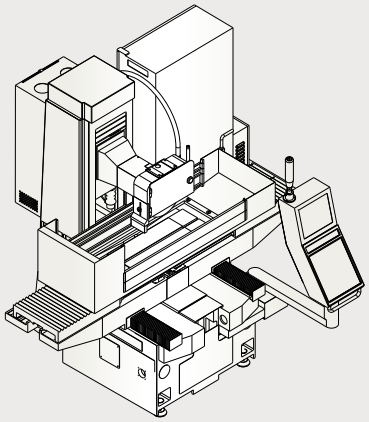
SMART-H/B 818/12/16IV Series

Multi-function CNC Surface Grinders

Intelligent. Dynamic. Affordable.

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

Chevalier's new, next generation SMART iControl simplifies operational procedures and enhances the performance of our CNC grinders



Intelligent. Dynamic. Affordable.

These words describe the driving forces behind the new design of our SMART-IV CNC surface grinders. These are the benchmarks required by the medical, energy, semiconductor, aerospace, mold and processing industries in order to meet current and future market demands.

This series is designed specifically for the grinding of complex workpieces. By selecting corresponding accessories, fixtures and customized configurations for automation, it can enhance performance, precision, and stability to meet the demand of stringent quality requirements.

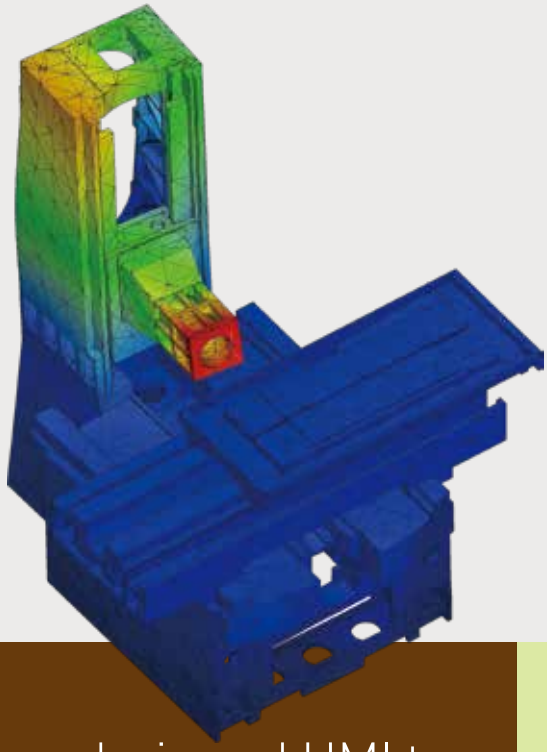
Our grinding machines are designed to be user friendly. Now, our exclusive next generation SMART iControl incorporates production efficiency, which simplifies operation procedures and greatly enhances the performance of Chevalier CNC grinders. Combined with TaskLink+, it allows operators to easily create their own programs for generating complex grinding tasks in a single cycle.

The SMART-B1224IV is shown with optional accessories.

Key Features and Benefits

Optimized structure

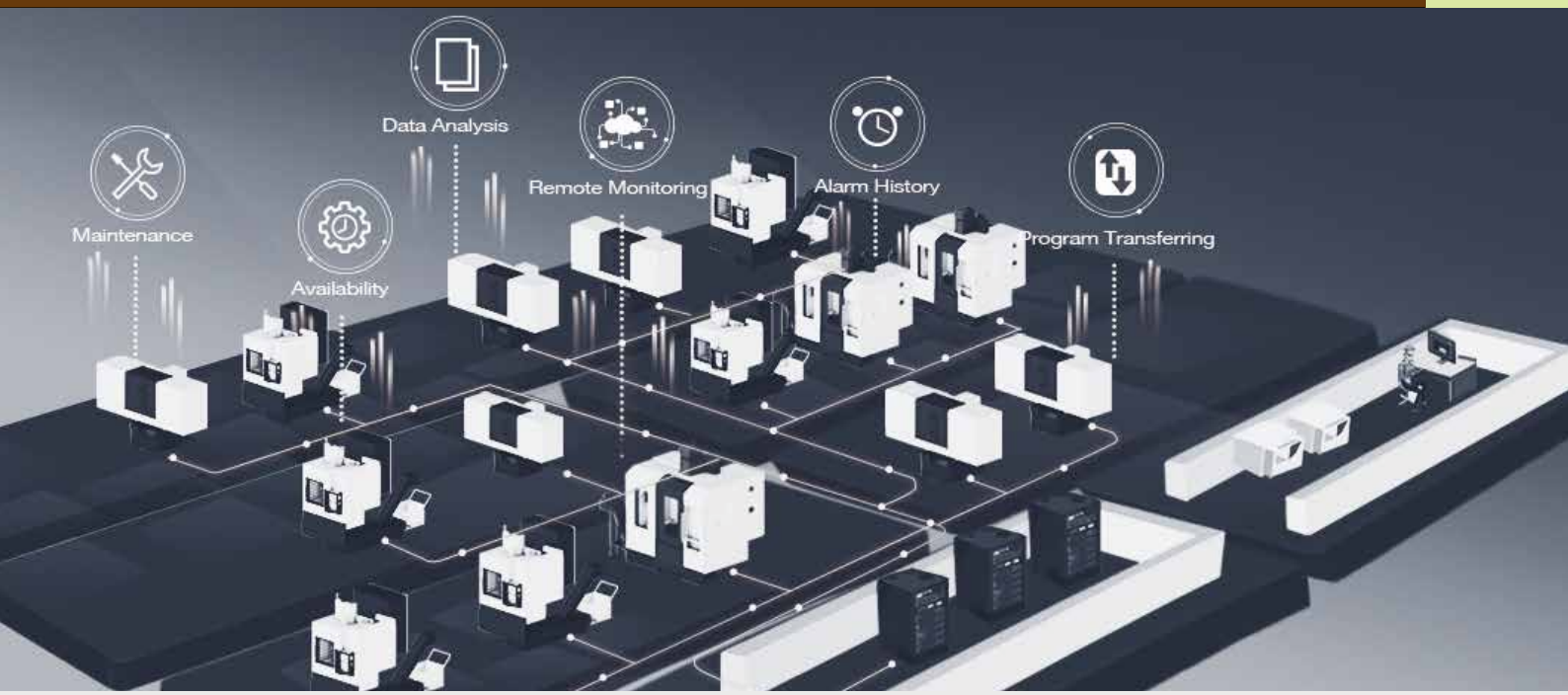
To enhance structural rigidity, increase stability and achieve high precision in grinding efficiency, SMART-H/B818IV features double "V" guideway and counterweight balance system design.
SMART-H/B12/16IV is equipped with preloaded needle roller bearings guideways, counterweight balance system and a fully supported guideway design.



Optional fully enclosed cover design

The fully enclosed cover design provides more protection, preventing cutting coolant splashing and oil mist dissipation. It completely protects the operator, avoiding grinding danger.

A higher level of computing, data analysis and HMI to improve your production process



The iMachine Communications System™ collects and integrates data from different machine controllers* and monitors the tasks and processes remotely. That means you will save physical time being in front of machines, reduce production time by monitoring on one device and foresee the wear and tear with live data.

**Controllers vary depending on regions and may be subject to change without notice or obligation.*

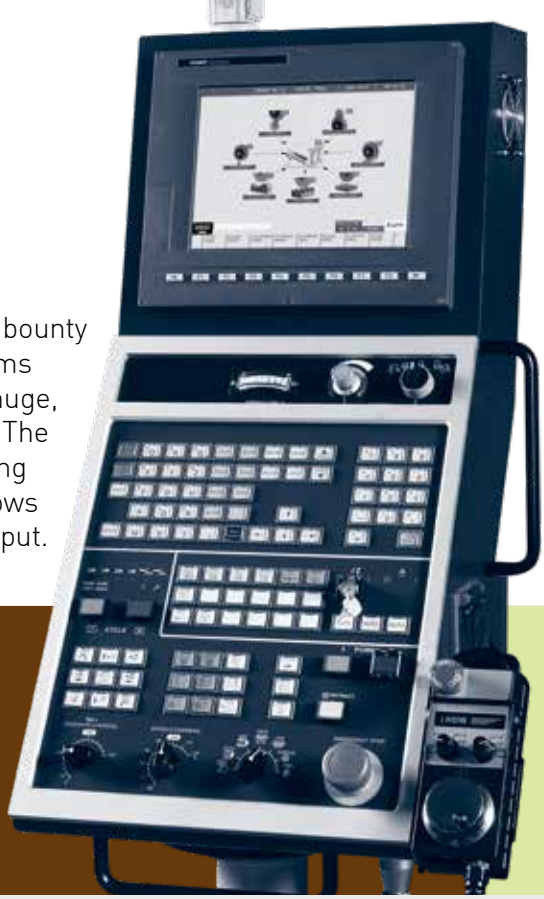
iMachine Communications System™ (iMCS)

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

The Next Generation of SMART iControl

Now, our exclusive next generation SMART iControl delivers a bounty of benefits. Users no longer need to write complicated programs and memorize detailed variables. Instead, they can complete huge, complex processing programs and perform intricate grinding. The powerful computing ability enhances the HMI for better grinding accuracy and with data analysis from network connectivity allows managers to improve the production process and increase output.



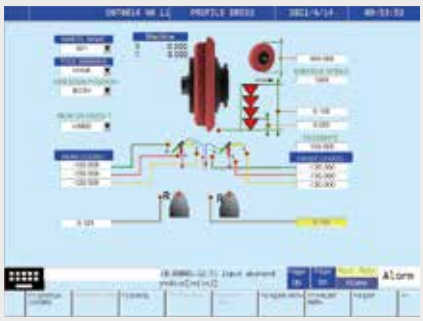
The SMART iControl's conversational programming eliminates complicated programming codes

The SMART iControl supports M3 serial communication servo systems, featuring a high computing capabilities of 2,000 single blocks per second to produce high precision smoothness, high precision contour control, machining path smoothing, multi-group working conditions, and quick parameter settings to significantly improve the workpiece's accuracy and geometry.

Up to eight CNC axes can be controlled for multifunction machining requirements. A single axis group can connect up to four axes of four/five axes for complex forming machining.

To meet future automation needs, it can accommodate extra IO connections (optional) and connect other automation equipment.

Human-machine interface (HMI) of SMART iControl, featuring Chevalier's exclusive conversational graphic program, enhances user-friendly operations. It implements an MPG simulation, where the operator can run the program by rotating handwheel forward or in reverse to check for interference and prevent collisions. Even beginners can use the control with ease.



Intelligent grinding assistant system

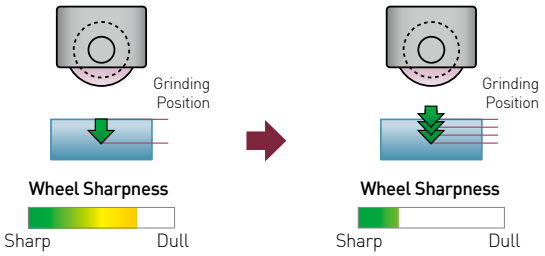
Sets parameters based on prioritizing the machining process for precision or speed in order to improve application efficiency.

Worktable reversing smoothing function (SMART-B type)

Low-frequency vibration is suppressed during reciprocating motion to enhance the surface finish of the workpiece and improve efficiency.

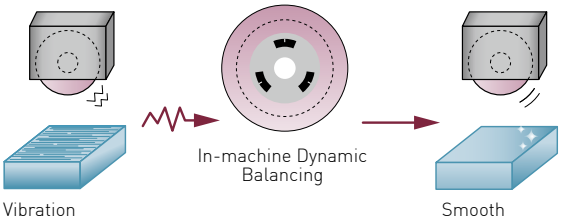
Intelligent auto wheel dressing

This function detects when the wheel needs to reach optimal cutting efficiency regardless of operator experience to avoid poor grinding quality.



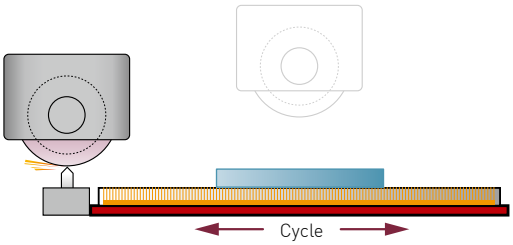
In-machine dynamic balancing

Operator can manually adjust the grinding wheel balance to reduce wheel vibration and eliminate chatter marks to improve grinding quality.



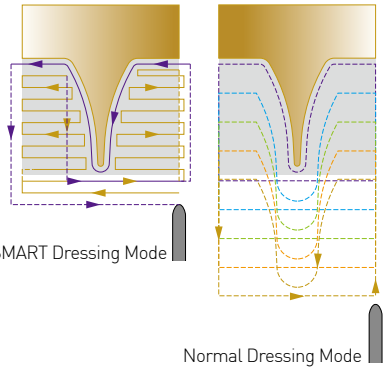
Automatic wheel dressing with compensation

An automatic wheel dressing with compensation feature dresses the wheel automatically during rough and/or fine grinding and again at the end of rough grinding. This enables the machine to run unattended for hours, making it ideal for high-volume production runs, while reducing machining costs and increasing line productivity.



Constant-contact dressing mode

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



Applications

The SMART-IV easily adapts to future needs for job shops, medical, automotive, semiconductor and aerospace industries

Machine Construction SMART-H/B818IV

Spindle design

The spindle is supported by four Class 7 (P4), ultra-precision angular contact ball bearings and features an air-cooling circulation design.

The SMART-B818IV is shown with optional accessories.

Elevating transmission mechanism and counterbalance system

The wheelhead elevation accuracy is designed with a counterweight balance system to ensure micro down feed accuracy.

Precision angular contact ball bearings run through a matching sleeve, which is preloaded between the linear guideways to ensure accurate and precise positioning with stick-slip free movement.

The double “V” guideways for table and saddle aids in precision side grinding operations

Swivelable control panel

Users can easily adjust it for ergonomic operation.

Double "V" guideways for table and saddle

The hand-scraped, Turcite-B longitudinal guideways between table and saddle feature a double "V" design, which is ideal for side grinding operations.

Longitudinal double "V" guideways

Cross feed double "V" guideways

Machine Construction
SMART-H/B1224IV / SMART-H/B1640IV

The SMART-B1640IV is shown with optional accessories.

The SMART-H1224IV is shown with optional accessories.

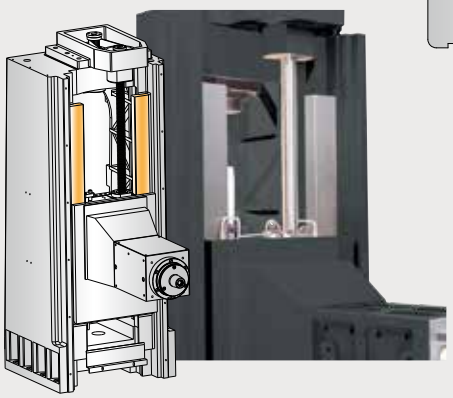
Spindle design

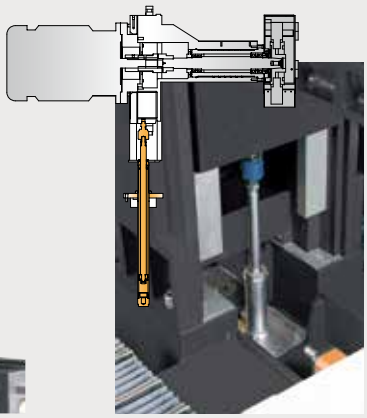
The spindle is supported by four Class 7 (P4), ultra-precision angular contact ball bearings and features an air-cooling circulation design.

A hardened and ground table guideway system with precision-needle roller bearings provides stick-slip-free movement when cutting or in rapid traverse

Elevating transmission mechanism and counterbalance system

The elevating transmission design are hardened and laminated with Turcite-B anti-friction materials. along with a counterbalance system, to reduce ballscrew wear, enhance vertical movement sensitivity, and ensure downfeed accuracy.





Completely supported guideways

SMART-H/B12/16IV Series CNC surface grinder's guideways for crossfeed and longitudinal travel are designed with an ultra-long full-support configuration. This design enhances the stability of worktable and machine column during movement, while also improving the rigidity and lifespan of the machine.

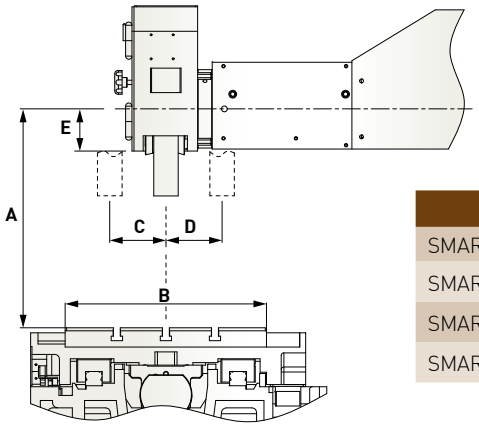
Heavy-duty needle roller bearings ways

Ultra-low friction coefficient, providing better accuracy and lower maintenance costs.

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

Max. Working Space

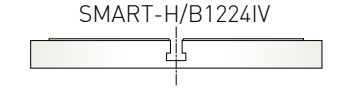
Units: mm (")



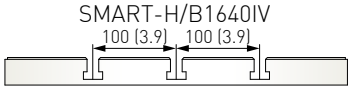
Item	A	B	C	D	E
SMART-H818IV	445 (17.5)	200 (7.9)	100 (3.9)	100 (3.9)	62 (2.4)
SMART-B818IV	395 (15.6)	200 (7.9)	100 (3.9)	100 (3.9)	62 (2.4)
SMART-H/B1224IV	600 (23.6)	300 (11.9)	167.5 (6.6)	182.5 (7.2)	86 (3.4)
SMART-H/B1640IV	600 (23.6)	400 (15.7)	222.5 (8.8)	227.5 (9.0)	86 (3.4)

Table and T-slot Dimensions

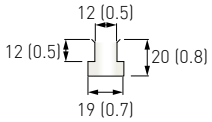
SMART-H/B818IV
SMART-H/B1224IV



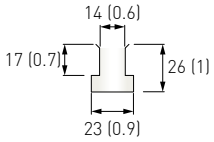
SMART-H/B1640IV



SMART-H/B818IV

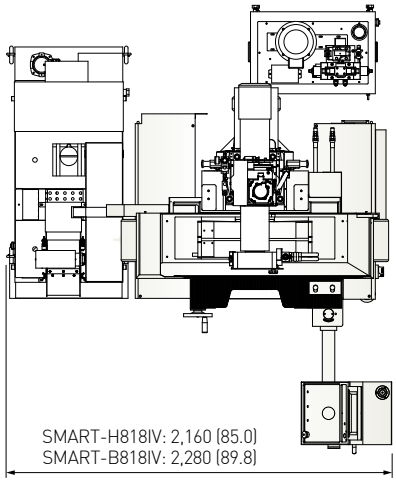


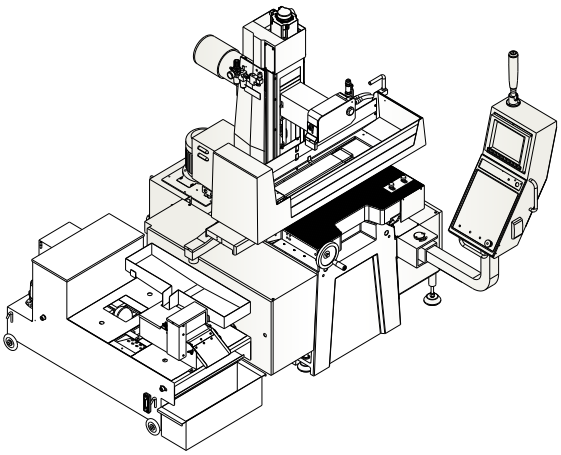
SMART-H/B1224/1640IV



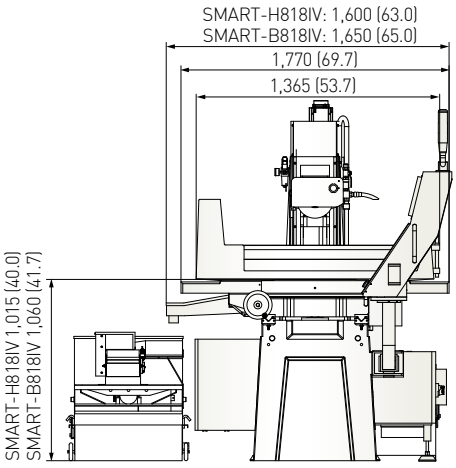
SMART-H/B818IV	T-slot x 1
SMART-H/B1224IV	T-slot x 1
SMART-H/B1640IV	T-slot x 3

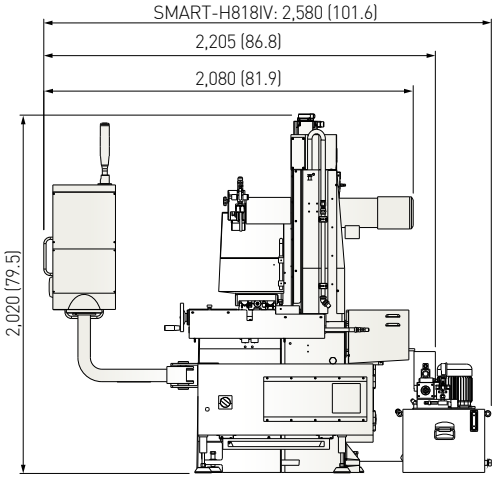
Machine Dimensions
SMART-H/B818IV





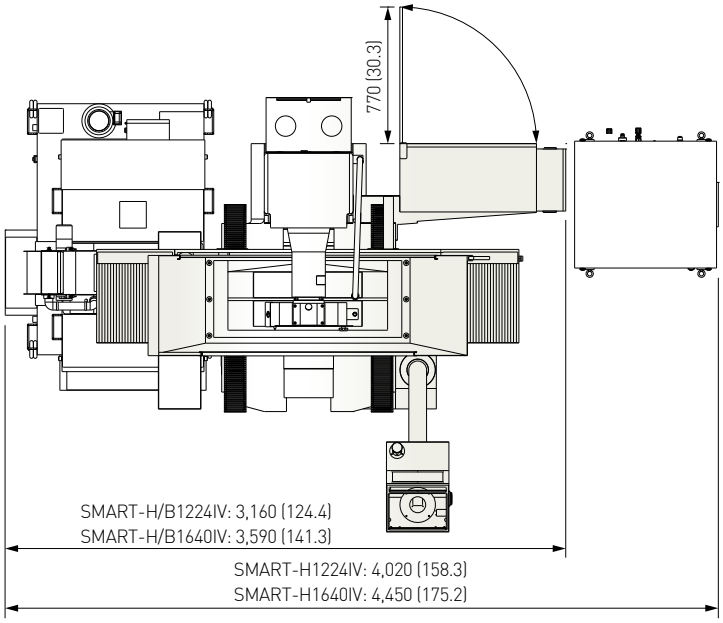
Note: Machine shown with optional accessories.

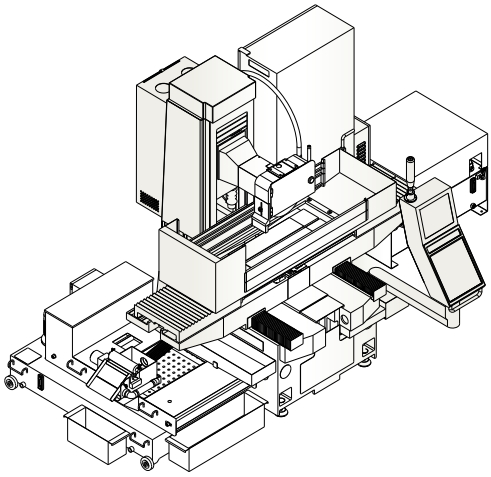




Machine Dimensions
SMART-H/B1224IV / SMART-H/B1640IV

Units: mm (")





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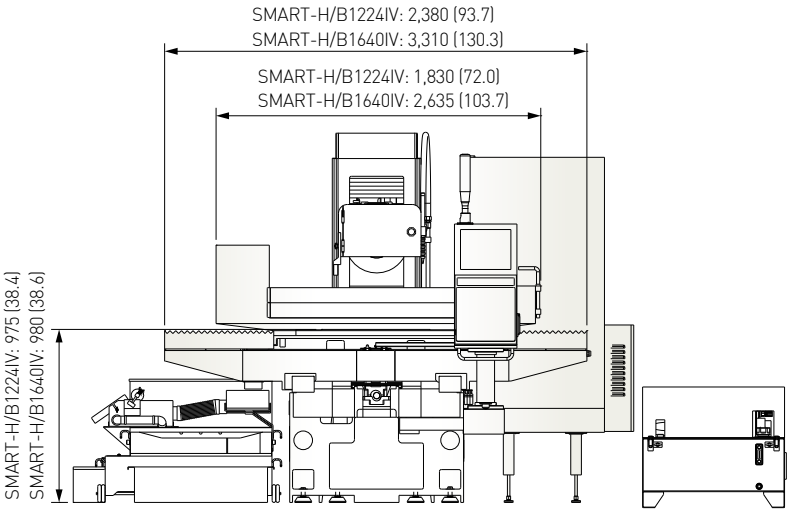
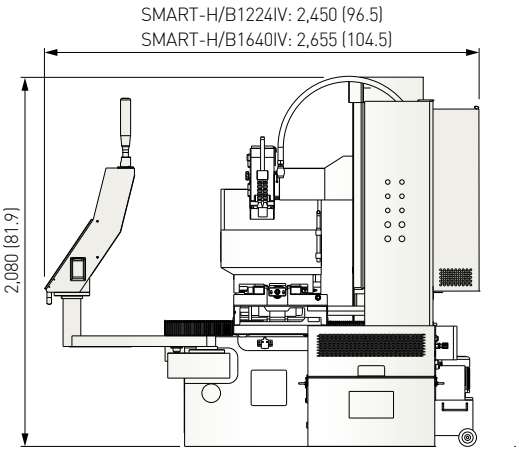
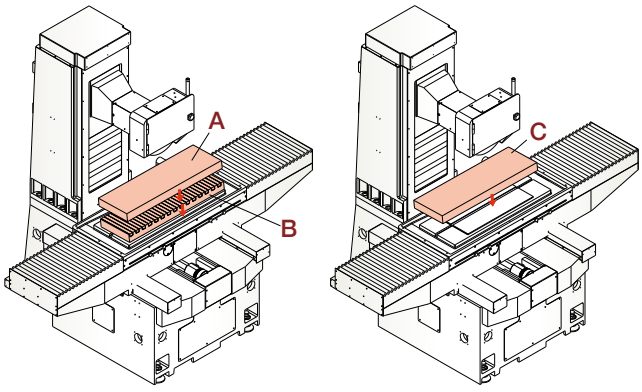




Loading Capacity

Item	SMART-H/B818IV	SMART-H/B1224IV	SMART-H/B1640IV
A	175 kg (385 lbs.)	195 kg (430 lbs.)	250 kg (551 lbs.)
B	35 kg (77 lbs.)	175 kg (385 lbs.)	220 kg (485 lbs.)
C	210 kg (462 lbs.)	370 kg (815 lbs.)	470 kg (1,036 lbs.)

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



A full line of standard and optional accessories adds flexibility to SMART-IV Series grinders

Accessories

Standard accessories

- Wheel flange (clamping width):
  SMART-H/B818IV:
  6.3~19 mm (0.2" ~ 0.7")
  SMART-H/B12/16IV Series:
  19~38 mm (0.7" ~ 1.5")
- Grinding wheel (OD x Width x Bore):
  SMART-H/B818IV:
  Ø205 x 12.7 x Ø31.7 mm (Ø8" x 0.5" x Ø1.3")
  SMART-H/B12/16IV Series:
  Ø355 x 50 x Ø127 mm (Ø14" x 2" x Ø5")
- Wheel mounting/dismounting tools
- Hole plugs
- Splash guard
- Heat exchanger
- Leveling screws, nuts and pad:
  SMART-H/B818IV: 3 sets
  SMART-H/B12/16IV Series: 6 sets
- Toolbox includes balancing arbor (wheel), hook wrench, hex head wrench, ring spanner (41 mm)

Optional accessories

- 15" LCD touch screen with HMI (SMART-H/B12/16IV Series)
- Chuck control
- Electromagnetic chuck
- Diamond dresser
- Balancing stand roller type
- Coolant system with auto paper feeding device
- Coolant system with auto paper feeding device and magnetic separator
- Hydraulic tank and oil cooler
- Grinding wheel dynamic balancer (SMART-H/B12/16IV Series)
- Rotary tables
- Single disc dresser
- Dual support rolling type wheel dresser
- Linear scales

Specifications

Item	Description	SMART-H818IV	SMART-B818IV	SMART-H1224IV	SMART-B1224IV	SMART-H1640IV	SMART-B1640IV
Control system		SMART iControl					
Capacity	Max. grinding length-longitudinal	460 mm (18.1")		610 mm (24.0")		1,015 mm (40.0")	
	Max. grinding width-crosswise	200 mm (7.9")		305 mm (12.0")		406 mm (16.0")	
	Distance between table to spindle centerline	445 mm (17.5")	395 mm (15.6")	600 mm (23.6")		600 mm (23.6")	
	Max. table load	210 kg (462 lbs.)		370 kg (815 lbs.)		470 kg (1,036 lbs.)	
Table	Table size	200 x 460 mm (7.9" x 18.1")		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.)	12 mm x 124 mm x 1 (0.5" x 4.9" x 1)		14 mm x 152.5 mm x 1 (0.6" x 6.0" x 1)		14 mm x 100 mm x 3 (0.6" x 3.9" x 3)	
	Height from the machine table to ground	1,015 mm (40.0")	1,060 mm (41.7")	975 mm (38.4")		980 mm (38.6")	
	Table speed (variable)	0.1~25 m/min (0.33~82 fpm)	0~20 m/min (0~65.6 fpm)	5~25 m/min (16~82 fpm)	0~20 m/min (0~65.6 fpm)	5~25 m/min (16~82 fpm)	0~20 m/min (0~65.6 fpm)
	Max. table travel	510 mm (20.1")		700 mm (27.6")		1,100 mm (43.3")	
Transverse movement (Z)	Max. travel	220 mm (8.7")		350 mm (13.8")		450 mm (17.7")	
	Feed speed	0~3,000 mm/min (0~10 fpm)					
	Min. input	0.001 mm (0.0001")					
Wheelhead elevation (Y)	Max. travel	340 mm (13.4")	290 mm (11.4")	440 mm (17.3")			
	Feed speed	0~3,000 mm/min (0~10 fpm)					
	Min. input	0.001 mm (0.0001")					
Spindle	Spindle speed (variable speed)	1,000~7,000 rpm		500~1,800 rpm			
	Spindle motor	3 kW (4 HP)		11 kW (15 HP)			
Motors	Axis motors (X / Y / Z)	Y/Z: 1.1 kW	X: 2.4 kW Y/Z: 1.1 kW	Y/Z: 1.1 kW	X: 3.9 kW Y/Z: 1.1 kW	Y/Z: 1.1 kW	X: 3.9 kW Y/Z: 1.1 kW
	Hydraulic motor	1 HP	—	3 HP	—	3 HP	—
Wheel dimension	OD x Width x Bore	Ø205 x 12.7 x Ø31.75 mm (Ø8" x 0.5" x Ø1.3")		Ø355 x 50 x Ø127 mm (Ø14" x 2" x Ø5")			
Power and air requirement	Power required	12 kVA		26 kVA			
	Total air consumption — Pressure	6 kg/cm² (86 psi)					
	Total air consumption — Flow	200 NL/min (7 cfm)					
Tank capabilities	Hydraulic tank capacity	90 L (23 gals.)	—	150 L (39 gals.)	—	150 L (39 gals.)	—
Machine dimensions	Floor space (W x D x H)	2,160 x 2,580 x 2,020 mm (85.0" x 101.6" x 79.5")	2,280 x 2,205 x 2,020 mm (89.8" x 86.8" x 79.5")	4,020 x 2,450 x 2,080 mm (158.3" x 96.5" x 81.9")	3,160 x 2,450 x 2,080 mm (124.4" x 96.5" x 81.9")	4,450 x 2,655 x 2,080 mm (175.2" x 104.5" x 81.9")	3,590 x 2,655 x 2,080 mm (141.3" x 104.5" x 81.9")
	Net weight	1,500 kg (3,300 lbs.)		3,200 kg (7,000 lbs.)		4,200 kg (9,300 lbs.)	
Accuracy	Positioning accuracy	0.004 mm (0.00016")		0.005 mm (0.0002")			
	Repeatability accuracy	0.003 mm (0.00012")		0.003 mm (0.00012")			
	Accuracy standard	ISO 1986-1					

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TÄGLICH AKTUALISIERTE LAGERLISTE UNTER www.hesse-maschinen.com

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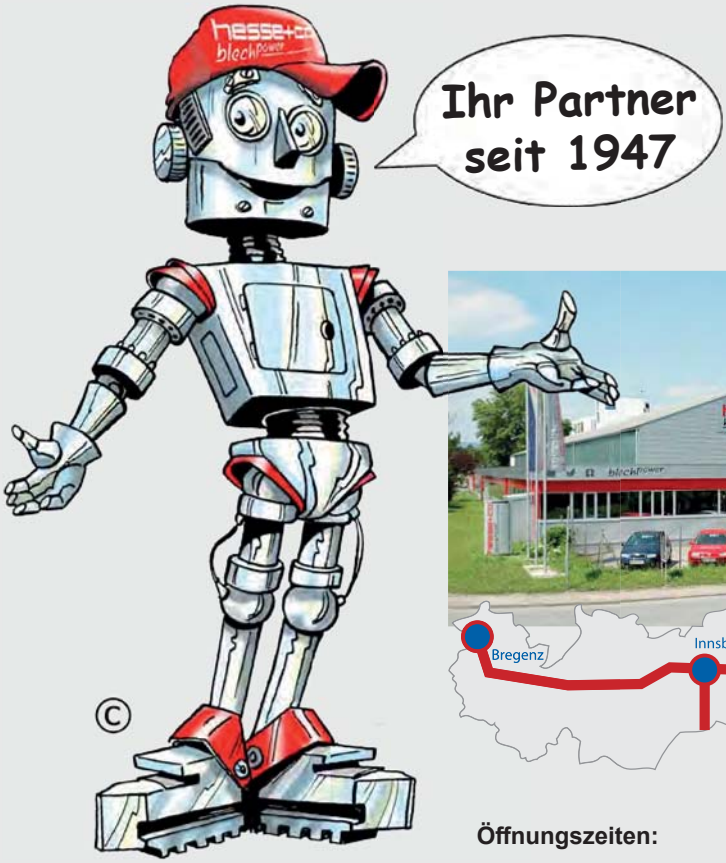

Öffnungszeiten:

Mo - Do 8:00 - 16:30 Uhr
Fr 8:00 - 14:30 Uhr

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