EXTERIOR LIGHTS ELECTRONIC SYSTEMS AUTOPILOT LA OR A-12 (FILAMENT) TAXI LIGHT WING LEADING EDGE LIGHTS IMOTOR GENERATORI (GYRO COMPASSI LANDING LIGHTS AND CONTROL NAVIGATION POSITION LIGHTS FUSELAGE LIGHTS ANTI-COLLISION LIGHT (ROTATING BEACON) WHEEL WELL LIGHTS - LOWER BAGGAGE COMPARTMENTS - ALDIS LAMP ELECTRICAL SYSTEMS ENGINES INTERIOR LIGHTS COWL FLAP MOTOR CONTROL - COWL FLAP MOTOR COCKPIT OVERHEAD FLOODLIGHTS OIL COOLER DOORS INSTRUMENT LIGHTING SWITCH PANEL OIL DILUTION - UPPER INSTRUMENT AND FORWARD OVERHEAD PANEL LIGHTS OIL TEMPERATURE CONTROL ACTUATOR MAP LIGHT PRIMER, STARTER MJB LIGHTS INDUCTION VIBRATOR - RADIO OPERATOR'S TABLE LIGHTS AND INSTRUMENT LIGHTS CYLINDER TEMPERATURE INDICATOR - DOME LIGHT FLIGHT COMPARTMENT IGNITION - CABIN DOME LIGHTS (7) ENGINE SUPERCHARGER CONTROL - LAVATORY DOME LIGHT CARBURETOR DEICER PUMP - NAVIGATOR'S TABLE AND INSTRUMENT LIGHTS CARBURETOR TEMPERATURE PASSENGER ENTRANCE WATER INJECTION PUMP AUXILIARY OIL TRANSFER ADI INSTRUMENTS ALARM AND WARNING SYSTEMS PILOT'S S-2 COMPASS AMPLIFIER CO-PILOT'S S-2 COMPASS AMPLIFIER - ANTISKID WARNING LIGHT PILOT'S TURN-AND-SLIP INDICATOR - SEAT BELT CO-PILOT'S TURN-AND-SLIP INDICATOR - NO SMOKING PILOT'S AND MJB 24 VOLT UTILITY OUTLET ANNUNCIATOR SYSTEM CO-PILOT'S 24 VOLT UTILITY OUTLET LANDING GEAR WARNING LIGHT PILOT AND ENGINE INSTRUMENT RED LIGHT - LANDING GEAR WARNING HORN CO-PILOT AND ENGINE INSTRUMENT RED LIGHT - FIRE DETECTORS HEATER WARNING LIGHTS - FIRE EXTINGUISHERS LOW SUPERCHARGER SHAFT OIL PRESSURE DOOR OPEN LIGHT WHEELS - GENERATOR FAILURE LOW FUEL PRESSURE -ANTISKID CONTROL VALVE LOW OIL PRESSURE NO AC POWER AND VOLTAGE REGULATOR TEMPERATURE LOW ADI PRESSURE INDICATORS QUANTITY INDICATORS (WATER, ALCOHOL, HYDRAULICS) WING FLAPS LANDING GEAR POSITION AND WARN. SYSTEMS MISCELLANEOUS TEMPERATURE OUTSIDE AND CABIN AIR WATER PUMP WATER DRAIN RAZOR INVERTER CABIN PRESSURE CONTROL HEATING, VENTILATING, AND DEICING WINDSHIELD DEICING LANDING GEAR GROUND CONTROL RELAY HEATER FUEL PUMPS (3) AIRFOIL HEATERS (2) -EMERGENCY HYDRAULIC PUMP TAIL HEATER -CABIN HEATER AND GROUND BLOWER CONTROL AIRFOIL HEATERS AND GROUND BLOWER CONTROL SPLITTER HEATER-WING DRAINS AIR SCOOP HEATER URINAL DRAIN TURE HEATER WATER HEATER CABIN TEMPERATURE MIXING VALVE (53-3223 AND SUBS)

Figure 1-14 (Sheet 2 of 4)

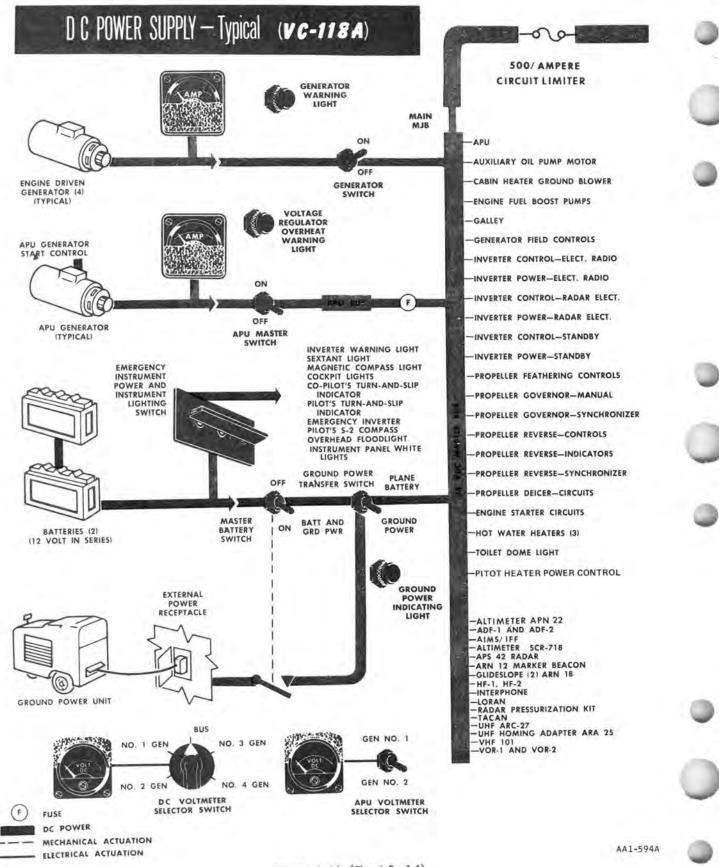


Figure 1-14 (Sheet 3 of 4)

ELECTRONIC SYSTEMS EXTERIOR LIGHTS A-12 AUTOPILOT (FILAMENT) (INTERLOCK) TAXI LIGHT IMOTOR GENERATOR) (GYRO COMPASS) WING LEADING EDGE LIGHTS STEERING COMPUTER (APPROACH COUPLER) LANDING LIGHTS -NAVIGATION POSITION LIGHTS FUSELAGE LIGHTS -ANTI-COLLISION LIGHT (ROTATING BEACON) -WHEEL WELL LIGHTS LOWER BAGGAGE COMPARTMENTS ALDIS LAMP INTERIOR LIGHTS ELECTRICAL SYSTEMS ENGINES COCKPIT OVERHEAD FLOODLIGHTS COWL FLAP MOTOR CONTROLS INSTRUMENT LIGHTING SWITCH PANEL COWL FLAP MOTORS UPPER INSTRUMENT AND FORWARD OVERHEAD PANEL LIGHTS OIL COOLER DOORS MAP LIGHTS OIL DILUTION SOLENOID VALVE DOME LIGHT OIL TEMPERATURE CONTROL ACTUATORS MJB LIGHTS PRIMER STARTER RELAY AND INDUCTION RADIO OPERATOR'S TABLE LIGHTS AND INSTRUMENT LIGHTS VIBRATOR FLIGHT COMPARTMENT DOME LIGHT CYLINDER TEMPERATURE INDICATOR NAVIGATOR'S TABLE AND INSTRUMENT LIGHTS PASSENGER COMPARTMENT READING LAMP OUTLETS, DOME ENGINE SUPERCHARGER CONTROL MOTORS LIGHT AND INSTRUMENT PANEL LIGHTS CARBURETOR DEICER PUMP CONFERENCE ROOM CARBURETOR AIR TEMPERATURE STATEROOM ENGINE OIL TEMPERATURE PASSENGER ENTRANCE WATER INJECTION PUMP AUXILIARY OIL TRANSFER ADI PUMPS INSTRUMENTS -CAPT 5-2 COMPASS AMPLIFIER ALARM AND WARNING SYSTEMS 1ST. OFFICER 5-2 COMPASS AMPLIFIER ANTISKID WARNING LIGHT CAPT TURN-AND-SLIP INDICATOR 1ST. OFFICER TURN-AND-SLIP INDICATOR -SEAT BELT CAPT. AND MJB 24 VOLT UTILITY OUTLET NO SMOKING-RETURN TO AIRCRAFT ANNUNCIATOR SYSTEM 1ST. OFFICER 24 VOLT UTILITY OUTLET CAPT. AND ENGINE INSTRUMENT RED LIGHT NO AC POWER AND VOLTAGE REGULATOR TEMPERATURE WARNING 1ST. OFFICER AND ENGINE INSTRUMENT RED LIGHT LANDING GEAR WARNING HORN, WARNING LIGHT -FIRE DETECTORS HEATER WARNING LIGHTS FIRE EXTINGUISHERS LOW SUPERCHARGER SHAFT OIL PRESSURE WHEELS -DOOR OPEN LIGHT GENERATOR FAILURE -ANTI-SKID CONTROL VALVE ADI WARNING LIGHT FUEL AND OIL PRESSURE WARNING POWER -60 CYCLE ENTERTAINMENT INVERTER INDICATORS QUANTITY INDICATORS (WATER, ALCOHOL, HYDRAULICS) WING FLAPS POSITION INDICATOR LANDING GEAR POSITION AND WARN TEMPERATURE OUTSIDE AND CABIN AIR CABIN AIR SYSTEMS MISCELLANEOUS LANDING GEAR GROUND CONTROL RELAY -LADDER MOTOR HEATING, VENTILATING, AND DEICING ENTERTAINMENT RADIOS (2) HEATER FUEL PUMPS REFRIGERATOR (GALLEY) PUBLIC ADDRESS AIRFOIL HEATERS (2) WATER PUMP TAIL HEATER CABIN HEATER AND GROUND BLOWER CONTROL WATER DRAIN AIRFOIL HEATER AND GROUND BLOWER CONTROL RAZOR INVERTER CABIN PRESSURE CONTROL SPLITTER HEATER, WING DRAINS WINDSHIELD DEICER AIR SCOOP HEATER URINAL DRAIN TUBE HEATER CABIN TEMPERATURE MIXING VALVE TEST -EMERGENCY HYDRAULIC PUMP

Figure 1-14 (Sheet 4 of 4)

A C POWER SUPPLY — Typical (C-118A)

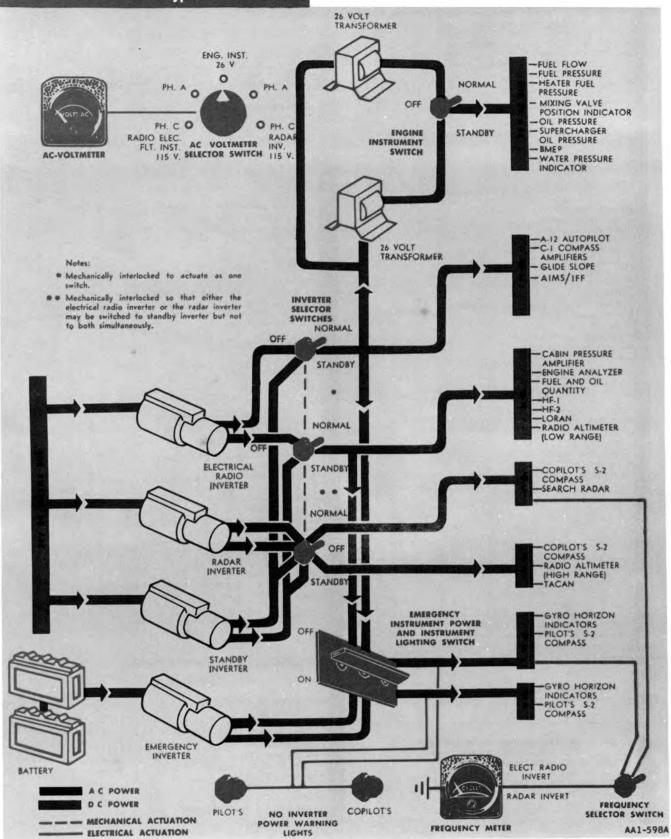


Figure 1-15 (Sheet 1 of 2)

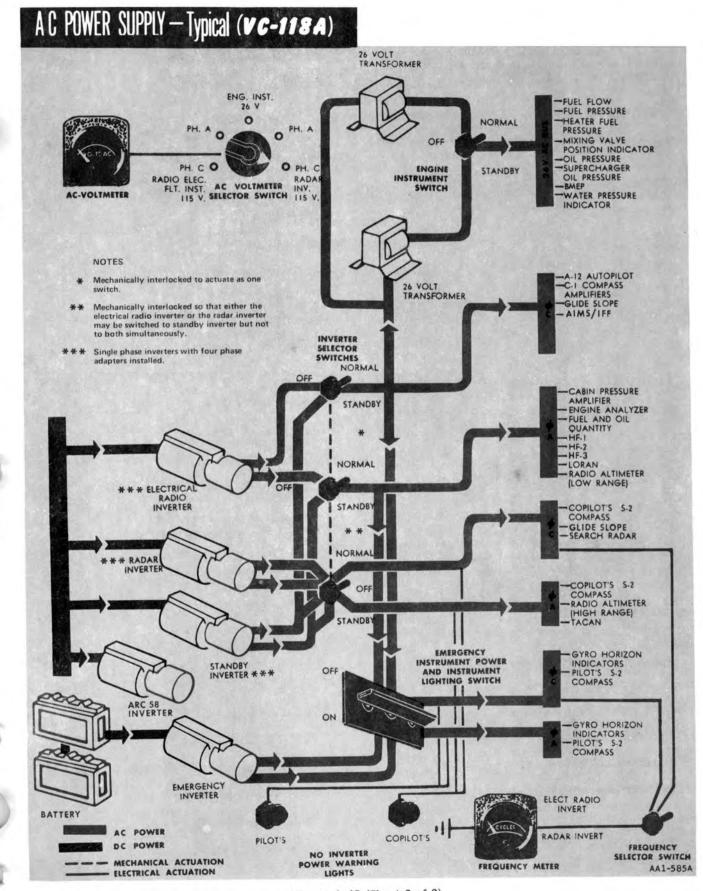


Figure 1-15 (Sheet 2 of 2)

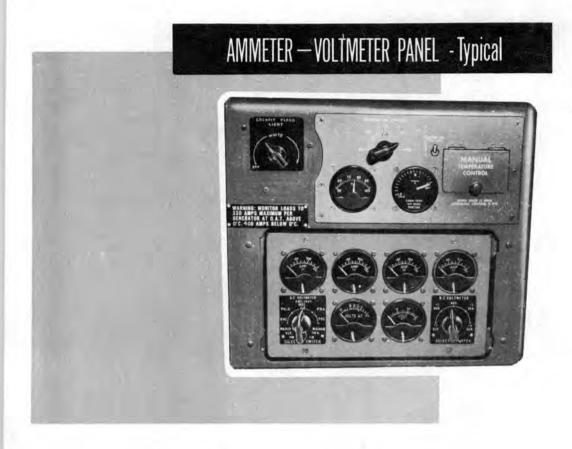


Figure 1-16

of A or C phase power failure of the ELECT-RADIO inverter. If the lights illuminate, the other inverter or the emergency inverter should be energized to supply ac power for the gyro flight instruments. ,

AC VOLTMETER AND SELECTOR SWITCH.

A rotary-type selector switch, installed adjacent to the voltmeter, has placarded positions 115 ELEC & RADIO INVERT., FLT. INST. PHASE C, ENG. INST 26, FLT. INST. PHASE A, and 115 RADAR INVERTER. On remaining aircraft, a rotary-type selector switch, installed adjacent to the voltmeter, has placarded positions RADIO ELECT. FLT. INST. 115V, PH.C, PH.A, ENG. INST. 26V, PH.A, PH.C, and RADAR INV. 115V. The selector switch may be used to connect the voltmeter to any one of the positions. Normally, the selector switch should remain in the ENG. INST. 26V position.

EMERGENCY INSTRUMENT POWER AND INSTRUMENT LIGHTING SWITCH.

A gang bar ON-OFF emergency instrument power and instrument lighting switch is mounted on the forward overhead panel (figure 1-11). Moving this

switch to the ON position turns on the emergency inverter to supply ac power to the gyro flight instruments, disconnects the ac power supply from the main inverters to the flight instruments, and connects the aircraft batteries to supply dc power to the emergency inverter and dc operated emergency lighting and instruments. The operational ac powered flight instruments will be the pilot's and co-pilot's attitude indicator and the pilot's and navigator's S-2 compass system, or with the G-2 system, it will be the copilot's compass system. The dc operated emergency instruments are the pilot's and copilot's turn-andslip indicators. The dc operated lights are the magnetic compass light, the periscopic sextant and mount light, instrument white lights, the pilot's overheadfloodlight, and the emergency inverter warning lights. The main inverters will continue to supply ac power to the remaining electrical equipment not affected by the emergency switch, unless the inverter switches are turned off. At any time the emergency inverter is operating, RADIO ELECT. FLT. INST 115V PH.C and RADIO ELECT. FLT. INST 115V PH.A positions on the ac voltmeter selector switch will indicate emergency inverter output and the RADIO ELECT position of the ac FREQUENCY SELECTOR switch will indicate the emergency inverter cycles on the ac frequency meter.

ENGINE INSTRUMENT TRANSFORMERI. SWITCH.

The engine instrument transformer switch mounted on the forward overhead panel (figure 1-11) connects either the NORMAL or ALTERNATE (STANDBY) 26 volt transformer to provide ac power for the engine instruments. The center position is the OFF position.

EXTERNAL POWER SUPPLY RECEPTACLE.

One three-pronged, polarized receptacle is provided on the undersurface of the fuselage to permit connecting external power for starting engines or for operating other aircraft equipment (figure 1-2). A polarized relay will prevent the ground power relay from closing if polarity of the ground power unit is reversed. If ground power supply voltage drops to 18 volts or less, the aircraft batteries will automatically be connected to the master bus.

EXTERNAL POWER SUPPLY LIGHT.

A red external power supply light is mounted on the forward overhead panel (figure 1-11), and illuminates when external power supply is plugged in and operating, the master battery switch is turned on, and the battery selector switch is placed in the GROUND POWER position.

NOTE

If the red light is out, check the ground power circuit breaker, located overhead and aft of the cockpit entrance. This circuit breaker also controls operation of the cabin heater ground blower on external power and controls the auxiliary ground power relay, which provides additional 175-ampere loading.

CIRCUIT PROTECTORS.

The circuit protectors are located on the main circuit protector panel and the radio rack panel (figure 1-17). The circuit protectors for the fuel booster pumps are located on the aft overhead panel (figure 1-10). Additional circuit protectors are located throughout the aircraft.

HYDRAULIC POWER SUPPLY SYSTEM.

The hydraulic power supply system operates the retractable tricycle landing gear, the wheel brakes,

the nosewheel steering system, the windshield wipers, the wing flaps, the forward cargo door, and the aft section of the main cargo door (figure 1-18). Two main pressure accumulators, each equipped with a pressure gage, are installed in the hydraulic accessories compartment. A nosewheel steering pressure accumulator and pressure gage are installed in the nosewheel well. An engine-driven hydraulic pump capable of maintaining system pressure within limits is installed on each inboard engine to deliver hydraulic fluid under pressure to the system during normal operation. An electrically driven auxiliary hydraulic pump provides an emergency source of pressure. The auxiliary pump can be used if the engine-driven pumps fail or if pressure is desired while the aircraft is on the ground and the engines are inoperative.

NOTE

On some aircraft the cargo doors have been sealed shut, the hydraulic lines to the cargo doors are capped off, and the cargo door switches and actuating cylinders have been removed.

HYDRAULIC SYSTEM BYPASS VALVE LEVER.

A hydraulic system bypass valve lever is mounted on the control pedestal (figure 1-6) and has placarded positions ON and OFF. In the OFF (bypass handle up, system inoperative) position, the bypass valve is opened, allowing the fluid to bypass the pressure regulator and return to the reservoir. In the ON position, (bypass handle down) fluid is directed to all units in the hydraulic system except the cargo down.

EMERGENCY HYDRAULIC PUMP SWITCH.

A spring-loaded ON-OFF emergency pump switch is mounted on the hydraulic and oxygen instrument panel to the right of the copilot's seat (figure 1-20).

EMERGENCY HYDRAULIC PUMP SELECTOR VALVE LEVER.

An emergency hydraulic pump selector valve lever, installed on the floor to the left of the copilot's seat (figure 1-19), controls the hydraulic fluid delivery from the emergency hydraulic pump only. Hydraulic pressure is delivered to the brakes in all positions of the selector valve. However, in the BRAKE SYSTEM position, pressure from the pump will be

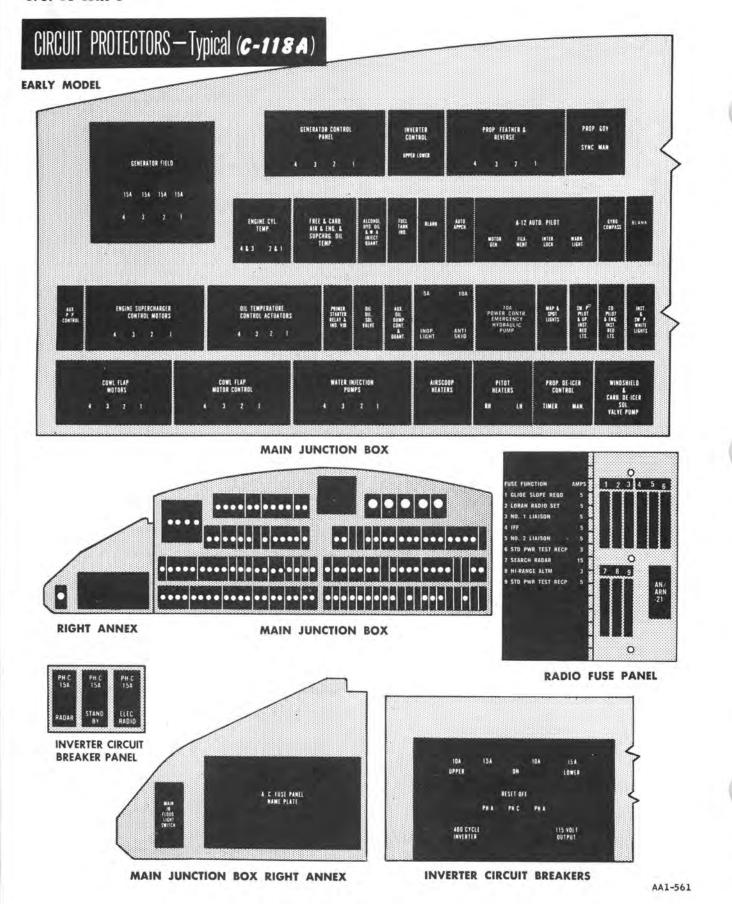
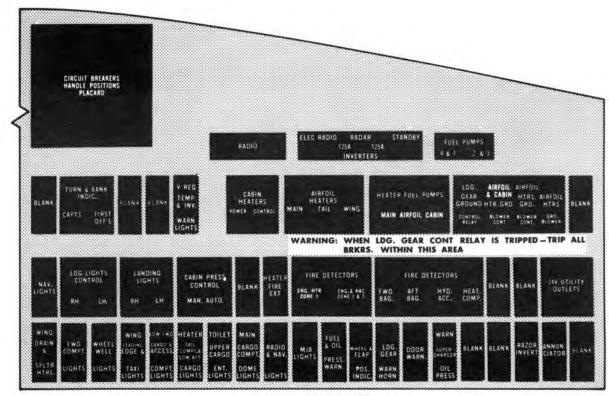
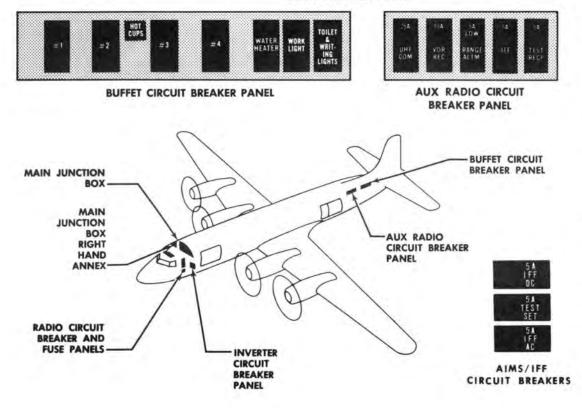


Figure 1-17 (Sheet 1 of 9)



MAIN JUNCTION BOX



RADIO CIRCUIT BREAKER PANEL AA1-562

BLANK BLANK BLANK

VHE NAV

GLIDE SLOPE MARKER BEACON

RADIO ALTIMETER

RED ADF

BLANK

FLT INTERPHONE

HF COMM REC NO 1 HF COMM REC NO 2

RANGE REC

AN/ARN 21

Figure 1-17 (Sheet 2 of 9)

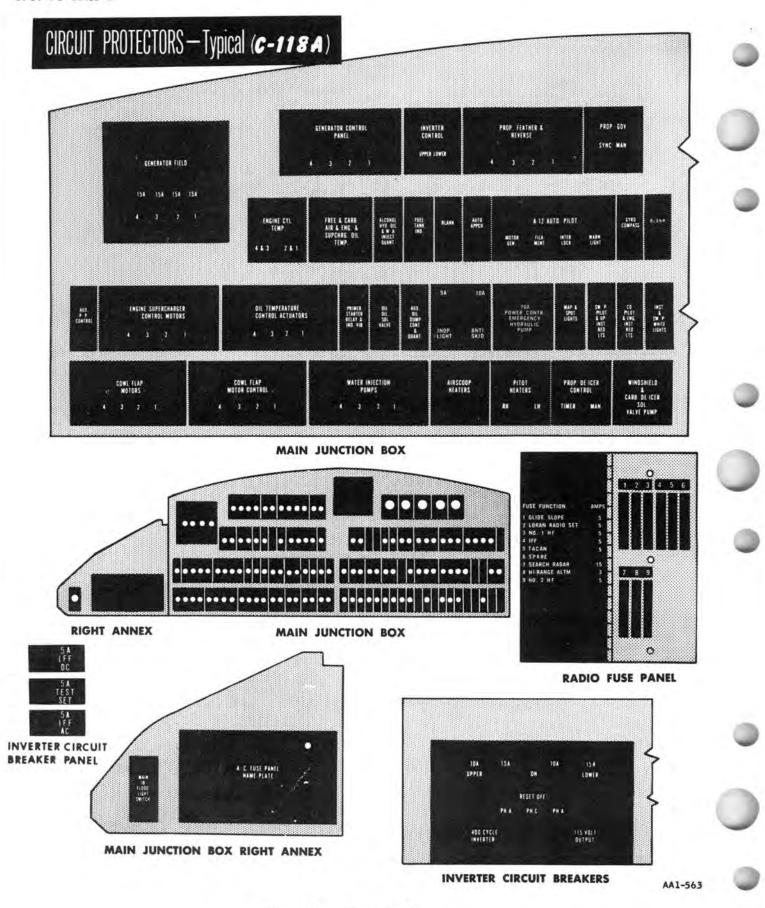
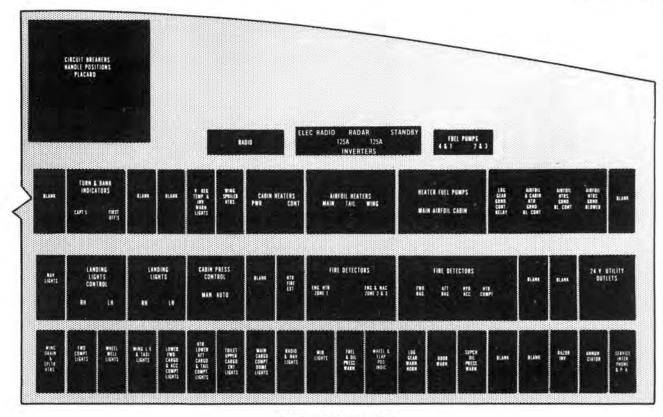
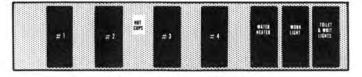


Figure 1-17 (Sheet 3 of 9)



MAIN JUNCTION BOX



BUFFET CIRCUIT BREAKERS

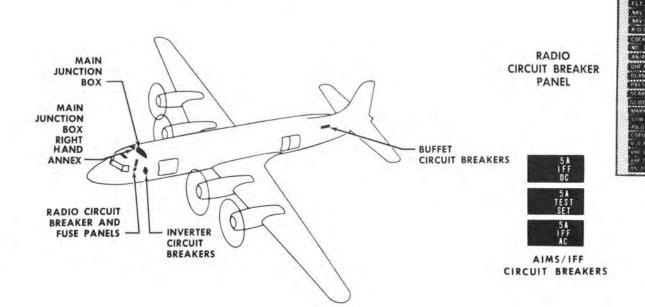


Figure 1-17 (Sheet 4 of 9)

AA1-564

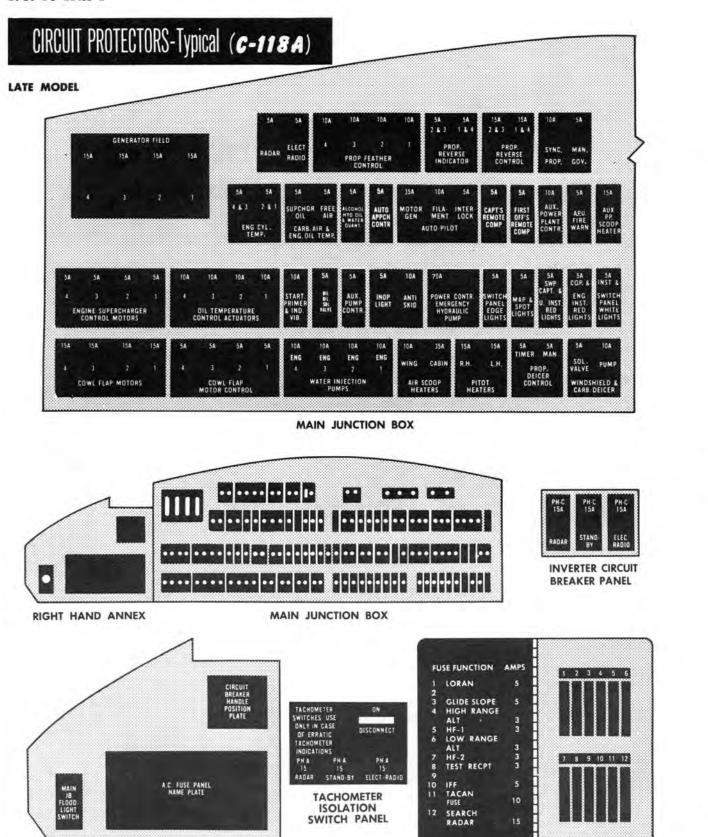
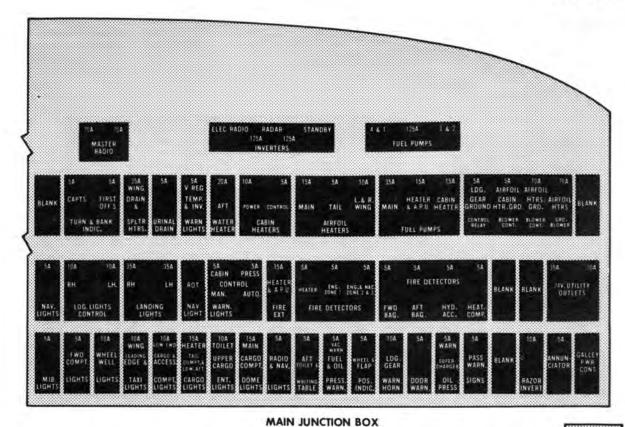


Figure 1-17 (Sheet 5 of 9)

RADIO FUSE PANEL

AA1-565

MAIN JUNCTION BOX RIGHT HAND ANNEX



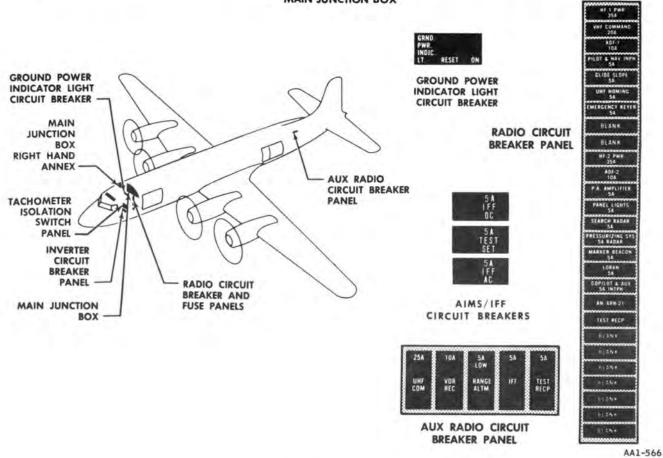
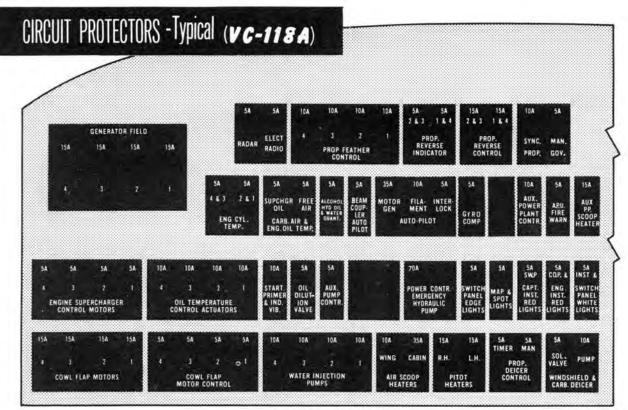
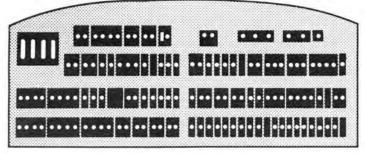


Figure 1-17 (Sheet 6 of 9)



MAIN JUNCTION BOX



MAIN JUNCTION BOX

1	ARC-58 dA	10A
2	ARC-58 //B	10A
3		10A
4	ARC-58 DC	5A
	SEL CALL DC	5A

ARC-58 CIRCUIT BREAKERS

1	AN/ARN-21	5A
2	TEST RECPT	5A
3	IFS	5A
4	TACAN	5A

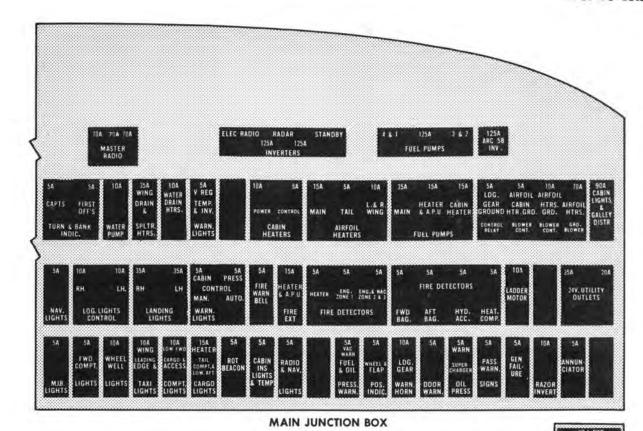
IFS-TACAN CIRCUIT BREAKERS

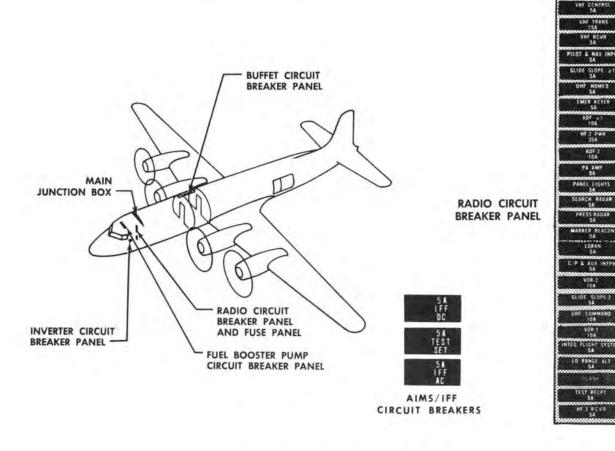


RADIO FUSE PANEL

AA1-567

Figure 1-17 (Sheet 7 of 9)





AA1-568

ADF-2 10A

Figure 1-17 (Sheet 8 of 9)

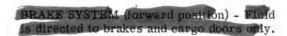
CIRCUIT PROTECTORS-Typical (C-118A)

						NGEMENT			
	ENG #1 FUEL FLOW, FUEL PRESS., SUPERCHG'R OIL PRESS.			0	15.	FIRST OFFICER'S FLIGHT INSTR.	A	2A	115
	OIL PRESS, TORQUEMETER, WATER PRESS.	C	2A	26V	16.	FIRST OFFICER'S FLIGHT INSTR.	C	2A	115
2.	ENG #2 FUEL FLOW, FUEL PRESS, OIL PRESS				17.	CAPT'S REMOTE COMPASS	A	3A	115
	TORQUEMETER, WATER PRESS.	C	2A	26V	18.	CAPT'S REMOTE COMPASS	C	3A	115
	ENG #3 FUEL FLOW, FUEL PRESS, OIL PRESS,			38.	19.	AUTO PILOT	C	5A 2A	115
	TORQUEMETER, WATER PRESS.	C	ZA	26 V	20.	CAPT'S FLIGHT INSTR.	A	ZA ZA	115
	ENG #4 FUEL FLOW, FUEL PRESS, SUPERCHG'R OIL PRESS.				21.	CAPT'S FLIGHT INSTR.	6	ZA ZA	115
	OIL PRESS, TORQUEMETER, WATER PRESS.	C	ZA	26V	22.	CABIN PRESS, CONTROL AMPL.	0	5A	115
	FUEL PRESS, HEATERS, MIX, VALVE POSITION INDIC	C	2A	26 V	23.	UTILITY OUTLET	ů,	2A	115
				-0.7	24.	COMPASS REPEATER POWER UNIT		2A	115
				100	25. 26.	UPPER ENG. INSTR. POWER LOWER ENG. INSTR. POWER	- 6	2A	115
	and an array	-			27.	ENGINE ANALYZER RECEPT.	C	3A	115
	AUX. DIL QUAN.	U	2A	115V	28.	FIRST OFFICER'S REMOTE COMPASS	Δ	3A	115
	FUEL QUANT TOTALIZER	Ü	ZA ZA	115V	29.	FIRST OFFICER'S REMOTE COMPASS		3A	115
	ENG 1 DIL QUAN & MAIN & ALT. FUEL QUAN.	i c	ZA ZA	115V	30.	FINAL DEFIGEN S NEMOTE COMPASS		310	114
	ENG 2 OIL QUAN & MAIN & ALT. FUEL QUAN. ENG 3 OIL QUAN & MAIN & ALT. FUEL QUAN.		2A	115V 115V	31.				
		0	ZA ZA		32.				
4.	ENG 4 DIL QUAN & MAIN & ALT. FUEL DUAN.	U	ZA	115V	52.				

A.C. FUSE ARRANGEMENT

Figure 1-17 (Sheet 9 of 9)

delivered only to the brakes and cargo doors; it is recommended that the control lever normally be left in this position. The positions of the selector valve lever are as follows:



NOTE

When operating the hydraulic emergency pump in the BRAKE SYSTEM position, emergency pressure will not indicate on the hydraulic system pressure indicator.

GENERAL SYSTEM (center position) - Fluid is directed to general system, brakes, and cargo doors only.

PRESS ACCUM (aft position) - Fluid is directed to brakes, general system, pressure accumulators, and cargo doors.

HYDRAULIC SYSTEM EMERGENCY SHUTOFF VALVES.

A mechanically actuated shutoff valve, controlled from the cockpit by means of the respective fire selector handle (figure 1-25), is installed at each inboard nacelle firewall to shut off the flow of hydraulic fluid through the firewall.

HYDRAULIC SYSTEM PRESSURE INDICATOR.

A hydraulic system direct reading pressure indicator is mounted on the hydraulic and oxygen instrument panel (figure 1-20).

HYDRAULIC SYSTEM QUANTITY INDICATOR.

A hydraulic system quantity indicator, energized by 28 vdc, is mounted on the upper instrument panel (figure 1-9). With the engines inoperative, the fluid level should indicate FULL at zero pressure. With the engines operating, the fluid level should indicate

at NORMAL FLIGHT. The REFILL position indicates insufficient hydraulic fluid quantity.

FLIGHT CONTROL SYSTEM.

All flight controls are conventionally operated by dual wheel and rudder pedal controls (figure 1-4). Trim tabs are mechanically controlled and both ailerons, both elevators, and the rudder are equipped with spring control tabs (figure 1-21).

RUDDER TRIM TAB HANDWHEEL.

The rudder trim tab is controlled by a handwheel mounted at the vee of the windshield (figure 1-4). The degree of trim is shown on an indicator below the wheel.

AILERON TRIM TAB HANDWHEEL.

The aileron trim tabs are controlled by a handwheel mounted on the control pedestal (figure 1-6). The degree of trim is indicated above the handwheel.

ELEVATOR TRIM TAB HANDWHEELS.

The elevator trim tabs are controlled by two handwheels mounted on the control pedestal (figure 1-6). The degree of trim is shown on an indicator on the inboard side of each handwheel.

NOTE

Pitch limits on the elevator trim tab hand-wheels are calibrated from 0 to 9 degrees noseup and from 0 to 6 degrees nosedown.

Less than 4-degree noseup tab will allow 22 degrees of elevator travel; however, full elevator travel of 25 degrees is available with more than 4-degree noseup tab. During preflight check of the elevator trim control, a slight drag or binding on the control at approximately the 4-degree noseup position is no cause for alarm as this is due to the readjustment of the elevator travel.

SPRING CONTROL TABS.

Both allerons, both elevators, and the runder are equipped with spring control flying tab.. The tabs are spring loaded and designed to utilize acrody

namic loads on the spring control tabs to provide acrodynamic boost to the main control surfaces, thus reducing what would otherwise be high stick forces.

The spring control tab is actually an intermediate arrangement (figure 1-21) giving stick forces somewhere between those obtained by controlling the main surfaces directly (a direct control system) and those forces obtained by controlling a tab directly (a pure flying tab or servo tab system). Spring tabs have been found necessary because pilot forces arising from the use of direct control were too high, while those obtained by using a servo tab were much too low. Pilot forces that are too low deprive the pilot of "feel," since friction in the control system conceals the small forces.

The spring on the control tab is preloaded to overtome system friction and to conter the tab. Except for the rudder system, the preload is set to barely overcome the system friction. The rudder preload is much higher in order to make the control forces heavier. This is accomplished by preventing the tab from helping the main surface until approximately 65 pounds of pilot force are applied.

Note that the spring control systems for both rudder and elevator have different operational characteristics on the ground (no airload). Since the spring control tabs for the rudder and elevator are preloaded, movement of the stick under these conditions moves the main surface while the tab remains fixed at neutral position, because of the springs, until the main surface reaches its stops. At this point, continued movement of the stick will deflect the tab, and stick force will be felt as a result of the action of the tab springs.

The aileron spring tabs are not preloaded; therefore, any ground movement of the aileron will deflect the aileron spring control tabs. This movement will be shown on the aileron tab motion indicator, located just forward of the aileron trim indicator. In flight, all spring control tabs will be deflected with any movement of their respective control surfaces.

CONTROL-SURFACE LOCK LEVER.

While the aircraft is on the ground, the control surfaces can be locked in the neutral positions, as a protection against damage from high wind velocities, by a mechanical control-surface lock system. The system is engaged with the control surfaces by a lever mounted on the floor to the right of the pilot's seat (figure 1-23). To engage the control-surface lock lever, hold the controls centered and pull the