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EcoMet 30 Auto/Manual Grinder & Polisher

User Manual


BUEHLER
Our Mission Statement
Buehler's mission is to be recognized as the global leader in the materials preparation and analysis industry, providing our users with innovative & robust full-lab solutions, reliable service, support & access to the knowledge that comes from serving the industry for 80+ years. We also strive to achieve our goals following the ITW business model upholding the company values of integrity, respect, trust, shared risk and simplicity at all times.
Strong Partner, Reliable Solutions

EC – DECLARATION OF CONFORMITY

Name of Manufacturer and contact information:	BUEHLER 13A No. 88 Xinjun Ring Rd. Caohejing, Hi-Tech Park, Pujiang Town Minghang District, China 1-800-BUEHLER / www.buehler.com
Contact information of Buehler's authorized representative within the Community:	ITW Test & Measurement GmbH Boschstraβe 10 73734 Esslingen am Neckar, Germany (49) (0) 711 4904690-0 / www.buehler.com ***Markus Mueller***
Machine Name and Description:	***Name:*** EcoMet 30 Grinder & Polisher ***Catalog Number:*** 491-0075 EcoMet 30 Single Auto 491-0076 EcoMet 30 Twin Auto 491-0070 EcoMet 30 Single Manual 491-0072 EcoMet 30 Twin Manual ***Description:*** Grinder & Polisher with Auto and Manual that can fit different platen sizes, 8 / 10 / 12 inch (203 / 254 / 305 mm)
Machine Serial Number:	Month Code – ### – Number of units built. (Every unit assembled is registered in our database.)
Buehler declares this product to be in compliance with EC Directive(s):	
2006/42/EC,2014/30/EU according to the following standards: EN ISO 12100-1 : 2010 EN 60214-1 : 2006+A1 : 2009	EN 61000-3-2:2014 EN 61000-3-3:2013 EN 61000-4-2:2008 EN 61000-4-3:2006+A1+A2 EN 61000-4-4:2012 EN 61000-4-5:2014 EN 61000-4-6:2013 EN 61000-4-8:2010 EN 61000-4-11:2004+A1:2017 EN 61000-6-2:2005 EN 61000-6-4:2007+A1
Quality Management System: (ISO 9001:2015)	Registered firm: DNV GL-Business Assurance QMS Certificate #: 89358-2010-AQ-RGC-RVA
This machine is CE-marked. ***RoHS Compliant (2011/65/EU Directive).***	Shanghai, China, 10/2020
Prepared by:	R&D Engineer: Tony Zhang

THIS MANUAL IS A CUSTOM GENERATED DOCUMENT. IT INCLUDES ALL REVISIONS RELATED TO THIS SPECIFIC BUEHLER ITEM AS OF THE DATE SHOWN BELOW.

EC DECLARATION OF CONFORMITY

CE

According to the following EC Directives

- Machinery Directive: 2006/42/EC
- Electromagnetic Compatibility Directive: 2014/30/EU

The undersigned, Pan Jie , from ITW Test & Measurement (Shanghai) Co., Ltd /13A, No.88, Xin Jun Ring Rd, Caohejing HI-TECH PARK, Pujiang Town, Minhang District, Shanghai, 201114, China, declares that the machine described hereafter:

Product name: **EcoMet30**
Model: **4910070, 4910072**

Provided that it is used and maintained in accordance with the general accepted codes of good practice and the recommendations of the instructions manual, fulfill the essential safety and health requirements of the above Directives and the product standards mentioned bellow. Person authorised to hold the technical file:

Name: ITW Test & Measurement GmbH.

Address: Boschstrasse 10 73734 Esslingen am Neckar, Germany

For the most specific risks of this machine, safety and compliance with the essential requirements of the Directives has been based on elements of:

- EN ISO 12100:2010 Safety of machinery — General principles for design — Risk assessment and risk reduction
- EN 60204-1:2006+A1:2009 Safety of machinery — Electrical equipment of machines — Part 1: General requirements
- EN 61000-6-2:2005 Generic standards — Immunity for industrial environments
- EN 61000-6-4:2007+A1:2011 Generic standards — Emission standard for industrial environments
- EN61000-3-2: 2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase
- EN61000-3-3:2013 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
- EN61000-4-2:2008 Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
- EN61000-4-3:2006+a1+a2 Electromagnetic compatibility (EMC) - Part 4-3 :Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
- EN61000-4-4:2012 Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- EN61000-4-5:2014 Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test
- EN61000-4-6:2013 Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- EN61000-4-8:2010 Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
- EN61000-4-11:2004+A1:2017 Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

Date: Oct. 1st, 2020

Place: Shanghai

Signature: Pan Jie

Qualification: Electronic Engineer

EC DECLARATION OF CONFORMITY

CE

According to the following EC Directives

- Machinery Directive: 2006/42/EC
- Electromagnetic Compatibility Directive: 2014/30/EU

The undersigned, Pan Jie , from ITW Test & Measurement (Shanghai) Co., Ltd / 13A, No.88, Xin Jun Ring Rd, Caohejing HI-TECH PARK, Pujiang Town, Minhang District, Shanghai, 201114, China, declares that the machine described hereafter:

Product name: **EcoMet30**
Model: **4910075, 4910076**

Provided that it is used and maintained in accordance with the general accepted codes of good practice and the recommendations of the instructions manual, fulfill the essential safety and health requirements of the above Directives and the product standards mentioned bellow. Person authorised to hold the technical file:

Name: ITW Test & Measurement GmbH.

Address: Boschstrasse 10 73734 Esslingen am Neckar, Germany

For the most specific risks of this machine, safety and compliance with the essential requirements of the Directives has been based on elements of:

- EN ISO 12100:2010 Safety of machinery — General principles for design — Risk assessment and risk reduction
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- EN61000-3-3:2013 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
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- EN61000-4-3:2006+a1+a2 Electromagnetic compatibility (EMC) - Part 4-3 :Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
- EN61000-4-4:2012 Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
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- EN61000-4-6:2013 Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- EN61000-4-8:2010 Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
- EN61000-4-11:2004+A1:2017 Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

Date: Oct. 23th, 2020

Place: Shanghai

Signature: Pan Jie

Qualification: Electronic Engineer

Contents

Safety Information

For safe installation and operation of this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in equipment damage and personal injury.

The EcoMet 30 Auto/Manual Grinder & Polisher is designed for use in dry, indoor laboratory and workshop environments away from strong electromagnetic fields and with normal temperature ranges (41° F to 104° F / 5° C to 40° C) and non-condensing humidity ranges (30-85%).

Safety Terms

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE indicates practices not related to personal injury.

Key Notifications

Take note of all Safety and Warning Symbols listed table below:

DANGER: Electrical Shock/Electrocution, Hazardous Voltage will cause Severe Injury or Death

WARNING: Entanglement Hazard, Do Not Operate with Loose Clothing, Long Exposed Hair or Jewelry

GENERAL WARNING

WARNING: Pinch Points, Keep Hands and Fingers Clear

CAUTION: Chemical Goggles Required in this Area

NOTICE: Refer to Instruction Manual

WARNING: Lifting Hazard, Use Three (3) Person Lift

Machine Use and Care

All operators should be trained in the use of Grinder-Polishers. If training is needed, please visit www.Buehler.com or contact your local Buehler Sales Representative.

Always use safety glasses. Flying debris and liquids can cause severe eye injury.

Dress properly. Do not wear loose clothing or jewelry and contain long hair. They can be caught in moving parts and may result in severe personal injury.

Protective equipment should be worn to handle specimens, which may be sharp or hot.

Do not operate machine in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Sparks may ignite the dust or fumes.

Replace damaged or defective parts immediately and use only Buehler or Buehler authorized replacement parts. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electrical shock or injury.

Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the machine operation. If damaged, have the machine serviced before using. Poorly maintained machines can cause accidents.

Maintain the machine with care. Properly maintained machines are less likely to bind and are easier to control. Any alteration or modification is a misuse and may result in a dangerous condition.

Use only qualified personnel to perform installation and repair. Service or maintenance performed by non-qualified personnel could result in a risk of injury.

Do not alter or abuse the power cord. Never use the cord to move the machine or pull the plug from an outlet. Keep the cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electrical shock.

Do not use extension cords with Buehler products.

Remove worn-out Pressure Sensitive Adhesive (PSA) backed abrasive papers and cloths from the platen after every use. If left on the platen for a prolonged period, they may be difficult to remove. Before use, verify that the platen is clean and free of residue from previous operations.

Adhesive residues may be removed with a mild solvent.

- For more information, refer to the *Maintenance* section on P. 33.

EcoMet 30 Grinder-Polisher

The EcoMet 30 provides a simple, economical, robust, high performance solution for the materials analyst who requires the versatility of manual and semi-automatic sample preparation.

The EcoMet 30 is a variable speed grinder-polisher that will accept 8-inch (203 mm), 10-inch (254) and 12-inch (305 mm) platens.

The EcoMet 30 is available in single or twin platen versions and can be configured with or without a power head. Using the power head will increase efficiency and guarantee consistency among samples. For semi-automatic application, single force can be used with 1 to 4 samples and center force can be used with 1-6 samples. Compressed air is needed when using the power head.

The EcoMet 30 has four Models listed below:

- 491-0075 - EcoMet 30 Single Auto Grinder-Polisher
- 491-0076 - EcoMet 30 Twin Auto Grinder-Polisher
- 491-0070 - EcoMet 30 Single Manual Grinder-Polisher
- 491-0072 - EcoMet 30 Twin Manual Grinder-Polisher

The EcoMet 30 has 3 platens listed below:

- 49-1008 - 8in Platen Kit (203mm)
- 49-1010 - 10in Platen Kit (254mm)
- 49-1012 - 12in Platen Kit (305mm)

Buehler Environmental Policy

Buehler is committed to complying with accepted environmental practices, including the commitment to meet or exceed applicable legal and other requirements, to strive for continual improvement in our environmental management system, and to minimize the creation of wastes and pollution. We at Buehler will, therefore, manage our processes, our materials, and our people in order to reduce the environmental impacts associated with our products.

To help conserve natural resources and to protect human health and environment, please follow your state and local regulations on recycling and disposing of waste, consumables, or parts related to your Buehler machine.

For End Of Life on Buehler machines, if recycling and disposal facilities are not available in your area, please call Buehler Service at 1.800.BUEHLER (283.4537) or email at service@buehler.com. We will provide options on how to properly recycle and dispose of your Buehler machine.

Specifications

Semi-Auto	EcoMet 30 Single Auto	EcoMet 30 Twin Auto
Machine Size:	19.7” L x 25.6” D x 25.6” H (500 mm L x 650 mm D x 650 mm H)	37.4” L x 26” D x 25.6” H (950 mm L x 660 mm D x 650 mm H)
Platen Size:	8-inch (203mm) /10-inch (254mm) /12-inch (305mm)	8-inch (203mm) /10-inch (254mm) /12-inch (305mm)
Platen Motor Power:	BLDC 440W	BLDC 440W
Platen Speed:	50 – 500rpm in 50rpm increments	50 – 500rpm in 50rpm increments
Machine Power:	100 – 240 VAC 50/60Hz, Single phase	100 – 240 VAC 50/60Hz, Single phase
Base & Head Power Usage:	1000W, 8.8/4.3A@115/230VAC	1000W, 8.8/4.3A@115/230VAC
LCD:	7inch/800x480 DPI	7inch/800x480 DPI
Water Supply Pressure:	Small than 116psi (8 bar)	Small then 116psi (8 bar)
Power Head Power:	BLDC 300W	BLDC 300W
Power Head Speed:	30 – 200rpm in 10rpm increments	30 – 200rpm in 10rpm increments
Center Force:	5-40lbs (25-200N), in 5lbs (25N) increments	5-40lbs (25-200N), in 5lbs (25N) increments
Single Force:	1-10lbs (5-40N), in 1lbs (5N) increments	1-10lbs (5-40N), in 1lbs (5N) increments
Specimen Size:	1",1.25",1.5",25mm,30mm,40mm	1",1.25",1.5",25mm,30mm,40mm
Rotating Direction:	Clockwise/Counter-Clockwise	Clockwise/Counter-Clockwise
Air Supply Pressure:	>0.4MPa	>0.4MPa
Air Input Hose:	Ø6	Ø6
Specimen Capacity:	Single force:1~4/center force:2~6	Single force:1~4/center force:2~6
Weight:	165lbs (75kg) Net	232lbs (105kg) Net

Manual	EcoMet 30 Single Manual	EcoMet 30 Twin Manual
Machine Size:	19.7” L x 25.6” D x 17.7” H (500mm L x 650mm D x 450mm H)	37.4” L x 26” D x 17.7” H (950mm L x 660mm D x 450mm H)
Platen Size:	8-inch（203mm）/10-inch（254mm）/12-inch（305mm）	8-inch（203mm）/10-inch（254mm）/12-inch（305mm）
Platen Motor:	BLDC 300W	BLDC 440W
Platen Speed:	50 – 500 rpm, Continuous	50 – 500 rpm, Continuous
Machine Power:	100 – 240 VAC 50/60 Hz, Single Phase	100 – 240 VAC 50/60 Hz, Single Phase
Machine Power Usage:	640W, 5.6/2.8A@115/230VAC	970W, 8.5/4.1A@115/230VAC
Water Supply Pressure:	Smaller than 116 psi (8 bar)	Smaller than 116 psi (8 bar)
Weight:	102lbs (46kg) Net	154lbs (70kg) Net

Noise Testing

1. **Idle noise: 49~64dB**

   The maximum noise is tested about 1~2in above the lab table near the bottom of the machine while running idle.

2. **Load noise: 54~69dB**

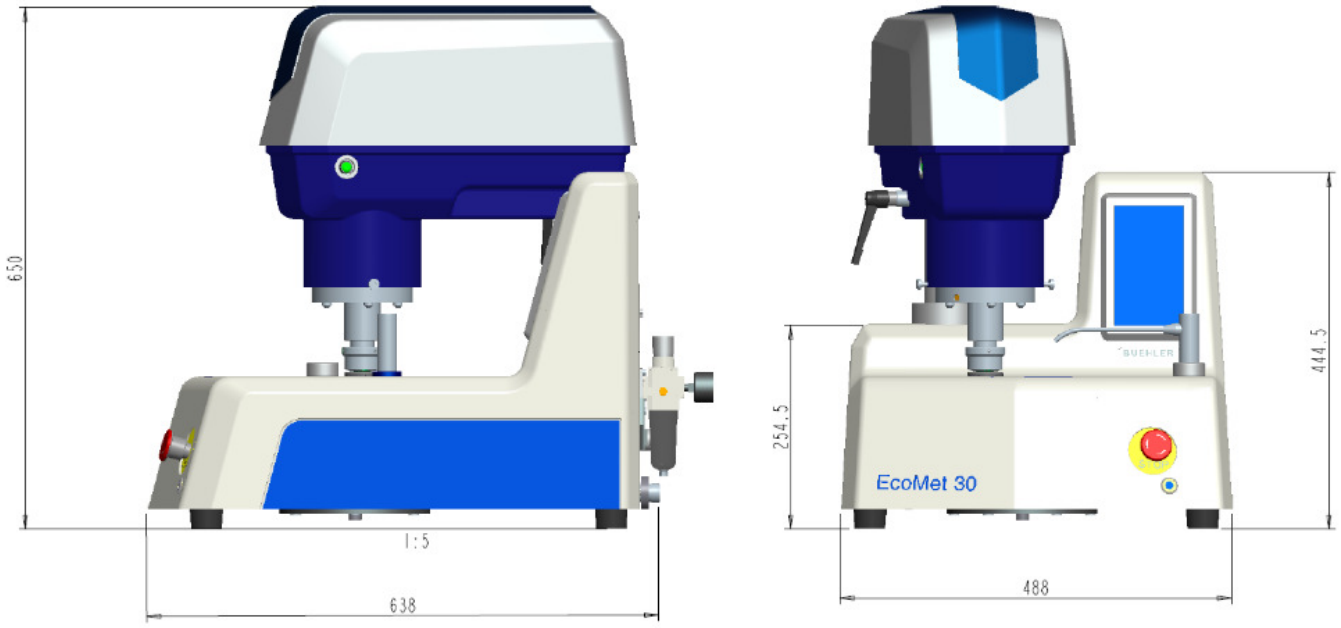
   The maximum noise is tested about 1~2in above the lab table near the bottom of the machine during a cycle with the maximum load applied.

NOTICE

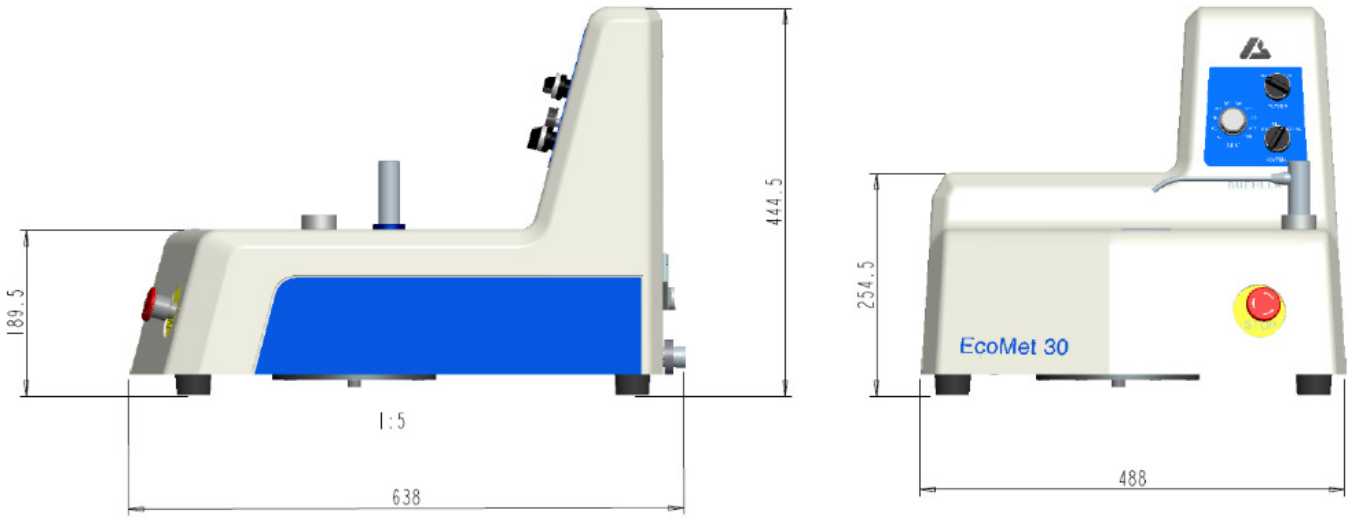
- **When using special material, such as coarse carbide paper, the maximum load, minimum load and power head speed with complimentary head and platen may cause vibration.**
- **The noise may grow higher than 70Db.**
- **Wearing an ear protected devise is *strongly* recommended.**
- **In this circumstance, re-grind and re-polish the specimen within the proper parameters.**

Machine Dimensions

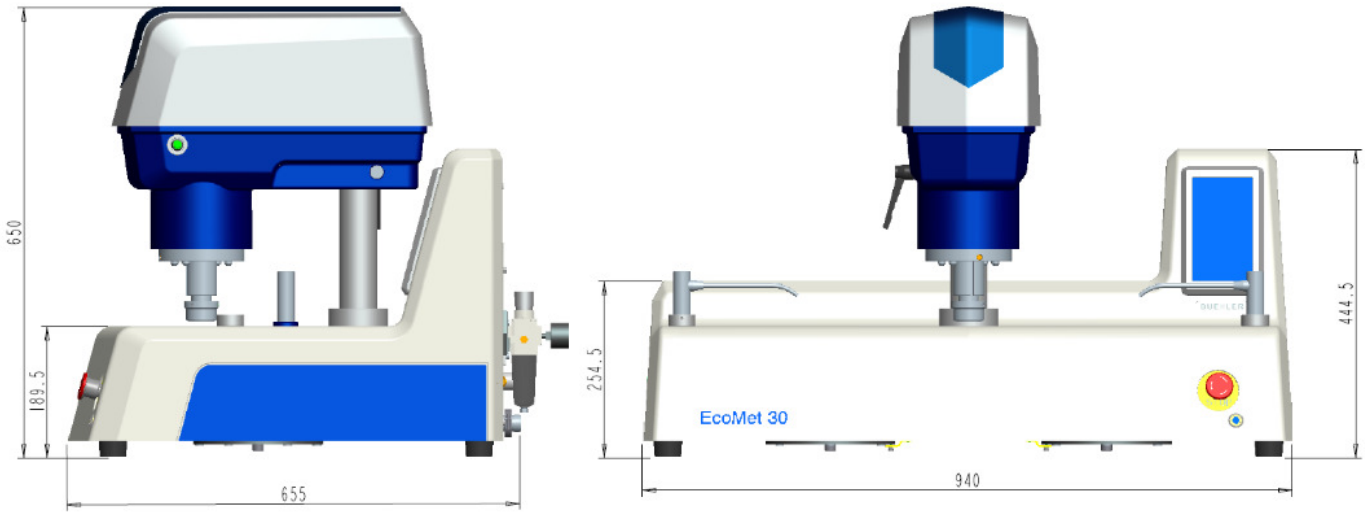
EcoMet 30 Single Auto Grinder-Polisher:



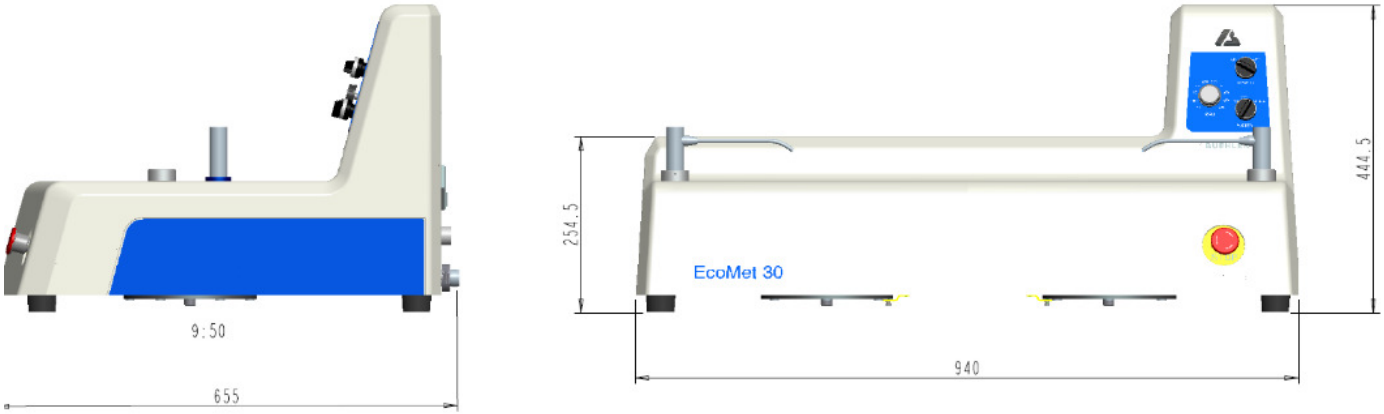
EcoMet 30 Single Manual Grinder-Polisher:



EcoMet 30 Twin Auto Grinder-Polisher:



EcoMet 30 Twin Manual Grinder-Polisher:



Packing Contents

The EcoMet 30 Grinder-Polisher is carefully packaged for protection during transit from the Buehler factory to your location.

Check that damage has not occurred to:

- Cover on the top of power head (Semi-Auto Grinder-Polisher)
- Water Stainless steel outlet
- Appearance (and touch screen for Semi-Auto Grinder-Polisher)

Confirm that the packing contents have not been damaged during transportation. If there is damage, please inform the transportation company and Buehler of the incident.

Use only qualified personnel to perform installation and repair by Buehler or distributor.

Carefully unpack and check that the following items have been received:

Single Manual and Semi-Auto

Drain Hose (**1**)		Inlet Tube (**1**)	
Small Hose Clamps (**2**)		Big Hose Clamps (**4**)	
PVC Fitting (**1**)		Power Cord – GB/EU/US Standard (**3 total**)	
Bowl Liner (**1**)		0.3µm Decompressing Air Filter (Semi-Auto only) (**1**)	
Electronic Operation Manual (**1**)			

Twin Manual and Semi-Auto

Drain Hose (**2**)		Inlet Tube (**1**)	
Small Hose Clamps (**2**)		Big Hose Clamps (**8**)	
PVC Fitting (**2**)		Power Cord – GB/EU/US Standard (**3 total**)	
Bowl Liner (**2**)		0.3µm Decompressing Air Filter (Semi-Auto only) (**1**)	
Electronic Operation Manual (**1**)			

Warranty

18 Month Limited Equipment Warranty

Buehler warrants all new serialized equipment for a period of 18 months starting from the date of delivery from the common carrier, when operated under recommended guidelines and when properly installed and maintained as determined by Buehler. The warranty is void if inspection shows evidence of abuse, misuse, unsafe use or unauthorized repair. This warranty covers all Buehler costs associated with the replacement of defective materials (e.g., parts and labor).

6 Month Service Warranty

Buehler warrants that the services it provides to its customer will conform with any mutually agreed upon specifications or statements of work. The Services, and any service parts, are warranted for a period of 6 months from the date of completion of the Services. Buehler's sole liability and the customer's sole remedy under the Services Warranties will be for Buehler, at its option, to re-perform the Service or to credit the customer's account for such Services.

Instructions for Warranty Claims

In order to make a claim under Buehler's Limited Equipment Warranty, please contact Buehler Service through www.buehler.com. Please have the following information available when contacting Buehler:

1. Customer Purchase Order Number
2. Buehler Invoice Number and Date
3. Serial Number of Equipment
4. Reason(s) for Warranty Claim

If the Equipment must be returned to Buehler for warranty service, you must receive prior authorization and a Return Material Authorization Number ("RMA") prior to the return.

Instructions for Technical Support

Pursuant to the terms of Buehler's Equipment Warranty, Buehler offers its customer unlimited technical support over telephone or email. In order to take advantage of this service, customers may contact Buehler Service at www.buehler.com or at the following contact details:

Region	Email	Phone	Phone Hours (local time)
Americas	service@buehler.com	+1 847 295 6500	M-F: 8:00-16:00
Europe	service.eu@buehler.com	+49 0 711 4904690-0	M-F: 8:00-16:00
Asia	service.sh@buehler.com	+86 400 000 3418	M-F: 8:00-16:00
Japan	info.japan@buehler.com	+03-5439-5077	M-F: 8:00-16:00

For more information regarding the warranty policy and claim instructions, visit: www.buehler.com.

Installation

WARNING

Equipment Damage. The EcoMet 30 Grinder-Polisher is heavy.

Follow local safety practices to lift the grinder-polisher from the shipping carton. Improper lifting can result in personal injury or machine damage.

You must use 3 or more people when lifting the EcoMet 30.

Personal Injury. Improper lifting of the EcoMet 30 Grinder-Polisher and AutoMet Power Head can result in personal injury.

The EcoMet 30 is rested on a wooden base for protection during shipping. Open areas are provided at the corners of the base for ease of lifting.

1. Lift the EcoMet 30 out of the carton and position it on a table so all four feet are sitting on a level surface.
2. Find a location for your EcoMet 30 that provides an adequate working space, a level surface, a power source, water, air (only for semi-auto) and a drain.
3. Allow 4 inches (100 mm) of space at the back of the EcoMet 30 for adequate ventilation and access to the rear power switch.

NOTICE

For safe installation and operation of this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in equipment damage and personal injury.

The EcoMet 30 designed for use in dry, indoor laboratory and workshop environments away from strong electromagnetic fields and with normal temperature ranges (41° F to 104° F / 5° C to 40° C) and non-condensing humidity ranges (30-85%).

Water and Air Connection

When connecting water to the EcoMet 30 Grinder-Polisher observe local water regulations. Use a Buehler connection kit if using a pressure reliever and a check valve from the water source.

NOTICE

- **The main water supply must be shut off at night or when the machine is left unattended.**
- **Check the water supply hose and drain hose for any leaks. Make sure there are no leaks, before operating the unit.**
- **Use only qualified personnel to perform installation and repair.**

Water Connections

1. The recommended water flow rate is 0.5 Gallon/Min (2 liter/Min), water pressure for the EcoMet 30 is 40 to 116 psi (2.5 – 8 bars).
2. Connect the thread in the Inlet Tube to the thread of Water Inlet at the back of the machine, connect the other side of the Inlet Tube with Hose Clamp to the water source equipped with a separate shut-off valve.

Drain Connections

1. Connecting one side of the Drain Hose to the drain outlet fitting located on the back of the grinder-polisher, Use the supplied 90-degree PVC Drain Elbow to direct the drain hose in work areas where space is limited and does not allow the drain hose to be fully extended.
   Place the other side of the Drain Hose at an incline to allow for proper drainage and to prevent the buildup of debris residue in the hose.
2. Extend the remaining length of the drain hose to a drain, sink, recirculating system, or other available catch container.

Air Connections (Semi-Auto Only)

NOTICE

- **Use of the included Buehler Air Filter is required. Failure to use the supplied Air Filter and Regulator can damage the machine and any damages will not be covered under warranty.**
- **The Power Head requires filtered, dry, regulated and compressed air. Set the regulator at 0.4MPa ~ 0.6MPa when connecting air to the EcoMet 30 Grinder-Polisher.**
- **Check the air pipeline for any leaks. Verify that there are no leaks before operating the machine.**

1. Install Ø4mm Air Hose from Port 2 on the Air Filter to the Compressed Air Port on the back of the grinder-polisher (see *Figure 1*).
2. Connect Ø4mm Air Hose from Port 1 on the Air Filter to an external air supply source.
3. Set the regulator at 0.4MPa ~ 0.6MPa. Pull out the knob on top of the Air Filter.
4. Rotate the knob to set the pressure between green indictors, then push down the knob to lock the pressure.

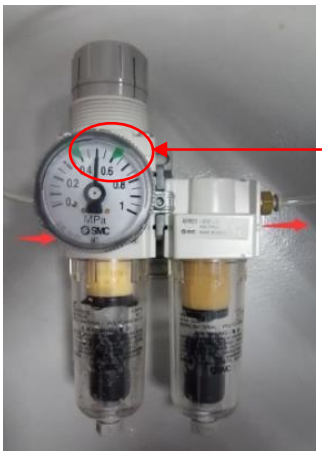


Figure 1: Air Filter

NOTICE

If the incoming air is not within the specified limits, the Power Head Single Force and Center Force application may not operate correctly.

Air Filter must be installed in an upright position for draining out the water.

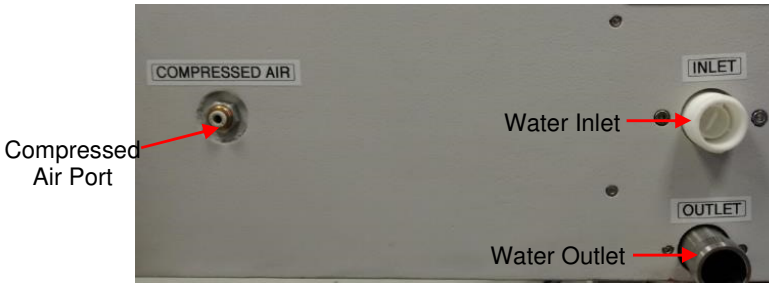


*Figure 2: Rear of Unit **without** Installation*

*Figure 3: Rear of Unit **with** Installation*

Electrical Installation

DANGER

Electrical Shock Hazard. Only a qualified electrical technician should perform electrical installation and maintenance.

Electrical Shock Hazard. Do not change the power plug in any way.

- ***Disconnect the power supply before making any electrical adjustments.***
- ***Capacitors inside the machine may retain a charge even if the machine is disconnected from the power supply.***

Installation of the EcoMet 30 must comply with local electrical standards or codes of practice.

The Specification Sticker is located on the back of the machine. Check that the Specification Sticker value's for voltage, current, and power consumption are compatible with the intended electrical supply before installation.

Power Cord Installation

1. Choose the correct power cord from the packing contents.
2. Install the appropriate plug on the power cord.
3. Plug the EcoMet 30 into an outlet rated for the voltage and frequency specified on the Specification Sticker.

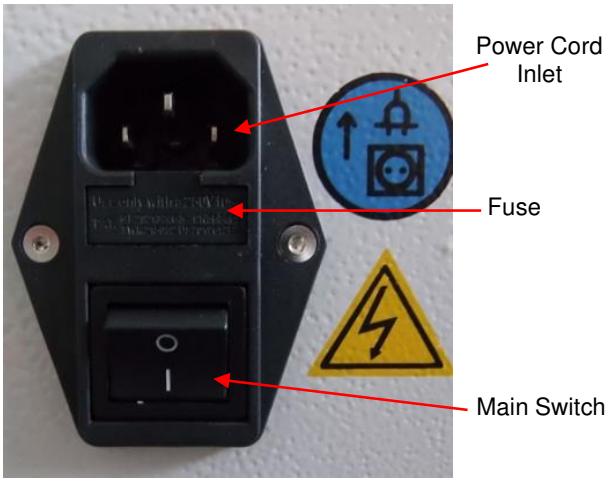


Figure 4: Power Outlet

Preparation Before Operating

Bowl Liner Installation

A transparent plastic bowl liner is supplied with the machine. The purpose of the bowl liner is to prevent accumulation of debris residue inside the bowl.

1. Install the bowl liner by aligning the opening of the liner with the drain hole.

Figure 5: Align with Drain Hole

2. Apply lubricant onto the 4 O-Rings and the male cone.

Figure 6: O-ring and Male Cone

Platen Installation

1. Align the male cone into the female cone on the platen.
2. Verify that the platen is secure and does not wobble.

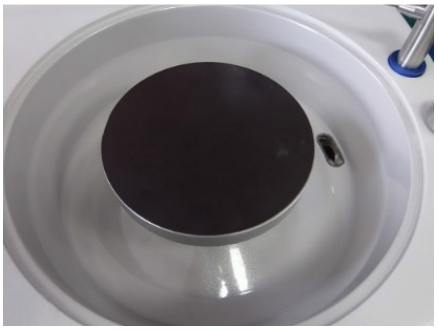


Figure 7: Secure Platen

Splash Ring Installation

1. Install the splash ring onto the machine.
2. Install the plastic cover over the platen to keep it protected while the machine is left unattended.

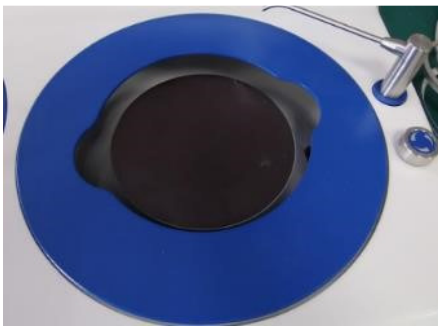


Figure 8: Install Splash Ring and Plastic Cover

Starting Up

Main Power Breaker Switch

1. The main power breaker switch is located on the back of the machine. Move the power switch to the ON position and verify that the power is supplied to the machine.
2. When the main power breaker switch is turned on a buzzing sound will occur. This is normal.
3. When power is supplied to the semi-auto model, the **Power Button** located on the front of the machine will illuminate with a slow blue pulsating light.
4. When the power is supplied to the manual model, the **Buehler logo** located on the front of the machine will illuminate with a blue light.
5. The main power breaker switch serves as a circuit breaker in case of an electrical malfunction. In this case, move the power switch to the **OFF** position. To turn the machine on again, move the power switch to the **ON** position *before* pressing the blue power.

NOTICE

For the semi-auto model, power OFF the EcoMet 30 with the blue power button. Powering OFF with the blue power button will save current system changes. If the machine power is disconnected by switching OFF the main power breaker switch and/or unplugging the power cord system, parameter changes may not be saved.

The blue power button is only applicable for the semi-auto model. The power button is located on the front of the base and is used to power up or power down the machine.

- When the machine is in the **ON** position, the power button will illuminate with a steady blue light.
- When the machine is in the **OFF** position, the power button will illuminate with a blue slow pulsating light.
- When the machine is DISCONNECTED from power*, the power button will not be lit.

*The main power breaker switch is in the **OFF** position and/or the machine is not plugged in.

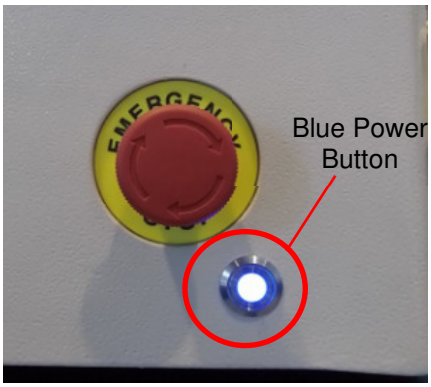


Figure 9: Blue Power Button on Semi-Auto Model

NOTICE

All electronic, pneumatic and moving components on the semi-auto model are self-initializing. The air that flows throughout the machine and the electromagnetic module will sound like a faint clicking for 3 to 5 seconds. The initialization process will be displayed on the interface.

Control Panels

Manual Unit Control Panel

The EcoMet 30 Grinder-Polisher is controlled by the Power Switch, Platen Speed Control and Water Control Mechanical Knobs. It is a robust machine for tough environments.

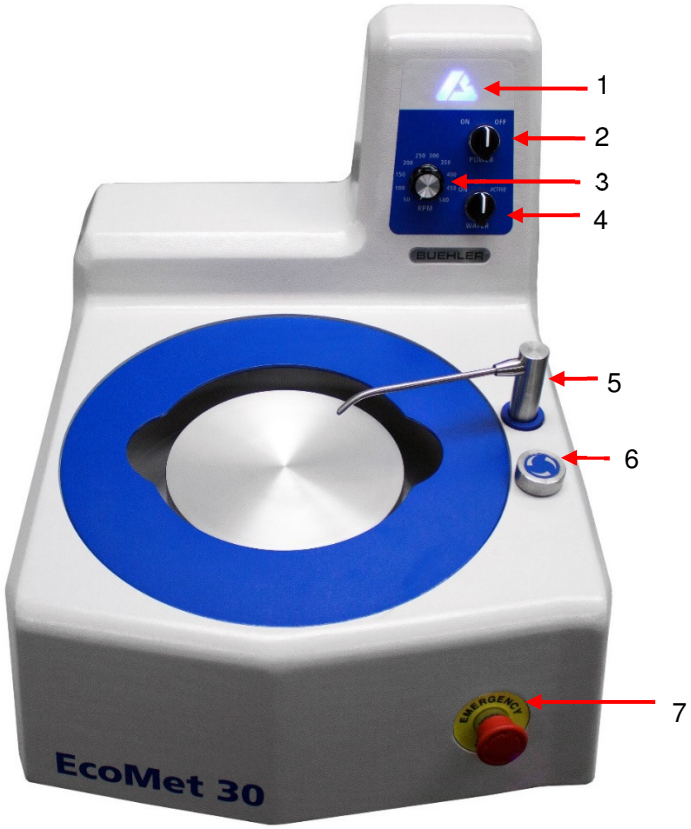


Figure 10: Manual Model

1.	**Buehler Logo:**	When power is connected, the Buehler Logo will illuminate with a blue light.
2.	**Power Switch:**	Turn the Power Switch knob to the **ON** position and the platen will rotate. Turn the Power Switch knob to the **OFF** position and the platen will stop rotating.
3.	**Platen Speed Control:**	Turn the Platen Speed Control knob to the preferred speed between 50rpm-500rpm.
4.	**Water Control:**	Turn the Water Control knob to the **ON** position to turn water on. Turn the Water Control knob to the **OFF** position to turn water off.
5.	**Water Dispensing Arm:**	Turn the arm to adjust the position of the water dispensing within 90 degree.
6.	**Water Control Knob:**	Turn the knob clockwise and counterclockwise to decrease or increase water rate.
7.	**Emergency Power Button:**	Disconnects all high voltage electricity from the machine and stops all moving parts. Only use the **E-STOP** function in an emergency.

WARNING

Keep the sample and the arm of the machine outside of the red lined area indicated in *Figure 11*. If it is not avoided, it can result in injury or breaking of articles.

Do not wear loose clothing, long strings, jewelry or have loose hair while operating the machine. These can get entangled by the moving parts. If not avoided, it can result in serious injury.

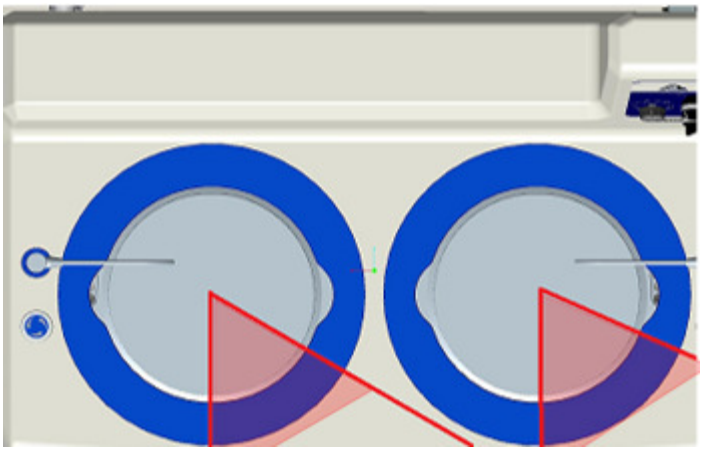


Figure 11: No Dangling Items within Red Lines

Semi-Automatic Unit Control Panel

The EcoMet 30 Semi-Auto Grinder-Polisher provides a user-friendly touchscreen interface and two green start buttons to control the machine**. PLAY STOP** and **PAUSE** can be controlled on the touchscreen.

Figure 12: Semi-Auto Model

1.	**User Interface:**	Touch screen to modify the machine settings and cut parameters.
2.	**Water Dispensing Arm:**	Turn the arm to adjust the position of the water dispensing within 90 degree.
3.	**Water Control Knob:**	Turn the knob clockwise and counterclockwise to decrease or increase water rate.
4.	**Emergency Stop Button:**	Disconnects all high voltage electricity from the machine and stops all moving parts. Only use the E-STOP function in an emergency.
5.	**Power Button:**	When AC voltage is available and the machine is OFF, press the Power Button to turn the machine ON (the button will become a constant blue light). To turn the machine OFF, press again (the button will blink blue).
6.	**Power Head Green Start Buttons (2):**	Hold both buttons simultaneously more than 2 seconds to lower power head and start grinding and polishing.

WARNING

Keep the sample and the arm of the machine outside of the red lined area indicated in *Figure 13*. If it is not avoided, it can result in injury or breaking of articles.

Do not wear loose clothing, long strings, jewelry or have loose hair while operating the machine. These can get entangled by the moving parts. If not avoided, it can result in serious injury.

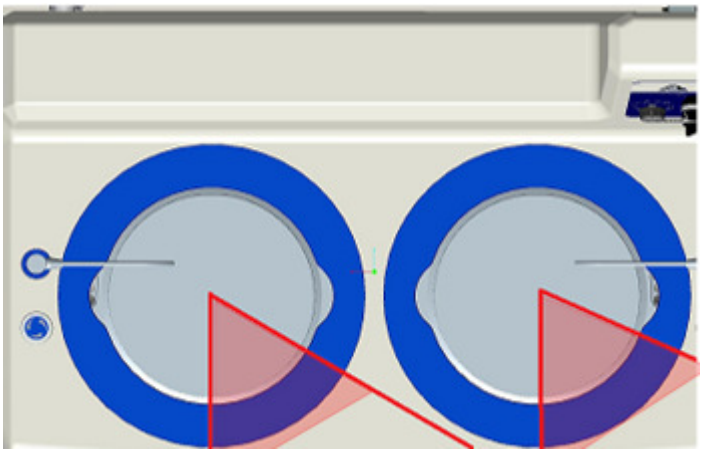


Figure 14: No Dangling Items within Red Lines

Main Menu

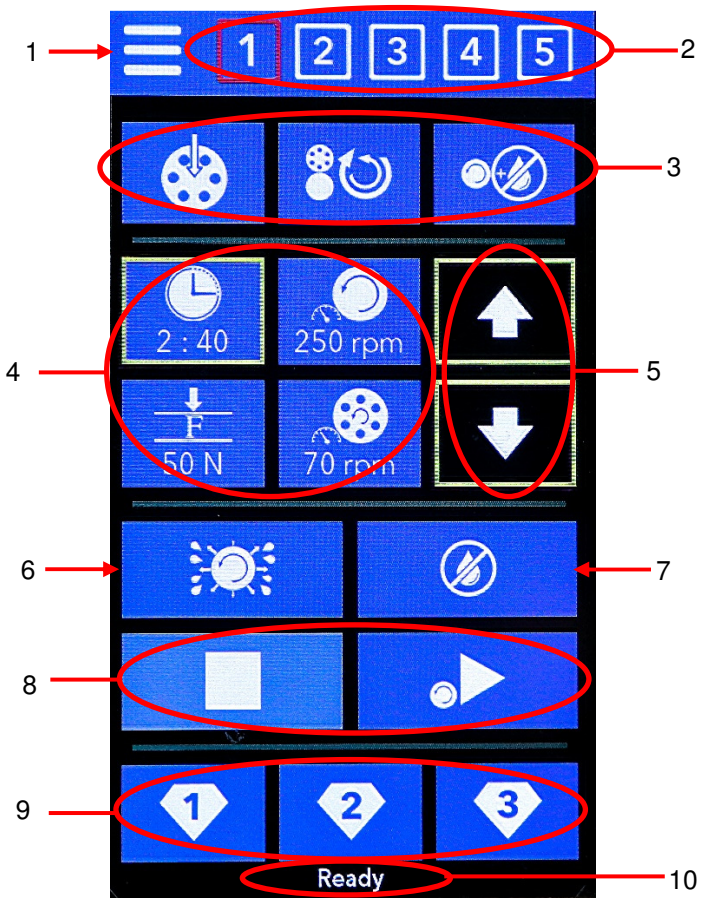


Figure 15: MAIN MENU Screen

1.	**Settings:**	Enters the Settings Screen.
2.	**Preset Steps:**	Displays each step in a saved Preset cycle.
3.	**Power Head Function Selections:**	Basic functions can be set with the **POWER HEAD FUNCTION SELECTION** buttons. This includes Force Mode, Rotating Direction and Water Control Mode.
4.	**Parameter Control Settings:**	Parameters can be modified with the **PARAMETER CONTROL SETTINGS** buttons. This includes Force Mode Grinder-Polishing Time, Platen Speed, Power Head Speed and Load Applied.
5.	**Parameter Value Modification:**	Parameters can be changed by using the up and down arrows.
6.	**Rinse and Spin:**	Used to clean the platen while it is running at maximum speed.
7.	**Manual Water:**	Turn the water **ON** and **OFF**.
8.	**Play, Stop & Pause:**	Grinding and Polishing functions are controlled with the **PLAY**, **STOP** & **PAUSE** buttons.
9.	**Burst Activation:**	Turn the Burst unit **ON** and **OFF**.
10.	**Notification Area:**	Notifies the user of the current state of the machine.

Settings

To enter, Press the **SETTINGS** icon on the **MAIN MENU**. The **SETTINGS** Screen has five commands icons.

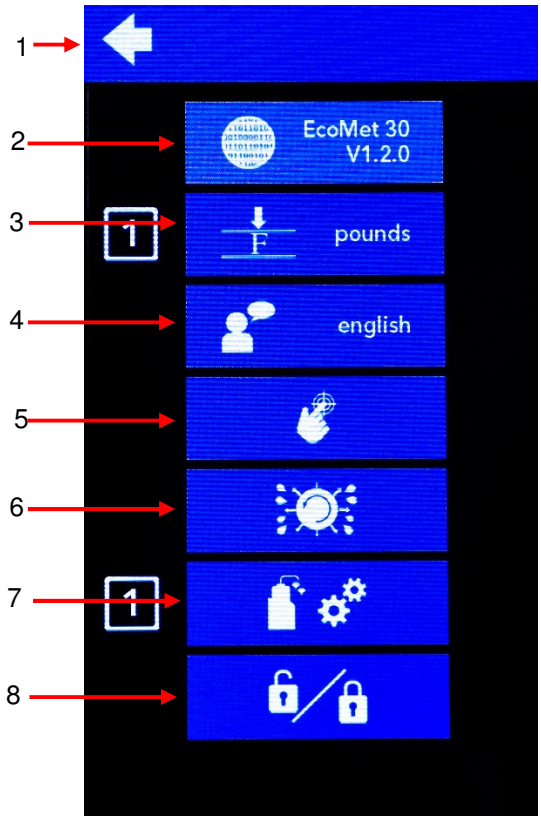


Figure 16: SETTINGS Screen

1.	**Back:**	Exits to the previous screen (**MAIN MENU** Screen).
2.	**Machine Version:**	Press and hold to retrieve general information including Firmware Version, Power **ON** Time (in hours) and Run Time (in hours).
3.	**Force Unit:**	Toggle the icon to change between units of measure, Newton and Pound.
4.	**Language:**	Enters the **LANGUAGE** Screen to select preferred language.
5.	**Touch Screen Calibration:**	Use only when machine is being service. **Note**: This function is locked by password for service use only.
6.	**Rinse and Spin:**	Press and hold icon to turn function **ON** and **OFF**. When activated, the platen will spin, and the water will turn on.
7.	**Burst System Setting:**	Display or hide Burst System on the **MAIN MENU** Screen.
8.	**Lock and Unlock:**	Enters the LOCK Screen to select preferred level of security.

Language

The EcoMet 30 Semi-Auto Unit is operational in ten different languages.

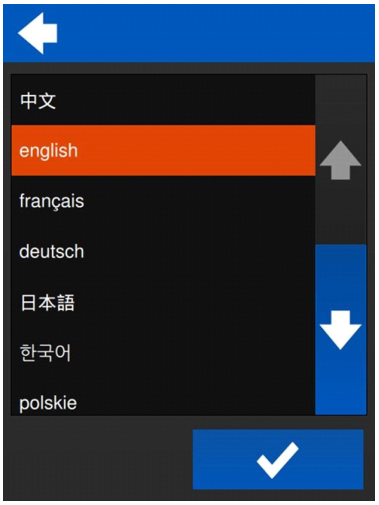


Figure 17: LANGUAGE Screen

Press the pressed language to change the operational language. The up and down arrows move the list to show more options.
Languages include:

- ENGLISH
- FRANCAIS (FRENCH)
- DEUTSCH (GERMAN)
- 日本語 (JAPANESE)
- 한국어 (KOREAN)
- POLSKI (POLISH)
- ESPANOL (SPANISH)
- PORTUGUÊS (PORTUGUESE)
- РУССКИЙ (RUSSIAN)
- 中文 (CHINESE)

Rinse and Spin Settings

Modify the RINSE AND SPIN parameters.

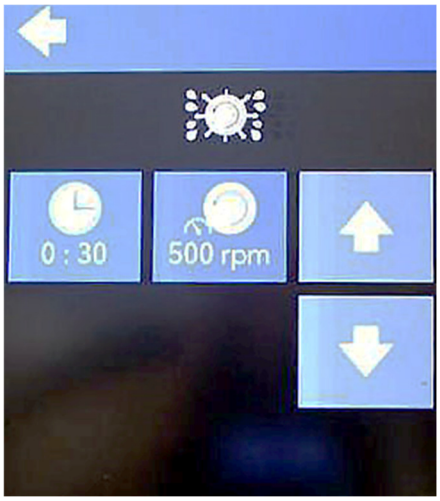


Figure 18: RINSE AND SPIN Settings Screen

- Press the **TIME** icon 

and use the **UP** and **DOWN** Arrows to increase or decrease the **RINSE AND SPIN** time.
- Press the **SPEED** icon 

and use the **UP** and **DOWN** Arrows to increase or decrease the platen speed.

Rinse and Spin Function

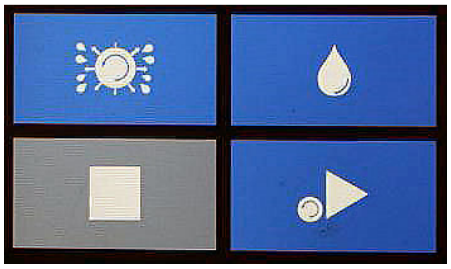


Figure 19: RINSE AND SPIN, Manual Functions

There are 4 functions that can be selected for Grinding and Polishing:

- **RINSE AND SPIN**
- **MANUAL WATER CONTROL**
- **STOP**
- **MANUAL START**

NOTICE

The Power Head will not work during a Manual Grinding and Polishing cycle.

- **RINSE AND SPIN**  : Press and hold for more than 1 second to initiate the **RINSE AND SPIN** function. When the cycle is completed, the timer will countdown to 0, the water will stop flowing and the platen will run for an additional 10 seconds in order to dry it.
- **MANUAL WATER ON**  : This icon means that the water is **ON**. Toggle the icon to turn **OFF** the water.
- **MANUAL WATER OFF**  : This icon means that the water is **OFF**. Toggle the icon to turn **ON** the water.
- **RUN MODE**  : In this mode the platen will spin with the use of the Power Head. If the timer is set, the numbers on the timer will decrease. If the timer is not set, the numbers on the timer will increase. The water will turn **ON** if **AUTO WATER ON** is running.
- **PAUSE**  : This mode will temporarily stop the timer and all functions including the water, platen spinning and Power Head spinning. Press **RUN MODE** in order to complete the cycle.
- **STOP**  : This mode will permanently stop the timer and all functions including the water, platen spinning and Power Head Spinning. The Power Head will extend when **STOP** is selected.

Power Head Function Selection

Three parameters can be set for the Power Head Function Selection: **FORCE MODE, PLATEN DIRECTION** and **WATER**. *Figures 19 & 20* indicate the differences between the three functions and what the icons look like for each. Toggle each icon to switch between modes.

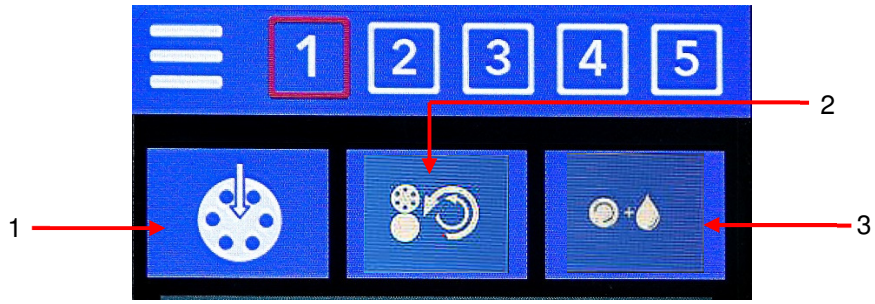


Figure 20: FUNCTION Selections, Option 1

1.	**Force Mode:**	Indicates that the Power Head is in **CENTER FORCE** mode. **Note**: The **FORCE MODE** cannot be modified during a cycle.
2.	**Rotating Direction:**	Indicates that the Power Head is set to move **COUNTER-CLOCKWISE**.
3.	**Water Control:**	Indiates **AUTO WATER ON**. The water will turn on automatically when platen is running and will turn off automatically when platen stops.

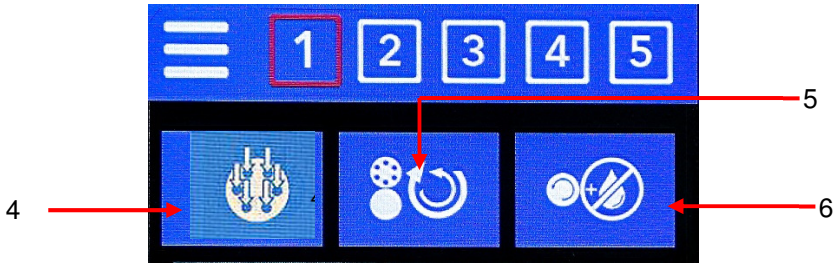


Figure 21: FUNCTION Selections, Option 2

4.	**Force Mode:**	Indicates that the Power Head is in **SINGLE FORCE** mode. **Note**: The **FORCE MODE** cannot be modified during a cycle.
5.	**Rotating Direction:**	Indicates that the Power Head is set to move **CLOCKWISE**.
6.	**Water Control:**	Indicates **AUTO WATER OFF**. The water will turn off automatically regardless of the platen status.

Parameter Control Settings

Four parameters can be set for Grinding and Polishing: **TIME, PLATEN SPEED, FORCE** and **POWER HEAD**.

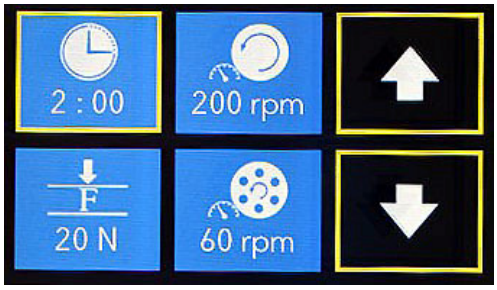


Figure 22: TIMER Selection

- Select the **TIMER** icon and use the UP and DOWN Arrows to increase or decrease the Grinding and Polishing time (in 10 second increments).
- During a Grinding and Polishing cycle, the **TIME** cannot be modified. The cycle can be stopped by pressing the **STOP** icon  .
- During a Grinding and Polishing cycle, the time will be displayed at the top of the screen.
  - Button 

: The status is Timer mode ON;
  - Button 

: The status is Timer mode OFF;
  - Toggle the button to switch the timer mode between ON and OFF

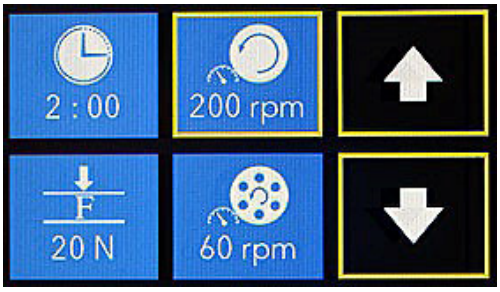


Figure 23: PLATEN SPEED Selection

- Select the **PLATEN SPEED** icon and use the **UP** and **DOWN** Arrows to increase or decrease the platen speed (in 50rpm increments).
- The lowest platen speed is 50rpm and the highest platen speed if 500rpm.
- The speed can be modified during a Grinding and Polishing cycle.

Figure 24: FORCE CHANGE Selection

- Select the **FORCE** icon and use the **UP** and **DOWN** Arrows to increase or decrease the applied force.
- The Center Force can be modified from 5lbs (25N) to 40lbs (200N) in 5lbs/25N increments.
- The Single Force can be modified from 1lb (5N) to 10lbs (40N) in 1lb/5N increments.
- The force can be modified during a grinding or polishing cycle.

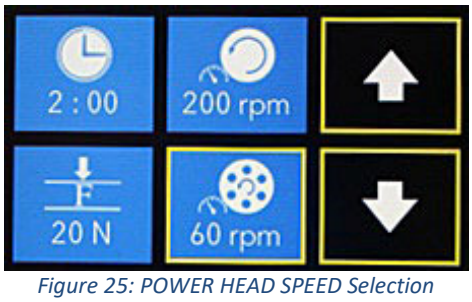


Figure 25: POWER HEAD SPEED Selection

- Select the **POWER HEAD SPEED** icon and use the **UP** and **DOWN** Arrows to increase or decrease the Power Head Speed (in 50rpm increments).
- The lowest Power Head Speed is 30rpm and the highest Power Head Speed is 200rpm.
- The speed can be modified during a grinding or polishing cycle.

Preset Setup

The EcoMet 30 can store the parameters for five [5] steps that can be recalled with a single click. The parameter settings that can be saved are the Power Head Function Selections, Parameter Control Settings, Unit of Measure and Burst Settings.

1. Prior to saving a preset, set the parameters for the step on the main screen.

   See the previous sections of the manual for instructions on how to set these:

   a. Setting

   b. Power Head Function Selection

   c. Parameter Control Settings

2. Press and hold the button for the desired step. Hold it until the Save icon appears.
3. The step has been successfully saved when the Save icon appears.

Recalling Preset

To recall a saved preset:

1. Press the numbered button corresponding to the desired preset.
2. The selected preset will now be highlighted and the settings on the machine will be changed.
3. If the settings are changed from the preset, the selected step will turn red. Any setting changes are not automatically saved. If you want to change the defined preset, refer to the previous section.

Locking a Preset

The EcoMet 30 has two different types of locks that are password protected.

- Locking of the preset steps – This setting prevents changes to the saved presets.
- Locking of all settings – This setting prevents changes to the saved presets and changes to any parameters. The only functionality available is selecting a preset and using the Play, Stop & Pause functions to run a cycle.

To set a lock:

1. Navigate to the Settings screen
2. Select Lock key
3. Select level of locking desired as described above.
4. Enter password to confirm.

Figure 26: Lock Screen: Unlocked Settings

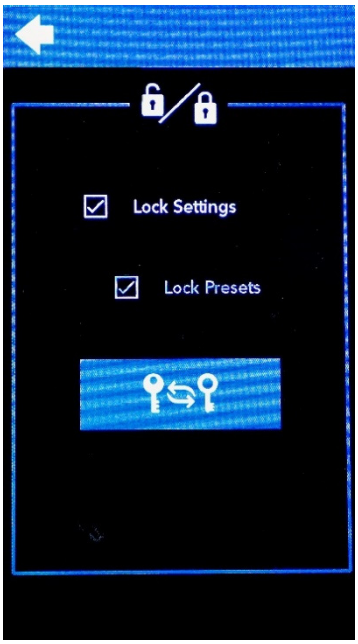


Figure 27: Lock Screen: Fully Locked Settings

To remove a lock:

1. Navigate to the Settings screen
2. Select Lock key
3. Enter password to confirm that the lock should be removed.
   a. Contact Buehler Service for password assistance, if needed.

To select the level of security:

1. Navigate to the Settings screen
2. Select Lock key
3. Enter password to confirm that the lock should be removed.

Emergency Stop

The **EMERGENCY STOP** button is the large red push button on the front of the EcoMet 30. Press the **EMERGENCY STOP** button to safely stop the machine functions at any time. When pressed, all high voltage electricity is disconnected from all moving parts and the Grinder-Polisher is disabled from operation.
The interface of the semi-auto model will indicate when the machine is in **EMERGENCY STOP** mode.
To restart the operation, turn the **EMERGENCY STOP** button clockwise a ¼-turn until it is released. All operations will return at their last set parameters.

NOTICE

The **EMERGENCY STOP** button should not be used as a normal **STOP** feature. Using the **EMERGENCY STOP** button as a normal **STOP** feature will result in excessive wear to the machine and can cause failure to the **EMERGENCY STOP**.

Figure 28: Emergency Stop Button

Water Flow Rate Control Knob

Water Flow Rate Control Knob controls the flow of water and can be rotated within a 90° angle.

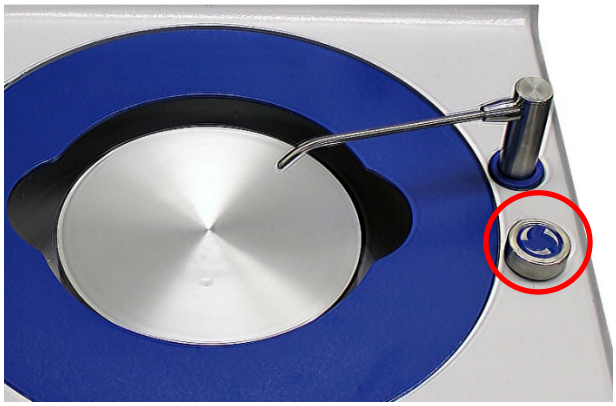


Figure 29: Water Flow Rate Control Functions

- Rotate the knob counterclockwise to increase the water rate.
- Rotate the knob clockwise to decrease the water rate until it stops completely.

Power Head Functions

Green Start Buttons

Figure 30: Power Head Green Start Buttons (#2 not shown)

- The Green Start Buttons are located on the sides of the Power Head.
- To lower the Power Head and begin a Platen Spin cycle, hold both buttons simultaneously for more than 2 seconds. Buttons should be pressed until the specimen holder and platen almost meet.
- In Central Force, the timer and Platen Spin cycle will begin once the specimen holder and platen touch.
- In Single Force, the unit will go into **PAUSE** mode if the specimen holder and platen touch.

NOTICE

Press both the green start buttons simultaneously and hold for 2 seconds while the timer counts down. Once the 2 seconds have elapsed release the buttons.

For central force operation, the head will lower until the specimen carrier reaches the platen. The carrier and the platen will start spinning.

For single force operation, the head will lower until the specimen carrier reaches the platen. The samples can now be loaded into the carrier. Press and hold both the green start buttons again to start the carrier and the platen spinning.

Note: If the two green buttons are not pressed simultaneously, the countdown timer will not appear on the screen and the head will not lower. If this occurs, release both buttons and begin again.

Moving and Positioning the Power Head

Figure 31: Power Head Movement & Positioning

1. Rotate the Locking Handle, located on the left-side of the Power Head, counter-clockwise to loosen the Power Head. They will enable the Power Head to move freely.

2. Move the Power Head to the desired position.

3. Rotate the Locking Handle clockwise to tighten and secure the position of the Power Head.

NOTICE

Buehler recommends keeping the specimen approximately 1/3 off of the edge of the platen in its outmost position.

Specimen Holders

Central Force Specimen Holder

In Central Force Application, the specimen holder secures the sample in place and the amount of force (pressure) is applied at a central point on the specimen holder.

1. Position the Power Head for easy loading of the specimen holder.
2. Raise the outer sleeve of the lift-lock chuck of the Power Head.
3. Insert the specimen holder. Gently rotate the specimen holder until it locks in place.

Figure 32: Central Force Specimen Holder

4. To begin a Grinding or Polishing cycle, lock the position of the Power Head by turning the locking handle clockwise.
5. Set the desired parameters for a Grinding and/or Polishing. Hold both of the Green Start Buttons simultaneously for more than 2 seconds to lower the Power Head and start the platen spinning. The buttons should be held until the specimen holder almost reaches the platen.
6. Set **SPEED** and **FORCE** parameters while the unit is running.
7. After Grinding and/or Polishing, the specimen holder lifts automatically.
   a. Press the **STOP** icon  to stop the Grinding and Polishing if needed.
8. Raise the outer sleeve of the lift-lock chuck to release the specimen holder.

NOTICE

Hold the specimen holder before raising the outer sleeve in case of falling or damage to the samples and machine.

CAUTION

The cylinder in the center moves up and down during the Central Force Application. While the machine is running, all articles, except for the specimen holder and samples, are prohibited directly below the Power Head. If not avoided, it can result in injury or breaking of articles.

Do not wear loose clothing, long strings, jewelry or have loose hair while operating the machine. These can get entangled by the moving parts. If it is not avoided, it can result in serious injury.

Figure 33: Central Force Grinding & Polishing

Single Force Specimen Holder

In Single Force Application the samples are placed, but not secured, in a specimen holder. The amount of force (pressure) is applied to the individual sample through fingers.

1 to 4 samples can be easily prepared and removed for inspection. The Single Force Specimen Holder must be locked rigidly in place to prevent unsatisfactory sample preparation results.

1. Position the Power Head for easy loading of the specimen holder.
2. Raise the outer sleeve of the lift-lock chuck of the Power Head.
3. Insert the specimen holder and gently rotate it until it locks into place.
4. Lock the specimen holder in place using the collar clamp. Rotate the collar clamp so it is positioned against the lift-lock chuck. This will lock and secure the specimen holder into place during a Grinding or Polishing cycle.

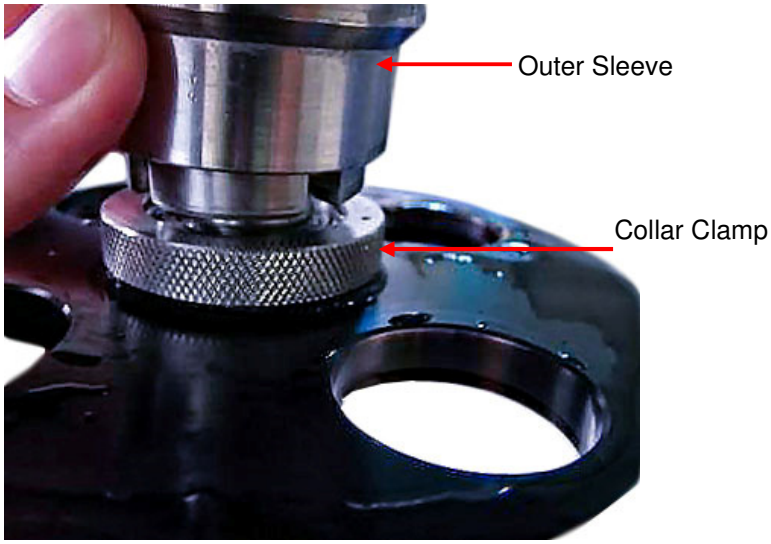


Figure 34: Single Force Specimen Holder

5. To begin a Grinding or Polishing cycle, lock the position of the Power Head by turning the locking handle clockwise.
6. Set the desired parameters for a Grinding and/or Polishing. Hold both of the Green Start Buttons simultaneously for more than 2 seconds to lower the Power Head and start the platen spinning. The buttons should be held until the specimen holder almost reaches the platen.
7. Load the samples into the specimen holder.
8. Hold both of the Green Start Buttons simultaneously for more than 2 seconds.
9. After Grinding and/or Polishing, the specimen holder lifts automatically.
   a. Press the PAUSE icon  to temporarily stop the Grinding or Polishing cycle if needed.
   b. Press the STOP icon  to permanently stop the Grinding or Polishing cycle if needed.
10. Raise the outer sleeve of the lift-lock chuck to release the specimen holder.

NOTICE

Hold the specimen holder before raising the outer sleeve in case of falling or damage to the samples and machine.

The cylinder in the center moves up and down during the Central Force Application. While the machine is running, all articles, except for the specimen holder and samples, are prohibited directly below the Power Head. If not avoided, it can result in injury or breaking of articles.

Do not wear loose clothing, long strings, jewelry or have loose hair while operating the machine. These can get entangled by the moving parts. If it is not avoided, it can result in serious injury.

Figure 35: Single Force Grinding & Polishing

Maintenance

The EcoMet 30 Grinder-Polisher will continue to perform at optimum levels with proper care, daily cleaning, and general maintenance.

WARNING

Personal Injury. Disconnect the power supply before performing any maintenance or adjustments.

NOTICE

Check the machine daily for damage. Any damage or defective parts need to be replaced before using the machine.

Follow these guidelines for optimal results:

- Wipe down the surfaces of the Grinder-Polisher cabinet and Power Head. Do not use harsh abrasive cleaners, acetone or ammonia-based products.
- Use a mild soap solution to wipe down and clean the control panel and the machine.
- Remove worn-out abrasive backed papers and cloths from the platen and cone after use.
- The Platen Bowl liner is designed to minimize the build-up of Grinding and Polishing residue in the bowl. Take out the platen and bowl liner, clean the bowl and flush out the debris and residue regularly.
- Place the drain hose at an incline to allow for proper drainage and to prevent the buildup of debris residue in the hose.

NOTICE

Do not use sharp objects, such as a screwdriver, to dislodge residue from the bowl. This may damage the bowl surface.

Customer Support

The main goal of Buehler's service departments is to provide quality services to help you meet strict laboratory equipment certification standards. For more information, contact Buehler Service at www.Buehler.com or 1-800-283-4537. **If outside the US or Canada contact your local Buehler Representative.**

Buehler offers a number of services that will enable you to keep your equipment running at the highest standards attainable in the industry.

Preventive Maintenance Program

Available services vary by region; please contact your local Service Department for more information.

- Extends the life of your equipment while minimizing machine down-time.
- Offers control of repair schedule - during most "economical" time, not rushed during high production period.
- Saves money before failure because decision to repair can be based on actual component condition.
- Allows you the opportunity to budget maintenance cost.
- Allows routine scheduling of cleaning.

Daily Maintenance Checklist

- ☐ Wipe down the exterior of the machine with a dry cloth.
- ☐ Wash the bowl liner after completing a Grinding and/or Polishing cycle daily.
- ☐ Clean out the drain located in the bowl.
- ☐ Clean out the drain located at the back of the machine.
- ☐ Inspect the hose for the presence of debris and residue. Clean the hose if necessary.
- ☐ Put a cover on the machine when it is not in use.
- ☐ Inspect the bowl liner for the presence of debris and residue. Change the bowl liner if necessary.
- ☐ Apply grease to the female cone, male cone and O-ring under the platen.

Extended Maintenance Checklist

Monthly

- ☐ Clear the drain hose with a high-pressure air gun.
- ☐ Clean the water inlet filter located on the rear of the machine.

Annually

- ☐ Inspect the platen cone for any wear. If the platen runout is more than 0.5mm, repair or replace the shaft mechanism.
- ☐ Inspect the Power Head for wobbling. If necessary, adjust the set screws located on the bearing of the Power head.
- ☐ Replace the air filter located on the rear of the machine. (or grinding and polishing for more than 2000 hours)

Every Two Years

- ☐ Replace the seal under the platen

Fuse Replacement

The EcoMet 30 Grinder-Polisher fuse may melt when fault happens. The fuse can be easily replaced.

Configuration	Fuse Specification
EcoMet 30 **Single** Auto Grinder-Polisher	F10A
EcoMet 30 **Twin** Auto Grinder-Polisher	F10A
EcoMet 30 **Single Manual** Grinder-Polisher	F6.3A
EcoMet 30 **Twin Manual** Grinder-Polisher	F10A

Table 1: Fuse Specification Table

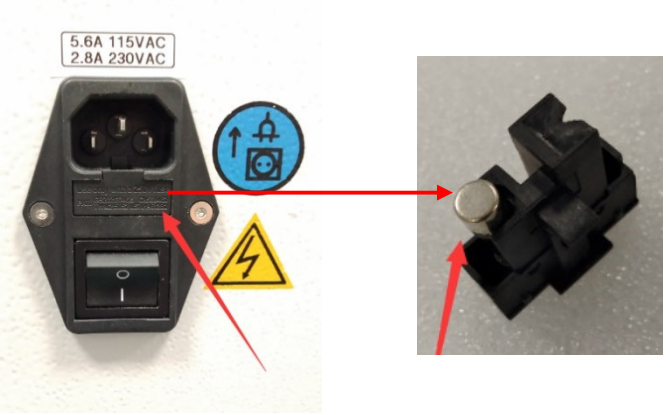


Figure 36: Fuse Location

- The fuse is located near the power switch on the rear of the machine (see *Figure 33*).

1. Gently open the fuse box with a small slotted screwdriver (see *Figure 34*).
2. Pull the fuse out of the box and replace the failed fuse with a new one.
3. Push the new fuse back into the box.

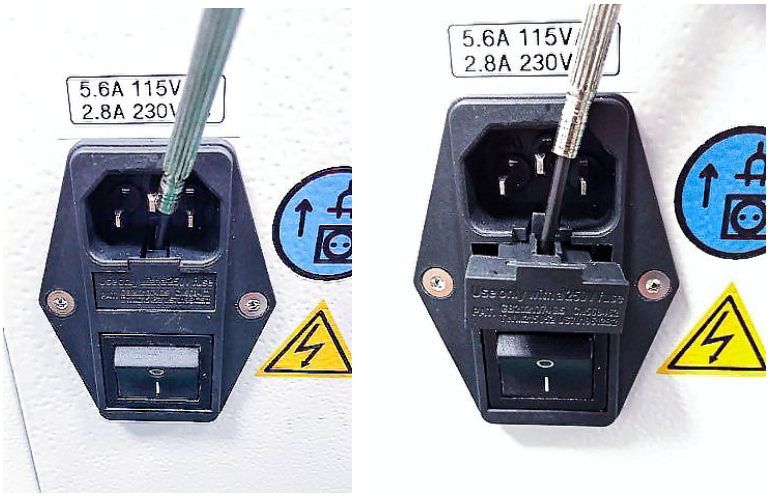


Figure 37: Removal of the Fuse

Bowl Liner Removal

1. Remove the splash ring.

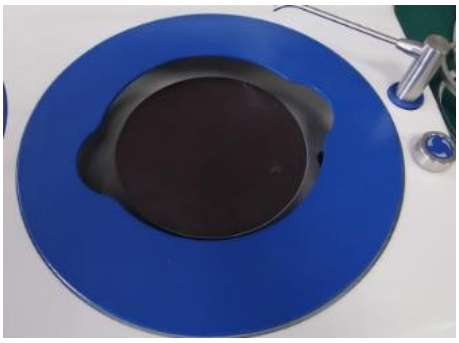


Figure 38: Remove Splash Ring

2. Remove the platen with two hands holding the bottom of the platen.

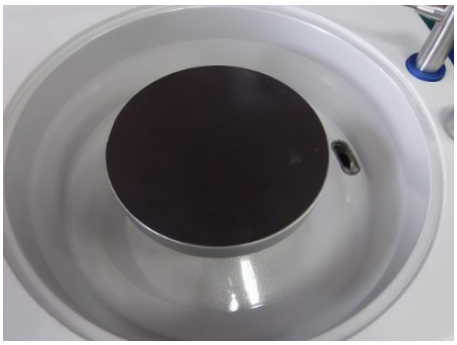


Figure 39: Remove Platen

3. Remove the bowl liner.

Figure 40: Remove Bowl Liner

Note: The instructions on how-to install/replace the Bowl Liner are referenced in the *Preparation Before Operating* section on P. 13.

FAQs

Q 1. Why do I hear a fan sound when running the EcoMet 30?

The cooling fan is located near the switch power on the rear of the machine. Cooling fan can start and stop according to the switch power internal temperature.

Q 2. How can I stop my platen from wobbling?

- Check if the debris is on the female cone, clear and lubricate it
- Check if the debris is on the male cone, clear and lubricate it.
- Check if the male cone is wearing out, replace with a new one.

Q 3. Why is there a buzzing noise when powering on the EcoMet 30?

All electronic, pneumatic and moving components on the Semi-Auto unit are self-initializing. The air that flows throughout the machine and the electromagnetic module will sound like a buzzing sound for 3 to 5 seconds. The initializing process will also be displayed on the interface.

Q 4. Why is the bowl of my grinder-polisher draining slowly or not draining?

- The drainage of the bowl may be blocked.
    - Thoroughly clean out the bowl area and remove any debris.
    - Replace the bowl liner.
- Check that the drain hose is at an incline so that debris may drain properly.
- Check for any drain hose blockage. If there is a blockage, remove the drain hose, locate the blockage and remove. Reinstall the drain hose.

Q 5. What is the maximum specimen size I can use with the grinder-polisher?

When using the Power Head, 1½ -inch (40 mm) diameter is the maximum specimen size.

Q 6. What is the difference between single force and central force sample preparation?

In Single Force Application the samples are placed, but not secured, in a specimen holder. The amount of force (pressure) is applied to the individual sample through fingers.

1 to 4 samples can be easily prepared and removed for inspection. The Single Force Specimen Holder must be locked rigidly in place to prevent unsatisfactory sample preparation results.

In Central Force Application, the specimen holder secures the sample in place and the amount of force (pressure) is applied at a central point on the specimen holder.

Q 7. Why do I need to tighten the locking ring/collar clamp on a single specimen holder?

Single Force specimen holders must be locked rigidly in place to prevent the holder from wobbling and producing unsatisfactory sample preparation results.

Q 8. How can I increase the water pressure to the water spray nozzle?

Turn the Water Control Knob counterclockwise to increase water flow through the water spray nozzle.

Q 9. What is the maximum water pressure I can use?

The recommended water pressure for the EcoMet 30 is smaller than 116 psi (8 Bar).

Q 10. Why do I need to use an air filter and regulator?

The EcoMet 30 is designed with precision valves. Cleanliness must be high (0.3um particle filter), small air lines and tight pressure control demands that require that the pneumatic components operate properly. Not using the Air Filter can cause damage to the machine and any damages will not be covered under warranty.

Q 11. What is the air pressure I can use?

0.4MPa to 0.6MPa is needed for EcoMet 30, the pressure can be adjusted by a compression release valve. If the pressure is not within the specified limits, the EcoMet 30 power head may not operate correctly.

Q 12. Why is my machine making a loud noise when grinding?

Depending on the type of samples and grinding material used, some noise will be generated during the grinding process. To reduce noise when grinding extremely soft or extremely hard samples:

- Change the amount of force
- Change the platen direction to a clockwise direction

Q 13. Why does my power head make a buzzing sound noise?

The power head is maintaining precise air pressure for Single Force mode. This noise is normal and will not affect the operation of the machine. The sound can be stopped after stopping the machine.

Q 14. Why is the power light pulsating blue?

When the power light is pulsating blue, the grinder-polisher is in the **OFF** mode to conserve power. Press the blue power button to activate the machine.

Q 15. What is the Emergency Stop for?

The Emergency Stop disconnects electricity to the machine in case of an emergency. All moving parts will be disabled from operation. The Emergency Stop is for limited use and is not to be used as an **OFF** button.

Q 16. Where is the best place to position the power head over the platen?

- Buehler recommends that the sample should not normally cross the center of the platen, to avoid detrimental grinding and polishing artifacts.
- Contact the Buehler Lab at 1.800.BUEHLER (1.800.283.4537) for best practices regarding your sample preparation practices. If you are outside the USA or Canada, please contact your local Buehler Representative.

Q 17. What is the best way to prepare my specimen(s) for grinding or polishing?

- Buehler Solutions provides customers with Methods by Materials, Training Programs, Literature, Conversion Calculators and more. Buehler Solutions can be found on www.Buehler.com. Click on the Solutions tab for an entire list of Buehler's sample preparation resources.
- For further sample preparation information, contact the Buehler Lab at 1.800.BUEHLER (1.800.283.4537) Outside the USA or Canada contact your local Buehler Representative.

Q 18. What accessories are available for my grinder-polisher?

Refer to the latest Buehler Catalog at www.Buehler.com. Click the Product Information tab for an entire list of accessories and consumables that will fit your grinding and polishing needs.

Troubleshooting Guide

Problem	Possible Cause	Possible Corrections
Water does not flow out of the water spray nozzle.	Water is not connected to the machine. Poor water pressure. Water hose has a blockage. The water control knob is in the wrong position. **Broken water valve.	• Check that water is available. • Check that the water hose is connected to the machine and to the water source. • Check for proper water pressure. • Remove blockage or replace hose. • Turn the water control knob. • Check the water filter for blockage.
The front control panel does not illuminate. The blue power light does not illuminate. Blue logo does not illuminate for manual version.	No electricity to the machine.	• Check that power is available. • Check that the power cord at the power source and on the back of the machine is securely plugged in. • Check that the main ON OFF switch on the back of the machine is in the ON position. • Check voltage at the wall outlet.
The power head fingers and center cylinder will not lower.	No air to the machine or the pressure is too low. Air hose is blocked. Machine running manual mode. **Possible air leak, failed solenoid valve or proportional valve.	• Check that air is available. • Check that the air hose is connected to the machine and the air source. • Check for proper air pressure, • Remove blockage or replace hose. • Check the force mode, toggle the SINGLE FORCE / CENTER FORCE
Specimen holder hits splash ring	The power head out of position.	• Loosen the Locking Handle (See Moving and Positioning the Power Head in the Operator's Manual) and reposition the head over the platen.
The power head moves during a grinding polishing cycle.	The power head is not securely tightened into position.	Tighten the Locking Handle to secure the Power Head over the platen.
The platen will not rotate.	No electricity to the machine. Machine in PAUSE mode. Emergency Stop activated. **Broken or loose belt. **Pulley loose.	• Check that power is available. See above. • Press the GREEN START buttons to get out of PAUSE mode. • Release the Emergency Stop button.
Wastewater not draining.	Drain hose blocked. The drain hole in the bowl is blocked.	• Remove blockage or replace hose. • Clean out drain and outlet.

For ** possible causes, contact your Buehler Representative for service.

If problem is not resolved, contact your Buehler Representative for service.

Glossary

Bowl Liner:	A transparent plastic bowl liner that is supplied with the machine. The purpose of the bowl liner is to prevent accumulation of debris residue inside the bowl.
Central Force Application:	The specimen holder secures the sample in place and the amount of force (pressure) is applied at a central point on the specimen holder. Applies only to Semi-Auto units.
Platen:	A flat plate pressed against a disc in order to facilitate grinding or polishing methods. Many different platen systems are available to facilitate the use of different surfaces.
Power Head:	Enables semi-automatic operation of Grinder-Polisher machines and secures the specimen holder in place during application. Applies only to Semi-Auto units.
Pressure Sensitive Adhesive (PSA) Backing:	A grinding disc with a PSA layer that is able to attach directly to the platen.
Single Force Application:	The samples are placed, but not secured, in a specimen holder. The amount of force (pressure) is applied to the individual sample through fingers. Applies only to Semi-Auto units.
Specimen Holder:	Used to facilitate process automation and optimization by securing samples. Many options for different sizes and shapes are available. Applies only to Semi-Auto units.
Splash Ring:	Prevents accidental spraying during application and can be easily removed for platen changing.

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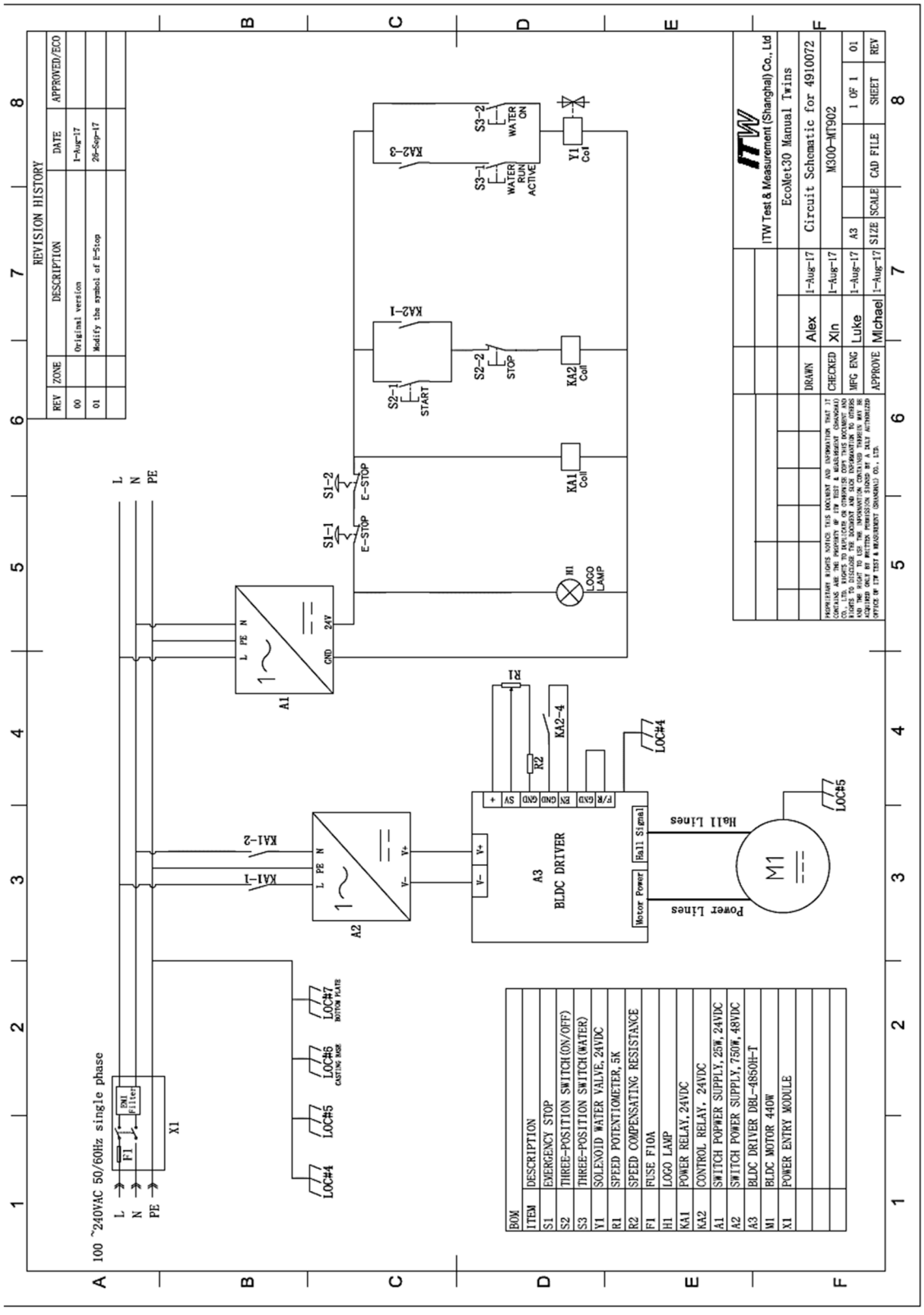
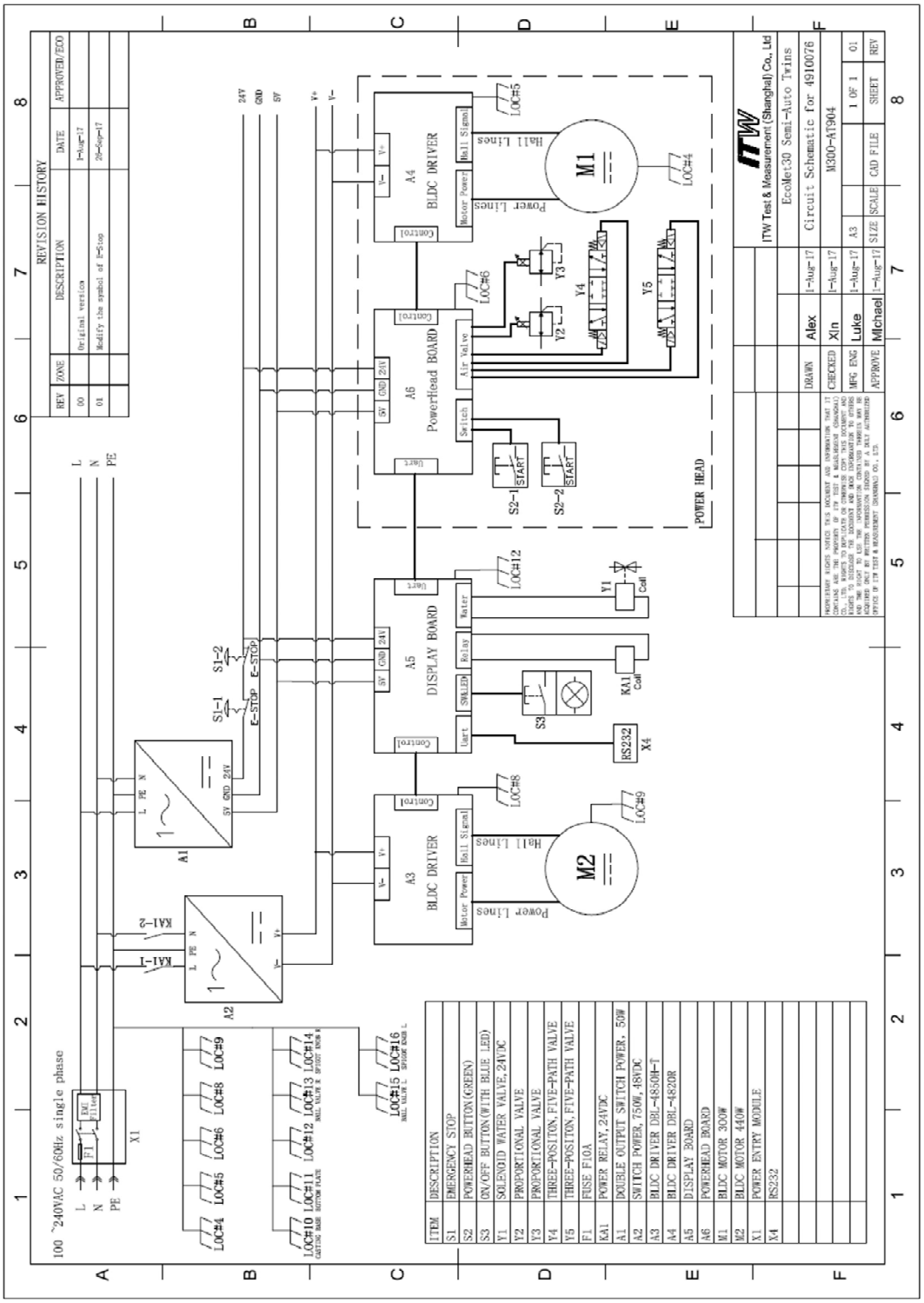
For all other service inquiries visit Buehler at www.buehler.com.

APPENDIX: Schematic




REVISION HISTORY
REV ZONE DESCRIPTION DATE APPROVED/ECO
00 Original version 1-Aug-17
01 Modify the symbol of E-Stop 28-Sep-17
100 ~240VAC 50/60Hz single phase
L
N
PE
F1
X1
KA1-1
KA1-2
A1
A2
S1-1
S1-2
E-STOP
A3
BLDC DRIVER
A4
BLDC DRIVER
A5
DISPLAY BOARD
A6
PowerHead BOARD
POWER HEAD
S2-1
S2-2
START
S3
Y1
Y2
Y3
Y4
Y5
M1
M2
RS232
X4
KA1
Coil
LOC#1
LOC#2
LOC#3
LOC#4
LOC#5
LOC#6
LOC#8
LOC#9
LOC#10
LOC#11
LOC#12
LOC#13
LOC#14
LOC#15
LOC#16
ITEM DESCRIPTION
S1 EMERGENCY STOP
S2 POWERHEAD BUTTON(GREEN)
S3 ON/OFF BUTTON(WITH BLUE LED)
Y1 SOLENOID WATER VALVE, 24VDC
Y2 PROPORTIONAL VALVE
Y3 PROPORTIONAL VALVE
Y4 THREE-POSITON, FIVE-PATH VALVE
Y5 THREE-POSITON, FIVE-PATH VALVE
F1 FUSE F10A
KA1 POWER RELAY, 24VDC
A1 DOUBLE OUTPUT SWITCH POWER, 50W
A2 SWITCH POWER, 750W, 48VDC
A3 BLDC DRIVER DBL-48S04-T
A4 BLDC DRIVER DBL-4820R
A5 DISPLAY BOARD
A6 POWERHEAD BOARD
M1 BLDC MOTOR 300W
M2 BLDC MOTOR 440W
X1 POWER ENTRY MODULE
X4 RS232
ITW Test & Measurement (Shanghai) Co, Ltd
Ecolet30 Semi-Auto Trims
Circuit Schematic for 4910076
M300-A1904
DRAWN Alex 1-Aug-17
CHECKED Xin 1-Aug-17
MFG ENG Luke 1-Aug-17
APPROVE Michael 1-Aug-17
A3
1 OF 1
01
SIZE
SCALE
CAD FILE
SHEET
REV

Notes

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