

## EXTENSION AND RETRACTION

### DESCRIPTION AND OPERATION

#### 1. GENERAL

The landing gear maneuver system includes the following elements :

- main landing gear actuating cylinder,
- nose landing gear actuating cylinder,
- main landing gear hinged strut,
- nose landing gear hinged strut,
- main landing gear compensating spring,
- nose landing gear compensating actuator,
- end of travel microswitch.

#### 2. LOCATION

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Main L / G actuating cylinder	2	730 - 740	/	32-30-01
Nose L / G actuating cylinder	1	100	131	32-30-02
Main L / G hinged strut	2	730 - 740	/	32-30-03
Nose L / G hinged strut	1	100	131	32-30-04
Main L / G compensating spring	2	730 - 740	/	32-30-00
Nose L / G compensating actuator	2	100	131	32-30-06
End of travel microswitch	8	100 - 730 - 740	131	32-30-07

#### 3. DESCRIPTION (Figure 1)

##### A. Main and nose L / G actuating cylinders

Three double-acting actuators allow the landing gear retraction and extension thanks to the hydraulic pressure provided by an electrohydraulic generator. They are attached to the cell at body side, and to the hinged strut at slide rod.

##### Post-MOD. 141

In order to avoid the transient illumination / extinction of the green indicator lights, a flow regulator is installed on the "retracted" port of the nose landing gear actuating cylinder.

##### B. Main and nose L / G hinged struts

A hinged strut on which is attached actuating cylinder provides for each landing gear transmission of "up" and "down" maneuvers as well as "landing gear down" mechanical locking. Locking of landing gears in "up" position is ensured by hydraulic pressure which is maintained automatically by a valve on the electrohydraulic generator located under rear seat.

ACAC

Validity : Electrohydraulic generator  
"COMMERCIAL HYDRAULICS"

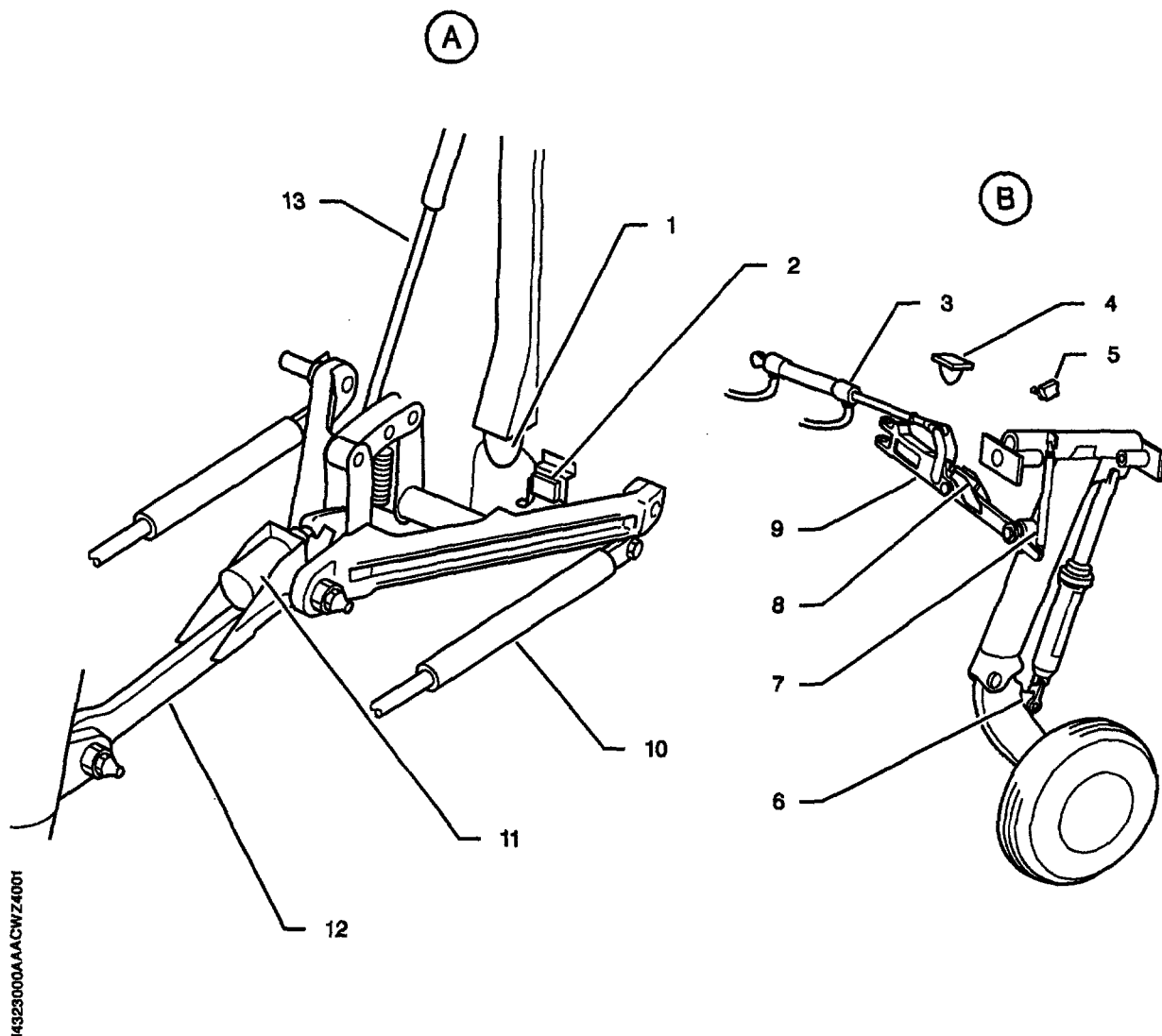
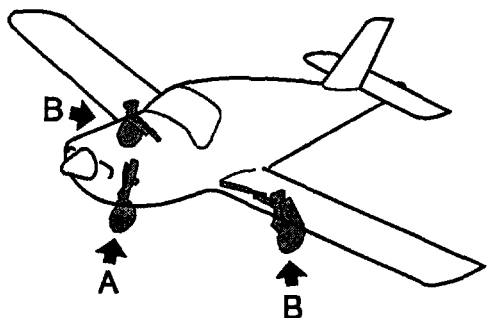
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- 1 - Nose landing gear rubber stop
- 2 - Nose landing gear end of travel microswitch
- 3 - Main landing gear actuating cylinder
- 4 - Main landing gear rubber stop
- 5 - Main landing gear end of travel microswitch
- 6 - Main landing gear ground safety microswitch
- 7 - Main landing gear compensating spring
- 8 - Main landing gear hinged strut microswitch
- 9 - Main landing gear hinged strut
- 10 - Nose landing gear compensating actuator
- 11 - Nose landing gear hinged strut microswitch
- 12 - Nose landing gear hinged strut
- 13 - Nose landing gear actuating cylinder

Extension and retraction  
Key to Figure 1



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Extension and retraction  
Figure 1

**C. Main landing gear compensating spring**

The helical compensating spring provides hinged strut locking when the main landing gear reaches the low position in the "EMERGENCY" extension. It is pulled on the end of the hinged strut at the landing gear side. It is attached to the end of the hinged strut and to a landing gear fitting above its hinge.

**D. Nose landing gear compensating actuator**

The gas strut compensating actuators provide the nose landing gear extension in "EMERGENCY". They are attached to the compensating lever at the rear attachment level of the hinged strut and to the hinge tab of the nose landing gear hinged body.

**E. End of travel microswitches**

The end of travel microswitches transmit the landing gear position to the pilot through the configuration and control box.

With vapor cycle cooling system

S183 microswitch (landing gear locked down), located on the hinged strut of R.H. main landing gear is also used to shed vapor cycle cooling system when max. power / landing gears locked down condition is reached.

**4. OPERATION (Figures 2, 3, 4, 5 and 6)**

**A. Landing gear retraction**

When the pilot actuates the control lever of the landing gear configuration and control box in the "UP" position, it supplies the electrohydraulic generator electrically. The latter supplies pressurized hydraulic fluid to the actuating cylinders. Under the action of the actuators, the hinged struts are unlocked, their microswitches are actuated, the green indicator lights go off and the red warning light comes on. The landing gears go up, pulled by the actuators, in their respective housing. When they are at the up landing gear end of travel, the pressure in the system actuates the pressure switch which cuts off the electrical power supply of the electrohydraulic generator, and the landing gears actuate the end of travel microswitches which cause the red warning light to go off.

In up position, landing gears are not locked, but they are maintained by the hydraulic pressure held in the actuators by a check valve located on the electrohydraulic generator.

**B. Landing gear extension in "NORMAL"**

When the pilot actuates the control lever of the landing gear configuration and control box in the "DOWN" position, it supplies the electrohydraulic generator electrically. The latter supplies pressurized hydraulic fluid to the landing gear actuating cylinders. The landing gear starts to go down, the pressure exerted by the landing gears on the end of travel microswitches is loosened and the red warning light comes on. The landing gear reaches its low position, the hinged struts lock, the microswitches are actuated, the electrohydraulic generator stops, the red warning light goes off and the green indicator lights come on. The landing gear is locked down.

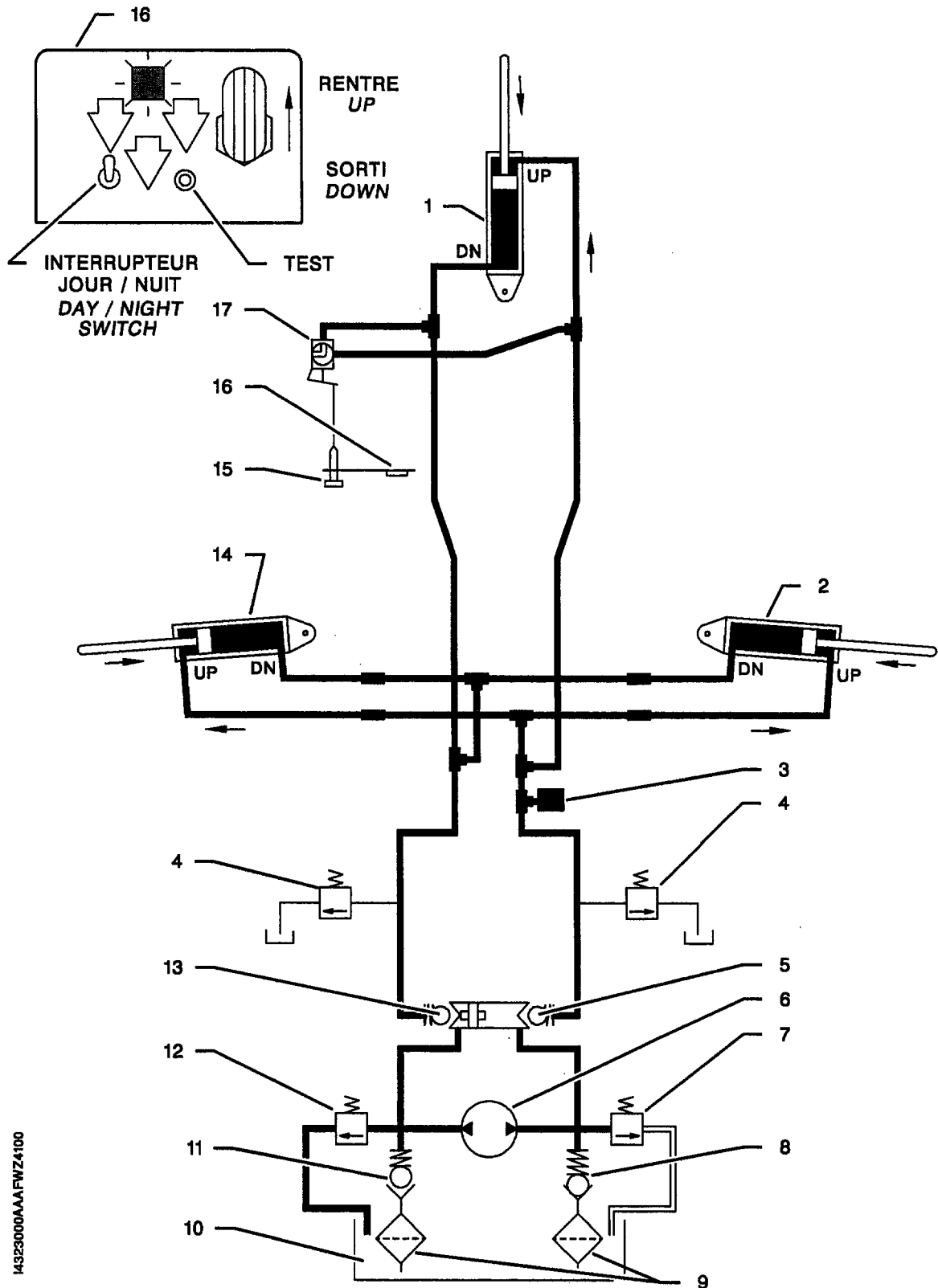
**C. Landing gear extension in "EMERGENCY"**

When the electric pump circuit-breaker is disconnected and, when the pilot actuates the landing gear emergency control pull knob, the emergency valve is in open position. The "UP" and "DOWN" chambers of the landing gear maneuver actuators intercommunicate through the emergency valve. The pressure falls, the landing gears go down by gravity thanks to the compensating actuators (nose landing gear) and the compensating springs (main landing gears) which actuate the hinged struts. The hydraulic fluid is expelled from the actuator low chamber (up) towards the electrohydraulic generator. It is displaced by the generator load check valve to the emergency valve, which drives it towards the actuator upper chamber (down).

The end of travel microswitches are actuated and the red warning light comes on. The landing gear reaches its down position, the hinged struts are locked, the microswitches are actuated, the red warning light goes off and the green indicator lights come on.

- 1 - Nose gear actuator
- 2 - R.H. main gear actuator
- 3 - Pressure switch
- 4 - Thermal valve
- 5 - Check valve
- 6 - Pump
- 7 - High pressure valve
- 8 - Check valve
- 9 - Filter
- 10 - Reservoir
- 11 - Check valve
- 12 - Low pressure valve
- 13 - Check valve
- 14 - L.H. main gear actuator
- 15 - Emergency valve control
- 16 - Configuration and control panel
- 17 - Emergency valve

Landing gear system during retraction  
Key to Figure 2



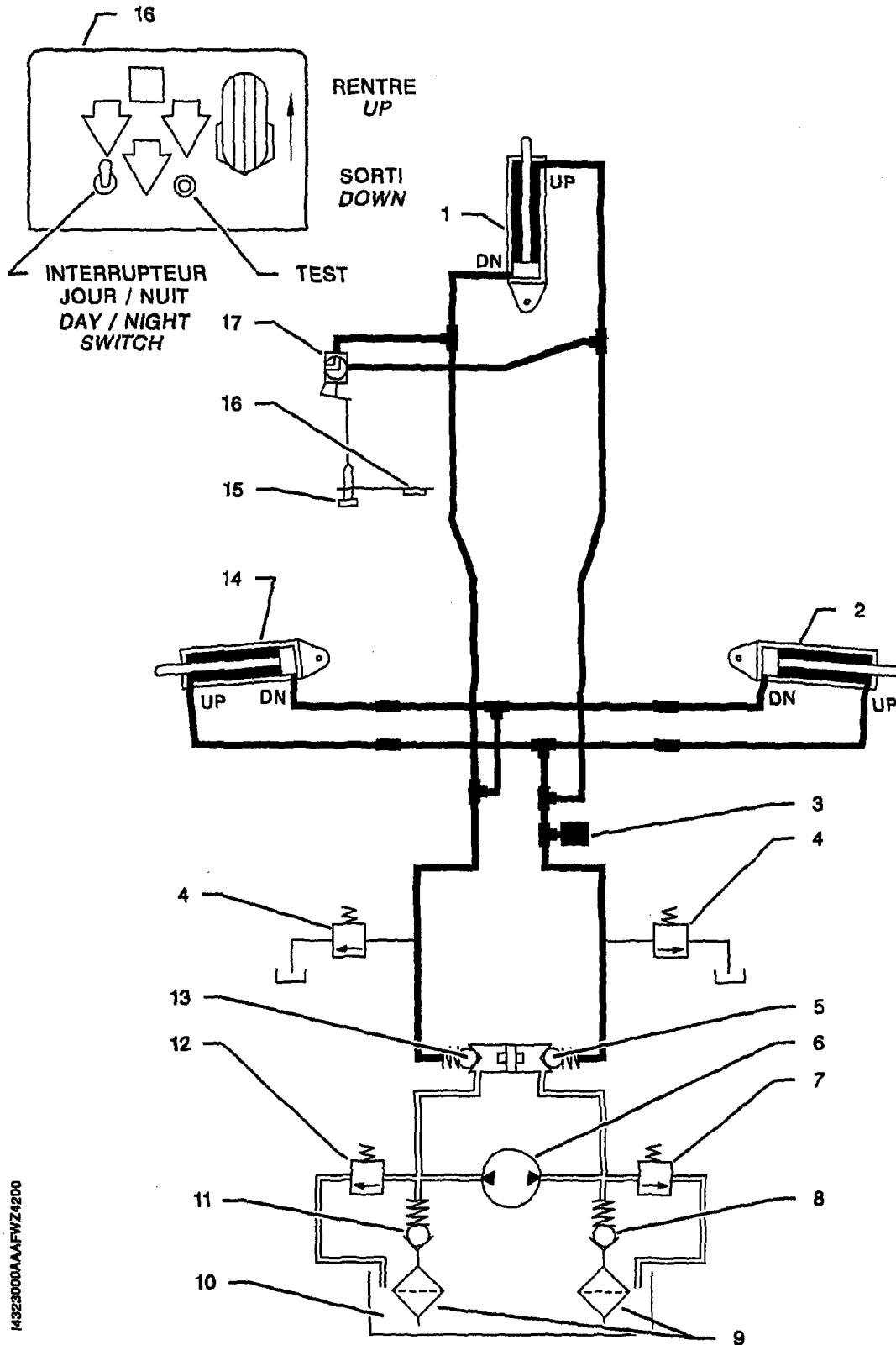
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**Landing gear system during retraction  
Figure 2**

- 1 - Nose gear actuator
- 2 - R.H. main gear actuator
- 3 - Pressure switch
- 4 - Thermal valve
- 5 - Check valve
- 6 - Pump
- 7 - High pressure valve
- 8 - Check valve
- 9 - Filter
- 10 - Reservoir
- 11 - Check valve
- 12 - Low pressure valve
- 13 - Check valve
- 14 - L.H. main gear actuator
- 15 - Emergency valve control
- 16 - Configuration and control panel
- 17 - Emergency valve

Landing gear system in "retracted" position  
Key to Figure 3



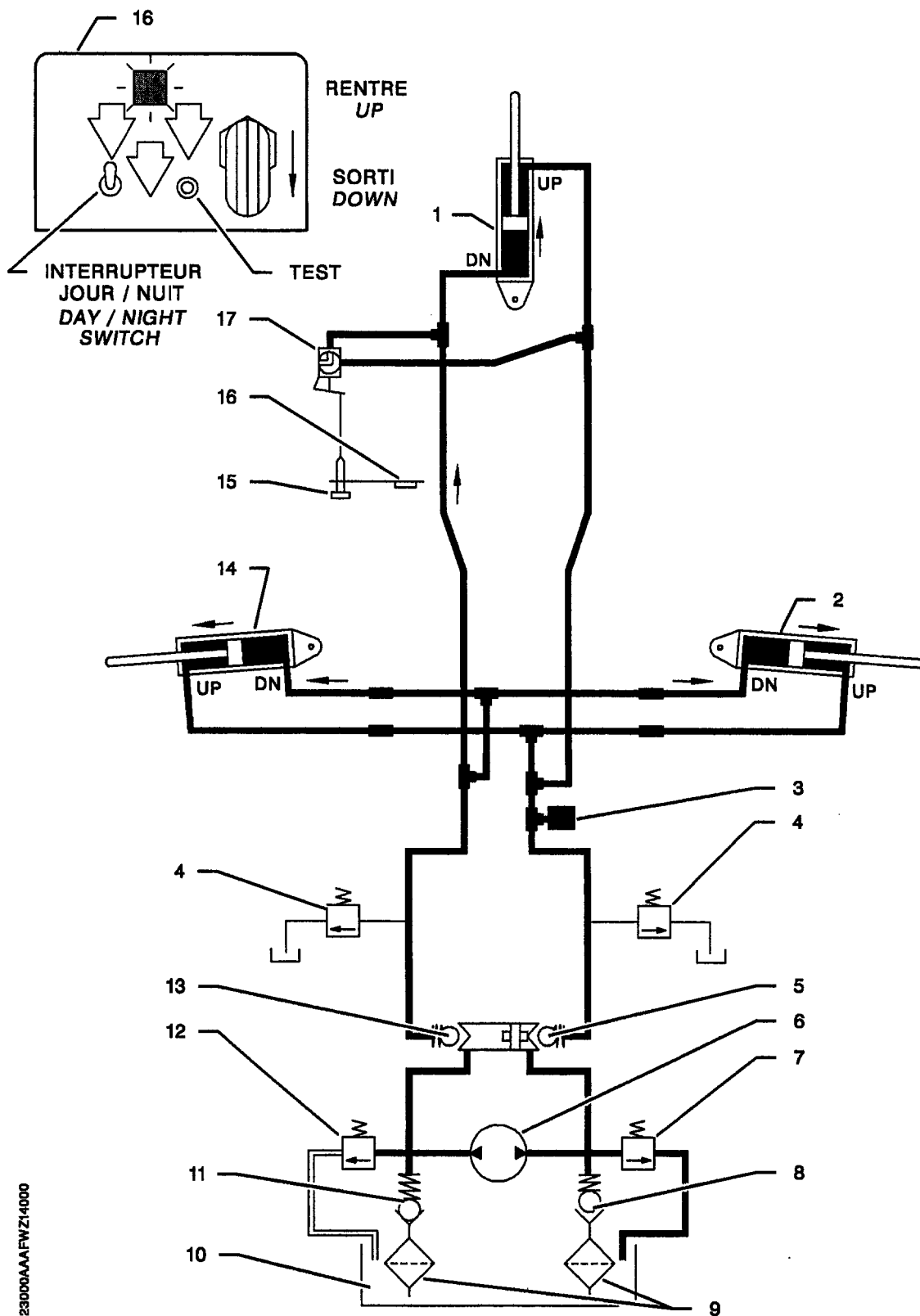


Landing gear system in "retracted" position  
Figure 3

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- 1 - Nose gear actuator
- 2 - R.H. main gear actuator
- 3 - Pressure switch
- 4 - Thermal valve
- 5 - Check valve
- 6 - Pump
- 7 - High pressure valve
- 8 - Check valve
- 9 - Filter
- 10 - Reservoir
- 11 - Check valve
- 12 - Low pressure valve
- 13 - Check valve
- 14 - L.H. main gear actuator
- 15 - Emergency valve control
- 16 - Configuration and control panel
- 17 - Emergency valve

Landing gear system during extension  
Key to Figure 4



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Landing gear system during extension  
Figure 4

- 1 - Nose gear actuator
- 2 - R.H. main gear actuator
- 3 - Pressure switch
- 4 - Thermal valve
- 5 - Check valve
- 6 - Pump
- 7 - High pressure valve
- 8 - Check valve
- 9 - Filter
- 10 - Reservoir
- 11 - Check valve
- 12 - Low pressure valve
- 13 - Check valve
- 14 - L.H. main gear actuator
- 15 - Emergency valve control
- 16 - Configuration and control panel
- 17 - Emergency valve

Landing gear system in "extended and locked" position  
Key to Figure 5



- 1 - Nose gear actuator
- 2 - R.H. main gear actuator
- 3 - Pressure switch
- 4 - Thermal valve
- 5 - Check valve
- 6 - Pump
- 7 - High pressure valve
- 8 - Check valve
- 9 - Filter
- 10 - Reservoir
- 11 - Check valve
- 12 - Low pressure valve
- 13 - Check valve
- 14 - L.H. main gear actuator
- 15 - Emergency valve control
- 16 - Configuration and control panel
- 17 - Emergency valve

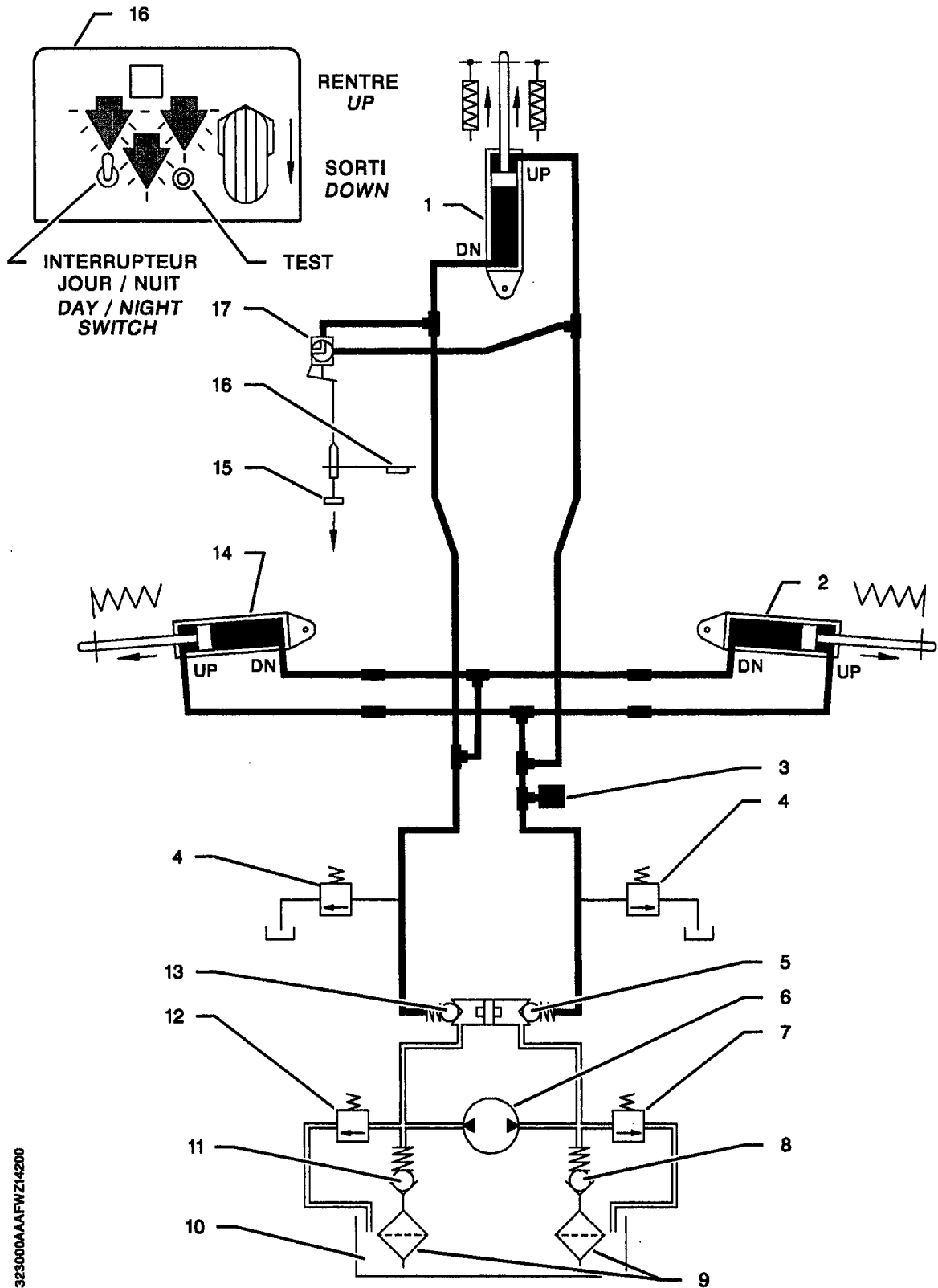
Landing gear system "emergency extension"  
Key to Figure 6

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Landing gear system "emergency extension"  
Figure 6

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**EXTENSION AND RETRACTION**

**TROUBLE-SHOOTING**

**1. TROUBLE-SHOOTING PROCEDURE**

Figure 101 : Landing gear does not retract.

Figure 102 : Landing gear does not extend.

Figure 103 : One of the main landing gears does not extend or does not lock in low position.

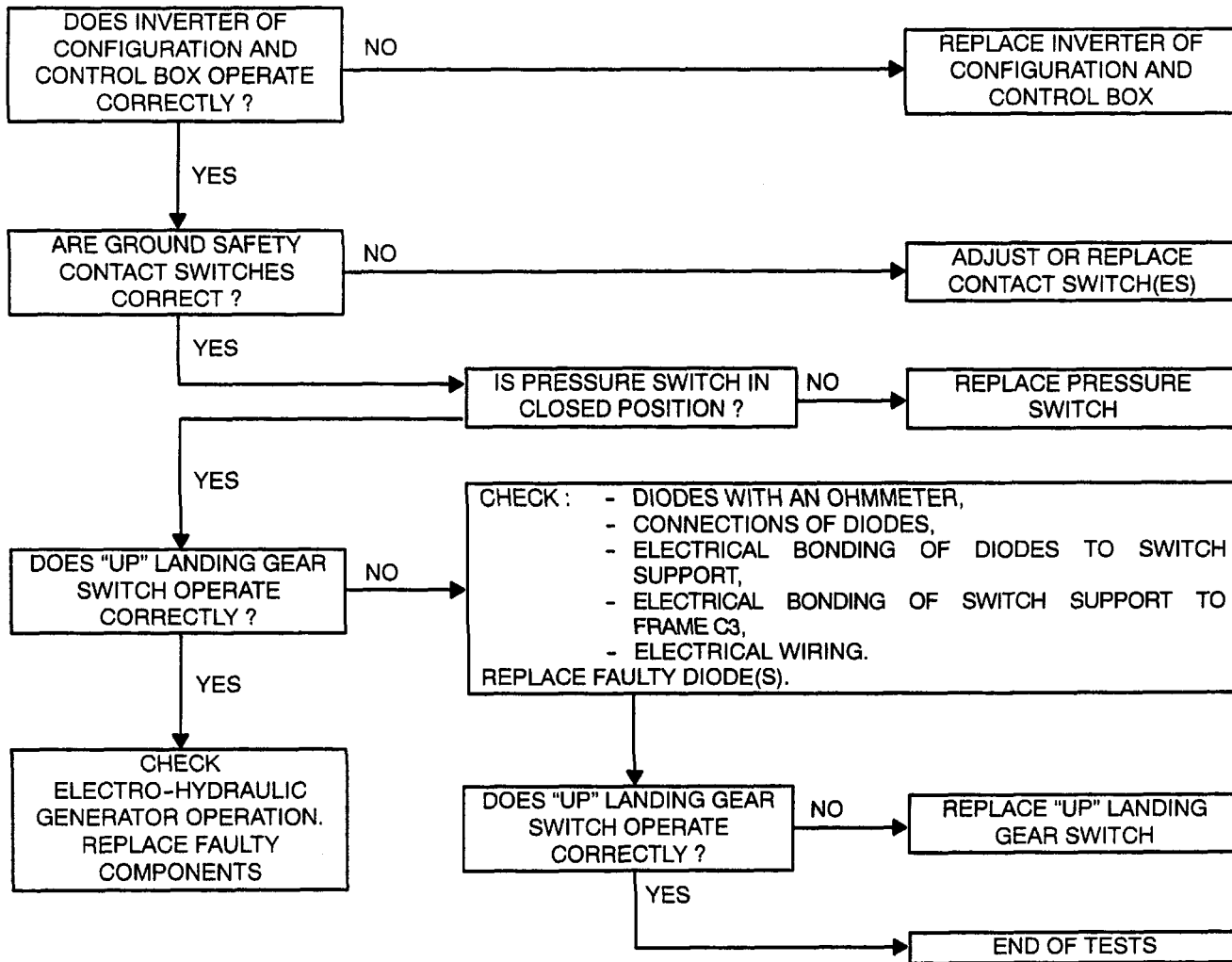
Figure 104 : One of the landing gears does not retract or does not lock in high position.

Figure 105 : Landing gear does not remain in high position

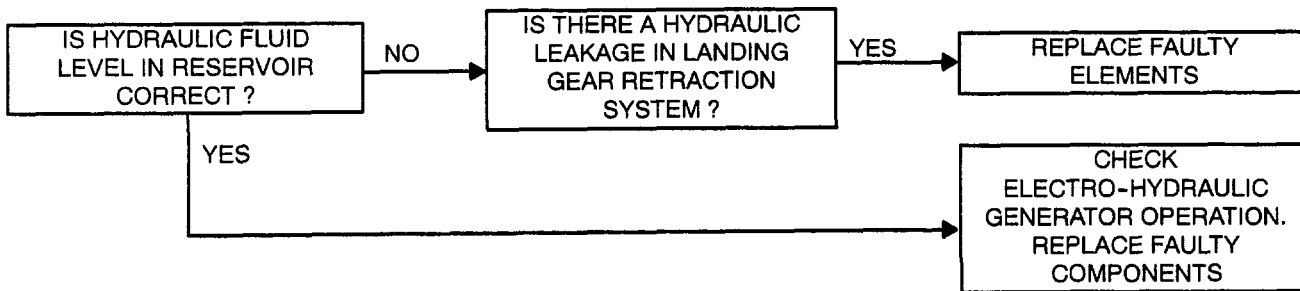
LANDING GEAR DOES NOT  
RETRACT

**PREREQUISITES**  
"LDG GEAR" "PULL OFF" TYPE  
CIRCUIT-BREAKER CLOSED

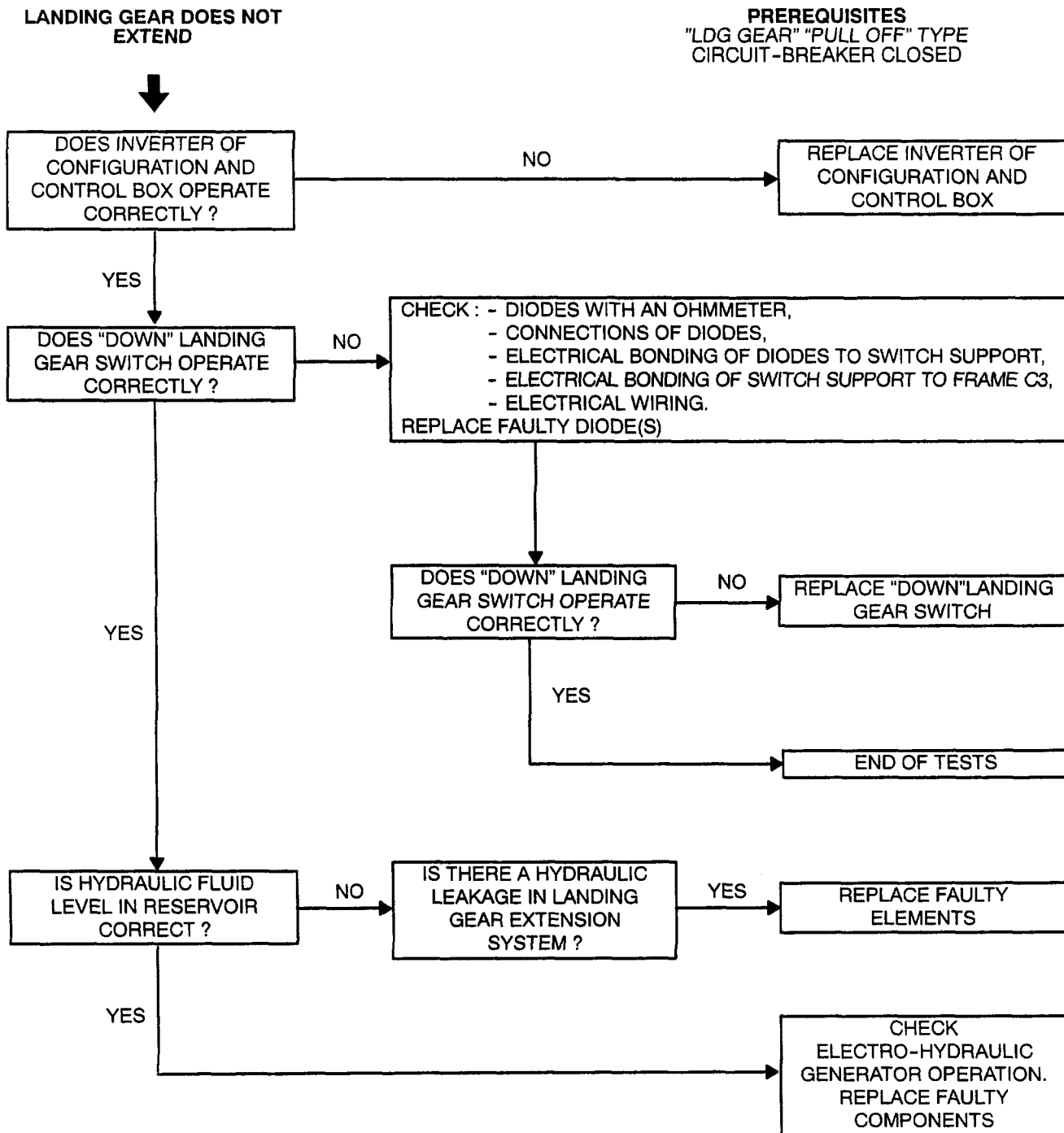
**A. The electro-hydraulic generator is not power supplied**



**B. The electro-hydraulic generator is power supplied**



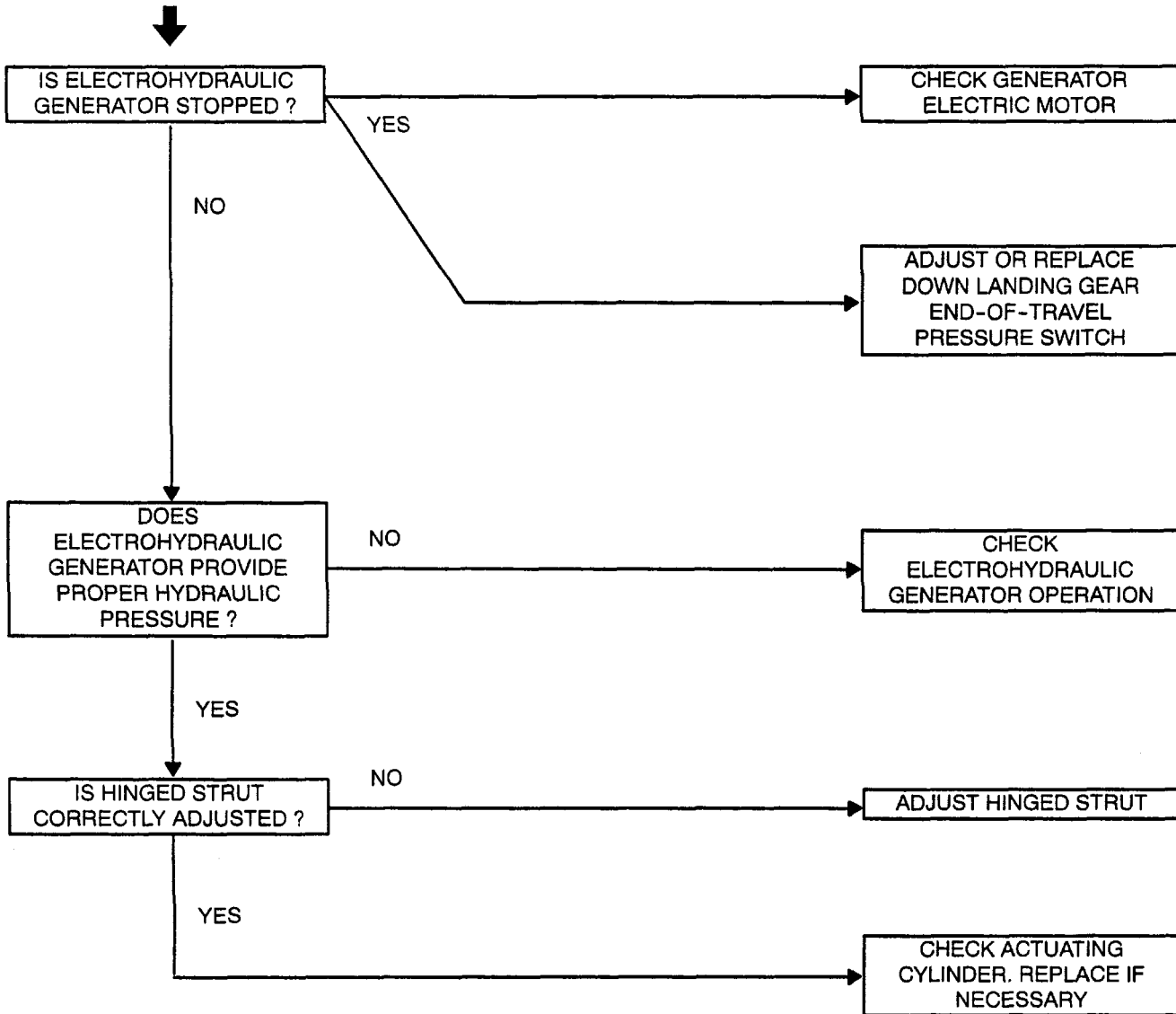
Landing gear does not retract  
Figure 101



Landing gear does not extend  
Figure 102

ONE OF THE MAIN LANDING  
GEARS DOES NOT EXTEND  
OR DOES NOT LOCK IN LOW  
POSITION

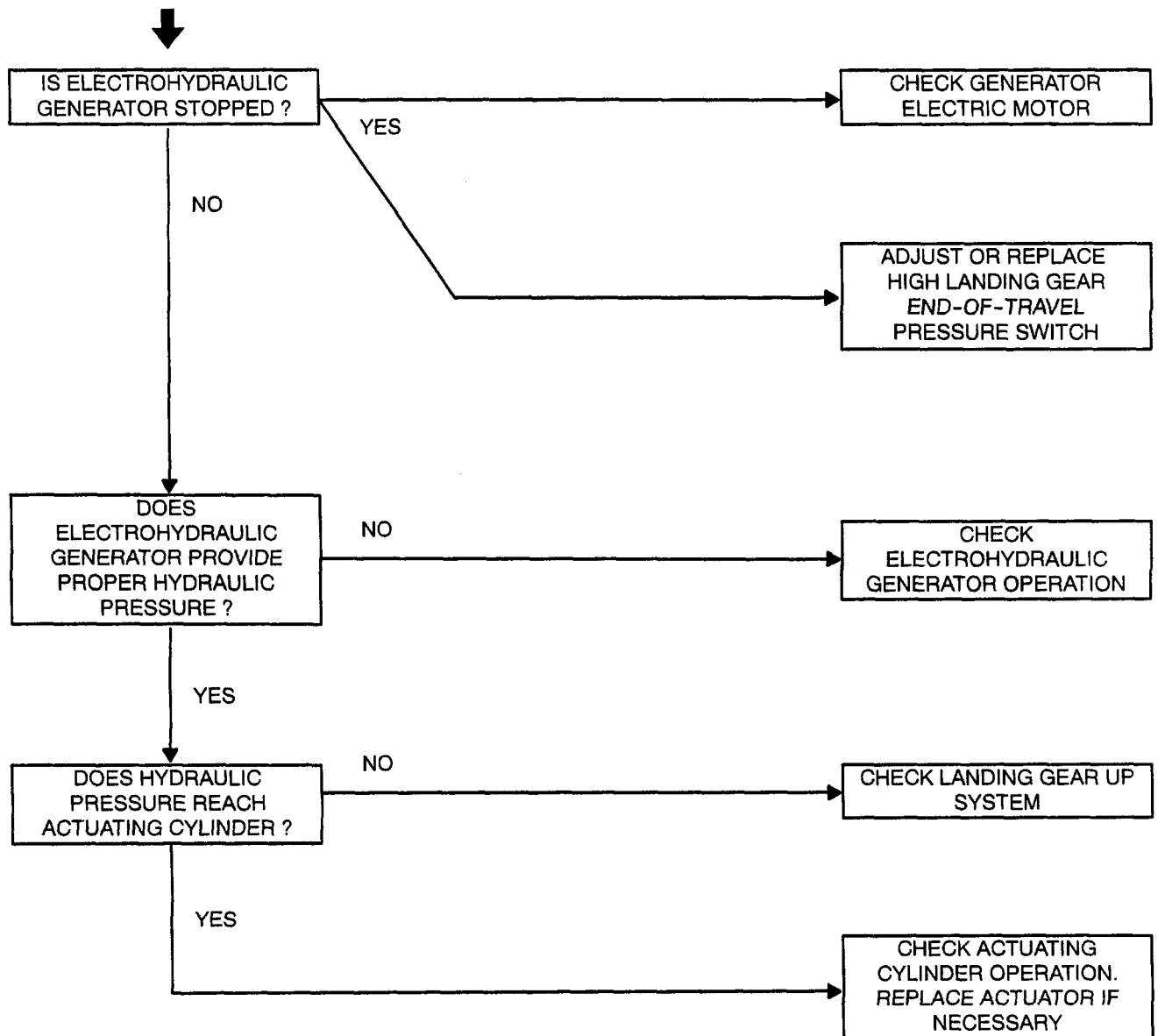
**PREREQUISITES**  
"LDG GEAR" "PULL OFF" TYPE  
CIRCUIT-BREAKER CLOSED



One of the main landing gears does not extend or does not lock in low position  
Figure 103

ONE OF THE LANDING  
GEARS DOES NOT RETRACT  
OR DOES NOT REACH HIGH  
POSITION

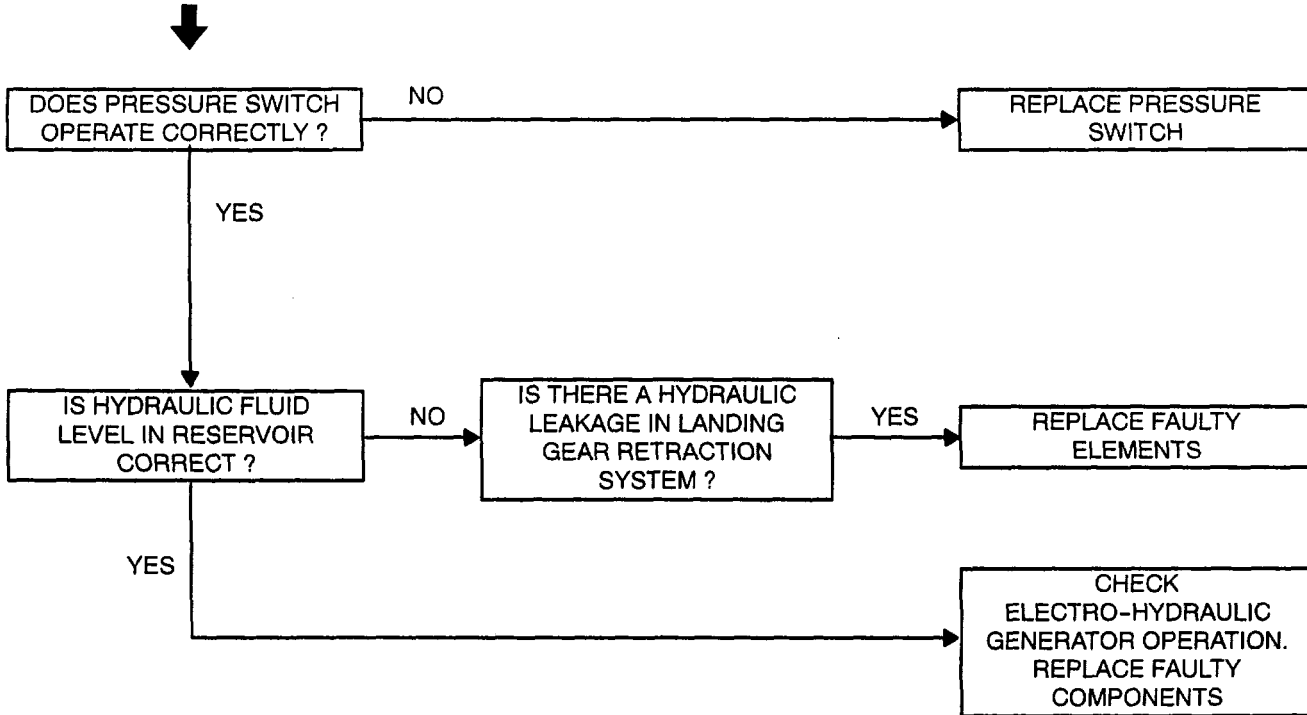
PREREQUISITES  
"LDG GEAR" "PULL OFF" TYPE  
CIRCUIT-BREAKER CLOSED



One of the landing gears does not retract or does not lock in high position  
Figure 104

LANDING GEAR DOES NOT  
REMAIN IN HIGH POSITION

**PREREQUISITES**  
"LDG GEAR" "PULL OFF" TYPE  
CIRCUIT-BREAKER OPEN



Landing gear does not remain in high position  
Figure 105