

MetPrep 4™/PH™ Grinding/Polishing Systems



- ❖ **Intuitive Operation**
 - ❖ **Durable, Powerful, Reliable**
 - ❖ **25 Programmable Steps**
 - ❖ **Variable Platen and Sample Speed**
 - ❖ **Central or Individual Sample Force Modes**

MetPrep 4™/PH™ Grinding/Polishing Systems

The **MetPrep 4™** Grinding/Polishing machine, when combined with the **PH-4™** or **PH-6™** Power Head, is a powerful system for semiautomatic operation, ideal for low to high volume sample preparation requirements. A wide variety of combinations provide ideal solutions that accommodate any application, lab or material.

Intuitive operation with user-friendly push-button interface and backlit LCD make it easy to use and program. The microprocessor-based system allows up to 25 programmable steps, including parameters for platen speed, direction (comp/contra), cycle time, fluid selection, sample force, sample rotation speed, platen rinse and force reduction.

A "Procedure Development" step allows in-process adjustments to platen speed, sample force and sample rotation speed to determine optimum parameters. The jog mode provides convenient "one-button" activation of the platen without activating the Power Head.

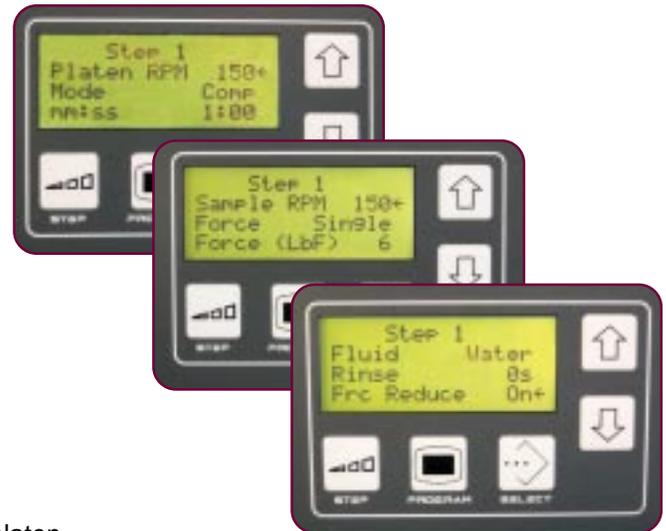
Either aluminum or magnetic platens may be used with any plain/adhesive backed or magnetic system disc.

MetPrep 4™ Features:

- ❖ Touch-pad switches control all functions
- ❖ Backlit 4-line LCD
- ❖ Programmable up to 25 polishing steps, including parameters for platen speed, comp/contra rotation (sample holder/platen), cycle time, fluid selection, sample force (LbF or N), sample rotation speed, water rinse and force reduction (On/Off, %)
- ❖ Variable platen speed, 10 RPM increments (see chart)
- ❖ Variable platen jog speed, 10 RPM increments (see chart)
- ❖ 3 Phase AC motor, single phase AC input with durable reduction gearbox provides constant high-torque output
- ❖ Variable cycle time: 0-60 minutes (15 second increments)
- ❖ Seamless integration with optional AD-5™ Fluid Dispenser for fully automatic operation
- ❖ Quick-change platen design, anodized to resist wear and corrosion
- ❖ Electronic coolant control with adjustable flow control valve
- ❖ Bowl flush to prevent debris buildup
- ❖ Emergency shut-off switch
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



PH-6™ Central Force Configuration



Up to 25 programmable steps

Technical Data/Features

	115 V	230 V
Platen RPM	50-400	40-600
Jog RPM	50-400	40-600
Platen	10" (250 mm)/12" (300 mm)	
Horsepower	1½	2
Watts	1100	1500
W	22" (560 mm)	
Dimensions D	27" (690 mm)	
H	24" (610 mm)	
Weight	225 lb. (102 kg)	

Power Heads

The **PH-4™** and **PH-6™** Power Heads offer maximum versatility for low to high volume semiautomatic sample preparation, using either central or individual sample force modes. The pneumatic-electric system provides controlled sample force and allows up to twelve (12) samples to be prepared simultaneously, depending on power head, mount and holder size.

The unique tilt-up design allows easy, unhindered access to the sample holder and platen, and eliminates the need to reposition the head during the preparation procedure.

A variety of sample holders are available for various mount and sample sizes.

Sample Holders are sold separately

PH™ Features:

- ❖ Central and Individual sample force modes
- ❖ Soft-start and force reduction control
- ❖ Unique tilt-up feature allows easy access to platen and holder
- ❖ Simple push/pull attachment and removal of sample holders
- ❖ Sample holders available in teardrop, dual-cavity or clamp style
- ❖ Lateral swivel provides versatile sample holder positioning
- ❖ ¼ HP (190 W) DC motor with durable reduction gearbox provides constant high-torque output
- ❖ Variable sample rotation speed: 0-150 RPM (10 RPM increments)
- ❖ Complementary or contra rotation modes



Unique tilt-up feature for easy access to sample holder and platen

Power Head Specifications

	PH-4™	PH-6™
Sample RPM	0-150	
Horsepower	¼ (190 W)	
	Individual Force	
Number of Samples	1 - 4	1 - 6
Force Range (LbF/N)	0-22/0-96	0-22/0-96
Maximum Mount Size	2"/51 mm	2"/51 mm
	Central Force	
Number of Samples	3 - 9	3 - 12
Force Range (LbF/N)	5-90/22-394	5-90/22-394

System Item Numbers

Platen Diameter	Voltage AC	MetPrep 4™	
		PH-4™	PH-6™ *
10" (250 mm)	115	5-6510	5-6610
	230	5-6510-230	5-6610-230
12" (300 mm)	115	5-6512	5-6612
	230	5-6512-230	5-6612-230

Use this chart to determine the item number of the system based on the desired platen diameter and power head combination. Platen diameter is determined by sample size and volume to be prepared.

**PH-6™ Power Head - Maximizes use of the entire 12" abrasive disc when using individual force mode*

Central Force Holders

Designed for preparing three (3) or more samples at one time. They are easier to clean and handle compared to individual holders, and are recommended for high-volume preparation requirements.

Custom shapes and sizes can be designed and manufactured upon request.

5-33XX Series Holders

Use with 10" or 12" diameter platens.
Outside diameter = 140 mm

5-3301	Sample Holder Blank Disc w/Heating Stage for securing unmounted samples using wax
5-3330	(6) 1-1¼" Samples, Teardrop
5-3340	(5) 1"-40 mm Samples, Teardrop
5-3361	(6) 1-1¼" Samples, Dual-Cavity
5-3380	Sample Loading Fixture, for 5-33XX Holders

Teardrop Sample Holders allow flexibility in the shape and size of the sample that can be held.

Dual-Cavity Sample Holders feature a single tightening point, for rapid insertion and removal of up to two round or irregular shaped specimens per cavity. An advantage of the design is that it can hold either one or two samples in a common cavity.



5-34XX Series Holders

Use with 10" or 12" diameter platens.
Outside diameter = 160 mm

5-3401	Sample Holder Blank Disc w/Heating Stage for securing unmounted samples using wax
5-3435	(6) 1-1½" Samples, Teardrop
5-3440	(3) 1-2" Samples, Teardrop
5-3445	(9) 1-1¼" Samples, Teardrop
5-3460	(8) 1-1¼" Samples, Dual-Cavity
5-3461	(6) 1"-40 mm Samples, Dual-Cavity
5-3465	(3) 2" x 1¼" (50 x 32 mm) Rectangular
5-3490	(5) 2.18" x 1.21" (55 x 31 mm) Rectangular
5-3480	Sample Loading Fixture, for 5-34XX Holders



5-36XX Series Holders

Use with 12" diameter platens.
Outside diameter = 200 mm

5-3601	Sample Holder Blank Disc w/Heating Stage for securing unmounted samples using wax
5-3605	(12) 1-1¼" Samples, Dual-Cavity
5-3635	(6) 1-1½" Samples, Teardrop
5-3650	(3) 2½" x 3.7" (54 x 94 mm) Rectangular
5-3661	(8) 1¼"-40 mm Samples, Dual-Cavity
5-3662	(6) 40 mm-2" Samples, Dual-Cavity
5-3680	Sample Loading Fixture, for 5-36XX Holders



Sample Holder Compatibility Chart

Sample holder selection is based on platen diameter and sample preparation procedure requirements.

Sample holders are characterized by function - either Central or Individual force.

		Platen Diameter	
Function	Series	10" (250 mm)	12" (300 mm)
Central	5-33XX	X	X
	5-34XX	X	X
	5-36XX	-	X
Individual	5-37XX	X	X
	5-39XX	-	X

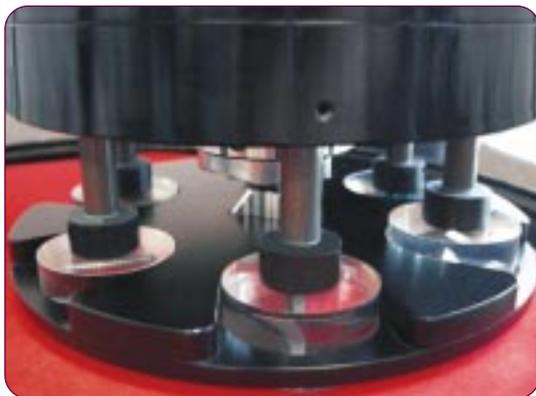
Individual Force Holders

Designed to allow as few as one or up to multiple samples to be prepared simultaneously. The advantage of individual preparation is that it allows removal of any number of samples during the grinding/polishing operation without affecting balance of the system. They are ideal for applications where small geometry and site-specific cross-section requirements make alignment of more than three (3) samples to a common plane extremely challenging. Recommended when preparing fragile materials or materials requiring lighter force (EBSD).

5-37XX Series Holders

Use with PH-4™ Power Head

5-3735	(4) 1" (25 mm) Mounts
5-3740	(4) 30 mm Mounts
5-3745	(4) 1¼" (32 mm) Mounts
5-3750	(4) 1½" (38 mm) Mounts
5-3755	(4) 40 mm Mounts
5-3760	(4) 50 mm Mounts
5-3765	(4) 2" (51mm) Mounts



PH-6™ Individual Force Configuration: six (6) individual pistons apply force to the mount(s) (1.5" mounts shown). Large, rigid mount pads produce flatter samples.

5-39XX Series Holders

Use with PH-6™ Power Head

5-3935	(6) 1" (25 mm) Mounts
5-3940	(6) 30 mm Mounts
5-3945	(6) 1¼" (32 mm) Mounts
5-3950	(6) 1½" (38 mm) Mounts
5-3955	(6) 40 mm Mounts
5-3960	(6) 50 mm Mounts
5-3965	(6) 2" (51mm) Mounts



Central force sample holders feature a stable, low profile design allowing observation on an upright microscope (shown on a Zeiss Axiomager Microscope)

Accessories

Aluminum platens are used with plain or adhesive back SiC discs or adhesive back, multiple-use grinding/polishing discs. If using with multiple-use grinding/polishing discs, it is recommended that one platen per disc be used.

Magnetic Platens feature a non-slip magnetic foil which is permanently adhered to an aluminum platen and used with Magnetic System grinding and polishing discs. They provide a convenient method for quick and easy changing of the disc without the need to exchange or invest in multiple platens.

Paper holding bands are used to secure plain back abrasive discs to aluminum platens. The inside of the band edge is designed to accommodate discs that may overhang the platen edge so the paper does not fold onto itself. They are adjustable to fit metric and imperial size platens.



Aluminum Platen



Magnetic Platen

Platen Diameter	Aluminum Platen	Magnetic Platen	Paper Holding Band
10"/250 mm	5-6010	5-6010M	125-10012
12"/300 mm	5-6005	5-6005M	125-10013

Platen/Disc/Cloth Storage Cabinet

Durable aluminum cabinet accommodates up to ten (10) aluminum trays/shelves (reversible) for storage of platens, discs or cloths. Hinged, clear plastic door with magnetic lock prevents dust contamination. Can be stacked or wall mounted. Supplied with five (5) trays.



(Shown with door removed for visual clarity)

Item	Description
5-8100	Storage Cabinet for Platens, Discs or Cloths up to 12" diameter
5-8105	Tray/Shelf for #5-8100 Cabinet

Specifications:

Dimensions: 14" W x 14" D x 14" H (355 x 355 x 355 mm)
 Weight: 25 lb. (11 kg)

Material Removal Measuring Instrument

Measuring instrument to determine material removal from samples mounted in central force sample holders. Features include a digital indicator with 1 μm (Metric) or 0.00005" (Imperial) resolution and plunger cable for remotely lifting the indicator tip.

Item	Description
5-3385	Measuring Instrument, for Material Removal using 5-33XX Sample Holders
5-3485	Measuring Instrument, for Material Removal using 5-34XX Sample Holders
5-3685	Measuring Instrument, for Material Removal using 5-36XX Sample Holders





AD-5™ Fluid Dispenser

The **AD-5™** Fluid Dispenser provides automatic, unattended application of polishing suspensions or lubricants. Its function can be controlled through Allied's MetPrep 3™, MetPrep 4™ and DualPrep 3™ grinders/polishers, or can be used with **ANY** brand polishing machine as a stand-alone system.

Timed, volume-controlled, variable-frequency dispensing guarantees reproducible results by eliminating inconsistencies between operators, increasing productivity and efficiency in the lab. Intuitive navigation and simple-logic programming make the dispenser easy-to-use.

The AD-5™ features five (5) dispensing positions, two of which include a flush cycle to prevent clogging when using colloidal suspensions. Peristaltic pump technology offers mist-free drip delivery to the polishing surface.

Features:

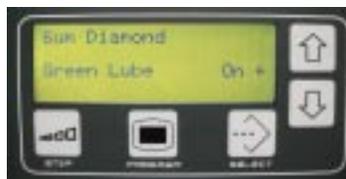
- ❖ Five (5) dispensing positions, 16 oz. (500 mL) capacity
- ❖ User-defined labeling of each step (abrasive type & size, lubricant, cloth, material, and step name)
- ❖ One-touch priming function allows quick, initial charging of new cloths
- ❖ One-touch activation independent of step for simple operation
- ❖ Allows dispensing of colloidal suspensions (silica, silica/alumina and alumina) with rinse/flush function to avoid clogging
- ❖ Sequential programming of steps
- ❖ Peristaltic pump controlled dispensing
- ❖ 25 programmable steps
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



Custom Label each step



Data displayed during operation



25 programmable steps

Item	Description
5-7000	AD-5™ Fluid Dispenser, 115 V
5-7000-230	AD-5™ Fluid Dispenser, 230 V

Includes: Operation Manual, Power Cord (country specific), bottle labels

Specifications:

Dimensions: 8" W x 25" D x 9" H (203 x 635 x 228 mm)
 Weight: 28 lb. (13 kg)

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Equipment is subject to change due to innovations/improvements at any time.

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