



BUEHLER

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HandiMet™ 2 Roll Grinder



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 ITW Test & Measurement (Shanghai) Co., Ltd. Building 13A, No. 88 Xijunhuan Road, Block F, Caohejing Hi-tech Park, Pujiang, Minhang, Shanghai 201114, China
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: HandiMet™ 2 Roll Grinder Catalog Number: 39-1572 Description: An economical fine grinding station for manual grinding.
Machine Serial Number:	Month Code – HRG – 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	
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).	Minhang, Shanghai, China
Prepared by:	Kate Watling, Technical Communicator 

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HandiMet 2 Roll Grinder

The HandiMet 2 Roll Grinder offers fast, economical, top-quality, manual, fine-grinding of metallurgical and petrographic samples.

The HandiMet 2 Roll Grinder is a self-contained, four-stage fine grinding station with a controlled water flow for lubrication and flushing. The continuous water flush removes grinding residue from the abrasive work surfaces and maintains the sharpness of the exposed abrasive grit.

No special clamps or hold-downs are required. A unique water activated clamp holds the abrasive paper firmly in position during the grinding process.

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 Customer Purchase Order Number

- Buehler Invoice Number and Date
- Serial Number
- Reason for return

Specifications

Dimensions	19" W x 22" D x 6" H (480 mm x 560 mm x 150mm)
Grinding Surface Dimensions	4 at 3 7/16" x 11 1/2" (90 mm x 220 mm)
Recommended Water Pressure	40 to 100 psi.
Recommended Grit Size	240, 320, 400, 600
Shipping Weight	33 lbs (15 kg)

Safety Information

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

The HandiMet 2 Roll Grinder 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 Roll Grinders 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. Do not wear loose clothing or jewelry and contain long hair.

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.

Maintain the HandiMet 2 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.

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

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

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

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 HandiMet 2 has been carefully packaged for protection during transit from the factory to your location.

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

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

- 240 grit CARBIMET™ abrasive paper roll
- 320 grit CARBIMET™ abrasive paper roll
- 400 grit CARBIMET™ abrasive paper roll
- 600 grit CARBIMET™ abrasive paper roll
- Drain hose (48 inches)
- Water hose (48 inches)
- 2 Paper support rods



Equipment Damage. The HandiMet 2 weighs approximately 33 lbs (15 kg). Carefully lift the unit from the shipping carton.

Follow approved procedures and safety practices when lifting and installing this machine. Improper lifting can result in machine damage.

Plumbing

Select a location for your HandiMet 2 that provides an adequate working space, a power source, water connections, and a drain.

When connecting water to the HandiMet 2 observe local water regulations. Use a Buehler connection kit if using a pressure reliever and a check valve from the water source.

NOTICE

Use of the Buehler Water Filtration Kit (60-9091) is highly recommended. Not using the Water Filtration Kit can cause damage to the machine and any damages will not be covered under warranty.

Plumbing installation and machine maintenance should be performed by qualified personnel.

The recommended water pressure for the HandiMet 2 is 40 to 100 psi.

Water Connections

1. Connect one end of the supplied ¼-inch water hose to the water outlet fitting located on the back of the HandiMet 2.
 - Measure and cut the appropriate length of hose to install the recommended Buehler Water Filtration Kit (60-9091).
2. Measure and cut the appropriate length of hose to extend to an external water source.
3. Connect the other end of the water hose to an external water source equipped with a separate shut-off valve.

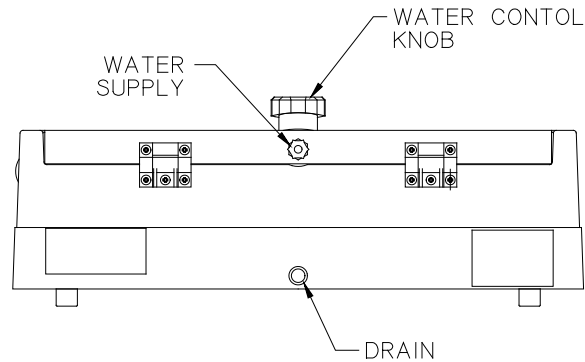


Figure 1 HandiMet 2 Drain and Water Connections

NOTICE

The main water supply must be shut off at night or when the machine is left unattended.

Drain Connections

1. Place the HandiMet 2 on a level surface for proper drainage.
2. Connect one end of the supplied drain hose to the drain outlet fitting located on the back of the HandiMet 2.
3. Extend the remaining length of the drain hose to a drain, sink, recirculating system, or other available catch container.

NOTICE

Place the drain hose at an incline to allow for proper drainage and to prevent the buildup of debris residue in the hose.

Loading CarbiMet™ Abrasive Paper Rolls

Install each of the four different grit size abrasive paper rolls in the appropriate position as indicated on the HandiMet 2 cover panel.

1. Turn off the water flow.
2. Raise the cover panel.
3. Remove the protective cover from the paper roll.
4. Thread the end of the paper roll over ROLLER #1 and under ROLLER #2 WITH SPRING (see Figure 3).
5. Slide the paper forward to the PVC PLATEN.
6. Insert the paper between the PVC PLATEN and the PAPER EDGE GUIDE.

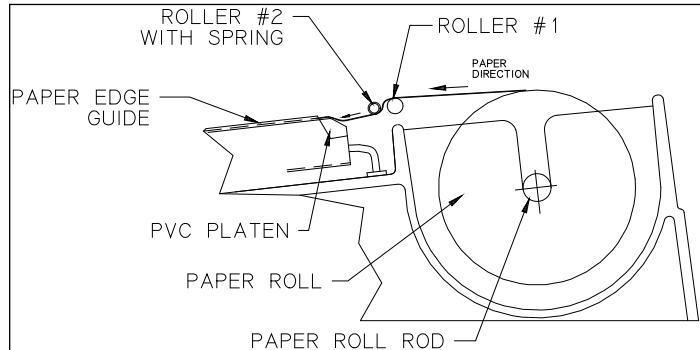


Figure 3 Abrasive Paper Installation Diagram

Advancing the Abrasive Paper

1. Turn off the water flow.
2. Using the palm of the hand, push the paper through the trim strip at the front end of the HandiMet 2.
3. Remove the worn paper.
4. Turn on the water flow. The paper will automatically be clamped in place.

Operation

The HandiMet 2 grinder is designed to perform manual grinding in a series of abrasive papers, 240, 320, 400, and 600 grit.

For best results, do not use heavily worn papers. Worn papers do not grind effectively and their use can result in poorly prepared surfaces.

Water Control

The water flow is controlled by the Water Control Knob located on the HandiMet 2 top panel. Adjust the Water Control Knob to provide a steady but gentle stream of water.

The proper water flow allows the abrasive paper to grind freely and effectively while flushing the waste products away.

Too little water flow will produce an excess of build-up of sample debris on the abrasive paper and reduce the paper's grinding abilities.

Too much or excessive water flow will cause the sample to hydroplane on the abrasive surface and will result in poor and ineffective grinding.

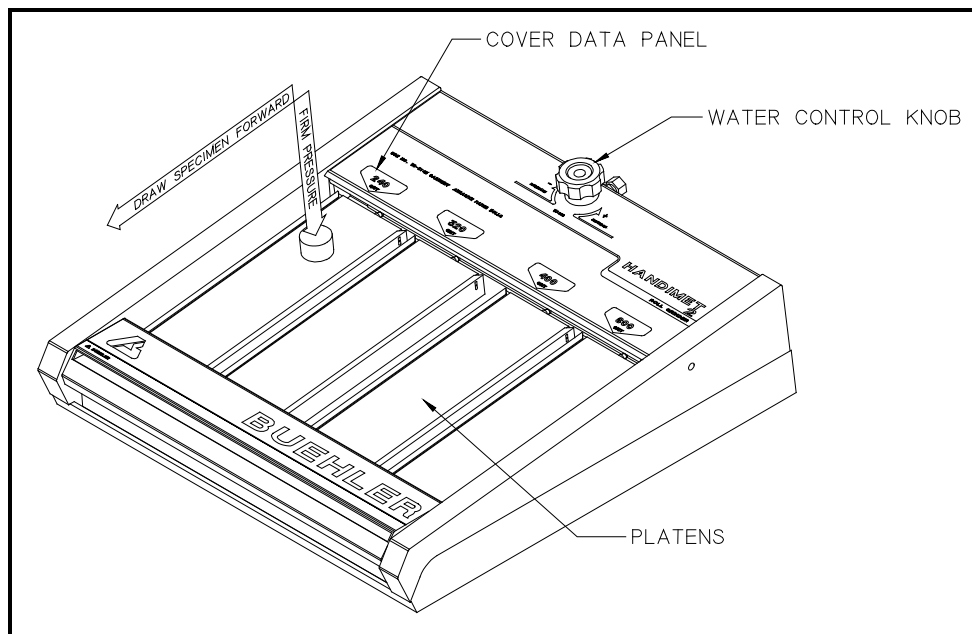


Figure 4 HandiMet 2 Operation Diagram

HandiMet 2 Grinding Techniques

Grinding techniques vary with the individual operator. For proper grinding and for best sample surface results, follow these suggestions.

- Grasp the sample firmly in the fingertips.
- Apply a uniform but firm pressure to the sample against the abrasive surface.
- Draw the sample over the abrasive surface from the back to the front in a straight, even motion. A back and forth motion usually leads to an undesirable curved surface.
- Make as many strokes as required to remove all visible scratches. Continue with several additional strokes until the previous scratches have been removed.
- Proceed from the coarsest grit (240) to the finest grit (600) for fine grinding.
- Rotate the specimen 90 degrees between each step so the grinding is perpendicular to the previous scratches. This will provide a clear indication of how the grinding is progressing.
- Rinse the sample between each step to remove the abrasive particles. Ultrasonically clean the sample thoroughly after the last grinding step (600 grit).
- Change the abrasive paper when the paper becomes worn or when changing to a different material, i.e. steel to aluminum.



Figure 5 HandiMet 2 Grinding

Maintenance

The HandiMet 2 will continue to perform at optimum levels with proper care, daily cleaning, and general maintenance.

- Wipe exposed surfaces with a clean damp cloth after each use or at the end of the day. This will reduce the possibility of coarse abrasive grit particles from contaminating the finer grit papers.

HandiMet™ 2 Accessories

Accessories

Description	Catalog Number
240 grit CARBIMET™ Abrasive Paper Roll 1 roll per package, 3 $\frac{7}{16}$ " x 75' (8.8 cm x 23 m)	30-5143-240-001
320 grit CARBIMET™ Abrasive Paper Roll 1 roll per package, 3 $\frac{7}{16}$ " x 75' (8.8 cm x 23 m)	30-5143-320-001
400 grit CARBIMET™ Abrasive Paper Roll 1 roll per package, 3 $\frac{7}{16}$ " x 75' (8.8 cm x 23 m)	30-5143-400-001
600 grit CARBIMET™ Abrasive Paper Roll 1 roll per package, 3 $\frac{7}{16}$ " x 75' (8.8 cm x 23 m)	30-5143-600-001
Buehler Water Filtration Kit	60-9091

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.

HandiMet™ 2 Assembly Drawings

Note: Drawings and parts list subject to change without notice.

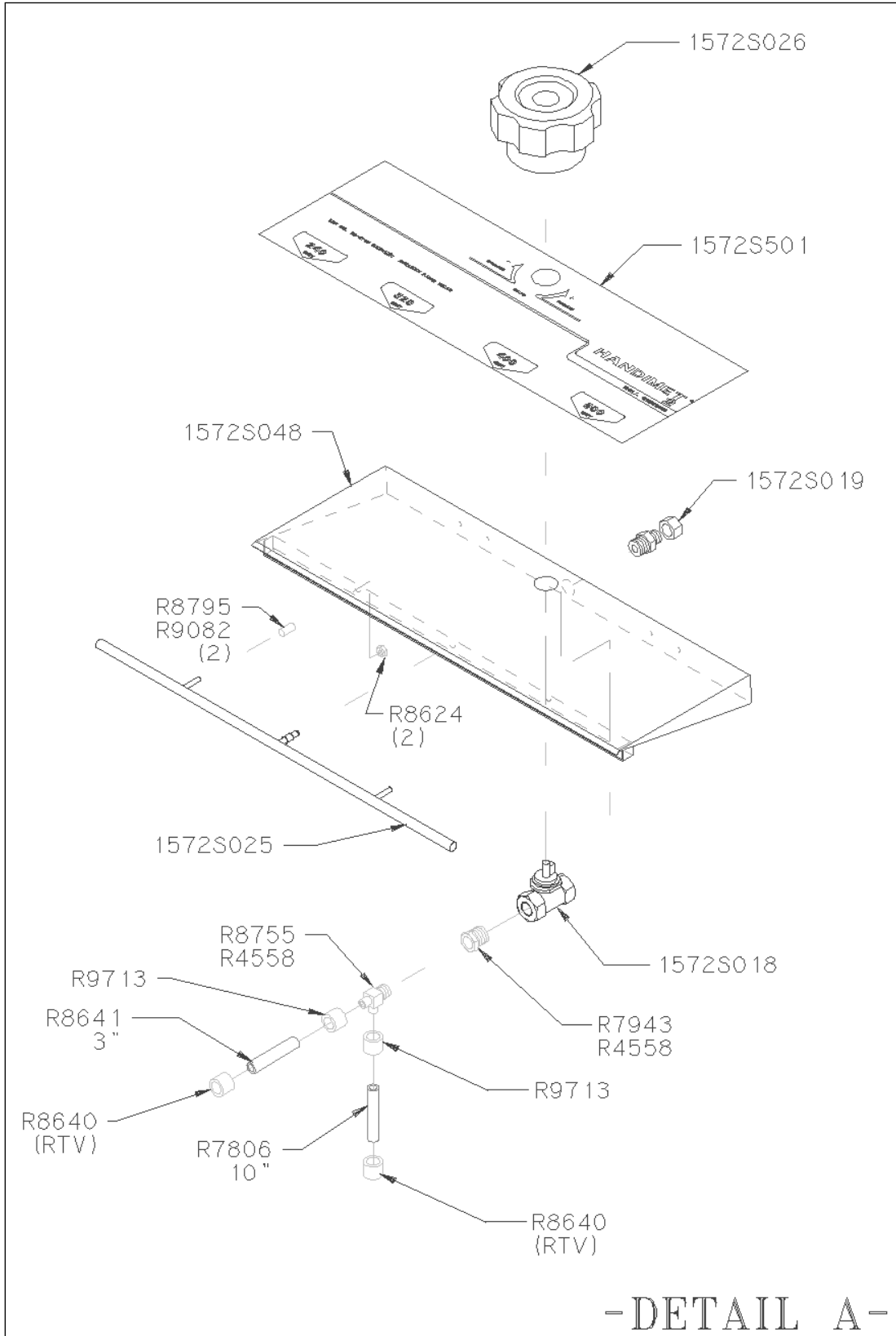


Figure 6 HandiMet 2 Assembly Diagram, Detail A (391572A)

HandiMet™ 2 Assembly Drawings

Note: Drawings and parts list subject to change without notice.

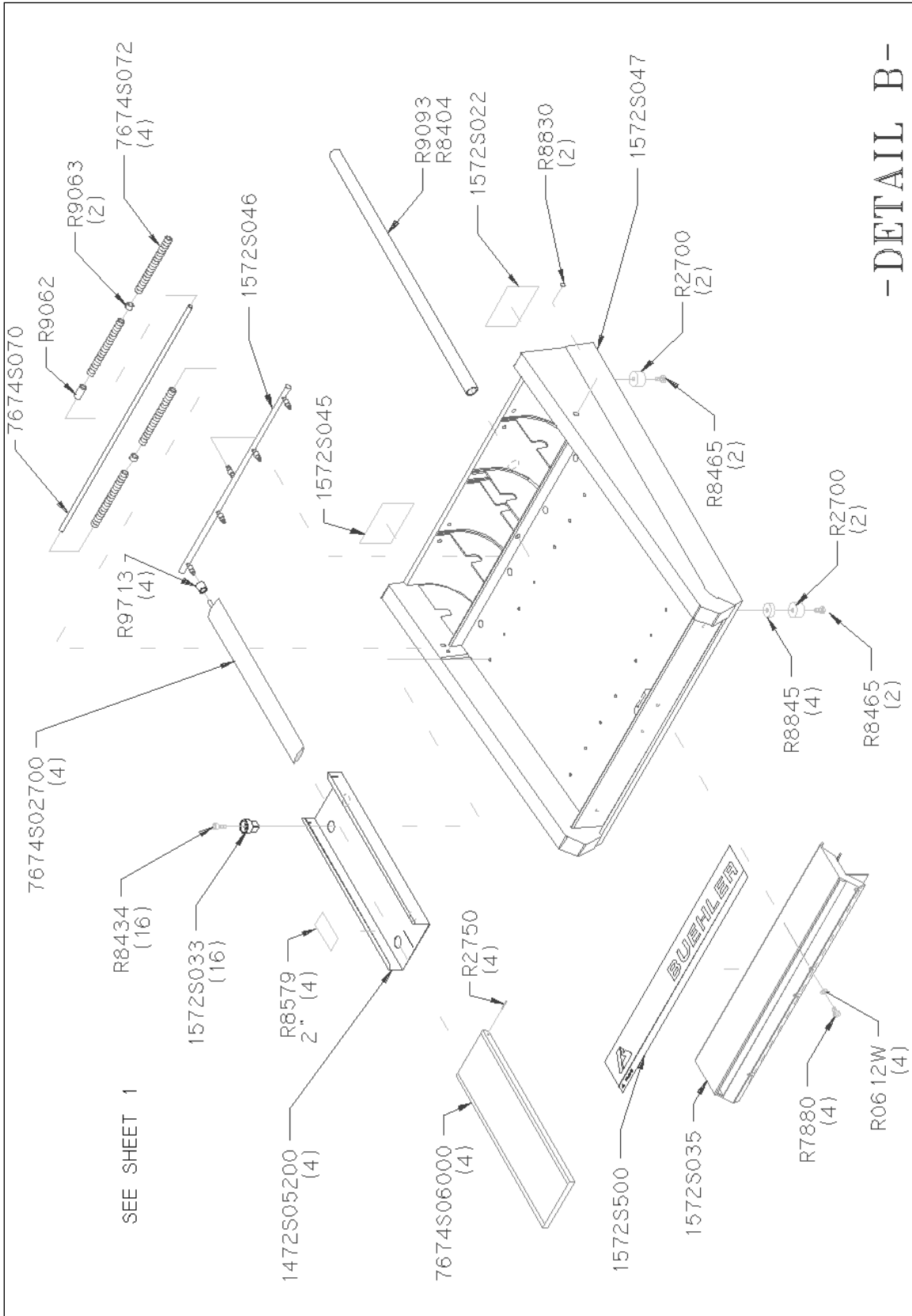


Figure 7 HandiMet 2 Assembly Diagram, Detail B (391572B)

HandiMet™ 2 Assembly Drawings

Note: Drawings and parts list subject to change without notice.

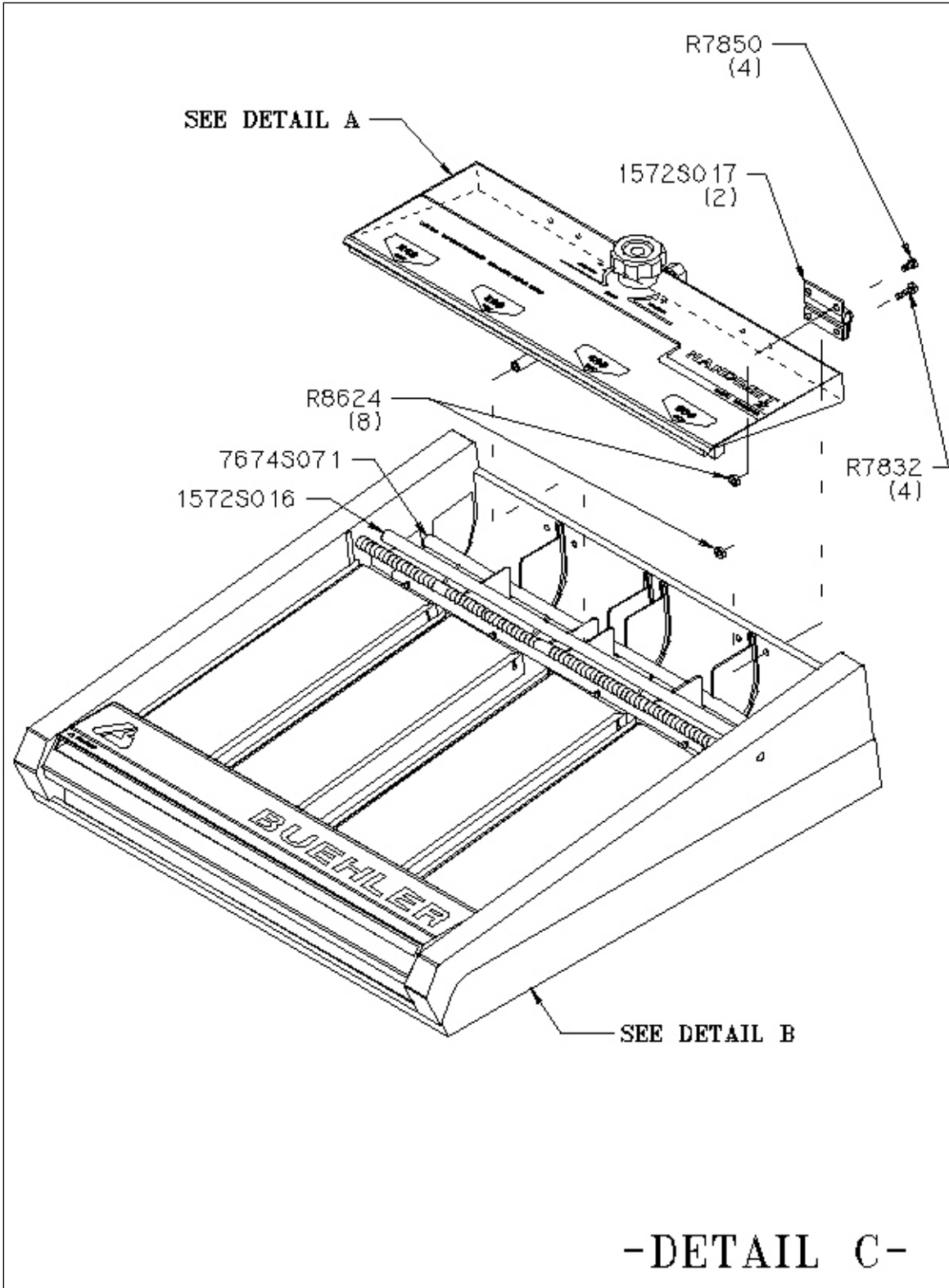


Figure 8 HandiMet 2 Assembly Diagram, Detail C (391572C)

HandiMet™ 2 Assembly Drawings

Note: Drawings and parts list subject to change without notice.

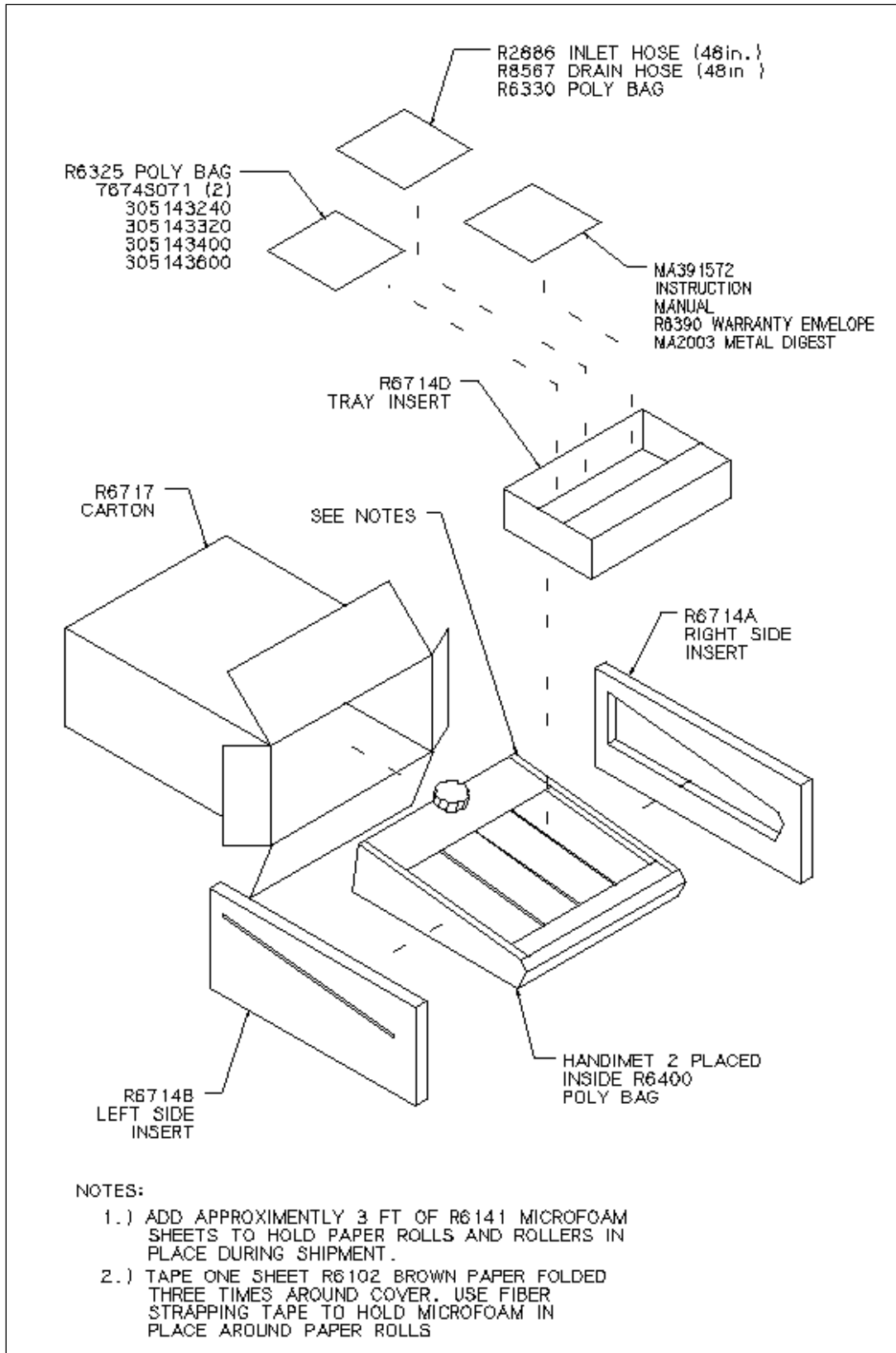


Figure 9 HandiMet 2 Packaging Diagram (391572D)

Parts List

Part No.	Description	Qty.	U/M
Note: Drawings and parts list subject to change without notice.			
R0612W	Washer, Flat #10 Stainless Steel	4	EA
R2700	Bumper, Rubber, 3/4 Diameter x 9/16" black	4	EA
R2750	Dowel Pin, 1/16 x 1/4"	4	EA
R2826	Elbow, 90 Deg, 1/4 x 1/4" Tube	1	EA
R2886	Nylon Tube 1/4 OD	48	IN
R4558	Anaerobic Adhesive-Pipe Seal	A/R	EA
R6325	Poly Bag 8 x 10-4 MIL	1	EA
R6330	Poly Bag 12 x 12-2 MIL	1	EA
R6390	Envelope, Warranty-9 x 14 x 4 MIL	1	EA
R6400	Bag, Poly Trash	1	EA
R6714D	Insert, Tray	1	EA
R6717	Carton-Book fold 8 Inch Wheel	1	EA
R6714A	Insert-Right Side 40 x 24	1	EA
R6714B	Insert Left Side 40 x 24	1	EA
R7739	Tubing, 1/8" O.D.	.20	FT
R7850	Screw, 8-32X3/8" Phillip Pan Head Stainless Steel	8	EA
R7880	Screw, 10-24 x 3/8" Cross Pan Head	4	EA
R7832	Screw, 8-32 x 5/8" Cross Pan Head	8	EA
R7943	Reducing Bushing, 1/4" NPT, 1/8" NPT	1	EA
R8434	Screw, 10-24 x 1/2" Socket Head	16	EA
R8465	Screw, 10-16 X 1" Hex Stainless Steel	4	EA
R8567	Tubing 1/2 Clear PVC	48	IN
R8579	Tape PCB Track Mounting	4	EA
R8624	Nut, 8-32	10	EA
R8640	Clamp, Tube Sleeve	2	EA
R8641	Tube, Polyurethane 1/8" ID x 1/4" OD	14	EA
R8755	Tee, Male Run 1/8"	1	EA
R8795	Spacer, 8-32 x 1/2" long x .25" OD, Nylon	2	EA
R8830	Plug	2	EA
R8845	Washer, black .25 thick	4	EA
R9062	Spacer, 0.17" ID x 0.38" OD x 0.75" long	1	EA
R9082	Sealant, Silicone RTV (Elec)	A/R	OZ
R9093	Tube, .62 OD x .028 WL x 18.25 Long CU	1	EA
R9063	Spacer, 0.17" ID x 0.38" OD x 0.25" long	1	EA
R9713	Clamp, 1/4" snap hose	6	EA
1472S05200	Paper Clamp	4	EA
1572S047	Housing	1	EA
1572S016	Bar, Roller	1	EA
1572S017	Hinge	2	EA
1572S018	Valve, Water, 1/4" NPT	1	EA
1572S019	Fitting, 1/4" x 1/4" tube white	1	EA
1572S020	Tube, PVC, 1/2" Drain	1	EA
1572S022	Specification Plate	1	EA

Parts List

Part No.	Description	Qty.	U/M
Note: Drawings and parts list subject to change without notice.			
1572S025	Tube, Water	1	EA
1572S026	Knob, Water Valve	1	EA
1572S027	Nut, Connector 1/4" Tube White	1	EA
1572S033	Post, Platen Support	16	EA
1572S035	Cover, Front	1	EA
1572S048	Cover, Rear	1	EA
1572S045	Plate, Patent, HandiMet® 2	1	EA
1572S046	Tube, Water Distribution	1	EA
1572S501	Nameplate, Upper	1	EA
1572S500	Nameplate, Lower	1	EA
305143240000	CARBIMET® Roll, 240 grit	1	EA
305143320000	CARBIMET® Roll, 320 grit	1	EA
305143400000	CARBIMET® Roll, 400 grit	1	EA
305143600000	CARBIMET® Roll, 600 grit	1	EA
674S072	Compression Spring, 0.17" ID x 0.22" OD x 4.0" FL	4	EA
7674S06000	Platen, PVC	4	EA
7674S02700	Expander	4	EA
7674S070	Rod, Roller, 0.156" Diameter x 17.25" long	1	EA
7674S071	Rod, Paper Support	2	EA
7674S072	Compression Spring, 17 ID x .22 OD x 4.0FL	4	EA
7674S073	Holder, Paper Roll	4	EA

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Notes
