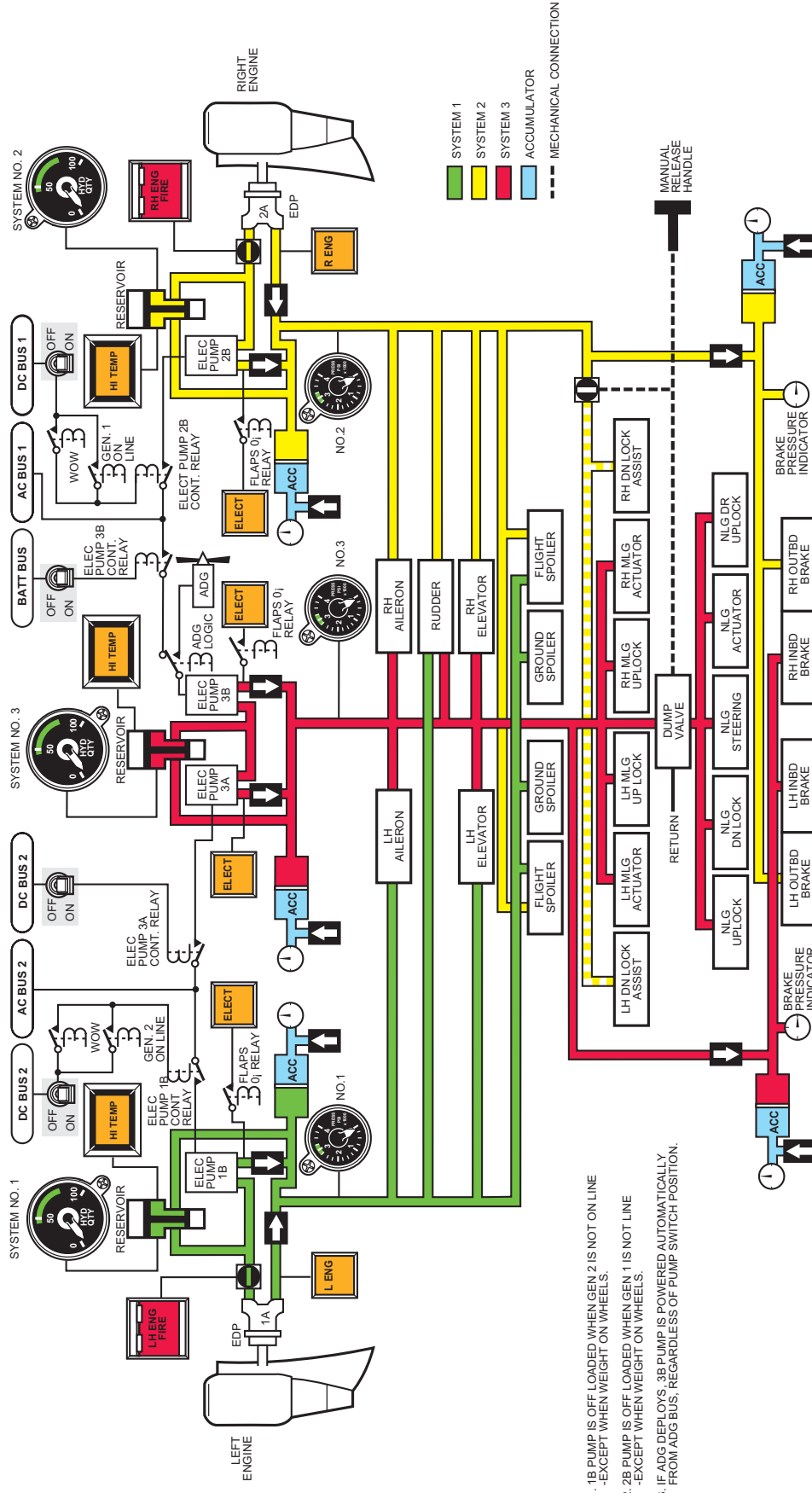
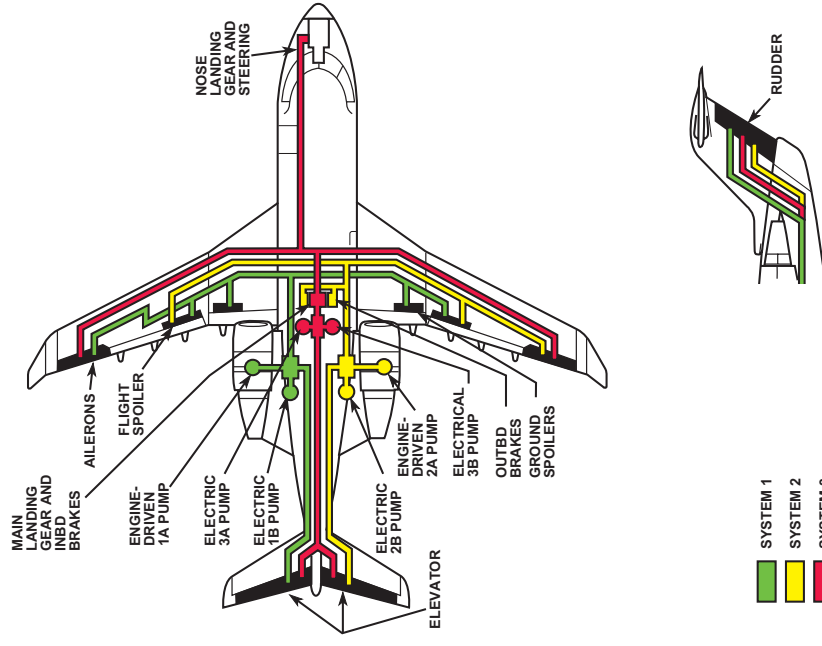


Hydraulic System



- 1. 1B PUMP IS OFF LOADED WHEN GEN.2 IS NOT ON LINE
-EXCEPT WHEN WEIGHT ON WHEELS.
- 2. 2B PUMP IS OFF LOADED WHEN GEN.1 IS NOT LINE
-EXCEPT WHEN WEIGHT ON WHEELS.
- 3. IF ADG DEPLOYS, 3B PUMP IS POWERED AUTOMATICALLY FROM ADG BUS, REGARDLESS OF PUMP SWITCH POSITION.

Hydraulic System



Hydraulic Systems

Three fully independent hydraulic systems supply hydraulic fluid (Skydrol 500B) at 3,000 ±250 PSI to power the flight control, landing gear, and nosewheel steering systems. Systems 1 and 2 have an engine-driven pump (EDP, 1A and 2A) supplemented by an electric motor-driven pump (1B and 2B). System 3 has two electric motor-driven pumps (3A and 3B). All six pumps are variable displacement units whose flow rate increases or decreases with system demands to maintain a constant system pressure.

The four AC powered (115/200V, 3 phase) electric pumps (1B, 2B, 3A and 3B) are controlled by DC electric switches on the Hydraulic Panel (**see Table 4-I**) except when the aircraft is W OFF W and the opposite side generator line contactor is open (load shed function of the GCU, caused by generator or engine failure) the 1B or 2B will be unpowered regardless of switch position.

Pump	Control	Power
1B	DC Bus 2	AC Bus 2
2B	DC Bus 1	AC Bus 1
3A	DC Bus 2	AC Bus 2
3B	Battery bus	AC Bus 1/ADG bus

Table 4-I; Electric Hydraulic Pump Power Sources

Additionally, the 3B pump has an alternate power source. If both Main AC buses lose power, the air-driven generator (ADG) deploys; the 3B hydraulic pump transfer contactor automatically connects the 3B motor to the ADG bus and will operate regardless of the 3B switch position.

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There is an accumulator for each system that should be charged to 1500 \pm 50 PSI. The inboard and outboard brakes each have accumulators charged to 750 \pm 50 PSI. All accumulator pressures must be checked without systems pressurized.

System pressure is tapped off to provide “bootstrap” pressure (55 PSI) to its reservoir that ensures positive fluid flow to the pump during all phases of flight.

CAUTION: While ground servicing of the hydraulic systems and accumulators is a maintenance function, PILOTS MUST ENSURE that when ground service personnel are servicing the LAV that there is no mistaking the Hydraulic System #3 “mule” connections for the LAV connections located behind access doors aft of the right wing root. Landing gear and flight controls do not respond well when water is mixed with Skydrol.

Pump Operation

As an engine accelerates toward idle, the EDP draws fluid from the appropriate system reservoir through the firewall shutoff valve while the electric pumps draw fluid directly from the supply line from the reservoir. Placing and ELECT PUMP switch to the ON position supplies 28V DC to energize the motor contactor that supplies AC power to the motor.

A small amount of fluid that each pump uses for lubrication and cooling exits the pump’s case drain line and travels through the case drain non-bypassable filter (“case drain filter”) and for Systems 1 and 2 the heat exchanger (in the aft equipment bay) back to the reservoir.

System Operations

Each pump's output passes by the pressure switch that controls the specific amber L or R ENG PUMP or ELECT PUMP light and on through a one way check valve to supply fluid under pressure to a pressure manifold for that system's users (**see Table 4-J**). As pump output pressure builds (2,300 ±200 PSI) the associated PUMP light extinguishes. If pump output pressure drops to 1,800 PSI, the associated PUMP light illuminates.

Hydraulic System		
No. 1	No. 3	No. 2
1A Engine-driven 1B Electric	3A Electric 3B Electric	2A Engine-driven 2B Electric
Left Aileron Rudder Left Elevator L/R Flight Spoilers L/R Ground Spoilers	L/R Ailerons Rudder L/R Elevators Main/Nose Landing Gear Nosewheel Steering Inboard Brakes	Right Aileron Rudder Right Elevator L/R Flight Spoilers MLG Downlock Assist Outboard Brakes

Table 4-J; Hydraulic Pressure Distribution

In the pressure manifold prior to the users there is a non-bypassable filter ("system filter"). After the system filter, the Pressure Transducer picks up and displays system pressure on the gage located on the HYDRAULIC SYSTEMS panel on the cockpit overhead panel. From the users the fluid is routed back to reservoir through a filter ("return filter") that is capable of bypassing should it get clogged. System 2 Outboard Brakes has its own return line to reservoir separate from the other users.

The accumulators act to dampen pressure surges caused by system operation. If system pressure reaches 3,750 PSI, a relief valve opens routing excess fluid to the reservoir.

When reservoir fluid temperature exceeds 96°C (205°F), the HI TEMP light on the HYDRAULIC SYSTEMS panel illuminates. Predetermined temperatures in the reservoir will cause the Heat Exchanger tower fan to operate without pilot control or advisory.

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Hydraulic Systems

Power Source	Engine-driven pumps (1A and 2A) Electric pumps (1B, 2B, 3A, and 3B) Hydraulic servicing cart (ground/maintenance) Battery bus DC Bus 1 and DC Bus 2
Distribution	Brakes Flight and ground spoilers L/R ailerons L/R elevators Landing gear Rudder Nosewheel steering
Control	ELECT PUMP switches ENG FIRE PUSH (shutoff valves)
Monitor	System pressure gages System quantity gages Lights ELECT PUMP ENG PUMP HI TEMP HYD
Protection	Pressure manifold relief valve Reservoir pressure relief valve