

**BUEHLER®**

**EcoMet® 3000, 4000 & TWIN  
VARIABLE SPEED GRINDER-POLISHERS &  
AutoMet® 2000 & 3000  
MICROPROCESSOR CONTROLLED POWER HEADS**

- Variable Platen Speed
- Built-in Memory Retains Last Parameter Setting
- Available with 8" (203mm) or 12" (305mm) Diameter Platens
- Choose Between Single or Dual Platens
- Resettable, Built-in Circuit Protection
- Sealed Membrane Control Panels with Tactile Feedback Buttons
- Universal Input Voltage
- Imperial or Metric Units
- EcoMet® Family Can be Upgraded to Semi-automatic Preparation Systems with the Addition of an AutoMet® Head



**BUEHLER**

# Quality Sample Preparation Has Never Been So Easy



## **EcoMet®/AutoMet® Family**

The EcoMet®/AutoMet® family of grinder-polishers is designed to meet the needs of the materials analyst who requires the versatility of handling manual or automatic sample preparation applications. Choose between 8" (203mm) or 12" (305mm) platen sizes, single or dual platen systems, and manual or semi-automatic operation.

## **EcoMet® 3000, 4000 and Twin Grinder-Polishers**

The EcoMet® 3000 is a variable speed grinder-polisher with an 8" (203mm) low profile aluminum platen and a Buehler universal mount. Platen speed is variable from 10 to 500 rpm.

The EcoMet® 4000 is a variable speed grinder-polisher with a 12" (305mm) low profile, aluminum platen with a Buehler universal mount. Platen speed is variable from 10 to 500 rpm. Percent Load display shows the amount of load on the motor. A green LED indicates normal conditions and a red LED indicates a motor overload condition.

The EcoMet® Twin is a variable speed grinder-polisher which is equipped with two 8" (203mm) low profile, aluminum platens with Buehler universal mounts. Both platen speeds are variable from 10 to 350 rpm. A built-in center mount facilitates use of the AutoMet® Power Head with either wheel. Designed for sample

preparation applications which require two grinding-polishing stations and where convenience and economy is of concern.

The EcoMet® 3000SS and 4000S1 are slow speed variable speed grinder-polishers. They offer the same specifications as the EcoMet® 3000 and 4000, but they were designed for the electronics market with a maximum speed of 50 rpm and minimum speed of 1 rpm.

The EcoMet® Flush Mount Grinder-Polishers allow the flexibility of mounting for custom tables.

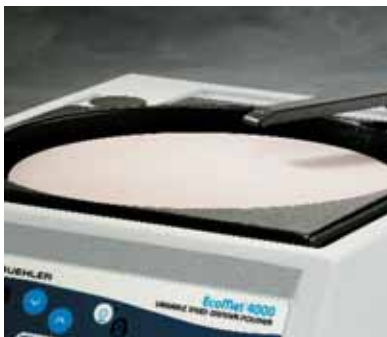
The EcoMet® DI Grinder-Polishers are designed for facilities using deionized water.

## Construction Features

The EcoMet® family is manufactured with a reaction-injected molded (RIM) cabinet construction. This provides for a corrosion and impact resistant protective housing. The pop-up water dispensing arm can be positioned over the platen and the flow control valve controls the amount of water dispensed on the platen. The molded, in bowl wash and drain flushes out particles and minimizes buildup of grinding-polishing residue, while the pitched bowl design promotes easy drainage. A removable splash ring keeps water contained. The sealed membrane control panel and low voltage controls ensure operator safety. A direct-drive motor and gearbox design transmits high torque loads and prevents any belt slippage or belt adjustment. Also includes protective platen cover(s) to keep debris off platen when not in use.

## Easy-To-Use Control

The EcoMet® Grinder-Polishers feature a touch-pad front panel to control main power on/off, motor run on/off, platen variable rpm speed, and water dispensing on/off. Positive action tactile feed back buttons allow the operator to “feel” the control action. LED's indicate on/off status for main power, platen motor and water.



Pop-up water dispensing arm swings over any position on the platen.

A bright, 7-segment LED speed display is easy to read. Parameter memory retains the last speed setting after the motor switch is turned off.

## Powerful and Productive

A high torque 1Hp (750 watt) motor with heavy-duty gearbox ensures long-life and trouble free operation. Platen speed is constantly maintained under all load conditions. The drive system is designed to maximize platen support and eliminates platen instability. Connectivity to the optional PriMet® Modular Dispensing systems allow control of dispensing fluid suspensions during preparation steps. The optional EnvironMet™ Filtering and Recirculating System controls water usage and collects debris for environmentally sound disposal or reclamation.

## Technical Data for EcoMet® Grinder-Polishers

### Power

85-264 VAC, 50/60 Hz, 1-phase, 6.0A

### Platen Size

EcoMet® 3000: 8" (203mm), Single

EcoMet® 4000: 12" (305mm), Single

EcoMet® Twin: 8" (203mm), Dual

### Platen Speed

Single Platen Models: 10-500 rpm, in 10 rpm increments

Dual Platen Models: 10-350 rpm, in 10 rpm increments

Slow Speed Models: 1-50 rpm, in 1 rpm increments

### Ambient Temperature

41 °F to 104 °F (5 °C to 40 °C)

### Water Supply

¼" O.D., 40-100 psi (3-7bar)

### Dimensions and Weight

EcoMet®3000:

13" W x 26¾" D x 9½" H  
(330mm x 680mm x 240mm),  
78 lbs (35.5 kg)

EcoMet® 4000:

17½" W x 28⅞" D x 9½" H  
(440mm x 730mm x 240mm)  
80 lbs (36.4 kg)

EcoMet® Twin:

26⅝" W x 26⅝" D x 9½" H  
(680mm x 680mm x 240mm),  
115 lbs (52.3kg)

EcoMet® In-Table Models:

21½" W x 22½" D x 22½" H  
(550mm x 570mm x 570mm)

### Table Cutout Dimensions

EcoMet®3000:

20¾" W x 15⅞" D  
(527mm x 403mm)

EcoMet®4000:

20⅜" W x 17⅜" D  
(529mm x 453mm)



EcoMet® 3000 Grinder-Polisher Fascia

# Versatility For Manual or Automatic Operation



## **AutoMet® 2000 and 3000 Power Heads**

The AutoMet® 2000 and AutoMet® 3000 Power Heads convert any EcoMet® 3000, EcoMet® 4000, or EcoMet® Twin Grinder-Polisher into a semi-automatic preparation system. This versatile design accommodates medium to high specimen volumes. A microprocessor-based, integrated systems approach is particularly important for repetitive work where productivity and reproducibility are essential. The AutoMet® 2000 Power Head offers all the features needed for most basic applications, while the AutoMet® 3000 expands user flexibility by adding a comprehensive memory which can store up to 99 programs with up to 9 steps per program. The AutoMet® family of Power

Heads offers quality, durability, reliability and productivity for any specimen preparation application.

## **Easy-to-Use Control**

The front control panel features easy to use touch pad control buttons with LED displays. All AutoMet® functions are microprocessor controlled for unparalleled reliability. The front panel allows the operator to control main power on/off, cycle start/stop, time, force, specimen holder rotation, and water/fluid activation. Eight bright LED indicators clearly illuminate when the various functions are active and in-use. The 7-segment LED display allows the operator to monitor time, force and program steps (AutoMet® 3000 only). The tactile feed controls and

sealed membrane front fascia panel resists water and can be easily wiped down and cleaned.

The time to complete individual preparation steps is displayed and the timer counts down to zero during use. The sample force can be adjusted during operation to accommodate specific material requirements. The built-in electronic memory retains the last used settings after power is switched off and are automatically recalled the next time the AutoMet® is powered on.

## **Durable and Safe Construction**

The durable AutoMet® 2000 and 3000 Power Heads offer a variety of outstanding design features. Dual start buttons on opposite sides of the head keeps the

operator's hands safely away from moving parts while the specimen holder is lowered. Force application is electronically controlled, eliminating the need for compressed air, hydraulic fluids or compression springs. The large diameter steel mounting post securely attaches the power head to the grinder base and eliminates any vibration. A reaction-injected-molded (RIM) housing offers excellent corrosion and impact resistance.

### **Versatility**

A wide variety of versatile specimen holders are offered and can accommodate many sample sizes and shapes to satisfy almost any application. Central force application allow multiple samples to be prepared simultaneously. The convenient Lift-lock Chuck provides easy and quick attachment of specimen holders. The quick-locking, swing away design allows the head to be moved out of the way to facilitate manual hand grinding and polishing. The Buehler universal mounts allow platens to be quickly and easily changed out.

### **AutoMet® 2000 Power Head**

The AutoMet® 2000 offers all the features listed above and can be used for most user applications.

### **AutoMet® 3000 Microprocessor Power Head**

The AutoMet® 3000 expands the flexibility of the AutoMet® 2000 by offering a comprehensive memory which can store up to 99 programs with up to 9 steps per program. It automatically loads the parameters for each successive step in the preparation process while the operator cleans the samples or prepares the next consumable. The AutoMet® 3000 operation is identical to the AutoMet® 2000 when set to manual mode. Parameters can easily be changed without affecting any stored methods.

### **Technical Data for AutoMet® 2000 and AutoMet® 3000**

#### *Power:*

85-264 VAC, 50/60Hz, 1-phase

#### *Microprocessor Controlled Functions:*

AutoMet® 2000: Time, Force, Head Direction, Fluid Dispensing Cycle Stop, Automatic/Manual Operation and Power

AutoMet® 3000: Automatic method memory programmability in addition to all AutoMet® 2000 functions, including program and step selection

#### *Memory Capacity:*

AutoMet® 2000: 1 Step Memory

AutoMet® 3000: Nonvolatile 99 method memory, 9 steps/methods with long-life lithium battery backup (10 year battery life)

#### *Sample Capacity:*

1 to 10 samples depending upon selected specimen holder and platen diameter

#### *Maximum Sample Size:*

Up to 1½" (40mm) diameter samples with 8" (203mm) platen

Up to 2" (50mm) diameter samples with 12" (305mm) platen

#### *Time:*

Variable from 0 to 99 minutes, 59 seconds in 1 second increments

#### *Sample Force and Motor:*

Variable from 1 to 60 lbs (50 to 265 N), in 1 lb (5 N) increments. Applied by 1/20Hp (37W) DC Motor

#### *Head Direction, Speed and Rotation Motor:*

Clockwise or counterclockwise 60 rpm; 1/20Hp (37W) AC gear motor

#### *Fluids:*

Water on/off

Abrasive suspensions dispensed via optional PriMet® 3000 Modular Dispensing System

#### *Construction:*

Corrosion and Impact resistant reaction-injected-molded (RIM) housing

High strength cast aluminum post

#### *Safety Features:*

Dual Start Safety Switches

Low voltage control panel

CE Marked

EC applicable directives and standards

#### *Shipping Weight:*

40 lbs. (18.2 kg)

#### *Dimensions:*

9" W x 17" D x 16.3" H\*(230mm x 430mm x 410mm)\*

\*Height from platen surface to top of power head



The front facia panel is easy to operate and allows control of AutoMet® 2000 functions.



Programming the AutoMet® 3000 is made simple with the easy-to-read control panel.



PriMet® 3000 Modular Dispensing System with PriMet® Modular Dispensing Satellites automatically dispense.



The PriMet® Modular Dispensing Satellites can be purchased and used individually.



The 60-2410 Specimen Loading Fixture and 60-2413 Specimen Loading Plate level the specimens within the holder.



A variety of Specimen Holders are available for a multitude of sample sizes and shapes.

## Ordering Information

### EcoMet® Grinder-Polishers

All EcoMet® Grinder-Polishers include aluminum platen(s), splash guard(s) with removable cover(s), water filter kit, drain and water supply hose, electrical power cord, a selection of polishing cloths and CarbiMet® Abrasive Discs and instruction manual. For 85-264VAC, 50/60Hz, 1-phase operation.

They are available in the following models:

- Standard bench-top
- Slow speed for electronics and other special applications
- Flush mount for customized table mount applications
- Deionized water application

49-1760 EcoMet® 3000 Standard Grinder-Polisher, 8" (203mm) platen, 10-500 rpm

49-1760SS EcoMet® 3000 Slow-Speed Grinder-Polisher, 8" (203mm) platen, 1-50 rpm

49-1760DI EcoMet® 3000 Grinder-Polisher for use with deionized water applications, 8" (203mm) platen, 10-500 rpm

49-3300SS EcoMet® 3000 Flush Mount Slow-Speed Grinder-Polisher, 8" (203mm) platen, 1-50 rpm

49-1780 EcoMet® 4000 Standard Grinder-Polisher, 12" (305mm), 10-500 rpm

49-1780S1 EcoMet® 4000 Slow-Speed Grinder-Polisher, 12" (305mm) platen, 1-50 rpm

49-3330 EcoMet® 4000 Flush Mount Grinder-Polisher, 12" (305mm), 10-500 rpm

49-1890 EcoMet® Twin Standard Grinder-Polisher, 8" (203mm) platen, 10-350 rpm

### AutoMet® Power Heads

All AutoMet® Power Heads include mounting post, 60-2425 Loading Plate, 60-1958 Lift-lock Chuck, 60-2499 drive adapter, and operating instructions. For 85-264VAC, 50/60Hz, 1-phase operation.

60-1970 AutoMet® 2000 Power Head

60-1980 AutoMet® 3000 Power Head with Programmable Memory

## Accessories

### Abrasive Discs

CarbiMet® Abrasive Discs are a premium line of silicon carbide grinding papers designed for superior grinding performance on all types of specimens. The tightly held abrasive grain sizing gives CarbiMet® Abrasive Discs the rapid material removal and uniform finish needed to reduce rough and final polishing times. Utilizes premium "C" weight paper and a Pressure Sensitive Adhesive (PSA) backing.

Diameter	Grit	Quantity	Catalog Number
8" (203mm)	120 (P120)	100	30-5118-120-100
	180 (P180)	100	30-5118-180-100
	240 (P280)	100	30-5118-240-100
	320 (P400)	100	30-5118-320-100
	400 (P800)	100	30-5118-400-100
	600 (P1200)	100	30-5118-600-100
	800 (P1500)	100	30-5118-800-100
	1200 (P2500)	100	30-5118-012-100
	Assorted, 240-600 Grit (P280-1200)	40	30-5128
12" (305mm)	60 (P60)	100	30-5125-3-060-100
	120 (P120)	100	30-5125-3-120-100
	180 (P180)	100	30-5125-3-180-100
	240 (P280)	100	30-5125-3-240-100
	320 (P400)	100	30-5125-3-320-100
	400 (P800)	100	30-5125-3-400-100
	600 (P1200)	100	30-5125-3-600-100
	800 (P1500)	100	30-5125-3-800-100
	1200 (P2500)	100	30-5125-3-012-100

## Central Force Specimen Holders and Loading Plates

60-2410 Specimen Holder Loading Fixture, for use in conjunction with a Specimen Loading Plate and a variety of specimen holders. Consistently sets the height between the holder and loading plate at a 3mm depth. Includes reversible loading plate for 8" (203mm) and 10" (254mm) specimen holders. For 12" (305mm) specimen holders, order 60-2413 loading plate separately.

60-2413 Loading Plate, reversible for 8" (203mm) and 12" (305mm) specimen holders. Required for EcoMet 4000, order separately.

60-2411 Loading Plate, reversible for 8" (203mm) and 10" (254mm) specimen holders, included with 60-2410 Loading Fixture.

60-2499 Drive Adapter, connects specimen holder to Lift-lock Chuck (1 adapter required per specimen holder).

## Specimen Holders

Select the correct specimen holder(s) for your specific application.

	Specimen Holder Number	Holder Type	Specimen Size	Number of Specimens
For 8" (203mm) Grinder-Polishers	60-2482	Barrel	1" (25.4mm)	6
	60-2483	Barrel	1¼" (32mm)	6
	60-2484	Barrel	1¼" (32mm)	3
	60-2485	Barrel	1½" (38mm)	3
	60-2486	Barrel	30mm	6
	60-2487	Barrel	40mm	3
	60-2422	Teardrop*	1¼" (32mm)	6
	60-2409	Rectangular	1" x 1¼" (25.4mm x 32mm)	4
For 12" (305mm) Grinder-Polishers	60-2408	Blank	**	NA
	60-5281	Barrel	1" (25.4mm)	10
	60-5282	Barrel	1¼" (32mm)	10
	60-5283	Barrel	1½" (38mm)	6
	60-5287	Barrel	30mm	10
	60-5288	Barrel	40mm	6
	60-5289	Barrel	2" (50mm)	3
	60-5252	Teardrop*	1¼" (32mm)	9
	60-5245	Rectangular	2" x 1.375" (51mm x 35mm)	5
	60-5250	Rectangular	3" x 1.375" (76mm x 35mm)	3
	60-5254	Blank	**	N/A

\* Recommended for extremely hard materials \*\* for special applications; may require customer modifications

## Other Accessories

**40-2800 PriMet® 3000 Modular Fluid Dispensing System**, reduces abrasive waste and increases specimen consistency. Peristaltic, no-mist pumps control the amount of fluid dispensed. Includes two dispensing bottles and up to eight additional PriMet Satellites may be added to the system. Programmable with 25 pre-programmed dispensing methods, plus another 25 user-defined methods available. Universal, 85-264 VAC operation.

**40-2810 PriMet Modular Dispensing Satellite**, with 3' (1m) cord and convenience on/off control hand switch

**40-2811 PriMet Modular Dispensing Satellite**, without hand switch

**49-2500 EnvironMet Recirculating Filtering System**, is designed for use at facilities concerned with water regulation and conservation requirements, environmental or reclamation issues. Filters up to 1µm particles and then recirculates water. Includes 6 gallon (23 liter) reservoir, 100µm filtering bag, and twenty 1µm final filtering cartridges.

**60-5090 PC MET™ Precision High Volume Printed Circuit Board Accessory**, holds up to 6 printed wiring board coupons 1" (25.4mm) long in one of 6 cavities. Provides accurate, reproducible cross-sections of through-holes down to 0.008" (200µm) in diameter. See PC Met™ literature for more information.

For a complete listing of Buehler consumable supplies for use with the EcoMet 3000, EcoMet 4000 and EcoMet Twin, please refer to Buehler's Consumables Buyer's Guide. Buehler continuously makes product improvements; therefore, technical specifications are subject to change without notice.

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**BUEHLER ANALYST SECTION**

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