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IsoMet® 1000 Precision Saw

The IsoMet® 1000 Precision Saw offers increased speed, load, and blade size that enables a wide variety of specimen samples to be cut quickly and with low deformation.

The IsoMet® 1000 cutting compartment is fully enclosed and can be removed and replaced with the accessory Table Saw Attachment for sectioning larger samples. The coolant tray can be easily removed from the front of the machine for fast cleaning and for easy retrieval of cut samples.

With a 7-inch diamond blade capacity and a wide selection of accessories, the IsoMet® 1000 Precision Saw offers increased versatility and power for sectioning today's advance materials.

Warranty

This unit is guaranteed against defective material and workmanship for a period of two (2) years / 2000 hours from the date of receipt by the customer. 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, labor, and travel).

If for any reason this unit must be returned to Buehler Ltd. for warranty service, please apply for prior authorization with shipping instructions. Please include the following information:

- Customer Purchase Order Number
- Buehler Invoice Number and Date
- Serial Number
- Reason for return

Unpacking

The IsoMet® 1000 Precision Saw has been carefully packaged to protect it during transit from the factory to your location. Carefully unpack and check the contents. If any components are missing or damaged, save the packing list and materials and advise the carrier and Buehler, Ltd. of the discrepancy.

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

- 11-1184 Bar and Tube Stock Chuck
- 11-1185 Irregular Specimen Chuck
- 11-1186 Wafering Chuck
- 11-1187 Small Single Saddle Chuck
- Pint IsoCut® Fluid
- Series 15LC 6-inch Diamond Wafering Blade
- 2 3-inch Flanges
- Hex Wrench 1/8 inch
- Hex Wrench 3/32 inch
- Hex Wrench 5/32 inch
- Hex Wrench 5/64 inch
- Open End Hex 1/2 - 5/8 inch

WARNING! **Equipment Damage.** The IsoMet® 1000 Precision Saw weighs 75 lbs (34 kg) and two persons are required to safely lift the unit from the shipping carton.

The IsoMet® 1000 Precision Saw is bolted to a wood base for protection during shipping. Open areas are provided at the corners of the base for ease of lifting. Lift IsoMet® 1000 Precision Saw out of the carton and position it on a table so it overhangs on the edge. Remove the bolts securing the IsoMet® 1000 Precision Saw to the wood base.

Note: Do not remove the four bolts securing the motor to the IsoMet® 1000 housing (see **Figure** 1).

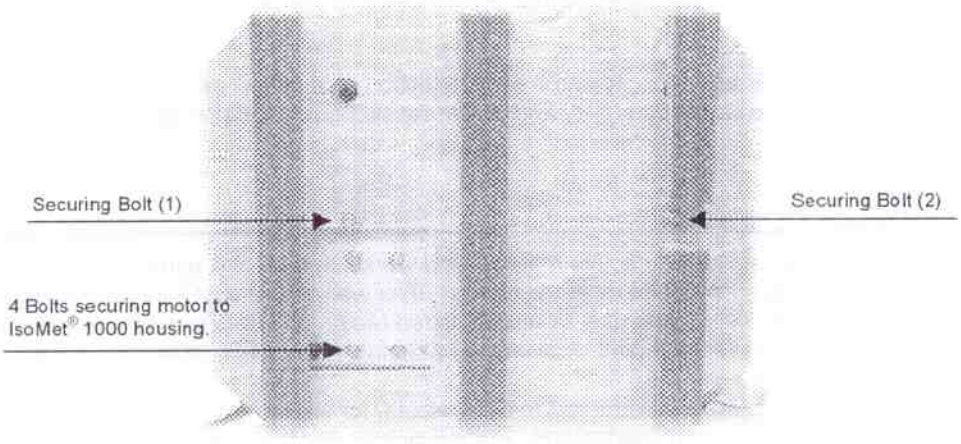

Figure 1 IsoMet® 1000 Wood Base

Safety Information

The IsoMet® 1000 Precision Saw is designed to section metallurgical and petrographic materials with recommended cutting wheels.

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 IsoMet® 1000 Precision Saw 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 (30-90%).

Machine Use and Care

Dress properly. Do not wear loose clothing or jewelry and contain long hair. They can be caught in moving parts and can result in severe personal injury. Protective equipment should be worn to handle samples, 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.

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

Maintain the IsoMet® 1000 Precision Saw 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 situation.

Maintain machine guards and interlocks. Do not attempt to enter the cutting bay when the IsoMet® 1000 Precision Saw is in use.

Only qualified repair personnel must perform machine service. Service or maintenance performed by unqualified personnel could result in a risk of injury.

Replace damaged or defective parts immediately and use only identical 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 cause many accidents.

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

Use of extension cords is not recommended for Buehler machines and equipment.

Machine coolant can present a biological hazard if not maintained correctly. Change the coolant regularly in accordance with local regulations and safety practices.

- Coolant must be suitable for grinding cut-off use and protect against electrolytic action between sample material and machine.

Installation

CAUTION! Equipment Damage. Follow all locally approved procedures and safety practices when lifting and installing this machine. Improper lifting can result in machine damage.

Select a location for your IsoMet® 1000 Precision Saw that provides an adequate working space and a power source.

The IsoMet® 1000 Precision Saw is 15 ½ inches (394 mm) wide, 21 inches (533 mm) deep, and 12 inches (305 mm) high. Placement of the IsoMet® 1000 Precision Saw should be on a sturdy, level bench. Buehler TECH-MET® tables are highly recommended.

Allow 6 inches (150 mm) of space at the back of the IsoMet® 1000 Precision Saw for raising the hood. Make sure to leave sufficient space on both sides for sectioning long bars.

Electrical Installation

WARNING! Electrical Shock Hazard. Do not change the power plug in any way. Buehler machines are equipped with a polarized plug (one blade is wider than the other) and a ground pin. Polarized plugs reduce the risk of electrical shock. This plug will fit in a polarized outlet only one way.

Check that Specification Plate values for voltage, current, and power consumption are compatible with the intended electrical supply before installation.

The IsoMet® 1000 Precision Saw can be plugged into an outlet rated for the voltage and frequency listed on the Specification Plate.

WARNING! Electrical Shock Hazard. A qualified electrical technician should perform electrical maintenance.

- ***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 IsoMet® 1000 Precision Saw must comply with local electrical standards or codes of practice.

IsoMet® 1000 Precision Saw	Voltage / Frequency
11-2180	85 – 264 Volts / 50 – 60 Hz

Table 1 IsoMet® 1000 Electrical Data

Activating the IsoMet® 1000 Precision Saw

To activate power to the IsoMet® 1000 Precision Saw flip the power switch on the back of the machine to the UP position.

The IsoMet® 1000 power switch is also a two-pole circuit breaker that will provide protection for the machine in the event of an overload.

If at any time the Front Control Panel buttons or the motor does not operate, reset the IsoMet® 1000 by flipping the power switch to the DOWN position then back to the UP position.

Blade Installation

1. Remove the thumbscrew, end cap bushing, and outer flange from the arbor shaft (see **Figure 2**).
2. Install the blade on the arbor shaft against the inner flange.
3. Slide the outer flange, the end cap bushing, and the thumbscrew on to the arbor shaft.
4. Hand tightened the thumbscrew to secure the blade.

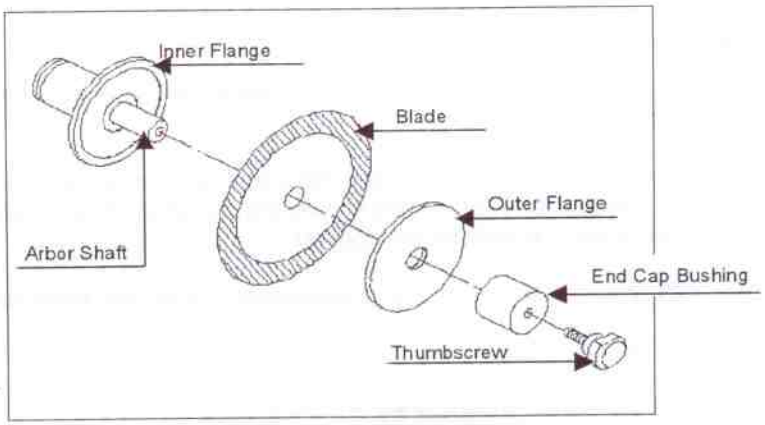

Figure 2 Blade Installation

Gang Sawing

Several blades can be installed to the IsoMet® 1000 for gang sawing.

1. Install the blades with the appropriate spacers.
2. Slide the outer flange, the end cap bushing, and the thumbscrew on to the arbor shaft.
3. Hand tightened the thumbscrew to secure the blades.

Flanges

CAUTION! Equipment Damage. Flanges provide support for wafering blades. Failure to provide adequate flange support can result in curved cuts and damaged blades.

Always select the maximum flange diameter to correspond with the sample size.

Before re-installing a wafering blade, clean the flanges, end cap bushing, and thumbscrew. This will help prevent misalignment of the blade and prevent poor quality cuts.

Blade Dressing

New wafering blades (including the original equipment blade) must be dressed before making any cuts.

Blade dressing removes built up matrix metal and exposes the abrasive grain to provide clean, aggressive cutting. New wafering blades should be dressed several times and older blades should be dressed as required.

Note: When cutting metal, it may be necessary to dress the blade after each cut.

To dress a wafering blade:

1. Position the dressing stick in the dressing chuck.
   - From the front of the machine, pull the lubricant tank straight out until the blade makes contact with the back of the tank. The dressing chuck will now be exposed.
   - Position the dressing stick as needed.
   - Close the lubricant tank.
2. Close the hood.
3. Press the SAW button to activate the saw.
4. Rotate the Dressing Stick Feed Control knob clockwise to feed the dressing stick into the wafering blade (see **Figure 3**).

5. Make as many cross cuts through the dressing stick as needed to dress the blade. Three to five crosscuts usually work well.

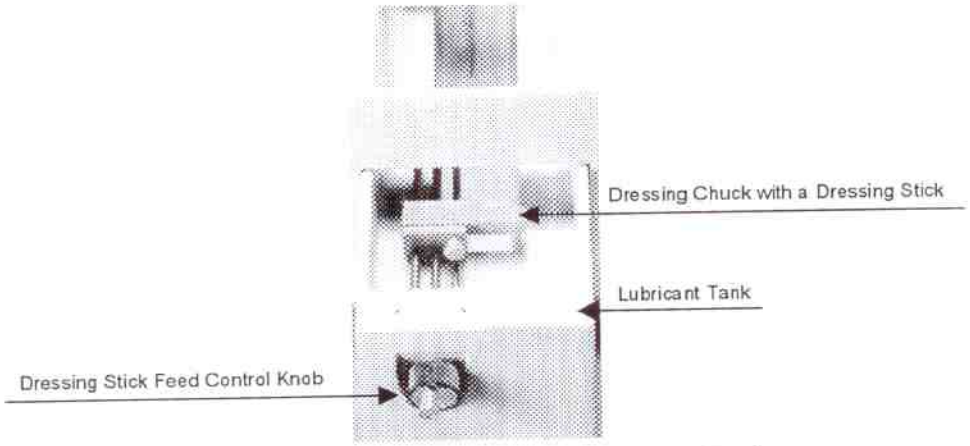

Figure 3 Dressing Chuck inside the Lubricant Tank

WARNING! Personal Injury. Feeding the dressing stick or any specimen sample into the blade by hand can result in severe personal injury and equipment damage.

Lubrication

The IsoMet® 1000 Precision Saw uses the drag principle of lubrication. The lubricant is carried to the sample on the edge of the rotating blade.

IsoCut® Plus Fluid reduces cutting time and produces superior cuts. IsoCut® Plus Fluid is best for most metals and many non-metals. The use of IsoCut® Plus Fluid promotes effective lubrication enables diamond particles to cut cleanly and minimizes loading of the blade.

- Fill the IsoMet® 1000 lubricant tank with IsoCut® Plus Fluid to a level that will immerse the blade approximately ¼-inch.
- Discard the lubricant when becomes contaminated with sludge.
    a. Remove the sample tray, wafering blade, and flanges from the arbor shaft.
    b. From the front of the machine, pull the lubricant tank straight out.
    c. Discard the lubricant in a safe and approved manner.
    d. Clean the lubricant tank.
    e. Reinstall the lubricant tank.
    f. Refill the lubricant tank with fresh, clean lubricant.
    g. Reinstall the wafering blade, flanges, and sample tray.

Operation

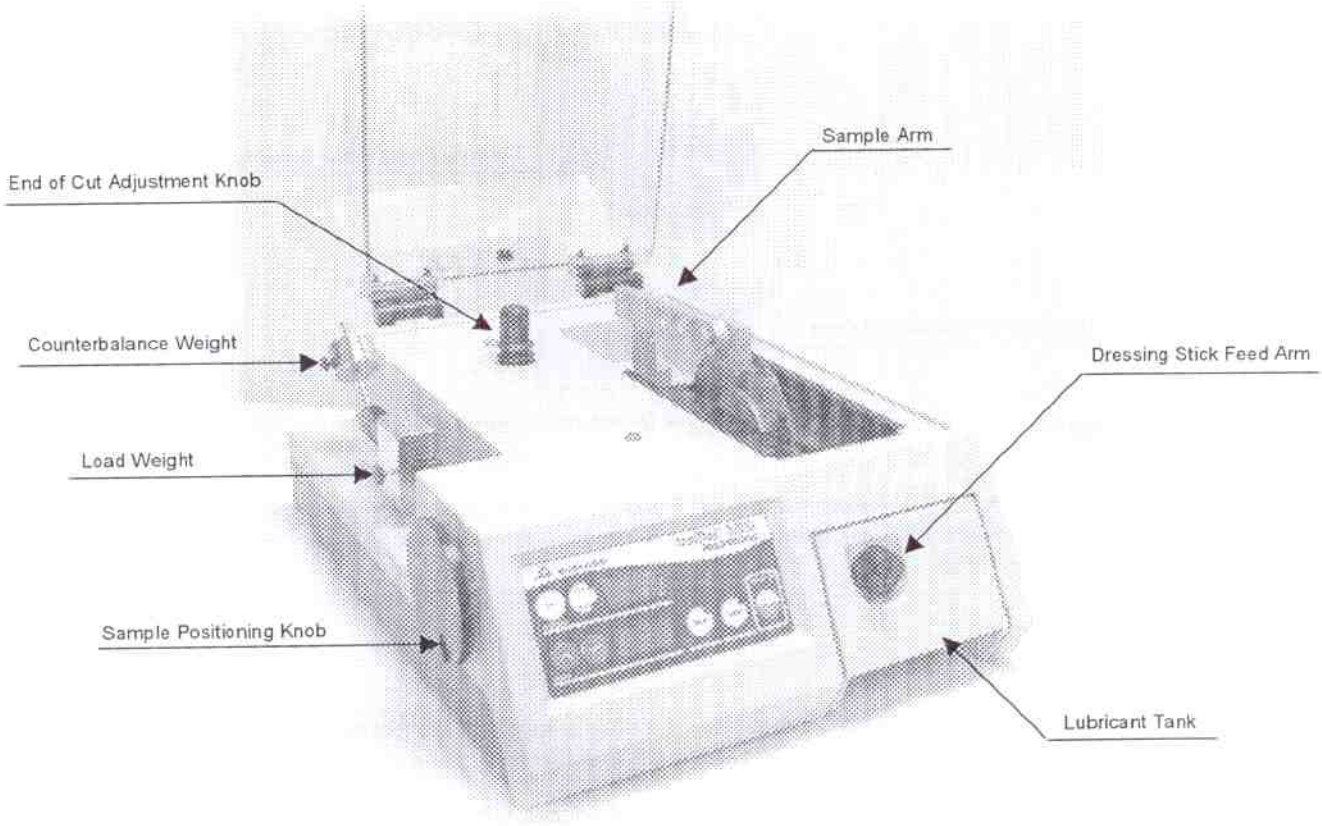

Figure 4 IsoMet® 1000 Precision Saw Components

IsoMet® 1000 Front Control Panel

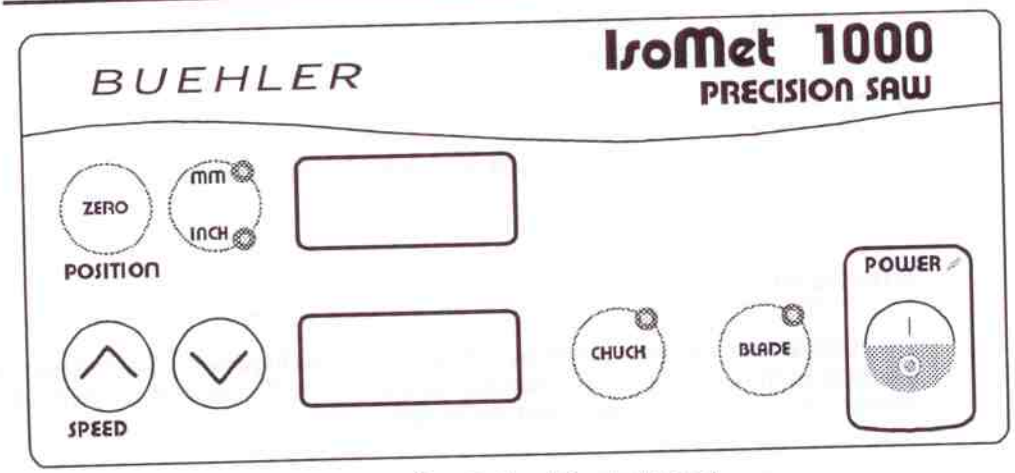

Figure 5 IsoMet® 1000 Front Control Panel

POSITION (ZERO) Resets the blade position to zero. The POSITION LCD will display 00.0.

UNITS (MM / INCH) Displays either millimeters or inches as the unit of measurement in the POSITION LCD.

The default unit of measurement is inches. The indicator light will light up for the unit of measure selected.

POSITION FIELD Displays the distance of the blade from the set ZERO position.

INCREASE Increases the blade speed in increments of 25 rpms. Press and hold the INCREASE button for rapid speed selection.

DECREASE Decreases the blade speed in increments of 25 rpms. Press and hold the DECREASE button for rapid speed selection.

SPEED FIELD Displays the blade speed in rpms. The minimum blade speed is 100 rpms. The maximum blade speed is 950 rpms.

Note: The IsoMet® 1000 will retain to the last selected speed.

CHUCK *Only used* with the Rotating Chuck accessory. Activates and deactivates the Rotating Chuck. The indicator light will light up when the chuck is activated.

BLADE Activates and deactivates the blade. The indicator light will light up when the blade is running.

POWER Activates and deactivates power to the IsoMet® 1000.

Sample Arm

The Sample Arm has three positions to select from (see **Figure 6**). The position selected depends on the diameter of the wafering blade (4-inch to 7-inch) and the angle of engagement between the blade and the sample.

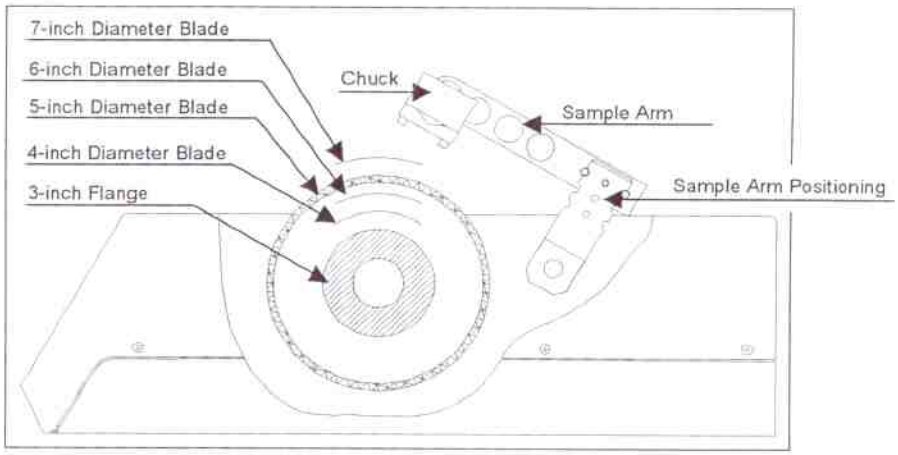

Figure 6 Sample Arm Positioning

Loading the Saw

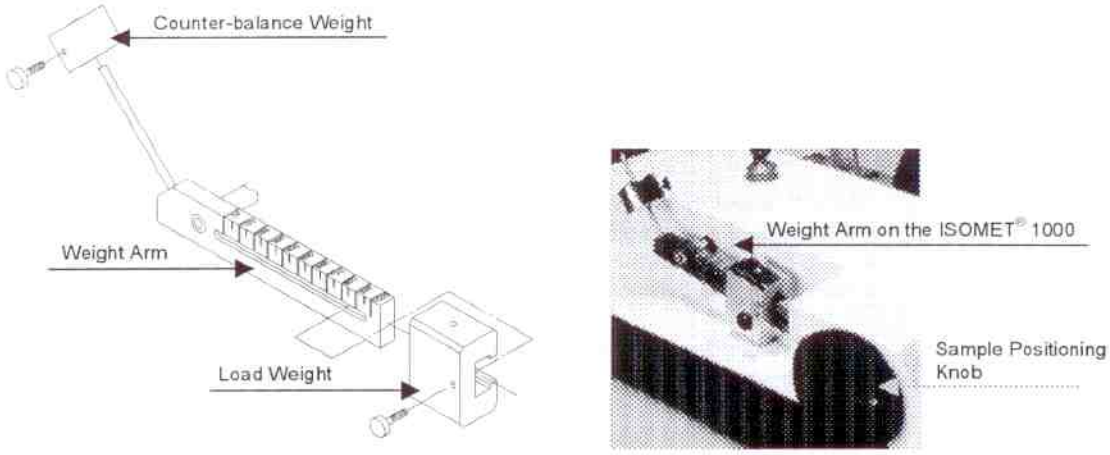

Figure 7 Weight Arm

1. On the left side of the IsoMet® 1000 is the Weight Arm. Lift the Weight Arm to the locked position.
2. Loosen the thumbscrew on the Load Weight.
3. Slide the weight to the zero setting.
4. Select the proper chuck for the application and clamp the sample in the chuck.
   - To clamp odd or irregular samples, it may be necessary to sandwich metal strips between the sample and the chuck.
5. Attach the sample loaded chuck to the Sample Arm with the supplied screw (a socket head cap).
6. Once the chuck is secure, rotate the Sample Positioning knob to move the Sample Arm to the far left.
7. Lower the Weight Arm so it lays horizontal.
8. Slide the counter-balance weight up or down until a balance is achieved.
9. Tighten the thumbscrew on the counter-balance weight to secure the weight.
   - If a large chuck or a heavy sample is used, a balance may not be achieved.
   - If the sample is load sensitive, deduct the unbalanced weight from the Load Weight setting.
10. Set the Load Weight to the desired load as marked on the Weight Arm.
    - The Weight Arm is calibrated from zero (0) to 500 grams. 300 grams of additional weight can be added with the optional weight kit.
    - Lighter weights are recommended since heavier loads can cause greater surface damage to the sample.