GROUP 1

GENERAL INFORMATION

LIST OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

Introduction

1 This group contains a general description of the aircraft's instrument installation, including the general servicing information required to maintain the installation in an efficient condition. For a detailed description and information on the standard instruments employed, reference should be made to the appropriate Air Publications, which are quoted in the various groups of this chapter.

2. The group also contains a master index of all the equipment and illustrations showing the location of, and access to the instruments and associated equipment. The master index also forms the key to the illustrations showing the location of the equipment. For details of the circuit codes of electrically operated instruments reference should be made to the circuit index in Section 5, Chapter 1, Group A.1.

DESCRIPTION

General

3. Electrical, mechanical and air pressure operated instruments are fitted. The electrically operated instruments with the exception of the tachometer which generates its own power, are supplied from the normal 28 volt d.c. system or from the 115 volt, 3 phase a.c. system, as described in Section 5, Chapter 1. A separate standby 24 volt battery supply is also available for the emergency operation of the turn and slip indicator. The air pressure operated instruments are supplied from a pressure head projecting forward from the port wing tip, as explained in Group 3.

4. The majority of instruments are mounted on five separate instrument panels and two cabin shelves. The instrument

panels are attached by anti-vibration and rubber mounting assemblies to a structure extending across the top of frame 8. The cabin shelves extend aft, one on each side of the cabin, from the instrument panels to frame 12. The gyro gun sight and camera recorder are carried on either a retractable mounting (Pre Mod.378) or fixed mounting (Post Mod.378) above the centre instrument panel.

Instrument panel mounting structure

5. This structure consists of a tie member extending transversely across the top of frame 8 and two large brackets, which project towards each other from the inboard edges of frame 8 below the tie member. Each of these brackets is stiffened by a strut extending from its inner end to frame 7 and a cross tube, supporting the electrical cables forward of the instrument panels, passes between these two struts. The tie member carries two brackets at its outboard ends, to each of which is assembled a pair of Lord flexible mountings and a further pair of Lord flexible mountings are incorporated at the inboard end of each of the brackets below the tie member. Each outboard end of these latter brackets has a smaller bracket attached, which projects aft and carries a rubber mounting block assembly. Further brackets, with rubber mounting assemblies are mounted on the underside of the port top longeron, the windscreen starboard platform and on each side of the decking.

6. The centre instrument panel is supported by brackets on the four pairs of Lord mountings, the port and starboard instrument panels are carried on the rubber mounting assemblies, while the windscreen arch panels are attached to the glare shield structure. Each instrument panel is bonded to the aircraft structure by earthing connectors at each of the Lord mountings and at four of the rubber mounting assemblies.

Panels and shelves

7. The instrument panels and cabin shelves are all constructed of light-alloy sheet, which is lightly shot blasted and finished matt black. The instruments, indicators and switches are mounted through suitable holes in the panels and are identified where necessary by eau-de-nil coloured lettering. For a description of the mountings of the cabin shelves, reference should be made to Section 5, Chapter 1, Group A.1.

Instruments

8. The majority of the instruments are standard items of equipment, which are fully described in the relevant volumes of A.P.1275 series, to which reference should be made when it is required to obtain any information not contained in this chapter.

SERVICING

Instrument panels

9. The instrument panels should be examined periodically for distortion, security and to ensure that the anti-vibration mountings are serviceable and not damaged in any way. If damaged, they must be replaced without delay. All the earthing connectors at the anti-vibration mountings should also be examined to ensure that they are not broken and that they are making good electrical connections. When refitting earthing connectors care must be taken to ensure that the surfaces in contact are perfectly clean and in particular, free from grease and paint. Completed assemblies should be protected by applying one coat of blue oil-base paint to D.T.D. Spec.827. The mounting structure for the panels should also be examined for damage and distortion. All the instruments on the panels should be examined for security and any insecure attachments rectified.

Cabin shelves

10. For the general servicing information required for these shelves, reference should be made to Section 5, Chapter 1, Group A.1.

Instruments

11. The necessary servicing to maintain the instruments in an efficient condition and the standard serviceability tests which should be applied together with the equipment to be used and the method of conducting the tests, is contained in the relevant Air Publications for the instrument concerned. Reference is made to these publications in the appropriate groups of this chapter. Before servicing or removing any of the electrically-operated instruments, the aircraft must be rendered electrically

safe, as described in Section 5, Chapter 1, Group A.1.

Location of instruments and associated equipment

12. The location of the instruments and their associated equipment installed in this aircraft is illustrated in fig.1 to 4 inclusive. These illustrations should be used in conjunction with the master index (*Table 1*) when it is required to locate any item of equipment.

Access to instruments and associated equipment

13. The position on the aircraft of all the access panels, which require opening or removing to gain access to the instruments and their associated equipment, is given on fig.5. The illustration should be used in conjunction with Table 1 when it is required to obtain access to a particular component.

Master index of instruments and associated equipment

14. This master index, given in Table 1 should be employed in conjunction with the location and access panel illustrations, when it is required to find the location and access to the various instruments and associated equipment. The components are listed in the order found in the groups of this chapter and each item is referenced by a number corresponding to that given in both the location and access panel illustrations. The illustrations on which the components are shown are also indicated in the index and the grid references are likewise given to assist in locating the items on the illustrations.

REMOVAL AND ASSEMBLY

General

15. The following paragraphs describe the recommended methods of removing the instrument panels. In general, the assembly of these panels is a reversal of the removal procedure, but where there is any special assembly feature this is covered by a note in the appropriate paragraph of this group.

Centre instrument panel

16. This panel is mounted on four pairs of Lord mountings attached to the mounting structure on frame 8. The recommended procedure for removing this panel is as follows:–

(1) Render the aircraft electrically safe, as described in Section 5, Chapter 1, Group A.1.

(2) Disconnect cables F.12 and F.32 from the leg panel and coil them back to the centre instrument panel, releasing clipping of cable as necessary. Seal off ends with approved caps and covers.

(3) Disconnect cable F.139 from F.133,cable PC12 from PC1 and blank off ends with approved caps and covers.

(4) At the instrument panel mounting plug and socket break disconnect cable to artificial horizon and cable F.134 to turn and slip switch and blank off cable ends with approved caps and covers.

(5) Disconnect both cables from gyro compass and stow clear after fitting caps and covers.

(6) Remove cable F.72 from the exhaust gas thermometer then tape and stow clear.

(7) *Pre Mod.1375*
Disconnect cable F.205 from main altimeter and cable HW.4 from HW.2. Blank off ends with approved caps and covers.

Post Mod.1375
Disconnect cable F.210 from Mk.30B altimeter flying lead and blank off ends.

(8) At lower forward face of instrument panel disconnect the pitot and static pipe lines from pressure head installation and at rear of rate of climb indicator disconnect static connection to standby altimeter. Blank off all lines and connectors to prevent the ingress of dirt and moisture.

(9) Remove the four nuts and washers securing the panel to the brackets on the Lord mountings, withdraw panel from brackets and remove from aircraft using care not to damage instruments or attached cables.

Note . . .

When refitting panel ensure all bonding connections are made, pitot and static flexible tubing is undamaged, metal piping routed to avoid chafing and all connecting cables secure and free from kinks or restriction. After refitting panel pressure the head installation should be tested for leaks in accordance with local instructions.

Port instrument panel

17. This panel is mounted on three rubber mounting assemblies attached to brackets on the underside of the top port longeron, the port decking skin and the centre instrument panel mounting structure. The recommended procedure for removing the panel is as follows:-

(1) Render the aircraft electrically safe as described in Section 5, Chapter 1, Group A.1.

(2) Disconnect cable assembly F.13 from the plug and socket break between frames 7 and 8 on the port side of the fuselage. Coil the cable back to the instrument panel, releasing any clipping found necessary. Seal off the plugs and sockets with the approved caps and covers.

(3) Release the flap emergency control from the valve forward of the instrument panel by removing the split-pin and withdrawing the attachment pin.

(4) Release the panel from its mounting by removing the three nuts from the attachment bolts passing through the rubber mounting blocks. These nuts are forward of the panel. Replace the nuts on the bolts to prevent loss of the washers, distance tubes and mounting blocks. Remove the panel from the aircraft taking care not to damage the instruments.

Note . . .

When assembling the panel, ensure that the earthing connectors are fitted correctly and making good electrical contacts, as described in para.9 of this group.

Starboard instrument panel

18. This panel is mounted on three rubber mounting assemblies attached to brackets on the windscreen starboard platform, the starboard decking skin and to the centre instrument panel mounting structure. The recommended procedure for removing the panel is as follows:-

(1) Render the aircraft electrically safe, as described in Section 5, Chapter 1, Group A.1.

(2) Disconnect cable assembly F.11 from the leg panel and coil it back to the instrument panel, releasing any clipping found necessary and seal off the plug and socket with an approved cap and cover.

(3) Release the panel from its mounting by removing the three nuts from the attachment bolts passing through the rubber mounting blocks. These nuts are forward of the panel. Replace the nuts on the bolts to prevent loss of the washers, distance tubes and mounting blocks. Remove the panel from the aircraft taking care not to damage the instruments.

Note . . .

When assembling the panel, ensure that the earthing connectors are fitted correctly and making good electrical contact, as described in para.9.

Windscreen arch panels

19. Once access has been gained the removal of the windscreen arch panels, attached to the anti-glare shields will become obvious.

Cabin shelves

20. The recommended procedure for removing the cabin port and starboard shelves is fully described in Section 5, Chapter 1, Group A.2 of this volume.

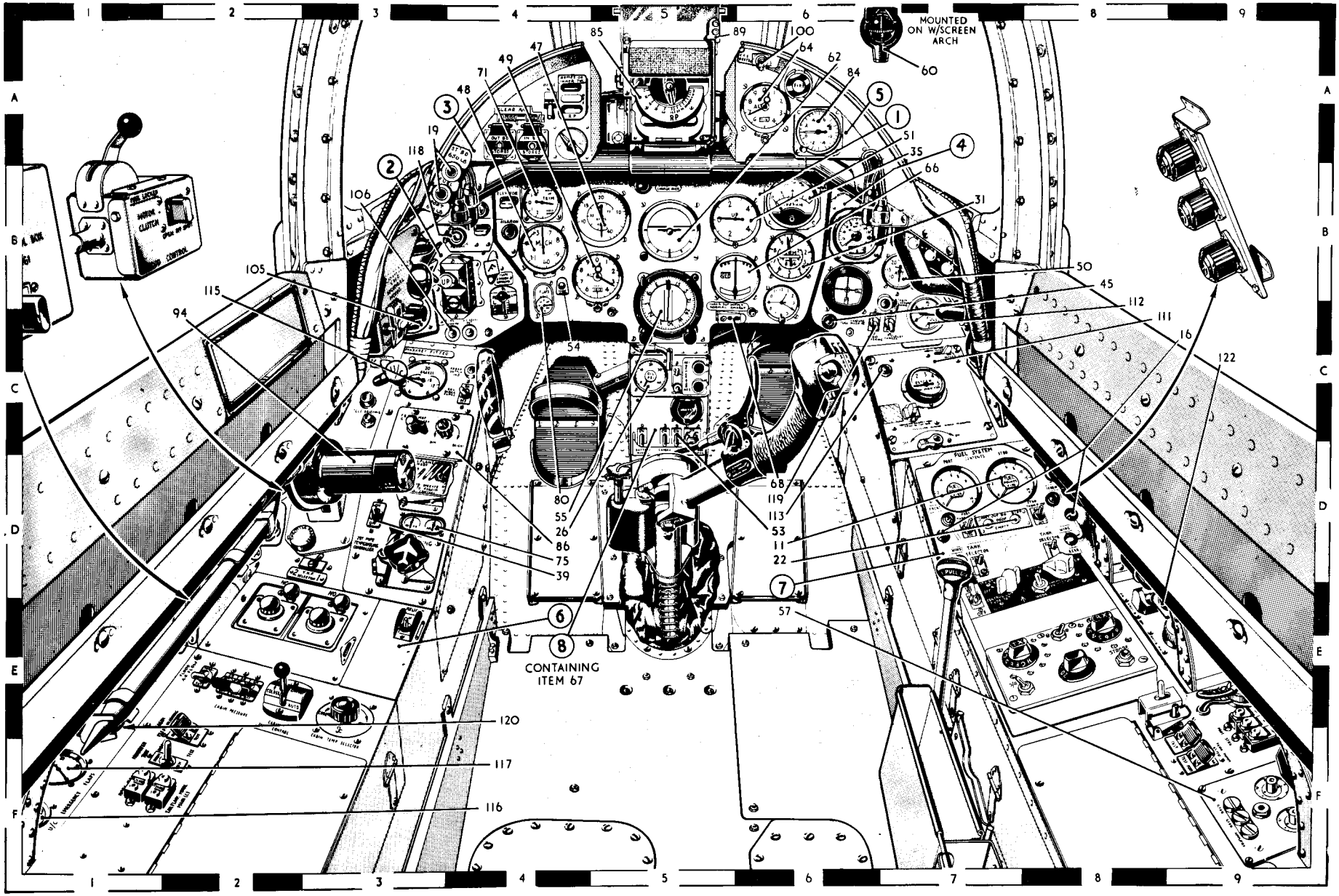


Fig. 1 Instrument location — cabin

TABLE 1
MASTER INDEX OF INSTRUMENTS AND ASSOCIATED EQUIPMENT

Item	Equipment	Fig.	Grid Ref.
	MAJOR COMPONENTS		
1	Centre instrument panel	1	B.5
2	Port instrument panel	1	B.4
3	Port arch panel	1	A.4
4	Starboard instrument panel	1	B.7
5	Starboard arch panel	1	A.6
6	Cabin port shelf	1	D.2
7	Cabin starboard shelf	1	D.8
8	Leg panel	1	C.5
9	◀ Height warning J.B. (pre Mod.1375) ▶	2	C.4

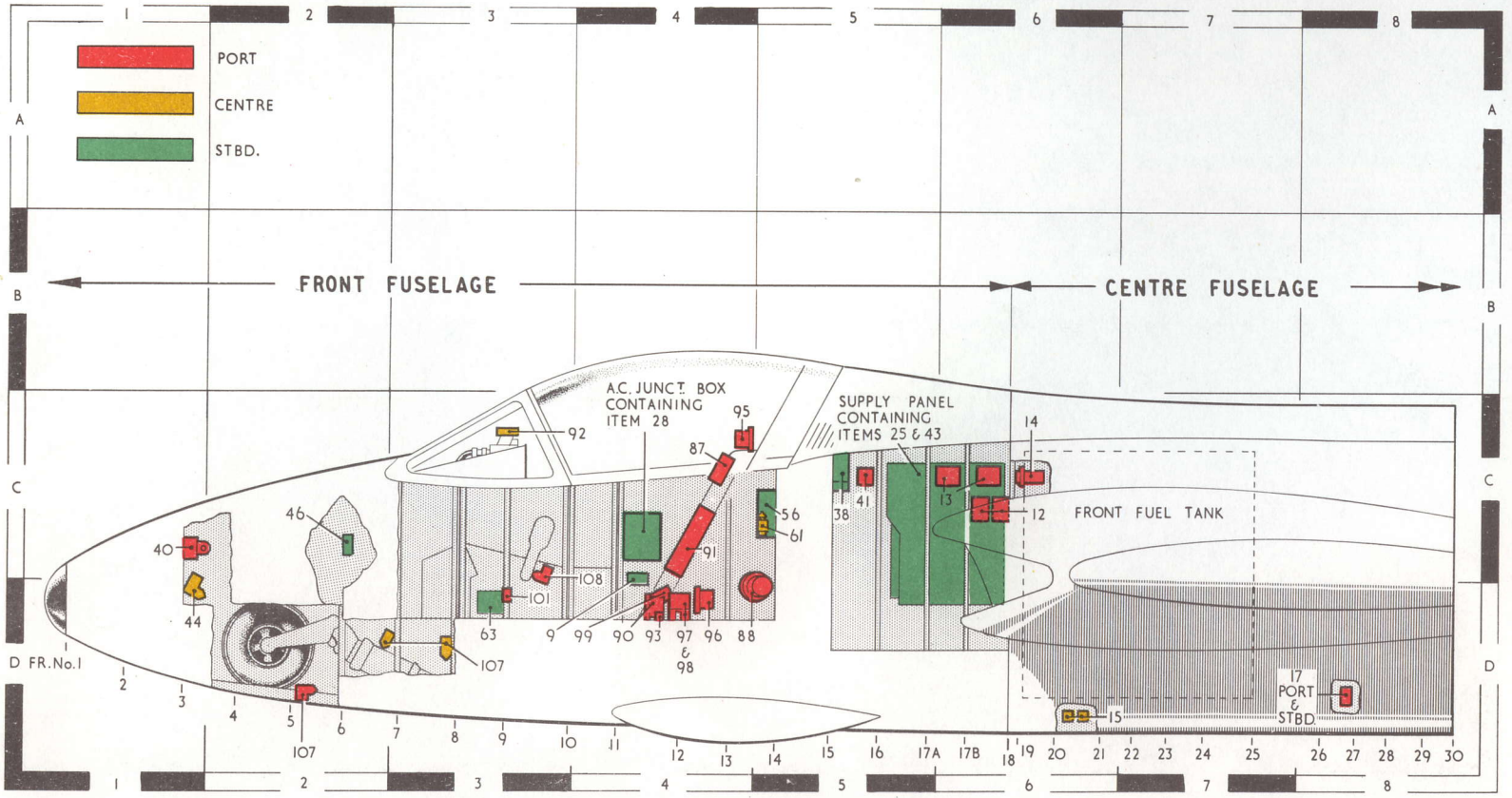


Fig. 2 Instrument location — fuselage (1)

◀ (Mod.1375 added) ▶

TABLE 1 – Continued

Item	Equipment	Fig.	Grid Ref.
10			
ENGINE INSTRUMENTS			
11	Fuel content gauges	1	D.7
12	Fuel gauge amplifiers	2	C.6
13	Fuel gauge relay boxes	2	C.6
14	Fuel gauge tank units	2	C.6
		3	C.4 and D.4
		4	A.1 and B.2
15	Transfer pressure switches	2	D.6
16	Transfer pressure failure indicators	1	D.7 and D.8
17	Fuel cock actuators	2	D.8
18	Fuel level switches	3	D.4
		4	B.2
19	Fuel low level warning lights	1	B.4
20	Engine fuel pressure switch	3	D.1
21	Outboard drop tank float switches	4	D.2 and D.3

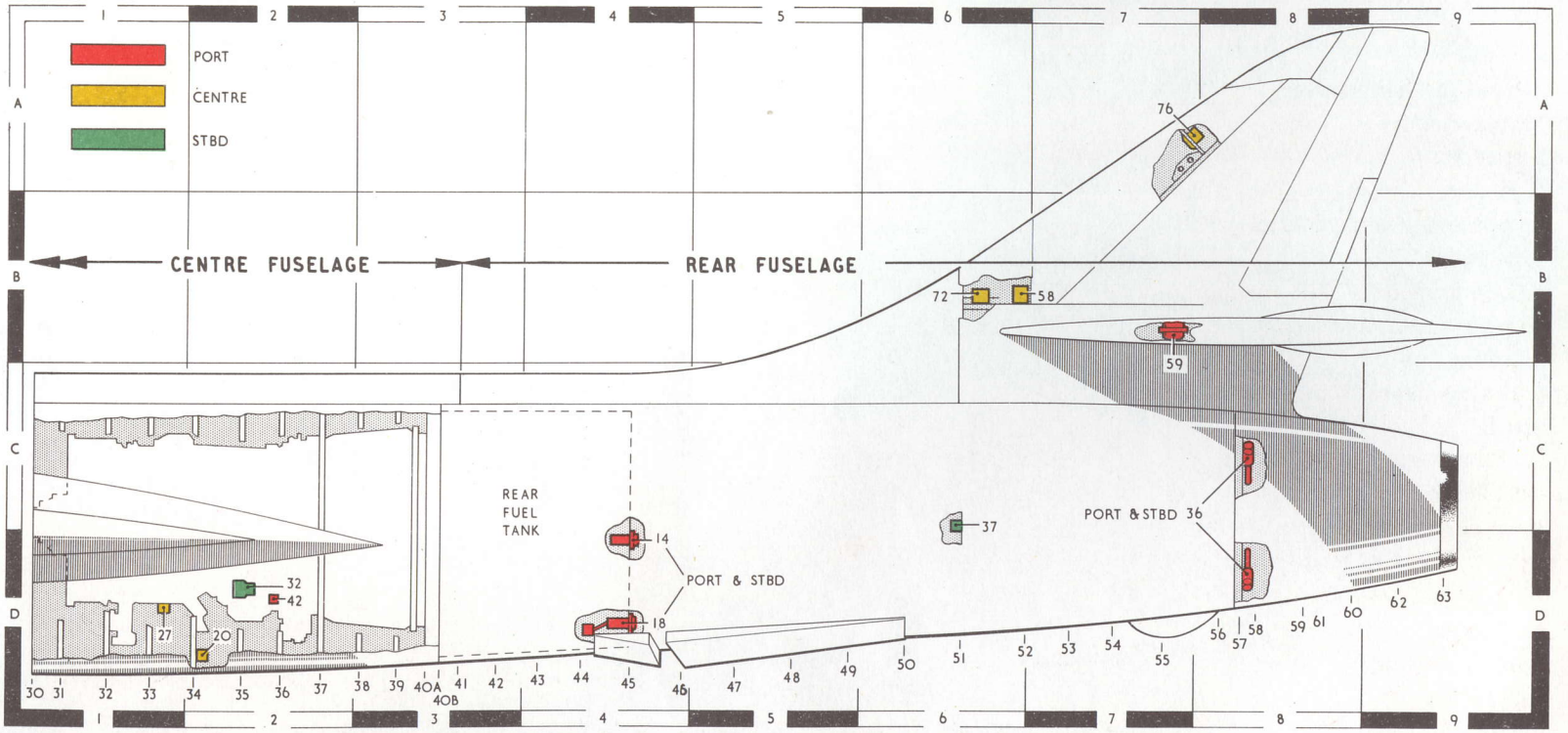


Fig. 3 Instrument location – fuselage (2)

TABLE 1 - Continued

Item	Equipment	Fig.	Grid Ref.
22	Outboard drop tank empty indicators	1	D.7
23 and 24			
25	Relays T.1, U.1, V.1, and W.1	2	C.5
26	Oil pressure gauge	1	C.5
27	Oil pressure transmitter	3	D.2
28	Oil pressure auto-transformer	2	C.4
29			
30			
31	Tachometer	1	B.6
32	Tachometer generator	3	D.2
33			
34			
35	Exhaust gas thermometer	1	B.6
36	Thermo-couples	3	C.8 and D.8
37	Test socket	3	C.6
38	Top temperature magnetic amplifier	2	C.5
39	Jet pipe temperature control switch	1	D.3
40	Time switch	2	C.1
41	A.C. control box	2	C.5
42	Jet pipe temperature solenoid	3	D.2
43	Adjusting resistor	2	C.5
44	Top temperature override micro switch	2	D.1
45	Fuel low pressure warning light	1	C.6
FLYING INSTRUMENTS			
◀ 46	Amplifier Mk.1A (pre Mod.1375) Inverter 375 (post Mod.1375) ▶	2	C.2
47	Air speed indicator	1	B.5
48	Machmeter	1	B.4
49	Main altimeter	1	B.5
50	Cabin altimeter	1	B.7
51	Rate-of-climb indicator	1	B.5
52	Pressure head and heater	4	C.2
53	Pressure head heater switch	1	D.5
◀ 54	Height warning lamp (pre Mod.1375) ▶	1	B.4

Item	Equipment	Fig.	Grid Ref.
55	Gyro compass	1	B.5
56	Gyro compass precession amplifier	2	C.5
57	Gyro compass corrector control box	1	F.9
58	Gyro compass junction box	3	B.6
59	Gyro compass detector unit	3	B.7
60	Standby compass	1	A.6
61 ◀	Height warning aneroid switch (pre Mod. 1375) ▶	2	C.4
62	Artificial horizon	1	B.5
63	Levelling controller	2	D.3

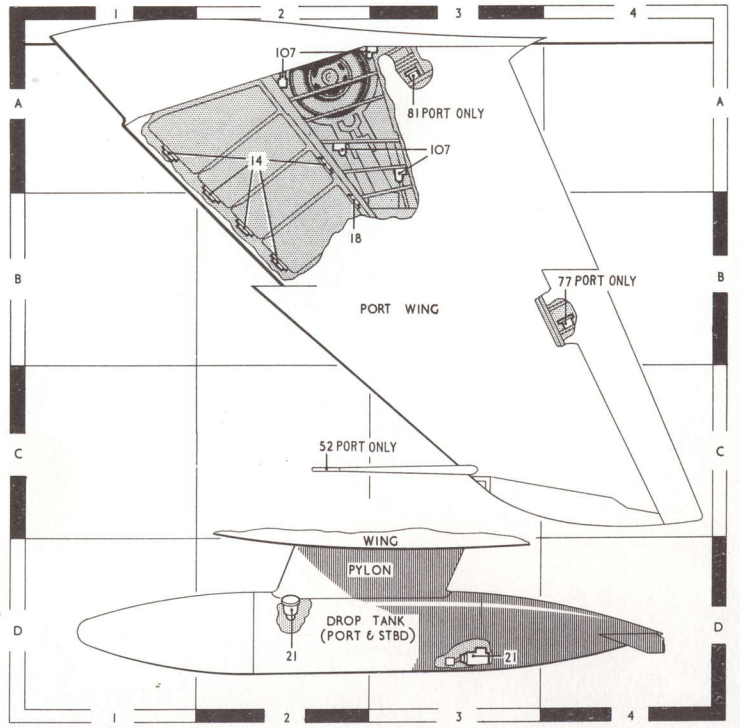
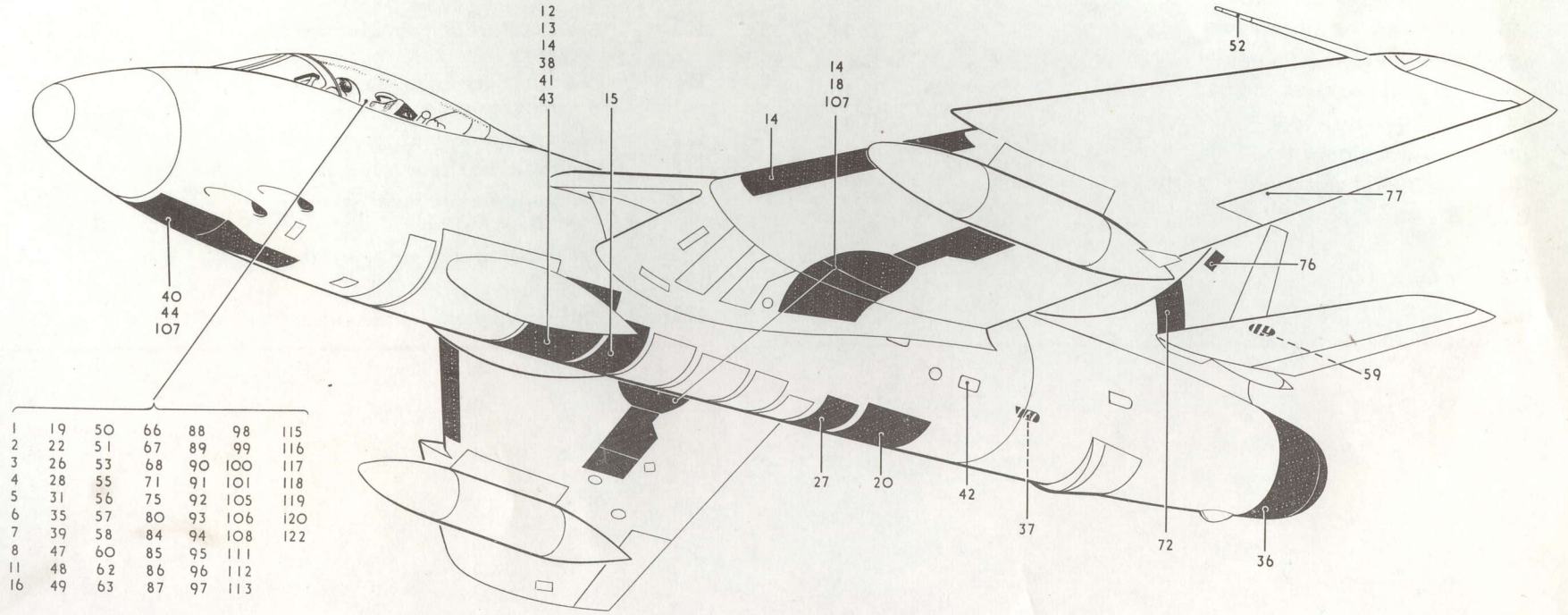


Fig. 4 Instrument location — main planes

T.P.(E) 22941

TABLE 1 - Continued

Item	Equipment	Fig.	Grid Ref.
◀ 64	Standby Altimeter	1	A.6 ▶
65			
66	Turn and slip indicator	1	B.6
67	Turn and slip relay	1	C.5
68	Turn and slip NORMAL/ EMERGENCY switch	1	C.5
69			
70			
71	Tail plane position indicator	1	B.4
72	Tail plane position transmitter	3	B.6
73			
74			
75	Rudder and aileron trim indicators	1	D.3
76	Rudder tab position transmitter	3	A.7
77	Aileron tab position transmitter	4	B.4
78			
79			
80	Flap position indicator	1	B.4
81	Flap position transmitter	4	A.3
82			
83			
84	Accelerometer	1	A.6



1	19	50	66	88	98	115
2	22	51	67	89	99	116
3	26	53	68	90	100	117
4	28	55	71	91	101	118
5	31	56	75	92	105	119
6	35	57	80	93	106	120
7	39	58	84	94	108	122
8	47	60	85	95	111	
11	48	62	86	96	112	
16	49	63	87	97	113	

Fig.5 Access panels

TABLE 1 - Continued

Item	Equipment	Fig.	Grid Ref.
	ARMAMENT INSTRUMENTS		
85	Gyro gunsight	1	A.5
86	Selector dimmer unit	1	C.3
87	Ballastics unit	2	C.4
88	Altitude unit	2	C.5
89	Lamp unit	1	A.5
90	Anti-topple unit	2	D.4
91	Control unit Type B Mk.11	2	C.4
92	Camera recorder	2	C.3
93	Suppressor Type F.2	2	D.4
94	Control unit Type T.1 Mk.2	1	D.3
95	Radar/Manual unit	2	C.4
96	Relay amplifier	2	D.4
97	Voltage regulators	2	D.4
98	Test sockets	2	D.4
99	Suppressor type F.5	2	D.4
100	Gunsight switch	1	A.6
101	Control unit Type T.B. Mk.1	2	D.3
102			
103			
104			

Item	Equipment	Fig.	Grid Ref.
	MISCELLANEOUS INSTRUMENTS		
105	Alighting gear indicator	1	B.3
106	Alighting gear warning lamp	1	C.3
107	Undercarriage leg and wheel door micro switches	2 4	D.2 and D.3 A.2
108	Throttle micro switch	2	C.3
109			
110			
111	Oxygen regulator	1	C.7
112	Oxygen pressure gauge	1	C.7
113	Oxygen flow indicator	1	C.7
114			
115	Brake and main hydraulic pressure gauge	1	C.3
116	Undercarriage emergency air pressure gauge	1	F.1
117	Flaps emergency air pressure gauge	1	F.1
118	Hydraulic failure warning lamp	1	B.4
119	Hydraulic failure audio warning cut-out switch	1	C.6
120	Brake emergency air pressure gauge	1	E.1
121			
122	Anti-G system pressure gauge	1	E.8