

612/618/818 SP

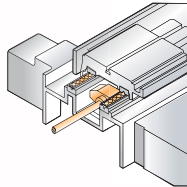
SUPER PRECISION SURFACE AND FORM GRINDER

MACHINE FEATURES

- Table traverses on linear ball bearings and D2 (SKD11) hardened and ground guideways.
- Reinforced ribbed column with hardened and ground guideway system.
- Elevating and crossfeed leadscrews are hardened and ground.
- Saddle travels on Turcite-B coated and hand-scraped Double-V guideways.
- Vertical handwheel at waist level.
- 0.001mm (0.000050") vertical micro-feed device.
- Permanently lubricated and sealed cartridge-type spindle uses two pairs of Class 7(P4) angular contact ball bearings.
- 2HP dynamically balanced spindle motor.
- Automatic lubrication system.
- Meehanite castings.
- A mirror surface can be accomplished on these machines accurately and efficiently due to machine construction features and the specially designed V3 grade spindle motor that provide excellent rigidity and stability.

Table Guideways

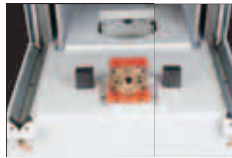
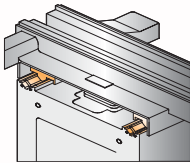
- Table is driven by steel wire and traverses on hardened and ground guideways with steel ball bearings which have been accurately sieved. This provides smooth, accurate, and efficient table movement.



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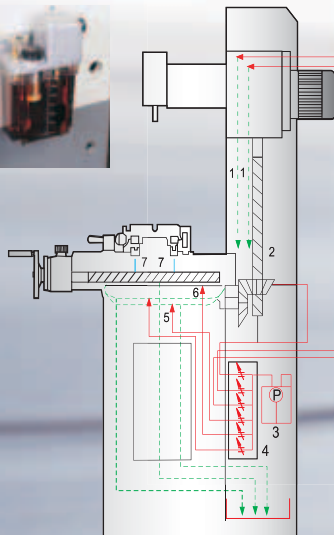
Durable Slideways

- Machine-base slideways are laminated with Turcite-B and precisely hand-scraped, low-friction slideways incorporated with an automatic intermittent lubrication system to ensure high accuracy and longer life of slideways.



Automatic Lubrication

- The lubrication system provides lube oil to saddle, column ways, crossfeed and elevating leadscrews. This system minimizes the wear due to negligent operation, ensuring the machine accuracy and extending the life of machine. (3cc / 30 min).



1. Column slideways
2. Elevating leadscrew
3. Lubricator
4. Oil Distributor
5. Machine base Double-V slideways
6. Crossfeed leadscrew
7. Table guideways with ball bearings are lubricated by grease.

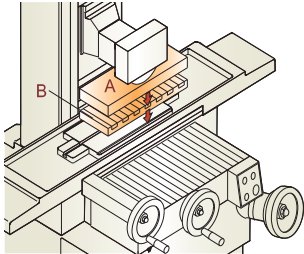
- Feed Loop
- Return Loop
- Grease Lubrication



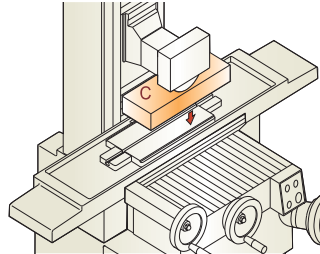
818SP

Note: Machine shown with optional accessories

PERMISSIBLE LOAD OF MACHINE



Grinding with
Electromagnetic Chuck



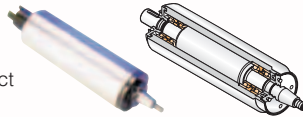
Grinding without
Electromagnetic Chuck

The total suggested maximum workloads of table are shown as follows:

MODEL	Kg (lbs.)		
	612SP	618SP	818SP
A	130 (286)	180 (396)	215 (474)
B	20 (44)	30 (66)	35 (77)
C	150 (330)	210 (462)	250 (551)

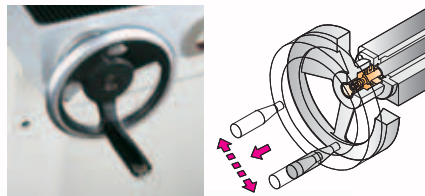
High Precision Cartridge Type Spindle

- Spindle is supported by four pieces of Class 7 (P4) super-precision angular-contact ball bearing. The bearings are accurately measured, selected and preloaded and assembled to ensure superior water resistance, longevity grinding accuracy and surface finish. The labyrinth seal type structure is designed to offer better water-resistance enhancing longevity of the spindle bearings.



Indexing Table Handwheel

- The table handwheel can be indexed to a comfortable position to enhance the ease of table traverse.



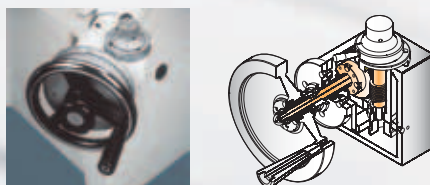
Wheelhead and Column

- The column casting is cross-ribbed for extra rigidity. The elevating guideways of wheelhead and column are hardened and ground. The sliding surfaces of the wheelhead are laminated with Turcite-B, providing accuracy of downfeed and machine longevity.



Elevating Micro-Feed Device

- The micro-feed device utilizes a worm and worm gear for vertical feeds in increments of $1 \mu\text{m}$ (0.000050"). The micro-feed device is engaged by turning the lever clockwise, which also locks the handwheel to prevent any danger caused by accidentally touching the handwheel. Operation of the handwheel can be resumed by turning the lever counter-clockwise.



TYPICAL ACCURACY



Parallelism of upper and lower sides of the workpiece within 0.002mm (0.0001")

Conditions:

- Material: SAE1045 (S45C), HRC45
- Workpiece Size: $\varnothing 25.4 \times 25.4\text{mm}$ (1" x 1")
- Grinding Wheel: 38A46H (or equivalent)
- Dressing Speed: 0.04~0.12inch/sec. (1~3 mm/sec.)
- Specification of Dressing Diamond: 0.5~1.0 carat
- Dressing Depth: 0.003~0.006mm (0.0001"~0.0002")
- Table Speed: 33~66 fpm (10~20 m/min)
- Grinding Depth per Stroke: 0.001~0.005mm (0.000050"~0.0002")
- Room Temperature: 20~25°C (68~77°F)
- Grinding Wheel Size: $\varnothing 203 \times 12.7 \times \varnothing 31.74\text{mm}$ ($\varnothing 8" \times 1/2" \times \varnothing 1 1/4"$)



Surface finish better than (or equal to) R_{max} 0.3S (3 micro inch AA) Conditions:

- Material: D2 (SKD11), HRC60
- Workpiece Size: 100mm x 100mm (3.93" x 3.93")
- Grinding Wheel: ELBE 89A60-2111V26 (or equivalent)
- Dressing Speed: 16 mm/sec. (0.629"/sec.)
- Specification Of Dressing Diamond: 0.5~1.0 carat
- Dressing Depth: 0.01mm (0.0004")
- Table Speed: 24.38m / min(80 fpm)
- Grinding Depth Per Stroke: 0.001mm (0.000050")
- Crossfeed: 0.4mm (0.016")
- Room Temperature: 20~25°C (68~77°F)
- Grinding Wheel Size: $\varnothing 203 \times 12.7 \times \varnothing 31.74\text{mm}$ ($\varnothing 8" \times 1/2" \times \varnothing 1 1/4"$)

SPECIFICATION

Description		Unit	FSG-618M	FSG-2A618	
Table size		mm (")	150 x 460 (5 7/8" x 18.1")		
Max. grinding length	Longitudinal	mm (")	462 (18.18")		
Max. grinding width	Crosswise	mm (")	152 (6")		
Max. distance from table surface to spindle centerline		mm (")	450 (17 3/4")		
Standard magnetic chuck size		mm (")	150 x 450 (5 7/8" x 17 3/4")		
Longitudinal movement of table	Travel, hydraulic	mm (")	N/A	500 (19 3/4")	
	Max. travel, manual	mm (")	482 (18.98")	510 (20")	
	Table speed, variable	m/mm (fpm)	N/A	5~25 (16~82)	
Cross movement of table	Rapid travel, approx.	mm/min (ipm)	N/A	960 (48)	
	Auto increment	mm (")	N/A	0.4~6 (0.016"~0.24")	
	Max. auto travel	mm (")	N/A	171 (6 3/4")	
	Max. manual travel	mm (")	180 (7")		
	Handwheel per revolution	mm (")	3 (0.12")		
	Handwheel per graduation	mm (")	0.01 (0.0005")	0.01(0.0005")	
	Micro Feed	mm (")	N/A		
Wheelhead vertical infeed	Automatic infeed	mm (")	N/A		
	Handwheel per revolution	mm (")	2 (0.08")		
	Handwheel per graduation	mm (")	0.01 (0.0005")		
	Micro feed	Rapid travel, approx.	mm/min (ipm)	N/A	
		Per revolution feed	mm (")	1 (0.04")	
Per graduation		mm (")	N/A		
Grinding spindle drive	Speed	Hz / rpm	60 / 3,450, 50 / 2,850		
	Power rating	Kw (HP)	1.5 (2)		
Hydraulic drive	Standard accessory/ Power rating	Kw (HP)	N/A	0.75 (1)	
Crossfeed drive	Standard accessory/ Power rating	W (HP)	N/A	40 (0.05)	
Elevating drive	Standard accessory/ Power rating	Kw (HP)	N/A		
Standard grinding wheel	Diameter	mm (")	Ø203 (8")		
	Width	mm (")	12.7 (1/2")		
	Bore	mm (")	Ø31.75 (1 1/4")		
Floor space (L x W x H)	Total space required	mm (")	1,900 x 1,400 x 2,130 (74.8" x 55" x 83.86")	1 900 x 1,600 x 2 ,130 (74.8" x 63" x 83.86")	
Net weight	Approx. Based on 3A	Kg (lbs.)	680 (1,496)	800 (1,760)	
Rated power	approx.	Kw (HP)	1.65 (2.2)	2.5 (3.3)	
Packing dimensions (L x W x H)		mm (")	1,120 x 1,016 x 2,159 (44" x 40" x 85")	1,550 x 1,120 x 2,133 (61" x 44" x 83.98")	

※ All content is for reference only and may be subject to change without prior notice or obligation.

	FSG-2A818	FSG-3A818	FSG-2A1224	FSG-3A1224	612SP	618SP	818SP
	203 x 457 (8" x 18")		305 x 610 (12" x 24")		152 x 330 (6" x 13")	152 x 480 (6" x 18.89")	203 x 480 (8" x 18.89")
	457 (18")		610 (24")		355 (14")	500 (19 3/4")	
	203 (7 7/8")		305 (12")		203 (8")		230 (9")
	450 (17 3/4")		630 (24.8")		500 (19 3/4")		
	200 x 450 (7 7/8" x 17 3/4")		300 x 600 (11 3/4" x 23 5/8")		150 x 300 (5 7/8" x 11-3/4")	150 x 450 (5 7/8" x 17 3/4")	200 x 450 (7 7/8" x 17 3/4")
	500 (19 3/4")		650 (25 5/8")		N/A		
	530 (20.87")		700 (27 1/2")		360 (14 1/8")	510 (20")	
	5~25 (16~82)		5~25 (16~82)		N/A		
	960 (48)		1,100 (56)		N/A		
	0.4~6 (0.016~0.24")		1~12 (0.04~0.47")		N/A		
	230 (9")		360 (14 1/8")		N/A		
	240 (9 1/2")		370 (14 1/2")		203 (8")	230 (9")	
	4 (0.16")		4 (0.16")		5 (0.2")		
	0.02 (0.001")		0.02 (0.001")		0.02 (0.001")		
	N/A		N/A		Opt. 0.001 (0.000050)		
	N/A	0.002~0.04 (0.0001"~0.002")	N/A	0.002~0.04 (0.0001"~0.002")	N/A		
	2 (0.08")		2 (0.08")		1(0.04")		
	0.01 (0.0005")		0.01 (0.0005")		0.005 (0.0002")		
	OPT.	330 (13) (3A only)	OPT.	330 (13)	330 (13) (opt.)		
	OPT.	0.2(0.01")(3A only)	OPT.	0.2 (0.01")	0.02 (0.001")		
	OPT.	0.002 (0.0001") (3A only)	OPT.	0.002 (0.0001")	0.001 (0.00005")		
	60 / 3,450, 50 / 2,850		60 / 1,750, 50 / 1,450		60/3,450, 50/2,850		
	1.5 (2)		3.7 (5)		1.5 (2)		
	0.75 (1)		1.5 (2)		N/A		
	40 (0.05)		40 (0.05)		N/A		
	0.19 (0.25) (2A opt.)		0.19 (0.25) (2A opt.) Standard Accessory		0.19 (0.25) (opt.)		
	Ø203 (8")		Ø355 (14")		Ø203 (8")		
	12.7 (1/2")		50 (1.97")		Opt. 12.7 (1/2"), Max. 25.4 (1")		
	Ø31.75 (1 1/4")		Ø127 (5")		Ø31.75 (1 1/4")		
	2,200 x 1,575 x 1,950 (86.6" x 62" x 76.78")		2,670 x 1,810 x 2,050 (105.12" x 71.26" x 80.7")		2,040 x 1,360 x 2,134 (80.3" x 53 1/2" x 84")	1,750 x 1,360 x 1,870 (68.89" x 53 1/2" x 73 3/4")	
	1,320 (2,907)		2,100 (4,620)		900 (1,980)	950 (2,090)	1,050 (2,310)
	3.7 (5)		7.5 (10)		1.65 (2.2)		
	1,854 x 1,549 x 2,210 (73" x 61" x 87")		2,743 x 1,905 x 2,235 (108" x 75" x 88")		1,473 x 1,232 x 2,134 (58" x 48.5" x 84")		