

The Phoenix logo, featuring the word "PHOENIX" in a bold, white, sans-serif font. The letter "O" is replaced by a stylized globe icon with latitude and longitude lines. The logo is set against an orange rectangular background.

PHOENIX



BED TYPE CNC MILLING MACHINE

The best assistant for MOLD MAKING as well as versatile machining, tool room, development and maintenance.



CNC MILLING MACHINES

FM-160/205/255/300/305/340/395/495/600CNC/MH/ATC



FM-160ATC ▲

- ONE-PIECE rigid bed casting, EXTREMELY WIDE slide ways, FULLY LENGTH saddle supported & STRONG type work head ensured EXCELLENT HEAVY cutting.
- EXTENDABLE quill, more flexible for deeper pocket machining. (standard milling head)
- SWIVELABLE milling head, more flexible for angle machining. (standard milling head)



FM-205CNC ▶

■ w/optional 3-Hand wheel operation panel.

CNC MILLING MACHINES

FM-160/205/255/300/305/340/395/495/600CNC/MH/ATC



FM-255CNC ▲

- ONE-PIECE rigid bed casting, EXTREMELY WIDE slide ways, FULLY LENGTH saddle supported & STRONG type work head ensured EXCELLENT HEAVY cutting.
- w/150mm LARGER quill dia. (machining center head)
- EXTENDABLE quill and SWIVELABLE milling head, more flexible for deeper pocket as well as angle machining. (standard milling head)
- Special designed LARGE & RIGID chip tray w/rear splash guards.
- Special designed operation panel cabinet w/base extended support arm, electric cabinet.



FM-255MH
■ w/optional 3-Hand wheel operation panel.

CNC MILLING MACHINES

FM-160/205/255/300/305/340/395/495/600CNC/MH/ATC



FM-300ATC ▲

■ w/optional tilting rotary table, 3-Hand wheel operation panel.

- ONE-PIECE rigid bed casting, EXTREMELY WIDE slide ways, FULLY LENGTH saddle supported & STRONG type work head ensured EXCELLENT HEAVY cutting.
- w/150mm LARGER quill dia. (machining center head)
- Special designed LARGE & RIGID chip tray w/rear splash guards.



- Tilting rotary table (the 4th & 5th axes control)



FM-305ATC

■ w/optional fast feed on 3 axes.

CNC MILLING MACHINES

FM-160/205/255/300/305/340/395/495/600CNC/MH/ATC



- ONE-PIECE rigid bed casting, EXTREMELY WIDE slide ways, FULLY LENGTH saddle supported & STRONG type work head ensured EXCELLENT HEAVY cutting.
- w/150mm LARGER quill dia. (maching center head)
- Special designed LARGE & RIGID chip tray w/rear splash guards.

FM-340ATC ▲
■ w/optional rotary table.



FM-395ATC
■ w/optional arm type ATC. 4

CNC MILLING MACHINES

FM-160/205/255/300/305/340/395/495/600CNC/MH/ATC



FM-495MH ▲



FM-600MH ▲

CNC MILLING MACHINES

MACHINE FRAME CONSTRUCTION



▲ **FM-300ATC**
■ Machine frame construction



▲ **FM-395ATC**
■ Machine frame construction

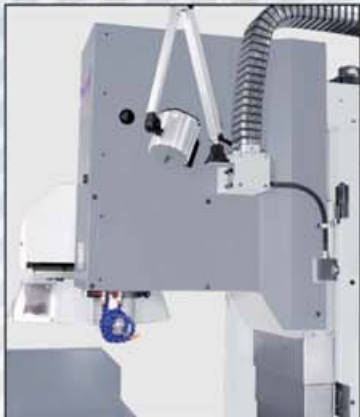


▶ **FM-600MH**
■ Machine frame construction

- ONE-PIECE HUGE and rigid bed casting w/4-BOX WAYS (340/395/495 series) / 6-BOX WAYS (600 series), EXTREMELY WIDE slide ways, FULLY LENGTH saddle supported & STRONG type work head ensured EXCELLENT HEAVY cutting and accuracy.
- Precision BALL SCREWS w/double nuts on 3 axes.
- Licensed MEEHANITE casting.
- HARDENED & GROUND on X, Y, Z slide ways & top surface of TABLE.
- TURCITE B coated on X, Y, Z slide ways and gibs.

CNC MILLING MACHINES

ADVANTAGE / MAJOR FEATURES



- Clear oil level check window for tool clamp/unclamp.



- Special wipers under table guides.
- Sealing gaskets for 3 axes end cover/way cover.



- Strong and rigid support arm construction, special designed clamp fingers and combination type tool magazine construction; ensure the operation accuracy and also reduce the unexpected damage of magazine disk, due to the wrong sequence in action steps of ATC.



- European/ Japanese components, CE norms wiring and arrangement for the electricity control.



- Standard equipped Floor type power transformer w/cabinet.



- Pressure setting switch included
- Three-point assembly for safety ATC and Tool clamp/unclamp.
- CNC controlled also Manual adjusting Auto lubrication system.



- All machines are inspected and calibrated by laser test (X, Y, Z axes) and ball bar calibration (not only XY plane, but also on YZ and XZ planes) ; and are executed for at least 72 hours continuous running test before shipment.



- Protect cover/guarding for X and Y servo motors.
- Support brackets for flexible metal conduit.

CNC MILLING MACHINES

OPTIONAL ACCESSORIES / EQUIPMENTS



• Rotary table(the 4th axis control)



• 3-Hand wheel operation panel



▲ FM-305ATC

■ w/optional full enclosure guard.

▲ Full enclosure guard w/auger style chip conveyor, conforming with CE norms.

■ Rigid construction features w/simple installation.

■ One piece laser cut, protect railed 3-front+2-side windows design; features w/safety, wide field of vision and easy clean up.



• Cool light lamp provides superior lighting.



• Auger style chip conveyor makes chip disposal and collection easy; convenient.



• SYNTEC controller



• FAGOR controller



• FANUC controller

SPECIFICATIONS

MODEL	FM-160MH	FM-160ATC	FM-205CNC	FM-205MH	FM-205ATC	
TABLE						
Working surface	355x1270mm(14"x 50")		406x1372mm(16"x 54")			
T-slots(size x number x pitch)	16mmx3x64mm(0.630"x 3x2.520")		16mmx3x64mm(0.630"x 3 x 2.520")			
Max. table load	500kgs(1100 lbs)		800kgs(1760 lbs)			
TRAVEL						
Longitudinal travel(X axis)	800mm(31- ½")		1000mm(39- ⅜")			
Cross travel(Y axis)	400mm(15- ¾")		500mm(19- ⅜")			
Vertical travel(Z axis)	450mm(17- ⅛")		620mm(24- ⅜")			
Distance from spindle end to table	105~555mm(4- ⅛"~21- ⅜")		155~775mm(6- ⅛"~30- ½")		105~725mm(4- ⅛"~28- ⅞")	
Distance from spindle center to column	430mm(16- ⅞")		500mm(19- ⅛")			
Distance from floor to table surface	780mm(30- ⅛")		840mm(33- ⅛")			
SPINDLE						
Spindle nose taper	BT40		NT40		BT40	
Spindle speeds	vari 8000 r.p.m. (or 10000 r.p.m., opt.)		vari 4200 r.p.m, 2 ranges		vari 6000 r.p.m. (or 8000/10000 r.p.m., opt.)	
FEED						
Cutting feed rate (X, Y, Z axes)	1~3000mm/min.(max.) [or 1~5000mm/min.(max.) (F-F),opt.]					
Rapid traverse (X, Y axes)	5.0m/min.(max.) [or 10.0m/min.(max.) (F-F),opt.]					
Rapid traverse (Z axis)	5.0m/min.(max.) [or 10.0m/min.(max.)(F-F),opt.]					
Gear ratio of motor pulley to ballscrew pulley on X, Y, Z axes.	1:2/1:1.33 [or direct coupled (F-F), opt.]					
ATC						
Tool storage capacity	—	16pcs (carrousel)	—	—	16pcs (carrousel)	
Max. tool weight	—	7kgs(15.4 lbs)	—	—	7kgs(15.4 lbs)	
Max. tool size(dia. x length)	—	89x250mm(3- ½"x9- ⅞")	—	—	89x250mm(3- ½"x9- ⅞")	
Tool selection	—	Random	—	—	Random	
Tool shank	—	BT40	—	—	BT40	
Pull stud bolt	—	MAS-P40T-1	—	—	MAS-P40T-1	
Distance from gauge line of tool holder to table	—	450mm(17- ⅝")	—	—	555mm(21- ¾")	
MOTOR						
Spindle motor(AC servo)	3.75/5.5KW(or 5.5/7.5KW,opt.)		5.5/7.5KW(or 7.5/11KW,opt.)			
X,Y,Z axes motor	AC servo , 1KW, 2000 r.p.m. [or 1.5KW, 2000 r.p.m.(F-F),opt.]					
Coolant pump motor	AC ⅙HP/ ¼ HP(F.E.G.)					
GENERAL						
Gross weight(Approx.)	2800kgs(6160 lbs)	3000kgs(6600 lbs)	3200kgs(7040 lbs)		3400kgs	
Packing size(LxWxH)	2080x1800x2450mm(81- ⅞"x70- ⅞"x96- ⅜")		2670x2020x2530mm(105- ⅙"x79- ½"x99- ⅝")			
MODEL	FM-255CNC	FM-255MH	FM-255ATC	FM-300CNC	FM-300MH	FM-300ATC
TABLE						
Working surface	420x1600mm(16- ⅝"x 63")			450 x 1800mm(17- ⅛"x 70- ⅞")		
T-slots(size x number x pitch)	16mmx5x60mm(0.630"x 5 x 2.362")					
Max. table load	1000kgs(2200 lbs)					
TRAVEL						
Longitudinal travel(X axis)	1300mm(51- ⅜")			1500mm(59")		
Cross travel(Y axis)	650mm(25- ⅞") [or 810mm(24"), direct coupled (F-F), opt.]					
Vertical travel(Z axis)	620mm(24- ⅜")					
Distance from spindle end to table	155~775mm(6- ⅙"~30- ½")	105~725mm(4- ⅙"~28- ⅞)		155~775mm(6- ⅙"~30- ½")	105~725mm(4- ⅙"~28- ⅞)	
Distance from spindle center to column	630mm(24- ⅜")					
Distance from floor to table surface	895mm(35- ¼")					
SPINDLE						
Spindle nose taper	NT40	BT40		NT40	BT40	
Spindle speeds	vari 4200 r. p.m., 2 ranges	vari 6000 r.p.m. (or 8000/10000 r.p.m., opt.)		vari 4200 r. p.m., 2 ranges	vari 6000 r.p.m. (or 8000/10000 r.p.m., opt.)	
FEED						
Cutting feed rate (X, Y, Z axes)	1~3000mm/min.(max.) [or 1~5000mm/min.(max.) (F-F),opt.]					
Rapid traverse (X, Y axes)	5.0m/min.(max.) [or 10.0m/min.(max.) (F-F),opt.]					
Rapid traverse (Z axis)	5.0m/min.(max.) [or 10.0m/min.(max.)(F-F),opt.]					
Gear ratio of motor pulley to ballscrew pulley on X, Y, Z axes.	1:2/1:1.33 [or direct coupled (F-F), opt.]					
ATC						
Tool storage capacity	—	—	16pcs (carrousel)	—	—	16pcs (carrousel)
Max. tool weight	—	—	7kgs(15.4 lbs)	—	—	7kgs(15.4 lbs)
Max. tool size(dia. x length)	—	—	89x250mm(3- ½"x9- ⅞")	—	—	89x250mm(3- ½"x9- ⅞")
Tool selection	—	—	Random	—	—	Random
Tool shank	—	—	BT40	—	—	BT40
Pull stud bolt	—	—	MAS-P40T-1	—	—	MAS-P40T-1
Distance from gauge line of tool holder to table	—	—	555mm(21- ¾")	—	—	555mm(21- ¾")
MOTOR						
Spindle motor(AC servo)	5.5/7.5KW(or 7.5/11KW,opt.)					
X,Y,Z axes motor	AC servo ,1KW, 2000 r.p.m. [or 2KW, 2000 r.p.m.(F-F),opt.]					
Coolant pump motor	AC ⅙HP/ ¼ HP(F.E.G.)					
GENERAL						
Gross weight(Approx.)	3900kgs(8580 lbs)		4100kgs(9020 lbs)		4300kgs(9460 lbs)	
Packing size(LxWxH)	2700x2020x2530mm(106- ⅙"x79- ½"x99- ⅝")					

SPECIFICATIONS

MODEL	FM-305MH	FM-305ATC	FM-340MH	FM-340ATC	FM-395MH	FM-395ATC
TABLE						
Working surface	610x1854mm(24"x73")		762x1830mm(30"x72")		813x2185mm(32"x86")	
T-slots(size x number x pitch)	18mmx5x70mm(0.709"x 5 x2.756")		18mmx5x100mm(0.709"x5x3.9")			
Max. table load	1500kgs(3300 lbs)		1800kgs(3960 lbs)			
TRAVEL						
Longitudinal travel(X axis)	1500mm(59")		1700mm(66- $\frac{7}{8}$ ")		2000mm(78- $\frac{3}{4}$ ")	
Cross travel(Yaxis)	850mm(33- $\frac{1}{16}$ ")		850mm(33- $\frac{7}{16}$ ")			
Vertical travel(Z axis)	710mm(28")		710mm(28")			
Distance from spindle end to table	95~805mm(3 $\frac{3}{4}$ "~31 $\frac{11}{16}$ ")		95~805mm(3 $\frac{3}{4}$ "~31 $\frac{11}{16}$ ")			
Distance from spindle center to column	869mm(34- $\frac{3}{16}$ ")		870mm(34"- $\frac{1}{4}$ ")			
Distance from floor to table surface	895mm(35- $\frac{1}{4}$ ")		885mm(34- $\frac{13}{16}$ ")			
SPINDLE						
Spindle nose taper	BT40(or BT50, opt.)		BT40(or BT50, opt.)			
Spindle speeds	vari 6000 r.p.m. (BT40) (or 8000/10000 r.p.m., opt.)(BT40)		vari 6000 r.p.m. (BT40) (or 8000/10000 r.p.m., opt.)(BT40)			
FEED						
Cutting feed rate (X,Y, Z axes)	1~3000mm/min.(max.) [or 1~5000mm/min.(max.)(F-F),opt.]		1~5000mm/min.(max.)			
Rapid traverse (X,Y axes)	5.0m/min.(max.) [or 10m/min.(max.)(F-F),opt.]		10.0m/min.(max.)			
Rapid traverse (Z axis)	5.0m/min.(max.) [or 10m/min.(max.)(F-F),opt.]		10.0m/min.(max.)			
Gear ratio of motor pulley to ballscrew pulley on X, Y, Z axes.	1:2/1:1.33[or direct coupled (F-F), opt.]		Direct coupled			
ATC						
Tool storage capacity	—	16pcs (or 20pcs, opt.)(BT40) (carousel)	—	16pcs (or 20pcs, opt.)(BT40) (carousel)	—	16pcs (or 20pcs, opt.)(BT40) (carousel)
Max. tool weight	—	7kgs(15.4 lbs)/ 15kgs(33.1lbs)(BT50)	—	7kgs(15.4 lbs)/ 15kgs(33.1lbs)(BT50)	—	7kgs(15.4 lbs)/ 15kgs(33.1lbs)(BT50)
Max. tool size(dia. x length)	—	89x250mm(3- $\frac{1}{2}$ "x9- $\frac{7}{8}$ ")/ 125x300mm(4- $\frac{7}{8}$ "x11- $\frac{3}{4}$ ") (BT50)	—	89x250mm(3- $\frac{1}{2}$ "x9- $\frac{7}{8}$ ")/ 125x300mm(4- $\frac{7}{8}$ "x11- $\frac{3}{4}$ ") (BT50)	—	89x250mm(3- $\frac{1}{2}$ "x9- $\frac{7}{8}$ ")/ 125x300mm(4- $\frac{7}{8}$ "x11- $\frac{3}{4}$ ") (BT50)
Tool selection	—	Random	—	Random	—	Random
Tool shank	—	BT40(or BT50, opt.)	—	BT40(or BT50, opt.)	—	BT40(or BT50, opt.)
Pull stud bolt	—	MAS-P40T-1/ MAS-P50T-1(BT50)	—	MAS-P40T-1/ MAS-P50T-1(BT50)	—	MAS-P40T-1/ MAS-P50T-1(BT50)
Distance from gauge line of tool holder to table	—	645mm(25- $\frac{3}{8}$ ")	—	645mm(25- $\frac{3}{8}$ ")	—	645mm(25- $\frac{3}{8}$ ")
MOTOR						
Spindle motor(AC servo)	7.5/11KW(or11/15KW,opt.)		7.5/11KW(or11/15KW,opt.)			
X,Y, Z axes motor	AC servo , 1KW, 2000 r.p.m. [or 2KW, 2000 r.p.m.(F-F),opt.]		AC servo , 3.5KW, 2000 r.p.m.			
Coolant pump motor	AC $\frac{1}{6}$ HP/ $\frac{1}{4}$ HP(F.E.G.)		AC $\frac{1}{4}$ HP			
GENERAL						
Gross weight(Approx.)	6000kgs(13200 lbs)	6200kgs(13640 lbs)	6700kgs(14740 lbs)	6900kgs(15180 lbs)	7000kgs(15470 lbs)	7200kgs(15912 lbs)
Packing size(LxWxH)	3200x2260x2550mm(126"x89"x100- $\frac{3}{8}$ ")		3000x2300x2545mm(118- $\frac{1}{8}$ "x90- $\frac{3}{16}$ "x100- $\frac{3}{16}$ ") +3030x2300x1060mm(119- $\frac{5}{16}$ "x90- $\frac{9}{16}$ "x41- $\frac{3}{4}$ ")			

* The manufacturer reserves the right to modify the design, specifications, mechanisms...etc. to improve the performance of the machine without prior notice. All the specifications shown above are just for reference.

OPTIONAL ACCESSORIES / EQUIPMENTS

- Air power draw bar(for NT40 spindle nose, CNC models)
- Protection guard for work table
- Spindle cooling device(for 6000/ 8000r.p.m., MH/ATC)
- 8000/10000 r.p.m. M/C head w/spindle cooling device(for MH/ATC)
- Fast feed on 3 axes(10 m/min.rapid, 5 m/min. cutting ; F-F)
- Bigger horse power spindle motor
- Bigger horse power 3 axes servo motor
- Arm type ATC (auto tool changer)
- Full enclosure guard w/auger style chip conveyer
- 3-Hand wheel operation panel
(not available for machine w/full enclosure guard)
- Rotary table (the 4th axis control)
- Tilting rotary table (the 4th & 5th axes control)

* FM-205/ 255/ 300 CNC: **CNC** means the machine w/standard milling head.

* FM-160/ 205/ 255/ 300/ 305/ 340/ 395/ 495 / 600MH: **MH** means the machine w/machining center head.

* FM-160/ 205/ 255/ 300/ 305/ 340/ 395/ 495 / 600ATC: **ATC** means the machine w/Auto Tool Changer as well as machining center head.

SPECIFICATIONS

MODEL	FM-495MH	FM-495ATC	FM-600MH	FM-600ATC
TABLE				
Working surface	813x2750mm(32"x108-1/4")		813x3200mm(32"x126")	
T-slots(size x number x pitch)	18mm x 5 x 125mm(0.709"x 5 x 4.921")		18mmx7x100mm(0.709"x7x3.937")	
Max. table load	2000kgs(4400 lbs)		2200kgs(4840 lbs)	
TRAVEL				
Longitudinal travel(X axis)	2500mm(98-1/2")		3000mm(118-1/8")	
Cross travel(Y axis)	850mm(33-1/2")		900mm(35-7/16")	
Vertical travel(Z axis)	710mm(28")		750mm(29-1/2")	
Distance from spindle end to table	100~810mm(3-7/8"~31-7/8")		100~850mm(3-7/8"~33-7/16")	
Distance from spindle center to column	870mm(34-1/4")		930mm(36-5/8")	
Distance from floor to table surface	880mm(34-5/8")		955mm(37-9/16")	
SPINDLE				
Spindle nose taper	BT40 (or BT50, opt.)		BT50	
Spindle speeds	vari 6000 r.p.m. (BT40).p.m. (BT40) (or 8000/10000 r.p.m., opt.) (BT40)		vari 4500 r.p.m. (or 6000 r.p.m., opt.)	
FEED				
Cutting feed rate (X, Y, Z axes)	1~5000mm/min.(max.)		1~5000mm/min.(max.)	
Rapid traverse (X, Y axes)	10.0m/min.(max.)		10.0m/min.(max.)	
Rapid traverse (Z axis)	10.0m/min.(max.)		10.0m/min.(max.)	
Gear ratio of motor pulley to ballscrew pulley on X, Y, Z axes	Direct coupled			
ATC				
Tool storage capacity	—	20pcs(BT40) (carrousel) (or 24pcs, arm type, opt.)	—	20pcs(carrousel) (or 24pcs, arm type, opt.)
Max. tool weight	—	7kgs (15.4 lbs)/ 15kgs (33.1lbs) (BT50)	—	15kgs(33.1lbs)
Max. tool size(dia. x length)	—	89x250mm (3-1/2"x9-7/8") / 125x300mm (4-7/8"x11-3/4") (BT50)	—	125x300mm (4-7/8"x11- 3/4")
Tool selection	—	Random	—	Random
Tool shank	—	BT40 (or BT50, opt.)	—	BT50
Pull stud bolt	—	MAS-P40T-1/ MAS-P50T-1(BT50)	—	MAS-P50T-1
Distance from gauge line of tool holder to table	—	645mm (25-3/8")	—	704mm(27-11/16")
MOTOR				
Spindle motor(AC servo)	11/15KW(or 15/18.5KW, opt.)		15/18.5KW(or 18.5/22KW, opt.)	
X, Y, Z axes motor	5KW, MHMA, 2000r.p.m.		5 KW, MHMA, 2000r.p.m. + i3 Speed Reducer	
Coolant pump motor	AC 1/4HP		AC 1/2HP	
GENERAL				
Gross weight(Approx.)	10200kgs(22542 lbs)	10400kgs(22984 lbs)	21000kgs(46200 lbs)	21500kgs(47300 lbs)
Packing size(LxWxH)	3230x2300x2545mm(127-3/16"x90-9/16"x100-3/16") + 3030x2300x1060mm(119-5/16"x90-9/16"x41-11/16")		6000x2300x2550mm(236-3/16"x90-9/16"x100-3/8") + 6250x2300x1060mm(246"x90-9/16"x41-11/16")	

* The manufacturer reserves the right to modify the design, specifications, mechanisms...etc. to improve the performance of the machine without prior notice. All the specifications shown above are just for reference.

STANDARD ACCESSORIES/EQUIPMENTS

- Draw bar (for CNC)
- Air tool clamp / unclamp device (for MH/ATC)
- Tools
- Tool box
- Chip tray
- Rear splash guard
- Telescopic sheet metal way covers on 3 axes
- Leveling screws w/blocks
- Precision ball screws w/double nuts on 3 axes
- Hardened and ground on X,Y,Z slide ways and top surface of table
- Turcite B coated on X,Y,Z slide ways and gibs
- Centralized auto lubrication device
- Coolant spraying device
- Halogen work lamp
- Power transformer w/cabinet (except OEM)

* The machines could be supplied without controller and servo motor/drives as OEM FRAME.



**FRANK PHOENIX
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Manufacturer, Exporter & Importer

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