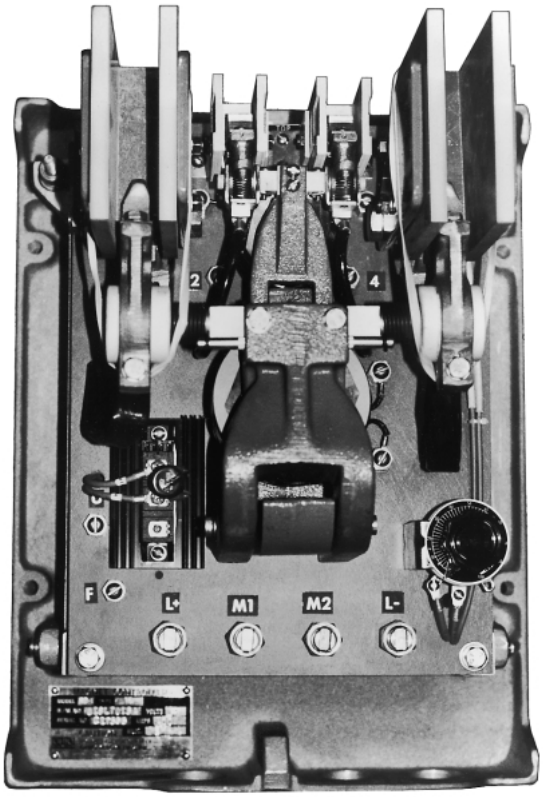
OHIO MODEL RD-1W
AUTO MATIC DROP MAGNET CONTROLLER

INSTALLATION, MAINTENANCE, AND PARTS BULLETIN

OPERATING RANGE 20-100 A (COLD MAGNET CURRENT)



OHIO MAGNETICS, INC. ISO 9001 CERTIFIED STEARNS MAGNETICS

DESCRIPTION

The RD-1W Automatic Controller is a wide range magnet controller used for magnets from 100 A down to 20 A cold current*. A reverse current adjustment provides for a fast, clean drop of the magnet over a complete range of magnetic material with one movement of the master switch or push button. The RD-1W controller uses many parts interchangeable with both higher and lower range controllers for lower inventory costs.

* Cold current means magnet temperature at 25°C throughout.

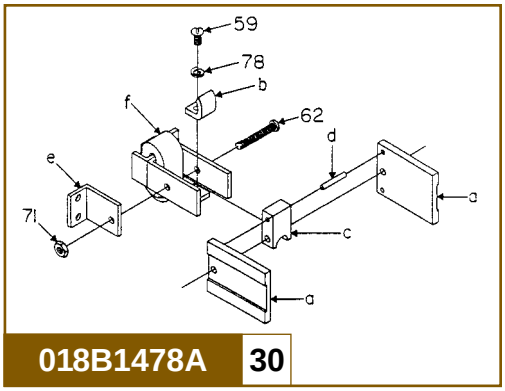
INSTALLATION PROCEDURES

- Mount the controller to a solid surface with the mounting bars provided.
- The controller must be mounted vertically with the “TOP” up to operate properly.
- Mount the controller away from sources of heat and direct exhaust of engines.
- Allow enough room around the controller for air circulation.
- Route electrical wires through bottom of the enclosure and connect securely to the terminals.
- Controller is polarity sensitive. The positive line must be connected to L+ and the negative line to L- to ensure proper operation.
- All electrical circuits must be free from grounds and shorts.
- Remove shipping material from the arc shields before operating the controller.
- Adjust the reverse current control rheostat to provide enough reverse current to cleanly drop the magnet load.

Procedure Start with the dial set at low range. Pick up and drop a load of the material to be handled. If the material does not completely fall off the magnet, increase the adjustment and try another load. If the material drops off and then some jumps back up to the magnet before it can fall free, reduce the adjustment and try another load. When all the material falls cleanly from the magnet, the controller is properly set.

Spec Tech Industrial 203 Vest Ave. Valley Park, MO 63088 Phone: 888 SPECTECH
Email: sales@spectechind.com www.spectechind.com

RD-1W SUBASSEMBLIES



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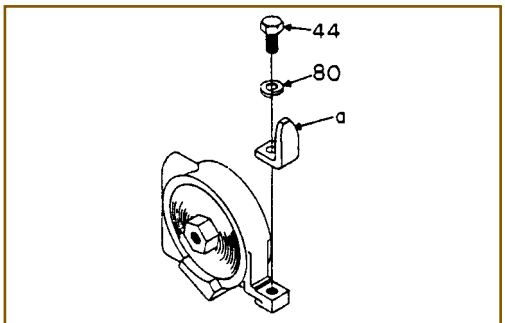

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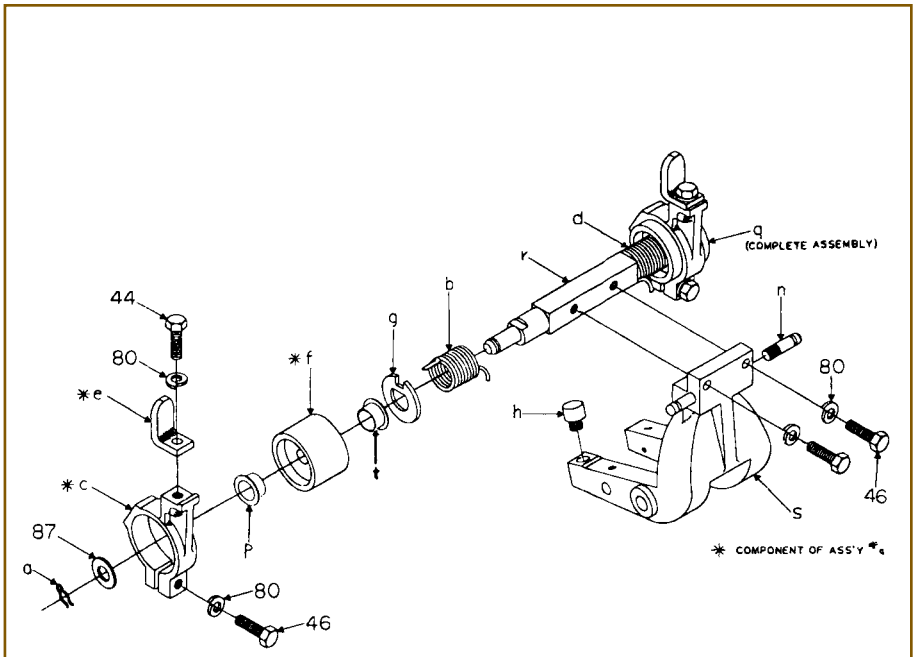

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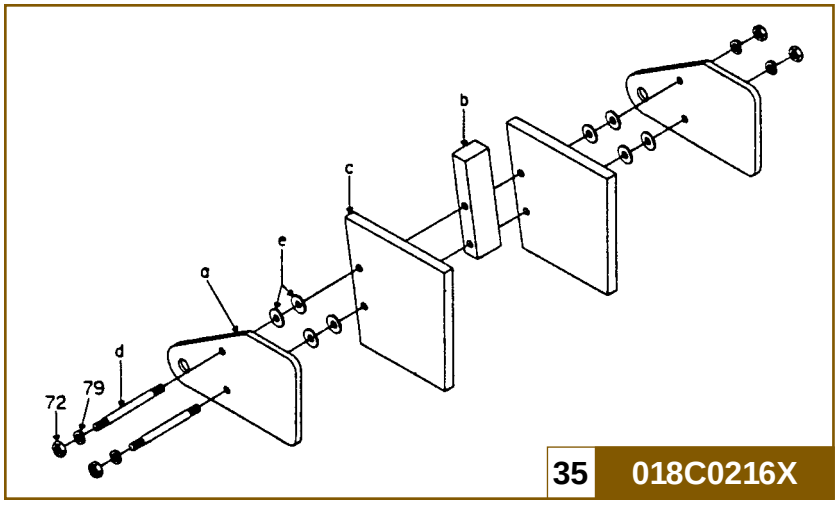

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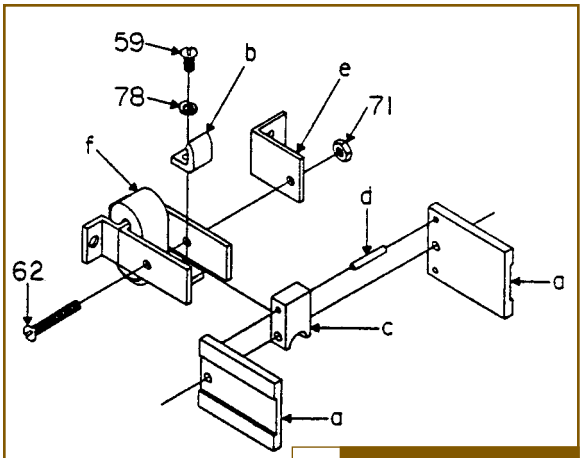

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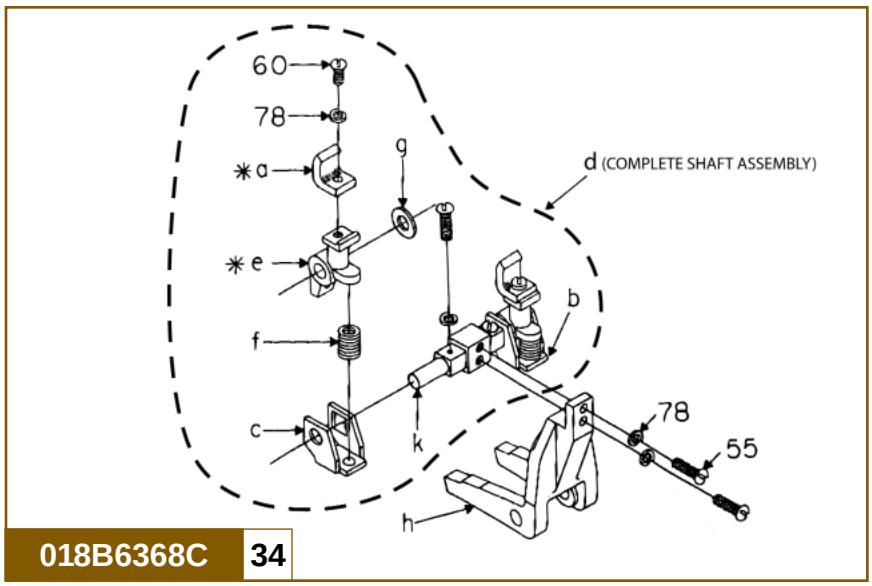

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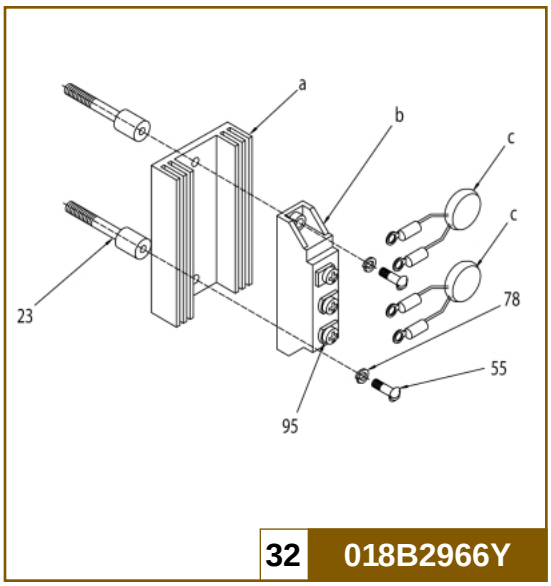

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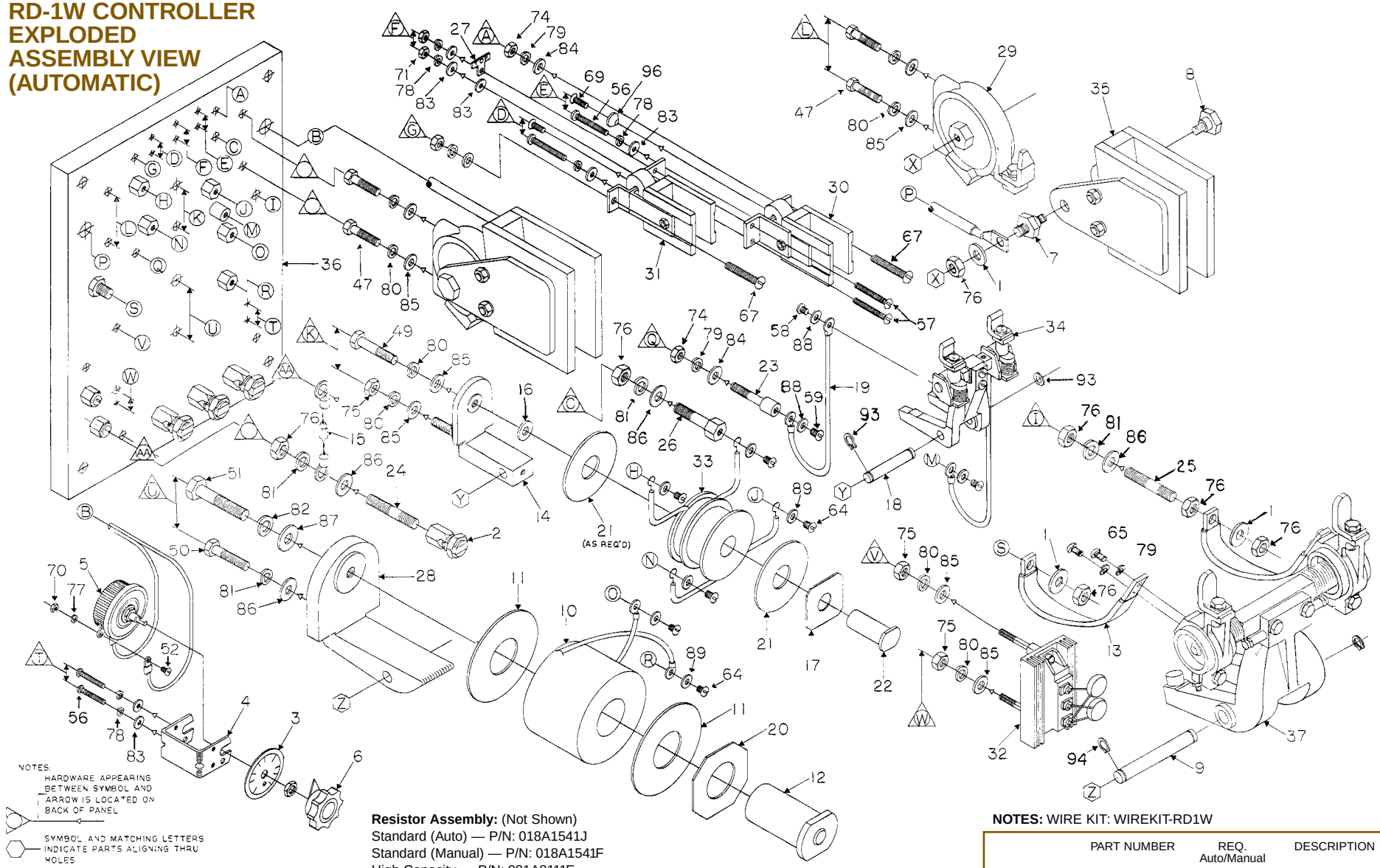
OHIO MODEL RD-1W AUTOMATIC DROP MAGNET CONTROLLER

RD-1W CONTROLLER EXPLODED ASSEMBLY VIEW (AUTOMATIC)



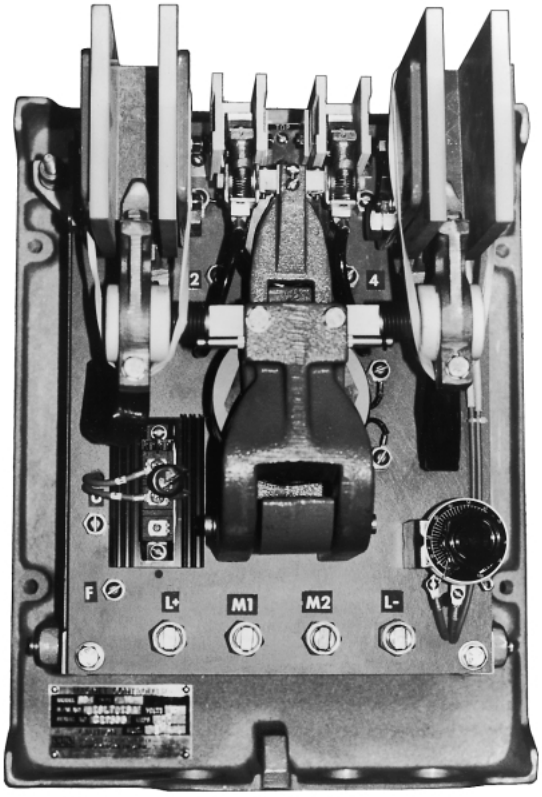
Resistor Assembly: (Not Shown)
Standard (Auto) — P/N: 018A1541J
Standard (Manual) — P/N: 018A1541F
High Capacity — P/N: 081A8111E

NOTES: WIRE KIT: WIREKIT-RD1W

	PART NUMBER	REQ. Auto/Manual	DESCRIPTION
NOT SHOWN	018A1500X	8	WASHER
	018B1554A	2/4	RESISTOR — 8 Ω
	018B1554G	2/0	RESISTOR — 12 Ω

RD-1W HARDWARE SPECIFICATIONS LIST

ITEM	PART NUMBER	QTY.	DESCRIPTION	MAT'L
44	A-900007-02	4	SCR HX HD 5/16-18NC X 3/4"	STEEL
46	A-900007-05	4	SCR HX HD 5/16-18NC X 1-1/4"	STEEL
47	A-900007-06	4	SCR HX HD 5/16-18NC X 1-1/2"	STEEL
49	A-900007-08	1	SCR HX HD 5/16-18NC X 2"	STEEL
50	A-900008-08	1	SCR HX HD 3/8-16NC X 1-3/4"	STEEL
51	A-900010-09	1	SCR HX HD 1/2-13NC X 2-1/2"	STEEL
52	A-900416-05	2	SCR RH SLTD M4 x 0.7 X 10 mm	STEEL
55	A-900023-07	6	SCR RH SLTD #10-32NF X 7/8"	STEEL
56	A-900023-09	4	SCR RH SLTD #10-32NF X 1-1/4"	STEEL
57	A-900023-11	2	SCR RH SLTD #10-32NF X 1-3/4"	STEEL
58	A-900023-13	2	SCR RH SLTD #10-32NF X 5/16"	BRASS
59	A-900023-14	2	SCR RH SLTD #10-32NF X 3/8"	BRASS
60	A-900023-15	2	SCR RH SLTD #10-32NF X 1/2"	BRASS
62	A-900023-25	2	SCR RH SLTD #10-32NF X 1-3/4"	BRASS
64	A-900025-16	8	SCR RH SLTD 1/4-20NC X 3/8"	BRASS
65	A-900025-17	4	SCR RH SLTD 1/4-20NC X 1/2"	BRASS
67	A-900025-22	2	SCR RH SLTD 1/4-20NC X 1-3/4"	BRASS
69	A-900086-03	2	SCR SLTD FLT HD #10-32NF X 3/4"	STEEL
70	A-900106-38	2	NUT HX M4 x 0.8 mm	STEEL
71	A-900106-03	4	NUT HX #10-32NF	STEEL
72	A-900106-05	8	NUT HX 1/4-20NC	STEEL
74	A-900108-11	8	NUT HX JAM 1/4-20NC	BRASS
75	A-900108-12	3	NUT HX JAM 5/16-18NC	BRASS
76	A-900112-07	34	NUT HX JAM 3/8-16NC	BRASS
77	A-900115-28	2	M4 SPLIT LOCKWASHER	STEEL
78	A-900115-03	14	#10 SPLIT LOCKWASHER	STEEL
79	A-900115-05	16	1/4" SPLIT LOCKWASHER	STEEL
80	A-900115-06	16	5/16" SPLIT LOCKWASHER	STEEL
81	A-900115-07	11	3/8" SPLIT LOCKWASHER	STEEL
82	A-900115-09	1	1/2" SPLIT LOCKWASHER	STEEL
83	A-900118-03	7	#10 FLATWASHER	STEEL
84	A-900118-05	4	1/4" FLATWASHER	STEEL
85	A-900118-06	8	5/16" FLATWASHER	STEEL
86	A-900118-07	11	3/8" FLATWASHER	STEEL
87	A-900118-09	3	1/2" FLATWASHER	STEEL
88	A-900118-18	4	#10 FLATWASHER	BRASS
89	A-900118-20	8	1/4" FLATWASHER	BRASS
93	A-900219-06	2	EXT. RET. RING—3/8" SHAFT	STEEL
94	A-900219-09	2	EXT. RET. RING—1/2" SHAFT	STEEL
95	A-900413-08	3	SCREW ASSY.—M5 X 0.8 X 16	STEEL
96	A-900117-03	2	#10 EXT 7H LOCKWASHER (FORMED)	STEEL



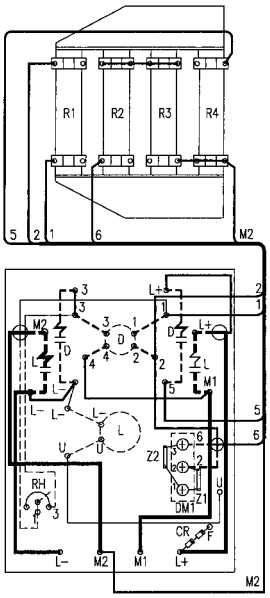
ITEM	PART NUMBER	REQ.	DESCRIPTION
		Auto/Man	
1	A-900118-21	4	3/8" FLATWASHER
2	A-900215-02	4	CABLE CONNECTOR (#2-#8)
3	A-900228-01	1/0	RHEOSTAT DIAL
4	A-900229-01	1/0	RHEOSTAT MNTG. KIT.
5	A-900232-13	1/0	RHEOSTAT—2.0 Ω-50 W
6	A-900233-02	1/0	RHEOSTAT KNOB
7	018A0123X	2	BLOWOUT BLT.—W/STUD
8	018A0124X	2	BLOWOUT BLT.
9	018A0140C	1	ARM PIN—1/2" DIA. (12 mm)
10	018A0151F	1	MAIN COIL—230 V
11	018A0152X	2	INSULATING WASHER
12	018A0154A	1	CORE ASSEMBLY
13	018A0317D	2	SHUNT ASSEMBLY
14	018A1442A	1	REVERSE FRAME ASSEMBLY
15	018A2966Z	1	CONTROL DIODE ASSEMBLY
16	018A2631X	1	SPACE WASHER
17	018A2637X	1	SPRING WASHER
18	018A2641A	1	ARM PIN
19	018A2720A	2	SHUNT ASSEMBLY
20	018A2866X	1	CLAMP WASHER
21	018A2977X	3	SEPARATOR WASHER
22	018A3000B	1/0	REVERSE SWITCH CORE
22	018A2637A	0/1	REVERSE CORE
23	018A3010X	4	TERMINAL STUD
24	018A3878A	4	TERMINAL STUD—2-1/2" (65 mm)
25	018A3878X	2	TERMINAL STUD—2-3/4" (70 mm)
26	018A3882X	8/7	TERMINAL STUD
27	018A6375A	1	"TOP" DESIGNATION PLT.
28	018B0116A	1	MAIN FRAME
29	018B0217X	2	BLOWOUT COIL ASSEMBLY
29a	018A0125X	2	CONTACT TIP
30	018B1478A	1	BLOWOUT COIL ASSEMBLY—RIGHT
30a	018A0803X	2	ARC SHIELD SIDE
30b	018A1443X	1	CONTACT TIP
30c	018A1503X	1	ARC SHIELD SPACER
30d	018A1523X	1	DOWEL
30e	018A6361A	1	INSULATING SUPPORT
30f	018B2727A	1	BLOWOUT COIL ASSEMBLY—RIGHT
31	018B1478B	1	BLOWOUT COIL ASSEMBLY—LEFT
31a	018A0803X	2	ARC SHIELD SIDE
31b	018A1443X	1	CONTACT TIP
31c	018A1503X	1	ARC SHIELD SPACER
31d	018A1523X	1	DOWEL
31e	018A6361B	1	INSULATING SUPPORT
31f	018B2727B	1	BLOWOUT COIL ASSEMBLY—LEFT
32	018B2966Y	1	DIODE/HEAT SINK ASSEMBLY
32a	A-900565-17	1	HEAT SINK
32b	A-900550-26	1	DIODE
32c	018A2966Q	2	MOV SUPPRESSOR ASSEMBLY
33	018B3003A	1/0	REVERSE SWITCH COIL
33	018A1508D	0/1	DROP COIL
34	018B6368C	1	REVERSE SWITCH ARM ASSEMBLY
34a	018A1443X	2	CONTACT TIP
34b	018A2604A	1	CONTACT BRACKET
34c	018A2605A	1	CONTACT BRACKET
34d	018B5074A	2	CONTACT ARM ASSEMBLY
34e	018A2614X	2	CONTACT ARM
34f	018A2625X	2	CONTACT SPRING
34g	018A2631X	2	SPACER WASHER
34H	018B2596C	1	REVERSE SWITCH ARM
34k	018B2618C	1	REVERSE ARM SHAFT
35	018C0216X	2	ARC SHIELD ASSEMBLY
35a	018A0120X	4	BLOWOUT EAR
35b	018A0126X	2	SPACER
35c	018A0130X	4	BLOWOUT SHIELD
35d	018A0139X	4	STUD—3-1/8" (80 mm)
35e	018A1362X	16	WASHER
36	018C1477B	1	PANEL
37	018D1529B	1	ARM ASSEMBLY
37a	A-900221-05	2	HAIR PIN CLIP
37b	018A0104X	1	SPRING—LEFT
37c	018A0118X	2	CONTACT ARM
37d	018A0121X	1	SPRING—RIGHT
37e	018A0125X	2	CONTACT TIP
37f	018A0128A	2	ARM INSULATION
37g	018A0129X	2	STOP WASHER
37h	018A0138X	1	STOP
37n	018A0824X	2	SPRING PIN
37p	A-900298-02	2	BEARING—SELF LUBRICATING
37q	018B0219A	2	CONTACT ARM ASSEMBLY
37r	018B0821X	1	ARM SHAFT
37s	018C2992A	1	MAIN ARM
37t	A-900298-03	2	BEARING—SELF LUBRICATING

RD-1W WIRING DIAGRAM

RD-1W AUTOMATIC CONTROLLER

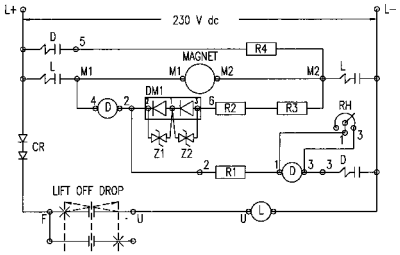
WIRE DIAGRAM P/N: 018B5153AG (AUTOMATIC)

RESISTOR ASSEMBLY



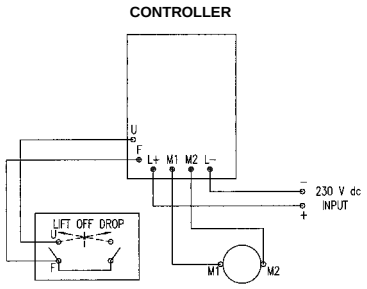
PANEL REAR VIEW

WIRING DIAGRAM



SCHEMATIC DIAGRAM

CONTROLLER



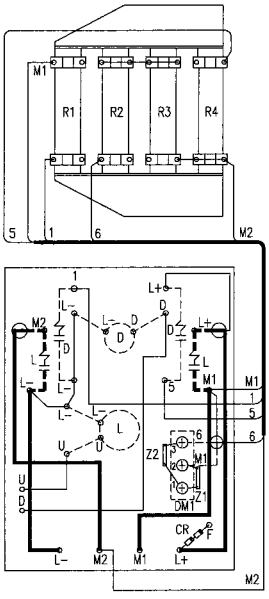
MASTER SWITCH MAGNET

SYSTEM DIAGRAM

RD-1W MANUAL CONTROLLER

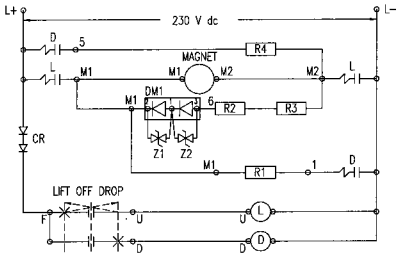
WIRE DIAGRAM P/N: 018B5153AM (MANUAL)

RESISTOR ASSEMBLY



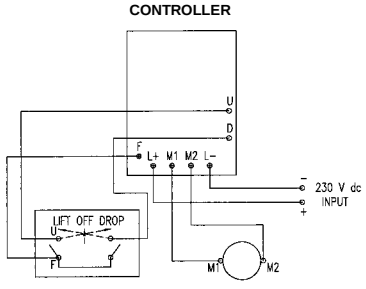
PANEL REAR VIEW

WIRING DIAGRAM



SCHEMATIC DIAGRAM

CONTROLLER



MASTER SWITCH MAGNET

SYSTEM DIAGRAM

TABLE OF EQUIPMENT

SYMBOL	DESCRIPTION	FUNCTION
D	REVERSE CONTACTOR	DROP
L	MAIN CONTACTOR	LIFT
RH	2.0 Ω RHEOSTAT	DROP CONTROL
R1&R4	12 Ω RESISTORS	DROP RESISTOR (AUTOMATIC)
R1&R4	8 Ω RESISTORS	DROP RESISTOR (MANUAL)
R2-R3	8 Ω RESISTORS	DISCHARGE RESISTOR
DM1	DIODE MODULE	BLOCKING DIODE
Z1-Z2	MOV SUPPRESSOR	DIODE PROTECTION
CR	CONTROL DIODE	ANTI-REVERSE PROTECTION

STEP BY STEP CONTROLLER OPERATION

AUTOMATIC CONTROLLER

1. When a lift signal is given by closing the contacts between terminals “F” and “U”, the “L” coil is energized.
2. This closes the “L” contacts which supplies full power to the magnet.
3. When a drop signal is given the “F” to “U” contact is broken and the “L” coil is de-energized.
4. This opens the “L” contacts and at the same time a discharge circuit is set up through resistors “R2” and the “R3”, and the “4”, “2” winding of the “D” coil, (energizing the coil).
5. This causes the energy in the magnet to be dissipated to the “R2” and “R3” resistors, and the “D” contacts to close.
6. Reverse voltage is then applied to the magnet through the “R1” and “R4” resistors.
7. When the proper amount of reverse current to the magnet, (as adjusted by the rheostat), is measured by the “4”, “2” winding of the “D” coil, it cancels the affect of the “1”, “3” winding of the “D” coil and the “D” contacts open.
8. This stops the flow of reverse current through the magnet.

MAINTENANCE AND TROUBLE SHOOTING

Check all contact tips for excess wear or burning. Replace if needed.

Check arc shields for burnt areas. Replace any that are badly burned.

Check for burned or damaged insulation on shunts or wires. Replace if found.

Check for carbon tracking on the base panel and insulating parts. If found, remove by filing or scraping. If carbon can not be removed, replace the part.

Check Power Diode Integrity (DM) with a standard Digital Volt Meter (DVM), set to the diode check function. (See owner's manual for details.) Disconnect leads to the diode and remove suppressor MOV (Z) to isolate from the circuit. Place the red lead of meter on Terminal 1 of diode (number is stamped next to terminal) and the black lead on Terminal 2. Meter should read <1.0. Reverse leads and meter should read 1.(00). Repeat for Terminals 3 (red) and 1 (black). If the diode reads bad, replace. Reconnect wires and MOV (Z).

Check gap (¾" (20 mm) opening) between main contacts (#29a and #37e). Adjust by loosening screw (#46) on part (#37c) and turning the assembly.

All pin connections should move easily, and contact springs should provide force when contacts are closed. If springs do not provide contact force, replace them.

EMERGENCY SPARE PARTS AND OPTIONAL KITS

Automatic — #ESP-018M7016A1

- Contains the parts most likely to fail due to a system problem or a high voltage spike. It is recommended that one of these kits be kept on hand to avoid unnecessary down time.

Conversion Kit — 018M2966U

- Converts old style contact arm to diode.

PEERLESS-WINSMITH, INC. MATERIAL HANDLING EQUIPMENT

OHIO MAGNETICS—PERFORMANCE ENGINEERED

OHIO MAGNETICS

Stearns magnetics

OHIO MAGNETICS, INC. SUBSIDIARY OF PEERLESS-WINSMITH, INC.

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