

**TECHNICAL MANUAL**

**MAINTENANCE INSTRUCTIONS  
WITH ILLUSTRATED PARTS BREAKDOWN  
(DEPOT)**

**REMOTE CONTROL UNIT,  
C-11329/URC, P/N 10088-0000**

Harris Corporation, RF Communications Group  
F04606-82-D-0079

**BASIC AND ALL CHANGES  
HAVE BEEN MERGED TO MAKE  
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## SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

### KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not replace components with the power supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position, due to charges retained by capacitors. To avoid casualties, always remove power and discharge circuits to ground before touching any circuit components. Remove watches and rings before performing any maintenance procedures.

### DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

### RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

Cardiopulmonary resuscitation procedures are outlined in T.O. 31-1-141-1, and annual refresher training requirements are outlined in AFOSH STD 127-50.

The following warnings appear in the text in this volume, and are repeated here for emphasis.

**WARNING**

Dangerous voltages exist in this radio equipment. Before removing any covers, disconnect the primary power.

### HANDLING OF ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESD)

Electrostatic Discharge Sensitive Devices (ESD) must be handled with certain precautions that must be followed to minimize the effect of static build-up. Consult T.O. 00-25-234, DOD Std-1686, and DOD HDBK 263. ESD Devices are identified in this technical order by the following symbol:



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## GLOSSARY

A	Ampere(s)
A/D	Analog-to-Digital (Converter)
AFSK	Audio frequency shift keying; a baseband modulation scheme in which two audio frequencies are used to represent binary coded data; the frequency is shifted to one frequency to represent a 1 (mark) and to the other to represent a 0 (space)
AGC	Automatic gain control
ALE	Address latch enable
AM	Amplitude modulation; a modulation scheme in which the carrier is made to vary in amplitude in accordance with the modulating signal
AME	Amplitude modulation equivalent
ANTIVOX	Prevents false VOX operation; see VOX
BFO	Beat Frequency Oscillator, used in SSB detection circuits
BIT	Built-in Test
BIU	Bus interface unit
BW	Bandwidth
CPU	Central processing unit
CREV	Converter reverse
CW	Continuous wave; a wave that does not vary in amplitude or frequency and is turned on and off to carry intelligence, e.g., Morse Code
D/A	Digital-to-Analog (Converter)
dB	Decibel(s)
dBm	Decibel(s) relative to one milliwatt
EMI	Electromagnetic interference
EPROM	Erasable programmable read-only memory
EU	Execution unit
HF	High frequency; a radio frequency band extending from about 3 MHz to 30 MHz; in this manual, HF includes 1.6 to 30 MHz
HV	High voltage
IF	Intermediate frequency
IM	Intermodulation (distortion)
I/O	Input/Output
KREV	Keyer reverse
LCD	Liquid crystal display
LED	Light emitting diode
LPA	Linear power amplifier
LSB	Lower sideband; a modulation scheme in which the intelligence is carried on the first sideband below the carrier frequency; see SSB
MIC	Microphone
mA	Milliamperere(s)
mV	Millivolt(s)
NBSV	Narrow band secure voice
PEP	Peak envelope power
PPC	Peak power control
PWB	Printed wiring board
RAM	Random access memory
rms	Root mean square
RTC	Real time clock
RX	Receive

GLOSSARY (Continued)

S TONE	Sidetone
SSB	Single sideband; a modulation scheme in which the intelligence is carried by one of the carrier sidebands, the other sideband and the carrier center frequency being suppressed
TGC	Transmitter gain control
TX	Transmit
uA	Microampere(s)
uP	Microprocessor
USB	Upper sideband; a modulation scheme in which the intelligence is carried on the first sideband above the carrier frequency; see SSB
uV	Microvolt(s)
Vac	Volts, alternating current
VCO	Voltage controlled oscillator
Vdc	Volts, direct current
VOX	Voice operated transmission
VSWR	Voltage standing wave ratio; the ratio of the maximum to the minimum voltage of a standing wave on a radio frequency transmission line
W	Watt(s)



## INTRODUCTION

The purpose of this manual is to provide information necessary for the depot-level maintenance of Remote Control Unit, C-11329/URC, manufactured by the RF Communications Group of Harris Corporation, Rochester, New York. The manual is divided into three chapters. The contents of each chapter are briefly described in the following paragraphs.

### NOTE

This manual only contains three chapters, because chapters 1-5 are contained in the On-Equipment Manual, T.O. 31R2-2URC-91. For a description of the contents of these chapters, see the INTRODUCTION in T.O. 31R2-2URC-91.

Chapter 6 describes the depot-level maintenance procedures. The maintenance procedures in this chapter are based on performance testing and trouble analysis of the subassembly or PWB to locate and replace faulty parts at the lowest replaceable unit level (LRU).

Chapter 7 contains the Illustrated Parts Breakdown (IPB) information at the depot level. This includes assemblies and parts that may be replaced at the depot location.

Chapter 8 contains foldout (FO) drawings, which consist of the schematic diagrams for all the PWB assemblies. A cross reference list is also provided. The diagrams are numbered FO-1, FO-2, etc. They are printed on sheets with page-size blank aprons to permit viewing the diagram with the rest of the book closed or opened to another page.

The following specifications, standards, and publications were used in the preparation of this manual.

**APPLICABLE SPECIFICATIONS**

<b>SPECIFICATION</b>	<b>NAME</b>
MIL-M-38798B, para. 3.4	Combined Operation and Maintenance Instructions Manual (Equipment).
MIL-M-38807, Amend. 4	Preparation of Illustrated Parts Breakdown.
MIL-M-38790 and MIL-M-38784A	General Requirements for Preparation of Technical Manuals.

**APPLICABLE STANDARDS**

<b>STANDARD</b>	<b>NAME</b>
MIL-STD-12	Abbreviation for use on Drawings and in Technical Type Publications.
MIL-STD-15-1A	Graphic Symbols for Electrical Components.
MIL-STD-17-1	Mechanical Symbols.
MIL-STD-806	Graphic Symbols for Logic Diagrams.

**APPLICABLE PUBLICATIONS**

<b>PUBLICATION</b>	<b>NAME</b>
DOD 5200.20	Distribution Statements on Technical Documents.
USAS Y14.15-1966	Electrical and Electronic Diagrams.
USAS Y32.16-1968	Electrical and Electronic Reference Designations.
T.O. 31-1-141 (Series)	Technical Manual-Basic Electronic Technology and Testing Practices.

## CHAPTER 6

### MAINTENANCE

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**WARNING**

Dangerous voltages exist in this radio equipment. Before removing any covers, disconnect the primary power.

#### Section I. INTRODUCTION

**6-1. CHAPTER ORGANIZATION.** This chapter is divided into three sections. Section I tells how the chapter is organized. Section II contains alignment procedures for the replaceable modules. This information is also contained in the On-Equipment Manual T.O. 31R2-2URC-91, and is repeated here for convenience. Section III consists

of diagnostic procedures which will enable you to troubleshoot faulty modules to the component level. These procedures are based on use of the BIT feature. For more information on BIT, as well as removal/replacement procedures and periodic maintenance procedures, see the On-Equipment Manual, T.O. 31R2-2URC-91.

**Section II. ALIGNMENT PROCEDURES**

**6-2. INTRODUCTION.** This section contains instructions for checking and adjusting the replaceable subassemblies in the Remote Control Unit. This section also contains circuit board layouts

to help you identify the components that require adjustment. To do the procedures described in this section, you need the test equipment listed in Table 6-1 or equivalent equipment.

**Table 6-1. Test Equipment**

Generic Name	Military Designation	Manufacturer Model No.	National Stock No.	Required Range
Signal Generator (RF)	SG-1093/U	Hewlett Packard, Model 8640B	6625-00-318-6304	-120 to +20 dBm; 440 KHz to 70.5 MHz in 10 Hz increments
Signal Generator (audio)		Hewlett Packard, Model 204D	6625-00-427-4513	-70 to +10 dBm; 300 Hz to 3.3 KHz
AC Voltmeter		Hewlett Packard, Model 400F	6625-00-403-6526	300 uV to 3 V (audio frequency)
Digital Multimeter		Fluke, Model 8012A	6625-01-140-0221	200 mV to 250 Vac; 200 mV to 40 Vdc; 0 to 20 megohms
PROM Programmer		Data I/O, Model System 19	7045-01-115-8993	
100 Watt Transceiver	RT-1446/URC	RF Communications, Model RF-350	5820-01-162-3406	
Remote Control Unit	C-11329/URC	RF Communications, Model RF-352	5820-01-160-9360	

NOTE: Equivalent Items Authorized

**6-3. ALIGNMENT PROCEDURES**

**NOTE**

After each of the following alignment procedures, disconnect test equipment and reconfigure equipment (module or circuit card) to normal operating condition.

**NOTE**

See figure 1-3 in the On-Equipment Manual, T.O. 31R2-2URC-91, for subassembly locations.

a. FRONT PANEL PWB ASSY, A1A1.

Preset as follows:

- Squelch.....fully counterclockwise
- RF gain.....fully clockwise
- Audio gain.....for comfortable listening level.

b. DISPLAY ASSY, A1A2.

No adjustments.

c. AUDIO/MICROPROCESSOR PWB ASSY, A2  
(Fig. 6-1)

**(1) R244, LINE RX AUDIO Adjustment**

- (a) Rotate R244 maximum counterclockwise.
- (b) With the Remote Control Unit connected to a 100 Watt Transceiver and REMOTE operation selected on the transceiver front panel, enter a frequency of 2.456 MHz on the Remote Control Unit's front panel.
- (c) Select USB mode and the LINE meter function.
- (d) Activate the BIT Oscillator in the transceiver by moving the jumper from pins 1 and 2 on J7 of the Low Pass Filter PWB Assy to pins 2 and 3 (located in transceiver).
- (e) At the transceiver front panel, adjust the LINE potentiometer for -10 dBm, as

indicated at the transceiver front panel meter.

- (f) On the Remote Control Unit, select MIC as the audio source.
- (g) Observe the LINE meter at the Remote Control Unit's front panel. If the meter reads less than -10 dBm, note the level and continue with the next step. If it is -10dBm or more, this alignment is complete (-9 dBm is more than -10 dBm).
- (h) Set the meter to PATCH.
- (i) Set the PATCH RX potentiometer on the Remote Control Unit's front panel for -10 dBm, as indicated on the PATCH meter.
- (j) Adjust R244 to raise the PATCH level by the same amount that the LINE level at the Remote Control Unit was below the LINE level at the transceiver.

**(2) R59, AUDIO 2 RX AUDIO Adjustment**

Before adjusting R59, check that R244 is adjusted correctly.

- (a) With the Remote Control Unit connected to a 100 Watt Transceiver and REMOTE operation selected on the transceiver front panel, enter a frequency of 2.456 MHz on the Remote Control Unit's front panel.
- (b) Select USB.
- (c) Activate the BIT Oscillator in the transceiver by moving the jumper from pins 1 and 2 on J7 of the Low Pass Filter PWB Assy to pins 2 and 3.
- (d) Connect a 600-ohm resistor across pins 2 and 3 of connector J3 (AUDIO 2) on the back of the Remote Control Unit.

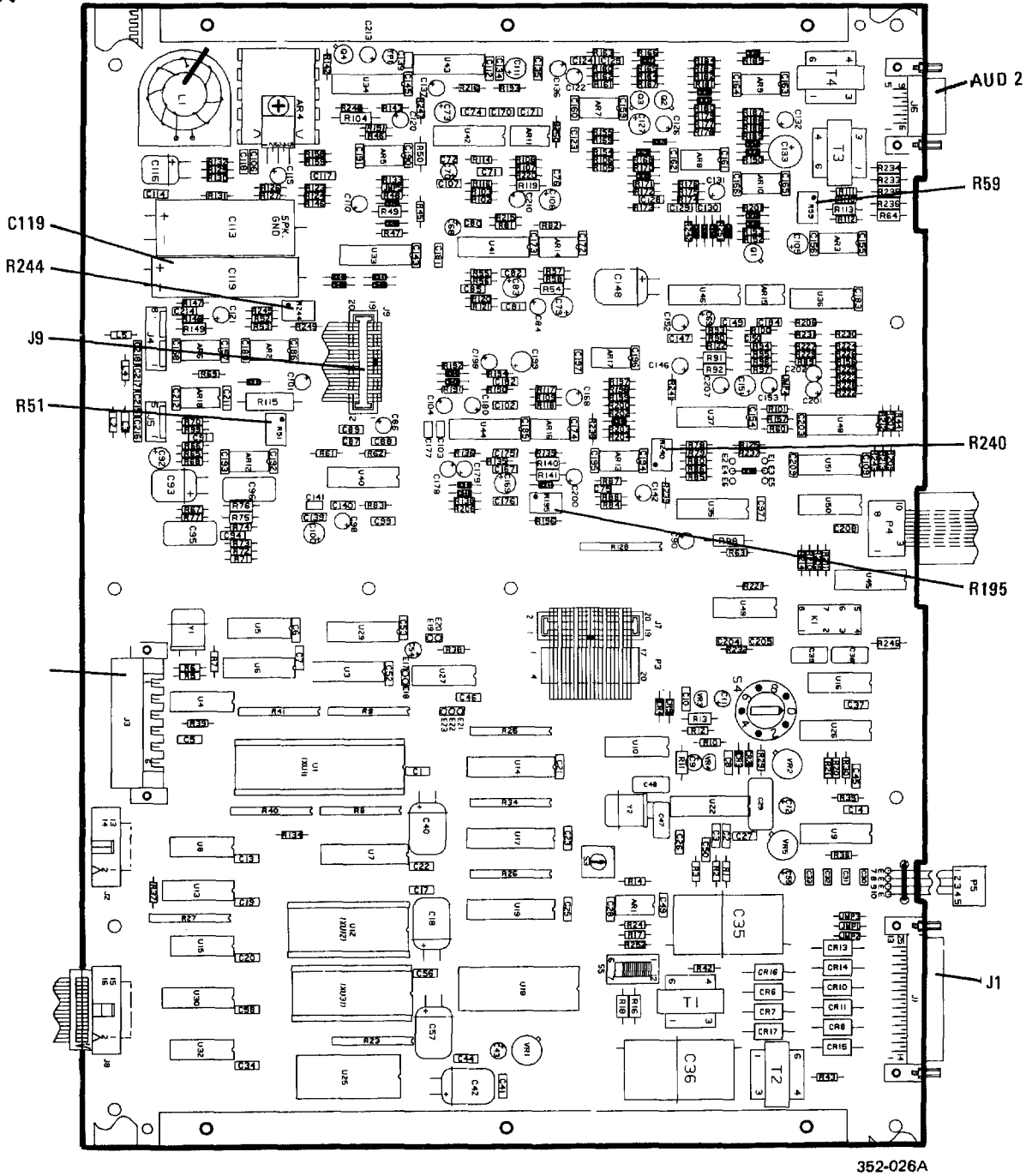


Figure 6-1. Audio/Microprocessor PWB Assy

(e) Connect an audio voltmeter across the resistor, and adjust R59 for +10 dBm on the meter.

**(3) R51, AUDIO 2 TX AUDIO Adjustment**

- (a) Connect an audio signal generator to pins 4 and 5 of the AUDIO 2 connector J3 at the rear of the Remote Control Unit.
- (b) On the Remote Control Unit front panel, select AUDIO 2 as the AUDIO SOURCE.
- (c) Set the meter to AUDIO.
- (d) Adjust the signal generator output to +10 dBm at 1 KHz, and adjust R51 for 0 dBm on the Remote Control Unit's front panel meter.

**NOTE**

This is the correct setting for interfacing with the KY-65 or KY-75 communications secure voice equipment. For interfacing with other equipments, R51 should be set for a 0 dBm AUDIO meter reading with the nominal audio output level of the external equipment applied to J3.

**(4) R195, VOX Voice Delay Adjustment**

This potentiometer sets the "hang time" for VOX voice keying; that is, it determines the amount of time it takes for the Remote Control Unit to unkey after audio has ceased. This adjustment is preferential, but the normal factory setting is 1/2 to 3/4 second. Select VOX voice operation. Using MIC as the AUDIO SOURCE, adjust R195 so that at the end of a test count, the desired time elapses before the unit unkeys.

**(5) R240, Sidetone Level Adjustment**

- (a) Set Remote Control Unit to USB, Meter to Audio, and Audio Source to Patch.

(b) Connect an Audio Signal/Generator to the "2W" Patch Terminals on TB1 at the rear of the Remote Control Unit. Set the Generator to 1 KHz at -10 dBm.

(c) Inject a 40.454 MHz signal into J1 on the transceiver A7 Assy. at -40 dBm.

(d) Connect J1 on the transceiver to a dummy load.

(e) Connect an oscilloscope to the negative lead of C119.

(f) Key the Remote Control Unit, select sidetone (ensure audio meter on remote front panel indicates 0dB. If it does not, adjust Patch Xmit for 0dB).

(g) Adjust R240 so that for a given volume control setting on the Remote Control Unit's front panel, the audio level of the Xmit Sidetone is approximately the same as the Receive Audio level.

**d. MULTIVOLTAGE SUPPLY ASSY, A3 (Fig. 6-2)**

**(1) R61 (+5 V Adjustment)**

Adjust R61 for +5 Vdc at E6 (blue wire) on the Multivoltage Supply PWB Assy.

**(2) R4 (+15 V Adjustment)**

Adjust R4 for +15 Vdc at E3 (orange wire) on the Multivoltage Supply PSB Assy.

**e. AUDIO INTERFACE PWB ASSY, A4 (Fig. 6-3)**

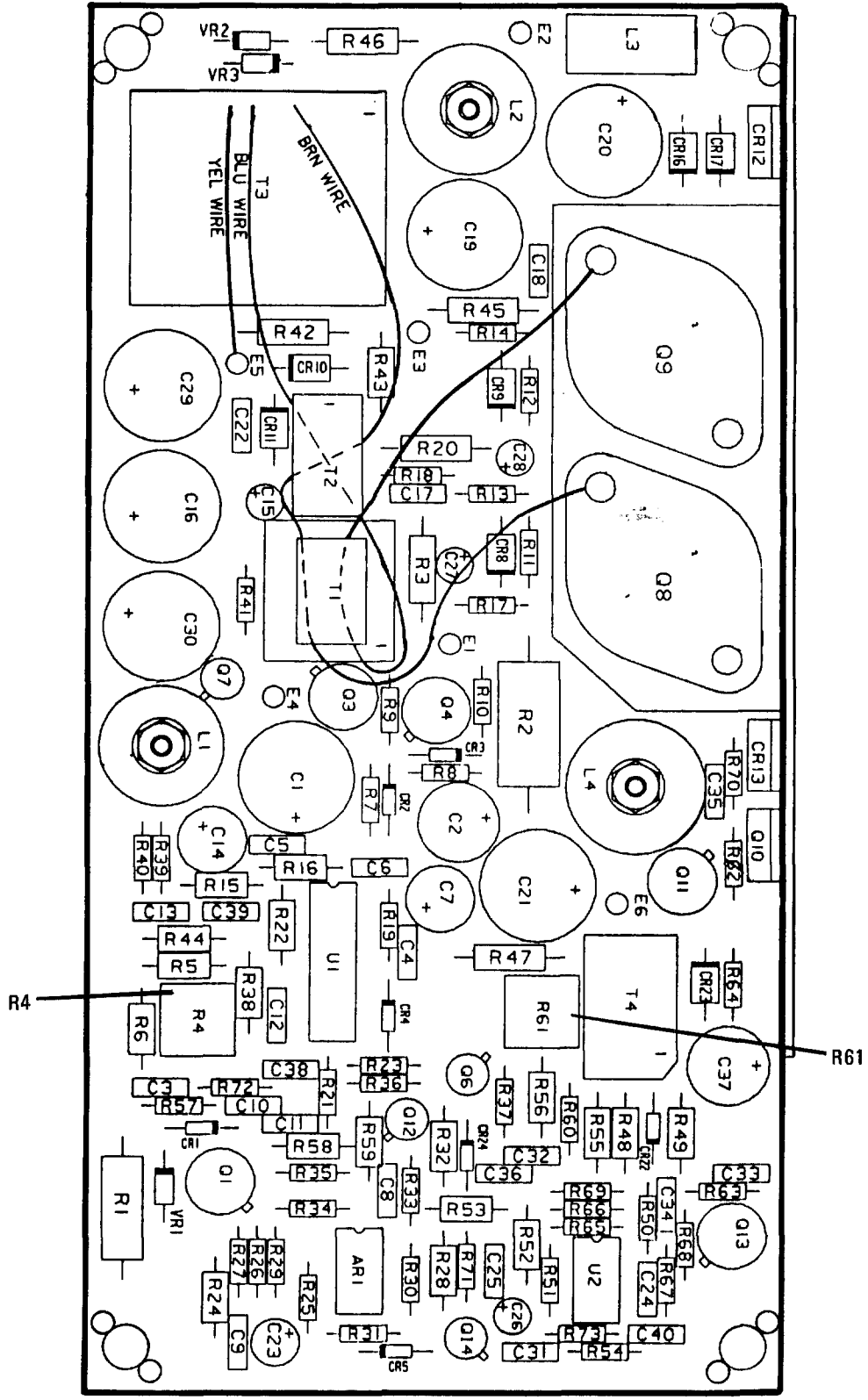
**(1) PATCH Nulling Potentiometer R1**

**NOTE**

This adjustment has an effect only when using a 2-wire PATCH hookup. The Remote Control Unit must be connected to and controlling a 100 Watt Transceiver.

(a) Set the PATCH selector switch (S1) on the Audio Interface PWB Assy to the "2W" position.

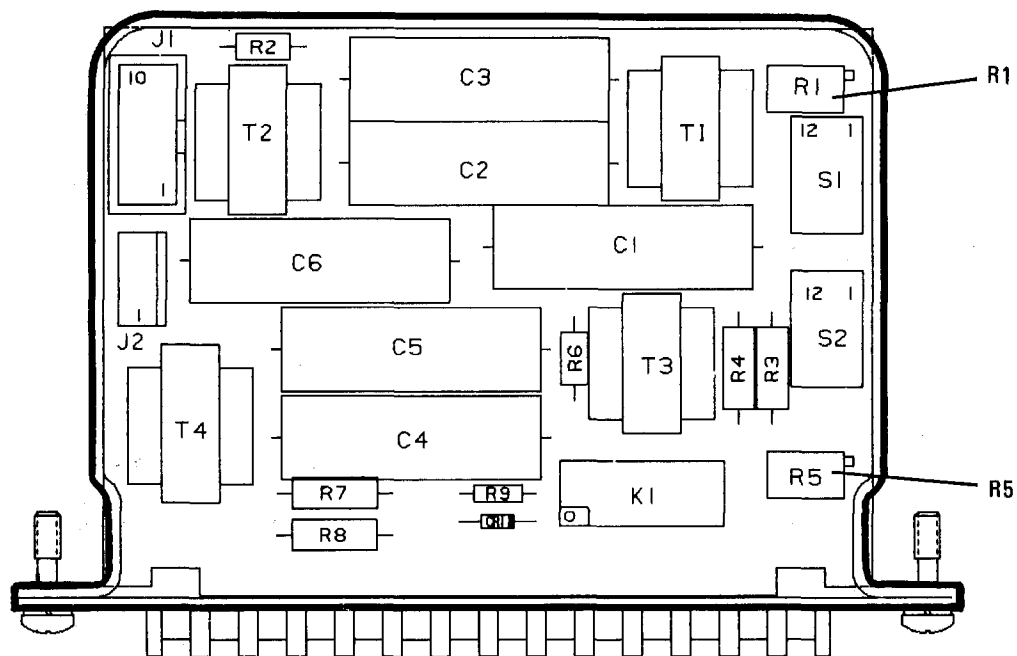
(b) Connect the nominal 600-ohm termination across the "2W" PATCH



350-086A

Figure 6-2. Multivoltage Supply Assy





350-087A

Figure 6-3. Audio Interface PWB Assy

terminals on TB1 (pins 2 and 3) at the rear of the Remote Control Unit.

- (c) Connect an RF signal generator to the antenna jack (J1) at the rear of the transceiver.
- (d) Set the signal generator for a carrier frequency of 15 MHz at approximately -20 dBm. Select a modulating frequency of 1 KHz at 50% modulation.
- (e) On the Remote Control Unit, select AME at 15 MHz.
- (f) Select PATCH for the audio source, and select AUDIO for the meter.
- (g) Adjust potentiometer R1 (accessible through a hole in the Audio Interface PWB Assy's frame) for a null (minimum reading) on the front panel meter of the Remote Control Unit.

**(2) LINE Nulling Potentiometer R5**

**NOTE**

This adjustment only affects a 2-wire LINE hookup (as when a Remote Control Unit is connected to the 100 Watt Transceiver). For this procedure, the Remote Control Unit must be connected to a 100 Watt Transceiver. The transceiver must be in REMOTE and connected to a dummy load.

- (a) On the transceiver, select USB mode at any frequency.
- (b) Select MIC as the AUDIO SOURCE.
- (c) Set the LINE selector switch (S2) on the Audio Interface PWB Assy to the "2W" position on both the transceiver and the Remote Control Unit.
- (d) Turn on the internal BIT test tone of the Remote Control Unit by moving the jumper plug (PN65474-001) from between E22 and E23 to between E22 and E21 on the Audio/Microprocessor PWB Assy.
- (e) Key the Remote Control Unit using the 2ND, TX KEY buttons on the front panel.
- (f) Turn the volume control to maximum and adjust R5 on the Audio Interface PWB Assy for minimum audio on the speaker.
- (g) Turn the volume control to minimum and unkey the Remote Control Unit.
- (h) Place the jumper plug on the Audio/Microprocessor PWB Assy to its original position (between E22 and E23).

**MAINTENANCE**

**Section III. DIAGNOSTIC PROCEDURES**

**6-4. DEPOT MAINTENANCE PHILOSOPHY.** The maintenance procedures presented in this chapter assume that equipment problems have already been isolated to one of the replaceable subassemblies listed below. This has been accomplished in the field using the BIT (Built-In Test) troubleshooting approach. (For a detailed description of BIT, see Chapter 6 in the On-Equipment Manual for the Remote Control Unit, T.O. 31R2-2URC-91.) As a depot maintenance technician, your job is to take these defective subassemblies returned from the field, swap them with known good subassemblies in a properly functioning Remote Control Unit or 100 Watt Transceiver (the "test bed"), and troubleshoot the defective subassemblies to the component level. Once you have identified and replaced the faulty component (resistor, capacitor, transistor, etc.), you will then perform whatever adjustment or alignment procedures are required to restore the subassembly to peak operating condition. To accomplish these tasks, you will need the procedures contained in this chapter, a complete set of schematics (in Chapter 8 of this manual), and the test equipment listed in Table 6-1. The following is a list of the subassemblies covered in Section III:

**NOTE**

In order to find the location of components on circuit boards, refer to the circuit board layout drawings in the Alignments section of this chapter or in the Illustrated Parts Breakdown in chapter 7.

SUBASSEMBLY	PARAGRAPH
Front Panel PWB Assy, A1A1.....	6-5
Display Assembly, A1A2.....	6-6
Audio/Microprocessor PWB Assy, A2.....	6-7
Multivoltage Supply Assy, A3.....	6-8
Audio Interface PWB Assy, A4.....	6-9

**6-5. FRONT PANEL PWB ASSY, A1A1.** The Front Panel PWB Assy used in the Remote Control Unit is identical to the one used in the 100 Watt Transceiver. Therefore, follow the troubleshooting procedures listed in the Depot Manual for the 100 Watt Transceiver.

**6-6. DISPLAY ASSEMBLY, A1A2.** The Display Assembly used in the Remote Control Unit is identical to the one used in the 100 Watt Transceiver. Therefore, follow the troubleshooting procedures listed in the Depot Manual for the 100 Watt Transceiver.

**6-7. AUDIO/MICROPROCESSOR PWB ASSY, A2.**

a. Preliminary Procedure.

- (1) Remove the good Audio/Microprocessor PWB Assy from the test-bed Remote Control Unit, and replace it with the faulty Audio/Microprocessor PWB Assy.
- (2) Power up the Remote Control Unit.
- (3) Connect a dummy load to the 100 Watt Transceiver.
- (4) Check for the presence of the following power supply voltages on the board. Voltages should be within 0.5 V of the nominal value.

<u>Voltage:</u>	<u>Measure at:</u>
+5 Vdc	J3, pin 6
+15 Vdc	J3, pin 3
-15 Vdc	J3, pin 2

- (5) If the voltages check good, run the receive-transmit BIT test.

**NOTE**

You can run the BIT test only if you have successfully established a communications link between the transceiver and the Remote Control Unit after you have selected REMOTE operation from the transceiver front panel. If the transceiver cannot establish a communications link with the Remote Control Unit after REMOTE operation has been selected, "rcu OFF" will

appear on the transceiver's display and "LCU OFF" will appear on the Remote Control Unit's display. In this case, the problem is most likely in the interface circuitry. Check it as follows:

- (6) Try establishing a communications link on each of the other interfaces. Remember that the interface select switches in both the transceiver and the Remote Control Unit must be set the same. Also, when selecting modem, make sure that you change the baud rate to 300 on both units and that the 2-wire, 4-wire select switches are set the same.
- (7) If the failure occurs in only one specific interface, then troubleshoot the circuitry unique to that interface:

<u>Failure in:</u>	<u>Check:</u>
RS-232 only	U10A, U16A
RS-422 only	U26B, U9, and associated components
MS-188 only	U27B, U27D, U10B, U16B, C39
Modem only	AR1, U22, U32C, U8D, T1, S5, Y2, T2 (4-wire only), and associated components

In the case of modem, the signal you are tracing is audio tones; in all other cases, the signal consists of a series of pulses.

- (8) If none of the interfaces works, then check for a series of pulses every 5 seconds at pin 4 of Interface Select Switch S4. These are the polling signals which the microprocessor sends to the transceiver. If these signals are not present at the switch, look for them at pin 11 of U1. If they are not present there either, then look for a possible microprocessor fault. See the "Additional Symptoms" section following the discussion of fault code 4-01.

- b. Interpreting the BIT Fault Code. Use the fault code listed below as a guide in troubleshooting the Audio/Microprocessor PWB Assy. In the event that the BIT test runs without generating the fault code, look for other obvious symptoms, such as no VOX operation or no PATCH

transmit. Then refer to the "ADDITIONAL SYMPTOMS" section following the BIT code section.

BIT Test Description for the  
Audio/Microprocessor PWB Assy

- (1) Turns on the BIT Oscillator signal (1200 Hz) and selects audio loopback on the Audio/Microprocessor PWB Assy.
- (2) Verifies the PATCH RX (receive) output from the Audio/Microprocessor PWB Assy.

The BIT test for the Remote Control Unit is very comprehensive; it checks most of the functions and circuits on the Audio/Microprocessor PWB Assy. The only circuits it doesn't check are the following:

- o The AUDIO 2 TX AUDIO input from J6 to AR13B
- o The PATCH TX AUDIO input from P4 to AR13B
- o The AUDIO 2 RX AUDIO output from AR13A to J6
- o The RX AUDIO output from AR11A to the speaker or headphone

Therefore, if the Remote Control Unit passes the BIT test, you can be sure that the main audio path is functional, as well as the microprocessor and its associated components.

CODE 4-01

This fault code indicates that the 1200 Hz test signal, which was applied to the DYNAMIC MIC input (J5, pin 4) as transmit audio and looped back through K1 to become receive audio, was not detected at the AD0-AD7 inputs to microprocessor U1.

The problem could be anywhere from frequency divider U5 (where the 2.4 KHz signal from the CPU clock oscillator is converted to the 1200 Hz test signal) to the inputs of A/D Converter U18 (if this chip or the data bus was bad, chances are you wouldn't be able to run the BIT test at all). Proceed as follows:

- (1) Select MIC as the audio source on the front panel of the Remote Control Unit.
- (2) Using a dual-trace scope (a storage scope is recommended), connect the CH1 input to U17-2. Adjust the scope to trigger on the negative transition of the signal at U17-2. Initiate the BIT test, and check to see whether U17-2 goes low at the start of the test. If it doesn't, skip to step 8.
- (3) Connect the CH2 input of the scope to the junction of R102 and R103, and measure the PATCH RX AUDIO output. You should see a 1200 Hz sine wave at approximately 0.25 V pk-pk when you run the BIT test.
  - (a) If the signal here is good, check it at pin 3 of U33, pin 7 of AR5B (positive spikes), and pin 27 of U18. Remember to initiate the BIT test each time you take a measurement. This should isolate the problem to U33, AR5B, or the circuit board traces.
  - (b) If the signal at the junction of R102 and R103 is bad, work your way back through AR11B, U24B, U34C, AR2, and pin 7 of K1.
- (4) If you have not found the faulty component by the time you get to pin 7 of K1, then connect the jumper from E21 to E22. Doing this will allow you to trace the signal from pin 2 of K1 all the way back to the CPU oscillator without having to initiate the BIT test each time you take a measurement. (You must initiate the BIT test to energize the relay; installing the E21-E22 jumper merely generates the 1200 Hz test signal by enabling the output of frequency divider U5.)
- (5) Trace the signal from pin 2 of K1 back through AR14B, U41B, U37A, AR15B, U46B, U37B, AR13B, U40B, U35B, AR18, and R77.
- (6) If you have not yet identified the faulty component, check the output and input of 1200 Hz Filter AR12B. The output, pin 7, should be a 1200 Hz sine wave; the input, pin 5, should be a signal at the same frequency.
- (7) If the input to AR12B is bad, check for the 1200 Hz TTL square wave at pin 9 of U5. If the signal is not present, check pin 13. Pin 13 should be high with the E21-E22 jumper installed. When the jumper is not installed, pin 13 should go high at the start of the BIT test.
  - (a) If pin 13 is good, check for the 2.4 KHz input on pin 11. If the signal on pin 11 is bad, trace it back to pin 14 of U6.
  - (b) If pin 13 is bad, check U27A by removing and inserting the E21-E22 jumper. With the jumper removed, the output of U27A should be a low; with the jumper installed, the output should be high. (This assumes that the other input to U27A, pin 2, is high, which it normally is when the BIT test is not being run.) Initiate the BIT test and see whether U27A-2 (U17-2) goes low at the beginning of the test.
- (8) If U27A-2 (U17-2) does not go low during BIT, check U17-11 and U17-3 for pulse activity. If no signal is observed, check U13-13 and U8C-8 for pulse activity.
- (9) If U15C and U8C appear to be functioning correctly, and if the U13-13 signal is good, then check U13-4 and U13-6 for activity. Also check the address lines (A0, A1, A2) into U13; these should be pulsing high and low.

#### NOTE

This is about as far as you can go without getting into the micro-control circuitry. Normally, though, you don't have to go this far, because if there were a fault in this circuitry, you probably would not be able to run the BIT test in the first place. If you think you might have a micro-control fault, see the section below.

#### ADDITIONAL SYMPTOMS

##### Microprocessor Fault

Microprocessor-related faults are generally characterized by an abnormal, random display and

a loss of transceiver control functions. In this case, running the BIT test is of no avail. Therefore, if you think you have a microprocessor-related fault and you cannot run the BIT test, use the following procedure:

**NOTE**

The Audio/Microprocessor PWB Assy contains the Intel 8031 microprocessor, which controls all the functions of the Remote Control Unit, including the automatic BIT test. A failure in the microprocessor, EPROM, RAM, decoders, etc. will probably disable the BIT circuitry and most of the other Remote functions as well. Unless you are thoroughly familiar with the circuitry of this board and with the operation of microprocessors, it will be very difficult for you to isolate a faulty chip or discrete component using standard test equipment and troubleshooting techniques. The following procedures, therefore, are intended to check only the most obvious and fundamental aspects of the board's operation. If these do not enable you to identify the problem, then you will need more advanced test equipment and test procedures, which are beyond the scope of this manual.

- (1) Check the supply voltage (+5 Vdc) to the microprocessor at U1-40.
- (2) Check the reset pin (U1-9). Normally, this pin should be low all the time. If the microprocessor is not working properly, it will be pulsing high. If this is the case, then the CPU clock circuitry (the CPU Oscillator, Dividers, Program Timer, U27) is probably okay. If the reset line is continually high, look for a failure in U3 or U27.
- (3) Check the clock inputs to the microprocessor: U1-19 (4.9152 MHz) and U1-15 (153.6 KHz).
- (4) Check U1-30 to see if it's pulsing high and low; it should not be continuously high or low. Do the same for U1-16, U1-17, and all the address lines.
- (5) Check that U1-12 is always high except for a low pulse when the Remote Control Unit is keyed by any keyline except the front panel keypad.

- (6) Check that pins 20 and 22 of U12 are pulsating; they should not be continuously high or low.
- (7) If all the above checks are good, try replacing the microprocessor U1. This chip is socketed for easy replacement.
- (8) If the problem persists, replace the EPROM U12. This chip is also socketed.

**Bad PATCH TX Audio**

Check U40A, U35A, and their associated components.

**Bad AUDIO 2 TX Audio**

Check T3, AR12A, U35C, and their associated components.

**Bad VOX, ANTIVOX Operation**

Check AR14A, AR16, U44, U48A, U36A, AR17A, U50D, and their associated components.

**Bad AUDIO 2 RX Audio**

Check AR3A, T4, and their associated components.

**Bad Speaker Audio**

Check U34B, AR4A, U49D, and their associated components.

**Bad Headphone Audio**

Check AR6A and its associated components.

**Bad Speaker/Headphone Audio**

Check U34A, Q4, U43B, AR11A, and their associated components. There could also be a problem with the squelch circuitry, which causes U34C to open the main audio line.

**Bad Sidetone**

Check AR13A, U37C, and their associated components.

**Incorrect SQUELCH Operation**

Check the operation of the SQUELCH circuitry as follows:

- (1) With the Remote Control Unit connected to a 100 Watt Transceiver and with REMOTE operation selected on the transceiver front panel, connect an RF signal generator to the antenna jack (J1) at the rear of the transceiver.
- (2) Select USB on the Remote Control Unit at a frequency of 5 MHz.
- (3) Set the signal generator carrier frequency to 5.001 MHz at -20 dBm.
- (4) Modulate the carrier frequency with a 20 Hz signal at 50% modulation.
- (5) Manually adjust the SQUELCH control on the Remote Control Unit's front panel, and check to see that the speaker audio is squelched as you rotate the control clockwise. Adjust the control so that the audio just squelches.
- (6) Increase the percentage of modulation on the signal generator. The squelch should break.

If the SQUELCH circuitry does not respond as described above, do the following:

- (7) Leaving the signal generator set up as before (with 50% modulation), connect a DC voltmeter to pin 7 of AR9B. You should see a positive DC voltage which varies in proportion to the increase or decrease in the percentage of modulation on the signal generator. If the voltage here is good, skip to step 9. If not, continue with step 8.
- (8) Check the base of Q2 for a 1 KHz audio signal modulated at 20 Hz. If the signal is not good there, the problem is in the Audio Compressor circuit (AR7A, Q2, Q3, and

their associated components). If the signal is good, check for a 20 Hz audio signal at the output of the Bandpass Filter, AR8B pin 7. If this signal is not good, the problem is in the Rectifier (AR7B and its associated components) or the Bandpass Filter (AR8B and its associated components). If the signal is good at AR8B pin 7, then the problem is in rectifier AR8A and its associated components.

- (9) Check the inputs to Comparator AR10A, pins 2 and 3. The voltage at pin 3 is determined by the setting of the SQUELCH control. With a DC voltmeter, check that this voltage varies as you adjust the SQUELCH control. The voltage at pin 2 should vary as you adjust the percentage of modulation on the signal generator. If it does not, DC Amplifier AR9B (or its associated components) is probably bad. When the voltage at pin 2 becomes more positive than the voltage at pin 3, then the output at pin 1 should go low. This is the unsquelched condition. When the voltage at pin 3 is more positive than at pin 2, pin 1 should go high. This is the squelched condition. If the output at pin 1 does not behave as described, then the problem is in AR10A.
- (10) If the output of Comparator AR10A is good, then the problem has to be in the diodes CR34, CR35, or in Buffer Amplifier AR10B (or their associated components). You can also check the SQUELCH CONTROL line at pin 11 of U34C. This line should be low during the unsquelched condition and high during the squelched condition.

**6-8. MULTIVOLTAGE SUPPLY ASSY, A3.**

The Multivoltage Supply Assy used in the Remote Control Unit is identical to the one used in the 100 Watt Transceiver. Therefore, follow the troubleshooting procedures listed in the Depot Manual for the 100 Watt Transceiver.

**6-9. AUDIO INTERFACE PWB ASSY, A4.**

The Audio Interface PWB Assy used in the Remote Control Unit is identical to the one used in the 100 Watt Transceiver. Therefore, follow the troubleshooting procedures listed in the Depot Manual for the 100 Watt Transceiver.

**APPENDIX A**

CHECKS PERFORMED DURING THE AUTOMATIC BIT ROUTINE FOR THE REMOTE CONTROL UNIT

- |   |  |
|---|--|
| <p>1. Turns on all front panel indicators for the duration of the test for inspection by the operator.</p> <p>2. Turns on the BIT Oscillator signal (1200 Hz) and selects audio loop back on the Audio/Microprocessor PWB Assy.</p> | <p>3. Verifies the PATCH RX (receive) output from the Audio/Microprocessor PWB Assy.</p> <p>4. Commands the rest of the system (the 100 Watt Transceiver and the 500 Watt or 1 KW Linear Power Amplifier) to perform an automatic BIT routine.</p> |
|---|--|

**APPENDIX B**

**Performance Specifications**

**NOTE**

The following specifications assume that all normal operating voltages are applied to the circuit board or assembly. No special test fixtures are required to measure the specifications, other than standard test equipment.

**Audio/Microprocessor PWB Assy  
10088-5000**

PARAMETER	TEST CONDITIONS	ADJUSTMENT	TEST POINT	SPECIFICATION
Line Rx Audio	R244 fully CCW; 1 KHz signal into P4-7; adjust input to produce 0 dBm output at J4-7 (approx. -9.0 dBm input); decrease signal by 20 dB	R244	J4-7	Output at J4-7 can be brought back to 0 dBm by adjusting R244 CW
Audio 2 Rx Audio	1 KHz signal at -26.5 dBm into P4-7	R59	J6-3, -2	R59 can vary output from +4 ±0.5 dBm to +10 ±0.5 dBm; set level to +6 dBm
Audio 2 Tx Audio	R244 fully CCW; 1 KHz at +10 dBm into J6-4 and -5	R51	AR5-7	1.00 Vdc
Patch Tx Audio	1 KHz at 0 dBm into P4-10; adjust signal for 1.00 Vdc at AR5-7	None	P4-5	Approximately +10.0 dBm



**Audio/Microprocessor PWB Assy (Continued)  
10088-5000**

PARAMETER	TEST CONDITIONS	ADJUSTMENT	TEST POINT	SPECIFICATION
Dynamic Mike TX Audio	1 KHz at 4 mV rms into J5-4; adjust signal for 1.00 Vdc at AR5-7	None	Same as above	-18 to -8 dBm
	Vary input $\pm 15$ dB	None	Same as above	Same as above
Sidetone	R240 fully CCW; adjust signal for 10 mV rms across J4-7	R240	J4-7	When R240 is rotated fully CW, output at J4-7 is approx. 100 mV rms

**Multivoltage Supply Assy  
10085-1240**

PARAMETER	TEST CONDITIONS	ADJUSTMENT	TEST POINT	SPECIFICATION
-15 Vdc Output	+10.0 to +35 $\pm 2$ Vdc input with full load at all outputs: -15 Vdc = 0.5 A +15 Vdc = 1.7 A +5 Vdc = 2.5 A	None	E2	-14.85 to -15.3 Vdc
+15 Vdc Output		R4	E3	+15.0 Vdc
+5 Vdc Output		R61	E6	+5.0 Vdc

**Audio Interface PWB Assy  
10085-0570**

PARAMETER	TEST CONDITIONS	ADJUSTMENT	TEST POINT	SPECIFICATION
Patch Transmit Output	1 KHz, 0 dBm into J1-5	None	J1-10	-10.8 $\pm 1$ dBm in 2W position; -11.0 $\pm 1$ dBm in 4W position
Line Balance	Same as above	R5	J1-7	Null (should be less than -40 dBm)
Line In Output	1 KHz, 0 dBm into J1-9	None	Same as above	-10.8 $\pm 1$ dBm in 2W position; -11.0 $\pm 1$ dBm in 4W position
Patch Balance	Same as above	R1	J1-10	Null (should be less than -40 dBm)



## CHAPTER 7

### ILLUSTRATED PARTS BREAKDOWN

#### Section 1. INTRODUCTION

**7-1. PURPOSE.** This chapter lists, illustrates, and describes the detail parts for the Remote Control Unit. Its purpose is for the identification, requisitioning, and issuance of parts at the depot level.

**7-2. SCOPE.** Bulk electrical items, such as terminals, wire, heat shrink tubing, etc., are not listed in this manual. Common hardware items, such as screws, washers, nuts, etc., when used to attach structural components that are not normally removed or disassembled, are also not listed. In general, the parts installed at the time the Remote Control Unit was manufactured are listed and identified in this chapter. When a part (including vendor items), which is different from the original, was installed during the manufacture of later items, series, or blocks, all parts are listed (and "Usable-On" coded). However, when the original part does not have continued application (no spares of the original were procured or such spares are no longer authorized for replacement), only the preferred part is listed. Also, when a part was installed during modification, and the original does not have continued application, only the preferred item is listed. Interchangeable and substitute parts, subsequently authorized by the Government, are not listed in this chapter; such items are identified by information available through the Interchangeable and Substitute (I & S) Data Systems. Refer to T.O. 00-25-184. When a standard size part can be replaced with an oversize or undersize part, the latter parts, showing sizes, are also listed. Repair Parts Kits

and Quick Change Units are listed when they are available for replacement.

**7-3. CHAPTER ORGANIZATION.** This chapter is divided into two sections. Section I, INTRODUCTION, explains the purpose, scope, and organization of the chapter. Section II, MAINTENANCE PARTS LIST, consists of illustrations, in which the detail parts of the Remote Control Unit are identified by numbers (called index numbers), followed by lists which contain parts numbers, descriptions, and other relevant data for the items identified on the illustrations. Section II also contains two other lists: A numerical index, which lists the parts in alphanumerical sequence; and a reference designator index, which lists the electrical parts in alphabetical sequence by their reference designators.

**7-4. SOURCE, MAINTENANCE, AND RECOVERABILITY (SMR) CODES.** This chapter contains Air Force Peculiar In-Being Source and Repair Codes only. Definitions of these SMR codes, as well as detailed coding criteria and transposition matrices for each coding method, may be obtained from T.O. 00-25-195. Refer to page 7-13.

**7.5. FEDERAL SUPPLY CODES FOR MANUFACTURERS (FSCM).** The codes used in this chapter are as follows. The first list is in numerical order by FSCM; the second is in alphabetical order by manufacturer name.

**T.O. 31R2-2URC-93**

FSCM	NAME AND ADDRESS				
00000	Ordnance Corps The Defense Logistics Services Center	02660	Bunker Ramo-Eltra Corporation Amphenol Division 2801 S. 25th Avenue Broadview, IL 60153	06980	Varian Associates, Inc. EIMAC Division 301 Industrial Way San Carlos, CA 94070
00141	PIC Design Corporation Division of Wells-Berrous Corporation Benson Road P.O. Box 1004 Middlebury, CT 06762	02735	RCA Corporation Solid State Division Route 202 Somerville, NJ 08876	07263	Fairchild Camera and Instrument Corporation Semiconductor Division Subsidiary of Schlumberger LTD North American Sales Mail Stop 14-1053 401 Ellis Street P.O. Drawer 7284 Mountain View, CA 94042
00159	Acme Electric Corporation Cuba, NY	02768	Illinois Tool Works, Inc. Fastex Division 195 Algonquin Road Des Plaines, IL 60016	07707	USM Corporation Subsidiary of Emhart Industries, Inc. USM Fastener Division 510 River Road Shelton, CT 06484
00213	Nytronics Components Group, Inc. Subsidiary of Nytronics Inc. Orange Street Darlington, SC 29532	03508	General Electric Company Semi-Conductor Products Department W. Genesee Street Auburn, NY 13021	07858	Arrow Hart Canada LTD Scarborough, Ontario Canada M8Z 2R4
00348	Microtran Co., Inc. 145 E. Mineola Avenue P.O. Box 236 Valley Stream, NY 11582	03888	Pyrofilm Division Division of KDI Electronics Inc. 60 S. Jefferson Road Whippany, NJ 07981	08289	Blinn Delbert Company, Inc. The 1678 E. Mission Blvd. P.O. Box 2007 Pomona, CA 91769 5065
00493	Sargent Art Division of Mead Corporation Hazleton, PA	04009	Crouse-Hinds Arrow Hart Inc. Arrow Hart Division 103 Hawthorn Street Hartford, CT 06105	08484	Breeze-Eastern Corporation Subsidiary of Transtechnology Corporation 700 Liberty Avenue Union, NJ 07083
00752	Eaton Corporation AIL Division Lond Island Plants Commack Road Deer Park, L.I., NY 11729	04222	AVX Ceramics Division of AVX Corporation 19th Avenue South P.O. Box 867 Myrtle Beach, SC 29577	08544	United Shoe Machinery Corporation Cincinnati, OH
00758	Neilsen Products Company Lake Elmo, MN	04386	Litton Industries, Inc. Litton Systems Inc. Triad-Utrad Division 305 N. Briant Street Huntington, IN 46750	08779	Signal Transformer Company, Inc. 500 Bayview Avenue Inwood, NY 11696
00779	AMP, Inc. 2800 Fulling Mill P.O. Box 3608 Harrisburg, PA 17105	04426	Licon Division of Illinois Tool Works, Inc. 6615 W. Irving Park Road Chicago, IL 60634	09023	Cornell-Dubilier Electronics 118 E. Jones Street Fuquay-Varina, NC 27526
00853	Sangamo Weston, Inc. Sangamo Capacitor Division Subsidiary of Schlumberger LTD Sangamo Road P.O. Box 128 Pickens, SC 29671	04713	Motorola, Inc. Semiconductor Products Sector 5005 E. McDowell Road Phoenix, AZ 85008	09166	Stone City Products, Inc. 1206 7th Street P.O. Box 369 Bedford, IN 47421
01009	Alden Products Company 117 N. Main Street P.O. Box 860 Brockton, MA 02403	05326	General Electric Company Aviation Service Operation/CINTI 333 W. Seymour Avenue Cincinnati, OH 45216	09214	General Electric Company Semi-Conductor Products Department Power Components Operation W. Genesee Street Auburn, NY 13021
01295	Texas Instruments Inc. Semiconductor Group 13500 N. Central Expressway P.O. Box 225012 M/S 49 Dallas, TX 75265	05828	General Instrument Corporation Government Systems Division 600 W. John Street Hicksville, NY 11802	09353	C and K Components, Inc. 15 Riverdale Avenue Newton, MA 02158
01961	Varian Associates, Inc. Pulse Engineering Subsidiary 7250 Convoy CT P.O. Box 12235 San Diego, CA 92112	06090	Raychem Corporation 300 Constitution Drive Menlo Park, CA 94025	10026	CSI Capacitors A Division of CSI Technologies, Inc. Del Dios Highway P.O. Box 2052 Escondido, CA 92025
02111	Spectrol Electronics Corporation Subsidiary of Carrier Corporation 17070 E. Gale Avenue P.O. Box 1220 City of Industry, CA 91749	06383	Panduit Corporation 17301 Ridgeland Tinley Park, IL 60477	10054	Marson Corp 130 Crescent Avenue Chelsea, MA 02150
02114	Amperex Electronic Corporation Ferroxcube Division 5083 Kings HWY Saugerties, NY 12477	06402	E-T-A Circuit Breakers 7400 N. Croname Road Chicago, IL 60648	11195	Magna Division Vermont American Corporation 1001 West Park Road Elizabethtown, KY 42701
02289	HI-G Company Subsidiary of Nytronics Inc. 101 Locust Street Hartford, CT 06114	06540	Mite Corporation Amatom Electronic Hardware Division 446 Blake Street New Haven, CT 06515	11236	CTS of Berne, Inc. 406 Parr Road Berne, IN 46711

11897	Plastiglide Manufacturing Corporation 2701 W. El Segundo Blvd. Hawthorne, CA 90250	16546	Centralab, Inc. A North American Phillips Company 4561 Colorado Los Angeles, CA 90039	21340	ITT Telecom Products Corporation Network Systems Division HWY 137 Suncrest Drive P.O. Box N Carroll Reece Station Johnson City, TN 37601
12040	National Semiconductor Corporation Commerce Drive P.O. Box 443 Danbury, CT 06810	16733	Cablewave Systems, Inc. 60 Dodge Avenue North Haven, CT 06473	22526	Du Pont E I De Nemours and Company, Inc. Photo Products Department Berg Electronics Division Route 83 New Cumberland, PA 17070
12909	Cardion Electronics Division of General Signal Controls, Inc. A Unit of General Signal Corporation Long Island Expressway Woodbury, NY 11797	16741	Triad Transformer Corporation Huntington, IN	22701	Bestran Corporation Dilectron Division 2669 So. Myrtle Avenue Monrovia, CA 91016
12969	Unitrode Corporation 580 Pleasant Street Watertown, MA 02172	17117	Electronic Molding Corporation 96 Mill Street Woonsocket, RI 02895	22903	Singer Company The Link Flight Simulation Division Advanced Products Operation 1077 E. Arques Avenue P.O. Box 3484 Sunnyvale, CA 94088
13103	Thermalloy Company, Inc. 2021 W. Valley View Lane P.O. Box 340839 Dallas, TX 75234	17856	Siliconix, Inc. 2201 Laurelwood Road Santa Clara, CA 95054	24446	General Electric Company 3135 Easton Turnpike Fairfield, CT 06431
13499	Rockwell International Corporation Collins Telecommunications Products Division Defense Electronics Operations 855 NE 35th Street Cedar Rapids, IA 52498	18212	American Trans-Coil Corporation 124-06 101st Avenue Richmond Hill, NY 11419	24546	Corning Glass Works 550 High Street Bradford, PA 16701
13764	Micro Plastics, Inc. HWY 178 N. Flippin, AR 72634	18324	Signetics Corporation Military Products Division 4130 S. Market Court Sacramento, CA 95834	25330	General Connector Corporation Subsidiary of the Union Corporation 80 Bridge Street Newton, MA 02158
14304	Harris Corporation RF Communications Division 1680 University Avenue Rochester, NY 14610	18722	RCA Corporation Solid State Division Crestwood Road Mountaintop, PA 18707	25403	Amperex Electronic Corporation Semiconductor Solid State and Active Devices-Electro Optical Devices Providence Pike Slatersville, RI 02876
14519	Designatronics, Inc. 55 S. Denton Avenue New Hyde Park, NY 11040	18796	Murato Erie Technological Products State College Operations 1900 W. College Avenue State College, PA 16801	26066	Minnesota Mining and Manufacturing Company Industrial Tape Division 3M Center St Paul, MN 55101
14655	Cornell-Dubilier Electronics Division of Federal Pacific Electric Company Government Contracts Department 150 Ave L Newark, NJ 07101	18876	Department of Army U.S. Army Missile Command Redstone Arsenal, AL 35809	26344	Mite Corporation 466 Blake Street New Haven, CT 06515
14674	Corning Glass Works Houghton Park Corning, NY 14830	18915	Birtcher Corporation The Industrial Division 4501 N. Arden Drive P.O. Box 4399 El Monte, CA 91734	26667	Litton Industries, Inc. Triad Distributor Division Huntington, IN
14933	Defense Electronics Supply Center Dayton, OH 45401	19200	U.S. Army Armament Research and Development Command Dover, NJ 07801	27014	National Semiconductor Corporation 2900 Semiconductor Drive Santa Clara, CA 95051
15542	Mini-Circuits Laboratory Division of Scientific Components Corporation 2625 E. 14th Street Brooklyn, NY 11235	19207	U.S. Army Tank Automotive Command Warren, MI 48090	27264	Molex, Inc. 2222 Wellington Court Lisle, IL 60532
15801	Fenwal Electronics Division of Kidde Walter and Company, Inc. 63 Fountain Street Framingham, MA 01701	19396	Illinois Tool Works, Inc. Paktron Division 900 Follin Lane S.E. Vienna, VA 22180	27777	Varo, Inc. Electron Devices Division 2203 Walnut Street P.O. Box 401146 Garland, TX 75040
15912	T and B/Ansley Corporation Subsidiary of Thomas and Betts Corporation 4371 Valley Blvd. Los Angeles, CA 90031	19647	Caddock Electronics, Inc. 1717 Chicago Avenue Riverside, CA 92507	28124	Minnesota Mining and Manufacturing Company Industrial Coated Abrasives Division 3M Center St. Paul, MN 55101
15969	Dixie Chemical Company 3635 W. Dallas Street Houston, TX 77019	19701	Mepco/Electra, Inc. A North American Phillips Company P.O. Box 760 Mineral Wells, TX 76067		
		21052	High Energy Corporation Subsidiary of Inductotherm Corporation Lower Valley Road Parkesburg, PA 19365		
		21317	Electronic Applications Company 4918 Santa Anita Avenue El Monte, CA 91734		

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28480	Hewlett-Packard Company Corporate HQ 3000 Hanover Street Palo Alto, CA 94304	34649	Intel Corporation 3065 Bowers Avenue Santa Clara, CA 95051	54254	Minnesota Mining and Manufacturing Company Data Recording Products Division 350 S. Lewis Road Camarillo, CA 93010
28482	Electronic Laboratory Supply Company 7208 Germantown Avenue Philadelphia, PA 19119	34899	Fair-Rite Products Corporation 1 Commercial Row Walkkill, NY 12589	54473	Matsushita Electric Corporation of America One Panasonic Way P.O. Box 1501 Secaucus, NJ 07094
28520	Heyco Molded Products 1750 Blvd. P.O. Box 160 Kenilworth, NJ 07033	37695	Magnavox Government and Industrial Electronics Co. 1313 Production Road Fort Wayne, IN 46808	54904	Eltra Corporation Subsidiary of Allied Chemical Company Medwec Division 105 Skyport Drive P.O. Box 417 Scottsbluff, NE 69361
29964	Allied Devices Corporation 2365 Millburn Avenue P.O. Drawer E. Baldwin, NY 11510	44122	LXD 24500 High Point Road Cleveland, OH 44122	55002	Power Conversion, Inc. 495 Boulevard Elmwood Park, NJ 07407
30142	Minnesota Mining and Manufacturing Company Energy Systems 3M Center Bldg. 551 St. Paul, MN 55101	46384	Penn Engineering and Manufacturing Corporation Old Easton Road P.O. Box 1000 Danboro, PA 18916	55285	The Bergquist Company, Inc. 5300 Edina Industrial Blvd. Minneapolis, MN 55435
31433	Union Carbide Corporation Electronics Division HWY 276 SE P.O. Box 5928 Greenville, SC 29606	49671	RCA Corporation 30 Rockefeller Plaza New York, NY 10020	55322	Samtec, Inc. 810 Progress Blvd. P.O. Box 1147 New Albany, IN 47150
31922	Leeds and Northrup Company A Unit of General Signal Corporation Sumneytown Pike North Wales, PA 19454	50157	Midwest Components, Inc. 1981 Port City Blvd. P.O. Box 787 Muskegon, MI 49443	55566	R A F Electronic Hardware, Inc. 95 Silvermine Road Seymour, CT 06483
32039	Zeus Industrial Products, Inc. Ft. Thompson Street Raritan, NJ 08869	50173	Curt Straub Enterprises 444 W. Ocean Blvd. Suite 1106 Long Beach, CA 90802	56289	Sprague Electric Company 87 Marshall Street North Adams, MA 01247
32097	PCC Pertec Division Pertec Computer Corporation 9600 Irondale Avenue Chatsworth, CA 91311	50434	Hewlett-Packard Company Optoelectronics Division 640 Page Hill Road Palo Alto, CA 94304	56637	RCD Components, Inc. 330 Bedford Street Manchester, NH 03101
32284	Rotron Controls Division Rotron, Inc. Woodstock, NY	51144	IDI Electric Canada LTD 33 Fuller Road Box 159 Ajax, Ontario Canada L1S 2E1	56699	Mepco/Electra, Inc. 6071 St. Andrews Road Columbia, SC 29210
32293	Intersil Inc. Subsidiary of General Electric Company 10710 N. Tantau Avenue Cupertino, CA 95014	51984	NEC America, Inc. 2741 Prosperity Avenue Fairfax, VA 22031	57074	Alberox Corporation New Bedford, MA
32848	Thompson Industries Division of W M F Container Corporation 2501 E. Magnolia Street Phoenix, AZ 85036	52458	Magnum Electric Corporation 6385 Dixie HWY Erie, MI 48133	57285	Millen Division Electronic Instrument and Specialty Corporation 42 Pleasant Street Stoneham, MA 02180
32890	Luminescent Systems Inc. Etna Road Grafton County Lebanon, NH 03766	52559	Metraplex Corporation Berkshire Industrial Park Bldg. 3 Bethel, CT 06801	57771	Stimpson Company, Inc. 900 Sylvan Avenue Bayport, NY 11705
32997	Bourns, Inc. Trimpot Division 1200 Columbia Avenue Riverside, CA 92507	52760	Minnesota Mining and Manufacturing Company Electro Products Division 341 Factory Road Addison, IL 60101	57921	Bourns, Inc. Precisions/Controls Division 1200 Columbia Avenue Riverside, CA 92507
34335	Advanced Micro Devices 901 Thompson Place Sunnyvale, CA 94086	53373	Midland-Ross Corporation Cambion Division Barnstead Road Pittsfield, NH 03263	57922	Bourns, Inc. Precisions/Controls Division 1200 Columbia Avenue Riverside, CA 92507
34553	Amperex Electronic Corporation Component Division Hauppauge, NY	53894	Aham, Inc. 27901 Front Street Rancho California, CA 92390	57924	Bourns, Inc. Networks Division 12155 Magnolia Avenue Riverside, CA 92503
				58167	Palco Connector, Inc. 75 Center Street Bristol, CT 06010

59076	Designatronics, Inc. Stock Drive Products Division 55 S. Denton Avenue New Hyde Park, NY 11040	63312	Endicott Research Group, Inc. 2601 Wayne Street P.O. Box 269 Endicott, NY 13760	72819	Carborundum Company The Electrical Products Division Globar Plant 3425 Hyde Park Blvd. P.O. Box 339 Niagara Falls, NY 14302
59730	Thomas and Betts Corporation HWY 218 S. Iowa City, IA 52240	70485	Atlantic India Rubber Works, Inc. 571 W. Polk Street Chicago, IL 60607	72835	Gochenaur Marine Company Philadelphia, PA
59950	Shielding Technology, Inc. Subsidiary of Chomerics, Inc. 120 Ethel Road W. Piscataway, NJ 08854	70494	Emhart Industries, Inc. Hardware Division 225 Episcopal Road Berlin, CT 06037	72962	Amerace Corporation Esna Division 2330 Vauxhall Road Union, NJ 07083
59993	International Rectifier Semiconductor Division 233 Kansas Street El Segundo, CA 90245	70903	Belden Corporation Subsidiary of Cooper Industries, Inc. 2000 S. Batavia Avenue Geneva, IL 60134	72982	Murata Erie North America, Inc. Erie Operations 645 W. 11th Street Erie, PA 16512
60705	Cera-Mite Corporation 1327 6th Avenue Grafton, WI 53024	70983	Bethlehem Steel Corporation Shipbuilding Department Room 1000 Martin Tower Bethlehem, PA 18016	73138	Beckman Instruments, Inc. Beckman Electronic Technologies Subsidiary of Smith Kline/Beckman Corporation 2500 Harbor Blvd. Fullerton, CA 92634
60963	Niagara Straw Company, Inc. 72 Lakeview Avenue Buffalo, NY 14201	71041	Incom International, Inc. Boston Gear Division, Inc. 14 Hayward Street Quincy, MA 02171	73734	Federal Screw Products, Inc. 3917 N. Kedzie Avenue Chicago, IL 60618
61306	Silvered Electronic Mica Company, Inc. RT 6 Willimantic, CT 06226	71279	Midland-Ross Corporation Cambion Division One Alewife Place Cambridge, MA 02140	73899	JFD Electronic Components A Division of Murata Erie North America 112 Mott Street Oceanside, NY 11572
61429	Fox Electronics Fox Enterprises, Inc. P.O. Box 1078 Cape Coral, FL 33910	71400	Bussmann Division of McGraw-Edison Company 114 Old State Road P.O. Box 14460 St. Louis, MO 63178	73905	ITT Jennings 970 McLaughlin Avenue San Jose, CA 95116
61463	Uniroyal, Inc. Oxford Management and Research Center Benson Road Middlebury, CT 06749	71450	CTS Corporation 905 N. West Blvd. Elkhart, IN 46514	73988	The Harrington And King Perforating Company, Inc. 5655 Fillmore Street Chicago, IL 60644
61529	Aromat Corporation 250 Sheffield Street Mountainside, NJ 07092	71468	ITT Cannon Electric Division of International Telephone and Telegraph Corporation 10550 Talbert Avenue P.O. Box 8040 Fountain Valley, CA 92708	74199	Quam Nichols Company 218 E. Marquette Road Chicago, IL 60637
61587	Hughes Electronic Devices Corporation 13321 Grass Valley Avenue P.O. Box 185 Grass Valley, CA 95945	71785	TRW, Inc. TRW Cinch Connectors Division 1501 Morse Avenue Elk Grove Village, IL 60007	74276	General Instrument Corporation Lamp Division/Worldwide 4433 N. Ravenswood Avenue Chicago, IL 60640
61725	ITT Components Division International Telephone and Telegraph Corporation 3201 S. Standard Street P.O. Box 2197 Santa Ana, CA 92707	71895	Delavan Corporation 811 Fourth Street P.O. Box 100 West Des Moines, IA 50265	74840	Illinois Capacitor, Inc. 3757 W. Touhy Avenue Lincolnwood, IL 60645
61735	Pulse Engineering, Inc. 5004 Lehigh Road College Park, MD 20740	72136	Electro Motive Corporation Subsidiary of International Electronics Corporation Florence, SC	74868	Amphenol RF Operations An Allied Company 33 E. Franklin Street Danbury, CT 06810
61802	Toshiba Internation Industrial Division 13131 W. Little York Road P.O. Box 40906 Houston, TX 77041	72619	Dialight Division Amperex Electronic Corporation 203 Harrison Place Brooklyn, NY 11237	74970	Johnson EF Company 299 10th Avenue SW Waseca, MN 56093
61957	USM Corporation Subsidiary of Emhart Industries, Inc. 140 Federal Street Boston, MA 02107	72634	Dielectric Products Company, Inc. Jersey City, NJ	75042	TRW, Inc. TRW Electronic Components IRC Fixed Resistors Philadelphia Division 401 N. Broad Street Philadelphia, PA 19108
62703	Varo Semiconductor, Inc. Subsidiary of Varo, Inc. 1000 N. Shiloh Road P.O. Box 40676 Garland, TX 75040	72794	Dzus Fastener Company, Inc. 425 Union Blvd. West Islip, NY 11795	75263	Keystone Carbon Company 1935 State Street St. Marys, PA 15857

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75378	CTS Knights, Inc. 400 Reimann Avenue Sandwich, IL 60548	8004:	Cincinnati Electronics Corporation Subsidiary of GEC, Inc. An English Electric Corporation Company 2630 Glendale-Milford Road Cincinnati, OH 45241	83325	SNC Manufacturing Company, Inc. 101 Waukau Road Oshkosh, WI 54901
75382	Kulka Electric Corporation A North American Philips Corporation Mt. Vernon, NY			83330	Kulka Smith, Inc. A North American Philips Company 1913 Atlantic Avenue Manasquan, NJ 08736
75915	Tracor Littelfuse, Inc. 800 E. Northwest HWY Des Plaines, IL 60016	80063	U.S. Army Communications And Electronics Materiel Readiness Command Logistics Engineering Directorate Fort Monmouth, NJ 07703	84830	Lee Spring Company, Inc. 1462 62nd Street Brooklyn, NY 11219
76301	McDonnell Douglas Corporation McDonnell Aircraft Company P.O. Box 516 St. Louis, MO 63166	80101	General Electronics, Inc. Paterson, NJ	86797	Rogan Corporation 3455 Woodhead Drive Northbrook, IL 60062
76385	Minor Rubber Company, Inc. 49 Ackerman Street Bloomfield, NJ 07003	80103	Veeco Instruments, Inc. Lambda Electronics Division 515 Broad Hollow Road Melville, NY 11747	86928	Seastrom Manufacturing Company, Inc. 701 Sonora Avenue Glendale, CA 91201
76490	Moto Meter Gauge and Equipment Division Electric Auto Lite Company New York, NY	80294	Bourns Instruments, Inc. 135 Magnolia Avenue Riverside, CA 92506	89032	Eaton Corporation Engineered Fasteners Division 8700 Brookpark Road P.O. Box 6688 Cleveland, OH 44101
77264	Phoenix Specialty Manufacturing Company, Inc. 971 Stewart Avenue Garden City, LI, NY 11530	80372	Marine Corps. Navy Annex Washington, DC 20380	89110	AMP, Inc. Capitron Division 1595 S. Mt. Joy Street Elizabethtown, PA 17022
77342	AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	81073	Grayhill, Inc. 561 Hillgrove Avenue P.O. Box 10373 La Grange, IL 60525	89265	AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671
77347	Poulsen and Wardon, Inc. Los Angeles, CA	81095	Triad-Utrad Division Litton Systems, Inc. National City, CA	90372	Wakefield Engineering Company P.O. Box 818 Coeur D Alene, ID 83814
77609	RCA Corporation RCA Service Company RTE 38 Cherry Hill, NJ 08358	81249	Library Efficiency Corporation New York, NY	91506	Augat, Inc. 33 Perry Avenue P.O. Box 799 Attleboro, MA 02703
77820	Allied Amphenol Products Bendix Connector Operations 40-60 Delaware Street Sidney, NY 13838	81349	Mil Spec	91836	Kings Electronics Company, Inc. 40 Marbledale Road Tuckahoe, NY 10707
78488	The Stackpole Corporation 201 Stackpole Street St. Marys, PA 15857	81483	International Rectifier 9220 Sunset Blvd. Los Angeles, CA 90069	91929	Honeywell, Inc. Micro Switch Division 11 W. Spring Street Freeport, IL 61032
79061	Vaco Products Company 1510 Skokie Blvd. Northbrook, IL 60062	81564	Artted Company, Inc. 50 Warehouse Street Springfield, MA 01118	92891	Alliance Engineering, Inc. Alliance, OH
79136	Waldes Kohinor, Inc. 47-16 Austel Place Long Island City, NY 11101	82389	Switchcraft, Inc. Subsidiary of Raytheon Company 5555 N. Elstron Avenue Chicago, IL 60630	92967	Hutchens Industries, Inc. 215 N. Patterson Avenue P.O. Box 1427 SSS Springfield, MO 65805
79218	Waterous Company 300 John E. Carroll Avenue E. South St. Paul, MN 55075	82415	Airpax Corporation Frederick Division A North American Philips Company Husky Park P.O. Box 500 Frederick, MD 21701	93958	Republic Electronics Corporation 176 E. 7th Street Paterson, NJ 07524
79963	Zierick Manufacturing Company Radio Circle Mt. Kisco, NY 10549	82877	Rotron, Inc. Custom Division 7 Hasbrouck Lane Woodstock, NY 12498	94033	Lapointe Industries, Inc. Electronic Products Division 155 W. Main Street Rockville, CT 06066
80009	Tektronix, Inc. 4900 SW Griffith Drive P.O. Box 500 Beaverton, OR 97077	83014	Hartwell Corporation 900 S. Richfield Road Placentia, CA 92670	94117	Sanders Associates, Inc. Daniel Webster HWY South Nashua, NH 03061
80031	Mepeco/Electra, Inc. 22 Columbia Road Morristown, NJ 07960	83079	Amerace Corporation Buchanan Crimptool Products Division 1065 Floral Avenue Union, NJ 07083	94222	Southco, Inc. 210 N. Brinton Lake Road Concordville, PA 19331



94464	Masstech Corporation Subsidiary of Transtechnology Corporation Swamp Road RT 313 P.O. Box 2001 Doylestown, PA 18901	99256	PEM Engineering Company Los Angeles, CA		AMP, Inc. 2800 Filling Mill P.O. Box 3608 Harrisburg, PA 17105	00779
94696	Magnecraft Electric Company 5575 N. Lynch Avenue Chicago, IL 60630	99313	Varian Associates, Inc. Microwave Tube Division 611 Hansen Way Palo Alto, CA 94303		Amperex Electronic Corporation Component Division Hauppauge, NY	34553
95146	Alco Electronic Products, Inc. 1551 Osgood Street North Andover, MA 01845		<b>NAME AND ADDRESS</b>	<b>FSCM</b>	Amperex Electronic Corporation Ferroxcube Division 5083 Kings HWY Saugerties, NY 12477	02114
95275	Vitramon, Inc. Box 544 Bridgeport, CT 06601		Acme Electric Corporation Cuba, NY	00159	Amperex Electronic Corporation Semiconductor Solid State and Active Devices-Electro Optical Devices Providence Pike Slatersville, RI 02876	25403
95987	WH Brady Company 727 W. Glendale Avenue Milwaukee, WI 53209		Advanced Micro Devices 901 Thompson Place Sunnyvale, CA 94086	34335	Amphenol RF Operations An Allied Company 33 E. Franklin Street Danbury, CT 06810	74868
96214	Texas Instruments, Inc. Equipment Group 13500 N. Central EXPY P.O. Box 660246 M/S 3137 Dallas, TX 75266		Aham, Inc. 27901 Front Street Rancho California, CA 92390	53894	Aromat Corporation 250 Sheffield Street Mountainside, NJ 07092	61529
96238	Dataproducts New England, Inc. Barnes Park North Wallingford, CT 06492		Airpax Corporation Frederick Division A North American Philips Company Husky Park P.O. Box 500 Frederick, MD 21701	82415	Arrow Hart Canada LTD Scarborough, Ontario Canada M8Z 2R4	07858
96804	Bell Industries, Inc. JW Miller Division 19070 Reyes Avenue P.O. Box 5825 Compton, CA 90224		Alberox Corporation New Bedford, MA	57074	Artted Company, Inc. 50 Warehouse Street Springfield, MA 01118	81564
96906	Mil Spec		Alco Electronic Products, Inc. 1551 Osgood Street North Andover, MA 01845	95146	Atlantic India Rubber Works, Inc. 571 W. Polk Street Chicago, IL 60607	70485
97520	Basler Electric Company RT 143 P.O. Box 269 Highland, IL 62249		Alden Products Company 117 N. Main Street P.O. Box 860 Brockton, MA 02403	01009	Augat, Inc. 33 Perry Avenue P.O. Box 799 Attleboro, MA 02703	91506
97942	Westinghouse Electric Corporation Defense and Electronic Systems Center Baltimore-Washington Airport P.O. Box 1897 MS 984 Baltimore, MD 21203		Alliance Engineering, Inc. Alliance, OH	92891	AVX Ceramics Division of AVX Corporation 19th Avenue South P.O. Box 867 Myrtle Beach, SC 29577	04222
98003	Nielsen Hardware Corporation 770 Wethersfield Avenue P.O. Box 568 Hartford, CT 06141		Allied Amphenol Products Bendix Connector Operations 40-60 Delaware Street Sidney, NY 13838	77820	Basler Electric Company RT 143 P.O. Box 269 Highland, IL 62249	97520
98291	Sealectro Corporation BICC Electronics 40 Lindeman Drive Trumbull, CT 06611		Allied Devices Corporation 2365 Milburn Avenue P.O. Drawer E. Baldwin, NY 11510	29964	Beckman Instruments, Inc. Beckman Electronic Technologies Subsidiary of Smith Kline/Beckman Corporation 2500 Harbor Blvd. Fullerton, CA 92634	73138
98410	ETC-Molex, Inc. Subsidiary of Molex, Inc. 5201 Richmond Road Bedford Heights, OH 44146		Amerace Corporation Esna Division 2330 Vauxhall Road Union, NJ 07083	72962	Belden Corporation Subsidiary of Cooper Industries, Inc. 2000 S. Batavia Avenue Geneva, IL 60134	70903
98734	Hewlett-Packard Company Manufacturing Division Palo Alto, CA		Amerace Corporation Buchanan Crimptool Products Division 1065 Floral Avenue Union, NJ 07083	83079	Bell Industries, Inc. JW Miller Division 19070 Reyes Avenue P.O. Box 5825 Compton, CA 90224	96804
99120	Plastic Capacitors, Inc. 2623 N. Pulaski Road Chicago, IL 60639		American Trans-Coil Corporation 124-06 101st Avenue Richmond Hill, NY 11419	18212	Bergquist Company, Inc., The 5300 Edina Industrial Blvd. Minneapolis, MN 55435	55285
99167	Sundstrand Aviation Operations Unit of Sundstrand Corporation 4747 Harrison Avenue P.O. Box 7002 Rockford, IL 61125		AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	77342		
			AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	89265		
			AMP, Inc. Capitron Division 1595 S. Mt. Joy Street Elizabethtown, PA 17022	89110		

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Bestran Corporation Dilectron Division 2669 So. Myrtle Avenue Monrovia, CA 91016	22701	Cardion Electronics Division of General Signal Controls, Inc. A Unit of General Signal Corporation Long Island Expressway Woodbury, NY 11797	12909	Department of Army U.S. Army Missile Command Redstone Arsenal, AL 35809	18876
Bethlehem Steel Corporation Shipbuilding Department Room 1000 Martin Tower Bethlehem, PA 18016	70983	Centralab, Inc. A North American Philips Company 4561 Colorado Los Angeles, CA 90039	16546	Designatronics, Inc. 55 S. Denton Avenue New Hyde Park, NY 11040	14519
Birtcher Corporation The Industrial Division 4501 N. Arden Drive P.O. Box 4399 El Monte, CA 91734	18915	Cera-Mite Corporation 1327 6th Avenue Grafton, WI 53024	60705	Designatronics, Inc. Stock Drive Products Division 55 S. Denton Avenue New Hyde Park, NY 11040	59076
Blinn Delbert Company, Inc. The 1678 E. Mission Blvd. P.O. Box 2007 Pomona, CA 91769 5065	08289	Cincinnati Electronics Corporation Subsidiary of GEC, Inc. An English Electric Corporation Company 2630 Glendale-Milford Road Cincinnati, OH 45241	80045	Dialight Division Amperex Electronic Corporation 203 Harrison Place Brooklyn, NY 11237	72619
Bourns, Inc. Trimpot Division 1200 Columbia Avenue Riverside, CA 92507	32997	Cornell-Dubilier Electronics 118 E. Jones Street Fuquay-Varina, NC 27526	09023	Dielectric Products Company, Inc. Jersey City, NJ	72634
Bourns, Inc. Precision/Controls Division 1200 Columbia Avenue Riverside, CA 92507	57921	Cornell-Dubilier Electronics Division of Federal Pacific Electric Company Government Contracts Department 150 Ave L Newark, NJ 07101	14655	Dixie Chemical Company 3635 W. Dallas Street Houston, TX 77019	15969
Bourns, Inc. Precision/Controls Division 1200 Columbia Avenue Riverside, CA 92507	57922	Corning Glass Works Houghton Park Corning, NY 14830	14674	Du Pont E I De Nemours and Company, Inc. Photo Products Department Berg Electronics Division Route 83 New Cumberland, PA 17070	22526
Bourns, Inc. Networks Division 12155 Magnolia Avenue Riverside, CA 92503	57924	Corning Glass Works 550 High Street Bradford, PA 16701	24546	Dzus Fastener Company, Inc. 425 Union Blvd. West Islip, NY 11795	72794
Bourns Instruments, Inc. 135 Magnolia Avenue Riverside, CA 92506	80294	Crouse-Hinds Arrow Hart Inc. Arrow Hart Division 103 Hawthorn Street Hartford, CT 06105	04009	Eaton Corporation AIL Division Lond Island Plants Commack Road Deer Park, L.I., NY 11729	00752
Breeze-Eastern Corporation Subsidiary of Transtechnology Corporation 700 Liberty Avenue Union, NJ 07083	08484	CSI Capacitors A Division of CSI Technologies, Inc. Del Dios Highway P.O. Box 2052 Escondido, CA 92025	10026	Eaton Corporation Engineered Fasteners Division 8700 Brookpark Road P.O. Box 6688 Cleveland, OH 44101	89032
Bunker Ramo-Eltra Corporation Amphenol Division 2801 S. 25th Avenue Broadview, IL 60153	02660	CTS Corporation 905 N. West Blvd. Elkhart, IN 46514	71450	Electro Motive Corporation Subsidiary of International Electronics Corporation Florence, SC	72136
Bussmann Division of McGraw-Edison Company 114 Old State Road P.O. Box 14460 St. Louis, MO 63178	71400	CTS Knights, Inc. 400 Reimann Avenue Sandwich, IL 60548	75378	Electronic Applications Company 4918 Santa Anita Avenue El Monte, CA 91734	21317
C and K Components, Inc. 15 Riverdale Avenue Newton, MA 02158	09353	CTS of Berne, Inc. 406 Parr Road Berne, IN 46711	11236	Electronic Laboratory Supply Company 7208 Germantown Avenue Philadelphia, PA 19119	28482
Cablewave Systems, Inc. 60 Dodge Avenue North Haven, CT 06473	16733	Curt Straub Enterprises 444 W. Ocean Blvd. Suite 1106 Long Beach, CA 90802	50173	Electronic Molding Corporation 96 Mill Street Woonsocket, RI 02895	17117
Caddock Electronics, Inc. 1717 Chicago Avenue Riverside, CA 92507	19647	Dataproducts New England, Inc. Barnes Park North Wallingford, CT 06492	96238	Eltra Corporation Subsidiary of Allied Chemical Company Medwec Division 105 Skyport Drive P.O. Box 417 Scottsbluff, NE 69361	54904
Carborundum Company The Electrical Products Division Global Plant 3425 Hyde Park Blvd. P.O. Box 339 Niagara Falls, NY 14302	72819	Defense Electronics Supply Center Dayton, OH 45401	14933	Emhart Industries, Inc. Hardware Division 225 Episcopal Road Berlin, CT 06037	70494
		Delavan Corporation 811 Fourth Street P.O. Box 100 West Des Moines, IA 50265	71895	Endicott Research Group, Inc. 2601 Wayne Street P.O. Box 269 Endicott, NY 13760	63312

E-T-A Circuit Breakers 7400 N. Croname Road Chicago, IL 60648	06402	Grayhill, Inc. 561 Hillgrove Avenue P.O. Box 10373 La Grange, IL 60525	81073	Illinois Tool Works, Inc. Paktron Division 900 Follin Lane S.E. Vienna, VA 22180	19396
ETC-Molex, Inc. Subsidiary of Molex, Inc. 5201 Richmond Road Bedford Heights, OH 44146	98410	Harrington And King Perforating Company, Inc., The 5655 Fillmore Street Chicago, IL 60644	73988	Incom International, Inc. Boston Gear Division, Inc. 14 Hayward Street Quincy, MA 02171	71041
Fairchild Camera and Instrument Corporation Semiconductor Division Subsidiary of Schlumberger LTD North American Sales Mail Stop 14-1053 401 Ellis Street P.O. Drawer 7284 Mountain View, CA 94042	07263	Harris Corporation RF Communications Division 1680 University Avenue Rochester, NY 14610	14304	Intel Corporation 3065 Bowers Avenue Santa Clara, CA 95051	34649
Fair-Rite Products Corporation 1 Commercial Row Wallkill, NY 12589	34899	Hartwell Corporation 900 S. Richfield Road Placentia, CA 92670	83014	International Rectifier Semiconductor Division 233 Kansas Street El Segundo, CA 90245	59993
Federal Screw Products, Inc. 3917 N. Kedzie Avenue Chicago, IL 60618	73734	Hewlett-Packard Company Corporate HQ 3000 Hanover Street Palo Alto, CA 94304	28480	International Rectifier 9220 Sunset Blvd. Los Angeles, CA 90069	81483
Fenwal Electronics Division of Kidde Walter and Company, Inc. 63 Fountain Street Framingham, MA 01701	15801	Hewlett-Packard Company Optoelectronics Division 640 Page Hill Road Palo Alto, CA 94304	50434	Intersil Inc. Subsidiary of General Electric Company 10710 N. Tantau Avenue Cupertino, CA 95014	32293
Fox Electronics Fox Enterprises, Inc. P.O. Box 1078 Cape Coral, FL 33910	61429	Hewlett-Packard Company Manufacturing Division Palo Alto, CA	98734	ITT Cannon Electric Division of International Telephone and Telegraph Corporation 10550 Talbert Avenue P.O. Box 8040 Fountain Valley, CA 92708	71468
General Connector Corporation Subsidiary of the Union Corporation 80 Bridge Street Newton, MA 02158	25330	Heyco Molded Products 1750 Blvd. P.O. Box 160 Kenilworth, NJ 07033	28520	ITT Components Division International Telephone and Telegraph Corporation 3201 S. Standard Street P.O. Box 2197 Santa Ana, CA 92707	61725
General Electric Company Semi-Conductor Products Department W. Genesee Street Auburn, NY 13021	03508	High Energy Corporation Subsidiary of Inductotherm Corporation Lower Valley Road Parkesburg, PA 19365	21052	ITT Jennings 970 McLaughlin Avenue San Jose, CA 95116	73905
General Electric Company Aviation Service Operation/CINTI 333 W. Seymour Avenue Cincinnati, OH 45216	05326	HI-G Company Subsidiary of Nytronics Inc. 101 Locust Street Hartford, CT 06114	02289	ITT Telecom Products Corporation Network Systems Division HWY 137 Suncrest Drive P.O. Box N Carroll Reece Station Johnson City, TN 37601	21340
General Electric Company Semi-Conductor Products Department Power Components Operation W. Genesee Street Auburn, NY 13021	09214	Honeywell, Inc. Micro Switch Division 11 W. Spring Street Freeport, IL 61032	91929	JFD Electronic Components A Division of Murata Erie North America 112 Mott Street Oceanside, NY 11572	73899
General Electric Company 3135 Easton Turnpike Fairfield, CT 06431	24446	Hughes Electronic Devices Corporation 13321 Grass Valley Avenue P.O. Box 185 Grass Valley, CA 95945	61587	Johnson EF Company 299 10th Avenue SW Waseca, MN 56093	74970
General Electronics, Inc. Paterson, NJ	80101	Hutchens Industries, Inc. 215 N. Patterson Avenue P.O. Box 1427 SSS Springfield, MO 65805	92967	Keystone Carbon Company 1935 State Street St. Marys, PA 15857	75263
General Instrument Corporation Government Systems Division 600 W. John Street Hicksville, NY 11802	05828	IDI Electric Canada LTD 33 Fuller Road Box 159 Ajax, Ontario Canada L1S 2E1	51144	Kings Electronics Company, Inc. 40 Marbledale Road Tuckahoe, NY 10707	91836
General Instrument Corporation Lamp Division/Worldwide 4433 N. Ravenswood Avenue Chicago, IL 60640	74276	Illinois Capacitor, Inc. 3757 W. Touhy Avenue Lincolnwood, IL 60645	74840	Kulka Electric Corporation A North American Philips Corporation Mt. Vernon, NY	75382
Gochenaur Marine Company Philadelphia, PA	72835	Illinois Tool Works, Inc. Fastex Division 195 Algonquin Road Des Plaines, IL 60016	02768	Kulka Smith, Inc. A North American Philips Company 1913 Atlantic Avenue Manasquan, NJ 08736	83330

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Lapointe Industries, Inc. Electronic Products Division 155 W. Main Street Rockville, CT 06066	94033	McDonnell Douglas Corporation McDonnell Aircraft Company P.O. Box 516 St. Louis, MO 63166	76301	Minnesota Mining and Manufacturing Company Electro Products Division 341 Factory Road Addison, IL 60101	52760
Lee Spring Company, Inc. 1462 62nd Street Brooklyn, NY 11219	84830	Mepco/Electra, Inc. A North American Philips Company P.O. Box 760 Mineral Wells, TX 76067	19701	Minnesota Mining and Manufacturing Company Data Recording Products Division 350 S. Lewis Road Camarillo, CA 93010	54254
Leeds and Northrup Company A Unit of General Signal Corporation Summeytown Pike North Wales, PA 19454	31922	Mepco/Electra, Inc. 6071 St. Andrews Road Columbia, CS 29210	56699	Minor Rubber Company, Inc. 49 Ackerman Street Bloomfield, NJ 07003	76385
Library Efficiency Corporation New York, NY	81249	Mepco/Electra, Inc. 22 Columbia Road Morristown, NJ 07960	80031	Mite Corporation Amatom Electronic Hardware Division 446 Blake Street New Haven, CT 06515	06540
Licon Division of Illinois Tool Works, Inc. 6615 W. Irving Park Road Chicago, IL 60634	04426	Metraplex Corporation Berkshire Industrial Park Bldg. 3 Bethel, CT 06801	52559	Mite Corporation 466 Blake Street New Haven, CT 06515	26344
Litton Industries, Inc. Litton Systems Inc. Triad-Ultrad Division 305 N. Briant Street Huntington, IN 46750	04386	Midland-Ross Corporation Cambion Division Barnstead Road Pittsfield, NH 03263	53373	Molex, Inc. 2222 Wellington Court Lisle, IL 60532	27264
Litton Industries, Inc. Triad Distributor Division Huntington, IN	26667	Midland-Ross Corporation Cambion Division One Alewife Place Cambridge, MA 02140	71279	Moto Meter Gauge and Equipment Division Electric Auto Lite Company New York, NY	76490
Luminescent Systems Inc. Etna Road Grafton County Lebanon, NH 03766	32890	Micro Plastics, Inc. HWY 178 N. Flippin, AR 72634	13764	Motorola, Inc. Semiconductor Products Sector 5005 E. McDowell Road Phoenix, AZ 85008	04713
LXD 24500 High Point Road Cleveland, Ohio 44122	66670	Microtran Co., Inc. 145 E. Mineola Avenue P.O. Box 236 Valley Stream, NY 11582	00348	Murata Erie North America, Inc. Erie Operations 645 W. 11th Street Erie, PA 16512	72982
Magna Division Vermont American Corporation 1001 West Park Road Elizabethtown, KY 42701	11195	Midwest Components, Inc. 1981 Port City Blvd. P.O. Box 787 Muskegon, MI 49443	50157	Murato Erie Technological Products State College Operations 1900 W. College Avenue State College, PA 16801	18796
Magnavox Government and Industrial Electronics Co. 1313 Production Road Fort Wayne, IN 46808	37695	Mil Spec	81349	National Semiconductor Corporation Commerce Drive P.O. Box 443 Danbury, CT 06810	12040
Magnecraft Electric Company 5575 N. Lynch Avenue Chicago, IL 60630	94696	Millen Division Electronic Instrument and Specialty Corporation 42 Pleasant Street Stoneham, MA 02180	57285	National Semiconductor Corporation 2900 Semiconductor Drive Santa Clara, CA 95051	27014
Magnum Electric Corporation 6385 Dixie HWY Erie, MI 48133	52458	Mini-Circuits Laboratory Division of Scientific Components Corporation 2625 E. 14th Street Brooklyn, NY 11235	15542	NEC America, Inc. 2741 Prosperity Avenue Fairfax, VA 22031	51984
Marine Corps. Navy Annex Washington, DC 20380	80372	Minnesota Mining and Manufacturing Company Industrial Tape Division 3M Center St Paul, MN 55101	26066	Neilsen Products Company Lake Elmo, MN	00758
Marson Corp. 130 Crescent Avenue Chelsea, MA 02150	10054	Minnesota Mining and Manufacturing Company Industrial Coated Abrasives Division 3M Center St. Paul, MN 55101	28124	Nielsen Hardware Corporation 770 Wethersfield Avenue P.O. Box 568 Hartford, CT 06141	98003
Masstech Corporation Subsidiary of Transtechnology Corporation Swamp Road RT 313 P.O. Box 2001 Doylestown, PA 18901	94464	Minnesota Mining and Manufacturing Company Energy Systems 3M Center Bldg. 551 St. Paul, MN 55101	30142	Niagara Straw Company, Inc. 72 Lakeview Avenue Buffalo, NY 14201	60963
Matsushita Electric Corporation of America One Panasonic Way P.O. Box 1501 Secaucus, NJ 07094	54473			Nytronics Components Group, Inc. Subsidiary of Nytronics Inc. Orange Street Darlington, SC 29532	00213

Ohmite Manufacturing Company 3601 W. Howard Street Skokie, IL 60076	44655	RCA Corporation Solid State Division Crestwood Road Mountaintop, PA 18707	18722	Signetics Corporation Military Products Division 4130 S. Market Court Sacramento, CA 95834	18324
Ordnance Corps The Defense Logistics Services Center	00000	RCA Corporation 30 Rockefeller Plaza New York, NY 10020	49671	Siliconix, Inc. 2201 Laurelwood Road Santa Clara, CA 95054	17856
Palco Connector, Inc. 75 Center Street Bristol, CT 06010	58167	RCA Corporation RCA Service Company RTE 38 Cherry Hill, NJ 08358	77609	Silvered Electronic Mica Company, Inc. RT 6 Willimantic, CT 06226	61306
Panduit Corporation 17301 Ridgeland Tinley Park, IL 60477	06383	RCD Components, Inc. 330 Bedford Street Manchester, NH 03101	56637	Singer Company The Link Flight Simulation Division Advanced Products Operation 1077 E. Arques Avenue P.O. Box 3484 Sunnyvale, CA 94088	22903
PCC Pertec Division Pertec Computer Corporation 9600 Irontdale Avenue Chatsworth, CA 91311	32097	Republic Electronics Corporation 176 E. 7th Street Paterson, NJ 07524	93958	SNC Manufacturing Company, Inc. 101 Waukau Road Oshkosh, WI 54901	83325
PEM Engineering Company Los Angeles, CA	99256	Rockwell International Corporation Collins Telecommunications Products Division Defense Electronics Operations 855 NE 35th Street Cedar Rapids, IA 52498	13499	Southco, Inc. 210 N. Brinton Lake Road Concordville, PA 19331	94222
Penn Engineering and Manufacturing Corporation Old Easton Road P.O. Box 1000 Danboro, PA 18916	46384	Rogan Corporation 3455 Woodhead Drive Northbrook, IL 60062	86797	Spectrol Electronics Corporation Subsidiary of Carrier Corporation 17070 E. Gale Avenue P.O. Box 1220 City of Industry, CA 91749	02111
Phoenix Specialty Manufacturing Company, Inc. 971 Stewart Avenue Garden City, LI, NY 11530	77264	Rotron Controls Division Rotron, Inc. Woodstock, NY	32284	Sprague Electric Company 87 Marshall Street North Adams, MA 01247	56289
PIC Design Corporation Division of Wells-Benus Corporation Benson Road P.O. Box 1004 Middlebury, CT 06762	00141	Rotron, Inc. Custom Division 7 Hasbrouck Lane Woodstock, NY 12498	82877	Stackpole Corporation, The 201 Stackpole Street St. Marys, PA 15857	78488
Plastic Capacitors, Inc. 2623 N. Pulaski Road Chicago, IL 60639	99120	Samtec, Inc. 810 Progress Blvd. P.O. Box 1147 New Albany, IN 47150	55322	Stimpson Company, Inc. 900 Sylvan Avenue Bayport, NY 11705	57771
Plastiglide Manufacturing Corporation 2701 W. El Segundo Blvd. Hawthorne, CA 90250	11897	Sanders Associates, Inc. Daniel Webster HWY South Nashua, NH 03061	94117	Stone City Products, Inc. 1206 7th Street P.O. Box 369 Bedford, IN 47421	09166
Poulsen and Wardon, Inc. Los Angeles, CA	77347	Sangamo Weston, Inc. Sangamo Capacitor Division Subsidiary of Schlumberger LTD Sangamo Road P.O. Box 128 Pickens, SC 29671	00853	Sundstrand Aviation Operations Unit of Sundstrand Corporation 4747 Harrison Avenue P.O. Box 7002 Rockford, IL 61125	99167
Power Conversion, Inc. 495 Boulevard Elmwood Park, NJ 07407	55002	Sargent Art Division of Mead Corporation Hazleton, PA	00493	Switchcraft, Inc. Subsidiary of Raytheon Company 5555 N. Elstron Avenue Chicago, IL 60630	82389
Pulse Engineering, Inc. 5004 Lehigh Road College Park, MD 20740	61735	Seaelectro Corporation BICC Electronics 40 Lindeman Drive Trumbull, CT 06611	98291	T and B/Ansley Corporation Subsidiary of Thomas and Betts Corporation 4371 Valley Blvd. Los Angeles, CA 90031	15912
Pyrofilm Division Division of KDI Electronics Inc. 60 S. Jefferson Road Whippany, NJ 07981	03888	Seastrom Manufacturing Company, Inc. 701 Sonora Avenue Glendale, CA 91201	86928	Tektronix, Inc. 4900 SW Griffith Drive P.O. Box 500 Beaverton, OR 97077	80009
Quam Nichols Company 218 E. Marquette Road Chicago, IL 60637	74199	Shielding Technology, Inc. Subsidiary of Chomerics, Inc. 120 Ethel Road W. Piscataway, NJ 08854	59950	Texas Instruments Inc. Semiconductor Group 13500 N. Central Expressway P.O. Box 225012 M/S 49 Dallas, TX 75265	01295
R A F Electronic Hardware, Inc. 95 Silvermine Road Seymour, CT 06483	55566	Signal Transformer Company, Inc. 500 Bayview Avenue Inwood, NY 11696	08779		
Raychem Corporation 300 Constitution Drive Menlo Park, CA 94025	06090				
RCA Corporation Solid State Division Route 202 Somerville, NJ 08876	02735				

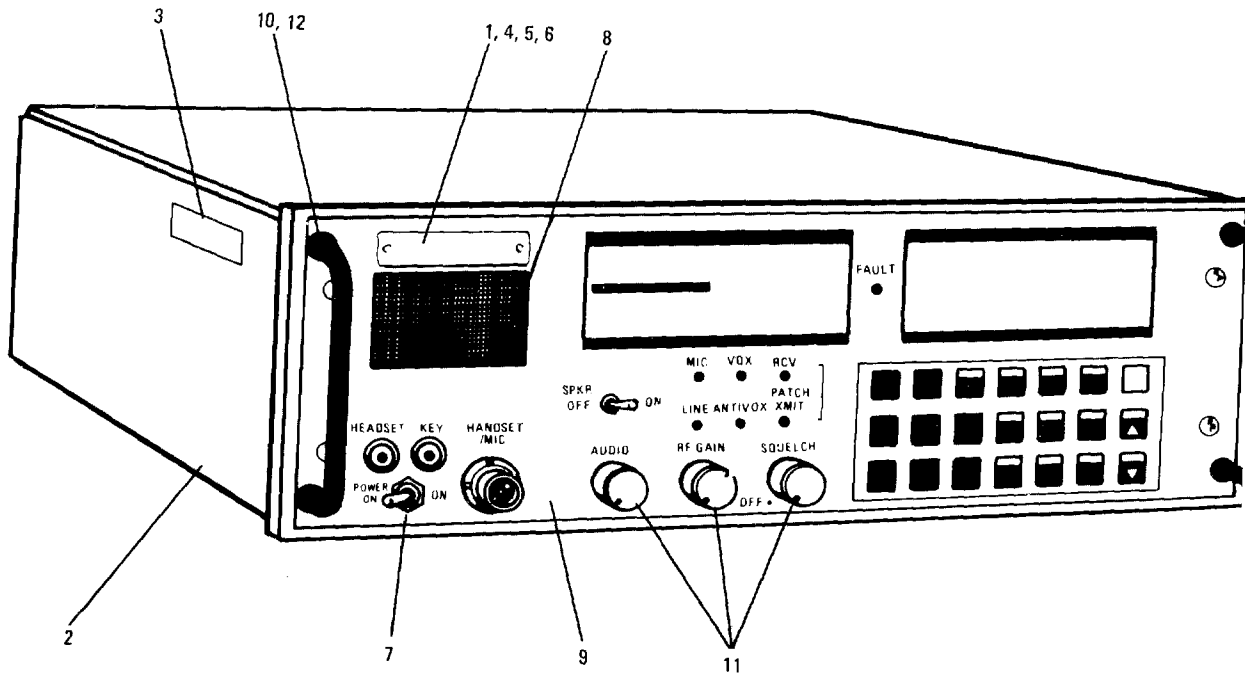
**T.O. 31R2-2URC-93**

Texas Instruments, Inc. Equipment Group 13500 N. Central EXPY P.O. Box 660246 M/S 3137 Dallas, TX 75266	96214	USM Corporation Subsidiary of Emhart Industries, Inc. USM Fastener Division 510 River Road Shelton, CT 06484	07707	Zierick Manufacturing Company Radio Circle Mt. Kisco, NY 10549	81814
Thermalloy Company, Inc. 2021 W. Valley View Lane P.O. Box 340839 Dallas, TX 75234	13103	USM Corporation Subsidiary of Emhart Industries, Inc. 140 Federal Street Boston, MA 02107	61957		
Thomas and Betts Corporation HWY 218 S. Iowa City, IA 52240	59730	Vaco Products Company 1510 Skokie Blvd. Northbrook, IL 60062	79061		
Thompson Industries Division of W M F Container Corporation 2501 E. Magnolia Street Phoenix, AZ 85036	32848	Varian Associates, Inc. Pulse Engineering Subsidiary 7250 Convoy CT P.O. Box 12235 San Diego, CA 92112	01961		
Toshiba Internation Industrial Division 13131 W. Little York Road P.O. Box 40906 Houston, TX 77041	61802	Varian Associates, Inc. EIMAC Division 301 Industrial Way San Carlos, CA 94070	06980		
Tracor Littelfuse, Inc. 800 E. Northwest HWY Des Plaines, IL 60016	75915	Varian Associates, Inc. Microwave Tube Division 611 Hansen Way Palo Alto, CA 94303	99313		
Triad Transformer Corporation Huntington, IN	16741	Varo, Inc. Electron Devices Division 2203 Walnut Street P.O. Box 401146 Garland, TX 75040	27777		
Triad-Utrad Division Litton Systems, Inc. National City, CA	81095	Varo Semiconductor, Inc. Subsidiary of Varo, Inc. 1000 N. Shiloh Road P.O. Box 40676 Garland, TX 75040	62703		
TRW, Inc. TRW Cinch Connectors Division 1501 Morse Avenue Elk Grove Village, IL 60007	71785	Veeco Instruments, Inc. Lambda Electronics Division 515 Broad Hollow Road Melville, NY 11747	80103		
TRW, Inc. TRW Electronic Components IRC Fixed Resistors Philadelphia Division 401 N. Broad Street Philadelphia, PA 19108	75042	Vitramon, Inc. Box 544 Bridgeport, CT 06601	95275		
Union Carbide Corporation Electronics Division HWY 276 SE P.O. Box 5928 Greenville, SC 29606	31433	Wakefield Engineering Company P.O. Box 818 Coeur D Alene, ID 83814	90372		
Uniroyal, Inc. Oxford Management and Research Center Benson Road Middlebury, CT 06749	61463	Waldes Kohinoor, Inc. 47-16 Austel Place Long Island City, NY 11101	79136		
United Shoe Machinery Corporation Cincinnati, OH	08544	Waterous Company 300 John E. Carroll Avenue E. South St. Paul, MN 55075	79218		
Unitrode Corporation 580 Pleasant Street Watertown, MA 02172	12969	Westinghouse Electric Corporation Defense and Electronic Systems Center Baltimore-Washington Airport P.O. Box 1897 MS 984 Baltimore, MD 21203	97942		
U.S. Army Armament Research and Development Command Dover, NJ 07801	19200	WH Brady Company 727 W. Glendale Avenue Milwaukee, WI 53209	95987		
U.S. Army Communications and Electronics Materiel Readiness Command Logistics Engineering Directorate Fort Monmouth, NJ 07703	80063	Zeus Industrial Products, Inc. Ft. Thompson Street Raritan, NJ 08869	32039		
U.S. Army Tank Automotive Command Warren, MI 48090	19207	Zierick Manufacturing Company Radio Circle Mt. Kisco, NY 10549	79963		

JOINT MILITARY SERVICES UNIFORM SMR CODING MATRIX T.O. 00-25-195

SOURCE		USE		MAINTENANCE REPAIR		RECOVERABILITY		ERRC CODE	
1st Position	2nd Position	3rd Position	4th Position	5th Position	6th Position				
P Procurable	A Stocked	O Remove/ Replace at Organizational Level	Z No Repair	Z Nonreparable Condemn at 3rd Position Level	N Nonrecoverable XB3 Condemn at Any Level	N			
	B Insurance								
	C Deteriorative								
	E Support Equipment, Stocked								
	F Support Equipment, Nonstocked								
	G Sustained Life Support								
K Component of a Repair Kit	F Intermediate Kit	F Remove/ Replace at Inter- mediate Level	O Repair at Organizational	F Reparable Condemn at Intermediate	C Recoverable XD1 (SCARS) Condemn at Depot	C			
	D Depot Kit								
	B In Both Kits								
	O Organization								
M Manufacture	F Intermediate	D Remove/Replace at Depot Level	D Limited Repair at O or F Level	D Reparable Condemn at Depot	S Nonexpendable Support Equipment, Depot ND2	S			
	D Depot								
	O Organization								
	F Intermediate								
A Assemble	D Depot	D Remove/Replace at Depot Level	D Overhaul at Depot	A Special Handling	U Nonexpendable Support Equipment, Organizational and Intermediate NF2	U			
	A Requisition NHA								
	B Reclamation from IM								
X Nonprocured	C Mfg Drawings								

Section II. MAINTENANCE PARTS LIST



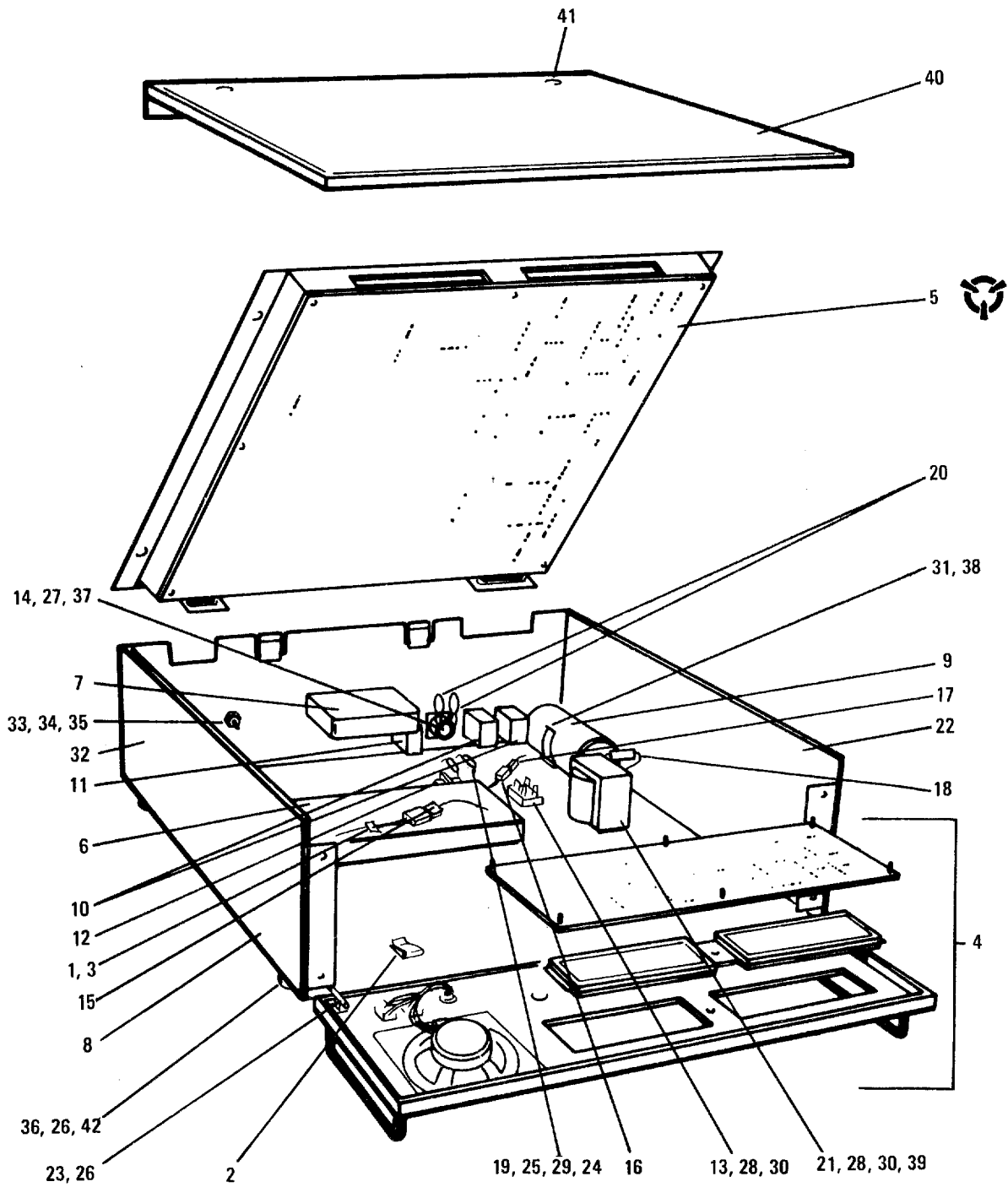
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Figure 7-1. Remote Control Unit, C-11329/URC, Front View



Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
7-1 -	10088-0000	14304	CONTROL UNIT,REMOTE*							1		PEODD
- 1	10085-0008	14304	. PLATE,IDENT							1		PADZZ
- 2	10088-0100	14304	. REMOTE CONTROL ASSY							1		PAODD
- 3	10088-0071	14304	. PLATE,IDENT							1		MDO
- 4	MS51957-18	96906	. SCREW,MACHINE (AP)							2		PAOZZ
- 5	22NTE-62	72962	. NUT,CLINCH (AP)							2		PAOZZ
- 6	MS15795-803	96906	. WASHER,FLAT (AP)							4		PAOZZ
- 7	7401T1ZGE	09353	. SWITCH							1		PAOZZ
- 8	22-SLOTB-BRASS	73988	. SHIELD,SPEAKER							1		XB
- 9	10085-2017	14304	. OVERLAY,PANEL							1		XB
- 10	10350-A-1032-2	06540	. HANDLE							2		XB
- 11	MS-67-1-DC-WD	86797	. KNOB							3		PAOZZ
- 12	MS24693-C272	96906	. SCREW,MACHINE (AP)							4		PAOZZ

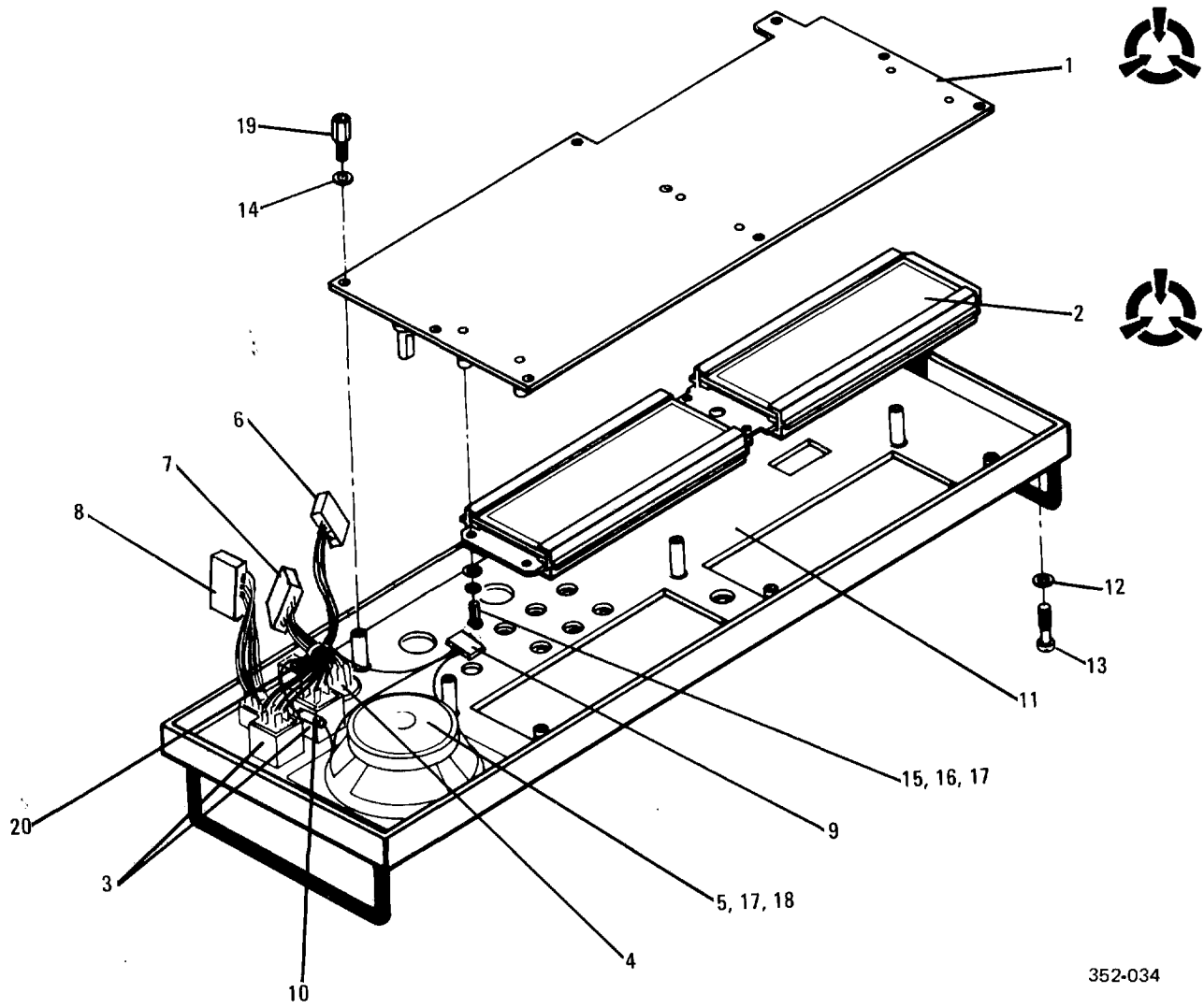
\*Installation requires Ancillary Kit 10088-0060. See figure 7-4. ■



352-031

Figure 7-2. Remote Control Unit, C-11329/URC, Exploded View

Figure & Index Number	Part Number	FSCM	Description	Units Per Assy	Usable On Code	SMR Code
7-2 -	10088-0100	14304	REMOTE CONTROL ASSY	1		PAODD
- 1	TY-23M	59730	. RETAINER	10		XB
- 2	DM53741-5059	71468	. CLAMP, CABLE	4		XB
- 3	TC-105A	59730	. BASE, RETAINER	2		XB
- 4	10085-2000	14304	. PANEL ASSY, A1	1		PAODD
- 5	10088-5000	14304	. CIRCUIT CARD ASSY, A2	1		PAODD
- 6	10085-1240	14304	. MULTIVOLT SPLY ASSY, A3	1		PAODD
- 7	10085-0570	14304	. CIRCUIT CARD ASSY, A4	1		PAODD
- 8	10088-0500	14304	. CHASSIS, ELEC, EQPT	1		XB
- 9	DCM462T100EC2B	00853	. CAP, FXD, ELCTLT	1		PAOZZ
- 10	W58XB1A6A-1	89265	. CIRCUIT BREAKER	2		PAOZZ
- 11	W58XB1A6A-5	89265	. CIRCUIT BREAKER	1		PAOZZ
- 12	70HFR20	81483	. SEMICOND DEVICE, DIO	1		PADZZ
- 13	MDA2501	04713	. SEMICOND DEVICE, DIO	1		PADZZ
- 14	MS3102R20-8P	96906	. CONNECTOR, RCPT, ELEC	1		PADZZ
- 15	207377-1	00779	. CONNECTOR, RCPT, ELEC	3		PADZZ
- 16	54483-2	00779	. CONNECTOR, RCPT, ELEC	1		PADZZ
- 17	53894-41	00779	. CONNECTOR, PLUG, ELEC	1		PADZZ
- 18	RCR42G122JS	81349	. RESISTOR, FXD, COMP	1		PADZZ
- 19	RE65GR562F	81349	. RESISTOR	2		PADZZ
- 20	V275LA40A	09214	. RESISTOR VOLTAGE	2		PADZZ
- 21	10087-5110	14304	. TRANSFORMER, RF	1		PADZZ
- 22	10088-0505	14304	. CHASSIS, ELEC, EQPT	1		XB
- 23	10085-5159	14304	. HINGE ASSY	2		XB
- 24	MS35649-244	96906	. NUT, PLAIN, HEX (AP)	1		XB
- 25	MS51959-4	96906	. SCREW, MACHINE (AP)	4		XB
- 26	MS24693-C26	96906	. SCREW, MACHINE (AP)	4		PAOZZ
- 27	MS51957-17	96906	. SCREW, MACHINE (AP)	4		PADZZ
- 28	MS15795-807	96906	. WASHER, FLAT (AP)	5		PAOZZ
- 29	MS35338-134	96906	. WASHER, LOCK (AP)	4		PAOZZ
- 30	H-6767	14304	. NUT, PLAIN, HEX (AP)	5		XB
- 31	4511-175-87-2N	86928	. RETAINER, CAPACITOR	1		XB
- 32	10088-0504	14304	. BRACKET, MTG	2		XB
- 33	MS51958-63	96906	. SCREW, MACHINE (AP)	1		PAOZZ
- 34	MS35338-138	96906	. WASHER, LOCK (AP)	1		PAOZZ
- 35	MS15795-808	96906	. WASHER, FLAT (AP)	2		PAOZZ
- 36	101-BB-1029	11897	. BUMPER, RUBBER	4		XB
- 37	H-6769	14304	. NUT, PLAIN, HEX (AP)	3		PADZZ
- 38	M24243/5-B402	81349	. RIVET, BLIND	2		XB
- 39	10088-0072	14304	. LABEL	1		PADZZ
- 40	10088-0105	14304	. COVER	1		PADZZ
- 41	82-32-101-20	94222	. STUD TURNLOCK FAST	2		PAOZZ
- 42	H-6768	96906	. NUT, CLINCH (AP)	4		PAOZZ



352-034

Figure 7-3. Front Panel Assy, A1

Figure & Index Number	Part Number	FSCM	Description 1 2 3 4 5 6 7	Units	Usable	SMR Code
				Per Assy	On Code	
7-3 -	10085-2000	14304	PANEL ASSY,A1	1		PAODD
- 1	10085-2100	14304	. CIRCUIT CARD ASSY,A1A1	1		PAODD
- 2	10085-2110	14304	. DISPLAY ASSY,A1A2	1		PAODD
- 3	113	82389	. CONNECTOR,RCPT,ELEC	2		PADZZ
- 4	GC283	25330	. CONNECTOR,RCPT,ELEC	1		PADZZ
- 5	82-8666	74199	. SPEAKER	1		PAOZZ
- 6	22-01-3057	27264	. CONNECTOR,PLUG,ELEC	1		PADZZ
- 7	22-01-3087	27264	. CONNECTOR,PLUG,ELEC	1		PADZZ
- 8	207376-1	00779	. CONNECTOR,PLUG,ELEC	1		PADZZ
- 9	22-01-3037	27264	. CONNECTOR,PLUG,ELEC	1		PADZZ
- 10	RN55D4751F	81349	. RESISTOR,FXD,FILM	1		PADZZ
- 11	10085-2019	14304	. PANEL	1		XB
- 12	10087-2011	14304	. WASHER,FLAT (AP)	4		PAOZZ
- 13	10087-2012	14304	. SCREW,MACHINE (AP)	4		PAOZZ
- 14	MS35333-70	96906	. WASHER,LOCK (AP)	9		PADZZ
- 15	MS51957-14	96906	. SCREW,MACHINE (AP)	7		PADZZ
- 16	MS35338-135	96906	. WASHER,SPLIT (AP)	7		PADZZ
- 17	MS15795-803	96906	. WASHER,FLAT (AP)	6		PADZZ
- 18	H-6768	14304	. NUT,CLINCH (AP)	4		XB
- 19	9725-SS-0440-7	06540	. POST ELEC MECH	9		PAOZZ
- 20	TC-105A	59730	. BASE	1		XB

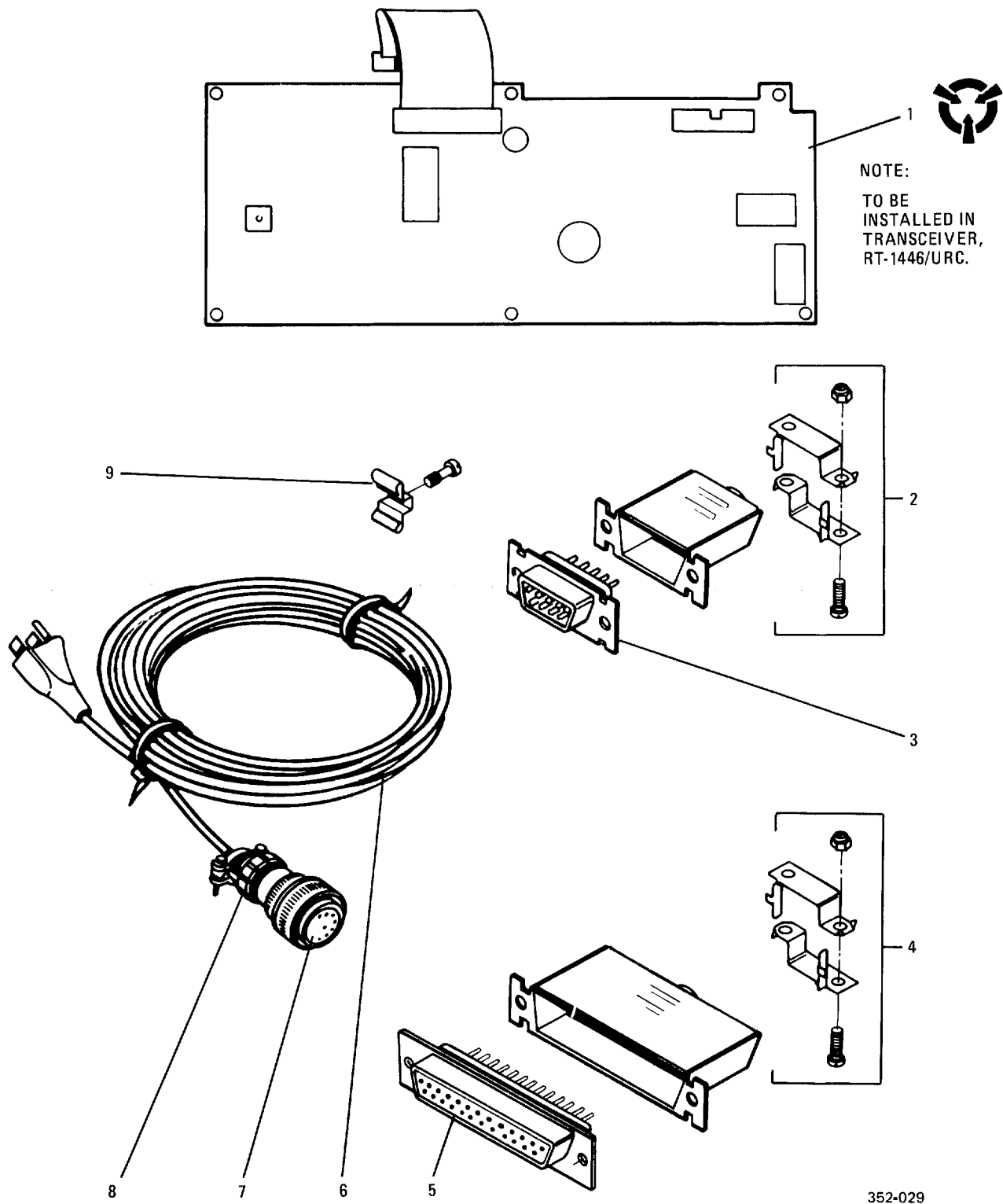
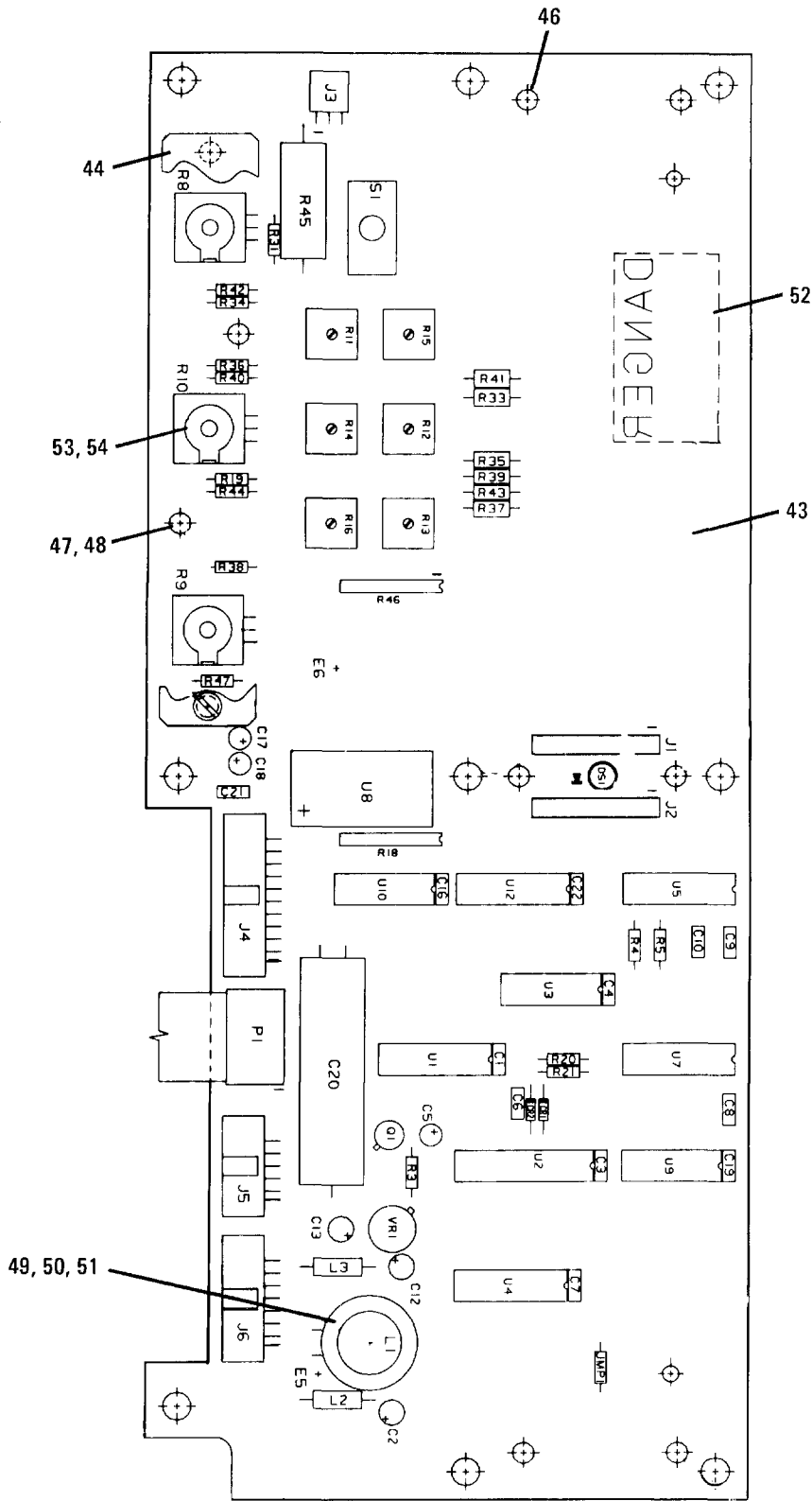


Figure 7-4. Installation Kit for the Remote Control Unit

Figure & Index Number	Part Number	FSCM	Description	Units Per Assy	Usable On Code	SMR Code
			1 2 3 4 5 6 7			
7-4 -	10088-0060	14304	INSTALLATION KIT	1		XB
- 1	10088-6000	14304	. CIRCUIT CARD ASSY, 1A1A19	1		PAODD
- 2	DE24657	71468	. SHIELD ELECTRICAL	1		PAOZZ
- 3	M24308/1-1	81349	. CONNECTOR, RCPT, ELEC	1		PAOZZ
- 4	DB24659-2	71468	. SHIELD ELECTRICAL	2		PAOZZ
- 5	M24308/1-3	81349	. CONNECTOR, RCPT, ELEC	2		PAOZZ
- 6	10085-0065	14304	. CABLE ASSY, RF	1		XB
- 7	MS3106A20-8S	96906	. CONNECTOR	1		PAOZZ
- 8	M85049/41-12A	81349	. ADAPTER	1		PAOZZ
- 9	588D205-12	94033	. SCREW LOCK ELECTRIC	6		PAOZZ



350-122

Figure 7-5. Front Panel PWB Assy, A1A1



## NOTE

To find index numbers for circuit board components, use the reference designator index at the end of this chapter. The complete reference designator for a circuit board component consists of "1," followed by the assembly designator (A1, A2, etc.), then the reference designator on the illustration. For example, the complete reference designator for R25 on the Front Panel PWB Assy is 1A1A1 R25.

Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
7-5 -	10085-2100	14304	CIRCUIT CARD ASSY,A1A1							1		PAODD
- 1	MDO15E104MAA	04222	. CAPACITOR, FXD, CER							12		PADZZ
- 2	T392B106M010AS	31433	. CAP, FXD, ELCTLT							1		PADZZ
- 3	199D225X9025BG2	56289	. CAP, FXD, ELCTLT							1		PADZZ
- 4	TAPF10M25	31433	. CAP, FXD, ELCTLT							2		PADZZ
- 5	T392B335M025AS	31433	. CAP, FXD, ELCTLT							2		PADZZ
- 6	672D477H025DS5J	56289	. CAPACITOR, FXD, ALUM							1		PADZZ
- 7	JAN1N4454	81349	. SEMICOND DEVICE, DIO							2		PADZZ
- 8	5082-4655	01295	. LED							1		PADZZ
- 9	87334-3	00779	. CONNECTOR, RCPT, ELEC							2		PADZZ
- 10	22-12-2034	27264	. CONNECTOR, RCPT, ELEC							1		PADZZ
- 11	1251-8273	28480	. CONNECTOR, RCPT, ELEC							1		PADZZ
- 12	609-1007	15912	. CONNECTOR, RCPT, ELEC							1		PADZZ
- 13	1251-8274	28480	. CONNECTOR, RCPT, ELEC							1		PADZZ
- 14	MP-1142	14304	. JUMPER, ELEC							8		PADZZ
- 15	10085-2144	14304	. COIL, RF							1		PADZZ
- 16	MS14046-6	96906	. COIL, RF							1		PADZZ
- 17	MS90538-20	96906	. COIL, RF							1		PADZZ
- 18	10085-2113	14304	. CABLE ASSY, RF							1		PADZZ
- 19	JAN2N2222A	81349	. TRANSISTOR							1		PADZZ
- 20	CF07-104J	78488	. RESISTOR, FXD, COMP							3		PADZZ
- 21	CF07-103J	78488	. RESISTOR, FXD, COMP							2		PADZZ
- 22	CF07-154J	78488	. RESISTOR, FXD, COMP							1		PADZZ
- 23	10085-2141	14304	. RESISTOR, VARIABLE							1		PADZZ
- 24	10085-2143	14304	. RESISTOR, VARIABLE							1		PADZZ
- 25	10085-2142	14304	. RESISTOR, VARIABLE							1		PADZZ
- 26	3386F-1-502	32997	. RESISTOR, VARIABLE							6		PADZZ
- 27	4308R-101-472	32997	. RESISTOR, NETWORK							1		PADZZ
- 28	CF07-101J	78488	. RESISTOR, FXD, COMP							1		PADZZ
- 29	RW74U6R49F	81349	. RESISTOR, FXD, WW							1		PADZZ
- 30	4308R-101-102	32997	. RESISTOR, NETWORK							1		PADZZ
- 31	7101SDV70QE	95146	. SWITCH, TOGGLE							1		PADZZ
- 32	SN54LS138J	01295	. MICROCIRCUIT							1		PADZZ
- 33	804991-1	96214	. MICROCIRCUIT							1		PADZZ
- 34	SN54LS00J	01295	. MICROCIRCUIT							1		PADZZ
- 35	M38510/30608BEB	81349	. MICROCIRCUIT							1		PADZZ
- 36	7901401EB	14933	. MICROCIRCUIT							1		PADZZ
- 37	SN54LS367AJ	01295	. MICROCIRCUIT							1		PADZZ
- 38	E312-E0001	63312	. MICROCIRCUIT							1		PADZZ
- 39	SN54LS74AJ	01295	. MICROCIRCUIT							1		PADZZ
- 40	DM5416J	27014	. MICROCIRCUIT							1		PADZZ
- 41	CD4094BF	02735	. MICROCIRCUIT							1		PADZZ
- 42	UA78M12HM	07263	. MICROCIRCUIT							1		PADZZ
- 43	10085-2109	14304	. CIRCUIT CARD							1		XA
- 44	10085-2105	14304	. BRACKET, ANGLE							1		XB

T.O. 31R2-2URC-93

Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
- 45	1010M	60963	.	SPACER						1		XB
- 46	18097B-B0440-14	46384	.	SPACER						10		XB
- 47	MS35338-135	96906	.	WASHER, SPLIT (AP)						4		PADZZ
- 48	MS51957-14	96906	.	SCREW, MACHINE (AP)						4		PADZZ
- 49	010440B062	13764	.	SCREW, MACHINE, NYLON						1		PAOZZ
- 50	2813-03-16	80045	.	NUT, PLAIN, HEX (AP)						1		PAOZZ
- 51	2261-N116	06540	.	WASHER, FLAT, NYLON						2		PAOZZ
- 52	MP-0745	14304	.	LABEL						1		MDO
- 53	H-0963	14304	.	NUT, PLAIN, HEX (AP)						3		XB
- 54	MS35333-76	96906	.	WASHER LOCK						3		PAOZZ