



PROTH Surface Grinders

SIMPLE IS THE BEST

Founded in 1980, **PROTH** Industrial Co., Ltd. has specialized in the field of precision surface grinders. As a highly reputed manufacturer of precision surface grinders in Taiwan, a whole line of surface grinders are manufactured in house, including the following series: small saddle, medium column & over-arm, large double column planer, rotary and CNC surface grinders. In dedicated to research and develop the most comprehensive ranges of surface grinders, our mission is to provide the finest quality in assisting customers to achieve the best performance.

Over the years, **PROTH** supplies the best machines with excellent service has been highly acclaimed both domestically and internationally. With a proud commitment to quality control, **PROTH** surface grinders consistently surpass all the rigorous quality requirements of the European and Japanese markets.

In addition to the emphasis on innovating our product lines, achieving a better working environment with social and environment concerns, **PROTH** Industrial Co., Ltd. seeks to provide not only the best surface grinding machines but to do so with the focus on humanity.

"Simple is the best". The simplest design contributes to maximizing excellent grinding implementation.

R&D Capabilities

Constant technical upgrade has long been a **PROTH** tradition, our outstanding R&D team continuously develops new models to meet customers' requirements and assist customers to stay competitive. All surface grinders are developed and manufactured in-house. We are proud of our R&D professions who are from various machinery backgrounds with the same passion in dedicating to up-to-date surface grinding technology. With unceasing enthusiasm towards R&D, **PROTH** offers supreme surface grinders with competitive edge.

Stability Guaranteed

Coins remain standing upright while the machine is in operation. The hydraulic system is designed particularly to assure extremely smooth motion, quiet running and shock-free performance.



Minimum Vibration and Deformation Integrated One Piece Casting Design

PSGC, PSGO and PSGP models are all first precision ground before final hand finish scraping.

The slideway lengths are equal to table lengths, insuring table free from torsion and floatation.

Excellent Features for Absolute Precision Grinding

Surfaces of longitudinal table ways and saddle ways are all hand scraped by experts to insure high accuracy and to get perfect contact patterns between the matching surfaces. High rigidity, heavy loading capability and lowest twist deformation all yield maximum productivity with the highest surface finished and accuracy maintained.



Quality Assurance

At **PROTH**, we have a strong commitment to offer the best surface grinders with rigorous quality control throughout the entire manufacturing process. **PROTH** surface grinders have provided full satisfaction to each customer in both machine quality and performance. Fully equipped with a comprehensive range of inspection instruments for rigorously inspecting parts and machines, all these guarantee the maximum dependability of each surface grinder from **PROTH**.



Performance

Hydraulic System : **Extra Low Noise**

- Two single-acting hydraulic cylinders are anchored at very specific positions with their piston rods to enhance rigidity and stability. It creates a very stable table motion and eliminates table floatation.
- A specially designed hydraulic system, in consideration of preventing excessive heating of hydraulic oil and reducing table reversal shock, results in an extra smooth table movement.
- The hydraulic tank and pumping unit are separated from the main machine body to provide the following advantages:
 - Prevent the heat of warm hydraulic oil from entering the machine body and the cause of the expansion and distortion which can affect the accuracy of workpiece finished.
 - Prevent any vibration generated by the hydraulic pumping system from being transferred to the machine base and the cause of flatter marks on workpiece.
- Hydraulic-type driven system for table left/right motion provides the smoothest, shock-free stepless feeds for superior workpiece finished.
- In order to enhance the life of pistons, pumps, cylinders, O-rings and seals, oil filtration is provided to keep the supplied hydraulic oil free of dirt and grit.

Stress-Relieved Main Casting:

- All components of the main machine casting, such as base, table, saddle, column, etc., are all annealed TWICE with particular attention to remove all metallurgical stress.

Lubrication:

- Spindles:
 - Ultra high-grade sealed bearings and special formulated grease lubrication are partnered to provide long service life and lowest maintenance required.
- Table Longitudinal Ways:
 - The table longitudinal ways are automatically lubricated with oil supplied from the hydraulic unit via a cartridge type oil filter, which filters contaminate particles larger than 10 microns and prevents premature deterioration of the oil.
 - The filter not only keeps the oil in a clean condition, but also automatically keep the exact oil film thickness as soon as the hydraulic system is activated. No lubrication shortage would occur.

Grinding Spindle:

- The high precision high rigidity spindle is of a cartridge-type design, which provides easier accessibility and service when maintenance is needed.
- Multiple high-precision anti-friction axial and radial bearings are utilized specifically for absolute minimal play and run-out.
- A special type of grease-for-life bearing lubrication is accurately applied and sealed in house for long production hours of trouble free grinding.
- Spindle run-out is tested at better than 0.0025mm (0.0001") T.I.R.
- Spindles are quiet and vibration free.



Low-Friction Coated Surface:

- Most of the slideways consist of one cast iron precision scraped surface in contact with a specially designed anti-friction coated surface to provide smooth fluid motion.

PSGC-60120NC

Shown with Optional Equipment

PROGRESS

Slideways:

Models	Cross	Longitudinal
1535M	Double V Ways	Vee-Flat Ways
1545M	Double V Ways	Vee-Flat Ways
2045M	Double V Ways	Ball Rolling Ways
2550M	Double V Ways	Ball Rolling Ways



PSGS-2045M

Shown with Optional Equipment



PSGS-2550M

Specification:

Model		PSGS-1535M	PSGS-1545M	PSGS-2045M	PSGS-2550M
General Capacity	Max. Travel (Cross x Longitudinal)	160 x 375mm	160 x 475mm	210 x 475mm	270 x 550mm
	Spindle Center Height From Table	400mm			490mm
	Grinding Surface Of Table	150 x 350mm	150 x 450mm	200 x 450mm	250 x 500mm
Longitudinal Movement	Hydraulic Table Speed (60Hz)	Manual			
Cross Movement	Intermittent Cross Feed (Electro-Mechanical) Approx.	Manual			
	Continuous Cross Feed (Electro-Mechanical) Approx.	Manual			
	Hand Feed Per Revolution	5mm			4mm
	Hand Feed Per Division	0.02mm			
Vertical Downfeed	Rapid Traverse Approx. (Option) 50Hz	Manual			
	Hand Feed Per Revolution	1mm			
	Hand Feed Per Division	0.005mm			
Grinding Wheel	Dimension (O.D x W x I.D)	175 x 13(19) x 31.75mm			
	Spindle Speed 50/60Hz	3000 / 3600 r.p.m.			
Motor	Spindle Motor	1.1(1.5)KW / 1.5(2)HP		1.5KW / 2HP	2.2KW / 3HP
	Hydraulic Motor	Manual			
Weight	Net Weight	560kg	780kg	900kg	1100kg
	Gross Weight	800kg	1020kg	1140kg	1500kg
Packing Size	Dimension (L x W x H)	1.3 x 1.15 x 1.98m	1.4 x 1.04 x 2m	1.6 x 1.25 x 1.98m	1.77 x 1.5 x 1.95m

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REPUTATION

Slideways:

Models

1545H / 1545AH

2550H / 2550AH

3060H / 3060AH

3060H / 3060AH / 3060BH

4080AHR

Cross

Double V Ways

Double V Ways

Double V Ways

Double V Ways

Double V Ways

Longitudinal

V-Flat Ways

Double V Ways

Double V Ways

Double V Ways

Double V Ways

■ Longitudinal: Hydraulic

■ Cross: Automatic

■ Vertical: Manual Standard

■ Rapid Up/Down: Optional

■ Auto Down Feed: Optional

[ABBR.]

A : Auto-cross

B: Big Column

H: Hydraulic Longitudinal

R: Rapid Up/Down



Specification:

Model		PSGS-1545H PSGS-1545AH	PSGS-2550H PSGS-2550AH	PSGS-3060H PSGS-3060AH	PSGS-3060BH	PSGS-4080AHR
General Capacity	Max. Travel (Cross x Longitudinal)	160 x 475mm	280 x 600mm	340 x 700mm	340 x 700mm	460 x 900(1100)mm
	Spindle Center Height From Table	400mm	490mm		600mm	
	Grinding Surface Of Table	150 x 450mm	250 x 500mm	300 x 600mm	300 x 600mm	400 x 800(1000)mm
Longitudinal Movement	Hydraulic Table Speed (60Hz)	1-25m / min	1-25(0.3-25)m / min			
Cross Movement	Intermittent Cross Feed (Electro-Mechanical) Approx.	0.15-7.5mm / feed	0.1-10mm / feed			
	Continuous Cross Feed (Electro-Mechanical) Approx.	1200mm / min	1000mm / min			
	Hand Feed Per Revolution	5mm	4mm			
	Hand Feed Per Division	0.02mm				
Vertical Downfeed	Rapid Traverse Approx. (Option) 50Hz	220mm / min	240mm / min			
	Hand Feed Per Revolution	1mm				
	Hand Feed Per Division	0.005mm				
Grinding Wheel	Dimension (O.D x W x I.D)	175 x 13(19) x 31.75mm	175 x 13(19) x 31.75(355 x 25 x 127)mm		355 x 38 x 127mm	
	Spindle Speed 50/60Hz	3000 / 3600 r.p.m.	3000 / 3600 (1500 / 1800) r.p.m.		3000 / 3600 r.p.m	1500 / 1800 r.p.m.
Motor	Spindle Motor	1.1(1.5)KW / 1.5(2)HP	2.2KW / 3HP		3.7KW / 5HP	
	Hydraulic Motor	0.75KW / 1HP				1.5KW / 2HP
Weight	Net Weight	885kg	1350kg	1650kg	1900kg	2800(3400)kg
	Gross Weight	1100kg	1700kg	2100kg	2500kg	3400(3700)kg
Packing Size	Dimension (L x W x H)	1.6 x 1.15 x 1.98m	1.77 x 1.5 x 1.95m	2.3 x 1.55 x 1.95m	2.3 x 1.85 x 2.1m	2.3 x 1.9 x 2.1m 2.98 x 1.94 x 2.16m

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* PSGS-2550H and 3060H are only available for 3HP spindle motor and 175 x 13(19) x 31.75 mm wheel and manual cross feed.

* PSGS-3060BH is also available for 5HP spindle motor with 175x13(19)x31.75 mm wheel.

ORIENT

Slideways: Specifications in blue are for CNC models only

Models

50100AHR(CNC) / 50120AHR(CNC) / 50150AHR(CNC)

60120AHR(CNC) / 60150AHR(CNC) / 60220AHR(CNC) / 60250AHR(CNC)

Cross
Double V Ways
Double V Ways

Longitudinal
Double V Ways
Double V Ways

- Longitudinal: Hydraulic
- Cross: Automatic (CNC Controlled System)
- Vertical: Rapid Up/Down, Manual (CNC Controlled System)
- Auto Down Feed: Optional
- Controller: FANUC



PSGC-50150AHR

**Shown with Optional
Equipment**

Specification:

Model		PSGC-50100AHR PSGC-50100CNC	PSGC-50120AHR PSGC-50120CNC	PSGC-50150AHR PSGC-50150CNC	PSGC-60120AHR PSGC-60120CNC	PSGC-60150AHR PSGC-60150CNC	PSGC-60220AHR PSGC-60220CNC	PSGC-60250AHR PSGC-60250CNC
General Capacity	Max. Travel (Cross x Longitudinal)	560 x 1150mm	560 x 1350mm	560 x 1650mm	660 x 1350mm	660 x 1650mm	660 x 2350mm	660 x 2650mm
	Spindle Center Height From Table	700mm						
	Grinding Surface Of Table	500 x 1000mm	500 x 1200mm	500 x 1500mm	600 x 1200mm	600 x 1500mm	600 x 2200mm	600 x 2500mm
Longitudinal Movement	Hydraulic Table Speed (60Hz)	1-25m / min						
Cross Movement	Intermittent Cross Feed (Electro-Mechanical) Approx.	0.1-15(0.1-30)mm / feed						
	Continuous Cross Feed (Electro-Mechanical) Approx.	1500(50-1500)mm / min						
	Hand Feed Per Revolution	5mm						
	Hand Feed Per Division	0.02mm						
Vertical Downfeed	Rapid Traverse Approx. (Option) 50Hz	240mm / min						
	Hand Feed Per Revolution	0.25mm						
	Hand Feed Per Division	0.002mm						
Grinding Wheel	Dimension (O.D x W x I.D)	355 x 50 x 127mm						
	Spindle Speed 50/60Hz	1500 / 1800 r.p.m.						
Motor	Spindle Motor	7.5(11)KW / 10(15)HP						
	Hydraulic Motor	3.7KW / 5HP						
Weight	Net Weight	5800kg	6100kg	7000kg	6500kg	7400kg	8900kg	12500kg
	Gross Weight	6900kg	7500kg	8500kg	7900kg	9000kg	12000kg	15600kg
Packing Size	Dimension (L x W x H)	3.4 x 2.2 x 2.6m	4.6 x 2.2 x 2.6m	5.3 x 2.2 x 2.6m	4.6 x 2.3 x 2.6m	5.3 x 2.3 x 2.6m	6.4 x 2.3 x 2.6m	7.6 x 2.3 x 2.6m
CNC Specifications	Max. Travel (Cross x Longitudinal)	530 x 1150mm	530 x 1350mm	530 x 1650mm	630 x 1350mm	630 x 1650mm	630 x 2350mm	630 x 2650mm
	Spindle Center Height From Table	650mm						
	Hydraulic Table Speed (60Hz)	200-25000mm / min						
	Continuous Cross Feed (Electro-Mechanical) Approx.	0-5000mm / min						
	Micro Cross Infeed	0.001mm						
	Rapid Traverse Approx. (Option) 50Hz	0-500mm / min						
	Micro Vertical Infeed	0.001mm						
	Max. Height From Table Top To Bottom Of Standard Wheel	472mm						

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* A table mounted wheel dresser is available. This would reduce any standard longitudinal table travels by approx. 300 mm.

TECHNOLOGY

Slideways:

Models

60150AHR

75150AHR / 75220AHR / 75300AHR

Cross

Double V Ways

Double V Ways

Longitudinal

V-Flat Ways

V-Flat Ways

- Longitudinal: Hydraulic
- Cross: Automatic
- Vertical: Rapid Up/Down, Manual
- Auto Down Feed: Optional



PSGO-75150AHR

Specification:

Model		PSGO-60150AHR	PSGO-75150AHR	PSGO-75220AHR	PSGO-75300AHR
General Capacity	Max. Travel (Cross x Longitudinal)	660 x 1650mm	810 x 1650mm	810 x 2350mm	810 x 3150mm
	Spindle Center Height From Table	700(950)mm			
	Grinding Surface Of Table	600 x 1500mm	750 x 1500mm	750 x 2200mm	750 x 3000mm
Longitudinal Movement	Hydraulic Table Speed (60Hz)	1-25m / min			
Cross Movement	Intermittent Cross Feed (Electro-Mechanical) Approx.	0.1-15(0.1-30)mm / feed			
	Continuous Cross Feed (Electro-Mechanical) Approx.	1500(50-1500)mm / min			
	Hand Feed Per Revolution	5mm			
	Hand Feed Per Division	0.02mm			
Vertical Downfeed	Rapid Traverse Approx. (Option) 50Hz	240mm / min			
	Hand Feed Per Revolution	0.25mm			
	Hand Feed Per Division	0.0025mm			
Grinding Wheel	Dimension (O.D x W x I.D)	355 x 50 x 127mm			
	Spindle Speed 50/60Hz	1500 / 1800 r.p.m.			
Motor	Spindle Motor	7.5(11)KW / 10(15)HP			
	Hydraulic Motor	5.6KW / 7.5HP			
Weight	Net Weight	9350kg	11000kg	12500kg	14400kg
	Gross Weight	10800kg	12300kg	14000kg	16000kg
Packing Size	Dimension (L x W x H)	5.5 x 2.1 x 2.85m	5.5 x 2.25 x 2.85m	7 x 2.25 x 2.85m	8.8 x 2.25 x 2.85m

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HONEST

- Cross: Criss Cross Grinding (MPG on request)
- Vertical: Auto Down Feed AD1
- Tilted Table ($\pm 3^\circ$) is standard but on request



Shown with Optional Equipment

PSRS-600S



PSRC-600S

Specification:

Model		PSRS-400S	PSRS-500S	PSRS-600S
General Capacity	Max. Grinding Radius	240mm	290mm	340mm
	Spindle Center Height From Table	380mm		500mm
	Table Diameter	400mm	500mm	600mm
Rotary Table	Max. Speed	60 r.p.m.		
	Table Motor	0.75KW / 1HP		1.5KW / 2HP
Cross Movement	Continuous Cross Feed (Approx.)	1000mm / min		
	Hand Feed Per Revolution	4mm		5mm
	Hand Feed Per Division	0.02mm		
Vertical Downfeed	Rapid Traverse Approx. (Approx.) 50Hz	240mm / min		
	Hand Feed Per Revolution	MPG		
	Hand Feed Per Division	MPG		
Grinding Wheel	Dimension (O.D x W x I.D)	355 x 38 x 127mm		355 x 50 x 127mm
	Spindle Speed 50/60Hz	1500 / 1800 r.p.m.		
Motor	Spindle Motor	3.7KW / 5HP		
Weight	Net Weight	2800kg	3000kg	5000kg
	Gross Weight	3400kg	3700kg	6000kg
Packing Size	Dimension (L x W x H)	1.6 x 1.9 x 2.1m	1.8 x 1.9 x 2.1m	2.5 x 1.9 x 2.6m

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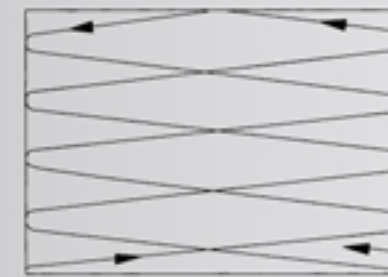
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Features and Attachment

Criss Cross Grinding (Standard – for PSGC Series)

1. The advantage of criss cross grinding is that the cross feed speed is infinitely variable, yielding a wide range of cross feed movement.
2. Table longitudinal movement and wheel head cross feed movement are synchronized and engaged simultaneously.
3. During table longitudinal movement, hydraulic table speed and spindle speed can be accommodated to get brilliant grinding results. This helps to grind very thin workpieces efficiently.



Criss-Cross Grinding



Incremental Grinding

Electric Touch Cross Traverse Setting System (Standard – for PSGC & PSGO Series)

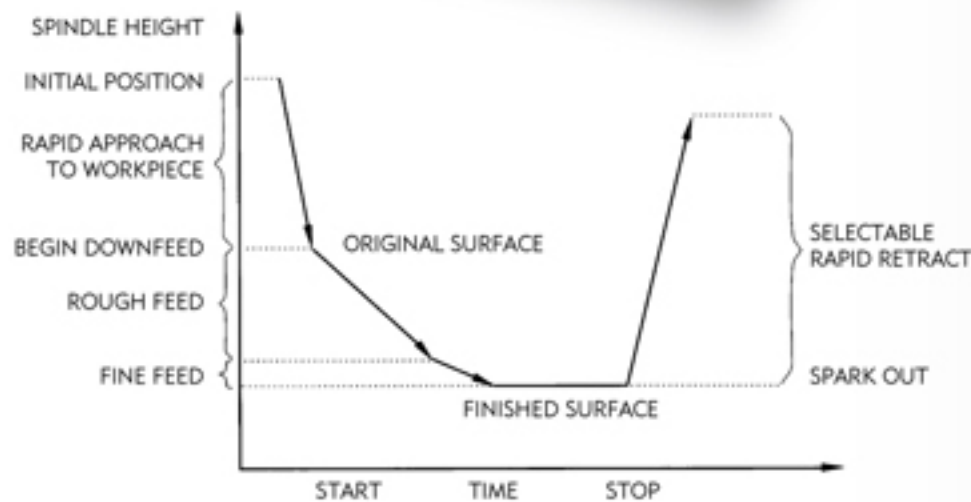
1. The advantage of this user-friendly electronic 'one-touch' system is to pre-set the width of surface cross grinding, which improves production time efficiently with a perfect performance finished.
2. Setting up the system is as easy as below:
Hold **Power Rapid Crossfeed** pushbutton down until the grinding wheel gets to the ideal starting position.
Press **SB33** pushbutton (the indicator light on the control panel will flash)
Hold **Power Rapid Opposite Crossfeed** pushbutton down until the grinding wheel gets to the ideal finishing position.
Press **SB33** pushbutton (the indicator light on the control panel will flash).
This is the whole setup of electric touch cross traverse setting system.



Optional Features and Attachment

Computerized Auto Down Feed ADI

1. Approach to the workpiece surface for the proper positions automatically and rapidly.
2. Minimum control increment is 0.001mm (0.0001").
3. Total stock removal resolution is up to 99999 μ m.
4. Total fine feed stock removal resolution is up to 99999 μ m.
5. Setting of "Spark-out" grinding up to 999 passes.
6. Selectable wheelhead retract clearance at job completion for convenient workpiece loading and unloading up to 300mm (9.9inch).



AD1 Grinding Process

Auto Down Feed ADC

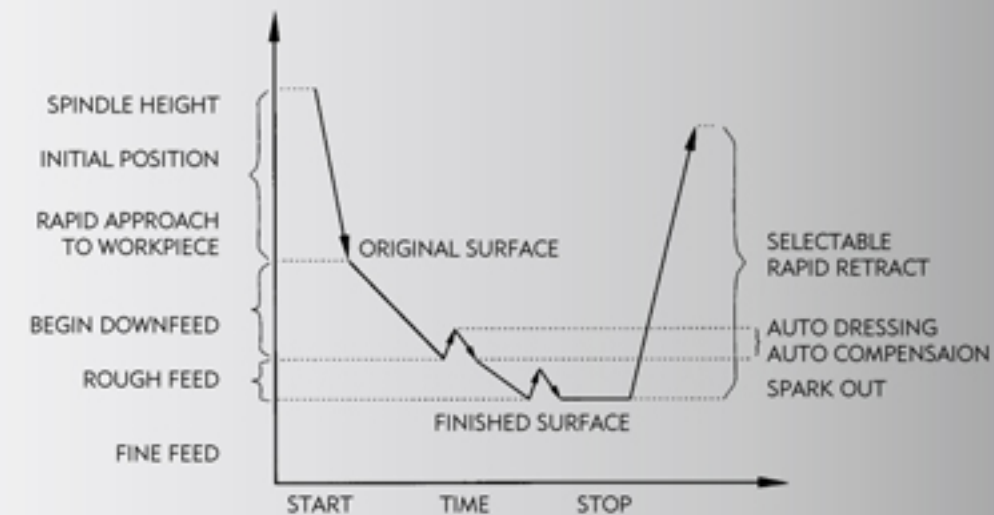
This attachment includes:

Computerized auto down feed AD 1

2 axes automatic dresser and auto compensation

Features:

1. Approach to the workpiece surface for the proper positions automatically and rapidly.
2. Minimum control increment is 0.001mm (0.0001").
3. Total stock removal resolution is up to 99999 μ m.
4. Total fine feed stock removal resolution is up to 99999 μ m.
5. Setting of "Spark-out" grinding up to 999 passes.
6. Selectable wheelhead retract clearance at job completion for convenient workpiece loading and unloading up to 300mm (9.9inch).



ADC Grinding Process

Optional Features and Attachment

Auto Down Feed AD3

This convenient attachment includes a built-in Power Rapid-Up (wheel retract) and Rapid Down (wheel approach) function as Fig. 1.

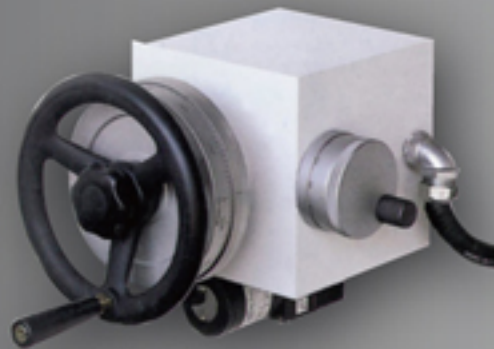


Fig. 1

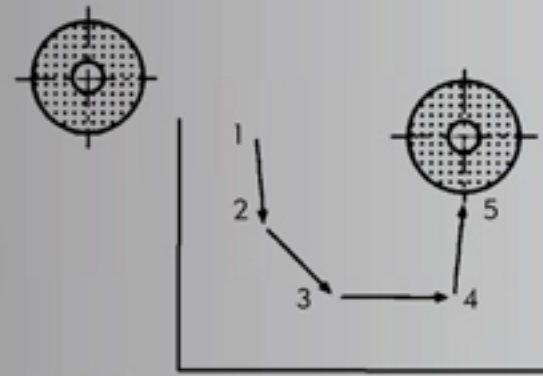


Fig. 2

Operational features as shown in the diagram (as Fig. 2) are:

Point 1: Wheel Starting Position

Point 1-2: Wheel rapidly approaches the workpiece by pressing power pushbutton

Point 2-3: Auto downfeed is engaged and individual incremental downfeeds per table stroke reversal may be preset by a lever, selectable in 6 steps for: 0.005mm, 0.01mm, 0.015mm, 0.02mm, 0.025mm, 0.03mm in metric or 5 steps for 0.0002", 0.0004", 0.0006", 0.0008" and 0.001" in inch

Point 3-4: Selectable sparkout passes are up to a max of 9 times

Point 4-5: Wheelhead rapidly retracts and shuts-down the spindle motor and hydraulic motor

Point 5: Table stops and parks conveniently at left or right side as desired for easy workpiece loading or unloading

NC Servo Control

1. Approach to the workpiece surface for the proper positions automatically and rapidly.
2. Minimum control increment: 0.001mm (0.0001").
3. Total stock removal resolution up to 99999 μ m.
4. Total fine feed stock removal resolution up to 99999 μ m.
5. Setting of "spark-out" grinding: up to 999 passes.
6. Pause grinding function during grinding cycles via "HOLD" button.
7. After the grinding process is completed, cycle end modes:
 - a. Spindle motor off
 - b. Hydraulic motor off
 - c. Power off



Standard Accessories

Pictures are for Reference Only



- 1.7" Wheelhead
- 2.Wheel Balancer
- 3.Wheel Balancing Arbor
- 4.Wheel Flange
- 5.Table-mounted Diamond Dresser
- 6.Tools
- 7.Tool Box

For Manual Models



- 1.7" Wheelhead
- 2.Wheel Balancer
- 3.Wheel Balancing Arbor
- 4.Wheel Flange
- 5.Table-mounted Diamond Dresser
- 6.Tools
- 7.Tool Box

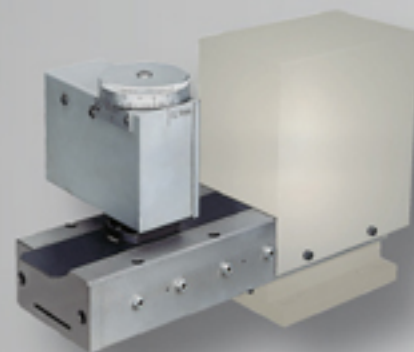


- 1.14" Wheelhead
- 2.Wheel Balancer
- 3.Wheel Balancing Arbor
- 4.Wheel Flange
- 5.Table-mounted Diamond Dresser
- 6.Tools
- 7.Tool Box

Optional Accessories



Electro Magnetic Chuck



Auto-Parallel Dressing Attachment
2 Axes Full Auto
(Electrical Cross + Step Control Down)



Cross Micrometer Attachment (PSGS)
1 division on cross handwheel: 0.002mm
1 revolution on cross handwheel: 0.04mm

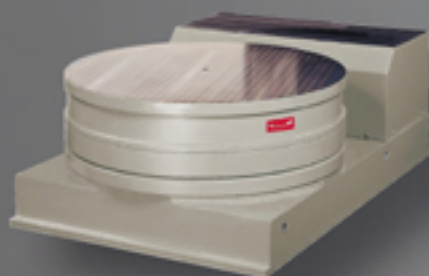


Inclinable Electro Magnetic Chuck



Parallel Dressing Attachment (PSGO)

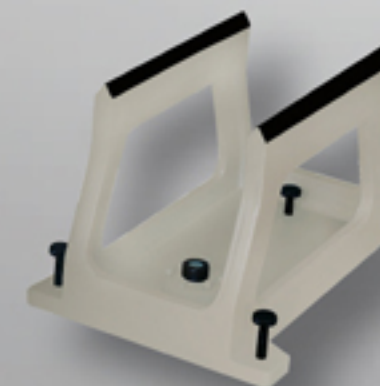
Vertical Micrometer Attachment (PSGS)
1 division on vertical handwheel: 0.001mm
1 revolution on vertical handwheel: 0.01mm
※ For PSGS-2550AH/3060AH/3060BH/4080AHR



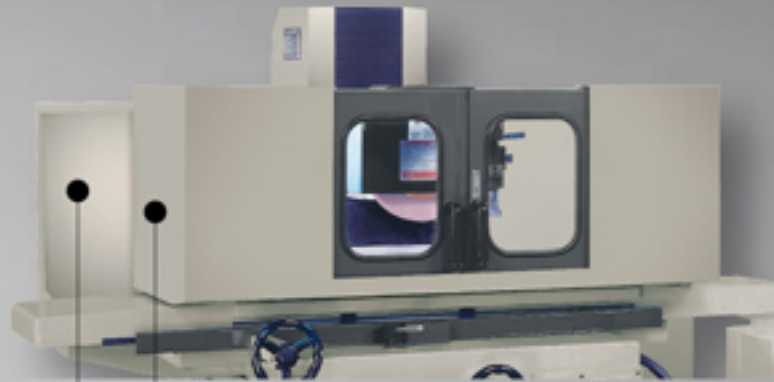
Round Electro Magnetic Chuck



Parallel Dressing Attachment
(Manual Type for PSGS)
※ With The Exception of PSGS-2035M, 2045M, 2045H



Level Type Wheel Balancer



Window Type Splash Guard (PSGS)
(Cross Travel will Shorten 30-50mm)

Rear Side Coolant Baffle (PSGS)



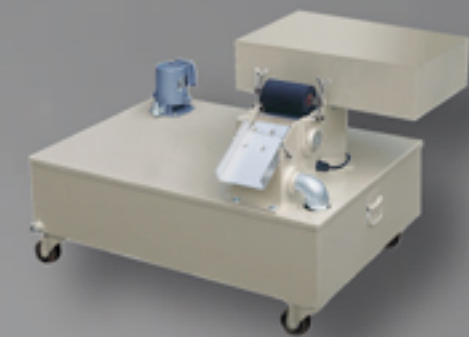
Dust-Suction Cooling System (PSGS)



Automatic Paper Strip Filter
with/without Magnetic Separator



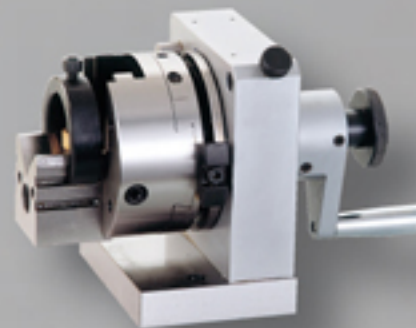
Cooling System



Cooling System with Magnetic Separator



Wheel Flange



Punch Former



Radius and Angle Dresser



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