

## Chapter 6 MISCELLANEOUS INSTRUMENTS

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## DESCRIPTION

**WARNING**

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cockpit or performing any operations upon the aircraft.

**General**

1. The information given in this chapter applies to the instruments which are not included in a functional group. The locations of those installed in the cockpit are illustrated in fig.1.

**Oxygen system***General*

2. The normal oxygen requirements of the crew are supplied by a liquid oxygen system, in which the oxygen is carried in two containers housed in a single pack installed in the main equipment compartment. Pressure in the oxygen pipelines is indicated by two non-electric pressure gauges on the main instrument panel A1. Two magnetic oxygen flow indicators Ref.No.5CZ/5003 are fitted, one port and one starboard, on panel A1 for use by the pupil and instructor respectively.

*Oxygen contents gauges*

3. The contents of both containers are shown by two gauges incorporated in the oxygen pack, and two gauges mounted on panel A5. The gauges are operated by a transistorized control unit, integral with the pack, which is connected to capacitance probes within the containers. Changes in capacitance caused by variation of the amount of liquid oxygen in the containers is amplified and transformed into signals suitable for operating the gauges.

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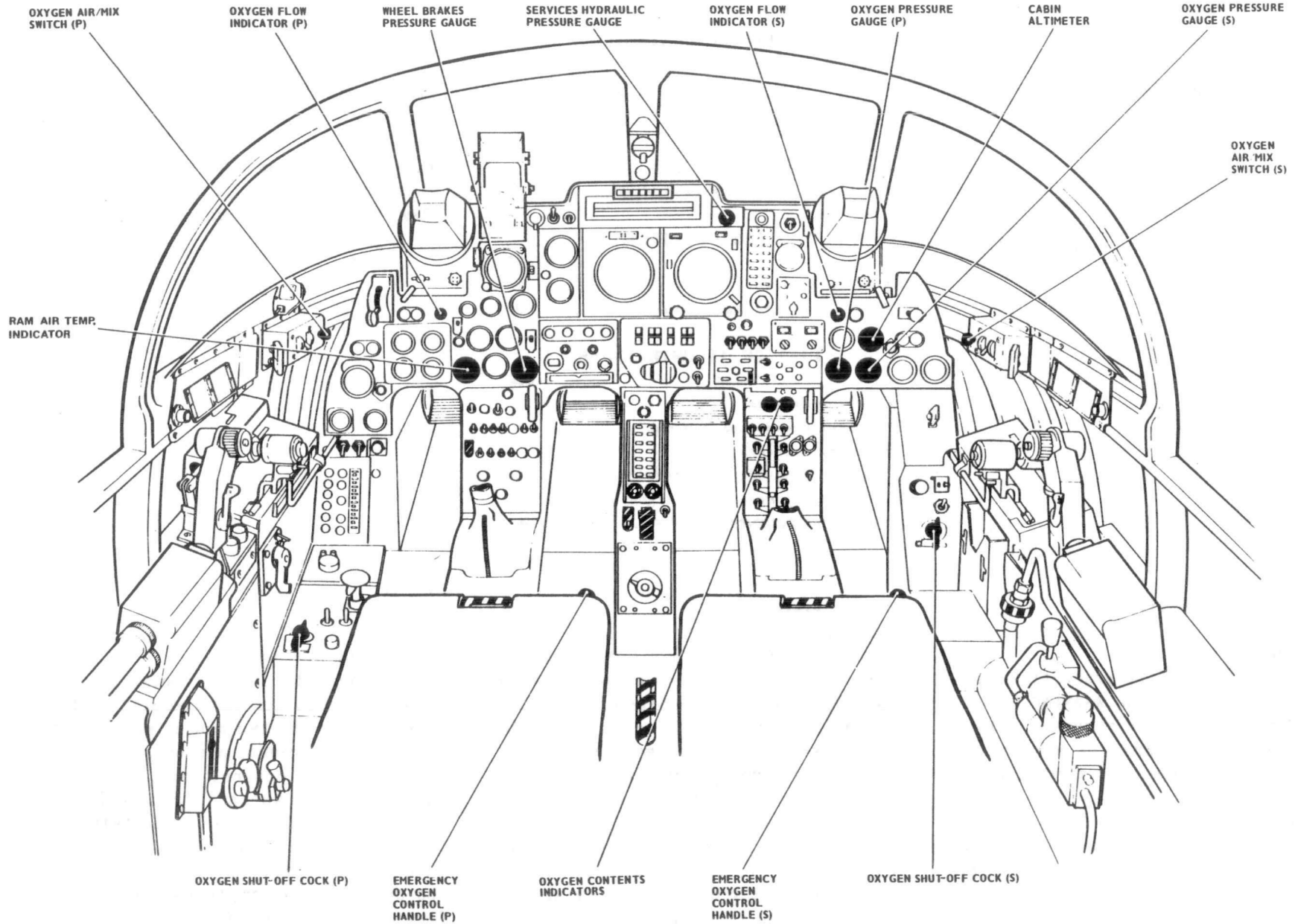


FIG.1. MISCELLANEOUS INSTRUMENTS

◀ SEM/LTG/036 INCORPORATED ▶

*Seat installations*

4. The main oxygen equipment incorporated in each pilot's seat comprises a Type 120 regulator, a solenoid-actuated air/mix valve, a pressure switch, and a connection socket. The pressure switch on each seat will close to operate the associated OXY warning (OXY 1 - pupil, OXY 2 - instructor) on the standard warning panel should the main oxygen supply to the seat fall to a dangerous level. The air/mix valve on each seat is controlled by the relevant switch fitted one on panel B1 (P) and the other on panel C1 (S).

*Regulator, Type 120*

5. This regulator is a demand-type unit which provides an oxygen supply directly related to the rate and strength of the user's respiration and a progressive increase in delivery pressure with increasing altitude. The regulator incorporates a diaphragm-operated switch arranged to operate a magnetic indicator which blinks in unison with the pilot's breathing (*refer to para.2*).

*Fatigue meter*

6. The number of times the aircraft exceeds pre-determined acceleration values is registered by a Mk.14 fatigue meter installed between frames 46 and 47 at the starboard side in the rear fuselage. The meter circuit is fed from fuse 45 in the a.c./d.c. fuse and relay box and is controlled by one of the microswitches in the nose wheel indicator circuit, thus ensuring that the meter is only operative when the aircraft is airborne with the wheels locked up. It

is important to note that the fatigue meter is a delicate instrument and during its removal from or reassembly in the aircraft the instructions given in A.P.112G-0203-1 must be strictly adhered to.

*Services hydraulic pressure gauge*

7. Indication of the pressure in the main hydraulic system is given by a Type A1756 indicator mounted on panel A1 at the starboard side of the cockpit. The gauge is operated by a Type A1757 transmitter coupled into the hydraulic pipeline in the armament bay.

*Wheel brakes pressure gauge*

8. Pressure in the wheel brakes hydraulic system is shown by a Type S149/1/126 indicator installed on panel A1 at the port side of the cockpit. The indicator is operated by a Type S122/4/55 transmitter installed in the armament bay, starboard.

*Hydraulic accumulator pressure gauges*

9. A number of small hydraulic pressure gauges Ref.No.6A/6115 are located at various points in the aircraft skin (*Sect.2, Chap.2*), for use during servicing when it is required to check hydraulic accumulator pressures. The pressure gauges are included in A.P.112G-0400-1.

*Cabin pressure controller*

10. Pressurization of the cabin is regulated by a Type C pressure controller installed at the port side of the cockpit between frames 7 and 8. Certain aircraft embodying Mod.4022 have the

controller mounted on frame 5. The controller operates in conjunction with a combined valve unit fitted to the front face of the cabin forward bulkhead. In addition to controlling cabin pressure the Type C unit incorporates a pressure switch which closes to operate the CPR warning on the standard warning panel (*Sect.6, Chap.12*) if the pressure falls to a dangerous level. Connection to the pressure switch is made to a terminal block on the top of the unit.

*Cabin altimeter*

11. A Mk.21A cabin altimeter is installed on the starboard side of panel A1. The instrument registers pressure in the cockpit in terms of altitude to guide the pilot in his use of oxygen. The altimeter is described in A.P.112G-1005-1.

*Ram air temperature indicator*

12. A ram air temperature indicator in the cockpit is operated by a sensor fitted in the spine. The installation requires a 28-volt d.c. supply which is fed from fuse 7 in the A.C./D.C. fuse and relay box. The indicator is fitted in the instrument panel, panel A1. It has a single pointer operating over a 0-150 deg.C circular scale. The sensor is fitted in the rear spine hatch and protrudes into the airstream at the starboard side. The probe consists of a stainless steel housing containing a sealed sensor element having a resistance of 130 ohms at 0 deg.C. When operating, the resistance of the element varies according to the ram air temperature and it is the effect of this resistance change which operates the indicator. ▶

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TABLE 1  
Equipment details

Equipment	Reference	Location	Access	Air Publications
Oxygen contents gauges, Type B4900/0045		Cabin	Cabin	1275G, Vol.1, 2nd. Ed., Part 2, Sect.2
Oxygen regulator, Type 120	6D/2792	Cabin	Cabin	1275G, Vol.1, 2nd. Ed., Part 2, Sect.1
Oxygen pressure gauges, OP5750	6D/2708	Cabin	Cabin	1275G, Vol.1, 2nd. Ed., Part 2, Sect.2
Fatigue meter, Mk.14	6A/6487	Frames 46-47 (S)	Panel 56S	112G-0203-1
Services hydraulic pressure gauge				
Indicator, AI756	6A/7284	Cabin	Cabin	} 112G-0552-1
Transmitter, AI757	6A/7285	Armament bay	Armament bay	
Wheel brake pressure gauge				
Indicator, S149/1/126	6A/6098	Cabin	Cabin	} 112G-0506-1
Transmitter, S122/4/55	6A/4659	Armament bay	Armament bay	
Pressure controller, Type C	27KD/1464	Cabin	Cabin	1275A, Vol.1, Sect.20
Cabin altimeter, Mk.21A	6A/5463	Cabin	Cabin	112G-1005-1
Hydraulic accumulator pressure gauges	6A/6115	Refer to Sect.2, Chap.2		112G-0400-1
Ram air temperature indicator				
◀ Indicator, S149/1/552	6A/12667	Panel A1	Cabin	112G-0508-1
Sensor, 102BB3K	6A/12668	Rear spine hatch	Rear spine hatch	112G-0601-1 ▶

TABLE 2  
Fuses, circuits, and locations

Fuse No.	Rating	Code	Circuit	Location
6	5A	DM1	Oxygen contents gauge	} a.c./d.c. fuse and relay box
57	5A	WG1	Oxygen low indicator (P)	
58	5A	WG5	Oxygen air mix switch (P)	
131	5A	WG3	Oxygen flow indicator (S)	
132	5A	WG7	Oxygen air mix switch (S)	
156	5A	DJK1	Services hydraulic press. gauge	
25	5A	DK1	Brake pressure gauge	
45	5A	DL1	Fatigue meter	
◀ 7	5A	DQ1	Ram air temperature indicator	

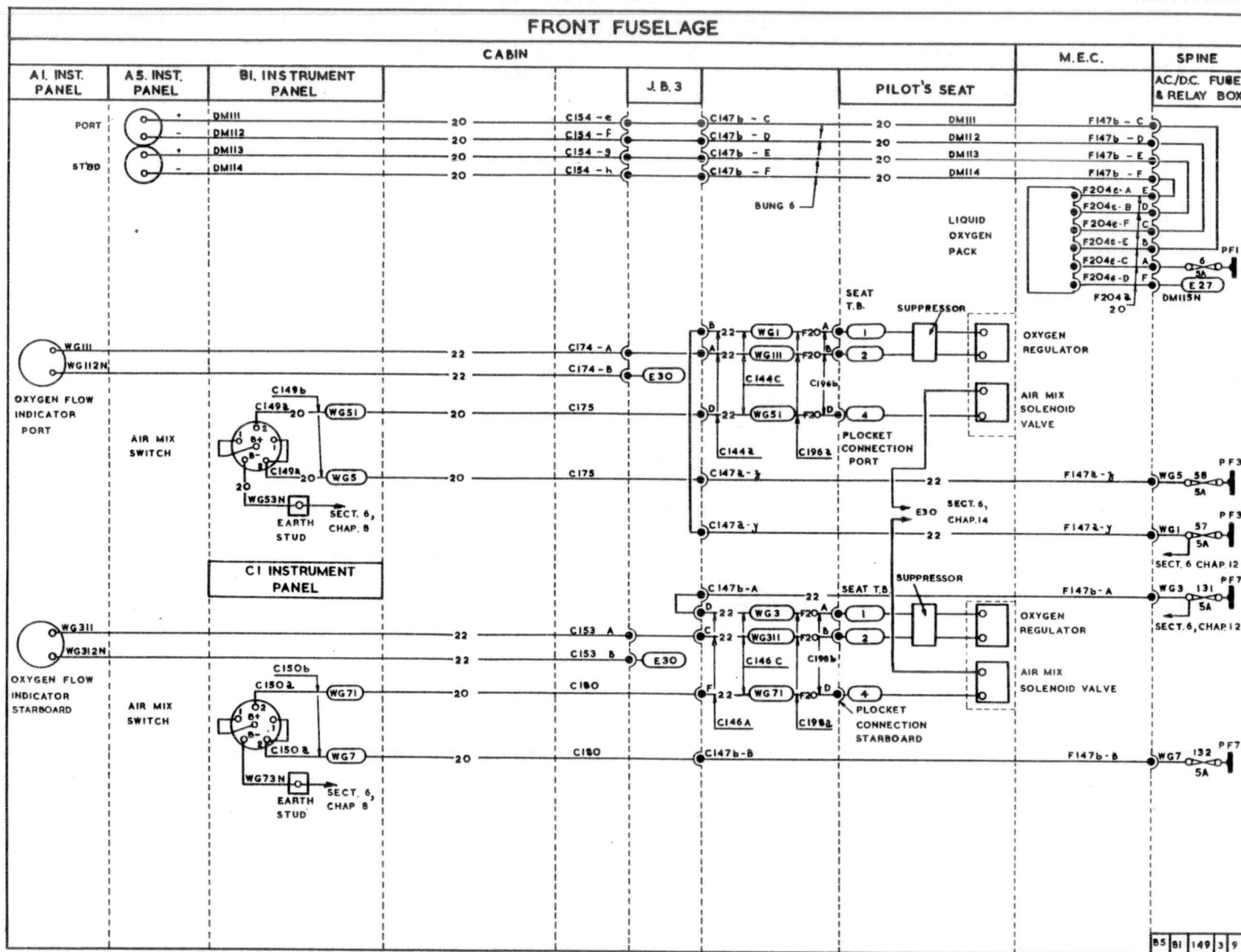


FIG. 2. OXYGEN CONTROL AND INDICATORS

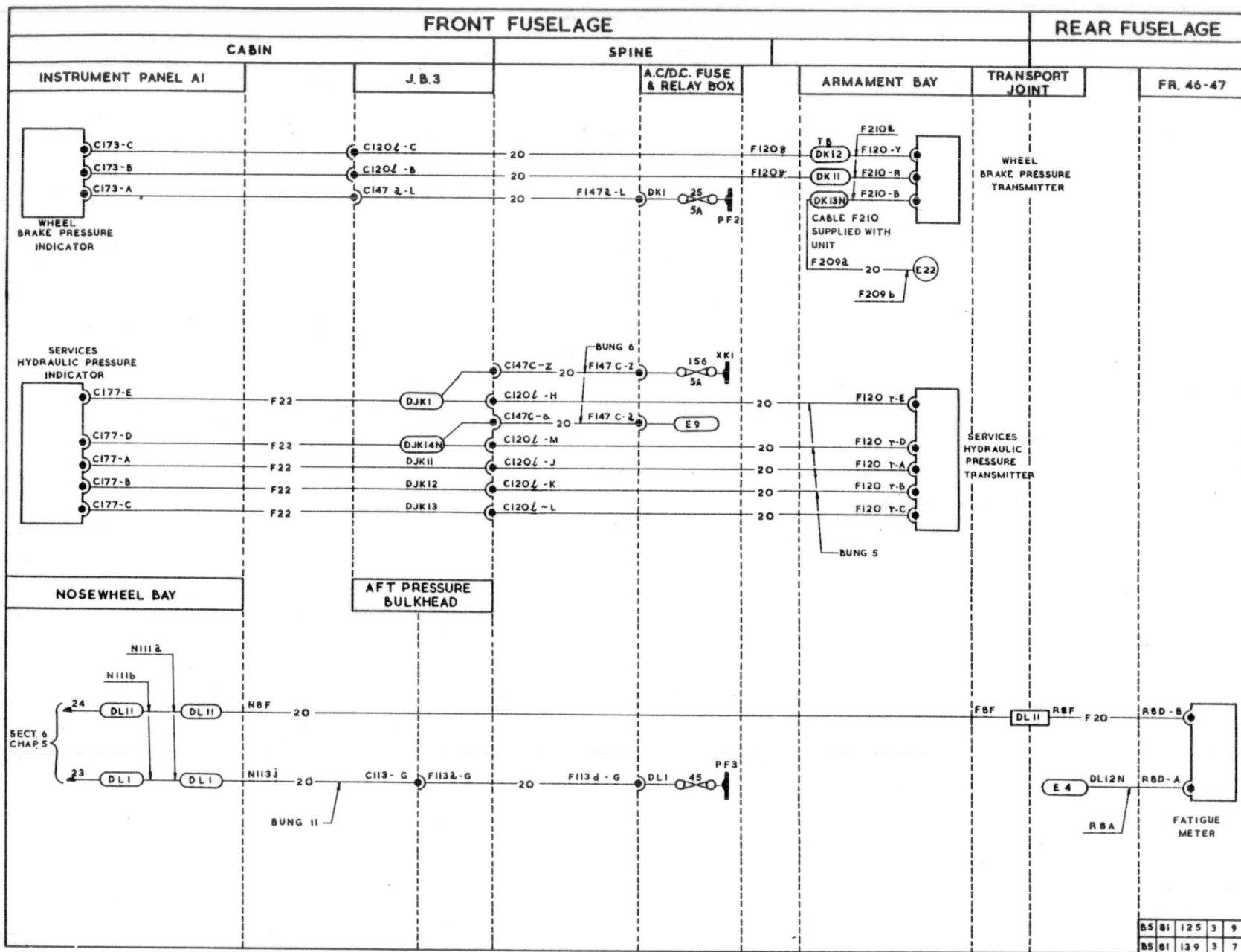


FIG. 3. PRESSURE GAUGE AND FATIGUE METER

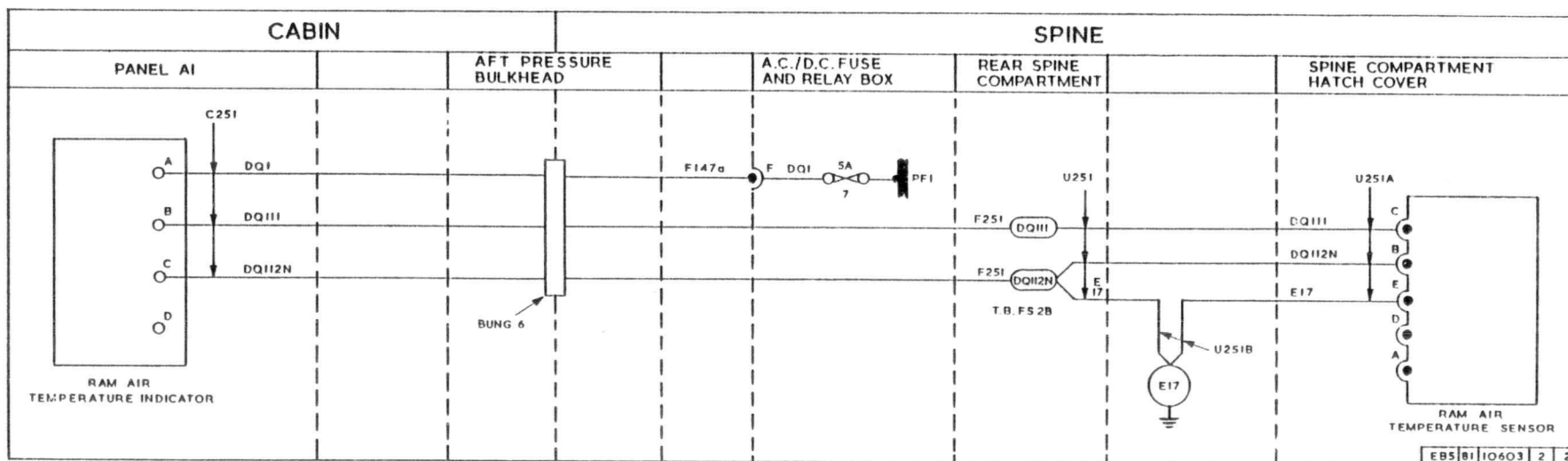
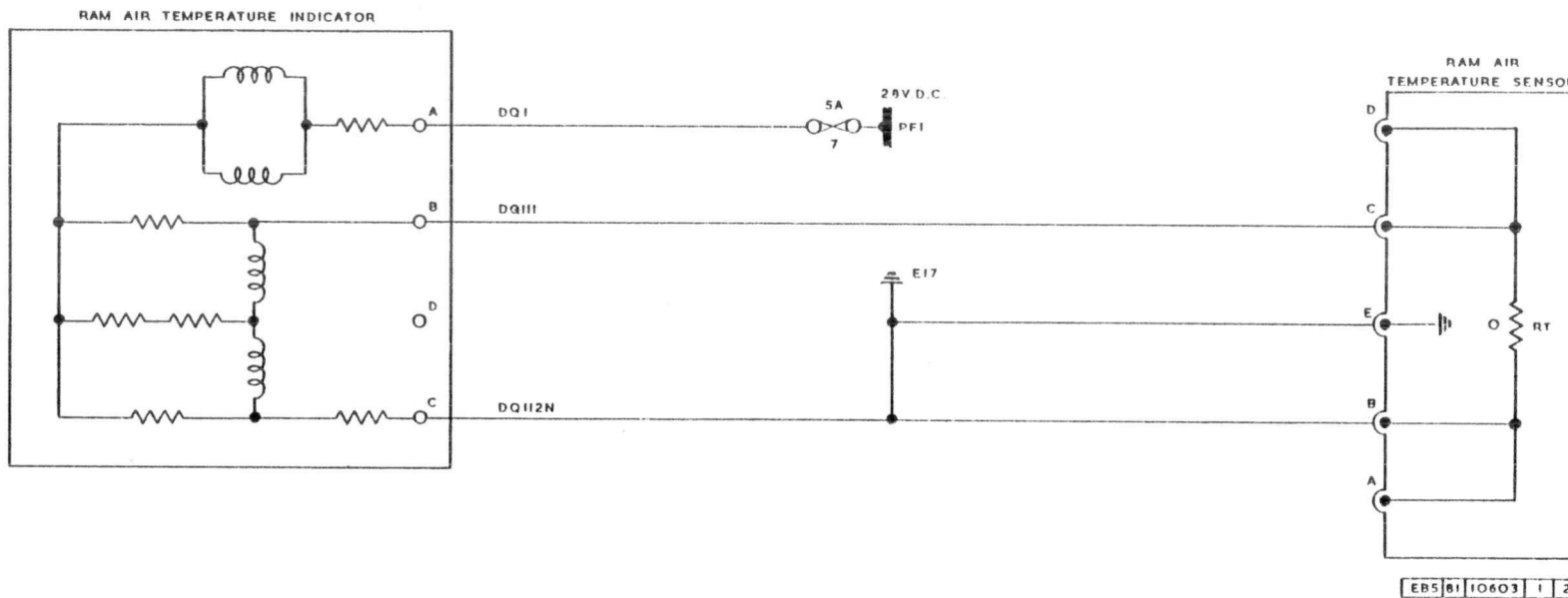


FIG.4. RAM AIR TEMPERATURE INDICATOR