

BUEHLER®

BuehlerVanguard® 2000

FULLY AUTOMATIC SAMPLE PREPARATION SYSTEM

- Fully Automated, Allowing Dramatic Increases in Productivity and Consistency
- Microprocessor Based with 50 Method Memory
- User Friendly, Icon Based, Color Interface
- Central or Single Force Load Application
- Versatile for Low or High Sample Volumes



BUEHLER

Fully Automated Preparation



Increases Productivity and Consistency

The BuehlerVanguard® 2000 is a Fully Automatic Grinding-Polishing System developed to free your personnel from the time consuming task of sample preparation. Fully automated means that samples can be prepared from start to finish without continuous operator involvement. Just load up to six samples at a time, select the preparation method, and step away. In as little as 15 to 20 minutes your samples will be finished; cleaned, dried, and ready for analysis. While the BuehlerVanguard 2000 prepares samples, the user is free to spend time on critical applications such as analysis and report generation.

With BuehlerVanguard 2000 you can increase your lab's volume without

sacrificing consistency or quality. BuehlerVanguard 2000 automatically monitors the critical operating parameters for each batch, assuring consistent results, operator to operator, shift to shift, day in and day out.

Microprocessor Based with 50 Method Memory

The BuehlerVanguard 2000's microprocessor based system allows the user to select from six preinstalled methods or up to 44 individually created preparation methods. Designed by Buehler's expert laboratory personnel, the six preinstalled methods enable less experienced metallographers to prepare a variety of materials quickly and effectively.

The user can easily create, retrieve, modify, and store up to 44 methods to meet individual application requirements. The same method used today can be recalled day after day, operator after operator, to give consistent results sample after sample.

User Friendly, Icon Driven Interface

The BuehlerVanguard's user friendly interface makes operation simple. All controls are located on one easy to use touch panel. No keyboard or mouse is needed. Simple icons guide the operator through all program display screens enabling use by laboratory personnel of all skill levels. Operation is further simplified by the use of full color displays, color graphics, and by highlighting the windows or text to be edited.

User Friendly Control Panel



Selects window to be edited on the screen

Selects data to enter values in command fields

Touch-pad controls activate corresponding screen functions

Main Power

Enters alphanumeric text

The key to the BuehlerVanguard 2000's ease of use is simplicity. For most applications, the operator has only to press Power On, scroll to the desired method, and press Run to begin preparing samples. After the method is started, the robotic arm automatically loads one of six selected platens onto the grinding-polishing base. Next, the automatic head places the samples on the platen while providing single or central load application.

As the samples are being prepared, the BuehlerVanguard 2000 counts down the time remaining on a given step and projects the estimated time to completion for the entire process. During preparation, the operator can

pause, stop, or restart the system at anytime.

A fully integrated dispensing system automatically doses abrasive suspensions onto the grinding/polishing surface. The BuehlerVanguard 2000's dispensing system meters the abrasive suspensions dosing by frequency and duration to eliminate waste, resulting in consumable savings as compared to manual abrasive application.

The automatic head shuttles the samples between steps to the ultrasonic cleaning and drying station. Meanwhile, the robotic arm automatically returns the first platen to the storage rack and loads a second platen in preparation for the next step.

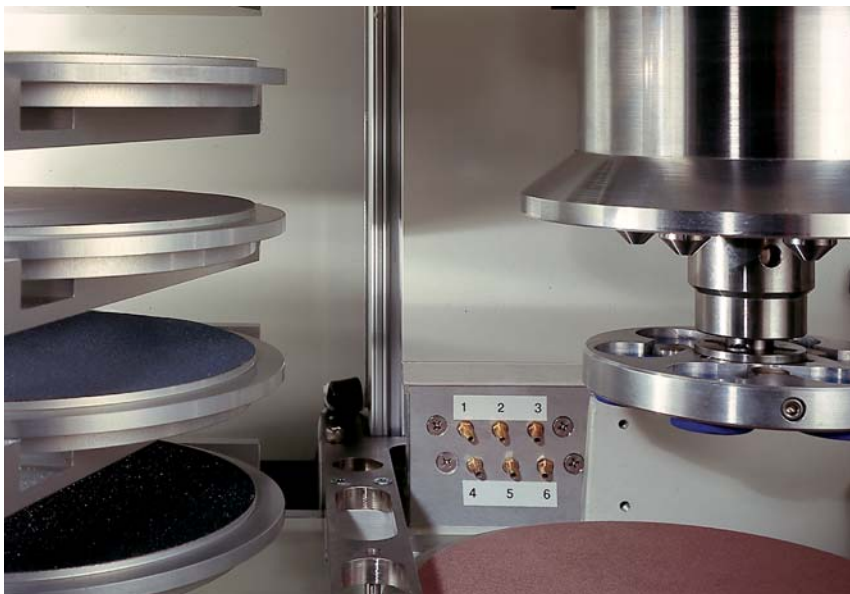
After the final polishing step, the BuehlerVanguard 2000 signals the operator that the samples are ready for analysis. The user can, by the push of one button, repeat the method or go back and select a new polishing method.

BuehlerVanguard 2000 safety features include a transparent access portal with safety interlock, separate splash proof control housing, and an emergency stop switch.

Designed for international use, the BuehlerVanguard 2000 has multiple language capacity and English or graphic display facia panels.



Buehler Vanguard 2000 system gives the operator the choice of preparing samples using single or central force application. Single force application means as few as one or as many as six samples can be prepared at a time. With single force application, individual samples can be removed, examined, then returned to the holder to continue preparation.



The robotic arm moves the aluminum platens from the storage rack into the drive base. Abrasive suspensions are dispensed from one of six self cleaning nozzles onto the preparation surface.



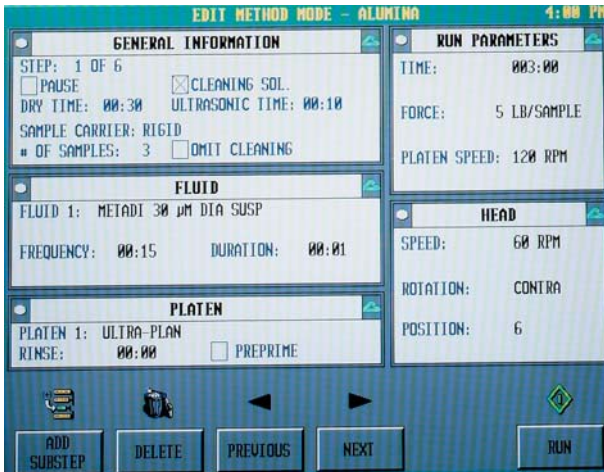
The cleaning station offers a choice of ultrasonic or non-ultrasonic cleaning and warm or cold air specimen drying.



The consumable storage area holds up to 6 bottles of abrasive and one bottle of UltraMet® Sonic Cleaning Solution. Buehler offers specially formulated abrasive suspensions for the Buehler Vanguard 2000 in addition to our standard line of grinding media, polishing cloths, and MetaDi® Supreme Diamond Suspensions. The easy to open front panel provides quick access to the storage area.



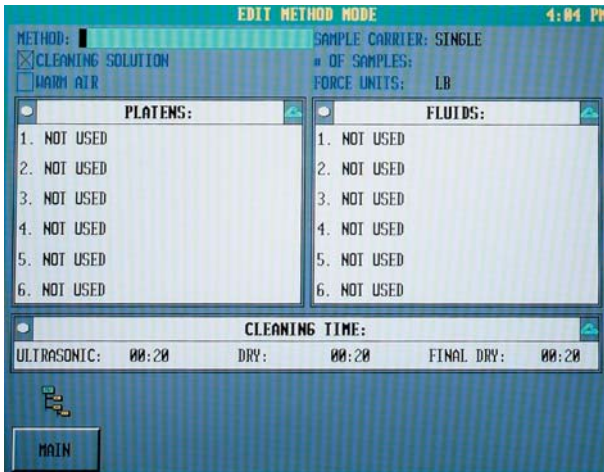
A complete series of specimen holders accommodates both compression and cold mounted samples as well as a range of unmounted specimens.



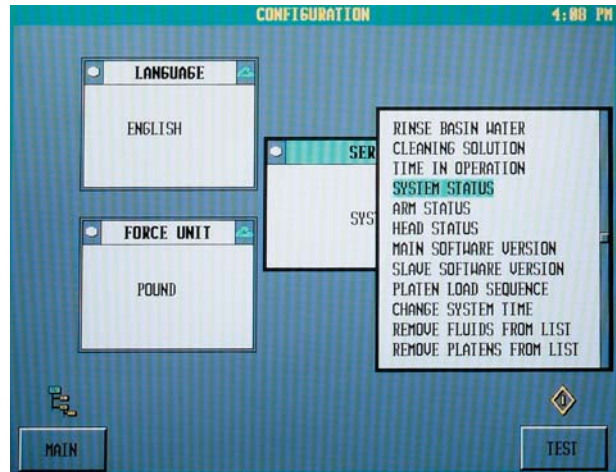
The BuehlerVanguard 2000 makes it easy to program and run sample preparation methods. The Main Menu displays a list of options and commands to program, edit, or run a method. Press the key under the corresponding command to activate a command.



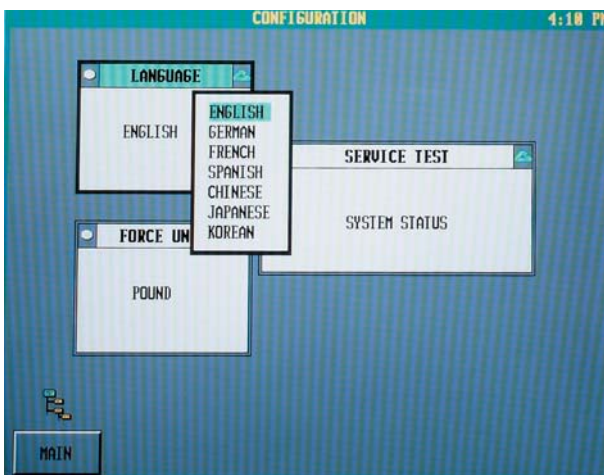
The BuehlerVanguard™ 2000 has six pre-programmed methods for alumina, aluminum alloys, carbon steels, copper/bronze alloys, stainless steels and titanium alloys. These methods can be used as programmed or edited and saved under a different method name.



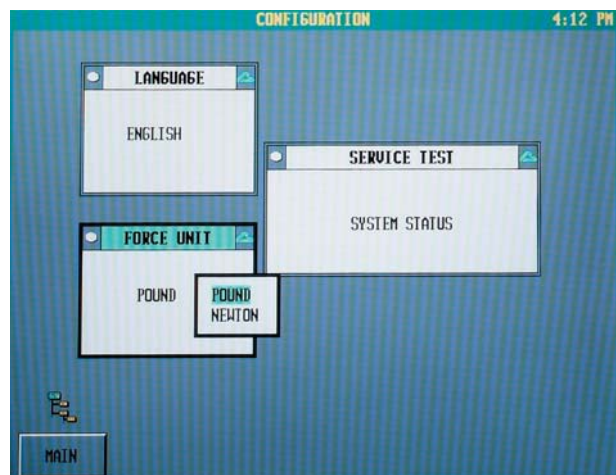
The Edit Method Mode allows changing method parameter values, such as number of samples, force, platen identity and abrasives used and cleaning time.



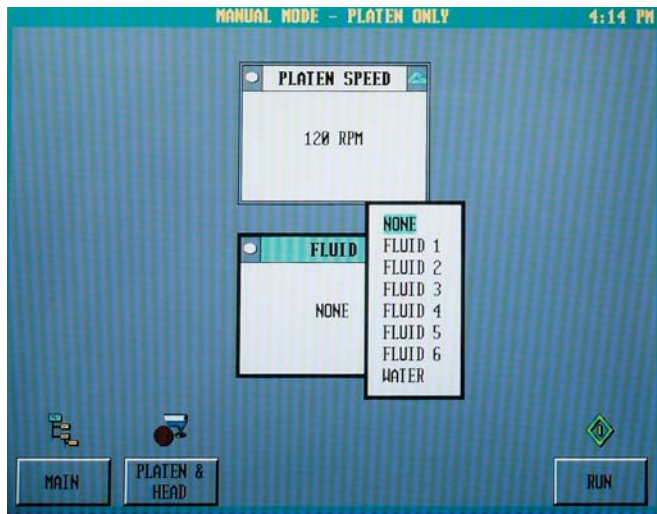
A service test can be performed to display the BuehlerVanguard 2000 system status.



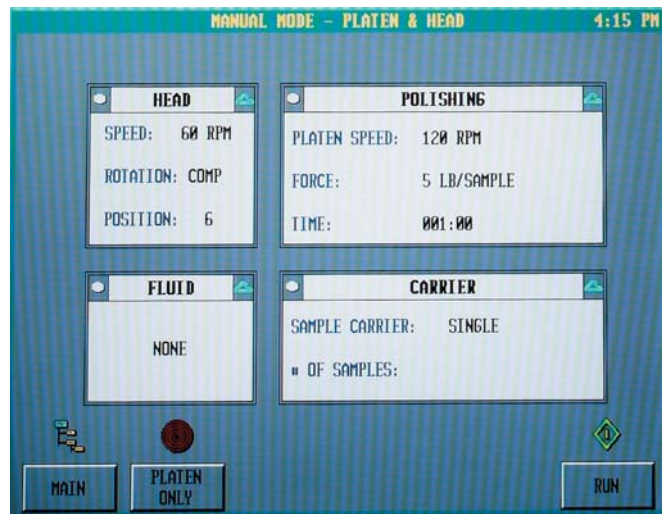
The Configuration Mode allows selection among a variety of languages. Select between English, German, French, Spanish, Chinese, Japanese or Korean languages.



Select between metric or imperial units of measure in the Configuration Mode.



The Manual Mode - Platen Only screen enables Platen Speed and Fluid parameters to be entered before starting a method execution.



The Manual Mode - Platen & Head screen enables Head, Polishing, Fluid and Carrier parameters to be entered at the start of the method execution.

Technical Data

Operation Modes

- Fully automatic
- Semi-automatic
- Manual

Single and Central Mode Sample Capacity

- Quantity 6 of 1" or 25mm samples
- Quantity 6 of 1¼" or 30mm samples
- Quantity 3 of 1½" or 40mm samples

Sample Force

- 1 to 20 lb. per sample
- 4-89 N per sample

Head/Base Parameters

- Base motor 1Hp (746 watts)
- Wheel speed 20-350 rpm (in 10 rpm increments)
- Head motor ¼ Hp (187 watts)
- Head speed 30, 60, and 120 rpm
- Head/base relative rotation: complementary or contra

Dispensing System

- Automatic or touch panel controlled dispensing
- 6 abrasive suspensions
- 1 cleaning solution on/off
- Water on/off
- Self cleaning nozzles

Cleaning and Drying Station

- Ultrasonic cleaning
- Cleaning time 0-5 minutes
- Stainless steel wash tank
- Cleaning solution dispensing
- Warm or cold air drying
- Air dry time 0-1 minutes
- Final step air dry time 0-5 minutes

Microprocessor

- Dual microprocessors
- 32 MB Flash RAM Drive
- 128 MB DDR RAM Memory
- 400 MHz Speed
- 16MB UMA Graphic Display Memory
- 50 method memory up to 6 steps per method (6 preinstalled methods)

Controls

- User friendly icon driven
- Fully integrated touch-pad control
- 8.5" (216mm) LCD color display
- Multi-language user interface
- English or graphic control facia panel for easy world wide operation

Construction

- Tabletop system
- Heavy duty, corrosion resistant aluminum construction

Construction (cont.)

- Corrosion and impact resistant ABS cabinet
- Quiet pneumatic operation
- Lighted operating chamber

Safety Features

- Isolated splash proof control cabinet
- Transparent safety interlock access panel
- Mushroom type emergency stop switch

Power:

170-264V/50-60 Hz/1 phase, 20 amps

Air Requirements:

95 psi (6.6 bars) filtered, regulated compressed air

Water Requirements:

¾" OD tube (9.5mm) supply, 15-85 psi (1.0-5.9 bars) source

Weight:

350 lb. (159 kg)

Dimensions

W	x	D	x	H
39.25"	x	23.65"	x	31.50"
997mm	x	601mm	x	800mm

Specifications

63-2000 BuehlerVanguard 2000 Fully Automatic Preparation System tabletop unit with microprocessor based operation, six 8" (203mm) aluminum platens. Complete with operating instructions. Specimen holders supplied separately. For 170-264V/50-60 Hz/1 phase operation.

Accessories

63-1001 Aluminum Platen, for BuehlerVanguard 2000, 8" (203mm).

48-8282 TechMet® Table, for BuehlerVanguard 2000, 36" H x 54" W x 30" D (915mm x 1372mm x 762mm).

Single Force Accessories

Single force holders come standard with drive adapters. The single force holders also include one set of appropriately sized retaining rings.

Component	Part Number
Specimen Holder, Single Force six 1" mounts	63-1002
Specimen Holder, Single Force six 1¼" mounts	63-1003
Specimen Holder, Single Force three 1½" mounts	63-1004
Specimen Holder, Single Force six 25mm mounts	63-1005
Specimen Holder, Single Force six 30mm mounts	63-1006
Specimen Holder, Single Force three 40mm mounts	63-1007
Retaining Ring Replacements, Single Force six 1" and 25mm mounts	63-1022
Retaining Ring Replacements, Single Force six 1¼" and 30mm mounts	63-1023
Retaining Ring Replacements, Single Force three 1½" and 40mm mounts	63-1024

Central Force Accessories

Central force holders require the purchase of drive adapters.

Specimen Holder, Central Force six 1" or 25mm mounts	60-2482
Specimen Holder, Central Force six 1¼" mounts	60-2483
Specimen Holder, Central Force three 1½" mounts	60-2485
Specimen Holder, Central Force six 30mm mounts	60-2486
Specimen Holder, Central Force three 40mm mounts	60-2487
Drive Adapter for Central Force Specimen Holders	60-2499
Specimen Loading Plate, for Central Force Specimen Holders	60-2425

Consumables

Apex® Diamond Grinding Discs, Color, PSA Backed, 8" (203mm)

Micron	Color	Quantity	Part Number
75	Red	1	41-3508
55	Purple	1	41-3608
35	Yellow	1	41-3708
15	White	1	41-3808
8	Blue	1	41-3908

Consumables (Cont.)

BuehlerVanguard 2000's proprietary slurries and suspensions are specially formulated for use with Buehler's dispensing systems to maximize performance and are conveniently sized to fit the BuehlerVanguard 2000's consumable storage area.

MetaDi® Supreme Polycrystalline Diamond Suspensions, 32 oz. (.95ℓ)

Diamond Size	Color	Type	Part Number
1 micron	Blue	Water Based	40-6630-032
3 micron	Green	Water Based	40-6631-032
6 micron	Yellow	Water Based	40-6632-032
9 micron	Deep Red	Water Based	40-6633-032
15 micron	Brown	Water Based	40-6634-032

Final Polishing Suspensions and BuehlerVanguard® 2000 Consumables

Description	Microns	Part Number
MasterPrep® Suspension, 6 oz.	0.05	63-6377-006
MicroPolish® Alumina, #1, 6 oz.	5.0	63-6351-006
MicroPolish® Alumina, #1C, 6 oz.	1.0	63-6354-006
MicroPolish® Alumina, #2A, 6 oz.	0.3	63-6352-006
MicroPolish® Alumina, #3B, 6 oz.	0.05	63-6353-006

Cleaning Solution

Description	Part Number
UltraMet® 2 Sonic Cleaning Solution, 6 oz.	63-6000-006
UltraMet® 2 Sonic Cleaning Solution, 32 oz.	75-6000-032

The BuehlerVanguard Fully Automatic Preparation System is also compatible with Buehler's standard grinding media, polishing cloths, and MetaDi® Diamond Suspensions. For a complete consumable listing, please refer to the Quality At Work - Consumables Buyers Guide. Buehler continuously makes product improvements; therefore, technical specifications are subject to change without notice.

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BUEHLER

BUEHLER LTD. - Worldwide Headquarters
41 Waukegan Road • P.O. Box 1
Lake Bluff, Illinois 60044-1699 USA
Tel: 847/295-6500 • Fax: 847/295-7979
Sales: 1/800/BUEHLER • 1/800/283-4537
Web Site: <http://www.buehler.com>
Email: info@buehler.com

BUEHLER GMBH - European and MESA Headquarters

In der Steele 2 • 40599 Düsseldorf
Postfach 16 03 55 • 40566 Düsseldorf
Telefon: (49) 211 974100 • Telefax: (49) 211 9741079
Web Site: <http://www.buehler-met.de>
Email: info@buehler-met.de

BUEHLER FRANCE

Téléphone: 0800 89 73 71
Télécopie: 0800 88 05 27
Web Site: <http://www.buehler.fr>
Email: info@buehler.fr

BUEHLER UNITED KINGDOM

Telephone: 0800 707 6273
Fax: 0800 707 6274
Web Site: <http://www.buehler.co.uk>
Email: sales@buehler.co.uk

BUEHLER CANADA

10 Carlow Court, Unit #2
Whitby, Ontario L1N 9T7
Telephone: (905) 430-4684 • Fax: (905) 430-4647
Sales Telephone: 1-800-268-3593
Email: info@buehler.ca

BUEHLER ASIA

5/F Vogue Centre
696 Castle Peak Road
Lai Chi Kok, Kowloon
Hong Kong, SAR, China
Telephone: (852) 2307 0909
Fax: (852) 2307 0233