

ELECTRIC SCHEMATIC LOCOMOTIVES

PHOTO BOOK BY ADAM NUGENT ROSENBERGER

2.3. OPERATOR CONTROLS AND INDICATORS (cont)

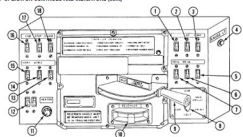


FIGURE 2-4. Controller mechanism.

Key	Control or Indicator	Function/Use
(1)	Circuit Breaker	Not used.
(2)	GF Switch (breaker)	Switches generator field current ON or OFF.
(3)	CONT Switch (breaker)	Switches control panel power ON or OFF.
(4)	GAUGE LT Rheostat Switch	Controls the brightness of the gage lights.
(5)	Circuit Breaker	Not used.
(6)	RE-FL Switch (breaker)	Switches rear headlights ON or OFF.
(7)	FR-FL Switch (breaker)	Switches front headlights ON or OFF.
(8)	HOLT Switch	Controls brightness of front and rear headlights.
(9)	POWER THROTTLE Handle	Used to control the speed of the locomotive.
(10)	REVERSER Handle	Used to control the direction the locomotive moves.
(11)	HEATER Rheostat Switch	Controls the speed of the fan in heater #2 situated in the left rear of cab.

2.3. OPERATOR CONTROLS AND INDICATORS (cont)

Key	Control or Indicator	Function/Use
(12)	Circuit Breaker	Not used.
(13)	Circuit Breaker	Not used.
(14)	HTR 2 Switch (breaker)	Switches heater #2 in left rear of cab ON or OFF.
(15)	HTR 1 Switch (breaker)	Switches heater #1 in right front of cab ON or OFF.
(16)	CAB Switch (breaker)	Switches the two cab dome lights ON or OFF.
(17)	STEP Switch (breaker)	Switches the four outside step lights and the two number lights ON or OFF.
(18)	GAUGE Switch (breaker)	Switches the gage lights ON or OFF.

2.3. OPERATOR CONTROL AND INDICATORS (cont)

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TO 45A2-2-14-41

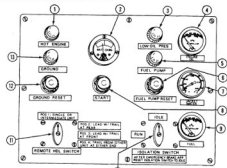


FIGURE 2-2. Meter panel.

Key	Control or Indicator	Function/Use
(1)	HOT ENGINE Indicator Light	When lit, along with the warning bell sounding, indicates diesel engine water temperature is above 180° F (82.2° C).
(2)	BATT CHRG Indicator	Indicates condition of batteries and charging system.

TM 55-2210-225-12
TO 45A2-2-14-41

2.3. OPERATOR CONTROLS AND INDICATORS (cont)

Key	Control or Indicator	Function/Use
(3)	LOW OIL PRES Indicator Light	When lit, along with the warning bell sounding, indicates that oil pressure in diesel engine is below 20 psi (138 kPa).
(4)	ENGINE OIL Gage	Indicates the lube oil pressure in the diesel engine.
(5)	FUEL PUMP Indicator Light	When lit, indicates fuel pressure control (FPC) relay is deenergized.
(6)	FUEL PUMP RESET Pushbutton	Must be pushed to energize fuel pressure control (FPC) relay before attempting to start diesel engine.
(7)	JACKET WATER Gage	Indicates the temperature of the water coolant in the diesel engine.
(8)	START Pushbutton	When pushed, connects the generator to the batteries to start the diesel engine.
(9)	FUEL PRESSURE Gage	Indicates the pressure of the fuel oil in the diesel engine.
(10)	ISOLATION SWITCH	Controls whether the locomotive is in idle or running mode.
(11)	REMOTE HDL SWITCH	Controls the headlights of the locomotive when operating as a single unit or when arranged in multiple-unit lockup position.
(12)	GROUND RESET Pushbutton	When pushed, releases the ground relay by its lockup position.
(13)	GROUND Indicator Light	When lit, indicates a ground or a current passing through frame or car body. Also will light when testing fuses.

3.3. OPERATOR CONTROLS AND INDICATORS (cont)

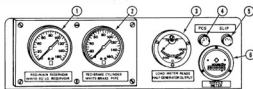
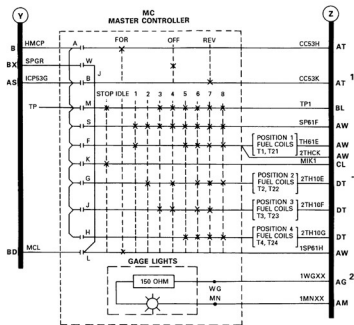


FIGURE 3.3. Gauge panel.

Key	Control or Indicator	Function/Use
1	RED-MAIN RESERVOIR and WHITE-EQ. RESERVOIR Duplex Air Stage	Indicates the main and equalizing air pressures.
2	RED-BRAKE CYLINDER and WHITE-BRAKE PIPE Duplex Air Stage	Indicates the brake cylinder and brake pipe air pressures.
3	LOAD METER Indicator	Indicates one-half of the output of main generator. Indicates the current through traction motors 1 and 2.
4	PCS Indicator Light	When lit, indicates pneumatic control system air pressure is below 75 psi (57 kPa).
5	SLIP Indicator Light	When flashing, and warning bell is sounding, indicates that a pair or more wheels are slipping.
6	SERVICE METER	Indicates the number of hours the diesel engine has run.



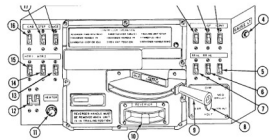


FIGURE 2-4. Controller mechanism.

Key	Control or Indicator	Function/Use
(1)	Circuit Breaker	Not used.
(2)	GF Switch (breaker)	Switches generator field current ON or OFF.
(3)	CONT Switch (breaker)	Switches control panel power ON or OFF.
(4)	GAUGE LT Rheostat Switch	Controls the brightness of the gauge lights.
(5)	Circuit Breaker	Not used.
(6)	RR HL Switch (breaker)	Switches rear headlights ON or OFF.
(7)	FR HL Switch (breaker)	Switches front headlights ON or OFF.
(8)	HOLT Switch	Controls brightness of front and rear headlights.
(9)	POWER THROTTLE Handle	Used to control the speed of the locomotive.
(10)	REVERSER Handle	Used to control the direction the locomotive moves.
(11)	HEATER Rheostat Switch	Controls the speed of the fan in heater #2 situated in the left rear of cab.

2-7

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2-3. OPERATOR CONTROLS AND INDICATORS (cont.)

Key	Control or Indicator	Function/Use
(12)	Circuit Breaker	Not used.
(13)	Circuit Breaker	Not used.
(14)	HTR 2 Switch (breaker)	Switches heater #2 in left rear of cab ON or OFF.
(15)	HTR 1 Switch (breaker)	Switches heater #1 in right front of cab ON or OFF.
(16)	CAB Switch (breaker)	Switches the two cab dome lights ON or OFF.
(17)	STEP Switch (breaker)	Switches the four outside step lights and the two hood lights ON or OFF.
(18)	GAUGE Switch (breaker)	Switches the gauge lights ON or OFF.

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2.3. OPERATOR CONTROLS AND INDICATORS

TM 55-2210-225-12
TO 45A2-2-14-41

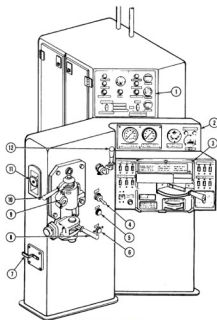


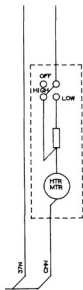
FIGURE 2-1. Master controller.

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2.3. OPERATOR CONTROLS AND INDICATORS (cont)

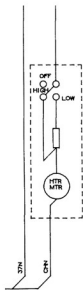
Key	Control or Indicator	Function/Use
(1)	Meter Panel	Contains the meters and switches for engine operation. See FIG. 2-2.
(2)	Gage Panel	Contains the air gages and load meter. See FIG. 2-3.
(3)	Controller Mechanism	Contains the throttle, reverser, and control switches. See FIG. 2-4.
(4)	Sand Valve Control	When pushed, applies sand in front of the driving wheels in the direction the locomotive is moving.
(5)	STOP Pushbutton	When pushed, shuts down the diesel engine.
(6)	BELL Ringer Valve	When pushed, rings the warning bell.
(7)	Double-Ported Cutoff Cock	Is positioned to correspond to the operating mode of the locomotive. In the two positions, OPEN (Lead or Dead) and CLOSED (Trail).
(8)	Independent Brake Valve	Used to apply and release the locomotive brake. By depressing the independent handle, a release of the automatic brake application can be made on the locomotive without releasing the train brake.
(9)	Cutoff Pilot Valve (Double Heading Cock)	Used for cutting in or cutting out the charging of brake pipe. On trailing units and when measuring brake pipe leakage, the valve is in the OUT position.
(10)	Automatic Brake Valve	Used to apply and release the automatic brakes on the locomotive and train.
(11)	Regulating Valve Handle	Used to adjust the equalizing reservoir pressure when automatic brake valve is in RELEASE.
(12)	Horn Valve	When pulled, sounds the warning horn.

SYMBOLY USED FOR 60 TON LOCOMOTIVE STATION LOCATOR		ALTERNATOR or AC MOTOR	BATTERY	BELL	CIRCUIT BREAKER	DC GENERATOR or MOTOR
SINGLE-PHASE						ARMATURE FIELD WINDING
DIODES INDICATES RED TERMINAL 	FUSE 	GROUND 	LAMPS 	METERS 	PLUGS and RECEPTACLES 	RECTIFIERS INDICATES RED TERMINAL
SUPPRESSION 			INDICATOR (SHOW LENS COLOR) 	AMMETER 	UTILITY POWER	HALF WAVE CONTROLLED DIODE
RELAYS and CONTACTORS DOUBLE BREAK CONTACTS 	RESISTORS SHOW RESISTANCE VALUE INSIDE SYMBOL 	SWITCHES NOTARY MANUAL 	RHEOSTAT 	SLIP ACTION 	MULTIPOSITION 	PUSHBUTTON w/ SPRING RETURN
NORMALLY OPEN 	TAPPED 	N.O. N.C. 	FIXED 	ADJUSTABLE 	PRESSURE 	THERMAL
NORMALLY CLOSED 	DOUBLE BREAK 	DOUBLE THROW 		DOUBLE BREAK MANUAL 	NORMALLY OPEN 	NORMALLY CLOSED
DOUBLE THROW 	DELAYED PICKUP 	SPRING RETURN 		DOUBLE THROW 	DOUBLE THROW 	GANGED
DELAYED DROPOUT 	OPERATING COIL 	NOTE: DRAW NORMALLY OPEN CONTACTS ON BOTTOM OR RIGHT SIDE, AND NORMALLY CLOSED CONTACTS ON TOP OR LEFT SIDE				



HEATER

HEATER FIREMAN



HEATER

HEATER ENGINEER

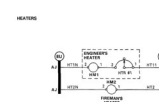
THE TRAINING SYSTEM PROGRAM

1. Read	2. Read	3. Read
2. Read	3. Read	4. Read
3. Read	4. Read	5. Read

1. Read the text carefully and understand the meaning of the words.
 2. Read the text carefully and understand the meaning of the words.
 3. Read the text carefully and understand the meaning of the words.



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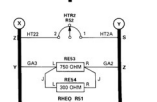
THE TRAINING SYSTEM PROGRAM

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3. Read	4. Read	5. Read

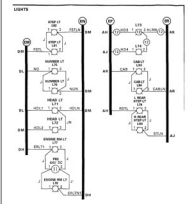
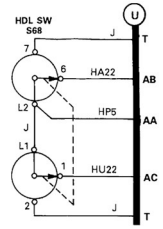
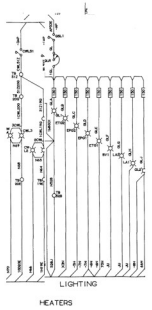
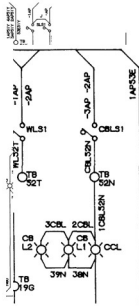
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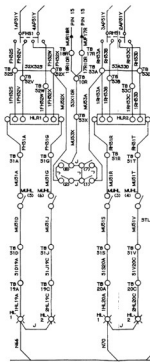
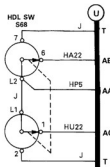
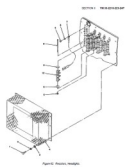
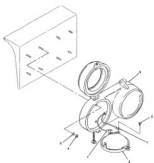
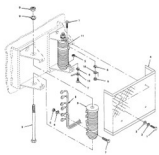


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HEADLIGHTS

W2041

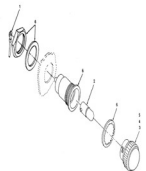


Fig. 7 Light socket

W2042/2043

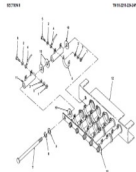


Fig. 8 Switch

W2044

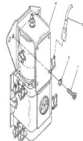
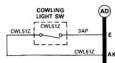
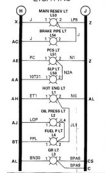
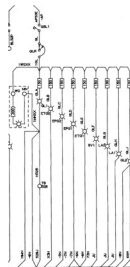
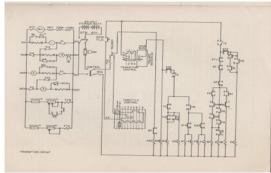


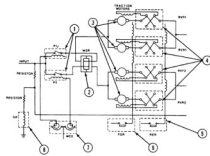
Fig. 9 Mechanical type door frame

W2045/2046

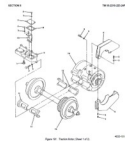
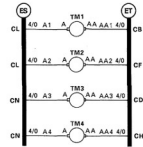


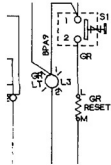
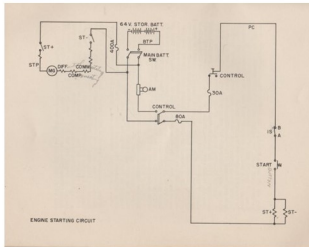


1-12. TRACTION MOTORS AND SWITCHING DEVICES

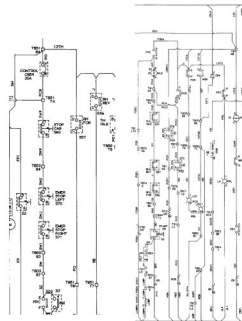


TRACTION MOTORS

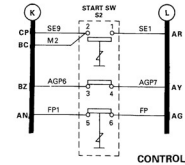




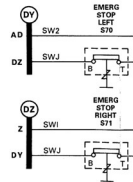
EMERGENCY START AND STOP SWITCHES

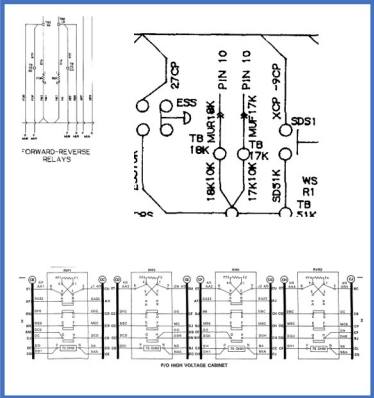
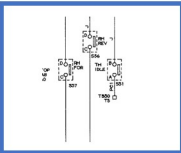
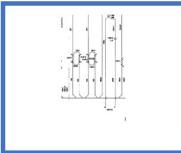
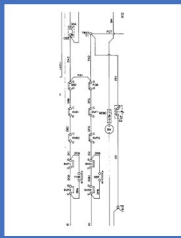
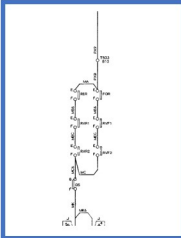


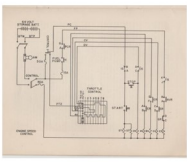
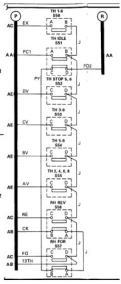
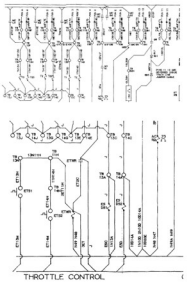
START/SHUTOFF



EMERGENCY STOP SWITCHES







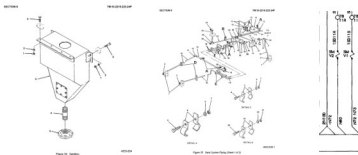


Figure 10

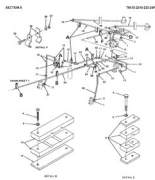
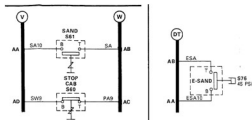
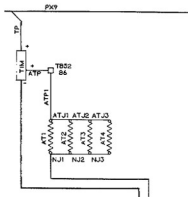


Figure 11 Sand Valve (Pony Model) (1/2)



FRONT SAND FWD SOLENOID

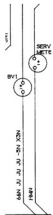


REAR SAND FWD SOLENOID

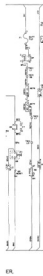
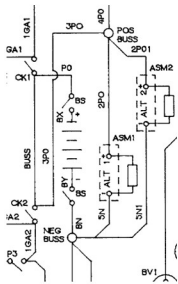


SAND VALVE

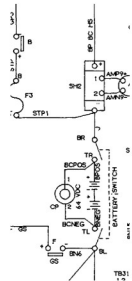




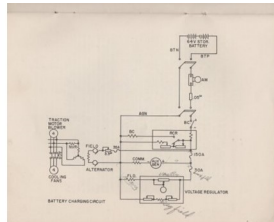
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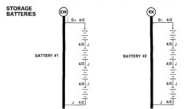
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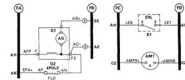
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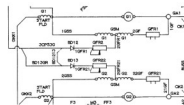
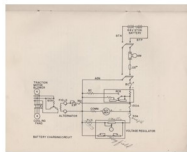
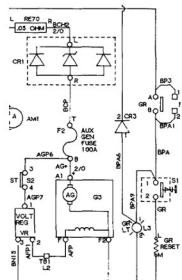
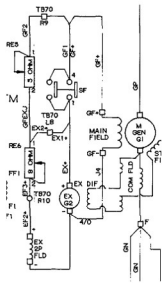


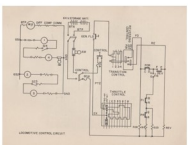
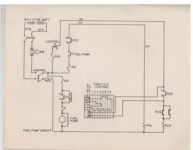
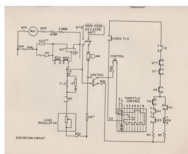
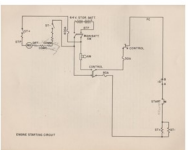
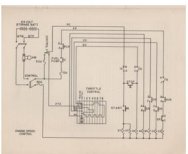
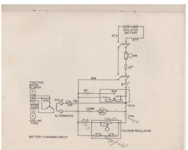
BATTERY CHARGING CIRCUIT

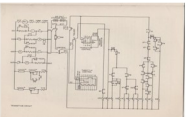
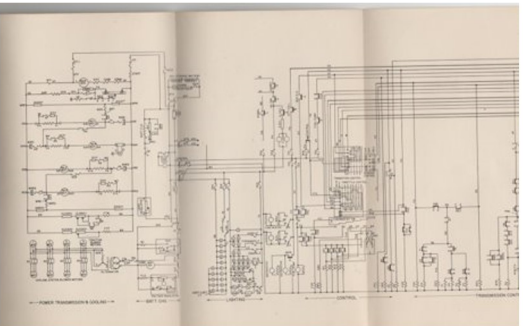


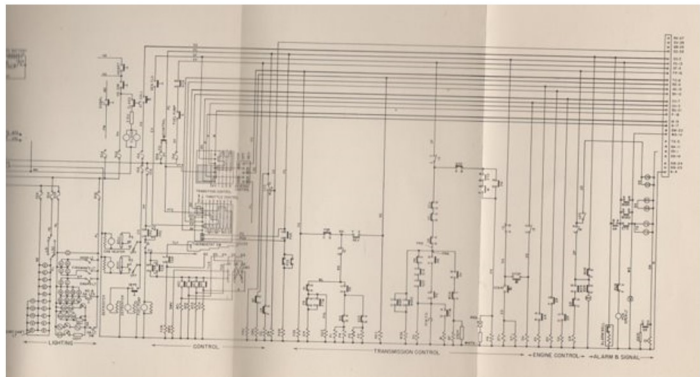
BATTERY CHARGING ALTERNATOR

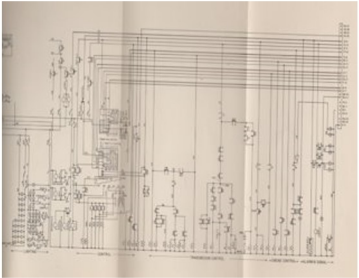
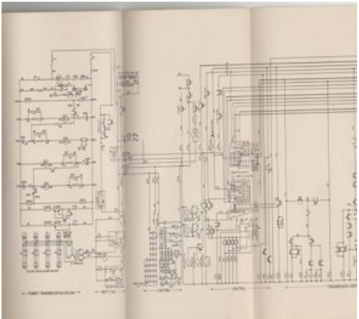


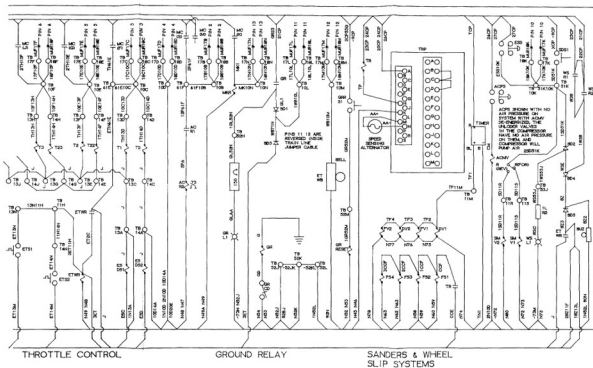


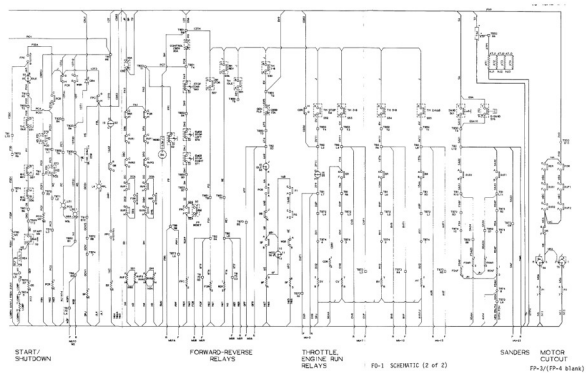


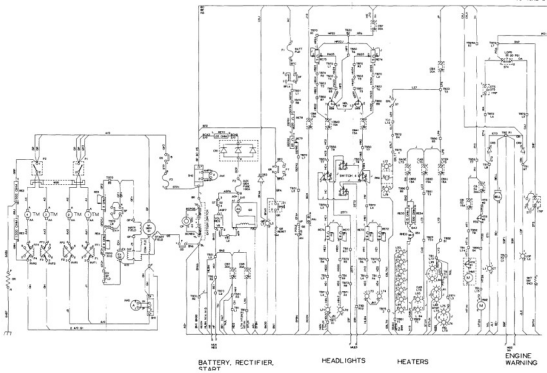










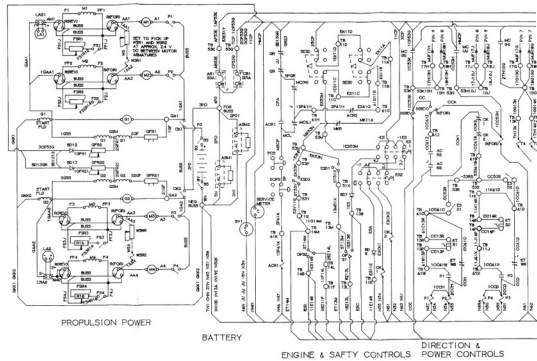


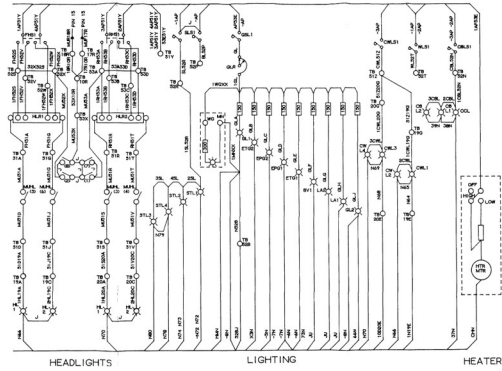
BATTERY, RECTIFIER,
47 AMP

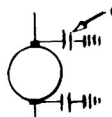
HEADLIGHTS

HEATERS

ENGINE
WARNING



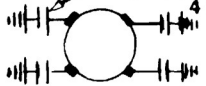




CA-470 0.01 UF 250 V. AC/DC
CAPACITOR
2 REQUIRED

HEATER MOTOR

**CAPACITOR
APPLICATIONS**
FOR RADIO
SUPPRESSED
LOCOMOTIVES



CA-442 0.1 UF,
100 V. DC CAPACITOR
4 REQUIRED

AUXILIARY GENERATOR

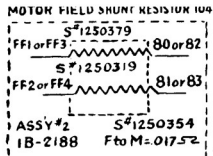
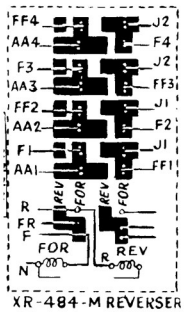
NF-10072, 0.1 UF
100 AMP. 250 V. D.C.
FEED THROUGH
CAPACITORS
2 REQUIRED

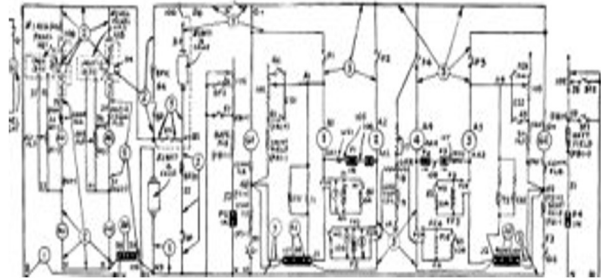
- 31 or 34 (AG)
- 30 or 35 (B3)
- 32 or 36 (AF)
- 33 or 37 (N)

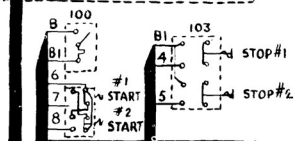
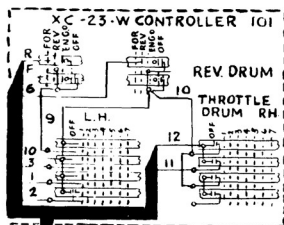
VOLTAGE REGULATOR

DWG # 49468

TC500 20453

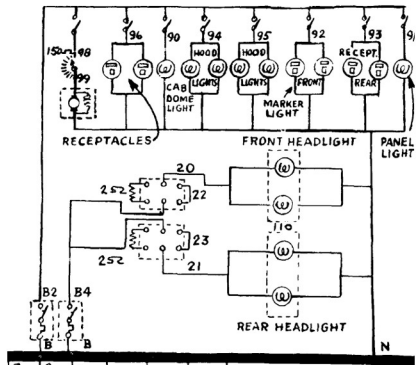




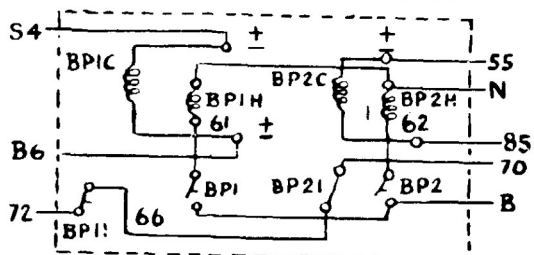


BILL OF MATERIALS

G1, G2	-----	195-A MAIN GENERATORS
1, 2, 3, 4	-----	928-GK TRACTION MOTORS
AG1, AG2	-----	YG-418 - AUXILIARY GENERATORS
FOH REV	-----	XR - 484 - M PNEUMATIC REVERSER
P1, P3	-----	UMA-275-A CONTACTORS (1 IN, 1 OUT INTERLOCK)
P2, P4	-----	UMA-275-A CONTACTORS (2 - IN INTERLOCK)
D, G1, G2, BS	-----	UMJ-134-A CONTACTORS (1 IN, 1 OUT INTERLOCK)
M1, M2, M3, M4	-----	UMJ-134-A CONTACTORS (NO INTERLOCK)
T1, ES1, T2, ES2	-----	UV-56-N-FIELD SHUNT RELAY
VR1, VR2	-----	UV-230-F VOLTAGE REGULATOR PANEL
BP	-----	UM-17-A CONTACTOR (1 IN, 1 OUT INTERLOCK)
ST1 ST2	-----	UE-116 ENGINE SHUTDOWN VALVES
BP1, BP2	-----	UR 727-A RELAY PANEL
BA	-----	OX-33-BATTERY AMMETER 100-0-100 A
AA1, AA2	-----	OX-33-CHARGING AMMETERS 0-50A
AF, A2	-----	NX 35 MAIN AMMETERS, COLORED DIAL
BL	-----	PARALLEL BATTERY SIGNAL LAMP WITH:
		SW 805-269-B RECEPTACLE
		S4 549474 LAMP
		S4 549469 LENS (GREEN)
TH	-----	UE-16-C THROTTLE OPERATOR
BP1, BP2	-----	UR 227-G RELAYS
WSL	-----	WHEEL SLIP INDICATING LIGHT, SAME AS BL EXCEPT HAS AMBER LENS (SW 549472)
WS1, WS2	-----	UR 677-C WHEEL SLIP RELAYS
GR	-----	URD-627 A GROUND RELAY
GRCO	-----	AG GROUND RELAY CUT OUT BREAKER 3 POLES (2 POLES CLOSE IN ON, 1 POLE CLOSES ON OFF)
100	-----	AB CONTROL CIRCUIT BREAKER 1 POLE 25 AMPS
101	-----	KC-2J-M MASTER CONTROLLER
102	-----	H.D. PUSH BUTTONS, S# 1033638
103	-----	H.D. PUSH BUTTONS, S# 1033637
104	-----	WM MOTOR FIELD SHUNT RESISTOR
105	-----	TM GENERATOR FIELD RESISTOR
106	-----	496-R BATTERY SWITCH
107	-----	TS-185 MAIN AMMETER SHUNT, 100 M.V., 1500 AMPS
108	-----	AB AUXILIARY GENERATOR CIRCUIT BREAKER - 2 POLE - 50 AMP
109	-----	G BATTERY AMMETER SHUNT, 100 AMP, 50 HW
110	-----	DUAL SEALED BEAM HEADLIGHTS - PYLE NATIONAL



UR-727-A RELAY PANEL



PICK UP 80A COILS SHOULD AID WHEN
 + TERM ARE SAME POLARITY

