

operating and maintenance instructions



ECOMET® IV GRINDER/POLISHER

© 1987 BUEHLER LTD.

MA49-1675



BUEHLER

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Tel: 312/295-6500 • Telex: 210019 • FAX: 312/295-7979

WARRANTY

This unit is guaranteed against defective material and workmanship for a period of two (2) years from date of receipt by customer. Warranty is void if inspection shows evidence of abuse, misuse or unauthorized repair. Warranty covers only replacement of defective materials.

If, for any reason, this unit must be returned to our plant for warranty service, please apply for prior authorization with shipping instructions, and include the following information: Customer Purchase Order Number; Buehler Ltd. Invoice Number and Date; Serial Number; and reason for return.

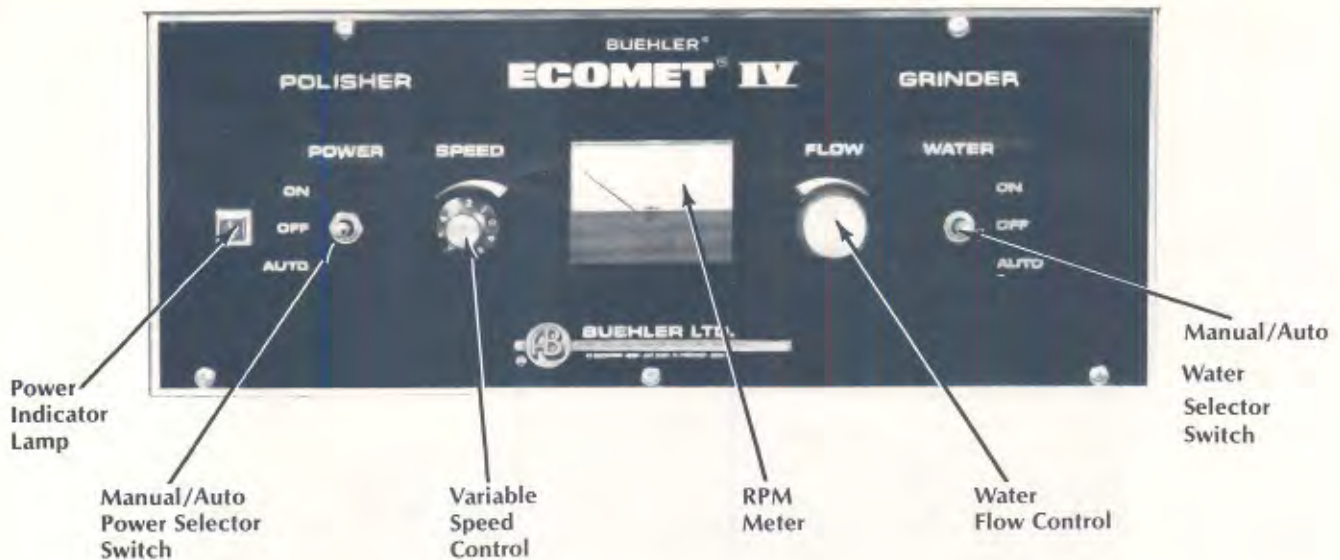


Figure 2. ECOMET® IV GRINDER/POLISHER CONTROLS

Drain connection is made by attaching one end of a 1" ID plastic or rubber hose to the Drain Outlet Fitting located on the Rear Panel of the ECOMET® IV. The remaining free end should extend to a nearby sink or other available drain or catch container.

OPERATION:

To operate ECOMET® IV as a manual Grinder/Polisher, or Lapping Machine, turn the Power and Water Control Switches to the ON position (see Figure 2). In this position, the machine is operated in the untimed (manual) mode with the full range of speed control. Water flow is fully controlled by adjusting the Water Flow Knob.

The ECOMET® IV Grinder/Polisher may be used to prepare metallographic, petrographic, and ceramographic samples. Detailed information on metallographic sample preparation including specific data on abrasives, wheel coverings and lubricants for various metals and alloys may be found in the METAL DIGEST®, Volume 20, Nos. 2 and 3. Information on the preparation of petrographic and ceramographic samples for both reflected and transmitted light examination is available in METAL DIGEST®, Volume 22, No. 3. Supplies for the ECOMET® IV Grinder/Polisher are listed on Pages 5-7. A complete list of supplies for sample preparation is available in the BUEHLER ANALYST®, Section 7.

ECOMET® IV may also be used to perform free lapping, a surface preparation technique which is capable of producing exceptionally flat surfaces. As shown in Figure 3, samples are placed within a conditioning

ring which rotates freely on a metal platen charged with an abrasive slurry or on a cloth charged with abrasive compound, and is contained within a retaining arm assembly. Pressure is applied by means of a dead weight via a resilient material which acts to distribute the weight uniformly. Either mounted or unmounted samples may be prepared.

To perform free lapping, a No. 49-1681 Lapping Accessory shown on page 9 must be installed to the ECOMET® IV Grinder/Polisher.

OPERATION—TIPS FOR SMOOTH OPERATION

1. Platen installation is achieved with four lugs on the bottom of the platen which lock into the Drive Plate slots. A mechanical groove in the Drive Plate acts as a guide to locate the holes. Simply rotate the Platen in either direction until the four lugs engage, then rotate platen clockwise while holding the Mounting Wheel fixed.
2. Splash protection is provided by a two-position Splash Ring which fits against the inside surface of the Polishing Bowl. To obtain maximum protection, lift the Splash Ring upward and turn to the detent position. The Ring should remain in the high position. To lower, reverse this procedure. The Splash Ring may also be removed for maximum access to the Polishing Bowl.
3. Sample Preparation Procedures selected will depend on the material to be prepared. Refer to METAL DIGEST®, Volume 20, Nos. 2 and 3.

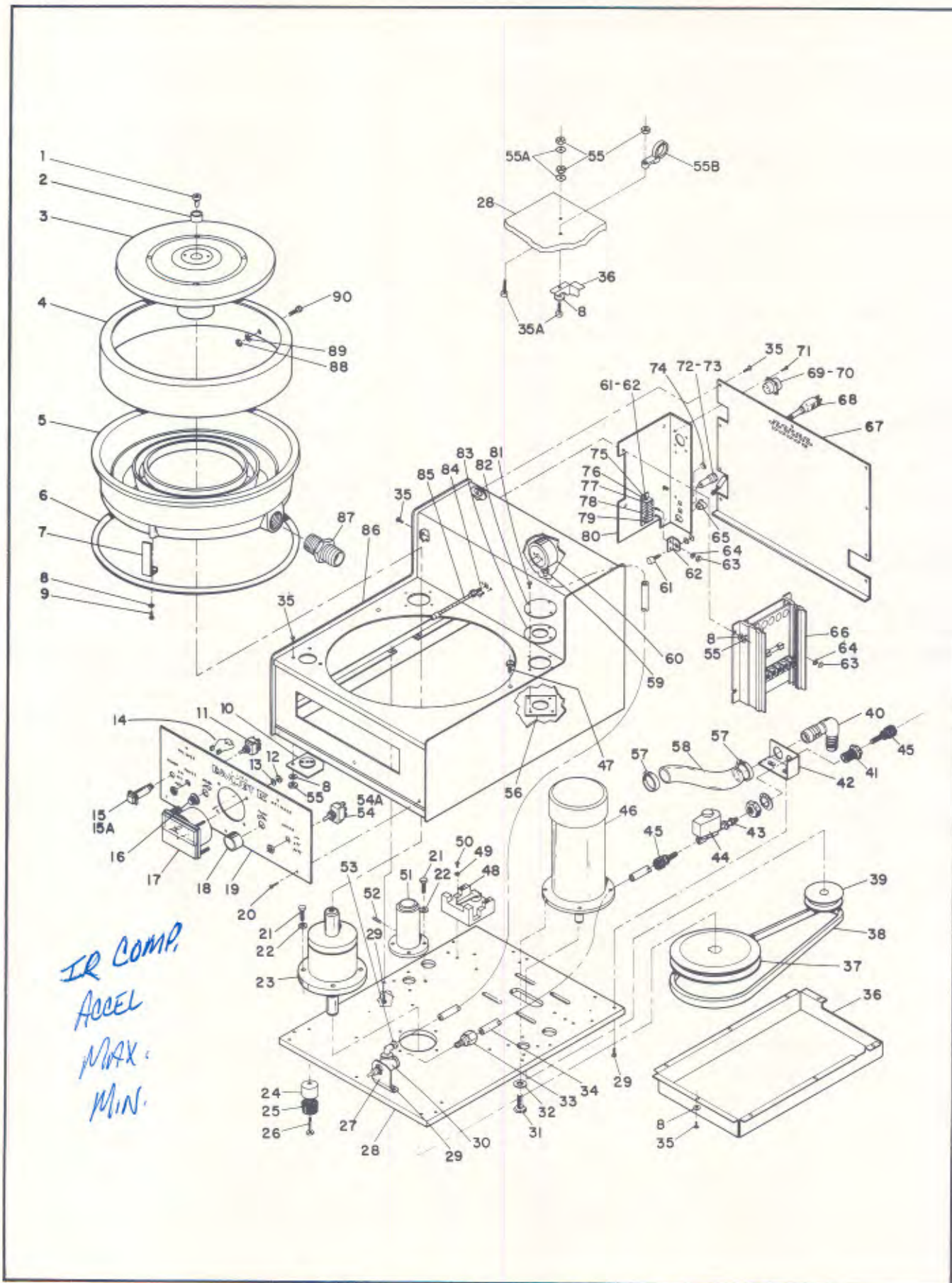


Figure 5. ECOMET® IV ASSEMBLY DETAIL

ECOMET® IV GRINDER/POLISHER PARTS LIST

(Details of design are subject to change without notice.)

REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION	REF. NO.	PART NO.	NO. REQ'D.	DESCRIPTION
1	R-0984	1	Screw, 1/4-20×5/8" Skt Hd SS	48	1330-S22A	1	Relay 115V
2	1670-S027	1	Pilot Bushing—Mtg Wheel		1330-S22B	1	Relay 220V
3	1670-S012	1	Mounting Wheel	49	R-7485	2	Washer, #10 Nylon
4	1670-S056	1	Splash Guard	50	R-7844	2	Screw, 8-32×3/4" Cr Pan Hd SS
5	1670-S034	1	Bowl, Plastic 12"	51	1670-S021	2	Powerhead Post Socket
6	1670-S058	1	Bowl Gasket	52	R-7895	2	Set Screw, 1/4-20×1/2"
7	1670-S040	4	Bowl Clamp	53	R-4510	1	Male Elbow, 1/4 Tube-1/8" NPT
8	R-0611W	15	Washer #10 SS	54	R-7889	1	Switch, IP DT Toggle
9	R-7894	4	Screw, 10×3/4" Hex W Hd HI-LO	54A	R-0564	2	Boot, Switch Handle
10	1670-S041	1	Post Plate Assy	55	R-0612	7	Nut, 10-32 Hex SS
11	R-7890	1	Switch 3PDT Toggle	55A	R-0612LWE	2	Lock Washer #10 External
12	R-0603	8	Nut, 4-40 Hex SS	55B	R-7747	2	Tie Strap
13	R-0603W	8	Washer, #4 SS	56	1670-S028	2	Post Hole Nut Collar
14	1670-S069	1	Lamp Resistor Assy	57	R-2744	2	Hose Clamp, H-16 SS
15	1723-S9	1	Pilot Light, Red 115V	58	R-2892	9.5"	PVC Clear Tubing
	1507-S38	1	Pilot Light, Red 220V	59	R-7726	1	Male Connector, Barb 1/8" NPT
15A	1180-S136	1	Anchor Nut	60	1670-S048	1	90° Bulkhead Fitting
16	R-7028	1	Knob	61	R-7893	1	Potentiometer
17	1670-S011	1	Tachometer, 800 RPM	62	1670-S054	1	Trimpot Bracket
18	1330-S71	1	Knob	63	R-0605	5	Nut, #6 Hex SS
19	1670-S101	1	Nameplate	64	R-7072	5	Lock Washer
20	3000-S067	5	Screw, 8-32×3/8" Cr Pan Hd SS	65	R-4536	1	Cord Bushing 115V
21	R-2275	12	Screw, 5/16-18×1" Hex Hd		R-4535	1	Cord Bushing 220V
22	R-0617LW	3	Lock Washer, 5/16"	66	1670-S006	1	3/4 HP Control 115V
23	1670-S037	1	Spindle Assy		1670-S007	1	3/4 HP Control 220V
24	1670-S031	4	Foot Spacer	67	1670-S015	1	Rear Panel
25	R-7886	4	Rubber Bumper	68	R-0497A	1	Cord and Plug 14-3 SJO 115V
26	R-2261	4	Screw, 1/4-20×2-1/2" Hex Hd		R-0496B	72"	Cable, 3 Wire European 220V
27	1670-S035	1	Water Valve Bracket	69	R-7289	1	Connector Body
28	1670-S002	1	Baseplate	70	R-7509	1	Connector Insert—5 pin
29	R-7565	16	Screw, 10-32×5/8" Cr Pan Hd SS	71	R-1603	4	Screw, 4-40×1/4" Slit Rd Hd SS
30	1600-S044	1	Valve	72	1305-S17	1 or 2	Fuse Post
31	R-2296	4	Screw, 3/8×1-1/4" Hex Hd SS	73	R-7927	1	Fuse, 10A 250V-115V
32	R-0620W	4	Washer, 3/8"		R-7764	2	Fuse, 5A 250V-220V
33	R-4512	1	Connector, 1/4" tube—14" NPT	74	R-2789	1	Snap Cap, 1/2" 115V
34	R-2886	42"	Nylon Tube, 1/4" OD	75	1670-S055	1	Channel—T Strip
35	R-7519	25	Screw, 10-32×3/8" Cr Pan Hd SS	76	4000-S334	2	End Clamp
35A	R-7937	3	Screw, 10-32×3/4" Cr Pan Hd SS	77	4000-S333	2	Barrier End
36	1670-S051	1	Belt Guard	78	4000-S332	7	Terminal
37	1670-S009	1	Pulley, 8.00"×5/8"	79	R-7891	1	Resistor, 110K 115V
38	1670-S010	1	V-Belt		R-7892	1	Resistor, 220K 220V
39	1110-S056	1	Pulley, 2.80"×5/8"	80	1670-S016	1	Electrical Panel
40	R-7887	1	Elbow, 1"×90°	81	R-2106	8	Screw, 6-32×5/8" Slit Rd Hd SS
41	R-7742	1	Anchor Connector, 1/4" NPT	82	1670-S030	2	Post Hole Cover
42	1670-S017	1	Rear Water Bracket	83	1670-S029	2	Gasket—Post Hole
43	R-7888	1	Nipple, 1/4" NPT, Close brass	84	R-7847	2	Screw, 6-32×5/16" Cr Tr Hd SS
44	1670-S019	1	Water Valve—Solenoid 115V	85	1670-S039	1	Water Nozzle
	1670-S020	1	Water Valve—Solenoid 220V	86	1670-S003	1	Cabinet
45	R-4562	2	Connector, 1/4" Tube×1/8" NPT	87	R-2891	1	Male Insert Adapter
46	1670-S004	1	Motor, 3/4 HP 90 VDC 115V	88	R-0609	4	Nut, 8-32 Hex SS
	1670-S005	1	Motor, 3/4 HP 180 VDC 220V	89	R-0609LWE	4	Lock Washer, #8 External Tooth
47	R-7758	2	Screw, 1/4-20×3/8" Cr Pan Hd SS	90	R-7853	4	Screw, 8-32×1/4" Skt Hd SS

SUPPLIES FOR ECOMET® IV AND OTHER BUEHLER GRINDER/POLISHERS

CARBIMET® DISCS 12" (30.5cm) Dia. With PSA Back	Grit
15-5112-060-100	60
15-5112-120-100	120
15-5112-180-100	180
30-5112-240-100	240
30-5112-320-100	320
30-5112-400-100	400
30-5112-600-100	600

(packaged 100 Discs per Box)

ZIRMET® DISCS 12" (30.5cm) Dia. With PSA Back	Grit
15-5132-060-025	60
15-5132-120-025	120
15-5132-180-025	180
15-5132-220-025	220

(Packaged 100 Discs per Box)

SUPPLIES (CONTINUED)

POLISHING MATERIALS	POWDERS				LIQUIDS
	TYPE	NAME	8 oz. (0.23 Kg)	1 lb. (0.45 Kg)	5 lb. (2.3 Kg)
Aluminum Oxide (Al ₂ O ₃)	MICROPOLISH® B 0.05 micron Gamma	40-6301-008	40-6301-016	40-6301-080	
	MICROPOLISH® A 0.3 micron Alpha	40-6305-008	40-6305-016	40-6305-080	
	MICROPOLISH® C 1.0 micron Alpha	40-6310-008	40-6310-016	40-6310-080	
	Levigated Alumina		40-6435-016	40-6435-080	
	Alpha MICROPOLISH® Alumina No. 1 5.0 micron				40-6351-006
	Alpha MICROPOLISH® Alumina No. 1C 1.0 micron				40-6354-006
	Alpha MICROPOLISH® Alumina No. 2A 0.3 micron				40-6352-006
	Gamma MICROPOLISH® Alumina No. 3B 0.05 micron				40-6353-006
New Deagglomerated Aluminum Oxide (Al ₂ O ₃)	MICROPOLISH® II 1.0 micron	40-6321-008	40-6321-016	40-6321-080	
	MICROPOLISH® II 0.3 micron	40-6323-008	40-6323-016	40-6323-080	
	MICROPOLISH® II 0.05 micron	40-6325-008	40-6325-016	40-6325-080	
	MICROPOLISH® II 1.0 micron				40-6361-006
	MICROPOLISH® II 0.3 micron				40-6363-006
	MICROPOLISH® II 0.05 micron				40-6365-006
Cerium Oxide (CeO)	MIROMET® 1.0 micron				40-6355-006
Chromic Oxide (Cr ₂ O ₃)	Chrome Oxide 1-5 micron		40-6480-016	40-6480-080	
	METPOLISH® No. 1 1.0 micron				40-6481-006
	METPOLISH® No. 2 0.5 micron				40-6482-006
Magnesium Oxide (MgO)	MAGOMET®		40-6440-016		
Iron Oxide (Fe ₂ O ₃)	Jewelers Rouge 3.0 micron		40-6445-016	40-6445-080	
Colloidal Silica (SiO ₂)	MASTERMET®	Liquid, 0.5 Gal (1.9l)			40-6370-064

EXTENDERS FOR METADI®

Cat. No.	Description	Cat. No.	Description
40-6004	METADI® Fluid 4 oz. (0.12l) with appl.	40-8142-032	Polishing Oil 32 oz. (0.95l)
40-6014	METADI® Fluid 4 oz. (0.12l) Refill	40-8142-128	Polishing Oil 1 gal. (3.8l)
40-6016	METADI® Fluid 16 oz. (0.47l) Refill	60-3250-006	AUTOMET® Lapping Oil 6 oz. (0.18l)
40-6032	METADI® Fluid 32 oz. (0.95l) Refill	60-3250-128	AUTOMET® Lapping Oil 1 gal. (3.8l)
40-3200	Atomizer Applicator for METADI® Fluid	60-3255	Applicator Bottle 8 oz. (0.24l)

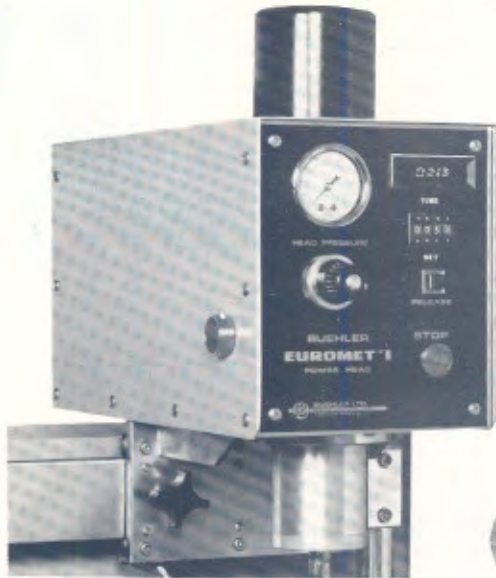
SUPPLIES (CONTINUED)

POLISHING CLOTHS					
CLOTHS	6" (15.2cm) WHEEL	8" (20.3cm) WHEEL	8" x 2½" (20.3cm x 6.4cm) AUTOMET®	10" (25.4cm) WHEEL	12" (30.5cm) WHEEL
SELVYT	40-7006	40-7008		40-7010	40-7012
NYLON Plain Back	40-7056	40-7058		40-7060	40-7062
Water Resistant Adhesive Back		40-7068	40-7078		40-7072
METCLOTH®	40-7156	40-7158		40-7160	40-7162
MICROCLOTH® Plain Back	40-7206	40-7208	40-7238	40-7240	40-7242
Oil/Water Resistant Adhesive Back	40-7216	40-7218	40-7228	40-7220	40-7222
BILLIARD CLOTH	40-7306	40-7308		40-7310	40-7312
RED FELT	40-7356	40-7358		40-7360	40-7362
SELECTED SILK	40-7406	40-7408		40-7410	40-7412
RAYVEL®	40-7476	40-7478		40-7480	40-7482
CANVAS	40-7506	40-7508		40-7510	40-7512
TEXMET® Oil/Water Resistant Adhesive Back	40-7616	40-7618	40-7628	40-7620	40-7622
Perforated/ Chemically Activated Adhesive Back	40-7636	40-7638	40-7648	40-7640	40-7642
MASTERTEX® Oil/Water Resistant Adhesive Back		40-7738	40-7748		40-7742
CHEMOMET® I Plain Back		40-7908			40-7912
Oil/Water Resistant Adhesive Back		40-7918	40-7928		40-7922

All Buehler Cloths are available in other sizes on special requests.

METADI® DIAMOND COMPOUNDS				METADI® II DIAMOND COMPOUNDS				
PASTE		MICRON	COLOR	AEROSOL SPRAY 5 oz. (142 g)	MICRON	COLOR	PASTE	
5 Grams	20 Grams						5 Grams	20 Grams
40-6112	40-6102	¼ Medium	Gray	40-6260	¼	Gray	40-6241	40-6240
40-6132	40-6122	1 Medium	Blue	40-6264	1	Blue	40-6244	40-6243
40-6138	40-6128	1 Heavy	Blue					
40-6152	40-6142	3 Heavy	Green	40-6268	3	Green	40-6247	40-6246
40-6172	40-6162	6 Medium	Yellow	40-6272	6	Yellow	40-6250	40-6249
40-6192	40-6182	9 Heavy	Deep Red	40-6276	9	Deep Red	40-6253	40-6252
40-6212	40-6202	15 Heavy	Brown	40-6280	15	Brown	40-6256	40-6255
40-6222		30 Medium	Mahogany	40-6284	30	Mahogany	40-6258	
40-6232		45 Medium	Purple	40-6288	45	Purple	40-6259	

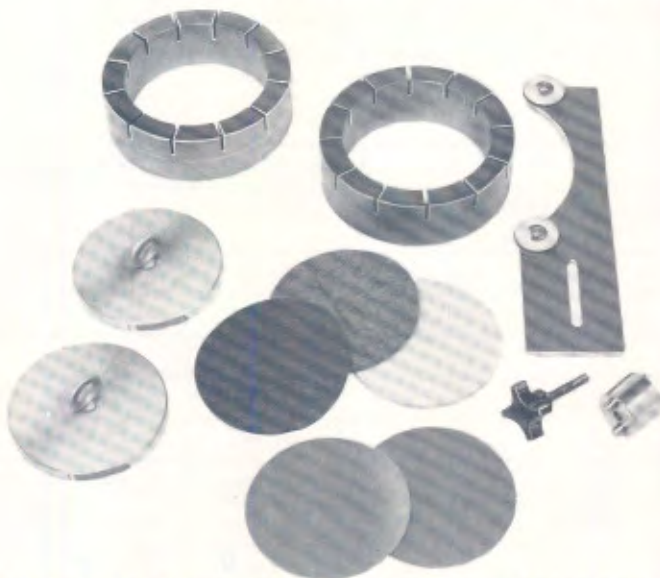
ECOMET® IV ACCESSORIES



60-5000 160/250 EUROMET® I POWER HEAD



49-1680 METADI® DIAMOND POWER LAPPING ACCESSORY



49-1681 ECOMET® IV FREE LAPPING ACCESSORY



**60-5460
EUROMET® I
DRESSING TOOL**