Chapter 1 GENERAL INFORMATION

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Introduction

1. The wireless installation on this aircraft comprises five distinct airborne radio installations (ARIs) and an intercommunication and telebrief system. This chapter only describes the salient features of the individual installations, more detailed information on each being provided, under the appropriate heading, in the succeeding chapters of this Section. Since the layout of this Section closely follows the pattern established in Section 6, Chap. 1 of this Book, further introductory and descriptive information is similar and is not, therefore, repeated in this Chapter.

2. Most terminal blocks, panels and junction boxes referred to and listed in Sect. 7, Chap. 1 serve a variety of circuits including some concerned with the wireless installation. Therefore, when such items have already been listed, they are not repeated in the Tables and location illustrations in this Chapter.

DESCRIPTION

Airborne radio installations

3. A brief description of the function of each of the radio installations which form the wireless installation on this aircraft is given, under the appropriate heading, in the following paragraphs.

Intercommunication

4. This service enables the pilot and observer to communicate with each other during flight and on the ground, at the same time maintaining radio silence. Intercom sockets are also provided in each undercarriage wheel bay to enable ground crew to contact and communicate with the aircrew. The audio-frequency amplifier of the ARI 18124/1, ARI 18179 or the ARI 23057 is used for this service.

Telebrief

5. The telebrief link enables the aircraft, when on the ground or carrier deck, to be connected by a land line to a ground or ship control point for two-way communication between the aircrew and the control point personnel. Communication can be maintained until the moment of take-off. The telebrief uses an amplifier located at the control point.

HF (SSB) installation

6. This equipment (ARI 18179) caters for wireless transmission and reception over long distances. Under the control of the observer, the equipment can be used by the pilot or the observer, as occasion demands, in a similar manner to the ARI 18124/1.

UHF installation

7. Composed of three interconnected ARIs, each of which is dealt with under the appropriate heading in the following paragraphs, the UHF installation is under the control of the pilot only.

8. *ARI 18124/1.* This equipment forms the normal two-way wireless communication facility of the aircraft up to a range of approximately 200 miles. Either crew member is able to transmit to, or receive from, other aircraft and/or ground stations, as occasion demands.

9. *ARI 23057.* This equipment forms the standby communications facility, should ARI 18124/1 become unserviceable. In this event, however, the transmission and reception capabilities are restricted to two frequency channels; the guard (distress) channel of 243 Mc/s is always one of these.

10. *ARI 18120/4.* This is a navigational aid for homing which can be switched into service by the pilot. It utilizes the signals received from a transmitting station to which the ARI 18124/1 is tuned, to indicate on the attitude indicator in the IFIS, the bearing of the aircraft in relation to the transmitting station.

Radio altimeter

11. This equipment (ARI 23061) will, when brought into operation by the pilot's control unit, register the height of the aircraft above surface level, in either of two ranges. The ranges are 0 to 500 feet, and 0 to 5000 feet respectively; indication is displayed on a dial-type indicator which can be supplemented by a system of limit lamps, working in conjunction with the pilot's control unit. Provision is made for the radio altimeter to supply the autopilot with a radio height signal.

Access to components

12. Access to the majority of components and equipment of the wireless installation is by removing an access door or panel. The location of particular doors or panels referred to in Tables 1, 2 or 3 is illustrated in Sect, 7, Chap. 1.

Illustrations

13. Circuit routeing charts, theoretical diagrams, and component location diagrams, as used to describe the wireless installation, are identical in character with those in the preceding Sections of this Book. The conception and presentation of such illustrations is fully explained in Cover 1, Sect. 6, Chap. 1 and, hence, it is unnecessary to repeat the descriptive information in this Chapter. A noteworthy point regarding the wireless installation, however, is the omission of circuit theoretical diagrams from all chapters except that dealing with the intercommunication and telebrief system. Although each of the ARIs is individually described in a relevant publication, the above mentioned equipment has been designed for this aircraft and, because of

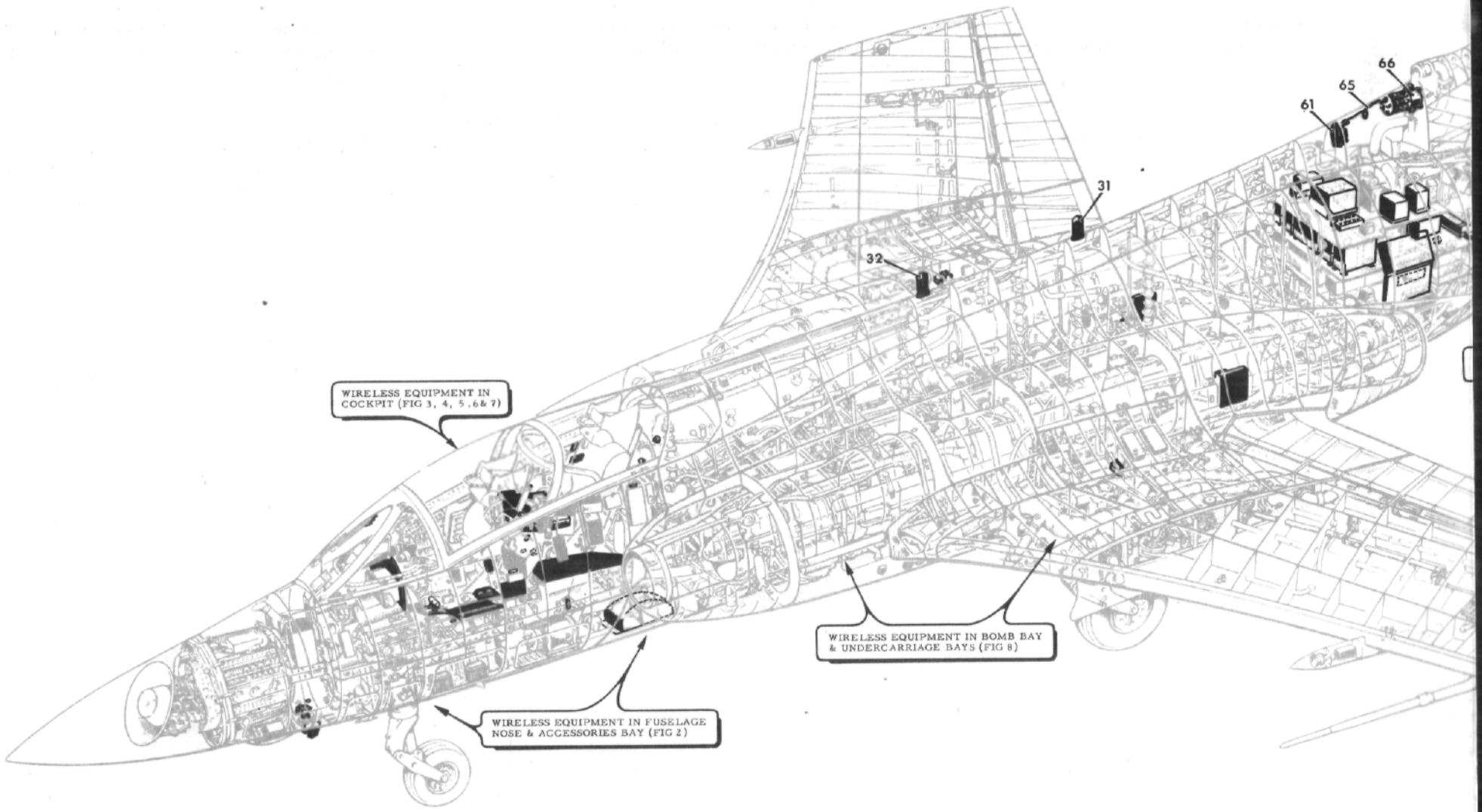
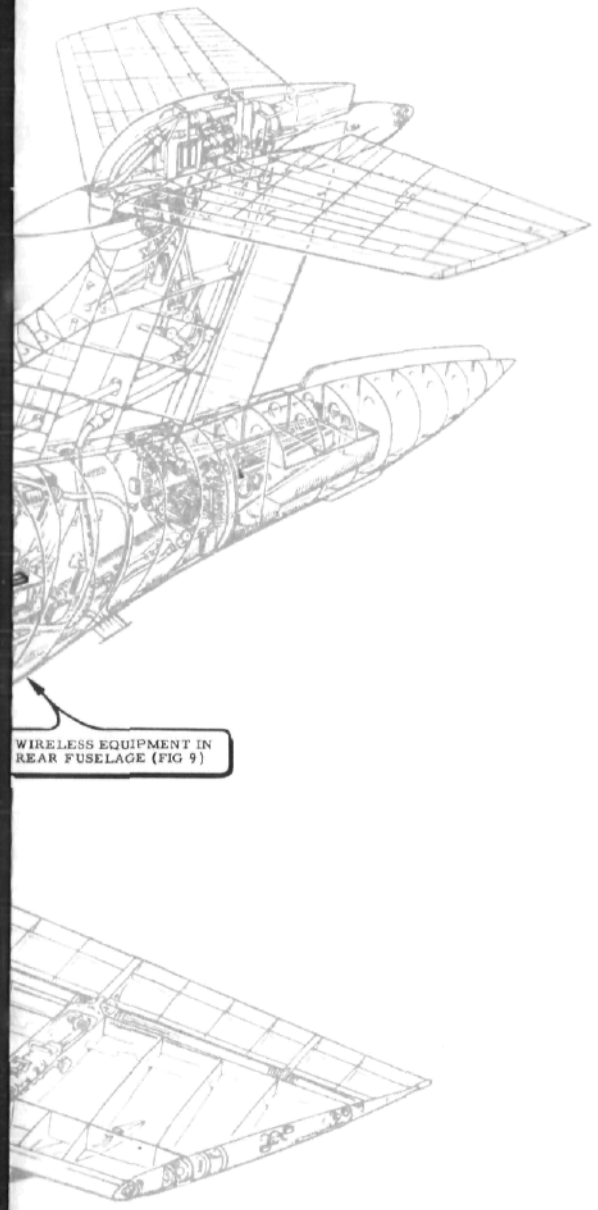


Fig. 1. Wireless equipment location – general


WIRELESS EQUIPMENT IN
REAR FUSELAGE (FIG 9)

this, a circuit theoretical diagram is included in the chapter concerned.

Modifications

14. The circuits described in the succeeding chapters of this Section are to a minimum modification standard. Further modifications to the circuits will be described in the form of an appendix to the relevant chapters. The text and illustrations in the appendixes will show the post modification state of the circuits. The chapters and associated appendixes will be periodically revised.

SERVICING

General

15. Servicing instructions, and standard serviceability test requirements, for components and associated equipment used in the ARIs described in this Section are contained in the publication for the relevant ARI. A reference to these publications is included in Table 1 of this chapter. Detailed instructions concerning the isolation of electrical services and the methods of making electrical power available to the aircraft are contained in Cover 1, Sect. 6, Chap. 1. These instructions are equally applicable to equipment constituting the wireless installation and will not, therefore, be repeated in this Chapter.

Wiring

16. Information relating to servicing of the aircraft wiring system is contained in Cover 1, Sect. 6, Chap. 1 and is equally applicable to cables associated with the wireless installation. The majority of connections to items of wireless equipment are made by plug and socket-type connectors with screwed attachment shells. Periodically these connections must be examined for cleanliness and the shells for freedom from damage. Screw threads must be lubricated and screwed tight when the plugs and sockets are connected. When disconnected, protective caps must be fitted to the exposed ends to prevent ingress of foreign matter on or around the contacts and the end of the cable loom must be secured with string or tape to a convenient part of the aircraft structure until required for connecting again.

Bonding

17. The importance of bonding in wireless circuits requires the bonding connections and earth points to be examined and maintained to the standard laid down in Cover 1, Sect. 6, Chap. 1.

TABLE 1 Wireless equipment

Item	Fig	Component	Type or Part No.	Ident	Access panel	A.P. Ref
INTERCOMMUNICATION AND TELEBRIEF *(CHAP. 2)*						
1	8-C	Connector	3570	WS-AW	–	2876G, Vol. 1
2	4	Intercom socket	YB3-82-907	C-ET	–	–
3	7	Intercom socket	YB3-82-908	C-EU	–	–
4	8-B	Intercom socket	YB3-82-376	WP-AV	–	–
5	8-B	Intercom socket	YB3-82-376	WS-AV	–	–
6	9-C	Intercom socket	YB3-82-740	H (panel R-F)	238	–
7	7	Push-switch (foot-operated)	YB3-82-339	C-BX	–	–
8	9-C	Receptacle	CZ 56745	G (panel R-F)	238	4343P, Vol. 1, Bk. 1
9	7	Rectifier	GEX 541 (Germanium)	(Relay A on panel C-DJ)	–	–
10	9-C	Rectifier (2 off)	GEX 541 (Germanium)	RTB9 (panel R-F)	238	–
11	7	Relay	10B. No. - (pre-Mod 809, 1077 and 699) 20B. No. 1 (post-Mod 809, pre-Mod 1077 and 699) 20B. No. 3 (post-Mod 1077, pre-Mod 699) BS-115-B1B-2C/1 (post-Mod 699)	A (panel C-DJ)	–	
12	4	Relay	10B. No. - (pre-Mod 809, 1077 and 699) 20B. No. 1 (post-Mod 809, pre-Mod 1077 and 699) 20B. No. 3 (post-Mod 1077, pre-Mod 699) BS-115-B1B-2C/1 (post-Mod 669)	A (panel C-S)	–	
13	4	Relay	10B. No. - (pre-Mod 809, 1077 and 699) 20B. No. 1 (post-Mod 809, pre-Mod 1077 and 699) 20B. No. 3 (post-Mod 1077, pre-Mod 699) BS-115-B1B-2C/1 (post-Mod 699)	B (panel C-S)	–	4343C, Vol. 1, Bk. 2
14	9-C	Relay	10B. No. - (pre-Mod 809, 1077 and 699) 20B. No. 1 (post-Mod 809, pre-Mod 1077 and 699) 20B. No. 3 (post-Mod 1077, pre-Mod 699) BS-115-B1B-2C/1 (post-Mod 699)	C (panel R-F)	238	
15	4	Resistor, 240 or 250 ohms, 4W	MV1	T.B. D (panel C-S)	–	–

TABLE 1 *(continued)*

Item	Fig	Component	Type or Part No.	Ident	Access panel	A.P. Ref
16	4	Rotary switch	36823/MHLC2	K (panel C-DG)	–	4343C, Vol. 1, Bk. 1
17	6	Rotary switch	36823/MHLC2	F (panel C-K/1)	–	
18	9-C	Rotary switch	36823/MHLC2	E (panel R-F)	238	
19	4	Throttle grip switch	DN 1231 Z	G (panel C-E)	–	
20	4	Toggle switch	Pye No. 535/1	C (panel C-U)	–	
21	4	Tumbler switch	XD 781/4	F (panel C-G/2)	–	
22	6	Tumbler switch	XD 781/4	G (panel C-K/1)	–	
23	8-B	Tumbler switch	XD 782/4	WP-AU	–	
24	8-B	Tumbler switch	XD 782/4	WS-AU	–	
25	9-C	Tumbler switch	XD 777/4	B (panel R-F)	238	
26	6	Warning lamp	A915/D/1	E (panel C-K/1)	–	4343E, Vol. 1, Bk. 1
27	4	Warning lamp	A915/D/1	A (panel C-U)	–	
UHF INSTALLATION *(CHAP. 3)*						
31	1	Aerial	EDC 18136	D-AG	–	116D-0105-1
32	1	Aerial	EDC 18136	D-AJ	–	
33	2	Aerial	EDC 18136	N-AA	–	
34	2	Aerial	EDC 18136	N-AB	–	
35	2	Aerial switching unit assembly	YB3-82-680	N-AC	–	–
36	9	AF unit	9635	R-DZ	238	116B-0301-1
37	4	Control unit	C1607-ARC52 or C1607/4-ARC52	L (panel C-G/2)	–	116D-0105-1
38	9	Filter	5915-99-970-0362	(Fitted on R-EB)	238	116D-0110-1 & 6
39	9	RF unit	11037	R-EA	238	116B-0301-1
		Receptacle	See item 8	G (panel R-F)	238	–
40	9-C	Rectifier	GEX 541 (Germanium)	L (panel R-F)	238	–
41	2	Relay	F1741	N-DU		4343C, Vol. 1, Bk. 2
		Relay	See item 14	C (panel R-F)	238	–
42	9-C	Resistor 0·5 ohm	P 2000	D (panel R-F)	238	–
43	9	Rheostat 2·2 ohm	SDS 1293	R-JA	238	116D-0110-1 & 6
44	9	Transmitter-receiver (standby)	TR 10056	R-EB	238	116D-0110-1 & 6
			or M4			
			or M6			
			or D403/M (post-Mod 1117)			
45	9	Transmitter-receiver	TR5/ARC52	R-ET	238	116D-0105-1

TABLE 1 *(continued)*

Item	Fig	Component	Type or Part No.	Ident	Access panel	A.P. Ref
46	4	Tumbler switch	XD 778/4	M		
47	4	Tumbler switch	XD 778/4	N		
48	4	Tumbler switch	XD 778/4	P (panel C-G/2)	–	4343C, Vol. 1, Bk. 1
49	4	Tumbler switch	XD 778/4	Q		
50	4	Tumbler switch	XD 778/4	R		
UHF AUTO TONE *(CHAP. 3)*						
54	3	Flasher unit	B	C-GG	–	4343C, Vol. 1, Bk. 2
55	3	Switch unit	5930-99-914-1941	C-GE	–	–
56	3	Switch unit	5930-99-914-1941	C-GF	–	–
57	4	Toggle switch	4TLI-2D	R (panel C-DG)	–	4343C, Vol. 1, Bk. 1
HF (SSB) *(CHAP. 4)*						
60	7	Control unit	13027	A (panel C-M)	–	
61	1	Impedance matching unit	13038	D-AM	20	
62	9	Junction box	13026	R-CA	238	
63	9	Power supply unit	13025	R-BB	238	4736A, Vol. 1
64	9	RF amplifier	13024	R-BA	238	
65	1	RF connector	13414	–	20	
66	1	RF tuner unit	13037	D-AN	20	
67	9	Reference signal generator	9493	R-GM	238	
68	9-A	Relay	BS-115-B1B-2C/1	J (panel R-A)	238	4343C, Vol. 1, Bk. 2
69	9	Selector unit	13036	R-BC	238	4736A, Vol. 1
70	9	Transmitter-receiver	13023	R-BG	238	
71	7	Tumbler switch	XD 778/4	C-FA	–	4343C, Vol. 1, Bk. 1

TABLE 1 *(continued)*

Item	Fig	Component	Type or Part No.	Ident	Access panel	A.P. Ref
RADIO ALTIMETER *(CHAP. 5)*						
		Aerial assembly, comprising:-				
76	2-A	*Delay unit*	16119	A-CH	98	116B-0203-1
77	2-A	Receiver aerial	16088	A-BD		
78	2-A	Switch and coupling unit	10B/19673	–		
79	2-A	Switch and coupling unit	10B/19673	–		
80	2-A	Transmitter aerial	16088	A-BB		
81	9	Amplifier unit	16089	R-GW		
82	4	Control unit	16095	P (panel C-G/1)	–	
83	5	Indicator	16094	H (panel C-B)	–	
84	9	Junction box	16507	R-GW	238	
85	9	Junction box	YB3-82-516	R-GR	238	
86	2-A	Transmitter-receiver	16098	A-BC	98	
87	5	Warning lamp	C500/A/7	DH (panel C-B) (pre-Mod 332)	–	4343E, Vol. 1, Bk. 4
				C-FT (post-Mod 332)	–	
88	5	Warning lamp	C500/B/7	DG (panel C-B) (pre-Mod 332)	–	
				C-FS (post-Mod 332)		
89	5	Warning lamp	C500/C/7	DF (panel C-B) (pre-Mod 332)	–	
				C-FR (post-Mod 332)	–	

TABLE 2 Terminal blocks

Item	Fig	Ident	Panel or J.B.	Access panel
95	4	C	C-S	–
96	3	C-GJ	–	–
97	3	C-GK	–	–
98	4	D	C-S	–
		E	N-B	(See item 486 of Table 2 in Sect. 7, Chap. 1)
99	8-A	N	B-A	244
100	8-A	N	B-B	244
101	2	N-AJ	–	–
102	2	N-CU	–	–
103	2	N-DV	–	–
104	9-B	P	R-C	238
105	3	RTB1	C-E	–
	–	RTB2	(See item 525 of Table 2 in Sect. 7, Chap. 1)	Fwd floor panel, observer's station
106	7	RTB4	–	–
107	7	RTB5	–	–
108	2	RTB6	–	26
109	8-C	RTB7	–	–
110	9-C	RTB9	R-F	238
111	8-B	RTB12	–	–
112	8-B	RTB13	–	–
113	8	RTB14	–	244

TABLE 3 Panels and junction boxes

Item	Fig	Ident	Access panel
116	4	C-G/1	–
117	4	C-G/2	–
118	9-C	R-F	238

Note...

For panels and junction boxes used in the aircraft wireless installation but not listed in this Table refer to Table 3 of Sect. 7, Chap. 1.

TABLE 4 Cable types

Cable nomenclature	Spec	Description	Abbrev
CO-AXIAL			
Uniradio 72	DEF 14	Silver-plated copper wire conductor with a P T F E dielectric and an outer layer of silver-plated wire braid, protected overall by an outer covering of glass fibre braid and silicone varnish	–

WARNING...

When polytetrafluoroethylene (P T F E) is heated above 200 deg C, toxic compounds are evolved which can result in serious injury or death to personnel who do not treat this material with proper respect. Precautions as detailed in A.P. 4343C, Vol. 1, Book 3, Sect. 5, Chap. 12 must be observed.

TABLE 5 Circuit references

Code	Service	Circuit Ref
R	**RADIO (WIRELESS)**	
	H F (S S B) communications installation	R1
	Radio altimeter and limit light indication	R2
	Intercommunication and telebrief	R3
	U H F communications installation	R6
	Standby U H F communications facility	R6
	U H F homer facility	R6
	U H F auto-transmission facility	R11

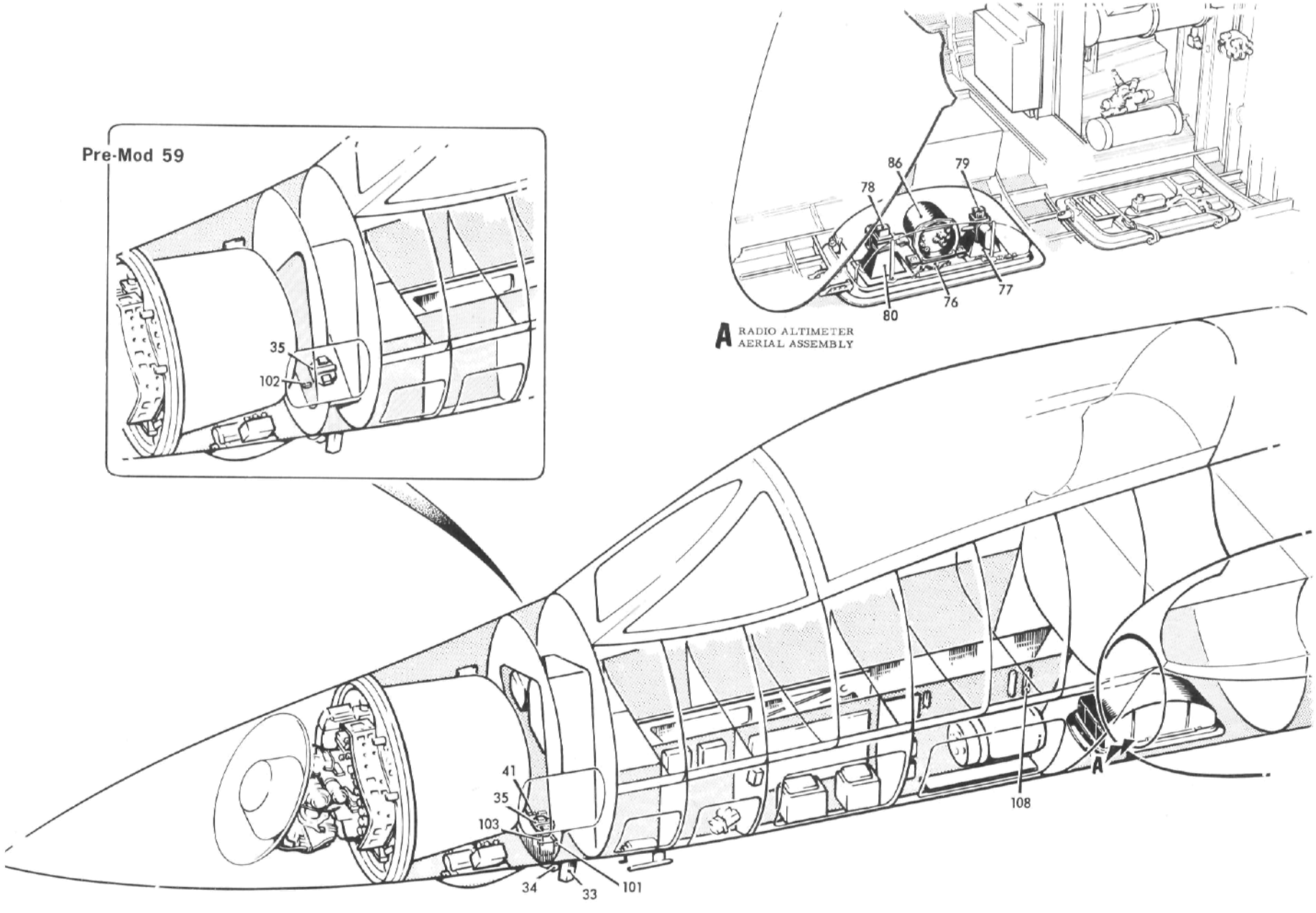


Fig. 2. Wireless equipment in fuselage nose and accessories bay

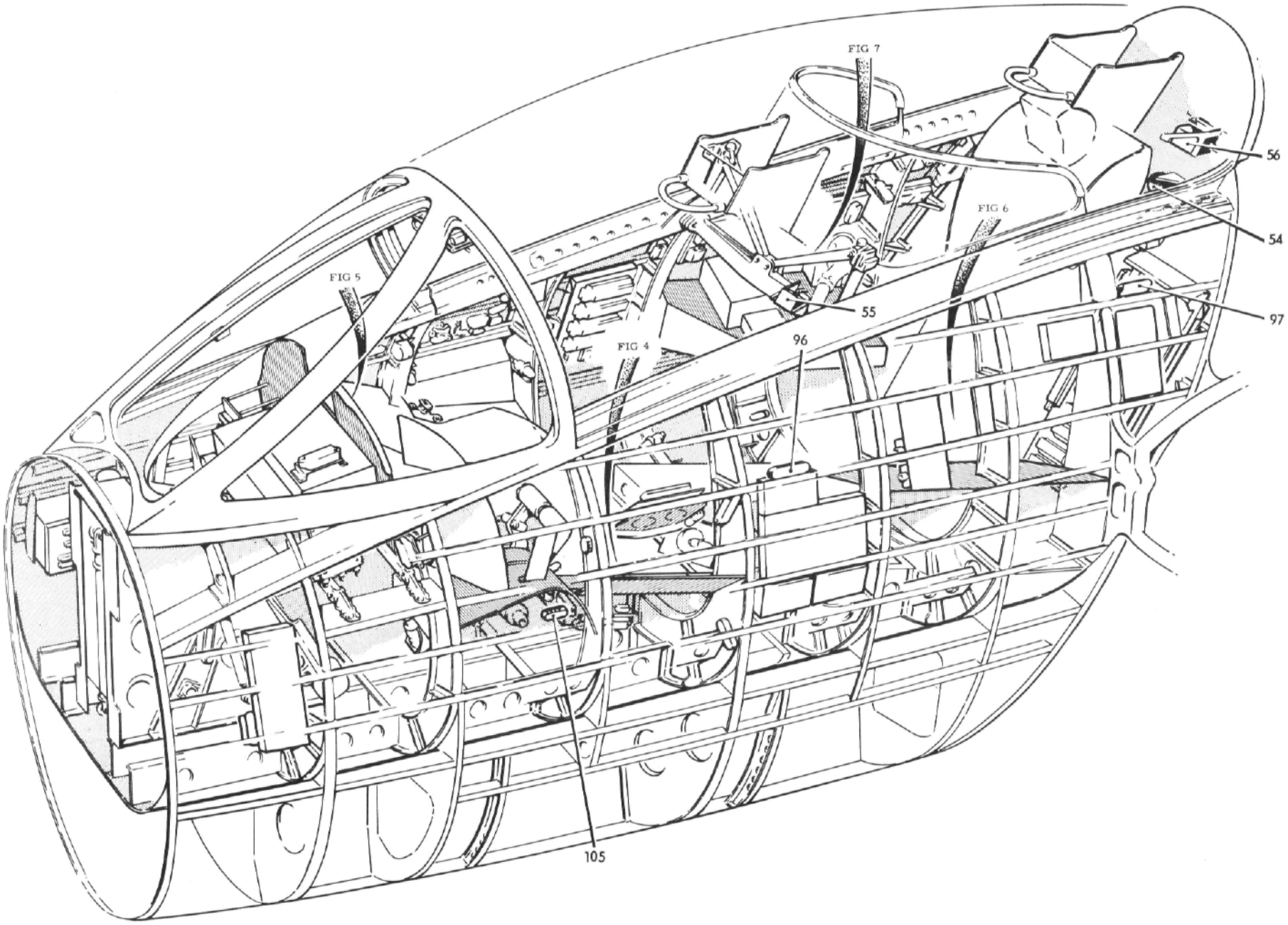


Fig. 3. Wireless equipment in cockpit – general

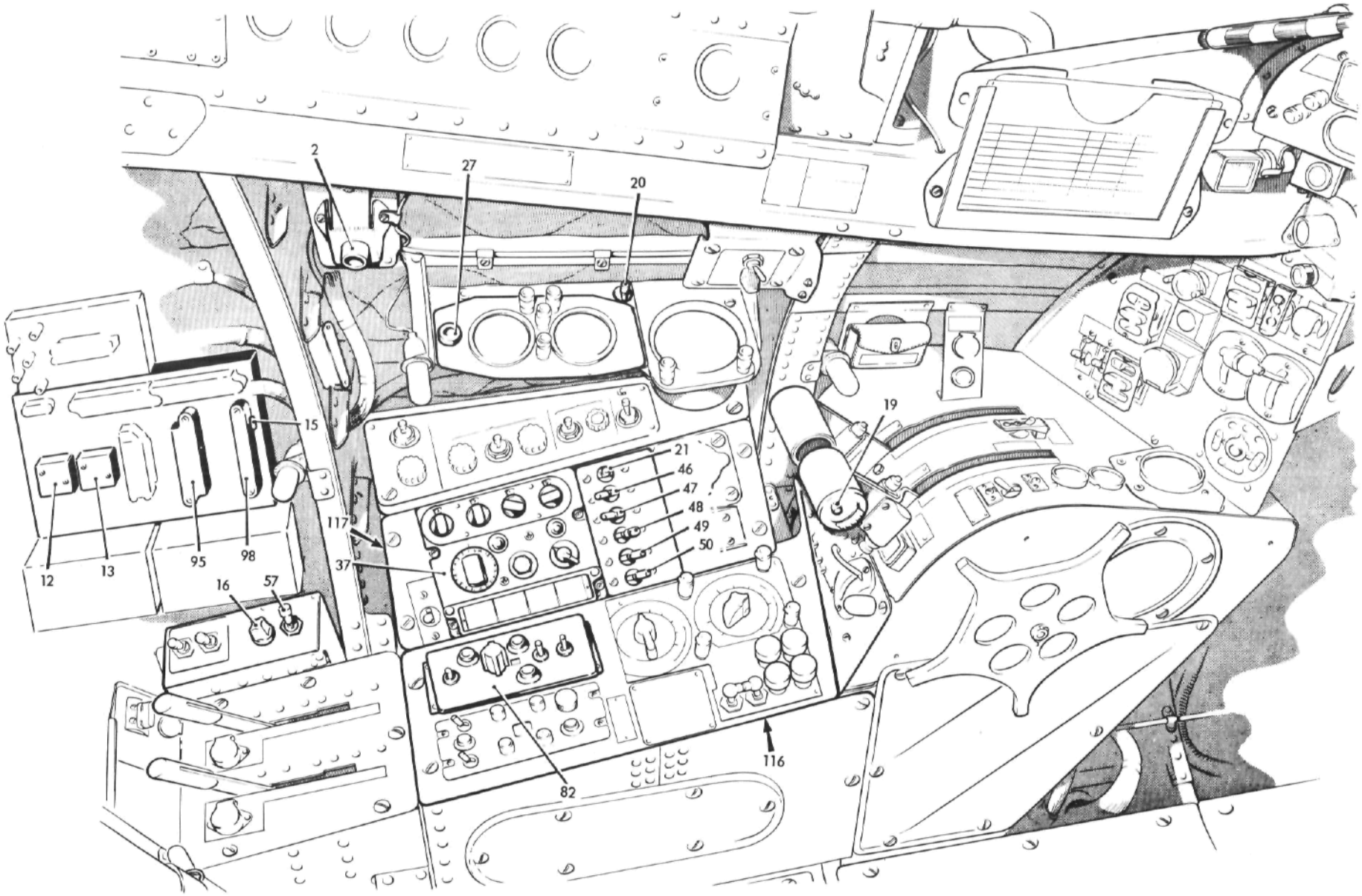


Fig. 4. Wireless equipment in pilot's cockpit – port

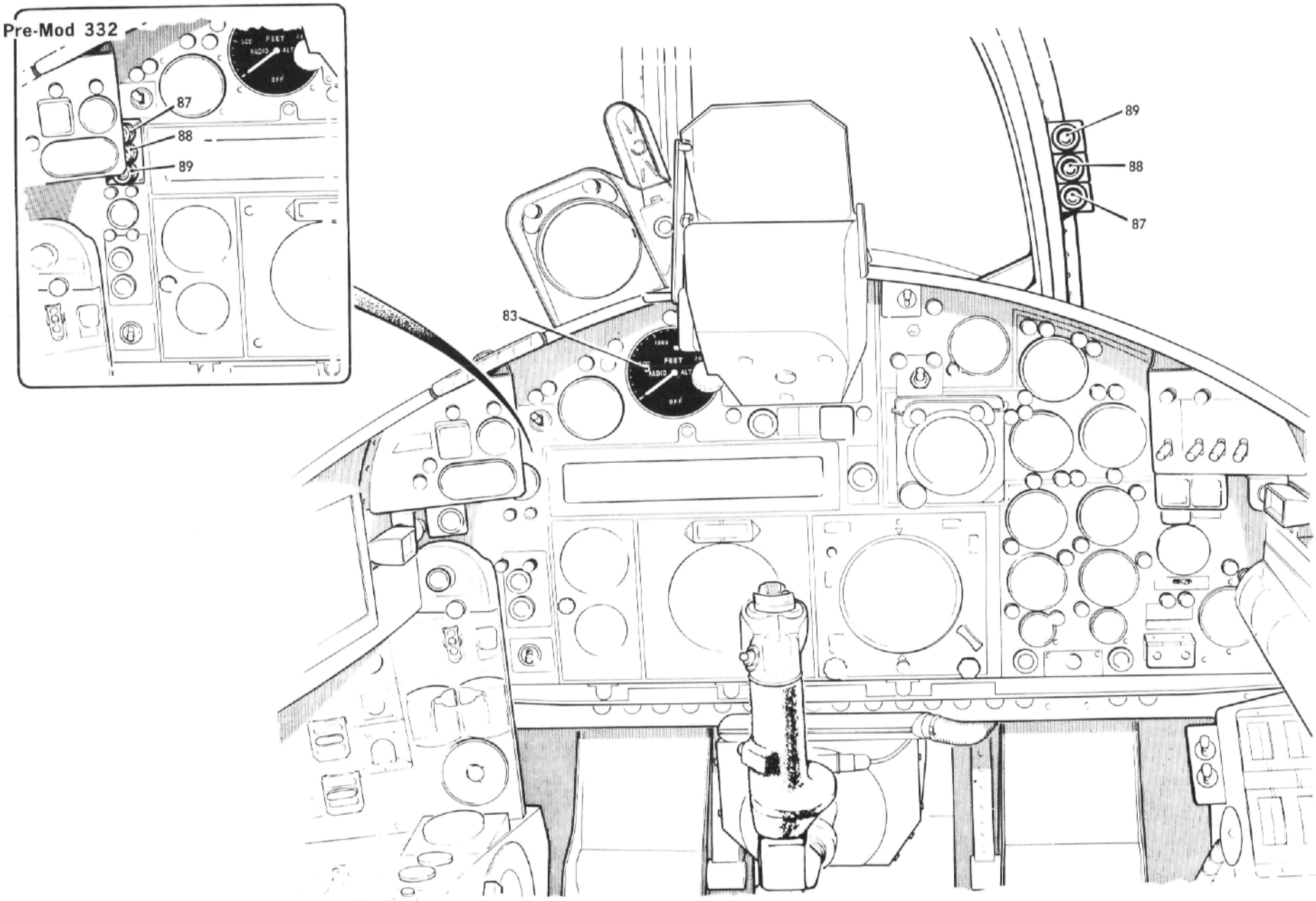


Fig. 5. Wireless equipment in pilot's cockpit – central display

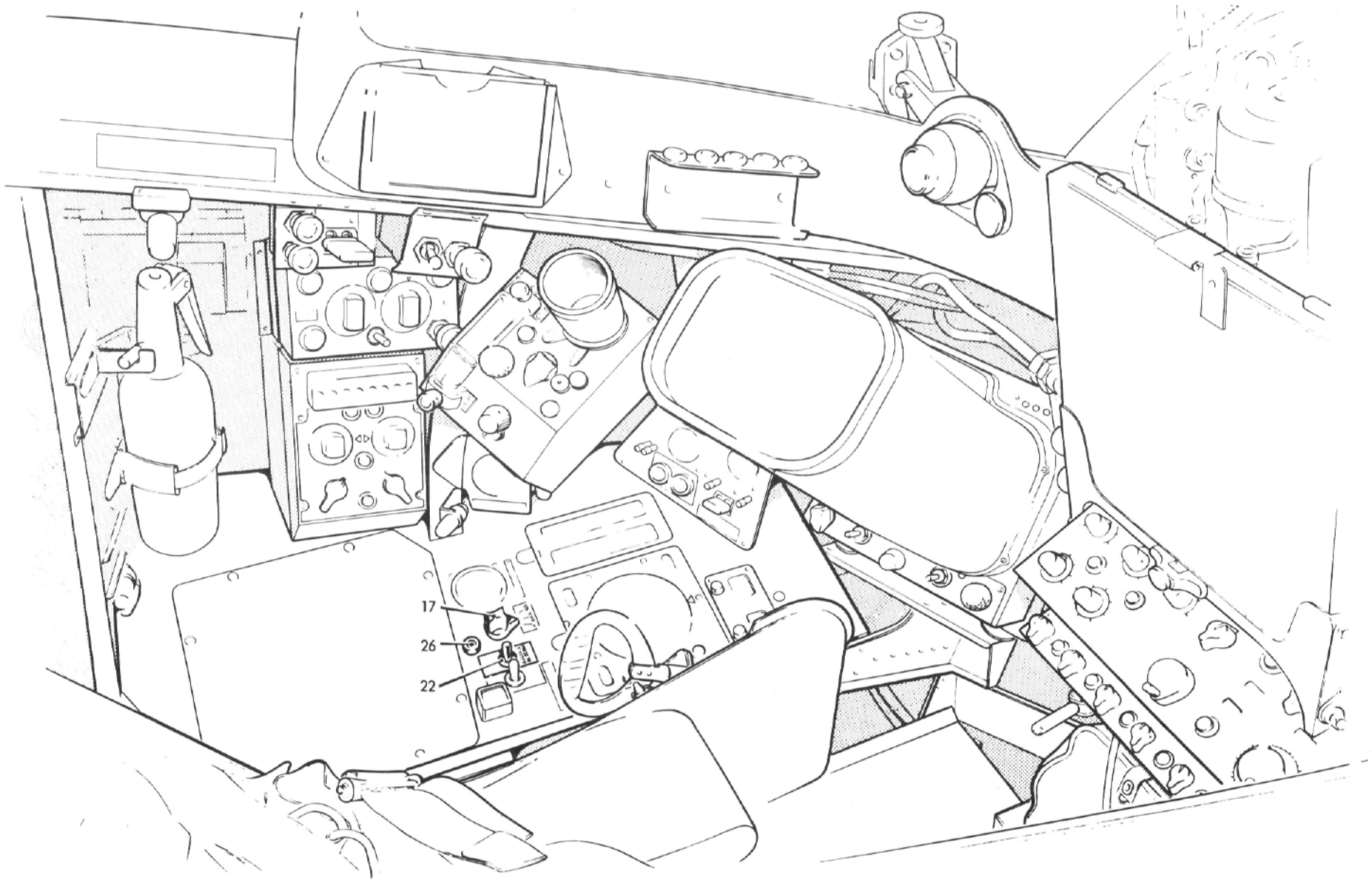


Fig. 6. Wireless equipment in observer's cockpit – port

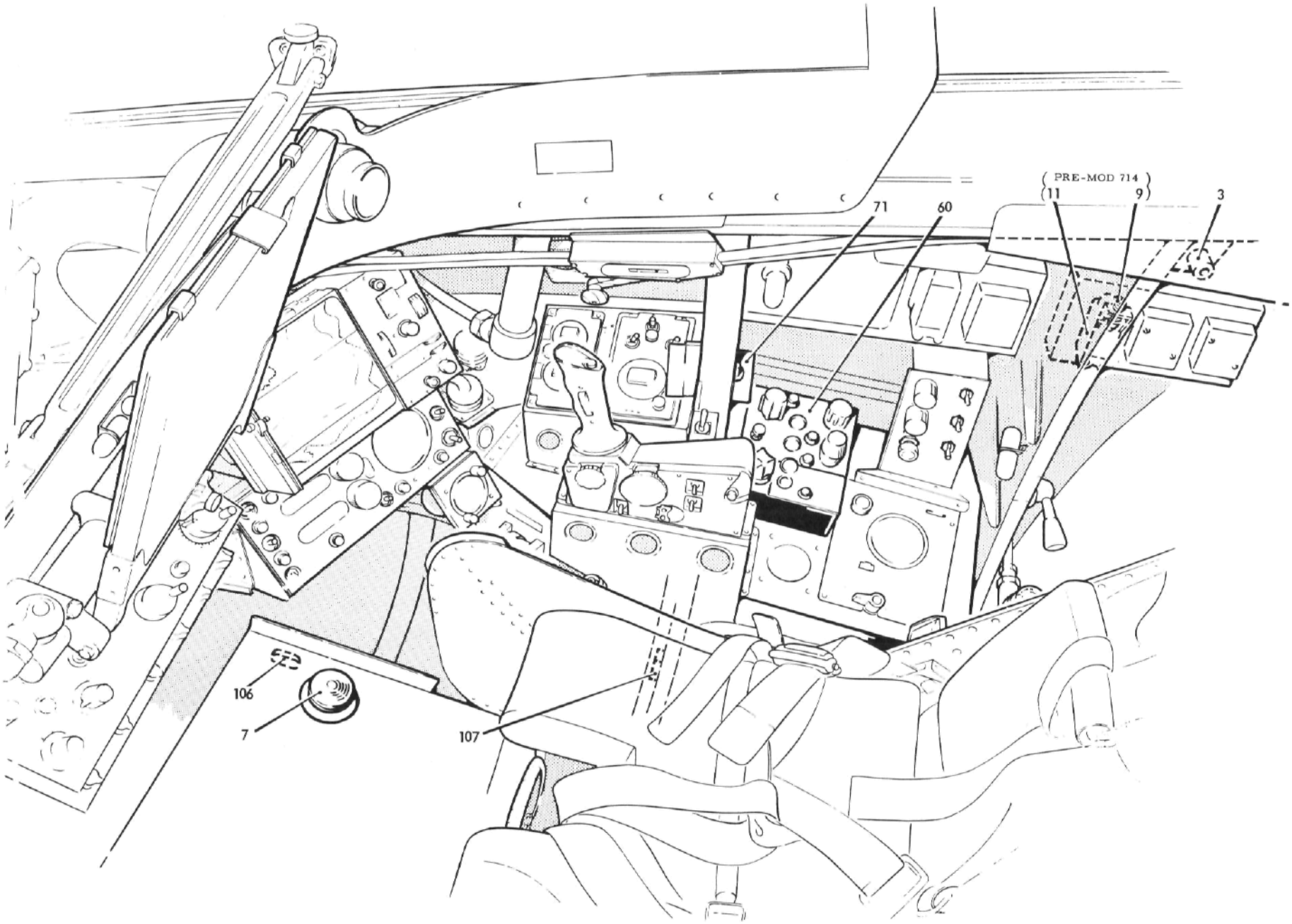


Fig. 7. Wireless equipment in observer's cockpit – starboard

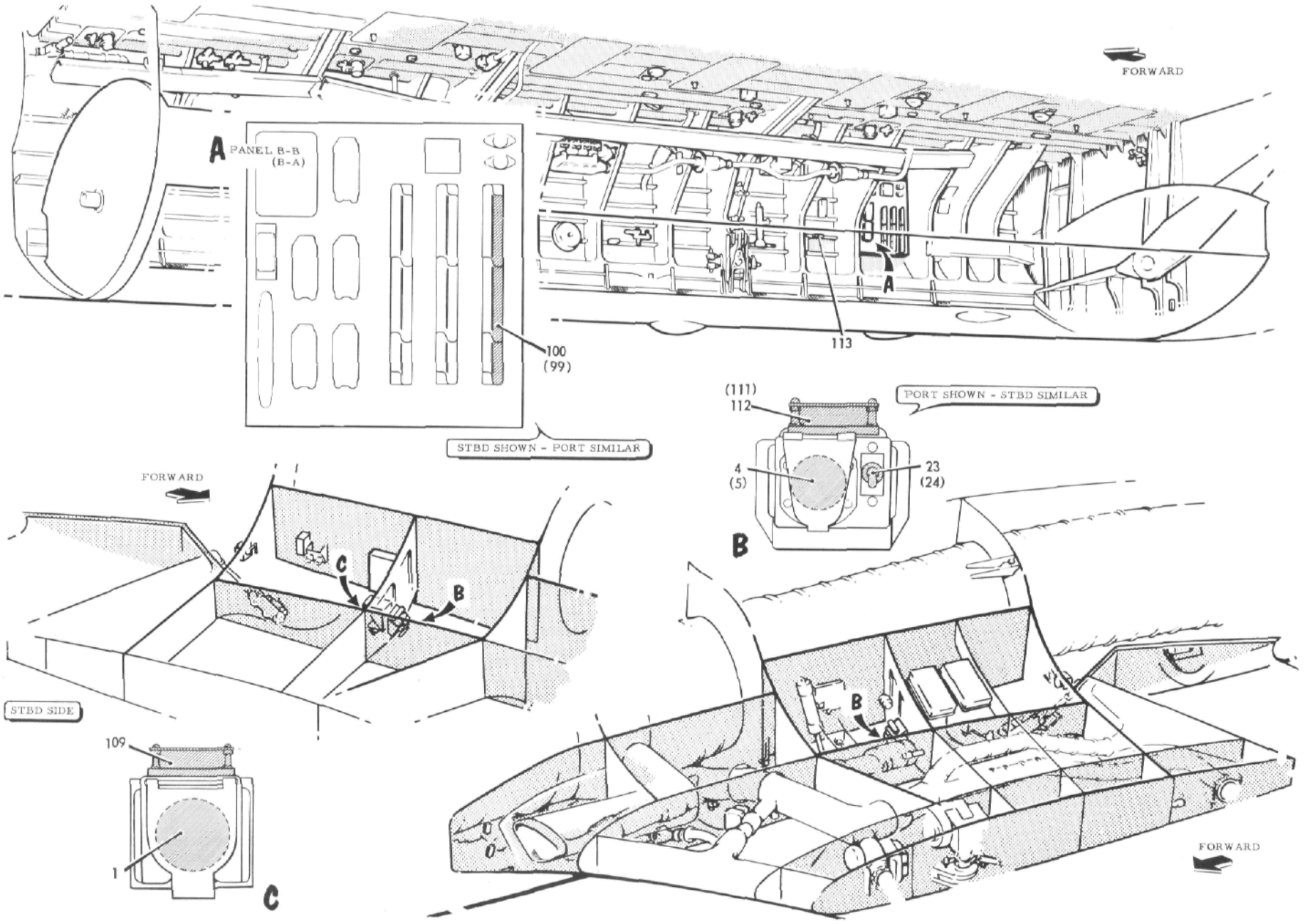


Fig. 8. Wireless equipment in bomb bay and undercarriage bays

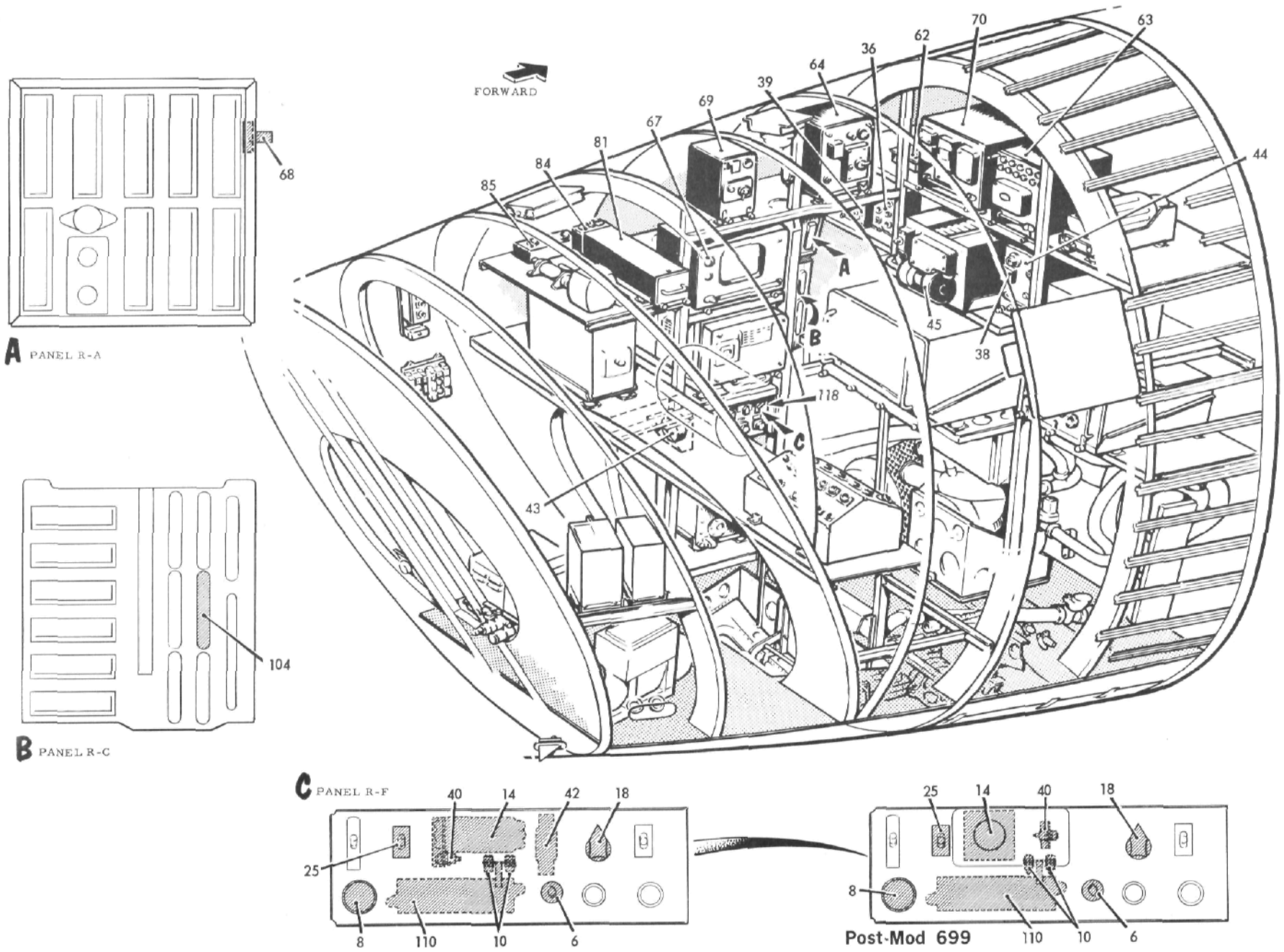


Fig. 9. Wireless equipment in rear fuselage