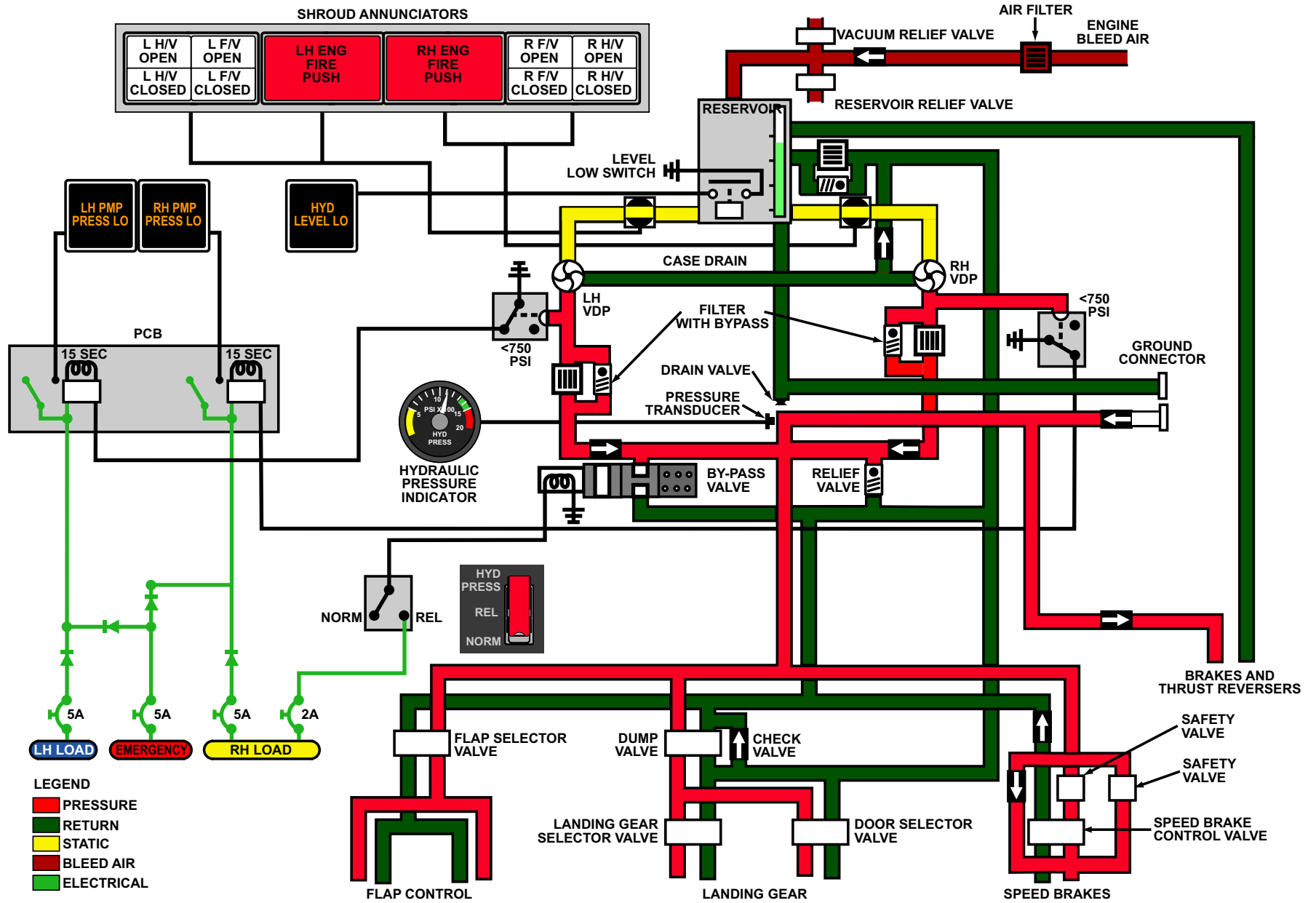


# Hydraulic System





### Hydraulic System

The airplane is equipped with a closed-center hydraulic power system which has two engine-driven pumps, a hydraulic package, ground connectors and associated electrical components. It operates at 1,500 PSI and is monitored by a pressure gage and caution lights. The system supplies hydraulic power to the flaps, speedbrakes, power brakes/anti-skid, thrust reversers and the landing gear.

### Hydraulic Pumps

A variable displacement, rotary-plunger-type hydraulic pump is installed on, and driven by, each engine accessory gearbox. The displacement varies from zero at an output pressure of 1,500 PSI to 3.9 GPM at about 1,400 PSI. This pump not only varies the volume of fluid pumped, but also regulates the system pressure. There is no need for a pressure regulator.

### Hydraulic Package

The hydraulic package consists of a reservoir, air filter, vacuum and air pressure relief valves, check valves, fluid filters, shutoff valves, a hydraulic relief valve, a bypass valve, low-pressure switches, a high-pressure switch, a pressure transducer, and lines. The reservoir provides hydraulic fluid for system operation. Its capacity is approximately 1.1 US gallons of MIL-H-5606 hydraulic fluid. The reservoir is pressurized by filtered engine bleed air that is regulated to 15 PSI. Air pressure in the reservoir is controlled by an air supply check valve, a vacuum relief valve and a pressure relief valve. The reservoir is equipped with a sight gage (window) that is used to check proper fluid level. A float-type switch installed inside the reservoir warns the flight crew when the reservoir fluid quantity reaches 0.6 US gallons or less. Activation of this switch will illuminate the HYD LEVEL LO annunciator.

Shutoff valves are mounted at the fluid supply ports of the reservoir to stop fluid flow to the engine-driven pumps. These valves are normally open and are closed in case of an engine fire or overheat condition. During an engine fire procedure, depressing the LH or RH ENG FIRE PUSH button electrically closes the fuel and hydraulic shutoff valves.

Three filters extract foreign particles from the fluid to prevent damage to moving parts in the system. One filter assembly is installed in each pressure passage from the pumps and one is in the fluid return passage to the reservoir. Should a filter element become clogged, a bypass valve will allow fluid to bypass the element for continued system operation. After passing through the filters, fluid passes through a check valve that prevents reverse flow of pressure in case of engine shutdown.

The system relief valve relieves abnormally high pressure to the return side when system pressure rises excessively. The system can be depressurized through the bypass valve that is electrically energized by the HYD PRESS REL switch to prevent excessive fluid temperature rise caused by the sustained flow through the system relief valve. The switch should be set in the NORMAL position. When moved to the HYD PRESS REL position, the bypass valve is opened to bypass the hydraulic fluid to the reservoir.

The low-pressure switches sense a low-pressure condition in the pump outlet lines. If one or both pumps fail (pressure below  $750 \pm 100$  PSI for 15 seconds or more), the LH or RH PMP PRESS LO annunciator illuminates. The same indication is provided for excessive leakage due to any hydraulic component failure. The hydraulic pressure indicator can monitor the system pressure. After fluid passes through all the indicating and controlling devices, it is ported through the hydraulic valve to the systems utilizing hydraulic pressure for actuation. Systems utilizing hydraulic pressure for activation are the landing gear, flaps, speedbrakes, power brakes/anti-skid and thrust reversers.