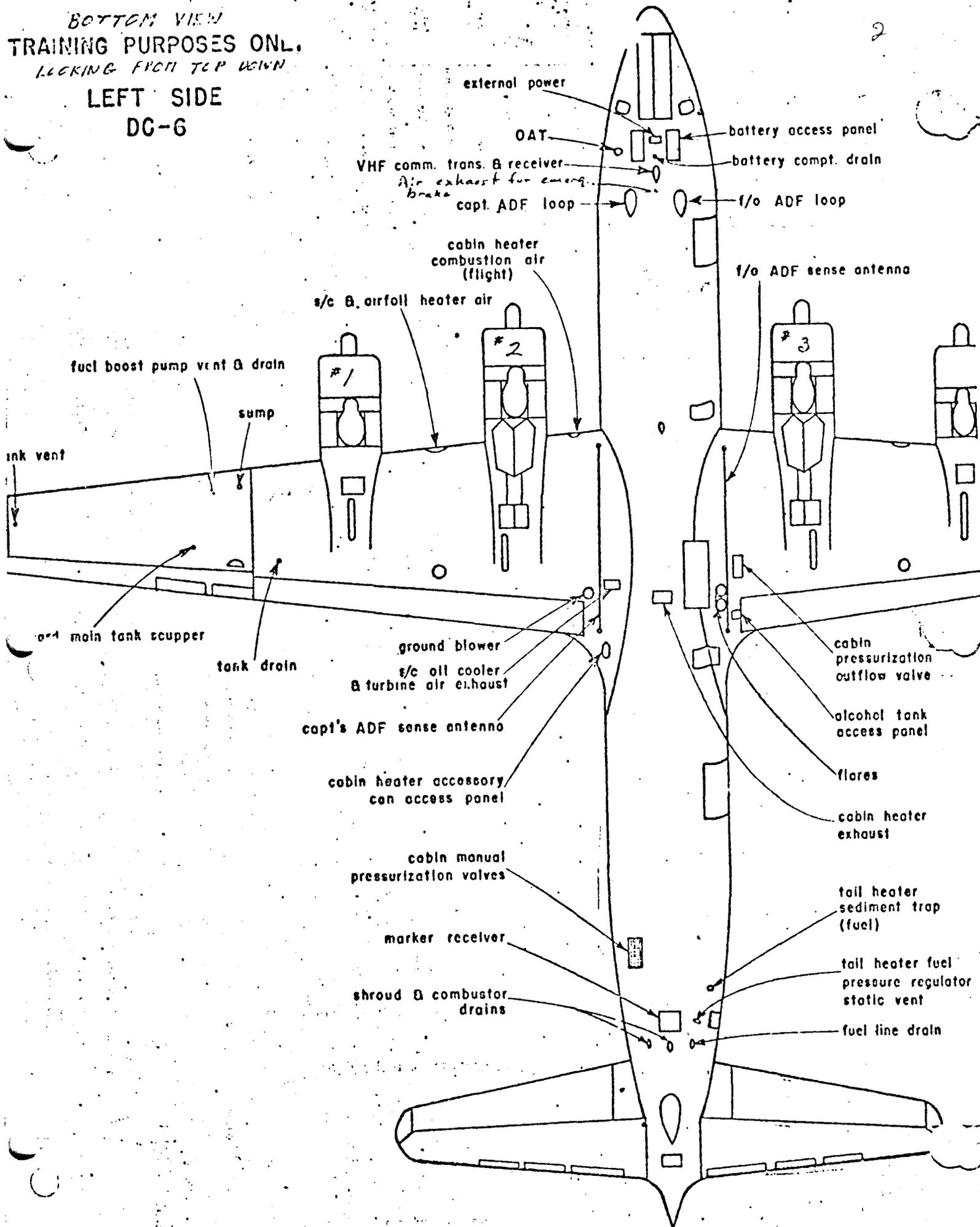




BOTTOM VIEW  
TRAINING PURPOSES ONLY,  
LOCKING FROM TOP DOWN

LEFT SIDE  
DC-6



external power

OAT

VHF comm. trans. & receiver

Air exhaust for emergency  
brake

capt. ADF loop

battery access panel

battery compt. drain

f/o ADF loop

cabin heater  
combustion air  
(flight)

f/o ADF sense antenna

s/c & airfoil heater air

fuel boost pump vent & drain

sump

ink vent

main tank scupper

tank drain

ground blower

s/c oil cooler  
& turbine air exhaust

capt's ADF sense antenna

cabin heater accessory  
can access panel

cabin manual  
pressurization valves

marker receiver

shroud & combustor  
drains

cabin  
pressurization  
outflow valve

alcohol tank  
access panel

flores

cabin heater  
exhaust

tail heater  
sediment trap  
(fuel)

tail heater fuel  
pressure regulator  
static vent

fuel line drain

FLIGHT ENGINEER'S PREFLIGHT WALK AROUND INSPECTION

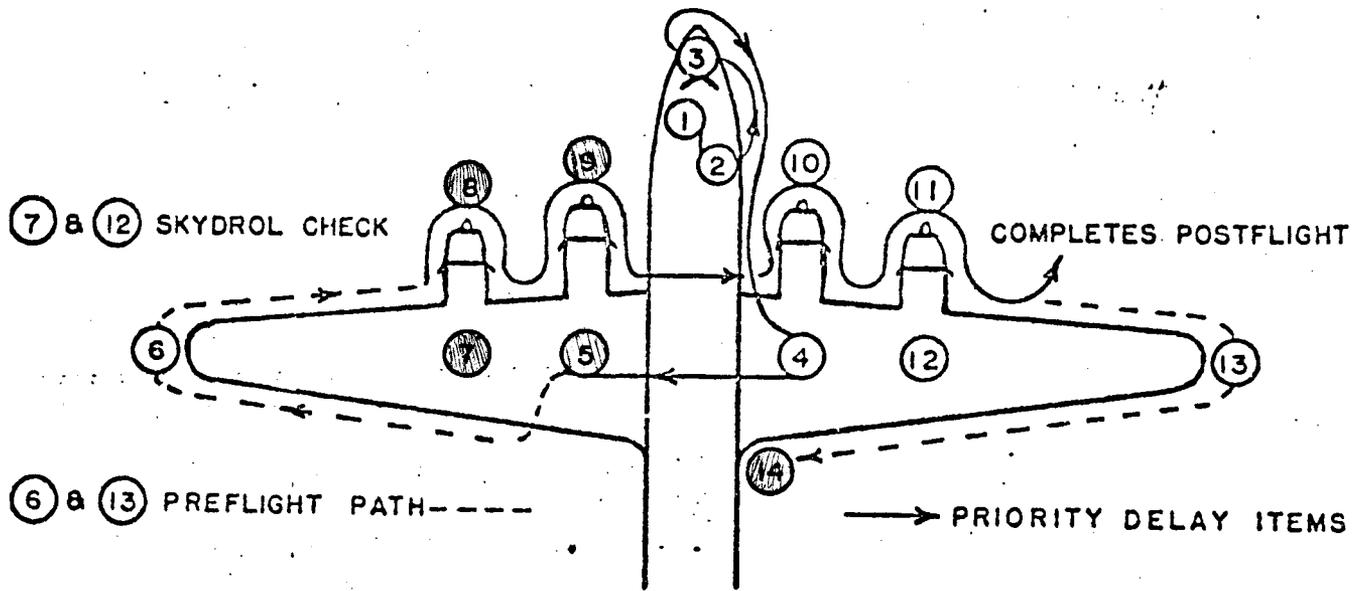


FIGURE 1. SPANWISE, POST & PREFLIGHT "WALK AROUND"

DEFER REMAINDER OF INSPECTION UNTIL AFTER SERVICING IF NECESSARY

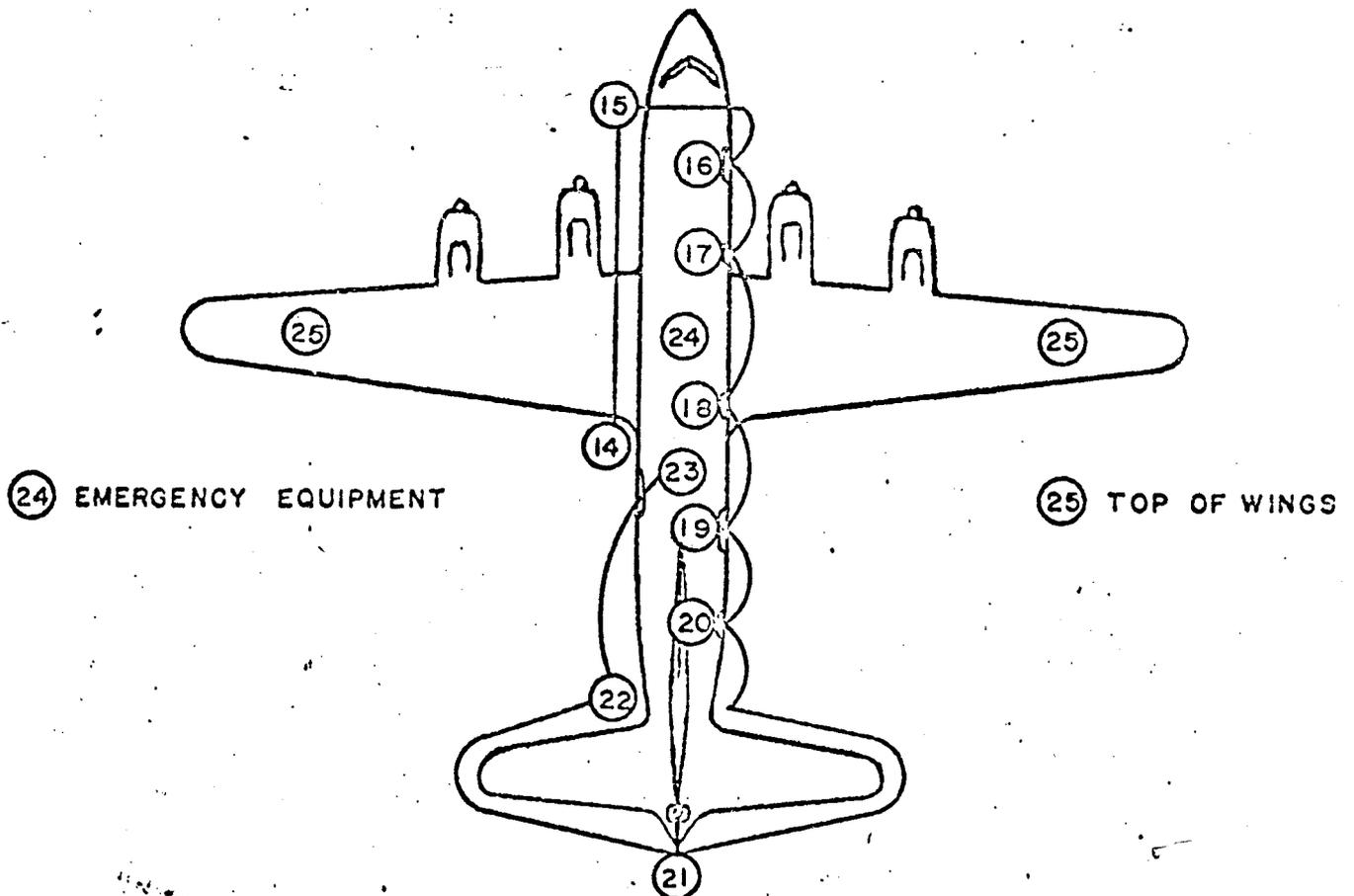


FIGURE 2. LENGTHWISE, PREFLIGHT INSPECTION

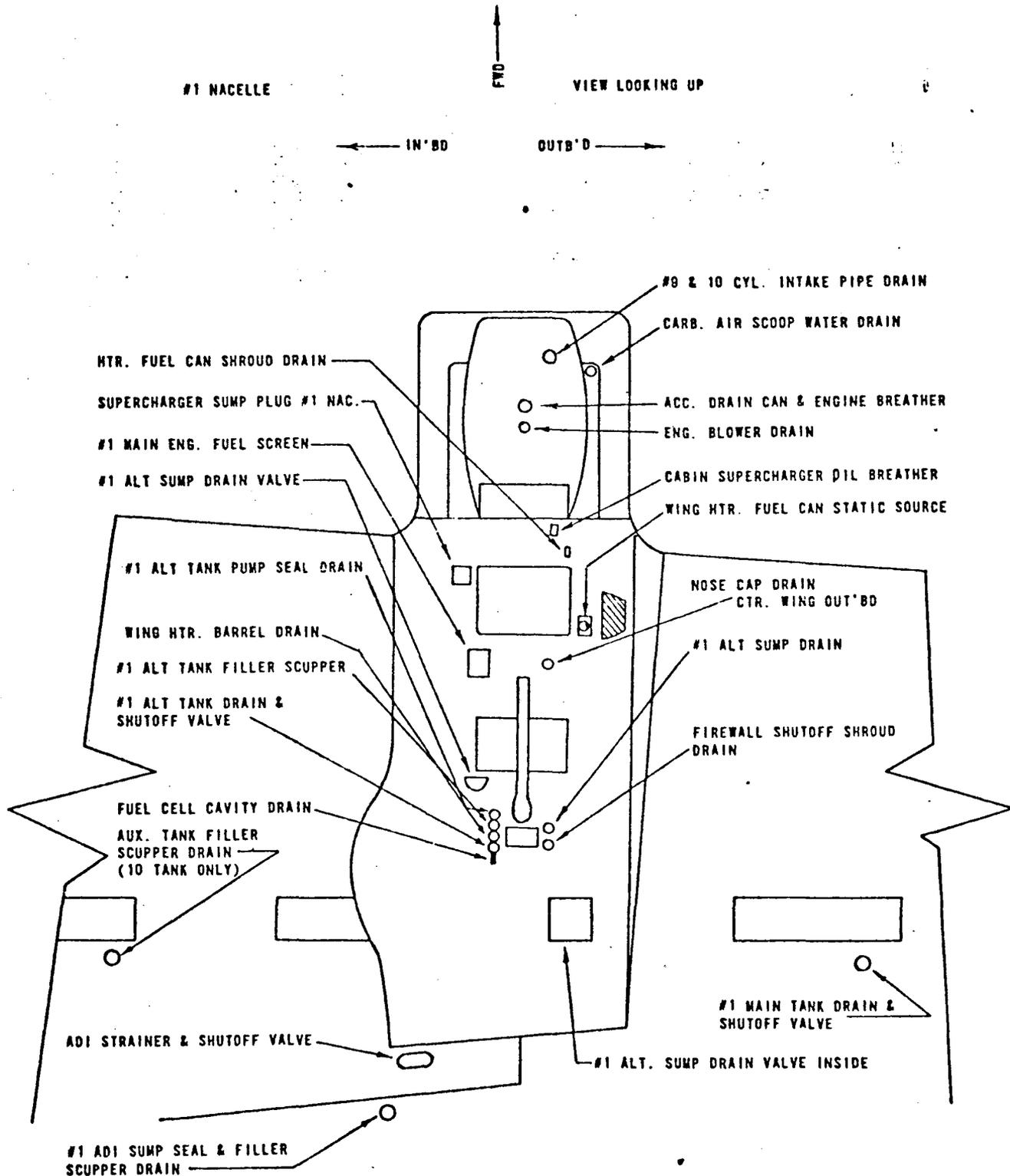




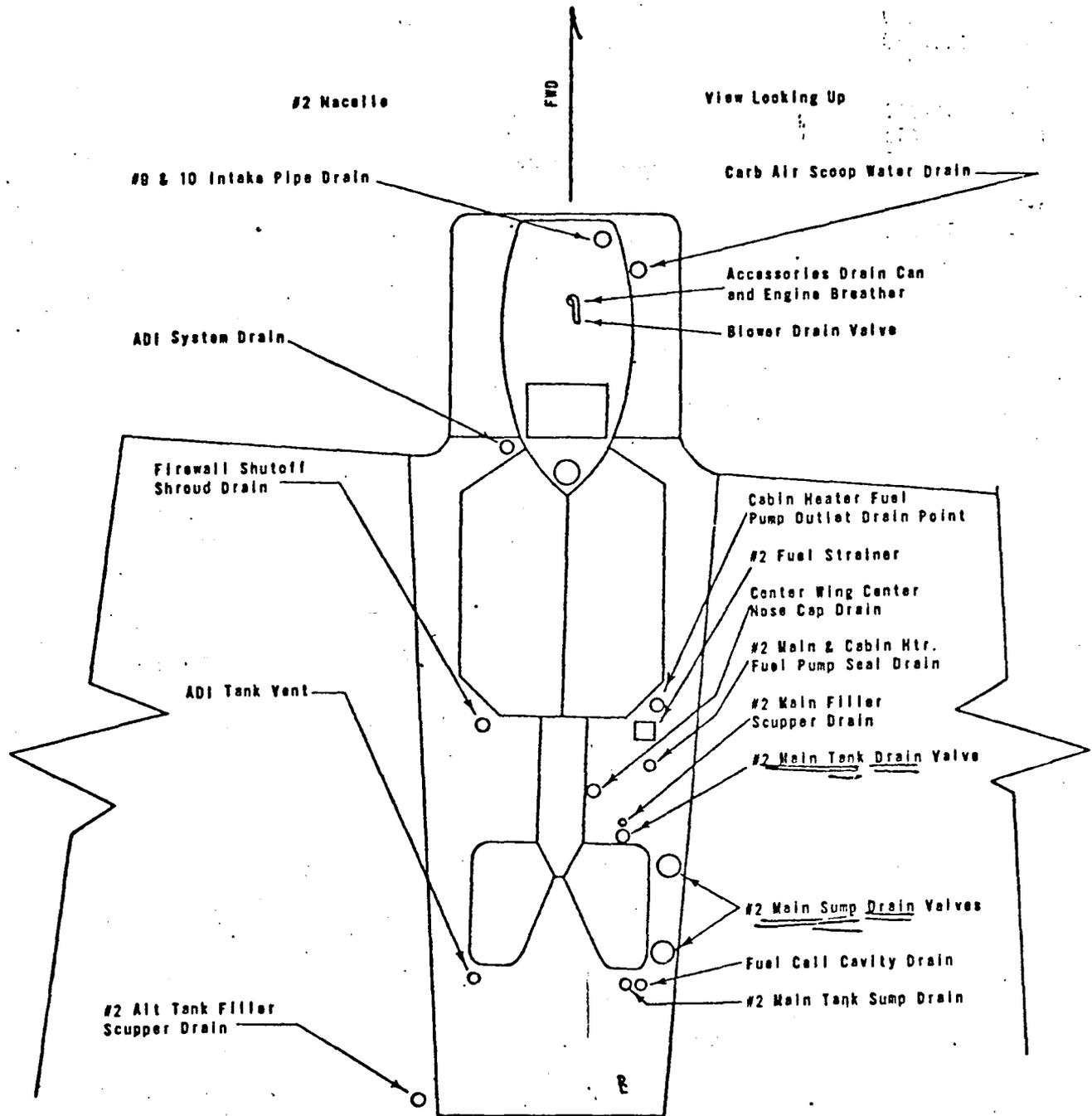
CHAPTER  
SECTION  
SUBJECT

4 - DESCRIPTION & OPERATION  
1 - CHECK LISTS & PROCEDURES  
30 - DRAINS, OPENINGS, & OUTLET DIAGRAMS

VOL. DC-6  
REFERENCE : 4:1:30  
ISSUED : 11/15/65  
SUPERSEDES: Reissued  
PAGE 2



NOTE: #4 NACELLE IS IDENTICAL EXCEPT FOR THE HTR. FUEL CAN SHROUD DRAIN, CABIN SUPERCHARGER OIL BREATHER AND SUPERCHARGER SUMP PLUG. THESE ITEMS ALSO VARY SLIGHTLY FROM A/C TO A/C.



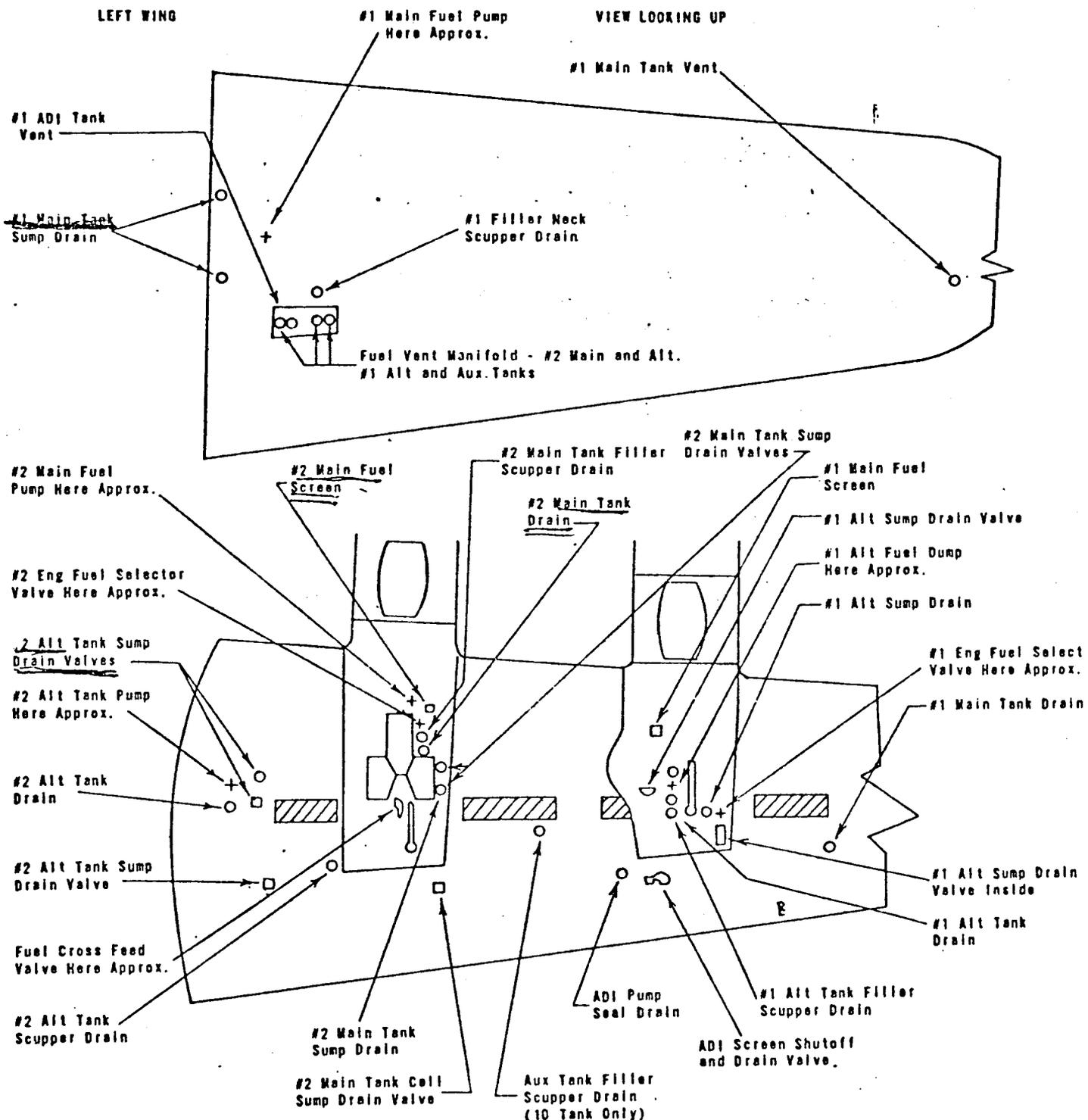
This view is typical of #3 nacelle also, except for the firewall shutoff shroud drain and the ADI system drain--These two do not shift their position and remain symmetrical with the engine.

In'bd

○ ← #2 Main Tank Cell Cavity Drain

○ ← #2 Main Cell Sump Drain

Out'bd

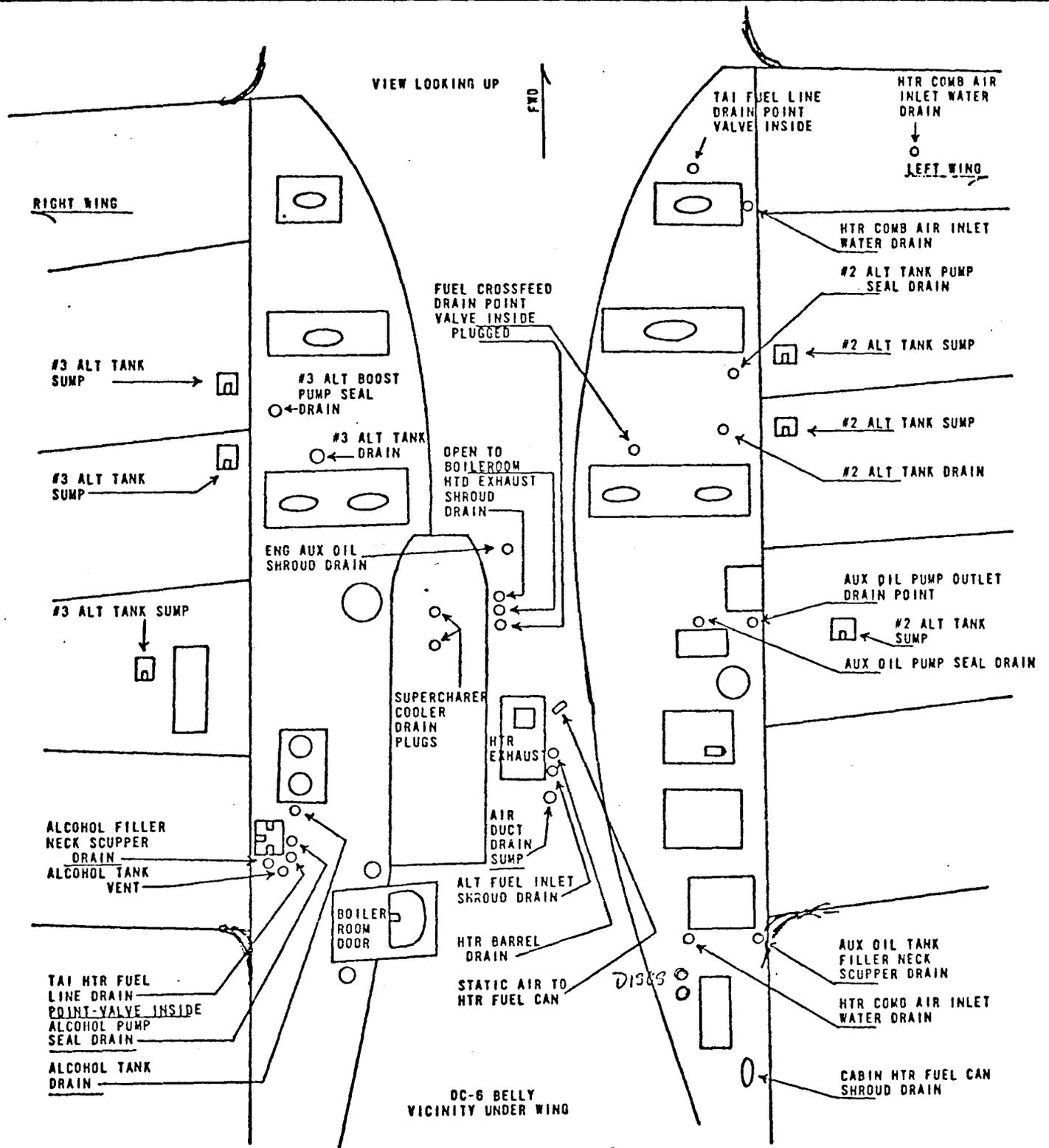




CHAPTER  
SECTION  
SUBJECT

4 - DESCRIPTION & OPERATION  
1 - CHECK LISTS & PROCEDURES  
30 - DRAINS, OPENINGS, & OUTLET DIAGRAMS

VOL. DC-6  
REFERENCE : 4:1:30  
ISSUED : 11/15/65  
SUPERSEDES: Reissued  
PAGE 5



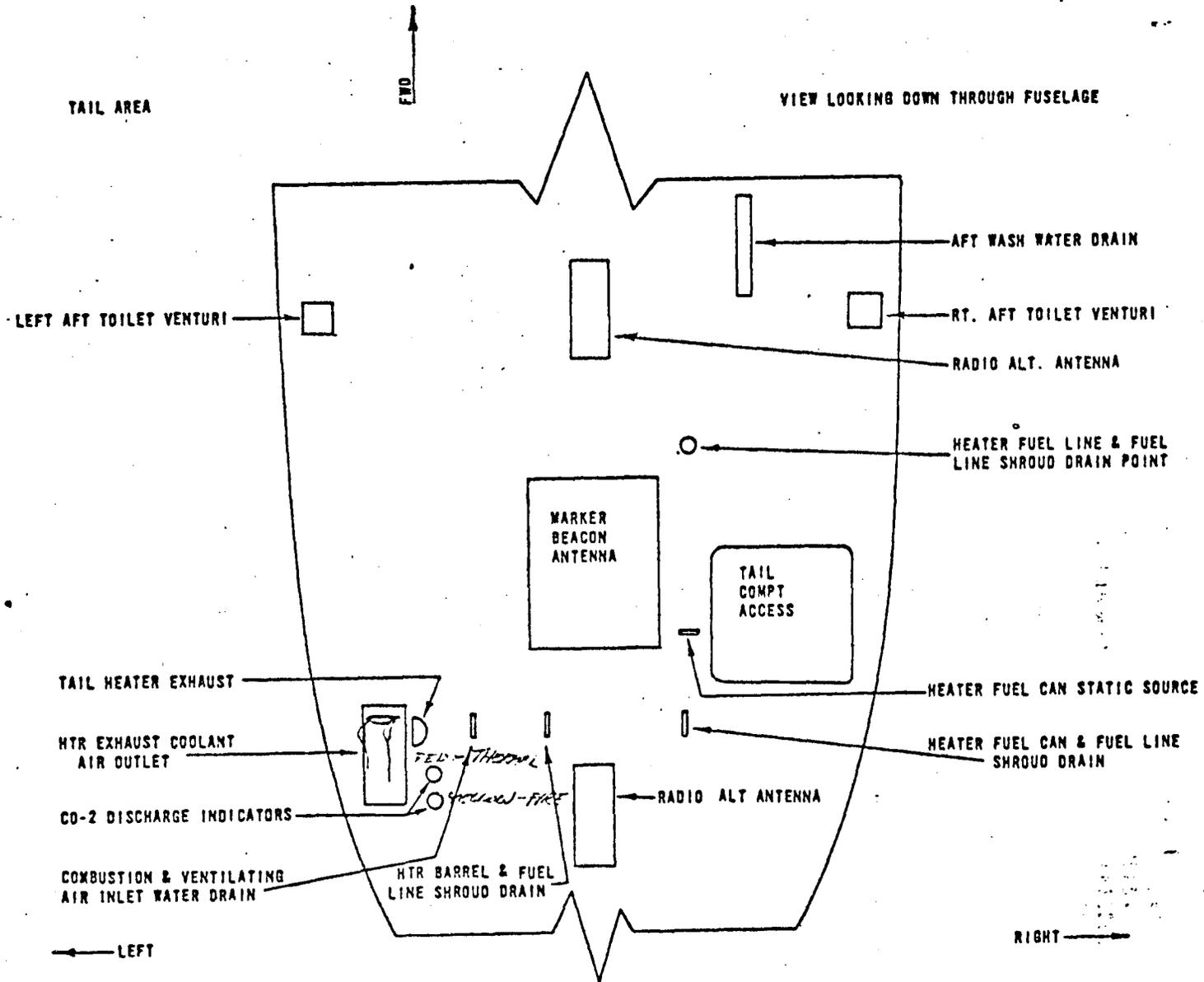


CHAPTER  
SECTION  
SUBJECT

4 - DESCRIPTION & OPERATION  
1 - CHECK LISTS & PROCEDURES  
30 - DRAINS, OPENINGS & OUTLET DIAGRAMS

VOL. :  
REFERENCE : 4-1:30  
ISSUED : 11/15/65  
SUPERSEDES :  
Reissued  
PAGE 1

DC-6



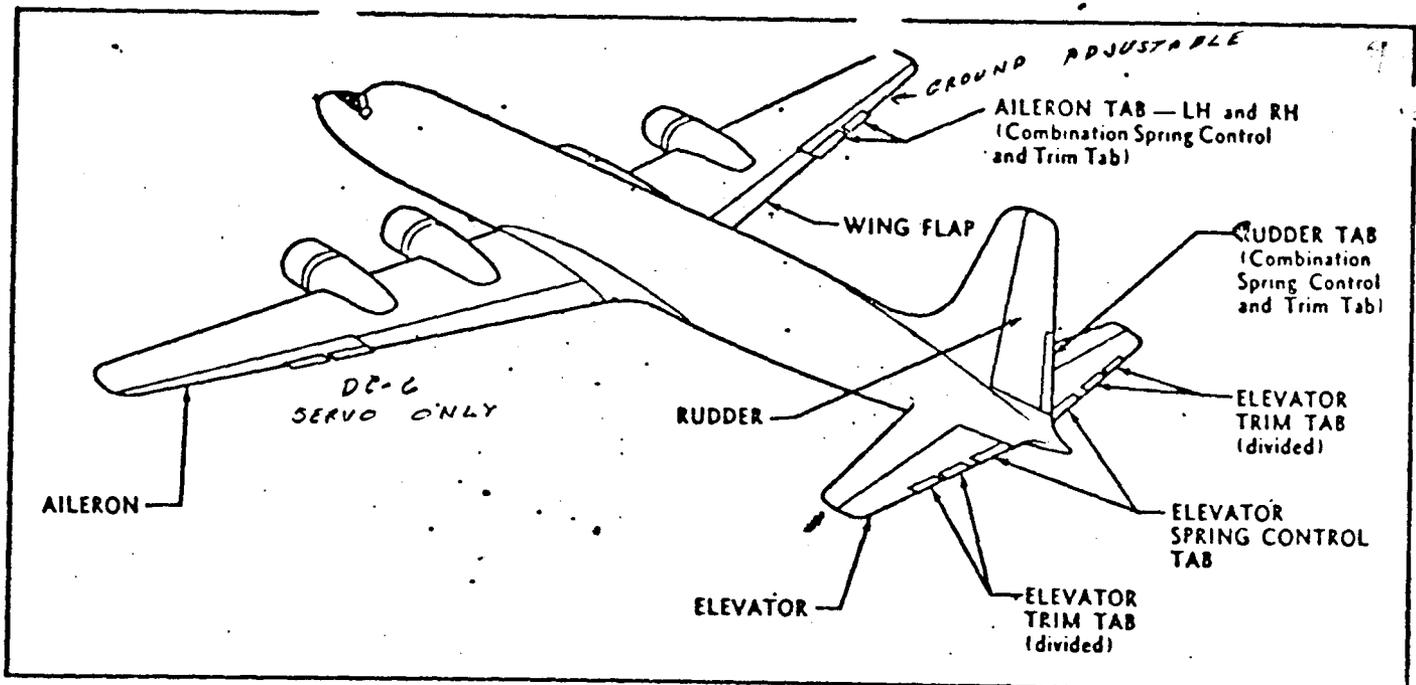


Figure 16-4. Control Surfaces

6.197

Revised 1 May 1958

16-5

DESCRIPTION AND OPERATION MANUAL

Airplane Systems and Equipment  
Chapter 16  
Mechanical Controls

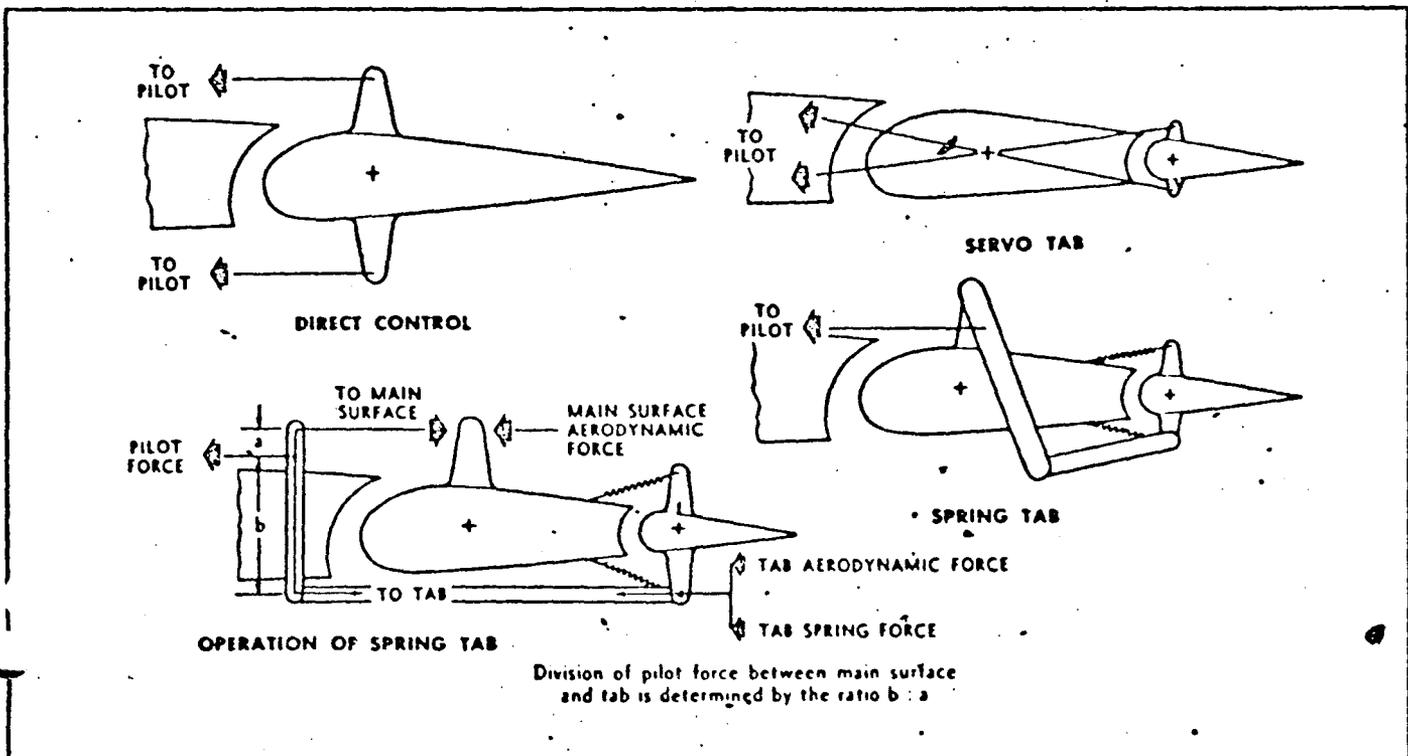
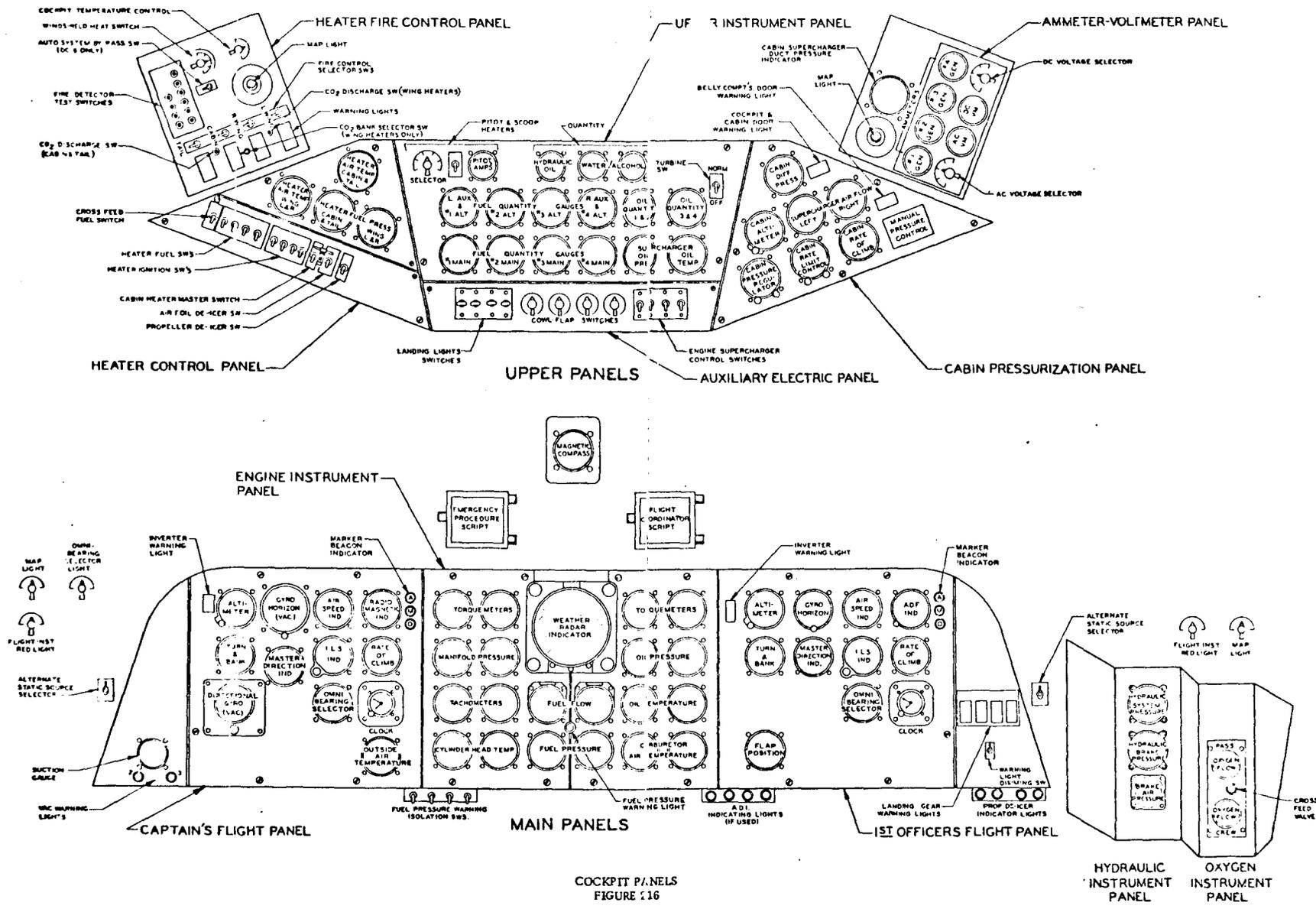


Figure 16-6. Spring Control Tab Diagram

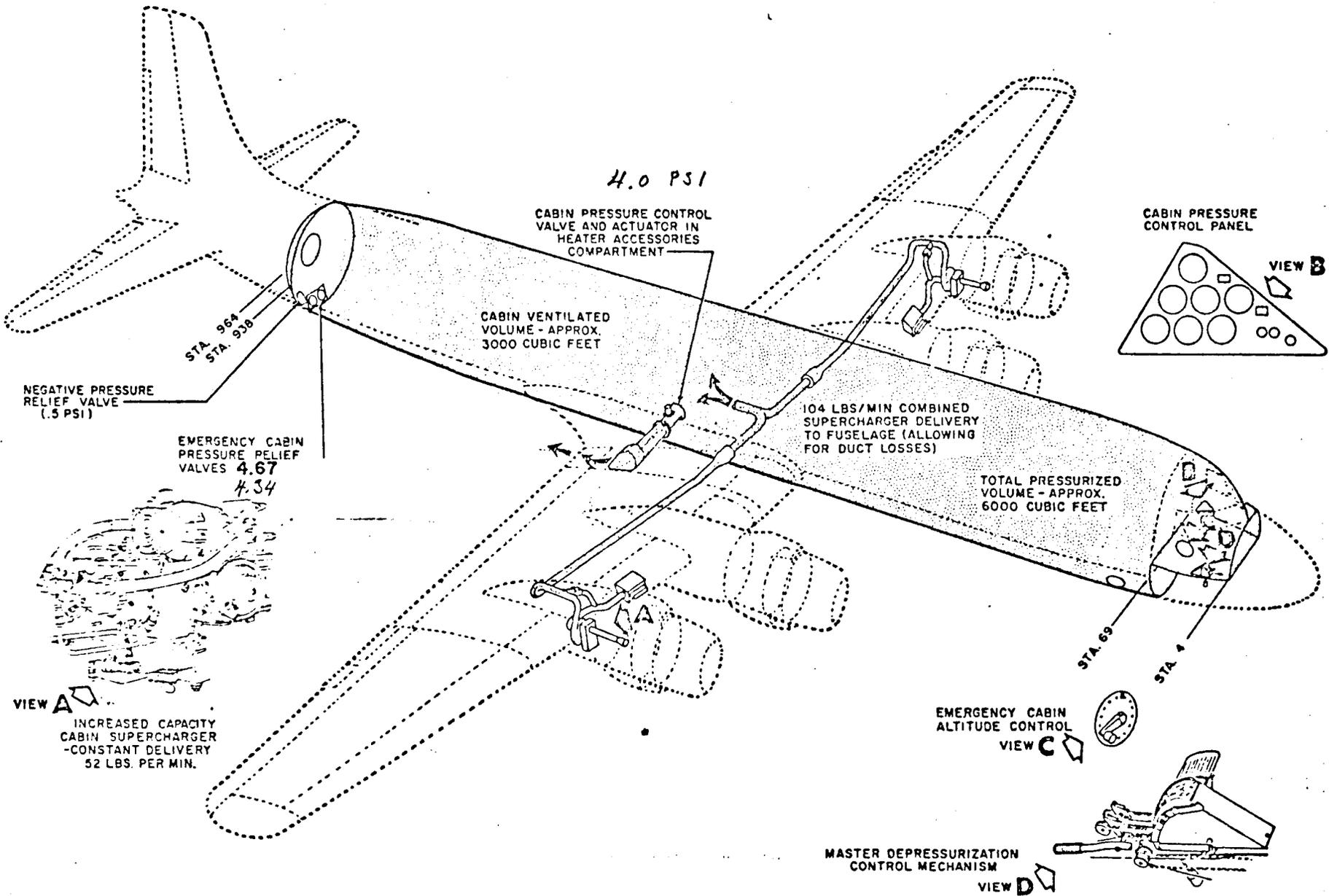
3.918



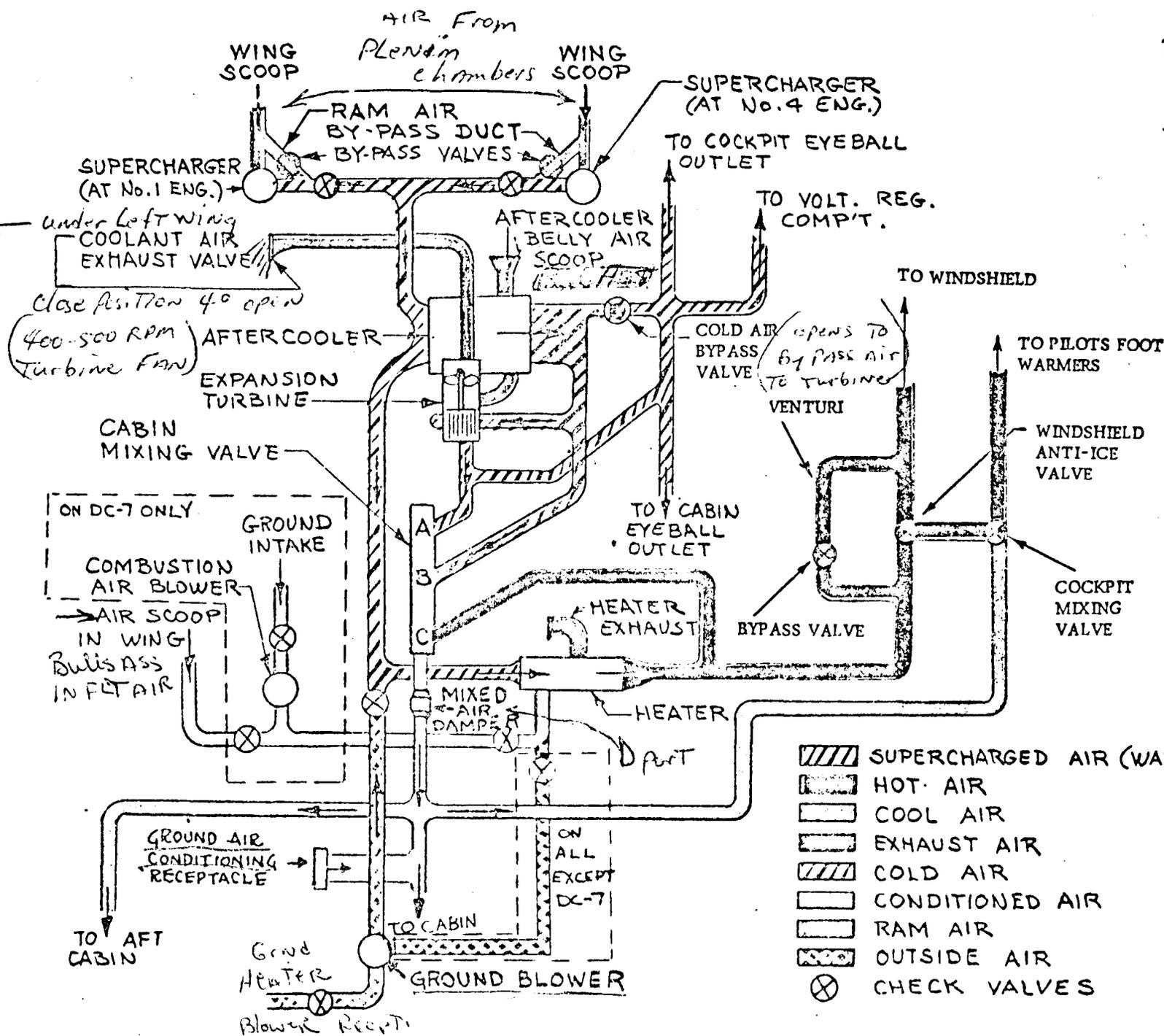
COCKPIT PANELS  
FIGURE 116

FIG. 9-26 Pressurized and Ventilated Areas

9-47



AIR CONDITIONING SYSTEM SCHEMATIC

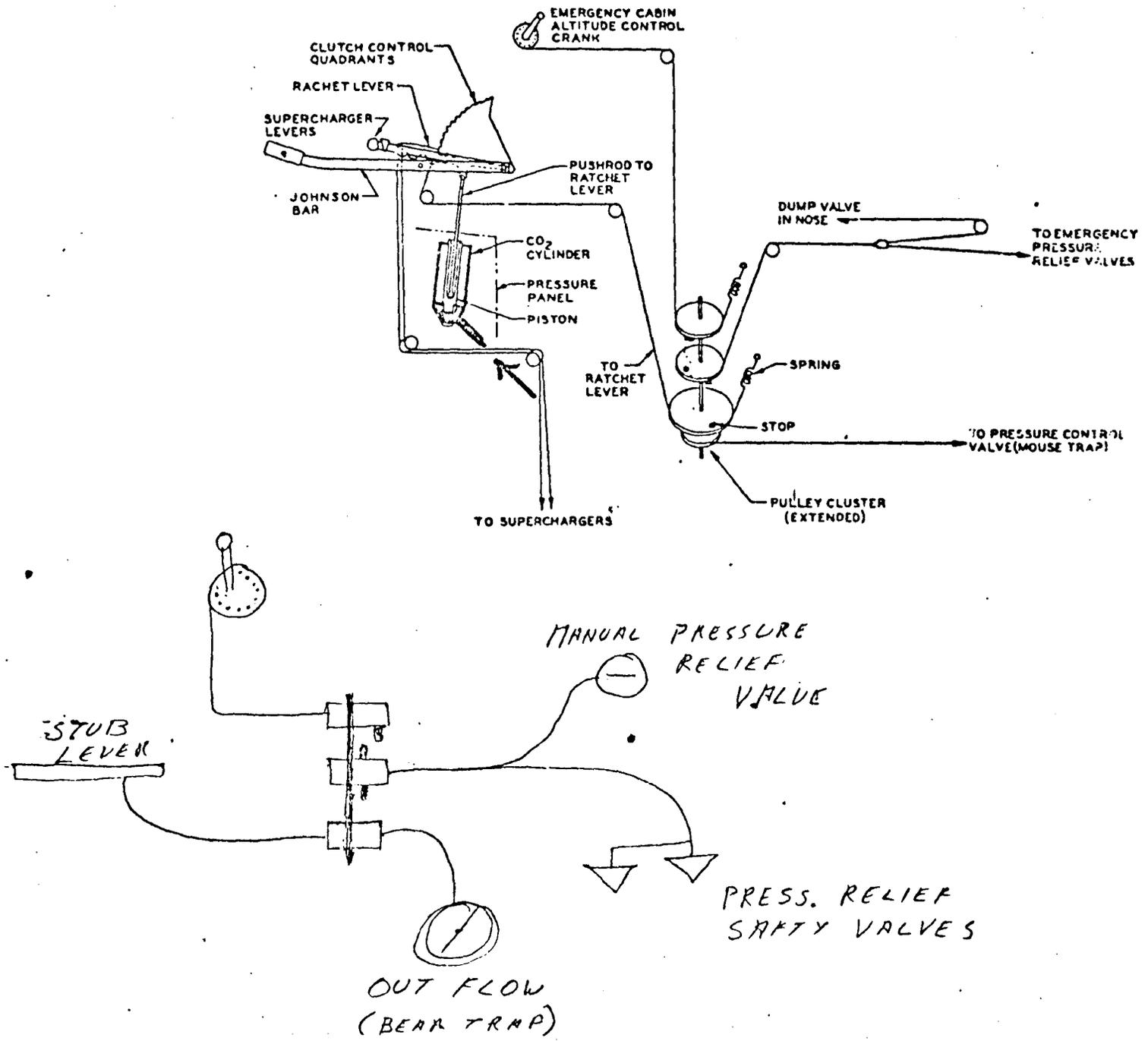


(Continued)



FIG. 9-39 Emergency Pressure Controls Diagram

9-109





## ICE CONTROL SYSTEMS

### DESCRIPTION (Continued)

DIAGRAM OF WINDSHIELD HEAT CONTROL SWITCH FUNCTION		
SWITCH POSITION		CONTROL VALVE POSITION
<p style="text-align: center;"><b>AIRPLANES</b> N37501 thru N37541</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. F.</p>	<p style="text-align: center;">All Airplanes Except N37501 thru N37541</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. C.</p>	<p style="text-align: center;">N37567 - 596 AND ALL DC-7</p>
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. F.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. C.</p>	<p style="text-align: center;">N37567 - 596 AND ALL DC-7</p>
<p style="text-align: center;">Cabin Heater cycles @ 85°C</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. F.</p>	<p style="text-align: center;">No Similar Position</p>	<p style="text-align: center;">TO WINDSHIELD</p>
<p style="text-align: center;">Cabin Heater cycles @ 121°C</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. F.</p>	<p style="text-align: center;">Cabin Heater cycles @ 129°C</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div> <p style="text-align: center;">NOTE: DEG. C.</p>	<p style="text-align: center;">N37567 - 696 AND ALL DC-7</p>
<p style="text-align: center;">Cabin Heater cycles @ 121°C</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div>	<p style="text-align: center;">Cabin Heater cycles @ 129°C</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WINDSHIELD HEAT</p> </div>	<p style="text-align: center;">N37567 - 696 AND ALL DC-7</p>

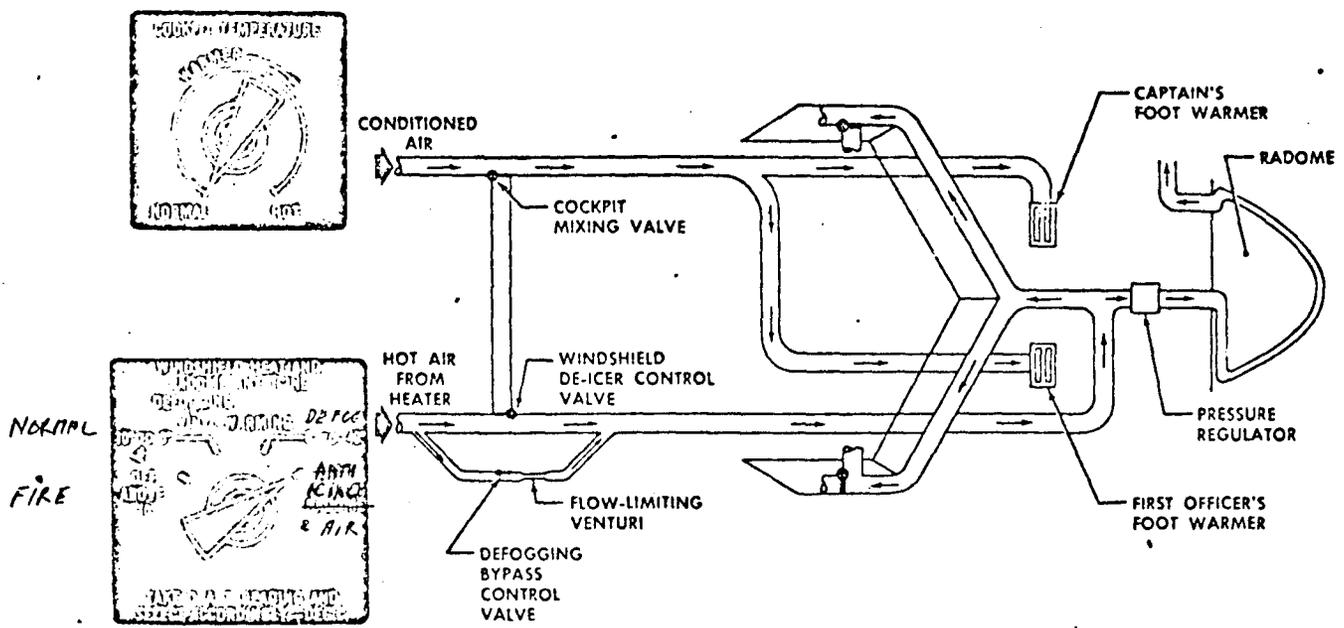


FIG. 9-61 Windshield Temperature Control Schematic

REVISED WING VENTILATION  
IN SMALL AND LARGE TANK CAPACITY WINGS

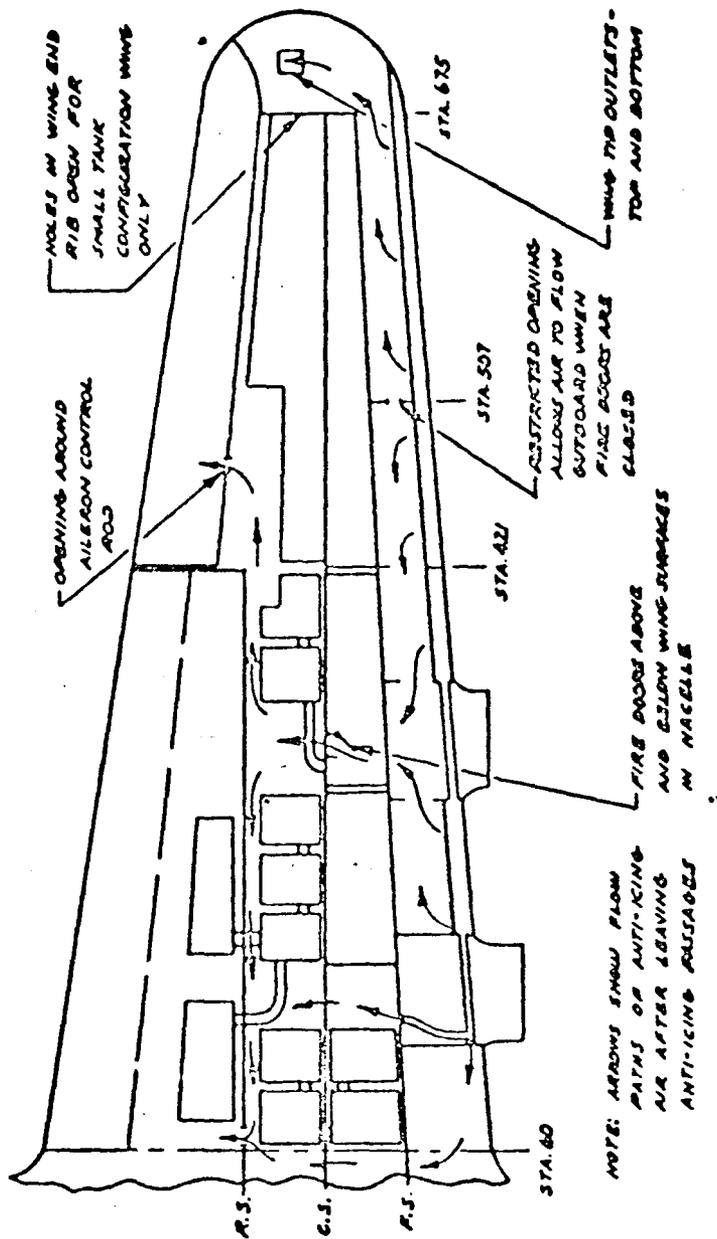
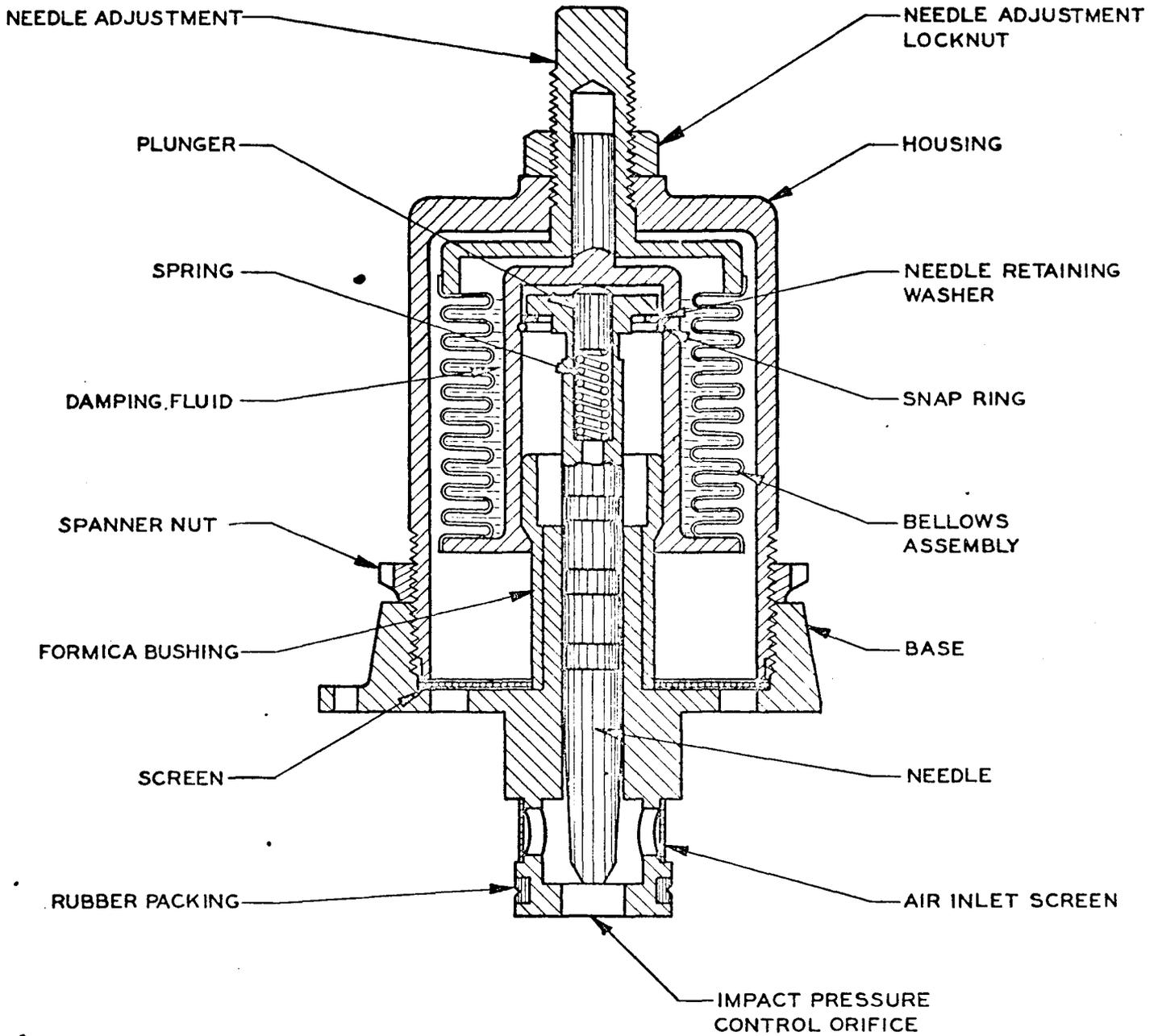
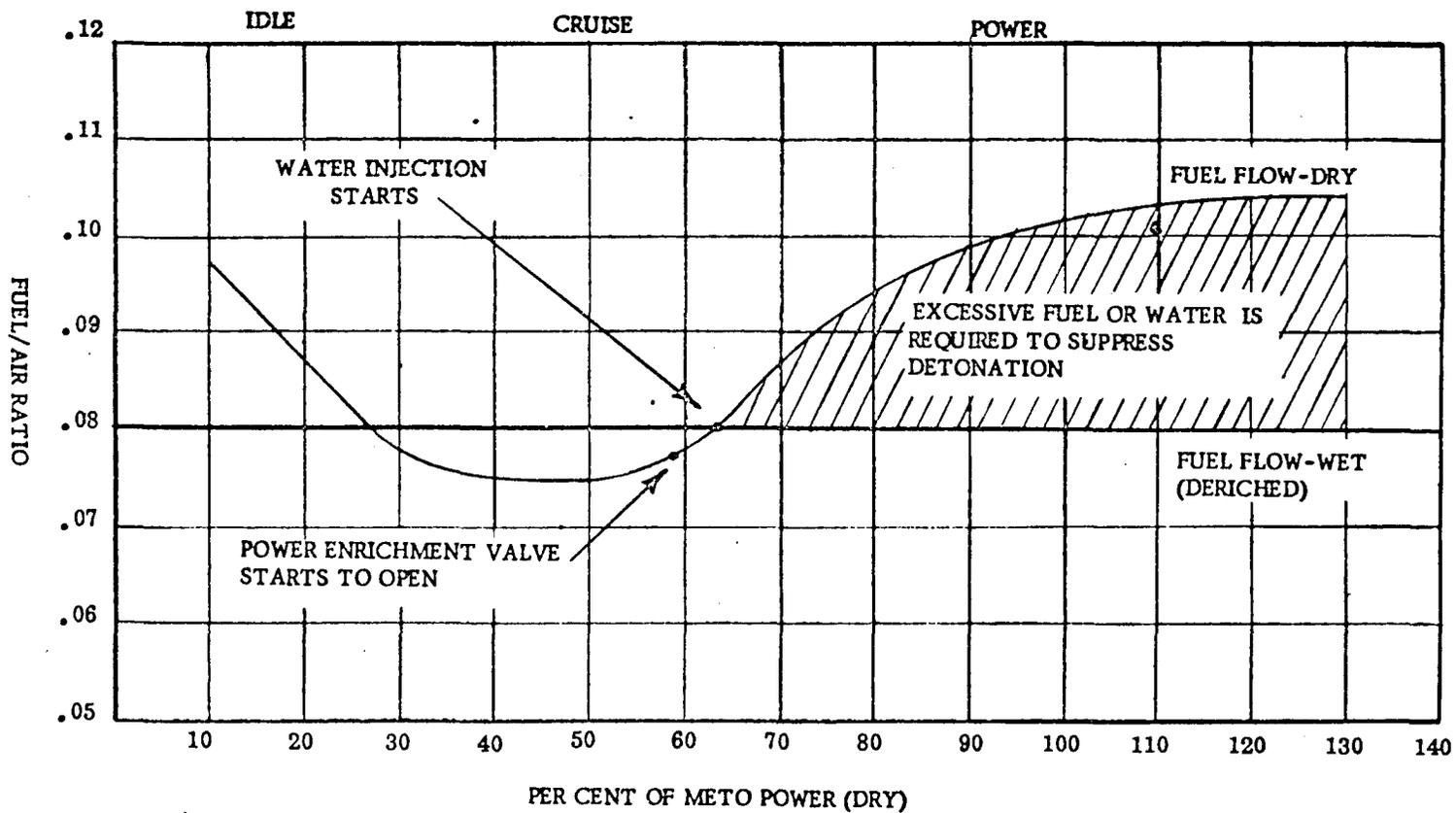


Fig. 10-2 Wing Ventilation Schematic



### AUTOMATIC MIXTURE CONTROL UNIT

FIGURE-24



R-2800 FUEL FLOW

FIGURE 25





## WATER/ALCOHOL INJECTION SYSTEMS

### PRINCIPLES OF WATER INJECTION

THE R-2800 CB16 ENGINE MAY BE PROVIDED WITH AN ANTI-DETONATION INJECTION SYSTEM (ADI), COMMONLY CALLED WATER/ALCOHOL SYSTEM OR WATER INJECTION SYSTEM. THIS SYSTEM PERMITS SAFE OPERATION OF THE ENGINE AT POWERS EXCEEDING THE DRY TAKE-OFF POWER RATING. THE WATER/ALCOHOL MIXTURE IS INJECTED AT THE FUEL FEED VALVE.

CONTRARY TO COMMON ASSUMPTION, THE INJECTION OF WATER/ALCOHOL MIXTURE DOES NOT, IN ITSELF, INCREASE THE POWER OUTPUT OF THE ENGINE. NEITHER DOES IT PRODUCE THE SAME REACTION AS ATMOSPHERIC HUMIDITY. HUMIDITY RESULTS IN A LOSS OF BRAKE HORSE POWER OUTPUT - A LOSS WHICH WILL BE EXPERIENCED BY EITHER A "WET" OR "DRY" ENGINE, ALTHOUGH THE "DRY" ENGINE, WILL LOSE POWER MORE RAPIDLY. THE INJECTION OF WATER/ALCOHOL MERELY ACTS TO SUPPRESS DETONATION, ALLOWING ENGINE OPERATION WITH "BEST POWER" MIXTURE IN HIGH POWER RANGE.

OPERATION AT HIGH POWER, USING "BEST POWER" MIXTURE AND NOT USING ADI, WILL RESULT IN A COMBINATION OF TEMPERATURE AND PRESSURE OF THE FUEL/AIR CHARGE LEADING TO DETONATION. THE TENDENCY TO DETONATE IS NORMALLY SUPPRESSED BY ENRICHING THE MIXTURE BEYOND "BEST POWER" TO SUPPLY EXCESS FUEL TO COOL THE COMBUSTION. HOWEVER, THIS IN TURN RESULTS IN A POWER REDUCTION OF APPROXIMATELY 6 TO 8 PERCENT. THIS ENRICHMENT CAN BE INCREASED UNTIL THE EXCESS FUEL BEING USED AS A COOLING AGENT WILL FLOOD THE ENGINE.

THE ANTI-DETONANT INJECTION MIXTURE REPLACES (SEE FIGURE 25) THE EXCESS FUEL USED FOR COOLING WITH A VOLUME OF WATER/ALCOHOL WHICH SERVES EVEN BETTER THE PURPOSE OF COOLING THE CHARGE AND CONSEQUENTLY SUPPRESSES THE TENDENCY TOWARD DETONATION. DURING ANTI-DETONANT INJECTION, THE FUEL-AIR MIXTURE STRENGTH IS AUTOMATICALLY REDUCED TO "BEST POWER" BY THE DERICHMENT VALVE IN THE CARBURETOR, AND, IF THERE IS NO CHANGE IN THE MANIFOLD PRESSURE, A POWER INCREASE IN THE R-2800 CB-16 ENGINE OF APPROXIMATELY 200 BRAKE HORSE POWER IS OBTAINED.

THIS GAIN IN HORSE POWER HOLDS TRUE FOR SEA LEVEL CONDITIONS ONLY, OF COURSE. AT HIGH ALTITUDE FIELDS WHERE THE THROTTLE LEVERS MAY COME TO THE FORWARD STOPS BEFORE THE WET MANIFOLD PRESSURE LIMITS ARE REACHED, THE POWER GAINED BY W/A MAY ONLY BE THAT AFFORDED BY DERICHING THE MIXTURE TO "BEST POWER".

INTERESTING OBSERVATION ON WATER/ALCOHOL INJECTION IS THAT IT PERMITS AN ENGINE TO OPERATE AT A POWER OUTPUT WHICH IS HIGHER THAN IN DRY. SMALL AMOUNT OF POWER IS LOST ON ANY GIVEN MANIFOLD PRESSURE BECAUSE THE CARBURETOR DOES NOT REACT TO THE PRESENCE OF THE VAPOR - IT DOES NOT COMPENSATE FOR THE LACK OF AIR REPRESENTED BY THE VAPOR IN THE CHARGE.

THE EXTENT OF POWER LOST DUE TO THE DECREASED AMOUNT OF ACTUAL AIR IN THE CHARGE IS THE SAME FOR A WET ENGINE AS FOR A DRY ONE. IN EITHER ENGINE, THE MIXTURE IS RICHER THAN WOULD BE THE CASE WITH AIR FREE OF VAPOR BECAUSE THE CARBURETOR DOES NOT REACT TO THE PRESENCE OF THE VAPOR - IT DOES NOT COMPENSATE FOR THE LACK OF AIR REPRESENTED BY THE VAPOR IN THE CHARGE.



ON THE DRY ENGINE, HOWEVER, THE MIXTURE IS ALREADY RICH TO PROVIDE COOLING. THE FURTHER ENRICHENING OF THE MIXTURE BY THE PRESENCE OF WATER VAPOR IN THE AIR WILL CAUSE A GREATER LOSS OF POWER THAN WILL THE SLIGHT ENRICHENING IN THE WET ENGINE WHICH HAD BEEN DERICHED AND OPERATES AT BEST POWER.

A NEGLIGIBLE AMOUNT OF POWER MAY ALSO BE GAINED IN W/A INJECTION DUE TO COOLING OF THE FUEL CHARGE ENTERING THE CYLINDERS AND BETTER COMBUSTION RESULTING FROM THE CLEANING ACTION OF THE ALCOHOL ON THE SPARK PLUGS. IT IS AN INTERESTING FACT THAT THE PRESENCE OF ALCOHOL IN THE COMBUSTION MIXTURE TENDS TO ELIMINATE THE FORMATION OF CARBON.

← IN FACT, ANY FUEL MIXTURE CONTAINING 35% OR MORE ALCOHOL WILL NOT FORM CARBON.

### ADI FLUID

A MIXTURE OF 50% WATER AND 50% METHANOL (METHYL ALCOHOL) IS USED FOR WATER INJECTION IN THE DC-6. THE ALCOHOL PREVENTS THE MIXTURE FROM FREEZING. AN INCIDENTAL ADVANTAGE IN USING ALCOHOL IN THE MIXTURE, OTHER THAN THOSE ALREADY MENTIONED, LIES IN THE FACT THAT IT ACTS AS A DETONATION-SUPPRESSOR SIMILAR TO TETRA-ETHYL-LEAD. ALL ADI LINES ARE COLOR-CODED RED-WHITE-RED.

### SYSTEM ARRANGEMENT

EACH ENGINE HAS ITS OWN COMPLETE ADI SYSTEM, INDEPENDENT OF THE OTHER ENGINES. (SEE FIGURE 26.) THE PRINCIPAL OPERATING UNITS ARE LOCATED IN OR NEAR THE ENGINE NACELLE. EACH SYSTEM CONSISTS ESSENTIALLY OF A VENTED SUPPLY TANK AND AN ELECTRICALLY-DRIVEN PUMP AFT OF THE FIREWALL. FORWARD OF THE FIREWALL, THERE IS A WATER REGULATOR, MOUNTED ON THE ENGINE, WHICH PERMITS WATER PRESSURE TO ACTUATE THE FUEL DERICHMENT VALVE ON THE CARBURETOR AND FEEDS WATER/ALCOHOL TO THE FUEL FEED VALVE IN THE INTERMEDIATE REAR CASE.

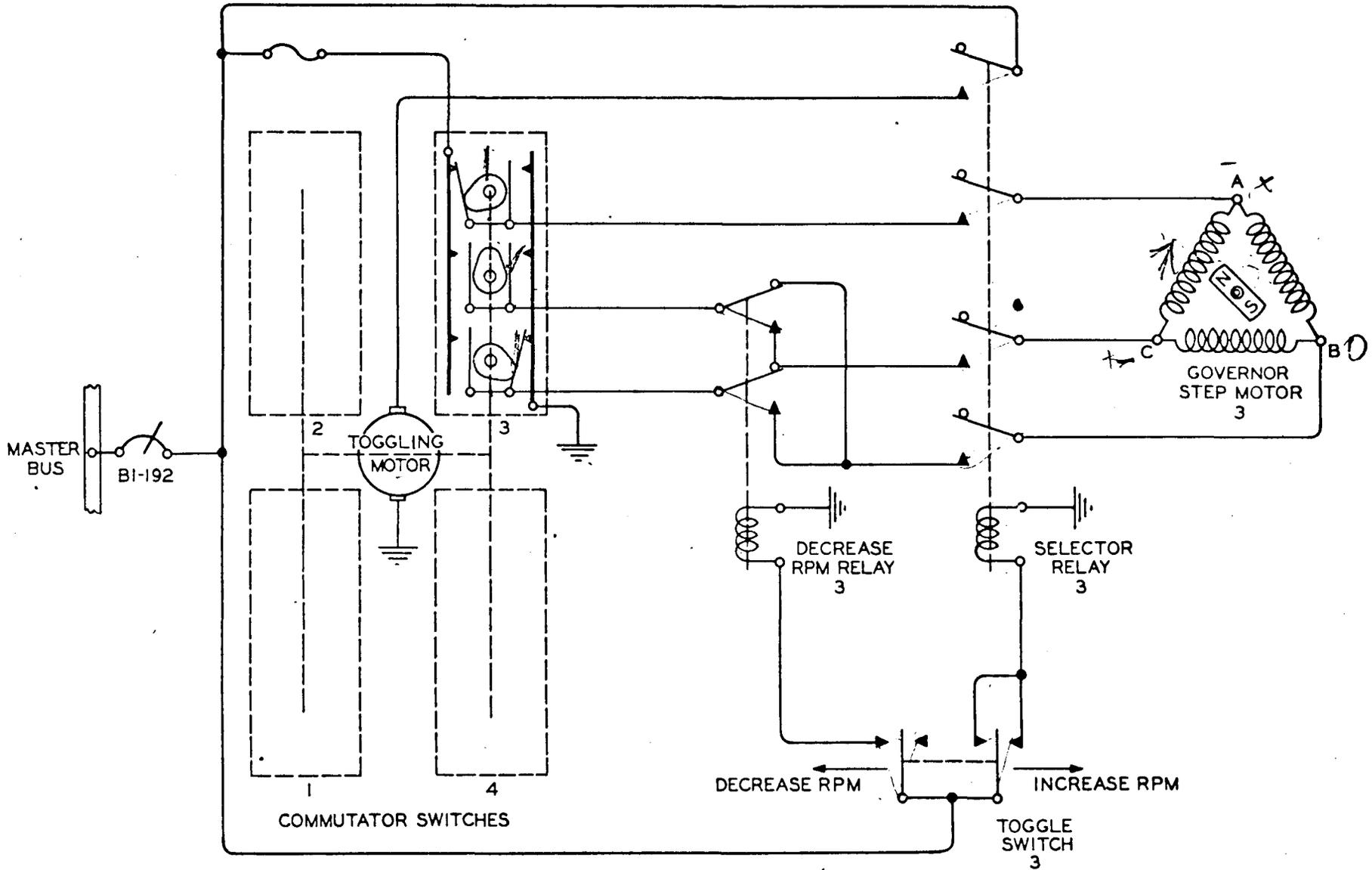
WHEN WATER INJECTION IS NOT TAKING PLACE, IT IS POSSIBLE FOR FUEL TO BACK UP FROM THE FUEL FEED VALVE INTO THE REGULATOR. THERE ARE VALVES INSTALLED IN THE LINES BETWEEN THE REGULATOR AND THE SUPPLY TANK TO KEEP THIS FUEL FORWARD OF THE FIREWALL.

### CONTROLS AND INSTRUMENTATION

IN THE COCKPIT, FOUR WATER INJECTION CONTROL SWITCHES ARE GROUPED IN A ROW ON THE AFT OVERHEAD ELECTRICAL PANEL, AT THE FORWARD LEFT-HAND CORNER AND JUST AHEAD OF THE OIL COOLER DOOR SWITCHES. THESE ON-OFF TOGGLES CONTROL OPERATION OF THE W/A PUMPS.

THERE ARE TWO DUAL W/A QUANTITY INDICATORS LOCATED AT THE TOP OF THE UPPER INSTRUMENT PANEL. CONNECTED TO A LIQUIDOMETER IN EACH RESPECTIVE TANK, THEY INDICATE THE SUPPLY AVAILABLE IN GALLONS. ALL FOUR QUANTITY-INDICATING CIRCUITS ARE POWERED THROUGH CIRCUIT BREAKER B1-9, WHICH ALSO SERVES THE HYDRAULIC FLUID AND ANTI-ICING ALCOHOL QUANTITY INDICATING SYSTEMS.

FOUR WATER PRESSURE INDICATING LIGHTS ARE LOCATED AT THE BOTTOM EDGE, LEFT-HAND CORNER, OF THE 1ST OFFICER'S FLIGHT INSTRUMENT PANEL. THESE LAMPS, WHICH ARE GREEN IN COLOR AND PUSH-TO-TEST TYPE, ARE LIGHTED WHEN THERE IS WATER PRESSURE AT THE INLET SIDE OF THE REGULATOR SUFFICIENT FOR SATISFACTORY W/A OPERATION.



PROPELLER TOGGLE CIRCUIT NO.3  
(TYPICAL)

FIGURE- 34



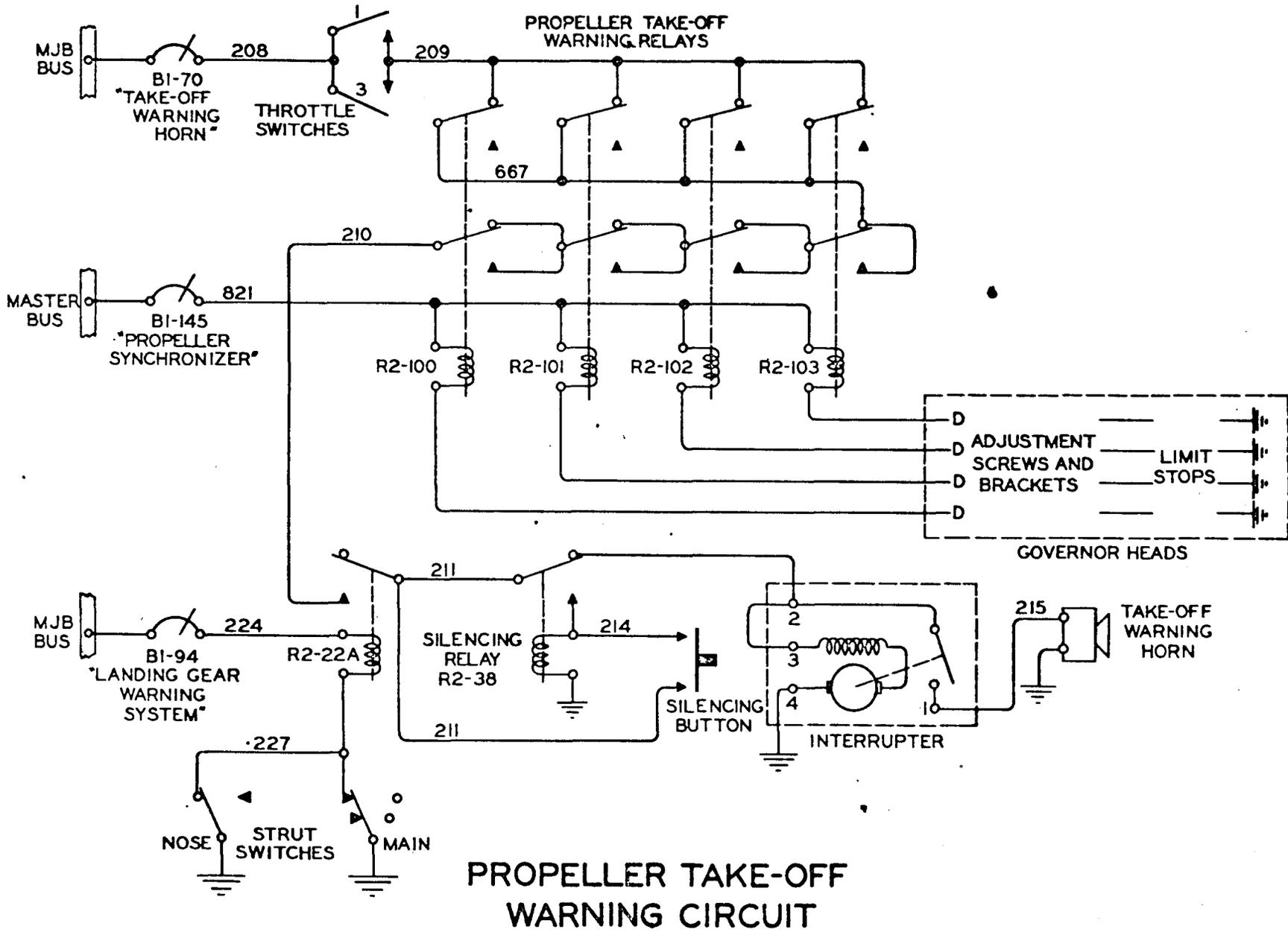
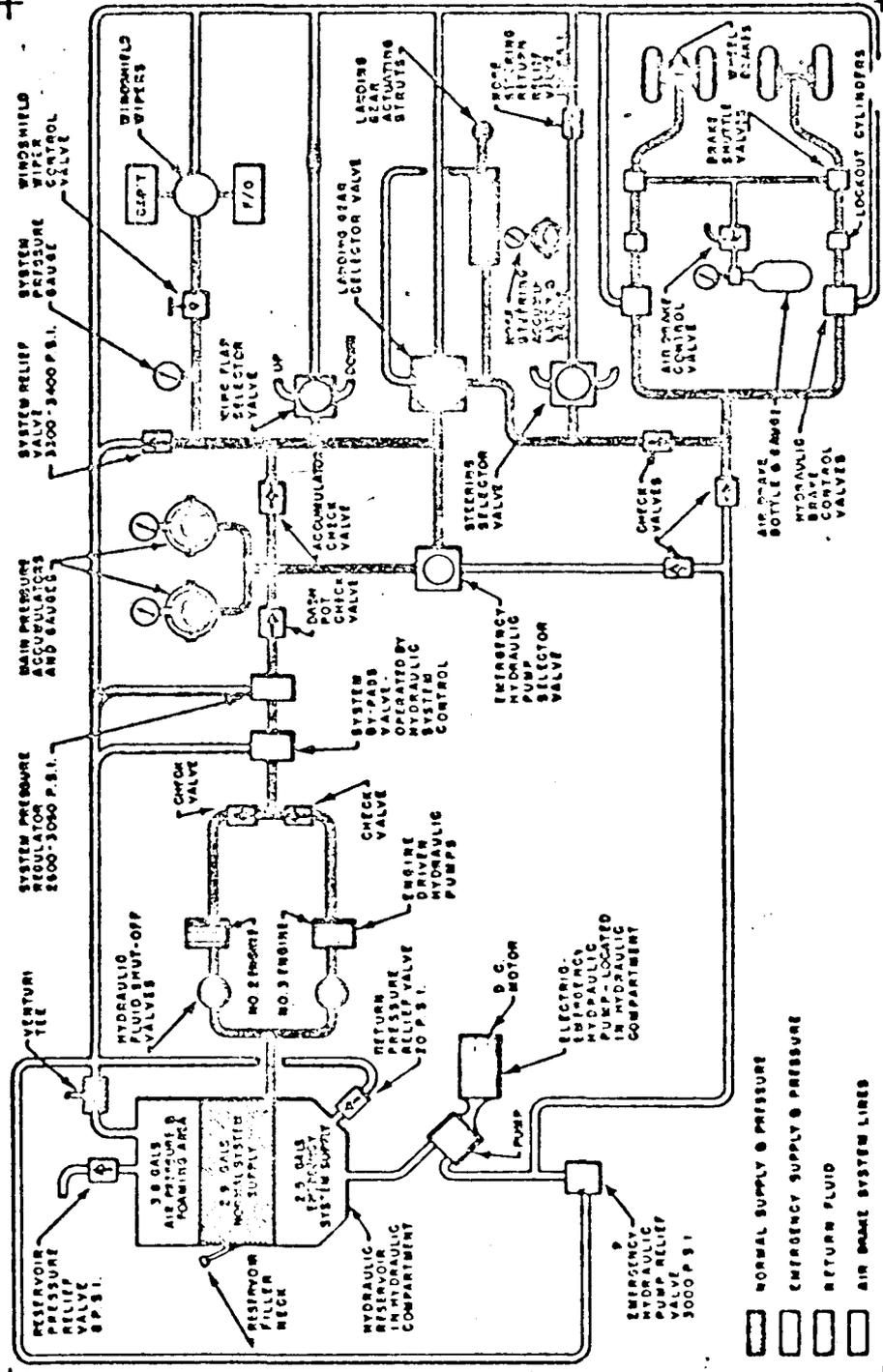


FIGURE- 27

1. GENERAL

HYDRAULIC SYSTEM SCHEMATIC



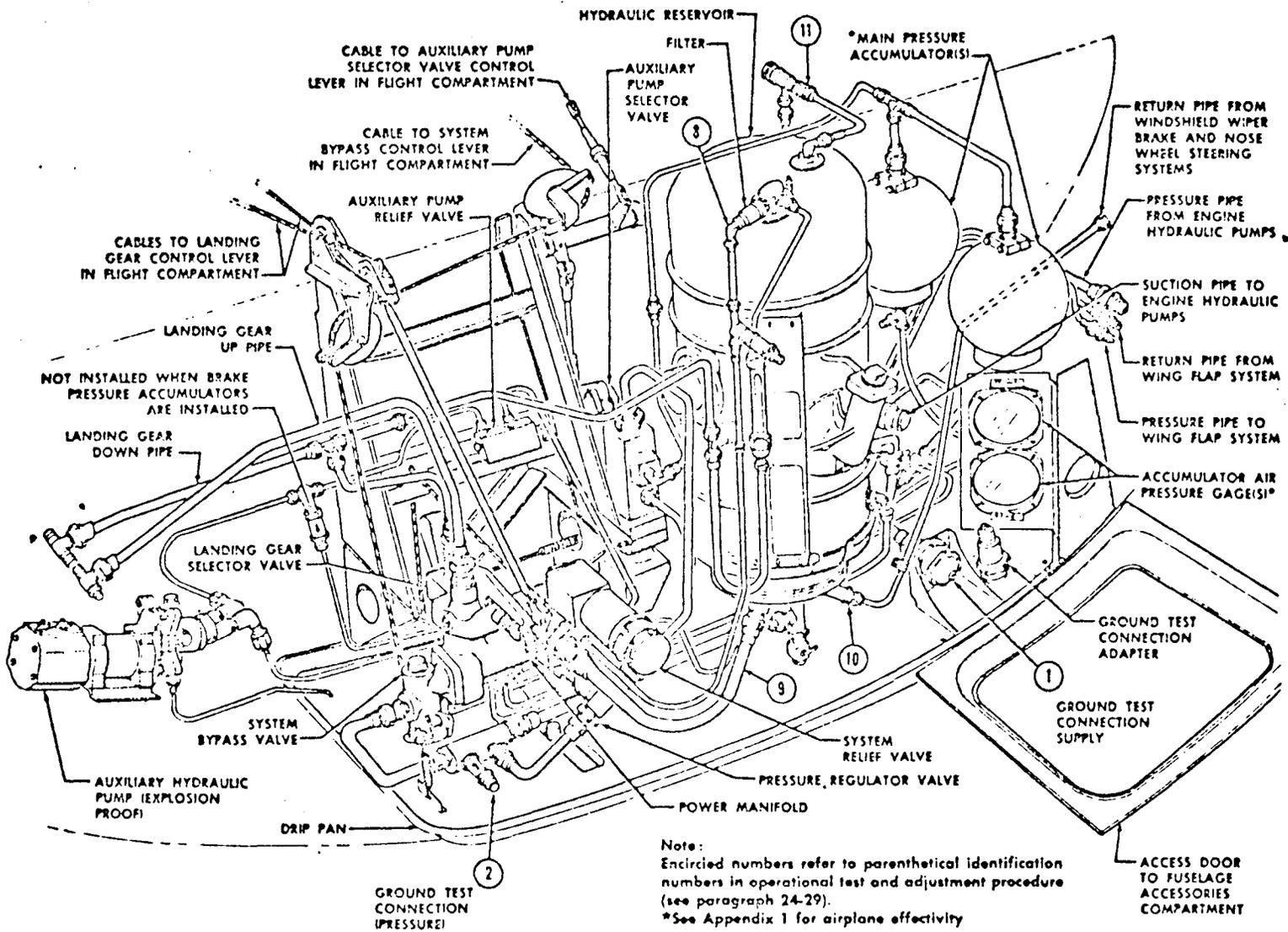
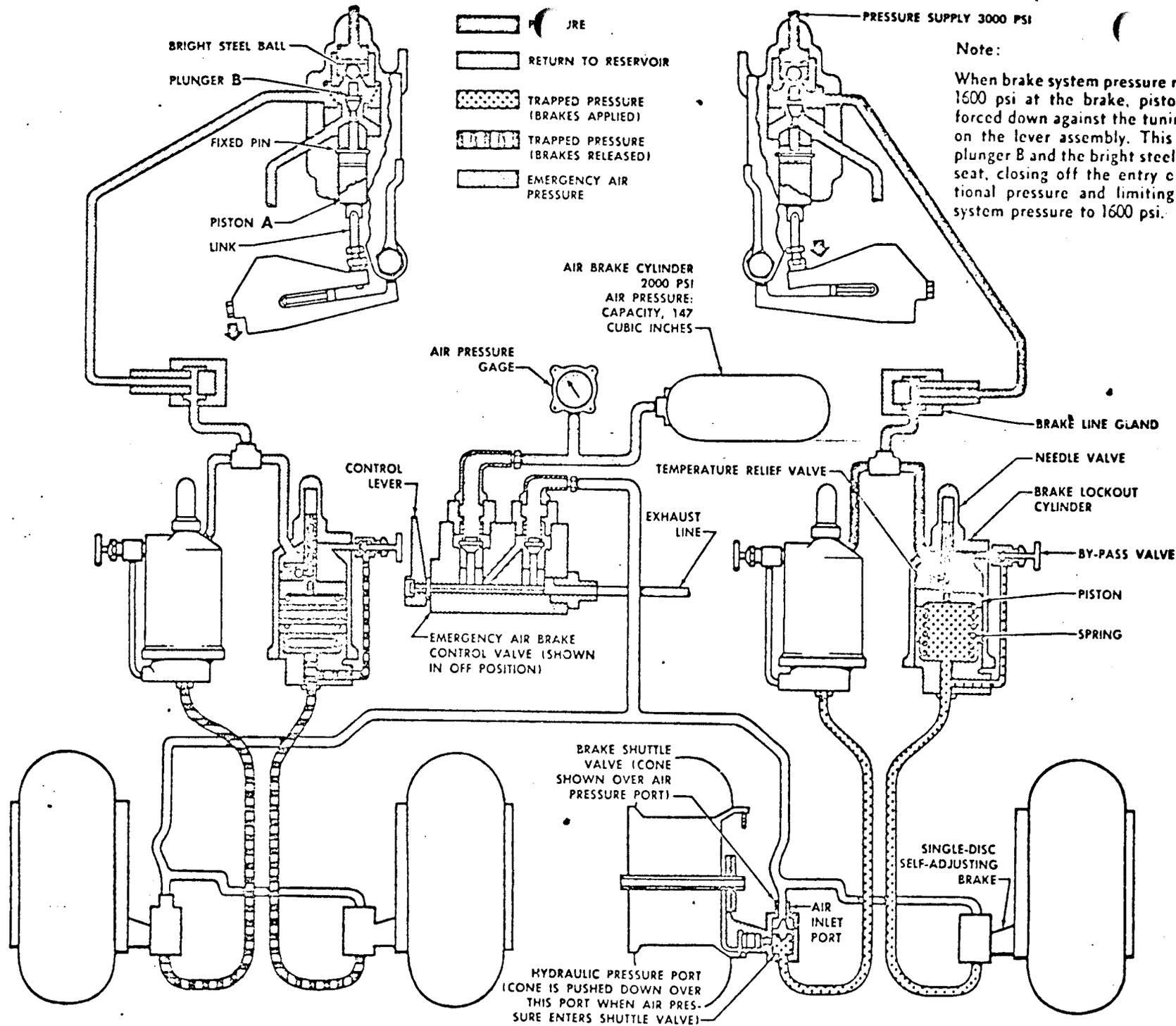


Figure 24-8. Fuselage Accessories Compartment Hydraulic Units

Fig. 4-8 Brake Hydraulic System

4-18



D-6

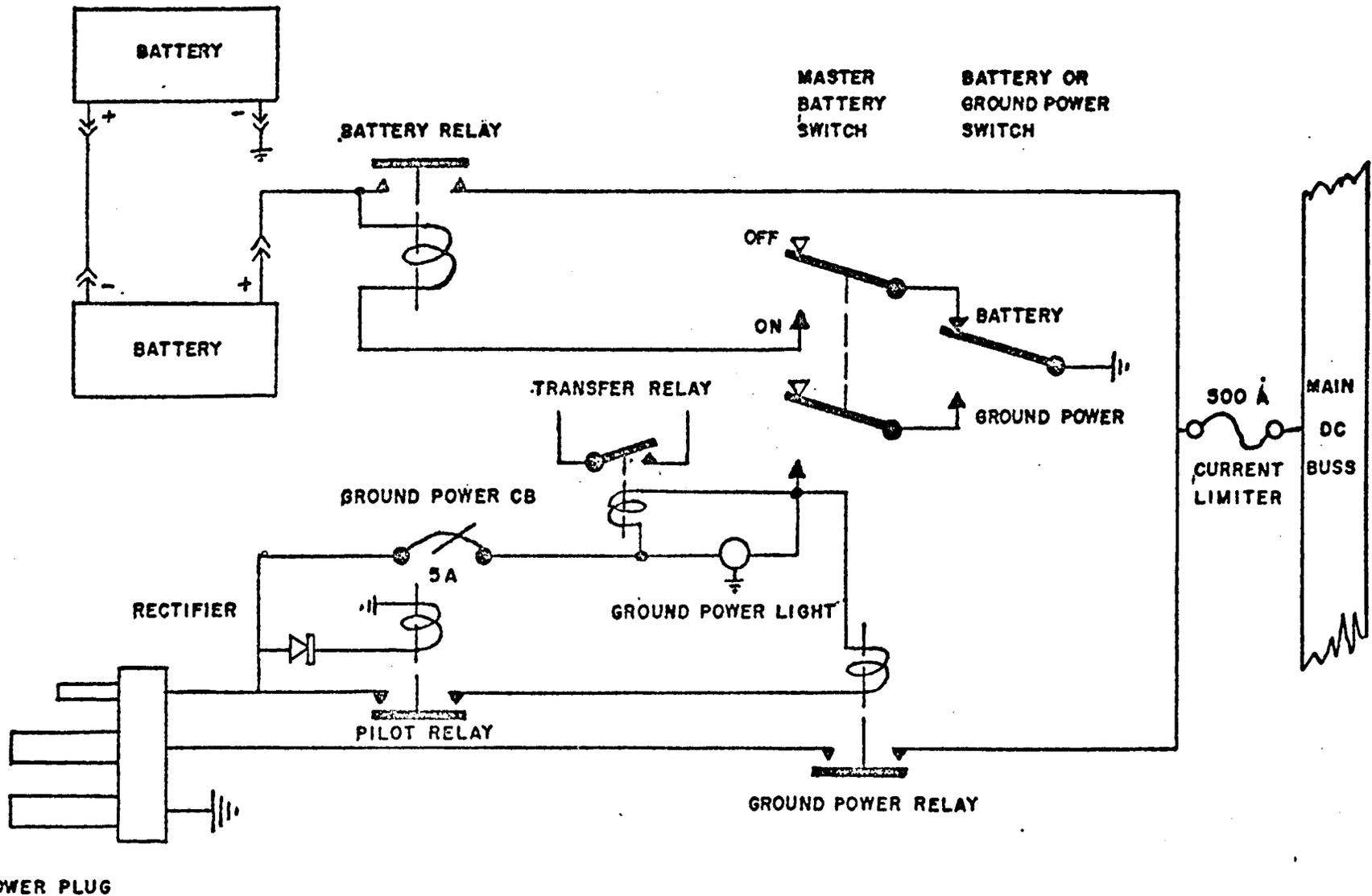
## FLIGHT ENGINEER PART I

### FIRE CLASSIFICATION AND DEFINITIONS OF MATERIALS

<u>CLASS OF FIRE</u>	<u>TYPE EXTINGUISHER</u>
<u>CLASS A</u> WOOD, CLOTH, RUBBISH PAPER, ETC.	USE <u>WATER-TYPE</u> EXTINGUISHER, OR ANY <u>NON COMBUSTIBLE LIQUID</u> (WATER, COFFEE, TEA, ETC.
<u>CLASS B</u> FLAMMABLE AND COMBUSTIBLE LIQUIDS - (OIL, GREASE, GASOLINE, ETC.)	USE <u>FOAM, CO<sub>2</sub> OR DRY CHEMICAL</u> TYPE EXTINGUISHER <u>DO NOT USE WATER OR OTHER</u> LIQUIDS.
<u>CLASS C</u> ELECTRICAL (ELECTRONICS AND FEEDER SYSTEMS)	USE <u>CO<sub>2</sub> OR DRY CHEMICAL</u> <u>DO NOT USE WATER OR OTHER</u> LIQUIDS
<u>CLASS D</u> METALS (MAGNESIUM, TITANIUM, ZINCONIUM, ETC.	USE <u>DRY CHEMICAL ONLY</u> <u>DO NOT USE WATER OR OTHER</u> LIQUIDS

#### F.A.R. 1.1 GENERAL DEFINITIONS.

- FIREPROOF: MATERIAL WHICH WILL WITHSTAND HEAT EQUALLY WELL OR BETTER THAN STEEL.
- FIRE RESISTANT: MATERIAL WHICH WILL WITHSTAND HEAT EQUALLY WELL OR BETTER THAN ALUMINUM ALLOY.
- FLAME RESISTANT: MATERIAL WHICH WILL NOT SUPPORT COMBUSTION OF A FLAME, BEYOND SAFE LIMITS, AFTER THE IGNITION SOURCE IS REMOVED.
- FLASH RESISTANT: MATERIAL NOT SUSCEPTIBLE TO BURNING VIOLENTLY WHEN IGNITED.
- FLAMMABLE: WITH RESPECT TO A FLUID OR GAS, MEANS SUSCEPTIBLE TO IGNITING READILY OR EXPLODING.



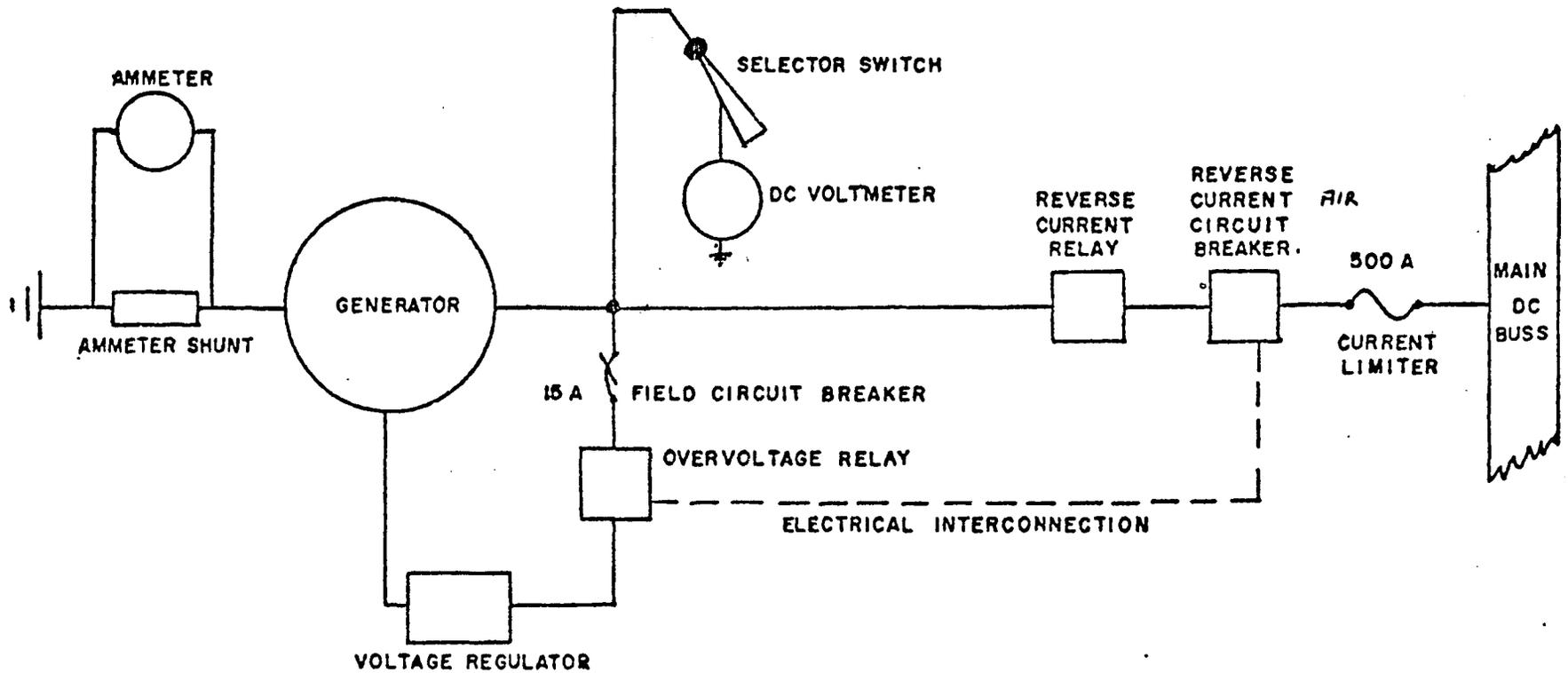
*FLIGHT SAFETY, INC.*

DC6B BATTERY & GROUND POWER

FOR TRAINING PURPOSES ONLY

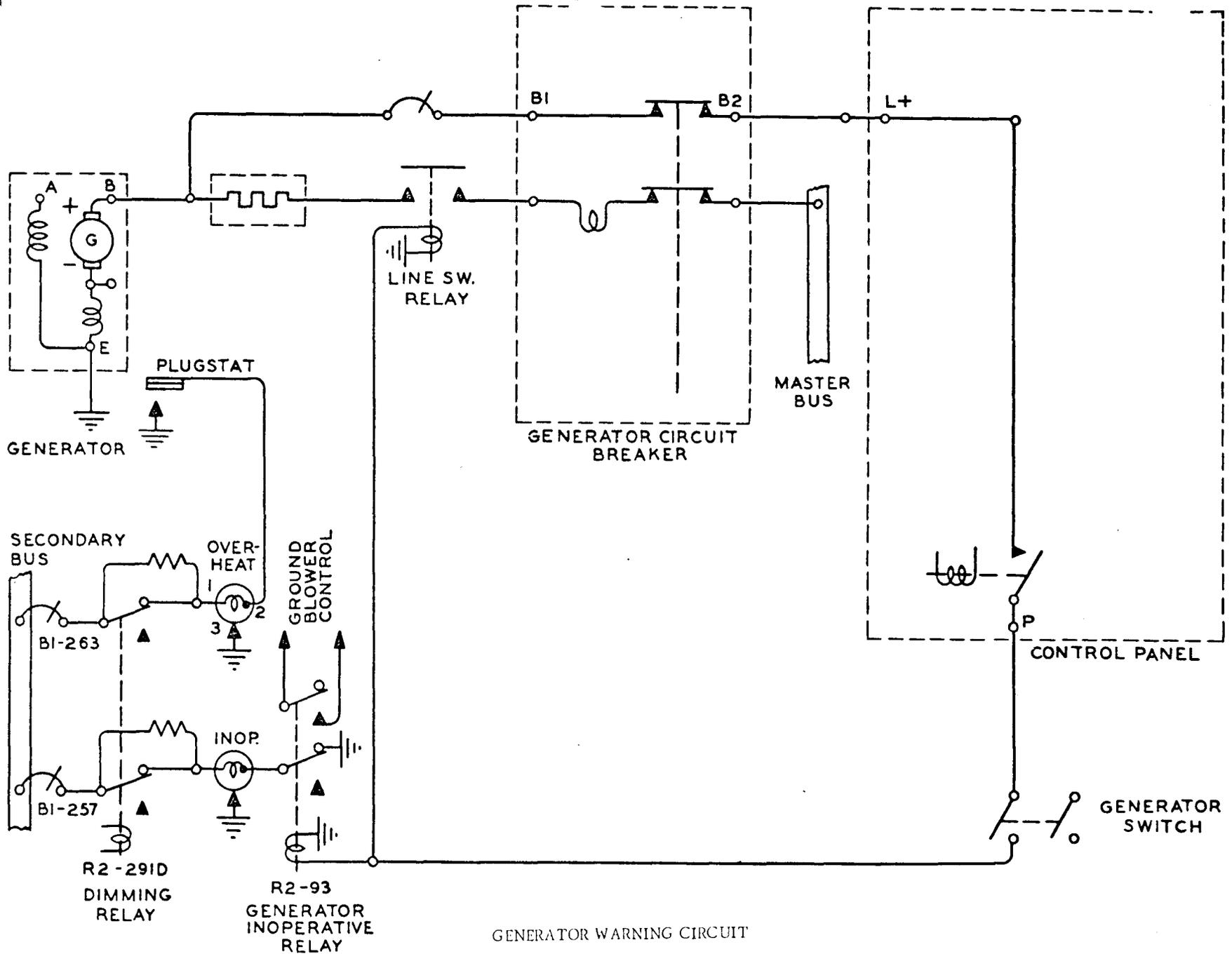
FS1/MTC DE REMER 46508

# FLIGHT SAFETY, INC.



**DC6B GENERATOR CIRCUIT**  
FOR TRAINING PURPOSES ONLY

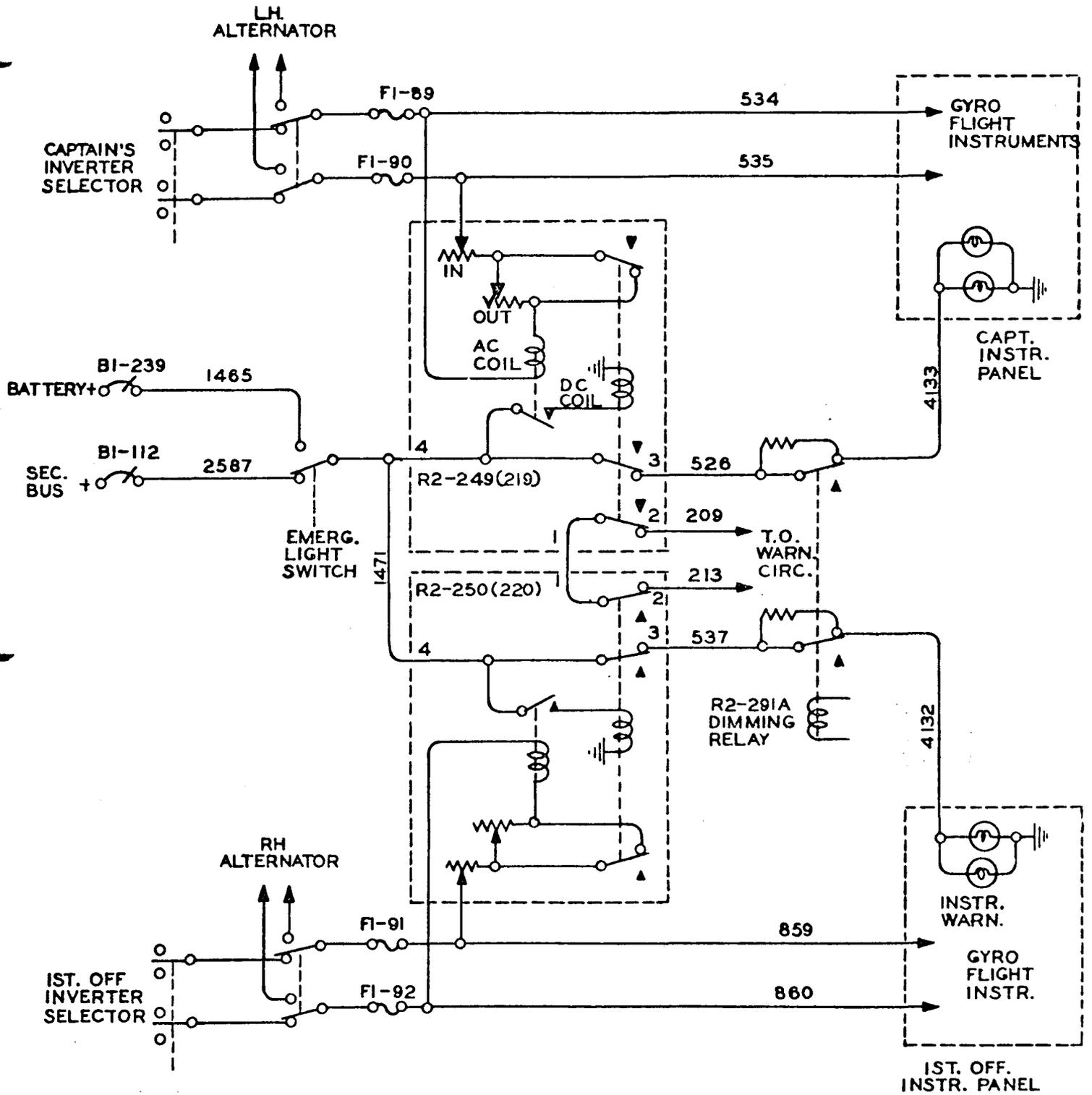




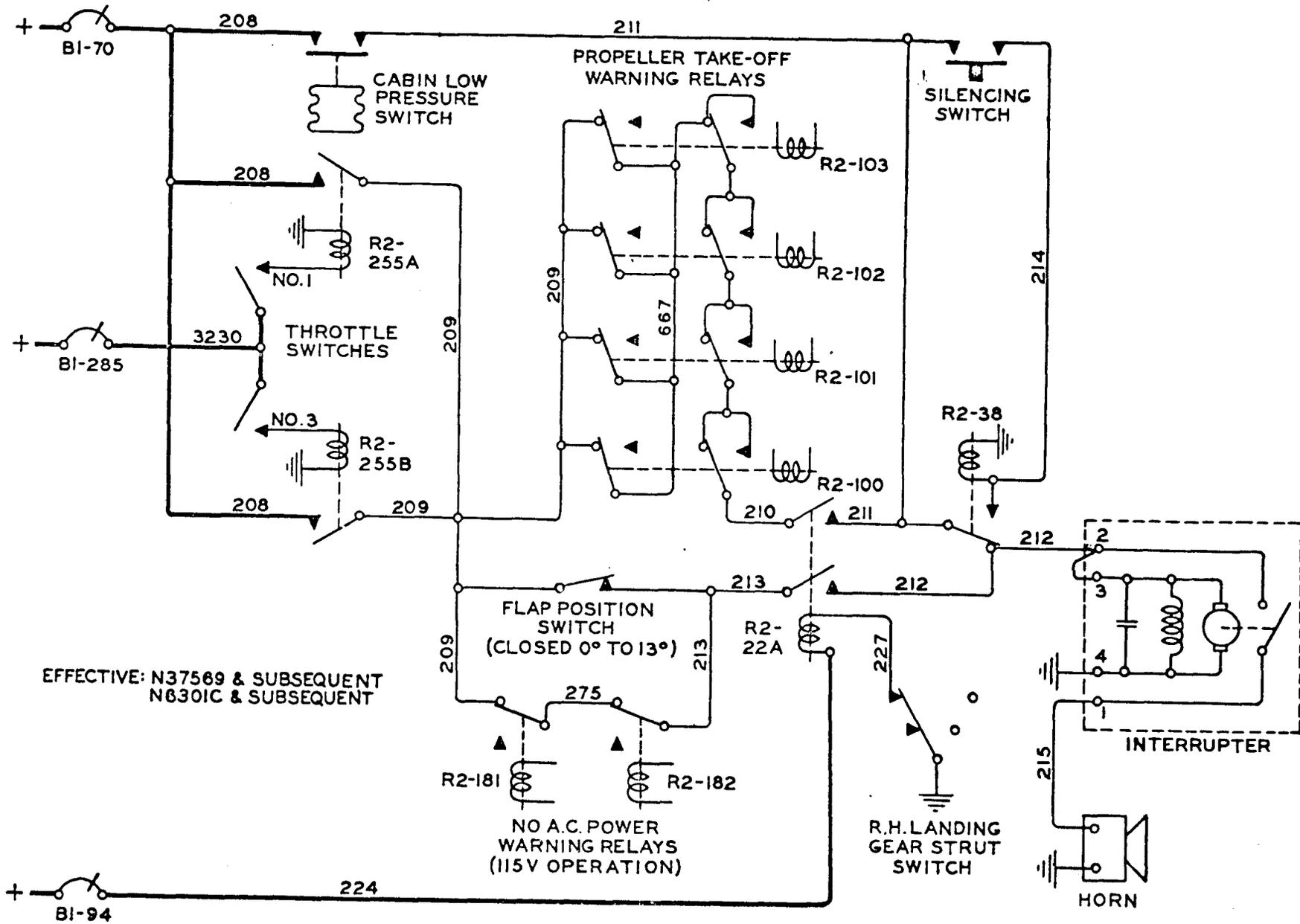
GENERATOR WARNING CIRCUIT

FIGURE 92



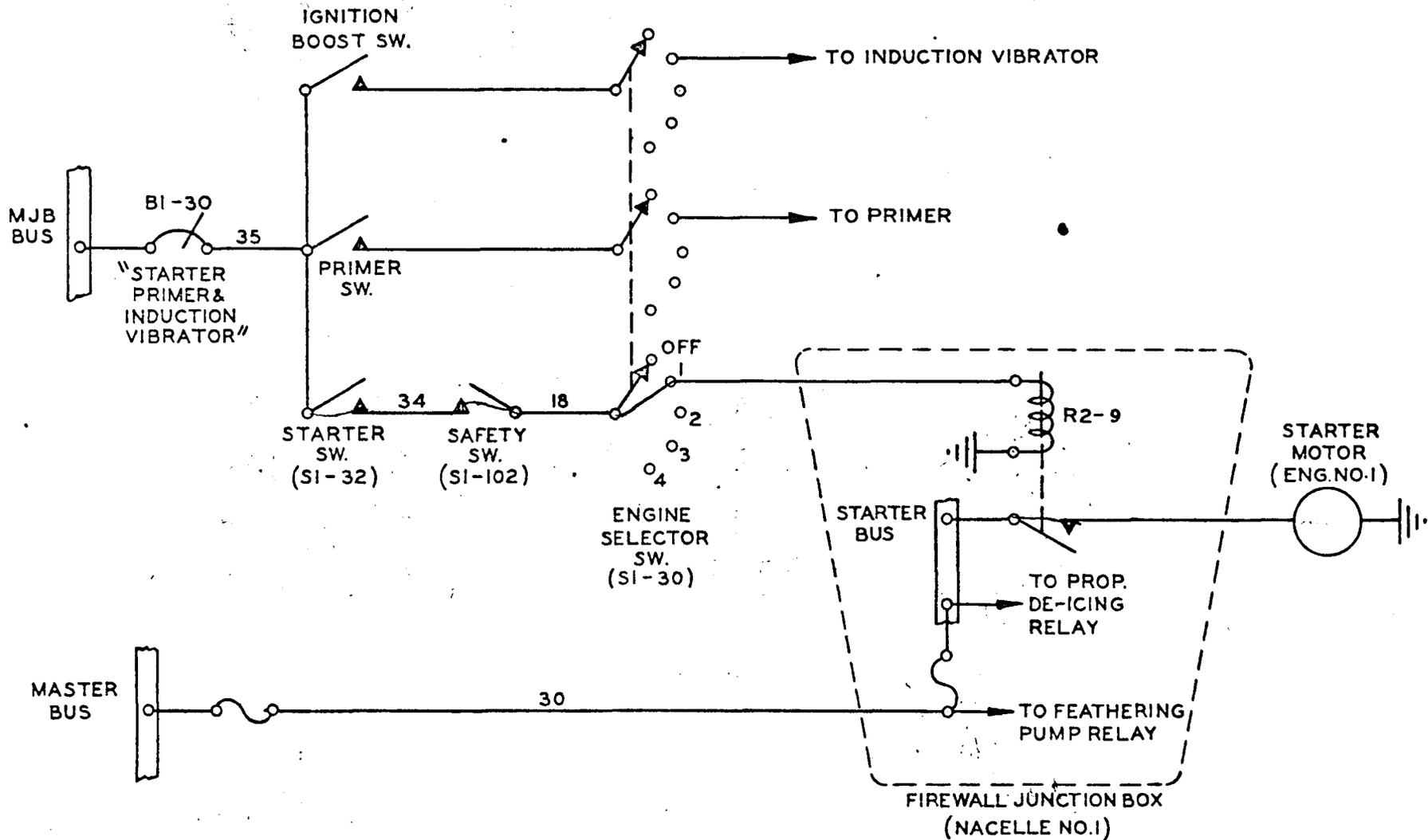


FLIGHT INSTRUMENT POWER WARNING  
FIGURE 123



EFFECTIVE: N37569 & SUBSEQUENT  
N6301C & SUBSEQUENT

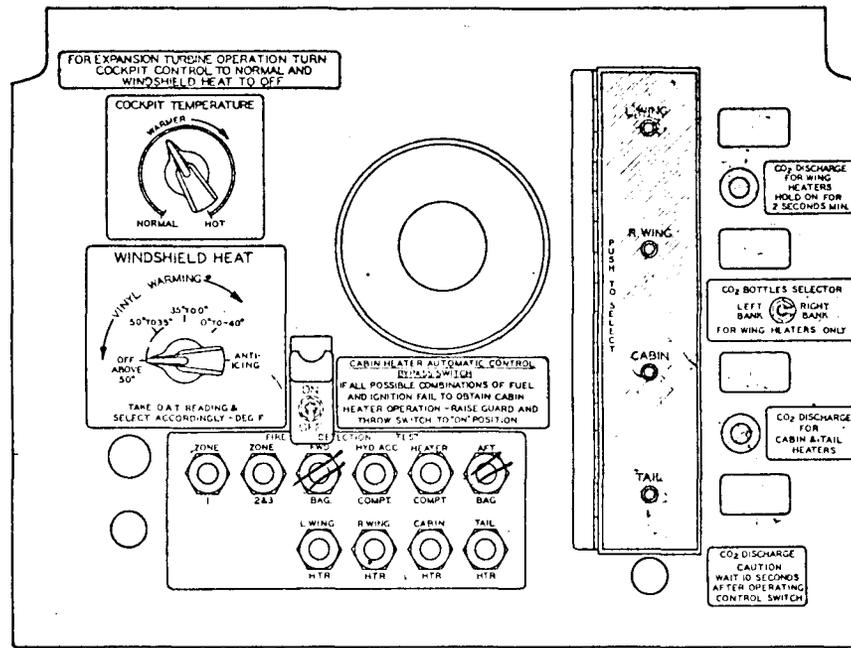




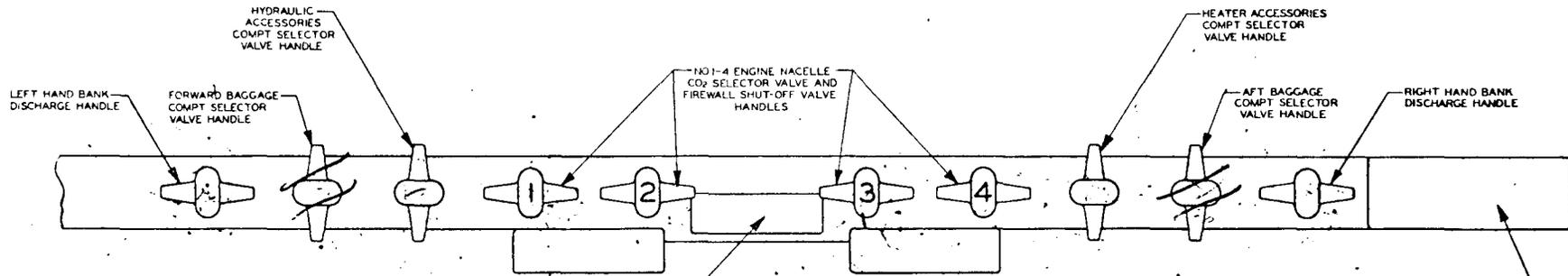
STARTER CONTROL CIRCUIT

FIGURE-31





• HEATER FIRE CONTROL PANEL



NOTE: ENGINE SELECTOR HANDLES OPERATE FIRE EXTINGUISHER SELECTOR VALVE AND ENGINE FLUID SHUT-OFF VALVES

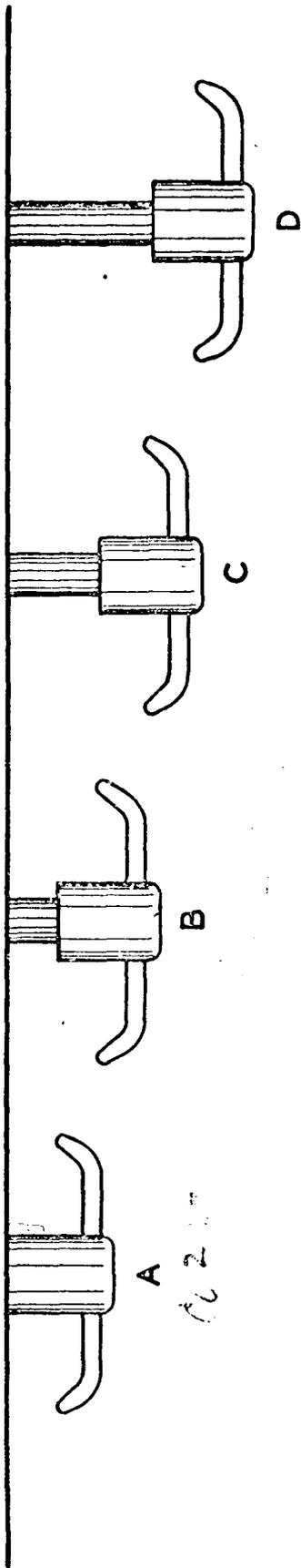
MAIN CO<sub>2</sub> FIRE CONTROL PANEL

FIRE EXTINGUISHER SELECTORS  
PULL ENGINE OR COMPARTMENT SELECTOR HANDLE BEFORE RELEASING FIRST CO<sub>2</sub> DISCHARGE  
PULL ENGINE OR COMPT SELECTOR HANDLE OUT AGAIN BEFORE RELEASING SECOND CO<sub>2</sub> DISCHARGE

FIRE CONTROL PANELS

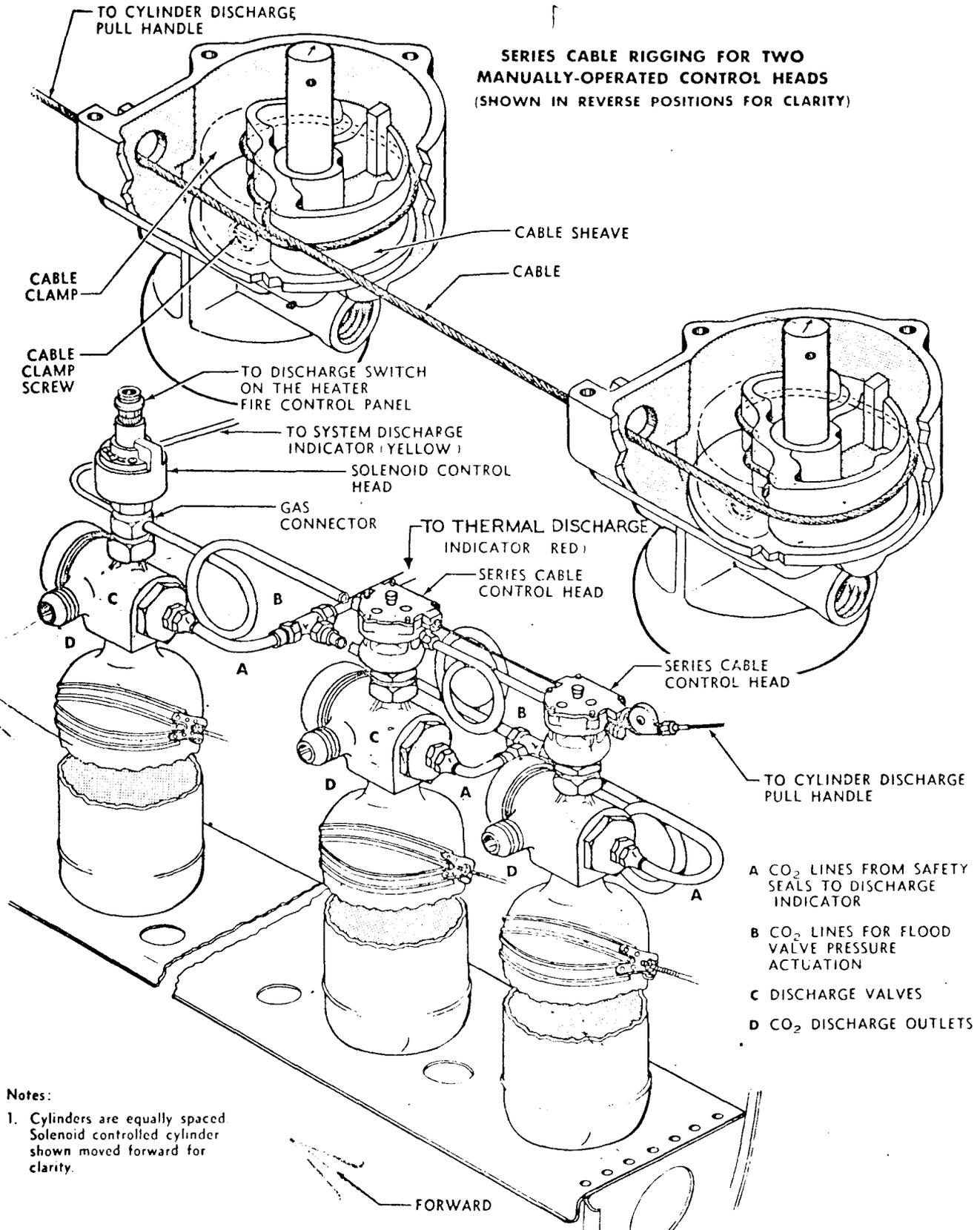
DC-6  
FIGURE 65



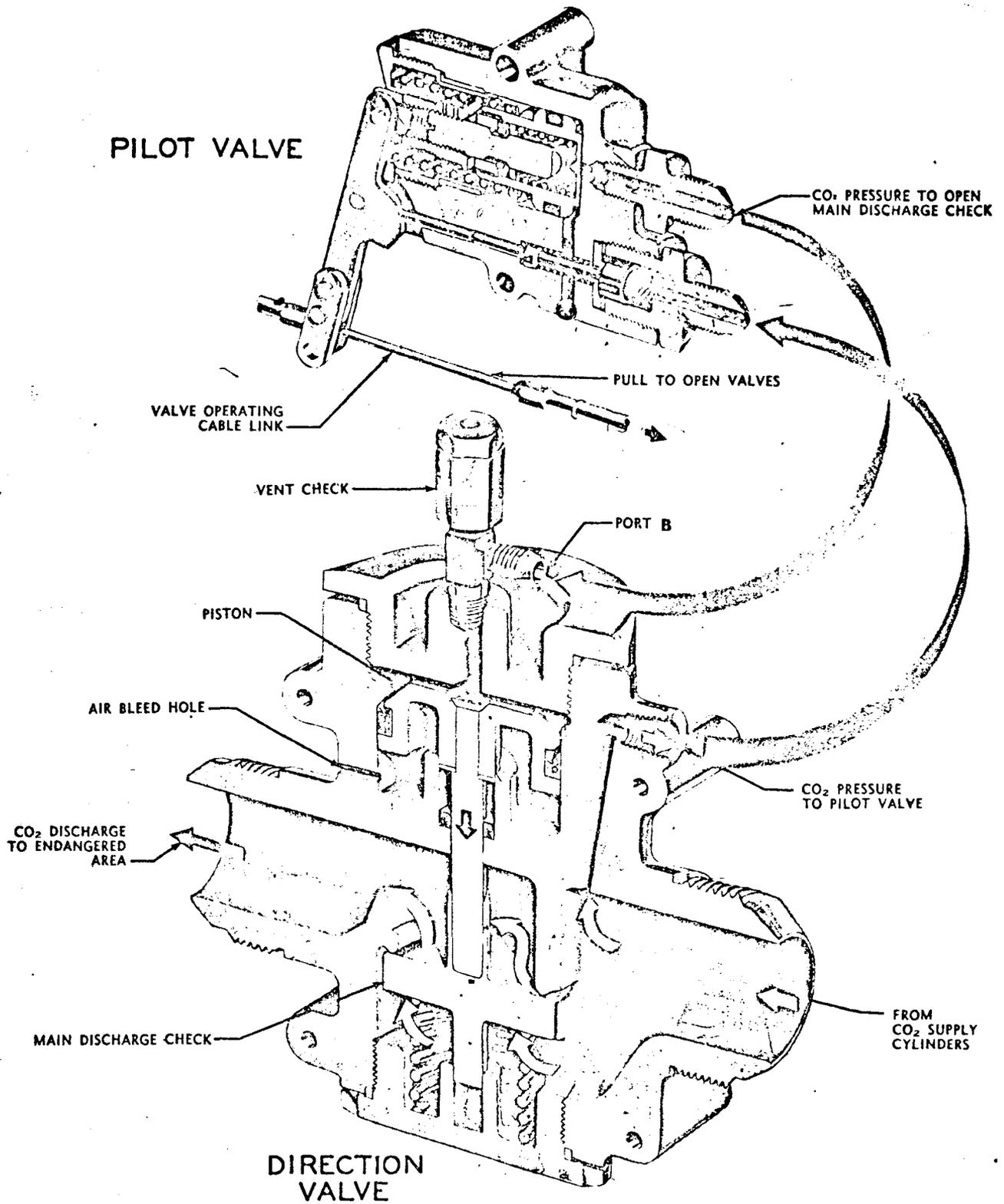


CONDITION	FIREWALL VALVES			BLAST TUBE	PILOT VALVE
	FUEL	OIL	HYDR.		
A	OPEN	OPEN	OPEN	OPEN	CLOSED
B	CLOSED	OPEN	CLOSED	OPEN	CLOSED
C	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
D	CLOSED	CLOSED	CLOSED	CLOSED	OPEN

ENGINE SELECTOR HANDLE POSITIONS  
FIGURE 55



1-INCH CYLINDER FLOOD VALVE,  
CONTROL HEADS AND CO<sub>2</sub> CYLINDERS  
FIGURE 52



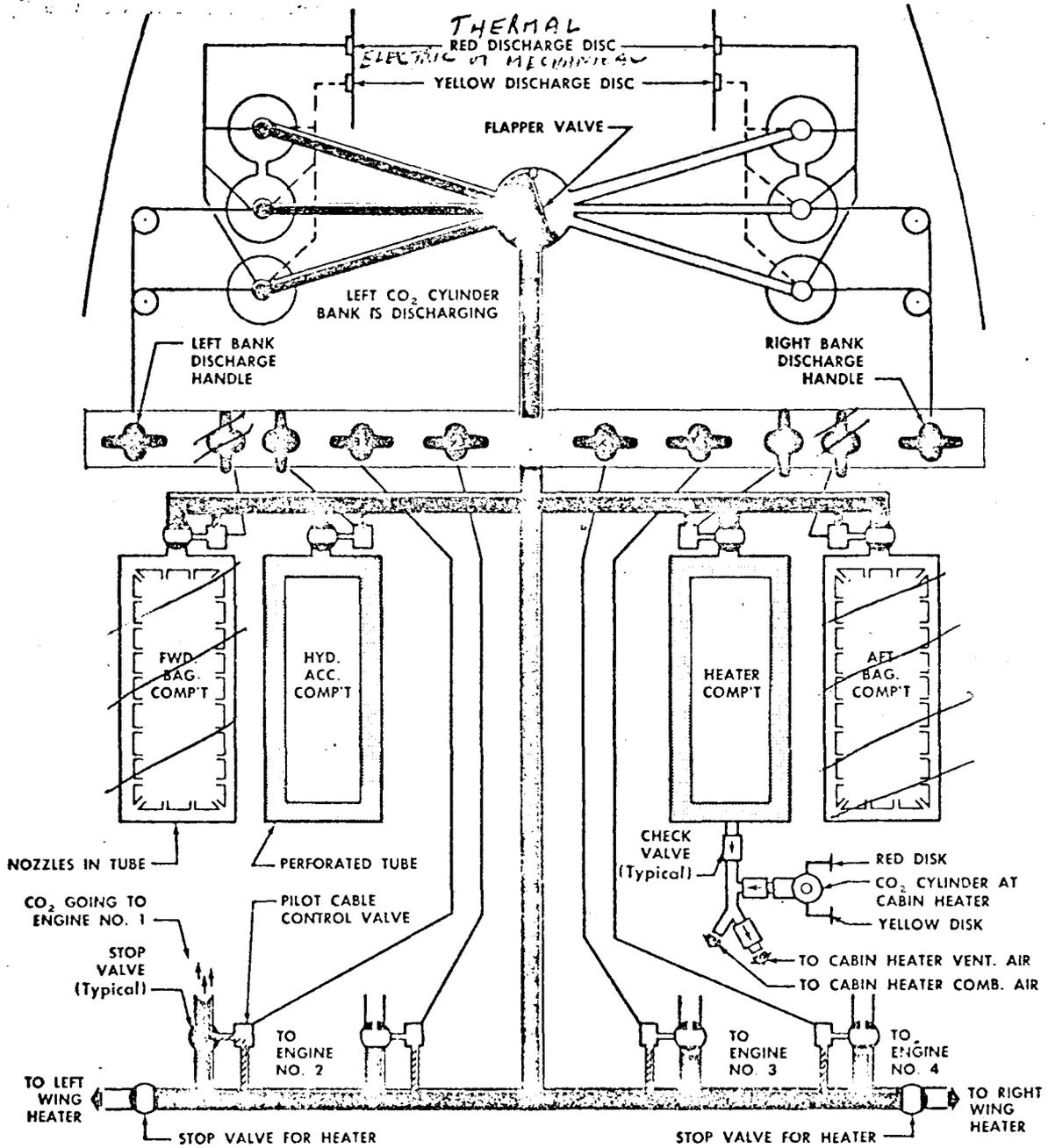
PILOT VALVE AND DIRECTION VALVE  
FIGURE 56





**FIRE EXTINGUISHER SYSTEM**  
**DESCRIPTION**

(Continued)



**MAIN CO<sub>2</sub> SYSTEM SCHEMATIC**