Pilot's Handbook of Flight Operating Instructions

NAVY MODELS

F4U-1 F3A-1 FG-1
F4U-1C F3A-1D FG-1D
F4U-1D Airplanes

BRITISH MODELS

CORSAIR I • II • III • IV

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OF PRINCIPAL SECTIONS
PILOTS HANDBOOK
of
FLIGHT OPERATING INSTRUCTIONS
FOR

U.S. Navy Models

F4U-1 • F4U-1C • F4U-1D
F3A-1
FG-1 • FG-1D

British Models

CORSAIR I • II • III

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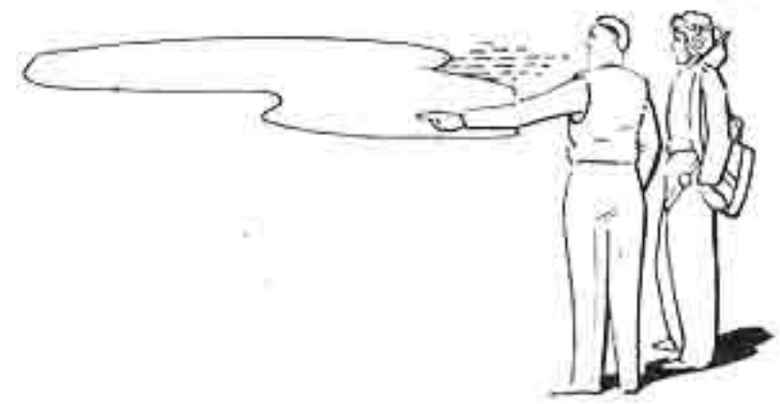
Section I
DESCRIPTION



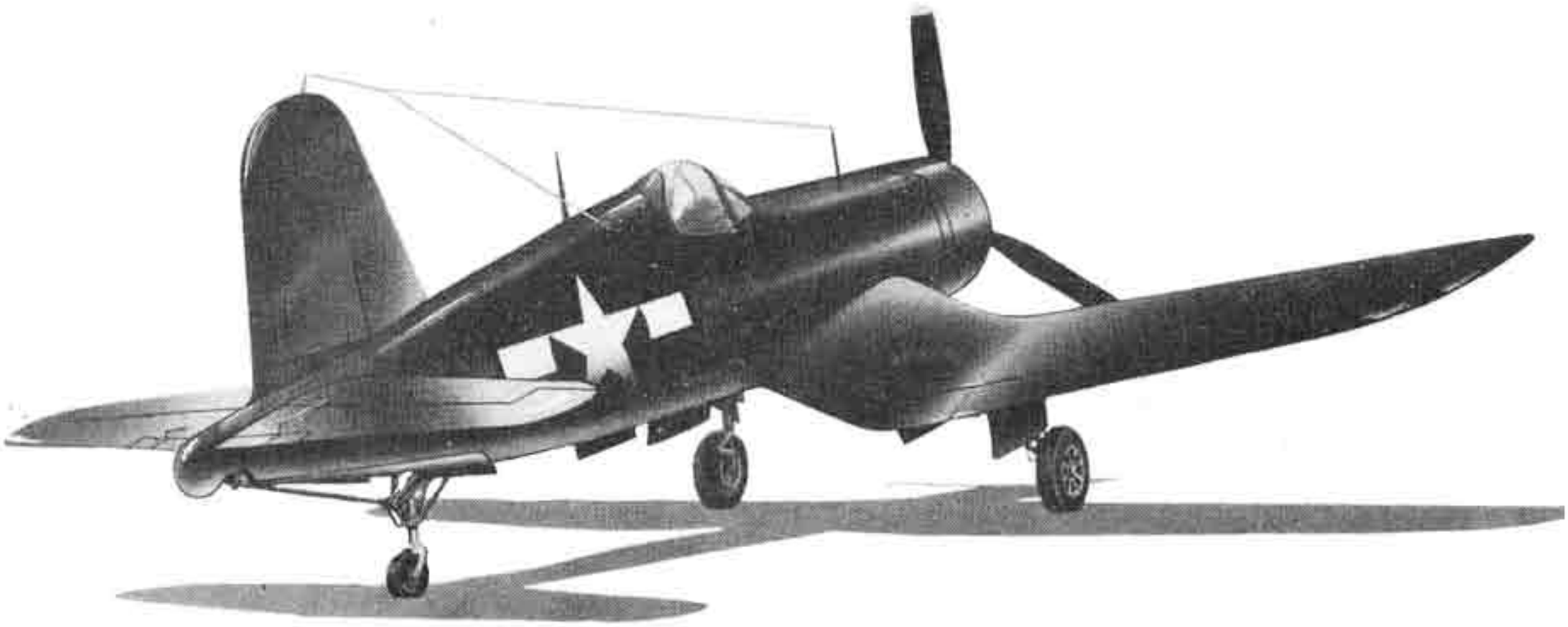


Figure 1—The Corsair

1. AIRPLANE.

a. GENERAL.—The Model F4U-1, F3A-1, FG-1 airplanes, F4U-1C airplanes and British Corsair I, II, III airplanes are single-engine, single-seat, folding low-wing monoplanes designed as carrier and land based fighters.

In the Model F4U-1C airplane (cannon wing design), the .50 caliber machine guns are replaced by M2 cannons.

The Model F4U-1D and FG-1D airplanes (center section twin pylons design) are equipped for operation as long range fighter-bombers when carrying either one or two 1000 pound bombs.

The approximate gross weights for these airplanes with full ammunition loading and full internal fuel, but with no external loading, are as follows:

F4U-1, F3A-1, FG-1 ..... 12,820 pounds

F4U-1C ..... 12,063 pounds

F4U-1D and FG-1D ..... 12,028 pounds

The approximate overall dimensions for these airplanes in the three-point attitude are as follows:

Length ..... 33 ft.

Height ..... 12 ft.

Span ..... 41 ft.

BRITISH

Span ..... 40 ft.

b. ENGINE.—Pratt and Whitney Double Wasp; R-2800-8W; two stage supercharged; two speed auxiliary stage; geared 2:1.

c. PROPELLER.—Production airplanes are normally equipped with Hamilton Standard Hydromatic three blade 6501A-0 or 6541A-0 propellers having a diameter of thirteen feet, one inch. If this propeller is not available, those Hamilton Standard propellers with blade designations of 6443A-21 or 6525A-21 with a diameter of thirteen feet, four inches may be substituted.

d. STARTER AND PRIMER.

(1) CARTRIDGE STARTER—ECLIPSE, TYPE III.

(a) Breech access door—upper right hand accessory compartment.

(b) Starter switch—electrical panel (right side of cockpit).

(c) Use Type "D" cartridges for starting under normal conditions. Type "E" may be used in cold weather, or under other conditions when Type "D" cartridges are inadequate.

(2) ELECTRIC STARTER—JACK AND HEINTZ, MODEL JH4NER.

(a) Starter switch—electrical panel (right side of cockpit).

Note

The ignition booster is operated by the starter switch. Hold starter switch "ON" until engine is running smoothly. Model F4U-1 airplanes with serial numbers below 02443 (except 02264 and 02391) are equipped with booster coils; subsequent Model F4U-1 airplanes (except 02468, 02469, 02470, 02485, 02516, 02576, 02715, 02716 and 02722) are equipped with induction vibrators in lieu of booster coils. Model FG-1, F3A-1, and Britsh Corsair I, II, III airplanes all are equipped with induction vibrators.

(3) PRIMER SWITCH.—The primer switch is located adjacent to the starter switch. The electric auxiliary fuel pump must be used to supply pressure for priming before starting the engine.

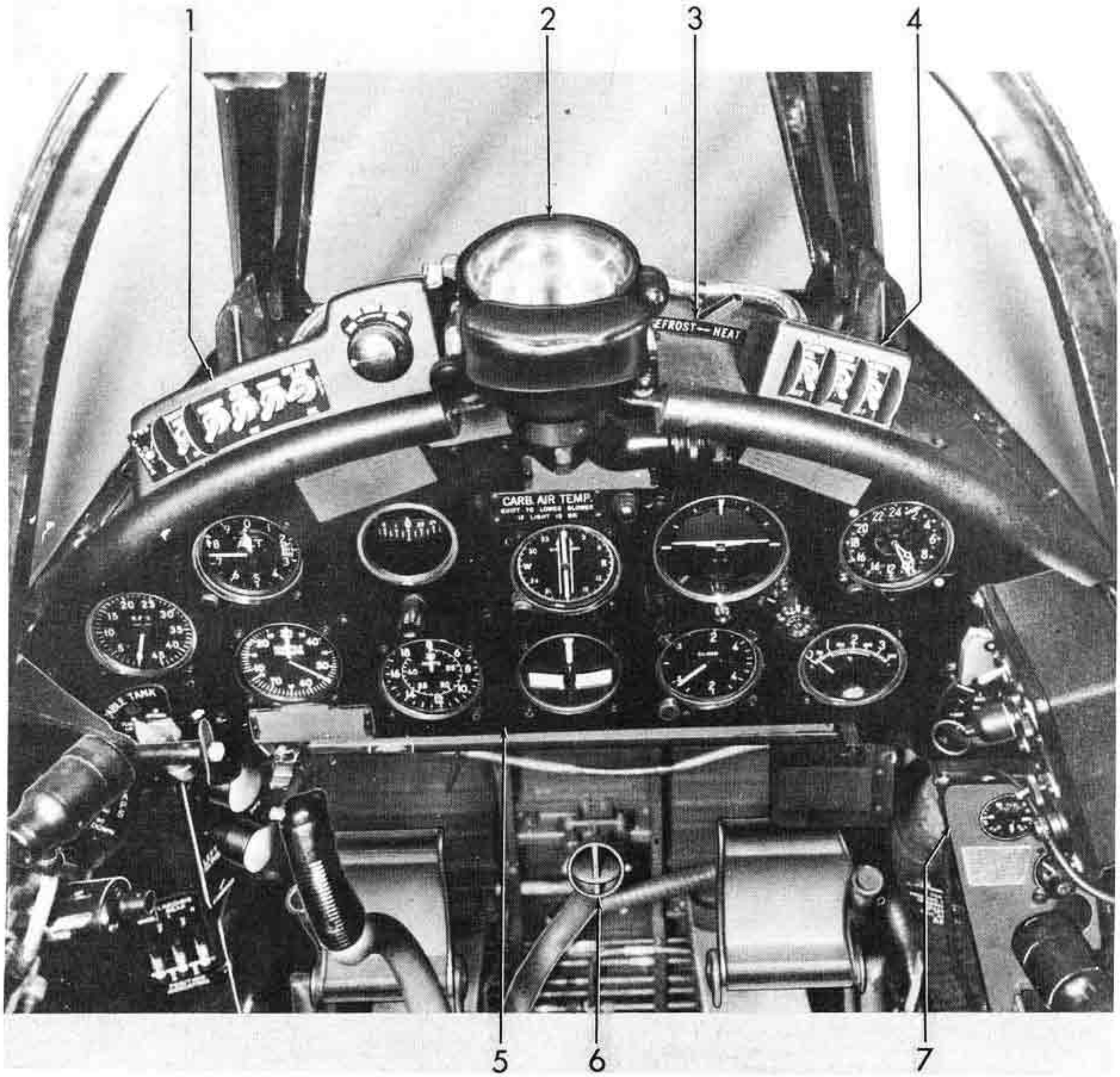


Figure 2—Cockpit—Forward

1. Gun Switch Box
2. Gun Sight
3. Defroster Control
4. Bomb Switch Box
5. Main Instrument Panel
6. Cockpit Ventilator
7. Right Hand Sub-Instrument Panel

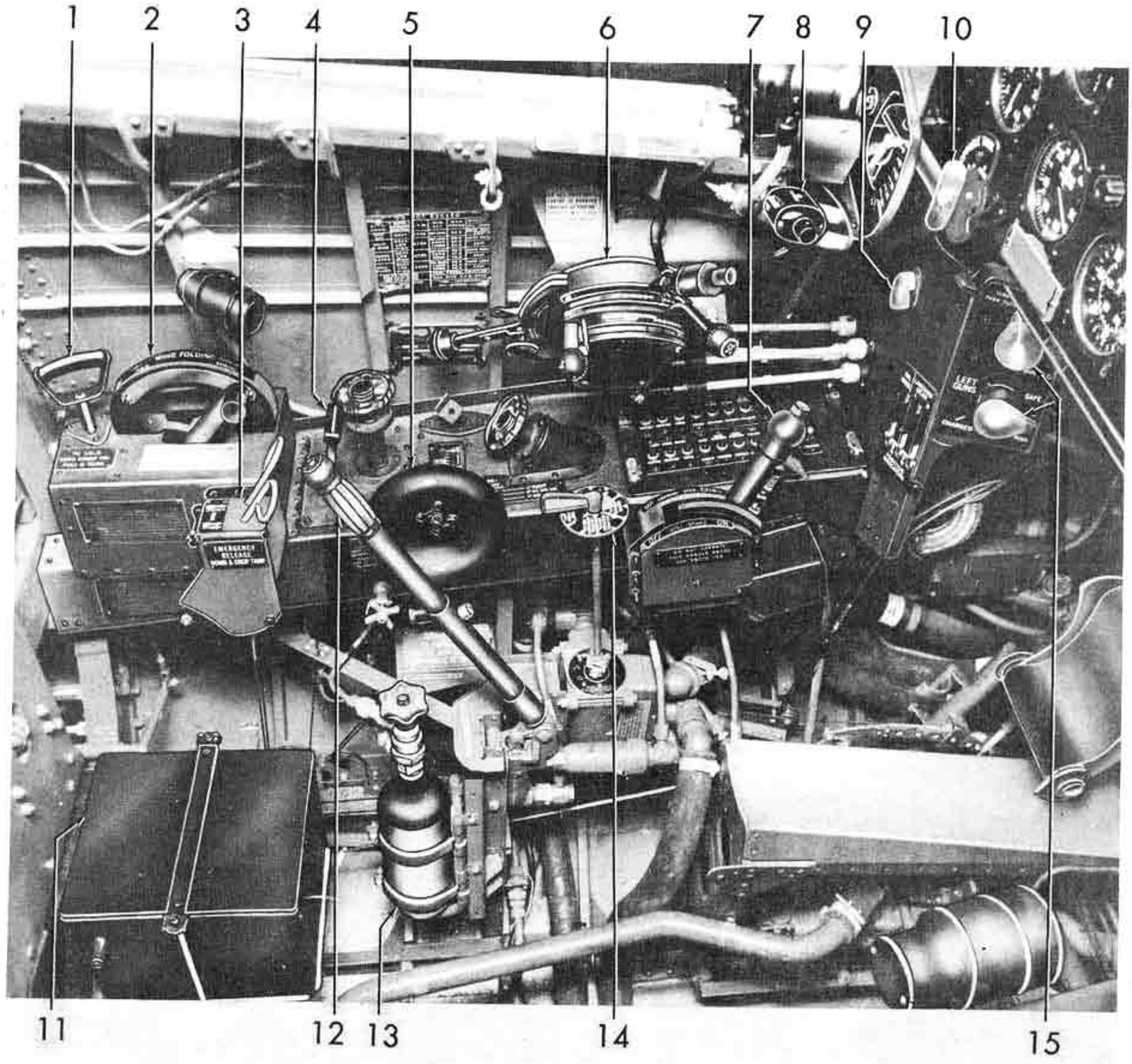


Figure 3—Cockpit—Left Side

1. Wing Hinge Pin Lock Control
2. Wing Folding Control
3. Manual Drop Tank and Bomb Release
4. Tail Wheel Lock Control
5. Trim Tab Controls
6. Engine Control Unit
7. Landing Gear and Dive Brake Control
8. Rocket Launching Switch
9. Ignition Switch
10. Wing Flaps Control
11. Battery
12. Hydraulic System Hand Pump
13. CO_2 Bottle—Emergency Landing Gear
14. Fuel Selector
15. Gun Charging Controls

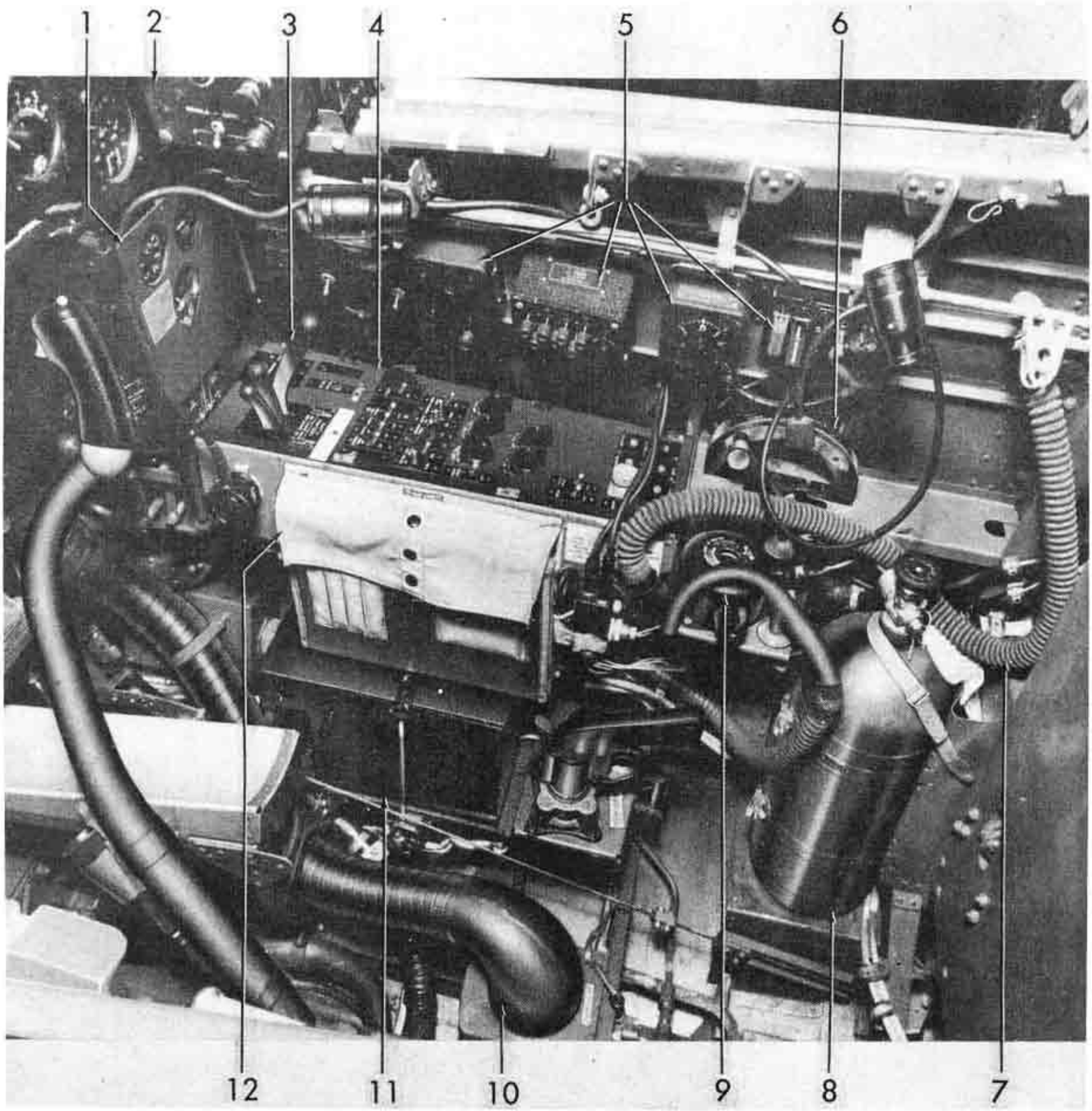
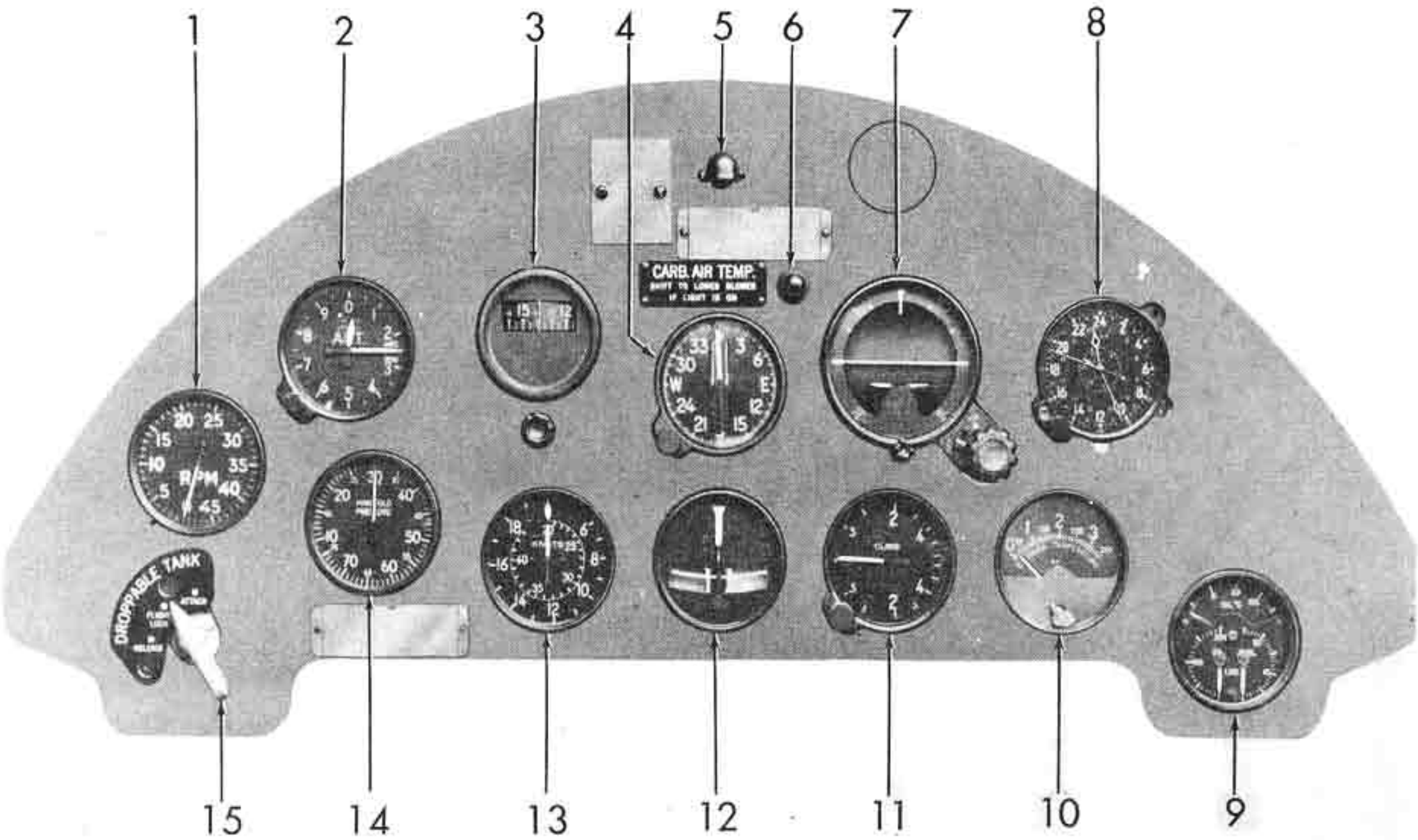
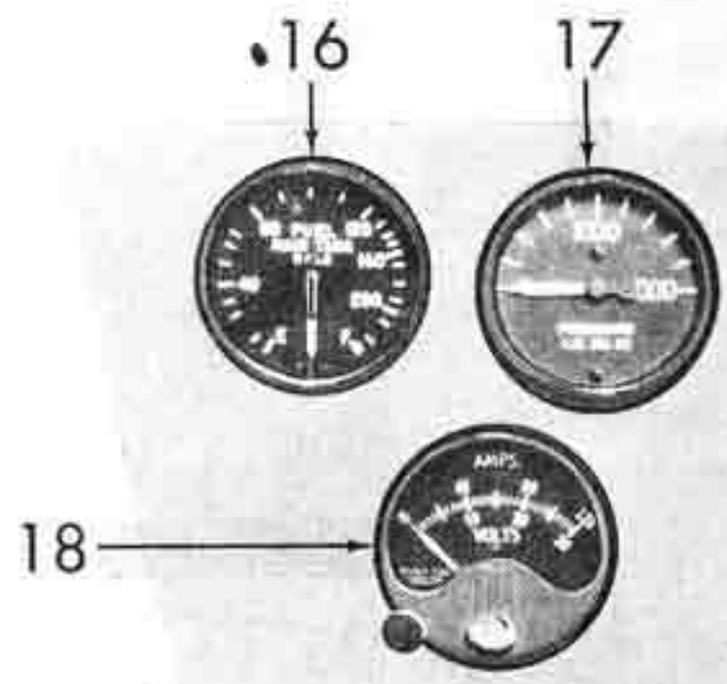


Figure 4—Cockpit—Right Side

1. Right Hand Sub-Instrument Panel
2. Rocket Station Distributor Box
3. Cooling Flaps Controls
4. Pilot's Distribution Box
5. Radio and Communications Controls
6. Arresting Hook Control
7. Oxygen Tube
8. Oxygen Bottle
9. Diluter-Demand Regulator
10. Defroster
11. Battery
12. Map Case



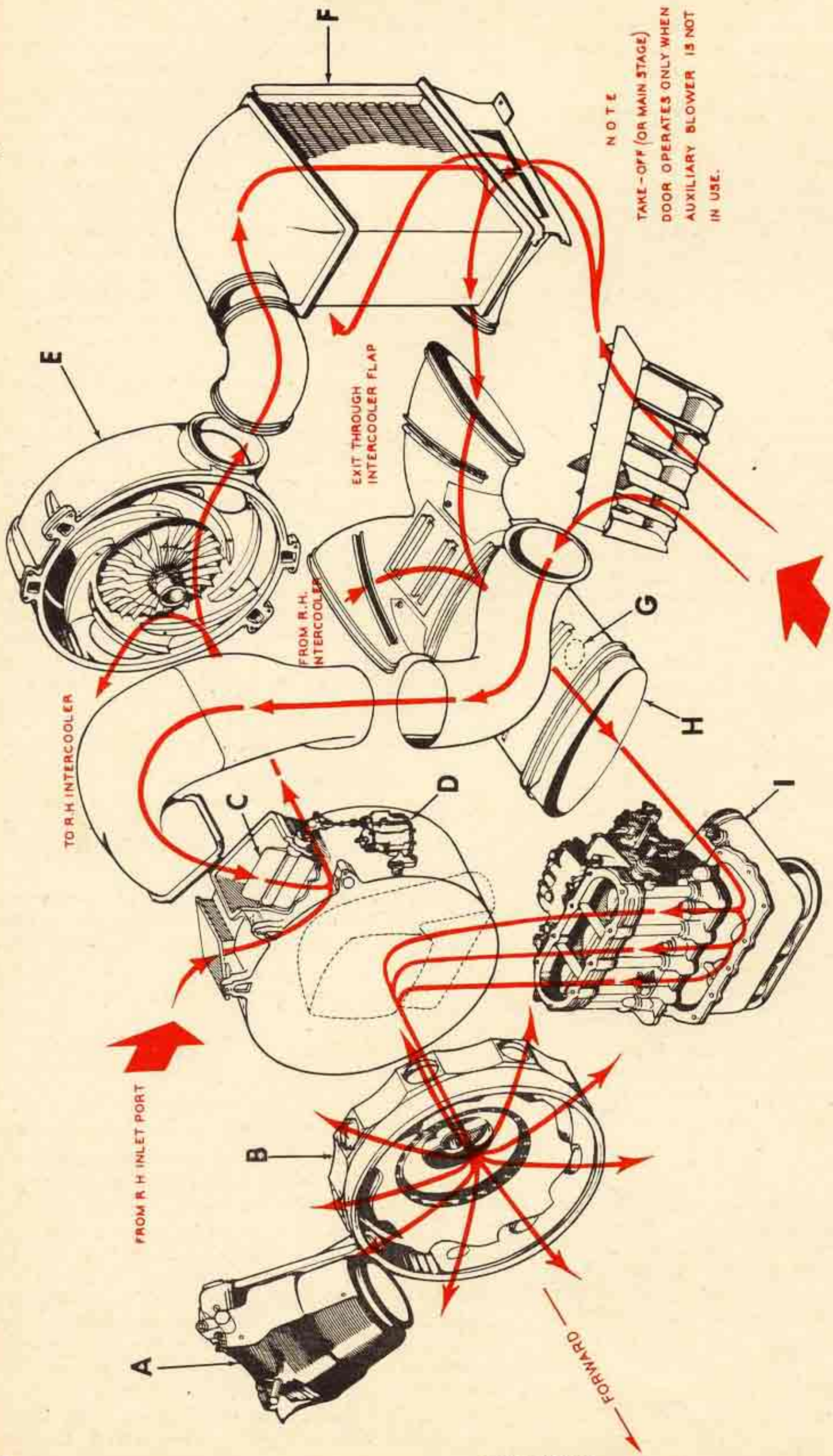
MAIN INSTRUMENT PANE



RIGHT HAND SUB-INSTRUMENT PANEL

Figure 5—Instrument Panels

1. Tachometer
2. Altimeter
3. Directional Gyro
4. Compass
5. Chartboard Light
6. Carburetor Air Temperature Warning Light
7. Gyro Horizon
8. Clock
9. Engine Gage Unit
10. Cylinder Temperature Indicator
11. Climb Indicator
12. Turn and Bank Indicator
13. Airspeed Indicator
14. Manifold Pressure Gage
15. Centerline Droppable Fuel Tank Switch
16. Fuel Quantity Gage
17. Hydraulic Pressure Gage
18. Voltammeter



KEY

A CYLINDER
B MAIN STAGE BLOWER
C AUXILIARY STAGE GATE VALVE
D AUX. STAGE SUPERCHARGER REGULATOR
E AUXILIARY STAGE BLOWER
F INTERCOOLER
G FIRE EXTINGUISHER VALVE
H CARBURETOR AIR "Y" DUCT
I CARBURETOR

Figure 7—Induction System

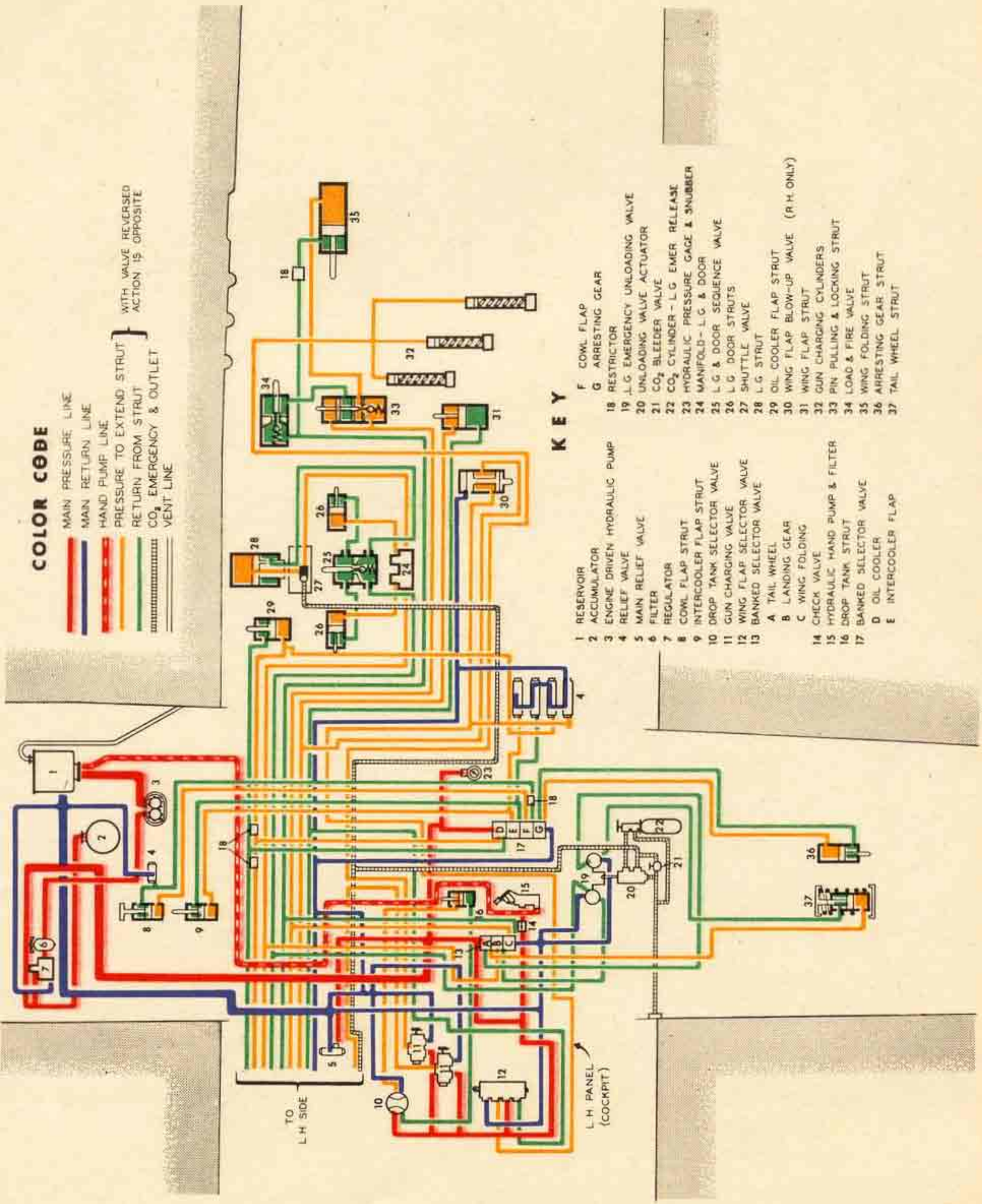


Figure 17—Hydraulic System Overall Diagram

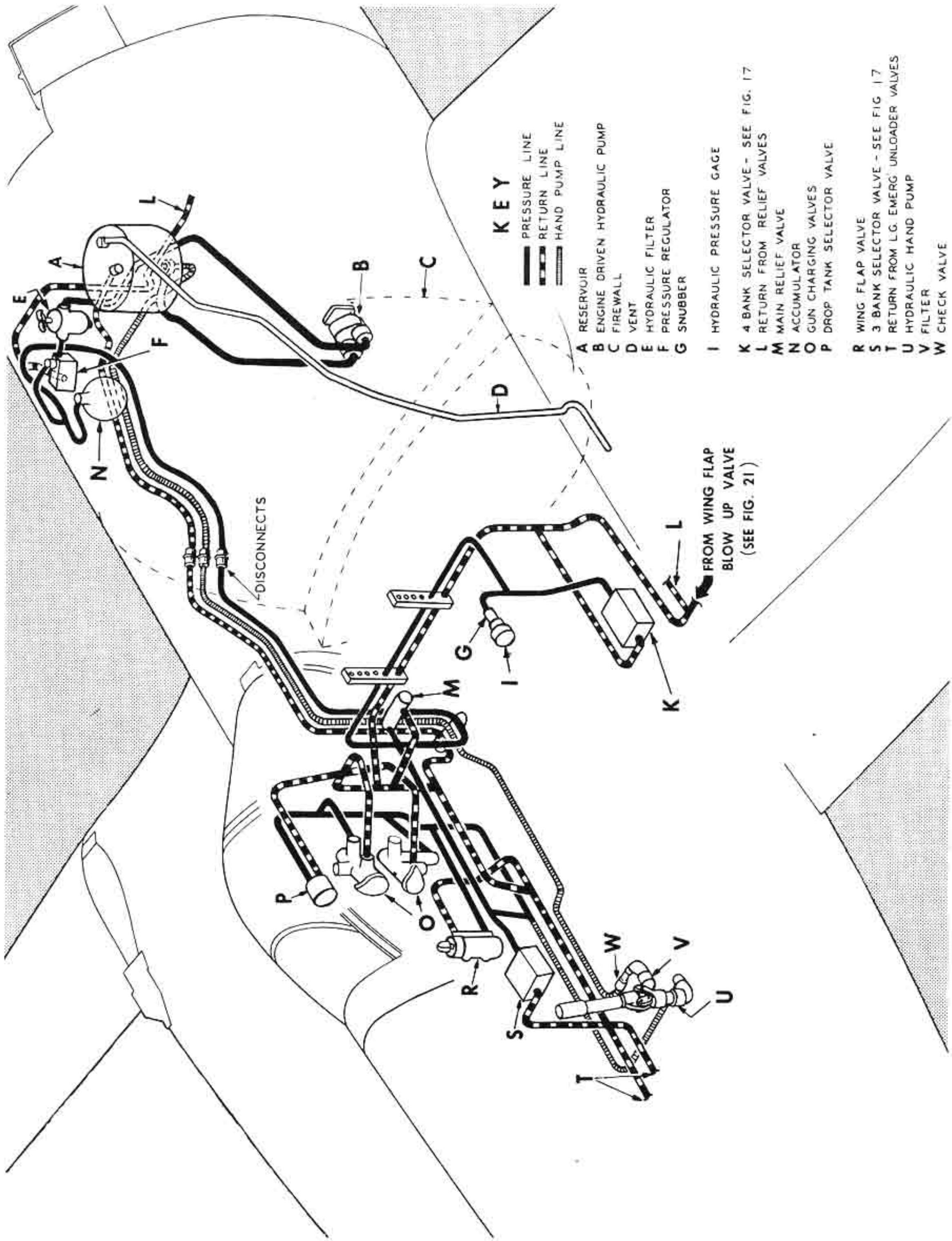


Figure 18—Hydraulic System Power Supply

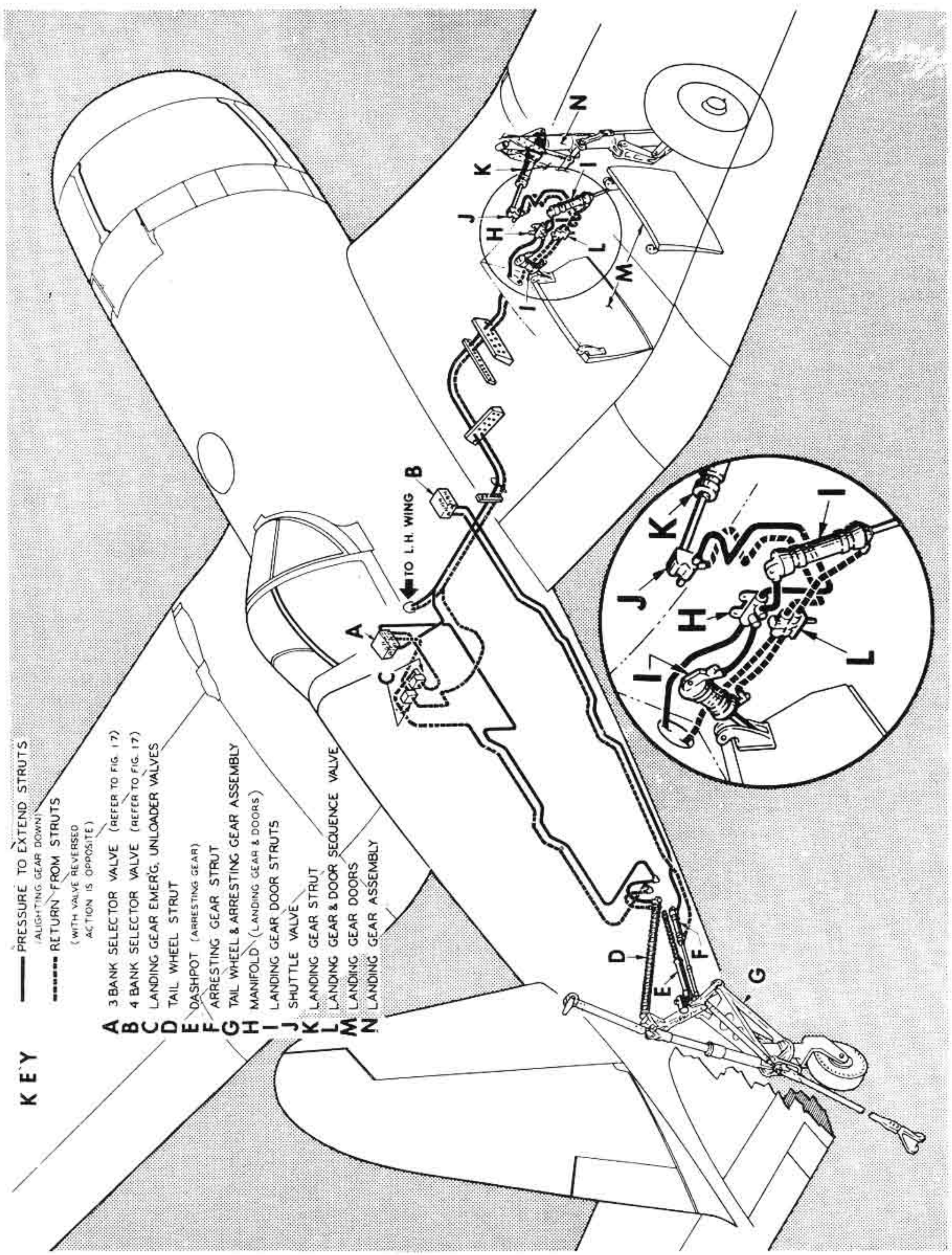


Figure 19—Alighting Gear Hydraulic System

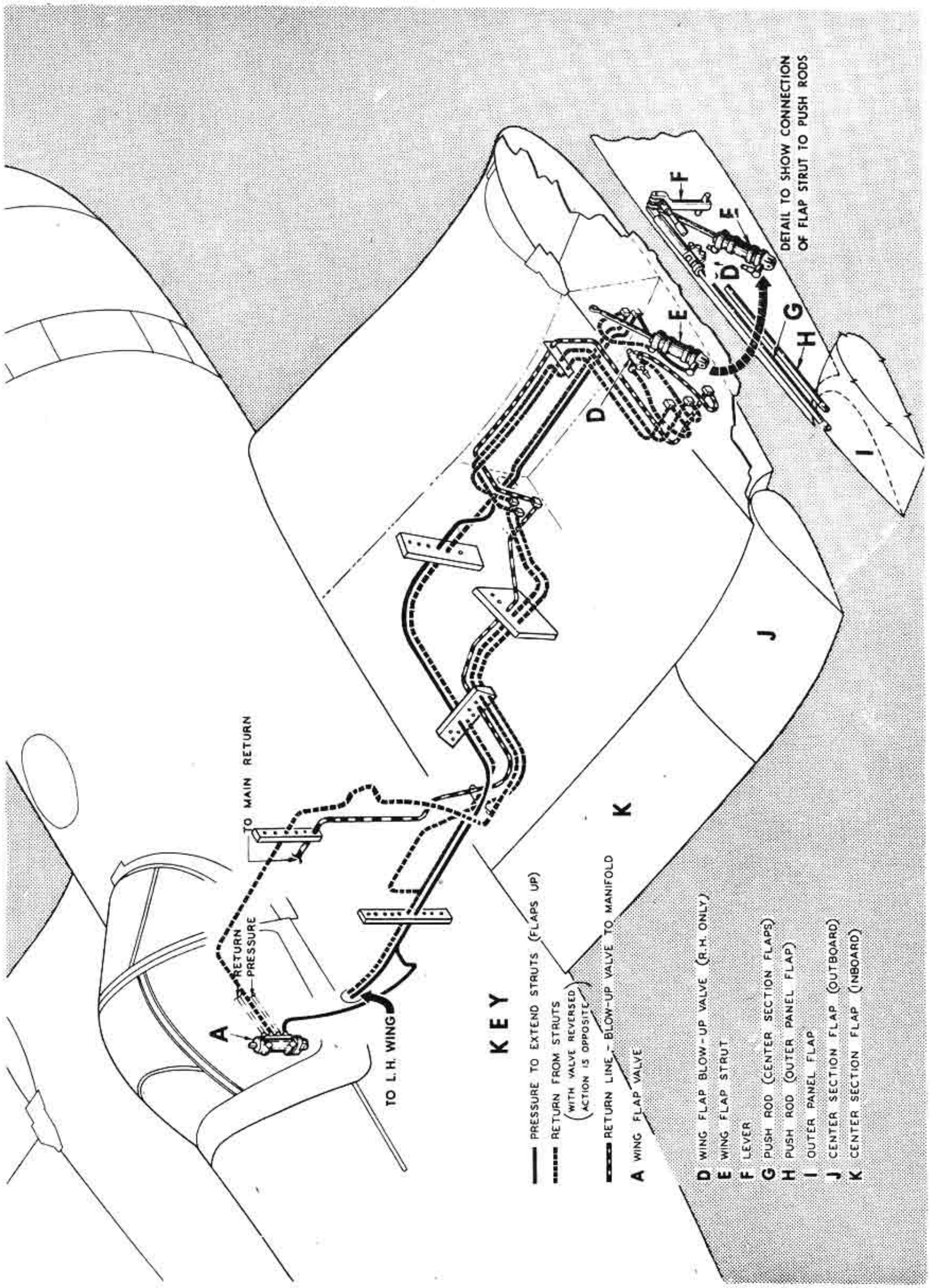


Figure 20—Wing Flaps Hydraulic System

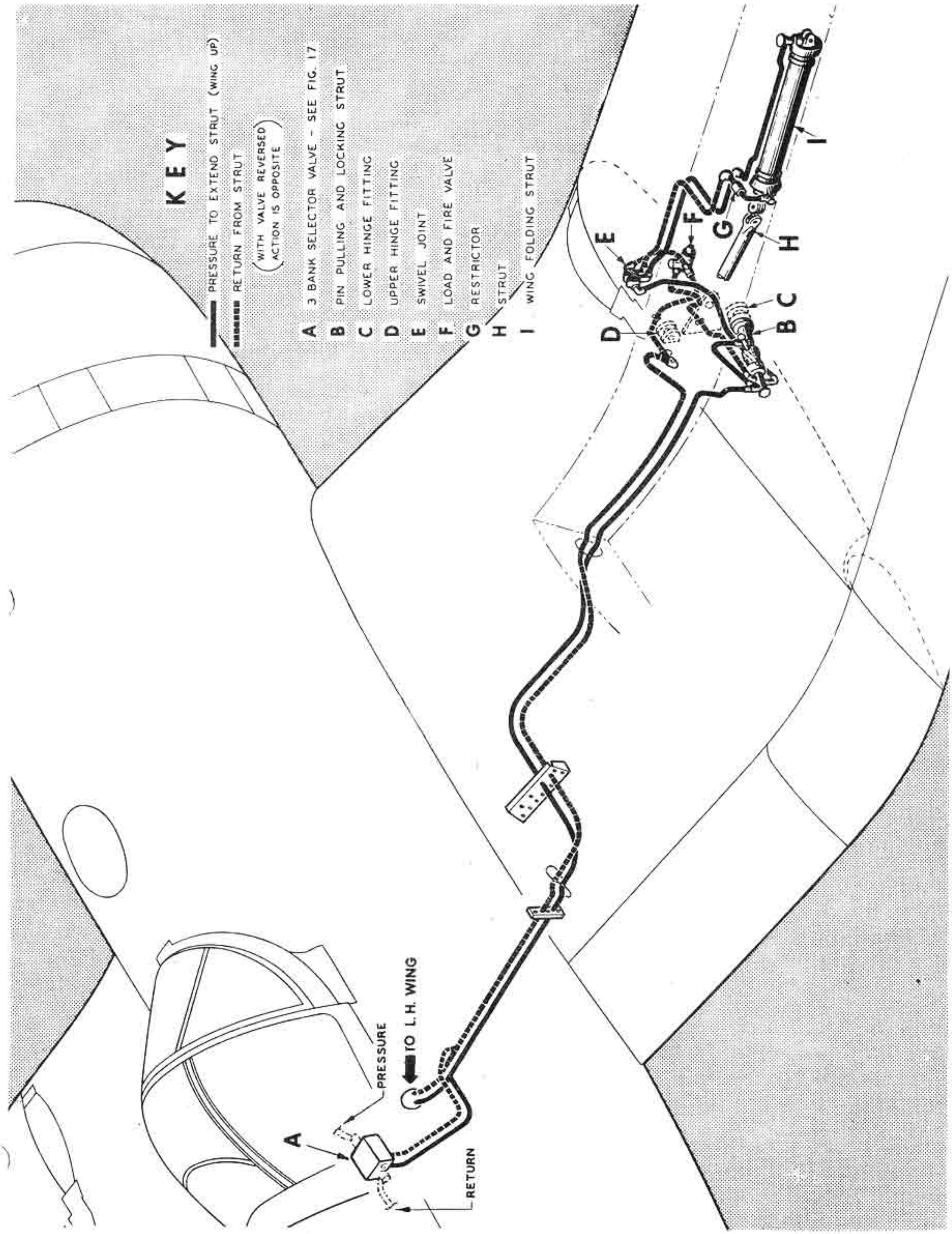


Figure 21—Wing Folding Hydraulic System

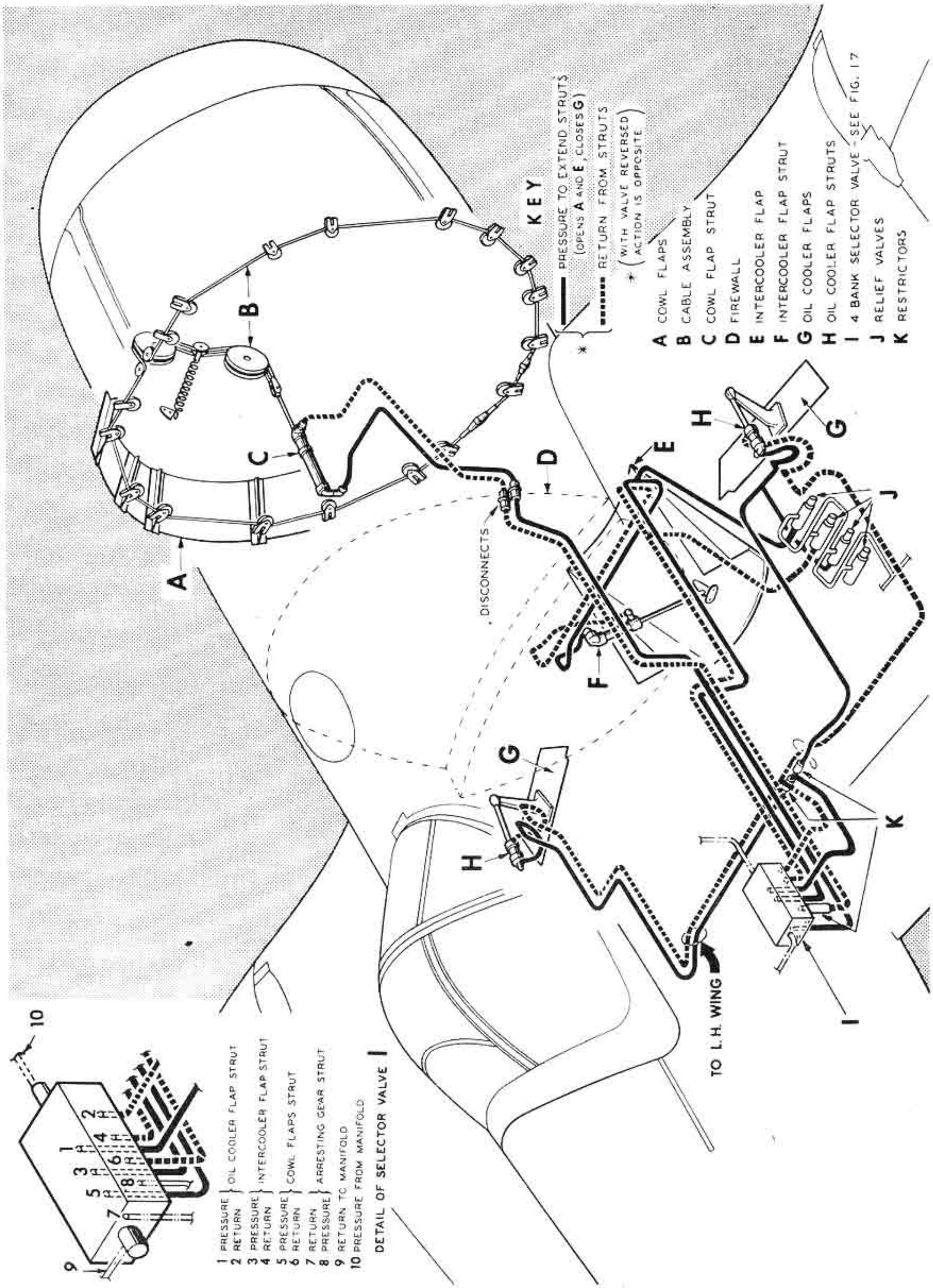


Figure 22—Cooling Flaps Hydraulic System

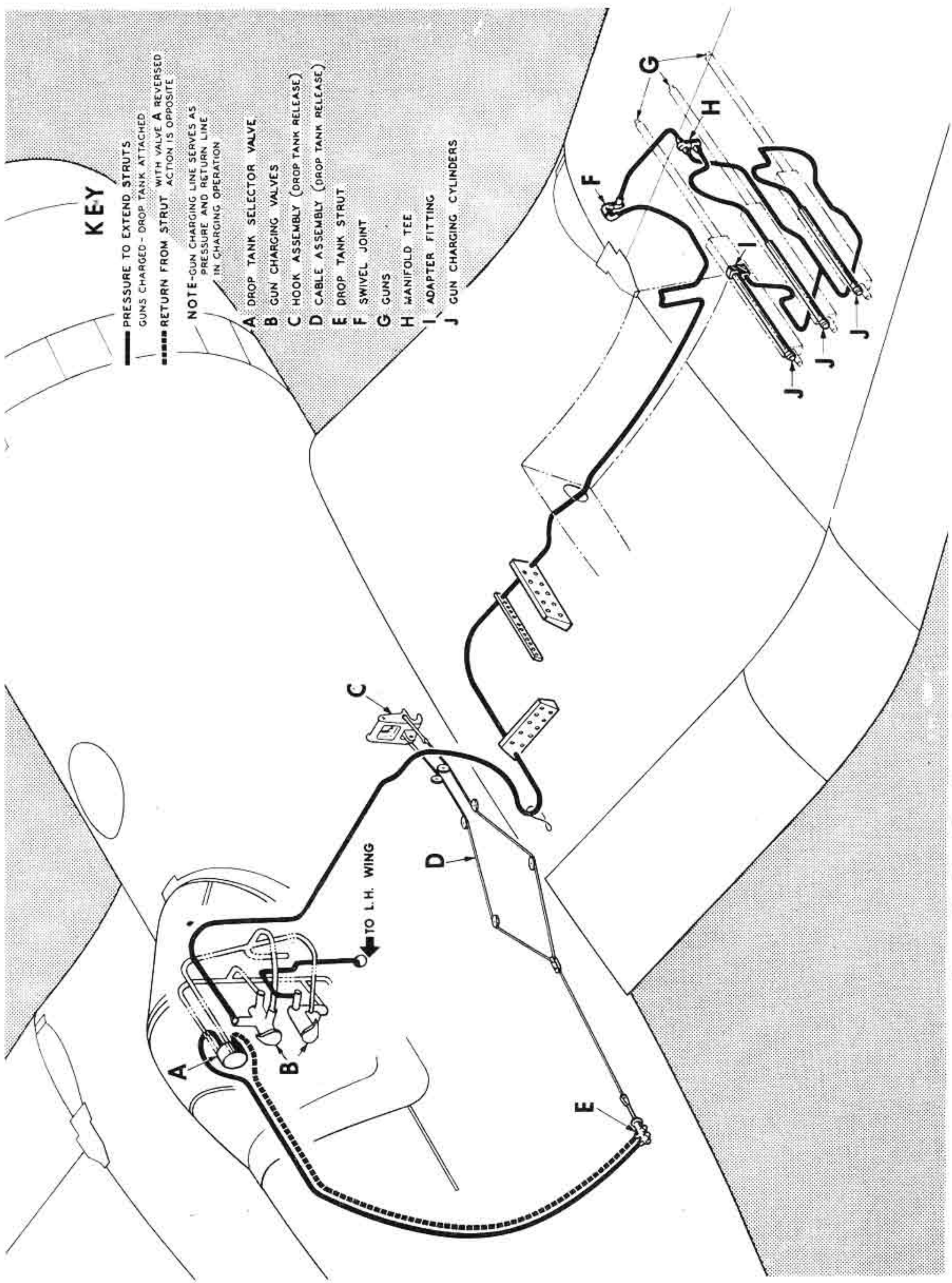


Figure 23—Gun Charging and Center Line Drop Tank Hydraulic Systems

Section IV

EMERGENCY OPERATING INSTRUCTIONS

1. EMERGENCY EGRESS.

a. The entire cabin section can be released in flight in case of emergency. The two release handles, one on either side of the cabin structure, are plainly marked "CABIN EMERGENCY RELEASE." These two handles are safety-pinned to prevent inadvertent release of the cabin and to permit using the handles for pushing the cabin fully closed. The safety pins (painted red) are attached to wire loops adjacent to the release handles and must be pulled free (aft) before the release handles can be moved. The release handles disengage the front rollers from the cabin. As the cabin is pushed upward, the rear rollers are disengaged and the cabin is freed of the airplane, to be carried away by the slipstream.

b. To release the cabin in an emergency in flight:

(1) Pull the safety pin loops.

(2) Pull both cabin release handles inboard simultaneously and push them forward.

(3) Break cabin free with upward push on the release handles.

2. EMERGENCY LANDING GEAR OPERATION.

a. The landing gear can be extended if there is complete failure of the hydraulic system, that is, even if no action can be obtained by operating the hand pump. The emergency gear extension is actuated by a CO_2 system on the main gear and a spring system on the tail wheel (see figure 28). However, before resorting to emergency landing gear extension, attempt to lower the gear with the hand pump, since subsequent retraction may be desired and will be impossible once the CO_2 system is operated. To lower the landing gear with the hand pump:

(1) Move the landing gear control to "DOWN."

(2) Operate the hand pump until the landing gear indicators show that the gear is fully down and locked.

b. The following procedure is used for emergency extension of the landing gear in case of actual failure of the hydraulic system.

(1) Close throttle and reduce speed to about 110 knots.

(2) Open the emergency landing gear release valve. This valve is located to the left of the pilot's seat.

Note

The CO_2 system will extend the landing gear regardless of the position of the landing gear control handle, but it is recommended that the control handle be placed in the "DOWN" position.

(3) Further reduce speed to about 90 knots (keep above the stalling speed) while the landing gear is extending.

(4) Check the indicators that the landing gear and tail wheel are fully locked "DOWN."

c. The emergency extension of the landing gear is started at a comparatively high speed so that the air-flow will assist in opening the landing gear doors. Turning the emergency landing gear release valve admits CO_2 to a sequence valve which actuates two unloader valves, the unloader valves by-passing the hydraulic oil at the bottom of the landing gear and tail wheel struts directly back to the hydraulic reservoir. The sequence valve in turn admits CO_2 pressure to the top of the landing gear struts, thereby extending the gear. The early models incorporating a pull handle emergency release work on much the same principle. In this case, pulling the release first actuates the unloader valves and then operates a cutter valve which releases the CO_2 pressure to the landing gear struts.

3. LIFE RAFT.

a. The one-man, parachute-type life rafts are used by pilots operating these airplanes.

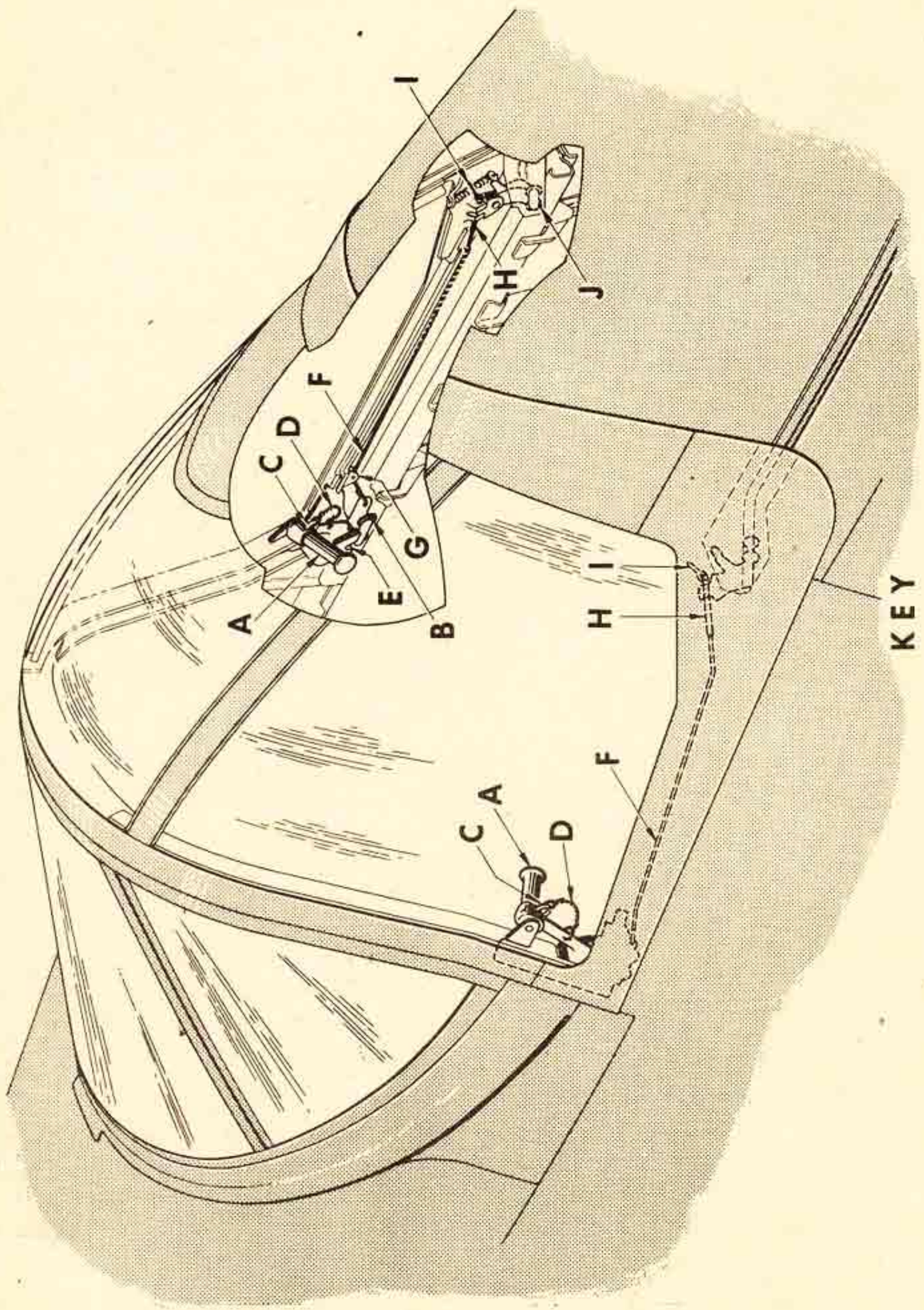


Figure 27—Cabin Emergency Release

4. ENGINE FAILURE DURING FLIGHT.

a. Engine failure is noticeable in either of the following conditions:

(1) Freezing of engine.
(2) Drop in altitude and loss of speed.

Note

If the engine fails but does not freeze, no absence of engine noise is apparent since the windmilling propeller simulates normal engine operation. Also, in this condition manifold pressure can be increased and decreased normally, and the propeller blade angle can be changed within certain limits. While the propeller is windmilling, the hydraulic system can be operated normally. However, if the engine should freeze or rough operation should necessitate stopping the engine by placing the propeller governor control in high pitch (minimum rpm) position, the hydraulically controlled units must be operated by the hand pump.

b. If altitude permits, attempt to find the cause of engine failure by the following procedure:

(1) The selected tank may be empty. Switch to another tank.

(2) If it is apparent that the fault does not lie in fuel system operation, and altitude still permits, check the following:

(a) Move the mixture control to "AUTO RICH."
(b) Test the magnetos individually.

c. If, after completing the above operations, the engine does not start, prepare for an emergency landing. Refer to paragraph 5., below.

Note

The gliding ratio of this airplane in the clean condition at 140 knots indicated air speed (best gliding speed) is 13:1.

5. FORCED LANDINGS.

a. GENERAL.

(1) In the event of a forced landing over land, the pilot should consider a number of variables in order to determine his best landing attitude. These include altitude, type of terrain and the characteristics of the airplane.

(2) Landings in soft or uneven terrain such as golf courses or ploughed fields and in rough, rocky, or tree stump terrain should be made with landing gear up. Most nose-overs occur as a result of landing in such territory with the landing gear down, and nearly all serious injuries and fatalities result from nosing over.

(3) Pilots should remember that ground which appears smooth and level from the air frequently turns out to be rough, crossed with ditches, soft or full of obstructions when the actual landing is made.

(4) All forced landings should be made well above the stalling speed. There will be no control of the airplane if an attempt is made to land at or slightly above stalling speed. The plane should be on the ground before that stage of deceleration is reached.

b. BELLY LANDINGS.

(1) Preparation for belly landing:

(a) Release droppable fuel tanks or bombs.

(b) Landing gear—"UP."

(c) Landing flaps—"DOWN."

(d) Remove rocket safety plug. (If rockets are carried.)

(e) Shoulder harness and safety belt—"LOCKED."

(f) Jettison the cockpit sliding section.

(g) Fuel tank pressure release—"AFT."

(2) Prior to contact with the ground:

(a) Drop pilot's seat several inches.

(b) Switches (battery, ignition)—"OFF."

(c) Fuel selector—"OFF."

(d) Master armament switch—"OFF."

c. WATER LANDINGS (DITCHING).

(1) The same procedure as that outlined for belly landings is applicable to ditching.

Note

THIS AIRPLANE HAS EXCELLENT WATER CHARACTERISTICS DUE TO THE INVERTED GULL WING WHICH CAUSES IT TO PLANE ON CONTACT WITH THE WATER. BECAUSE OF THE PLANING FEATURE, A FULL-STALL LANDING IS NOT NECESSARY.

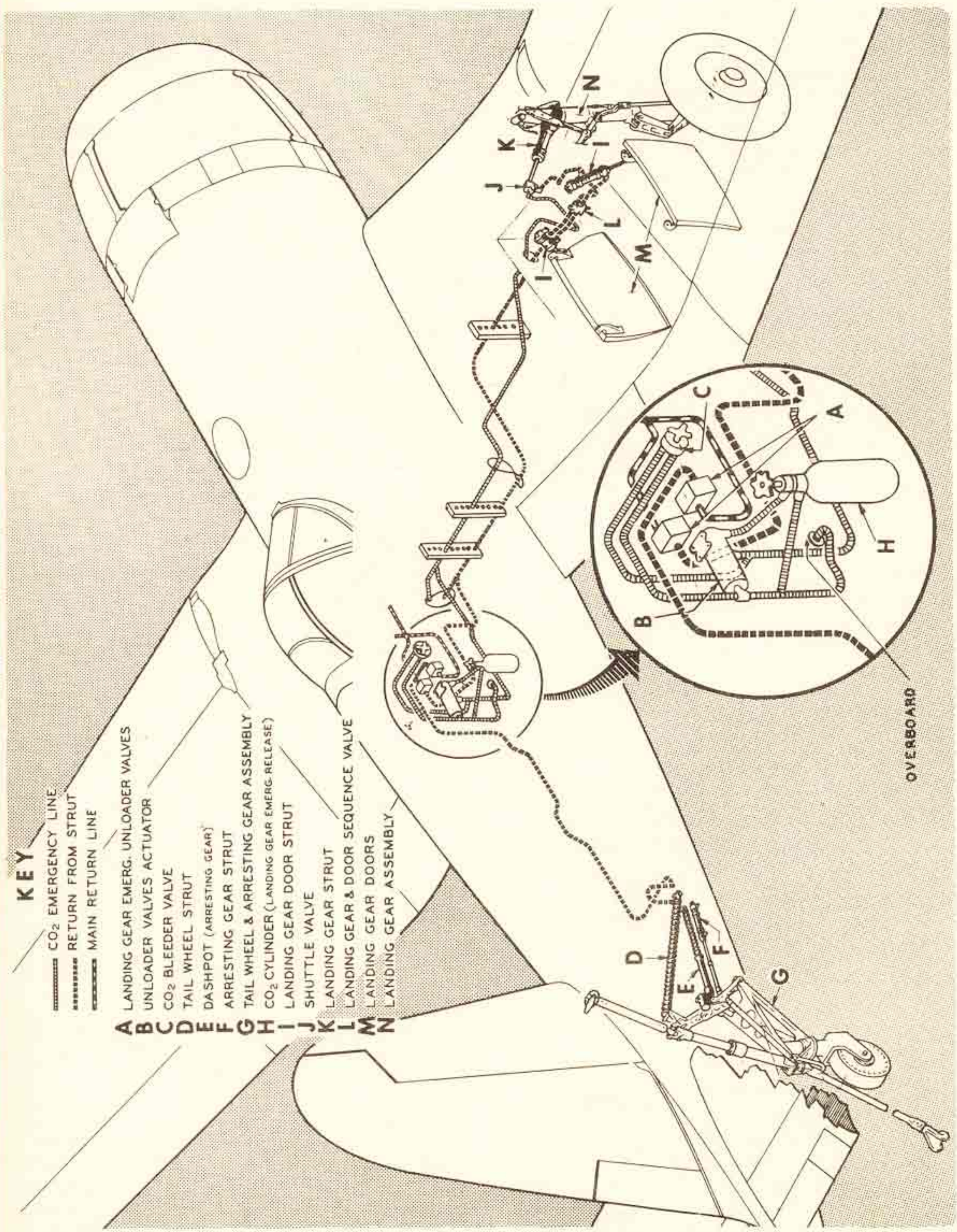


Figure 28—CO_2 System—Emergency Landing Gear Operation