

Horizontal Machining Center

MCH/R SERIES

MCH5000R

MCH8000R



Outstanding heavy-duty cutting performance and incredible stability
Launching OKK's newly remodeled

Super Heavy-Duty Cutting Machining Centers

Launching a new super machine intensively focused on high speed, high accuracy and high rigidity the MCH series has a proven track record and history as heavy-duty cutting machining centers. With a super heavy-duty cutting capacity and a broad range of workability both the MCH5000R and MCH8000R ensure dramatic increases in production efficiency.

MCH5000R

Specifications

Travel distance:
800×700×880mm
(31.50") (27.56") (34.65")

Pallet size:
500×500mm
(19.70") (19.70")

Maximum workpiece size:
ø850×1000mm
(33.46") (39.37")

Rapid traverse rate:
30000mm/min
(1181ipm)

Maximum spindle torque:
1250N·m
(922ft·lbs)

Number of stored tools:
40tools

Maximum tool diameter:
ø270mm
(10.63")

MCH8000R

Specifications

Travel distance:
1300×1200×1200mm
(51.18") (47.24") (47.24")

Pallet size:
800×800mm
(31.50") (31.50")

Maximum workpiece size:
ø1500×1400mm
(59.10") (55.12")

Rapid traverse rate:
24000mm/min
(945ipm)

Maximum spindle torque:
1829N·m[Opt]
(1349ft·lbs)

Number of stored tools:
60tools

Maximum tool diameter:
ø270mm
(10.63")

Highly rigid main body and spindle enables super heavy-duty cutting

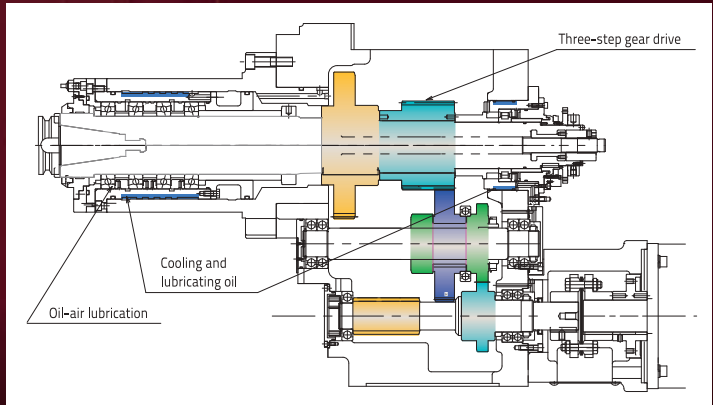
Offers many advantages for heavy-duty machining of hard-to-cut, ferrous, and cast materials.



Eco-friendly & highly rigid spindle

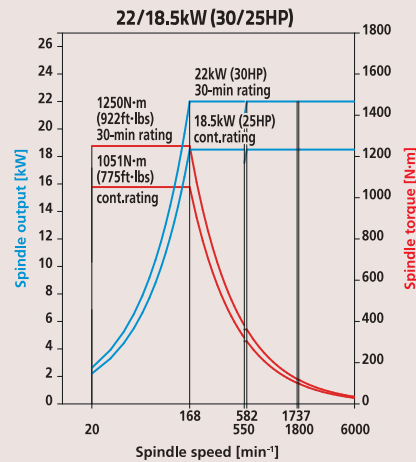
The MCH5000R and MCH8000R use a three-step gear drive enabling the spindle to generate the high torque needed for heavy-duty cutting especially at lower RPMs. In addition the MCH5000R/8000R reduce the spindle motor power consumption by 40% compared with a built-in motor. Spindle rigidity has been improved by using a large-diameter (ø120-mm) bearing that can help maximize the spindle torque.

*1. Diameter of the MCH5000R bearing is ø100-mm.



Largest-in-class spindle torque is available.

MCH5000R 6000 min⁻¹ specification



MCH8000R

4500 min⁻¹ specification

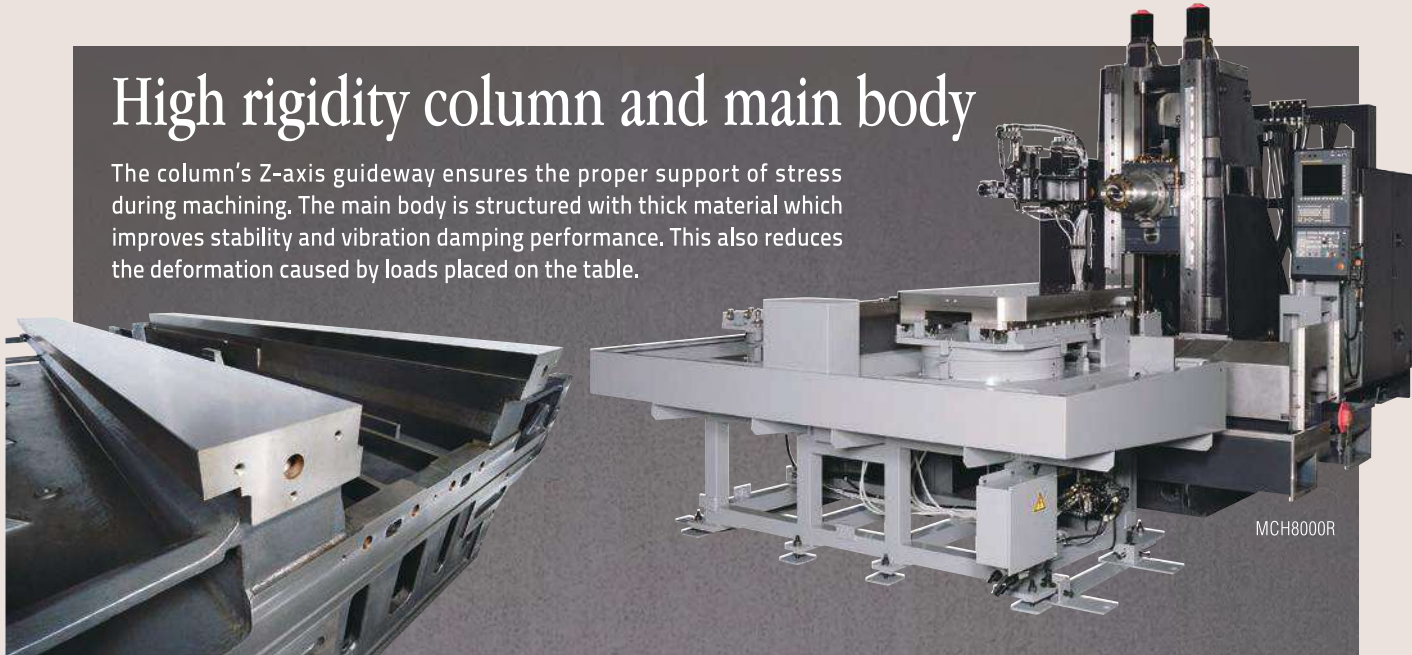


6000 min⁻¹ specification



High rigidity column and main body

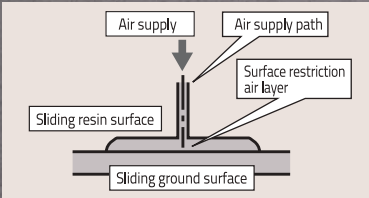
The column's Z-axis guideway ensures the proper support of stress during machining. The main body is structured with thick material which improves stability and vibration damping performance. This also reduces the deformation caused by loads placed on the table.



Improved machine response

The X and Z-axis utilize a hybrid guide face and aerostatic bearing pad. Use of the hybrid guideway reduces the load weight and friction resistance. In addition, it improves the positioning accuracy; fine step feed characteristics and circularity.

*1: MCH5000R has only X-axis.



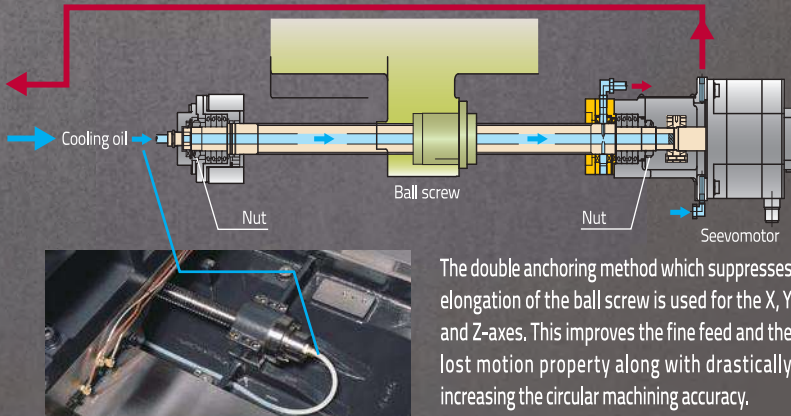
The Y axis uses a twin drive for the spindle head's vertical movement. This eliminates the need for a counterbalance and improves the machine response drastically.

*2: MCH8000R only

Core chilled ball screw and Double-anchor pre-tension system

Lubricating oil temperature controller

The X, Y and Z-axes use core chilled ball screws. This suppresses thermal displacement and helps maintain high accuracy for many hours of operation by circulating the temperature-controlled oil through the ball screw, ball screw support and motor mounting surface.



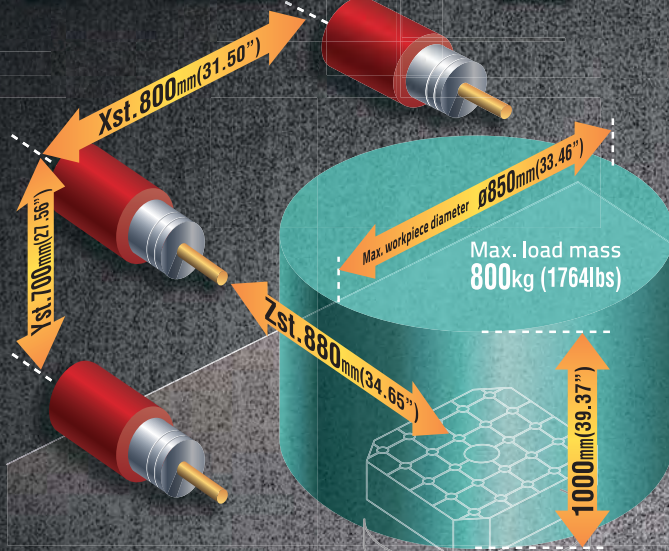
The double anchoring method which suppresses elongation of the ball screw is used for the X, Y and Z-axes. This improves the fine feed and the lost motion property along with drastically increasing the circular machining accuracy.

High-accuracy

High-quality machining supported by the main body design.

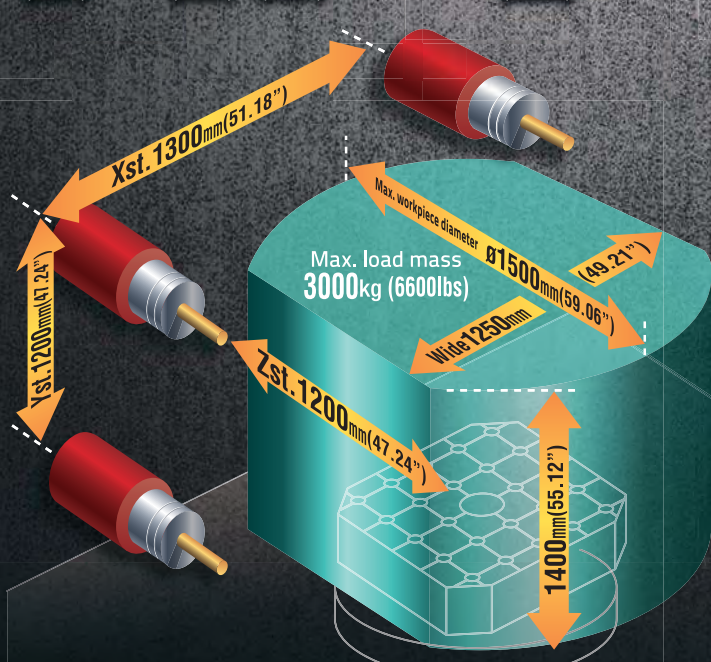
MCH5000R

Pallet size :	Maximum workpiece size : (diameter x height)	Maximum load mass :
□ 500mm (19.7")	ø850x1000mm (33.46") (39.37")	800kg (1764lbs)



MCH8000R

Pallet size :	Maximum workpiece size : (diameter x height)	Maximum load mass :
□ 800mm (31.50")	ø1500x1400mm (59.06") (55.12")	3000kg (6600lbs)

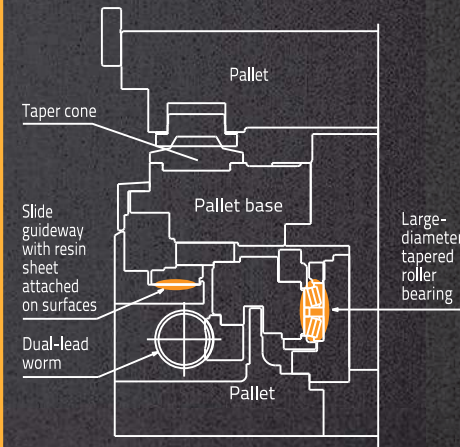


BRT [Built in Rotary Table]*1

The table of MCH5000R consists of a highly rigid speed reducer instead of a conventional worm gear. This system has very low backlash and high resistance to overload (shocks), and is capable of positioning the table at high speed excellent accuracy. The MCH8000R supports heavy work pieces of up to three tons, therefore a hybrid guide (slide guideway and a large-diameter tapered roller) are used for the B axis to maximize the rigidity of the table.

*1: MCH8000R: Optional

Structure of Hybrid Guide



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.

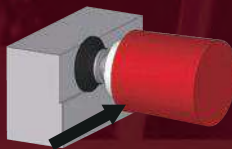


Machining capabilities & Accuracy

Machining capabilities

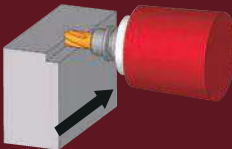
Cutting data	MCH5000R	6000min ⁻¹ 22 / 18.5kW (30 / 25HP)
	MCH8000R	6000min ⁻¹ 26 / 22kW (35 / 30HP)

Face milling



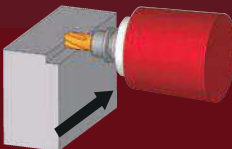
Type of machining	Unit	Machine model	
		MCH5000R	MCH8000R
Spindle speed	min ⁻¹	500 (19.7")	460 (18.12")
Cutting width	mm	100 (3.94")	120 (4.72")
Cutting depth	mm	6 (0.23")	6 (0.23")
Feed rate	mm/min	800 (31.52")	1190 (46.88")
Cutting amount	cm ³ /min	480 (18.91")	857 (2.24")
Spindle motor load	%	112	120
Workpiece material		S45C	S45C

Side milling



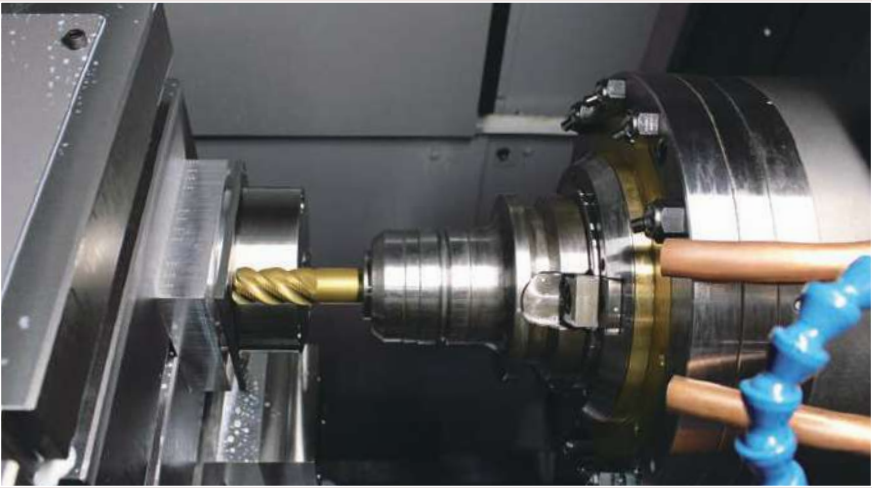
Type of machining	Unit	Machine model	
		MCH5000R	MCH8000R
Spindle speed	min ⁻¹	500 (19.7")	500 (19.7")
Cutting width	mm	30 (1.18")	30 (1.18")
Cutting depth	mm	50 (1.97")	60 (2.36")
Feed rate	mm/min	360 (14.18")	385 (15.16")
Cutting amount	cm ³ /min	540 (21.27")	693 (27.30")
Spindle motor load	%	110	113
Workpiece material		S45C	S45C

Side milling



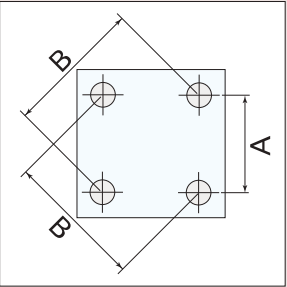
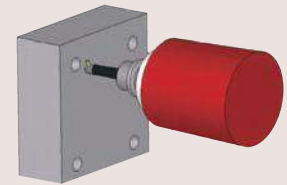
Type of machining	Unit	MCH5000R
		Side milling
Spindle speed	min ⁻¹	240 (9.45")
Cutting width	mm	40 (1.57")
Cutting depth	mm	60 (2.36")
Feed rate	mm/min	250 (9.85")
Cutting amount	cm ³ /min	600 (23.64")
Spindle motor load	%	96
Workpiece material		Ti-6AL-4V

Values shown here are for reference to provide an indication of cutting capability.

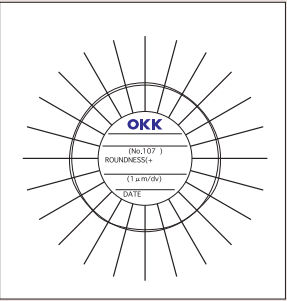
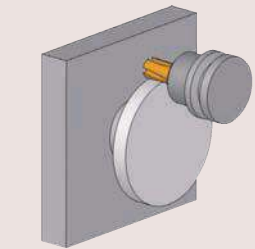


Accuracy

Accuracy



A	200.000 (7.87")
B	282.843 (11.13555")



Positioning Machining Accuracy

MCH5000R		
(mm)		
Item	OKK tolerance	Example record When linear scale is not used
Axial direction	0.015 (0.00059")	-0.004 (-0.00016")
Diagonal direction	0.015 (0.00059")	-0.004 (-0.00016")
Difference in diameter	0.010 (0.00039")	0.004 (0.00016")

MCH8000R		
(mm)		
Item	OKK tolerance	Example record When linear scale is not used
Axial direction	0.015 (0.00059")	-0.005 (-0.00019")
Diagonal direction	0.015 (0.00059")	-0.003 (-0.00012")
Difference in diameter	0.010 (0.00039")	0.005 (0.00020")

Circular Cutting Accuracy

MCH5000R		
(mm)		
Item	OKK tolerance	Example record When linear scale is not used
Circularity	0.015 (0.00059")	0.00509 (0.00020")

MCH8000R		
(mm)		
Item	OKK tolerance	Example record When linear scale is not used
Circularity	0.015 (0.00059")	0.00454 (0.00017")

Positioning Accuracy

(mm)			
Model	Item		
MCH5000R	Positioning accuracy	When linear scale is not used	X/Y/Z: ±0.0050 (0.00020")/full length
		When linear scale is used	X: ±0.0030 (0.00012")/full length
	Repeatability	When linear scale is not used	X/Y/Z: ±0.0020 (0.00008")/full length
		When linear scale is used	X/Y/Z: ±0.0010 (0.00004")/full length
MCH8000R	Positioning accuracy	When linear scale is not used	X/Y/Z: ±0.0050 (0.00020")/full length
		When linear scale is used	X: ±0.0030 (0.00012")/full length Y: ±0.0030 (0.00012")/full length Z: ±0.0025 (0.00010")/full length
	Repeatability	When linear scale is not used	X/Y/Z: ±0.0020 (0.00008")/full length
		When linear scale is used	X/Y/Z: ±0.0010 (0.00004")/full length

Remarks

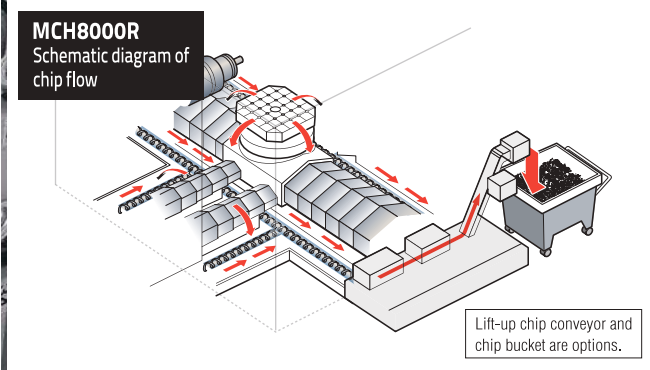
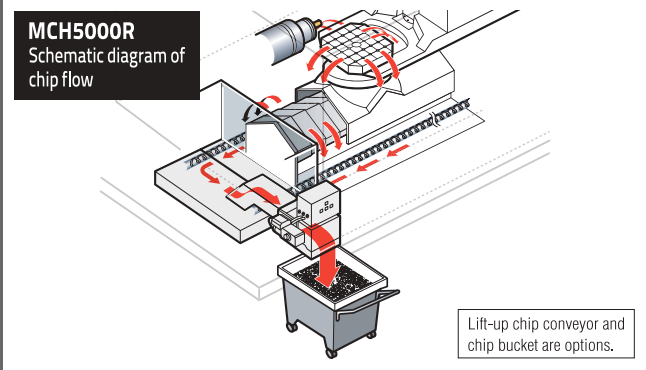
- The above sample data shows a short-time machining example and the results of continuous machining may differ from them.
- The above sample data shows the accuracy under OKK's in-house cutting test conditions. The results may vary with the conditions of the cutting tools and fixtures.
- The accuracy shown above are values obtained based on OKK's inspection standards under the conditions that the machine is installed according to OKK's foundation drawing and the ambient temperature remains constant.

Improved reliability and durability

We thoroughly improved the production efficiencies in the operation over a number of hours by reviewing the operability, extend additional tool magazines, measures against chips, etc.

Chip processing

The MCH5000R has coil-type conveyors installed on the both sides of the table. The MCH8000R comes standard with four coil conveyors, one on each side of the column plus one on the front and rear of the table. The chips are promptly ejected from the machines by coil-type conveyors. Troughs for the coil-type conveyors help to suppress thermal displacement of the main body by blocking the transfer of heat from the chips and coolant.



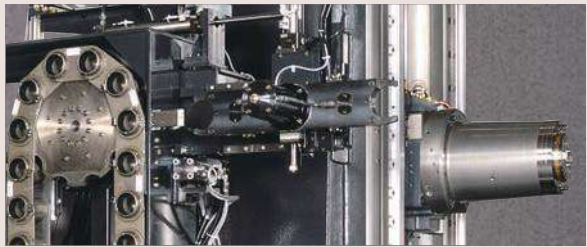
MCH5000R



MCH8000R

ATC [Automatic Tool Changer]

The machine uses a reliable slide-type ATC which provides a stable tool change with excellent durability. The standard specification includes a variable-speed ATC function that automatically slows down the ATC turning speed for a heavy or large-diameter tool. This allows these tools to be handled smoothly by simply selecting the slow turning speed during tool registration.



MCH5000R
Maximum tool diameter ø270mm (10.63") * When the adjoining tool pots contain tools: ø115mm (4.53")
Maximum tool length 500mm (19.70")
Maximum tool mass 25kg (55lbs) (Required slow ATC speed) * Standard ATC speed: 15kg (33lbs)

MCH8000R
Maximum tool diameter ø270mm (10.63") * When the adjoining tool pots contain tools: ø125mm (4.72")
Maximum tool length 610mm (24.03")
Maximum tool mass 30kg (66lbs)

Magazine

MCH5000R

40-or 60-tool capacity magazine	80-or 116-tool capacity magazine	120-or 176-tool capacity magazine																				
<table><tr><th>Number of storable tools *1</th><th>L mm(in)</th><th>H mm(in)</th><th>D mm(in) *2</th></tr><tr><td>40 tools (Standard)</td><td>1880 (74.07")</td><td>2965 (116.82")</td><td rowspan="5">ø270 (10.63")</td></tr><tr><td>60 tools (Option)</td><td>4165 (6.50")</td><td>3205 (12.01")</td></tr><tr><td>80 tools (Option)</td><td>2695 (106.18")</td><td>4165 (164.10")</td></tr><tr><td>116 tools (Option)</td><td>3205 (12.01")</td><td>4165 (16.41")</td></tr><tr><td>176 tools (Option)</td><td>2995 (118.00")</td><td>4165 (6.50")</td></tr></table>			Number of storable tools *1	L mm(in)	H mm(in)	D mm(in) *2	40 tools (Standard)	1880 (74.07")	2965 (116.82")	ø270 (10.63")	60 tools (Option)	4165 (6.50")	3205 (12.01")	80 tools (Option)	2695 (106.18")	4165 (164.10")	116 tools (Option)	3205 (12.01")	4165 (16.41")	176 tools (Option)	2995 (118.00")	4165 (6.50")
Number of storable tools *1	L mm(in)	H mm(in)	D mm(in) *2																			
40 tools (Standard)	1880 (74.07")	2965 (116.82")	ø270 (10.63")																			
60 tools (Option)	4165 (6.50")	3205 (12.01")																				
80 tools (Option)	2695 (106.18")	4165 (164.10")																				
116 tools (Option)	3205 (12.01")	4165 (16.41")																				
176 tools (Option)	2995 (118.00")	4165 (6.50")																				

1. For the 40- or 60-tool magazines the number of storable tools shown above includes one tool attached to the spindle. Subtracting one from the above values shows the number of tools that can be stored in the magazine.

2. The dimension "D" indicates the maximum tool diameter available when the adjoining tool pots are empty. The maximum diameter is 115 (4.53") mm when adjacent pots are used.

MCH8000R

60-tool capacity magazine								
<table><tr><th>Number of storable tools *1</th><th>L mm(in)</th><th>H mm(in)</th><th>D mm(in) *2</th></tr><tr><td>60 tools (Standard)</td><td>3430 (135.14")</td><td>2950 (116.23")</td><td>ø270 (10.63")</td></tr></table>	Number of storable tools *1	L mm(in)	H mm(in)	D mm(in) *2	60 tools (Standard)	3430 (135.14")	2950 (116.23")	ø270 (10.63")
Number of storable tools *1	L mm(in)	H mm(in)	D mm(in) *2					
60 tools (Standard)	3430 (135.14")	2950 (116.23")	ø270 (10.63")					

1. For the 40- or 60-tool magazines the number of storable tools shown above includes one tool attached to the spindle. Subtracting one from the above values shows the number of tools that can be stored in the magazine.

2. The dimension "D" indicates the maximum tool diameter available when the adjoining tool pots are empty. The maximum tool diameter is 125 mm when adjacent pots are used.

120- and 240-tool capacity magazines are also available as options.

Exceptional capabilities to operate unattended for long periods

Centralized maintenance area and many multi-pallet options increases the unattended operating periods.

APC [Automatic Pallet Changer]

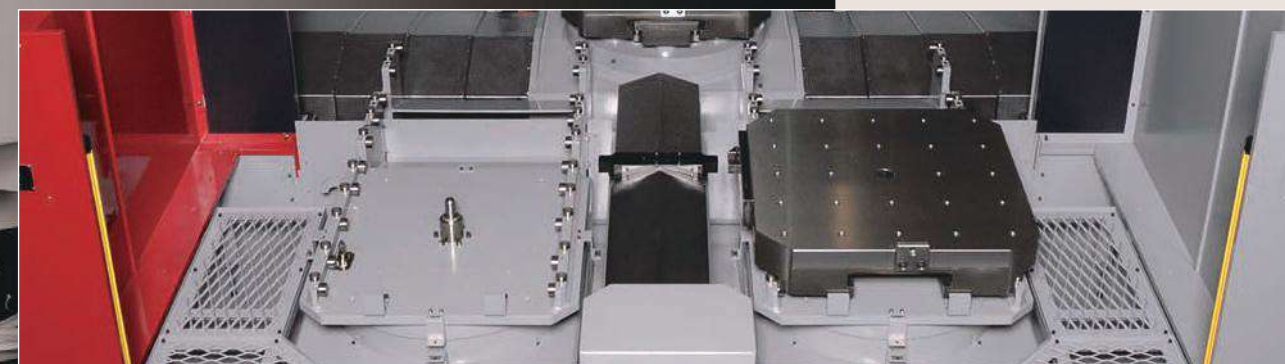
The MCH5000R uses a direct turn pallet changing mechanism for quick pallet exchanges. The MCH8000R adopts a side shuttle pallet changing mechanism for large and heavy workloads. Both models support a variety of multi-pallet systems.



MCH5000R



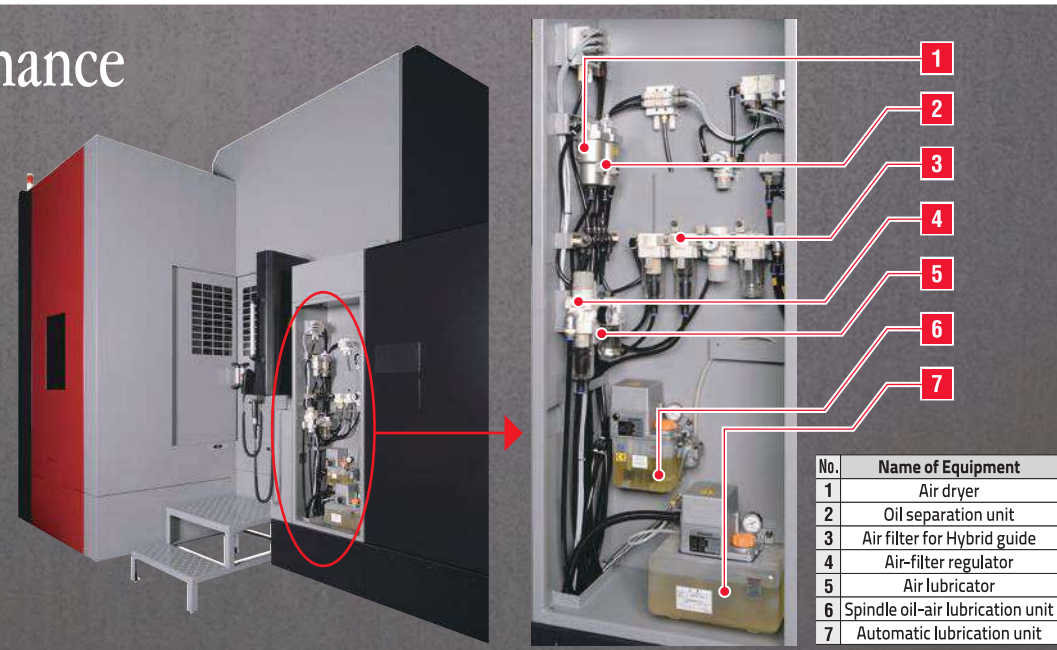
MCH8000R



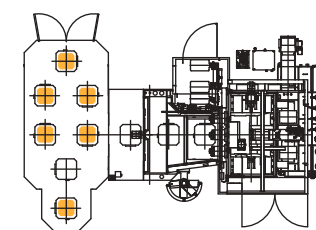
MCH8000R

Maintenance

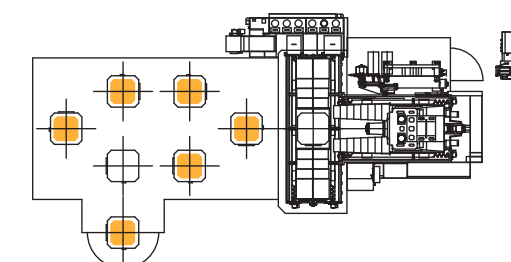
All of the maintenance devices are centrally located on operator door side for simple daily inspection.



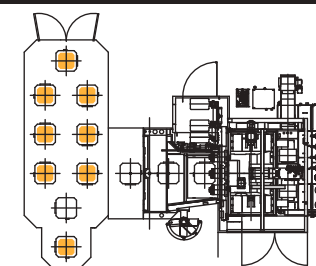
MCH5000R 6APC



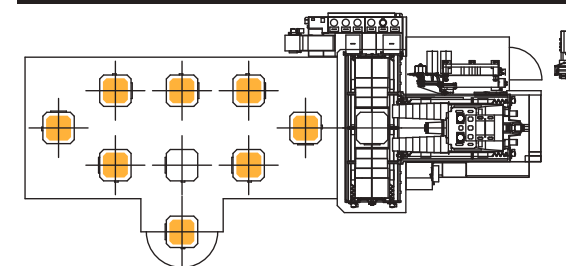
MCH8000R 6APC



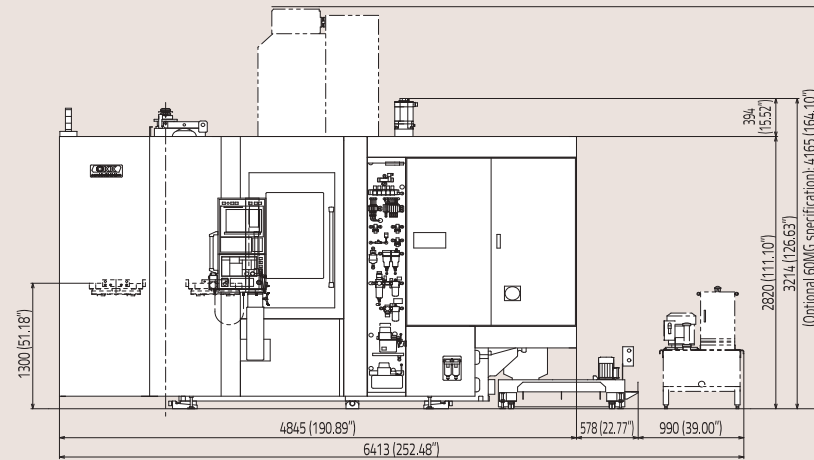
MCH5000R 8APC



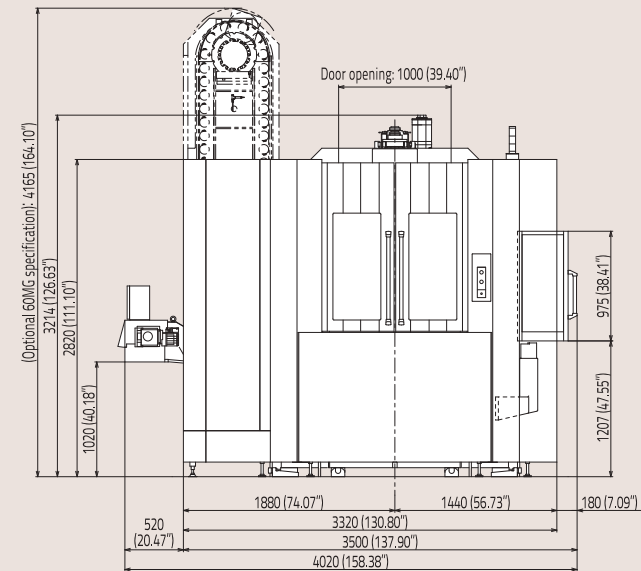
MCH8000R 8APC



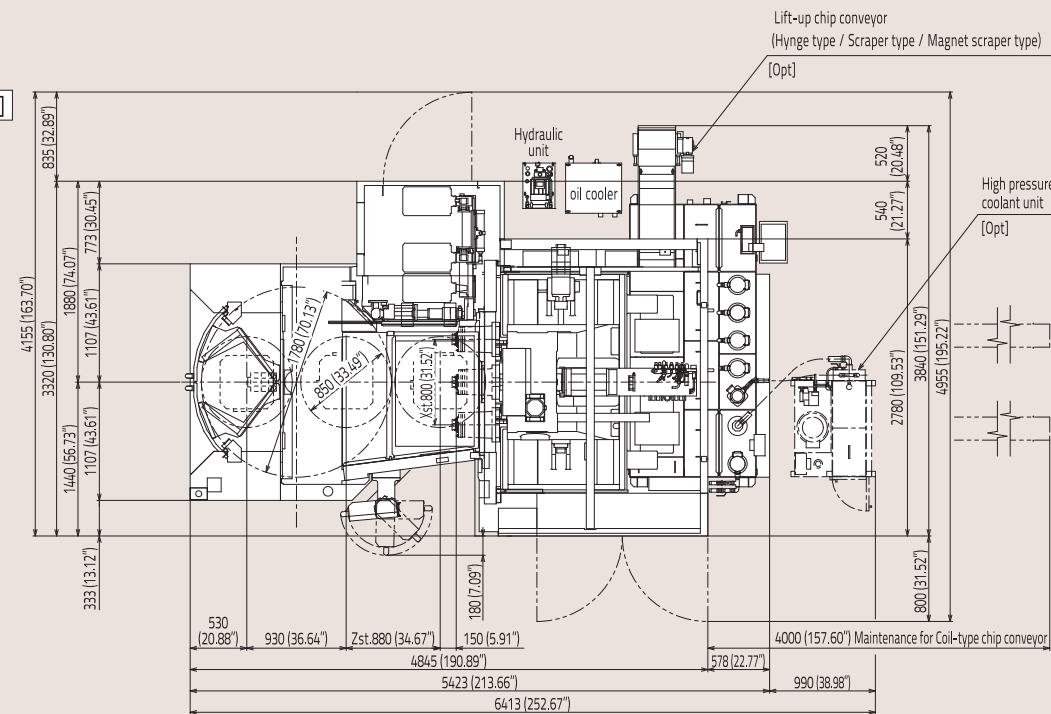
Lift-up chip-conveyor Specification



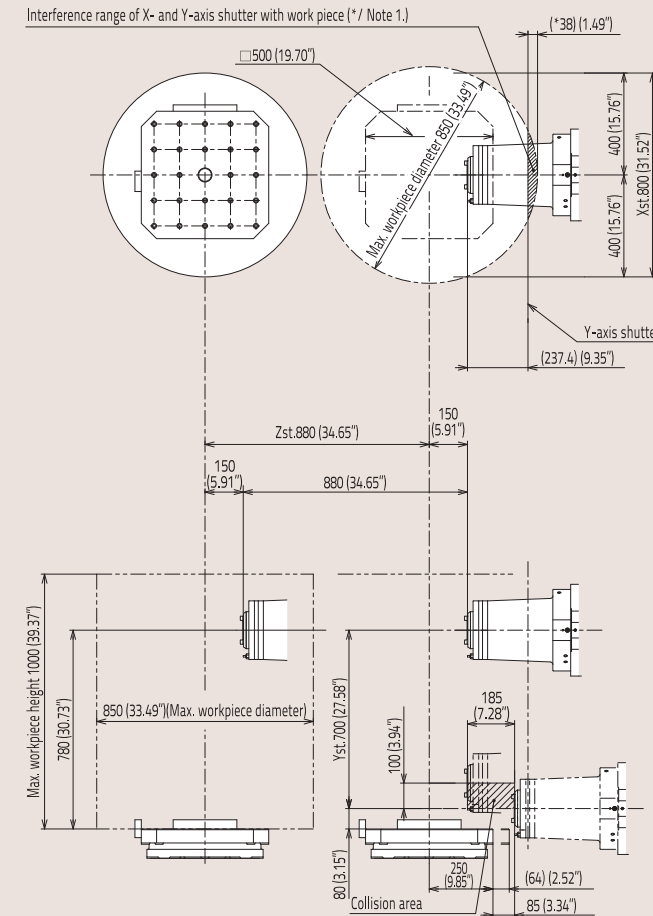
Lift-up chip-conveyor Specification



Lift-up chip-conveyor Specification

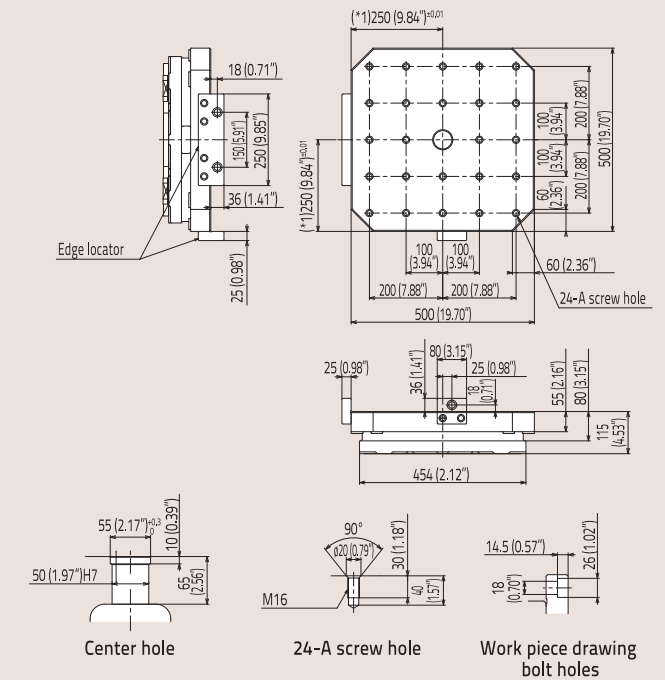


Stroke Diagram



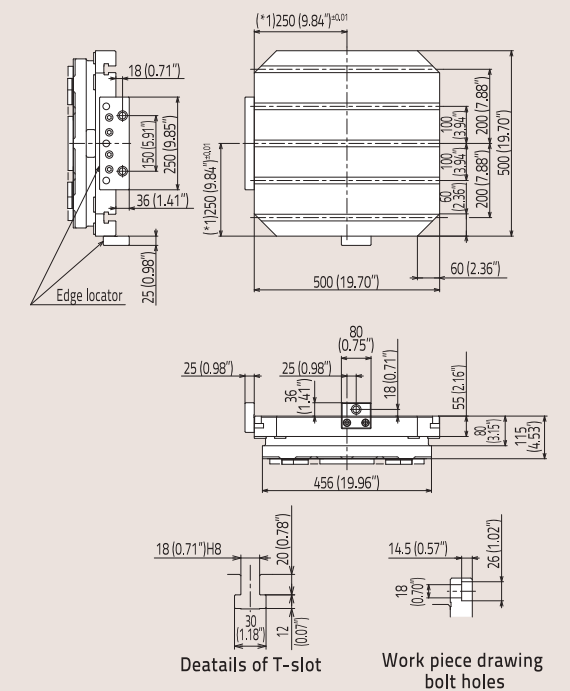
Note 1: The shutter can interfere with the work piece(*) near Z-axis stroke end when loading a large diameter work piece. Pay careful attention in order to prevent a collision.

Pallet Dimensions



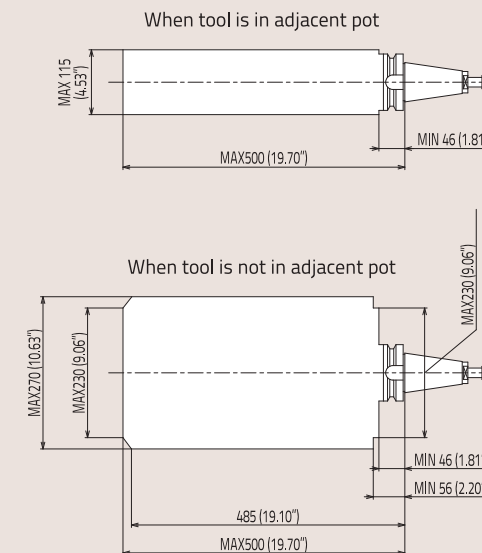
Note *1 dimensions are from the edge locators to the center of rotation not the center hole.

Pallet Dimensions T-slot Specification [Option]

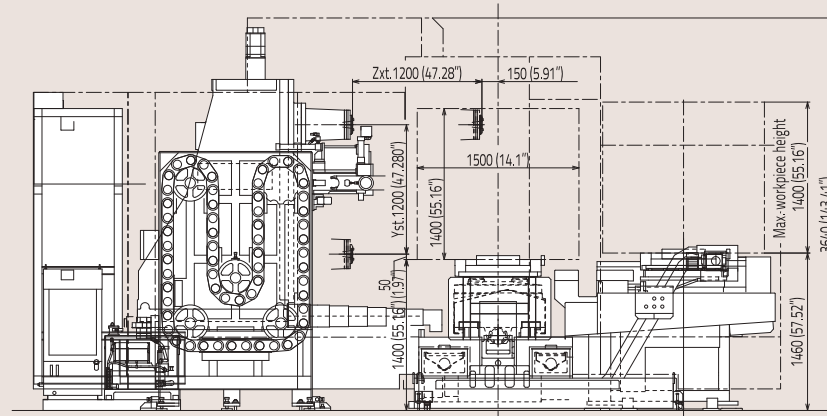


Note *1 dimensions are from the edge locators to the center of rotation not the center hole.

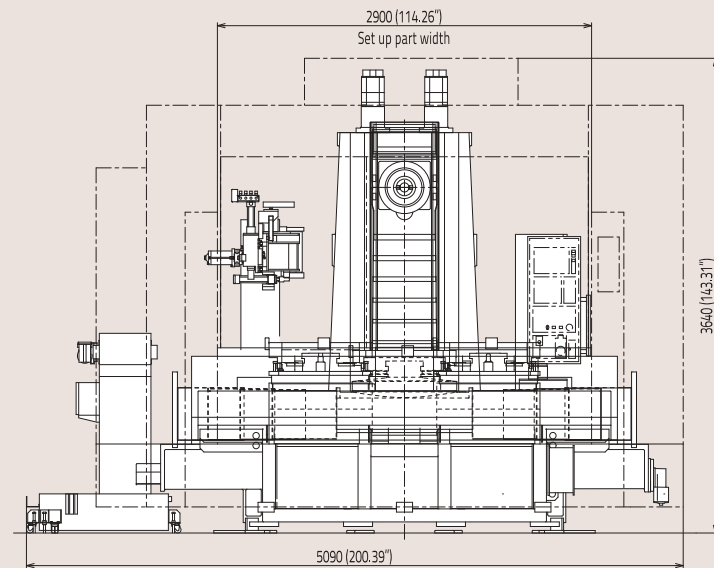
Restrictions on Tool



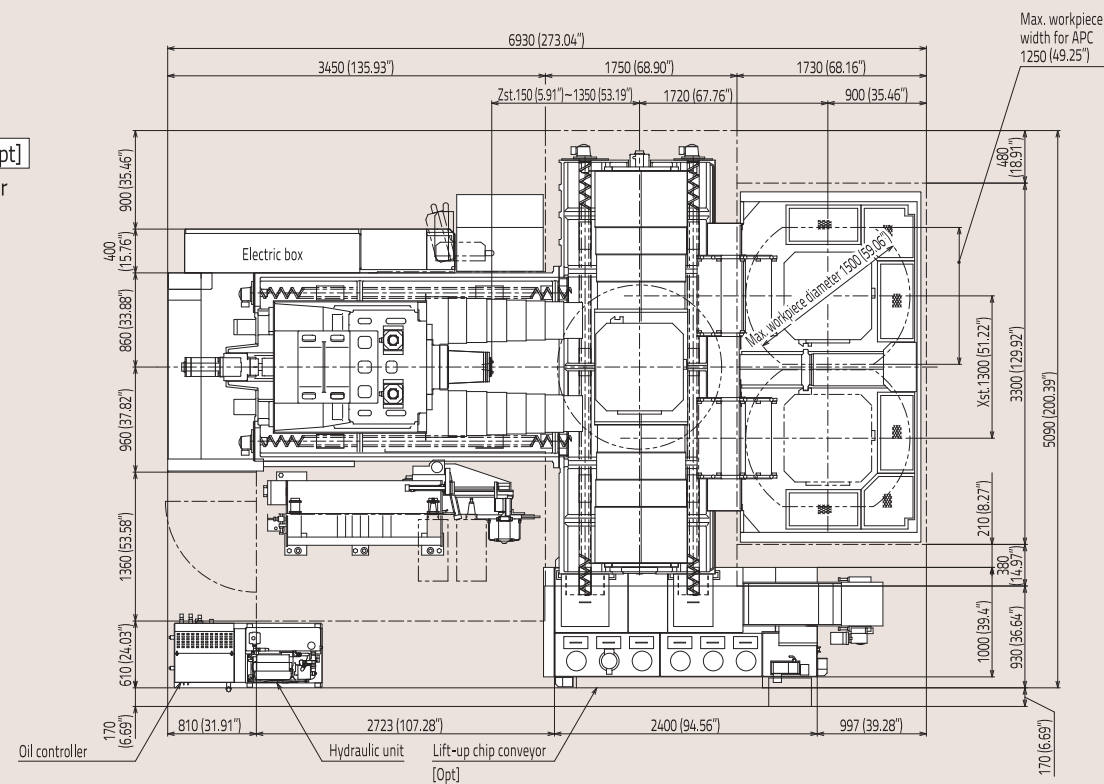
Lift-up chip-conveyor Specification



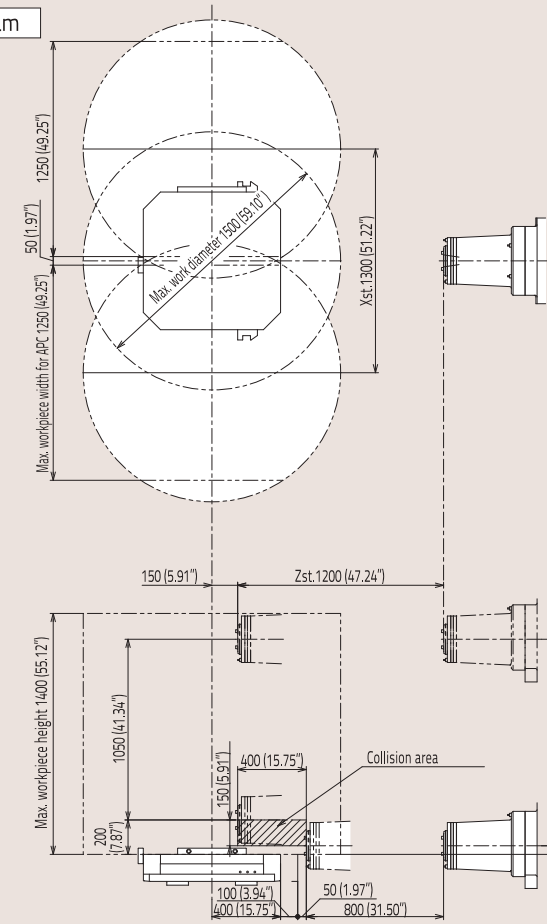
Lift-up chip-conveyor Specification



Lift-up chip-conveyor Specification

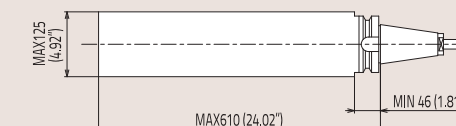


Stroke Diagram

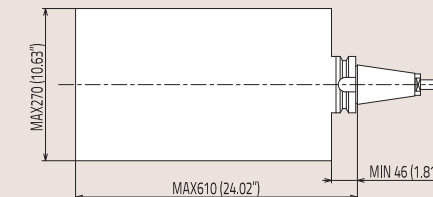


Restrictions on Tool

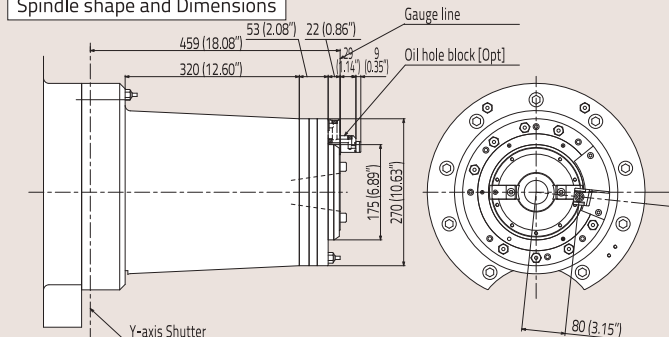
When tool is in adjacent pot



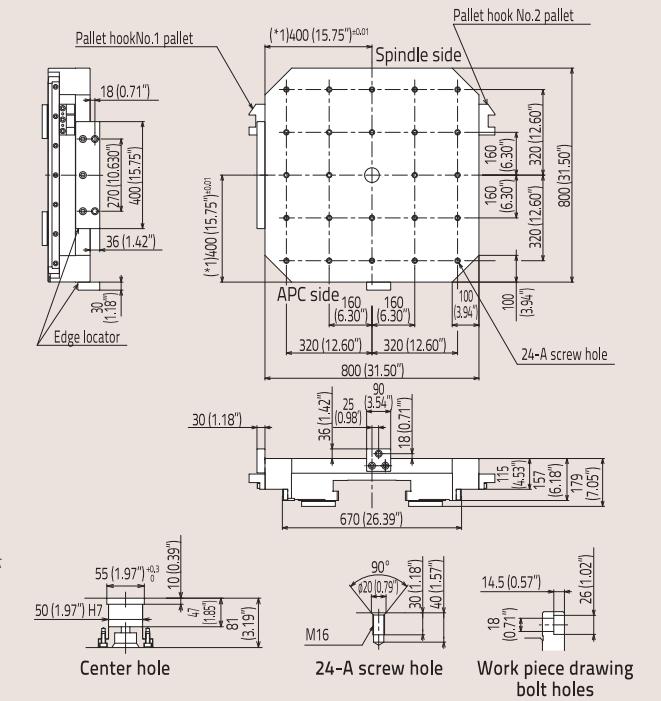
When tool is not in adjacent pot



Spindle shape and Dimensions

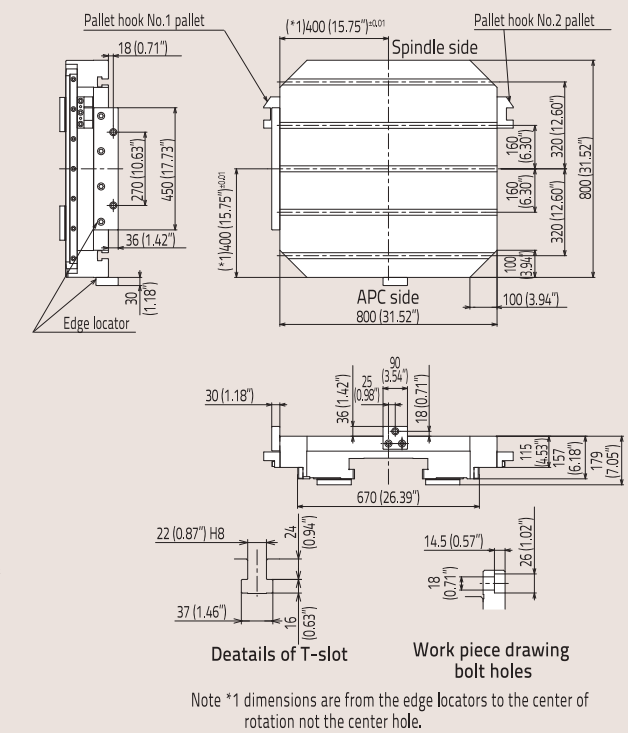


Pallet Dimensions Screw Hole Specification [Standard]



Note *1 dimensions are from the edge locators to the center of rotation not the center hole.

Pallet Dimensions T-slot Specification [Option]



Note *1 dimensions are from the edge locators to the center of rotation not the center hole.

MCH5000R Main Specifications

Main Specifications

Item		Specification
Travel on X axis (Column's longitudinal movement)	mm	800 (31.50")
Travel on Y axis (Spindle head's vertical movement)	mm	700 (27.56")
Travel on Z axis (Pallet's crosswise movement)	mm	880 (34.65")
Distance from table top surface to spindle center	mm	80 to 780 (3.15" to 30.71")
Distance from table center to spindle nose	mm	150 to 1030 (5.91" to 40.55")
Size of table's (pallet's) working surface	mm	500 × 500 (19.69" × 19.69")
Max. workpiece mass loadable on table (pallet)	kg	800 (1764 lbs) (Uniformly distributed load)
Table's (Pallet's) top surface configuration		24 × M16 tap
Minimum indexable angle of table (pallet)	deg	BRT: 0.001 IT(option):1
Table (Pallet) indexing time (for 90°)	sec	BRT: 0.6 IT(option):1.7
Spindle rotating speed	min ⁻¹	20 to 6000 (20 to 6000 rpm)
Number of spindle speeds		3 gears
Spindle nose (nominal number)		7/24-taper No. 50 (Two-face looking type)
Spindle bearing bore diameter	mm	ø100 (3.94")
Rapid traverse rate	m/min	X/Y/Z axes: 30 (1181 ipm)
	min ⁻¹	B axis: 50 (50 rpm) (BRT) / 30 (30 rpm) (IT)
	mm/min	X/Y/Z axes: 1 to 30000 *1 (0.04 to 1181 ipm)
	min ⁻¹	B axis: 1 to 27.7 *1 (1 to 27.7rpm)
Cutting feed rate		
Tool shank (nominal number)		JIS B 6339 BT50
Pull stud (nominal number)		OKK only 90°
Number of storable tools	tools	40 *2
Maximum tool diameter (with tools in adjoining pots)	mm	ø115 (4.53")
Maximum tool diameter (with no tools in adjoining pots)	mm	ø270 *3 (10.63")
Maximum tool length (from the gauge line)	mm	500 (19.69")
Maximum tool mass	kg	Normal turning: 15 (33 lbs) / Slow turning: 25 (55 lbs)
Maximum tool moment	N·m	29.4 (21.7 ft·lbs)
Tool selection method		Address fixed random method
Tool exchange time (cut-to-cut)	sec	6
Pallet exchange method		Direct-turn method
Pallet exchange time (JIS evaluation time)	sec	12
Spindle motor	kW	22 (30 HP) (30-min rating) / 18.5 (25 HP) (continuous rating)
	kW	X, Y and Z axes: 5.5 (7.4 HP)
Feed motors	kW	B axis: 4.5 (6 HP) (BRT) / 2.7 (3.6 HP) (IT(option))
Motor for coolant pump	kW	1.2 (1.6 HP) (60 Hz) / 0.7 (0.9 HP) (50 Hz)
Motor for hydraulic unit	kW	1.5 (2 HP)
Motor for spindle and feed system cooling oil pump (Oil Cooler)	kW	0.75 (1 HP)
Motor for spindle oil-air lubrication pump	kW	0.017 (0.02 HP)
Motor for ATC	kW	0.75 (1 HP)
Power supply	kVA	49
Supply voltage and supply frequency	V·Hz	200 VAC±10 %, 50/60 Hz±1 Hz 220 VAC±10 %, 60 Hz±1 Hz
Compressed air supply pressure *5	MPa	0.4 to 0.6 (58 to 87 psi)
Compressed air supply flow rate (Atmospheric pressure) *4 *5	L/min(ANR)	Min 600 (159 GPM) (ANR)
Coolant tank	L	530 (140gal)
Spindle and feed system cooling oil (Oil Cooler) tank	L	60 (16gal)
Spindle oil-air lubrication oil tank	L	2 (1gal)
Hydraulic unit's tank	L	20 (5gal)
Magazine lubrication oil tank	L	6 (2gal)
Machine height from the floor surface	mm	3214 (126.54")
Required floor space (for standard specification)	mm	4845 × 3320 (190.75" × 130.71")
Machine mass	kg	20000 (44092 lbs)
Operating environment temperature	°C	5 to 40
Operating environment humidity	%	10 to 90 (No condensation)

*1: Feed rate under the HQ or Hyper HQ control.

*2: The number of storable 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 storable in the tool magazine.

*3: It is the value under the specified conditions. See "Restrictions on Tools" (Page 28) for details.

*4: Specified is the compressed air supply flow rate for the standard specification machine. When optional specifications such as an air blower is added, add the corresponding air supply according to the operating frequency.

*5: Purity of the supplied air should be equivalent to or higher than the Classes 3, 5 and 4 specified in ISO 8573-1/JIS B8392-1.

Note 1: Be sure to use a pull-stud with no hole for the tool holder when the through-spindle is not used.

Standard Accessories

Item	Qty	Remarks
LED lighting system	1 set	
Coolant unit (Separately installed coolant tank)	1 set	Tank capacity: 530 L (140gal)
Splash guard / APC safety guard	1 set	
Slideway protection steel sliding covers for X, Y and Z axes	1 set	
Earth leakage breaker	1 set	
Automatic power off	1 set	
Edge locator	1 set	
Signal lamp	1 set	2-lamp type
Direct-turn APC unit	1 set	
Chip conveyor(Coil type)	1 set	1 unit for each of the right and left sides
Oil skimmer	1 set	
Hydraulic unit	1 set	
Spindle and ball screws cooling oil temperature controller (installed separately)	1 set	
Slideway MG lubrication unit	1 set	
Oil-air unit	1 set	
Instruction manual	1 set	
Electrical instruction manual(including electrical diagrams)	1 set	

Special Accessories

Item	Specification
Type of pull stud	MAS 1 (45°) / MAS 2 (60°)
Pallet index angle	IT(1°indexing)
Number of storable tools	60 tools / 80 tools / 116 tools / 120 tools / 176 tools
APC unit	6APC / 8APC
Pallet top face specification	T-slot specification
Additional pallets	
Automatic opening and closing the APC's safety door	
Additional lighting system	LED
Signal lamp	3-lamp type without buzzer alarm
Linear scale	For X, Y and Z axes / For X and Y axes
Through-spindle (See Note 1)	Center-through
Coolant unit	Pressure: 2MPa / 7MPa (Coolant cooler: YES / NO)
Spare Thickener bag filter	6 pieces (1 set)
Air blower	1 nozzle
Oil mist blower	
Minimal quantity lubrication system	External nozzle / Spindle-through
Whirl stopper block	For oil hole / For angle attachment
Piping for the oil-hole block	Normal pressure (Equivalent to 1.1-kW pump) / High pressure (2 MPa)
Ceiling shower	30 nozzles
Workpiece cleaning equipment	Shower gun
Conveyor chip bucket	Fixed type / Tilting type
Foundation parts for machine anchoring	Bond Anchor Bond: YES / NO
Machine coating color	
Standard tool set	Including a tool box
Spindle nose external nozzle	Normal pressure (Equivalent to 1.1-kW pump)
Mist collector	Separately installed on the front left side / Separately installed on the rear side / Installing the supplied equipment (ø200)
Lift-up type chip conveyor	Hinged-pan type / Scraper type / Scraper type with floor magnet / For aluminum chips / For aluminum and ferrous chips Chip discharge from left side / rear side
Air drier	
Fire extinguishing appliance	
Sub table	2 sets / 1 set
Mass block	2 sets / 1 set
Angle plate	2 sets / 1 set
Two-face angle plate	2 sets / 1 set
System for fixture	Rotary joint type Number of ports: 3 ports
Touch sensor system T1	T1-A (Workpiece measurement) T1-B (Workpiece measurement / Tool length measurement, Tool break detection) T1-C (Tool length measurement, Tool break detection)
Tool break detection inside tool magazine	
Automatic restart at tool damage	
Tool presence/absence detection	
Steps	Steps for the operation panel

MCH8000R Main Specifications

Main Specifications

Item		Specification
Travel on X axis (Table's longitudinal direction)	mm	1300 (51.18")
Travel on Y axis (Spindle head's vertical direction)	mm	1200 (47.24")
Travel on Z axis (Column's cross direction)	mm	1200 (47.24")
Distance from table top surface to spindle center	mm	50 (1.97") to 1250 (49.21")
Distance from table center to spindle nose	mm	150 (5.91") to 1350 (53.15")
Table (Pallet) work surface area	mm	800 (31.50") × 800 (31.50")
Mass of maximum load loadable on table (pallet)	kg	3000 (6614lbs) (Uniformly distributed load)
Size of maximum load loadable on table (pallet)	mm	ø1500 (59.06") × 1400 (55.12") *1
Table (Pallet) top surface configuration	mm	24 x M16 tap
Minimum indexable angle of table (pallet)	°	1°
Spindle rotating speed	min ⁻¹	20 to 4500 (20 to 4500rpm)
Number of spindle speeds		3-step gear drive
Spindle taper hole		7/24 taper, No. 50
Spindle bearing bore diameter	mm	ø120 (4.72")
Rapid traverse rate	m/min	X/Y/Z: 24000 (944.88ipm)
	min ⁻¹	B-12(IT: Index Table)
	mm/min	X/Y/Z: 1 to 18000 (0.04 to 708.66ipm)
	min ⁻¹	B-1~12(IT: Index Table)
Cutting feed rate *2		
Type of tool shank		
Type of pull stud		OKK only 90°
Number of storable tools	tools	60 *3
Max. tool diameter (with tools in adjacent pots)	mm	ø125 (4.92")
Max. tool diameter (with no tools in adjacent pots)	mm	ø270 mm (10.63")
Maximum tool length (from the gauge line)	mm	610 (24.02")
Maximum tool mass	kg	30 (66.1lbs)
Tool selection method		Address fixed random method
Tool exchange time (tool-to-tool)	sec	8.5
Pallet exchange method		Subtle method
Pallet exchange time (JIS evaluation time)	sec	65
Spindle motor (30-min rating/continuous rating)	kW	18.5 / 15 (25/20HP)
Feed motors	kW	X: 5.0 kW (6.7HP) / Y: 5.5 kW (7.4HP) × 2, Z: 5.0 kW (6.7HP) / B: IT(Index Table): 5.5 kW (7.4HP)
Hydraulic pump motor	kW	5.0 (7.0HP)
Spindle and feed system cooling oil pump motor	kW	1.7 (2.3HP) (compression) / 0.75 (1HP) (discharge)
Coolant pump motor	kW	0.7 (0.9HP) (50 Hz) / 1.2 (1.6HP) (60 Hz)
Power supply	kVA	67
Supply voltage x supply frequency	V·Hz	200V±10% 50/60Hz±1Hz 220V±10% 60Hz±1Hz
Compressed air supply pressure *4	MPa	0.4 to 0.6 (58 to 87psi)
Compressed air supply flow rate *4, *5	L/min(ANR)	Min700 (185GPM)
Coolant tank capacity	L	550 (145.3gal)
Hydraulic unit tank capacity	L	60 (15.9gal)
Spindle and feed system cooling oil tank capacity	L	70 (18.5gal)
Slideway lubricating oil tank capacity	L	6.0 (1.6gal)
Machine height	mm	3640 (143.31")
Required floor space	mm	5090 (200.39") × 6990 (275.20") (Option for the lift-up type chip conveyor specification)
Machine mass	kg	30000 (66137.6lbs)
Operating environment temperature	°C	5 to 40
Operating environment humidity	%	10 to 90 (No condensation)

*1: The maximum workpiece diameter will be ø1480 mm (58.27") when the tool length is longer than 600 mm (23.62").

The maximum workpiece width causing no collision of workpieces will be 1250 mm (49.21") for APC systems.

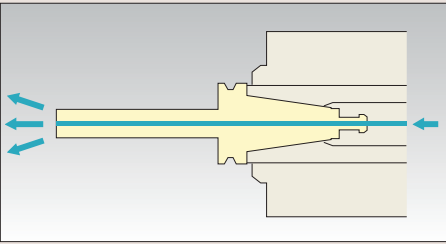
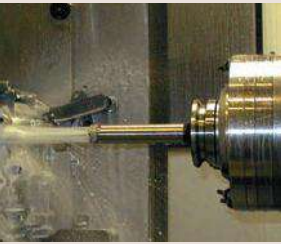
*2: This is the value under the HQ or hyper HQ control.

*3: The number of storable tools refers the total number of tools including the one attached to the spindle i.e. subtract one from the above for the number of tools storable in the tool magazine.

*4: Purity of the supplied air should be equivalent to or higher than Class 3.5.4 specified in ISO 8573-1/JIS B8392-1.

*5: The flow rate for the standard specification machine is specified in the above. When optional specifications such as an air blower is added, add the corresponding air supply according to the operating frequency.

High pressure coolant through spindle [Opt]



High pressure coolant is supplied to the tip of a cutting tool through the center hole of spindle and the cutting tool. It is very efficient for chip removal, cooling the cutting point and extending the life of cutting tools. Air supply through the spindle is also available by switching a valve. [Another Opt]

Discharge pressure Mpa (psi)	2.0 (290psi)	7.0 (1015psi)
Discharge volume L/min (gpm)	50Hz 36 (106GPM)	71 (186GPM)
	60Hz 35 (96GPM)	30 (78GPM)

Notes : * Discharge values indicated are at the outlet of pump.
* Actual discharge volumes from the tool are different due to the hole-diameter of cutter tools.

Coolant shower gun [Opt]



Ceiling shower [Opt]



Mist collector [Opt] *1



Air blow nozzle [Opt]



*1 Mist collector suctions mist from the splash guards. It is recommendable when high-pressure coolant is used.

Lift-up chip conveyor [Opt]

Suitable lift-up chio conveyor according to type of chips

Type of chip conveyors			Hinge		Scraper		Scraper with magnet		Scraper with drum		Magnet scraper with drum			
Use or not use 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		○	○	×	×	×	×	×	—	×	—
		Cast iron	Needle shape		×	△*1	×	○	○*3	○	○	—	○	—
			Powder and small lump		×	△*1	×	○	○*3	○	○	—	○	—
			Needle shape		×	△*1	×	○	○*3	○	○	—	○	—
	Non-magnetizable chips	Aluminum	Powder and small lump		×	△*1	×	○	○*3	○	△*3	—	○	—
			Short curl		×	○	△*4	○	—	—	○	—	○	—
			Spiral		○	○	○	○	—	—	△*5	—	△*5	—
		Aluminum	Long		○	○	○	○	—	—	△*5	—	△*5	—
			Needle shape		×	△*1	×	○	—	—	○	—	○	—
			Powder and small lump		×	△*1	×	○	—	—	○	—	○	—

○ Most suitable ○ Usable △ Usable under condition × Not usable - Not applicable

Touch sensor system T1-A



Touch sensor system T1-C

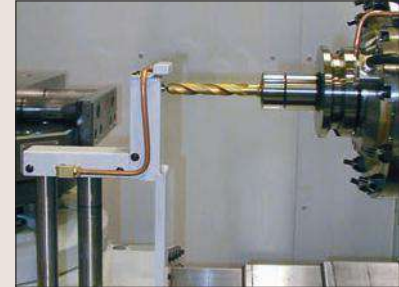
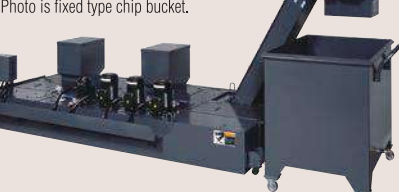


Photo is Scraper type.

Chip bucket is another Option. There are fixed type and swivel type.

Photo is fixed type chip bucket.



*1. Minute chips can enter the conveyor through a gap on the hinged plate. So, inside of the conveyor needs frequent cleaning.

*2. Scraper can easily catch long chips. So, shortening the chips (for example by using the step feed) or removing such chips is required.

*3. When flow rate of the coolant is large, filters can be clogged with chips flowed out of the conveyor case. Therefore, combined use with a magnet plate is recommendable.

*4. When flow rate of the coolant is large, filters can be clogged with chips flowed out of the conveyor case. Therefore, filters require frequent cleaning.

*5. Scraper can easily catch long chips. Therefore, periodical removal of chips is needed. If they remain, a drum filter may be damaged.

Controller for MCH Series

FANUC controller F31i-B

Standard Specification
No. of controlled axes: 4 axes (X, Y, Z, B)
No. of simultaneously controlled axes: 3 axes (4 axes for BRT specification)
Least input increment : 0.001mm / 0.0001° (X, Y, Z) 0.001deg (B(BRT))
Max. programmable dimension: ±999999.999mm / ±39370.0787"
Absolute / Incremental command: 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 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
15" color LCD
Clock function
MDI (manual data input) operation
Memory card / USB 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: Total 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
Program number search
Sequence number search
Program restart
Cycle start

Standard Specification
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
Graphic display
Backlash compensation for each rapid traverse and cutting feed
Smooth backlash compensation
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 check 1
Stored stroke check 2, 3
Load monitor
Self-diagnosis
Absolute position detection
Manual Guide I (Basic)

Optional Specification
Additional one axis control: name of axis (A, C, U, V, W) ^{Note}
Additional two axes control: name of axis (A, C, U, V, W) ^{Note}
No. of simultaneously controlled axes: 5 axes ^{Note}
Least input increment : 0.0001mm / 0.00001°
FS15 tape format
Unidirectional positioning: G60
Helical interpolation PK1
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: 320m [128KB] (250 in total)
Part program storage capacity: 640m [256KB] (500 in total)
Part program storage capacity: 1280m [512KB] (1000 in total) PK1
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)
RS232C interface: RS232C-1CH
Data server: ATA card (1GB) PK2
Data server: ATA card (4GB)
Spindle contour control (Cs contour control)
Tool position offset
3-dimensional cutter compensation
Tool offset sets: 200 sets in total PK1
Tool offset sets: 400 sets in total

(WindowsCE-installed Open CNC)

Optional Specification
Tool offset sets: 499 sets in total
Tool offset sets: 999 sets in total
Addition of workpiece coordinate system (48 sets): G54.1 P1 to P48 PK1
Addition of workpiece coordinate system (300 sets): 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 PK1
Optional chamfering / corner R
Custom macro PK1
Interruption type custom macro
Addition of custom macro common variables: 600
Figure copy
Coordinate system rotation: G68, G69
Scaling: G50, G51
Chopping (Axis control by PMC)
Playback
Automatic tool length measurement: G37 / G37.1
Tool life management: 256 sets in total PK1
Addition of tool life management sets: 1024 sets in total
High-speed skip
Run hour and parts count display PK1
Manual Guide I (Milling cycle)

Original OKK Software
Machining support integrated software (incl. help guidance, etc.) STD
Tool support STD
Program Editor STD
EasyPRO STD
Work Manager Opt
HQ control STD
Hyper HQ control mode A Opt
Hyper HQ control mode B PK2 Opt
Hyper HQ valuekit (including the items with "PK2") Opt
NC option package (including the items with "PK1") Opt
Special canned cycle (including circular cutting) Opt
Cycle Mate F Opt
Soft Scale III STD
Touch sensor T0 software Opt
Tool failure detection system (Soft CCM) Opt
Adaptive control unit (Soft AC) Opt
Automatic restart at tool damage Opt

Note: F31i-B5 (WindowsCE-installed Open CNC)
[STD]: Standard
[Opt]: Option

OKK

OKK CORPORATION

8-10, KITA-ITAMI, ITAMI
HYOGO 664-0831 JAPAN

Overseas Sales Department
TEL: (81)72-771-1112/1143
FAX: (81)72-772-7592
http://www.okk.co.jp
E-mail:ovsd@okk.co.jp



Technical Center



M-Plant



W-Plant

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

INAGAWA PLANT:
8-10, KITA-ITAMI, ITAMI, HYOGO 664-0831 JAPAN
TEL: (81)72-782-5121
FAX: (81)72-772-5156
E-mail:eigibu@okk.co.jp

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

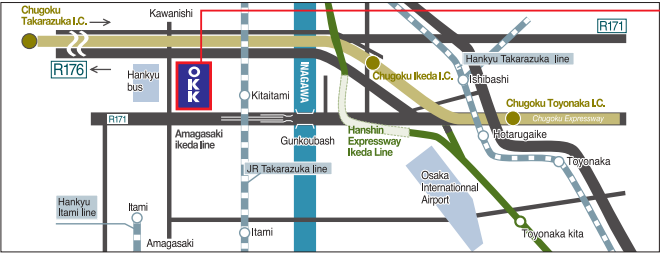
Other Products Include:
Water Maters

NOTE :

OKK reserves the right to change the information contained in this brochure without notice.
OKK is not responsible to make changes to previously sold machines or accessories.
The machines in the photographs of this brochure may include optional accessories.

The export of this product is subject to an authorization from the government of the exporting country.
Check with the government agency for authorization.

Access map



OKK Inagawa factory
8-10 Kitaitami, Itami, Hyogo Prefecture
664-0831, Japan

From Kansai International Airport :
Please take a airport bus bound for Osaka (Itami) International Airport and take a taxi to OKK.