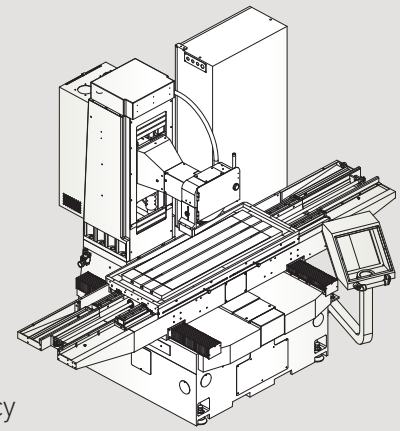
FSG-AF Series

Fully Automatic Precision Surface Grinder

Fully Enclosed.
Precise. Efficient. Affordable.

CHEVALIER®
Grinding Turning / Milling
We shape your ideas.™

Introduction

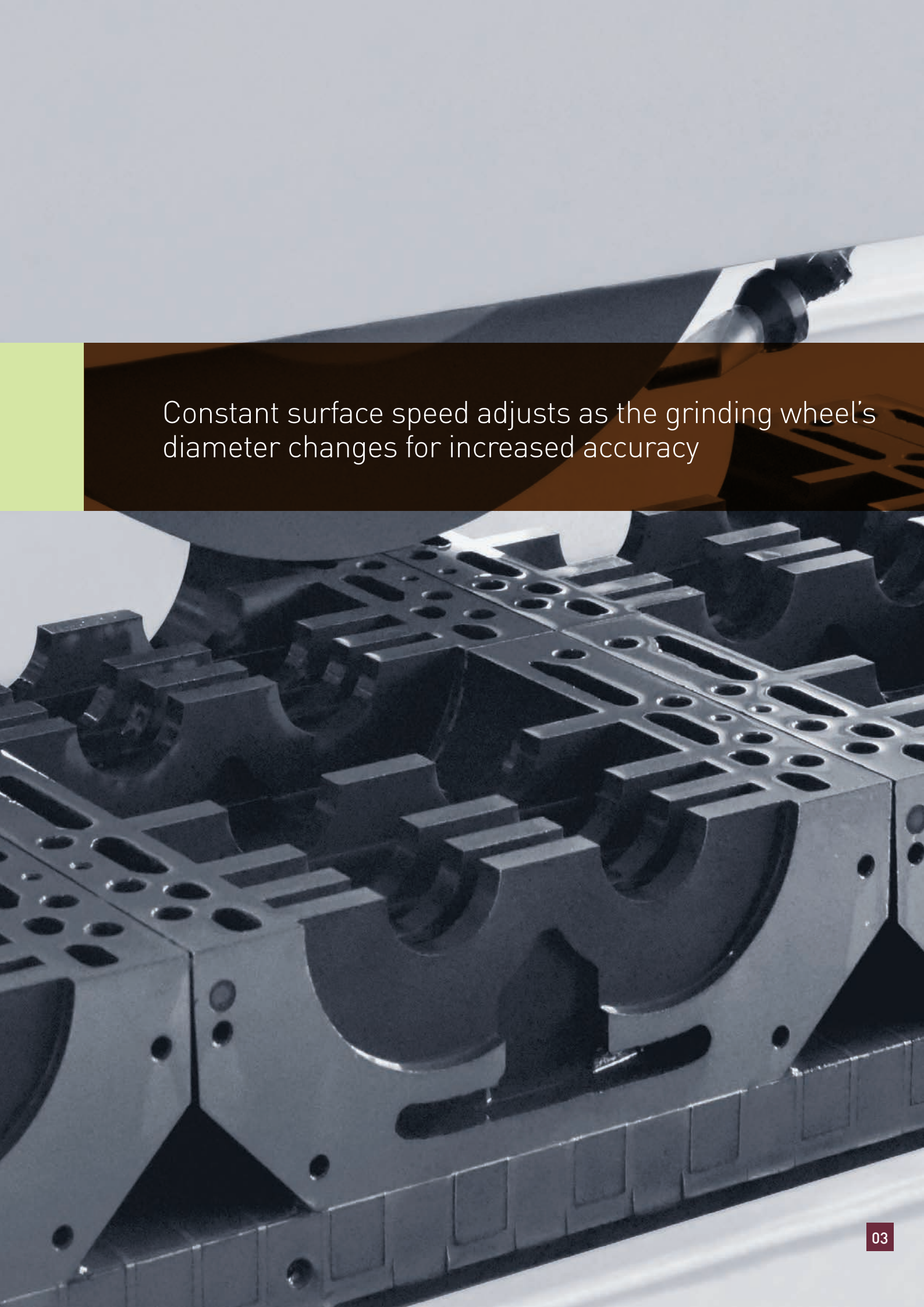


Chevalier's engineers developed the fully-covered FSG-1224.1640AF Series of precision surface grinders to meet regulations mandating worker safety and environmental protection.

However, this does not come at the expense of efficiency and productivity. All AF Series surface grinders include built-in functions designed to shorten your processing and non-processing preparation while delivering high-precision workpieces year after year—functions you might not expect on such affordable machines: iSurface control, variable speed spindle, constant surface speed, loading detection and in-machine manual dynamic balancing.

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

Note: Machine shown with optional accessories.

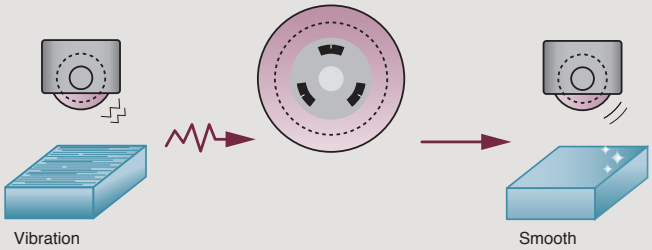


Constant surface speed adjusts as the grinding wheel's diameter changes for increased accuracy

Key Features and Benefits

In-machine dynamic balancing

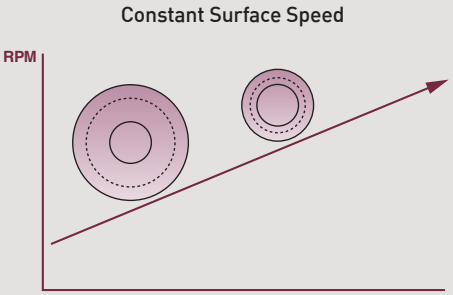
By manually adjusting the in-machine dynamic balancing function, operators can reduce grinding wheel vibration and eliminate the surface workpiece ripple to improve grinding quality.



In-Machine Dynamic Balancing

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.

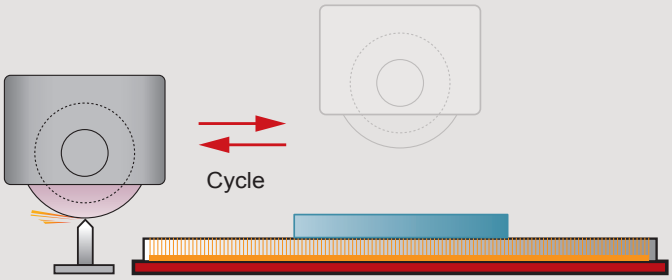


Fully enclosed design

The fully enclosed cover design meets safety and environmental regulations by preventing cutting coolant splashing and oil mist dissipation while fully protecting the operator from grinding dangers.

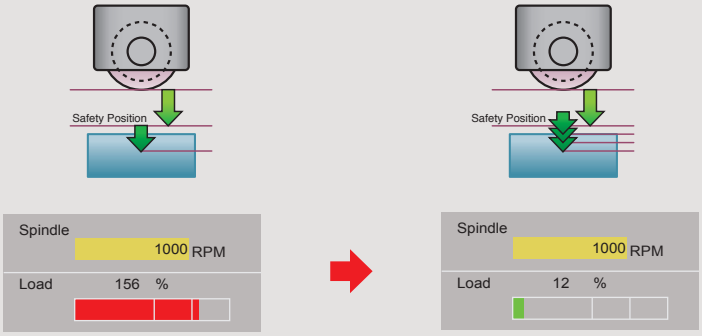
Automatic dressing on table (optional)

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.



Load force detection

Operator can measure the spindle load during the machining cycle, then utilize this data to determine at his or her own discretion whether the wheel requires dressing. If an abnormal load is detected, the spindle automatically moves up to stop the cycle.



Enhanced control system

Unlike PLC control boards, the PC-based control's powerful computing power enhances the HMI for more precise control. Combined with data analysis from network connectivity, it permits managers to improve production presses for higher output.

iMachine Communications System™ (iMCS) software

This exclusive Chevalier software package remotely collects data and allows managers to track it from any mobile device. (Additional PC and software are required.)

Control Features and Benefits

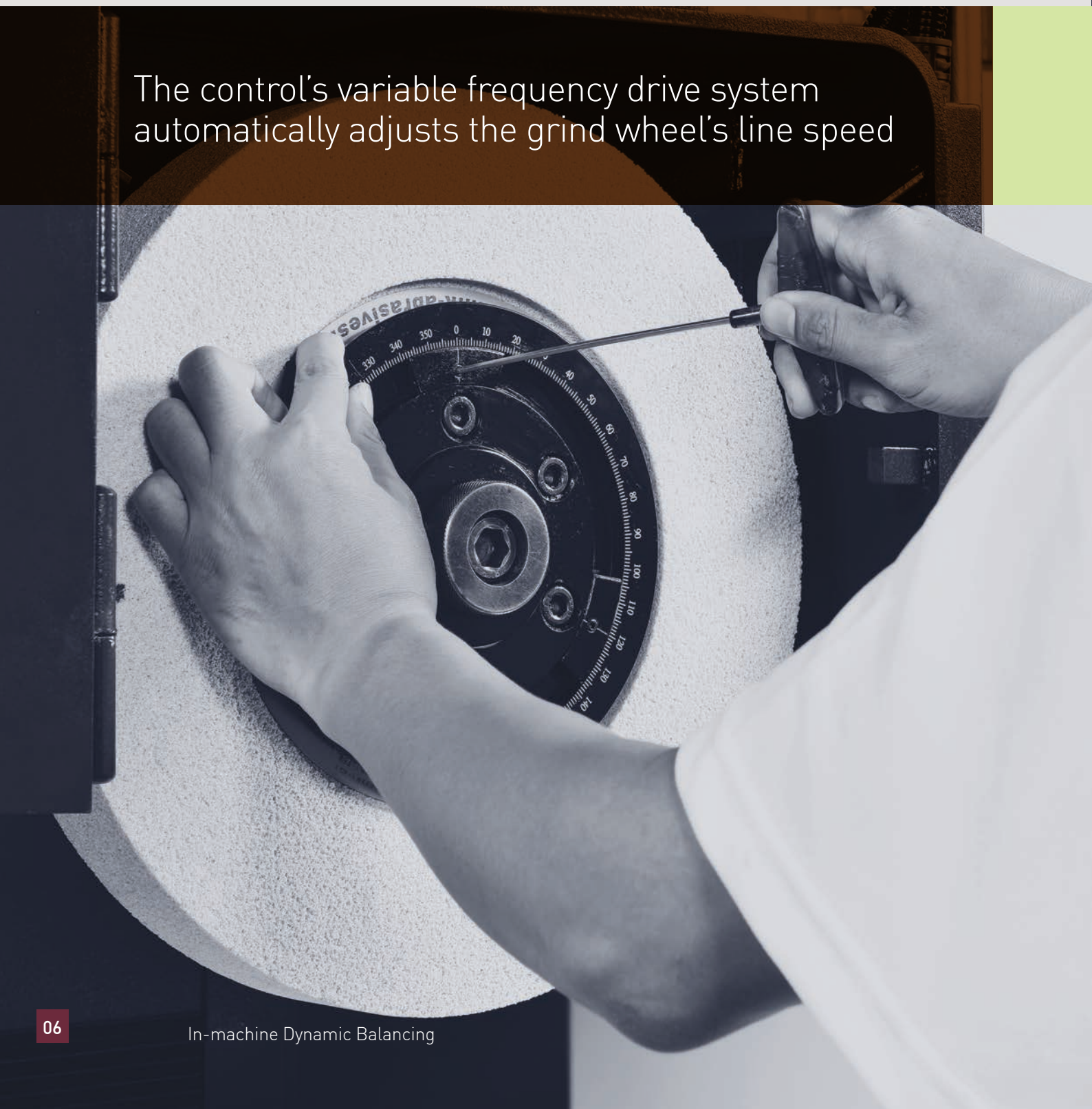
All new iSurface control

AF 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 grind wheel's line speed. A magnetic encoder accurately detects spindle load and correctly grasps the spindle cutting load.

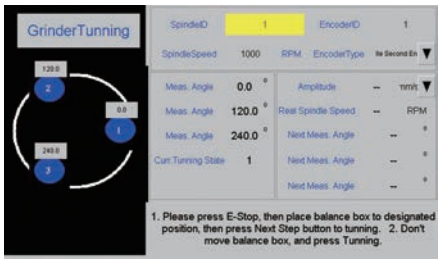
A built-in acceleration gauge monitors the grinding wheel's balance at all times. If the wheel becomes unbalanced the operator will be notified to rebalance the wheel.

The control's variable frequency drive system automatically adjusts the grind wheel's line speed



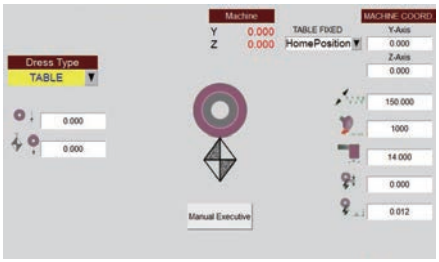
Perfect HMI control

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

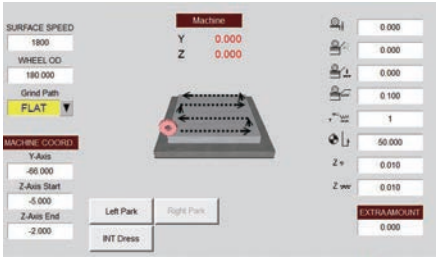


In-Machine Dynamic Balancing

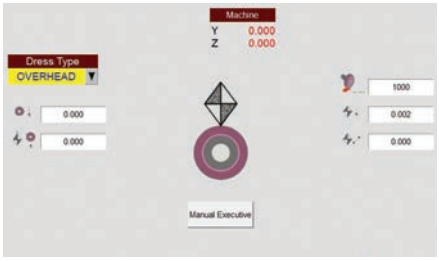
Plunge Grinding Mode



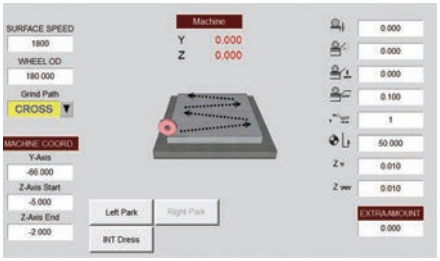
Automatic Dressing on Table (optional)



Surface Grinding Mode



Automatic Overhead Dresser with Compensation (optional)



Crisscross Grinding Mode

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

Wheel Dressing

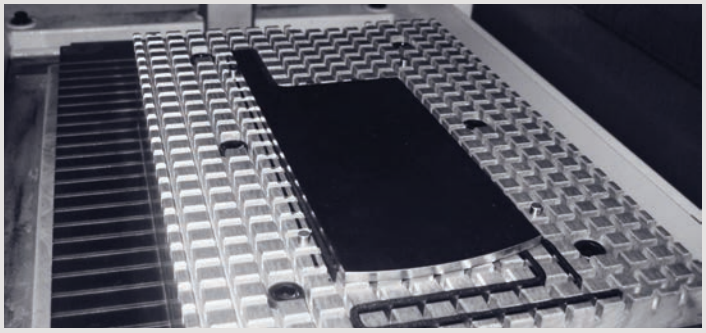
A Normal Dressing Mode wastes time by cutting in air. The iSurface Dressing Mode never cuts air because the diamond is in constant contact with the wheel to minimize dress time.

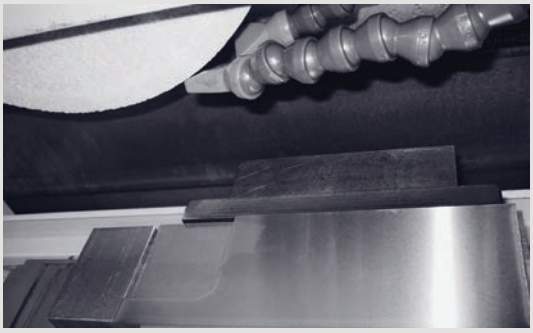
Auto dressing modes (optional)

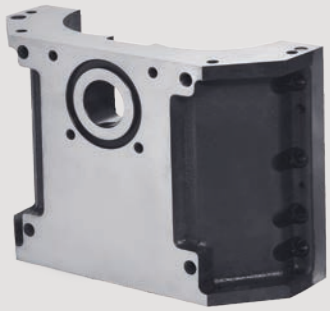
Conversational graphic automatic wheel dressing modes can be linked with any—or all—grinding modes.

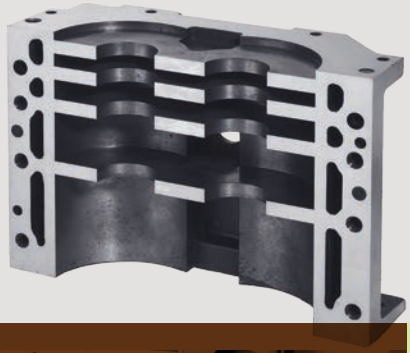
On Table Dressing

Applications

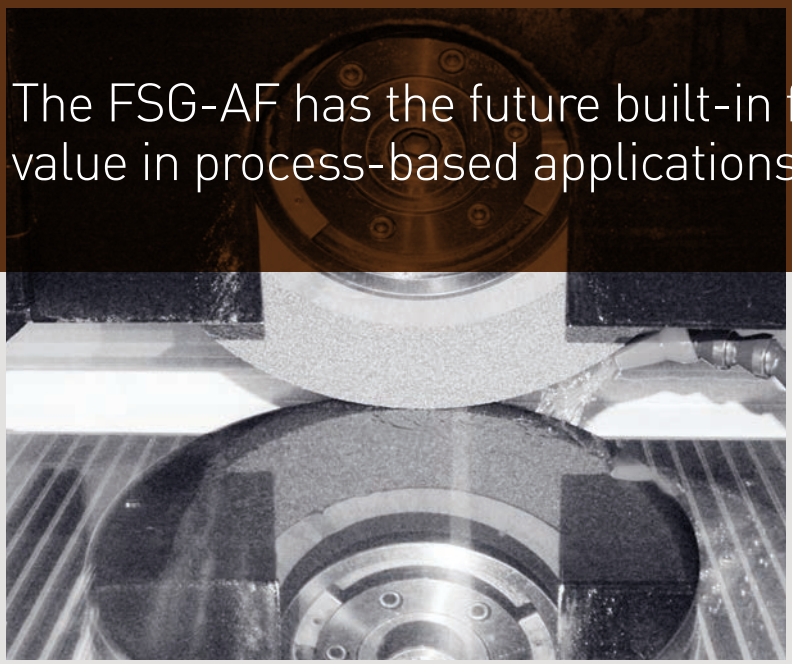


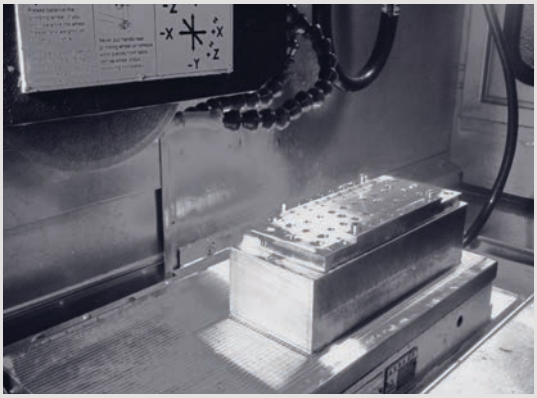


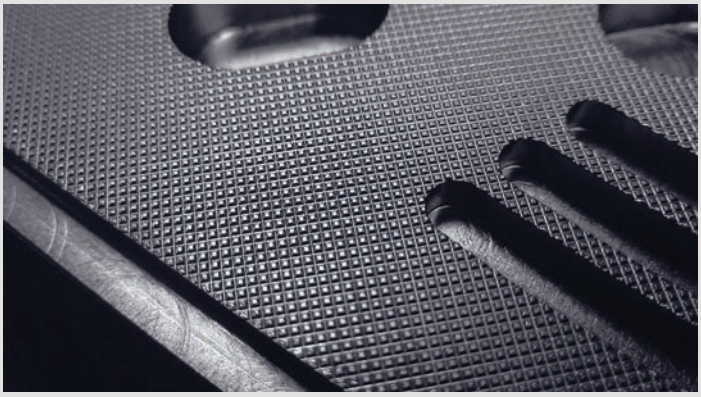


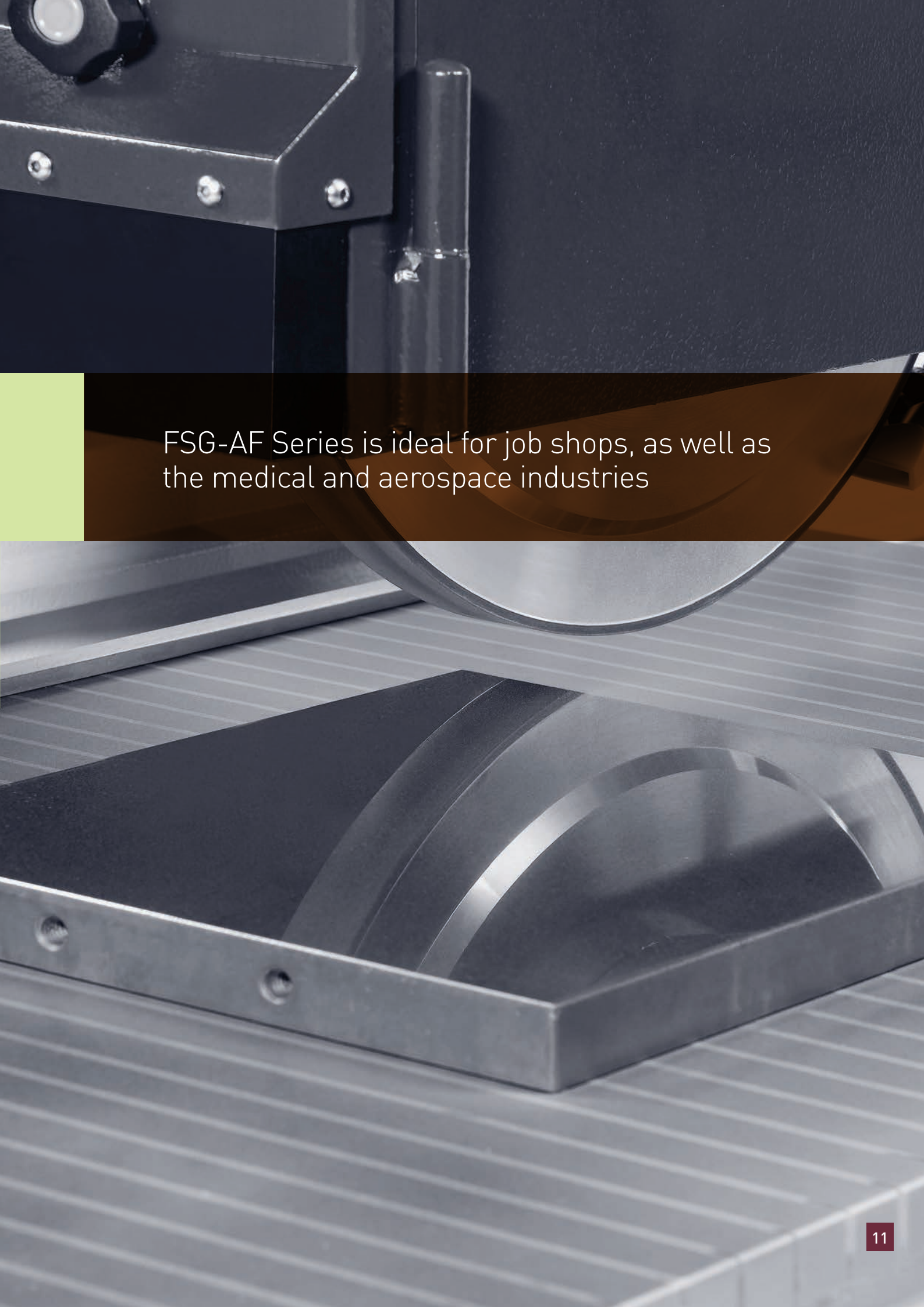


The FSG-AF has the future built-in for long-term value in process-based applications.







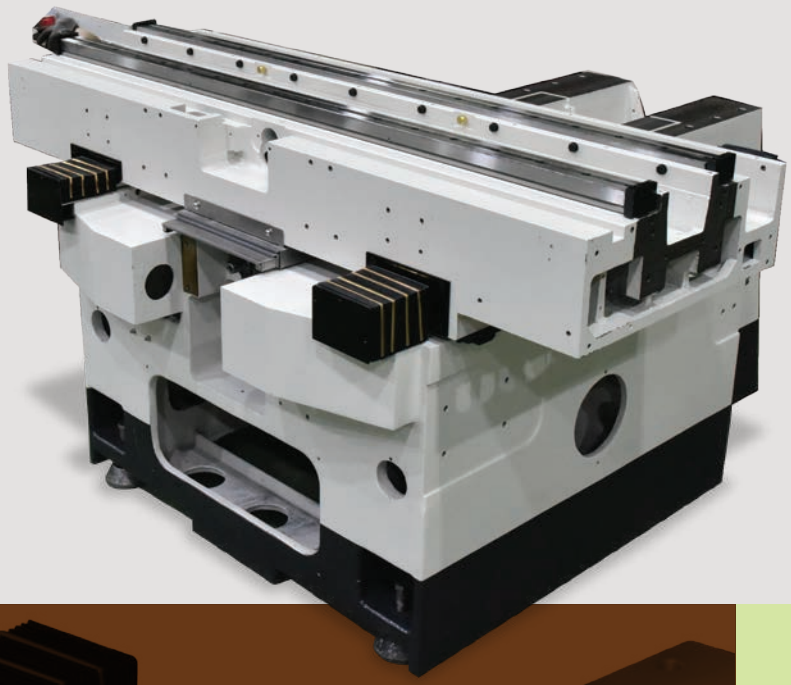


FSG-AF Series is ideal for job shops, as well as the medical and aerospace industries

Table Guideway

Completely supported guideways

FSG-AF Series surface grinders include extended base guideways for crossfeed and longitudinal travel to enhance rigidity and stability, upgrade accuracy and longevity, and eliminate table overhang to completely support permissible loads.



2-axis NC control

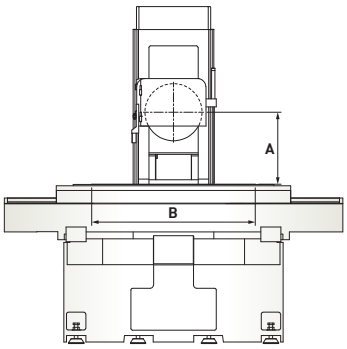
The X-axis is driven by a precision hydraulic cylinder. The table stroke and speed are 5~25 m/min (16~82 fpm).

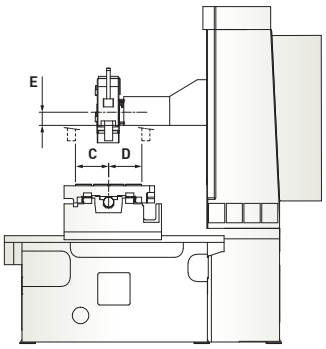
Heavy-duty needle roller bearings ways

Ultra-low friction improves accuracy and lowers maintenance costs.

Extended base guideways enhance rigidity and stability for crossfeed and longitudinal travel

Max. Working Space



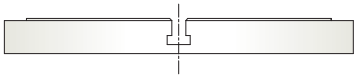


Item	A	B	C	D	E
FSG-1224AF	600 (23.6)	610 (24)	152.5 (6)	152.5 (6)	82 (3.2)
FSG-1640AF	600 (23.6)	1,015 (40)	202.5 (8)	202.5 (8)	82 (3.2)

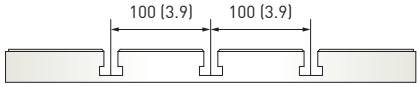
Table and T-slot Dimensions

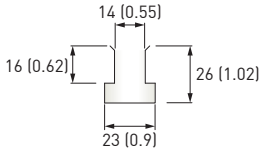
Units: mm (")

FSG-1224AF



FSG-1640AF

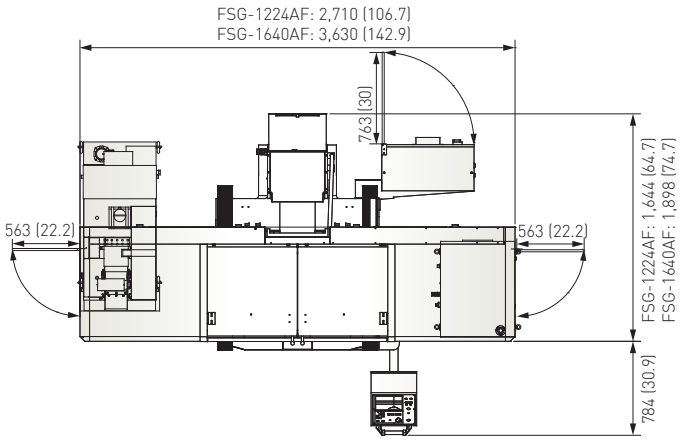


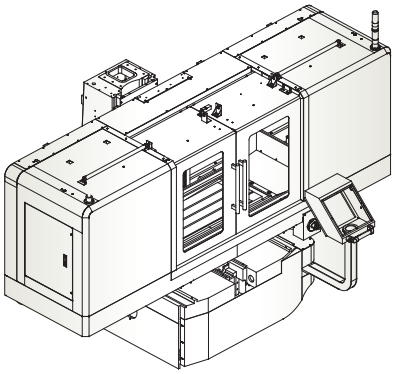


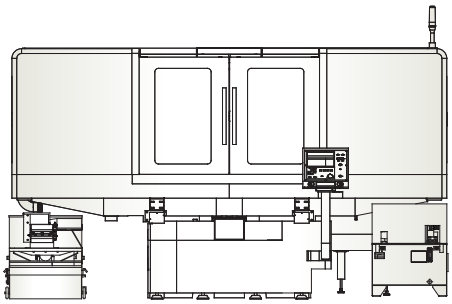
FSG-1224AF	T-slot x 1
FSG-1640AF	T-slot x 3

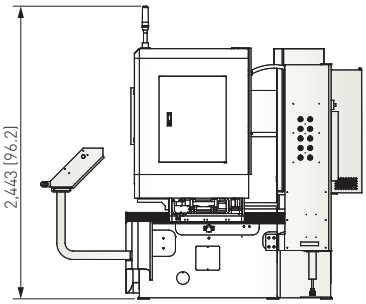
Machine Dimensions

Units: mm (")







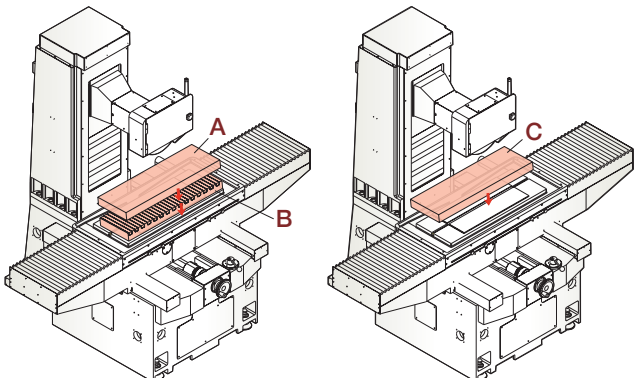


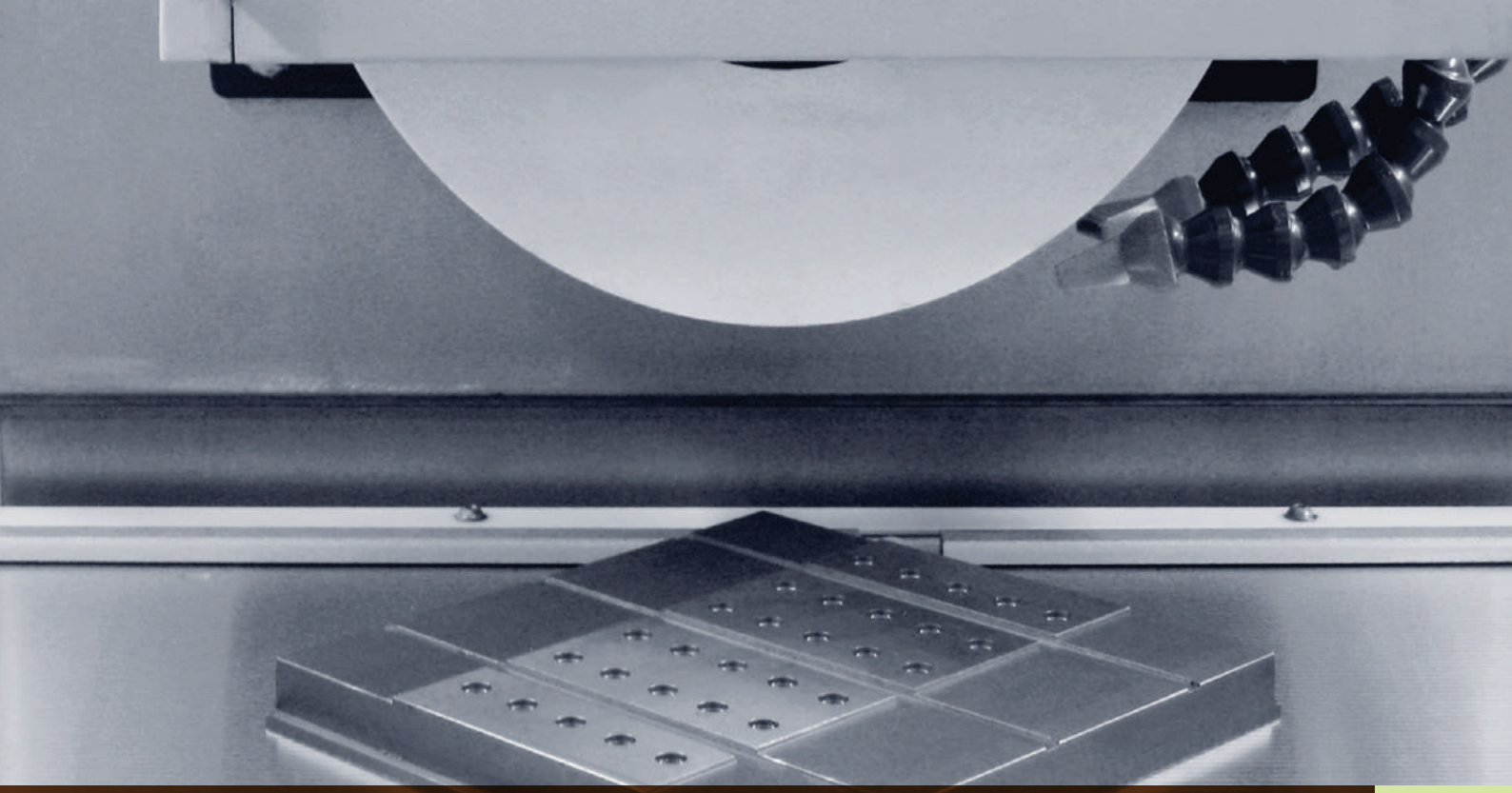
Note: Machine shown with optional accessories.

Loading Capacity

Item	FSG-1224AF	FSG-1640AF
A	314 kg (690 lbs.)	423 kg (930 lbs.)
B	106 kg (233 lbs.)	247 kg (543lbs.)
C	420 kg (923 lbs.)	670 kg (1,473 lbs.)

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





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

Accessories

Standard accessories

- Wheel flange:
  Clamping width 19~38 mm (0.7" ~ 1.5")
- Wheel dimension (OD x Width x Bore):
  Ø355 x 50 x Ø127 mm (Ø14" x 2" x Ø5")
- Fully enclosed splash guard
- Heat exchanger for electric cabinet
- Leveling pad: 6 pieces
- Leveling screws and nuts: 6 sets
- Toolbox (includes balancing arbor, wrench, hex head wrench, diamond dresser with diamond and hole plugs)
- Stylus

Optional accessories

- Chuck control
- Electromagnetic chuck
- Linear scales
- Spindle motor 7.5/11 kW (10/15 HP)
- Coolant system with manual paper feeding device
- Coolant system with auto paper feeding device
- Coolant system with auto paper feeding device and magnetic separator
- Oil mist collector
- Spindle oil cooling system
- Hydraulic tank and oil cooler
- Over-the-wheel automatic straight line dressing and compensation device
- Parallel dressing attachment (hydraulic type)
- Automatic table dresser with compensation
- Roller balancing stand
- Guideway-type balancing stand (12/16 series)
- LED working lamp

Specifications

Item	Description	FSG-1224AF	FSG-1640AF
Control system		iSurface	
Capacity	Max. grinding length-longitudinal	610 mm (24")	1,015 mm (40")
	Max. grinding width-crosswise	305 mm (12")	405 mm (15.9")
	Distance between table to spindle centerline	600 mm (23.6")	
	Height from table to ground	975 mm (38.4")	
	Max. table load	420 kg (923 lbs.)	670 kg (1,473 lbs.)
Table	Table size	300 x 600 mm (11.8" x 23.6")	400 x 1,000 mm (15.7" x 39.4")
	T-slots (width x pitch x no.)	14 mm x 150 mm x 1 (0.6" x 5.9" x 1)	14 mm x 100 mm x 3 (0.6" x 3.9" x 3)
	Table speed (variable)	5~25 m/min (16~82 fpm)	
	Max. table travel	700 mm (27.6")	1,100 mm (43.3")
Transverse movement (Z)	Max. travel	350 mm (13.8")	450 mm (17.7")
	Feed speed	0~2,250 mm/min (0~7.38 fpm)	
	Automatic transverse movement (step)	0.001~32 mm (0.00001"~1.3")	
	Min. input	0.001 mm (0.00001")	
Wheelhead elevation (Y)	Max. travel	440 mm (17.3")	
	Feed speed	0~675 mm/min (0~2.2 fpm)	
	Automatic elevating movement (step)	0.001~0.04 mm (0.00001"~0.0016")	
	Min. input	0.001 mm (0.00001")	
Spindle	Spindle speed	500~1,800 rpm	
	Spindle motor	5.5 kW (7.5 HP)	
Motors	Axis motors (Y/ Z)	Y: AC servo 1.1 kW / Z: AC servo 1.1 kW	
	Hydraulic motor	1 HP / 6 P	2 HP / 6 P
Wheel dimension	OD x Width x Bore	Ø355 x 50 x Ø127 mm (Ø14" x 2" x Ø5")	
Power and air requirement	Power required	12 kVA	13 kVA
	Total air consumption — Pressure	6 kg/cm^2 (86 psi)	
	Total air consumption — Flow	200 NL/min (7 cfm)	
Machine dimensions	Floor space (W x D x H)	2,710 x 2,428 x 2,443 mm (106.7" x 95.6" x 96.2")	3,630 x 2,682 x 2,443 mm (142.9" x 105.6" x 96.2")
	Net weight	3,500 kg (7,716 lbs.)	4,800 kg (10,582 lbs.)
Accuracy	Accuracy standard	ISO 1986-1	

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

Grinding Machines

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