TM 11-5820-518-20

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

RADIO SET AN/ARC-51X AND AN/ARC-51BX

This copy is a reprint which includes current pages from Changes 1 through 5.

HEADQUARTERS, DEPARTMENT OF THE ARMY
MAY 1968

WARNING

DON'T TAKE CHANCES!

DANGEROUS VOLTAGES EXIST IN

RADIO RECEIVER-TRANSMITTERS RT-702/ARC-51X AND RT-742(*)/ARC-51BX

Do not make contact with exposed wires or connectors. Turn all power switches off before making any connections or disconnections.

Change
No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 12 January 1984

ORGANIZATIONAL MAINTENANCE MANUAL RADIO SETS AN/ARC-51X (NSN 5821-00-082-3698) AND AN/ARC-51BX (NSN 5821-00-082-3926)

TM 11-5820-518-20, May 1868, is changed as follows:

1. Cover. The title is superseded as shown above.
2. New or added material is indicated by a vertical bar in the margin of the page.
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Remove Pages	Insert Pages
i and ii	i and ii
1-1 through 14.1	1-1 through 1-4.2
3-1 through 34	3-1 through 3-4
A-1	A-1/(A-2 blank)

5. File this change sheet in front of the publication for reference purposes.

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Technical Manual
No. 11-5820-518-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 3 *May 1968*

Organizational Maintenance Manual

RADIO SETS AN/ARC-51X (NSN 5821-00-082-3698) AND AN/ARC-51 BX (NSN 5821-00-082-3926)

***This manual supercedes TM 11-5820-518-12, 16 November 1963, including all changes, and TM 11-5820-518-20P, 24 February 1965.**

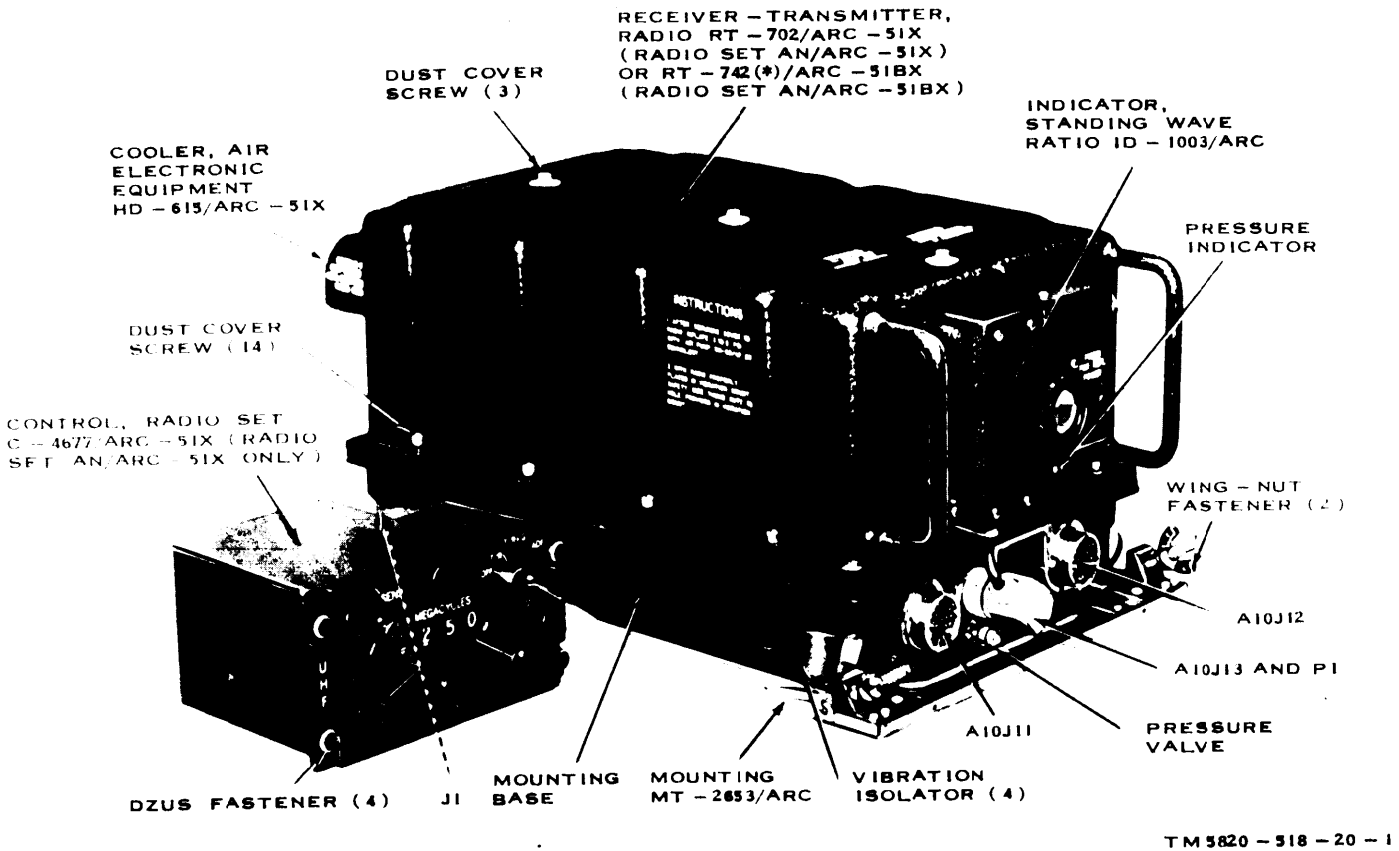

Figure 1-1. Radio Sets AN/ARC-51X and AN/ARC-51BX (less Radio Set Control C-6287/ARC-51BX).

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Radio Sets AN/ARC-51X and AN/ARC-51BX (figs. 1-1 and 1-2) and covers their operations, preflight check, and organizational maintenance. Maintenance includes preventive maintenance checks and services, troubleshooting, and replacement of main components of the AN/ARC-51X and the AN/ARC-51BX.

Note. Radio Set AN/ARC-51X is similar to Radio Set AN/ARC-51BX. Information in this manual applies to both radio sets unless otherwise specified.

b. Equipment nomenclature followed by the designation (*) denotes all models of a particular equipment item covered in this manual. For example Radio Receiver-Transmitter RT-742 (*)/ARC-51BX represents Radio Receiver-Transmitters RT-742/ARC-51BX and RT-742B/ARC-51BX.

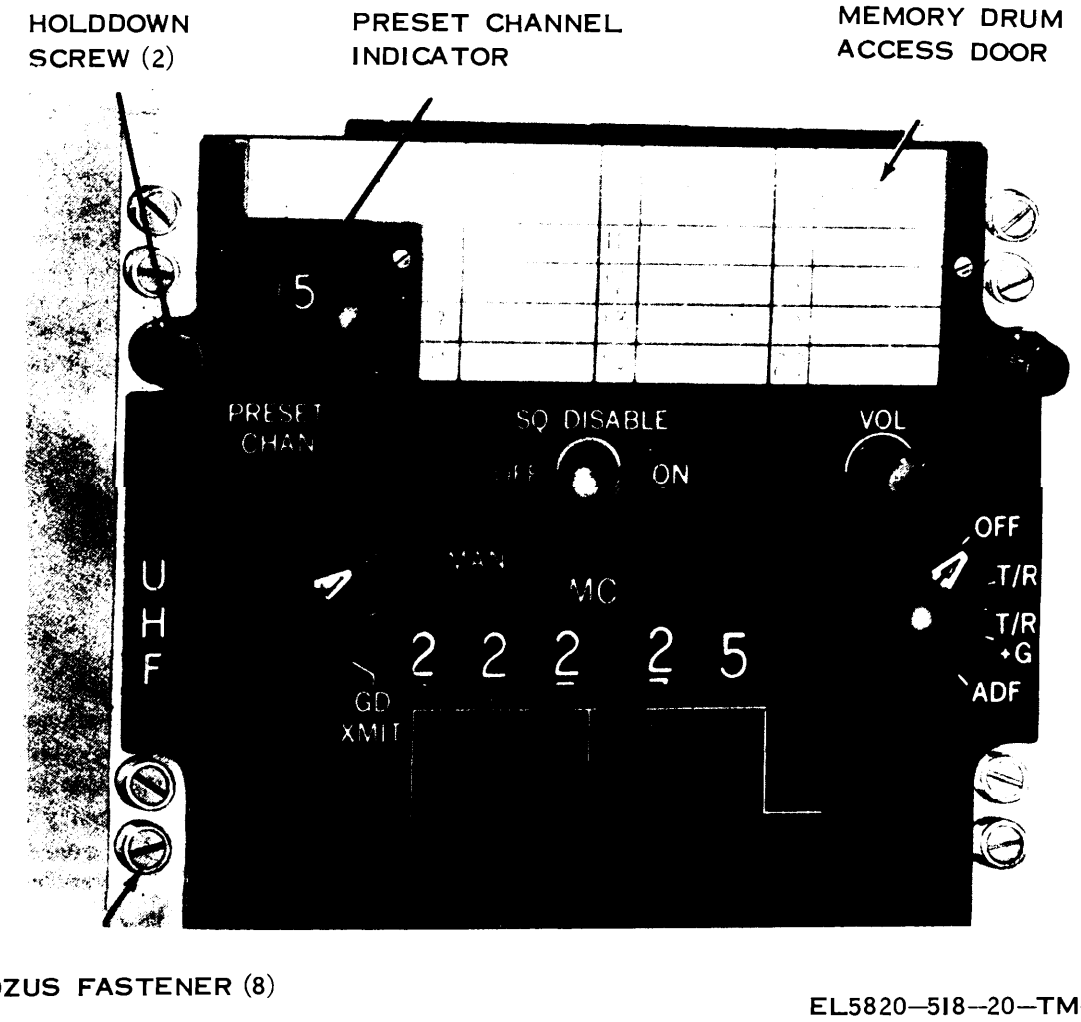

Figure 1-2. Radio Set Control C-6287/ABC-5IBX

1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/ AFR 400-54/MCO 4430.3F.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 461033C/ AFR 75-18/MCO P4610.19D DLAR 4500.15.

1-3.1. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. In either case, a reply will be furnished to you.

1-3.2. Reporting Equipment Improvement Recommendations (EIR)

If your Radio Set needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

1-3.3. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or 'limited storage are covered in TM 740-90-1.

1-3.4. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

(figs. 1-1 and 1-2)

a. Purpose. Radio Sets AN/ARC-51X and AN/ ARC-51BX are airborne radio sets which provide amplitude-modulated (am) voice communication within the ultrahigh frequency (uhf) band. The AN/ARC-51X operates from 225 megacycle (me) to 399.9 mc, and the AN/ARC-51BX operates from 225 mc to 399.95 mc.

b. Use. Radio Sets AN/ARC-51X and AN/ARC 51BX are used for two-way radio communication between aircraft in flight, aircraft and ground, or aircraft and surface ships when such installations are properly equipped with similar uhf communications equipment. Transmission and reception are conducted on the same frequency with the use of a common antenna. Also, a guard receiver (contained within Radio Receiver-Transmitter RT-702/ARC-51X of Radio Set AN/ARC-51X; and Radio Receiver-Transmitter RT-742(*)/ARC-51BX of Radio Set AN/ARC-51BX) can be used to monitor a fixed-frequency guard channel. The AN/ARC-51 and the AN/ARC-51BX are also used with aircraft automatic direction finding (adf) equipment such as Direction Finder AN/ARA-25.

1-5. Technical Characteristics

Frequency range
AN/ARC-51X . . . . . 225.0 to 399.9 mc.
AN/ARC-51BX . . . . . 225.0 to 399.95 mc.

Frequency channels
AN/ARC-51X . . . .1,750 selectable channels, plus fixed guard channel on receive.
AN/ARC-51BX. . . . . .3,500 selectable channels, plus fixed guard channel on receive.

Channel spacing
AN/ARC-5lX . . . . . .100 kilocycles.
AN/ARC-51BX . . . .50 kilocycle.

Frequency control . . . . . Crystal-controlled.

Radio frequency output power . . . . . .16 watts minimum for all channels.

Receiver sensitivity . . . .4.2 microvolt for 14-milli watt output, with 10-decibel signal plus noise-to-noise ratio.

Power requirements . . . .27.5 volts dc ±0.5, 12.25 amperea, supplied by aircraft.

Terminations:
Rf input and output . . . . . .52 ohms, noninductive.
Receiver audio headset . . ..150 ohms, noninductive with provision for 600 ohms.
Auxiliary audio . . . .20,000 ohms.
Microphone, input-carbon . . . .82 ohms.
Microphone, input-dynamic . . . .l50 ohms.

Audiofrequency response . ...300 to 6,000 cycles per second with not more than + 1 or —3 db variation relative to response at 1,000 cps.

Frequency stability
Transmitter . . . . . ±l0 kc.
Guard receiver . . . . . ±13 kc.
Main, receiver . . . . . .±l0 kc.

Channel-changing time . . . . . not more than 6 seconds.

1-6. Components of Radio Sets AN/ARC-51X and AN/ARC-51BX

a. Components of Radio Set AN/ARC-51X. This listing is based on the original shipment by the contractor on Contract No. NOw (A)-63-0533. For the current official listing of components of individual models, refer to paragraph 1-6.1.

Quantity	Componennt	Dimensions(in.)			Unit weight (lb)	Figure No.
		Height	Depth	Width		
1	Radio Receiver-Transmitter RT-702/ARC-51X.	7	15 1/8	9 9/16	28.7	1-1
1	Radio Set Control C-4677/ARC-51X	3	4 1/4	5 3/4	2.2	1-1
1	Mounting MT-2653/ARC	1	14 1/4	9 1/2	0.5	1-1
1	Cooler, Air, Electronic Equipment HD-615/ARC-51X.	6 3/8	3 1/8	6 5/32	1.0	1-4
1	Indicator, Standing Wave Ratio ID-1003/ARC.	17/16	3 3/4	4 3/4	1.1	1-1
1	Radio Receiver-Transmitter RT-742(*)/ARC-51BX.	7	15 1/8	9 9/16	29.2	1-1
1	Radio Set Control C-6287/ARC-51BX	4 15/16	4 3/16	5 3/4	3.8	1-2
1	Mounting MT-2653/ARC	1	14 1/4	9 1/2	0.5	1-3
1	Cooler, Air, Electronic Equipment HD-615/ARC-51X.	6 3/8	3 1/8	6 5/32	1.0	1-4
1	Indicator, Standing Wave Ratio ID-1003/ARC.	17/16	3 3/4	4 3/4	1.1	1-1

1-6.1. Items Comprising an Operable Equipment

NSN	Quantity		Nomenclature, part No., and mfr code
	AN/ARC-51X	AN/ARC-51BX	
			NOTE The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.

1-6.1. Items Comprising an Operable Equipment (Cont)

NSN	Quantity		Nomenclature, part No., and mfr code
	AN/ARC-51X	AN/ARC-51BX	
			NOTE Number 1 in the quantity column refers to items comprising an operable AN/ARC-51X; column 2 refers to items comprising an operable AN/ARC-51BX.
5821-00-082-3698			Radio Set AN/ARC-51X
5820-00-082-3926			Radio Set AN/ARC-51BX
5821-00-082-3700	1		Control, Radio Set C-4677/ARC-51X, 522-3113-004; 13449 (This item is nonexpendable)
5821-00-082-3928		1	Control, Radio Set C6287/ARC-51BX, 522-3629-005, 13499 (This item is nonexpendable)
5820-00-082-3701	1	1	Cooler, Air, Electronic Equipment HD-615/ARC-51X, 522-3113-004,13449 (This item is nonexpendable)
6625-00-892-5223	1	1	Indicator, Standing Wave Ratio ID-1003/ARC, 522-1580-004, 13449 (This item is nonexpendable)
5821-00-980-5789	1	1	Mounting MT-2653/ARC, 522-2298-004, 13499 (This item is nonexpendable)
5820-00-082-3699	1		Receiver-Transmitter, Radio RT-702/ARC-51X, 522-31144-005, 13449 (This item is nonexpendable)
5821-00-082-3927		1	Receiver-Transmitter, Radio RT-742/ARC-51BX, 522-3628-005, 13499 (This item is nonexpendable)

1-7. Common Names

Listed below are nomenclature assignments and common names for the equipment covered in this manual.

Nomenclature	*Common name*
Radio Set AN/ARC-51X	Radio set.
Radio Set AN/ARC-51BX	Radio set.
Radio Receiver-Transmitter RT-702/ARC-51X	Receiver-Transmitter.
Radio Receiver-Transmitter RT-742(*)/ARC-51BX	Receiver-Transmitter.
Radio Set Control C-4677/ARC-51X	Radio set control.
Radio Set Control C-6287/ARC-51BX	Radio set control.
Mounting MT-2653/ARC	Mounting.
tiler, Air, Electronic Equipment HD-615/ARC-51X	External blower.
Indicator, Standing Wave Ratio ID-1003/ARC	Reflectometer.

1-8. Description of Radio Set

(fig. l-l)

The radio set includes the receiver-transmitter, the mounting, the radio set control, the external blower, and the reflectometer. The receiver-transmitter, which is the main unit of the radio set, is pressurized. It is installed on the mounting in the aircraft. The external blower and the reflectometer are installed on the receiver-transmitter. Primary power and signal connections for the radio set are made at connector on the front of the receiver-transmitter and on the rear of the radio set control. Connections to the aircraft antenna are made from the reflectometer (fig. l-5), located on the receiver-transmitter front panel. The radio set control (figs. 1-1 and 1-2) is installed at a convenient location near the pilot and is connected to the receiver-transmitter through the aircraft wiring.

1-9. Description of Receiver-Transmitter

(fig. l-l)

The receiver-transmitter includes a main chassis (not shown) and a mounting base with vibration isolators. *A* dust cover is fastened to the mounting base with 14 screws and to the chassis with 3 screws. The dust cover contains two handles on the front panel to facilitate removal and replacement of the receiver-transmitter into the mount. A gasket is compressed between the dust cover and the mounting base to make the assembly airtight. The external blower draws air through the mounting base, and expels it through the front of the mounting base. The internal air is cooled by heat exchangers (not shown) and is sealed in and pressurized by the duet cover and the gasket. *A* pres-

surizing valve and a pressure indicator are located on the front panel of the receiver-transmityte. Two wingnut fasteners, which attach to the mounting, are located on the front of the mounting base. Safety wires (not shown) prevent the wingnut fasteners from vibrating loose.

1-10. Description of Mounting

(fig. 1-3)

The mounting provides a means of securing the receiver-transmitter to a plane surface in the aircraft. The mounting consists of a sheet metal template with holddown hardware. Latches are provided to attach the wingnut fasteners on the front of the receiver-transmitter mounting base.

1-11. Description of External Blower

(fig. 1-4)

The external blower is mountd on the rear of the receiver-transmitter with four retaining screws and forces air through the external cores of the two receiver-transmitter exceeds 95°F. The external em. Power is applied to the external blower through an internal connector. The blower operates only when the internal temperature of the receiver-transmitter exceeds 95°F. The external blower is equipped with a removable air filter. One-ampere fuse F1 for the external blower motor is contained in the air filter holder.

1-12. Description of Radio Set Control

(figs. 1-1 and 1-2)

The radio set control contains operating controls for the receiver-transmitter and three panel lamps (fig. 2-l). The panel lamps are mounted behind the front panel of the C-6287/ARC-51BX (fig. 1-2). The radio set control is intended for panel mounting in the aircraft and is held in place by four Dzus fasteners (fig. l-l) and eight Dzus fasteners in the C-6287/ARC-51BX (fig. 1-2). Connections to the receiver-transmitter are made through a connector on the rear of the radio set control.

1-13. Description of Reflectometer

The reflectometer is installed on the front of the receiver-transmitter (fig. l-l) and contains a radio-frequency (rf) wattmeter and a meter switch (fig. 1-5). The reflectometer is connected to the aircraft antenna through a connector on the upper right side of the reflectometer, and to the receiver-transmitter through a pendant cable and connector on the bottom of the reflectometer.

1-14. Additional Equipment Required

The items listed below are not supplied as a part of the radio set but are required for its

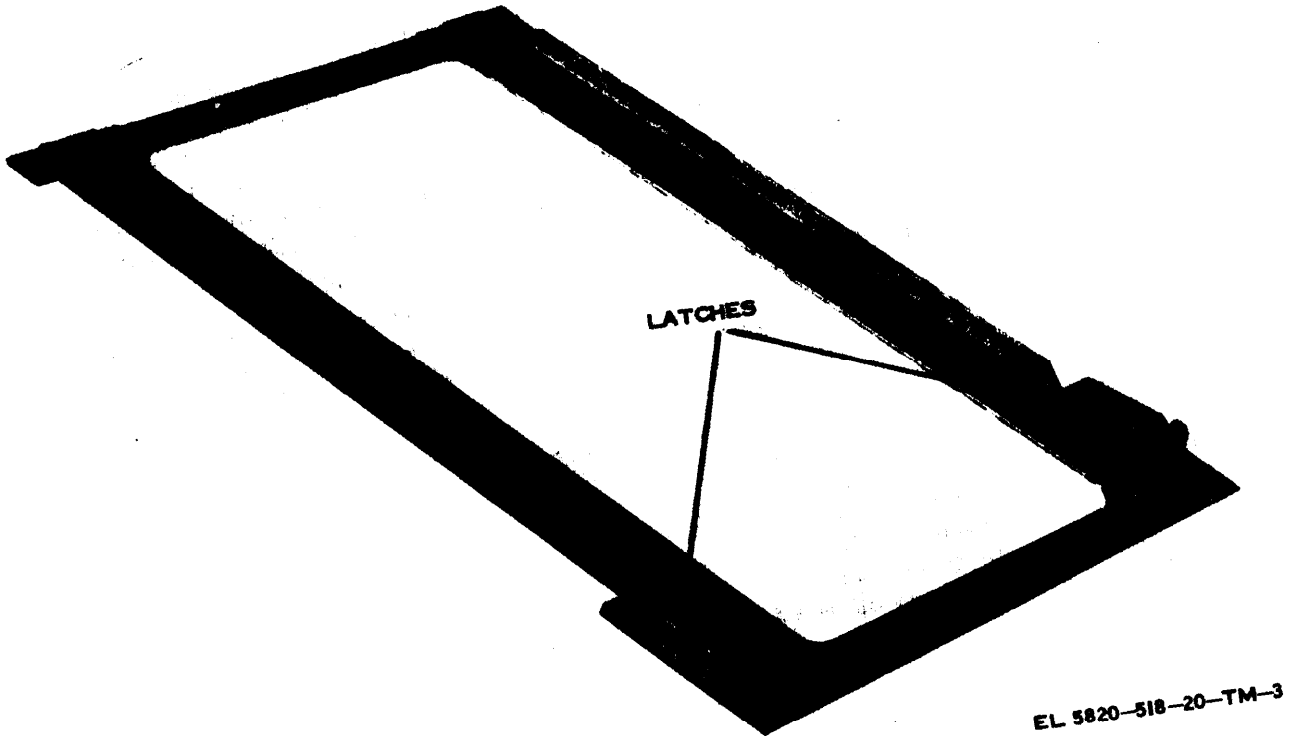

Figure 1-3. Receiver-transmitter mounting.

operation. In addition to these items, the radio set relies on aircraft cabling for interconnections between the radio set control, the receiver-transmitter, and the uhf antenna.

a. Primary power source of 27.5 volts ±0.5 direct current (dc) at 12.25 amperes to power the radio set.

b. Uhf transmitting and receiving antenna, 50-ohm input.

c. Headset, 150 ohms, noninductive.

d. Dynamic microphone, 150 ohms, resistive; or a carbon microphone, 82 ohms, resistive, with a push-to-talk switch.

1-15. Differences in Models

Radio Receiver-Transmitters RT-702/ARC-51X and RT–742(*)/ARC–51BX are similiar in purpose, operation, and appearance. Radio Set Control C-4677/ARC-51X, used with the RT-702/ARC-51X, and Radio Set Control C-6287/ARC-51BX, used with the RT-742(*)/ARC-51BX, are similar in purpose but are different in appearance and operation.

a. Radio Receiver-Transmitters RT-702/ARC-51X and RT-742(*)/ARC–51BX differ in the internal electrical circuitry.

b. Radio Receiver-Transmitter RT–742B/ARC–51BX only, has provisions for X-mode (voice security) operation.

c. The C–4677/ARC-51X tunes in 0.1-mc increments, has a four-numbered frequency indicator, and contains a SENS control. The C-6287/ARC–51BX tunes in 0.05-mc increments, has a five-numbered frequency indicator, and does not have a SENS control. The C-6287/ARC-51BX permits selection of 20 preset channels and contains a mode selector which permits preset channel selection, manual channel selection, and automatic switching of the RT–742(*)/ARC–51BX to the guard channel frequency.

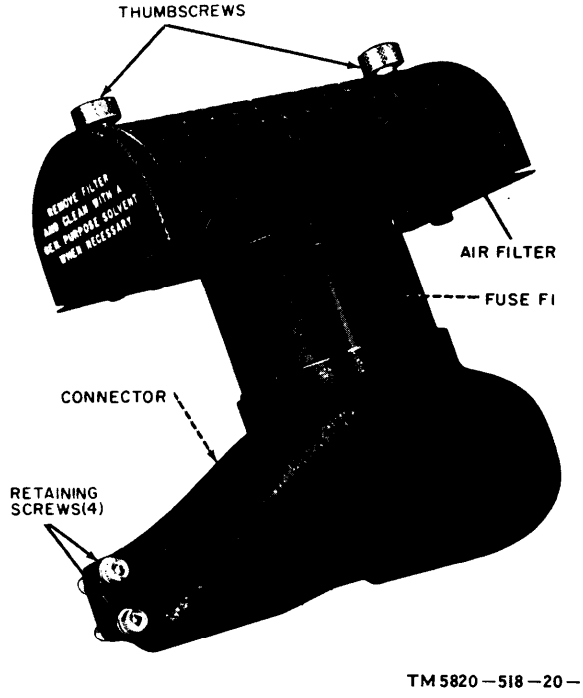

Figure 1-4. External blower.

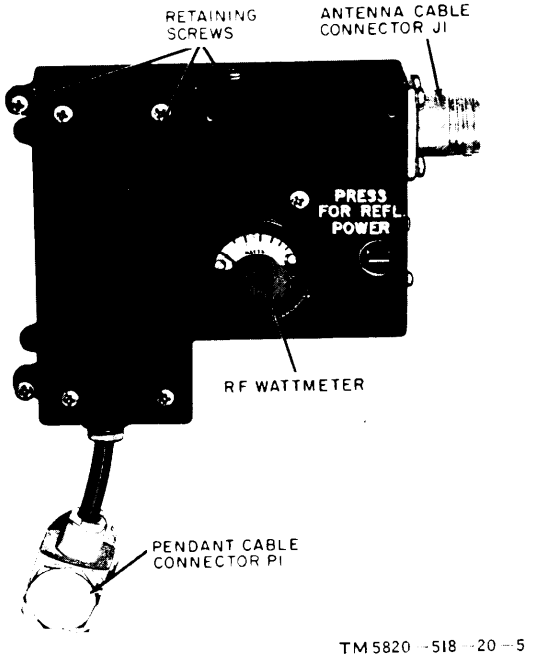

Figure 1-5. Reflectometer.

CHAPTER 2

OPERATION

Section I. OPERATING INSTRUCTIONS

2-1. Operator's Controls and Indicators (figs. 2-1 and 2-2)

Note. The C-4677/ARC-61X must be used with the RT-702/ARC-51X, and the C-6287/ARC-51BX must be used with the RT-742(*)/ARC-51BX. The chart below lists the operator's controls and indicators and their functions.

Control or indicator	Function
Function select switch (4-position rotary switch).	Applies power to radio set and selects type of operation,
	switch pos — *Action* OFF — Removes operating power from radio set. T/R — Applies power to radio set and permits transmission and reception; guard receiver is not operative. T/R+G — Permits transmission and reception; guard receiver is operative. ADF — Permits transmission, reception, and automatic direction finder operation; guard receiver is not operative.
VOL control ----------	Controls level of audio applied to headset.
SENS control (C-4677/ARC-51X only) --	Adjusts main receiver sensitivity. When rotated fully clockwise, SENS control disables squelch.
SQ DISABLE switch (C-6287/ARC-51BX only).	When set to ON, squelch is disabled. When set to OFF, squelch is operative.
Mode selector switch (3-position rotary switch, C-6287/ARC–51BX only).	Determines manner in which frequencies are selected. *switch pos* — *Action* PRESET CHAN — Permits selection of one of 20 channels by means of preset channel control. MAN — Permits frequency selection by means of megacycle controls. GD XMT — Receiver-transmitter automatically tunes to guard channel frequency.
Preset channel control (20-position rotary switch, C-6287/ARC-51BX only).	Permits selection of any one of 20 preset channels.
Preset channel indicator ----------	Indicates preset channel selected by preset channel control.
10-megacycle control (18-position rotary switch).	Selects portion of receiver-transmitter operating frequency in 10-megacycle steps (first two numbers, left to right, on C–4677/ARC–51X MEGACYCLES indicator, and C-6287/ARC-51BX MC indicator).
l-megacycle control (10-position rotary switch).	Selects portion of receiver-transmitter operating frequency in 1-megacycle steps (third number on MEGACYCLES indicator).
0.l-megacycle control (10-position rotary switch on C-4677/ARC-51X and 20-position rotary switch on C-6287/ARC-51BX).	Selects portion of receiver-transmitter operating frequency in 0.1-megacycle steps (fourth number on C-4677/ARC–51X MEGACYCLES indicator), or 0.05-megacycle steps (fourth and fifth numbers on C-6287/ARC-51BX MC indicator).

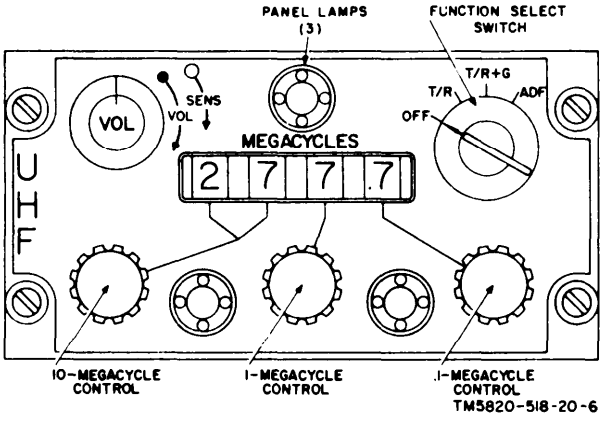

Figure 2-1. Radio Set Control C-4677/ARC-51X, front panel contro1s.

2-2. Types of Operation

(figs. 2-1 and 2-2)

Three types of operation are available to the operator; transmission and reception (main receiver on, guard receiver off); transmission and reception (main and guard receivers on); and transmission, reception, and adf operation (guard receiver off). When the radio set control function select switch is set to T/R, it enables selection of transmit-receive operation (main receiver on). When the function select switch is set to T/R+G, transmit-receive plus guard receiver (normally fixed tuned on 243 mc) operation is possible. When the function select switch is set to ADF, it permits transmit-receive operation (guard receiver off), plus direction finder operation when adf equipment is used with the radio set.

2-3. Preliminary Operating Procedures

Caution: **Do not attempt operation of the equipment unless the radio set is connected to a suitable uhf antenna or dummy load.**

a. Turn on the aircraft communication power controls.

b. Set the function select switch (figs. 2-1

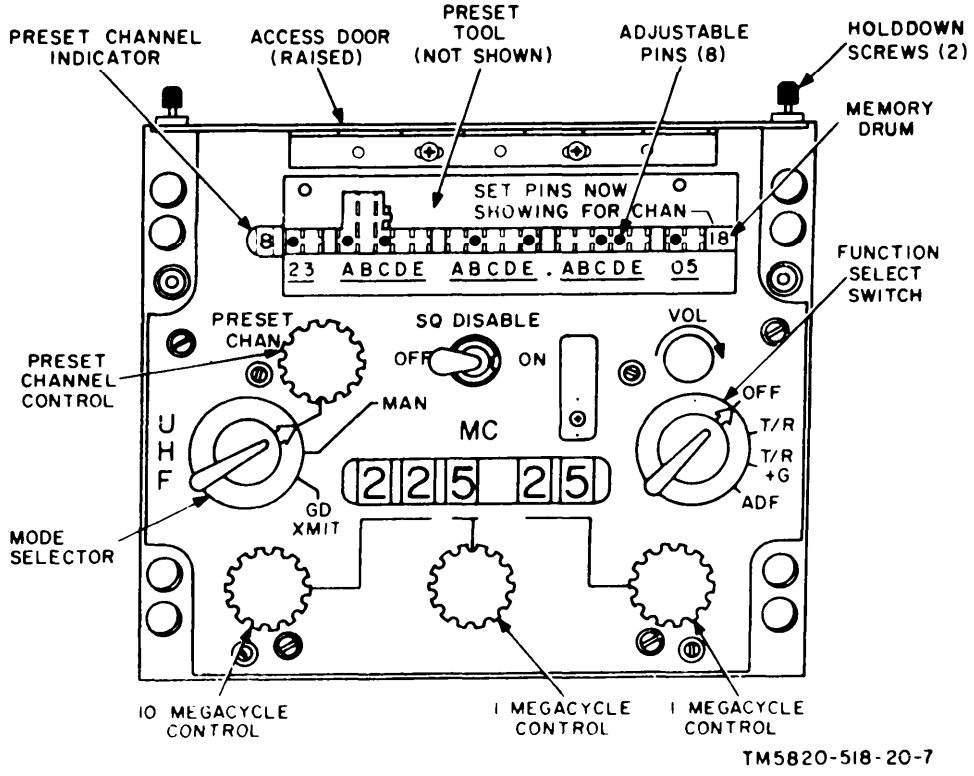

Figure 2-2. Radio Set Control C-6287/ARC-51BX, front panel controls.

and 2-2) to T/R, T/R+G, or ADF to select the desired type of operation (para 2-2).

c. Turn the mode selector switch to MAN (C-6287/ARC-51BX only, fig. 2-2).

d. Allow the radio set to warm up for 5 minutes.

2-4. 0perating Procedures
(figs. 2-1 and 2-2)

a. Transmit-Receive (Main Receiver) Op*eration.*

(1) Turn the radio set control 10-megacycle control until the first two numbets of the desired operating frequency (local uhf station) appear in the MEGACYCLES indicator window.

Note. During the channel-change cycle, an 800-cycles per second (cps) audio tone should be heard in the headset.

(2) Turn the radio set control l-megacycle control until the third number of the desired operating frequency appears in the MEGACYCLES indicator window.

(3) Turn the C-4677/ARG51X 0.l-megacycle control (C-6287/ARC-51BX 0.05-megacycle control) until the decimal point and the fourth number on the C-4677/ARC-51X, or the fourth and fifth numbers on the C-6287/ARC-51BX, of the desired operating frequency appear in the MEGACYCLES indicator window.

Caution: **Once a frequency is set, allow at least 12 seconds before changing channels.**

(4) Set the C-6287/ARC-51BX SQ DISABLE switch to ON.

(5) Turn the C-4677/ARC-51X SENS control fully counterclockwise.

(6) Turn the radio set control VOL control to the midpoint of its range.

(7) Adjust the C-4677/ARC-51X SENS control so that the incoming audio signal is clear and intelligible.

(8) Adjust the radio set control VOL control to obtain a comfortable audio listening level. The audio should remain at a constant level.

(9) Depress the microphone push-to-talk switch to transmit. Speak into the microphone and listen for a sidetone in the headset.

b. Preset operation (C-6287/ARC-51BX only) (fig. 2-2).

(1) Turn the mode selector switch to PRESET CHAN.

(2) Turn the preset channel control to the desired channel, as indicated on the preset channel indicator.

(3) The transmit-receive operation is the same as described in a(6), (8), and (9) above.

c. Transmit-Receive (Guard Receiver) Operation.

(1) Turn the 10-, 1-, and 0.1-megacycle (on the C-4677/ARC-51X) or 0.05-megacycle (on the C-6287/ARC-51BX) controls to obtain any frequency in the MEGACYCLES indicator window (a(l), (2), and (3) above) greater than ±5 mc of the guard channel (243 mc).

(2) Adjust the VOL control for a comfortable audio listening level.

(3) In the C-6287/ARC-51BX, set the mode selector to the GD XMT position to tune automatically to the guard channel.

d. Adf Operation.

(1) Turn the 10-, 1-, and 0.l-megacycle (on the C-4677/ARC-51X) or 0.5-megacycle (on the C-6287/ARC-51BX) controls until the desired operating frequency is indicated in the MEGACYCLES indicator window (a(1), (2), and (3) above).

(2) Adjust the VOL and SENS controls; listen briefly to identify the station.

(3) Bearing information is obtained from the adf equipment.

e. Stopping Procedure. Set the function select switch to OFF.

Section II. PREFLIGHT (DAILY) OPERATIONAL CHECK

2-5. General

The operational checks given in paragraph 2-6 supplement the inspection procedures given in the aircraft operator's condensed checklist. The operational checks should be accomplished just before flight. The pilot or copilot should report any malfunction or failures noted in flight or during the preflight check, in accord-

ante with the requirements set forth in TM 38-750.

2-6. Operational Checks
(figs. 2-1 and 2-2)

a. General. The preflight operational checks should be performed during engine warmup in the order given below.

b. Procedures.

(1) Perform the preliminary operating procedures given in paragraph 2-3.

(2) Set the radio set control function select switch to T/R.

(3) Turn the 10-, 1-, and 0.1-megacycle (on the C-4677/ARC-51X) or 0.05-megacycle (on the C-6287/ARC-51BX) controls to the control tower frequency.

(4) Turn the C-4677/ARC-51X SENS control fully counterclockwise.

(5) Turn the VOL control to the midpoint of its range.

(6) Depress the microphone push-to-talk switch and contact the control tower.

(7) Adjust the SENS (C-4677/ARC-51X) and VOL controls to obtain a clear and comfortable audio level.

(8) Request a communications check across the equipment frequency range (225, 312, and 399 mc).

(9) Check the clarity of the received signal, the sidetone, the accuracy of tuning, and the squelch operation at each frequency.

(10) Request that the control tower furnish a signal on the guard receiver frequency (243 mc).

(11) Set the function select switch to T/R + G, and monitor the audio signal; normal audio should be heard.

(12) If the radio set is used with adf equipment, turn the 10-, 1- and 0.l-megacycle (on the C–4677/ARC-51X) or 0.05-megacycle (on the C-6287/ARC-51BX) controls to obtain the desired operating frequency in the MEGACYCLES indicator window.

(13) Set the function select switch to ADF.

(14) Monitor the adf station and note that bearing information is displayed on the adf equipment.

(15) Set the function select switch to the proper position determined by the type of operation desired (para 2–2) during flight.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-1. Scope of Maintenance

The maintenance duties assigned to the organizational electronic equipment repairman or crew chief are listed below together with a reference to the paragraphs covering the specific maintenance functions. The tools and materials required are listed in paragraph 3-2.

a. Organizational intermediate and periodic preventive maintenance checks and services (para 3-4).

b. Paragraph 3-lb deleted.

c. Cleaning (para 3-3 b).

d. Preservation (para 3-7).

e. Organizational troubleshooting (paras 3-10 and 3-11).

f. Removal and replacement of panel lamps (para 3-12).

g. Removal and replacement of receiver-transmitter (para 3-13).

h. Removal and replacement of radio set control (para 3-17).

i. Removal and replacement of external blower (para 3-15).

j. Removal and replacement of external blower filter and blower fuse F1 (para 3-14).

k. Removal and replacement of reflectometer (para 3-16).

l. Presetting channels (C-6287/ARC-5lBX only) (para 3-18).

3-2. Tools and Materials Required

a. Tool Kit, Operations Central TK-101/G.

b. Brush MIL-G-7241.

c. Lens tissue paper.

d. Trichlorotrifluoroethane (NSN 6850-00-105-3084).

e. Sandpaper, fine No. 000.

f. Safety wire, annealed corrosion-resistant, steel, spool, 0.032 in. (NSN 9505-00-554-1421).

3-3. Organizational Preventive Maintenance

NOTE

Refer to TM 750-244-2 for proper procedures for destruction of this equipment to prevent enemy use.

a. Organizational preventive maintenance procedures are designed to help maintain equipment in serviceable condition. They include items to be checked and how to check them. These checks and services, described in paragraph 3-5, outline inspections that are to be made at the periodic and intermediate maintenance intervals. Intermediate and periodic maintenance intervals depend upon the aircraft service intervals established for the aircraft in which the radio set is to be used.

(1) INTERMEDIATE AND PERIODIC PMCS are important checks to keep serious problems from suddenly happening.

(2) Use the ITEM NO. column in the PMCS table to get the number to be used in the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

b. Routine checks like CLEANING, PRESERVATION, DUSTING, WASHING, CHECKING FOR FRAYED CABLES, STOWING ITEMS NOT IN USE, COVERING UNUSED RECEPTACLES, CHECKING FOR LOOSE NUTS AND BOLTS AND CHECKING FOR COMPLETENESS are not listed as PMCS checks. They are things that you should do any time you see they must be done. If you find a routine check like one of those listed in your PMCS, it is because other operators reported problems with this item.

NOTE

When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUORO-ETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRI-FLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.

c. Deficiencies that cannot be corrected must be reported to higher category maintenance personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in TM 38-750.

3-4. Organizational Intermediate and Periodic Preventive Maintenance Checks and Services

a. General. Perform the maintenance functions indicated in the intermediate preventive maintenance checks and services chart (para 3-5) every 25 flying hours (concurrently with the aircraft intermediate preventive maintenance checks and services to reduce downtime). Refer to paragraph 3-10 (troubleshooting) for corrective measures. Equipment that has a deficiency that cannot be remedied at the organizational category must be reported to higher category maintenance personnel. Records and reports of Preventive Maintenance must be made in accordance with procedures in TM 38-750.

b. Periodic Pullout Inspection. During the aircraft preventive maintenance checks and services, the electronic equipment (including the receiver-transmitter) will be removed from the aircraft for bench tests and inspections, and replacement electronic equipments will be reinstalled from float stock. These tests and inspections are performed by direct support personnel. Perform the intermediate (para 3-5) and periodic preventive maintenance checks and services after the float stock has been installed.

3-5. Intermediate and Periodic Preventive Maintenance Checks and Services Chart

I – Intermediate Preventive Maintenance Check
P - Periodic or Phased Preventive Maintenance Check

Item No.	Interval		Item to be Inspected	Procedures
	I	P		
1	•		Mission Essential Equipment	Check for completeness and satisfactory condition of the equipment. Report missing items.
2	•	•	Pressure Indicator	Check to see that pressure indicator (fig. 1-1) shows 3 to 5 psi internal air pressure in receiver-transmitter (center head of indicator will protrude).
3	•	•	External Blower Air Filter	Remove and inspect air filter. Clean air filter in mild detergent and water. Dry and reinstall.

3-6. Cleaning

a. External Blower Air Filter.

(1) Remove the external blower air filter (para 3-14a(l) and (2)).

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

(2) Observe whether the air filter cells are clogged with dirt. If the air filter appears dirty, immerse it in a bath of cleaning compound; agitate the air filter to remove all dirt from cells.

(3) Remove the air filter from the cleaning compound and allow the air filter to dry completely before replacing it (para 3-14b(l) and (2)) in the external blower.

b. Cables, Connectors and Receptacles.

(1) Wipe dust and grime off cables, connectors, and cable clamps with a lint-free cloth moistened with the cleaning compound. Dry the parts with a clean cloth.

CAUTION

Do not direct the compressed air nozzle toward the reflectometer rf wattmeter.

(2) Remove dust from receptacles with a small, soft-bristle brush and an air jet. Use clean, dry, compressed air at a pressure of 25 to 28 pounds per square inch (psi) if a compressed air source is available.

CAUTION

Do not allow the cleaning compound to flow into sleeves or conduit covering any wires connected to the contact terminals of the receptacle.

(3) Remove dirt and any traces of oil or grease from receptacles, insulation, and contacts with the cleaning compound. Apply the cleaning compound sparingly with a small camel's-hair brush.

c. Lamps, Lampholders, and Lenses (C-4677/ARC-51X Only).

(1) Clean the dial lamps with a lint-free cloth moistened with the cleaning compound. Dry and polish the dial lamps with a clean, dry lint-free cloth.

(2) Clean the exteriors of the lampholders with a soft-bristle brush and an air jet.

(3) Wipe the lens surfaces and the MEGACYCLES indicator window clean with a lint-free cloth moistened with the cleaning compound. Wipe dry and polish with a fine lens tissue paper.

d. Exterior Surfaces, Front Panels, and Control Knobs.

(1) Use a soft, damp, clean cloth and an air jet to remove dust and grime.

(2) Wipe off grease or oil with a cloth moistened with the cleaning compound.

3-7. Preservation

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB 43-0118.

Paragraph 3-8 deleted.

Paragraph 3-9 deleted.

Section II. ORGANIZATIONAL TROUBLESHOOTING

3–10. General

Troubleshooting procedures for Radio Sets AN/ARC-51X and AN/ARC-51BX are based on the operational checks contained in the intermediate and periodic preventive maintenance checks and services chart (para 3-5). To troubleshoot the radio set, perform the procedures in the chart and proceed through the sequences until an abnormal indication or result is observed. If an abnormal indication is observed, perform the checks and corrective measures indicated in the troubleshooting chart (para 3—11). If the recommended corrective measures do not correct the trouble, higher category maintenance is required.

3-11. Organizational Troubleshooting Chart

Item No.	*Trouble symptom*	*Probable trouble*	*Checks and corrective measures*
5	External blower does not operate.	*a.* External blower (fig. 1-4) fuse burned out, or defective external blower.	*a.* Remove external blower air filter (para 3-14a) and check fuse F1; replace if defective. Replace external blower (para 3-15).
		b. Defective radio set control or receiver-transmitter.	*b.* Check by substitution (para 3-13 and 3-17) ; refer defective unit to higher category of maintenance.
6	*a.* No audio in headset	*a.* Defective headset or receiver-transmitter.	*a.* Replace defective headset. If headset is good, replace receiver-transmitter (para 3-13). Higher category of maintenance required.
	b. Radio set control SENS control does not cut off audio completely at fully counterclockwise position (C-4677/ARC-51X only).	*b.* Defective SENS control, or malfunction in receiver-transmitter.	*b.* Check radio set control and receiver-transmitter by substitution; replace defective unit (paras 3-13 and 3-17).
7	SQ DISABLE switch does not function properly (C-6287/ARC-51BX only).	Defective SQ DISABLE switch, or malfunction in receiver-transmitter.	Check radio set control and receiver-transmitter by substitution (paras 3-13 and 3-17).
8	Headset audio level cannot be controlled by radio set control.	Defective radio set control VOL control.	Replace radio set control (para 3–17) ; higher category maintenance required.
9	No audio tone in headset during channel-changing cycle.	Fault in receiver-transmitter.	Replace receiver-transmitter (para 3–13) ; higher category maintenance required.
10	Preset channel selection inoperative (C–6287/ ARC-51BX only).	Defective radio set control or receiver-transmitter.	Check radio set control and receiver-transmitter by substitution (paras 3-13 and 3-17).
11	Transmitter power output indication is less than 16 watts.	*a.* Defective receiver-transmitter	*a.* Replace receiver-transmitter (para 3-13); higher category maintenance required.
		b. Defective reflectometer	*b.* Replace reflectometer (para 3–16); higher category maintenance required.
12	Reflected power indication is more than 5 watts.	*a.* Defective receiver-transmitter	*a.* Replace receiver-transmitter (para 3-13) ; higher category maintenance required.
		b. Improper cable connections between receiver-transmitter and uhf antenna.	*b.* Check antenna cable connections; replace defective cable.
		c. Defective reflectometer----------	*c.* Replace reflectometer (para 3-16) ; higher category maintenance required.
13	No sidetone audio in headset during transmission.	Defective receiver-transmitter	Replace receiver-transmitter (para 3–13) ; higher category maintenance required.
14	Radio set fails to provide two-way communications with base control tower, or other uhf receiver-transmitter, on all assigned test frequencies.	Defective receiver-transmitter	Replace receiver-transmitter (para 3-13) ; higher category maintenance required.

Item No.	Trouble symptom	Probable trouble	Checks and corrective measures
15	No guard receiver audio output.	Defective receiver-transmitter, or radio set control.	Check receiver-transmitter and radio set control by substitution; replace defective unit (paras 3-13 and 3–17). Higher category maintenance required.
16	Adf equipment does not operate properly.	*a.* Defective receiver-transmitter, or radio set control.	*a.* Check receiver-transmitter and radio set control by substitution (paras 3-13 and 3-17); replace defective unit. Higher category maintenance required.
		b. Defective adf equipment -------	*b.* Refer to applicable technical manual to check operation of adf equipment.

3-12. Removal and Replacement of Radio Set Control Panel Lamps (C-1677/ARC-51X Only)

a. Turn each lampholder (fig. 2-1) counterclockwise to unscrew it from the front panel of the radio set control.

b. Extract the lamp from the lampholder with the thumb and forefinger; pull straight outward.

c. Insert a new lamp into the lampholder by pressing on the contact end.

d. Replace the lampholder on the front panel by screwing it into the socket in a clockwise direction; tighten securely.

3-13. Removal and Replacement of Receiver-Transmitter (fig. 1-1)

a. Removal.

(1) Disconnect the antenna and the power and control cables from the receiver-transmitter.

(2) Remove the safety wires (not shown) from the wingnut fasteners on the mounting base. Loosen the wingnut fasteners and swivel them upward to disengage the latches on the mounting.

(3) Grasp both handles on the receiver-transmitter dust cover and slide the unit off the mounting.

b. Replacement.

(1) Slide the receiver-transmitter onto the mounting.

(2) Swivel the wingnut fasteners downward to engage the latches on the mounting. Tighten the wingnut fasteners, and secure the safety wires (TM 11-530) between the mounting and each wingnut fastener.

(3) Connect the antenna and the power and control cables.

3-14. Removal and Replacement of External Blower Air Filter and Fuse F1 (fig. 1-4)

a. Removal.

(1) Remove the receiver-transmitter from the mounting (para 3-13) to reach the external blower.

(2) Loosen the two knurled thumbscrews and remove the air filter from the external blower.

(3) Remove l-ampere fuse F1 from the air filter holder.

b. Replacement.

(1) Replace fuse F1 in the air filter holder.

(2) Replace the air filter and tighten the thumbscrews on the top of the air filter.

(3) Replace the receiver-transmitter on the mounting (para 3-13b).

3-15. Removal and Replacement of External Blower

a. Removal.

(1) Remove the receiver-transmitter from the mounting (para 3-13) to reach the external blower.

(2) Use a No. 6 Allen wrench to loosen the four captive retaining screws which fasten the external blower to the receiver-transmitter (fig. 1-4) .

(3) Pull the external blower away from the receiver-transmitter to disconnect the external blower connector (not shown) from the receiver-transmitter.

b. Replacement.

(1) Align the four captive retaining screws on the external blower with the mounting holes on the receiver-transmitter.

Caution: **Do not twist, turn, or force the external blower plug into the receiver-transmitter jack.**

(2) Push the external blower straight forward to connect the external blower plug with the jack on the receiver-transmitter.

(3) Fasten the external blower to the receiver-transmitter with the four captive retaining screws; tighten securely with the No. 6 Allen wrench.

3-16. Removal and Replacement of Reflectometer

a. Removal.

(1) Disconnect pendant cable connector P1 from the receiver-transmitter jack (figs. 1-1 and 1-5).

(2) Disconnect antenna cable connector J1 from the reflectometer antenna connector (fig. 1-5) .

(3) Loosen the three Phillips-head captive retaining screws which fasten the reflectometer to the receiver-transmitter dust cover.

b. Replacement.

(1) Align the three Phillips-head captive retaining screws on the reflectometer with the mounting holes on the receiver-transmitter dust cover; tighten the captive screws securely.

(2) Connect pendant cable connector P1 to the receiver-transmitter jack (fig. l-l).

(3) Connect antenna cable connector J1 to the reflectometer antenna connector.

3-17. Removal and Replacement of Radio Set Control

a. Removal.

(1) Loosen the four captive Dzus fasteners which secure the radio set control to the aircraft mounting panel (fig. 1–1). (Remove the eight Dzus fasteners on the C-6287/ARC-5IBX (fig. 1-2).)

(2) Pull the radio set control out of the aircraft mounting panel and disconnect the cable from the rear of the radio set control.

b. Replacement.

(1) Connect the radio set control cable to the rear of the radio set control.

(2) Insert the radio set control into the aircraft mounting panel and fasten the four Dzus fasteners securely. (Fasten the eight Dzus fasteners on the C-6287/ARC-51BX (fig. 1-2).)

3-18. Presetting Channels (C-6287/ARC-51BX Only)

Perform the procedures given below to preset channels to desired frequency.

a. Loosen the two holddown screws (fig. 1-2) in the memory drum access door and open the door (fig. 2-2).

b. Turn the preset channel control to the channel to be preset, as indicated on the right side of the memory drum (fig. 2–2). Disregard the channel number shown in the preset channel indicator; this is not the channel being preset.

c. With the preset tool mounted in the memory drum access area, move the eight adjustable pins according to designation and letter code on the memory drum access door cover to preset the channels to desired frequency. The three center digits (252) are selected with two pins for each number according to the letter code on the memory drum access door cover. The hundreds digit (2 or 3) and the hundredths digit (0 to 5) are selected by a single pin for either digit, as designated on the control.

Note. **Make sure that the adjustable pins are firmly seated before rotating the memory drum to the next channel.**

d. Record the channel frequencies on the chart provided on the front of the memory drum access door, in accordance with the channel indicated on the right side of the memory drum.

e. Replace the preset tool in its holder.

f. Close the memory drum access door and tighten the two holddown screws.

APPENDIX A

REFERENCES

Following is a list of applicable publications available to the organizational repairman of Radio Sets AN/ARC-51X and AN/ARC-51BX.

DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
TB 434118	Field Instructions for Painting and Preserving Electronics Command Equipment, Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.

APPENDIX C
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations for AN/ARC-51X and AN/ARC-51BX Radio Sets. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy *of* the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, model (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, end item or system.

j. Overhaul. That periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero three age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

C-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column *3* lists the functions to be performed on the item listed in column 2.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate ''worktime" figures will be shown for each category. The number of man-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time and quality assurance/quality control time in additional to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C . . . . . Operator/crew
O . . . . . .Organizational
F . . . . . Direct support
H . . . . . . General support
D . . . . . Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

C-4. Tool and Test Equipment Requirements (Table 1)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

SECTION II MAINTENANCE ALLOCATION CHART FOR RADIO SETS AN/ARC-51X AND AN/ARC-51BX

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT
			C	O	F	H	D	
00	RADIO SETS AN/ARC-51X AND AN/ARC-51BX	Inspect		.5				17
		Test		1.0				7
	SEE NOTE 1.	Service		.5				17
		Adjust		1.0				7 & 17
		Replace		1.0				17
		Repair		2.0				7 & 17
		Inspect			.5			
		Test			1.0			1
	SEE NOTE 2.	Service			.5			thru
		Adjust			1.0			18
		Repair			2.0			
		Inspect				.5		
		Test				1.0		1
	SEE NOTE 3.	Service				.5		thru
		Align				1.0		18
		Repair				2.0		
		Overhaul					10.0	
		Rebuild					20.0	
01	CONTROL, RADIO SET C-4677/ARC-51X AND C-6287/ARC-51BX	Inspect		.5				17
		Test		1.0				7
	SEE NOTE 4.	Service		.5				17
		Adjust		1.0				7 & 17
		Replace		1.0				17
		Repair		2.0				7 & 17
		Inspect			.5			
		Test			1.0			7,8,
		Service			.5			15, & 16
		Adjust			1.0			
		Repair			2.0			
02	MOUNTING MT-2653/ARC	Inspect		.5				
		Test		1.0				
		Service		.5				
		Replace		1.0				17
		Repair			1.0			16
03	RECEIVER-TRANSMITTER SYSTEM							
0301	COOLER, AIR ELECTRONIC EQUIPMENT MD-615/ARC-51X	Inspect		.25				
		Service		.25				
		Replace		.5				17
		Test			.5			8 & 15
		Repair			.5			8 & 15
0302	INDICATOR, STANDING WAVE RATIO ID-1003/ARC	Inspect		.25				
		Test		.25				
		Service		.25				
		Replace		.50				17
		Test			1.0			8 & 15
		Repair			2.0			8, 14, & 15
0303	RECEIVER-TRANSMITTER, RADIO RT-702/ARC-51X AND RT-742/ARC-51BX, RT-742B/ARC-51BX, RT-742C/ARC-51BX	Inspect		.5				
		Test		1.0				
	SEE NOTE 5.	Service		.5				
		Replace		1.0				
		Repair		2.0				

SECTION II MAINTENANCE ALLOCATION CHART FOR RADIO SETS AN/ARC-51X AND AN/ARC-51BX

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT
	SEE NOTE 6.	Test			1.0			
		Service			.5			
		Adjust			1.0			
		Repair			2.0			
	SEE NOTE 7.	Test				1.0		
		Service				.5		
		Align				2.0		
		Repair				3.0		
030301	AMPLIFIER, INTERMEDIATE FREQUENCY 1 AND 2	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030302	AMPLIFIER, INTERMEDIATE FREQUENCY 3	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030303	AMPLIFIER, RADIO FREQUENCY POWER	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030304	SPECTRUM GENERATOR	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030305	AUDIO MODULATOR	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			

SECTION II MAINTENANCE ALLOCATION CHART FOR RADIO SETS AN/ARC-51X AND AN/ARC-51BX

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030306	DIRECT CURRENT POWER SUPPLY	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030307	GUARD RECEIVER	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030308	RADIO FREQUENCY PREAMP RECEIVER	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		
030309	RECEIVER-TRANSMITTER SUBASSEMBLY	Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Adjust				1.0		18
		Repair				2.0		
030310	MECHANICAL TUNER	Inspect			.5			
		Test			1.0			1
		Service			.5			thru
		Adjust			1.0			18
		Replace			1.0			
		Inspect				.5		
		Test				1.0		1
		Service				.5		thru
		Align				1.0		18
		Repair				2.0		

(1) Organizational testing is limited to equipment operation and continuity test of connecting cables. Adjustment is to pre-set frequency channels. Replace items (black-boxes) and repair (limited) as indicated in break-down.
(2) Repair by replacement of individual modules as indicated. Full repair to control unit and mounting.
(3) Repair modules. Complete overhaul and rebuild of entire radio set at depot level.
(4) Test is limited to equipment operation. Repair is limited to replacements of lamps and knobs.
(5) Testing is limited to equipment operation. Repair is limited to replacement of internal fuses.
(6) Repair of replacement of individual modules as indicated.
(7) Repair modules. Complete overhaul and rebuild at depot level.

TABLE 1. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR RADIO SETS AN/ARC-51X AND AN/ARC-51BX

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F,H,&D	SPECTRUM ANALYZER TS-723/U	6625-00-668-9418	
2	F,H,&D	SIGNAL GENERATOR AN/URM-127(*)	6625-00-783-5965	
3	F,H,&D	TEST SET, RADIO FREQUENCY POWER AN/URM-120	6625-00-813-8430	
4	F,H,&D	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207(*)	6625-00-911-6368	
5	F,H,&D	R F SIGNAL GENERATOR AN/URM-25D	6625-00-649-5193	
6	F,H,&D	MAINTENANCE KIT, ELECTRONIC EQUIPMENT MK-731(*)/ARC-51X	6625-00-082-4057	
7	O	MULTIMETER AN/URM-105	6625-00-581-2036	
8	F,H,&D	MULTIMETER AN/USM-223	6625-00-999-7465	
9	F,H,&D	MULTIMETER ME-26(*)/U	6625-00646-9409	
10	F,H,&D	OSCILLOSCOPE AN/USM-281A	6625-00-228-2201	
11	F,H,&D	MULTIMETER TS-585(*)/U	6625-00-244-0501	
12	F,H,&D	TEST SET, ELECTRON TUBE TV-2(*)/U	6625-00-699-0263	
13	F,H,&D	TEST SET, ELECTRON TUBE TV-7(*)/U	6625-00820-0064	
14	F,H,&D	TEST SET, SEMICONDUCTOR DEVICE TS-1836/U	6625-00-893-2628	
15	F,H,&D	TOOL KIT ELECTRONIC EQUIPMENT TK-105(*)/G	5180-00-610-8177	
16	F,H,&D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100(*)/G	5180-00-605-0079	
17	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101(*)/G	5180-00-064-5178	
18	F,H,&D	GENERATOR SIGNAL AN/USM-44(*)	6625-00-669-4031	

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