AFS Control Panel

FLAP LIMIT AUTO / OVRD

The Flap Limiting System automatically retracts flaps if the airspeed exceeds speed limits for flap settings between 22 and 50 degrees. This automatic flap limiting is only active at speeds greater than 175 kts. The system provides automatic retraction and prevents further extension. If flap position airspeeds are exceeded (causing auto retraction), flaps will return to the selected position when speed is reduced.

MANUAL (illuminated)
The Auto Flap Limiting System has two channels. Failure of the first channel will cause the Flap Limiting System to automatically switch to the remaining channel. In the event of a failure of both channels, MANUAL will illuminate and a SEL FLAP LIM OVRD level 2 alert will display. In this case, manual override is required through the use of the AUTO / OVRD selector. MANUAL will also illuminate if the AUTO / OVRD selector is moved out of the AUTO position (regardless of whether or not the Auto Flap Limiting System has failed).

AUTO/OVRD Selector
Normally selected to AUTO. Selecting OVRD (1 or 2) overrides normal flap limit system.

YAW DAMPER SYSTEM

Provides turn coordination and dutch roll damping. The Yaw damper operates continuously when power is applied to the acft, except during autoland localizer track and flare, and during engine out flight.

There are 2 Yaw Damper channels (A & B) for each of the two FCC's (1 & 2). FCC 1 operates the lower rudder, and FCC 2 operates the upper rudder. If dual Y/D channels (A and B) fail on the same rudder surface, dual control is automatically maintained by the other FCC.

FAIL (illuminated)
-The associated channel has failed

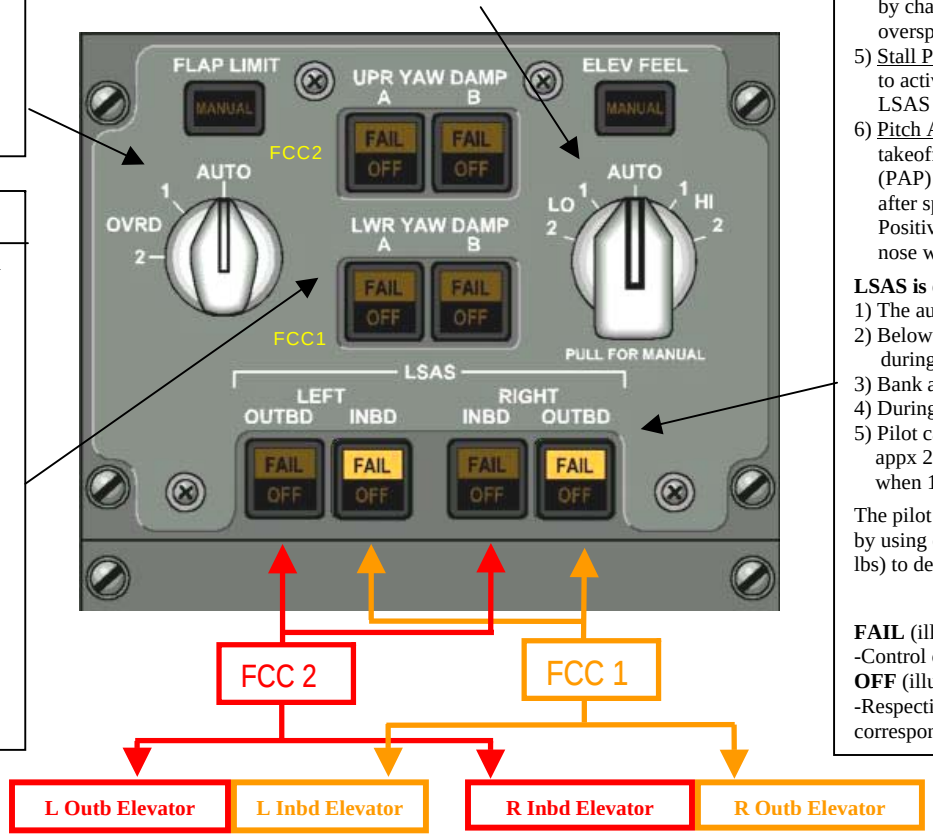
OFF (illuminated)
-The associated channel has been selected off by manually by pressing the respective Yaw Damper switch.

ELEV FEEL System

The Elevator Feel System provides a simulated feel of elevator aerodynamic loads (as a function of airspeed). The system has two Auto channels, and a (pilot selectable) manual override system. ELF functions are performed by the Flight Control Computer.

ELEV FEEL (Selector)
-AUTO - With the selector in AUTO, the dual channel system automatically adjusts elevator feel to correspond with the current airspeed.
-HI (1or 2) or LO (1 or 2) – Slews the elevator load feel to correspond to a higher or lower airspeed as indicated on the speed scale. The speed scale will appear on the SD Config page, when the selector is pulled.

MANUAL (illuminated) - The Elevator Feel System has two channels. Failure of the first channel will cause the system to automatically switch to the remaining channel. In the event of a failure of both channels, MANUAL will illuminate and a SEL ELEV FEEL OVRD level 2 alert will display. In this case, manual override is required through the use of the AUTO/Manual selector. MANUAL will also illuminate if the AUTO/Manual selector is moved out of the AUTO position (regardless of whether or not the Elevator Feel System has failed).



Longitudinal Stability Augmentation System (LSAS)

LSAS provides:

1) Pitch Attitude Hold and Automatic Pitch Trim – With no force on the control column, and bank angle less than 30 degrees, LSAS holds the current pitch attitude. LSAS holds this attitude by deflecting the elevators as much as 5 degrees. The horizontal stabilizer is automatically adjusted to relieve the sustained elevator deflection and maintain a full 5 degree elevator authority.
2) Pitch Attitude Limiting – LSAS maintains pitch attitude to less than 10 degrees of dive, or less than 30 degrees of climb.
3) Pitch Rate Damping – Increases the apparent static stability to reduce the chance of over-control in pitch. It is active throughout the flight envelope. 100% of max damping is available above 20,000ft, decreasing linearly to 30% below 16,500 ft.
4) Speed Protection – If the autopilot is not engaged and the autothrottle is not available (or able to maintain a safe speed), LSAS Speed Limiting will engage to provide overspeed or stall protection. LSAS overspeed protection is accomplished by changing pitch. LSAS does not provide flap, slat or gear overspeed protection.
5) Stall Protection – At 75-85 pct of the angle of attack required to activate the stick shaker, the LSAS stall protection engages. LSAS reduces pitch until the AOA is sufficiently reduced.
6) Pitch Attitude Protection and Positive Nose Lowering - During takeoff rotation, LSAS provides Pitch Attitude Protection (PAP) to reduce the possibility of a tail strike. During landing, after spoiler deployment is commanded, LSAS initiates Positive Nose Lowering (PNL) to assist in transitioning the nose wheel to the runway after main gear touchdown.

LSAS is off when:

1) The autopilot is engaged
2) Below 100 ft RA, except active for pitch attitude protection during takeoff and positive nose lowering during landing.
3) Bank angle exceeds 30 degrees
4) During manual trim operation
5) Pilot can override LSAS if, when below 1500 ft., more than appx 2 lbs. of pressure is applied to the control column; or, when 10-15 lbs of force is applied while PAP or PNL is active.

The pilot may counteract the LSAS overspeed or stall protection by using enough manual force on the control column (appx 50 lbs) to defeat the LSAS inputs.

LSAS Switches

FAIL (illuminated)
-Control channel has failed, and has shut off
OFF (illuminated)
-Respective LSAS switch has been pressed, and the corresponding control channel has been turned off.