

## 6 Flight Controls (ATA 27)

### Definition

*Those units and components which furnish a means of manually controlling the flight attitude characteristics of the aircraft, including items such as hydraulic boost system, rudder pedals, controls, mounting brackets, etc. Also includes the functioning and maintenance aspects of the flaps, spoilers and other control surfaces, but does not include the structure... (ATA 100)*

Flight Controls extends from the controls in the cockpit to the control surface actuators. The definition reads "means of manually controlling"; this sets the flight control system apart from the auto flight system. Thus, the flight control system is concerned only with direct inputs from the pilot via control column, rudder pedals, or other such control devices and the transformation of these inputs to adequate control surface movements.

Flight controls is subdivided into the mechanical aspects of the system and – in case of Fly-by-Wire (FBW) aircraft – the electronic (avionic) part.

Following **ATA 100**, the mechanical subsystems comprise the

- the ailerons
- the rudder
- the elevator
- the spoilers
- the horizontal stabilizer
- the high lift system
- gust locks and dampers.

The electronic (avionic) subsystem is

- the Electronic Flight Control System (EFCS).

Even in modern FBW aircraft there exist many mechanical parts because in the end control surfaces have to be moved against heavy air loads in limited time. The high-lift systems (flaps and slats) also show a considerable amount of mechanical parts.

See the References and Further Reading for more on the mechanical aspects of modern flight control systems design.