

QUASER

we cut faster

MF SERIES

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Workpiece size & Machine structure

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MF400



MF500



MF630



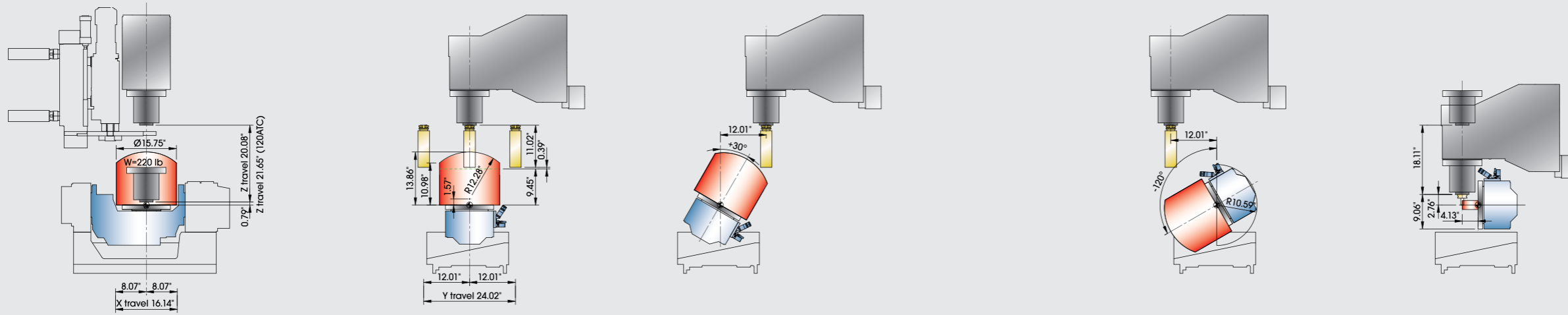
- C type: 5 axes positioning/
4 axes simultaneously**
- QUASER mill i
 - SIEMENS 828D
 - MITSUBISHI M830

- U type: 5 axes simultaneously**
- FANUC 31iB5
 - SIEMENS 840D
 - HEIDENHAIN TNC640

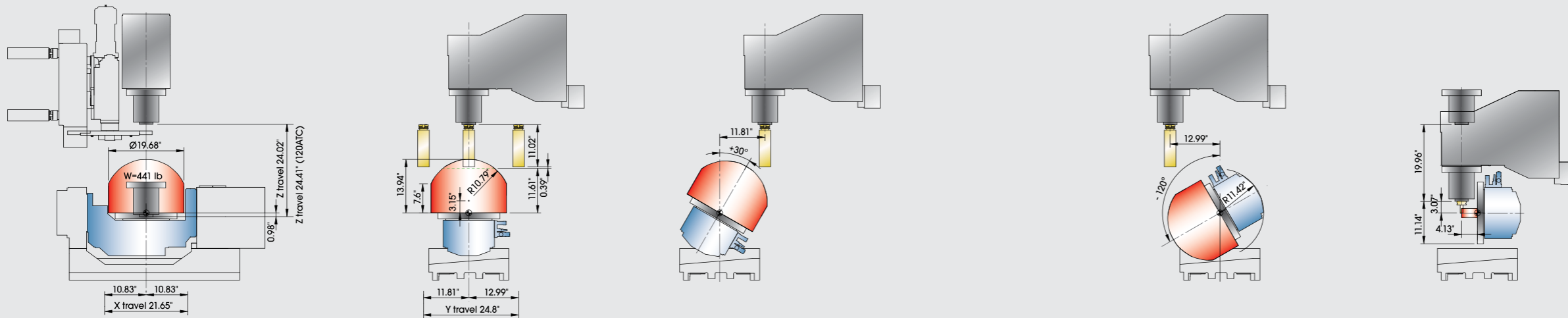
Note: - The object might be different from the photos of catalogue if there is any specification update.

Cutting area and interference

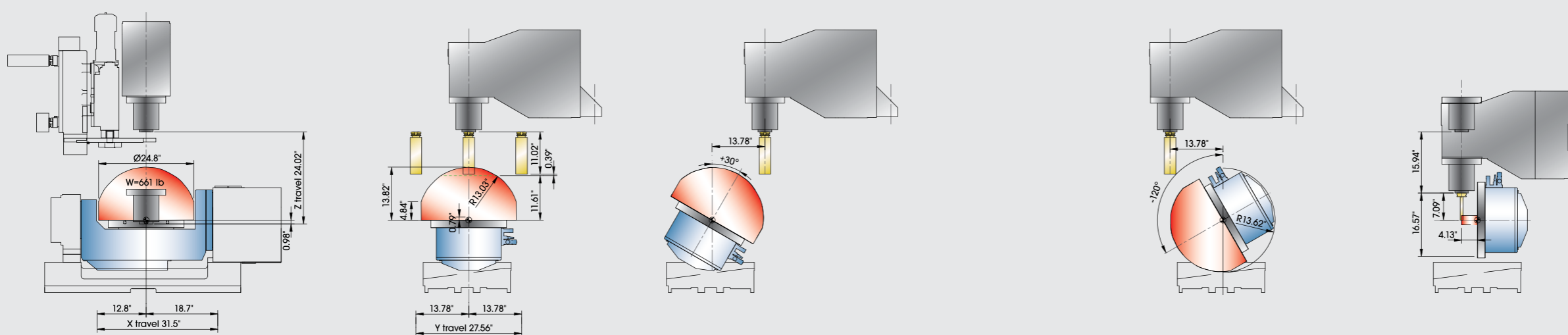
MF400



MF500



MF630



Application sample



FANUC = **F** SIEMENS = **S** MITSUBISHI = **M**

Motor power	MF400C			MF500C			MF630C		
	SC-4.2	MC-4.1R	MC-4.0R	SC-4.2	MC-4.1R	MC-4.0 R	SC-4.2	MC-4.1R	MC-4.0R
X / Y / Z (hp)	F	24/24/34	4/4/54	24/4/34	4/4/54		54/54/54		
	S	36/36/42	-	36/66/36	-		58/66/58		
	M	3/4/4	-	3/4/4	-		4.7/4.7/4.7	-	
A / C (hp)	F	2.4/1.6		3.4/2.4			3.4/2.4		
	S	31/2	-	42/31	-		42/31		
	M	3/2	-	2.7/2	-		3/3	-	

FANUC = **F** HEIDENHAIN = **H** SIEMENS = **S**

Motor power	MF400U			MF500U			MF630U			
	SC-4.2	MC-4.1R	MC-4.0R	SC-4.2	MC-4.1R	MC-4.0R	SC-4.2	MC-4.1R	MC-4.0R	
X / Y / Z (hp)	F	4/4/5.4			4/4/5.4			5.4/5.4/5.4		
	S	3.6/3.6/4.2	-		3.6/6.6/3.6	-		5.8/6.6/5.8		
	H	6/6.8/6.8	-		6/6.8/6.8	-		6.8/6.8/11.5		
A / C (hp)	F	3.6/3.4		6/3.6			6/3.6			
	S	3.1/2	-		4.2/3.1	-		4.2/3.1		
	H	3.2/2.3	-		6/3.2	-		6/3.2		

Unique spindle technology



Spindle code: SC-4.2
Transmission: Coupling
- Speed range:
10,000 & 12,000 rpm
- Lubrication:
Grease packed system
- 4 ball bearing



MC-4.1R
Coupling

15,000 rpm

Re-grease system
2 Angular contact ceramic bearing, 1 Cylindrical roller steel bearing

MC-4.0R
Coupling

20,000 rpm

Re-grease system
2 Angular contact ceramic bearing, 1 Cylindrical roller ceramic bearing

Control: FANUC = ● SIEMENS = ● MITSUBISHI = ● HEIDENHAIN = ●

SPINDLE	SC-4.2		MC-4.1R	MC-4.0R			
Max. spindle speed (rpm)	10,000	12,000	15,000	20,000			
Spindle transmission	Coupling		Coupling	Coupling			
Spindle diameter	Ø3.15" / Ø2.76		Ø3.15" / Ø2.56"	Ø2.76" / Ø2.36"			
FANUC							
Spindle base speed	-	1,350	1,500	1,400	1,500		
Spindle output power hp (S3-25%)	-	24.8	20.1	34.9	20.1		
Spindle output torque ft-lb (S3-25%)	-	87.1	70.5	130.6	92.3		
SIEMENS							
Spindle base speed	-	1,500	1,500	2,000	-		
Spindle output power hp (S6-25%)	-	17.8	23.6 ⁽¹⁾	17.8	23.6 ⁽¹⁾	37.1	-
Spindle output torque ft-lb (S6-25%)	-	62.7	82.7 ⁽¹⁾	62.7	82.7 ⁽¹⁾	97.4	-
MITSUBISHI							
Spindle base speed	1,500	1,500	1,400	1,500	1,400	-	-
Spindle output power hp (30min.)	20.1	14.8	24.8	14.8	24.8	-	-
Spindle output torque ft-lb (30min.)	70.8	51.7	75.3	51.7	75.3	-	-
HEIDENHAIN							
Spindle base speed	-	1,500	1,500	2,000	-	-	-
Spindle output power hp (S6-25%)	-	22.8	42.9	22.8	42.9	37.1	-
Spindle output torque ft-lb (S6-25%)	-	79.7	150.6	79.7	150.6	97.4	-
CTS Available	X	X	○	○	○	○	○
Model							
MF400C	●	●●●	-	●●●	-	●●	●
MF400U	-	●●●	-	●●●	-	●●●	●
MF500C	●	●●●	-	●●●	-	●●	●
MF500U	-	●●●	-	●●●	-	●●●	●
MF630C	●	-	●●●	-	●●●	●●	●
MF630U	-	-	●●●	-	●●●	●●●	●

Note: The standard specification for MF series as 12C + Oil chiller but except MITSUBISHI control ⁽¹⁾S6-40%

Two axes table (4/5 axis)

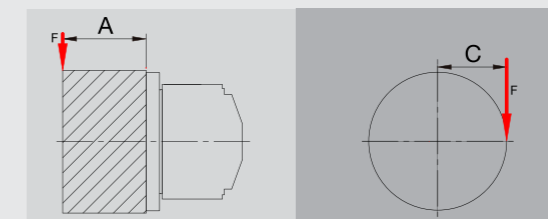
Combining alloy steel and aluminum bronze greatly reduces friction coefficient, effectively transmitting motor torque.



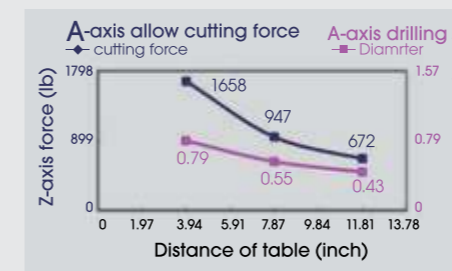
Work envelope	MF400		MF500		MF630	
	Rotary Axis (C-axis)	Tilting Axis (A-axis)	Rotary Axis (C-axis)	Tilting Axis (A-axis)	Rotary Axis (C-axis)	Tilting Axis (A-axis)
Max. swing	Ø15.75"		Ø19.69"		Ø24.8"	
Max. loading capacity (lb)	441 (in horizontal) 220 (in tilt)		441 (in horizontal) 331 (in tilt)		661 (in horizontal) 551 (in tilt)	
Allowable unbalancing workpieces moment (ft-lb)	74		148		221	
Maximum R.P.M	25	25	16.6	11.1	16.6	11.1
Indexing accuracy (sec.)	20 (12)	12	20 (12)	12	20 (12)	12
Repeatability (sec.)	10 (4)	5	10 (4)	5	12 (5)	8
Clamping torque (ft-lb)	554	1107	1181	1476	1845	2214

Note: () with rotary encoder

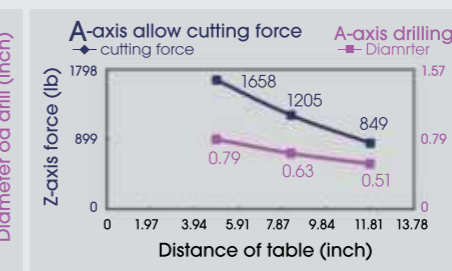
Cutting force limitation



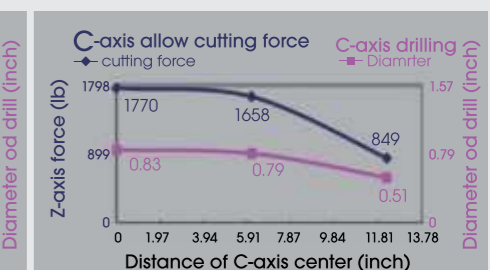
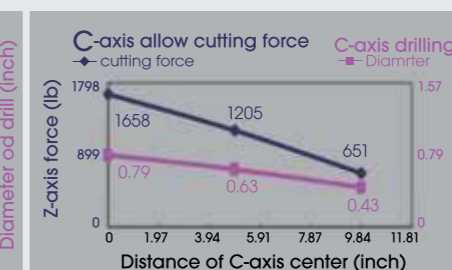
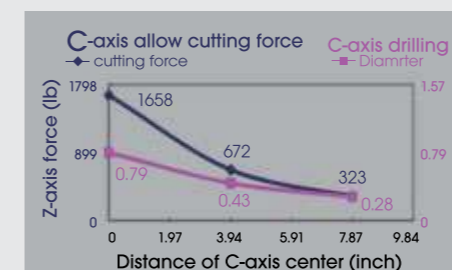
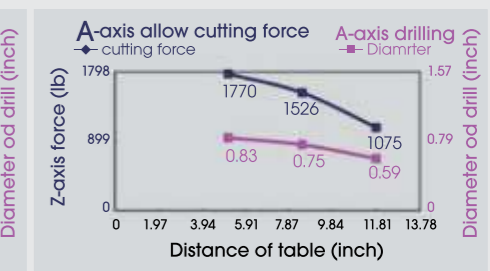
MF400



MF500



MF630



ATC system



30 ATC (std.)



48 ATC (opt.)



60 ATC (opt.)



120 ATC (opt.)



ATC auto door (opt.)

MF400 Cell & MF500 Cell

MF400 : Pallet size: \square 10.43"

Travel X / Y / Z: 26.77" / 24.02" / 20.08"

Max. ATC capacity: 120

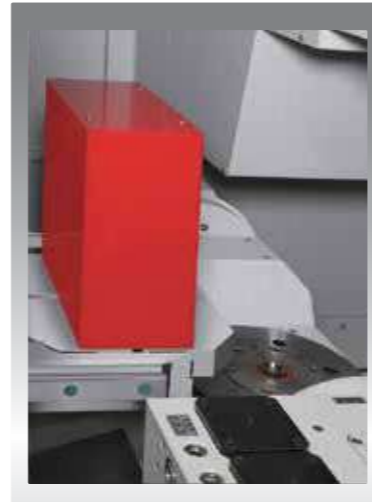
Pallet capacity: 40

MF500 : Pallet size: \square 13.78"

Travel X / Y / Z: 21.65" / 24.8" / 24.02"

Max. ATC capacity: 120

Pallet capacity: 28



pallet clamping system



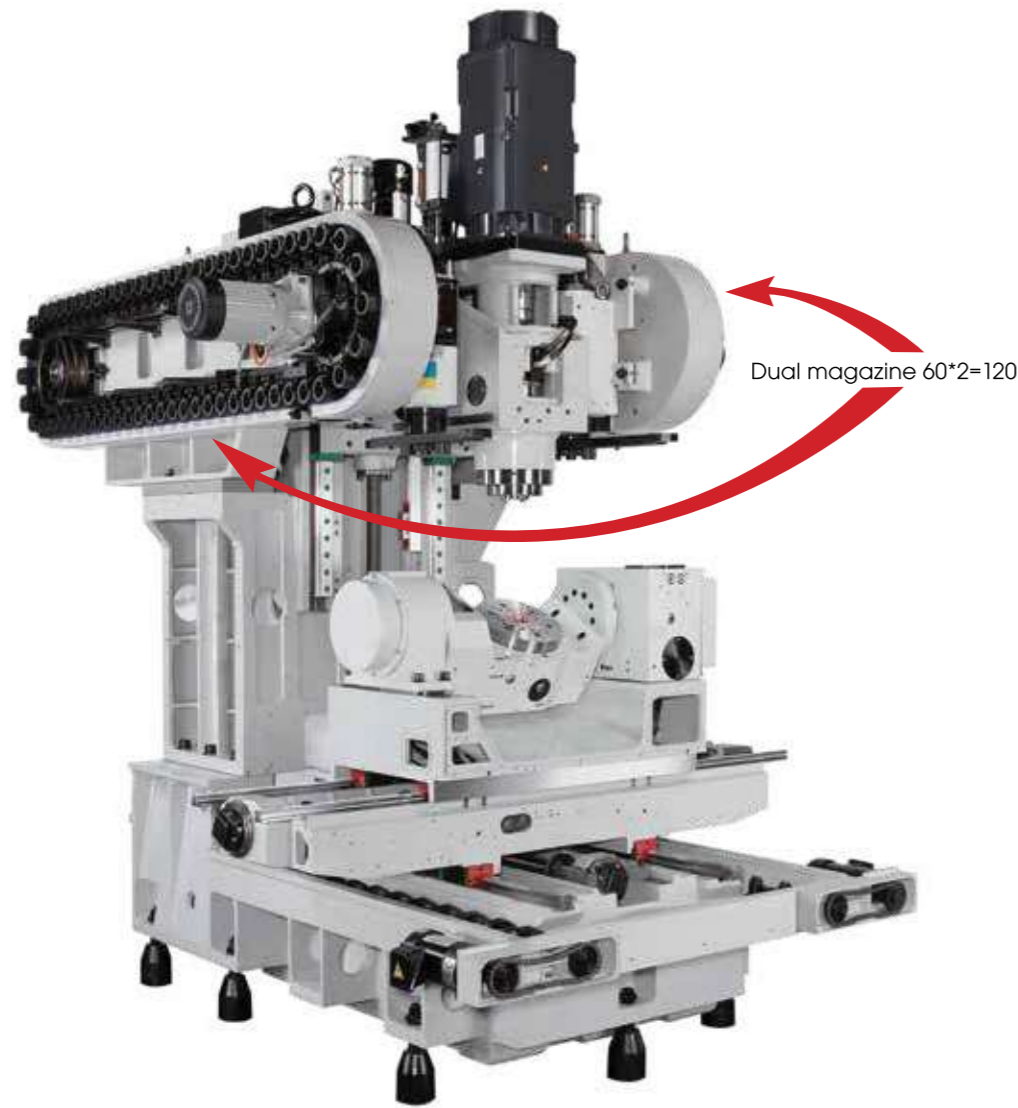
Pallet storage tower



Pallet loader



System controller



Dual magazine 60*2=120



Note: Find details in MF M/C Cell.

Easy operation

a From center of table to operator door

- MF400: 23.82"
- MF500: 23.82"
- MF630: 21.26"

b Max. size when operator door open

- MF400: 34.25"
- MF500: 34.25"
- MF630: 55.12"

c Documentation & hand tool shelf

d Swivel type operation panel

e Hand held remote MPG



Coolant system & Chip management

a Coolant tank

- MF400 / MF500 / MF630: 79.2 / 79.2 / 158.4 gal
- Nozzle coolant: 43.51 ~ 50.76 psi
- Wash down: 43.51 ~ 65.27 psi

b External chip conveyor (opt.)

c Internal chip augers

d Wash gun



Model MF500U

Technical Data		MF400C MF400U				
Spindle code		10C	12C	15C	20C*	
Work range						
Table size		Ø12.6"				
Travel X / Y / Z		16.14" / 24.02" / 20.08" (1)				
A (degree)		+30° ~ -120°				
C (degree)		360° (Continuous)				
Max. swing (mm)		Ø15.75"				
Table surface to spindle nose		0.79" ~ 20.87"				
Spindle nose to tilting center		0.79" ~ 20.87"				
Max. work piece size		Ø15.75" x 11.81"				
Max. loading capacity (lb)		441 (In horizontal) 220 (In tilt)				
Allowable unbalancing workpieces moment (ft-lb)		74				
Feed drive						
Feed force X / Y / Z (lb)		1412.48/2648.49/2648.49 (M)	1294.94/1294.91/2354.21 (F) 1412.48/1412.48/2354.21 (S) 1412.48/2648.49/2648.49 (M) 1412.48/1412.48/2589.59 (F) 1412.48/1412.48/2354.21 (S) 2083.31/2542.60/2542.60 (T)	1412.48/1412.48/2589.59 (F) 1412.48/1412.48/2354.21 (S) 1412.48/1412.48/2589.59 (F) 1412.48/1412.48/2354.21 (S) 2083.31/2542.60/2542.60 (T)		
Rapid movement X / Y / Z (ipm)		1417 / 1417 / 945				
A / C (rpm)		A=25 / C=25				
Acceleration X / Y / Z (ft/s²)		9.84 / 9.84 / 6.56 (M)	9.84 / 9.84 / 6.56 (F; M; T) 9.84 / 6.56 / 6.56 (S)			
Accuracy Positioning / Repeatability						
ISO 230-2		0.00031" / 0.00016"				
JIS 6338 (11.81")		±0.00012" / ±0.00008"				
VDI3441		0.00031" / 0.00016"				
Main spindle						
Spindle taper		40 Taper				
Tool changer						
Tool selection		Random				
Magazine positions		30 (std.) 48 / 60 / 120 (opt.)				
Max. tool diameter		3"				
w/o adjacent tool		4.92"				
Max. tool length		11.02"				
Max. tool weight (lb)		15.43				
CTC time - ISO 10791-9 (sec.)		4.2 (M)	4.2 (F; M; T) 4.4 (S)			
Coolant system						
Coolant tank capacity (gal)		79.2				
Pump capacity						
- Nozzle coolant		19.8 gal / min., 43.51 psi				
- Wash down		19.8 gal / min., 43.51 psi				
Machine size						
Height		120.9"		123.6"		
Floor space W x D		30 / 48ATC	79.5" x 111"			
		60ATC	79.5" x 124.4"			
Weight (lb)		16094 (30ATC)	16755 (48ATC)	17196 (60ATC)	19114 (120ATC)	
Connections						
Main power		220V or 380V or 400V or 415V / 50Hz or 60Hz				
Power consumption (KVA)		26 (M)	24 (F) 21 (S; M) 28 (F; T) 21 (S)	32.5 (F) 31 (S) 34 (F) 21 (S) 34 (T)	31 (F) 32 (F)	

Note: (1) Option 120 ATC Z axis travel 21.65". (2) Option 120 ATC Z axis travel 24.41". * Only for FANUC control.

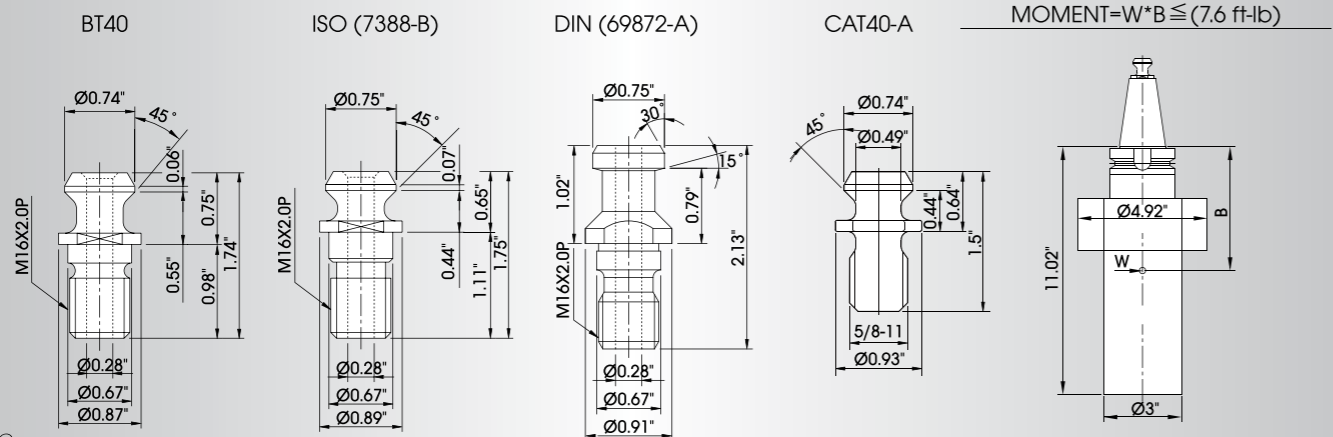
MF500C MF500U				MF630C MF630U							
10C	12C	15C	20C*	10C	12C	15C	20C*				
Work range											
Table size				Ø16.14"							
Travel X / Y / Z				21.65" / 24.8" / 24.02" (2)							
A (degree)				+30° ~ -120°							
C (degree)				360° (Continuous)							
Max. swing (mm)				Ø19.68"							
Table surface to spindle nose				-0.98" ~ 23.03"							
Spindle nose to tilting center				-0.98" ~ 23.03"							
Max. work piece size				Ø19.68" x 11.81"							
Max. loading capacity (lb)				441 (In horizontal) 331 (In tilt)							
Allowable unbalancing workpieces moment (ft-lb)				148							
Feed force X / Y / Z (lb)		1412.48 / 2648.49 / 2648.49 (M)	1294.91/2354.21/2354.21 (F) 1412.48/3178.14/2354.21 (S) 1412.48/2648.49/2648.49 (M) 1412.48/2589.59/2589.59 (F) 1412.48/3178.14/2354.21 (S) 2083.31/2542.60/2542.60 (T)	1412.48/1412.48/2589.59 (F) 1412.48/3178.14/2354.21 (S) 1412.48/2589.59/2589.59 (F) 1412.48/3178.14/2354.21 (S) 2083.31/2542.60/2542.60 (T)	2648.49 / 2648.49 / 3972.62 (M)	2589.59/2589.59/2589.59 (F) 3178.14/3178.14/3178.14 (S) 2648.49/2648.49/2648.49 (M) 2589.59/2589.59/2589.59 (F) 3178.14/3178.14/3178.14 (S) 2542.60/2542.60/4473.04 (T)	2589.59/2589.59/2589.59 (F) 3178.14/3178.14/3178.14 (S) 2589.59/2589.59/2589.59 (F) 3178.14/3178.14/3178.14 (S) 2542.60/2542.60/4473.04 (T)				
Rapid movement X / Y / Z (ipm)				1417 / 1417 / 945							
A / C (rpm)				A=11.1 / C=16.6							
Acceleration X / Y / Z (ft/s²)				9.84 / 9.84 / 6.56							
Accuracy Positioning / Repeatability											
ISO 230-2				0.00031" / 0.00016"							
JIS 6338 (11.81")				±0.00012" / ±0.00008"							
VDI3441				0.00031" / 0.00016"							
Main spindle											
Spindle taper				40 Taper							
Tool changer											
Tool selection				Random							
Magazine positions				30 (std.) 48 / 60 / 120 (opt.)							
Max. tool diameter				3"							
w/o adjacent tool				4.92"							
Max. tool length				11.02"							
Max. tool weight (lb)				15.43							
CTC time - ISO 10791-9 (sec.)				4.2 (M)	4.2 (F) 4.4 (S) 4.2 (T)		6.2				
Coolant system											
Coolant tank capacity (gal)				79.2							
Pump capacity											
- Nozzle coolant				19.8 gal / min., 43.51 psi							
- Wash down				19.8 gal / min., 43.51 psi							
Machine size											
Height		122.2"		125"		127.2"		133.1"			
Floor space W x D		89.8" x 127"		145.9" x 99.6" (30ATC)		145.9" x 113" (48ATC)					
		89.8" x 142.1"		145.9" x 128"							
Weight (lb)		16490 (30ATC)		17152 (48ATC)		17593 (60ATC)		19511 (120ATC)			
		19290 (30ATC)		19952 (48ATC)		20393 (60ATC)					
Connections											
Main power				220V or 380V or 400V or 415V / 50Hz or 60Hz							
Power consumption (KVA)				26 (M)	26 (F) 25 (S) 21 (M) 29 (F; T) 25 (S)	33 (F) 32 (S) 36 (F) 32 (S) 34 (T)	31 (F) 33 (F)	28 (M)	28 (F) 35 (S) 32 (M) 31 (F) 35 (S) 36 (T)	34.7 (F) 35 (S) 38 (F) 35 (S) 36 (T)	32 (F) 36 (F)

● Standard ○ = Option ✕ = N/A

Standard / Option accessories	MF400C / MF400U				MF500C / MF500U				MF630C / MF630U				
	10C	12C	15C	20C	10C	12C	15C	20C	10C	12C	15C	20C	
Spindle code													
■ SIEMENS 828D (5 Faces)	✕	○/✕	○/✕	✕	✕	○/✕	○/✕	✕	✕	○/✕	○/✕	✕	✕
■ QUASER mill i (5 Faces)	✕	●/✕	○/✕	○/✕	✕	●/✕	○/✕	○/✕	✕	●/✕	○/✕	○/✕	✕
■ MITSUBISHI M830 (5 Faces)	●/✕	○/✕	✕	✕	●/✕	○/✕	✕	✕	●/✕	○/✕	✕	✕	✕
■ FANUC 31iB5 (5 Axes)	✕	✕/○	✕/○	✕/○	✕	✕/○	✕/○	✕/○	✕	✕/○	✕/○	✕/○	✕
■ SIEMENS 840D (5 Axes)	✕	✕/○	✕/○	✕	✕	✕/○	✕/○	✕	✕	✕/○	✕/○	✕	✕
■ HEIDENHAIN TNC640 (5 Axes)	✕	✕/●	✕/○	✕	✕	✕/●	✕/○	✕	✕	✕/●	✕/○	✕	✕
■ Oil chiller	●	●	●	●	●	●	●	●	●	●	●	●	●
■ 10,000 rpm SC-4.2 coupling spindle	●/✕	✕	✕	✕	●/✕	✕	✕	✕	●/✕	✕	✕	✕	✕
■ 12,000 rpm SC-4.2 coupling spindle	✕	●/●	✕	✕	✕	●/●	✕	✕	✕	●/●	✕	✕	✕
■ 15,000 rpm MC-4.1R coupling spindle	✕	✕	●/●	✕	✕	✕	●/●	✕	✕	✕	●/●	✕	✕
■ 20,000 rpm MC-4.0R coupling spindle (FANUC only)	✕	✕	✕	●/●	✕	✕	✕	●/●	✕	✕	✕	●/●	✕
■ 30 position tool magazine	●	●	●	●	●	●	●	●	●	●	●	●	●
■ 48 / 60 position tool magazine	○	○	○	○	○	○	○	○	○	○	○	○	○
■ 120 position tool magazine	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Pull stud for BT tooling system	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Balance tooling for spindle warm up	○	○	●	●	○	○	●	●	○	○	●	●	○
■ ATC auto door	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Work probe receiver OMI-2T	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Work probe OMP-40	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Reference rod (for thermal comp with probe)	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Tool length / breakage measurement	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Hydraulic through pallet (2 ports)*	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Air pressure detector for pallet clamping	○	○	○	○	○	○	○	○	○	○	○	○	○
■ X / Y / Z linear scale & C rotary encoder	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Rotary encoder on A axes	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Transformer	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Coolant system	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Coolant through spindle	F	○	○	○	X	○	○	○	X	X	○	○	○
	S	○	○	○	X	○	○	○	X	X	○	○	○
	M	○	○	○	X	○	○	○	X	○	○	○	○
	T	○	○	○	X	○	○	○	X	○	○	○	○
■ Coolant wash gun	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Coolant wash down	●	●	●	●	●	●	●	●	●	●	●	●	●
■ External chip conveyor	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Internal chip augers	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Cutter air blast	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Oil-mist collector	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Bag filtration	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Filtration unit	○	○	○	○	○	○	○	○	○	○	○	○	○
■ Documentation (USB) ⁽¹⁾	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Work light	●	●	●	●	●	●	●	●	●	●	●	●	●
■ Machine status light	●	●	●	●	●	●	●	●	●	●	●	●	●
■ CE & EMC / GB	○	○	○	○	○	○	○	○	○	○	○	○	○

Note: ⁽¹⁾ Paper documentation is option.
 - Machine specification might be different from the catalogue if there is any specification update.
 * Factory mounted only

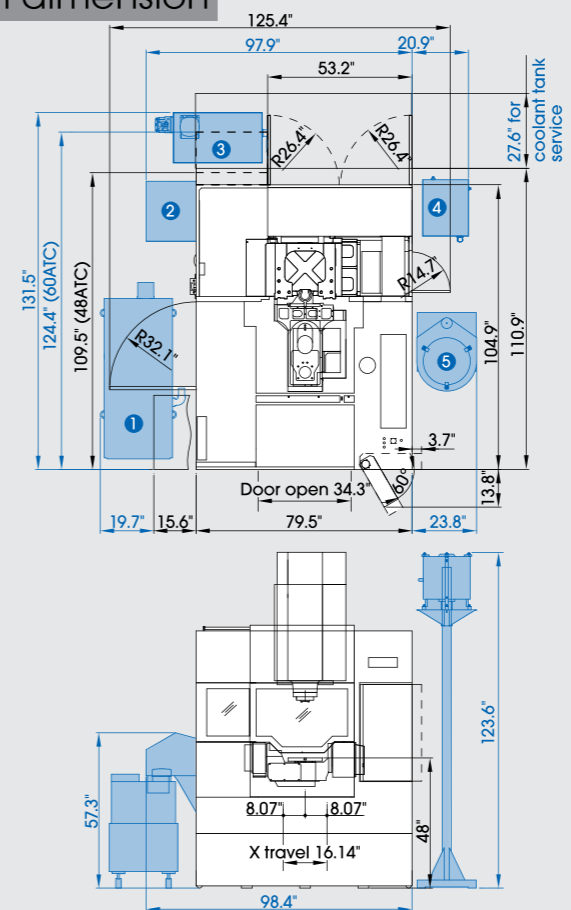
Pull stud and applicable tools



Layout

Installation dimension

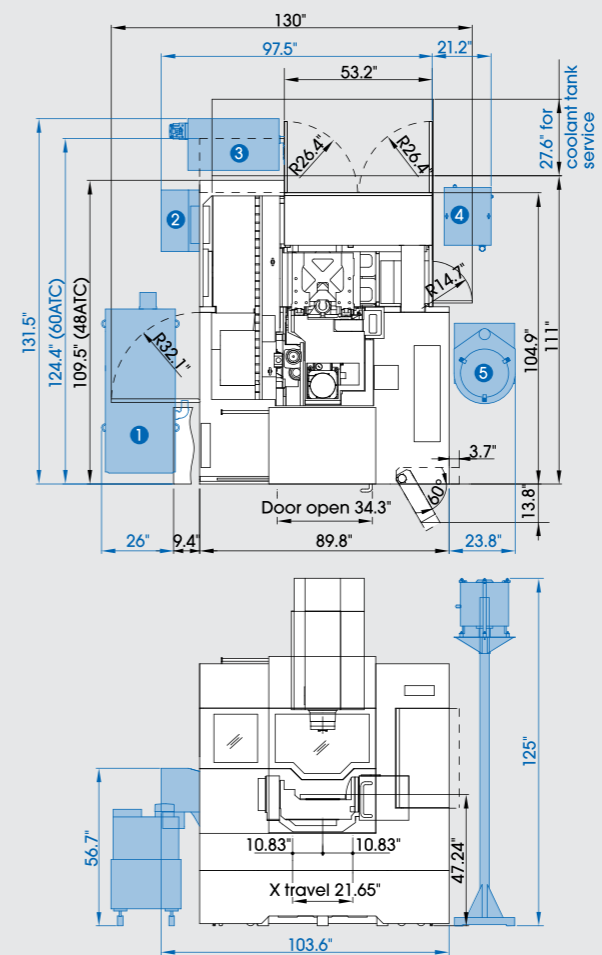
MF400



ATC	A	B
30 ~ 60	123.6"	20.08"
120	125.2"	21.65"

- 1 Filtration unit (opt.)
- 2 External chip conveyor (opt.)
- 3 Bag filtration (opt.)
- 4 Oil chiller (opt.)
- 5 Oil-mist collector (opt.)

MF500

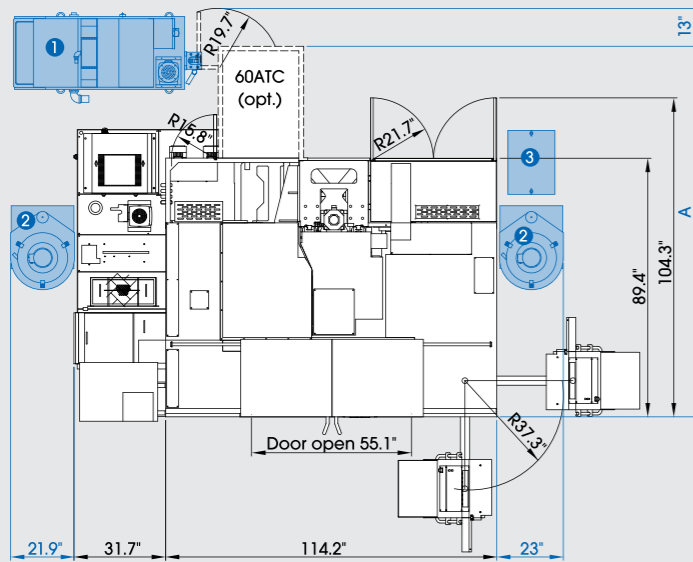


ATC	A	B
30 ~ 60	125"	24.02"
120	125.4"	24.41"

- 1 Filtration unit (opt.)
- 2 External chip conveyor (opt.)
- 3 Bag filtration (opt.)
- 4 Oil chiller (opt.)
- 5 Oil-mist collector (opt.)

Installation dimension

MF630



40Taper		
A	30ATC	99.6"
	48ATC	113"
	60ATC	128"

- 1 Filtration unit (opt.)
- 2 Oil-mist collector (opt.)
- 3 Transformer (opt.)
- 4 External chip conveyor (opt.)

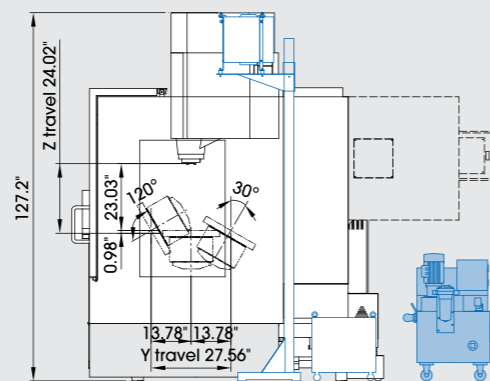
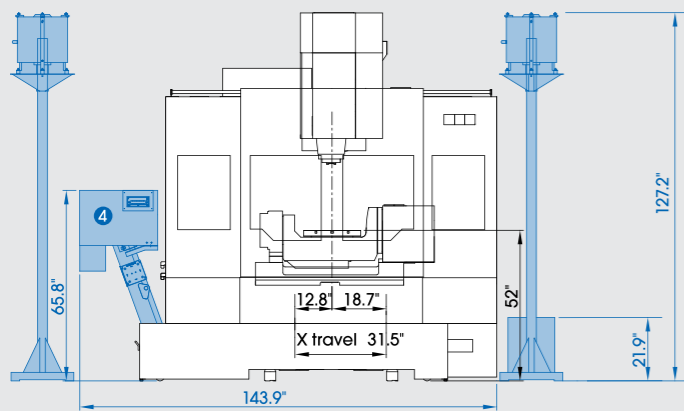
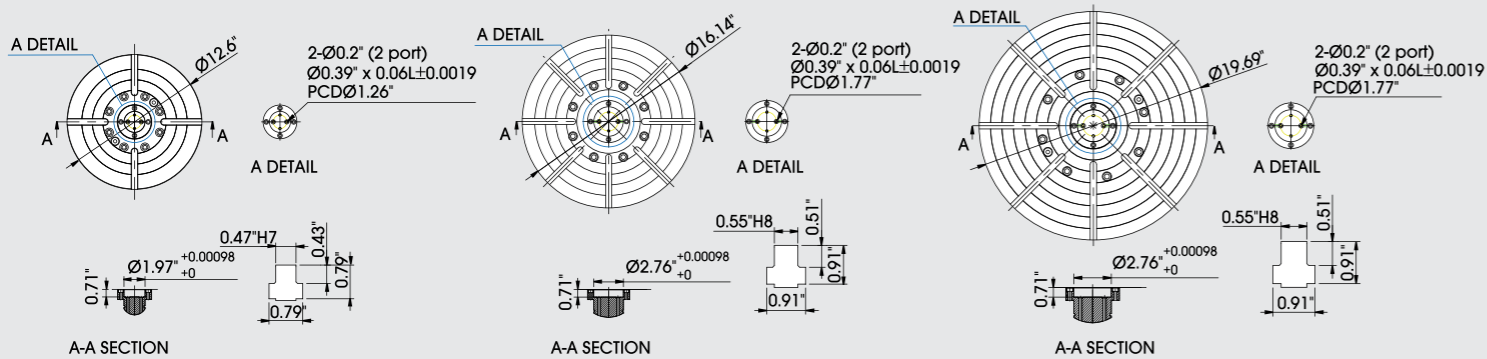


Table dimension

MF400

MF500

MF630



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