Attachment 28

Operational Factors Group Chairman's Factual Report

DCA00MA030

Brake System

SYSTEM DESCRIPTION

BRAKE SYSTEMS

General

The brake system is operated by conventional rudder pedal inputs or automatic brake control. The brakes are powered by two independent hydraulic systems which allow system A hydraulic pressure to supply the inboard brakes and system B hydraulic pressur to supply the outboard brakes. Each brake system has an accumulator which stores hydraulic pressure and is used as a backup system in the event of a system hydraulic failure. The Antiskid Control Switch controls power to the antiskid controller. The controller regulates pressure through each valve based on four separate wheel speed transducer inputs. Parking brakes are set by depressing the brake pedals, pulling the Parking Brake Lever back, and releasing the pedals. Parking brakes are released by depressing the pedals.

Antiskid System

The antiskid system controls the amount of hydraulic pressure applied to the brakes during manual or automatic braking.

With a fixed amount of brake pressure, the rate at which a wheel slows down is dependent on how much force the tire can exert against the runway surface before skidding. For instance, on an icy runway the tire can exert very little force against the runway before it skids. Without antiskid, the wheel stops almost immediately and begins to slide, greatly increasing the stopping distance of the airplane. Since the skid detector senses the rate of wheel deceleration, it directly senses the coefficient of friction of the runway. By modulating pressure to the brakes, the antiskid can give the maximum allowable braking effort for the condition of the runway. In addition to skid protection, the antiskid system provides locked wheel, touchdown, and hydroplane protection.

Autobrake System - (Deactivated)

The autobrake system provides immediate braking after touchdown by automatically controlling brake pressure. It operates in conjunction with the antiskid system to regulate and maintain the selected deceleration rate. The autobrakes will bring the airplane to a complete stop unless the braking is terminated by the pilot. When stopping on normal runway surfaces, the autobrake system will reduce brake pressure as reverse thrust is applied. The total deceleration of reverse thrust and braking is equal to the selected deceleration rate.

The autobrake system is armed for landing when:

- Air/ground safety sensor is in flight mode.
- Antiskid Control Switches are ON.
- Autobrake Select Switch positioned to MIN, MED or MAX.

During landing with the autobrake system armed, the brakes will be applied when the following conditions are satisfied:

- Thrust levers are retarded to near IDLE.
- Main wheel spin-up.

The autobrakes system will be deactivated by:

- Moving the Speed Brake Handle to the down detent.
- Advancing the Thrust Levers (as for go-around).
- Positioning the Autobrake Select Switch to OFF.
- Application of manual brakes.