



#### NIDEC OKK CORPORATION

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#### NIDEC OKK A DIVERSIFIED MANUFACTURER OF MACHINE TOOLS

Specializes In: Machining centers Graphite cutting machining centers Grinding centers **CNC** Milling machines Conventional milling machines Total die and mold making systems Flexible manufacturing cells and systems

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## NIDEC OKK CORPORATION





# Large Capacity, High-Speed Horizontal Machining Center

Combining exceptional cutting capability with high-speed and accuracy to optimize the machining of wind-power amplifier gear boxes, large-size dies and molds, diesel engine blocks and other large products.

> Travel Distance 2400(94.49") x 1650(64.96") x 1750(68.90") mm Pallet Size 1600 (62.99") x 1250(49.21") mm Maximum Workpiece Size (Diameter × Height) ø2500 (98.43") x 1850(72.83") mm

Rapid Traverse Rate (X/Y/Z axes) 42m/min(1654ipm)

Maximum Tool Mass **30**kg(66.11bs)

Maximum Tool Diameter ø**300**mm(11.81")

Maximum Tool Length **600**mm(23.62")

Number of Stored Tools 60 tools \*116, 176 or 236 tools can be stored optionall

Maximum Load Mass 5000kg(11013lbs) g (17621|bs) or 10000 kg (22026|bs) can be loaded

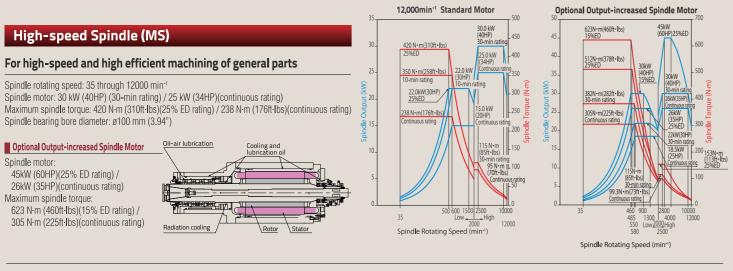


# Consistent machining performance is received by the precise synchronization of the control and the drives.

Synchronized control of the Y and Z axes drives and the large-diameter twin-lead ball screws

# Provision of various types of spindles to respond to any users' demands

Three types of spindle specification.



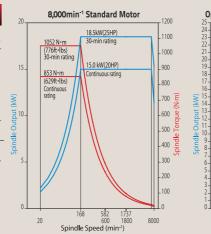
#### Gear-drive Spindle (Three-step Gear Drive)

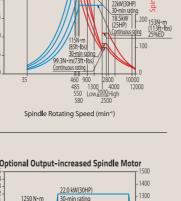
For smoothly machining the hard-to-cut materials for heavy-duty parts

#### 8000min<sup>-1</sup>

Spindle rotating speed: 20 through 8000 min-1 Spindle motor: 18.5kW (25HP)(30-min rating) / 15kW(20HP)(continuous rating) Maximum spindle torque: 1052 N·m (776ft lbs)(30-min rating) / 853 N·m (629ft lbs)(continuous rating) Spindle bearing bore diameter: ø120mm (4.72") Spindle rotating speed: 20 through 8000 min Spindle motor: 22kW(30HP)(30-min rating) 18.5kW(25HP)(continuous rating)

Maximum spindle torque: 1250N-m(922ft-lbs) (30-min rating)/1052N-m(776ft-lbs)(continuous rating) Spindle bearing bore diameter: ø120mm (4.72")





8.5kW(25H



#### Two Position Locking Quill Style Spindle (Three-step Gear Drive)

The two position locking quill spindle can realize with a single chucking operation the machining that required two processes using the machining center and the boring machine. It allows a drastic reduction in the total machining time by reducing both the processes and the setup work that can take hours for the large-size parts.

Spindle rotating speed: 20 through 4000 min-1 Spindle motor: 18.5 kW (25HP)(30-min rating) / 15 kW (20HP)(continuous rating) Maximum spindle torque 1000 N·m (738ft.lbs)(30-min rating) / 810 N·m (597ft.lbs)(continuous rating)

Spindle bearing bore diameter: ø150 mm (5.91" Quill spindle outside diameter: ø110 mm (4.33")

#### Optional Output-increased Spindle Motor

Spindle motor: 26.0 kW (35HP)(10-min rating) / 22.0 kW (30HP)(15-min rating) / 18.5 kW (25HP)(30-min rating) / 15 kW (20HP)(continuous rating) Maximum spindle torque:1402 N·m (1034ft.lbs)(30-min rating) / 1186 N·m (875ft.lbs)(30-min rating) / 1000 N·m (738ft.lbs)(30-min rating) / 810 N m (597ft.lbs)(continuous rating)

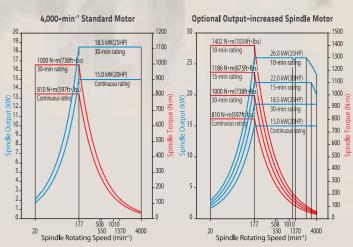


**Ouill spindle position** 

00 mm)(0"/11.81") Nidec OKK's inal clamp device minimizes the in machining capability when the



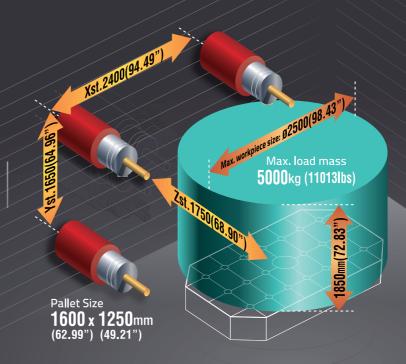
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HM 1600
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# High-accuracy Positioning and High Clamping Force

Nidec OKK's original six cylinder pallet clamping holds with a force of 284 kN and six taper cones produce high-accuracy positioning.

The balanced clamping method and high clamping force delivers high cutting capability that is necessary for machining the large and heavy workpieces.



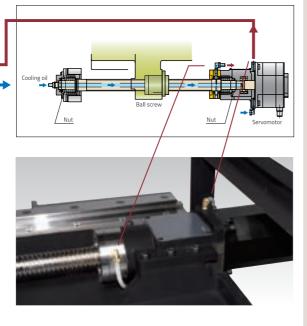
# Wide Machining Area available for Large Workpieces

OKK pursued the ultimate superior accuracy, accessibility and operability by a thorough study of the heavy-duty cutting environment.

#### Forced Core Cooled Ball Screw and Double-anchoring Method

Lubrication Oil Temperature Controller

The forced core cooled ball screws are used on the X, Y and Z axes. Circulation of the temperature-controlled cooling oil on the surfaces of the ball screws, ball screw supports and motor mounting section minimizes the thermal displacement and provides continued accuracy over a long period of time.



The double-anchoring method is effective for improving the feed mechanism' s rigidity and accuracy. Use of the method for the X, Y and Z axes improves the fine-feed and lost-motion characteristics and drastically increases the circular cutting accuracy.

#### **Cutting Data**









Type of machining	Face milling (ø125(5")x6T)		
Quill spindle position	Standard position (0 mm)(0")	Extended position (300 mm)(11.81")	
Spindle rotating speed	Spindle rotating speed 300min <sup>-1</sup> 300mi		
Width of cut	100mm (3.94")	100mm (3.94")	
Depth of cut	of cut 6mm (0.24") 2.5m		
Feed rate	1000mm/min (39.37ipm)	600mm/min (23.62ipm)	
Cutting rate	600cm3/min (36in3/min)	150cm3/min (9in3/min)	
Workpiece material	S45C	S45C	

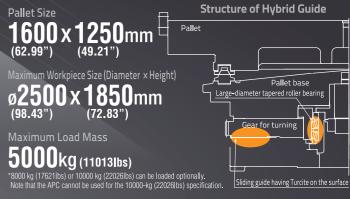
Type of machining	Grooving (ø50(2")×6T)	
Quill spindle position	Standard position (0 mm)(0")	
Spindle rotating speed	160 min <sup>-1</sup>	
Width of cut	50mm (1.97")	
Depth of cut	25mm (0.98")	
Feed rate	200mm/min (7.87ipm)	
Cutting rate	250cm3/min (15in3/min)	
Workpiece material	S45C	

Type of machining	Side milling (ø50(2")×6T)	
Quill spindle position	Standard position (0 mm)(0")	
Spindle rotating speed	160 min <sup>-1</sup>	
Width of cut	25mm (0.98")	
Depth of cut	50mm (1.97")	
Feed rate	200mm/min (7.87ipm)	
Cutting rate	250cm <sup>3</sup> /min (15in <sup>3</sup> /min)	
Workpiece material	S45C	

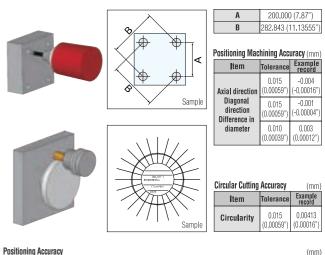
The above values are reference values and consider them only as a guide for the cutting capability.

Hybrid guide supporting heavy workpiece Utilizing a large-diameter tapered roller bearing and the sliding guide surface on the B axis has produced a highly rigid table.

The built-in rotary table (BRT) is ideal for machining complicated workpieces and is included in the standard specification. It enables the 0.0001-degree minimum index angle.



Accuracy



Item		
Positioning	When linear scale is not used	X:±0.0035(0.00014") / full length Y:±0.0030(0.00012") / full length Z:±0.0030(0.00012") / full length
accuracy	When linear scale is used	X:±0.0030(0.00012") / full length Y:±0.0025(0.00010") / full length Z:±0.0025(0.00010") / full length
Repeated positioning	When linear scale is not used	X/Y/Z:±0.0020(0.00008") / full length
accuracy	When linear scale is used	X/Y/Z:±0.0015(0.00006") / full length

(Nidec OKK tolerance)

1. The data shown above as an example are based on the short-time machining. The values may vary in the continuous machining. 2. The data shown above as an example were obtained under the Nidec OKK's in-house cutting test conditions. The values may vary with the condition of the cutting tools and fixtures.

3. The above accuracy data are the laboratory data obtained by installing the machine according to the Nidec OKK's foundation drawing and carrying out the inspection based on the Nidec OKK's inspection standard in the environment with constant temperature

Performance of product

# Improved Reliability and Durability

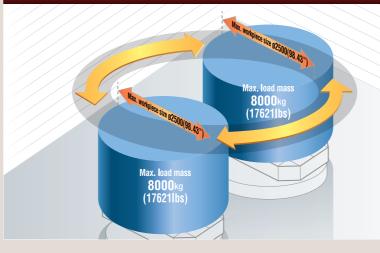
We have considered the measures for chip removal, ease of maintenance, etc. and thoroughly pursued the production efficiency in the long hours of operation.

#### ATC [Automatic Tool Changer]



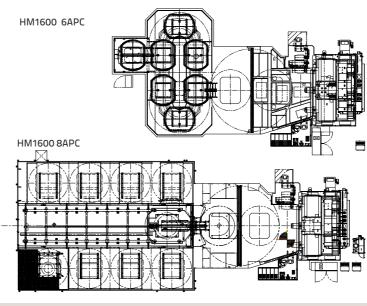
Consistent tool change operation and superior durability are ensured by use of the acknowledged Nidec OKK's original cam-controlled high-speed synchronizing tool changer (Nidec OKK patent). The variable-speed ATC function included in the standard specification allows setting at the time of tool registration for the heavy tools and large-diameter tools so that the ATC turning speed slows down automatically to change those tools smoothly.

#### APC [Automatic Pallet Changer]



#### Configuration examples 6APC/8APC

Figure is a conceptual diagram. Actual specifications may differ.

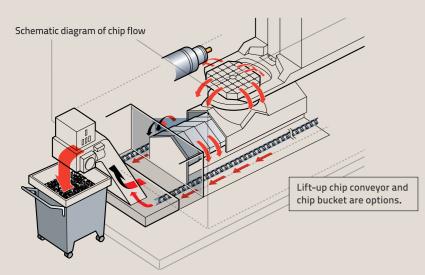


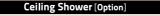
### Design structure in consideration of safety, operability and even the environmental measures We have improved largely the operability- and chip-processing-related problems that are specific to the large-size machines.

Thorough Chip Processing Measures

The shutter slots have been eliminated from the Y-axis upper and lower covers. Both the table main body and the Z-axis shutter have been steepened to avoid chips accumulation and improve the continuous machining reliability.

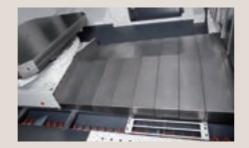
The wide troughs on both sides of the table can receive a large amount of chips. The chips and coolant in the troughs are completely transferred and ejected from the machine by means of the coil-type conveyors. The troughs also help to suppress the thermal displacement by sheltering the transfer of heat from chips and coolant to the bed.





A large amount of coolant can be jetted and sprayed evenly over the machine inside by using four pumps dedicated to the ceiling shower. The high-capacity ceiling shower washes away chips from fixtures and workpieces and prevents chips from accumulating.







# Maximum Tool Length **600**mm(23.62")

\*For the multi-magazine that can store 176 or more tools, the maximum tool length for the tools stored in the 3rd or later magazines is restricted to 500 mm.

Maximum Tool Mass **30**kg(66.1lbs)

Tool Exchange Time (tool-to-tool) **3.8**S

Tool Exchange Time (cut-to-cut)

**11.0**s

Maximum Tool Moment **29.4**N·m (21.7ft·lbs)

#### APC [Automatic Pallet Changer]

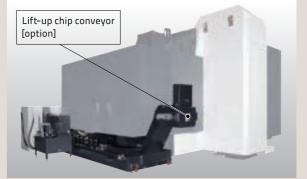
The APC mechanism of HM1600 uses the direct-turn method consisting only of the pallet lift and turning mechanism so that the pallet exchange time is reduced and space-saving is realized. It can handle the table's maximum load mass of 8000 kg (17621lbs) [option].

Since its design has taken into consideration the expansion for automation (6APC with automatically transferred pallet), it is easily compatible with the line configuration.

#### Lift-up Chip Conveyor [Option]

We can provide various types of lift-up chip conveyors.





#### Machine Specification

#### Main Specification

Main Specification				
Item		12000-min <sup>-1</sup> MS	8000-min <sup>-1</sup> gear spindle	4000-min <sup>-1</sup> two position spindle
Travel on X axis (Column's longitudinal direction)	mm		2400(94.49")	FFF
Travel on Y axis (Spindle head's vertical direction)	mm		1650(64.96")	
Travel on Z axis (Pallet's cross direction)	mm		1750(68.90")	
Distance from table top surface to spindle center	mm	1	00(3.94")~1750(68.90	")
Distance from table center to spindle nose	mm		50(9.84")~2000(78.74	
Table (pallet) work surface area	mm		600(62,99")×1250(49,2	,
rabio (pario) non carraco arca				(OP:10000kg(22026lbs))
Max. mass of load on table (pallet)	kg	(Uniformly distributed load)	(OP:8000kg(17621lbs) Uniformly distributed load)	Uniformly distributed load
Table (pallet) top surface specification		34 × M20 scr	ew hole at intervals of 2	50 mm(9.84")
Minimum indexable angle of table (pallet)	0		0.0001	
Table (pallet) indexing time per 90°	Sec	3.5 (Optional 10	000-kg(22026lbs) spec	ification: 6.5 sec)
Spindle rotating speed	min-1	35~12000	20~8000	20~4000
Number of spindle speeds		2-speed electrical shift (MS)	3-speed gearshift	3-speed gearshift (two position spindle
Spindle taper hole			7/24 taper No. 50	
Spindle bearing bore diameter		ø100(3.94")	ø120(4.72")	ø150(5.91")
Rapid traverse rate	mm	. ,	000-kg(22026lbs) specification	. ,
Cutting feed rate	mm/min		20000 (0.04~787.40ipm	
Type of tool shank	mm/min		JIS B 6339 BT50	~
Type of pull stud			OKK only 90 °	
Number of stored tools	tool	0KK OHIY 90 ° 60 *3		
Maximum tool diameter	mm	ø115(4.53") (ø300 mm (11.81") with no tools in adjacent j		ale in adiacont note)
Maximum tool length (from gauge line)	mm	0110(4.00) (0000		DIS III dujaceni pols)
		600(23.62")		
Maximum tool mass Maximum tool memont	kg N·m	30(66.1lbs)		
	IN-III	29.4(21.7ft-lbs)		1
Tool selection method		Address fixed random method		
Tool exchange time (tool-to-tool)	Sec	3.8 (Speed is changeable for heavy tools.)		
Tool exchange time (cut-to-cut)	Sec	11 (Optional 10000-kg(22026lbs) specification: 15 s		fication: 15 sec)
Pallet exchange method		Direct turn method		
Pallet exchange time (JIS B 6336-9)	Sec	54 (Optional 8000-kg(17621lbs) specification: 65 sec		fication: 65 sec)
Spindle motor (30-min rating/continuous rating)	AC, kW	30/25(40HP/34HP) 18.5/15(25HP/20HP) 18.5/1		18.5/15(25HP/20HP)
Motor for ATC	kW		0.75(1HP)	
Feed motors	AC, kW	X:5.0(6.7HP) Y:4.	0(5.4HP)×2 Z:5.0(6.7H	P)×2 B:4.5(6.0HP)
Hydraulic pump motor	kW		2.2(3HP)	
Spindle and feed system cooling oil pump motor (compression/discharge)	kW	2.48/0.75×2 (3.3HP/1HP×2)		
Coolant pump motor	kW		1.1(1.5HP)	
Motor for APC	AC, kW		7.0(9.4HP)	
Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz *4	kVA	86	70	70
Compressed air supply	MPa, I/min[ANR]	0.4(57.1psi)~(	).6(85.7psi), Min500(13	1 32.2qpm) *4 *5
Hydraulic unit tank capacity			20(5.3gal)	G. /
Spindle and feed system cooling oil tank capacity	1		70(18.5gal)×2	
B axis and magazine lubrication oil tank capacity		4.0(1.1gal)		
Coolant tank capacity	1	4.0(1.1gal) 800(211.4gal)		
Machine height	mm		4370(172.05")	
Required floor space	mm	4370(172.05°) 7485(294.69")×10770(424.02")(Opt. lift up chip conveyor)		
Machine mass			1 10000-kg(22026lbs) specifi	
Operating environment temperature	kg °C	JUDUU(TTUT32IDS) (Uptiona	5~40	σαιτσπ. 40000 κιμίδο rubiDS)
	-			-
Operating environment humidity	%	1	0~90 (No condensatio	n)

Note 1: The APC cannot be used for the 10000-kg(22026lbs) specification.

Note 2: Feed rate under the HQ or Hyper HQ control.

Note 3: The number of stored tools refers to the total number of tools including the one installed on the spindle i.e. subtract one from the above for the actual number of tools stored in the tool magazine.

Note 4: The values for the standard specification machines are described above. They are subject to change because of the added options. Note 5: Purity of the supplied air should be equivalent to or higher than Class 3.5.4 specified in ISO 8573-1/JIS B8392-1.

#### **Standard Accessories**

Item	Qty	Remarks
Separate coolant tank	1 set	
Slideway protection covers for X, Y and Z axes	1 set	
Top cover / APC safety guard	1 set	
Earth leakage breaker	1 set	
Automatic power off	1 set	
Lighting system (Two lamps inside the machine)	1 set	
Signal lamp (2-lamp type)	1 set	
Edge locator	1 set	
Direct-turn APC unit	1 set	
Chip conveyors (Two for table both sides)	1 set	Coil type inside the machine for chip discharge from rear side
Hydraulic unit	1 set	
Guide and ball screw automatic greasing		Lubricating the linear guides and ball screws
Spindle and feed system cooling oil temperature controller	1 set	
Oil-air unit	1 set	
B axis and magazine automatic lubrication	1 set	
Steps inside the machine	1 set	
Work platform for the operator	1 set	Shared with the equipment box
Foundation parts (for the bond anchoring method)	1 set	Including the bond for foundation
Instruction manual	1 copies	
Electrical instruction manual (including electrical diagrams)	1 copy	

#### Special Accessories

ltem	Specification
Increased spindle motor output	45/30/26kW(60/40/35HP) (12000-min* MS specification) 22/18.5kW(30/25HP) (8000-min* gear-spindle specification) 26/22/18.5/15kW (35HP/30HP/25HP/20HP) (4000-min* quill-spindle specification
Two-surface locking tool	BT type
Tool removing device	
Changing the type of pull stud	MASI 45° MASII 60°
Number of stored tools	116 / 176 / 236 tools
Multi-pallet APC	
Pallet top face specification	T-slot specification / Special specification
Addition of pallets	
Maximum mass of load on the table	8000 kg(17621lbs) (uniformly distributed load) 10000 kg(22026lbs) (uniformly distributed load without APC)
APC safety door automatic operation	
Oil skimmer	
Addition of lighting system	
Signal lamp	3-lamp type with buzzer / 3-lamp type without buzzer
Linear scale	For X, Y and Z axes / For X and Y axes
Coolant-through-spindle	2-MPa(285psi) coolant / 7-MPa(1000psi) coolant / Air mist
Coolant cooler	
Spare Thickener bag filter	6 pieces (1 set)
Air blow nozzle	1 nozzle
Oil mist blower	
Minimal quantity lubrication system	External nozzle specification / Spindle-through specification
Swirl stopper block	For oil hole / For angle attachment
Piping for the oil-hole block	Normal pressure (1.2 kW)(1.6HP) / High pressure (2 MPa)(285psi)
Ceiling shower	
Workpiece cleaning equipment	Shower gun type
Mist collector	
Lift-up chip conveyor	Hinged-pan type / Scraper type / For aluminum chips Scraper type with floor magnet / For aluminum/Fc chips with magnet separato
Conveyor chip bucket	Fixed type / Swing type
Machine coating color	Color specified by customer
Standard tool set	Including a tool box
Air dryer	
Fire extinguishing appliance	
Sub table	T-slot / Hole / Special specification
Mass block	T-slot / Hole / Special specification
Angle plate	T-slot / Hole / Special specification
2-face angle plate	T-slot / Hole / Special specification
Fixture	
Tooling	
Rotary table, tail stock	
Vice	
Touch sensor system T1	Workpiece measurement (T1-A) / Tool length measurement, Tool break detection (T1-C
Tool break detection inside the magazine	
Tool presence/absence detection	

#### Controller

#### FANUC Controller F31i-B Plus

### Standard Specification

No. of controlled axes: 4 axes (X, Y, Z, B)	Z-axis feed cancel
No. of simultaneously controlled axes: 3 axes(BRT specification is 4 axis)	Auxiliary function lock
Least input increment: 0.001mm / 0.0001*(X,Y,Z) 0.0001deg(B[BRT])	Graphic function
Max. programmable dimension:±9999999.999mm/±39370.0787"	Program number search
Absolute / Incremental programming: G90 / G91	Sequence number search
Decimal point input/Pocket calculator type decimal point input	Program restart
Inch/ Metric conversion: G20 / G21	Cycle start
Program code: ISO / EIA automatic discrimination	Feed hold
Program format: FANUC standard format	Manual absolute (ON/OFF with PMC para
FS15 tape format	Auto restart
Nano interpolation (internal)	Program stop: M00
Positioning: G00	Optional stop: M01
Linear interpolation: GO1	Sequence number collation and stop
Circular interpolation: G02 / G03 (CW/CCW)(Including radius designation)	Sub program control
Helical interpolation	Canned cycle: G73, G74, G76, G80 to G89
Unidirectional positioning: G60	Mirror image function parameter
Cutting feed rate: 6.3-digit F-code, direct designation	Custom macro
Rapid traverse override: 0 / 1 / 10 / 25 / 50 / 100%	Programmable mirror image
Cutting feed rate override: 0 to 200% (every 10%)	Programmable data input: G10
Feed rate override cancel: M49 / M48	Automatic corner override
Rigid tapping: G84, G74 (Mode designation: M29)	Manual Guide i (Basic)
Manual handle feed: Least input increment ×1, ×10, ×100 / graduation	Exact stop check / mode
Dwell: G04	Scaling: G50, G51
One-digit F code feed	Additional custom macro common variab
inverse time feed	Coordinate system rotation: G68, G69
Part program storage capacity: total 10240m [4MB] (total 1000 programs)	Optional chamfering / corner R
Part program editing	Playback
Background editing: Possible to program or edit the machining program while NC machining is executed.	
Extended part program editing	Backlash compensation for each rapid tra
15-inch color LCD/QWERTY key MDI	Smooth backlash
Clock function	Skip function
MDI (manual data input) operation	Tool life management: total 256 sets
Run hour and parts count display Memory card / USB interface	Tool length manual measurement
Spindle function: Direct designation of spindle speed with 5-digit S-code	Data protection key NC alarm display / alarm history display
Spindle speed override: 50 to 150% (every 5%)	Machine alarm display
Tool function: Direct designation of called tool number with 4-digit T-code	Stored stroke check 1
ATC tool registration	Stored stroke check 2
Auxiliary function: Designation with 3-digit M-code	Load monitor
Multiple M-codes in 1 block: Maximum 3 codes in 1 block (Maximum 20 settings)	Self-diagnosis
Tool length offset: G43, G44 / G49	Absolute position detection
Tool diameter and cutting edge R compensation:G41, G42 / G40	
Tool offset sets: total 400 sets	
Tool offset memory C	Optional Speci
Tool position offset	Additional one axes control:name of axis
Automatic reference position return: G28 / G29	Additional two axes control:name of axis
2nd reference position return: G30	No. of simultaneously controlled axes: 5
Machine coordinate system: G53	Least input increment: 0.0001mm / 0.000
Coordinate system setting: G92	Spiral / Conical interpolation
Automatic coordinate system setting	Cylindrical interpolation
Workpiece coordinate system: G54 to G59 G54.1 P1~P48	Hypothetical axis interpolation
Local coordinate system: G52	Involute interpolation
Polar coordinate command: G15, G16	NURBS interpolation
Manual reference position return	Smooth interpolation (Hyper HQ control I
Reference position return check: G27	Handle feed 3 axes:Standard pulse handl
Optional block skip:/	Part program storage capacity:total 2048
Single block	Machining time stamp
Dry run	Data server: ATA card (1GB)
Machine lock	Data server: ATA card (4GB)

	(WindowsCE-installed Open	n CN(
ation	Optional Specification	
	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	o P3
	Optional block skip: Total 9	
	Manual handle interruption	
ter)	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	
	Original Nidec OKK Software	
	Integrated machining support software (incl. help guidance, etc.)	S
	Tool support	S
	Program Editor	S
	EasyPRO	S
1000	Work Manager	[0
	HQ control	S
	Hyper HQ control mode A	[0
	Hyper HQ control mode B	[0
tion type)	Hyper HQ varue kit *2	[0
se and cutting feed	Special canned cycle (including circular cutting)	[0
	Cycle Mate F	[0
	Soft Scale II m	S
	Touch sensor TO software	[0
	Soft CCM (Tool failure detection system)	[0
	Soft AC (Adaptive control unit)	[0

Automatic restart at tool damage

Standard Spe

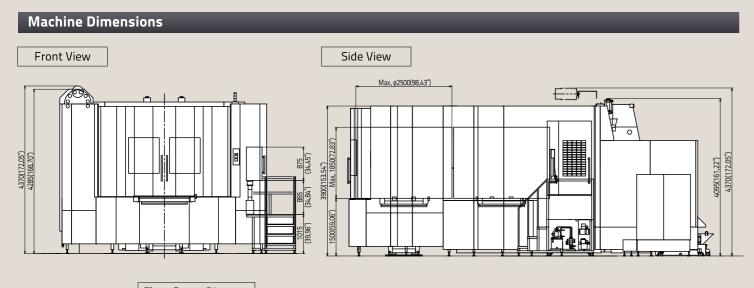
### Optional Specification

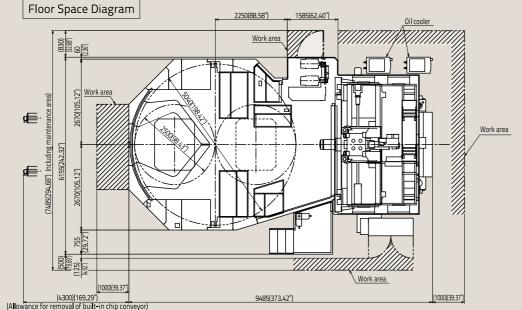
es control:name of axis (A, C, U, V, W) \*1 tes control:name of axis (A, C, U, V, W)  $^{\star1}$ ously controlled axes: 5 axes \*1 ment: 0.0001mm / 0.00001"

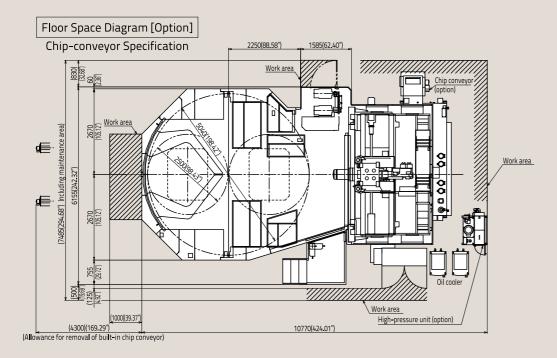
tion (Hyper HQ control B mode is required) es:Standard pulse handle is removed rage capacity:total 20480m [8MB] (1000 in total)

> Note 1: F31i-B5 Plus (WindowsCE-installed Open CNC) Note 2: Includes Data server: ATA card (1GB) and Hyper HQ control mode B STD: Standard [Opt]: Option

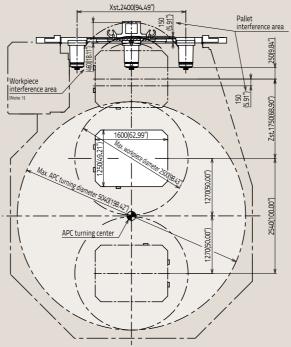
[Opt]



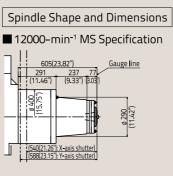




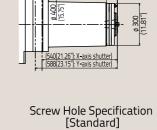
Restrictions on Workpiece



Note 1: When the APC operation is used, do not load a wokpiece that exceeds the range of the maximum APC turning diameter shown above.



■ 8000-min<sup>-1</sup> Gear Spindle Specification 660(25.98") Gauge line 418

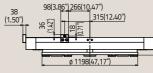


Restrictions on Tool \_ Max600(23.62") [Noti 450(17.72") 56(2<u>.20")</u> 46(1.81") ø 115 4.53") ¢ 270 Max ø300 (11.81")

Note: For the multi-magazine that can store 176 or more tools, the maximum

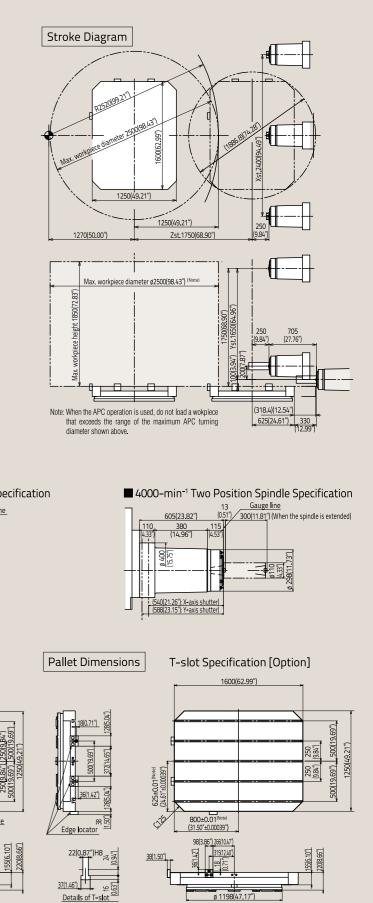
tool length for the tools stored in the 3rd or later magazines is restricted to 500 mm(19.69").

1600(62.99") (1) T 500(19.6 250(9.84") 250(9.84 34-M20 screw hole 800±0.01<sup>(Note</sup> (31.50"±0.00039" Édge locato



Note: This dimension is the dimension between the center of rotation and the edge locator. Please also note that the pallet center hole does not always correspond to the center of rotation.

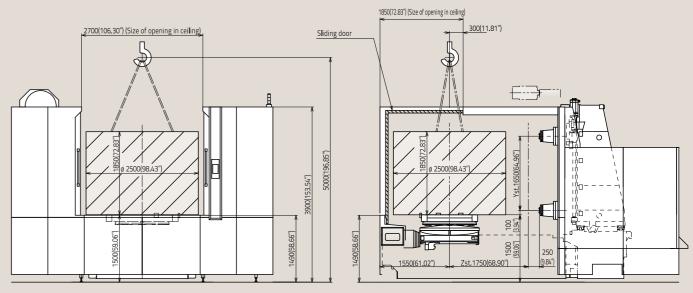
11

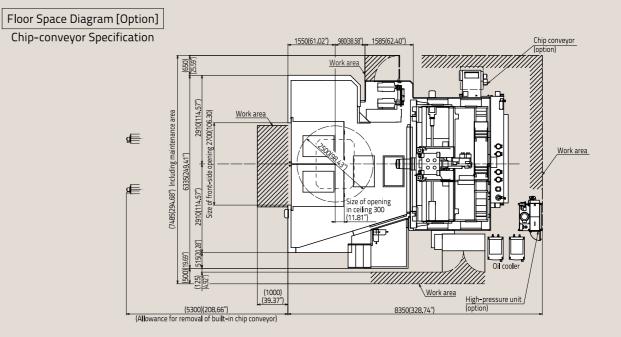


Note: This dimension is the dimension between the center of rotation and the edge locator.

### 10000-kg(22026lbs) Specification Machine Main Dimensions Workpiece Loading Diagram

# 81") $\bigcirc$ 2700(106.30") (Size of opening in ceiling)





HIM1600/10t Mass Specification

> The 10000-kg(22026lbs) maximum load mass specification machine can be provided for machining dies and molds and large and heavy parts. (APC unit is not available. Rapid traverse rate: 20000

> mm/min(787.40ipm) for X, Y and Z axes and 2.5 min<sup>-1</sup> for B axis)

> > Small-lead ball screw

Linear scale [option]

(12-mm lead)

Small-lead ball screw (12-mm lead)

#### Main Specification

•		
Item	Unit	10000-kg(22026lbs) Specification
Travel on X axis (Column's longitudinal direction)	mm	2400(94.49")
Travel on Y axis (Spindle head's vertical direction)	mm	1650(64.96")
Travel on Z axis (Pallet's cross direction)	mm	1750(68.90")
Distance from table top surface to spindle center	mm	100(3.94")~1750(68.90")
Distance from table center to spindle nose	mm	250(9.84")~2000(78.74")
Table (pallet) work surface area	mm	1600(62.99")×1250(49.21")
Max. mass of load on table (pallet)	kg	10000(22026lbs)
Max. workpiece size (diameter × height)	mm	ø2500(98.43")×1850(72.83")

ltem	Unit	10000-kg(22026lbs) Specification
Rapid traverse rate	mm/min	X/Y/Z: 20000(787.40ipm)
Number of stored tools	tools	60
Maximum tool diameter	mm	ø115(4.53") (ø300 mm(11.81") when the adjoining tool pots are empty.)
Maximum tool length (from gauge line)	mm	600(23.62")
Maximum tool mass	kg	30(66.1lbs)
Required floor space	mm	6625(260.83")×7230(284.65")
Machine height	mm	4370(172.05")
Machine mass	kg	40000(88105lbs)

\*Pallets have the same dimensions as the ones for the standard machine