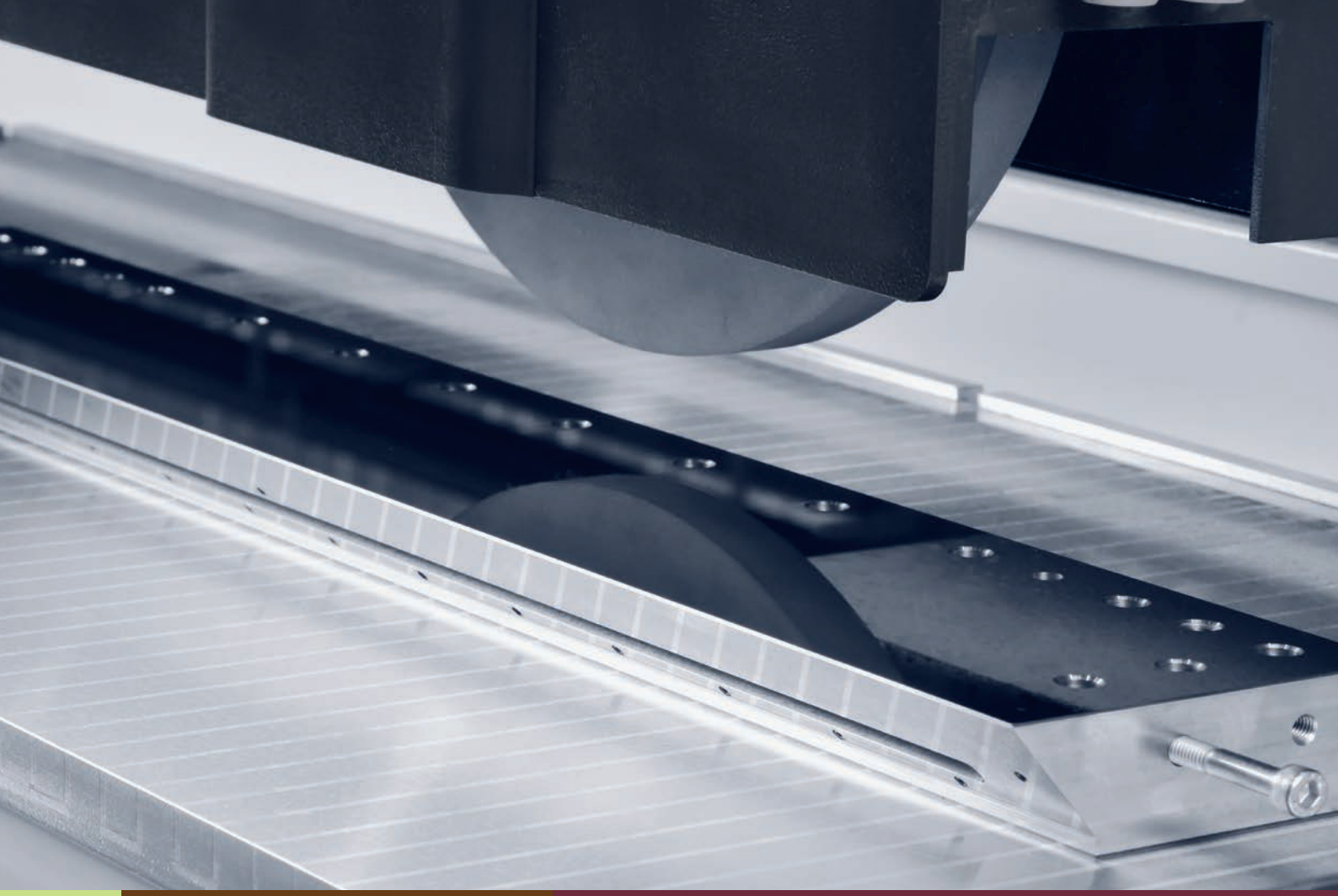


FSG-20/24 ADIV Series

Traveling Column, 3-axis, Fully Automatic Precision Surface Grinder

Improved grinding performance, precision and stability



CHEVALIER®

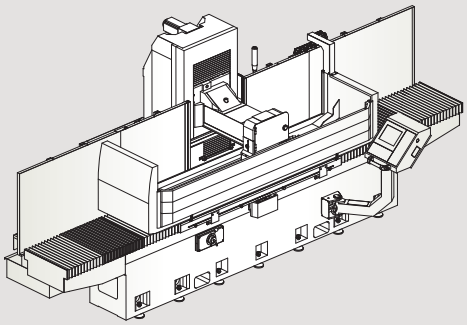
Grinding / Turning / Milling

We shape your ideas.™



Stronger rigidity produces less vibration and smoother movement for years of consistent, reliable operation

Traveling Column, 3-axis, Fully Automatic Precision Surface Grinder



Chevalier's FSG-20/24ADIV Series of surface grinders now includes four new machine sizes, along with several newly designed features: a traveling column structure to further reduce vibration and achieve higher accuracy; a spindle that can withstand heavy load grinding; and a double-V guideway for smooth, stable longitudinal movements. Fully supported worktable design. Maximum table speed: 30 m/min (98.4 fpm), increases processing efficiency. Integrated machine-body temperature control system greatly improves accuracy and stability.

These four larger sizes, along with the entire FSG-20/24ADIV Series, offer several design features to shorten processing and non-processing preparation while delivering high-precision workpieces: iSurface control, variable speed spindle, constant surface speed, smart grinding path and in-machine manual dynamic balancing.

The driving forces behind this series pave the way to smart manufacturing by meeting the current grinding demands and standards required by the automotive, electric vehicle, mining, aerospace and job shop industries.

This series of grinders also features tools to secure Big Data with Chevalier's exclusive iMachine Communications System™ (iMCS). Combined with data analysis, this software package enhances machine efficiency in the factory while enabling remote monitoring and diagnostics to track machine performance and identify potential problems before they begin.



The FSG-2064ADIV is shown with optional accessories.

Key Features and Benefits

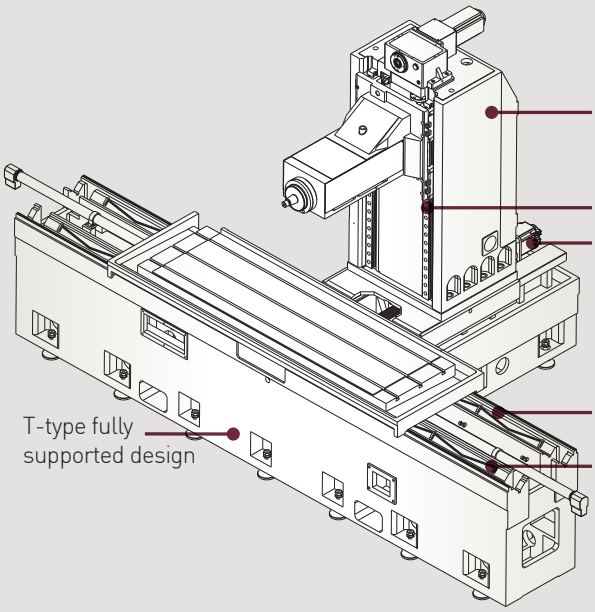
Machine construction

The machine structure is designed with the Finite Element Method (FEM). The column features a highly rigid, double-layer structure design. The base under the front part of the machine is a fully supported, single-piece design. The rear base is designed with a linear guideway.

The strong main structure supports heavy load grinding to greatly improve grinding performance, precision and stability. The co-temperature cooling system of the whole machine significantly improves accuracy and stability.

Transmission mechanism

The longitudinal guideway system incorporates double-V guideways, dual hydraulic cylinder and circulating oil-film guideway lubrication system. The elevating transmission mechanism is equipped with a linear guideway, ballscrew and AC servo motors. The cross-feed transmission mechanism uses highly rigid casting and linear guideways and a ballscrew, combined with direct-drive AC servo motors to improve grinding quality and achieve a mirror-finish.



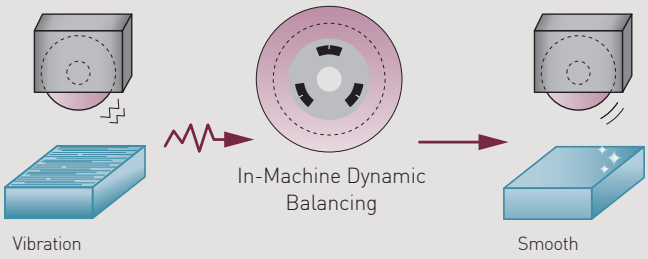
The longitudinal guideway system incorporates double-V guideways, dual hydraulic cylinder and a circulating oil-film guideway lubrication system



In-machine Dynamic Balancing

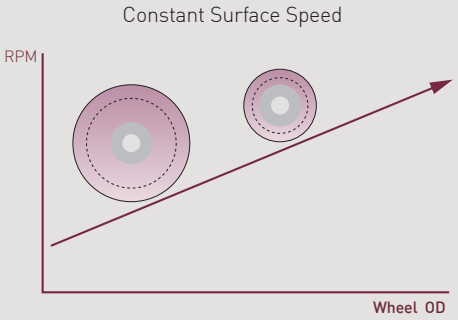
In-machine dynamic balancing

The control's data helps to set adjustments for the in-machine dynamic balancing in order to reduce grinding wheel vibration and eliminate the workpiece surface ripple to improve grinding quality.



Variable speed spindle

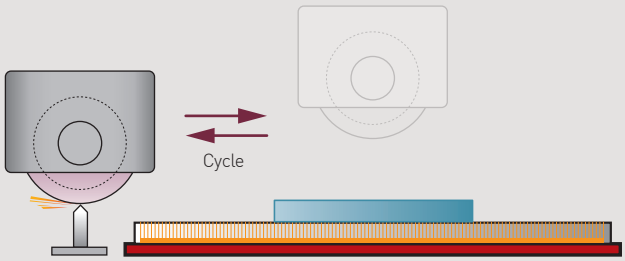
The built-in driver controls spindle speed. Combined with the automatic dressing function, the driver provides constant surface speed regardless of the grinding wheel's changing diameter.



A higher level of precision, flexibility and functionality with in-machine manual dynamic balancing

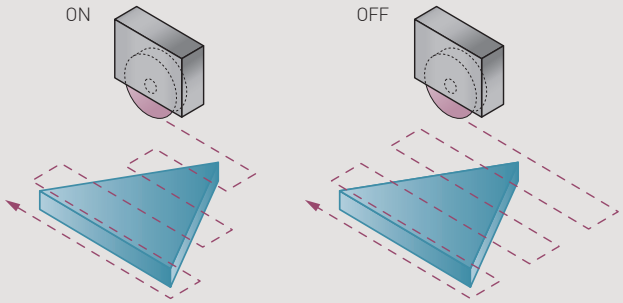
Automatic dressing on table (optional)*

When the grinder enters an automatic dress cycle, the table automatically positions itself where the diamond is set to dress and compensate according to operator settings.



Smart grinding path

By leveraging Chevalier's extensive experience in technological innovation, we have greatly enhanced the FSG-20/24ADIV Series' intelligent grinding path. This smart grinding path will automatically minimize air cutting strokes during grinding of such irregular shapes as I, L, Z or triangular. It will also automatically remove invalid cutting strokes and improve overall processing efficiency.



*U.S.A.: standard

Control Features and Benefits

All new iSurface control

FSG-20/24ADIV Series controls are PC-based (NC control), high-specification industrial units. The high-response AC servo motors on the Y- and Z-axes are designed to improve accuracy.

The control is equipped with a variable frequency drive system that automatically adjusts the grinding wheel's linear speed. A magnetic encoder accurately detects spindle load and correctly grasps the spindle cutting load.

A built-in acceleration gauge monitors the grinding wheel's balance at all times. If the wheel becomes unbalanced, the operator will be notified to rebalance the wheel.

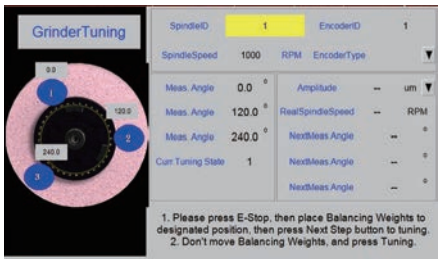
iMachine Communications System™ (iMCS)

iMCS is a comprehensive remote monitoring software that integrates with IoT functions on Chevalier's CNC machines to perform 24/7 data collection, utilization monitoring, data analysis, alarm history, maintenance and overall equipment effectiveness (OEE), all which help to avoid downtime and increases productivity. Additional PC and software are required.

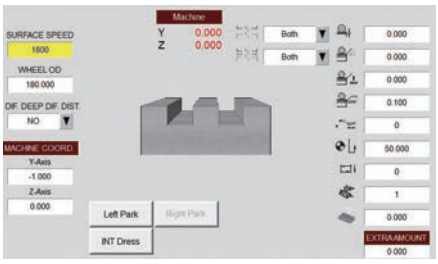


Perfect HMI control

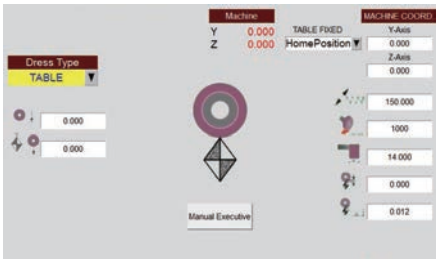
The control's standard equipment includes a 10.4" high-color touchscreen with HMI.



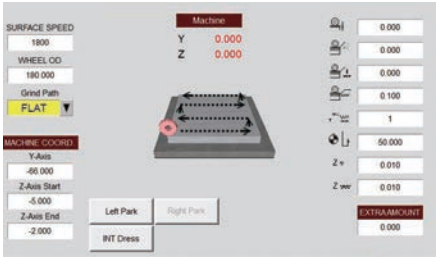
In-Machine Dynamic Balancing



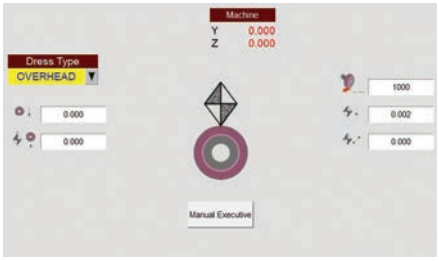
Plunge Grinding Mode



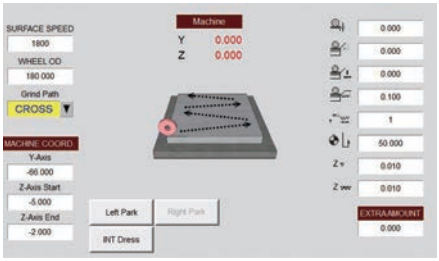
Automatic Dressing on Table (optional)*



Surface Grinding Mode



Automatic Overhead Dresser with Compensation (optional)



Crisscross Grinding Mode

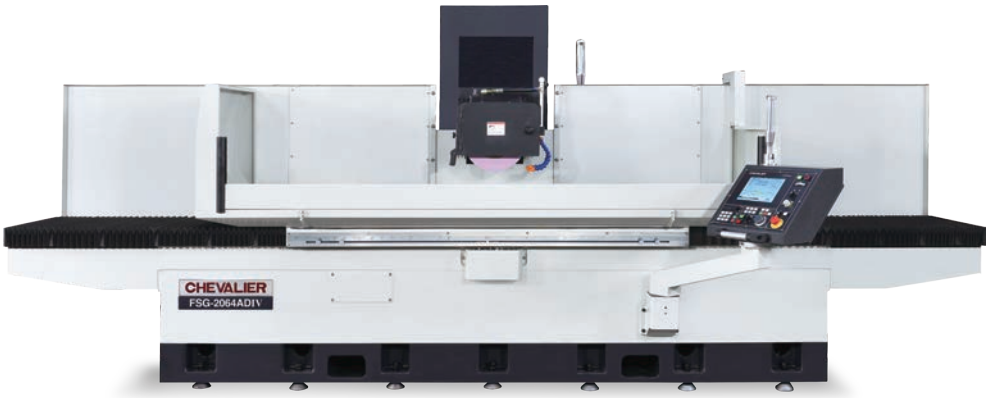
*U.S.A.: standard

Wheel Dressing

A normal dressing mode wastes time by cutting in air. The iSurface dressing mode never cuts air because the diamond is in constant contact with the wheel to minimize dress time.

Auto dressing modes (optional)*

Conversational graphic, automatic-wheel dressing modes can be linked with any—or all—grinding modes.



The FSG-2064ADIV is shown with optional accessories.

*U.S.A. Auto dressing is standard



On Table Dressing



The wheel dressing mode ensures the grinding wheel remains true for consistent grinding accuracy

Machine Construction

Machine-body temperature control integration

The cooling system regulates the temperature for the spindle, lubrication system, and hydraulic system.

Establishes a consistent temperature for the entire machine and greatly improves accuracy and stability.

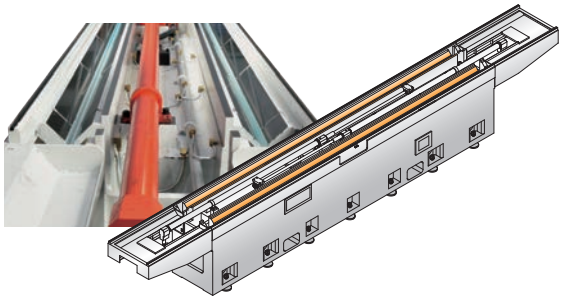


Longitudinal slideways

This series features a double-V, guideway design laminated with Turcite-B, anti-friction material for smooth and stable longitudinal movement. Equipped with a new oil-film guideway lubrication system designed for low-wear, the series easily and effectively achieves mirror grinding while improving grinding accuracy.

Fully supported design of worktable.

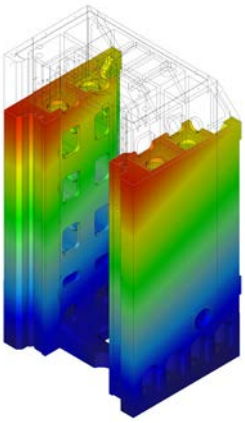
Maximum table speed: 30 m/min (98.4 fpm), increases processing efficiency.

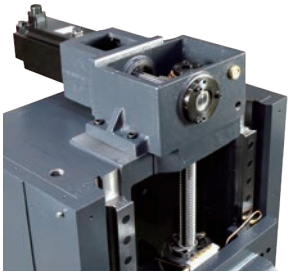


Column structure and elevating transmission mechanism

The double-layer casting structure, which has undergone FEM analysis to optimize its mechanical design, provides better grinding efficiency and accuracy.

The elevating transmission, driven by a C2-grade ballscrew, worm gear mechanism and an AC servo motor, provides high torque, high speed and accurate positioning. It is equipped with a linear guideway to improve elevating accuracy. Accurate positioning with a minimum increment of 0.001 mm (0.00001").

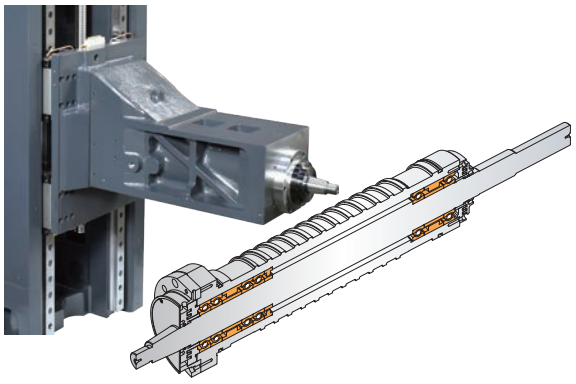




Accurate positioning with a minimum increment of 0.001 mm or 0.00001".

Spindle design

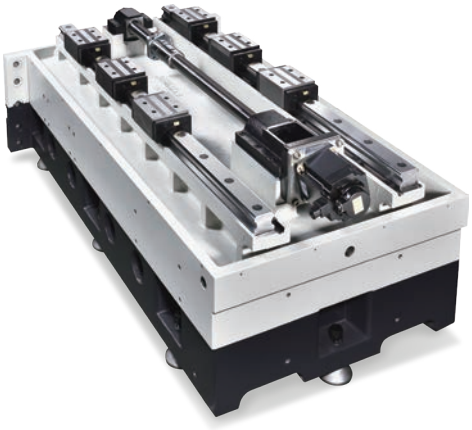
The redesigned spindle is supported by six Class 7 (P4), ultra-precision angular contact ball bearings (four in front, two in rear). The spindle structure is rigid and withstands heavy load grinding. The flexible coupling connecting the spindle and the motor incorporates a precise-balanced correction process, which effectively reduces vibration and ensures grinding quality.



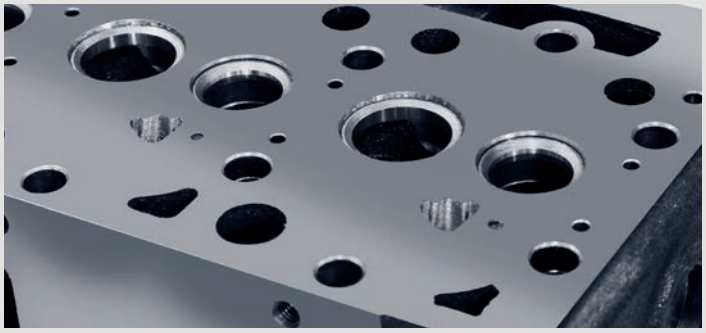
Smart grinding path improves overall processing efficiency

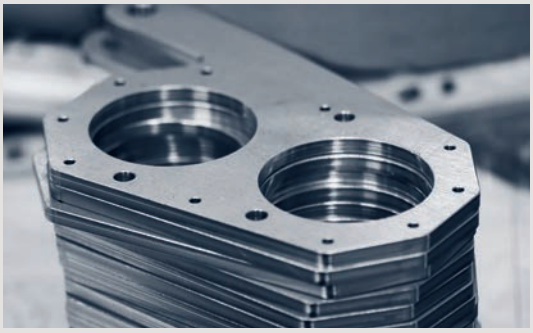
Stable feed, superior accuracy

The crossfeed slideway system features a perfect mating of linear slideways, precision ballscrews and a servo motor that provides high torque and high speed.



Applications

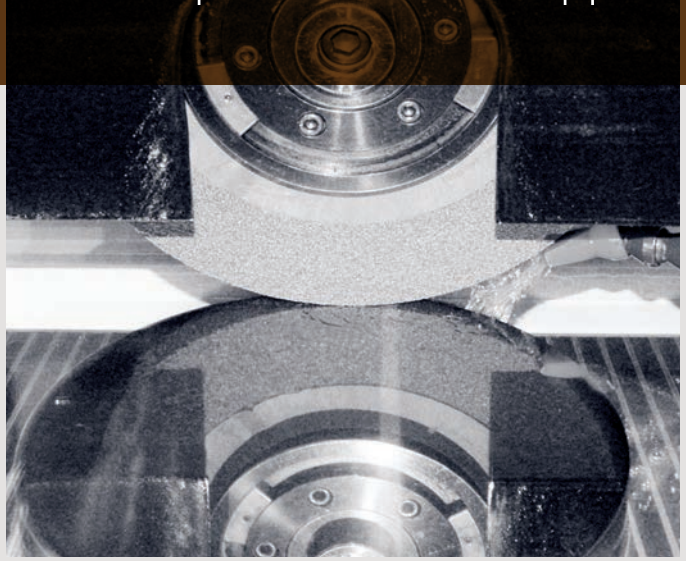


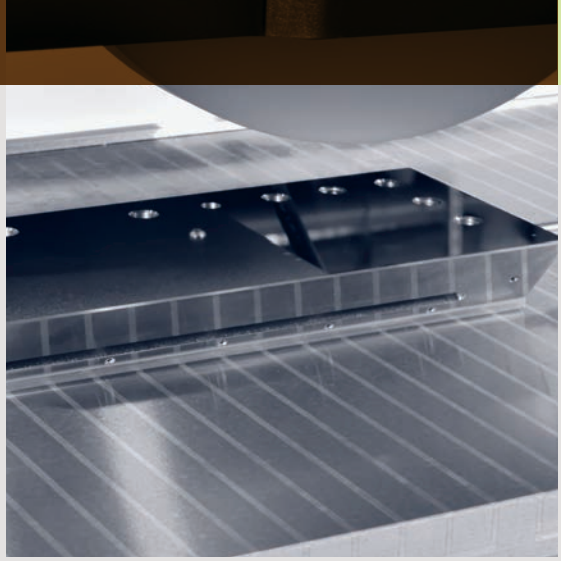




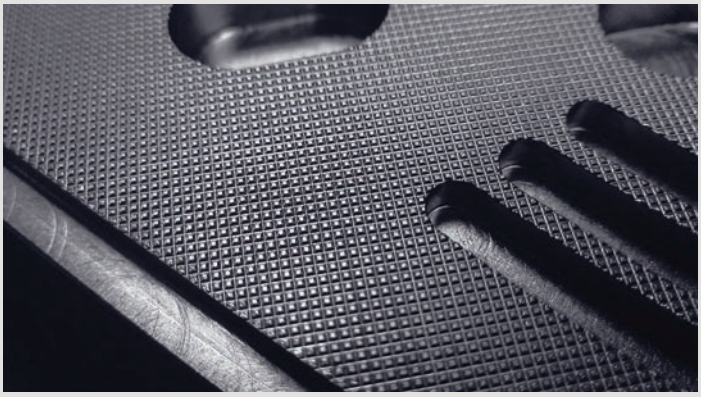


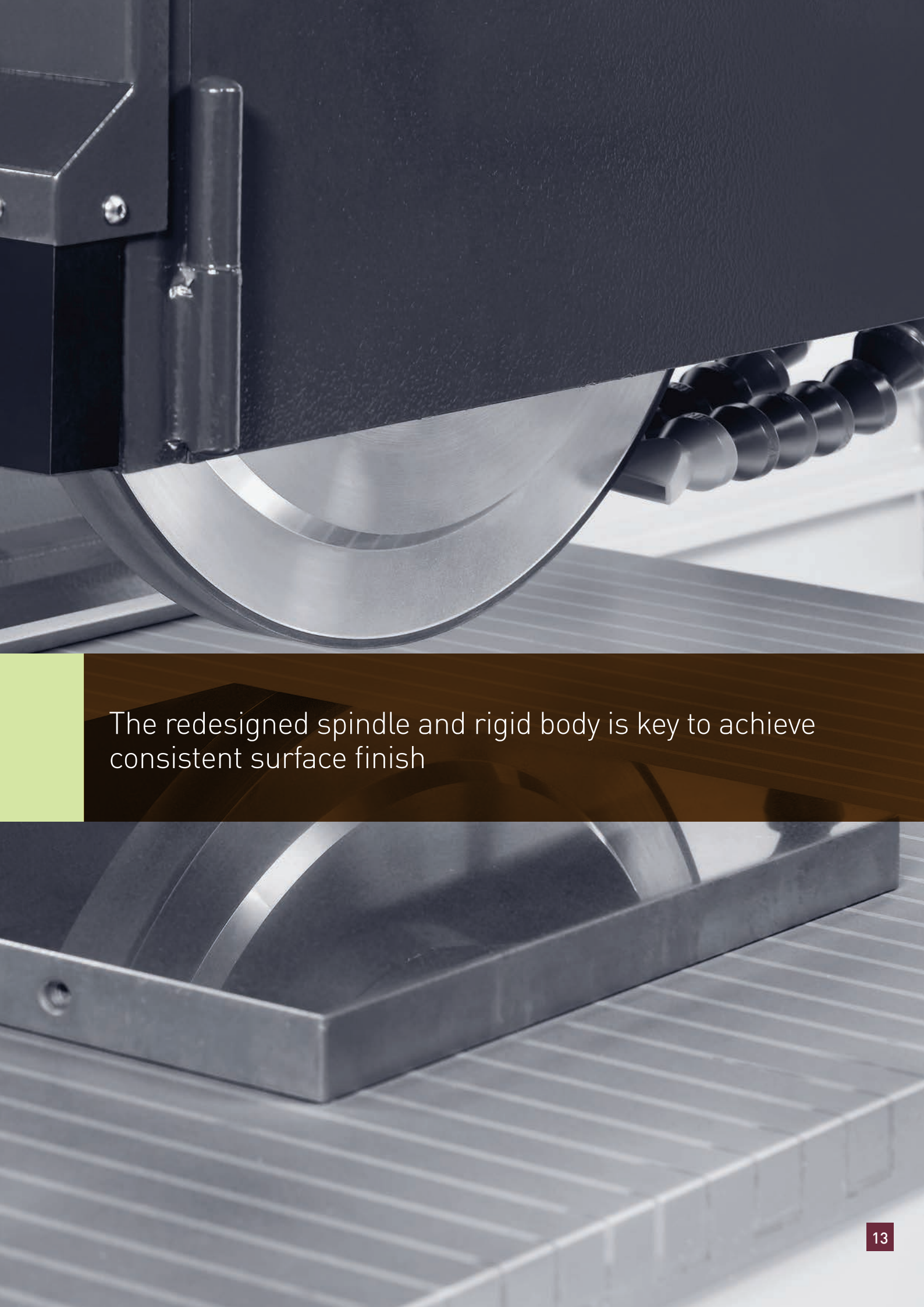
The FSG-20/24ADIV Series has built-in long-term value in process-based applications







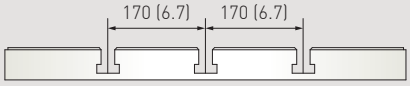




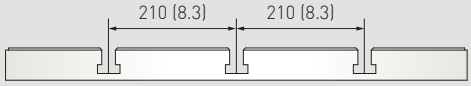
The redesigned spindle and rigid body is key to achieve consistent surface finish

Table and T-slot Dimensions

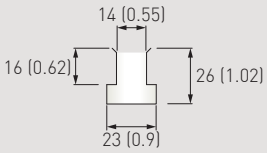
FSG-2048ADIV / FSG-2064ADIV



FSG-2448ADIV / FSG-2464ADIV / FSG-2480ADIV
FSG-24120ADIV / FSG-24160ADIV



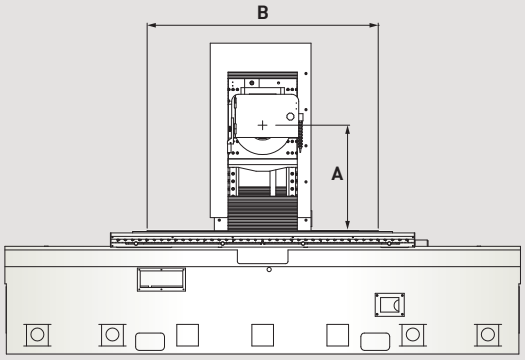
Units: mm (")

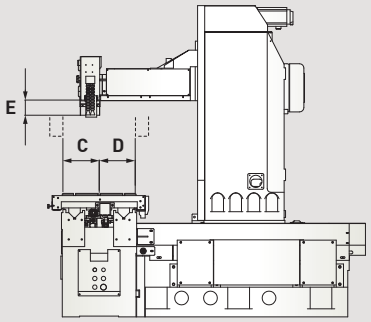


FSG-2048ADIV	T-slot x 3
FSG-2064ADIV	T-slot x 3
FSG-2448ADIV	T-slot x 3
FSG-2464ADIV	T-slot x 3
FSG-2480ADIV	T-slot x 3
FSG-24120ADIV	T-slot x 3
FSG-24160ADIV	T-slot x 3

Maximum Working Space

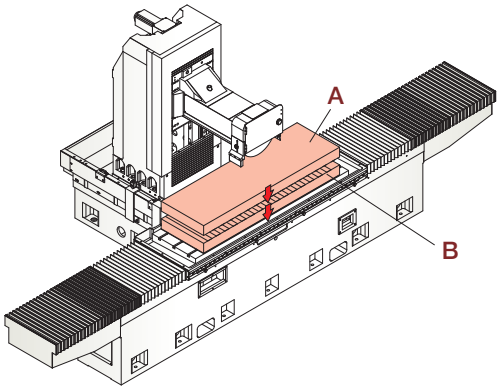
Units: mm (")

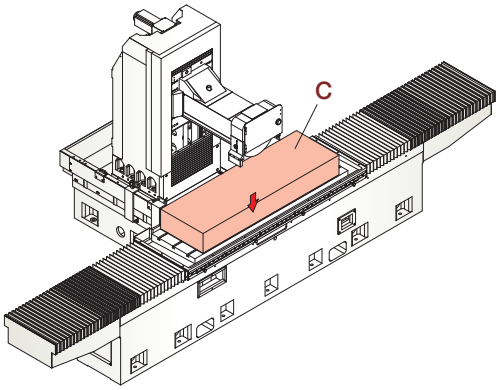




Item	A	B	C	D	E
FSG-2048ADIV	730 (28.7)	1,200 (47.2)	250 (9.8)	250 (9.8)	85 (3.3)
FSG-2064ADIV	730 (28.7)	1,600 (63.0)	250 (9.8)	250 (9.8)	85 (3.3)
FSG-2448ADIV	730 (28.7)	1,200 (47.2)	300 (11.8)	300 (11.8)	110 (4.3)
FSG-2464ADIV	730 (28.7)	1,600 (63.0)	300 (11.8)	300 (11.8)	110 (4.3)
FSG-2480ADIV	730 (28.7)	2,000 (78.7)	300 (11.8)	300 (11.8)	110 (4.3)
FSG-24120ADIV	730 (28.7)	3,000 (118.1)	300 (11.8)	300 (11.8)	110 (4.3)
FSG-24160ADIV	730 (28.7)	4,000 (157.5)	300 (11.8)	300 (11.8)	110 (4.3)

Loading Capacity





Item	A	B	C
FSG-2048ADIV	930 kg (2,049 lbs.)	320 kg (705 lbs.)	1,250 kg (2,754 lbs.)
FSG-2064ADIV	1,110 kg (2,445 lbs.)	470 kg (1,036 lbs.)	1,580 kg (3,481 lbs.)
FSG-2448ADIV	1,150 kg (2,533 lbs.)	450 kg (992 lbs.)	1,600 kg (3,525 lbs.)
FSG-2464ADIV	1,335 kg (2,941 lbs.)	515 kg (1,134 lbs.)	1,850 kg (4,075 lbs.)
FSG-2480ADIV	1,240 kg (2,732 lbs.)	760 kg (1,674 lbs.)	2,000 kg (4,406 lbs.)
FSG-24120ADIV	1,350 kg (2,974 lbs.)	1,050 kg (2,313 lbs.)	2,400 kg (5,287 lbs.)
FSG-24160ADIV	1,250 kg (2,754 lbs.)	1,550 kg (3,414 lbs.)	2,800 kg (6,168 lbs.)

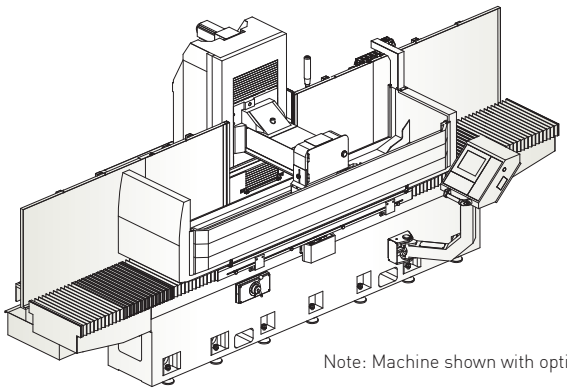
Suggested maximum table loads
A = Workpiece, B = Chuck, C = A+B

Machine's reliability provides high-performance surface

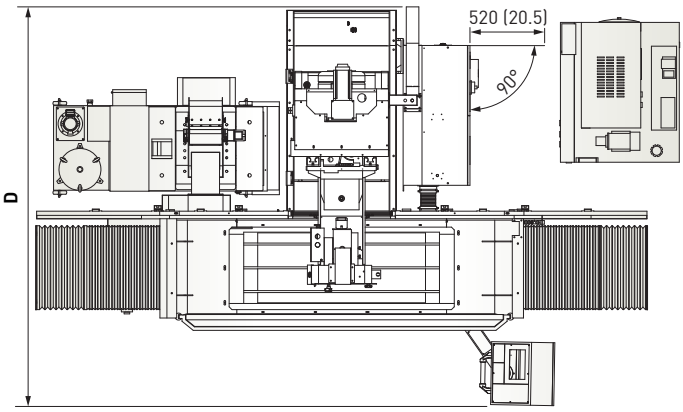


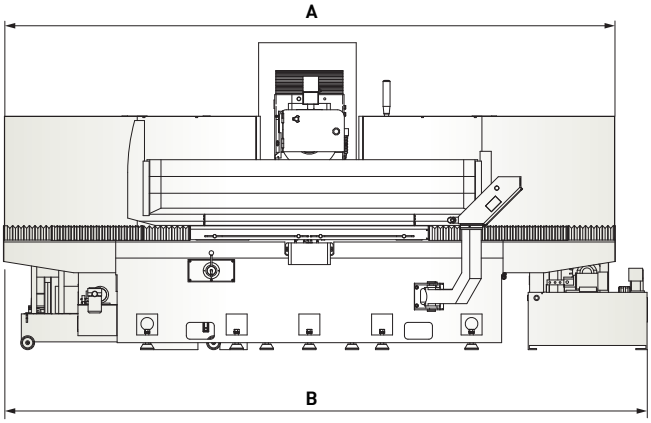
Machine Dimensions

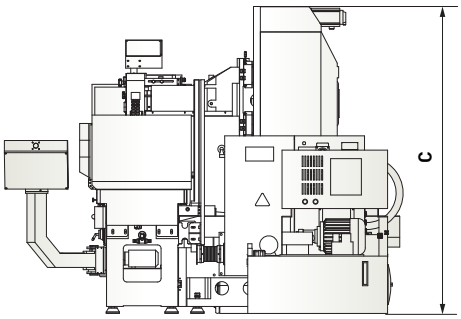
Units: mm (")



Note: Machine shown with optional accessories.







Item	A	B	C	D
FSG-2048ADIV	4,400 (173.2)	4,600 (181.1)	2,200 (86.6)	2,837 (111.7)
FSG-2064ADIV	5,200 (204.7)	5,200 (204.7)	2,200 (86.6)	2,837 (111.7)
FSG-2448ADIV	4,625 (182.1)	4,790 (188.6)	2,305 (90.7)	3,207 (126.3)
FSG-2464ADIV	5,425 (213.6)	5,425 (213.6)	2,305 (90.7)	3,207 (126.3)
FSG-2480ADIV	6,225 (245.1)	6,225 (245.1)	2,305 (90.7)	3,207 (126.3)
FSG-24120ADIV	9,200 (362.2)	9,200 (362.2)	2,305 (90.7)	3,207 (126.3)
FSG-24160ADIV	11,200 (440.9)	11,200 (440.9)	2,305 (90.7)	3,207 (126.3)



A full line of standard and optional accessories adds flexibility to FSG-ADIV Series grinders

Accessories

Standard accessories

- Wheel flange (clamping width):
  FSG-20ADIV: 22~38 mm (0.9"~1.5")
  FSG-24ADIV: 43~50 mm (1.7"~2")
- Grinding wheel (OD x Width x Bore):
  Ø405 x 50 x Ø127 mm (Ø16" x 2" x Ø5")
- Oil cooling system-lubricating oil, hydraulic oil, spindle oil cooling
- Air purge spindle
- Diamond dresser stand with diamond rod
- Splash guard
- Double-sided water baffle
- Heat exchanger for electric cabinet
- Display accuracy 0.0001 mm (0.00001")
- Stylus
- Leveling screws, nuts and pads:
  FSG-2048ADIV: 16 sets
  FSG-2064ADIV: 20 sets
  FSG-2448ADIV: 18 sets
  FSG-2464ADIV: 22 sets
  FSG-2480ADIV: 26 sets
  FSG-24120ADIV: 32 sets
  FSG-24160ADIV: 38 sets
- Toolbox (includes balancing arbor, spanner, ring spanner, locking nut and wheel flange extractor)
- Ball point hex wrench set

Optional accessories

- Chuck control
- Electromagnetic chuck
- Coolant system with auto paper feeding device
- Coolant system with auto paper feeding device and magnetic separator (tank capacity):
  FSG-2440ADIV: 250 L (66 gals.)
  FSG-2460/2480ADIV: 500 L (132 gals.)
  FSG-24120/24160ADIV: 1,000 L (264 gals.)
- Y-, Z-axis linear scale
- Parallel dressing attachment (hydraulic type)
- Over-the-wheel automatic straight-line dressing and compensation device
- Fully enclosed splash guard
- High semi enclosed splash guard
- Oil mist collectors
- Automatic dressing and compensation system (Table-mounted, with special hydraulic oil tank*)
- Balancing stand
- Work lamp
- Spindle motor:
  FSG-24ADIV: 18.5 kW (25 HP)
- Air-conditioned electric cabinet
- Hydrodynamic spindle

*U.S.A.: standard

Specifications

Item	Description	FSG-2048ADIV	FSG-2064ADIV
Control system		iSurface	
Capacity	Max. grinding length-longitudinal	1,200 mm (47.2")	1,600 mm (63.0")
	Max. grinding width-crosswise	500 mm (19.7")	
	Distance between table to spindle centerline	730 mm (28.7")	
	Height from the machine table to ground	900 mm (35.4")	
	Max. table load	1,250 kg (2,754 lbs.)	1,580 kg (3,481 lbs.)
Table	Table size	500 x 1,200 mm (19.7" x 47.2")	500 x 1,600 mm (19.7" x 63.0")
	T-slots (width x pitch x no.)	14 mm x 170 mm x 3 (0.6" x 6.7" x 3)	
	Table speed (variable)	5~30 m/min (16~98.4 fpm)	
	Max. table travel	1,300 mm (51.2")	1,700 mm (66.9")
Transverse movement (Z)	Max. travel	560 mm (22.0")	
	Feed speed	0~2,250 mm/min (0~7.38 fpm)	
	Automatic transverse movement	0.001~32 mm (0.00001"~1.3")	
	Min. input	0.0001 mm (0.00001")	
Wheelhead elevation (Y)	Max. travel	560 mm (22.0")	
	Feed speed	0~675 mm/min (0 ~ 2.2 fpm)	
	Automatic elevating movement	0.001~0.04 mm (0.00001"~0.0016")	
	Min. input	0.0001 mm (0.00001")	
Spindle	Spindle speed	500~2,200 rpm	
	Spindle motor	11 kW (15 HP)	
Motors	Axis motors (Y/Z)	Y: AC servo 3.1 kW, Z: AC servo 2.4 kW	
	Hydraulic motor	5 HP / 6 P	5 HP / 6 P
Wheel dimension	OD x Width x Bore	Ø405 x 50 x Ø127 mm (Ø16" x 2" x Ø5")	
Power and air requirement	Power required	30 kVA	
	Total air consumption — Pressure	6 kg/cm^2 (86 psi)	
	Total air consumption — Flow	200 NL/min (7 cfm)	
Tank capabilities	Oil tank capacity	255 L (67 gals.)	
Machine dimensions	Floor space (W x D x H)	4,600 x 2,837 x 2,200 mm (181.1" x 111.7" x 86.6")	5,200 x 2,837 x 2,200 mm (204.7" x 111.7" x 86.6")
	Net weight	6,400 kg (14,100 lbs.)	8,000 kg (17,630 lbs.)
Accuracy	Accuracy standard	ISO 1986-1	

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

FSG-2448ADIV	FSG-2464ADIV	FSG-2480ADIV	FSG-24120ADIV	FSG-24160ADIV
		iSurface		
1,200 mm (47.2")	1600 mm (63.0")	2,000 mm (78.7")	3,000 mm (118.1")	4,000 mm (157.5")
		600 mm (23.6")		
		730 mm (28.7"), optional 850 mm (33.5")		
		900 mm (35.4")		
1,600 kg (3,525 lbs.)	1,850 kg (4,075 lbs.)	2,000 kg (4,406 lbs.)	2,400 kg (5,287 lbs.)	2,800 kg (6,168 lbs.)
600 x 1,200 mm (23.6" x 47.2")	600 x 1,600 mm (23.6" x 63.0")	600 x 2,000 mm (23.6" x 78.7")	600 x 3,000 mm (23.6" x 118.1")	600 x 4,000 mm (23.6" x 157.5")
		14 mm x 210 mm x 3 (0.6" x 8.3" x 3)		
		5~30 m/min (16~98.4 fpm)		
1,300 mm (51.2")	1,700 mm (66.9")	2,100 mm (82.7")	3,200 mm (125.9")	4,200 mm (165.4")
		685 mm (27.0")		
		0~2,250 mm/min (0~7.38 fpm)		
		0.001~32 mm (0.00001"~1.3")		
		0.0001 mm (0.00001")		
		560 mm (22.0"), optional 675 mm (26.6")		
		0~675 mm/min (0 ~ 2.2 fpm)		
		0.001~0.04 mm (0.00001"~0.0016")		
		0.0001 mm (0.00001")		
		500~2,200 rpm		
		11 kW (15 HP), optional 18.5 kW (25 HP)		
		Y/Z: AC servo 3.1 kW		
	7.5 HP / 6 P		10 HP / 6 P	15 HP / 6 P
		Ø405 x 50 x Ø127 mm (Ø16" x 2" x Ø5")		
	33 kVA		37 kVA	41 kVA
		6 kg/cm^2 (86 psi)		
		200 NL/min (7 cfm)		
		255 L (67 gals.)		
4,790 x 3,207 x 2,305 mm (188.6" x 126.3" x 90.7")	5,425 x 3,207 x 2,305 mm (213.6" x 126.3" x 90.7")	6,225 x 3,207 x 2,305 mm (245.1" x 126.3" x 90.7")	9,200 x 3,207 x 2,305 mm (362.2" x 126.3" x 90.7")	11,200 x 3,207 x 2,305 mm (440.9" x 126.3" x 90.7")
8,100 kg (17,850 lbs.)	9,500 kg (20,930 lbs.)	10,200 kg (22,470 lbs.)	15,000 kg (33,040 lbs.)	17,500 kg (38,550 lbs.)
		ISO 1986-1		

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