

Chapter 6 MISCELLANEOUS INSTRUMENTS

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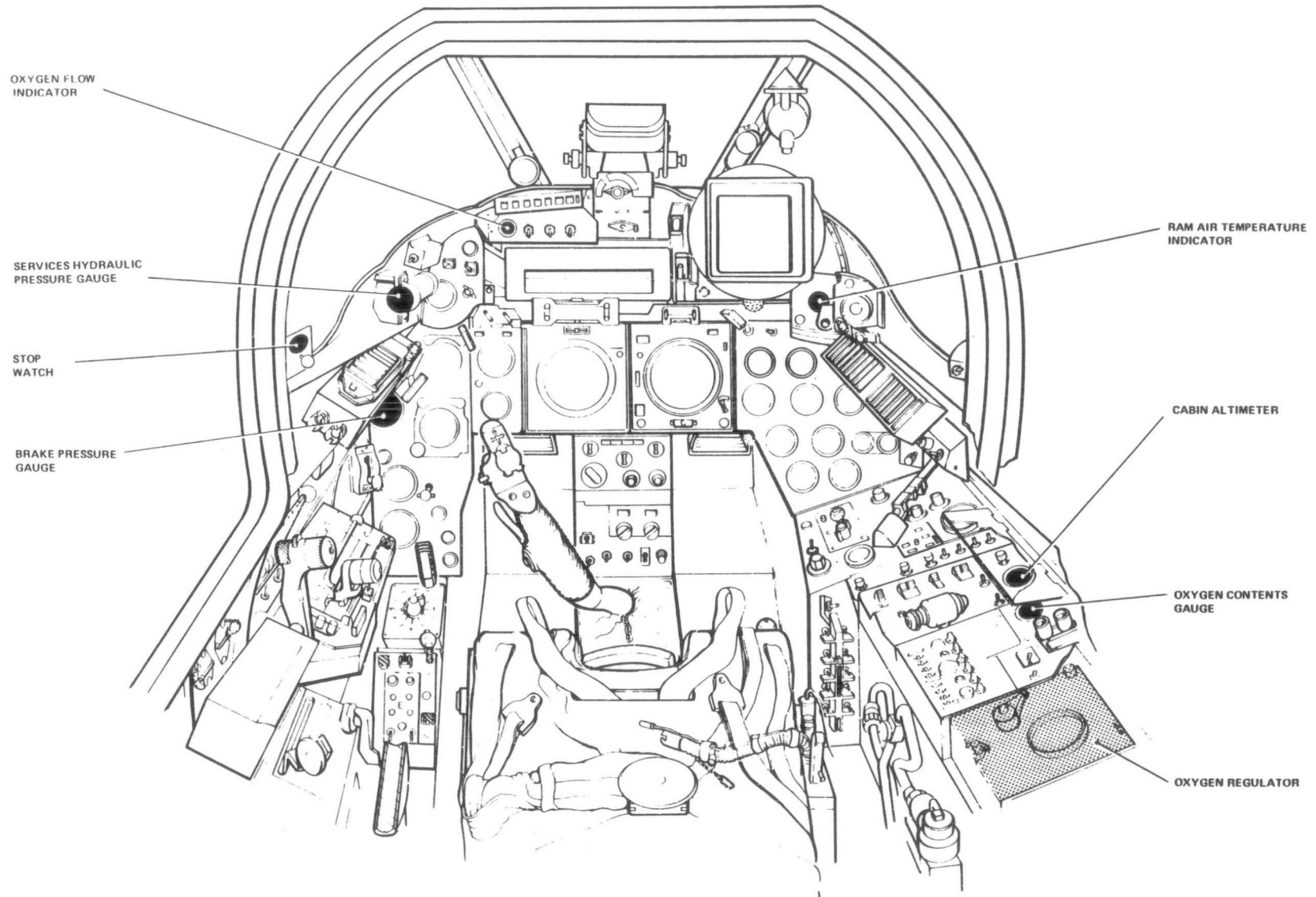


FIG.1.MISCELLANEOUS INSTRUMENTS-COCKPIT INSTALLATION

<MOD 4664 REFERENCE DELETED>

DESCRIPTION

**General**

1. The information given in this chapter applies to the miscellaneous aircraft instrument installation. The location of those installed in the cockpit are illustrated in fig.1. Details relating to component type, location, means of access and the Air Publication, which contains more detailed information, are listed in Table 1. Table 2 contains information relating to the circuits regarding supply fuse numbers, rating coding and location.

Oxygen contents gauges

2. Indication of the contents of the liquid oxygen container installed in the forward equipment compartment is shown by two gauges, one of which is fitted on the starboard console and the other at the filling point between frames 7 and 8 port, behind access panel 6P.

3. The container incorporates a capacitance system which is connected through a coaxial cable to a transistorized control unit installed on frame 8 at the starboard side of the cockpit. Changes in capacitance caused by variation of the amount of liquid oxygen in the container are amplified and transformed into signals suitable for operating the gauges.

Oxygen regulator

4. The pilot's oxygen supply is controlled from the starboard console by a Type 20A regulator which incorporates a pressure gauge, and a magnetic indicator which blinks when oxygen is flowing to the pilot's mask.

Oxygen flow indicator

5. Since the regulator is not in the pilot's direct frontal vision, a remote magnetic indicator is fitted on the centre shroud panel above the main instrument panel. This indicator operates in parallel with the regulator integral indicator and provides identical indication by blinking when oxygen is flowing to the pilot's mask. A low pressure switch is connected into the main delivery line. If in the event of the pressure falling below 125-128 lb/in² a supply is connected to OXY on the standard warning system (*refer to Sect.6, Chap.12*).

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 (access panel 56S). The meter circuit is fed from fuse 29 in the forward fusebox and is controlled by one of the microswitches in the nose-wheel indicator circuit so 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 or reassembly the

instructions given in A.P.112G-0203-1 must be strictly adhered to.

Cabin pressure controller

7. Pressurization of the cockpit is regulated by a Type C pressure controller in conjunction with a combined valve unit, both of which are installed at the port side in the cockpit. In addition to controlling cockpit pressure the Type C unit incorporates a switch which closes to operate a warning lamp (*Sect.6, Chap.12*) if the pressure falls to a dangerous level. Connections to the pressure switch are made to a 2-way terminal block on the top of the unit. Descriptive and servicing information covering the controller is included in A.P.1275A, Vol.1, Sect.20.

Cabin altimeter

8. A Mk.21A cabin altimeter is mounted on the starboard console. 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.

Services hydraulic pressure gauge

9. Indication of the pressure in the main hydraulic system is given by a Type A1756 gauge installed on the cockpit port coaming. The gauge is operated by a Type A1757 transmitter unit coupled into the hydraulic pipeline in the pack bay. A description of the indicator and transmitter will be found in A.P.112G-0552-1.

Wheel brakes pressure gauge

10. Pressure in the wheel brakes hy-

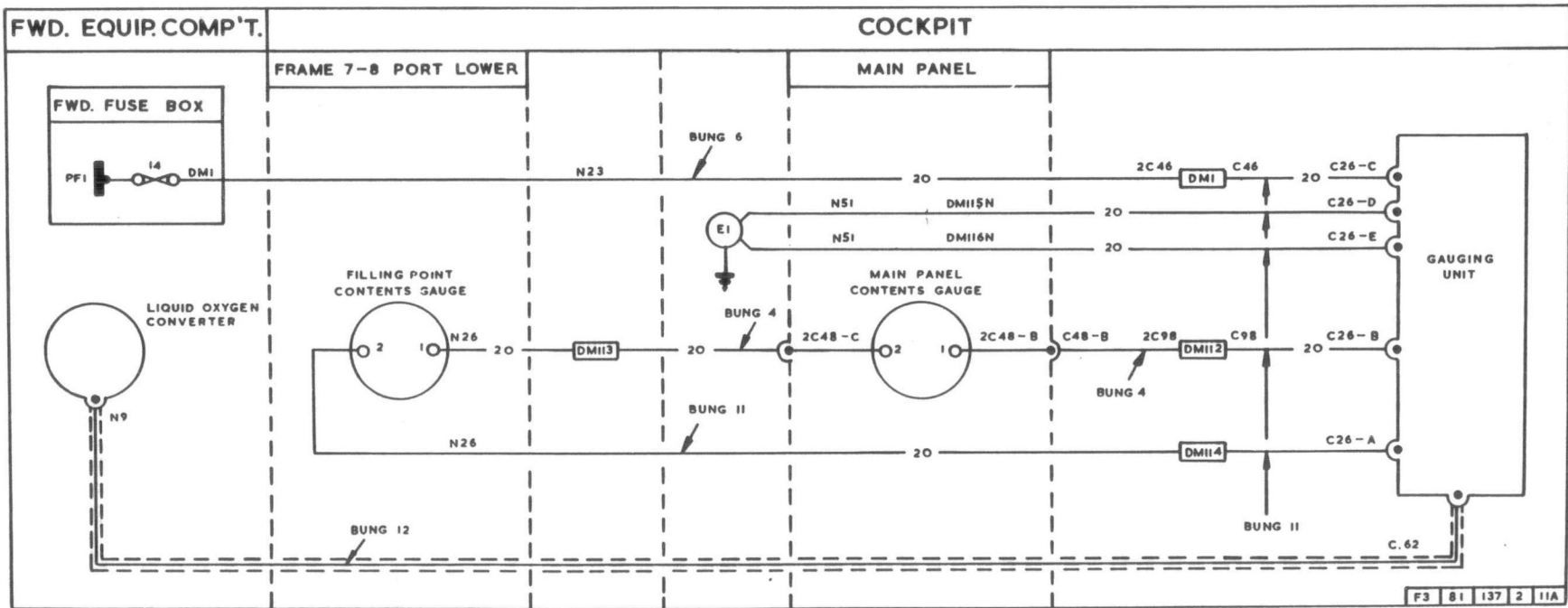
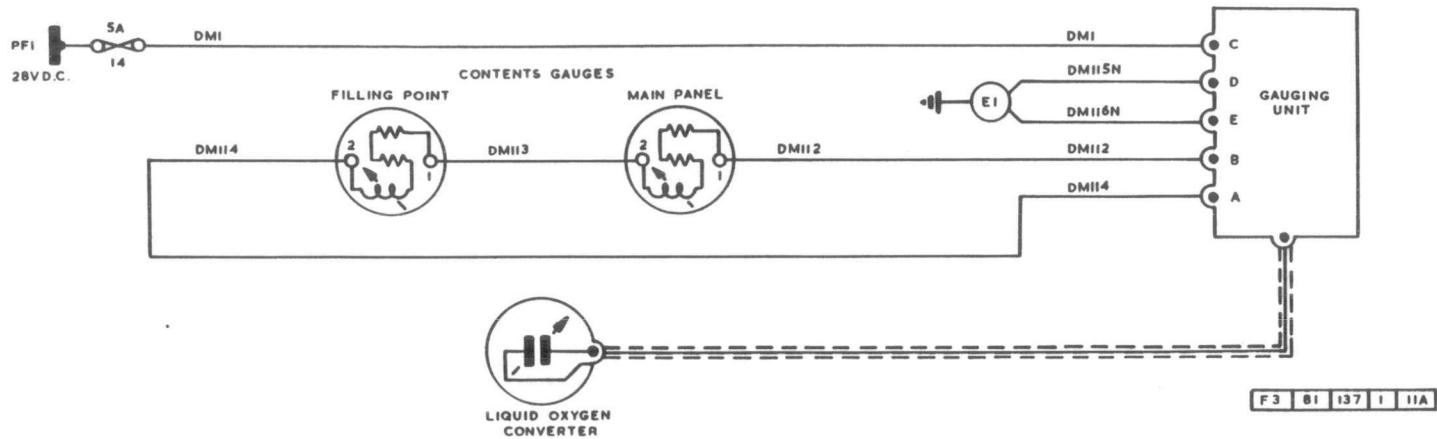


FIG. 2. OXYGEN CONTENTS GAUGES

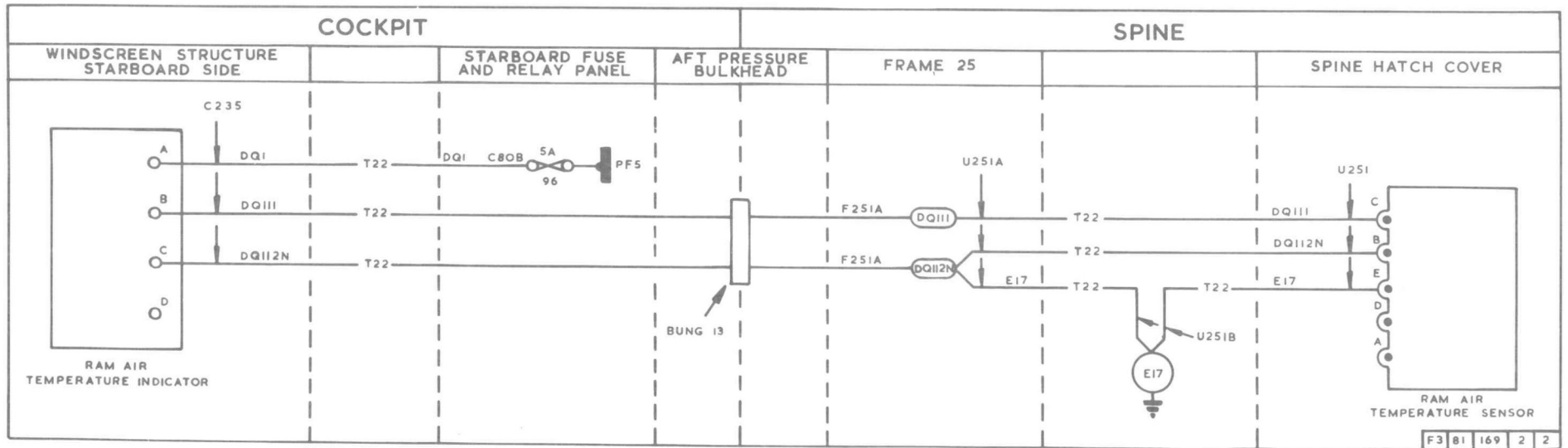
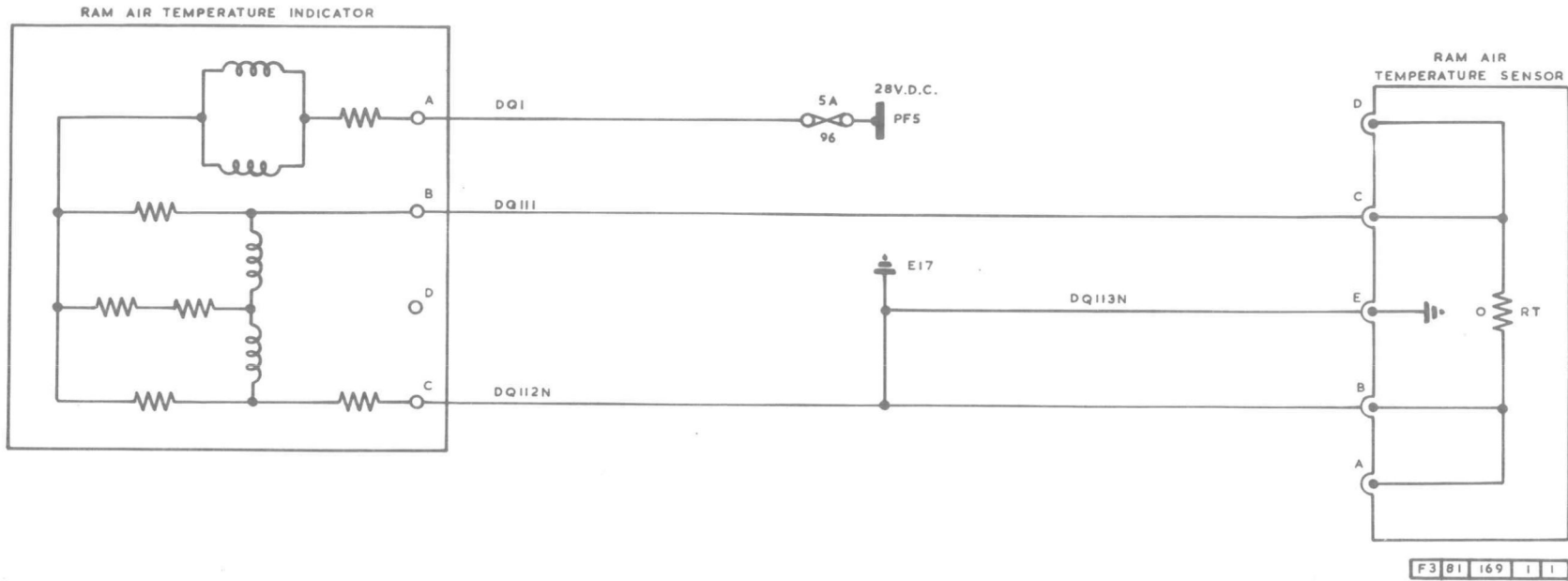


FIG. 4. RAM AIR TEMPERATURE INDICATOR

draulic pipelines is shown by a Type S214/1/45 triple-pointer indicator mounted on the port instrument panel. The indicator is controlled by a Type S122/4/55 transmitter installed between frames 21 and 25 at the starboard side in the lower fuselage and two Type S122/4/61 transmitters fitted one in the port wheel well and the other in the starboard wheel well. The Type S122/4/55 transmitter controls the main pointer of the indicator to register the pressure in the brakes accumulator. The Type S122/4/61 transmitters fitted in the port and starboard wheel wells control the two subsidiary pointers on the indicator to record the hydraulic pressure in the lines to the port and starboard wheel brake units respectively. For more detailed information concerning the indicator and the transmitters, refer to A.P.112G-0557-1 and A.P.112G-0506 respectively.

Hydraulic accumulator pressure gauges

11. 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.

Ram air temperature indicator

12. A ram air temperature indicator in the cockpit is operated by a probe unit fitted in the spine. The installation

requires a 28-volt d.c. supply which is fed from fuse 96 in the starboard fuse and relay box. The Type S149/1/552 indicator, Ref.No.6A/12667, is fitted to the starboard shroud panel. The instrument is a normal 2 inch S149 type (A.P.112G-0508-1) which is held in a bracket assembly secured to the strut. It has a single pointer operating over a 0-150 deg C circular scale. The Type 102BB3K probe Ref.No.6A/12668, 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 cockpit indicator.

Stop watch

◀13. A Monte-Carlo type stop watch is mounted on the canopy arch, port side, adjacent to the high intensity lamp. The watch shows the time of flight in hours, minutes, seconds and 1/5 seconds. For further information refer to A.P.112G-0815-1. ▶

SERVICING

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.

Note...

Servicing of the individual components should be carried out according to A.P.1275G, Vol.1, Part 2, Sect.7, Chap.2, 3 and 4.

FUNCTIONAL TESTS

General

14. In addition to the normal operational and continuity checks, a full functioning check for the system is given in the following paragraph.

Low pressure switch check

15. This check must be made as soon as possible after the oxygen system has been filled.

(1) Connect a d.c. ground supply to the aircraft and check that the oxygen contents gauge registers the tank contents. The OXY caption on the standard warning panel should extinguish.

(2) Turn the oxygen supply to OFF and watch the pressure gauge. At approximately 125-128 lb/in² pressure the OXY warning should light.

(3) Turn the oxygen supply to ON. The OXY warning should cancel when normal system pressure has been reached.

(4) Switch OFF the oxygen supply. Disconnect the d.c. power supply.

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TABLE 1

Equipment details

Equipment	Reference	Location	Access	Air Publications
Oxygen contents gauge	6D/2605	Stbd. console	Cockpit	1275G, Vol.1, 2nd.Ed., Part 2, Sect.2.
Oxygen contents gauge	6D/2605	Filling point fr.7-8	Panel 6P	
Oxygen regulator, Type 20A	6D/2295	Stbd. console	Cockpit	1275G, Vol.1, 2nd.Ed., Part 2, Sect.1.
Cabin altimeter, Mk.21A	6A/5463	Stbd. console	Cockpit	112G-1005-1
Fatigue meter, Mk.14	6A/6487	Frames 46-47 (S)	Panel 56S	112G-0203-1
Services hydraulic pressure gauge				
Indicator, AI756	6A/7284	Port coaming panel	Cockpit	112G-0552-1
Transmitter, AI757	6A/7285	Armament bay	Armament bay	
Wheel brake pressure gauge				
Indicator, S214/1/45	6A/	Port instrument panel	Cockpit	112G-0557-1
Transmitter, S122/4/55	6A/4659	Armament bay	Armament bay	112G-0506-1
Transmitter, S122/4/61	6A/5441	Port wheel well	Port wheel well	
Transmitter, S122/4/61	6A/5441	Stbd. wheel well	Stbd. wheel well	
Pressure controller, Type C	27KD/1464	Cockpit-port side	Cockpit	
Ram air temperature indicator				
Indicator, S149/1/552	6A/12667	Stbd. shroud panel	Cockpit	112G-0508-1
Probe, 102BB3K	6A/12668	Rear spine hatch	Rear spine hatch	112G-0601-1
Low pressure switch, Type 128	6D/2764	Stbd. console fr.10	Cockpit	1275G, Vol.1, Part 2, Sect.7, Chap.3
Hydraulic accumulator pressure gauges	6A/6115	Refer to Sect.2, Chap.2		112G-0400-1
Stop watch (Monte-Carlo)	6B/5209604	Coaming, port canopy	Cockpit	112G-0815-1
Control unit (contents gauge LOX), Type CMB2, Mk.3 (post Mod.4813)	6D/2248458	Stbd. fr.8	Cockpit	

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TABLE 2

Fuses, circuits and locations

Fuse No.	Rating	Code	Circuit	Location
26	5A	WG1	Oxygen flow indication	Forward fusebox
14	5A	DM1	Oxygen contents gauges	
7	5A	DK1	Brake pressure indicator	
4	5A	DK2	Brake pressure indicator	
29	5A	DL1	Fatigue meter	
96	5A	DQ1	Ram air temperature indicator	Starboard fuse and relay panel
336	5A	GCK1	Services hydraulic pressure indicator	A.C. fuse and relay box

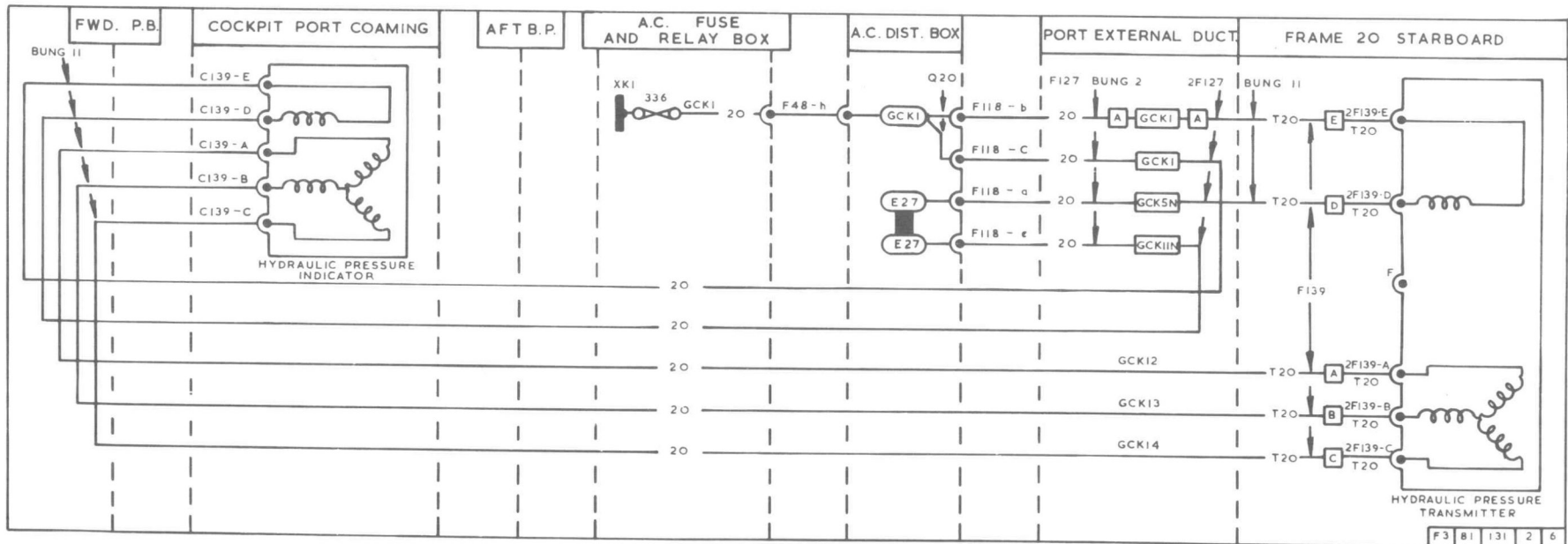
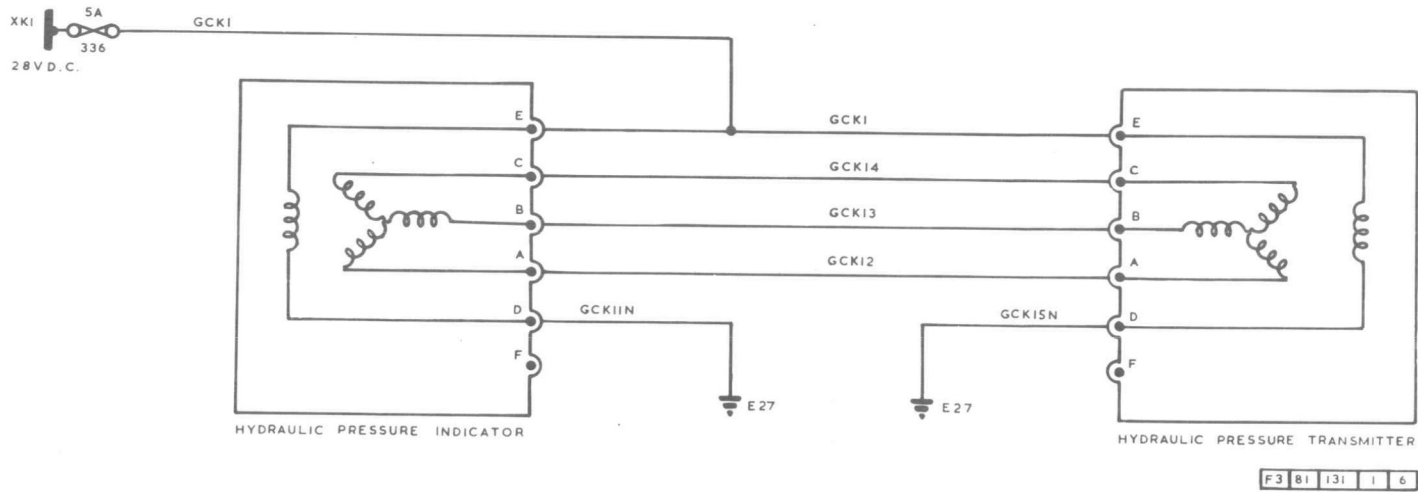


FIG. 5. SERVICES HYDRAULIC PRESSURE INDICATOR

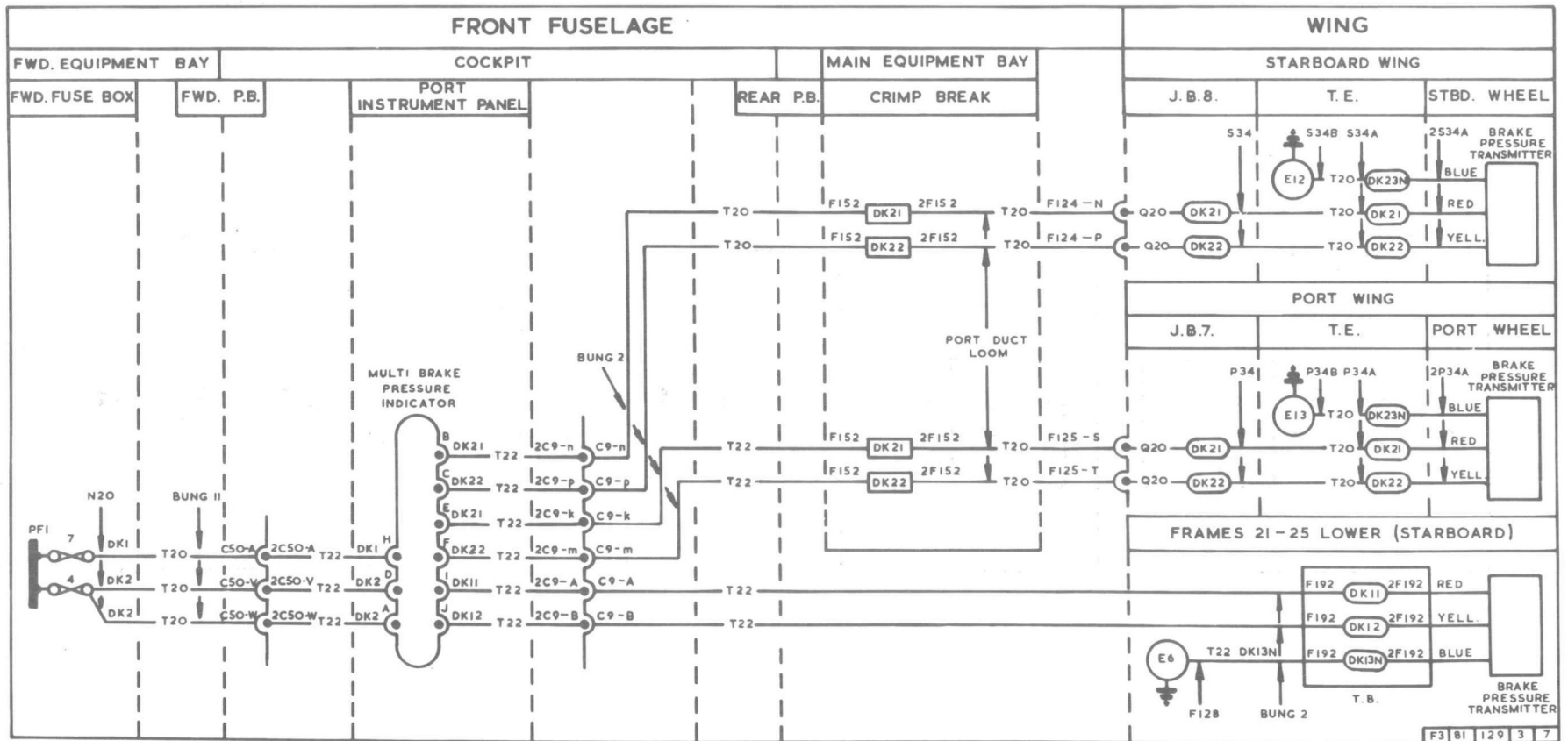
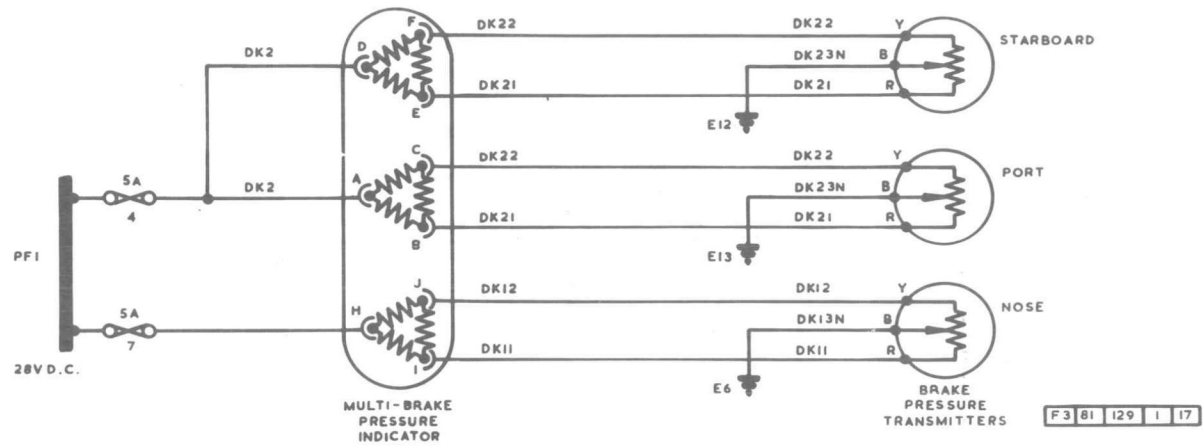


FIG. 6. BRAKE PRESSURE INDICATOR

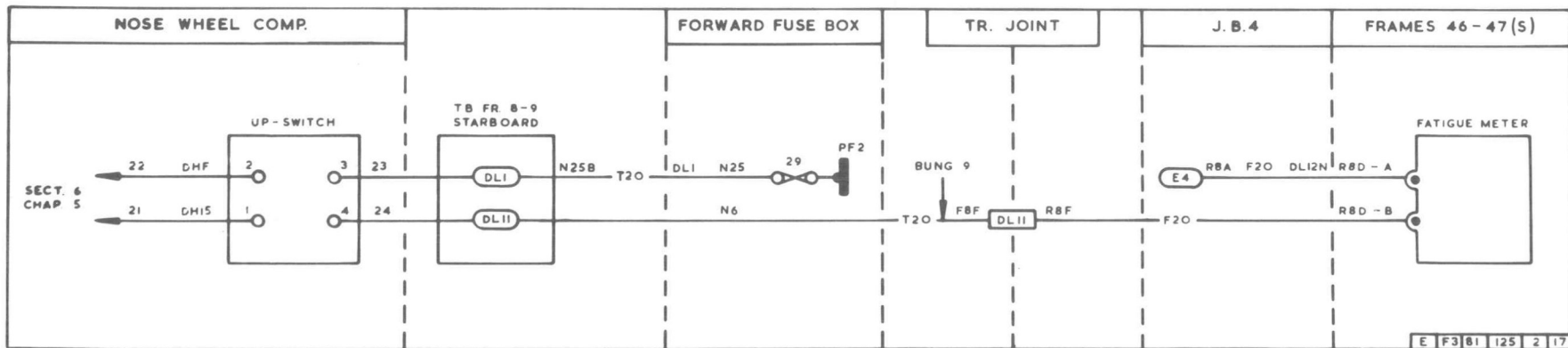
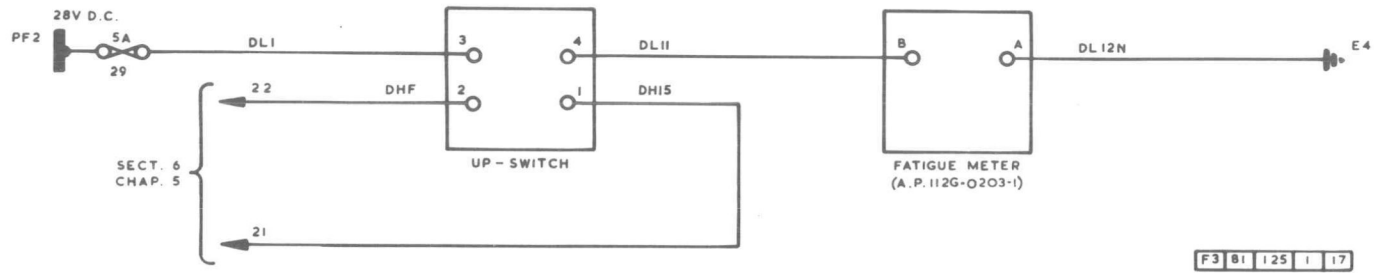


FIG. 7. FATIGUE METER