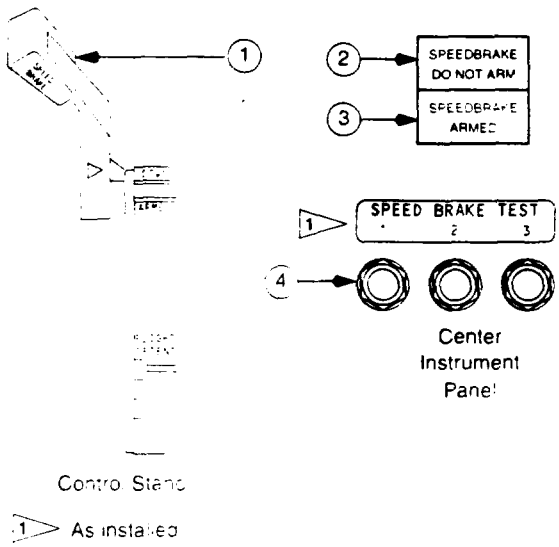
Attachment 27

Operational Factors Group Chairman's Factual Report

DCA00MA030

Speedbrakes/Spoilers System

Speedbrakes



1. Speedbrake Lever (SPEEDBRAKE)

   DOWN (detent)—all flight and ground spoiler panels in faired position.

   ARMED—

   - automatic speedbrake system armed.
   - upon touchdown, the speedbrake lever moves to the UP position, and all flight and ground spoilers extend.

   FLIGHT DETENT—all flight spoilers are extended to their maximum position for in-flight use.

   UP—all flight and ground spoilers are extended to their maximum position for ground use.

2. Speedbrake Do Not Arm Light (SPEEDBRAKE DO NOT ARM) (Deactivated when speedbrake lever is in the DOWN position).

   Illuminated (amber)—indicates abnormal condition or test inputs to the automatic speedbrake system.

3. Speedbrake Armed Light (SPEEDBRAKE ARMED) (Deactivated when speedbrake lever is in the DOWN position).

   Illuminated (green)—indicates valid automatic speedbrake system inputs.

4. Speedbrake Test Switches (SPEED BRAKE TEST)

   For maintenance use only.

Speedbrakes

The speedbrakes consist of flight spoilers and ground spoilers. Hydraulic system A powers all the ground spoilers and the inboard flight spoilers. Hydraulic system B powers the outboard flight spoilers. The speedbrake lever controls the spoilers. When the speedbrake lever is actuated all the spoilers extend when the aircraft is on the ground, and only the flight spoilers extend when the aircraft is in the air.

In Flight Operation

Operating the speedbrake lever in-flight causes all flight spoiler panels to rise symmetrically to act as speedbrakes. Caution should be exercised when deploying flight spoilers during a turn, as they greatly increase roll rate. When the speedbrakes are in an intermediate position roll rates increase significantly.

Ground Operation

During landing, the auto speedbrake system operates when these conditions occur:

- speedbrake lever is in the ARMED position.
- SPEEDBRAKE ARMED light is illuminated
- both thrust levers are retarded to IDLE.
- main landing gear wheels spin-up (more than 60 kts)—speedbrake lever automatically moves to the UP position and the flight spoilers deploy.
- right main landing gear strut compresses on touchdown causing the mechanical linkage to open the ground spoiler shutoff valve and the ground spoilers deploy.
- radio altitude is less than 10 feet.

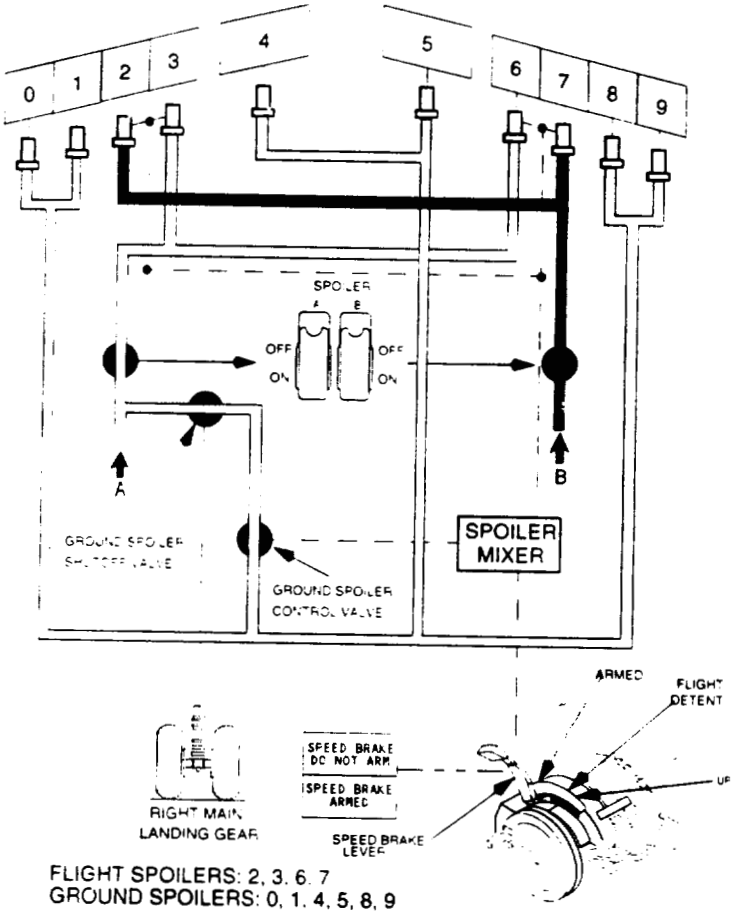
If a wheel spin-up signal is not detected, when the air/ground system senses ground mode (any gear strut compresses) the speedbrake lever moves to the UP position and flight spoiler panels deploy automatically. When the right main landing gear strut compresses, the mechanical linkage opens the ground spoiler shutoff valve and the ground spoilers deploy.

During a rejected takeoff (RTO) the auto speedbrake system operates when these conditions occur:

- main landing gear wheels spin-up (more than 60 kts).
- takeoff is rejected, both thrust levers are retarded to IDLE and the reverse thrust levers are positioned for reverse thrust—speedbrake lever automatically moves to the UP position and all spoilers deploy.

After a RTO or landing, if either thrust lever is advanced, the speedbrake lever automatically moves to the DOWN detent and all spoiler panels retract. The spoiler panels may also be retracted by manually moving the speedbrake lever to the DOWN detent.

Speedbrakes Synoptic



FLIGHT SPOILERS: 2, 3, 6, 7
GROUND SPOILERS: 0, 1, 4, 5, 8, 9