QUASER

we cut faster

MK603S SERIES

MK603S series is our third generation of MK60S vertical machining center.
The MK603S series achieves:

- Large work area configuration with compact foot print
- High efficiency
- High reliability

Economic Machine	Performance Machine	
MK 603SE	MK 603SP	MK 603SP
33.5 hp	42.9 hp	34.9 hp / 20.1 hp
Belt Spindle	Belt Spindle	Coupling Spindle
- 9,000 rpm, 156.5 ft-lb	- 9,000 rpm, 219.2 ft-lb	- 15,000 rpm, 130.6 ft-lb
- 12,000 rpm, 117.3 ft-lb	- 12,000 rpm, 164.6 ft-lb	- 20,000 rpm, 92.3 ft-lb
- 1260 ipm	- 1260 ipm (option 1890 ipm with Linear scale)	- 1260 ipm (option 1890 ipm with Linear scale)
QUASER mill i	FANUC 31iB	FANUC 31iB

All following items are standard:

- 290 psi coolant through spindle
- Chip management system including: auto flush, chip augers, chip conveyor and full enclosures
- Dual-pallet swing type APC
- 48 position ATC

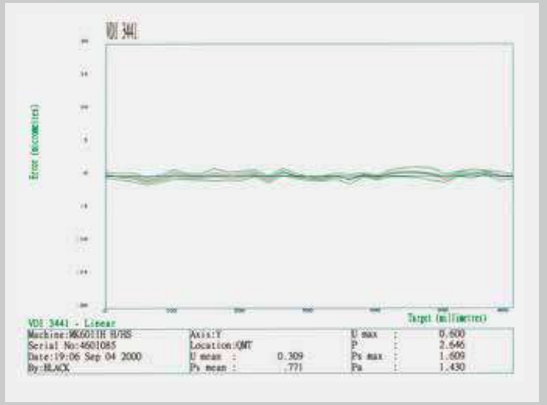
Note: The object might be different from the photos of catalogue if there is any specification update.

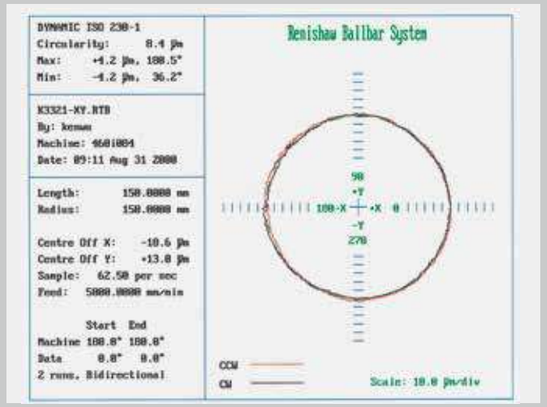
Column moving design on X/Y/Z axes, with high rigidity machine base, which provide less geometric error with different work-piece weight, and trouble free from chips and coolant.

- X axis span at 35.43"
- Y axis span at 19.69"
- Z axis span at 16.93"

Heavy duty ø1.77" pretensioned ball screws, directly coupled with AC servo motors, achieve consistent high accuracy.
3 axes 0.00197" absolute linear scales are option.

Motor	MK603SE	MK603SP
X / Y / Z(hp)	4 / 4 / 5.4	5.4 / 5.4 / 5.4

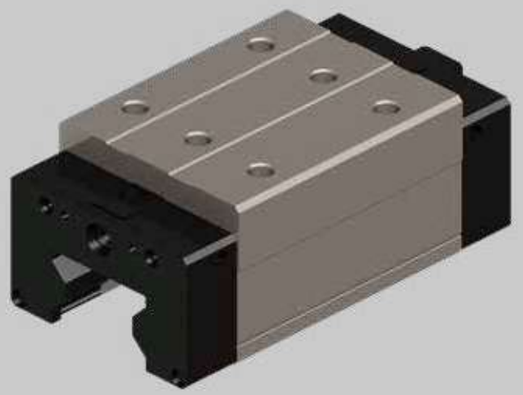




Note: The measuring results indicated in this catalog are provided as an example by random selection.

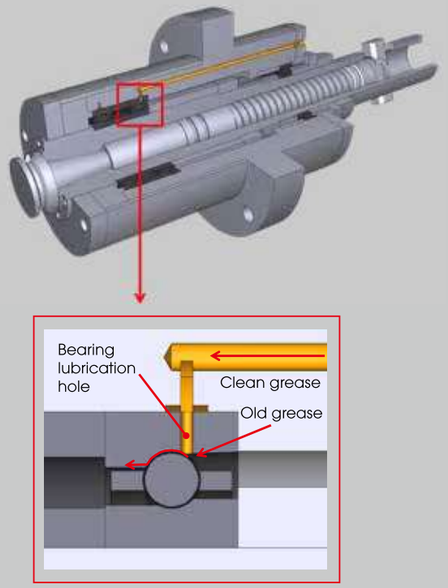
Super heavy-duty roller linear ways

X-axis linear ways size 55
Y-axis linear ways size 55
Z-axis linear ways size 45

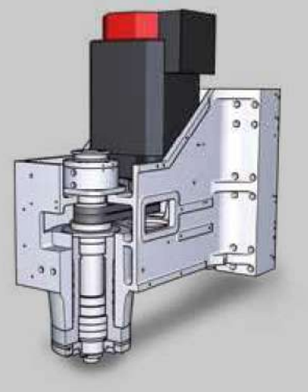


Spindle System

- Grease supply system is designed to be stable and eco-friendly by supplying new grease intermittently to the bearing during the high speed rotation.



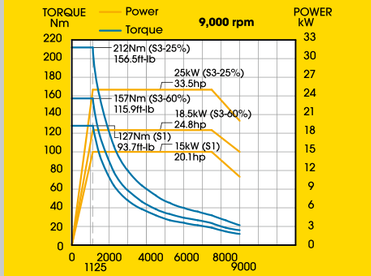
- Standard on all models



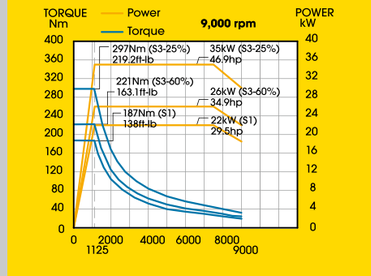
New spindle code	MB-4.0		MC-4.1R		MC-4.0R	
Shaft diameter	ø2.76" / ø2.56"		ø3.15" / ø2.56"		ø2.76" / ø2.36"	
Spindle Taper	ISO-40		ISO-40 / HSK A63			
Bearing arrangement	< > =		< > =		< > =	
Ball bearing type	Ceramic		Ceramic		Ceramic	
Roller bearing type	Steel		Steel		Ceramic	
Bearing lubrication	Grease packed		Re-Grease		Re-Grease	
Transmission	Belt		Coupling		Coupling	
Spindle motor	αiI15/12,000 (SPM22)		αiI22/12,000 (SPM26)		αiIT15/15,000 (SPM30)	α8/20,000iL (SPM30i)
Spindle Speed	9,000	12,000	9,000	12,000	15,000	20,000
FANUC						
Spindle base speed	1,125	1,500	1,125	1,500	1,400	1,150
Spindle output power (hp) (S3-25%)	33.5	33.5	46.9	46.9	34.9	20.1
Spindle output torque (ft-lb) (S3-25%)	156.5	117.3	219.2	164.6	130.6	92.3
CTS Availability	●	●	●	●	●	●
Available NC	FANUC = ●					
MK603SE	●	●	-	-	-	-
MK603SP	-	-	●	●	●	●

MB-4.0

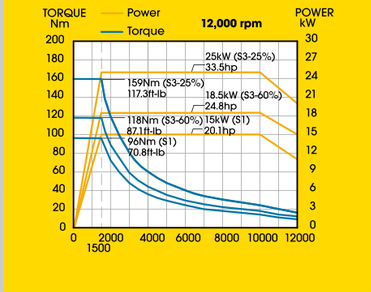
Belt
Motor type: αiI15 / 12,000 (SPM22)



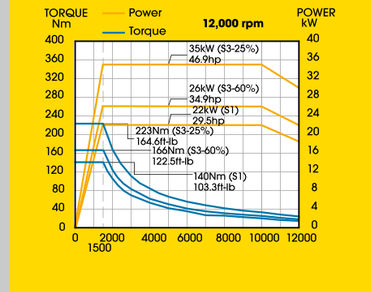
Belt
Motor type: αiI22 / 12,000 (SPM26)



Belt
Motor type: αiI15 / 12,000 (SPM22)

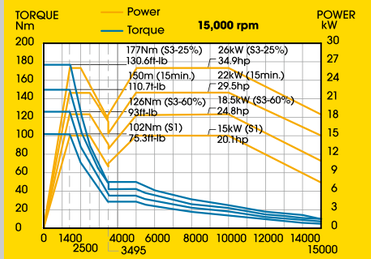


Belt
Motor type: αiI22 / 12,000 (SPM26)



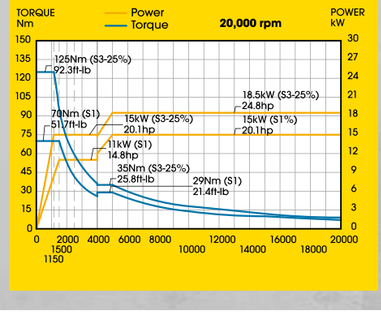
MC-4.1R

Coupling
Motor type: αiIT15 / 15,000 (SPM30)



MC-4.0R

Coupling
Motor type: α8 / 20,000iL (SPM30i)



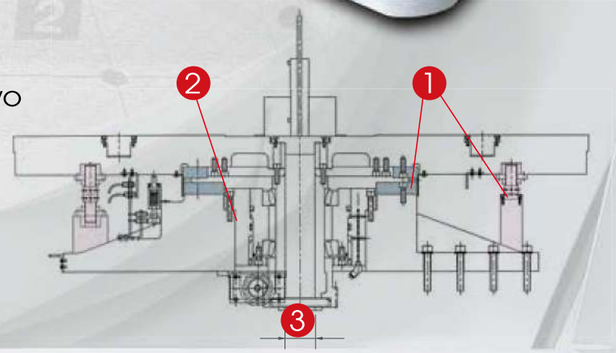
Pallet system

Pallet load capacity: 661 lb/each end
APC time: 8 seconds

Two fourth axis tables (ø10.04") with tailstocks or fixtures with hydraulic end supports can boost maximum efficiency. (option)

Rigid & reliable system

1. ø23.62" curvic coupling plus two end supporters
2. 11241 lb clamping force
3. Center through hole ø3.15" (for hydraulic or 4th axis table)



ATC system

Minimum moving parts to achieve highest reliability

Tool to tool : 2.5 seconds
Chip to chip : 6.5 seconds

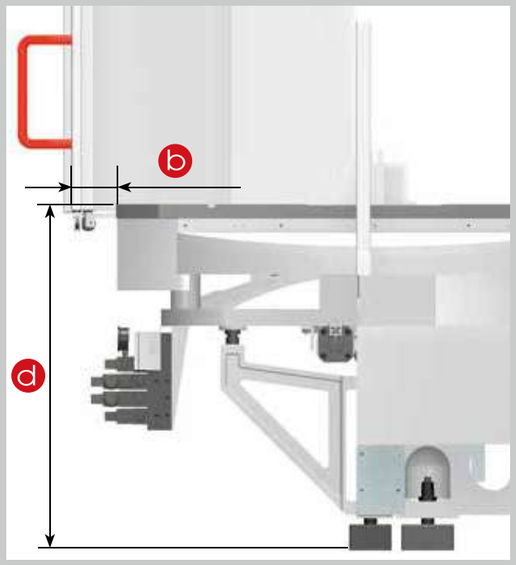
48 pos. magazine

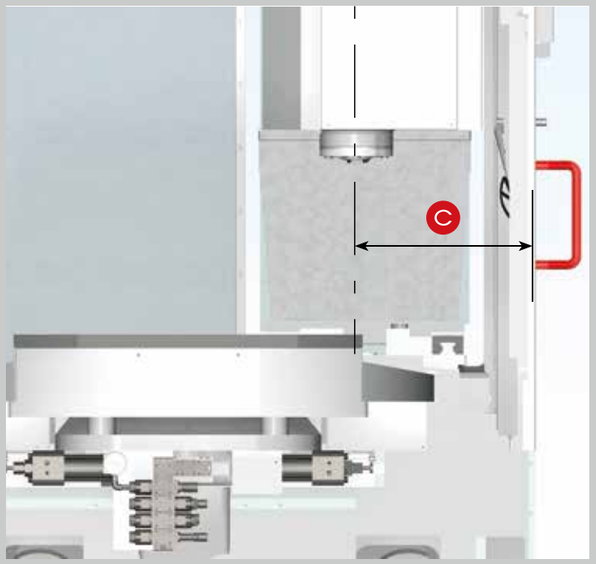
60 pos. magazine

Ergonomic and Space-saving design

Built from operator's view

- (a) Ergonomic operator control panel
- (b) Good accessibility from edge of table to operator- minimum distance 5.91"
- (c) Side door to spindle is 21.06"
  Allows convenient access for manual tool loading/unloading from spindle.
- (d) Table surface to floor at 39.37"
  - Large door opening 39.37"
- (e) Documentation & hand tool shelf
- (f) Tool shelf





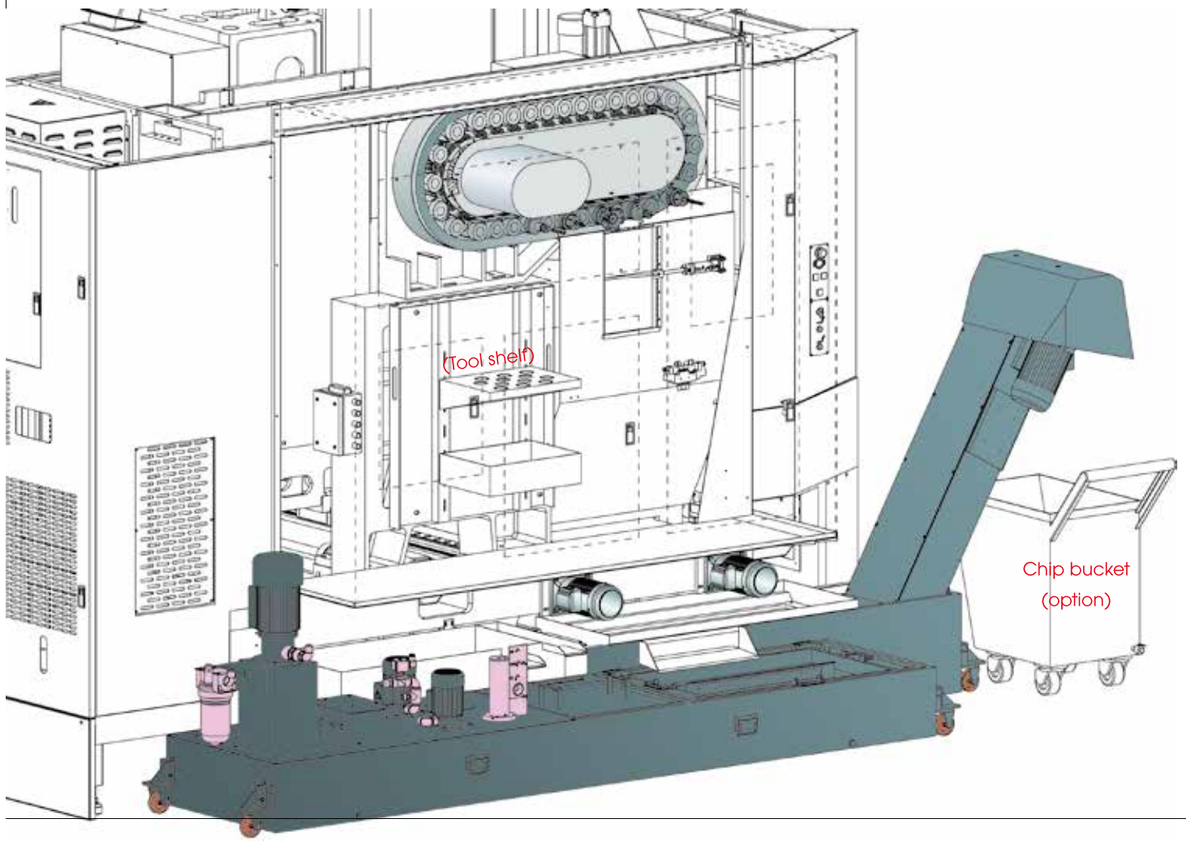
Our attention to small details shows that we care

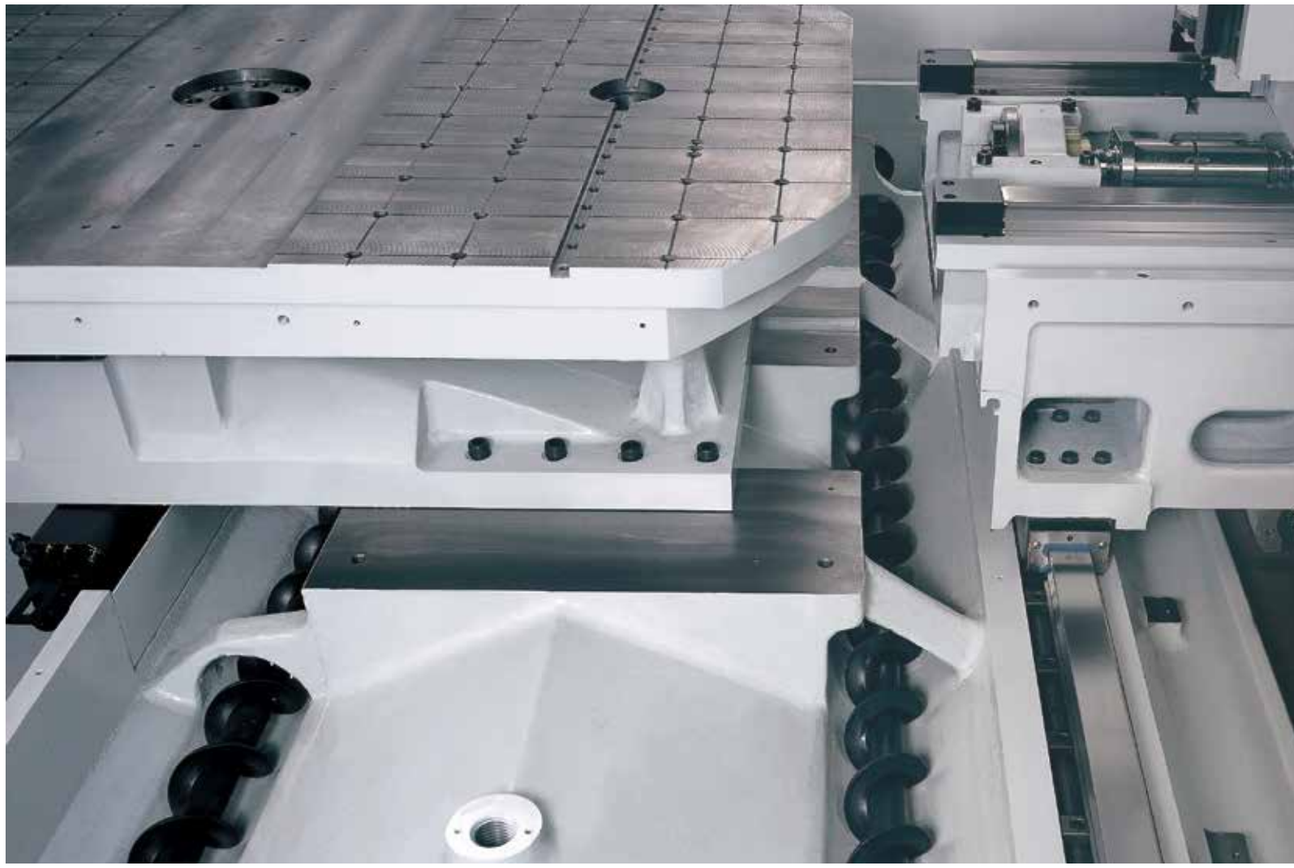
Coolant system & Chip management

The best chip management system with minimum floor space required when compared with competitive machines in the same price range

Principles

- Heavy chip carried by drag type chip conveyer.
- Light & small chip overflow through 0.06" & 0.02" filters for nozzle coolant & flushing; a final 0.00098" filter with alarm signal for 290 psi C.T.S.
- No need to worry about coolant balance between tanks; to compensate for coolant evaporation top up by checking against an easy to read gauge.





(Some covers removed for explanations)

Main spindle : Heavy duty, belt drive = B Heavy duty, direct coupling = C

Technical data	MK603SE Economic		MK603SP Performance			
Spindle code	9B	12B	9B	12B	15C	20C
Work range						
Pallet size	41.34" x 21.65" x 2					
Max. work swing diameter	Ø64.17"					
Max. work piece height	13.78" (1)					
Table load capacity (lb)	661 x 2 (1102 x 2 by reducing speed)					
Travel X / Y / Z	40.16" / 24.02" / 23.62"					
Table surface to spindle nose	5.12" ~ 28.74"					
Surface configuration	128 – M12 @ Pitch 100 grid					
Feed drive						
Feed force X (lb)	1412.48		1942.13			
Y (lb)	1412.48		1942.13			
Z (lb)	2589.81		1942.13			
Rapid movement X / Y / Z (ipm)	1260		1260 (opt.1890)			
Acceleration X / Y / Z (ft/s²)	8.86 / 9.84 / 11.15		13.12 / 16.4 / 16.4 (11.48 / 14.76 / 14.76 on 1890 ipm)			
Dia. & pitch of the ball screw	Ø1.77" / P0.47"		Ø1.77" / P0.63"			
Accuracy Positioning / Repeatability						
ISO 230-3 / JIS	0.00031" / 0.00016"					
JIS 6338 (11.81")	±0.00012" / ±0.00008"					
VDI 3441	0.00031" / 0.00016"					
Main spindle						
Spindle taper	40 Taper					
Tool changer						
Tool selection	Random					
Magazine positions	48					
Max. tool diameter / No adjacent tool	Ø3" / Ø4.92"					
Max. tool length	11.81"					
Max. tool weight (lb)	15.43					
Tool to tool time (sec.) (2)	2.5					
Chip to chip time (sec.) (2)	6.5		6.5 sec @ 1260 ipm; 6 sec @ 1890 ipm			
Pallet changer						
Number of pallet	2					
Method of pallet changer	Swing Type					
Pallet change time (sec.) (2)	8					
Pallet changing repeatability	0.00031"					
Coolant system						
Coolant tank capacity (gal)	153.1					
- Nozzle coolant	19.8 gal / min; 43.5 psi					
- Coolant through spindle	6.6 gal / min, 290.1 psi					
- Wash down	19.8 gal / min; 43.5 psi					
Machine size						
Height	129.9"					
Floor space W x D	145.7" x 188.8"					
Weight (lb)	26455					
Connections						
Main power	220V or 380V or 400V or 415V / 50Hz or 60Hz					
Power consumption (KVA)	35		40			

Note: (1) The interference area during tool "change, please see page 15." (2) At 60Hz.

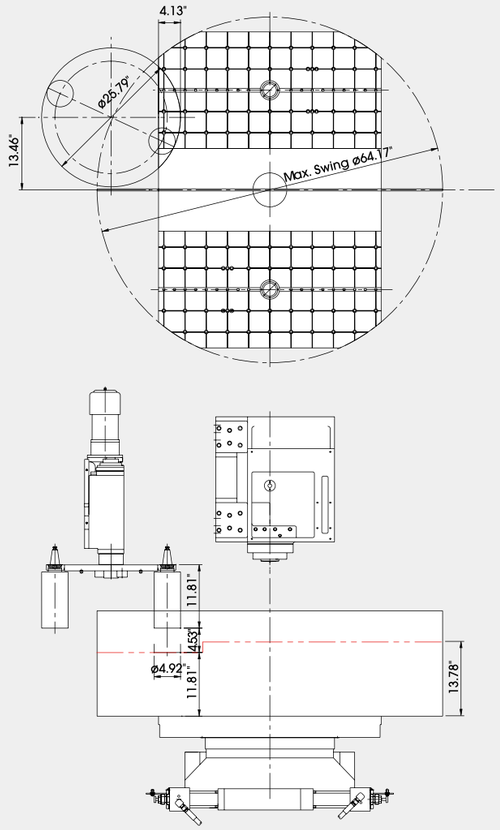
● = Standard ○ = Option × = N/A

Standard / Option accessories	MK603SE Economic		MK603SP Performance			
Spindle code	9B	12B	9B	12B	15C	20C
■ QUASER mill i	○	●	×	×	×	×
Mold machining pack (R660)						
AICC II (Lock-ahead 200 blocks)						
Smooth tolerance control	○	●	×	×	×	×
Jerk control						
Machining quality level adjust function						
FANUC – data server	○	○	○	○	○	○
■ FANUC 31iB	×	×	○	●	○	○
AICC II (Lock-ahead 200 blocks)	×	×	○	●	○	○
FANUC – data server	○	○	○	○	○	○
FANUC – high speed processing (Lock-ahead 600 blocks)	×	×	○	○	○	○
■ Oil chiller	●	●	●	●	●	●
■ 1890 ipm rapid (3)	×	×	○	○	○	○
■ 40 Taper 48 position tool magazine	●	●	●	●	●	●
40 Taper 60 position tool magazine	○	○	○	○	○	○
■ Tooling - BT40	●	●	●	●	●	●
- ISO40	○	○	○	○	○	○
- DIN40	○	○	○	○	○	○
- HSK A63	×	×	×	×	○	○
- CAT40	○	○	○	○	○	○
■ Pull stud for BT tooling	●	●	●	●	●	●
■ Balance tooling for spindle warm up	●	●	●	●	●	●
■ BBT spindle attachment (Double contact)	●	●	●	●	●	●
■ 2 pallet station	●	●	●	●	●	●
■ Tool length / breakage measurement	○	○	○	○	○	○
■ Linear encoder	○	○	○	○	○	○
■ Coolant system	●	●	●	●	●	●
■ Coolant through spindle 290.1 psi	●	●	●	●	●	●
■ Coolant through spindle 725.2 psi	○	○	○	○	○	○
■ Saddle wash down coolant	●	●	●	●	●	●
■ Coolant wash gun	●	●	●	●	●	●
■ Chip augers	●	●	●	●	●	●
■ Cutter air blast	●	●	●	●	●	●
■ Chip conveyor	●	●	●	●	●	●
■ Filtration unit	○	○	○	○	○	○
■ Documentation (USB) (4)	●	●	●	●	●	●
■ Work light	●	●	●	●	●	●
■ Machine status light	●	●	●	●	●	●
■ CE & EMC (5)	○	○	○	○	○	○
■ Top cover	○	○	○	○	○	○

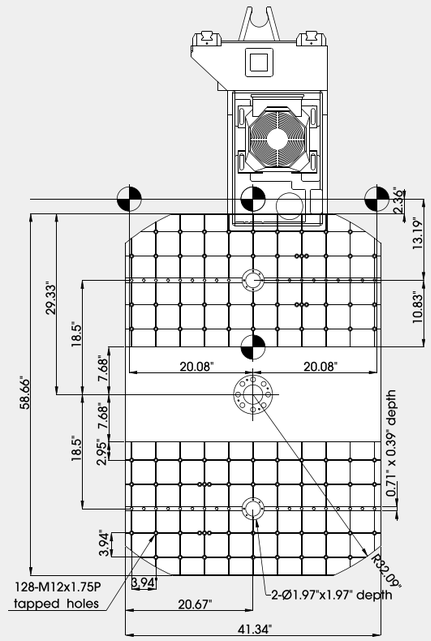
Note: (3) The linear encoder is standard item for rapid traverse as 1890 ipm model. (4) Paper documentation is option.
(5) Standard for Europe area.
- Machine specification might be different from the catalog if there is any specification update.

Machine size

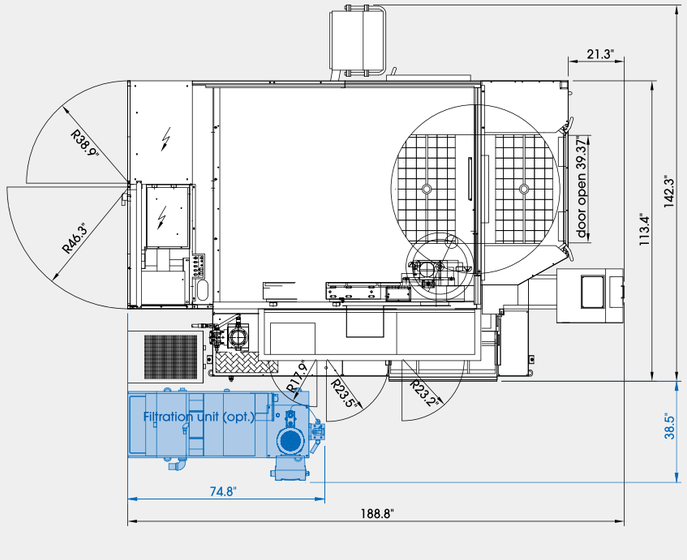
Swing table interference area

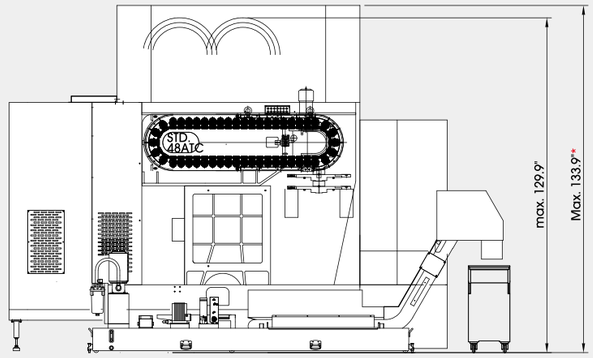


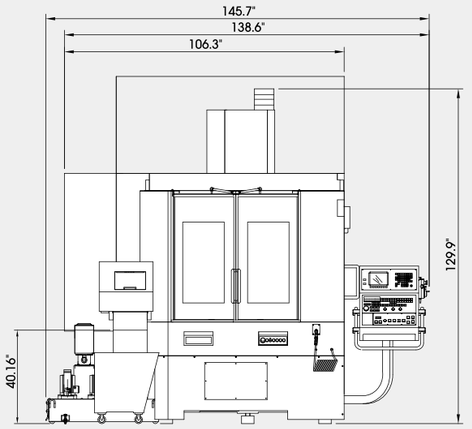
Swing table dimension



Installation dimension





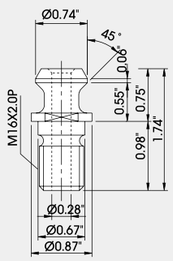


* With top cover (option)

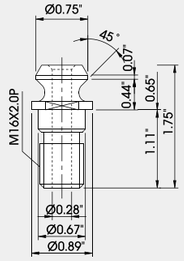
Pull stud and applicable tools

B	tool median point distance
W	tool weight
MOMENT=W*B(≦7.6 ft-lb)	

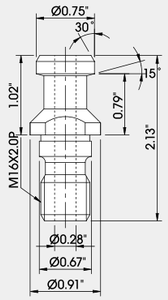
BT 40 (QUASER supply)



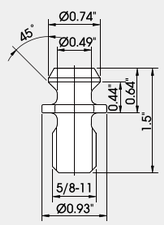
ISO (7388-B)

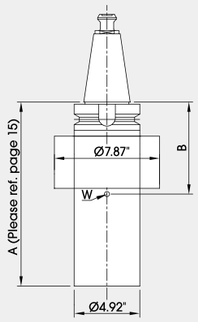


DIN (69872-A)



CAT40-A





We build machines in a hybrid way

- Very classic craftsmanship combined with the most advanced modern equipment in a clean environment...

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QUASER

we cut faster

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