

CHAPTER 13

WIRING DIAGRAMS

Section 1. GENERAL

13-1. Scope.

This chapter contains wiring diagrams and essential wiring information for the electrical systems and circuits in the UH-1D/H helicopter to assist maintenance personnel in understanding the circuits and components installed in the helicopter and in troubleshooting and tracing of inoperative and malfunctioning circuits.

13-2. Wiring Data.

All wiring is adequately shielded and wires are marked with identification letters and numbers;

a. Wire Identification. Identification of each wire is accomplished by a combination of letters and numbers. (See figure 13-1.)

b. Abbreviations. Abbreviations used are in accordance with MIL-STD-12 except when the abbreviation depicts a marking actually found in the aircraft.

c. Symbols. Diagrams components symbols are drawn in accordance with MIL-STD-15-1. (See figure 13-2.)

13-3. Equipment List.

The purpose of Tables 13-1 thru 13-4 is to provide maintenance personnel with the necessary information to correlate equipment location, wiring diagrams and text.

Alphabetical, numerical code item numbers are assigned to each piece of equipment and is common in equipment location, illustrations, wiring diagrams and text.

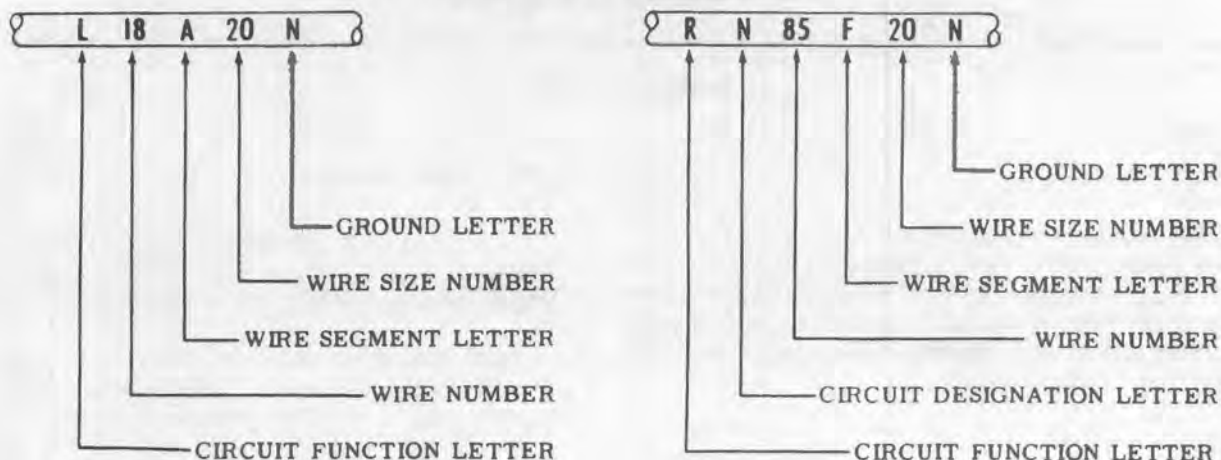
13-4. Connector Replacement Chart.

The purpose of Table 13-5 is to provide maintenance personnel with necessary information to replace (resolder or crimp) a damaged electrical connector.

The chart contains the connector code item numbers, the connector pin letters or numbers, and the wire number that installs in each respective pin.

Only those connectors that are not shown in their entirety in one of the system diagrams are presented in table 13-5.

WIRING IDENTIFICATION CODE

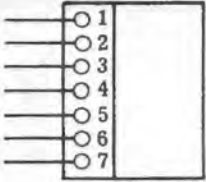
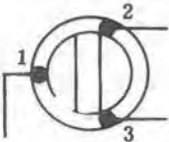
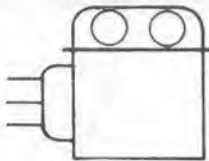
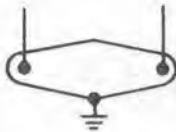
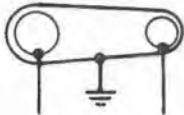
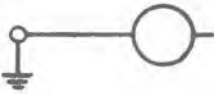
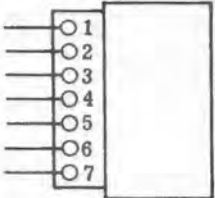
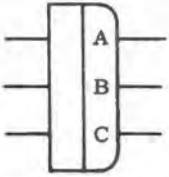
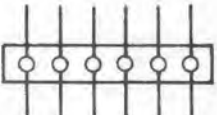
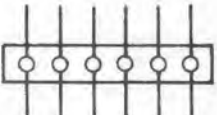
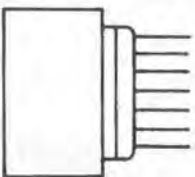
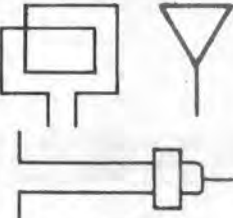
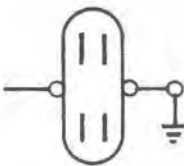
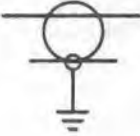


CIRCUIT FUNCTIONS

<u>CODE</u>	<u>NOMENCLATURE</u>	<u>CODE</u>	<u>NOMENCLATURE</u>
A	ARMAMENT	RC	COMMAND
C	CONTROL SURFACES	RF	VHF LIAISON
D	INSTRUMENTS (OTHER THAN FLIGHT OR ENGINE)	RL	LIAISON
E	ENGINE INSTRUMENTS	RM	MARKER BEACON
F	FLIGHT INSTRUMENTS	RN	NAVIGATION
H	HEATING, VENTILATING AND DE-ICING	RU	UHF COMMAND
J	IGNITION	RV	VHF COMMAND
K	ENGINE CONTROL	RZ	INTERPHONE AND HEADPHONE
L	LIGHTING	S	RADAR
M	MISCELLANEOUS ELECTRIC	SX	RECOGNITION (IFF)
N	GROUND	TN	TRACKING NAVIGATION
P	DC POWER	V	DC POWER AND DC CONTROL CABLES FOR AC SYSTEM
Q	FUEL AND OIL	W	WARNING AND EMERGENCY
R	RADIO (NAVIGATION AND COMMUNICATION)	X	AC POWER

204475-34C
AV 054194

Figure 13-1. Wiring identification code

LIGHTS			
			
LANDING	MARKER BEACON	ANTI-COLLISION	DOM E
			
FUSELAGE	COCKPIT	WARNING	SEARCH LIGHT
CONNECTORS			
			
PLUG & RECPT.	QUICK DISCONNECT	TERMINAL CONNECT	TERMINAL BLOCK
			
PERMANENT SPLICE	TERMINAL CONNECT	TERMINAL BLOCK	
MISCELLANEOUS			
			
RESISTORS	RECEIVER TRANSMITTER CONTROLS	ANTENNAS	SOLENOID VALVE
			
THERMOCOUPLE HARNESS	HEATED BLANKET RECEPTACLE	COAXIAL CABLE	SHIELDED WIRES IN CABLE

204075-8-1
AV 054193-1

Figure 13-2. Electrical symbol chart (Sheet 1 of 2)

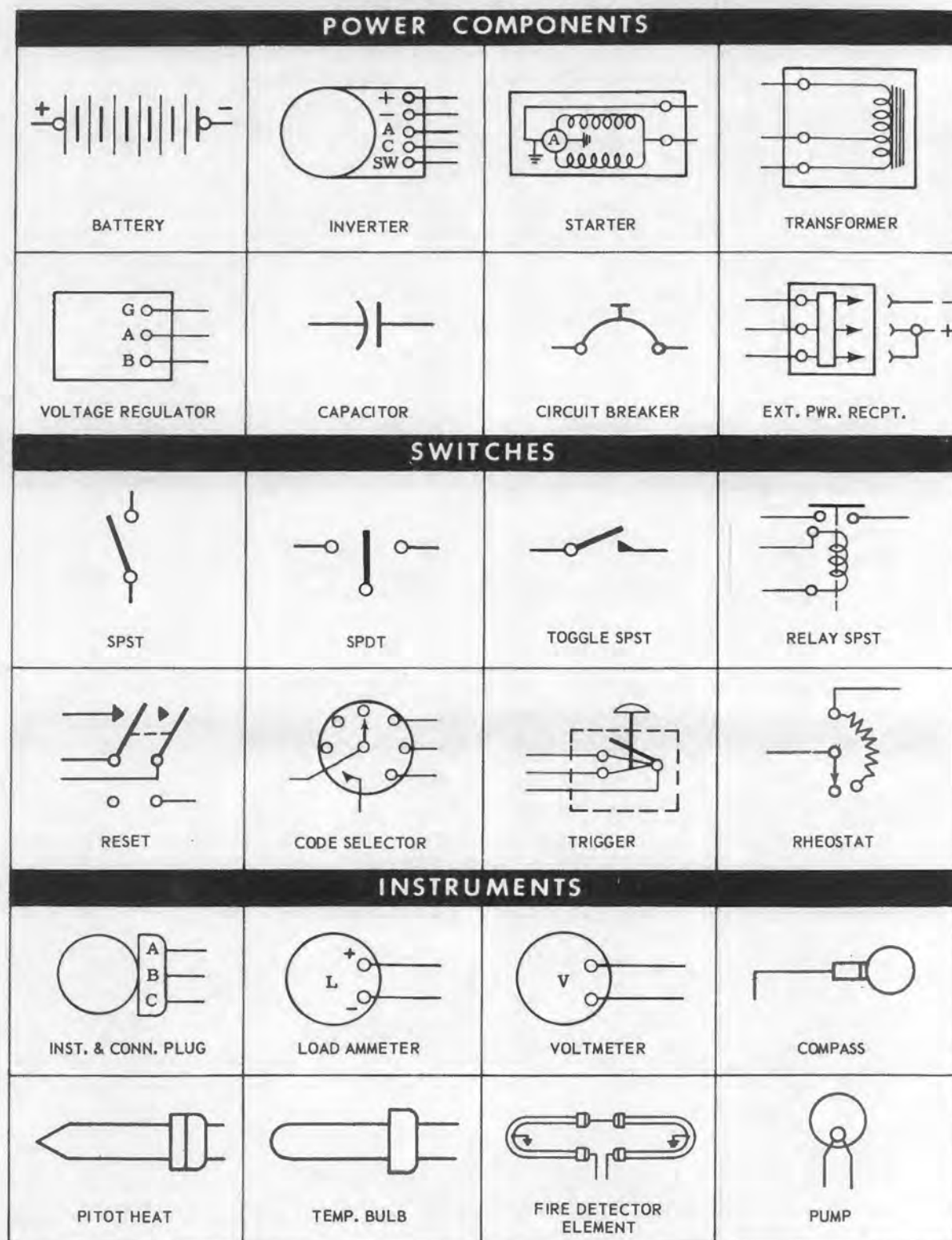

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AV 054193-2

Figure 13-2. Electrical symbol chart (Sheet 2 of 2)

Table 13-1. Equipment List — Helicopters Serial No. 65-9565 Through 65-12895

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
A1	Panel, DC Power	E 2	Detector, Magnetic Chip
A2	Panel, AC Power	E3	Detector, Magnetic Chip
A3	Panel, Engine	E4	Detector, Magnetic Chip
A4	Panel, Caution		
A6	Panel, Instrument Lights	G2	Generator, 30 VDC (300A)
A7	Panel, Exterior Lights	G3	Generator, Tach. (Gas Prod.)
A8	Panel, Hydraulic Control	G4	Generator, Tach. (Pwr. Turb.)
A10	Panel, Miscellaneous	G5	Generator, Tach. (Rotor)
A11	Panel, Heating	G6	Generator, Starter 28V (200A)
A12	Cargo Hook Assembly		
A13	Panel, Resistor	HR1	Heater, Pitot Tube
A14	Panel, AC Circuit Breaker	I1	Indicator, Attitude (Copilot)
A15	Panel, Overhead Console	I2	Indicator, Fuel Quantity
A20	Panel Assembly, Aft Dome Lights	I3	Indicator, Torque - Pilot
A21	Panel, Dome Lights & Pitot Heater	I4	Indicator, Oil Pressure (Engine)
A26	Panel, Assembly, Ext. Fuel	I5	Indicator, Oil Pressure (XMSN)
		I6	Indicator, Fuel Pressure
B1	Syncro XMTR Torque Pressure	I7	Indicator, Tach. (Gas Prod.)
B3	Syncro XMTR, XMSN Oil Pressure	I8	Indicator, Tach-Dual (Pilot)
B3	Syncro XMTR, Engine Oil Pressure	I9	Light, Utility (Pilot)
B4	Syncro XMTR, Fuel Pressure	I10	Light, Dome
B5	Motor, Fuel Shutoff Valve	I11	Light, Search
B6	Motor, R/H Fuel Boost Pump	I12	Light, Fire Warning
B7	Motor, Windshield Wiper	I13	Light, Master Caution
B8	Motor, R/H Aux. Fuel Pump	I14	Light, Instrument Secondary
B12	Motor, Gov. RPM Actuator	I15	Lamp, Instrument & Edge Lights
B13	Motor, L/H Aux. Fuel Pump	I16	Light, Landing
B19	Motor, Bleed Air Valve	I17	Light, Left Navigation
B31	Motor, Copilot Windshield Wiper	I18	Light, Right Navigation
BT2	Battery	I19	Light, Tail
		I20	Light, Top Fuselage
C1	Capacitor, PF Corr. (MIL-C-25)	I21	Indicator, XMSN Oil Temp.
C7	Capacitor, Filter, JN14	I22	Indicator, Engine Oil Temp.
CB1	Circuit Breaker (5A)	I23	Indicator, Turn & Slip (Pilot)
CB2	Circuit Breaker (10A)	I25	Light, XMSN Sump Inspect
CB3	Circuit Breaker (15A)	I26	Light, Bottom Fuselage
CB4	Circuit Breaker (20A)	I28	Light, Utility (Copilot)
CB5	Circuit Breaker (25A)	I31	Indicator, Exh. Temp. (Pilot)
CB6	Circuit Breaker (1A)	I34	Standby Compass (Pilot)
CB7	Circuit Breaker (35A)	I40	Light, Anti-Collision
CB8	Circuit Breaker (1.5A)	I42	Indicator, Attitude (Pilot)
CB11	Circuit Breaker (7.5A)	I44	Light, Cargo Release Armed
CB12	Circuit Breaker (50A)	I45	Light, Hi-Lo RPM Warn.
CP1	Coupler, Fuel Qty. Sys. "J" Box, Unshielded	I72	Light, Air Filter, Warning
CP2	Coupler, Fuel Qty. Sys. "J" Box, Shielded	J2	Recept. Pitot Tube Heater
CR2	Diode, Ext. Power Relay	J3	Recept. Instrument Panel Disc.
CR30	Diode, Batt. Voltage Fwd. Loc	J4	Recept. Fuel Quantity Ind.
CR31	Diode, Batt. Voltage Aft Loc	J5	Recept. Fuel Pressure Ind.
		J6	Recept. Copilot Att. Ind.
D1	Inverter, 250 V.A. 3 Ph (Main)	J7	Recept. Engine Oil Temperature Ind.
D2	Inverter, 250 V.A. 3 Ph (Spare)	J8	Recept. Engine Oil Pressure Ind.
DS1	Control Assembly, RPM Warn.	J9	Recept. Pilot Dual Tach. (Rotor)
		J10	Recept. Pilot Dual Tach. (Pwr. Turb.)
E1	Detector, Magnetic Chip	J11	Recept. XMSN Oil Temperature Ind.
		J12	Recept. XMSN Oil Pressure Ind.

Table 13-1. Equipment List — Helicopters Serial No. 65-9565 Through 65-12895 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
J15	Recept. Pilot Torque Meter	J106	Recept. Heated Blanket R/H
J16	Recept. Pilot Turn & Slip Indicator	J107	Recept. Copilot Collective Stick
J17	Recept. Gas Prod. Tach.	J108	Recept. Fuel Diff. Pressure Sw.
J20	Recept. Pilot Cyclic Stick	J109	Recept. Ext. Power
J21	Recept. Hydraulic Control Panel	J110	Recept. Anti-Collision Lt. Disc.
J22	Recept. Copilot Cyclic Stick	J111	Recept. Anti-Collision Lt.
J23	Recept. Engine Panel	J112	Recept. Mag. Brake, Anti-Torque
J24	Recept. Caution Panel	J113	Recept. Mag. Brake, Fore & Aft
J25	Recept. Pilot Collective Stick	J114	Recept. Mag. Brake Lat.
J26	Recept. Windshield Wiper	J115	Recept. Test-Eng. Vibration Meter
J28	Recept. Hydraulic Bypass Solenoid	J127	Recept. Var. Mix Valve Disc.
J29	Recept. Hydraulic Press. Warning Sw.	J129	Recept. Displacement-Roll & Pitch Gyro
J31	Recept. Cargo Hook	J130	Recept. Rate Switching Gyro
J32	Recept. Cargo Sling Disc.	J131	Recept. Attitude Ind.
J35	Recept. Rotor, Tach. Gen.	J135	Recept. Ice Interpreter
J36	Recept. XMSN Oil Pressure Sw.	J136	Recept. Ice Interpreter
J37	Recept. XMSN Oil Temperature Bulb	J138	Recept. Door Post Outlet Valve Act.
J38	Recept. Copilot Windshield Wiper	J146	Recept. Bleed Air Valve
J39	Recept. XMSN Oil Pressure XMTR	J147	Recept. Internal Aux. Fuel Disc. L/H
J41	Recept. XMSN Disc.	J148	Recept. Internal Aux. Fuel Disc. R/H
J42	Recept. Fuel Tank Disc. L/H	J155	Recept. Hi-Lo RPM Warn.
J43	Recept. Compensator Fuel Tank Disc L/H	J156	Recept. Eng. Fuel Filter Bypass Sw.
J44	Recept. Fuel Tank Disc L/H	J166	Recept. Aft, Outlet Valve
J53	Recept. Bulkhead Feed-thru-Aft Fuel Cell	J191	Recept. Main Inverter Power
J54	Recept. Bulkhead Feed-thru-Aft Fuel Cell	J192	Recept. Spare Inverter Power
J57	Recept. Ext. Fuel Cont. Panel	J194	Recept. Engine Chip Detector
J60	Recept. Socket, Relay-Gen Field	J1017	Recept. Ext. Fuel Disc. L/H
J64	Recept. Torque Press. XMTR	J1024	Recept. Ext. Fuel Disc. R/H
J65	Recept. Engine Oil Press. XMTR		
J66	Recept. Fuel Pressure XMTR	K1	Relay, External Power
J68	Recept. Disc. Muff Heater	K2	Relay, Non-Essential Bus
J71	Recept. Engine Fuel Valve	K3	Relay, Starter
J72	Recept. Engine Oil Pressure Sw.	K4	Relay, Bus Cont. (Gen. Fail)
J74	Recept. Batt. Disc.	K5	Relay, Reverse Curr (Main)
J75	Recept. Navigation Lts. Flasher	K6	Relay, Over Voltage
J77	Recept. Ice-Detector	K7	Relay, Generator Field
J80	Recept. Engine Air Pressure Sw.	K8	Relay, AC Failure
J81	Recept. Starter Deck	K9	Relay, Battery
J84	Recept. De-Icing, Hot Air Valve	K10	Relay, Fuel Transfer
J85	Recept. Engine Oil Temp. Bulb	K23	Relay, Standby Gen. Rev. Curr
J86	Recept. Power Turb. Tach.	K24	Relay, Cargo, Hook Release
J87	Recept. Gas Turb. Tach.	K27	Relay, Inverter
J88	Recept. Ignition Unit, Engine	K35	Relay, Main Invt. Power
J89	Recept. Primer Valve (Fuel Ign. Sol.)	K36	Relay, Spare Invt. Power
J90	Recept. Fuel Cont. Sol. Valve	K37	Relay, Lo-Fuel Caution Light
J91	Recept. Engine Disc.	K38	Relay, Lo-Fuel Caution Light
J92	Recept. Engine Fwd. Disc.	K46	Relay, Overheat
J93	Recept. Fire Det. Fwd. Disc.	K65	Relay, Battery, Aft Loc
J94	Recept. Fire Det. Element R/H	K66	Relay, Battery Feeder
J95	Recept. Fire Det. Element L/H		
J96	Recept. Fire Det. Element R/H	L1	Solenoid, Primer (Ignition)
J97	Recept. Fire Det. Element L/H	L2	Solenoid, Fuel Cont. Valve
J98	Recept. Tail Light Disc.	L4	Solenoid, Hydraulic Bypass
J99	Recept. Thermocouple Disc.	L6	Solenoid, Hot Air De-icer
J102	Recept. Standby Compass (Pilot)	L7	Solenoid, Idle Stop Rel.
J105	Recept. Heated Blanket L/H	L8	Mag. Brake Anti-Torque Force Trim

Table 13-1. Equipment List - Helicopters Serial No. 65-9565 Through 65-12895 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
L9	Mag. Brake Fore & Aft Force Trim	P66	Plug, Fuel Press. XMTR
L10	Mag. Brake Lat. Force Trim	P68	Plug, Muff Heater Disc.
L14	Solenoid, Door Post Htr. Outlet Valve	P71	Plug, Fuel Valve Shut-off
L15	Solenoid, Aft Outlet Valve Act.	P72	Plug, Engine Oil Press. Sw.
		P74	Plug, Battery Disc. Fwd.
M1	Meter, DC Load (Stand-By-Gen.)	P75	Plug, Navigation Lights Flasher
M2	Meter, DC Volts	P77	Plug, Ice Detector
M3	Meter, AC Volts	P80	Plug, Eng. Air Pressure Sw.
M4	Meter, DC Load (Main Gen)	P81	Plug, Starter Deck
O2	Guard - Generator Sw-DC Pwr. Panel	P84	Plug, De-Icing Hot Air Valve
P2	Plug, Pitot Tube Heater	P85	Plug, Oil Temp. Bulb
P3	Plug, Instrument Panel Conn.	P86	Plug, Power Turb. Tach.
P4	Plug, Fuel Qty. Ind.	P87	Plug, Gas Prod. Tach.
P5	Plug, Fuel Press. Ind.	P88	Plug, Ignition Unit-Eng.
P6	Plug, Copilot Att. Ind.	P89	Plug, Ignition Sol. Valve
P7	Plug, Engine Oil Temp. Ind.	P90	Plug, Fuel Cont. Sol. Valve
P8	Plug, Engine Oil Press. Ind.	P91	Plug, Engine Disc.
P9	Plug, Pilot Dual Tach. (Rotor)	P92	Plug, Engine Forward Disc.
P10	Plug, Pilot Dual Tach. (Pwr. Turb.)	P93	Plug, Fire Det. Forward Disc.
P11	Plug, XMSN Oil Temp. Ind.	P94	Plug, Fire Det. Element R/H
P12	Plug, XMSN Oil Press. Ind.	P95	Plug, Fire Det. Element L/H
P15	Plug, Pilot, Torque Meter	P96	Plug, Fire Det. Element R/H
P16	Plug, Pilot, Turn & Slip Ind.	P97	Plug, Fire Det. Element L/H
P17	Plug, Gas Prod. Turb. Tach	P98	Plug, Tail Light Disc.
P20	Plug, Pilot's Cyclic Stick	P99	Plug, Thermocouple Disc. - Engine
P21	Plug, Hydraulic Cont. Panel	P99A	Plug, Thermocouple Disc. - Engine
P22	Plug, Copilot Cyclic Stick	P99B	Plug, Thermocouple Disc. - Engine
P23	Plug, Engine Panel	P102	Plug, Standby Compass (Pilot)
P24	Plug, Caution Panel	P107	Plug, Copilot Coll. Stick
P25	Plug, Pilot Collective Stick	P108	Plug, Fuel Diff. Press. Sw.
P26	Plug, Windshield Wiper	P110	Plug, Anti-Collision Light Disc.
P28	Plug, Hyd. Bypass Sol. Valve	P111	Plug, Anti-Collision Light
P29	Plug, Cargo Hook	P112	Plug, Mag. Brake Anti-Torque
P32	Plug, Cargo Hook Disc.	P113	Plug, Mag. Brake Fore and Aft
P35	Plug, Rotor Tach. Gen.	P114	Plug, Displacement, Roll & Pitch Gyro
P36	Plug, XMSN Oil Pressure Sw.	P130	Plug, Rate Switching Gyro
P37	Plug, XMSN Oil Temp. Bulb	P131	Plug, Attitude Ind.
P38	Plug, Copilot Windshield Wiper	P135	Plug, Ice-Interpreter
P39	Plug, XMSN Oil Press. XMTR	P136	Plug, Ice-Interpreter
P41	Plug, XMSN Disc.	P138	Plug, Door Post - Aft Outlet Valve Act.
P42	Plug, Shielded Tank Unit Disc L/H Tank	P146	Plug, Bleed Air Valve
P43	Plug, Monitor Tank Unit Disc L/H Tank	P147	Plug, Unshielded Tank Coupler Disc.
P44	Plug, Unshielded Tank Unit Disc. L/H Tank	P148	Plug, Unshielded Tank Coupler Disc.
		P149	Plug, Unshielded Tank Coupler Disc.
P46	Plug, Fuel Tank Disc. L/H Cell	P151	Plug, Shielded Tank Coupler Disc.
P47	Plug, Fuel Tank Disc. L/H Cell	P152	Plug, Shielded Tank Coupler Disc.
P48	Plug, Fuel Tank Disc. L/H Cell	P153	Plug, Shielded Tank Coupler Disc.
P53	Plug, Unshielded Tank Unit Aft Cell	P155	Plug, Hi-Lo RPM Warning
P54	Plug, Shielded Tank Unit Aft Cell	P156	Plug, Engine Fuel Filter Bypass
P55	Plug, Fuel Tank Disc. - Aft Cell	P166	Plug, Aft Outlet Valve
P56	Plug, Fuel Tank Disc. - Aft Cell	P191	Plug, Inverter Disc. - Main
P57	Plug, Ext. Fuel Cont. Panel	P192	Plug, Inverter Disc. - Spare
P60	Plug, Field Relay Gen.	P194	Plug, Engine Chip Detector
P64	Plug, Torque Press. XMTR	P1017	Plug, Ext. Fuel Disc. L/H
P65	Plug, Eng. Oil Press. XMTR	P1024	Plug, Ext. Fuel Disc. R/H

Table 13-1. Equipment List - Helicopters Serial No. 65-9565 Through 65-12895 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
R1	Shunt, Ammeter (Stby-Gen.)	S63	Switch, Ext. Fuel Jett.
R2	Shunt, Ammeter (Main Gen.)	S68	Switch, Force Trim
R3	Resistor, Windshield Wiper	S70	Switch, Starter-Generator
R4	Rheostat, Pilot Inst. Light Dim.	S73	Switch, Overheat Bleed Air
R5	Rheostat, Sec. Instrument Light Dim	S75	Switch, Search (ON STOW)
R6	Rheostat, Overhead Console	S76	Switch, Landing Light (ON-OFF)
R7	Resistor, Navigation Lights Dim	S77	Switch, Starter (Copilot Coll.)
R8	Rheostat, Ped. Lights Dim	S78	Switch, Cargo Rel. (Copilot)
R9	Rheostat, Eng. Inst. Light Dim	S79	Switch, Fuel Ejector Flow Sw. L/H
R10	Rheostat, Copilot Inst. Lights Dim	S80	Switch, Fuel Ejector Flow Sw. R/H
R11	Resistor, Fire Det. Cont.	S81	Switch, De-Ice (ON-OFF)
R12	Resistor, Spool Thermocouple	S83	Switch, Bleed Air (ON-OFF)
R21	Rheostat, Aft Dome Lights	S84	Switch, Bleed Air (HT-DEF)
R26	Rheostat, Course Ind. Light Dim	S85	Switch, Aft Outlet (Htr)
R27	Resistor, AC Load Balancing	S87	Switch, Aft-Outlet Limit
		S88	Switch, Start Fuel
S1	Switch, Aft Dome Light	S83	Switch, Hi-Low RPM
S2	Switch, Rotary (AC VM Sel.)	S94	Switch, Fuel Filter Bypass
S4	Switch, XMSN Sump Insp. Light	S111	Switch, Fuel Trans. Pump
S5	Switch, Fuel Quantity Test	S112	Switch, Pilot Hoist Cont.
S6	Switch, Starter (Pilot Coll.)	S114	Switch, Fire Control
S7	Switch, Hydraulic Boost Cont.	S115	Switch, Fire Control
S8	Switch, Gen. (ON-OFF Reset)	S124	Switch, Sel-Windshield Wiper
S9	Switch, Pitot Heater	S134	Switch, Chip Det. Sel.
S10	Switch, Force Trim (Copilot Cyc.)	S195	Switch, Diff. Pressure
S11	Switch, Rotary (AC VM Sel.)		
S12	Switch, Searchlight Cont.	T1	Transformer 115/28V
S13	Switch, Navigation Lights (Flash Steady)	TB1	Term. Blk, Forward Inst. Panel.
S14	Switch, Nav. Lights (Bright-Dim)	TB2	Term. Blk. Overhead Console R/H
S18	Switch, Force Trim (Pilot Cyc.)	TB3	Term. Blk. Overhead Console L/H
S20	Switch, Test (Fire Det.)	TB4	Term. Blk. Aft Fuel Cell
S23	Switch, Windshield Wiper	TB9	Term. Blk. Top Ext. & Dome Lights
S25	Switch, Landing Lt. (Ext.-Retr)	TB12	Term. Blk. Ped. Panel Edge Lights
S26	Switch, XMSN Oil Temp.	TB13	Term. Blk. Inst. Panel Lights
S27	Switch, Hydraulic Pressure	TB14	Term. Blk. Inst. Panel Sec. Ligh
S28	Switch, XMSN Oil Pressure Warn.	TB15	Term. Blk. Cockpit Lights L/H
S29	Switch, Engine Oil Pressure Warn.	TB16	Term. Blk. Cockpit Lights R/H
S31	Switch, Limit (Ext. Power Door)	TB25	Term. Blk. Thermocouple Ind.
S32	Switch, Cargo Release (Pilot)	TB26	Term. Blk. DC Gnd. & Audio
S33	Switch, Governor (Auto-Emer.)	TB27	Term. Blk. Aft Thermo Lead
S35	Switch, Forward Dome Light	TB29	Term. Blk. Instrument Gnd.
S36	Switch, Cargo Release	TB34	Term. Blk. Aft Dome Lt. Panel.
S37	Switch, RPM Gov. (Pilot)	TB35	Term. Blk. R/H Fuel Cell
S38	Switch, Fuel (ON-OFF)	TB36	Term. Blk. Ext. Power Diode
S39	Switch, Inverter (Main-Spare)	TB38	Term. Blk. L/H Fuel Cell
S40	Switch, Battery (ON-OFF)	TB39	Term. Blk. Electrical Compt. Aft
S41	Switch, Upper Float	TB60	Term. Blk. Batt. Voltage, Forward
S42	Switch, Lower Float	TB61	Term. Blk. Batt. Voltage, Aft
S44	Switch, Fuel-Low Level		
S45	Switch, Fuel-Transfer L/H	VR1	Regulator - Voltage (Main Gen.)
S46	Switch, Fuel-Transfer R/H	VR2	Regulator - Voltage (Stby Gen.)
S50	Switch, Idle Stop Rel (Pilot)		
S51	Switch, RPM Gov. (Copilot)	W1	Cable Assembly, Fire Det.
S58	Switch, Fuel Diff. Pressure		
S59	Switch, Anti-Coll. Light	Z2	Engine Ignition Unit
S62	Switch, Non-Ess Bus Cont.	Z3	Flasher Unit - Navigation Lights

Table 13-1. Equipment List — Helicopters Serial No. 65—9565 Through 65—12895 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
Z5	XMSN Oil Temperature Bulb	Z16	Fuel Qty. Tank Unit - Aft
Z6	Engine Oil Temperature Bulb	Z17	Displacement - Roll and Pitch Gyro
Z8	Ice Interpreter	Z18	Rate Switching Gyro
Z9	Fire Det. Cont.	Z22	Fuel Qty. Tank Unit R/H Forward
Z13	Ice Detector		

Table 13-2. Equipment List — Helicopters Serial No. 66-746 Through 66-17144

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
A1	Panel, DC Power	E1	Detector, Magnetic Chip
A2	Panel, AC Power	E2	Detector, Magnetic Chip
A3	Panel, Engine	E3	Detector, Magnetic Chip
A4	Panel, Caution	E4	Detector, Magnetic Chip
A6	Panel, Instrument Lights		
A7	Panel, Exterior Lights	G2	Generator, 30 VDC (300A)
A8	Panel, Hydraulic Cont.	G3	Generator, Tach. (Gas Prod.)
A10	Panel, Misc.	G4	Generator, Tach. (Pwr. Turb.)
A11	Panel, Heating	G5	Generator, Tach (Rotor)
A12	Cargo, Hook Assembly	G6	Generator, Starter 28V (200A)
A13	Panel, Resistor		
A14	Panel, AC Circuit Breaker	HR1	Heater, Pilot Tube
A15	Panel, Overhead Console	I1	Indicator, Attitude (Copilot)
A20	Panel, Assembly Aft Dome Lts.	I2	Indicator, Fuel Qty.
A21	Panel, Dome Light Pitot Heater	I3	Indicator, Torque - Pilot
A26	Panel, Assembly Ext. Fuel	I4	Indicator, Oil Press. (Eng.)
		I5	Indicator, Oil Press. (XMSN)
B1	Synchro XMTR, Torque Press.	I6	Indicator, Fuel Pressure
B3	Synchro XMTR, XMSN Oil Press.	I7	Indicator, Tach. (Gas Prod.)
B3	Synchro XMTR, Eng. Oil Press.	I8	Indicator, Tach. Dual (Pilot)
B4	Synchro XMTR, Fuel Press.	I9	Light, Utility (Pilot)
B5	Motor, Fuel Shut-Off Valve	I10	Light, Dome
B6	Motor, R/H Fuel Boost Pump	I11	Light Search
B7	Motor, Windshield Wiper	I12	Light, Fire Warning
B8	Motor, R/H Aux. Fuel Pump	I13	Light, Master Caution
B12	Motor, Gov. RPM Actuator	I14	Light, Instrument Secondary
B13	Motor, L/H Aux. Fuel Pump	I15	Light, Instrument & Edge Lights
B19	Motor, Bleed Air Valve	I16	Light, Landing
B22	Motor, Boom Actuator Hoist	I17	Light, Left Navigation
B31	Motor, Copilot Windshield Wiper	I18	Light, Right Navigation
B33	Motor, Winch Assy. Hoist	I19	Light, Tail
B34	Motor, Bleed Air Valve	I20	Light, Top Fuselage
BT2	Battery	I21	Indicator XMSN Oil Temp.
		I22	Indicator, Engine Oil Temp.
C1	Capacitor, PF (Corr (MIL-C-25)	I23	Indicator, Turn & Slip (Pilot)
C7	Capacitor, Filter	I25	Light, XMSN Sump Inspect
CB1	Circuit Breaker (5A)	I26	Light, Bottom Fuselage
CB2	Circuit Breaker (10A)	I28	Light, Utility (Copilot)
CB3	Circuit Breaker (15A)	I31	Indicator, Exhaust Temp. (Pilot)
CB4	Circuit Breaker (20A)	I34	Standby, Compass (Pilot)
CB5	Circuit Breaker (25A)	I40	Light, Anti-Collision
CB6	Circuit Breaker (1A)	I42	Indicator, Attitude (Pilot)
CB7	Circuit Breaker (35A)	I44	Light, Cargo Release Armed
CB8	Circuit Breaker (1.5A)	I45	Light, Hi-Lo RPM Warn.
CB11	Circuit Breaker (7.5A)	I72	Light, Air Filter Warning
CB12	Circuit Breaker (50A)		
CP1	Fuel Qty. Sys. "J" Box, Unshielded	J2	Recept. Pitot Tube Heater
CP2	Fuel Qty. Sys. "J" Box Shielded	J3	Recept. Instr. Panel Disc.
CR2	Diode, External Power Relay	J4	Recept. Fuel Qty. Ind.
CR30	Diode, Batt. Voltage Fwd. Loc	J5	Recept. Fuel Press. Ind.
CR31	Diode, Batt. Voltage Aft Loc	J6	Recept. Copilot Att. Ind.
		J7	Recept. Engine Oil Temp. Ind.
D1	Inverter (Main)	J8	Recept. Engine Oil Press. Ind.
D2	Inverter (Spare)	J9	Recept. Pilot Dual Tach. Rotor
DS1	Control Assy, RPM Warning	J10	Recept. Pilot Dual Tach. Pwr. Turb.

Table 13-2. Equipment List — Helicopters Serial No. 66-746 Through 66-17144 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
J11	Recept. XMSN Oil Temp. Ind.	J105	Recept. Heated Blanket L/H
J12	Recept. XMSN Oil Press. Ind.	J106	Recept. Heated Blanket R/H
J15	Recept. Pilot Torque Meter	J107	Recept. Copilot Collective Stick
J16	Recept. Pilot Turn & Slip Ind.	J108	Recept. Fuel Diff. Press. Sw.
J17	Recept. Gas Prod. Tach.	J109	Recept. External Power
J20	Recept. Pilot Cyclic Stick	J110	Recept. Anti-Collision Light Disc.
J21	Recept. Hydraulic Cont. Panel	J111	Recept. Anti-Collision Light
J22	Recept. Copilot Cyclic Stick	J112	Recept. Mag. Brake Anti-Torque
J23	Recept. Engine Panel	J113	Recept. Mag. Brake Fore & Aft
J24	Recept. Caution Panel	J114	Recept. Mag. Brake - Lat.
J25	Recept. Pilot Collective Stick	J115	Recept. Test-Eng. Vibration Meter
J26	Recept. Windshield Wiper (Pilot)	J119	Recept. Cabin Roof Disc. Hoist
J28	Recept. Hydraulic Bypass Sol.	J127	Recept. Var. Mix. Valve Disc.
J29	Recept. Hydraulic Press. Warning Sw.	J129	Recept. Displacement Roll & Pitch Gyro
J31	Recept. Cargo Hook	J130	Recept. Rate Switch Gyro
J32	Recept. Cargo Sling Disc.	J131	Recept. Attitude Ind.
J35	Recept. Rotor, Tach. Gen.	J135	Recept. Ice Interpreter
J36	Recept. XMSN Oil Press. Sw.	J136	Recept. Ice Interpreter
J37	Recept. XMSN Oil Temp. Bulb	J138	Recept. Door Post Outlet Valve Act.
J38	Recept. Copilot Windshield Wiper	J146	Recept. Bleed Air Valve
J39	Recept. XMSN Oil Press. XMTR	J147	Recept. Internal Aux. Fuel Disc L/H
J41	Recept. XMSN Disc.	J148	Recept. Internal Aux. Fuel Disc. R/H
J42	Recept. Fuel Tank Disc. L/H	J155	Recept. Hi-Lo RPM Warning
J43	Recept. Compensator Fuel Tank Disc L/H	J156	Recept. Engine Fuel Filter Bypass Sw.
J44	Recept. Fuel Tank Disc. L/H	J166	Recept. Aft Outlet Valve
J53	Recept. Bulkhead Feed-thru-Aft Fuel Cell	J191	Recept. Main Inverter Power
J54	Recept. Bulkhead Feed-thru-Aft Fuel Cell	J102	Recept. Spare Inverter Power
J57	Recept. Ext. Fuel Cont. Panel	J194	Recept. Engine Chip Detector
J60	Recept. Socket, Relay-Gen-Field	J268	Recept. Hoist Cont. Box
J64	Recept. Torque Press. XMTR	J269	Recept. Hoist Cont. Box
J65	Recept. Engine Oil Press. XMTR	J270	Recept. Hoist Cont. Box
J66	Recept. Fuel Press. XMTR	J271	Recept. Hoist Cont. Box
J68	Recept. Disc. Muff Heater	J272	Recept. Hoist Cont. Box
J71	Recept. Engine Fuel Valve	J273	Recept. Hoist Cont. Pendent
J72	Recept. Engine Oil Press. Sw.	J274	Recept. Hoist Boom Act.
J74	Recept. Battery Disc.	J275	Recept. Hoist Winch Assembly
J75	Recept. Navigation Lights Flasher	J1017	Recept. Ext. Fuel Disc. L/H
J77	Recept. Ice Detector	J1024	Recept. Ext. Fuel Disc. R/H
J80	Recept. Engine Air Filter Press. Sw.		
J81	Recept. Starter-Deck	K1	Relay, Ext. Power
J84	Recept. De-Icing Hot Air Valve	K2	Relay, Non-Ess Bus
J85	Recept. Engine Oil Temp. Bulb	K3	Relay, Starter
J86	Recept. Power Turbine Tach.	K4	Relay, Bus Cont. (Gen Fail)
J87	Recept. Gas Turbine Tach.	K5	Relay, Reverse Curr. (Main)
J89	Recept. Primer Valve (Fuel Ign. Sol.)	K6	Relay, Overvoltage
J90	Recept. Fuel Cont. Sol. Valve	K7	Relay, Gen Field
J91	Recept. Engine Disc.	K8	Relay, AC Failure
J92	Recept. Engine Firward Disc.	K9	Relay, Battery
J93	Recept. Fire Det. Forward Disc.	K10	Relay, Fuel Transfer
J94	Recept. Fire Det. Element R/H	K15	Relay, Standby Gen Field
J95	Recept. Fire Det. Element L/H	K23	Relay, Standby Gen. Rev. Curr.
J96	Recept. Fire Det. Element R/H	K24	Relay, Cargo Hook Release
J97	Recept. Fire Det. Element L/H	K27	Relay, Inverter
J98	Recept. Tail Light Disc.	K32	Relay, Hoist Power
J99	Recept. Thermocouple Disc.	K35	Relay, Main Invtr. Power
J102	Recept. Standby Compass (Pilot)	K36	Relay, Spare Invtr. Power

Table 13-2. Equipment List - Helicopters Serial No. 66-746 Through 66-17144 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
K37	Relay, Lo-Fuel Caution Light	P42	Plug, Shld Tank Unit Disc. (L/H Tank)
K38	Relay, Lo-Fuel Caution Light	P43	Plug, Monitor Tank Unit Disc. (L/H Tank)
K46	Relay, Overheat	P44	Plug, Unshld Tank Unit Disc. (L/R Tank)
K65	Relay, Battery Aft Location	P46	Plug, Fuel Tank Disc. L/H Cell
K66	Relay, Battery Feeder	P46	Plug, Fuel Tank Disc. L/H Cell
L1	Solenoid, Primer (Ignition)	P48	Plug, Fuel Tank Disc. L/H Cell
L2	Solenoid, Fuel Cont. Valve	P53	Plug, Unshld Tank Unit - Aft Cell
L4	Solenoid, Hydraulic Bypass	P54	Plug, Shielded Tank Unit - Aft Cell
L6	Solenoid, Hot-Air De-Icer	P55	Plug, Fuel Tank Disc. - Aft Cell
L7	Solenoid, Idle Stop Rel.	P56	Plug, Fuel Tank Disc. - Aft Cell
L8	Mag. Brake - Anti-Torque Force Trim	P57	Plug, Ext. Fuel Cont. Panel
L9	Mag. Brake - Fore & Aft Force Trim	P60	Plug, Field Relay Gen.
L10	Mag. Brake - Lat Force Trim	P64	Plug, Torque Press. XMTR
L14	Solenoid, Door Post Htr. Outlet Valve	P65	Plug, Eng. Oil Press XMTR
L15	Solenoid, Aft Outlet Valve Act.	P66	Plug, Fuel Press. XMTR
L21 	Solenoid, Var. Mix Valve	P68	Plug, Muff Heater Disc.
M1	Meter, DC Load (Standby Gen)	P71	Plug, Fuel Valve Shut-Off
M2	Meter, DC Volts	P72	Plug, Engine Oil Press. Sw.
M3	Meter, AC Volts	P74	Plug, Battery Disc.
M4	Meter, DC Load (Main Gen)	P75	Plug, Nav. Lights Flasher
O2	Guard, Gen-Sw. DC Power Panel	P77	Plug, Ice Detector
O3	Guard, Cable Out Sw-Hydraulic Panel	P80	Plug, Engine Filter Press. Sw.
P2	Plug, Pitot Tube Htr	P81	Plug, Starter Deck
P3	Plug, Inst. Panel Conn.	P84	Plug, De-Ice Hot Air Valve
P4	Plug, Fuel Qty. Ind.	P85	Plug, Oil Temp. Bulb
P5	Plug, Fuel Press. Ind.	P86	Plug, Power Turb. Tach.
P6	Plug, Copilot Att. Ind.	P87	Plug, Gas Prod. Tach.
P7	Plug, Engine Oil Temp. Ind.	P88	Plug, Ignition Unit - Engine
P8	Plug, Engine Oil Press. Ind.	P89	Plug, Ignition Sol. Valve
P9	Plug, Pilot Dual Tach. (Rotor)	P90	Plug, Fuel Cont. Sol. Valve
P10	Plug, Pilot Dual Tach. (Power-Turb.)	P91	Plug, Engine Disc.
P11	Plug, XMSN Oil Temp. Ind.	P92	Plug, Engine Forward Disc.
P12	Plug, XMSN Oil Press. Ind.	P93	Plug, Fire Det. Forward Disc.
P15	Plug, Pilot Torque Meter	P94	Plug, Fire Det. Element - R/H
P16	Plug, Pilot Turn & Slip Ind.	P95	Plug, Fire Det. Element - L/H
P17	Plug, Gas Prod Turb. Tach.	P96	Plug, Fire Det. Element - R/H
P20	Plug, Pilot's Cyclic Stick	P97	Plug, Fire Det. Element - L/H
P21	Plug, Hydraulic Cont. Panel	P98	Plug, Tail Light Disc.
P22	Plug, Copilot Cyclic Stick	P99A	Plug, Thermocouple Disc - Engine
P23	Plug, Engine Panel	P99B	Plug, Thermocouple Disc - Engine
P24	Plug, Caution Panel	P102	Plug, Standby Compass (Pilot)
P25	Plug, Pilot Collective Stick	P107	Plug, Copilot Coll. Stick.
P26	Plug, Windshield Wiper (Pilot)	P108	Plug, Fuel Diff. Press. Sw.
P28	Plug, Hydraulic Bypass Sol. Valve	P110	Plug, Anti Coll. Light Disc.
P29	Plug, Hydraulic Press. Warning Sw.	P111	Plug, Anti Coll. Light
P31	Plug, Cargo Hook	P112	Plug, Mag. Brake - Anti-Torque
P32	Plug, Cargo Hook Disc.	P113	Plug, Mag. Brake - Fore & Aft
P35	Plug, Rotor Tachometer Gen.	P114	Plug, Mag. Brake - Lat.
P36	Plug, XMSN Oil Press. Sw.	P119	Plug, Cabin Roof Disc. Hoist
P37	Plug, XMSN Oil Temp. Bulb	P127 	Plug, Var. Mix Valve Disc.
P38	Plug, Copilot Windshield Wiper	P129	Plug, Displacement, Roll & Pitch Gyro
P39	Plug, XMSN Oil Press. XMTR	P130	Plug, Rate Switch Gyro
P41	Plug, XMSN Dis.	P131	Plug, Attitude Ind.
		P135	Plug, Ice Interpreter
		P136	Plug, Ice Interpreter
		P138	Plug, Door Post, Aft Out Val. Act.

Table 13-2. Equipment List — Helicopters Serial No. 66-746 Through 66-17144 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
P146	Plug, Bleed Air Valve	S25	Switch, Landing Lt. (Ext. Retr)
P147	Plug, Unshielded Tank Coupler Disc.	S26	Switch XMSN Oil Temp.
P148	Plug, Unshielded Tank Coupler Disc.	S27	Switch, Hydraulic Press.
P149	Plug, Unshielded Tank Coupler Disc.	S28	Switch, XMSN Oil Press. Warn.
P151	Plug, Shielded Tank Coupler Disc.	S29	Switch, Eng. Oil Press. Warn.
P152	Plug, Shielded Tank Coupler Disc.	S31	Switch, Limit (Ext. Pwr. Door)
P153	Plug, Shielded Tank Coupler Disc.	S32	Switch, Cargo Release (Pilot)
P155	Plug, Hi-Lo RPM Warning	S33	Switch, Gov. (Auto-Emer)
P156	Plug, Engine Fuel Filter Bypass	S35	Switch, Fwd. Dome Lt.
P166	Plug, Aft Outlet Valve	S36	Switch, Cargo Release
P191	Plug, Inverter Disc. - Main	S37	Switch, RPM Gov. (Pilot)
P192	Plug, Inverter Disc. - Spare	S38	Switch, Fuel (ON-OFF)
P194	Plug, Engine Chip Detector	S39	Switch, Invtr (Main - Spare)
P268	Plug, Hoist to Ship	S40	Switch, Battery (ON-OFF)
P269	Plug, Cable, Out & Up Limit	S41	Switch, Upper Float
P270	Plug, Hoist to Cont. Pendant	S42	Switch, Lower Float
P271	Plug, Boom Act.	S44	Switch, Fuel - Low Level
P272	Plug, Hoist to Winch Assy	S45	Switch, Fuel - Transfer L/H
P273	Plug, Cont. Pendant	S46	Switch, Fuel - Transfer R/H
P274	Plug, Boom Act.	S49	Switch, J-2 Comp. De-slave
P275	Plug, Winch Assembly	S50	Switch, Idle Stop Rel. (Pilot)
P1017	Plug, Ext. Fuel Disc. L/H	S51	Switch, RPM Gov. (Copilot)
P1024	Plug, Ext. Fuel Disc. R/H	S58	Switch, Fuel Diff. Press.
		S59	Switch, Anti-Coll. Light
R1	Shunt, Ammeter (Stby Gen.)	S62	Switch, Non-Ess Bus Cont.
R2	Shunt, Ammeter (Main Gen.)	S63	Switch, Ext. Fuel Jett.
R3	Resistor - Windshield Wiper	S68	Switch, Force Trim
R4	Rheostat, Pilot Inst. Lt. Dim	S70	Switch, Starter Gen.
R5	Rheostat, Sec. Inst. Lt. Dim	S73	Switch, Overheat Bleed Air
R6	Rheostat, Overhead Console	S75	Switch, Searchlight (ON-STOW)
R7	Resistor, Navigation Lts. Dim	S76	Switch, Landing Light (ON-OFF)
R8	Rheostat, Ped. Lights Dim	S77	Switch, Starter (Copilot Coll)
R9	Rheostat, Engine Inst. Lights Dim	S78	Switch, Cargo Rel (Copilot)
R10	Rheostat, Copilot Inst. Lights Dim	S79	Switch, Fuel Ejector Flow Sw. L/H
R11	Resistor, Fire Det. Cont.	S80	Switch, Fuel Ejector Flow Sw. R/H
R12	Resistor, Spool Thermocouple	S81	Switch, De-Ice (ON-OFF)
R21	Rheostat, Aft Dome Lts.	S83	Switch, Bleed Air (ON-OFF)
R26	Rheostat, Course Ind. Lt. Dim	S84	Switch, Bleed Air (Ht-Def)
R27	Resistor, AC Load Balancing	S85	Switch, Aft Outlets (Htr)
		S87	Switch, Aft-Outlet Limit
S1	Switch, Aft Dome Lt.	S88	Switch, Start Fuel
S2	Switch, Rotary (DC VM Sel)	S93	Switch, Hi-Lo RPM
S4	Switch, XMSN Sump Inspection Lt.	S94	Switch, Fuel Filter Bypass
S5	Switch, Fuel Qty. Test	S96	Switch, Cable Cut
S6	Switch, Starter (Pilot Coll)	S97	Switch, Cable Up Limit
S7	Switch, Hydraulic Boost Cont.	S101	Switch, Overload Sense
S8	Switch, Gen. (ON-OFF-RESET)	S111	Switch, Fuel Trans Pump
S9	Switch, Pitot Heater	S112	Switch, Pilot Hoist Cont.
S10	Switch, Force Trim (Copilot Cyc.)	S114	Switch, Fire Control
S11	Switch, Rotary (AC VM Sel)	S115	Switch, Fire Control
S12	Switch, Searchlight Cont.	S124	Switch, Sel-W/Wiper
S13	Switch, Nav. Lts. (Flash Steady)	S134	Switch, Chip Det. Sel
S14	Switch, Nav. Lts. (Bright-Dim)	S195	Switch, Diff. Press.
S18	Switch, Force Trim (Pilot Cyc.)		
S20	Switch, Test (Fire Det.)	T1	Transformer 115/28V
S23	Switch, Windshield Wiper	RB1	Term. Blk. Fwd. Inst. Panel

Table 13-2. Equipment List - Helicopters Serial No. 66-746 Through 66-17144 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
TB2	Term. Blk. Overhead Console R/H	W1	Cable Assembly
TB3	Term. Blk. Overhead Console L/H		
TB4	Term. Blk. Aft Fuel Cell	Z2	Engine, Ignition Unit
TB9	Term. Blk. Top Ext. & Dome Lts.	Z3	Flasher Unit - Nav. Lts.
TB12	Term. Blk. Ped. Panel Edge Lts.	Z5	XMSN Oil Temp. Bulb
TB13	Term. Blk. Inst. Panel Lts.	Z6	Engine Oil Temp. Bulb
TB14	Term. Blk. Inst. Panel Sec. Lts.	Z8	Ice Interpreter
TB15	Term. Blk. Cockpit Lts L/H	Z9	Fire Det. Cont.
TB16	Term. Blk. Cockpit Lts. R/H	Z13	Ice Detector
TB25	Term. Blk. Thermocouple Ind.	Z16	Fuel Qty. Tank Unit - Aft
TB26	Term. Blk. DC Gnd & Audio	Z17	Displacement - Roll * Pitch Gyro
TB27	Term. Blk. Aft Thermo Lead	Z18	Rate Switching Gyro
TB29	Term. Blk. Inst. Ground	Z22	Fuel Qty. Tank Unit R/H Fwd.
TB34	Term. Blk. Aft Dome Lt. Panel	Z24	Hoist Control Box
TB35	Term. Blk. R/H Fuel Cell	Z25	Hoist Cable Cutter
TB36	Term. Blk. Ext. Power Diode	Z41	Hoist Control Pendant
TB38	Term. Blk. Left-hand Fuel Cell		
TB39	Term. Blk. Elec. Compt. Aft		
TB45	Term. Blk. Pitot Heater - Disc.		
TB60	Term. Blk. Battery Voltage, Fwd.		
TB61	Term. Blk. Battery Voltage, Aft		
VR1	Regulator - Voltage (Main Gen)		
VR2	Regulator, Voltage (Stby Gen.)		
NOTES			
⚠ EFF 66-16868 thru 66-17144			
⚠ EFF 66-746 through 66-16867			
⚠ EFF 66-746 through 66-1210, 66-16000 through 66-16033			

Table 13-3. Equipment List — Helicopters Serial No. 67-17145 Through 67-19537

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
A1	Panel, DC Power	E1	Detector Magnetic Chip
A2	Panel, AC Power	E2	Detector Magnetic Chip
A3	Panel, Engine	E3	Detector, Magnetic Chip
A4	Panel, Caution		
A6	Panel, Instrument Lights	G2	Generator, 30VDC (300A)
A7	Panel, Ext. Lights	G3	Generator, Tach (Gas Prod)
A8	Panel, Hydraulic Cont.	G4	Generator, Tach (Pwr Turb)
A10	Panel, Miscellaneous	G5	Generator, Tach (Rotor)
A11	Panel, Heating	G6	Generator, Starter 28V (200A)
A12	Cargo, Hook Assembly		
A13	Panel, Resistor	HR1	Heater, Pitot Tube
A14	Panel, AC Circuit Breaker	I1	Indicator, Attitude (Copilot)
A15	Panel, Overhead Console	I2	Indicator, Fuel Qty.
A20	Panel Assembly Aft Dome Lights	I3	Indicator, Torque - Pilot
A21	Panel, Dome Lt. & Pitot Heater	I4	Indicator, Oil Press (Eng)
A26	Panel, Assembly Ext. Fuel	I5	Indicator, Oil Press (XMSN)
		I6	Indicator, Fuel Press.
B1	Syncro XMTR, Torque Press.	I7	Indicator, Tach (Gas Prod)
B2	Syncro XMTR, XMSN Oil Press.	I8	Indicator, Tach Dual (Pilot)
B3	Syncro XMTR, Engine Oil Press.	I9	Light, Utility (Pilot)
B4	Syncro XMTR, Fuel Press.	I10	Light, Dome
B5	Motor, Fuel Shutoff Valve	I11	Light, Search
B6	Motor, R/H Fuel Boost Pump	I12	Light, Fire Warning
B7	Motor, Windshield Wiper	I13	Light, Master Caution
B8	Motor, R/H Aux. Fuel Pump	I14	Light, Instr. Secondary
B12	Motor, Gov. RPM Actuator	I15	Lamp, Instr. & Edge Lights
B13	Motor, L/H Aux. Fuel Pump	I16	Light, Landing
B22	Motor, Boom Actuator Hoist	I17	Light, Left Nav.
B31	Motor, Copilot Windshield Wiper	I18	Light, Right Nav.
B35	Motor, Winch Assembly, Hoist	I19	Light, Tail
B34	Motor, Bleed Air Valve	I20	Light, Top Fuselage
BT2	Battery	I21	Indicator, XMSN Oil Temp.
		I22	Indicator, Eng. Oil Temp.
C1	Capacitor, PF Corr. (MIL-C-25)	I23	Indicator, Turn & Slip (Pilot)
C7	Capacitor Filter, JN14	I25	Light, XMSN Sump Inspect
CB1	Circuit Breaker (5A)	I26	Light, Bottom Fuselage
CB2	Circuit Breaker (10A)	I28	Light, Utility (Copilot)
CB3	Circuit Breaker (15A)	I31	Indicator, Exh. Temp. (Pilot)
CB4	Circuit Breaker (20A)	I34	Standby Compass (Pilot)
CB5	Circuit Breaker (25A)	I40	Light, Anti-Collision
CB6	Circuit Breaker (1A)	I42	Indicator, Attitude (Pilot)
CB7	Circuit Breaker (35A)	I44	Light, Cargo Release Armed
CB8	Circuit Breaker (2A)	I45	Light, Hi-Lo RPM Warn.
CB11	Circuit Breaker (7.5A)		
CB12	Circuit Breaker (50A)	J2	Recept. Pitot Tube Heater
CB13	Circuit Breaker (1A)	J3	Recept. Instrument Panel Disc.
CP1	Coupler, Fuel Qty. Unshielded	J4	Recept. Fuel Quantity Ind.
CP2	Coupler, Fuel Qty. Shielded	J5	Recept. Fuel Press. Ind.
CR2	Diode, Ext. Power Relay	J6	Copilot Att. Ind.
CR30	Diode, Battery Voltage Fwd. Loc	J7	Recept. Engine Oil Temp. Ind.
CR31	Diode, Battery Voltage, Aft Loc	J8	Recept. Engine Oil Press. Ind.
		J9	Recept. Pilot Dual Tach. Rotor
D1	Inverter (Main)	J10	Recept. Pilot Dual Tach. Pwr. Turb.
D2	Inverter (Spare)	J11	Recept. XMSN Oil Temp. Ind.
DS1	Control Assembly RPM Warn.	J12	Recept. XMSN Oil Press. Ind.

Table 13-3. Equipment List — Helicopters Serial No. 67-17145 Through 67-19537 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
J15	Recept. Pilot Torque Meter	J110	Recept. Anti-Coll. Lt. Disc.
J16	Recept. Pilot Turn & Slip Ind.	J111	Recept. Anti-Coll. Light
J17	Recept. Gas Prod. Tach.	J112	Recept. Mag. Brake - Anti-Torque
J20	Recept. Pilot Cyclic Stick	J113	Recept. Mag. Brake - Fore & Aft
J23	Recept. Engine Panel	J114	Recept. Mag. Brake Lat.
J24	Recept. Caution Panel	J115	Recept. Test - Eng. Vibration Meter
J25	Recept. Pilot Coll. Stick	J119	Recept. Cabin Roof Disc. Hoist
J26	Recept. Windshield Wiper	J127	Recept. Var. Mix. Valve Disc.
J28	Recept. Hydraulic Bypass Sol.	J129	Recept. Displacement Roll & Pitch Gyro
J29	Recept. Hydraulic Press. Warn. Sw.	J130	Recept. Rate Switch Gyro
J31	Recept. Cargo Hook	J131	Recept. Attitude Indicator
J32	Recept. Cargo Sling Disc.	J135	Recept. Ice Interpreter
J35	Recept. Rotor, Tach. Gen.	J136	Recept. Ice Interpreter
J36	Recept. XMSN Oil Press. Sw.	J138	Recept. Door Post Outlet Valve Act.
J37	Recept. XMSN Oil Temp. Bulb	J146	Recept. Bleed Air Valve
J38	Recept. Copilot Windshield Wiper	J147	Recept. Internal Aux. Fuel Disc. L/H
J39	Recept. XMSN Oil Press. XMTR	J148	Recept. Internal Aux. Fuel Disc. R/H
J41	Recept. XMSN Disc.	J155	Recept. Hi-Lo RPM Warn.
J42	Recept. Fuel Tank Disc R/H	J156	Recept. Eng. Fuel Filter Bypass Sol.
J43	Recept. Compensator Fuel Tank Disc R/H	J166	Recept. Aft Outlet Valve
J44	Recept. Fuel Tank Disc. R/H	J191	Recept. Main Invtr. Pwr.
J53	Recept. Blkhd Feed-thru-Aft Fuel Cell	J192	Recept. Spare Invtr. Pwr.
J54	Recept. Blkhd Feed-thru-Aft Fuel Cell	J194	Recept. Engine Chip Detector
J57	Recept. Ext. Fuel Cont. Panel	J267	Recept. Battery Disc. Aft
J60	Recept. Socket, Relay-Gen. Field	J268	Recept. Hoist Cont. Box
J64	Recept. Torque Press. XMTR	J269	Recept. Hoist Cont. Box
J65	Recept. Engine Oil Press. XMTR	J270	Recept. Hoist Cont. Box
J66	Recept. Fuel Press. XMTR	J271	Recept. Hoist Cont. Box
J68	Recept. Disc. Muff Heater	J272	Recept. Hoist Cont. Box
J71	Recept. Engine Fuel Valve	J273	Recept. Hoist Cont. Pendant
J72	Recept. Engine Oil Press. Sw.	J274	Recept. Hoist Cont Boom Act.
J74	Recept. Battery Disc. Fwd.	J275	Recept. Hoist Winch Assy.
J75	Recept. Nav. Lights Flasher	J1017	Recept. Ext. Fuel Disc L/H
J77	Recept. Ice Detector	J1024	Recept. Ext. Fuel Disc. R/H
J80	Recept. Eng. Air Filter Press. Sw.		
J81	Recept. Starter Deck	K1	Relay, Ext. Power
J84	Recept. De-Icing Hot Air Valve	K2	Relay, Non-Ess Bus
J86	Recept. Power Turb. Tach.	K3	Relay, Starter
J88	Recept. Ignition Unit, Eng.	K4	Relay, Bus Cont. (Gen Fail)
J89	Recept. Primer Valve (Fuel Ign. Sol.)	K5	Relay, Reverse Curr (Main)
J90	Recept. Fuel Cont. Sol. Valve	K6	Relay, Over Voltage
J91	Recept. Engine Disc.	K7	Relay, Gen. Field
J92	Recept. Engine Forward Disc.	K8	Relay, AC Failure
J93	Recept. Fire Det. Fwd. Disc.	K9	Relay, Battery
J94	Recept. Fire Det. Element R/H	K10	Relay, Fuel Transfer
J95	Recept. Fire Det. Element L/H	K15	Relay, Standby Gen. Field
J96	Recept. Fire Det. Element R/H	K23	Relay, Standby Gen. Rev. Curr.
J97	Recept. Fire Det. Element L/H	K24	Relay, Cargo Hook Release
J98	Recept. Tail Light Disc.	K27	Relay, Inverter
J99	Recept. Thermocouple Disc.	K32	Relay, Hoist Power
J102	Recept. Standby Compass (Plt)	K35	Relay, Main Invtr. Pwr.
J105	Recept. Heated Blanket L/H	K36	Relay, Spare Invtr. Pwr.
J106	Recept. Heated Blanket R/H	K37	Relay, Lo-Fuel Caution Lt.
J107	Recept. Copilot Coll. Stick	K38	Relay, Lo-Fuel Caution Lt.
J108	Recept. Fuel Diff. Press. Sw.	K46	Relay, Overheat
J109	Recept. Ext. Power	K65	Relay, Battery Aft Location

Table 13-3. Equipment List — Helicopters Serial No. 67-17145 Through 67-19537 (Cont)

ITEM NO.	DESCRIPTION	ITEM	DESCRIPTION
K66	Relay, Battery Feeder		
L1	Solenoid, Primer (Ignition)	P47	Plug, Fuel Tank Disc. R/H Cell
L2	Solenoid, Fuel Cont. Valve	P48	Plug, Fuel Tank Disc. R/H Cell
L4	Solenoid, Hydraulic Bypass	P53	Plug, Unshld Tank Unit - Aft Cell
L6	Solenoid, Hot-Air De-Ice	P54	Plug, Shld Tank Unit - Aft Cell
L7	Solenoid, Idle Stop Rel.	P55	Plug, Fuel Tank Disc - Aft Cell
L8	Mag. Brake - Anti-Torque Force Trim	P56	Plug, Fuel Tank Disc - Aft Cell
L9	Mag. Brake - Fore & Aft Force Trim	P57	Plug, Ext. Fuel Cont. Panel
L10	Mag. Brake - Lat. Force Trim	P60	Plug, Field Relay Gen.
L14	Solenoid, Door Post Aft Outlet Valve	P64	Plug, Torque Press. XMTR
L15	Solenoid, Aft Outlet Valve Act.	P65	Plug, Engine Oil Press. XMTR
L21	Solenoid, Var. Mix Valve	P66	Plug, Fuel Press. XMTR
		P68	Plug, Muff Heater Disc.
M1	Meter, DC Load (St-by Gen.)	P71	Plug, Fuel Valve Shut-off
M2	Meter, DC Volts	P72	Plug, Eng. Oil Press. Sw.
M3	Meter, AC Volts	P74	Plug, Battery Disc. Fwd.
M4	Meter, DC Load (Main Gen.)	P75	Plug, Nav. Lts. Flasher
		P77	Plug, Ice Detector
O2	Guard-Gen. Sw. - DC Pwr. Panel	P80	Plug, Eng. Air Filter Press. Sw.
O3	Guard-Cable Cut Sw. - Hyd Panel	P81	Plug, Starter Deck
P2	Plug, Pitot Tube Htr.	P84	Plug, De-icing Hot Air Valve
P3	Plug, Inst. Panel Conn.	P85	Plug, Oil Temp. Bulb
P4	Plug, Fuel Qty. Ind.	P86	Plug, Pwr. Turb. Tach.
P5	Plug, Fuel Press. Ind.	P87	Plug, Gas Prod. Tach.
P6	Plug, Copilot Att. Ind.	P88	Plug, Ignition Unit - Engine
P7	Plug, Eng. Oil Temp. Ind.	P89	Plug, Ignition Sol. Valve
P8	Plug, Eng. Oil Press. Ind.	P90	Plug, Fuel Cont. Sol. Valve
P9	Plug, Pilot Dual Tach. (Rotor)	P91	Plug, Engine Disc.
P10	Plug, Pilot Dual Tach. (Pwr Turb.)	P92	Plug, Engine Forward Disc.
P11	Plug, XMSN Oil Temp. Ind.	P93	Plug, Fire Det. Forward Disc.
P12	Plug, XMSN Oil Press. Ind.	P94	Plug, Fire Det. Element R/H
P15	Plug, Pilot Torque Meter	P95	Plug, Fire Det. Element L/H
P16	Plug, Pilot Turn & Slip Ind.	P96	Plug, Fire Det. Element R/H
P17	Plug, Gas Prod. Turb. Tach.	P97	Plug, Fire Det. Element L/H
P20	Plug, Pilot's Cyclic Stick	P98	Plug, Tail Light Disc.
P21	Plug, Hydraulic Cont. Panel	P99A	Plug, Thermocouple Disc. Engine
P22	Plug, Copilot Cyclic Stick	P99B	Plug, Thermocouple Disc. Engine
P23	Plug, Engine Panel	P102	Plug, Standby Compass (Pilot)
P24	Plug, Caution Panel	P107	Plug, Copilot Coll. Stick
P25	Plug, Pilot Coll. Stick	P108	Plug, Fuel Diff. Press. Sw.
P26	Plug, Windshield Wiper	P110	Plug, Anti-Coll. Lt. Disc.
P28	Plug, Hyd. Bypass Solenoid Valve	P111	Plug, Anti-Coll. Lt.
P29	Plug, Hyd. Press. Warning Sw.	P112	Plug, Mag. Brake Anti-Torque
P31	Plug, Cargo Hook	P113	Plug, Mag. Brake Fore & Aft
P32	Plug, Cargo Hook Disc.	P114	Plug, Mag. Brake - Lat.
P35	Plug, Rotor Tach. Gen.	P119	Plug, Cabin Roof Disc. Hoist
P36	Plug, XMSN Oil Press. Sw.	P127	Plug, Var. Mix Valve Disc.
P37	Plug, XMSN Oil Temp. Bulb	P129	Plug, Displacement, Roll & Pitch Gyro
P38	Plug, Copilot W/S Wiper	P130	Plug, Rate Switching Gyro
P39	Plug, XMSN Oil Press. XMTR	P131	Plug, Attitude Ind.
P41	Plug, XMSN Disc.	P135	Plug, Ice Interpreter
P42	Plug, Shielded Tank Unit Disc (R/H Tank)	P136	Plug, Ice Interpreter
P43	Plug, Monitor Tank Unit Disc (R/H Tank)	P138	Plug, Door Post - Aft-Out Val. Act.
P44	Plug, Unshielded Tank Unit Disc (R/H Tank)	P146	Plug, Bleed Air Valve
P46	Plug, Fuel Tank Disc R/H Cell	P147	Plug, Unshld-Tank Coupler Disc.

Table 13-3. Equipment List — Helicopters Serial No. 67—17145 Through 67—19537 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
P148	Plug, Unshld-Tank Coupler Disc.	S27	Switch, Hyd. Press.
P149	Plug, Unshld-Tank Coupler Disc.	S28	Switch, XMSN Oil Press. Warning
P151	Plug, Shld-Tank Coupler Disc.	S29	Switch, Eng. Oil Press. Warning
P152	Plug, Shld-Tank Coupler Disc.	S31	Switch, Limit (Ext. Pwr. Door)
P153	Plug, Shld-Tank Coupler Disc.	S32	Switch, Cargo Release (Plt)
P155	Plug, Hi-Lo RPM Warning	S33	Switch, Gov. (Auto-Emer)
P156	Plug, Eng. Fuel Filter Bypass	S39	Switch, Invt. (Main-Spare)
P166	Plug, Aft Outlet Valve	S36	Switch, Cargo Release
P191	Plug, Inverter Disc. - Main	S37	Switch, RPM Gov. (Plt)
P192	Plug, Inverter Disc. - Spare	S38	Switch, Fuel (ON-OFF)
P194	Plug, Engine Chip Detector	S40	Switch, Battery (ON-OFF)
P267	Plug, Battery Disc. Aft	S41	Switch, Upper Float
P268	Plug, Hoist to Ship	S42	Switch, Lower Float
P269	Plug, Cable Cut & Slip Limit	S44	Switch, Fuel - Low Level
P270	Plug, Hoist to Cont. Pendant	S45	Switch, Fuel - Transfer L/H
P271	Plug, Boom Act.	S46	Switch, Fuel - Transfer R/H
P272	Plug, Hoist to Winch Assy.	S47	Switch, ICS Sw. Pilot's Cyclic Stick
P273	Plug, Cont. Pendant	S48	Switch, KS SW Copilot's Cyclic Stick
P274	Plug, Boom Act.	S50	Switch, Idle Stop Rel (Plt)
P275	Plug, Winch Assy	S51	Switch, RPM Gov. (Copilot)
P1017	Plug, Ext. Fuel Disc. L/H	S58	Switch, Fuel Diff. Press.
P1024	Plug, Ext. Fuel Disc. R/H	S59	Switch, Anti-Coll. Lt.
R1	Shunt-Ammeter (Stby Gen.)	S62	Switch, Non-Ess Bus Cont.
R2	Shunt-Ammeter (Main Gen.)	S63	Switch, Ext. Fuel Jett.
R3	Resistor-Windshield Wiper	S68	Switch, Force Trim
R4	Rheostat, Plt Inst. Lt. Dim	S70	Switch, Starter-Gen.
R5	Rheostat, Sec. Inst. Lt. Dim	S73	Switch, Overheat Bleed Air
R6	Rheostat, Overhead Console	S77	Switch, Searchlight (ON-STOW)
R7	Resistor, Nav. Lts. Dim	S76	Switch, Landing Lt. (ON-OFF)
R8	Rheostat, Ped. Lts. Dim	S77	Switch, Starter (Copilot Coll)
R9	Rheostat, Eng. Inst. Lts. Dim	S78	Switch, Cargo Rel (Copilot)
R10	Rheostat, Copilot Inst. Lts. Dim	S79	Switch, Fuel Ejector Flow Sw. L/H
R11	Resistor, Fire Det. Cont.	S80	Switch, Fuel Ejector Flow Sw. R/H
R12	Resistor, Spool Thermocouple	S81	Switch, De-Ice (ON-OFF)
R21	Rheostat, Aft Dome Lts.	S83	Switch, Bleed Air (ON-OFF)
R26	Rheostat, Course Ind. Lt. Dim	S85	Switch, Aft Outlets (Htr)
R27	Resistor, AC Load Balancing	S87	Switch, Aft-Outlet, Limit
S1	Switch, Aft Dome Lt.	S93	Switch, Hi-Lo RPM
S2	Switch, Rotary (DC VM Sel)	S94	Switch, Fuel Filter Bypass
S4	Switch, XMSN Sump Insp. Lt.	S96	Switch, Cable Cut
S5	Switch, Fuel Qty Test	S97	Switch, Cable Up Limit
S6	Switch, Starter (Plt Coll)	S101	Switch, Overload Sense
S7	Switch, Hyd Boost Cont.	S111	Switch, Fuel Trans. Pump
S8	Switch, Gen. (On-Off Reset)	S112	Switch, Pilot Hoist Cont.
S9	Switch, Pitot Heater	S114	Switch, Fire Control
S10	Switch, Force Trim (Copilot Sw.)	S115	Switch, Fire Control
S12	Switch, Searchlight Cont.	S124	Switch, Sel - W/Wiper
S13	Switch, Nav. Lts. (Flash Steady)	S134	Switch, Chip Det. Sel.
S14	Switch, Nav. Lts. (Bright-Dim)	S195	Switch, Diff. Press.
S18	Switch, Force Trim (Plt-Cyl)	T1	Transformer 115/28V
S20	Switch, Test (Fire Det.)	TB1	Term. Blk. Fwd. Inst. Panel
S23	Switch, Windshield Wiper	TB2	Term. Blk. Overhead Console R/H
S25	Switch, Landing Lt. (Ext-Retr)	TB3	Term. Blk. Overhead Console L/H
S26	Switch, XMSN Oil Temp.	TB4	Term. Blk. Aft Fuel Cell
		TM9	Term. Blk. Top Ext. & Dome Lts.

Table 13-3. Equipment List — Helicopters Serial No. 67-17145 Through 67-19537 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
TB12	Term. Blk. Ped. Panel Edge Lts.	VR 1	Regulator - Voltage (Main Gen)
TB13	Term. Blk. Inst. Panel Lts.	VR2	Regulator - Voltage (Stby Gen)
TB14	Term. Blk. Inst. Panel Sec. Lts.		
TB15	Term. Blk. Cockpit Lts. L/H	W1	Cable Assembly - Fire Det.
TB16	Term. Blk. Cockpit Lts. R/H		
TB22	Term. Blk. Copilot Headset	Z2	Engine, Ignition Unit
TB23	Term. Blk. Pilot Headset	Z3	Flasher Unit - Nav. Lts.
TB25	Term. Blk. Thermocouple Ind.	Z5	XMSN Oil Temp. Bulb
TB26	Term. Blk. DC Gnd. & Audio	Z6	Engine Oil Temp. Bulb
TB27	Term. Blk. Aft Thermo Lead	Z8	Ice Interpreter
TB29	Term. Blk. Inst. Ground	Z9	Fire Det. Cont.
TB34	Term. Blk. Aft Dome Lt. Panel	Z13	Ice Detector
TB35	Term. Blk. R/H Fuel Cell	Z16	Fuel Qty. Tank Unit - Aft
TB36	Term. Blk. Ext. Power Diode	Z17	Displacement - Roll & Pitch Gyro
TB38	Term. Blk. L/H Fuel Cell	Z18	Rate Switching Gyro
TB39	Term. Blk. Elect. Compt. Aft	Z22	Fuel Qty. Tank Unit R/H Fwd.
TB45	Term. Blk. Pitot Htr. - Disc.	Z24	Hoist Control Box
TB60	Term. Blk. Battery Voltage, Fwd.	Z25	Hoist Cable Cutter
TB61	Term. Blk. Battery Voltage, Aft	Z41	Hoist Control Pendant

Table 13-4. Equipment List — Helicopters Serial No. 68-15214 Through 70-15932

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
A1	Panel, DC Power	E3	Detector, Magnetic Chip
A2	Panel, AC Power	E4	Detector, Magnetic Chip
A3	Panel, Engine		
A4	Panel, Caution	G2	Generator, 30 VDC (300A)
A6	Panel, Inst. Lights	G3	Generator, Tach (Gas Prod)
A7	Panel, Ext. Lights	G4	Generator, Tach (Pwr Turb)
A8	Panel, Hydraulic Control	G5	Generator, Tach (Rotor)
A10	Panel, Miscellaneous	G6	Generator, Starter 28 V (200A)
A11	Panel, Heating		
A12	Cargo Hook Assy	HR1	Heater, Pitot Tube
A13	Panel, Resistor		
A14	Panel, AC Circuit Breaker	I1	Indicator, Attitude (Copilot)
A15	Panel, Overhead Console	I2	Indicator, Fuel Qty
A20	Panel Assy, Aft Dome Lts	I3	Indicator, Torque - Pilot
A21	Panel, Dome Lt & Pitot Htr	I4	Indicator, Oil Press (Eng)
A26	Panel Assy, Ext. Fuel	I5	Indicator, Oil Press (XMSN)
		I6	Indicator, Fuel Press
B1	Syncro XMTR, Torque Press	I7	Indicator, Tach (Gas Prod)
B2	Syncro XMTR, XMSN Oil Press	I8	Indicator, Tach-Dual
B3	Syncro, XMTR, Engine Oil Press	I9	Light, Utility (Pilot)
B4	Syncro XMTR, Fuel Press	I10	Light, Dome
B5	Motor, Fuel Shut-Off Valve	I11	Light, Search
B6	Motor, R/H Fuel Boost Pump	I12	Light, Fire Warning
B7	Motor, Windshield Wiper	I13	Light, Master Caution
B8	Motor, R/H Aux. Fuel Pump	I14	Light, Instr, Secondary
B12	Motor, Gov RPM Actuator	I15	Lamp, Instr & Edge Lights
B13	Motor, L/H Aux. Fuel Pump	I16	Light, Landing
B31	Motor, Copilot Windshield Wiper	I17	Light, Left Nav.
B34	Motor, Bleed Air Valve	I18	Light, Right Nav.
BT2	Battery	I19	Light, Tail
		I20	Light, Top Fuselage
C1	Capacitor, PF Corr. (MIL-C-25)	I21	Indicator, XMSN Oil Temp
C7	Capacitor, Filter, JN14	I22	Indicator, Eng. Oil Temp.
CB1	Circuit Breaker (5A)	I23	Indicator, Turn & Slip (Plt)
CB2	Circuit Breaker (10A)	I25	Light, XMSN Sump Inspect
CB3	Circuit Breaker (15A)	I26	Light, Bottom Fuselage
CB4	Circuit Breaker (20A)	I28	Light, Utility (Copilot)
CB5	Circuit Breaker (25A)	I31	Indicator, Exh. Temp (Plt)
CB6	Circuit Breaker (1A)	I34	Standby Compass (Plt)
CB7	Circuit Breaker (35A)	I40	Light, Anti-Collision
CB8	Circuit Breaker (2A)	I42	Indicator, Attitude (Plt)
CB11	Circuit Breaker (7.5A)	I44	Light, Cargo Release Armed
CB12	Circuit Breaker (50A)	I45	Light, Hi-Lo RPM Warn.
CB13	Circuit Breaker (1A)		
CP1	Coupler, Fuel Qty. Unshielded	J2	Recept. Pitot Tube Htr
CP2	Coupler, Fuel Qty. Shielded	J3	Recept. Instr. Panel Disc.
CR2	Diode, Ext. Pwr. Relay	J4	Recept. Fuel Qty Ind.
CR30	Diode, Batt. Voltage Fwd Loc	J5	Recept. Fuel Press Ind.
CR31	Diode, Batt. Voltage Aft Loc	J6	Recept. Copilot Att. Ind.
		J7	Recept. Eng. Oil Temp. Ind.
D1	Inverter, 250V.A. 3 Ph (Main)	J8	Recept. Eng. Oil Press. Ind.
D2	Inverter, 250V.A. 3 Ph (Spare)	J9	Recept. Pilot Dual Tach Rotor
DS1	Control Assy, RPM Warn.	J10	Recept. Pilot Dual Tach Pwr Turb.
		J11	Recept. XMSN Oil Temp. Ind.
E1	Detector, Magnetic Chip	J12	Recept. XMSN Oil Press. Ind.
E2	Detector, Magnetic Chip	J15	Recept. Pilot Torque Meter

Table 13-4. Equipment List — Helicopters Serial No. 68—15214 Through 70—15932 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
J16	Recept. Pilot Turn & Slip Ind.	J107	Recept. Copilot Coll. Stick
J17	Recept. Gas Prod. Tach.	J108	Recept. Fuel Diff. Press. Sw.
J20	Recept. Pilot Cyclic Stick	J109	Recept. Ext. Power
J21	Recept. Hydraulic Cont. Panel	J110	Recept. Anti-Coll. Lt. Disc.
J22	Recept. Copilot Cyclic Stick	J11	Recept. Anti-Coll. Lt.
J23	Recept. Engine Panel	J112	Recept. Mag. Brake Anti-Torque
J24	Recept. Caution Panel	J113	Recept. Mag. Brake Fore & Aft
J25	Recept. Pilot Coll. Stick	J114	Recept. Mag. Brake Lat
J26	Recept. Windshield Wiper	J115	Recept. Test-Eng. Vibration Meter
J28	Recept. Hyd. Bypass Solenoid	J127	Recept. Var. Mix Valve Disc.
J29	Recept. Hyd. Press. Warn. Sw.	J129	Recept. Displacement-Roll & Pitch Gyro
J31	Recept. Cargo Hook	J130	Recept. Rate Switching Gyro
J32	Recept. Cargo Slind Disc.	J131	Recept. Attitude Ind.
J35	Recept. Rotor, Tach. Gen.	J135	Recept. Ice Interpreter
J36	Recept. XMSN Oil Press. Sw.	J136	Recept. Ice Interpreter
J37	Recept. XMSN Oil Temp. Bulb	J138	Recept. Door Post Outlet Valve Act
J38	Recept. Copilot Windshield Wiper	J146	Recept. Bleed Air Valve
J39	Recept. XMSN Oil Press. XMTR	J147	Recept. Internal Aux. Fuel Disc L/H
J41	Recept. XMSN Disc.	J148	Recept. Internal Aux. Fuel Disc R/H
J42	Recept. Fuel Tank Disc R/H	J155	Recept. Hi-Lo RPM Warn.
J43	Recept. Compensator Fuel Tank Disc R/H	J156	Recept. Eng. Fuel Filter Bypass Sw.
J44	Recept. Fuel Tank Disc R/H	J166	Recept. Aft, Outlet Valve
J53	Recept. Bulkhead Feed-thru-aft Fuel Cell	J191	Recept. Main Inverter Pwr.
J54	Recept. Bulkhead Feed-thru-aft Fuel Cell	J192	Recept. Spare Inverter Pwr.
J57	Recept. Ext. Fuel Cont. Panel	J194	Recept. Engine Chip Detector
J60	Recept. Socket, Relay-Gen. Field	J267	Recept. Battery Disc. Aft
J64	Recept. Torque Press. XMTR	J1017	Recept. Ext. Fuel Disc. L/H
J65	Recept. Eng. Oil Press. XMTR	J1024	Recept. Ext. Fuel Disc. R/H
J66	Recept. Fuel Press. XMTR		
J68	Recept. Disc. Muff Heater	K1	Relay, Ext. Pwr.
J71	Recept. Eng. Fuel Valve	K2	Relay, Non-Ess Bus
J72	Recept. Eng. Oil Press. Sw.	K3	Relay, Starter
J74	Recept. Batt. Disc. Fwd.	K4	Relay, Bus Cont. (Gen Fail)
J75	Recept. Nav. Lts. Flasher	K5	Relay, Reverse Curr. (Main)
J77	Recept. Ice Detector	K6	Relay, Overvoltage
J80	Recept. Eng. Air Filter Press. Sw.	K7	Relay, Gen. Field
J81	Recept. Starter Deck	K8	Relay, AC Failure
J84	Recept. De-Icing Hot Air Valve	K9	Relay, Battery
J85	Recept. Eng. Oil Temp. Bulb	K10	Relay, Fuel Transfer
J86	Recept. Pwr. Turb. Tach.	K15	Relay, Standby Gen. Field
J87	Recept. Gas Turb. Tach.	K23	Relay, Standby Gen. Rev. Curr.
J88	Recept. Ignition Unit, Eng.	K24	Relay, Cargo Hook Release
J89	Recept. Primer Valve (Fuel Ign. Sol.)	K27	Relay, Inverter
J90	Recept. Fuel Cont. Sol. Valve	K35	Relay, Main Invtr. Pwr.
J91	Recept. Engine Disc.	K36	Relay, Spare Invtr. Pwr.
J92	Recept. Engine Fwd. Disc.	K37	Relay, Lo-Fuel Caution Lt.
J93	Recept. Fire Det. Fwd. Disc.	K28	Relay, Lo-Fuel Caution Lt.
J94	Recept. Fire Det. Element R/H	K46	Relay, Overheat
J95	Recept. Fire Det. Element L/H	K65	Relay, Battery, Aft Loc
J96	Recept. Fire Det. Element R/H	K66	Relay, Battery Feeder
J97	Recept. Fire Det. Element L/H		
J98	Recept. Tail Lt. Disc.	L1	Solenoid, Primer (Ignition)
J99	Recept. Thermocouple Disc.	L2	Solenoid, Fuel Cont. Valve
J102	Recept. Standby Compass (Plt)	L4	Solenoid, Hyd. Bypass
J105	Recept. Heated Blanket L/H	L6	Solenoid, Hot-Air De-icer
J106	Recept. Heated Blanket R/H	L7	Solenoid, Idle Stop Rel.

Table 13-4. Equipment List — Helicopters Serial No. 68—15214 Through 70—15932 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
L8	Mag. Brake - Anti-Torque Force Trim	P64	Plug, Torque Press. XMTR
L9	Mag. Brake - F & A Force Trim	P65	Plug, Eng. Oil Press. XMTR
L10	Mag. Brake - Lat Force Trim	P66	Plug, Fuel Press XMTR
L14	Solenoid, Door Post Htr. Outlet Valve	P68	Plug, Muff Heater Disc.
L15	Solenoid, Aft Outlet Valve Act.	P71	Plug, Fuel Valve Shut-Off
L21	Solenoid, Var. Mix Valve	P72	Plug, Eng. Oil Press Sw.
		P74	Plug, Battery Disc. Fwd.
M1	Meter, DC Load (Stand-by-gen.)	P75	Plug, Nav. Lts. Flasher
M2	Meter, DC Volts	P77	Plug, Ice Detector
M3	Meter, AC Volts	P80	Plug, Eng. Air Filter Press. Sw.
M4	Meter, DC Load (Main Gen)	P81	Plug, Starter Deck
O2	Guard - Gen. Sw. DC Pwr. Panel	P84	Plug, De-Icing Hot Air Valve
P2	Plug, Pitot Tube Heater	P85	Plug, Oil Temp. Bulb
P3	Plug, Inst. Panel Conn.	P86	Plug, Pwr. Turb. Tach.
P4	Plug, Fuel Qty Ind.	P87	Plug, Gas Prod. Tach.
P5	Plug, Fuel Press Ind.	P88	Plug, Ignition Unit-Eng.
P6	Plug, Copilot Att. Ind.	P89	Plug, Ignition Sol. Valve
P7	Plug, Engine Oil Temp. Ind.	P90	Plug, Fuel Cont. Sol. Valve
P8	Plug, Engine Oil Press. Ind.	P91	Plug, Engine Disc.
P9	Plug, Pilot Dual Tach. (Rotor)	P92	Plug, Engine Fwd. Disc.
P10	Plug, Pilot Dual Tach. (Pwr. Turb.)	P93	Plug, Fire Det. Fwd. Disc.
P11	Plug, XMSN Oil Temp. Ind.	P94	Plug, Fire Det. Element R/H
P12	Plug, XMSN Oil Press. Ind.	P95	Plug, Fire Det. Element L/H
P15	Plug, Pilot Torque Meter	P96	Plug, Fire Det. Element R/H
P16	Plug, Pilot Turn & Slip Ind.	P97	Plug, Fire Det. Element L/H
P17	Plug, Gas Prod. Turb. Tach.	P98	Plug, Tail Lt. Disc.
P20	Plug, Pilot's Cyclic Stick	P99A	Plug, Thermocouple Disc - Eng.
P21	Plug, Hyd. Cont. Panel	P99B	Plug, Thermocouple Disc - Eng.
P22	Plug, Copilot Cyclic Stick	P102	Plug, Standby Compass (Pilot)
P23	Plug, Engine Panel	P107	Plug, Copilot Coll. Stick
P24	Plug, Caution Panel	P108	Plug, Fuel Diff. Press. Sw.
P25	Plug, Pilot Coll. Stick	P110	Plug, Anti-Coll. Lt. Disc.
P26	Plug, Windshield Wiper	P111	Plug, Anti-Coll. Lt.
P28	Plug, Hyd. Bypass Sol. Valve	P112	Plug, Mag. Brake Anti-Torque
P29	Plug, Hyd. Press. Warn. Sw.	P113	Plug, Mag. Brake F & A
P31	Plug, Cargo Hook	P114	Plug, Mag. Brake - Lat.
P32	Plug, Cargo Hook Disc.	P127	Plug, Var. Mix Valve Disc.
P35	Plug, Rotor Tach. Gen.	P129	Plug, Displacement, Roll & Pitch Gyro
P36	Plug, XMSN Oil Press. Sw.	P130	Plug, Rate Switching Gyro
P37	Plug, XMSN Oil Temp. Bulb	P131	Plug, Attitude Ind.
P38	Plug, Copilot Windshield Wiper	P135	Plug, Ice Interpreter
P39	Plug, XMSN Oil Press. XMTR	P136	Plug, Ice Interpreter
P41	Plug, XMSN Disc.	P138	Plug, Door Post-Aft Outlet Valve Act.
P42	Plug, Shielded Tank Unit Disc(R/H Tank)	P146	Plug, Bleed Air Valve
P43	Plug, Monitor Tank Unit Disc(R/H Tank)	P147	Plug, Unshielded Tank Coupler Disc.
P44	Plug, Unshielded Tank Unit Disc(R/H Tank)	P148	Plug, Unshielded Tank Coupler Disc.
P46	Plug, Fuel Tank Disc. R/H Cell	P149	Plug, Unshielded Tank Coupler Disc.
P47	Plug, Fuel Tank Disc R/H Cell	P151	Plug, Shielded Tank Coupler Disc.
P48	Plug, Fuel Tank Disc R/H Cell	P152	Plug, Shielded Tank Coupler Disc.
P53	Plug, Unshielded Tank Unit-Aft Cell	P153	Plug, Shielded Tank Coupler Disc.
P54	Plug, Shielded Tank Unit-Aft Cell	P155	Plug, Hi-Lo RPM Warning
P55	Plug, Fuel Tank Disc - Aft Cell	P156	Plug, Eng. Fuel Filter Bypass
P56	Plug, Fuel Tank Disc - Aft Cell	P166	Plug, Aft Outlet Valve
P57	Plug, Ext. Fuel Cont. Panel	P191	Plug, Inverter Disc. - Main
P60	Plug, Field Relay Generator	P192	Plug, Inverter Disc. - Spare
		P194	Plug, Eng. Chip Detector

Table 13-4. Equipment List — Helicopters Serial No. 68—15214 Through 70—15932 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
P267	Plug, Battery Disc. Aft	S58	Switch, Fuel Diff Press
P1017	Plug, Ext. Fuel Disc. L/H	S59	Switch, Anti-Coll. Lt.
P1027	Plug, Ext. Fuel Disc. R/H	S62	Switch, Non-Ess Bus Cont
R1	Shunt, Ammeter (Stby Gen)	S63	Switch, Ext. Fuel Jett
R2	Shunt, Ammeter (Main Gen)	S68	Switch, Force Trim
R3	Resistor, Windshield Wiper	S70	Switch, Starter-Gen.
R4	Rheostat, Pilot Inst. Lt. Dim	S73	Switch, Overheat Bleed Air
R5	Rheostat, Sec. Instrument Lt. Dim	S75	Switch, Searchlight (ON-STOW)
R6	Rheostat, Overhead Console	S76	Switch, Landing Lt. (ON-OFF)
R7	Resistor, Nav. Lts. Dim	S78	Switch, Cargo Rel. (Copilot)
R8	Rheostat, Ped. Lts. Dim	S79	Switch, Fuel Ejector Flow Sw. L/H
R9	Rheostat, Eng. Inst. Lts. Dim	S80	Switch, Fuel Ejector Flow Sw. R/H
R10	Rheostat, Copilot Inst. Lts. Dim	S81	Switch, De-ice (ON-OFF)
R11	Resistor, Fire Det. Cont.	S83	Switch, Bleed Air (ON-OFF)
R12	Resistor, Speel Thermocouple	S85	Switch, Aft Outlets (Htr)
R21	Rheostat, Aft Dome Lts.	S87	Switch, Aft-Outlet Limit
R26	Rheostat, Course Ind. Lt. Dim	S93	Switch, Hi-Lo RPM
R27	Resistor, AC Load Balancing	S94	Switch, Fuel Filter Bypass
S1	Switch, Aft Dome Lt.	S111	Switch, Fuel Trans. Pump
S2	Switch, Rotary (DC VM Sel)	S112	Switch, Pilot Hoist Cont.
S4	Switch, XMSN Sump Insp. Lt.	S114	Switch, Fire Control
S5	Switch, Fuel Qty. Test	S115	Switch, Fire Control
S6	Switch, Starter (Plt Coll.)	S124	Switch, Sel-Windshield Wiper
S7	Switch, Hyd. Boost Cont.	S134	Switch, Chip Det. Sel.
S8	Switch, Gen. (On-Off Reset)	S195	Switch, Diff. Press.
S9	Switch, Pitot Heater	T1	Transformer 115/28V
S10	Switch, Force Trim (Copilot Cyc.)	TB1	Term. Blk. Fwd. Inst. Panel
S11	Switch, Rotary (AC VM Sel)	TB2	Term. Blk. Overhead Console R/H
S12	Switch, Searchlight Cont.	TB3	Term. Blk. Overhead Console L/H
S13	Switch, Nav. Lts. (Flash Steady)	TB4	Term. Blk. Aft Fuel Cell
S14	Switch, Nav. Lts. (Bright-Dim)	TB9	Term. Blk. Top Ext. & Dome Lts.
S18	Switch, Force Trim (Plt-Cyc)	TB12	Term. Blk. Ped. Panel Edge Lts.
S20	Switch, Test (Fire Det)	TB13	Term. Blk. Inst. Panel Lts.
S23	Switch, Windshield Wiper	TB14	Term. Blk. Inst. Panel Sec. Lts.
S25	Switch, Landing (lt. (Ext-Retr)	TB15	Term. Blk. Cockpit Lts. L/H
S26	Switch, XMSN Oil Temp.	TB16	Term. Blk. Cockpit Lts. R/H
S27	Switch, Hyd. Press.	TB25	Term. Blk. Thermocouple Ind.
S28	Switch, XMSN Oil Press Warn.	TB26	Term. Blk. DC Gnd. & Audio
S29	Switch, Eng. Oil Press. Warn.	TB27	Term. Blk. Aft Thermo Lead
S31	Switch, Limit (Ext. Pwr. Door)	TB29	Term. Blk. Inst. Gnd.
S32	Switch, Cargo Release (Plt)	TB34	Term. Blk. Aft Dome Lt. Panel
S33	Switch, Gov. (Auto-Emer)	TB35	Term. Blk. R/H Fuel Cell
S36	Switch, Cargo Release	TB36	Term. Blk. Ext. Pwr. Diode
S37	Switch, RPM Gov. (Plt)	TB38	Term. Blk. L/H Fuel Cell
S38	Switch, Fuel (ON-OFF)	TB39	Term. Blk. Elect. Compt. Aft
S39	Switch, Invtr (Main-Spare)	TB45	Term. Blk. Pitot Htr. - Disc.
S40	Switch, Battery (ON-OFF)	TB60	Term. Blk. Battery Voltage, Fwd.
S41	Switch, Upper Float	TB61	Term. Blk. Battery Voltage, Aft
S42	Switch, Lower Float	VR1	Regulator - Voltage (Main Gen)
S44	Switch, Fuel-Low Level	VR2	Regulator - Voltage (Stby Gen)
S45	Switch, Fuel-Transfer L/H	W1	Cable Assy. Fire Det.
S46	Switch, Fuel-Transfer R/H	Z2	Eng. Ignition Unit
S50	Switch, Idle Stop Rel (Plt)		
S51	Switch, RPM Gov (Copilot)		

Table 13-4. Equipment List — Helicopters Serial No. 68—15214 Through 70—15932 (Cont)

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
Z3	Flasher Unit - Nav. Lts.	Z13	Ice Detector
Z5	XMSN Oil Temp. Bulb	Z16	Fuel Qty. Tank Unit - Aft
Z6	Eng. Oil Temp. Bulb	Z17	Displacement-Roll & Pitch Gyro
Z8	Ice Interpreter	Z18	Rate Switch Gyro
Z9	Fire Det. Cont.	Z22	Fuel Qty. Tank Unit R/H Fwd.

Table 13-5. Connector Replacement Chart

WIRE NO.	RECEPTACLE	PIN	PLUG	WIRE NO.
D9A20	J3	A	P3	D9B20
X11A20	J3	B	P3	X11B20
X12A20	J3	C	P3	X12B20
D13B22	J3	D	P3	D13A22
D12A22	J3	E	P3	D12B22
D35A20	J3	F	P3	D35B20
D34B20	J3	G	P3	D34C20
L36A20	J3	H	P3	L36B20
L20F20	J3	J	P3	L20E20
W109A20	J3	R	P3	W109B20
E32A20	J3	S	P3	E32B20
W2B20	J3	T	P3	W2A20
W4B20	J3	U	P3	W4C20
M3F20	J3	V	P3	M3G20
E7D18N	J3	W	P3	E7E18N
M1C20	J3	X	P3	M1D20
W12A20	J3	Y	P3	W12B20
W6A20	J3	Z	P3	W6B20
L20A20	J3	a	P3	L20B20
L19A20	J3	b	P3	L19B20
L18A20	J3	c	P3	L18B20
C12A20	J20	A	P20	P/O Equipment
M4B20	J20	C	P20	P/O Equipment
M3E20	J20	E	P20	P/O Equipment
	J20	G	P20	P/O Equipment
	J20	H	P20	P/O Equipment
M29A20	J20	L	P20	P/O Equipment
M27A20	J20	M	P20	P/O Equipment
M30A20	J20	N	P20	P/O Equipment
M22A20	J20	P	P20	P/O Equipment
M28A20	J20	R	P20	P/O Equipment
RZ1714B20	J20	S	P20	P/O Equipment
RZ1853B20N	J20	T	P20	P/O Equipment
RZ1715C20	J20	U	P20	P/O Equipment
C1C20	J20	V	P20	P/O Equipment
M43C20	J21	A	P21	M25A20
	J21	B	P21	
	J21	C	P21	
L21C20	J21	D	P21	L21B20
C8B20	J21	E	P21	C8A20
C9A20	J21	F	P21	C9B20
L22E20N	J21	G	P21	L22D20N
W18B20	J21	H	P21	W18A20
W17A20	J21	I	P21	W17B20
M44A20	J21	J	P21	M26A20
W19C20	J21	K	P21	W19B20
C12B20	J21	L	P21	C12A20
C21A20	J21	M	P21	C21B20
	J21	N	P21	
M4C20	J22	A	P22	P/O Equipment
	J22	B	P22	P/O Equipment
	J22	C	P22	P/O Equipment
	J22	D	P22	P/O Equipment
C21B20	J22	E	P22	P/O Equipment

Table 13-5. Connector Replacement Chart (Cont)

WIRE NO.	RECEPTABLE	PIN	PLUG	WIRE NO.
C13A20	J22	F	P22	P/O Equipment
	J22	G	P22	P/O Equipment
	J22	H	P22	P/O Equipment
M3C20	J22	J	P22	P/O Equipment
	J22	K	P22	P/O Equipment
RZ1752C20	J22	L	P22	P/O Equipment
RZ1854B20N	J22	M	P22	P/O Equipment
RZ1751B20	J22	N	P22	P/O Equipment
	J22	U	P22	P/O Equipment
L22A20N	J23	A	P23	L22B20N
L21H20	J23	B	P23	L21G20
Q52A20	J23	C	P23	Q52B20
W102B20	J23	D	P23	W102A20
W103B20	J23	E	P23	W103A20
Q53D20	J23	F	P23	Q53C20
J3H20 	J23	H	P23	 J3G20
J4A20 	J23	J	P23	 J4B20
	J23	K	P23	
Q12D20	J23	L	P23	Q12E20
	J23	M	P23	
	J23	N	P23	
	J23	P	P23	
	J23	R	P23	
	J23	S	P23	
	J23	T	P23	
	J23	U	P23	
	J23	V	P23	
	J23	W	P23	
Q11A20	J23	X	P23	Q11B20
Q10B20	J23	Y	P23	Q10A20
Q12A20	J23	Z	P23	Q12B20
E37D20	J23	a	P23	E37C20
E46A20	J23	b	P23	E46B20
Q30A20	J23	c	P23	Q30B20
Q29B20	J23	d	P23	Q29A20
Q50A20	J23	e	P23	Q50B20
E44A20	J23	f	P23	E44B20
Q51A20	J23	g	P23	Q51B20
J2A20	J23	h	P23	J2B20
J1B20	J23	i	P23	J1A20
Q4A20	J23	j	P23	Q4B20
Q3B20	J23	k	P23	Q3A20
H61A16	J23	m	P23	H61B16
Q5A20	J23	n	P23	Q5B20
Q1B20	J23	p	P23	Q1A20
Q2A20	J23	q	P23	Q2B20
H60C16	J23	r	P23	H60B16
J2D20 J2B20 	J25	A	P25	J2E20
L43B20	J25	B	P25	L43A20
L42A20	J25	C	P25	L42B20
L30C20	J25	D	P25	L30B20
J3B20	J25	E	P25	J3A20
K2A20	J25	F	P25	K2B20
L34B20	J25	G	P25	L34A20
Q25B20	J25	H	P25	Q25A20

Table 13-5. Connector Replacement Chart (Cont)

WIRE NO.	RECEPTABLE	PIN	PLUG	WIRE NO.
L51B20	J25	J	P25	L51A20
L20T20	J25	K	P25	L20U20
	J25	L	P25	
	J25	M	P25	
	J25	N	P25	
	J25	P	P25	
	J25	R	P25	
J3G20 	P25	S	P25	J3F20
Q24A20	J25	T	P25	Q24B20
L53A20N	J25	U	P25	L53B20
Q26B20	J25	V	P25	Q26A20
Q22B20	J25	W	P25	Q22A20
Q23B20	J25	X	P25	Q23A20
L33B20	J25	Y	P25	L33A20
K3B20	J25	Z	P25	K3A20
L44B20	J25	a	P25	L44A20
L31B20	J25	b	P25	L31A20
L38B20	J25	c	P25	P38A20
D16B20	J41	A	P41	D16A20
D17A20	J41	B	P41	D17B20
	J41	C	P41	
	J41	D	P41	
	J41	E	P41	
	J41	F	P41	
	J41	G	P41	
	J41	H	P41	
	J41	J	P41	
W19B20	J41	L	P41	W19A20
	J41	M	P41	
D5A20	J41	N	P41	D5B20
D6B20	J41	P	P41	D6C20
D1B20	J41	R	P41	D1A20
D22A20	J41	S	P41	D22B20
D2B20	J41	T	P41	D2A20
D25C20N	J41	U	P41	D25B20N
D23A20	J41	V	P41	D23B20
P/O Equipment	J91	B	P91	
P/O Equipment	J91	C	P91	Q28A16
P/O Equipment	J91	D	P91	H61C16
P/O Equipment	J91	E	P91	E1A18
P/O Equipment	J91	F	P91	E2A18
P/O Equipment	J91	G	P91	E21A18
P/O Equipment	J91	H	P91	E22A18
P/O Equipment	J91	J	P91	J3E18
P/O Equipment	J91	K	P91	J4C18
P/O Equipment	J91	L	P91	Q12C18
P/O Equipment	J91	M	P91	Q11C18
P/O Equipment	J91	N	P91	E8A18
P/O Equipment	J91	P	P91	E9B18
P/O Equipment	J91	R	P91	
P/O Equipment	J91	U	P91	
P/O Equipment	J91	V	P91	
P/O Equipment	J91	d	J91	
H56A20 	J92	A	P92	 H56A20
Q46B20	J92	B	P92	Q46C18

Table 13-5. Connector Replacement Chart (Cont)

WIRE NO.	RECEPTACLE	PIN	PLUG	WIRE NO.
P35A16	J92	C	P92	P35B16
Q45B20	J92	D	P92	Q45C18
Q47A20N	J92	E	P92	Q17B18
W16B20	J92	F	P92	W16A18
Q15A20	J92	G	P92	Q15B18
H61B16	J92	H	P92	H61C16
Q67B20N	J92	J	P92	Q67A18
Q66A20	J92	K	P92	Q66B18
E1B20	J92	L	P92	E1A18
E2B20	J92	M	P92	E2A18
E21B20	J92	N	P92	E21A18
E22B20	J92	P	P92	E22A18
J3D20	J92	R	P92	J3E18
J4B20	J92	S	P92	J4C18
Q12B20	J92	T	P92	Q12C18
Q28B16N	J92	U	P92	Q28A16
Q11B20	J92	V	P92	Q11C18
E8A20	J92	W	P92	E8A18
E9A20	J92	X	P92	E9B18
E29B20N	J92	Z	P92	E29A18
Q17A20	J92	a	P92	Q17B18
E15A20	P92	b	P92	E15B18
H55A20 	P92	c	P92 	H55B18
H54A20 	P92	d	P92 	H54B18
E5B20	J92	e	P92	E5A18
E33C-CHROM	J92	f	P92	E33B-CHROM
Q18A20N	J92	g	P92	Q18B18
E14A20	J92	h	P92	E14B18
E31B20N	J92	j	P92	E31A18
E6A20	J92	k	P92	E6B18
E43C-ALML	J92	m	P92	E34B-ALML
Q31A18N	J92	n	P92	Q31B18
H57A20N	J92	p	P92	H57B18
H44A20 H52B20 	J92	r	P92 	H52C18 H44B18
H45A20 H53A20 	J92	s	P92 	H53B18 H45B18
Q46B20	J107	A	P107	Q46A20
Q45B20	J107	B	P107	Q45A20
Q24D20	J107	C	P107	Q24E20
Q22B20	J107	D	P107	Q22C20
K2C20 	J107	E	P107 	K2D20
J2D20 	J107	F	P107 	J2C20
J2B20	J107		P107	
Q23B20	J107	G	P107	Q23C20
J3B20 	J107	I	P107 	J3C20
J3D20 	J107		P107	
K3B20 	J107	J	P107 	K3C20
K3D20	J107		P107	
NOTES				
	EFF When Rescue Hoist Provisions are Installed.			
	EFF 65-9565 thru 66-16033			
	EFF 68-15214 thru 70-15932			
	EFF 65-9565 thru 66-16867			
	EFF 65-9565 thru 67-19537			

Section II. LOAD CHARTS AND WIRING DIAGRAMS

13-5. Index.

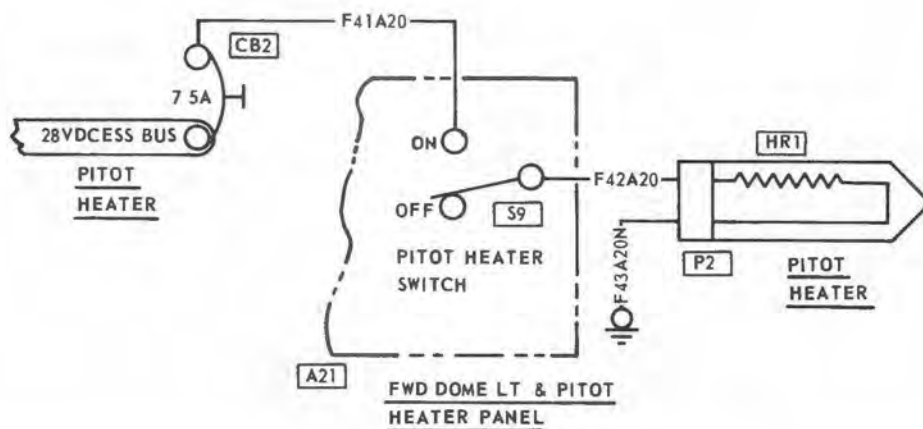
NOTE

13-6. Diagrams.

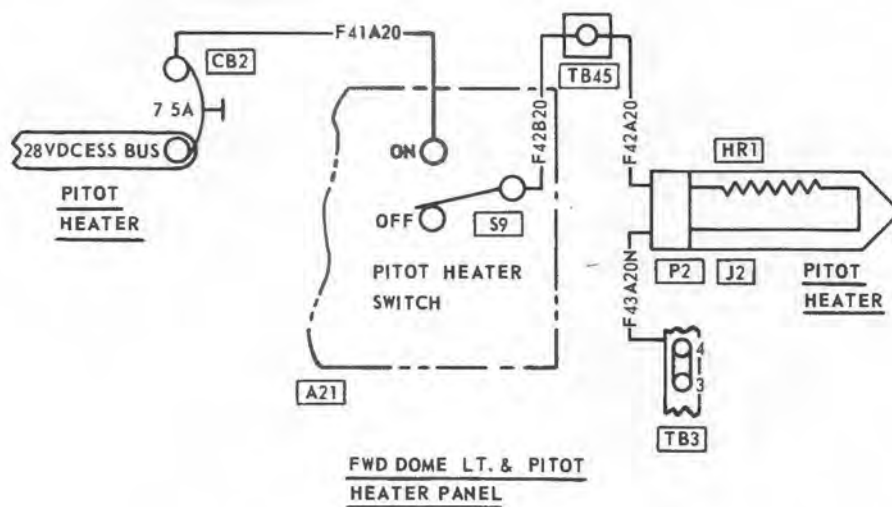
System wiring diagrams with no effectivity listing cover ship blocks 65-9565 through 70-15932.

The following load analysis charts, systems wiring diagrams and master wiring diagrams are utilized in this section:

FIGURE	TITLE
13-3	Load Analysis Chart (62-2106 thru 62-2113, 62-12351 thru 62-12372)
13-4	Load Analysis Chart (63-8739 thru 63-8859, 63-12956 thru 63-13002)
13-5	Load Analysis Chart (64-13492 thru 64-13901)
13-6	Load Analysis Chart (65-9565 thru 65-12895)
13-7	Load Analysis Chart (66-746 thru 66-8577)
13-8	Load Analysis Chart (67-17145 thru 67-19537)
13-9	Load Analysis Chart (68-15214 thru 68-16628) (69-15000 thru 70-15932)
13-10	Pitot Heater System
13-11	Temperature Bulb, Turn and Slip Indicator System
13-12	Attitude Indicator System
13-13	Tachometer Generator System
13-14	A.C. Pressure Indicator System
13-15	Exhaust Temperature Indicator System
13-16	Fuel Quantity System
13-17	Generator and Bus System
13-18	External Power System
13-19	Battery System
13-20	Starter System
13-21	R.P.M. Warning System
13-22	Force Trim and Hydraulic Control System
13-23	Ignition System
13-24	Fuel Boost and Fuel Valve System
13-25	Governor Control and Idle Stop Systems
13-26	A.C. Power System
13-27	Cockpit and Dome Lights System
13-28	Instrument, Console and Pedestal Lights System
13-29	Caution Lights System
13-30	De-Ice and Ice Detector System
13-31	External Fuel System
13-32	Fire Detector System
13-33	Landing and Search Lights System
13-34	Navigation, Fuselage and Anti-Collision Lights System
13-35	Cabin Heating System
13-36	Heated Blanket Receptacle Wiring Diagram
13-37	Windshield Wiper System
13-38	Cargo Hook System
13-39	Rescue Hoist System
13-40	Armament Wiring Diagram (63-8739 thru 63-8859, 63-12956 thru 63-13002)
13-41	Armament Wiring Diagram (64-13492 thru 64-13901)
13-42	Electrical Schematic (60-6028 thru 60-6034)
13-43	Electrical Wiring Diagram (60-6028 thru 60-6034)
13-44	Electrical Schematic (62-2106 thru 62-2113, 62-12351 thru 62-12372)
13-45	Electrical Wiring Diagram (62-2106 thru 62-2113, 62-12351 thru 62-12372)
13-46	Electrical Schematic (63-8739 thru 63-8859, 63-12956 thru 63-13002)
13-47	Electrical Wiring Diagram (63-8739 thru 63-8859, 63-12956 thru 63-13002)
13-48	Electrical Schematic (64-13492 thru 64-13901)
13-49	Electrical Wiring Diagram (64-13492 thru 64-13901)



EFF 65-9565 THRU 65-12895



EFF 66-746 THRU 68-16628

205475-116
AV 054245

Figure 13-10. Pitot heater system

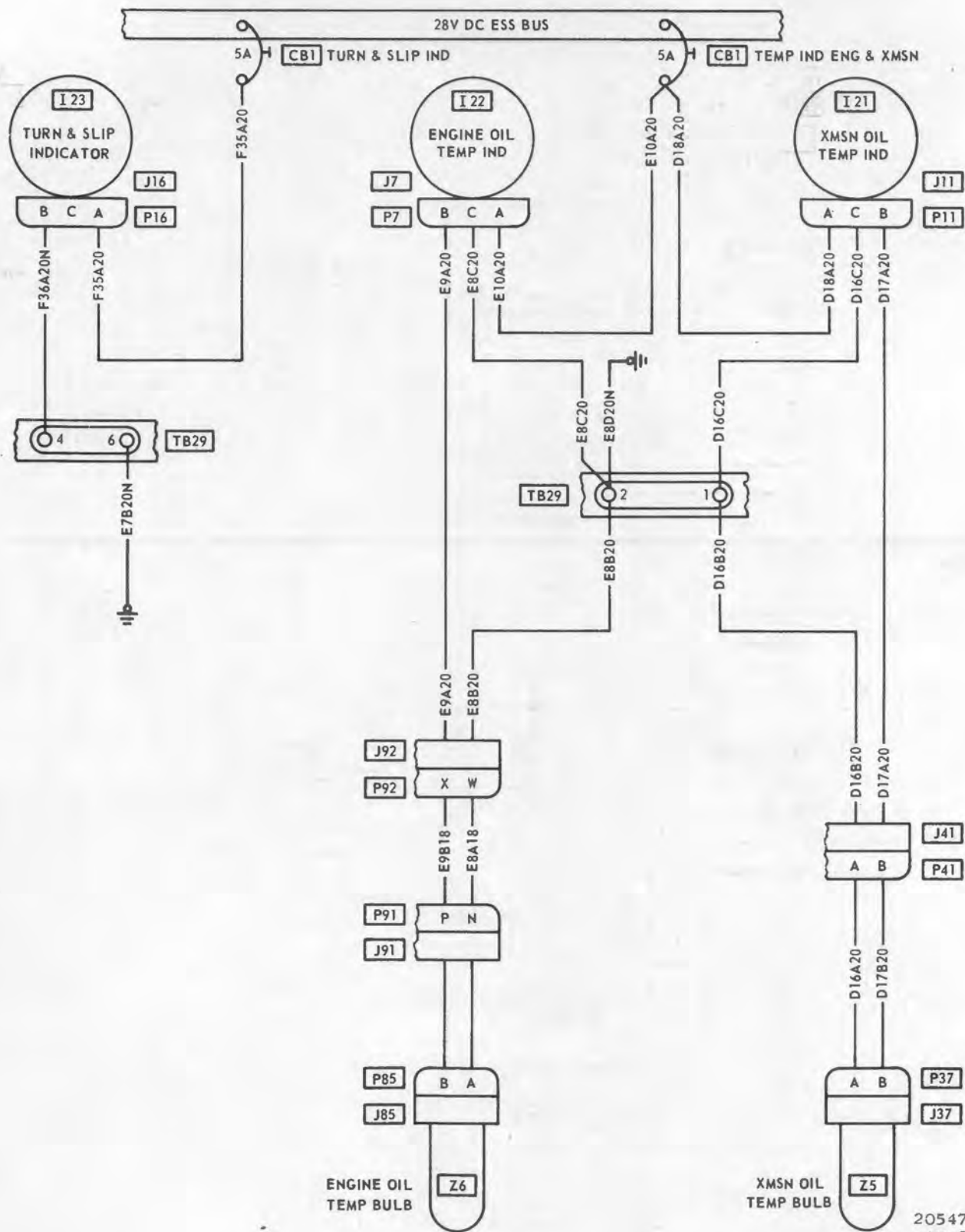


Figure 13-11. Temperature bulb, turn and slip indicator system



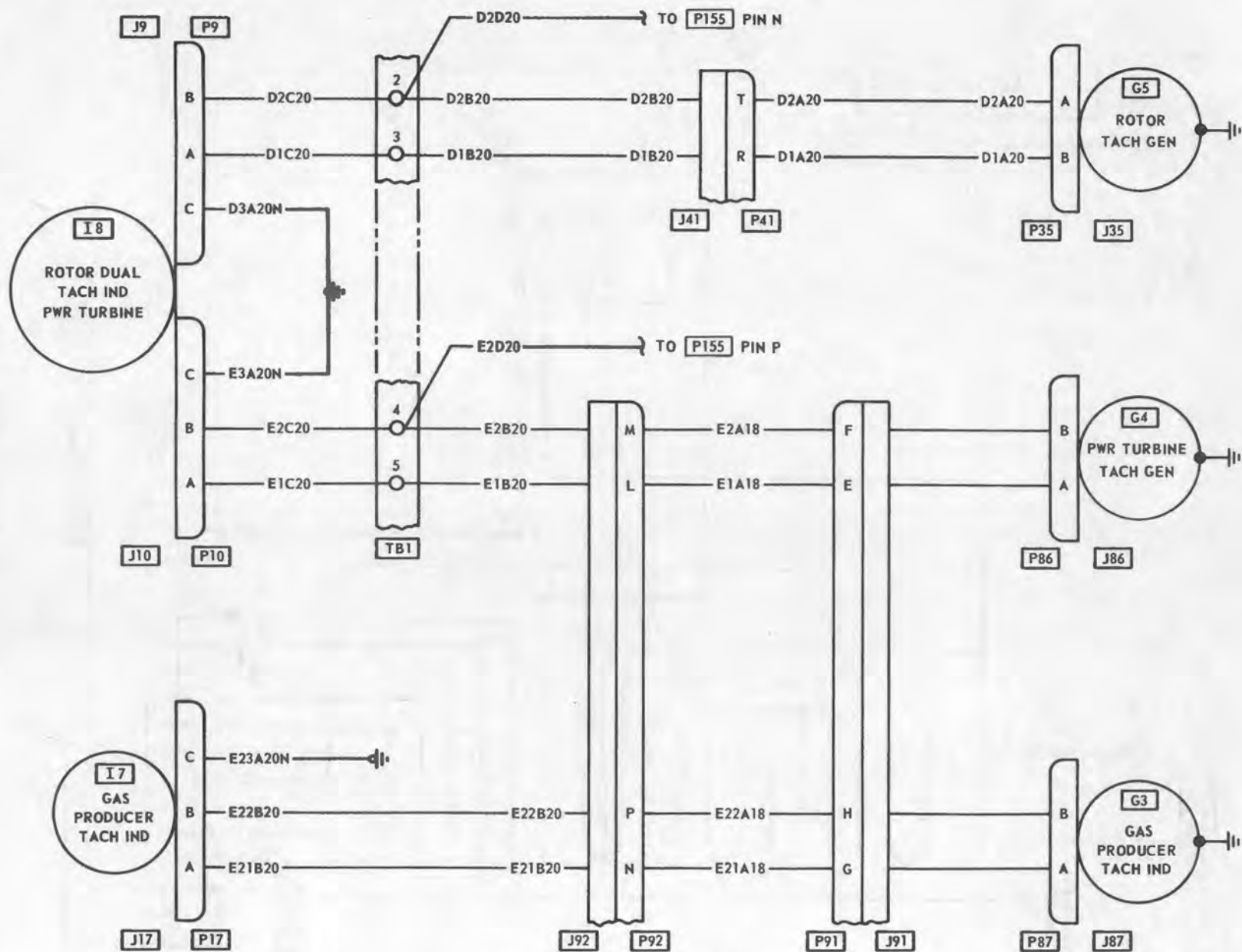
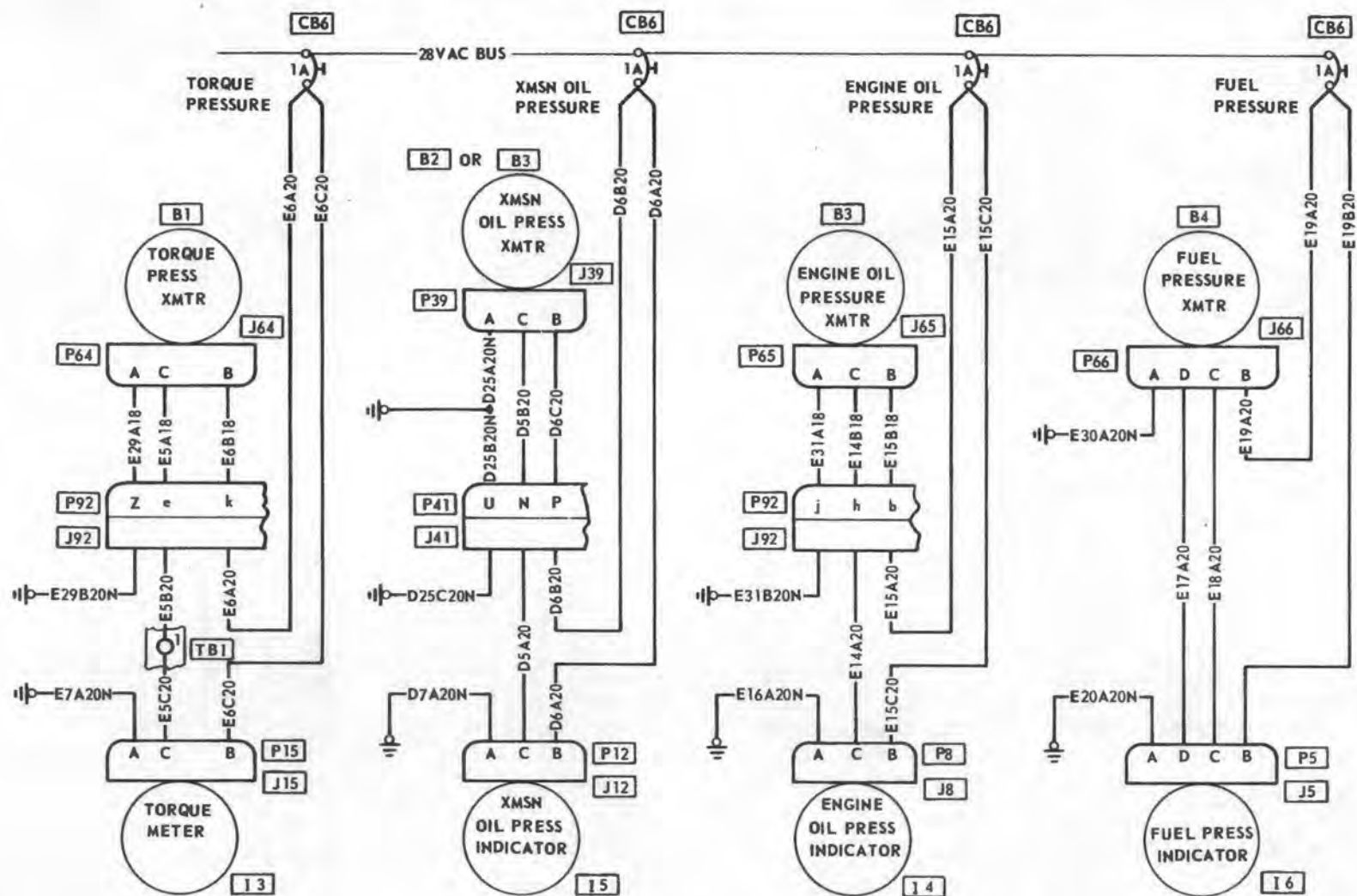


Figure 13-13. Tachometer generator system

205475-135
AV 054248



205475-114
AV 054249

Figure 13-14. AC pressure indicator system

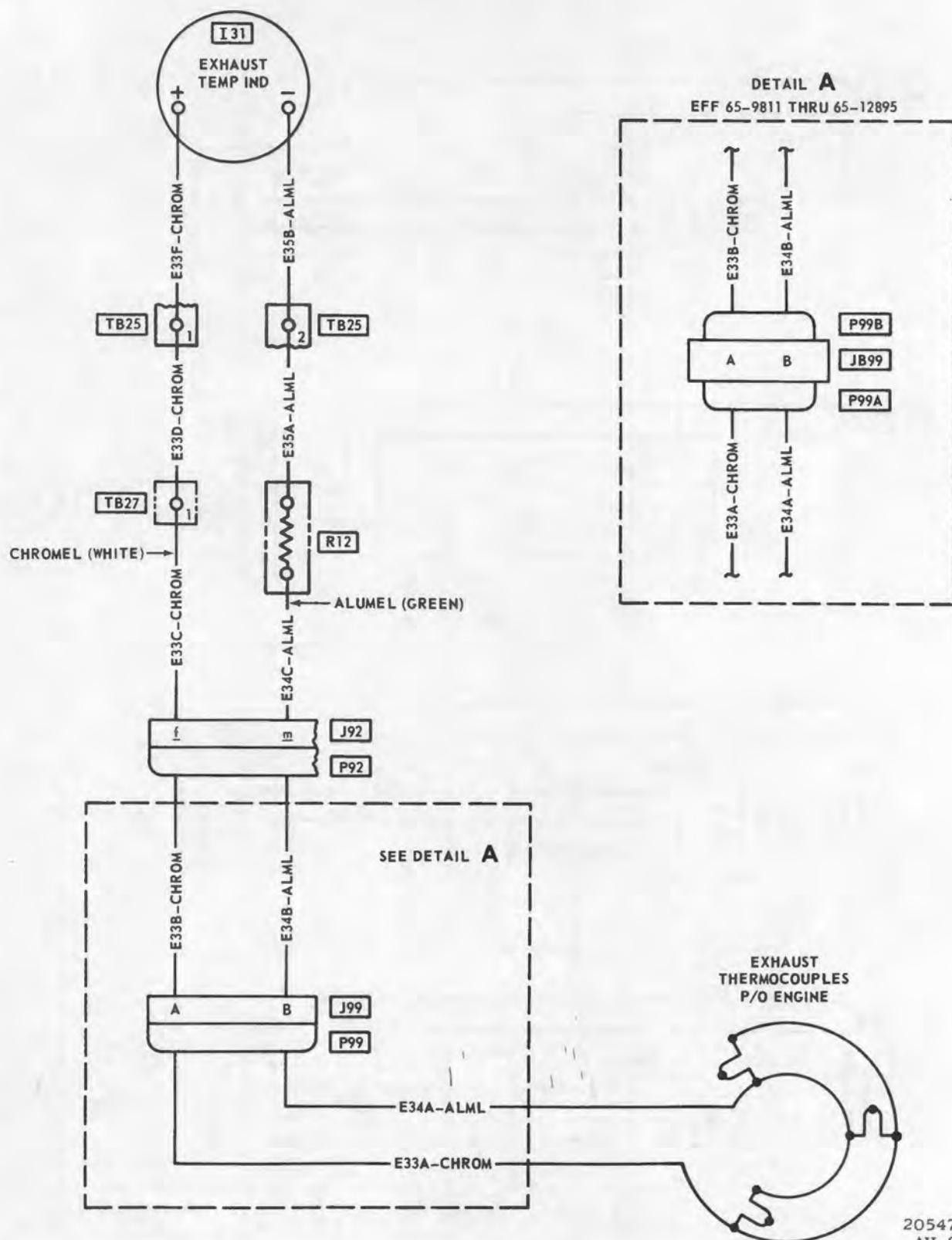
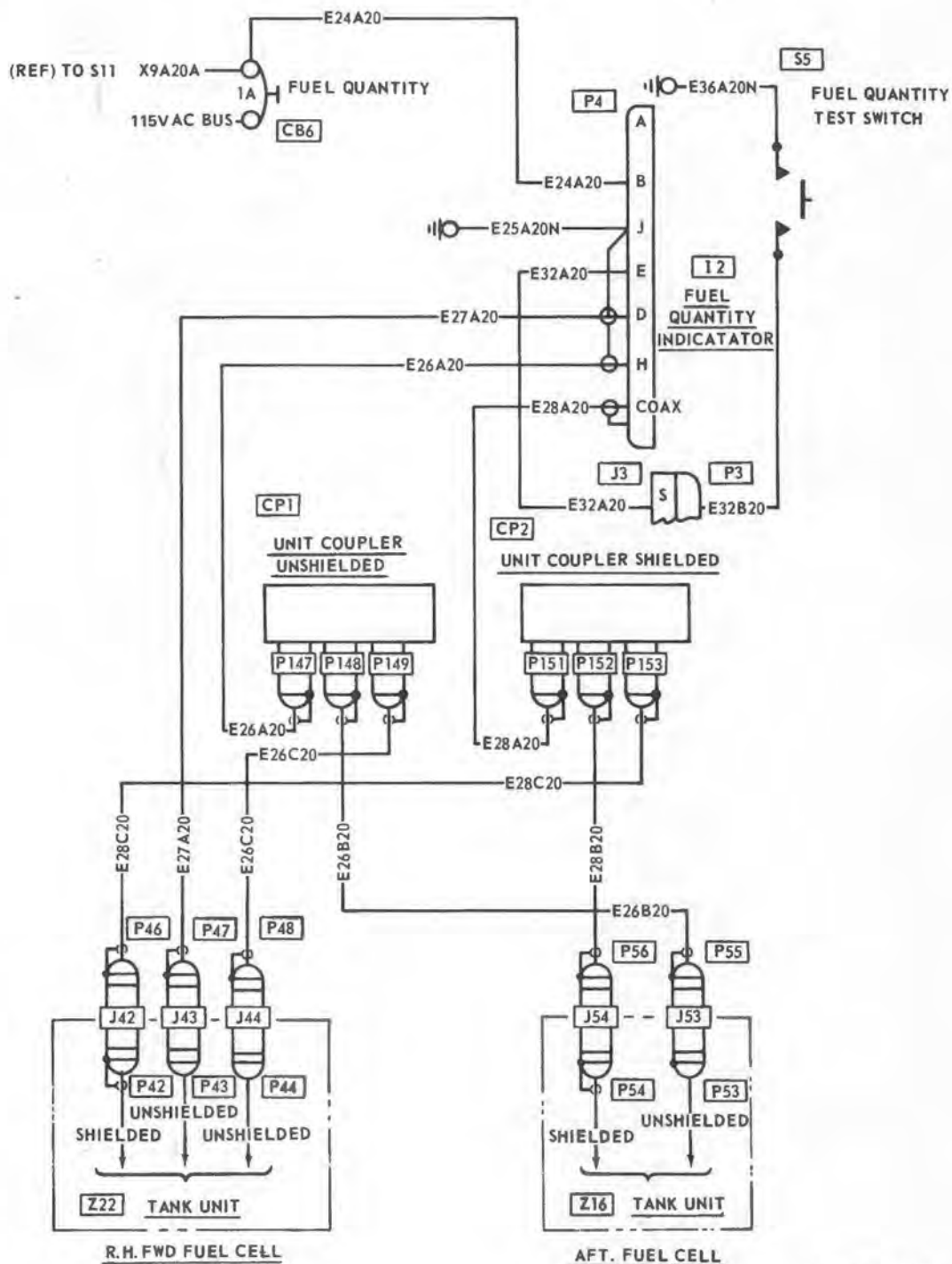


Figure 13-15. Exhaust temperature indicator system



205475-132A
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Figure 13-16. Fuel quantity system

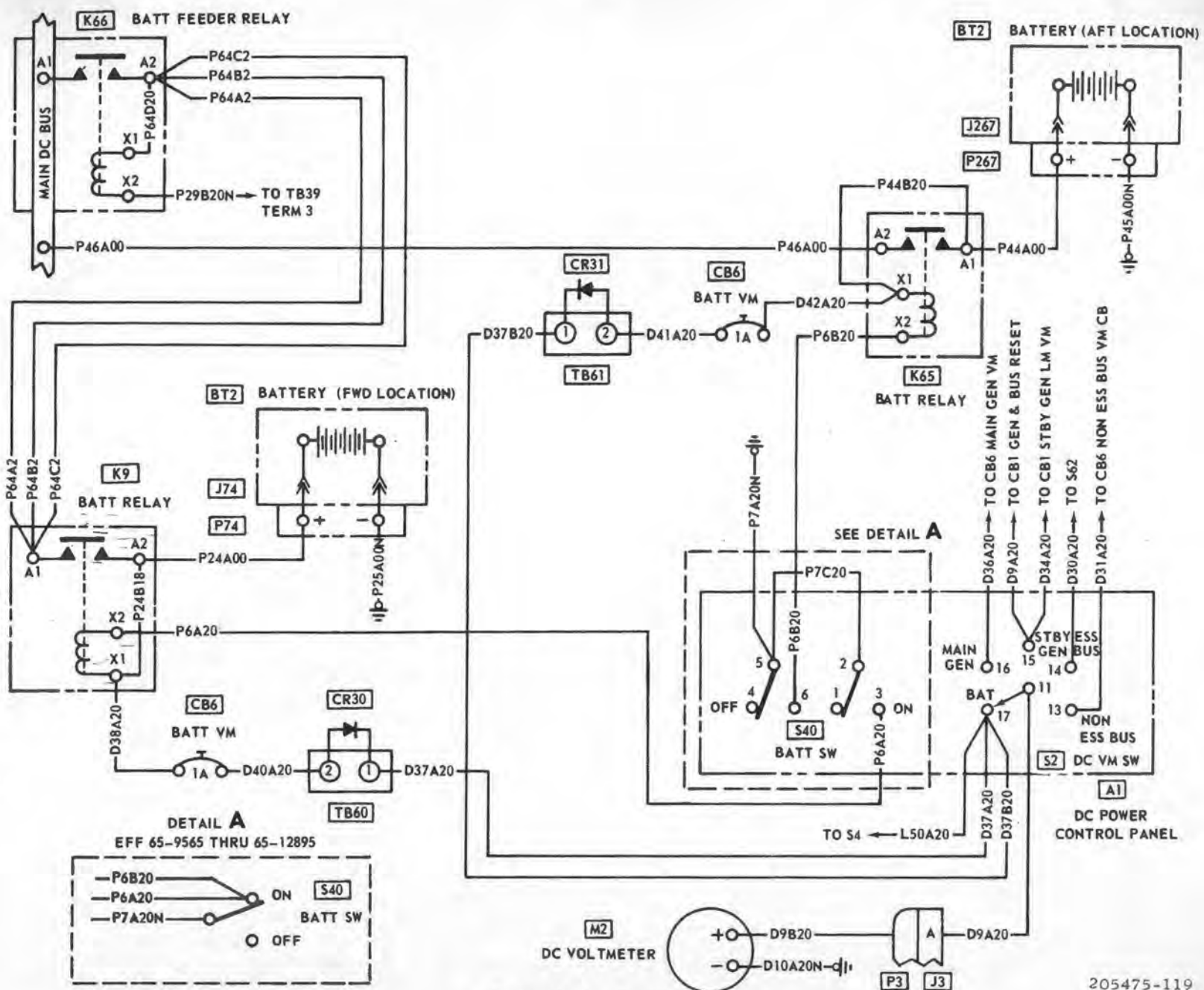


Figure 13-19. Battery system

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AV 054254

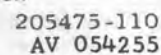
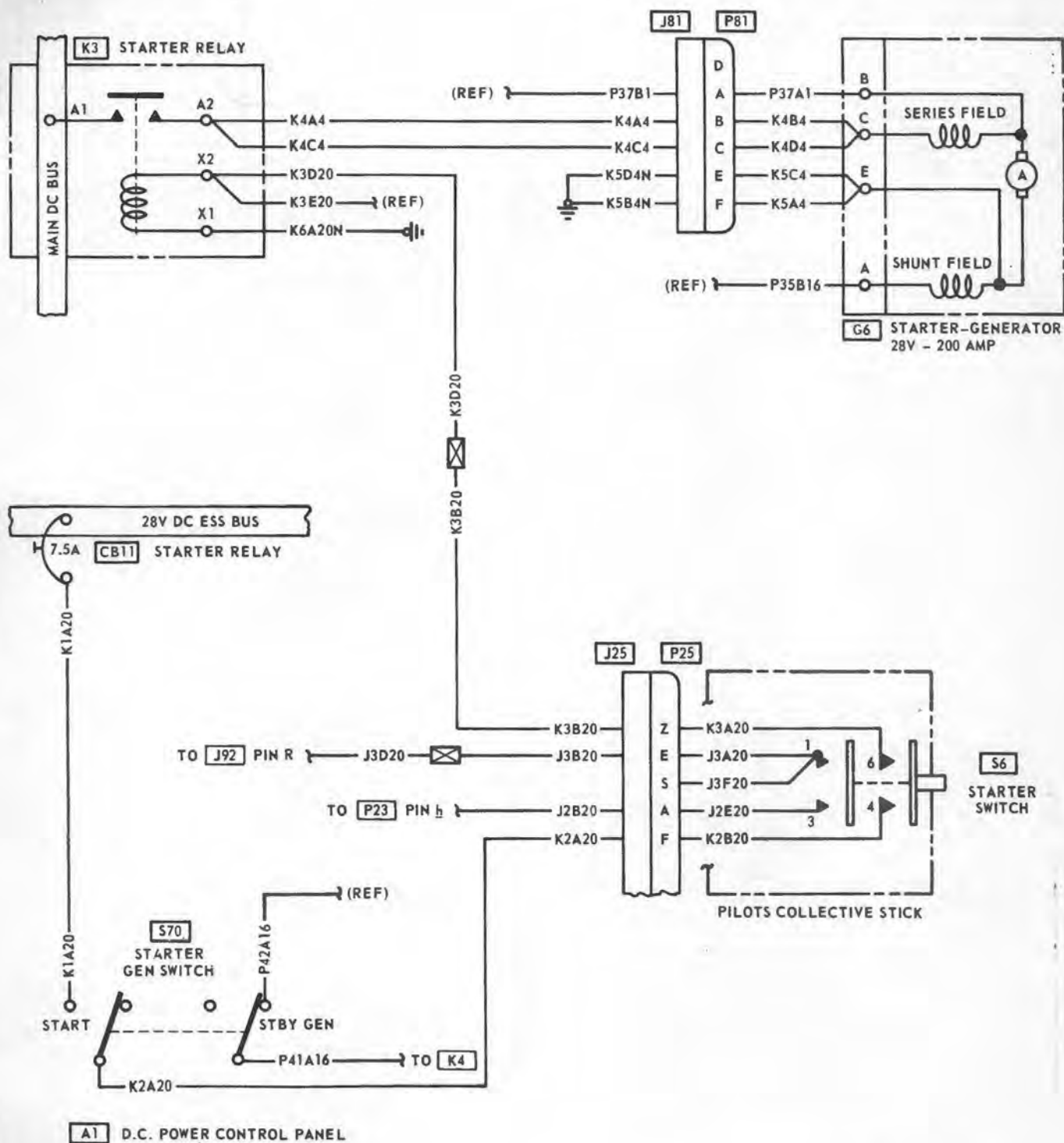
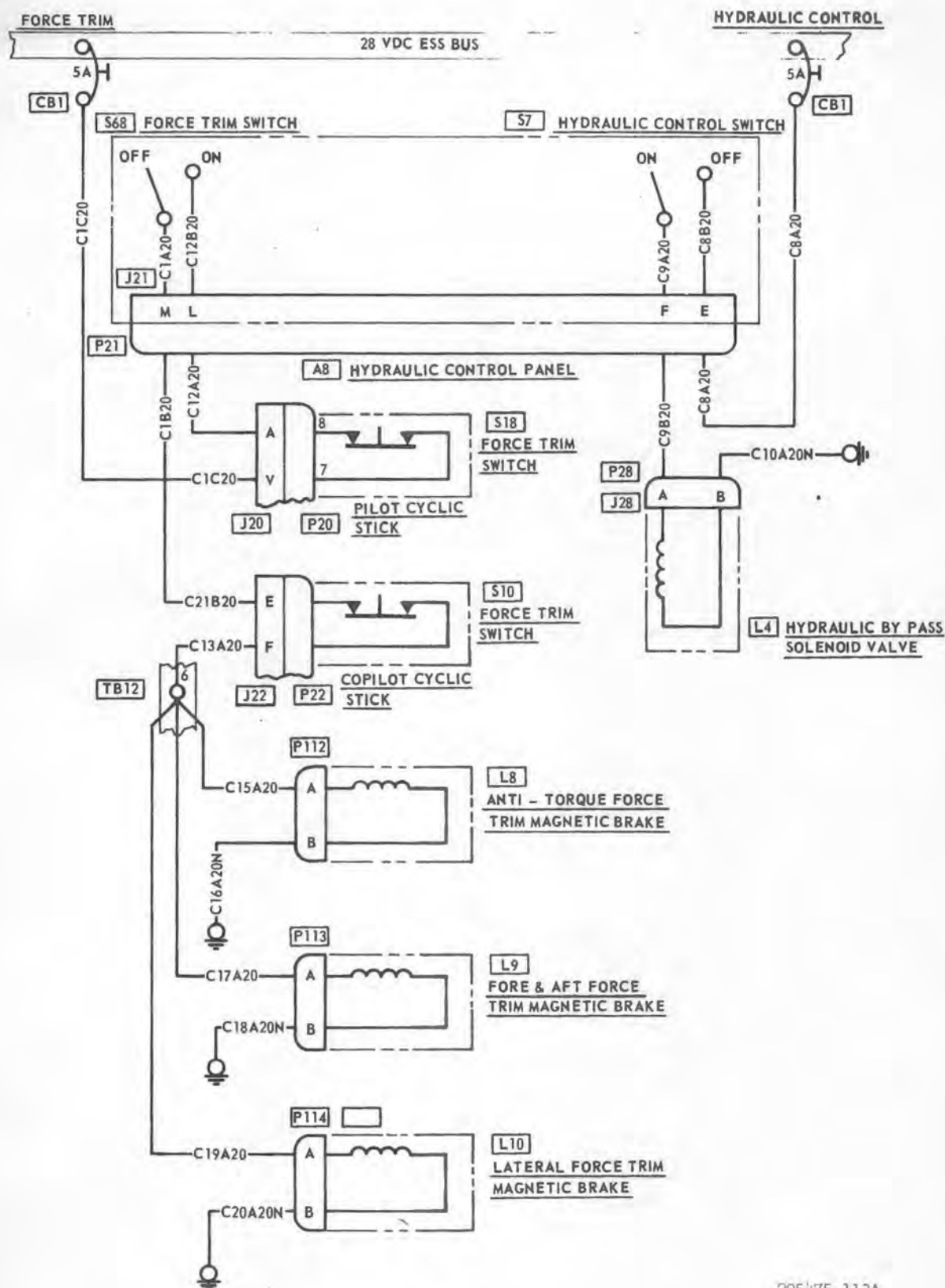


Figure 13-20. Starter system (effective 65-9565 through 67-19537) (Sheet 1 of 2)



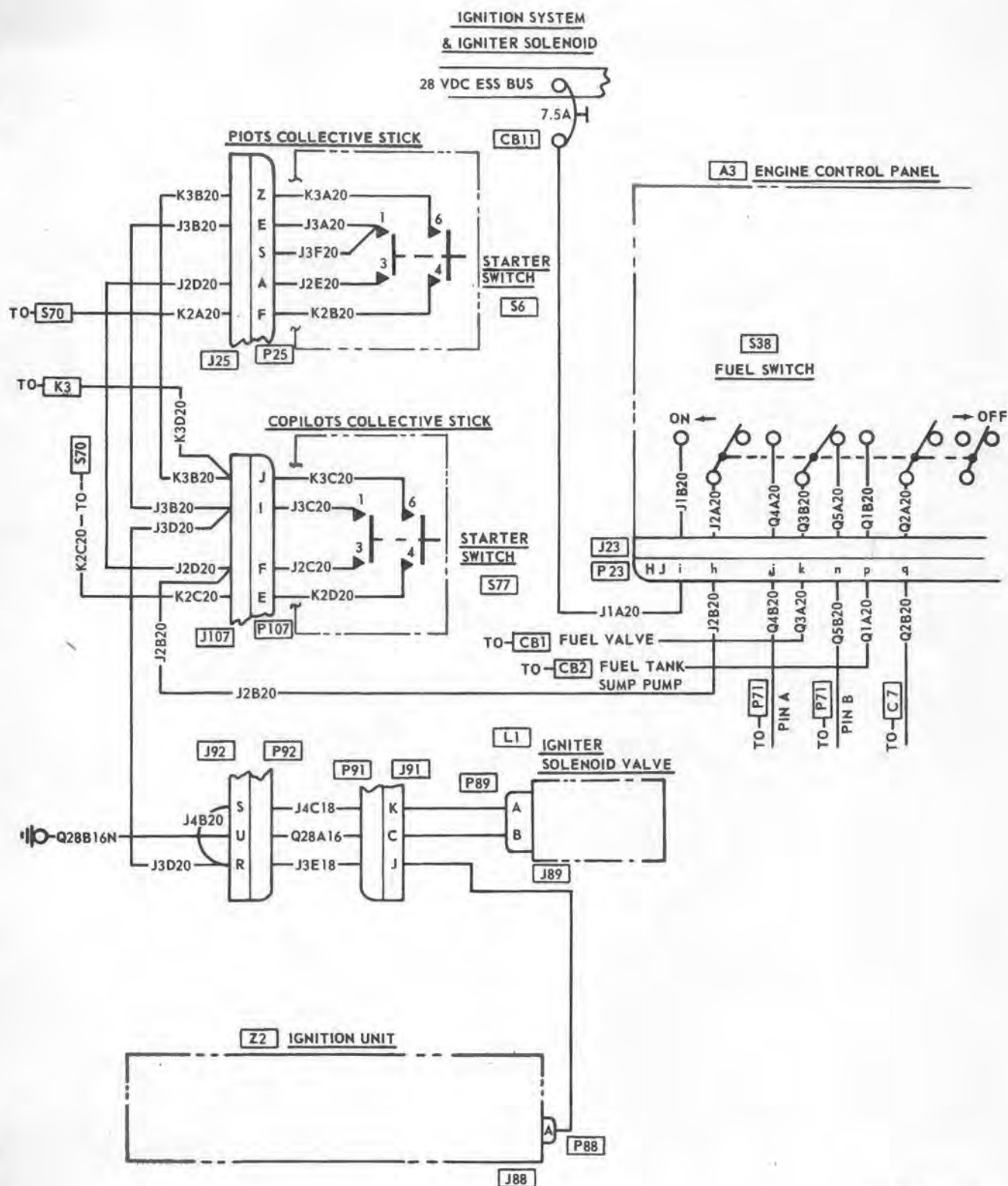
205475-111
AV 054256

Figure 13-20. Starter system (effective 68-15214 through 70-15932) (Sheet 2 of 2)



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AV 054258

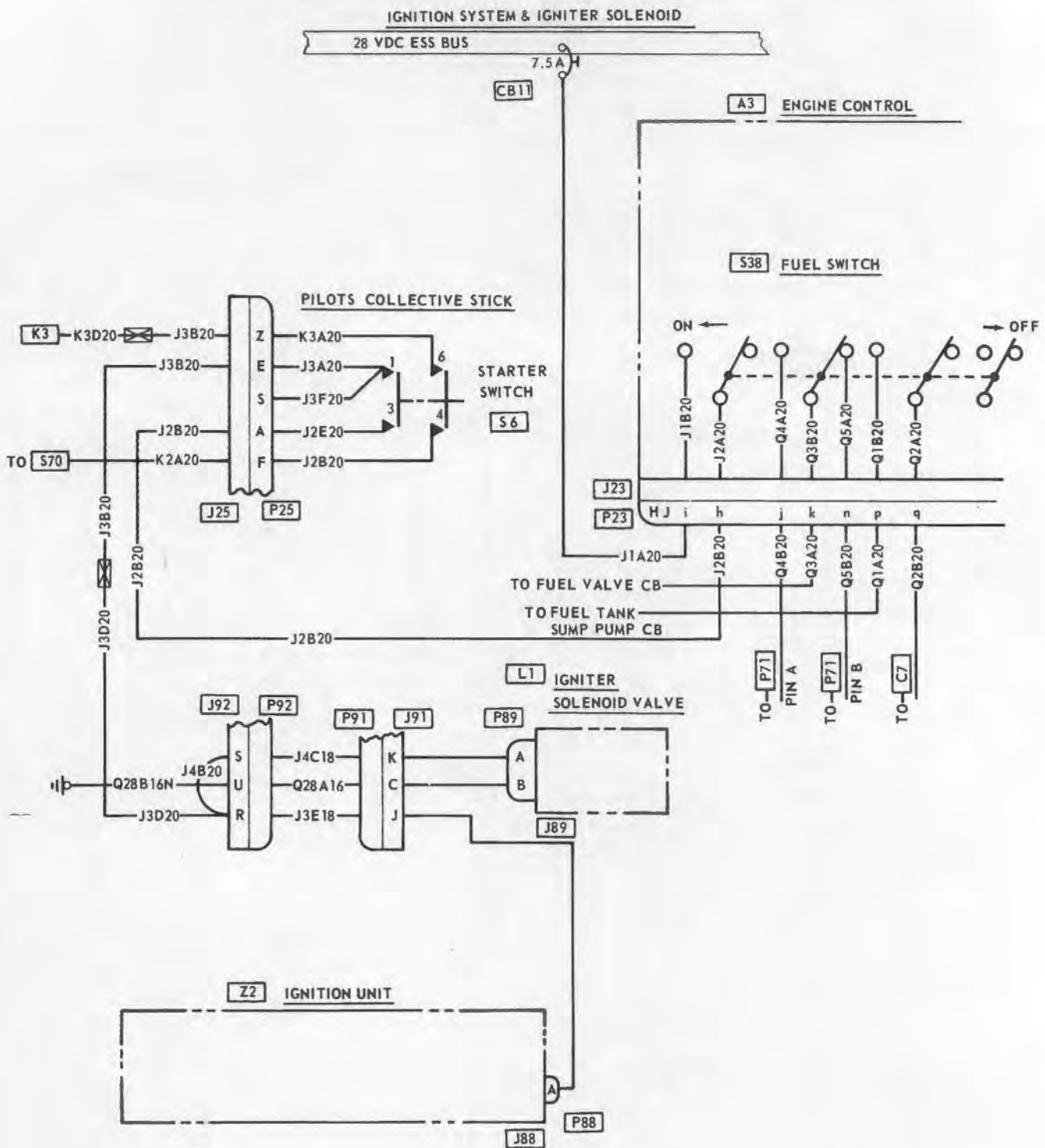
Figure 13-22. Force trim and hydraulic control system



EFF 66-16034 THRU 67-19537

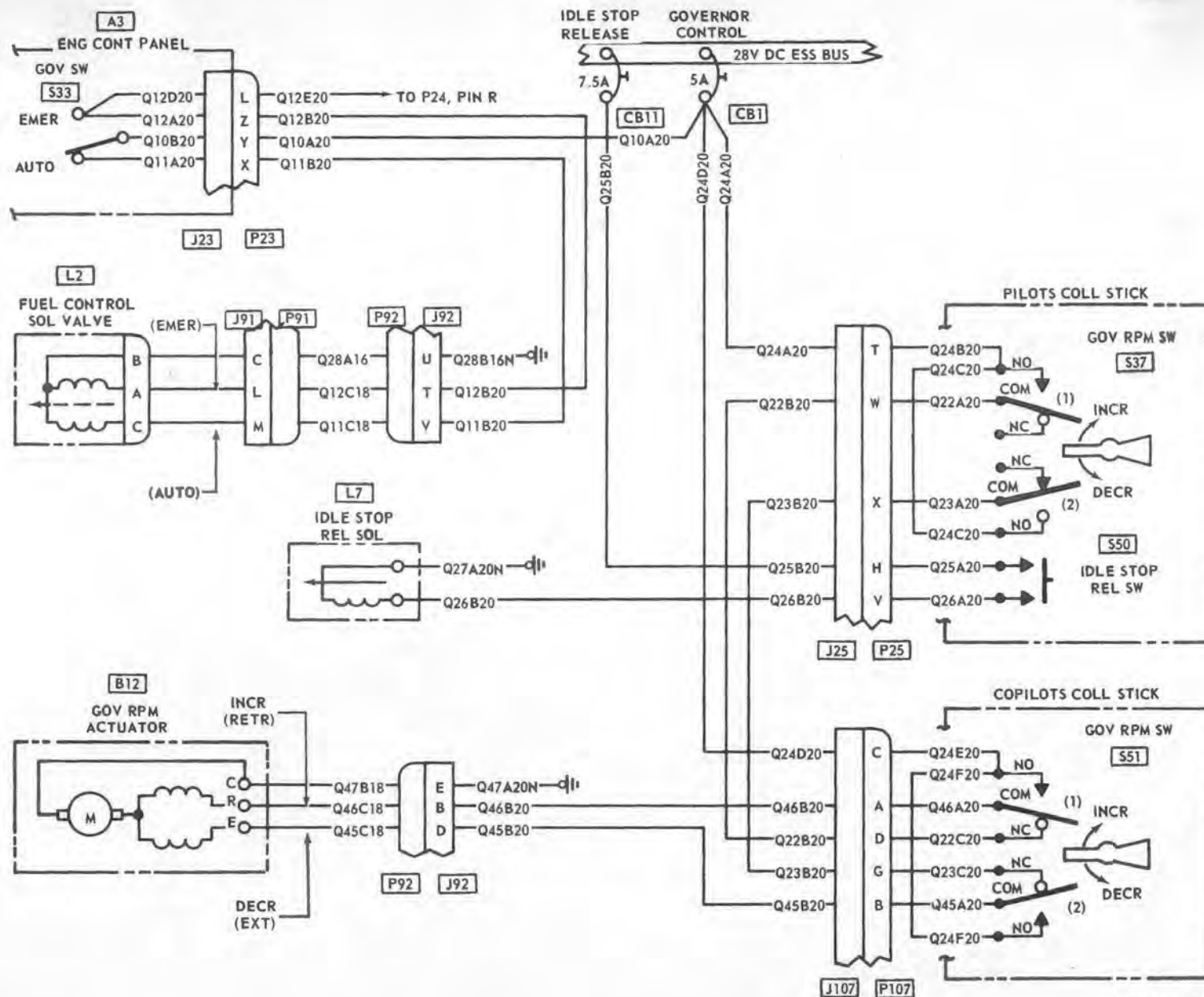
205475-143
AV 054260

Figure 13-23. Ignition system (effective 66-16034 through 67-19537) (Sheet 2 of 3)



EFF 68-15214 THRU 68-16628

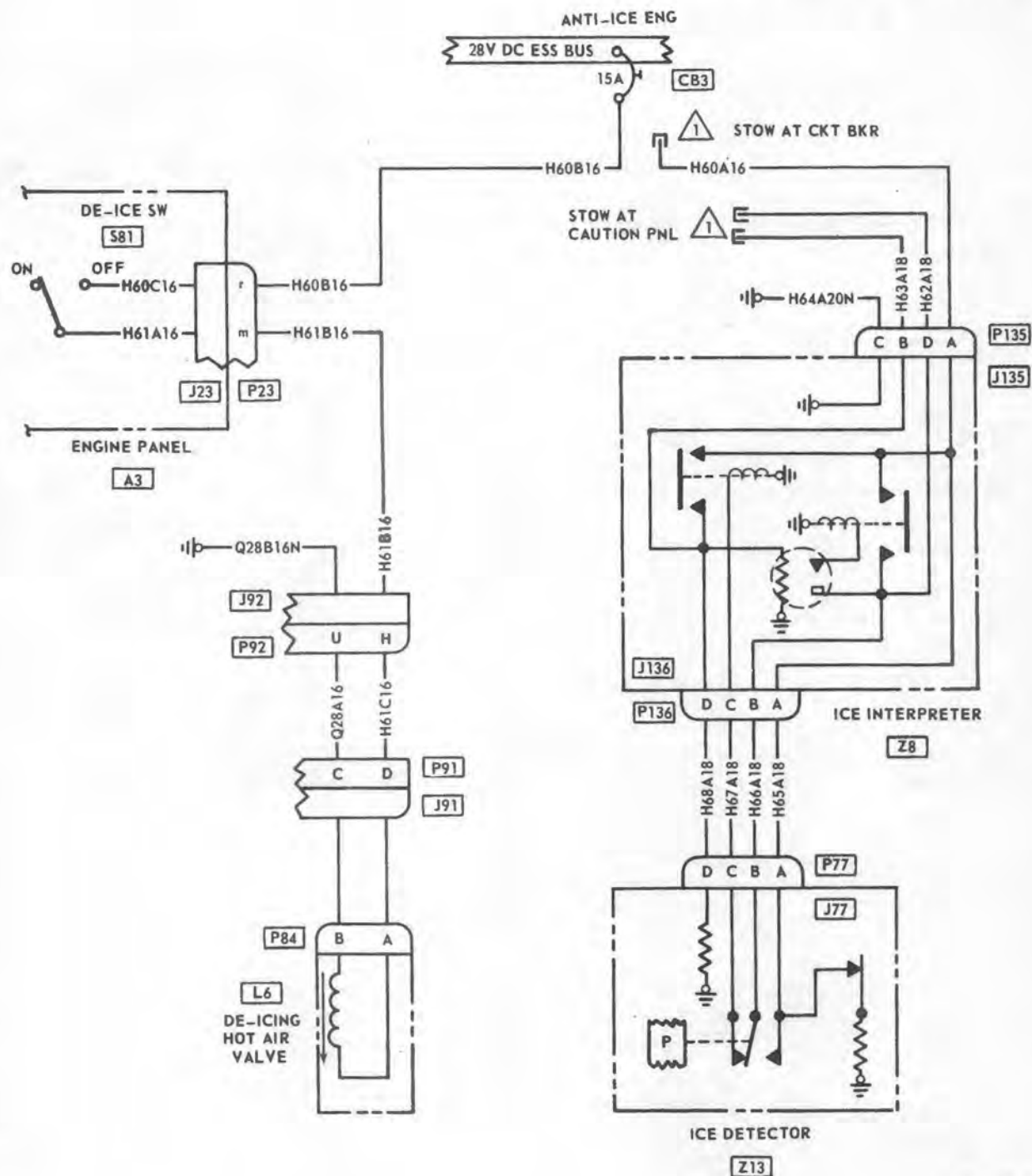
Figure 13-23. Ignition system (effective 68-15214 through 70-15932) (Sheet 3 of 3)



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AV 054263

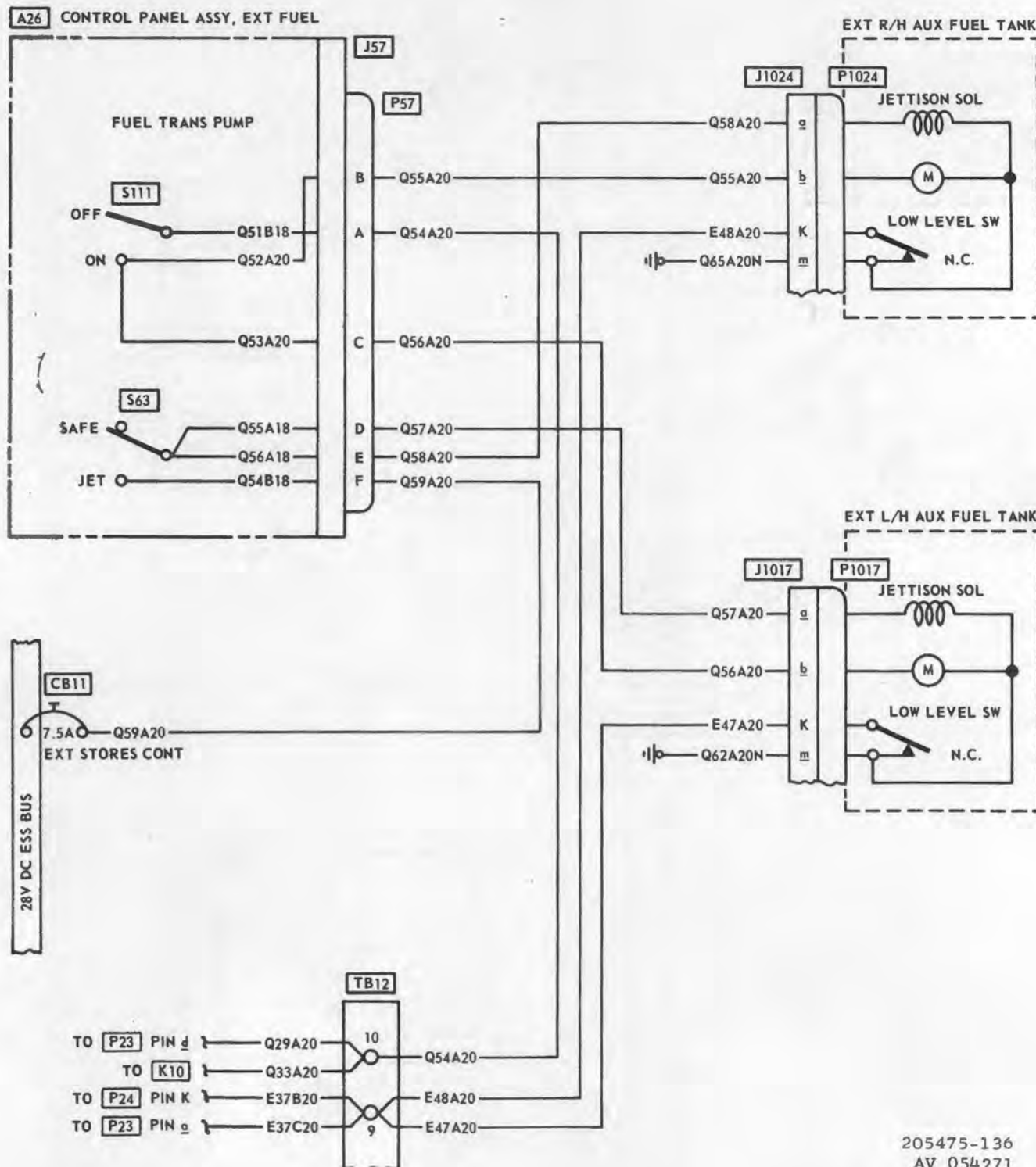
Figure 13-25. Governor control and idle stop systems

⚠ EFF 65-9565 THRU 66-16867 - WIRE H60A16 CONNECTED TO CIRCUIT BREAKER, WIRE H62A18 CONNECTED TO PIN C, P24, WIRE H63A18 CONNECTED TO PIN B, P24



205475-123
AV 054270

Figure 13-30. De-ice and ice detector system



205475-136
AV 054271

Figure 13-31. External fuel system

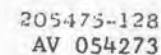


Figure 13-33. Landing and search lights system

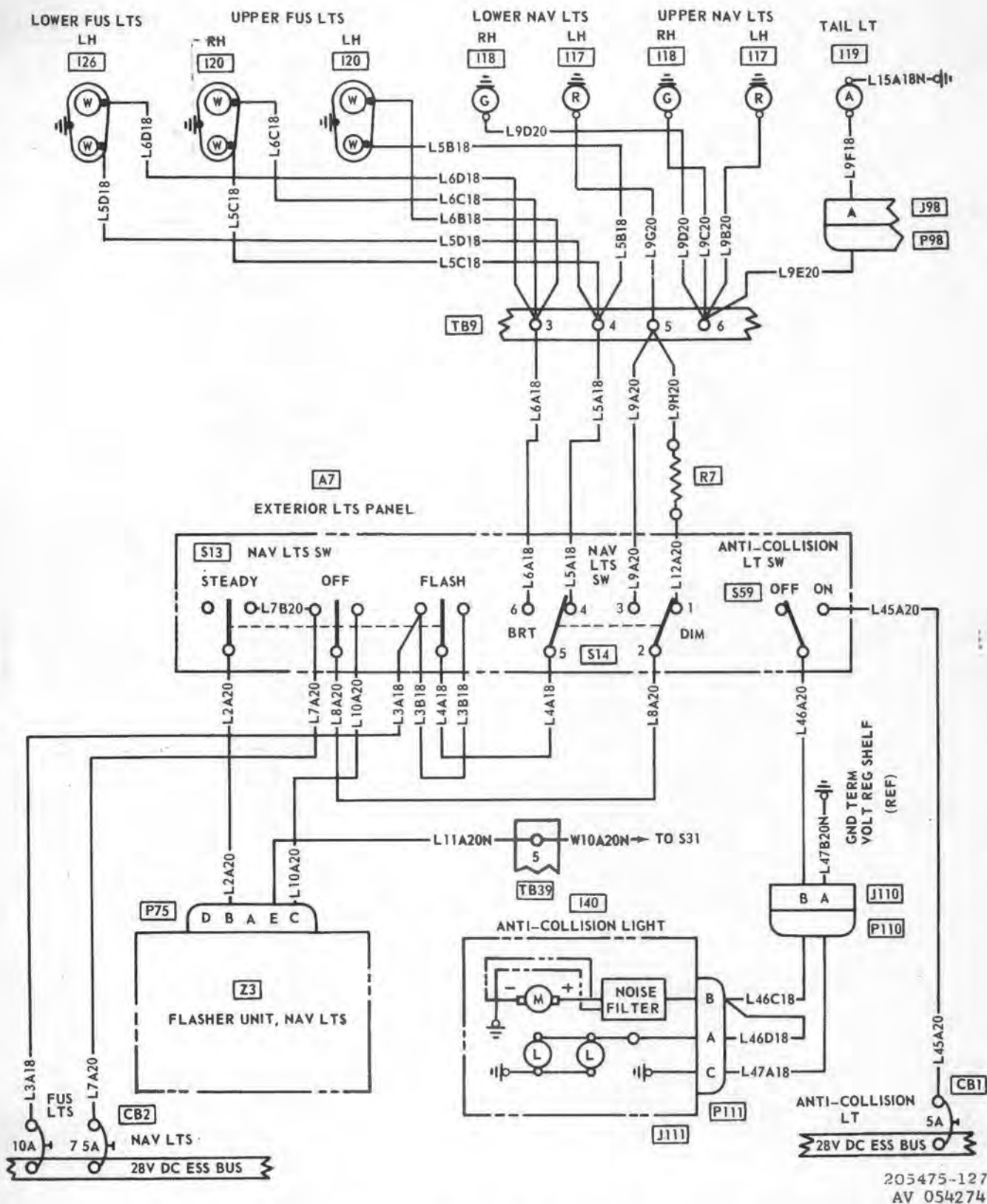
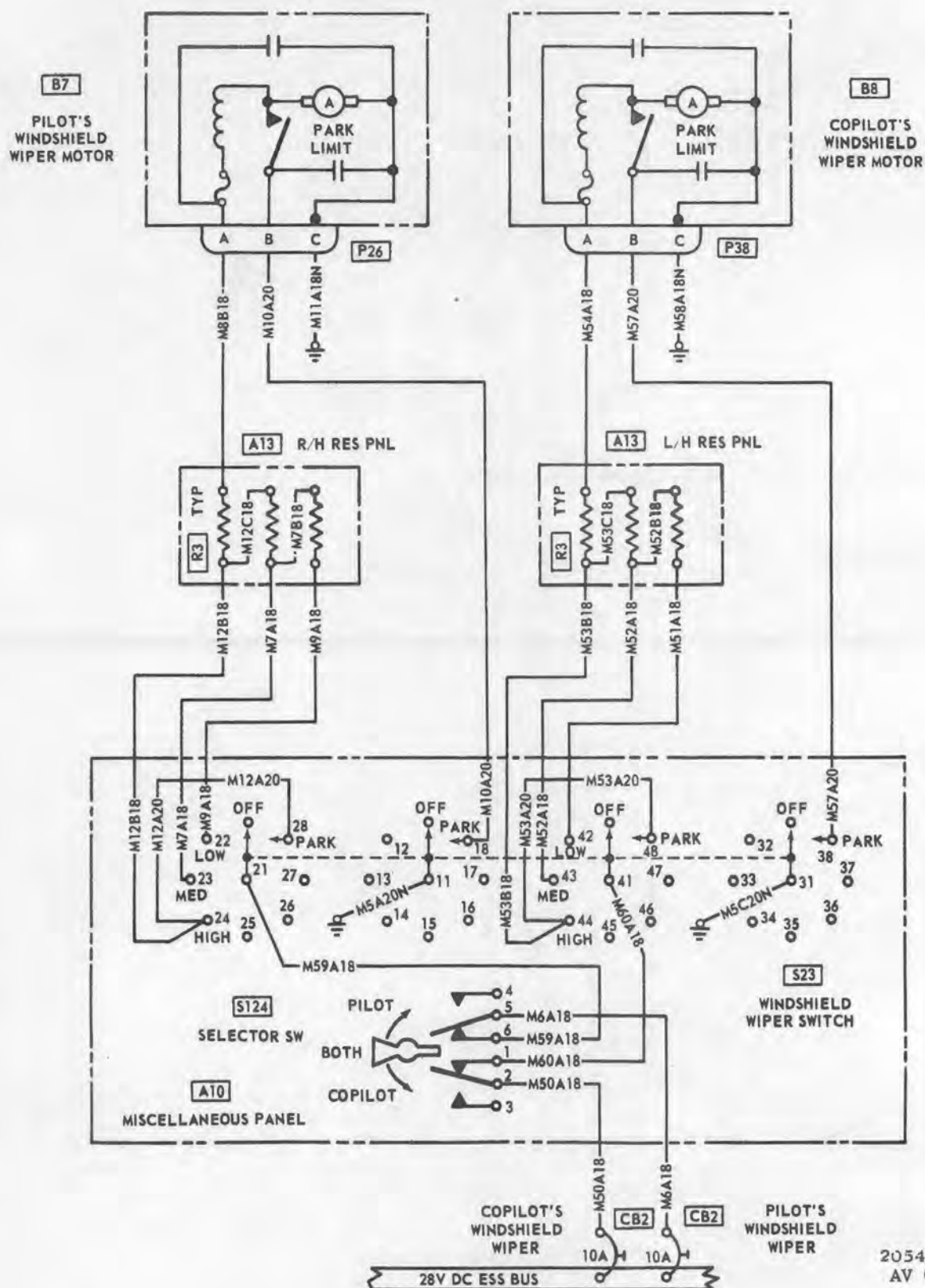


Figure 13-34. Navigation, fuselage and anti-collision lights system



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AV 054277

Figure 13-37. Windshield wiper system

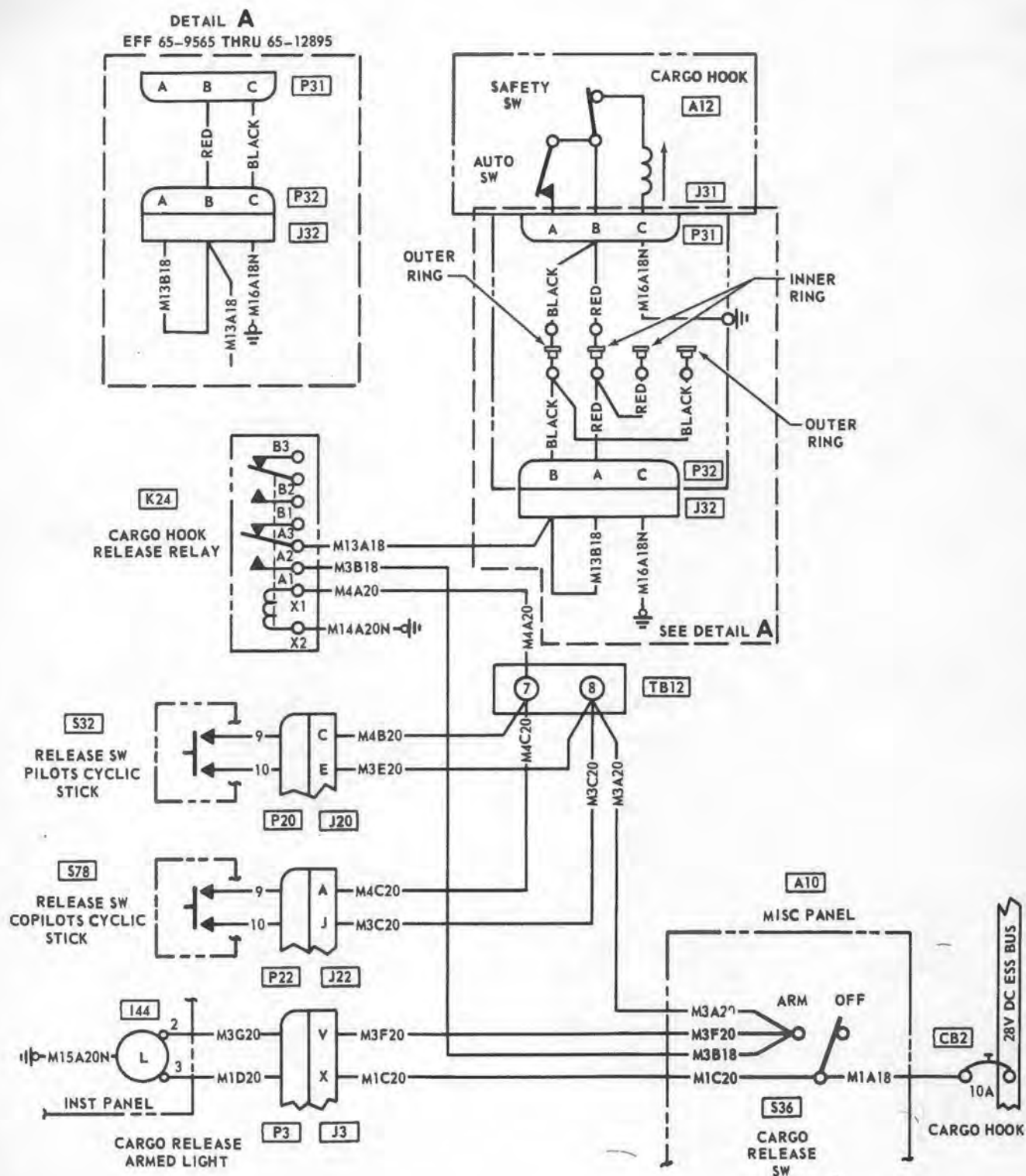
205475-120
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Figure 13-38. Cargo hook system

CHAPTER 14

AVIONICS, PHOTOGRAPHY AND ARMAMENT

Section I. INTRODUCTION

14-1. General.

Refer to Appendix A for appropriate organizational maintenance manuals covering avionics and photography

systems for Army Model UH-1D/H aircraft. This chapter contains organizational maintenance instructions for the armament system. Organizational maintenance of the armament subsystem will be performed by Aircraft Armament Repair men, MOS 45J.

Section II. ARMAMENT SYSTEM

14-2. Armament — M6 7.62 MM M60C. (Figure 14-1.)

The Quad 7.62 MM, M60C, machine gun is designed for use on the Model UH-1D/H helicopter. It consists, basically of four M6 7.62 MM machine guns, two machine gun mounts equipped with turret adapters (3) which are attached to each of the forward external stores support assemblies (4). Also included are the ammunition feed group, the electrical-hydraulic power source, for control and operation of the machine guns, and the sighting station.

NOTE

This installation is applicable to UH-1D/H serial numbers 63-12956 thru 65-12895.

14-3. Machine Gun — M6 7.62 MM M60C. (See figure 14-1.)

The M6 7.62 MM machine gun is a basic M60 machine gun modified for use with the helicopter. Four guns are available in this installation. Normally, two guns are mounted on each side of the helicopter, one above the other. The gun cover assemblies on the left-hand guns face inboard, towards the helicopter, while those on the right-hand guns face outboard. Ammunition is fed to the guns from above and cartridge cases are ejected downward. The guns are attached to the mount assemblies in such a manner that they can be quickly and readily removed and replaced. All four machine guns are interchangeable and may be installed on either mount assembly. (Refer to TM 9-1005-243-12.)

a. Removal — M6 7.62 MM M60C Machine Gun. (See figure 14-1.)

(1) Before removing the machine guns from the helicopter perform the following:

WARNING

In order to guard against danger in case of accidental firing, all personnel should remain clear of the firing pattern. "NO-STEP" markings on armament should be observed at all times.

(a) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(b) Set the "OFF-SAFE-ARMED" switch to the "OFF" position.

(c) Make sure that control panel indicator lights are out.

(d) Make sure that all machine guns are in "out-of-battery" position.

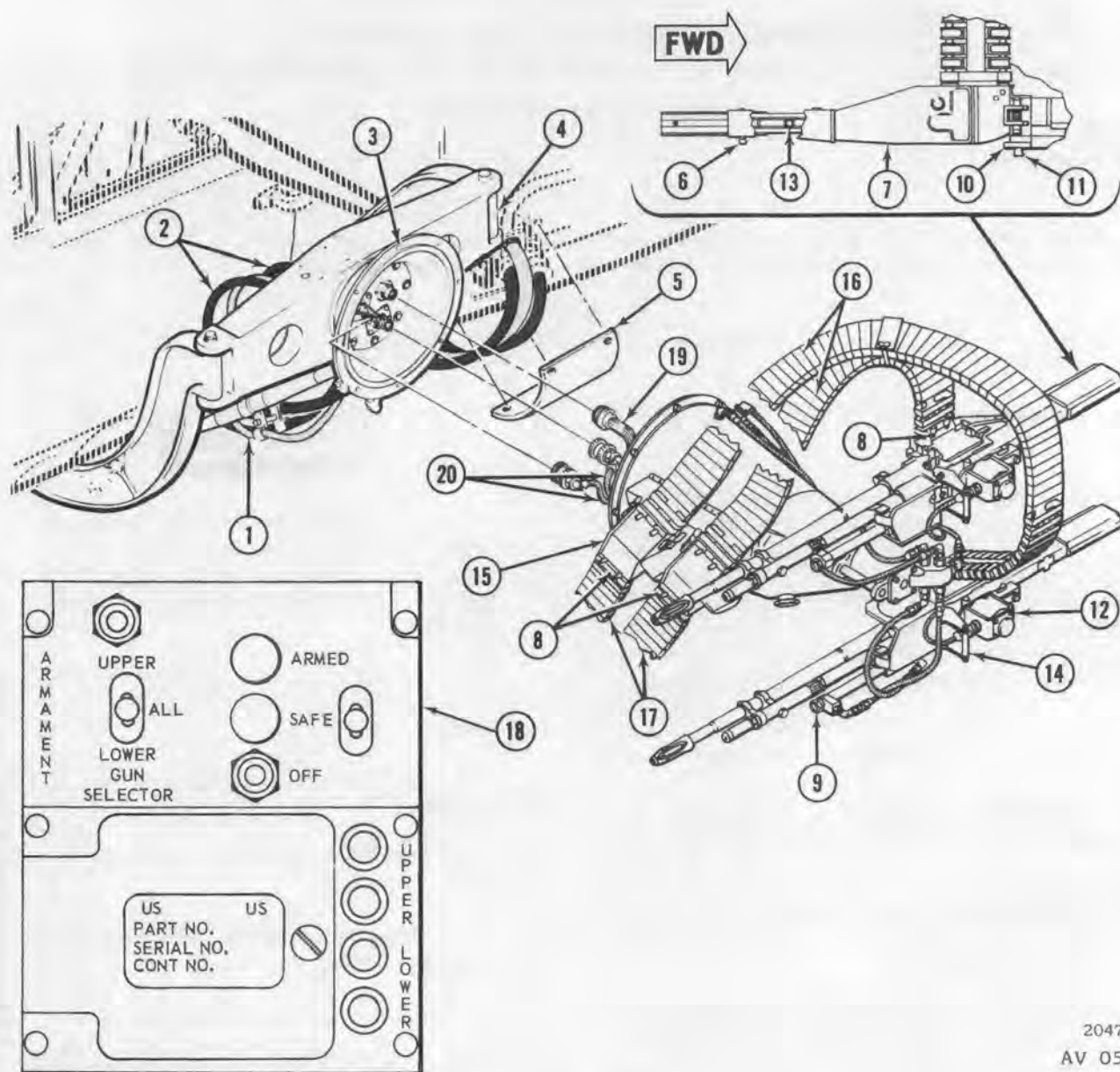
(2) Unload the machine guns as follows:

(a) Rotate the gun cover latch lever (6, figure 14-1) counterclockwise and open the gun cover (7).

(b) Depress spring loaded ammunition chute latches (8) on the machine gun ammunition receiver and disconnect ammunition chute from gun. Carefully fold loose end of ammunition chute over gun mount assembly.

(3) Close the gun cover (7) and make sure that cover latch lever (6) locks the cover in place.

(4) Use a 3/16 inch off-set drift pin, or other suitable tool, to depress plunger in aft end of charger cylinder assembly (9) piston. This action unlocks a detent inside the charger cylinder assembly, which relieves hydraulic pressure and permits disengagement of spring



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- | | |
|--|--|
| 1. Electrical Cable - Helicopter to Turret Adapter | 11. Cocking Handle |
| 2. Hydraulic Lines - Helicopter to Turret Adapter | 12. Firing Solenoid Assembly |
| 3. Turret Adapter | 13. Gun Bolt |
| 4. External Stores Support | 14. Gun Latch |
| 5. Cover Plate | 15. Cartridge Drive |
| 6. Gun Cover Latch Lever | 16. Ammunition Chute - Cartridge Drive to Machine Gun |
| 7. Gun Cover | 17. Ammunition Chute - Ammunition Box to Cartridge Drive |
| 8. Ammunition Chute Latches | 18. Control Panel |
| 9. Charger Cylinder Assembly | 19. Electrical Cable - Machine Gun to Turret Adapter |
| 10. Finger Latch | 20. Hydraulic Lines - Machine Gun to Turret Adapter |

Figure 14-1. Machine gun adapter kit and controls installation

loaded finger latch (10) attaching charger cylinder assembly (9) to machine gun cocking handle (11) bolt. Disengage finger latch (10) and rotate latch and charger cylinder assembly piston to clear cocking handle bolt.

(5) Press up on underside of firing solenoid (12) to trip sear. This action permits the gun bolt (13), cocking handle (11) and charger cylinder assembly (9) piston to move forward to "battery" position and remain in that position.

(6) Disconnect electrical connector from mating receptacle on firing solenoid assembly (12).

(7) Depress spring loaded safety latches on gun latch (14) and unlock gun latch. Disengage machine gun from gun latch pawls. Remove machine gun from helicopter.

NOTE

Removal of all four machine guns is the same.

NOTE

Refer to TM 9-1005-243-12 for cleaning, lubrication and detail maintenance procedures of the M6 7.62 MM, M60C, machine guns.

b. Installation — M6 7.62 MM, M60C Machine Gun.

(1) Before installing the machine guns on the helicopter perform the following:

(a) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(b) Set the "OFF-SAFE-ARMED" switch to the "OFF" position.

(2) Depress spring loaded safety latches on gun latch (14, figure 14-1) and unlock gun latch. Position and engage machine guns in gun latch pawls. Close and lock spring loaded safety latches.

(3) Connect electrical connector to mating receptacle on firing solenoid assembly (12).

(4) Position spring loaded finger latch (10) aft of cocking handle (11) bolt. Engage finger latch with bolt.

(5) Refer to paragraph 14-5 b. and TB 55-1520-208-10/3 for loading and arming machine gun.

NOTE

Installation of all four machine guns is the same.

14-4. Mount And Adapter — M6 7.62 MM, M60C Machine Gun.

The two gun mount assemblies (see figure 14-1) each support two 7.62 MM machine guns. They also contain necessary equipment for movement of machine guns and ammunition. Each mount is capable of moving the two guns through a vertical arc of plus nine degrees and minus 66 degrees from center line position. They can also move both guns horizontally from 12 degrees inboard to 70 degrees outboard. All four guns move simultaneously, but when either mount moves the attached gun to the 12 degree inboard position a solenoid switch is activated and movement and firing of those guns is automatically stopped. Movement of the guns is controlled by means of hydraulic power. Each gun mount is equipped with an electrically operated cartridge drive which moves the ammunition from the ammunition boxes to the machine guns. The inboard end of each gun mount is attached to a turret adapter (see figure 14-1), which, in turn, is attached to an external stores support assembly. A hinge at the junction of the mount and adapter permits the mount to be swung to one side for easy access to hydraulic and electrical connectors.

NOTE

Left-hand and right-hand gun mounts and turret adapters are not interchangeable.

a. Removal — M6 7.62 MM, M60C Machine Gun Mount and Adapter.

(1) Remove 7.62 MM M60C machine guns. (Refer to paragraph 14-3 a.)

(2) Depress spring loaded ammunition chute latches (8, figure 14-1) at top and bottom of cartridge drives (15) and release ammunition chutes from cartridge drives. Remove cartridge drive to machine gun ammunition chutes (16) and place on helicopter aft cabin floor or other suitable location. Fold ammunition box to cartridge drive ammunition chutes (17) back onto aft cabin floor.

(3) Remove eight nuts, washers, and bolts attaching gun mount to turret adapter (3). Carefully swing gun mount open.

NOTE

Use care not to damage hydraulic lines (20) at quick disconnects on turret adapter (3) and immediately cap or cover male and female connectors to prevent entrance of foreign material. Disconnect electrical cable from receptacle on turret adapter (3) and cap or cover electrical connector and receptacle to prevent entrance of foreign material.

CAUTION

Each gun mount weighs approximately 60 pounds. Use two men to remove each mount as outlined in the following step (4).

(4) Position one man on each side of the gun mount and carefully raise the mount from the hinge pins on the turret adapter (3). Move gun mount to location where it will not be damaged.

(5) Disconnect hydraulic lines (2) at helicopter fuselage quick disconnects. Cap or cover lines and connectors to prevent entrance of foreign material.

(6) Back off check nuts connecting hydraulic lines (2) to turret adapter (3) quick disconnects. Disconnect hydraulic lines from quick disconnects. Remove, and cap or cover hydraulic lines and connectors to prevent entrance of foreign material.

(7) Disconnect electrical cable (1) from receptacle to prevent entrance of foreign material.

(8) Remove eight nuts, washers and bolts attaching turret adapter (3) to external stores support assembly (4) and remove turret adapter.

NOTE

Turret adapter (3) may be inspected by Fluorescent Penetrant method, Specification MIL-I-6866. Before proceeding with such inspection complete the following steps (9) and (10).

(9) Back off check nut attaching electrical receptacle to adapter plate and remove receptacle and attached cable (1).

(10) Remove four nuts, washers and bolts attaching each hydraulic mounting flange to turret adapter and remove mounting flanges. Back off quick disconnect check nuts and remove hydraulic quick disconnects from turret adapter.

(11) Refer to TM 9-1005-243-12 for further information.

b. Installation — M6 7.62 MM, M60C Machine Gun Mount and Adapter.

NOTE

If turret adapter (3, figure 14-1) has been completely disassembled, complete steps (1) and (2).

(1) Position hydraulic quick disconnect in turret adapter (3) and install check nuts. Position hydraulic mounting flange over each check nut and install four attaching bolts, washers and nuts.

(2) Thread electrical cable (1) through turret adapter (3) and position electrical receptacle. Install attaching check nut.

(3) Position turret adapter (3) to external stores support assembly (4) and install eight attaching bolts, washers and nuts.

(4) Uncap or uncover electrical cable (1) connector and receptacle at helicopter fuselage skin. Connect electrical cable to receptacle.

(5) Uncap or uncover hydraulic lines (20), turret adapter (3) quick disconnects and helicopter fuselage quick disconnects. Connect lines (20) to quick disconnects.

CAUTION

Each gun mount weighs approximately 60 pounds. Use two men to install each mount as outlined in the following step (6).

(6) Position one man on each side of the gun mount and carefully engage the gun mount half hinge on the turret adapter (3) hinge pins.

(7) Uncap or uncover electrical cable connector and turret adapter (3) receptacle and connect electrical cable (19) to receptacle.

(8) Uncap or uncover hydraulic lines and turret adapter (3) quick disconnects and connect hydraulic lines (20) to quick disconnects.

CAUTION

Use extreme care when closing the gun mount assembly to avoid pinching or kinking the hydraulic hoses and to assure that they do not interfere with servo valves in the gun mount assembly. Make certain that the small two-pin plug is properly mated with the receptacle on the charger control valve. DO NOT force gun mount assembly into position.

(9) Carefully swing gun mount to the closed position and install eight bolts, washers and nuts attaching the gun mount to the turret adapter (3).

(10) Position loose end of ammunition box to cartridge drive ammunition chutes (16) to bottom of cartridge drives (15). Depress spring loaded ammunition chute latches (8) and connect ammunition chutes (17) to cartridge drives (15).

(11) Position cartridge drive to machine gun ammunition chutes (16) to top of cartridge drives (15). Depress spring loaded ammunition chute latches (8) and connect ammunition chutes (16) to cartridge drives (15).

(12) Install M6 7.62 MM M60C machine guns. (Refer to paragraph 14-3 b.)

(13) Refer to TB 55-1520-208-10/3 and TM 9-1005-243-12 for further information.

14-5. Ammunition Feed Group — M6 7.62 MM, M60C Machine Gun.

The ammunition feed group (see figure 14-2) consists, basically, of eight ammunition chutes, twelve ammunition boxes and an ammunition box tray equipped with three hold-down strap assemblies. Four ammunition chutes, two on each side of the helicopter, connect the top of the cartridge drive assemblies to the machine guns. A comparable installation connects the ammunition boxes to the bottom of the cartridge drive assemblies. The chutes connecting the ammunition boxes to the bottom of the cartridge drive assemblies pass through an opening in the cargo floor and the fuselage. The ammunition boxes are mounted on the ammunition box tray, located in the helicopter cargo area, and are held firmly in place by three hold-down strap assemblies. The sheet metal ammunition boxes are arranged in three groups of four boxes each. Each box is capable of holding approximately 450 rounds of ammunition, with a total capability of 5434 rounds, weighing 353.21 pounds. The ammunition box tray is attached to the helicopter cargo area floor by means of 16 screws. The three hold-down strap assemblies secure the ammunition boxes and tray to footman's loops in the cargo area floor.

a. Removal — Ammunition Feed Group.

(1) Accomplish paragraph 14-3 a. steps (1) and (2).

(2) Depress the spring loaded ammunition chute latches (8, figure 14-1) which connect the chutes (16) to the top of the cartridge drives (15), and disengage chutes from cartridge drives.

NOTE

Ammunition chute clamps may be removed from chutes before storage.

(3) Depress the spring loaded ammunition chute latches (8) which connect the chutes (17) to the bottom of

the cartridge drives (15) and the ammunition boxes. Withdraw chutes through opening in the cargo floor and fuselage.

NOTE

Ammunition chute clamps may be removed from chutes before storage.

NOTE

Removal of the right and left-hand ammunition chutes is the same.

(4) Release three ammunition box hold-down strap assemblies (3, figure 14-2) at lower, forward side of ammunition box tray (5). Remove strap assemblies (3) and ammunition box clamps (1).

(5) Remove ammunition boxes from helicopter.

(6) Remove 16 screws attaching ammunition box tray (5) to cargo area floor and remove tray from helicopter.

b. Installation — Ammunition Feed Group.

(1) Position ammunition box tray (5, figure 14-2) in helicopter and install 16 attaching screws.

NOTE

The two existing screws (forward and aft of the ammunition tray) which comprise the second group inboard from the left-hand side of the helicopter, must be replaced.

(2) If ammunition boxes are not loaded, complete the following:

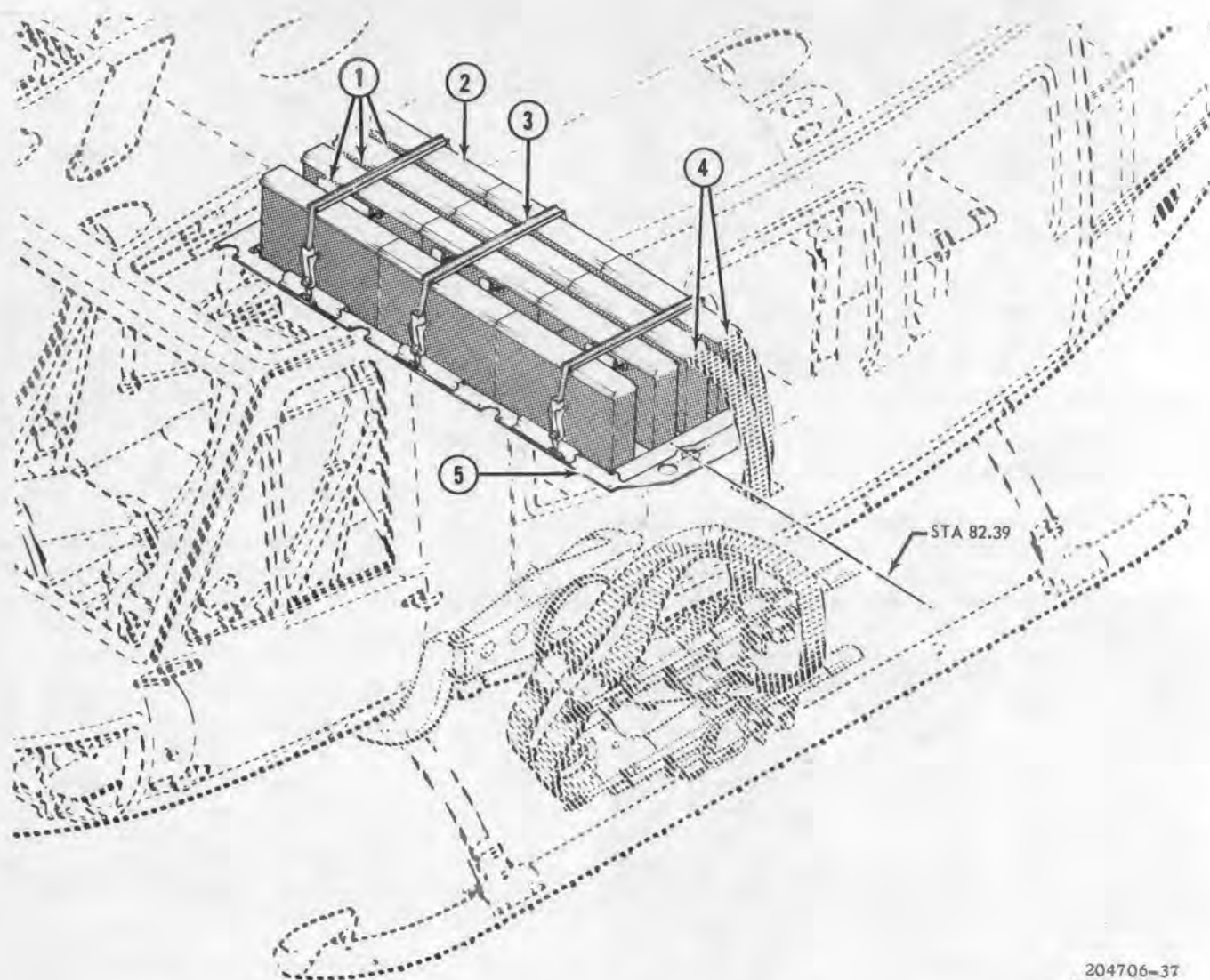
(a) Unsnap clamps (1) on top of ammunition box covers and remove covers.

(b) Fold the allowable maximum quantity of ammunition into boxes with links up, single-link end first. Projectiles must point to the left for feed to the left-hand machine guns and to the right for feed to the right-hand guns.

(c) Position the twelve ammunition boxes (2) on the ammunition box tray (5).

(d) Connect the ammunition belts together at adjoining boxes.

(e) Crimp over the trailing link hanging out of the end of the third box in each row with a pair of pliers. Inspect all ammunition to make sure that it is laying properly in all boxes.



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- | | |
|--------------------------|-----------------------------|
| 1. Ammunition Box Clamps | 4. Ammunition Chute Latches |
| 2. Ammunition Boxes | 5. Ammunition Box Tray |
| 3. Strap Assemblies | |

Figure 14-2. Ammunition feed group

(f) Install covers on all ammunition boxes.

(3) Position ammunition box clamps (1). Hook three hold-down strap assemblies to footman's loops along aft side of ammunition box tray (5) and position snugly over ammunition boxes. Position other ends of strap assemblies footman's loops forward of ammunition box tray (5). Tighten and secure hold-down strap assemblies (3).

(4) Position one end of ammunition chutes (16, figure 14-1) to top of cartridge drives (15). Depress ammunition chute latches (8) and connect chutes to drives.

Allow opposite ends of these two chutes to hang over the gun mount assembly.

(5) Position one end of ammunition chutes (17) to bottom of cartridge drives (15). Depress ammunition chute latches (8) and connect chutes to drives. At a short distance behind the gun mount assembly, grasp the two ammunition chutes and position the lower chute on top of the upper chute. Secure in this position with an ammunition chute clamp approximately midway between the gun mount assembly and the opening in the helicopter fuselage.

(6) Extend free ends of left-hand ammunition chutes through the opening in the helicopter fuselage and cargo area floor into the cargo area. Connect the lower machine gun chute to the end box of the second row of ammunition boxes and the upper machine gun chute to the end box of the first row of ammunition boxes. (Refer to figure 14-2.)

NOTE

Installation of left and right hand machine gun ammunition chutes is the same, except the right-hand lower gun chute is connected to the end box of the fourth row of ammunition boxes and the right-hand upper gun chute is connected to the end box of the third row of ammunition boxes.

14-6. Control Panel.

The control panel (18, figure 14-1) is located in the lower left-hand corner of the instrument pedestal between the pilot and copilot. It contains the "OFF-SAFE-ARMED" switch, a gun selector switch, an "ARMED" (red) safelight, a "SAFE" (green) light and necessary fuses, amplifiers and resistors.

a. Removal - Armament Control Panel Assembly.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(2) Release quick-disconnect fasteners attaching armament control panel assembly to instrument pedestal and carefully raise panel assembly from pedestal.

(3) Disconnect electrical connectors at back of panel and remove panel assembly. Cap or cover electrical connectors to prevent entrance of foreign material.

b. Installation - Armament Control Panel Assembly.

(1) Uncap or uncover electrical connectors and connect to back of control panel assembly.

(2) Position control panel assembly in instrument pedestal and engage quick-disconnect fasteners.

14-7. Sighting Station.

The sighting station is attached to the cabin roof above and forward of the copilot's station. The purpose of this equipment is remote alignment of machine guns.

a. Removal - Sighting Station.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and the external power is disconnected.

(2) Disconnect electrical connector from receptacle on sighting station mounting pad bracket and cap or cover connector and receptacle to prevent entrance of foreign material.

CAUTION

The sighting station is a delicate, precision instrument. Do not drop or jar at any time.

(3) Manually support the sighting station and remove the four bolts and washers attaching it to the mounting pad on the cabin roof.

(4) Carefully remove sighting station from the helicopter.

b. Installation - Sighting Station.

CAUTION

The sighting station is a delicate, precision instrument. Do not drop or jar at any time.

NOTE

Thick edge of the mounting plate must be forward toward the nose of the helicopter.

(1) Carefully position sighting station and align mounting holes. Install four attaching washers and bolts.

(2) Uncap or uncover electrical connector and receptacle and engage connector with receptacle.

14-8. Gun Firing Relay.

The gun firing relay is mounted on a bracket inside the instrument pedestal at approximate center. Two terminal blocks are provided for electrical wiring interconnection.

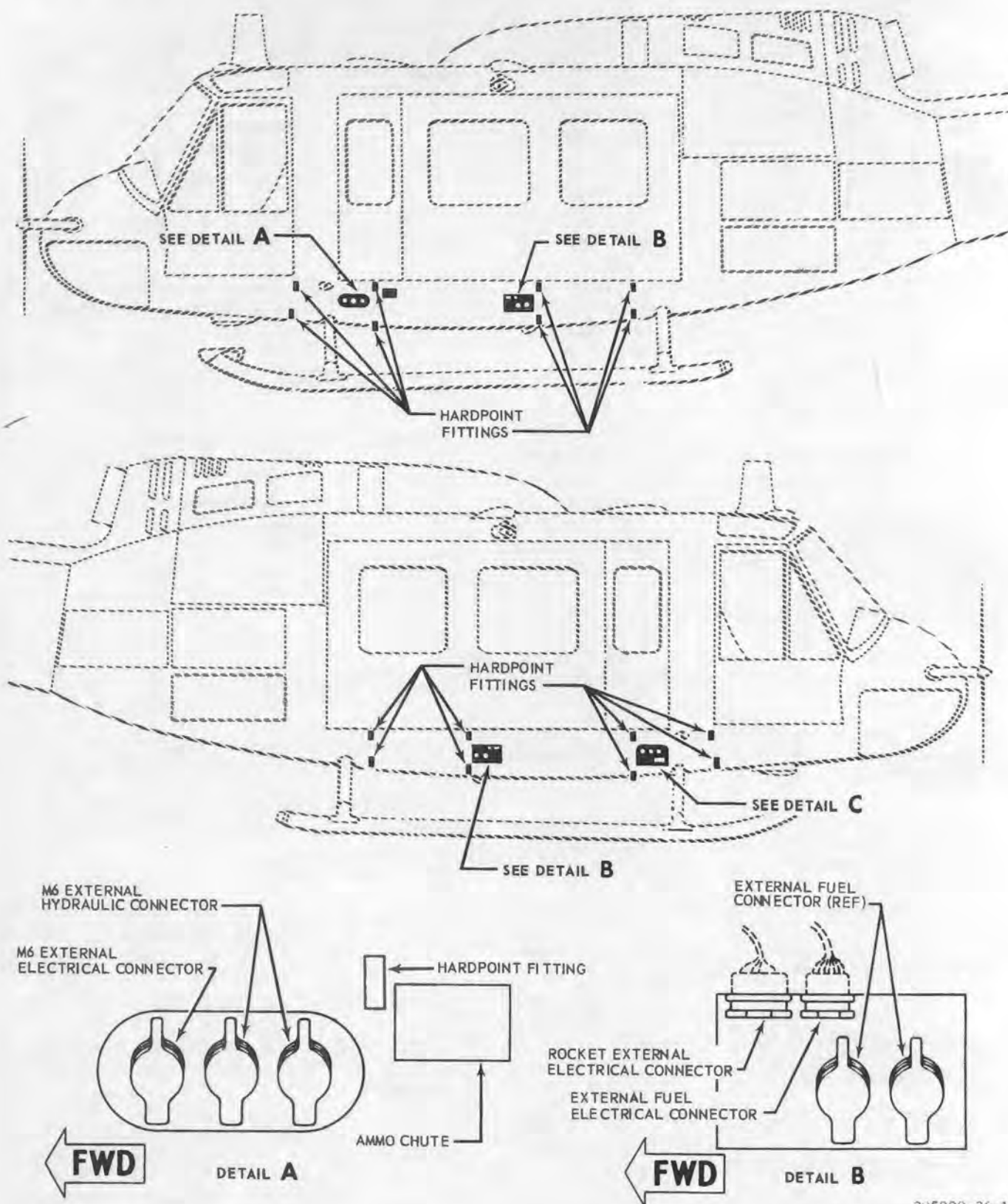
a. Removal - Gun Firing Relay.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(2) Release quick disconnect fasteners and remove access panel from floor under pilot's seat.

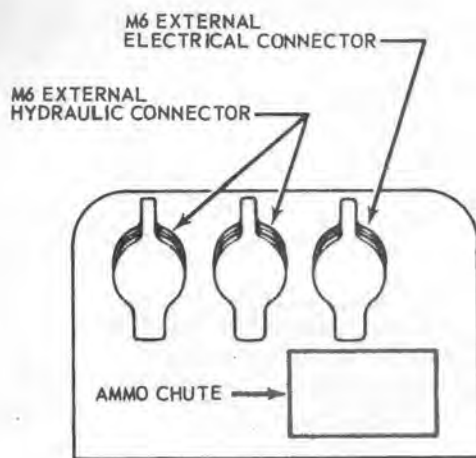
(3) Disconnect electrical wiring from relay and cover wire ends with tape.

(4) Remove four attaching nuts, washers and screws and remove relay.



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AV 054197-1

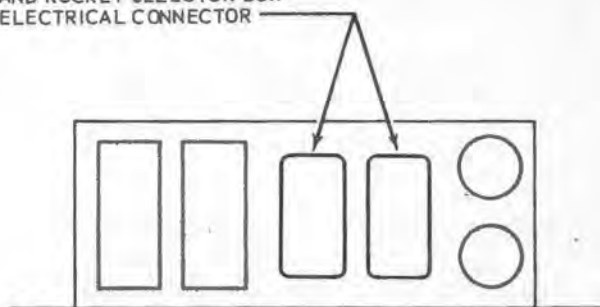
Figure 14-3. External connections arm and fuel kit (Sheet 1 of 2)



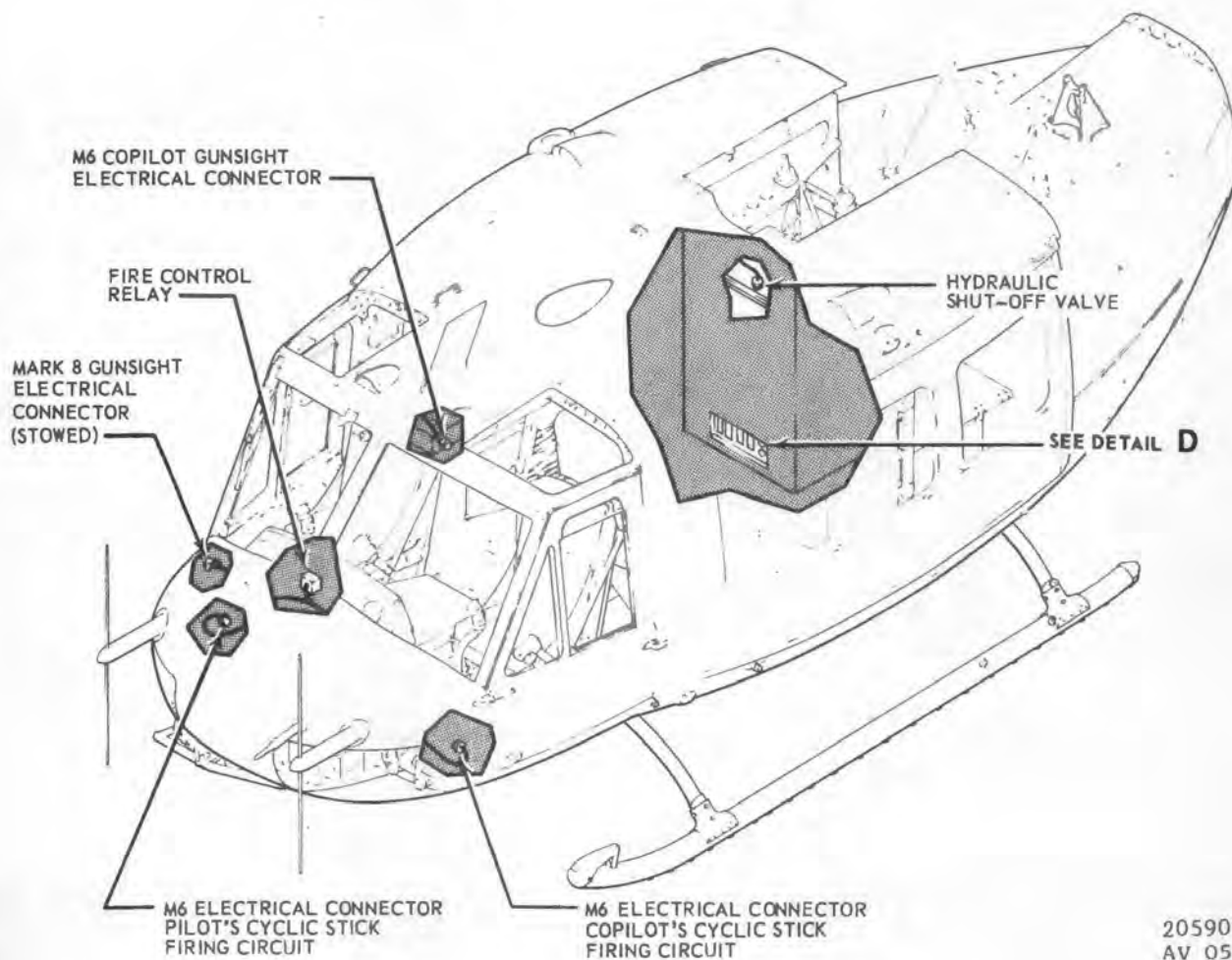
DETAIL C



(XM3) ABMA JUNCTION BOX
AND ROCKET SELECTOR BOX
ELECTRICAL CONNECTOR



DETAIL D



205900-26-2
AV 054197-2

Figure 14-3. External connections arm and fuel kit (Sheet 2 of 2)

b. Installation — Gun Firing Relay.

(1) Position gun firing relay in instrument pedestal and install four attaching screws, washers and nuts.

(2) Remove tape from wire ends and connect electrical wiring to relay.

(3) Position access panel to floor and engage fasteners.

14-9. Rocket System — 2.75 Inch, XM3, Fixed.

Complete electrical provisions for installing the XM3, 2.75 rocket installation are included in helicopter Serial No. 63-12956 through 65-12895. The 2.75 inch, XM3, fixed rocket installation includes two launcher pods (1, figure 14-4), one on each side of the helicopter. Each pod consists of four modules, each of which contains six launcher tubes, thus giving the helicopter a total armament capability of forty-eight modified Navy Type Mark IV, Mod VI, rockets. Each launcher pod may be adjusted from plus six degrees to minus six degrees by manually operating the adjustable link assembly (3) the aft end of which is pinned to the actuator bracket (4). Manually adjustable back-up bearings act as mechanical stops to limit the launcher at plus 8 degree to minus 18 degrees relative to the helicopter. Launcher pods can be jettisoned by means of explosive bolts. Each pod is attached to an adapter assembly (5) by means of four quick release attachment pins. Each adapter assembly is attached to a crank assembly (6) which mates to the center hole in the external stores support assembly (7) crossbeam. The external stores support assembly is attached to the aft "hardpoints" on the helicopter fuselage structure.

a. Rocket Components. Other components of this installation include an armament control panel assembly and a sight light panel assembly, located in the lower left-hand corner of the instrument pedestal; a Mark 8 sight assembly, mounted on the right-hand side of the instrument panel just above the helicopter altimeter; cyclic control stick trigger switches; a junction box, and necessary electrical wiring, circuit breakers and relays. The system is capable of selective firing from the cabin, by either the pilot or copilot in the following modes:

(1) Pair, single - one from each pod.

(2) Ripples of 1-2-3-4-6 or 24 pairs (up to 48 rounds).

b. Rocket — 2.75 Inch. The 2.75 inch folding fin aircraft rocket (see figure 14-4) (FFAR) used with the XM3 fixed system is a standard Navy Type IV, Mod VI, which has been modified to impart a ballistic spin of fifteen revolutions per second by scarfing the thrust nozzles at a twenty-four degree angle. Each rocket weighs 18 pounds, with the warhead containing 1.4 pounds of HEX-1 explosive. A shear release of 100 pounds is required for the

shear wire in the detent rod. Rockets are fired with an average thrust of 761 pounds and have a burning distance of 6000 feet.

c. Removal — 2.75 Inch Rockets.

(1) Set the helicopter master battery switch to the "OFF" position.

NOTE

Handling of the 2.75 inch FFAR is similar to that of other aircraft rockets. It should be transported to and from the assembly area and loaded and unloaded in accordance with standard handling practices.

WARNING

The following safety precautions are to be observed at all times:

(a) Before removing an unfired round from the launcher, make sure that the firing circuit has been made safe at the rocket armament control panel and that the rocket jettison circuit breakers have been pulled.

(b) Handling of the rockets shall be confined to trained personnel.

(c) Smoking shall be prohibited in the vicinity of rockets at all times.

(d) No spark producing devices or power tools shall be used in the vicinity of rockets at any time.

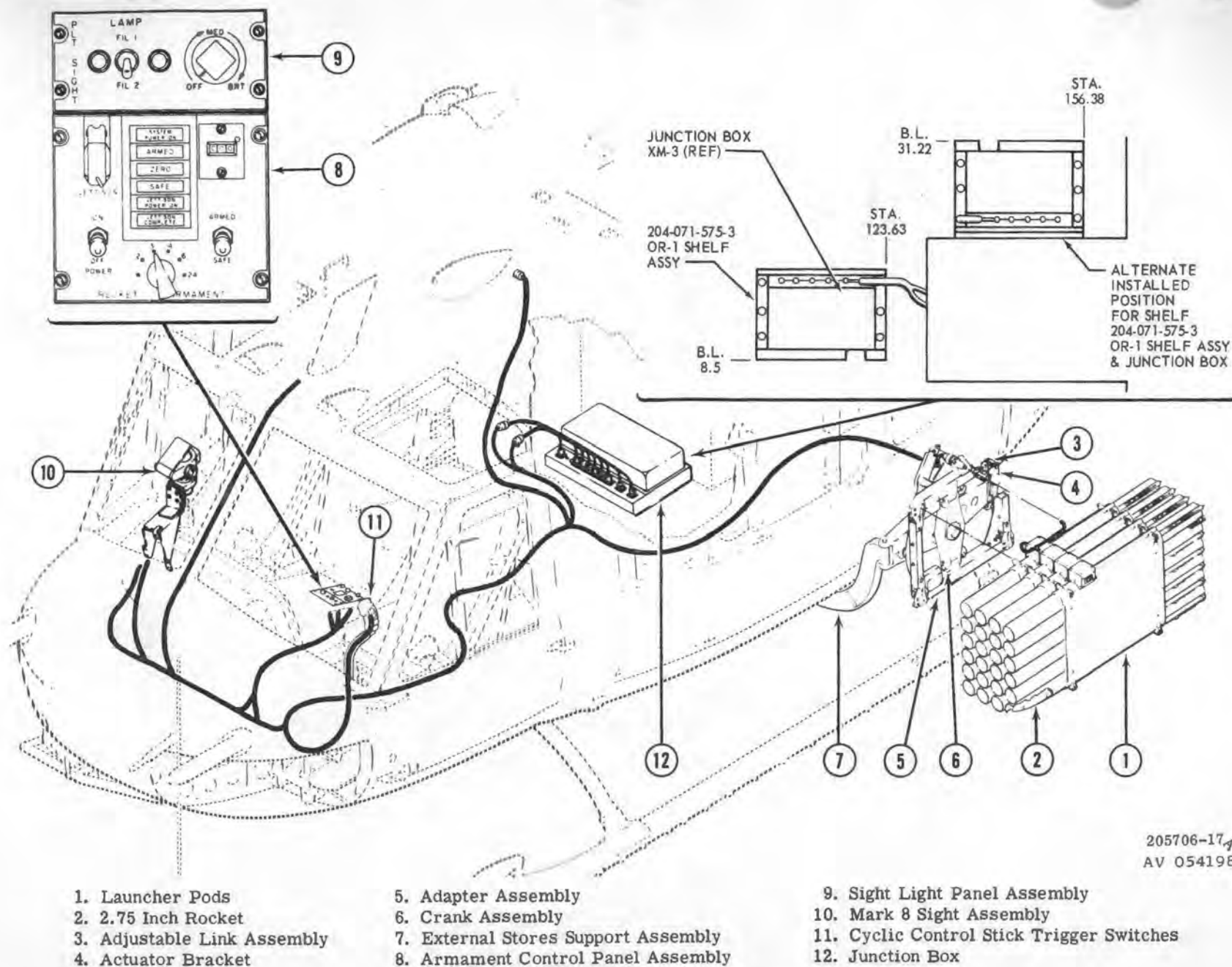
(e) Precautions shall be taken in handling unshielded rockets in the vicinity of radio and radar transmitters, as there is the possibility of squibs actuating prematurely.

(f) A motor or rocket which has been dropped shall not be used but shall be labeled "Dropped Round", stored apart from usable rounds, and proper personnel contacted for disposition.

(g) Unnecessary personnel shall be kept well away from the front and rear of loaded launchers and launchers in the process of being loaded or unloaded.

(h) The helicopter shall not be fueled when rockets are nearby or in the launchers.

(i) While launchers are being loaded or unloaded the helicopter shall be pointed away from personnel and installations.



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Figure 14-4. 2.75 XM3 fixed rocket installation

- (2) Disconnect the main battery plug from the battery.
- (3) Electrically ground the helicopter to an earth ground.
- (4) Release the launcher firing pin assembly from the fin retainer assembly and swing the firing pin assembly clear of the breech.
- (5) Release and remove aluminum shear wire from detent rod.

NOTE

Rocket may be loaded and unloaded from either the muzzle or the breech end of the launcher tube.

- (6) Release launcher latch and carefully remove rocket from launcher tube.
- (7) Install fin protector as soon as rocket has been removed from launcher tube.
- (8) Visually inspect synchronized elevator and forward section of tail boom for possible damage caused by rocket debris.

d. Installation - 2.75 Inch Rockets.

- (1) Observe all safety precautions outlined in paragraph 14-9 c.
- (2) Make sure that the armament control panel counter reads 000 and the ZERO indicators on the panel and junction box are illuminated.
- (3) Pull out the two rocket jettison circuit breakers.
- (4) Set the helicopter master battery switch to the "OFF" position.
- (5) Disconnect the main battery plug from the battery.
- (6) Electrically ground the helicopter to an earth ground.
- (7) Make sure the JETTISON switch cover on the armament control panel is wired with copper break wire.
- (8) Make sure the launcher firing pin assembly is clean and will make good electrical contact. Swing the firing pin assembly clear of the breech.
- (9) Remove the fin protector from the rocket fins. Make sure the fin retainer and contact button are in place

and that the launcher latch retaining groove and contact disc are free from grease and foreign material.

WARNING

If a gap exists between the front end of the rocket motor and the rocket head when assembled hand-tight, the rocket shall not be used.

NOTE

Rocket may be loaded and unloaded from either the muzzle or the breech end of the launcher tube.

- (10) Push the rocket into the launcher tube until the launcher latch seats firmly in the launcher latch retaining groove on the rocket.

- (11) Position aluminum shear wire in detent rod and crimp to retain.

WARNING

Shear wire has been especially designed and constructed for this purpose. Be sure to use proper part. Use of improper wire may cause rocket to hang up and not launch.

- (12) Swing the launcher firing pin assembly back in place until the pin assembly snaps into the fin retainer assembly.

14-10. Launcher And Adapter.

A launcher and adapter (see figure 14-4) are attached to each side of the helicopter fuselage. Each launcher contains four six rocket modules which are attached to the adapter assembly. All modules are interchangeable with respect to attachment points and alignment. Switch boxes are on top of the module on the left-hand side of the helicopter (looking down range) and on the bottom on the right-hand side. The adapter assembly is an open, rectangular, aluminum frame which is attached to the crank by means of two explosive bolts.

a. Removal - Launcher and Adapter.

- (1) Remove all unfired rockets. (Refer to paragraph 14-9 c.)
- (2) Disconnect electrical connectors from explosive bolts, adapter assembly and switch box on inside module. Cap or cover connectors to prevent entrance of foreign material.

(3) Remove module assemblies by pulling attachment pins.

(4) Cut safety wire and remove two explosive bolts attaching adapter assembly to crank assembly. Remove adapter assembly.

b. Cleaning — Launcher and Adapter. Launcher tubes should be cleaned, after each day's firing, with bore cleaner, or hot, soapy water. The firing contacts should be examined after each day's firing and thoroughly cleaned. Wipe the firing contacts with waste or rags soaked in bore cleaner until clean of all residue. Use a wire brush to aid in cleaning the firing contacts.

NOTE

Do not use dry cleaning solvents or mineral spirits paint thinner near an open flame. Keep such petroleum products as bore cleaner, dry cleaning solvent, mineral spirits paint thinner and lubricants off electrical components, wiring and rubber parts.

c. Installation — Launcher and Adapter.

(1) Position adapter assembly to crank assembly and install attaching explosive bolts. Lock-wire bolts.

(2) Assemble module assemblies to adapter assembly with attachment pins.

(3) Uncap or uncover electrical connectors and connect connectors to switch box on inside module and to adapter assembly.

NOTE

Do not connect electrical connectors to explosive bolts until just before flight.

14-11. Adjustable Link, Actuator Bracket And Crank Assembly.

Each launcher has an adjustable link (see figure 14-4) with the forward end mounted in a yoke formed by the upper end of the crank and the plate and spacer assembly. The aft end of the adjustable link is pinned to the actuator bracket. The actuator bracket is an open box type structure with extended sides which form lugs for pinning the aft end of the adjustable link to the aft end of the cross beam. The actuator bracket also receives the threaded ends of the adjustable backup bearings. The crank assembly is an aluminum box section unit. In conjunction with a steel shaft, bearings and other miscellaneous components, the crank assembly is attached to the cross beam of the external stores support and serves as the mounting point for the adapter assembly.

a. Removal — Adjustable Link, Actuator Bracket and Crank Assembly.

(1) Remove launcher and adapter. (Refer to paragraph 14-10 a.)

(2) Cut lockwire and remove bolt attaching the forward end of the adjustable link to the yoke formed by the upper end of the crank and the plate and spacer assembly.

(3) Remove nut, washer and bolt attaching aft end of the adjustable link to the actuator bracket. Remove adjustable link.

(4) Remove teflon bearings from threaded holes in actuator bracket.

(5) Remove nut, washers and bolt attaching actuator bracket to aft end of cross beam and remove actuator bracket. Reinstall bolt, washers and nut to attach cross beam to aft support.

(6) Cut lockwire and remove four nuts, washers and bolts attaching stop brace and bracket to plate and spacer assembly. Remove bracket.

(7) Cut lockwire and remove four bolts attaching stop brace to crank assembly. Remove stop brace.

(8) Remove crank shaft retainer nut from outboard end of crank shaft and remove keeper, key, crank assembly, bearing retainer and roller bearing from cross beam.

(9) Remove crank shaft, with keeper, plate and spacer assembly, key, bearing retainer and roller bearings, as a unit from the inboard side of the cross beam.

(10) Remove nuts, washers and bolts attaching bearing housings to the external stores support cross beam and remove bearing housings.

b. Installation — Adjustable Link, Actuator Bracket and Crank Assembly.

(1) Position bearing housings to external stores support cross beam and install attaching bolts, washers and nuts.

(2) Assemble roller bearings, bearing retainer, short key, plate and spacer assembly (with flat side outboard) and keeper to the end of the crank shaft which has the short keyway. Secure loosely with shaft retainer nut.

(3) Insert the items assembled in step (2) above, into the external stores support cross beam in such a manner that the plate and spacer assembly is on the inboard side of the cross beam.

(4) Assemble roller bearing, bearing retainer, crank assembly, long key, keeper and shaft retainer nut to outboard end of crank shaft.

(5) Tighten both retainer nuts until there is no looseness but crank shaft rotates freely. Lock both nuts with tangs of keepers.

(6) Align one end of stop brace with crank assembly so that stop brace is above cross beam. Install four bolts to attach stop brace to crank assembly and lock-wire.

(7) Position bracket and other end of stop brace to plate and spacer assembly. Install four attaching bolts, washers and nuts and lock-wire.

(8) Remove nut, washers and bolt attaching external stores support cross beam to aft support. Position actuator bracket to aft end of cross beam and install bolt, washers and nut previously removed.

(9) Install teflon back-up bearings in threaded holes. Torque front and bottom rear bearings one turn. Torque top rear bearing one and one-half turns. Starting point for these torque values is 0.002 inch between the bearing arc and the teflon back-up bearing.

(10) Position aft end of adjustable link to actuator bracket and install attaching bolt, washer and nut.

(11) Position forward end of adjustable link to the yoke formed by the upper end of the crank and the plate and spacer assembly. Install attaching bolt and lock-wire.

14-12. Panel Assembly — Armament Control.

The armament control panel (see figure 14-4) is located in the lower left-hand corner of the instrument pedestal. The controls necessary for jettisoning the two pod assemblies, for turning on system power, for selecting the number of pairs of rounds, and the SAFE-ARMED switch are located on the panel. It also contains a counter to record the number of pairs of rounds fired during a mission, a SYSTEM POWER ON indicator light, an ARMED indicator light, a ZERO indicator light, a SAFE indicator light, a JETTISON POWER ON indicator light and a JETTISON COMPLETE indicator light.

a. Removal — Armament Control Panel Assembly.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(2) Release quick-disconnect fasteners attaching armament control panel assembly to instrument pedestal and carefully raise panel assembly from pedestal.

(3) Disconnect electrical connectors at back of panel and remove panel assembly. Cap or cover electrical connectors to prevent entrance of foreign material.

b. Installation — Armament Control Panel Assembly.

(1) Uncap or uncover electrical connectors and connect to back of control panel assembly.

(2) Position control panel assembly in instrument pedestal and engage quick disconnect fasteners.

14-13. Panel Assembly — Sight Light.

The sight light panel assembly is located in the lower left-hand corner of the instrument pedestal just forward of the armament control panel. The purpose of this panel is to control the power to the Mark 8 sight lamp. This action, as well as the intensity of illumination, is accomplished by means of a rheostat. The sight lamp has two filaments, either of which may be used for illumination. A switch on the sight light panel assembly affords the operator a choice of FIL 1 or FIL 2. The panel also is equipped with two standard panel lights.

a. Removal — Sight Light Panel Assembly.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(2) Release quick-disconnect fasteners attaching armament control panel assembly to instrument pedestal and carefully raise panel assembly from pedestal.

(3) Disconnect electrical connectors at back of panel and remove panel assembly. Cap or cover electrical connectors to prevent entrance of foreign material.

b. Installation — Sight Light Panel Assembly.

(1) Uncap or uncover electrical connectors and connect to back of control panel assembly.

(2) Position control panel assembly in instrument pedestal and engage quick-disconnect fasteners.

14-14. Sight Assembly — Mark 8.

The pilot sight (see figure 14-4) is used as an aid in maintaining alignment of the helicopter with the target during firing of a missile. The sight is mounted on a support assembly which is attached to the right-hand side of the instrument panel in front of the pilot's seat. The pilot sight consists of a sight body, a lamp and housing and a Mark 4 Mode O reflector assembly. A small control panel on the center console contains an FIL 1 - FIL 2 switch and an intensity control for illumination of the reticle.

a. Removal – Mark 8 Sight Assembly.

(1) Remove four nuts and bolts attaching pilot sight (10, figure 14-4) to support assembly, and remove pilot sight.

NOTE

The pilot sight is a delicate, optical instrument. Handle with care.

(2) Remove five nuts, washers and screws attaching pilot sight support assembly to right-hand side of instrument panel, and remove support assembly.

b. Installation – Mark 8 Sight Assembly.

(1) Position pilot sight support assembly on instrument panel, and install attaching screws, washers and nuts.

(2) Position pilot sight (10, figure 14-4) against support assembly and install attaching bolts and nuts.

14-15. Armament – Junction Box.

The junction box (12, figure 14-4) connects to electrical connector at center of pylon in cabin and contains the circuits necessary for firing the rockets and for jettisoning the two pod assemblies. It also contains a RESET button which cycles the stepping switch to zero and a zero indicator light which illuminates when stepping switch is in zero position.

a. Removal – Armament Junction Box.

(1) Make sure that the helicopter master battery switch is in the "OFF" position and that external power is disconnected.

(2) Disconnect electrical connectors from junction box and cap or cover to prevent entrance of foreign material.

(3) Remove six bolts and washers attaching junction box to shelf assembly and remove junction box from helicopter.

b. Installation – Armament Junction Box.

(1) Position junction box in helicopter and install six attaching washers and bolts.

(2) Uncap or uncover electrical connectors and connect to junction box.

NOTE

For description, removal, and installation instructions on the M23 and XM59 armament sub-systems, refer to TM 9-1005-304-12.

14-16. Smoke Generator Sub-System XM52.

The smoke generator sub-system basically consists of the oil tank and hoses, pump and motor assembly, nozzle ring. A new designed bench seat and door panel is necessary to accept the smoke generator sub-system. The tank capacity is 50 gallons and provides approximately three minutes of smoke generator operation.

a. Removal – Smoke Generator Sub-System.

(1) Remove clamps on pump inlet hose and remove hose.

(2) Remove switch (U6374) by disconnecting connector on switch cord from connector in roof.

(3) Remove pump and motor assembly.

(a) Remove floor clamps securing hoses and wiring harnesses and replace screws in cabin floor.

(b) Disconnect hoses and wiring harness and remove from cabin floor.

(c) Remove pump and motor attaching parts and remove pump and motor.

(4) Remove quantity indicator and bracket and reinstall screws and washers.

(5) Remove control box:

(a) Disconnect wiring harnesses.

(b) Remove attaching hardware.

(c) Remove control box.

(6) Remove hose between nozzle ring and tailpipe fairing.

(7) Remove nozzle ring attaching parts and nozzle ring.

(8) Remove vent hose clamps from cabin floor, disconnect and remove vent hose.

(9) Unhook tank tie down straps and remove oil tank.

(10) Release fasteners and remove passenger seat.

(11) Remove tank tie down straps.

(12) Reinstall two-man seats and center seat. Do not secure forward legs of center seat.

(13) Remove attaching bolts and remove door from cabin floor. Reinstall original door using existing hardware. Secure forward seat legs to floor fittings.

(14) Remove attaching bolts and washers, and remove brackets from tailpipe fairing.

b. Inspection and Cleaning. Aircraft shall be inspected for internal oil accumulation at the tailboom bulkheads. Any oil accumulation shall be removed. Tailboom of aircraft shall be washed down after each day's use of the smoke generator sub-system.

c. Installation — Smoke Generator Sub-System.

(1) Modify tailpipe fairing as follows: (See figure 14-5.)

(a) Locate vertical and horizontal centerlines of tailpipe opening. Mark centerlines of aft flange of fairing.

(b) Mark a line on each side of centerline marks on fairing flange, 1.25 inch from centerline mark.

(c) Drill eight No. 10 (0.193 inch diameter) holes in fairing flange at locations marked in step (b). Center holes on flat surface of flange.

(d) Mark existing interfering rivets for removal between holes and 0.375 inch beyond holes at bottom position.

(e) Mark interfering rivet above and below lower hole at right and left positions.

(f) Remove interfering rivets marked in steps (d) and (e).

(g) Install maximum of nine rivets (MS20426AD4-4) in holes from which interfering rivets were removed.

(h) Install two nut plates (NAS697A3) and two shims (205-961-100-3) at left and right positions shown, using four rivets (MS20426AD3-4).

(i) Install one nutplate (NAS696A3) at lower hole of left position and five nutplates (NAS697A3) at remaining locations using 12 rivets (MS20426AD3-4).

(j) Install doubler (205-961-100-5) as follows: (See figure 14-5.)

1. On right side of tailpipe fairing, locate vertical skin joint below and aft of large tailpipe opening.

2. Measure forward from aft edge of skin at joint, 4.00 inches. Mark a vertical line parallel to edge of skin.

3. Measure up 1.10 inch from upper edge of bottom flange of fairing, along line marked in step 2. Mark an intersecting line.

4. Cut a 1.33 inch diameter hole in fairing at intersection of lines.

5. Position doubler (205-961-100-5) on inside of fairing, align with hole and lower edge of fairing and secure in position.

6. Remove three interfering rivets from lower flange.

7. Install two rivets (MS20426AD4-4) in two interference holes at edge of doubler. Drill six No. 30 (0.128 inch diameter) rivet holes as shown in figure 14-5, and install six rivets (MS20470AD4-4).

(2) Replace aft center door in cabin floor as follows: (See figure 14-6.)

(a) Release fasteners on legs of center passenger seat from floor fittings.

(b) Remove attaching bolts and remove aft center cabin floor door.

(c) Position new door in same location as removed door, with large cutout aft.

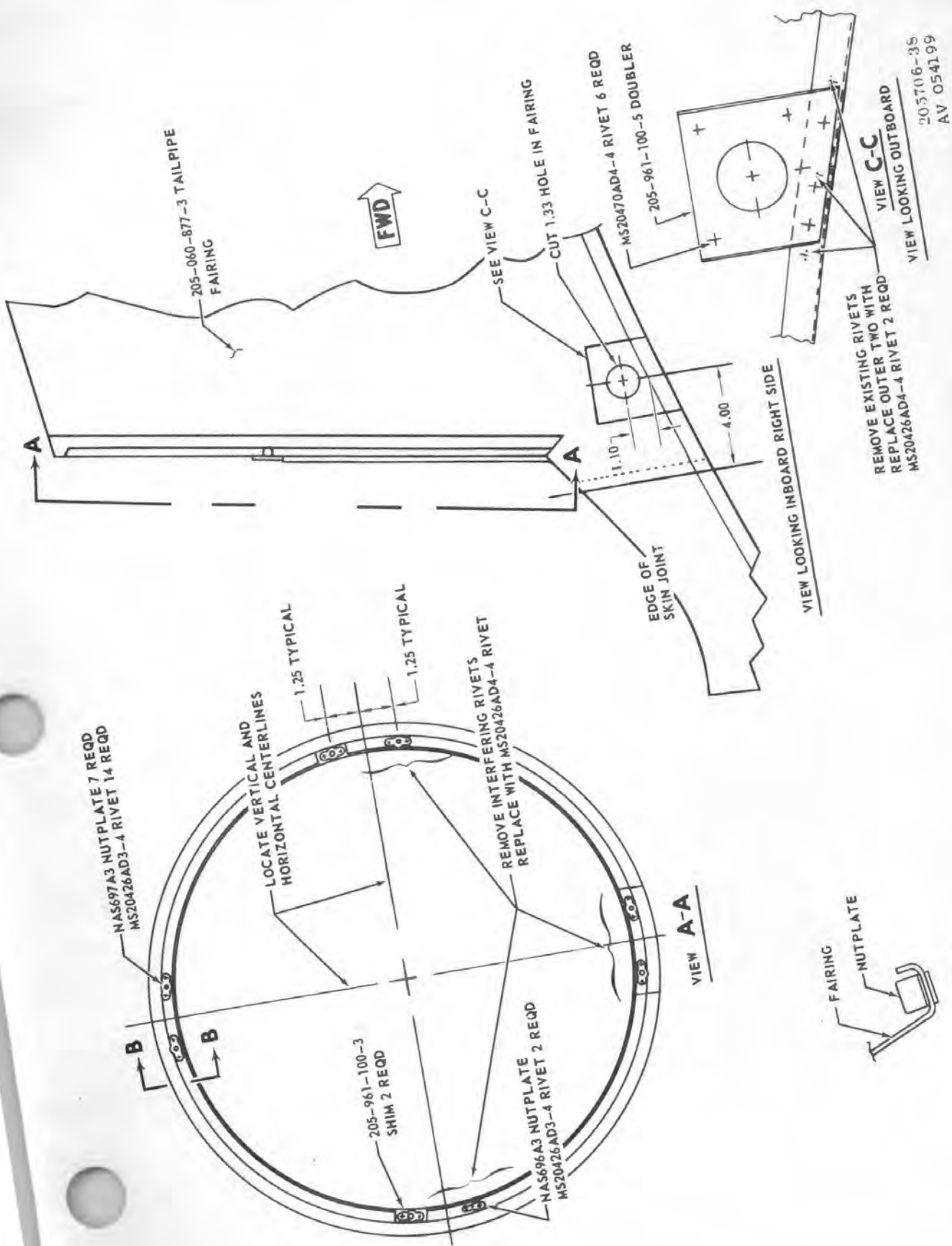
(d) Secure door to airframe, using hardware previously removed, and one additional bolt and washer.

(3) Position tank on cabin floor, centered 1.62 inches to left of aircraft centerline, on forward side of bulkhead, FS 128.00 (see figure 14-7).

(4) Install new passenger seat (see figure 14-8) as follows:

NOTE

If the two aft legs (205-070-710-1) (see figure 14-9) cannot be installed on tube assembly (205-070-055-1) because four rivet heads protrude near one end of the tube, rework tube as follows: Remove two rivets (MS20470B5) at fitting end. Clean up rivet holes with number 19 drill (0.166) diameter. Apply zinc chromate primer to bare surfaces. Slide legs over tube assembly and install two screws (AN525-832-22), two washers (AN960-8L) and two nuts (NAS679-A08). Torque nuts 7 to 15 inch-pounds.



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Figure 14-5. Tailpipe fairing modification

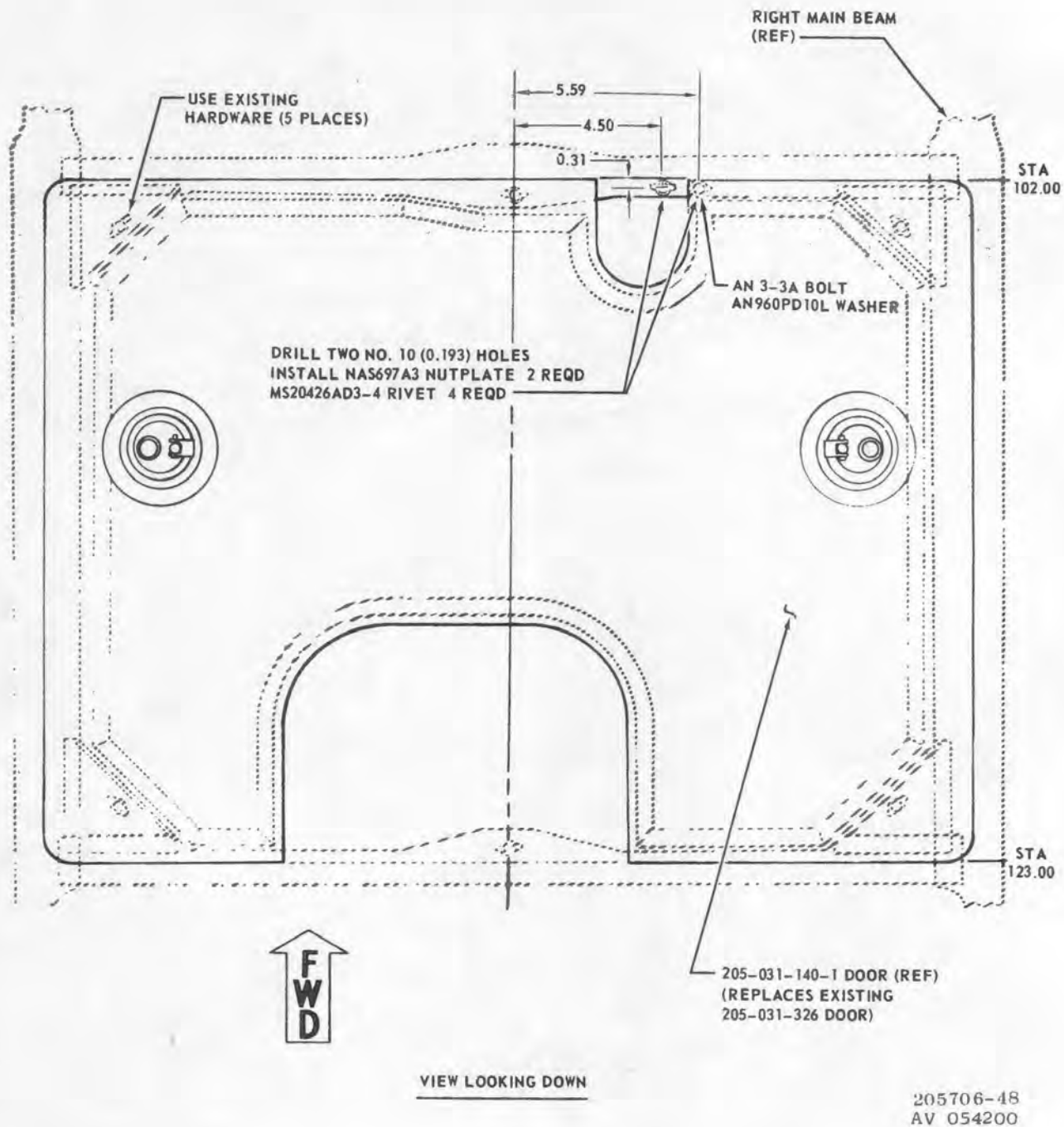
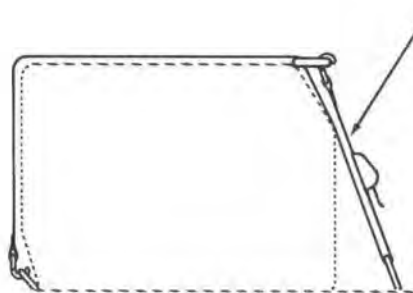
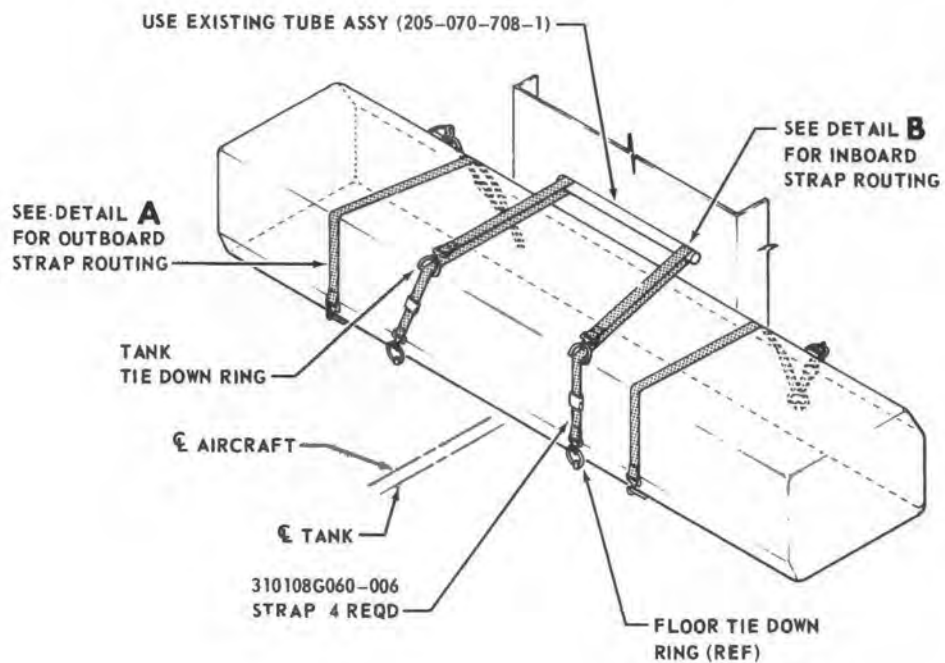
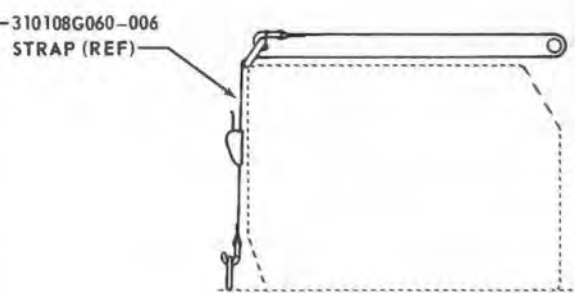


Figure 14-6. Cabin floor modification



DETAIL A



DETAIL B

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Figure 14-7. Oil tank installation

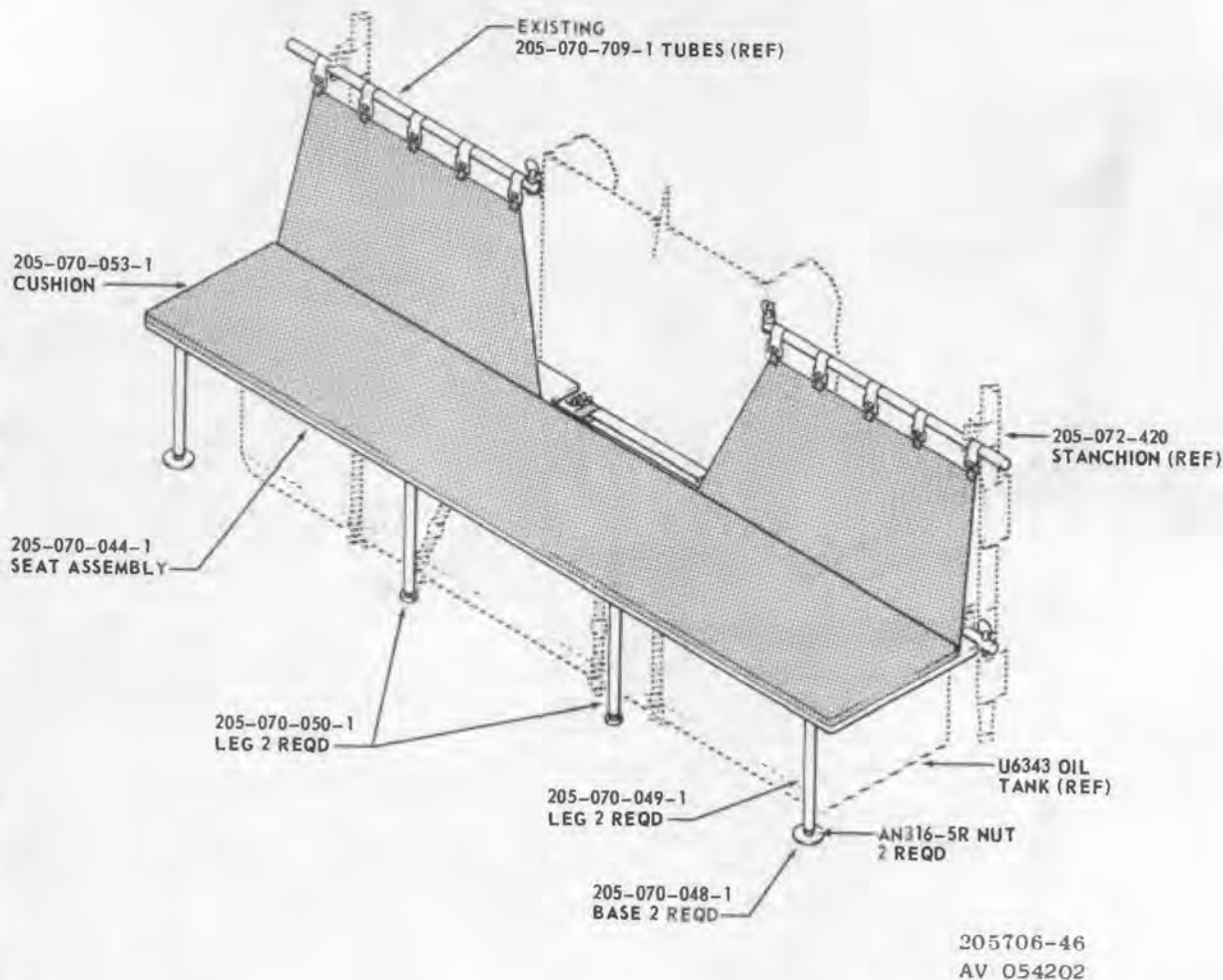


Figure 14-8. Seat installation

(a) Release attaching fasteners and remove the left and right two-man seats across aft area of cabin. Leave upper seat back support tubes in place.

(b) Release attaching fasteners and remove center seat. Slide out lower center tube and reinstall for reuse.

(c) Install two legs on underside of seat at outboard forward corners, using six screws (MS27039-1-08).

(d) Install nut on each leg base and screw base into insert in leg.

(e) Install legs at the remaining positions on forward edge of seat, using six screws (MS27039-1-08).

(f) Position seat in aircraft. Insert tubes on aft edge of seat into existing brackets on stanchions at aft

cabin bulkhead. Secure with existing pins and latches and adjust clamps on seat tubes as necessary.

NOTE

Do not secure seat legs to the floor fittings until steps e. (6) through (11) have been accomplished.

(g) Secure aft legs of seat to floor fittings.

(h) Secure forward inboard legs of seat to floor fittings.

(i) Adjust forward outboard leg bases to fit snugly to floor. Tighten jam nut.

(j) Position cushion on seat and tie cushion to tubes at aft edge of seat.



Figure 14-9. Vent hose installation (Sheet 1 of 2)

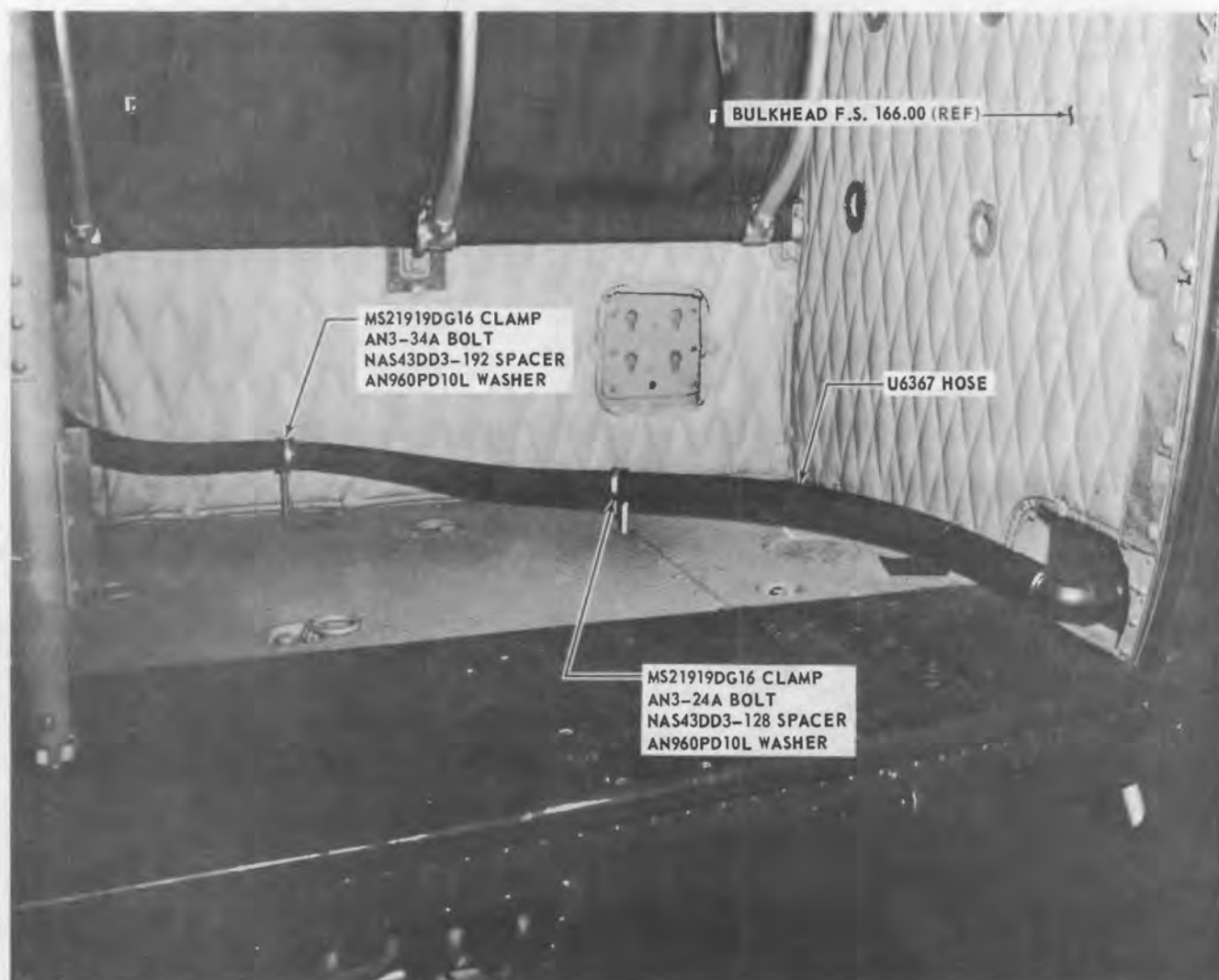


Figure 14-9. Vent hose installation (Sheet 2 of 2)

(k) Hook straps of seat backs to existing upper support tubes and adjust as necessary.

(5) Install brackets on tailpipe fairing (see figure 14-10) as follows:

(a) Position brackets over nutplates.

(b) Secure each bracket to fairing using two bolts and washers.

(6) Install oil tanks as follows.

(a) Remove center cover plate from bottom of tank. Remove shipping plug from cover plate.

(b) Install oil quantity transmitter (U6377) to cover plate, using gasket (U6350) and existing hardware. Position transmitter so that electrical connector will be toward right end of tank when installed in aircraft.

(c) Reinstall cover plate on bottom of tank, using existing hardware.

(d) Install union (AN815-20D) in one end of adapter tube (U6435).

(e) Connect opposite end of adapter tube to fitting in bottom of tank.

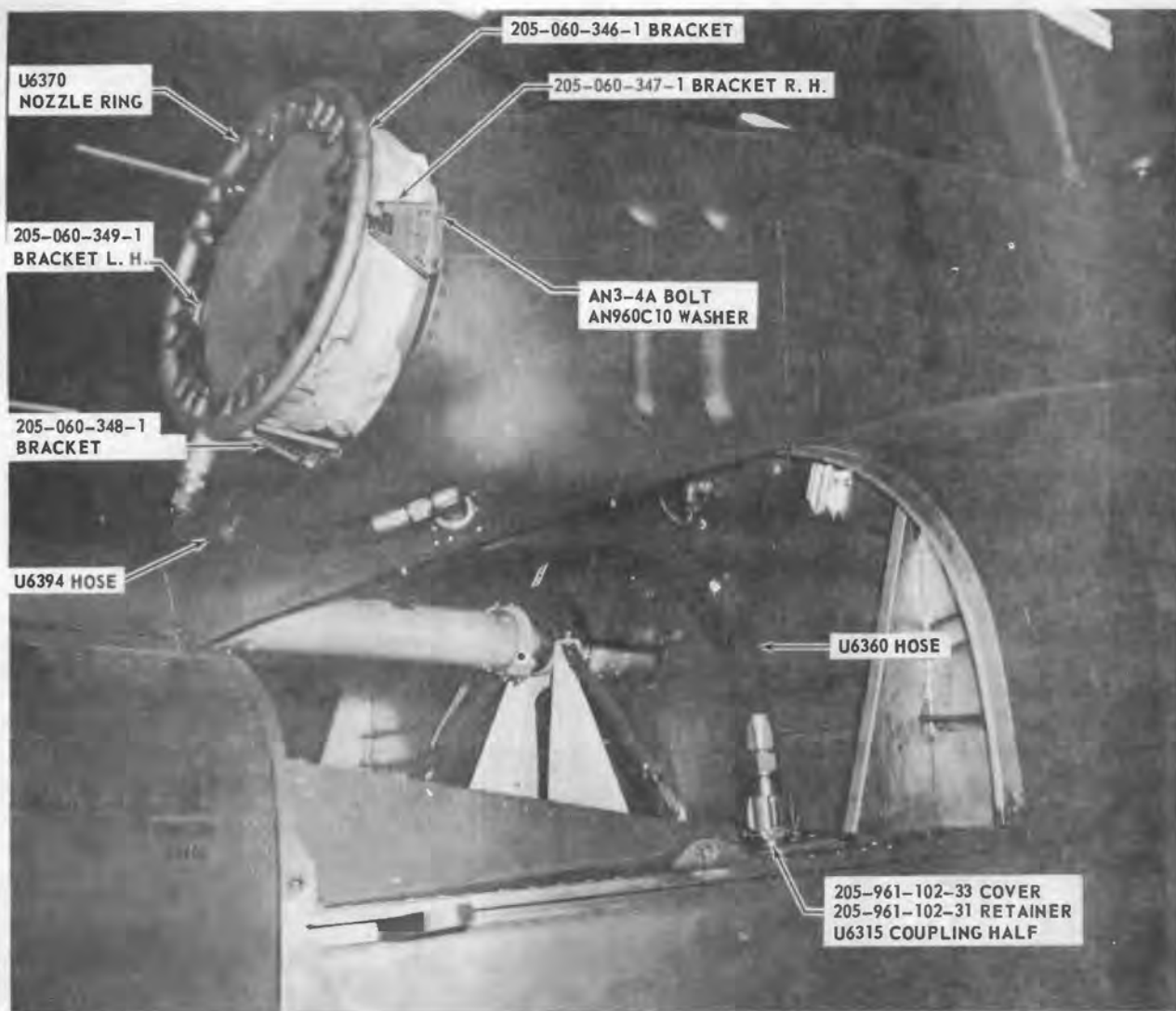


Figure 14-10. Nozzle ring and bracket installation

(f) Raise tank approximately six (6) inches above cabin floor and temporarily block in this position using any suitable material near ends of tank.

(g) Connect 90 degree end of hose (U6356) to union previously installed in adapter tube.

(h) Connect existing stowed electrical connector on wiring harness to connector of quantity transmitter previously installed in bottom of tank.

(i) Route hose forward and up through opening in floor, so that hose extends up through forward cutout in new door.

(j) Remove blocking material and allow tank to rest on cabin floor.

(k) Secure oil tank to floor, as shown in figure 14-7, using four straps.

(l) Install one coupling (U6363) in 45 degree end of hose (U6356). (See figure 14-11.)

(m) Secure hose to cabin floor, using bracket (AN743-12), spacer (NAS43DD3-16), screw (AN520-10R16), washer (AN960PD10L), clamp (MS21919DG24), screw (AN520-10R8), washer (AN960PD10L), and nut (NAS679A3).

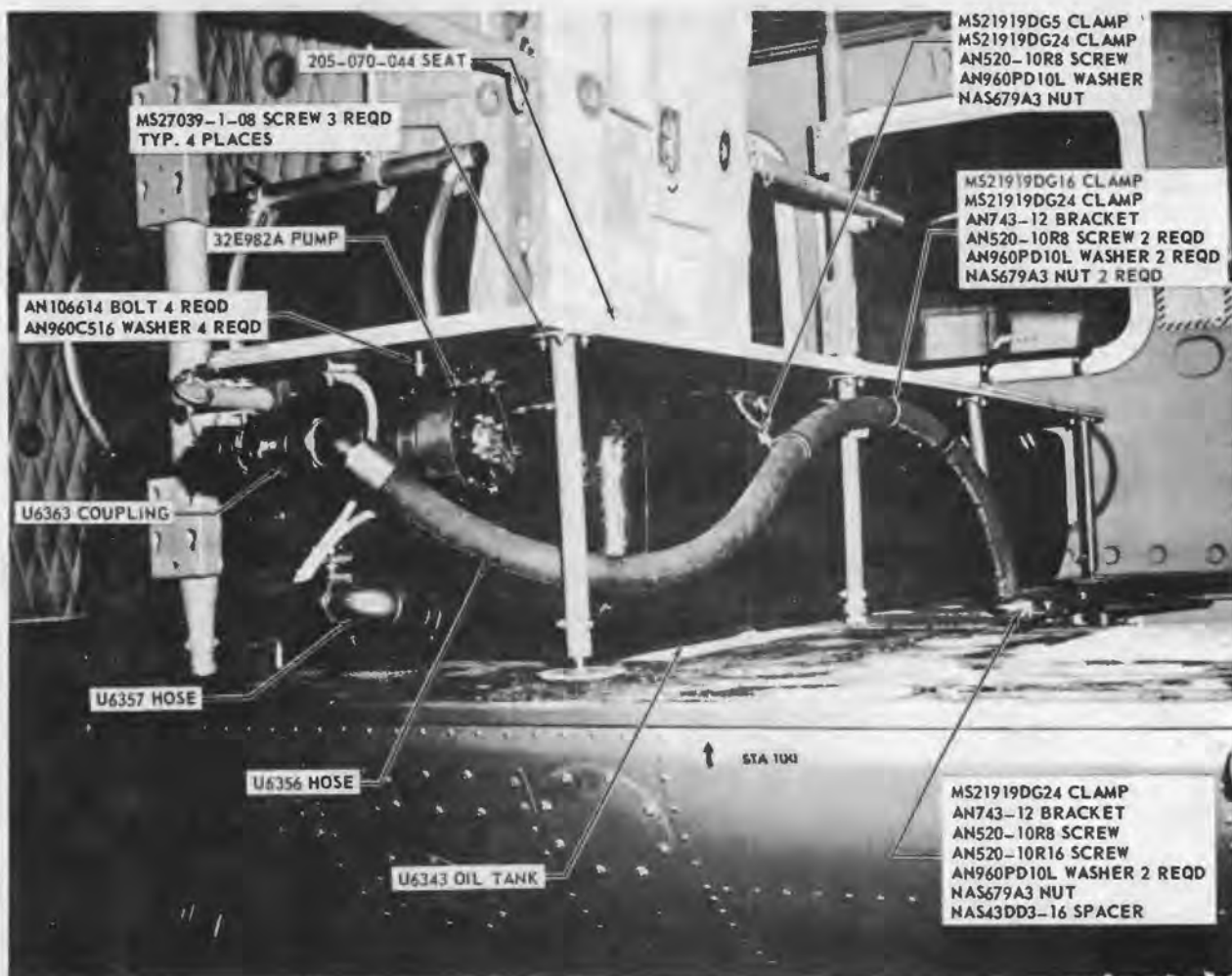


Figure 14-11. Oil pump and motor installation

(n) Connect one end of vent hose (U6367) to top fitting toward left end of tank.

(o) Route hose aft and outboard around left side of pylon island along cabin floor, to existing connector in bulkhead, FS 166.00. Connect elbow to connector in bulkhead.

(p) Secure vent hose as follows: (See figure 14-9).

1. Locate row of holes in outboard side of vertical angle at left forward corner of pylon island at FS 128.00.

2. Secure hose at fourth hole up from floor, using bracket (U6366), washer (AN960PD416L), bolt

(AN4-11A), bracket (AN743-12), clamp (MS21919DG16), two screws (AN520-10R8), two washers (AN960PD10L), and two nuts (NAS679A3).

3. Secure hose at second hole up from floor, using bracket (U6366), washer (AN960PD416L), bolt (AN4-11A), bracket (AN743-12), clamp (MS21919DG16), two screws (AN520-10R8), two washers (AN960PD10L), and two nuts (NAS679A3).

4. Locate inboard row of screws securing cabin floor between FS 128.00 and FS 166.00.

5. Remove screw approximately 12 inches aft of forward corner of island.

6. Secure hose at forward screw hole, using clamp (MS21919DG16), bolt (AN3-34A), washer (AN960PD10L), and spacer (NAS43DD3-192).

7. Remove screw and secure hose at aft screw hole (as shown), using clamp (MS21919DG16), bolt (AN3-24A), washer (AN960PD10L), and spacer (NAS43DD3-128).

(7) Install nozzle ring (U6370) (see figure 14-10) as follows:

(a) Position nozzle ring on brackets with inlet fitting at bottom and slightly to left of aircraft center line. Align bosses on nozzle ring with holes in brackets.

(b) Secure nozzle ring to brackets, using four bolts (AN106408) and four washers (MS15795-808). Lock-wire bolts to nozzle ring, using lockwire (MS20995C32).

(8) Install hoses (U6360) and (U6394) (see figure 14-10) as follows:

(a) Loosen fasteners and remove lower right tailpipe fairing.

(b) Install elbow (AN833-16D) in hole in right side of upper tailpipe fairing using washer (AN960-2116), and nut (AN924-16D). Do not tighten nut at this time.

(c) Connect 90 degree end of hose (U6394) to nozzle ring.

(d) Connect opposite end of hose (U6394) to elbow in fairing. Position hose to prevent chafing on skin, and tighten nut on elbow.

(e) Install coupling half (U6387) on straight end of hose (U6360).

(f) Connect 90 degree end of hose (U6360) to elbow in tailpipe fairing.

(g) Connect coupling half on hose to coupling half in service deck.

(h) Reinstall tailpipe lower fairing.

(9) Install control box (see figure 14-12) as follows:

(a) Open left aft electrical compartment doors.

(b) Remove attaching bolts and remove front cover of control box (U6415).

(c) Position control box shell in forward inboard corner of electrical compartment, against left main beam web and near bulkhead, FS 211.00, under shelf.

(d) Secure control box to beam at existing nutplates, using four bolts (AN104608) and four washers (MS15795-808).

(e) Reinstall control box front cover, using bolts and washers previously removed. Lock-wire bolts.

(f) Locate large connector on existing wiring harness (U6426). Install connector on control box.

(g) Locate small connector on existing wiring harness (U6427). Install connector on control box.

(h) Lock-wire connectors using safety-wire (MS20995C32).

(10) Install quantity indicator and bracket assembly (U6373) as follows:

(a) Remove sixth and seventh screws outboard from center post, along top edge of right windshield.

(b) Position indicator and bracket and align with existing holes. Holes in bracket may be elongated, as necessary, to accommodate screw spacing.

(c) Secure bracket, using two screws (AN525D10R10) and existing washers and nuts previously removed.

(d) Connect connector from wiring harness (U6429) to back of quantity indicator.

(11) Install pump and motor assembly (34E982A) as follows (see figure 14-11):

(a) Assemble the following parts into each port of pump. Do not completely tighten nuts on unions.

1. Install union (AN832-20D), with nut (AN6289-20D) and packing (MS28778-20), in pump port.

2. Install elbow (AN939-20D) with packing (MS28778-20) on union.

3. Install coupling half (U6365) with packing (MS28778-20) in elbow.

(b) Install pump and motor under right end of seat, using four bolts (AN106614) and four washers (AN960C516). Do not tighten aft outboard bolt at this time.

(c) Position elbows as shown in figure 14-11 and tighten all pump fittings.

(12) Install hose (U6357) (see figure 14-13) and wiring harness (U6443) as follows:

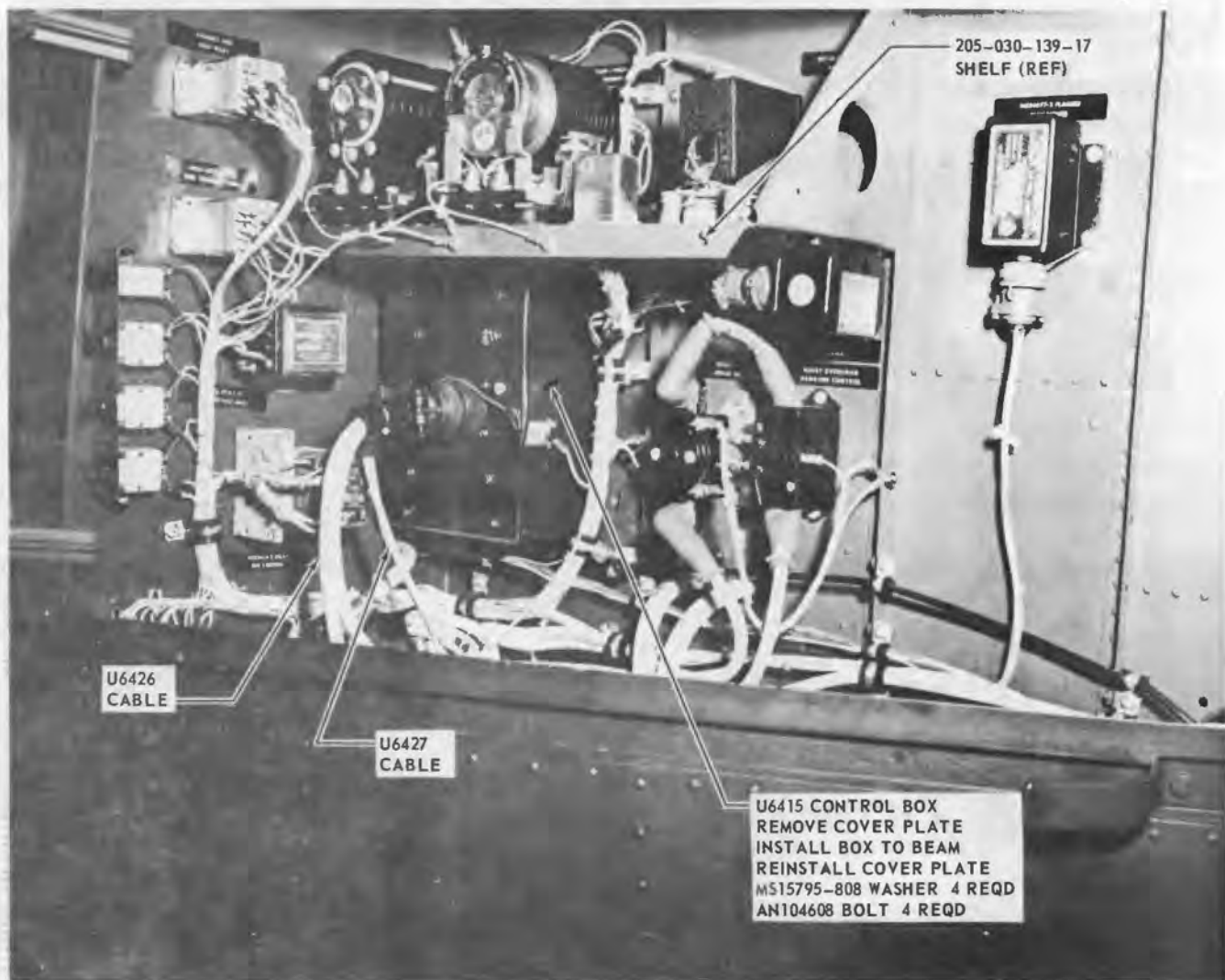


Figure 14-12. Control box installation

(a) Install connector on wiring harness (U6443) to connector in right side of bulkhead, FS 166.00.

(b) Route wires inboard and forward under two man seat, to pump motor.

(c) Connect wire number P111B4 to terminal on pump motor.

(d) Remove aft outboard pump mounting bolt and secure wire number P112B4 to pump base with pump mounting bolt.

(e) Install union (AN815-20D) in one end of hose (U6357).

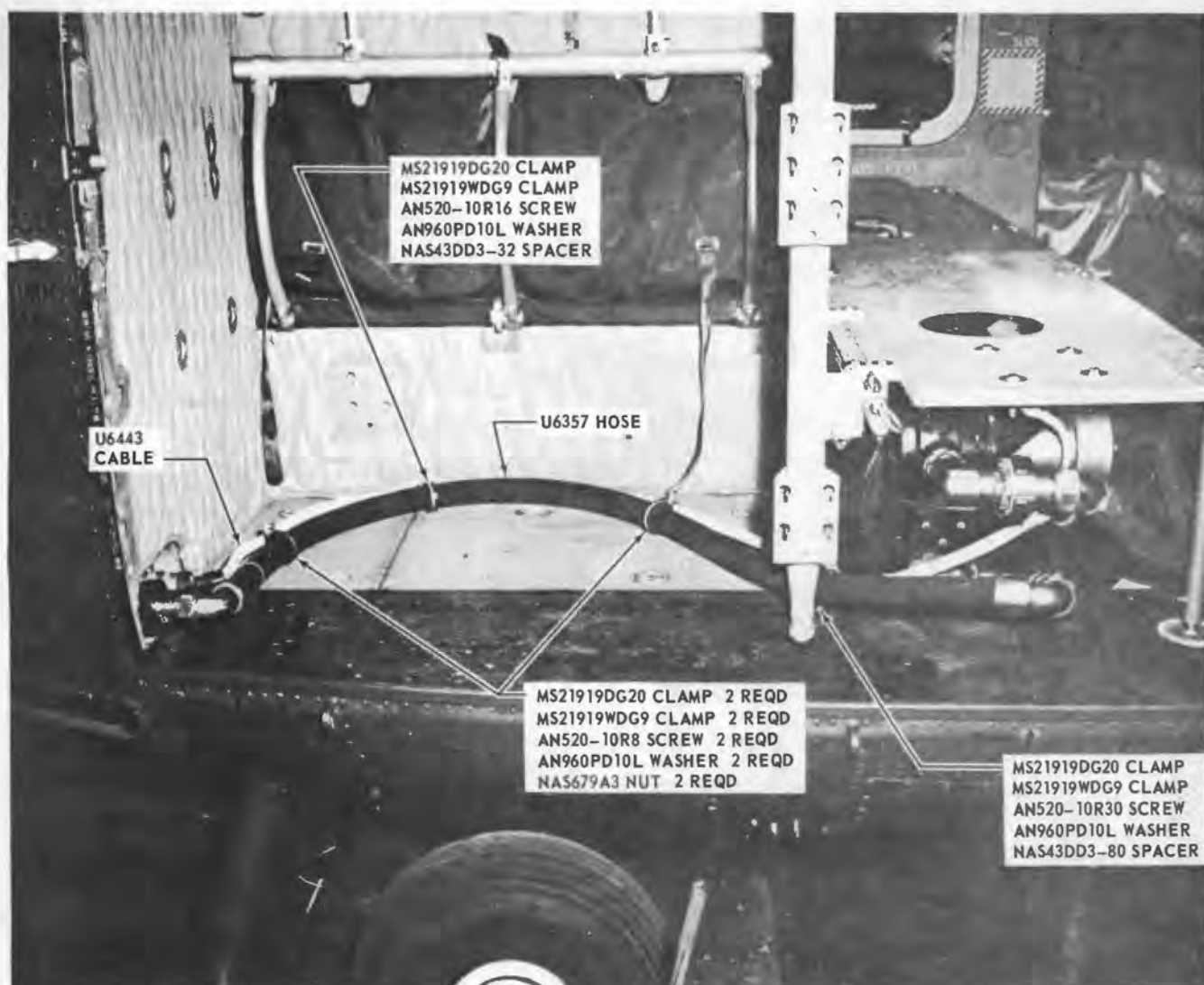
(f) Install elbow (AN939-20D) with packing (MS28778-20) on union.

(g) Install coupling half (U6363) with packing (MS28778-20) in elbow.

(h) Install coupling half (U6363) in opposite end of hose.

(i) Connect end of hose with elbow installed in bottom (outlet) port of pump.

(j) Route hose inboard and aft to coupling in bulkhead, FS 166.00. Connect hose to coupling.



VIEW LOOKING INBOARD RIGHT SIDE

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AV 054207

Figure 14-13. Hose and wiring assemblies

(k) Remove one screw from cabin floor aft of pump. Secure hose and wiring harness at screw hole (as shown).

(l) Remove one screw from near inboard end of row of screws approximately 10 inches forward of bulkhead, FS 166.00. Secure hose and wiring harness at screw hole (as shown).

(m) Secure hose and wiring harness approximately midway between aft connector and aft floor attach point (as shown).

(n) Secure hose and wiring harness approximately midway between the two floor attach points (as shown).

(13) Install switch (U6374) as follows:

(a) Locate small electrical connector in cabin roof outboard and aft of right overhead console.

(b) Install connector on switch cord, on connector in roof.

(c) Stow switch in spring clip located in cabin roof approximately two inches aft of overhead console.

(14) Complete pump inlet hose installation as follows (figure 14-11):

(a) Route hose (U6356) which extends up from center of floor forward of oil tank, outboard to the right along forward edge of tank, to pump. Connect coupling (U6363) on hose, to coupling (U6365) on upper (inlet) pump port.

(b) Secure hose to forward inboard seat leg and DEE ring in tank (as shown).

d. Servicing - Smoke Generator Sub-System Tank.

(1) Perform the following pre-flight procedures before servicing the tank:

(a) Inspect all supports and tighten if necessary.

(b) Inspect nozzle ring and nozzles for looseness or missing nozzles.

(c) Depress the tank level fog oil circuit breaker in the overhead panel and observe the oil level gage in the cockpit.

(2) If the oil level gage indicates less than full, fill oil tank as follows:

WARNING

Do not use any alternate fluids in the oil tank. The prescribed fog oil is Type SGF-2 (item 508, table 2-1).

(a) Disconnect the hoses from the inlet and outlet ports on the pump and motor assembly.

(b) Remove the quick disconnect fitting from the dip tube, insert strainer (Part No. U6697) into the flared end of the dip tube and replace the fitting on the dip tube.

(c) Connect one end of the filling hose to the IN (inlet) port of the pump and motor assembly. Connect the other end of this hose to the dip tube, then insert the dip tube into the fog oil shipping drum.

(d) Connect the hose from the oil tank to the OUT (outlet) port of the pump and motor assembly.

WARNING

Keep all personnel clear of vent located on the left underside of the helicopter during filling operation. If the oil tank is overfilled, excess fog oil will spill from the vent.

(e) Depress SMOKE GEN PUMP CONT circuit breaker. Depress operating switch push button and observe oil level gage as pump and motor assembly operate. When gage indicates F (full), release push button.

NOTE

The oil tank holds approximately 50.0 gallons of fog oil.

(f) Open the circuit breakers.

(g) Disconnect filling hose from IN (inlet) port of pump and motor assembly and from fog oil shipping drum.

(h) Disconnect the hose from the OUT (outlet) port of the pump and motor assembly and connect it to the IN (inlet) port.

(i) Connect pump to bulkhead hose assembly to OUT (outlet) port of pump and motor assembly.

(3) Perform the following post flight procedures:

(a) Open circuit breakers in overhead panel.

(b) Check oil tank and hose connections for leaks. A grazing 0.50 caliber or larger round may result in a non-self-sealing leak in the oil tank.

CHAPTER 15

EXTERNAL STORES — NONARMAMENT

Section I. INTRODUCTION

15-1. Purpose.

The purpose of this Chapter is to provide all the essential information for maintenance personnel to accomplish organizational maintenance on the external stores that are carried by the UH-1D/H helicopter.

Section II. MAINTENANCE INSTRUCTIONS

15-2. Fuel System — 60.0 U.S. Gallon External Auxiliary.

a. Two 60.0 U.S. gallon capacity external auxiliary fuel tanks (19, figure 15-1) may be installed on UH-1D/H helicopters. Each of these tanks is attached to a pylon assembly (20), from which they may be simultaneously released by either manual (21) or electrical (22) means. When the tanks are jettisoned all hoses and electrical cables are automatically disconnected. Hoses have poppet type disconnects that immediately seal them off.

b. Mechanical jettisoning of the fuel tanks is accomplished by activating the mechanical jettison lever mounted on the righthand side of the instrument pedestal. Electrical jettisoning is accomplished by placing the "JETTISON-SAFE" switch on the instrument pedestal control panel (23) in the "JETTISON" position.

c. Fuel in the tanks is forced into the main fuel system by means of an air pressurization system which is protected by a pressurization system which is protected by a pressure regulator. Air for this system is provided by a pump on each pylon assembly (20) and the system is interconnected so that if one pump fails the other will still supply the required pressure. The pylon assemblies (20) are attached to pylon supports (24), which, in turn, are attached to external stores support assemblies (25). The external stores support assemblies are attached to aft "hard-points" on the helicopter structure.

d. External auxiliary fuel provisions have been installed on ships No. 63-8739 thru 66-16867. Number 66-16868 and subsequent, provisions for external auxiliary fuel must be installed on helicopter.

15-3. Fuel Tank — 60.0 U. S. Gallon External Auxiliary.

The fuel tank (see figure 15-1) is of welded aluminum construction and is equipped with two suspension lugs for attachment to the pylon assembly. The filler cap is located

in the forward end of the tank and will accommodate fuel nozzles up to 2.0 inches in diameter.

a. Removal — Fuel Tank.

NOTE

The external auxiliary fuel tank may be removed by either activating the mechanical release lever or by placing the "JETTISON-SAFE" switch in the "JETTISON" position.

CAUTION

Adequate precautions must be taken for suitable support for the fuel tank at time of release.

b. Installation — Fuel Tank.

NOTE

With battery switch "ON" place the "JETTISON-SAFE" switch on the instrument pedestal control panel in the "SAFE" position.

(1) Remove lock-pins from the pylon fuel (1, figure 15-2) and air (2) couplings. Rotate wing nuts under each coupling mounting flange to raise body of coupling to highest position. This will avoid contact between the tank and coupling during positioning of the tank and arming of the pylon.

(2) Loosen the four sway brace jam nuts and raise the sway braces (3 and 4) approximately 3/4 inch to avoid contact with the tank during arming.

NOTE

The following step requires a minimum of two personnel.

(3) Carefully raise the fuel tank so that the suspension lugs properly engage with the pylon hooks. Make sure that the pylon mounted electrical coupling (5) mates securely with the receptacle on the fuel tank, and arm the pylon.

(4) Lower the fuel (1) and air (2) couplings by turning wing nuts. Make sure the pilot on each coupling poppet barrel properly engages the tank opening. Adjust the position of each coupling body so that the lower portion of the body aligns with the red groove around the poppet barrel. Install lock pins in coupling flange.

(5) Lower the forward sway braces (3) to stabilize the tank on the pylon. Push down firmly on the forward end of the tank during this operation to eliminate any play at the forward hook. Play may result from the load applied by the three spring loaded couplings (1, 2 and 5) at the rear of the tank. Position tank fore and aft as well as laterally during this operation. This will assure that the fuel (1) and air (2) couplings are approximately perpendicular to their respective seats on the tank and will evenly distribute sealing pressure. Lower aft sway braces (4) to contact tank surface. All braces shall be finger tight only.

NOTE

If the helicopter is to be flown with empty tanks the jam nuts should be made secure to prevent movement of the sway braces (3 and 4). If tanks are to be fueled do not secure jam nuts until tanks are full. Then readjust sway braces finger tight and secure jam nuts.

(6) Check operation of the "AUX FUEL LOW" warning light on the pilot's caution panel. With the system on and the tanks empty the warning light should be on. During fueling of the auxiliary system the warning light should go out.

NOTE

Before completing fueling of the main fuel system it is desirable to close the auxiliary fuel tank filler caps, pressurize the tanks and transfer a small amount of fuel from the auxiliary system to the main system. While transferring fuel check both the fuel (1) and air (2) coupling seats for leaks. After switching off transfer pumps the auxiliary tanks may be topped off and the main fuel tanks filled.

15-4. Pylon Assembly — External Auxiliary Fuel System.

The pylon assemblies are attached to the pylon supports on both sides of the helicopter, and contain the pylon hooks to which the fuel tanks are attached. An air pump (6, figure 15-2) is mounted on the forward end of each pylon, and an air pressure regulator (7) is located at the approximate center on the outboard side. Fuel, air and electrical lines and cabling are also a part of each pylon assembly.

a. Removal — Pylon Assembly.

(1) Remove fuel tank. (Refer to paragraph 15-3a.)

(2) Disconnect fuel (8, figure 15-2) and air (9) couplings and electrical connector (10) just inside helicopter fuselage skin. Disconnect lower manual release cable (11) at same location. Cap or cover fuel and air couplings and electrical connector to prevent entrance of foreign material. Install access panel to fuselage skin on left-hand side of helicopter and to cabin floor on right-hand side of helicopter.

(3) Remove cotter pin and pin attaching cable guard tube (12) to support assembly (13) on top of

1. Lower Cable Assembly
2. Grommet
3. Cable Assembly
4. Pulley Brackets
5. Upper Guard Tube
6. Lower Guard Tube
7. Barrel
8. Lateral Release Cable Pulleys
9. Bellcrank
10. Lateral Release Cable Assemblies
11. Cable Guard
12. Longitudinal Release Cable Assembly
13. Emergency Release Lever Assembly

14. Grommet
15. Longitudinal Release Cable Pulleys
16. Fairlead
17. Grommets
18. Support Assembly
19. Auxiliary Fuel Tank
20. Pylon Assembly
21. Manual Release Mechanism
22. Electrical Release Controls
23. Control Panel
24. Pylon Support
25. External Stores Support Assembly

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Figure 15-1. 60 gallon external fuel tank (Sheet 1 of 2)

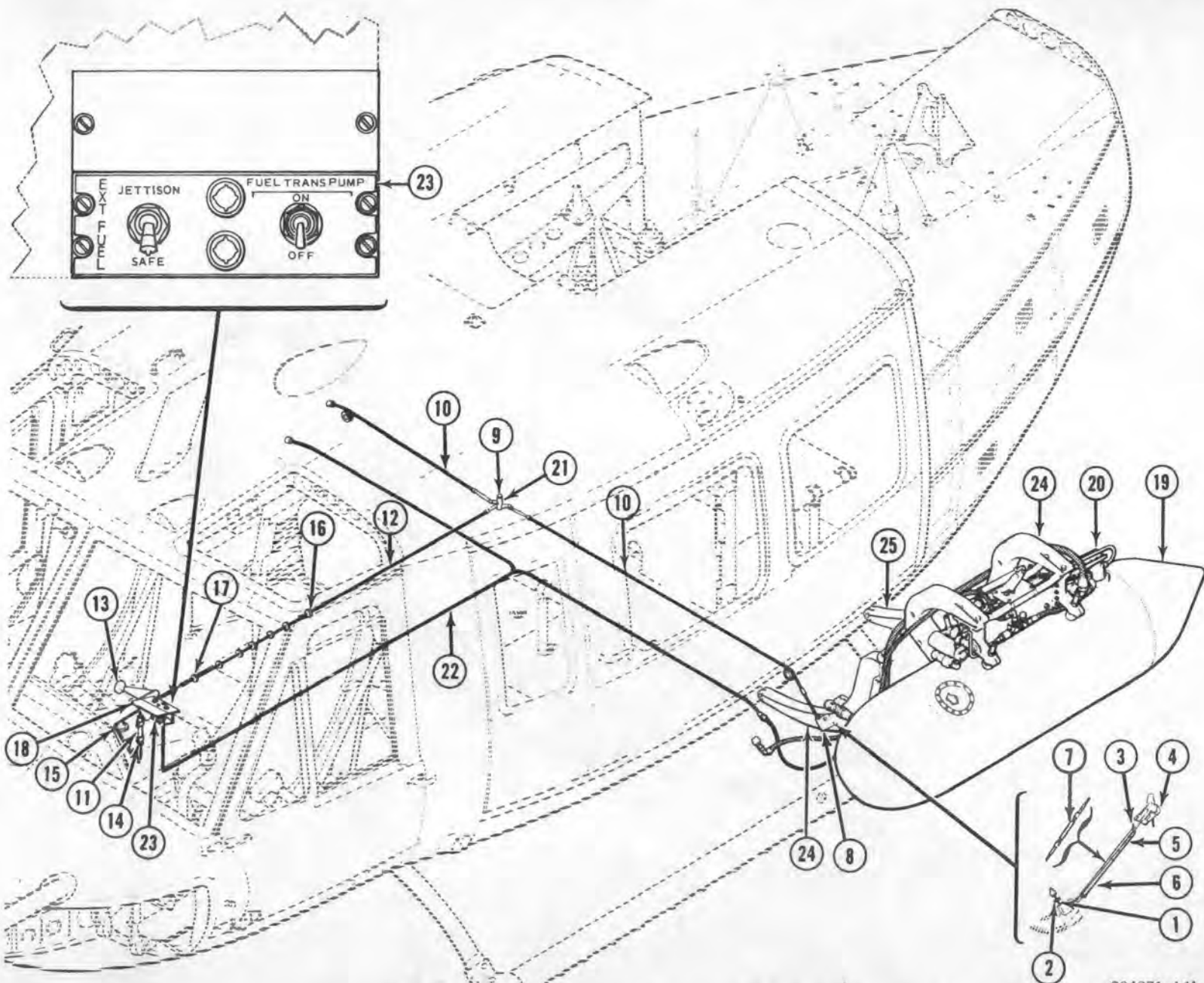
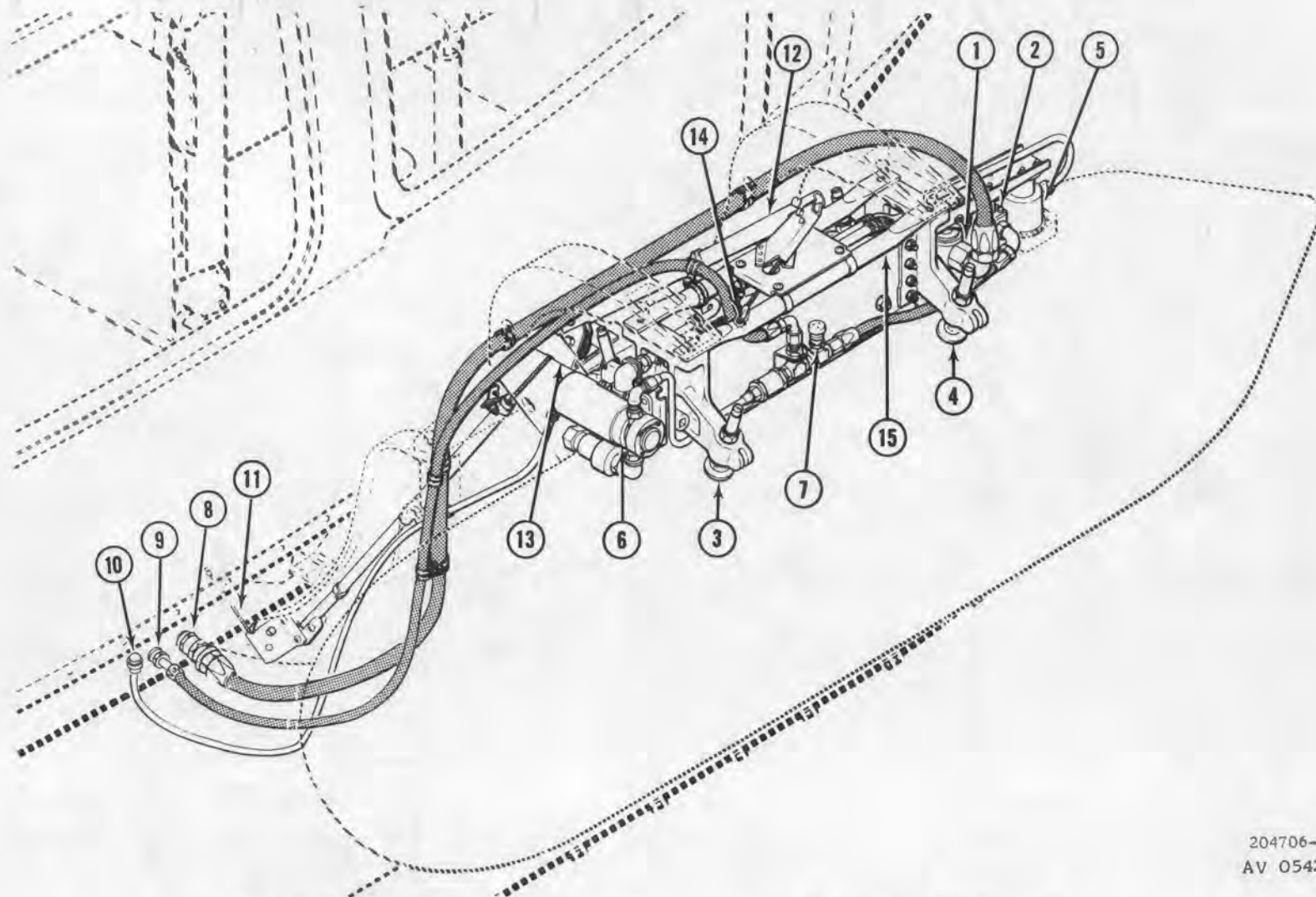


Figure 15-1. 60 gallon external fuel tank (Sheet 2 of 2)

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1. Pylon Fuel Coupling
2. Pylon Air Coupling
3. Forward Sway Brace
4. Aft Sway Brace
5. Pylon Electrical Coupling
6. Air Pump
7. Air Pressure Regulator
8. Fuselage Fuel Coupling

9. Fuselage Air Coupling
10. Fuselage Electrical Connector
11. Lower Manual Release Cable
12. Cable Guard Tube
13. Support Assembly
14. Pin, Washer and Cotter Pin
15. Pulley Support Tubes

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Figure 15-2. External components — 60 gallon external fuel tank

external stores support assembly. Carefully disengage cable guard tube (12) from support assembly (13), and withdraw manual release cables from lower guard tubes. Remove cotter pin, washer and flat head pin (14) attaching upper end of manual release cable to pylon assembly.

(4) Support pylon assembly and remove nuts, washers and bolts attaching pylon assembly to pulley support tubes (15) and pylon support (24, figure 15-1). Remove pylon assembly. Remove pulley support tubes (15, figure 15-2) with support, cable guard tube (12) and manual release cables still attached.

b. Installation — Pylon Assembly.

(1) Position the pulley support tubes (15, figure 15-2) with support, cable guard tube (12) and manual release cables attached and pylon assembly to the pylon support (24, figure 15-1) and install attaching bolts, washers and nuts.

NOTE

Air pump (6, figure 15-2) on pylon shall be forward.

(2) Attach upper end of manual release cable to pylon assembly with flat head pin, washer and cotter pin (14). With hand tension on cable, adjust pulley support bracket to obtain proper cable alignment. This adjustment will place the forward edge of the support bracket between 3.6 and 4.6 inches aft of the aft edge of the pylon support forward arm.

(3) Align manual release cable over pulley in support assembly (13) on top of external stores support assembly. Align holes in cable guard tube (12) with holes in support assembly (13) and install attaching pin and cotter pin. Thread lower manual release cable (11) through lower guard tubes.

(4) Remove access panels from fuselage skin on left-hand side of helicopter and from cabin floor on right-hand side of helicopter. Connect lower manual release cable to existing release cable.

NOTE

Cable tension may be varied by adjustment of the turnbuckle located between the upper and lower manual release cables.

(5) Uncap or uncover fuel (8) and air (9) couplings and electrical connector (10). Connect fuel and air couplings and electrical connector to existing internal lines and electrical receptacle.

CAUTION

Fuel couplings are colored RED and air couplings are colored GREEN. Be sure to connect red coupling to red coupling and green to green.

(6) Before installing fuel tank, arm the pylon and operate both the manual and electrical release mechanisms to assure smooth, efficient operation.

15-5. Support — External Auxiliary Fuel System Pylon.

The pylon support (see figure 15-3) is a heavy duty aluminum alloy casting. It is attached to the external stores support assembly (25, figure 15-1) and supports the pylon and fuel tank.

a. Removal — Pylon Support. Adequately support the pylon support and remove nuts, washers and bolts attaching the pylon support to the external stores support assembly.

b. Installation — Pylon Support. Position the pylon support against the external stores support assembly and align bolt holes. Install attaching bolts, washers and nuts with a washer under each bolt head and under each nut.

15-6. Panel — External Auxiliary Fuel System Control.

The control panel (23, figure 15-1) is located in the lower right-hand corner of the instrument pedestal where it is readily available to the pilot. This panel contains the "JETTISON-SAFE" switch, the "FUEL PUMP TRANSFER" switch and two instrument lights.

a. Removal — Control Panel.

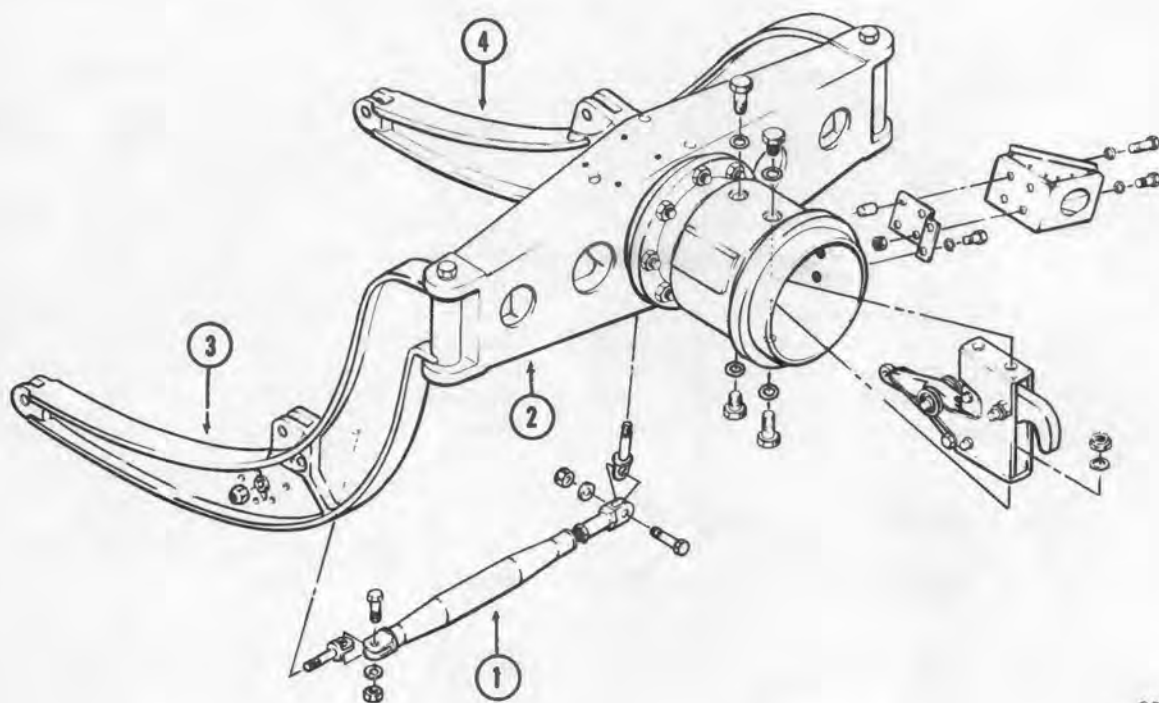
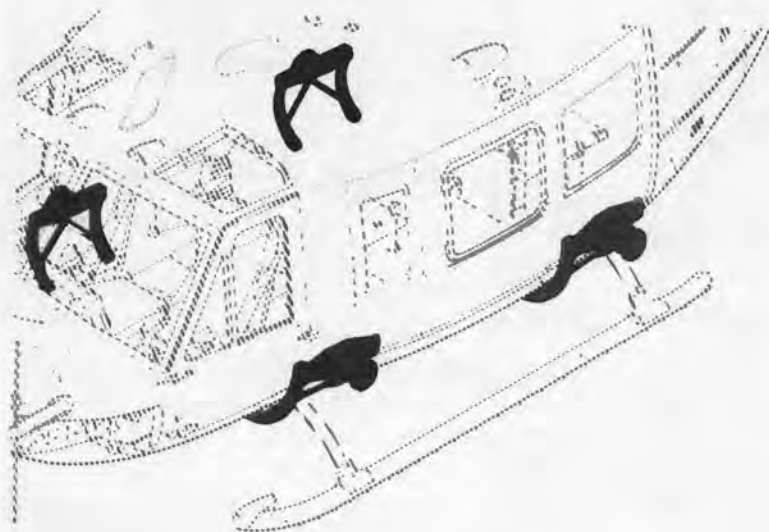
(1) Disconnect four quick-disconnects and raise panel from instrument pedestal.

(2) Disconnect electrical connector from receptacle on back of control panel and cover connector and receptacle with tape to prevent entrance of foreign material.

(3) Remove blank panel above control panel and install second blank panel to completely cover opening in instrument pedestal.

b. Installation — Control Panel.

(1) Remove existing blank panel from lower right-hand corner of instrument pedestal.



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- 1. Sway Brace Assemblies
- 2. Support Assembly Cross Beam

- 3. Support Assembly Forward Beam
- 4. Support Assembly Aft Beam

Figure 15-3. External stores support assembly

(2) Remove tape from electrical connector and receptacle on back of control panel and connect receptacle and connector.

(3) Position control panel in instrument pedestal and connect four quick-disconnect fasteners. Position and install blank panel just above control panel.

15-7. External Stores Support Assemblies.

The external stores supports (see figure 15-3) consist of beams and sway braces to which various adapters are available for equipment or armament configurations.

a. Removal – External Stores Support Assemblies.

(1) Remove nuts, washers, and bolts attaching sway braces to support beams and cross beams. Remove sway braces.

(2) Remove nuts, washers, and bolts attaching cross beam to forward and aft supports and remove adapters.

(3) Remove nuts, washers, and clevis bolts attaching forward and aft support assemblies to fuselage and remove support beams.

b. Inspection – External Stores Hard Points.

(1) Inspect for corrosion and cracks. Perform dye penetrant inspection, inspecting for fatigue cracks in an area approximately 6 inches adjacent to the upper attaching points.

(2) Inspect for loose, missing or improperly installed hardware.

(3) Inspect bushings for proper inside diameter.

(4) Maximum allowable tolerance for external mounting stores hard points is 0.012 inch.

c. Installation – External Stores Support Assemblies.

(1) Position each support beam assembly on helicopter and secure to structure with clevis bolts, washers, and nuts. Install cotter pins.

(2) Position cross beam between outer ends of forward and aft beam assemblies and install attaching bolts, washers, and nuts.

(3) Position sway brace assemblies on external stores support assembly and install attaching bolts, washers, and nuts.

CHAPTER 16

STORAGE OF AIRCRAFT

Section I. INTRODUCTION

16-1. General.

This chapter provides detailed preparation procedures to place a UH-1D/H helicopter in storage for a period of 6 months or less, the necessary depreservation procedures to activate the helicopter after a period of storage, and the necessary steps to demolish the helicopter. This storage procedure is divided into 3 modes of storage: flyable storage, short term storage and intermediate storage.

Storage of aircraft includes corrosion control which consists primarily of preventing moisture from contacting exposed metal surfaces by the use of preservatives.

16-2. Environmental Conditions.

a. The existing environmental conditions and available facilities must be taken into account when a helicopter is to be placed in storage.

b. A choice of storage procedures is permissible for short periods of storage. For example, a choice must be made between flyable storage and short term storage for any period of time up to 45 days. The decision will be based on such on-site conditions as availability of men,

materials, equipment necessary to perform ground run ups, motoring of engines, defueling and purging of fuel tanks and other elements of various procedures. Wet weather conditions create corrosion, rot, mildew and mold. To prevent these deteriorating effects, perform inspections regularly and take proper preventive maintenance action. The following practices should be used as a guide during exceptionally wet weather conditions:

(1) Prevent rot, mildew and mold from forming on nonmetallic materials by keeping them clean and as dry as possible. Keep fabric material in the helicopter clean. (Refer to Chapter 1.)

(2) Treat for visible corrosion in accordance with Chapter 1.

(3) Open all drain holes to facilitate draining when water accumulates.

(4) Keep fuel tanks full to prevent condensation in the tanks.

(5) Store helicopters in a hangar or shed if space permits.

Section II. GENERAL STORAGE PROCEDURES

16-3. Modes Of Storage.

The length of time the aircraft will be inactive and the facilities and manpower available will determine which of the following categories of storage will be used:

a. *Flyable Storage (No Time Limit).* Flyable storage is the procedure prescribed to maintain a stored helicopter in an operable condition. Next to daily use, this keeps the aircraft in the best possible condition. It does, however, require attention periodically.

b. *Short Term Storage (From 1 to 45 Days).* This type of storage is used to store a helicopter up to 45 days with very little attention during the storage period.

c. *Intermediate Storage (From 46 to 180 Days).* A helicopter that will be inactive for more than 45 days, but not exceeding 180 days, shall be prepared and maintained in intermediate storage.

16-4. Procedures Common To All Modes Of Storage.

The following procedures are to be used whenever a helicopter is placed in flyable, short term or intermediate storage:

a. *Preservation.* Preservation should be accomplished in an uninterrupted series of operations. When periods of interruption are necessary, temporary protection shall be provided for partially processed items as required to avoid contamination.

NOTE

For component assemblies removed from the helicopter, preservation and packaging instructions may usually be found in the section of this manual which carries instructions for removing the component. Further information may be found in TM 38-230, Preservation, Packaging and Packing of Military Supplies and Equipment.

b. Ventilation. The prevention of corrosion depends to a large extent on the control of moisture. One very satisfactory method of doing so is by means of ventilation. On days when the relative humidity is 55 percent or below, the doors and other openings can be temporarily opened to allow a circulation of the dry air through the helicopter. Fans or blowers, when available, are very helpful.

c. Drainage. Ensure that water drain holes are free from obstruction and are kept open for the duration of the storage period.

d. Towing. Tow the helicopter in accordance with standard procedures. (Refer to Chapter 1.)

e. Parking. Park the helicopter in accordance with Chapter 1.

f. Mooring. Moor the helicopter in accordance with standard mooring procedures. (Refer to Chapter 1.)

g. Lubrication. Lubricate the helicopter prior to placing it in storage in accordance with Chapter 2.

16-5. Inspection Of Stored Helicopters.

The local maintenance officer is responsible for establishing an inspection program for stored helicopters. TM 55-1520-210-PMD may be used as a guide for areas to be covered. The frequency of inspection will be the responsibility of the local maintenance officer. The inspection program is to include the following for all types of storage.

a. When all weather covers are available, they will be installed in accordance with Chapter 1. If all weather covers are not available, protect the areas concerned (figure 1-7) with barrier material (item 506, table 1-2) and secure with tape (item 400, table 1-2). This barrier material should be installed in such a manner as to prevent the accumulation

of water on the surface of the cover. Provide drains, if necessary. Replace aircraft covers or barrier material which are damaged or deteriorated.

b. Determine peak interior helicopter temperatures, during hot weather conditions. Obtain temperature information from standard thermometers temporarily installed in the helicopter. Record interior temperatures at intervals during the hottest part of the day. Ventilate the helicopter if interior temperatures exceed 135 degrees F (57 degrees C). Provide forced ventilation if normal ventilation procedures are not adequate to prevent condensation and possible mildew and corrosion.

c. Inspect and treat the helicopter against corrosion. Inspection for corrosion includes close observation of areas where moisture does not evaporate rapidly. Evidence of corrosion will not be as prevalent on painted surfaces as it is on unpainted surfaces. Corrosion can attack metal through paint and will be evidenced by blisters or scaly appearance.

d. Inspect static ground wires, rotor tiedown straps, and mooring devices (ropes, cables, rods or eyes) at regular intervals. Inspect tiedown devices immediately after the helicopter has been subjected to winds exceeding 40 m.p.h. Replace ground wires, mooring devices, or tiedown straps which are deformed or deteriorated.

e. Inspect communication equipment for fungus or corrosion. Remove, clean, repair, package and identify communication equipment which is deteriorating. Stow the packaged equipment in the helicopter from which it was removed. Do not remove or package antennas.

f. If possible the helicopter will be stored in a hangar or under a shed roof, otherwise, it will be parked and moored in accordance with Chapter 1.

g. Enter the type of storage and the date aircraft was placed in storage in the aircraft log book.

Section III. FLYABLE STORAGE (NO TIME LIMIT)

NOTE

The general requirements in Sections I and II form a part of this procedure.

16-6. Inspection Prior To Storage.

Helicopters in this storage category will be maintained in a serviceable condition. Perform daily inspection prior to performing the requirements in paragraphs 16-6 a. through 16-6 e. (Refer to TM 55-1520-210-PMD). Make sure the date and type of storage is recorded in the aircraft log book.

a. Power Train.

(1) Check the power train system lubrication including sight gages. Service the Power Train system in accordance with Chapter 1.

(2) The preservation run-up prescribed in step b.
(3) below completes the preservation of the transmission and gear boxes.

b. Engine. Preserve the engine as follows:

(1) Exercise every precaution to keep the engine and accessories clean. Keep the air intake duct, plenum chamber, and compressor inlet screens clean and free of any foreign materials. When external cleaning is necessary, use solvent (item 302, table 1-2).

(2) Start engine. (Refer to TM 55-1520-210-10.)

(3) Run engine for 10 minutes at flight idle and check all instruments for normal engine operation. Make certain that engine temperature stabilizes.

NOTE

This run up may be omitted if the helicopter was recently operated and known to be dry.

(4) Shut down engine. (Refer to TM 55-1520-210-10.)

(5) Install engine inlet and exhaust protective covers. If engine covers are not available, seal the air inlet and exhaust openings with barrier material (item 506, table 1-2) and secure material with tape (item 400, table 1-2).

(6) Cover additional engine cowling openings in a similar manner as outlined in subparagraph (5) above.

(7) Record the date engines were placed in flyable storage in the aircraft log book.

c. Hydraulic System. Check the hydraulic reservoir and fill as necessary with fluid (item 4, table 1-2). Refer to Chapter 1 for hydraulic reservoir servicing procedure.

d. Fuel System. Service fuel tanks to normal capacity after each engine preservation run. Drain water from the fuel tanks before adding fuel.

NOTE

Tanks filled to normal capacity reduces fuel contamination by condensation. The maintenance officer will determine the interval of periodic drainage.

e. Airframe Preparation.

(1) Install pitot tube cover, or if the cover is not available, wrap the pitot tube with barrier material (item 505, table 1-2) and secure wrap with tape (item 400, table 1-2).

(2) Install aircraft all weather covers if available in accordance with Chapter 1.

(3) Close all doors and windows.

16-7. Maintenance Of Preservation During Flyable Storage.

a. Helicopters in flyable storage will be inspected in accordance with local directives and those requirements outlined in paragraph 16-5 and 16-6.

b. Perform a preventive maintenance daily inspection at least once every 7 days in accordance with TM 55-1520-210-PMD.

c. Operate the engine at least once every 7 days for approximately 10 minutes at flight idle. Check all instruments for normal operation and ensure that the engine temperature has stabilized. (Refer to TM 55-1520-210-10.)

d. Install engine and exhaust covers in accordance with paragraph 16-6 step b, substep (5).

Section IV. SHORT TERM STORAGE (1 TO 45 DAYS)

NOTE

The general requirements in Sections I and II form a part of this procedure.

16-8. Inspection Prior To Storage.

a. The following inspection is required:

(1) Ensure that all removed components are preserved and stowed within the helicopter in suitable containers.

(2) Make sure that a record of all removed or disconnected parts are entered in the aircraft log book.

(3) Check fuel, oil, and hydraulic lines and hoses for leakage.

(4) Lubricate the helicopter for the 50-hour interval. (Refer to Chapter 2.)

(5) Make sure that bolts, washers, nuts, etc., which are removed during disassembly, are coated with a light coat of corrosion preventive compound (item 312, table

1-2) and reinstalled as removed from the major component unless otherwise specified.

(6) Record the date and type of storage in the aircraft log book.

b. Power Train System.

(1) Clean the exposed metal surfaces of the power train system with a clean cloth dampened with solvent (item 302, table 1-2).

(2) Check the power train lubrication system including the sight gages and service in accordance with Chapter 1.

(3) Coat the exposed metal surfaces with corrosion preventive compound (item 312, table 1-2).

NOTE

If the engine is inoperable, complete preservation of power train system in accordance with step (7) below.

(4) Start engine and run at flight idle for ten minutes. (Refer to TM 55-1520-210-10.) Check that all instruments are operating normally. Ascertain that engine temperature has stabilized.

(5) Shut down engine. (Refer to TM 55-1520-210-10.)

(6) Cover breather holes in transmission and gear boxes with grade A barrier material (item 505, table 1-2) and secure with tape (item 400, table 1-2). The preservation run-up prescribed in subparagraph (4) above completes the preservation of the transmission and gear boxes.

(7) If engine can not be motored, preserve power train as follows:

(a) Remove main rotor. (Refer to Chapter 8.)

(b) Remove mast assembly; request direct support assistance.

(c) Spray inside of transmission, through top opening, with approximately one gallon of lubricating oil, (item 2, table 1-2). While spraying, manually rotate internal gears and bearings with input drive quill.

(d) Reinstall mast assembly. Apply fingerprint remover, corrosion preventive (item 313, table 1-2) to all unpainted surfaces of mast assembly. Wipe mast dry with clean lint-free cloth. Apply corrosion-preventive compound (item 312, table 1-2) to all unpainted surfaces.

(e) Reinstall main rotor.

(f) Reinstall main drive shaft.

(g) Be sure intermediate and tail rotor gear boxes have been filled with operating oil to the proper operating level.

(h) Cover breather holes in transmission and gear boxes with grade A barrier material (item 505, table 1-2) and secure with tape (item 400, table 1-2).

c. Operable Engines.

NOTE

Preserve inoperable engines in accordance with paragraph 16-8, step d.

(1) Exercise every precaution to keep the engine and its accessories clean. Keep the air intake ducts, plenum chambers and compressor inlet screens clean and free of any foreign materials. When external cleaning is required, use dry cleaning solvent conforming to P-D-680 (item 302, table 1-2).

(2) Check the oil level; service as necessary in accordance with Chapter 1.

CAUTION

Lubricating oil (item 2 or 3, table 1-2) may soften paint upon contact. If lubricating oil is spilled on painted surfaces, remove it by wiping affected area with a clean cloth dampened with solvent (item 302, table 1-2).

(3) Disconnect cable connector from ignition exciter to prevent accidental firing of engine.

(4) Remove fuel inlet strainer, pump discharge strainer, and servo supply filter from fuel regulator. Clean with solvent, (item 302, table 1-2) and reinstall.

(5) Disconnect the main fuel hose from main fuel manifold (flow divider on T53-L-13) and the starting fuel hose from inlet side of starting fuel solenoid valve. Install temporary lines on end of hoses to allow drainage into suitable container.

(6) Connect hose from a source of lubricating oil, (item 5, table 1-2) to fuel control inlet fitting.

(7) Check that engine has cooled enough to prevent auto-ignition. Set throttle arm to idle position.

(8) Motor engine, with starter, to pump lubricating oil into fuel system.

CAUTION

Do not operate starter in excess of operating limits. Operation of starter is limited to three runs of 40 seconds each, maximum, during any 60 minute period. Three minutes cooling time between starts is required. Do not engage starter until engine has come to a complete stop.

(9) Open and close throttle to ensure flushing of the fuel control.

(10) Continue motoring until fuel free oil is observed draining into container.

(11) With engine stopped, spray power turbine rotor with sufficient amount of corrosion preventive compound (item 325, table 1-2) to cover blades.

NOTE

Use dehydrated air for spraying operation.

(12) Disconnect lubricating oil hose from fuel control and connect fuel inlet line.

(13) Remove temporary lines from fuel hoses and connect main fuel hose to main fuel manifold, or flow divider. Connect starting fuel hose to starting fuel solenoid valve.

(14) Connect cable connector to ignition exciter.

(15) Install engine inlet and exhaust covers.

NOTE

When covers are not available, seal opening with greaseproof barrier material (item 506, table 1-2) and secure with tape (item 400, table 1-2).

(16) Remove oil filter, disassemble and clean. Immerse in operating lubricant, reassemble and reinstall.

(17) Attach a tag to the controls stating: ENGINE PRESERVED, FUEL CONTROL HAS BEEN PRESERVED WITH OIL, MIL-L-6081. FLUSH WITH STANDARD FUEL BEFORE PLACING IN SERVICE.

(18) Visually check entire engine. Plug all holes, cap all ports, and check that external parts are complete and secure. Bare metal, including internal and external threads, should be covered with a film of corrosion preventive compound (item 325, table 1-2).

(19) Record date and extent of engine preservation in the engine historical records.

d. Inoperable Engine. Preserve engine that can not be operated as follows:

(1) Exercise every precaution to keep the engine and its accessories clean. Keep the air intake ducts, plenum chambers and compressor inlet screens clean and free of any foreign materials. When external cleaning is required, use solvent (item 302, table 1-2).

(2) Disconnect cable to ignition exciter.

(3) Disconnect the fuel lines from the fuel control inlet and outlet ports; remove fuel control drain plug and drain fuel from the fuel control and hoses.

(4) Remove fuel inlet strainer, pump discharge strainer, and servo supply filter from fuel control. Clean with solvent, (item 302, table 1-2) and reinstall.

(5) Remove overspeed governor and drain fuel.

(6) Connect cable to ignition exciter and connect fuel hoses. Replace drain plug.

(7) Lock-wire throttle arm into closed position.

(8) Pour lubricating oil, (item 5, table 1-2) into openings made accessible by removal of overspeed governor, until fuel regulator is filled.

(9) Pour lubricating oil into overspeed governor while rotating the drive shaft by hand.

(10) Reinstall overspeed governor.

(11) Install engine inlet and exhaust covers. When covers are not available, seal openings with greaseproof barrier material (item 506, table 1-2) and secure with tape (item 400, table 1-2).

(12) Seal the gap between bleed band and compressor housing by encircling the engine with a narrow strip of barrier material, (item 505, table 1-2) and secure with tape, (item 400, table 1-2).

(13) Visually check entire engine. Plug all holes, cap all ports, and check that external parts are complete and secure. Bare metal, including internal and external threads, should be covered with a film of corrosion preventive compound (item 325, table 1-2).

(14) Attach a tag to controls stating: FUEL CONTROL HAS BEEN PRESERVED WITH OIL, MIL-L-6081. FLUSH WITH STANDARD FUEL BEFORE PLACING IN SERVICE.

(15) Record date and extent of engine preservation in engine historical records.

e. *Fuel System.* Maintain the fuel tanks at the full level for the duration of the storage period. Full tanks prevent fuel contamination. Drain any water from the fuel tanks before adding fuel. Fill fuel tanks as necessary in accordance with Chapter 1. Refer to paragraph 16-9 step e. for damaged fuel tank procedure.

f. *Hydraulic System.*

(1) Fill hydraulic reservoir with fluid (item 4, table 1-2).

(2) Wipe exposed portions of hydraulic boost cylinder actuator pistons with lint-free cloth moistened with hydraulic preservative fluid (item 11, table 1-2).

g. *Rotors and Controls.*

(1) Lubricate rotor system in accordance with Lubrication Order. (Refer to Chapter 2.)

(2) Apply fingerprint remover (item 313, table 1-2), to all unpainted metal surfaces. Remove any film residue of fingerprint remover with solvent (item 302, table 1-2).

(3) Wipe all parts dry with clean, lint-free cloth, and apply corrosion-preventive compound (item 312, table 1-2) on all unpainted metal surfaces not in contact with bearings.

(4) Clean surfaces of rotor blades with mild soap and water solution. Wipe blade completely dry with clean, lint-free cloth.

(5) Apply a light, even coat of wax (item 504, table 1-2) to entire painted area of rotor blades.

(6) Apply a light coat of corrosion preventive compound (item 312, table 1-2), to tail rotor cables, sprocket, and chain. Cycle controls through full range for complete coverage.

h. *Battery.*

(1) Disconnect battery and allow to remain in helicopter.

(2) Wrap battery quick-disconnect with barrier material (item 506, table 1-2), secured with tape (item 400, table 1-2).

i. *Instruments.*

(1) Install cover on pitot tube.

(2) Cut a piece of barrier material (item 506, table 1-2), to fit over each static vent of airspeed system. Secure material in place with tape (item 400, table 1-2).

j. *Avionic Equipment.*

(1) Remove, attach condition tags, and return all head-sets and microphones to supply.

(2) Leave all other unclassified avionic equipment installed in helicopter.

k. *Landing Gear.*

(1) Place blocks or shoring under skid tubes to provide free air passage.

(2) Clean cross tubes and skid tubes, and treat for corrosion in accordance with TM 55-405-3.

(3) Repaint any exposed metal surfaces. If the paint system can not be touched up, coat the bare metal surfaces with corrosion preventive compound (item 312, table 1-2).

l. *Airframe.*

(1) Park and moor helicopter with main and tail rotor tie-downs installed (Refer to Chapter 1).

(2) Close all doors and windows.

(3) Close and secure all cowling, inspection panels and covers.

(4) Close all openings not already covered with barrier material (item 505, table 1-2) and secure material with tape (item 400, table 1-2).

m. *Maintenance of Preservation.*

(1) Helicopters in short term storage will be inspected in accordance with local directives and those requirements outlined in paragraphs 16-5 and 16-8.

(2) Perform applicable portions of preventive maintenance daily inspection at least once every 7 days in accordance with TM 55-1520-210-PMD. (Refer to paragraph 16-5.)

(3) If conditions change so that a helicopter that was prepared for short term storage must remain in storage for a longer period of time, represerve the helicopter in accordance with Section V. DO NOT RENEW SHORT TERM STORAGE.

Section V. INTERMEDIATE STORAGE (46 TO 180 DAYS)

NOTE

The general requirements in Sections I and II form a part of this procedure.

16-9. Inspection Prior To Storage.

a. Inspect the helicopter in accordance with paragraph 16-5 and as follows:

(1) Make sure that all removed components are preserved and either stowed in the helicopter or at a designated location as prescribed in the respective paragraph.

(2) Main rotor blades will be removed and placed in a metal shipping and storage container and stored under cover.

(3) Make certain that a record of all removed or disconnected components is entered in the aircraft log book.

(4) Check fuel, oil and hydraulic lines and hoses for leakage.

(5) Lubricate the helicopter for 50- and 100-hour intervals in accordance with Chapter 2.

(6) Make sure that bolts, washers, nuts, etc., which are removed during disassembly, are coated with a light coat of corrosion preventive compound (item 312, table 1-2) and reinstalled as removed from the major component unless otherwise specified.

(7) Record the type and date of storage in the aircraft log book.

b. *Power Train System.* Preserve the power train system in accordance with paragraph 16-8, step b.

c. *Engine.* Preserve the engine in accordance with paragraph 16-8, step c. (operable engine) or in accordance with paragraph 16-8, step d. (inoperable engine).

d. *Fuel System.*

WARNING

In the interest of safety of personnel and equipment, the following precautions must be observed while preparing aircraft fuel tanks for storage:

The aircraft and all equipment used in performing the operation must be properly grounded. This includes defueling equipment, work stands, purging equipment, and any powered or pneumatic devices. Work stands shall be equipped with a personnel static discharge plate of copper or zinc plate, which shall be affixed in such a position that personnel can contact the plate before coming in contact with the aircraft.

Fuel tanks should not be drained near the end of the working day and then allowed to stand "empty" over night. Residue fuel drains down the sides of the tank and forms puddles. Over night, fuel from these puddles evaporates into the air in the tank and should a critical fuel air ratio develop, an explosion could be set off by a spark. A lapse of time between draining and purging should be avoided.

(1) Drain the fuel tanks in accordance with Chapter 1.

(2) Fill the fuel tanks with lubricating oil (item 5 table 1-2) and allow it to remain in the tanks overnight or for a period of approximately 10 hours.

(3) Drain the lubricating oil, and test fuel tanks with a Davis Vapometer, or equal, if a dangerous level of fuel fumes still exists, discard the drained lubricating oil and reflush tanks with fresh oil, until a safe reading is obtained.

(4) Tag fuel cap as follows: THIS FUEL SYSTEM HAS BEEN PRESERVED WITH OIL, MIL-L-6081. FLUSH WITH STANDARD FUEL BEFORE PLACING IN SERVICE.

NOTE

As an alternate method, serviceable fuel tanks may be purged and preserved in accordance with step e. below.

e. *Combat Damaged Fuel System.* Fuel tanks which cannot be filled with lubricating oil because of leaks will be purged and preserved as follows:

(1) Open fuel cells in accordance with Chapter 5 Section V and ventilate tanks with rapidly moving dry air

until fumes are below the danger level as shown by test with a Davis Vapometer, or equal.

(2) Preserve the tanks by spraying with lubricating oil (item 5, table 1-2) through the access openings; coat the entire interior surface.

(3) Tag the fuel system in accordance with paragraph 16-9, step d, substep (4).

f. Hydraulic System. Process the hydraulic system for storage in accordance with paragraph 16-8, step f.

g. Rotor and Controls. Rotor and controls will be preserved in accordance with paragraph 16-8, step g., however, the main rotor blades will be removed, placed in a metal shipping and storage container, and stored under cover.

h. Battery.

(1) Remove the battery and turn into battery shop for storage.

(2) Clean the battery compartment and accessories as necessary in accordance with Chapter 12.

(3) Wrap battery quick disconnect plug with grade A barrier material (item 505, table 1-2) and secure plug to airframe with tape (item 400, table 1-2).

i. Instruments. Process instruments in accordance with paragraph 16-8, step i. Remove clock, apply condition tag, and turn into supply.

j. Avionic Equipment. Process avionic equipment in accordance with paragraph 16-8, step j.

k. Utility Equipment.

(1) Remove fire extinguishers, apply condition tag, and return to local supply.

(2) Remove, apply condition tag, and return to supply such items as first aid kits and other equipment subject to mildew and deterioration.

l. Landing Gear. Process landing gear in accordance with paragraph 16-8, step k.

m. Airframe.

(1) Park and moor helicopter with the tail rotor tiedown installed in accordance with Chapter 1.

(2) Close and secure all cowling, inspection panels and covers.

(3) Close all openings in the fuselage not already covered with barrier material (item 506, table 1-2) and secure material with tape (item 400, table 1-2).

n. Maintenance of Preservation.

(1) Helicopters in intermediate storage will be inspected in accordance with local directives and those requirements outlined in paragraphs 16-6 and 16-9, step a.

(2) Applicable portions of preventive maintenance daily inspection will be performed at least once every 7 days in accordance with TM 55-1520-210-PMD (Refer to paragraph 16-6).

(3) If conditions change so that a helicopter that was prepared for intermediate storage must remain in storage for a longer period of time, represerve the helicopter.

o. Accident Engines-Preservation.

NOTE

Engines removed from an aircraft, which has been involved in an accident in which engine failure or malfunction is known or suspected to have been a factor, should not be treated for corrosion protection. (Refer to Chapter 3.)

(1) Without disconnecting lines or fittings make every effort to prevent the remaining fuel and oil in the engine from leaking out.

(2) To prevent the accumulation of moisture, place four eight-unit bags of desiccant, (item 310, table 1-2) in the inlet housing and four bags in exhaust diffuser.

(3) Plug all ports and cap all fittings and lines. Seal all openings with covers or barrier material, (item 505, table 1-2) and secure with tape, (item 400, table 1-2).

p. Damaged, Cannibalized or Failed Engine Preservation Procedure. Inoperable engines that are idle because they require parts, maintenance, or overhaul shall be preserved as required (depending on storage time) and stored in a shipping container or in a clean, dry area, adequately protected from dirt and physical damage.

Section VI. DEPRESERVATION AND ACTIVATION PROCEDURES

16-10. Depreservation After Flyable Storage.

- a. Remove protective covers and stow them in designated location in helicopter.
- b. Remove all barrier material and tape; remove tape residue with solvent (item 302, table 1-2).
- c. Clean aircraft as necessary in accordance with Chapter 1.
- d. Open all doors and ventilate helicopter.
- e. Remove main rotor and tail rotor tiedowns, if applicable.
- f. Perform preventive maintenance daily inspection in accordance with TM 55-1520-210-PMD.
- g. Record the date the helicopter was prepared for service in the aircraft log book.
- h. Remove static ground wire installed for storage.

16-11. Depreservation After Short Term Storage.

a. Airframe.

- (1) Remove protective covers and stow them in designated location in the helicopter.
- (2) Remove all barrier material and tape; remove tape residue with solvent (item 302, table 1-2).
- (3) Open all doors and ventilate helicopter.
- (4) Remove main and tail rotor tiedowns.

b. *Landing Gear.* Remove blocks from under skid gear.

c. *Avionics.* Secure headset microphones from supply and install in helicopter.

d. Battery.

(1) Remove barrier material and tape from quick disconnect plug.

(2) Connect battery.

e. Rotors and Controls.

(1) Clean main and tail rotor assemblies with dry cleaning solvent (item 302, table 1-2). Wipe dry with lint-free cloth.

(2) Lubricate in accordance with Lubrication Order, Chapter 2.

(3) Check stabilizer bar dampers to be full of hydraulic oil (item 4, table 1-2). If fluid level is much below top of window on damper, check timing after refilling and replace damper if unsatisfactory. (Refer to Chapter 8.)

f. Power Train Assembly.

(1) Fill transmission, intermediate and tail rotor gear box as necessary with operating oil in accordance with Chapter 1.

(2) Check and clean transmission oil filters.

(3) Clean drive shafts as necessary with cleaning solvent (item 302, table 1-2).

g. *Fuel System.* Check fuel tanks for the presence of water and drain as necessary. Fill fuel tanks as necessary with operating fuel in accordance with Chapter 1.

h. Hydraulic System.

(1) Clean exposed portion of hydraulic boost cylinder actuator pistons with a clean cloth dampened with hydraulic fluid (item 4, table 1-2).

(2) Coat hydraulic pistons with a light coat of the same hydraulic fluid.

i. Engine.

NOTE

A new or overhauled engine will be installed on the airframe with proper fuel and oil supplied. Activate engine as directed below.

(1) Remove bleed band if applicable, inlet, and exhaust covers or barrier material.

(2) Inspect openings for foreign material and corrosion. Wipe clean with dry cleaning solvent (item 302, table 1-2).

(3) Remove chip detector from accessory drive gearbox and drain plugs from fuel control. Allow oil to drain. Clean and replace chip detector and plugs.

(4) Disconnect cable connector from ignition exciter to prevent accidental firing of engine.

(5) Disconnect main fuel hose from main fuel manifold or flow divider and drain into a container of at least a two-gallon capacity.

(6) Check oil level; service if necessary.

(7) Operate aircraft boost pump to prime fuel system and motor engine with starter.

CAUTION

Do not exceed starter limitations.

(8) Move throttle arm to maximum until a solid stream of fuel with no air bubbles is observed flowing into container. At least one gallon of fuel must flow into container.

NOTE

Engine lubrication system is fully primed when oil pressure gage shows a steady positive indication.

(9) Connect main fuel hose to main fuel manifold or flow divider and inspect engine for leakage.

(10) Connect cable connector to ignition exciter. Lock-wire connector.

(11) Start engine and operate for 10 minutes at flight idle. (Refer to TM 55-1520-210-10.) Check that all instruments are operating normally and ascertain that the engine temperature has stabilized.

(12) Shut down engine.

(13) Remove oil filter. Check for excessive contamination and replace.

(14) Remove chip detector. Check for excessive contamination, clean and reinstall.

(15) Remove fuel inlet strainer, pump discharge strainer, and servo supply filter from fuel control, check for contamination, clean and replace.

(16) If no contamination is evident, the engine is ready for ground test.

(17) If there is a slight contamination, drain the oil and refill system with new oil.

(18) Repeat steps (11) through (15). Evidence of continued contamination in oil system requires a thorough investigation.

NOTE

If there is less than ten hours operating time on engine since new, or since last overhaul,

repeat steps (11) through (14) until no contamination is evident, or analysis of the contamination determines that engine must be replaced.

j. Miscellaneous.

(1) Clean helicopter as necessary in accordance with Chapter 1.

(2) Check that all removed components have been reinstalled on the aircraft. Check the aircraft log book for a record of components that have been removed or disconnected. Check for subsequent installation or connection.

(3) Check that related systems have been properly depreserved and serviced before any system or component operational check has been performed.

(4) Perform necessary inspection required by aircraft log book in accordance with Chapter 3.

(5) Remove static ground wire installed for storage.

(6) Record the date the helicopter was prepared for service in aircraft log book.

16-12. Depreservation After Intermediate Storage.

a. Airframe.

(1) Remove protective covers and stow them in designated location in the helicopter.

(2) Remove all barrier material and tape; remove tape residue with solvent (item 302, table 1-2).

(3) Open all doors and ventilate helicopter.

(4) Remove tail rotor tiedown.

b. Landing Gear. Remove blocks from under skid gear. Inflate ground handling wheel tires to normal pressure.

c. Avionics. Secure headset microphones from supply and install in helicopter.

d. Instruments.

(1) Remove pitot cover and store with other protective covers in helicopter.

(2) Remove barrier material and tape from static vents in airspeed system; remove tape residue with solvent (item 302, table 1-2).

- (3) Secure clock from supply and install.

e. Battery.

(1) Obtain battery from battery shop and install in helicopter.

(2) Remove barrier material and tape from quick disconnect plug.

- (3) Connect battery.

f. Rotors and Controls.

(1) Clean main and tail rotor assemblies with dry cleaning solvent (item 302, table 1-2). Wipe dry with lint-free cloth.

- (2) Install main rotor blades.

(3) Lubricate in accordance with Lubrication Order, Chapter 2.

(4) Check stabilizer bar dampers to be full of hydraulic oil (item 4, table 1-2). If fluid level is much below top of window on damper, check timing after refilling and replace damper if unsatisfactory. (Refer to Chapter 8.)

g. Utility Equipment. Secure fire extinguishers, first aid kits and other equipment, which were removed, from supply facilities and install.

h. Hydraulic System.

(1) Clean exposed portion of hydraulic boost cylinder actuator pistons with a clean cloth dampened with hydraulic fluid (item 4, table 1-2).

(2) Coat hydraulic pistons with a light coat of the same hydraulic fluid.

i. Fuel System.

(1) Disconnect the fuel hose to the main fuel manifold or flow divider.

- (2) Fill fuel tanks with operational fuel.

(3) Motor engine with an auxiliary power supply until oil free fuel is discharged from open fuel line.

- (4) Connect fuel hose.

j. Power Train Assembly.

(1) Fill transmission, intermediate and tail rotor gearbox as necessary with operating oil in accordance with Chapter 1.

- (2) Check and clean transmission oil filters.

(3) Clean drive shafts as necessary with cleaning solvent (item 302, table 1-2).

k. Engine.

NOTE

A new or overhauled engine will be installed on the airframe with proper fuel and oil supplied. Activate engine as directed below.

(1) Remove bleed band if applicable, inlet, and exhaust covers or barrier material.

(2) Inspect openings for foreign material and corrosion. Wipe clean with dry cleaning solvent (item 302, table 1-2).

(3) Remove chip detector from accessory drive gearbox and drain plugs from fuel control. Allow oil to drain. Clean and replace chip detector and plugs.

(4) Disconnect cable connector from ignition exciter to prevent accidental firing of engine.

(5) Disconnect main fuel hose from main fuel manifold or flow divider and drain into a container of at least a two-gallon capacity.

- (6) Check oil level; service if necessary.

(7) Operate aircraft boost pump to prime fuel system and motor engine with starter.

CAUTION

Do not exceed starter limitations.

(8) Move throttle arm to maximum until a solid stream of fuel with no air bubbles is observed flowing into container. At least one gallon of fuel must flow into container.

NOTE

Engine fuel system is fully primed when fuel pressure gage shows a steady positive indication.

(9) Connect main fuel hose to main fuel manifold or flow divider and inspect engine for leakage.

(10) Connect cable connector to ignition exciter. Lock-wire connector.

(11) Start engine and operate for 10 minutes at flight idle. Check that all instruments are operating normally and that the engine temperature has stabilized.

(12) Shut down engine.

(13) Remove oil filter. Check for excessive contamination and replace.

(14) Remove chip detector. Check for excessive contamination, clean, and reinstall.

(15) Remove fuel inlet strainer, pump discharge strainer, and servo supply filter from fuel control, check for contamination, clean and replace.

(16) If no contamination is evident, the engine is ready for ground test.

(17) If oil system accumulation is slight, drain the oil and refill system with new oil.

(18) Repeat steps (11) through (14). Evidence of continued contamination in oil system requires a thorough investigation.

NOTE

If there is less than ten hours operating time on engine since new, or since last overhaul,

repeat steps (11) through (14) until no contamination is evident, or analysis of the contamination determines that engine must be replaced.

I. Miscellaneous.

(1) Clean helicopter as necessary in accordance with Chapter 1.

(2) Check that all removed components have been reinstalled on the aircraft. Check the aircraft log book for a record of components that have been removed or disconnected. Check for subsequent installation or connection.

(3) Check that related systems have been properly depreserved and serviced before any system or component operational check has been performed.

(4) Perform necessary inspection required by aircraft log book in accordance with Chapter 3.

(5) Remove static ground wire installed for storage.

(6) Record the date the helicopter was prepared for service in aircraft log book.

Section VII. DEMOLITION

16-13. Explanation Of Necessity.

When it is evident that an enemy may possibly come into possession of the helicopter, every effort should be made to evacuate the aircraft to a defensible location. If the helicopter is not in operational readiness, destruction of the aircraft shall be accomplished by one of the following procedures, the most logical of which should be determined by evaluating the existing circumstances.

16-14. Destruction By Explosives.

Place a charge of dynamite, or comparable explosive, in the engine compartment. Attach a suitable time delay fuse so personnel may attain a safe distance after igniting. Ignite fuse, evacuate to a safe distance, and lie flat on the terrain with face down.

16-15. Destruction By Mechanical Means.

The helicopter may be destroyed mechanically in several different ways. The most logical manner of

destruction is to smash all instruments, transmission case, engine compressor housing, gear boxes and rotor blades, using an entrenching tool or other suitable devices. Another means of destroying the helicopter mechanically is to run engine at flight idle rpm and lock collective control stick in down position. Open oil drain valves on transmission, engine, and gear box reservoirs so as to allow oil to drain. Leave engine running and evacuate personnel to a safe distance. A mechanical seizure of all rotating parts will subsequently occur thus damaging the helicopter to such an extent that further operation would be impossible.

16-16. Destruction By Fire.

The simplest method of destroying the helicopter by fire is to open the fuel drain valve and allow fuel to saturate the terrain beneath the helicopter. Pour a vein of fuel from the saturated spot to a point ten to twelve feet from the helicopter. Ignite the vein of fuel and evacuate the area. The flame will subsequently travel the distance of the vein and ignite the saturated point.

APPENDIX A

The following references, of the issue in effect, in addition to those references contained in TM 55-1520-210-10, Appendix A, are required for use by organizational maintenance personnel in performance of their duties.

NUMBER	TITLE
DA Form 2408-13	Aircraft Inspection and Maintenance Record
DA Form 2408-14	Uncorrected Fault Record
DA Form 2408-16	Component Installation and Removal Record
DA PAM 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, Lubrication Orders.
DA PAM 310-7	U.S. Army Equipment and Index of Modification Work Orders
TB 55-1500-300-25	Aircraft Accessory Replacement and Reuse Procedure
TB 55-1500-304-25	Mutilation of Condemned Aeronautical Equipment Prior to Disposition
TB 55-1500-308-25	First Aid Kit, Airplane, Without Narcotics
TB 55-2500-311-25	Test Flights and Maintenance Operational Checks for Army Aircraft
TB 55-1500-314-25	Radioactive Material
TB 55-2800-200-30/1	T53 Engine Inspection Guide
TB 55-9150-200-25	Engine and Transmission Oils, Fuels and Additives for Army Aircraft
TB 746-93-2	Painting and Marking of Army Aircraft
TB 750-99-15	Maintenance Expenditure Limitations for Army Aircraft.
TB 1520-208-10/3	Operating Instructions: Quad 7.62 mm machine gun helicopter armament subsystem XM6E3 UH-1B
TM 1-2R-1-83	Removal of Rust from Ferrous Aircraft Engine Parts
TM 1-15H1-2-10-3	Overhaul Instructions: Aircraft heaters and accessories (Janitrol Aircraft - Automotive Division) (Surface Combustion Corp.)
TM 3-220	Chemical, Biological and Radiological (CBR) Decontamination
TM 9-1005-243-12	Operator and organizational maintenance manual (including repair parts and special tools list): Armament subsystem helicopter, 7.62 mm machine gun, quad M6 (XM6E3) (Used on UH-1B helicopters)

ARMY AVIATION MAINTENANCE ENGINEERING MANUALS

NUMBER	TITLE
TM 11-6140-203-12	Nickel and Cadmium Storage Batteries
TM 11-1520-210-20	Organizational Maintenance Manual: Electronic Equipment Configuration's Army Model UH-1D Helicopters
TM 38-230	Preservation, Packing and Packing of Military Supplies and Equipment
TM 38-750	The Army Equipment Record System and Procedures
TM 55-403	Fundamentals of Army Helicopter Maintenance
TM 55-405-9	Weight and Balance
TM 55-412	Fundamentals of Aircraft Instruments
TM 55-416	Aircraft Maintenance Management and Production Control
TM 55-450-3	Air Transport of Supplies and Equipment
TM 55-1500-204-25/1	General Aircraft Maintenance
TM 55-1500-301-25	Army Aircraft Maintenance Inspections Procedures
TM 55-1500-322-25	Maintenance of Aeronautical Antifriction Bearings
TM 55-1520-210-20P	Repair Parts and Special Tools List
TM 55-4920-244-15	Organizational, DS, GS, and Depot Maintenance Manual: Tester Exhaust Temperature, Model BH112JA36.

ARMY AVIATION MAINTENANCE ENGINEERING MANUALS (Cont)

NUMBER

TITLE

TM 750-126

Use of Material Condition Tags and Labels on Army Aeronautical and Air Delivery Equipment.

TM 750-134

Procedures for Rapid Deployment Redeployment and Retrogradation of U.S. Army Rotary Wing Aircraft.

TM 750-199

Procedures for Rapid Deployment Redeployment and Retrogradation of U.S. Army Aircraft Components, Spare Parts, and Support Equipment (Class II (A) and Class IV (A) Supplies)

APPENDIX B

MAINTENANCE ALLOCATION CHART

SECTION I. INTRODUCTION

B-1. Maintenance Allocation Chart.

a. The maintenance allocation chart assigns maintenance functions to the lowest level of maintenance based on past experience and the following consideration:

(1) Skills available.

(2) Time required.

(3) Tools and test equipment required and/or available.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated.

c. A maintenance function assigned to a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

e. The assignment of a maintenance function will not be construed as authority to carry the associated repair parts in stock. Authority to requisition, stock, or otherwise secure necessary repair parts will be as specified in the repair parts appendix.

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis at the request of the lower maintenance level, be specifically authorized by the Maintenance Officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc., required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility of the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Organizational through depot maintenance of the U.S. Army Electronics Command Equipment will be performed by designated U.S. Army Electronics Command personnel.

h. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B-2. Definitions.

a. *Inspect*: To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. *Test*: To verify serviceability and to detect electrical or mechanical failure by the use of test equipment.

c. *Service*: To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents and air.

d. *Adjust*: To rectify to the extent necessary to bring into proper operating range.

e. *Align*: To adjust specified variable elements of an item to bring to optimum performance.

f. *Calibrate*: To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument or test equipment being compared with the certified standard.

g. *Install*: To set up for use in an operational environment such as an emplacement, site or vehicle.

h. *Replace*: To replace unserviceable items with serviceable assemblies, sub-assemblies or parts.

i. *Repair*: To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This includes, but is not limited to, inspections, cleaning, preserving, adjusting, replacing, welding, riveting and strengthening.

j. *Overhaul*: To restore an item to a completely serviceable condition as prescribed by maintenance

serviceability standards prepared and published for the specific item to be overhauled.

k. Rebuild: To restore an item to a standard as nearly as possible to the original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements (items) using original manufacturing tolerance and specifications and subsequent reassembly of the item.

B-3. Symbols.

a. The symbols "O, F, H and D" represent: Organizational maintenance (O), Direct Support maintenance (F), General Support Maintenance (H), and Depot Maintenance (D) and when placed on the maintenance allocation chart, indicates the lowest level of

maintenance responsible for performing the particular maintenance function. Maintenance levels higher than the level of maintenance marked by the symbol are authorized to perform the indicated function.

b. The symbol "%%" applies to organizational maintenance and indicates that the particular maintenance function may be performed provided it is specifically authorized by the direct support maintenance officer. In no case will the direct support maintenance officer require the accomplishment of a "%%" maintenance function by an organization or unit and in no case will a "%%" function authorize stockage of parts at organization level.

c. The symbol (*) in column 3 and 4 of the MAC denotes that a special tool is required to perform the indicated maintenance function.

d. The symbols (1) through (10) in column 3 of the MAC refer to footnotes on page (B-16) of the MAC.

SECTION II. CHARTS

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
00	AIRCRAFT												
	Clean												O
	Moor												O
	Tow												O
	Jack												O
	Preservation												O
	Weight & Balance												F
	Complete Painting												H
01	AIRFRAME												
	Sheet Metal & Structural Members Not Requiring Jigs & Fixtures	O							F	F			
	Sheet Metal & Structural Members Requiring Jigs & Fixtures	O							D	H ₅			
	Honeycomb Panels Requiring Jigs/Fixtures Major Repair	O						D	D	F		D	Note 11
	Honeycomb Panels Not Requiring Jigs/Fixtures Major Repair	O						F	F	F		D	Note 11
	Honeycomb Panels Minor Repair	O							F	F			
	Fuselage Assembly												
	Windshields	O		O					O	O		D	
	Windshield Wiper Motors, Converter Assembly, Linkages, Blade Drive Unit, Blades and Cover	O			O				O	F	H ₅		
	Fairings, Cowlings, Access Doors & Panels	O			O				O	F			
	Windows, Fixed & Sliding	O		O	O				O	F		D	
	Doors	O			O				O	F			

MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
01	Cockpit & Cabin Floors & Floor Access Panels	O							O	F				
	Service Platforms & Cables, Entrance & Service Steps, Ladders	O							F	F				
	Fuselage Furnishings													
	Crew & Passenger Seats & Cushions	O		O	O				O	F				
	Seat Belts & Shoulder Harnesses	O		O					O					
	Inertia Reels	O		O ₁					O					
	Curtains, Upholstery, Sound Proofing & Sun Visor	O		O					O	F				
	Engine Mount Support Arms (Brace Rods, Tripod & Bipod)	O							F	F				
	Engine Mount Trunnion and Bearing Assembly	O							O	F				
	Engine Floor Mount Attaching Brackets	O							F					
	Tail Boom & Pylons	O							F	F	D			
	Tail Boom and Pylons requiring Jigs and fixtures									H ₅	H ₅			
	Synchronized Elevator	O							O	F				
	Tail Rotor Guards, Skids & Bumpers	O							O	F				
02	LANDING OR ALIGHTING GEAR													
	Skid, Cross Tubes & Shoes	O							O	F				
	Ski & Float Installation	O	F	O					F	F				
	Ground Handling Wheel Actuating Mechanism	O		O					O	F				
	Wheels, Tires and Tubes	O		O					O	O				

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
03	ENGINE AND RELATED SYSTEMS													
	Engine as Complete Assembly	O	O			O			%%	O	D			Turbine Engine Test Stand at H ₅
	Fuel and Oil Hoses	O	O ₁			O			O					
	Electrical Harness & Ignition Leads	O					D		O					
	Ignition Exciter	O							O					
	Igniter Plugs	O							O					
	Fuel Control Assembly	O		O	O				O		D			
	Electrical Solenoid Valve	O							O					
	Overspeed Governor Assembly	O							O		D			
	Fuel System Filter and Strainers	O		O					O					
	Starting Fuel Solenoid Valve	O							O					
	Main Fuel Manifolds	O							O	F				
	Starting Fuel Manifold	O							O					
	Starting Fuel Nozzles	O							O	H				
	Oil Pump	O			O				O		H			
	Bearing Housing Oil Strainers	O		O					O					
	Main Oil Filter	O		O					O	O				
	Engine Oil Tank	O		O					O	F				
	Engine Oil Coolers	O		O					O	F				
	Engine Oil Cooler Blower	O		O					O	F				

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
03	Interstage Airbleed Actuator	O							O	F	D		
	Interstage Airbleed Band	O				O			O	O			
	Interstage Airbleed Hoses	O							O				
	Inlet Guide Vane Actuator Assembly	O			O				O	F			
	Inlet Guide Vane Actuator Hose Assembly	O							O				
	Inline Valve	O							O	F	H		
	Airbleed Connecting Manifold and Adapter	O							O				
	Exhaust Thermocouple Harness	O	F		F				O				
	Combustion Chamber Drain Valve	O							O				
	Flow Divider & Dump Valve Assembly	O							O	F			
	Accessory Drive Gearbox	O							O	O*	D		*Limited to replacement of seals
	Overspeed Governor and Tachometer Drive Assembly	O			O*				O	F			*Pressure regulating valve
	Torquemeter Booster Pump	O							O	F	H		
	Oil Transfer Tubes (For Reduction Gears)	F*							F	F			*During special inspection

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
03	Output Shaft Seal	O*							F					* For leakage
	Reduction Carrier and Gear Assembly	F*							F	F**	D			* During special inspection ** Limited to replacement of parts
	Overspeed Governor and Tachometer Drive Support and Gear	F							F	F				
	Accessory Gear Carrier	D							F		D			
	Combustion Chamber Housing	F							F	F				
	Combustion Chamber Liner	F							F	F*				* Stop drill cracks
	Fuel Vaporizers	F							F	F				
	Power Turbine Nozzle and Cylinder	F							F	F				
	Fireshield	F							F					
	Exhaust Diffuser	O							F	H				
	Power Turbine Rotor Assembly	O							F	F				
	Gas Producer Turbine Rotor Assembly	F							F	F				
	Gas Producer Turbine Nozzle and Flange	F							F	F				
	Combustion Chamber Deflector	F							F	H				

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
03	Diffuser Housing	O							D	F			*During special inspection
	Tailpipe	O							O	H			
	Rear Bearing Seal and Seal Housing	F							F				
	Rear Bearing Seal Liner & Forward Rear Cones	F							F				
	Impeller Housing	O							F	F			
	Compressor Housing	O							F	F			
	Compressor Stator Vanes	F							F	F			
	Compressor Rotor Blades	O							F	F			
	Power Shaft *	F*							D				
	Inlet Housing	O							D	F			
	Inlet Guide Vanes	O							D	F			
	Variable Inlet Guide Vane Assembly	O							D	F			
	Engine Oil Cooler Fan Assembly	O		O					O	F	H		
	Engine Control Linkage	O			O				O	O			
	Droop Compensator	O		O	O				O	O			
	Actuator, Linear	O			O				O		H		
	Particle Separator (Sand & Dust)	O		O				O	O	F			
04	ROTOR, TRANSMISSION SYSTEMS & CLUTCHES												
	Mast Assembly	O		O					F	F	H		

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
04	Main Rotor Blades	O		O	O ₂				O	%%			
	Main Rotor Hub & Blade Assy	O		O	O				O	F	D		
	Main Rotor Hub Assy	O		O		F ₄			O	F	D		
	Swashplate & Support Assembly	O		O	O				O	F	H		
	Scissors & Sleeve Assembly	O		O					O	H	H		
	Tail Rotor Hub & Blade Assy	O		O	O	F ₄			O	F			
	Tail Rotor Blades	O		O	O ₂				F	%%			
	Tail Rotor Hub Assembly	O		O					F	F			
	Main Transmission	O	O ₁	O	O				F	F	D		
	Tail Rotor, 42 degree & 90 degree Gear Boxes	O		O					O	F	D		
	Quill Assembly	O							F	F	D		
	Main Drive Shaft	O		O		O			O	F	D		
	Tail Rotor Drive Shaft	O				F			O	O*			
	Stabilizer Bar Assembly	O		O	O	F ₄			O	F			
	Stabilizer Bar Dampers	O		O		O			O	F			
	Tail Rotor Drive Shaft Hanger Assembly	O		O					O	H	H		
	Transmission or Gear Box Lubrication System												
	Pumps	O							%%		H		
	Oil Cooler	O		O					O	F			
	Filters & Screens	O		O					O				
	Magnetic Plugs and Chip Detectors	O		O					O				
	Valves	O			O				O				

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
06	Hoses, Lines and Fittings	O	O ₁			O			O				
	Friction Damper	O							F	F			
	Transmission Mount	O							F				
	HYDRAULIC SYSTEMS												
	Hydraulic Pumps and Motors	O		O					O	F	D		
	Tanks and Reservoirs	O		O					O	F			
	Tail Rotor Cylinder Assy	O	O ₁	O	O				O	F	H		
	Valves; Check Solenoid	O		O	O				O	F			
	Valves; Shut Off Control, Relief, Drain, Manual	O		O	O				O	F			
	Hydraulic Filter Assembly	O		O					O	F			
	Filter Elements	O		O					O				
	Flight Control Servo Cylinder Assemblies	O	O ₁	O	O				O	F	D		
08	Irreversible Valve Assy	O	O ₁	O					O		D		
	Hoses, Tubing & Fittings	O	O ₁			O			O				
	AIRCRAFT INSTRUMENTS												
	Flight and Navigation												
	Airspeed Indicator	O	F	O					O		H		
	Altimeter	O	F	O					O		H		
	Vertical Velocity Indicator	O	F	O					O		H		
	Compass, Standby	O	O	O			O ₈		O		H		
	Attitude Indicator	O		O					O		H		

MAINTENANCE ALLOCATION CHART FOR YUH-1D, UH-1D and UH-1H (AR 310-3)													
(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
08	Turn and Slip Indicator	O		O					O		H		
	Directional Gyro Indicator	O		O					O		H		
	Pitot/Static System	O	F	O					O				
	Pitot Tube	O	O ₁	O					O				
	Engine, Rotor & Transmission Instruments												
	Exhaust Temperature Indicator	O	F	O					O		H		
	Engine Oil Temperature Indicator	O		O					O	H	H		
	Transmission Oil Temperature Indicator	O		O					O	H	H		
	Oil Pressure, Oil Temperature & Fuel Pressure Indicator (Engine Gauge Unit)	O		O					O		H		
	Engine Oil Pressure Indicator	O		O					O		H		
	Fuel Pressure Gauge	O		O					O		H		
	Engine & Rotor Tachometer Dual	O	F	O					O		H		
	Gas Producer Tachometer	O	F	O					O		H		
	Torque Meter	O		O					O		H		
	Miscellaneous Instruments												
Clock	O		O					O		H ₅			
Free Air Temperature Indicator	O		O					O					
Volt, Amp & Load Meters	O		O					O					

MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
08	Transmitters, Sensing Units & Tachometer Generators												
	Transmitters, Pressure	O		O					O		H		
	Temperature Sensing Bulbs and Thermocouples	O	F	O					O				
	Tachometer Generators	O	F						O		H		
	Fuel Quantity Measuring System	O	O				F						
	Fuel Quantity Indicator	O		O					O	H ₅			
	Fuel Quantity Transmitter	O							O				
09	Tank Sensors, Probes & Units	O							O	H			
	ELECTRICAL SYSTEM, MAIN (AC & DC) SWITCHES, CIRCUIT BREAKERS SHOCK MOUNTS, FUSES	O							%%				
	Receptacles, Circuits, Lead Connectors, Plugs	O							%%	O			
	Relays, Shunts, Rheostats, Flasher Units, Warning Horn	O							%%				
	DC Components												
	Battery	O		O					O				Note 9
	Generators & Starter	O	O ₁	O					O	F	H		
	Motors & Actuators	O		O	O				O	F	H		
	Magnetic Brake	O			O				O	F	H		
	Voltage Regulator	O	O ₁		O				O	F			

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
09	Exterior Lighting System												
	Navigation & Anti-Collision	O		O					O	F			
	Landing & Searchlights	O		O	O				O	F	H		
	Interior Lighting System												
	Instrument & Utility	O							O	O			
	Master Caution Panel	O		O					O	F			
	AC Components												
	Inverters	O							O				Note 9
	Transformers & Rectifier	O							O	F	H		
	RPM Warning System	O ₁	O ₁		O				O	F	H		
10	FUEL SYSTEMS, MAIN TANKS & CELLS	O	F	O					F	F			
	Ejector Pumps	F							F				
	Pumps; Boost & Transfer	O	O ₁						O	H			
	Main Fuel Valve	O							O	F	H		
	Main Fuel Valve	O							O	F	H		
	Valves; Drain, Shutoff	O							O				
	Screens, Filters & Strainers	O	O						O				
	Auxiliary Fuel Tanks	O		O				O	O	F			
	Hose Tubing & Fittings	O							O				
11	FLIGHT CONTROLS SYSTEM REQUIRING RIGGING AND/OR LINE DRILLING AND REAMING												
	Bell Cranks, Torque Tubes & Quadrants	O	O ₁		O ₃				O	F			

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
11	Push and Pull Rods, Links & Rod End Bearings	O	O ₁		O ₃				O	F			
	Control Cables and Pulleys	O	O ₁	O	O ₃				O				
	Cyclic Control Sticks	O	O ₁		O ₃				O	F			
	Collective Pitch and Foot Pedal Mechanism	O	O ₁		O ₃				O	F			
	Tail Rotor Pitch Control Mechanism	O	O ₁	O	O ₃				O	F			
	NOT REQUIRING RIGGING BELL CRANKS, TORQUE TUBES & QUADRANTS	O	O ₁						O	F			
	Push & Pull Rods, Links & Rod End Bearings	O	O ₁		O				O				
	Cylinder Assembly Mount	O		O	O				H	H	D		
12	UTILITY SYSTEM												
	Heater Units	O	O ₁	O					O	F	H		
	Blowers	O		O					O	F			
	Heater Fuel Control	O							O	F	H		
	Valves, Solenoid & Manual	O							O				
	Ignition Unit	O							O	F	H		
	Fuel Filters	O		O					O				
	Temperature Controls	O							O	F			
	Air Pressure Switches	O							O				
	Detection Loops, Thermocouples and Sensing Elements	O	F						O	F			
	Anti-Icing and Heater Ducts	O	O						F				
	Anti-Icing System, Hot Air Valves	O							O	F	H		

MAINTENANCE ALLOCATION CHART FOR YUH-1D, UH-1D and UH-1H (AR 310-3)													
(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
17	CARGO & PERSONNEL HANDLING LITTERS, TROOP SEATS & TIE-DOWN ASSEMBLIES	O		O					O	F			
	Cargo Suspension System	O		O					O	F			
	Cargo Hook	O	O ₁	O	O ₄				O	F			
	Winches/Hoists	O	O ₁	O				O	O	F	H		
	Winch Gear Box	O		O					F	F	H		
	Cable Cutting & Emergency Release Systems	O		O					O	F			
19	AVIONICS												
	Communications & Navigations												Note 9
30	ARMAMENT EQUIPMENT												Note 9
60	BULK MATERIALS LIST												
70	MAINTENANCE SUPPLIES												
	Dye Penetrant Inspection												O
	Magnaflux & Hardness Testing												F
	Heat Treat												H ₅
	Cleaning												O
	Preservation & Depreservation												O
	Cadmium Plating												H ₅
	Chrome Plating												H ₅
	Spot Painting												O
	Welding & Brazing												F
	Anodize												H ₅

**MAINTENANCE ALLOCATION CHART
FOR
YUH-1D, UH-1D and UH-1H**

(AR 310-3)

(1) GROUP NO	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTION										(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
	NOTES:												
	1. Maintenance Operational Check (Ref TB-AVN-23-16)												
	2. Tracking												
	3. Rigging												
	4. Balance												
	5. Normally Depot Function. However, where facilities, skills, equipment and test capabilities are authorized at "H" level, this function is authorized.												
	6. N/A												
	7. N/A												
	8. Compass Swing												
	9. For all maintenance allocations and functions refer to the maintenance allocation chart in applicable TM												
	10. If the transformers and rectifiers are not AVCOM managed items, use Note 9												
	11. Environment controlled clean room facility required for rebuilding of panels												

APPENDIX C

AIRCRAFT INVENTORY MASTER GUIDE

C-1. Introduction.

a. The purpose of Appendix C is to establish those items of installed or loose equipment required by, and authorized for using organizations to accomplish their primary or alternate mission, and to standardize present inventory procedures, using the inventory master guide to determine the inventoriable items of installed and/or loose equipment authorized and required of the designated mission of the aircraft. Insofar as possible, items of equipment are listed in the sequence of their physical location within the aircraft area.

b. Aircraft inventory is subject to change, as a result of authorized changes (MWO's), addition or deletions of property for special missions requirements; therefore, the selection of items of inventory from the inventory master guide may or may not provide a complete inventory list. When it is known that the master guide does not provide a complete inventory list, it will be necessary to research authorized changes (MWO's) and local command directives in order to compile an accurate and exact inventory list.

c. When the compilation of the inventory list is accomplished, this list will be entered on DA Form 2408-17 "Aircraft Inventory Records." For preparation and use of this form, refer to TM 38-750.

C-2. Security.

It is desired that inventory records be unclassified. Therefore when equipment bearing a security classification or the installation of unclassified equipment is of a confidential or secret nature, accomplishment of the classification will be in accordance with existing security regulations.

C-3. Inventoriable Items.

NOTE

The selection of inventoriable items is without regard to the agency, governmental or contractual, furnishing the items.

a. Items to be listed are:

(1) Items essential to the execution of the designated mission of the aircraft, such as electronic, photographic, armament, special mission instruments and safety and comfort equipment.

(2) Loose equipment delivered with the aircraft and items subject to pilferage or readily converted to personal use.

(3) Modification kits which are issued or distributed to owning organizations for installation and which are not immediately placed in-work will be recorded on the affected aircraft DA Form 2408-17 (Aircraft Inventory Record) and identified as loose equipment until modification is completed.

(4) Equipment required for operation in special environment.

b. Items to be excluded are:

(1) Non-accountable items coded as expendable in the applicable stock lists.

(2) Personal issue or furnished on unit allowance or other authority.

(3) Items or components considered basic or integral parts of the airframe or basic aircraft such as engines, propellers, wheels and standard instrument.

(4) Technical publications, check lists and aircraft forms.

C-4. Periods of Inventory.

NOTE

Inventoriable items will be checked against the Aircraft Inventory Record (DA Form 2408-17) at the following periods:

a. Upon receipt of the aircraft.

b. Prior to transfer of the aircraft to another organization.

c. Upon placing aircraft in storage and upon removing from storage. Aircraft need not be inventoried while in storage.

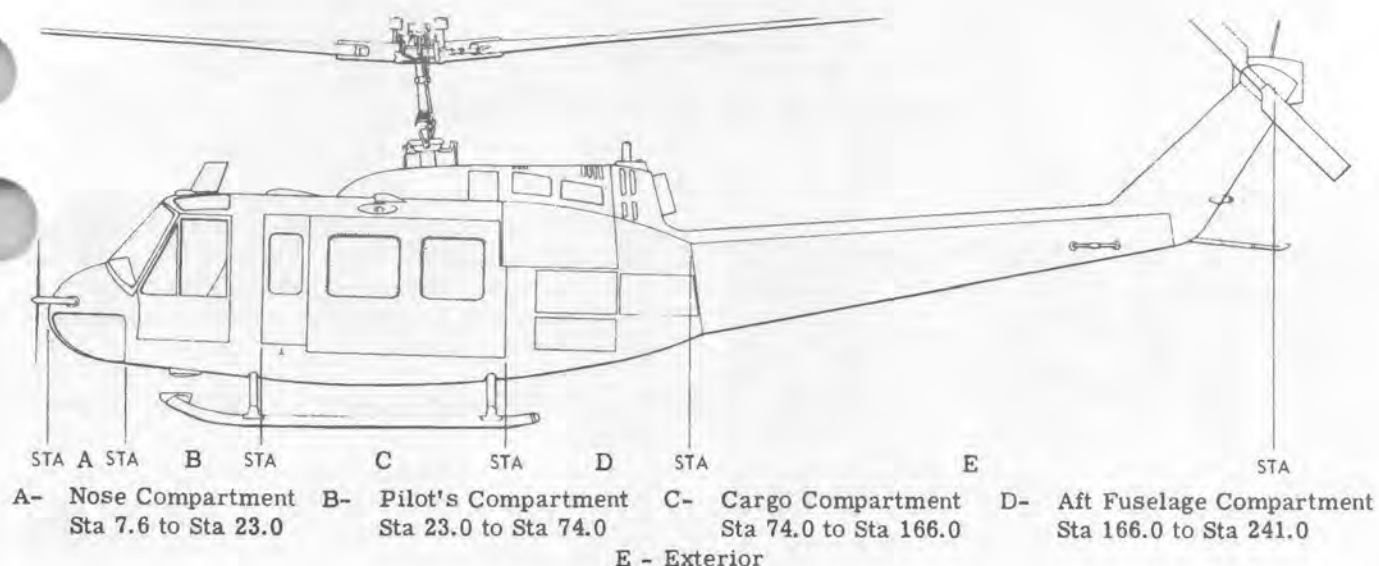
d. Twelve (12) months elapsed time since last inventory.

e. Loose equipment shipped under separate cover is inventoried upon transfer by the sending activity and immediately upon receipt by the receiving activity.

C-5. Inventory Items List. (Refer to figure C-1.)

NOTE

Only those items listed which are installed or assigned to a particular aircraft are to be listed on the DA Form 2408-17, "Aircraft Inventory Record" for the aircraft.



Nomenclature		Aircraft Series and Number of Items Normally Installed		Remarks
		UH-1D/H		
Section A - Nose Compartment				
AN/ARA-31	FM Homing	1	FY-63	UH-1D
AN/ARC-44	FM Radio Set	1		
AN/ARC-51X	UHF Radio Set	1		
AN/ARC-55	UHF Radio Set	1		
AN/ARN-5g	ADF	1		
AN/ARC-73	UHF Radio Set	1		
R-1041/ARN	Marker Beacon	1	FY-64	UH-1D
T-366/ARC	VHF Transmitter	1		
AN/ARC-54	FM Radio Set	1		
Section B - Pilot's Compartment				
C-1611/AIC	Intercom	3	FY-63	UH-1D
SB-329/AR	Intercom	3		
Clock 1-7/8 Inch Dial:	Type			
A-13A		1		
Compass Magnetic:	Pilot			
Standby		1		
Pilot Seat and Back Cushions		1		
Copilot Seat and Back Cushions		1		
Pilot Seat Belt and Shoulder Harness		1		
Copilot Seat Belt and Shoulder Harness		1		
Fire Extinguisher:	Vaporizing Liquid Type	1		
Blackout Curtains		3		

205070-42-1

Figure C-1. Inventory items list component diagram (Sheet 1 of 2)

Nomenclature		Aircraft Series and Number of Items Normally Installed		Remarks
		UH-1D/H		
Section C - Cargo Compartment				
H-101/U	Mic-Headset	1		
First Aid Kits		4	FY64	UH-1D
Medical Attendant Seat		1		
Passenger Seats Against Firewall		3		
Passenger Seat Belts Against Firewall		5		
Passenger Seats:	Forward Arrangement	2	Includes Medical	
Passenger Seat Belts:	Forward Arrangement	2	Attendants Seat Belt	
Passenger Seats:	Aft	2		
Passenger Seat Belts:	Aft	4		
Litter Rack	(Number of Patients)	6		
Litter Rack Seat Belts		2		
Blood Bottle Hangers		6		
Aft Bulkhead Tiedown Fittings		16		
Cargo Restraint Device		1		
Parachute Anchor Line Cable Kit		1	FY-64	UH-1D
Section D - Aft Fuselage Compartment				
AN/ARN-30	OMNI Range Receiver	1		
AN/APX-4	Transponder Set	1		
AN/ARC-102	HF Radio Set	1		
J-2	Gyro Compass	1	FY-63	UH-1D
Luggage Compartment Net		1		
100,000 BTU Heater Kit		1		
Internal Fuel Tank Kit (300 Gallon)		1		
(Two 150 Gallon Tanks)				
Blade Anti-Icing Kit		1		
Section E - Exterior				
Pitot Tube All Weather Cover		1		
Rear View Mirror		1		
Engine Air Inlet All Weather Cover		1		
Hard Point Fittings		4		
External Stores Kit		1	XM-6E3	FY64 UH-1D
External Stores Kit		1	XM-3	FY64 UH-1D
External Stores Kit		1	XM-153MG	FY63 UH-1D
Engine Exhaust All Weather Cover		1		
Main Rotor Blade Tiedown Rig		1		
Tail Rotor Blade Tiedown Rig		1		
MS27212-1-3			FMC	96906
Fabricate from FSN 5940-950-1610				
NAS1455B00-5			FMC	80205
Fabricate from FSN 4010-554-8661				

205070-42-2F

Figure C-1. Inventory items list component diagram (Sheet 2 of 2)

C-3/(C-4 blank)

APPENDIX D

WEIGHT AND BALANCE

D-1. General Information.

NOTE

For general weight and balance information, refer to TM 55-405-9, Army Aviation

Maintenance Engineering Manual, Weight and Balance. Appendix B, Maintenance Allocation Chart should be consulted for responsibility of weighing and balancing of the aircraft.

APPENDIX E

ILLUSTRATED FIELD MANUFACTURE ITEMS LIST

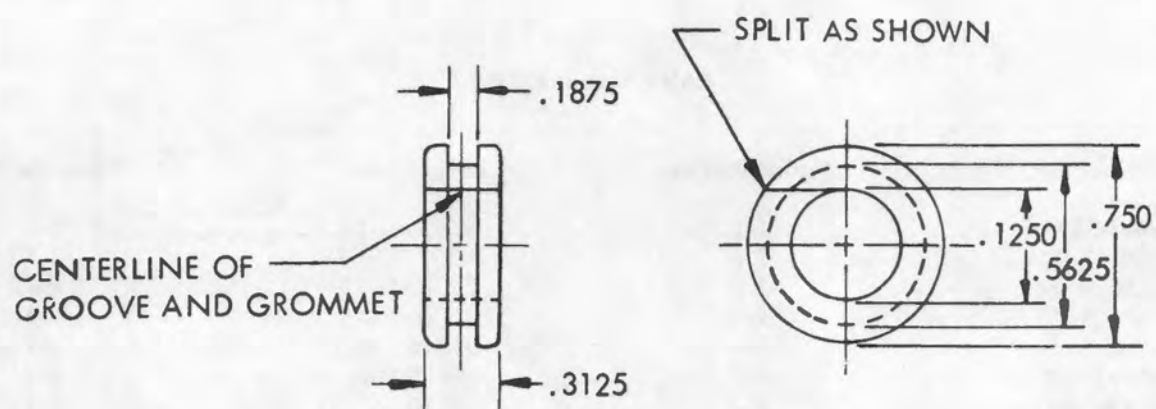
E-1. Introduction.

This appendix includes complete instructions, including bills of material, for field manufacture of all items listed in TM 55-1520-210-20P, Organizational Maintenance Repair Parts and Special Tools Lists, bearing MO Sourc Code.

The part number index lists all items in part number order with a cross-reference to the figure in which the item appears. All materials necessary for manufacture of an item are listed, by Federal stock number, in the bill of material for the item.

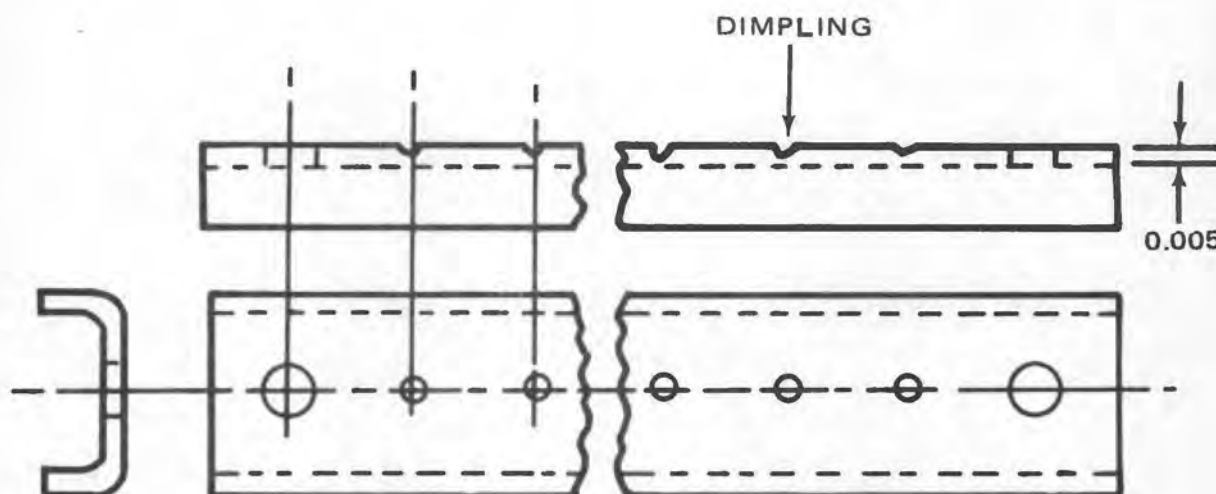
PART NUMBER INDEX

Part Number	Figure Number	Part Number	Figure Number
AN931-5S9	E-1	MS27212-1-15	E-3
MS18029-1S2	E-2	MS27212-1-18	E-3
MS18029-1S6	E-2	25C10-1A3	E-4
MS18029-1S7	E-2	25C10-1A4	E-4
MS18029-1S9	E-2	25C10-1A4-5	E-4
MS18029-1S10	E-2	25C10-1A6	E-4
MS18029-1S11	E-2	25C10-1A7-00	E-4
MS18029-1S12	E-2	25C10-1A25	E-4
MS18029-1S15	E-2	25C10-2-3	E-4
MS18029-1S18	E-2	25C10-2-4	E-4
MS27212-1-1	E-3	204-075-152-3	E-5
MS27212-1-2	E-3	205-075-137-1	E-7
MS27212-1-3	E-3	397-1	E-6
MS27212-1-4	E-3	397-2	E-6
MS27212-1-5	E-3	397-4	E-7
MS27212-1-7	E-3	397-12	E-6
MS27212-1-9	E-3	397-15	E-6
MS27212-1-10	E-3	397-18	E-6
MS27212-1-11	E-3		
MS27212-1-12	E-3		



Part Number AN 931-559 GROMMET, Rubber
 Fabricate from: FSN 5325-543-3364
 Material: Grommet, Rubber, Synthetic

Figure E-1.



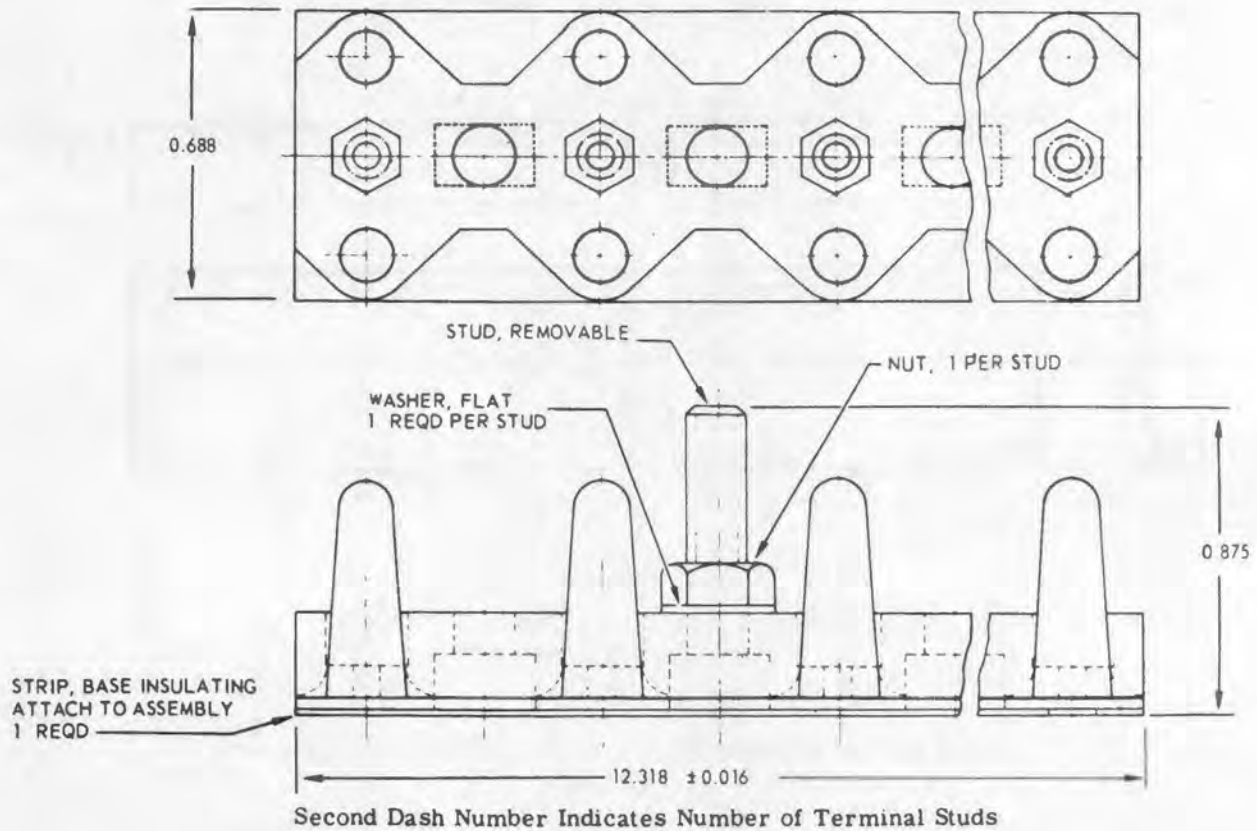
Notes:

1. -IS USE ONE NUT ASSEMBLY ONLY.
ALL OTHER ASSEMBLIES USE TWO
NUT ASSYS.
2. LAST DASH NUMBER INDICATES NUMBER OF
STUDS TO BE COVERED.
3. DIMPLING IS TO ENSURE CORRECT POSITIONING
OF HOLE(S) FOR THE NUT ASSEMBLY.

Part Numbers MS18029-1S2, MS18029-1S4, MS18029-1S6, COVER, Terminal Board
MS18029-1S7, MS18029-1S9, MS18029-1S10,
MS18029-1S11, MS18029-1S15,
MS18029-1S18.

Fabricate from FSN 5940-082-4642
FSN 5940-907-5939

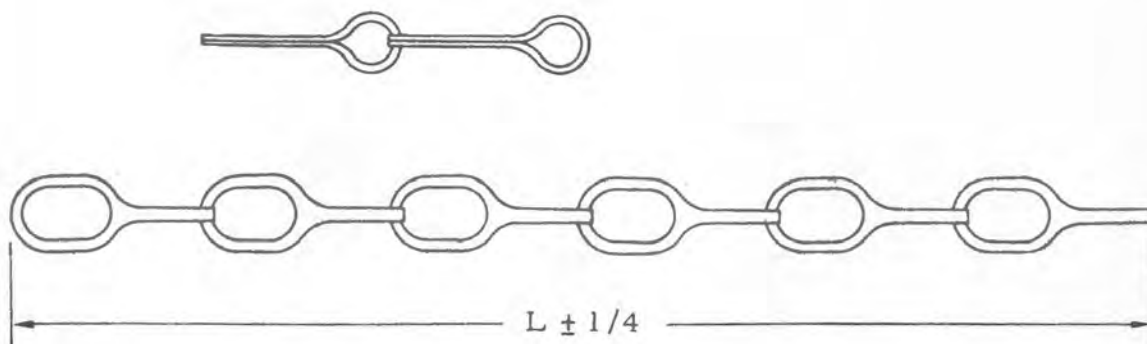
Figure E-2



Part Numbers	MS27212-1-1	TERMINAL BLOCK
	MS27212-1-2	MS27212-1-10
	MS27212-1-3	MS27212-1-11
	MS27212-1-4	MS27212-1-12
	MS27212-1-5	MS27212-1-15
	MS27212-1-7	MS27212-1-18
	MS27212-1-9	

Fabricate from FSN 5940-950-1610
Material: Terminal Board, Plastic, Laminated

Figure E-3.



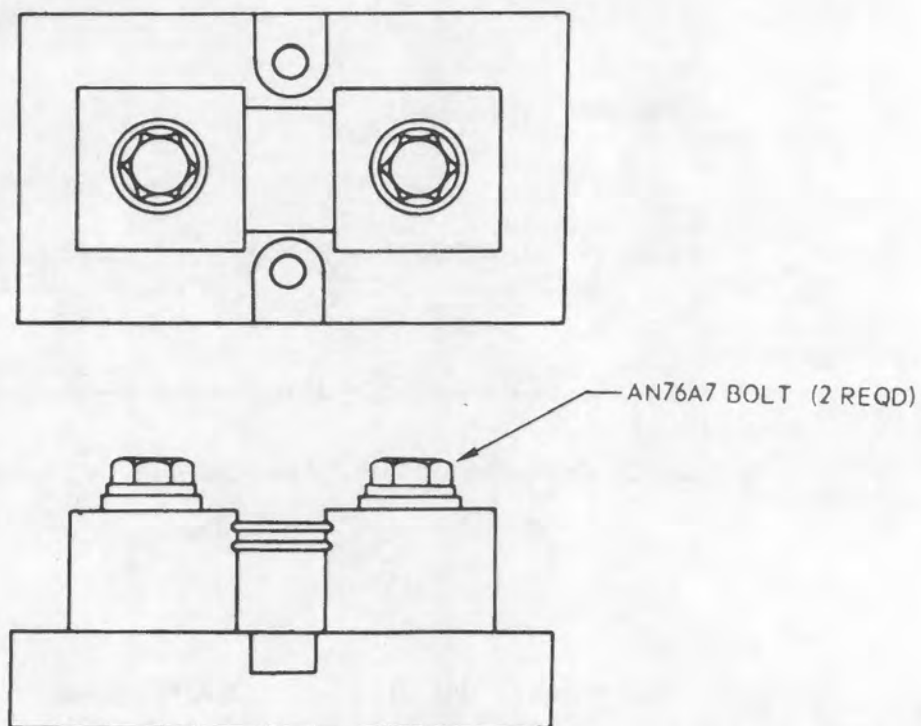
Second Dash Number Indicates Length in Inches

Part Number 25C10 CHAIN, Safety

25C10-1A3	25C10-1A6	25C10-2-3
25C10-1A4	25C10-1A7-00	25C10-2-4

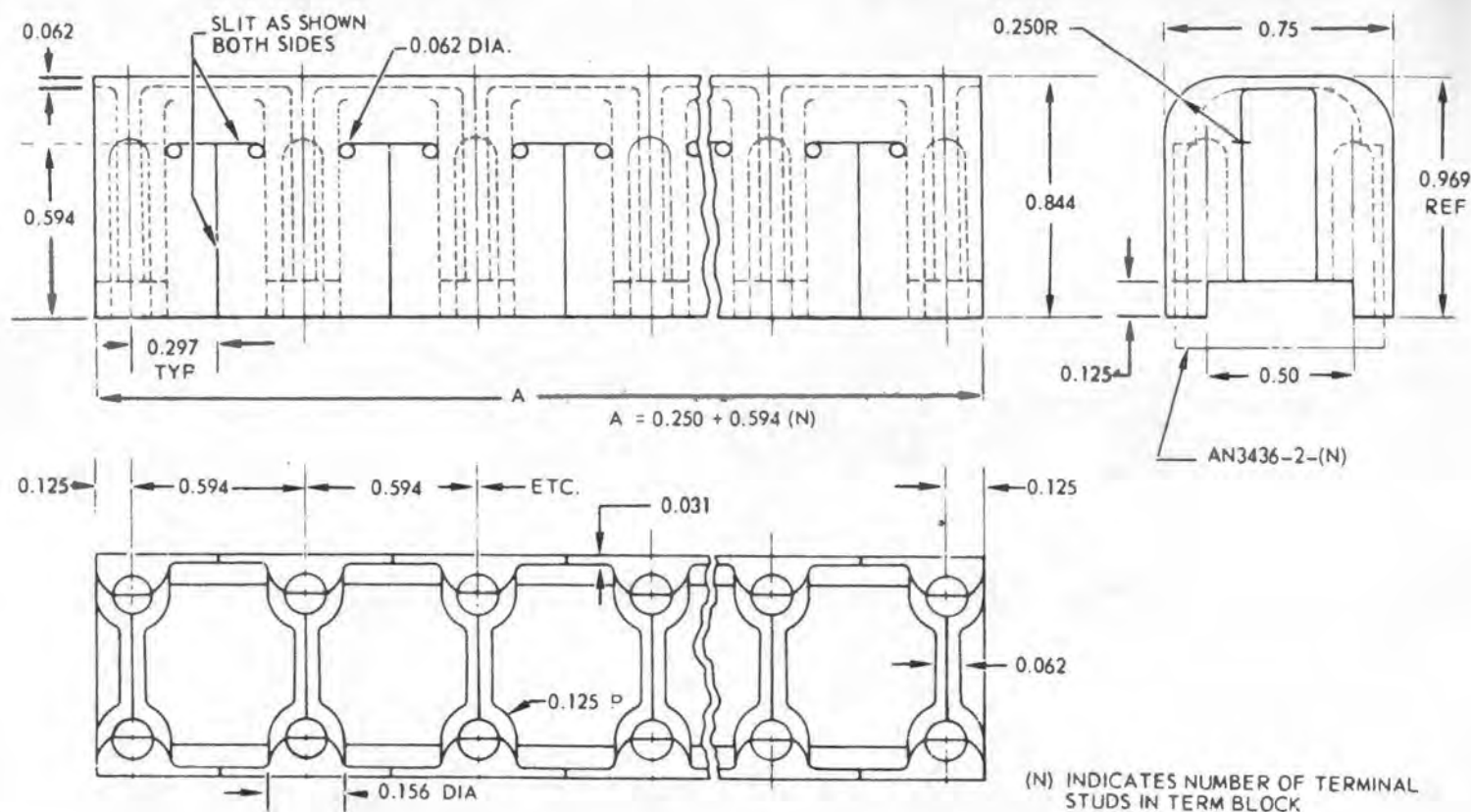
Fabricate from:	FSN 4010-554-8661
Material:	Chain, Brass 0.018 in. thk, RR-C-271 Type II Class 6

Figure E-4.



Part Number 204-075-152-3 SHUNT
Fabricate from: FSN 6625-166-1005

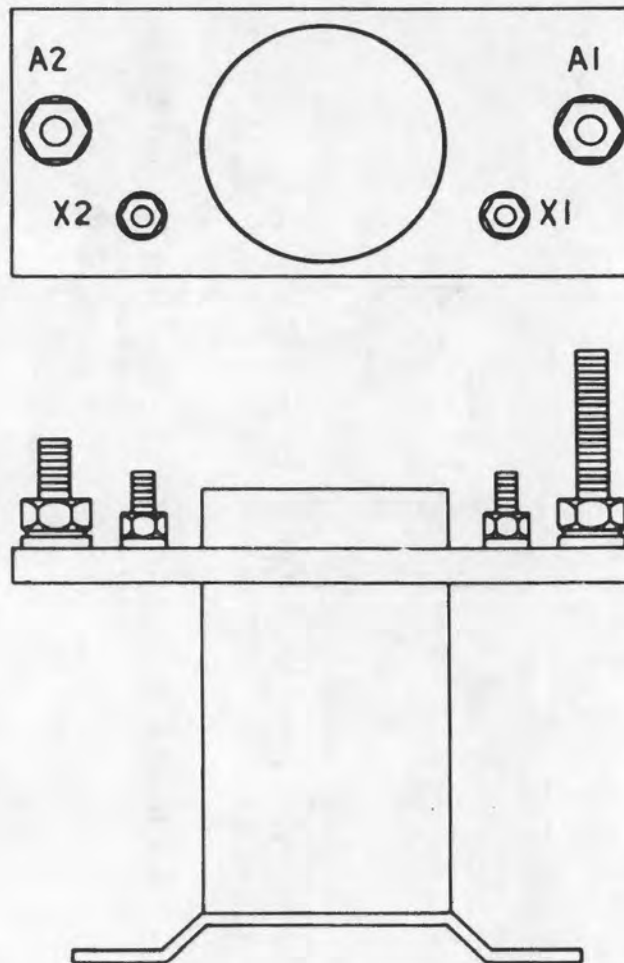
Figure E-5.



Part Number	397 COVER - Electrical Terminal Block
397-1	397-9
397-2	397-11
397-4	397-12

Fabricate from: FSN 5940-642-1381
 Material: Synthetic Rubber

Figure E-6.



Part Number 205-075-137-3, RELAY ASSEMBLY - 200 AMP, Battery
 Fabricate from: FSN 5945-660-9315

Figure E-7

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Y

Z

This manual is published for the use of all concerned.

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS,
*Major General, United States Army,
The Adjutant General.*

W. C. WESTMORELAND,
*General, United States Army,
Chief of Staff.*

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31 (qty rqr block no. 352) requirements for Organizational Maintenance Instructions for UH-1D and 1H aircraft.

EQUIPMENT	PART DESIGNATION	Number Of Units	Amps Per Unit	Operating Time-Min.	OPERATING CONDITIONS																					
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY					
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.					
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.		
C - FLIGHT CONTROLS	Magnetic Brake-Force Trim Solenoid-Hydraulic Sol.	Airborne Acc Corp R460M15 Ronson 1-U-1026	3	0.5	30.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		
E - ENGINE INSTRUMENTS	Engine Oil Temp. XMSN Oil Temp.	Aerno 61-8835 (MS28009-1) Aerno 61-8842 (MS28009-2)	1	0.04	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
F - FLIGHT INSTRUMENTS	Gyro Compass Power Interlock Relay Heater, Pilot Tube Turn & Slip Type MD-8	Type J-2 204-075-363-3 Aerno 60-9660 (AN5812-1) Aerno 60-5704 (MS28024-3)	1	0.6	30.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8		
H - HEATING	Cabin Heater Motor-Bled Air Valve Engine Anti-Icing Heated Blanket Outlets	Janitrol S-100 204-060-444 Cook Elec. 575-1022 & 667-20 Hubbel 7626	1	31.1	30.0	2.0	0.8	0.2	NEG	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
J - ENGINE IGNITION SYS.			2	1.5	0.5	1.5	1.5	0.4	NEG																	
K - ENGINE CONTROLS	Starter Generator Relay Starter	Aerno 42-7031 Type Stu-6/A MS24172D1	1	4.5	0.5	4.5	4.5	1.1	0.2																	
L - LIGHTING	Dome Light-Red Cockpit Light Inst. & Edge Lights Inst.-Sec. Lights Fus Light-Top & Bottom Fus Light-Side Fus Light-Tail Flasher-Fus Lights Master Caution Panel Search Light Landing Light Anti-Collision Light	MS25235R311 Lamp MS25231-313 Lamp MS25237-327 Lamp MS25069-1485 Lamp AN2120-1047 Lamp ASA 7512 Lamp MS25232-1683 Lamp Type C-2 MIL-F-7414 204-075-705 Type MA-3 MIL-L-26998 Grimes G8385-1 Grimes G8400A-B-24	4	1.28	30.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8		
M - MISCELLANEOUS	Windshield Wiper Solenoid-Cargo Hook Rel. Relay-Cargo Hook Rel.	204-070-907 Eastern Rotocraft MS24149D1	1	3.5	30.0	10.0	0.1			3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		
P - POWER	Battery Charging Relay-Battery Relay-Non Essential Bus Relay-Bus Control Inverter-Main Inverter-Spare Relay, Inverter Power	MS24498-1 34 Amp. Hr. MS24171D1 (205-075-127-1) MS24171D1 MS25024-2 MS21983-1 MS21983-1 MS24166D1	1	0.6	30.0	0.6	0.6	0.6	0.6	129.6	129.6	81.0	42.2	97.2	97.2	60.7	22.9	32.4	32.4	20.2	16.2	32.4	32.4	20.2	7.6	4.8
Q - FUEL & OIL	Pump-Fuel Boost Pump-Aux. Fuel Pump-External Fuel Valve-Fuel Shut-Off Solenoid Valve-Igniter Solenoid Valve-Gov. Bypass Actuator-Gov. RPM Solenoid-Idle Stop Rel.	205-060-606 205-061-622 Lear Type RG-8160-2P 204-060-013 204-060-762 204-060-775	1	5.2	30.0	6.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
R - RADIO NAV. & COMM.	Radio Compass (ADF) Marker Beacon Revr. Vox Receiver (V.H.F.) FM Homing Adapter FM Auxiliary Revr. FM Transceiver (Reactive) (Additional Pwr. Xmit.) U.H.F. Transceiver (Receive) (Additional Pwr. Xmit.) V.H.F. Xmitr. (Standby) Relay-Intercom Signal Distb. Panel Signal Distb. Panel Aux. Relay-Aux. Sig. Distb. Pul.	AN/ARN-59 R-1041/ARN AN/ARN-30 AN/ARA-31 AN/ARA-49 (Pwr. Prov.) AN/ARC-44 AN/ARC-5B T-368/ARC MS24139-5 SB 329/AR MX-1648/AIC Cook Electric 645-6106	1	2.8	30.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
S - RADAR	IFF Transponder IFF Adapter Altimeter	AN/APX-44 (Pwr. Prov.) Mark XII (Pwr. Prov.) AN/APN-100 (Pwr. Prov.)	1	4.5	30.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
W - WARNING	Fire Detection Control-RPM Warning	Edison 227-25-5 205-074-091-1	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
TOTALS-Avg. Amperes					122.6	112.3	104.4	100.9	340.5	332.4	281.4	241.5	343.2	327.0	286.7	227.3	279.5	269.3	254.1	248.6	210.2	199.0	170.8	147.9	143.2	

GENERATOR: (1) G.F.E. Aerno 42-2051 Type GEU-5/A
DWG 58C62266 30 Volt 300 AMP
Gear Ratio Gen.: Eng. Power Turbine Output Shaft 1:1

STARTER-GENERATOR: (1) G.F.E. Aerno 42-7031 Type STU-6/A
30 Volt 300 AMP
Gear Ratio, Starter-Gen.: Eng. Gas Producer
Section, 0.283:1

VOLTAGE REGULATOR: (2) E-1597-1 MIL-R-6809

REVERSE CURRENT CUTOUT: (2) AN3025-300

BATTERY: (1) MS24498-1 34 AMP.-HR., Nickel Cadmium.

⚠ Loads not on essential bus. These loads may be obtained by use of bus override switch.

⚠ Part of auxiliary fuel system.

⚠ Power requirement shown is for 100,000 BTU heater used with winterization kit.

5. The 30 volt, 200 amp. starter-generator is considered suitable for the essential loads listed in the emergency column (P-8).

5. Recommended capacity for ground power unit based on graph P-4, 500 amp. 28V DC, 1000 amp. overload capability.

⚠ GFE (part of Lycoming T53-L-11 engine).

⚠ Main & spare inverters are used interchangeably. One inverter only can be energized at one time.

⚠ This equipment normally de-energized.

⚠ See supplementary data chart.

NOTES—

Operating Conditions	Start & Warmup	Takeoff	Cruise	Land	Emergency
Max. Operating Gen. RPM	5600	5600	5600	5600	
Gen. RPM Min. Operating	5000	5800	5800	5800	
Max. Altitude Feet		12,200	16,800	12,200	16,800

GENERATOR: (1) G.F.E. Aerno 42-2051 Type GEU-5/A
DWG 58C62266 30 Volt 300 AMP.
Gear Ratio Gen.: Eng. Power Turbine Output Shaft 1:1

STARTER-GENERATOR: (1) G.F.E. Aerno 42-7031 Type STU-6/A
30 Volt 300 AMP.
Gear Ratio, Starter-Gen.: Eng. Gas Producer
Section, 0.288:1

VOLTAGE REGULATOR: (2) E-1597-1 MIL-R-6809

REVERSE CURRENT CUTOUT: (2) AN3025-300

BATTERY: (1) MS24498-1 34 AMP-HR. Nickel Cadmium.

- ⚠ Loads not on essential bus. These loads may be obtained by use of bus override switch.
- ⚠ Part of auxiliary fuel system.
- ⚠ Power requirement shown is for 100,000 BTU heater used with winterization kit.
5. The 30 volt, 300 amp. starter-generator is considered suitable for the essential loads listed in the emergency column (F-8).
5. Recommended capacity for ground power unit based on graph P-4, 500 amp. 28V DC, 1000 amp. overload capability.
- ⚠ GFE (part of Lycoming T53-L-11 engine).
- ⚠ Main & spare inverters are used interchangeably. One inverter only can be energized at one time.
- ⚠ This equipment normally de-energized.
- ⚠ See supplementary data chart.

NOTES—

Operating Conditions	Start & Warmup	Takeoff	Crui	Land	Emergency
Max. Operating Gen. RPM	5600	5600	5600	5600	
Gen. RPM Min. Operating	5000	5800	5800	5800	
Max. Altitude Feet		12,200	16,800	12,200	16,800

Figure 13-3. Load analysis chart — DC — electrical — UH-1D (62-2106 through 62-2113, and 62-12351 through 62-12372) (Sheet 1 of 2)

205099-3-1
AV 054000-1

EQUIPMENT	PART DESIGNATION	Total No. Of Units	Operating Time-Min.	ELECTRICAL REQUIREMENTS PER UNIT									Power Factor	Voltage Regulation	Frequency Range	CONNECTED LOADS										
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			28 VOLTS 1 1 PH.						PHASE A TO B		PHASE C TO A		PHASE B TO C						
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				WATTS	VAR.	WATTS	VAR.	WATTS	VAR.					
INVERTER—MAIN	MS21983-1	1		250									.80 LAG .95 LEAD	±2.2	390/410											
D. INSTRUMENTS																										
Indicator—XMSN Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65					
Transmitter—XMSN Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20					
E. ENGINE INSTRUMENTS																										
Indicator—Engine Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65					
Transmitter—Engine Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20					
Indicator—Fuel Pressure	Aerno 61-2461 (MS28010-1)	1	30.0							2.60	0.45	2.57	0.17	±10	360/440					0.45	2.57					
Transmitter—Fuel Pressure	Aerno 61-3008 (MS28005-1)	1	30.0							3.25	0.59	3.19	0.18	±10	360/440					0.59	3.19					
Indicator—Torque Pressure	Aerno 61-2486, Type MO-3	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65					
Transmitter—Torque Pressure	Aerno 61-2487, Type MH-4	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20					
Indicator—Fuel Quantity	205-061-633	1	30.0				3.50	3.50					1.0	±10	360/440	3.50										
Tank Unit—Fuel Quantity	205-061-633	3	30.0																							
F. FLIGHT INSTRUMENTS																										
Vertical Gyro Indicator	Lear 4005G	1	30.0				15.00	14.10	5.10				0.94	±10	380/420	14.10	5.10									
Ind. System Amplifier	Lear 5404G	1	30.0										0.94	±10	380/420	7.80	2.80	7.80	2.80	7.80	2.80					
Pilot Control Gyro	Aerno 60-5937, Type MD-1	1	30.0	25.00	23.50	8.50							0.94	±10	380/420	4.50	1.60									
Rate Gyro	Aerno 60-5938, Type MC-1	1	30.0				4.80	4.50	1.60				0.94	±10	380/420											
Attitude Indicator—Copilot	Type J-8 MIL-I-5133	1	30.0	9.00	7.70	4.70							0.85	±10	360/440	2.57	1.57	2.57	1.57	2.57	1.57					
Compass System Amplifier	Aerno 60-1702, Type A-2	1	30.0										0.92	±10	360/440	6.61	5.49	12.00	1.21	6.95	1.38					
Type J-2 Control Gyro	Aerno 60-1480, Type S-3A	1	30.0	27.70	25.56	8.08																				
Transmitter & Compensator	Aerno 60-1483, Type C-2	1	30.0																							
Pwr. Interlock Relay	Aerno 60-1479	1	30.0																							
Master Indicator	204-075-363-3	1	30.0	1.60	0.80	-1.39							0.50	±10	380/440	0.40	-0.69			0.40	-0.69					
Servo Amplifier	Sperry C-6H	1	30.0							22.50	5.30	21.90	0.24	±10	360/440					5.30	21.90					
Repeater Indicator	Sperry 1783867-1	1	30.0				17.40	14.80	9.20				0.85	±10	360/440					14.80	9.20					
	ID-250A/ARN	1	30.0							6.69	1.20	6.57	0.18	±10	360/440					1.20	6.57					
M. MISCELLANEOUS																										
Capacitor—P.F. Correction	CP53BIEE105K MIL-C-25	2	30.0				33.20		-33.20				0.0									-66.40				
Resistor—Load Balancing	RW20G911 MIL-R-26	1	30.0				14.50	14.50					1.0					14.50								
R. RADIO NAVIGATION																										
RMI Converter	ARC Type B-18A	1	30.0							7.28	7.28		1.0								7.28					
X. A.C. POWER (WARNING)																										
A.C. Failure Relay	Type DI AAF32471	1	30.0				13.20	0.80	13.10				0.06	±10	360/440						0.80	13.10				
INVERTER—SPARE	MS21983-1			250																						
NOTE: Spare inverter loads are identical to main inverter loads.																										
TOTALS:																39.48	15.87	36.87	5.58	51.53	6.74					
TOTAL LOAD																131 VA @ 0.97 P.F. (LAG)										

A

PHASE C BUS

SHIP BUS PHASE ROT. ACB

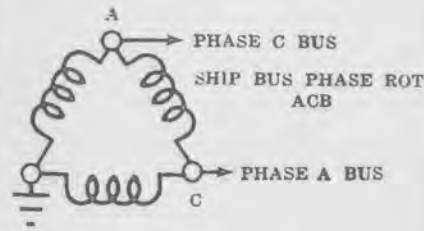
PHASE A BUS

MAIN & SPARE INVERTER
MS21983-1
PHASE ROTATION — ABC

⚠ Power interlock relay draws power from two phases only.

⚠ Obtained from 115/28 volt auto transformer.

NOTES—



MAIN & SPARE INVERTER
MS21983-1
PHASE ROTATION — ABC

- ⚠ Power interlock relay draws power from two phases only.
- ⚠ Obtained from 115/28 volt auto transformer.

NOTES—

Figure 13-3. Load analysis chart -- AC -- electrical -- UH-1D (62-2106 through 62-2113, and 62-12351 through 62-12372) (Sheet 2 of 2)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	5.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
C - FLIGHT CONTROLS																									
Magnetic Brake-Force Trim	Airborne ACC Corp RM460M15	3	0.5	30.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Solenoid-Hydraulic	Ronson 1-U-1025	1	1.5	30.0																					
E - ENGINE INSTRUMENTS																									
Engine Oil Temp.	Aerno 61-8833(MS28009-1)	1	0.04	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Xmsn. Oil Temp.	Aerno 61-8842(MS28009-2)	1	0.04	30.0																					
F - FLIGHT INSTRUMENTS																									
Gyro Compass	Type J-2	1	0.6	30.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
Power Interlock Rly.	204-075-363-3	1	0.2	30.0																					
Heater-Pitot Tube	Aerno 60-9660(AN5813-1)	1	4.0	30.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Turn & Slip Ind. Type MD-3	Aerno 60-5704(MS28024-3)	1	0.1	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
H - HEATING																									
Cabin Heater	Janitrol S-100	1	31.1	30.0					31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	
Bleed Air Valve	204-060-444	1	2.0	0.2	2.0	0.8	0.2	NEG									2.0	0.8	0.2	0.1					
Heat Defrost Valve	Leland A38153-001	1	3.1	0.5	3.1	3.1	0.8	0.1									3.1	3.1	0.8	0.3					
Door Post/Aft Outlet Valve	Leland A38153-001	2	3.1	0.5	6.2	6.2	1.6	0.2									6.2	6.2	1.6	0.6					
Ice Detector-Engine	Cook Elect. 575-0122 & 667-20	1 ea.	11.0	30.0	11.0	2.9	2.9	2.9	11.0	2.9	2.9	2.9	11.0	2.9	2.9	2.9	11.0	2.9	2.9	2.9	11.0	2.9	2.9	2.9	
Heated Blanket Outlets	Hubbel 7526	6	10.0	30.0					60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0				6	
J - ENGINE IGNITION SYS.		1	1.5	0.5	1.5	1.5	0.4	NEG																	
K - ENGINE CONTROLS																									
Starter-Generator	Aerno 42-7031 Type STU-6/A	1																							
Relay-Starter	MS24172D1	1	4.5	0.5	4.5	4.5	1.1	0.2																	
L - LIGHTING																									
Dome Light-Red	MS25235R311 Lamp	4	1.28	30.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	
Cockpit Light	MS25231-313 Lamp	2	0.17	30.0	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	
Instrument & Edge Lights	MS25237-327 Lamp	132	0.04	30.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	
Inst. Secondary Lights	MS25069-1495 Lamp	4	0.34	30.0																					
Fus. Light-Top & Bottom	AN3120-1047 Lamp	3	2.7	30.0																					
Navigation Light-Side	ASA 7512 Lamp	4	0.83	30.0	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	
Navigation Light-Tail	MS25232-1683 Lamp	1	1.15	30.0																					
Flasher-Fus. Lights	MIL-F-7414 Type C-2	1	0.4	30.0																					
Master Caution Pnl.	204-075-705	1	0.2	30.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	
Search Light	MIL-L-26998 Type MA-3	1	17.0	5.0									17.0	17.0	17.0	2.8	17.0	17.0	17.0	17.0					
Landing Light	Grimes G8385-1	1	16.5	5.0									16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	2.8	1.4	
Anti-Collision Light	Grimes G8400A-8-24	1	3.0	30.0					3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
M - MISCELLANEOUS																									
Windshield Wiper	204-070-907	1	3.5	30.0					3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Solenoid-Cargo Hook	Eastern Rotorcraft SP4100-3	1	10.0	0.1									10.2	2.	0.5	NEG					10.2	3.5	2.1	0.5	
Relay-Cargo Hook	MS24149D1	1	0.2	0.1																					
P - POWER																									
Battery Charging	BB-433/A	1		30.0					126.9	126.9	81.0	43.2	97.2	97.2	60.7	22.9	32.4	32.4	20.2	16.2	32.4	32.4	20.2	7.6	4.3
Battery Relay	MS24171D1 (205-075-137-1)	1	0.6	30.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Non Essential Bus. Rly.	MS24171D1	1	0.6	30.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Bus. Control Relay	MS25024-2	1	0.35	30.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Inverter-Main	PU-543/A	1	14.8	30.0																					
Inverter-Spare	PU-543/A	1	14.8	30.0																					
Inverter Power Rly.	MS24166D1	2	0.35	30.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	
Inverter Relay	MS24149D1	1	0.2	30.0																					
Q - FUEL AND OIL																									
Pump-Fuel Boost	205-060-606	1	5.2	30.0	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
Pump-Aux. Fuel	205-061-622	2	3.5	22.0																					
Pump-External Fuel	Lear Type RG8160-2F	2	3.7	22.0									7.4	7.4	7.4	2.4									
Valve-Fuel Shut Off	204-060-013	1	1.0	0.02	1.0	NEG																			

Figure 13-4. Load analysis chart — DC — electrical — UH-1D (63-8739 through 63-8859, and 63-12956 through 63-13002) (Sheet 1 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																			
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY			
					Average Amps.			Amps	Average Amps.			Amps	Average Amps.			Amps	Average Amps.			Amps	Average Amps.			
					0.5 Min.	2.0 Min.	15.0 Min.		0.5 Min.	2.0 Min.	15.0 Min.		0.5 Min.	2.0 Min.	30.0 Min.		0.5 Min.	2.0 Min.	5.0 Min.		0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
R - RADIO NAV. & COMM.	Radio Compass	1	2.8	30.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	Marker Beacon Rcvr.	1	0.04	30.0	NEG			NEG				NEG				NEG				NEG				
	VOR Receiver (VHF)	1	2.9	30.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
	FM Homing Adapter	1	1.0	1								1.0	1.0	1.0	1.0									
	FM Auxiliary Rcvr.	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	FM Transceiver (Rec.)	1	4.92	30.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	(Additional Pwr. Xmit.)	1	1.43	1				1.4	1.4	0.7	0.1					1.4	1.4	0.7	0.3	1.4	1.4	0.7	0.1	0.1
	FM Transcvr. Pwr. Rly.	1	0.25	30.0		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Intercom Relay	2	0.02	1	NEG			NEG				NEG				NEG				NEG				
	VHF Xmitr. (Standby)	1	1.5	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	VHF Transcvr. (Rec.)	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	(Additional Pwr. Xmit.)	1	6.5	1	6.5	6.5	3.3	0.7	6.5	6.5	3.3	0.7	6.5	6.5	3.3	0.7	6.5	6.5	3.3	0.7	6.5	6.5	3.3	0.7
S - RADAR	IFF Transponder	1	4.5	30.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	IFF Adapter	1	4.2	30.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	Radar Altimeter	1	3.0	30.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
W - WARNING	Fire Detection-Eng.	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	RPM Limit	1	0.5	30.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SHEET TOTAL — Average Amperes					36.1	36.1	32.9	30.3	37.5	37.5	33.8	30.6	37.5	37.5	34.1	31.5	37.5	37.5	33.8	30.6	37.5	37.5	33.8	30.6
TOTAL FROM SHEET 1					82.9	72.6	59.4	55.1	297.4	279.3	233.3	195.3	293.4	277.2	238.5	180.3	236.6	228.1	208.4	202.8	159.7	142.5	128.6	96.9
TOTAL — AVERAGE AMPERES					119.0	108.7	91.3	85.4	324.9	316.8	267.1	225.9	330.9	314.7	272.6	211.8	274.1	265.6	242.2	233.4	197.2	180.0	162.4	132.2
A (S/N 63-8804 thru 63-8859)																								
A ADDED EQUIPMENT — (S/N 63-12956 & SUBSEQUENT): 13																								
A - ARMAMENT	Rocket Launcher Sys.	1	0.6																					
	Sight	1	5.0																					
	Machine Gun System	1	41.2																					
	Fire Control Relay	1	0.35										41.6	41.6	41.6	12.0								
TOTAL — AVERAGE AMPERES					119.0	108.7	91.3	85.4	324.9	316.8	267.1	225.9	372.5	356.3	314.2	223.8	274.1	265.6	242.2	233.4	197.2	180.0	162.4	132.2
(S/N 63-12956 & Subsequent)																								

13

This equipment added by PCA 205-55 (CCN-MOD. 13) and is effective for S/N 63-12956 and subsequent helicopters.

12

Only one of these systems may be installed at any one time.

(Continued from sheet 1)

NOTES—

Figure 13-4. Load analysis chart — DC — electrical — UH-1D (63-8739 through 63-8859, and 63-12956 through 63-13002) (Sheet 2 of 3)

A EQUIPMENT	B PART DESIGNATION	C Total No. Of Units	D Operating Time-Min.	ELECTRICAL REQUIREMENTS PER UNIT-E									F Power Factor	G Voltage Regulator	H Frequency Range	CONNECTED LOADS-I						
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			28 VOLTS 1 PH.						PHASE A TO B		PHASE C TO A		PHASE B TO C		
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				WATTS	VAR.	WATTS	VAR.	WATTS	VAR.	
INVERTER—MAIN	PU-543/A	1		250									.80 LAG .95 LEAD	±	390/410							
D - INSTRUMENTS																						
Indicator—XMSN Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440						0.47	1.65
Transmitter—XMSN Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440						0.66	2.20
E - ENGINE INSTRUMENTS																						
Indicator—Engine Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440						0.47	1.65
Transmitter—Engine Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440						0.66	2.20
Indicator—Fuel Pressure	Aerno 61-2461 (MS28010-1)	1	30.0							2.60	0.45	2.57	0.17	±10	360/440						0.45	2.57
Transmitter—Fuel Pressure	Aerno 61-3008 (MS28005-1)	1	30.0							3.25	0.59	3.19	0.18	±10	360/440						0.59	3.19
Indicator—Torque Pressure	Aerno 61-2486, Type MO-3	1	30.0							1.72	0.47	1.65	0.28	±10	360/440						0.47	1.65
Transmitter—Torque Pressure	Aerno 61-2487, Type MH-4	1	30.0							2.29	0.66	2.20	0.29	±10	360/440						0.66	2.20
Indicator—Fuel Quantity	205-061-633	1	30.0				3.50	3.50					1.0	±10	360/440	3.30						
Tank Unit—Fuel Quantity	205-061-633	3	30.0																			
F - FLIGHT INSTRUMENTS																						
Attitude Indicator	Indicator Lear 4005G	1	30.0				15.00	14.10	3.10				0.94	±10	380/420	14.10	5.10					
System Pilot	Amplifier Lear 5404G	1	30.0										0.94	±10	380/420	7.80	2.80	7.80	2.80	7.80	2.80	
	Control Gyro Aerno 60-5937, Type MD-1	1	30.0	25.00	23.50	8.50							0.94	±10	380/420	4.50	1.60					
	Rate Gyro Aerno 60-5938, Type MC-1	1	30.0				4.80	4.50	1.60													
Attitude Indicator—Copilot	MIL-1-5133, Type J-8	1	30.0	9.00	7.70	4.70							0.85	±10	380/420	2.57	1.57	2.57	1.57	2.57	1.57	
Compass System Type J-2	Amplifier Aerno 60-1702, Type A-2	1	30.0										0.92	±10	360/440	6.61	5.49	12.00	1.21	6.95	1.38	
	Control Gyro Aerno 60-1480, Type S-3A	1	30.0	27.70	25.56	8.08																
	Transmitter & Aerno 60-1483, Type C-2	1	30.0																			
	Compensator Aerno 60-1479	1	30.0																			
	Pwr. Interlock Rly. 204-075-363-3	1	30.0	1.60	0.60	-1.39							0.24	±10	360/440	0.40	-0.69			0.40	-0.69	
	Master Indicator Sperry C-6H	1	30.0							22.50	5.30	21.90	0.85	±10	360/440					3.30	21.90	
	Servo Amplifier Sperry 1763867-1	1	30.0				17.40	14.80	9.20				0.85	±10	360/440					14.80	9.20	
	Repeater Indicator ID-250A/ARN	1	30.0							6.69	1.20	6.57	0.18	±10	360/440					1.20	6.57	
M - MISCELLANEOUS																						
Capacitor—P.F. Correction	CP33B1EF10SK	2	30.0				33.20		-33.20				0.0									
Resistor—Load Balancing	RW20G911	1	30.0				14.50	14.50					1.0					14.50				-66.40
R - RADIO NAVIGATION																						
RMI Converter	ARC Type B-18A	1	30.0							7.28	7.28		1.0								7.28	
X - AC POWER (WARNING)																						
AC Failure Relay	AAF 32471 Type D1	1	30.0				13.20	0.80	13.10				0.06	±10	360/440					0.80	13.10	
TOTALS:																39.48	15.87	36.87	5.58	31.53	6.74	
TOTAL LOAD: 131 VA @ 0.97 PF (LAG)																						
INVERTER—SPARE	PU-543/A	1		250																		
NOTE: Spare inverter loads are identical to main inverter loads.																						

A

PHASE C BUS

SHIP BUS PHASE ROTATION A-C-B

B

C

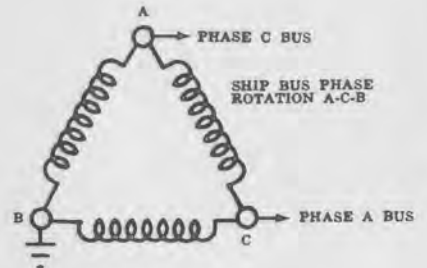
PHASE A BUS

MAIN AND SPARE INVERTER
PU-543/A
PHASE ROTATION A-B-C

POWER INTERLOCK RELAY
DRAWS POWER FROM
TWO PHASES ONLY.

OBTAINED FROM 115/28
VOLT AUTOTRANSFORMER.

NOTES



MAIN AND SPARE INVERTER
PHASE ROTATION A-B-C

- 2 POWER INTERLOCK RELAY
DRAWS POWER FROM
TWO PHASES ONLY.
- 4 OBTAINED FROM 115/28
VOLT AUTOTRANSFORMER.
- NOTES

Figure 13-4. Load analysis chart — AC — electrical — UH-1D (63-8739 through 63-8859,
and 63-12956 through 63-13002) (Sheet 3 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amps Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	3.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
A - ARMAMENT	Rocket Launch Sys. Sight Machine Gun System Fire Control Relay	1 1 1 1	0.6 5.0 45.0 0.35	△ △ △ △										45.4	45.4	22.7	1.5								
C - FLIGHT CONTROLS	Magnetic Brake-Force Trim Solenoid-Hyd. Control	3 1	0.5 1.5	30.0 △	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
E - ENGINE INSTRUMENTS	Engine Oil Temp. XMSN Oil Temp.	1 1	0.04 0.04	30.0 30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
F - FLIGHT INSTRUMENTS	Gyro Compass Power Interlock Relay Heater-Pitot Tube Turn & Slip Ind. Type MD-8	1 1 1 1	0.6 0.2 4.0 0.1	30.0 30.0 30.0 30.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	
H - HEATING	Cabin Heater Motor-Bleed Air Valve Ice Detector System-Eng. Defrost Valve Aft Outlet Valve Heated Blanket Outlet Pump-Rotor De-Icing Pump-Windshield De-Icing Solenoid Valve De-Icing	1 1 1 1 2 1 1 1 1	31.1 2.1 11.0 3.1 3.1 10.0 2.1 1.0 1.2	30.0 △ △ △ △ △ △ △ △	2.0	0.8	0.2	NEG	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	
J - ENGINE IGNITION SYS.	△	1	1.5	0.5	1.5	1.5	0.4	NEG																	
K - ENGINE CONTROLS	Starter-Generator Relay-Starter	1 1	4.5 0.5	△ △	4.5	4.5	1.1	0.2																	
L - LIGHTING	Dome Light-Red Cockpit Light Instrument & Edge Lights Instruments Sec. Lights Fus. Light-Top & Bottom Fus. Light-Side Fus. Light-Tail Flasher-Fus. Lights Master Caution Panel Search Light Landing Light Anti-Collision Light	4 2 132 4 3 4 1 1 1 1 1 1	1.28 0.17 0.04 0.34 2.7 0.83 1.15 0.40 0.20 17.00 16.50 3.00	△ △ △ △ △ △ △ △ △ △ △ △	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	
M - MISCELLANEOUS	Windshield Wiper Solenoid-Cargo Hook Relay-Cargo Hook	2 1 1	2.5 10.0 0.2	30.0 △ △					7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
P - POWER	Battery Charging Relay-Battery Relay-Non-Essential Bus. Relay-Bus. Control Inverter-Main Inverter-Spare Relay-Inverter Power Relay-Inverter	1 1 1 1 1 1 2 1	△ 0.6 0.6 0.35 14.8 14.8 0.35 0.2	△ 30.0 30.0 30.0 30.0 30.0 30.0 30.0	129.6	129.6	81.0	48.2	97.2	97.2	80.7	22.9	32.4	32.4	20.2	16.2	32.4	32.4	20.2	7.6	4.3				
Q - FUEL AND OIL	Pump-Fuel Boost Pump-Aux. Fuel Pump-External Fuel Valve-Fuel Shut-Off Solenoid Valve-Igniter Solenoid Valve-Gov. By-Pass Actuator-Gov. RPM Solenoid-Idle Stop Rel. Relay-Aux. Fuel Trans.	1 2 2 1 1 1 1 1 1	5.2 3.5 3.7 1.0 0.75 1.0 0.9 6.5 0.2	30.0 22.0 22.0 △ △ △ △ △ △	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
PAGE 2 TOTAL - Average Amperes					82.9	72.6	59.4	55.1	297.9	289.8	241.1	203.1	346.6	330.4	269.0	194.6	246.2	235.9	216.2	209.9	163.2	146.0	182.1	105.1	100.4
GENERATOR:					(1) GFE Aero 42-2031 Type GEU-5/A DWG 5805226, 30 Volt, 300 Ampere. Gear Ratio, Generator to Power Turbine Output Shaft, 1 to 1.																				
STARTER-GENERATOR:					(1) GFE Aero 42-7031 Type STU-8/A. 30 Volt, 200 Amp. Gear Ratio. Starter-Generator to Engine Gas Producer, 9.283 to 1.																				
VOLTAGE REGULATOR:					(2) E-1597-1, MIL-R8309.																				
REVERSE CURRENT CUTOUT:					(2) AN3025-300.																				
BATTERY:					(1) BB-433A, 34 Amp. Hrs., Nickel-Cadmium.																				
13. Recommended capacity of ground power unit: 28 VDC, 500 amp., 100 amp. overload capacity.																									
12. The 30 volt, 200 amp. starter generator is considered suitable for the essential loads listed in the emergency column (F-8).																									
△ Power requirement shown is for 100,000 BTU heater used with winterization kit.																									
△ Either AN/ARC-51X or AN/ARC-73 may be installed.																									
△ Loads not on essential bus. These loads may be obtained by use of bus override switch.																									
△ Part of auxiliary fuel system (not normally installed).																									
△ Operates with spare inverter only.																									
△ Main and spare inverters are used interchangeably. (Both cannot be operated at the same time).																									
△ GFE (part of Iycoming T53-L-11 engine).																									
△ See supplementary data sheet.																									
△ This equipment normally de-energized.																									
△ Only one of the following systems may be installed at any one time: rocket launch system, machine gun system, or external fuel system.																									
△ Estimated value.																									
NOTES-																									

GENERATOR: (1) GFE Aerno 42-2031 Type GEU-5/A
DWG 5805226, 30 Volt, 300 Ampere.
Gear Ratio, Generator to Power
Turbine Output Shaft, 1 to 1.

STARTER-GENERATOR: (1) GFE Aerno 42-7031 Type STU-6/A.
30 Volt, 200 Amp. Gear Ratio,
Starter-Generator to Engine
Gas Producer, 0.283 to 1.

VOLTAGE REGULATOR: (2) E-1597-1, MIL-R8809.

REVERSE CURRENT CUTOFF: (2) AN3025-300.

BATTERY: (1) BB-433A, 34 Amp. Hr., Nickel-Cadmium.

- Recommended capacity of ground power unit:
28 VDC, 500 amp., 100 amp. overload capacity.
- The 30 volt, 200 amp. starter generator is
considered suitable for the essential loads
listed in the emergency column (F-8).
- Power requirement shown is for 100,000 BTU
heater used with winterization kit.
- Either AN/ARC-51X or AN/ARC-73 may be installed.
- Loads not on essential bus. These loads may be
obtained by use of bus override switch.
- Part of auxiliary fuel system (not normally
installed).
- Operates with spare inverter only.
- Main and spare inverters are used interchangeably.
(Both cannot be operated at the same time).
- GFE (part of lycoming T53-L-11 engine).
- See supplementary data sheet.
- This equipment normally de-energized.
- Only one of the following systems may be
installed at any one time: rocket launch
system, machine gun system, or external
fuel system.
- Estimated value.

NOTES—

Operating Conditions	Start & Warmup	Takeoff	Cruise	Land	Emergency
Max. Operating Gen. RPM	6600	6600	6600	6600	
Min. Operating Gen. RPM	5000	5800	5800	5800	
Max. Altitude Feet		12,200	16,300	12,200	16,300

Figure 13-5. Load analysis chart — DC — electrical — UH-1D (64-13492 through 64-13901) (Sheet 1 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	5.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
R - RADIO NAV. & COMM.																									
Radio Compass	AN/ARN-39	1	2.8	30.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
Marker Beacon Rcvr.	R-1041/ARN	1	0.04	30.0	NEG				NEG				NEG				NEG				NEG				
VOR Receiver (VHF)	AN/ARN-30E	1	2.9	30.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	
FM Transceiver (Rcvr.)	AN/ARC-44	1	3.3	30.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
(Additional Pwr. Xmit.)			4.2	30.0	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.8	4.2	4.2	2.1	0.4	0.4
UHF Transceiver (Rcvr.)	AN/ARC-51X	1	5.8	30.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
(Additional Pwr. Xmit.)			3.8	30.0	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.8	3.8	3.8	1.9	0.4	0.4
VHF Transceiver (Rcvr.)	AN/ARC-73	1	2.0	30.0																					
(Additional Pwr. Xmit.)			6.5	30.0																					
HF Transceiver (Rcvr.)	AN/ARC-102	1	7.5	30.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
(Additional Pwr. Xmit.)			31.6	30.0					31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6	
Signal Distribution Pnl.	C-1611/A1Q	3	0.2	30.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
VHF Transceiver Pwr. Relay	MS24149-D1	1	0.25	30.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Intercom Relay	C2A-126 (Hi-G, Inc.)	2	0.02	30.0	NEG				NEG				NEG				NEG				NEG				
FM Auxiliary Receiver	AN/AAR-40 (Prov. Only)	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
S - RADAR																									
IFF Transponder	AN/APX-44	1	4.5	30.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
IFF Adapter	Mark XII (Prov. Only)	1	4.2	30.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Radar Altimeter	AN/APN-100 (Prov. Only)	1	3.0	30.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
W - WARNING																									
Fire Detection-Eng.	Edison 227-29-5	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
RPM Limit	205-074-001-1	1	0.5	30.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
PAGE 3 TOTAL - Average Amperes					45.5	45.5	41.5	38.6	45.5	45.5	41.5	38.6	45.5	45.5	41.5	38.3	45.5	45.5	41.5	43.1	45.5	45.5	43.5	38.3	38.3
TOTAL FROM PAGE 2 -					82.9	72.6	59.4	55.1	297.9	289.8	241.1	203.1	346.6	330.4	269.0	194.6	246.2	235.9	216.2	209.9	163.2	146.0	132.1	105.1	100.4
TOTAL - Average D.C. Amperes -					128.4	118.1	100.9	93.7	343.4	335.3	282.6	241.7	392.1	375.9	310.5	232.9	291.7	281.4	257.7	253.0	208.7	191.5	173.6	143.4	138.7

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Figure 13-5. Load analysis chart - DC - electrical - UH-1D (64-13492 through 64-13901) (Sheet 2 of 3)

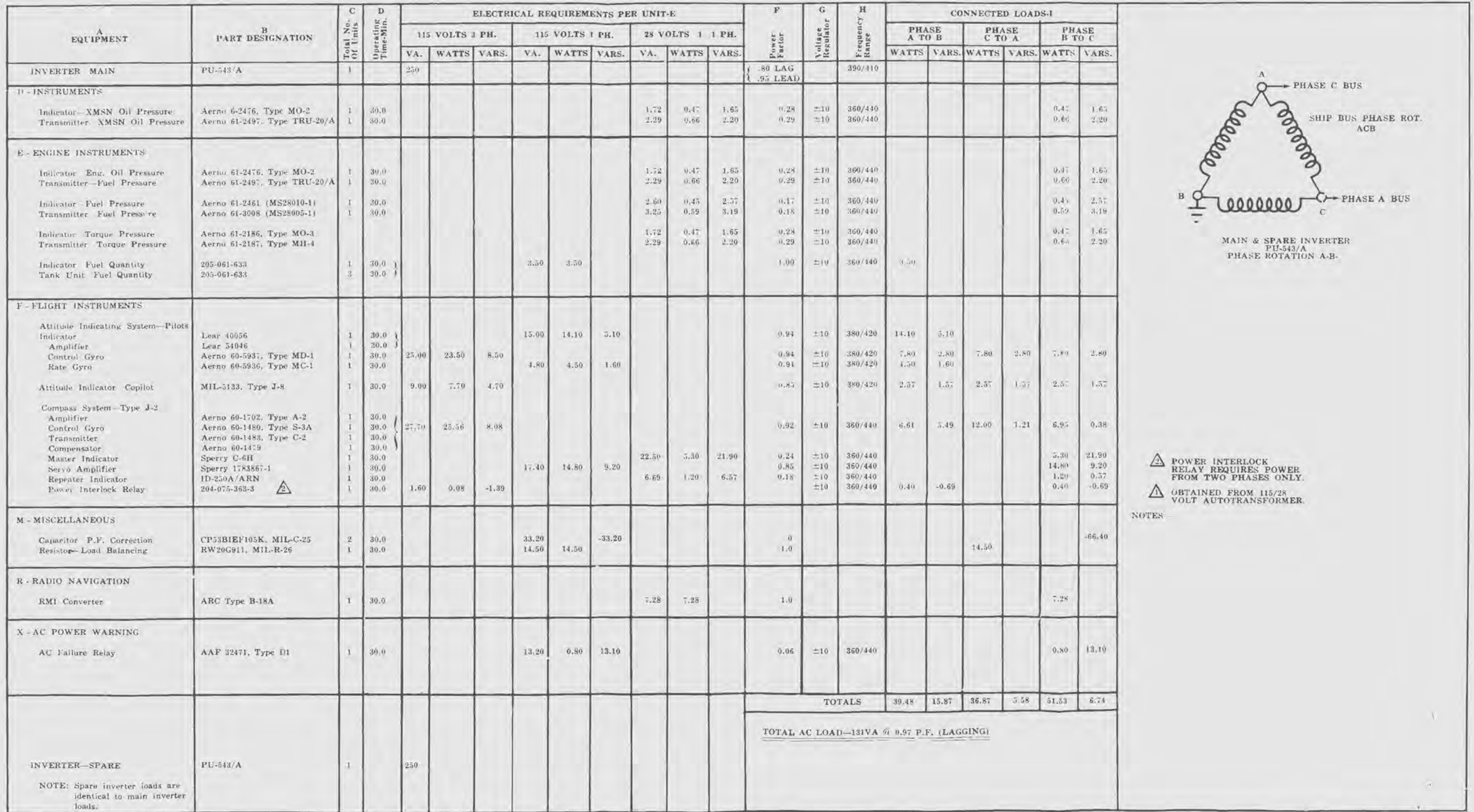


Figure 13-5. Load analysis chart - AC - electrical - UH-1D (64-13492 through 64-13901) (Sheet 3 of 3)

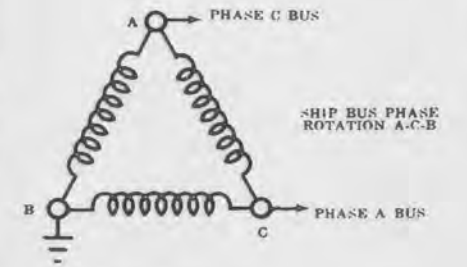
Figure 13-6. Load analysis chart — DC — electrical — UH-1D (65-9565 through 65-12895) (Sheet 1 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	5.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
R - RADIO NAV. & COMM.																									
Radio Compass	AN/ARN-59	1	2.8	30.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
Marker Beacon Rcvr.	R-141/ARN	1	0.04	30.0	NEG				NEG				NEG				NEG				NEG				
VOR Receiver (VHF)	AN/ARN-30E	1	2.9	30.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	
FM Transceiver (RCVR)	AN/ARC-54	1	3.3	30.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
(Additional PWR XMIT)			4.2	△	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.8	4.2	4.2	2.1	0.4	0.4
UHF Transceiver (RCVR)	AN/ARC-51X	1	5.8	30.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
(Additional PWR XMIT)			3.8	△	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.8	3.8	3.8	1.9	0.4	0.4
VHF Transceiver (RCVR)	AN/ARC-73	△	2.0	30.0																					
(Additional PWR XMIT)			6.5	△																					
HF Transceiver (RCVR)	AN/ARC-102	1	7.5	30.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
(Additional PWR XMIT)			31.6	△																					
Signal Distribution PNL	C-111/A1C	4	0.1	30.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
VHF Transceiver PWR	MS-149-D1	△	0.25	30.0																					
Relay																									
Intercom Relay	C244126 (HI-G, INC)	2	0.02	4	NEG				NEG				NEG				NEG				NEG				
FM Auxiliary Receiver	AN/ARR-1	1	0.1	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Emergency Transmitter	T-366/ARC	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
S - RADAR																									
IFF Transponder	AN/APX-44	△	4.5	30.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
IFF Transponder	AN/APX-68	1	1.7	30.0																					
Computer Kit	1A/TEC	1	0.1	30.0																					
Test Set	TS-1343/APX	△	0.5	30.0																					
W - WARNING																									
Fire Detection-Eng.	Edison 227-29-5	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
RPM Limit	20574-001-1	1	0.5	30.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
					37.9	37.9	33.9	31.0	37.9	37.9	33.9	31.0	37.9	37.9	33.9	30.7	37.9	37.9	33.9	31.5	37.9	37.9	33.9	30.7	30.7
					82.9	72.6	59.4	55.1	266.8	258.7	210.0	172.0	315.5	299.3	237.9	163.5	215.1	204.8	185.1	178.8	132.1	114.9	101.0	74.0	69.3
					120.8	110.5	93.3	86.1	304.7	296.6	243.9	203.0	353.4	337.2	271.8	194.2	253.0	242.7	219.0	210.3	170.0	152.8	134.9	104.7	100.0
					15. Installed with and part of the AN/APX-68 System. 14. Either on AN/APX-44 or AN/APX-68 may be installed.																				
					NOTES --																				

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Figure 13-6. Load analysis chart - DC - electrical -- UH-1D (65-9565 through 65-12895) (Sheet 2 of 3)

A EQUIPMENT	B PART DESIGNATION	C Total No. Of Units	D Operating Time-Min.	ELECTRICAL REQUIREMENTS PER UNIT-E									F Power Factor	G Voltage Regulator	H Frequency Range	CONNECTED LOADS-I						
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			28 VOLTS 1 1 PH.						PHASE A TO B		PHASE C TO A		PHASE B TO C		
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				WATTS	VAR.	WATTS	VAR.	WATTS	VAR.	
INVERTER-MAIN	PU-543/A	1		250									.88 LAG .95 LEAD		390/410							
D - INSTRUMENTS																						
Indicator -XMSN Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65	
Transmitter-XMSN Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20	
E - ENGINE INSTRUMENTS																						
Indicator-Engine Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65	
Transmitter-Engine Oil Pressure	Aerno 61, Type TRU-20A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20	
Indicator Fuel Pressure	Aerno 61-2461 (MS28010-1)	1	30.0							2.60	0.45	2.57	0.17	±10	360/440					0.45	2.57	
Transmitter-Fuel Pressure	Aerno 61-3008 (MS28005-1)	1	30.0							3.25	0.59	3.19	0.18	±10	360/440					0.59	3.19	
Indicator-Torque Pressure	Aerno 61-2186, Type MO-3	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65	
Transmitter-Torque Pressure	Aerno 61-2187, Type MH-4	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20	
Indicator-Fuel Quantity	205-061-633	1	30.0				3.50	3.50					1.00	±	360/440	3.50						
Tank Unit-Fuel Quantity	205-061-633	3	30.0																			
F - FLIGHT INSTRUMENTS																						
Attitude Indicating System-Pilot	Type IND-AS-NA-1	1	30.0				15.00	14.10	5.10				0.94	±10	380/420	14.10	5.10					
Attitude Indicator	Aerno 60-5937, Type MD-1	1	30.0	23.00	23.50	8.50							0.94	±10	380/420	7.80	2.80	7.80	2.80	7.80	2.80	
Control Gyro	Aerno 60-5938, Type MC-1	1	30.0				4.80	4.50	1.60				0.94	±10	380/420	4.50	1.60					
Rate Gyro																						
Attitude Indicator-Copilot	MIL-5133, Type J-8	1	30.0	9.00	7.70	4.70							0.85	±10	380/420	2.57	1.57	2.57	1.57	2.57	1.57	
Compass System-Type J-2																						
Amplifier	Aerno 60-1702, Type A-2	1	30.0																			
Control Gyro	Aerno 60-1480, Type S-3A	1	30.0	27.70	25.50	8.08							0.92	±10	360/440	6.61	5.49	12.00	1.21	6.95	0.48	
Transmitter	Aerno 60-1483, Type C-2	1	30.0																			
Compensator	Aerno 60-1479	1	30.0																			
Master Indicator	Sperry C-6H	1	30.0							22.30	5.30	21.90	0.24	±10	360/440					5.30	21.90	
Servo Amplifier	Sperry 1783867-1	1	30.0				17.40	14.80	9.20				0.85	±10	360/440					14.80	9.20	
Repeater Indicator	1D-250A/ARN	1	30.0							6.68	1.20	6.57	0.18	±10	360/440					1.20	0.57	
Power Interlock Relay	204-075-363-3	1	30.0	1.60	0.80	-1.39								±10	360/440	0.40	-0.69			0.40	-0.69	
M - MISCELLANEOUS																						
Capacitor-P.F. Correction	CP53B1EF105K, MIL-C-25	2	30.0				33.20		-33.20				9									-66.40
Resistor-Load Balancing	RW20G911, MIL-R-26	1	30.0				14.50	14.50					1.0				14.50					
R - RADIO NAVIGATION																						
RM1 Converter	ARC Type B-18A	1	30.0							7.28	7.28		1.0								7.28	
S - RADAR																						
Computer Kit	1A/TSEC	1	30.0				25.0	25.0					1.0	±10							25.0	
X - AC POWER WARNING																						
AC Failure Relay	AAF 32471, Type D1	1	30.0				13.20	0.80	13.10				0.06	±10	360/440					0.80	13.10	
INVERTER- SPARE	PU-543/A	1																				
NOTE: Spare inverter loads are identical to main inverter loads.																						
TOTALS:																39.48	15.87	36.87	5.58	76.53	-0.26	
TOTAL AC LOAD: 154.3 VA @ 0.99 P.F. (LAGGING)																						



MAIN & SPARE INVERTER
PU-543/A
PHASE ROTATION A-C-B

- NOTES
- ⚠ INSTALLED WITH AND PART OF AN/AEX-68 SYSTEM
 - ⚠ POWER INTERLOCK RELAY REQUIRES POWER FROM TWO PHASES ONLY.
 - ⚠ OBTAINED FROM 115/28 VOLT AUTOTRANSFORMER.

Figure 13-6. Load analysis chart - AC - electrical - UH-1D (65-9565 through 65-12895) (Sheet 3 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	5.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
C - FLIGHT CONTROLS Magnetic Brake-Force Trim Solenoid-Hyd. Control	Airborne ACC. R460M15 Ronson 1-U-1025	3 1	0.5 1.5	30.0 △	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
E - ENGINE INSTRUMENTS Engine Oil Temp. Xmsn. Oil Temp.	Aerno 61-8833 (MS28009-1) Aerno 61-8842 (MS28009-2)	1 1	0.04 0.04	30.0 30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
F - FLIGHT INSTRUMENTS Gyro Compass Power Interlock Relay Heater-Pitot Tube Turn & Slip Ind. Type MD-8	Type J-2 204-075-363 Aerno 60-9660 (AN5813-1) Aerno 60-5704 (MS28024-3)	1 1 1 1	0.6 0.2 4.0 0.1	30.0 30.0 30.0 30.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	
H - HEATING Heat Exchanger Motor-Bleed Air Valve Ice Detector System-Eng. Defrost Valve Aft Outlet Valve Heated Blanket Outlet Heated Blanket Outlet	204-072-263 204-060-444 Cook Elect. 575-1022 & 677-20 Leland A38153-001 Leland A38153-001 Hubbel 7540 Hubbel 7540	1 1 1 ea. 1 2 6 2	1.2 2.1 11.0 3.1 3.1 10.0 10.0	△ △ 2 0.5 0.5 30.0 30.0	2.0 11.0 3.1 6.2	0.8 2.9 3.1 6.2	0.2 2.9 2.9 1.6	NEG 2.9 0.1 0.2	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0	60.0 60.0 60.0 60.0		
J - ENGINE IGNITION SYS.	△	1	1.5	0.5	1.5	1.5	0.4	NEG																	
K - ENGINE CONTROLS Starter-Generator Relay-Starter	204-060-200 MS24172D1	1 1		0.5	4.5	4.5	1.1	0.2																	
L - LIGHTING Dome Light-Red Cockpit Light Instrument & Edge Lights Instruments Sec. Lights Fus. Light-Top & Bottom Fus. Light-Side Fus. Light-Tail Flasher-Nav. Lights Master Caution Panel Search Light Landing Light Anti-Collision Light	MS25235R311 Lamp MS25231-313 Lamp MS25237-327 Lamp MS25069-1495 Lamp AN3120-1047 Lamp ASA 7512 Lamp MS25232-1683 Lamp MS24577-2 Type II 204-075-705 MIL-L-26998 Type MA-3 Grimes G8985-1 Grimes G8400A-8-24	4 2 132 4 3 4 1 1 1 1 1 1	1.28 0.17 0.04 0.34 2.7 0.83 1.15 3.0 0.20 17.00 16.50 3.00	△ △ △ △ △ △ △ △ △ △ △ △	8.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.2 5.3 5.3	3.8 NEG 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.2 5.3 5.3	3.8 NEG 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.2 5.3 5.3	3.8 NEG 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	3.8 0.3 5.3 5.3	
M - MISCELLANEOUS Windshield Wiper Internal Rescue Hoist	204-070-907 205-706-030	2 1	3.5 70.0	30.0 △					7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
P - POWER Battery Charging Relay-Battery Relay-Non-Essential Bus. Relay-Bus. Control Inverter-Main Inverter-Spare Relay-Inverter Power Relay-Inverter	BB433A 34 Amp. Hour MS24171-D1 MS24171-D1 MS25025-2 PU-543/A PU-543/A MS24166-D1 MS24149-D1	1 1 1 1 1 1 2 1		△ △ △ △ △ △ △ △	129.6 129.6 81.0 43.2	97.2 97.2 60.7 22.9	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	32.4 32.4 20.2 16.2	
Q - FUEL AND OIL Pump-Fuel Boost Pump-Aux. Fuel Pump-External Fuel Valve-Fuel Shut-Off Solenoid Valve-Igniter Solenoid Valve-Gov. By-Pass Actuator-Gov. RPM Solenoid-Idle Stop Rel. Relay-Aux. Fuel Trans.	205-060-606 205-060-622 Lear Type RG8160-2F 204-060-013 204-060-762 204-060-775 MS24149-D1	1 2 2 1 1 1 1 1	5.2 3.5 3.7 1.0 0.75 1.0 0.9 6.5	30.0 22.0 22.0 0.02 0.5 30.0 1.0 0.03	5.2 5.2 5.2 1.0 0.8 1.0 0.9	5.2 5.2 5.2 NEG 0.8 1.0 0.9	5.2 5.2 5.2 NEG 0.2 1.0 0.4	5.2 5.2 5.2 NEG 1.0 1.0 0.1	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9	5.2 5.2 5.2 1.0 1.0 0.9		
△ PAGE 2 TOTAL - Average Amperes					82.9	72.6	59.4	55.1	262.5	254.4	205.7	167.7	325.6	317.5	280.4	181.7	210.8	200.5	180.8	174.5	121.9	112.8	100.5	74.0	69.3
△ PAGE 2 TOTAL Average Amperes					82.9	72.6	59.4	55.1	222.5	214.4	165.7	127.7	285.6	277.5	240.4	141.7	170.8	160.5	140.8	134.5	121.9	112.8	100.5	74.0	69.3

GENERATOR: (1) GFE Aerno 42-2031 Type GEU-5/A DWG 5806226, 30 Volt, 300 Ampere, Gear Ratio, Generator to Power Turbine Output Shaft: 1 to 1.

STARTER-GENERATOR: (1) CFE, BHC Specification 204-060-200-1, 30 Volt, 300 Amp., Gear Ratio of Starter-Generator to Engine Gas Producer, 0.283 to 1.

VOLTAGE REGULATOR: (2) E-1597-1, MIL-R-6809

REVERSE CURRENT CUTOUT: (2) AN3025-300.

BATTERY: (1) BB-433A, 34 Amp. Hr., Nickel-Cadmium.

11. Recommended capability of ground power unit: 28V DC, 500 amp., 1000 amp. overload capability.

10. The 30 volt, 300 amp. starter generator is considered suitable for the essential loads listed in the emergency column (F-8).

△ Power requirement not applicable. Listing is for reference only.

△ Either AN/ARC-51BX or AN/ARC-73 may be installed.

△ Loads not on essential bus. These loads may be obtained by use of bus override switch.

△ Part of auxiliary fuel system (not normally installed).

△ Operates with spare inverter only.

△ Main and spare inverters are used interchangeably. (Both cannot be operated at the same time.)

△ GFE (part of Lycoming T53-L-11 engine).

△ See supplementary data sheet.

△ This equipment normally de-energized.

NOTES: Also on sheet 2.

Operating Conditions	Start & Warmup	Takeoff	Cruise	Land	Emergency
Max. Operating Gen. RPM	6600	6600	6600	6600	
Min. Operating Gen. RPM	5000	6000	6000	6000	
Max. Altitude Feet		19,350	26,050	19,350	26,050

GENERATOR:

(1) GFE Aerno 42-2031 Type GEU-5/A
DWG 5806226, 30 Volt, 300 Ampere,
Gear Ratio, Generator to Power
Turbine Output Shaft: 1 to 1.

STARTER-
GENERATOR:

(1) CFE, BHC Specification 204-060-200-1,
30 Volt, 300 Amp., Gear Ratio of
Starter-Generator to Engine
Gas Producer, 0.283 to 1.

VOLTAGE
REGULATOR:

(2) E-1597-1, MIL-R-6809

REVERSE CURRENT
CUTOUT:

(2) AN3025-300.

BATTERY:

(1) BB-433A, 34 Amp. Hr., Nickel-Cadmium.

11. Recommended capability of ground power unit:
28V DC, 500 amp., 1000 amp. overload capability.

10. The 30 volt, 300 amp. starter generator is
considered suitable for the essential loads
listed in the emergency column (F-8).

△ Power requirement not applicable. Listing is
for reference only.

△ Either AN/ARC-51BX or AN/ARC-73 may be installed.

△ Loads not on essential bus. These loads may be
obtained by use of bus override switch.

△ Part of auxiliary fuel system (not normally
installed).

△ Operates with spare inverter only.

△ Main and spare inverters are used interchang-
ably. (Both cannot be operated at the same time.)

△ GFE (part of Lycoming T53-L-11 engine).

△ See supplementary data sheet.

△ This equipment normally de-energized.

NOTES: Also on sheet 2.

Operating Conditions	Start & Warmup	Takeoff	Cruise	Land	Emergency
Max. Operating Gen. RPM	6600	6600	6600	6600	
Min. Operating Gen. RPM	5000	6000	6000	6000	
Max. Altitude Feet		19,350	26,050	19,350	26,050

Figure 13-7. Load analysis chart - DC electrical - UH-1D (66-746 through 66-8577) (Sheet 1 of 3)

EQUIPMENT	PART DESIGNATION	Number Of Units	Amperes Per Unit	Operating Time-Min.	OPERATING CONDITIONS																				
					START & WARM UP				TAKE OFF				CRUISE				LAND				EMERGENCY				
					Average Amps.				Average Amps.				Average Amps.				Average Amps.				Average Amps.				
					Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	15.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	Amps	0.5 Min.	2.0 Min.	5.0 Min.	Amps	0.5 Min.	2.0 Min.	30.0 Min.	60.0 Min.
R - RADIO NAV. & COMM.																									
Radio Compass	AN/ARN-83ADF	1	1.2	30.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Marker Beacon Revr.	R-1041/ARN	1	0.04	30.0	NEG				NEG				NEG				NEG				NEG				
VOR Receiver (VHF)	AN/ARN-82	1	1.0	30.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
FM Transceiver (Revr.)	AN/ARC-54	1	3.3	30.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
(Additional Pwr. Xmit.)			4.2	30.0	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.6	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.8	4.2	4.2	2.1	0.4	
UHF Transceiver (Revr.)	AN/ARC-51BX	1	5.8	30.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
(Additional Pwr. Xmit.)			3.8	30.0	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.5	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.8	3.8	3.8	1.9	0.4	
VHF Transceiver (Revr.)	AN/ARC-73	1	2.0	30.0																					
(Additional Pwr. Xmit.)			6.5	30.0																					
HF Transceiver (Revr.)	AN/ARC-102	1	7.5	30.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
(Additional Pwr. Xmit.)			11.6	30.0																					
Signal Distribution Pnl.	C-1611/A1C	4	0.2	30.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
VHF Transceiver Pwr. Relay	MS24149-D1	1	0.25	30.0																					
Intercom Relay	C2A-126(HI-G, INC)	2	0.02	30.0	NEG				NEG				NEG				NEG				NEG				
FM Auxiliary Receiver	AN/ARR-()	1	0.1	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Emergency Transmitter	T-366/ARC	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
VHF Transceiver	AN/ARC 134	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
S - RADAR																									
IFF Transponder	AN/APX-44	1	4.5	30.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
IFF Transponder	AN/APX-68	1	1.7	30.0																					
Computer Kit	1A/TSEC	1	0.1	30.0																					
Test Set	TS-1843/APX	1	0.5	30.0																					
W - WARNING																									
Fire Detection-Eng.	Edison 227-29-5	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
RPM Limit	205-074-001-1	1	0.5	30.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
PAGE 3 TOTAL - Average Amperes -					34.8	34.8	30.8	27.9	34.8	34.8	30.8	27.9	34.8	34.8	30.8	27.9	34.8	34.8	30.8	27.9	34.8	34.8	30.8	27.9	27.9
15 Total From Page 2 -					82.9	72.6	59.4	55.1	262.5	254.4	205.7	167.7	325.6	317.5	280.4	181.7	210.8	200.5	180.8	174.5	121.9	112.8	100.5	74.0	69.3
16 Total From Page 2 -					82.9	72.6	59.4	55.1	222.5	214.4	165.7	127.7	285.6	277.5	240.4	141.7	170.8	160.5	140.8	134.5	121.9	112.8	100.5	74.0	69.3
15 Total Average D.C. Amperes					117.7	107.4	90.2	83.0	297.3	289.2	236.5	195.6	360.4	352.3	311.2	209.6	245.6	235.3	211.6	202.4	156.7	147.6	131.3	101.9	97.2
16 Total Average D.C. Amperes					117.7	107.4	90.2	83.0	257.3	249.2	196.5	155.6	320.4	312.3	271.2	169.6	205.6	195.3	171.6	162.4	156.7	147.6	131.3	101.9	97.2

- 16 Totals are for the following ships:
66-16034 and sub.
- 15 Totals are for the following ships:
66-746 thru 66-16033.
- 14 Quantity shown is for ships 66-746 thru 66-16033.
Three (3) dome lights only installed on 66-16034 & sub.
- 13 Installed with and part of the AN/APX-68 system.
- 12 Either AN/APX-44 or AN/APX-68 may be installed.
See Page 2.

NOTES - Continued from sheet 1.

AV 054004-2

Figure 13-7. Load analysis chart - DC - electrical - UH-1D (66-746 through 66-8577) (Sheet 2 of 3)

EQUIPMENT	PART DESIGNATION	Total No. Of Units	Operating Time-Min.	ELECTRICAL REQUIREMENTS PER UNIT									Power Factor	Voltage Regulation	Frequency Range	CONNECTED LOADS							
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			28 VOLTS 1 1 PH.						PHASE A TO B		PHASE C TO A		PHASE B TO C			
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				Watts	Vars.	Watts	Vars.	Watts	Vars.		
INVERTER—MAIN	PU-543/A	1		250									.80 LAG .95 LEAD		390/410								
D. INSTRUMENTS																							
Indicator—XMSN Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65		
Transmitter—XMSN Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20		
E. ENGINE INSTRUMENTS																							
Indicator—Engine Oil Pressure	Aerno 61-2476, Type MO-2	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65		
Transmitter—Engine Oil Pressure	Aerno 61-2497, Type TRU-20/A	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20		
Indicator—Fuel Pressure	Aerno 61-2461 (MS28010-1)	1	30.0							2.60	0.45	2.57	0.17	±10	360/440					0.45	2.57		
Transmitter—Fuel Pressure	Aerno 61-3008 (MS28005-1)	1	30.0							3.25	0.59	3.19	0.18	±10	360/440					0.59	3.19		
Indicator—Torque Pressure	Aerno 61-2186, Type MO-3	1	30.0							1.72	0.47	1.65	0.28	±10	360/440					0.47	1.65		
Transmitter—Torque Pressure	Aerno 61-2187, Type MH-4	1	30.0							2.29	0.66	2.20	0.29	±10	360/440					0.66	2.20		
Indicator—Fuel Quantity	205-061-633	1	30.0				3.50	3.50					1.00	±10	360/440	3.50							
Tank Unit—Fuel Quantity	205-061-633	3	30.0																				
F. FLIGHT INSTRUMENTS																							
Attitude Indicating System—Pilots																							
Attitude Indicator	Type IND-A5-NA-1	1	30.0				15.00	14.10	5.10				0.94	±10	380/420	14.10	5.10						
Control Gyro	Aerno 60-5937, Type MD-1	1	30.0	25.00	23.50	8.50							0.94	±10	380/420	7.80	2.80	7.80	2.80	7.80	2.80		
Rate Gyro	Aerno 60-5938, Type MC-1	1	30.0				4.80	4.50	1.60				0.94	±10	380/420	4.50	1.60						
Attitude Indicator—Copilot	MIL-5133, Type J-8	1	30.0	9.00	7.70	4.70							0.85	±10	380/420	2.57	1.57	2.57	1.57	2.57	1.57		
Compass System—Type J-2																							
Amplifier	Aerno 60-1702, Type A-2	1	30.0																				
Control Gyro	Aerno 60-1480, Type S-3A	1	30.0	27.70	25.56	8.08							0.92	±10	360/440	6.61	5.49	12.00	1.21	6.95	1.38		
Transmitter	Aerno 60-1483, Type C-2	1	30.0																				
Compensator	Aerno 60-1479	1	30.0																				
Master Indicator	Sperry C-6H	1	30.0							22.50	5.30	21.90	0.24	±10	360/440						5.30	21.90	
Servo Amplifier	Sperry 1783867-1	1	30.0				17.40	14.80	9.20				0.85	±10	360/440						14.80	9.20	
Repeater Indicator	ID-250A/ARN	1	30.0							6.69	1.20	6.57	0.18	±10	360/440						1.20	6.57	
Power Interlock Relay	204-075-363-3	1	30.0	1.60	0.80	-1.30								±10	360/440	0.40	-0.60				0.40	-0.60	
M. MISCELLANEOUS																							
Capacitor—P.F. Correction	Sprague 143P15K 5.0 UF	1	30.0						-79.6													-79.6	
Resistor—Load Balancing	RW20G911 MIL-R-26	1	30.0				14.50	14.50					1.0					14.50					
R. RADIO NAVIGATION																							
RMI Converter	ARC Type B-18A	1	30.0							7.28	7.28		1.0	±10	360/440						7.28		
VOR/LOC Receiver	AN/ARN-82	1	30.0							6.00	2.30	5.50	0.38	±10	360/440						2.30	5.50	
Radio Compass	AN/ARN-83ADF	1	30.0							14.80	5.64	13.73	0.38	±10	360/440						5.64	13.73	
S. RADAR																							
Computer Kit	1A/TSEC	1	30.0				25.0	25.0					1.0	±10		25.0							
X. AC POWER WARNING																							
AC Failure Relay	AAF 32471 Type D1	1	30.0				13.20	0.80	13.10				0.06	±10	360/440						0.80	13.10	
INVERTER—SPARE	PU-543/A	1		250																			
NOTE: Spare Inverter loads are identical to main inverter loads.																							
TOTALS																64.48	15.87	36.87	5.58	59.47	12.77		
TOTAL AC LOAD: 164.4 VA @ 0.98 P.F. (LAGGING)																							

A → PHASE C BUS

→ PHASE A BUS

C

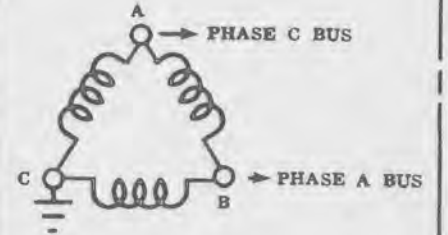
MAIN & SPARE INVERTER
PU-543/A
PHASE ROTATION A-B-C

③ Installed with and part of AN/APX-68 system.

② Power interlock relay requires power from two phases only.

① Obtained from 115/28 volt autotransformer.

NOTES—



MAIN & SPARE INVERTER
PU-543/A
PHASE ROTATION A-B-C

- ③ Installed with and part of AN/APX-68 system.
- ② Power interlock relay requires power from two phases only.
- ① Obtained from 115/28 volt autotransformer.

NOTES—

Figure 13-7. Load analysis chart — AC — electrical — UH-1D (66-746 through 66-8577) (Sheet 3 of 3)

EQUIPMENT	PART DESIGNATION	NUMBER OF UNITS	AMPERES PER UNIT	OPERATING TIME MIN.	OPERATING CONDITIONS																								
					START & WARM UP					TAKE OFF					CRUISE					LAND					EMERGENCY				
					AVERAGE AMPS					AVERAGE AMPS					AVERAGE AMPS					AVERAGE AMPS					AVERAGE AMPS				
					AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	5.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.	60.0 MIN.
C— FLIGHT CONTROLS																													
SOLENOID—IDLE STOP REL	204-060-775	1	6.5	0.03	NEG						NEG					NEG					NEG								
SOLENOID VALVE—GOV BY-PASS		1	1.0	30.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0				
ACTUATOR—GOV RPM	204-060-762	1	0.9	1.0	0.9	0.9	0.4	0.1							0.9	0.9	0.4	NEG											
MAGNETIC BRAKE—FORCE TRIM	AIRBORNE ACC R460M15	3	0.5	30.0	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5				
SOLENOID—HYD CONTROL	RONSON I-U-1025	1	1.5																										
E— ENGINE INSTRUMENTS																													
ENGINE OIL TEMP	MS28009-1	1	0.04	30.0	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1				
XMSN OIL TEMP	MS28009-2	1	0.04	30.0																									
F— FLIGHT INSTRUMENTS																													
HEATER—PITOT TUBE	AN5813-1	1	4.0	30.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0				
TURN & SLIP IND TYPE MD-8	MS28024-3	1	0.1	30.0	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1				
H— HEATING																													
MOTOR—BLEED AIR VALVE	204-060-444	1	2.0	0.2	2.0	0.8	0.2	NEG												2.0	0.8	0.2	NEG						
ICE DETECTOR SYS—ENGINE	COOK ELECT 575-1022 & 677-20	1 EA	11.0		11.0	2.9	2.9	2.9		11.0	2.9	2.9	2.9		11.0	2.9	2.9	2.9		11.0	2.9	2.9	2.9	2.9	2.9				
DEFROST VALVE	LELAND A38153-001	1	3.1	0.5	3.1	3.1	0.1	0.1												3.1	3.1	0.8	0.1						
AFT OUTLET VALVE	LELAND A38153-001	2	3.1	0.5	6.2	6.2	1.6	0.2												6.2	6.2	1.6	0.2						
HEATED BLANKET OUTLET	HUBBELL 7540	1	10.0	30.0						20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0						
J— ENGINE IGNITION SYS																													
IGNITER UNIT		1	1.5	0.5	1.5	1.5	0.4	NEG																					
SOLENOID VALVE—IGNITER		1	0.75	0.5	0.8	0.8	0.1	NEG																					
K— ENGINE CONTROLS																													
STARTER—GENERATOR	204-060-200	1																											
RELAY—STARTER	MS24172-D1	1	4.5	0.5	4.5	4.5	1.1	0.2																					
L— LIGHTING																													
DOVE LIGHT	MS25235R311 LAMP	3	1.28	30.0	3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8	3.8	3.8				
COCKPIT LIGHT	MS25231-313 LAMP	2	0.17		0.1	0.3	0.2	NEG		0.3	0.3	0.2	NEG		0.3	0.3	0.2	NEG											
INSTRUMENT & EDGE LIGHTS	MS25237-327 LAMP	132	0.04	30.0	5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3	5.3	5.3				
INSTRUMENTS SEC LIGHTS	MS25069-1495 LAMP	4	0.34																										
FUS LIGHT—TOP & BOTTOM	AN3120-1047 LAMP	3	2.7	30.0																									
NAV LIGHTS	ASA-7512 LAMP	4	0.85	30.0	12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6	12.6	12.6				
FUS LIGHT—TAIL	MS25232-1683 LAMP	1	1.15	30.0																									
FLASHER—NAVIG LIGHTS	MS24577-2, TYPE II	1																											
MASTER CAUTION PANEL	204-075-705	1	0.20	30.0	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2				
SEARCH LIGHT	MIL-L-26998, TYPE MA-3	1	17.00	5.0											17.0	17.0	17.0	2.8		17.0	17.0	17.0	17.0						
LANDING LIGHT	GRIMES G8385-1	1	16.50	5.0																16.5	16.5	16.5	16.5	16.5	2.8	1.4			
ANTI-COLLISION LIGHT	GRIMES G8400A-B-245	1	3.00	30.0						3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0				
M— MISCELLANEOUS																													
WINDSHIELD WIPER	204-070-907	2	3.5	30.0						7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0				
INTERNAL RESCUE HOIST	205-706-030	1	53.0												53.0	53.0	53.0	33.3											
SOLENOID—CARGO HOOK	EASTERN ROTOCRAFT SP400-3	1	10.0	0.1											10.2	2.1	0.5	NEG											
RELAY—CARGO HOOK	MS24149-D1	1	0.2	0.1																									
P— POWER																													
BATTERY CHARGING	BB433A 34 AMP HOUR	1								122.4	122.4	76.5	40.8		91.8	91.8	57.4	21.7		30.6	30.6	19.1	15.3	30.6	30.6	19.1	7.2	4.0	
RELAY—BATTERY	MS24171-D1	1	0.6	30.0	0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6	0.6	0.6	0.6			
RELAY—NON-ESSENTIAL BUS	MS24171-D1	1	0.6	30.0	0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6	0.6	0.6	0.6			
RELAY—BUS CONTROL	MS25024-2	1	0.35	30.0	0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4	0.4	0.4	0.4			
INVERTER—MAIN	PU-5431 1/A	1	16.26	30.0	16.6	16.6	16.6	16.6		16.6	16.6	16.6	16.6		16.6	16.6	16.6	16.6		16.6	16.6	16.6	16.6	16.6	16.6	16.6			
RELAY—MAIN INVT PWR	MS24166-D1	1	0.35	30.0																									
INVERTER—SPARE	PU-5431 1/A	1	16.26	30.0																									
RELAY—SPARE INVT PWR	MS24166-D1	1	0.35	30.0	16.8	16.8	16.8	16.8		16.8	16.8	16.8	16.8		16.8	16.8	16.8	16.8		16.8	16.8	16.8	16.8	16.8	16.8	16.8			
RELAY—INVERTER	MS24149-D1	1	0.2	30.0																									

GENERATOR: (1) GFE TYPE GEU-5/A
DWG 5806226 30 VOLT, 300 AMPERE, GEAR RAT. O.
GENERATOR TO POWER TURBINE OUTPUT SHAFT:
1 TO 1.

STARTER-GENERATOR: (1) CFE BHC SPECIFICATION 204-060-200-1, 30
VOLT, 300 AMP, GEAR RATIO OF STARTER GEN
ERATOR TO ENGINE GAS PRODUCER, 0.283 TO 1.

VOLTAGE
REGULATOR: (2) E-1597-1, MIL-R-6809

REVERSE CURRENT
CUTOUT: (2) AN3025-300

BATTERY: (1) BB-433A 34 AMP. HR. NICKEL CADMIUM.

Operating Conditions	Start & Warmup	Takeoff	Cruise	Land	Emergency
Max Operating Gen RPM	6600	6600	6600	6600	—
Min Operating Gen RPM	5000	6000	6000	6000	—
Max Altitude Feet	—	19,350	26,050	19,350	26,050

- △ EITHER AN AN/APX-44 OR AN/APX-68 MAY BE INSTALLED.
- △ INSTALLED WITH AND PART OF THE AN/APX-68 SYSTEM.
- △ MAIN AND SPARE INVERTERS ARE USED INTERCHANGABLY. (BOTH INVERTERS CANNOT BE OPERATED AT ONE TIME.)
- △ GFE (PART OF LYCOMING T53-L-11 ENGINE)
- △ SEE SUPPLEMENTARY DATA SHEET.
- △ THIS EQUIPMENT NORMALLY DE-ENERGIZED.

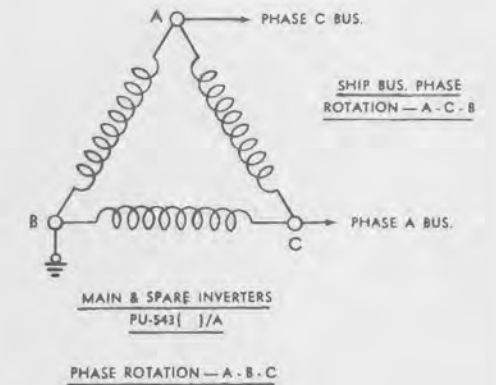
NOTES—

Figure 13-8. Load analysis chart — DC — electrical — UH-1D (67-17145 through 67-19537) (Sheet 1 of 4)

205475-67-1
AV 054005-1

Figure 13-8. Load analysis chart — DC — electrical — UH-1D (67-17145 through 67-19537) (Sheet 2 of 4)

EQUIPMENT	PART DESIGNATION	TOTAL NO. OF UNITS	OPERATING TIME—MIN.	ELECTRICAL REQUIREMENTS PER UNIT									POWER FACTOR	VOLTAGE REGULATION	FREQUENCY RANGE	CONNECTED LOADS						
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			26 VOLTS Δ 1 PH						PHASE A TO B		PHASE C TO A		PHASE B TO C		
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				WATTS	VAR.	WATTS	VAR.	WATTS	VAR.	
INVERTER—MAIN	PU-543 I/A	1		250								.80 LAG .95 LEAD		390/410								
D—INSTRUMENTS																						
INDICATOR—XMSN OIL PRESSURE	217-100A MIL-T-2543B	1	30.0							1.72	0.47	1.65	0.28	+10	360/440	0.47	1.65					
TRANSMITTER—XMSN OIL PRESSURE	318-100A MIL-T-2663B	1	30.0							2.29	0.66	2.20	0.29	+10	360/440	0.66	2.20					
E—ENGINE INSTRUMENTS																						
INDICATOR—ENG. OIL PRESSURE	217-100A MIL-T-2543B	1	30.0							1.72	0.47	1.65	0.28	+10	360/440	0.47	1.65					
TRANSMITTER—ENG. OIL PRESSURE	318-100A MIL-T-2663B	1	30.0							2.29	0.66	2.20	0.29	+10	360/440	0.66	2.20					
INDICATOR—FUEL PRESSURE	MS-28010-1	1	30.0							2.60	0.45	2.57	0.17	+10	360/440	0.45	2.57					
TRANSMITTER—FUEL PRESSURE	MS-28005-1	1	30.0							3.25	0.59	3.19	0.18	+10	360/440	0.59	3.19					
INDICATOR—TORQUE PRESSURE	217-50A MIL-T-2557B	1	30.0							1.72	0.47	1.65	0.28	+10	360/440	0.47	1.65					
TRANSMITTER—TORQUE PRESSURE	218-50A MIL-T-25577A	1	30.0							2.29	0.66	2.20	0.29	+10	360/440	0.66	2.20					
INDICATOR—FUEL QUANTITY	205-061-633	1	30.0				3.50	3.50					1.00	+10	360/440						3.50	
TANK UNIT—FUEL QUANTITY	205-061-633	3	30.0																			
F—FLIGHT INSTRUMENTS																						
ATTITUDE INDICATING SYSTEM—Pilot's																						
ATTITUDE INDICATOR	TYPE IND-AS-UH-1	1	30.0				15.00	14.10	5.10				0.94	+10	380/420						14.10	5.10
CONTROL GYRO	TYPE MD-1	1	30.0	25.00	23.50	8.50							0.94	+10	380/420	7.80	2.80	7.80	2.80		7.80	2.80
RATE GYRO	TYPE MC-1	1	30.0				4.80	4.50	1.60				0.94	+10	380/420						4.50	1.60
ATTITUDE INDICATOR—Copilot's	MIL-5133 TYPE J8	1	30.0	9.00	7.70	4.70							0.85	+10	380/420	2.57	1.57	2.57	1.57		2.57	1.57
COMPASS SYSTEM—AN/ASN-43																						
GYRO, DIRECTIONAL	CN-998 I/ASN-43	1	30.0				10.00	17.00	10.53				0.85	+10	380/420	17.00	10.53					
TRANSMITTER	T611 I/ASN	1	30.0																			
SERVO AMPLIFIER	AM-3209 I/ASN	1	30.0				17.40	14.80	9.20				0.85	+10	360/440	14.80	9.20					
COURSE INDICATOR	ID-998 I/ASN (C-6H)	1	30.0							22.50	5.30	21.90	0.24	+10	360/440	5.30	21.90					
COURSE INDICATOR	ID-250/ARN	1	30.0							6.69	1.20	6.57	0.18	+10	360/440	1.20	6.57					
M—MISCELLANEOUS																						
CAPACITOR—P.F. CORRECTION	CP53B1EE105K 1.0 U.F. 600V MIL-C-25	2	30.0						—33.22								—66.44					
RESISTOR—LOAD BALANCING	RW20G911 910 20W MIL-R-26/2	1	30.0				14.50	14.50					1.0					14.50				



- ⚠ MAIN AND SPARE INVERTERS MAY BE USED INTERCHANGEABLY. BOTH INVERTERS CAN NOT BE ENERGIZED SIMULTANEOUSLY.
- ⚠ INSTALLED WITH AND PART OF AN/APX-68 SYSTEM.
- ⚠ OBTAINED FROM 115/28 VOLT AUTOTRANSFORMER.
- NOTES—

Figure 13-8. Load analysis chart — AC — electrical — UH-1D (67-17145 through 67-19537) (Sheet 3 of 4)

205475-67-3
AV 054005-3

[illegible]

205475-67-4
AV 054005-4

Figure 13-8. Load analysis chart — AC — electrical — UH-1D (67-17145 through 67-19537) (Sheet 4 of 4)

A EQUIPMENT	B PART DESIGNATION	C NUMBER OF UNITS	D AMPERS PER UNIT	E OPERATING TIME - MIN.	OPERATING CONDITIONS-F																								
					START & WARM UP F-2					TAKE OFF F-4					CRUISE F-5					LAND F-7					EMERGENCY F-8				
					AVERAGE AMPS.					AVERAGE AMPS.					AVERAGE AMPS.					AVERAGE AMPS.					AVERAGE AMPS.				
					AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	5.0 MIN.	MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.	60.0 MIN.
C—FLIGHT CONTROLS																													
SOLENOID—IDLE STOP	204-060-775	1	6.5	0.03	NEG					NEG					NEG					NEG									
ACTUATOR—GOV. RPM	204-060-762	1	0.9	1.0	0.9	0.9	0.4	0.1							0.9	0.9	0.4	NEG		1.5	1.5	1.5	1.5		1.5	1.5	1.5		
MAG. BRAKE—FORCE TRIM	AIRBORNE ACC. R460M153	3	0.5	30.0	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5											
SOLENOID—HYD. CONTROL	RONSON I-U-1025	1																											
E—ENGINE INSTRUMENTS																													
ENGINE OIL TEMP.	MS28009-2	1	0.04	30.0	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1		
XMSN OIL TEMP.	MS28009-2	1	0.04	30.0																									
F—FLIGHT INSTRUMENTS																													
HEATER—PITOT TUBE	AN581-1	1	4.0	30.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0		
TURN & SLIP INDICATOR	MS28024-3 TYPE MD-8	1	0.1	30.0	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1		
H—HEATING																													
MOTOR—BLEED AIR VALVE	204-060-444	1	2.0	0.2	2.0	0.8	0.2	NEG												2.0	0.8	0.2	NEG						
DEFROST VALVE	LELAND A38153-001	1	3.1	0.5	3.1	3.1	0.8	0.1												3.1	3.1	0.8	0.1						
AFT OUTLET VALVE	LELAND A38153-001	2	3.1	0.5	6.2	6.2	1.6	0.2												6.2	6.2	1.6	0.2						
HEATED BLANKET OUTLET	HUBBELL 7526	2	10.0	30.0						20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0						
J—ENGINE IGNITION SYS.																													
IGNITOR UNIT		⚠	1	1.5	0.5	1.5	1.5	0.4	NEG																				
SOLENOID VALVE—IGNITOR		⚠	1	0.75	0.5	0.8	0.8	0.2	NEG																				
K—ENGINE CONTROLS																													
STARTER—GENERATOR	204-060-200	1																											
RELAY—STARTER	MS24172 D1	1	4.5	0.50	4.5	4.5	1.1	0.2																					
L—LIGHTING																													
DOVE LIGHT	MS25235R311	3	1.28	30.0	3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8		3.8	3.8	3.8	3.8		3.8	3.8	3.8		
COCKPIT LIGHT	MS25231-313	2	0.17		0.3	0.3	0.2	NEG		0.3	0.3	0.2	NEG		0.3	0.3	0.2	NEG							0.3	0.3	0.2		
INSTRUMENT & EDGE LIGHTS	MS25237-327	132	0.04	30.0	5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3		5.3	5.3	5.3	5.3		5.3	5.3	5.3		
INSTRUMENT SEC. LIGHTS	MS25069-1495	4	0.34	⚠																									
POSITION LIGHTS—TOP & BOTTOM	AN3120-1047	3	2.7	30.0																									
POSITION LIGHTS—TAIL	MS25232-1683	1	1.15	30.0	12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6		12.6	12.6	12.6	12.6		12.6	12.6	12.6		
NAV. LIGHTS	ASA-7512	4	0.83	30.0																									
FLASHER—NAV. LIGHTS	MS24577-2, TYPE II	1	⚠																										
MASTER CAUTION PANEL	204-075-705	1	0.20	30.0	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2		0.2	0.2	0.2		
SEARCH LIGHT	MIL-L-26998 TYPE, MA-3	1	17.0	5.0											17.0	17.0	17.0	2.8		17.0	17.0	17.0	17.0						
LANDING LIGHT	GRIMES 68385-1	1	16.5	5.0																16.5	16.5	16.5	16.5		16.5	16.5	2.8		
ANTI-COLLISION LIGHT	GRIMES 68400A-8-245	1	3.0	30.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0		
M—MISCELLANEOUS																													
WINDSHIELD WIPER	204-070-907	2	3.5	30.0						7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0		
INTERNAL RESCUE HOIST	205-706-030	1	53.0												53.0	53.0	53.0	33.3											
SOLENOID—CARGO HOOK	EASTERN ROTOCRAFT SP400-3	1	10.0	0.1											10.2	2.1	0.5	NEG											
RELAY—CARGO HOOK	MS2414901	1	0.2	0.1																									
P—POWER																													
BATTERY CHARGING	BB433A 34 AMP. HOUR	1								122.4	122.4	76.5	40.8		91.8	91.8	57.4	21.7		30.6	30.6	19.1	15.3		30.6	30.6	19.1		
RELAY—BATTERY	MS2417101	1	0.6	30.0	0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6		
RELAY—NON-ESSENTIAL BUS	MS2417101	1	0.6	30.0	0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6	0.6		
RELAY—BUS CONTROL	MS25074-3	1	0.35	30.0	0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4						
INVERTER—MAIN	PU-543 (I/A)	1	14.15	30.0	14.5	14.5	14.5	14.5		14.5	14.5	14.5	14.5		14.5	14.5	14.5	14.5		14.5	14.5	14.5	14.5		14.5	14.5	14.5		
RELAY—MAIN INVT. PWR.	MS2416601	1	0.35	30.0																									
INVERTER—SPARE	PU-543 (I/A)	1	14.15	30.0																									
RELAY—SPARE INVT. PWR.	MS2416601	1	0.35	30.0	14.7	14.7	14.7	14.7		14.7	14.7	14.7	14.7		14.7	14.7	14.7	14.7		14.7	14.7	14.7	14.7		14.7	14.7	14.7		
RELAY—INVERTER	MS2414901	1	0.2	30.0																									
Q—FUEL & OIL																													
PUMP—FUEL ROOST	205-060-606	1	5.2	30.0	5.2	5.2	5.2	5.2		5.2	5.2	5.2	5.2		5.2	5.2	5.2	5.2		5.2	5.2	5.2	5.2		5.2	5.2	5.2		
PUMP—AUX. FUEL	205-060-606	2	3.5	22.0											7.0	7.0	7.0	5.2											
VALVE—FUEL SHUT OFF		⚠	1	1.0	0.02	1.0	NEG													1.0	NEG				1.0	NEG			
SOLENOID VALVE—FUEL CONT.		⚠	1	1.25																									

GENERATOR: GFE, TYPE GEU-5 A, DWG 58C6276, 30 VOLT 300 AMPERE D.C. GEAR RATIO: GENERATOR TO POWER TURBINE OUTPUT SHAFT: 1 TO 1
STARTER-GENERATOR: GFE, BHC SPECIFICATION 204-060-200, 30 VOLT 300 AMPERES D.C. GEAR RATIO, STARTER-GENERATOR TO ENGINE GAS PRODUCER: 0.281 TO 1
VOLTAGE REGULATOR: (2) E-1597 I, MIL-R-6809
REVERSE CURRENT RELAY: (2) AN3025 OR A700AAP
BATTERY: BB-433A, 34 AMP-HR., NICKEL-CADMIUM

- △ SPACE, WEIGHT AND POWER PROVIDED FOR THIS EQUIPMENT.
△ INSTALLED WITH AND PART OF AN/APX-72 SYSTEM.
△ MAIN AND SPARE INVERTERS ARE USED INTERCHANGEABLY. BOTH INVERTERS CANNOT BE OPERATED TOGETHER.
△ PART OF LYCOMING ENGINE.
△ THIS EQUIPMENT NORMALLY DE-ENERGIZED.

Figure 13-9. Load analysis chart — DC — electrical — UH-1D/H (68-15214 through 68-16628) (Sheet 1 of 6)

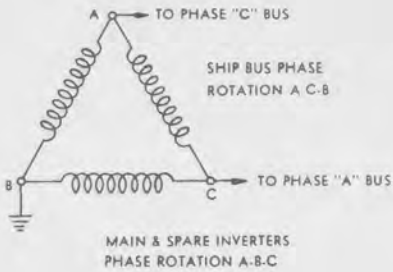
A EQUIPMENT	B PART DESIGNATION	C NUMBER OF UNITS	D AMPERS PER UNIT	E OPERATING TIME - MIN.	OPERATING CONDITIONS-F																			
					START & WARM UP F-2				TAKE OFF F-4				CRUISE F-5				LAND F-7				EMERGENCY F-8			
					AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.			
					AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	AMPS	0.5 MIN.	2.0 MIN.	15.0 MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.	AMPS	0.5 MIN.	2.0 MIN.	5.0 MIN.	AMPS	0.5 MIN.	2.0 MIN.	30.0 MIN.
R—RADIO NAV & COMM																								
RADIO COMPASS	AN/ARN-83	1	1.2	30.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
MARKER BEACON RCVR	R-1041/ARN	1	0.04	30.0	NEG				NEG				NEG				NEG				NEG			
VOR RECEIVER (VHF)	AN/ARN-82	1	1.0	30.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
FM TRANSCEIVER	AN/ARC-54	1	3.3	30.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
(ADDITIONAL PWR XMTR)			4.2		4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4
UHF TRANSCEIVER	AN/ARC-518X	1	5.8	30.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
(ADDITIONAL PWR XMTR)			3.8		3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4
HF TRANSCEIVER	AN/ARC-102	1	7.5	30.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
(ADDITIONAL PWR XMTR)			31.6																					
SIGNAL DIST. PANEL	C-1611 ()/AIC	4	0.2	30.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
INTERCOM. RELAY	C2A-126 (HI-G, INC)	2	0.02		NEG				NEG				NEG				NEG				NEG			
VHF TRANSCEIVER	AN/ARC-134	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
(ADDITIONAL PWR XMTR)			5.5		5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6
SECURITY SET	TSEC/KY-28	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NAVIGATION SET	AN/ASN-72	1	11.0	⚠																				
RECEIVING SET	R-1297 ()/AR	1	0.1	⚠																				
S—RADAR																								
IFF TRANSPONDER	AN/APX-72	1	3.6	30.0																				
COMPUTER KIT	IA/TSEC	1	1.1	30.0	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
TEST SET	TS-1843/APX	1	0.7	30.0																				
W—WARNING																								
FIRE DETECTION—ENG.	EDISON 227-28-5	1	0.07	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
RPM WARNING LIMIT	205-074-001-1	1	0.5	30.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TOTAL AVERAGE AMPERES THIS SHEET					43.1	43.1	36.4	31.0	43.1	43.1	36.4	31.0	43.1	43.1	36.4	31.0	43.1	43.1	36.4	32.3	43.1	43.1	36.4	31.0
TOTALS FROM SHEET 1					73.7	71.5	58.3	54.0	203.1	203.1	157.1	121.2	260.8	252.7	216.1	143.5	156.8	154.6	135.6	129.5	118.0	108.9	95.7	69.4
TOTAL AVERAGE AMPERES					116.8	114.6	94.7	85.0	246.2	246.2	193.5	152.2	303.9	295.8	252.5	174.5	199.9	197.7	172.0	161.8	161.1	152.0	132.1	100.4

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Figure 13-9. Load analysis chart — dc — electrical — UH-1D/H (68-15214 through 68-16628) (Sheet 2 of 6)

A EQUIPMENT	B PART DESIGNATION	C TOTAL NO. OF UNITS	D OPERATING TIME-MIN.	ELECTRICAL REQUIREMENTS PER UNIT-E									F POWER FACTOR	G VOLTAGE REGULATION	H FREQUENCY RANGE	CONNECTED LOADS-I						
				115 VOLTS 3 PH.			115 VOLTS 1 PH.			26 VOLTS 1 PH. ⚠						PHASE C A TO B		PHASE B C TO A		PHASE A B TO C		
				VA.	WATTS	VAR.	VA.	WATTS	VAR.	VA.	WATTS	VAR.				WATTS	VAR.	WATTS	VAR.	WATTS	VAR.	
INVERTER—MAIN	PU-543 () / A MS21983	1	30.0	250									10.80 LAG 10.95 LEAD		300/410							
D—INSTRUMENTS																						
INDICATOR—XMSN OIL PRESSURE	217A-100A MIL-I-25438	1	30.0							1.72	0.47	1.65	0.28	± 10	340/440	0.47	1.65					
TRANSMITTER—XMSN OIL PRESSURE	318-100A MIL-T-26638	1	30.0							2.29	0.66	2.20	0.29	± 10	340/440	0.66	2.20					
E—ENGINE INSTRUMENTS																						
INDICATOR—ENG. OIL PRESSURE	217A-100A MIL-I-25438	1	30.0							1.72	0.47	1.65	0.28	± 10	340/440	0.47	1.65					
TRANSMITTER—ENG. OIL PRESSURE	318-100A MIL-T-26638	1	30.0							2.29	0.66	2.20	0.29	± 10	340/440	0.66	2.20					
INDICATOR—FUEL PRESSURE	MS-28010-1 MIL-I-7085	1	30.0							2.60	0.45	2.57	0.17	± 10	340/440	0.45	2.57					
TRANSMITTER FUEL PRESSURE	MS-28005-1 MIL-T-5882	1	30.0							3.25	0.59	3.19	0.18	± 10	340/440	0.59	3.19					
INDICATOR—TORQUE PRESSURE	217A-100A MIL-I-25438	1	30.0							1.72	0.47	1.65	0.28	± 10	340/440	0.47	1.65					
TRANSMITTER—TORQUE PRESSURE	318-100A MIL-T-26638	1	30.0							2.29	0.66	2.20	0.29	± 10	340/440	0.66	2.20					
INDICATOR—FUEL QUANTITY	205-061-633	1	30.0				3.50	3.50	—				1.00	± 10	340/440					3.50	—	
TRANSMITTER—FUEL QUANTITY	205-061-633	3	30.0																			
F—FLIGHT INSTRUMENTS																						
ATTITUDE INDICATING SYSTEM—PILOT																						
ATTITUDE INDICATOR	TYPE IND-A5-UH-1	1	30.0				15.00	14.10	5.10				0.94	± 10	340/420					14.10	5.10	
CONTROL GYRO	TYPE MD-1	1	30.0	25.00	23.50	8.50							0.94	± 10	330/420	7.80	2.80	7.80	2.80	7.80	2.80	
RATE GYRO	TYPE MC-1	1	30.0				4.80	4.50	1.60				0.94	± 10	330/420					4.50	1.60	
ATTITUDE INDICATOR—CO-PILOT	MIL-I-5133 TYPE J-8	1	30.0	9.00	7.70	4.70							0.85	± 10	330/420	2.57	1.57	2.57	1.57	2.57	1.57	
COMPASS SYSTEM																						
GYRO DIRECTIONAL	AN ASN-43																					
TRANSMITTER	CN-998 () / ASN-43	1	30.0				20.70	19.66	6.46				0.95	± 10	330/420	19.66	6.46					
SERVO AMPLIFIER	T-611 () / ASN	1	30.0																			
COURSE INDICATOR—PILOT	AM-3209 () / ASN	1	30.0				13.10	8.51	-9.96				0.65	± 10	360/440	8.51	9.96					
COURSE INDICATOR—CO-PILOT	ID-998 () / ASN (C-6H)	1	30.0							22.50	5.30	21.90	0.24	± 10	360/440	5.30	21.90					
	ID-250 ARN	1	30.0							6.69	1.20	6.57	0.18	± 10	360/440	1.20	6.57					
M—MISCELLANEOUS																						
CAPACITOR—P.F. CORRECTION	CP53B1EE105K (1.0 u.f., 600V)	2	30.0						33.22				0				66.44					
RESISTOR—LOAD BALANCING	RW20G911 (910Ω, 20W)	1	30.0				14.50	14.50					1.00					14.50				
R—RADIO NAVIGATION																						
VOR LOC RECEIVER	AN ARN-82	1	30.0							6.00	2.30	5.50	0.38	± 10	360/440	2.30	5.50					
VOR ILS INDICATOR	ID-1347 ARN-82	1																				
RADIO COMPASS ADF	AN ARN-83	1	30.0							14.80	5.64	13.73	0.38	± 10	360/440	5.64	13.73					
X—AC POWER WARNING																						
AC POWER FAILURE RELAY	AF-32471 TYPE D1	1	30.0				13.20	0.80	13.10				0.06	± 10	360/440	0.80	13.10					
TOTALS											18.87	65.01										
TOTAL 26VAC LOAD											67.7 VA @ 0.28 P.F. (LAG)											
TOTALS											58.21	12.54	24.87	4.37	32.47	11.07						
PHASE VA											59.6	25.3	34.2									
TOTAL VA LOAD											119.0 VA @ 0.97 P.F. (LAG)											
INVERTER—SPARE	PU-543 () / A	1	30.0	250																		
SPARE & MAIN INVERTER LOADS ARE IDENTICAL																						

POWER SOURCE EQUIPMENT



⚠ MAIN & SPARE INVERTERS MAY BE USED INTERCHANGEABLY. BOTH INVERTERS CANNOT BE USED AT THE SAME TIME.

⚠ OBTAINED FROM 115/28 VAC AUTOTRANSFORMER.

Figure 13-9. Load analysis chart - ac - electrical - UH-1D/H (68-15214 through 68-16628) (Sheet 3 of 6)

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13-71/(13-72 blank)

A EQUIPMENT	B PART DESIGNATION	C NUMBER OF UNITS	D AMPERES PER UNIT	E OPERATING TIME-MIN.	OPERATING CONDITIONS - F																							
					START & WARM UP F-2				TAKE OFF F-4				CRUISE F-5				LAND F-7				EMERGENCY				F-8			
					AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.			
					AMPS	0.5 MIN	2.0 MIN	15.0 MIN	AMPS	0.5 MIN	2.0 MIN	15.0 MIN	AMPS	0.5 MIN	2.0 MIN	30.0 MIN	AMPS	0.5 MIN	2.0 MIN	5.0 MIN	AMPS	0.5 MIN	2.0 MIN	30.0 MIN	60.0 MIN			
C- FLIGHT CONTROLS																												
SOLENOID-IDLE STOP	204-060-775	1	6.5	0.09	6.5	NEG				NEG				NEG				NEG										
MAG BRAKE-FORCE TRIM	AIRBORNE ACC R460 M13-3	3	0.5	30.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5				
SOLENOID-HYD. CONTROL	RONSON 1-U-1025	1	1.2	1																								
F- ENGINE INSTRUMENTS																												
ENGINE OIL TEMP	MS28009-2	1	0.04	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
XMSN OIL TEMP	MS28009-2	1	0.04	30.0																								
F- FLIGHT INSTRUMENTS																												
HEATER-PILOT TUBE	AN5813-1	1	4.0	30.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
TURN & SLIP INDICATOR	MS28024-3 TYPE MD-B	1	0.1	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
H- HEATING																												
MOTOR-BLEED AIR VALVE	204-060-444	1	2.0	0.2	2.0	0.8	0.2	NEG									2.0	0.8	0.2	NEG								
DEFROST VALVE	LELAND A38153-001	1	3.1	0.5	3.1	3.1	0.8	0.1									3.1	3.1	0.8	0.1								
AFT OUTLET VALVE	LELAND A38153-001	2	3.1	0.5	6.2	6.2	1.6	0.2									6.2	6.2	1.6	0.2								
HEATED BLANKET OUTLET	HUBBELL 7526	2	10.0	30.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0				
J- ENGINE IGNITION SYSTEM																												
IGNITOR UNIT	A	1	1.5	A																								
SOLENOID VALVE IGNITOR	A	1	0.75	A																								
K- ENGINE CONTROLS																												
STARTER-GENERATOR	204-060-200	1																										
RELAY-STARTER	MS24172 D1	1	4.5	A																								
L- LIGHTING																												
DOVE LIGHT	MS25235 R311 LAMP	3	1.28	30.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8				
COCKPIT LIGHT	MS25231-313 LAMP	2	0.17	A	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG	0.3	0.3	0.2	NEG				
INSTRUMENT & EDGE LIGHTS	MS25237-327 LAMP	132	0.04	30.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3				
INSTRUMENT SEC. LIGHTS	MS25069-1495 LAMP	4	0.34	A																								
POSITION LIGHTS-TOPE BOTTOM	AN3120-1047 LAMP	4	2.7	30.0																								
POSITION LIGHTS-TAIL	MS35478-1683 LAMP	1	1.15	30.0	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6					
NAV. LIGHTS	ASA-7512	4	0.83	30.0																								
FLASHER-NAV. LIGHTS	MS24577-2 TYPE II	1	A																									
MASTER CAUTION PANEL	204-075-705	1	0.20	30.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2					
SEARCH LIGHT	MIL-1-2699B TYPE NA-3	1	17.0	5.0													17.0	17.0	17.0	17.0								
LANDING LIGHT	GRIMES 08388-1	1	16.5	5.0													16.5	16.5	16.5	16.5	16.5	16.5	2.8	1.4				
ANTI COLLISION LIGHT	GRIMES 08400A-B-245	1	3.0	30.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
M- MISCELLANEOUS																												
WINDSHIELD WIPER	204-070-907	2	3.5	30.0					7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
INTERNAL RESCUE HOIST	205-706-030	1	53.0	A					53.0	53.0	53.0	33.3																
SOLENOID-CARGO HOOK	EASTERN ROTOCRAFT BP400-3	1	10.0	0.1					10.2	2.1	0.5	NEG									10.2	2.1	0.5	NEG				
RELAY-CARGO HOOK	MS24149 D1	1	0.2	0.1																								
P- POWER																												
BATTERY CHARGING	BB433A 34 AMP-HOUR	1		30.0	105.0	105.0	77.5	40.0	97.5	97.5	35.4	19.7	19.3	18.3	18.3	17.3	6.5	6.1	6.1	5.1	4.8	4.7	4.7	4.6	4.5	4.5		
RELAY-BATTERY	MS24171 D1	1	0.6	30.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6				
RELAY-NON ESSENTIAL BUS	MS24171 D1	1	0.6	30.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6				
RELAY-BUS CONTROL	MS25024-2	1	0.35	30.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4				
INVERTER-MAIN	PU-543(I)/A	A	14.15	30.0																								
RELAY-MAIN INVERTER POWER	MS24166 D1	1	0.35	30.0																								
INVERTER-SPARE	PU-543(I)/A	A	14.15	30.0																								
RELAY-SPARE INVT. PWR	MS24166 D1	1	0.35	30.0	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7				
RELAY-INVERTER	MS24149 D1	1	0.2	30.0																								
Q- FUEL OIL																												
PUMP-FUEL BOOST	205-060-606	2	5.2	30.0	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4				
PUMP-AUX FUEL	205-060-626	2	3.5	22.0					7.0	7.0	7.0	5.2					1.0	NEG			1.0	NEG						
VALVE-FUEL SHUTOFF		A	1.0	0.02	1.0	NEG																						
SOLENOID VALVE-FUEL CONT		A	1.25	30.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3				
RELAY-AUX FUEL TRANSFER	MS24149 D1	1	0.2	7.0					0.2	0.2	0.2	0.1																
ACTUATOR-GOV RPM	204-060-762	1	0.9	1.0	0.9	0.9	0.4	0.1	0.9	0.9	0.9	0.4	NEG															

POWER SOURCE EQUIPMENT

GENERATOR: GFE, TYPE GEU-5/A, 30 VOLT, 300 AMPERE DC, @5000 TO 8000 RPM. POWER TURBINE OUTPUT SHAFT SPEED 6000 TO 6600 RPM. GENERATOR TO POWER TURBINE GEAR RATIO: 1.0 TO 1.0

STARTER-GENERATOR: BHC 204-060-200-5 90 VOLT 300 AMPERE DC, @ 4400 TO 8000 RPM. ENGINE GENERATOR PAD SPEED 4900 TO 7110 RPM (BASED ON 69% TO 100% GAS PRODUCER RPM AND GAS PRODUCER TO STARTER-GENERATOR GEAR RATIO OF 1.0 TO 0.283).

BATTERY: BB-433A, 34 AMP-HR, NICKEL-CADMIUM

REVERSE CURRENT RELAY: (2) AN3025-300

VOLTAGE REGULATOR: MIL-R-6809

- ⚠ BATTERY LOAD DURING STARTING
- ⚠ ASSUMED TO BE IN STANDBY CONDITION
- ⚠ EITHER UNIT MAY BE USED. TOTAL AVERAGE AMPERES BASED ON UNIT WITH GREATEST CURRENT RATING.
- ⚠ ONE MINUTE OPERATION PER TEN MINUTES
- ⚠ ELECTRICAL POWER PROVIDED FOR THIS EQUIPMENT.
- ⚠ INSTALLED WITH, AND PART OF AN/APX-72 SYSTEM.
- ⚠ MAIN AND SPARE INVERTERS ARE USED INTERCHANGEABLY. BOTH INVERTERS CANNOT BE OPERATED TOGETHER.
- ⚠ PART OF LYCOMING ENGINE.
- ⚠ SEE SUPPLEMENTARY DATA SHEET.
- ⚠ THIS EQUIPMENT NORMALLY DE-ENERGISED.

NOTES-

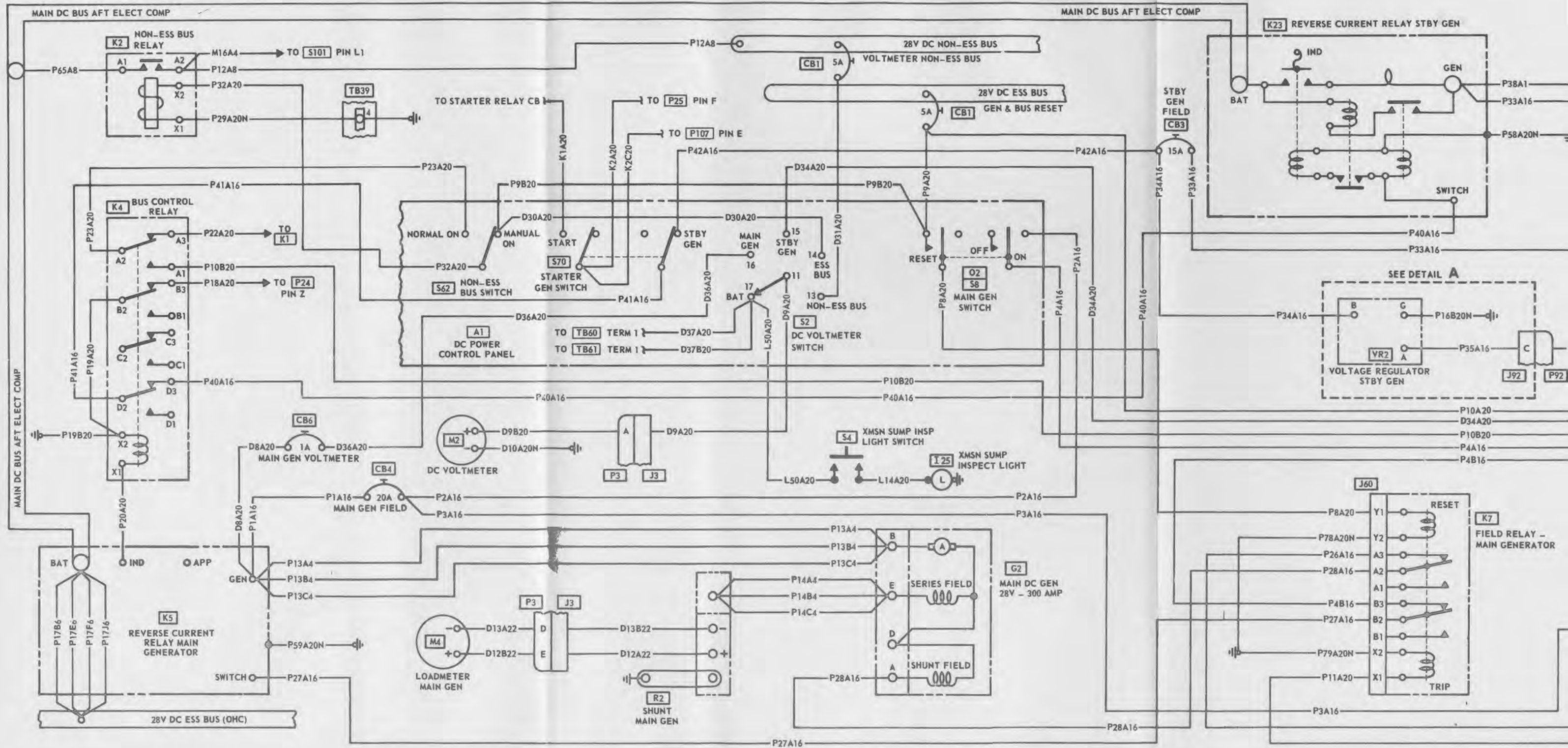
AV 069022

Figure 13-9. Load analysis chart — DC — electrical — UH-1H (69-15000 through 70-15932) (Sheet 4 of 6)

A EQUIPMENT	B PART DESIGNATION	C NUMBER OF UNITS	D AMPERES PER UNIT	E OPERATING TIME-MIN.	F OPERATING CONDITIONS - F																				POWER SOURCE EQUIPMENT	
					START & WARM UP F-2				TAKE OFF F-4				CRUISE F-5				LAND F-7				EMERGENCY F-8					
					AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.				AVERAGE AMPS.					
					AMPS	0.5 MIN	2.0 MIN	15.0 MIN	AMPS	0.5 MIN	2.0 MIN	15.0 MIN	AMPS	0.5 MIN	2.0 MIN	30.0 MIN	AMPS	0.5 MIN	2.0 MIN	5.0 MIN	AMPS	0.5 MIN	2.0 MIN	30.0 MIN		60.0 MIN
H- RADIO NAV & COMM																										
RADIO COMPASS	AN/ARN-83	1	1.2	30.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
MARKER BEACON RCVR	R-1041C/ARN	1	0.04	30.0	NEG					NEG				NEG				NEG				NEG				
VOR RECEIVER (VHF)	AN/ARN-82	1	1.0	30.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
FM TRANSCEIVER	AN/ARC-59	1	3.3	30.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
(ADDITIONAL PWR XMTR)			4.2	30.0	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	4.2	4.2	2.1	0.4	0.4	
FM TRANSCEIVER	AN/ARC-191	1	1.35	30.0																						
(ADDITIONAL PWR XMTR)			2.22	30.0																						
UHF TRANSCEIVER	AN/ARC-51BX	1	5.8	30.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
(ADDITIONAL PWR XMTR)			3.8	30.0	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	3.8	3.8	1.9	0.4	0.4	
HF TRANSCEIVER	AN/ARC-102	1	7.5	30.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
(ADDITIONAL PWR XMTR)			31.6	30.0																						
SIGNAL DIST PANEL	C-1611C/AIC	4	0.2	30.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
INTERCOM RELAY	G2A-126 (HI-G INC)	2	0.02	30.0	NEG					NEG				NEG				NEG				NEG				
VHF TRANSCEIVER	AN/ARC-134	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
(ADDITIONAL PWR XMTR)			5.5	30.0	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	5.5	5.5	2.8	0.6	0.6	
SECURITY SET	TSEC/KY-28	1	2.0	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
DISCREET SIGNAL DISCR.	MD-736/A	4	0.03	30.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
NAVIGATION SET	AN/ASN-72	1	11.0	30.0																						
RECEIVING SET	R-1297C/AR	1	0.1	30.0																						

Figure 13-9. Load analysis chart - DC - electrical - UH-1H (69-15000 through 70-15932) (Sheet 5 of 6)

AV 089023



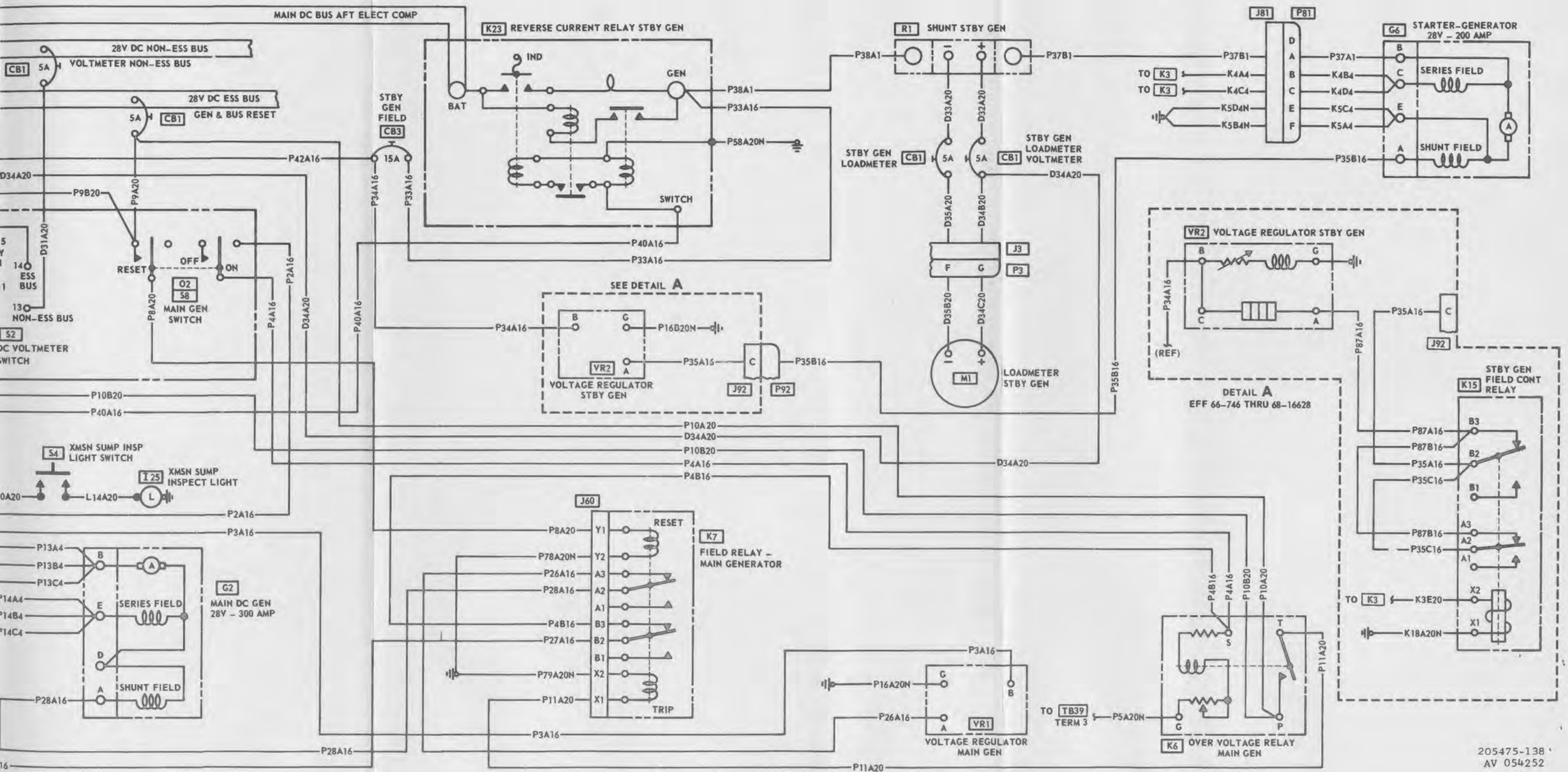


Figure 13-17. Generator and bus system

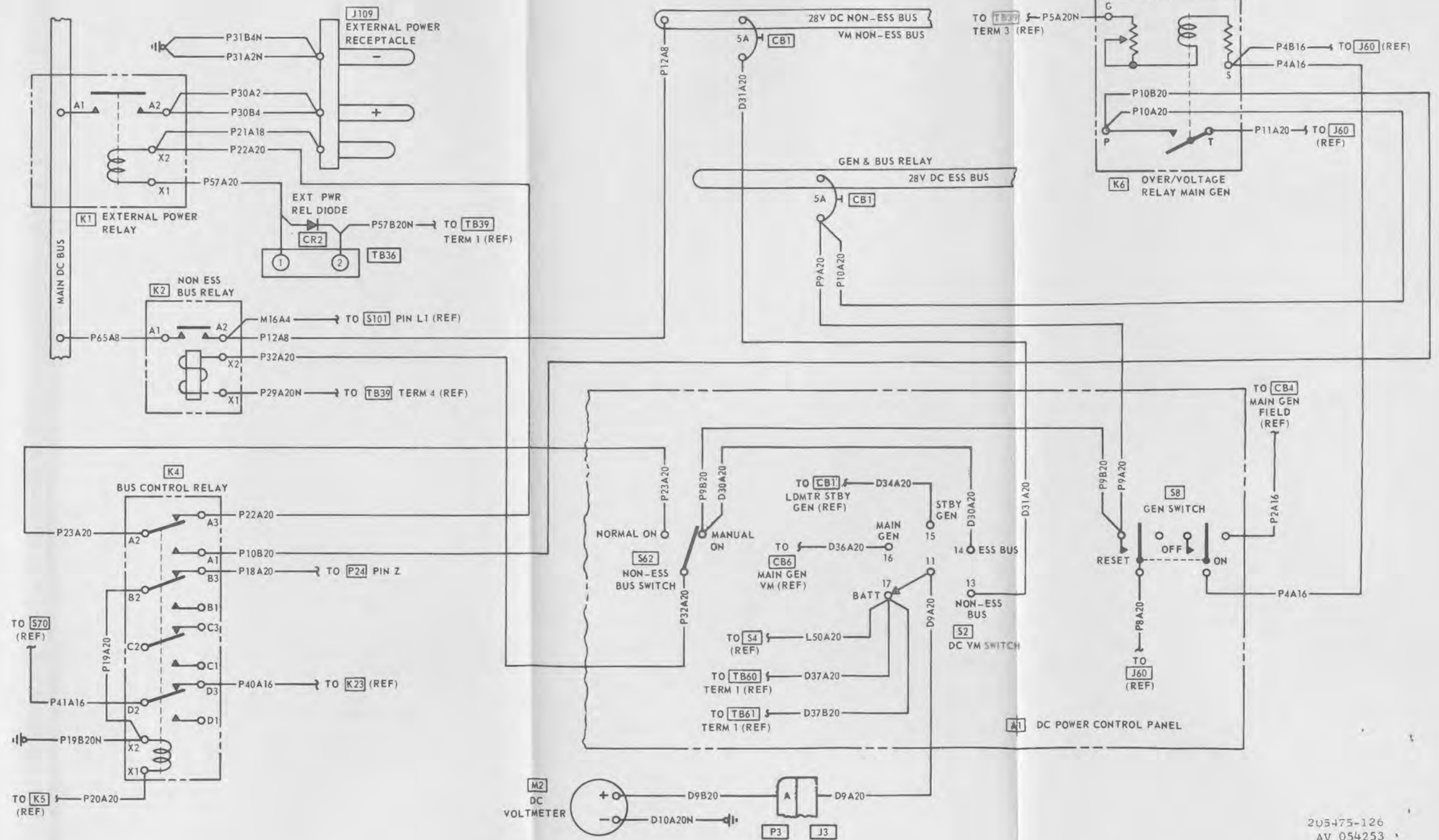


Figure 13-18. External power system

205475-126
AV 054253

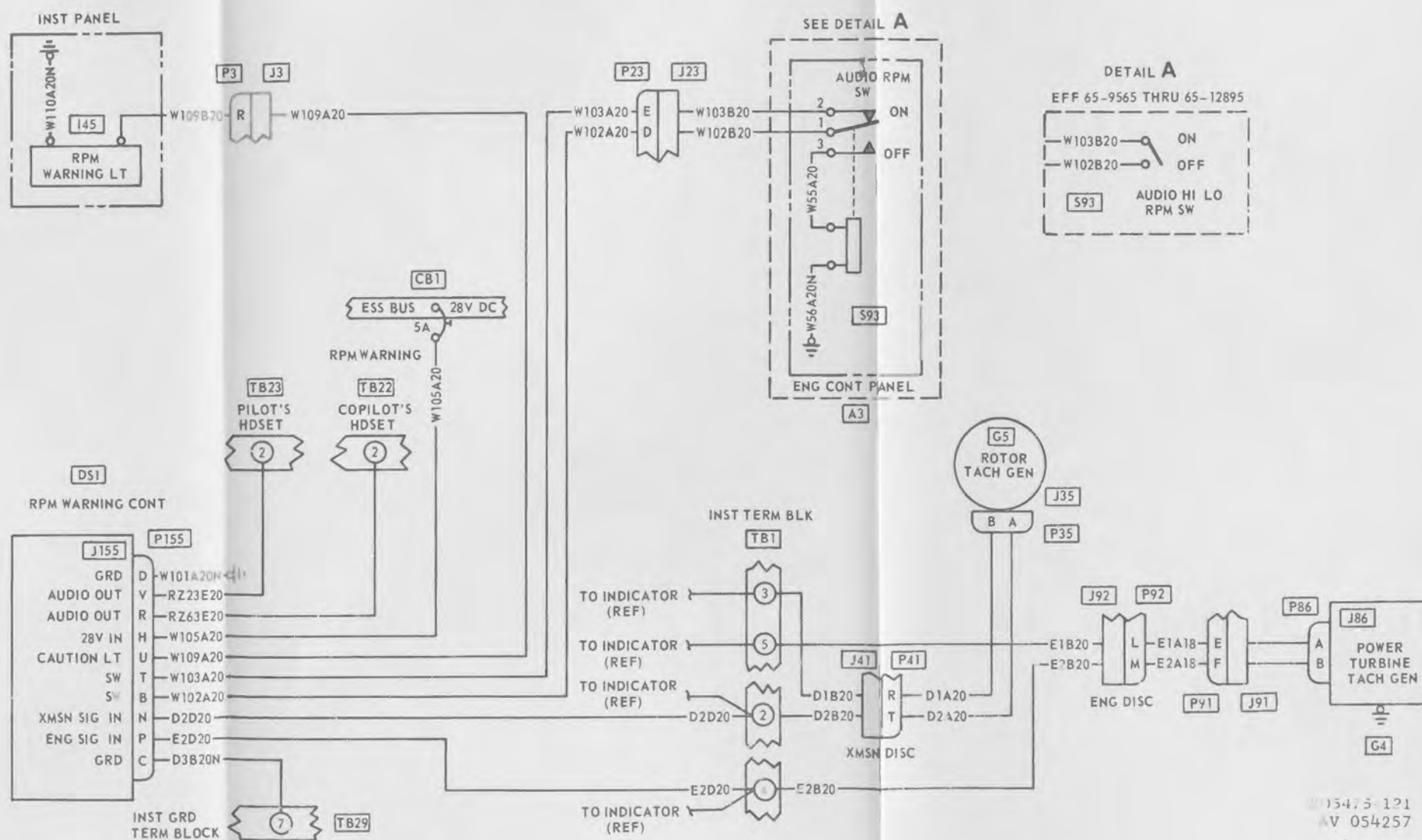


Figure 13-21. RPM warning system

CH 13 - SEC II

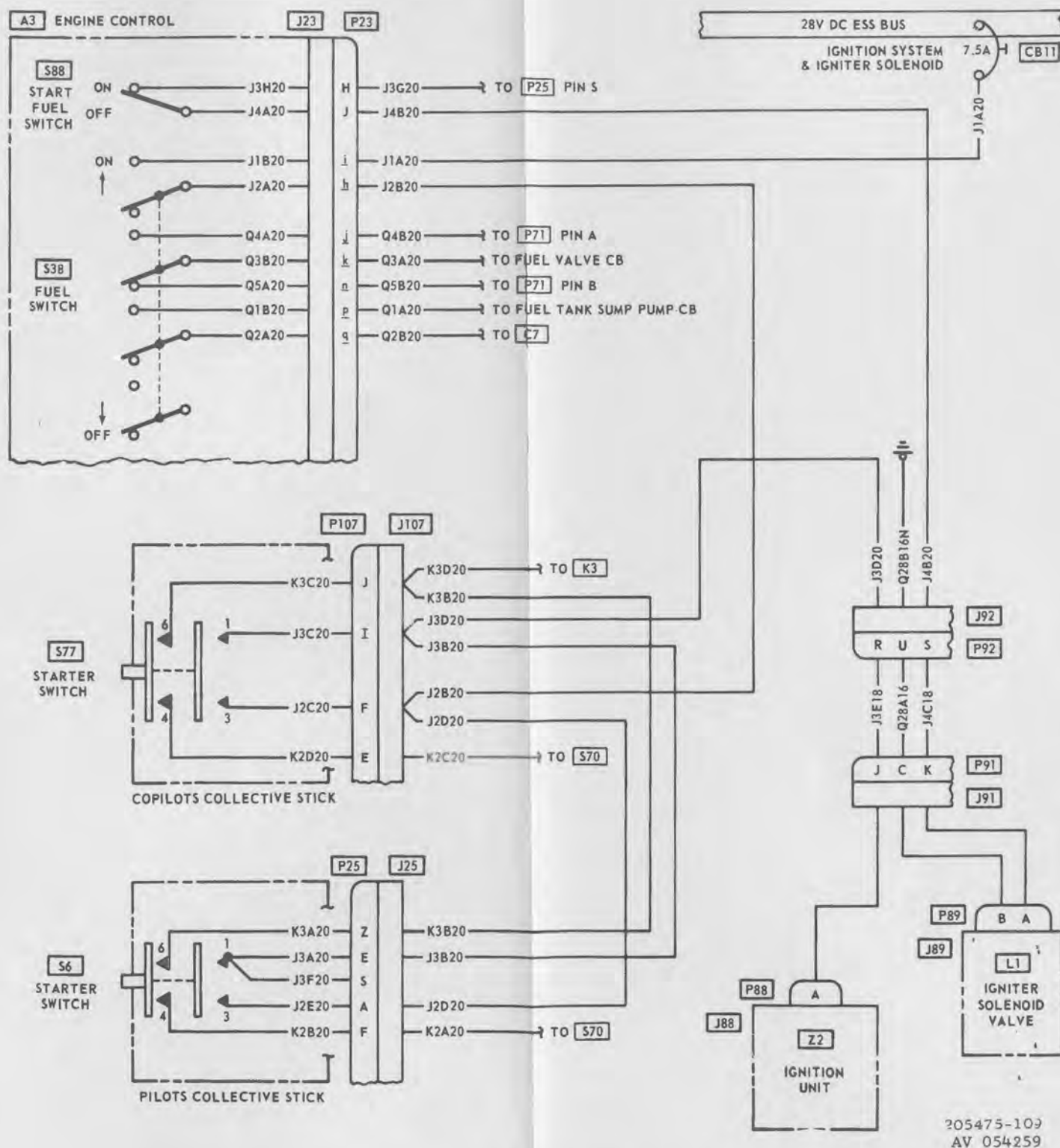
205475-109
AV 054259

Figure 13-23. Ignition system (effective 65-9565 through 66-16033) (Sheet 1 of 3)

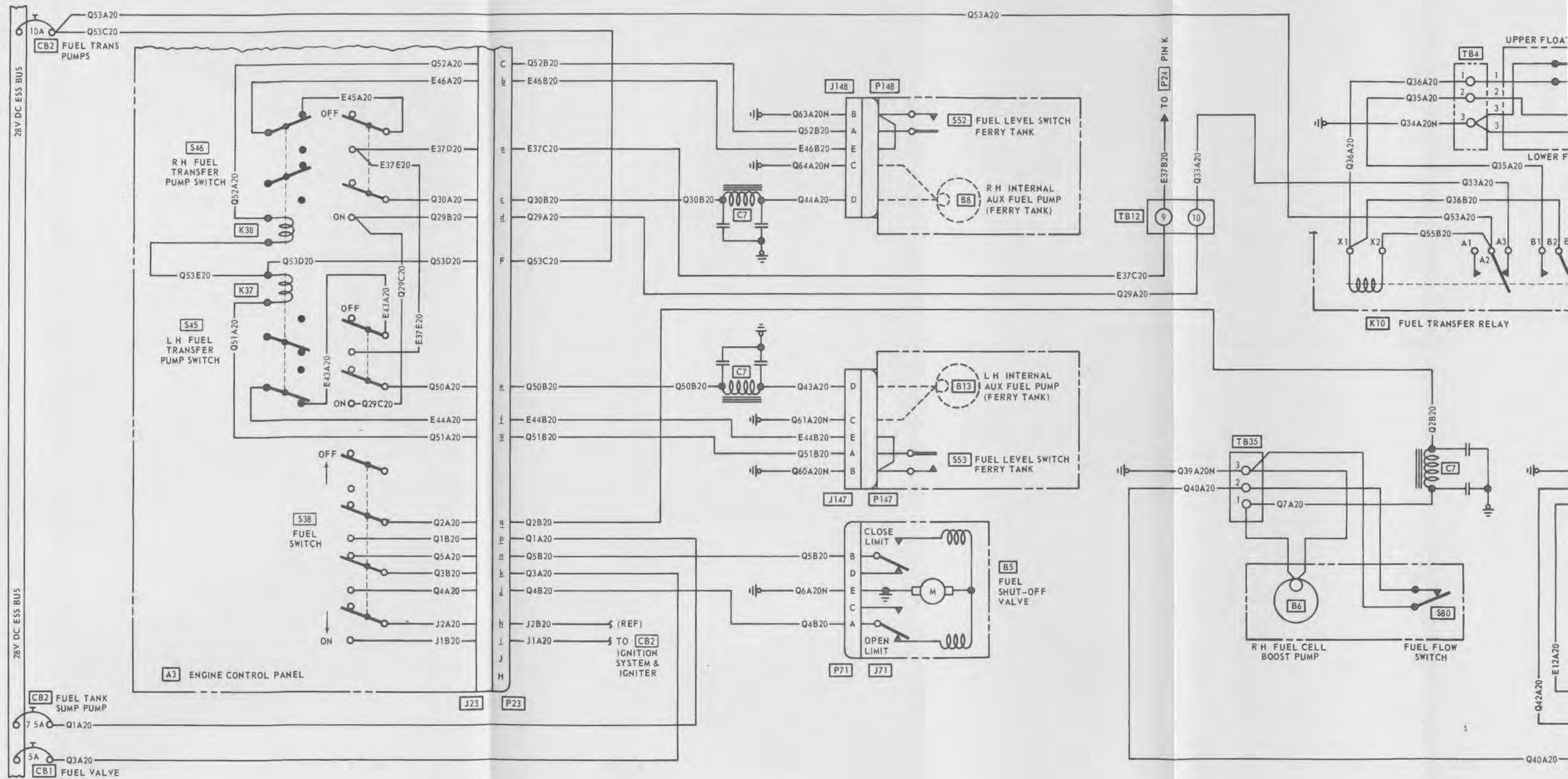
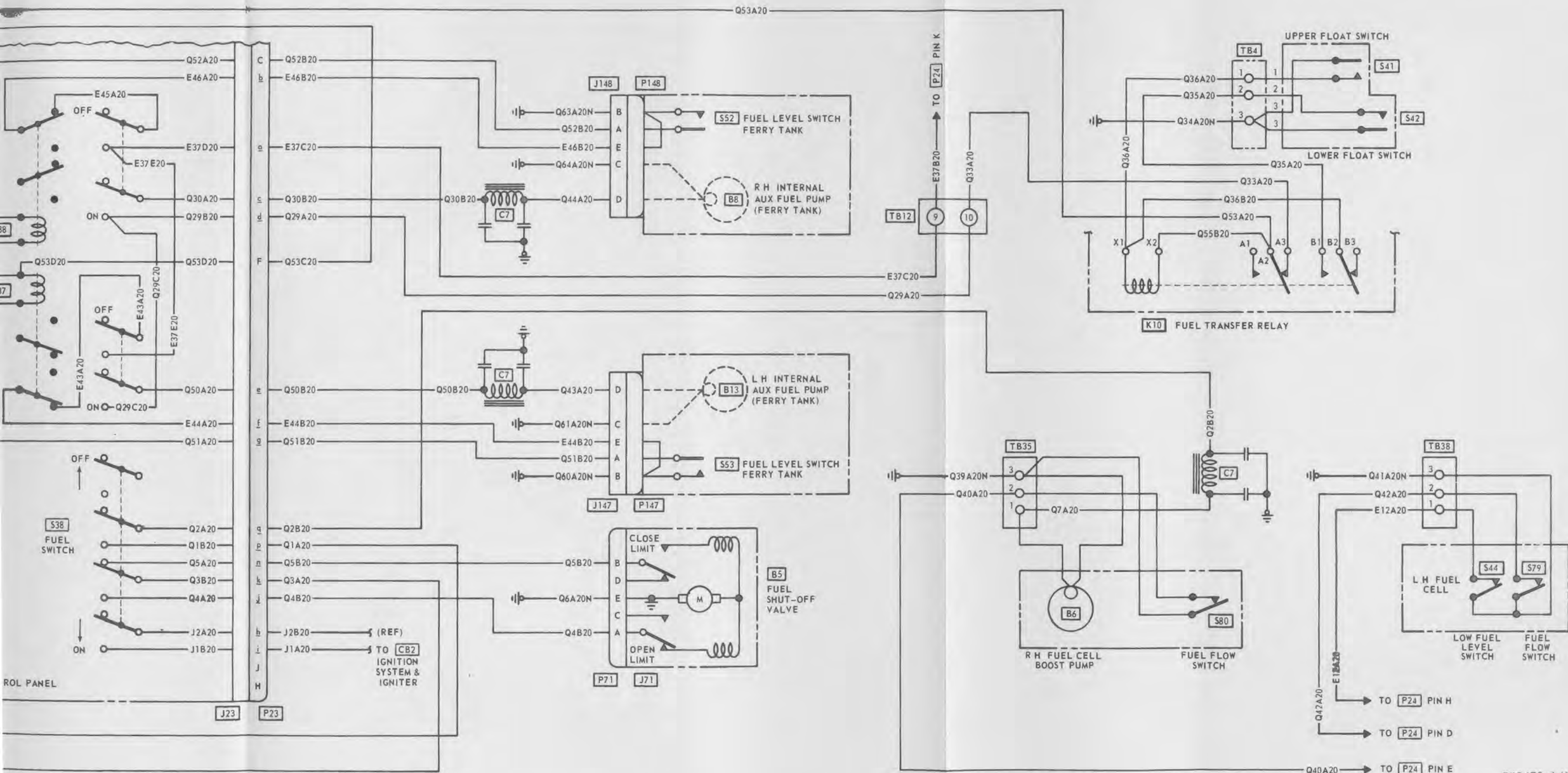


Figure 13-24. Fuel boost and fuel valve system (S



205475-141
AV 054262

Figure 13-24. Fuel boost and fuel valve system (Sheet 1 of 2)

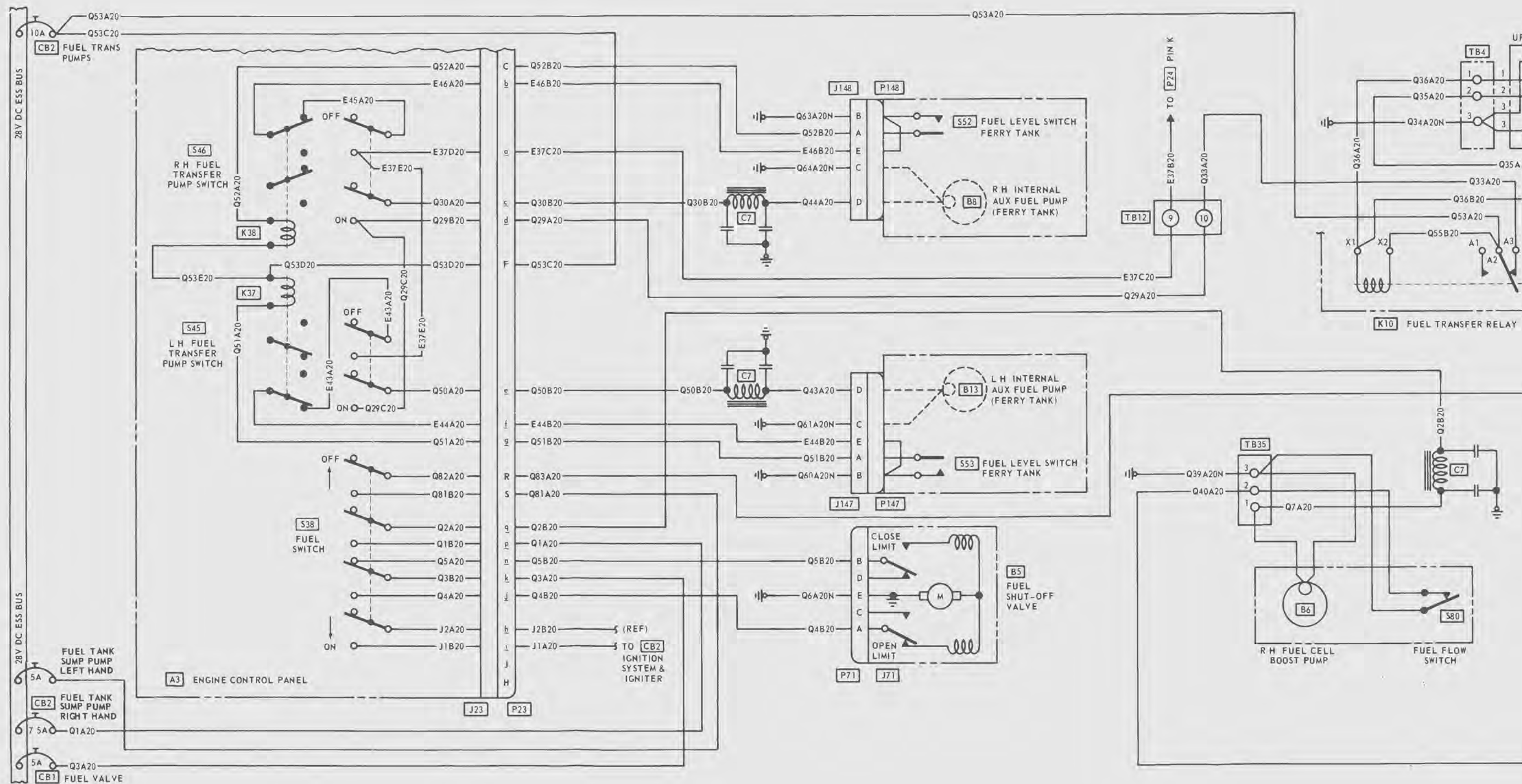
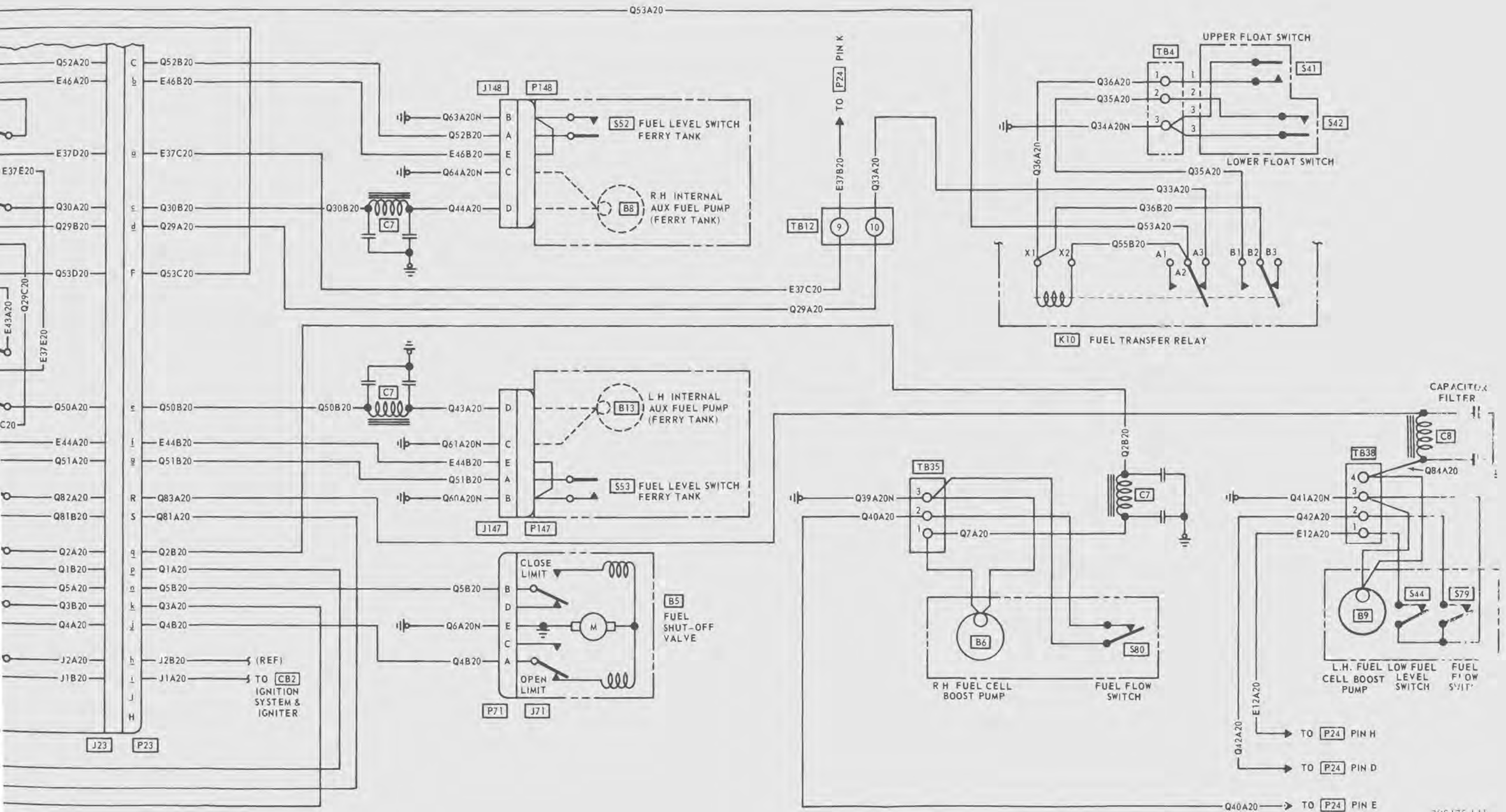


Figure 13-24. Fuel boost and fuel valve



205475 144
AV 05-10

Figure 13-24. Fuel boost and fuel valve system (Sheet 2 of 2)

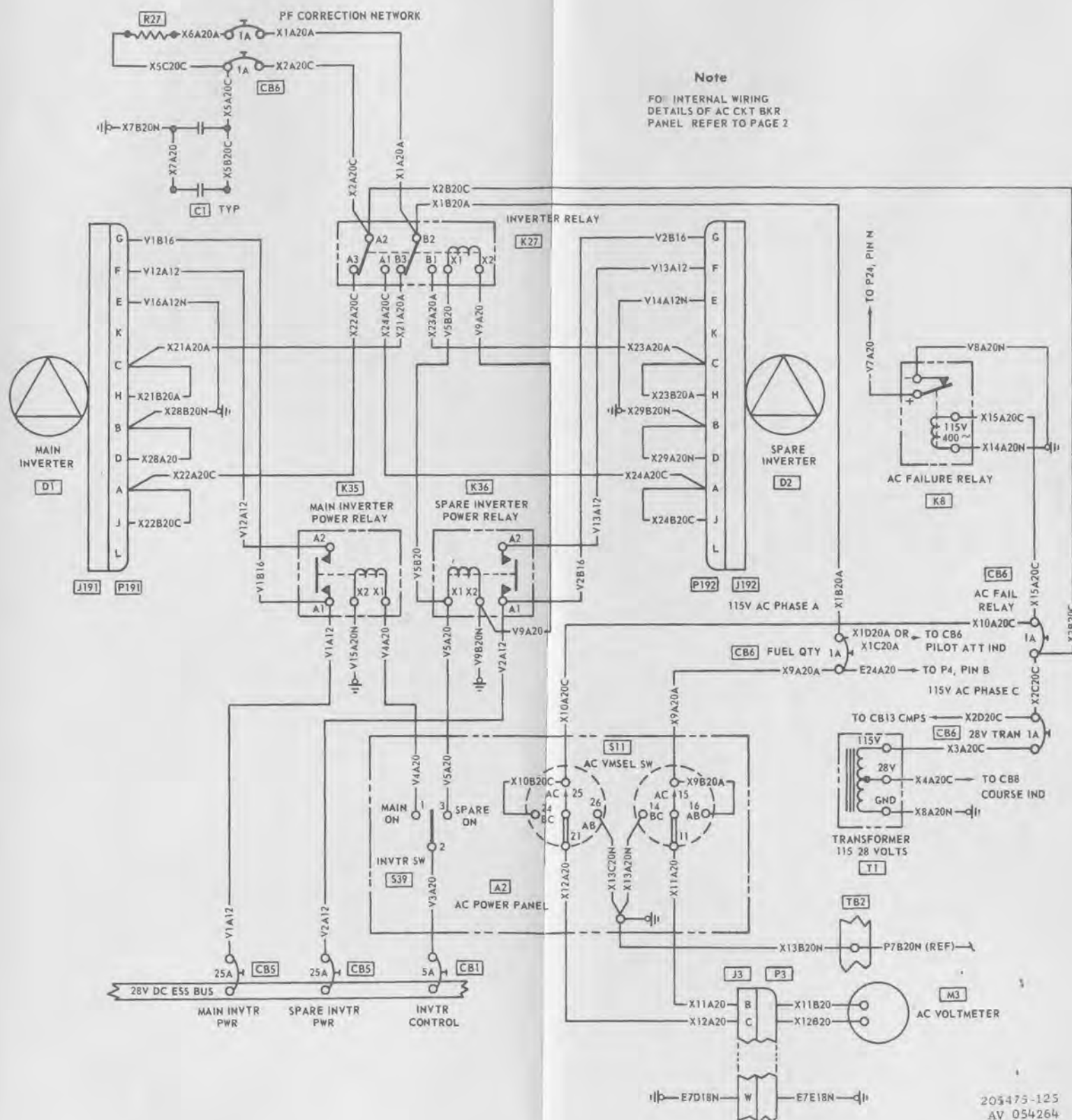


Figure 13-26. AC power system (Sheet 1 of 2)

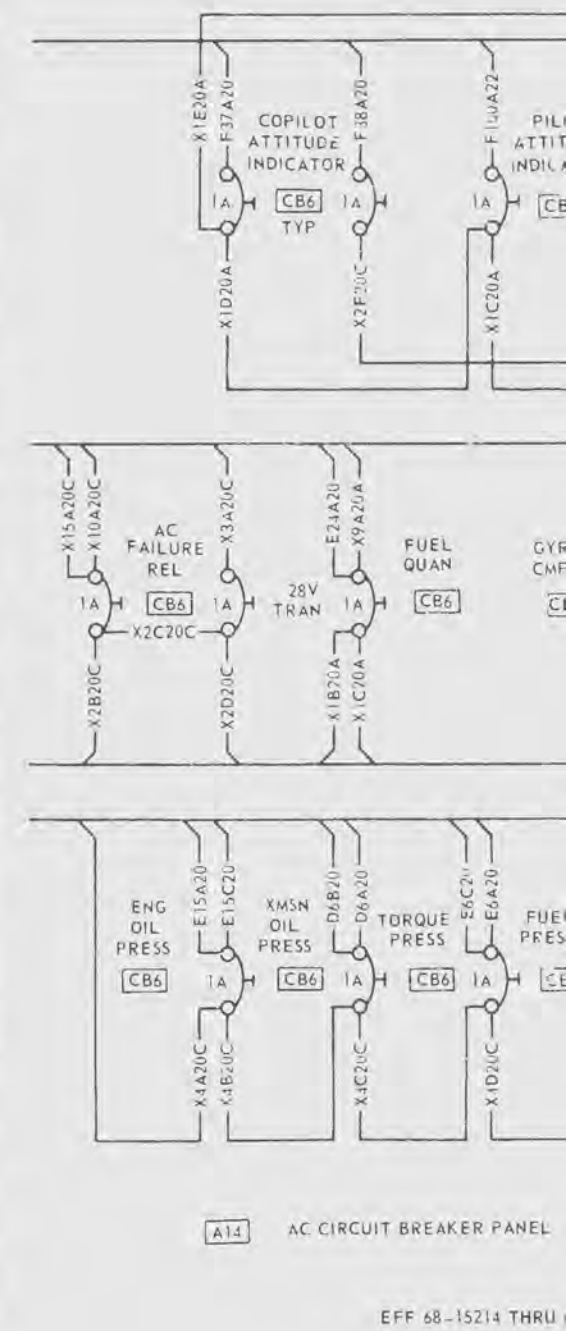
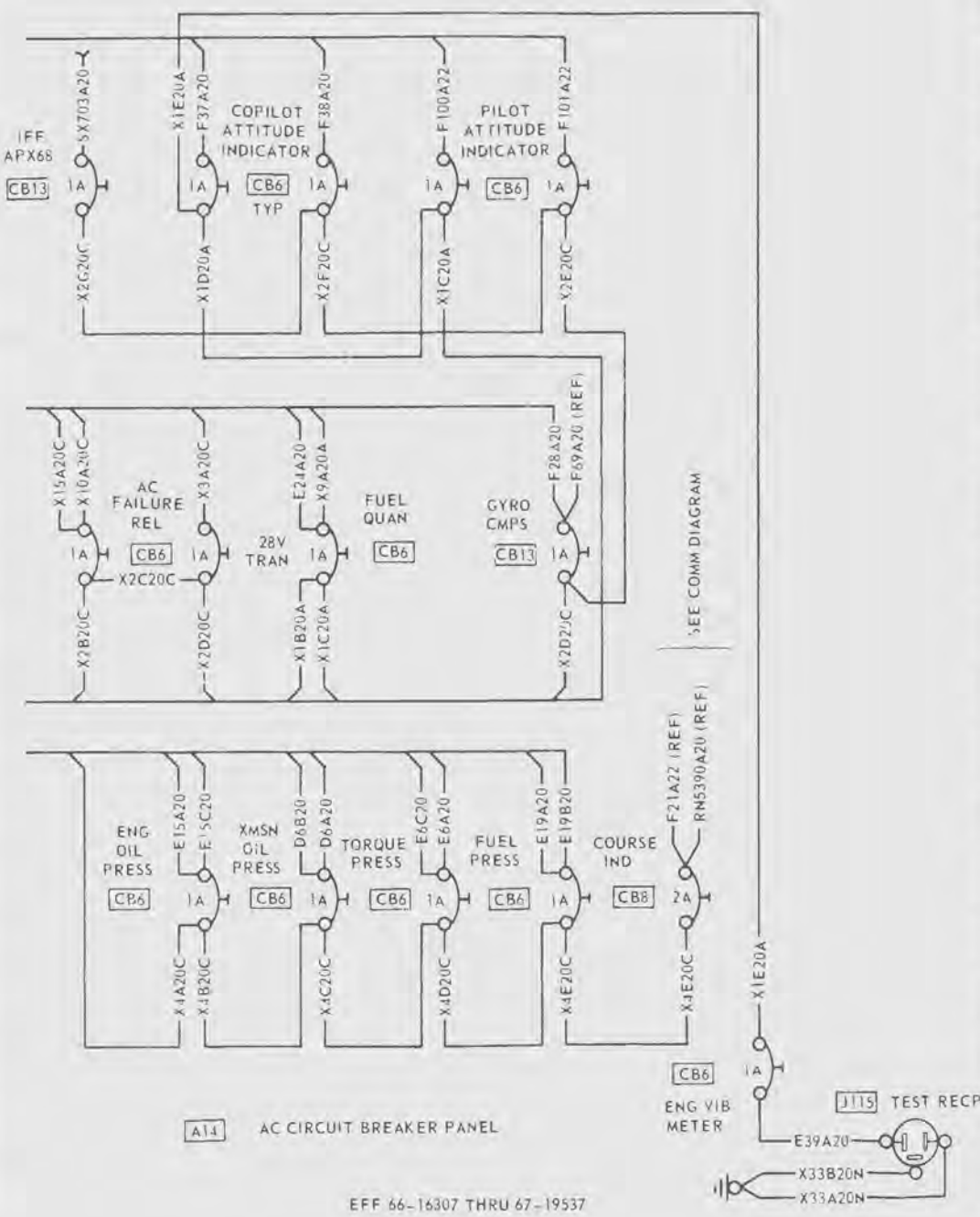
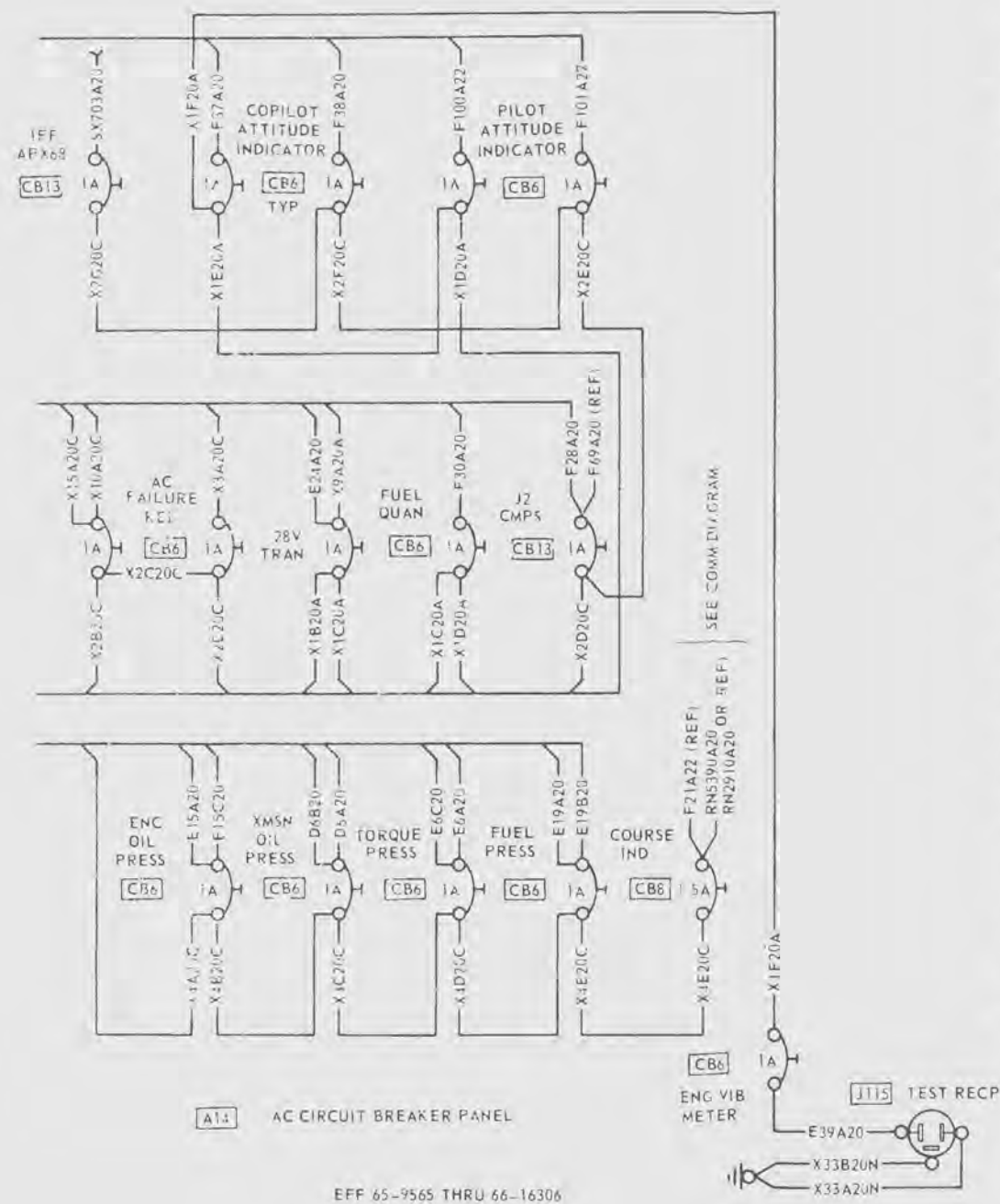


Figure 13-26. AC power system (She

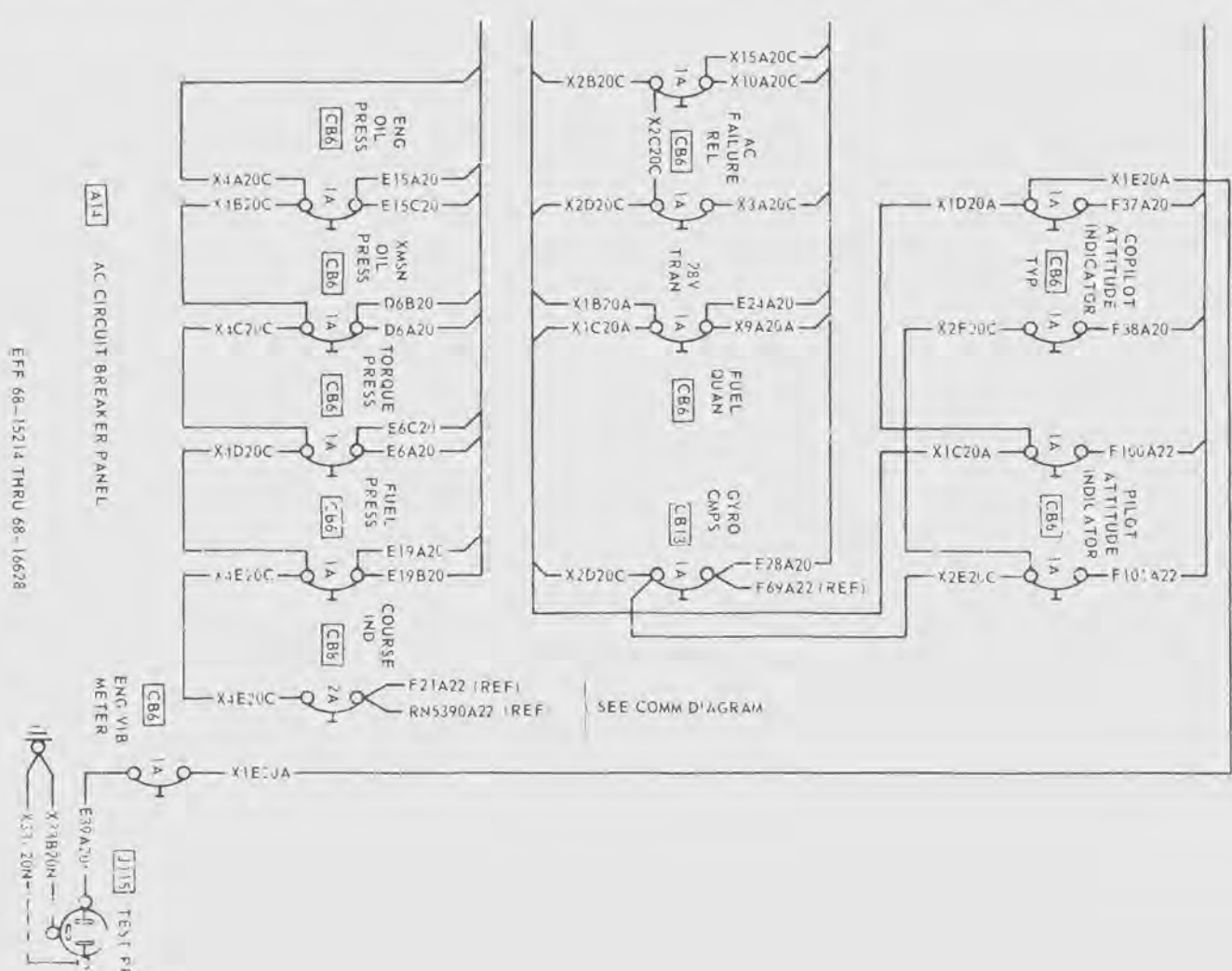
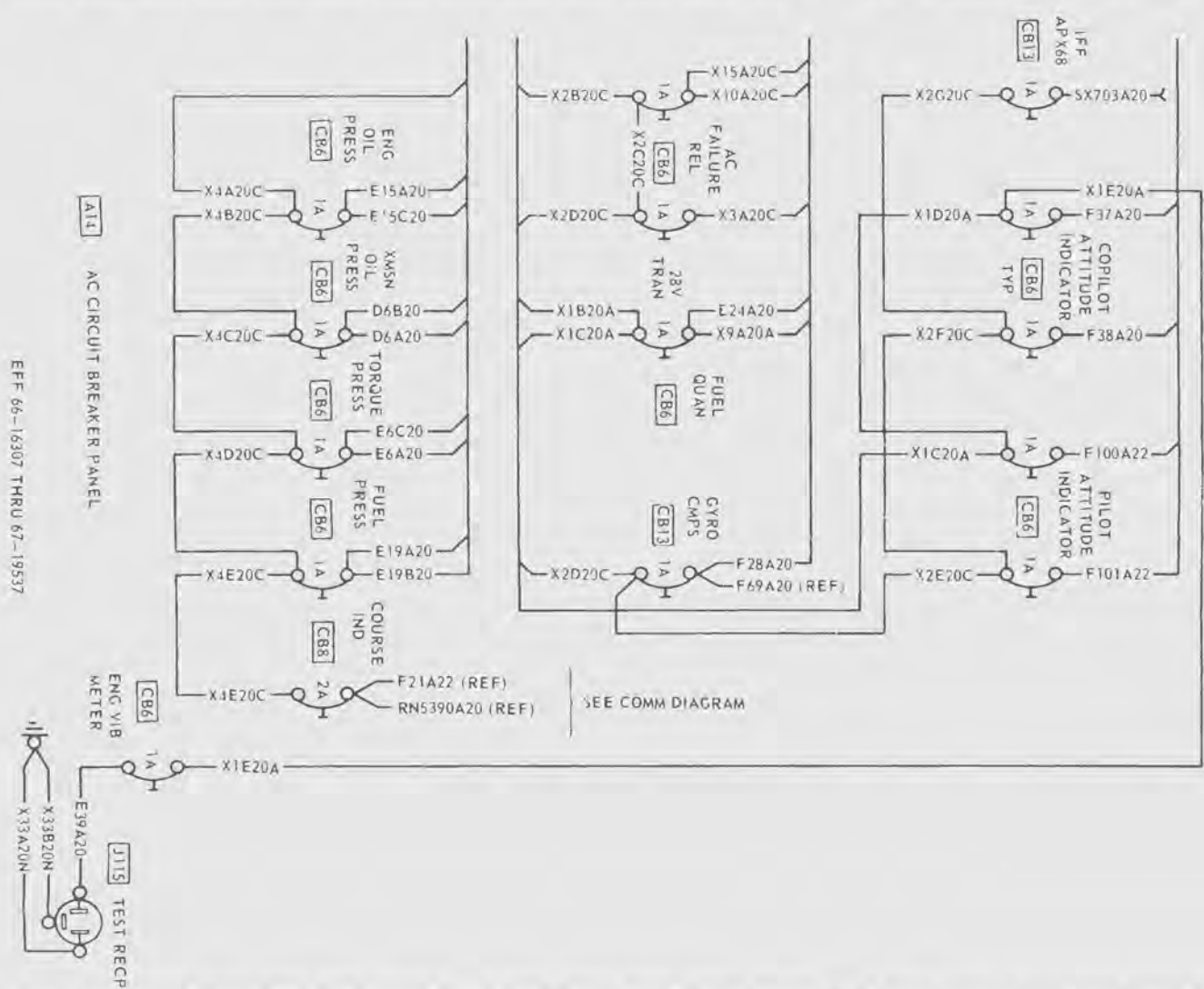
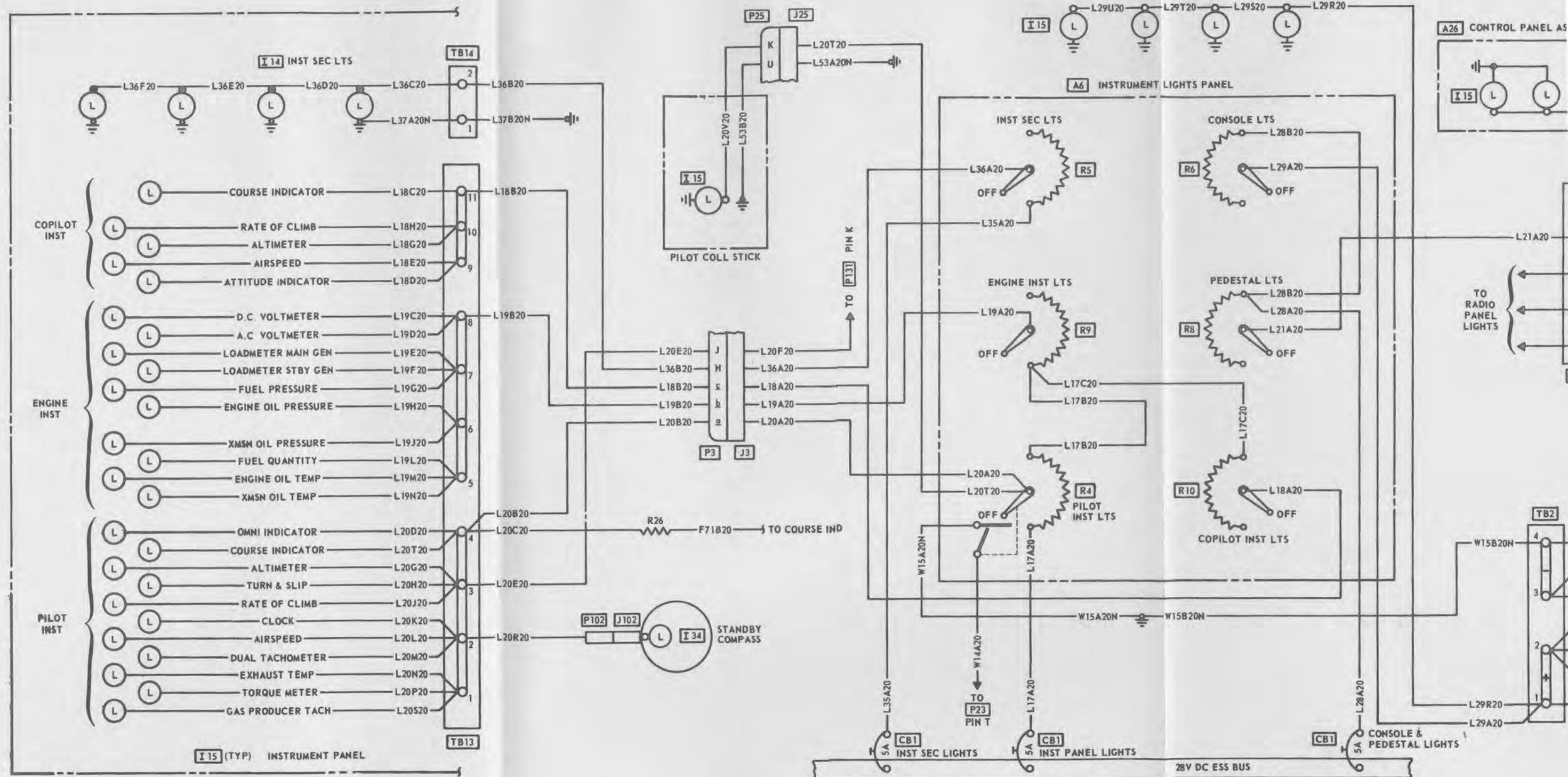
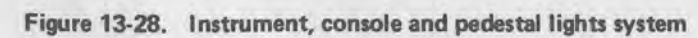


Figure 13-26. AC power system (Sheet 2 of 2)





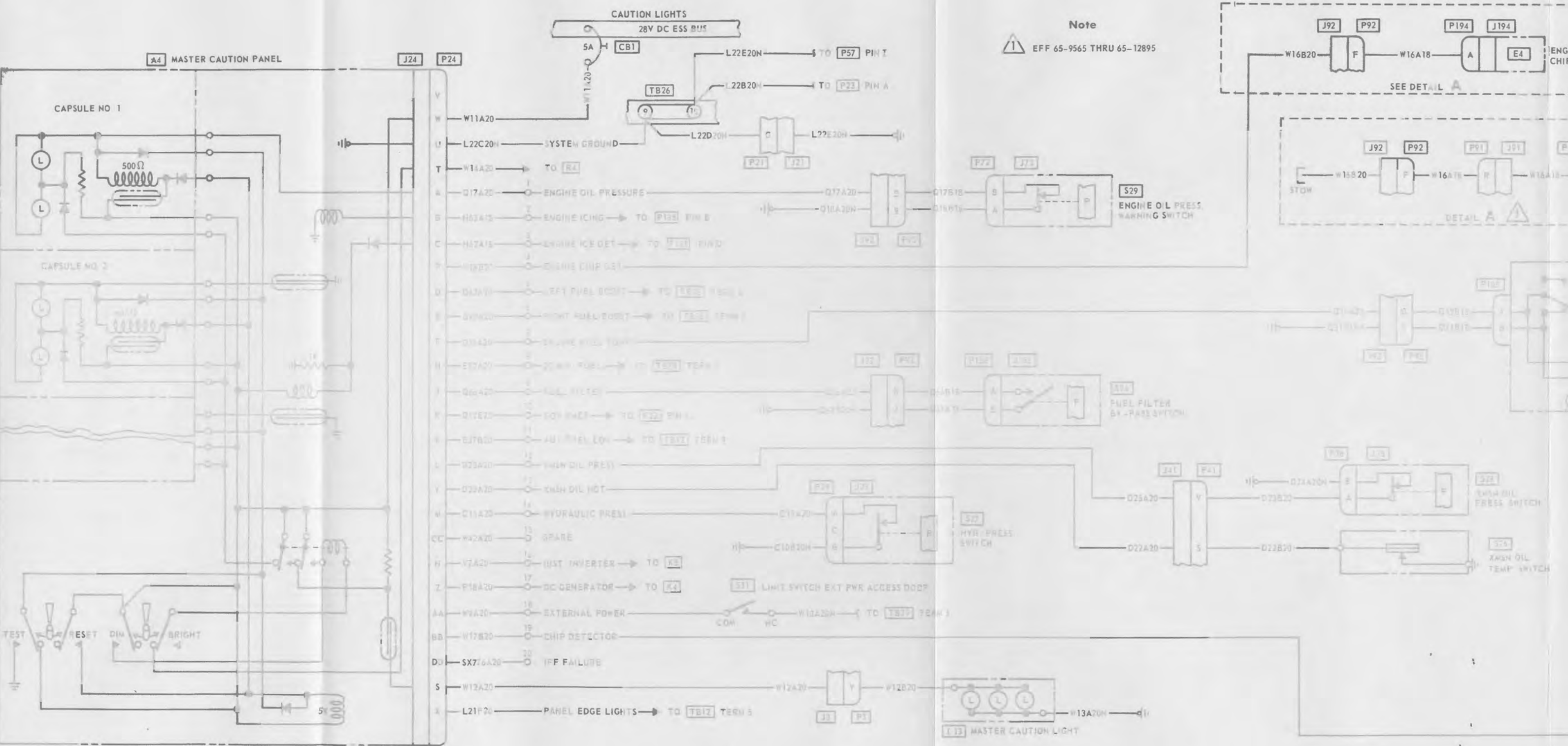
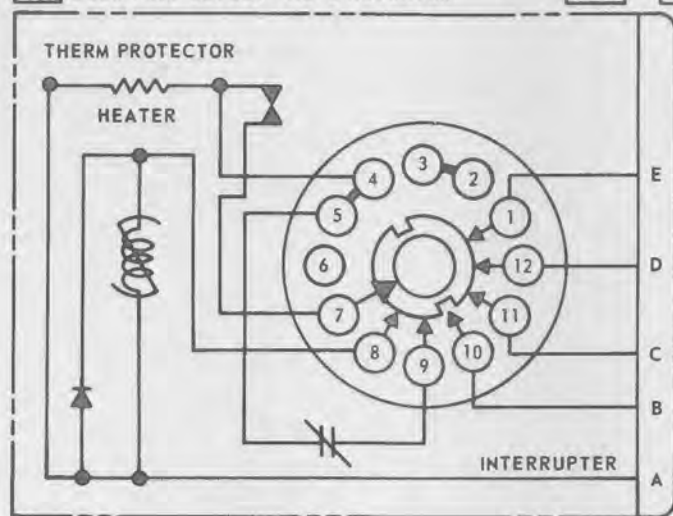


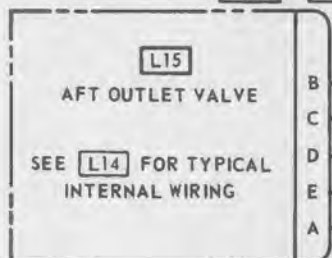
Figure 13

Figure 13-29. Caution lights system (effective 65-9565 through 66-16867) (Sheet 1 of 2)

L14 DOOR POST OUTLET VALVE ACTUATOR J138 P138



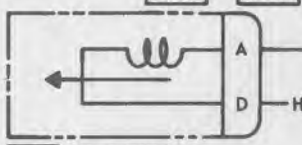
J166 P166



P68 J68

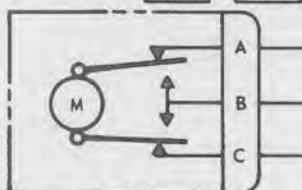


J127 P127



L27 VAR MIX SOL

J146 P146

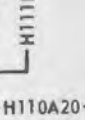
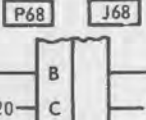


B34 BLEED AIR VALVE

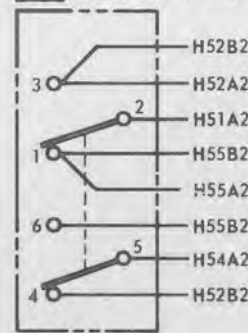
P92 J92



HEATER OVERHEAT SWITCH S73



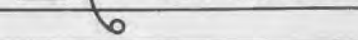
S83 BLEED AIR SWITCH



TO LOCAL GROUND TB3

TO LOCAL GROUND TB3

CB1 5A CABIN HEATER CONT



28V DC ESS BUS

28V DC ESS BUS

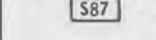
A11 HEATING PANEL

A11 HEATING PANEL

Note

WHEN "MUFF" HEATER (WINTERIZATION KIT) IS INSTALLED, REMOVE WIRE H86A20 FROM TERM 13 AND RECONNECT TO TERM 16

AFT OUTLET LIMIT SWITCH S87

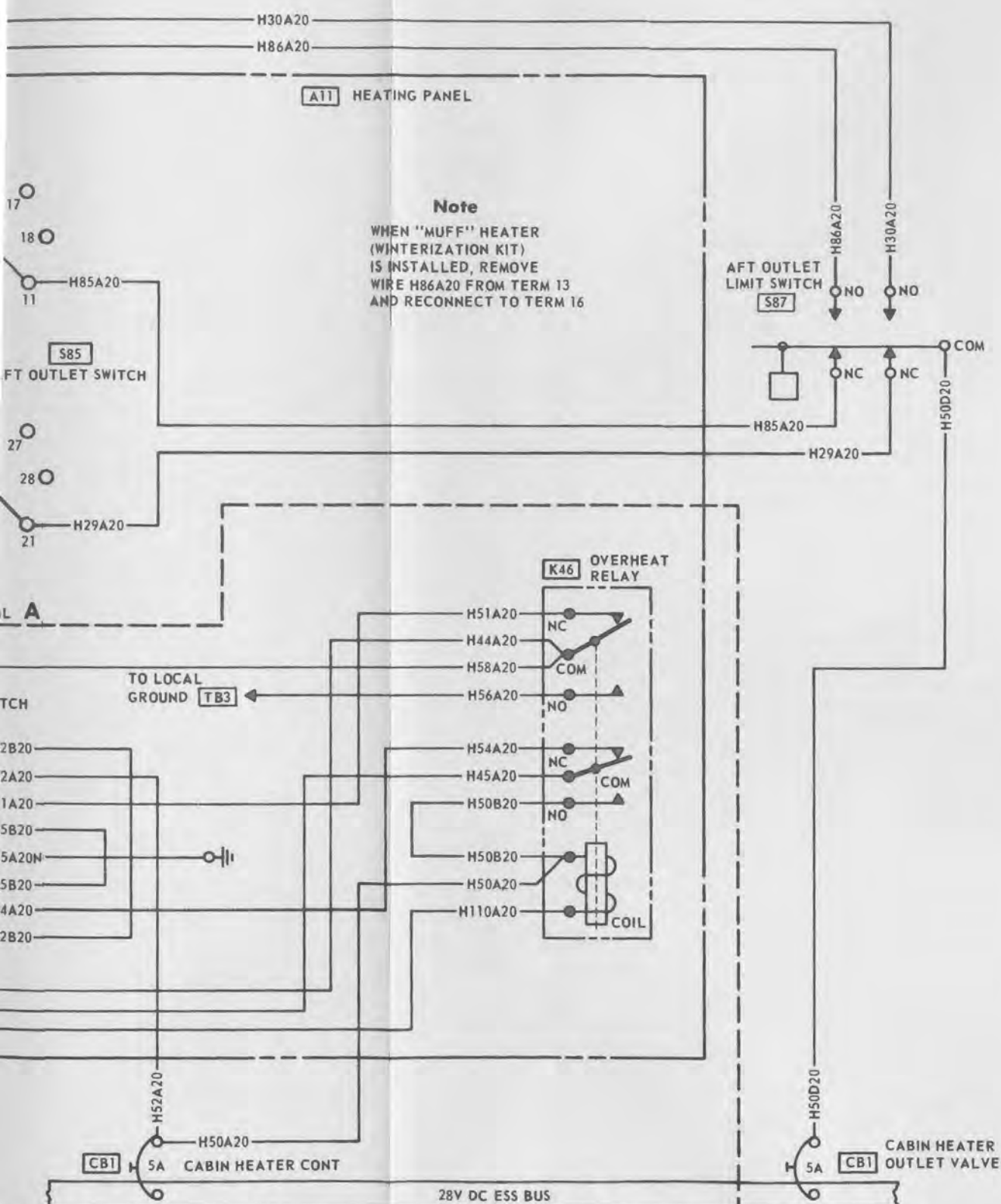


K46 OVERHEAT RELAY



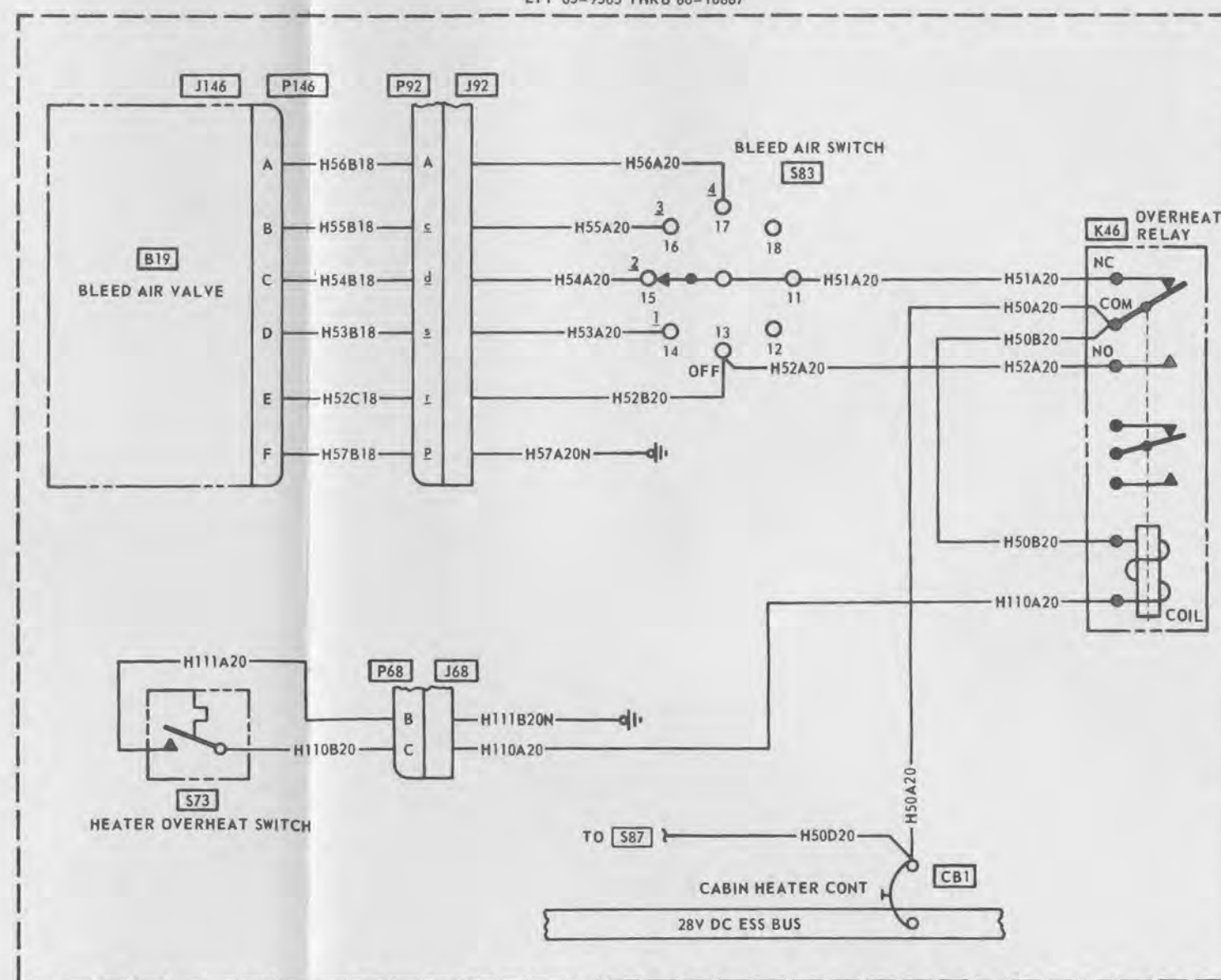
CABIN HEATER OUTLET VALVE





PRIOR TO INSTALLATION OF MUFF HEATER KIT (205-706-028) ON SHIPS UH-1D/H 66-16868 THROUGH 68-15396 ONLY, CHANGE CABLE ASSEMBLY 205-075-402-15 AT PLUG P146 BY CONNECTING WIRE H44B18 TO PIN "C" IN LIEU OF PIN "A" AND CONNECT WIRE H45B18 TO PIN "A" IN LIEU OF PIN "C". THIS CHANGE IS MANDATORY PRIOR TO KIT INSTALLATION TO PREVENT MALFUNCTION OF BLEED AIR VALVE.

DETAIL **A**
EFF 65-9565 THRU 66-16867



205-75-137A
AV 054275

Figure 13-35. Cabin heating system

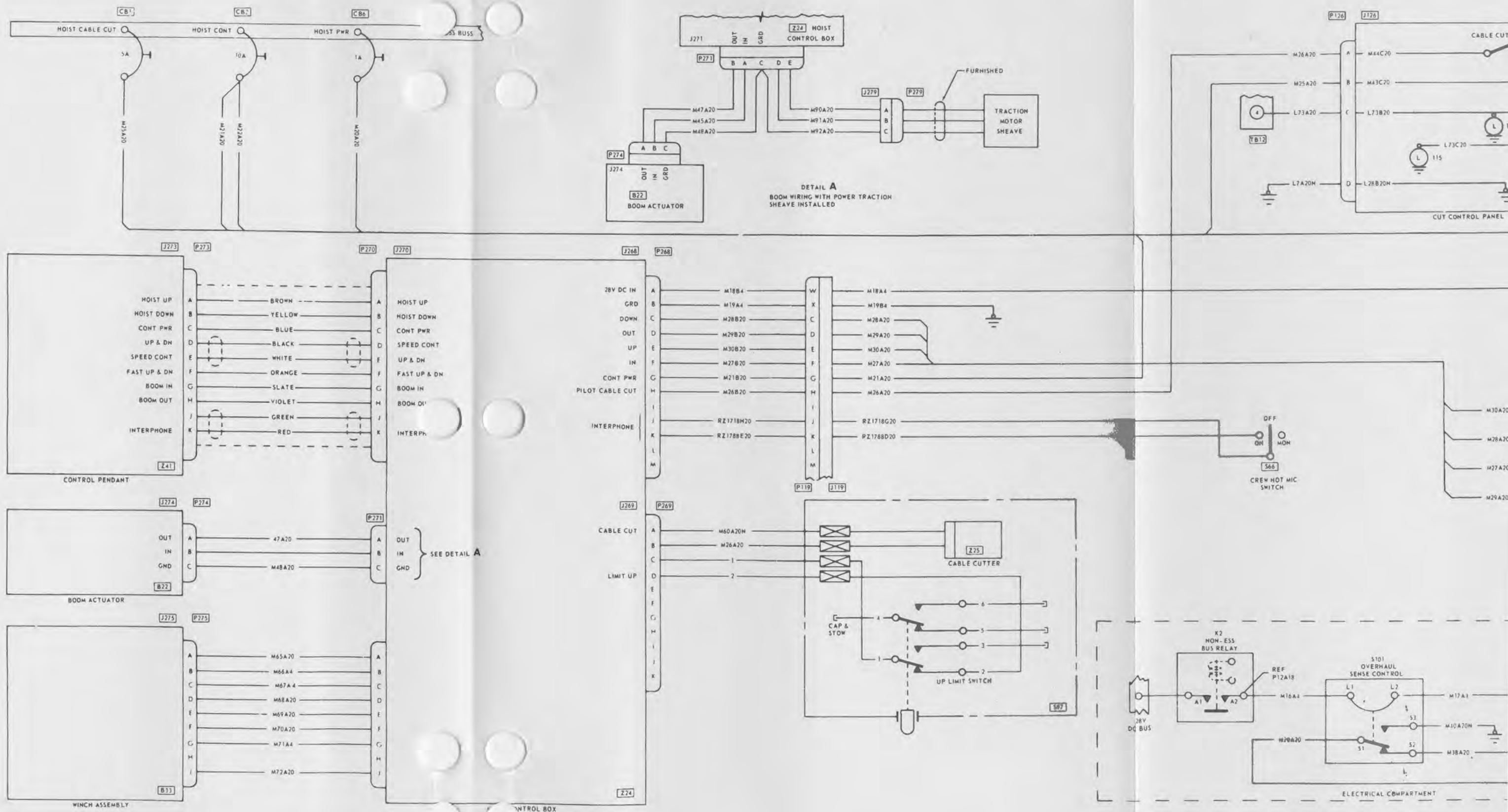


Figure 13-39. Rescue hoist system (prior to 65-956)

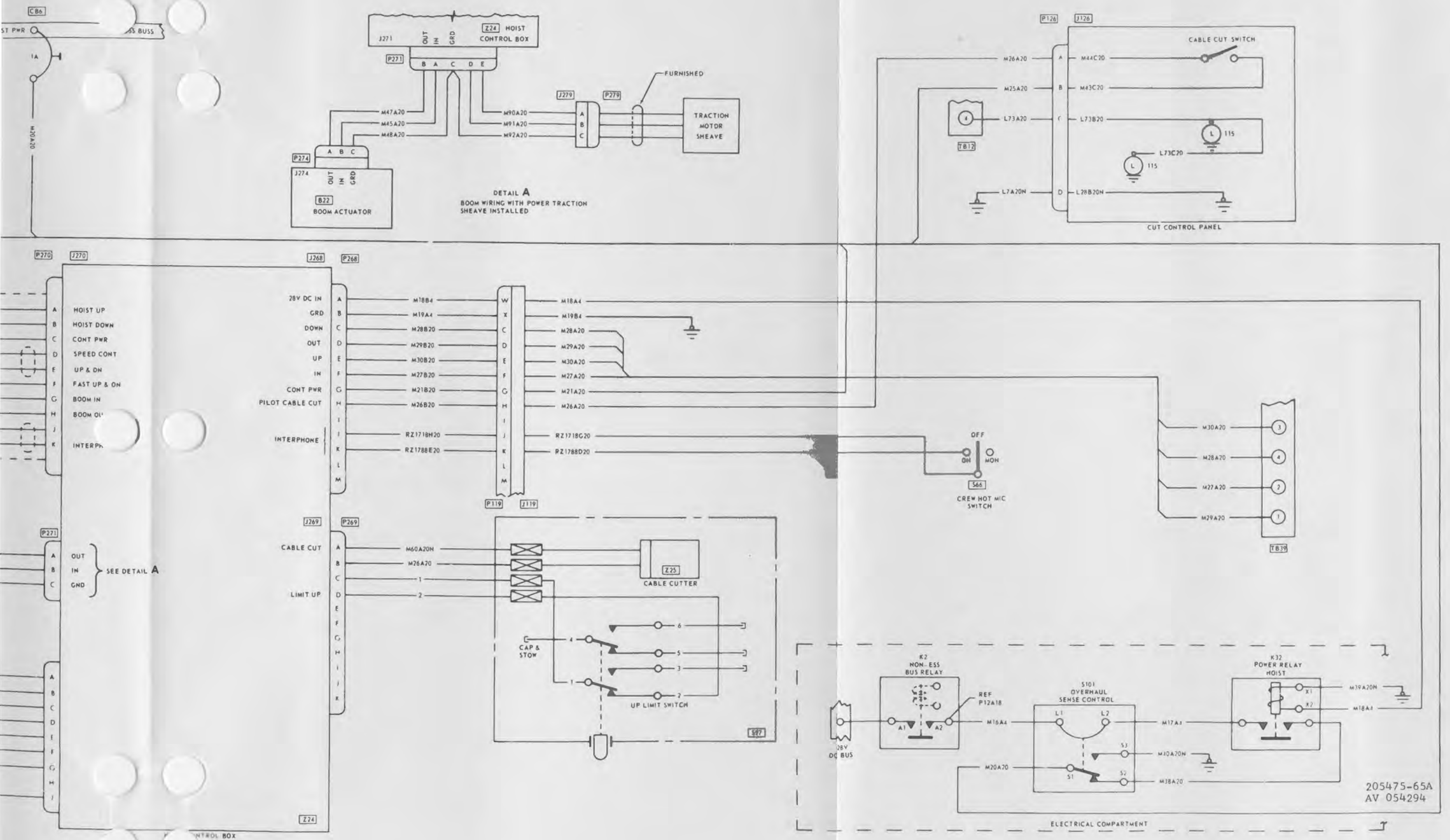
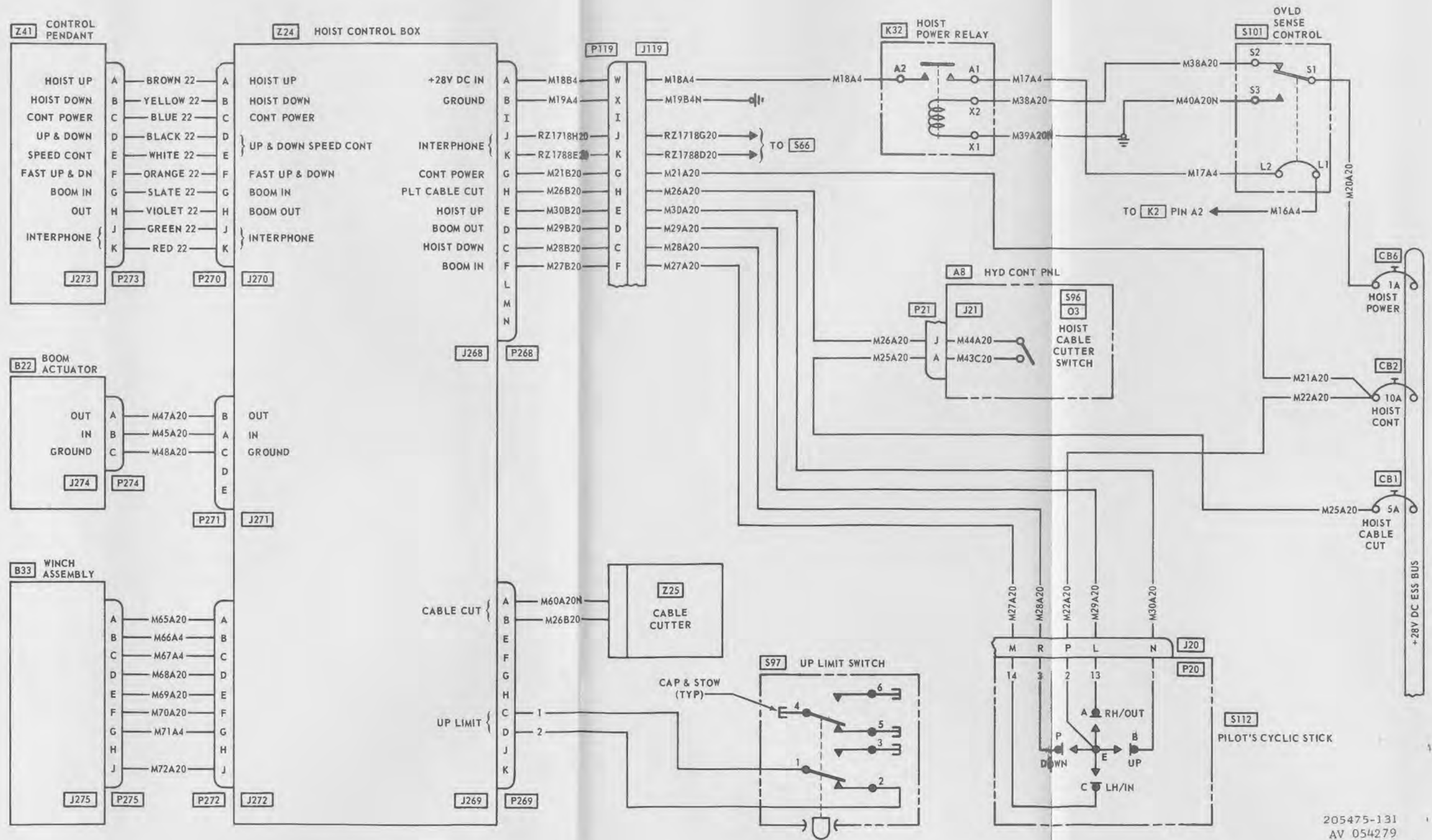
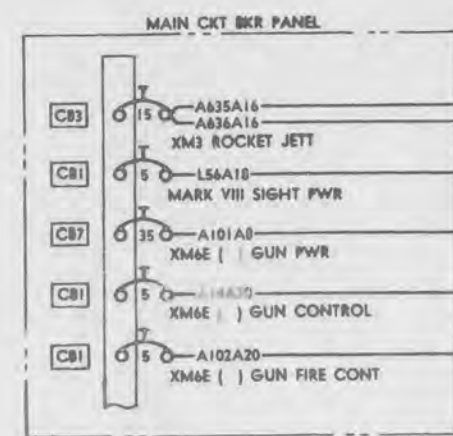


Figure 13-39. Rescue hoist system (prior to 65-9565) (Sheet 1 of 2)

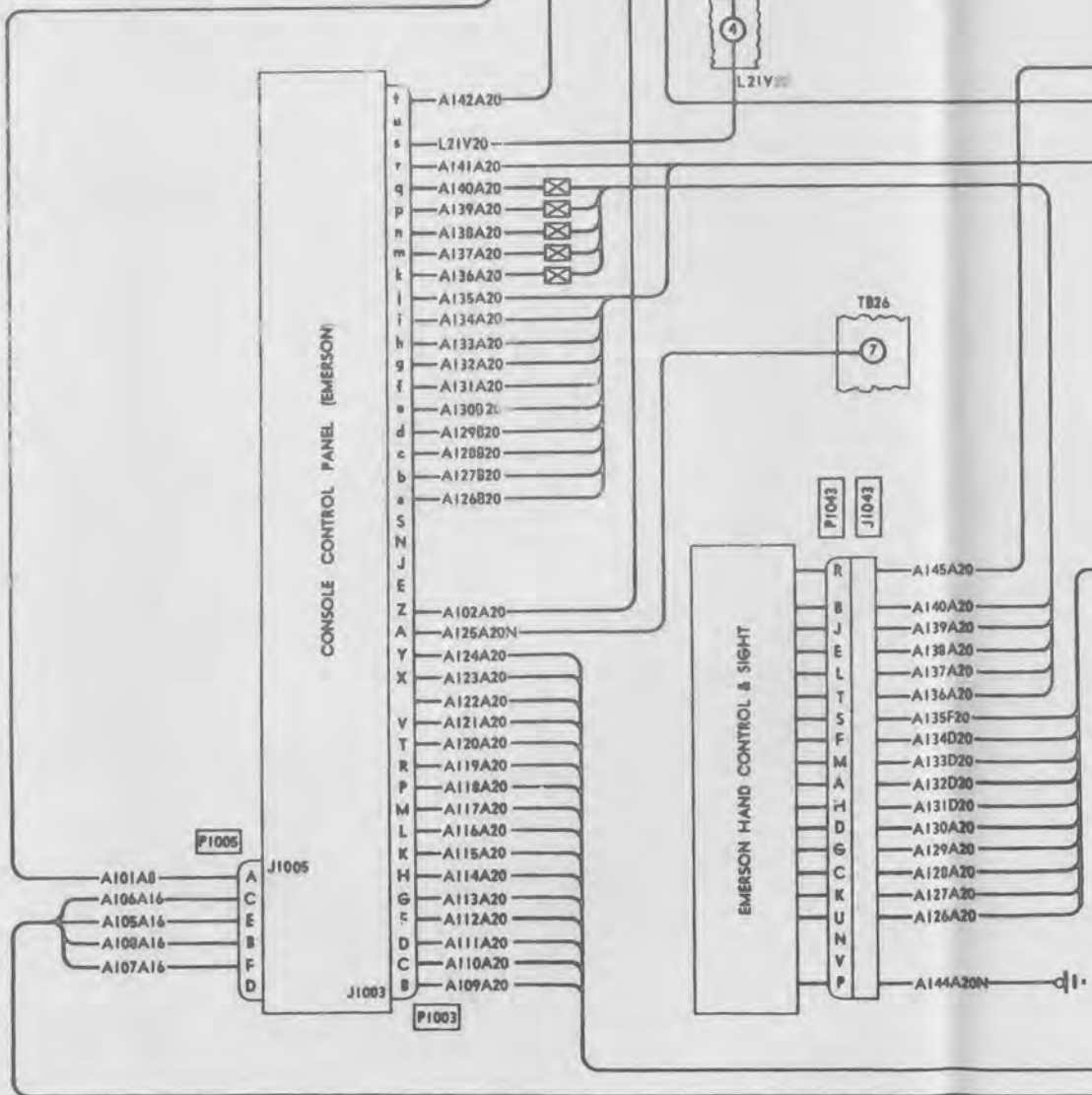
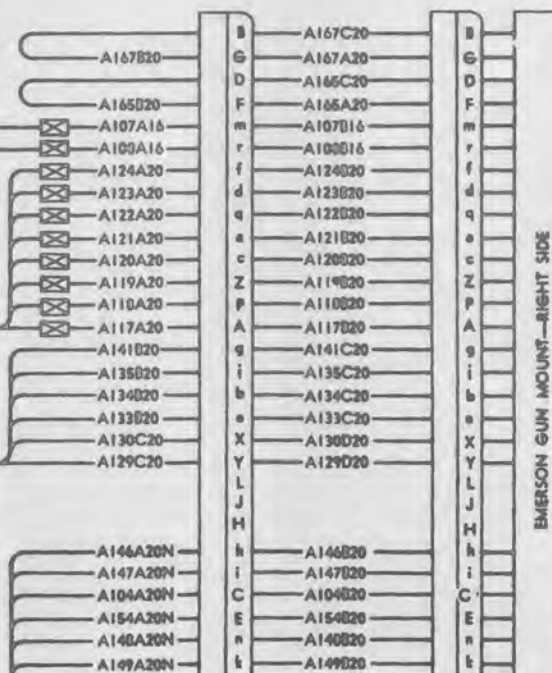
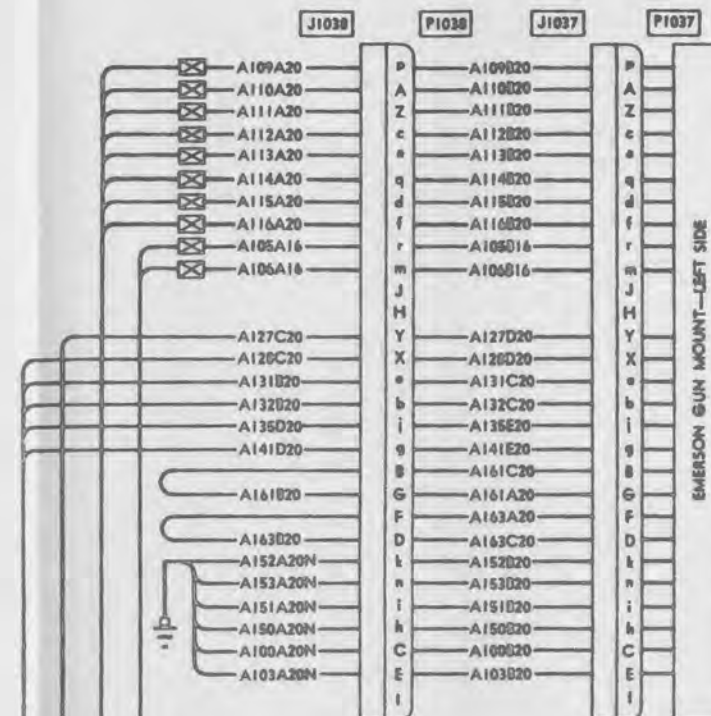
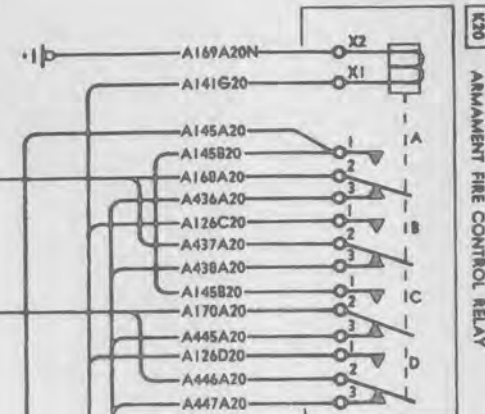
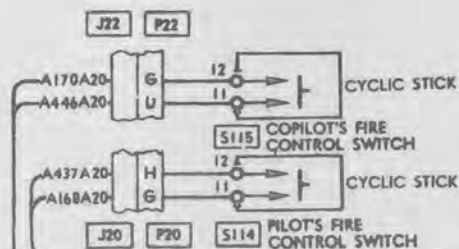
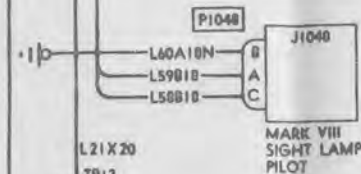
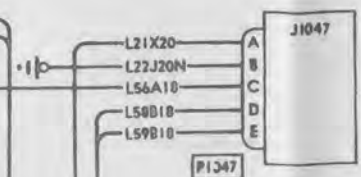


205475-131
AV 054279

Figure 13-39. Rescue hoist system (65-9565 and subsequent) (Sheet 2 of 2)



A31 PANEL ASSY
SIGHT LIGHT
MARK VIII



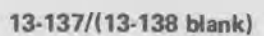
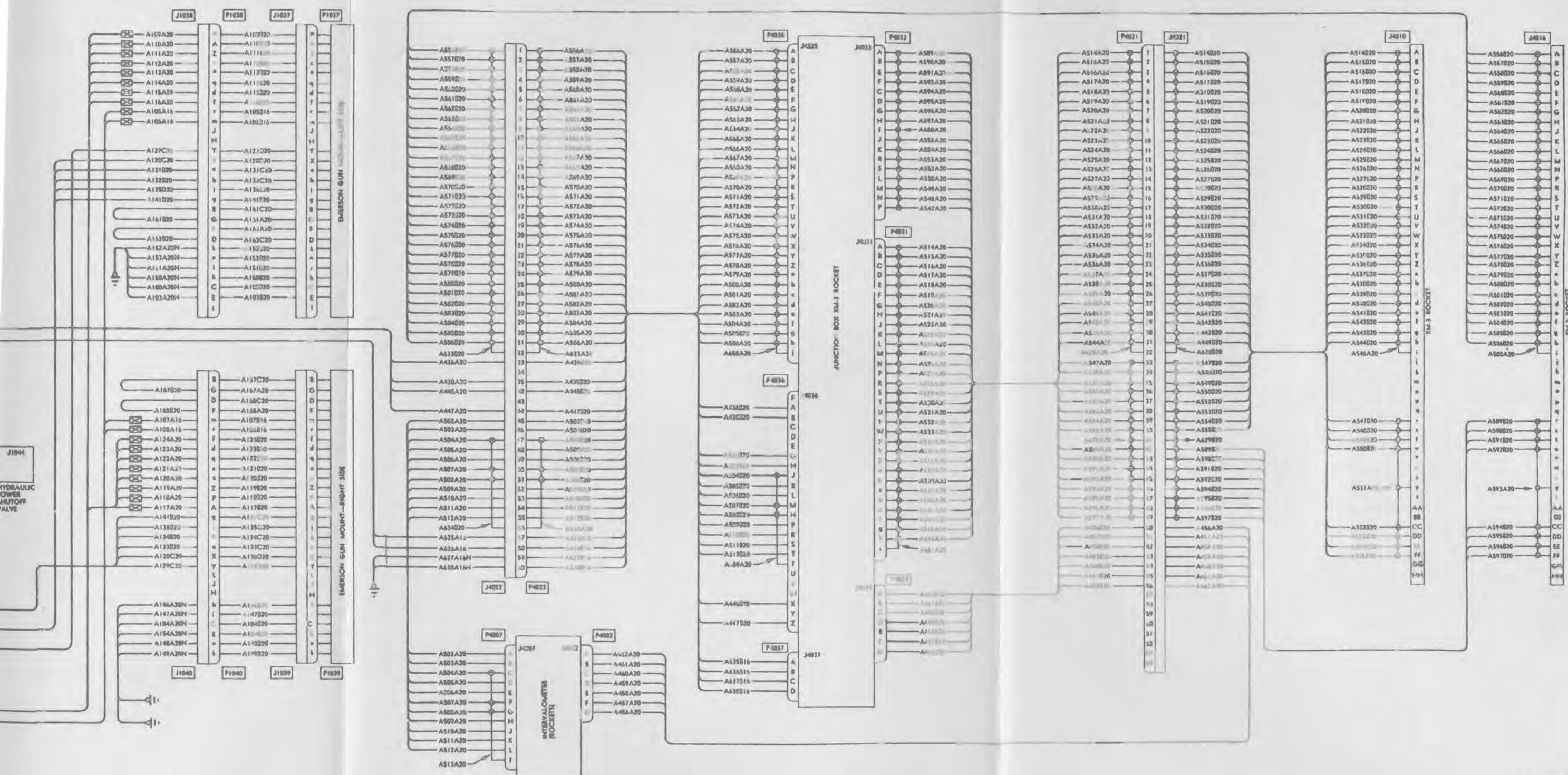


Figure 13-40. Armament wiring diagram — UH-1D (effective 63-8739 through 63-8859, and 63-12956 through 63-13002)



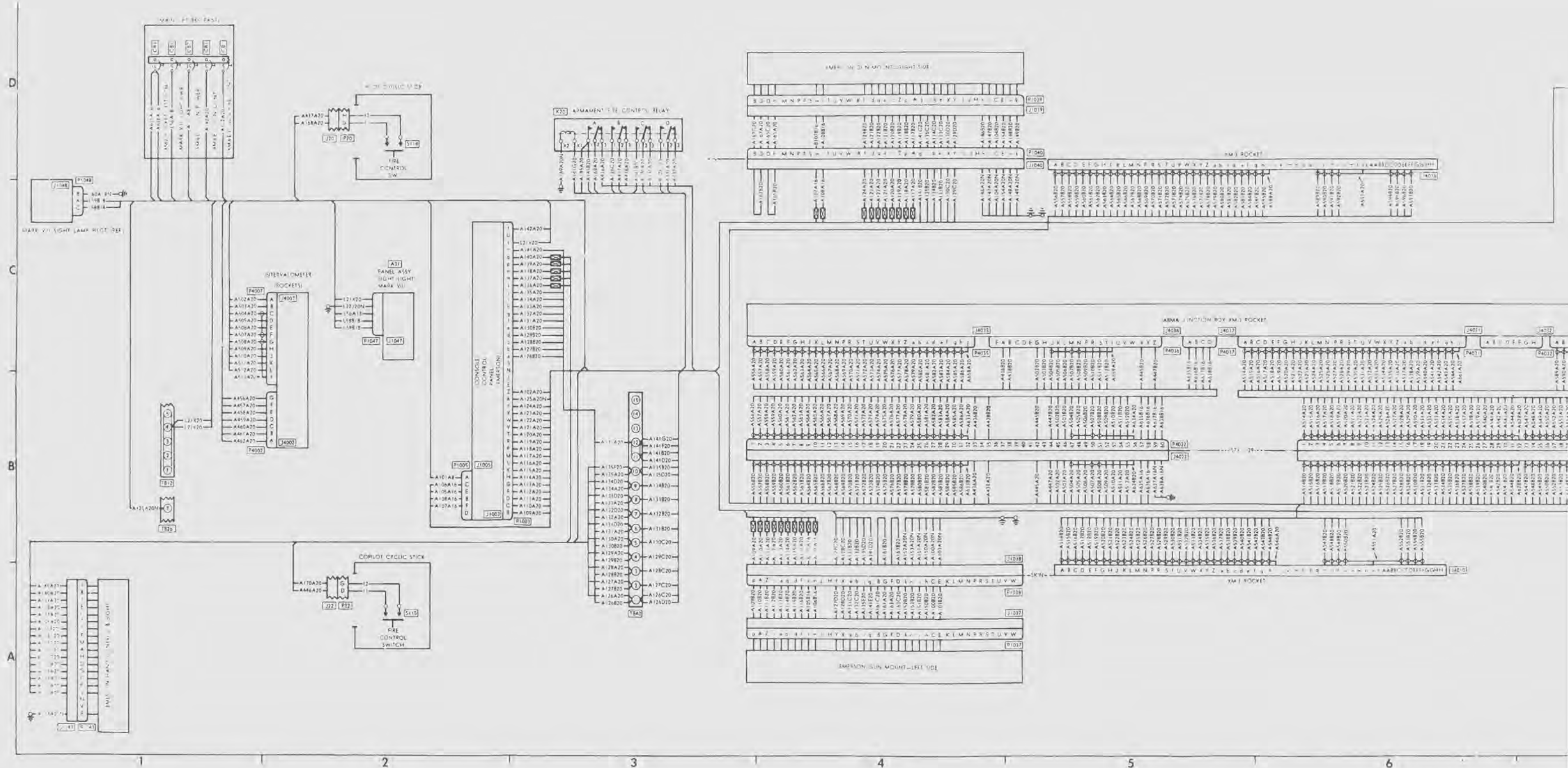


Figure 13-41. Armament wiring diagram — UH-1D (effective 65-12773 through 65-12776, 65-12847 through 65-12852, and 65-12853 through 65-12856)

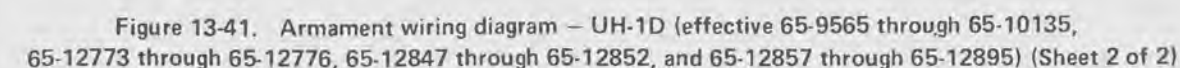
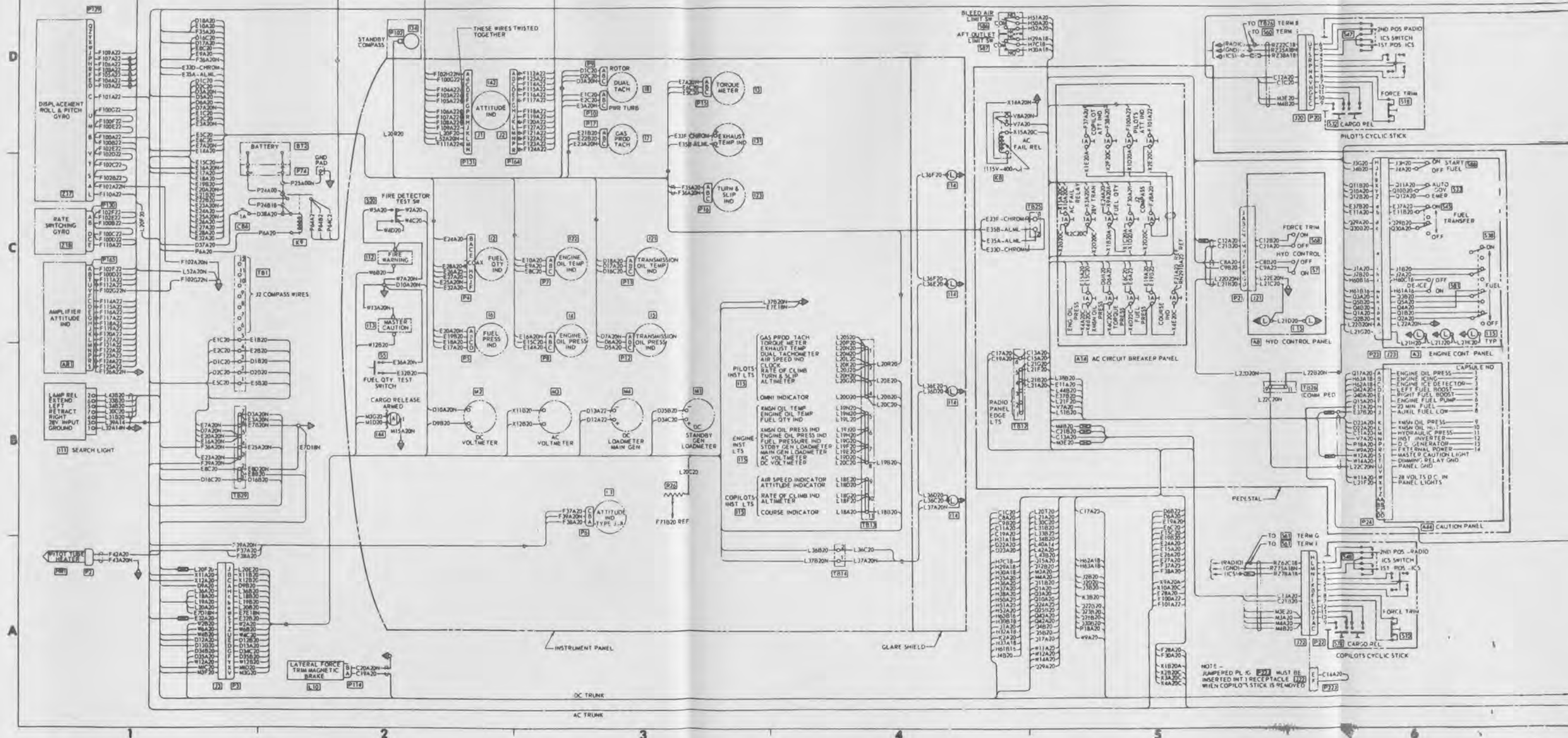




Figure 13-42. Electrical schematic – YUH-1D (effective 60-6028 through 60-6034)



D

C

B

A

2

3

4

5

6

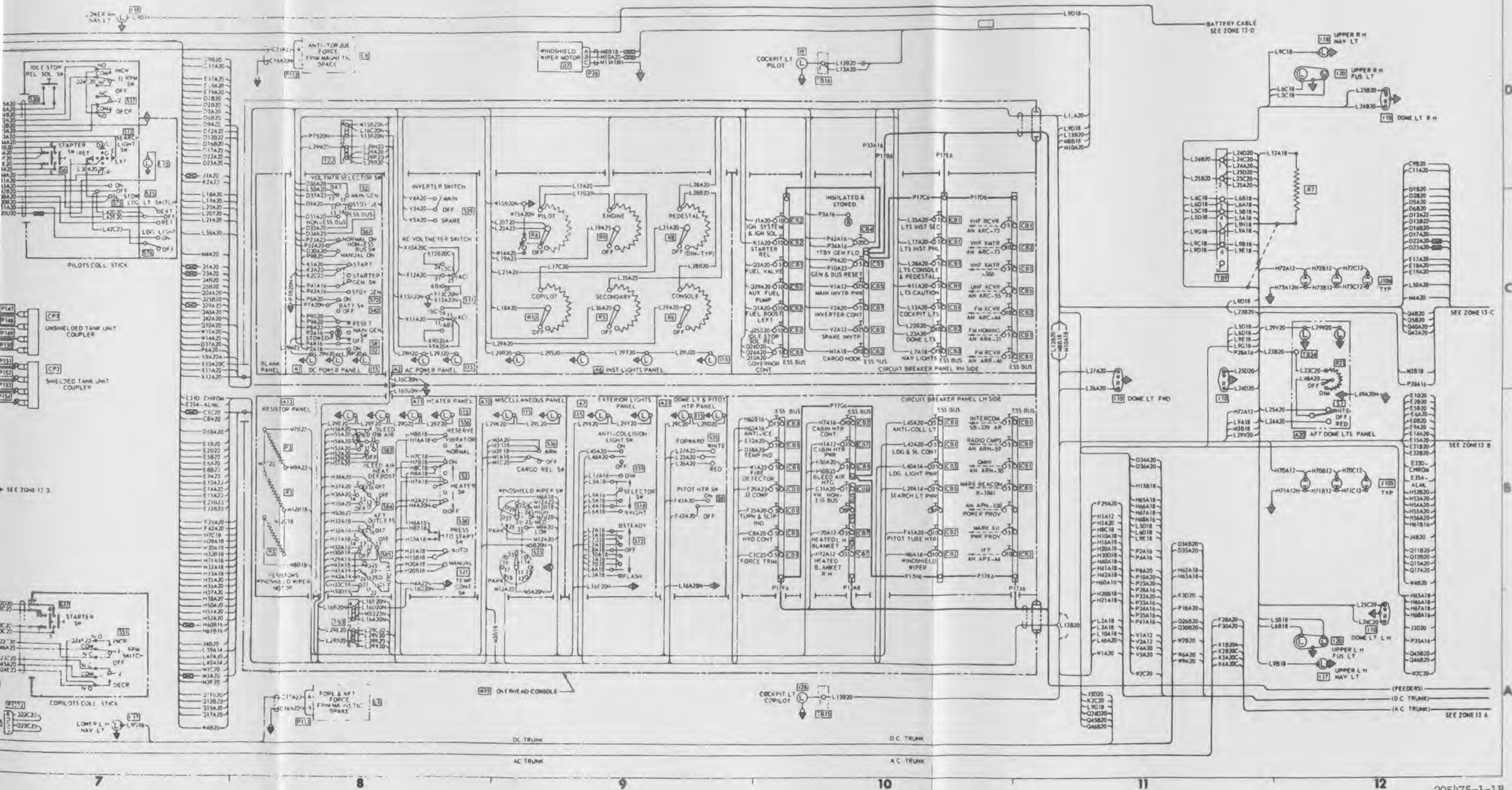


Figure 13-43. Electrical wiring diagram - YUH-1D (effective 60-6028 through 60-6034) (Sheet 1 of 2)

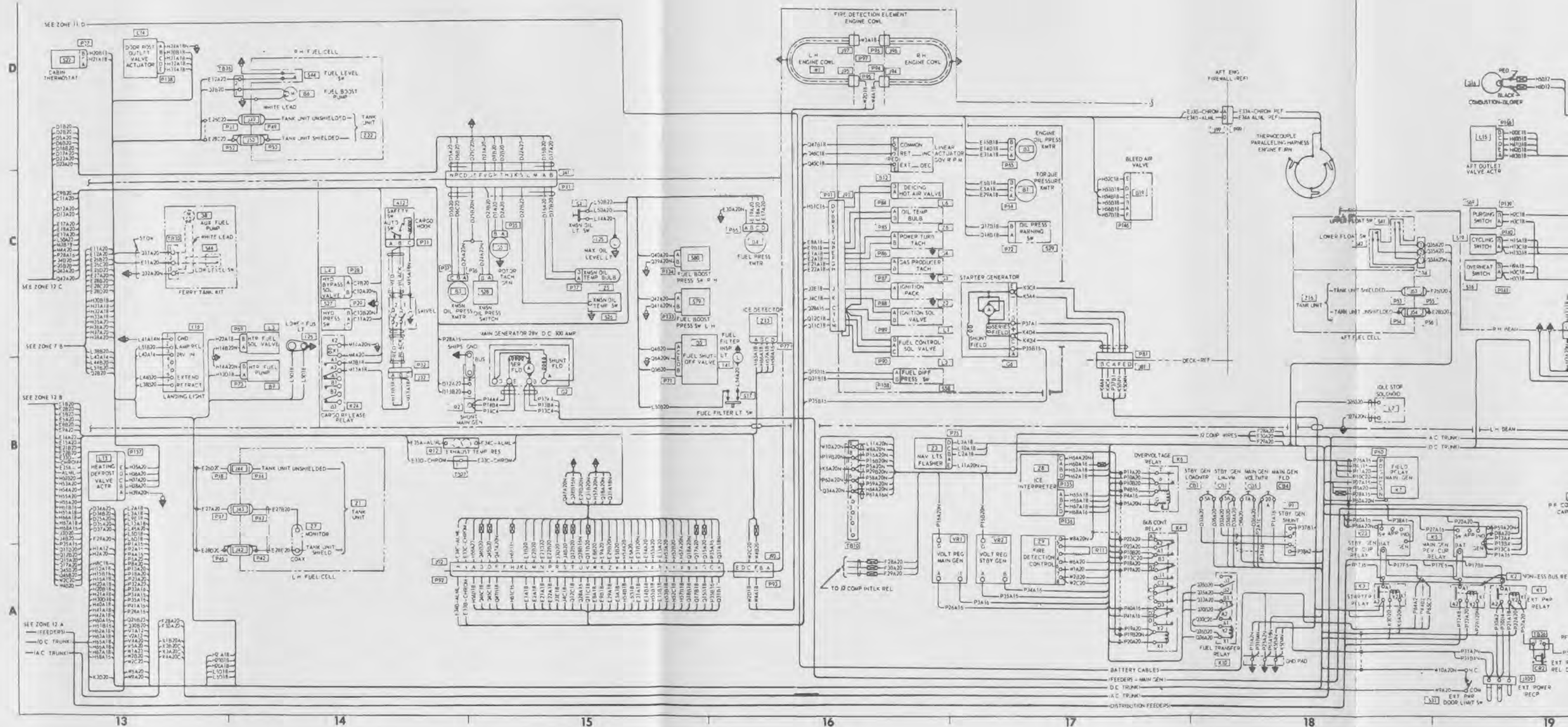


Figure 13-43. Electrical wiring diagram

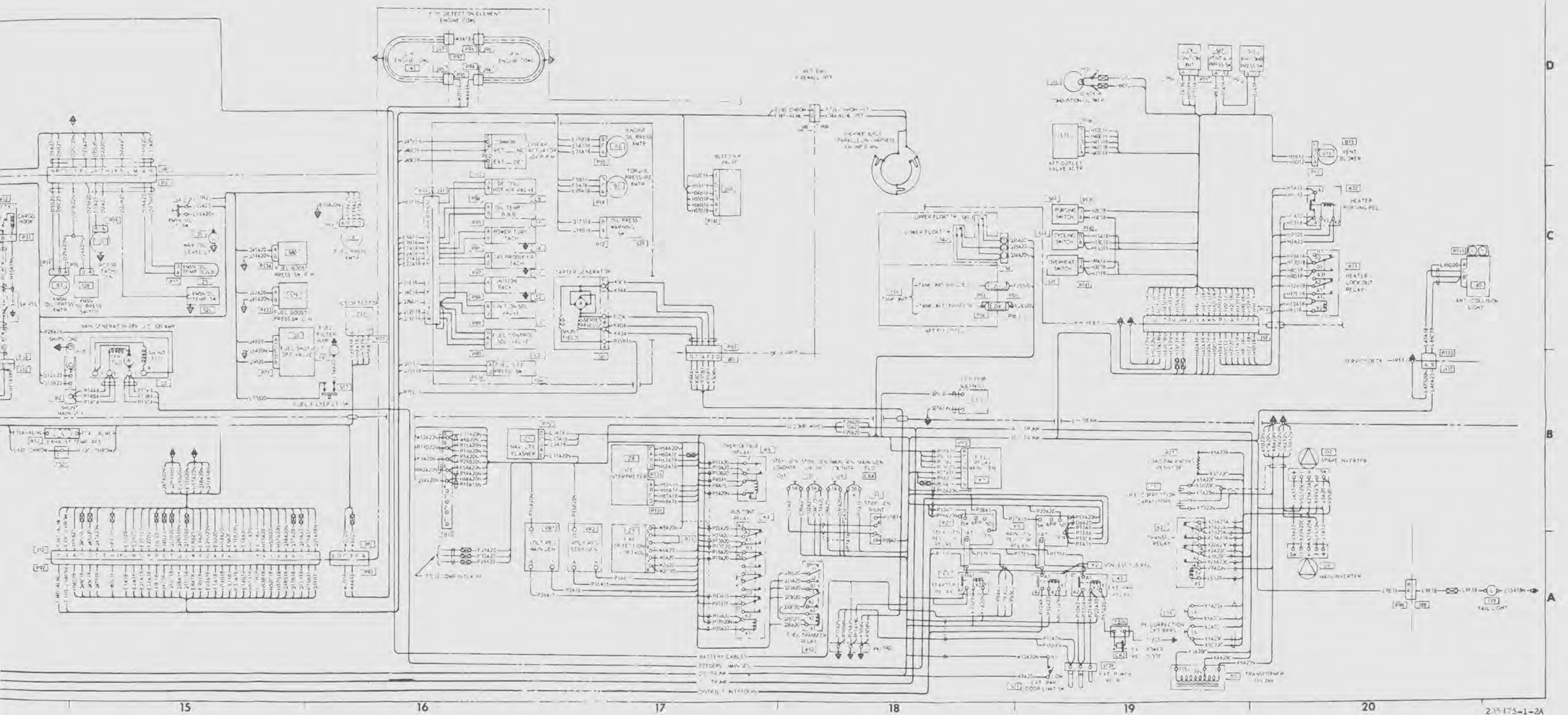
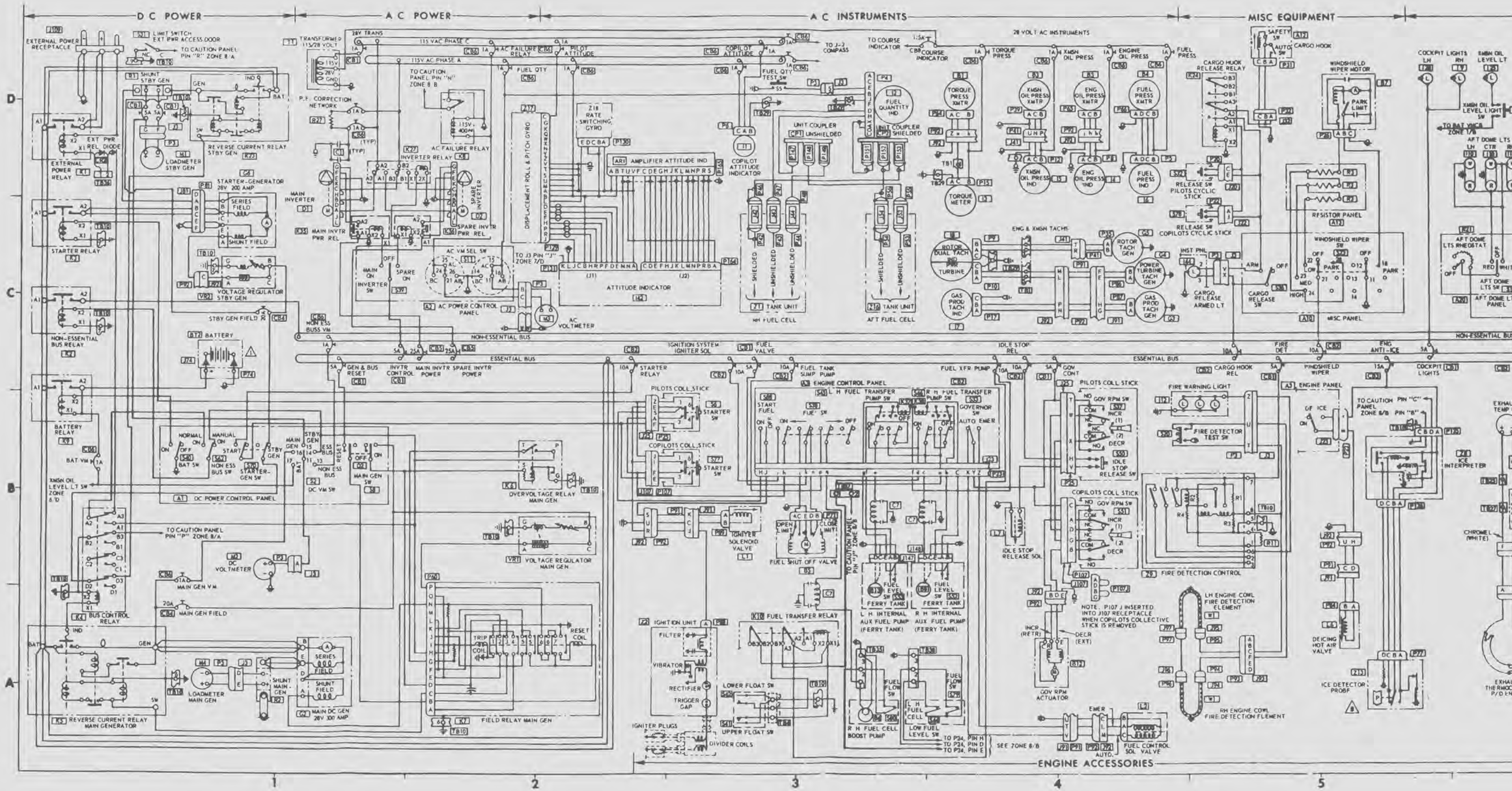
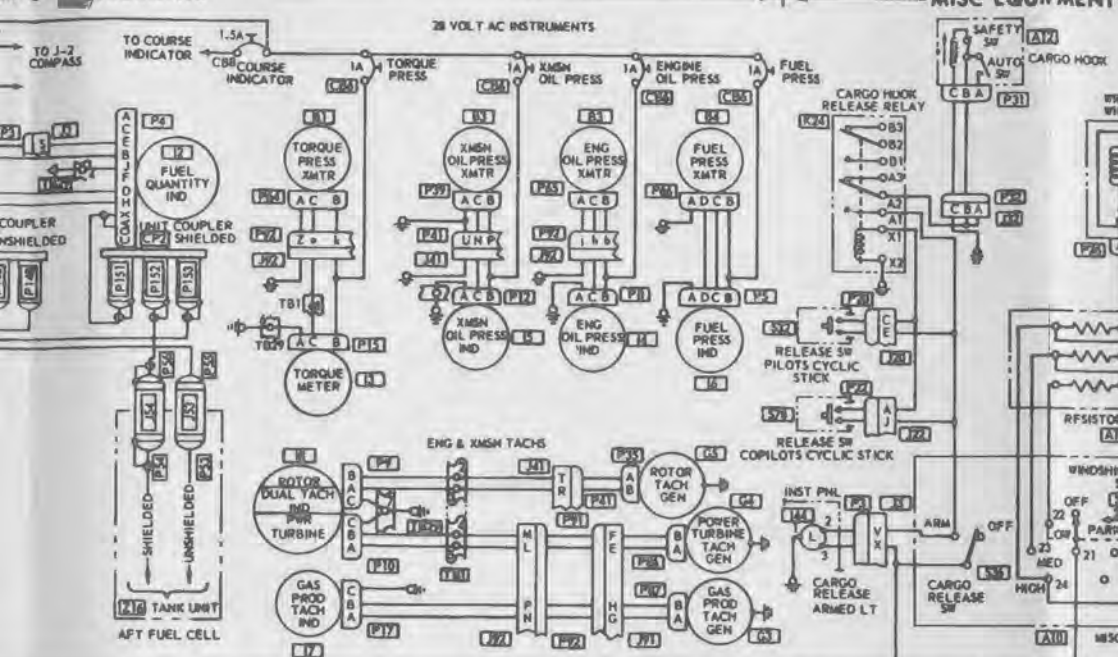


Figure 13-43. Electrical wiring diagram — YUH-1D (effective 60-6028 through 60-6034) (Sheet 2 of 2)

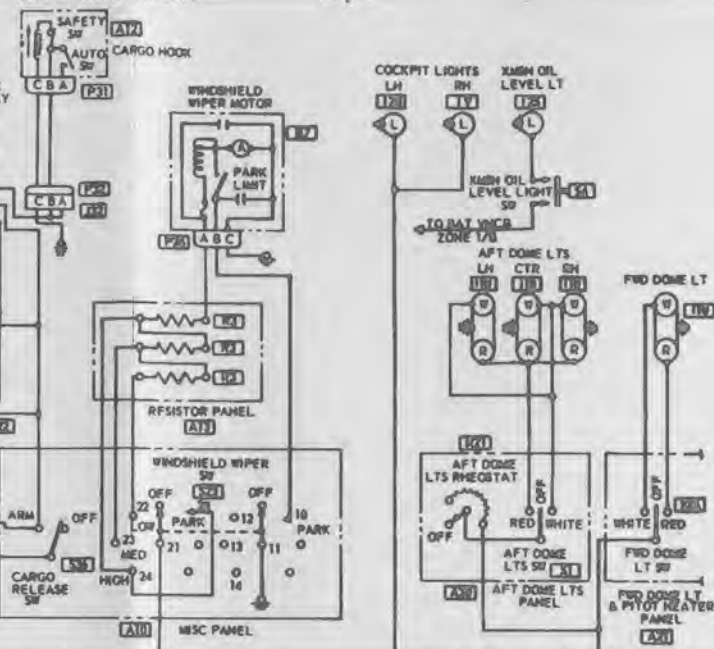


D
C
A

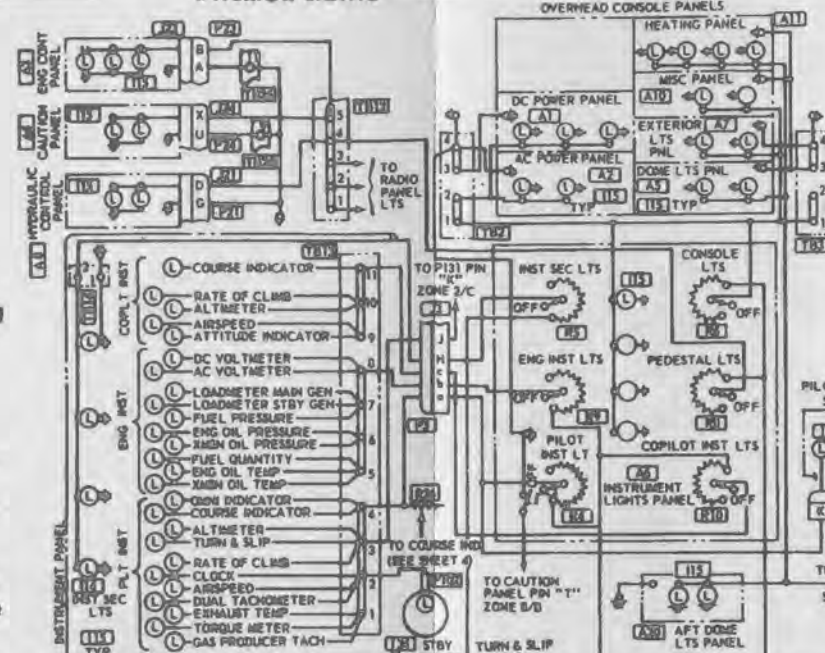
A C INSTRUMENTS-



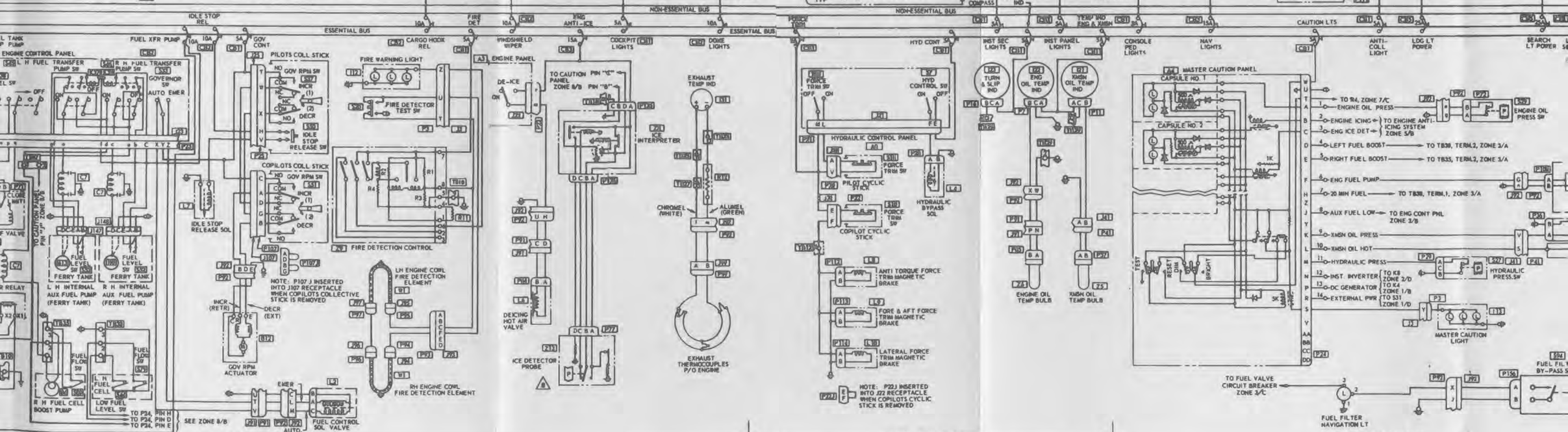
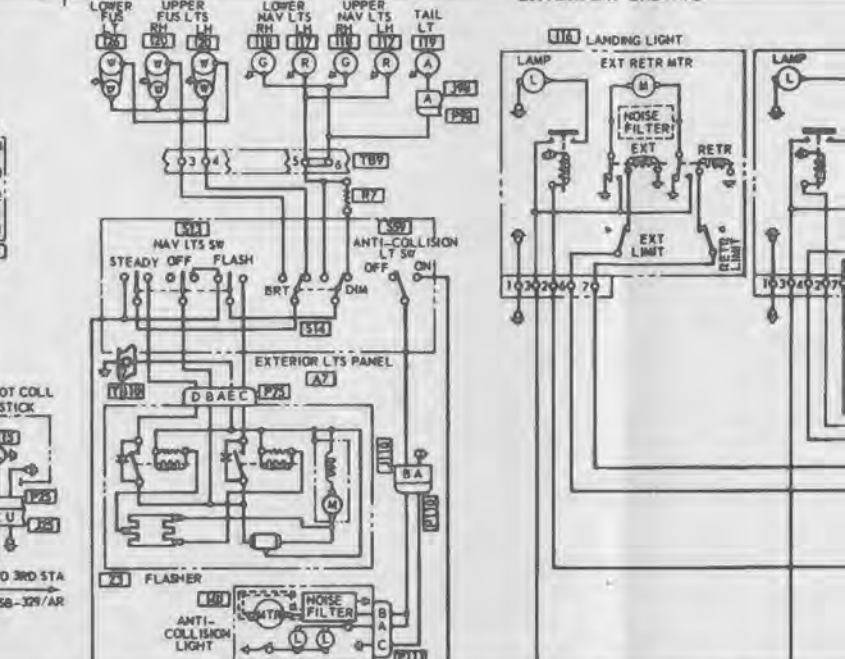
-MISC EQUIPMENT



-INTERIOR LIGHTS



— EXTERIOR LIGHTS



D C INSTRUMENTS

—CAUTION LIGHTS

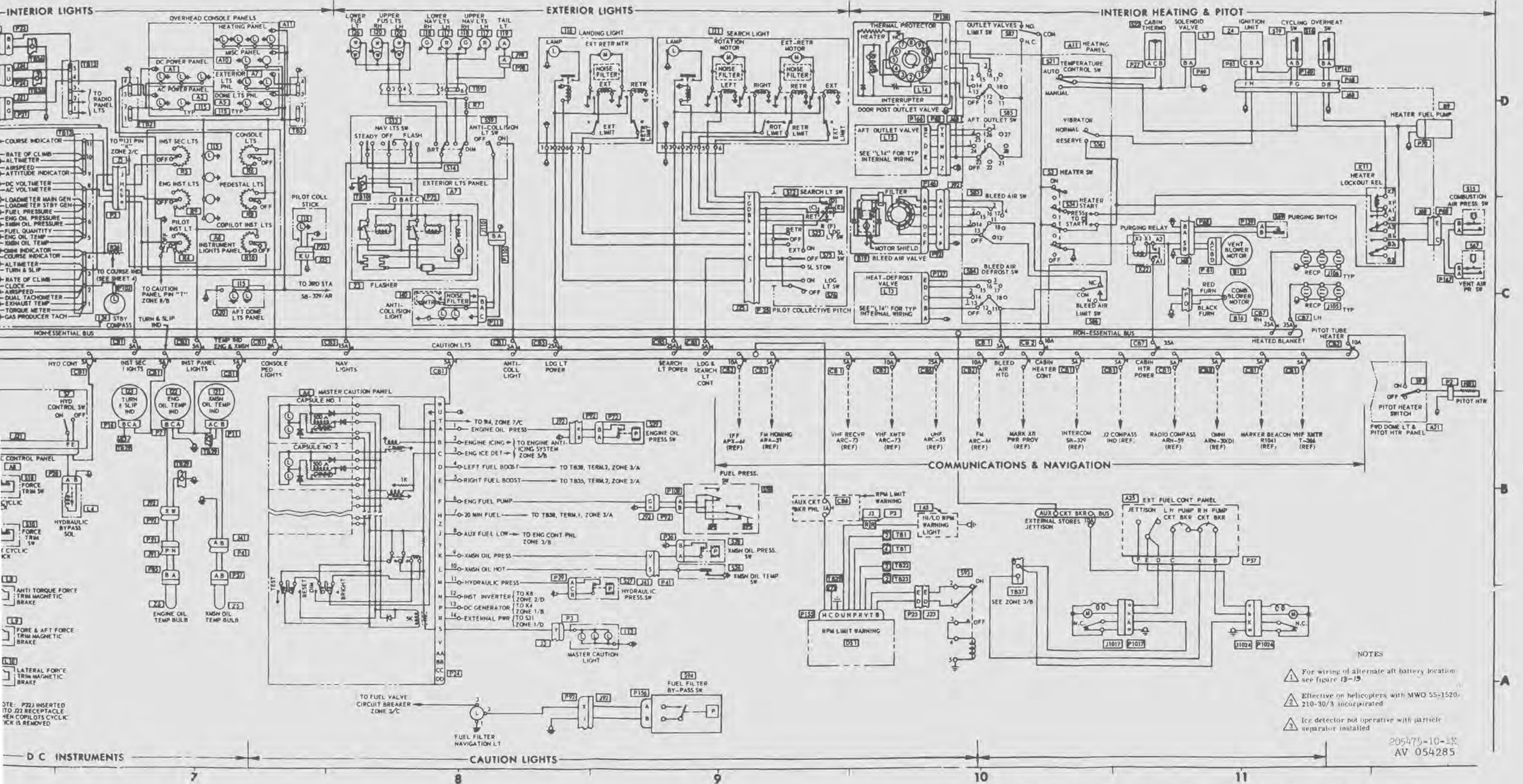
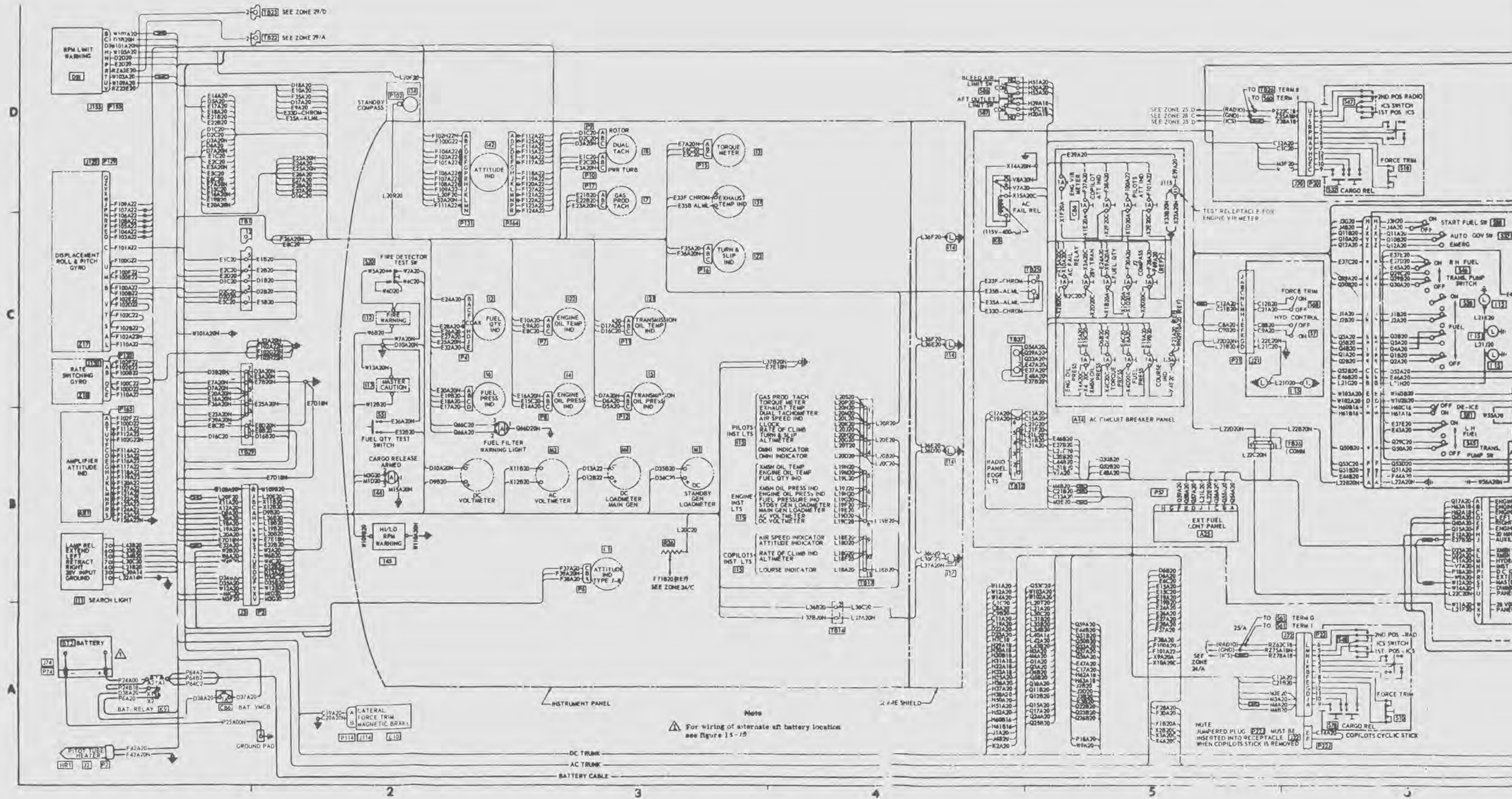
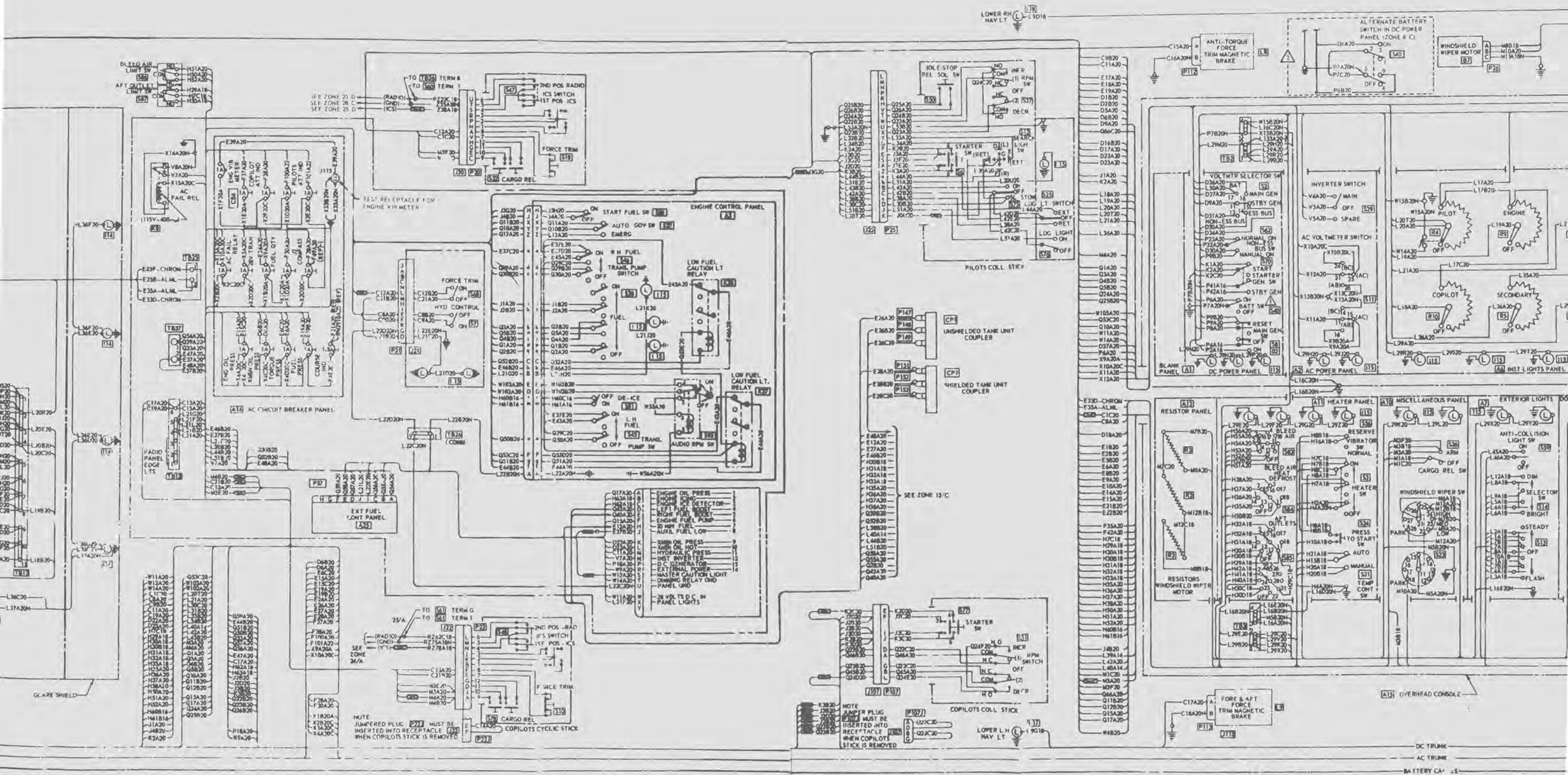


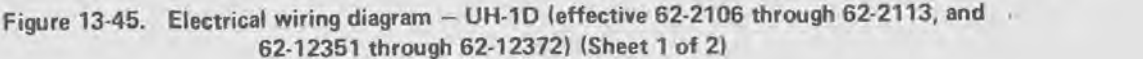
Figure 13-44. Electrical schematic - UH-1D (effective 62-2106 through 62-2113, and 62-12351 through 62-12372)

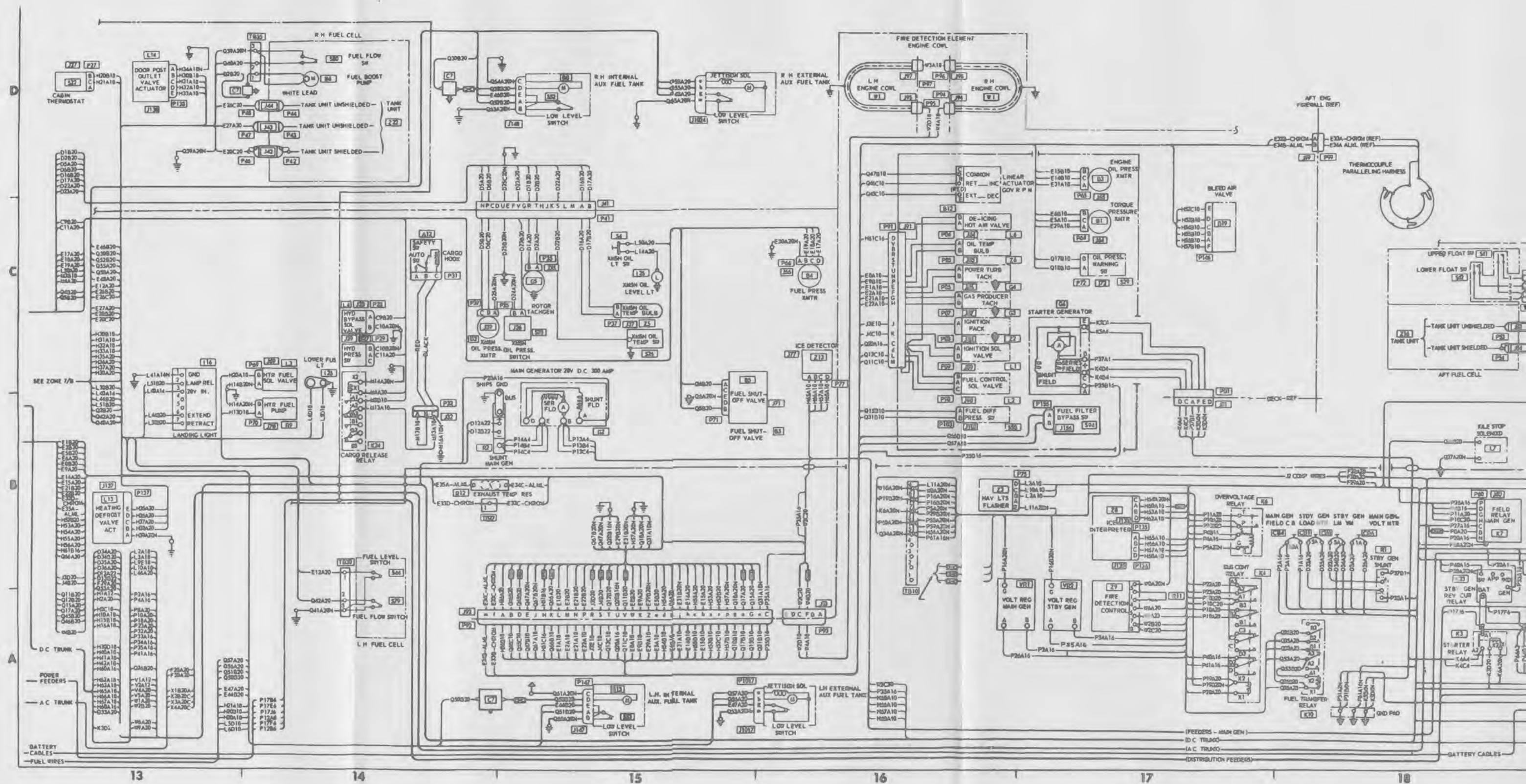


Note
For wiring of alternate aft battery location
see figure 15-15

NOTE
JUMPERED PLUG 277 MUST BE
INSERTED INTO RECEPTACLE 277
WHEN COPILOTS STICK IS REMOVED







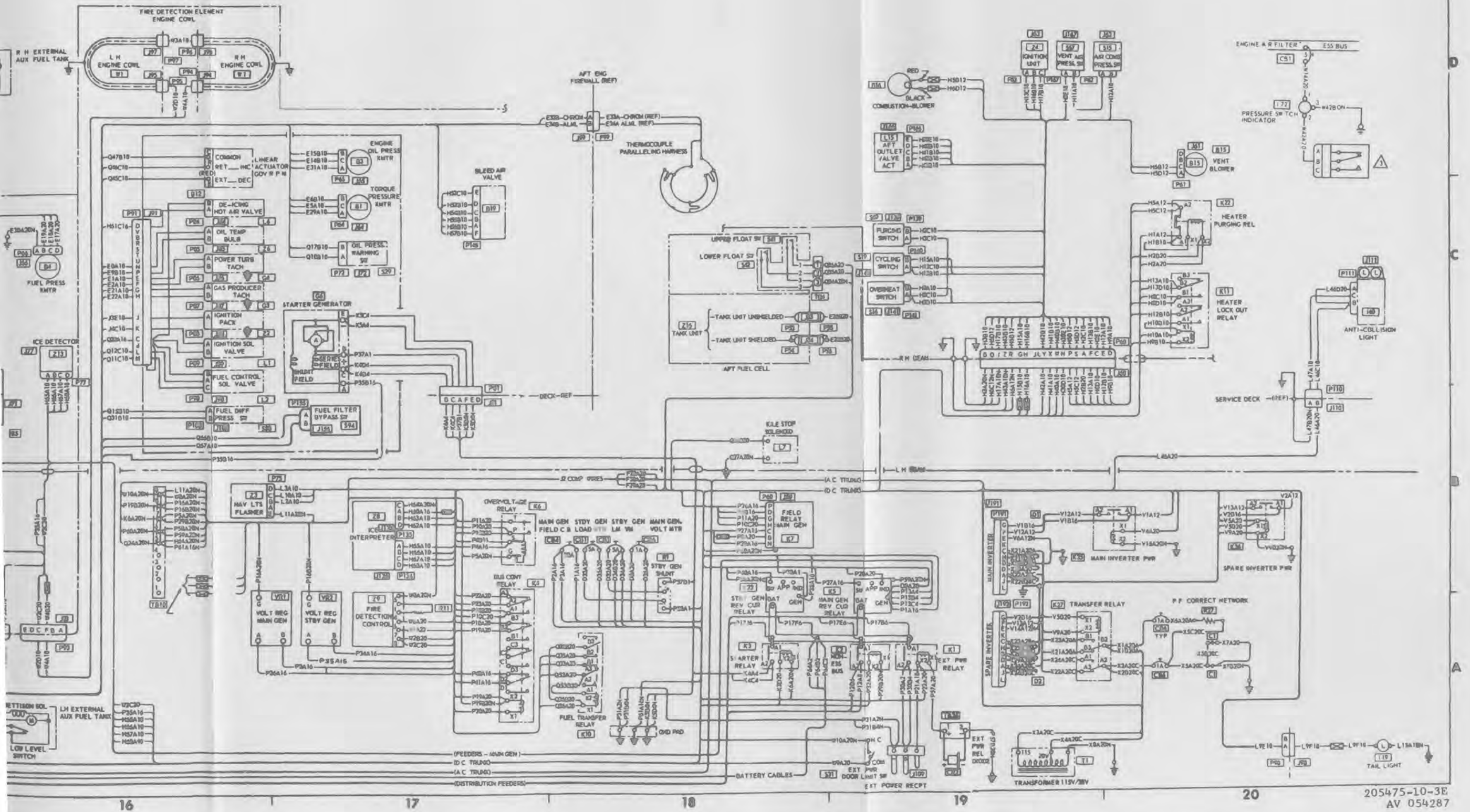
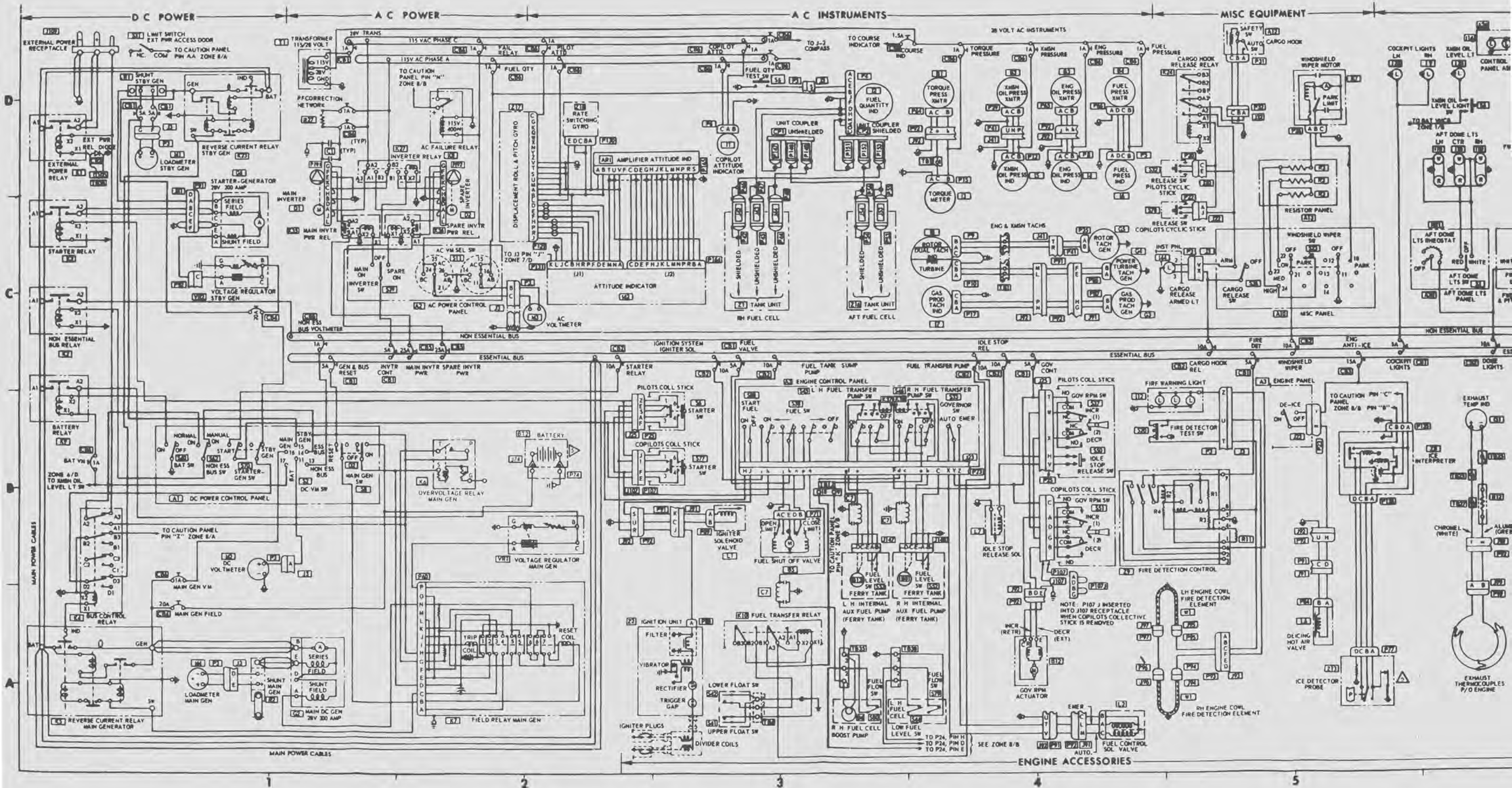


Figure 13-45. Electrical wiring diagram - UH-1D (effective 62-2106 through 62-2113, and 62-12351 through 62-12372) (Sheet 2 of 2)



—INTERIOR LIGHTS



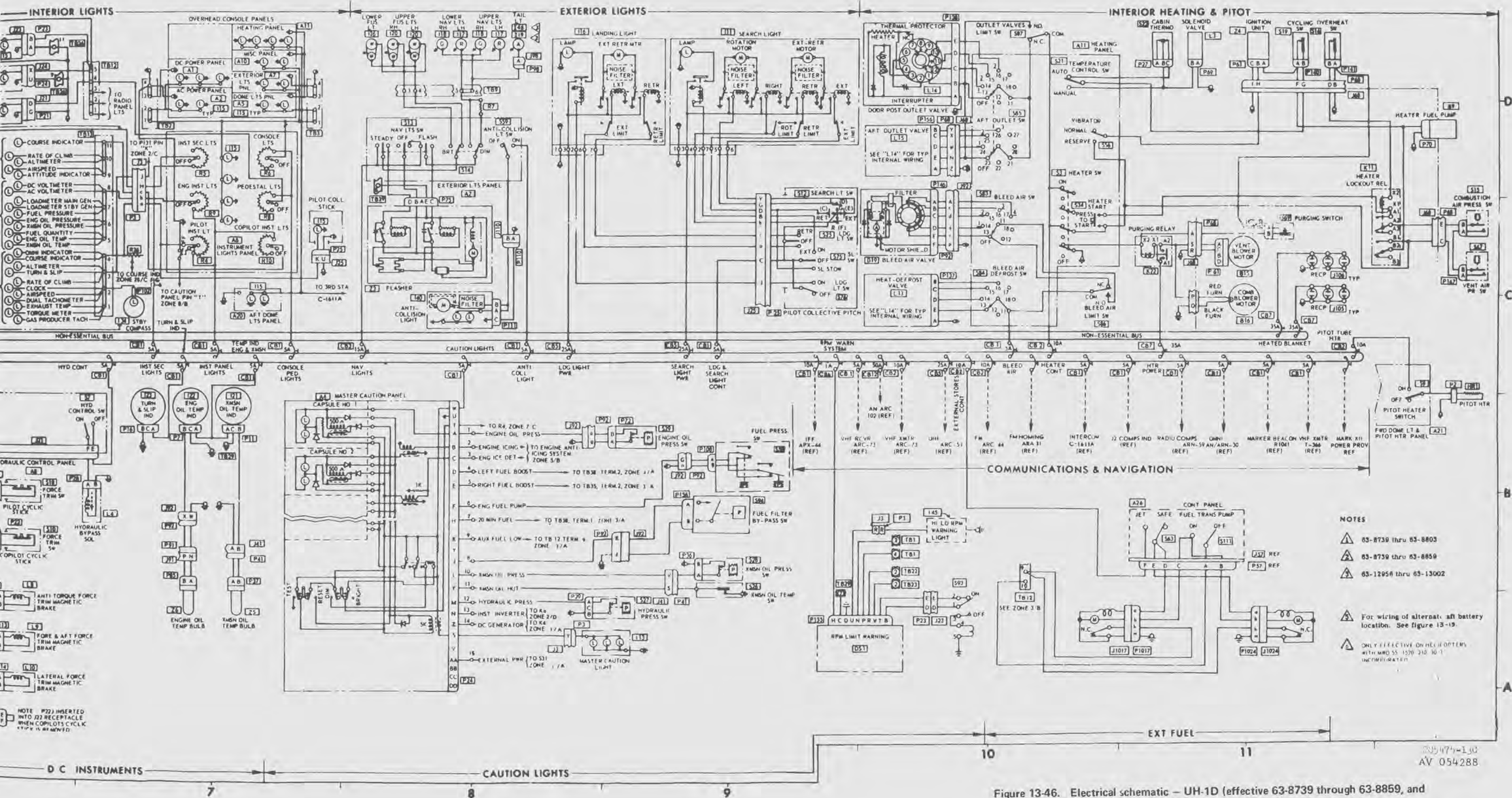
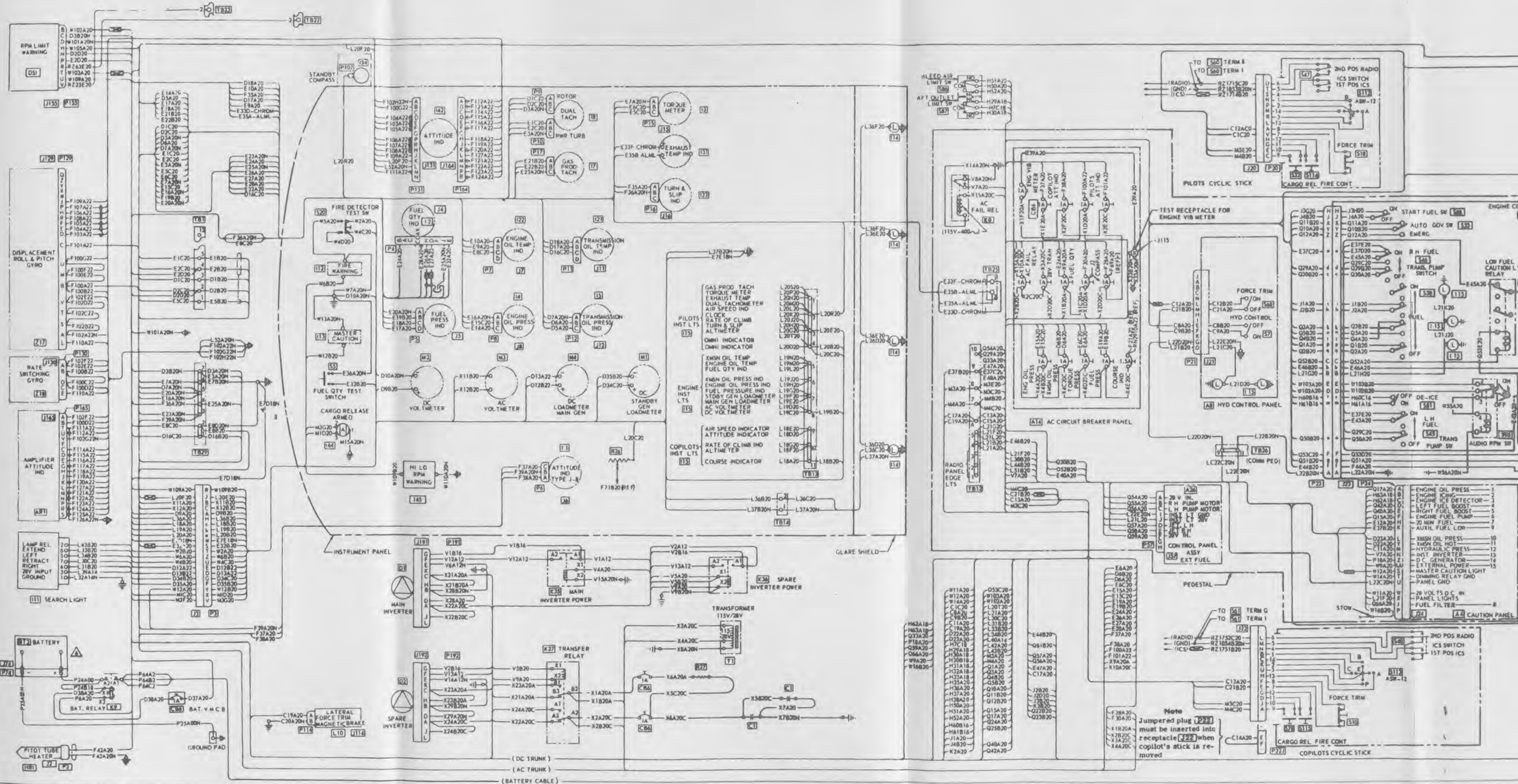
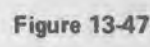


Figure 13-46. Electrical schematic – UH-1D (effective 63-8739 through 63-8859, and 63-12956 through 63-13002)



Note
Jumped plug 1222
must be inserted into
receptacle 1222 when
copilot's stick is re-
moved



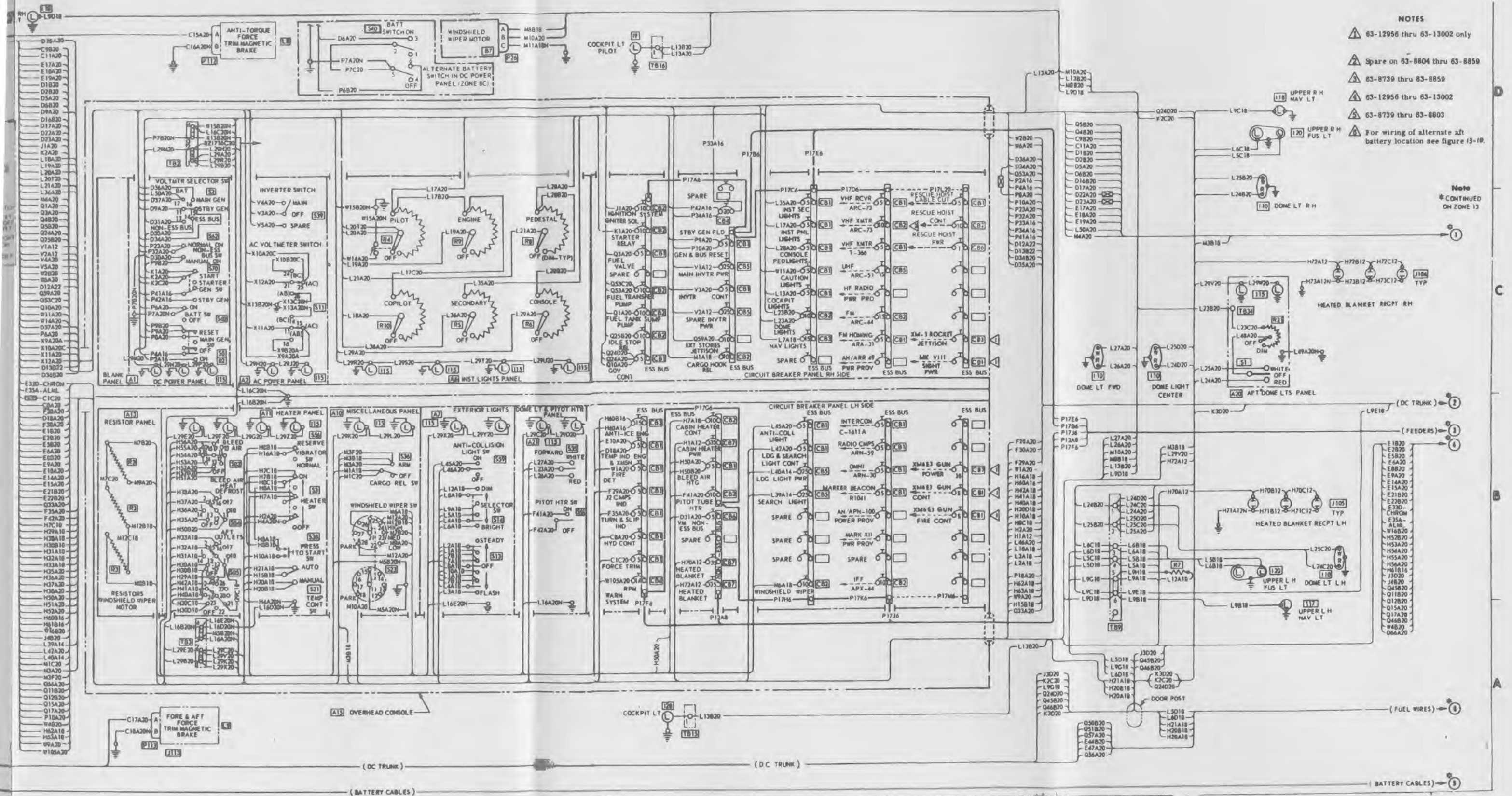
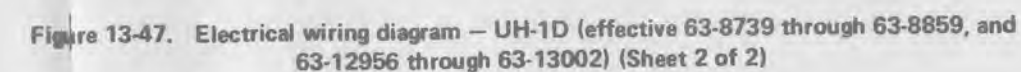
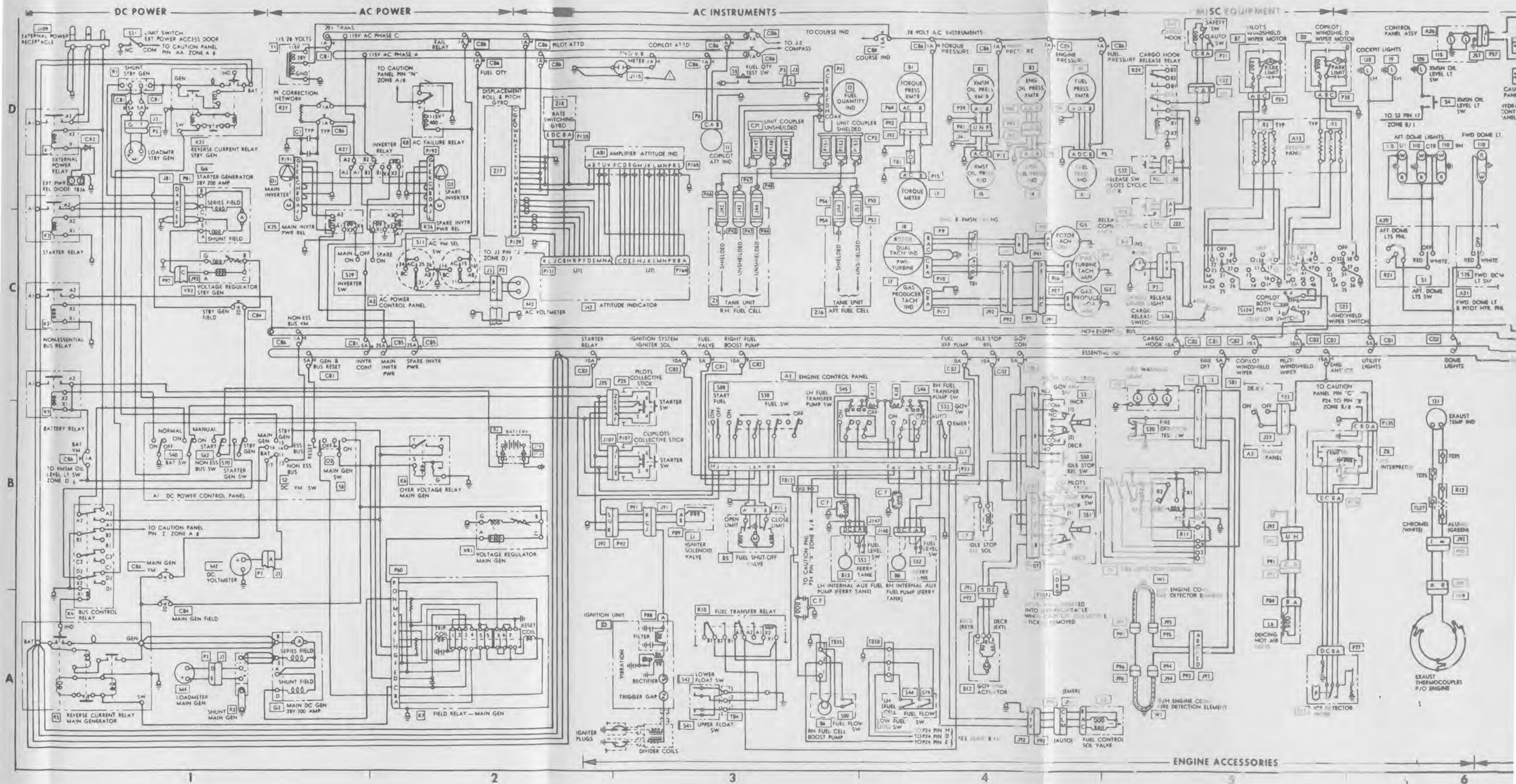


Figure 13-47. Electrical wiring diagram - UH-1D (effective 63-8739 through 63-8859, and 63-12956 through 63-13002) (Sheet 1 of 2)





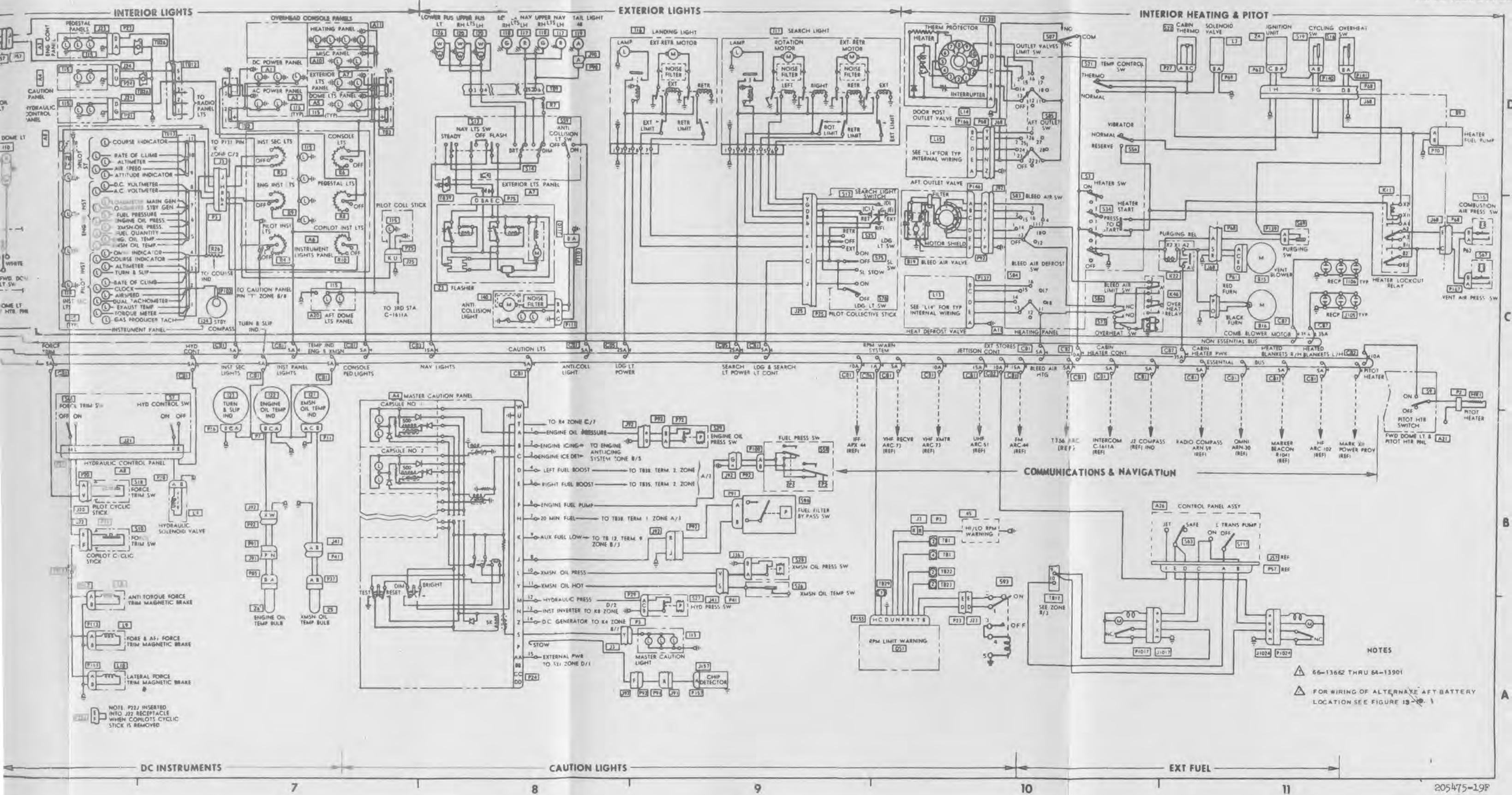
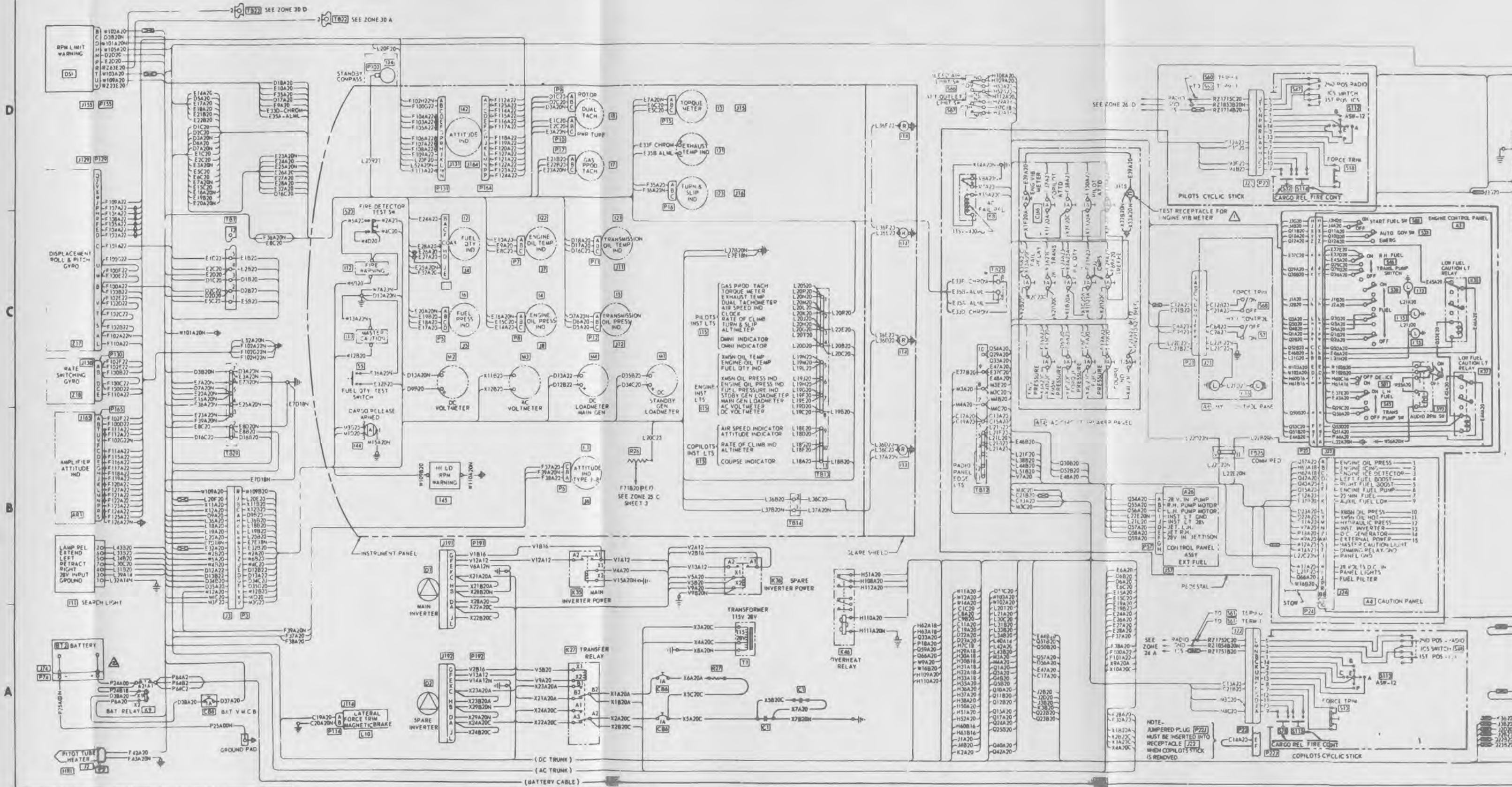
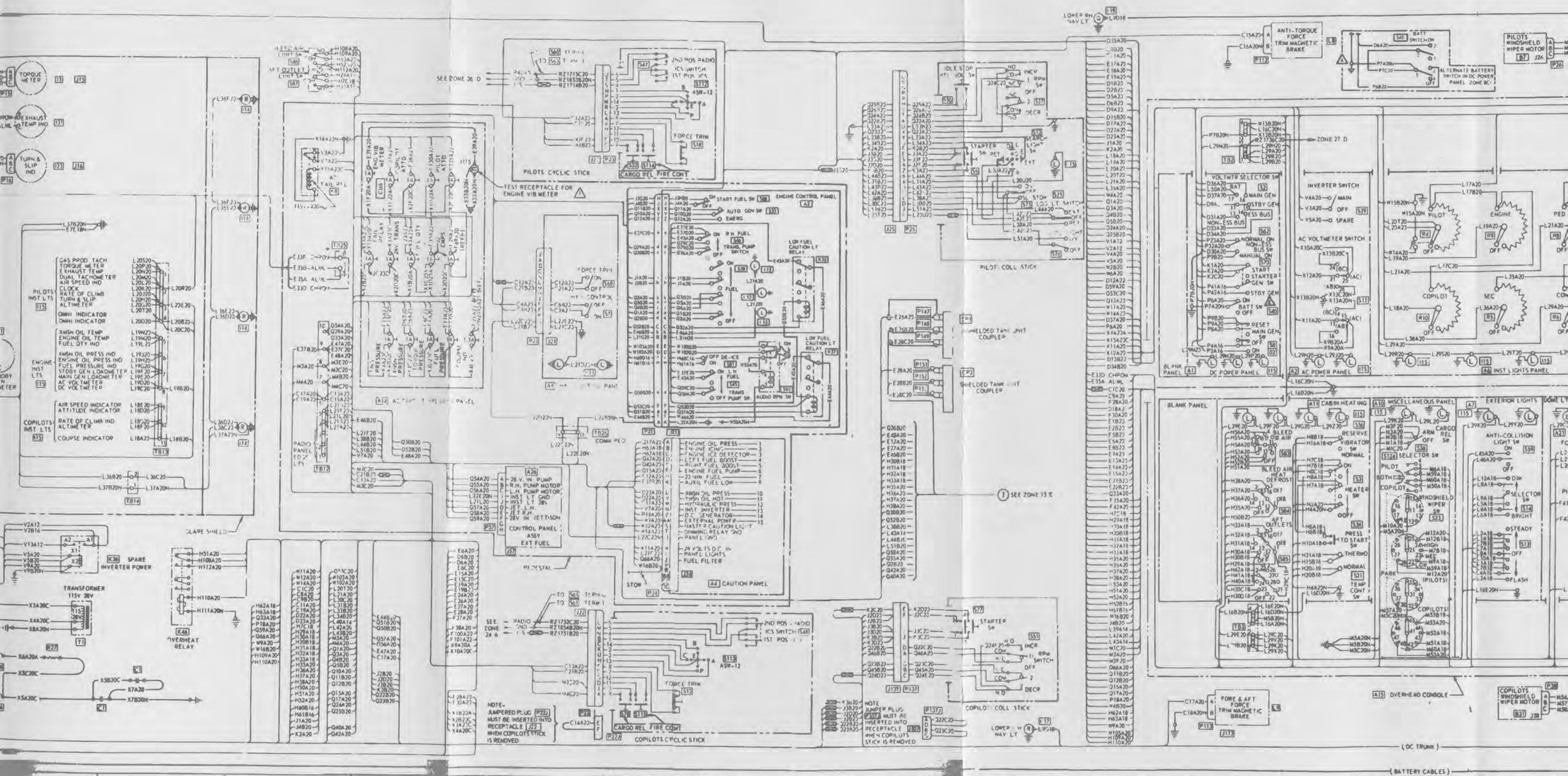


Figure 13-48. Electrical schematic — UH-1D (effective 64-13492 through 64-13901)





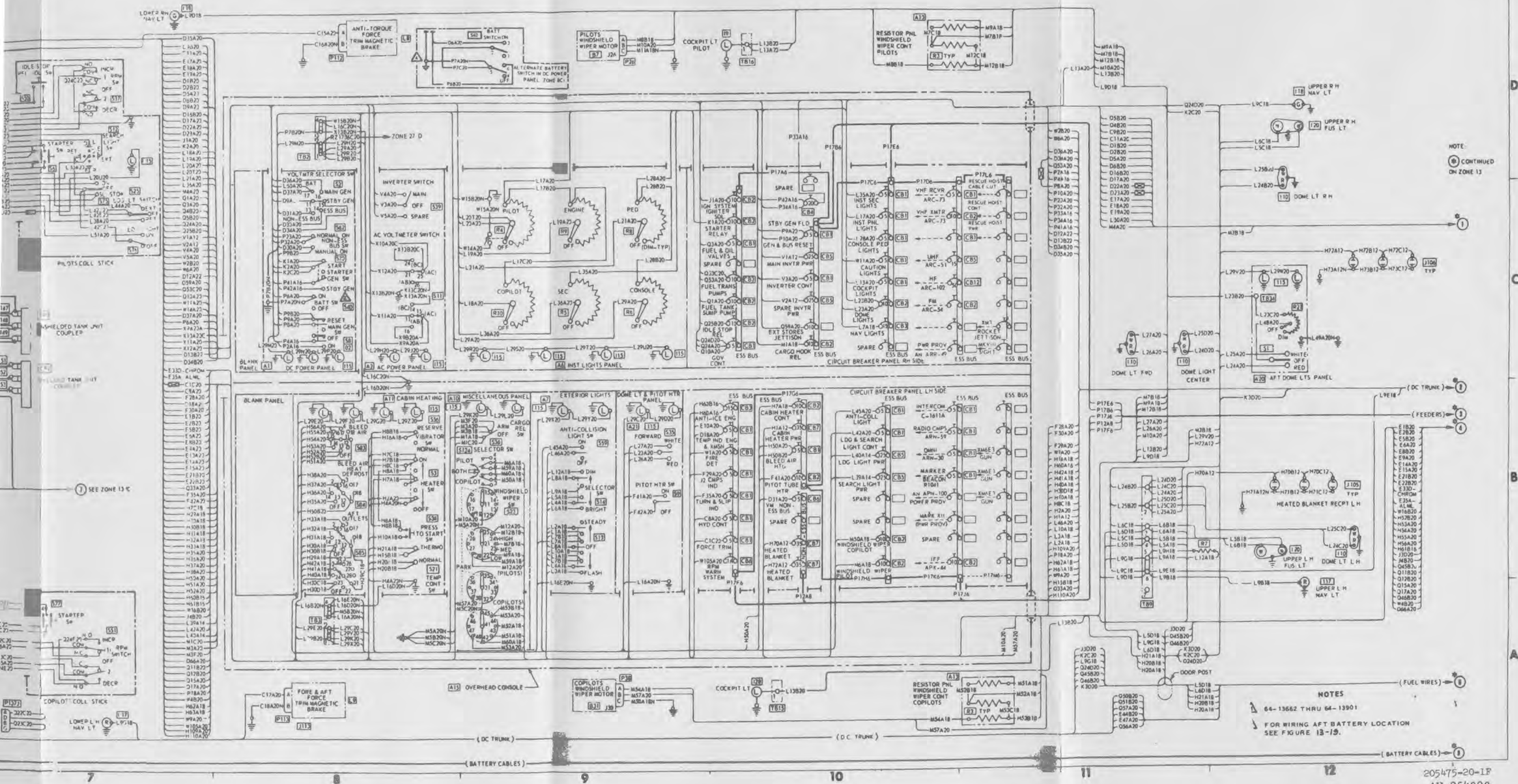


Figure 13-49. Electrical wiring diagram - UH-1D (effective 64-13492 through 64-13901) (Sheet 1 of 2)



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