversion: G20 / G21
Program format: Meldas standard format
(M2 / M0 format needs to be instructed separately.)
Decimal point input Ⅰ/Ⅱ
Absolute / Incremental programming: G90 / G91
Program code: ISO / EIA automatic discrimination
Least control increment: 1nm
Positioning: G00
Linear interpolation: G01
Circular interpolation: G02 / G03
(Including radius designation)
Unidirectional positioning
Helical interpolation
Cutting feed rate: 5.3-digit F-code, direct designation
One digit F-code feed
Rapid traverse override: 0 / 1 / 10 / 25 / 50 / 100%
Cutting feed rate override: 0 to 200% (every 10%)
Feed rate override cancel: M49 / M48 (cancel)
Rigid tap cycle: G74, G84
Manual handle feed:
Least input increment: ×1, ×10, ×100 / graduation
Dwell: G04
Part program storage capacity: 1280m [500KB]
No. of registered programs: 1000
Part program editing
Background editing: Possible to program or edit the machining program while NC machining is executed.
Buffer modification
Color touch-panel display (15" LCD / QWERTY key MDI)
Integrating time display
Clock function
User definable key
MDI (Manual Data Input) operation
Menu list
Parameter / Operation guidance
Alarm guidance
Ethernet interface
SD card / USB memory interface
Operation inside display unit with high-speed program server
Operation with SD card / USB memory
Spindle function:
Direct designation of spindle speed with 5-digit S-code
Spindle speed override: 50 to 150% (every 5%)
Tool function: Direct designation of called tool number with 4-digit T-code
ATC tool registration
Miscellaneous function: Designation with 3-digit M-code
Multiple M-codes in 1 block: Maximum 3 codes in 1 block (Maximum 20 settings)
Tool length offset: G43, G44, G49 (cancel)
Tool position offset: G45 to G48
Cutter compensation: G38 to G42
Tool offset sets: Total 200 sets
Tool offset memory Ⅱ:
tool geometry (length / diameter) and wear offset
Machine coordinate system: G53
Coordinate system setting: G92
Automatic coordinate system setting
Workpiece coordinate system: G54 to G59
Local coordinate system: G52
Manual reference position return
Automatic reference position return
2nd to 4th reference position return:
G30 P2 to P4
Reference position return check: G27
Optional block skip: / n (n: 1 to 9)
Single block
Dry run
Machine lock
Z-axis feed cancel
Miscellaneous function lock
3D solid program check
Graphic display check
Program number search
Sequence number search
Sequence number comparison and stop
Program restart function
Cycle start
Feed hold
Manual absolute
(ON / OFF setting with PLC parameter)
Auto restart
Program stop: M00
Optional stop: M01
Machining time computation
Automatic operation handle interruption
Manual numerical command
Sub program control: M98, M99
Canned cycle: G73, G74, G76, G81 to G89, G80 (Cancel)
Linear angle designation
Circular cutting: G12, G13
Parameter mirror image
Programmable mirror image:
G51.1, G50.1 (Cancel)
User macro and user macro interruption
Variable command: total 700 sets
Programmable coordinate system rotation: G68, G69 (Cancel)
Parameter coordinate system rotation
Corner chamfering / corner R:
Insert between straight line-straight line / straight line-circle blocks
Programmable data input: G10 / G11 (Cancel)
Automatic corner override
Exact stop check / mode
Playback
Memory pitch error compensation
Backlash compensation
Skip function: G31
Manual tool length measurement
Tool life management Ⅱ: 200 sets
External search
Emergency stop
Data protection key
NC alarm display
Machine alarm message
Stored stroke limit Ⅰ/Ⅱ
Load monitor
Self-diagnosis
Absolute position detection

Optional Specification

Additional one axis control:
name of axis (A, B, C, U, V, W)
Additional two axes control:
name of axis (A, B, C, U, V, W) Note
Simultaneously controlled axes: 4 axes
Simultaneously controlled axes: 5 axes Note
Least input increment: 0.0001 mm / 0.00001 inch
Program format: M2 / M0 format
Spiral / Conical interpolation
Cylindrical interpolation
Hypothetical axis interpolation
NURBS interpolation
(Hyper HQ control mode Ⅱ is required)
Handle feed 3 axes: Standard pulse handle is removed.
Inverse time feed
Part program storage capacity: 2560m [1MB]
(No. of registered programs: total 1000)
Part program storage capacity: 5120m [2MB]
(No. of registered programs: total 1000)
Color touch-panel display (19" LCD / Software key MDI)
RS232C interface: RS232C-1CH
Computer link B: RS232C
Spindle contour control (Spindle position control)
3-dimensional cutter compensation
Tool offset sets: total 400 sets
Tool offset sets: total 999 sets
Addition of workpiece coordinate system (total 96 sets): G54.1 P1 to G54.1 P96
Addition of workpiece coordinate system (total 300 sets): G54.1P1 to G54.1 P300
Tool retract and return
Scaling: G51, G50 (Cancel)
Pattern rotation
Chopping function
Special canned cycles: G34, G35, G36, G37
Additional tool life management sets: total 400 sets
Additional tool life management sets: total 999 sets

Original Nidec OKK Software

Integrated machining support system ····· STD
Tool support ····· STD
Program Editor ····· STD
EasyPRO ····· STD
Work Manager ····· Opt
HQ control ····· STD
Hyper HQ control mode Ⅱ ····· STD
Soft Scale Ⅱm ····· STD
Cube environmental thermal displacement correction ····· STD
WinGMC8 ····· Opt
Cycle Mate ····· Opt
Touch sensor T0 software ····· Opt
Soft CCM (Tool failure detection system) ····· Opt
Soft AC (Adaptive control unit) ····· Opt
Automatic restart at tool damage ····· Opt

Note: N850 (Windows 8-installed Open CNC)
STD : Standard Opt : Option

F31i-B Plus (WindowsCE-installed Open CNC)

Standard Specification

No. of controlled axes: 3 axes (X, Y, Z)
No. of simultaneously controlled axes: 3 axes
Least input increment: 0.001mm / 0.0001"
Max. programmable dimension:
±999999.999mm / ±39370.0787"
Absolute / Incremental programming: G90 / G91
Decimal point input /
Pocket calculator type decimal point input
Inch/ Metric conversion: G20 / G21
Program code: ISO / EIA automatic discrimination
Program format: FANUC standard format
FS15 tape format
Nano interpolation (internal)
Positioning: G00
Linear interpolation: G01
Circular interpolation: G02 / G03 (CW / CCW)
(Including radius designation)
Helical interpolation
Unidirectional positioning: G60
Cutting feed rate: 6.3-digit F-code, direct designation
Rapid traverse override: 0 / 1 / 10 / 25 / 50 / 100%
Cutting feed rate override: 0 to 200% (every 10%)
Feed rate override cancel: M49/M48
Rigid tapping: G84, G74 (Mode designation: M29)
Manual handle feed:
Least input increment ×1, ×10, ×100 / graduation
Dwell: G04
One-digit F code feed
inverse time feed
Part program storage capacity:total 10240m [4MB] (total 1000 programs)
Part program editing
Background editing: Possible to program or edit the machining program while NC machining is executed.
Extended part program editing
15-inch color LCD/QWERTY key MDI
Clock function
MDI (manual data input) operation
Run hour and parts count display
Memory card/USB interface
Spindle function:
Direct designation of spindle speed with 5-digit S-code
Spindle speed override: 50 to 150% (every 5%)
Tool function: Direct designation of called tool number with 4-digit T-code
ATC tool registration
Auxiliary function: Designation with 3-digit M-code
Multiple M-codes in 1 block: Maximum 3 codes in 1 block (Maximum 20 settings)
Tool length offset: G43, G44 / G49
Tool diameter and cutting edge R compensation: G41, G42 / G40
Tool offset sets: total 400 sets
Tool offset memory C
Tool position offset
Automatic reference position return: G28 / G29
2nd reference position return: G30
Machine coordinate system: G53
Coordinate system setting: G92
Automatic coordinate system setting
Workpiece coordinate system:
G54 to G59 G54.1 P1 ~ P48
Local coordinate system: G52
Polar coordinate command: G15, G16
Manual reference position return
Reference position return check: G27
Optional block skip: /
Single block
Dry run
Machine lock
Z-axis feed cancel
Auxiliary function lock
Graphic function
Program number search
Sequence number search
Program restart
Cycle start
Feed hold
Manual absolute (ON / OFF with PMC parameter)
Auto restart
Program stop: M00
Optional stop: M01
Sequence number collation and stop
Sub program control
Canned cycle: G73, G74, G76, G80 to G89
Mirror image function parameter
Custom macro
Programmable mirror image
Programmable data input: G10
Automatic corner override
Manual Guide i (Basic)
Exact stop check / mode
Scaling: G50,G51
Additional custom macro common variables: 1000
Coordinate system rotation: G68, G69
Optional chamfering / corner R
Playback
Interpolation type pitch error compensation
Backlash compensation for each rapid traverse and cutting feed
Smooth backlash
Skip function
Tool life management: total 256 sets
Tool length manual measurement
Data protection key
NC alarm display / alarm history display
Machine alarm display
Stored stroke check 1
Stored stroke check 2
Load monitor
Self-diagnosis
Absolute position detection
Data server: ATA card (1GB)

Optional Specification

Additional one axis control:
name of axis (A, B, C, U, V, W)
Additional two axes control:
name of axis (A, B, C, U, V, W) Note 1
No. of simultaneously controlled axes: 4 axes
No. of simultaneously controlled axes: 5 axes Note 1
Least input increment: 0.0001mm / 0.00001"
Spiral / Conical interpolation
Cylindrical interpolation
Hypothetical axis interpolation
Involute interpolation
NURBS interpolation
Smooth interpolation
(Hyper HQ control B mode is required)
Handle feed 3 axes:Standard pulse handle is removed
Part program storage capacity:
total 20480m [8MB] (1000 in total)
Machining time stamp
Data server: ATA card (4GB)
RS232C interface: RS232C-1CH
Spindle contour control (Cs contour control)
Tool position offset
Tool offset sets: total 499 sets
Tool offset sets: total 999 sets
Addition of workpiece coordinate system (total 300 sets): G54.1 P1 to P300
Optional block skip: Total 9
Manual handle interruption
Tool retract and return
Figure copy
Interruption type custom macro
Instruction of inclined plane indexing
Chopping
Manual Guide i (Milling cycle)
Addition of tool life management sets: total 1024 sets
High-speed skip

Original Nidec OKK Software

Integrated machining support software
(incl. help guidance, etc.) ····· STD
Tool support ····· STD
Program Editor ····· STD
EasyPRO ····· STD
Work Manager ····· Opt
HQ control ····· STD
Hyper HQ control mode B ····· STD
Special canned cycle (including circular cutting) ·· Opt
Cycle Mate F ····· Opt
Soft Scale Ⅱm ····· STD
Cube environmental thermal displacement correction ····· STD
Touch sensor T0 software ····· Opt
Soft CCM (Tool failure detection system) ····· Opt
Soft AC (Adaptive control unit) ····· Opt
Automatic restart at tool damage ····· Opt

Note 1 : F31i-B5 Plus (WindowsCE-installed Open CNC)
STD : Standard Opt : Option

Nidec
All for dreams

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