

BOEING 737-800

TECHNICAL REVIEW - CHAPTER 13

HYDRAULIC SYSTEM A

3 Systems: SYSTEM A, SYSTEM B, STANDBY SYSTEM

SYSTEM A & B operates independently

SYSTEM B and STANDBY are connected through a hydraulic servicing line

The Bleed air supplies air pressure to System A & B reservoir.

Fuel in the main wing tank helps cool the hydraulic fluid A & B with the help of a Heat Exchanger.

An engine driven pump supplies about 6 times the volume of hydraulic fluid of an electric driven pump.

SYSTEM A

Powered by Engine 1 hydraulic pump and an electric pump powered by IDG 2. It supplies power to :

- Primary flight controls (Ailerons, Elevator & Rudder)
- Engine 2 thrust reverser
- Autopilot A
- Two flight spoilers on each wing
- Ground spoilers
- Nose wheel steering
- Alternate Brakes
- Landing Gear
- Power Transfer Unit

LOSS OF SYSTEM A

With the loss of system A the following systems are inoperative :

- Autopilot A
- 2 Flight spoilers on each wing and all ground spoilers
- Normal landing gear extension and retraction

Considerations :

- Single autopilot = CAT III not available
- Plan a manual gear extension
- Once extended the gear will not retract again (decreased G/A performance, additional fuel burn)
- Ground spoilers unavailable, increased landing distance

POWER TRANSFER UNIT

When System B pressure is low, in flight with flaps 1 - 15, PTU control valve opens and supplies power from system A to system B with the help of standby fluid.

The purpose of the PTU is to supply power to operate the autoslats and the leading edge flaps and slats.

SYSTEM A FLUID LEAK

Hydraulic fluid to the engine 1 hydraulic pump is supplied by the system A reservoir via a standpipe.

Should a leak occur in the engine 1 hydraulic pump the system A level would decrease to about 20%.

Should a leak occur in the system A electric hydraulic all system A pressure is lost.

A leak in engine 1 hydraulic pump would not prevent operation of the PTU

HYDRAULIC SYSTEM B

SYSTEM B

Powered by Engine 2 hydraulic pump and an electric pump powered by IDG 1. It supplies power to :

- Primary flight controls (Aileron, Elevator & Feel, Rudder)
- Engine 2 thrust reverser
- Autopilot B
- Autoslats, Leading edge flaps and slats
- Trailing edge flaps
- Two flight spoilers on each wing
- Normal brakes
- Alternate Nose Wheel Steering
- Landing Gear Transfer Unit
- Yaw Damper

LOSS OF SYSTEM B

With the loss of system B the following systems are inoperative :

- Autopilot B
- 2 Flight spoilers on each wing
- Yaw damper
- Normal leading edge and trailing edge flaps

Considerations :

- Single autopilot = CAT III not available
- Plan an alternate flap extention
- Performance : plan a flaps 15 landing, leading edge devices can not be retracted

LANDING GEAR TRANSFER UNIT

In case of engine 1 failure during takeoff, with the landing gear lever selected up and either main landing gear not up and locked system A assists landing gear retraction via the landing gear transfer unit.

SYSTEM B FLUID LEAK

Any leak downstream of the system B reservoir will cause the loss of system B pressure.
However there remains sufficient fluid for the operation of the PTU.

STANDBY HYDRAULIC SYSTEM

STANDBY SYSTEM

The standby system is linked to the system B reservoir.

If a leak occurs in the standby system, the system B reservoir level will decrease to approx 72%.
A standby electric pump provides backup hydraulic power to :

- Engine 1 & 2 thrust reversers
- Standby rudder
- Leading edge flaps & slats (extension only)
- Standby yaw damper (loss of system A & B)