BUEHLER

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IsoMet™ 4000
Linear Precision Saw

Buehler Worldwide Mission Statement

We are Buehler, the science behind materials preparation and analysis and the premier company in our field, since 1936. Our global mission is to deliver outstanding value and delight our customers by providing innovative, quality, on-time products and services.

To fulfill our mission, we will continue to:

- Listen to and understand our customers to exceed their expectations.
- Apply engineering and technical support to provide innovative solutions to our customers.
- Achieve profitable growth.
- Foster an environment of creativity, respect, teamwork, open communication and ethical behavior.
- Provide the training and tools which allow all of us to achieve our mission.
- Continually improve our performance in all aspects of the business.

About Buehler

For over 70 years, Buehler has been a leading manufacturer of scientific instruments and supplies for use in materials analysis. Buehler products are used throughout the world in manufacturing facilities, quality laboratories and universities to analyze all types materials, including:

- Ferrous and Non-ferrous metals
- Thermal spray coatings
- Printed Circuit Boards
- Fasteners
- Ceramics
- Composites
- Semiconductors
- Rocks
- Glasses
- Plastics

Companies use Buehler products to improve the material within their product, monitor production or incoming purchased material, do failure analysis and perform basic materials research. Buehler products fall into three categories:

- Sample preparation equipment for cutting, grinding and polishing specimen material (usually cross sectioning) prior to microstructural inspection.
- Metallographic consumables for the sample preparation equipment including; cutoff wheels, saw blades, mounting compounds, grinding papers, polishing cloths and polishing suspensions.
- Inspection and testing equipment including microscopes, image analyzers, video equipment and hardness testers.

EC – DECLARATION OF CONFORMITY

Name of Manufacturer and contact information:	BUEHLER An ITW Company 41 Waukegan Road Lake Bluff, Illinois 60044 USA 1-800-BUEHLER / www.buehler.com
Contact information of Buehler's authorized representative within the Community:	ITW Test & Measurement GmbH In der Steele 2 D-40599 Düsseldorf, Germany (49) (211) 974 100 / www.buehler-met.de ***Juergen Vossbruch***
Machine Name and Description:	***Name:*** IsoMet™ 4000 Linear Precision Saw ***Catalog Number:*** 11-2680 / 11-2681 / 11-2675 ***Description:*** An automatic linear saw that adjusts the feed rate to provide consistent, quality cuts and to prevent specimen and machine damage.
Machine Serial Number:	Month Code – IS4S – 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 according to the following standards: EN ISO 12100-1: 2010 EN 60204-1: 2006	2004/108/EC (Electromagnetic Compatibility (EMC)) Directive: EN 61000-4-2 Cons Ed 1.2:2009 EN 61000-4-3:2006 EN 61000-4-4:2012 EN 61000-4-5 Ed 2.0:2006 EN 61000-4-6 Ed 2.2:2009 EN 61000-4-8:2010
Quality Management System: (ISO 9001:2008)	Registered firm: Underwriters Laboratories, Inc. QMS Cert. # 10001679 1130 W. Lake Cook Road / Suite 340 Buffalo Grove, IL 60089 / USA
This machine is CE-marked. ***RoHS Compliant (2011/65/EU Directive).***	***Lake Bluff, Illinois, USA***
Prepared by:	Kate Watling, Technical Communicator K. Watling

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

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IsoMet 4000 Linear Precision Saw

The IsoMet 4000 is an easy to use automatic linear saw that includes the SMARTCUT system to automatically adjust the feed rate to provide consistent, quality cuts and to prevent specimen and machine damage.

A 1μm Specimen Positioning System allows for precise applications and enables the cutting of delicate specimens with minimal deformation.

Three IsoMet 4000 models are available:

- 11-2680 IsoMet 4000 Precision Saw with accessories.
- 11-2681 IsoMet 4000 Precision Saw without accessories.
- 11-2675 IsoMet 4000 Precision Saw with accessories and external recirculating system.

Warranty

This unit is guaranteed against defective materials and poor workmanship for a period of 24 months or 2000 hours of normal use (whichever comes first), 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 and labor).

If for any reason this unit must be returned to Buehler for warranty service, please contact Buehler Service at www.Buehler.com or 1-800-283-4537 for prior authorization and shipping instructions. (If outside the USA or Canada contact your local Buehler Representative.) Please have the following information available when contacting Buehler:

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

Specifications

	11-2680 / 11-2681 / 11-2675 IsoMet 4000 Precision Saw
Dimensions	21 ½" W x 29 ½" D x 13 ¼" H (546 mm x 750 mm x 337 mm)
Electrical	85 – 264 V, 50/60 Hz, 1 Phase
Motor	1 ¼ hp (795 W) 200 – 5000 rpm
Decibels	(No Load, 12 inches away level from machine) 73 dB
Shipping Weight	130 lbs (56 kg)
Coolant Tank	.9 gal (4 liter)
Coolant Flow Rate	.7 gal/min (3 liter/min)

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 severe personal injury and equipment damage.

The IsoMet 4000 Linear 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

All operators should be trained in the use of the IsoMet 4000. If training is needed contact Buehler at 800.BUEHLER (800.283.4537) or your local Buehler Sales Representative.

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

Dress properly. 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. Flammable material must not be used with the IsoMet 4000 Linear Precision Saw**.**

Maintain the IsoMet 4000 Linear 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 4000 Linear 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.

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

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

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.

Unpacking

The IsoMet 4000 Linear Precision Saw is shipped fully assembled and has been carefully packaged to protect it during transit from the factory to your location. Carefully unpack and check contents.

If any components are missing or damaged, save the packing list and materials and advise the carrier and Buehler of the discrepancy.

IsoMet 4000 Linear Precision Saw with accessories ***(Catalog Number 11-2680)*** is shipped with:

- Automatic Dressing System (11-2696)
- Buehler Recommended Cutting Fluid
- Dressing Stick (11-1190)
- IsoCut® 7-inch Wafering Blade (11-4267)
- Set of 4-inch Stainless Steel Flanges (11-2689)
- Short T-Slot Table (11-2701)
- 1µm Specimen Positioning System (11-2699)
- 2 Abrasive Cut-off Wheels (11-4207-010 & 11-4217-010)
- 3 Specimen Chucks:

  11-2683 - Single Saddle Chuck

  11-2684 - 1 ¼-inch Round Specimen Chuck

  11-2686 - Irregular Specimen Chuck

Installation

Equipment Damage. The IsoMet 4000 Linear Precision Saw is heavy. Follow local safety practices to lift the IsoMet 4000 Linear Precision Saw unit from the shipping carton. Improper lifting can result in machine damage.

Personal Injury. Improper lifting of the IsoMet 4000 Linear Precision Saw can result in personal injury.

The IsoMet 4000 Linear Precision Saw is bolted to a wooden base for protection during shipping. Open areas are provided at the corners of the base for ease of lifting.

Lift the IsoMet 4000 Linear Precision Saw out of the carton and position it on a table so it overhangs the edge. Remove all bolts securing the IsoMet 4000 Linear Precision Saw to the wood base.

Select a location for your IsoMet 4000 Linear Precision Saw that provides an adequate working space, a power source, water connections, and a drain.

Allow 6 inches (150 mm) of space at the back of the IsoMet 4000 Linear Precision Saw for raising the hood.

Electrical Installation

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. 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.

- ***Disconnect the power supply before making any electrical adjustments. Install a lockout tag and follow lockout tag procedures to prevent any accidental starting of the machine.***

- ***Capacitors inside the machine may retain a charge even if the machine is disconnected from the power supply***

Installation of the IsoMet 4000 Linear Precision Saw must comply with local electrical standards or codes of practice.

The Specification Plate is located on the back of the IsoMet 4000 Linear Precision Saw. Check that the Specification Plate values for voltage, current, and power consumption are compatible with the intended electrical supply before installation.

The IsoMet 4000 Linear Precision Saw can be plugged into an existing outlet rated for the voltage and frequency listed on the Specification Plate.

Blade Installation

Flanges support the wafering and abrasive blades. Failure to provide adequate flange support may result in curved cuts and damaged blades. When cutting always select the maximum flange diameter in proportion with the size of the specimen.

Installing a Blade

1. Remove the end bolt and end cap bushing from drive shaft (see Figure 1).
2. Install the outer flange on the end cap bushing.
3. Install the blade against the outer flange.
4. Slip on the inner flange on the end cap bushing.
5. Tighten the end bolt to complete the installation.

NOTICE

To prevent misalignment and damage to the blade, clean the end cap bushing, screws, and flanges in a mild detergent solution to remove particles from prior cuttings before installing a wafering or abrasive blade.

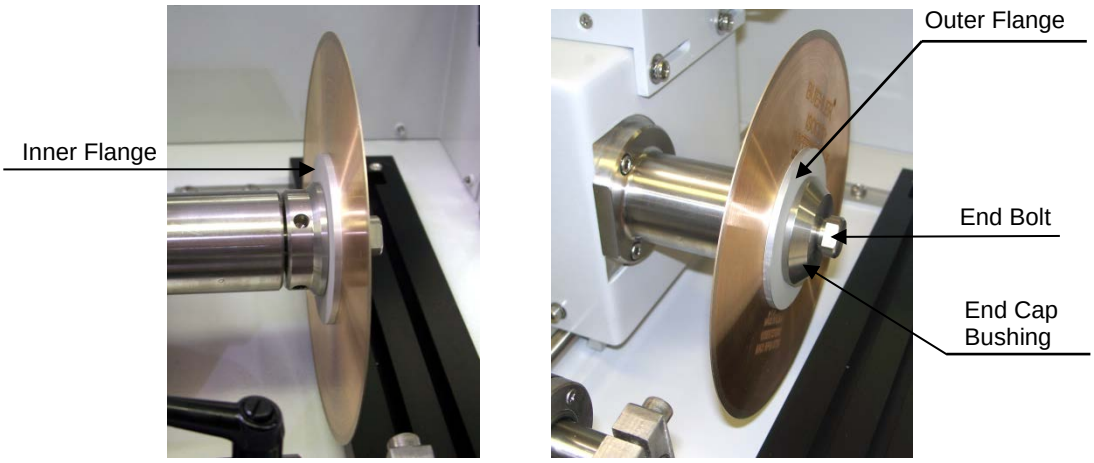


Figure 1 Blade Installation Diagram

Cooling and Lubrication

The IsoMet 4000 has an internal pump and adjustable nozzle for lubrication and cooling. The coolant tank is covered to prevent spills and has internal baffles. Baffles provide surface area for swarf control (debris left over from a blade cut). The nozzle can be adjusted with the hood open and the pump on.

Only the pump will operate with the hood open. The pump can be used for coolant adjustment, machine cleaning, and to empty the tank.

Equipment Damage. Do not allow the tank to become less than ½-inch below full. This will cause the water pressure to surge.

Do not run the pump dry for more than 30 seconds.

- The internal tank holds *three liters* and can be filled by pouring cutting fluid into the saw bed. Fill the coolant tank with cutting fluid.

  ***Using only water is not recommended*.** Using only water will cause damage to the internal pump and will not be covered under warranty. The External Recirculating System (part number 11-2710) is recommended for procedures that require using just water.

- Do not over fill the coolant tank. The true level of the liquid is indicated on the front of the tank and ***not*** at the drain inside the cutting chamber.

- During high frequencies of use or when using abrasive cut-off wheels with the IsoMet 4000 Linear Precision Saw, the coolant tank should be cleaned regularly. The drain screen should be cleaned between each cut to prevent blockage. (For high frequencies of use, it is highly recommended to use the External Recirculating System, part number 11-2710).

- If the IsoMet has not been operation for a long period of time or the coolant has been change, prime the pump for 10 – 20 seconds before use. Press the PUMP MOTOR button to ON (see page 10).

- If the IsoMet has not been operation for a long period of time or the protective residue on the machinery appears gummy, run the coolant first to wet the surfaces before moving the turret/hand-crank. This will extend the life of the rail seals and linear bearings.

Vises

The general use vise (Catalog Number 112691) is constructed of hardened and ground tool steel. This gives the best performance and accuracy, and will hold specimens up to 2 inches (50 mm) in size.

The vise must be oiled after each use if only water is used as a cutting fluid***. Using only water is not recommended.***

External Recirculating System

WARNING

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

1. Determine a location for the External Recirculating System.
2. Set the tank on a four-wheeled recirculating cart (P/N 16-1497).
3. Slide the 1-inch drain hose over the drain outlet pipe and secure the drain hose with the supplied hose clamp (see Figure 2)
4. Connect the water supply hose to the supply fitting on the recirculating tank (see Figure 3).

Figure 2 1-inch drain outlet pipe

Figure 3 Supply fitting on the recirculating tank

5. Connect the power cord from the saw to the 12-volt power plugs from the saw to the banana plugs on the recirculating tank (see Figure 3).
   a. Plug the BLACK banana plug into the BLACK connector.
   b. Plug the RED banana plug into the RED connector.
6. Fill the recirculating tank with seven (7) gallons of mixed coolant or until the mixed coolant reaches the top of the first or third baffle (see Figure 4).
7. Insert the drain hose into the large hole on the recirculating tank. The drain hose can be cut to length to facilitated easier installation.
8. The front control panel command buttons operate the External Recirculating Tank.

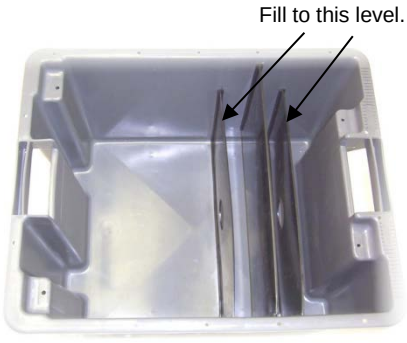


Figure 4
External Recirculating Tank Baffles

IsoMet 4000 Controls and Functions

Before operating the IsoMet 4000 lightly oil all exposed metal parts. During operation the coolant will maintain a protective film of oil on all exposed metal.

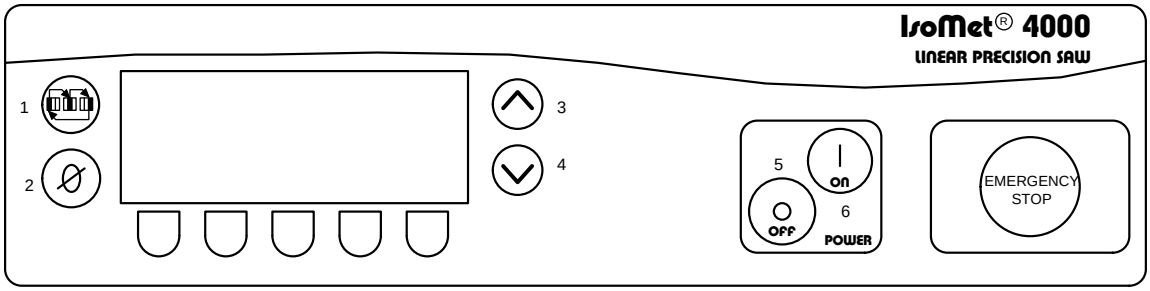
When the IsoMet 4000 is not in use raise the hood. This will minimize possible corrosion.

A glass-reinforced, splash-proof plastic hood encloses the entire cutting area to prevent loss of coolant and decrease noise. When raised, the counter-balanced hood will remain in the open position, activating a safety-lock switch disabling the controls for the cutting motor.

1. Activate power to the IsoMet 4000. Flip the power switch on the back of the machine to the ON position.

2. On the front control panel press the ON button.
   - The front panel LCD will light up and scroll through the display screen.
   - Raise the hood to allow access to the cutting bay.

Front Panel Controls



The front panel consists of six (6) dedicated buttons, five (5) software/multi-function softkey buttons, an Emergency Stop button, and a large Liquid Crystal Display (LCD) with back lighting. All buttons have tactile feedback.

Power ON The Power ON button will activate the IsoMet system.

When first turned ON, the LCD screen will scroll through the Buehler name, logo, type of machine, and latest firmware revision.

After 10 seconds the screen will change to display the BLADE SPEED, FEED RATE, and DISTANCE REMAINING parameter information as well as the softkey button commands for the L1 screen.

Power OFF The Power OFF button will deactivate the IsoMet system. The Power OFF button will store all previous set parameters before powering off.

Scroll The SCROLL button scrolls through the different parameter fields highlighting each one as it is selected. The parameter fields will change depending on how many times the SCROLL button is pressed.

There is a total of four (4) parameters that can be displayed: BLADE SPEED, FEED RATE, DISTANCE REMAINING, CUTTING DISTANCE.

Zero The ZERO button is used to indicate the SOFT HOME position by positioning the blade and the Micrometer Positioning System (if attached) at a starting point just before the specimen.

Once a position is determined, press the ZERO button and the DISTANCE REMAINING value will change to .00, indicating the SOFT HOME position.

Increase The Increase button will incrementally increase (raise) a parameter's value. The maximum values for the IsoMet 4000 are:

- BLADE SPEED = 5000 rpm
- FEED RATE = .75 in/min [19 mm]
- CUTTING DISTANCE = 8.00 inches [203 mm]

Decrease The Decrease button will incrementally decrease (lower) a parameter's value. The minimum values for the IsoMet 4000 are:

- BLADE SPEED = 200 rpm
- FEED RATE = .05 in/min [1.27 mm]
- CUTTING DISTANCE = .01 inch [.26 mm]

EMERGENCY STOP

Is the big red knob on the right side of the front panel. When pressed all electrical power is disconnected from the blade and all moving parts, disabling any further operations.

A warning message will appear when the Emergency Stop button is pushed.

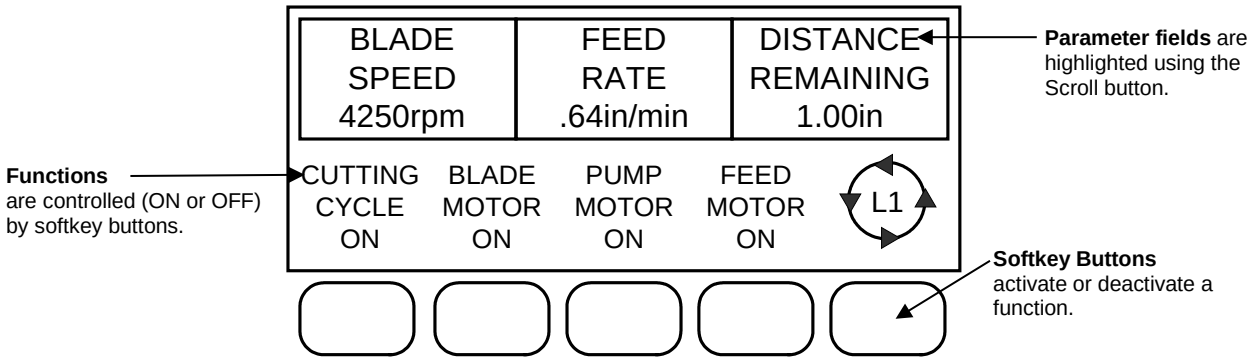
To return power, turn the Emergency Stop knob clockwise.

Press the CUTTING CYCLE button to continue operation.

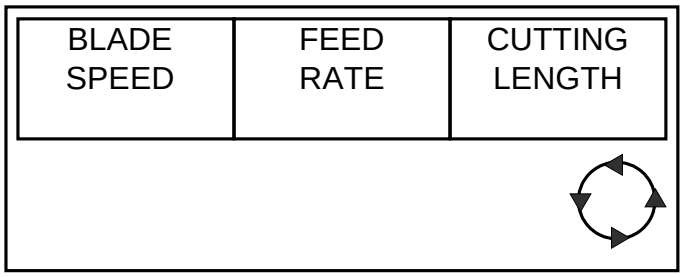
IsoMet 4000 Display Screens and Commands

Parameter Fields

There are four (4) different parameter fields available. Use the SCROLL button to scroll though the LCD Screens to display and highlight the parameters.

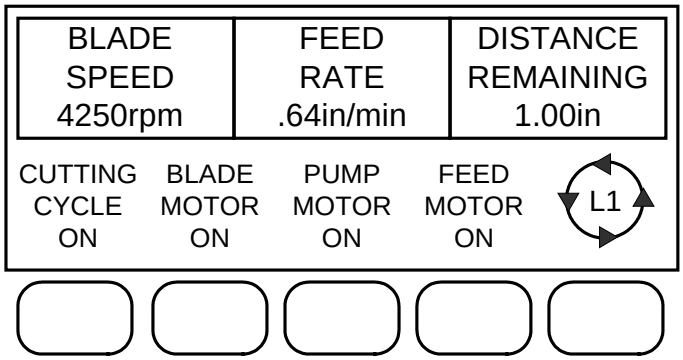


BLADE SPEED, **FEED RATE**, and **DISTANCE REMAINING** parameter fields.



Press the SCROLL button to display the **CUTTING LENGTH** parameter.

L1 Display Screen



L1 Display Screen Commands

Button [1] CUTTING CYCLE starts, stops, and pauses the cutting cycle.

Button [2] BLADE MOTOR activates [ON] or deactivates [OFF] the blade motor. The blade will rotate at a set speed and the hood *must* be closed.

Button [3] PUMP MOTOR activates [ON] or deactivates [OFF] the coolant pump motor.This is the only function that will work while the hood is open.

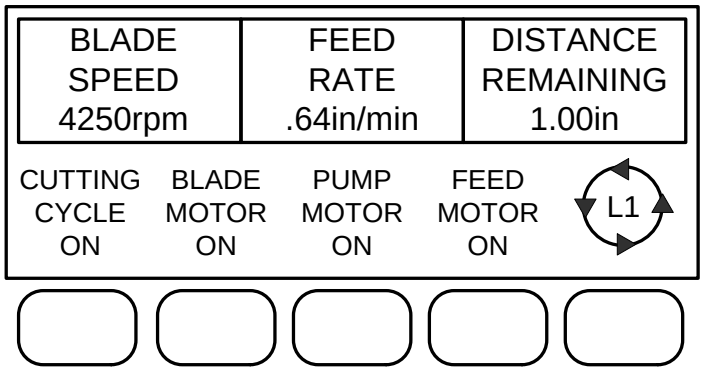
Button [4] FEED MOTOR activates [ON] or deactivates [OFF] the feed motor. The FEED MOTOR can be used to position the blade and will only operate when the blade is rotating.

Button [5] Scrolls the LCD Screen between Screen L1, Screen L2, and Screen L3.

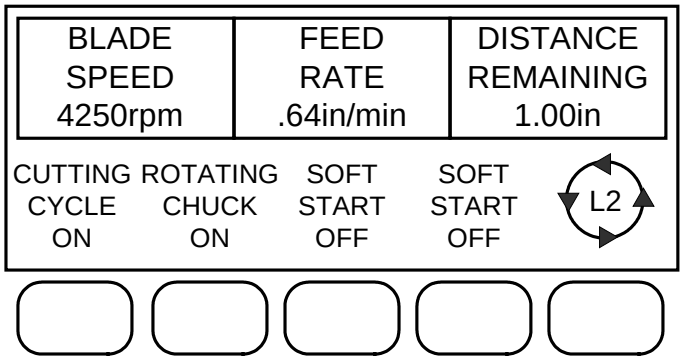
Pause CUTTING CYCLE

To pause the cutting cycle, press the CUTTING CYCLE button once.

When the CUTTING CYCLE is in the STOP and PAUSE mode, the L4 screen will become available.



L2 Display Screen



L2 Display Screen Commands

Button [1] CUTTING CYCLE starts, stops, and pauses the cutting cycle.

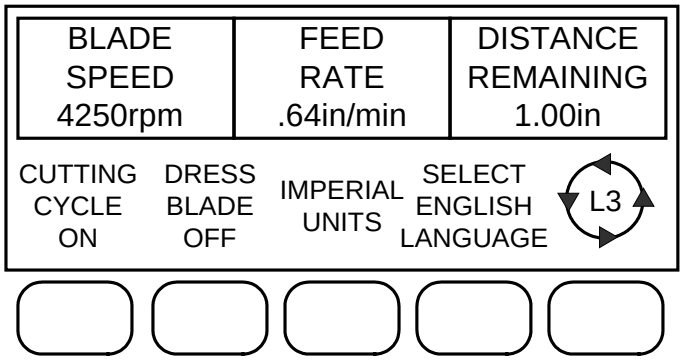
Button [2] ROTATING CHUCK activates [ON] or deactivates [OFF]. The chuck will rotate at a constant speed.

Button [3] SOFT START selects the Soft Start option. This will slow the selected FEED RATE for the first .06-inch [1.52 mm] of a cut.

Button [4] SOFT STOP selects the Soft Stop option. This will slow the selected FEED RATE for the last .25-inch [6.35 mm] of a cut.

Button [5] Scrolls the LCD Screen between Screen L2, Screen L3, and Screen L1.

L3 Display Screen



L3 Display Screen Commands

Button [1] CUTTING CYCLE starts, stops, and pauses the cutting cycle.

Button [2] DRESS BLADE sets the correct blade-dressing parameters and activates the automatic dressing mechanism (if attached).

Button [3] UNITS changes between METRIC and IMPERIAL (English) units of measure.

Button [4] LANGUAGE allows the operator to select a language from the list. The languages currently available are:

- English
- French
- German
- Spanish
- Portuguese
- Japanese
- Chinese
- Korean

Button [5] Scrolls the LCD Screen between Screen L3, Screen L1, and Screen L2.

Specimen Positioning

Specimen Loading

Several chucks are available to hold specimen of many different sizes and shapes. Select the proper chuck for the particular application and attach it to the T-slot bed.

CAUTION

Equipment Damage. Secure the specimen into the chuck and the chuck to the vise bed to prevent slipping or rotation during cutting. Improper clamping or chuck selection may cause blade damage.

Positioning a Specimen with an Unknown Thickness

1. Turn the hand crank clockwise until the blade is beyond the chuck position.
2. Determine the cut length of the specimen.
   a. Position the specimen in the chuck so the cutting blade can pass by the chuck without touching the specimen (see Figure 5).
   b. Turn the hand crank counter-clockwise to bring the blade forward until it is just behind the and almost touching the specimen (see Figure 6).
   c. Press the ZERO ⌀ button on the control panel and the DISTANCE REMAINING field value will display .00 in (or .00 mm).

BLADE SPEED 600 rpm	FEED RATE .75 in/min	DISTANCE REMAINING .00 in

   d. Turn the hand crank counter-clockwise until the blade travels the width of the cut (see Figure 8).
   e. Look at the REMAINING DISTANCE field on the LCD screen. The value displayed is how long the cut will be (*without the minus sign*).

BLADE SPEED 600 rpm	FEED RATE .75 in/min	DISTANCE REMAINING -.60 in

3. Program this value into the CUTTING LENGTH field.

   The DISTANCE REMAINING parameter field will change to the CUTTING LENGTH parameter field when highlighted with the SCROLL button.

BLADE SPEED 600 rpm	FEED RATE .75 in/min	CUTTING LENGTH .60 in

   a. Press the SCROLL  button until the CUTTING LENGTH parameter field is highlighted.

   b. Use the INCREASE or DECREASE buttons to change the value to equal the REMAINING DISTANCE value. The value will automatically be saved.

4. Turn the crank clockwise to position the blade behind the specimen. The value under REMAINING DISTANCE does not have to equal .00 in (or .00 mm) after repositioning the blade.

5. Reposition the specimen and tighten the vise to prevent the specimen from moving.

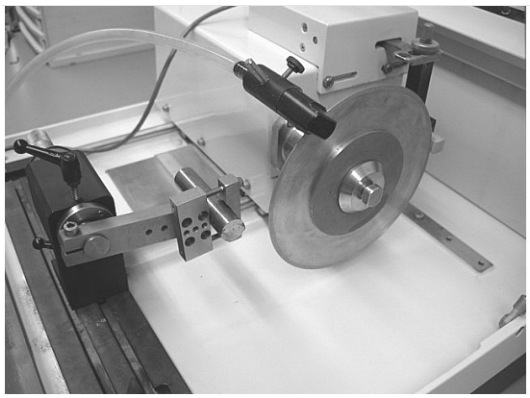


Figure 5 Positioning the specimen

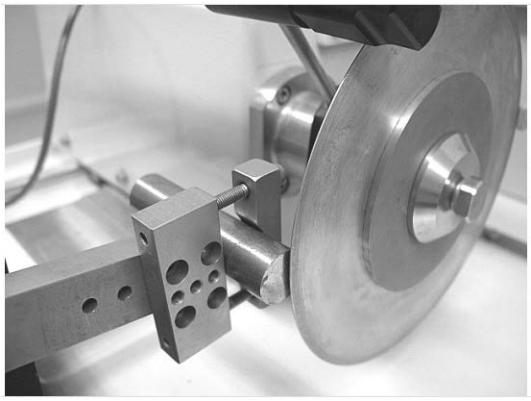


Figure 6 Blade behind the specimen

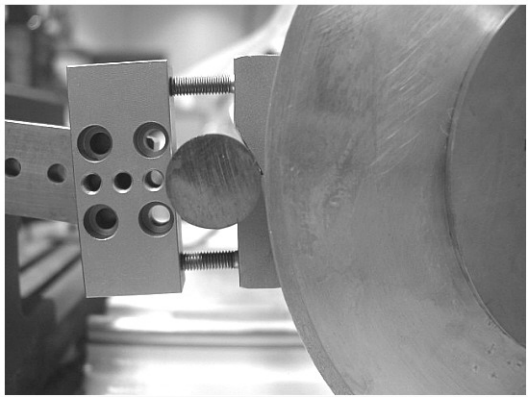


Figure 7 Blade almost touching the specimen

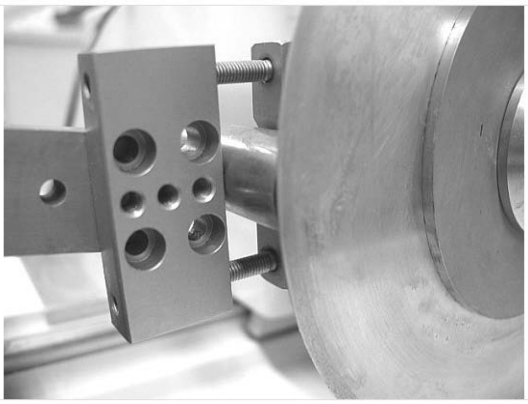


Figure 8 Blade traveling the width of the cut

Positioning a Specimen with a Known Thickness

1. Position the specimen in the chuck.

2. Turn the hand crank clockwise until the blade is beyond the chuck position (see Figure 9).

3. Turn the hand crank counter-clockwise to bring the blade forward until it is just behind and almost touching the specimen (see Figure 10).

4. Reposition the specimen and tighten the vise to prevent the specimen from moving.

5. Press the ZERO button on the control panel and the DISTANCE REMAINING field value will display .00 in (or .00 mm).

6. Program the known distance into the CUTTING LENGTH field.

   a. Press the SCROLL button until the CUTTING LENGTH parameter field is highlighted.

   b. Use the INCREASE or DECREASE buttons to change the value to equal the REMAINING DISTANCE value. The value will automatically be saved

CAUTION

Equipment Damage. Do not allow the specimen to contact the blade when adjusting positions. Blade damage may result.

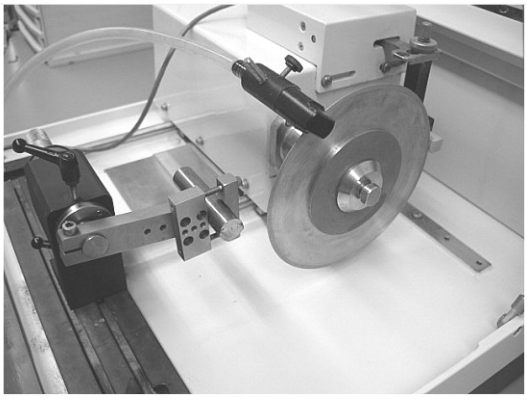


Figure 9 Positioning the specimen

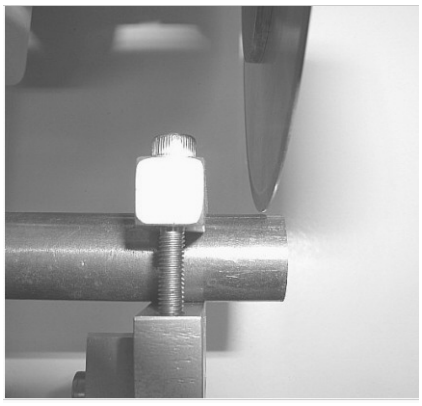


Figure 10 Blade almost touching the specimen

Operation

Cutting a Specimen

Select the appropriate BLADE SPEED, FEED RATE, and CUTTING LENGTH parameters to cut a specimen.

All the necessary functions will automatically activate when the CUTTING CYCLE button is pressed to the ON position. The CUTTING CYCLE command is accessible in the L1, L2, and L3 display screens.

Personal Injury. The IsoMet 4000 Linear Precision Saw is designed to only operate with the cover closed. Efforts to defeat the safety interlock could result in personal injury and void warranty.

Single Cut

1. Adjust the BLADE SPEED, FEED RATE, and CUTTING LENGTH
   - Press the SCROLL button until the desired parameter is highlighted and adjust the parameter values using the INCREASE or DECREASE buttons.
2. Position the specimen using any of the required chucks.
3. Use the SCROLL button to scroll to the L1 Screen.
4. Press the PUMP MOTOR button to the ON position and position the coolant flow as desired
5. Press the CUTTING CYCLE button to the ON position. The blade will begin to rotate at the selected speed, the coolant will begin to flow, and the automatic feed will begin to advance.

   As the blade advances the numerical value on the display screen will start to decrease.
6. After the blade has reached the set CUTTING LENGTH, the coolant pump and feed system will shut down.
7. Manually return the blade to the start position by way of the hand crank on the front of the saw.

NOTICE

Too large of a specimen may cause the flange to advance into the specimen causing damage to both the flange and specimen. If you need to cut large specimen, reposition the specimen using a different mount or use a larger blade.

During operation observe the saw's performance. Due to differences in specimen thickness and density/consistency, the FEED RATE parameter can be adjusted for optimum cutting conditions.

If, at any time during the cutting mode, the operator lifts the cover, presses the CUTTING CYCLE button to the OFF position, the blade reaches the end of travel switch, or the EMERGANCY STOP button is pressed, the blade will immediately stop.

Manual Cutting

There are two (2) ways to manually cut a specimen.

Method 1

1. Mount the specimen as previously described.
2. Press the BLADE MOTOR and PUMP MOTOR buttons to the ON position.
3. Adjust the BLADE SPEED to the desired rpms.
4. Manually turn the crank to cut the specimen.
5. Retract the blade when the cut is complete.
6. Press the BLADE MOTOR and PUMP MOTOR buttons to the OFF position.

Method 2

1. Mount the specimen as previously described.
2. Press the BLADE MOTOR and PUMP MOTOR buttons to the ON position.
3. Adjust the BLADE SPEED to the desired rpms.
4. Press the FEED MOTOR button to the ON position.
5. When the cut is complete, press the BLADE MOTOR button to the OFF position. The BLADE MOTOR and the FEED MOTOR will be deactivated.
    - When using Method B, the DISTANCE REMAINING field will count down to 0.00 and continue into the negative numbers.
6. Retract the blade.
7. Press the PUMP MOTOR button to the OFF position.

SMART CUT: Checking and Adjusting the Feed Rate

During the CUTTING CYCLE, the IsoMet 4000 will monitor the load that is applied to the blade. If an overload condition occurs, the IsoMet 4000 will automatically decrease the FEED RATE to maintain an optimum cutting condition.

This automatic function is the SMARTCUT feature and when in use, is displayed in the center of the LCD Screen. If the load is still too high and the blade stalls, a warning indicating BLADE PINCH will display and the saw will power OFF in approximately 20 seconds.

To change the FEED RATE during operation, press the SCROLL button until the value under FEED RATE is highlighted. Press the DECREASE or INCREASE buttons to select the desired rate in the range of .05 in/min [1.5 mm] to .75 in/min [19 mm].

Blade Dressing

Blade dressing exposes the abrasive grain to ensure free cutting. New wafering blades should be dressed several times and older blades dressed as required based on the specimen material properties.

The IsoMet 4000 is shipped with the Automatic Blade Dressing attachment adjusted for a 7-inch diameter blade. When a different diameter blade is installed, the Automatic Blade Dressing attachment must be readjusted.

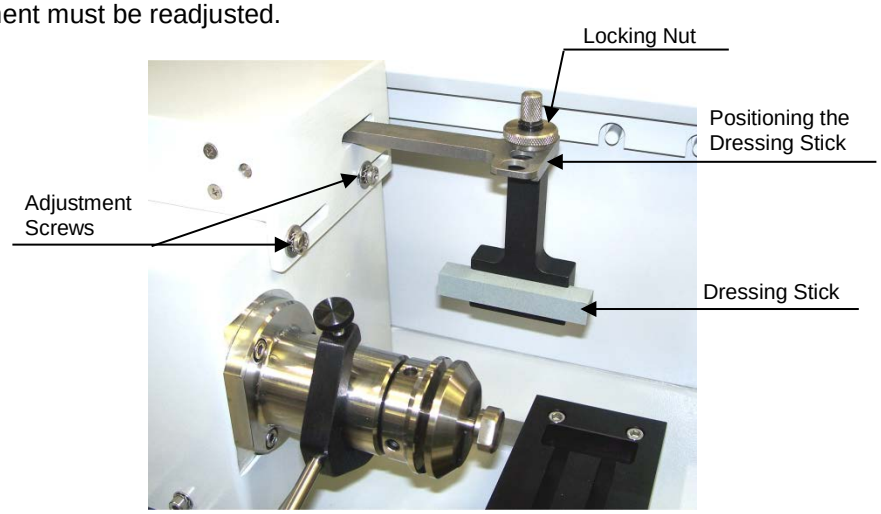


Figure 11 Automatic Dressing System

1. Remove the locking nut.
2. Position the dressing stick holder in the appropriate hole for the selected blade (see Figure 11).
3. Loosen the adjustment screws to horizontally position the dressing stick (see Figure 11).
4. Attach the blade on the spindle.
5. Slide the T-mount so the dressing stick is in the path of the blade.
6. Move the blade housing so the dressing stick is approximately 1/16-inch away from the blade.
7. Tighten the adjustment screws.
8. Slide the T-mount so the right-end of the dressing stick is just beyond the blade.

If a 3-inch blade is used, slide the T-mount so the left-end of the dressing stick does not hit the spindle base.

If the Automatic Dressing System ***is not attached***, insert a dressing stick in a specimen holder. Place the specimen holder in the path of the blade and clamp it securely.

Dressing the Blade

1. Close the hood.

2. Advance to the L3 Screen.

3. Press the DRESS BLADE button to the ON position.

- ***If not cutting***, this will automatically run the blade at the proper rpms and activate the lubricant.

- ***If cutting***, press the FEED MOTOR button to the OFF position and manually crank the blade forward into the dressing stick. Continue to cut by advancing the blade forward into the piece and press the FEED MOTOR button to the ON position.

If the Automatic Dressing System ***is attached*** and a dressing stick is present, advance to the L3 Screen and press the DRESS BLADE button.

- ***If not cutting***, this will automatically run the blade at the proper rpm and activate the lubricant. The Automatic Dressing System will advance the dressing stick into the blade and advance the stick for the next cut.

- ***If cutting***, the blade will stay at its preset speed and advance into the specimen automatically.

Periodically the T-mount may need to be pushed back into the dressing unit otherwise the T-mount may become misaligned and damaged. To push the T-mount back into the dressing unit:

1. Run a blade dressing cycle.

2. Press the T-mount back into the dressing unit.

Automatic Blade Dressing, Rotating Chuck, and Specimen Positioning System

The IsoMet 4000 is shipped with the Specimen Positioning System and Automatic Dressing System already attached. The following instructions are for replacing the Automatic Dressing System, the Specimen Positioning System, and a Rotating Chuck.

There are three (3) power sockets in a vertical line located behind the control housing.

- The top power socket is not used in the IsoMet 4000.
- The middle power socket connects to the Rotating Chuck.
- The bottom power socket connects to the Automatic Blade Dressing.

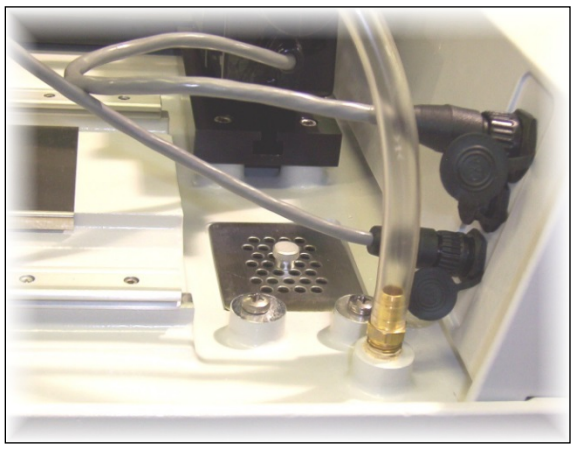


Figure 12 IsoMet Power Sockets

Removing the Specimen Position System (Catalog Number 11-2699)

1. Turn OFF the IsoMet 4000.
2. Remove the specimen.
3. Turn the large brass thumbscrew located under the unit counter-clockwise.
4. Slide the whole unit off the T-slot bed.

Installing the Specimen Position System

1. Clean the mounting embossment if the X T-slot bed is not installed.
2. Attach the T-slot table to the IsoMet 4000 (there will be four (4) screws).
3. Align the T-nut and posts on the bottom of the Specimen Positioning System to the T-slot and slide into position.
4. Attach a specimen to the chuck.
5. Rotate the adjustment arm to the desired cutting position.
6. Slide the Specimen Positioning System close to the cutting area.
7. Tighten the large brass nut (with the wrench provided) until tight.

Removing the Rotating Chuck (Catalog Number 11-2695)

1. Turn OFF the IsoMet 4000.
2. Use an Allen wrench (#4 metric) to loosen the two (2) mounting screws.
3. Disconnect the plug from the control panel.
4. Recap the middle power socket.

Installing the Rotating Chuck

1. Insert the mounting T-nuts into the T-slot of the rail parallel to the turret.
2. Set the Rotating Chuck assembly on to the T-slot (where cutting is to take place) and tighten the screws.
3. Uncap the middle power socket.
4. Insert the plug and secure it.

Removing the Automatic Blade Dressing System (Catalog Number 11-2696)

1. Turn OFF the IsoMet 4000.
2. Disconnect the power cable from the control housing.
3. Remove and keep the two (2) mounting screws.
4. Recap the bottom power socket.

Installing the Automatic Blade Dressing System

1. Clean the top of the turret of all cutting materials and fluids.
2. Place the Automatic Blade Dressing unit with the mounting flange down and to the right.
3. Align the mounting holes.
4. Insert the screws and tighten.
5. Uncap the power socket receptacle.
6. Insert the power plug and secure it.
7. Attach a dressing stick using the thumbscrew.
8. Adjust the T-mount to the blade size being used.

Warning Messages

The following Warning Messages will appear on the LCD Screen:

HOOD OPEN

The hood is not fully closed.

Check to see if any specimens or other debris is on the hood ledge.

ARM LIMIT

The IsoMet 4000 has a safety switch to limit the blade's forward travel. Use the hand crank to reposition the blade.

BLADE PINCHED

Indicates that during cutting the blade became pinched by the specimen and the cutting operation has automatically shut off.

Carefully retract the blade and check the specimen fixture.

EMERGENCY STOP

Indicates the Emergency Stop button has been pressed.

1. Examine the machine for problems.
2. Rotate the Emergency Stop button counter-clock wise until it pops out
3. Press the CUTTING CYCLE button to continue operation.

Maintenance

The IsoMet 4000 Linear Precision Saw will continue to perform at optimum levels with proper care, daily cleaning, and general maintenance.

The protective hood and touch-panel control pad should be cleaned using mild soap and water applied with a soft cloth. ***Do not*** use ammonia-based cleaners, i.e. Windex®. Cloudiness and cracking can occur.

Exterior painted surfaces, including the cutting chamber, should be cleaned with a non-abrasive household cleaner.

Internal Coolant/Lubricant Recirculating System

Discard and replace the coolant and/or lubricant when it becomes contaminated with abrasive residue or debris. Follow the mixing directions for the Buehler recommended cutting fluid, as indicated on the cutting fluid container.

Draining the Coolant

While the machine is not in use, remove the coolant tank, remove the lid, and pour the coolant in an appropriate container.

1. Lift the hood.
2. Pull off the Coolant Tube fitting and hold it over a container.
3. Press the PUMP MOTOR button to the ON position.
4. Let the pump run until the cooling tank is empty.
5. Turn the pump off and remove the tank for cleaning.
   Do not run the pump dry for more than 30 seconds.
6. Wipe out the tank, clean the screen, replace the screen, and place the tank back into the machine.
7. Press the PUMP MOTOR (see page 10) button to ON to run the coolant through the pump before use.

Equipment Damage. Do not install the tank without the internal round screen. This prevents debris from entering into the pump.

Cleaning the Unit

The IsoMet 4000 Linear Precision Saw should be cleaned periodically to prevent build-up of cutting residue and cutting fluids and the coolant line can be used to rinse the saw.

The linear rails should be cleaned daily and with heavy use should be lubricated with light oil. ***Do not use WD40™ on the linear rail bearings, WD40™ will destroy the bearings***.

Exterior painted surfaces including the cutting chamber may be cleaned with non-abrasive household cleaners. The protective hood and touch pad control panel should be cleaned using mild soap and water applied with a soft cloth.

Automatic Blade Dressing

The Automatic Blade Dressing system uses a fine-tooth shaft for advancing the Dressing Stick, giving maximum cleaning cuts from the stick. Periodically this fine-toothed shaft will need to be cleaned and lubricated.

Cleaning the Automatic Blade Dressing shaft

1. Turn off the IsoMet 4000.
2. Open the hood.
3. Pull the T-mount out of the housing.
4. Using the supplied cleaning brush, clean the shaft thoroughly and lubricate with a light oil. ***Do not*** use WD40™.
5. Carefully align T-mount and push it back into the housing.

Checking the Blade Motor Total Hours

To check the blade motor total operating time in hours:

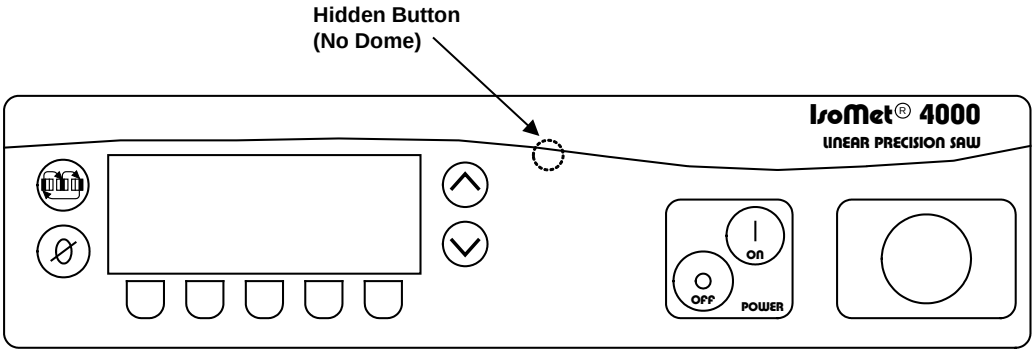


Figure 13 Hidden Button on the Front Display Panel

1. There is a hidden, non-tactile button located on the front display panel.
2. Power off the IsoMet 4000.
3. Press and hold the hidden button on the front display panel, this will power on the machine.
4. The LCD Screen will now display BLADE HOURS. This is the total number of hours that the blade motor has been rotating, either cutting or not.
5. Press the ZERO button to return to the normal operating screens.

Troubleshooting Chart

Problem	Possible Cause	Correction
The IsoMet does not power on	The unit is not plugged in	Check the power cord connection
	The unit is not powered on	Check the rear power switch
The pump has lost pressure	Fluid level may be too low	Fill the fluid to the correct level
	Tank screen may need cleaning	Remove screen and clean
	Suction hose clogged Flexible hoses clogged or blocked	Remove and check suction and flexible hose for blockages and clear blockages
The blade keeps pinching	Wrong blade for the material	Replace with correct blade
	Improper specimen fixture (primary cause)	Use correct specimen fixture
	Blade may need to be dressed	Dress blade
	The FEED RATE may be too slow	Increase FEED RATE
	BLADE SPEED may be too slow	Increase BLADE SPEED
The blade keeps stopping	The CUTTING DISTANCE may have changed	Reset the CUTTING DISTANCE
	The DISTANCE REMAINING may be .00 or less	Increase the DISTANCE REMAINING
	The ARM LIMIT switch may be activated	Deactivate the ARM LIMIT switch
The bed has rust on it	Improper coolant mixture	Check the coolant for proper mixture
	The hood has been closed too long with moisture build up	Open hood and keep hood open when not in use
The Specimen Positioning System does not move	Cable is disconnected	Check the cable connection
The Blade Dressing does not work	Cable is disconnected	Check the cable connection
	Dressing stick in the wrong position	Check the dressing stick position and clean it
The Rotating Chuck does not work	Cable is disconnected	Check the cable connection
	Rotating chuck is not powered on	Make certain the Rotating Chuck is turned on
The Blade Turret completed one cycle but won't advance for a second cut	The IsoMet is operating as if the Precision Table is still attached	Turn the unit off then back on.
Coolant leaks from the IsoMet	Table or unit is not level	Make certain the table is level
	Coolant level too high	Check the volume of cutting fluid

Application Guide

(0.5" (13 mm) diameter rod example specimen)

Specimen Material	Blade Type	Diamond Concentration	Speed (rpm)	Estimated Cutting Time (min:sec)	Feed Rate in./min mm/min
[1]8µm graphite fiber reinforced zirconium diboride/molybdenum disilicide composite	Series 5 LC	Low	2500	1:00	0.50" (13 mm)
[2]Aluminum nitride, AlN 3	Series 10 LC	Low	4000	2:40	0.25" (6 mm)
Boron carbide, B_4C	Series 20 LC	Low	3500	1:00	0.50" (13 mm)
[3]Chromium doped sapphire, Al_2O_3	Series 15 LC	Low	500	1:25	0.50" (13 mm)
[4]Chrysocolla (copper ore), hydrous copper silicate	Series 10 LC	Low	3000	3:40	0.20" (5 mm)
Extruded alumina, Al_2O_3	Series 10 LC	Low	4000	2:00	0.25" (6 mm)
High purity fused silica, SiO_2	Series 10 LC	Low	1500	1:40	0.40" (10 mm)
Hot pressed silicon nitride, Si_3N_4	Series 20 LC	Low	4000	1:00	0.50" (13 mm)
Manganese zinc ferrite, Fe_2O_3	Series 10 LC	Low	1500	1:00	0.50" (13 mm)
Nickel zinc ferrite, Fe_2O_3	Series 10 LC	Low	1500	1:00	0.50" (13 mm)
Partially stabilized zirconia, ZrO_2	Series 15 LC	Low	2500	1:15	0.40" (10 mm)
Printed circuit boards	11-4217 Abrasive Wheel	------	4000	1:15	0.40" (10 mm)
Sapphire, Al_2O_3	Series 15 LC	Low	1500	1:15	0.40" (10 mm)
Silicon carbide, SiC	Series 15 LC	Low	2500	1:00	0.50" (13 mm)
Thermal spray coatings:	15 HC or 11-4207 Abrasive Wheel	High ------	3000 4000	2:00 1:15	0.25" (6 mm) 0.40" (10 mm)
[5]Titanium alloy	Series 15 HC	High	2500	10:00	0.10" (3 mm)
Tungsten carbide 25% cobalt binder, WC	Series 15 HC	High	4500	3:50	0.15" (3 mm)
Tungsten carbide 6% cobalt binder, WC	Series 15 HC	High	4000	3:50	0.15" (3 mm)
[6]Yttria aluminum garnet, YAG	Series 10 LC	Low	2500	1:00	0.38" (10 mm)
Case hardened steel	IsoCut Wafering blade	N/A	4000	2:00	0.25" (6 mm)
Non-Ferrous metals	IsoCut Wafering blade	N/A	4000	2:00	0.25" (6 mm)
Through hardened steel	IsoCut Wafering blade	N/A	4000	2:00	0.25" (6 mm)
White cast iron	IsoCut Wafering blade	N/A	4000	2:00	0.25" (6 mm)
Zinc alloy	IsoCut Wafering blade	N/A	3000	2:00	0.25" (6 mm)
Aluminum	11-4217 Abrasive Wheel	------	4000	1:15	0.40" (10 mm)
Brass	11-4217 Abrasive wheel	------	4000	1:15	0.40" (10 mm)
Gray cast iron	Series 15 HC diamond	High	2500	3:30	0.15" (3 mm)

Specimen Material	Blade Type	Diamond Concentration	Speed (rpm)	Estimated Cutting Time (min:sec)	Feed Rate in./min mm/min
Hastelloy	11-4207 Abrasive wheel	------	4000	1:15	0.40" (10 mm)
Magnesium	11-4217 Abrasive wheel	------	4000	1:15	0.40" (10mm)
Plastics	11-4217 Abrasive wheel	------	4000	1:15	0.40" (10mm)
Stainless steels	ISOCUT Wafering blade	------	4000	2:00	0.25" (6 mm)
Titanium	11-4217 Abrasive wheel	------	4000	1:15	0.40" (10 mm)
Turbine blades - ferrous base	11-4207 Abrasive wheel	------	4000	1:15	0.40" (10 mm)
Turbine blades - Titanium	114-217 Abrasive wheel	------	4000	1:15	0.40" (10 mm)
Zinc	11-4217 Abrasive wheel	------	4000	1:15	0.40" (10 mm)

0.29" (6 mm) x .125"(3 mm) rectangular section

[2]0.67" (17 mm) diameter

[3] 0.570" (15 mm) diameter

[4] 0.74" (19 mm) diameter

[5] 1" (25 mm) x .25" (6 mm) rectangular section

[6]0.375" (0.95 mm) diameter

[7]BU01 - BU24 based on a 5-inch blade

[8]BU25 - BU35 based on a 7-inch blade

Reduce speed to 0.2"/min, 5 mm/min when using ACU-THIN Blades (Part Number 10-4060-010 and 10-4061-010)

IsoCut™ Blades can be substituted for 15 HC Blades in the table above for steels, cast iron, and carbide materials.

These are general guidelines. Consider the individual application and adjust the parameters to meet the application.

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.

Note: Drawings and Parts List are subject to change without notice.

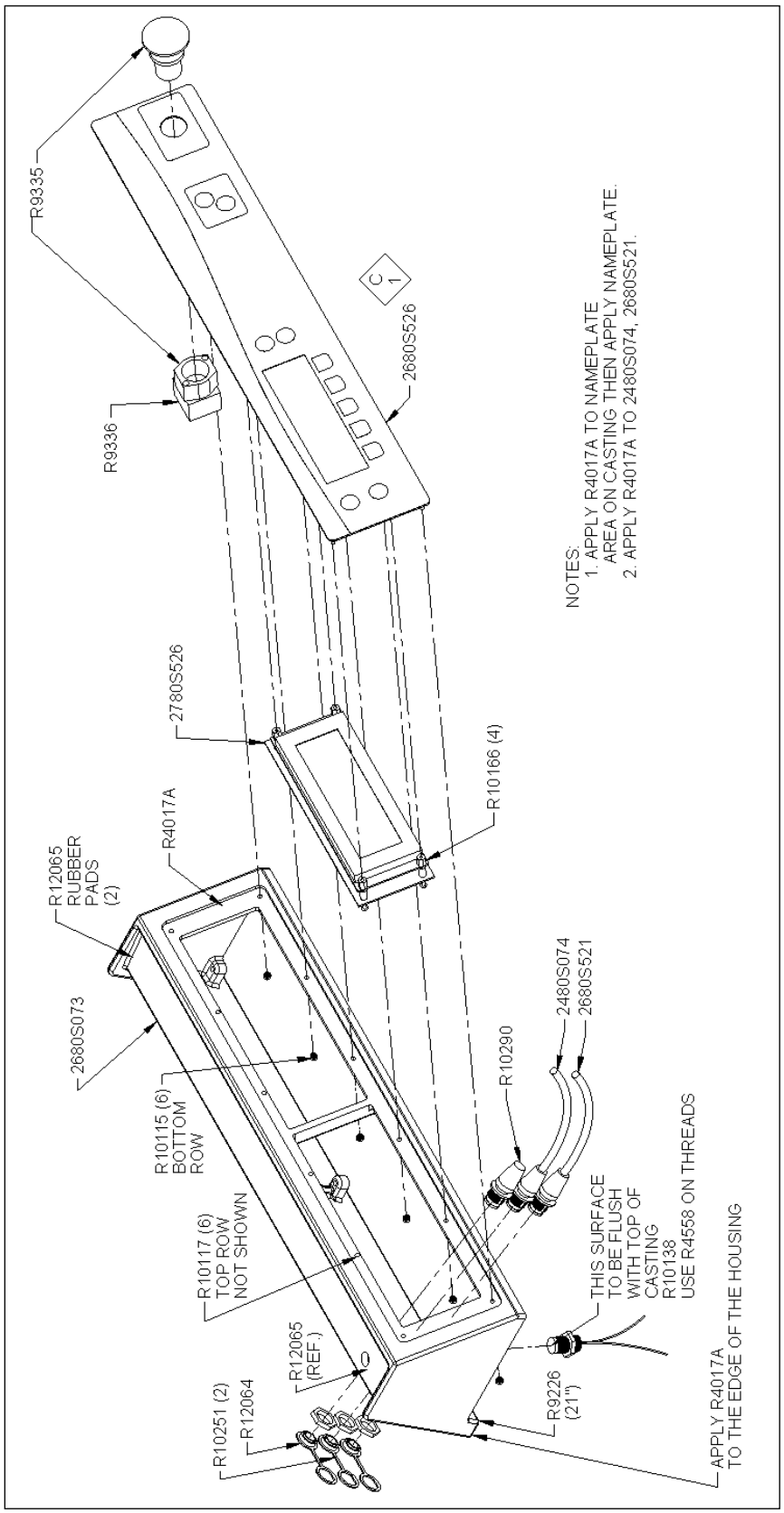


Figure 14 Control Housing Sub-Assembly Diagram (2680S803)

Note: Drawings and Parts List are subject to change without notice.

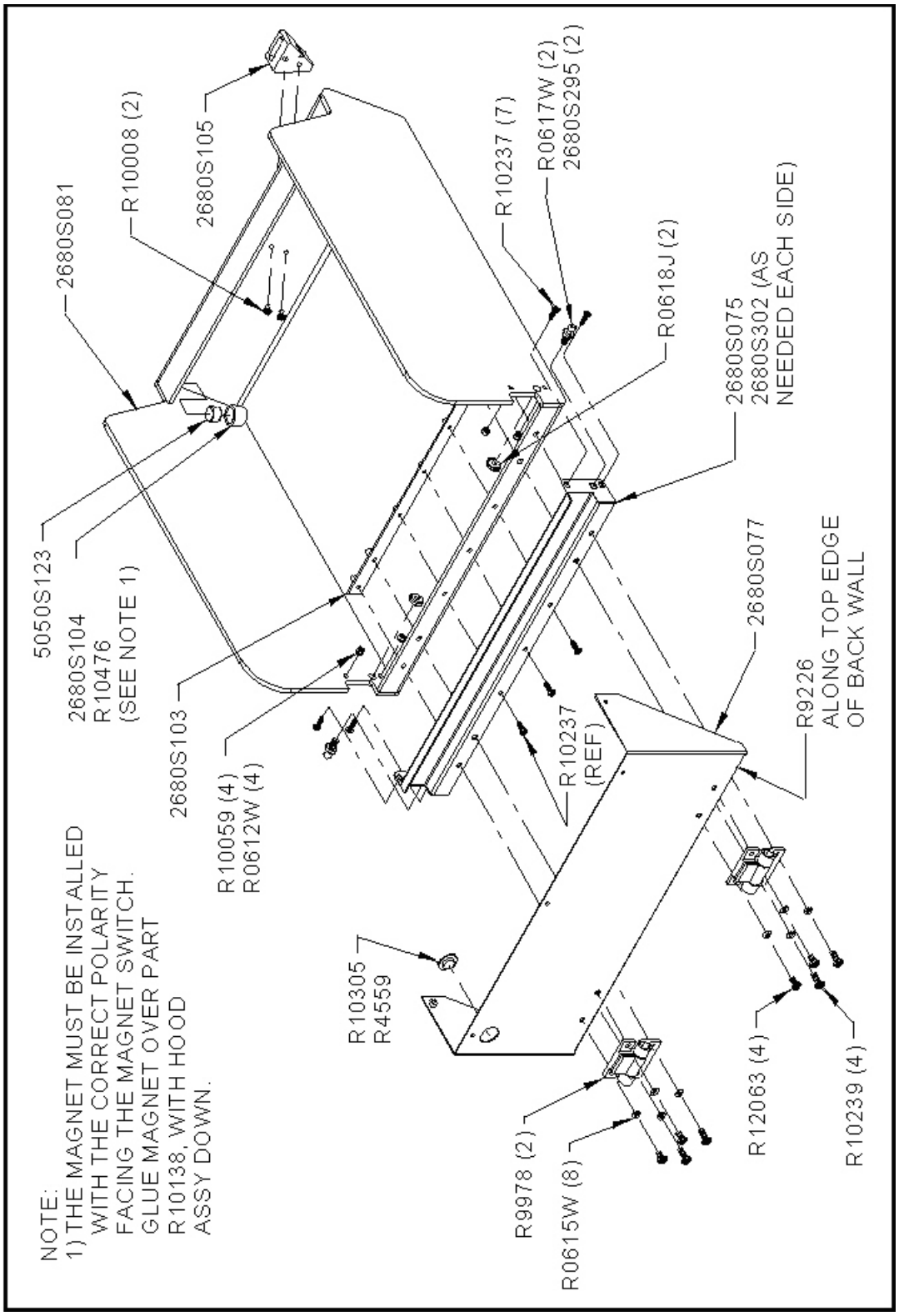
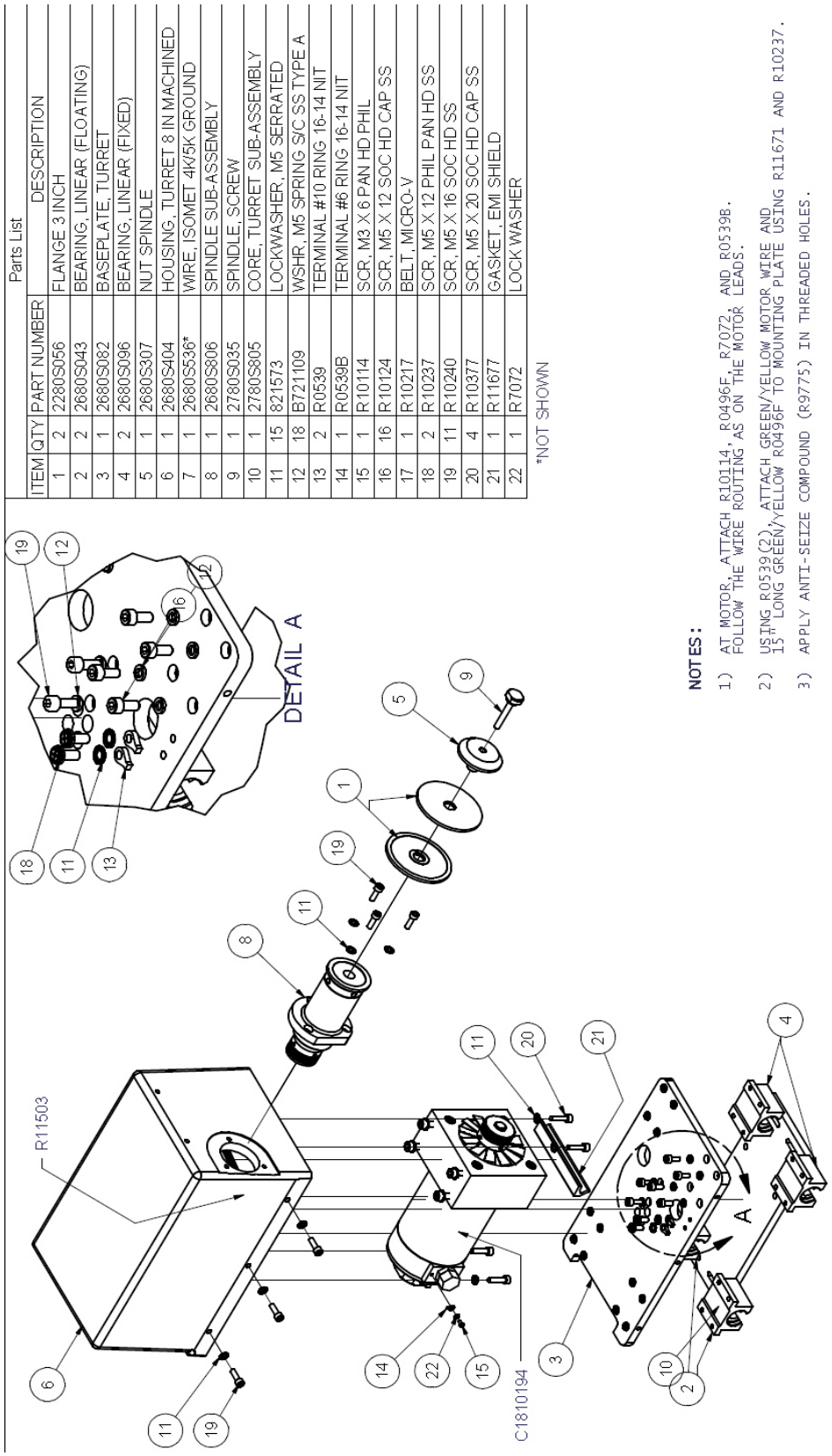


Figure 15 Hood Sub-Assembly Diagram (2680S802)

Note: Drawings and Parts List are subject to change without notice.



Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	2280S056	FLANGE 3 INCH
2	2	2680S043	BEARING, LINEAR (FLOATING)
3	1	2680S082	BASEPLATE, TURRET
4	2	2680S096	BEARING, LINEAR (FIXED)
5	1	2680S307	NUT SPINDLE
6	1	2680S404	HOUSING, TURRET 8 IN MACHINED
7	1	2680S536*	WIRE, ISOMET 4K/5K GROUND
8	1	2680S806	SPINDLE SUB-ASSEMBLY
9	1	2780S035	SPINDLE, SCREW
10	1	2780S805	CORE, TURRET SUB-ASSEMBLY
11	15	821573	LOCKWASHER, M5 SERRATED
12	18	B721109	WSHR, M5 SPRING S/C SS TYPE A
13	2	R0539	TERMINAL #10 RING 16-14 NIT
14	1	R0539B	TERMINAL #6 RING 16-14 NIT
15	1	R10114	SCR, M3 X 6 PAN HD PHIL
16	16	R10124	SCR, M5 X 12 SOC HD CAP SS
17	1	R10217	BELT, MICRO-V
18	2	R10237	SCR, M5 X 12 PHIL PAN HD SS
19	11	R10240	SCR, M5 X 16 SOC HD SS
20	4	R10377	SCR, M5 X 20 SOC HD CAP SS
21	1	R11677	GASKET, EMI SHIELD
22	1	R7072	LOCKWASHER

*NOT SHOWN

NOTES:

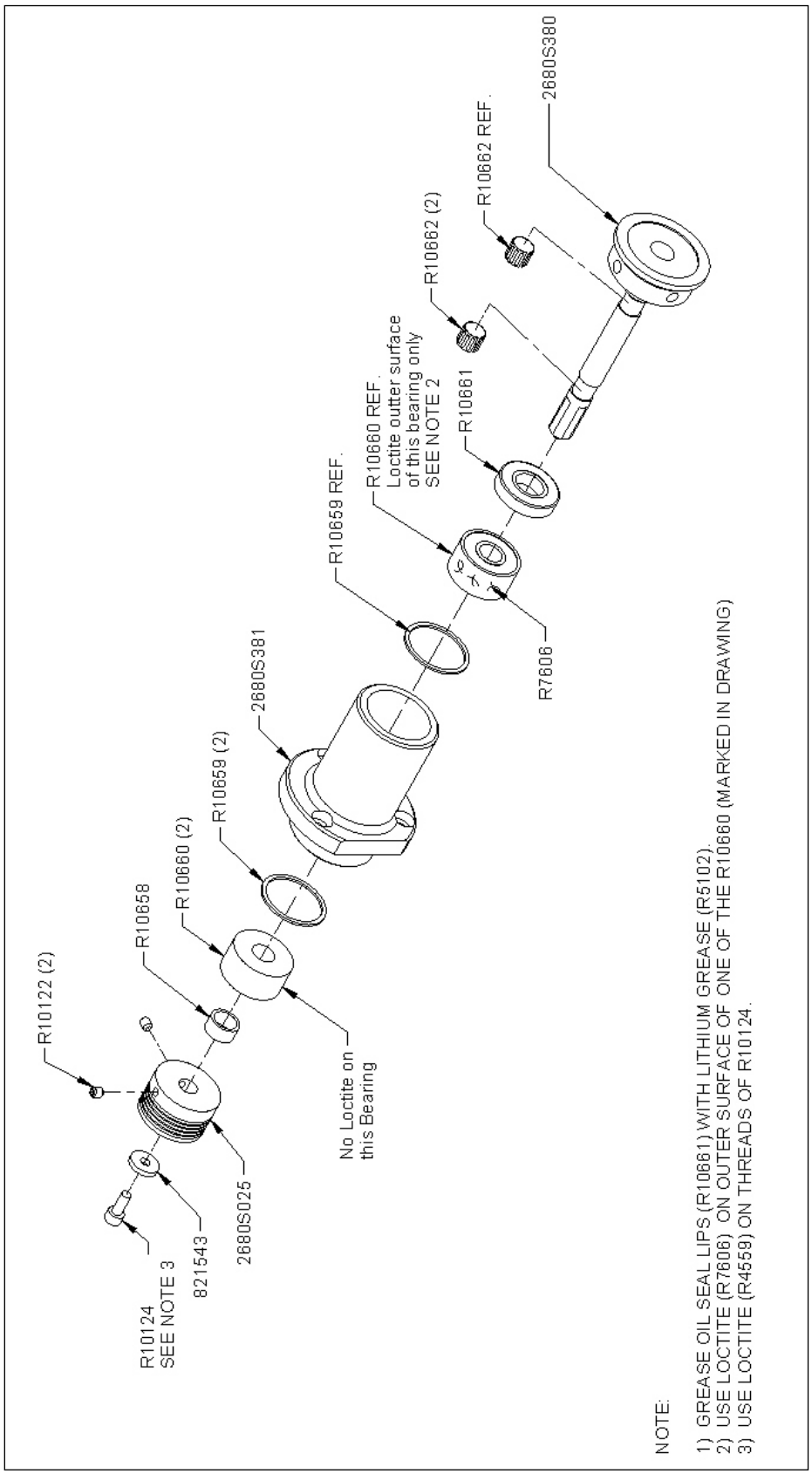
1) AT MOTOR, ATTACH R10114, R0496F, R7072, AND R0539B. FOLLOW THE WIRE ROUTING AS ON THE MOTOR LEADS.

2) USING R0539(2), ATTACH GREEN/YELLOW MOTOR WIRE AND 15" LONG GREEN/YELLOW R0496F TO MOUNTING PLATE USING R11671 AND R10237.

3) APPLY ANTI-SEIZE COMPOUND (R9775) IN THREADED HOLES.

Figure 16 Turret Sub-Assembly Diagram (2680S800)

Note: Drawings and Parts List are subject to change without notice.



Note: Drawings and Parts List are subject to change without notice.

Figure 17 Spindle Sub-Assembly Diagram (2680S806)

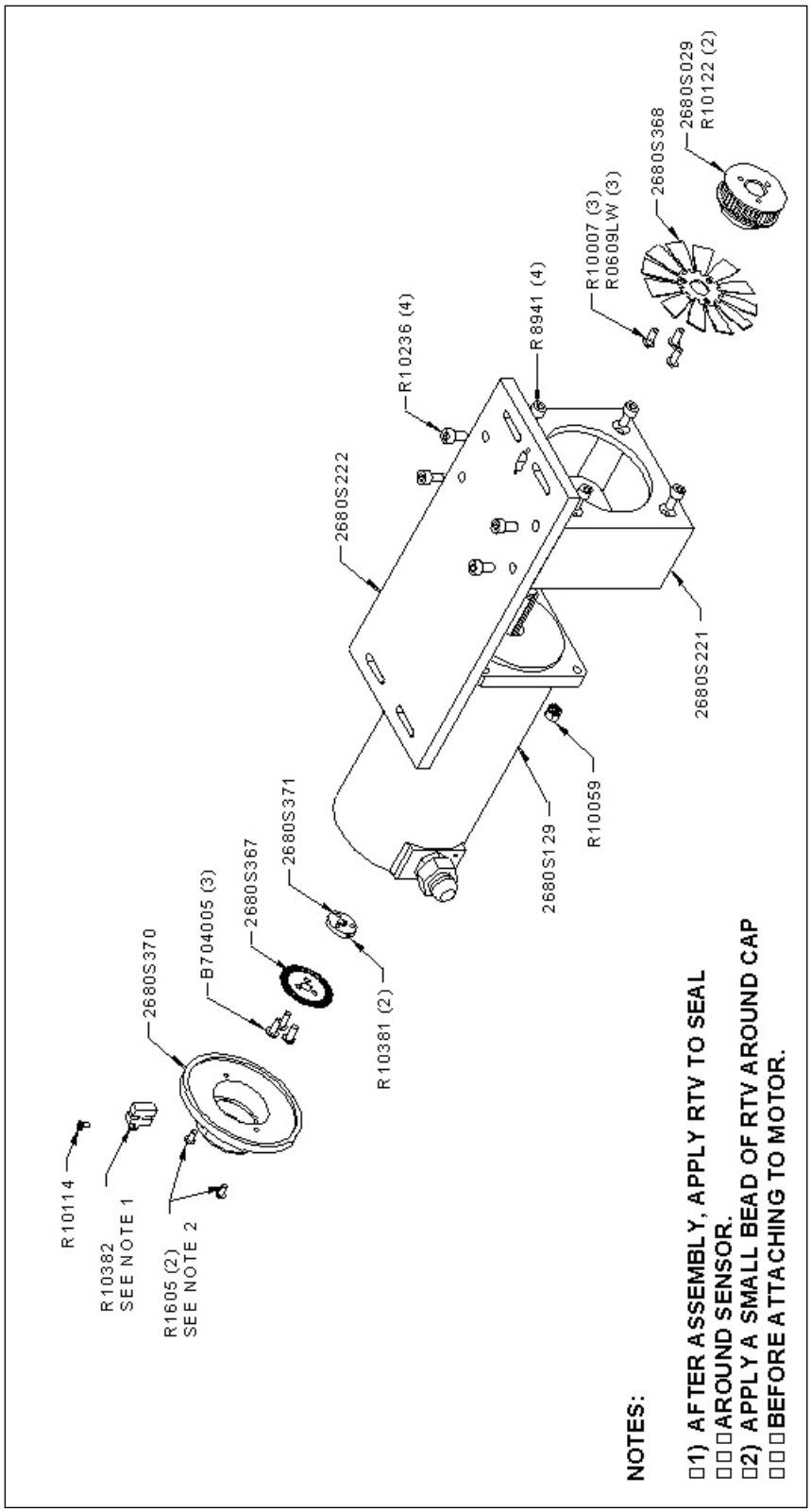


Figure 18 Turret Core Sub-Assembly Diagram (2780S805)

Note: Drawings and Parts List are subject to change without notice.

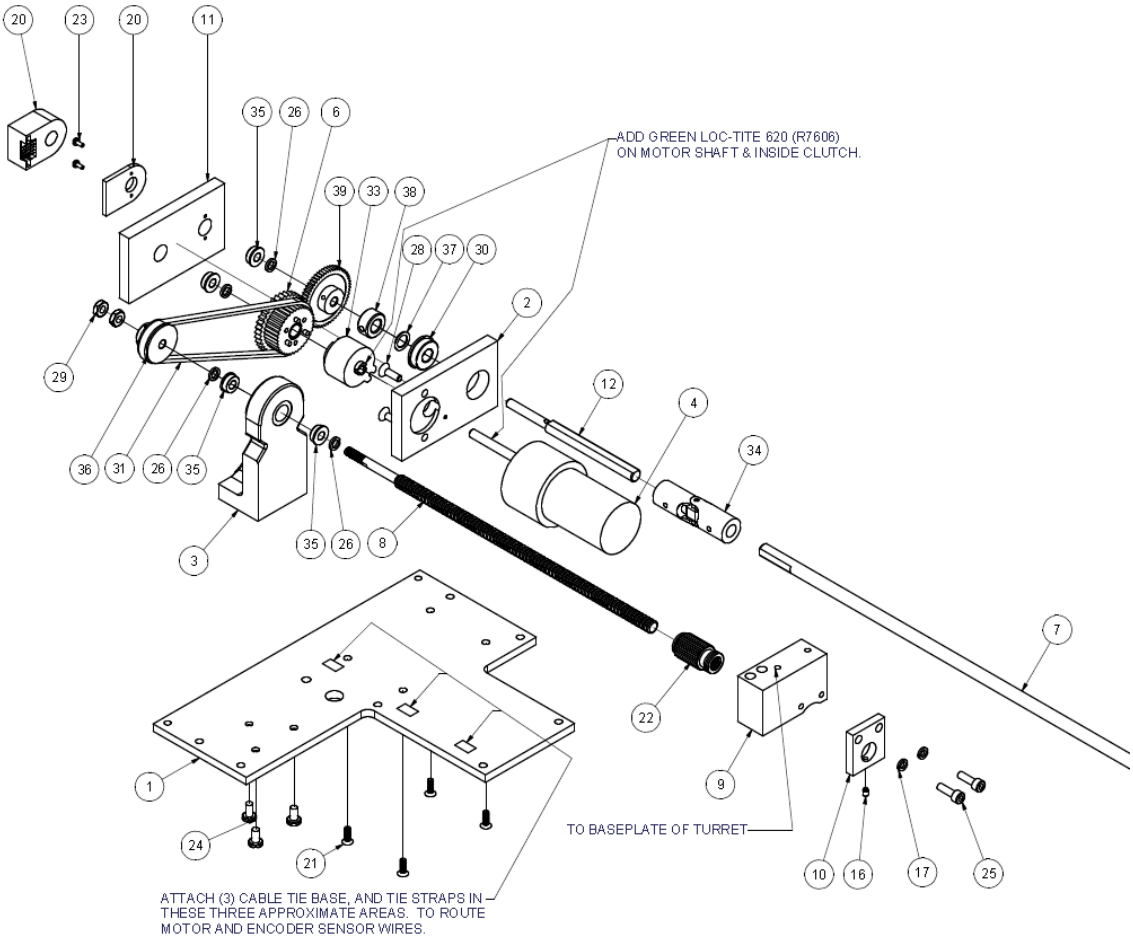


Figure 19A Feed Screw Sub-Assembly Diagram (2680S801) Part 1

Note: Drawings and Parts List are subject to change without notice.

Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	2680S037	PLATE, POWER FEED
2	1	2680S038	PLATE, MOTOR MOUNT
3	1	2680S047	SUPPORT, SCREW FEED MACHINED
4	1	2680S052	MOTOR, GEAR MOUNT 12 VOLT
5	1	2680S085	KNOB, FEED SCREW
6	1	2680S090	PULLEY, GEAR POWER FEED
7	1	2680S091	SHAFT, HAND FEED
8	1	2680S092	SCR, FEED TURRET
9	1	2680S097	BLOCK, DRIVE
10	1	2680S098	MOUNT, LEAD SCREW DRIVE
11	1	2680S101	PLATE, GEAR MOUNT
12	1	2680S107	SHAFT .374 DIA X 5.00 LONG
13	1	2680S108	SHAFT .374 DIA X 2.75 LONG
14	1	2680S535*	WIRE HARNESS, ISOMET 4K/5K
15	1	2680S537*	FERRITE, EMI SUPRESSOR CLAMPON
16	1	B702611	SCR, SET M4 X 6 SOC DOG PT
17	2	B721109	WSHR, M5 SPRING S/C SS TYPE A
18	3	C1600555*	BASE CABLE TIE
19	3	R0585*	TIE STRAP .10X4IN
20	1	R10078	SENSOR, POSITIONING ENCODER
21	4	R10079	SCR, M5 X 12 FL SOC SS
22	1	R10089	NUT, 3/8 LEAD SCREW
23	2	R10133	SCR, M2.5 X 6 PAN PH SS
24	3	R10211	SCR, M5 X 10 PHIL PAN HD ZINC
25	2	R10240	SCR, M5 X 16 SOC HD SS
26	4	R10243	WSHR, 1/4 ID X 3/8 OD X 1/16
27	2	R10849*	CONN SPLICE SEALABLE 18-22AWG
28	2	R7674	SCR, 10-32 X 5/8 FLAT PHIL SS
29	2	R7855	NUT, 1/4-28 HEX JAM SS
30	3	R8942	BEARING, BALL 3/8 ID FLANGED
31	1	R9514	BELT, TIMING HTD 3MM P X 128 T
32	1	R9543	SCR, SET M6 X 8 CUP PT SS
33	1	R9977	CLUTCH, GEAR MOUNT
34	2	R9979	U-JOINT, 3/8 BORE
35	4	R9980	BEARING, BALL 1/4 ID FLANGED
36	1	R9983	PULLEY,HTD 28 TOOTH X .25 BORE
37	3	R9984	SPACER, INNER RACE 3/8 .031
38	1	R9985	COLLAR SHAFT .375 ID.
39	1	R9988	GEAR, 24PT 42 TEETH 3/16 FACE

*NOT SHOWN

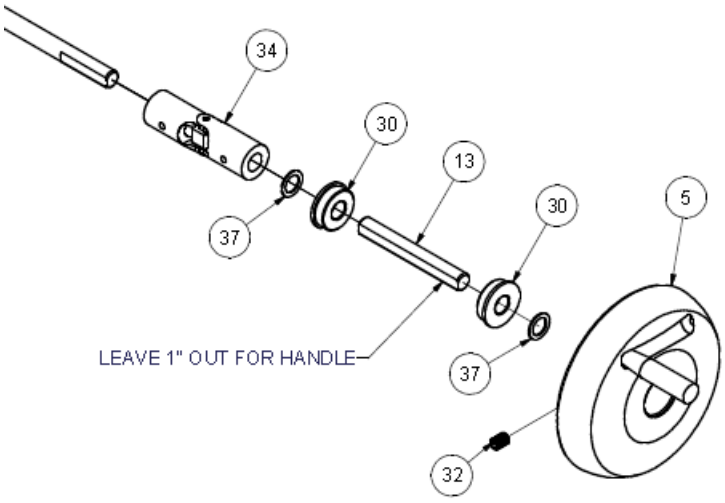


Figure 19B Feed Screw Sub-Assembly Diagram (2680S801) Part 2

Note: Drawings and Parts List are subject to change without notice.

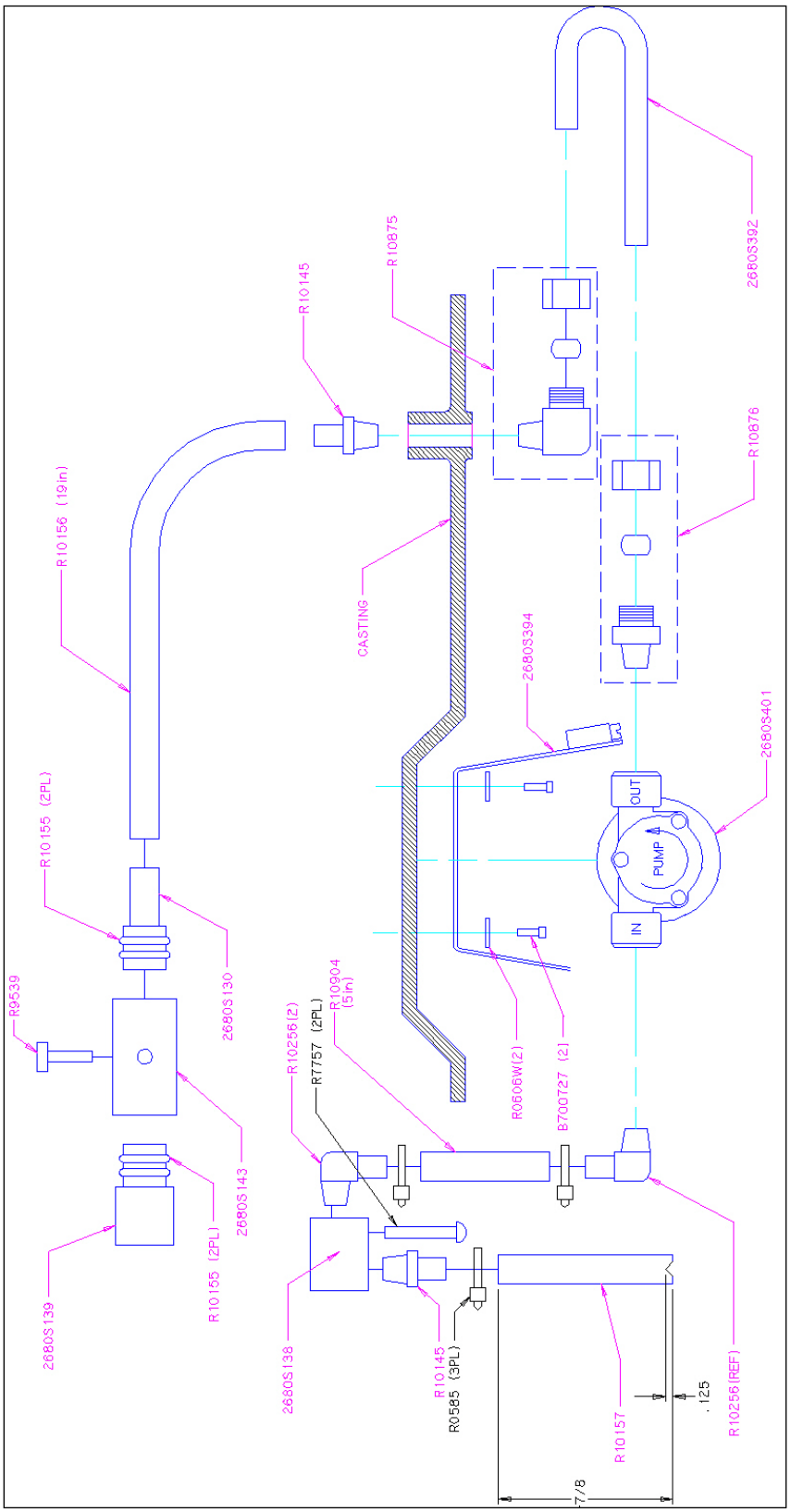


Figure 20 Exploded View of Pump Assembly Diagram (2780S804)

Note: Drawings and Parts List are subject to change without notice.

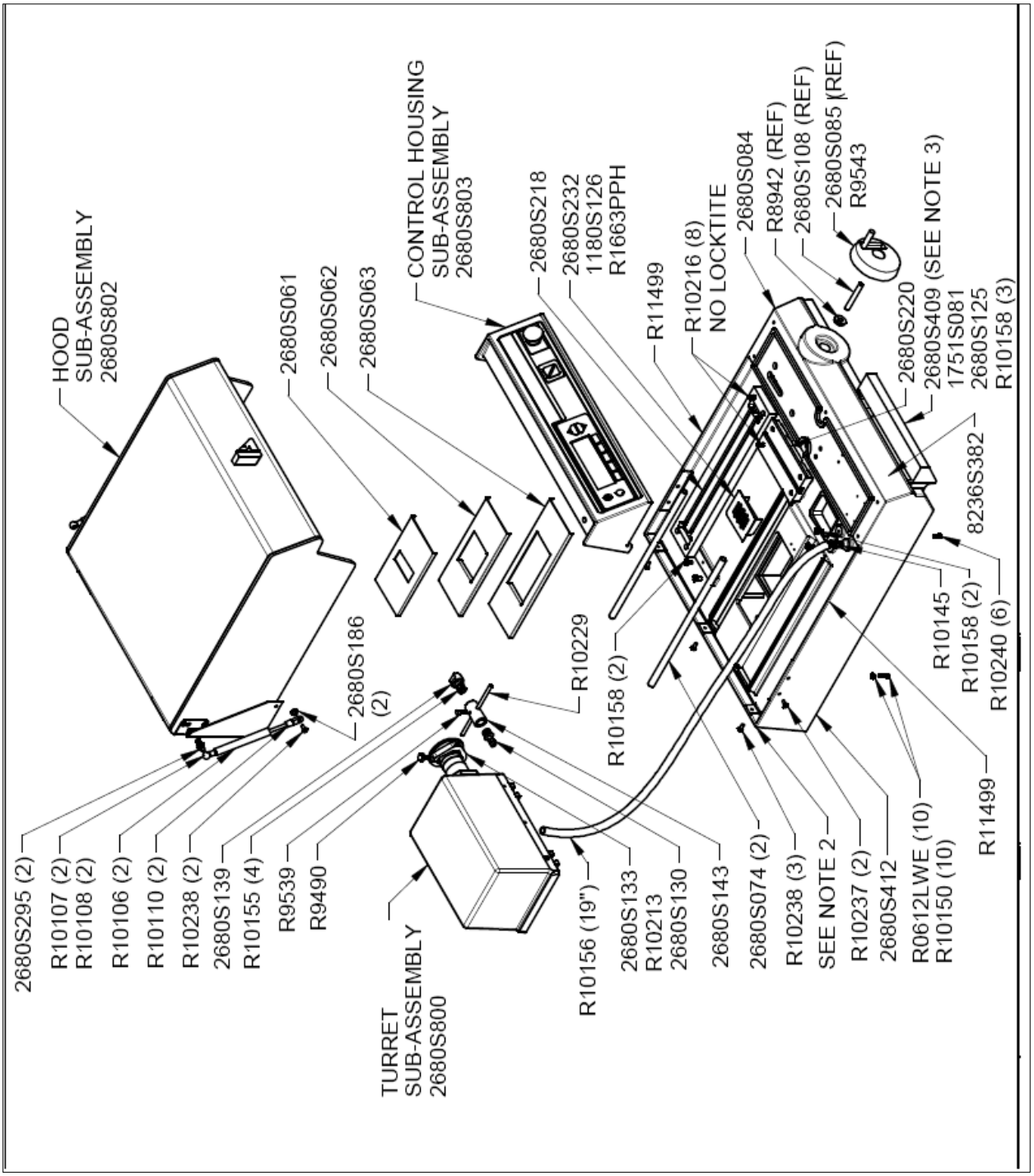


Figure 21 IsoMet 4000 Top View of Assembly Diagram (2680900B)

Note: Drawings and Parts List are subject to change without notice.

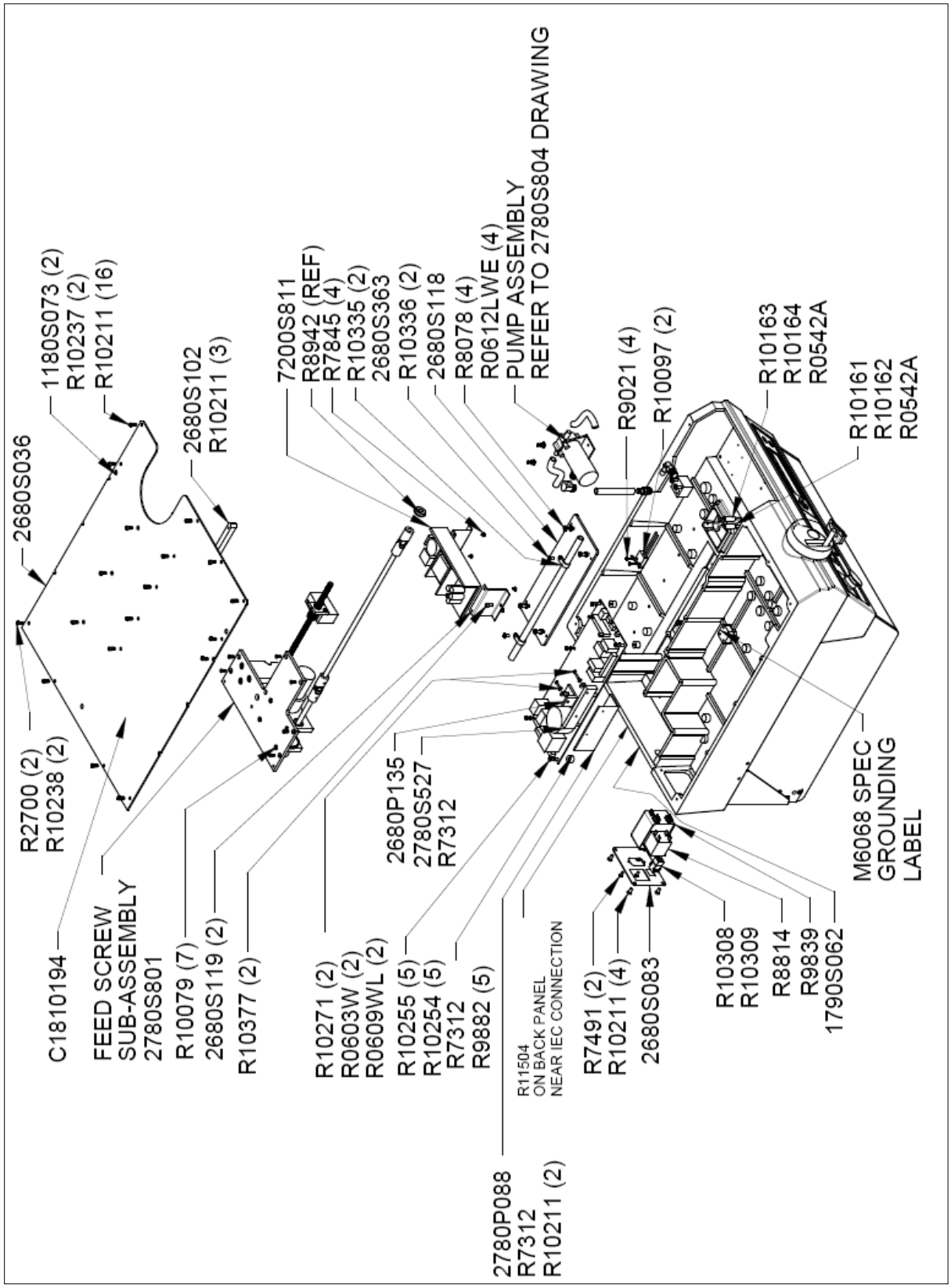
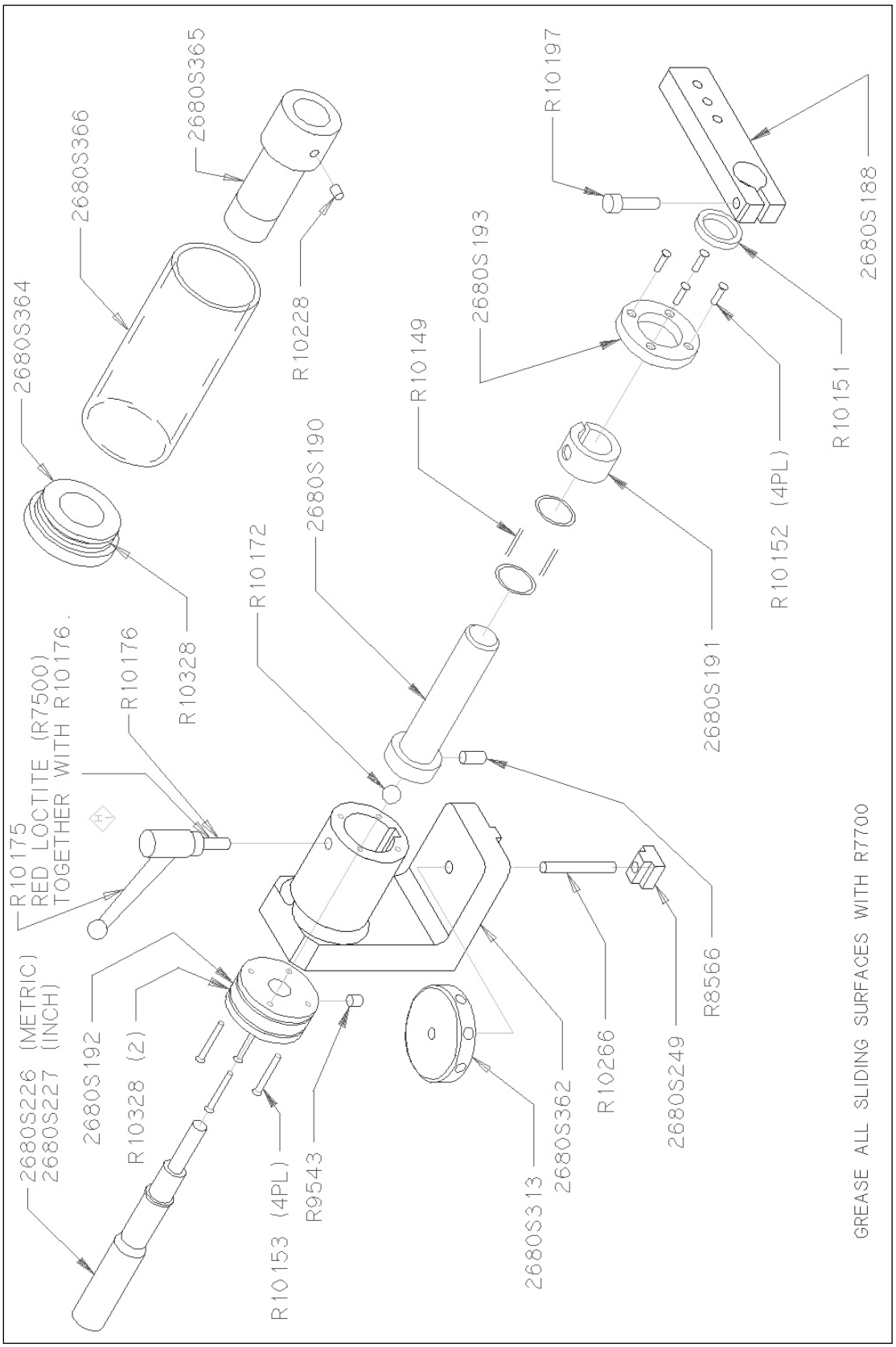


Figure 22 Bottom View of IsoMet 4000 Assembly Diagram (2680900C)

Note: Drawings and Parts List are subject to change without notice.



Note: Drawings and Parts List are subject to change without notice.

Figure 23 IsoMet 4000 1um Sample Positioning System Assembly Diagram (11-2699A)

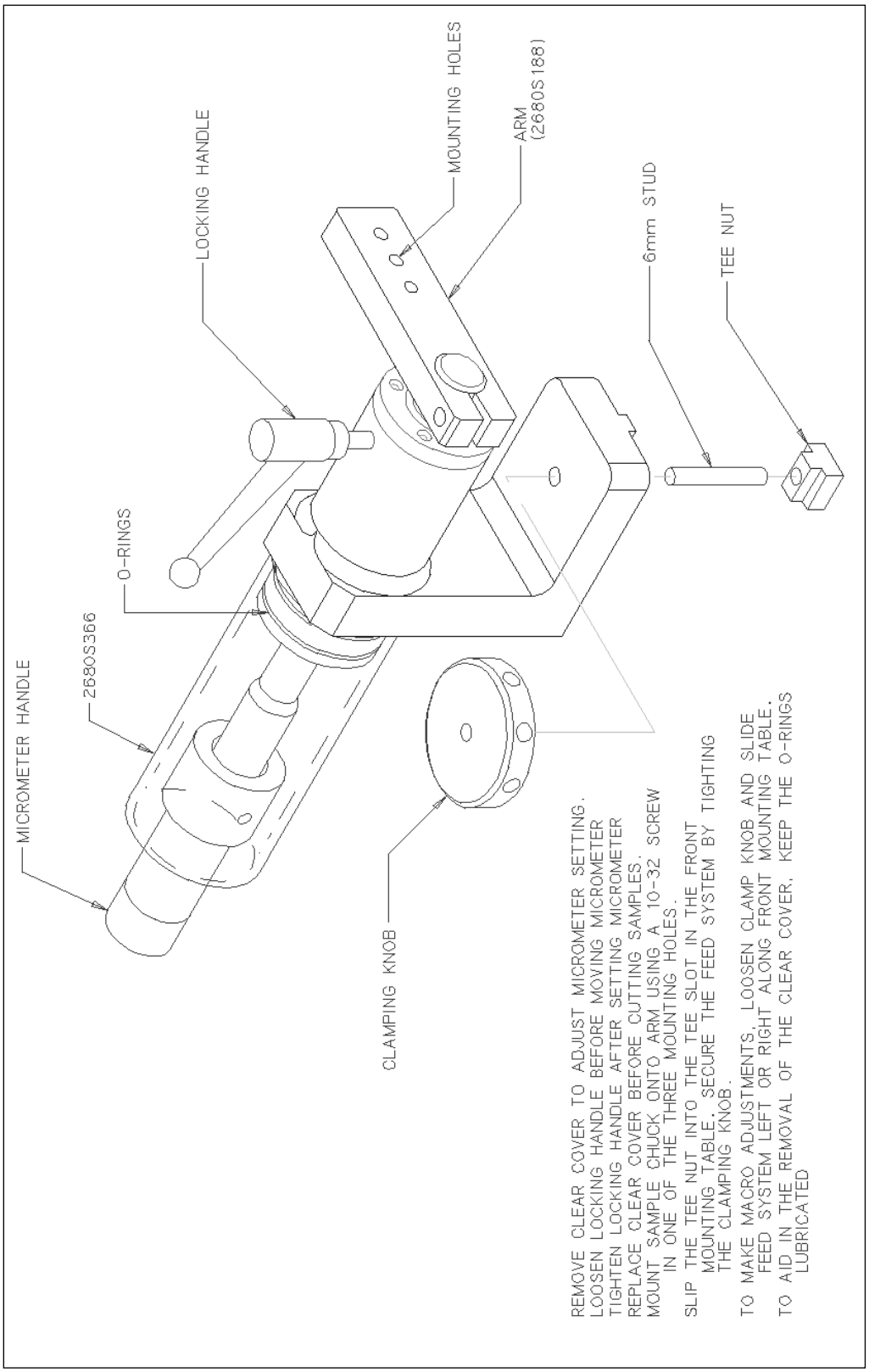


Figure 24 IsoMet 4000 1um Sample Positioning System Assembly Diagram (11-2699B)

Note: Drawings and Parts List are subject to change without notice.

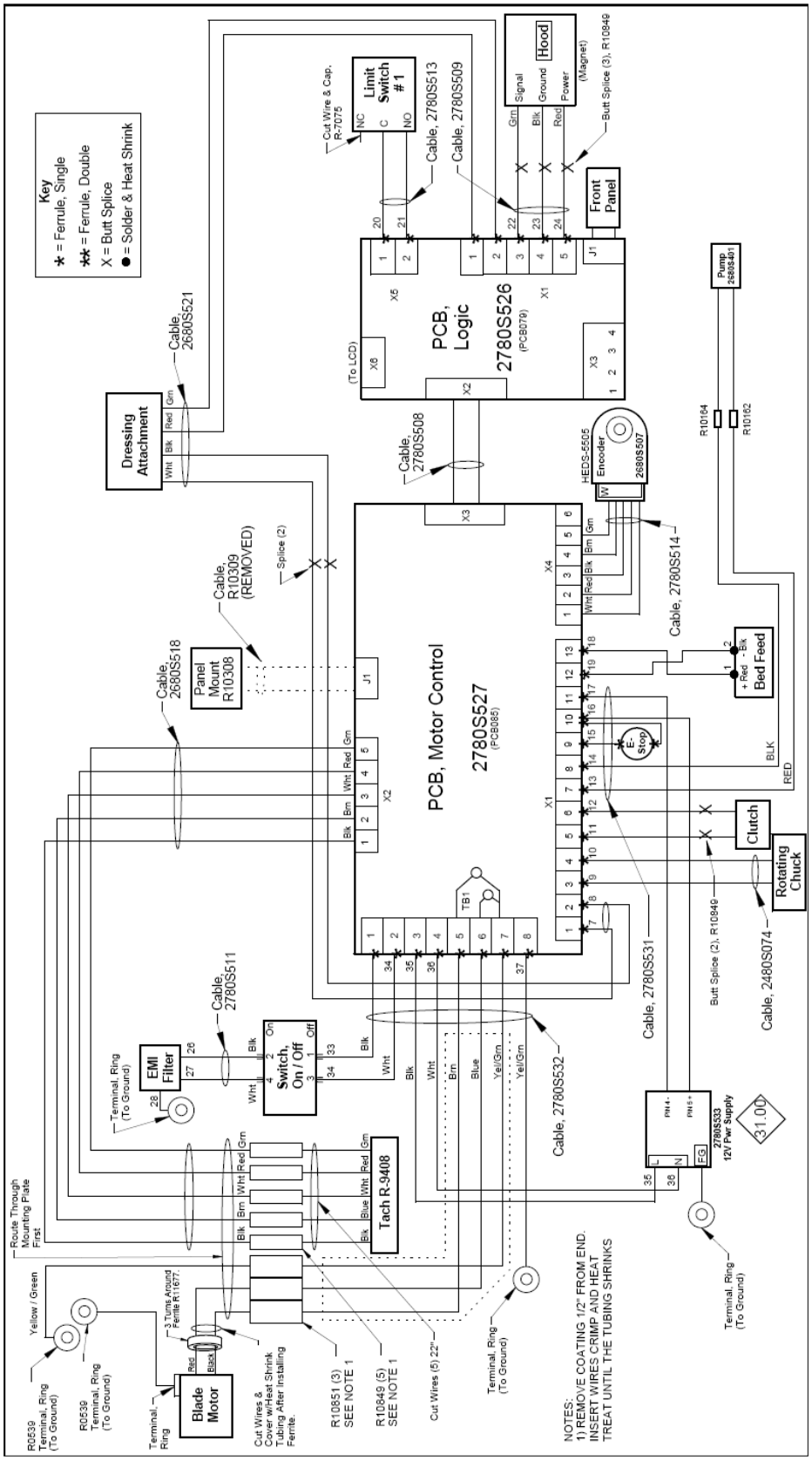


Figure 25 IsoMet 4000 Electrical Diagram (2680900D)

Note: Drawings and Parts List are subject to change without notice.

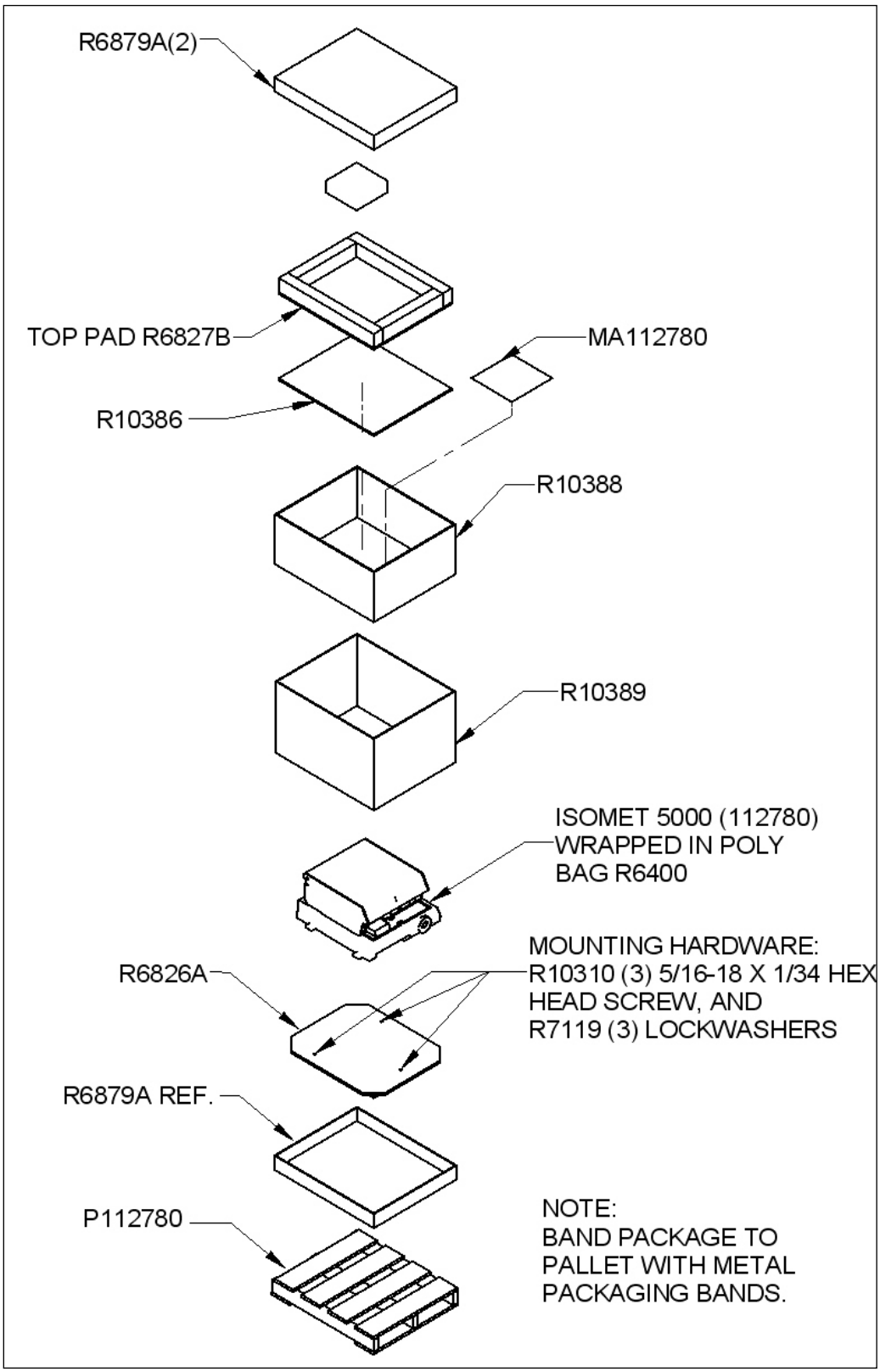


Figure 26 IsoMet 4000 Packaging Diagram (2680900E)

IsoMet™ 4000 Parts List

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
MA112680	MANUAL, INSTRUCT-ISOMET 4000	1	EA
R0496F	WIRE #18 GREEN/YELLOW STRANDED	30	IN
R0539	TERMINAL #10 RING 16-14 NIT	2	EA
R0539B	TERMINAL #6 RING 16-14 NIT	1	EA
R10252	PLUG, MODULAR JACK, 6PIN	0	EA
R10310	SCREW, 5/16-18 X 1-3/4 HEX HD ZI	3	EA
R10385	CAP, ISOMET 4K/5K PACKING	2	EA
R10386	PAD, ISOMET 4K/5K PACKING	2	EA
R10387	PAD, ISOMET 4K/5K PACKING	1	EA
R10388	TUBE, ISOMET 4K/5K INNER	1	EA
R10389	TUBE, ISOMET 4K/5K OUTER	1	EA
R10390	BASE, ISOMET 4K/5K WOODEN	1	EA
R6104	SHIPPING-3IN KRAFT CARTON TAPE	1	CS
R6390	ENVELOPE, WARRANTY-9X14X4MIL	1	EA
R6400	BAG, POLY TRASH	1	EA
R7119	SHAKE PROOF LOCK WASHER	3	EA
R9008A	CORD, IEC POWER - U.S.	0	EA
R9008B	CORD, IEC POWER - EUROPE	0	EA
R9008C	CORD, IEC POWER - U.K.	0	EA
R9008D	CORD, IEC POWER - JAPAN	0	EA
112683	SINGLE SADDLE CHUCK STN. STL.	1	EA
IS112682	INSTRUCTIONS 112682_83_84_85_86	1	EA
L112683	LABEL FOR 112683	1	EA
R8095	LABEL, A SIZE	1	EA
R10002	SCREW, M5 X 20 SOC SS	2	EA
R10474	SCREW, M5 X 30 SOC HD CAP SS	2	EA
R6106	CARTON, 4X3X3 200# OYS WHT	1	EA
R6332	POLY BAG 3X4-4 MIL	1	EA
R9703	KEY, HEX 4MM STL	1	EA
2680S291	BASE, SADDLE CHUCK METRIC	1	EA
2680S292	CLAMP, SADDLE CHUCK METRIC	1	EA
112684	CHUCK-1IN & 1-1/4IN MNTS S.S.	1	EA
IS112682	INSTRUCTIONS 112682_83_84_85_86	1	EA
L112684	LABEL FOR 112684	1	EA
R8095	LABEL, A SIZE	1	EA
R1285	SCREW, SET 8-32 X 3/8 SS	3	EA
R6106	CARTON, 4X3X3 200# OYS WHT	1	EA
R6141	MICROFOAM SHEET 3/32X12X6 IN	0.5	FT
R6332	POLY BAG 3X4-4 MIL	1	EA
R6335	POLY BAG 4X4-4 MIL	1	EA
R8275	SCREW, 10-32 X 5/8 SOC SS	1	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R8840	WRENCH, HEX 5/64 SHORT ARM	1	EA
1180S97	WRENCH, HEX 5/32 STL CD PL	1	EA
2680S171	ROUND BODY	1	EA
112686	IRREGULAR SPECIMEN CHUCK S.S.	1	EA
IS112682	INSTRUCTIONS 112682_83_84_85_86	1	EA
L112686	LABEL FOR 112686	1	EA
R8095	LABEL, A SIZE	1	EA
R0965	SCREW, 10-32 X 3/4 SOC SS	1	EA
R6106	CARTON, 4X3X3 200# OYS WHT	1	EA
R6316	POLY BAG 4X6-4 MIL	1	EA
R6332	POLY BAG 3X4-4 MIL	1	EA
R8840	WRENCH, HEX 5/64 SHORT ARM	1	EA
1180S97	WRENCH, HEX 5/32 STL CD PL	1	EA
1912S7	SCREW, SET 8-32 X 3/4 CUP PT SS	7	EA
2680S172	CHUCK, IRREGULAR SPECIMEN	1	EA
112689	FLANGE SET 4" SET OF 2 SS	1	EA
L112689	LABEL FOR 112689	1	EA
R8095	LABEL, A SIZE	1	EA
R6318	POLY BAG 6X8-4 MIL	2	EA
2680S163	FLANGE, 4 INCH	2	EA
112696	AUTOMATIC DRESSING SYSTEM	1	EA
L112696	LABEL FOR 112696	1	EA
R8095	LABEL, A SIZE	1	EA
R0585	TIE STRAP .10X4IN	1	EA
R10097	SWITCH, LIMIT .1A 12VAC	1	EA
R10123	SCREW, SET M5 X 12 SS	1	EA
R10140	MOTOR, GEAR 19VDC 41.3RPM	1	EA
R10219	SCREW, SET M4 X 6 SOC SS	2	EA
R10222	SCREW, M4 X 12 PH PAN SS	7	EA
R10223	SCREW, M4 X 30 PH PAN SS	1	EA
R10225	SPRING, 1/8DIA.X1/2LGX.016WIDE	1	EA
R10229	SHAFT, .25 DIA X 4.5 LG SS	1	EA
R10230	PIN, COTTER 1/16DIA X 3/4LG SS	1	EA
R10238	SCREW, M5 X 16 PHIL PAN HD SS	2	EA
R10282	STANDOFF, 6MM X 11MM X M4	1	EA
R10298	SCREW, SET M3 X 12 SS	1	EA
R10488	SCREW, M4 X 30 FLT HD SS	2	EA
R10818	SPRAYPAINT,RUSTPROOF BLK GLOSS	0.01	OZ
R6316	POLY BAG 4X6-4 MIL	1	EA
R6811	CARTON,UPS HAZ 9X5X8-1/2 275DW	1	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R7934	BUTT SPLICE 22-18	4	EA
R8025	TUBING-HEAT SHRINK .19 DIA	4	IN
R8067	SCREW, 4-40 X 3/8 FLAT PHIL SS	3	EA
R8370	CABLE TIE, MOUNT	1	EA
R8960	LINK, CONN. #25 CHAIN ST	1	EA
R9001	BUSHING, CORD .090-.265DIA BLK	1	EA
R9021	SCREW, M3 X 12 PH PN HD SS	4	EA
111190	DRESSING STICK - MED BLADES	1	EA
2680S272	SLIDE DRESSING SYSTEM	1	EA
2680S273	CAP SLIDE DRESSING	1	EA
2680S274	RAM ARM DRESSING SYSTEM	1	EA
2680S275	MOUNT MOTOR DRESSING	1	EA
2680S276	CRANK DRESSING SYSTEM	1	EA
2680S277	PUSHER DRESSING SYSTEM	1	EA
2680S278	MOUNT, PUSHER	1	EA
2680S279	CLAMP DRESSING SYSTEM	1	EA
2680S280	MOUNT DRESSING STONE	1	EA
2680S281	NUT, DRESSING SYSTEM	1	EA
2680S282	SCREW, DRESSING SYSTEM	1	EA
2680S378	MACHINED DRESSING	1	EA
2680S376	CASTING DRESSING	1	EA
2680S520	CABLE, BLADE DRESSING	1	EA
821545	WASHER, M8.4ID	2	EA
112699	PRECISION 1UM POSITIONING SYSTEM	1	EA
IS112699	INSTRUCTIONS SAMPLE POSITIONING SYS	1	EA
L112699	LABEL FOR 112699	1	EA
R8095	LABEL, A SIZE	1	EA
R0965	SCREW, 10-32 X 3/4 SOC SS	1	EA
R0967	SCREW, 10-32 X 1 SOC SS	1	EA
R0969	SCREW, 10-32 X 1-1/4 SOC SS	1	EA
R10149	SPRING, 3/4 ID X 1 OD X 2	1	EA
R10151	SEAL, 3/4 ID X 1 OD X 1/8	1	EA
R10152	SCREW, M3 X 12 FL PH SS	4	EA
R10153	SCREW, M3 X 25 FL PH SS	4	EA
R10172	BALL, SS 3/8-C55	1	EA
R10175	HANDLE, CLAMPING	1	EA
R10176	SCREW, SET M6 X 25 CUP PNT	1	EA
R10197	SCREW, M6 X 25 SOC HD SS	1	EA
R10228	SCREW, SET M4 X 5 SS	1	EA
R10266	STUD, M6 X 50 SS	1	EA
R10328	O-RING, BUNA-N NO. 222	3	EA
R10674	TECH SPRAY INDUSTRIAL WAX SEALR	0.5	OZ

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R6316	POLY BAG 4X6-4 MIL	1	EA
R6727	CARTON 8" METLAP	1	EA
R7500	ANAEROBIC ADHESIVE STUD GRADE	0.01	ML
R7700	GREASE EPI	0.01	TB
R8566	DOWEL PIN 1/4" DIA X 1/2" LONG	1	EA
R9543	SCREW, SET M6 X 8 SOC STL	1	EA
1180S97	WRENCH, HEX 5/32 STL CD PL	1	EA
2680S188	ARM 5MM SLIDE	1	EA
2680S190	PISTON	1	EA
2680S191	5MM CLAMP PISTON	1	EA
2680S192	MOUNT 5MM MICROMETER	1	EA
2680S193	MOUNT 5MM SEAL	1	EA
2680S226	MICROMETER METRIC LHT READ	1	EA
2680S249	NUT, M6 TEE	1	EA
2680S313	KNOB BRASS X-TABLE	1	EA
2680S362	BLOCK, MAIN	1	EA
2680S364	BUSHING, MICROMETER	1	EA
2680S365	HANDLE, ISOMET 4K MICROMETER	1	EA
2680S366	TUBE, ISOMET 4K MICROMETER	1	EA
114267	ISOCUT WAFERING BLADE 7X.025IN	1	EA
2150S150	RATING PLATE SMALL - SELF ADHE	1	EA
2680S911	ISOMET 4000 SAW BASE UNIT ASSEMBLY	1	EA
AK#207	ACCESSORY KIT F/112680/112780	1	EA
LAK#207	LABEL FOR AK#207	1	EA
R8095	LABEL, A SIZE	1	EA
MA114207	SHEET,INSTRUCTION-7"C/O WHEELS	1	EA
R6743	CARTON, BOOK FOLD	1	EA
R6744	PAD	4	EA
114207010	CUT-OFF WHEELS 7X.030X1/2	0.2	BX
114217010	CUT-OFF WHEELS 7X.030X1/2	0.2	BX
B703342	SCREW, M8 X 12 SOC HD CAP SS	2	EA
R10145	FIT 1/4 NPT - 3/8 BARB ADPTR	3	EA
R10156	TUBING, 3/8 ID TYGON	24	IN
R10157	TUBING, NEOPRENE 3\8 ID	6	IN
R10158	SCREW, M6 X 12 PAN HD PHIL SS	3	EA
R10256	ELBOW, MALE 1/4NPTX3/8ID HOSE	1	EA
R10875	FIT, 3/8T-1/4P ELBOW ISO 4K/5K	1	EA
R4017A	ADHESIVE SEAL-CLEAR RTV 11 OZ.	0.01	TB
R4559	ADHESIVE-ANAEROBIC THREAD GR.	0.01	EA
R7312	THERMAL COMPOUND	0.01	LB
R7757	SCREW, 10-32 X 1-1/2 PN PH	2	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R8025	TUBING-HEAT SHRINK .19 DIA	20	IN
R9021	SCREW, M3 X 12 PH PN HD SS	2	EA
R9202	TUBING, VINYL 3/8 ID X 5/8 OD	12	IN
1751S081	SCREEN, 4.0 DIA X 2.00 +/-.062	1	EA
2680S036	PLATE, BOTTOM ISOMET 4000	1	EA
2680S102	RAIL, GUIDE TANK	1	EA
2680S125	COVER, TANK	1	EA
2680S409	TANK, MACHINED	1	EA
2680S032	TANK, CASTING	1	EA
2680S138	BLOCK, MOUNTING SUCTION	1	EA
2680S392	U-PIPE FOR ISOMET 4000/5000	1	EA
2680S394	HOSE CLAMP, ISOMET 4000/5000	1	EA
R10892	CLAMP, 40-60MM HOSE	1	EA
2680S802	HOOD SUB-ASSEMBLY	1	EA
R0612W	WASHER, #10 FLAT SS	4	EA
R0615W	WASHER, 1/4IN SS	8	EA
R0617W	WASHER, 5/16IN	2	EA
R0618J	NUT, 5/16-18 HEX JAM SS	2	EA
R10008	SCREW, M5 X 10 SOC BUT SS	2	EA
R10059	NUT, M5 X 0.8 KEPS STEEL ZINC	4	EA
R10237	SCREW, M5 X 12 PHIL PAN HD SS	10	EA
R10239	SCREW, M6 X 20 PHIL PAN HD SS	4	EA
R10305	CAP, BACKWALL ISOMET 4000	1	EA
R12063	SCREW, M6 X 16 PAN HD PHIL SS	4	EA
R4559	ADHESIVE-ANAEROBIC THREAD GR.	0.01	EA
R9226	TAPE, FOAM 1/8 X 3/8 W	24	IN
R9978	HINGE, ISOMET 4000	2	EA
2680S075	MOUNT, HOOD	1	EA
2680S077	WALL, BACK ISOMET 4000	1	EA
2680S081	HOOD, ISOMET 4000	1	EA
2680S103	BRACKET, MOUNTING HOOD	1	EA
2680S104	CAP, MAGNET	1	EA
2680S105	HANDLE, HOOD ISOMET 4000	1	EA
2680S295	BALL STUD SS	2	EA
2680S302	SHIM HOOD	2	EA
5050S123	MAGNET, RARE EARTH - PC-MET	1	EA
2680S807	PUMP SUB-ASS'Y ISOMET 4K/5K	1	EA
C1600300	CABLE TIE WHITE 92M	6	EA
R0414	WIRE #16 BLACK STRANDED	6	IN
R0424	WIRE #16 RED STRANDED	6	IN
R0606W	WASHER, #6 SS	2	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R10157	TUBING, NEOPRENE 3\8 ID	8	IN
R10162	PLUG, BANANA INSULATED BLACK	1	EA
R10164	PLUG, BANANA INSULATED RED	1	EA
R10256	ELBOW, MALE 1/4NPTX3/8ID HOSE	1	EA
R10648	SCREW, M3 X 8 SOC HD HEX SS	2	EA
R10867	SPRING, WAVE 1" OD .73"ID	1	EA
R10875	FIT, 3/8T-1/4P ELBOW ISO 4K/5K	1	EA
R10876	FIT, 3/8T-1/4P ST ISOMET 4K/5K	1	EA
R10877	RELAY, ISOMET 4K/5K PUMP	1	EA
R10891	CONN .187" FLAG INSUL 14-16AWG	2	EA
R10904	SUPPLY TUBE	5	IN
2680S392	U-PIPE FOR ISOMET 4000/5000	1	EA
2680S401	PUMP, ISOMET 4K/5K	1	EA
2680S394	HOSE CLAMP, ISOMET 4000/5000	1	EA
R10892	CLAMP, 40-60MM HOSE	1	EA
2680S808	ISOMET 4000 PRE-ASSEMBLY	1	EA
R0535A	TERMINAL #6 BLK SPADE 22-16 FI	2	EA
R0542A	TERMINAL 1/4 RING 16-14 FIG	2	EA
R0605LWE	WASHER, EXT #6 STN STL	2	EA
R0612LWE	WASHER, #10 EXTERNAL LOCK SS	19	EA
R10079	SCREW, M5 X 12 FL SOC SS	7	EA
2780S533	POWER SUPPLY, 12VDC 110W	1	EA
R10097	SWITCH, LIMIT .1A 12VAC	1	EA
R10105	CLAMP, HOSE	3	EA
R10106	SPRING, GAS	2	EA
R10107	SOCKET, BALL 10MM BALL	2	EA
R10108	CLIP, SAFETY 10MM BALL	2	EA
R10110	EYELET, M6 FEMALE THREAD	2	EA
R10150	SCREW, M5 X 25 SOC SS	10	EA
R10155	O-RING, 7\16ID X 5/8OD BUNA N	4	EA
R10156	TUBING, 3/8 ID TYGON	24	IN
R10158	SCREW, M6 X 12 PAN HD PHIL SS	4	EA
R10159	FITTING 90 DEG STR ELBOW 1/4 P	1	EA
R10161	JACK, BANANA INSULATED BLACK	1	EA
R10163	JACK, BANANA INSULATED RED	1	EA
R10170	KEY, HEX 5MM LOOPED T-HANDLE	1	EA
R10211	SCREW, M5 X 10 PHIL PAN HD ZINC	32	EA
R10213	SCREW, SET M5 X 5 SOC SS	1	EA
R10216	SCREW, M6 X 20 SOC SS	8	EA
R10220	SCREW, M3 X 20 PH PAN SS	2	EA
R10229	SHAFT, .25 DIA X 4.5 LG SS	1	EA
R10237	SCREW, M5 X 12 PHIL PAN HD SS	4	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R10238	SCREW, M5 X 16 PHIL PAN HD SS	5	EA
R10240	SCREW, M5 X 16 SOC HD SS	6	EA
R10254	NUT, M4 KEPS	5	EA
R10255	SCREW, SET M4 X 25 SS	5	EA
R10308	CONNECTOR,RJ-11 FEMALE (PHONE)	1	EA
R10335	CLAMP, 1/2" ID WIRE	2	EA
R10336	SCREW, M5 X 10 PAN HD SS PHIL	2	EA
R10510	BRUSH, DRESSING SYS CLEANING	1	EA
R10849	CONN SPLICE SEALABLE 18-22AWG	5	EA
R10851	CONN SPLICE SEALABLE 10-12AWG	3	EA
R12056	FERRULE, 1.0MM,H1.0/14-D	2	EA
R12057	FERRULE,1.5MM, HO1.5/14-D	4	EA
R1663PPH	SCREW, 10-32 X 1/4 PN PH SS	2	EA
R2700	BUMPER, RUBBER 3/4DIAX9/16 BLK	2	EA
R4017A	ADHESIVE SEAL-CLEAR RTV 11 OZ.	0.01	TB
R4559	ADHESIVE-ANAEROBIC THREAD GR.	0.01	EA
R7075	STAKON WIRE JOINTS	1	EA
R7312	THERMAL COMPOUND	0.01	LB
R7342	SHRINK TUBING 3/32	20	IN
R7491	SCREW, 6-32 X 3/8 PAN HD PHIL SS	2	EA
R7760	TUBING-HEAT SHRINK .25 DIA	21	IN
R7845	SCREW, 6-32 X 3/16 PN PHIL HD SS	4	EA
R8025	TUBING-HEAT SHRINK .19 DIA	20	IN
R8078	SCREW, 10-32 X 7/8 PAN PHIL SS	4	EA
R8370	CABLE TIE, MOUNT	20	EA
R8814	CIRCUIT BREAKER, 10A 250V	1	EA
R8936	SCREW, M5 X 8 SOC HD CAP SS	2	EA
R9277	TUBING, HEAT SHRINK .38 DIA	0.3	FT
R9288	MOUNT, FLAT CABLE 1.09 X 1.00	1	EA
R9490	SCREW, 10-32 X 1.00 SS THUMB	1	EA
R9539	SCREW, 10-32 X 3/4 THUMB SS	1	EA
R9760	WRENCH, OPEN END 1/2 - 5/8 IN	1	EA
R9839	FILTER, LINE 6 AMP W/IEC SKT	1	EA
R9882	STAND-OFF, CYLINDER #10 3/8 LG	5	EA
1180S126	KNOB	1	EA
1180S73	RUBBER FOOT	2	EA
1790S062	PLATE, BILINGUAL CAUTION	1	EA
2680S061	SEAL, TOP	1	EA
2680S062	SEAL, CENTER	1	EA
2680S063	SEAL, LOWER	1	EA
2680S074	RAIL, TURRET	2	EA
2680S083	BACK PLATE, ELECTRICAL	1	EA
2680S084	HOUSING, MAIN	1	EA

IsoMet™ 4000 Parts List

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
2680S050	HOUSING, MAIN CASTING	1	EA
2680S118	TRAY, WIRE	1	EA
2680S119	BRACKET, MOUNTING POWER SUPPLY	2	EA
2680S130	NOZZLE, WATER	1	EA
2680S133	BRACKET, ARM WATER SUPPLY	1	EA
2680S139	NOSE, WATER DUAL SPRAY	1	EA
2680S143	HUB, WATER	1	EA
2680S186	NUT, SHOULDER	2	EA
2680S218	TABLE, VISE LONG 2 SLOT	1	EA
2680S220	TABLE, VISE SHORT SINGLE SLOT	1	EA
2680S232	SCREEN, BAFFLES ISOMET 4000	1	EA
2680S363	TUBE, 1/2"OD X 3/8"ID WIRE	1	EA
2680S518	CABLE, BLADE TACH	1	EA
2680S525	DECAL, ISOMET SIDE NEW	1	EA
2680S800	TURRET SUB-ASSEMBLY	1	EA
R0444	WIRE #16 GREEN/YELLOW STRANDED	31	IN
R0539	TERMINAL #10 RING 16-14 NIT	2	EA
R0539B	TERMINAL #6 RING 16-14 NIT	1	EA
R0606LW	LOCK WASHER #6 SS	1	EA
R0612LWE	WASHER, #10 EXTERNAL LOCK SS	2	EA
R0612W	WASHER, #10 FLAT SS	10	EA
R10001	SCREW, M5 X 10 SOC SS	25	EA
R10217	BELT, MICRO-V	1	EA
R10237	SCREW, M5 X 12 PHIL PAN HD SS	2	EA
R10240	SCREW, M5 X 16 SOC HD SS	4	EA
R4559	ADHESIVE-ANAEROBIC THREAD GR.	0.01	EA
R11677	GASKET, EMI SHIELD	1	EA
R11678	FERRITE, TUBULAR BEAD	1	EA
112282	FLANGE SET 3" SET OF 2	1	EA
L112282	LABEL FOR FLANGES-3"	1	EA
R8095	LABEL, A SIZE	1	EA
R6316	POLY BAG 4X6-4 MIL	2	EA
2280S056	FLANGE 3 INCH	2	EA
2680S002	HOUSING, TURRET 8 IN MACHINED	1	EA
2680S030	HOUSING, TURRET 8 IN CASTING	1	EA
2680S043	BEARING, LINEAR (FLOATING)	2	EA
2680S082	BASE PLATE, TURRET	1	EA
2680S096	BEARING, LINEAR (FIXED)	2	EA
2680S307	NUT SPINDLE	1	EA
2680S806	SPINDLE SUB-ASSEMBLY	1	EA
R10122	SCREW, SET M5 X 6 SS	2	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R10124	SCREW, M5 X 12 SOC HD CAP SS	1	EA
R10658	SPRING, SMALLEY SPIRAWAVE	1	EA
R10659	RING, SMALLEY SPIRAL	2	EA
R10660	BEARING, INA 3201J2RS	2	EA
R10661	SEAL, 15 X 32 X 7 TC TMC OIL	1	EA
R10662	RING, BN-12 X 10-S TOLERANCE	2	EA
R4559	ADHESIVE-ANAEROBIC THREAD GR.	0.01	EA
R6640	CARTON,6X3X3 200# OYS WHT	1	EA
R7606	ADHESIVE HIGH TEMP	0.01	ML
2680S025	PULLEY, SPINDLE MICRO-V	1	EA
2680S380	SHAFT, SPINDLE ISOMET 5000	1	EA
2680S381	HOUSING, SPINDLE	1	EA
821523	WASHER, M5 SS	1	EA
821543	WASHER, M5 LARGE OD STNL STEEL	1	EA
2780S035	SPINDLE, SCREW	1	EA
2780S805	CORE, TURRET SUB-ASSEMBLY	1	EA
B704005	SCREW, M3 X 6 REC PAN HD SS	3	EA
R0609LW	WASHER, SPLK #8 STN STL	3	EA
R10007	SCREW, M4 X 10 HEX BUT HD	3	EA
R10059	NUT, M5 X 0.8 KEPS STEEL ZINC	4	EA
R10114	SCREW, M3 X 6 PAN HD PHIL	1	EA
R10122	SCREW, SET M5 X 6 SS	2	EA
R10236	SCREW, M6 X 16 SOC HEAD SS	4	EA
R10381	SCREW, SET M2 X 4 CUP POINT SS	2	EA
R10382	SENSOR, TURRET SPEED	1	EA
R9408	SENSOR, SPEED	1	EA
R6394	CARTON ONE GALLON	1	EA
R8941	SCREW, M5 X 20 PHIL FL SS	4	EA
R8946	SCREW, 4-40 X 3/8 SS	2	EA
2680S029	PULLEY, MICRO-V .500 BORE	1	EA
2680S129	MOTOR, TURRET 1-1/2 H.P.	1	EA
2680S221	MOUNT, MOTOR	1	EA
2680S222	PLATE, MOTOR MOUNT	1	EA
2680S367	WHEEL, 50 HOLE ENCODER	1	EA
2680S368	FAN	1	EA
2680S370	MACHINED, ENCODER ENCLOSURE	1	EA
2680S369	CASTING, ENCODER ENCLOSURE	1	EA
2680S371	CLAMP, ENCODER WHEEL	1	EA
2680S803	CONTROL PANEL SUB-ASSEMBLY	1	EA
R10115	NUT, M3 X 0.5 KEPS STEEL ZI	6	EA
R10117	STAND-OFF, HEX THD 3MMX13MM	6	EA

Part Number	Description	Qty/Per	UM
Note: Drawings and Parts List are subject to change without notice.			
R10138	SWITCH, MAGNETIC	1	EA
R10166	STAND-OFF, HEX THD 4-40X.375LG	4	EA
R10251	CAP ELEC. SMALL	2	EA
R10290	PLUG, D-HOLE	1	EA
R12064	CAP, ELEC. LARGE	1	EA
R12065	FEET PVC BUMPER HT.060 .5 DIA	2	EA
R4017A	ADHESIVE SEAL-CLEAR RTV 11 OZ.	0.01	TB
R9226	TAPE, FOAM 1/8 X 3/8 W	21	IN
R9335	PUSHBUTTON, EMERGENCY STOP	1	EA
R9336	CONTACT, BLOCK FOR R9335	1	EA
2480S074	CONNECTOR, CABINET-PUMP	1	EA
2680S073	HOUSING, CONTROL PANEL	1	EA
2680S048	HOUSING, CONTROL PANEL CASTING	1	EA
2680S521	CABLE, BLADE DRESSING INHOUSE	1	EA
2680S526	NAMEPLATE OVERLAY ISOMET 4K NEW	1	EA
2780S526	LCD & LOGIC CNTRL ISO4K/5K	1	EA
PCB140	LCD & LOGIC CNTRL ISO4K/5K	1	EA
2780P088	HEAT SINK ISOMET 4K/5K	1	EA
2780S508	CABLE,30PIN LOGIC TO MTR CNTRL	1	EA
2780S509	CABLE, X1 LOGIC TO HOOD SWITCH	1	EA
2780S510	CONNECTOR, MOTOR (AC X1)	1	EA
2780S511	CABLE, AC INPUT	1	EA
2780S513	CABLE, TURRET TRVL LMIT SWITCH	1	EA
2780S514	CABLE, MTR CNTRL PCB TO ENCODR	1	EA
2780S517	CABLE, MTR CTRL PCB/ PWR CNTRL	1	EA
2780S527	MOTOR CONTROL, ISOMET 4K/5K	1	EA
PCB141	MOTOR CONTROL, ISOMET 4K/5K	1	EA
821523	WASHER, M5 SS	2	EA
821603	NUT, M5 SS HEX	2	EA
8236S382	NAMEPLATE-LOGO TRANSFER	1	EA
2780S508	CABLE,30PIN LOGIC TO MTR CNTRL	1	EA
2780S509	CABLE, X1 LOGIC TO HOOD SWITCH	1	EA
2780S510	CONNECTOR, MOTOR (AC X1)	1	EA
2780S511	CABLE, AC INPUT	1	EA
2780S513	CABLE, TURRET TRVL LMIT SWITCH	1	EA
2780S514	CABLE, MTR CNTRL PCB TO ENCODR	1	EA
2780S517	CABLE, MTR CTRL PCB/ PWR CNTRL	1	EA
2780S527	MOTOR CONTROL, ISOMET 4K/5K	1	EA
PCB141	MOTOR CONTROL, ISOMET 4K/5K	1	EA

Note: Drawings and Parts List are subject to change without notice.

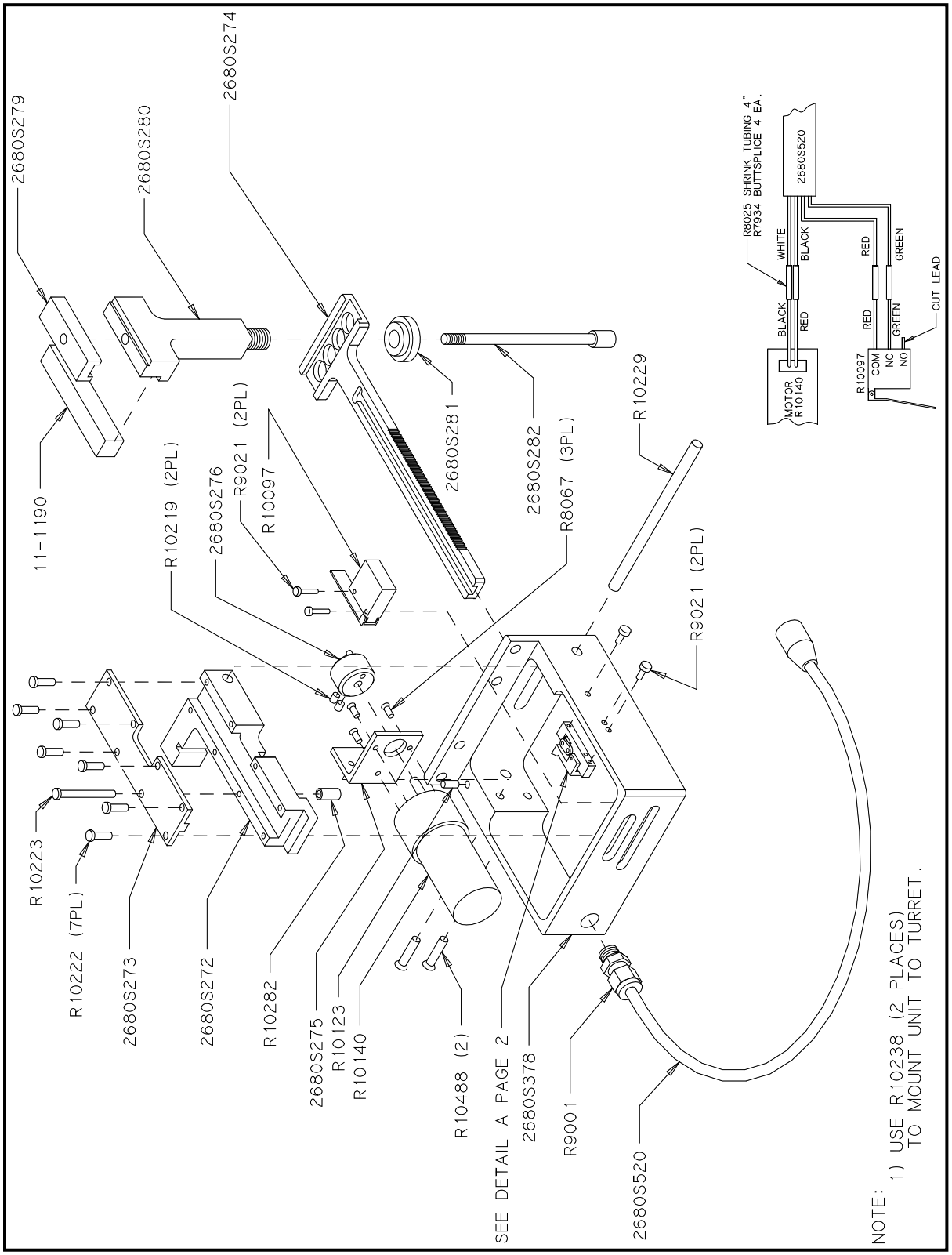


Figure 27 Automatic Dressing System Diagram

Note: Drawings and Parts List are subject to change without notice.

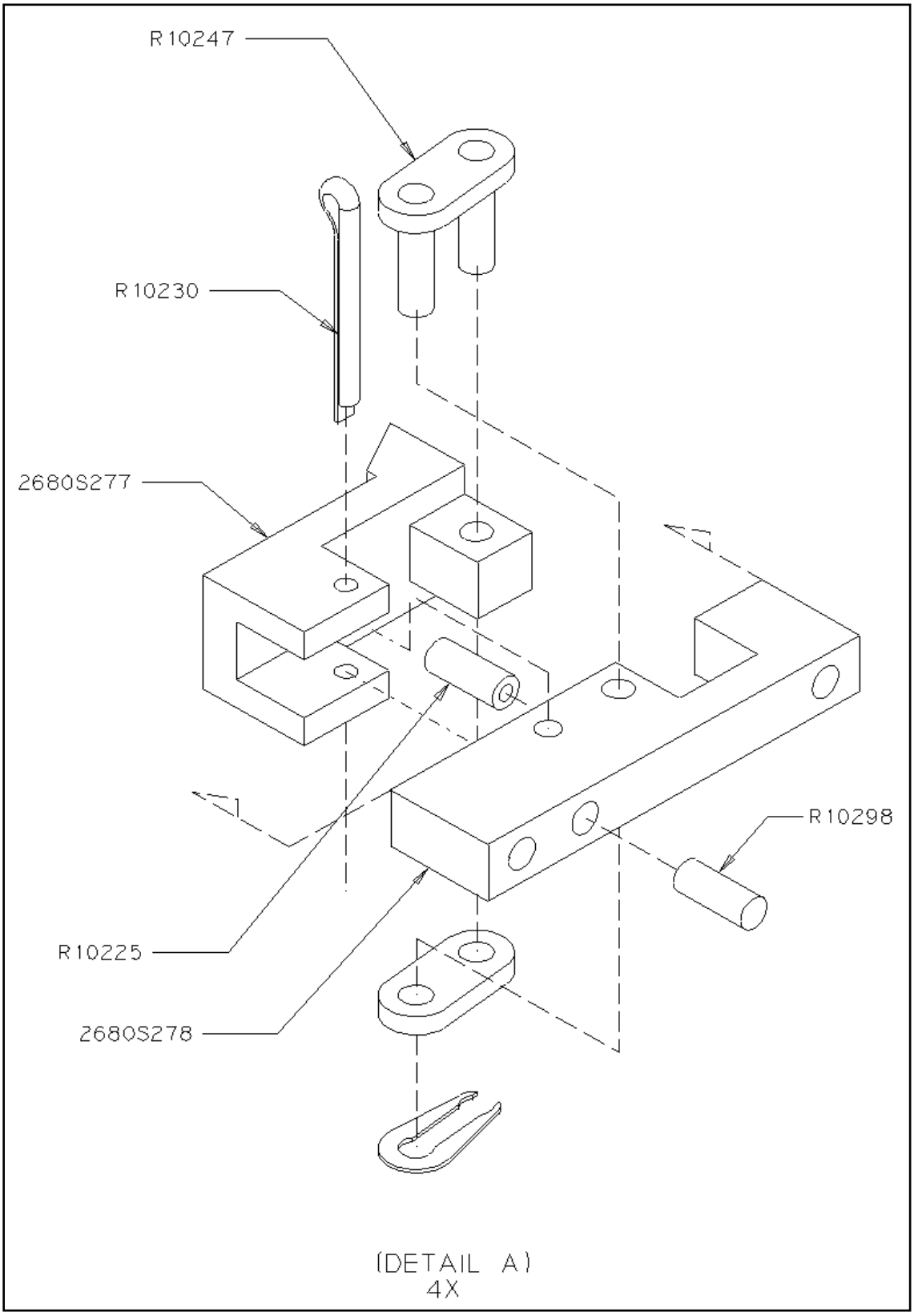


Figure 28 Automatic Dressing System Diagram – Detail A

Note: Drawings and Parts List are subject to change without notice.

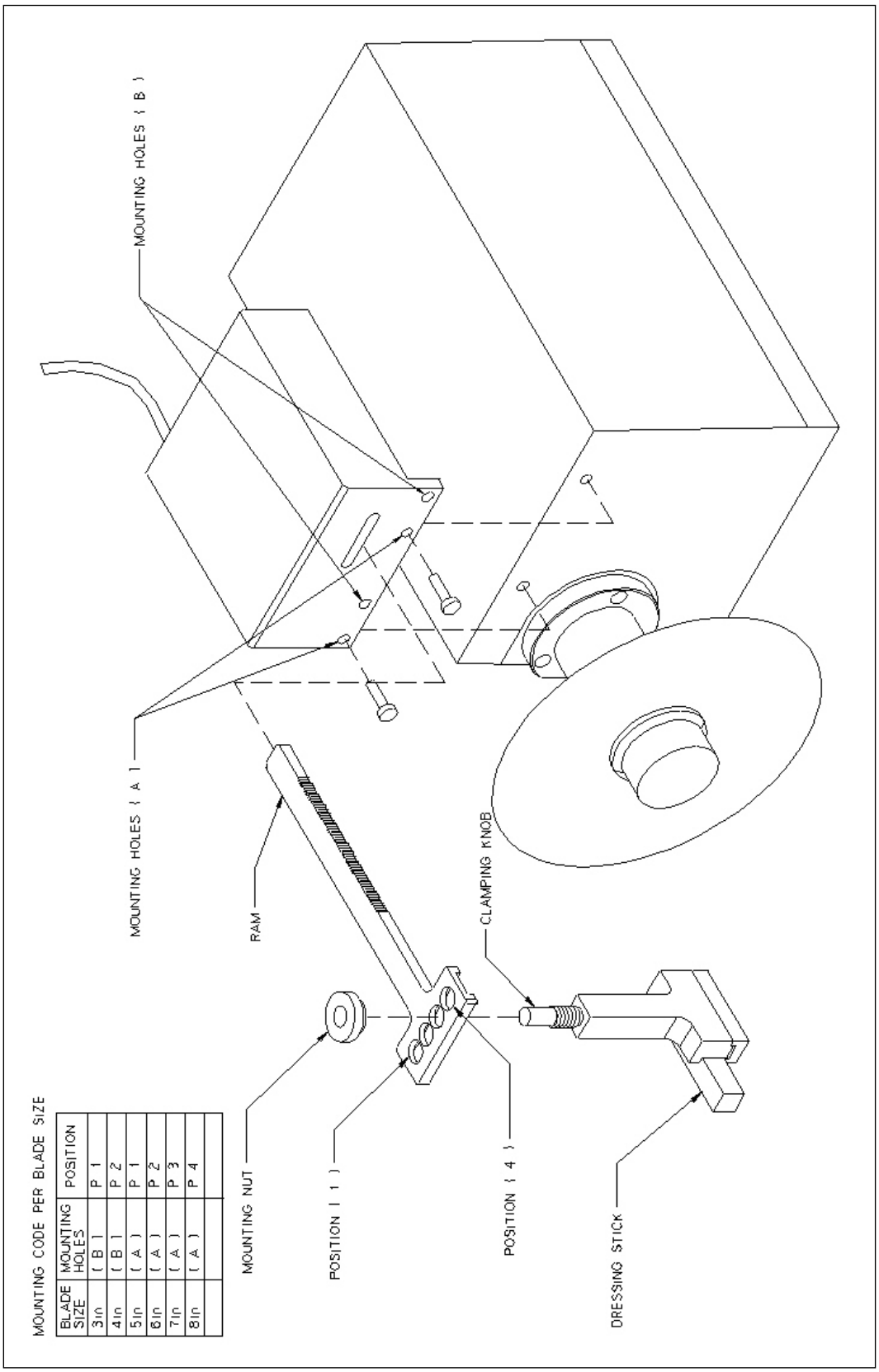


Figure 29 Dressing System Mounting Hole Diagram

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Notes