

7.2 - AIRFRAME

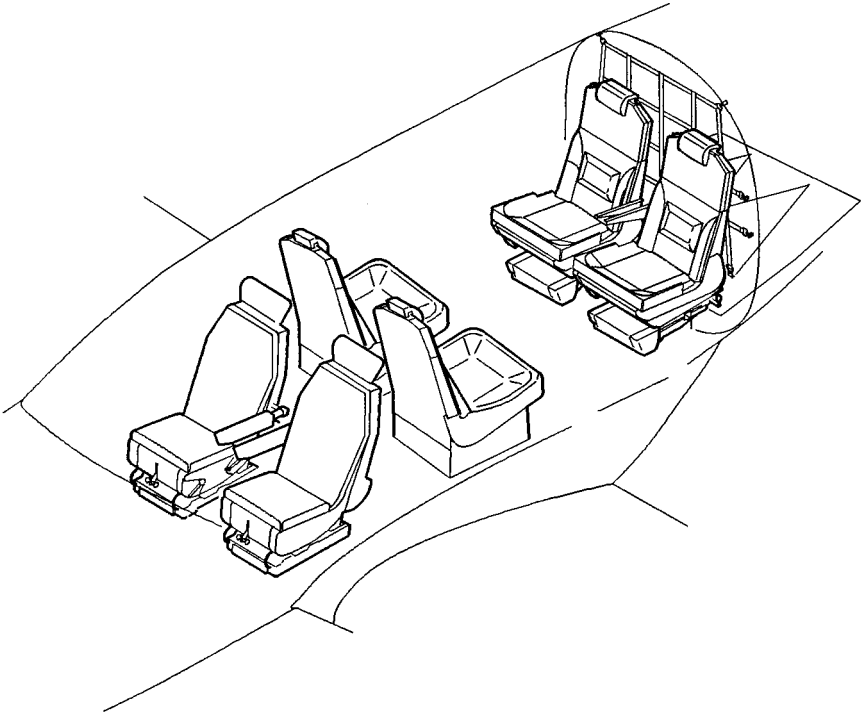
The TBM 850 is a six-place, low wing airplane. The structure is a semi-monocoque all-metal construction and is equipped with a retractable tricycle landing gear.

The pressurized cabin is equipped, on the left side of fuselage, with a "wide" one-piece door and folding stairs comprising a hand rail allowing pilot and passengers boarding. The occupants have access to cockpit and to rear seats through a central aisle.

A "pilot" door (if installed) located forward of the cabin on the left side allows to gain access to the cockpit by means of folding stairs.

The cabin rear part is a baggage compartment.

In fuselage non pressurized rear section, a compartment located between the rear pressure bulkhead at frame C17 and the frame C18 is provided as a secondary baggage compartment ; it is accessible through a door located on the fuselage L.H. side.



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Figure 7.2.1 - CABIN ARRANGEMENT

WINGS

The wings are monocoque, bi-spar structures. Main spars of each wing are linked to the fuselage by two integral attach fittings. Each wing contains a main landing gear well and sealed casings forming the fuel tank. The wing leading edge is equipped with a deicing system.

AILERONS, SPOILERS AND PITCH TRIM TAB

The ailerons located on external trailing edge of each wing are hinged on two attach fittings fixed on the rear spar. They allow airplane lateral control and are controlled mechanically through control wheel rotation.

The spoilers located in front of flaps, on top skin side, are mechanically linked to the ailerons.

Trim tab knob attached on the trailing edge of L.H. aileron is electrically activated by a trim knob, through an actuator.

WING FLAPS (Figure 7.2.2)

The wing flaps are large span slotted flaps with a single rotation point. They are activated by actuating rod-controlled screw jacks linked to an electric motor located under the floor, inside the fuselage.

A preselection control located on the right side of pedestal console allows the pilot to select one of the three positions (UP - TO - LDG). For each control position, a deflection angle is defined (0°, 10°, 34°).

The flap control knob is protected by a casing to avoid accidental operation.

A monitoring device interrupts flaps movement as soon as a deflection dissymmetry is detected.

Wings characteristics :

Area	193.75 sq. ft (18 m ²)
Wing loading	38.16 lb/sq.ft (186.3 kg / m ²)
Root chord at y = 2.13 ft (0.650 m)	5.79 ft (1.765 m)
Tip chord	3.67 ft (1.120 m)
Mean aerodynamic chord at y = 9.16 ft (2.793 m)	4.95 ft (1.510 m)
Rigging angle to fuselage horizontal datum	2°
Sweep-angle (at 25 % chord)	0°
Dihedral (at datum plane)	6.5°
Aspect ratio (platform reference)	8.216
Taper ratio	0.608
Airfoil section (at wing root)	RA 16-43
Airfoil section (at wing tip)	RA 13.3-43
Twist	0°

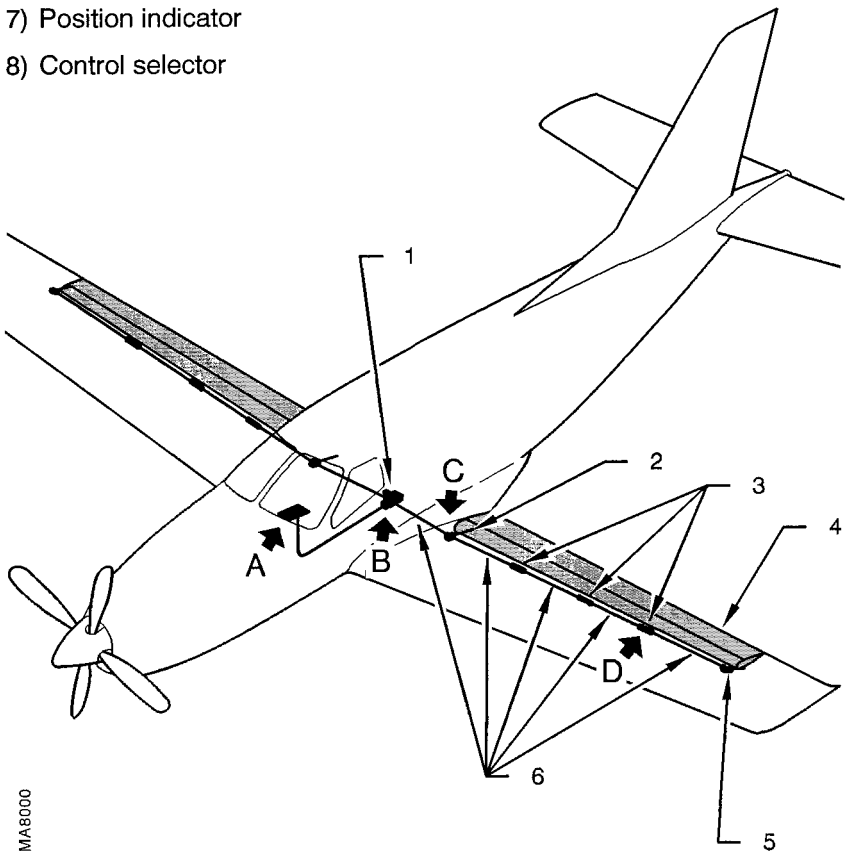
Aileron - spoilers characteristics :

Global aileron area (including trim tab)	9.65 sq.ft (0.897 m ²)
Aileron trim tab area	0.78 sq.ft (0.072 m ²)
Spoiler area	1.80 sq.ft (0.167 m ²)

Flaps characteristics :

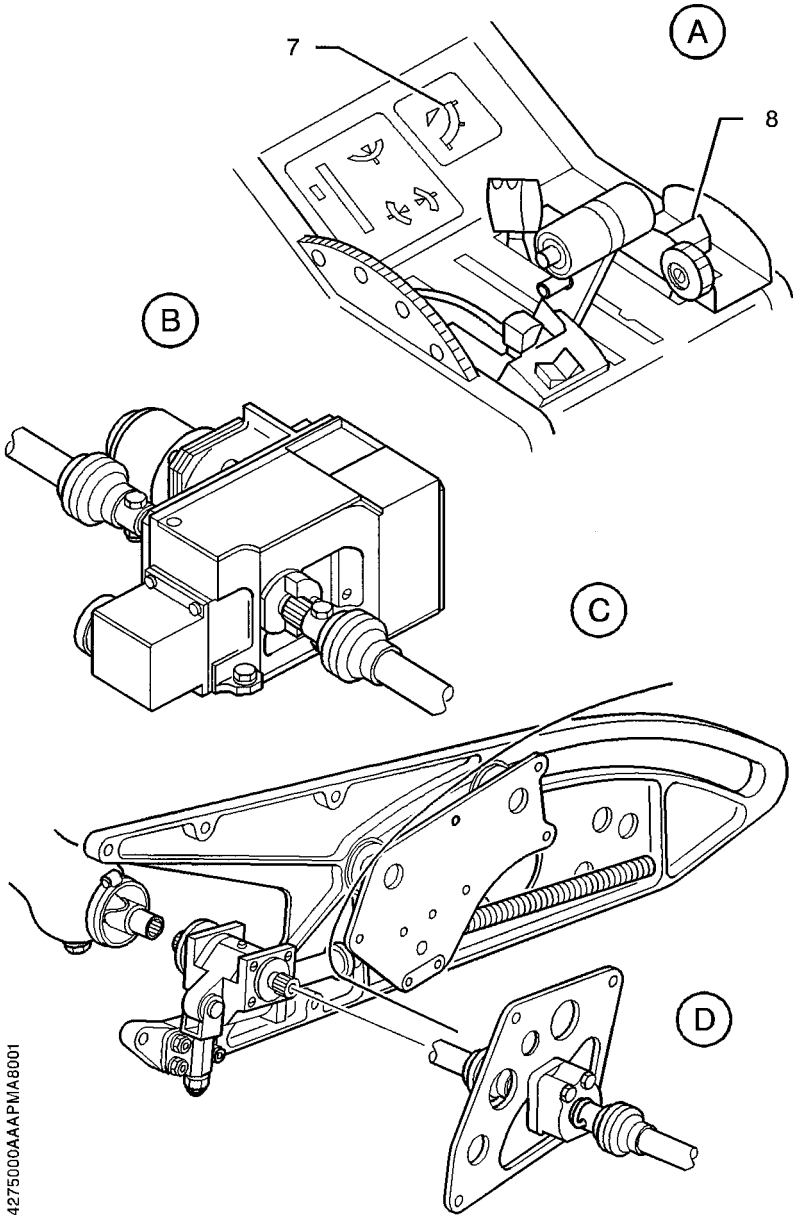
Type	Single-slotted, rotational
Global flap area	40.68 sq.ft (3.780 m ²)

- 1) Geared motor
- 2) Internal actuator
- 3) Intermediate bearings
- 4) Wing flap
- 5) External actuator
- 6) Rods
- 7) Position indicator
- 8) Control selector



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Figure 7.2.2 (1/2) - WING FLAPS



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Figure 7.2.2 (2/2) - WING FLAPS

EMPENNAGES

Empennages are composite structures. The horizontal empennage consists of a horizontal stabilizer (PHF), control surfaces and elevator trim tabs ; the vertical empennage consists of a vertical stabilizer, the rudder and the rudder trim tab. The empennage leading edge is equipped with a deicing system.

Horizontal stabilizer characteristics :

Overall span	16.36 ft (4.988 m)
Global area	52.52 sq.ft (4.879 m ²)
Chord	3.89 ft (1.186 m)
Tip chord	2.60 ft (0.795 m)
Mean aerodynamic chord at y = 3.76 ft (1.147 m)	3.26 ft (0.995 m)
Airfoil section	NACA 64 ₂ -A415 modified
Dihedral	6.5°
Rigging angle (leading edge up)	0.5°
Aspect ratio	5.034
Elevator global area (including trim tabs)	21.76 sq.ft (2.022 m ²)
Elevator trim tab area (right datum plane)	3.47 sq.ft (0.322 m ²)

Vertical stabilizer characteristics :

Global area	33.28 sq.ft (3.092 m ²)
Construction root chord	6.95 ft (2.120 m)
Reference tip chord	2.54 ft (0.775 m)
Mean aerodynamic chord	5.08 ft (1.551 m)
Construction airfoil section	NACA 63 ₁ -A012 modified
Sweep angle (at leading edge)	45°
Aspect ratio	1.481
Rudder area (including trim tab)	11.87 sq.ft (1.103 m ²)
Rudder trim tab area	1.36 sq.ft (0.126 m ²)