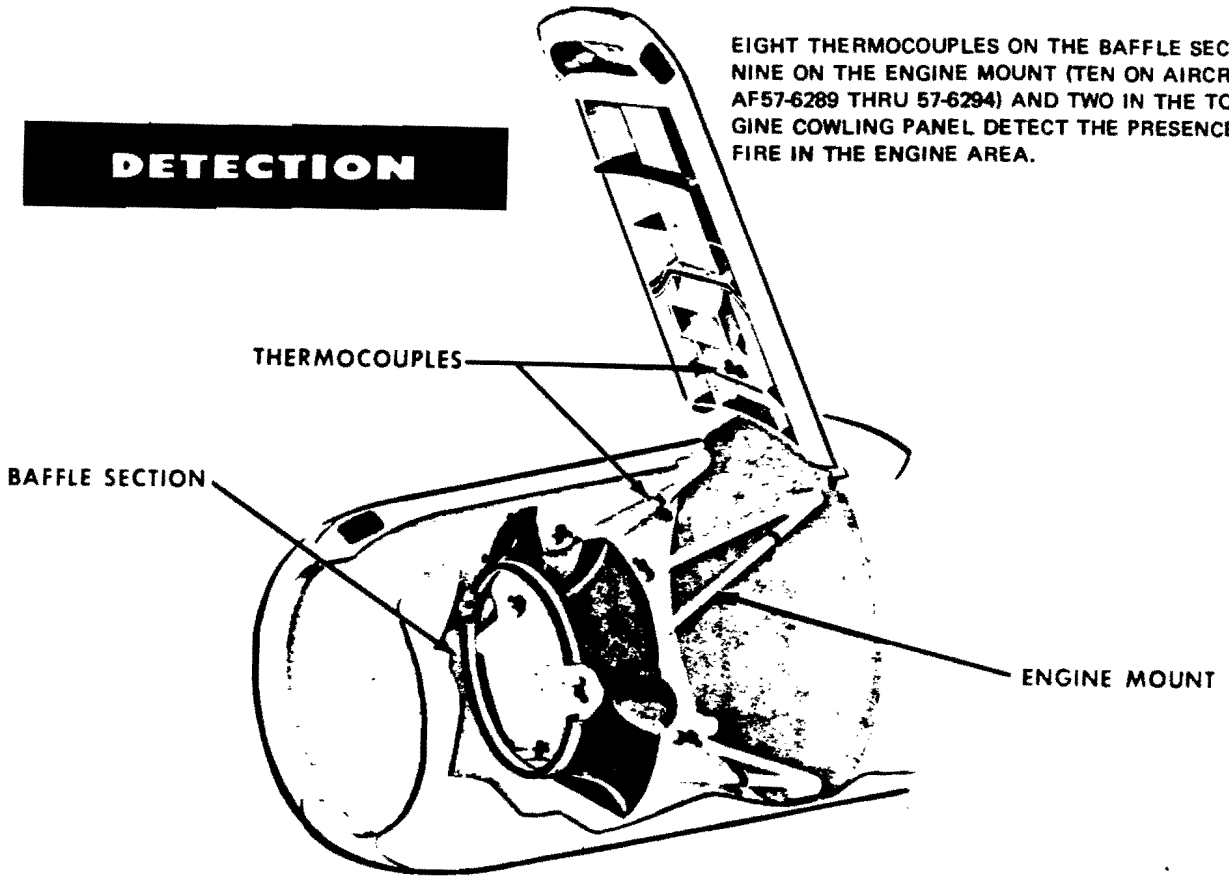
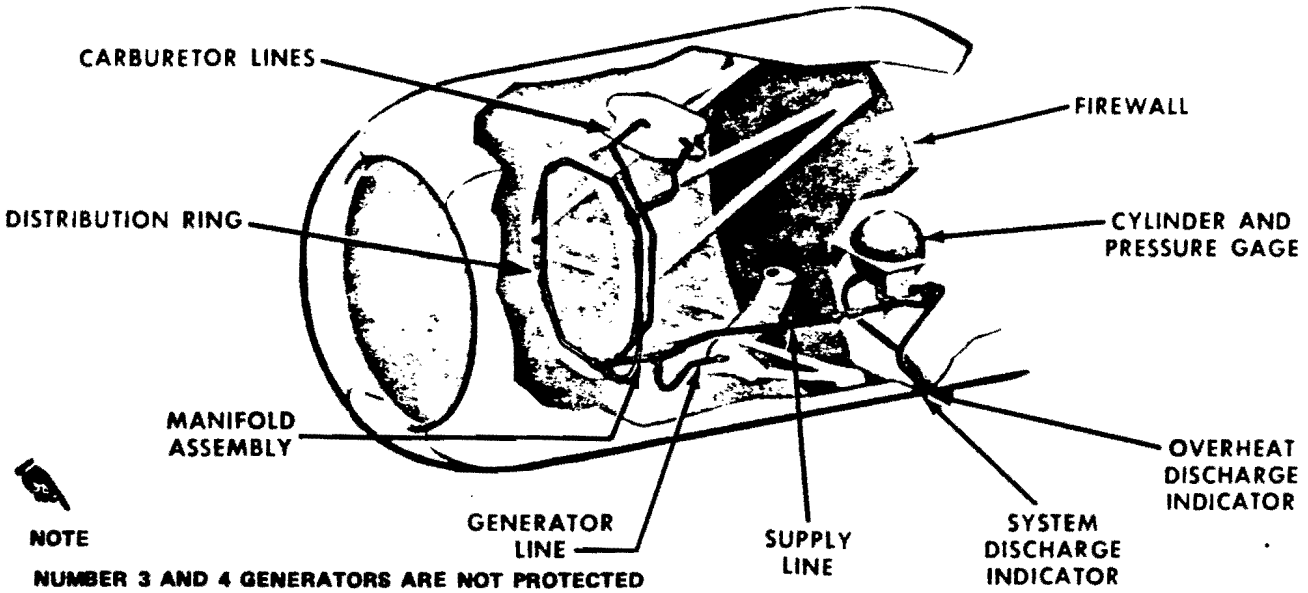
DETECTION

EIGHT THERMOCOUPLES ON THE BAFFLE SECTION, NINE ON THE ENGINE MOUNT (TEN ON AIRCRAFT AF57-6289 THRU 57-6294) AND TWO IN THE TOP ENGINE COWLING PANEL DETECT THE PRESENCE OF FIRE IN THE ENGINE AREA.



TYPICAL

ENGINE FIRE DETECTION AND EXTINGUISHING



NOTE

NUMBER 3 AND 4 GENERATORS ARE NOT PROTECTED BY THE FIRE EXTINGUISHING AGENT.

EXTINGUISHING

A FIRE EXTINGUISHER CYLINDER ON THE AFT SIDE OF THE FIREWALL SUPPLIES THE FIRE EXTINGUISHER RING OF THE EXTINGUISHER LINES TO THE GENERATOR BLAST TUBE, ENGINE MOUNTS, AND CARBURETOR.

26060

Figure 1-55

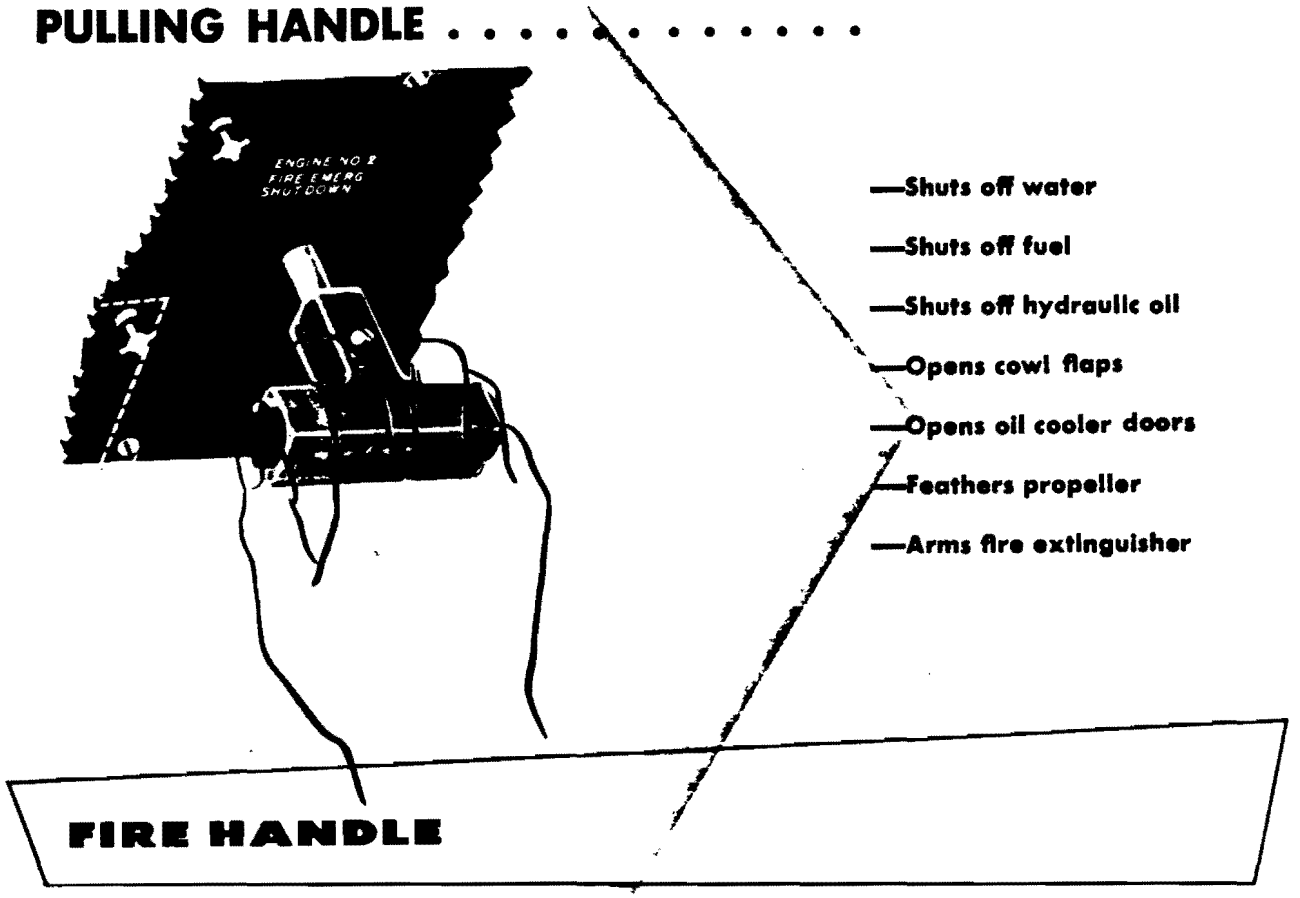
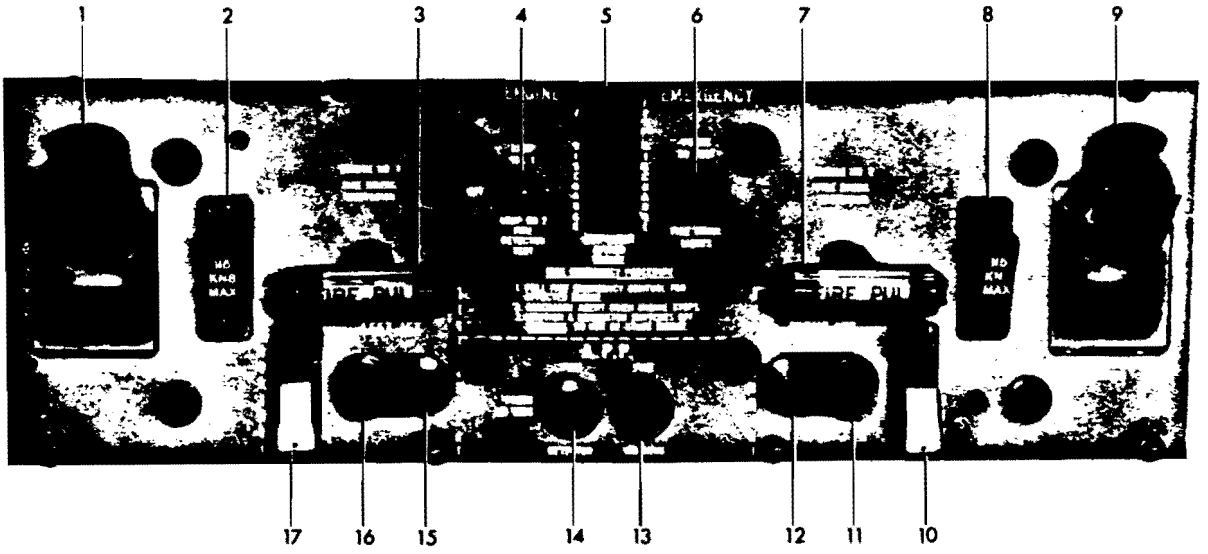


Figure 1-56

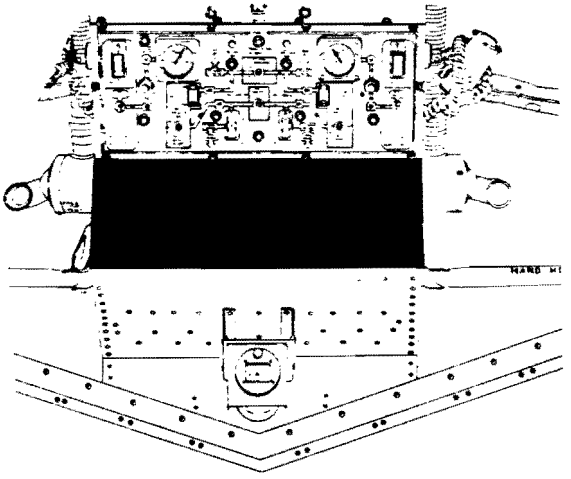
for the reciprocating engines, and a fire extinguishing agent discharge switch for each jet engine. For the reciprocating engines, the extinguishing agent is contained in a bottle in each nacelle and the jet engines extinguishing agent is contained in a bottle in each engine pylon. Both engine systems use bromochloromethane as the extinguishing agent and have a pressure gage on the bottle itself to indicate the condition of the charge. A plastic window in the side of the jet engine pylon allows the pressure gage reading to be obtained during the preflight inspection of the aircraft. Distribution of the agent throughout the reciprocating engine and accessory section is accomplished with a discharge hose and manifold assembly. Distribution of the extinguishing agent throughout the jet engine compartment and accessory section is accomplished through two discharge tubes which cause the agent to swirl throughout the engine compartment. Both systems are operated from the 28-volt dc flight emergency bus.

RECIP ENGINE FIRE EXTINGUISHING SYSTEM.

The engine fire extinguisher system is controlled from the engine emergency panel on which the following controls are located: fire emergency shutdown handles and extinguishing agent discharge switch. The extinguishing agent, bromochloromethane, is contained in a bottle in each nacelle. A pressure gage on the bottle itself indicates the condition of the charge. Distribution of the agent throughout the engine and accessory section is accomplished by means of a discharge hose and manifold assembly. Power for operation of the system is obtained from the 28-volt dc flight emergency bus.



1. PROPELLER FEATHER SWITCH (ENGINE NO. 1)
2. NACELLE TANK JETTISON SWITCH (NACELLE NO. 1)
3. FIRE EMERGENCY SHUTDOWN HANDLE (ENGINE NO. 1)
4. FIRE DETECTOR LOOP TEST SWITCH (RECIPROCATING ENGINES)
5. EXTINGUISHING AGENT DISCHARGE SWITCH (RECIPROCATING ENGINES)
6. ENGINE FIRE DETECTOR WARNING LIGHT TEST BUTTON
7. FIRE EMERGENCY SHUTDOWN HANDLE (ENGINE NO. 2)
8. NACELLE TANK JETTISON SWITCH (NACELLE NO. 2)
9. PROPELLER FEATHER SWITCH (ENGINE NO. 2)
10. EXTINGUISHING AGENT DISCHARGE SWITCH (RIGHT JET)
11. RIGHT JET FIRE WARNING LIGHT
12. RIGHT JET FIRE WARNING TEST SWITCH
13. APP FIRE WARNING LIGHT
14. APP FIRE DETECTOR PUSH TO TEST BUTTON
15. LEFT JET FIRE WARNING TEST SWITCH
16. LEFT JET FIRE WARNING LIGHT
17. EXTINGUISHING AGENT DISCHARGE SWITCH (LEFT JET)



ENGINE EMERGENCY PANEL

Figure 1-57

RECIP ENGINE FIRE EXTINGUISHING AGENT DISCHARGE SWITCH.

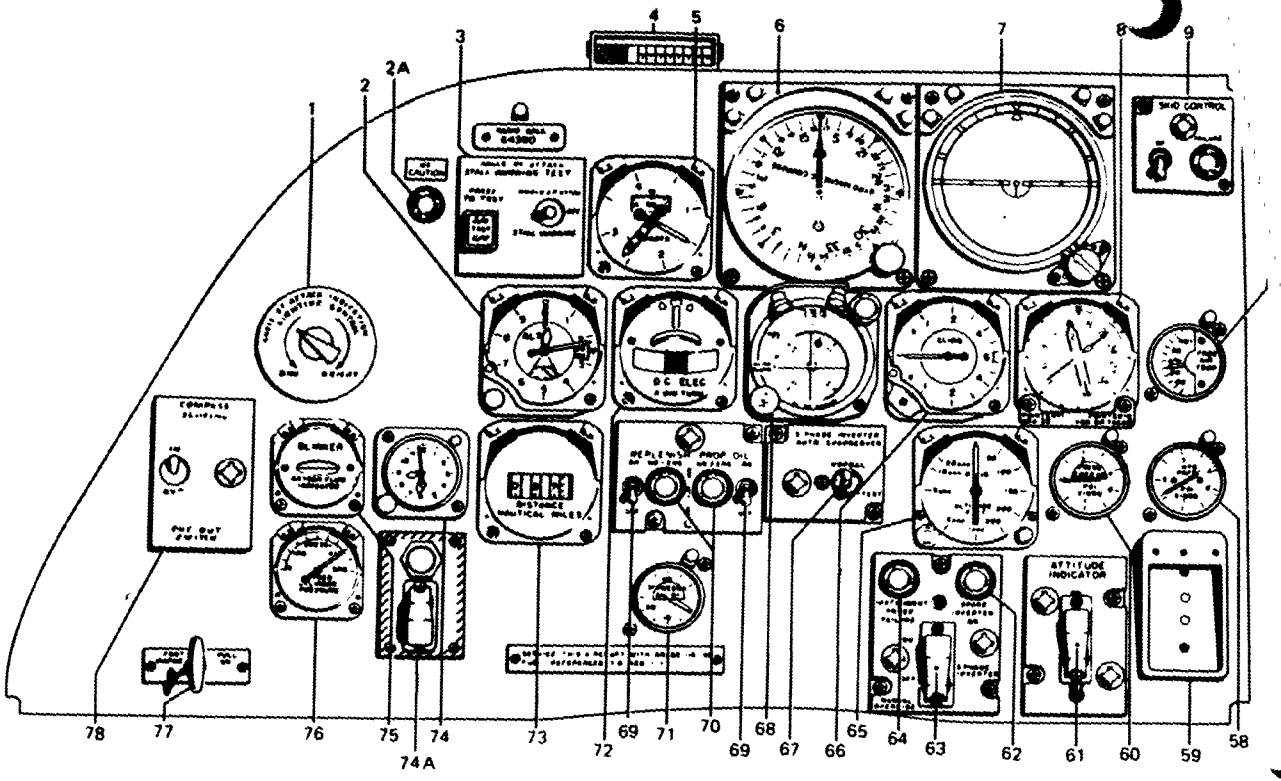
Discharge of the fire extinguishing agent is controlled by the extinguishing agent discharge switch (figure 1-57), on the engine emergency panel. Positioning this switch to DISCHARGE, after first pulling the desired fire emergency shutdown handle, fires an actuator cartridge at the base of the extinguisher bottle, rupturing the sealing disc, and allowing bromochloromethane to flow from the sphere into the main discharge hose and manifold assembly.

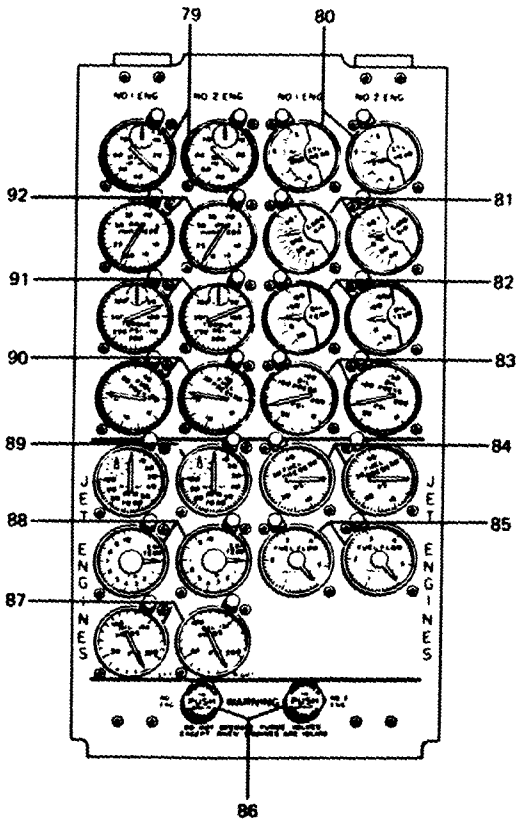
Note

When the fire extinguishing agent switch is placed to DISCHARGE, the cowl flaps and oil cooler doors of the selected engine will go to the closed position.

CAUTION

The fire extinguishing agent is highly corrosive and should be removed from the engine as soon as possible.

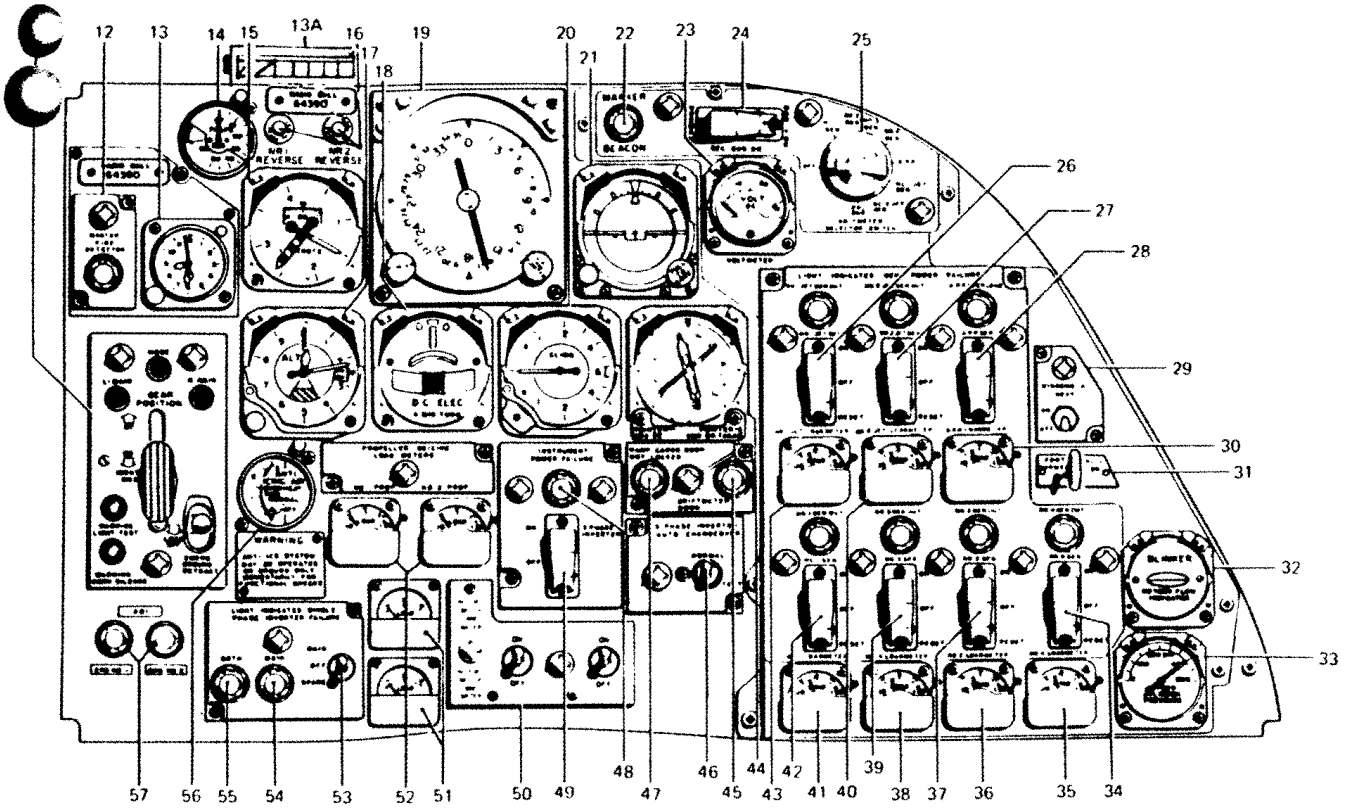




1. ANGLE OF ATTACK DIMMING RHEOSTAT
2. PILOT'S ALTIMETER
2A. IFF CAUTION LIGHT
3. ANGLE OF ATTACK/STALL WARNING TEST SWITCH
4. ANGLE OF ATTACK INDICATOR
5. PILOT'S AIRSPEED INDICATOR
6. PILOT'S DIRECTIONAL INDICATOR (GYRO-MAGNETIC COMPASS)
7. PILOT'S ATTITUDE INDICATOR
8. PILOT'S RADIO MAGNETIC INDICATOR
9. SKID CONTROL SWITCH AND WARNING LIGHT
10. FREE AIR TEMPERATURE
58. HYDRAULIC PRESSURE GAGE
59. CARD HOLDER
60. EMERGENCY AIR BRAKE PRESSURE GAGE
61. ATTITUDE INDICATOR SWITCH
62. SPARE THREE-PHASE INVERTER INDICATOR LIGHT
63. PILOT'S THREE-PHASE INVERTER SWITCH
64. PILOT'S INSTRUMENT POWER FAILURE WARNING LIGHT
65. RADAR ALTIMETER INDICATOR
66. PILOT'S VERTICAL VELOCITY INDICATOR
67. PILOT'S THREE-PHASE AUTOMATIC CHANGEOVER TEST SWITCH
68. COURSE INDICATOR
69. PROPELLER OIL REPLENISHING SWITCHES
70. PROPELLER OIL PRESSURE LIGHTS
71. AILERON DEICING PRESSURE GAGE
72. PILOT'S TURN AND SLIP INDICATOR
73. RANGE INDICATOR
74. PILOT'S CLOCK
74A. SPRAY DUMP VALVE SWITCH AND INDICATOR LIGHT
75. PILOT'S OXYGEN FLOW INDICATOR
76. PILOT'S OXYGEN PRESSURE GAGE
77. PILOT'S FOOT WARMER HANDLE
78. COMPASS SLAVING CUT-OUT SWITCH
79. MANIFOLD PRESSURE GAGES
80. CYLINDER HEAD TEMPERATURE INDICATORS
81. CARBURETOR AIR TEMPERATURE INDICATORS
82. OIL TEMPERATURE INDICATORS
83. OIL PRESSURE INDICATORS
84. JET FUEL PRESSURE INDICATORS
85. JET FUEL FLOW INDICATORS
86. MANIFOLD PRESSURE PURGE VALVES
87. JET OIL PRESSURE INDICATORS
88. JET EXHAUST GAS TEMPERATURE INDICATORS
89. JET TACHOMETERS
90. FUEL PRESSURE INDICATORS
91. TORQUE PRESSURE INDICATORS
92. TACHOMETERS

PILOT'S INSTRUMENT PANEL (typical)

Figure 1-58. (Sheet 1 of 2)



11. LANDING GEAR CONTROL AND INDICATION
12. MASTER FIRE DETECTOR LIGHT
13. COPILOT'S CLOCK
13A. COPILOT'S ANGLE OF ATTACK INDICATOR
14. FLAP POSITION INDICATOR
15. COPILOT'S AIRSPEED INDICATOR
16. PROPELLER REVERSE PITCH INDICATOR LIGHTS
17. COPILOT'S ALTIMETER
18. COPILOT'S TURN AND SLIP INDICATOR
19. COPILOT'S DIRECTIONAL INDICATOR (GYRO MAGNETIC COMPASS)
20. COPILOT'S VERTICAL VELOCITY INDICATOR
21. COPILOT'S ATTITUDE INDICATOR
22. MARKER BEACON LIGHT
23. DC VOLTMETER
24. SECONDARY BUS SWITCH
25. VOLTMETER SELECTOR SWITCH
26. NO. 1 JET GENERATOR SWITCH AND WARNING LIGHT
27. NO. 2 JET GENERATOR SWITCH AND WARNING LIGHT
28. APP GENERATOR SWITCH AND WARNING LIGHT
29. WINDSHIELD HEAT SWITCH
30. APP LOADMETER
31. COPILOT'S FOOT WARMER HANDLE
32. COPILOT'S OXYGEN FLOW INDICATOR
33. COPILOT'S OXYGEN PRESSURE GAGE
34. NO. 4 GENERATOR SWITCH AND WARNING LIGHT
35. NO. 4 GENERATOR LOADMETER
36. NO. 2 GENERATOR LOADMETER
37. NO. 2 GENERATOR SWITCH AND WARNING LIGHT
38. NO. 3 GENERATOR LOADMETER
39. NO. 3 GENERATOR SWITCH AND WARNING LIGHT
40. NO. 2 JET LOADMETER
41. NO. 1 GENERATOR LOADMETER
42. NO. 1 GENERATOR SWITCH AND WARNING LIGHT
43. NO. 1 JET LOADMETER
44. COPILOT'S RADIO MAGNETIC INDICATOR
45. DRIFTMETER DOWN WARNING LIGHT
46. THREE-PHASE INVERTER AUTOMATIC CHANGEOVER TEST SWITCH
47. CARGO RAMP AND DOOR WARNING LIGHT
48. COPILOT'S INSTRUMENT POWER FAILURE WARNING LIGHT
49. COPILOT'S THREE-PHASE INVERTER SWITCH
50. JET DEICING CONTROL PANEL
51. JET DEICING LOADMETERS
52. PROPELLER DEICING LOADMETERS
53. SINGLE-PHASE INVERTER SWITCH
54. MAIN SINGLE-PHASE INVERTER FAILURE WARNING LIGHT
55. BOTH SINGLE-PHASE INVERTER FAILURE WARNING LIGHT
56. ANTI-ICING TEMPERATURE INDICATOR
57. WATER INJECTION INDICATOR LIGHTS

COPILOT'S INSTRUMENT PANEL (typical)

Figure 1-58. (Sheet 2 of 2)

Figure 1-59 deleted.

NACELLE FIRE EXTINGUISHER DISCHARGE INDICATORS.

Two discharge indicators are installed on each nacelle housing to provide visual indication of system discharge. A rupture of the yellow disc indicates the bottle has been discharged by operating the system in the normal manner. A ruptured red disc indicates a premature discharge due to temperature and expansion.

JET ENGINE EXTINGUISHING AGENT DISCHARGE SWITCH.

A switch to control the discharge of the extinguishing agent is provided for each jet engine and is mounted on the engine emergency panel. Positioning this switch to DISCHARGE, after first selecting SHUTDOWN on the start panel, fires an actuator cartridge at the base of the extinguishing agent bottle rupturing the sealing disc and allowing the agent to flow from the bottle into the discharge tubes.

JET ENGINE FIRE EXTINGUISHER DISCHARGE INDICATORS.

Two discharge indicators are installed in each jet engine pylon to provide visual indication of system discharge. A rupture of the yellow disc indicates discharge by normal system operation. However, a ruptured red disc indicates a premature discharge due to temperature and expansion.

HAND FIRE EXTINGUISHERS.

Three portable bromochloromethane fire extinguishers (figure 3-3), are provided in the aircraft. Two are located in the cargo compartment, one just aft of the right troop door and one on the cargo compartment forward bulkhead to the right of the radio compartment entranceway. A third is located in the crew compartment behind the copilot's seat. A pressure gage mounted on each extinguisher indicates the pressure charge existing within the extinguisher.

WARNING

Prolonged exposure (5 minutes or more) or high concentrations (pronounced irritation of eye and nose) of bromochloromethane (CB) or its decomposition products should be avoided. CB is an anesthetic agent of moderate intensity. It is safer to use than previous fire extinguishing agents (carbon tetrachloride, methylbromide). However, especially in confined spaces, adequate respiratory and eye protection from excessive exposure, including the use of oxygen when available, should be sought as soon as the primary fire emergency will permit.

EMERGENCY ESCAPE PROVISIONS.

The following emergency escape provisions are incorporated into the aircraft for the exit of crew and passengers: three overhead ditching hatches, a bail-out chute, three floor-level doors with quick-release door handles, cargo door and ramp, two escape windows in the crew compartment and six escape windows in the cargo compartment. Refer to figure 3-13.

OVERHEAD DITCHING HATCHES.

Crew Ditching Hatch and Escape Ladder.

An overhead ditching hatch (figure 1-2), is provided immediately above the entrance to the crew compartment. A half-sectional ladder (figure 4-34), on each side of the crew compartment entrance way is secured

JET ENGINE FIRE DETECTION SYSTEM

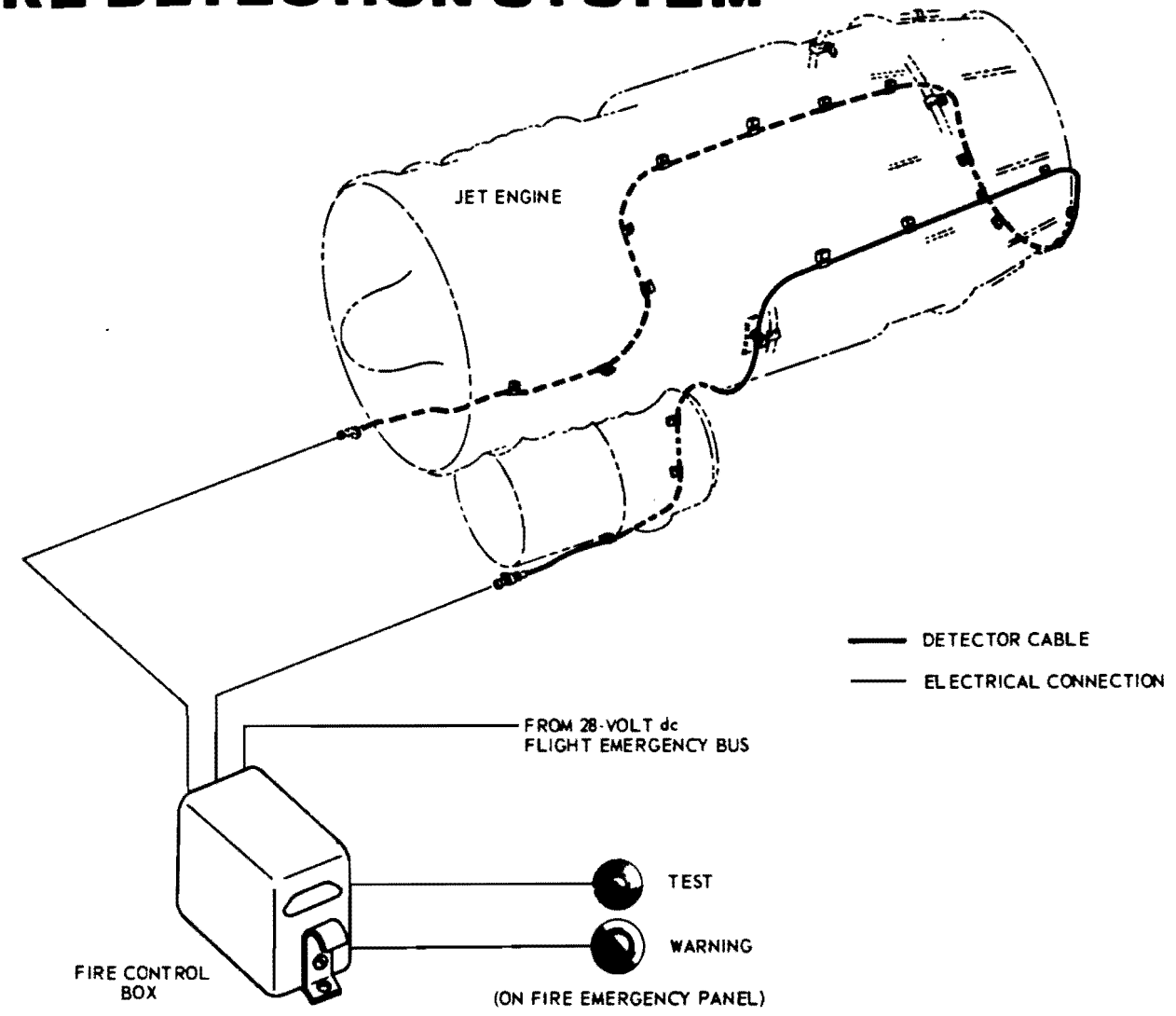


Figure 1-60

to the cargo compartment forward bulkhead. Each section may be rotated 180 degrees from its normal position to form an escape ladder to the overhead escape hatch. The hatch is equipped with a lever-type latching mechanism operable from both inside and outside the aircraft.

Cargo Compartment Ditching Hatches And Escape Ladders.

An overhead ditching hatch (figure 1-2), is provided on each upper side of the cargo compartment aft section for egress of personnel during ditching or ground emergency. An individual escape ladder (figure 4-35), hinged at the base of each hatch, swings into position when the securing attachment at the rear end of the ladder is released. The ladder is then secured to the cargo floor in a vertical position directly beneath the hatch. Each hatch is equipped with a lever-type latching mechanism operable from both inside and outside the aircraft.

BAIL-OUT CHUTE

A bail-out chute (figure 4-34), is located in the right-hand forward corner of the cargo compartment to provide a safe in-flight exit for the crew. The inner door of the bail-out chute is hinged at the forward edge and the release mechanism is operated by raising the door manually and latching it against the for-

JET ENGINE FIRE EXTINGUISHING SYSTEM

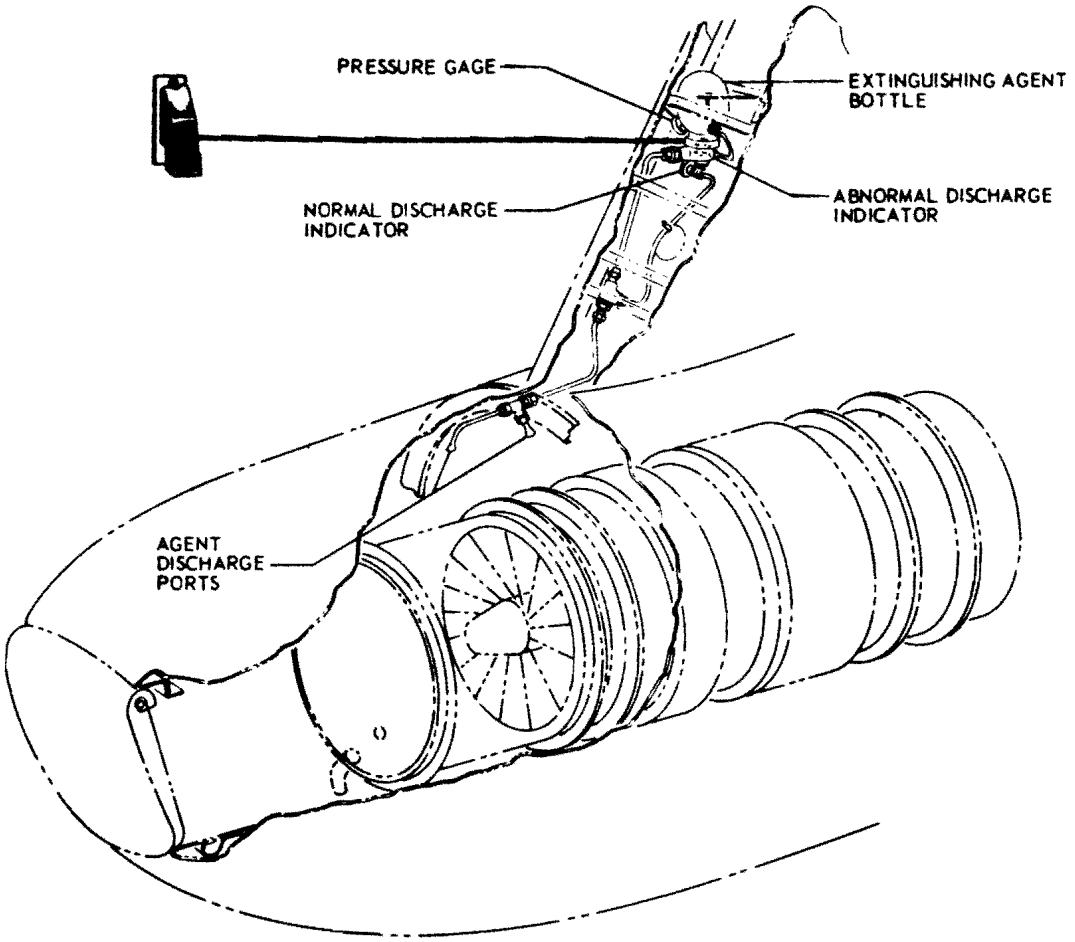


Figure 1-61

ward bulkhead. When the inner door is approximately 50 degrees open, a cable arrangement withdraws the locking pins allowing the outer door to fall free of the aircraft. For inspection purposes, the inner door may be raised as far as 45 degrees without withdrawing the locking pins.

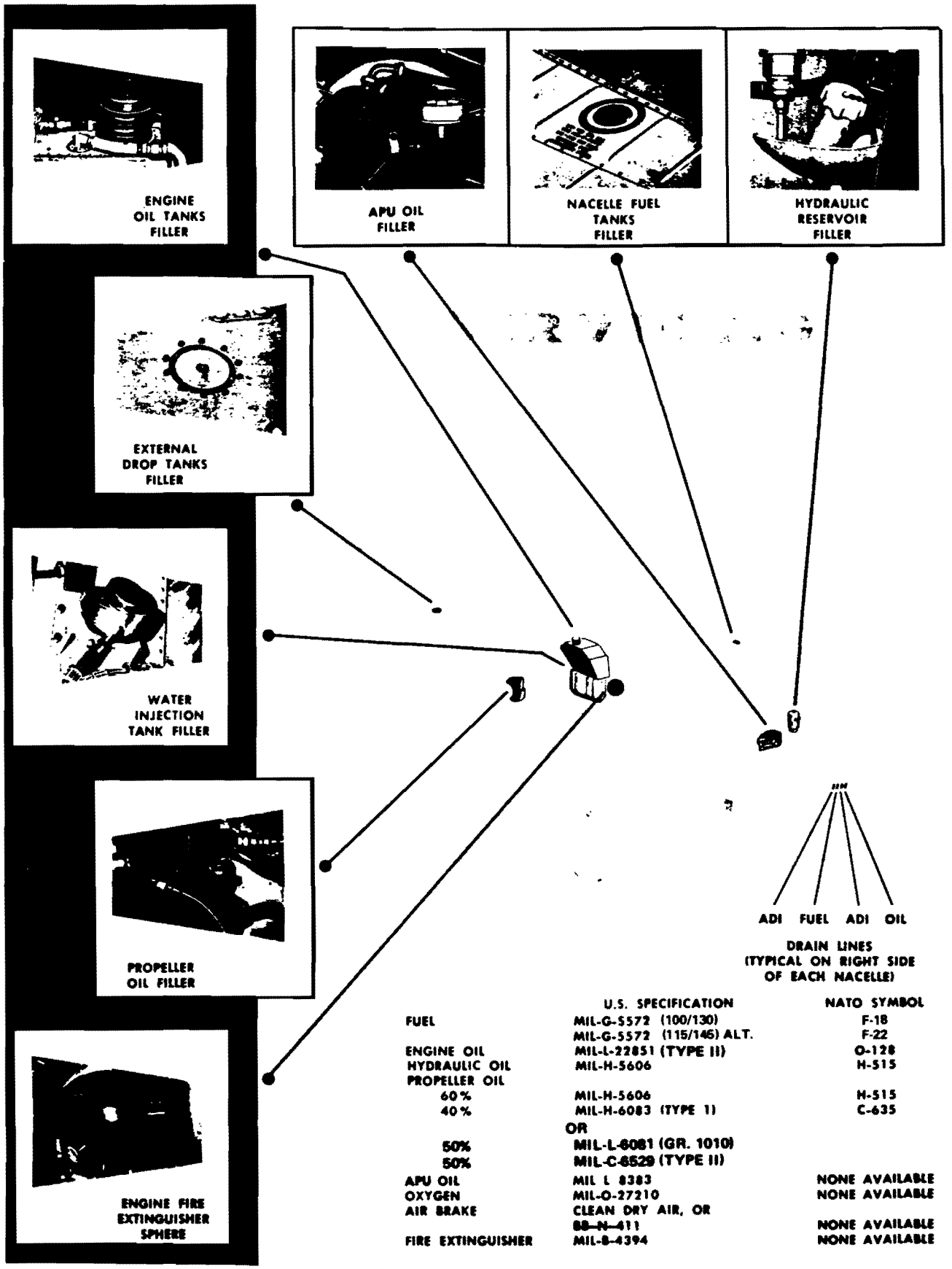
QUICK-RELEASE DOOR HANDLES.

Front Entrance Door Quick-release.

The front entrance door is equipped with a quick-release device for jettisoning during a ground emergency by releasing the hinge pins. The quick-release mechanism is operable from either the interior or exterior of the aircraft. The external release handle is located behind a suitably-placarded, hinged access panel adjacent to the door. The internal handle (figure 4-34), for the front entrance door is located either on the forward bulkhead of the cargo compartment or directly above the door.

Aft Troop Doors Quick-release.

Both aft troop doors are equipped with quick-release hinge pins for removing the doors prior to troop jumps or for jettisoning the doors during a ground or in-flight emergency. The quick-release mechanism (figure 3-13), is operable from the interior of the aircraft or may be operated from outside the aircraft after opening the placarded, hinged, access panel adjacent to the doors.



	U.S. SPECIFICATION	NATO SYMBOL
FUEL	MIL-G-5572 (100/130)	F-18
	MIL-G-5572 (115/145) ALT.	F-22
ENGINE OIL	MIL-L-22851 (TYPE II)	O-128
HYDRAULIC OIL	MIL-H-5606	H-515
PROPELLER OIL		
60%	MIL-H-5606	H-515
40%	MIL-H-6083 (TYPE 1)	C-635
	OR	
50%	MIL-L-6081 (GR. 1010)	
50%	MIL-C-6529 (TYPE II)	
APU OIL	MIL L 8383	NONE AVAILABLE
OXYGEN	MIL-O-27210	NONE AVAILABLE
AIR BRAKE	CLEAN DRY AIR, OR	
	68-N-411	NONE AVAILABLE
FIRE EXTINGUISHER	MIL-B-4394	NONE AVAILABLE

Figure 1-62. (Sheet 1 of 3)

	U.S. SPECIFICATION	NATO SYMBOL
WATER ALCOHOL		
ABOVE –50°F		
40% WATER* ± 5 60% ALCOHOL ± 5	O-M-232 (GRADE A)	S-747
ABOVE –30°F		
40% WATER* ± 5 60% ALCOHOL ± 5	MIL-A-6091	S-738

*Water should be distilled or chemically deenergized by adding 2/3% Oil-Emulsion Corrosion Preventive, MIL-C-4339, NATO C-630.

Note

Aircraft systems shall be drained when ambient temperatures below the recommended temperatures for the particular mixture are anticipated on the ground. If temperatures below those recommended are likely to be encountered in flight, drain the system or consume the entire amount on take-off and initial climb.

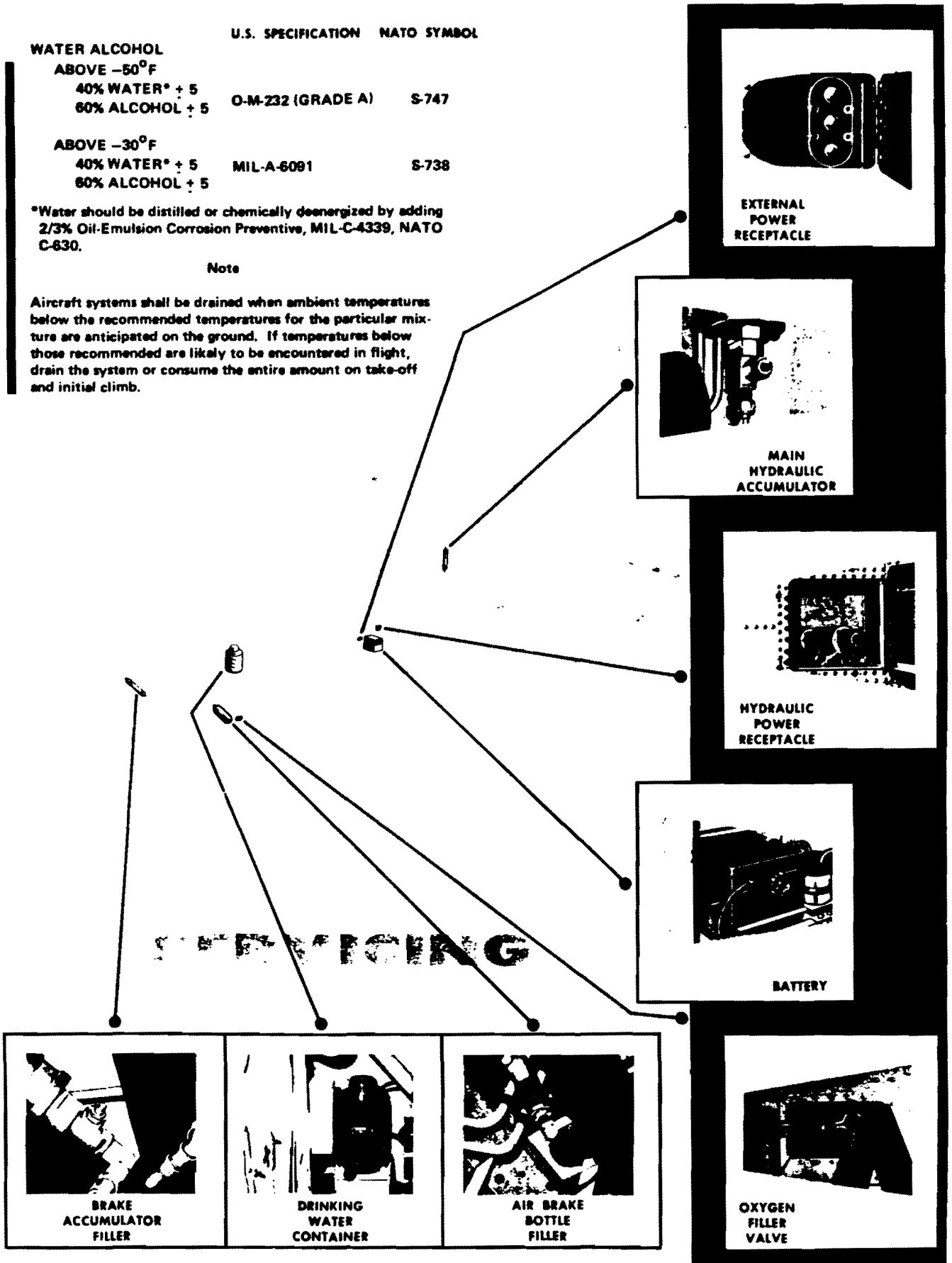
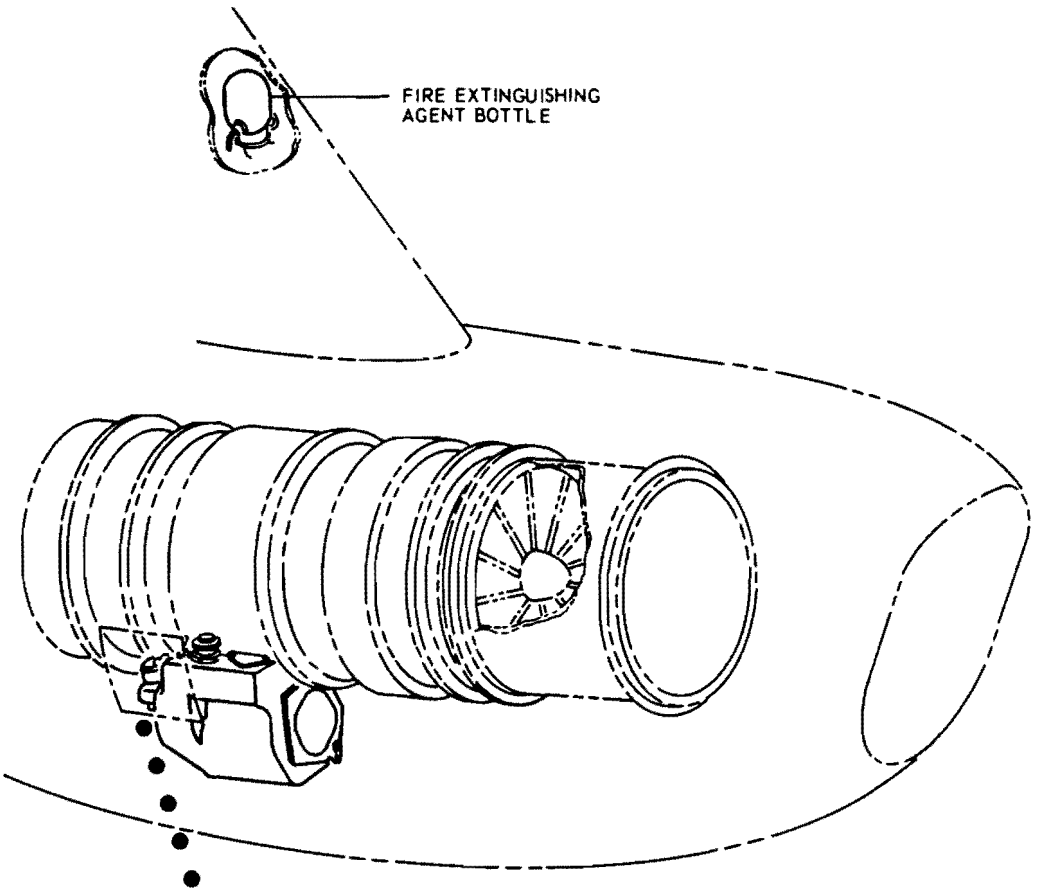
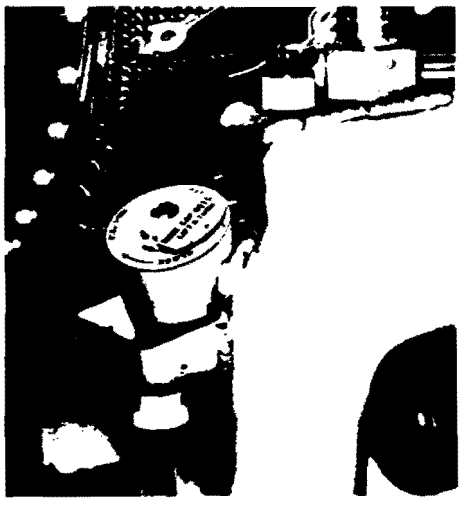


Figure 1-62. (Sheet 2 of 3)





JET ENGINE OIL FILLER

	U.S. SPECIFICATION	NATO SYMBOL
JET ENGINE OIL	MIL - L - 007808F	O - 148
FIRE EXTINGUISHER	MIL - B - 4394	NONE AVAILABLE

JET ENGINE SERVICING

Figure 1-62. (Sheet 3 of 3)

EMERGENCY ESCAPE WINDOWS.

The large side window at the pilot's and copilot's stations and the six side windows in the cargo compartment provide a means of escape during ground emergencies.

WARNING

The emergency exit windows should not be used for in-flight exits since injury to personnel bailing out may result; use of the emergency exit windows should be restricted to ground emergencies.

Crew Compartment Side Windows (Some Aircraft).

The side windows at both the pilot's and copilot's station is hinged at its forward edge and opens outward. These windows offer a means of emergency escape during a ground emergency. A stop chain is bolted between the upper forward inboard corner of the window and the crew compartment structure, allowing a wide outward swing of the window. A hook assembly is also located on the inboard side of the window. The assembly is swivel-mounted and may be used to hold the window open approximately six inches. A handle is provided on each window for opening and closing.

Crew Compartment Side Windows (Some Aircraft).

A sliding window is installed on each side of the crew compartment at the pilot's and copilot's stations. These windows may be utilized as emergency exits during a ground emergency. Each window, after being unlocked by the locking handle (figure 1-39 or 1-40), may be slid aft on its rollers to expose the window opening. A handle (figure 1-40), is also provided on each window to facilitate fore and aft movement of the window.

Cargo Compartment Side Windows.

Eight windows are installed in the cargo compartment; six forward, and two aft of the paratroop doors. The forward windows may be removed to provide a means of emergency exit from the aircraft to the ground. On aircraft AF 54-552 through 54-555, the aft windows may also be removed. Release of the windows is accomplished by pulling a yellow T-shaped handle or a leather strap secured to each filler strip. Refer to figure 3-13.

MISCELLANEOUS EMERGENCY EQUIPMENT.

The following miscellaneous emergency equipment is provided for use in the event an emergency condition should arise; pyrotechnic equipment, troop signal lights, equipment drop signal lights, ramp and door warning lights, alarm bells, emergency hand axes, and first aid kits.

PYROTECHNIC EQUIPMENT.

A pyrotechnic pistol and 12 signal flares (figure 1-40), may be fastened adjacent to each other to a bracket installed on the crew compartment floor behind the copilot's seat. A mount for holding the pistol in the firing position is located in the compartment structure above the copilot's seat in such manner that the pistol may be fired through the top of the fuselage.

TROOP SIGNAL LIGHTS.

Four sets of red and green troop signal lights are provided. One set (figure 1-4), is located on the pilot's control panel; one set is located adjacent to each aft troop door. The fourth set is located on the left side of the tail section. The set of lights on the pilot's control panel may be dimmed by means of the warning lights dimming switch. The lights can be dimmed in the cargo compartment and tail section by placing the cargo compartment lights master switch in the RED ONLY position. The dimming of the troop signal lights in the cargo compartment and tail section is to prevent the impairment of vision of troops during night drops and to reduce the possibility of enemy detection. If it is desired to have the lights dimmed and the cargo compartment blacked out, the red lights must be turned off at the cargo compartment lights switch box.

Troop Signal Lights Switch.

A three-position switch (figure 1-4), located on the pilot's control panel is provided to control operation of the troop signal lights. When the switch is placed in CAUTION, the red lights will illuminate. When moved to JUMP, the switch controls illumination of the green lights. In the OFF position the switch is inoperative. Power for operation of the troop signal system is directly from the battery.

EQUIPMENT DROP SIGNAL LIGHTS.

The equipment drop signal lights are used to control the in-flight dropping of equipment from the cargo compartment during normal as well as emergency conditions. Red and green signal lights are installed on a panel above the right aft troop door for the convenience of the cargo door and ramp operator.

Equipment Drop Signal Lights Switch.

An equipment drop signal switch (figure 1-4) on the pilots' control panel is used to control equipment drop operations. When the switch is placed in the CAUTION position, a red light above the right aft troop door will illuminate to signal the proximity of the drop zone. With the switch in DROP, the green light which is located beside the red one, will glow to indicate the drop zone has been reached. The center OFF position of the switch renders the system inoperative. Power for the equipment drop signal system is obtained directly from the battery.

RAMP AND DOOR WARNING LIGHT.

A red cargo door and ramp warning light on the copilot's instrument panel (figure 1-58 or 1-59) and one on the cargo door and ramp control panel (figure 4-29) will illuminate when the ramp and cargo door locks are not fully engaged. Power for the lights is obtained from the 28-volt dc primary bus.

ALARM BELLS.

An alarm bell (figure 4-34), mounted on the cargo compartment forward bulkhead is controlled from the pilot's control panel in the crew compartment. An additional bell is installed on the aft left side of the cargo compartment.

Alarm Bell Switch.

The alarm bell switch (figure 1-4), located on the pilot's control panel, controls the operation of the alarm bell. When in the ON position, the switch permits 28-volt dc power, obtained directly from the battery, through a circuit breaker on the Cowl Flap-Fire Emergency Relay panel, to energize the bells.

EMERGENCY HAND AXES.

Two emergency hand axes (figure 3-3), are located in the cargo compartment. One is located on the left side of the cargo compartment forward bulkhead; the other, on the right side of the cargo compartment rear bulkhead.

FLASHLIGHT HOLDERS.

Seven holders are provided for installation of flashlights in the event of electrical failure (figure 3-3). The holders are located, one at each ditching hatch, forward entrance door, emergency bail-out hatch and both aft troop doors.

FIRST AID KITS.

Six first aid kits (figure 3-3) are located in the cargo compartment. Four of these kits are on the left and right sides, and two are mounted on the forward face of the bulkhead at the aft end of the cargo ramp, one on the right and one on the left. The crew compartment first aid kit is mounted on the bulkhead to the rear of the pilot. Provisions are made also for the installation of six additional first aid kits in the cargo compartment.

ENTRANCE DOOR.

The front entrance door is located in the forward left side of the cargo compartment. This door is utilized for the normal entrance of personnel and for the loading of small cargo. The door, which is normally opened and closed by use of a handle (figure 4-34), opens outward and may be latched against the nose section in the open position. The front entrance door may be quickly jettisoned in an emergency. Refer to QUICK-RELEASE DOOR HANDLES, this section.

WARNING

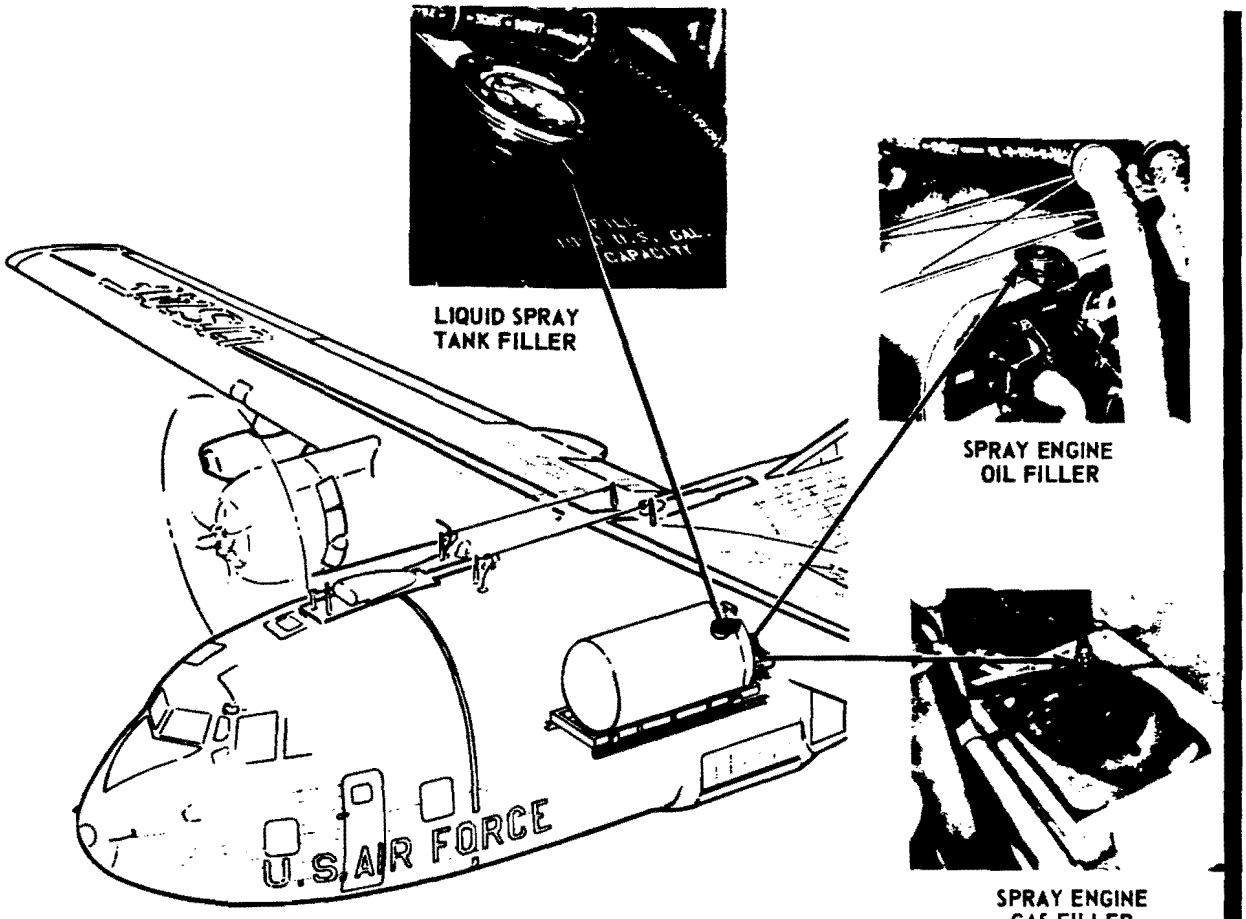
When left engine is running, this entrance should not be used because of its close proximity to the engine propeller.

SEATS.

The pilot's and copilot's seats are the long range type adjustable fore, aft, up, down and reclining. The pilot's seats may be adjusted laterally. These seats are equipped with safety belts and inertia reel shoulder harnesses. Fore and aft movement of each seat is controlled by an adjustment lever (figure 1-39), on the left side of the seat support. Vertical and reclining adjustments are controlled by levers (figure 1-39), on the right side of each seat. Lateral movement of the pilot's seat is controlled by the fore and aft lever. The seats have removable cushions to permit the use of back-type parachute and seat-survival kits. Refer to figures 1-39 and 1-40.

INERTIA REEL LOCK CONTROL.

An inertia reel (figures 1-39 or 1-40), mounted on the aft side of each seat will lock the shoulder harness either manually or automatically. With the inertia reel lock handle (figure 1-39) on the left side of the seat in the UNLOCKED position, the shoulder harness will be locked automatically upon any sudden aircraft and seat "g" load. To release the lock, depress the control lever knob and move the lever from the UNLOCKED to the LOCKED, and return to the UNLOCKED position. To lock the shoulder harness manually, depress the control lever knob and move the lever to its forward position.



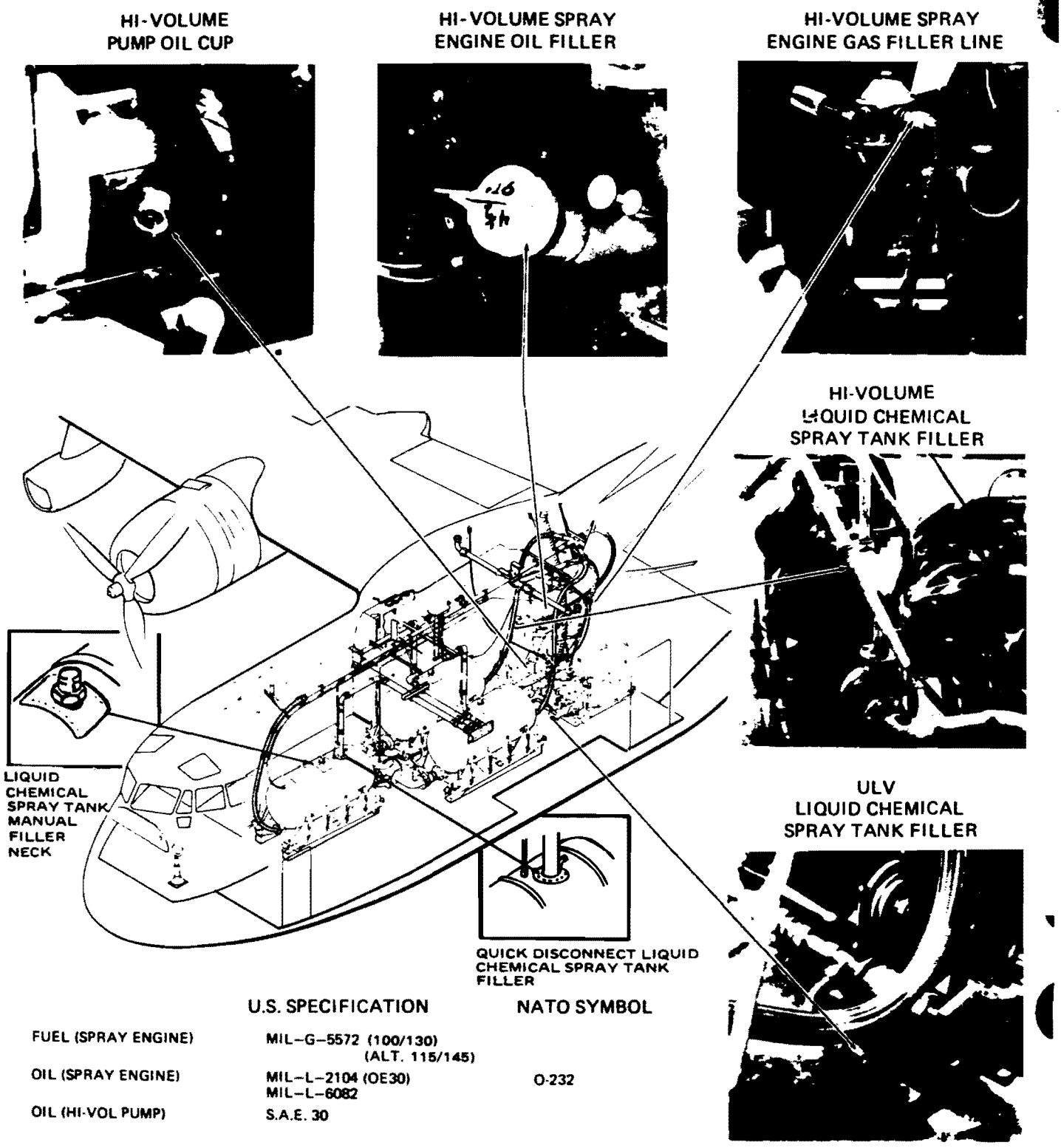
	U.S. SPECIFICATION	NATO SYMBOL
FUEL (SPRAY ENGINE)	MIL-G-3056 (80)	F-46
OIL (SPRAY ENGINE)	MIL-L-2104 (OE30) MIL-L-9000 (9250)	O-232 O-274

NOTE . . . THIS SERVICING INFORMATION SHOULD BE USED IN CONJUNCTION WITH THE SERVICING INFORMATION CONTAINED IN T.O. 1C-123K-1.

A/A45Y-1 SPRAY SYSTEM SERVICING (A)

Figure 1-63

IMPROVED PESTICIDE SPRAY SYSTEM Ⓑ SERVICING



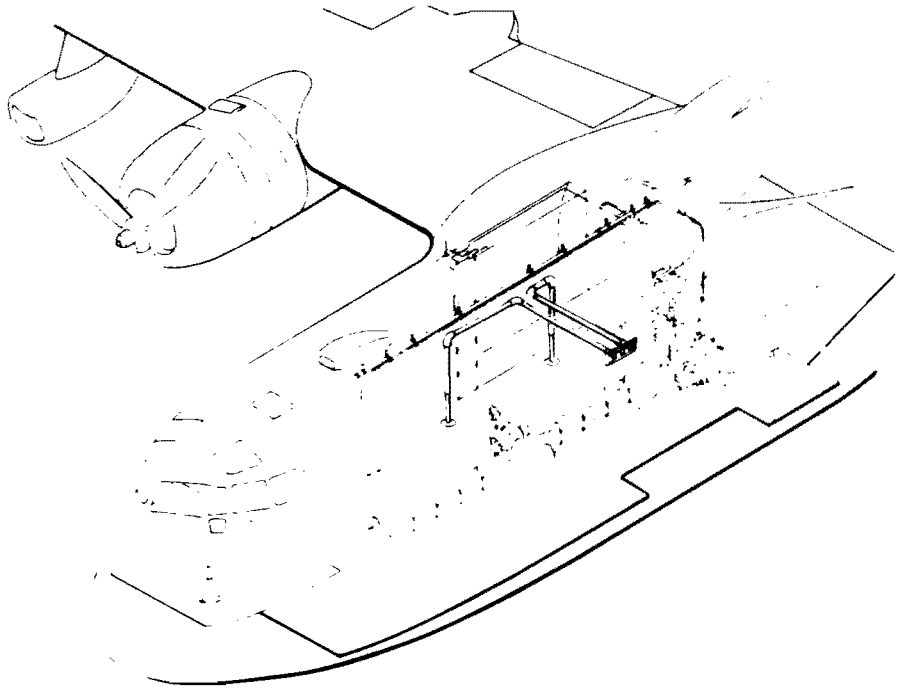
	U.S. SPECIFICATION	NATO SYMBOL
FUEL (SPRAY ENGINE)	MIL–G–5572 (100/130) (ALT. 115/145)	
OIL (SPRAY ENGINE)	MIL–L–2104 (OE30) MIL–L–6082	O-232
OIL (HI-VOL PUMP)	S.A.E. 30	

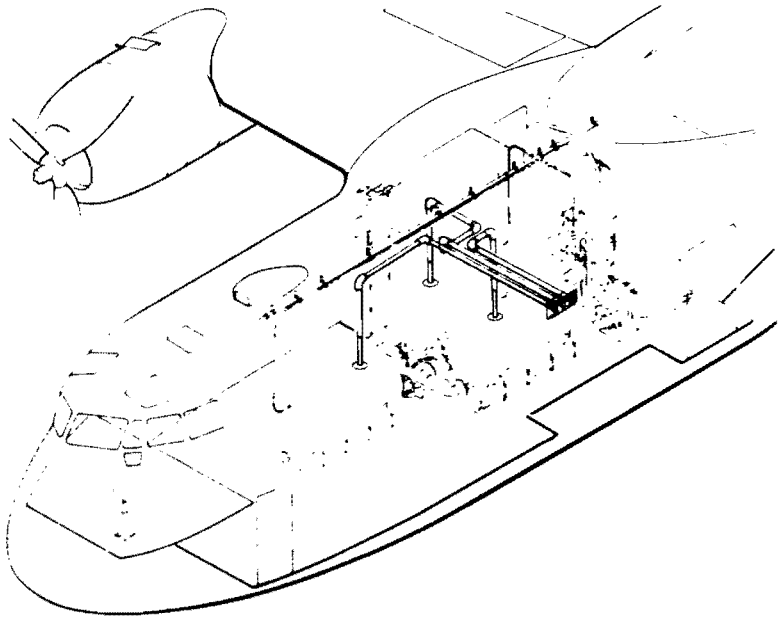
NOTE . . THIS SERVICING INFORMATION SHOULD BE USED IN CONJUNCTION WITH THE SERVICING INFORMATION CONTAINED IN T.O. 1C-1238-1 AND 1C-1238-2-1.

Figure 1-64

PESTICIDE SPRAY SYSTEMS CONFIGURATIONS – Ⓑ

TWO TANK SYSTEM





THREE TANK SYSTEM

Figure 1-65

SECTION II

NORMAL PROCEDURES

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PREPARATION FOR FLIGHT.

FLIGHT RESTRICTIONS.

For flight restrictions and limitations imposed on the aircraft, refer to Sections V, VI, and Appendix I of this manual.

FLIGHT PLANNING.

Determine the supply of fuel, airspeed, power settings, etc., necessary for the successful completion of the proposed mission by using performance data contained in Appendix 1 of this manual.

TAKE-OFF AND LANDING DATA CARD.

Complete the Take-off and Landing Data Card contained in the Pilot's/Flight Mechanic's Flight Crew Checklist. Completion of the TOLD Card is not required after initial take-off during a transition flight in which landings are being practiced. The Landing Data section will be accomplished prior to the first landing of a mission or prior to accomplishing any landing away from the departure base.

WEIGHT AND BALANCE.

Obtain take-off gross weight and loading data. From this and flight information, calculate anticipated landing gross weight and balance. Weight limitations are covered in Section V of this manual. Refer to T.O. 1-1B-40 Technical Manual Weight and Balance Data for detailed loading information. A load adjuster slide rule (balance computer) provided with the aircraft supplements the data which may be obtained from the above mentioned sources. It is the responsibility of the pilot to ascertain that the required payload has been properly loaded, and that Form 365F is current and correct.

CHECKLISTS.

Most of the information contained in Section II is presented in the form of checklists, and is arranged in normal chronological sequence with appropriate headings designating the various phases of action involved in a normal flight. The amplified checklists in Sections II and III of this manual are complete with Notes, Cautions, Warnings, as well as explanatory text related to individual steps of procedures. Flight Crew checklists are issued as separate technical orders (T.O. 1C-123K-1CL-1, etc.). The capital letter symbols (P, CP, FM) following the initial checklist entry indicates the crew member primarily responsible for the action to be taken. Responsibility for items marked (LM) and (N) will normally be delegated to the loadmaster or navigator when these crew members are aboard. The pilot is responsible for the proper use of the checklists. The pilot may delegate to the copilot or flight mechanic the accomplishment of the BEFORE EXTERIOR, EXTERIOR, and INTERIOR INSPECTIONS. The BEFORE TAKE-OFF CHECKLIST and ASSAULT AFTER LANDING CHECKLIST may be delegated to the copilot and accomplished prior to the ENGINE RUN-UP when an established run-up area is not available. The flight mechanic will read the AFTER TAKEOFF/CLIMB, CRUISE, DESCENT, BEFORE LANDING and AFTER LANDING checklists. The reading of the checklist and action items marked for the flight mechanic may be delegated to the copilot when mission requirements make it impracticable for the flight mechanic to accomplish said duty.

The copilot will be responsible for reading all other checklists.

Accomplishment of each item by other than the reader will be indicated by the proper response. If no response is given for a particular item, stop and demand a response before continuing. Upon completion of each checklist phase, the reader will advise the pilot that the checklist phase called for has been completed. Certain items in the checklists accomplished by the copilot or flight mechanic require coordination with the pilot; however, only the pilot is responsible for responding to the checklist challenge. These items are indicated by a circle around the number of the item (e.g. (1)). Procedures outlined in the checklists must be performed in the prescribed manner except where deviations are required in the interest of flying safety. Direct reference to the checklist is mandatory except during take-off, climb, landing, go-around and critical emergencies.

NOTE

- The response to "as required" items will be the switch or control position for the prevailing conditions.
- If the pilot pre-briefs that the use of specialized equipment (aircraft lighting, APU, heating, anti-icing and deicing equipment, etc.) is not a requirement of the mission, these items will not be considered to be challenge and response checklist items during that mission segment. The crew member responsible for reading the checklist will silently check these items.
- Checklist items may be omitted for equipment not installed in the aircraft.
- At the discretion of the pilot, the CRUISE CHECKLIST may be omitted if the flight is of short duration.

CLOSED PATTERN PROCEDURE.

When the aircraft remains in the traffic pattern for a series of landings, the cruise and descent checks may be omitted. The auxiliary hydraulic pump may remain in AUTO, fuel boost pumps may remain in the HI position, the drop tank air pumps left ON, and oil temperatures in the AUTO position. The following minimum items must be briefed prior to each landing: Flap setting, airspeeds, go-around, and emergency intentions.

Thru-flight Inspection.

Thru-flight inspection will be accomplished prior to take-off at intermediate stops when the aircraft is flown by the same flight crew on the same day and no maintenance has been performed. This inspection consists of those items marked by an asterisk under all phases accomplished prior to BEFORE TAKE-OFF. All items included in BEFORE TAKE-OFF and subsequent phases will be accomplished on every flight. Inspection items not included in the thru-flight inspection requirements may be checked at the discretion of the flight crew. When the engines are not shut down, aircrews may proceed from the AFTER LANDING check to the BEFORE TAKE-OFF Checklist or from the ASSAULT AFTER LANDING to the ASSAULT BEFORE TAKE-OFF Checklist. At intermediate

stops, except for refueling stops, when engines are shut down TOP of AIRCRAFT on the EXTERIOR INSPECTION may be omitted at the discretion of the pilot.

PREFLIGHT CHECKS.

The preflight checks which must be accomplished prior to flight are BEFORE EXTERIOR INSPECTION, EXTERIOR INSPECTION, and INTERIOR INSPECTION. The aircrew visual inspection procedures outlined in this section are predicated on the assumption that maintenance personnel have completed all the requirements of the Aircraft Scheduled Inspection and Maintenance Requirements, T.O. 1C-123B-6, for preflight. Therefore, duplicate inspections and operational checks of systems by aircrew members have been eliminated except for certain items required in the interest of flying safety.

BEFORE EXTERIOR INSPECTION.

The Before Exterior Inspection will be accomplished as follows:

* 1. Fire extinguisher, ground wire(s) and wheel chocks - In place.

* 2. Forms 781, 365F and publications - Checked.

Check that the "G" file and applicable flight information publications are aboard.

* 3. Landing gear pins - Installed.

* 4. APU oil quantity - Checked.

* 5. Landing gear lever - DOWN.

CAUTION

The landing gear lever shall be kept in the DOWN position during all ground operation.

6. Jet anti-ice - OFF

7. Windshield heat - OFF.

8. Alarm bell - Checked.

9. Propeller deice - OFF.

*10. Ignition - OFF.

11. Jet start switches - OFF.

12. Drop tank jettison - Safetied.

13. Nacelle tank jettison - Safetied.

14. Fire handles - IN.

*15. Battery - ON.

16. Heating system valve check - As required.

*17. APU - START - IDLE.

Refer to section IV for APU operating procedure.

*18. Landing gear position indicators - Checked.

*19. Fire detector systems - Checked.

a. Fire detector loop test switch - LOOP 1/LOOP 2. Check that both fire handle lights and master fire warning light illuminate.

b. APU fire detector warning light button - Press to test. Check that the APU fire warning and master fire warning light illuminate.

NOTE

If any light will not illuminate, corrective action must be taken prior to engine start.

NOTE

When testing the fire detector system, allow at least 15 seconds for warning lights to illuminate. This permits sufficient time for complete energization of the test system.

c. Left jet test switch, right jet test switch - Press to test.
Check that the left jet fire warning, right jet fire warning, and master fire warning lights illuminate.

NOTE

The jet fire warning lights should illuminate immediately.

20. Fire extinguisher switches - Safetied.

21. APU - RUN, generator - ON.

22. Single phase inverter - SPARE.

23. Cowl flaps - OPEN.

    On the first flight of the day, place the cowl flap switches to TAKE-OFF, CLOSED, TAKE-OFF, then OPEN. Check flap position visually.

*24. Oil temperature - COLD.

*25. Carb air - COLD.

26. Superchargers - LOW.

27. Water injection - OFF.

*28. Parking brakes - SET.

29. Compass slaving - IN.

30. Propeller replenish - OFF.

31. Three-phase inverters - Checked and OFF.

    On AF 54-565 through 54-706 aircraft, employ the following checking procedure:

    a. Copilot's three-phase inverter switch - SPARE.

    b. Check that copilot's attitude indicator warning flag disappear.

    c. Pilot's three-phase inverter switch - SPARE.

    d. Check that copilot's attitude indicator warning flag reappears, the copilot's warning light glows, and the warning flag of pilot's attitude indicator disappears.

    e. Pilot's and copilot's three-phase inverter switches - ON.

    On AF 54-707 and subsequent aircraft, employ the following checking procedure:

    a. Pilot's three-phase inverter switch MANUAL OVERRIDE.

    b. Check that the pilot's warning light goes out and the spare inverter light illuminates.

    c. Pilot's and copilot's three-phase inverter switches - ON.

    d. After a warm-up period (approximately 60 seconds), check that all warning lights are out and the warning flags of the copilot's heading indicators disappear.

    e. Copilot's automatic changeover test switch - TEST (hold for four seconds).

    f. Check that the spare inverter light illuminates and that the copilot's warning light goes out.

    g. Pilot's automatic changeover test switch - TEST (hold for four seconds).

    h. Check that the pilot's and copilot's warning lights are out, the spare inverter light is illuminated, the warning flags of the pilot's and copilot's heading indicators disappear.

    i. Pilot's automatic changeover test switch - TEST (hold for four seconds).

    j. Check that the spare inverter light and both warning lights are out and that the warning flags of the pilot's and copilot's heading indicators disappear.

32. Pilot's attitude indicator - OFF.

*33. Anti-skid - OFF.

34. Reciprocating generators - ON.

35. Jet generators - OFF.

36. Secondary bus - As required.

*37. Circuit breakers - Checked.

*38 POSITION lights - BRIGHT/FLASH/Checked.

*39. Anti-collision lights - ON/Checked/OFF.

40. Pitot heat - OFF.

41. Heaters - OFF.

42. Windshield wipers - OFF.

*43. Aux hydraulic pump - ON/Checked/OFF.

44. Drop tank air pumps - OFF.

45. Fuel shutoff valves - OPEN.

46. Fuel quantity - Checked.

Depress the fuel quantity test buttons, hold until pointer drops, release test button, indicators should return to original setting.

47. Single phase inverter - OFF.

48. Warning lights - Checked.

49. Trim - Zero.

*50. Electrical power - As required.

WARNING

Aircraft will not be left unattended with power on or APU in operation.

EXTERIOR INSPECTION.

Accomplish the Exterior Inspection in accordance with Figure 2-1.

INTERIOR INSPECTION.

Cargo Compartment (Left Side).

1. Entrance door emergency release handle - Safetied.

* 2. Cargo and equipment - Secured.

Proper stowage of load assist pulley, static line retrievers when not to be used, and similar loose equipment.

3. First aid kits - Stowed.

* 4. Litter posts - Secured.

5. Cargo compartment thermostat - Free of obstructions.

6. Remote compass emergency power - Single-phase NORMAL.

* 7. Left wheel well circuit breakers - In.

Panels and covers secured in place.

8. Left main landing gear - Checked.

General condition of landing gear mechanism.

9. Electrical equipment above left wheel well - Checked.

General condition and security of mounting.

10. IFF controls - As required.

Mode 2 set or zeroed.

11. Airborne loudspeaker - Secured.

12. Left main landing gear uplock release Checked.

*13. Left troop door - Checked.

a. Hinged pins seated.

b. Emergency release handle safetied.

c. Door opens easily without obstruction.

d. Door handle unlocked from outside.

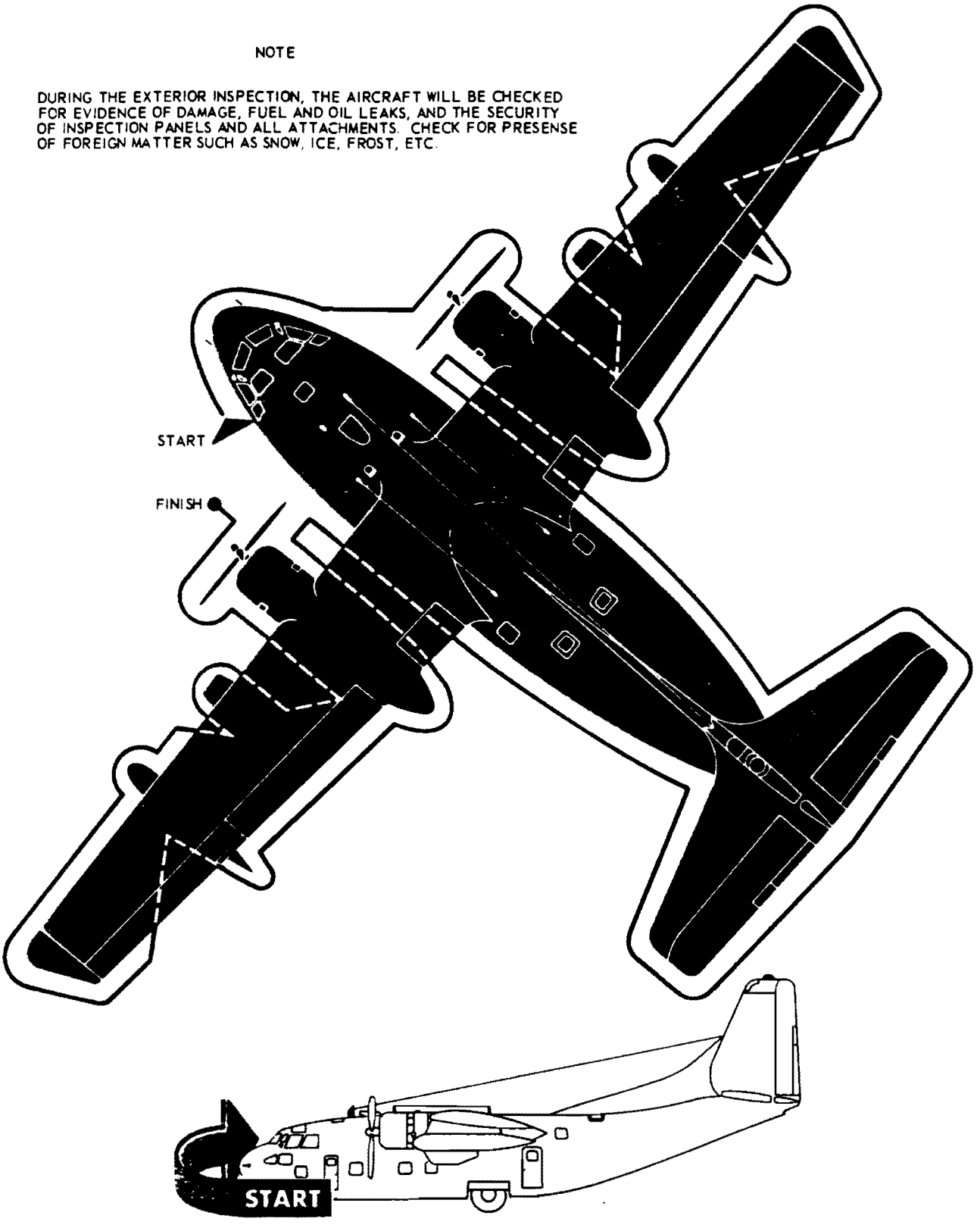
e. Door handle will secure closed.

f. Door fits properly.

14. Aileron deicing system manual shutoff valve - CLOSED.

NOTE

DURING THE EXTERIOR INSPECTION, THE AIRCRAFT WILL BE CHECKED FOR EVIDENCE OF DAMAGE, FUEL AND OIL LEAKS, AND THE SECURITY OF INSPECTION PANELS AND ALL ATTACHMENTS. CHECK FOR PRESENSE OF FOREIGN MATTER SUCH AS SNOW, ICE, FROST, ETC.



EXTERIOR INSPECTION

Figure 2-1 (Sheet 1 of 2)

1. FRONT ENTRANCE DOOR HINGE – CHECKED.

   Hinge mechanism checked for proper position.

2. LEFT STATIC PORT – CHECKED.

   Free from damage and obstructions.

* 3. PITOT COVERS – REMOVED.

* 4. NOSE LANDING GEAR – CHECKED.

   a. Tires, strut (approximately 7-1/2 inches), servicing and leaks.

   b. Pip pins installed.

5. RIGHT STATIC PORT – CHECKED.

   Free from damage and obstructions.

* 6. BAILOUT HATCH COVER – SECURED.

* 7. RIGHT PROPELLER – CHECKED.

   a. Blades and propeller assembly free from damage.

   b. Oil control unit and propeller dome for security of mounting.

   c. Auxiliary oil pump grounding wire for security.

* 8. OUTBOARD SIDE OF RIGHT ENGINE – CHECKED.

   a. Engine cowling secured.

   b. Cowl flaps secured.

   c. Evidence of fuel, oil and hydraulic leaks.

* 9. OIL COOLER AND EXIT DOOR – CHECKED.

*10. RIGHT JET ENGINE – CHECKED.

   a. Engine pod and pylon secured.

   b. Access doors secured.

   c. Oil quantity - Checked.

   d. Evidence of fuel and oil leaks.

   e. Fire extinguisher discharge indicators checked.

*11. RIGHT WING – CHECKED.

   Control surfaces, wing flaps and deicer boots checked for evidence of cracks and tears. Landing light cover - Cracks, general security, pylon secured. Check spray booms and lines for security and leaks if installed.

WARNING

Take-off should not be attempted if there is any evidence of damage to the landing light cover, as loss of cover in flight will result in severe control problems.

*12. INBOARD SIDE OF RIGHT ENGINE – CHECKED.

   a. Same as outboard side.

   b. Fire extinguisher discharge indicators checked.

*13. RIGHT MAIN LANDING GEAR – CHECKED.

   a. General condition of tire and mounting.

   b. Pip pins installed.

   c. Chocks in place

   d. Strut, service, leaks, brakes

*14. STABILIZER, ELEVATOR, AND RUDDER – CHECKED.

   a. Trim tabs and spring tabs neutral.

NOTE

Check aft spray boom for security and leaks if installed.

*15. LEFT SIDE OF AIRCRAFT – CHECKED.

   Inspection of left side same as right side; however, procedure is reversed, working from tail to nose.

   a. Aileron trim tab neutral (on left side only).

*16. TOP OF AIRCRAFT – CHECKED.

   a. Antennas.

   b. Top of engines.

   c. Servicing - Checked.

   The flight mechanic will visually check that the aircraft has been serviced with the proper quantities of fuel, oil, and oxygen, and the top of the wing is clear with all fuel and oil caps secured. If the ground maintenance crew has performed the maintenance dash six inspection, the flight mechanic will not be required to check the propeller oil and ADI levels.

   d. Top hatch - Closed.

Figure 2-1 (Sheet 2 of 2)

15. First aid kits - Stowed.

16. Ditching hatches and ladders (left and right) - Checked.

*17. Cargo ramp and door - Checked.

a. Left and right locking pins.

b. Left and right release handle.

c. Left and right ramp positioning links installed or stowed.

d. Cargo door emergency release closed and safetied.

18. Paratroop anchor cables - Checked.

*19. Maintenance ladder - Secured.

Cargo Compartment (Right Side).

1. Windshield heat circuit breakers - Checked.

2. Emergency hand axe - Stowed.

3. First aid kits - Stowed.

4. Cargo ramp and door control panel - Checked.

Handles in NORMAL.

5. Fire extinguisher - Checked.

* 6. Right troop door - Checked.

a. Hinge pins seated.

b. Emergency release handle safetied.

c. Door opens easily without obstruction.

d. Door handle unlocked from outside.

e. Door handle will secure closed.

f. Door fits properly.

7. Right main landing gear uplock release - Checked.

8. Main hydraulic accumulator pressure - Checked (1000 psi minimum).

9. Aux hydraulic pump - Checked.

10. Elevator and rudder reverse lock release valve - Normal (down).

11. Hydraulic air pressure valve - RES. PRESS.

12. Landing gear controllable check valve - NORMAL and safetied.

13. Right main landing gear - Checked.

General condition of gear mechanism.

14. APU manual fuel bypass valve - CLOSED.

*15. Right wheel well circuit breakers - In.

Panels and covers secured in place.

*16. Jet engine junction box circuit breakers - In.

17. Ground blower relay junction box circuit breakers - In.

*18. Litter posts - Secured.

19. First aid kits - Stowed.

20. Aileron deicing junction box circuit breakers - In.

21. Heaters for evidence of leaks and overheat condition - Checked.

Forward Bulkhead.

1. Radio compartment - Checked.

Equipment general condition and security of mounting.

2. Ignition analyzer - OFF.

3. Fire extinguisher - Checked.

4. Navigator's seat, table and equipment - Stowed.

5. Nose landing gear emergency downlock and uplock releases - Secured.

6. Landing gear emergency handcrank - Stowed.

7. Emergency hand axe - Stowed.

8. Paratroop anchor cables - Checked.

9. AC radio junction box circuit breakers - In (if installed.)

10. Driftmeter - Retracted, caged and off.

11. Oxygen compartment - Checked.

    a. General condition and security of mounting of oxygen bottles and lines.

    b. Free of oily or greasy rags, ropes, etc.

*12. Emergency air brake pressure - Checked. (1600 -2000 psi).

BEFORE STARTING RECIPROCATING ENGINES.

The pilot will insure that the PREFLIGHT CHECKS have been completed.

1. Crew briefing - Completed. P

2. Passenger briefing - Completed. P

* 3. Electrical power - ON. CP

Engine starts can be made either with APU or external power. If external power is not available, the APU will be started with the battery switch in the ON position. If external power is used, battery switch should be OFF. If APU is being used for engine start, place APU throttle to RUN and APU generator switch ON.

CAUTION

Check that the electrical power from the external power source is of the correct polarity. This may be accomplished by placing the dc voltmeter selector switch to PRI BUS and observing that the voltmeter correctly indicates the voltage output of the external power unit. If this precaution is not heeded and a reverse polarity condition exists, extensive damage to electrical equipment will result.

4. Oxygen - Checked. ALL

Check emergency valve, knurled collar and hose, flow indicators, system pressure. Mask attached, if required.

* 5. Seats, rudder pedals, safety belts, and harnesses - Adjusted. P, CP

* 6. Radios - As required. P

Turn on one radio channeled to the control tower frequency in tne event an emergency should arise during engine starting.

* 7. Oil temperature - AUTO. P

* 8. Carb air - COLD. P

* 9. Parking brake - Set. P

Brakes will not set until hydraulic pressure is available.

*10. Aileron deice pump - ON. CP

*11. AUXILIARY HYD PUMP - Checked. P

    a. AUTO until pressure switch setting is reached (approximately 1400 psi).

    b. MANUAL until pump relief valve setting is reached (Note audible pitch change of pump motor at approximately 1500 psi).

    c. Switch OFF.

*12. Propellers - INCREASE. P

*13. Mixtures - OFF. P

*14. Angle of attack/stall warning - Checked. P

    a. Test light - Press to test.

    b. Test switch to ANGLE OF ATTACK.

    Check indicator pointer is at 2.4 ± 0.1 in the cruise range. Throttles must be closed for this check.

    c. Open throttles approximately three inches.

    Check indicator pointer at 3 ± 0.1 in the cruise range. Set throttles to 3/4 inch open.

d. Test switch to STALL WARNING until the control column shaker actuates. Return switch to OFF.

WARNING

The angle of attack/stall warning system must be in calibration and functioning properly before take-off, if assault take-offs, landings, or maximum performance in-flight maneuvers are to be made when this system is used as the primary reference.

*15. Field barometric pressure - Checked. P

The pressure noted at this time will be used to determine engine performance during ignition system and power checks.

*16. Radio call - Completed. CP

Obtain taxi clearance, altimeter setting and etc.

*17. Anti-collision/Position Lights - ON/STEADY. P.

*18. BEFORE STARTING RECIPROCATING ENGINES Checklist - Completed. CP.

STARTING RECIPROCATING ENGINES.

Normally the right engine will be started first. The following procedure shall be employed in starting the engines.

* 1. Propellers - Clear, fire guard posted. P, CP

* 2. Right engine - Start. P, CP

a. Control lock throttle stop - Positioned. Position the flight control throttle stop red tab to allow full travel of the appropriate throttle during starting in the event of induction fire.

b. Boost pump - LO.

c. Start switch - START.

CAUTION

Motor engine eight blades to check for liquid lock. If engine has been shut down in excess of one hour, motor 15 blades to insure adequate reduction gear lubrication.

CAUTION

Do not crank the engine longer than one minute to avoid overheating the starter. Allow the starter to cool for at least one minute after each minute of cranking.

d. Ignition - BOTH.

e. Prime - As required.

Prime intermittently if engine is warm; continuously, if cold.

NOTE

The hot fuel prime system should be used when free air temperature is below 32° F (0° C). Refer to COLD WEATHER PROCEDURES, Section IX, T.O. 1C-123K-1.

CAUTION

Do not use the mixture lever to prime the engine.

f. Single-phase inverter - MAIN.

The single-phase inverter should be positioned to MAIN immediately after the engine is running in order to check oil pressure.

g. Oil pressure - Checked.

CAUTION

If oil pressure does not register almost immediately (within 30 seconds below 0° C), stop engine and investigate.

h. Mixture - RICH, after engine is running smoothly on prime.

CAUTION

The mixture lever should be moved smoothly at all times. An engine tending to become "overloaded" may often be saved by placing the mixture lever back in OFF and, without hesitating, returning the mixture lever to RICH.

i. Prime switch - Released, after 100 rpm decrease.

CAUTION

Transition from prime to carburetor operation should be made before disengaging prime, to prevent backfire.

j. Throttle - 800 - 1000 rpm.

k. Boost pump - OFF.

l. Fuel pressure - Checked (21 to 23 psi).

3. Right hydraulic pump, wing flaps - Checked. P

a. Check wing flap indicator for proper wing flap settings at the TAKE-OFF and LAND positions. Refer to Section I for wing flap static tolerances.

b. Return the wing flap handle to the UP position.

NOTE

A properly functioning hydraulic pump will restore hydraulic pressure to the normal operating range when the wing flaps are extended and raised. Wing flaps will be permitted to travel to selected position prior to reversing direction of the wing flap mechanism.

* 4. Start the left engine repeating steps 1 and 2.

* 5. STARTING RECIPROCATING ENGINES Checklist - Completed. CP

RECIPROCATING ENGINE GROUND OPERATION.

The aircraft engine should always be warmed up on the ground until a minimum oil temperature of 40°C is obtained. As soon as the engine is started, oil pressure permitting and hydraulic pump having been checked, the throttle should be adjusted to smoothest speed, approximately 1000 rpm.

CAUTION

Under normal conditions do not exceed 1000 rpm until oil temperature reaches 40°C. In order to expedite the completion of the checklist or to reduce the time to attain minimum oil temperature, a maximum of 1200 rpm may be used providing a definite rise in oil temperature has been noted.

CAUTION

Do not attempt to warm-up engines more quickly by closing cowl flaps, as damage to ignition wiring or excessive cylinder head temperatures may result.

The ground operation of each engine must be held to a minimum. Engines should be run only when it is necessary to perform the required checks and should be shut down if running unnecessarily during a prolonged check of another engine. Head the aircraft into the wind when ground operation for an extended period of time is anticipated. Prolonged periods of idling may lead to fouling of the spark plugs. Refer to SPARK PLUG FOULING, Section VII.

CAUTION

Do not exceed 232°C cylinder head temperature for ground operation.

ENGINE WARM-UP.

* 1. Temperatures and pressures - Checked. P

Check that temperatures and pressures are moving toward operating range.

NOTE

If oil dilution has been performed since previous flight, refer to Section IX for WARM-UP procedure.

* 2. External power - Removed, battery ON. CP (if used for engine start).

* (3.) Wheel chocks - Removed. FM

* 4. APU generator - OFF, engine IDLE. CP, FM (if used for engine start).

* 5. Three-phase inverters - ON. P, CP

* 6. Pilot's attitude indicator - ON. P

* 7. Radio altimeter - ON/Set. P

* 9. VOR/TACAN or UHF/DF switch — VOR/TACAN. CP

10. Manifold pressure purge - Completed. P

a. Set power at 1000 rpm.

b. Depress purge valve and hold for approximately 10 seconds noting that manifold pressure increases to approximately field barometric pressure. Release purge valves and note that manifold pressure returns to previous setting.

CAUTION

- Do not operate purge valves except when engines are at 1000 rpm or below, or when the manifold pressure is less than atmospheric pressure. This low manifold pressure will allow the moisture or foreign matter in the lines to be drawn into the engine.
- If the manifold purge valve is depressed while manifold pressure is greater than atmospheric pressure, a fuel-air mixture will be blown into the cockpit through the purge lines.

11. Ignition switch safety - Checked. P, CP

a. Throttles - 1000 rpm.

b. Switch No. 2 engine ignition from BOTH to LEFT, to RIGHT, to OFF (momentarily), to BOTH.

c. A slight drop in rpm when operating on each separate magneto and a complete cutting out of the engine at the OFF position indicates proper connection of the ignition leads.

d. Repeat above procedure for No. 1 engine.

*12. Drop tank pumps - ON until lights go out, then OFF. P

NOTE

To prevent corrosion of the drop tank air pumps, the pumps should be exercised by operating at least five minutes prior to the first flight of the day. When the tanks are serviced, a fuel transfer check shall be accomplished on each flight. (Refer to FUEL TRANSFER CHECK, Section VII).

*13. Flight emergency bus relay - Checked. P

a. Battery - OFF.

b. Check that the attitude warning flag of the pilot's attitude indicator does not appear or the landing gear indicators do not go to the unlocked position. If these systems show loss of power, a malfunction of the flight emergency bus relay is indicated. Do not take off. Investigate the cause and correct.

c. Battery - ON.

*14. AUXILIARY HYD PUMP - AUTO. P

*15. Alarm bell - Checked. P

*16. Flight controls - UNLOCKED. P

Unlocked and checked for freedom of movement.

17. Propeller reverse - Checked. P

CAUTION

Do not operate with propellers in reverse pitch for an extended period since the engine cylinder head temperature indicators will not give a true indication and extreme temperatures may result.

a. Propeller levers - INCREASE RPM.

b. Throttles - CLOSED.

c. Raise throttles over the reverse stops and apply power with a steady aft movement until 1000 rpm reverse thrust power is obtained. Observe illumination of propeller reverse pitch indicator lights.

d. Check throttle synchronization in reverse range.

e. Advance right throttle into forward thrust (1000 rpm) observing tachometer for a decrease, then an increase. Observe that right propeller reverse pitch indicating light is out.

f. Advance left throttle into forward thrust (1000 rpm) observing tachometer for a decrease, then an increase. Observe that left propeller reverse pitch indicating light is out.

CAUTION

RPM increase on a tachometer when advancing the opposite throttle indicates that the right and left engine wiring is reversed at the propeller reverse control boxes.

NOTE

Allow sufficient time for the auxiliary oil pump motor to deenergize in order that the individual loadmeter decrease can be noted after return to forward thrust. If a decrease is not noted, auxiliary oil pump motor is not wired to reverse circuit.

g. Elevator and rudder reverse locks - Checked.

*18. Altimeters and flight instruments - Set and checked. P, CP, N.

On AF54-565 thru 55-4577 aircraft, the pilot, copilot, and navigator will state their respective altimeter setting and uncage their flight instruments.

On AF 56-4355 and subsequent aircraft, the following check should be made by the pilot.

a. Rotate the pitch-trim knob fully clockwise. Horizon bar should rise at least one inch above the centered position.

b. Rotate pitch-trim knob fully counterclockwise. Horizon bar should descend at least one-half inch below the centered position.

c. Set pitch-trim knob to align miniature aircraft one half bar width below the horizon bar.

Local barometric pressure should be set into the altimeter at field elevation using the baroset knob on front of the altimeter. A field elevation check should be made after barosetting. Each altimeter should agree within ±75 feet of each indicator and field elevation. If errors exceed these limits, discontinue operation until the altimeter is re-zeroed or replaced by the appropriate personnel.

CAUTION

During normal use of the baroset knob, momentary locking of the barocounters may be experienced. If this occurs do not force the setting. Application of force may cause internal gear disengagement and result in excessive altitude errors. If locking occurs, the required setting may sometimes be established by rotating the knob a full turn in the opposite direction and approaching the setting again with caution.

Pilot, copilot, and navigator will state their respective altimeter setting and the copilot will uncage his flight instruments. The pilot's gyro instruments do not require manual uncaging.

WARNING

It is possible to mis-set the altimeter by 10,000 feet and still have the correct indication on the barometric scale. This happens when the barometric set knob is continuously rotated after the barometric scale is out of view until eventually the numbers reappear in the window. If the correct altimeter setting is then established, the altimeter will read 10,000 feet in error. To avoid the posibility of this error, pay particular attention to the ten-thousand foot pointer when setting the altimeter.

*19. Ramp and troop dooors - CLOSED. FM(LM)

Aft troop doors and cargo ramp will be kept closed at all times the aircraft is in motion, except when the requirements of the mission dictate otherwise.

CAUTION

Assure cargo door and ramp areas are clear prior to closing.

*20. Troop signal lights - CAUTION. CP

*21. Windshield heat - ON. CP

*22. ANTI-SKID - ON. P

*23. ENGINE WARMUP Checklist - Completed. CP

TAXIING PROCEDURES.

Normal taxiing is accomplished with engines operating at 800 to 1000 rpm, depending upon the gross weight, taxiway gradient, and wind. Avoid fast taxiing speeds and abrupt or excessive movement of the nose wheel. To turn, rotate the nose gear steering wheel by application of smooth positive pressure until the direction of the nose wheel begins to change and gradually increase the turn until the desired rate of turn is established. Use the same technique to straighten out the turn.

CAUTION

Make turns using nose gear steering, allowing the aircraft to move forward slightly before attempting to turn. Do not use inside brake when nose wheel is at full travel. Nose steering system damage will result. Full nose wheel steering travel should be avoided when taxiing over rough terrain or patches of ice.

CAUTION

The parking brake handle should be grasped before the pedals are depressed to prevent damage which may result if the handle is allowed to snap forward.

NOTE

Avoid abrupt stops caused by poor braking technique. The preferred technique is to gradually reduce the brake pressure as the aircraft slows to a stop so that grabbing action does not develop. Power should be reduced to idle as the aircraft brakes are applied and then set at 1000 rpm after the aircraft has stopped. 1000 rpm insures that the generator power is available, oil scavenger pumps are fully operating and engine cooling is improved.

TAXIING.

Taxi checks will be accomplished as follows:

* 1. Taxi area - CLEAR. P, CP, FM (LM)

* 2. Hydraulic pressure - Checked. CP

Copilot will periodically check pressure during all ground operations.

* 3. Brakes - Checked (individually). P, CP

* 4. Flight instruments - Checked. P, CP

While turns are being made, the pilot and copilot will check the turn-and-slip indicators and all heading indicators for correct response. After the first flight of the day, a turn in either direction is sufficient.

* 5. TAXIING Checklist - Completed. CP

CROSSWIND TAXIING.

Strong crosswinds are apt to result in lateral instability of the aircraft while parked or taxiing. Should the wind be blowing steadily, it is unlikely that tipping of the aircraft would result while at rest. However, any unpredictable rocking motion, such as might be induced by gusty wind or turning at high speed, can be expected to amplify the effect of the wind. For this reason, all turns in a marginal crosswind should be made with caution and prolonged exposure to a direct crosswind should be avoided. As an additional precaution, the copilot will apply aileron control as necessary to keep the wings level, leaving the pilot free to concentrate on nose gear steering and engine power.

CAUTION

Taxi operations are not recommended when wind speeds exceed 30 knots and the aircraft must be taxied crosswind.

ENGINE RUN-UP.

* 1. Nose landing gear and parking brakes - Centered and set. P

CAUTION

Engines should not run-up over unimproved terrain where loose dirt and gravel may cause damage. Crosswind, during run-up should not exceed 10 knots.

2. IFF/NAV radios - Checked. P, CP

Check operation of electronic navigation equipment.

* 3. Engine instruments - Checked. P

* 4. Mixtures - RICH. P

5. Reciprocating generators - Checked. CP

Engine should be operated at 1700 RPM during this check.

a. Check DC bus voltage for proper limits.

b. Observe loadmeters for proper indication of generator operation. Reciprocating engine generator loadmeters should indicate within ± 10% of each other.

c. If loads are uneven or other indications of a possible generator malfunction exist, the generator must be turned off to check voltage.

6. Anti-icing/deicing equipment - Checked. P, CP, FM (LM)

When icing conditions are anticipated, check operation of jet, wing, and tail anti-icing systems as well as propeller and aileron deicing equipment. Engine should be operated at 1500 RPM during this check.

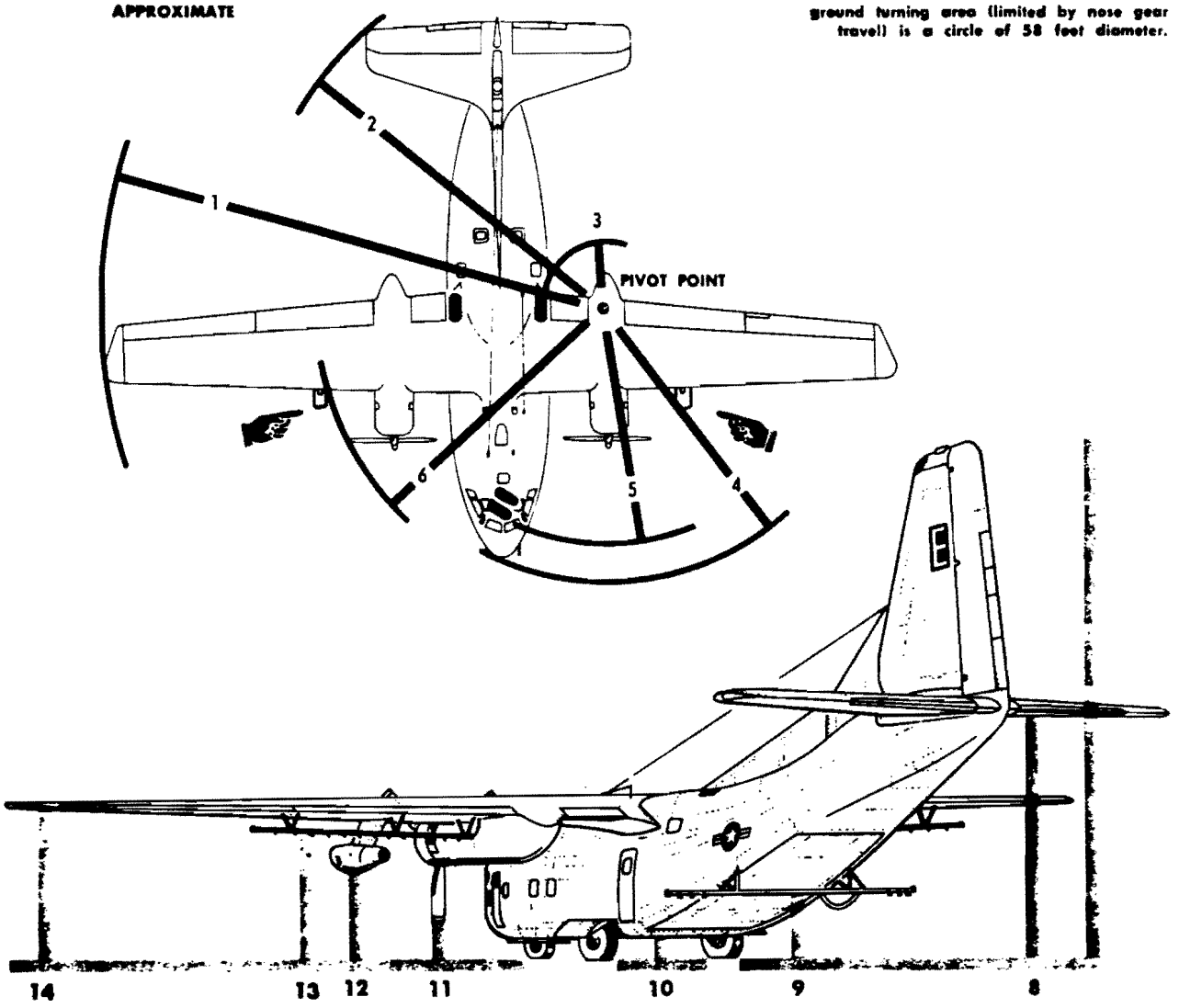
CAUTION

The anti-icing/deicing systems may be operated on the ground only briefly for functional checks. Excessive operation on the ground can cause damage to aircraft components.

NOTE

Turning radii are based on a maximum nose gear steering angle of 60 degrees. The aircraft pivots about a point approximately 9 feet outboard of the main gear. Minimum wing tip turning area required is a circle 140 feet in diameter. Minimum ground turning area (limited by nose gear travel) is a circle of 58 feet diameter.

ALL FIGURES ARE APPROXIMATE



1.	WING TIP	70 FT RADIUS	8.	HORIZONTAL STABILIZER	17 FT
2.	STABILIZER TIP	54 FT RADIUS	9.	TAIL SPRAY BOOM	4 FT 5 IN
3.	MAIN GEAR PIVOT	9 FT RADIUS	10.	FUSELAGE	1 FT 6 IN
4.	NOSE TIP	37 FT RADIUS	11.	PROPELLER TIP	4 FT
5.	NOSE GEAR	29 FT RADIUS	12.	JET POD	6 FT 8 IN
6.	PROPELLER TIP	40 FT RADIUS	13.	WING SPRAY BOOM	10 FT 5 IN
7.	VERTICAL STABILIZER	35 FT	14.	WING TIP	14 FT

taxi CLEARANCE

Figure 2-2

7. Propellers - Checked. P

a. Set throttles at 1700 rpm.

b. Move propeller levers to full DECREASE RPM and note minimum of 1100 - 1300 rpm.

c. Return propeller levers to INCREASE RPM and check for a reading of 1700 rpm.

d. Set propeller levers to 1500 rpm and check that this rpm is maintained without hunting.

e. Return propeller levers to INCREASE RPM.

f. Depress No. 2 feathering button; when engine speed drops 250 - 300 rpm, return the feathering button to neutral position and check that engine returns to 1700 rpm.

g. Copilot checks for a definite increase and decrease on loadmeters and indicates "Loads Check" to the pilot.

h. To check blade switch, pull feathering button out and note that rpm does not increase.

i. Copilot checks for a definite increase and decrease on loadmeters and indicates "Loads Check" to the pilot.

j. Repeat steps f through i for No. 1 propeller.

* 8. Power and ignition - Checked. P, CP

NOTE

During this check the engine should accelerate and decelerate smoothly with normal throttle movement.

a. Set throttles to obtain field barometric pressure as noted before starting engines.

b. Check that tachometers indicate 2200 rpm plus or minus 50 rpm and all instruments are within desired limits.

NOTE

When the power check is performed with the aircraft headed into the wind, add two rpm for each knot of wind velocity: subtract two rpm for each knot when headed downwind.

c. Move No. 2 ignition switch from BOTH to RIGHT, back to BOTH, from BOTH to LEFT, then back to BOTH. A drop of 100 rpm or less (50 - 75 rpm normal) in either L or R position is considered satisfactory provided no engine roughness is observed. However, the difference in drop between the R and L position should not exceed 40 rpm.

NOTE

It is essential that all readings be allowed to stabilize between switch changes. This must not be construed to mean, however, that the engines will be allowed to operate on single ignition at this speed for an extended period of time. A period as long as 30 seconds is not considered excessive, but should not be exceeded.

d. Repeat step c for No. 1 ignition switch.

9. Superchargers - Checked. P

a. Throttles - Set throttles to obtain field barometric pressure as noted before starting engine.

b. Supercharger switches - HIGH.

A fluctuation in oil pressure, a decrease in torque, and an increase in manifold pressure indicate that the blowers have shifted to high ratio.

c. Supercharger switches - LOW.

A decrease in manifold pressure and an increase in torque pressure indicate that the blowers have shifted to low ratio.

CAUTION

Should erratic changes in manifold pressure or other indications of improper supercharger operation appear, repeat the check after idling engine at 1000 rpm for two minutes to allow supercharger clutch heat to dissipate.

10. Carb air - Checked. P

NOTE

The carburetor heat system will not be checked when CAT exceeds 38°C; however, carburetor air levers may be checked in the FILTER position. CAT should not increase.

a. Move carburetor air levers to HOT and note increase in CAT.

b. Move carburetor air levers to FILTER and note decrease in CAT.

c. Return carburetor air levers to COLD.

*11. Elevator and rudder reverse lock - Released. P

Advance the right throttle to release locks, then retard both throttles.

*12. Engines and nacelles - Checked. FM (LM)

The engines and nacelles will be visually checked for leaks and security.

*13. ENGINE RUN-UP Checklist - Completed. CP

BEFORE TAKE-OFF.

Prior to take-off, the following checks should be accomplished to ascertain that the systems immediately pertinent to take-off are functioning normally and that the various controls are placed in the correct take-off positions. Most of the items may be checked immediately after the engine run-up has been completed.

1. Boost pumps - HI. P

2. Drop tank air pumps - OFF. P

3. Secondary bus - NORMAL. CP

NOTE

If heaters are being used when the secondary bus switch is placed in NORMAL, engine rpm must be maintained at 1100 - 1200 rpm to assure energization of the ground blower.

4. Wing flaps - As required. P

5. Trim - Set. P

6. Troop signal lights - OFF. CP

7. Water injection - ON/RESET. CP

If a water injection system malfunction is noted or if water must be conserved, the water injection switches should remain off.

8. Carb air - COLD. P

9. Landing gear pins - Removed, doors closed. FM (LM)

The flight mechanic (and loadmaster) will remove the landing gear pins and stow them, check tires and brake assemblies for general condition and evidence of overheating, close the access doors and advise the pilot when the action is completed.

CAUTION

If the nose gear ground lock pin access door is left open, the pin can be inadvertently installed (kicked in) by personnel entering the crew compartment during flight. This can cause damage and possible jamming of the nose gear when the landing gear is extended.

10. Fuel quantity - Checked. P, CP

11. Crew briefing - Completed. P

Pilot will insure that the crew is completely familiar with the following:

a. Review of Take-off and Landing Data Card.

b. Procedure for handling ailerons, control column and guarding throttles.

c. Procedure for gear retraction.

d. Procedure for power reductions.

e. Assistance in identifying any existing or potential emergency.

f. Procedure in event of aborted take-off.

g. Traffic pattern, type approach, and communications procedures for immediate landing after take-off.

h. Procedure for reciprocating engine failure.

i. Procedure for runaway propeller.

j. Procedure for reciprocating engine fire.

k. Procedure for jet engine emergencies.

l. Dumping intentions.

The pilot will brief the crew on his intended disposition of the spray chemical, should an emergency occur. This decision should be based on the effect of chemical weight on aircraft performance and the effect of the chemical on property.

WARNING

Chemical dumping should not be accomplished unless absolutely necessary. All crew members should be on 100% oxygen. prior to dumping. Heavy concentrations of fumes will be drawn in around the cargo door and ramp; contaminate the atmosphere, and may cause crew incapacitation. Crew members exposed to heavy concentrations of chemical should obtain medical care as soon as possible.

NOTE

If the pilot's briefs to dump in an emergency, the spray operator should be seated close to the mechanical dump valve. Should an electrical failure occur in the dumping circuit, the operator will manually open the dump valve on the pilot's command. Since the manual dump valve will return to the closed position with the electrical switch off or closed, the operator should hold the valve open until the dumping is complete.

(12) Jets - START. P, CP, FM

Either jet engine may be started first. The following procedure is also applicable to inflight and ground starts.

CAUTION

Do not attempt to start both jet engines simultaneously since the initial current drain is exceptionally high.

a. Place reciprocating engine throttles to 1500 rpm minimum (for ground start).

b. Place both jet start switches to SHUTTER.

CAUTION

Do not open inlet doors unless visual inspection insures that the pod doors and engine inlet lips are free of ice buildup.

c. Jet boost pump switches - ON.

d. Check visually that the jet engine air inlet doors are open and fuel pressure is being supplied to the engines.

e. Place jet start switch to FUEL TO 38% RPM, hold until engine reaches idle speed.

CAUTION

If exhaust gas temperature exceeds 900°C or the limits in Section V, indicating a hot

start or if light-off does not occur before 20 seconds or before fuel flow reaches 350 pounds per hour, immediately advance the start switch clockwise to SHUTDOWN. Allow the engine to roll down to 15% rpm; then motor the engine, using the motoring switch for 20 seconds. During starting cycle and after engine light-off, if hung start condition occurs, advance the start switch clockwise to SHUTDOWN. Failure to advance the starter switch will cause damage to the engine hot section and the starter. Engine starting time should not exceed 1 minute. If hung start occurs, engine restart should not be attempted until corrective action has been taken.

NOTE

Refer to Section V, for duty cycle limitations for the jet engine starter.

f. Position jet start switch to RUN.

g. Jet generator switch - ON.

h. Start other jet engine.

Repeat steps e through g for other engine.

CAUTION

During ground operation of the engines, avoid simultaneous full power run-up of a jet and reciprocating engine on the same side of the aircraft when the opposite engines are shut down or at idle. To do so imposes excessive strain on the nose wheel.

13. Pitot heat - ON. CP, FM

(14) APU - As required. CP, FM

15. Doors and top hatches - Secured. FM (LM)

Insure clear view windows are closed, side windows as required.

16. Seats, safety belts, shoulder harnesses - Secured. ALL

WARNING

The navigator's seat is not stressed for crash landing with the seat occupied. The navigator will, therefore, occupy one of the troop seats during take-offs and landings.

17. Flight controls - Checked. P

Check full travel for freedom of movement.

(18) Anti-ice/deice - As required. CP

Refer to Section IX for cold weather procedures.

19. BEFORE TAKE-OFF Checklist - Completed. CP

LINE-UP.

The following items will be accomplished when cleared onto the runway:

(1.) Mixtures - RICH. CP

2. Cowl flaps - TAKE-OFF. CP

3. IFF-Set/NORM. CP, FM

4. Landing lights - As required. P

5. Flight instruments - Checked. P, CP

The pilot and copilot should check their heading and attitude indicators for the correct heading and indication. Refer to INSTRUMENT FLIGHT, BEFORE TAKE-OFF, Section IX.

6. Jet Engines - 60%. CP, FM

7. LINE-UP checklist - Completed. CP

TAKE-OFF.

Depending upon the condition encountered, various techniques for take-off must be employed in order to achieve satisfactory performance. Since the basic procedures are common to all take-offs, e.g., "release brakes," "add power," etc., these are

described in detail only under STANDARD TAKE-OFF and are repeated briefly where other types of take-off are described, only as necessary to specify sequence or additional information.

WARNING

In no case will lift-off be made by reference to the angle of attack indicator.

WARNING

Under no circumstances will a reciprocating engine-out take-off be attempted. Serious directional control problems will result. If one jet engine is inoperative and mission dictates, take-off may be attempted with the remaining jet engine at approximately 60% using reciprocating engine only performance data.

CAUTION

Manifold and torque pressures should not be permitted to exceed take-off limits when using wet or dry Maximum Power. Application of power will be halted when either limit is reached. Full forward throttle may result in power setting above the take-off limits.

CAUTION

If water injection should fail when operating at maximum power, an engine overboost may occur. Maximum MAP, wet, at sea level, is 59.5 in. Hg., and dry, is 53 in. Hg., at 2800 RPM and 55 in. Hg. at 2700 RPM. If this should occur, the throttles must be retarded immediately to the limit MAP for maximum dry power. In addition, an entry in the Form 781 is required stating the amount of overboost in inches and the duration.

STANDARD TAKE-OFF.

A STANDARD TAKE-OFF is considered to be made from a hard surface runway. Flaps should be set at TAKE-OFF if jets are used, or UP if jets are not used. Either flap setting may be used at the pilots discretion. Refer to the appropriate chart in Appendix 1 for the flap setting and jet configuration selected (Standard Take-off Distance with flaps UP or Minimum Run Take-off Distance with flaps TAKE-OFF) to determine the ground run distance and take-off speed (VTO). Notice that VTO is based on zero thrust stall speed and varies with gross weight. Upon completion of the LINE-UP checklist, the aircraft is lined up on the designated runway and brought to a complete stop with the nose gear centered, smoothly advance reciprocating engine throttles, stabilize at field barometric pressure and check engine instruments. Advance jet throttles to obtain maximum thrust and allow the engine to stabilize. Check instruments to determine that jet engine overspeed and exhaust gas temperature limits are not exceeded. Refer to Engine Limitations Section V for jet engine limitations. Release brakes and advance reciprocating engine throttles smoothly to maximum power.

CAUTION

When wet and/or slippery runway conditions prevent setting maximum power prior to brake release, set the jet engines to 60% — 65%, advance the reciprocating engines to 30 in. manifold pressure and, if possible, advance maximum power on jet and reciprocating engines simultaneously. Release brakes when the aircraft starts to move. The use of this procedure will increase the take-off roll. If maximum jet thrust can be attained, advance reciprocating engine power in the same manner.

NOTE

In order to achieve the performance plotted in the TAKE-OFF DISTANCE charts, maximum power must be set before brake release and the aircraft must be flown off at V_{to} (Take-off speed).

During the initial part of the take-off roll, check the engine instruments for expected power output. In the event of any indication of engine malfunction, abort the take-off roll. (Refer to TAKE-OFF and LANDING EMERGENCIES, Section III). Maintain directional control by steering with the nose wheel until sufficient speed is obtained for

JET ENGINE DANGER AREAS

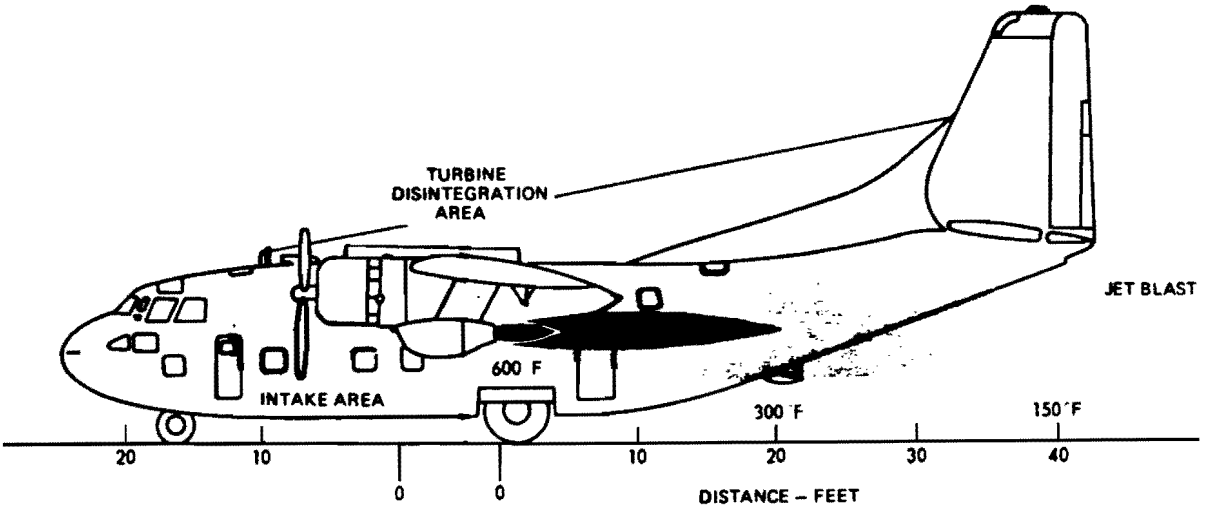


Figure 2-3

adequate rudder control at approximately 60 knots IAS. In order to assure the immediate availability of nose wheel steering in the event of engine failure, the pilot should keep his hand on the nose steering wheel until just before reaching rotation airspeed. Aileron control should be exercised by the copilot as necessary to hold the wings level until the pilot transitions from nosewheel steering to the flight controls. At rotation speed rotate aircraft to the take-off attitude. Speed should be allowed to build up until take-off speed (V_{to}) is attained, after which the aircraft is flown off the runway.

CAUTION

Because of the rapid acceleration and nose high attitude when making no flap take-offs using jets, it is possible to induce fuel starvation when nacelle fuel quantity is less than 2200 pounds.

ASSAULT TAKE-OFF.

If runway length is critical, a further reductión in ground run distance can be realized by taking off at 118% of power-on stall speed reduced by 4 or 8 knots IAS depending upon jet engine power setting for take-off and/or aircraft c.g. Refer to the particular chart for jet power used in Part 3 of Appendix I. This results in the maximum performance of the aircraft and should only be done when actually required to get out of the field in question. Assault take-off speed and ground run distance are charted in Part 3, Appendix I.

WARNING

Assault take-offs may be outside the operating envelope of the stall warning system. In addition, since the aircraft is to be flown at 118% of power on stall speeds or less, a loss of power or weight and balance miscalculation could result in an extremely dangerous situation.

WARNING

Because of the rapid acceleration and nose high attitude associated with assault take-offs and maximum performance climbs, the minimum fuel required in each nacelle tank is 2200 pounds with jet engines operating and 1050 pounds with reciprocating engines only.

CAUTION

When wet and/or slippery runway conditions prevent setting maximum power prior to brake release, set the jet engines to 60% — 65%, advance the reciprocating engines to 30 in. manifold

pressure and, if possible, advance maximum power on jet and reciprocating engines simultaneously. Release brakes when the aircraft starts to move. The use of this procedure will increase the take-off roll. If maximum jet thrust can be attained, advance reciprocating engine power in the same manner.

Because assault take-offs are made at minimum lift-off speeds, the c.g. location must necessarily be considered. With the c.g. at 26% MAC or aft, elevator effectiveness is such that a fixed speed schedule versus gross weight may be established. With the c.g. located at some point between 20%-26% MAC however, the lift-off speed also varies with c.g. locations because higher elevator forces are required to raise the nose to the take-off attitude. Since these speeds are difficult to predict for all possible gross weight and c.g. variations, it is recommended that the fixed speed schedule be employed in assault take-offs with the c.g. located forward of 26% MAC. Attempt to lift off as soon as the applicable speed for the take-off gross weight is obtained and continue to hold pressure on the elevator until the aircraft assumes the take-off attitude.

UNPREPARED RUNWAY TAKE-OFF.

When operating from hastily constructed or unprepared fields, it is recommended that the minimum run techniques be employed to reduce the length and rate of travel over rough terrain to the minimum possible for take-off. Damage to the propeller blades can result from gravel picked up on rough terrain when high rpm is used.

CAUTION

The reciprocating engines should not be runup on unimproved runways with the jets operating.

Attempt to raise the nose at approximately 50 - 60 knots IAS to lighten the load on the nose wheel and raise the wheel out of the soft earth as soon as possible. Upon becoming airborne, retract the landing gear and continue climbout until clear of any obstacles before reducing power. After reaching a safe altitude and airspeed, retract the wing flaps.

WARNING

Serious control problems may be encountered if minimum run take-off techniques are used on unprepared (rough) runways when crosswind conditions exist. In this case, maximum nose wheel effectiveness must be used and nose wheel liftoff speeds, as determined by crosswind take-off charts, will take precedence over the reduction of length and rate of travel over rough terrain.

CAUTION

If runway length permits, advance the jet throttles to 100% rpm and allow the aircraft to start rolling before advancing power on the reciprocating engines to prevent damage to jet engines.

OBSTACLE CLEARANCE TAKE-OFF.

When clearance of obstacles at the end of the runway is a critical factor in take-off planning, the climb-out immediately after take-off should be flown at obstacle clearance speed (V_{50}). This ensures the capability of clearing an obstacle 50 feet high at a specified distance from the point where the take-off run commences. The obstacle clearance technique may be used following any of the basic take-off procedures and does not necessarily imply assault technique. For normal and minimum run take-offs, the obstacle clearance speed (V_{50}) is 1.2 times the zero thrust stall speed (V_S); for maximum performance, climb speed will in no case be less than 1.2 V_S.

NOTE

During obstacle clearance take-offs the aircraft must leave the ground and reach an altitude of 50 feet prior to attaining single-engine minimum control speed. Therefore, single-engine performance during this period is critical from a control standpoint rather than gross weight consideration. After take-off, retract the gear. Upon clearing the obstacle and while attaining engine-out minimum control speed, the flaps should be retracted, placing the aircraft in the "clean" configuration for best possible engine-out performance.

REDUCED RPM TAKE-OFF

Under some conditions it is necessary to use less than 2800 RPM for take-off (Alternate fuel or high blower). The following procedures will be used to set the prop governor prior to take-off.

CAUTION

Insure that the area immediately in front of the aircraft is clear in case of brake slippage.

1. Head the aircraft into the wind.

2. Advance reciprocating engine throttles to obtain an RPM above the desired Take-off RPM. (Approximately 50" MAP).

3. Decrease RPM to the desired Take-off setting with the propeller control levers.

NOTE

Insure that friction control is tightened sufficiently to preclude creeping of the prop controls.

CROSSWIND TAKE-OFF.

When taking off in a crosswind, the aircraft has a tendency to turn upwind. During the initial part of the take-off run, this tendency is overcome by steering with the nose wheel. But immediately prior to take-off when the nose gear is raised off the runway, it is essential that adequate rudder control be available to maintain heading without nose gear steering. It is also important that the copilot devote his full attention to aileron control throughout the take-off run. Since the turning effect of the crosswind depends on the force and direction, the minimum nose wheel lift-off speed is variable. The minimum nose wheel lift-off speed can be determined from the Crosswind Take-off Chart, Appendix I. When this has been done, a comparison should be made with the take-off speed (V_{to}) specified in the appropriate take-off distance chart in Appendix I. The crosswind take-off should then be made using the greater of the two speeds. If the minimum nose wheel lift-off speed is greater than V_{to}, the planned take-off distance will not be valid but may be determined from the Take-off Acceleration Chart in Appendix I.

CAUTION

A positive forward pressure should be maintained on the control column during crosswind take-off to insure that the nose wheel maintains effective contact with the runway until minimum nose wheel liftoff/rudder control speed is attained.

AFTER TAKE-OFF—CLIMB.

If jet engines are to be used for climb, it is recommended that they remain at full power.

CAUTION

Do not apply take-off power of 100% rpm to the jet engines for longer than 30 continuous minutes.

Refer to climb charts in Appendix I for information concerning climbing speeds, power settings, rate-of-climb, etc. The following checklist outlines the complete procedure recommended after take-off.

(1.) Landing gear - UP. CP

After the aircraft is definitely airborne, the pilot will call and visually signal, "Gear up". The copilot will raise the gear. When the landing gear indicator indicates gear up, the copilot will advise the pilot "Gear up".

(2.) Wing flaps - UP. CP

The pilot will state "Flaps up". The copilot will raise the wing flap lever.

(3.) METO Power - Set. P, CP

After the flaps have retracted, the pilot will state "Meto power, water off, After Take-off and Climb Checklist". The pilot will retard the throttles to the METO setting and the copilot will reduce the rpm to 2600.

4. Water injection - OFF. CP

Readjust the rpm and manifold pressure for METO power.

5. Landing lights - As required. P

6. AUXILIARY HYD PUMP - OFF. CP, FM

7. Boost pumps - LO, CP, FM

8. Engine instruments - Checked. CP, FM

Adjust the carb air, cowl flaps and oil cooler doors to maintain desired engine temperature and pressure.

9. Engines and cargo compartment - Checked. FM (LM)

The flight mechanic (and loadmaster) will check the engines, propellers, landing gear, gear doors, cargo compartment and circuit breakers. This check will be accomplished every 30 minutes during flight.

(10.) Climb Power - As required. P, CP

11. AFTER TAKE-OFF - CLIMB Checklist - Completed. FM

CRUISE.

During cruise, the following checks are applicable.

(1.) Power - As required. CP, FM

The pilot will level off at cruise altitude, reduce the manifold pressure to the approximate cruise setting and state "Cruise power CRUISE Checklist." The copilot or flight mechanic will reduce the propellers to the cruise rpm setting, idle the jet engines and adjust the reciprocating engine throttles for long range cruise or as directed by the pilot. Refer to Section VII and Appendix.

CAUTION

Single jet engine operation for normal cruising is not recommended. To do so imposes unnecessary stress on the aircraft.

CAUTION

Unless mission requirements dictate, manual leaning should not be accomplished above 1200 BHP as engine life may be shortened. Jet engines should not be operated at cruise due to adverse fuel economy and engine life.

NOTE

To insure proper jet engine acceleration when above 5000 feet altitude and less than 160 knots airspeed, throttle should not be retarded under 70% rpm unless engine shutdown is anticipated.

2. Boost pumps - OFF. CP, FM

3. Engine instruments - Checked. CP, FM

Adjust the carb air, cowl flaps and oil cooler doors to maintain desired engine temperature and pressure.

4. Fuel quantity - Checked. CP

5. APU - OFF. FM, CP

⑥ Compasses - Checked. P, CP

The pilot's and copilot's heading indicator will be compared with each other and the B-16 compass.

WARNING

With partial or complete loss of the ME-1A Compass Amplifier, it is possible to have erroneous indications on the pilot heading indicator, the ID-250. There will be no "OFF" flags or warning lights displayed.

7. Flight emergency bus relay - Checked. CP, FM

a. Battery - OFF.

b. Check that the attitude warning (OFF) flag of the pilot's attitude indicator does not appear or the landing gear indicators do not go to the unlocked position. If these systems show a loss of power, a malfunction of the flight emergency bus relay is indicated. Refer to the Flight Emergency Bus Failure in Section III.

c. Battery - ON.

NOTE

The jet engine generator switches must be off to check the flight emergency bus.

⑧ Jets - As required. CP, FM

If jet engines are to be shut down, the following procedures will apply.

a. Retard jet throttle switch to 60% rpm or below.

Insure that the jet engines have been allowed to cool for two minutes.

b. Position the jet start switches to the SHUTDOWN position and allow the engines to decrease to 9 - 11% rpm.

c. Position the jet start switches to OFF.

CAUTION

If a jet engine inlet door will not close after jet engines are shutdown in flight, the engine should be restarted and run at idle RPM or higher until the aircraft is landed and the discrepancy corrected. Jet engine windmilling for prolonged periods may cause excessive oil leakage.

d. Jet boost pumps - OFF.

e. Jet generators - OFF.

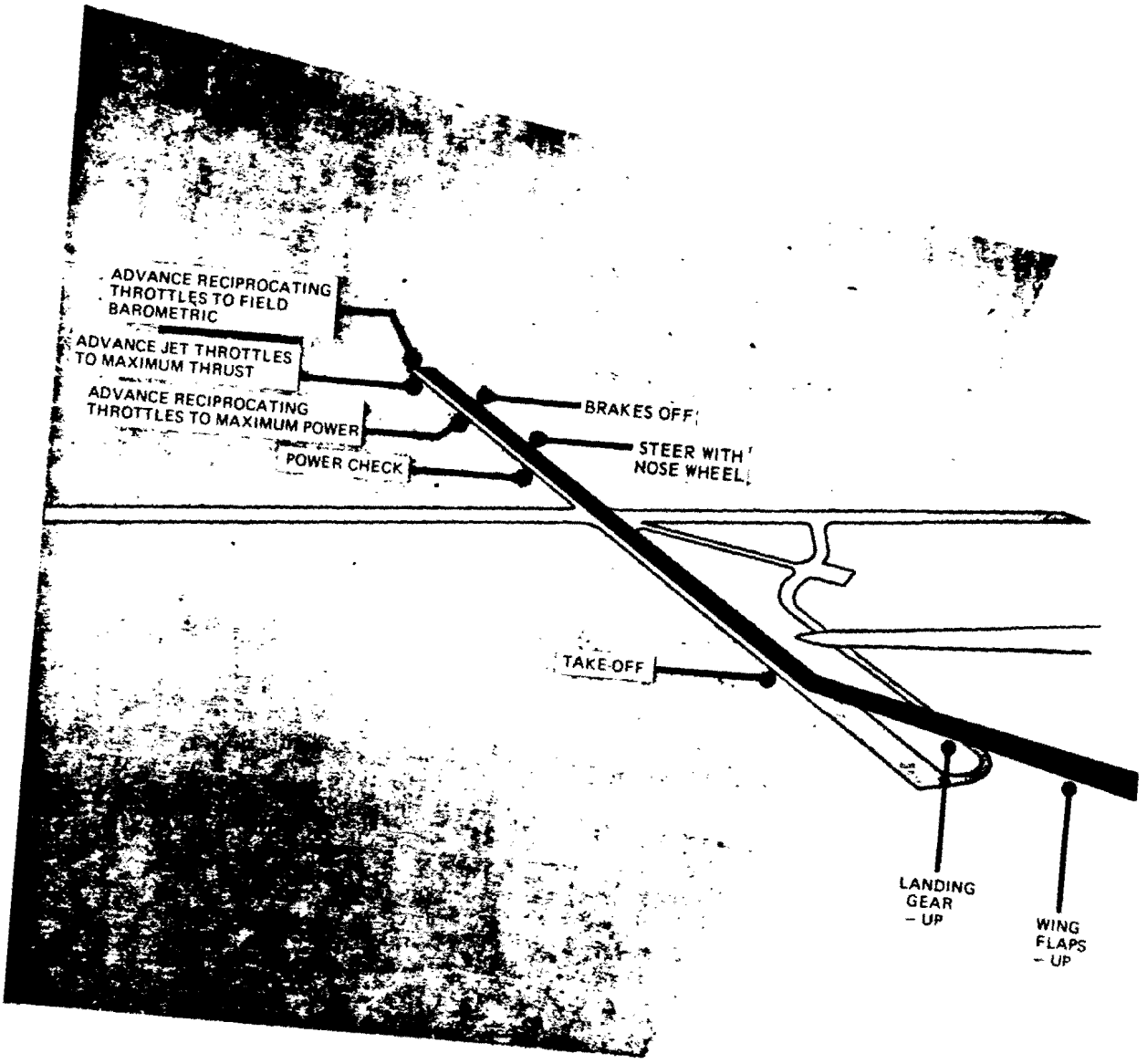
⑨ Mixtures - As required. CP, FM

When cruise is contemplated for long periods of time at a constant power setting, manual lean, or rich mixture will be selected since a combination of allowable carburetor and engine tolerances may cause detonation when operating in AUTO LEAN. Therefore, AUTO LEAN will not arbitrarily be used for cruise operation.

NOTE

Allow engines and carburetors to stabilize for 5 minutes with the aircraft trimmed for level flight prior to manual leaning. See Section VII, for manual leaning procedures.

10. CRUISE Checklist - Completed. FM



NOTE . . . THIS ILLUSTRATION REPRESENTS A TYPICAL TAKE-OFF. REFER TO APPENDIX 1 FOR TAKE-OFF DISTANCES AND SPEEDS AS WELL AS POWER SETTINGS AND SPEEDS DURING CLIMB. NORMAL CLIMB SPEED IS 140 KNOTS IAS (130 KNOTS IAS WITHOUT JET THRUST). CRUISE CONTROL CLIMB SPEED - AS COMPUTED FROM CLIMB AT METO POWER CHART, APPENDIX 1.

Figure 2-4 (Sheet 1 of 2)

TAKE-OFF & CLIMB

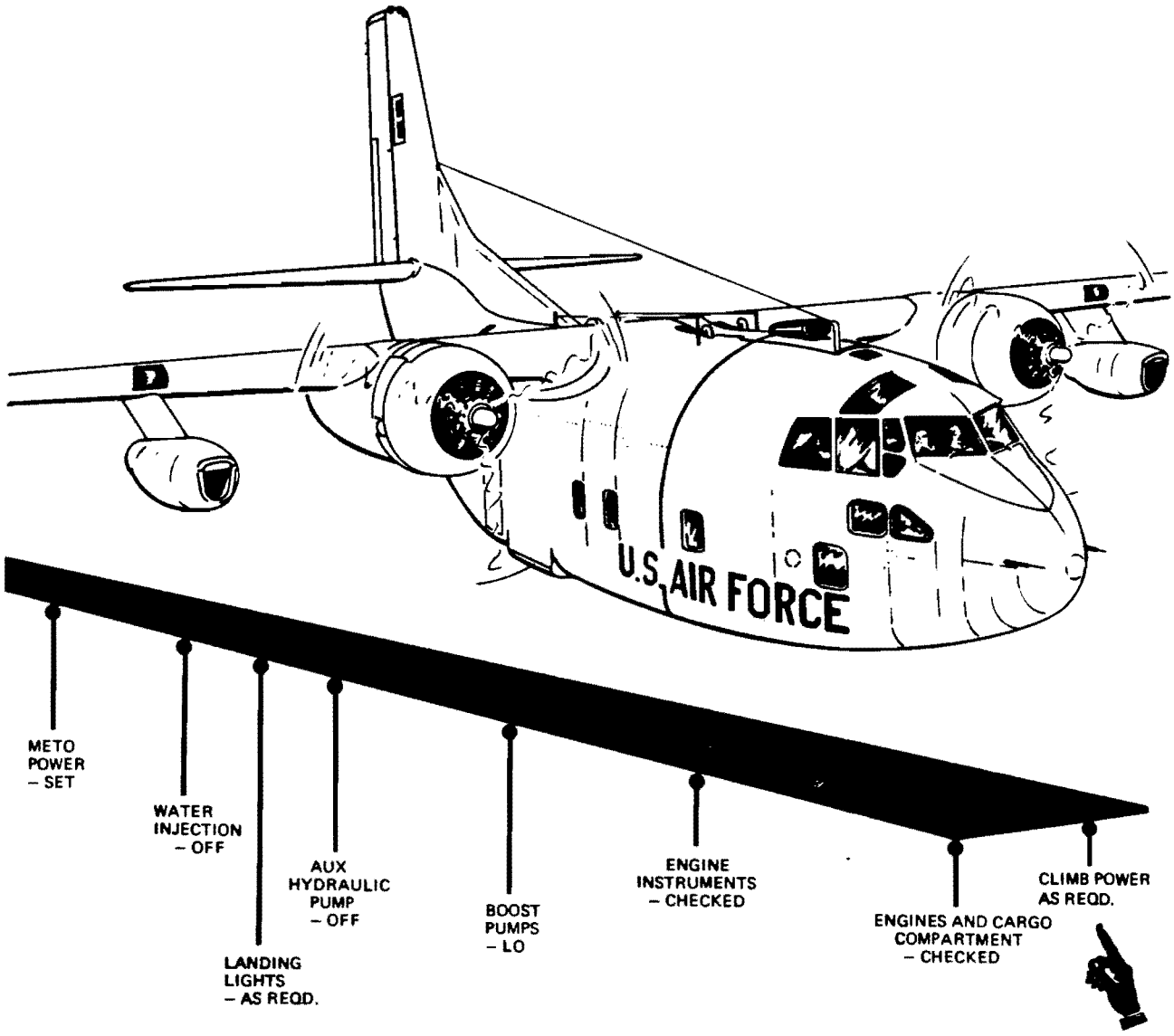


Figure 2-4 (Sheet 2 of 2)

DESCENT.

Desired rate of descent can be obtained by the proper combination of airspeed and engine power setting; however, sufficient power to assure proper engine operation during an extended descent must be maintained. If the descent is started enroute, it is permissible to use AUTO LEAN mixture, but if descent exceeds 1000 FPM, use RICH mixture and carburetor heat as necessary to provide stable operation at low power setting with cold cylinder head temperatures. Do not use manual lean for descent as unstable carburetor mixture will occur. If the nature of flying conditions requires a large reduction in power, reduce rpm as well as manifold pressure. For descents or other low power maneuvers, it is important to cushion the high inertia loads on the master rod bearings which occur at condition of high rpm and low manifold pressure. As a rule of thumb, it is well to remember that each hundred rpm requires at least one inch Hg manifold pressure: for example, 23 inches Hg at 2300 rpm. Operation at high rpm and low manifold pressure should be kept to a minimum.

Prior to entering the landing pattern, the jet engines shall be started. The small amount of jet thrust generated by the idling jets has little effect on landing distance, and in case a go-around is necessary, the jets can be advanced to maximum power in less than five seconds.

1. Crew briefing - Completed. P

   Check landing gross weight, altimeter setting approach minimums, field elevation, and wind conditions. Review landing data card.

2. Circuit breakers - Checked. CP, FM
3. Drop tank air pumps - As required. CP, FM
4. Aux hydraulic pump - AUTO. CP, FM
5. Boost pumps - HI. CP, FM
6. Fuel crossfeed - OFF. CP, FM
7. Oil temperature - AUTO. CP, FM
8. Carb air - As required. CP, FM
9. Heaters - As required. CP, FM
10. Superchargers - LOW. CP, FM
11. Mixtures - As required. CP, FM
12. APU - As required. CP, FM
13. Stall warning - Checked. P
14. Driftmeter - Retracted, caged and OFF. FM (N)
15. Passengers and cargo compartment - Secured. LM, (FM)
16. Seats, safety belts, and shoulder harness - Secured. P, CP
17. Jets - START/IDLE. CP, FM

    Inflight starting of the jet engines can be accomplished at all speeds and altitudes likely to be encountered during normal operation of the aircraft. At high altitudes, however, some additional cranking time may be required and airspeed must be increased to 160 knots IAS to accelerate jet engines to 70% rpm minimum.

18. DESCENT Checklist - Completed. FM

BEFORE LANDING.

Upon entering the traffic pattern, the following procedure should be accomplished. (Refer to Section V for weight and c.g. limitations imposed for landing.)

1. Landing gear - DOWN. CP

   The pilot will state "Landing gear down, BEFORE LANDING Checklist". The copilot will place the landing gear lever to the DOWN position. He will observe that the landing gear indicators indicate UNLOCKED and that the landing gear Warning light illuminates. After landing gear indicates GEAR DOWN and Warning light is out, he checks hydraulic pressure normal and states "Down". The pilot will check the landing gear indicators indicate GEAR DOWN.

WARNING

It is possible for an approach to be flown to touch-down without retarding

the throttle below the switch setting that arms the landing gear warning circuits. Under this condition the landing gear warning horn will not sound even though the landing gear is not in the GEAR DOWN position. The landing gear Warning light, Press-to-test does not require checking unless the Warning light did not illuminate during the time the landing gear was in transit. If the "press to test" of the Warning light is accomplished it is possible to inadvertently move the Landing gear lever to the UP position.

NOTE

The anti-skid failure light will sometimes come on when the landing gear is lowered. Cycling the anti-skid selector switch to OFF and back to ON will rearm the anti-skid failure warning circuit. The light should not then be illuminated. If it remains on, turn the anti-skid system OFF. Refer to LANDING WITH ANTI-SKID SYSTEM INOPERATIVE, SECTION III.

2. Mixtures - RICH. CP, FM

3. Propellers - 2400 RPM. CP, FM

4. Jet Engines -60%. CP, FM

5. Water injection - As required. CP, FM

(Normally OFF if jet engines are operating.)

If water injection is to be used, turn switches to ON, then RESET. Insure that the manifold pressure is less than approximately 37 inches Hg MAP before resetting or momentary loss of power or serious engine damage may result.

NOTE

Reset switches should be depressed at least 10 seconds prior to the application of power and held in until the indicator lights on the engine instrument panel go out, indicating that water pumps are running and pressure is available for use. If a water injection system malfunction is noted or if water must be conserved, the water injection switches should remain off.

6. Cowl flaps - As required. CP, FM

7. Landing gear - Visually checked down. FM (LM)

The flight mechanic will visually check the landing gear down and locked, the hydraulic fluid level and pressure and report any malfunction to the pilot.

The loadmaster will visually check to determine if the main landing gear is down and locked and report to or signal the flight mechanic who will report to the pilot.

8. Safety belts - Secured. N, FM, LM

WARNING

The navigator's seat is not stressed for crash landing with the seat occupied. The seat should be secured in the stowed position until the landing is completed. The navigator will, therefore, occupy one of the troop seats during landings.

9. RADIO ALTIMETER - SET. P
(Set the appropriate HAA/HAT)

10. Wing flaps - As required. CP

During the approach, the pilot will state "Flaps _____" as required. The copilot will set the wing flap lever in the desired detent. When the wing flap indicator indicates that the flaps have reached the desired setting, the copilot will advise the pilot "Flaps _____" as desired.

11. Landing lights - As required. P

12. Propellers - Full increase. CP

Prior to touchdown the pilot will direct, "Propellers Full Increase"; the copilot will advance the propeller levers to INCREASE rpm.

13. BEFORE LANDING Checklist - Completed. FM

LANDING.

The various techniques outlined below are intended to serve as a guide in landing the aircraft under a wide range of circumstances (wind, gross weight, runway length, etc.) that may be encountered during normal operation. Performance data related to these techniques are presented graphically in Appendix I and should be consulted in order to determine the proper approach speed, touchdown speed, and expected landing distance.

WARNING

A pitch attitude of 15° up or down will render approximately 500 pounds of fuel in each nacelle tank unusable.

NORMAL LANDING.

A normal landing is considered to be made on hard surface runway using land flaps and reverse thrust. Plan the landing as though reverse thrust were not available (refer to Landing Distance Charts, Appendix I). Final approach will be flown at 1.3 V_S for all flap settings. Final flap setting should be made approximately 1/2 mile from touchdown point. When landing is assured, the copilot will advance the propeller levers to full increase. Plan the approach so that V_{app} is attained prior to flareout, so that as power is reduced the aircraft will contact the ground on the main landing gear at the recommended touchdown speed (V_{td}). The aircraft should not be held off to the stall, but land in a slightly nose-high attitude while elevator control is still adequate. After touchdown, lower the nose and apply reverse thrust and brakes as necessary to stop within the remaining runway length.

CAUTION

Do not attempt to reverse until a full touch down is made but apply reverse thrust as soon as possible thereafter since it is most effective during the initial part of the landing roll. Excessive wear on the brakes can be minimized by delaying their use until reverse thrust becomes less effective.

CAUTION

Abrupt propeller reversal may result in excessive engine rpm before stabilized conditions are attained.

Use of Reverse Thrust.

After the aircraft has touched down and is rolling straight down the runway, the pilot will release the control column to the copilot, who will then apply forward pressure on the control column to assure positive nose wheel steering and at the same time "fly the ailerons" and maintain a wings-level attitude. The copilot should concentrate on merely holding the wings level rather than attempting to maintain directional control with the ailerons. After releasing the controls to the copilot, the pilot will place one hand on the nose steering wheel and use the other to move the throttles with a smooth, continuous motion into the reverse thrust range. When runway conditions permit reversal should be made in a manner that would not jeopardize directional control if asymmetric thrust results. Throttles should not be moved into full (maximum) reverse until assured both engines have reversed.

WARNING

Due to directional control problems in the event of asymmetrical reverse, pilots should consider not using reverse thrust when landing at airfields with narrow runways and/or minimum lateral clearance if sufficient length is available for roll out using brakes only.

WARNING

Slow or hesitant movements through the reverse idle range can result in partial or complete loss of engine power. If the aircraft starts to yaw to either side during the application of reverse thrust, corrective action will be applied immediately as follows:

a. Return throttles to forward thrust range.

Smoothly advance the throttles and avoid abrupt movement into the range beyond forward idle.

b. Apply brakes as necessary.

c. Steer with the nose wheel.

NOTE

When the throttles are placed in the reverse thrust range, the jet engines are automatically shut down to prevent ingestion of any foreign matter displaced from the landing area by the propwash of the reversed propellers. The jet engines cannot be restarted until the throttles are returned to the forward thrust range and both jet start switches are first placed to the OFF position. Do not use reverse thrust solely to shut down the jet engines or to engage the elevator and rudder lock.

Obstacle Clearance.

Should it be necessary to approach for landing over a 50-foot obstacle and land within a limited runway length, the final approach should be commenced at V_{app} and gradually reduced to 1.2 V_s by the time the aircraft passes over the obstacle. Speed at this point is known is "obstacle clearance speed (V_{50})" and, like stall speed and touchdown speed, is tabulated as a function of gross weight on the landing distance charts in the Appendix. After passing the obstacle, power is reduced so as to touch down at the recommended touchdown speed (1.1 V_s). This ensures the capability of clearing an obstacle 50 feet high at a specified distance from the point where the landing roll is eventually completed.

WARNING

If the throttles are closed prior to the flare, a stall may result.

ASSAULT LANDING.

When a normal landing cannot be made within the available runway length, assault technique can be employed to shorten the ground roll and total distance required. This is essentially the same as a normal landing, except that the minimum final approach airspeed is 120% of zero thrust stall speed. The approach should be planned to arrive at minimum airspeed (1.2 V_s) at a point near touchdown on final approach. There is no necessity to fly the entire final at 1.2 V_s, since touchdown speed is also slower than normal (1.05 V_s). Assault landings should be made only when existing runway length demands minimum landing roll. In gusty conditions, airspeed should be increased by one-half of the maximum gust velocity to insure that approach speed does not fall below 1.2 V_s. Lower the nose wheel immediately upon touchdown and apply reverse thrust and maximum braking until the aircraft is stopped.

WARNING

Assault landings should be made with caution when the c.g. is near the forward limit since elevator control is marginal at low airspeeds with low power settings.

WARNING

Assault landing distances will be increased when higher approach and touchdown speeds are used during gusty or crosswind landings.

WARNING

If the throttles are closed prior to a flare, a stall may result.

WARNING

When power settings below zero thrust are used on the reciprocating engines, stall speeds will increase approximately 7 knots above those shown in Figure 6-3, (Zero Thrust Stall Speeds chart). Approach, obstacle clearance, and touchdown speeds must be adjusted accordingly. Ground run distance will also be increased due to the increased touchdown speed.

Obstacle Clearance.

No reduction in approach speed is required for obstacle clearance when using assault technique since V_{50} is also $1.2V_S$.

CROSSWIND LANDING.

Crosswind landings should be made using the wingdown method rather than the crabbing method. In general, it is extremely difficult in this size aircraft to time the corrective yaw action with the sinking rate and touchdown speed. The wing-down method is a simpler technique since an angle of bank can be set up on the final approach for zero drift and held during the flareout and touchdown transition.

Use of differential power will assist in maintaining aircraft heading control when rudder limits are approached.

WARNING

When the aircraft is flown in a sideslip, or with wing-low drift correction during a crosswind landing, the pilot's and copilot's airspeed indicators should be closely monitored and the actual IAS should be considered to be the average of the two airspeed indicators. The angle of attack indicator should be monitored to insure safe airspeed is being maintained.

Minimum Nose Gear Touchdown Speed.

Immediately after touchdown, before the nose gear is lowered and assumes a substantial load, the aircraft has a noticeable tendency to turn upwind. Thus it is essential that adequate rudder control be available at this time to maintain heading. In order to ensure this, a minimum nose gear touchdown speed is established. Since the turning effect of the crosswind depends on its force and direction, the minimum nose gear touchdown speed is variable, and must be determined from Appendix I, Crosswind Landing chart. When the minimum nose gear touchdown speed has been determined, it should then be compared with the anticipated touchdown speed taken from the appropriate Landing Distance chart. The landing should be made using the greater of the two speeds. If the nose gear speed is greater than V_{td}, the planned landing distance will not be valid and cannot be accurately predicted with the data available in Appendix I.

LANDING ON SLIPPERY RUNWAYS.

The procedure for landing on slippery runways is essentially the same as for normal landings except that greater attention must be paid to proper braking technique and directional control if the landing performance specified in Appendix I is to be realized. These data are presented in the form of ground run and total distance required for landing on a dry, hard surface runways, with an additional chart for correcting the data to various runway surface conditions. (Refer to Landing Distance, Appendix I, Part 6). Since slippery runway surfaces cause an increase in landing distance, assault approach technique should be considered when landing on a slippery runway is anticipated. Aside from the shorter ground run required, the lower touchdown speeds used for assault landing reduce somewhat the danger of skidding sideways in maintaining directional control.

CAUTION

Extreme care should be exercised during crosswind landings on slippery runways. Although the use of a minimum nose gear touchdown speed may prevent loss of directional control immediately after touchdown, nose gear steering and braking may not be fully effective on a slippery runway.

CAUTION

Do not use reverse thrust unless necessary. Control problems could occur in the event of asymmetrical reverse.

If the aircraft starts to yaw, the pilot should not try to "catch" it by use of asymmetric braking; rather, he should release both brakes, and after the aircraft stabilizes, use the rudder and light application of brakes.

LANDING ON UNIMPROVED RUNWAYS.

When landing on unimproved runways, it is recommended that the assault landing technique be employed to reduce the length and rate of travel on rough terrain to a minimum. Carburetor air levers should be placed in FILTER to exclude foreign matter from the engine air induction system.

CAUTION

Care must be exercised when reversing on unimproved runways as flying gravel will damage propeller blades and dust will impair the pilot's forward visibility at low airspeeds.

TOUCH-AND-GO LANDING.

Touch-and-go landings will not be made without authorization of the major air command concerned.

Accomplish the approach and landing with any flap setting.

On The Runway.

a. Touch down nose gear.

b. Maintain directional control with rudder and ailerons.

c. Wing flaps - As required.

d. Propellers - INCREASE RPM.

e. Elevator trim tabs - Set for take-off.

f. Cowl flaps - As required.

g. Throttles - Maximum Power.

h. Jet throttles - As required.

Jets should be used at heavy gross weights when reciprocating engine out performance is marginal.

WARNING

A significant element of danger is involved in making touch-and-go landings because of the many rapid actions which must be performed while rolling on the runway at high speed, or while flying in proximity to the ground. Accordingly, the pilot will thoroughly brief the crew on coordination and procedures to be used.

After Take-off.

Refer to normal checklist, AFTER TAKE-OFF - CLIMB.

Before Landing (After Touch-And-Go).

Refer to normal checklist, BEFORE LANDING.

STOP AND GO.

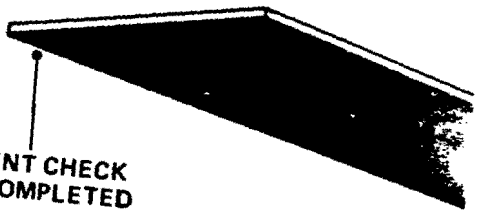
Accomplish a normal approach and landing to a full stop. Reverse thrust should not be used to preclude locking the controls and shutting down the jet engines. If reverse thrust is required, a stop and go landing will not be accomplished.

ON THE RUNWAY.

1. Wing flaps - As required. CP
2. Propellers - INCREASE. CP
3. Elevator trim tabs - Set. P
4. Cowl flaps - TAKE-OFF. CP
5. ON THE RUNWAY Checklist - Completed. CP

LANDING and

NOTE . . . *This illustration represents a typical landing. For landing speeds and distances, refer to Appendix I.*



DESCENT CHECK LIST COMPLETED
(prior to entering downwind leg)

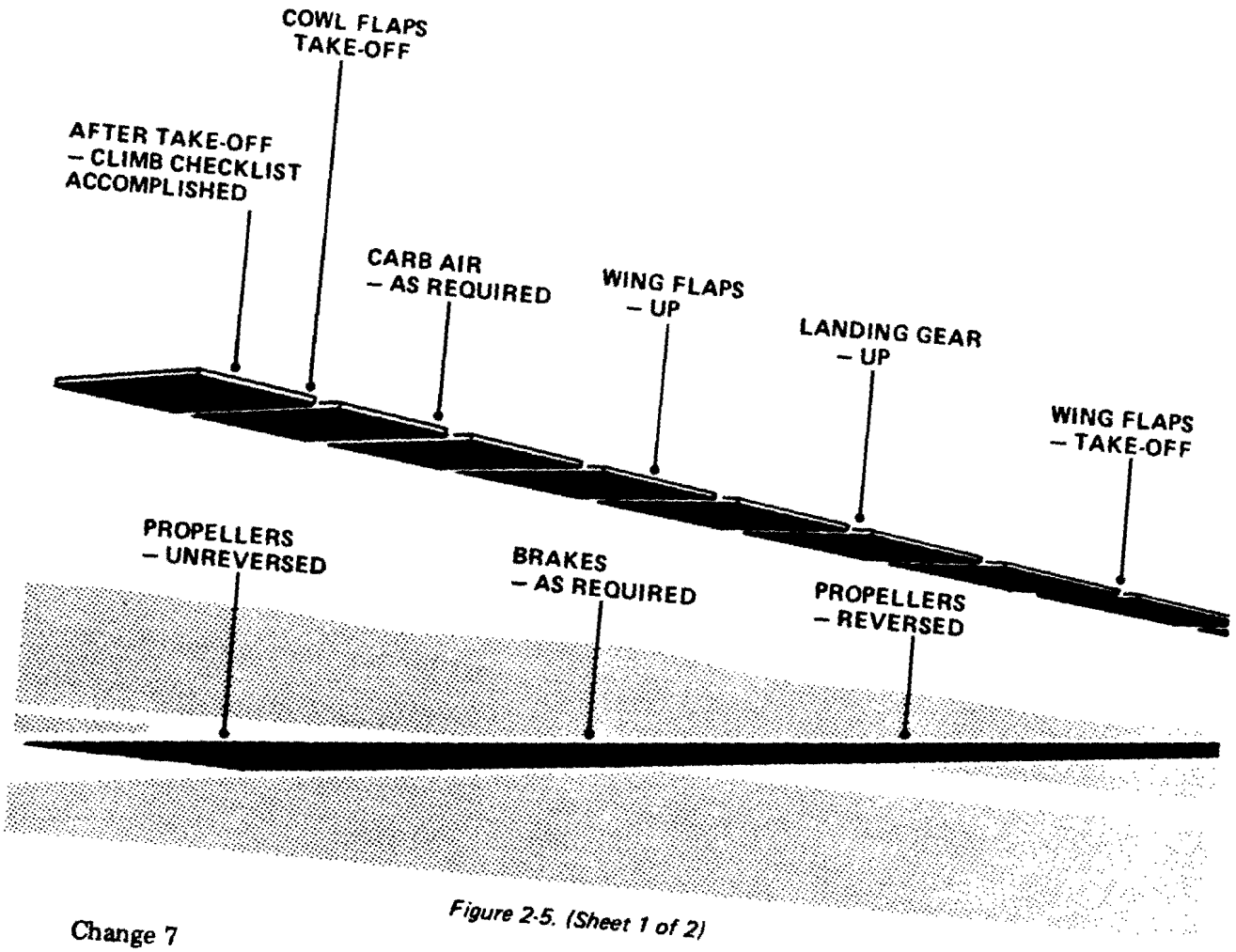
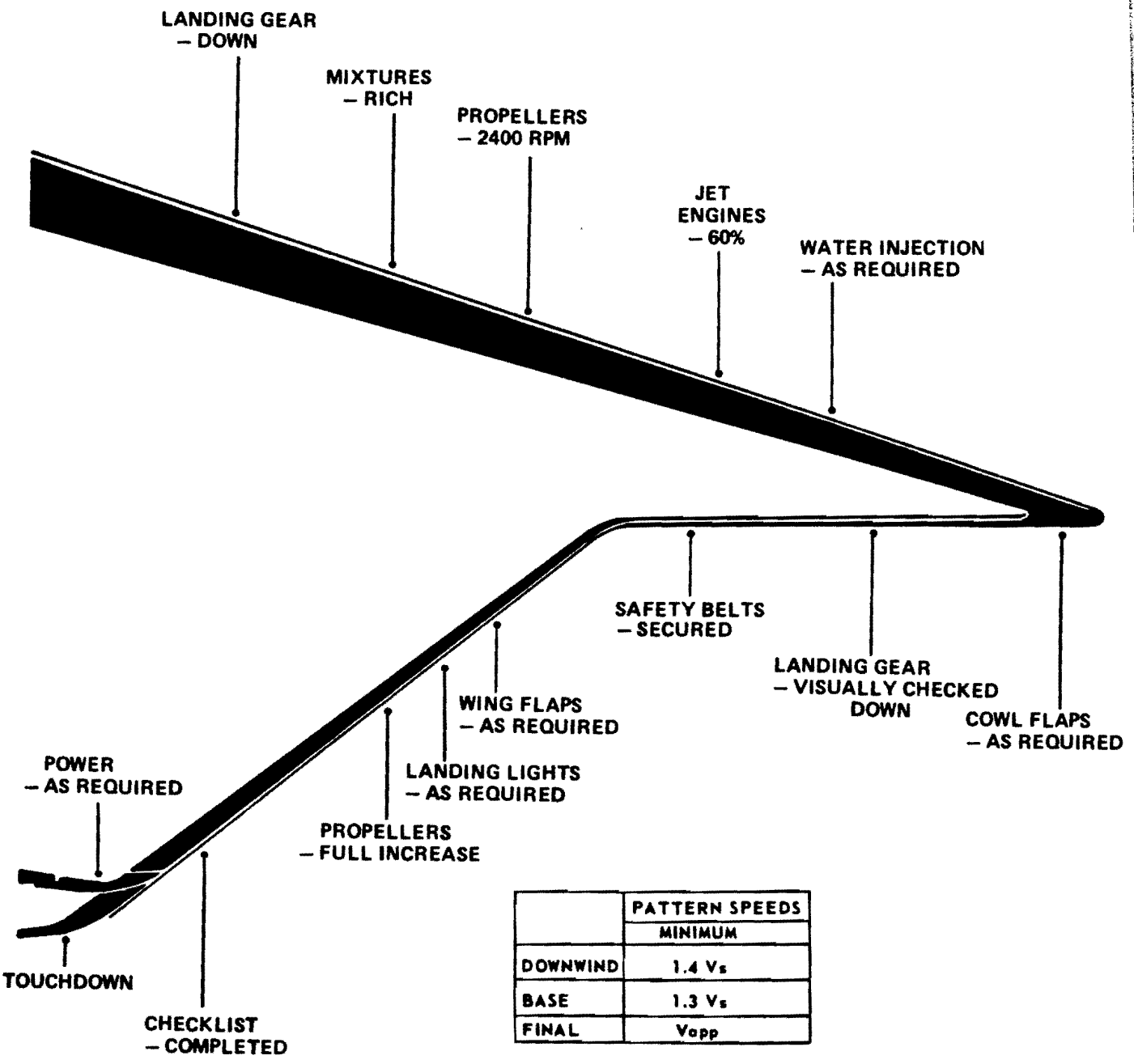


Figure 2-5. (Sheet 1 of 2)

GO-AROUND



	PATTERN SPEEDS
	MINIMUM
DOWNWIND	1.4 V_S
BASE	1.3 V_S
FINAL	V_{app}

Figure 2-5. (Sheet 2 of 2)

TAKE-OFF.

Refer to TAKE-OFF procedures, this section.

AFTER TAKE-OFF-CLIMB.

Refer to AFTER TAKE-OFF-CLIMB Checklist, this section.

GO-AROUND.

In the event a missed approach or go-around becomes necessary accomplish the GO-AROUND checklist.

(1.) Power - As required. P, CP

The pilot will state "Go-Around, propellers full increase". The copilot will advance the propellers to full increase and set jet power as briefed or as directed by the pilot. The pilot will advance reciprocating engine throttles as required to obtain the desired rate of climb.

(2.) Wing flaps - TAKE-OFF (if extended). CP

The pilot will state, "Flaps, Take-off." The copilot will acknowledge and will set the flaps if they have been extended beyond TAKE-OFF.

(3.) Landing gear - UP. CP

After the pilot determines that the aircraft will not touch down, he will give a visual and aural signal "Gear Up". The copilot will acknowledge and place the landing gear lever to the UP position. When the landing gear indicators indicate gear up, the copilot will advise the pilot "Gear Up".

(4.) Wing flaps - UP. CP

The pilot will state "Flaps up." The copilot will raise the wing flap lever.

5. Carb air - As required. CP, FM

Carb air temperature will be maintained as previously briefed. Carb air controls will be positioned to cold if carb heat is not required.

6. Cowl flaps - TAKE-OFF. CP, FM

7. AFTER TAKE-OFF-CLIMB checklist - Completed. FM

Refer to the AFTER TAKE-OFF-CLIMB checklist and complete the appropriate items.

AFTER LANDING.

After clearing the landing area, accomplish the following procedure.

(1.) Jet engines - As required. CP, FM

2. Wing flaps - UP. CP

3. Anti-ice/deicing - OFF. CP, FM

Turn off the propeller deicing, Jet anti-icing, and wing/tail anti-icing equipment.

4. Pitot heat - OFF. CP, FM

5. Reciprocating engine boost pumps - OFF. CP, FM

6. Water injection - OFF. CP, FM

7. Landing lights - As required. P

8. Troop signal lights - CAUTION. CP, FM

9. Cowl flaps - OPEN. CP, FM

10. Carb air - As required. CP, FM

11. IFF/NAV radios - As required. CP, FM

Turn the IFF to STBY or OFF to eliminate signals that may block the controllers scope and interfere with the control of airborne aircraft.

NOTE

If it is desired to retain the mode 4 codes between flight, it is necessary to lock the codes into the transponder computer before turning the MASTER control to OFF. Turning the Master control to OFF, or removing power from the aircraft without first locking the codes

into the transponder computer will zeroize the mode 4 codes. To lock the code, momentarily place the CODE control in the HOLD position after landing, and then proceed with the normal stopping procedure. When power is next applied, the transponder computer will again operate normally. If it is again desired to lock the code in the transponder computer, it is necessary to repeat the HOLD procedure. The transponder computer will zeroize any time that power is applied and the CODE control is turned to ZERO, even if the HOLD function has been activated. Once the code is zeroized, the code is not available until reset.

12. Landing gear pins - Installed. FM (LM)

Before beginning to move about in the cargo compartment the flight mechanic and loadmaster will advise the pilot of their intent. The aircraft should be stopped during this step. If taxiing is continued, the pilot will exercise Caution until the flight mechanic and loadmaster are again seated or restrained.

WARNING

An emergency requiring sudden or abrupt use of the brakes or a malfunction causing the brakes to grab may result in unrestrained personnel being thrown violently to the cargo floor.

13. AFTER LANDING Checklist - Completed. FM

POSTFLIGHT ENGINE CHECK.

If an engine malfunction is suspected, the following postflight engine checks will be made upon completion of the last flight of the day. Procedures are same as those outlined in ENGINF RUNUP and ENGINE WARM UP.

1. Nose landing gear and parking brake - Centered and set. P
2. Mixtures - RICH. P
3. Propellers - Checked. P
4. Power and ignition - Checked. P, CP
5. Superchargers - Checked. P
6. Idle speed - Checked individually. P

   Check for an idle speed of 650 rpm ± 25 rpm.

7. POSTFLIGHT ENGINE CHECK Checklist - Completed. CP

RECIPROCATING ENGINE SHUTDOWN.

1. Nose landing gear and parking brake - Centered and set. P
2. AUXILIARY HYD PUMP - OFF. P
3. Aileron deice - OFF. CP
4. Windshield heat - OFF. CP
5. Secondary bus - As required. CP
6. Power - 1000 RPM. P

   Run engines at 1000 rpm for 30 seconds.

7. Ignition switch safety - Checked. P, CP
8. Oil dilution - As required. P

   Refer to COLD WEATHER PROCEDURES, Section IX, for oil dilution procedures.

9. Right mixture - OFF. P

10. Left hydraulic pump - Checked. P

NOTE

Wing flaps are extended and raised to check operation of left engine-driven hydraulic pump. Properly functioning hydraulic pump will immediately restore the pressure to the normal operating range. Flaps will be permitted to travel to selected position prior to reversing direction of the flap mechanism. An alternate method of accomplishing this check is by opening the cargo door or lowering the ramp after the right engine is shutdown.

11. APU - As required. CP
12. Left mixture - OFF. P
13. Ignition - OFF, after propellers stop. P
14. Lights - OFF. CP, FM
    a. Anti-collision lights - OFF.
    b. Position lights - OFF.
    c. Formation/NAV lights - OFF.
15. Troop signal lights - OFF. CP
16. All inverters - OFF. P, CP
17. Radio Altimeter - OFF. P
18. RECIPROCATING ENGINE SHUTDOWN Checklist - Completed. CP

BEFORE LEAVING THE AIRCRAFT.

Employ the following procedure in securing the aircraft.

1. Elevator and rudder reverse locks - Released. P
2. Flight controls - LOCKED. P
3. All radios - OFF. P, CP
4. Electrical switches - As required. ALL
5. Carb air - FILTER. CP

   The carb air should be placed in the FILTER position after the last flight of the day to avoid the possible damage of clogging of carburetor air intake.

6. IFF - As required. CP

   Mode 2 code selector - Zero or remove the classified code as applicable.

7. Form 781 - Completed. P

   In addition to established requirements for reporting any system defects, unusual and excessive operations, the flight crew will also make entries in Form 781 to indicate when any limits in the Flight Manual have been exceeded.

8. Cowl flaps - As required. FM

NOTE

Leave the cowl flaps open at least 15 minutes after shutting down engines.

9. APU generator - OFF, APU - IDLE. FM
10. Wheel chocks - In place. FM
11. Tie-down - Completed. FM

    Refer to T.O. 1C-123B-2-1 for complete parking and mooring requirements.

12. Pitot tube covers - Installed. FM
13. APU - Idle five minutes, then OFF. FM
14. Battery Switch - OFF. FM
15. BEFORE LEAVING THE AIRCRAFT Checklist - Completed. FM

ASSAULT PROCEDURES.

Prior to the assault landing, the normal checklist procedures will be used up to and including the BEFORE LANDING checklist. After landing in the assault landing area, should the engines be shut down, the normal checklist will again be used through the BEFORE TAKE-OFF checklist.

Since weather facilities are not available at the assault landing zone, the TAKE-OFF AND LANDING DATA will be completed prior to take-off from the departure airfield, including the landing and take-off data at the assault landing zone, based on forecast conditions, when practical. Additionally, performance data should be computed to cover any unexpected situation, i.e., cargo not off-loaded.

LANDING.

Refer to LANDING procedures, this section.

GO-AROUND.

Refer to GO-AROUND procedures this section.

ASSAULT AFTER LANDING.

Accomplish this check immediately after clearing the landing area or while taxiing to the offload point on the landing zone.

(1) Jet start switches - As required. CP, FM

NOTE

When reverse thrust is used during landing, the jet engine shutter doors are held closed by a sequencing relay. If an immediate restart is required, both jet start switches must be positioned to OFF. This allows the shutter doors to open when the SHUTTER position is subsequently selected.

2. Wing flaps - TAKE-OFF. CP

3. Anti-ice/deicing - OFF. CP, FM

Turn off the propeller deicing, Jet anti-icing, and wing and tail anti-icing equipment.

4. Pitot heat - OFF. CP, FM

(5) Landing lights - As required. CP/FM

6. Troop signal lights - CAUTION. CP, FM

7. Water injection - OFF. CP/FM

8. Cowl flaps - OPEN. CP, FM

9. IFF - STDBY. CP, FM

10. Trim tabs - Set. P

11. Anti-collision/POSITION lights - As required. FM

12. ASSAULT AFTER LANDING Checklist - Completed. FM

BEFORE TAKE-OFF.

This checklist will be accomplished at the descretion of the aircraft commander prior to take-off:

1. Crew briefing - Completed. P

2. Propeller - Full increase. P

(3) Mixtures - RICH. CP

4. Carb air - As required. CP

5. Cargo ramp, doors, and hatches - Closed. FM (LM)

CAUTION

Assure cargo door and ramp area are clear prior to closing.

6. Troop signal lights - OFF. CP

7. Elevator and rudder reverse locks - Released. P

(8) Jets - Start/60%. CP, FM

9. Secondary bus - NORMAL. CP

10. Water injection - ON/RESET. CP

If a water injection system malfunction is noted or if water must be conserved, the water injection switches should remain off.

The following items will be accomplished when cleared onto the runway:

11. Flight controls — Checked. P

Check full travel for freedom of movement.

12. Cowl flaps - TAKE-OFF. CP

13. Pitot heat - As required. CP, FM

14. Anti-collision/POSITION/landing lights - As required. CP, FM

15. Anti-ice/deice - As required. CP

16. Seats, safety belts, and shoulder harnesses - Secured. All

17. IFF - Set/NORM. CP

18. BEFORE TAKE-OFF Checklist - Completed. CP

TAKE-OFF.

If the runway length is insufficient to permit a normal take-off, the pilot will release the brakes after advancing the throttles to maximum power and proceed with a short field or assault take-off.

AFTER TAKE-OFF – CLIMB.

Refer to AFTER TAKE-OFF-CLIMB checklist this Section.

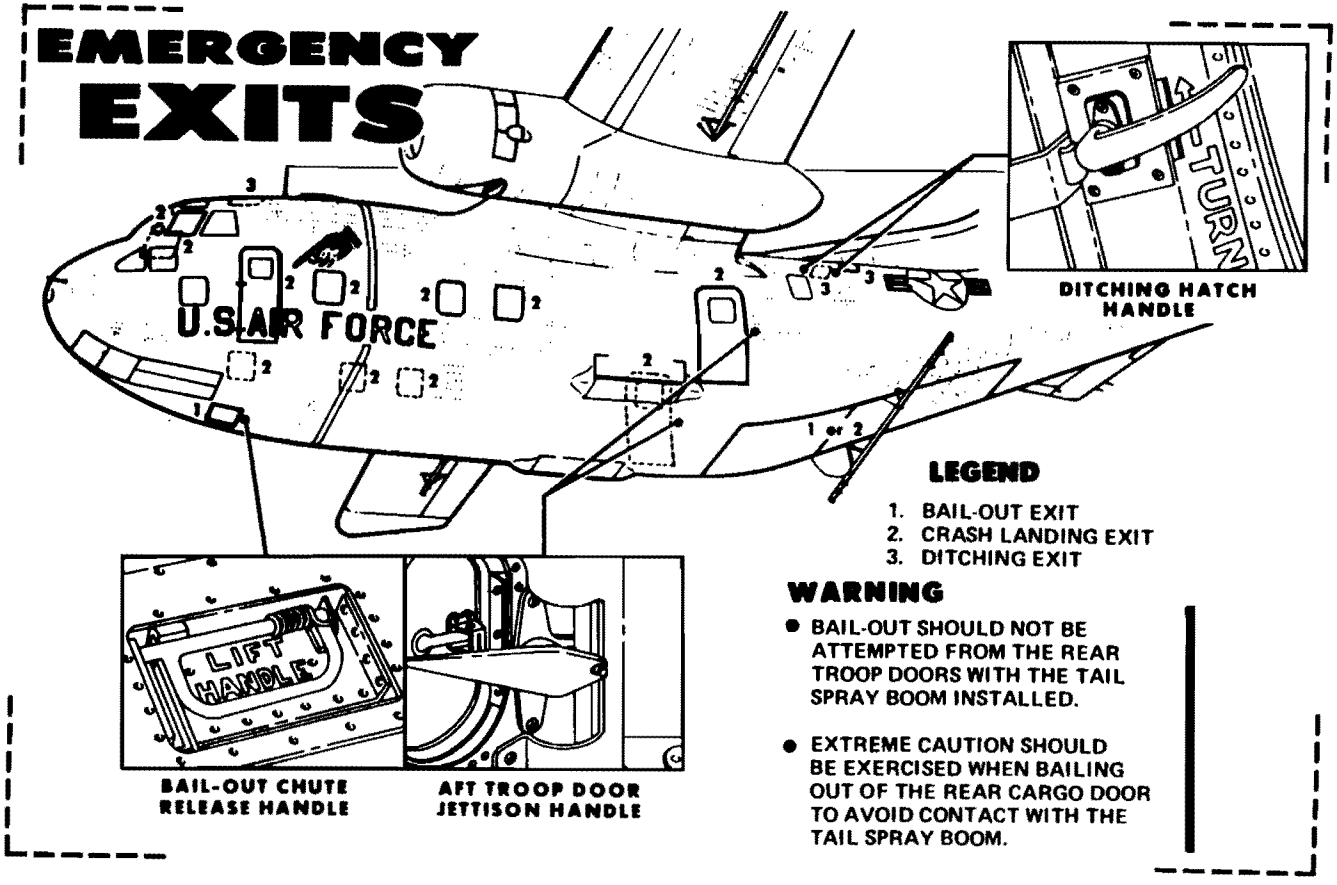


Figure 2-6

PASSENGER INFORMATION

NOTE: Should it become necessary to crash land or ditch, remain seated until aircraft forward motion has ceased.

SEAT BELTS—Seat belts will be fastened during all ground operations, take-offs, landings, and any time turbulence is encountered in flight, or as directed by the pilot.

SMOKING—SMOKING will not be permitted during ground operations, take-off and climb, immediately prior to and during landing, any time gas fumes are detected during flight, or as directed by the pilot.

ALARM BELL SIGNALS

BAIL-OUT

Prepare for bail out ..... 3 short rings
Evacuate aircraft ..... 1 long ring

DITCHING

Prepare for ditching (don exposure suit, life vest and fasten seat belt) ..... 6 short rings
Brace for impact (10 seconds prior to initial touchdown) ..... 1 long ring

CRASH LANDING

Same as Ditching.

EMERGENCY EXITS—See reverse side.

PARACHUTES—The parachute will be worn at all times when directed by the pilot. Before bail-out, tighten parachute straps.

Pages 2-43 and 2-44 Deleted.