

**QUASER**

*we cut faster*

# MV1 SERIES



MV154



MV154L



MV154



MV154L

**Generation I**

**Generation II**

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MV154 C / E / P / M

MV184 C / E / P / M

## Generation III

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

# MV1 SERIES



## MV154 C / E / P

Travel X / Y / Z: 762 / 530 / 560 (mm)

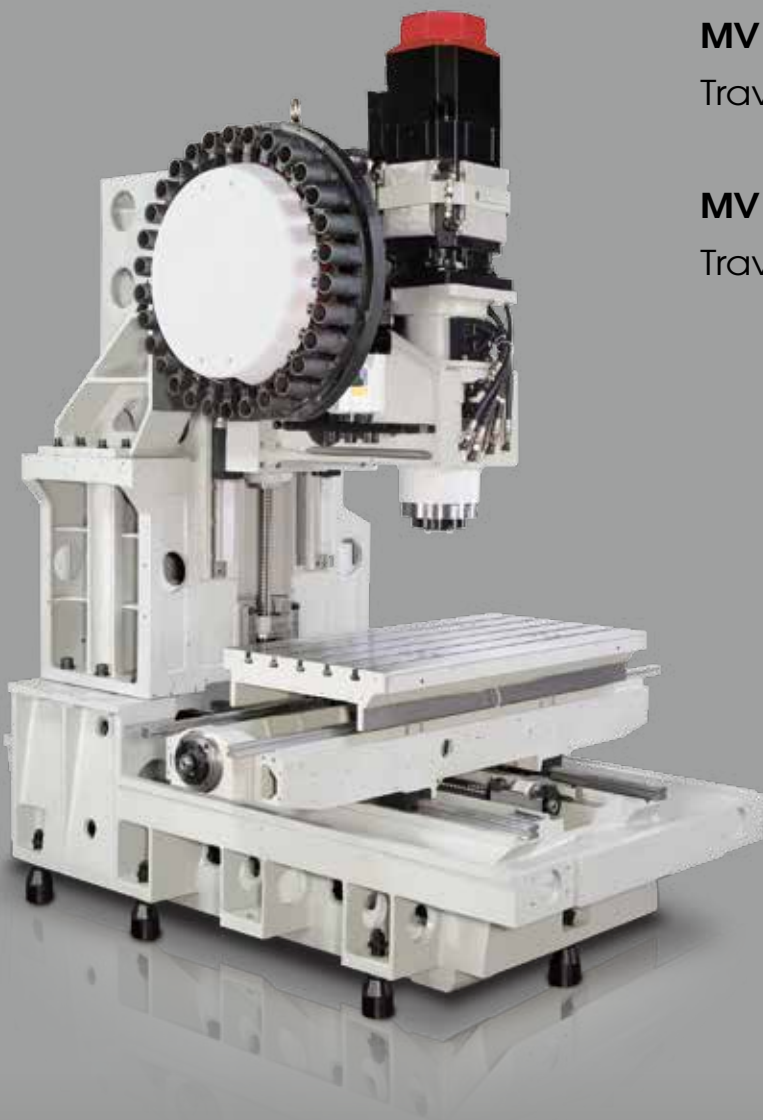
## MV154 M

Travel X / Y / Z: 700 / 530 / 560 (mm)



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

Motor	MV154C & MV184C			MV154E & MV184E	
		10B & 10C	12C	9B	12B
Spindle code					
X / Y / Z (kW)	<b>F</b>	1.8 / 1.8 / 2.5		3 / 3 / 4	
	<b>S</b>	2.7 / 2.7 / 3.1		-	
	<b>M</b>	2.2 / 2.2 / 3		-	
	<b>T</b>	-		3.1 / 3.1 / 4.5	



### MV184 C / E / P

Travel X / Y / Z: 1,020 / 610 / 610 (mm)

### MV184 M

Travel X / Y / Z: 900 / 610 / 610 (mm)



MV154P & MV184P						MV154M & MV184M			
9B	12B	15C	20C	18A	24A	15C	20C	18A	24A
3 / 3 / 4				-		4 / 4 / 5.5		-	
2.7 / 2.7 / 4.9			-	2.7 / 2.7 / 4.9		-		-	
4.5 / 4.5 / 5.1		4.5 / 4.5 / 5.4	-	4.5 / 4.5 / 5.4		5.1 / 5.4 / 5.4	-	5.1 / 5.4 / 5.4	

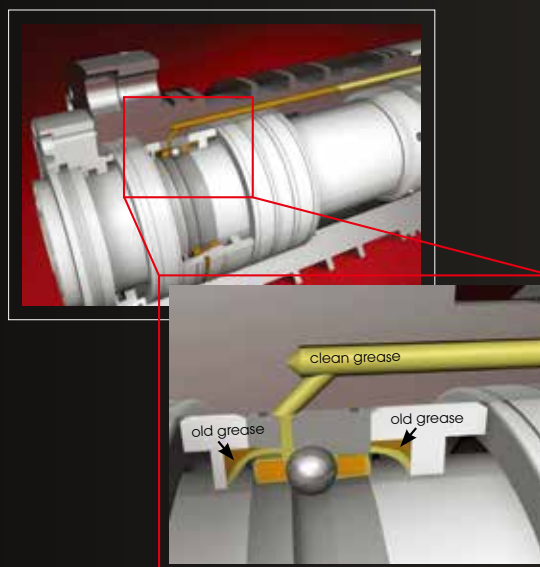


# Unique spindle technology



## Grease replenishing system

- Use car industry re-greasing principle to supply "clean grease" at 60~100 hr interval by 25~50 mm<sup>3</sup> / shoot.



Transmission	Lubrication	Spindle code
<ul style="list-style-type: none"> <li>• <b>Belt driving</b></li> </ul> 	Grease packed system	GB-4.1
<ul style="list-style-type: none"> <li>• <b>Coupling</b></li> </ul> 	Re-grease system	GB-4.1R
<ul style="list-style-type: none"> <li>• <b>Motor spindle</b></li> </ul> 	Grease packed system	SC-4.1
	Re-grease system	GC-4.0R GC-4.1R (2017-Q3)
	Oil-Air system	GC-4.1A (2017-Q3)
	Re-grease system	MC-4.1R
		MC-4.0R
	Oil-Air system	GM-4.0A
		GM-4.1A



- The grease volume in 1st installation can support 30,000 hr or 3 years.

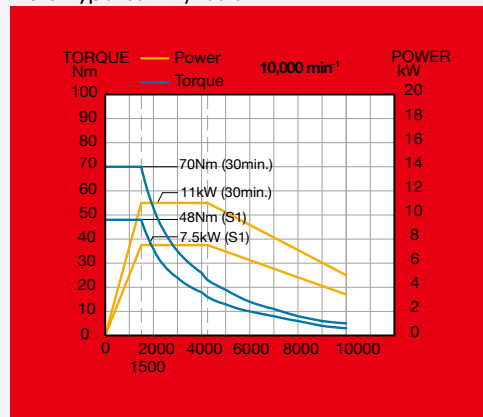
- Standard on all models



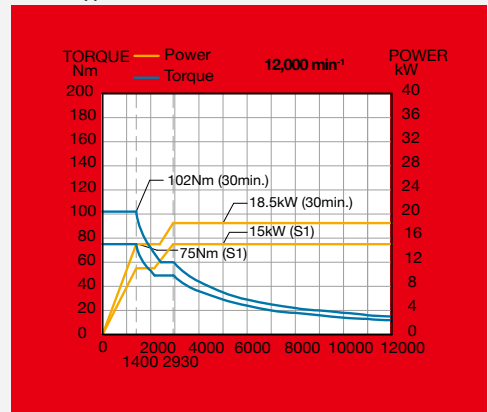
Speed range	Model
	ISO40
8,000 / 10,000 min <sup>-1</sup>	MV154C MV184C
9,000 / 12,000 min <sup>-1</sup>	MV154E / P MV184E / P
10,000 / 12,000 min <sup>-1</sup>	MV154C MV184C
15,000 min <sup>-1</sup>	MV154P / M MV184P / M
15,000 min <sup>-1</sup>	
15,000 min <sup>-1</sup>	
20,000 min <sup>-1</sup>	
24,000 min <sup>-1</sup>	MV154P / M MV184P / M
18,000 min <sup>-1</sup>	



**SC-4.1**  
Coupling  
Motor type: SJ-D11/100-01

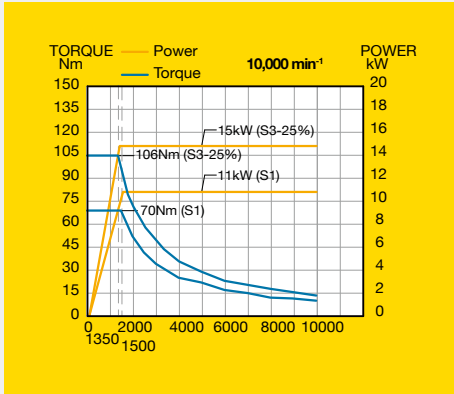


Coupling  
Motor type: SJ-VKS30-16ZT



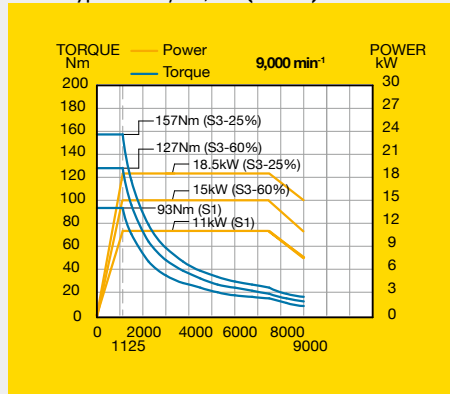
**GB-4.1**

Belt  
Motor type: αi12 / 12,000 (βiISVSP-15)

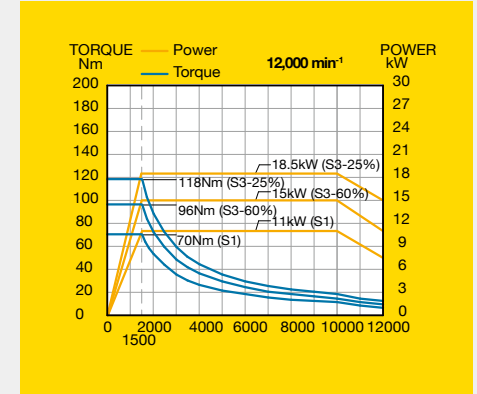


**GB-4.0R**

Belt  
Motor type: αi12 / 12,000 (SPM15)

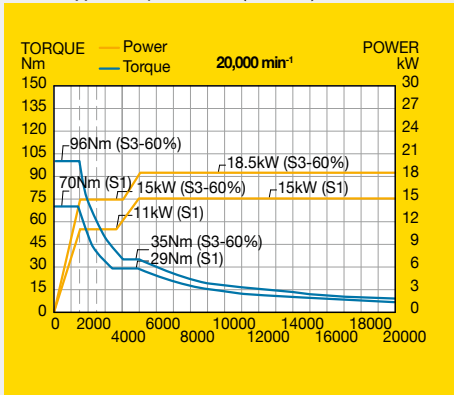


Belt  
Motor type: αi12 / 12,000 (SPM15)



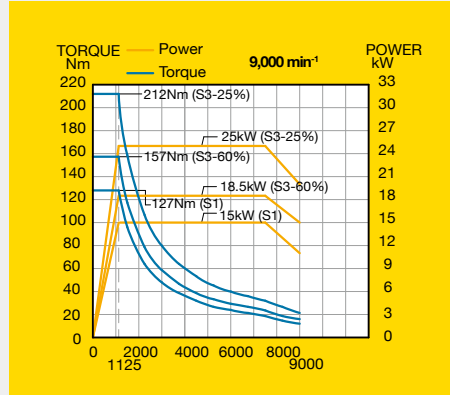
**MC-4.0R**

Coupling  
Motor type: α8 / 20000iL (SPM30)

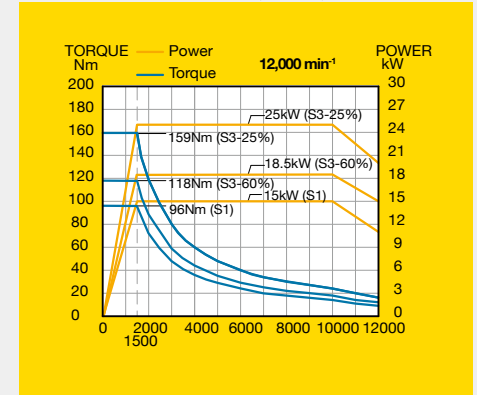


**GB-4.0R**

Belt  
Motor type: αi15 / 12,000 (SPM22)

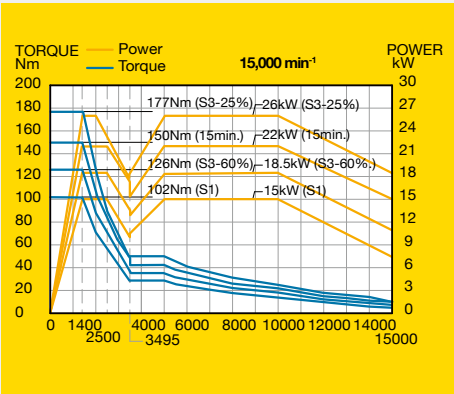


Belt  
Motor type: αi15 / 12,000 (SPM22)



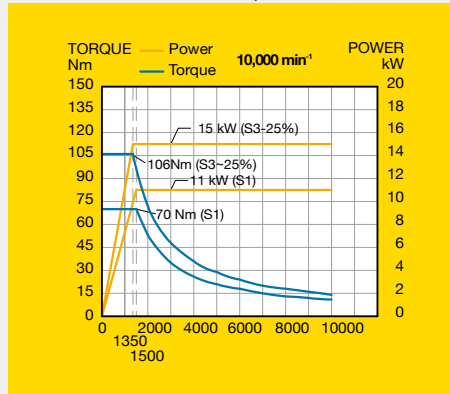
**GC-4.1R/MC-4.1R**

Coupling  
Motor type: αi115 / 15,000 (SPM30)

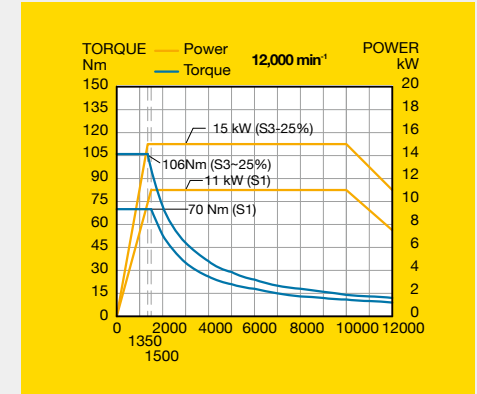


**SC-4.1**

Coupling  
Motor type: αi12 / 12,000 (βiISVSP-15)

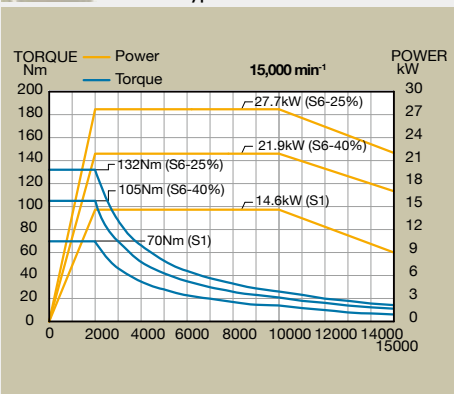


Coupling  
Motor type: αi12 / 12,000 (βiISVSP-15)



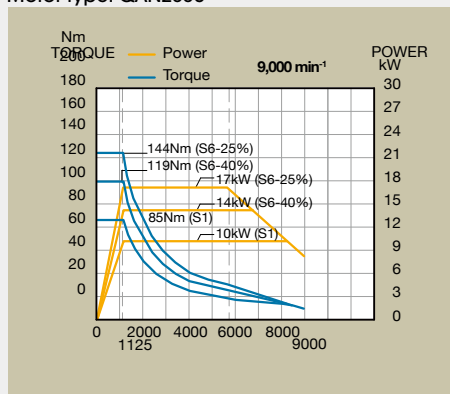
**GC-4.1R/MC-4.1R**

Coupling  
Motor type: 1PH8131

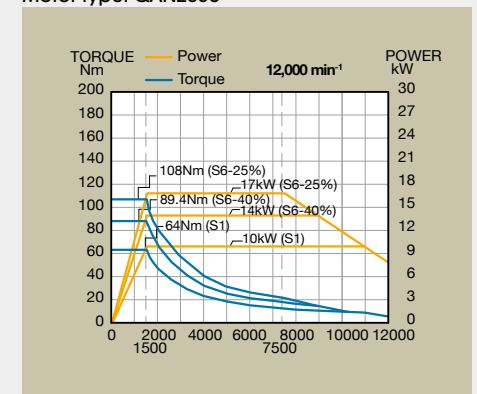


**GB-4.0R**

Belt  
Motor type: QAN200U



Belt  
Motor type: QAN200U

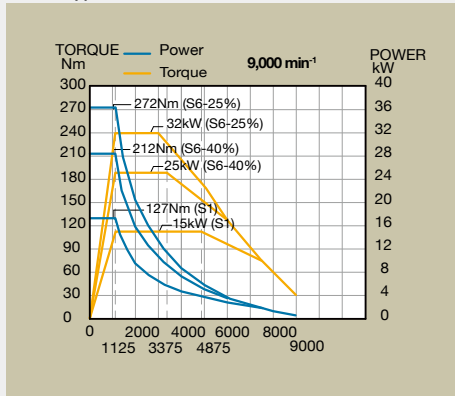






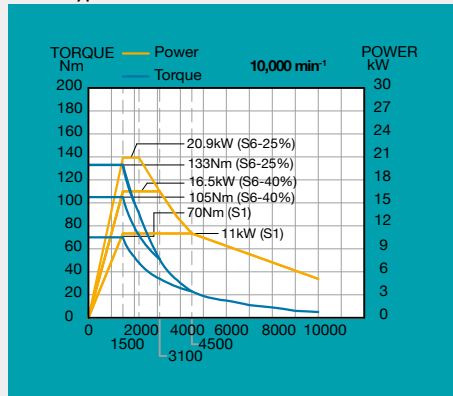
### GB-4.0R

Belt  
Motor type: QAN260M



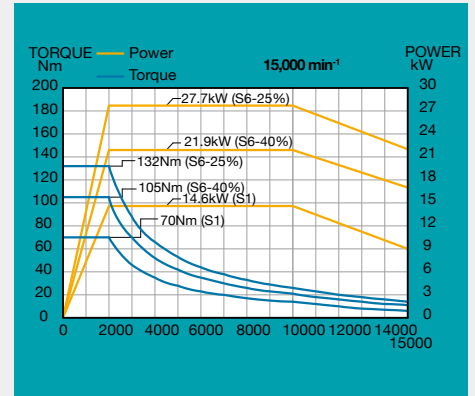
### GB-4.1

Belt  
Motor type: 1PH8131

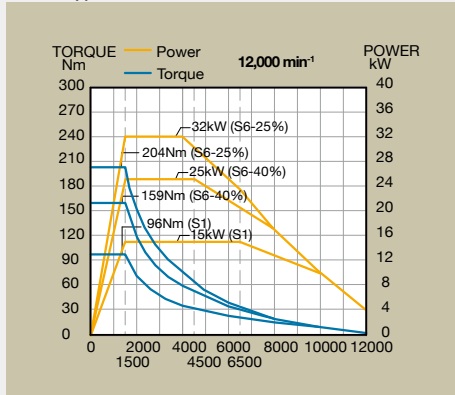


### GC-4.1R/MC-4.1R

Coupling  
Motor type: 1PH8131

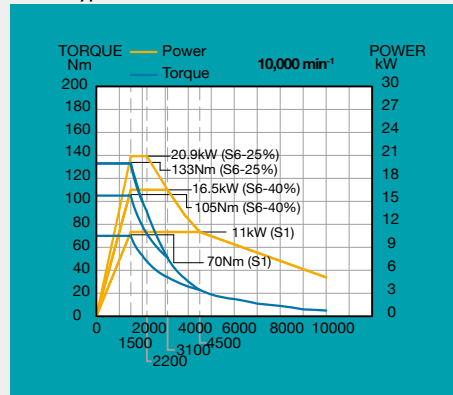


Belt  
Motor type: QAN260M

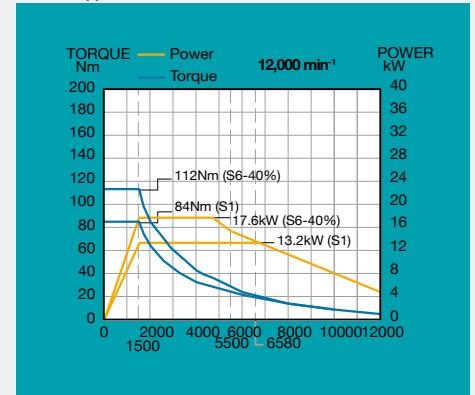


### SC-4.1

Coupling  
Motor type: 1PH8131

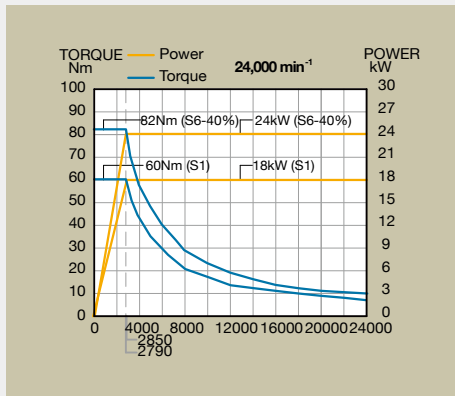


Coupling  
Motor type: 1PH8133



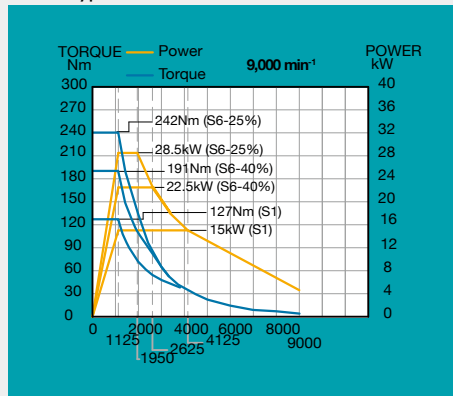
### GM-4.0A

Motor spindle

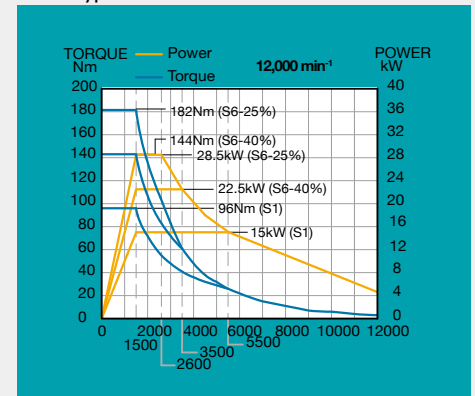


### GB-4.0R

Belt  
Motor type: 1PH8133

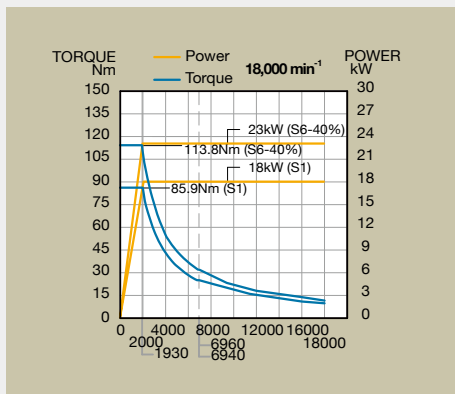


Belt  
Motor type: 1PH8133



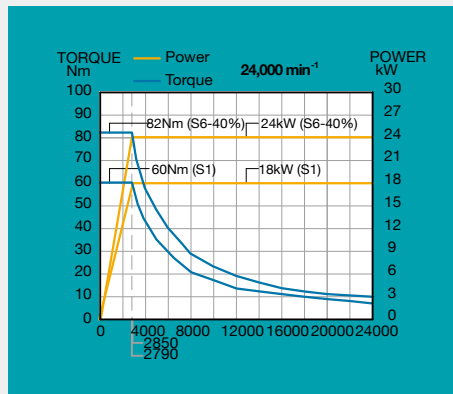
### GM-4.1A

Motor spindle



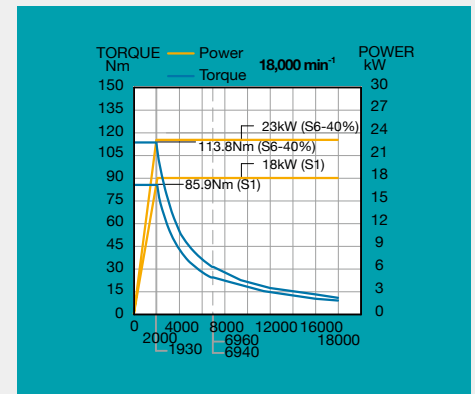
### GM-4.0A

Motor spindle

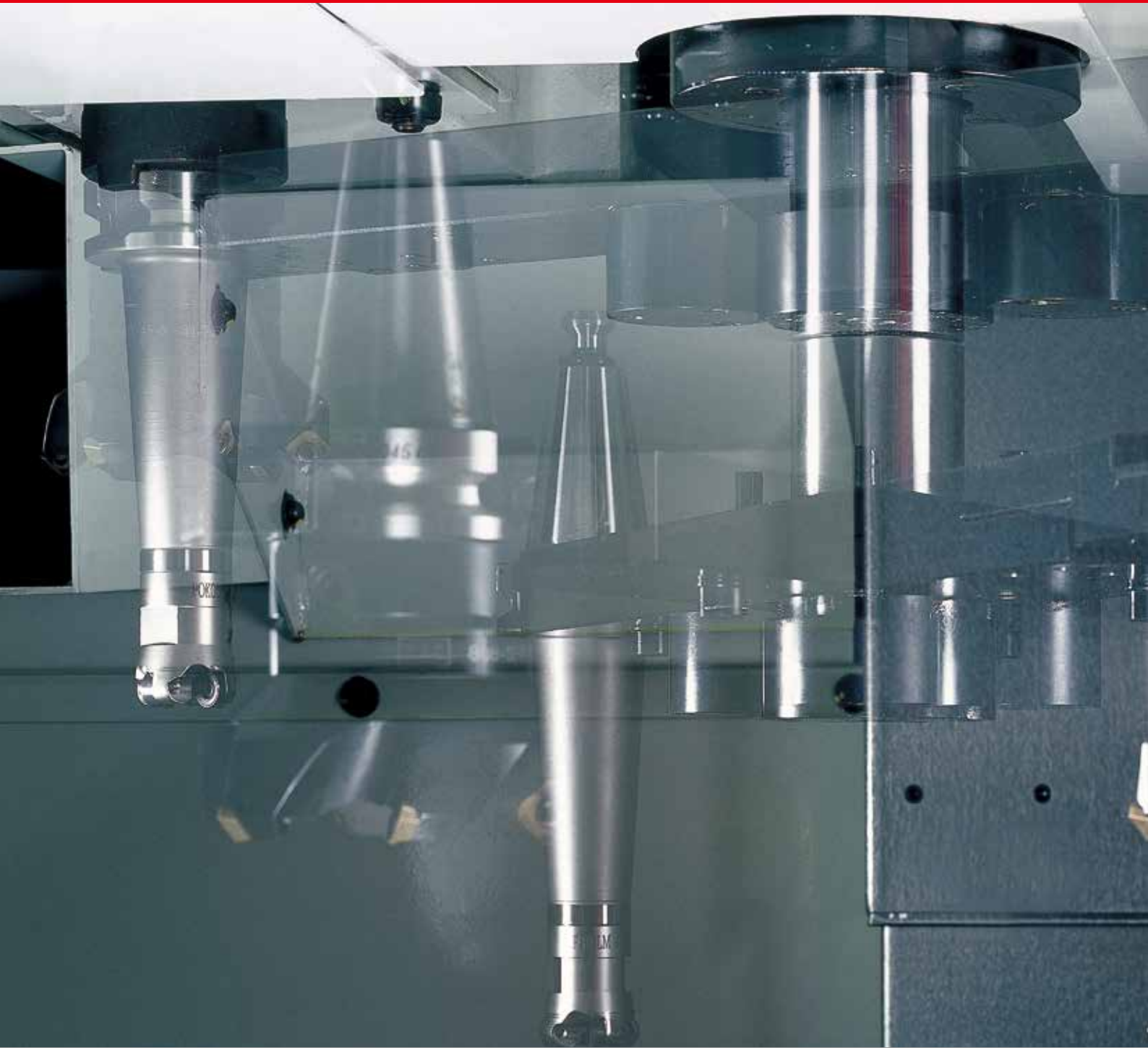


### GM-4.1A

Motor spindle

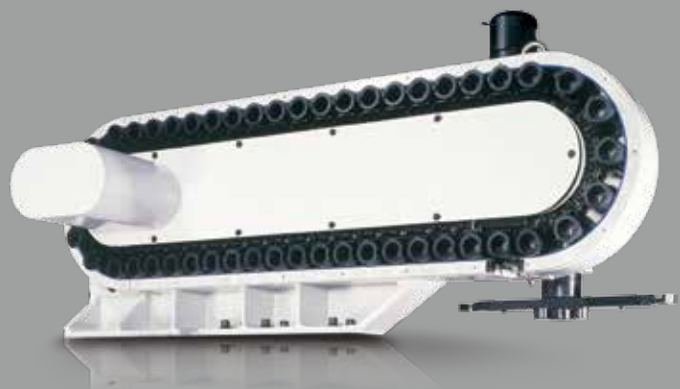


# ATC system



30 ATC (std.)

48 ATC (opt.)





60 ATC (opt.)

ATC auto door (opt.)



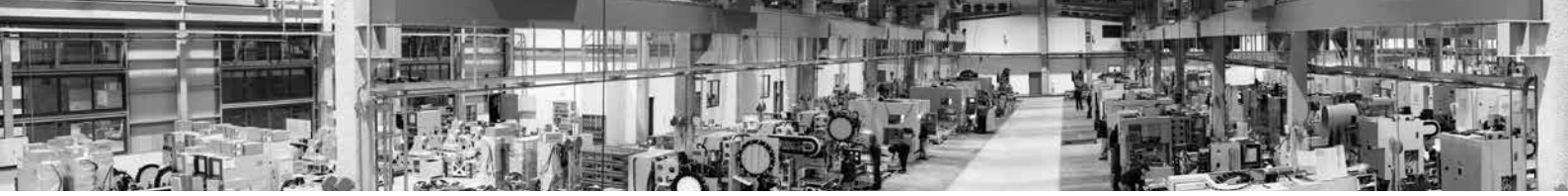


# Coolant system & Chip management



		MV154C MV184C	MV154E MV184E	MV154P MV184P	MV154M MV184M
<b>A</b>	Coolant tank	300 Liter			
<b>B</b>	Coolant through spindle	-	8 bar	20 bar	
<b>C</b>	Nozzle coolant	3 bar			
<b>D</b>	Wash gun	Std.			
<b>E</b>	Chip augers	Std.			
<b>F</b>	Chip conveyor	Scraper type	Opt.	Std.	
<b>G</b>	Filtration unit	-	Opt.		
<b>H</b>	Wash down	3 bar			







# Easy operation





- a** Swiveling operator panel.
- b** Single door design open at
  - MV154: 900 (mm)
  - MV184: 1,150 (mm)
- c** Spindle to front at a convenient
  - MV154: 753 (mm)
  - MV184: 870 (mm)
- d** Table to front-easy access
  - MV154: 168 (mm)
  - MV184: 265 (mm)

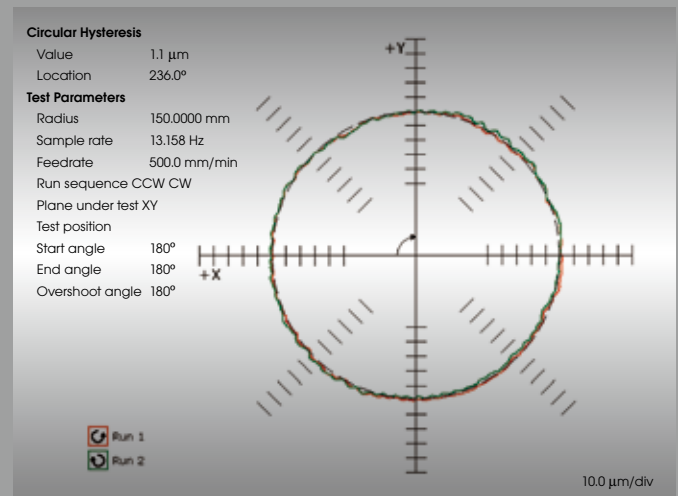
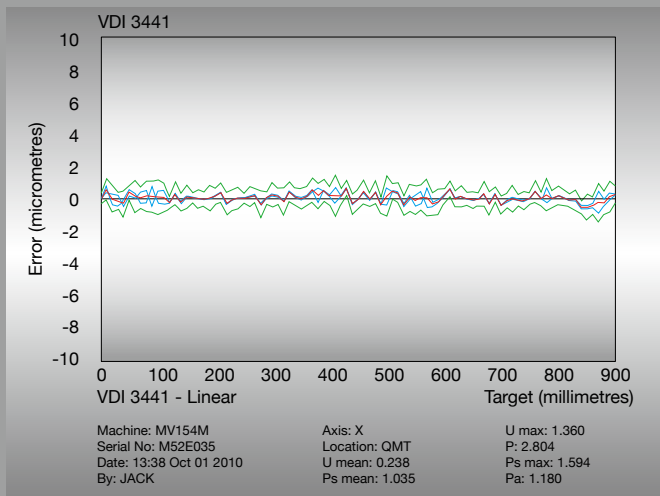


# Precision accuracy



Positioning accuracy=1.180 μm VDI 3441

Feed rate: 500 mm / min, Value: 1.1 μm



Note: The above data is sampled randomly selected from M-model machine.

ISO 10791-1 / ISO 10791-4.2		ISO STANDARD	QUASER STANDARD	
			(MV154/C & /E & /P) (MV184/C & /E & /P)	(MV154M / MV184M)
Straightness	X	0.015 / Full Stroke	0.010 / Full Stroke	0.005 / 0.008
	Y	0.010 / Full Stroke	0.010 / Full Stroke	0.005 / 0.005
	Z	0.010 / Full Stroke	0.010 / Full Stroke	0.005 / 0.005
Perpendicularity	X-Y	0.02 / 500	0.01 / 500	0.006 / 0.006
	Y-Z	0.02 / 500	0.01 / 500	0.006 / 0.006
	Z-X	0.02 / 500	0.01 / 500	0.006 / 0.006
Positioning accuracy (VDI 3441)	X	0.02	0.01	0.003 / 0.005
	Y	0.016	0.008	0.003 / 0.003
	Z	0.016	0.008	0.003 / 0.003
Positioning repeatability (VDI 3441)	X	0.008	0.004	0.002 / 0.003
	Y	0.006	0.004	0.002 / 0.002
	Z	0.006	0.004	0.002 / 0.002
Spindle run-out on table surface (for 300 mm distance)		0.02 / 300	0.01 / 300	0.005 / 0.005
Spindle run-out (with a test bar mounted)	At base	0.01	0.004	0.003 / 0.003
	At 300 mm	0.02	0.008	0.006 / 0.006
Circularity (Ø300 mm, F5000 & F500)	CW	N.A	0.010	(0.003 / 0.003)*
	CCW	N.A	0.010	(0.003 / 0.003)*

Note: \* Ø300 mm, F500

Unit: mm

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





## Results

Text island height

$Q = 3.0 \mu\text{m}$

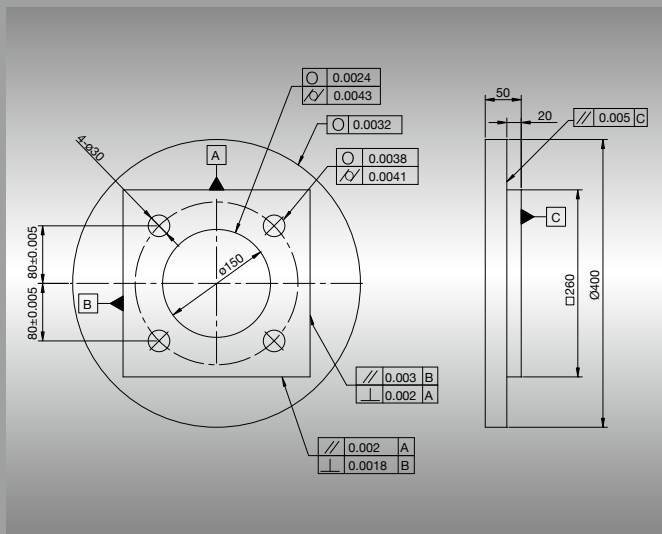
$U = 2.5 \mu\text{m}$

$A = 2.0 \mu\text{m}$

$S = 1.5 \mu\text{m}$

$E = 1.0 \mu\text{m}$

$R = 0.5 \mu\text{m}$



High accuracy machining part by **M model**, and measuring by (LEITZ) pmmc.

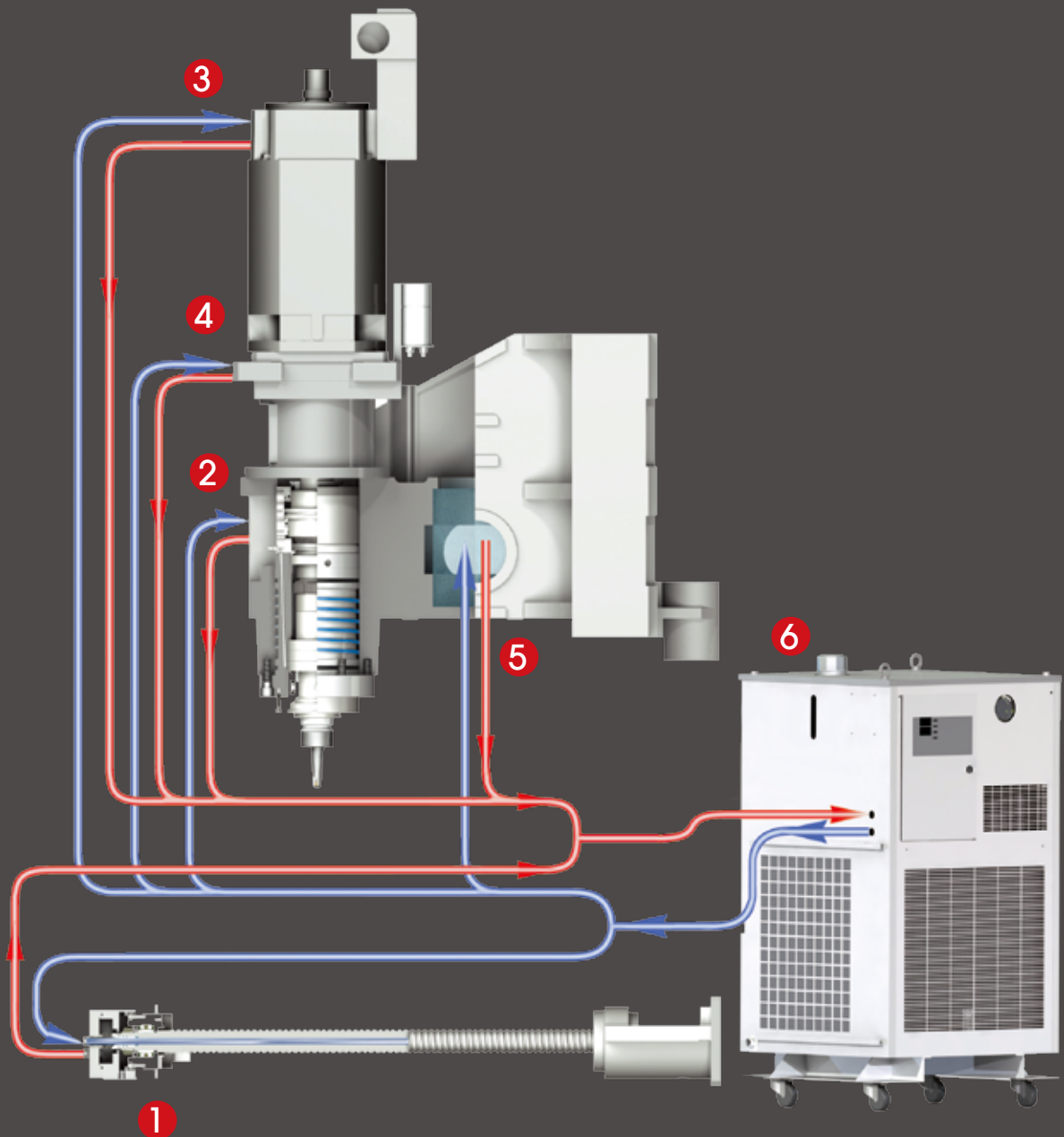


# Precision accuracy



To meet more and more severe "WORKING ACCURACY" requirements, our "THERMAL MANAGEMENT":

- 1 Coolant through ball screw.
- 2 Spindle cooling circuit.
- 3 Motor cooling circuit.
- 4 Motor mounting block cooling circuit.
- 5 Head stock cooling chamber. (Only GC-4.0R)
- 6 Oil chiller.







Heat generated from spindle and spindle motor are quickly removed by cooling circuits on spindle housing, spindle motor, motor mounting plate and spindle head, the heat is exchanged by large capacity oil chiller, plus thermal compensation function to reduce thermal impact to minimum.



### Thermal compensation on X, Y & Z

Before

After



Control: (F)=FANUC (T)=HEIDENHAIN (M)=MITSUBISHI (S)=SIEMENS

Technical data		MV154 / MV184				
		C			E	
Spindle code		10B	10C	12C	9B	12B
<b>Work range</b>						
Table size (mm)		900 x 500 1,200 x 600				
Travel X / Y / Z (mm)		762 / 530 / 560 1,020 / 610 / 610				
Spindle nose to table surface (mm)		150 ~ 710 100 ~ 710				
Table load capacity (kg)		500				
<b>Feed drive</b>						
Feed force X / Y / Z (N)	F	5,760 / 5,760 / 10,472			4,712 / 4,712 / 11,519	
	T	-			6,807 / 6,807 / 13,902	
	M	-	6,283 / 6,283 / 17,671		-	
	S	4,712 / 4,712 / 15,708			-	
Rapid movement X / Y / Z (m/min)		32 / 32 / 24 (F) (M) (S)			40 / 40 / 36 (F) 32 / 32 / 24 (T)	
Acceleration X / Y / Z (m/s <sup>2</sup> )	F	4 / 4 / 3			5 / 4 / 4	
	T	-			2 / 2 / 2	
	M	-	2.9 / 2.9 / 2.8		-	
	S	4 / 3 / 2			-	
Dia. & pitch of the ball screw		Ø45 / P = 12 / 12 / 12 (F) Ø45 / P = 12 / 12 / 8 (M) Ø45 / P = 16 / 16 / 8 (S)			Ø45 / P = 16 / 16 / 12 (F) Ø45 / P = 12 / 12 / 8 (T)	
<b>Accuracy Positioning / Repeatability</b>						
ISO 230-2		0.008 / 0.004				
JIS 6338 (300 mm)		±0.003 / ±0.002				
VDI 3441		0.008 / 0.004				
<b>Main spindle</b>						
Spindle model		40 Taper				
Max. spindle speed		10,000			12,000	9,000 12,000
Spindle base speed	F/M	1,350 / -	1,350 / 1,500	1,350 / 1,400	1,125 / -	1,500 / -
	T/S	- / 1,500	- / 1,500	- / 1,500	1,125 / -	1,500 / -
Spindle power output kW	(S3-25%)/30min. F/M	15 / -	15 / 11	15 / 18.5	18.5 / -	
	(S6-25%) T/S	- / 20.9	- / 20.9	- / 17.6 <sup>(1)</sup>	17 / -	
Spindle torque output Nm	(S3-25%)/30min. F/M	106 / -	106 / 70	106 / 102	157 / -	118 / -
	(S6-25%) T/S	- / 133	- / 133	- / 112 <sup>(1)</sup>	144 / -	108 / -
Spindle transmission		Belt	Coupling		Belt	
Spindle diameter (mm)		Ø70				
<b>Tool changer</b>						
Tool selection		Random				
Magazine positions		30			30 (std.) 48 & 60 (opt.)	
Max. tool diameter (mm)		76.2				
Max. tool dia. Due to neighbor pots are empty		125				
Max. tool length (mm)		280				
Max. tool weight (kg)		7				
CTC time-ISO 10791-9 (sec.)-60Hz		5 (F) 4 (M) 5.5 (S)			4 (F) 5 (T)	
<b>Coolant system</b>						
Coolant tank capacity (Liter)		300				
Pump capacity <sup>(4)</sup>						
-Nozzle coolant		75 L / min., 3 bar				
-Through spindle coolant		-			25 L / min., 8 bar	
-Wash down		75 L / min., 3 bar				
<b>Machine size</b>						
Height (mm)		2,955 / 2,860	3,060 / 3,070		2,955 / 2,860	
<sup>(3)</sup> Floor space W x D (mm)	30 ATC	2,100 x 2,600 2,515 x 2,800			2,540 x 2,600 / 2,760 x 2,800	
	48 / 60ATC	-			2,540 x 2,625 / 2,540 x 3,005 2,760 x 2,835 / 2,760 x 3,210	
Weight (kg)		6,300 / 7,290			6,400 / 7,390	
<b>Connections</b>						
Main power		200V / 60Hz or 400V / 50Hz				
Power consumption (KVA)		16 (F) 17.5 (M) 25 (S)	16 (F) 20 (M) 29 (S)	20 (F) 21 (T)		

Note: <sup>(1)</sup> (S6-40%) <sup>(2)</sup> (S3-60%) <sup>(3)</sup> Without oil chiller please ref. page23. <sup>(4)</sup> At 60 Hz <sup>(5)</sup> Only for FANUC control

Main spindle: (B) Belt spindle (C) Coupling spindle (A) Oil air motor spindle

MV154 / MV184									
P					M				
9B	12B	15C	20C <sup>(5)</sup>	18A	24A	15C	20C <sup>(5)</sup>	18A	24A
900 x 500					1,200 x 600				
762 / 530 / 560					1,020 / 610 / 610				
150 ~ 710					100 ~ 710				
500									
4,712 / 4,712 / 11,519					-				
6,951 / 6,951 / 11,310		6,951 / 6,951 / 13,666			17,279 / 17,279 / 23,562			-	
-					-				
4,712 / 4,712 / 14,137					-				
40 / 40 / 36 (F) (T) (S)					24 (F) (T)		24 (T)		
6 / 5 / 4					-				
5 / 4 / 5					10 / 10 / 8.5				
-					-				
6 / 5 / 5					-				
Ø45 / P = 16 / 16 / 12					Ø45 / P = 8 / 8 / 8				
0.008 / 0.004									
±0.003 / ±0.002									
0.008 / 0.004									
40 Taper									
9,000	12,000	15,000	20,000	18,000	24,000	15,000	20,000	18,000	24,000
1,125 / -	1,500 / -	1,400 / -	1,500 / -	-	-	1,400 / -	1,500 / -	-	-
1,125	1,500	2,000	-	2,000	2,850	2,000 / -	-	2,000 / -	2,850 / -
25 / -	26 / -	15 <sup>(2)</sup> / -	-	-	-	26 / -	15 <sup>(2)</sup> / -	-	-
32 / 28.5	27.7	-	23 <sup>(1)</sup>	24 <sup>(1)</sup>	27.7 / -	-	23 <sup>(1)</sup> / -	24 <sup>(1)</sup> / -	-
212 / -	159 / -	177 / -	96 <sup>(2)</sup> / -	-	-	177 / -	96 <sup>(2)</sup> / -	-	-
272 / 242	204 / 182	132	-	113.8 <sup>(1)</sup>	82 <sup>(1)</sup>	132 / -	-	113.8 <sup>(1)</sup> / -	82 <sup>(1)</sup> / -
Belt		Coupling		Motor spindle		Coupling		Motor spindle	
Ø70		Ø70(Ø80)		Ø70		Ø70(Ø80)		Ø70	
Random									
30 (std.) 48 & 60 (opt.)									
76.2					-				
125					76.2				
280					200				
7					4.5				
4 (F) 4.5 (T) 5.5 (S)					4.5 (T) 5.5 (S)				
4 (F) 5 (T)					5 (T)				
300									
75 L / min., 3 bar					75 L / min., 3 bar				
25 L / min., 8 bar					25 L / min., 20 bar				
75 L / min., 3 bar					75 L / min., 3 bar				
2,955 / 2,860		3,055 / 3,065		3,020 / 2,870		3,055 / 3,065		3,020 / 2,870	
2,540 x 2,600 2,760 x 2,800									
2,540 x 2,625 / 2,540 x 3,005 2,760 x 2,835 / 2,760 x 3,210									
6,400 7,390									
200V / 60Hz or 400V / 50Hz									
25 (F) (T) 29 (S)		33 (F) (T) 38 (S)		42 (T) 35 (S)		33 (F) (T)		43 (T)	

Note: Machine specification might be different from the catalogue if there is any specification update.

●=Standard ○=Option ×=N/A

Standard / Option accessories	MV154 / MV184				
	C			E	
Spindle code	10B	10C	12C	9B	12B
■ QUASER mill i	○	○	○	○	○
■ FANUC 31iB	×	×	×	×	×
■ AICC II (Look-ahead 200 blocks)	○	○	○	○	○
■ FANUC - data server	○	○	○	○	○
■ FANUC - high speed processing (Look-ahead 600 blocks)	×	×	×	×	×
■ HEIDENHAIN TNC640	×	×	×	×	×
■ HEIDENHAIN Option2	×	×	×	×	×
■ HEIDENHAIN TNC620	×	×	×	○	○
■ SIEMENS 828D	○	○	○	×	×
■ MITSUBISHI M80 (package A)	×	○	○	×	×
■ MITSUBISHI M830	×	○	○	×	×
■ Tooling - BT40	●	●	●	●	●
■ - ISO40 & DIN	○	○	○	○	○
■ - HSK A63	×	×	×	×	×
■ Pull stud for BT tooling	○	○	○	●	●
■ Balance tooling for spindle warm up	○	○	○	●	●
■ Spindle re-greasing system	×	×	×	●	●
■ BBT spindle attachment (simultaneous contact)	●	●	●	●	●
■ Spindle ECO cooler	●	●	×	●	●
■ Spindle oil chiller <sup>(1)</sup>	○	○	●	○	○
■ 30 position tool magazine	●	●	●	●	●
■ 48 position tool magazine	×	×	×	○	○
■ 60 position tool magazine	×	×	×	○	○
■ ATC auto door	×	×	×	○	○
■ 4 <sup>th</sup> axis preparation	×	×	×	●	●
■ Ø255 mm rotary table & tail stock	×	×	×	○	○
■ Remote MPG*	○	○	○	○	○
■ Transformer	○	○	○	●	●
■ Linear encoder	×	×	×	○	○
■ Coolant through ball screw	×	×	×	×	×
■ Thermal compensation	×	×	×	×	×
■ Spindle nose thermal compensation package (Z direction < 15µm)	×	×	×	×	×
■ Work probe	×	×	×	○	○
■ Tool length / breakage measurement	○	○	○	○	○
■ Coolant wash down & wash gun	●	●	●	●	●
■ 8 bar through spindle coolant	×	×	○ <sup>(2)</sup>	●	●
■ 20 bar through spindle coolant	○	×	○ <sup>(2)</sup>	○	○
■ 50 bar through spindle coolant	×	×	○ <sup>(2)</sup>	○	○
■ Stainless steel chip pan	●	●	●	●	●
■ Cutter air blast	●	●	●	●	●
■ Chip conveyor	○	○	○	●	●
■ Oil-mist collector	○	○	○	○	○
■ Bag filtration	○	○	○	○	○
■ Filtration unit	○	○	○	○	○
■ Documentation (paper)	○	○	○	○	○
■ Foundation bolts & blocks	●	●	●	●	●
■ Work light	●	●	●	●	●
■ Machine status light	●	●	●	●	●
■ CE & EMC <sup>(3)</sup> / GB	○	○	○	○	○

Note: <sup>(1)</sup> The chiller cooling capacity are different depends on models. <sup>(2)</sup> Not available on Fanuc model.  
<sup>(3)</sup> Standard for Eu area except C type. \* HEIDENHAIN standard



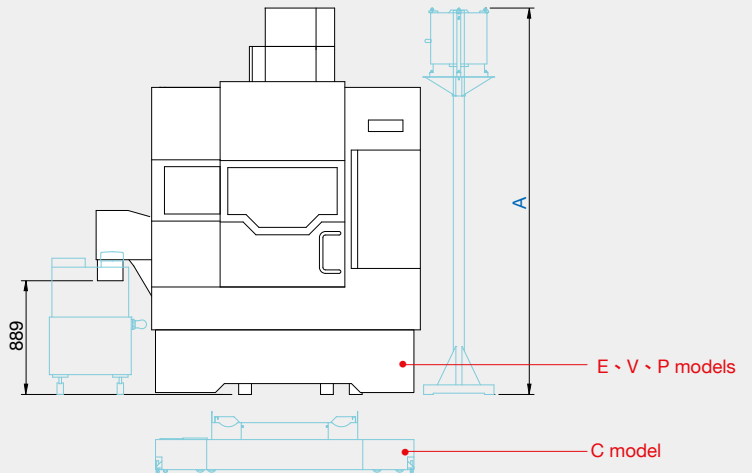
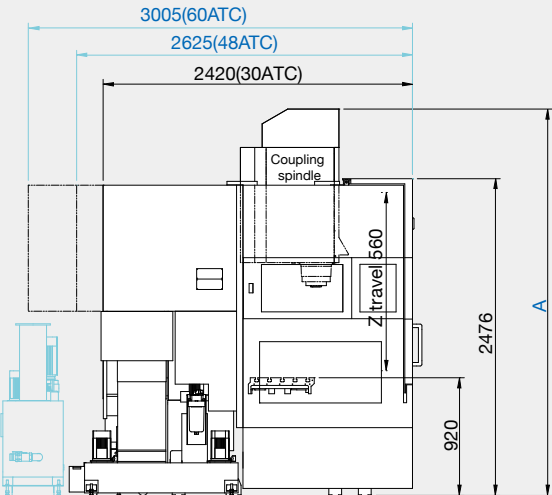
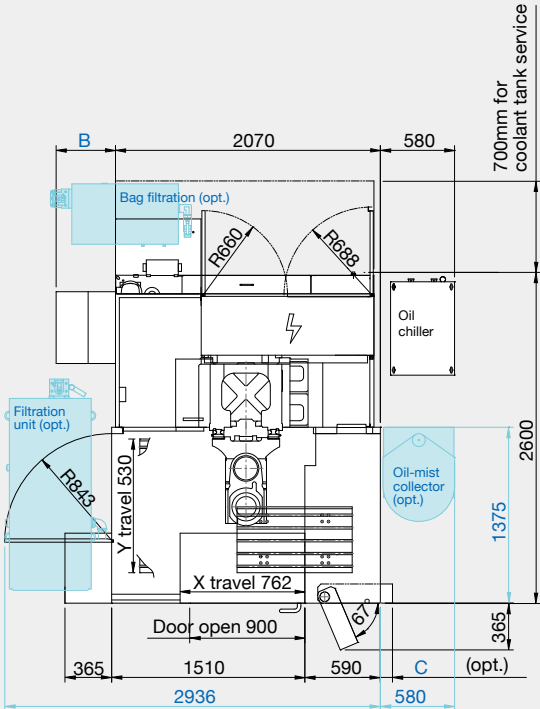




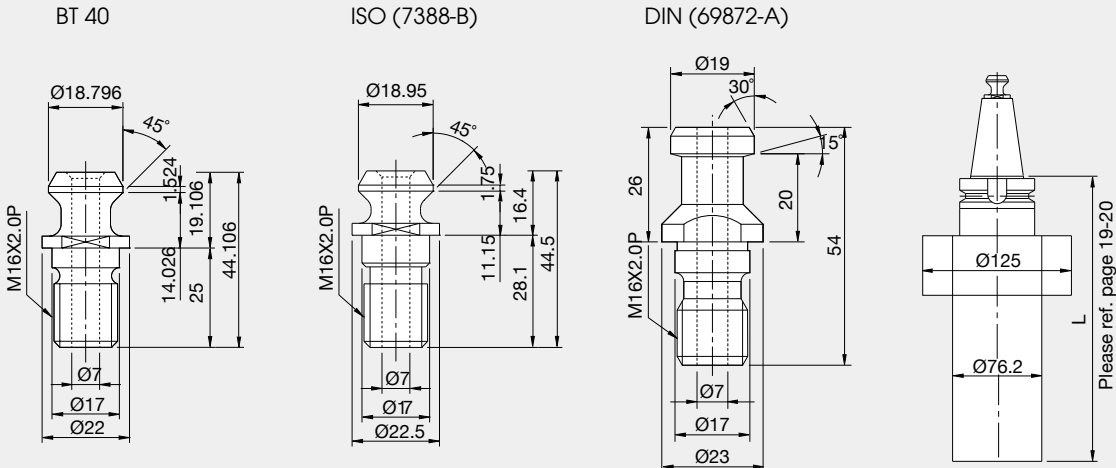
# Machine Dimensions

## Installation dimension

MV154 C / E / P / M		
<b>A</b>	10C / 12C	3,060
	9B / 10B / 12B	2,955
	15C / 20C	3,055
	18A / 24A	3,020
<b>B</b>	Chip conveyor	465
<b>C</b>	M720	95



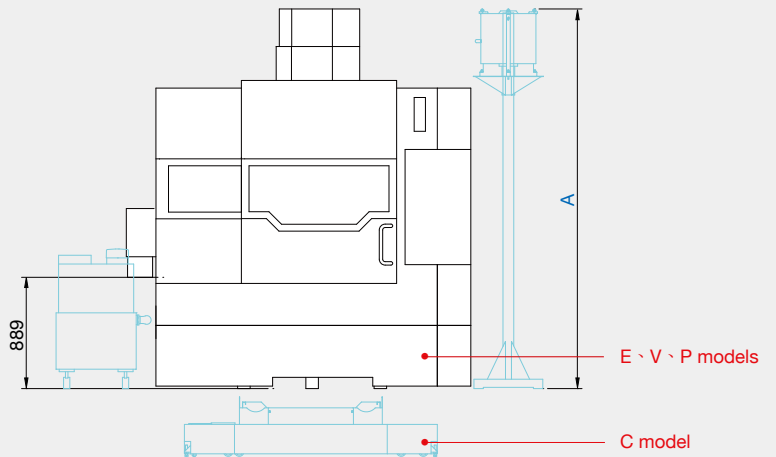
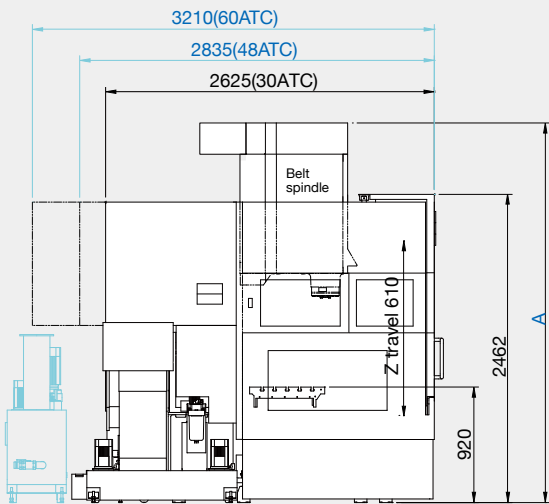
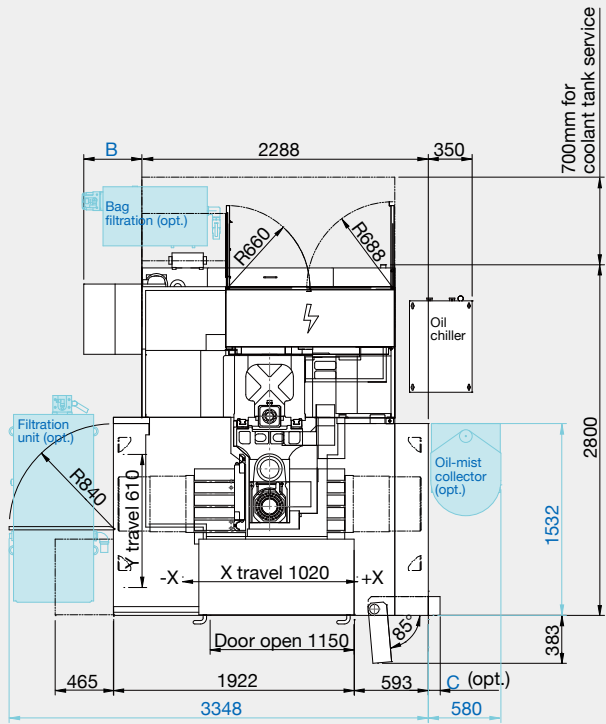
## Pull stud and applicable tools





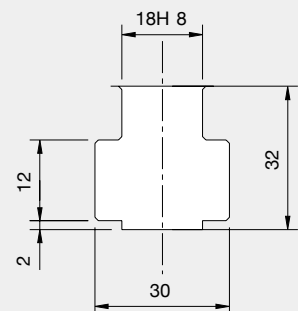
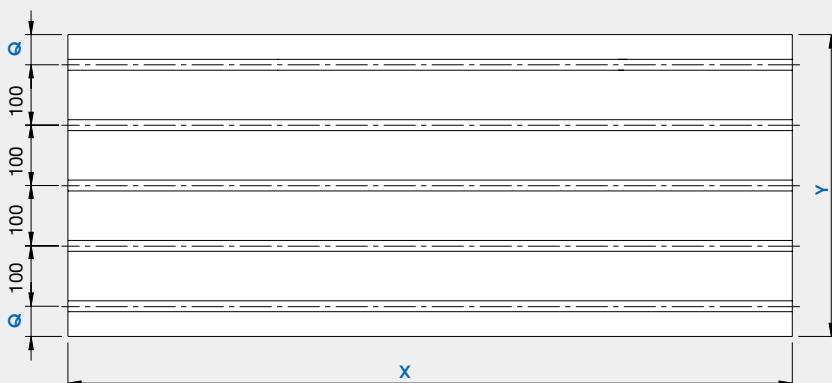
## Installation dimension

MV184 C / E / P / M		
<b>A</b>	10C / 12C	3,070
	9B / 10B / 12B	2,860
	15C / 20C	3,065
	18A / 24A	2,870
<b>B</b>	Chip conveyor	465
<b>C</b>	M720	95



## Table dimension

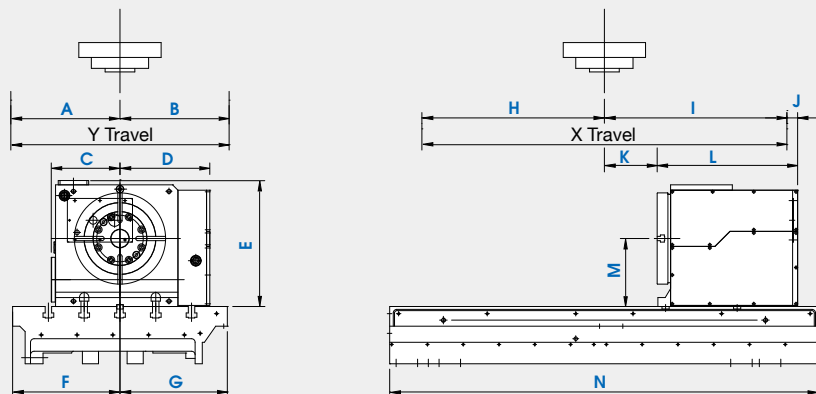
	MV154	MV184
<b>X</b>	900	1200
<b>Y</b>	500	600
<b>Q</b>	50	100



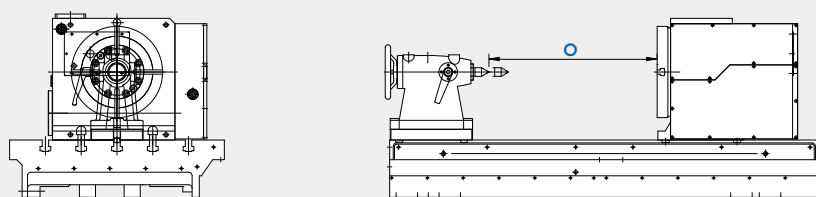
# Layout

## 4th axes

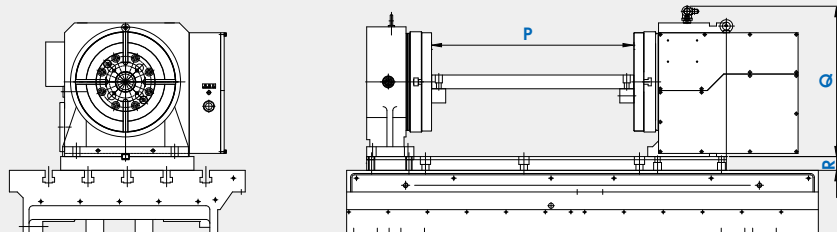
GV255HB



GV255HB+ST255



GV255HB+Fixture 2



	MV154	MV184
<b>A</b>	265	305
<b>B</b>	265	305
<b>C</b>	192	192
<b>D</b>	251	251
<b>E</b>	352	352
<b>F</b>	265	300
<b>G</b>	250	300
<b>H</b>	381	510
<b>I</b>	381	510
<b>J</b>	98	30
<b>K</b>	55.5	147.5
<b>L</b>	392.5	392.5
<b>M</b>	190	190
<b>N</b>	900	1200
<b>O</b>	230	470
<b>P</b>	300	515
<b>Q</b>	385	385
<b>R</b>	35	35

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