PART 1

CHAPTER 9 — RADIO AND RADAR CONTROLS

Contents

1 ARC 52 UHF and Standby UHF

(a) The UHF installation comprises two sets, one ARC 52 (main) for normal use and a standby set. The main set provides 1750 channels from 225·0 MHz to 399·9 MHz at 100 kHz spacing. The standby set provides two channels only, normally pre-tuned to 243·0 MHz and 243·8 MHz.

(b) The ARC 52 control unit is on the centre panel and has integral illumination controlled by one of the centre panel dimmer switches. A press-to-transmit switch is on each throttle lever twist grip and a press-to-mute switch is on the centre pedestal. The function of the controls on the control unit are shown overleaf.

(c) On the cockpit port wall are:

(i) An ARC 52/STANDBY switch. When ARC 52 is selected, the mic/tel sockets and press-to-transmit switches are connected to the main set. When STANDBY is selected, the mic/tel sockets and press-to-transmit switches are transferred to the standby set and the standby set is switched on. The standby set requires a 30 second warming-up period after being switched on.

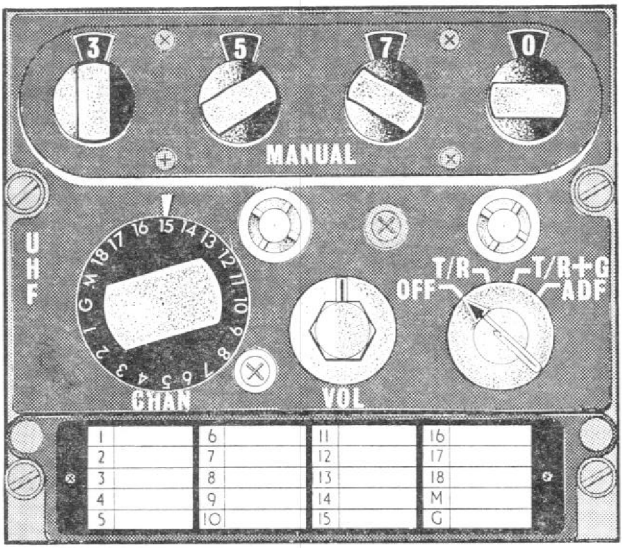
(ii) A POWER — NORMAL / EMERGY switch. When NORMAL is selected, the standby set is supplied from the main batteries; when EMERGY is selected, the standby set is supplied from the standby battery.

Control/Marking	*Function*
4-position function switch : OFF/TR/TR+G/ADF	OFF — The main set is switched off. TR — Transmission and reception of signals on the selected frequency are possible. TR+G — In addition to normal communication facilities on the selected channel a separate receiver provides a listening watch on the guard frequency of 243·0 MHz. ADF — Non-operative in this installation.
20-position selector switch : CHAN—1 to 18/M/G	Selects any one of 18 pre-tuned channels, manual tuning (M) or guard frequency (G) on the main set.
Four rotary controls with digital indicators : MANUAL	Used for manual selection of any one of 1750 frequency channels. The knobs from left to right select hundreds, tens, units and tenths of MHz, the appropriate digits appearing in windows above the knobs.
Rotary selector : VOL	Controls the volume of the audio output.

To conserve the main batteries in generator failure conditions, STANDBY should be selected with the power switch at EMERGY and the UHF control unit switched off.

(iii) A GUARD/A switch to select the guard frequency or the alternative channel of the standby set. The switch should be left at GUARD (243·0 MHz); the 'A' (243·8 MHz) position is normally only used for testing purposes.

(iv) An EMERG — P to T switch which provides an alternative transmit facility for use with the main or standby set. This switch must be used to transmit when the standby set is being supplied by the standby battery.



UHF (ARC 52) Control Unit

(v) A UHF — AERIAL 1 / AERIAL 2 switch for selecting the upper or lower aerial respectively. The standby set has its own aerial.

(vi) An AUTO TONE / CANCEL switch. When AUTO TONE is selected, a tone transmission facility is automatically activated when either ejection seat leaves the aircraft. If the remaining pilot is able to recover the situation, the transmission can be switched off by selecting CANCEL. An additional switch is provided for the instructor on the cockpit starboard wall.

2 Telebriefing

(*a*) The landline plug is on the inside of a spring-loaded door on the underside of the fuselage forward of the tail bumper. Pre-mod 1309, when the landline is connected, the mic/tel sockets are automatically disconnected from ▶

the UHF and connected to the telebrief and an amber light on the port shelf comes on. The telebrief press-to-speak button is adjacent to the amber light on the port shelf.

(*b*) Post-mod 1309, to activate the system, the telebrief press-to-speak button on the port shelf must be pressed momentarily after the landline is connected; the amber light then comes on. A telebrief plug fault which could prevent radio communication is indicated by the amber light remaining on when the landline is disconnected. If the fault develops in the air, the telebrief plug is already isolated and cannot affect radio communication.

3 Intercom A1961

(*a*) Intercommunication is provided by an intercom amplifier controlled by an ON/OFF switch and a NORMAL/EMERGENCY switch on the cockpit starboard wall. The amplifier requires a 30 second warming-up period after being switched on.

(*b*) If the intercom amplifier fails, intercom and UHF reception can be regained by switching off the amplifier or selecting the NORMAL/EMERGENCY switch to EMERGENCY. Intercom is then provided through the main or standby UHF and normal UHF reception is available.

4 Tacan

(*a*) The Tacan control unit is on the centre instrument panel and has the following controls:

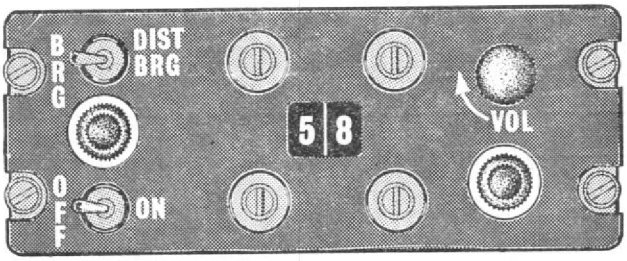
(i) An ON/OFF switch.

(ii) A BRG/DIST BRG switch. With BRG selected, only magnetic bearing information is presented. At the DIST BRG position both magnetic bearing and distance information is shown. On T Mk 8B aircraft, the BRG position is inoperative.

(iii) Four channel selector buttons. The top two buttons increase the units and tens by one and the bottom pair

decrease the numbers in a similar manner. The channel numbers appear in a central window.

(iv) A VOLume control.



Tacan Control Unit

(*b*) An RT/MIX/BEAC rotary switch is on the cockpit port wall. Tacan signals only are heard with the switch selected to BEAC. Both Tacan and UHF reception is heard at the MIX position and only UHF reception when RT is selected.

(*c*) (i) Tacan bearing and distance information is presented on an indicator on the centre panel. Above the indicator is a TACAN POWER SPLYS RESET button and a FAILURE magnetic indicator.

(ii) The 28 volt DC supply is taken from the main DC busbar and the 115 volt, 400 Hz AC supply is provided by a type 108 inverter. Provided that at least one generator is on line, the inverter starts up and the FAILURE indicator shows black when the weight of the aircraft is taken off the main wheels. If both generators come off line or the AC or DC supplies fail, the inverter shuts down and the FAILURE indicator shows black-white stripes. The inverter cannot be switched off in flight and continues to run after landing until the RESET button is pressed or both generators come off line after the engine is shut down. To avoid an excessive drain on the batteries, the RESET button should be pressed as soon as possible after landing.

(iii) In flight, the RESET button can be used to restart the inverter following a transient failure.

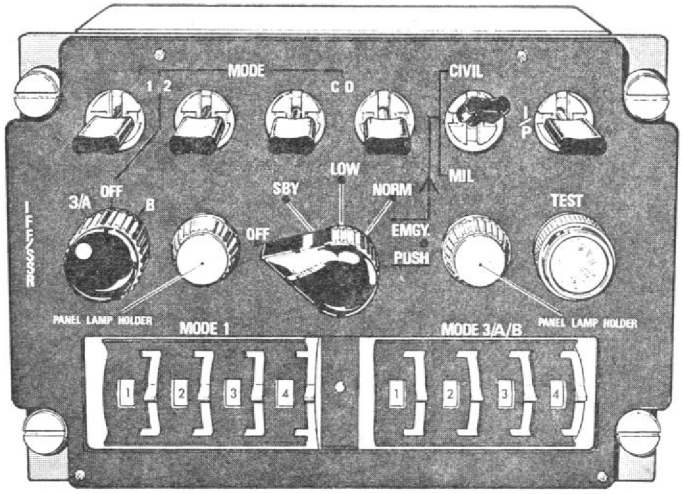
5 IFF/SSR

(*a*) Post-mod 1372, IFF/SSR is fitted. The equipment provides automatic identification of the aircraft by transmitting coded pulsed replies in answer to interrogation signals transmitted in various modes by military (IFF) stations or by civil secondary surveillance radar (SSR) stations.

(*b*) The control unit replaces the port GGS which is removed by mod 1372. The control unit has the following switches and indicators:

Control/Marking	*Function*	
5-position rotary master switch: OFF/SBY/LOW/NORM/EMGY PUSH	OFF:	Inverter and equipment switched off. IFF FAIL light on steady (provided battery master switch on). When set from OFF to any other position, 50 seconds required for warm-up
	SBY:	AC power to equipment. After warm-up, equipment is ready for full operation when selected. Transponder accepts interrogations on a selected mode, but cannot respond. When interrogated, the IFF FAIL light flashes
	LOW:	Transponder functioning but with reduced receiver sensitivity. Used at request of ground station to reduce clutter
	NORM:	Equipment functioning fully, accepting interrogations and responding on selected modes
	EMGY PUSH:	When pressed and turned to EMGY, transponder transmits immediate replies with emergency coding to Modes 1, 2, 3A or B (see also CIVIL/MIL switch) irrespective of settings of mode switches
Four on/off MODE selector switches (up for on): 1/2/C/D	1:	Transponder will accept Mode 1 interrogation and will reply using selected Mode 1 code
	2:	Transponder will accept Mode 2 interrogation and will reply using a Mode 2 code preset before flight, unique to aircraft
	C:	Transponder will accept Mode C interrogation and in reply will transmit aircraft altitude information when a height encoding altimeter is fitted
	D:	Not in use

3-position rotary Mode selector: 3A/OFF/B	OFF: Transponder isolated from Mode 3A or B interrogations 3A: Transponder will accept Mode 3A interrogation and will reply using selected Mode 3 code B: Transponder will accept Mode B interrogation and will reply using selected Mode 3 code
Code number selector for Mode 1 and Mode 3A or B transponder reply: MODE 1 (four digit selectors and digit indicators) MODE 3 (four digit selectors and digit indicators)	Each set of four selectors used to set appropriate code number. Indicators show 0000 to 7777 allowing 4096 possible codes to be set Use MODE 1 selectors for coding Mode 1 replies Use MODE 3 selectors for coding Mode 3A or B replies Note: Mode 2 reply codes are preset at the transponder before flight and are not accessible from the cockpit
2-position emergency coding switch: CIVIL/MIL	Used only in conjunction with EMGY PUSH selection to establish emergency reply codes for 3A/B modes MIL: Normal position. Selected Mode 3 code transmitted CIVIL: Code 7700 automatically selected for emergency reply transmission
2-position switch (spring-loaded off): I/P	2-second operation triggers an identification signal for 20 seconds, to enable ground station to identify the aircraft from other aircraft replying with the same selected code
Self-test push switch incorporating a double filament green light: TEST	With equipment switched on and warmed up, pressing switch self-tests receiver sensitivity, transmitter power output and mode serviceability. Set NORM, press TEST button (after 50 second warm-up) If check satisfactory TEST light comes on (IFF FAIL light should be/go out). Unsatisfactory test indicated by steady FAIL light and no TEST light. Flashing FAIL light if master switch at SBY. Steady FAIL light if switch at OFF or LOW. Pressing TEST when LOW selected may inhibit self-test process. To reset, select NORM press TEST



IFF/SSR Control Unit

(*c*) The operating modes and codes to be used are normally established before flight, but the ground radar station controlling the flight can, using voice communication, request particular modes and codes to be selected as required. Codes 7600 and 7700 are selected only in emergency situations to give the ground station a particular read-out alarm signal.

(i) Code 7600 — to indicate that the aircraft has suffered total voice communication failure.

(ii) Code 7700 — to indicate that a special emergency exists in the aircraft.

(d) An amber IFF FAIL warning light with a press-to-test facility for checking the filaments of both the fail light and the test light is above the control unit. The light illuminates with the battery master switch on and the IFF/SSR master switch off. The light flashes if the transponder is being interrogated but is unable to reply because the master switch is at SBY. If the light comes on steady with the master switch at NORM, operate the test switch on the control unit; if a fault condition is confirmed, switch off the equipment to avoid the possibility of overheating.