CLASS 6815 (FORMERLY 1315) TYPE A MAGNET CONTROLLERS
EQUIPPED WITH BOOSTER (OVEREXCITATION) FEATURE, SERIES A
TYPES A-80 & AW-80 FORMS E20, E33 & E34 RATED 31-80 AMPS*
TYPES A-130 & AW-130 FORMS E20, E33 & E34 RATED 81-130 AMPS*
FOR USE ONLY WITH A 275/190V DC GENERATOR SUPPLY

*Amp Ratings shown above apply to the "cold" current drawn by a magnet *at 230 volts* when its internal temperature is 68° - 77°F. **Note:** *Types A-130 and AW-130 are rated 50 Amps minimum if generator is at least 20KW.*

Installation:

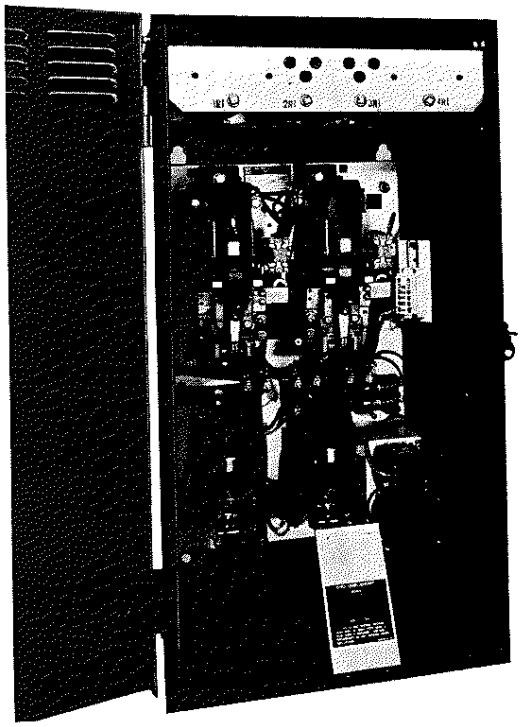
A. Unpack controller carefully. Verify receipt of correct device by checking main nameplate on panel.
B. Thoroughly inspect equipment for any transit damage. Tighten any electrical connections that might have loosened during shipment.
C. Bolt controller securely into desired position.
D. Wire all external power and control circuits in accordance with wiring diagram.
E. Before applying power or connecting magnet, manually operate contactors to check for free movement without binding, and *make sure all four arc chutes are pivoted to their fully down position.*

WARNING: Electrical Shock Hazard when enclosure door is open. Contactor arcing is normal for control operation and this arcing may result in emission of hot particles. To avoid injury from emission of hot particles, service personnel should were safety glasses and stand back and to the side when operating control with enclosure door open.

Start-up: *(With Magnet Disconnected)*

A. Set reverse-current rheostat 1RH above midpoint.
B. Apply voltage to controller, and check polarity by connecting a voltmeter's + lead to the controller's + line terminal, and the — lead to the — line terminal. **NOTE:** Controller will *NOT* operate with reversed polarity.
C. Check "boost" and "carry" voltages by *holding down* the *LIFT* button. For 6-8 seconds (unless the button is released) the voltage should be 275V Max., then automatically change to 190-200V. Next, release the *LIFT* button and briefly press the *DROP* button. (If necessary, re-adjust the crane mfr's generator field resistors and repeat above procedure until both voltages are correct.)
D. After a "lift" *without a magnet,* if reverse current rheostat is set above midpoint, the following should occur in rapid sequence when *DROP* button is pressed:
   1. Drop contactor closes
   2. Lift contactor opens
   3. Drop contactor re-opens in approximately 4 seconds.
E. Remove power from the controller. *Connect the magnet.* Apply power to the controller and repeat steps C and D. *With magnet connected, the drop contactor should re-open after 1-3 seconds.*

Adjustment For Clean Drop: To adjust the controller for a clean drop without "repicking", a reverse current rheostat is provided. To obtain the best setting for a given magnet, start with the knob set near MIN, then make lifts and drops at successively higher settings until a clean drop



is obtained. Do not set higher than necessary to get a clean drop on all types of loads being handled. Rheostat should be reset if magnet is changed.

Preventive Maintenance and Troubleshooting:

A. *Contact Tips* should be inspected on a regular basis for wear and excessive pitting, before a malfunction occurs. *Tips should be replaced in sets* (one set for the larger, upper pair of Lift contactors; one set for the smaller, lower pair of Drop contactors). Each set is available in a kit (see Items 3A and 5A on pages 3 and 4). It is recommended that both kits be kept on hand.
B. *Periodic Inspection During Operation* can reveal abnormal conditions. While dropping a load, if excessive or unequal arcing occurs when the two Lift contactors open, or when the two Drop contactors open, the system should be shut down to prevent further damage, and the following items checked:
   1. Contact tips and "pigtail" connectors on all four contactors.
   2. Electrical continuity of all resistors and the reverse current rheostat.
   3. Electrical continuity of all electrical interlocks.
   4. Shorts and grounds in the system, including the generator, cable, reel and magnet. Because ohm-meters may not detect grounds, a 500V or 1000V Megger should be used.

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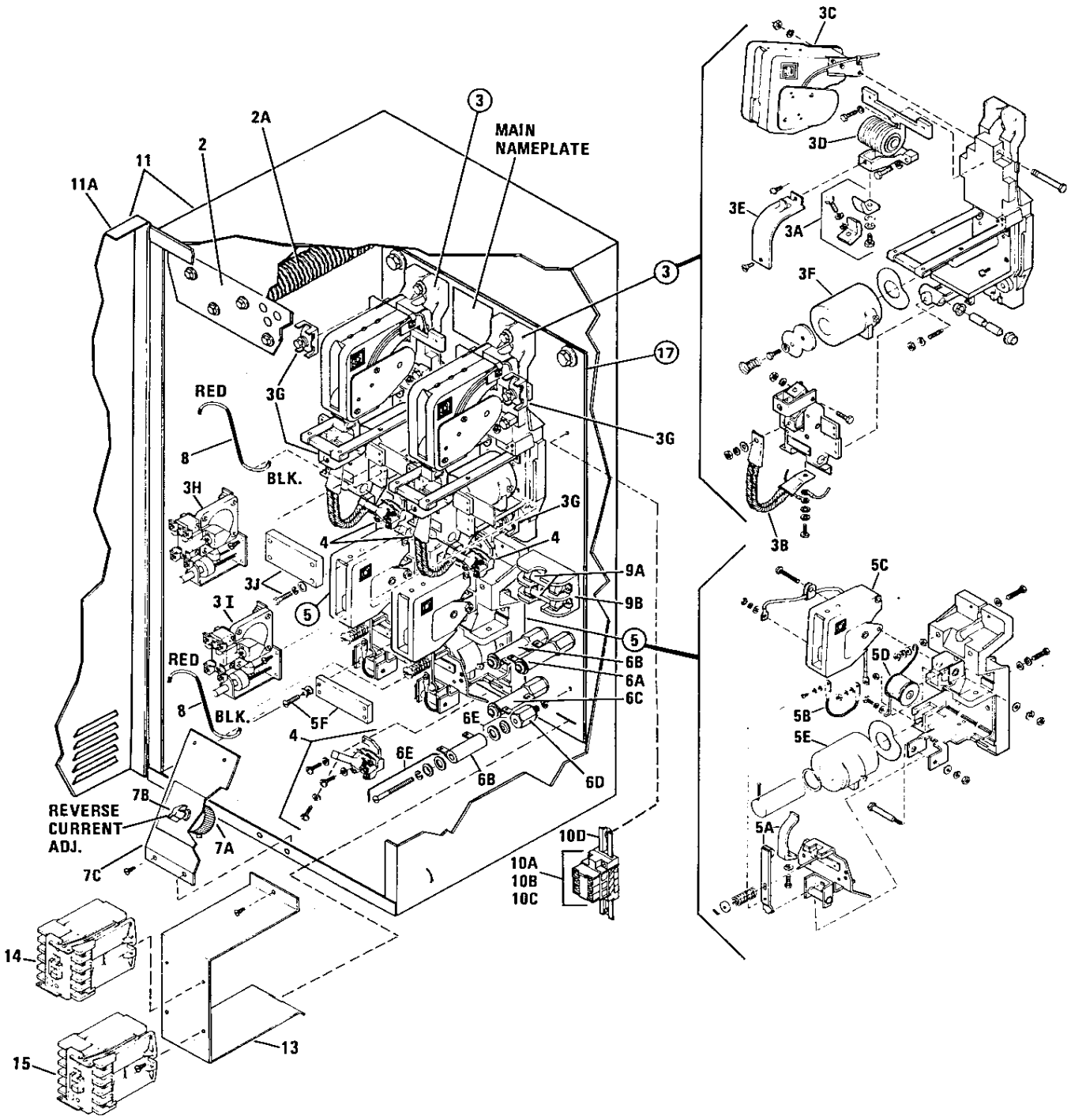
TYPE A FORMS E20, E33, E34 MAGNET CONTROLLERS



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TYPE A FORMS E20, E33, E34 MAGNET CONTROLLERS
PARTS INFORMATION

SYMBOL on Wiring Diagram	ITEM NO. From Pg. 2	DESCRIPTION Note: Indented items listed directly under a device are component parts of that device	TOTAL QTY. in Controller	ORDER PARTS BY NUMBERS SHOWN BELOW (Part Number or Class & Type Number)	
				(For Types A-80 & AW-80)	(For Types A-130 & AW-130)
1R1, 2R1, 3R1, 4R1	2	Discharge Resistor Assembly, with resistors	1	50910-514-50	50910-514-51
	2A	Discharge Resistors only	→	(4 required) 26114-52330 (3.0 ohms each)	(8 required) 26114-52337 (3.75 ohms each)
1L, 2L	3	Lift Contactors (Complete except for Items 3G, 3H, 3I, 3J & 4)	2	Class 7004 Type MEMO-1 with 120V coil (See Service Bul. 7004-65 for components not listed below).	Class 7004 Type MFMO-1 with 120V coil (See Service Bul. 7004-67 for components not listed below).
	3A	Set of Contact Tips for *both* Lift contactors (1L *and* 2L)	1	Class 9998 Type ME-1 Kit (Contains 2-moveable tips, 2 stationary tips, & hardware)	Class 9998 Type MF-1 Kit (Contains 2-moveable tips, 2-stationary tips, & hardware)
	3B	Connector	2	51017-204-50	51018-204-50
	3C	Arc Chute	2	51017-217-50	
	3D	Blowout Coil	2	51017-205-50	
	3E	Blowout Coil Guard	2	51017-237-01	
	3F	Operating Coil, 120 volt	2	51017-056-51	
1L, 2L	3G	Set of Power Terminal Lugs	1	Class 9999 Type ML-1 Kit (Contains 4-clamshell lugs)	
1L	3H	Backup Timer (actuated by 1L contactor)	1	Class 9999 Type MK-5 Pneumatic Timer Kit **Note:** *Mount at right of 1L contactor, then set for 4-second off-delay*	
2L	3I	Boost (Overexcitation) Timer (actuated by 2L contactor	1	Class 9999 Type MK-2 Pneumatic Timer Kit **Note:** Mount at right of 2L contactor, then *set On-Delay time* for: 6 seconds on Type A-80 controllers 8 seconds on Type A-130 controllers	
1L-2L	3J	Tie-Bar	1	Class 9999 Type MT-2 Kit	
1L, 2L, 1D	4	Electrical Interlocks (For Items 3 and 5)	4	Class 9999 Type MX-11 Kit (Each kit contains 1-N.O. & 1-N.C. interlock) 1 kit required for 1L contactor; 2 kits required for 2L contactor; 1 kit required for 1D contactor	
1D, 2D	5	Drop Contactors (Complete except for Items 4 & 5F)	2	Class 7004 Type MXCO-1 with 120V coil (See Service Bulletin 7004-61 for components not listed below)	
	5A	Set of Contact Tips for *both* Drop contactors (1D *and* 2D)	1	Class 9998 Type MX-1 Kit (Contains 2-moveable tips, 2-stationary tips, & hardware	
	5B	Connector (Shunt)	2	51016-220-50	
	5C	Arc Chute	2	51016-221-50	
	5D	Blowout Coil	2	51015-205-50	
	5E	Operating Coil, 120 volt	2	51015-056-51	
1D-2D	5F	Tie-Bar	1	Class 9999 Type MT-1 Kit	

(Continued on Page 4)

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SERVICE BULLETIN

PARTS INFORMATION (Continued)

SYMBOL on Wiring Diagram	ITEM NO. From Pg. 2	DESCRIPTION Note: Indented items listed directly under a device are component parts of that device	TOTAL QTY. in Controller	ORDER PARTS BY NUMBERS SHOWN BELOW (Part Number or Class & Type Number		
R2	6A	Control Resistor, 5000 ohm, 25 watt	1	52906-024-78		
R3, R4	6B	Control Resistor, 500 ohm, 25 watt	2	52906-024-66		
R5	6C	Control Resistor, 250 ohm, 25 watt	1	52906-024-63		
	6D	Resistor Standoffs (for Items 6A, 6B, 6C)	4	29903-01481		
	6E	Sets of Resistor Mounting Hardware (for Items 6A, 6B, 6C)	4	52927-060-50		
1RH	7A	Rheostat, 1000 ohm (Reverse Current Adjustment)	1	26198-34310		
	7B	Pointer Knob (for Item 7A)	1	29203-04002		
	7C	Mounting Bracket (for Item 7A)	1	50910-027-01		
1REC, 2REC	8	Diode Assembly	2	50910-030-50		
1FU, 2FU	9A	Fuses, 15A. 250V.	2	25405-00150		
	9B	Fuse Block	1	25408-30200		
TB	10A	Control Terminal Blocks	5	Class 9080 Type GB-3		
	10B	Terminal End Barrier	1	Class 9080 Type GB-3B		
	10C	Terminal End Clamps	2	Class 9080 Type GH-10		
	10D	Terminal Mounting Channel	1	Class 9080 Type GH-105		
	11	Enclosure only, with door (Add Item 12 for Type AW controllers)	1	50910-005-51		
	11A	Door only	1	50910-010-52		
	12	NEMA 3R Mounting Strap Kit (for Type AW controllers)	1	50910-506-51		
	13	Relay Mounting Bracket	1	51124-361-01		
Note: *For Components of relays below see Service Bulletin 311-AS*				**For Form E20**	**For Form E33**	**For Form E34**
LCR	14	Lift Control Relay	1	Class 8501 Type GDO-40 w/240V DC coil	Class 8501 Type GDO-40 w/12V DC coil	Class 8501 Type GDO-40 w/24V DC coil
DCR	15	Drop Control Relay	(1)	(None)	Class 8501 Type GDO-11 w/12V DC coil	Class 8501 Type GDO-11 w/24V DC coil
——	17	Replacement Assembled Control Panel (Does not include Items 2, 11, 12)				
		For Types A-80 and AW-80 with Form Number as indicated		Class 6815 Type AP-80 Form E-20	Class 6815 Type AP-80 Form E-33	Class 6815 Type AP-80 Form E-34
		For Types A-130 and AW-130 with Form Number as indicated		Class 6815 Type AP-130 Form E-20	Class 6815 Type AP-130 Form E-33	Class 6815 Type AP-130 Form E-34

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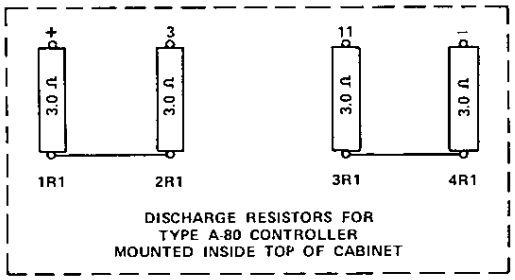
TYPE A FORM E20 MAGNET CONTROLLERS

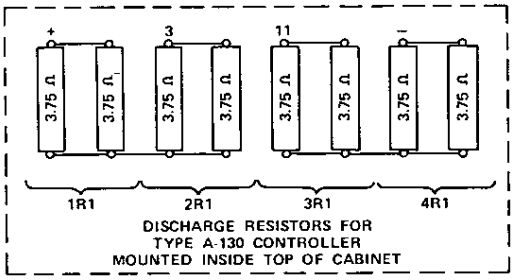
WIRING DIAGRAM

NOTE: CONTROLLER WILL ONLY OPERATE WHEN USING INDICATED POLARITY
DOTTED LINES INDICATE DEVICES & WIRING NOT FURNISHED BY SQUARE D

CONNECTION DIAGRAM



DISCHARGE RESISTORS FOR
TYPE A-80 CONTROLLER
MOUNTED INSIDE TOP OF CABINET



DISCHARGE RESISTORS FOR
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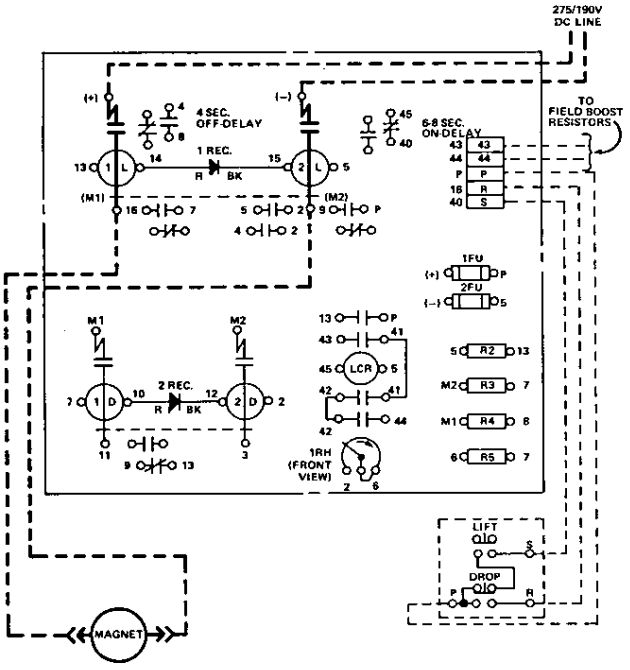
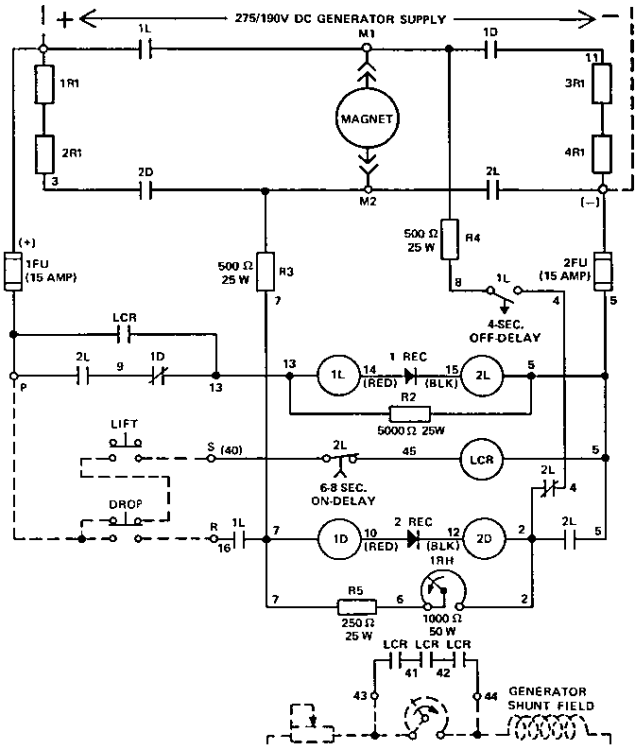


ELEMENTARY DIAGRAM



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TYPE A FORMS E33, E34 MAGNET CONTROLLERS

WIRING DIAGRAM

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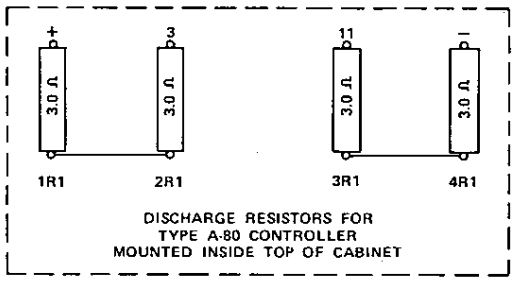
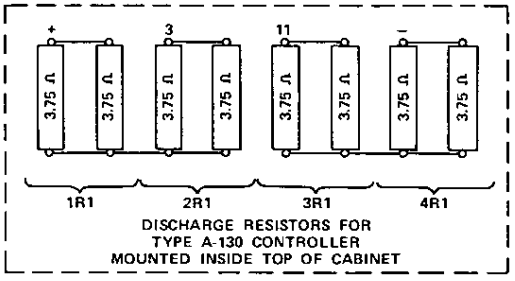
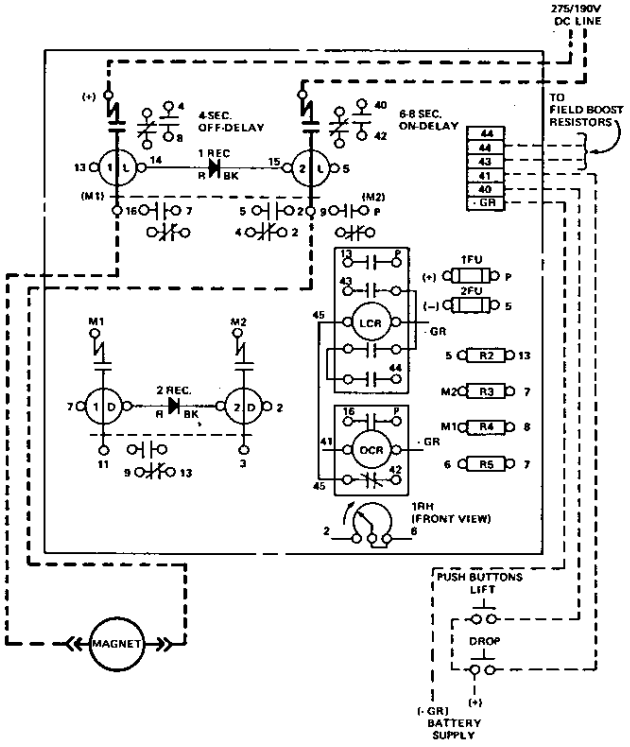
CONNECTION DIAGRAM







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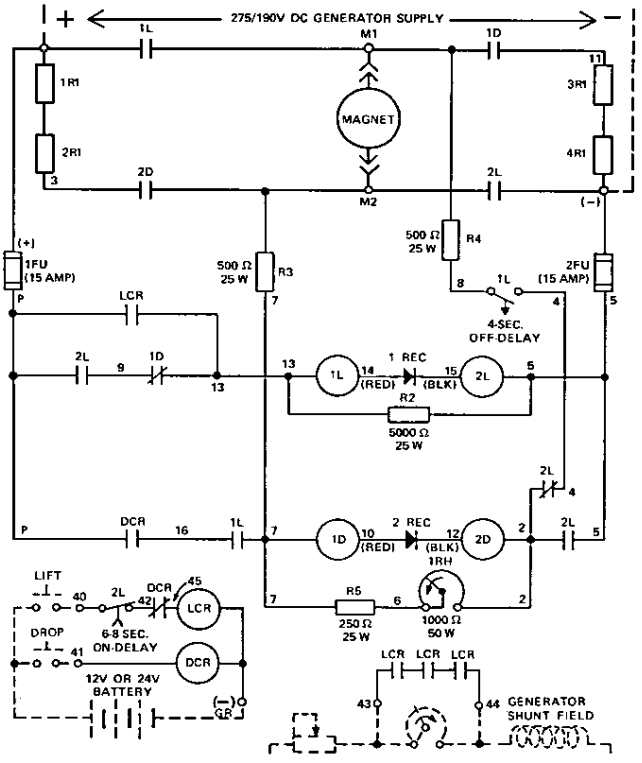

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