OKK

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Technical Center

S-Plant

W-Plant

chnical center is for test cutting, demonstration and training.
plant is for machining and assembly of spindles and tables.
-plant is for final assembly of large sized machining centers.
I are located at Inagawa, Itami city, Hyogo, Japan

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KK A DIVERSIFIED MANUFACTURER OF ACHINE TOOLS

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achining centers
aphite cutting machining centers
inding centers
NC Milling machines
nventional milling machines
tal die and mold making systems
exible manufacturing cells and systems

her Products Include:

xtile Machinery
ater Maters

OTE :

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11.02.3M (H)

OKK

Vertical Die & Mold Machining Center

VB53

Advanced High-quality
Die & Mold Machining
Compact
Vertical Machining Center
VB53

※Machine picture may include optional accessories

Main Specification

Spindle rotating speed	: 100 to 20,000min^{-1}
Rapid traverse rate	: 20m/min (787.40ipm)
Number of stored tools	: 30 tools
Tool exchange time	: 2 seconds (tool-to-tool)

Compact with higher Accuracy and Quality

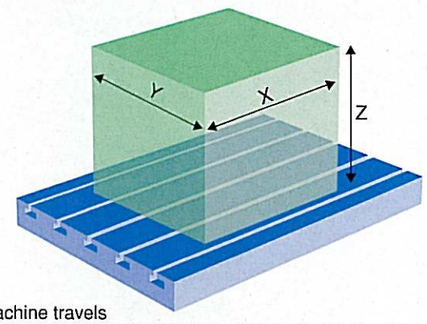
Automobile
interior part
Material:NAK80

Loudspeaker
Material:NAK80

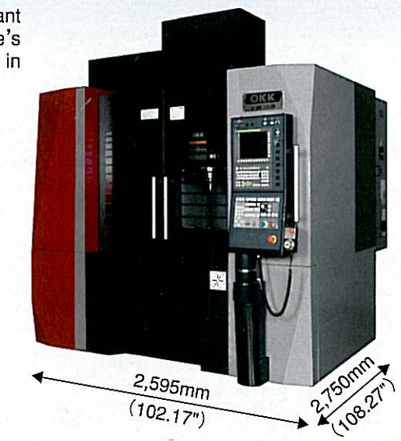
Sample die
Material:NAK80

Space-saving with a Large Machining Area

Discharging chips to the left side of the machine, into the coolant tank located under the splash guarding has reduced the machine's floor space to 2,595×2,750mm (102.17"×108.27"). Resulting in superior productivity per unit area.



Machine travels
X:1050mm (41.34"), Y:530mm (20.87"), Z axis:510mm (20.08")



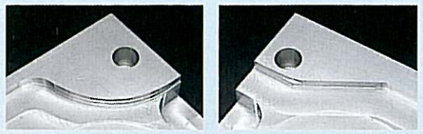
High-accuracy Machining

HQ Control / Hyper HQ Control

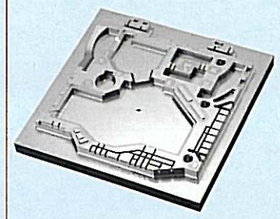
■Pre-interpolation acceleration/deceleration function:
This function minimizes the machined shape errors and the reduction in the radius error when executing the circular cutting command.

■Optimized corner deceleration function:
This function assesses the targeted machining program vector and decelerates at the corners producing highly accurate machined edges.

■Feed forward control function:
This function enables the control to minimize servo errors. Combined with the Hyper HQ control, it improves the processing of minute line segment data to machine the free-form surfaces such as dies and enables a substantial increase in speed and accuracy.



Hyper HQ control consists of the high speed processor, used to process data for high-speed, precise machining of workpieces of any shape. This includes a look ahead multiple block (multi-buffer). It automatically detects the corner on parts from the NC part program, and controls the feedrate so that it does not exceed the machine's permissable acceleration rate.



Minute Line Segment Processing Capability: N730

Specification	Line segment processing speed	Command
Hyper HQ control mode B	151m/min (5945 ipm)	G05 P2: ON G05 P0: OFF

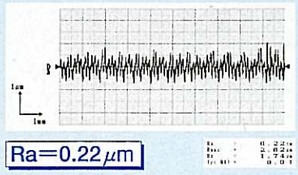
Minute Line Segment Processing Capability: F31i-A

Specification	Line segment processing speed	Command
Hyper HQ control mode B	150m/min (5906 ipm)	G05.1 Q1: ON G05.1 Q0: OFF

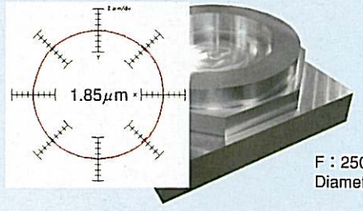
*The above values show (theoretical) maximum speeds for processing 1-mm-segment blocks constructing a straight line. Actual processing speeds depend on the type of the machine and NC data.

Accuracy

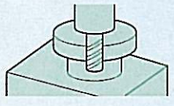
Surface roughness



Circular Cutting Accuracy



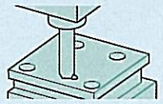
F : 2500mm/min (98.43ipm)
Diameter : φ80mm (dia.3.15)



(mm)

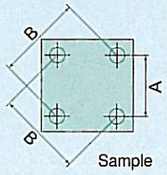
Item	OKK tolerance	Actual value example
Circularity	0.0050 (0.00020")	0.00185 (0.00007")

Machined Position Accuracy



(mm)

A	150 (5.91")
B	212.132 (8.35")



Sample

(mm)

Item	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 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 OKK specifications and constant temperature environment. Accuracy are based on OKK inspection standard.

High-speed Spindle

The standard specification includes a 20,000min⁻¹ two-face locking 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.

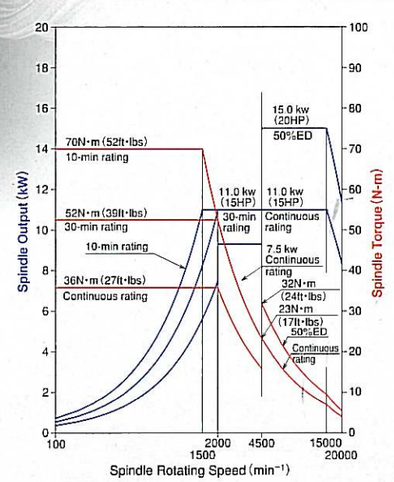
Cooling
Working together the forced cooling oil is circulated in the bearing section and an air-cooling system circulates around the spindle motor to suppress heat and minimize the spindle's thermal displacement.

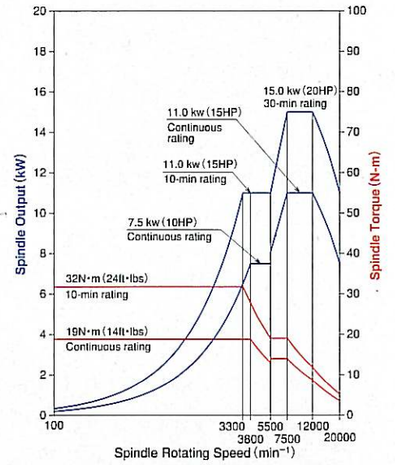
MITSUBISHI

Spindle motor specification		Low speed:100~4500min⁻¹		High speed:4501~20000min⁻¹	
Output	Continuous rating	7.5kW (10HP)	Continuous rating	11.0kW (15HP)	
	30-min rating	11.0kW (15HP)	50%ED	15.0kW (20HP)	
	10-min rating	11.0kW (15HP)			
Torque	Continuous rating	36N·m (27ft·lbs)	Continuous rating	23N·m (17ft·lbs)	
	30-min rating	52N·m (39ft·lbs)	50%ED	32N·m (24ft·lbs)	
	10-min rating	70N·m (52ft·lbs)			

FANUC

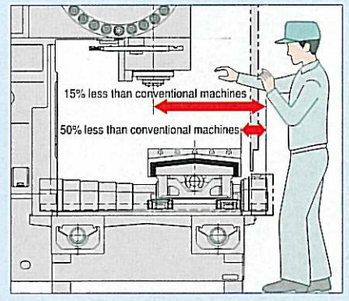
Spindle motor specification		Low-speed side 100~5500min⁻¹	High-speed side 5501~20000min⁻¹
Output	Continuous rating	7.5kW (10HP)	11.0kW (15HP)
	30-min rating (10-min rating in low-speed area)	11.0kW (15HP)	15.0kW (20HP)
Torque	Continuous rating	19N·m (14ft·lbs)	14N·m (11ft·lbs)
	30-min rating (10-min rating in low-speed area)	32N·m (24ft·lbs)	19N·m (14ft·lbs)





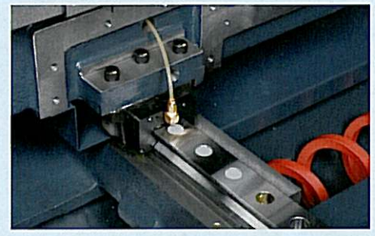
High Accessibility

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

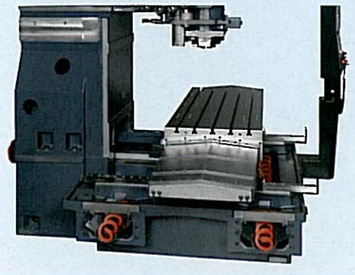


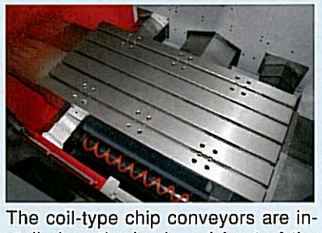
Powerfully Smooth Feed

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



Chip Removability

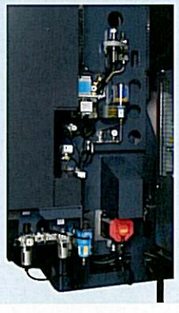




The coil-type chip conveyors are installed on the back and front of the table delivering excellent chip evacuation and space-savings.

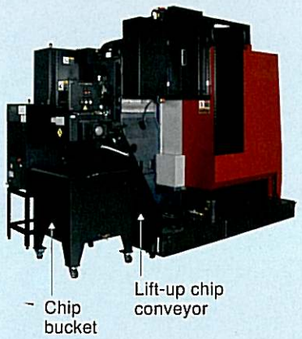
Easy Maintenance

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



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	◎	◎	○	○	◎	◎	○	-	◎	-
		Steel: Spiral	◎	◎	△*2	△*2	△*2	△*2	×	-	×	-
		Steel: Long	◎	◎	×	×	×	×	×	-	×	-
		Steel: Needle shape	×	△*1	×	○	○*3	○	○	-	◎	-
		Steel: Powder or small lump	×	△*1	×	○	○*3	○	○	-	◎	-
		Cast iron: Needle shape	×	△*1	×	○	○*3	○	○	-	◎	-
		Cast iron: Powder or small lump	×	△*1	×	○	○*3	○	△*3	-	◎	-
	Non-magnetizable chips	Aluminum: Short curl	×	◎	△*4	○	-	-	◎	-	◎	-
		Aluminum: Spiral	○	◎	○	○	-	-	△*5	-	△*5	-
		Aluminum: Long	○	◎	○	○	-	-	△*5	-	△*5	-
		Aluminum: Needle shape	×	△*1	×	○	-	-	◎	-	◎	-
		Aluminum: 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.

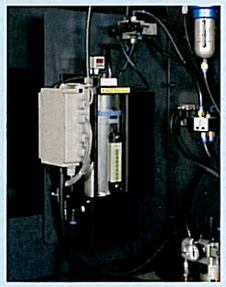
Measurement with Laser

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

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)



The MQL is the machining method that applies minimal quantity of the cutting oil to the machined place. 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

T1-A: Automatic workpiece measurement/compensation

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

T0: Manual workpiece measurement

It is handy for the workpiece centering operation and the tool length measurement. The sensor can be moved to the desired measurement point by using a handle. The machine starts measurement automatically when the sensor contacts a 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

It is used when machining a deep hole, etc.

Coolant-through Spindle

It is used when machining a deep hole, etc.

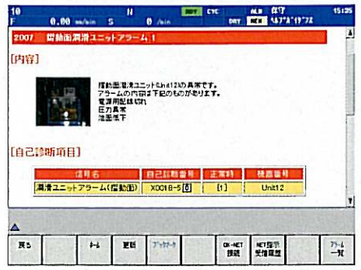
OKK's Dedicated Control Functions

Maintenance Functions

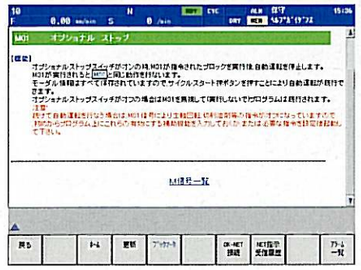
Help Guidance

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



Description of M-signal Display Screen

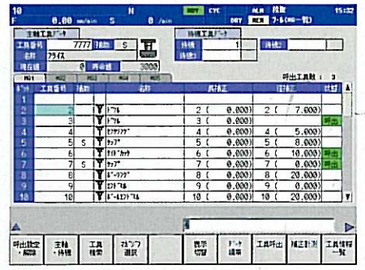


Setup Support Function

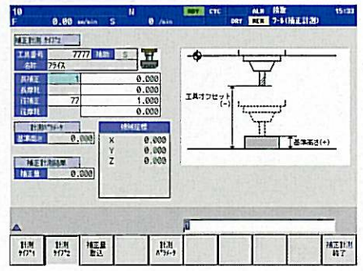
Tool Support

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



Tool Length Offset Measurement Screen

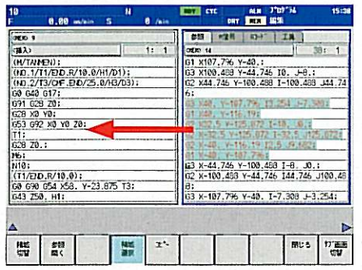


Programming Support Function

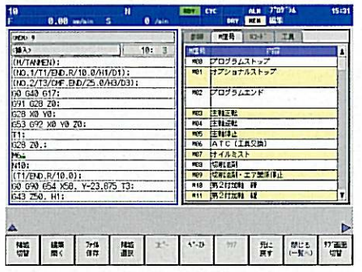
Program Editor
(N730:Standard／F31i-A:Option)

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.

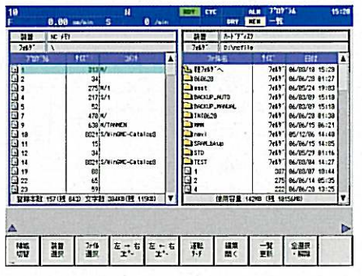
- Two programs can be displayed side by side.
- Batch conversion of certain characters in a program is possible.
  (Example:Change from "F1000" to "F1200")
- The data of the multiple lines in one program can be copied easily to another program.



- 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.



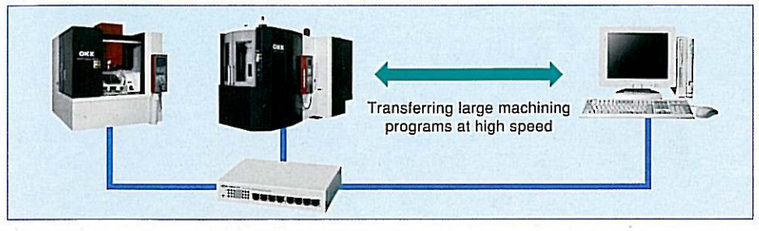
Network Function

Data Server
(F31i-A Standard Function)

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

Hard Disc Operation
(N730 Standard Function)

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



Main Specification

●Machine Main Body's Main Specification

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 nose	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
Distance from floor to table work surface	mm	900 (35.43")
Spindle rotating speed	min^{-1}	100~20,000
Number of spindle rotating speeds		2 steps
Spindle nose (nominal number)		7/24-tapered No.40
Spindle bearing bore diameter	mm	ϕ65 (dia. 2.56)
Rapid traverse rate	m/min	X/Y/Z:20 (787 ipm)
Cutting feed rate	mm/min	X/Y/Z:1~20,000 (0.04 to 787ipm)※1
Automatic Tool Changer (ATC)		
Type of Tool shank		BT40 (Two-face locking 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	ϕ80 (dia. 3.15")
Max. tool diameter (with no tools in adjacent pots)	mm	ϕ110 (dia. 4.33")
Max. tool length (from gauge line)	mm	350 (13.78")
Max. tool mass (moment)	kg (N·m)	10 (22 lbs) [9.8 (7.35 lbs)]
Tool selection method		Memory random method
Tool exchange time (tool-to-tool)	s	2.0
Tool exchange time (cut-to-cut)	s	5.5
Motor		
Spindle motor (30-min rating/continuous rating)	kW	15/11 (20/15HP)
Feed motors	kW	MITSUBISHI X/Y:3.0 (4HP) Z:3.5 (4.7HP)
		FANUC X/Y:3.0 (4HP) Z:4.0 (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)	400 (106 gal /ipm)※2 ※3
Spindle cooling oil tank capacity	L	50 (13.2 gal)
Coolant tank capacity	L	260 (68.7 gal)
Machine height (from floor surface)	mm	2,910 (114.57")
Floor space required for operation (width × depth)	mm	2,595 (102.17") ×2,750 (108.27")
Required floor space incl. maintenance area (width × depth)	mm	3,600 (141.73") ×3,700 (145.67")
Machine weight	kg	6,800 (14991 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

Name	Qty	Remark
Illuminating lamp	1 set	
Linear scale	1 set	For X, Y and Z axes
Coolant unit (Separate coolant tank)	1 set	Tank capacity:260L (68.7gal)
Entire machine cover (Splash guard)	1 set	Including front door and electromagnetic lock
Magazine safety cover	1 set	Including electromagnetic lock
Sliding surface protection steel sliding cover for X/Y axes	1 set	
Spindle head cooling oil temperature controller	1 set	
Coil-type chip conveyor	2 sets	1 set for each of front and rear sides
Leveling block	1 set	
Parts for machine transfer	1 set	
Automatic power-off unit (with M02 or M30)	1 set	
Electric spare parts (fuses)	1 set	
Instruction manual (Specification, Maintenance Manual, Foundation & Installation Manual)	2 sets	
Electrical instruction manuals (Operation Manual, Maintenance Manual, Parts List, Hardware Diagram)	1 set	

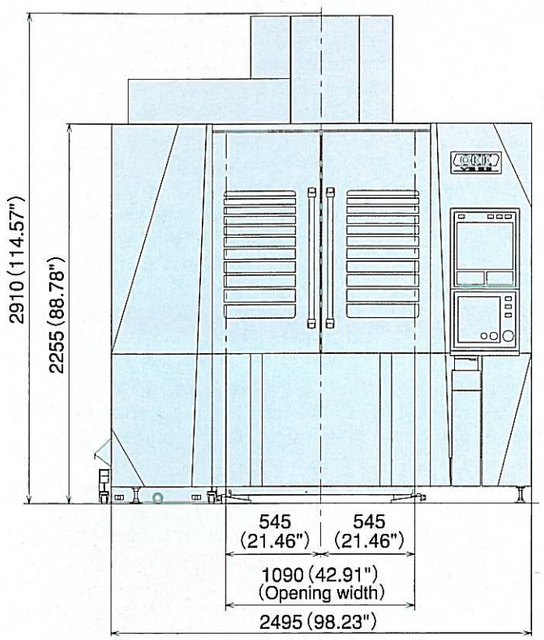
●Special Accessories

Item	Specification
Compatibility with two-face locking tool	HSK-A63
Number of stored tools	36
Raised column(Column-UP)	
Signal lamp	Two-lamp type / Three-lamp type
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※1	2MPa / 7MPa / Air
Oil-mist blower / Air blower	
Air blower	
Minimal quantity lubrication system	EcoBooster
Workpiece flushing equipment	Shower-gun type
ATC shutter	
Splash guard's top cover	Including magazine cover
Foundation parts	Bond anchor type
Bond for foundation work	1kg
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
Additional illuminating lamp inside the machine	1 lamp

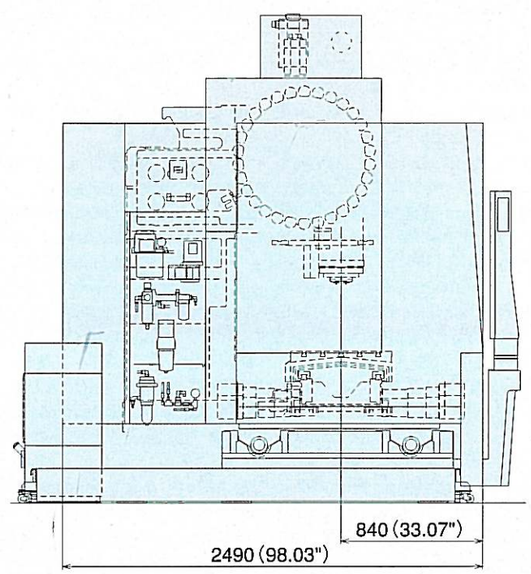
※1: Be sure to use the pull stud with no hole when the through-spindle is not used.

Machine Main Body's Main Specification

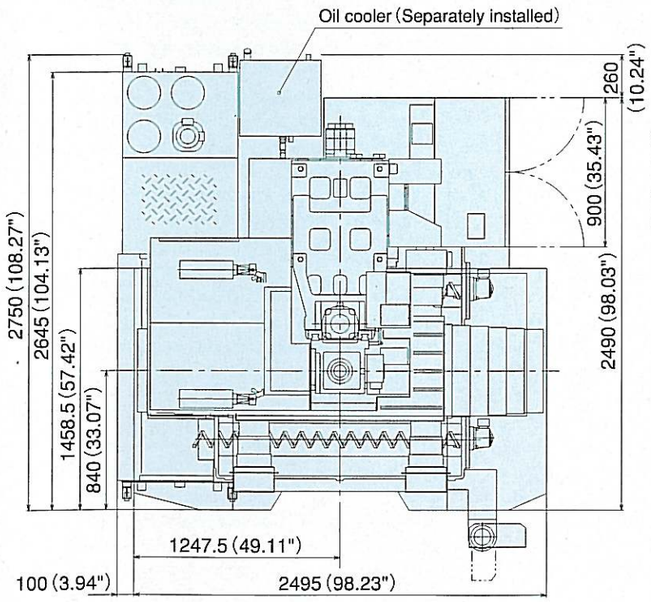
Front View



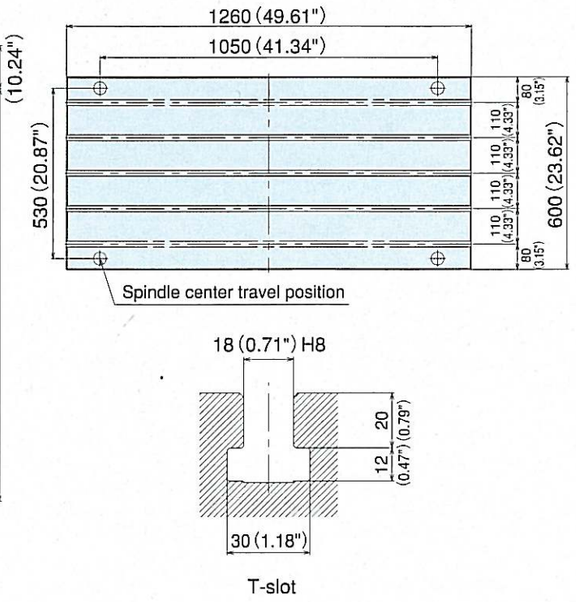
Side View



Floor Space



Table



VB53 N730 CONTROLLER

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"
Least control increment: 1nm
Max. programmable dimension:
±99999.999mm/±9999.9999"
Absolute / Incremental programming: G90 / G91
Decimal point input Ⅰ／Ⅱ
Inch / Metric conversion: G20 / G21
Program code: ISO / EIA automatic discrimination
Program format: Meldas standard format
(M2 format needs to be instructed.)
Positioning:G00
Linear interpolation:G01
Circular interpolation: G02 / G03 (CW / CCW)
(Including radius designation)
Cutting feed rate: 5.3-digit F-code, direct command
One digit F-code feed
Dwell: G04
Manual handle feed: Manual pulse generator
1 set (0.001, 0.01, 0.1mm)
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 tap cycle: G84, G74
Part program storage capacity: 160m [60KG]
No. of registered programs: 200
Part program editing
Background editing
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/Alarm guidance
Ethernet interface
IC card/USB memory interface
IC card driving
Hard disk driving
Spindle function: 5-digit S-code direct command
Spindle speed override: 50 to 150% (every 5%)
Tool function: 4-digit T-code direct command
ATC tool registration
Miscellaneous function: 3-digit M-code programming
Multiple M-codes in 1 block: 3 codes (Max 20 settings)
2nd auxiliary function: A, B, C
Tool length offset: G43, G44
Tool position offset: G45 to G48
Cutter compensation: G38 to G42
Tool offset sets: 200 sets
Tool offset memory Ⅱ: tool geometry and wear offset
Manual reference position return
Automatic reference position return: G28 / G29
2nd to 4th reference position return: G30 P2 to P4
Reference position return check: G27
Automatic coordinate system setting
Coordinate system setting: G92
Machine coordinate system: G53
Selection of workpiece coordinate system: G54 to G59
Local coordinate system: G52
Program stop: M00
Optional stop: M01
Optional block skip: / Dry run
Machine lock
Z-axis feed cancel
Miscellaneous function lock
Program number search
Sequence number search
Program restart function
Cycle start
Auto restart
Single block
Feed hold
Manual absolute on / off parameter
Machining time computation
Automatic operation handle interruption
Manual numerical command
Sub program control
Canned cycle: G73, G74, G76, G80 to G89
Linear angle designation
Circular cutting
Parameter mirror image
Programmable mirror image
Variable command: 200 sets
Automatic corner override
Exact stop check / mode
Programmable data input: G10 / G11
3D solid program check
Graphic display check
Backlash compensation
Memory pitch error compensation
Manual tool length measurement
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) ※
Simultaneously controlled axes: 4 axes
Simultaneously controlled axes: 5 axes ※
Program format: M2 / M0 format
Unidirectional positioning: G60 STD
Helical interpolation STD
Cylindrical interpolation
Hypothetical axis interpolation
Spiral/Conical interpolation
NURBS interpolation STD
(Hyper HQ control mode II is required.)
Handle feed 3 axes:Standard pulse handle is removed.
Part program storage capacity:1280m [500KB] (1000) STD
Part program storage capacity:2560m [1MB] (1000)
Part program storage capacity:5120m [2MB] (1000)
Computer link B: RS232C
Spindle contour control (Spindle position control)
3-dimensional cutter compensation
Tool offset sets: 400 sets
Tool offset sets: 999 sets
Addition of extended workpiece coordinate system
(48 sets) : G54.1 P1 to P48
Addition of extended workpiece coordinate system
(96 sets) : G54.1 P1 to P96
Optional block skip: Total 9
Tool retract and return
Sequence number comparison and stop
Corner chamfering / corner R: Insert into straight
line-straight line / straight line-circle arc STD
User macro and user macro interruption STD
Variable command: 600 sets in total STD
Pattern rotation
Programmable coordinate system rotation:
G68, G69 / G68.1, G69.1 STD
Parameter coordinate system rotation STD
Special canned cycles: G34 to G36, G37.1 / G34 to G37
Scaling: G50, G51
Chopping function
Playback
Skip function: G31 STD
Automatic tool length measurement: G37 / G37.1
Tool life management Ⅱ: 100 sets
Additional tool life management sets: 200 in total
Additional tool life management sets: 400 in total
Additional tool life management sets: 600 in total
Additional tool life management sets: 800 in total
Additional tool life management sets: 1000 in total
External search
(Standard for the machine with APC)
RS232C interface: RS232C-1CH

※STD: Standard specification for VB53

Original OKK Software

Machining support integrated software
(incl. help guidance, etc.) ····· STD
Tool support ····· STD
Program Editor ····· STD
HQ control ····· STD
Hyper HQ control mode Ⅱ ····· STD
WinGMC7 ····· OP
Soft Scale Ⅱm ····· STD
Touch sensor T0 software ····· OP
Tool failure detection system (Soft CCM) ····· OP
Adaptive control (Soft AC) ····· OP
Automatic restart at tool damage ····· OP

Item with ※ Require N750 controller

VB53 F31i-A CONTROLLER

Standard Specification

No. of controlled axes: 3 axes (X, Y, Z)
No. of simultaneously controlled axes: 3 axes
Least input increment B: 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
Nano interpolation (internal)
Positioning: G00
Linear interpolation: G01
Circular arc interpolation: G02/G03
(CW/CCW) (Including radius designation)
Cutting feed rate:
6.3-digit F-code, direct command
Dwell: G04
Manual handle feed: manual pulse generator 1 set
(0.001, 0.01, 0.1mm)
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)
Part program storage capacity: 160m [64KB]
No. of registered programs: 120
Part program editing
Background editing
Extended part program editing
10.4-inch color LCD/QWERTY key MDI
Clock function
MDI (manual data input) operation
Memory card interface
Spindle function: 5-digit S-code direct command
Spindle speed override: 50 to 150% (every 5%)
Tool function: 4-digit T-code direct command
ATC tool registration
Auxiliary function: 3-digit M-code programming
Multiple M-codes in 1 block: 3 codes (Max 20 settings)
Tool length offset: G43, G44/G49
Tool diameter and cutting edge
R compensation: G41, G42/G40
Tool offset sets: 99 sets
Tool offset memory C
Manual reference position return
Automatic reference position return: G28/G29
2nd reference position return: G30
Reference position return check: G27
Automatic coordinate system setting
Coordinate system setting: G92
Machine coordinate system: G53
Workpiece coordinate system: G54 to G59
Local coordinate system: G52
Program stop: M00
Optional stop: M01
Optional block skip: / Dry run
Machine lock
Z-axis feed cancel
Auxiliary function lock
Graphic display
Program number search
Sequence number search
Program restart
Cycle start
Auto restart
Single block
Feed hold
Manual absolute on/off parameter
Sub program control
Canned cycle: G73, G74, G76, G80 to G89
Mirror image function parameter
Automatic corner override
Exact stop check/mode
Programmable data input: G10
Backlash compensation for each rapid traverse
and cutting feed
Smooth backlash
Memory pitch error compensation (interpolation type)
Skip function
Tool length manual measurement
Emergency stop
Data protection key
NC alarm display / alarm history display
Machine alarm display
Stored stroke limit 1
Load monitor
Self-diagnosis
Absolute position detection

Optional Specification

15" color LCD / QWERTY key MDI
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
No. of simultaneously controlled axes: 4 axes
No. of simultaneously controlled axes: 5 axes ※
Least input increment C: 0.0001mm / 0.00001"
FS15 tape format
Unidirectional positioning: G60
Helical interpolation STD
Cylindrical interpolation
Hypothetical axis interpolation
Spiral/Conical interpolation
Smooth interpolation
(Hyper HQ control B mode is required.)
NURBS interpolation
(Hyper HQ control B mode is required.)
Involute interpolation
One-digit F code feed
Handle feed 3 axes:
Standard pulse handle is removed
Part program storage capacity:
1280m [512KB] (1000 in total) STD
Part program storage capacity:
2560m [1MB] (1000 in total)
Part program storage capacity:
5120m [2MB] (1000 in total)
Part program storage capacity:
10240m [4MB] (1000 in total)
Part program storage capacity:
20480m [8MB] (1000 in total)
Data server: ATA card (1GB) STD
Data server: ATA card (4GB)
Spindle contour control (Cs contour control)
2nd auxiliary function
Tool position offset
3-dimensional cutter compensation
Tool offset sets: 200 sets in total
Tool offset sets: 400 sets in total
Tool offset sets: 499 sets in total
Tool offset sets: 999 sets in total
Addition of workpiece coordinate system
(48 sets in total) : G54.1 P1 to P48
Addition of workpiece coordinate system
(300 sets in total) : G54.1 P1 to P300
Machining time stamp
Optional block skip: Total 9
Tool retract and return
Sequence number comparison and stop
Manual handle interruption
Programmable mirror image STD
Optional chamfering / corner R
Custom macro STD
Interruption type custom macro
Addition of custom macro common variables: 600
Figure copy
Coordinate system rotation: G68, G69 STD
Scaling: G50, G51
Chopping
Playback
Automatic tool length measurement: G37 / G37.1
Tool life management: 256 sets in total
Addition of tool life management sets: 1024 sets in total
High-speed skip
Run hour and parts count display STD
RS232C interface: RS232C-1CH
Manual Guide (i Basic)
Manual Guide (i Milling cycle)

※STD: Standard specification for VB53

Original OKK Software

Machining support integrated software
(incl. help guidance, etc.) ····· STD
Tool support ····· STD
Program Editor ····· OP
HQ control ····· STD
Hyper HQ control mode B ····· STD
Special canned cycle (including circular cutting) ··· OP
Soft Scale Ⅱm ····· STD
Touch sensor T0 software ····· OP
Tool failure detection system (Soft CCM) ····· OP
Adaptive control (Soft AC) ····· OP
Automatic restart at tool damage ····· OP

Item with ※ Require F31i-A5 controller