FlightSafety international

FALCON 20 RECURRENT TRAINING MANUAL

REVISION 5.01

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NOTICE

The material contained in this training manual is based on information obtained from the aircraft manufacturer's *Pilot Manuals* and *Maintenance Manuals* (FIELD CD). It is to be used for familiarization and training purposes only.

At the time of printing it contained then-current information. In the event of conflict between data provided herein and that in publications issued by the manufacturer or the JAA/FAA, that of the manufacturer or the JAA/FAA shall take precedence.

We at FlightSafety want you to have the best training possible. We welcome any suggestions you might have for improving this manual or any other aspect of our training program.

Courses for the Falcon 20 aircraft are taught at the following FlightSafety International learning centers:

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CHAPTER 1
INTRODUCTION

GENERAL

The *Falcon 20 Recurrent Training Manual* is designed to supplement the scheduled training sessions conducted at the Falcon Training Centers located at Teterboro and Houston.

The staff at FlightSafety welcomes you and invites you to use our facilities to their fullest. We are ready to assist you in every way possible as you strive for professional perfection. Please feel free to call upon us at any time.

The review material is presented in a logical sequence which provides a ready reference to operational data when needed. This manual, when used in conjunction with the syllabi and the numerous training aids offered by FlightSafety, will provide a sound basis for the maintenance and improvement of your piloting skills.

COURSE OBJECTIVES

The primary objectives of the recurrent training program are:

- To produce a more realistic understanding of the systems as used or controlled by the pilot while performing his duties
- To promote good cockpit management and crew coordination
- To provide the training necessary to complete the proper FAA individual pilot certification

EQUIPMENT

Our centers are fully equipped with the training aids necessary to provide a complete training program. You are encouraged to make full use of all the facilities available.

Available training aids include (but are not limited to):

- Fully equipped classrooms
- Audiovisual rooms for self-improvement
- Cockpit procedures mockups
- Cockpit procedures trainers
- Specialized flight simulators

TRAINING

GENERAL

FAA-approved courses are followed for all training exercises. These courses are tailored to the customers' needs, and specified syllabi are followed with proper FAA certification as their goal.

Optional training sessions are available according to a predetermined schedule. These courses cover many different topics, including:

- Meteorology
- Windshear
- Air traffic control
- Cockpit management

CREW

The desired minimum crew for all training is two pilots from the same company. This provides the optimum flight simulator training.

Pilots are encouraged to use their own company's checklists and operational procedures, when available. Training can be adjusted to meet individual company requirements.

TRAINING MATERIALS

The training materials necessary for satisfactory course completion are provided by FlightSafety and include training manuals, work materials, and checklists. Specialized materials, such as company checklists, computers, and other equipment, must be provided by the customer.

MANAGEMENT ASSISTANCE

You are encouraged to seek the assistance of the Director—Training or the Center Manager for help with any problems which cannot be resolved by your assigned instructor.

Syllabus will be made available to the students when they arrive at the center for training.

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EXPANDED CHECKLIST

CONTENTS

NORMAL PROCEDURES (EXPANDED)

CONTENTS

NORMAL PROCEDURES (EXPANDED)

This checklist assumes that a preflight inspection has been completed on the Falcon 20 in accordance with the preflight checklist in the *Airplane Flight Manual* and that passenger briefing has been completed (FAR 91.199). Steps marked with an asterisk need to be accomplished only on the first flight of the day.

EXTERNAL POWER

1. Generator/Auxiliary Bus ..... ON

   The generator switches are on to complete the start interlock for engine starting. The auxiliary bus switch is on to provide battery bus power to the service lights.

2. Batteries ..... CHECKED/ON

   Turn on the No. 1 battery, check voltage, amperage and illumination of the battery light on the master fault panel. Turn on the No. 2 battery switch and the battery light goes out. Turn off the No. 1 battery switch and the battery light reilluminates. Check the No. 2 battery voltage. Turn on the No. 1 battery switch and the battery light goes out.

3. DC Power Selector ..... FLIGHT NORMAL

   This switch should be in the FLIGHT NORMAL position before connecting or disconnecting the ground power unit.

4. External power ..... CONNECTED

   External power recommended voltage and amperage is 28.5 volts and 1,000 amps.

5. DC Power Selector ..... EXTERNAL POWER

   This switch provides external power to the start and main buses. This switch will now isolate the batteries from the electrical network; check that the battery light on the master fault panel is on. External power voltage can be monitored on the overhead voltmeter in the battery position.

APU STARTING

1. APU Circuit Breaker(s) ..... CHECKED/IN

   The APU circuit breaker on the copilot circuit-breaker panel must be in. On aircraft equipped with the Garrett 36-150 model the APU master switch and fire extinguisher and fire detection circuit breakers must be on and in.

2. Generator Switches ..... ON

   The generator switches must be on to complete the start interlock.

3. Auxiliary Bus Switch ..... ON

   The generator switches must be on to complete the start interlock.

4. Batteries ..... CHECKED/ON

   Turn on the No. 1 battery switch and check voltage, amperage and illumination of the battery light on the master fault panel. Turn the No. 2 battery switch on, the battery light goes out. Turn the No. 1 battery switch off, the battery light reilluminates. Check No. 2 battery switch on, the battery light goes out. Turn the No. 1 battery switch on and the battery light goes out.

5. DC Power Selector ..... FLIGHT NORMAL

6. Sliding Window ..... OPEN

   This step prevents pressurization after APU is started.

7. Bleed-Air Switches ..... CLOSED

   This satisfies the APU start interlock and isolates the APU from engine bleed lines. (This step is not necessary on some modified installations.)

8. Air-Conditioning Switch ..... OPEN

   This satisfies the APU start interlock and provides air source for jet pump operation. (This step is not necessary on some modified installations.)

9. APU Switch(es) ..... ON

10. APU Annunciator Lights ..... TESTED

    The BLEED air light on T-39 and the NRV light on the Saphir 4-2 panels can only be tested with the APU master switch off.

11. APU Fire Warning ..... TESTED

    Depress the fire panel test button, monitor fire panel illumination and fire warning horn.

12. Anticollision Lights ..... ON

13. No. 2 Boost Pump ..... AS REQUIRED

14. APU ..... STARTED/CHECKED

    Monitor APU starting parameters.

15. APU Generator ..... ON/CHECKED

    APU voltage on the overhead panel voltmeter in the battery position. Reduced voltage (1.5 volts) can be seen on some modified APUs for 3 to 7 minutes. Normal voltage output is 27.5 volts (the Garrett 36-150 voltage is 28.5 volts).

16. APU Bleed Air ..... AS REQUIRED

PRESTART

NOTE

The following prestart and start checklists assume the GPU or APU will be utilized. If only aircraft batteries are available consult the *AFM* for procedures.

NOTE

For aircraft equipped with expanded master caution panels, those items marked with * may be deleted from the prestart checklist.

1. Parking Brake ..... SET/LIGHT OUT

   The park brake light on the fault panel is a low pressure light which illuminates if the stored hydraulic pressure is less than 1,200 psi.

2. Cabin Door ..... CLOSED/LIGHT OUT

   The door light on the master fault panel monitors the door lock, exterior door handle, and rear compartment door.

3. Seats/Seatbelts/Rudder Pedals ..... ADJUSTED/SET
4. Circuit Breakers ..... CHECKED/IN
5. Blower Switches ..... OFF
6. Galley Power Switch ..... OFF
7. Generator Switches ..... ON

   Generator switches are on to complete the start interlock for engine starts.

8. Aux Bus Switch ..... ON

   This switch allows battery bus power to supply the service lights.

9. Battery Switches ..... ON (BAT LIGHT OFF)

   The battery light will be on if external power is connected and selected. It is recommended that batteries be on for a minimal time period if the APU or external power is not used.

10. Inverters ..... CHECKED/ON
11. No Smoking/Seat Belt Signs ..... ON
12. Overhead Panel Lights ..... AS REQUIRED

    The overhead panel lights are push-to-test type. Dimming and brightness of bulbs is by twisting the individual lights.

13. Fluorescent Lights/Cabin Lights ..... AS REQUIRED

14. Emergency Exit Lights ..... TESTED/ARMED

    Select the exit lights switch to the ON position and note the illumination of the overhead dome light emergency bulbs and emergency cabin lights. Select the ARM position and the emergency lights will go out.

15. Dome Lights ..... AS REQUIRED

    The auxiliary bus switch must be on for service light operation.

16. NAV Lights ..... AS REQUIRED
17. Anticollision Lights ..... AS REQUIRED
18. Flood Lights ..... OFF
19. Strobe Lights/High Intensity Lights ..... OFF
20. DC Power Selector ..... AS REQUIRED
21. Fuel Filter Clog Lights ..... TESTED/ADJUSTED
22. Booster Pumps ..... OFF
23. Transfer Pumps ..... OFF
24. Igniter Lights ..... TESTED/ADJUSTED
25. Start Selector Switches ..... GROUND START
26. Pitot Heat Switches ..... OFF
27. Angle-of-Attack Heat Switch ..... OFF
28. Anti-ice Lights ..... TESTED/ADJUSTED
29. Anti-ice Switches ..... TESTED/OFF
30. Windshield Heat Switches ..... OFF
31. Windshield Heat Transfer Light ..... TESTED/ADJUSTED
32. Windshield Wipers ..... STOWED/OFF
33. Pilot and Copilot Flight Instrument Lights ..... AS REQUIRED
34. Shield Lights ..... AS REQUIRED
35. Panel/Console Lights ..... AS REQUIRED
36. Reading Lights ..... AS REQUIRED
37. Pilot Oxygen Mask ..... CHECKED
38. Footwarmer/Defogger Levers ..... COLD

    These levers located on pilot console in the aft position (cold) prevent bleed-air surges during engine start.

39. Pilot Audio Panel ..... SELECTED/SET
40. Cockpit Recorder ..... TESTED
41. Static Selector ..... NORMAL

    Check that the static selector is not in the emergency position.

*42. Pilot Clock/Timer ..... SET
*43. Arthur Q Lights ..... TESTED/ADJUSTED

*44. Gust Light ..... TESTED/ADJUSTED
*45. Yaw Off Light ..... TESTED/ADJUSTED
46. Pilot Flight Instruments ..... CHECKED/BUGS SET/ALT SET
47. Pilot Flight Director ..... CHECKED
48. Pilot Compass Switch ..... SLAVED
49. Radio Altimeter ..... SET
50. Annunciator Panel Lights ..... TESTED
51. Standby Horizon ..... OFF/CAGED
52. Fuel Shutoff Handles ..... IN

This ensures that the fuel shutoff valves are open and fuel can be supplied to the engines.

53. Fire Warnings ..... TESTED

This checks electrical continuity and visible warnings for all fire detection loops. The horn should sound and be silenceable. (Note: Depressing the fire test button can cause APU shutdown on modified installations.)

54. Extinguisher Switches ..... DOWN/SAFETIED
55. Flap/DLE/Airbrake Lights ..... TESTED

Press the test button on the flap panel. All four lights illuminate. In addition, the large red AIRBRAKE light will illuminate when power levers are advanced.

56. Master Caution Panel Lights ..... TESTED
57. Radar ..... OFF
58. Thrust Reversers ..... TESTED

Press and hold thrust reverser flasher test button. The two reverser lights illuminate, followed two seconds later by flashing transit lights. Advance the power levers beyond the 80% position, the transit lights go out. Place power levers to cutoff position. Release the test button.

59. Fuel Quantity ..... CHECKED

The inverter(s) must be on to check fuel quantity.

60. Fuel Counters ..... RESET AND ON

The inverter(s) must be on for fuel flow indication and resetting. Depress the reset button to reset the fuel used display.

61. Single Point Refueling Switch ..... OFF/LIGHT OUT

This switch in the normal (guarded) position removes power from the external fueling panel (Aircraft with SB 400).

62. Refueling Warning Light ..... OUT

This light monitors fueling master and control switches, fueling doors and vent valves.

63. Rear Tank Level Switch . . . . . NORMAL/GUARDED

Aircraft equipped with two level feeder tanks must have this switch in normal position before takeoff.

64. Wing Pre-interconnect . . . . . OFF

65. Crossfeed Switch . . . . . OFF

66. Transfer Pump Lights . . . . . TESTED/ADJUSTED

These red lights (amber lights with SB614) are push-to-test, twist for dimming/brightness.

67. Normal Landing Gear Selector . . . . . DOWN

This handle should be down and guarded.

68. Emergency Gear Selector . . . . . IN

This handle must be full forward (in) for normal gear operation.

69. Landing Gear Panel/Hydraulic Panel Lights . . . . . TESTED

Depressing the test button on the landing gear indication panel tests the six lights on the gear panel and the eight lights on the hydraulic panel (total 14 lights). The cancelable gear warning will sound. On aircraft with SB 676 the gear handle light will also test.

70. Antiskid Switch . . . . . ON

71. Stabilizer Trim . . . . . CHECKED

This check begins with the stabilizer trim in the green range. The pilot trims nosedown and then calls the copilot to trim noseup. After confirming the copilot's trim stops, the pilot calls "Release," and continues to trim to the stop. The pilot now trims noseup and repeats the above check, except this time trimming noseup. When reaching the cruise stop, normal trim will stop. The captain now trims noseup, using the emergency trim to a maximum of 6°. The red out of trim should be illuminated (except standard models without SB 179 incorporated). Advance the throttle to the takeoff range. For models with SB 275 incorporated, the warning horn should sound. The pilot trims nosedown, using the emergency trim to confirm its operation in this direction. The pilot reengages the normal trim circuit breaker and sets takeoff trim position, using the normal trim.

NOTE

Whenever the stabilizer is in motion, an aural warning sounds. For takeoff with flaps clean, set the stabilizer at the cruise stop.

NOTE

A split switch arrangement exists on airplanes SNs 346 and subsequent. In order to test this system, each switch must be actuated individually, checking for no movement of the stabilizer. Actuating both switches simultaneously will permit completion of stabilizer system check.

72. Standby Hydraulic Pump ..... TESTED/ON

Selecting the standby pump handle to the test position left or right (first detent) activates the electric pump and charges the standby pump system. Selecting the handle to the second detent allows fluid flow to respective system.

NOTE

This test is to be performed with the GPU or APU operating. If GPU or APU is not available, perform the check after the first engine start.

73. Rudder Trim ..... CHECKED/SET
74. Aileron Trim ..... CHECKED/SET

NOTE

Aileron and rudder trim checks will be performed with hydraulic pressure to the flight controls. Use the aileron and rudder trim switches to operate these trim systems to their full range of travel in both directions. Reset these trims to the green area for takeoff.

75. Standby Hydraulic Pump ..... OFF

Move the standby pump handle to the center (OFF) position.

76. Engine Synchronization Switch ..... OFF
77. Ram-Air Switch ..... NORMAL/GUARDED

This ensures the ram-air scoop is closed.

78. Bleed-Air Switches:

With APU Operating ..... CLOSED

Without APU ..... OPEN

On most APU installations, the bleed valves must be closed for APU start and operation. (On aircraft equipped with the Garrett 36-150 APU, the bleeds must be closed for APU bleed valve to open.)

79. Air-Conditioning Switch

With APU Operating ..... OPEN

Without APU ..... AUTO

On most APU installations, the air-conditioning valve must be open to provide bleed-air for jet pump operation.

80. Pressurization Selector ..... AUTO

This switch in AUTO allows the pressurization controller to control the outflow valves.

81. Cabin Dump Switch ..... NORMAL/GUARDED

This switch is either guarded or safetied to the normal position.

82. Cabin Altitude Controller ..... SET

    For aircraft equipped with the IDC controller, set the planned flight altitude plus 1,000 feet on the inside scale to provide the proper cabin altitude.

83. Cabin Rate Knob..... SET

    On aircraft equipped with the IDL controller, the knob should be in the detent position.

84. Temperature Control ..... AUTO/SET

    The white arc of the temperature controller allows for automatic temperature control.

85. Cabin Altitude Control (Cherry Picker)..... NORMAL

    This knob is spring-loaded to the middle (normal) position.

86. Cross Over Switches..... TESTED/SET

87. Altitude Alerter ..... SET

88. Copilot Flight Instruments ..... CHECKED/BUGS SET/ALT SET

89. Copilot Flight Director ..... CHECKED

90. Copilot Annunciator Lights ..... TESTED

91. Copilot Compass Switch ..... SLAVED

92. Copilot Clock/Timer ..... SET

93. Battery Temp Gage ..... TESTED/CHECKED

    Depressing the test button results in upward movement of temperature indication needles and illumination of the warm (amber) and hot (red) lights. Aircraft with expanded master fault panels also have warm and hot lights that respond to the test. The LESS 50 button allows for battery temperature range extension. (Subtract 50° from the indicated reading when pushing the button.)

94. Pitot Shutoff Valve ..... PANEL AND ACCESSORIES

    This allows copilot pitot pressure to the copilot airspeed indicator and accessories.

95. Oxygen Pressure ..... CHECKED

96. Passenger Oxygen Control ..... SELECTED: NORMAL/AUTO

Passenger oxygen knob should be position ON to provide oxygen to the masks.

Passenger supply knob should be turned to AUTO and safety wired. This arms the automatic deployment of the masks.

Perform an operational check of the crew oxygen masks; select 100%.

Confirm the pressure on the gage; it must correspond to the amount required for the flight.

600 psi minimum: Two pilots, no passengers, and flight under 10,000 feet

950 psi minimum: Two pilots, eight passengers, emergency descent 42,000 feet to 10,000 feet all using oxygen, then one hour at 10,000 feet with one passenger using oxygen.

1,100 psi minimum: Two pilots, eight passengers, emergency descent 42,000 to 14,000 feet all using oxygen, then one hour with two pilots and one passenger using oxygen.

An interphone check ensures the oxygen mask microphone will operate when oxygen is in use.

97. Copilot Audio Panel ..... SELECTED/SET
98. Copilot Oxygen Mask ..... TESTED
99. APU Panel ..... CHECKED
100. DMEs ..... SET/OFF
101. Comm Radios ..... SET/OFF
102. NAV Radios ..... SET/OFF
103. Marker Beacons ..... TESTED
104. Long Range NAV Equip .....SET/OFF
105. Autopilot ..... CHECKED/OFF
106. Flap Handle ..... FORWARD
107. Audible Warnings ..... TESTED

Check for the proper aural warning:

Maximum operating speed/Mach: Cannot be silenced.

Cabin pressurization: Can be silenced. (Check master fault panel light.)

Flight stall: Should not sound.

Ground stall: Cannot be silenced.

Stabilizer out-of-trim warning: Cannot be silenced. (This check can also be

accomplished during the stabilizer trim check.)

*108. Yaw Damper Fail Light ..... TESTED/ADJUSTED
109. Drag Chute Handle ..... STOWED/SAFETIED

110. Landing Light Switch ..... OFF
111. Taxi Light Switch ..... OFF
112. Landing Light Warning ..... TESTED
113. Air Brake Handle ..... FORWARD
114. Power Levers ..... CUTOFF

Power levers must be in cutoff to complete the start interlock.

115. Takeoff Data ..... COMPUTE/SET

ENGINE START

1. Power Levers ..... CUTOFF

   Power levers must be in cutoff to complete the start interlock.

2. Anticollision Light ..... ON
3. DC Power Selector ..... AS REQUIRED
4. No. 2 Boost Pump ..... ON

   The FUEL P light on the master fault panel will extinguish if fuel pressure exceeds 8.7 psi. Boost pump pressure is also monitored in the triplex gage if the auxiliary buses are powered.

5. No. 2 Engine ..... START/CHECKED

   Complete the final start interlock check and ensure that BAT START or EXT PWR is selected and the BATTERY light on the master fault panel is illuminated. Depress the push-to-start button (two seconds maximum).

START PARAMETERS

N_1:

10% Power Lever to Idle Ignition Light ..... ON
12% Hydraulic Light ..... OUT
20% OIL Pressure Light ..... OUT
30% EGT ..... 40° C
41% Starter Drop OUT: Ignition Light ..... OUT

NOTE

On airplanes prior to SN 345, when BAT start is selected, the auxiliary buses are not powered. The crew must check fuel pressure, hydraulic pressure, and engine oil pressure on the master fault panel. Starting time will vary with the starting mode and engine model, but in all cases, discontinue the start after 30 seconds.

NOTE

It is recommended after the first engine start to select FLIGHT NORMAL to monitor N_2 (fun) rotation and check that the generator output is below 200 amps.

6. No. 1 Boost Pump ..... ON

   The FUEL P1 light will go out if boost pump pressure exceeds 8.7 psi.

7. No. 1 Engine ..... START/CHECKED

   Follow the first procedure as used for the first engine.

8. DC Power Selector ..... FLIGHT NORMAL

   The battery and GEN 1 and GEN 2 lights on the master fault panel will go out.

NOTE

If the aircraft has been supplied power from the GPU, the aircraft generators will not connect to the main bus with ground power supplied to the external power receptacle. disconnect GPU at this time.

9. Generators—Volts/Amps ..... CHECKED

   Check dual generator output on the overhead panel voltmeter in the BATTERY position. Check generator amperage to ensure generators are sharing the electrical load.

NOTE

Upon connection of the generators to the main bus (GEN 1, GEN 2 lights out) voltage reduction is activated. Voltage is reduced 1.5 volts for 3 to 7 minutes. Generator voltage will then increase to 28.5 volts.

10. Batteries—Amps/Temps/Current Limiters ..... CHECKED

    Check battery charge rate on the battery ammeter and battery temperature on the temperature indicator. Current limiters are checked by selecting a battery switch to the off position and checking for a decrease in battery charge rate or generator load.

11. Inverters ..... ON

    a. Place the standby inverter to the No. 1 AC bus; check the voltage and that the No. 1 AC light is out.

    b. Place the No. 1 inverter on.

    c. Place the standby inverter to the No. 2 AC bus; check the voltage and that the No. 2 AC light is out.

    d. Place the No. 2 inverter on.

    e. Place the standby inverter off.

    f. Check the voltage on the AC No. 2 and No. 1 AC buses.

NOTE

Indicated voltage should be 115 ± 5 volts.

12. Transfer Pumps ..... ON

    The transfer pressure lights on the fuel panel or master fault panel will go out if transfer pump pressure exceeds 4 psi.

13. Engine Parameters ..... CHECKED
    a. EGT ..... 427-675° C
    b. N_1 ..... 46 ± 1.5%
    c. N_2 ..... 20-30%
    d. Fuel Flow ..... 500-600 POUNDS
    e. Oil Pressure ..... 5 PSI MINIMUM
    f. Oil Temperature ..... 80-125° F
    g. Fuel Pressure ..... 20 PSI

AFTER ENGINE START

1. Aircraft Lighting ..... AS REQUIRED

   Most instrument lighting requires the AC buses to be powered.

2. Radios/EFIS ..... ON/SET
3. Navigation Equipment ..... ON/SET
4. Emergency Horizon ..... ON/UNCAGED
5. Blowers ..... ON
6. Galley Power ..... ON
7. Circuit Breakers ..... CHECKED/IN

TAXI

1. Passenger Briefing ..... COMPLETE
2. Hydraulics ..... CHECKED

   Observe the hydraulic panel and note proper pressures and indications 3,000 psi engine pressure and hydraulic annunciators are out.

3. Taxi Light ..... AS REQUIRED
4. Nav Lights ..... AS REQUIRED
5. No. 2 Brakes ..... SELECTED/TESTED

   Select No. 2 brakes to test for proper operation.

6. No. 1 Brakes ..... SELECTED

7. Antiskid ..... TESTED

The antiskid switch on the hydraulic panel must be on. Depress the brake pedals and observe the green No. 1 brake pressure lights illuminate. Push the antiskid test button and then release it. The green lights will go out for two seconds and then come back on again.

NOTE

The aircraft may move forward when the test button is released.

8. Windshield Heat

Place the windshield heat switches on the normal position and the side windshield heat on. These switches must remain on throughout the fight.

9. Window ..... AS REQUIRED

When closed and locked ensure the green mark is visible at the end of the handle.

10. Anti-ice ..... CYCLED/SET FOR TAKEOFF

NOTE

Use engine anti-ice anytime the temperature is below +5° C and there is visible moisture. Do not use anti-ice above +10° C.

Select both the ENG ANTI-ICE SWITCHES to ON. Observe the two red BLEED AIR VALVE lights illuminate and then go out. These light indicate the nacelle valves are in motion. Select the AIR-FRAME ANTI-ICE switch to ON. Observe the two red BLEED-AIR VALVE FAIL lights illuminate and then go out. Return the switches to the OFF position in reverse order.

NOTE

Engine anti-ice may be used for takeoff with the proper corrections applied. Airframe and anti-ice are not to be used until the gear is retracted.

11. Airbrakes ..... CHECKED/STOWED

Select the airbrake handle back and observe airbrake extension.

12. Flaps ..... CYCLED/SET FOR TAKEOFF

Select all four detents and observe that the flaps and DLE operate properly. Select the proper takeoff setting.

13. Yaw Damper ..... ON (LIGHT OUT)

Push the yaw damper switch in, and confirm the yaw damper disengage light is out.

14. Rear Tank Switch ..... AS REQUIRED

This switch normally is guarded to the NORMAL position.

15. Flight Controls ..... CHECKED

Actuate all three primary flight controls over their full range. The controls should be completely free and automatically return to neutral position when released.

16. Auto Pilot ..... OFF

17. Flight Instruments ..... CHECKED

Test all navigation and flight instruments prior to takeoff. Set the bugs with the proper speeds. The pilot should have V_2 set. V_R is a remembered speed. Set the altimeter to 400 feet. If an engine is lost, this is a guide for the minimum altitude for flap retraction.

18. Takeoff Briefing ..... COMPLETED

a. Confirm the V speeds and EPR to be used for takeoff. Check that bugs are properly set; (pilot, V_2; copilot, V_1).

b. Discuss the departure with respect to turns initial altitude, climb for noise, and/or a standard instrument departure (SID).

c. Abort the takeoff if any of the following occurs before V_1:
   - Any red light illuminates
   - Stabilizer movement
   - Abnormal engine indication
   - Thrust reverser deployment

NOTE

The pilot observing the problem will say, "Abort." Stop the airplane with:

- Throttles ..... IDLE
- Airbrake ..... EXTENDED
- Braking ..... MAXIMUM
- T/R and/or DRAG chute ..... AS NECESSARY

d. The pilot starts throttles forward; the copilot sets the takeoff EPR and calls, "Power set."

e. The copilot calls, "60 knots."

f. The copilot calls, "100 knots."

g. The copilot calls, "V_1" at V_1 speed.

Any malfunction after V_1 will be treated as an airborne problem, with the proper

checklist action applied.

h. The copilot calls, "Rotate," at V_R speed.

i. The pilot applies back pressure to attain a liftoff attitude of 12-15°.

j. Inform the passengers prior to the takeoff roll via the public address system.

BEFORE TAKEOFF/LINE UP

1. Brake Selector ..... NO. 1 POSITION

   Select No. 1 brakes before takeoff. Check that the green brake lights illuminate with brake pedals depressed.

2. Antiskid Switch ..... ON

3. Hydraulic Panel ..... CHECKED

   Confirm hydraulic pressure, hydraulic quantity and the TRANSFER JACK light is out.

4. APU ..... OFF

NOTE

Some modified APU installations permit APU operation for takeoff/climb. Consult your *Aircraft Flight Manual* for your installation.

5. Sliding Window ..... CLOSED

   Ensure the green mark is visible at the end of the handle.

6. Bleed-Air Switches ..... OPEN

NOTE

Most SAPHIR and SOLAR APUs will shut down if bleed switches are selected to the open position. On the Garrett 36-150 APU, bleed switches off results in loss of APU bleed air only.

7. Air-Conditioning Switch ..... AUTO

NOTE

Most SAPHIR and SOLAR APUs will shut down if air-conditioning switch is out of the open position.

8. Pitot Heat Switches ..... ON (LIGHTS OUT)

   Turn on the pilot pitot heat switch and observe PITOT 1 light extinguisher on the master fault panel. Turn on the copilot pitot heat switch and observe PITOT 2 light extinguishers. On aircraft equipped, turn on the angle-of-attack heat switch.

9. Master Caution Panel ..... CHECKED (LIGHTS OUT)

10. Flaps/Airbrakes/Trim/Speeds (FATS) ..... SET FOR TAKEOFF

    F—Flaps ..... 15°/10°

    A—Airbrakes ..... HANDLE FORWARD (LIGHT OUT)

    T—Trims ..... ALL THREE SET FOR TAKEOFF

    S—Speeds ..... BUGS SET PROPERLY

11. Transponder ..... ON

    Set the proper code and switch on the transponder.

12. Landing Lights ..... AS REQUIRED
13. Strobes ..... AS REQUIRED
14. Engine Anti-Ice ..... AS REQUIRED
15. Igniters ..... AS REQUIRED
16. Radar ..... AS REQUIRED

AFTER TAKEOFF

1. Landing Gear ..... UP

   Upon the pilot's command, the copilot places the gear selector up and confirms the proper retraction indications.

2. Anti-Ice ..... AS REQUIRED

   Use anti-icing when temperature is below +5° C and there is visible moisture. Do not use anti-icing above +10° C. See the minimum engine thrust setting charts.

3. DLE/Flaps ..... UP

   Upon the pilot's command, the copilot places the flap selector handle up and confirms the proper retraction indications of the flaps and DLEs.

4. Taxi Light ..... OFF
5. Landing Light ..... OFF/AS REQUIRED

   Turn off the retractable landing light switch if installed and confirm the landing light position indicator (amber light) is out.

   NOTE

   If wing root lights are installed switch them off after passing 10,000 feet MSL.

6. Igniters ..... OFF
7. Seat Belt/No Smoking Signs ..... AS REQUIRED
8. Pressurization ..... CHECKED

   Check for airflow through the outlets, cabin rate of climb, and cabin altitude and differential pressure indicators to confirm a normal pressurization schedule.

9. Cabin Temperature ..... CHECKED
10. Hydraulic Panel ..... CHECKED
11. Fuel Panel ..... CHECKED

12. APU ..... OFF
    a. Engine Thrust ..... 80% (N_1)
    b. Bleeds ..... BOTH OPEN
    c. Conditioning Valve ..... AUTO
    d. APU Switch ..... OFF
    e. NRV Light ..... OUT

    Check that the amber NRV light is out three minutes after shutdown. When illuminated, the APU to air-conditioning system line is not tight, and bleed air is being lost. Refer to the Abnormal Checklist.

13. Climb Thrust ..... SET
14. Engine Synchronization ..... AS REQUIRED

18,000 FOOT CHECK OR TRANSITION ALTITUDE

1. Altimeters 29.92

   Comply with FARs.

2. Oxygen ..... AS REQUIRED

   Comply with FAR Part 91.32.

3. Station Check ..... COMPLETE

   Check operation of all systems.

STATION CHECK

- Circuit breakers checked in
- Electrical panel
- Engine parameters
- Hydraulic panel
- Fuel panel
- Pressurization/temperature

This check is performed periodically by the crew to confirm all systems are operating normally.

DESCENT

1. Cabin Altitude Controller ..... SET

   Set the point on the outside scale to the destination airport's elevation (MSL) and set barometric scale to field altimeter setting.

2. Anti-Ice ..... AS REQUIRED

   Select these switches on if the flight is expected to pass through visible moisture and the temperature is below +5° C. Consider use of airstart ignition.

3. Altimeter ..... SET/X-CHECKED

4. Landing Computations ..... LANDING DISTANCE/LANDING FIELD LENGTH/V_{REF}

   Determine the landing weight, check the runway length, and go-around climb requirements. Set the bugs to the V_{REF}, plus any configuration additive and any wind correction.

   NOTE

   V_{REF} must be increased by half the steady wind, plus the full gust. The total wind correction shall not exceed 20 knots. Bleed off the steady state from 200 feet.

5. V_{REF} ..... BUGS SET
6. Seat Belt Sign ..... AS REQUIRED
7. Passenger Briefing ..... COMPLETED
8. Approach Briefing ..... COMPLETED
   a. Confirm the reference speed (V_{REF}), and set both bugs.
   b. Discuss the approach to be used:
      (1) Type and runway direction
      (2) Approach frequency
      (3) Airport elevation
      (4) Minimum safe altitude
      (5) Transition altitude (if any)
      (6) The inbound magnetic course
      (7) The final approach fix altitude
      (8) All missed approach information
      (9) The speed to be used
      (10) The time to the missed approach
      (11) All information that is added to clarify the approach
      (12) All lighting that is available
      (13) All runway information including the touchdown runway remaining

c. The pilot not flying will make calls on approach in accordance with the following listing:

(1) One dot left of right ..... "Localizer"

(2) One dot above or any below ..... "Glideslope"

(3) Any altitude deviation ..... "Altitude"

(4) Any vertical sink over 1,000 fpm..... "Sink rate"

(5) Any bank over 30° ..... "Bank"

(6) 10 knots above or any below the target speed.... "Airspeed"

(7) 500 feet above DH or MDA..... "500 above minimums"

(8) 100 feet above DH or MDA..... "Approaching minimums"

(9) At minimums:

- With runway in sight "Minimums—runway in sight—land"
- Without runway in sight "Minimums—no runway—go-around"

(10) Runway clearly visible ..... "Runway in sight"

APPROACH

1. Flaps ..... SET

   Select flaps to the first detent.

2. Seat Belt Sign ..... ON

3. Anti-Icing ..... AS REQUIRED

   Select these switches on if the flight is to pass through visible moisture and the temperature is below +5° C. Do no use above +10° C. Select these switches off if anti-icing is no longer required, or brief the copilot as to when to switch off anti-icing.

4. Radios ..... SET FOR APPROACH

   The pilot's radios should be set for the final approach course. Any flags should be noted and announced to the copilot with corrective action taken.

   As soon as practical, the copilot should select his radios for the final approach course to back up the pilot.

   The altitude alerter should be set to the missed approach altitude. This eliminates a needless bell during a critical phase of flight and avoids confusion regarding required altitude on a missed approach.

5. Altimeters ..... CHECKED/SET

6. Radio Altimeter ..... SET

7. Radar ..... STANDBY

LANDING

1. Gear ..... DOWN/3 GREEN

   Place the gear selector down, and confirm the proper extension indications.

2. Antiskid Hydraulics ..... TESTED/CHECKED

   Depress both brake pedals; the green lights should not illuminate. Push the antiskid test button; both lights should illuminate. Release the test button; both lights go out. Release the brakes.

3. Hydraulics ..... CHECKED

   Confirm hydraulic pressure, hydraulic quantity and that the transfer jack light is out prior to landing.

4. Landing Lights ..... AS REQUIRED

   Switch on the landing lights, taxi lights, if required.

   NOTE

   If wing root lights (WRL) are installed, switch them on when descending through 10,000 feet MSL.

5. Windshield Wipers ..... AS REQUIRED

   Maximum operating speed 180 knots.

6. Airbrakes ..... STOWED (LIGHTS OUT)
7. Autopilot ..... OFF
8. No Smoking Sign ..... ON
9. Igniters ..... AS REQUIRED

   Select both switches to AIRSTART for the landing if the runway has any amount of water, snow, or slush or if presence of birds is expected.

10. Engine Synchronization ..... OFF
11. Circuit Breakers ..... CHECKED IN
12. Flaps ..... SET FOR LANDING

AFTER LANDING

1. Anti-Ice ..... OFF

   Place both ENG ANTI-ICE switches to OFF. Do not use anti-icing above +10° C.

2. Pitot Heat ..... OFF

   Place both pitot heat switches and angle-of-attack (if equipped) switches off.

3. Radar ..... OFF
4. Windshield Heat

   If windshield heat is not necessary, turn it off as soon as possible to prevent unnecessary current drain.

5. Windshield Wipers ..... OFF

   Use windshield wipers only when windshield is wet.

6. Igniters ..... OFF
7. Taxi Lights ..... AS REQUIRED
8. Landing Lights ..... OFF

NOTE

Retractable landing lights and wing root lights are limited to 15 minutes of ground operation, then turned off for 45 minutes for cooling.

9. Strobes ..... OFF
10. Transponder ..... OFF
11. Brake Selector ..... NO. 2 POSITION

    Select No. 2 brakes for taxi.

12. Flaps ..... UP

    Retract flaps to prevent possible damage during taxiing.

13. Airbrakes ..... STOWED

    Move the handle forward.

14. Trims ..... RESET

    Set all three trims in the green position for the next takeoff.

15. Radios ..... OFF/AS REQUIRED

    Switch off all unnecessary radios to reduce current drain.

16. Sliding Windows ..... OPEN

    This ensures the airplane is depressurized.

17. APU ..... START/AS REQUIRED

APU STARTING (GARRETT 36-150)

1. Circuit Breakers ..... IN
2. APU Override Switch ..... OFF
3. Batteries ..... CHECKED/ON
4. No. 2 Battery Switch ..... OFF

   APU starts from the No. 2 battery while No. 1 battery, main engine generators, or external power supply the aircraft buses.

5. DC Power Selector .. FLIGHT NORMAL OR EXTERNAL POWER
6. APU Annunciators ..... TESTED
7. APU Fire Warning ..... TESTED
8. APU On/Off Switch ..... ON

   This results in APU start.

9. RPM Button ..... DEPRESSED
   This allows observation of RPM during starts.
10. No. 2 Battery Switch ..... ON
11. APU Generator Switch ..... ON/CHECKED
12. Bleed-Air Switches ..... OFF
    The Garrett APU bleed valve will not open unless the aircraft bleeds are closed.
13. APU Bleed Switch ..... ON

PARKING SHUT DOWN

1. Parking Brake ..... SET
   Pull the brake selector to the parking brake position.
2. Taxi Light ..... OFF
3. Radar ..... OFF
4. Radio/EFIS ..... OFF
5. Blowers ..... OFF
6. Sliding Window ..... OPEN
   This ensures the cabin is not pressurized.
7. Galley Power ..... OFF
8. Inverters ..... OFF
9. Transfer Pumps ..... OFF
10. Booster Pumps ..... OFF
11. Power Levers ..... CUTOFF
12. Seat Belt Sign ..... OFF
13. Exit Lights ..... OFF
14. APU ..... OFF
15. Anticollision Lights ..... OFF
16. NAV Lights ..... OFF
17. Cockpit/Cabin Lights ..... OFF
18. Batteries ..... CHECKED/OFF
19. Standby Horizon ..... OFF/CAGED
    Confirm the illumination has been activated with the loss of DC power; then select the power switch off, and cage the gyro.
20. Aux Bus Switch ..... OFF
    This isolates battery bus power from the service lights.

EMERGENCY AND ABNORMAL PROCEDURES

CONTENTS

TABLE

EMERGENCY PROCEDURES

ENGINE FIRE

Phase I

On Engine Concerned

1. Fuel Shutoff Handle ..... PULLED
2. Power Lever ..... IDLE
3. Bleed-Air Switch ..... CLOSED
4. Airframe Anti-ice Switch .....OFF

Phase II

5. Airspeed ..... REDUCE (IF POSSIBLE, BELOW 250 KNOTS)
6. Booster Pump Switch (On Engine Concerned) ..... OFF
7. Transfer Pump Switch (On Engine Concerned) ..... OFF

IF FIRE ZONE LIGHT IS "ON":

8. Extinguisher Switch ..... POSITION NO. 1

If after 30 seconds FIRE ZONE LIGHT remains "ON":

8a. Extinguisher Switch ..... POSITION NO. 2

Phase III

9. Power Lever ..... CUTOFF
10. Airframe Anti-ice Switch (If Necessary) ..... ON

Land as soon as possible if fire persists. Refer to One Engine Inoperative Procedure.

APU FIRE

For aircraft equipped with basic ***Micro Turbo Saphir APU***:

Phase I

APU should automatically shutdown.

1. APU Switch ..... OFF
2. APU Fire Extinguisher Switch ..... POSITION NO. 1

If aircraft is on the ground, consider evacuation of aircraft.

If aircraft is in flight, consider landing as soon as possible.

For aircraft equipped with ***Garret GTCP 36-150 APU***:

Phase I

1. APU Fire Push ..... DEPRESS

   Allow APU Turbine to stop (speed less than 5%) then:

2. APU Fire Extinguisher Switch ..... PUSH

If aircraft is on the ground, consider evacuation of aircraft.

If aircraft is in flight, consider landing as soon as possible.

REAR COMPARTMENT OVERHEAT

Phase I

1. Battery Switches ..... BOTH OFF
2. Airframe Anti-ice Switch ..... OFF
3. Power Levers ..... REDUCE
4. Bleed-Air Switches ..... BOTH OFF
5. APU Switch ..... OFF
6. Inspect rear compartment through the eyepiece in toilet compartment.

NOTE

Illumination of FIRE REAR COMP light and/or sounding of aural warning indicates an overhead which is very likely due to leakage of the hot bleed-air ducts from the engine.

Although the rear compartment is not classified as a fire zone, the presence of electrical wiring and of vital components introduces a possible fire risk. Therefore, fire extinguisher bottles normally provided for the engines may be used for the rear compartment.

If fire is evident (visible flames or smoke):

Phase II

7. Rear Compartment Fire Extinguisher POSITION NO. 1

Phase III

8. No Smoking Sign ON

*9. Emergency Pressurization ..... IF NECESSARY

If fire is not evident:

Phase II

7. Check frequently for absence of fire

Phase III

8. No Smoking Sign ..... ON

*9. Emergency Pressurization ..... IF NECESSARY

Land as soon as possible. Initiate the Emergency Descent Procedure.

If the FIRE REAR COMP light remains illuminated:

Continue monitoring the rear compartment and land as soon as possible.

or:

If the FIRE REAR COMP light has extinguished:

10. Power Levers ..... AS .....REQUIRED

NOTE

Check that the following procedure does not cause the alarm to reappear. If alarm is reinitiated, leave the corresponding battery switch or bleed switch off.

11. Battery Switches (One at a Time) ..... ON
12. Bleed Switches (One at a Time) ..... ON
*13. Emergency Pressurization ..... IF NECESSARY

NOTE

Aircraft with SB 558, No. 1 engine must be operating for emergency pressurization air supply.

BAGGAGE COMPARTMENT FIRE

Phase I

Baggage Compartment Fire Extinguisher ..... POSITION NO. 1

Phase II

Land as soon as possible.

ELECTRICAL SMOKE OR FIRE

Phase I

1. Auxiliary Bus Switch ..... OFF

If faulty system is identified:

2. Faulty System ..... ISOLATE
3. Windshield Defogging and Floor Air ..... HOT
4. Crew Oxygen Masks 100%/DONNED
5. Smoke Goggles ..... DONNED

6. Mask Communications ..... SELECTED/TESTED

If there are no flames in the cabin:

NOTE

Select NO SMOKE sign on, and ensure that all smoking materials are extinguished.

7. Passenger Oxygen ..... MANUAL OR OVERRIDE
8. Passenger Masks ..... DONNED/CHECKED

Initiate a descent if possible.

If fire is located:

Phase II

Use portable CO2 extinguisher.

If smoke persists:

- Land as soon as possible.

For Landing:

- Landing gear extended by system No. 2.

If fire is not located and smoke persists:

Phase II

9. Pull all white CBs except those indispensable for safety of flight.

If fire and smoke persists:

10. Generators..... BOTH OFF
11. Batteries..... BOTH OFF

- If smoke stops:
- Reset power supplies and distribution systems in order of necessity trying to identify the faulty system.
- After identification, definitely leave the faulty system off.
- Land as soon as possible.
- Consider effects of the faulty system.

CABIN SMOKE OR FIRE

Evacuation of smoke should be adequate with normal cabin ventilation. If smoke cannot be evacuated:

Phase I

1. Crew Oxygen Masks 100%/DONNED
2. Smoke Goggles (If Necessary) ..... DONNED

3. Mask Communications ..... SELECTED/TESTED
4. No Smoking Sign ..... ON

If there are no flames in the cabin:

5. Passenger Oxygen ..... MANUAL OR OVERRIDE
6. Passenger Masks ..... DONNED/CHECKED
7. Windshield Defogging and Floor Heat ..... HOT

Phase II

If fire exists and its origin is effectively not electrical, use the portable water extinguisher.

8. Descend ..... BELOW 10,000 FEET
9. Cabin ..... DEPRESSURIZED
10. Ram-Air Switch ..... OPEN

If necessary, below 160 knots:

11. Sliding Window ..... OPEN

Phase III

If smoke persists, land as soon as possible.

If necessary, initiate an Emergency Descent.

SMOKE FROM AIR-CONDITIONING SYSTEM

Phase I

1. Crew Oxygen Masks 100%/DONNED
2. Smoke Goggles ..... DONNED
3. Mask Communications ..... SELECTED/TESTED
4. No Smoking Sign ..... ON
5. Passenger Oxygen ..... MANUAL OR OVERRIDE
6. Passenger Masks ..... DONNED/CHECKED

Phase II

Try to locate the origin of the smoke by alternately closing the BLEED AIR switches.

If origin is located:

7. Faulty Bleed-Air Switch ..... CLOSED

If origin cannot be located:

7. Bleed-Air Switches ..... BOTH CLOSED
8. Emergency Pressurization ..... AS REQUIRED

If emergency pressurization is not used:

9. Descent ..... BELOW .....10,000 FEET
10. Cabin ..... DEPRESSURIZED
11. Ram-Air Switch ..... OPEN

If necessary:

12. Airspeed ..... <160 KNOTS
13. DV Window .....OPEN

Phase III

If smoke persists, land as soon as possible.

If necessary, initiate an Emergency Descent.

NOTE

Aircraft with SB 558, No. 1 engine must be operating for emergency pressurization air supply.

FUEL ODORS

Evacuation of fuel odors should be adequate with normal cabin ventilation. If fuel odors persist:

Phase I

1. No Smoking Sign ..... ON
1. Crew Oxygen Masks 100%/DONNED
1. Mask Communications ..... SELECTED/TESTED

If necessary, temporarily increase cabin altitude.

MAIN WHEEL WELL OVERHEAT

Phase I

1. Airspeed ..... REDUCE (IF POSSIBLE) BELOW 190 KNOTS
2. Landing Gear ..... DOWN

Phase II

Land as soon as possible.

NOTE

Overheat may have caused tires to deflate. Exercise caution during landing.

RAPID DEPRESSURIZATION

Phase I

1. Crew Oxygen Masks 100%/DONNED
2. Mask Communications ..... SELECTED/TESTED
3. No Smoking and Seat Belt Sign ..... ON
4. Passenger Oxygen ..... MANUAL OR OVERRIDE
5. Passenger Masks ..... DONNED/CHECKED

Phase II

As soon as conditions permit:

6. Descent (Emergency Descent, If Necessary) BELOW 14,000 FEET
7. Crew Oxygen Masks ..... NORMAL
8. Passenger Oxygen ..... OFF(IF NOT REQUIRED)

Land if necessary.

EMERGENCY DESCENT

NOTE

This procedure assumes structural integrity of the aircraft. If in doubt, limit speed as much as possible, reduce rate of descent if necessary, and avoid high load factors.

Verify minimum safe altitude for descent.

Phase I

1. Autopilot ..... DISENGAGE
2. Power Levers ..... IDLE
3. Seat Belt Sign ..... ON
4. Airbrakes ..... EXTENDED

Ensure that the landing gear is retracted.

5. Initiate Bank ..... MAXIMUM 45°
6. Descent ..... INITIATED
7. Target Speed ..... BETWEEN 200 KNOTS AND V_{MO}/M_{MO}
8. ATC Transponder ..... MAYDAY CODE

INADVERTENT THRUST REVERSER DEPLOYMENT—IN FLIGHT

If aircraft controllability is compromised, reduce effected engine power as necessary.

1. Airspeed ..... REDUCE TO 180 KNOTS
2. Altitude ..... DESCEND TO 15,000 OR BELOW
3. Thrust Reverser Lever ..... STOW POSITION
4. Faulty Engine Bleed-Air Switch ..... CLOSED

Attempt to stow reverser using the following procedure:

5. Engine Power ..... INCREASE N_1, TO 75% MAXIMUM

All reverser warning lights should extinguish.

If the thrust reverser will not stow:

CAUTION

If the reverser will not stow as shown by the illumination of the transit light and/or reverse light do not apply power to the effected engine.

NOTE

It is optional to shut down effected engine.

If landing is to be accomplished with the thrust reverser deployed, use the following procedure:

1. Limit maximum flap setting to 25°, and increase V_{REF} by 10 knots.
2. Perform normal prelanding procedure.
3. Make a normal landing and ensure that the main wheels and nosewheel are on the runway prior to deployment of "normal" engine thrust reverser.
4. Maintain directional control by use of rudder, brakes, and nosewheel steering.
5. At 65 knots, smoothly return "normal" engine reverser to idle, and stow.

HORIZONTAL STABILIZER TRIM RUNAWAY

WARNING

Trim clacker (audio), trim indicator, and/or (on the ground) out-of-trim warning horn light.

IN FLIGHT

Verify direction of trim movement and:

Phase I

1. Normal Trim ..... OPPOSITE DIRECTION

Immediately after:

2. Emergency Trim Control ..... ACTIVATE

Continue flight using the emergency trim control.

NOTE

Electric cruise stop no longer exists.

ON THE GROUND/TAKEOFF

Below V_1:

1. Abort the Takeoff.

Above V_1:

Verify direction of trim movement and:

1. Normal Trim ..... OPPOSITE DIRECTION

Immediately after:

2. Emergency Trim Control ..... ACTIVATE

Continue takeoff.

If trim run-away results in large trim change, continue with following procedure.

Takeoff with horizontal stabilizer out of trim for:

Nosedown

3. Accelerate normally.

4. Set and maintain normal climb attitude all the way back.

Noseup

3. Reduce power so as not to exceed 20° noseup attitude.

4. Speed ..... V_2 +20 KNOTS

5. Flaps (As Soon As Possible) .... 25°

NOTE

If necessary, enter a turn to limit the pitch attitude.

CAUTION

In both cases, noseup or nosedown, be prepared to exert large movement and high forces on the control

FAILURE OF BOTH GENERATORS

Phase I

1. Auxiliary Bus Switch ..... OFF
2. Generator Switches ..... ATTEMPT RESET
   (TWO ATTEMPTS MAXIMUM EACH)

If generators do not reset:

3. Generator Switches ..... OFF

Phase II

4. Battery Ammeter ..... CHECKED/BELOW 80 AMPS

If not less than 80 amps:

5. Deactivate non-essential services.

To regain necessary systems from auxiliary bus:

6. All Red Circuit Breakers ..... PULLED
7. Auxiliary Bus Switch .....ON
8. Reactive System ..... AS REQUIRED
9. Electrical Load ..... BELOW 80 AMPS

Phase III

10. Land as soon as possible.

NOTE

Maximum battery endurance will be obtained with minimum equipment in service.

NOTE

For aircraft equipped with APUs capable of in-flight operation, descend to prescribed altitude and consider starting APU. Limit load as per APU limitation.

Refer to Specifications/Limitations Normal section; page N-20.

See specific operating limits for individual APUs as installed, as per *AFM* supplement.

Refer to Aux Bus Review; page QR-4 and QR-5.

TOTAL LOSS OF HYDRAULIC POWER

Phase I

1. Airspeed . . . . . LIMIT TO 200 KNOTS MAXIMUM
2. Autopilot . . . . . DISENGAGE

NOTE

Without hydraulic assistance, control forces are higher. Crosswind capabilities are adversely affected. Do not use aileron or rudder trim.

Phase II

3. Avoid abrupt changes in attitude and flight in turbulent atmosphere.

   AFM 3-05-2; loss of systems 1 and 2:

   - In the event of loss of systems 1 and 2, leave or place electropump on system 2 side.
   - If the red arrow on system 2 side illuminates:

     a. Standby Electropump FULLY TO THE LEFT

     b. In flight, do not operate utilities using standby electropump pressure.

Phase III

For landing:

1. Extend flaps manually using the hand crank.

   Refer to Abnormal Section; TAB 17, page A-38.

   NOTE

   Limit the flap setting to 25° unless dictated by landing field conditions.

   To obtain pitch trim beyond the cruise stop limit, use the emergency pitch trim control.

2. Extend the landing gear using the free fall procedure.

   Refer to Abnormal section; TAB 12, page A-29.

3. Approach speed adjusted:

   V_{REF} +10 knots (Model C,D, and E)

   V_{REF} +20 knots (Model F)

4. Below 200 feet, limit rate of descent to less than or equal to 300 feet/minute.

5. Upon touchdown; deploy the drag chute (if installed).
   - If thrust reversers are available, use as necessary.
   - If thrust reversers are not available, after touchdown place the power levers to the cutoff position.
   - At the lowest possible speed, use the parking brake.

SPINS

Intentional spins are prohibited. This aircraft has not been spin tested in flight. However, results of wind tunnel tests have shown that the following procedure should be applied.

1. Configuration ..... CLEAN
2. Roll ..... SAME DIRECTION OF ROTATION
3. Yaw ..... OPPOSITE DIRECTION TO SPIN ROTATION
4. Elevator ..... NEUTRAL

FORCED LANDING

Preparation:

1. Transmit "Mayday" and Transponder Code 7700.
2. Prepare the passengers and cabin for forced landing.
3. Seat Belt Sign ..... ON
   Ensure all seat belts are secure.
4. No Smoking Sign ..... ON
   Ensure that all smoking material has been extinguished.
5. Airframe Anti-ice Switch ..... OFF
6. Bleed-Air Switches ..... BOTH CLOSED
7. APU ..... OFF

Approach:

8. Landing Gear ..... DOWN
9. Flaps ..... 40°
10. Normal/Dump Switch ..... DUMP
11. Speed ..... V_{REF}
12. Rate of Descent ..... 300 FEET/MIN
13. Generator Switches ..... BOTH OFF
14. Aux Bus Switch ..... OFF
15. Battery Switches ..... BOTH OFF
16. Fuel Shutoff Handles ..... PULL
    Contact the ground in a normal landing attitude.
17. Power Levers ..... CUTOFF

After Landing:

18. Emergency Exits ..... OPEN

DITCHING

Preparation:

1. Transmit "Mayday" and Transponder Code 7700.
2. Prepare the passengers and cabin for ditching.
3. Seat Belt Sign ..... ON
   Ensure that all seat belts are secured.
4. No Smoking sign ..... ON
   Ensure that all smoking material is extinguished.
5. Airframe Anti-ice Switch ..... OFF
6. Bleed-Air Switches ..... BOTH CLOSED
7. Fire Extinguisher Switches ..... POSITION 0
8. Ram-Air Switch ..... CLOSED/GUARDED
9. APU ..... OFF

Approach:

10. Landing Gear ..... UP
11. DLE Circuit Breaker (Droop CB) ..... PULLED
12. Flaps ..... 40°
13. Approach Speed ..... V_{REF} + 20 KNOTS
14. Rate of Descent ..... 300 FEET/MIN
15. Ditch heading parallel with the major swell.

Contact Procedures:

- Aircraft attitude will be higher than a normal landing, approximately 13.
- Reduce speed as much as possible, but do not stall.
- Adjust rate of descent to achieve a slope of approximately 1°.

Just prior to contact:

16. Generator Switches ..... BOTH OFF
17. Aux Bus Switch ..... OFF
18. Battery Switches ..... BOTH OFF
19. Fuel Shutoff Handles ..... PULL
    Ditch on a crest, parallel with the swell.
20. Power Levers ..... CUTOFF
    - After ditching, under reasonable conditions, the aircraft can be expected to remain afloat long enough to permit launching and subsequent boarding of the life rafts.
    - Do no open the passenger door.
    - Emergency exits must be used for evacuation.

ABNORMAL PROCEDURES

Anytime an aural warning signals a failure, it is recommended to silence it to facilitate a better coordination in accomplishing the procedures.

ENGINE FAILURE BEFORE V_1

Simultaneously:

1. Brakes ..... MAXIMUM
2. Power Levers ..... IDLE
3. Airbrakes ..... EXTENDED
4. Drag Chute (If Installed) ..... DEPLOYED
5. Thrust Reversers ..... AS REQUIRED

ENGINE FAILURE AFTER V_1

Continue the takeoff:

1. At V_R ..... ROTATE NORMALLY
2. Airspeed ..... MAINTAIN V_2

CAUTION

If the engine failure occurs at a speed greater then V_2, maintain speed attained.

When a positive rate of climb is established:

3. Landing Gear ..... UP
4. Bleed-Air Switches ..... BOTH CLOSED

At the altitude chosen to retract the flaps (400 feet AGL minimum) or minimum obstacle clearance altitude:

5. Level Flight Acceleration, Airspeed ..... V_2 +20/30 KNOTS
6. Flaps ..... UP
7. Maximum Continuous Thrust ..... SET
8. Final Segment Speed (V_{FS}) ..... ESTABLISHED

At the end of final segment:

9. Bleed-Air Switch on Operative Engine ..... ON (AS REQUIRED)

Complete shutdown of inoperative engine.

Positively identify the failed engine.

On failed engine:

10. Power Lever ..... CUTOFF
11. Booster Pump Switch ..... OFF
12. Transfer Pump Switch ..... OFF
13. Bleed-Air Switch ..... CLOSED
14. Generator Switch ..... OFF
15. Engine Anti-ice Switch ..... OFF

If engine integrity is questionable, do not attempt a restart.

If engine cannot be restarted:

16. Fuel Shutoff Handle ..... PULL
17. Engine Synchronization Switch ..... OFF

NOTE

Engine windmilling consequences for the hydraulic system.

Corresponding hydraulic system is supplied as long as indicated airspeed is above 160 knots.

*See specific Hydraulic Systems check for implications.

Refer to One Engine Inoperative Procedure; TAB 4, page A-11.

ENGINE FAILURE IN FLIGHT

1. Autopilot ..... DISENGAGE

   Positively identify the failed engine.

On failed engine:

2. Power Lever ..... CUTOFF
3. Booster Pump Switch ..... OFF
4. Transfer Pump Switch ..... OFF
5. Bleed-Air Switch ..... CLOSED
6. Generator Switch ..... OFF
7. Engine Anti-ice Switch ..... OFF

If engine integrity is questionable, do not attempt a restart.

8. Fuel Shutoff Handle ..... PULL
9. Engine Synchronization Switch ..... OFF

NOTE

Engine windmilling consequences for the hydraulic system.

Corresponding hydraulic system is supplied as long as indicated airspeed is above 160 knots.

*See specific Hydraulic Systems check for implications.

Refer to One Engine Inoperative Procedure; TAB 4, page A-11.

AIRSTART

WARNING

Do not attempt to relight an engine after an engine fire or if the engine integrity is questioned.

Establish the aircraft within the airstart envelope.

AIRSTART ENVELOPE

Preparing the Engine

1. Fuel Shutoff Handle ..... IN
2. Power Lever ..... CUTOFF
3. Start Selector Switch ..... GROUND START
5. Bleed-Air Switch ..... CLOSED
5. Booster Pump Switch ..... ON
6. Engine Anti-ice Switch ..... OFF
7. Airframe Anti-ice Switch ..... OFF

If N_2 is 12-24%, proceed with Windmilling Airstart Procedure A, below:

If N_2 is less than 12%, proceed with Starter Assist Procedure B.

Procedure A

Windmilling Airstart

8. Start Selector Switch ..... AIRSTART (GREEN IGNITER LIGHT ON)
9. Power Lever ..... IDLE

If relight is abnormal, or has not been obtained within 30 seconds, discontinue airstart:

1. Power Lever ..... CUTOFF
2. Start Selector ..... GROUND START

Observe all engine indications are within limits during start.

NOTE

If during the relight, engine acceleration is slower than normal, augment speed.

NOTE

If during the relight procedure, and windmilling airstart is not successful, use this procedure in more favorable conditions.

After the engine has stabilized:

10. Start Selector Switch ..... GROUND START
11. Generator Switch ..... ON
12. Transfer Pump Switch ..... ON
13. Bleed-Air Switch ..... OPEN

NOTE

In icing conditions:

After a windmilling or starter assist relight and prior to setting the anti-ice system into operation:

Start Selector Switch ..... AIRSTART

14. Anti-ice ..... AS REQUIRED

Procedure B

Starter Assist

8. Generator Switch ..... ON
9. DC Power Selector Switch ..... BATT START

NOTE

On SNs 1-344, automatic load shedding is automatic. Consider the effects on communications and systems.

10. Start Pushbutton ..... PUSHED (ENERGIZED 2 SECONDS MAXIMUM)

If start is abnormal:

1. Power Lever ..... CUTOFF
2. Start Selector ..... START STOP/GROUND START

When N_1 10-12%:

11. Power Lever ..... IDLE

Observe all engine indications are within limits during start.

12. DC Power Selector Switch ..... FLIGHT NORMAL
13. Transfer Pump Switch ..... ON
14. Bleed-Air Switch ..... OPEN

NOTE

In icing conditions:

After a windmilling or starter assist relight and prior to setting the anti-ice system into operation:

Start Selector Switch ..... AIRSTART

15. Anti-ice ..... AS REQUIRED

LOW OIL PRESSURE

Check oil pressure gage, and monitor oil temperature.

Reduce engine rpm.

If the OIL P light is still illuminated, shut down engine using the following procedure:

NOTE

The engine oil pump and the engine tachometer are both mounted on the same shaft. If the oil pressure and N_1 speed drop simultaneously to zero, the engine must be immediately shut down.

Positively identify the engine concerned.

On engine concerned:

1. Power Lever ..... CUTOFF
2. Booster Pump Switch ..... OFF
3. Transfer Pump Switch ..... OFF
4. Bleed-Air Switch ..... CLOSED
5. Generator Switch ..... OFF
6. Engine Anti-ice Switch ..... OFF

7. Fuel Shutoff Handle ..... PULL
8. Engine Synchronization Switch ..... OFF

Refer to One Engine Inoperative Procedure, TAB 4, page A-11.

ONE ENGINE INOPERATIVE (APPROACH/GO-AROUND/LANDING)

1. Fuel Implications ..... CHECKED
2. Hydraulic Implications ..... CHECKED
3. Electrical Implications ..... CHECKED
4. Landing Distance and Climb Requirements ..... CHECKED
5. V_{REF} Correction for Configuration ..... BUGS SET
6. Crew Briefing ..... COMPLETED

For approach and landing, review following procedures:

Approach and Landing (approach with DLE + 25°)

1. At 180 Knots ..... FLAPS 15°/10°
2. Landing Gear .... DOWN
3. At Beginning of Descent, Flaps .....25°
4. Minimum Approach Speed V_{REF} + 5 KNOTS

or

Approach and Landing (approach with DLE + 10°)

1. At 180 Knots ..... FLAPS 10°
2. Landing Gear ..... DOWN
3. Minimum Approach Speed..... V_{REF} + 10 KNOTS

NOTE

The minimum climb requirement for a go-around with one engine inoperative is guaranteed only with a maximum flap deflection of 25°.

When committed to landing, and the possibility of go-around is excluded:

1. Flaps ..... 40°
2. Airspeed ..... V_{REF}

Go-Around from Approach with DLE + 25°

1. Maximum Thrust .... SET
2. Airbrakes .. RETRACTED
3. Climb .....INITIATED
4. Speed .....1.3 V_S

When a positive rate of climb is established:

5. Landing Gear ..... UP
6. Flaps .....15°/10°

or

Go-Around from Approach with DLE + 10°

1. Maximum Thrust ..... SET
2. Airbrakes..... RETRACTED
3. Climb ..... INITIATED
4. Speed..... 1.3 V_S

5. Landing Gear..... UP

Upon reaching minimum altitude:

1. Airspeed ..... ACCELERATE TO V_{REF} + 20/30 KNOTS
2. DLE/Flaps ..... RETRACTED
3. One Engine Inoperative Approach Briefing ..... COMPLETE

Proceed with normal operations checklists.

LOSS OF NO. 1 SYSTEM

And/Or Pressure Drop No. 1 System, and or Illumination of 1 Light On Hydraulic Panel, and Possibly Transfer Jack Light.

1. No. 1 Hydraulic Reservoir Fluid Level ..... CHECKED
   - If the reservoir fluid level indicates normal, consult Procedure A.

   or,
   - If the reservoir fluid level indicates within the red area, consult Procedure B; on page EAP-27.

Procedure A

1. Windmilling Engine Hydraulic Pressure ..... CHECKED
   a. Airspeed ..... 160 KNOTS OR GREATER
   b. No. 1 Engine N_1 RPM ..... CHECKED/ROTATING
   c. No. 1 Hydraulic Pump Warning Light ..... CHECKED/OUT
   d. No. 1 System Hydraulic Pressure .. CHECKED/INDICATING
2. Transfer Jack Condition Warning Light ..... CHECKED

NOTE

A certain number of utilities may be supplied by the TRANSFER JACK up to its capacity.

It is not recommended to use the TRANSFER JACK for flap operation and landing gear extension, in order to reserve its capacity for a gear retraction in an emergency, or braking with antiskid. Use the other emergency procedures for operation of the other utilities.

3. Standby Hydraulic Electropump Handle ..... SELECTED FULL TO THE LEFT

Verify that the standby pump pressure is 1,600 to 2,150 psi, and the No. 1 system hydraulic light is not illuminated.

* Specific Case for No. 2 Engine Windmilling—Corresponding hydraulic system is supplied as long as indicated airspeed is greater than 160 knots. Longer operating times shall be expected for landing gear and high lift devices, as well as for the transfer jack reaming if it has already been in use.

** Available for operation SB 537 incorporated.

*** Available for operation if fully charged—(Transfer jack annunciator light not illuminated) and No. 2 system pressure available.

SYSTEM	STATUS	OPERATION
Flight Controls	No. 1 Servocontrols supplied via *windmilling pressure and/or **standby hydraulic electropump pressure. No. 2 Servocontrols supplied normal pressure via No. 2 Hydraulic System.	Normal
Arthur Q	Operational via No. 2 Hydraulic System	Normal
Yaw Damper	Operational via No. 2 Hydraulic System	Normal
Rudder and Aileron Trims	Same status as Flight Controls	Normal
DLE/Slats Flaps	Operational via *windmilling pressure and/or **standby hydraulic electropump, or ***transfer jack, or mechanical hand crank	LEADING EDGE(DLE/SLAT) and FLAP EXTENSION, if windmilling engine pump pressure is available, operate the leading edge and flaps normally or, if windmilling engine pump pressure is unavailable, or insufficient, extend the leading edges and flaps via the standby hydraulic electropump: 1. Flaps Circuit Breaker ..... PULLED 2. Flap Selector Handle ..... SELECTED 15°/10° When the leading edges are extended: 3. Flap Circuit Breaker ..... PUSH IN Observe that the flaps position ..... TO 15°/10° 4. Apply normal procedure for higher deflection. Leading Edge (DLE/Slat) and Flap Retraction: Apply normal procedure.
Landing Gear	Operational via *windmilling pressure and/or **standby hydraulic electropump or ***transfer jack, or the No. 2 Hydraulic Systems	LANDING GEAR For extension of landing gear via No. 2 Hydraulic System 1. No. 2 Hydraulic Pressure ..... CHECKED 2. Landing Gear Selector Circuit Breaker ..... PULLED 3. Landing Gear Selector Handle ..... DOWN 4. Emergency Gear Extension Handle ..... PULLED Verify proper gear extension and observe three green and three red lights illuminated on the gear indication panel. 5. Landing Gear Selector Circuit Breaker ..... AS REQUIRED NOTE Landing gear selector circuit breaker must be in if landing gear retraction is required. Nosewheel steering is supplied electrical power through the landing gear selector circuit breaker (SB 223 not compiled).

<table>
<tr><td>Landing Gear</td><td colspan="2">Landing gear retraction via transfer jack:
1. Transfer Jack Warning Light ..... OUT
2. Landing Gear Selector Circuit Breaker ..... IN
3. Landing Gear Selector Handle ..... UP
4. Emergency Landing Gear Handle ..... PUSH IN
Observe gear retraction with indication of all green and red lights out.

NOTE
If transfer jack is not available for gear retraction and SB 633 is incorporated, landing gear retraction through the standby hydraulic electropump Is possible. Landing gear retraction by the electropump is authorized, except in takeoff, or go-around phases. A maneuvering time of at least 30 seconds should be expected. Do not operate the slats, flaps and airbrakes during landing gear retraction procedure.</td></tr>
<tr><td>Brakes</td><td colspan="2">No. 1 System operation via *standby hydraulic electropump, or ***transfer jack, or the No. 2 System operation via normal No. 2 Pressure.

BRAKES
If transfer jack is available:
1. Brake Selector ..... POSITION NO. 1
Do not make antiskid check prior to landing or,
If transfer jack is not available:
1. Brake Selector ..... POSITION NO. 2
Landing Distance ..... ADD 2,000 FEET
2. Begin braking only below 105 knots.
3. Smoothly apply brake pressure.

NOTE
If SB 574 is not incorporated, copilot must not apply brakes.</td></tr>
<tr><td>Airbrakes</td><td>Operational via *windmilling pressure and/or **standby hydraulic electropump or ***transfer jack</td><td>Use for extension on landing only.</td></tr>
<tr><td>Nosewheel Steering</td><td>Operational via **standby hydraulic electropump</td><td>NOSEWHEEL STEERING
Operate the nosewheel steering via the standby hydraulic electorpump.</td></tr>
<tr><td>Parking Brake</td><td>Operational via accumulator</td><td>Normal</td></tr>
</table>

Procedure B

1. Standby Hydraulic Electropump Handle .... *SELECTED FULLY TO THE RIGHT
2. Transfer Jack Condition Warning Light ..... CHECKED

NOTE

A certain number utilities may be supplied by the TRANSFER JACK up to its capacity.

It is not recommended to use the transfer jack for landing gear extension, in order to reserve its capacity for gear retraction in an emergency, and braking with antiskid. Use the other emergency procedures for operations of the other utilities.

*For aircraft without SB 537, consult *AFM* for alternate procedure.

**Available for operation if SB 537 incorporated.

***Available for operation if fully charged transfer jack (annunciator light not illuminated) and No. 2 system pressure available.

SYSTEM	STATUS	OPERATION
Flight Controls	No. 1 Servocontrols No. 2 Servocontrols supplied normal pressure via the No. 2 Hydraulic System.	Limit airspeed to 200 knots maximum.
Arthur Q	Operational via No. 2 Hydraulic System	Normal
Yaw Damper	Operational via No. 2 Hydraulic System	Normal
Rudder and Aileron Trims	Same status as Flight Controls	Normal
DLE/Slats	Inoperative	Refer to Leading Edge Failure Procedures; TAB 16, A-36, items A1 and A2.
Flaps	Operational via the mechanical hand crank	FLAP EXTENSION for extension of flaps via the mechanical hand crank: 1. Flaps Circuit Breaker ..... PULLED 2. Insert the crank handle in the drive shaft located in the cabin center aisle and rotate it (clockwise) until desired deflection is obtained. NOTE Approximately 8 turns = 1 degree of flap deflection 10°=80 turns 15°=120 turns 25°=200 turns 40°=320 turns Flap deflection during operation is indicated on the flap position indicator. NOTE Limit flap deflection to 25° should a GO-AROUND be necessary. Approach speed: Refer to the V_{REF} correction chart; page N-11.

Landing Gear	Operational via No. 2 Hydraulic System LANDING GEAR 1. No. 2 Hydraulic Pressure ..... CHECKED 2. Landing Gear Selector Circuit Breaker ..... PULLED 3. Landing Gear Selector Handle ..... DOWN 4. Emergency Gear Extension Handle ..... PULLED Verify proper gear extension and observe three green and three red lights illuminated on the gear indication panel. 5. Landing Gear Selector Circuit Breaker ..... AS REQUIRED NOTE Landing gear selector circuit breaker must be in if landing gear retraction is required. Nosewheel steering is supplied electrical power through the landing gear selector circuit breaker (SB 223).	
Landing Gear	Landing gear retraction via transfer jack: 1. Transfer Jack Warning Light ..... OUT 2. Landing Gear Selector Circuit Breaker ..... IN 3. Landing Gear Selector Handle ..... UP 4. Emergency Gear Selector Handle ..... PUSH IN Observe gear retraction with indication of all green and red lights out..	
Brakes	No. 1 System operation via **transfer jack No. 2 System operation via normal No. 2 Hydraulic System Pressure BRAKES If transfer jack is available: 1. Brake Selector ..... POSITION NO. 1 Do not make antiskid check prior to landing or, If transfer jack is not available: 1. Brake Selector ..... POSITION NO. 2 Landing Distance ..... ADD 2,000 FEET 2. Begin braking only below 105 knots. 3. Smoothly apply brake pressure. NOTE If SB 574 is not incorporated, copilot must not apply brakes.	
Airbrakes	Operational via ***transfer jack	Operate airbrakes for landing via the transfer jack. Use for extension on landing only. If airbrake is inoperative, add 1,000 feet to landing distance.
Nosewheel Steering		Inoperative
Parking Brake	Operational via accumulator	Normal

LOSS OF HYDRAULIC RESERVOIR PRESSURE

NOTE

This failure may be followed by loss of either one or both hydraulic systems.

1. Hydraulic Pressure ..... MONITOR CAREFULLY
2. Descend to an Altitude Below ..... 25,000 FEET

   Above 12,000 feet do not use the airbrakes, and avoid large and abrupt control movements.

HYDRAULIC LOSS OF NO. 2 SYSTEM

Indications—HYDR 2 and/or pressure drop No. 2 System, and/or illumination of 2 light on hydraulic panel.

1. Standby Hydraulic Electropump Handle ..... SELECTED FULLY TO THE RIGHT
2. No. 2 Hydraulic Reservoir Fluid Level ..... CHECKED

- If the reservoir fluid level indication is within the normal green range, consult Procedure A or,
- If the reservoir fluid level indication is in the red range, consult Procedure B on page EAP-31.

SYSTEM	STATUS	OPERATION
Flight Controls	No. 1 Servocontrols supplied normal pressure via the No. 1 System. No. 2 Servocontrols supplied pressure via the standby pump.	Normal
Arthur Q	Low speed position	Refer to Arthur Q Unit Failure Procedure; TAB 18, page A-40.
Yaw Damper	Normal operation via standby pump	Normal
Rudder and Aileron Trims	Same status as Flight Controls	Normal
DLE/Slats	Normal operation via No. 1 system pressure	Normal
Flaps	Normal operation via No. 1 system pressure	Normal
Landing Gear	Normal operation via No. 1 system pressure	Normal

Brakes	No. 1 brake system normal operation via No. 1 system	Normal
	No. 2 brake system inoperative	Do not select No. 2 brakes.
Airbrakes	Normal operation via No. 1 system pressure	Normal
Nosewheel	Normal operation via No. 1 system pressure	Normal
Parking Brake	Operational via accumulator	Normal

Procedure A

Verify that the standby hydraulic electropump pressure is 1,600 to 2,150 psi, and that the No. 2 hydraulic light is not illuminated.

Procedure B

If the system No. 2 pressure is 1,600 to 2,150 psi, and the No. 2 hydraulic light is not illuminated, failure is caused by the hydraulic power malfunction (see Case 1) or,

If the system No. 2 pressure remains below 1,600 psi, and the No. 2 hydraulic light and the light is illuminated, failure is caused by a leakage within the flight control system.

Airspeed ..... 200 KNOTS MAXIMUM

Standby Electropump Handle ..... SELECTED FULLY TO THE LEFT

See Case 2.

NOTE

If the standby pump pressure remains 0 psi, place the hydraulic standby electropump handle to the neutral position. The hydraulic standby electropump is unserviceable. In the event of a loss of system No. 1, the flight shall be continued in the full manual control.

SYSTEM	STATUS	OPERATION	
		CASE 1	CASE 2
Flight Controls	No. 1 Servocontrols supplied normal pressure via the No. 1 System. No. 2 Servocontrols are inoperative, under Case 2.	Normal	Limit airspeed to 200 knots maximum.

Arthur Q	Low speed position	Refer to Arthur Q Unit Failure procedure; TAB 18, page A-40.	
Yaw Damper	Inoperative under Case 2.	Normal	Disengage Yaw Damper
Rudder and Aileron Trims	Same status as Flight Controls	Normal	
DLE/Slats	Normal operation via No. 1 System Pressure	Normal	
Flaps	Normal operation via No. 1 System Pressure	Normal	
Landing Gear	Normal operation via No. 1 System Pressure	Normal	
Brakes	No. 1 Brake System normal operation via No. 1 System	Normal	
	No. 2 Brake System inoperative	Do not select No. 2 Brakes.	
Airbrakes	Normal operation via No. 1 System Pressure	Normal	
Nosewheel Steering	Normal operation via No. 1 System Pressure	Normal	
Parking Brake	Operational via accumulator	Normal	

GENERATOR FAILURE

Indications—Gen 1 or Gen 2, and associated voltmeter and ammeter reading, and possibly a tripped generator switch.

1. Generator Switch ..... ATTEMPT RESET (TWO MAXIMUM)

If reset is unsuccessful:

2. Generator Switch ..... OFF

Limit the electrical load on the operative generator to:

- If IAS is above 170 knots, 300 amps maximum.
- If IAS is below 170 knots, 200 amps maximum.

INVERTER FAILURE

Indications—1 or 2 and associated voltmeter indicates zero.

1. Standby Inverter ..... SELECTED TO FAILED SIDE
   Check corresponding AC FAIL light is off.
2. Failed Inverter Switch .....OFF

BATTERY FAILURE

Battery

1. Battery Reset Pushbutton ..... RESET (TWO MAXIMUM)

   If the BATTERY light remains on, it is not possible to establish which battery has failed. The failure of both batteries should be envisaged.

BATTERY OVERHEAT

HOT BAT

1. Battery Switches ..... BOTH OFF

   In aircraft equipped with a battery temperature indicator system which permits determination of failed battery:

2. Battery Not Affected ..... ON

LOW ENGINE FUEL PRESSURE

FUEL P1 or FUEL P2

1. Crossfeed Valve Switch ..... ON
2. Booster Pump Switch (On Faulty Side) ..... OFF
3. Wing Pre-interconnect Valve Switch ..... AS REQUIRED

If the FUEL P light does not extinguish and/or the fuel pressure does not rise:

4. Crossfeed Valve ..... SWITCH OFF

   Check the feeder tank and wing tank levels.

   If the feeder tank fuel level is not steady and/or if the wing tank level decreases abnormally, a leak must be suspected.

On the faulty side—Engine Shutdown:

5. Fuel Shutoff Handle ..... PULLED
6. Transfer Pump Switch ..... OFF
7. Power Lever ..... CUTOFF
8. Transfer Shutoff Valve ..... CLOSED

   Then:

9. Wing Pre-interconnect Valve Switch ..... AS REQUIRED

NOTE

Engine operation without assistance of booster pump:

- When using kerosene (JP1), engine operation is correct up to 40,000 feet altitude.
- With JP4 type fuel, limit maximum altitude to 30,000 feet.

Refer to One Engine Inoperative Checklist; TAB 4, page A-11.

FUEL FILTER CLOGGING

If only one clogging light is illuminated, move the associated power lever gently.

If both lights are illuminated, suspect a contamination of the fuel and land as soon as possible.

WING-TO-FEEDER TANK TRANSFER FAILURE

Indications—FUEL XFER 1 or FUEL XFER 2

NOTE

If SB 614 is incorporated, transfer pump warning lights are amber.

1. Transfer Pump Switch (Faulty Side) ..... OFF
2. Wing Tank Fuel Quantity Indicators ..... MONITOR

If wing level decreases:	OR	If wing level is steady:
Leak between the wing and feeder tank.		Transfer pump failure.
3. Associated Transfer Shutoff Valve ... CLOSED		3. Associated Transfer Pump Circuit Breaker ..... PULLED

Then, in both cases:

4. Crossfeed Valve Switch ..... ON
5. Booster Pump Switch (On Faulty Side) ..... OFF
6. Wing Pre-interconnect Switch ..... AS REQUIRED

FUEL LEVEL ASYMMETRY BETWEEN THE WING TANKS

Use Procedure A or B

Procedure A

Using the Wing Pre-interconnect Valve:

1. Wing Pre-interconnect Valve Switch ..... ON
2. Transfer Pump Switch (On the Side of the Higher Level) .... OFF

   Monitor the wing and feeder tank fuel indicators.

   When the levels are equalized:
3. Transfer Pump Switch ..... ON
4. Wing Pre-interconnect Valve Switch ..... ON

Procedure B

Using the Crossfeed Valve

1. Crossfeed Valve Switch ..... ON
2. Booster Pump Switch (On the Side of the Lower Level) ..... OFF

   Monitor the wing and feeder tank fuel indicators.

   When the levels are equalized:
3. Booster Pump Switch ..... ON
4. Crossfeed Valve Switch ..... OFF

ABNORMAL FEEDER TANK LEVEL

If FEEDER TANK level is low, use Procedure A or;

If FEEDER TANK level is high, use Procedure B.

Procedure A

Fuel Level Decreases in Feeder Tank

1. Associated Fuel Transfer Light ... TESTED AND CHECKED OFF
2. Associated Transfer Pump Switch ..... OFF
3. Crossfeed Valve Switch ..... ON
4. Associated Booster Pump Switch ..... OFF
5. Wing Pre-interconnected Switch ..... IF REQUIRED

Procedure B

Fuel Level Increases in Feeder Tank

Aircraft equipped with single level feeder tanks:

1. Transfer Pump Switch (Faulty Side) ..... OFF
2. Check feeder tank level indication for actually decreasing below red range on fuel level indicator.

If level does not decrease:

3. Transfer Shutoff Valve on Faulty Side ..... CLOSED

   Wait until normal level indication is resumed on the fuel quantity indicator.
4. Crossfeed Valve Switch ..... ON
5. Booster Pump Switch (Faulty Side) ..... OFF
6. Wing Pre-interconnect Valve Switch ..... AS REQUIRED

Aircraft equipped with two level feeder tanks:

1. Rear Tank Level Switch . CHECKED/NORMAL AND GUARDED
2. Transfer Pump Switch (Faulty Side) ..... OFF
3. Check fuel quantity indication for actually decreasing and stabilizing at bottom (minimum) of yellow range.

If fuel level does not decrease:

4. Transfer Shutoff Valve on Faulty Side ..... CLOSED
   Wait until indication reaches bottom of yellow range (minimum).
5. Crossfeed Valve Switch ..... ON
6. Booster Pump Switch on Faulty Side ..... OFF
7. Wing Pre-interconnect Switch ..... IF REQUIRED

HIGH CABIN PRESSURE

Indication—CAB and/or aural warning and/or cabin diff. 8.7 psi.

If above 10,000 feet, consult Procedure A or;

If below 10,000 feet, consult Procedure B.

Procedure A

With IDC System:

1. Pressurization Switch ..... MANUAL
2. Manual Pressurization Control ..... UP
3. Maintain Normal Pressurization by Moving the Manual Control ..... UP/DOWN

With SEMCA System:

1. Manual Pressurization Control ..... UP
2. Pressurization Switch..... MANUAL
3. Then, Manual Pressurization Control..... AS REQUIRED

If the cabin pressure continues to rise:

4. Bleed-Air Switches ..... CLOSED

After the cabin differential has decreased:

5. Open one bleed-air switch and set power on the associated engine to maintain the pressurization.

Procedure B

1. Bleed-Air Switches ..... CLOSED
2. Manual Pressurization Control ..... UP

If unsuccessful:

3. Cabin Dump Switch ..... DUMP
4. Bleed-Air Switch ..... OPEN

HIGH CABIN ALTITUDE

Indications—CAB and/or aural warning and/or cabin altitude higher than 10,000 feet.

1. Crew Oxygen Masks 100%/DONNED
2. Oxygen Masks Communications ..... SELECTED/TESTED
3. Passenger Oxygen ..... MANUAL OR OVERRIDE
   Check for deployment and proper use of passenger oxygen masks.

With IDC System:

4. Pressurization Switch ..... MANUAL
5. Manual Pressurization Control ..... DOWN
6. Maintain Normal Pressurization by Moving the Control Manual ..... UP/DOWN
7. Emergency Pressurization Manual Control Valve .....OPEN (IF REQUIRED)

With SEMCA System:

4. Manual Pressurization Control ..... UP
5. Pressurization Switch..... MANUAL
6. Manual Pressurization Control..... DOWN, THEN AS REQUIRED

NOTE

Aircraft with SB 558, No. 1 engine, must be operating for emergency pressurization air supply.

If the emergency pressurization manual control valve was left closed or has been closed:

8. Descend, If Possible, to a Safe Altitude or to ..... 14,000 FEET
9. Cabin ..... DEPRESSURIZED
10. Ram-Air Switch ..... OPEN

AIR-CONDITIONING SUPPLY FAILURE

If pressurization is not possible as a consequence of a lack of air conditioning (no flow at the cold air outlets):

1. Air-Conditioning Switch ..... OPEN

If insufficient air supply:

2. Emergency Pressurization Manual
   Control Valve ..... OPEN (IF REQUIRED)

NOTE

Aircraft with SB 558, No. 1 engine, must be operating for emergency pressurization air supply.

If the emergency pressurization manual control valve was left closed or has been closed:

4. Descend, If Possible, to a Safe Altitude or to ..... 14,000 FEET
5. Cabin ..... DEPRESSURIZED
6. Ram-Air Switch ..... OPEN

TEMPERATURE CONTROL FAILURE

1. Conditioning Control Knob ..... MANUAL
   Positioning the temperature control valve as necessary by rotating the control knob (action held on HOT or COLD).

If unsuccessful:

2. Operate the manual temperature control valve (located in the toilet compartment, AFT bulkhead).

LANDING GEAR RETRACTION FAILURE

Limit airspeed to V_{LO} = knots of V_{LE} = 220 knots.

NOTE

If landing gear handle cannot be selected to the retracted position, do not use override button unless a greater emergency exits.

If indication is not correct upon retraction, recycle normal gear handle.

If fault is confirmed, proceed with Extension Procedure A as outlined, Tab 12, page A-28.

LANDING GEAR EXTENSION FAILURE

Incorrect landing gear indication, and possibly the landing gear control handle warning illuminated/landing gear not extended audio warning may sound.

1. No. 1 Hydraulic Pressure ..... CHECKED
2. Landing Gear Indication Panel ..... CHECKED

Check the integrity of the light bulbs in landing gear indication panel, then consult the following table for the correct procedure necessary to extend the landing gear.

CAUTION

If the normal landing gear control cannot be selected in the down position, the antiskid system will not operate.

Table EAP-1. Landing Gear Panel

HYDRAULIC SYSTEM STATUS		INDICATIONS	PROCEDURE
No. 1 Normal	No. 2 Normal	No Indication	A
No. 1 Normal	No. 2 Normal	3 Red, 1 or 2 Green	A
No. 1 Normal	No. 2 Normal	1, 2 or 3 Red, no Green	B
No. 1 Failed	No. 2 Normal	—	A
No. 1 Failed	No. 2 Failed	—	C

Procedure A

Unlocking and extension using the No. 2 Hydraulic System.

1. Normal Landing Gear Selector Handle ..... UP
2. No. 2 Hydraulic System Pressure ..... CHECKED/NORMAL
3. Landing Gear Selector Circuit Breaker ..... PULLED
4. Normal Landing Gear Selector Handle ..... DOWN
5. Emergency Landing Gear Handle ..... PULLED

   Monitor No. 2 hydraulic reservoir level during the landing gear extension.
6. Landing Gear Panel Indications ..... 3 GREEN/3 RED

CAUTION

If the nosewheel steering is supplied electrical power through the landing gear circuit breakers (SB 223 not complied with), landing shall be performed without nosewheel steering.

NOTE

If this procedure is not successful, push the emergency landing gear handle in, and comply with Procedure B.

Procedure B

Manual unlocking and extension using the No. 2 Hydraulic System.

Check to ensure that the emergency landing gear handle is in the normal flight position (pushed in).

1. Normal Landing Gear Selector Handle ..... UP
2. No. 2 Hydraulic System Pressure ..... CHECKED/NORMAL
3. Landing Gear Selector Circuit Breaker ..... PULLED
4. Normal Landing Gear Selector Handle ..... DOWN
5. Landing Gear Doors ..... MANUALLY UNLOCK
6. Emergency Landing Gear Handle ..... PULLED

   Monitor the No. 2 hydraulic reservoir level during the landing gear extension.
7. Landing Gear Panel Indication ..... 3 GREEN/3 RED

CAUTION

If the nosewheel steering is supplied electrical power through the landing gear selector circuit breakers (SB 223 not complied with), the landing shall be performed without nosewheel steering.

Procedure C

Manual unlocking and free fall extension.

1. Normal Landing Gear Selector Handle ..... UP
2. Airspeed ..... 160 KNOTS
3. Landing Gear Selector Circuit Breakers ..... PULLED
4. Normal Landing Gear Selector Handle ..... DOWN

To extend nose gear:

5. Nose Door and Gear . . . . . MANUALLY UNLOCK

Check that the nose gear RED light is illuminated.

Increase speed until the nose gear is down and locked, and that the nose gear indication GREEN light is illuminated.

To extend the LEFT and RIGHT main gear:

6. Side Slip 1/2 Ball Width to the Left . . . RUDDER TO THE RIGHT
7. Left Door and Gear . . . . . MANUALLY UNLOCK

Check that the left main gear RED light is illuminated.

Maintain the left side slip for 30 seconds, then;

8. Maximum Side Slip to the Right . . . . . RUDDER TO THE LEFT

Check that the left main gear GREEN light is illuminated.

To extend the RIGHT main gear:

9. Side Slip 1/2 Ball Width to the Right . . . RUDDER TO THE LEFT
10. Right Door and Gear . . . . . MANUAL UNLOCK

Check that the right main gear RED light is illuminated.

Maintain the right side slip for 30 seconds, then;

11. Maximum Side Slip to the Left . . . . . RUDDER TO THE RIGHT

Check that the right main gear GREEN light is illuminated.

BRAKE SYSTEM MALFUNCTION

UNSATISFACTORY TEST OF THE ANTISKID SYSTEM

1. Antiskid Switch . . . . . OFF

Braking can be accomplished using the

No. 1 brake system:

2.Landing Distance
ADD 2,000 FEET

3.Begin Braking
Only Below . . 105 KNOTS

4,Smoothly Apply Brake Pressure . . . . . WITHOUT LIGHTING THE GREEN INDICATING LIGHTS

OR

Braking can be accomplished using the

No. 2 brake system:

NOTE

SB 574 is not incorporated, copilot must not apply brakes

2. Brake Selector.... NO. 2 POSITION
3. Landing Distance ... ADD 2,000 FEET
4. Begin Braking Only Below..... 105 KNOTS (SMOOTHLY APPLY) BRAKE PRESSURE

NOTE

When the antiskid is not available:

5. Drag Chute (If Installed) ..... AS REQUIRED

BRAKE FAILURE ON LANDING

1. Antiskid Switch ..... OFF

If braking is recovered:

2. Smoothly apply brake pressure.

When the antiskid is not available:

3. Drag Chute (If Installed) AS REQUIRED

If braking is not recovered:

2. Brake Selector .... POSITION NO. 2

Smoothly apply brake pressure.

When antiskid is not available:

3. Drag Chute (If Installed) ..... AS .....REQUIRED

If braking is still not recovered (failure of both braking systems):

It is possible to stop the aircraft using the parking brake.

At the lowest possible speed:

Brake Selector ..... PARKING BRAKE

NOSEWHEEL STEERING FAILURE

Use differential braking to steer the aircraft on the ground.

NOTE

A nosewheel steering failure may be a warning of a loss of braking at a low speed (See Antiskid Failure).

1. Antiskid ..... OFF
2. Smoothly apply brake pressure.

When the antiskid is not available:

3. Drag Chute (If Installed) ..... AS REQUIRED

NO GREEN ANTI-ICE LIGHT

1. Anti-ice Switch ..... ON
2. Engine RPM ..... *AS RECOMMENDED

*See minimum N_1 for anti-ice page N-8.

Table EAP-2. Anti-icing Minimum Engine Thrust

RAT	%
+5° to –5°	84%
–5° to –10°	86%
–10° to –20°	88%
–20° and lower	90%

If the light is not on:

Avoid all temperatures +5° C and lower where there is visible moisture.

*Specific anti-ice malfunction (A), (B), or (C).

RED BLEED FAIL LIGHT ON

If climb power is used, this is normal with SB 416 and 459. Determine if the red light is a wing valve or nacelle valve.

This light is basically a disagreement light switching the associated switches "on" then "off" to determine the faulty valve.

Wing valve failed open:

After landing, shut down the engine associated with the failed valve as soon as possible.

*See specific anti-ice malfunction (A), (B), or (C).

(A) Electrical Failure

Windshield heat, windshield wipers, and pitot heat will be lost. Indicator and warning lights will be lost. Engine nose section valves will be open resulting in continuous hot air flow to the front frame supports, inlet guide vanes and shroud, and bullet nose. The valves supplying hot air to the nacelles and to the wing leading edges will remain in their position at the time of failure. Thus, two situations may prevail:

1. If anti-icing was in use at the time of failure: all components will continue to receive hot air. Engines must be shut down immediately upon landing to prevent skin damage to wings and nacelles. Air flow over these surfaces will maintain sufficiently low temperatures during flight.
2. If anti-icing was not in use at time of failure: wing and nacelles cannot be anti-iced. Engine nose section will begin receiving hot air, which cannot be shut off. Land and taxi normally, since there is no ground overheat problem in this situation.

(B) Engine Failure

Nose section and nacelle anti-icing will be lost on the failed engine. Anti-icing will be lost for the heat exchanger air inlet on the same side. The operating engine will retain anti-icing through its individual bleeds, and airframe anti-icing will be supplied to both wins through the crossover tube. The check valve will prevent loss of this air to the failed engine.

(C) Failure Indications

With Engine Anti-ice "ON"

Engine and nacelle anti-icing systems:

- If a nacelle valve fails to open when the corresponding ***system is switched ON***, the red light stays on and the green light does not come on as no hot air is delivered into the nacelle duct. The red light goes out when the system is switched OFF.
- Should the nacelle valve fail in a partially open position, the red light would be on, perhaps the green light too. Switching the system off causes the red light to stay on if the valve does not close.
- If the engine electrovalve fails to open when the ***system is switched ON***, the green light does not come on, while the red light is out. A difference in EGT may indicate that the cause is not a failure of the indication system. This is not a likely case, due to the failsafe design of the engine valve.

Failure indication with engine anti-ice "OFF":

- If the nacelle valve fails in the open position when ***switching the system OFF***, the red light stays on, while the green light goes out. After landing, shut down the engine corresponding to the failed valve.
- If the engine valve fails in the open position when switching the system OFF, red and green lights are out but the red light illuminates again after three minutes and the EGT is higher than normal for that engine.

Failure indication with airframe anti-ice "ON":

- If one airframe anti-icing valve fails to open when this system is switched on, the corresponding red light stays on and the green light comes on, both wings being supplied hot air by a single engine. After landing, shut down the engine corresponding to the failed valve.

Failure indication with airframe anti-ice "OFF":

- If one of these valves fails to close when the system is switched off, the corresponding red light stays on, the green light also (if the power setting is sufficient) and the EGT is higher than normal for the corresponding engine. After landing, shut down the engine corresponding to the failed valve.

LATE OPERATION OF THE ANTI-ICE SYSTEM

If flight is made into icing conditions with the anti-ice system not turned on, and the flight must be continued in these icing conditions:

1. Start Selector Switches . . . . . BOTH TO AIRSTART

   Observe the illumination of both green igniter lights.

2. Engine Power . . . . . SET TO PRESCRIBE N_1 MINIMUMS (SEE CHART, PAGE A-35)

3. No. 1 Engine Anti-ice Switch . . . . . ON

   Check the engine instruments to ascertain that the engine is properly anti-iced (decrease in EPR and a rise in EGT).

When the GREEN No. 1 deice hot light is illuminated and the power setting has stabilized, wait 20 seconds then:

4. No. 2 Engine Anti-ice Switch . . . . . ON

   Check the engine instruments to ascertain that the engine is properly anti-iced

   (decrease in EPR and a rise in EGT).

When the GREEN No. 2 deice hot light is illuminated and the power setting has stabilized, wait 30 seconds then:

5. Airframe Anti-ice Switch . . . . . ON

When the GREEN airframe deice hot light has illuminated and steady rpm's are established:

6. Start Selector Switches . . . . . GROUND START

NOTE

If the application of the above procedure causes engine surges (due to ice ingestion), the power lever must be immediately retarded to the idle position, and then slowly advanced to an acceptable power setting to prevent engine surge.

If the engine flames out, attempt an Inflight Relight Procedure; TAB 2, page A-6.

After landing the engine shall be inspected for possible damage from ice ingestion.

FAILURE OF PITOT PROBES HEATING

Indications—PITOT 1 and PITOT 2

WARNING

Illumination of PITOT 1 or PITOT 2 light.

Avoid icing conditions.

HEATED WINDSHIELD DAMAGE

If cracks or fissures appear on the heated glass panel, continue the flight with the following limitations:

1. Pressurization ..... 7.5 PSI MAXIMUM
2. Airspeed ..... 230 KIAS MAXIMUM
3. Windshield Heat Switch ..... NORMAL

LEADING EDGE FAILURE

Failure during extension, consult Procedure (A1) (C,D,E and F) or;

Failure during retraction, consult Procedure (A2) (F Model) or;

Asymmetrical leading edges, consult Procedure (B) (C,D,E, and F).

Procedure A1

Failure of Leading Edges Retracted (C,D,E, and F)

(No hydraulic power to No. 1 system, or failure of normal control.)

NOTE

The leading edges will remain mechanically locked in the retracted position. Land with the leading edges retracted.

NOTE

To obtain pitch trim beyond cruise stop, use emergency trim control.

1. Leading Edge Circuit Breaker ..... PULLED
2. Flaps ..... AS REQUIRED

3. Approach Speed ..... (C,D,E) V_{REF} + 10 KNOTS
   (F MODEL) V_{REF} + 20 KNOTS
4. Landing Distance ..... (C,D,E) ADD 12%
   (F MODEL) ADD 25%

Procedure A2

Failure Occurs with Leading Edges Not Retracted (F Model)

NOTE

Inboard leading edges remain in their position at moment of failure. Outboard leading edges (slats) tend to extend without hydraulic pressure. The higher the aircraft angle-of-attack is, the greater the angle of extension will be.

NOTE

To obtain pitch trim beyond cruise stop, use emergency trim control.

NOTE

It is possible that the green light (leading edge profile) remains out, and the red light (slats not fully extended) remains on.

For landing:

1. Leading Edges/Flaps ..... AS REQUIRED
2. Approach Speed ..... V_{REF} + 10 KNOTS
3. Landing Distance ..... ADD 12%

Procedure B

Asymmetrical Leading Edges (C,D,E, and F)

Total failure of wing leading edges (C,D,E or F):

1. Leading Edges/Flaps CLEAN
2. Leading Edge Circuit Breaker PULLED
3. Flaps AS REQUIRED
4. Approach Speed (C,D,E) V_{REF} + 10 KNOTS
   (F MODEL) V_{REF} + 20 KNOTS
5. Landing Distance . . . . . (C,D,E) ADD 12%
   (F MODEL) ADD 25%

or

Inboard leading edge or outboard slat failure (F model):

1. Leading Edges/Flaps..... AS .....REQUIRED
2. Leading Edge Circuit Breaker..... PULLED
3. Approach Speed..... V_{REF} + 10 KNOTS
4. Landing Distance ..... ADD 12%

FLAP FAILURE

Operate the flaps by either the TRANSFER JACK (Procedure A) or by the HAND CRANK (Procedure B).

Procedure A

Flap operation using the transfer jack.

1. Leading Edge Circuit Breaker . . . . . PULLED
2. Flap Handle . . . . . SELECTED TO DESIRED POSITION
3. Flap Emergency Pushbutton . . . . . PUSH AND HOLD IN UNTIL DESIRED FLAP SETTING IS ACHIEVED

Procedure B

Flap operation using the flap hand crank.

1. Flap Circuit Breaker . . . . . PULLED

Insert the flap hand crank into the drive shaft located in the cabin center aisle and rotate it (approximately eight turns per one degree of flap defection) (approximately 200 turns = 25° should a go-around be necessary).

NOTE

Limit flap deflection to 25° should a go-around be necessary.

APPROACH SPEED

With leading edges extended ..... (ALL MODELS) V_{REF} + 5 KNOTS

or;

With leading edges retracted .... (C,D,E, or MODEL) V_{REF} + 10 KNOTS
(F MODEL) V_{REF} + 20 KNOTS

ASYMMETRICAL FLAP EXTENSION

1. Flap Control Handle .... SELECTED TO PREVIOUS POSITION

NOTE

Do not operate the airbrakes. Leave the airbrakes in the configuration where they were when the flap failure occurred.

Perform the approach by increasing V_{REF}.

- If the least deflected flap is 0, V_{REF} + 15 knots or;
- If the flaps are up, proceed as follows to extend the leading edges:

Leading Edges/Flaps ..... CLEAN
Flaps Circuit Breaker ..... PULLED
Flap Control Handle ..... SELECTED 15°/10°
Approach Speed ..... V_{REF} + 15 KNOTS

or;

- If the least deflected flaps are 10, V_{REF} + 10 knots or;
- If the least deflected flaps are 25, V_{REF} + 5 knots.

AIRBRAKE FAILURE

Airbrakes will not extend, use Procedure A or;

Airbrakes will not retract, use Procedure B.

Procedure A

Airbrake Failure in the Retracted Position

1. Airbrake Control Handle ..... STOWED POSITION

NOTE

Landing distance must be increased by 1,000 feet.

Procedure B

Airbrake Failure in the Extended Position

1. Airbrake Circuit Breaker ..... PULLED

If the airbrakes do not retract:

2. Airbrake Circuit Breaker ..... PUSHED IN
3. Airbrake Control Handle ..... EXTENDED POSITION
4. Approach Speed ..... V_{REF} + 10 KNOTS

NOTE

Landing distance must be increased by 1,000 feet.

ABNORMAL RESISTANCE IN FLIGHT CONTROLS

If abnormal resistance is felt during movement of a flight control, do not hesitate to apply extra force in an attempt to overcome the resistance.

ARTHUR Q UNIT FAILURE

Indications—PITCH or ROLL

1. Autopilot ..... DISENGAGE

If IAS is above 265 knots:

Avoid abrupt or large control movements of the elevator and/or aileron controls.

If the leading edges are extended:

The forces required to move the elevator and/or aileron controls will be higher than usual.

FAILURE OF PRIMARY PITCH CONTROL (JAMMED ELEVATOR)

Control the aircraft attitude using the horizontal stabilizer trim.

Land in the normal configuration, exercising caution:

Approach Speed ..... V_{REF} + 10 KNOTS

Below 200 feet, limit rate of descent to 300 feet/minute.

JAMMED HORIZONTAL STABILIZER

Landing with horizontal stabilizer jammed in cruise position or in full nose-down position.

1. Move center of gravity aft.

If the SB 663 is complied with (REF, level with engines running):

Rear Tank Level Switch ..... REF

If possible, passengers on aft seats.

2. Flaps ..... 25°
3. Landing Gear ..... DOWN

   Determine minimum airspeed (V MINIMUM) at which the airplane is maintained in level flight with the control column pulled all the way to the rear.

4. Approach Speed ..... V MINIMUM + 10 KNOTS

Below 200 feet:

5. Rate of Descent Below or Equal to ..... 300 FEET/MINUTE

CAUTION

Do not reduce engine power before touchdown. It is possible that landing gear not extended horn will not sound.

TRIM FAILURE (RUDDER OR AILERON)

1. Stop runaway by moving the corresponding trim control in the opposite direction.
2. Trims Circuit Breaker (Yaw or Roll) ..... PULLED

FAILURE OF PILOT STATIC SYSTEM

WARNING

Wrong indications on pilot instruments with regard to copilot instruments.

1. Static Selector ..... EMERGENCY
   a. Pilot Instruments ..... AVAILABLE AGAIN

Consult *AFM* for reading corrections.

FAILURE OF COPILOT PITOT SYSTEM

WARNING

Wrong indications on copilot mach airspeed indicator.

1. Pitot Shutoff Valve ..... PANEL ONLY

If this failure is caused by a leakage on the accessory lines of copilot system, copilot mach airspeed indicator returns to operation state.

Consequences on the accessories:

a. Arthurs no longer slaved to IAS variations.
b. V_{MO}/M_{MO} Aural Warning ..... WRONG
c. EPR Indications ..... WRONG
d. AP Air Data References ..... WRONG

Apply following procedure:

2. Autopilot ..... DISENGAGED

Avoid abrupt and large movement of the flight controls.

Set engine thrust per N_1 rotation speeds or the flowmeters.

AUTOPILOT

See specific *AFM* procedure.

EFIS MALFUNCTIONS

NOTE

These checklists are applicable to Collins EFIS 85/86 systems.

Various types of avionics equipment may be installed in this aircraft, and specific warning/comparator flags, annunciators, and switches, described herein, may not appear in certain installations. Consult the Aircraft Flight Manual Supplement for data relating to specific equipment.

CENTER SWITCH PANEL

EFIS MALFUNCTIONS ..... Page A-45 through A-51

EADI DISPLAY FAILURE

Indication: Display goes out or color is altered.

1. Display Reversion Switch ..... DOWN

EHSI DISPLAY FAILURE

Indication: Display goes out or color is altered.

1. Display Reversion Switch ..... UP

SIMULTANEOUS FAILURE OR EADI AND EHSI—DISPLAYS ON SAME SIDE

Indication: Both displays go out or color is altered, red FAIL or DRV flag on the EADI and EHSI

1. Select CDRV or MPU DRV on failed side.
2. Amber CDRV flag displayed.

If unsuccessful:

3. Select MIX or ADI COMP or HSI COMP.

SUCCESSIVE FAILURE OF EADI AND EHSI—DISPLAYS ON SAME SIDE

Indication: Both displays successively go out.

If panel A is installed:

1. Select CDRV on failed side.
2. Select ADI COMP or HSI COMP on failed side.

NOTE

A composite ADI/HSI will be displayed on the multi-function display (MFD).

COLLINS EFIS

FAILURE MONITOR FLAGS (ALL RED)

COLLINS EFIS

COMPARISON FLAGS (ALL AMBER)

ATTITUDE FAILURE

Indications: Red ATT flag on EADI

1. ATT Transfer Switch ..... SELECTED
2. X ATT or ATT # Annunciator ..... ILLUMINATED

HEADING FAILURE

Indications: Red HDG flag on EHSI

Displayed heading may be incorrect.

1. HPG Transfer Switch ..... SELECTED
2. X HDG and HDG # Annunciator ..... ILLUMINATED

MPU FAILURE (MULTIFUNCTION DISPLAY PROCESSOR UNIT)

Indications: MFD display goes out.

Red XDTA flag on both EADIs

CAUTION

- Pilot's and copilot's HDG bugs are no longer synchronized.
- Comparison monitors are inoperative.

1. MPU DISC or MPU FAIL
   Switch (If Installed) ..... DEPRESS AND ILLUMINATED AMBER

If red XDTA flag stays on, or if the MPU switch is not installed,

2. MFD Power ..... OFF

NOTE

There is not backup for a MPU failure.

DCP FAILURE (DISPLAY CONTROL PANEL)

Indications: Red CTL or DCP flags on the associated EADI and EHSI

1. CTL XFER or DCP XFER ..... SELECTED
   XDCP or XCLT annunciators illuminated.

NOTE

- All the displays will be controlled by the operational DCP.
- FD modes are not annunciated on the side with the failed DCP.
- Display brightness remains under control of the failed DCP.

RADIO ALTIMETER FAILURE

For aircraft with dual radio-altimeters, consult Procedure A, or for aircraft with single radio-altimeter, consult Procedure B.

Procedure A

Indications: Red RA flag on EADI

1. Radio Altimeter

   Transfer Switch . . . . . SELECTED TO FUNCTIONAL RADIO ALTIMETER

   Red RA Flag . . . . . OUT

Procedure B

Indication: RA Red flag on both EADIs

NOTE

No Backup. Consequences:

- Loss of Radio Altimeter Display
- Loss of DH Warning
- Loss of GPWS (Ground Proximity Warning System)
- Loss of Rising Runway Symbol

NOTE

Consult Aircraft Flight Manual for possible autopilot minimum altitude elimination with the radio altimeter inoperative.

FLIGHT DIRECTOR FAILURE

Indication: Red FD fail, command bars removed

If FD No. 1 fails, and the autopilot is required:

1. AP XFR Switch . . . . . SELECTED

NOTE

The autopilot will now follow commands from the copilot flight director.

ATTITUDE COMPARISON MONITOR

Indications: Amber ATT or PIT or ROL flags on both EADIs, MSTR COMP lights illuminated.

1. Autopilot ..... DISENGAGE
2. Standby Horizon ..... CHECKED
3. Faulty Attitude Source ..... IDENTIFY
4. Attitude Transfer Switch (Faulty Side) ..... DEPRESS
5. XATT or ATT # Annunciator ..... ILLUMINATED
6. Master Comparators ..... RESET
7. Autopilot ..... RE-ENGAGE

HEADING COMPARISON MONITOR

Indications: Amber HDG flags on both EHSIs MSTR COMP light illuminated.

1. Standby Compass ..... CHECKED
2. Faulty HDG Source ..... IDENTIFY
3. HDG Transfer Switch (Faulty Side) ..... DEPRESS
4. XHDG or HDG # Annunciator ..... ILLUMINATED
5. Master Comparators ..... RESET

IAS COMPARISON MONITOR

Indication: Amber IAS flags on both EADIs

1. Standby Airspeed Indicator ..... CHECK
2. Faulty Airspeed Indicator ..... IDENTIFY

LOC OR GS COMPARISON MONITOR

Indication: Amber LOC or GS flags

1. Faulty NAV Source ..... IDENTIFY
2. Functional NAV Source ..... SELECTED TO BOTH SIDES

NOTE

If operationally feasible, discontinue the approach for any comparison monitor flag.

RA COMPARISON MONITOR

*AIRCRAFT WITH DUAL RADIO ALTIMETERS ONLY

Indications: Amber RA flags on EADIs

1. Faulty Radio Altimeter . . . . . IDENTIFY
2. Radio Altimeter Transfer Switch . . . . . SELECTED TO FUNCTIONAL RADIO ALTIMETER

CHAPTER 4
MASTER WARNING SYSTEM

TABLE

CHAPTER 4
MASTER WARNING SYSTEM

Table 4-1 illustrates the lights, their labels, colors, and causes for illumination. The listed lights are representative of those on most Falcon 20 airplanes; however, specific labels may vary among different airplanes.

Table 4-1. MASTER FAULT PANEL

Annunciator	Cause for Illumination
CABIN	The cabin altitude is higher than 10,000 feet or the cabin differential pressure is higher than 8.7 psi. This light operates from either an altitude switch or a differential pressure switch. It operates in conjunction with an aural warning which is cancelable.
DOOR	A. The main cabin entrance door is not locked or the exterior door handle is not in the locked position. B. The rear compartment access door is not closed. This light operates from one microswitch mounted on the rear compartment door lock.
PITOT 1 PITOT 2	The pilot or copilot pitot probe heating system is off or failed. On F model airplanes, each light also monitors static port heat.
DC GEN 1 DC GEN 2	The LH or RH engine DC generator is not supplying power to the main bus. Either DC GEN light illuminates when the corresponding reverse-current relay opens.
BATTERY	At least one battery is not connected to the main bus. This light illuminates when either one, or both, battery relays open.
PARK BR	Parking brake pressure is too low. This light operates when the parking brake system pressure drops below 1,200 psi.
HYDR 1 HYDR 2	The respective main hydraulic pump pressure is too low. These lights operate from two pressure switches set at 2,150 psi.

Table 4-1. MASTER FAULT PANEL (Cont)

Annunciator	Cause for Illumination
OIL PR 1 OIL PR 2	The respective engine oil pressure is too low. It illuminates when the oil pressure drops below 5 psi.
FUEL PR 1 FUEL PR 2	Either engine fuel feeder line pressure is too low. Each illuminates when the respective feeder line fuel pressure drops below 8.7 psi.
X FER FUEL 1 X FER FUEL 2	Two fuel transfer lights (one for each fuel system) are usually located on the fuel panel. Each illuminates if its associated transfer fuel pressure drops below 4 psi. (Early models may have red lights for these indications. They are the push-to-test type.)
T/R 1 TRANS T/R 2 TRANS	An in-transit light illuminates when its thrust reverser is not in the stowed position. These lights are located near the pilot's altimeter on older airplanes.
T/R 1 REVERSE T/R 2 REVERSE	Each reverse light illuminates when its thrust reverser is fully deployed. The test button is in the lower center of the two light systems when it is not located on the master fault panel. On older airplanes the lights are located near the pilot's altimeter.
YAW OFF	The yaw damper disengagement light is usually located on the pilot's side instrument panel. It indicates that the yaw damper is disengaged. Automatic disengagement takes place when the yaw damper deflection exceeds 4° or there is a loss of AC power. When the light is not located on the master fault panel, it is a push-to-test type.
YAW FAIL	The red yaw damper fail light on the center console illuminates when the yaw damper has failed with the engagement button in. Automatic failure occurs when yaw damper deflection exceeds 1½° for more than 10 seconds. When the light is not located on the master fault panel, it is a push-to-test type.
A/Q ROLL A/Q PITCH	Two red Arthur warning lights (one for roll, one for pitch) illuminate whenever the Arthur-Q unit position does not agree with the high- or low-speed modes of flight. High-speed disagreement interrogation takes place at approximately 265 knots. Low-speed disagreement takes place whenever the right DLE is extended. When the lights are not located on the master fault panel, they are the push-to-test type, located on the left side of the pilot's instrument panel.

Table 4-1. MASTER FAULT PANEL (Cont)

Annunciator	Cause for Illumination
GUST DAMP	The red gust damper light (E and F models only) is located near the Arthur Q warning lights. This light illuminates if the No. 1 hydraulic pressure drops in the rudder system and the gust damper valve is closed (damping position). When the light is not located on the master fault panel, it is a push-to-test type.
NOSE CONDTG	The nose conditioning red warning light is located near the conditioning panel; it illuminates if the nose cone altitude reaches 30,000 feet or if the nose temperature exceeds 55° C.
REFUEL	The red refuel light (F model) is located on the fuel panel; it illuminates if the: 1. Refuel switches are not off. 2. Refuel doors are open. 3. Master refuel switch is on. 4. Vent valve is open. When the light is not located on the master fault panel, it is a push-to-test type.
APU	The APU altitude red warning light is located on the pressurization panel; it flashes when the APU is operating above 12,000 feet to warn that the airplane is approaching the 15,000-foot APU altitude. When the light is not located on the master fault panel, it is a push-to-test type.
BAGGAGE FIRE	This illuminates if smoke and/or fire has been detected in the baggage area.
BATT WARM / BATT HOT	The BATT WARM light illuminates if battery temperature is between 120° F and 150° F. The BATT HOT light illuminates if battery temperature exceeds 150° F.
EMERG BATT	This illuminates when the emergency battery is in use.
NRV	This illuminates if the nonreturn valve is open with the APU switches turned off.

CHAPTER 5
LIMITATIONS AND SPECIFICATIONS

CONTENTS

CHAPTER 5
LIMITATIONS AND SPECIFICATIONS

TYPE OF AIRPLANE OPERATION

The Falcon 20 is authorized for the following types of operation:

- Visual flight, VFR
- Night flight
- Instrument flight, IFR
- Over-water operations when the required equipment is installed and approved in accordance with the applicable operating requirements of the Civil Air Regulations
- Flight in icing conditions

NOTE

Aerobatics and intentional spins are prohibited.

MINIMUM FLIGHT CREW

The number of required crewmembers is two pilots.

MAXIMUM NUMBER OF PASSENGERS

From eight to 13 passengers may be carried in accordance with approved interior arrangement.

AIRPLANE GENERAL

EXTERIOR DIMENSIONS

Wing span ..... 53 feet 6 inches

Height ..... 17 feet 4 inches

Length ..... 56 feet 3 inches

Wheel base ..... 18 feet 10 inches

Wheel tread ..... 12 feet 2 inches

CABIN DIMENSIONS

Height ..... 5 feet 8 inches

Length ..... 23 feet 3 inches

Width ..... 6 feet 2 inches

NOSEWHEEL STEERING

Range ..... 50° left and right

TIRE PRESSURES

Four-inch nose tire ..... 147 psi

Six-inch nose tire ..... 132 psi

Six-inch nose tire—E and F models ..... 147 psi

Main tires—Standard and D models ..... 132 psi

Main tires—E and F models ..... 147 psi

FUEL CAPACITY

Standard model (Without SB 278) ..... 1,233 gallons/8,230 pounds

Standard model (With SB 278) ..... 1,246 gallons/8,317 pounds

D and E models ..... 1,323 gallons/8,831 pounds

F model ..... 1,363 gallons/9,098 pounds

AIRSPEED LIMITATIONS

V_A (maneuvering speed) ..... 200 knots

V_{ABO} (maximum airbrakes operating speed) ..... V_{MO}/M_{MO}

V_{ABE} (maximum airbrakes extended speed) ..... V_{MO}/M_{MO}

V_{LO} (maximum landing gear operating speed) ..... 190 knots

V_{LE} (maximum landing gear extended speed) ..... 220 knots

V_{LLO} (maximum landing lights operating speed) ..... 220 knots

V_{LLE} (maximum landing lights extended speed) ..... 220 knots

V_{WWO} (maximum windshield wiper operating speed) ..... 180 knots

Maximum speed for sliding window ..... 160 knots

Maximum speed for total loss of hydraulics ..... 200 knots

Limiting tailwind component ..... 10 knots

Demonstrated crosswind component ..... 25 knots

Maximum Airspeeds (Knots)	Standard	D	E	F
V_{MO} at sea level	350	350	350	350
V_{MO} at 23,400 feet	370*	370*	390	390
M_{MO} above 23,400 feet	.85*	.85*	.88	.88

*Maximum V_{MO}/M_{MO} is 390/.88 for standard and D models with SB 381 and SB 363 (after Rev. 3).

MINIMUM CONTROL SPEEDS

	Rudder	V_{MCG}	V_{MCA}
CF-700-2C or CF-700-2D	23°	114 knots	110 knots
	30°	100 knots	98 knots
CF-700-2D-2	23°	120 knots	115 knots
	30°	102 knots	100 knots
F model	30°	100 knots	99 knots

MAXIMUM FLAPS EXTENDED SPEED

	Flap Extension	Configuration	V_{FE}
Standard, D, and E models	15°	Takeoff	200 knots
	25°	Approach	190 knots
	40°	Landing	180 knots
F models	10°	Takeoff	190 knots
	25°	Approach	190 knots
	40°	Landing	180 knots

MINIMUM FLAPS RETRACTION SPEED

Standard, D, and E models ..... V_2 + 20 knots

F model ..... V_2 + 30 knots

ALTITUDE LIMITATIONS

Maximum for takeoff and landing ..... 10,000 feet

Maximum operating altitude ..... 42,000 feet

Maximum for operation of flaps, DLE, landing gear, and landing lights ..... 20,000 feet

WEIGHT LIMITATIONS

Weights (Pounds)	Standard	D	E	F
Maximum ramp	26,675*	27,537*	28,660	28,660
Maximum takeoff	26,455*	27,337*	28,660	28,660
Maximum landing	25,200	26,036	27,320	27,320
Maximum zero fuel**	18,956	18,956	19,600	19,600

*28,660 pounds with SB 465

**22,000 pounds optional with SB 363 for all models

POWERPLANT LIMITATIONS

ENGINE THRUST RATINGS

CF-700-2C ..... 4,125 pounds

CF-700-2D ..... 4,250 pounds

CF-700-2D-2 ..... 4,315 pounds*

*4,500 pounds with SB 520

ENGINE RPM (N_1 AND N_2) LIMITS (ALL CF-700s)

Gas Generator Rotor (N_1)

Maximum takeoff (5 minutes) ..... 101.2% (16,700 rpm)

Maximum continuous ..... 100% (16,500 rpm)

Fan Rotor (N_2)

Maximum permissible speed ..... 105% (9,000 rpm)

In-flight Recommended Minimum Power Settings

With indicated airspeed higher than 200 knots:

Throttles ..... IDLE

With indicated airspeed lower than 200 knots:

Altitude	Minimum Setting
0 to 12,000 feet	IDLE
12,000 to 25,000 feet	68%
25,000 to 42,000 feet	75%

MAXIMUM INDICATED ENGINE EXHAUST GAS TEMPERATURE LIMITS (T_5)

AMD SB No. 455 and GE No. 77-7:	Without	With	2D2
Maximum continuous	705° C	724° C	724° C
Takeoff (5 minutes)	730° C	730° C	740° C
Maximum transient (10 seconds)	782° C	782° C	782° C
Maximum transient for starting (5 seconds)	854° C	854° C	854° C

ENGINE OIL SYSTEM LIMITATIONS

Synthetic oil conforming with FAA Data sheet No. E7EA for the engine, in accordance with General Electric CF-700 Operating Instructions, SEI 189

Indicated pressure:

At idle ..... 5 psig minimum

Operating range ..... 5 to 65 psig

OIL PR light on the master fault panel illuminates for a pressure lower than 5 psig.

Indicated temperature limit:

CF-700-2C without SB G.E. 72-51 ..... 193° C maximum

CF-700-2C and CF-700-2D2 with SB GE-72-51 ..... 185° C maximum

ENGINE IGNITION LIMITATIONS

Either 2 minutes on, 3 minutes off, then 2 minutes on, 23 minutes off or, 5 minutes on, 25 minutes off

(This restriction does not apply if the airplane is equipped with continuous duty ignition. Igniter plugs are not continuous; if times are exceeded, plugs should be checked.)

FUEL SYSTEM LIMITATIONS

Authorized fuels are JP1 (kerosene), JP4, or JP5 conforming with FAA Data-Sheet No. E7EA for the engine. If a change or a mixture in the type of fuel used is required, an adjustment for density must be made on the fuel control unit to maintain optimum acceleration performance characteristics. The use of aviation gasoline is exceptionally authorized for a period not to exceed 25 hours maximum between two overhauls. For a concentration of aviation gasoline in excess of 50%, the flight altitude must not exceed 20,000 feet.

NOTE

The use of PFA55MB anti-icing additive, or anti-icing additives conforming to MIL-I-27686d, is authorized with the fuels used in these engines. A concentration of 0.15% by volume must not be exceeded.

FUEL PRESSURE INDICATIONS

Transfer system lights ..... 4 psi

Engine feed system ..... 21 to 25 psi

Master fault panel FUEL P light ..... 8.7 psi

PRESSURE REFUELING

Maximum refueling pressure is 3.5 bars (50 psi).

CABIN PRESSURIZATION LIMITATIONS

P is the difference between cabin pressure and outside static pressure.

Maximum P (pressure relief valve setting) ..... 8.5 psi

CAB light and audio warning ..... 8.7 psi

FLIGHT CONTROLS LIMITATIONS

AIRBRAKE OPERATIONAL LIMITATIONS

In approach with flaps extended, the airbrakes must be retracted. If the approach is made with the anti-icing on, the airbrakes may be extended down to 500 feet above the ground.

DRAG CHUTE OPERATIONAL LIMITATIONS

It is forbidden to use the drag chute in flight. On the ground, with a crosswind component exceeding 15 knots, do not deploy the drag chute before nosewheel touchdown.

WINDOW HEAT LIMITATIONS

MAX position shall be used exclusively in flight if NOR position does not prevent ice from accumulating on the windows.

APPROVED HYDRAULIC FLUID

The hydraulic fluid used in the hydraulic systems must conform to MIL-H-5606 specification.

USE OF REAR COMPARTMENT

It is forbidden to use the rear compartment for storage of baggage and spare kits.

TAKEOFF AND LANDING ON WATER- OR SLUSH-COVERED RUNWAY

Maximum height of water or slush ..... 0.5 inch (12.7 mm)

SLIDING WINDOW

Maximum speed for use of the sliding window..... 160 knots

WING ANTI-ICING LIMITATIONS

Wing anti-icing must not be used with total air temperature in excess of +10° C.

Wing anti-icing must be switched on as a preventive means ***in flight*** when the indicated total temperature is below +5° C (+41° F) and when icing conditions are anticipated.

Wing anti-icing must not be operated on the ground and/or during takeoff prior to completion of landing gear retraction.

Wing anti-icing must be switched off immediately after landing.

AIRFRAME ANTI-ICING LIMITATIONS

Airframe anti-icing must not be used on the ground except for checks conducted in accordance with the *Maintenance Manual.*

ENGINE ANTI-ICING LIMITATIONS

Engine anti-icing must not be used with total air temperature in excess of +10° C.

Engine anti-icing must be switched on as a preventive measure when the total indicated temperature is below +5° C (+41° F) and icing conditions are anticipated.

APU LIMITATIONS (MICROTURBO SAPHIR 1, 2, OR 4-2)

Operation on the ground:

APU operation is allowed on the ground. Starting and ground operation of these units are authorized up to 10,000 feet pressure altitude and within the following temperature ranges:

At altitude zero ..... −30 to +49° C (−22 to +120° F)

At 10,000 feet ..... −30 to +31° C (−22 to +88° F)

In-flight operation (if authorized):

The Microturbo APUs that are authorized for in-flight operation can be utilized up to an altitude of 15,000 feet and within a temperature range of −30 to +20° C (−22 to +68° F). In-flight relight is authorized up to 13,000 feet and a maximum IAS of 300 knots and within a temperature range of −30 to +25° C (−22 to +77° F).

A blinking light at 12,000 feet and above warns the crew when approaching the APU altitude limit with the APU in operation.

AUTOPILOT LIMITATIONS

The autopilot shall not be utilized during takeoff. During landing, when category 1 minimums are applicable, the minimums must be complied with.

Substantiation of the certification requirements for category II and category III precision approaches has not been performed for autopilot/flight director systems installed in Falcon 20 airplanes.

During autopilot operation, one pilot must be seated at the controls with his seat belt fastened.

Autopilot operation is authorized within the entire airplane flight envelope.

SPERRY SP 40 OPERATIONAL LIMITATIONS

Height:

En route ..... 1,000 feet

At landing ..... 200 feet

COLLINS AP 103F OPERATIONAL LIMITATIONS

Height:

En route ..... 1,000 feet

At landing ..... 200 feet

COLLINS AP 104 OPERATIONAL LIMITATIONS (WITH FD 108 OR FD 109 FLIGHT DIRECTOR)

Height:

En route ..... 1,000 feet

At landing ..... 120 feet

COLLINS AP 105 OPERATIONAL LIMITATIONS (WITH FD 109 FLIGHT DIRECTOR)

Height:
En route ..... 600 feet

At landing ..... 120 feet

LANDING GEAR SHOCK ABSORBER MICROSWITCH FUNCTIONS

NOSE GEAR

- Antiskid
- Nosewheel steering
- Normal landing gear selector locking pin

LEFT MAIN GEAR

- Normal landing gear selector locking pin
- Stabilizer trim position warning with extended jackscrew
- Ground operation of cockpit side window heat with SB 178 and 306
- Airbrake extended warning

RIGHT MAIN GEAR

- Stall warning (in flight)
- Cabin pressurization (conditioning valve control and pressurization controller) (on ground)
- Saphir I APU (if not modified for in-flight operation)
- Battery ground ventilating fan
- Bleed/conditioning valve interlock removal on T-39 installations

ENGINE FAILURE TO START

If an engine has failed to start after 30 seconds terminate the start.

Check Engine for excess fuel then motor to clear it of excess fuel.

After dry motoring wait one minute prior to attempting another start. Without dry motoring wait two minutes prior to attempting another start.

Do not make more than three attempts of 30 seconds each.

Prior to proceeding with a fourth attempt, allow 40 minutes delay for sufficient cooling.

CHAPTER 6
SYSTEMS REVIEW

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ILLUSTRATIONS

CHAPTER 6
SYSTEMS REVIEW

ELECTRICAL POWER SYSTEMS

AUXILIARY BUS REVIEW

The Falcon 20 auxiliary bus switch provides isolation of certain equipment in case of electrical fire and reduces demand on the batteries in case of multiple generator failure. With the auxiliary bus switch off, the batteries will provide approximately 35 minutes of power to essential items necessary for safety of flight. These ***load-shed*** items are also removed automatically when the engines are being started with batteries on all airplanes SNs prior to 345. In automatic load shed the service lights remain operational if the auxiliary bus switch is on.

STATUS OF ITEMS WHEN IN LOAD-SHED CONDITION

FUEL		
Rear tank level switch		Fails to REF position
Single-point refuel switch		Operational (battery bus)
Crossfeed		Fails in last position
Interconnect		Fails in last position
Boost pump	Left	Operational
Boost pump	Right	Operational
Transfer pump	Left	Not working
Transfer pump	Right	Not working
Fuel quantity	Left wing	Not working
Fuel quantity	Right wing	Not working
Fuel quantity	Left feeder	Operational
Fuel quantity	Right feeder	Not working
Fuel counters	Left	Operational
Fuel counters	Right	Operational
ENGINE INSTRUMENTS		
Fuel flow	Left	Operational
Fuel flow	Right	Operational
Exhaust gas temperature	Left	Operational
Exhaust gas temperature	Right	Operational
N_1 indicator	Left	Operational
N_1 indicator	Right	Operational
N_2 indicator	Left	Not working
N_2 indicator	Right	Not working
Oil temperature	Left	Not working

Oil temperature	Right	Not working
Oil pressure	Left	Not working
Oil pressure	Right	Not working
Fuel pressure	Left	Not working
Fuel pressure	Right	Not working
Igniter light	Left	Operational
Igniter light	Right	Operational
EPR	Left	Not working
EPR	Right	Not working
Ram-air temperature		Operational
ICE AND RAIN		
Pitot heat	Left	Operational
Pitot heat	Right	Not working
Windshield heat	Left	Operational
Windshield heat	Right	Not working
Windshield heat (E and F models)	Side	Not working
Engine anti-ice valve	Left	Fails to open position
Engine anti-ice valve	Right	Fails to open position
Nacelle anti-ice valve	Left	Fails in last position
Nacelle anti-ice valve	Right	Fails in last position
Wing anti-ice valve	Left	Fails in last position
Wing anti-ice valve	Right	Fails in last position
Windshield wiper	Left	Operational
Windshield wiper	Right	Not working
Rain repellent	Left	Operational
Rain repellent	Right	Not working
HYDRAULIC		
Triplex indicator	No. 1	Not working
Triplex indicator	No. 2	Not working
Triplex indicator	Standby	Not working
Normal L/G selector		Not working (except with SB 676)
Emergency L/G selector	Mechanical	Operational
DLE		Not working

Flaps		Not working
Yaw damper		Operational
Airbrakes		Operational (SNs 1-236 with SB 437)
Stabilizer trim	Normal	Operational
Stabilizer trim	Emergency	Not working
Aileron trim		Not working
Rudder trim		Not working
Standby pump		Operational
Antiskid		Not working
Arthur Q	Nonelectrical	Operational
Gust damper	Nonelectrical	Operational
Nosewheel steering		Operational (SNs 1-89 with SB 223)
Transfer jack	Nonelectrical	Operational

*Most airplanes

CONDITIONING		
Dump switch		Operational
Cabin altitude controller		Operational
APU		Operational
Cabin temperature control		Operational
Conditioning valve		Operational
Bleed air	Left	Operational
Bleed air	Right	Operational
Ram air		Operational

RADIOS		
Communication No. 1		Operational
Communication No. 2		Not working
Navigation No. 1		Operational
Navigation No. 2		Not working
ADF No. 1		Operational
ADF No. 2		Not working
Transponder No. 1		Operational
Transponder No. 2		Not working
HF		Not working
Weather radar		Not working
Radar altimeter (pilot)		Operational

Radar altimeter (copilot)		Not working
DME No. 1		Operational
DME No. 2		Not working
Altitude alerter		Operational
Comparator		Not working
LIGHTS		
Master fault		Operational
Transfer pump	Left	Not working
Transfer pump	Right	Not working
Clogged fuel filter	Left	Not working
Clogged fuel filter	Right	Not working
Igniter	Left	Operational
Igniter	Right	Operational
Anti-ice (5)		Not working
L/G position		Operational
DLE		Not working
Flaps		Not working
Yaw damper		Both operational
Airbrakes	Amber	Not working
Airbrakes (large)	Red	Operational
Standby pump		Not working
Antiskid		Both not working
Arthur Q		Not working
Gust damper		Not working
Transfer jack		Not working
Tank pressurization		Not working
Emergency exit		Operational
Nose cone		Not working
Pilot's instruments		Operational
Copilot's instruments		Not working
Pedestal		Operational
Circuit-breaker panel		Operational
Reading (pilot)		Operational
Reading (copilot)		Operational

Shield	Red	Operational
Shield	White	Operational
Landing		Not working
Taxi		Not working
Seat belt/no smoking		Not working
Navigation		Not working
Rotating beacon (fin)		Operational (No other exterior light operational)
Rotating beacon (belly)		Not working
Strobes		Not working
Autopilot disengage		Operational
Fire		Operational
Battery temperature		Operational

MISCELLANEOUS

Automatic oxygen system (manual extension only)	Not working
Warning horns (all)	Operational
Toilet	Not working
Reversers and indication	Operational
Galley	Not working
Some cabin lighting	May not work
Battery temperature	Operational
Fire extinguishers	Operational

FALCON 20
RECURRENT TRAINING MANUAL
FlightSafety international

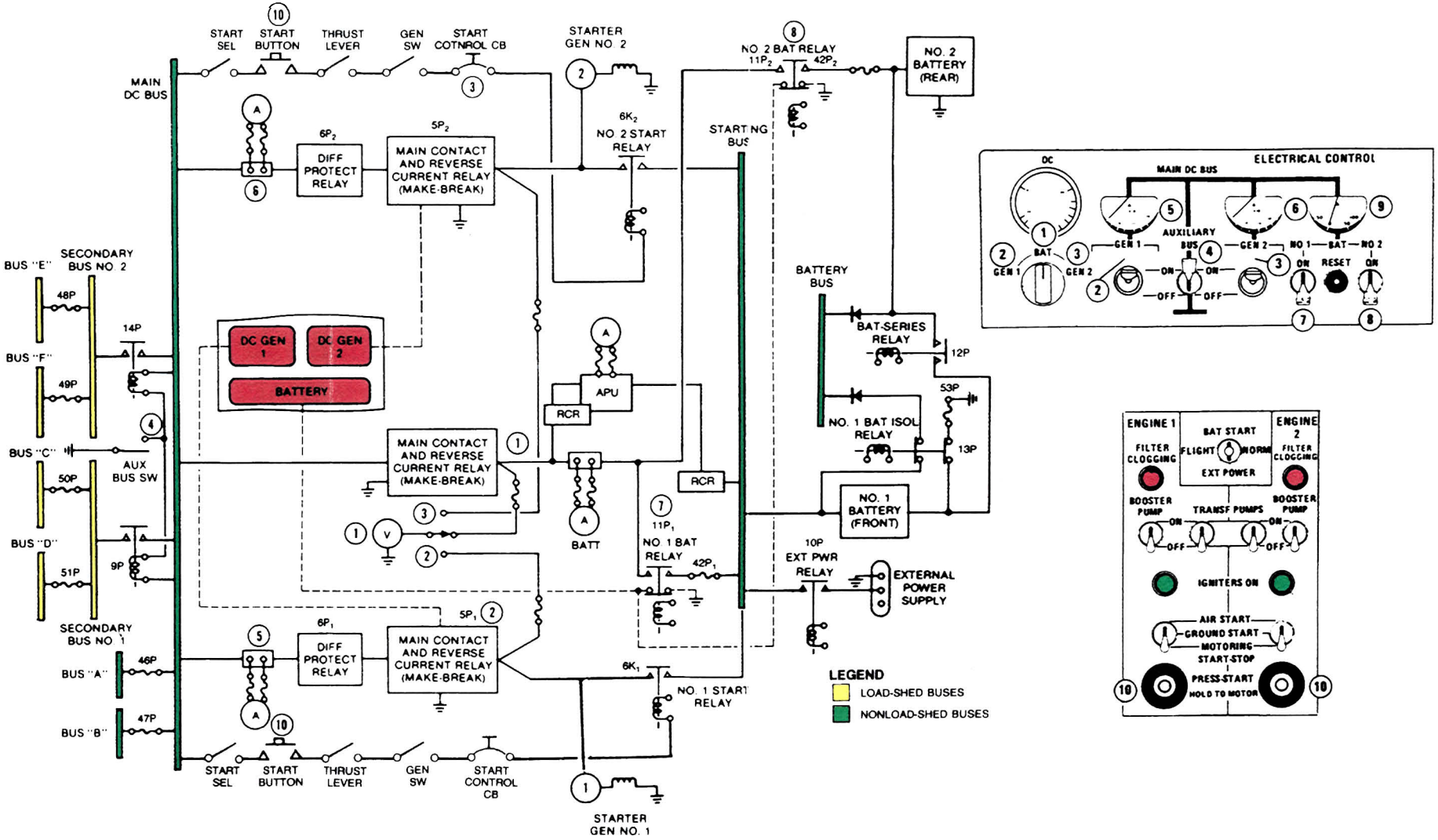

Figure 6-1. DC Distribution Buses Schematic

FOR TRAINING PURPOSES ONLY

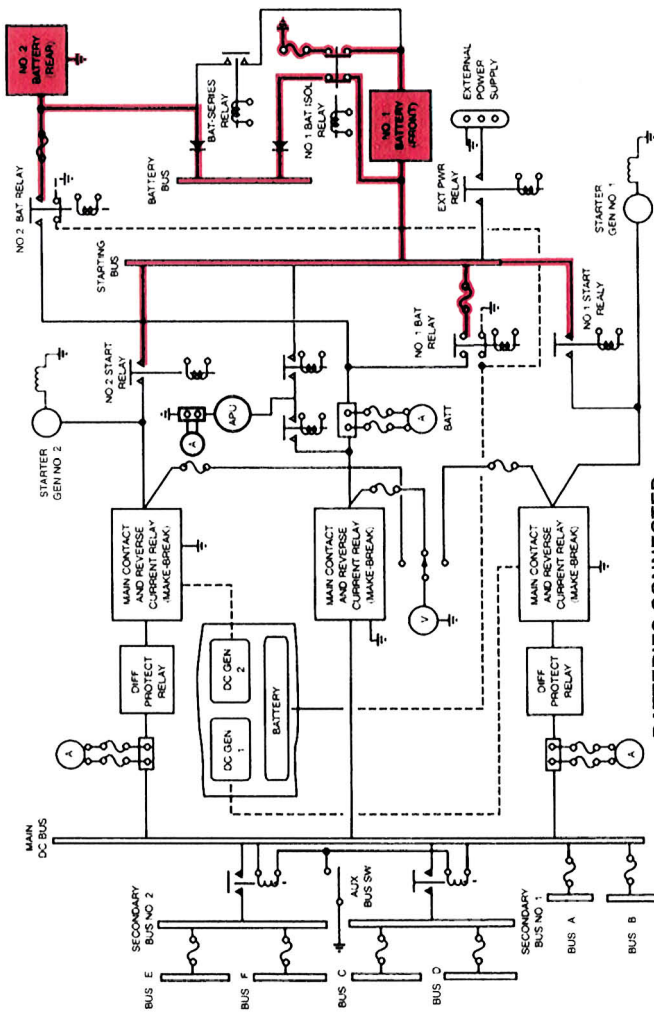

Figure 6-2. Batteries Connected Schematic

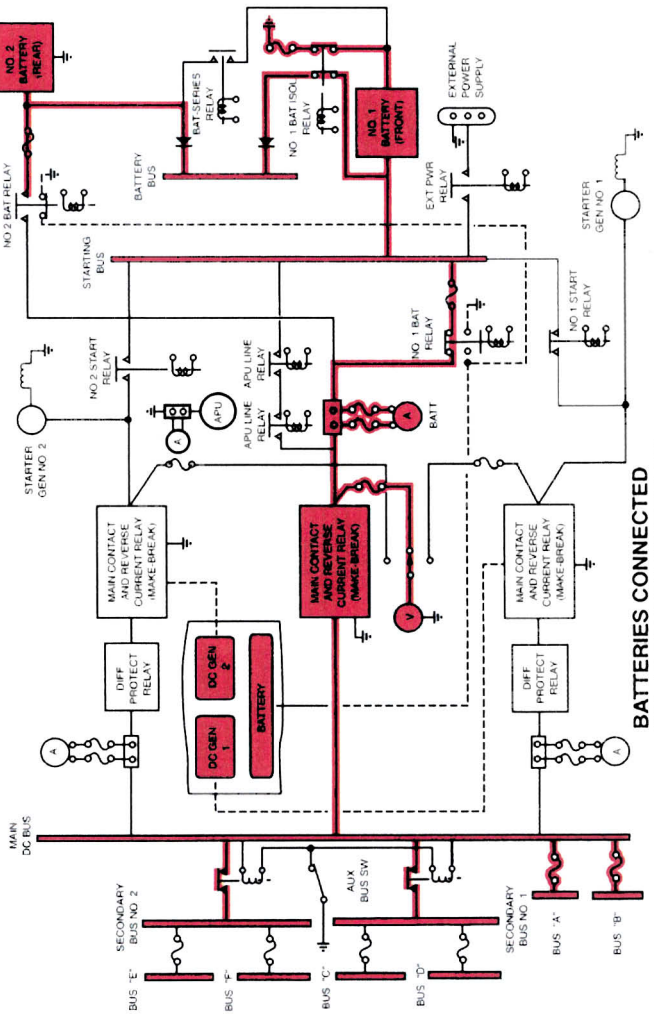

Figure 6-3. Battery Power Distribution—No. 1 Battery Schematic

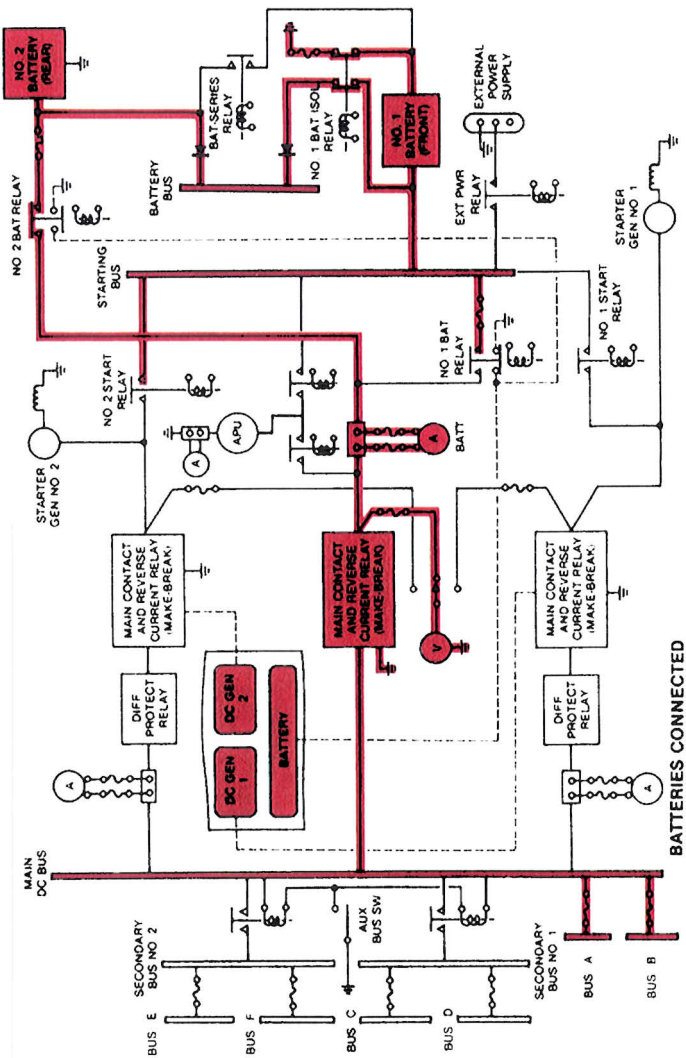

Figure 6-4. Battery Power Distribution—No. 2 Battery Schematic

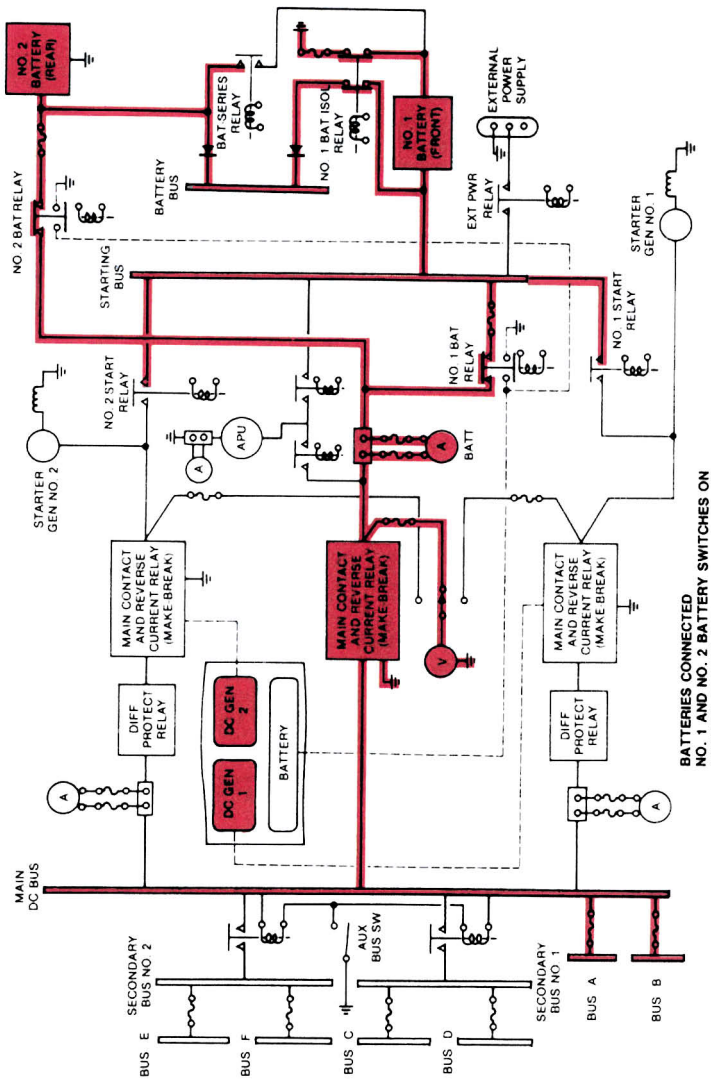

Figure 6-5. Battery Power Distribution—Both Batteries Schematic

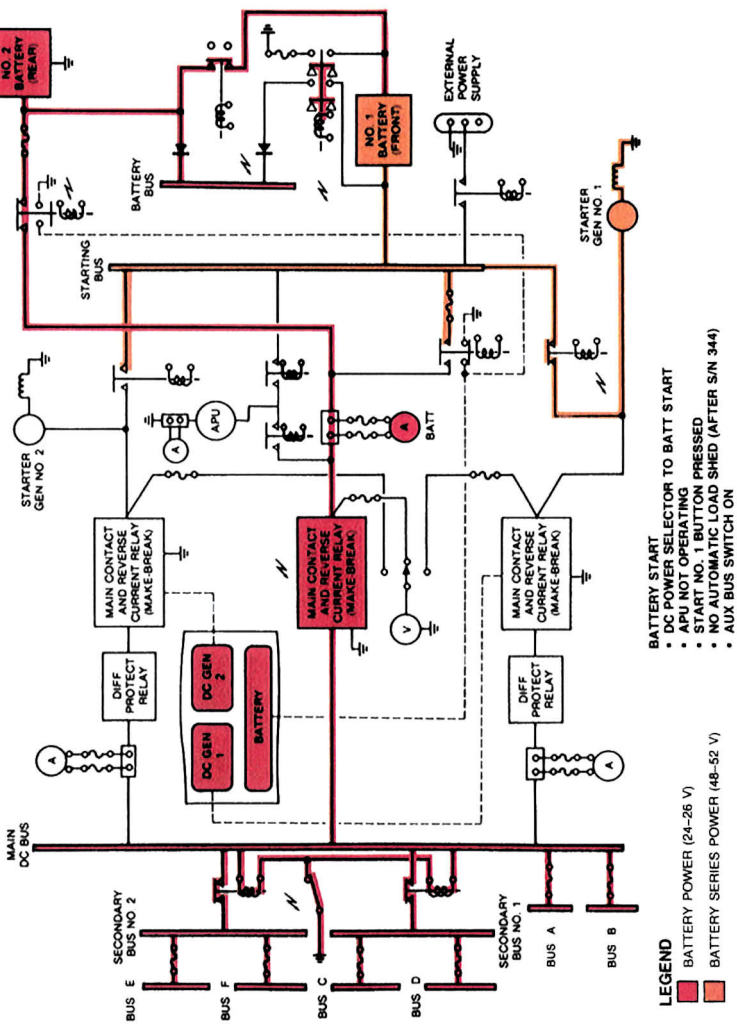

Figure 6-6. Battery Power Distribution—Battery Start Schematic

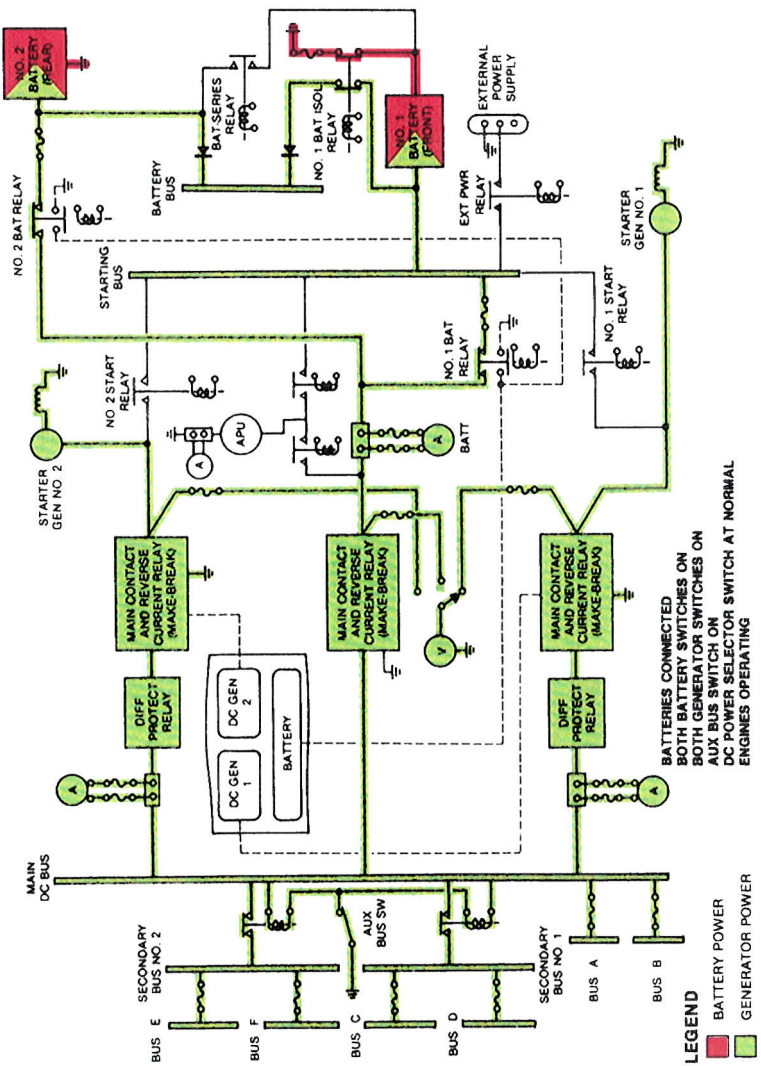

Figure 6-7. Both Battery Switches and Both Generator Switches On Schematic

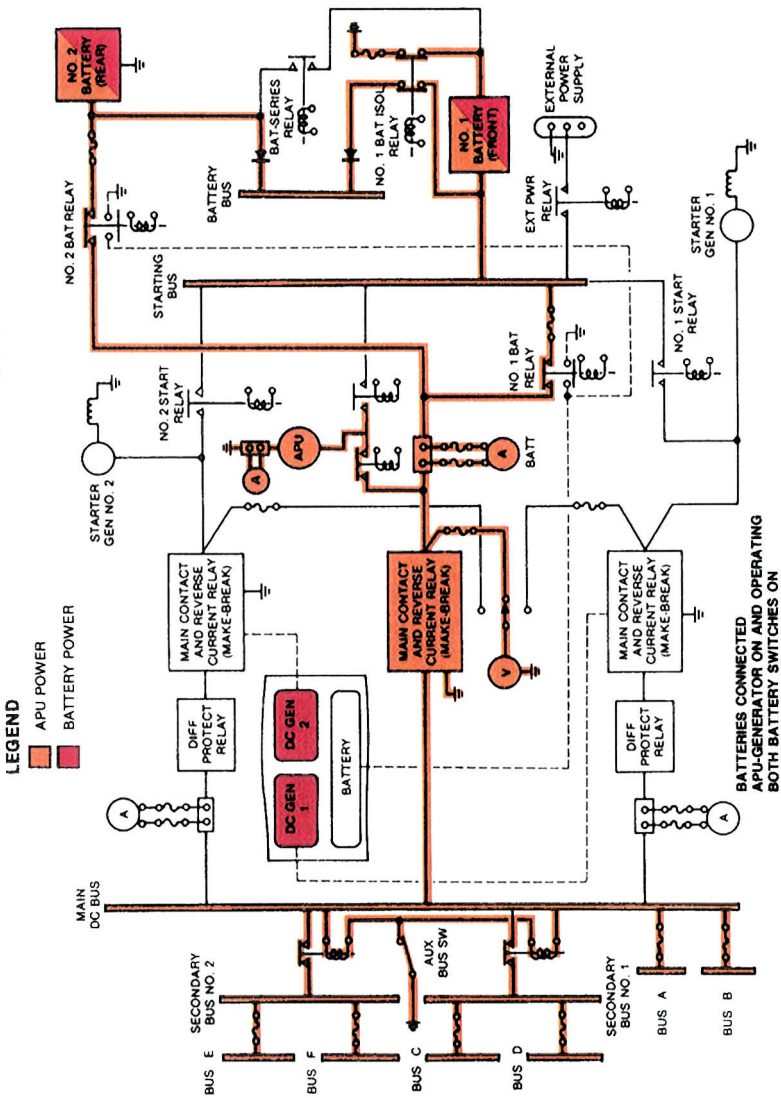

Figure 6-8. APU Generator On Schematic

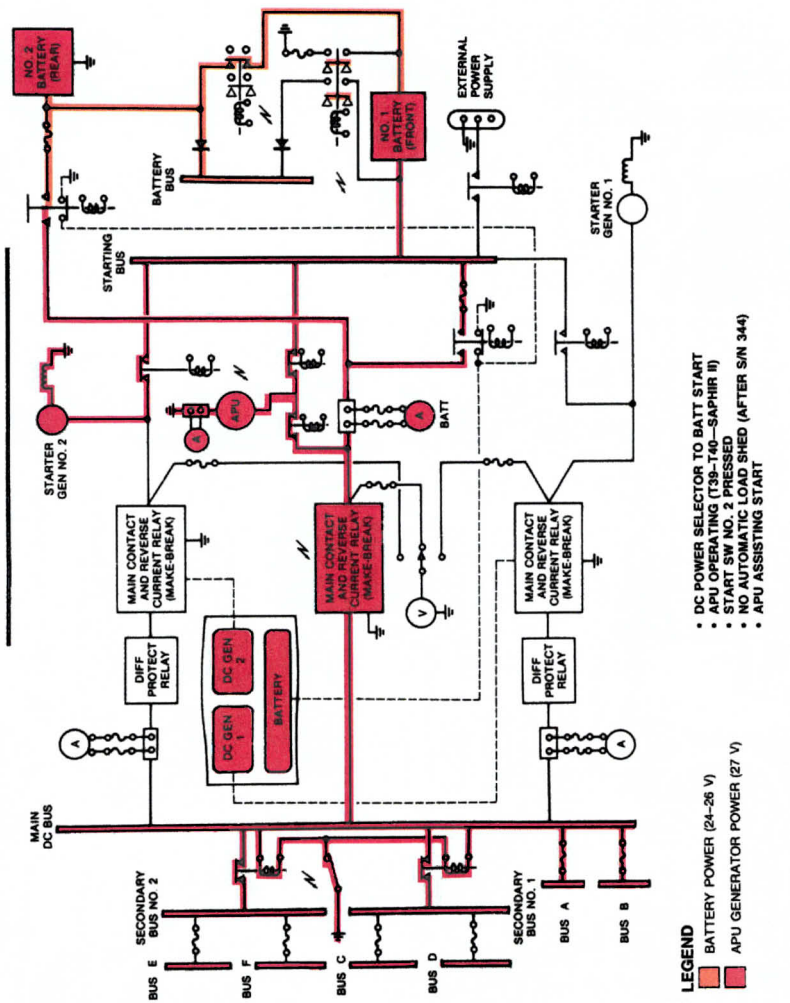

Figure 6-9. Battery Start with APU Assist

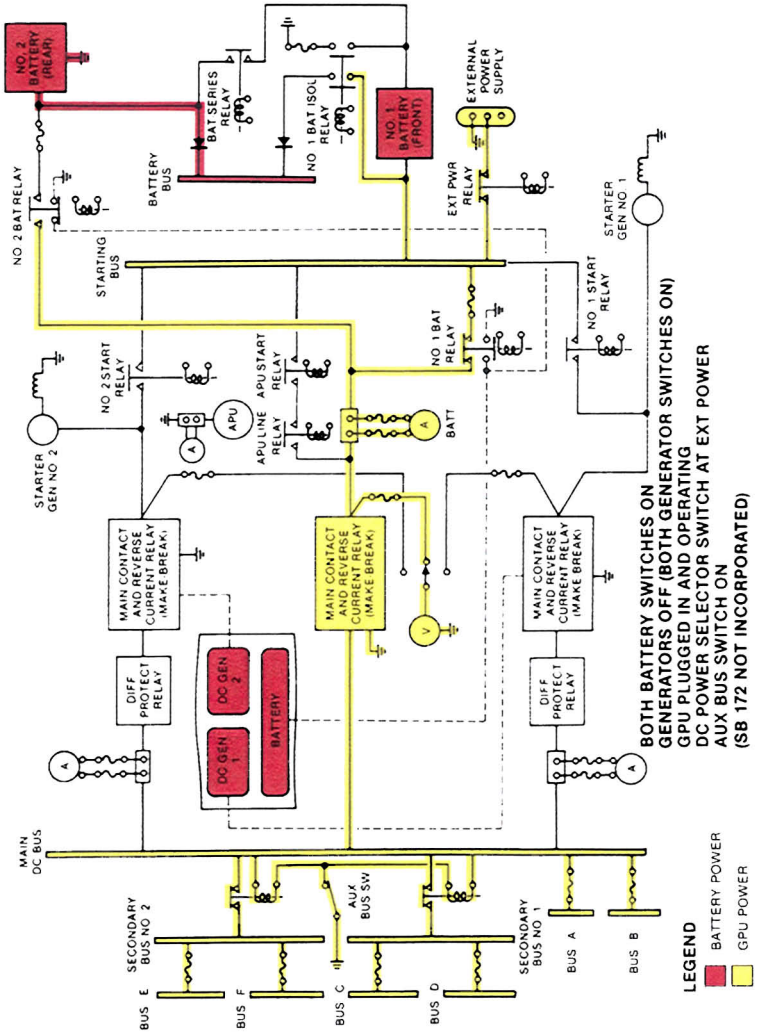

Figure 6-10. GPU Generator On Schematic

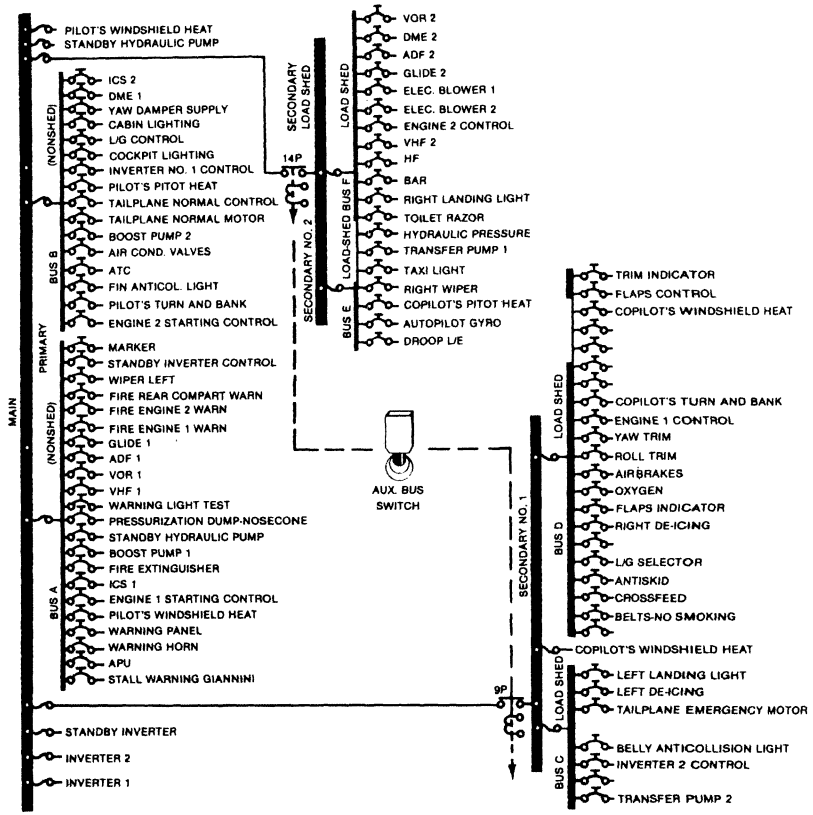

Figure 6-10A. DC Distribution—Falcon 20 Standard and D Models

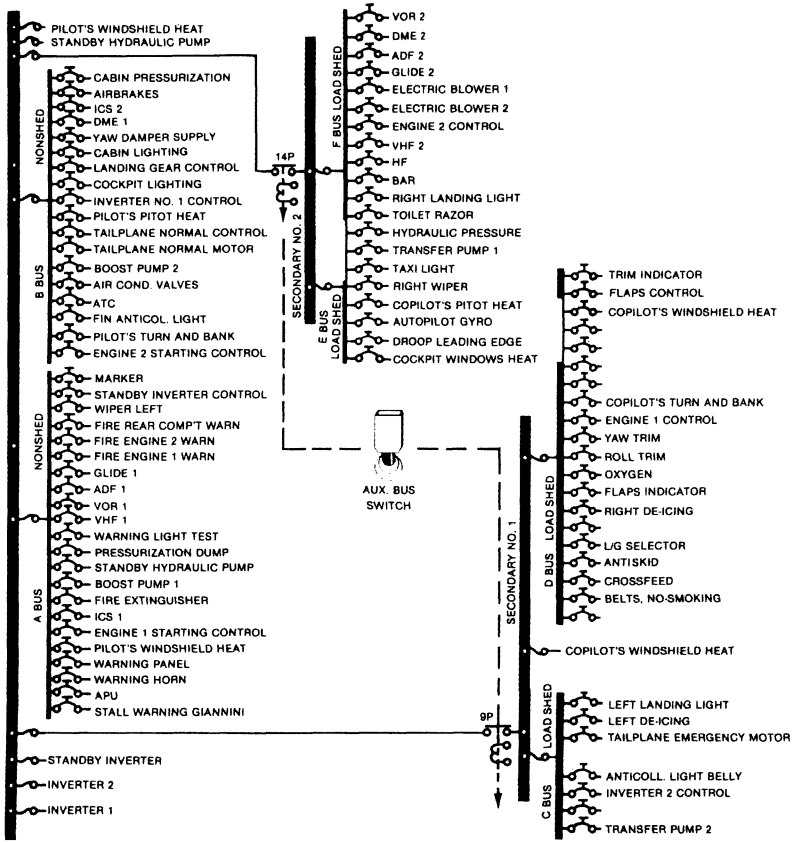

Figure 6-10B. DC Distribution—Falcon 20 E and F Models

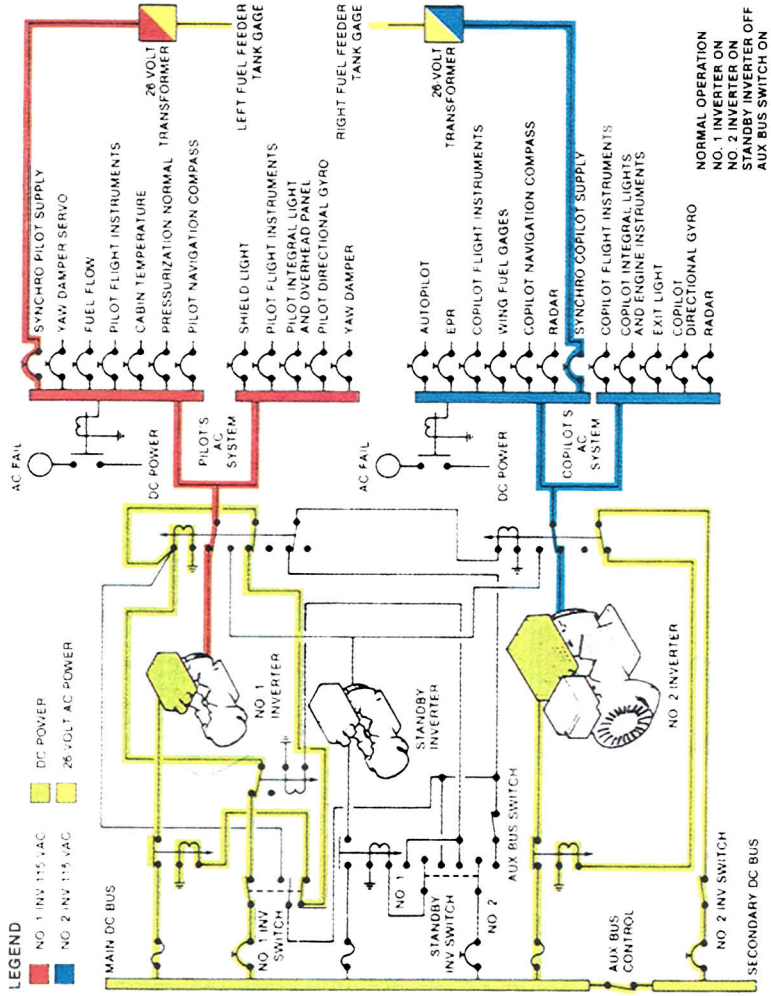

Figure 6-11. Normal Operation (AMD Basic) Schematic

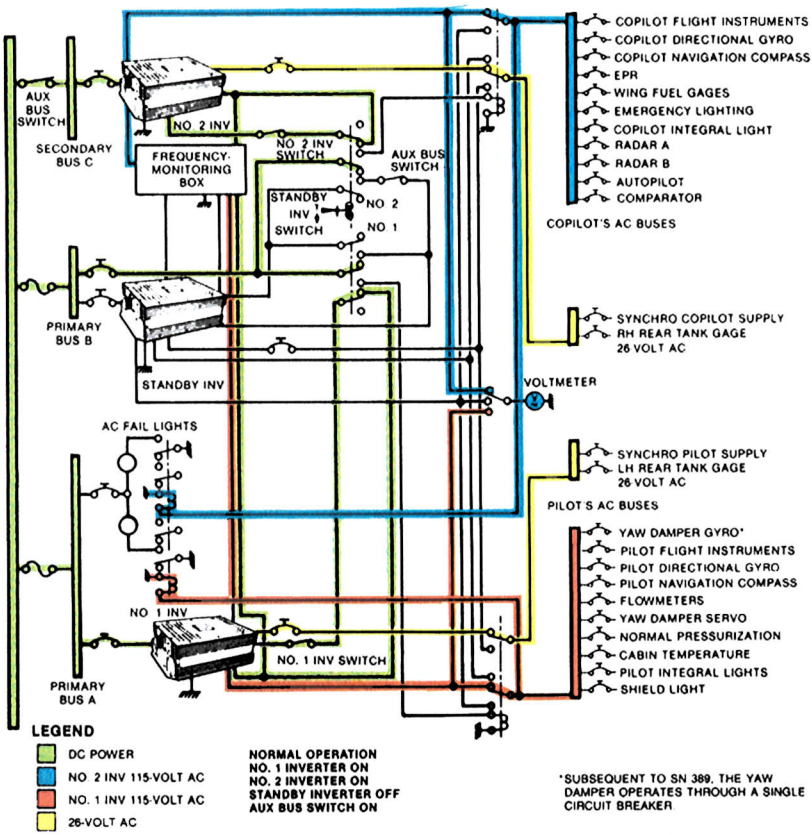

Figure 6-12. Normal Operation (AMD New) Schematic

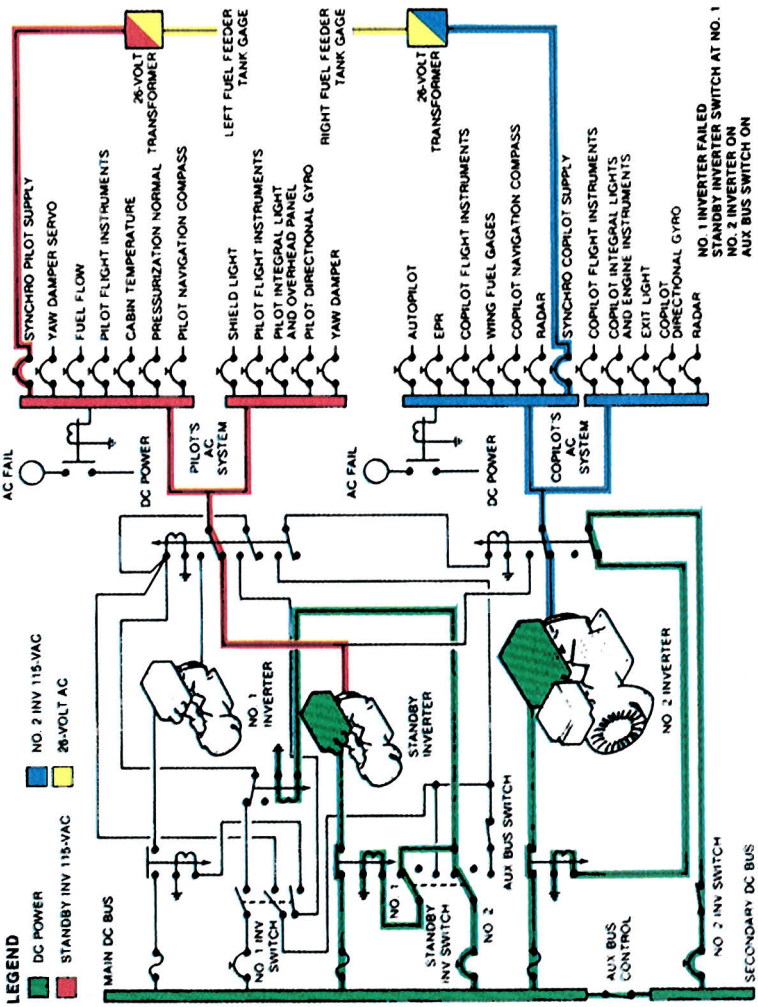

Figure 6-13. No. 1 Inverter Failure (AMD Basic) Schematic

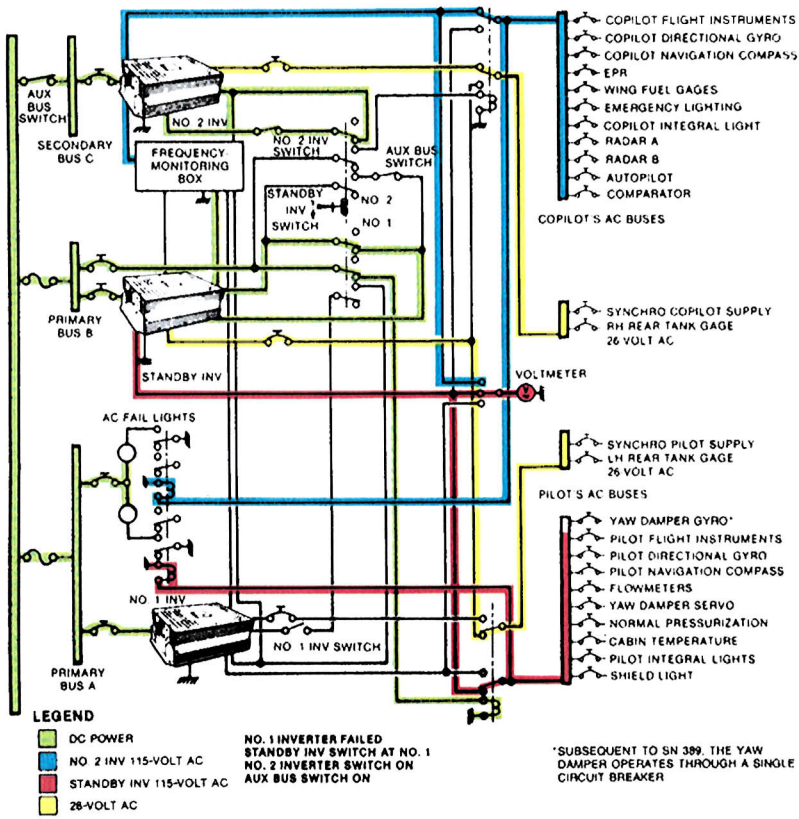

Figure 6-14. No. 1 Inverter Failure (AMD New) Schematic

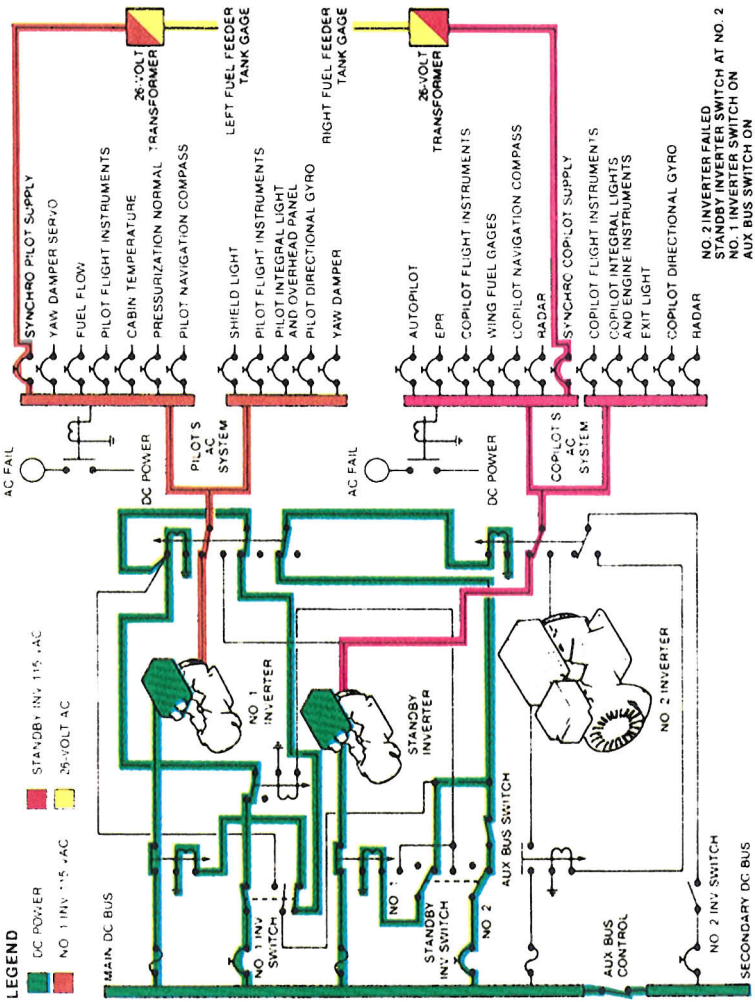

Figure 6-15. No. 2 Inverter Failure (AMD Basic) Schematic

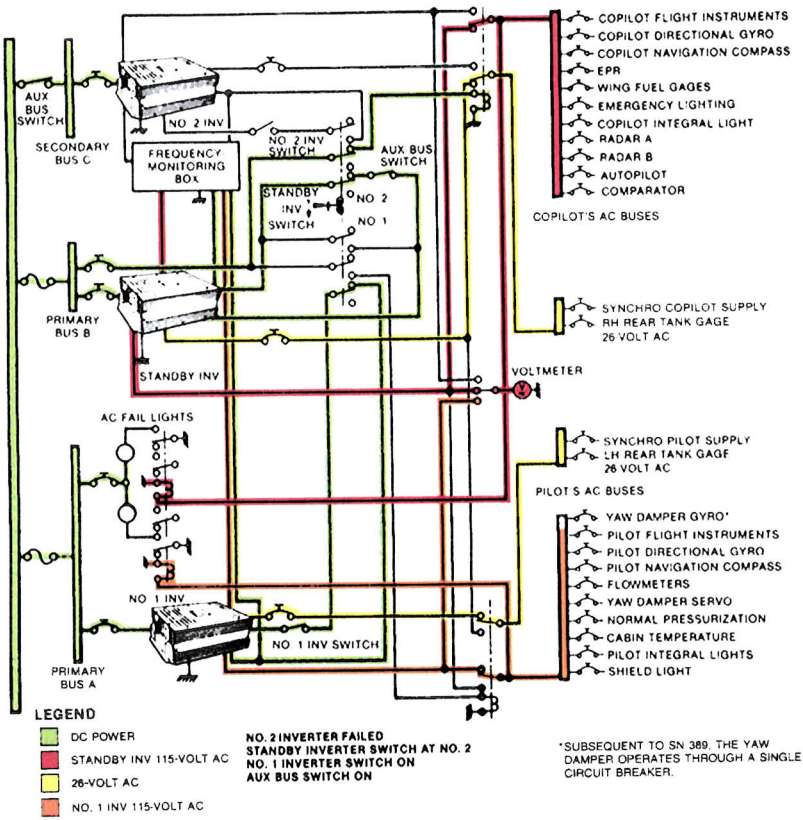

Figure 6-16. No. 2 Inverter Failure (AMD New) Schematic

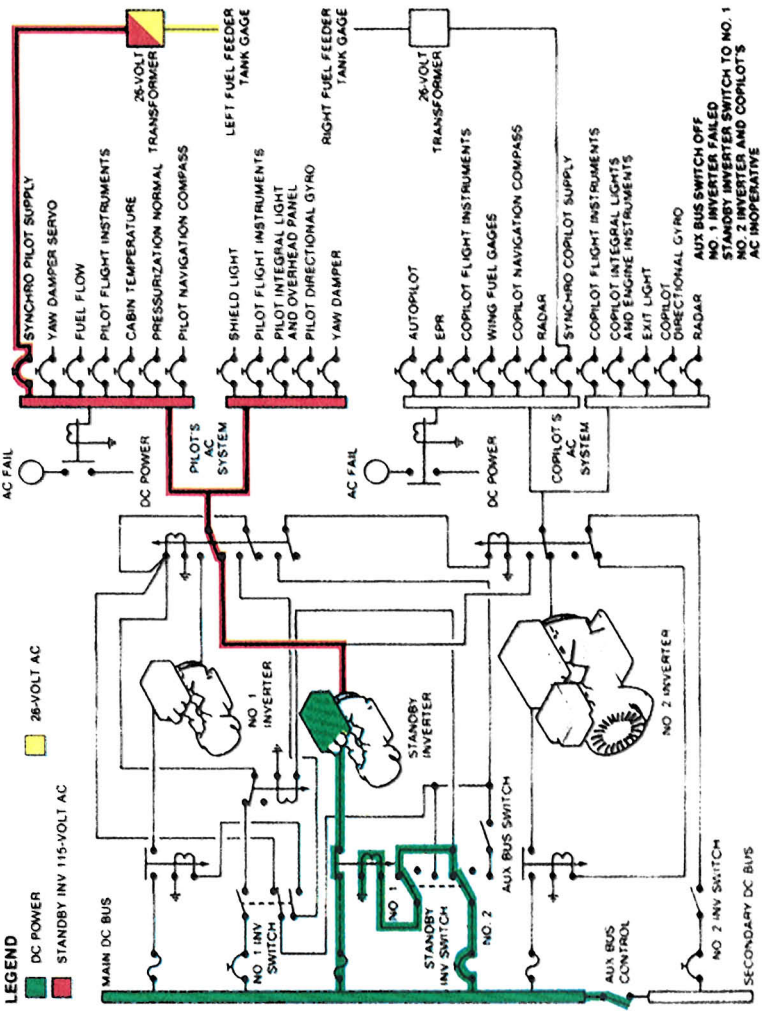

Figure 6-17. No. 1 Inverter Failed In Load Shed (AMD Basic) Schematic

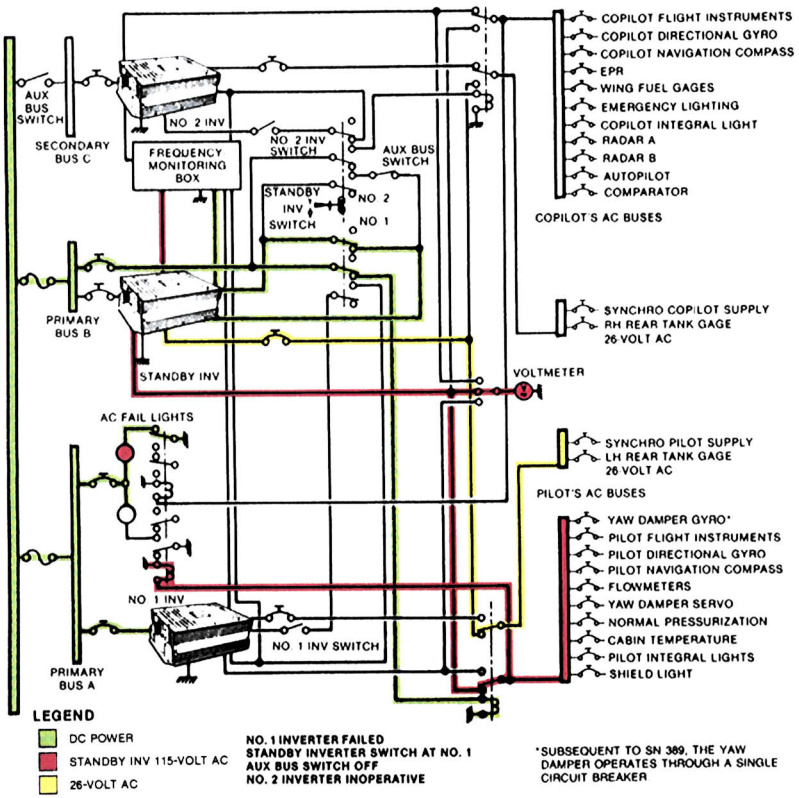

Figure 6-18. No. 1 Inverter Failed in Load Shed (AMD New) Schematic

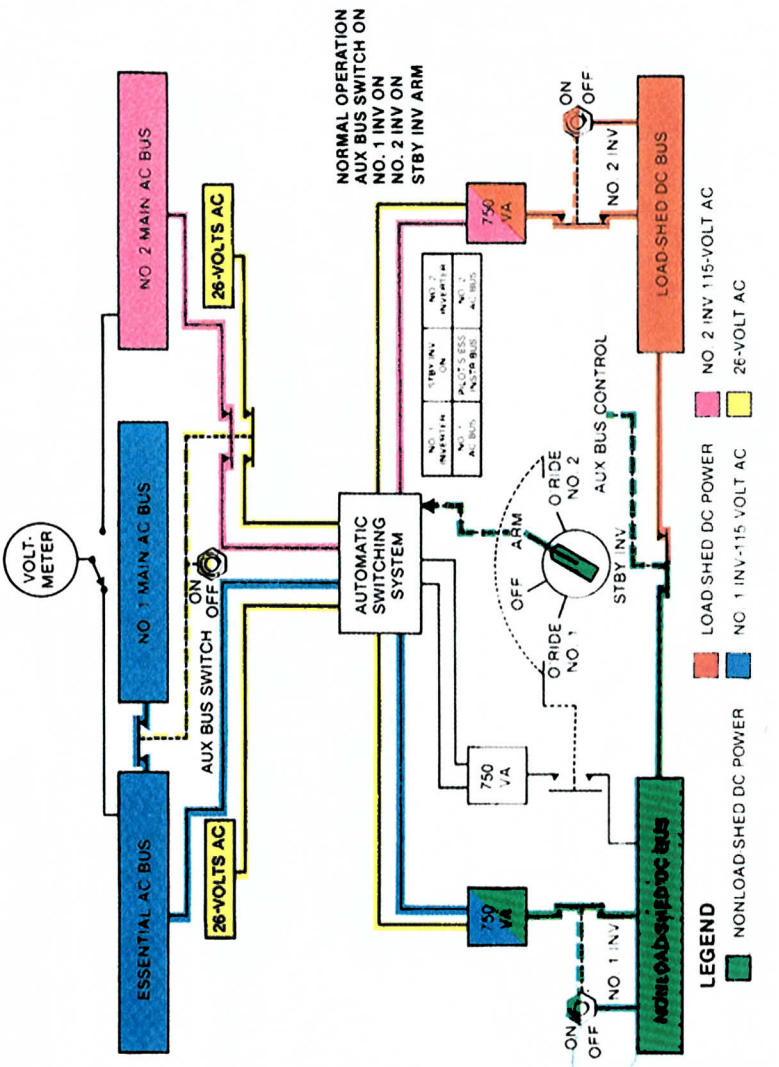

Figure 6-19. Normal Operation—Little Rock Airmotive

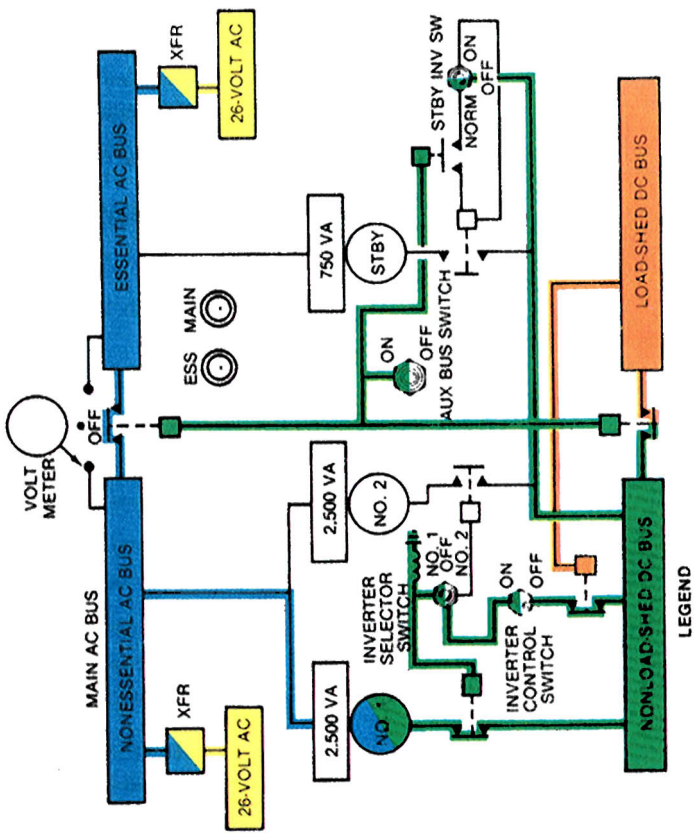

Figure 6-20. Normal Operation PAC System Schematic

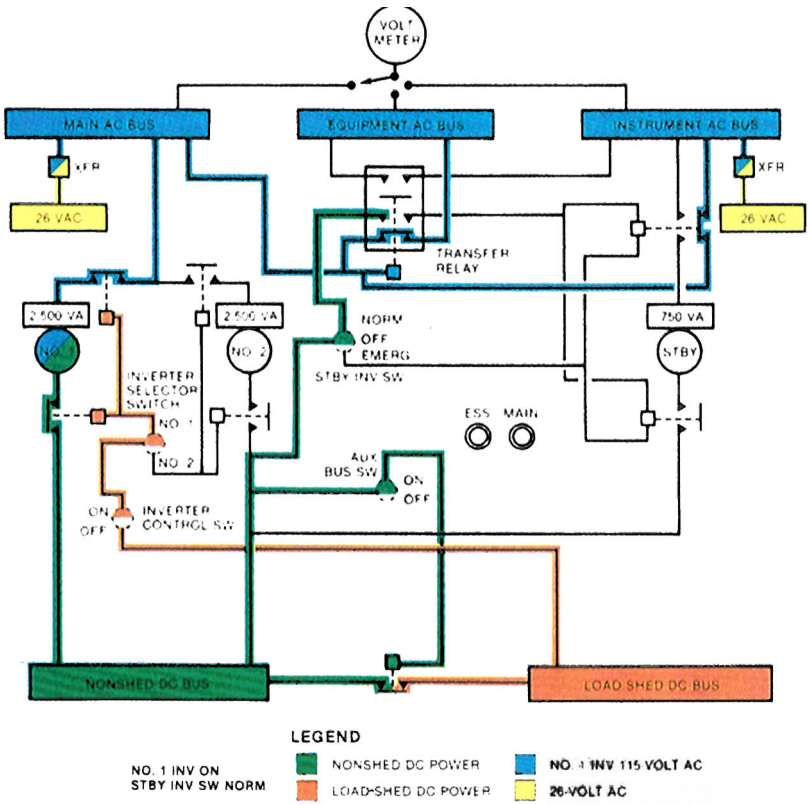

Figure 6-21. Normal Operation AiResearch System Schematic

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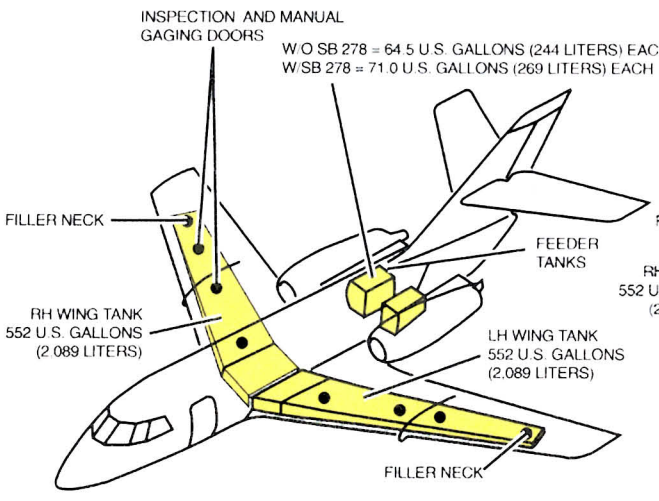
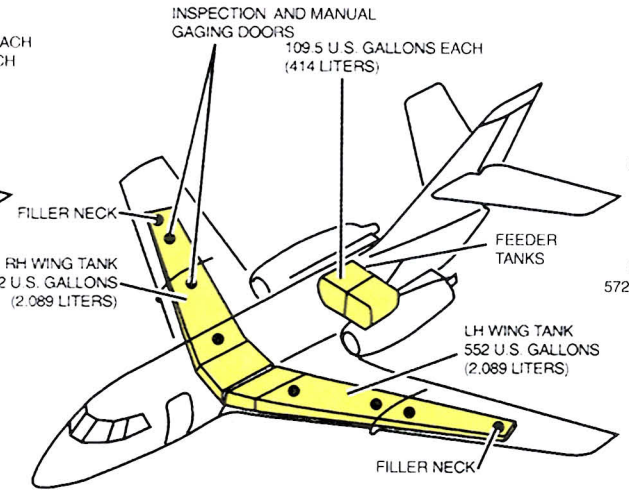
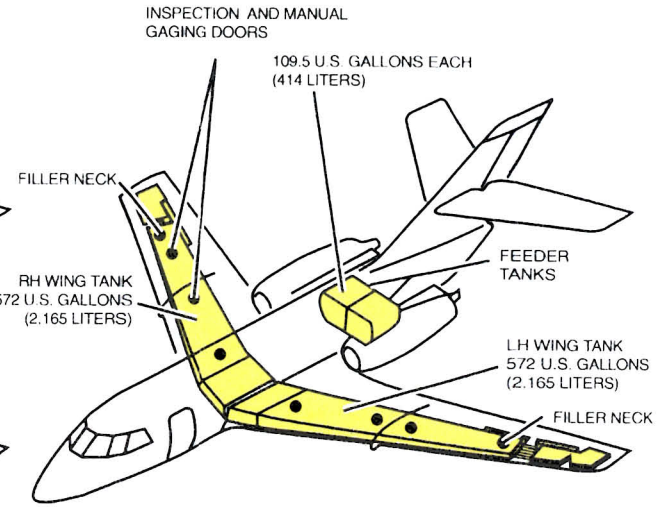


TOTAL USABLE FUEL CAPACITY
1,233 ± 10 U.S. GAL. (4,666 LITERS) WITHOUT SB 278 COMPLIED WITH (8,230 LB)
1,246 ± 10 U.S. GAL. (4,716 LITERS) WITH SB 278 COMPLIED WITH (8,317 LB*)



TOTAL USABLE FUEL CAPACITY
1,323 ± 10 U.S. GAL. (5,006 LITERS) (8,831 LB*)



TOTAL USABLE FUEL CAPACITY
1,363 ± 10 U.S. GAL. (5,158 LITERS) (9,098 LB*)

STANDARD MODELS

STANDARD MODEL AIRPLAINES WITHOUT SB 278 COMPLIANCE

TANKS	LITERS	U.S. GALLONS	POUNDS*
Wing Total	2 x 2,089 = 4,178	2 x 552 = 1,104	7,369
Feeder Total	2 x 244 = 488	2 x 64.5 = 129	861
Aircraft Total	4,666	1,233 – 10	8,230

STANDARD MODEL AIRPLAINES WITH SB 278 COMPLIANCE

TANKS	LITERS	U.S. GALLONS	POUNDS*
Wing Total	2 x 2,089 = 4,178	2 x 552 = 1,104	7,369
Feeder Total	2 x 269 = 538	2 x 71.0 = 142	948
Aircraft Total	4,716	1,246 – 10	8,317

* COMPUTED AT 6.675LB/U.S. GAL.

FALCON 20 D AND E MODELS

D AND E MODEL AIRPLANES

TANKS	LITERS	U.S. GALLONS	POUNDS*
Wing Total	2 x 2,089 = 4,178	2 x 552 = 1,104	7,369
Feeder Total	2 x 414 = 828	2 x 109.5 = 219	1,462
Aircraft Total	5,006	1,323 – 10	8,831

* COMPUTED AT 6.675LB/U.S. GAL.

FALCON 20 F MODEL

F MODEL AIRPLANES

TANKS	LITERS	U.S. GALLONS	POUNDS*
Wing Total	2 x 2,165 = 4,330	2 x572 = 1,144	7,636
Feeder Total	2 x 414 = 828	2 x 109.5 = 219	1,462
Aircraft Total	5,158	1,363 – 10	9,098

* COMPUTED AT 6.675LB/U.S. GAL.

Figure 6-22. Tank Configuration and Capacities

FOR TRAINING PURPOSES ONLY

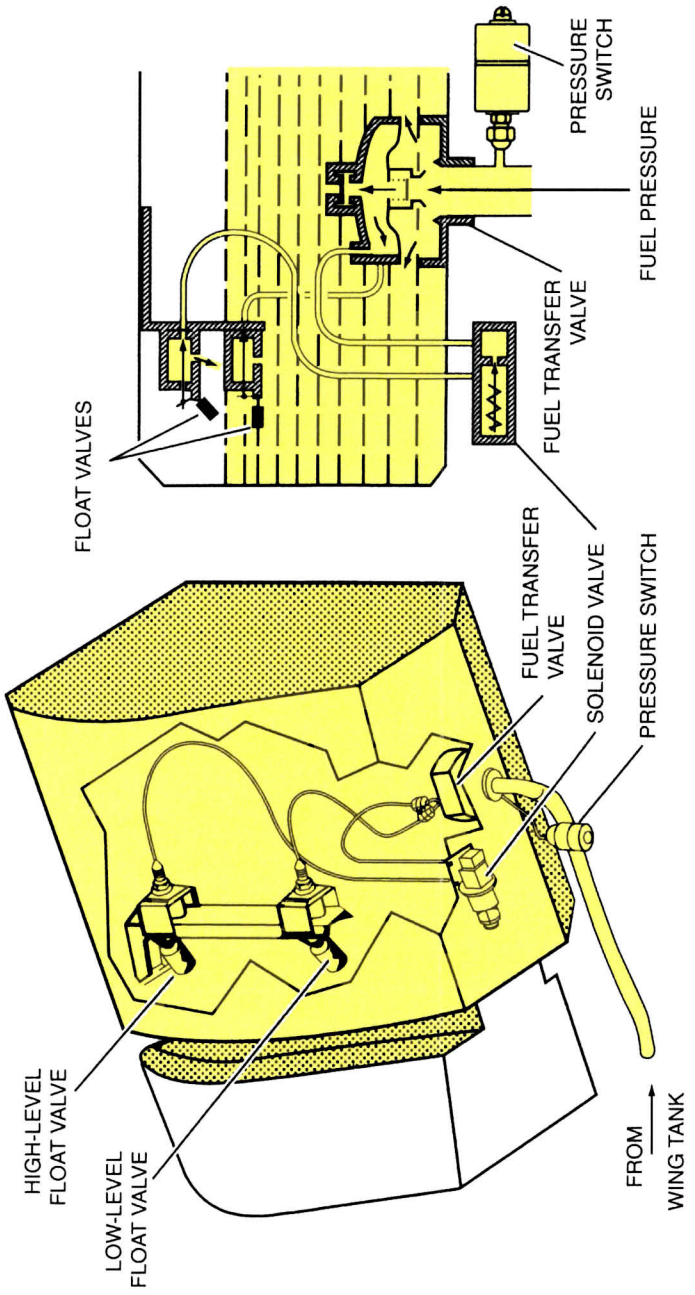


Figure 6-23. Feeder Tank Diagram

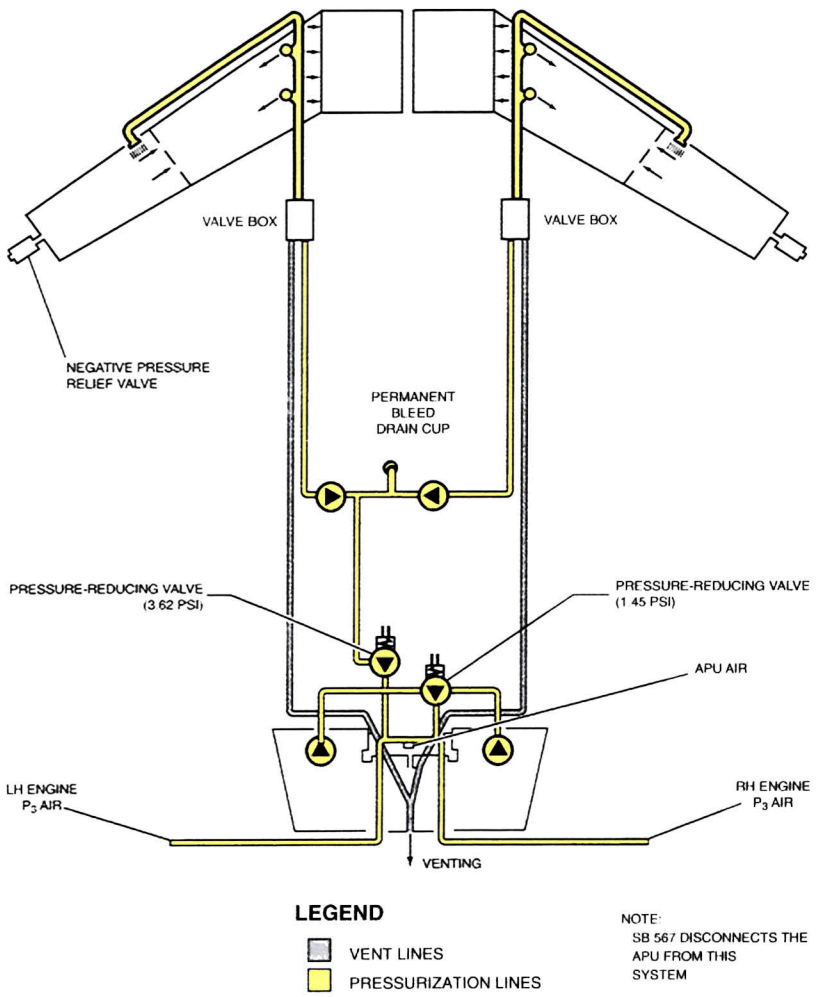


Figure 6-24. Fuel Tank Pressurization and Vent System

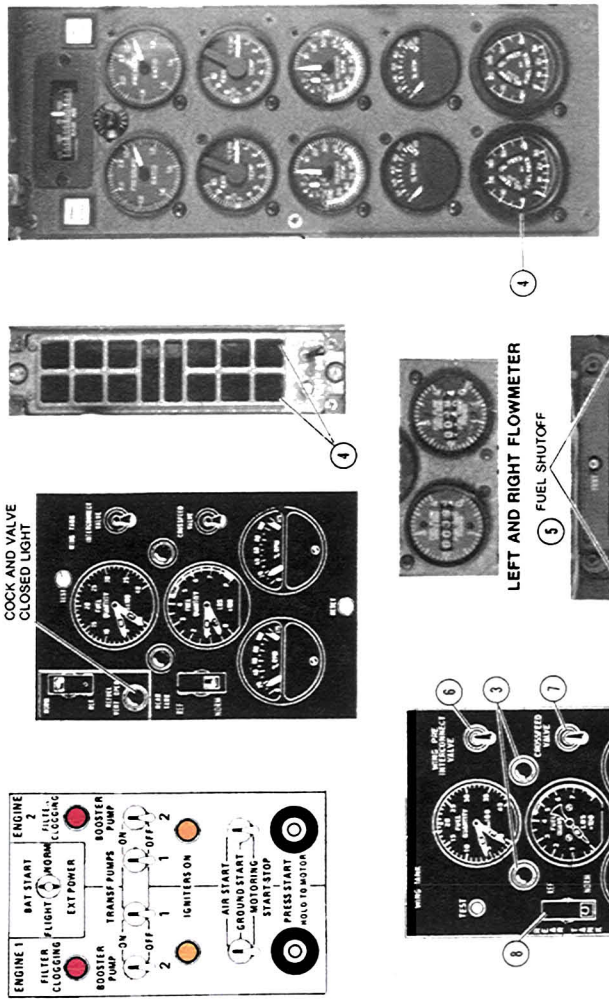


Figure 6-25. Fuel Distribution Diagram (Sheet 1 of 2)

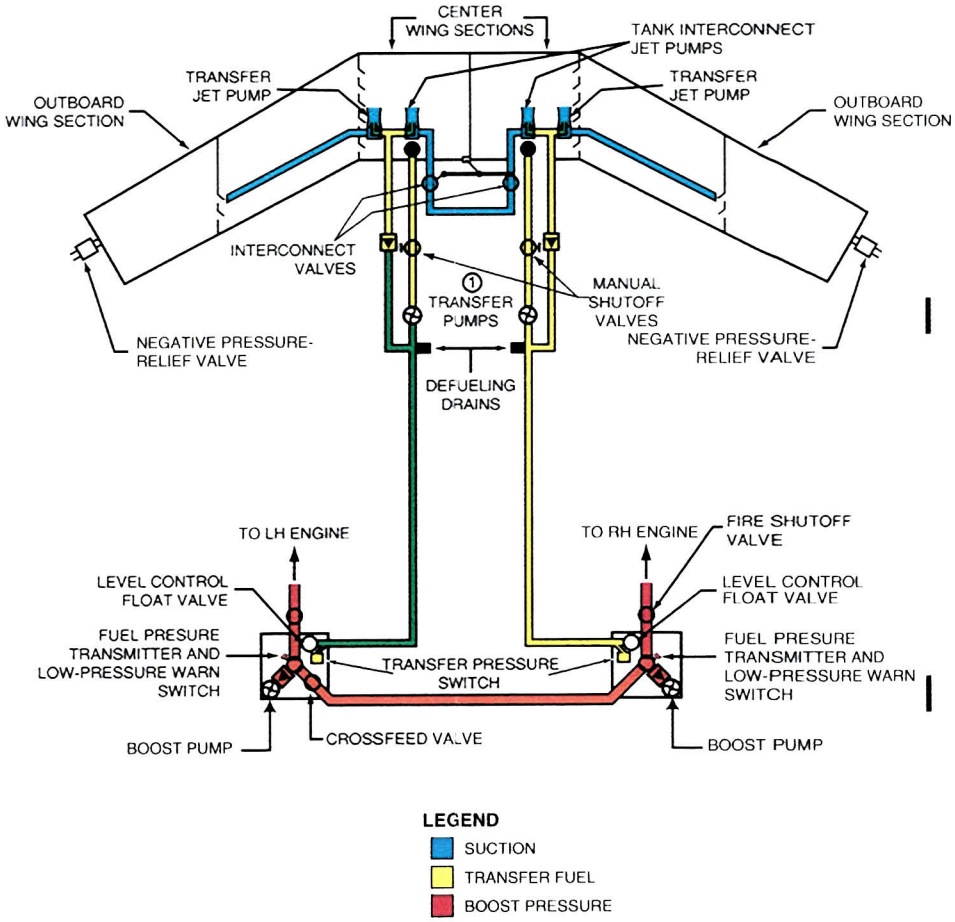


Figure 6-25. Fuel Distribution Diagram (Sheet 2 of 2)

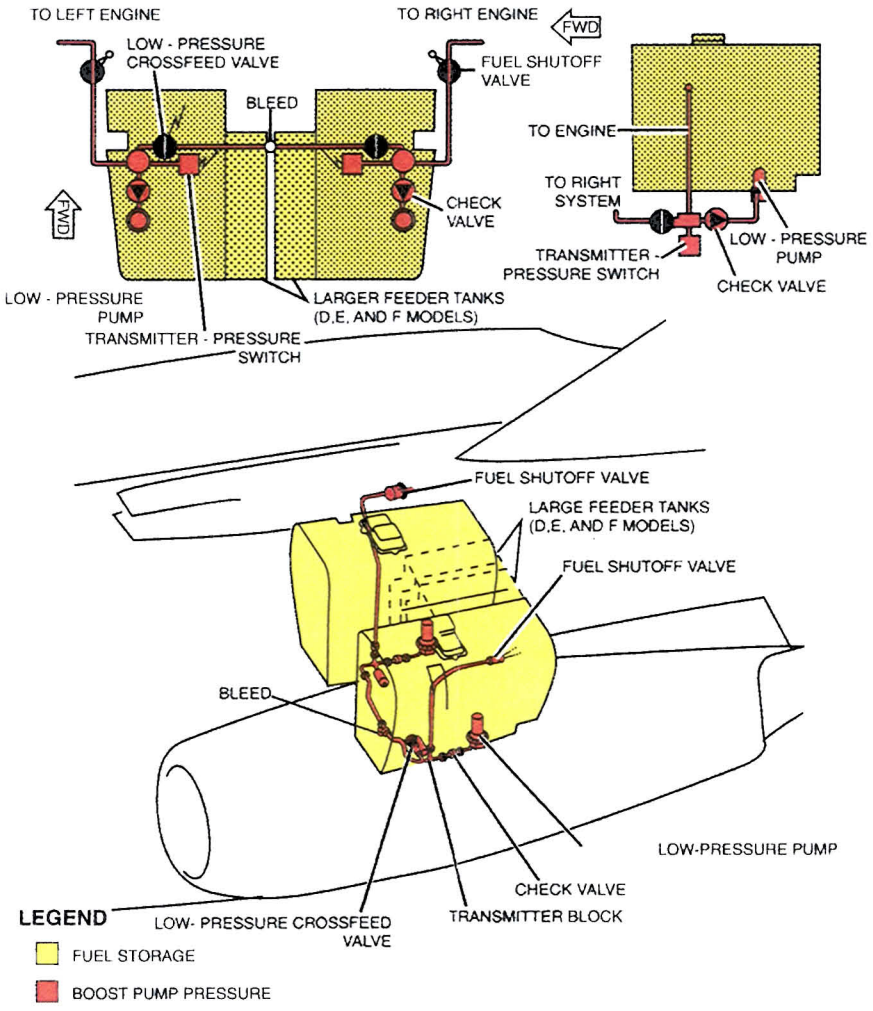


Figure 6-26. Engine Fuel System Diagram

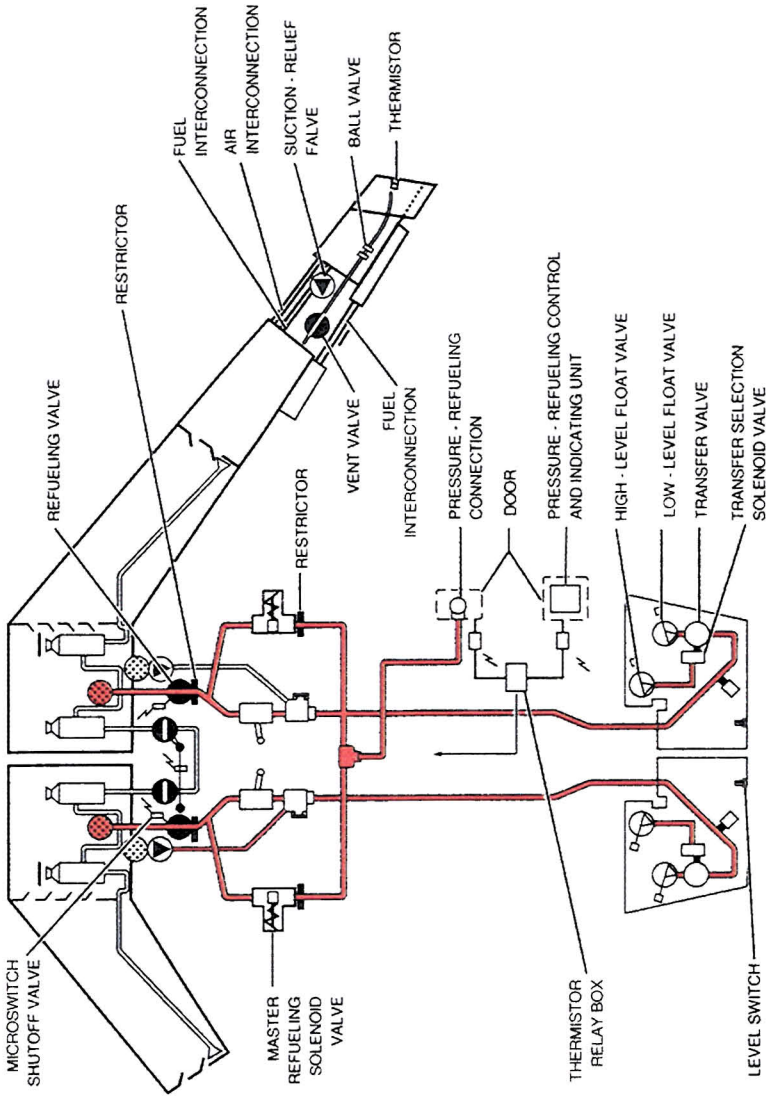


Figure 6-27. Pressure-Refueling System Diagram

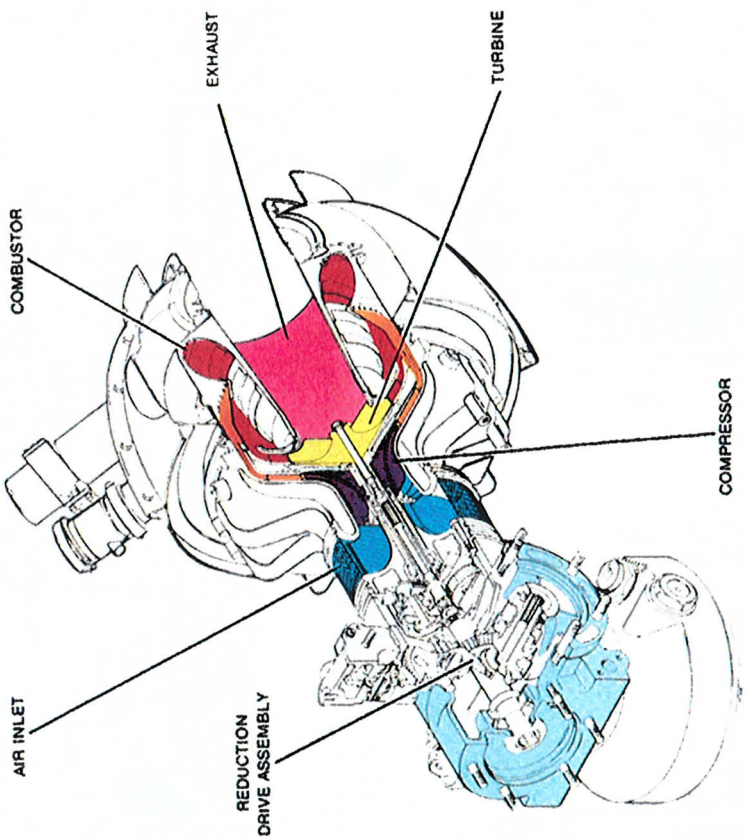


Figure 6-28. Solar APU (Typical)

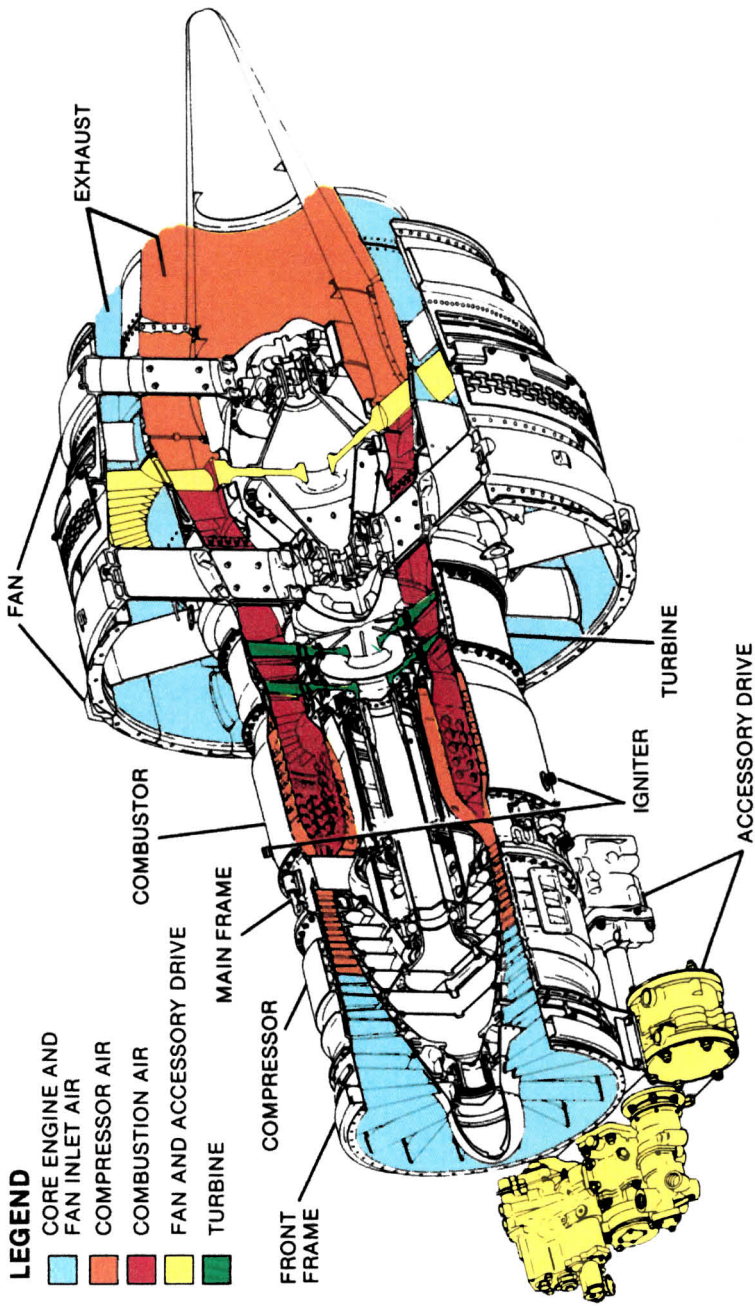


Figure 6-29. Engine Major Sections and Gas Flow

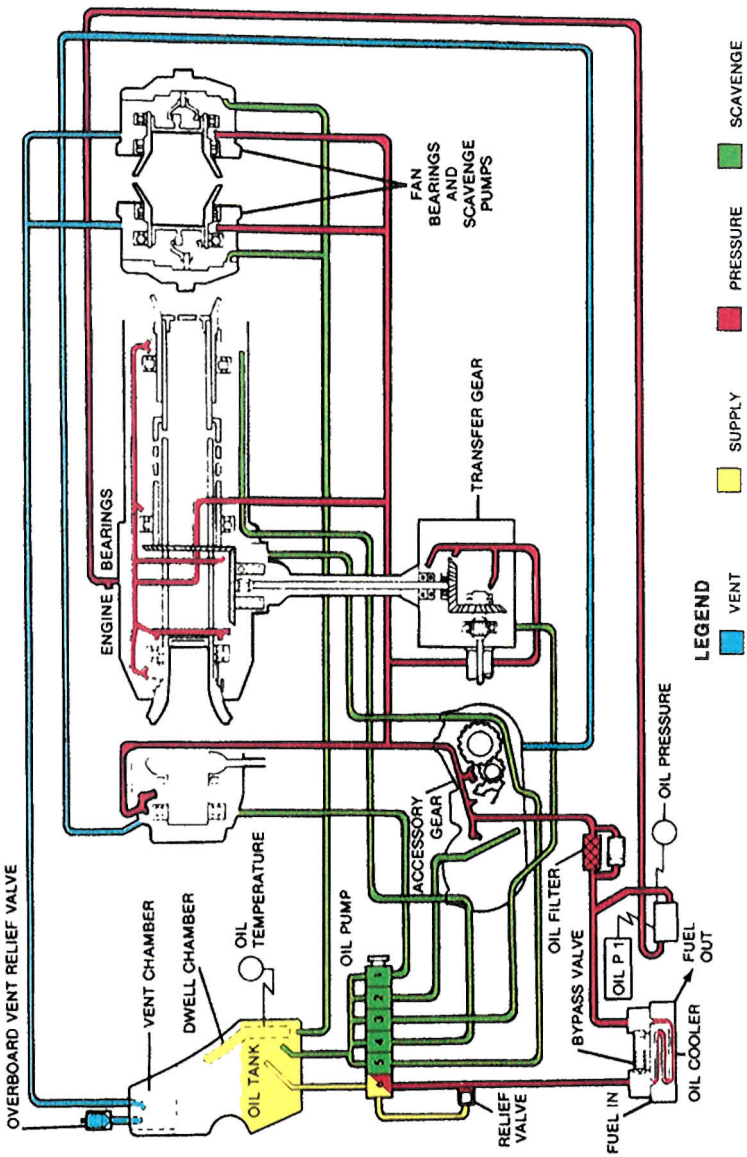


Figure 6-30. Engine Oil System Schematic

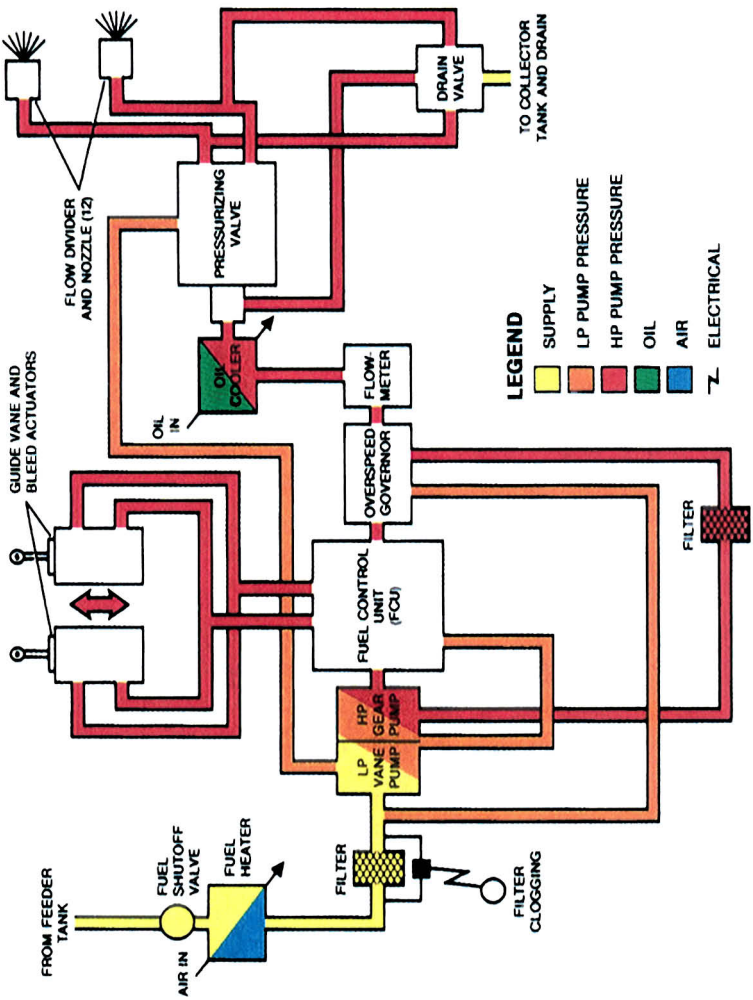


Figure 6-31. Engine Fuel System Schematic

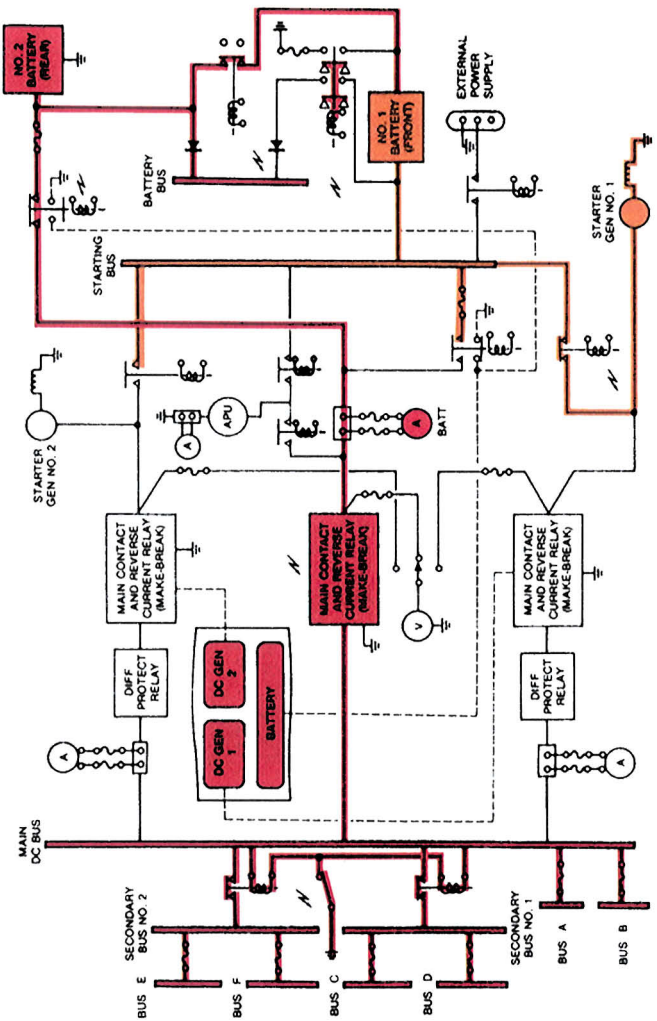


Figure 6-32. Battery Start Schematic

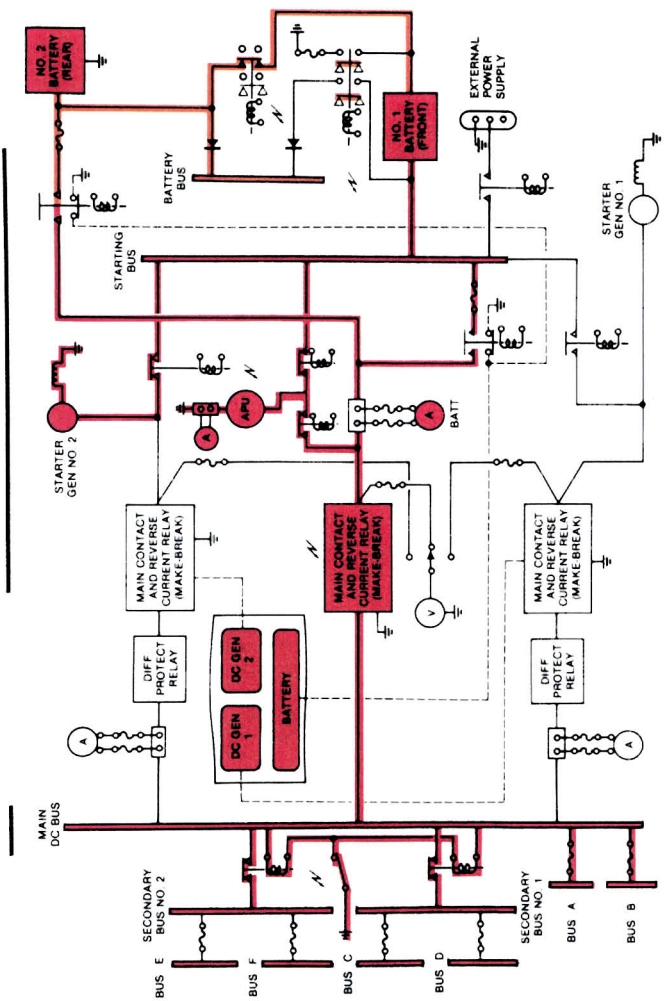


Figure 6-33. Battery/APU-Assisted Start Schematic

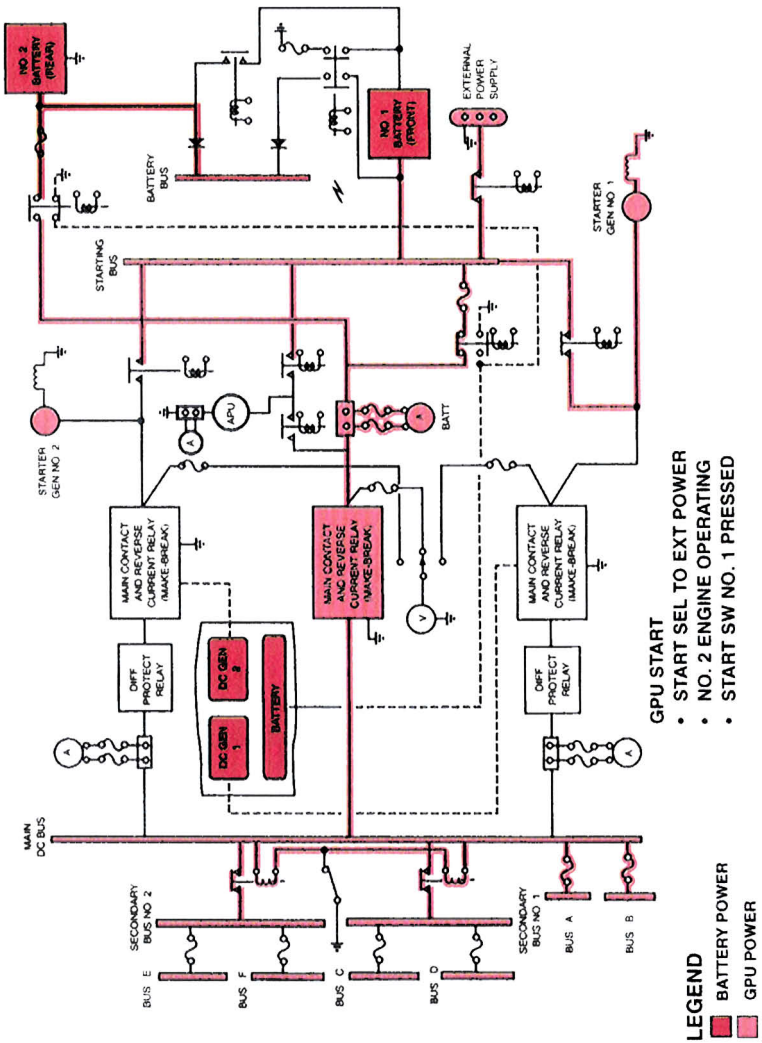


Figure 6-34. GPU Start Schematic

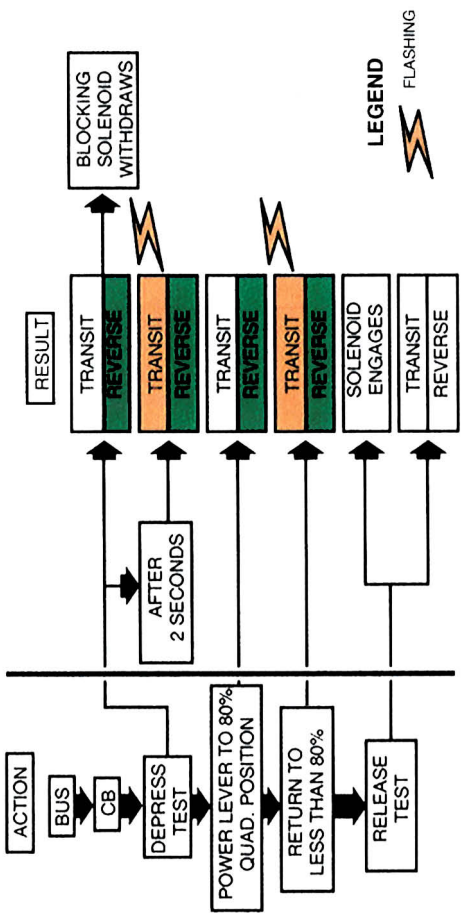


Figure 6-35. Thrust Reverser Test Sequence

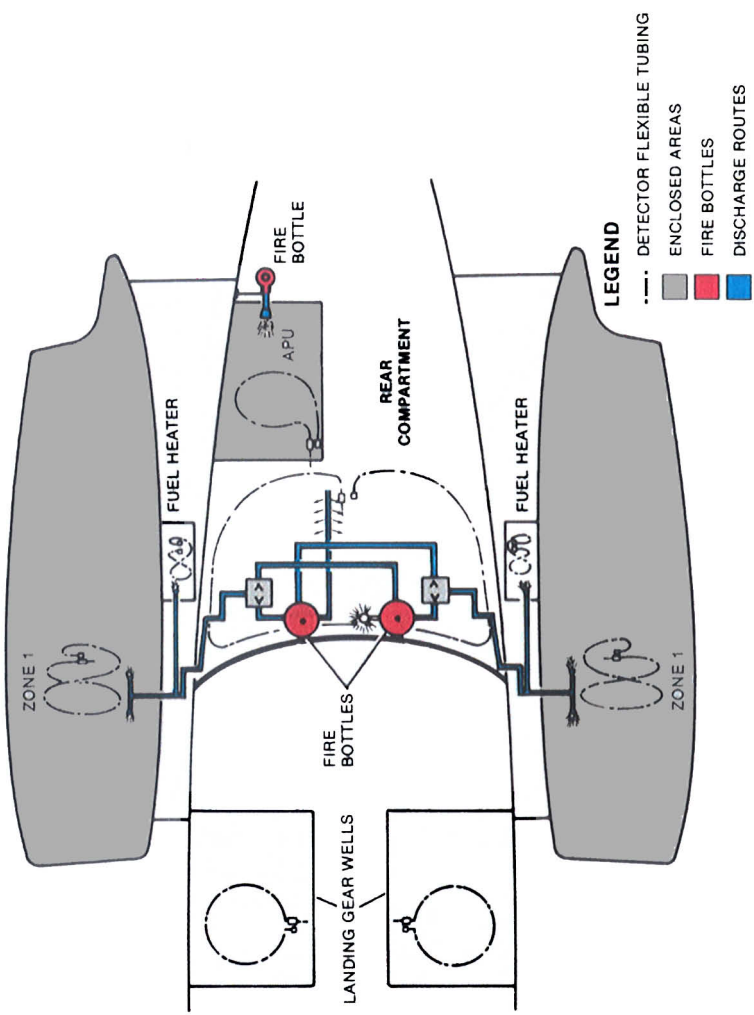


Figure 6-36. Fire Detection Component Locations

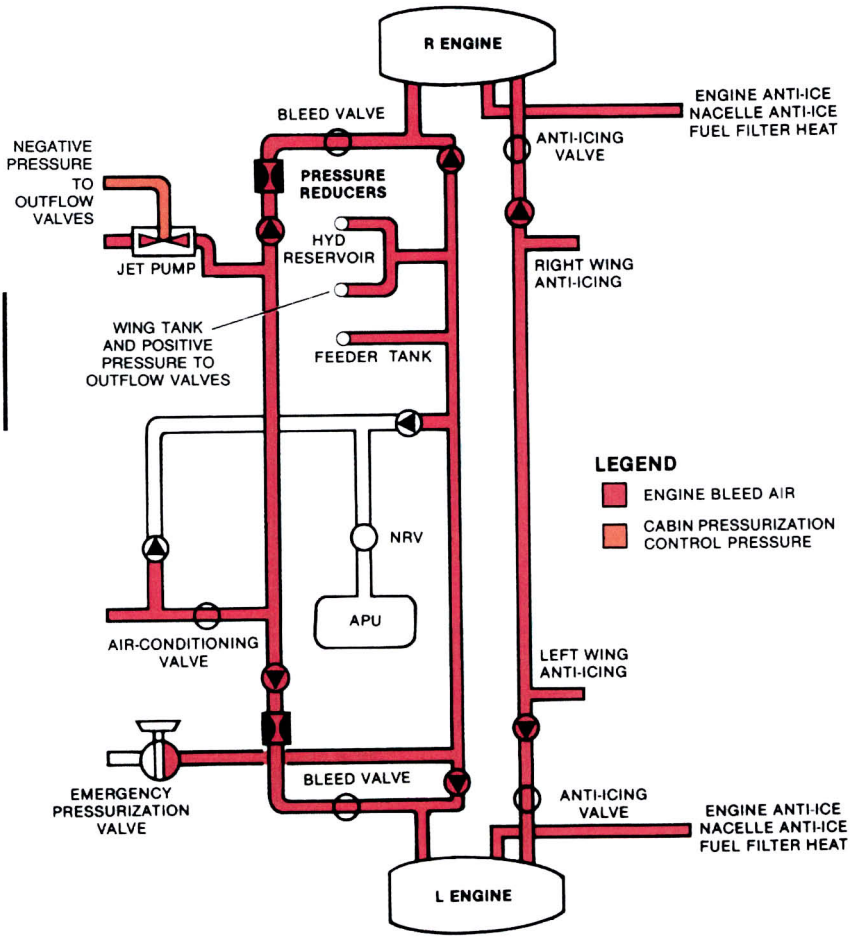


Figure 6-37. Pneumatic System Schematic (AMD SB 558 Not Incorporated)

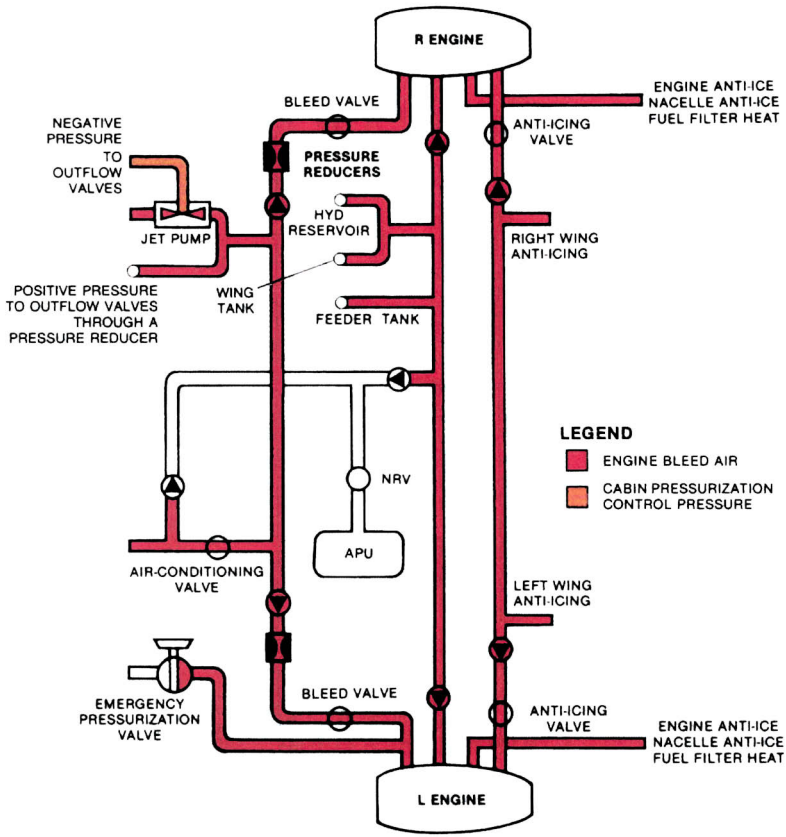


Figure 6-38. Pneumatic System Schematic (AMD SB 558 Incorporated)

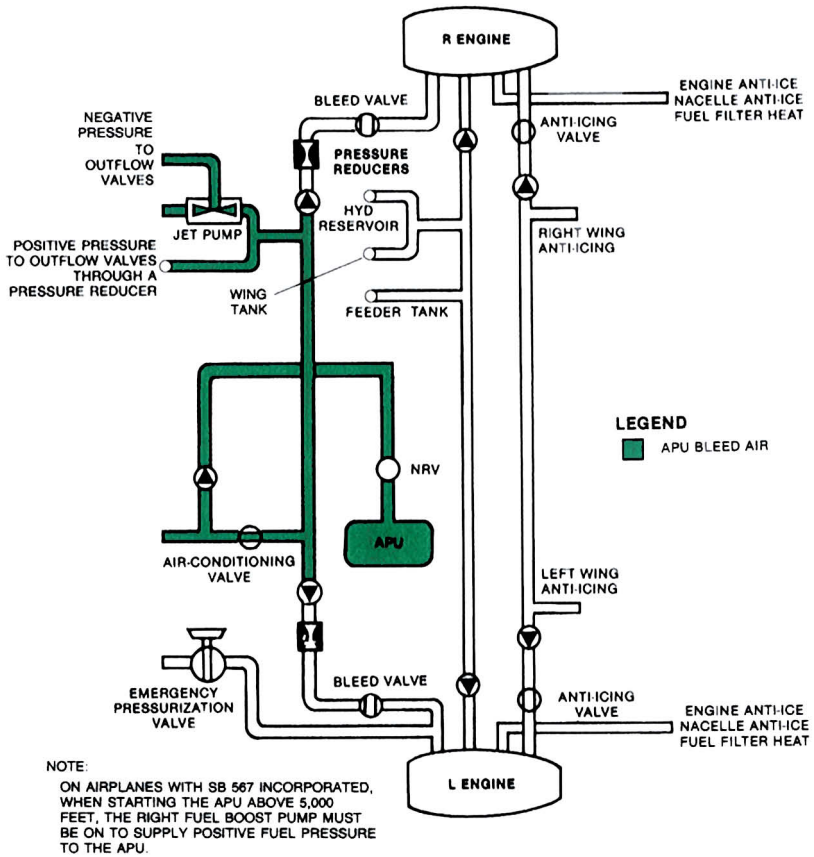


Figure 6-39. Pneumatic System Schematic—APU Operating (AMD SB 558 and 567 Incorporated)

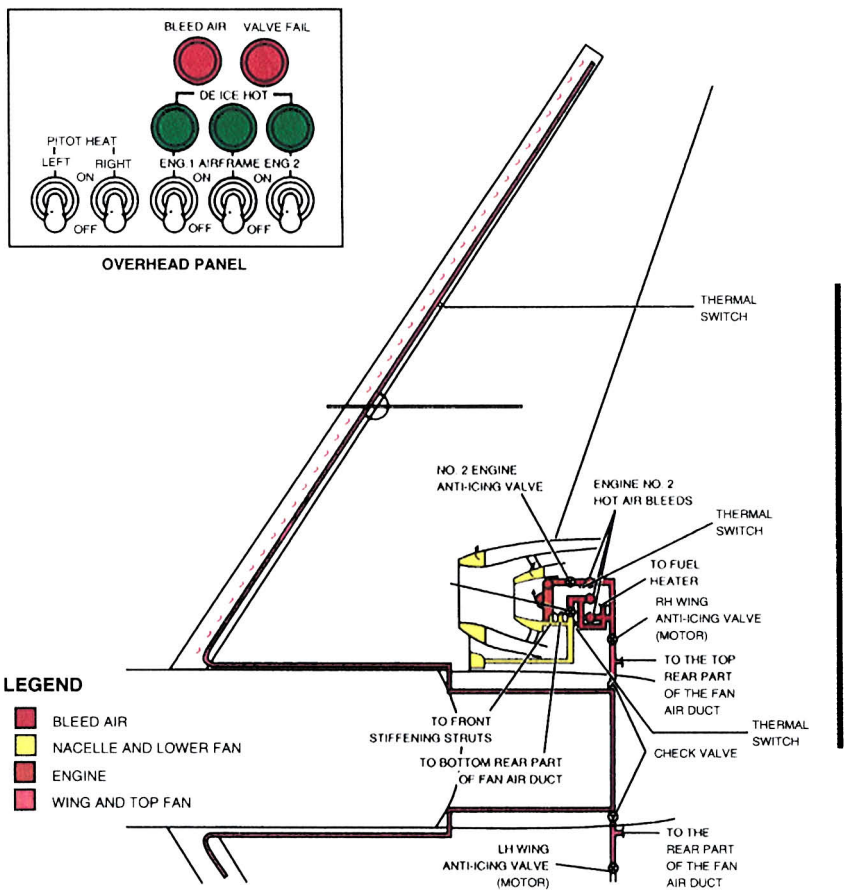


Figure 6-40. Engine, Nacelle, and Airframe Anti-icing Schematic (Standard, D, and E Model Airplanes)

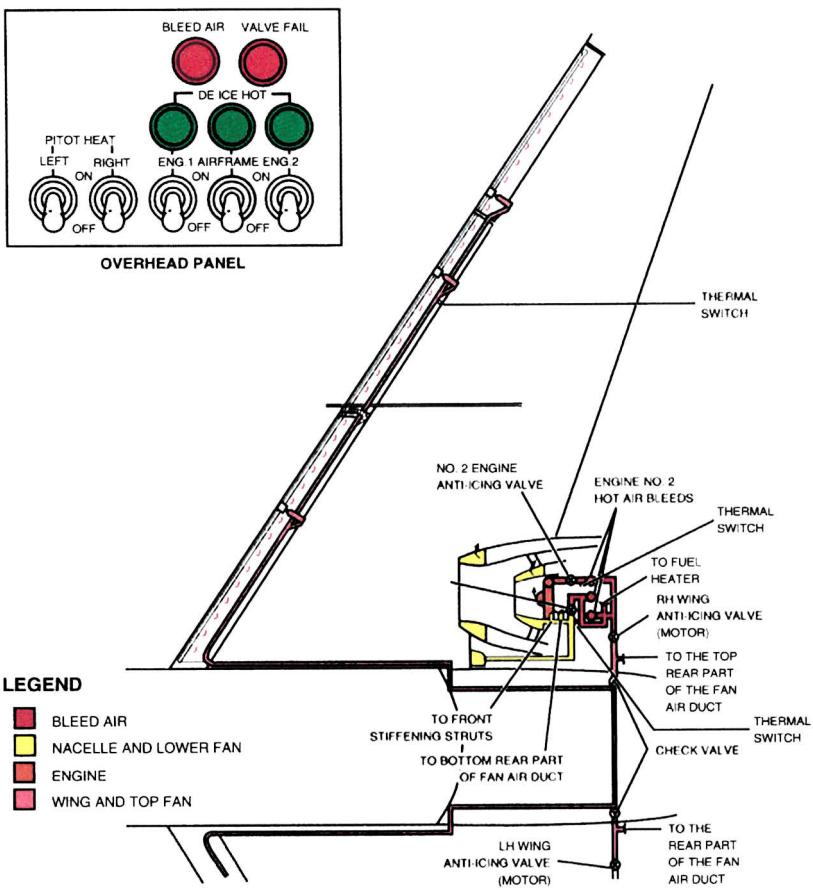


Figure 6-41. Engine, Nacelle, and Airframe Anti-icing Schematic (F Model Airplanes)

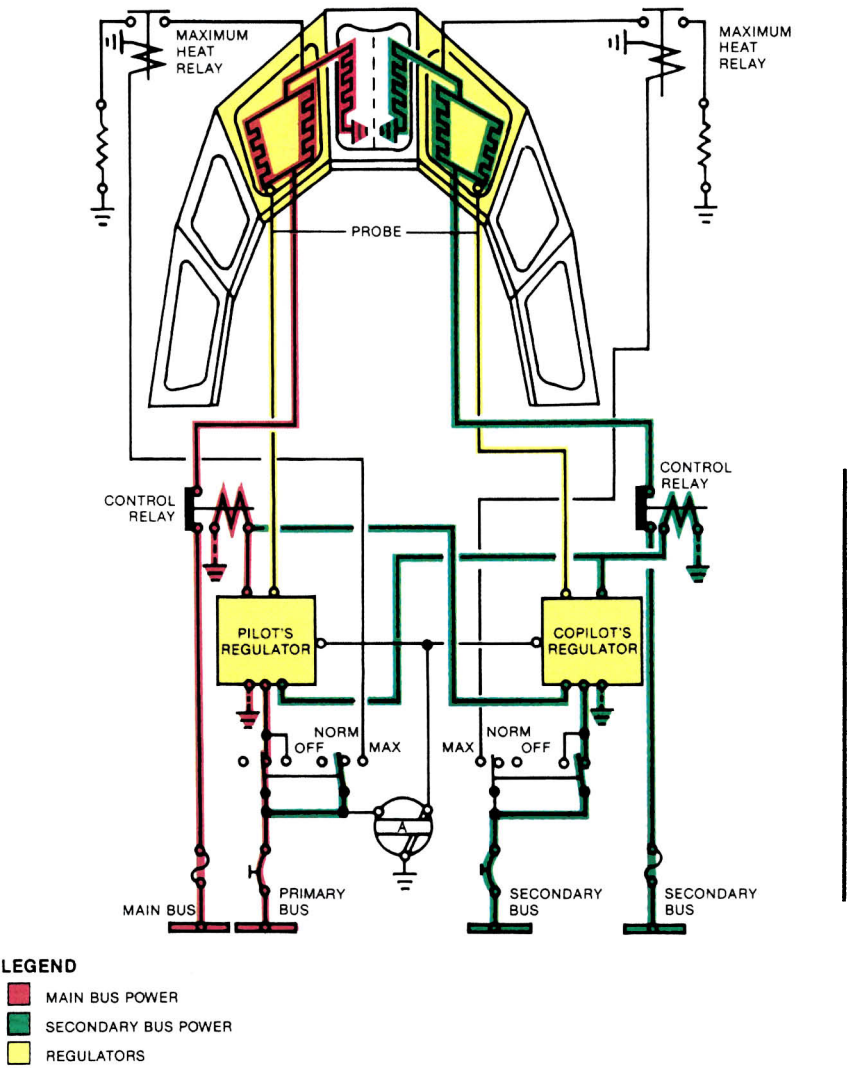


Figure 6-42. Windshield Heat System Schematic (SB 178 Not Incorporated)

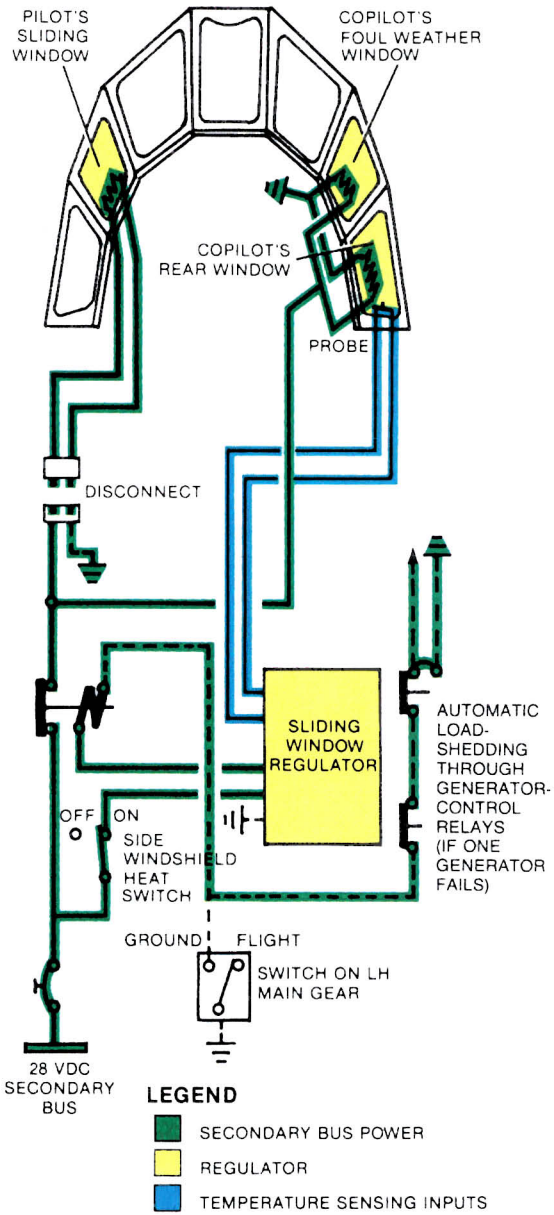


Figure 6-43. Side Window Heat System Schematic (SB 178 Incorporated)

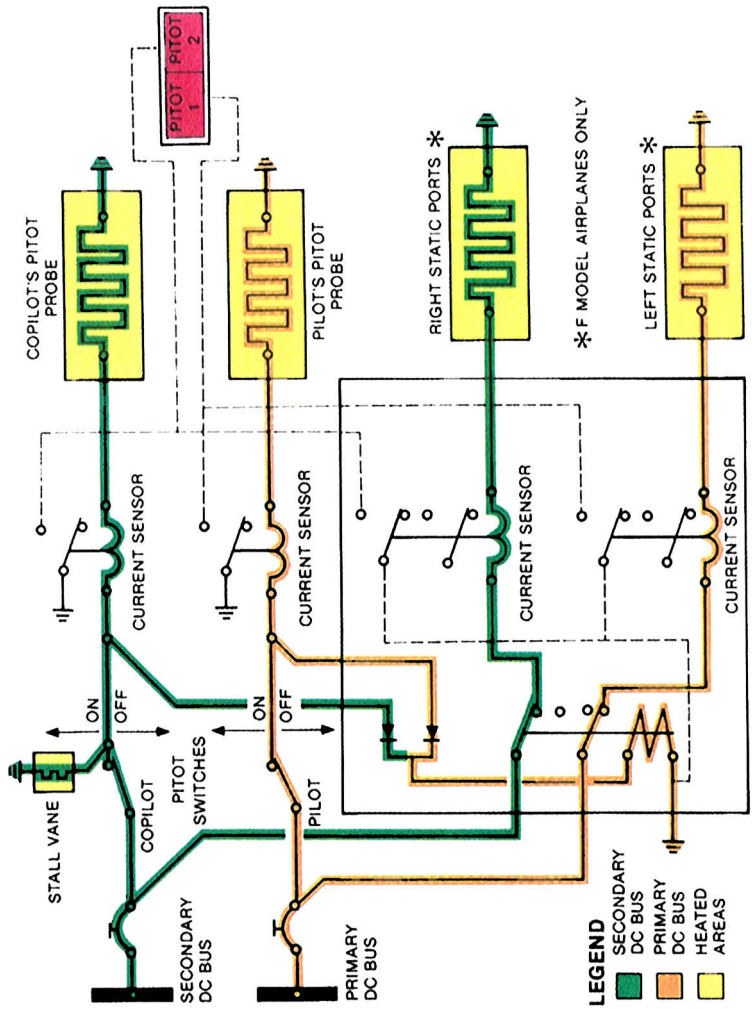


Figure 6-44. Pitot and Stall Vane Heat Schematic

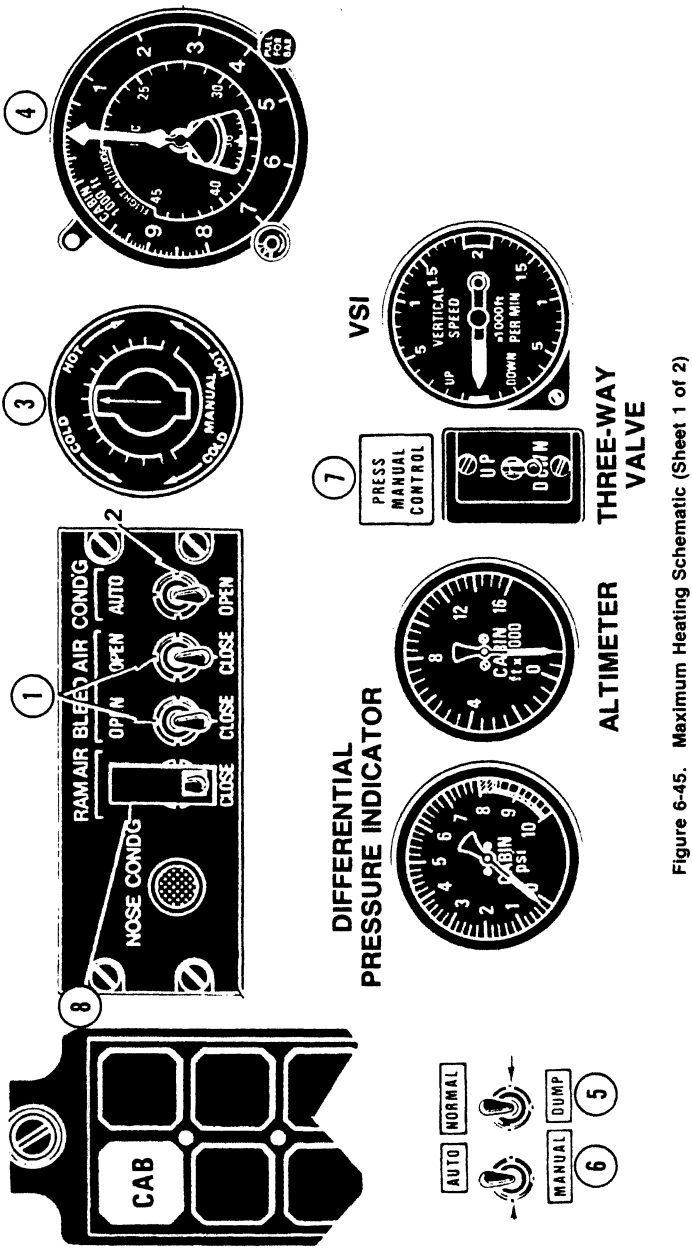


Figure 6-45. Maximum Heating Schematic (Sheet 1 of 2)

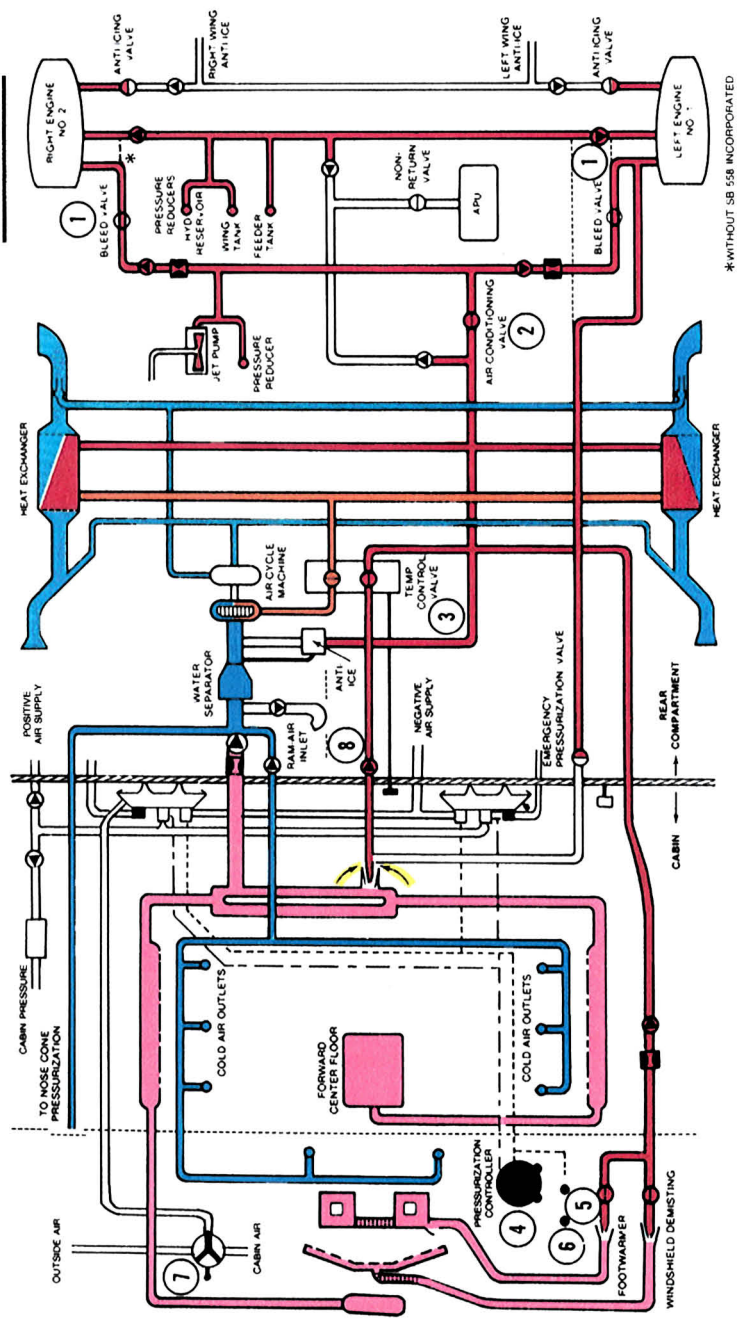


Figure 6-45. Maximum Heating Schematic (Sheet 2 of 2)

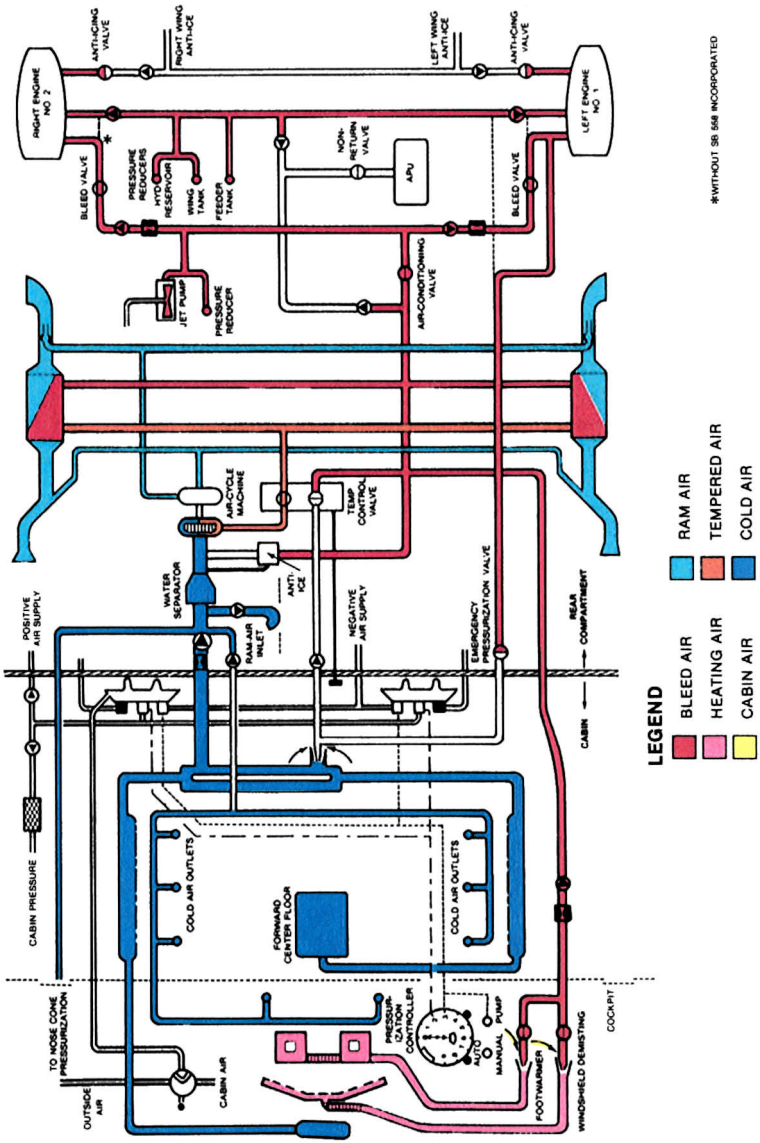
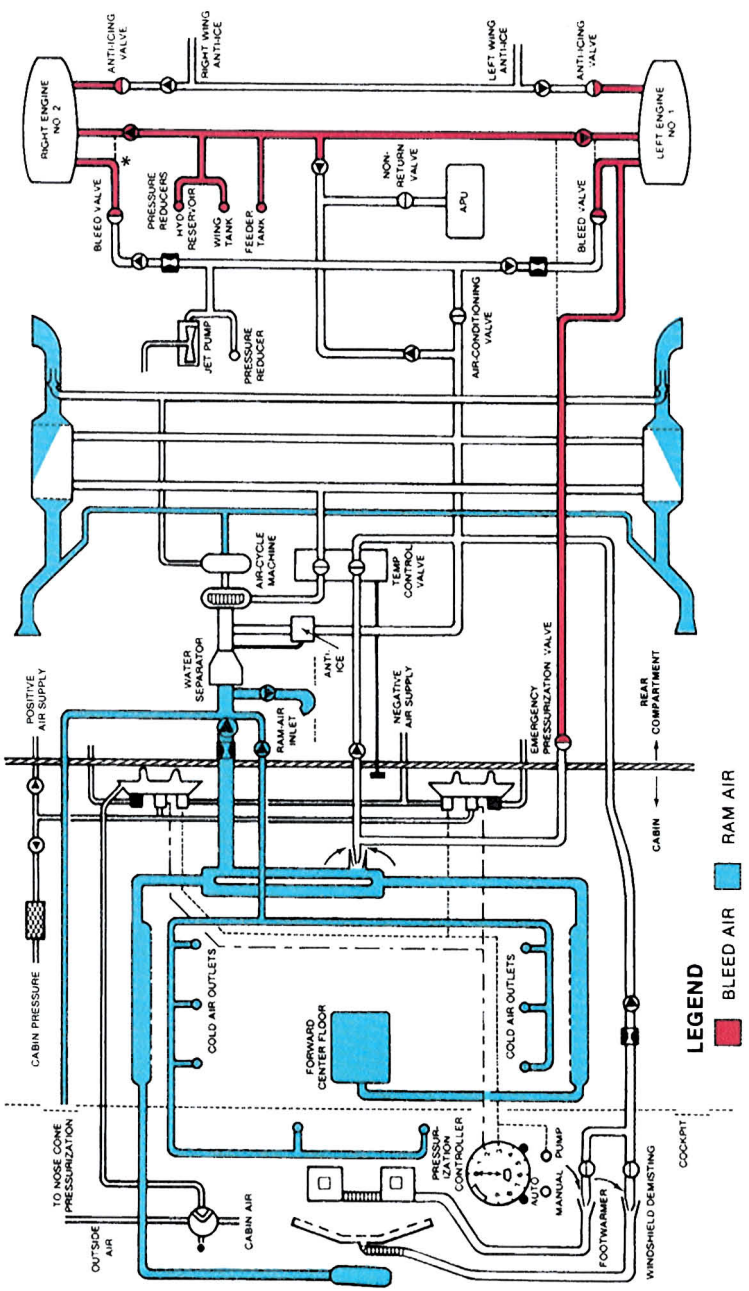


Figure 6-46. Maximum Cooling Schematic



*WITHOUT SB 558 INCORPORATED

Figure 6-47. Ram-Air Ventilation System

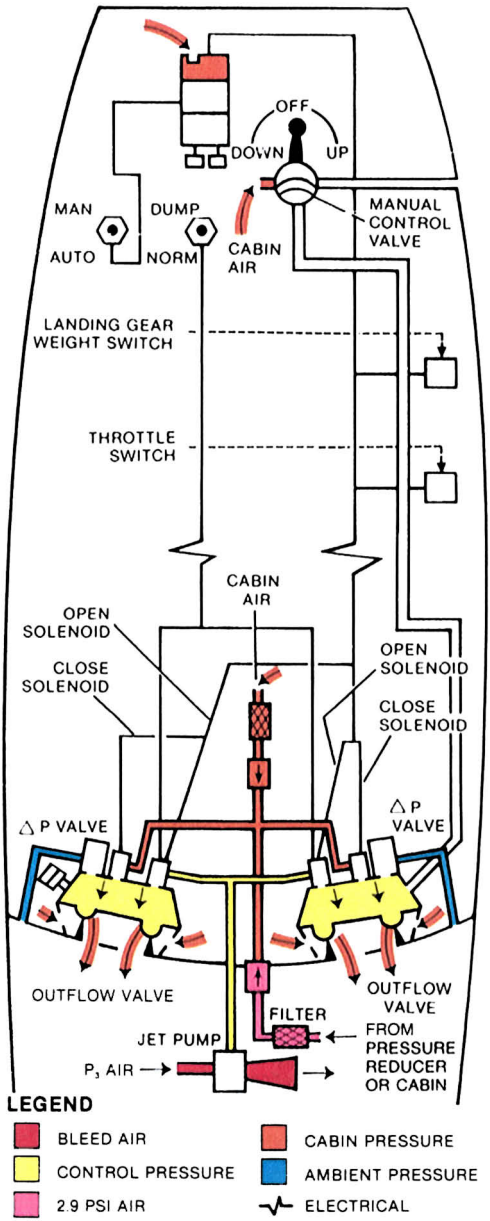


Figure 6-48. Pressurization System Automatic Operation Schedule

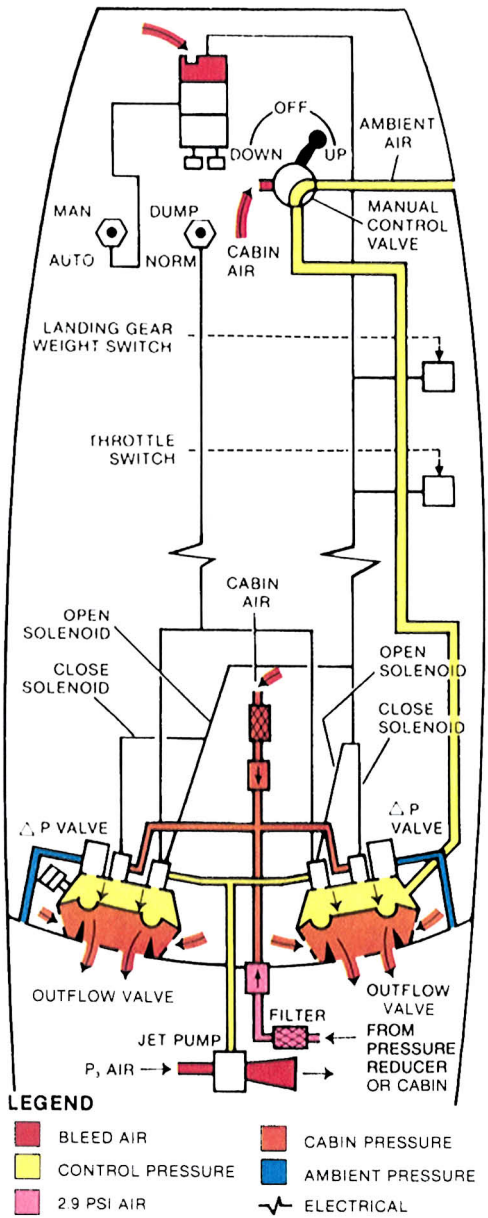


Figure 6-49. Pressurization System Manual Control and Operation Schematic

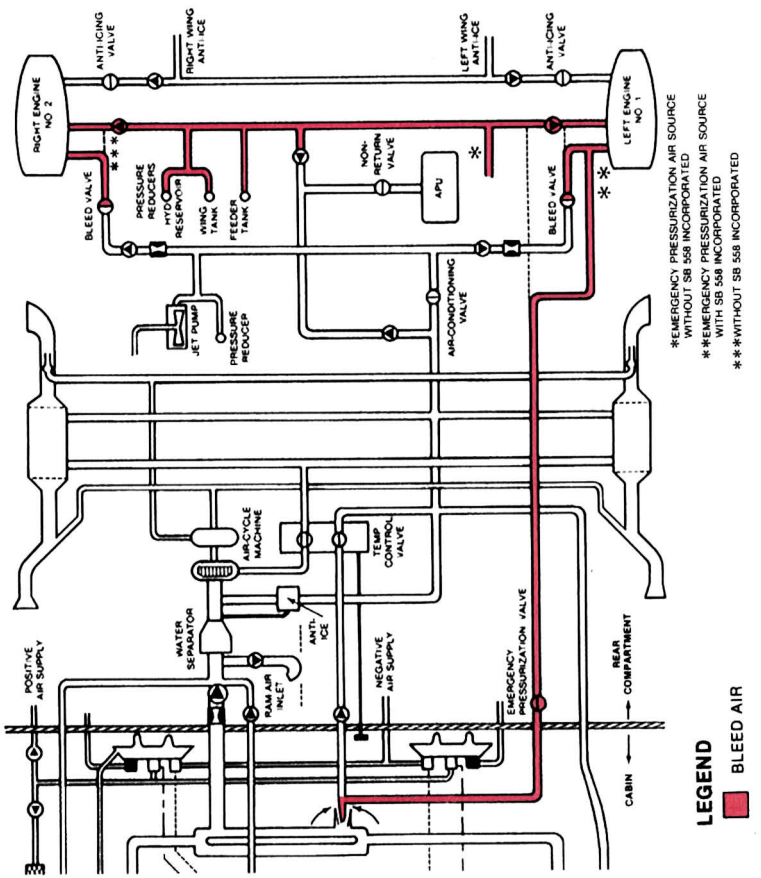


Figure 6-50. Emergency Pressurization Schematic

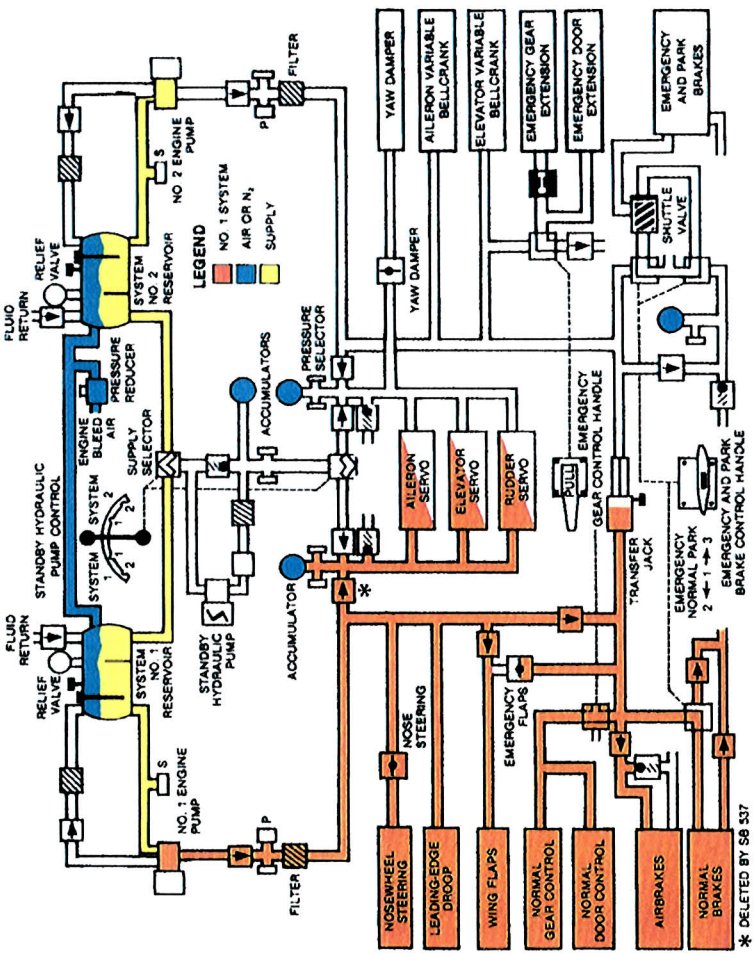


Figure 6-51. No. 1 Hydraulic System Schematic

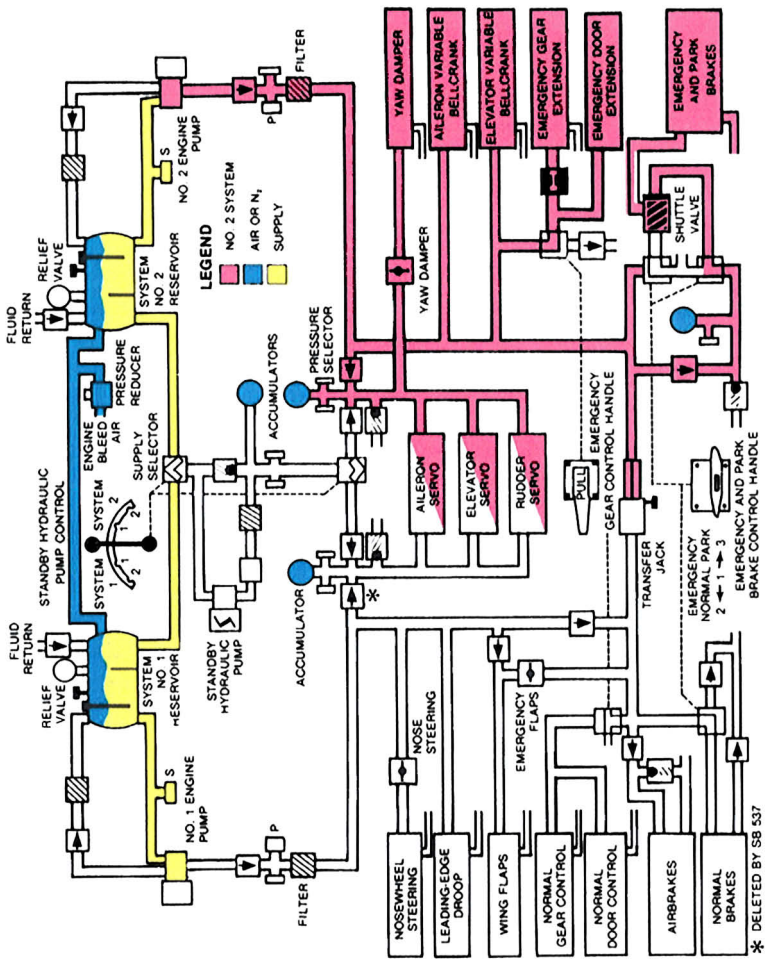


Figure 6-52. No. 2 Hydraulic System Schematic

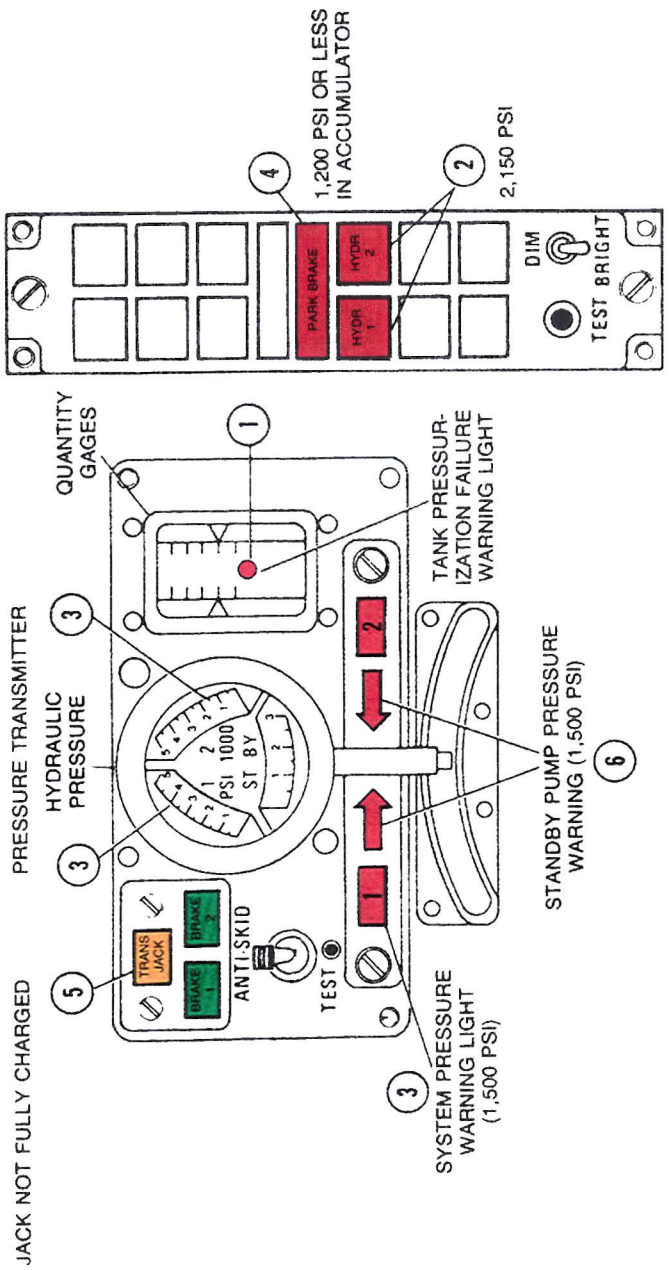


Figure 6-53. Normal Hydraulic Operation Schematic (Sheet 1 of 2)

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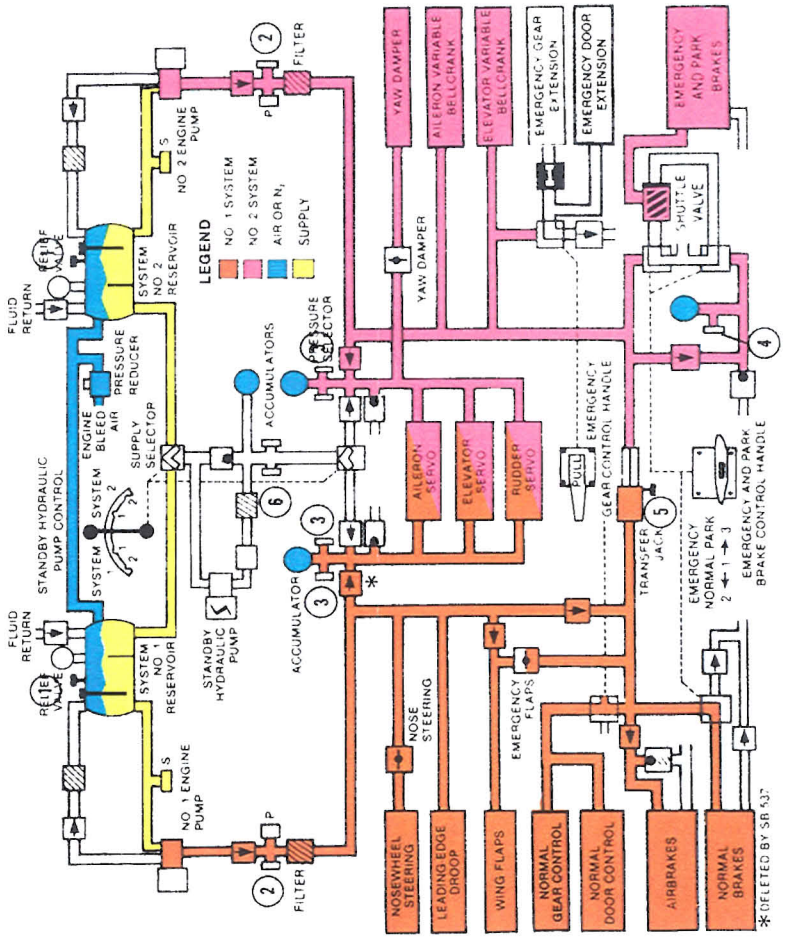

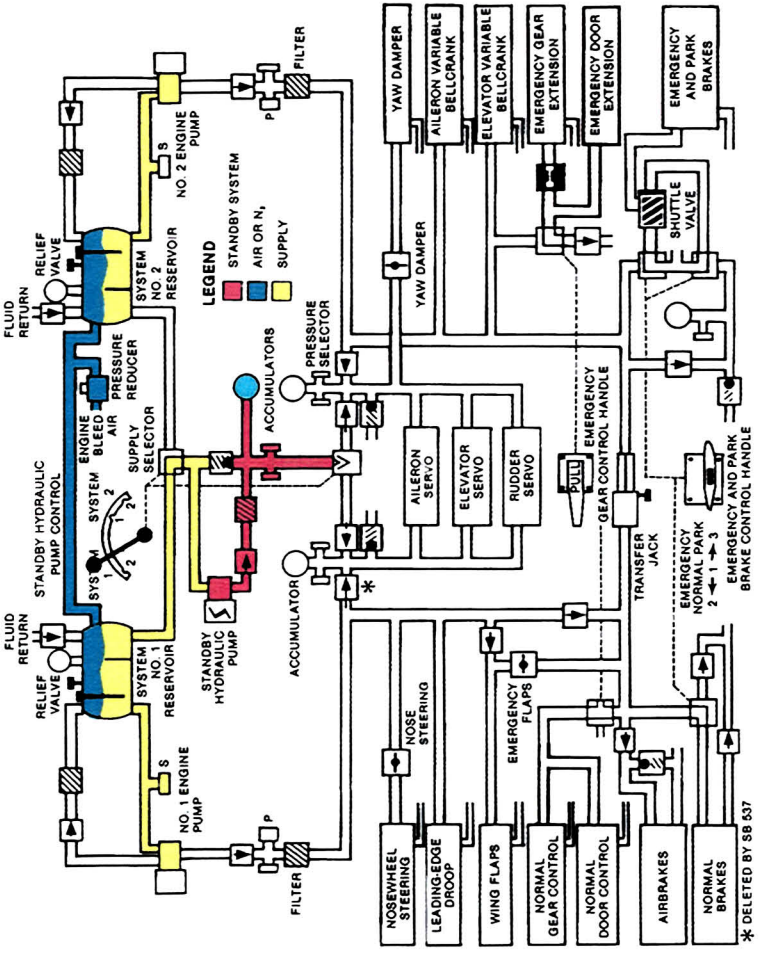

Figure 6-54. Hydraulic Standby Pump at No. 1 Left Test Position

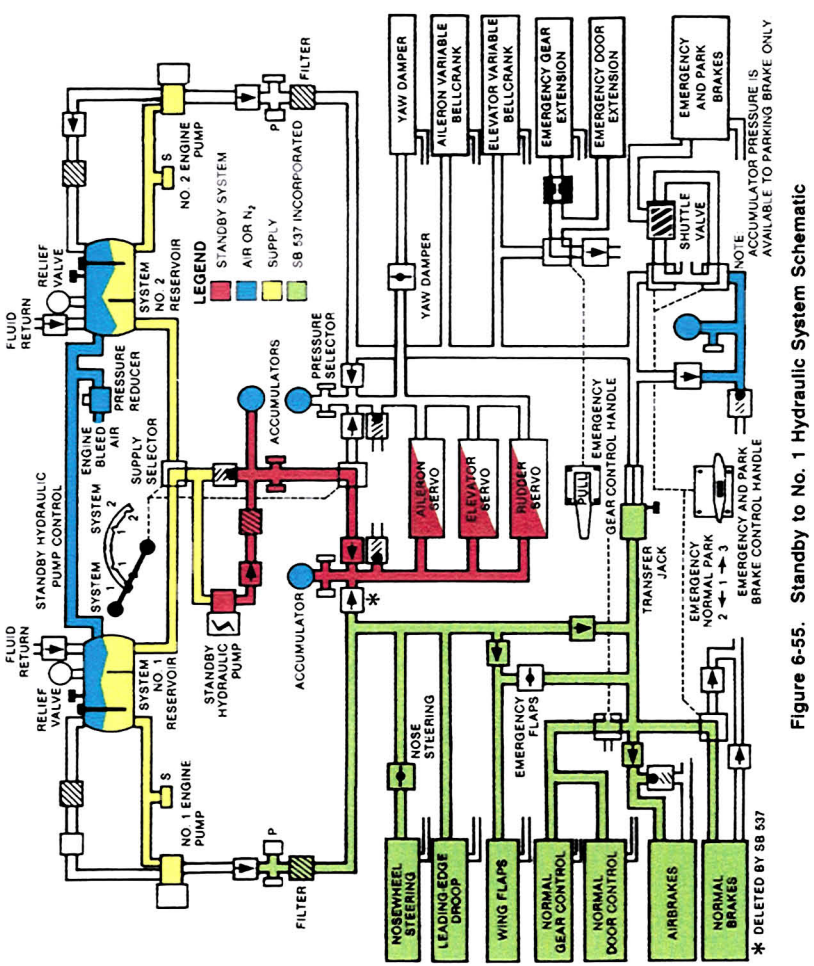

Figure 6-55. Standby to No. 1 Hydraulic System Schematic

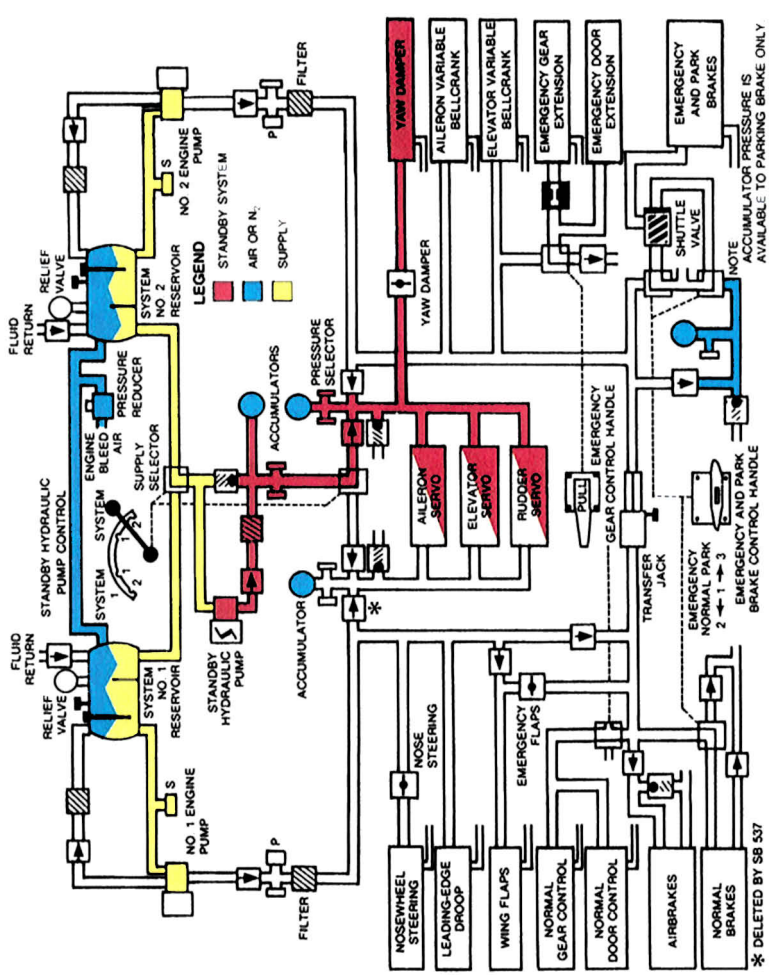

Figure 6-56. Standby to No. 2 Hydraulic System Schematic

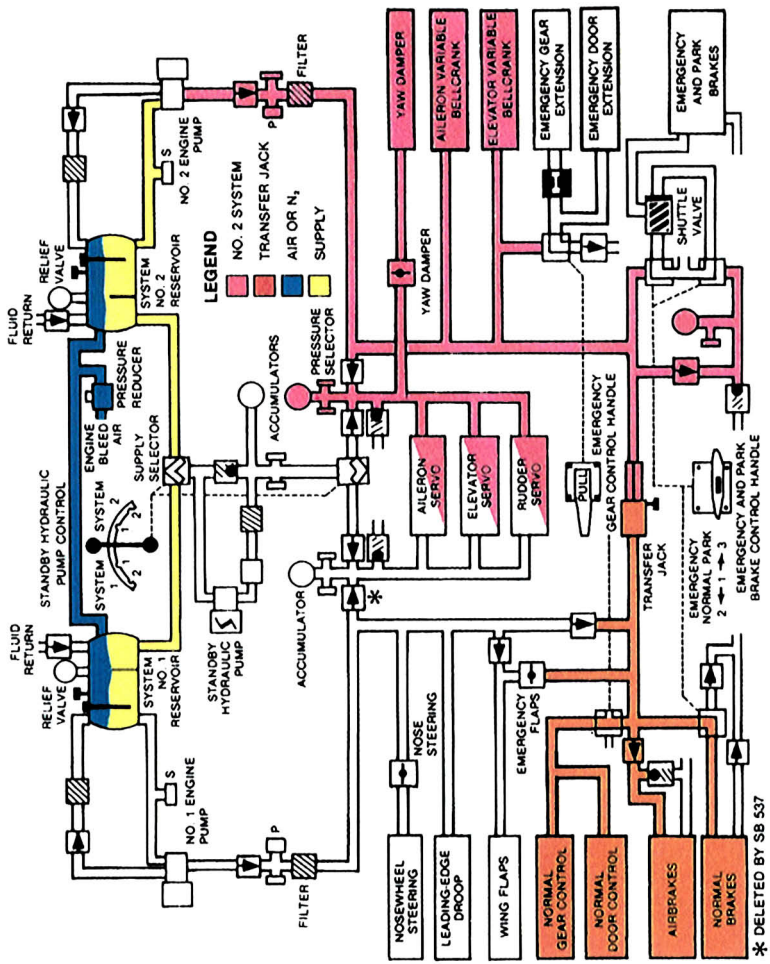

Figure 6-57. Transfer Jack Schematic

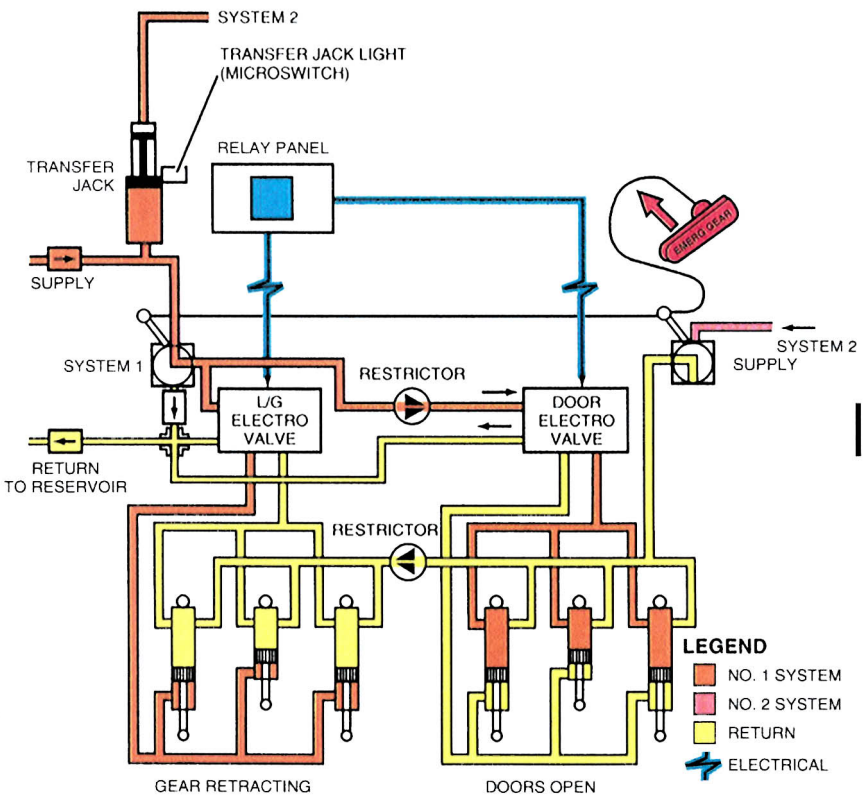

Figure 6-58. Landing Gear Retraction Schematic

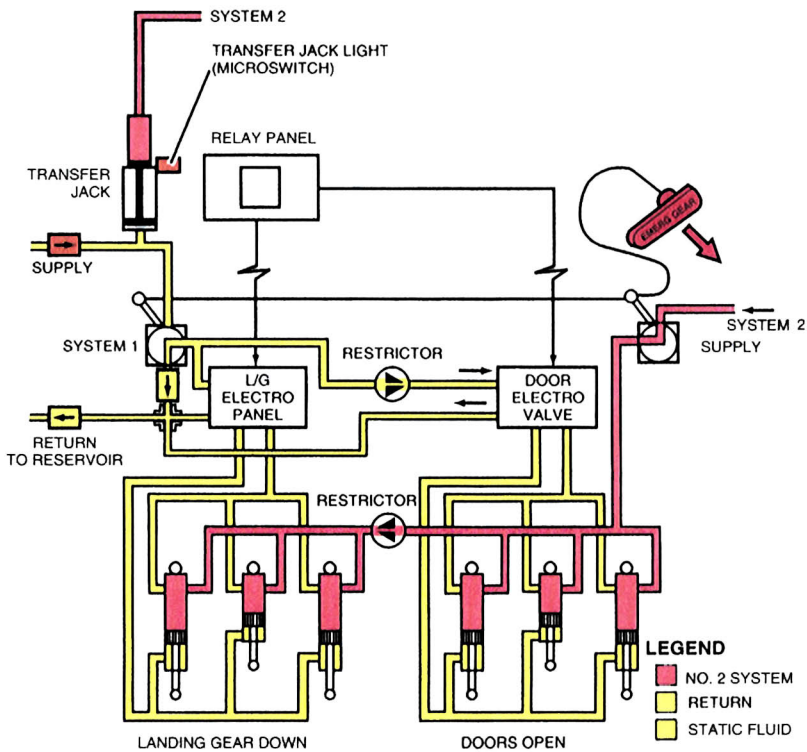

Figure 6-59. Emergency Landing Gear Extension Schematic

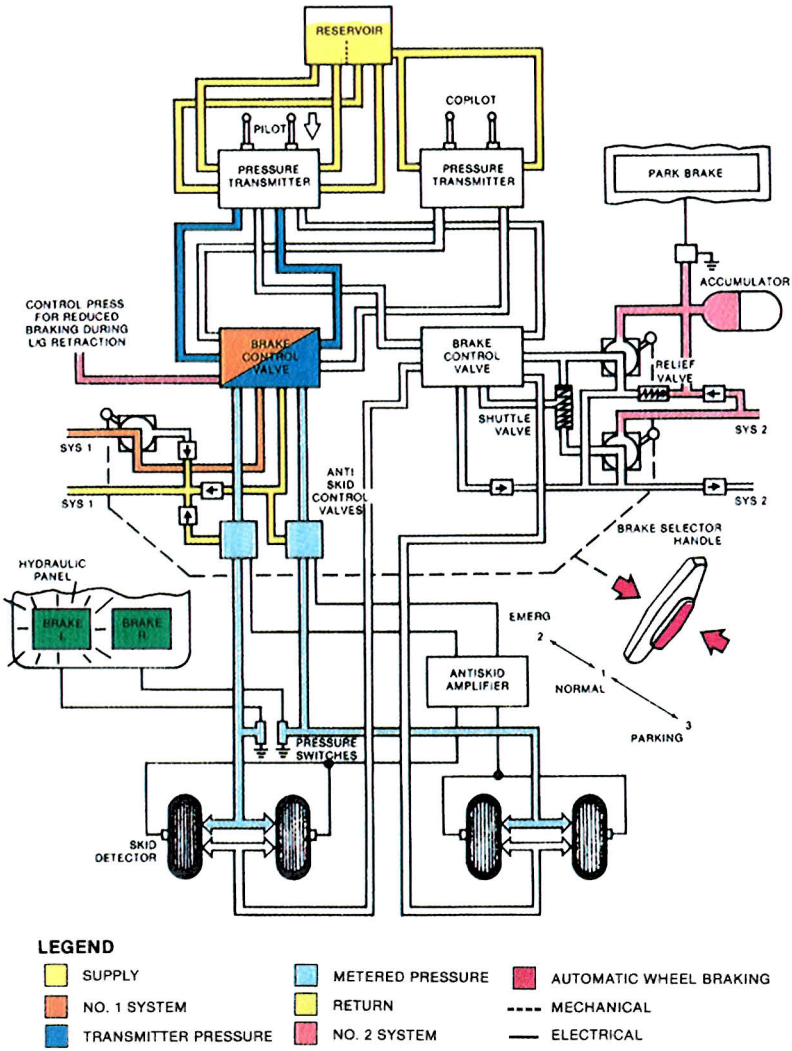

Figure 6-60. Normal Braking Schematic

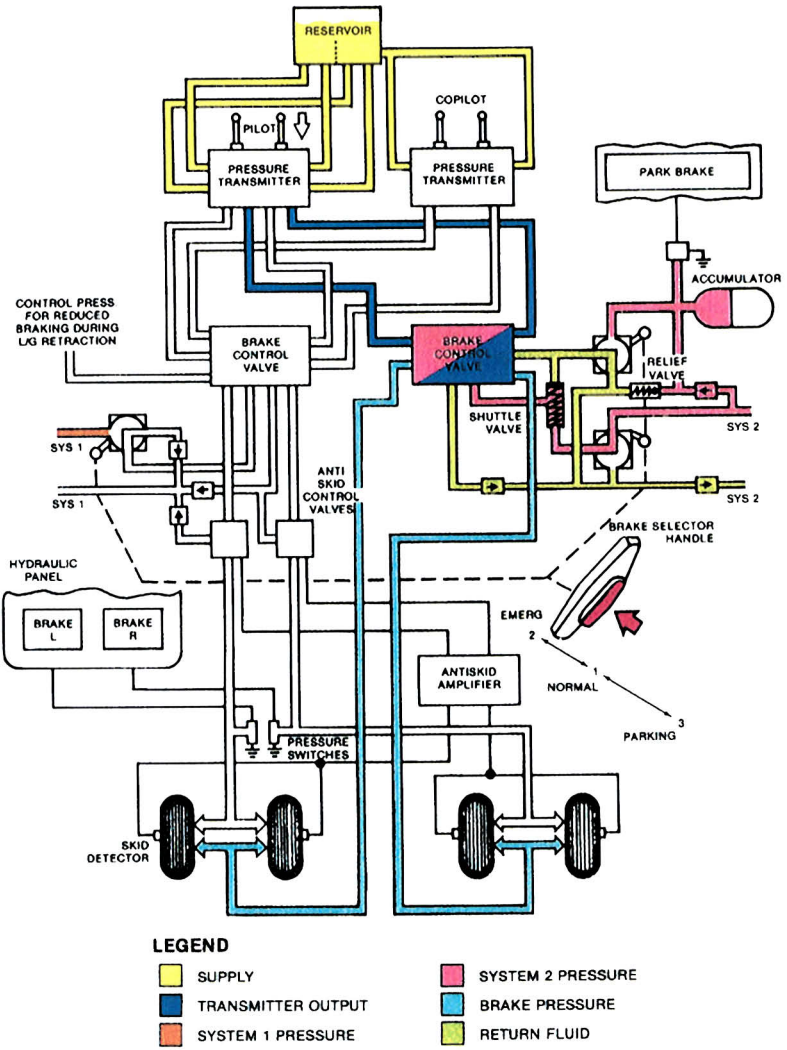

Figure 6-61. Emergency Braking Schematic

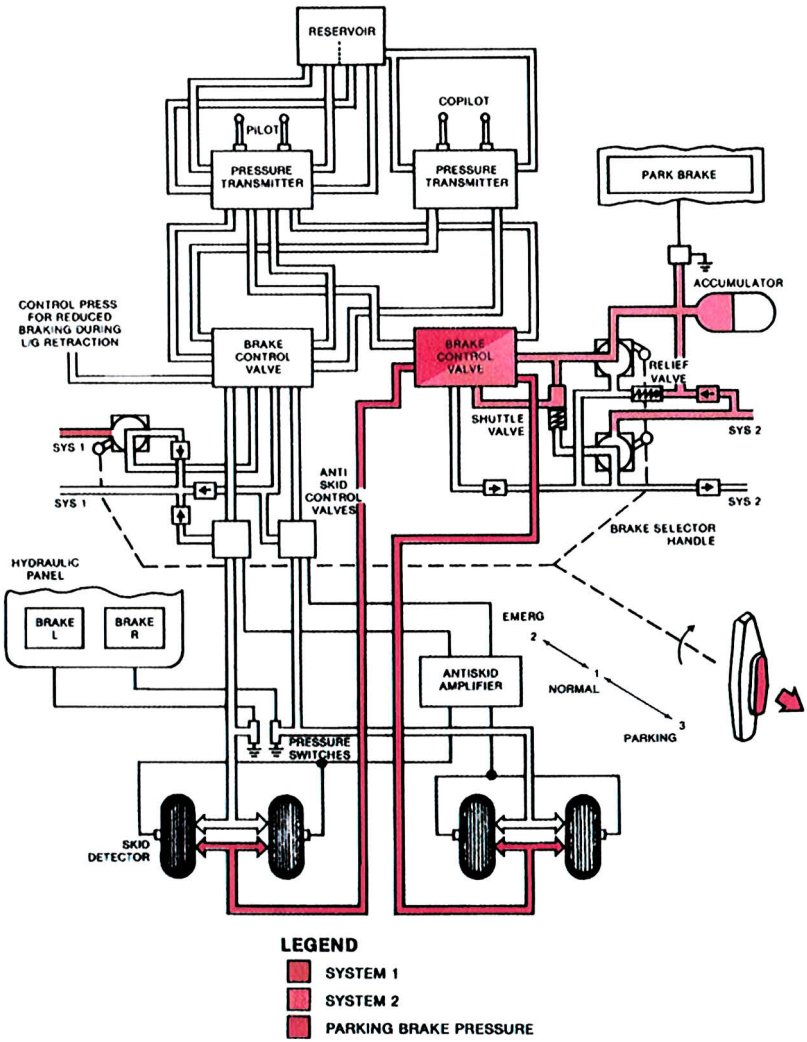

Figure 6-62. Parking Brake Schematic

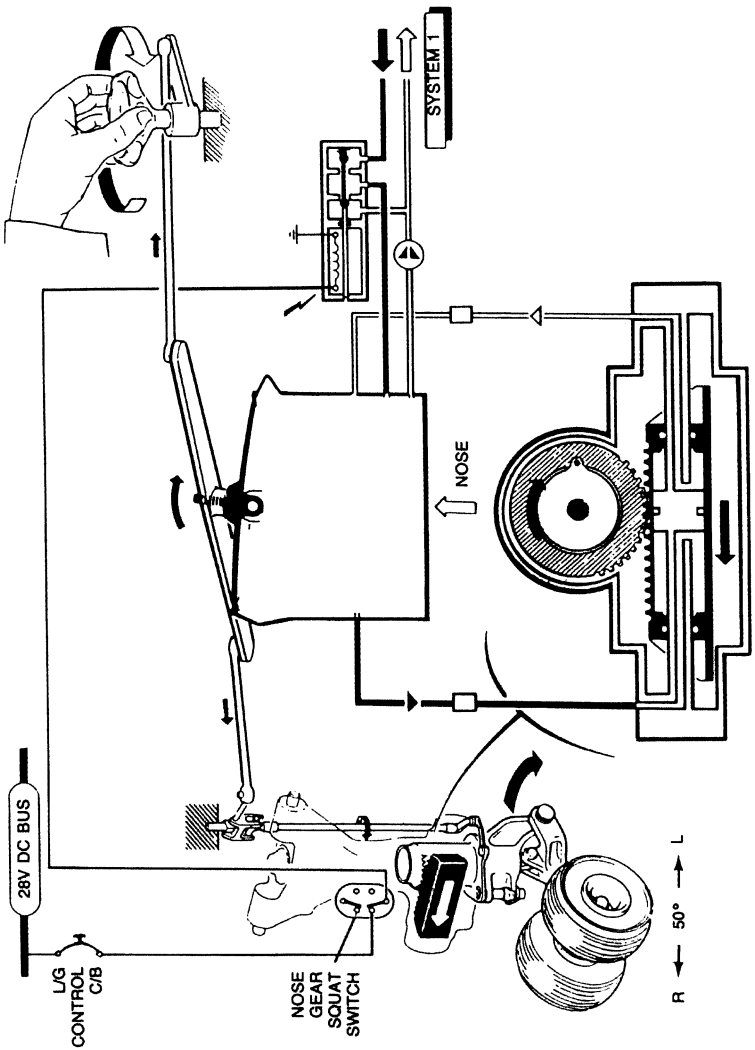

Figure 6-63. Steering System Schematic

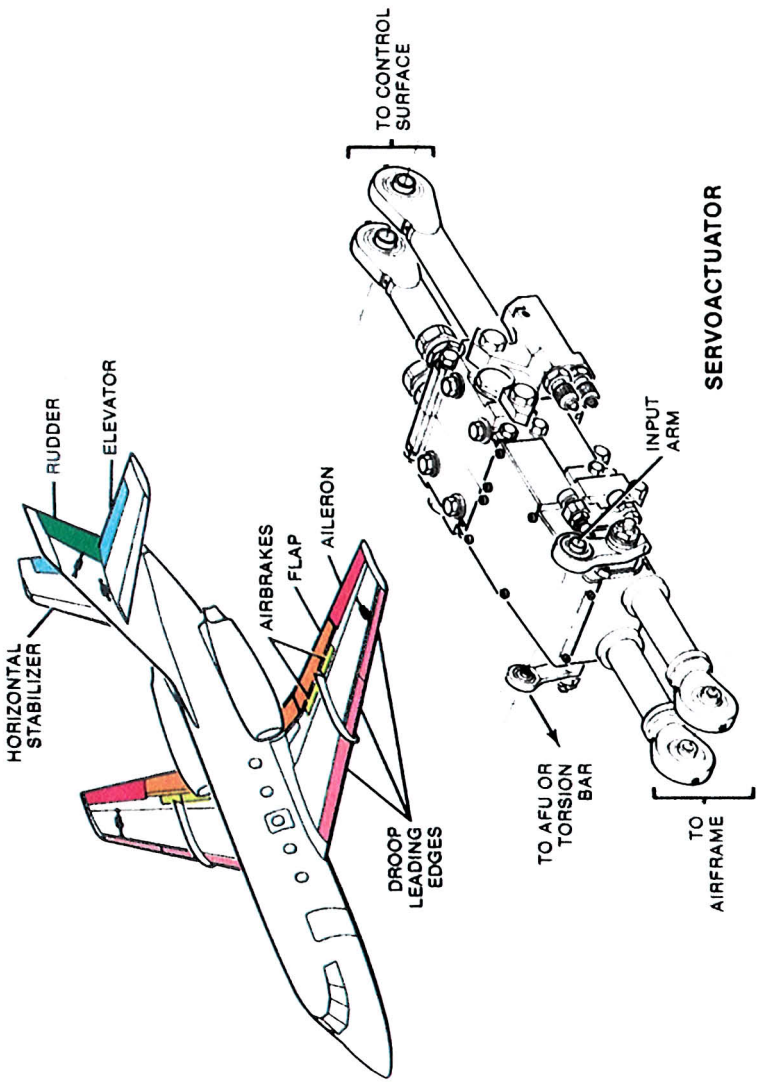

Figure 6-64. Flight Control Surfaces and Servoactuators

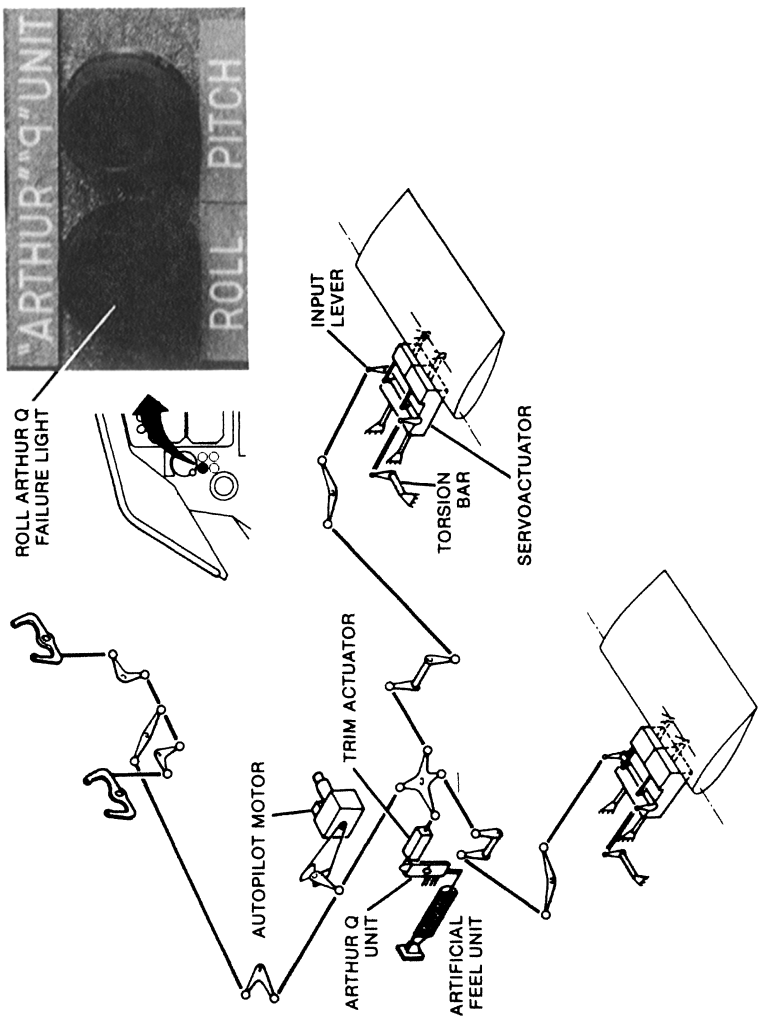

Figure 6-65. Aileron Control System

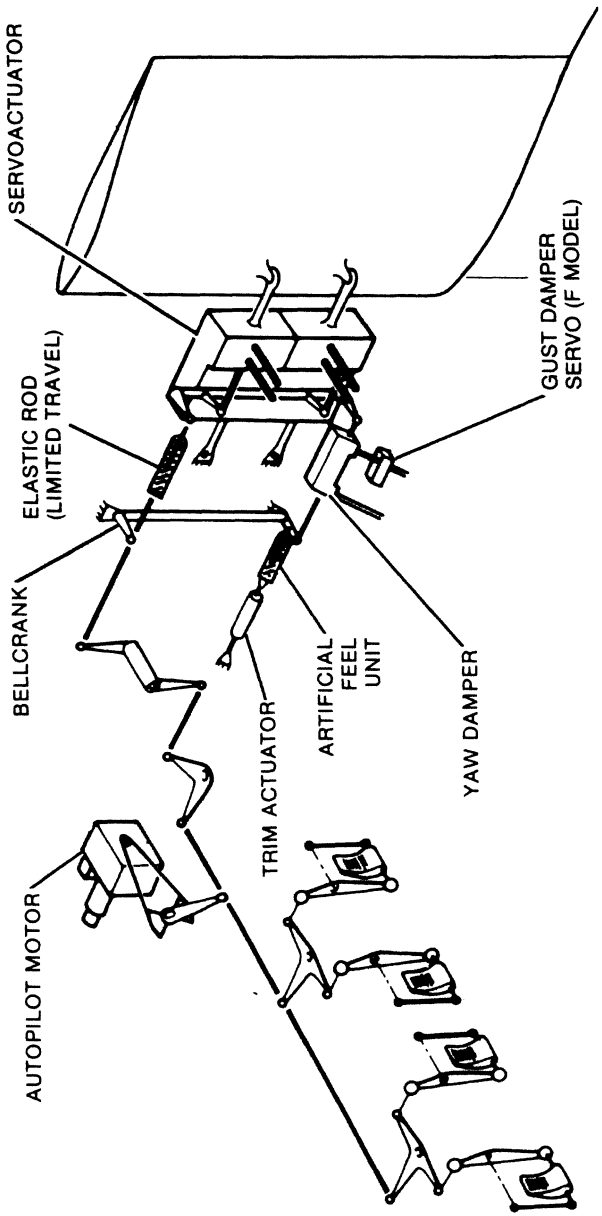

Figure 6-66. Rudder Control System

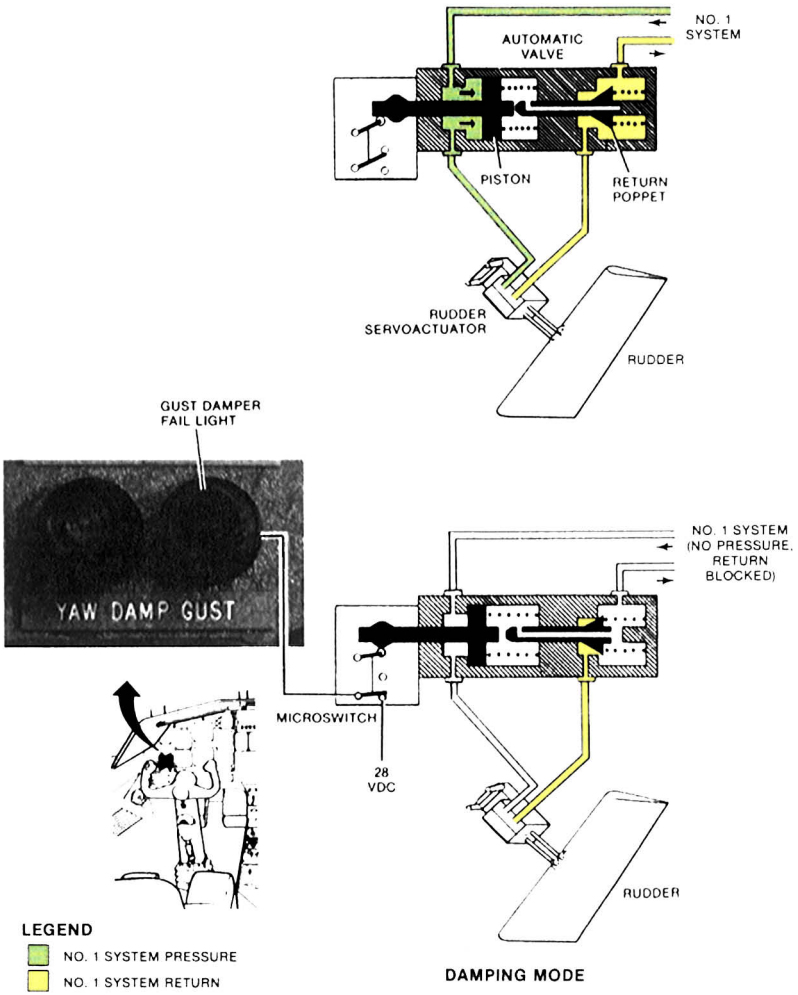

Figure 6-67. Gust Damper System

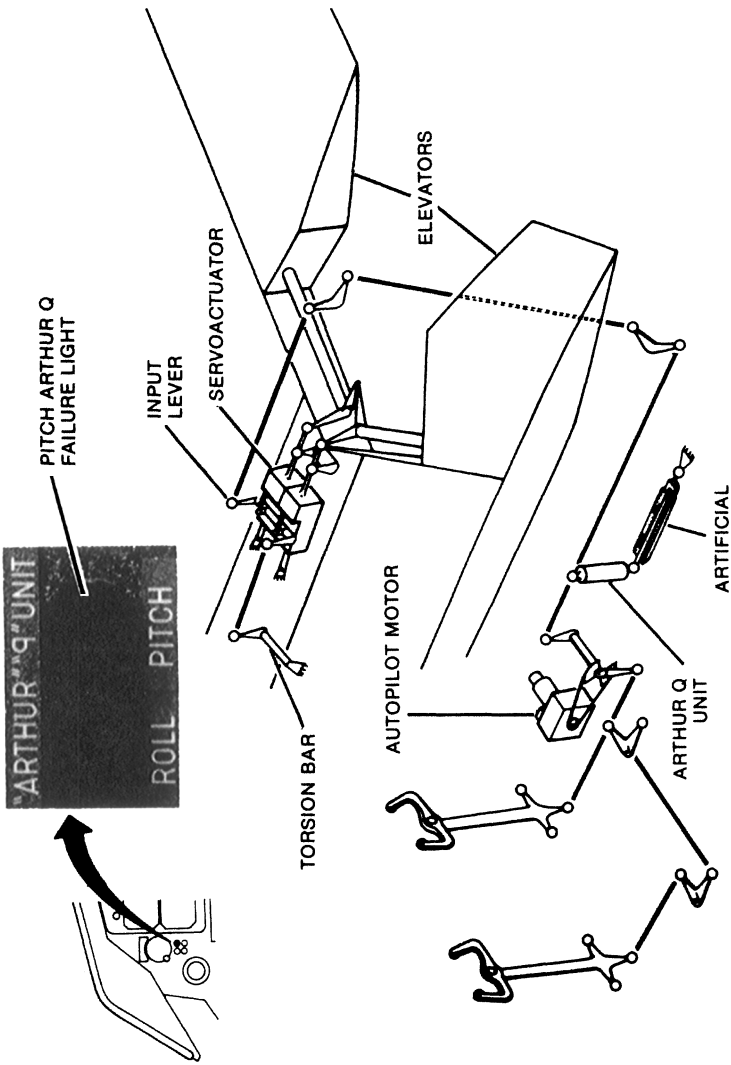

Figure 6-68. Elevator Control System

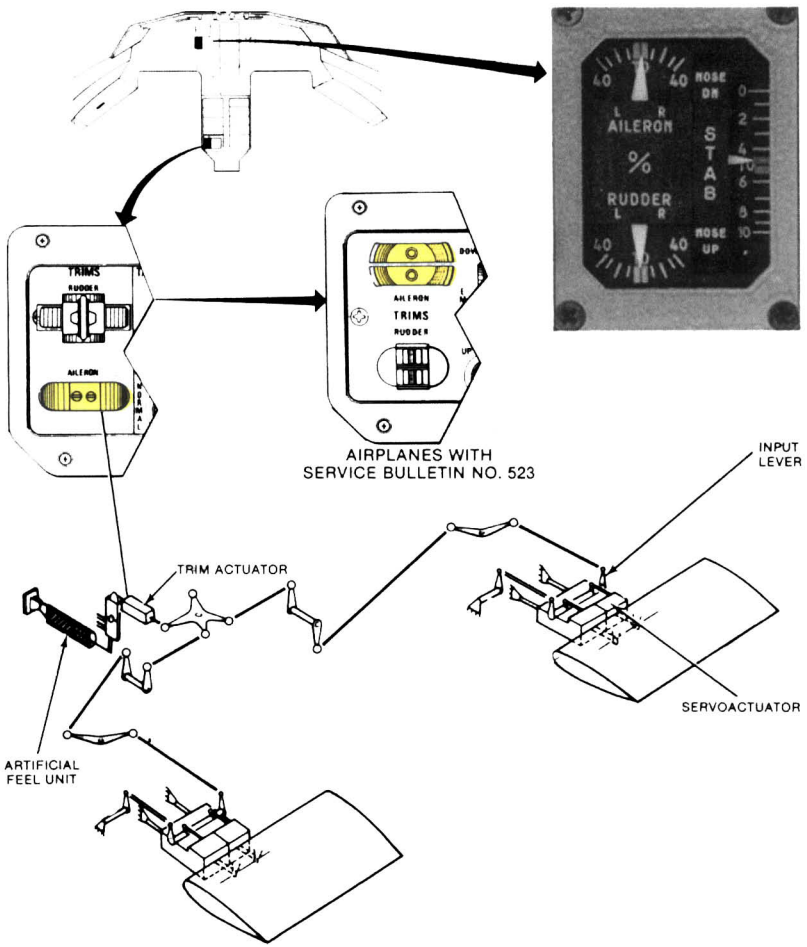

Figure 6-69. Aileron Trim System

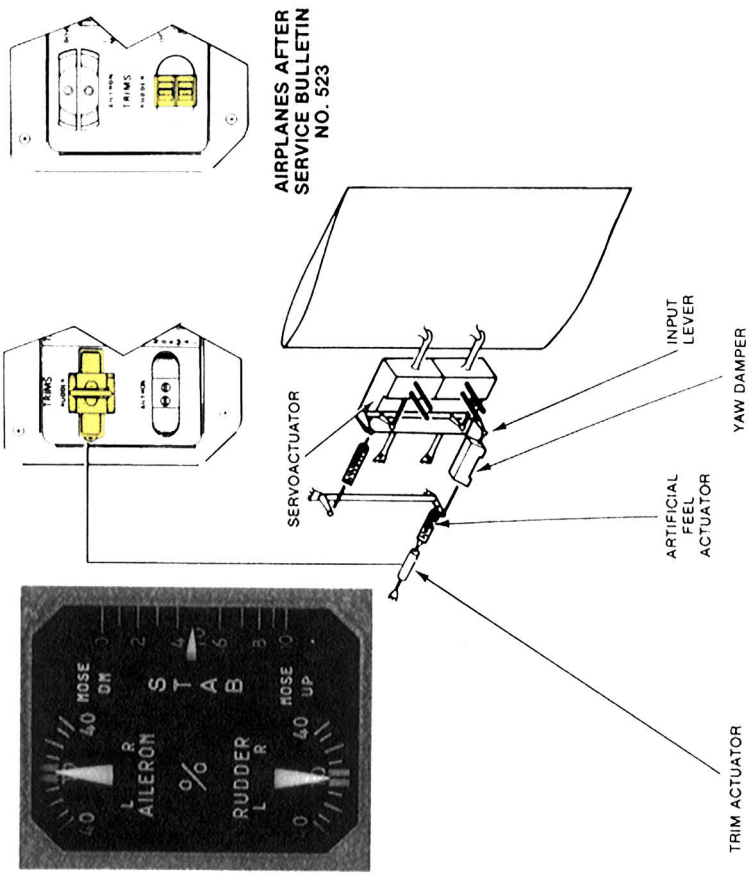

Figure 6-70. Rudder Trim System

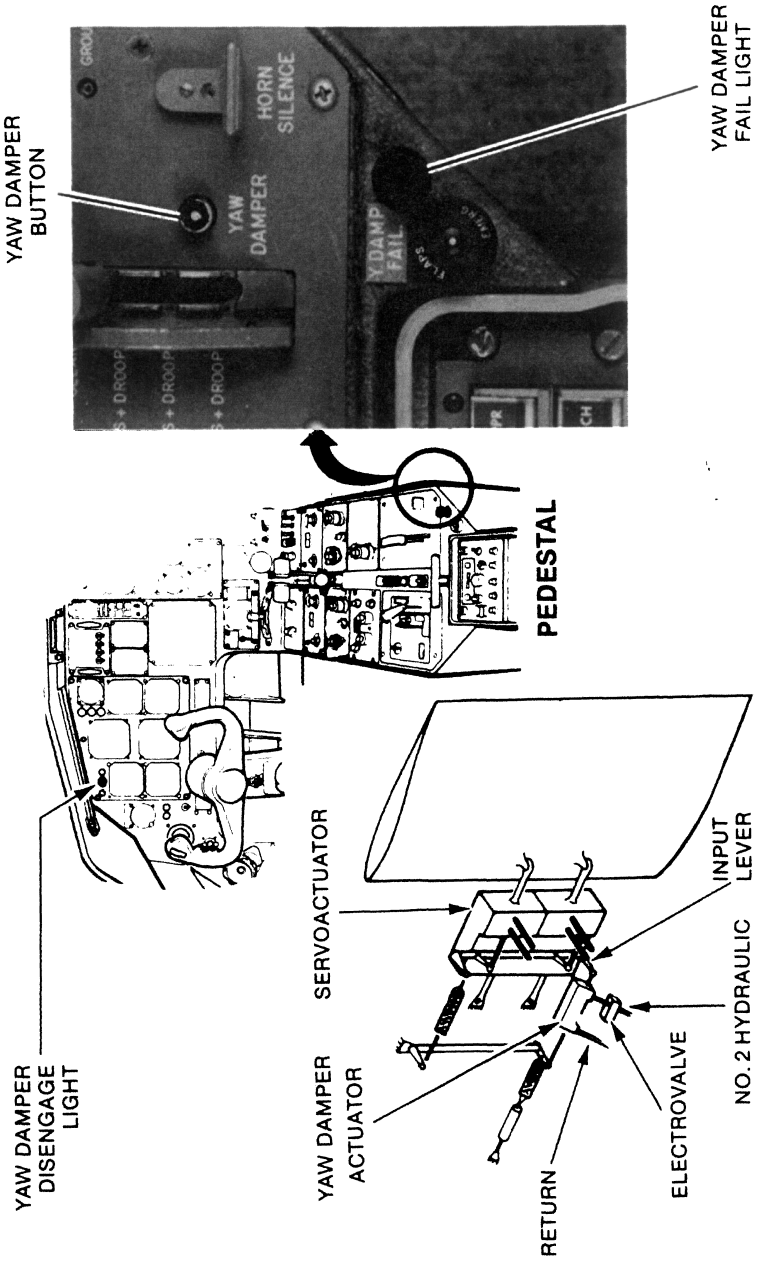

Figure 6-71. Yaw Damper System

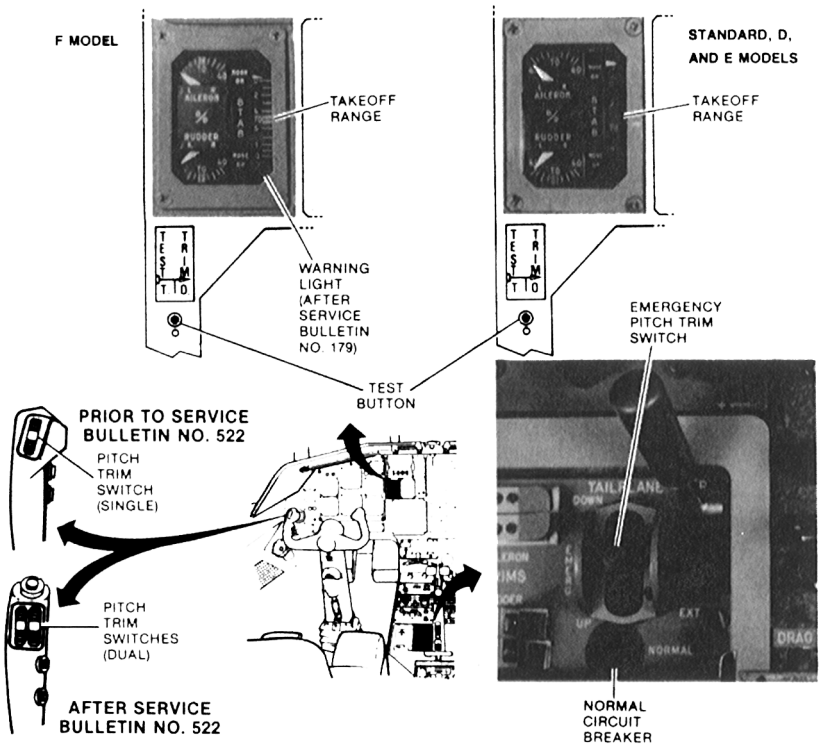

Figure 6-72. Stabilizer Trim System

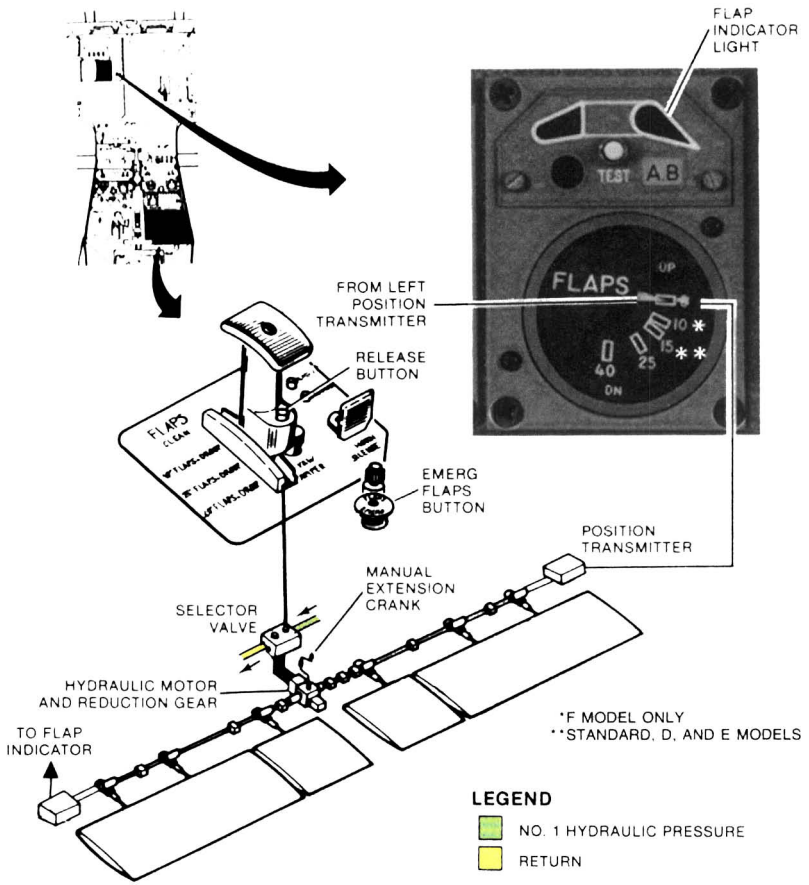

Figure 6-73. Trailing-Edge Flap System

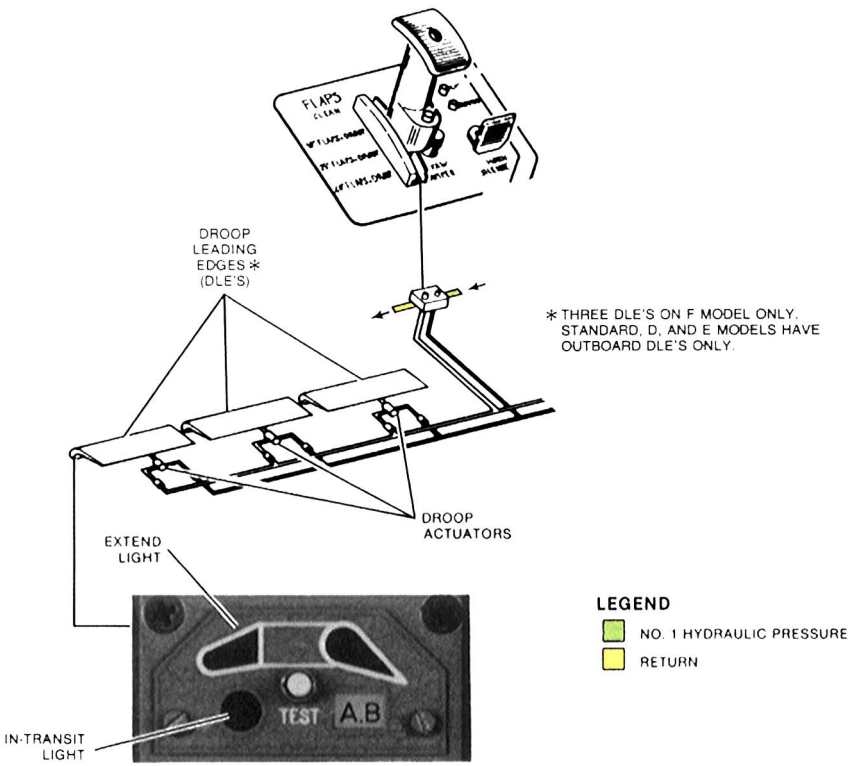

Figure 6-74. Droop Leading-Edge System

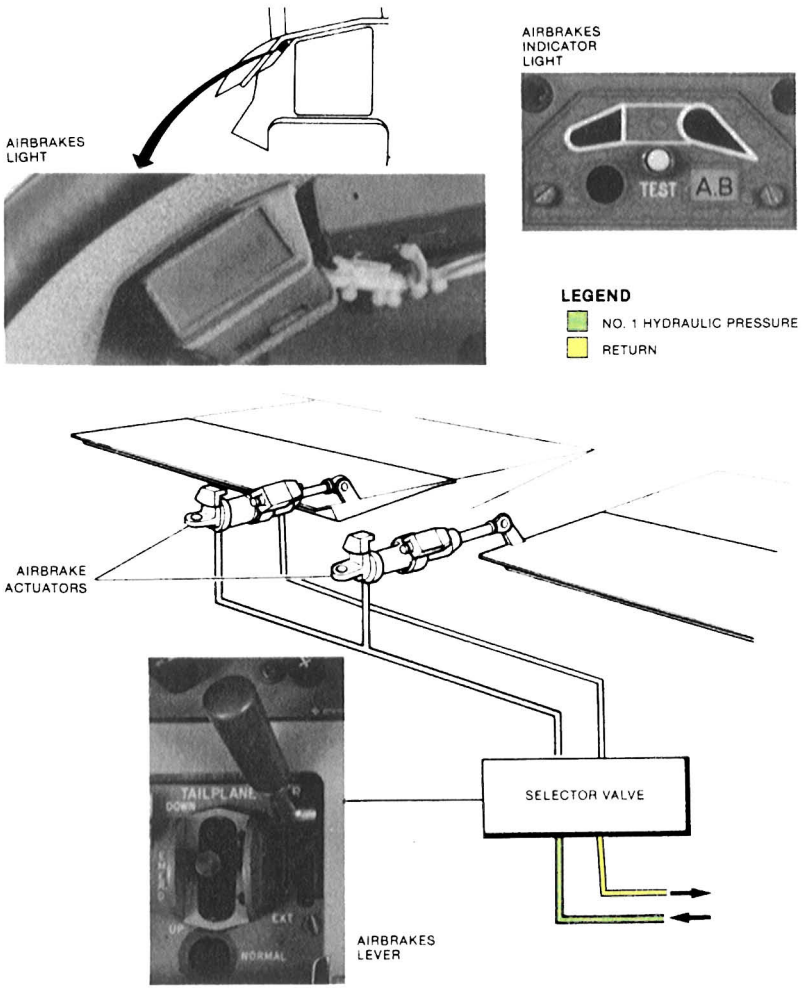

Figure 6-75. Airbrakes System

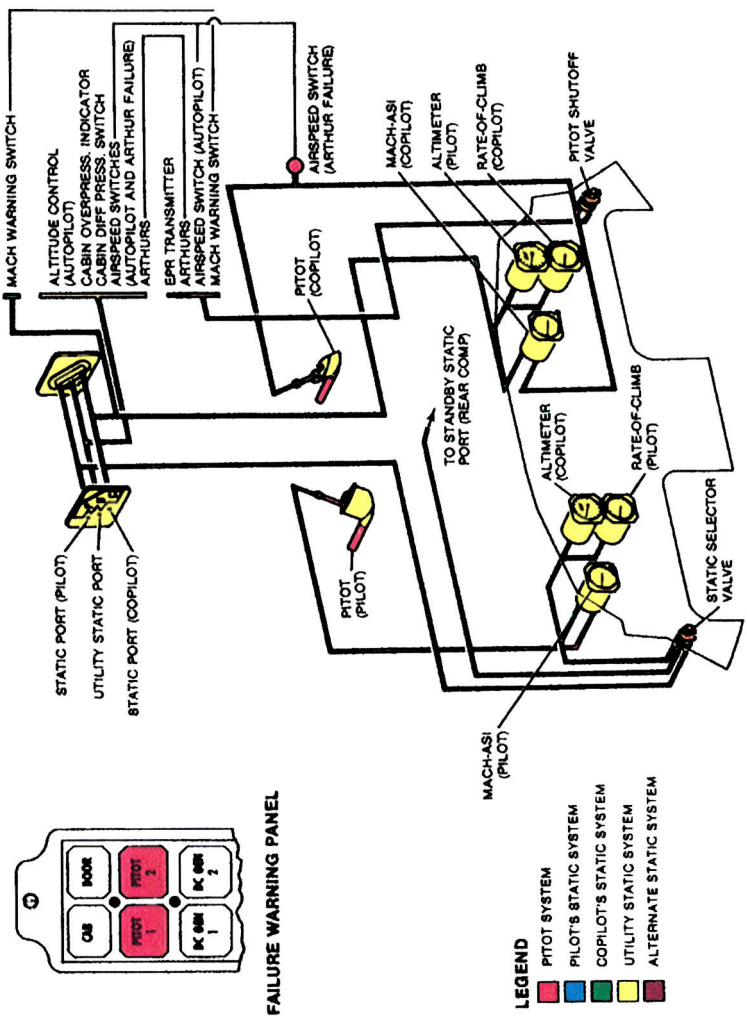

Figure 6-76. Pitot and Static Systems Diagram (F Model Airplanes)

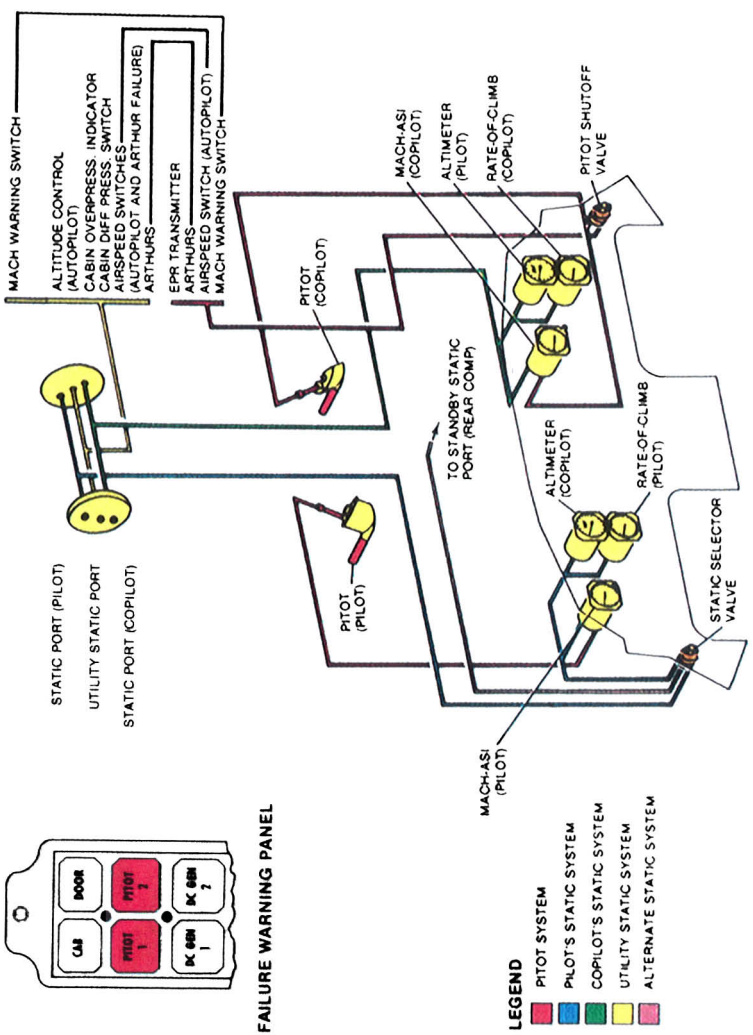

Figure 6-77. Pitot and Static Systems Diagram (Standard, D, and E Model Airplanes)

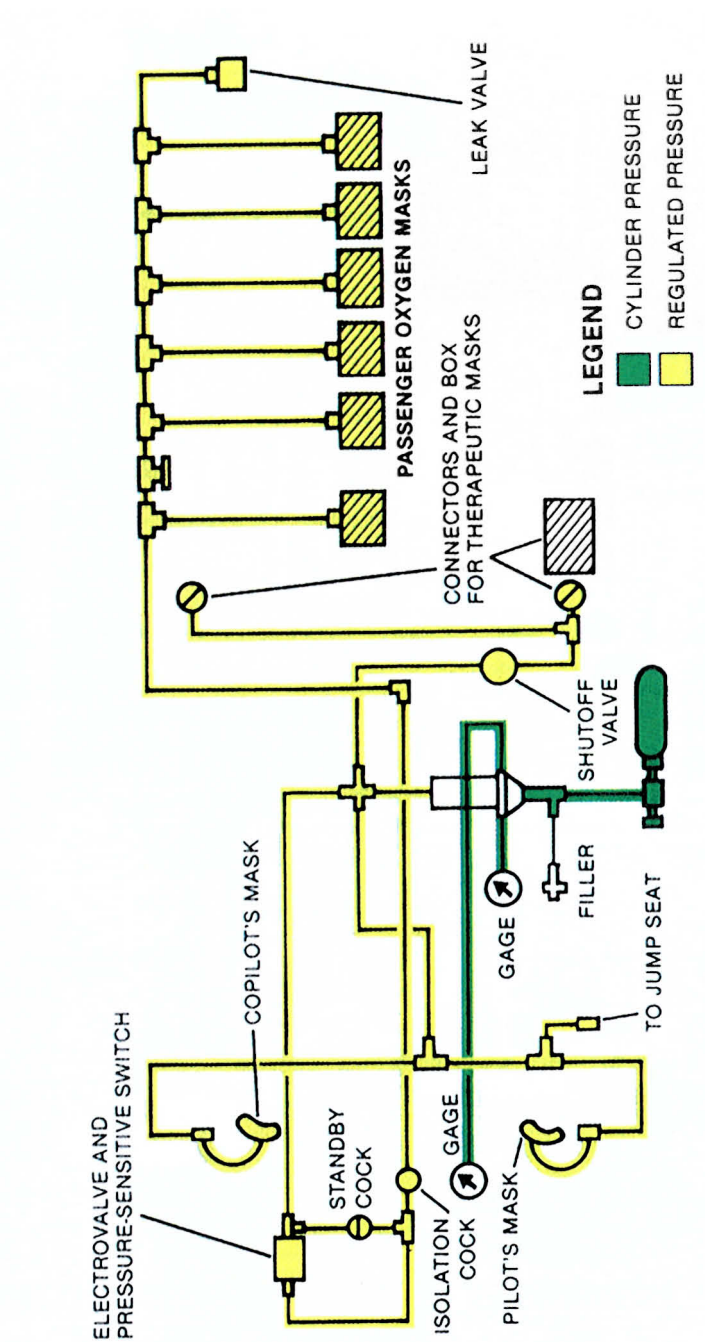

Figure 6-78. Oxygen System Schematic (Typical)

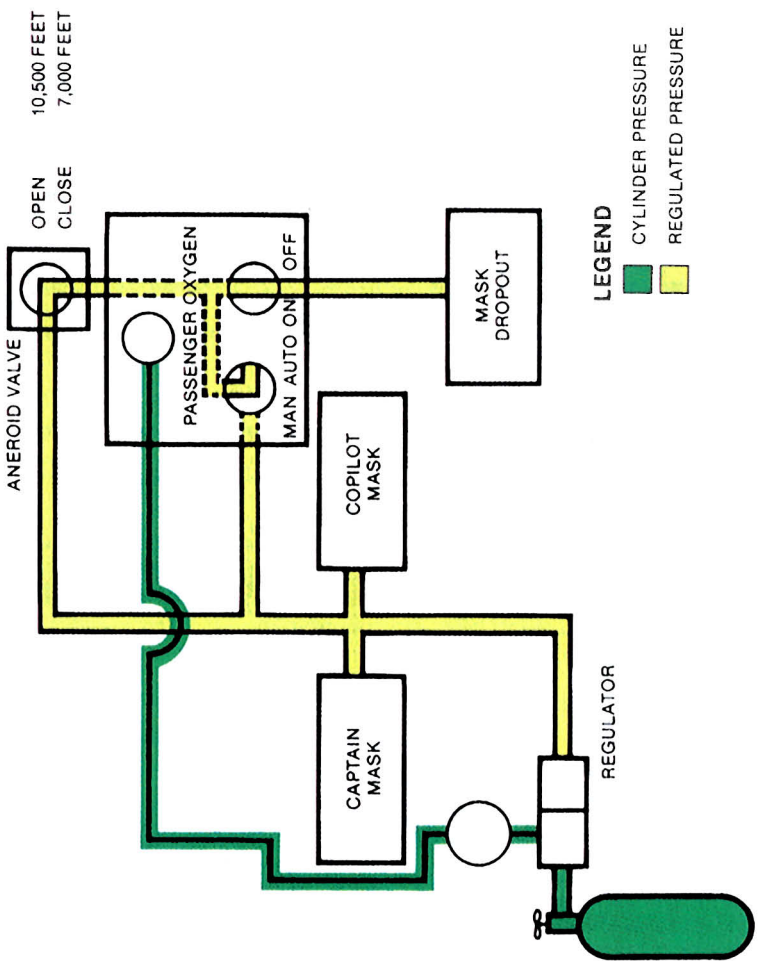

Figure 6-79. Oxygen System Schematic (SB 589 Incorporated)

CHAPTER 7
FLIGHT PLANNING INFORMATION

CONTENTS

ILLUSTRATION

CHAPTER 7
FLIGHT PLANNING INFORMATION

INTRODUCTION

It is the responsibility of the airplane operator to ensure that the Falcon 20 airplane is properly loaded. At the time of delivery, the manufacturer provides the necessary weight and balance data to compute individual loadings. All subsequent changes in airplane weight and balance are the responsibility of the airplane owner and/or operator. Information in this chapter begins with weight and balance definitions.

The second portion of this chapter covers performance abbreviations and definitions and supplies acceptable performance guidelines.

WEIGHT AND BALANCE

DEFINITIONS

Maximum Gross Weight—The maximum gross weight to which the airplane has been certified in compliance with the Federal Air Regulations

Payload—Weight of passengers, baggage, and cargo (does not include crew and usable fuel)

Center of Gravity (CG)—The point at which the mass of an object is considered to be concentrated

Arm (or Moment Arm)—The horizontal distance along the longitudinal axis from the datum to the point where a force is applied. Normally measured in inches, aft of the datum is plus (+), and forward of the datum is minus (−).

Moment—The product of a weight or force and its moment arm (Moment = Weight × Arm)

Datum—Arbitrary reference plane selected by the manufacturer from which all measurements are made for weight and balance computations. The datum on the Falcon 20 is located at the airplane nose so that all arm measurements will be positive. This makes weight and balance computation easier.

Mean Aerodynamic Chord (MAC)—An imaginary constant section airfoil that produces the same aerodynamic characteristics as the real airfoil. Due to its constant dimensions, the MAC can be assigned fuselage station numbers for its leading and trailing edges, and all calculations and measurements can be referenced from those points. The center of gravity is sometimes expressed as a percent of MAC. This defines the CG location as being the leading and trailing edge MAC at a certain percentage of the total distance.

For information regarding weight and balance, see Chapter 18, "Performance/Weight and Balance" in the *Pilot Training Manual*.

PERFORMANCE

DEFINITIONS

Takeoff Path—Extends from a standing start to a point 1,500 feet above the takeoff surface

Takeoff Distance—The horizontal distance along the takeoff path from the start to a point 35 feet above the takeoff surface following an engine failure, or 115% of all engines operating to a point 35 feet above the takeoff surface (this includes a legal clearway)

Accelerate Stop—The distance required to accelerate to V_1 and bring the airplane to a full stop, assuming that one engine failed at V_1 plus a delay of 2.5 seconds

Balanced Field—Is when the takeoff distance is equal to the accelerate-stop distance

V_1—The speed at which, if an engine failure occurs, the airplane:

- Will reach 35 feet above the takeoff surface, or
- Can be brought to a full stop on the takeoff surface

V_R—The speed at which rotation is initiated; attains V_2 at or prior to reaching 35 feet

V_2—The takeoff safety speed selected by the manufacturer so that the required climb gradient is attained

V_{FR}—The minimum speed to initiate flap retraction

V_{FS}—1.4 V_S and is the speed used from 400 feet to 1,500 feet above the takeoff surface following an engine failure

V_{SE}—1.5 V_S and is the speed used from 1,500 feet to the desired altitude following an engine failure

V_{REF}—1.3 times V_S in the landing configuration

V_{MCA}—The minimum flight speed at which the airplane is controlled, with a maximum of 5° bank, if one engine suddenly becomes inoperative

V_{MCG}—The minimum speed on the ground at which the takeoff can be continued, using aerodynamic control alone, if one engine suddenly becomes inoperative

Landing Distance—The horizontal runway surface necessary to cross the threshold from 50 feet at V_{REF}, maintaining a steady 3° glide to the landing surface, and come to a full stop using antiskid brakes and airbrakes

Landing Field Length—Landing distance multiplied by 1.67

Figure 7-1 shows a typical takeoff and landing flight path, illustrating many of these definitions.

ACCEPTABLE PERFORMANCE GUIDELINES

Steep turns—±100 feet, ±5° bank, ±10 knots, ±10° heading

Approach to stall—Recognize perceptible stall/warning device indication; recover at first indication, striving for minimum altitude loss.

Holding—±100 feet, ±10 knots

IFR approaches—Initial: ±100 feet, ±10 knots
Final: −0 +10 knots
DH/MDA: −0 +50 feet, −0 +10 knots, ±1 dot

Circling—Not to exceed 30° bank
MDA: −0 feet + 100 feet

Missed approach—DH/MDA: −0 feet (except in instances when runway environment is in sight)

Engine failure—V_1; V_2 KIAS, runway heading, ±10 knots
Runway heading: ±20°
Clean climb: V_{FS}, V_{SE}, −0 +10 knots
In-flight shutdown/restart: ±20° heading, ±100 feet

Landings—Traffic pattern: ±10 knots, altitude ±100 feet
Threshold: V_{REF} −0 +10 knots

PERFORMANCE EXERCISES

Performance Exercise I

Airplane is at Teterboro, New Jersey (TEB) and must go to Washington National (DCA) to pick up four passengers; there are no passengers from TEB to DCA. Richmond (RIC) is the alternate. What is the minimum fuel to complete this flight?

Teterboro weather:

Measured 200 feet overcast, 1 mile visibility, freezing drizzle, temperature 1° C, dewpoint −1° C, wind 070° at 12 knots, altimeter 30.17, no standing water, braking action good

Washington National weather:

Measured 400 feet broken, 1 mile visibility, drizzle and fog, temperature 6° C, dewpoint −2° C, wind 090° at 17 knots gusting to 27 knots, altimeter 30.14, braking action good

Richmond (alternate) weather:

Measured 600 feet overcast, 2 miles visibility fog, temperature 7° C, dewpoint 1° C, wind 100° at 18 knots gusting to 26 knots, altimeter 30.16

Additional information:

TEB to DCA is planned at 14,000 feet, with −30 wind factor at altitude. Distance from TEB to DCA is 210 NM. DCA to RIC is 115 NM and has the same wind factor.

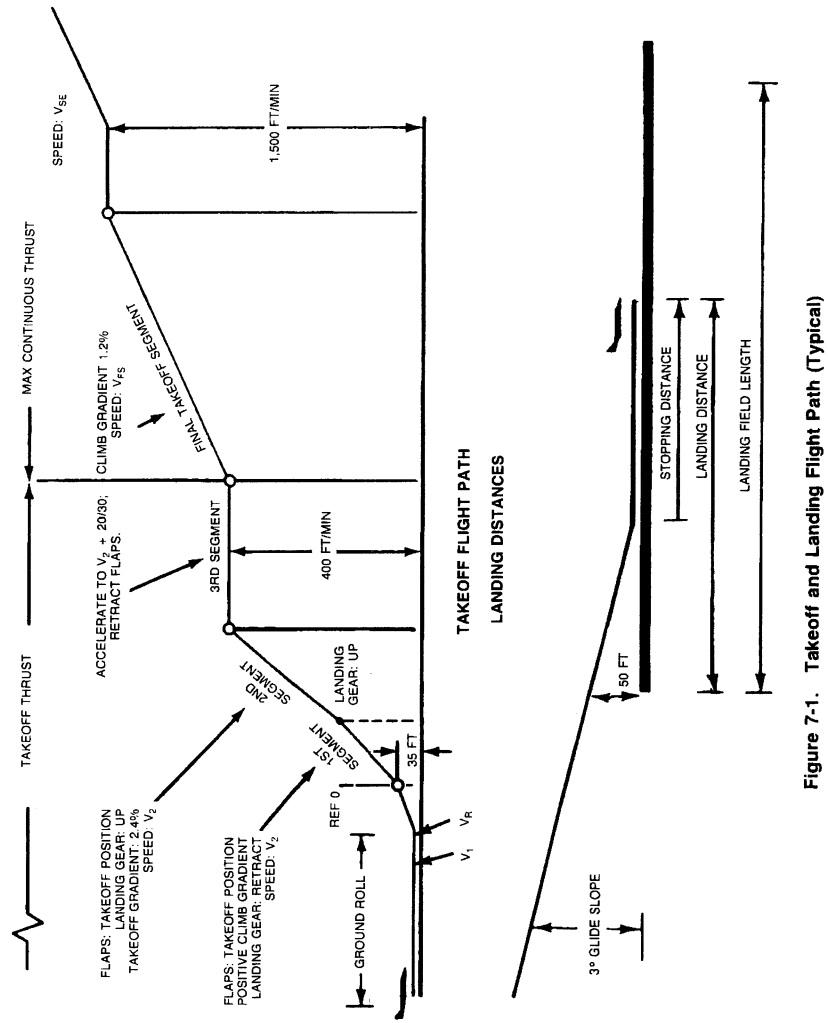

Figure 7-1. Takeoff and Landing Flight Path (Typical)

Performance Exercise II

Airplane is at Teterboro, New Jersey (TEB) and has two passengers with 45 pounds of baggage. Destination is Denver, Colorado (DEN). The return trip to Teterboro, New Jersey (TEB), will be with eight passengers with 90 pounds of baggage.

Teterboro weather:

3,000 feet scattered, 3 miles visibility, temperature 21° C, dewpoint 10° C, wind 20° at 10 knots, altimeter 30.01

Denver weather:

Clear, visibility unlimited, temperature 17° C, dewpoint 3° C, wind 270° at 8 knots, altimeter 29.97

Additional information:

TEB to DEN is to be with a zero wind at altitude at ISA. Distance is 1,400 NM.

DEN to TEB is to be with a +40 wind factor at altitude at ISA. Distance is 1,400 NM.

Performance Exercise III

Airplane is at a sea level airport, temperature 90° F, calm wind, no slope, altimeter 29.92. The runway is 5,000 feet. There is an obstacle 150 feet high located near the extended center line, 6,000 feet from the end of the active runway. Determine the maximum takeoff weight:

- Limited by runway
- Limited by obstacle climb

APPENDIX B

Appendix B presents a color representation of all the annunciator lights in the airplane.

Please unfold page B-1 to the right and leave it open for ready reference as the annunciators are cited in the text.

FALCON 20
RECURRENT TRAINING MANUAL
FlightSafety international
FALCON 20
RECURRENT TRAINING MANUAL
FlightSafety international

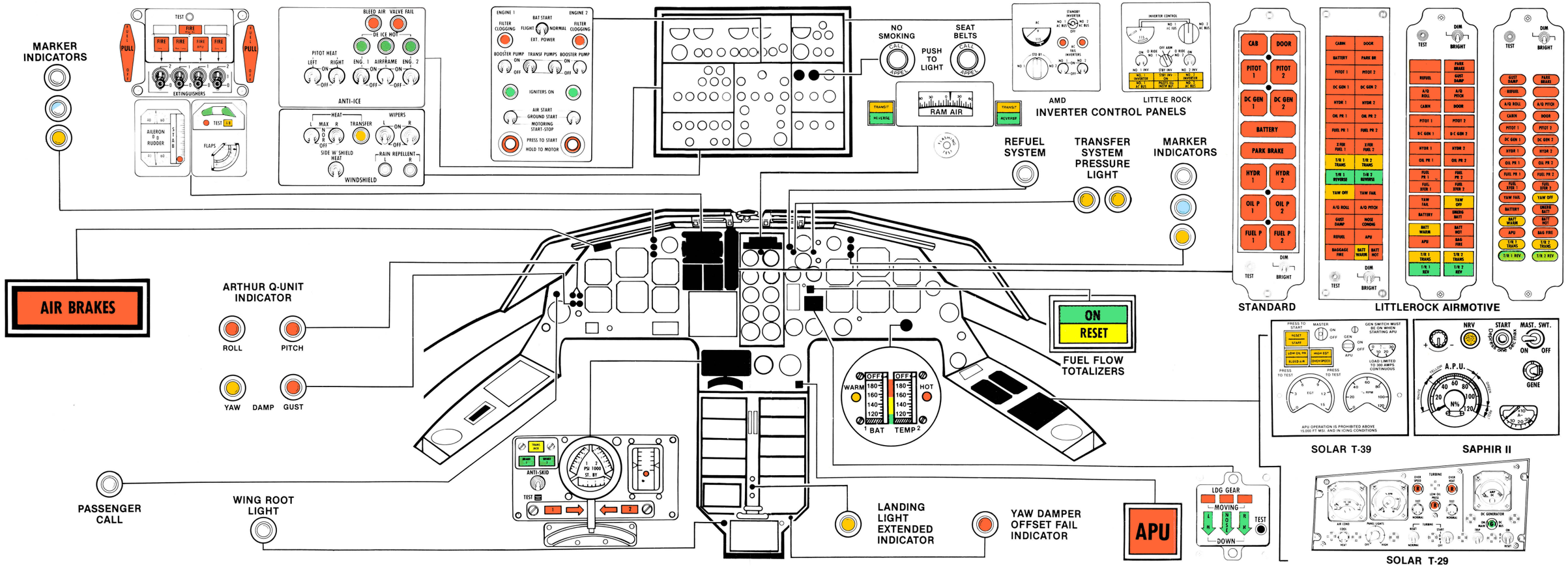

Figure B-1. Annunciators