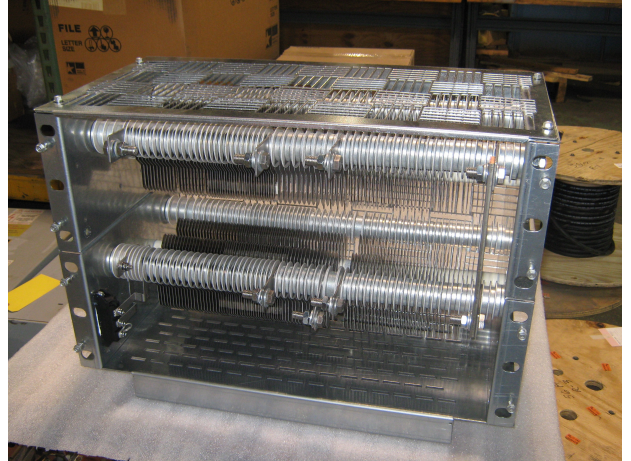
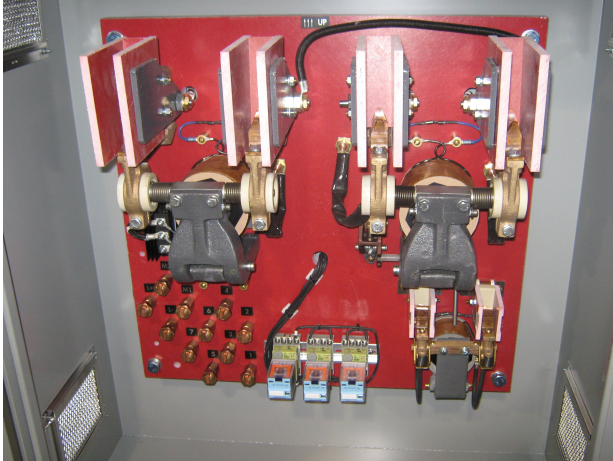


# OHIO MODEL RD-3A AUTO/MANUAL DROP MAGNET CONTROLLER

## **INSTALLATION, MAINTENANCE & PARTS BULLETIN** **OPERATING RANGE 100-200 A (COLD MAGNET CURRENT)**



### **DESCRIPTION**

The RD-3A Controller is a heavy duty magnet controller used for magnets whose cold current ranges from 100 A to 200 A dc. Cold current references the current flowing through the magnet when the magnet temperature is 25°C throughout.

#### **AUTOMATIC DROP**

A reverse current adjustment provides for a fast, clean drop of the magnet over the complete range of magnetic material with one movement of the master switch or push button

#### **MANUAL DROP**

Allows for partial dropping of the load by controlling the amount of reverse current to the magnet. A drop position on the master switch or push button that is spring returned to off, gives the operator complete control of the drop cycle.

### **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 & resistor bank for air circulation.

Route electrical wires through the bottom of the enclosure and connect securely to the terminals.

All electrical circuits must be free from grounds and shorts.

Remove shipping material from the arc shields before operating the controller.

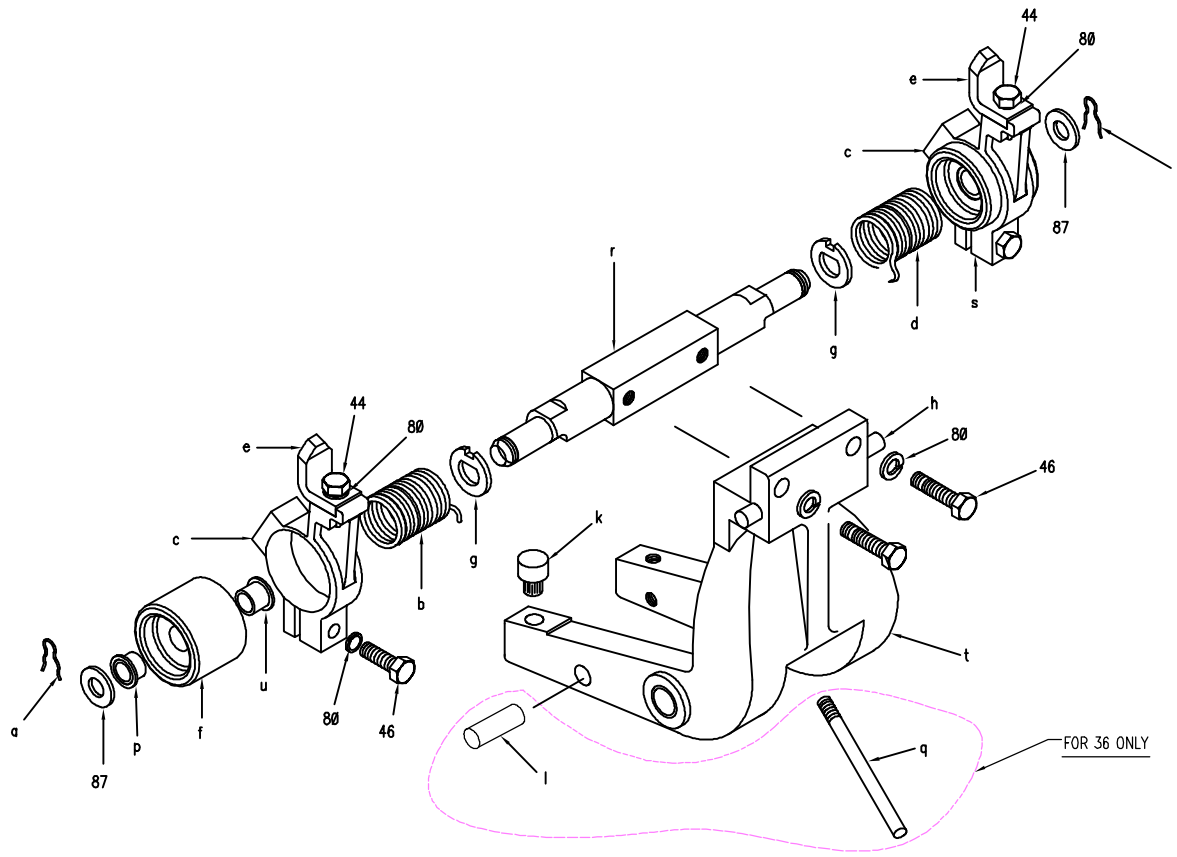
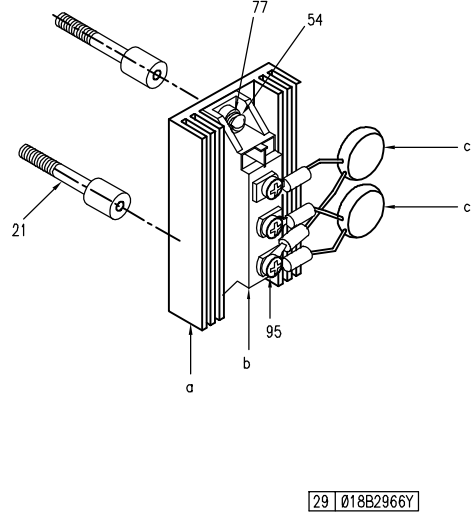
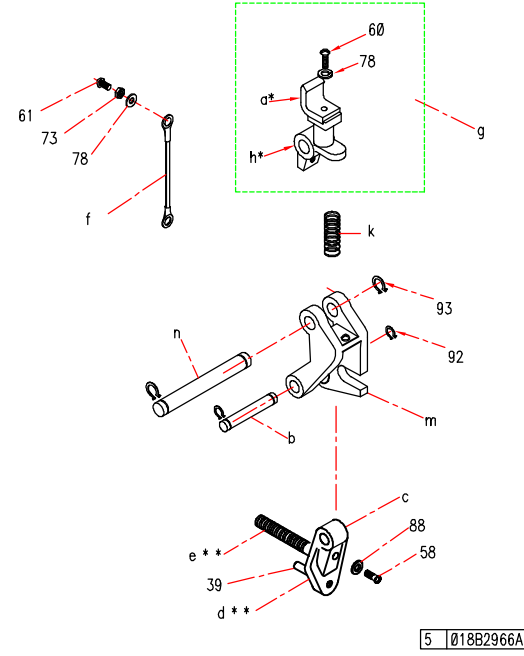
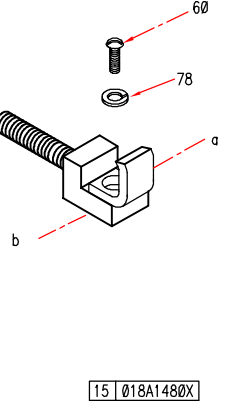
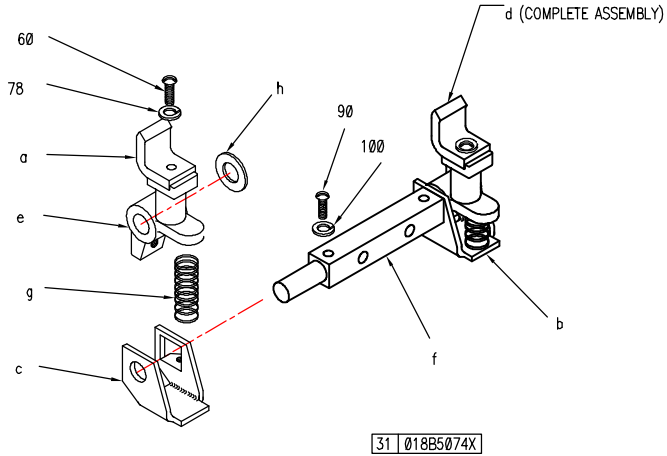
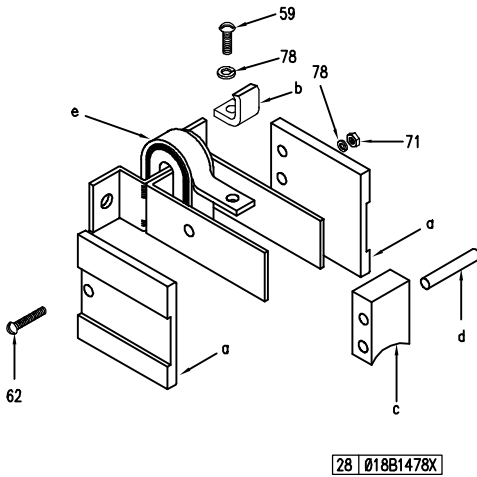
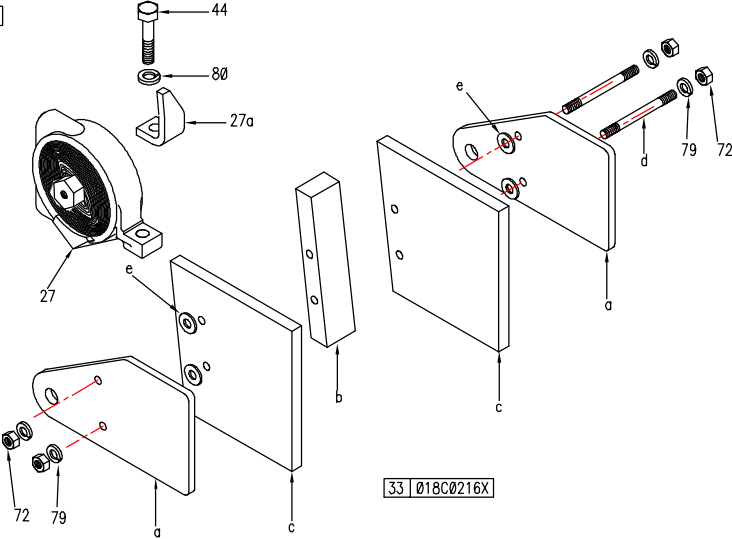
The resistor bank must be mounted separately. Provide a cover for the resistor bank to protect it from the weather & dirt.

The timers are factory preset for magnets rated 150-200 A: TR1=1.25 s; TR2=3.5 s

For magnets rated below 150 A: TR1=0.75 s; TR2=2.0 s

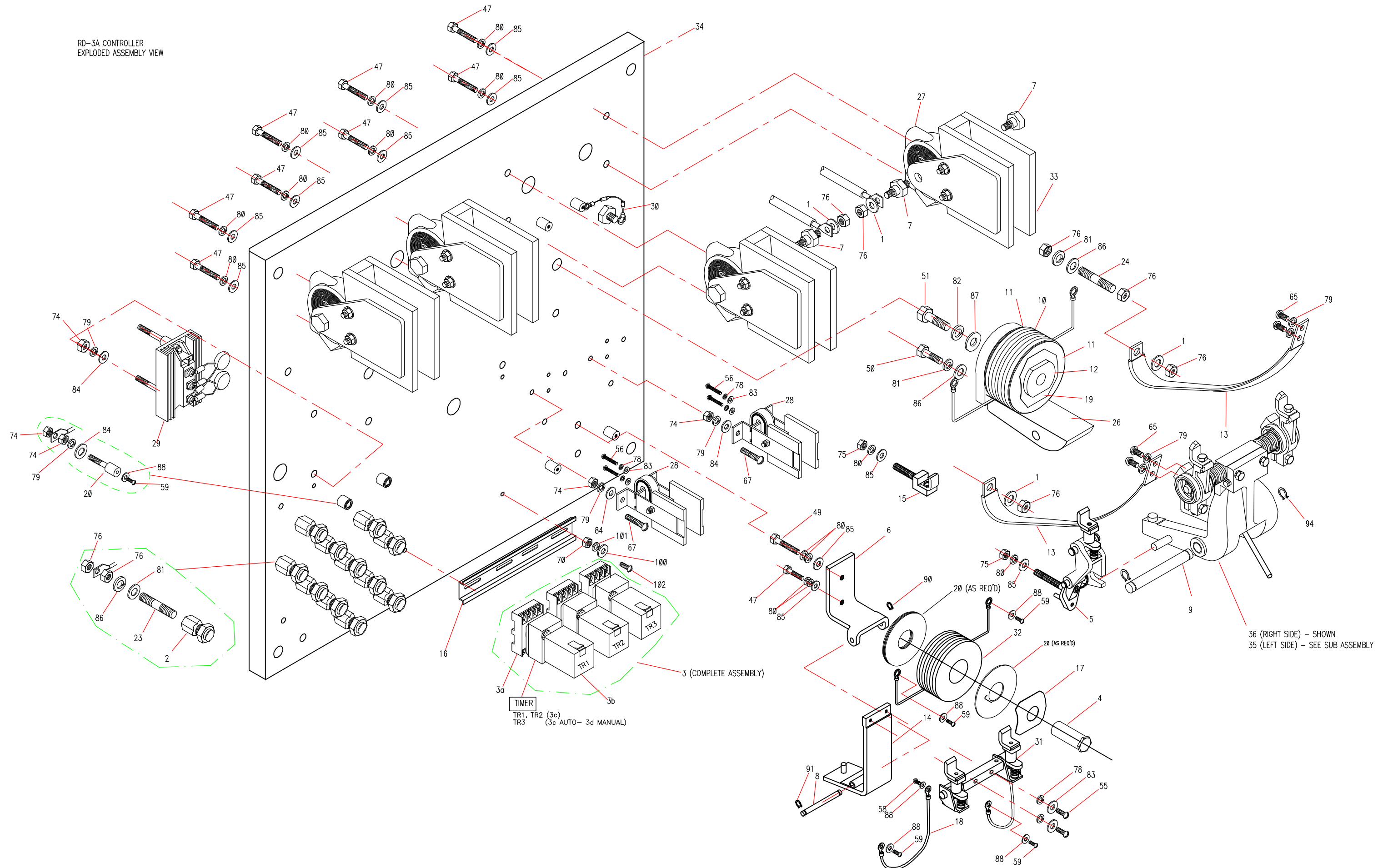
make additional minor timer adjustments to TR2 for optimal drop characteristics to suit material being handled.

27 | 018B0217A



# OHIO MODEL RD-3A AUTOMATIC DROP MAGNET CONTROLLER

RD-3A CONTROLLER  
EXPLODED ASSEMBLY VIEW



## RD-3A PARTS LIST

ITEM	PART NUMBER	REQ A230	REQ M230	REQ 0-230	DESCRIPTION	MAT'L/NOTES
1	A-900118-21	12	12	12	FLATWASHER: 3/8	
2	A-900215-02	11	11	11	CABLE CONNECTOR: #2 - #8	
3	120B010A04	1		1	TIMER RELAY ASSEMBLY – AUTO	
3	120B010A12		1		TIMER RELAY ASSEMBLY – MANUAL	
3a	A-900254-12	3	3	3	RELAY SOCKET	
3b	A-900568-34	3	3	3	RELAY: 2-DPDT; 240 V-dc COIL	
3c	A-900573-27	3	2	3	TIMER:DELAY-OFF; 240 V-dc	
3d	A-900573-31		1		TIMER:INTERVAL; 240 V-dc	
4	018A6209A	1	1	1	REVERSE CORE ASSEMBLY	
5	018B2966A	1	1	1	AUXILIARY ARM ASSEMBLY	
5a	018A1443X	2	2	2	CONTACT TIP	
5b	018A1444A	2	2	2	ARM PIN	
5c	018A1482A	2	2	2	AUXILIARY ARM BASE ASSEMBLY	
5d	018A1482X	2	2	2	AUXILIARY BASE	
5e	018A1484X	2	2	2	STUD: 2.18 in 55.5 mm	
5f	018A1487A	2	2	2	SHUNT	
5g	018A2614A	2	2	2	CONTACT ARM ASSEMBLY	
5h	018A2614X	2	2	2	CONTACT ARM ASSEMBLY	
5k	018A2670X	2	2	2	SPRING	
5m	018A2898X	2	2	2	AUXILIARY ARM	
5n	018A2945A	2	2	2	ARM PIN	
6	018A2615X	1	1	1	SWITCH FRAME MACHINED	
7	018A0123X	8	8	8	BLOWOUT BOLT WITH STUD	
8	018A2623A	1	1	1	ARM PIN: $\Phi 0.25$ in 6 mm	
9	018A0140C	2	2	2	ARM PIN: $\Phi 0.5$ in 12 mm	
10	018A0151F	2	2	2	MAIN COIL: 230 V	
11	018A0152X	6	6	6	INSULATING WASHER	
12	018A0154A	2	2	2	CORE ASSEMBLY	
13	018A0317D	4	4	4	SHUNT ASSEMBLY	
14	018A2622X	1	1	1	REVERSE SWITCH ARM ASSEMBLY	
15	018A1480X	1	1	1	STATIONARY CONTACT ASSEMBLY – AUXILIARY	
15a	018A1443X	1	1	1	CONTACT TIP	
15b	018A1486X	1	1	1	AUXILIARY CONTACT BRACKET	
16	A-900235-03	200	200	200	35 mm DIN RAIL (LENGTH IN MILLIMETRES)	
17	018A2637X	1	1	1	SPRING WASHER	
18	018A2720A	2	2	2	SHUNT ASSEMBLY	
19	018A2866X	2	2	2	CLAMP WASHER	
20	018A2977X	6	6	6	SEPERATOR WASHER	
21	018A3010X	10	8	10	TERMINAL STUD	
22						
23	018A3878A	11	11	11	TERMINAL STUD: 2.5 in 65 mm	
24	018A3878X	4	4	4	TERMINAL STUD: 2.75 in 70 mm	
25						
26	018B0116A	2	2	2	MAIN FRAME	
27	018B0217A	4	4	4	BLOWOUT COIL ASSEMBLY: MAIN	
27a	018A0125X	4	4	4	CONTACT TIP	
28	018B1478X	2	2	2	BLOWOUT COIL ASSEMBLY: DROP	
28a	018A0803X	4	4	4	ARC SHIELD SIDE	
28b	018A1443X	2	2	2	CONTACT TIP	

# RD-3A PARTS LIST

28c	018A1503X	2	2	2	ARC SHIELD SPACER
28d	018A1523X	2	2	2	DOWEL
28e	018A2726X	2	2	2	CONTACT BRACKET
29	018B2966Y	1	1	1	DIODE/HEATSINK ASSEMBLY
29a	A-900565-17	1	1	1	HEAT SINK: DRILLED
29b	A-900550-26	1	1	1	DIODE MODULE
29c	018A2966Q	2	2	2	MOV SUPPRESSOR ASSEMBLY
30	1400A074001	1	1		CONTROL DIODE ASSEMBLY
31	018B5074X	2	2	2	SWITCH ARM ASSEMBLY
31a	018A1443X	4	4	4	CONTACT TIP
31b	018A2604A	2	2	2	CONTACT BRACKET
31c	018A2605A	2	2	2	CONTACT BRACKET
31d	018A2614A	4	4	4	CONTACT ARM ASSEMBLY
31e	018A2614X	4	4	4	CONTACT ARM ASSEMBLY
31f	018A2618X	2	2	2	REVERSE ARM SHAFT
31g	018A2625X	4	4	4	CONTACT SPRING
31h	018A2631X	4	4	4	SPACER WASHER
32	018A1508J		1		REVERSE SWITCH COIL: MANUAL 230 V
33	018C0216X	2	2	2	ARC SHIELD ASSEMBLY: MAIN
33a	018A0120X	4	4	4	BLOWOUT EAR
33b	018A0126X	2	2	2	SPACER WASHER
33c	018A0130X	4	4	4	BLOWOUT SHIELD
33d	018A0139X	4	4	4	STUD: $\Phi 3.13$ in 80 mm
33e	018A1362X	16	16	16	WASHER
34	018D5511C	1	1	1	PANEL
35	018D3090D	1	1	1	ARM ASSEMBLY
35a	A-900221-05	2	2	2	HAIR PIN CLIP: $\Phi 0.38$ in 10 mm
35b	018A0104X	1	1	1	SPRING : LEFT
35c	018A0118X	2	2	2	CONTACT ARM: MACHINED
35d	018A0121X	1	1	1	SPRING: RIGHT
35e	018A0125X	2	2	2	CONTACT TIP
35f	018A0128A	2	2	2	ARM INSULATION
35g	018A0129X	2	2	2	STOP WASHER
35h	018A0135X	2	2	2	SPRING PIN
35k	018A0138X	1	1	1	STOP
35p	A-900298-02	2	2	2	BEARING: SELF LUBRICATIONG
35r	018B0131X	1	1	1	ARM SHAFT
35s	018B0219A	2	2	2	CONTACT ARM ASSEMBLY
35t	018C2992A	1	1	1	MAIN ARM MACHINED
35u	A-900298-03	2	2	2	BEARING: SELF LUBRICATIONG
36	018D3090A	1	1	1	ARM ASSEMBLY +INTERLOCK & OPERATING PIN
36a	A-900221-05	2	2	2	HAIR PIN CLIP: $\Phi 0.38$ in 10 mm
36b	018A0104X	1	1	1	SPRING : LEFT
36c	018A0118X	2	2	2	CONTACT ARM: MACHINED
36d	018A0121X	1	1	1	SPRING: RIGHT
36e	018A0125X	2	2	2	CONTACT TIP
36f	018A0128A	2	2	2	ARM INSULATION
36g	018A0129X	2	2	2	STOP WASHER
36h	018A0135X	2	2	2	SPRING PIN
36k	018A0138X	1	1	1	STOP
36l	018A1476A	1	1	1	OPERATING PIN
36p	A-900298-02	2	2	2	BEARING: SELF LUBRICATIONG

# RD-3A PARTS LIST

36q	018A5645X	1	1	1	THREADED ROD	
36r	018B0131X	1	1	1	ARM SHAFT	
36s	018B0219A	2	2	2	CONTACT ARM ASSEMBLY	
36t	018C2992A	1	1	1	MAIN ARM MACHINED	
36u	A-900298-03	2	2	2	BEARING: SELF LUBRICATIONG	
37	100A013B1	1	1	1	NAME PLATE	
38	1400A074002	3	3	3	SUPPRESSOR DIODE ASSEMBLY	
39	A-900146-02	1	1	1	STAINLESS STEEL SPRING PIN	
40						
41						
42						
43						
44	A-900007-02	8	8	8	SCR HEX HEAD: 5/16-18 x 0.75 UNC	STEEL
45						
46	A-900007-05	8	8	8	SCR HEX HEAD: 5/16-18 x 1.25 UNC	STEEL
47	A-900007-06	9	9	9	SCR HEX HEAD: 5/16-18 x 1.5 UNC	STEEL
48						
49	A-900007-08	1	1	1	SCR HEX HEAD: 5/16-18 x 2.0 UNC	STEEL
50	A-900008-08	2	2	2	SCR HEX HEAD: 3/8-16 x 1.75 UNC	STEEL
51	A-900010-09	2	2	2	SCR HEX HEAD: 1/2-13 x 2.5 UNC	STEEL
52						
53						
54	A-900023-06	2	2	2	SCR RH SLOTTED: 10-32 x 0.75 UNF	STEEL
55	A-900023-07	2	2	2	SCR RH SLOTTED: 10-32 x 0.88 UNF	STEEL
56	A-900023-09	4	4	4	SCR RH SLOTTED: 10-32 x 1.25 UNF	STEEL
57						
58	A-900023-13	3	3	3	SCR RH SLOTTED: 10-32 x 0.31 UNF	BRASS
59	A-900023-14	10	12	12	SCR RH SLOTTED: 10-32 x 0.38 UNF	BRASS
60	A-900023-15	2	2	2	SCR RH SLOTTED: 10-32 x 0.50 UNF	BRASS
61	A-900023-24	1	1	1	SCR RH SLOTTED: 10-32 x 0.63 UNF	BRASS
62	A-900023-25	1	1	1	SCR RH SLOTTED: 10-32 x 1.75 UNF	BRASS
63						
64						
65	A-900025-17	8	8	8	SCR RH SLOTTED: 1/4-20 x 0.50 UNC	BRASS
66						
67	A-900025-22	4	4	4	SCR RH SLOTTED: 1/4-20 x 1.75 UNC	BRASS
68						
69	A-900063-02	1	1	1	SCR SOC CUP PT: 1/4-20 x 0.25	STEEL
70	A-900106-38	2	2	2	HEX NUT: M4 x 0.7	STEEL
71						
72	A-900106-05	16	16	16	NUT HEX: 1/4-20	STEEL
73	A-900106-21	1	1	1	NUT HEX: 10-32 NF	BRASS
74	A-900108-11	26	28	28	NUT HEX JAM: 1/4-20 NC	BRASS
75	A-900108-12	2	2	2	NUT HEX JAM: 5/16-18 NC	BRASS
76	A-900112-07	46	46	46	NUT HEX JAM: 3/8-16 NC	BRASS
77	A-900115-18	2	2	2	LOCKWASHER SPLIT: #10	BRASS
78	A-900115-03	8	8	8	LOCKWASHER SPLIT: #10	STEEL
79	A-900115-05	22	24	24	LOCKWASER SPLIT: ¼	STEEL
80	A-900115-06	28	28	28	LOCKWASHER SPLIT: 5/16	STEEL
81	A-900115-07	17	17	17	LOCKWASHER SPLIT: 3/8	STEEL
82	A-900115-09	2	2	2	LOCKWASHER SPLIT: ½	STEEL
83	A-900118-03	6	6	6	FLATWASHER: #10	STEEL

# RD-3A PARTS LIST

84	A-900118-05	14	16	16	FLATWASHER: ¼	STEEL
85	A-900118-06	16	16	16	FLATWASHER: 5/16	STEEL
86	A-900118-07	17	17	17	FLATWASHER: 3/8	STEEL
87	A-900118-09	6	6	6	FLATWASHER: ½	STEEL
88	A-900118-18	14	16	16	FLATWASER: #10	BRASS

89						
90						
91	A-900219-02	2	2	2	EXTERNAL RETAINER RING: SHAFT ¼	STEEL
92	A-900219-04	2	2	2	EXTERNAL RETAINER RING: SHAFT 5/16	STEEL
93	A-900219-06	2	2	2	EXTERNAL RETAINER RING: SHAFT 3/8	STEEL
94	A-900219-09	4	4	4	EXTERNAL RETAINER RING: SHAFT ½	STEEL
95	A-900413-08	3	3	3	SCREW ASSEMBLY: M5 x 0.8 x 16 mm	STEEL

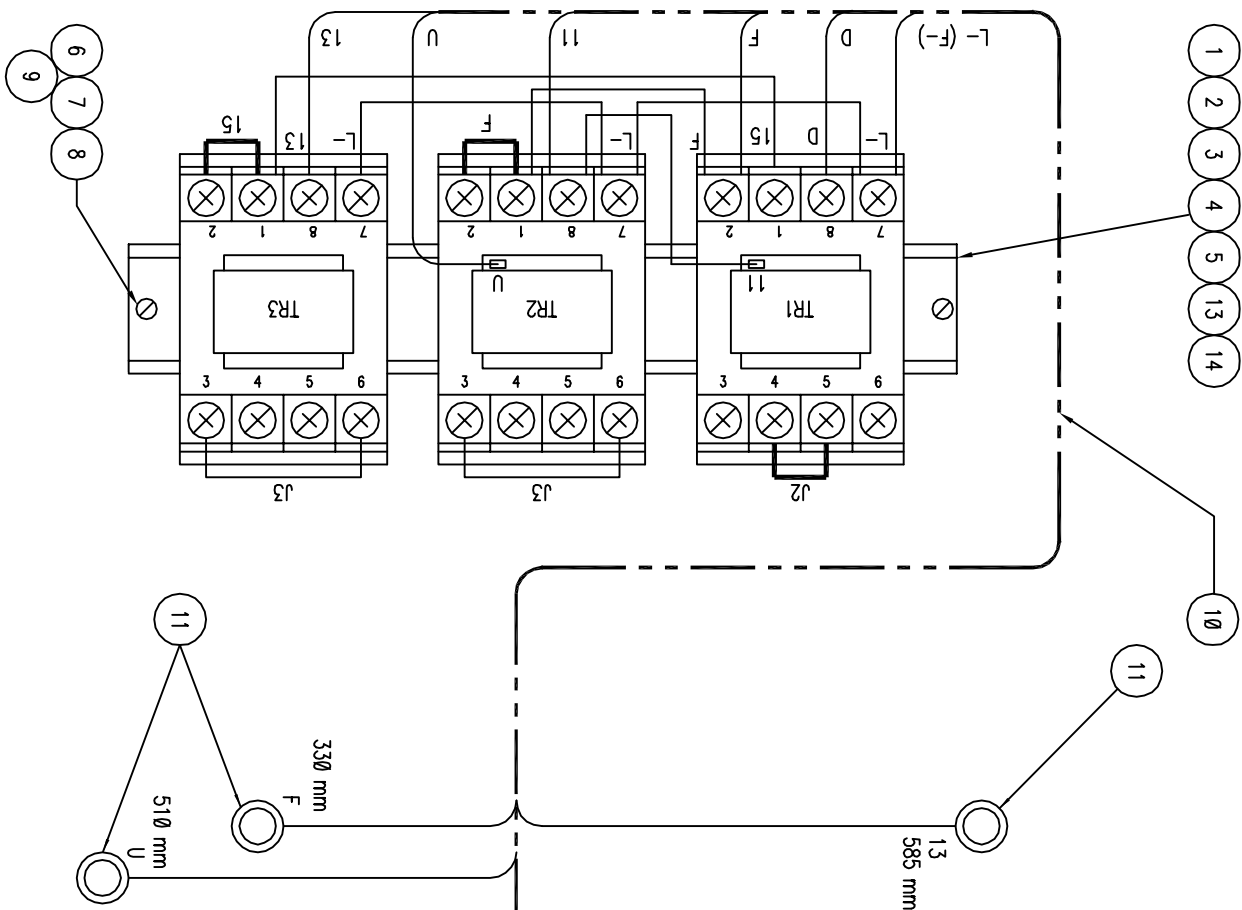
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100	A-900115-28	2	2	2	FLATWASHER: M4	STEEL
101	A-900118-35	2	2	2	LOCKWASHER: M4	STEEL
102	A-900416-11	2	2	2	SCREW: M4 x 0.7 x 35 mm	STEEL
103	A-900244-38	3	3	3	RELAY HOLD DOWN TY-WRAP	

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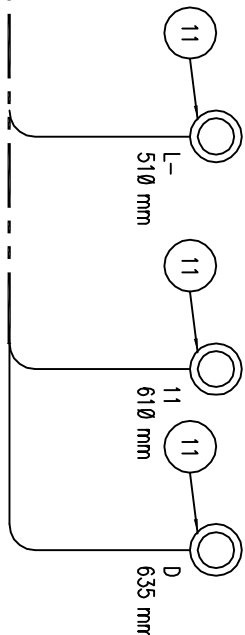
## WIRE KITS:

105B009G01	1			MAIN PANEL WIRE KIT	AUTOMATIC
105B009G02		1		MAIN PANEL WIRE KIT	MANUAL
105B009G03			1	MAIN PANEL WIRE KIT	VARIABLE



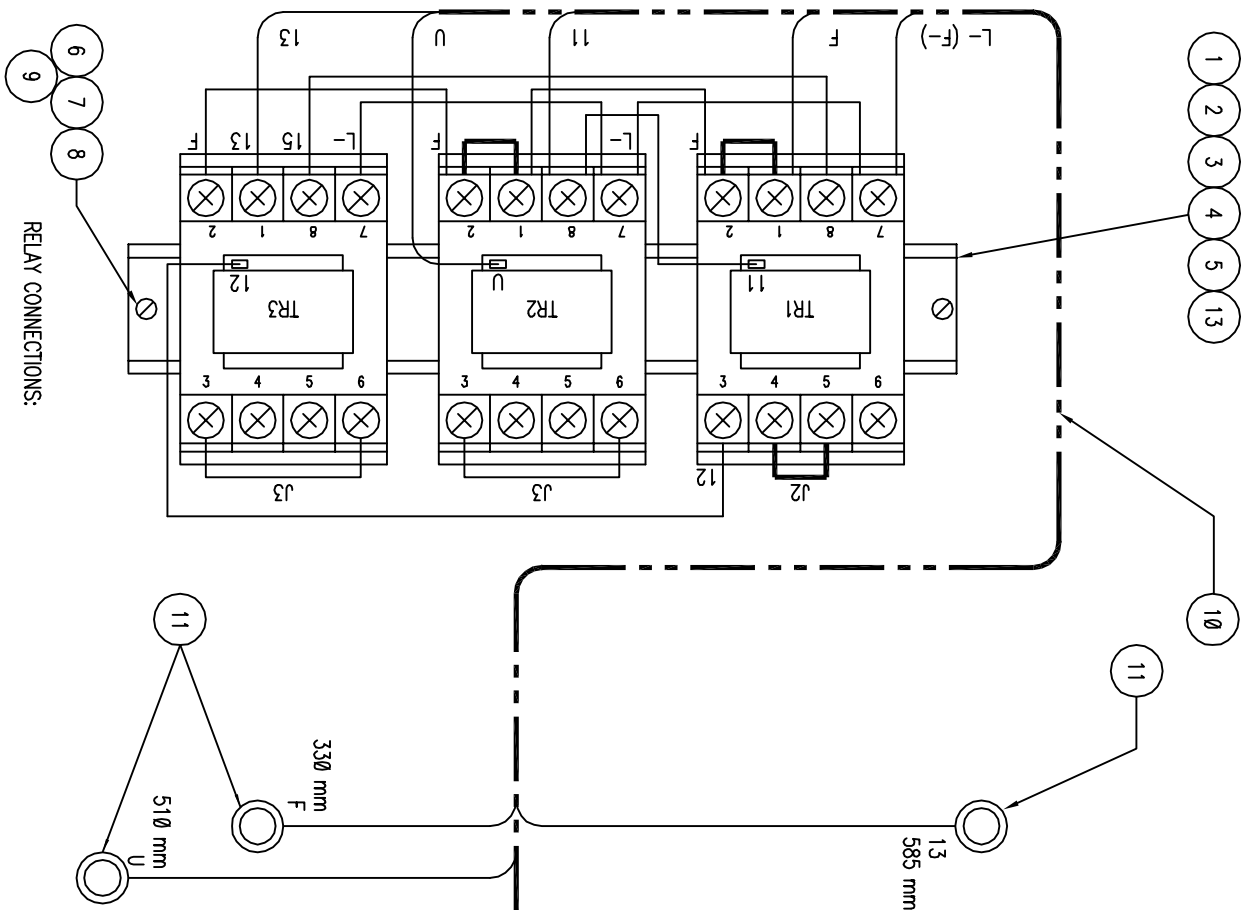


No.	QTY	SYMBOL	PART NUMBER	DESCRIPTION
1	200		A-900235-03	35 mm DIN MOUNTING RAIL
2	3		A-900254-12	RELAY SOCKET: 8 PIN
3	3	TR1-TR3	A-900568-34	RELAY: 2-DPDT: 240 V dc COIL
4	2	TR1-TR2	A-900573-27	TIMER: DELAY-OFF: 240 V dc
5	6		A-900567-07	JUMPER
6	2		A-900416-11	SCREW: M4 x 0.7 x 35 mm
7	4		A-900115-28	FLATWASHER: M4
8	4		A-900115-28	LOCKWASHER: M4
9	2		A-900106-38	HEX NUT: M4 x 0.7 mm
10	15		A-950000-48	WIRE: 1.5 mm <sup>2</sup> (#16 AWG) NEOPRENE BLACK
11	6		A-900210-123	WIRE TERMINAL: 6 mm (0.25 in) STUD
12			A-900210-109	WIRE TERMINAL: 8 mm (0.31 in) STUD
13	3		A-900244-38	RELAY HOLD DOWN TY-WRAP
14	1	TR3	A-900573-31	TIMER: INTERVAL: 240 V dc
15				

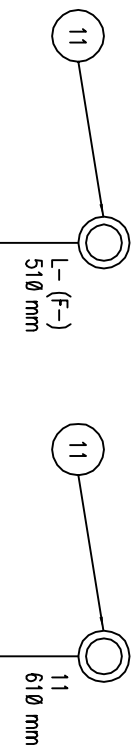


- NOTE:
- 1.) MOUNTING HARDWARE IS FOR SECURING RAIL TO CONTROLLER PANEL.
  - 2.) USE TY-WRAPS TO SECURE WIRES IN BUNDLES.
  - 3.) CUT WIRES LONG ENOUGH TO REACH ASSOCIATED TERMINALS.
  - 4.) MARK WIRE ENDS WITH PROPER TERMINAL DESIGNATIONS.
  - 5.) SET TIMER RANGE FOR 0.2 – 3 s. SET TR1 FOR 1 s, TR2 FOR 1.5 s, AND TR3 FOR 3 s.
  - 6.) L- IS USED ON FIXED VOLTAGE CONTROLLERS; F- ON VARIALE VOLTAGE

TIMER ASSEMBLY KIT 230 V dc SYS RD-3A TIMED MANUAL CONTROLLER 3 120B010A12



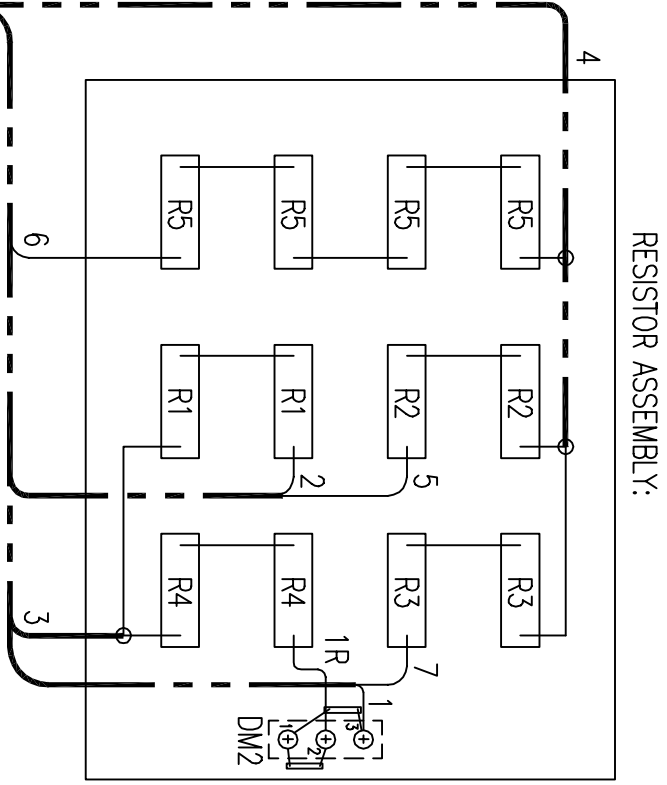
No.	QTY	SYMBOL	PART NUMBER	DESCRIPTION
1	200		A-900235-03	35 mm DIN MOUNTING RAIL
2	3		A-900254-12	RELAY SOCKET: 8 PIN
3	3	TR1-TR3	A-900568-34	RELAY: 2-DPDT: 240 V dc COIL
4	3	TR1-TR3	A-900573-27	TIMER: DELAY-OFF: 240 V dc
5	6		A-900567-07	JUMPER
6	2		A-900416-11	SCREW: M4 x 0.7 x 35 mm
7	4		A-900118-35	FLATWASHER: M4
8	4		A-900115-28	LOCKWASHER: M4
9	2		A-900106-38	HEX NUT: M4 x 0.7 mm
10	15		A-950000-48	WIRE: 1.5 mm <sup>2</sup> (#16 AWG) NEOPRENE BLACK
11	5		A-900210-123	WIRE TERMINAL: 6 mm (0.25 in) STUD
12			A-900210-109	WIRE TERMINAL: 8 mm (0.31 in) STUD
13	3		A-900244-38	RELAY HOLD DOWN TY-WRAP
14				
15				



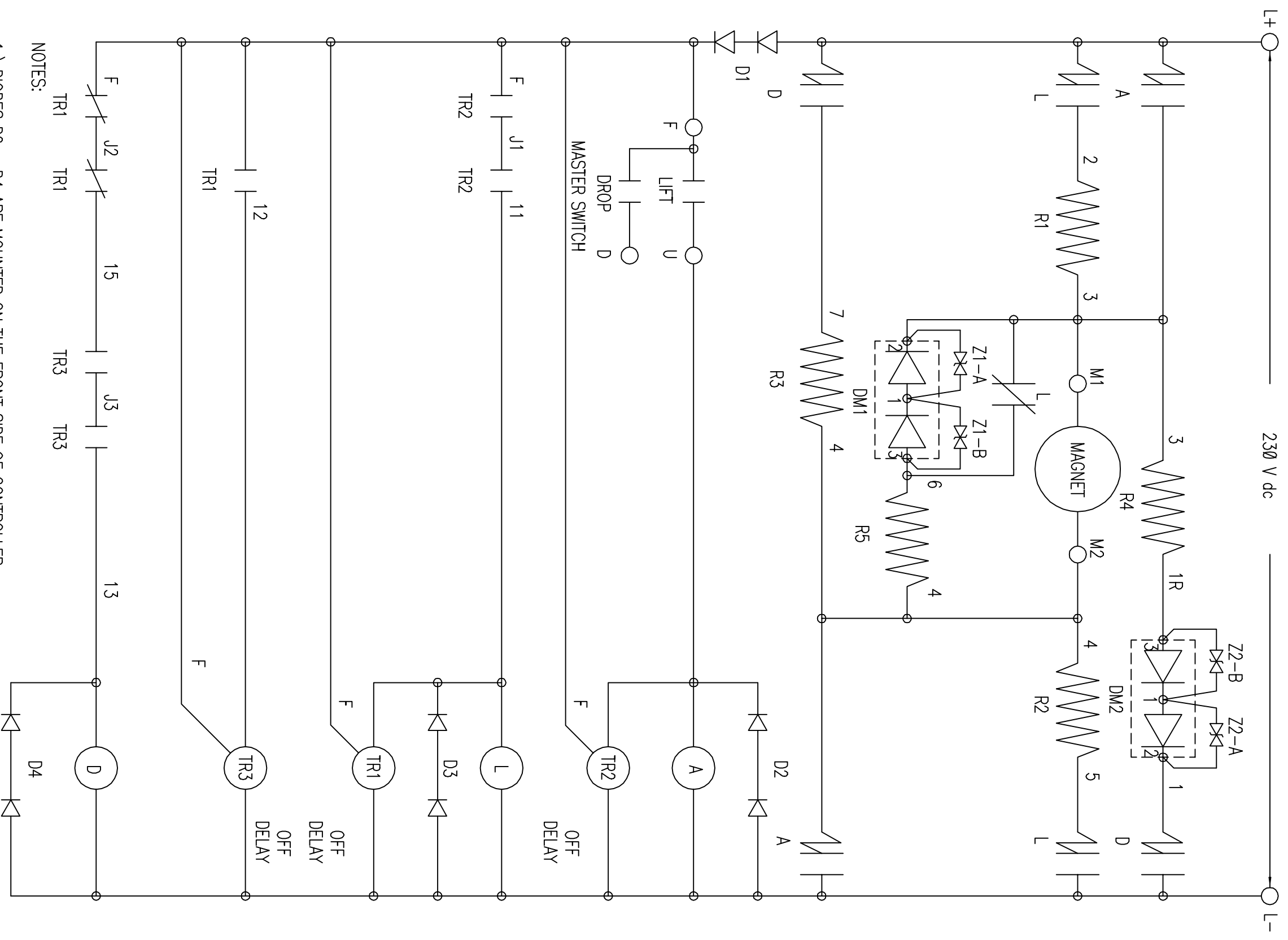
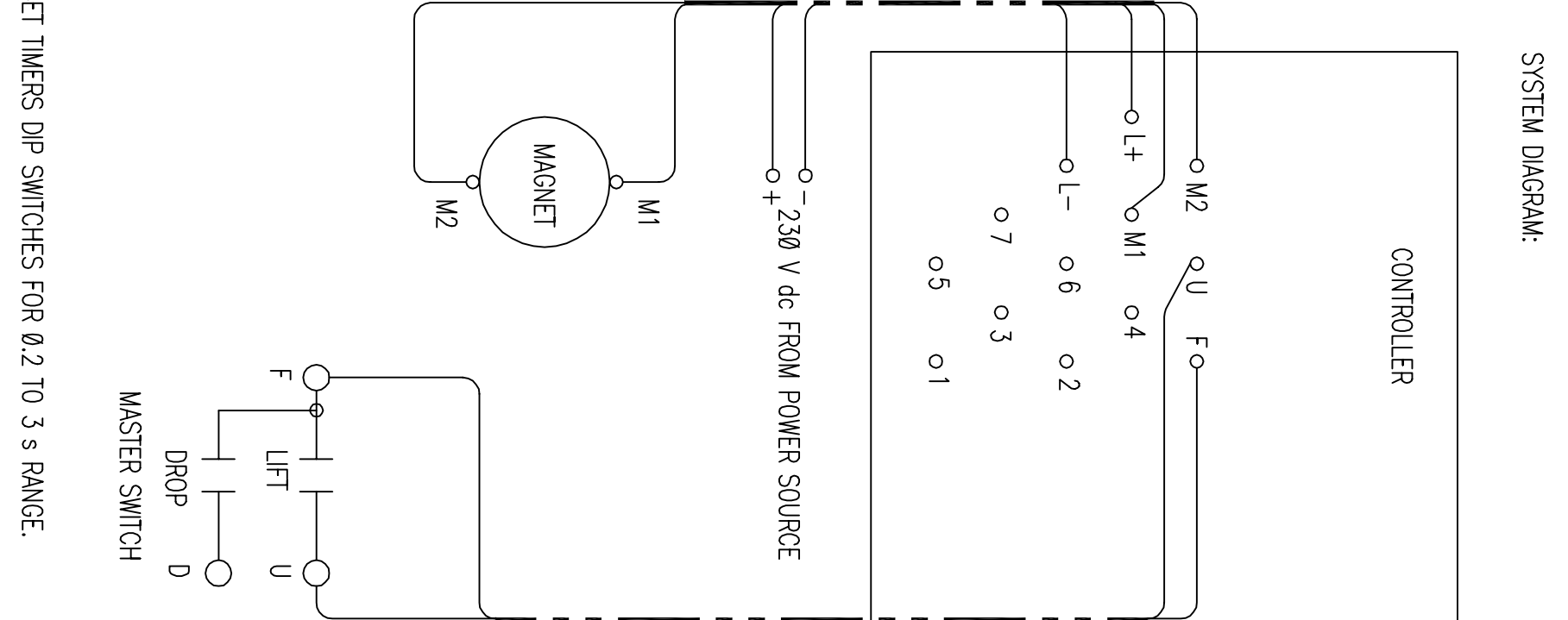
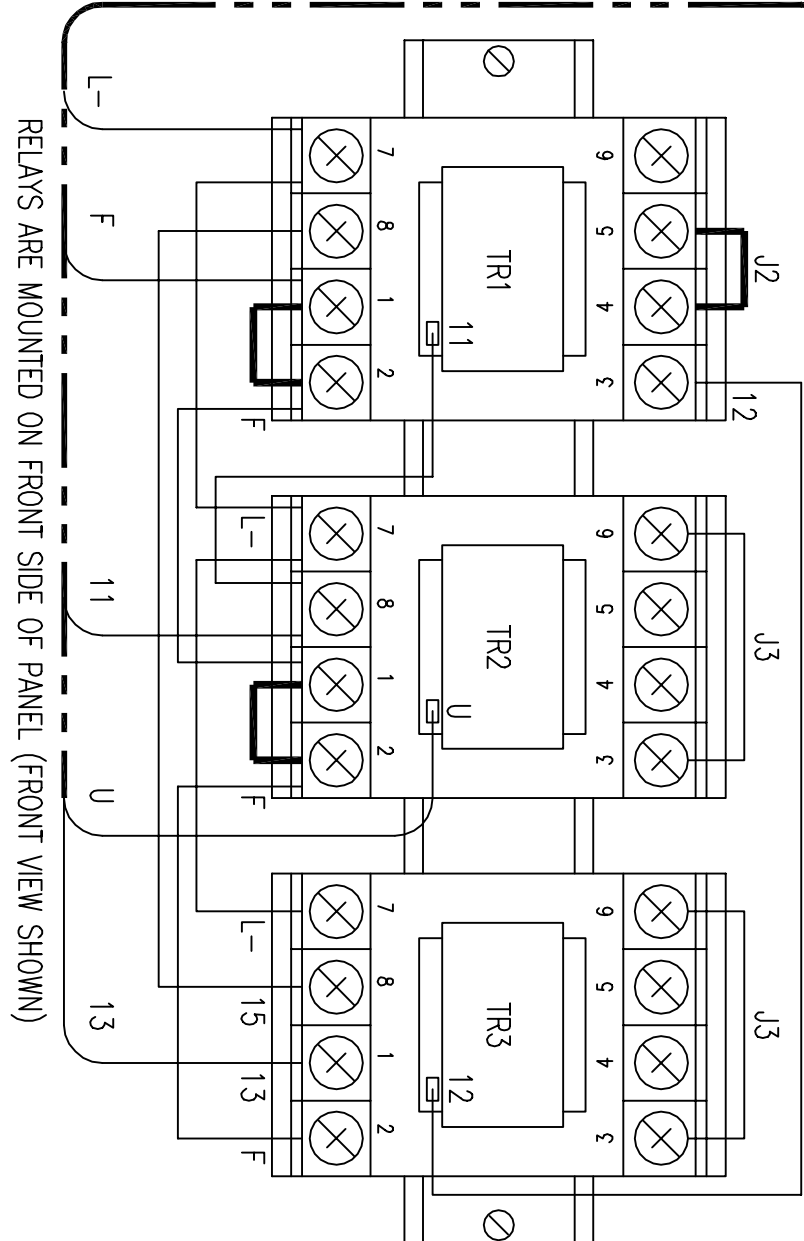
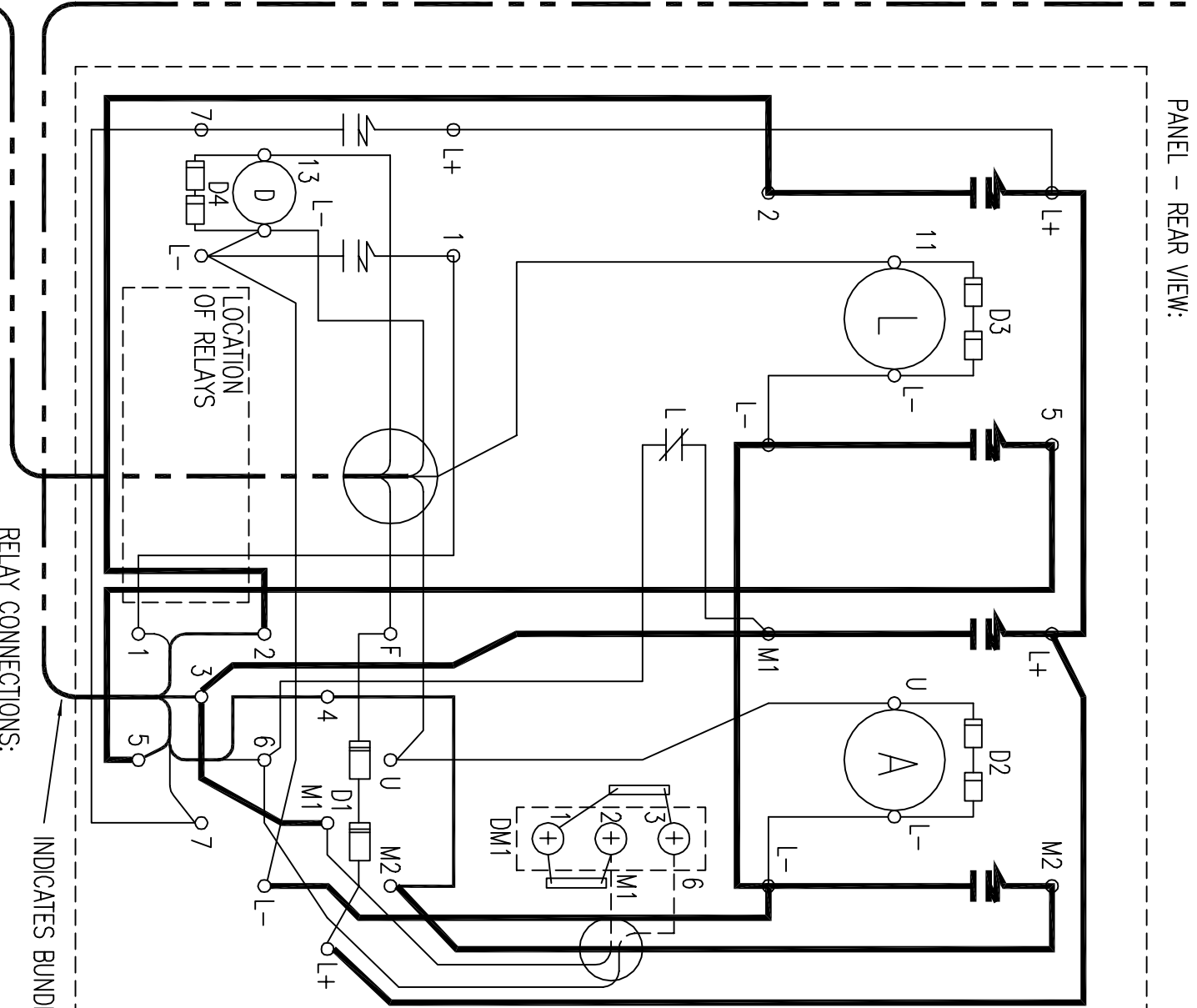
- NOTE:
- 1.) MOUNTING HARDWARE IS FOR SECURING RAIL TO CONTROLLER PANEL.
  - 2.) USE TY-WRAPS TO SECURE WIRES IN BUNDLES.
  - 3.) CUT WIRES LONG ENOUGH TO REACH ASSOCIATED TERMINALS.
  - 4.) MARK WIRE ENDS WITH PROPER TERMINAL DESIGNATIONS.
  - 5.) SET TIMER RANGE FOR 0.2 – 3 s. SET TR1 FOR 1 s, TR2 FOR 1.5 s, AND TR3 FOR 3 s.
  - 6.) L- IS USED ON FIXED VOLTAGE CONTROLLERS; F- ON VARIALE VOLTAGE

TIMER ASSEMBLY KIT RD-3A AUTOMATIC CONTROLLER 3 120B010A04





No.	SYMBOL	DESCRIPTION	FUNCTION
1	A	150 A LIFT CONTACTOR	MAIN LINE CONTACTOR
2	L	150 A LIFT CONTACTOR	REDUCED POWER CONTACTOR
3	D	25 A DROP CONTACTOR	REVERSE POWER CONTACTOR
4	TR3	D CONTACT ACTIVATE	REVERSE CYCLE DELAY TIMER
5	TR2	L CONTACT DELAY OPEN	REVERSE POWER ACTIVE TIMER
6	TR1	D CONTACT DELAY ACTIVATE	REDUCED POWER ACTIVE TIMER
7	R1	POWER RESISTOR: 0.5 0 x 2	REDUCED POWER RESISTOR
8	R2	POWER RESISTOR: 0.5 0 x 2	REDUCED POWER RESISTOR
9	R3	POWER RESISTOR: 3.1 0 x 2	REVERSE POWER RESISTOR
10	R4	POWER RESISTOR: 3.1 0 x 2	REVERSE POWER RESISTOR
11	R5	POWER RESISTOR: 2.3 0 x 4	MAGNET DISCHARGE RESISTOR
12	DM1,2	POWER DIODE ASSEMBLY	MAGNET DISCHARGE RESISTOR
13	D1	ANTI-REVERSE CONTROL DIODE	REVERSE POLARITY PROTECT
14	Z1-Z2	METAL OXIDE VARISTOR (MOV)	DIODE VOLT SPIKE PROTECT
15	D2-D4	DISCHARGE DIODE	LIMIT DISCHARGE SPIKE
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17			
18			

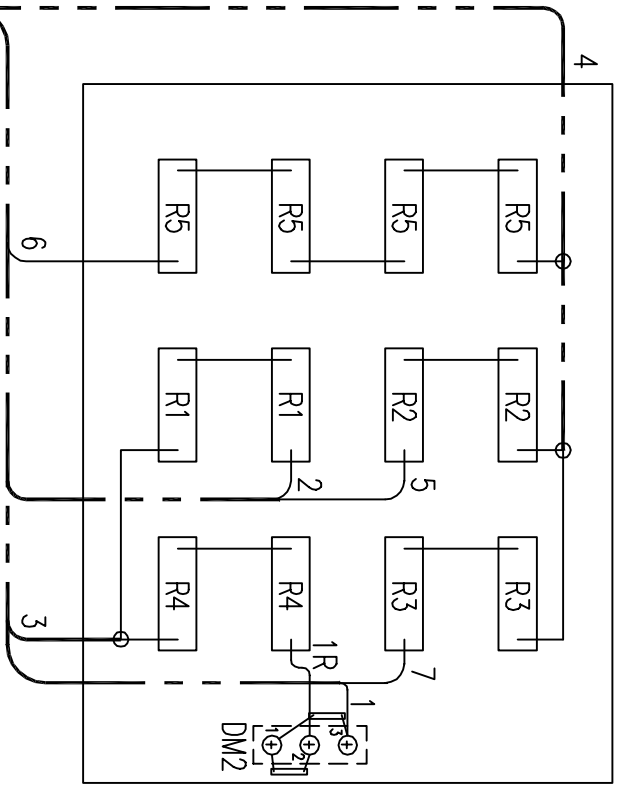


- NOTES:
- 1.) DIODES D2 - D4 ARE MOUNTED ON THE FRONT SIDE OF CONTROLLER.
  - 2.) TIMERS ARE PRESET AT FACTORY FOR MAGNETS RATED ABOVE 150 A.
  - 3.) REDUCE TIMING ON TR2 & TR3 FOR MAGNETS RATED BELOW 150 A. SEE TABULATION
  - 4.) MAKE ADDITIONAL MINOR TIMING ADJUSTMENTS ON TR3 FOR OPTIMUM DROP CHARACTERISTICS TO SUIT THE MATERIAL BEING HANDLED.
  - 5.) SET TIMER TR1 FOR 1 s.
  - 6.) REFERENCE ASSEMBLY DIAGRAM 120B010A04 FOR CONNECTIONS TO RELAYS.

MAGNET COLD CURRENT (A)	TIME (s)
150 - 200	1.25
200 - 250	1.50
250 - 300	1.75
300 - 350	2.00

RD-3A AUTOMATIC CONTROLLER  
WIRING DIAGRAM & SCHEMATIC  
07803507/AB

RESISTOR ASSEMBLY:



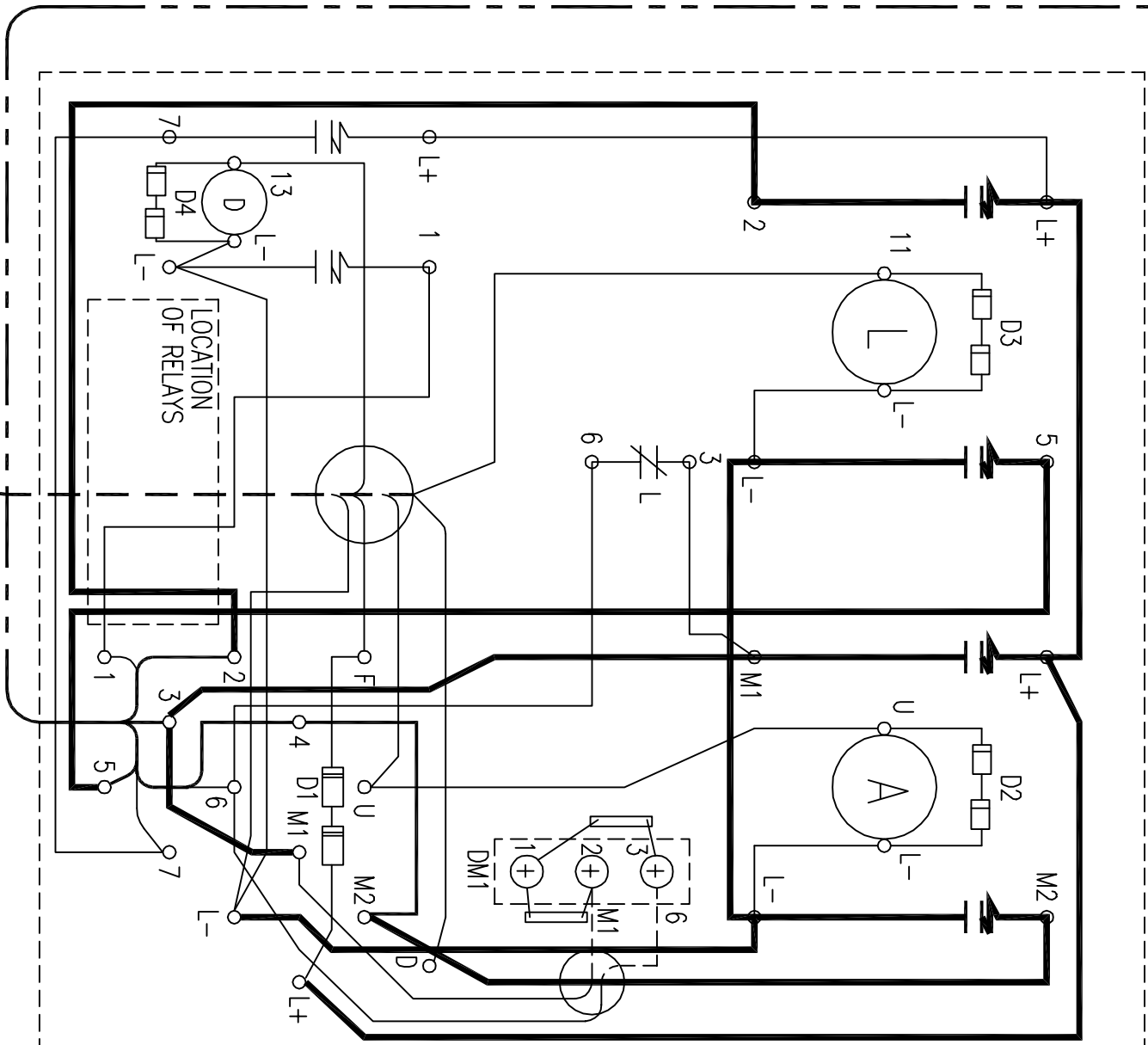
NOTES:

- 1.) DIODES D2 THRU D4 ARE MOUNTED ON THE FRONT SIDE OF THE PANEL.
- 2.) TIMERS ARE PRESET AT FACTORY FOR MAGNETS RATED ABOVE 150 A.
- 3.) REDUCE TIMING ON TR2 & TR3 FOR MAGNETS RATED BELOW 150 A. SEE TABULATION
- 4.) MAKE ADDITIONAL MINOR TIMING ADJUSTMENTS ON TR3 FOR OPTIMUM DROP CHARACTERISTICS TO SUIT THE MATERIAL BEING HANDLED.
- 5.) SET TIMER TR1 FOR 1 s.
- 6.) REFERENCE ASSEMBLY DIAGRAM 120B010A12 FOR CONNECTIONS TO RELAYS.

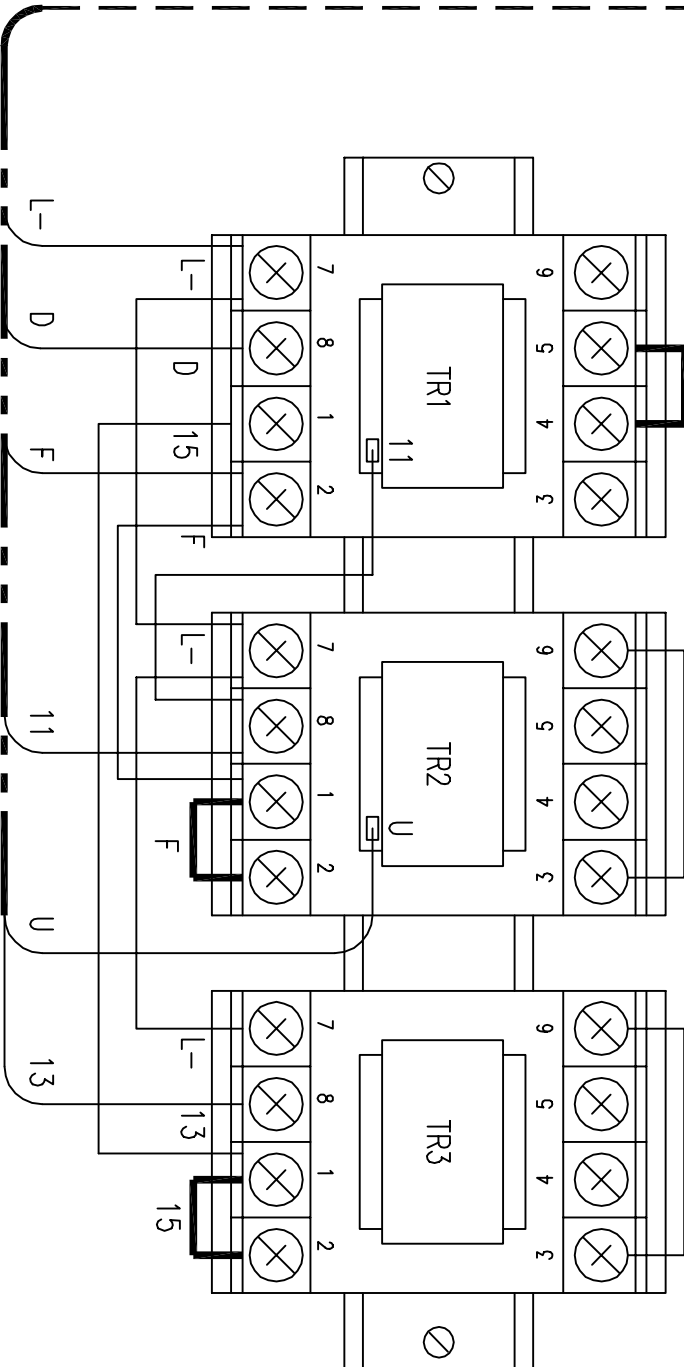
MAGNET COLD CURRENT (A)	TIME (s)	
	TR2	TR3
150 – 200	1.25	5.00
100 – 150	0.75	5.00

No.	SYMBOL	DESCRIPTION	FUNCTION
1	A	150 A LIFT CONTACTOR	MAIN LINE CONTACTOR
2	L	150 A LIFT CONTACTOR	REDUCED POWER CONTACTOR
3	D	25 A DROP CONTACTOR	REVERSE POWER CONTACTOR
4	TR3	D CONTACT ACTIVATE	REVERSE POWER ACTIVE TIMER
5	TR2	L CONTACT DELAY OPEN	REDUCED POWER ACTIVE TIMER
6	TR1	D CONTACT DELAY ACTIVATE	REVERSE CYCLE INTERLOCK
7	R1	POWER RESISTOR: 1.0 0 x 2	REDUCED POWER RESISTOR
8	R2	POWER RESISTOR: 1.0 0 x 2	REDUCED POWER RESISTOR
9	R3	POWER RESISTOR: 3.1 0 x 2	REVERSE POWER RESISTOR
10	R4	POWER RESISTOR: 3.1 0 x 2	REVERSE POWER RESISTOR
11	R5	POWER RESISTOR: 2.3 0 x 4	MAGNET DISCHARGE RESISTOR
12	DM1, 2	POWER DIODE ASSEMBLY	R5 CUTOFF DURING LIFT
13	D1	ANTI-REVERSE CONTROL DIODE	REVERSE POLARITY PROTECT
14			
15			
16			
17			
18			
19			
20			
21			
22			

PANEL – REAR VIEW:

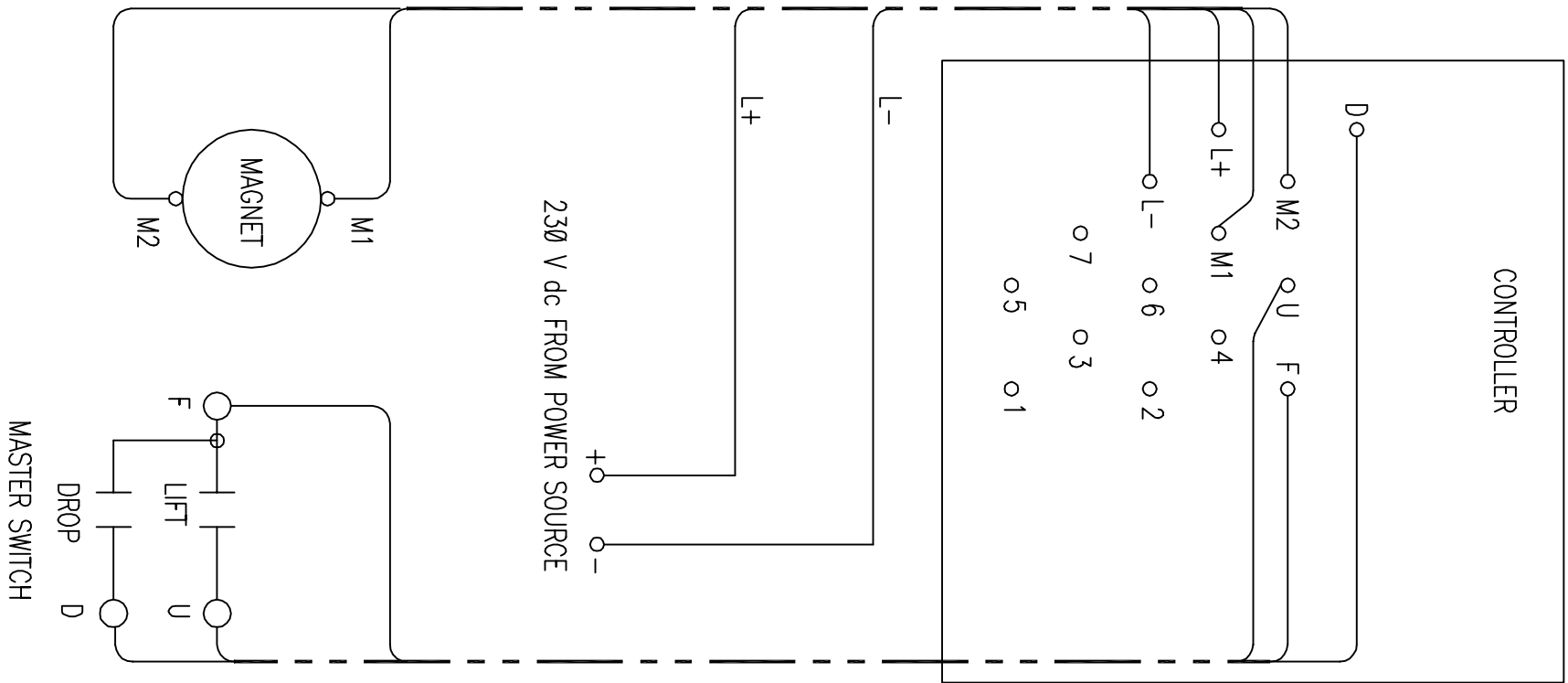


RELAY CONNECTIONS:

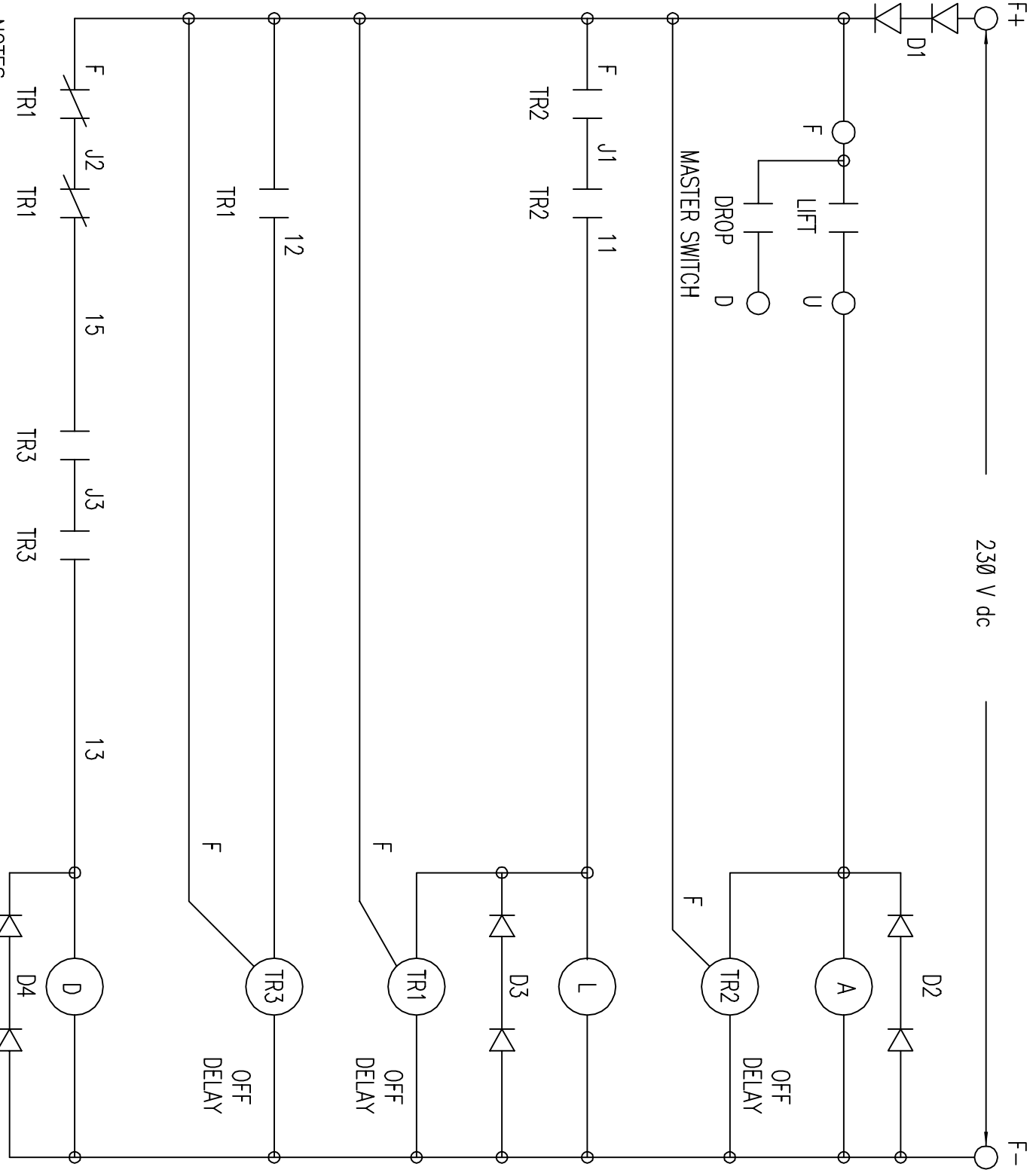
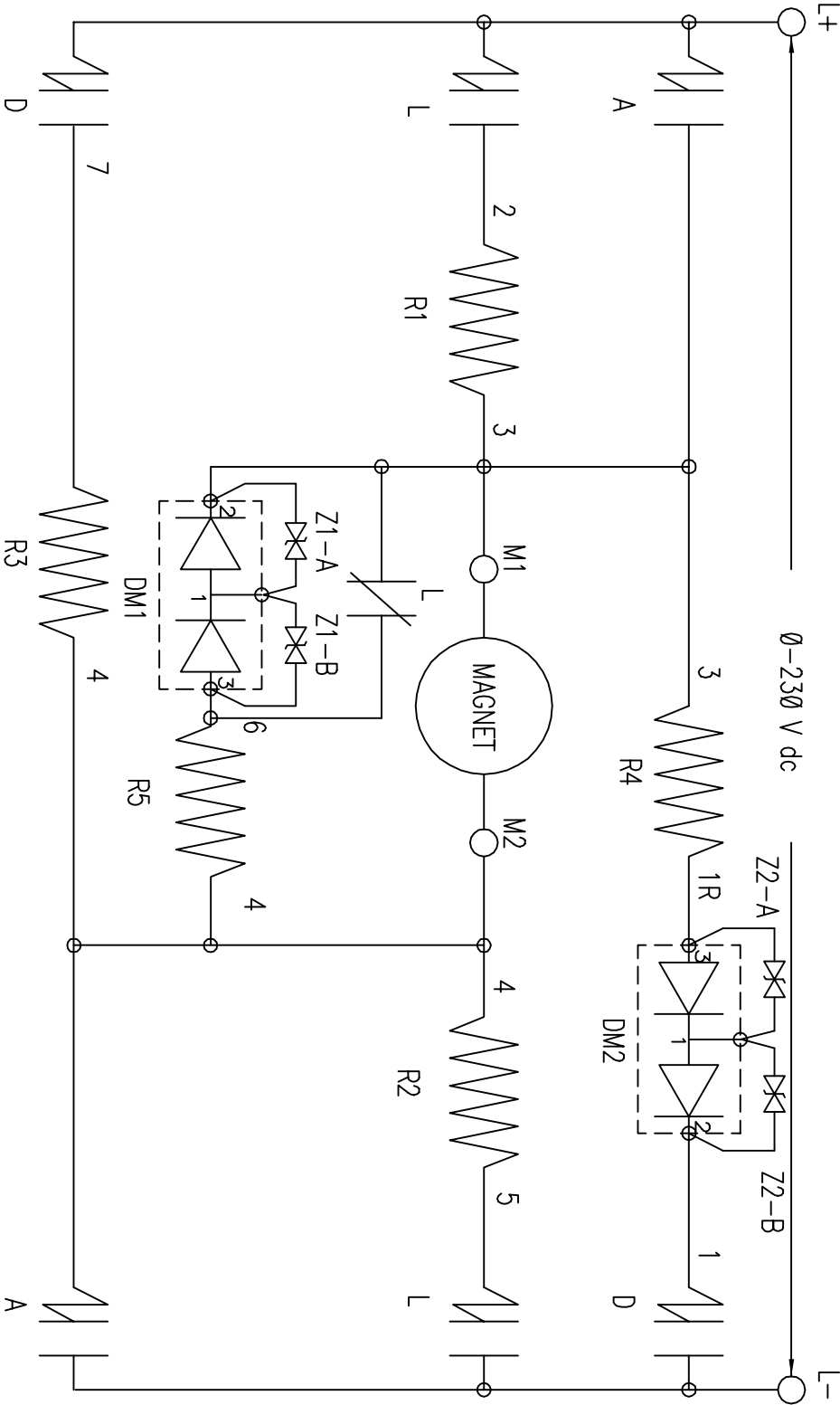
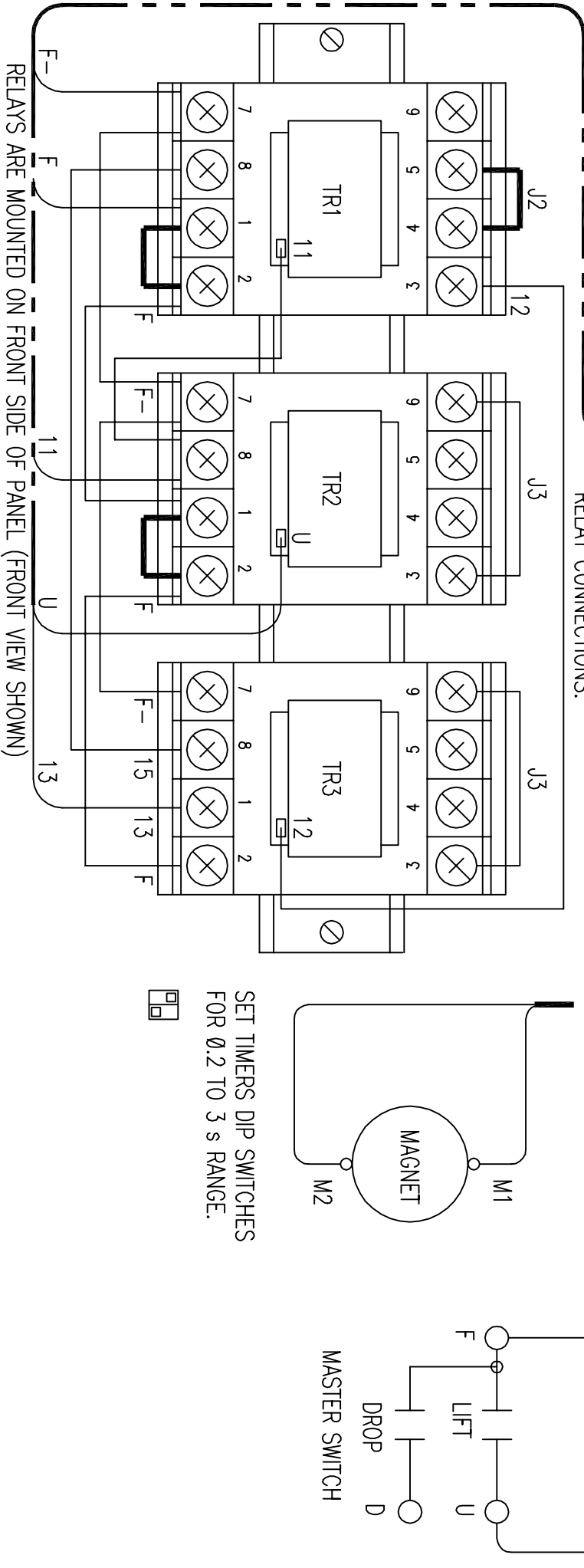
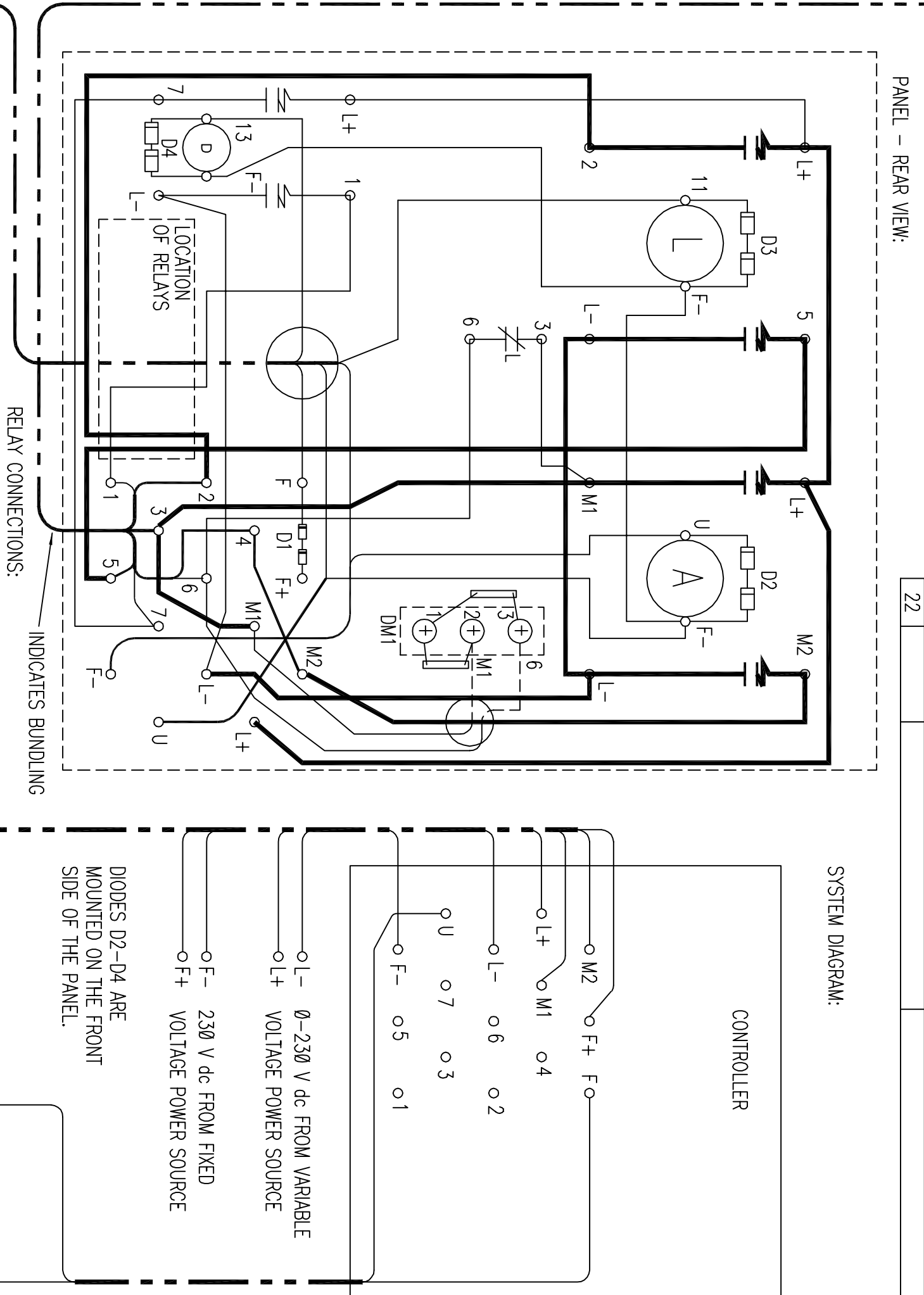
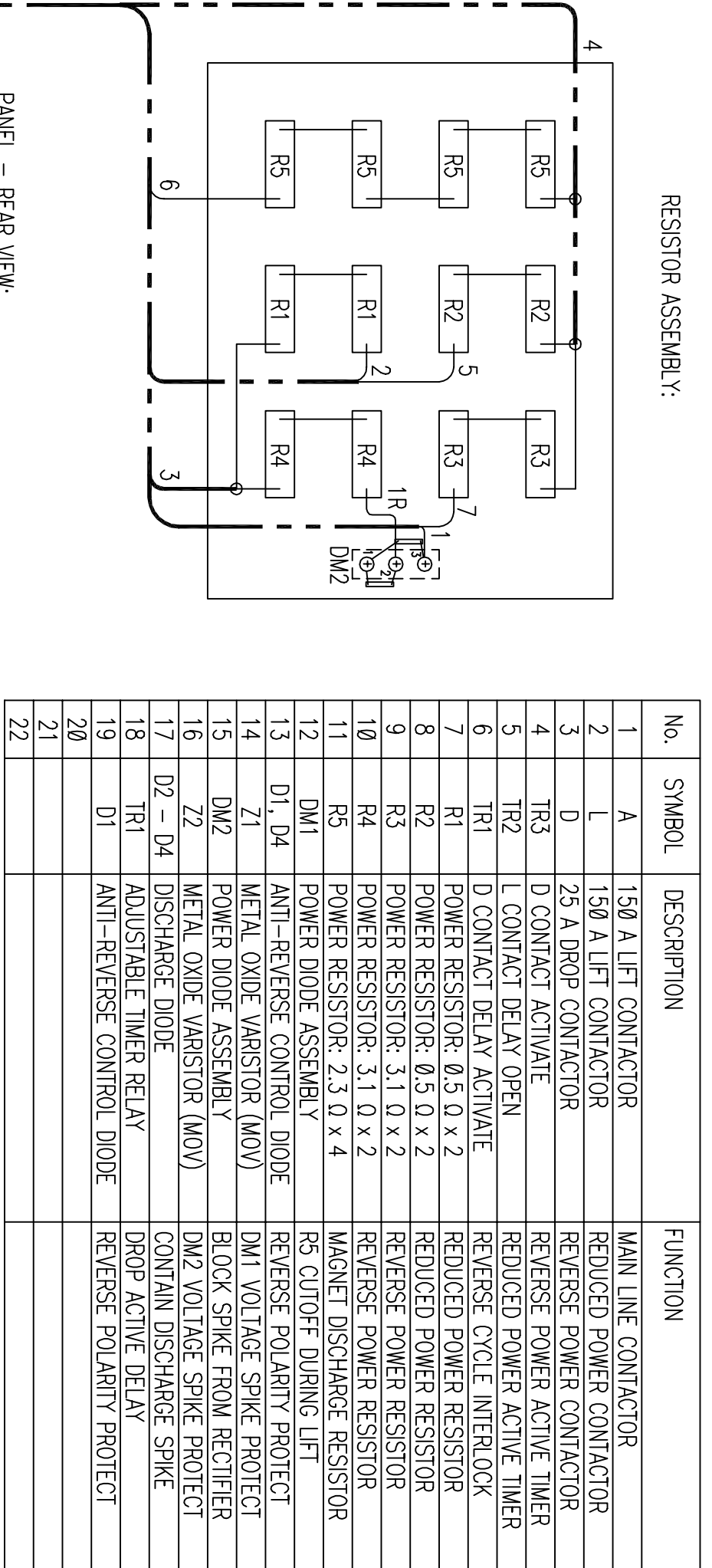


RELAYS ARE MOUNTED ON FRONT SIDE OF PANEL (FRONT VIEW SHOWN)

SYSTEM DIAGRAM:



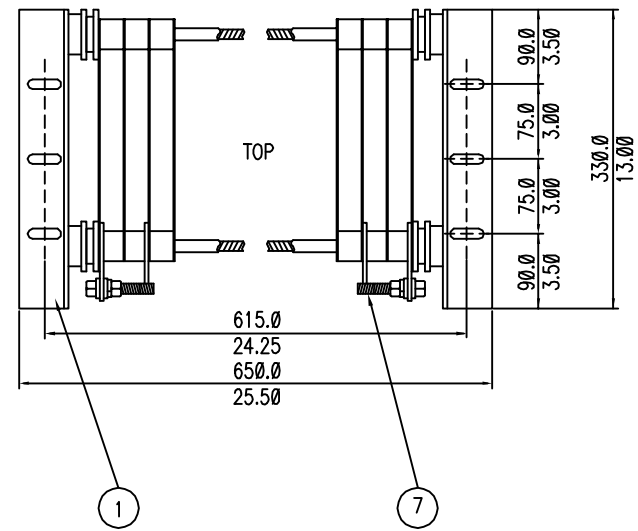
RD-3A TWO MANUAL CONTROLLER  
WIRING DIAGRAM & SCHEMATIC  
018D5507AF



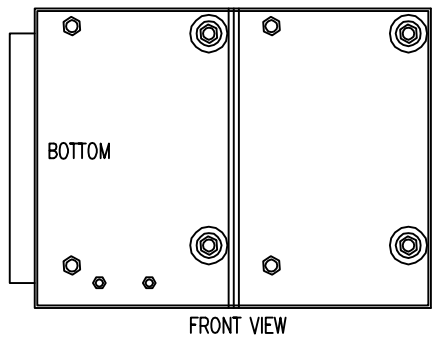
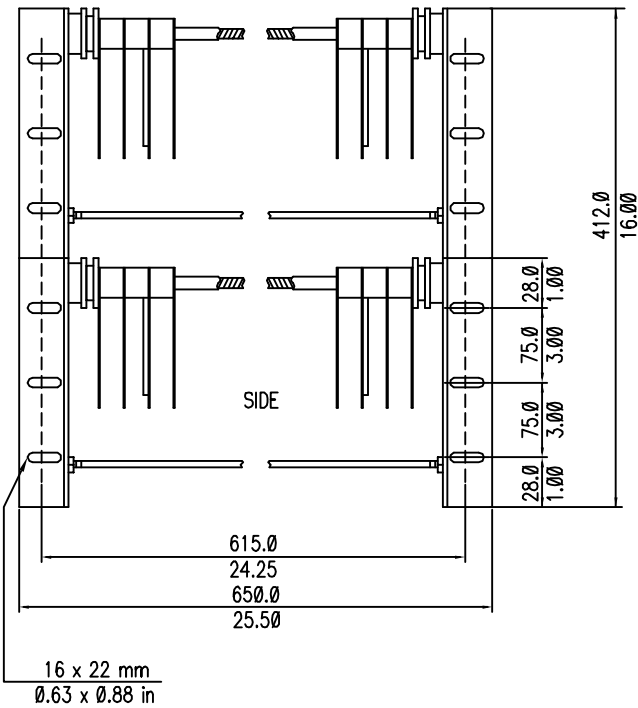
MAGNET COLD		TIME (s)	
CURRENT (A)		TR1	TR2
150 – 200		1.25	3.50
100 – 150		0.75	2.00

1.) TIMERS ARE PRESET AT FACTORY FOR MAGNETS RATED ABOVE 150 A.  
2.) REDUCE TIMING ON TR1 & TR2 FOR MAGNETS RATED BELOW 150 A.  
SEE TABULATION. SET TR1 FOR 1 s.  
3.) MAKE ADDITIONAL MINOR TIMING ADJUSTMENTS ON TR3 FOR OPTIMUM  
DROP CHARACTERISTICS TO SUIT THE MATERIAL BEING HANDLED.  
4.) REFERENCE ASSEMBLY DIAGRAM 120B010A04 FOR CONNECTIONS TO RELAYS.

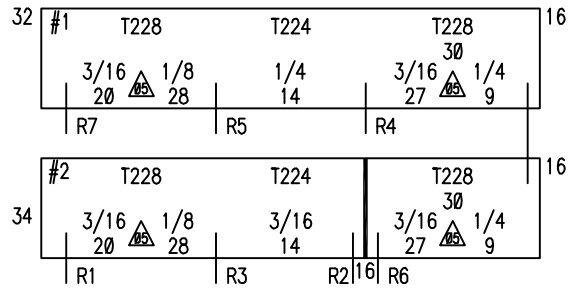
VARIABLE VOLTAGE OPERATION  
RD – 3A AUTOMATIC CONTROLLER  
WIRING DIAGRAM & SCHEMATIC  
Ø 1 8C5507AC



STEP	RESISTANCE	C.C.
R1-R3	6.2 $\Omega$	16
R3-R2	1.0 $\Omega$	34
R4-R6	9.2 $\Omega$	20
R4-R5	1.0 $\Omega$	34
R4-R7	6.2 $\Omega$	16



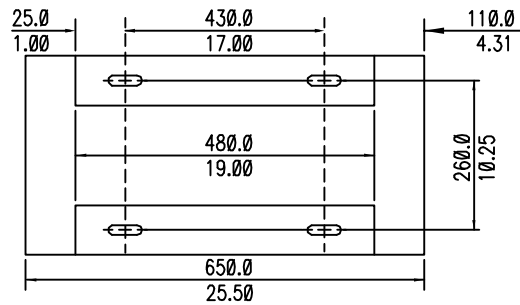
No.	QTY	PART NUMBER	DESCRIPTION
1	1	120B005A8	RESISTOR BANK: RD-3A GRID TYPE
2	1	A-900550-26	MODULAR DOUBLE DIODE: 110 A; 1.2 kV
3	2	018A2966Q	MOV SUPPRESSOR ASSEMBLY
4	2	A-900413-10	SCR ASSY: M5 x 0.8 x 18 mm
5	2	A-900106-39	HEX NUT: M5 x 0.8 mm
6	A/R	A-950009-01	HEAT SINK COMPOUND
7	7	A-900206-01	TERMINAL LUG
8			
9			



2 BANKS, EACH 650 x 330 x 206 mm (25.5 x 13 x 8 in).  
39620B ENDFRAMES. BOLT BANKS TOGETHER.  
FURNISH JUMPER AND 2 PIECE SCREENED COVER.  
HEAT SHIELD PER DRAWING 37836A.  
MODIFIED PER DRAWING 39620A.

REPLACES GUYAN #E-15345

MOUNTING FOOT PATTERN (BOTTON VIEW):



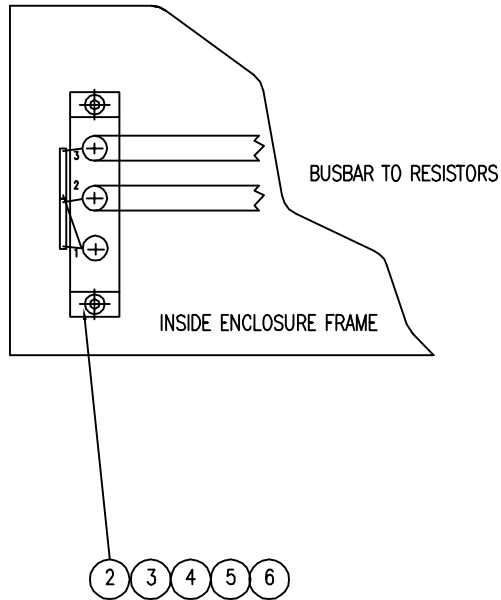
DIM: mm/in

RESISTOR BANK: RD-3A

1 2 0 C 0 0 3 A 1 3

DIODE MOUNTING INSTRUCTIONS:

- 1.) DIODE IS MOUNTED ON THE INSIDE OF ENCLOSURE FRAME IN SPACE PROVIDED AT THE LOWER LEFT CORNER OF RESISTOR BANK.
- 2.) REMOVE SCREEN COVER TO ACCESS DIODE MOUNTING AREA.
- 3.) BEFORE INSTALLING DIODE, REMOVE FACTORY INSTALLED SHORTING JUMPER LOCATED ON EXTENDED BUSBAR.
- 4.) APPLY HEAT SINK COMPOUND TO BOTTOM BASE OF DIODE. MOUNT DIODE ONTO ENCLOSURE FRAME WITH TERMINAL #3 OF DIODE MOUNTED ON TOP. DIODE MOUNTING HOLES WILL LINE UP WITH EXISTING HOLES IN ENCLOSURE FRAME. SECURE DIODE TO ENCLOSURE FRAME WITH SPECIFIED HARDWARE.
- 5.) cONNECT BUSBAR TO TERMINALS #2 AND #3 AS SHOWN USING HARDWARE PROVIDED WITH DIODE.
- 6.) CHECK FOR SNUGNESS OF ALL FASTENERS.



## RD-3A STEP BY STEP CONTROLLER OPERATION – AUTOMATIC

- 1.) When a signal is given by closing the contacts between terminals “F” and “U”, the “A” coil and the off-delay timer relay “TR2” are energized.
2. This closes the “A” contacts and applies full power to the magnet.
- 3.) The closing of the “TR2” contact energizes the “L” coil; closing the “L” contacts and also energizes the off-delay timer relay “TR1”.
- 4.) The closing of the “TR1” contact energizes the off-delay timer relay “TR3”.
- 5.) The normally closed “TR1” contacts in series with the drop coil “D” are opened and the normally opened “TR3” contacts are closed.
- 6.) When the “F” to “U” contact is broken, the “A” coil is de-energized.
- 7.) This opens the “A” contacts and sends current through resistors “R1” and “R2” to drop the magnet current to about half. The magnet will also begin to discharge through DM1 and R5. Timer “TR2” is also de-energized and begins to time out .
- 8.) Once timer “TR2” has completely timed out, its contacts connected to timer “TR1” and coil “L” open up. Coil “L” drops out and timer “TR1” begins to time out. The magnet continues to discharge through DM1 and R5.
- 9.) When timer “TR1” completely times out the normally closed contacts in series with the drop coil will close. Timer “TR3” will still be active and the circuit will be complete allowing the drop coil “D” to energize. The drop coil “D” will remain engaged until timer “TR3” will time out.

## RD-3A STEP BY STEP CONTROLLER OPERATION – MANUAL

- 1.) When a signal is given by closing the contacts between terminals “F” and “U”, the “A” coil and the off-delay timer relay “TR2” are energized.
2. This closes the “A” contacts and applies full power to the magnet.
- 3.) The closing of the “TR2” contact energizes the “L” coil; closing the “L” contacts and also energizes the off-delay timer relay “TR1”.
- 4.) The closing of the “TR1” contact energizes the off-delay timer relay “TR3”.
- 5.) The normally closed “TR1” contacts in series with the drop coil “D” are opened and the normally opened “TR3” contacts are closed.
- 6.) When the “F” to “U” contact is broken, the “A” coil is de-energized.
- 7.) This opens the “A” contacts and sends current through resistors “R1” and “R2” to drop the magnet current to about half. The magnet will also begin to discharge through DM1 and R5. Timer “TR2” is also de-energized and begins to time out .
- 8.) Once timer “TR2” has completely timed out, its contacts connected to timer “TR1” and coil “L” open up. Coil “L” drops out and timer “TR1” begins to time out. The magnet continues to discharge through DM1 and R5.
- 9.) In order to activate the manual drop action, the momentary switch lever has to be moved to the “DROP” position. With timer “TR1” timed out, interval timer “TR3” will engage, closing the “TR3” contacts and engaging the drop coil. The drop coil will remain engaged until timer “TR3” times out or the momentary “DROP” switch is released.

## **MAINTENANCE & TROUBLESHOOTING**

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

Check arc shields for burnt areas. replace any that are badly burnt.

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 gap [20 mm opening] between the main contacts (#27a and 35e). Adjust by loosening screw (#46) on part (#35c) and turning the assembly.

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

Check Power Diode (DM1) integrity with a standard Digital Multi-Meter (DMM) set to the diode check function. (See the owners manual for details.) Disconnect the leads to the diode and remove the MOV suppressors (Z1 & Z2) to isolate from the circuit. Place the red lead of the meter on terminal 1 of the diode (the number is stamped next to the terminal) and the black lead on terminal 2. Meter should read <1.0. Reverse the leads and the meter should read open (1.00) or  $\infty$ . Repeat for terminals 3 (red) and 1 (black). If the diode reads bad, replace. Reconnect wires and MOVs (Z1 & Z2).

Note: Z1 & Z2 are MOV suppressors to help limit voltage spikes applied to DM1 and causing Damage

### **EMERGENCY SPARE PARTS & UPGRADE KITS**

Automatic: #ESP-018M6100X1    Manual: #ESP-018M6100X2

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.

**OLD STYLE PNEUMATIC TIMER UPGRADE KIT: 120M01A04**



**OHIO MAGNETICS, INC.**

**A SUBSIDIARY OF PEERLESS-WINSMITH, INC**

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MAPLE HTS., OHIO 44137-3687**

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