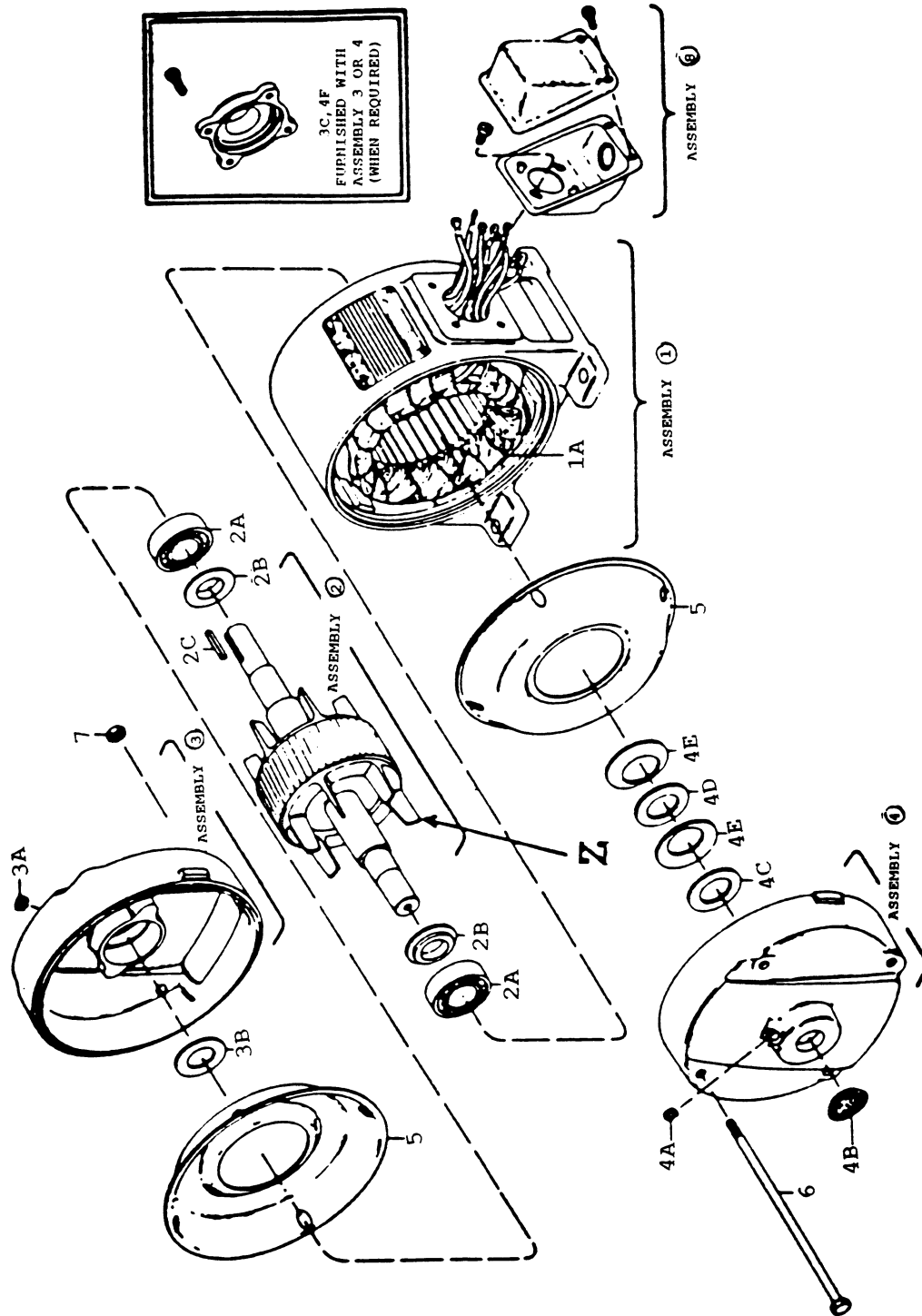
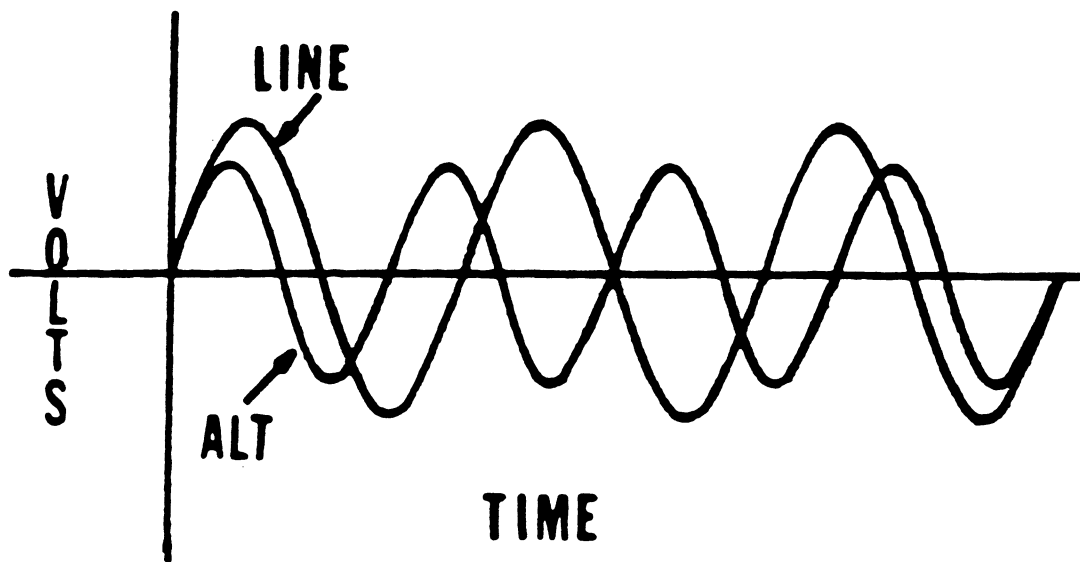


# CHAPTER 1 ELECTRICITY

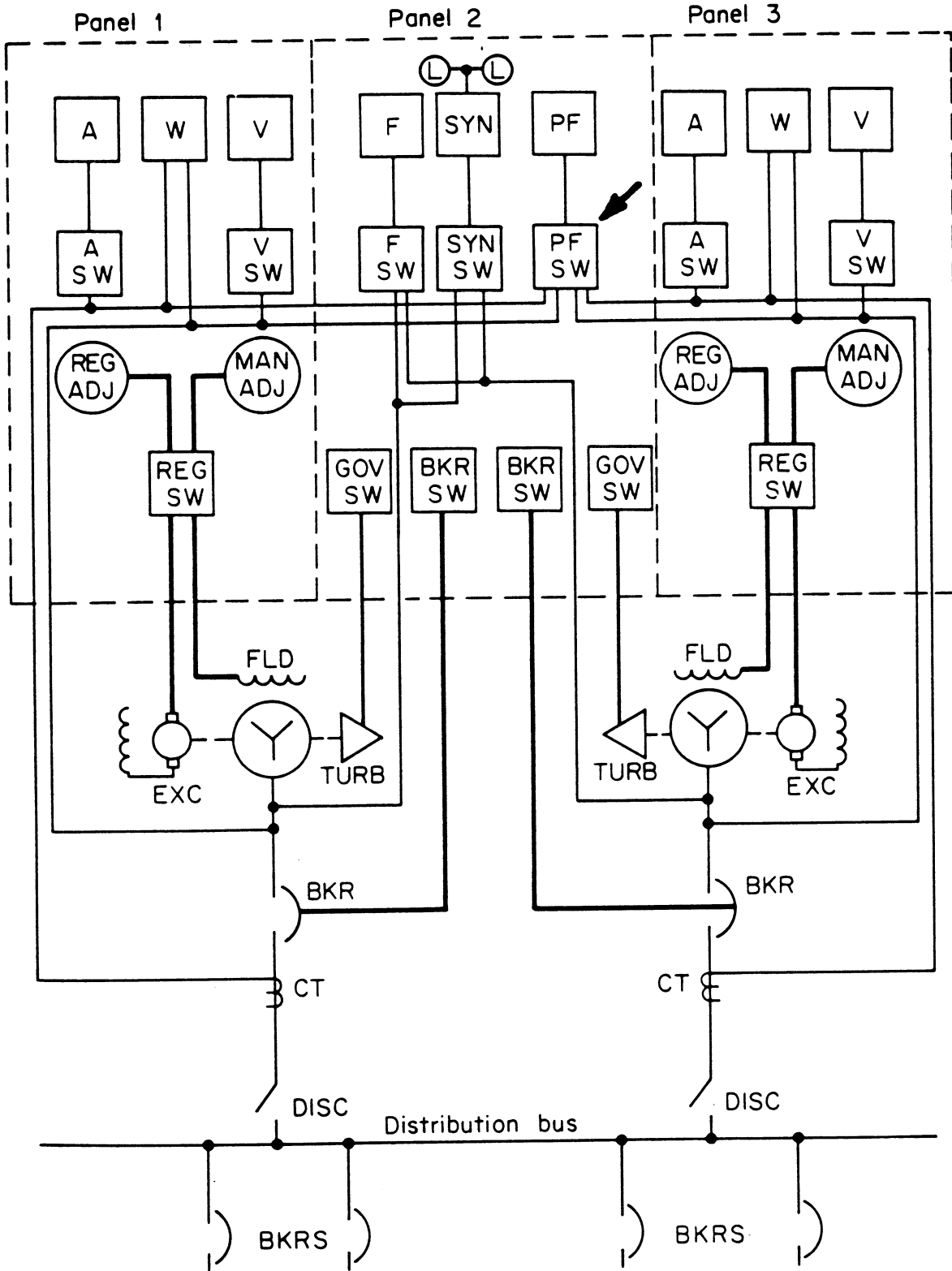
EL-0001



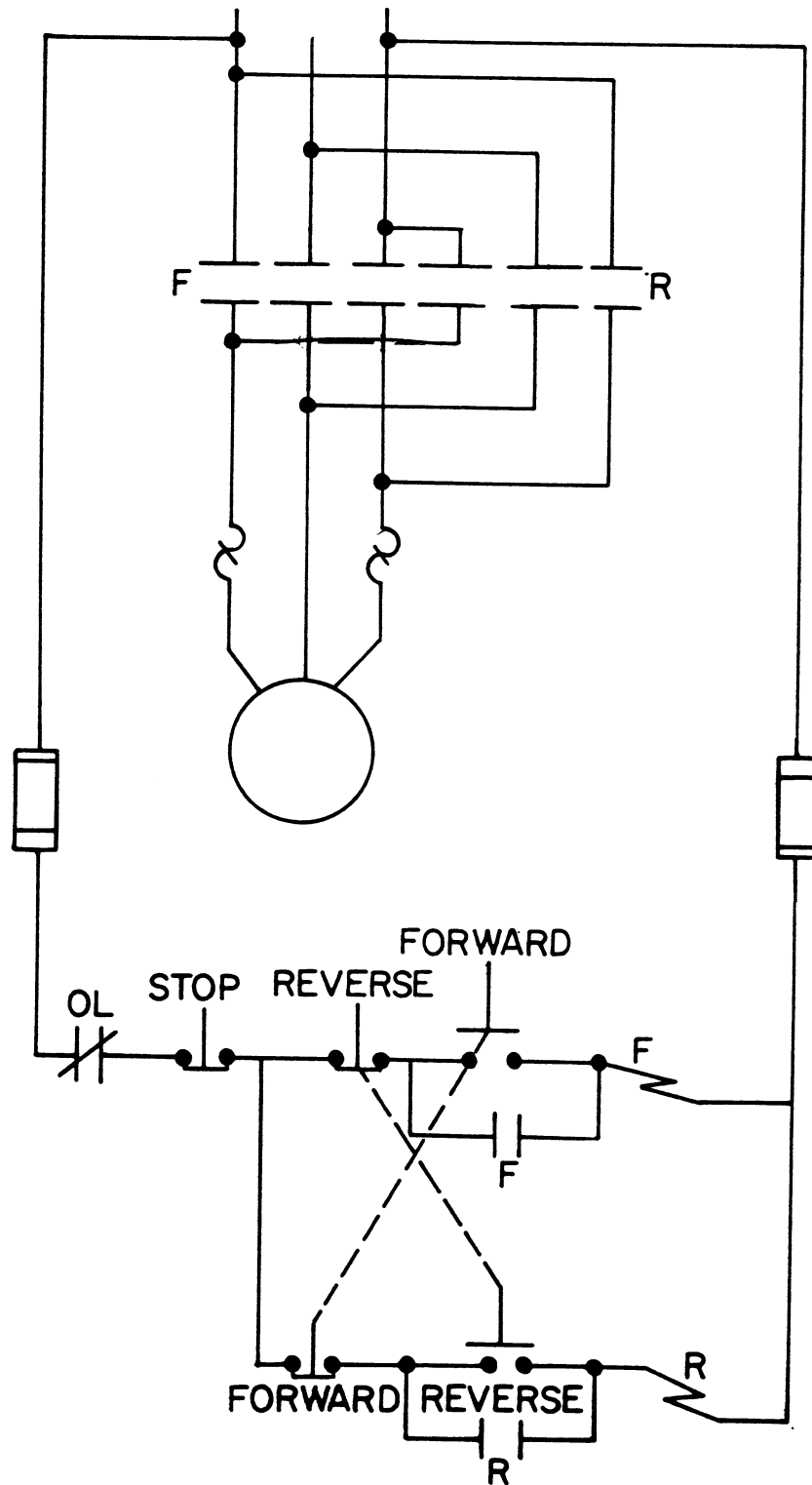
**EL-0002**



EL-0003



EL-0004



**EL-0005**

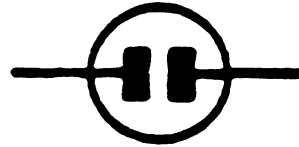
**A**



**B**



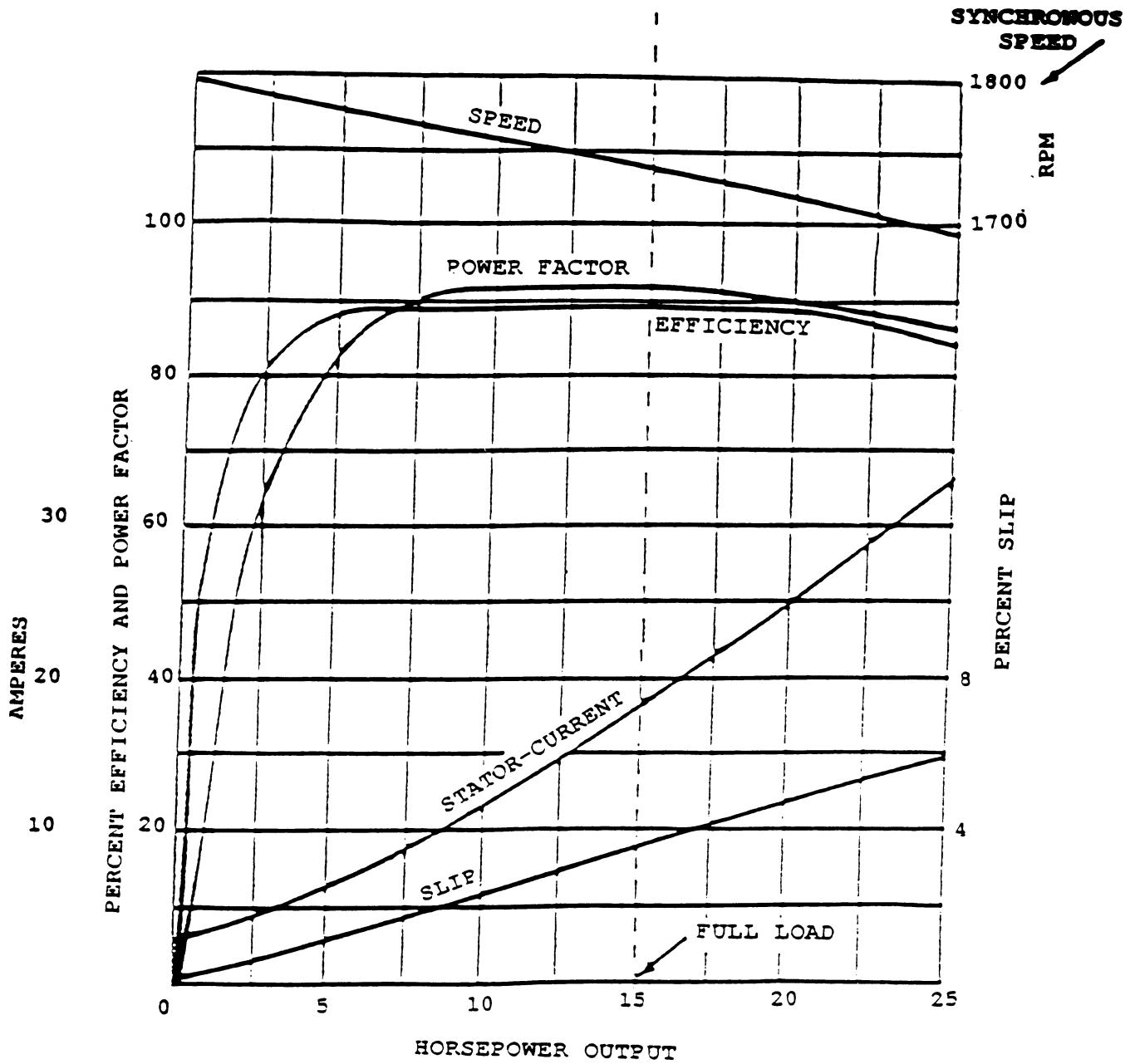
**C**



**D**

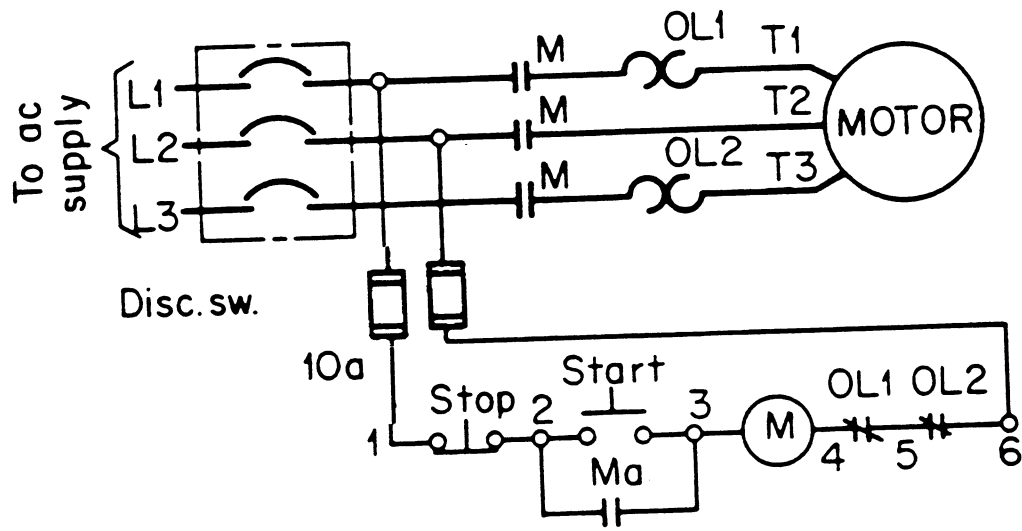


EL-0006

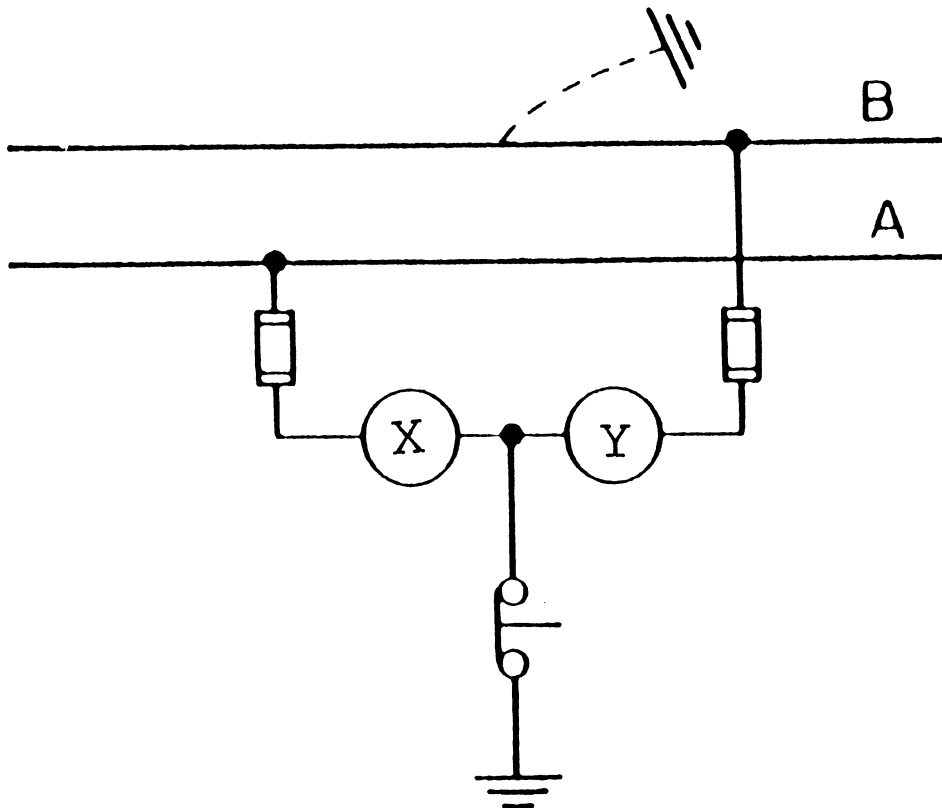


PERFORMANCE CURVES FOR 4-POLE 3-PHASE  
440-VOLT 15-HP CAGE-ROTOR MOTOR

EL-0007



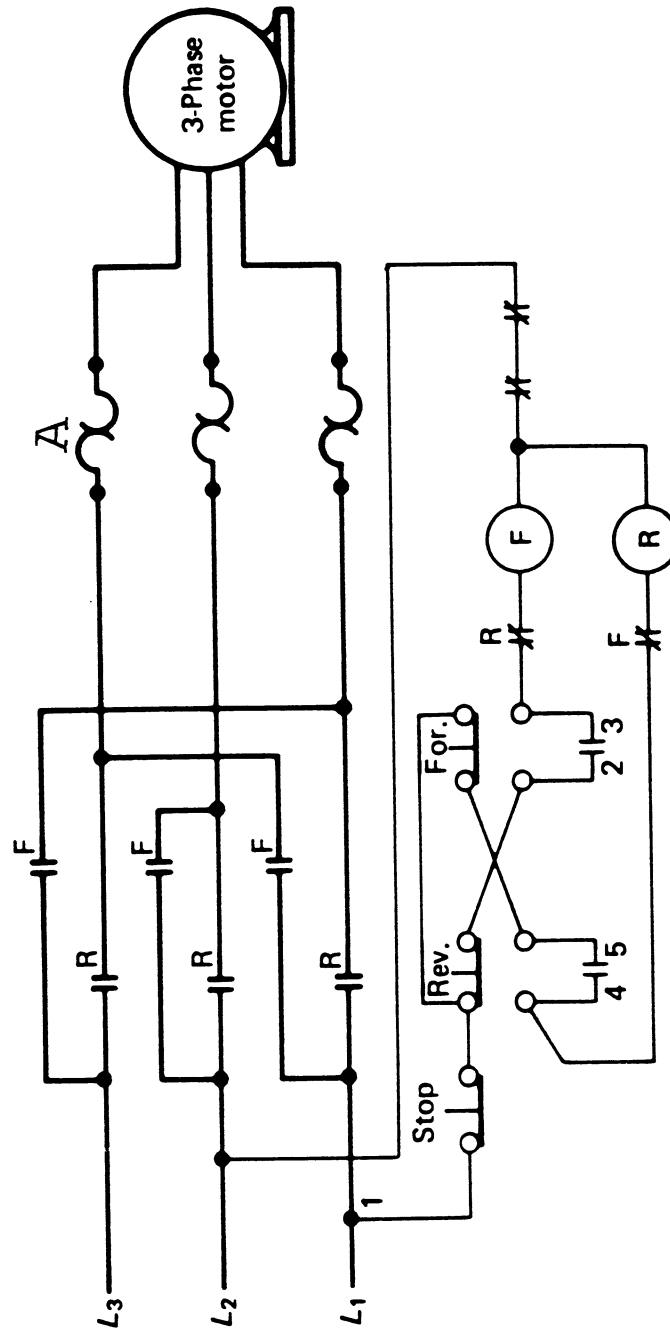
EL-0008



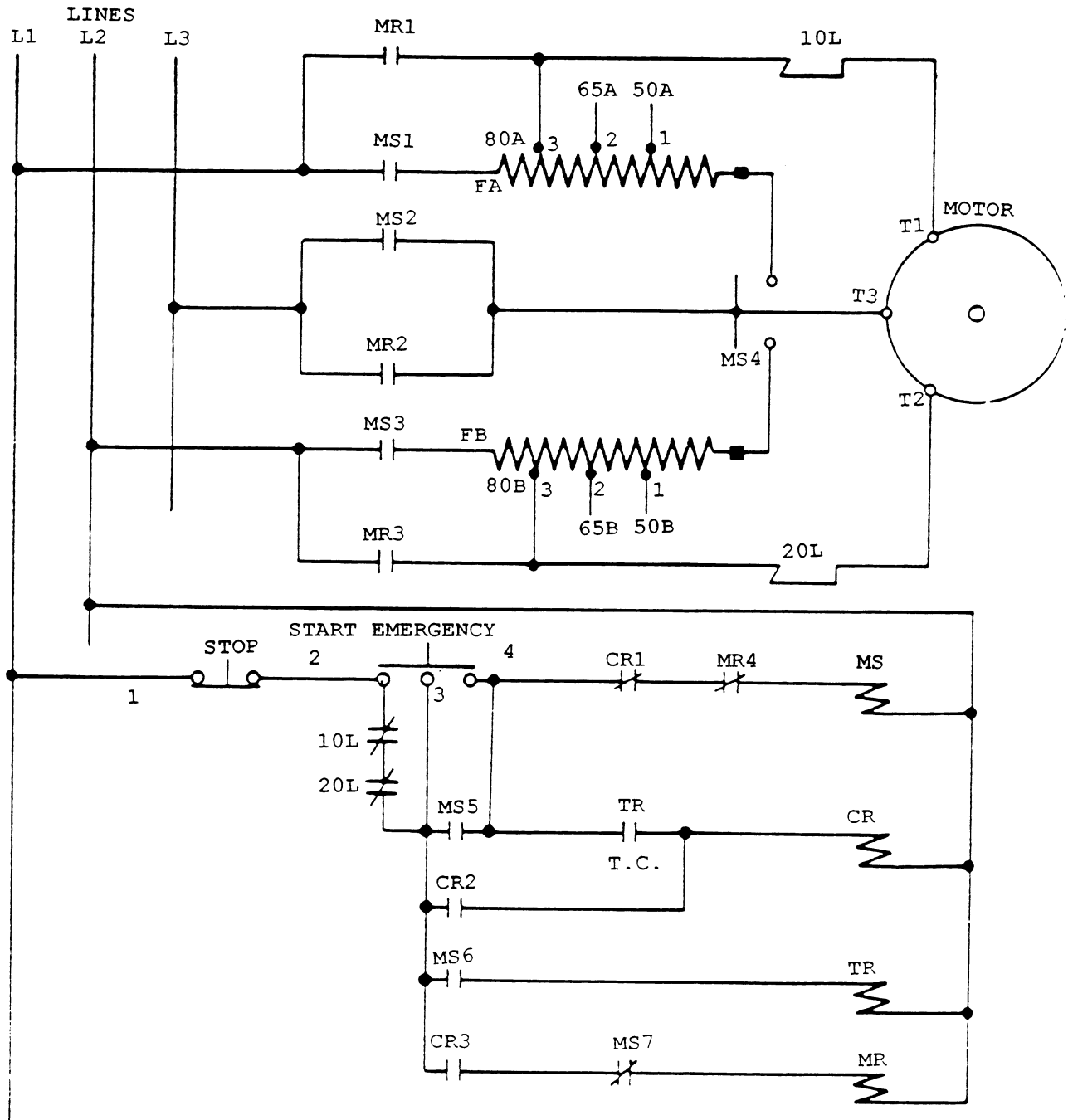




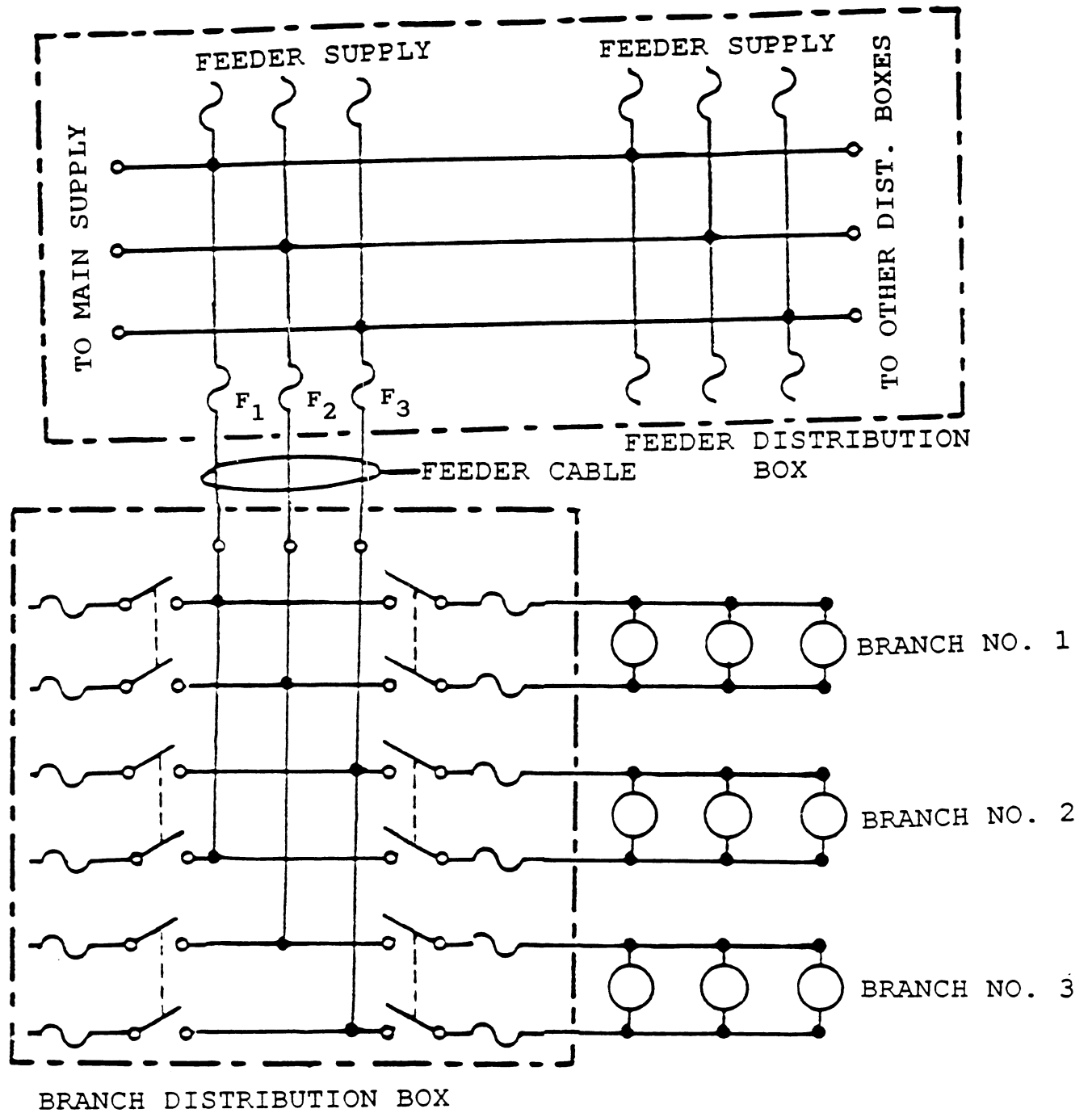
EL-0011



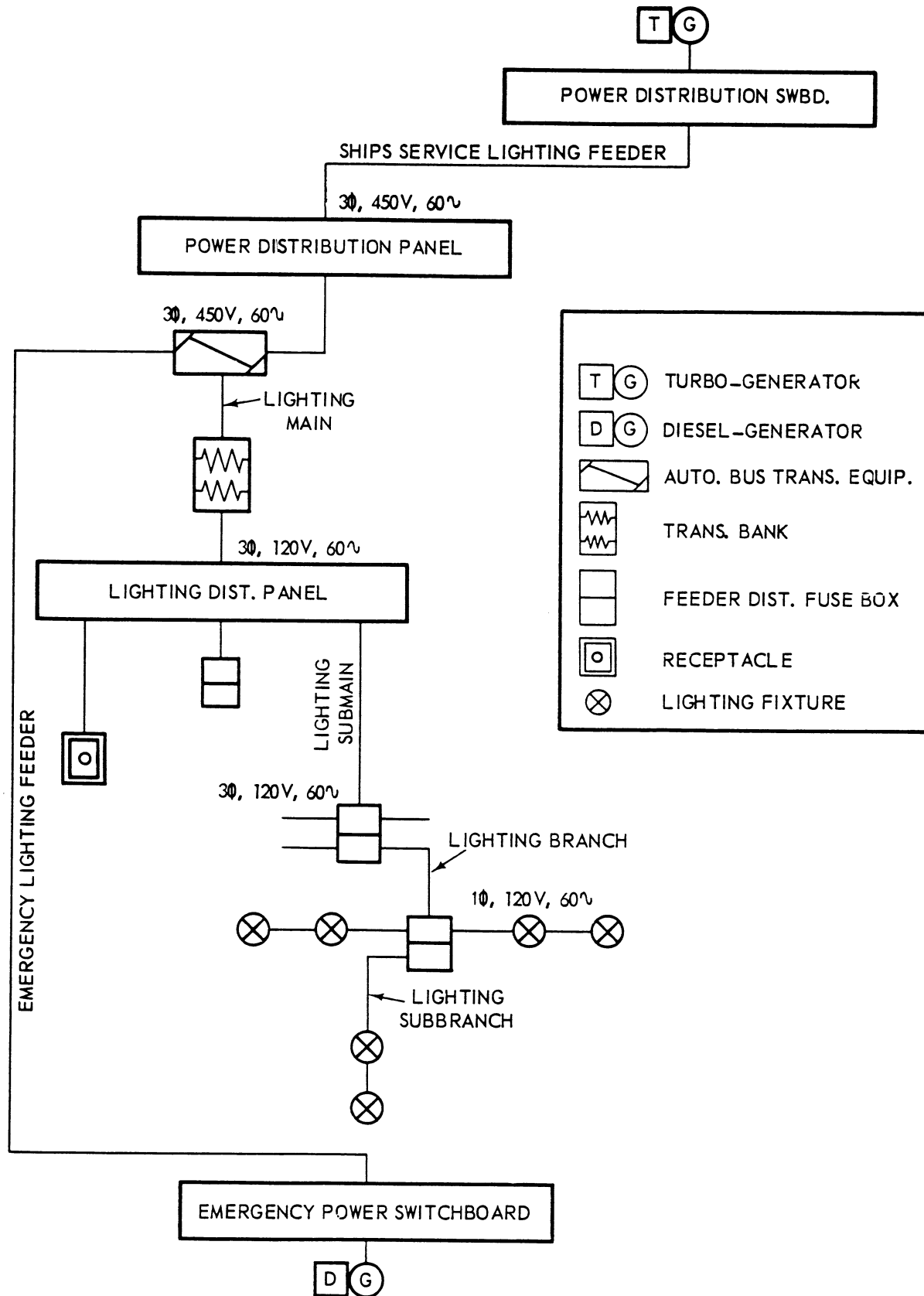
**EL-0012**



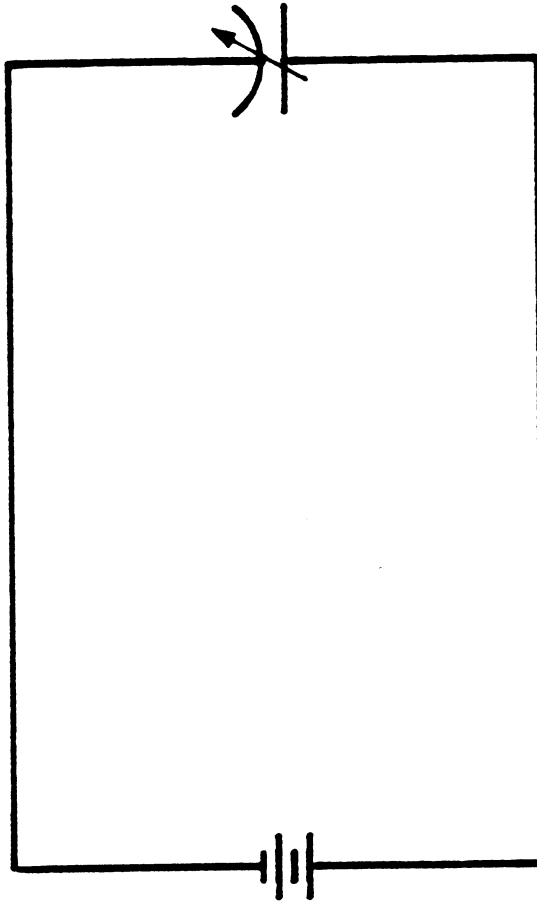
EL-0013



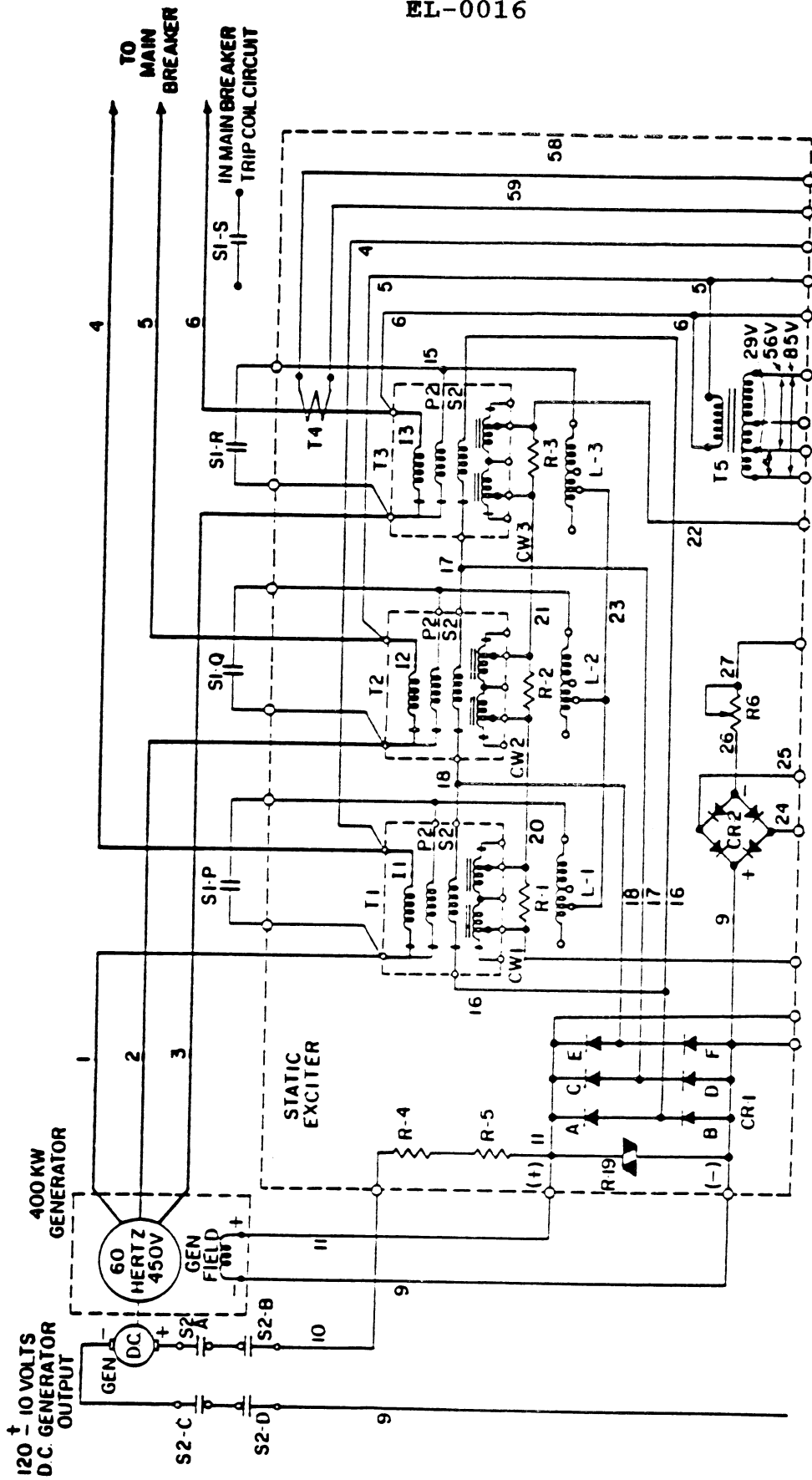
**EL-0014**



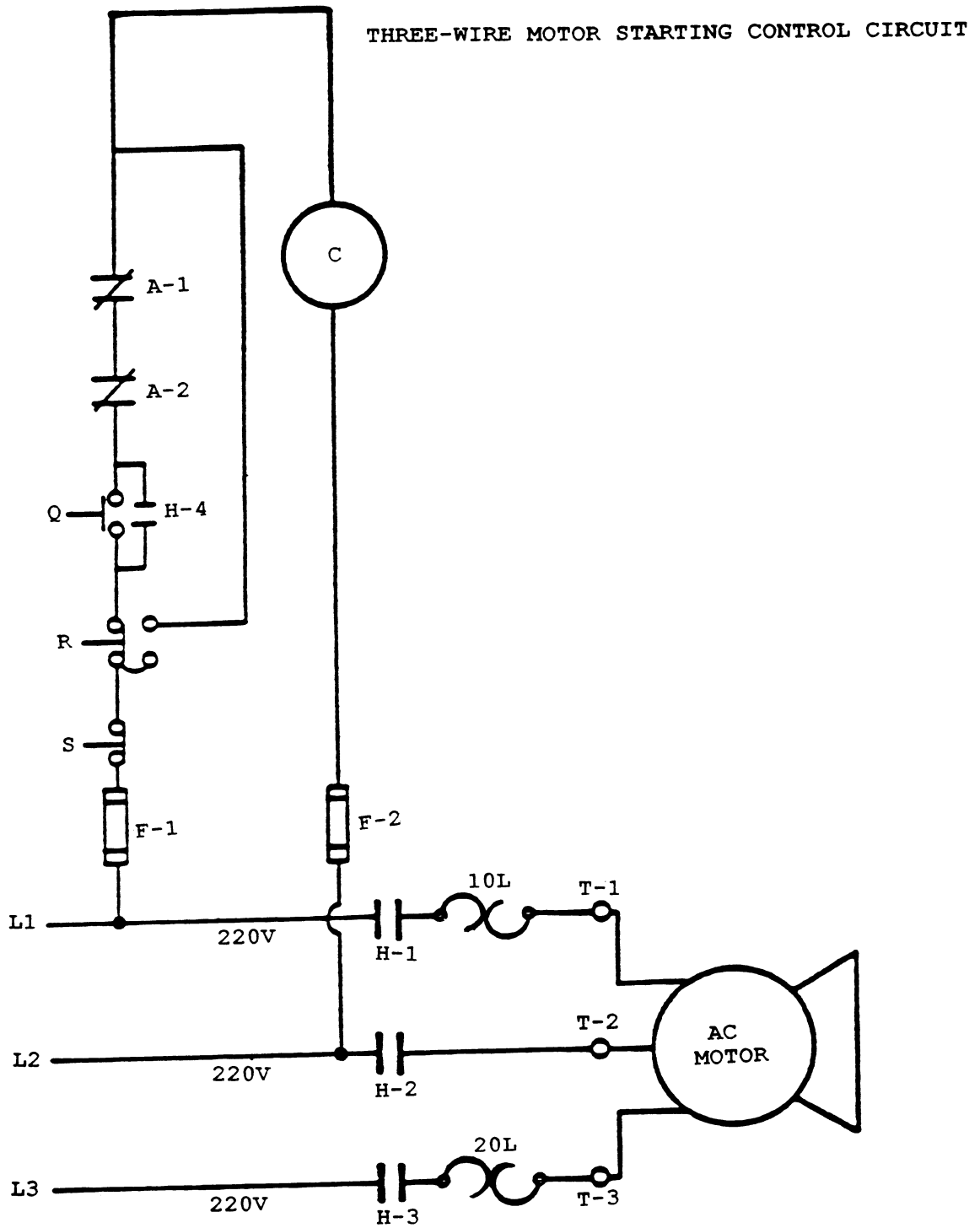
**EL-0015**



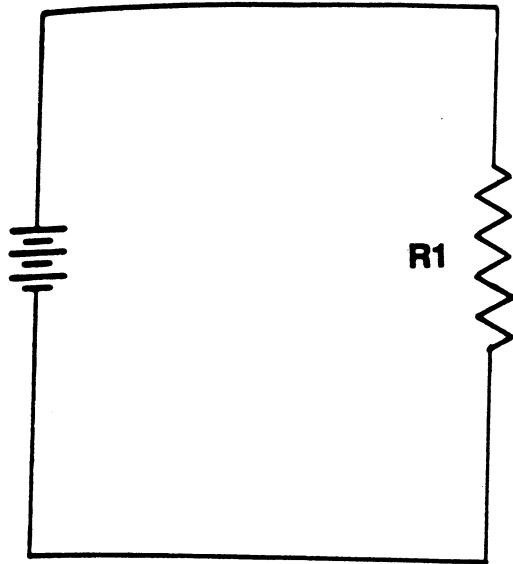
EL-0016



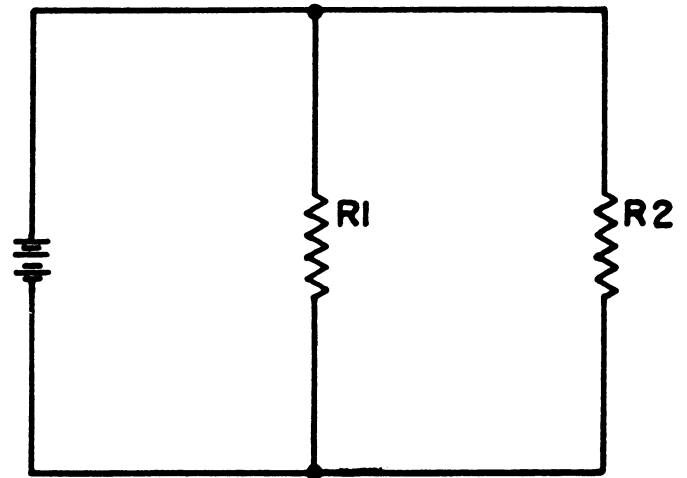
**EL-0017**



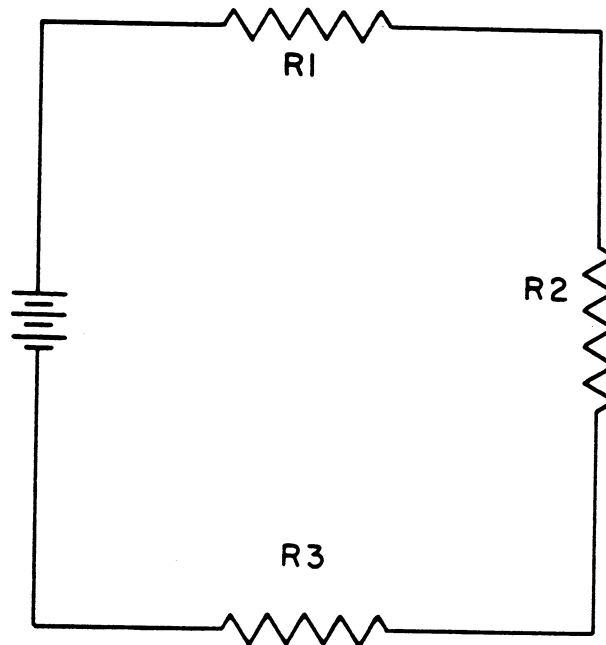
**EL-0018**



**EL-0019**

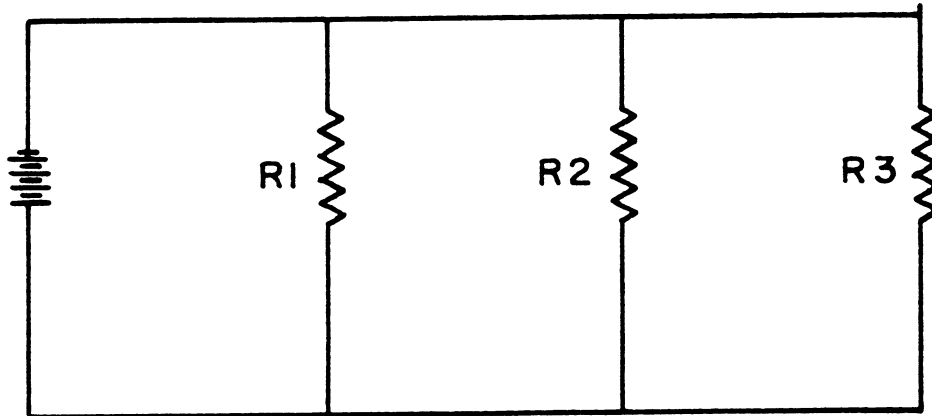


**EL-0020**

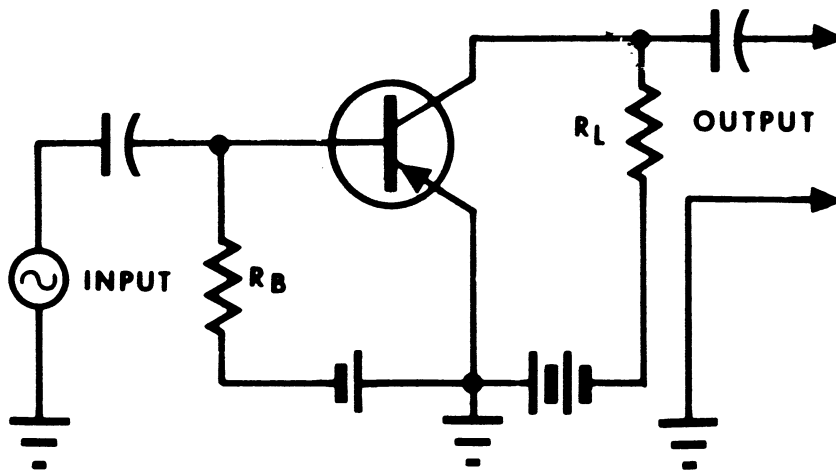




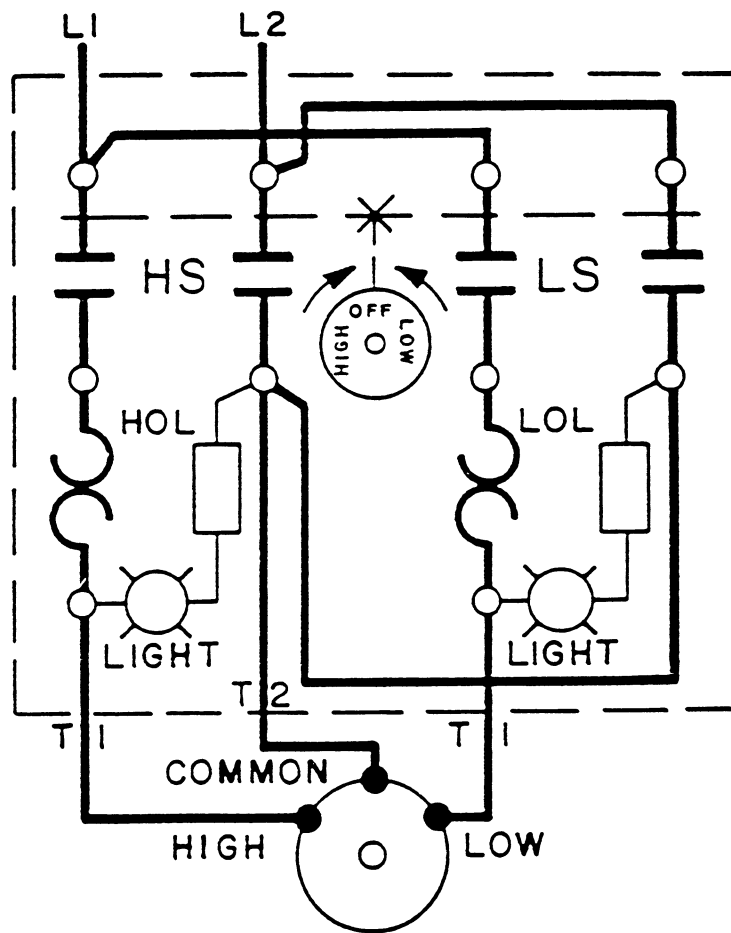
**EL-0021**



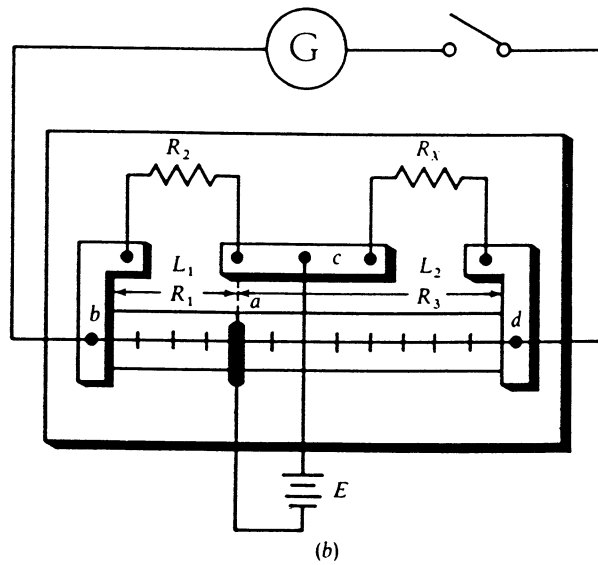
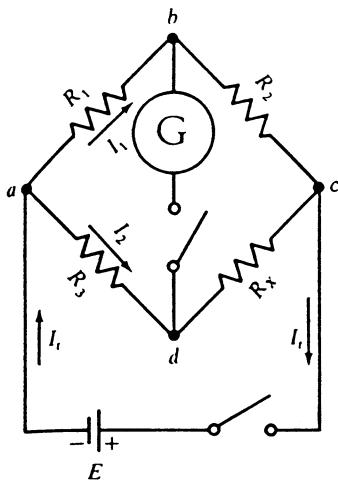
**EL-0022**



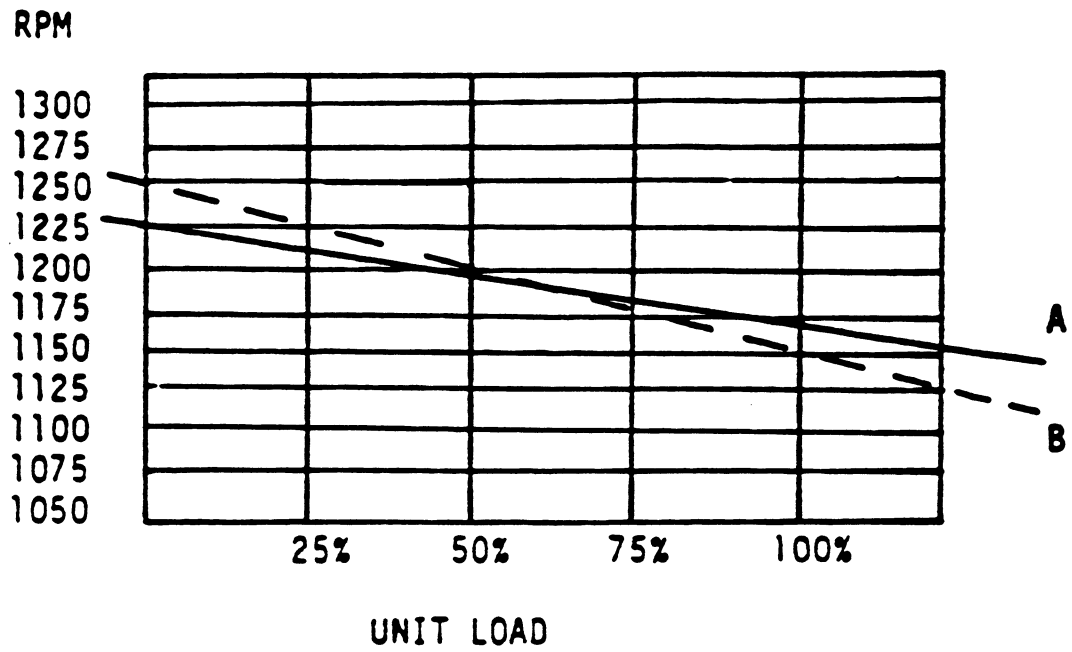
EL-0023



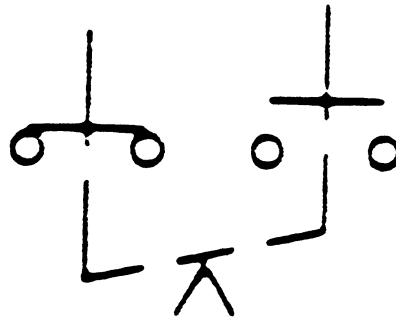
EL-0024



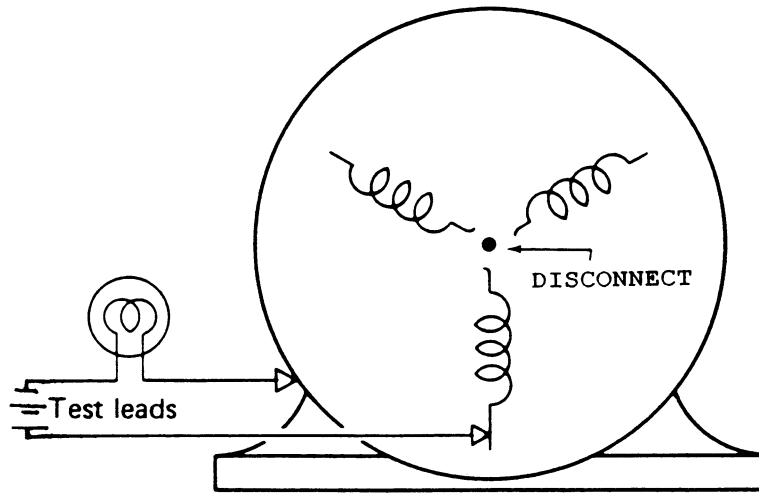
EL-0025



EL-0026

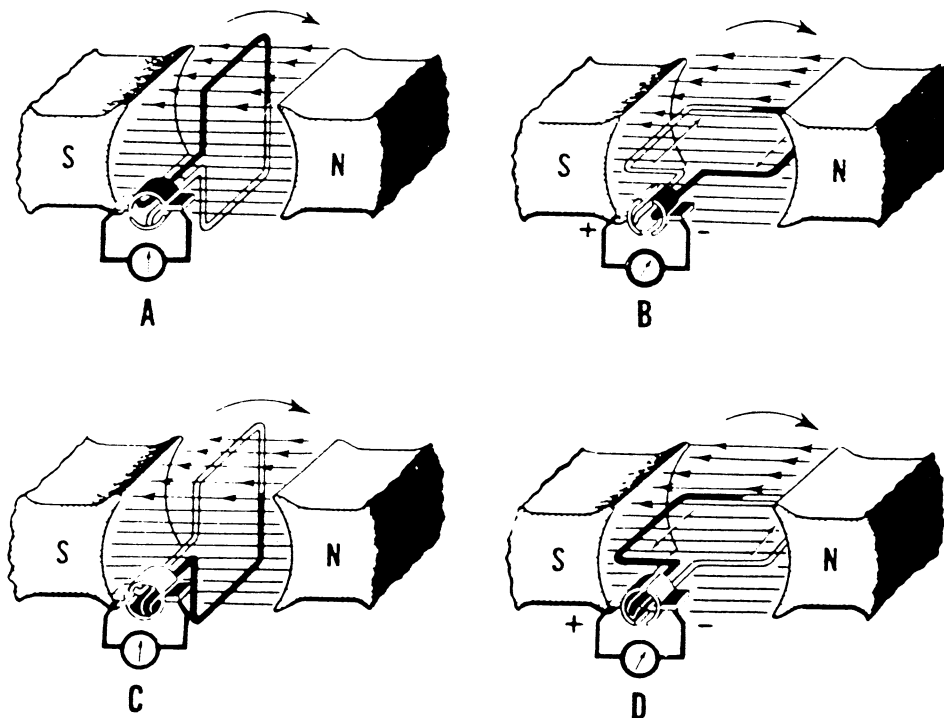


**EL-0027**

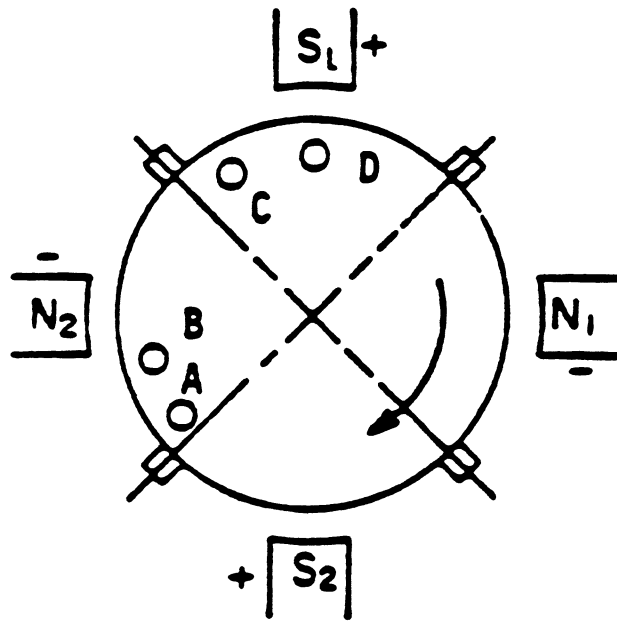


A

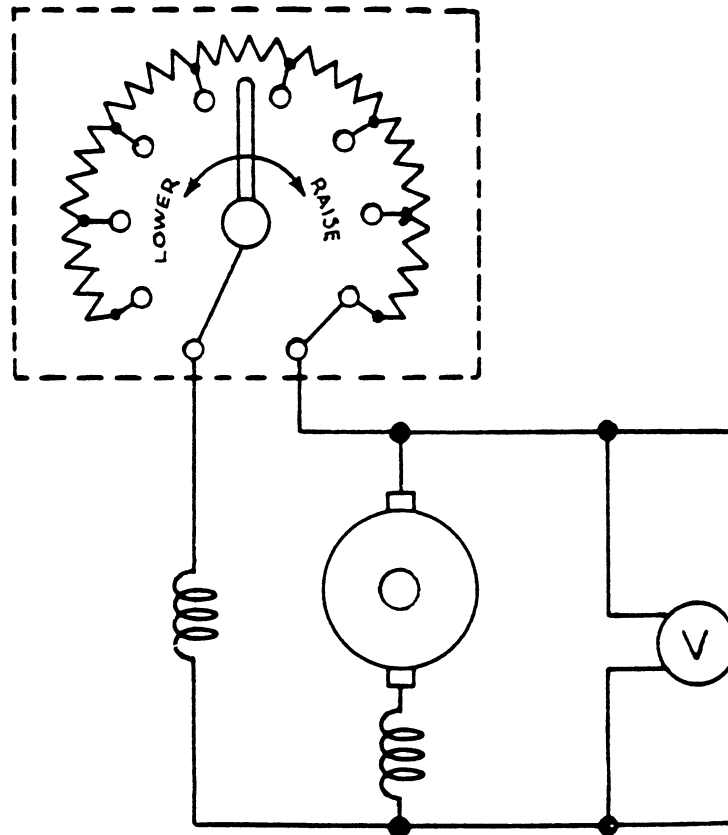
**EL-0028**



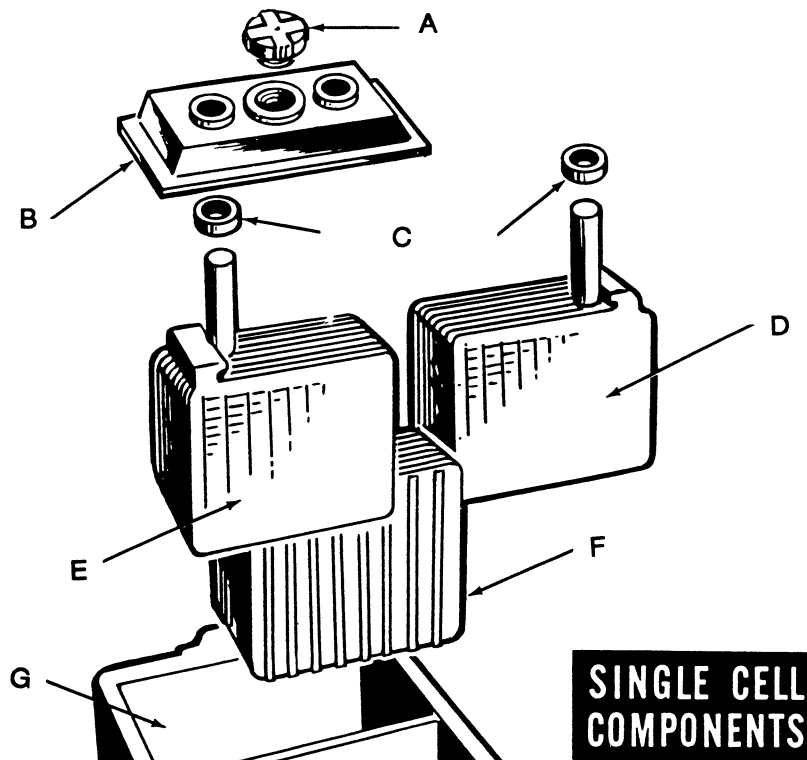
EL-0029



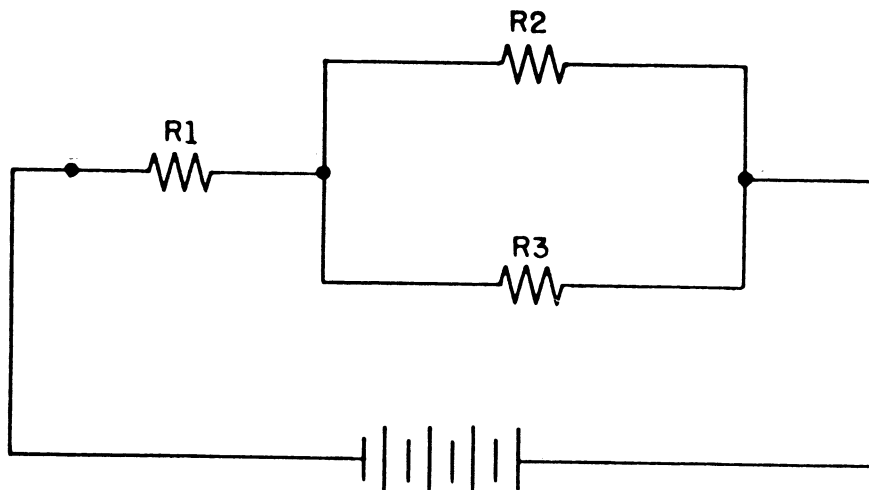
EL-0030



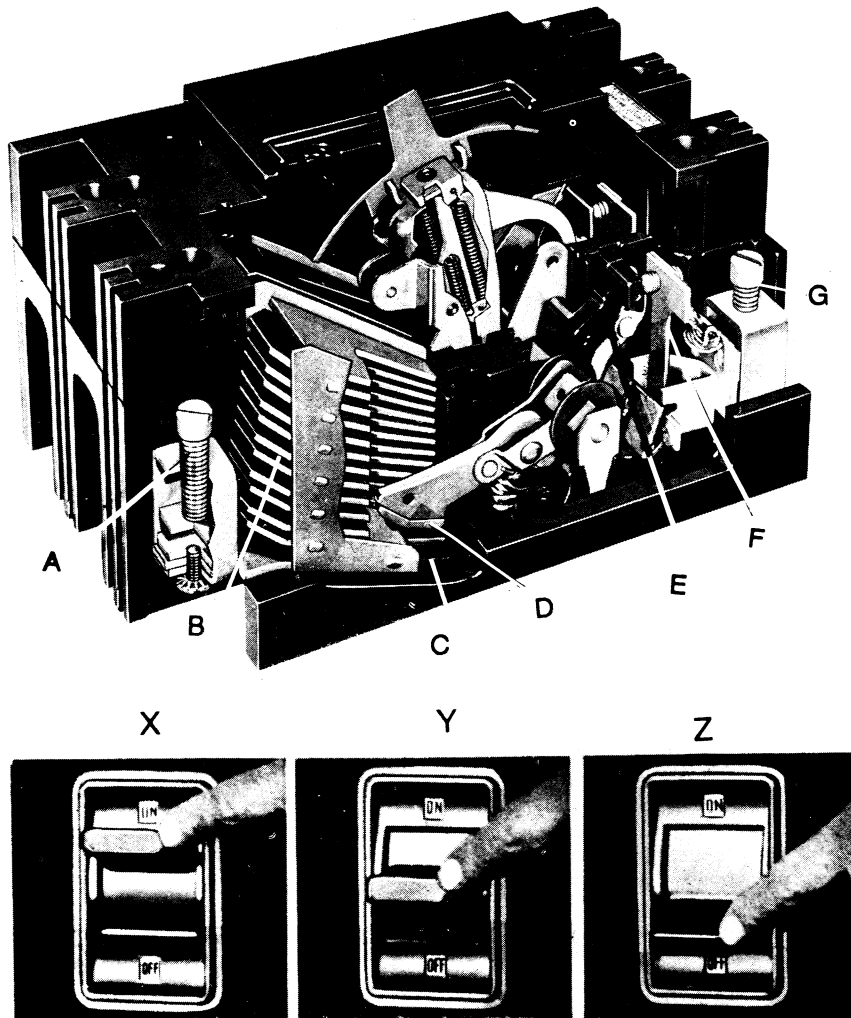
EL-0031



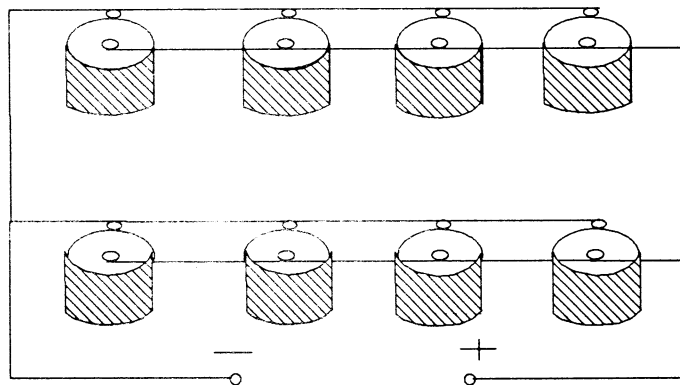
EL-0032



**EL-0033**



**EL-0034**



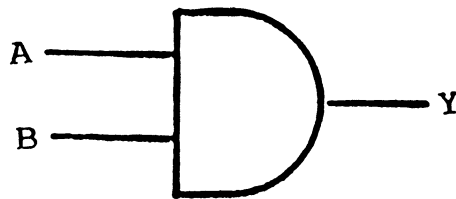
**EL-0035**

**FUNCTION**

**SYMBOL**

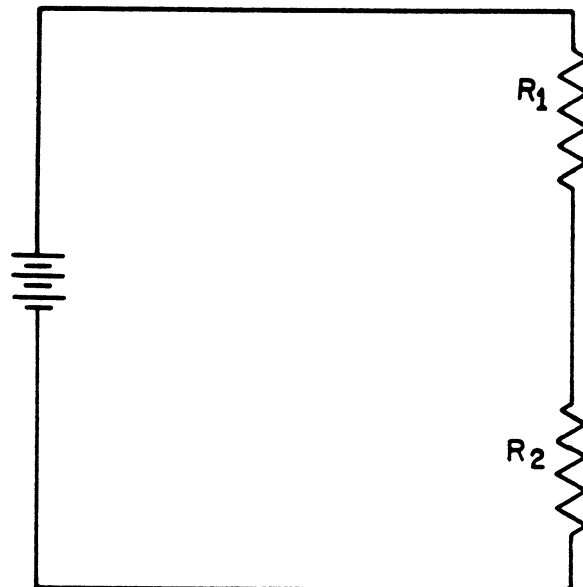
**TRUTH TABLE INPUTS**

**AND**



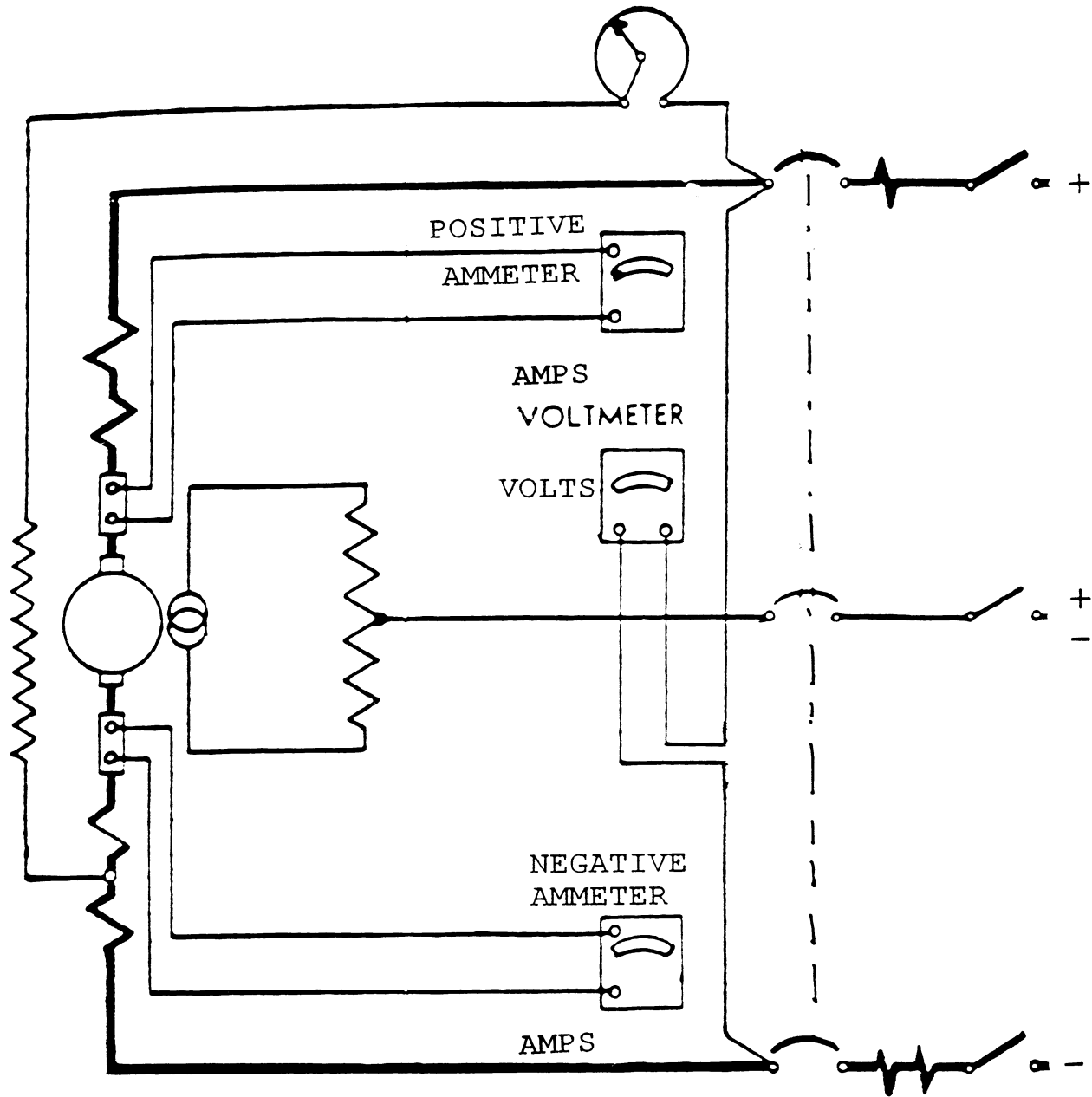
A	B
1	1
1	0
0	1
0	0

**EL-0036**

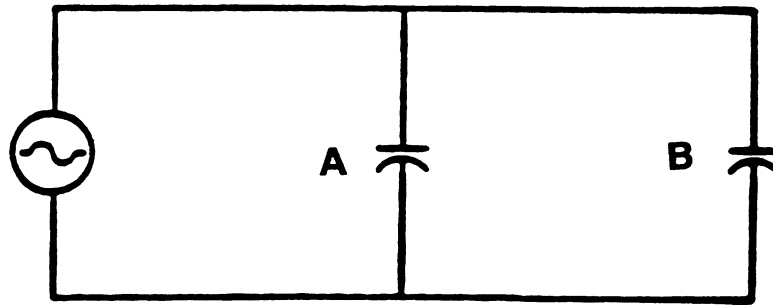




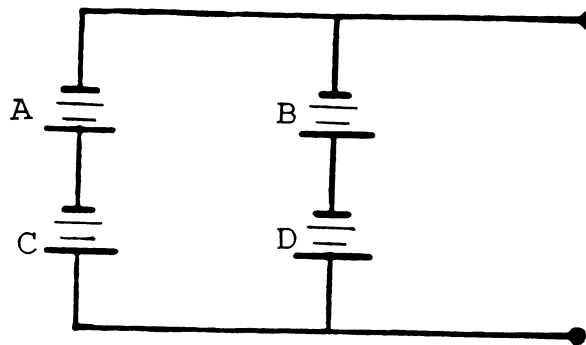
EL-0037



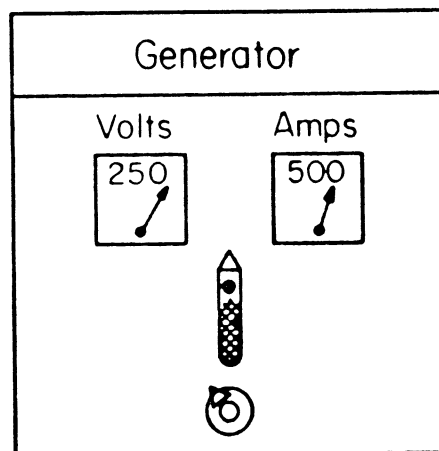
**EL-0038**



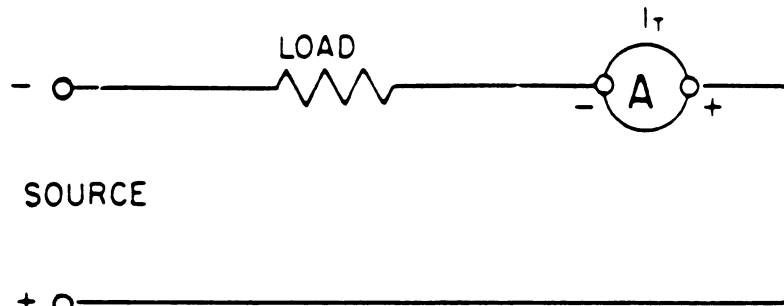
**EL-0039**



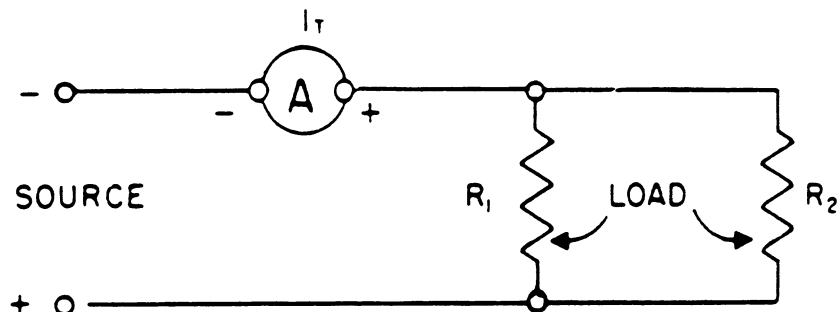
**EL-0040**



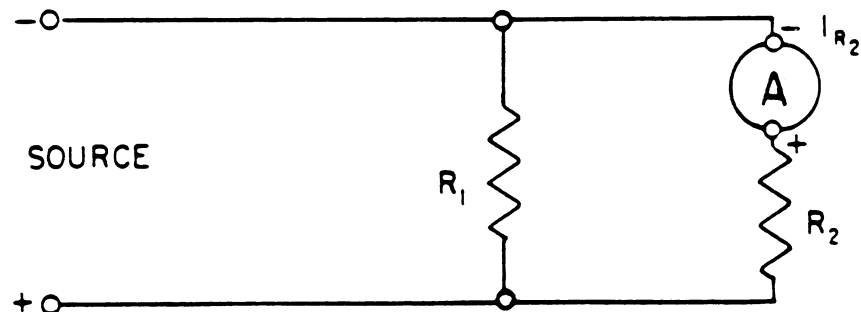
**EL-0041**



**(A) SERIES CIRCUIT**

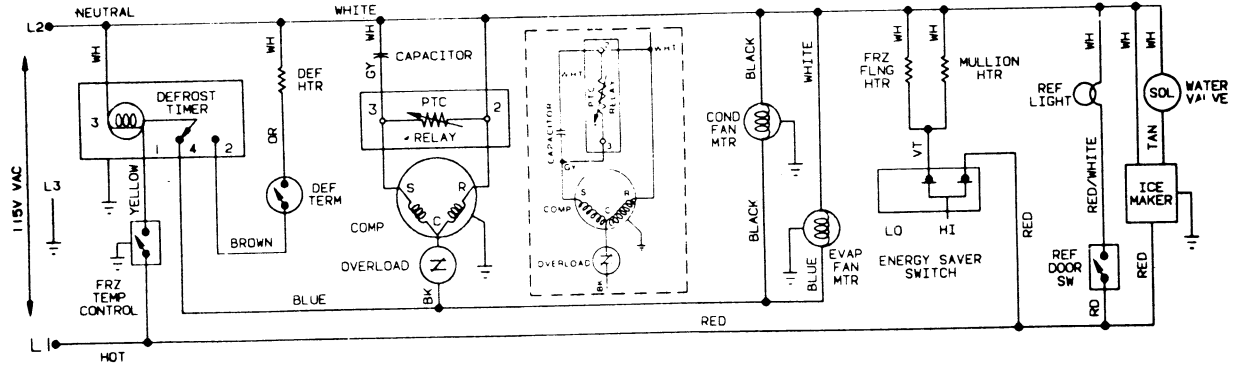


**(B) PARALLEL CIRCUIT**

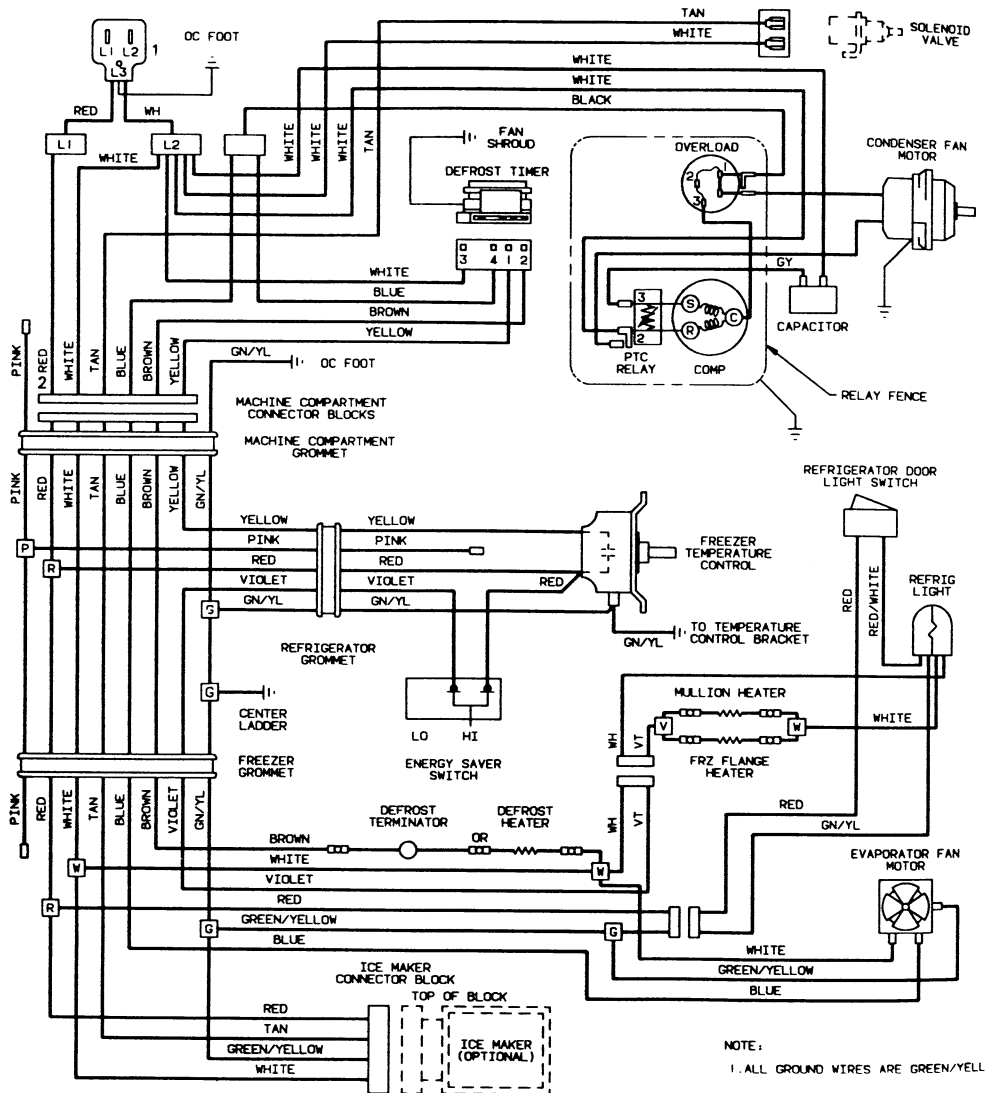


**(C) PARALLEL CIRCUIT**

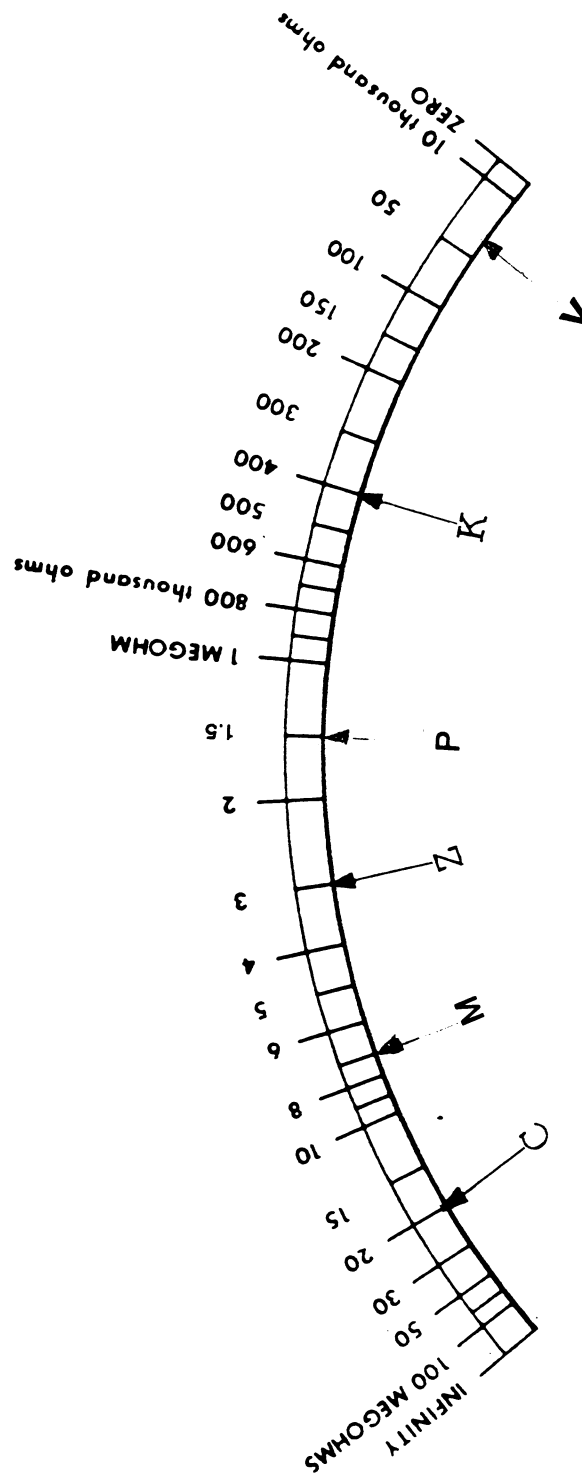
### EL-0042



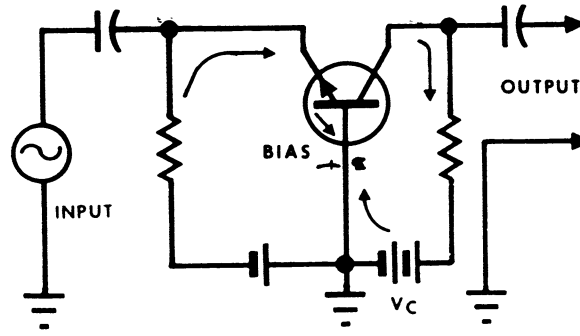
### EI-0043



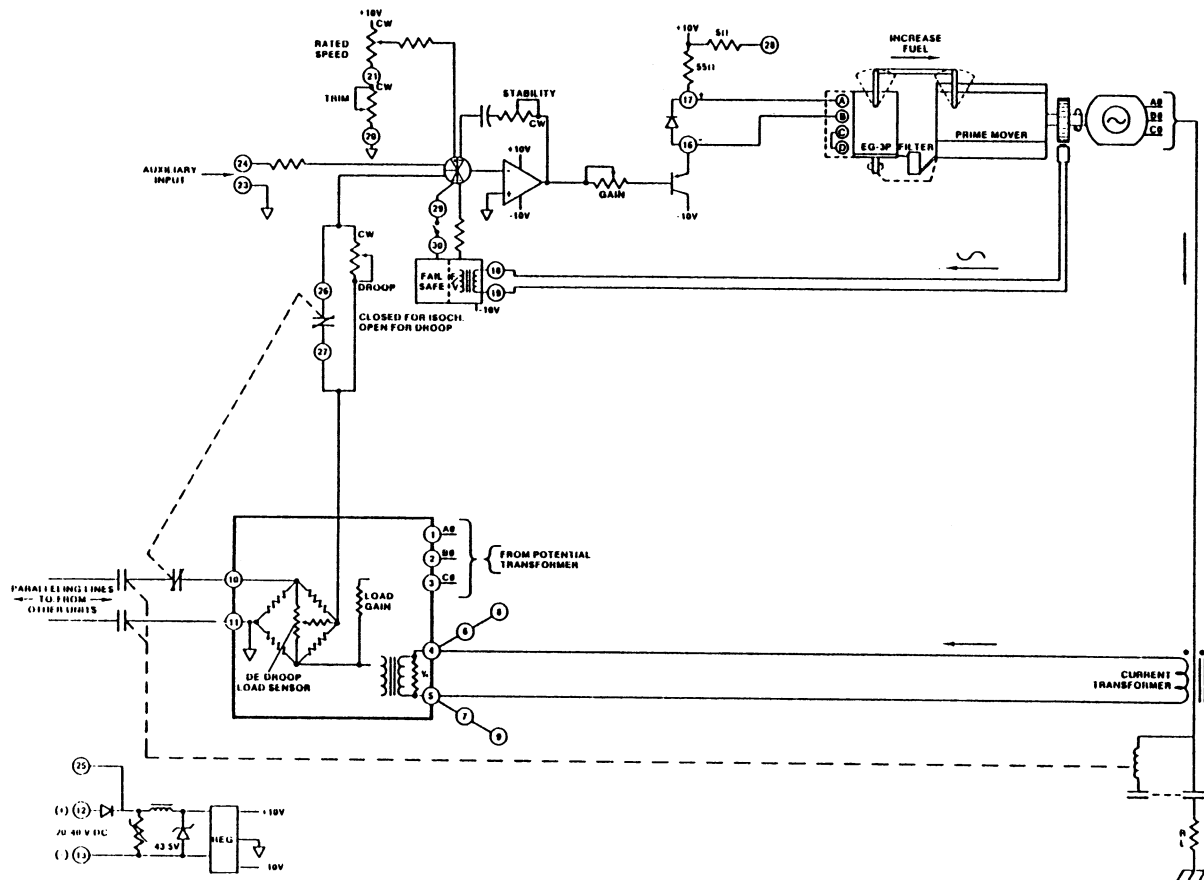
**EL-0044**



**EL-0045**



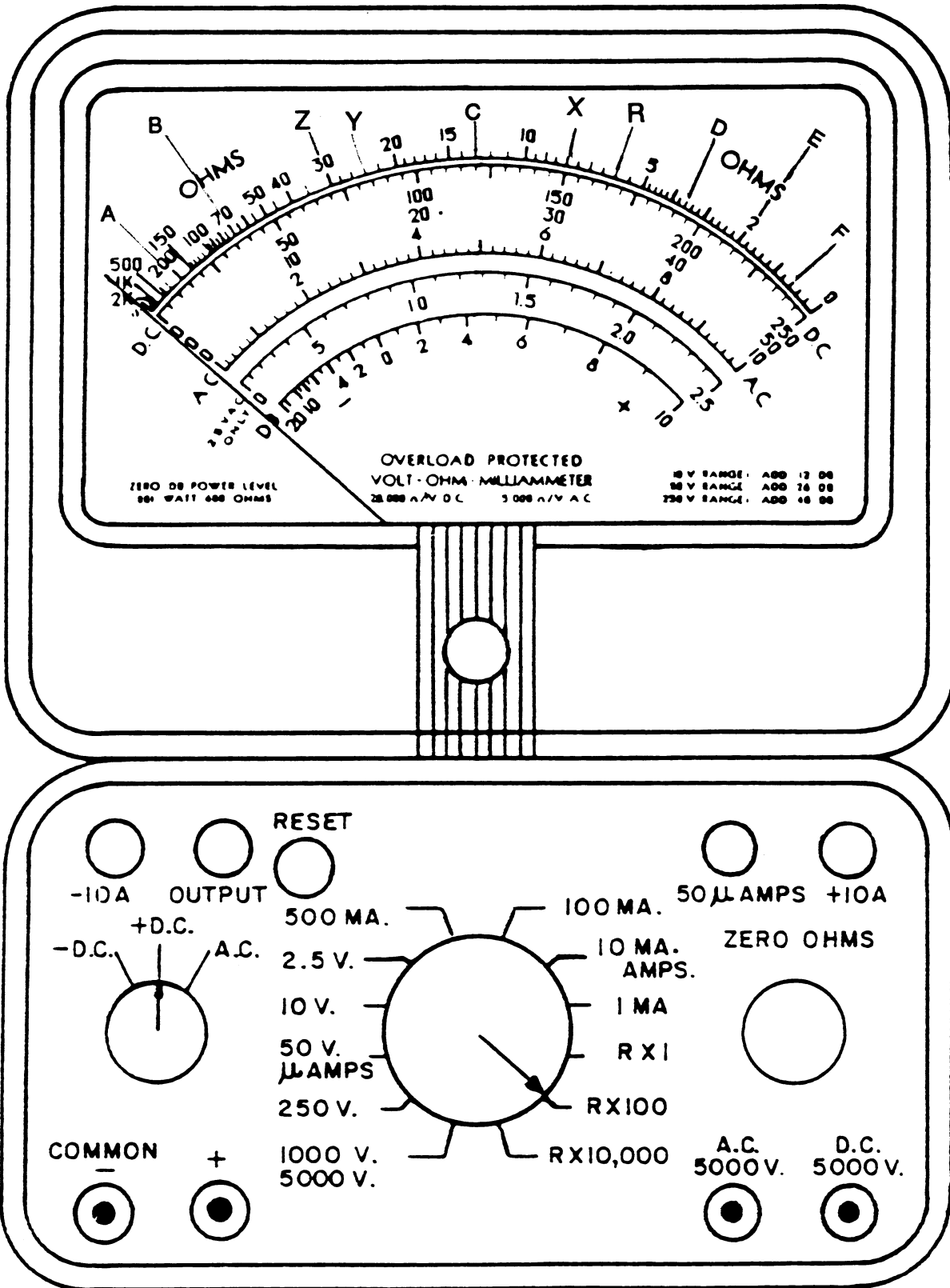
**EL-0046**



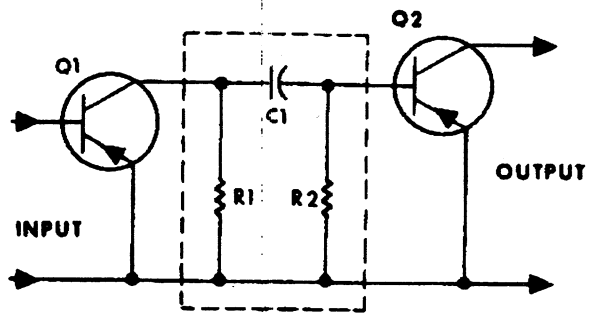
2301 (UNITIZED) CONTROL SYSTEM 8271-442 TYPICAL

(Courtesy of Woodward)

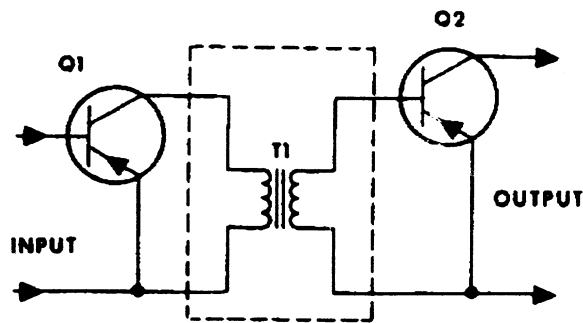
EL-0047



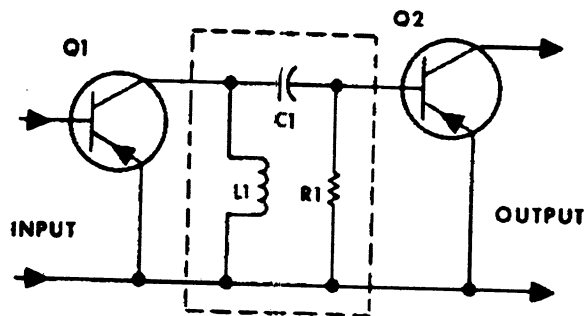
EL-0048



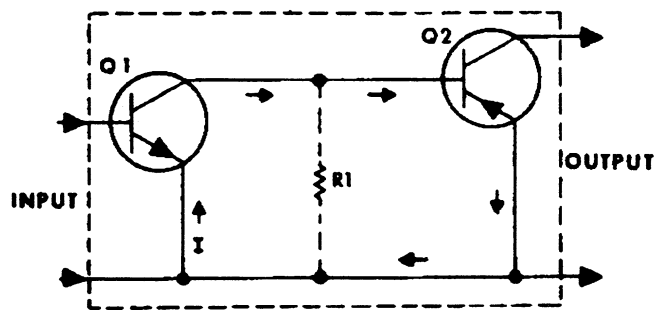
EL-0049



EL-0050

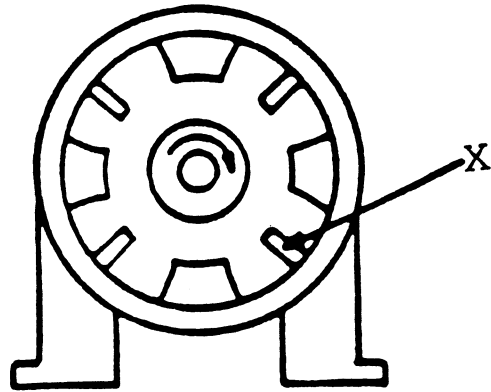


EL-0051

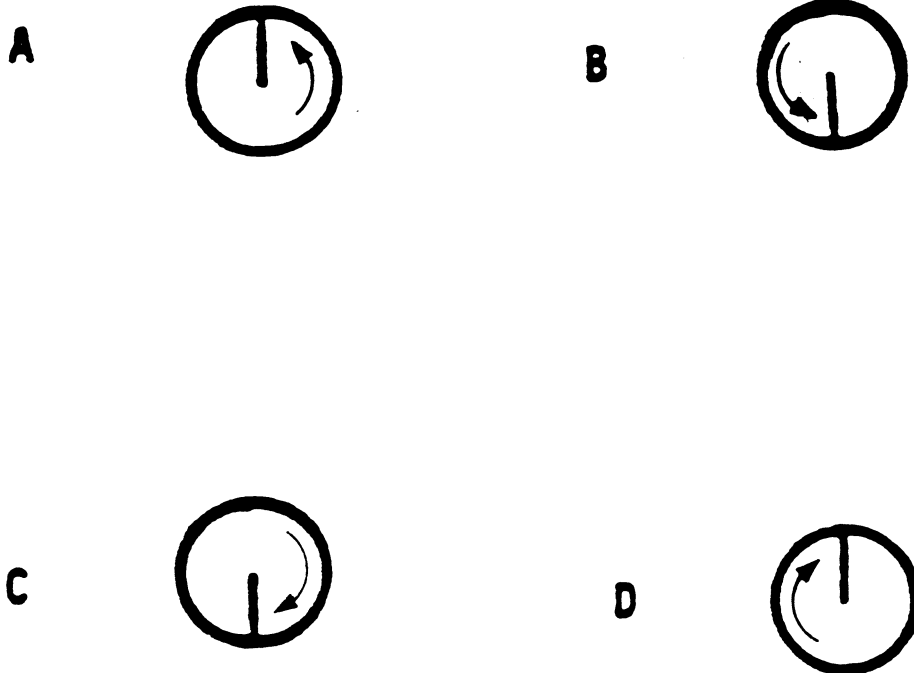




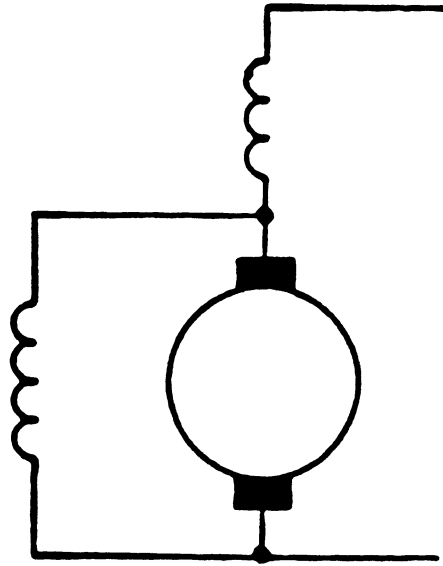
**EL-0052**



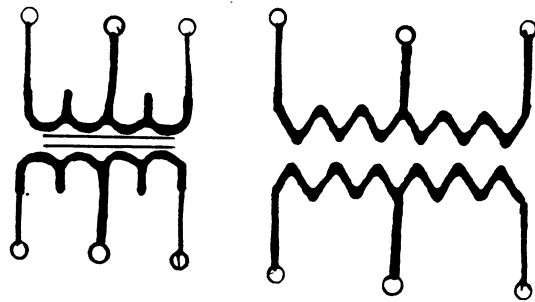
**EL-0053**



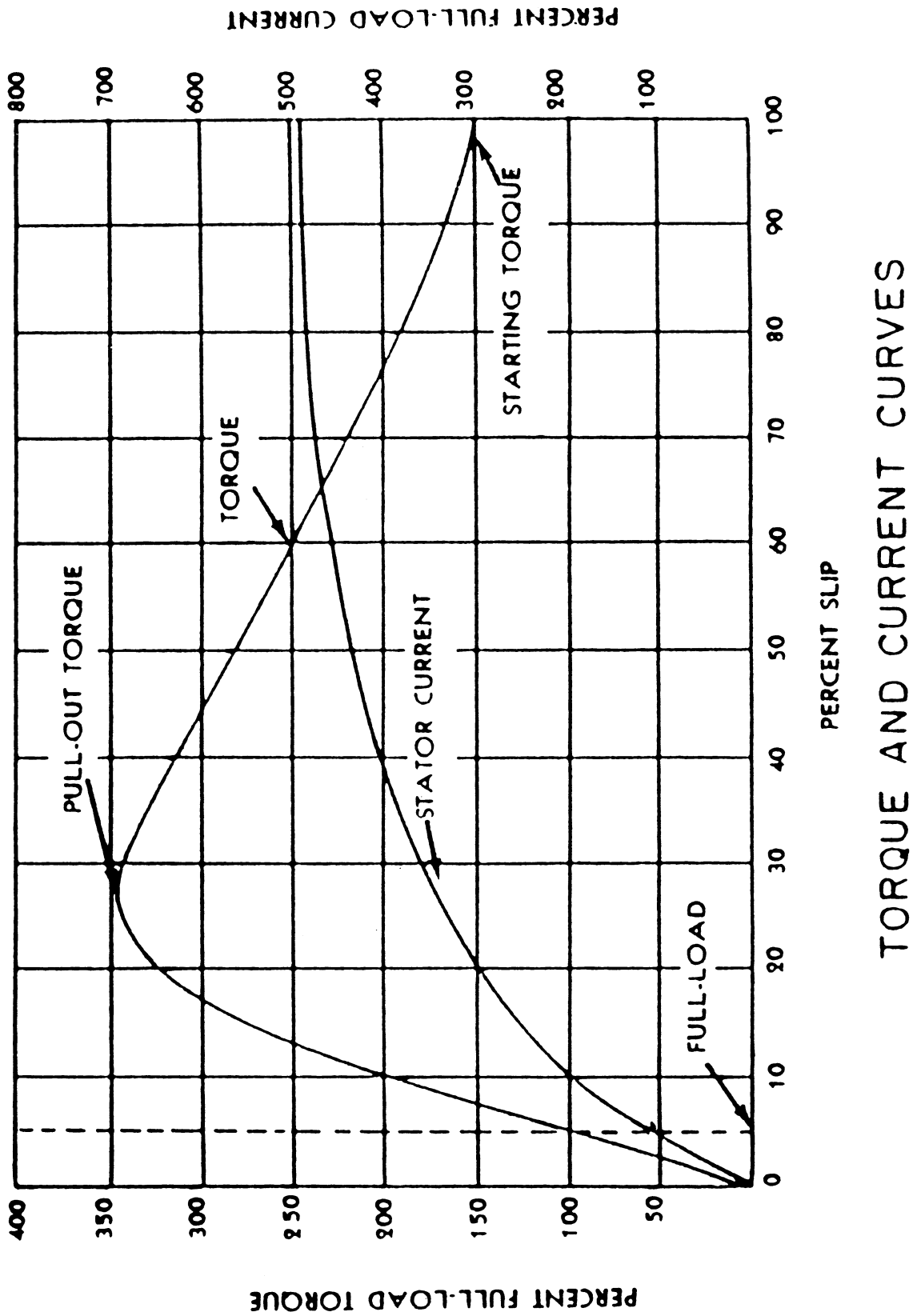
**EL-0054**



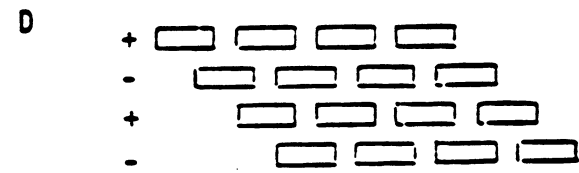
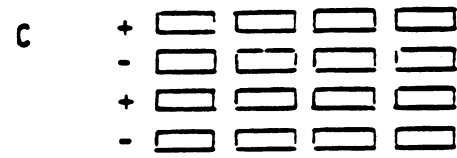
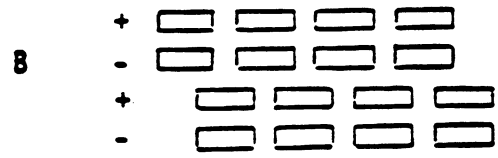
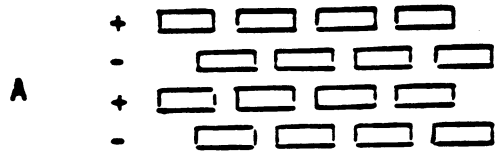
**EL-0055**



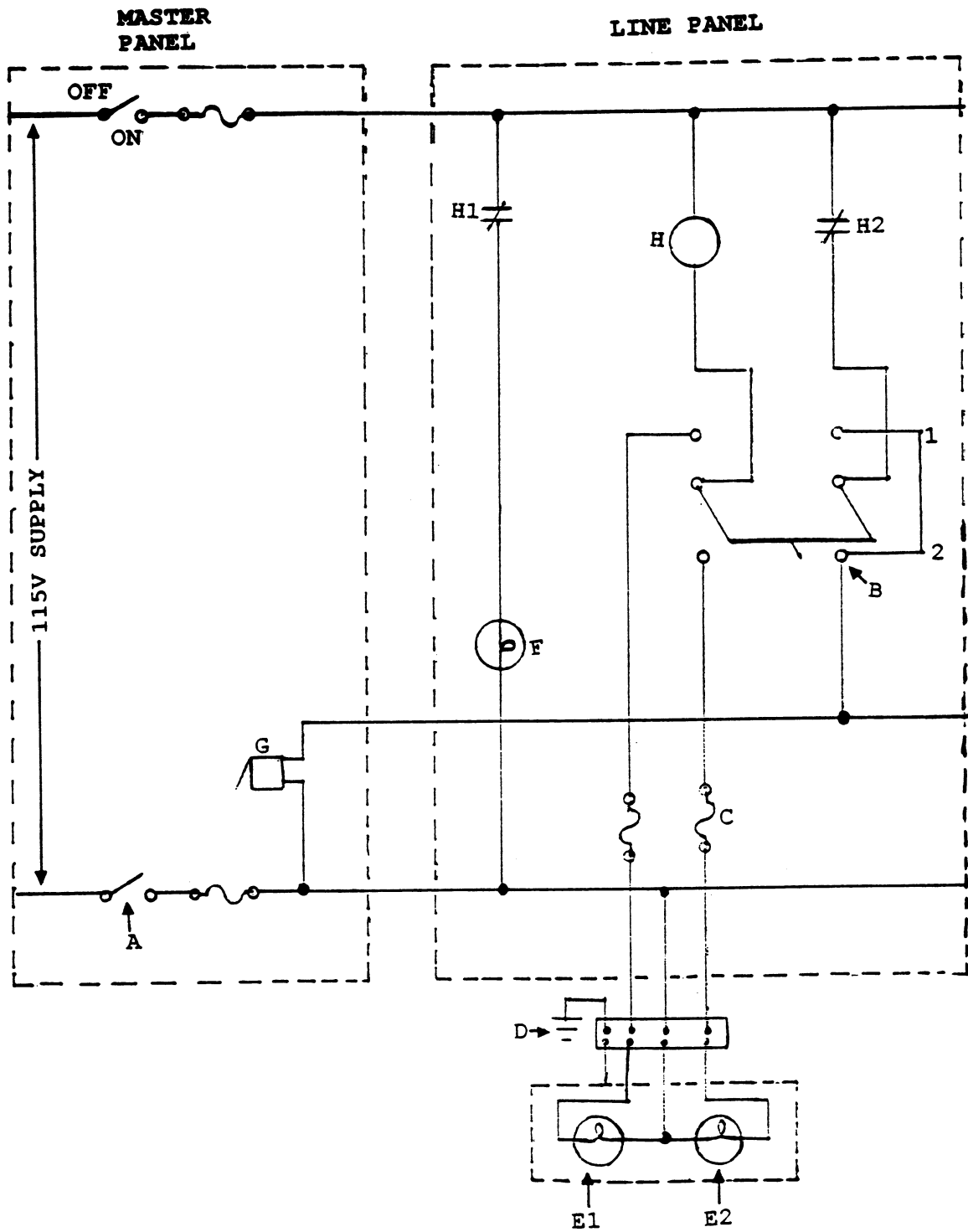
EL-0056



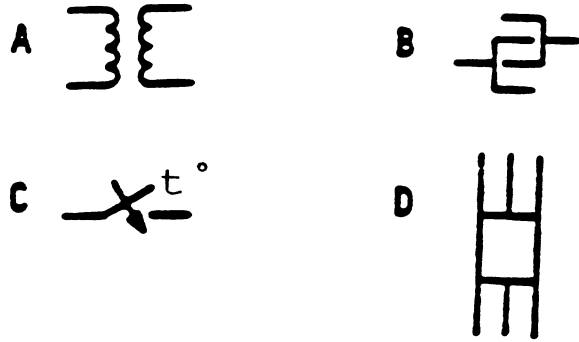
**EL-0057**



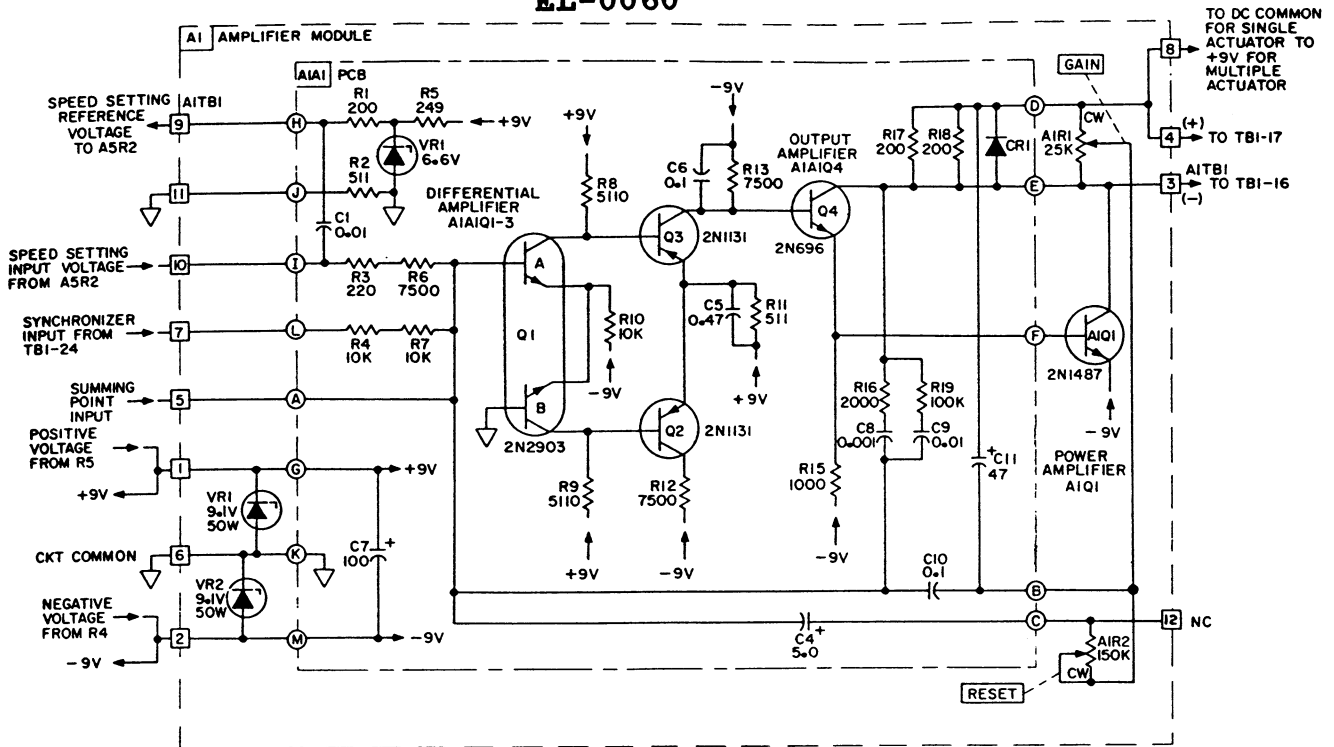
EL-0058



EL-0059

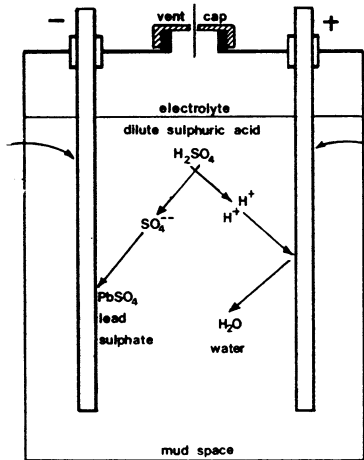


EL-0060

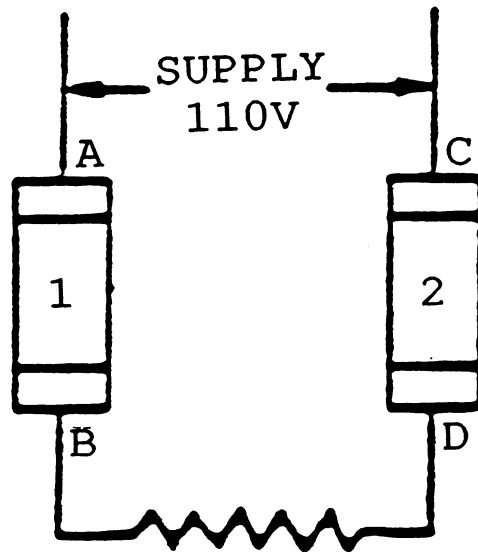


EL-0061

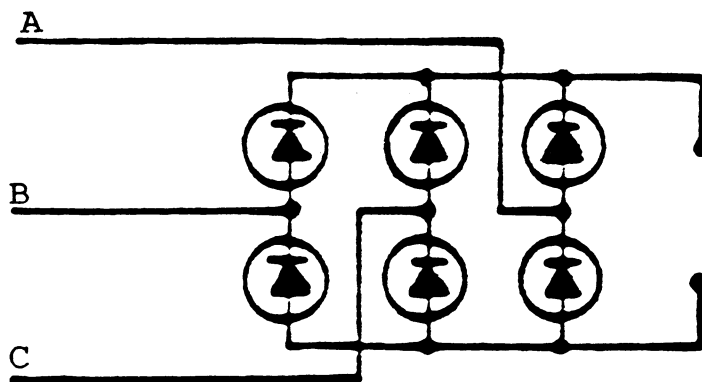
(Courtesy of Woodward)



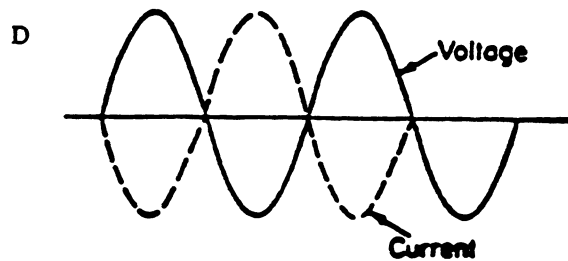
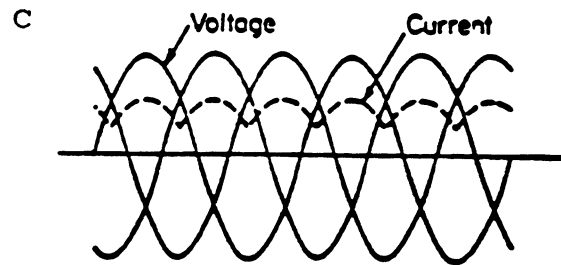
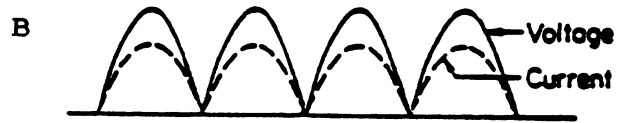
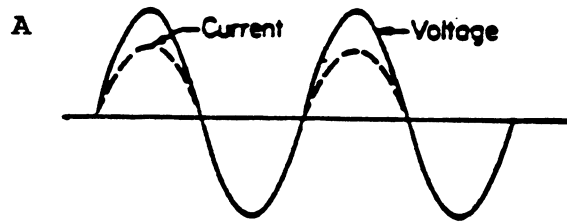
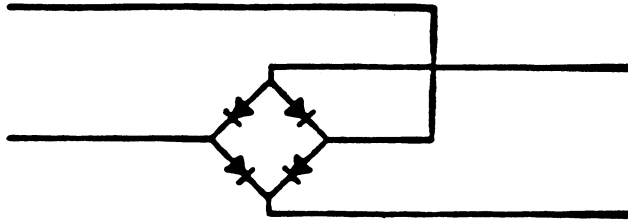
**EL-0062**



**EL-0063**

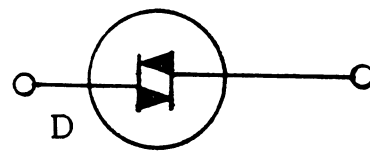
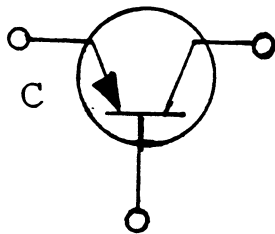
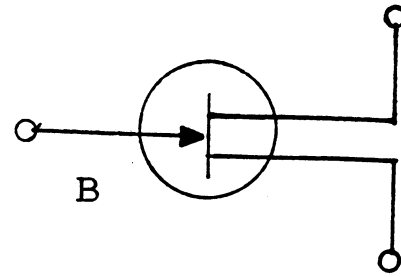
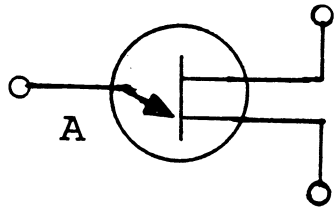


**EL-0064**

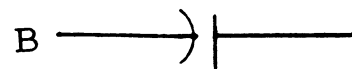




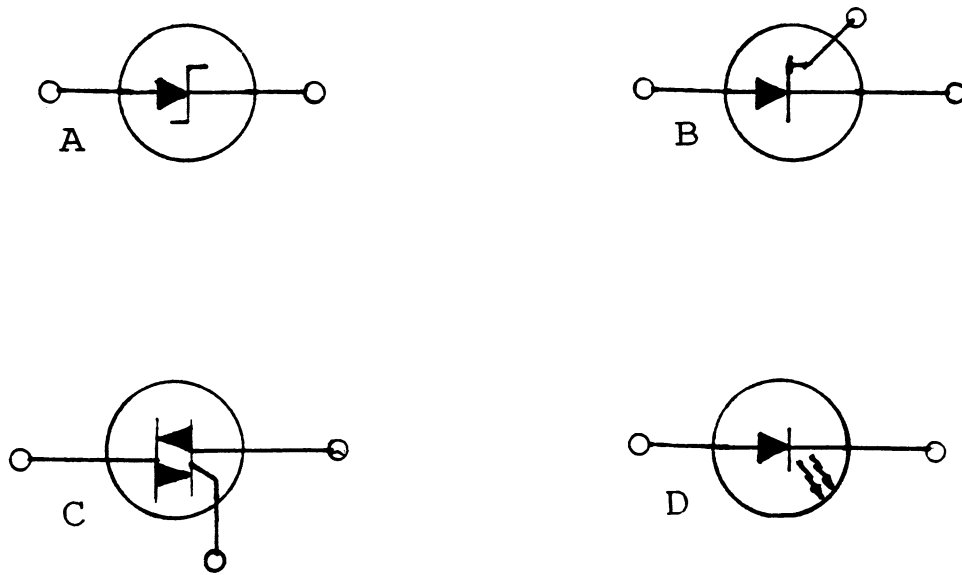
**EL-0065**



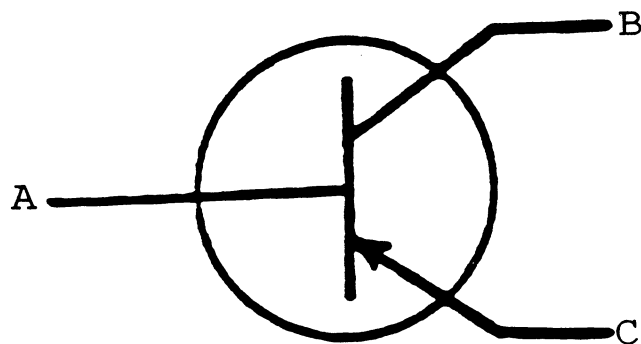
**EL-0066**



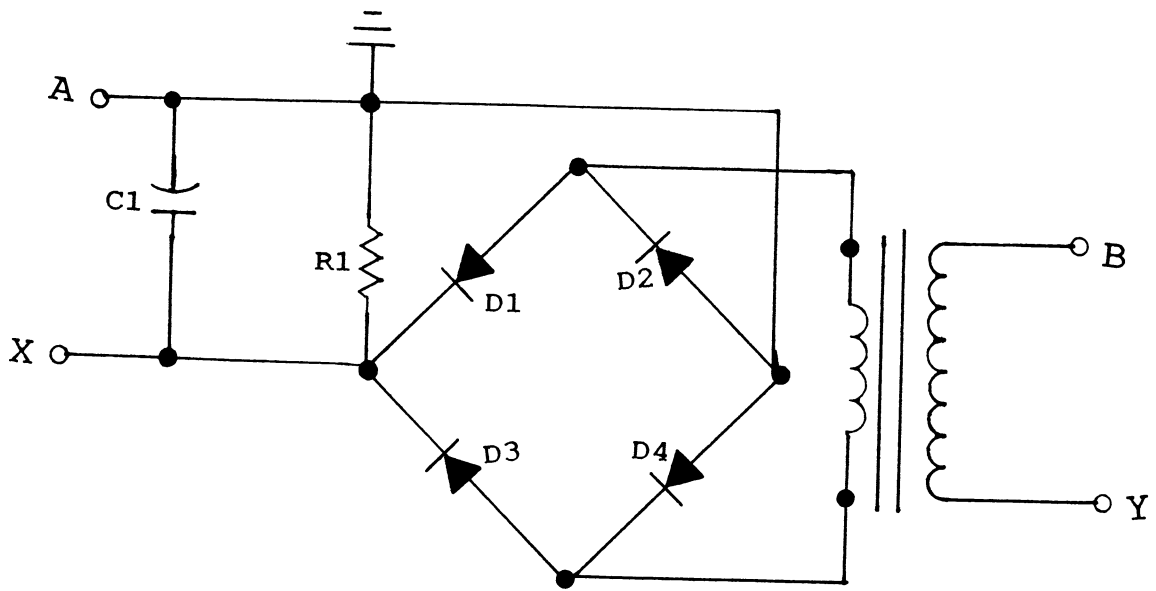
**EL-0067**



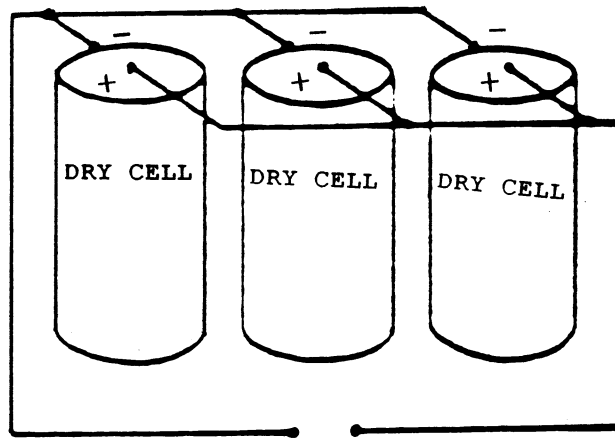
**EL-0068**



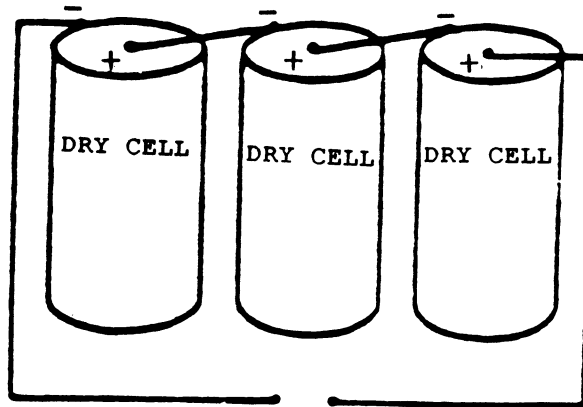
**EL-0069**



**EL-0070**



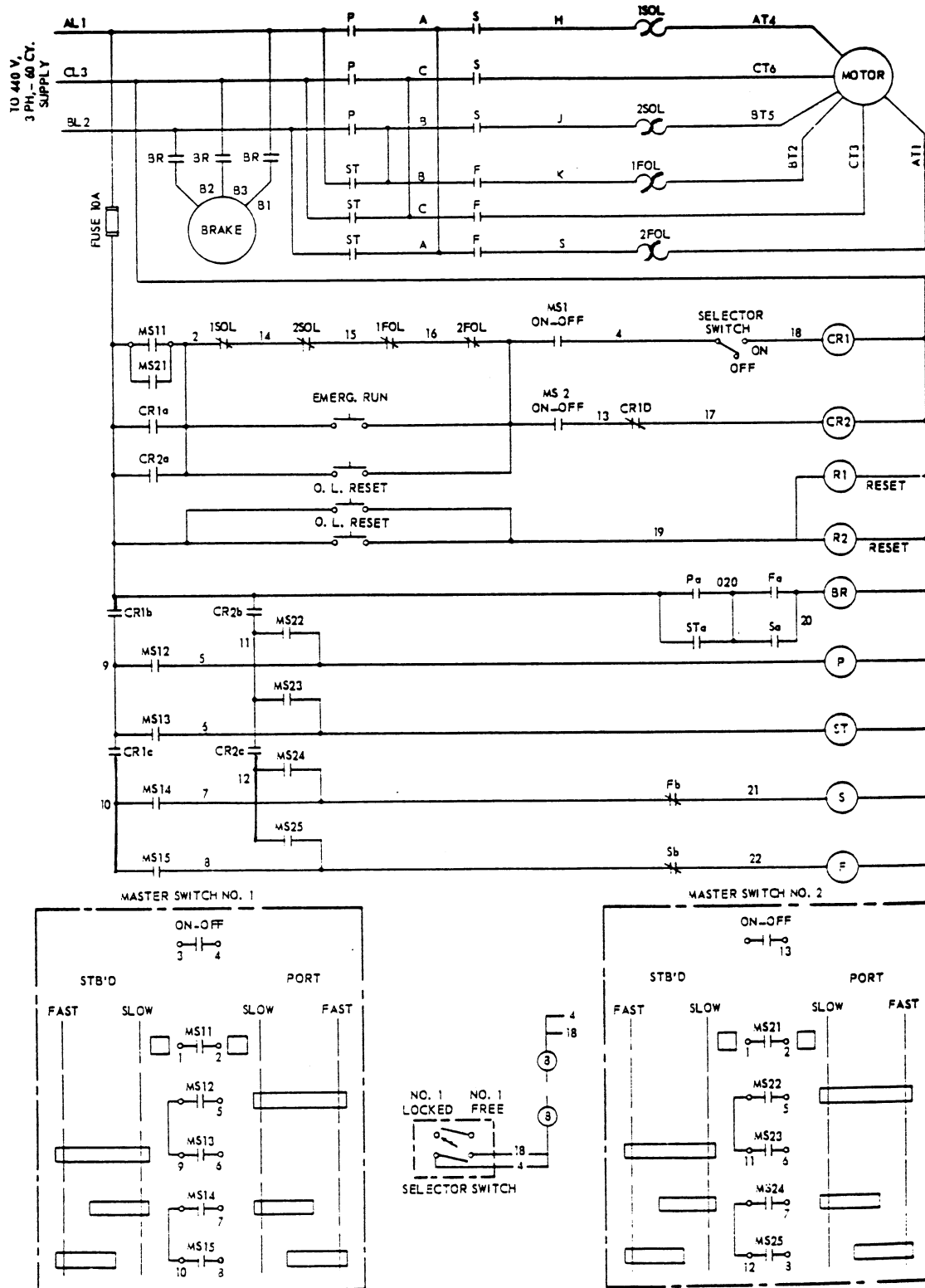
**EL-0071**



**EL-0072**

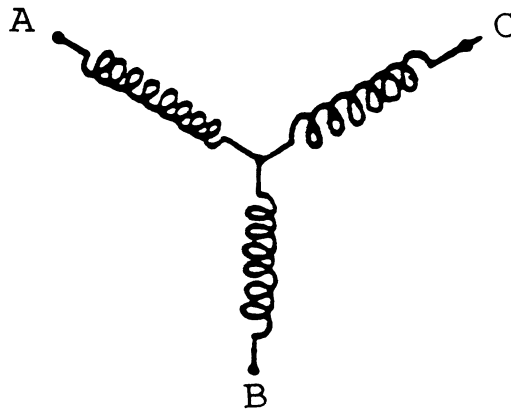
CONTACTS	INPUT		OUTPUT
	A	B	Z
VOLTAGE	1	0	1
	0	1	1
	1	1	1
	0	0	0

EL-0073

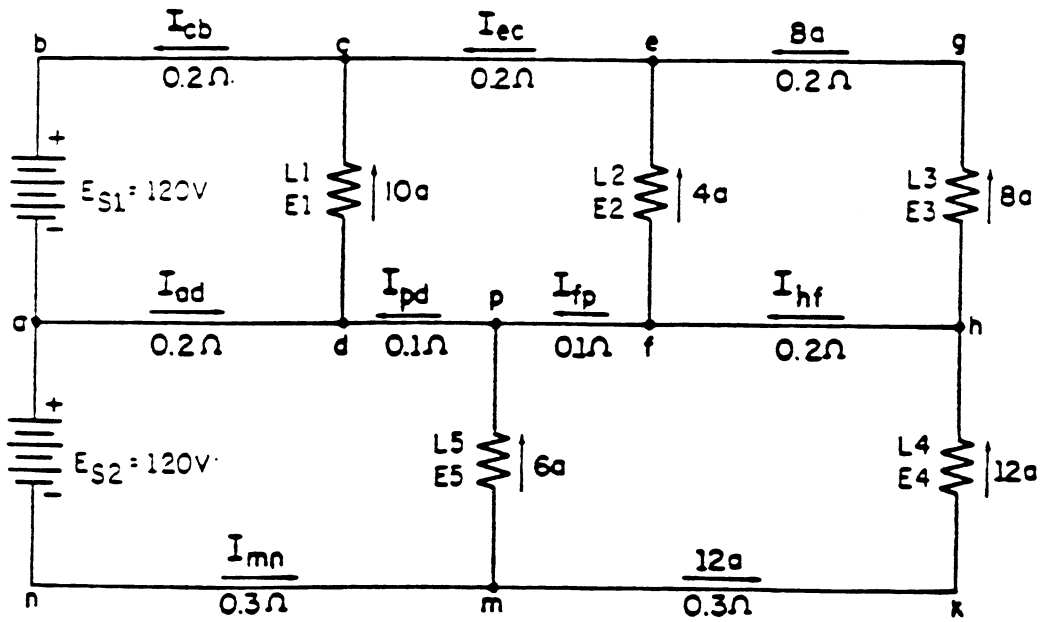


Reversing across-the-line starter for two-speed anchor windlass

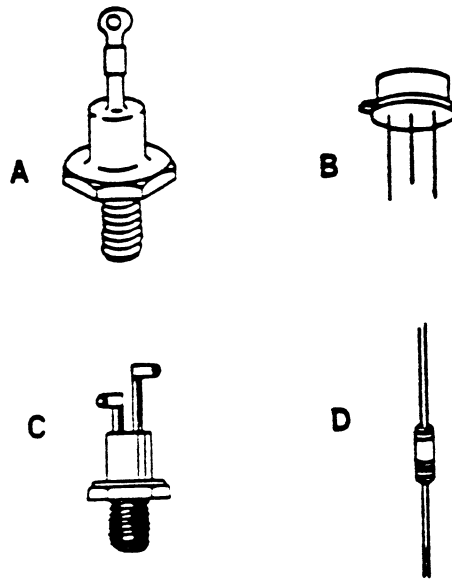
EL-0074



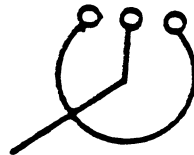
EL-0075



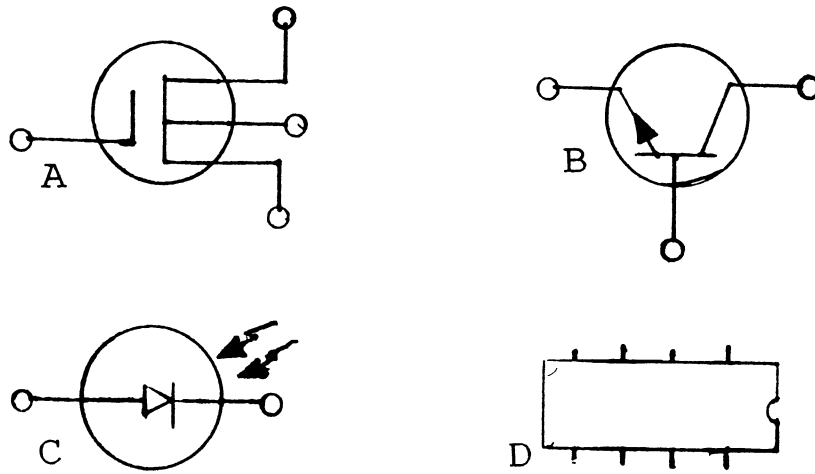
**EL-0076**



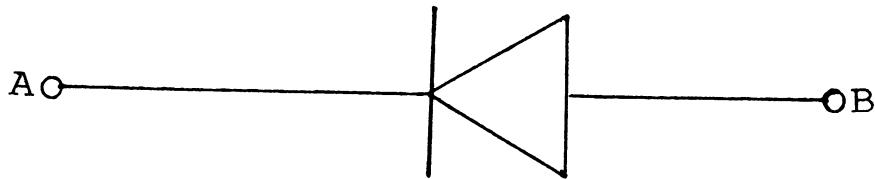
**EL-0077**



**EL-0078**

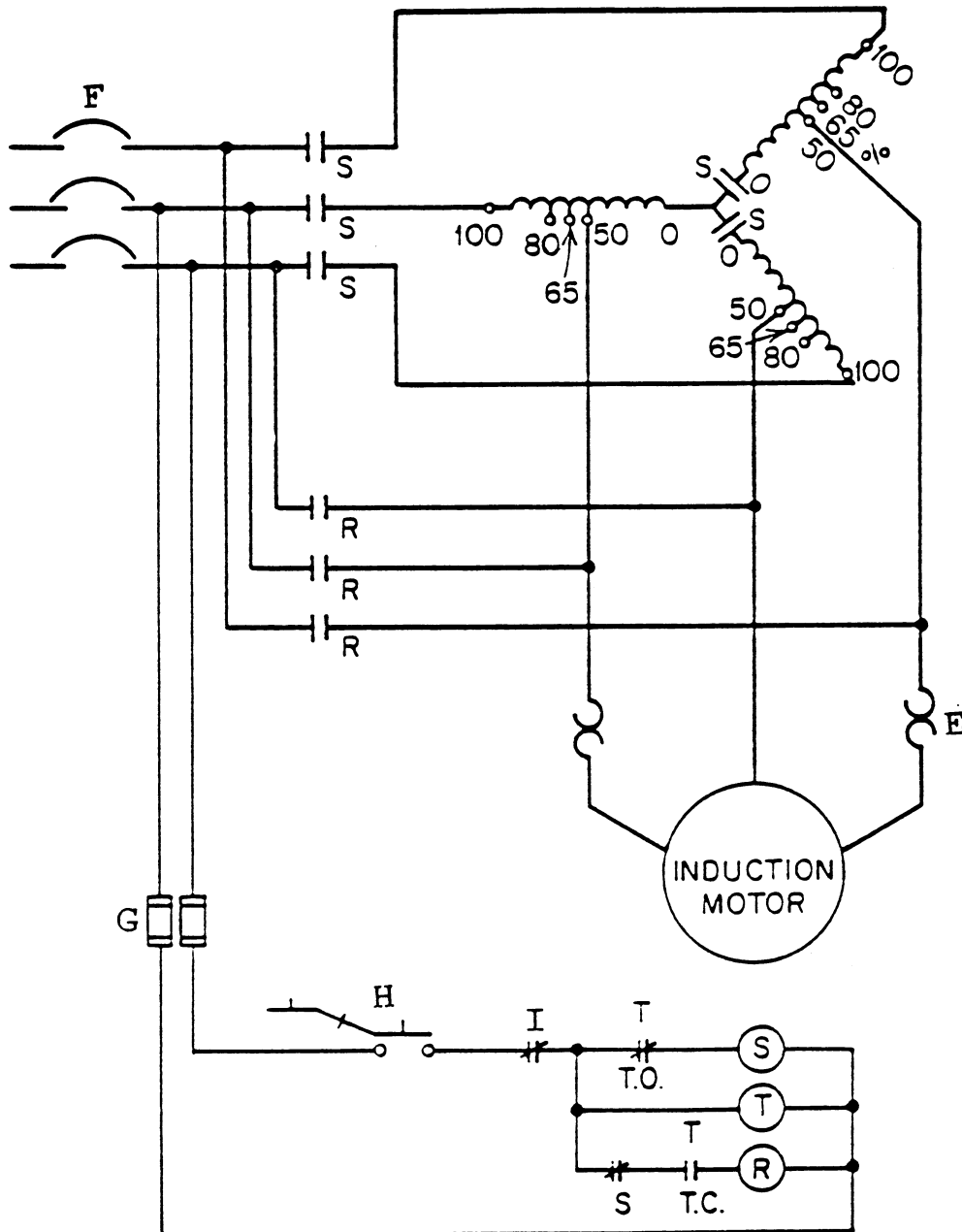


**EL-0079**

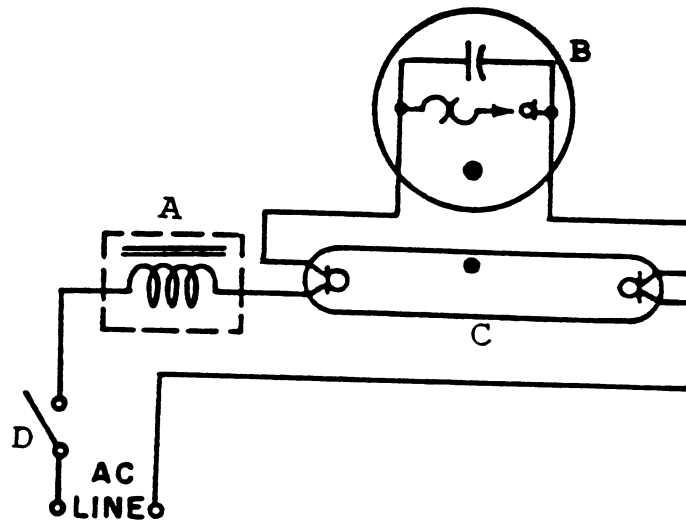




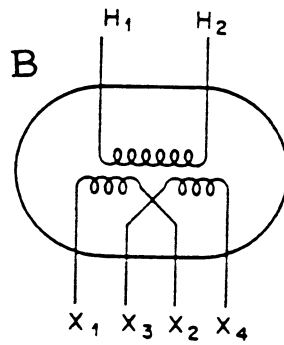
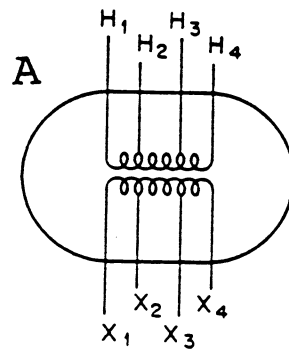
**EL-0080**



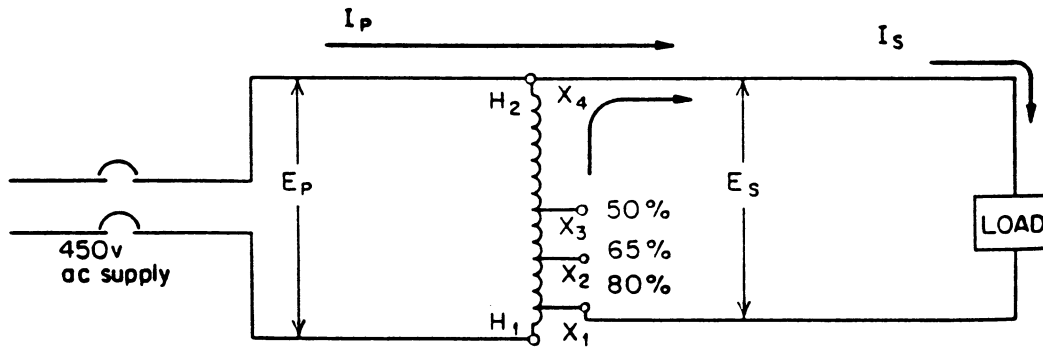
EL-0081



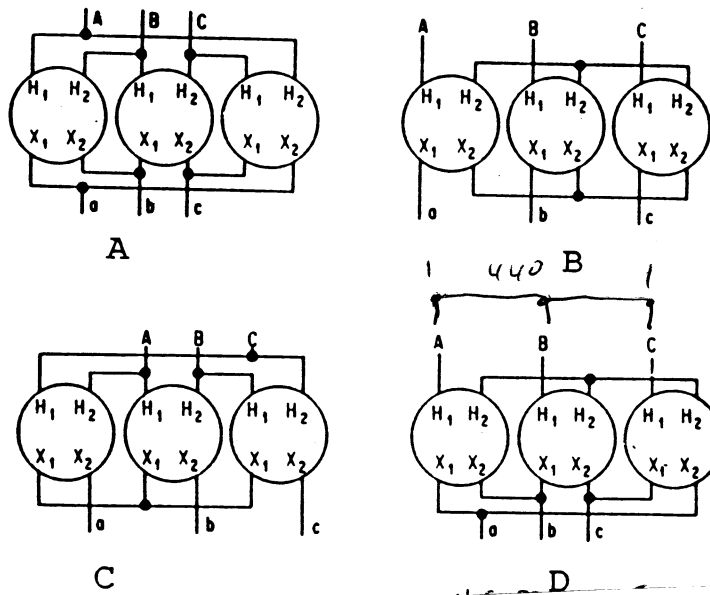
EL-0082



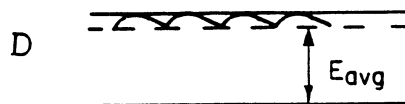
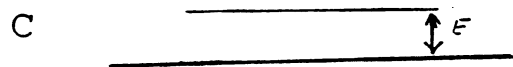
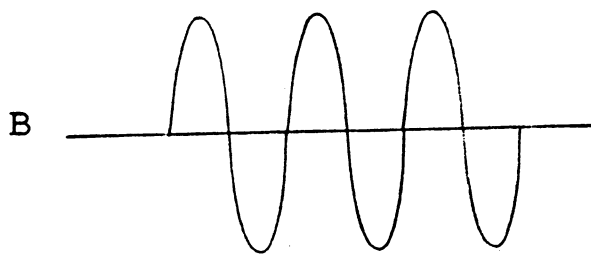
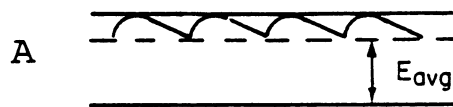
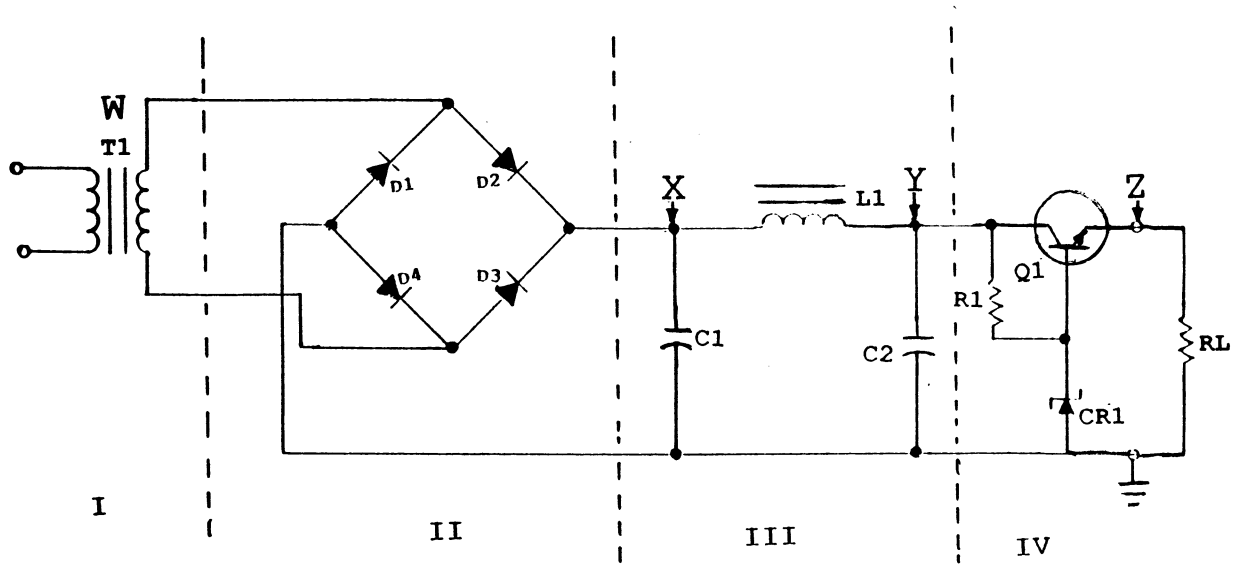
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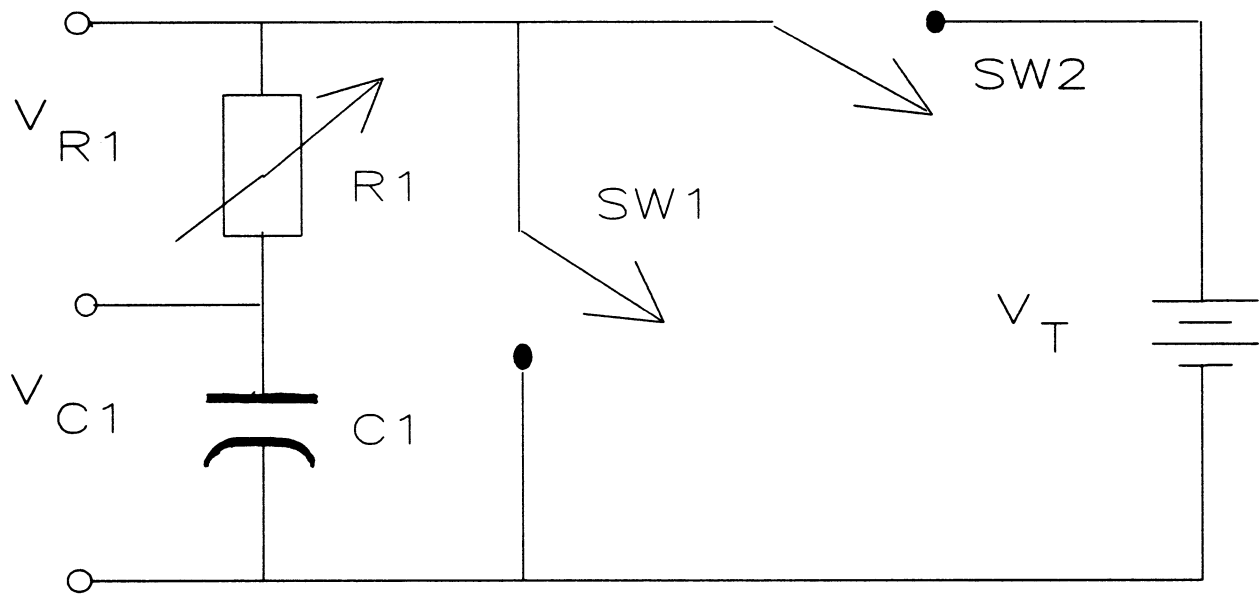
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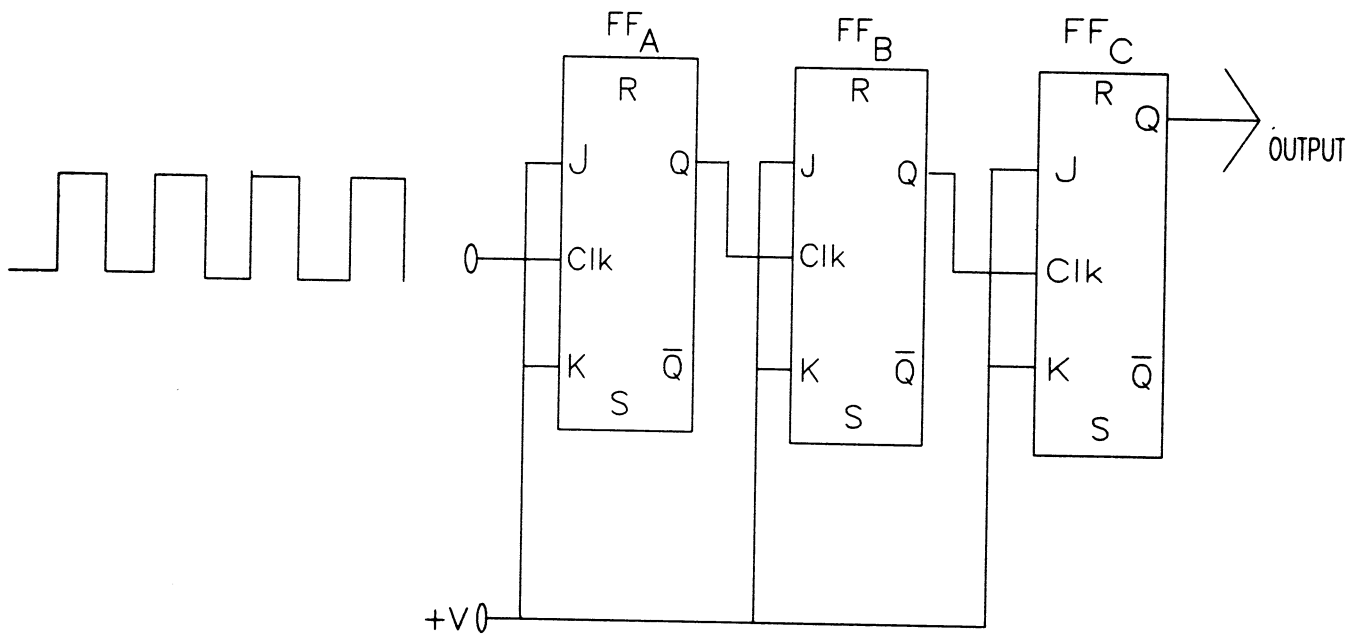
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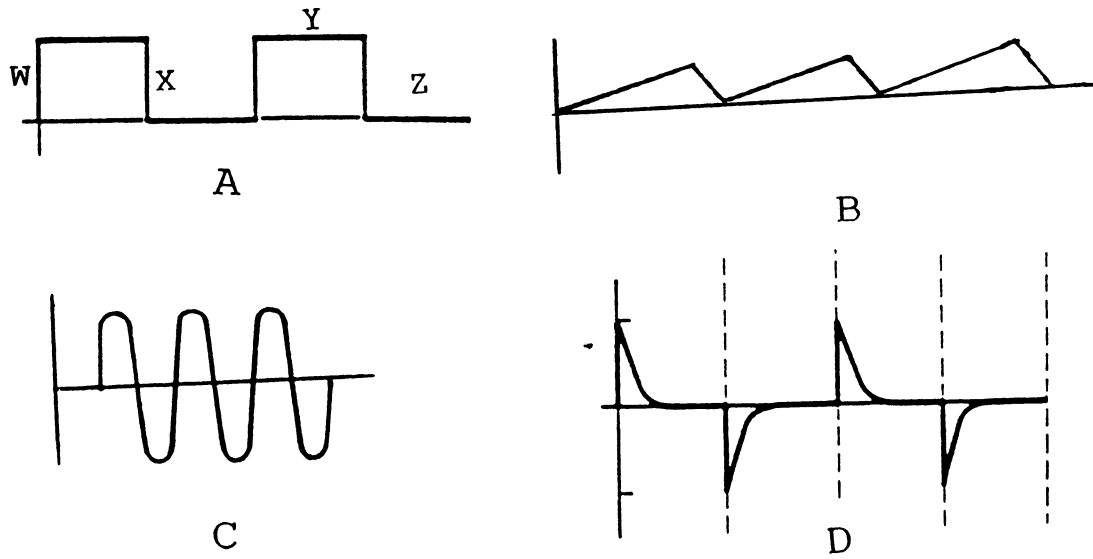
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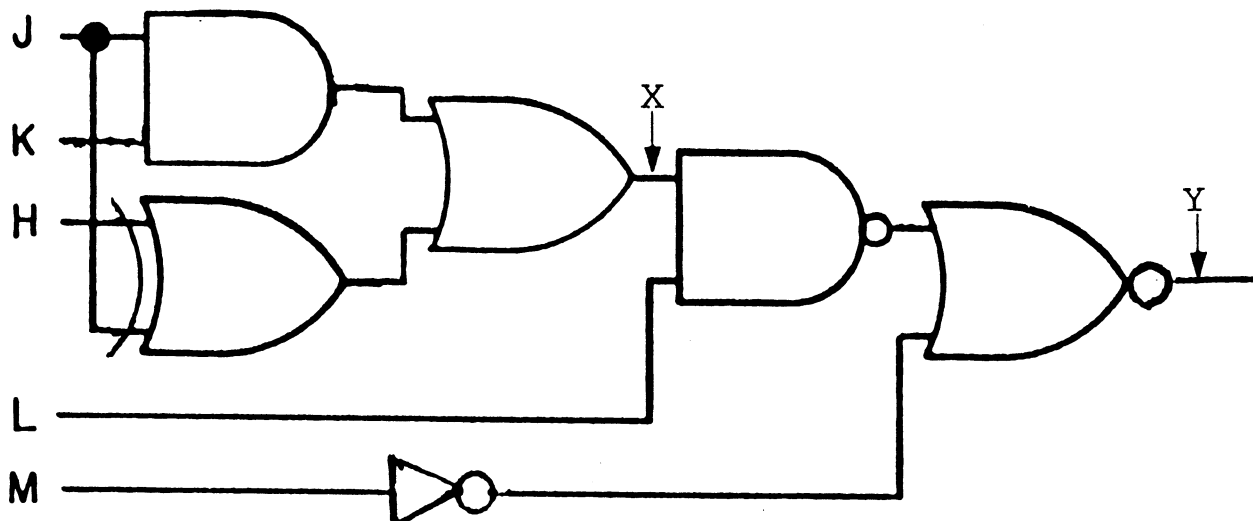
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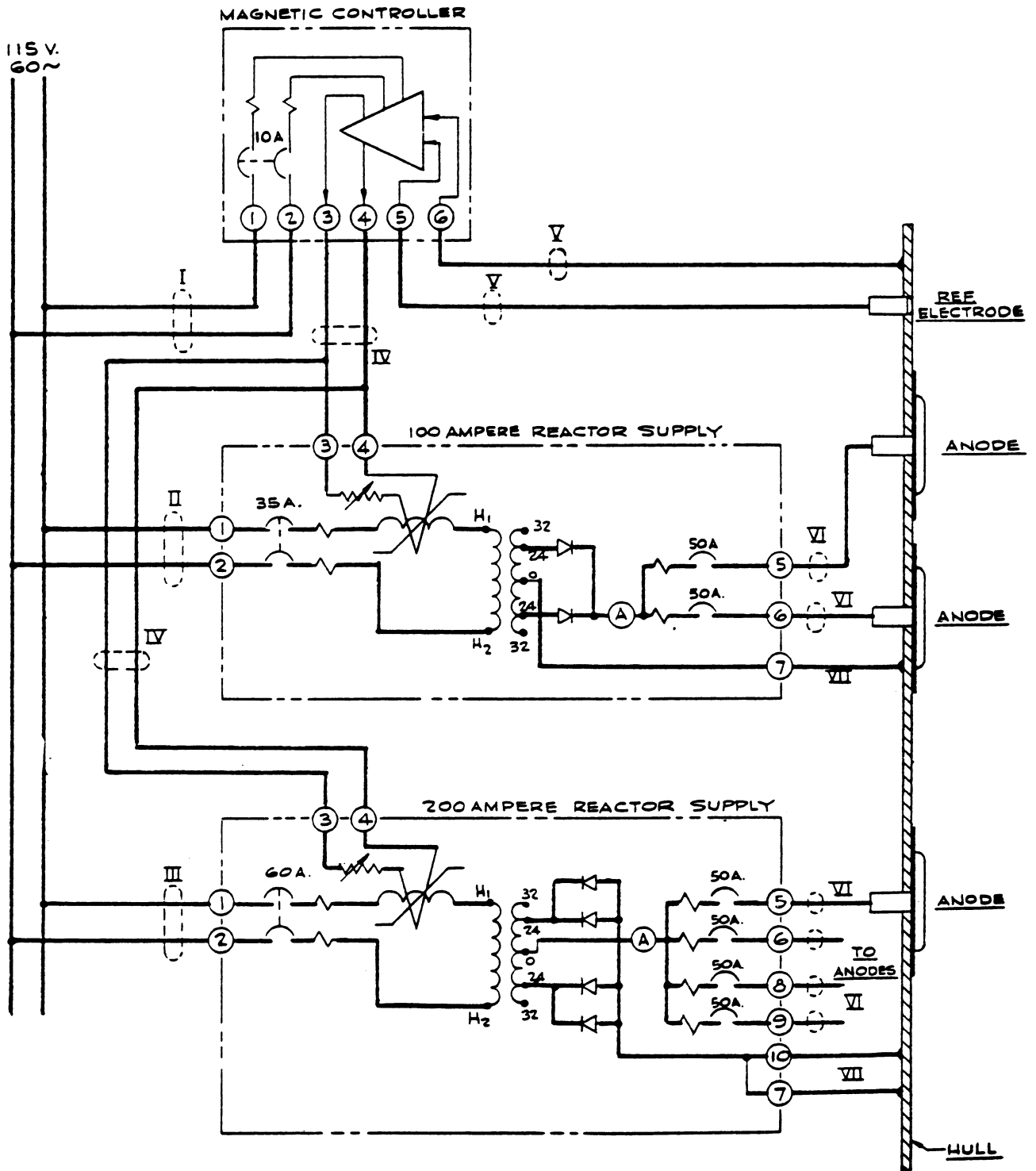
**EL-0088**



**EL-0089**

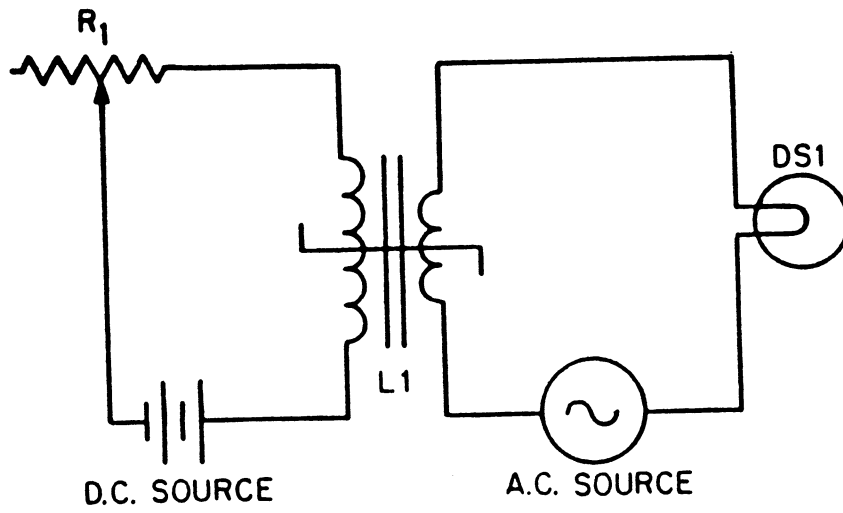


EL-0090

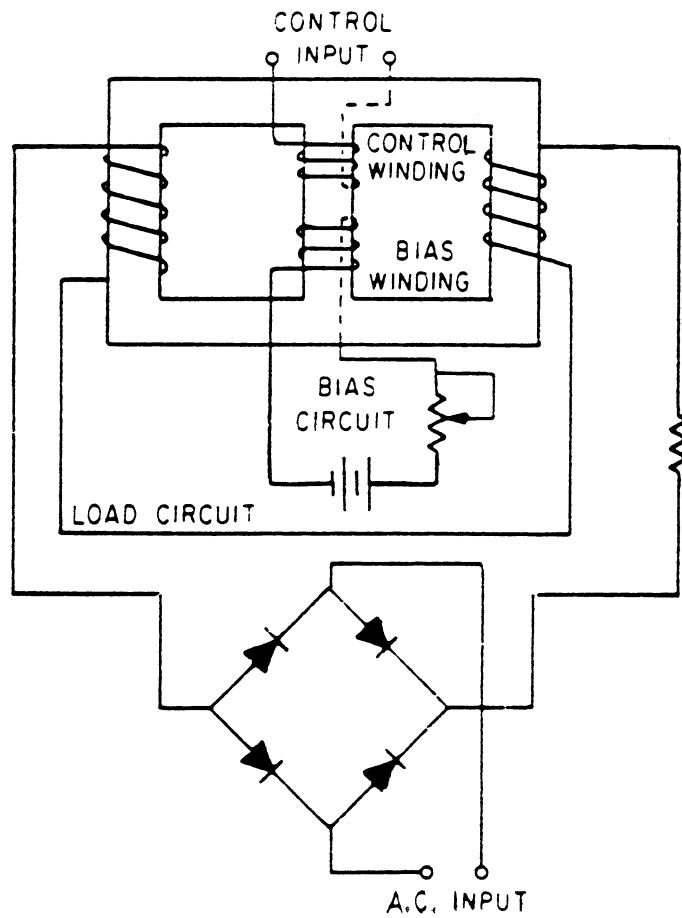


(COURTESY OF ENGLEHARD)

**EL-0091**



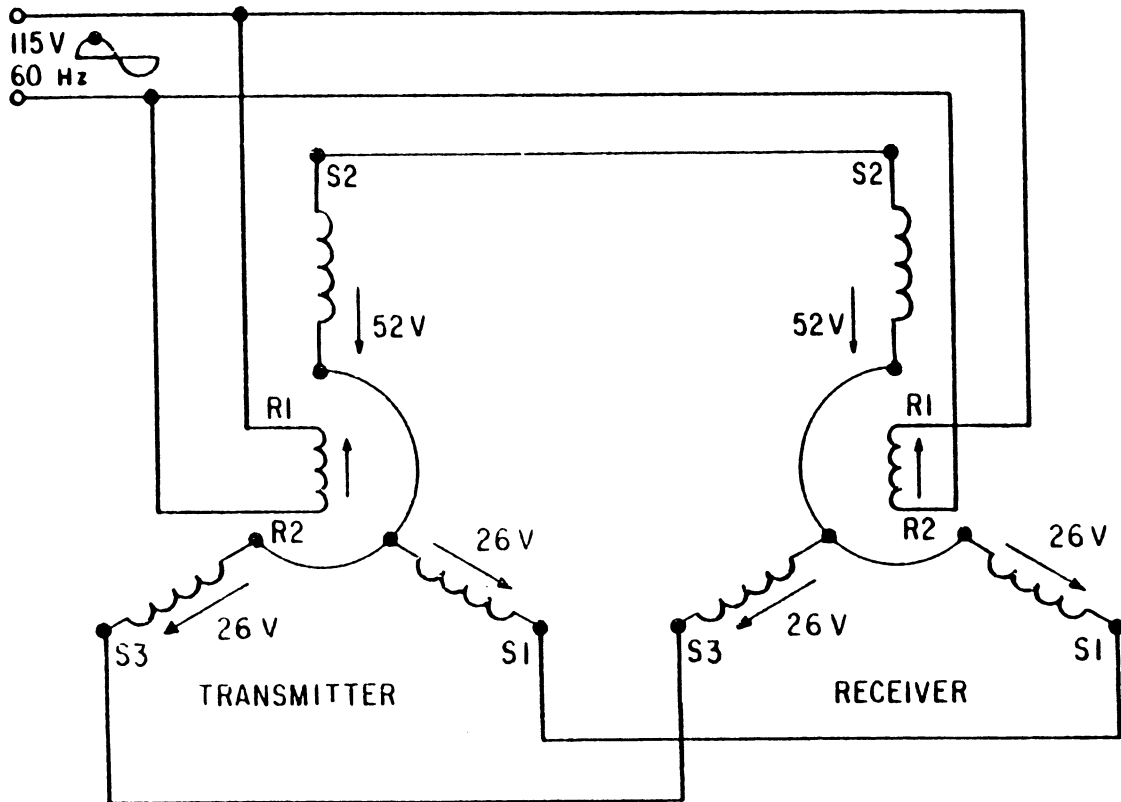
A



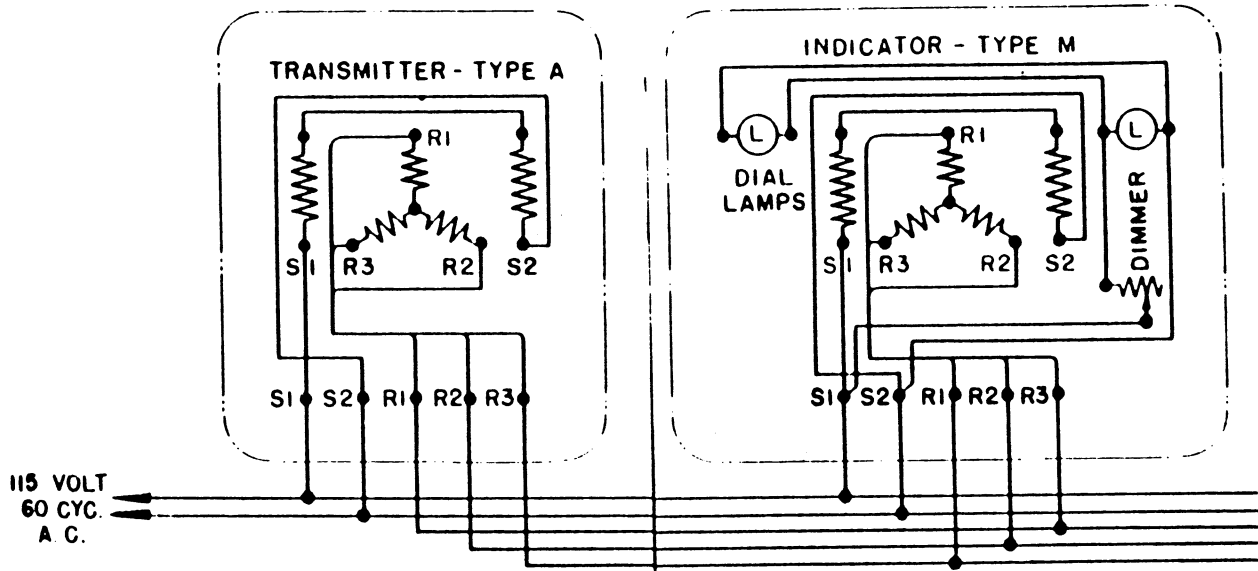
B



**EL-0092**



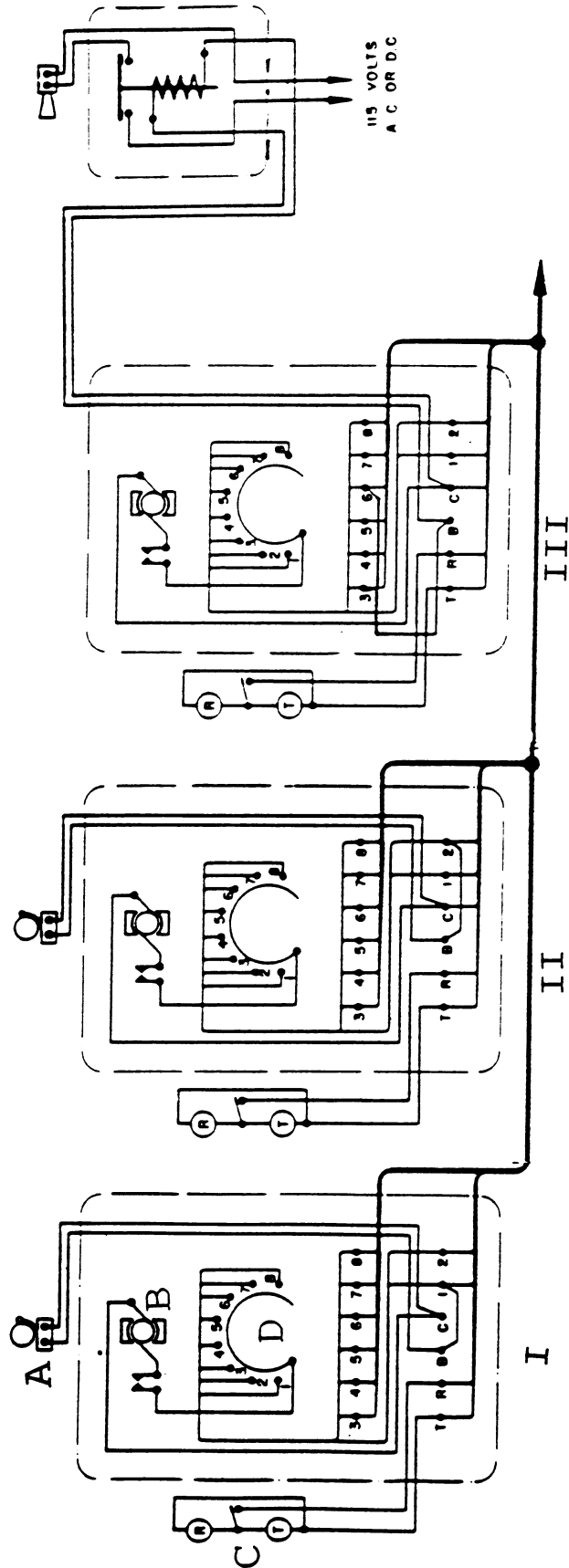
A



B

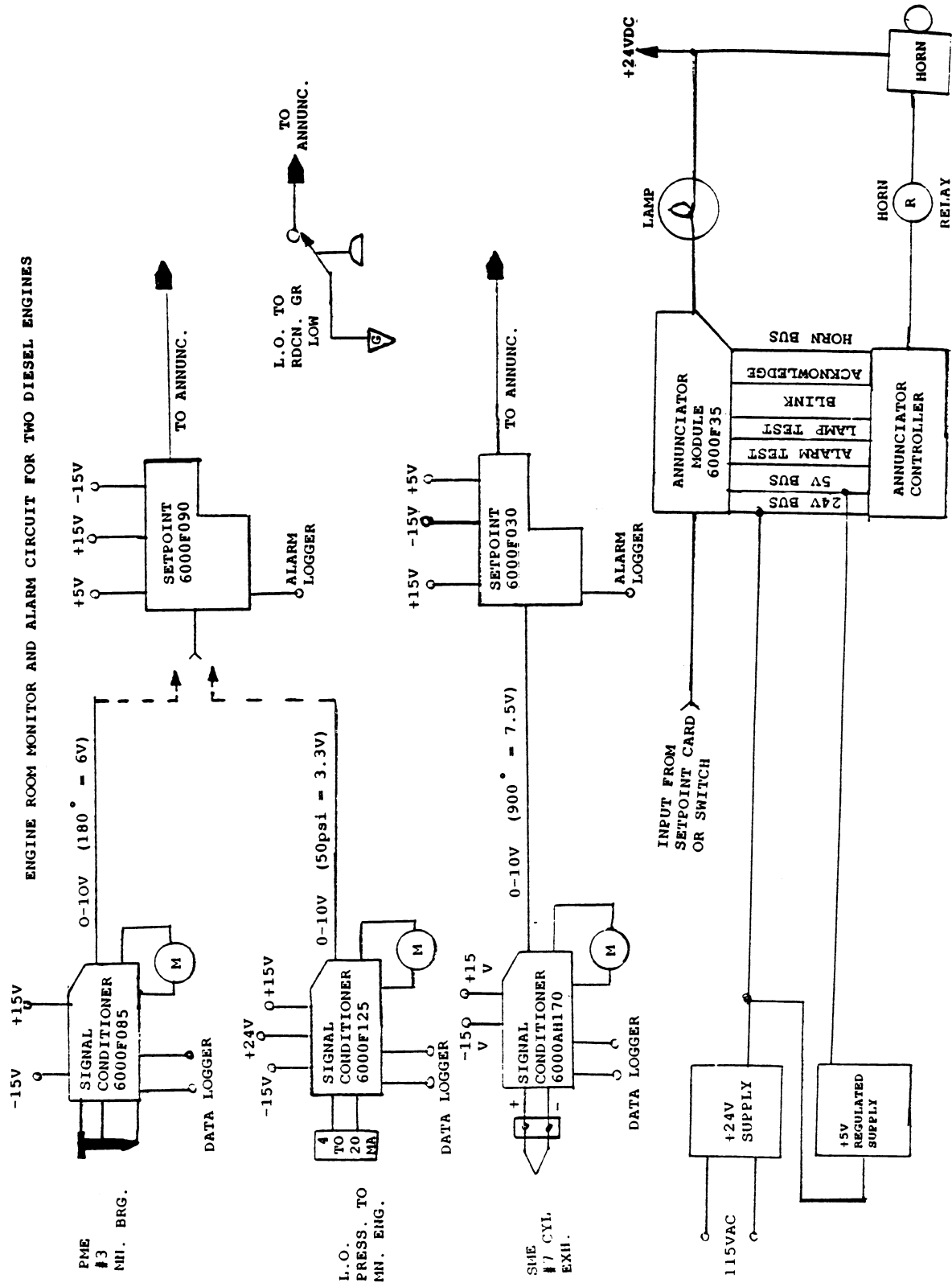
(Courtesy of Henschel Corp.)

EL-0093



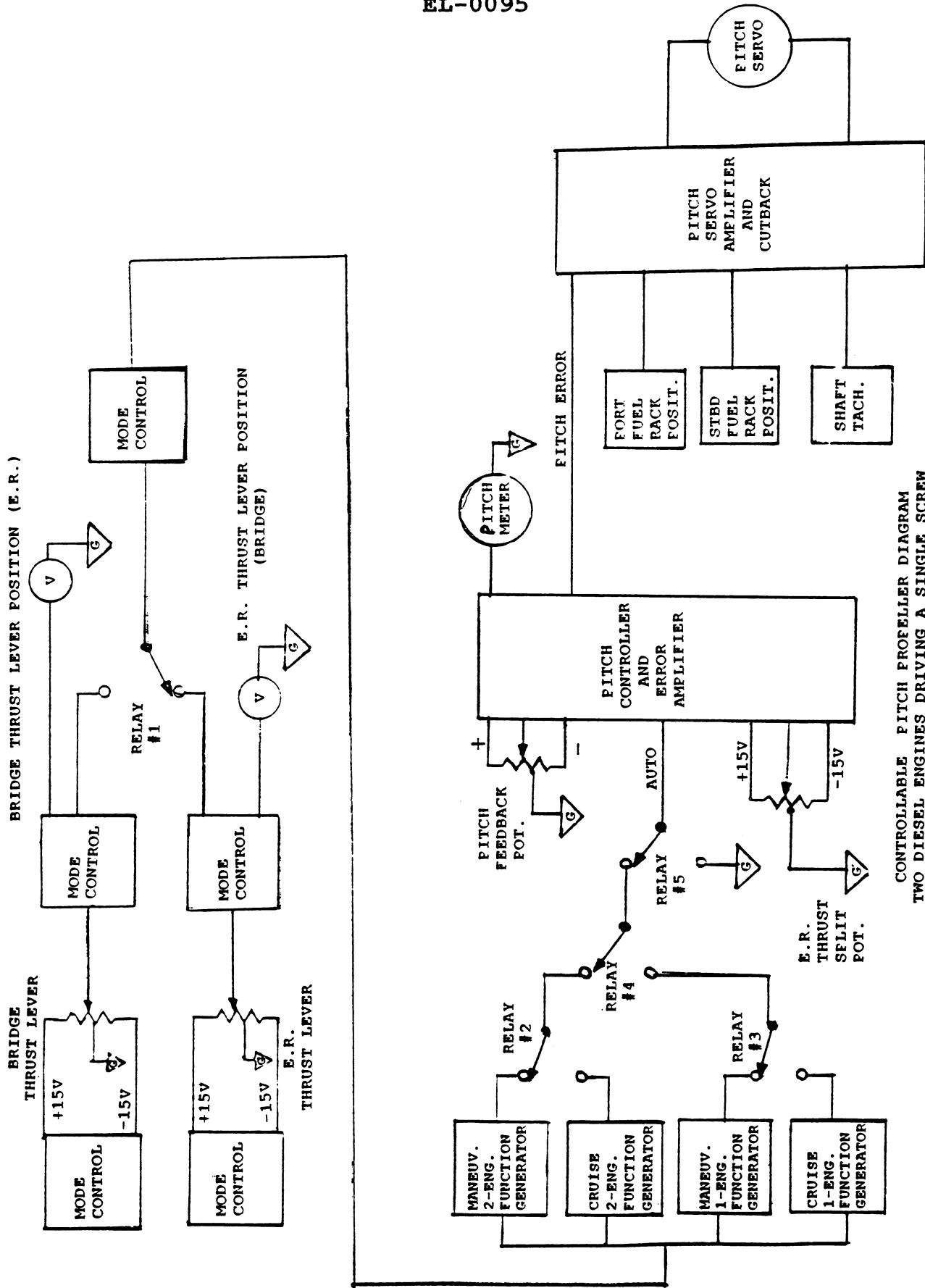
(COURTESY OF HENSCHEL CORP.)

EL-0094



(COURTESY OF TANO Marine Systems)

EL-0095

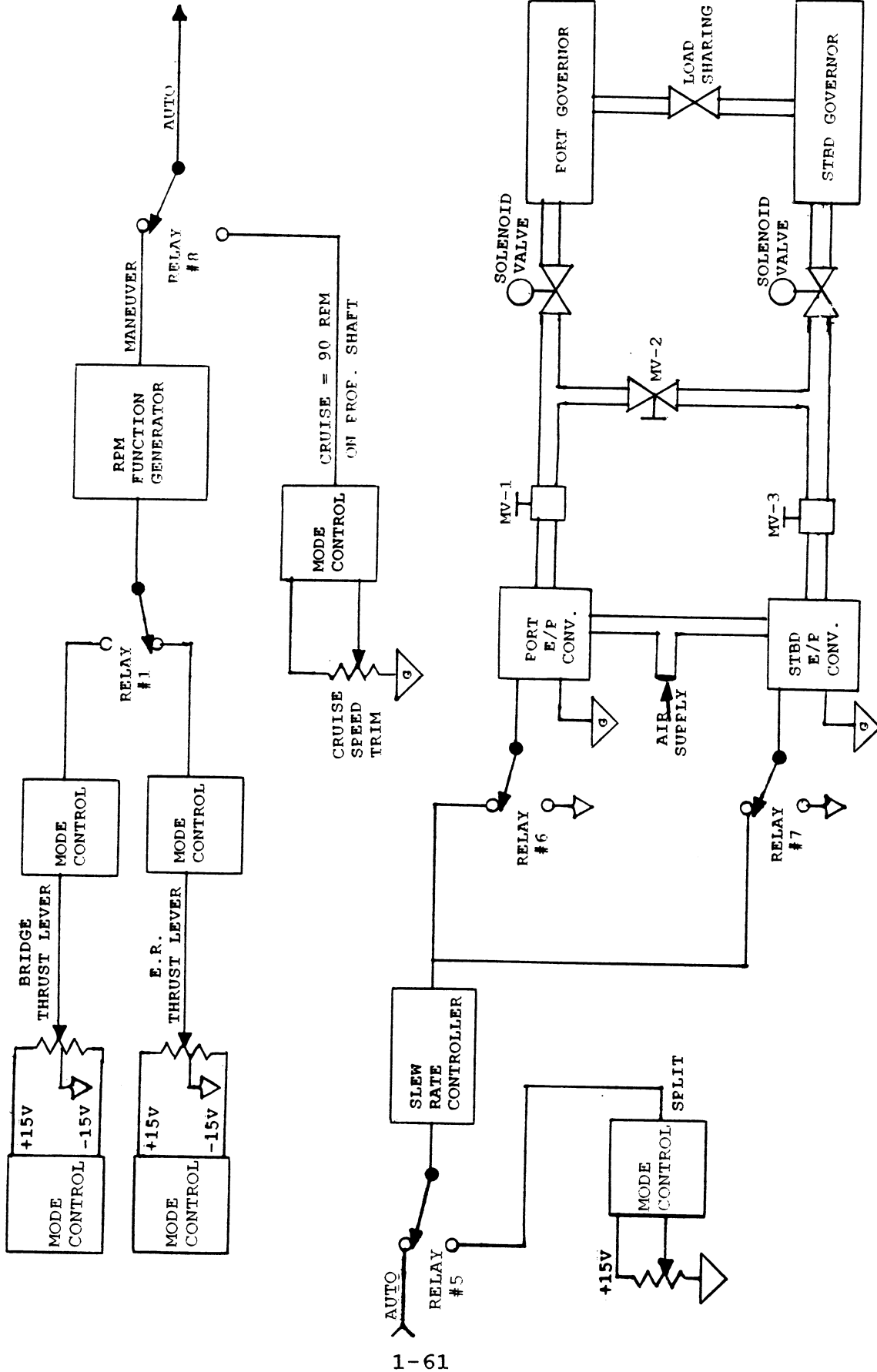


CONTROLLABLE PITCH PROPELLER DIAGRAM TWO DIESEL ENGINES DRIVING A SINGLE SCREW

(Courtesy of TAND Marine System)

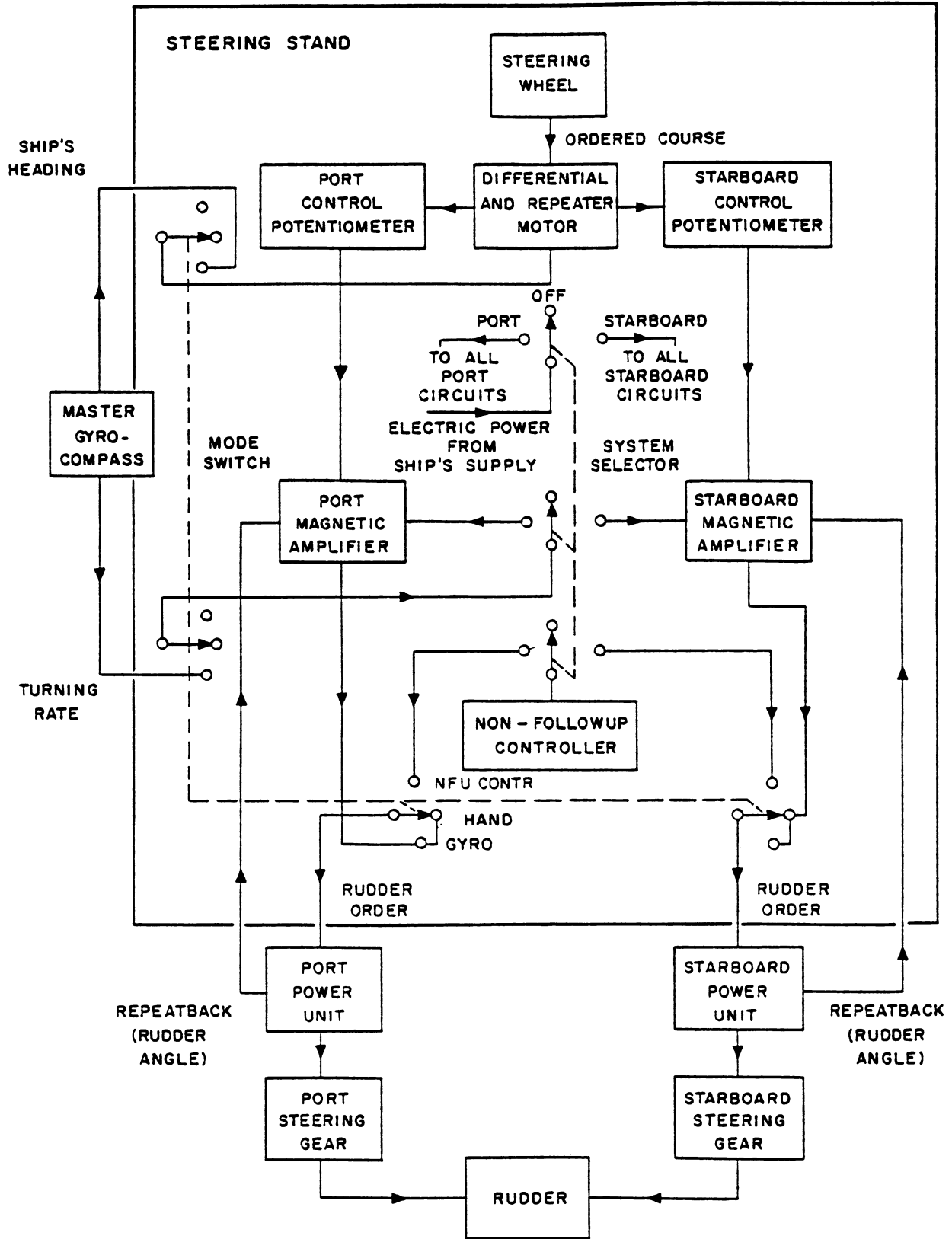
EL-0096

SPEED CONTROL DIAGRAM FOR TWO DIESEL ENGINES DRIVING A SINGLE SCREW



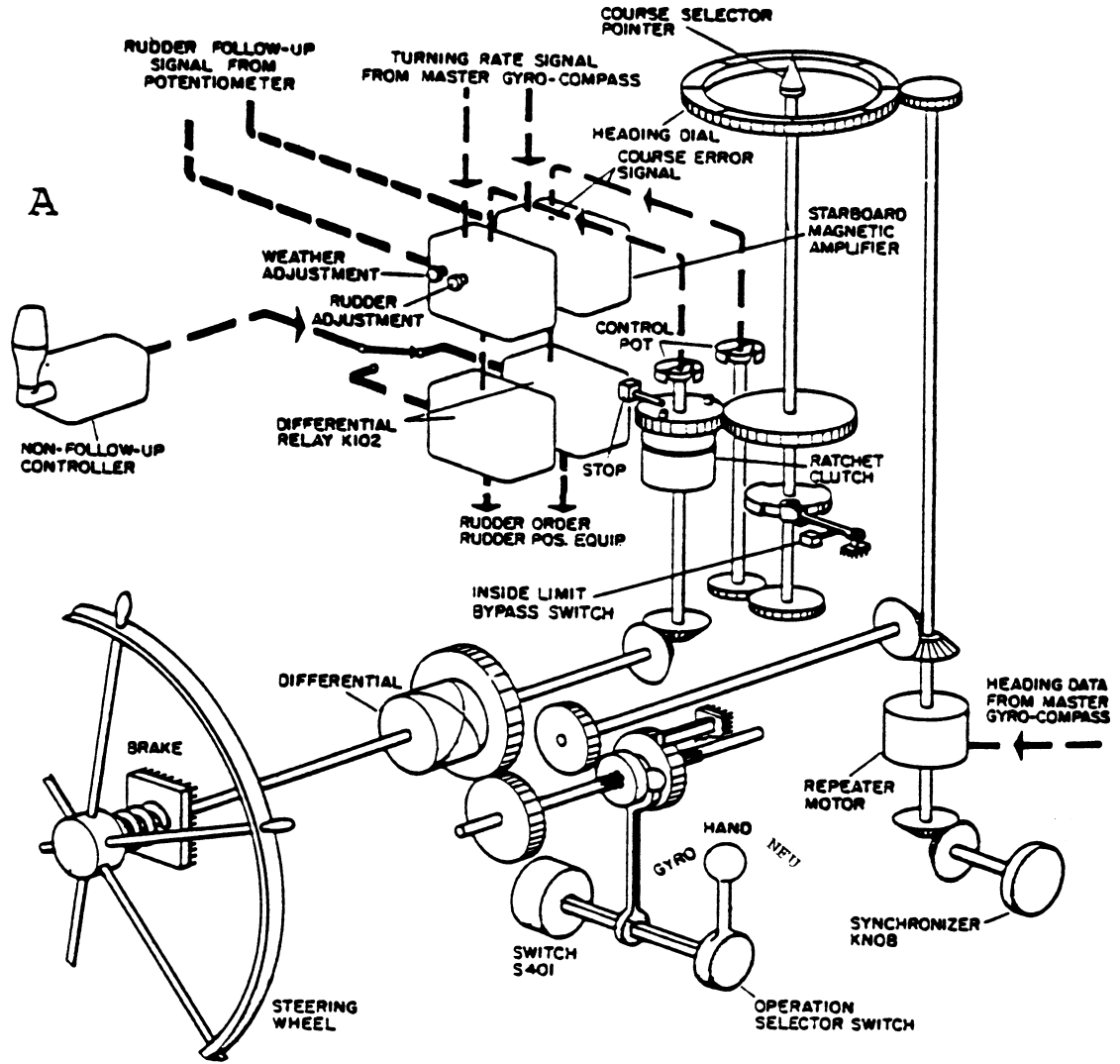
(Courtesy of TANO Marine System)

EL-0097

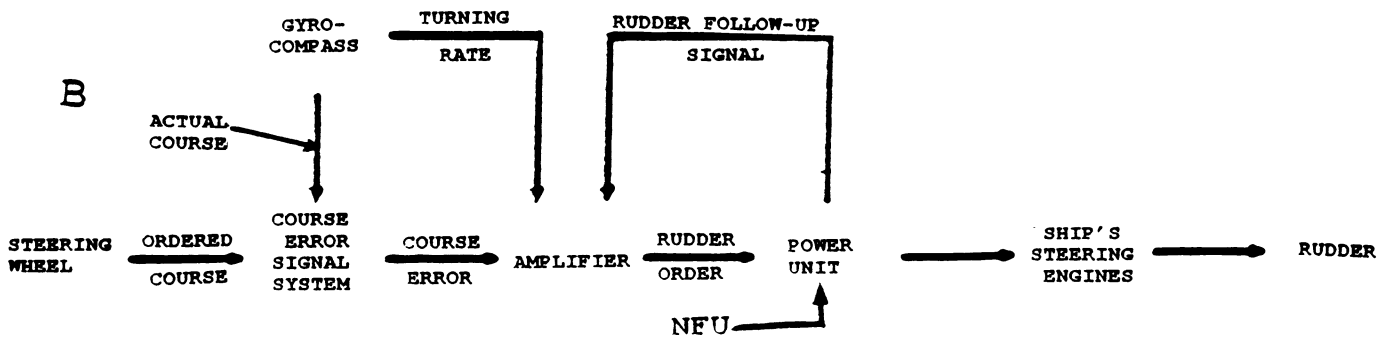


Block Diagram of Dual Steering Control System

EL-0098



Simplified isometric schematic of dual control Sperry Gyro-Pilot® steering stand.

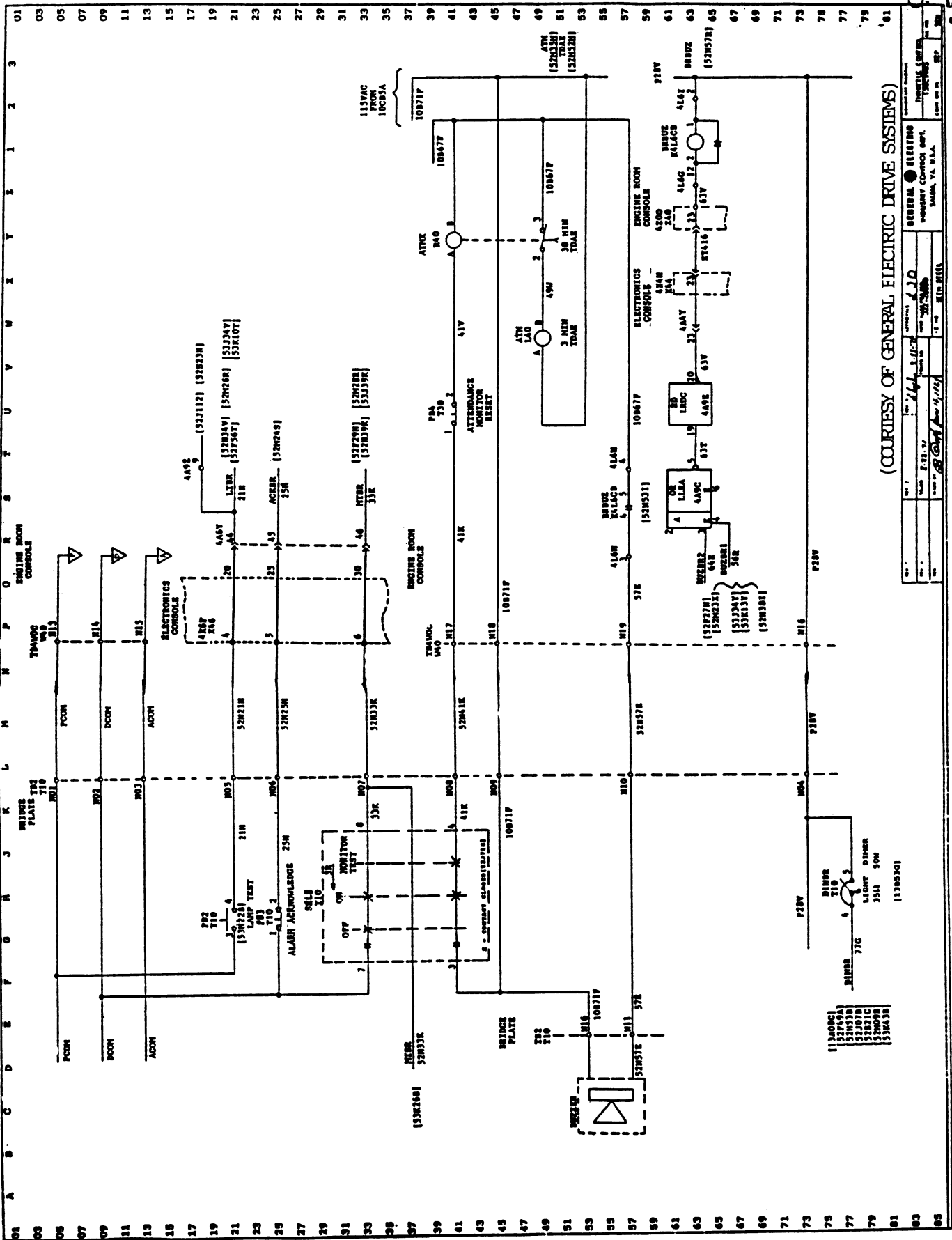


(Courtesy of Sperry Marine Inc.)

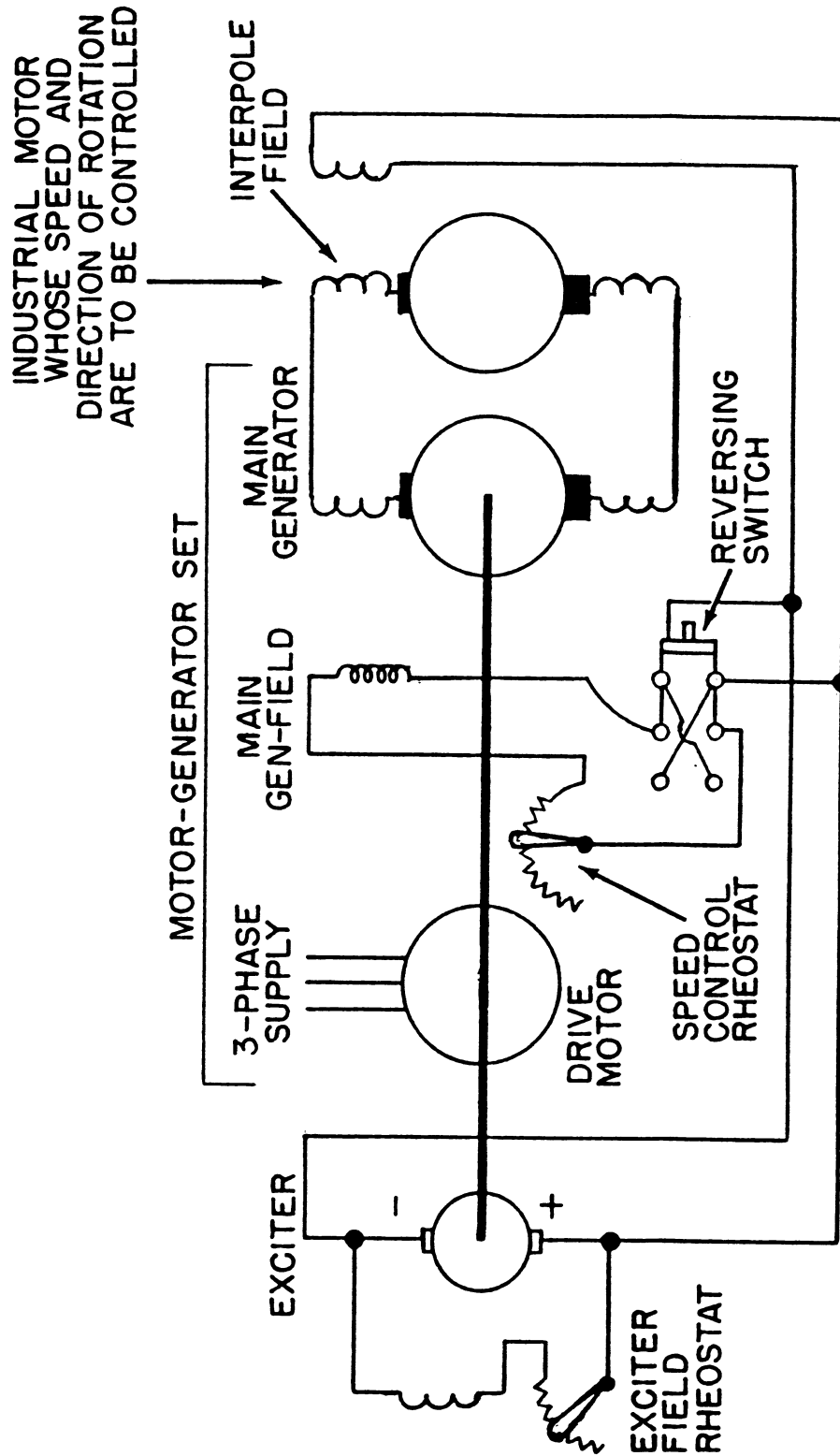


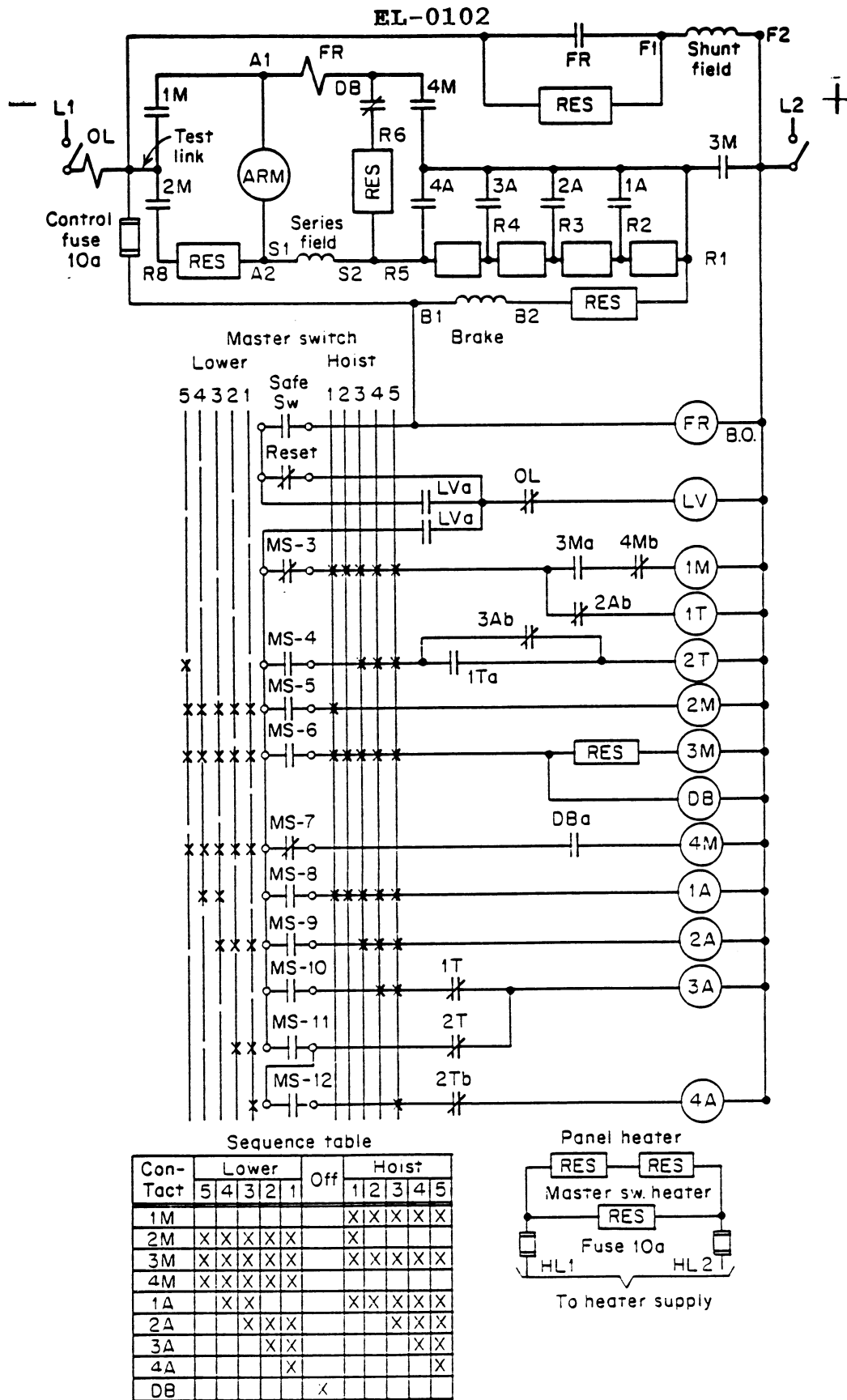


EL-0100



EL-0101





Elementary diagram for a dc hoist controller. (Courtesy of Westinghouse Electric Corp.)