FLAPS SYSTEM

The hydraulically operated and electrically controlled flaps are of the slotted fowler type. The two flaps are interconnected by a single actuating cylinder. Synchronization of both LH and RH flaps is established mechanically.

CONTROLS AND INDICATORS (Figure 1-24)

The flaps may be set to one of the three positions corresponding to the appropriate control button located on the LH console. Buttons in the aft cockpit override function of aft cockpit buttons. Each button bears a symbol which represents a different flight situation.

- The forward button, symbolized by a straight line, represents "Flight" position (zero degrees).
- The center button, symbolized a slightly bent line, represents the "Take Off" position (25 degrees).
- The aft button, symbolized by a sharply bent line, represents the "Landing" position (44 degrees).

Opposite each button is an indicator light, bearing the corresponding symbol, that illuminates when the flaps have reached the desired setting. After executing the hydraulic function, the depressed button pops back to its initial position. The mechanical indicators, located on upper surface of each wing, provide visual identification of flaps position.

Controls and indication of the flaps system is identical in both cockpits.

The flaps are automatically retracted to "Flight" position (zero degrees) at airspeed above 310 ± 15 km/h.

NOTE

Flaps extension is blocked from the aircraft speed above 310 ± 15 km/h.

Flaps control and position indication is powered by 28 V and protected by the "U/C BALANC.", "SIGNAL" and "CONTR." C/Bs, located on the aft CB/switch panel in the fwd cockpit and by "SIGNAL" C/B, located on miscellaneous CB/switch panel.

EMERGENCY OPERATION

Moving the emergency flaps lever in either cockpit to the emergency position, causes the flaps to extend all the way to landing (44°) position. Moving the lever back to the initial forward position will retract the flaps. Both forward and aft levers have the same priority.

SPEED BRAKES SYSTEM

The hydraulically operated and electrically controlled speed-brakes are mounted on the wing's lower side and consists of two hinged panels which, when opened, extend 55 degrees into the airstream.

CONTROLS AND INDICATORS (Figure 1-25)

Control from the both cockpits is by means of a switch located on the throttle grip. Selecting the switch to its aft position will cause the speed brakes to extend. Selecting the switch to its forward position will retract the brakes.

Forward Cockpit Control

The fwd cockpit switch has three positions (functions):

forward (speed brakes retracted), aft (speed brakes extended) and pressing inward (tactical use – the speed brakes extend and remain extended as long as the switch is depressed. The moment the switch is released the speed brakes retract).

Aft Cockpit Control

The spring loaded to the center position aft cockpit switch has three positions (functions):

momentary forward (speed brakes are retracted as long as the switch is held in fwd position), momentary aft (speed brakes are extended as long as the switch is held in the aft position), center (enables the forward cockpit to maintain control over the speed brakes).

NOTE

The speed brakes can be controlled from the forward cockpit, ONLY if the aft switch is at the neutral position.

The aft switch has over-ride function (the speed brakes can be retracted/extended from the aft cockpit although the fwd switch is in the opposite position).

Indication is identical in both cockpits and consists of a green "AIR BRAKE OUT" light in the landing gear position indicator panel.

Upon reaching the speed of M 0.78 ± 0.02, the speed brakes extend automatically and retract once the speed is reduced below this value, while extended the "M_{max}" light will be illuminated.

The speed brakes control and indicating system is powered by 28 V and protected by the "SIGNAL" and "CONTR." C/Bs, located on aft CB/switch panel in the fwd cockpit and by "SIGNAL" C/B, located on miscellaneous CB/switch panel.

FLIGHT CONTROLS

The primary flight controls (aileron, elevators and rudder) are activated by push–pull rods and levers while the secondary flight controls (trim tabs, flaps, speed brakes) are controlled by either electric or hydraulic actuators. The aileron and elevator control systems consist of two interconnected control sticks (forward and aft cockpits). The rudder control system consists of two pairs of interconnected rudder pedals. The rudder pedals can be adjusted according pilot needs by the pedal adjustment controller.

Aerodynamic balance of the ailerons and the elevator is obtained by balance tabs mounted on the trailing edge of the respective control surface. The elevator system is provided with a bungee booster. This bungee is activated by elevator deflection of approximately 13 degrees or more, to assist the pilot in overcoming the high stick forces at high speed and high "g" load.

The flight controls can be locked on the ground by means of a locking device shifted under the instrument panel.

TRIM TABS

The trim tabs provide aircraft trimming along the longitudinal and lateral axes.

Longitudinal trimming is provided by trim tabs fitted to the left and right elevators. The right trim tab is operated by electrical actuator which deflects the tab up or down. The left trim tab is controlled by the flaps extension and will deflect automatically when the wing flaps are moved from to 44 degrees (landing) position, thus effectively introducing a "nose up" trim for the flare. The right trim tab is controlled by the trim switch located on the control stick in either cockpits.

Lateral trimming is provided by combined trim/balance tab fitted to the left aileron and is operated by an electrical actuator which deflects the tab up or down. Right tab is the balance tab.

CONTROLS AND INDICATORS (Figure 1–23)

Both longitudinal and lateral trimming are controlled by a five–position spring loaded switch located on the top of the control stick grip.

In the forward cockpit, longitudinal trim position is indicated by an indicator consisting of a pointer and a top viewed miniature aircraft on a graduate scale. Consistent with the movement of the elevator tab, the pointer indicates a nose–up or nose–down attitude proportional to the amount of tab displacement. The indicator is located on the center pedestal. The aft cockpit indication consists of a trim tab neutral position green indicating light, placarded "LONGITUD".

In both cockpits, lateral trim position indicator is a "Neutral position" green light that illuminates when the aileron trim is at the neutral position. The light in the forward cockpit is labeled "NEUTRAL POSITION" and in the aft cockpit "LATERAL".

The lateral trim tabs control and indicating system is powered by 28 V and protected by "U/C BALANC." and "SIGNAL" C/Bs, located on the aft C/B switch panel in the fwd cockpit, and by "SIGNAL." C/B, located on the miscellaneous CB/switch panel in the aft cockpit. The longitudinal trim tab control and indicating system is powered and protected by the same manner as the lateral one, furthermore by the "ENGINE INSTRUM T.&B. INDIC." C/B on the aft C/Bswitch panel and "ENGINE" C/B located on the main C/B switch panel.

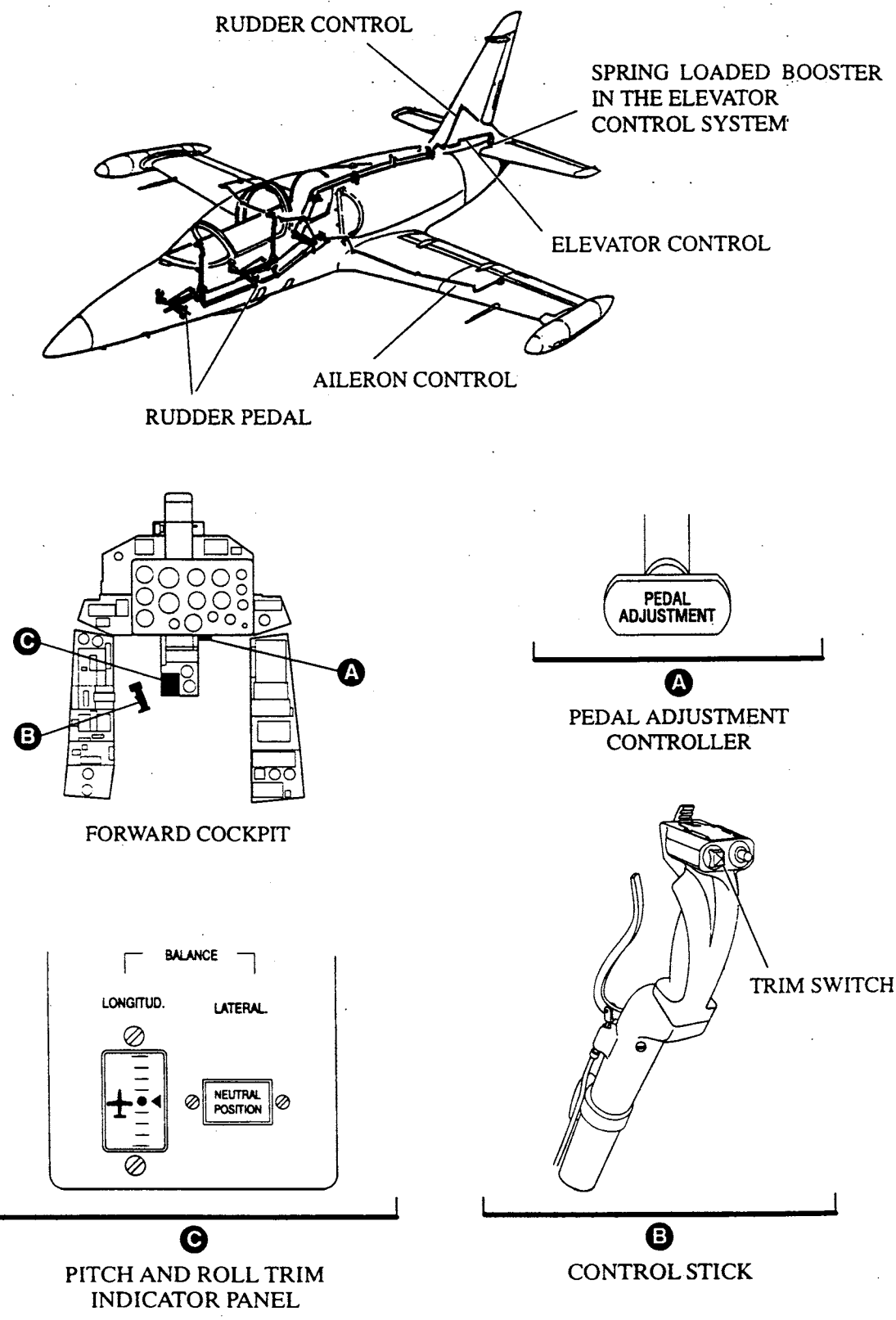

Figure 1–23. Flight Control System – Control and Indicators (sheet 1 of 2)