



**SYSTEM DESCRIPTIONS**  
**HYDRAULIC SYSTEM**  
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**ISSUE 002**

**1.12.01 Hydraulic System**

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## DESCRIPTION

**GENERAL**

The aircraft is equipped with two independent hydraulic systems, identified as system 1 and system 2. The systems are identical in concept and performance; they differ only in capacity and subsystems supplied. System 1 operates the LH aileron, rudder, elevator, stabilizer, alternate brakes, landing gear, nose-wheel steering, flaps, speed brakes, lift dumpers, and thrust reversers. System 2 operates the RH aileron, rudder, elevator, stabilizer, and normal brakes.

In the event of a single hydraulic system failure, operation of the elevators and rudder is not affected. Aileron control forces will be higher than normal. For alternate operation of the other subsystems see the relevant section.

The main components for each system are a tank, two engine-driven pumps, and one electrically driven pump. Dual fire shut-off valve are incorporated. System accumulators are installed in system 1 (if installed) and in system 2. A priority valve is installed in system 1. The systems are controlled from the HYDRAULIC panel.

Failures will be detected and the relevant alerts are presented.

**SYSTEM COMPONENTS**Hydraulic tanks

Each tank is pressurized by bleed-air and is equipped with a fluid quantity transmitter. Low fluid quantity, fluid over-heat, and low tank air pressure are signalled.

To equalize the fluid level in the tanks on the ground a transfer system is installed. In the fluid transfer line a transfer valve is installed.

This valve is normally closed and will open for a pre-set time with the aircraft on the ground, when the parking brake is set and at least one engine is running. To ensure equal air pressure in the tanks, the top of the tanks are interconnected. In the tank air pressure connection line a shut-off valve is installed. This shut-off valve opens and closes in parallel with the transfer valve.

Engine-driven pumps

Hydraulic power is supplied at a nominal system pressure of 3000 psi by two engine-driven pumps on each engine. One pump supplies system 1, the other supplies system 2. When a fire handle is pulled the relevant fire shut-off valves close. This will isolate both engine-driven pumps from the tank supply.

**NOTE:** Hydraulic system operation is not affected during single-engine operation.

Electrically driven pumps

A low capacity electrically driven pump is installed in each system. Its main purpose is for maintenance system testing. It can also be used to pressurize the brake system prior to engine starting.

Priority valve

The priority valve will close if system 1 pressure falls below a pre-set value to ensure that power remains available for the flight controls, speed brakes, and thrust reversers. This valve will open to restore pressure to the landing gear, nose-wheel steering, lift dumpers, alternate brakes, and flaps, when the pressure rises above a pre-set value.



## HYDRAULIC SYSTEM

### DESCRIPTION

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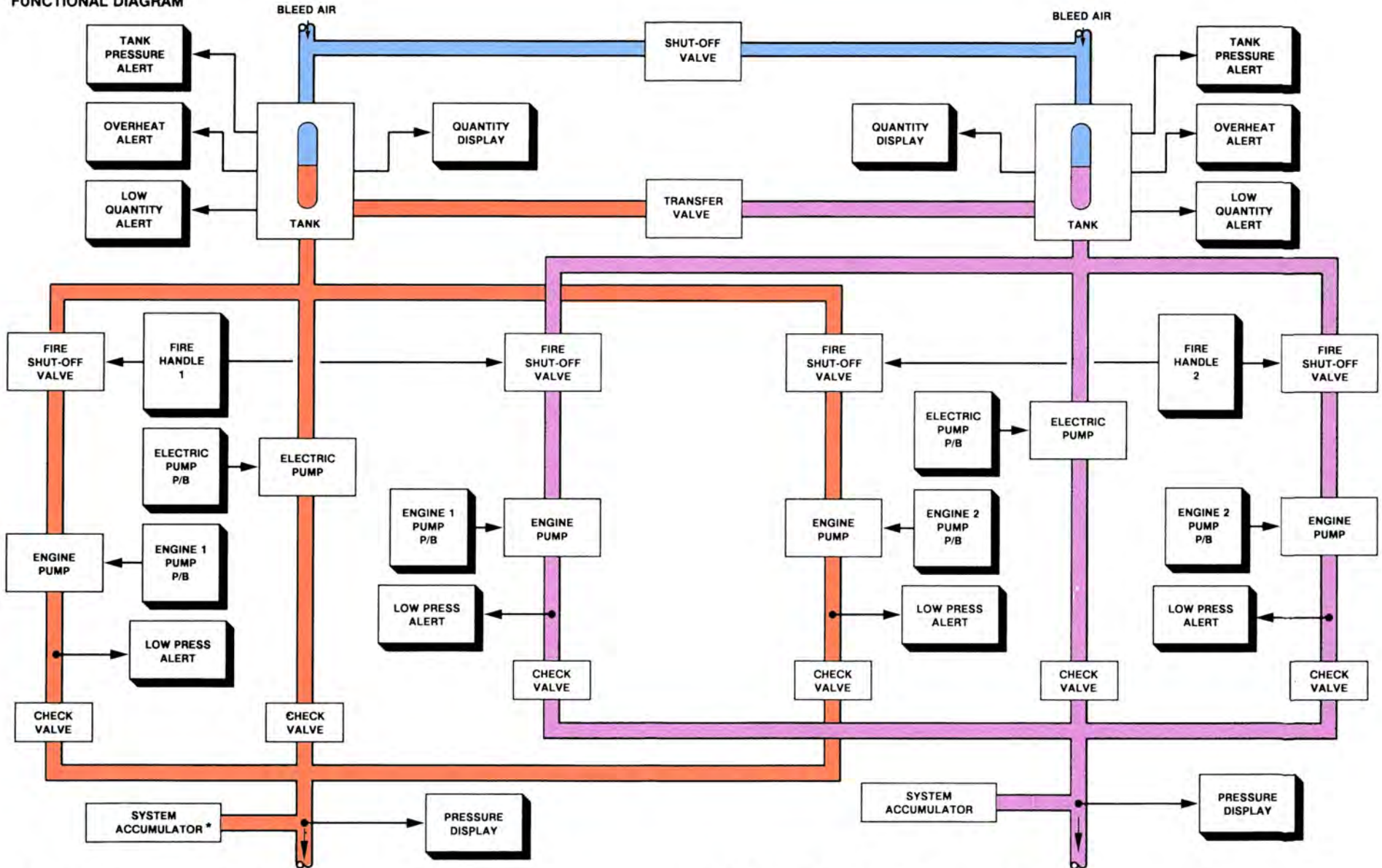
# HYDRAULIC SYSTEM

FUNCTIONAL DIAGRAM

# HYDRAULIC SYSTEM

FUNCTIONAL DIAGRAM

## FUNCTIONAL DIAGRAM



\* IF INSTALLED

TO SUBSYSTEMS:  
LH AILERON, RUDDER, ELEVATOR,  
STABILIZER, ALTERNATE BRAKES,  
LANDING GEAR, NOSE-WHEEL STEERING,  
FLAPS, SPEED BRAKES, LIFT DUMPERS,  
AND THRUST REVERSERS.

NOTE: SUBSYSTEMS ARE CONNECTED  
BY RETURN LINES TO THE TANK.

TO SUBSYSTEMS:  
RH AILERON, RUDDER, ELEVATOR,  
STABILIZER AND NORMAL BRAKES.



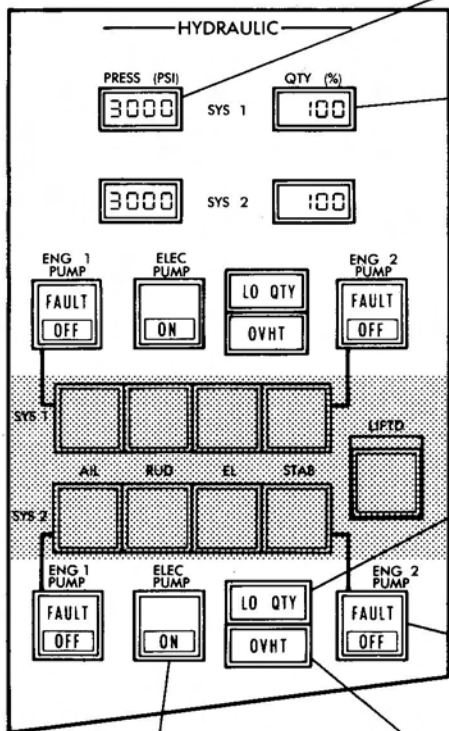
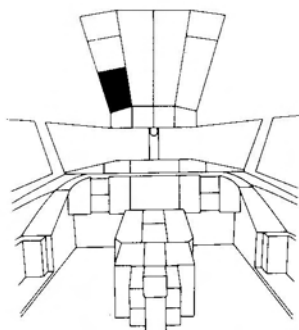
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## CONTROLS AND INDICATORS



### PRESSURE DISPLAY

Displays system pressure in psi.

### QUANTITY DISPLAY

Displays fluid quantity in per cent of max tank capacity.

### LOW QUANTITY LIGHT

LO QTY (amber)  
- Low fluid quantity.

### ENGINE PUMP P/B

Normal (blank)  
- Pump operating.  
FAULT (amber)  
- Pump output pressure low, or pump fault.  
OFF (white)  
- Pump manually switched off.

### ELECTRIC PUMP P/B

Normal (blank)  
- Pump off.  
ON (white)  
- Pump manually switched on.

### OVERHEAT LIGHT

OVHT (amber)  
- Fluid overheat.

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**CONTROLS AND INDICATORS**

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## ALERTS

### CONDITION(S)/LEVEL

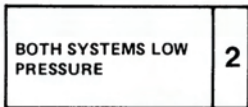
### ALERTS

AURAL

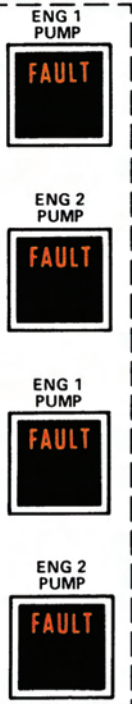
MWL/MCL

MFDU

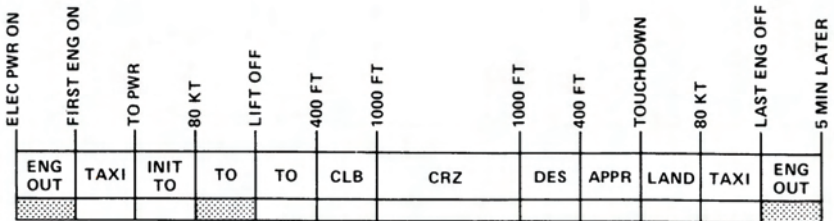
LOCAL



HYD SYS  
1 AND 2 LOP



ALERT INHIBITION



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## ALERTS

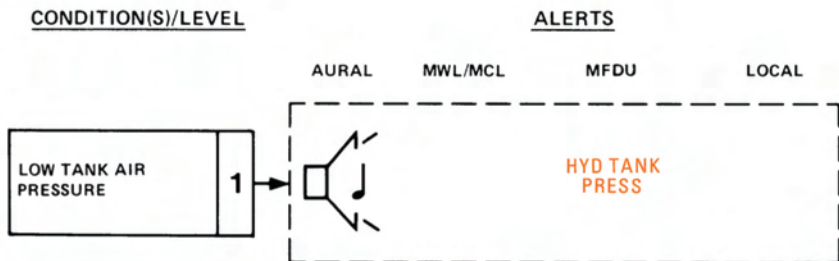
	CONDITION(S)/LEVEL	ALERTS			
		AURAL	MWL/MCL	MFDU	LOCAL
A	SYSTEM LOW PRESSURE 2			HYD SYS 1/2 LOP	ENG PUMP 
B	LOW FLUID QUANTITY 2			HYD SYS 1/2 LOQTY	
C	FLUID OVERHEAT 2			HYD SYS 1/2 OVHT	
D	ENGINE PUMP FAULT 1			HYD SYS 1/2 ENG 1/2 PUMP	ENG PUMP 

ALERT INHIBITION

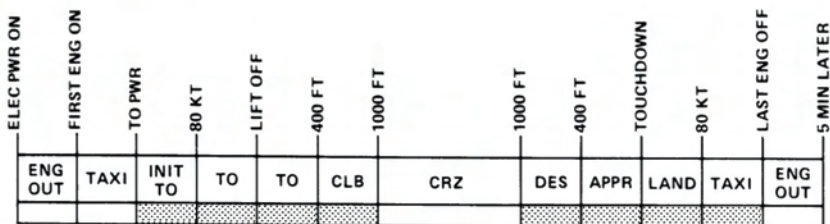
	ELEC PWR ON	FIRST ENG ON	TO PWR	80 KT	LIFT OFF	400 FT	1000 FT	1000 FT	400 FT	TOUCHDOWN	80 KT	LAST ENG OFF	5 MIN LATER
	ENG OUT	TAXI	INIT TO	TO	TO	CLB	CRZ	DES	APPR	LAND	TAXI	ENG OUT	
A													
B													
C													
D													

VD/OP-12-104/A

## ALERTS



ALERT INHIBITION





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