

FSG-AF Series

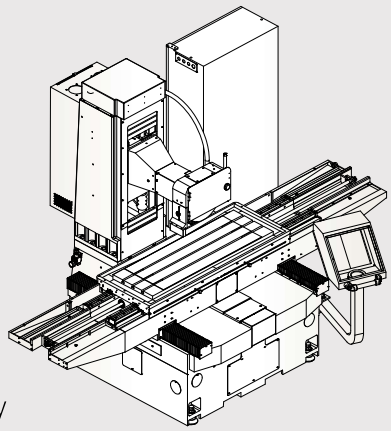
Fully Automatic Precision Surface Grinder

Fully Enclosed.
Precise. Efficient. Affordable.



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

Introduction



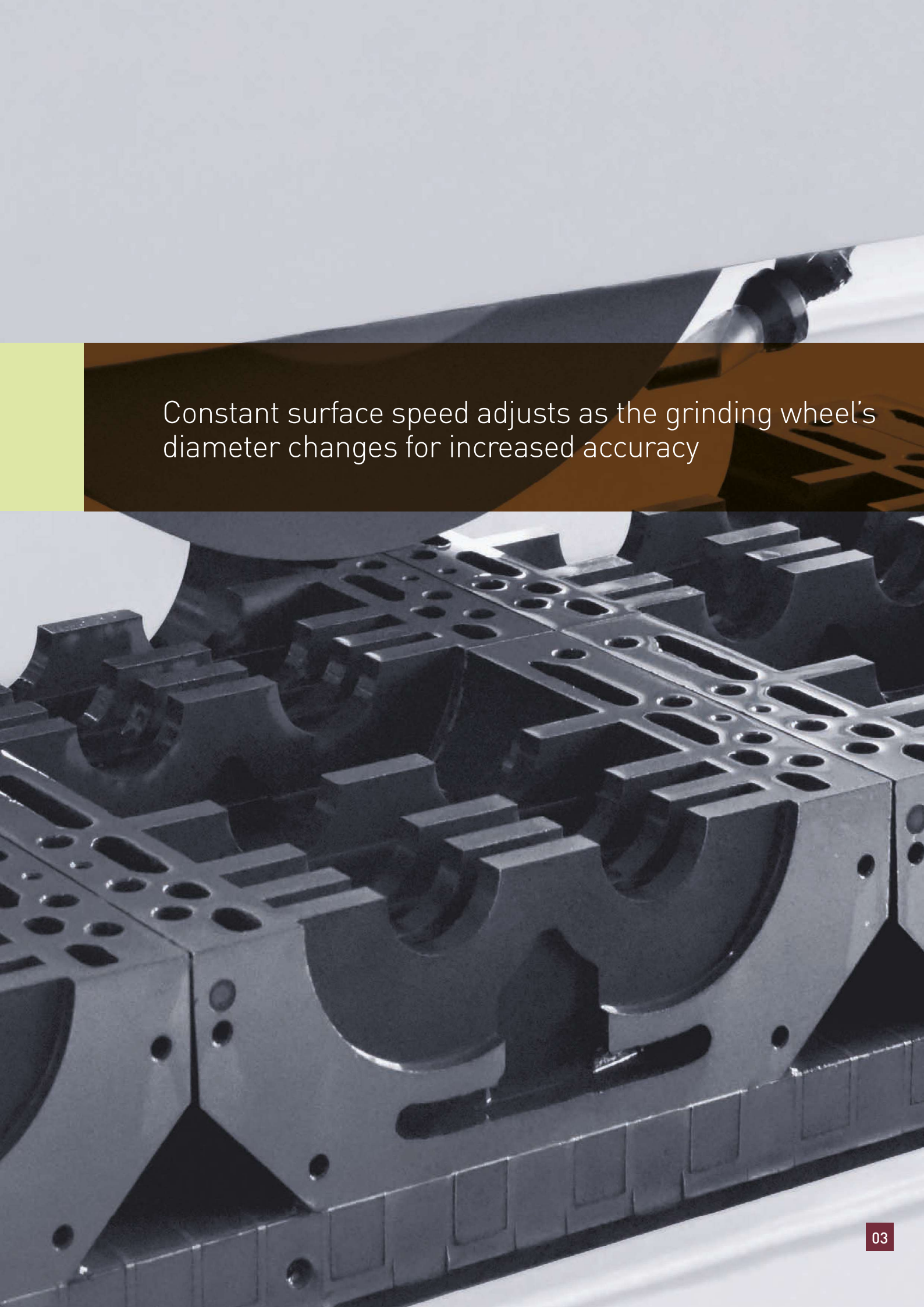
Chevalier's engineers developed the fully-covered FSG-1224.1640AF Series of precision surface grinders to meet regulations mandating worker safety and environmental protection.

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, smart grinding path 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.



The FSG-1224AF is shown with optional accessories.

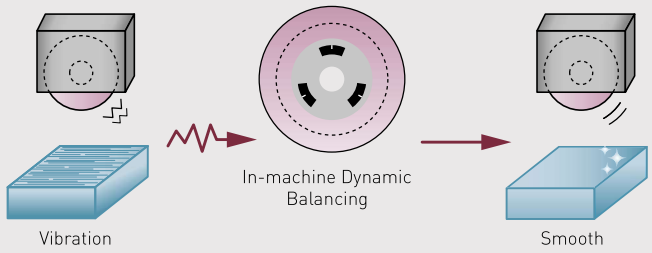


Constant surface speed adjusts as the grinding wheel's diameter changes for increased accuracy

Key Features and Benefits

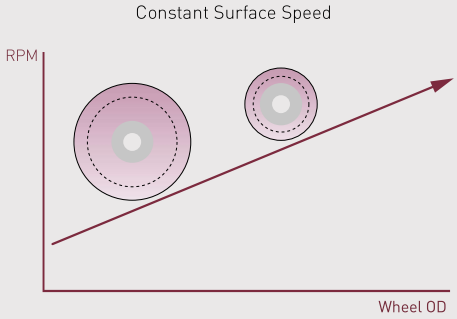
In-machine dynamic balancing

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.

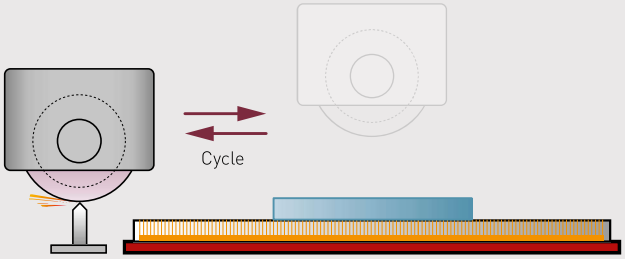


Full enclosure design

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

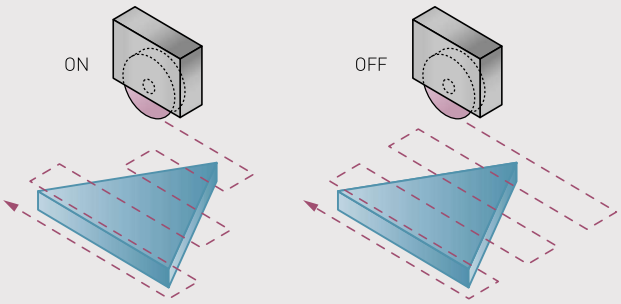
Automatic dressing on table (optional)

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.



Smart grinding path

Leveraging Chevalier's extensive experience in technological innovation, we have greatly enhanced this 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.

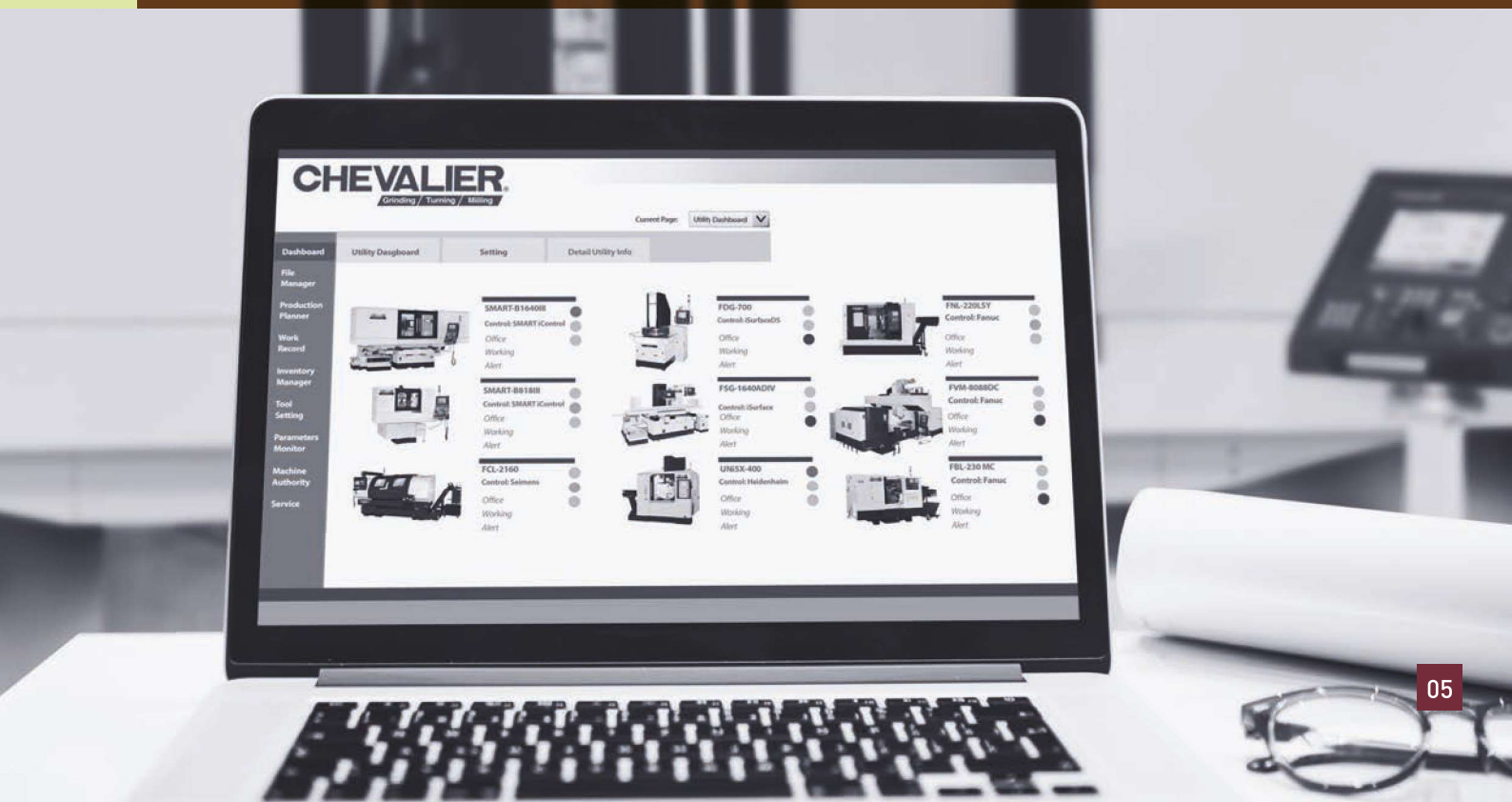


Enhanced control system

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)

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.



Control Features and Benefits

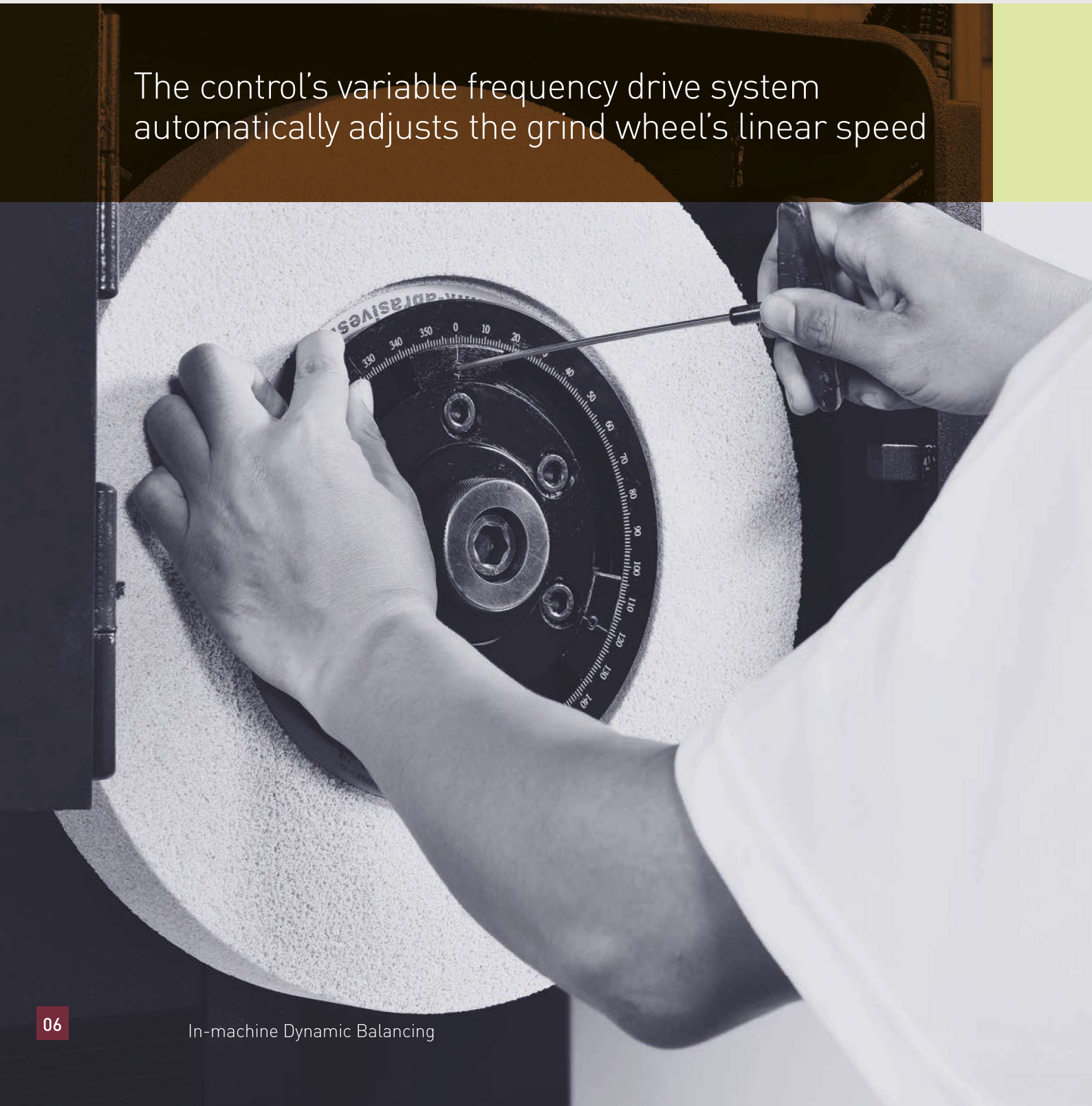
All new iSurface control

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 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.

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



In-machine Dynamic Balancing

Perfect HMI control

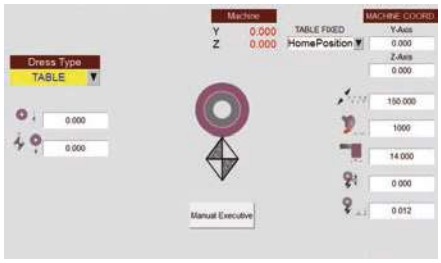
The control's standard equipment includes a 10.4" high-color touchscreen with HMI.



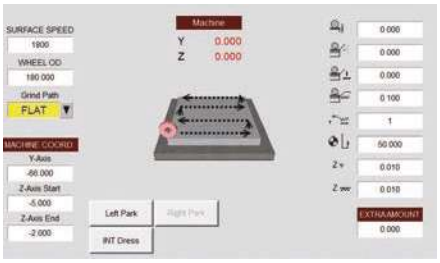
In-Machine Dynamic Balancing



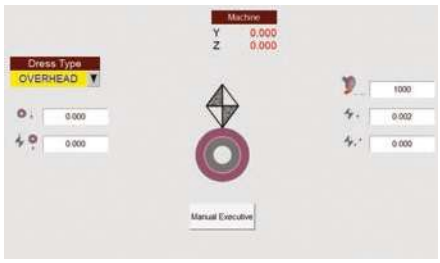
Plunge Grinding Mode



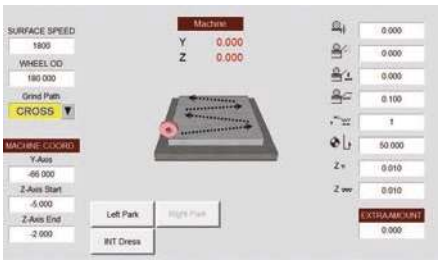
Automatic Dressing on Table (optional)



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.

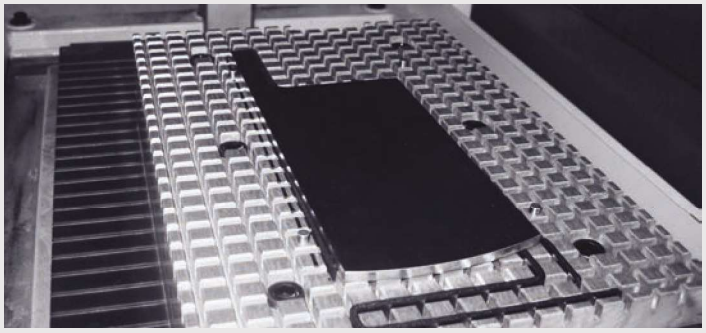


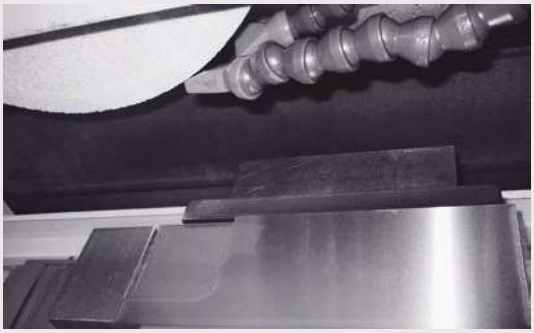
The FSG-1224AF is shown with optional accessories.



On Table Dressing

Applications

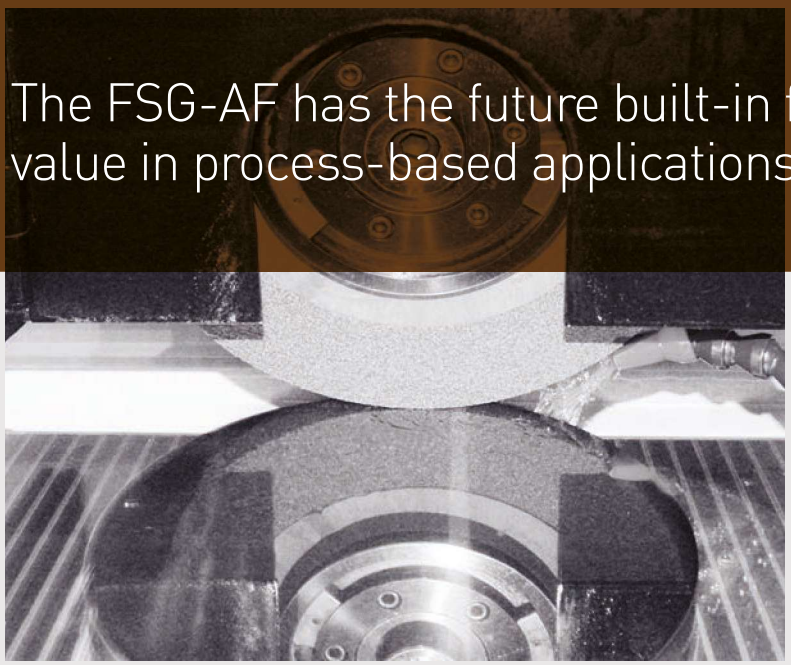




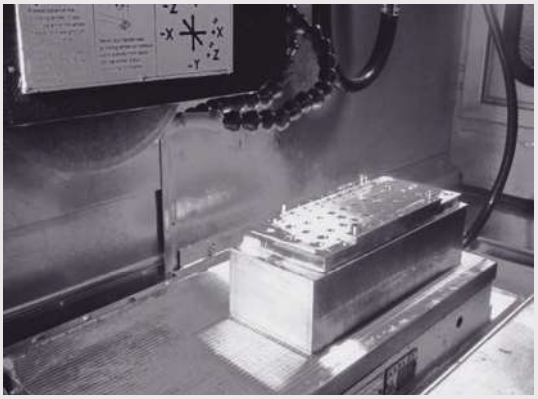




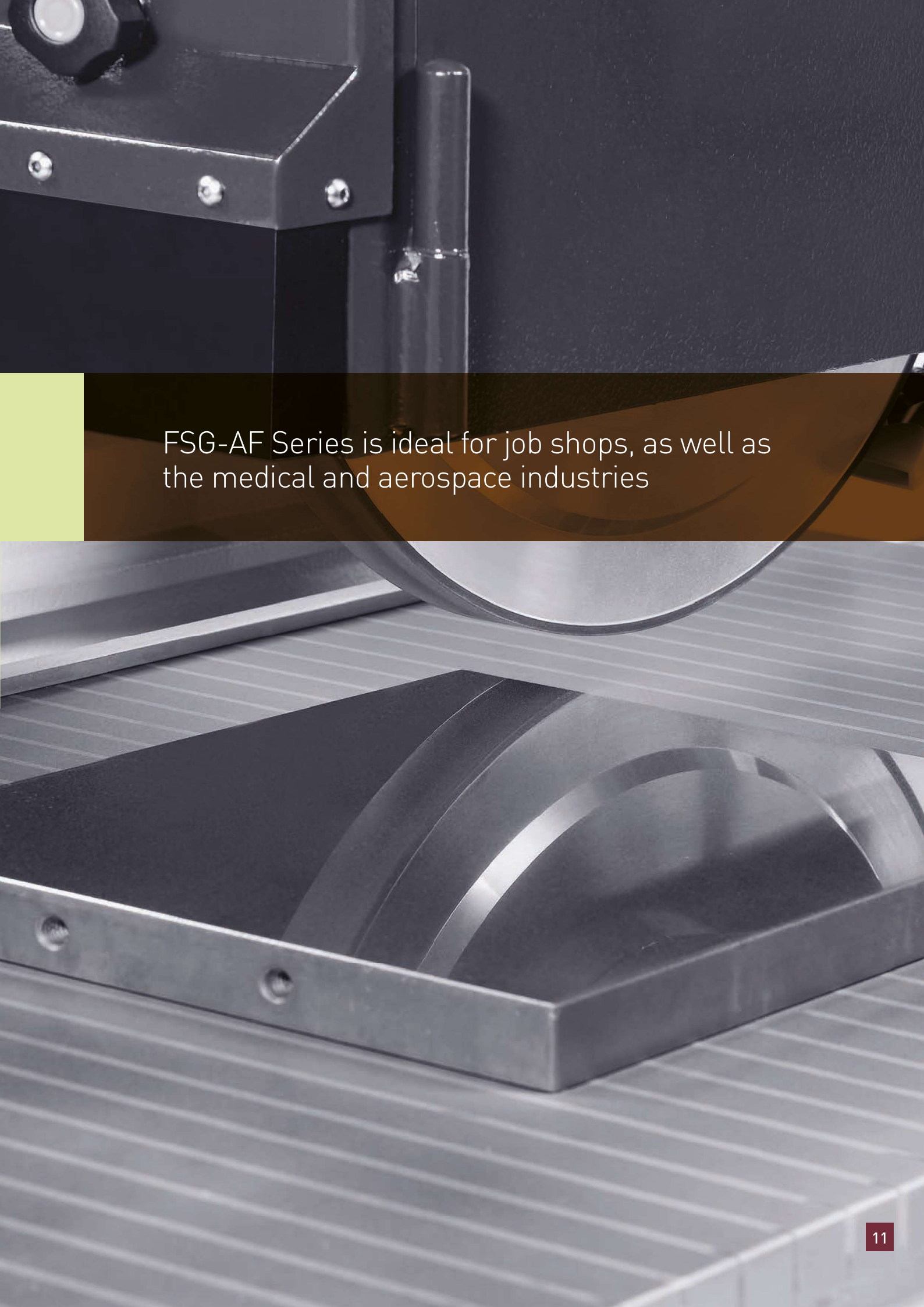
The FSG-AF has the future built-in for long-term value in process-based applications.









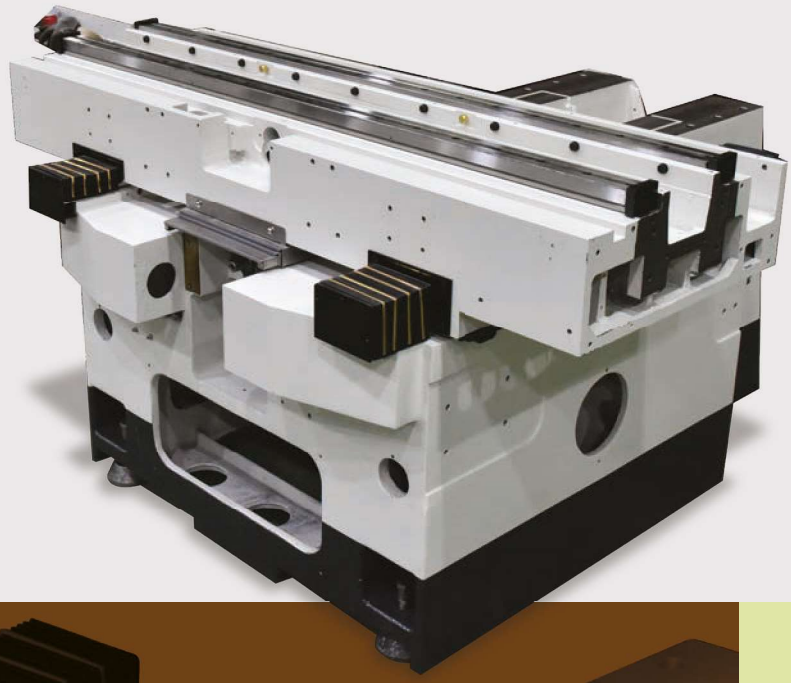


FSG-AF Series is ideal for job shops, as well as the medical and aerospace industries

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 speed is 5~25 m/min (16~82 fpm).

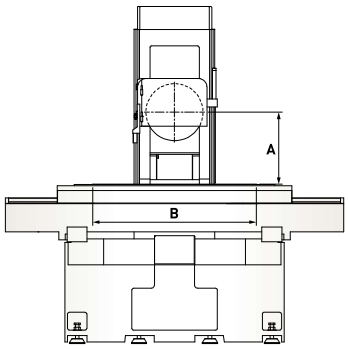
Heavy-duty needle roller bearings ways

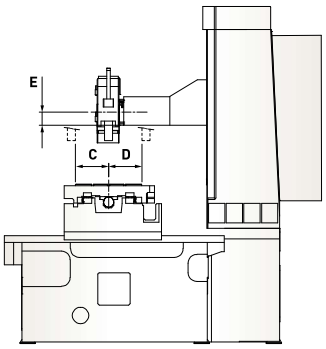
Ultra-low friction improves accuracy and lowers maintenance costs.

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



Maximum Working Space



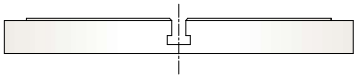


Item	A	B	C	D	E
FSG-1224AF	600 (23.6)	610 (24)	152.5 (6)	152.5 (6)	82 (3.2)
FSG-1640AF	600 (23.6)	1,015 (40)	202.5 (8)	202.5 (8)	82 (3.2)

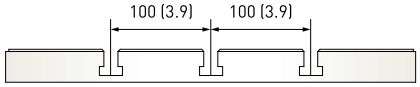
Table and T-slot Dimensions

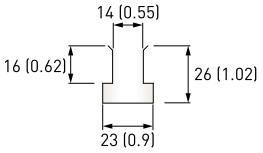
Units: mm (")

FSG-1224AF



FSG-1640AF

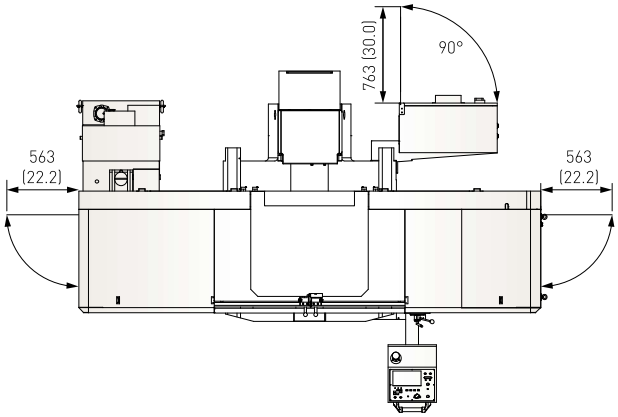


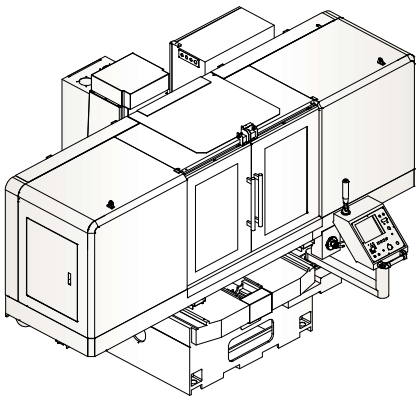


FSG-1224AF	T-slot x 1
FSG-1640AF	T-slot x 3

Machine Dimensions

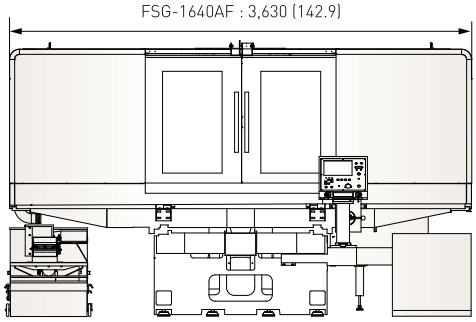
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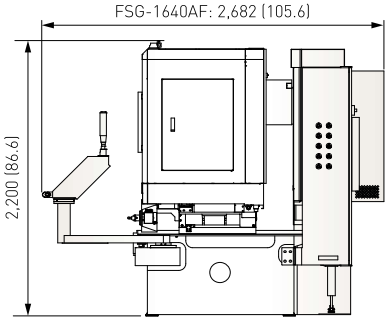


Note: Machine shown with optional accessories.

FSG-1224AF : 2,710 (106.7)
FSG-1640AF : 3,630 (142.9)



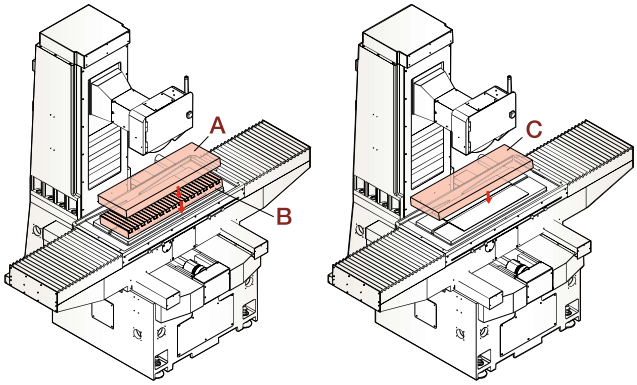
FSG-1224AF: 2,428 (95.6)
FSG-1640AF: 2,682 (105.6)

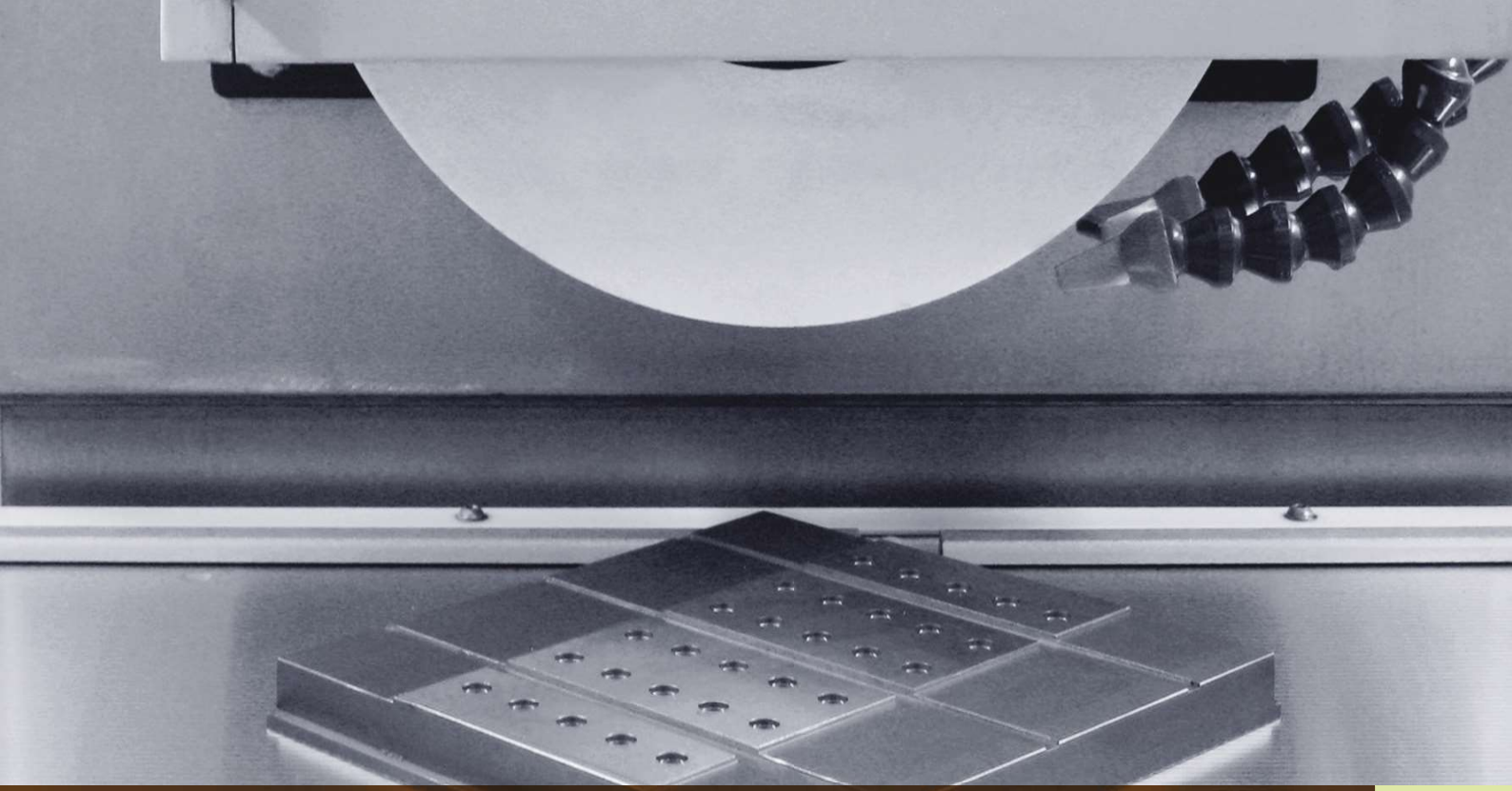


Loading Capacity

Item	FSG-1224AF	FSG-1640AF
A	314 kg (692 lbs.)	423 kg (931 lbs.)
B	106 kg (233 lbs.)	247 kg (544 lbs.)
C	420 kg (925 lbs.)	670 kg (1,475 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 screws, nuts and pads: 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)

Specifications

Item	Description	FSG-1224AF	FSG-1640AF
Control system		iSurface	
Capacity	Max. grinding length-longitudinal	610 mm (24.0")	1,015 mm (40.0")
	Max. grinding width-crosswise	305 mm (12.0")	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 (925 lbs.)	670 kg (1,475 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	500~2,000 rpm	
	Spindle motor	5.5 kW (7.5 HP)	
Motors	Axis motors (Y/Z)	Y/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 2,200 mm (106.7" x 95.6" x 86.6")	3,630 x 2,682 x 2,200 mm (142.9" x 105.6" x 86.6")
	Net weight	3,500 kg (7,710 lbs.)	4,800 kg (10,580 lbs.)
Accuracy	Accuracy standard	ISO 1986-1	

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