

T.O. 31R2-2URC-113

TECHNICAL MANUAL

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

**ANTENNA COUPLER, CU-2310/URC,
P/N 10094-0000**

HARRIS CORPORATION, RF COMMUNICATIONS GROUP
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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 and the RF source.

WARNING

High RF voltages may be present in the coupler during this alignment.

HANDLING OF ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (EDSD)

Electrostatic Discharge Sensitive Devices (EDSD) 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. EDSD 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	Milliampere(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 side band 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 Coupler, Antenna, CU-2310/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-111. For a description of the contents of these chapters, see the INTRODUCTION in T.O. 31R2-2URC-111.

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

SPECIFICATION	NAME
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

STANDARD	NAME
MIL-STD-12	Abbreviations 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

PUBLICATION	NAME
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

WARNING

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

Section I. INTRODUCTION

6-1. CHAPTER ORGANIZATION. This chapter is divided into four sections. Section I tells how the chapter is organized. Section II contains alignment procedures for replaceable modules. This information is also contained in the On-Equipment Manual, T.O. 31R2-2URC-111, 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-111. Section IV contains removal/replacement procedures for the variable coil, variable capacitor, and servo drive assemblies.

Section II. ALIGNMENT PROCEDURES

6-2. INTRODUCTION. This section contains instructions for checking and adjusting the replaceable subassemblies in the 100/500 Watt Antenna Coupler. This section also contains

illustrations to help you identify the components that can be adjusted. To do the procedures described in this section, you need the test equipment listed in Table 6-1.

Table 6-1. Test Equipment*

Generic Name	Military Designation	Manufacturer Model No.	National Stock No.	Required Range
Digital Multimeter		Fluke, Model 8012A	6625-01-140-0221	10 mV to 13.6 Vdc; 0 to infinity ohms
Dummy Load		Bird, Model 8833	6625-00-225-9074	500 W (pk), 250 W (avg), 50 ohms
Electronic Voltmeter w/ AC Probe & T-connector		Hewlett Packard Model 410C	6625-00-469-2258	10 to 100 V rms; 1.6 to 30 MHz (peak reading)
		Model 11036A	6625-00-910-5973	
		Model 11042A	5985-00-713-4356	
100 Watt Transceiver	RT-1446/URC	RF Communications Model RF-350	5820-01-1623406	
Feeler gauge				2.3-2.5 mm
Antenna Coupler	CU-2310/URC	RF Communications Model RF-351	5985-01-161-1724ZX	

*NOTE: Equivalent Items Authorized

6-3. ALIGNMENT PROCEDURES.

NOTE

a. Logic PWB Assembly A1. (see figure 6-2).

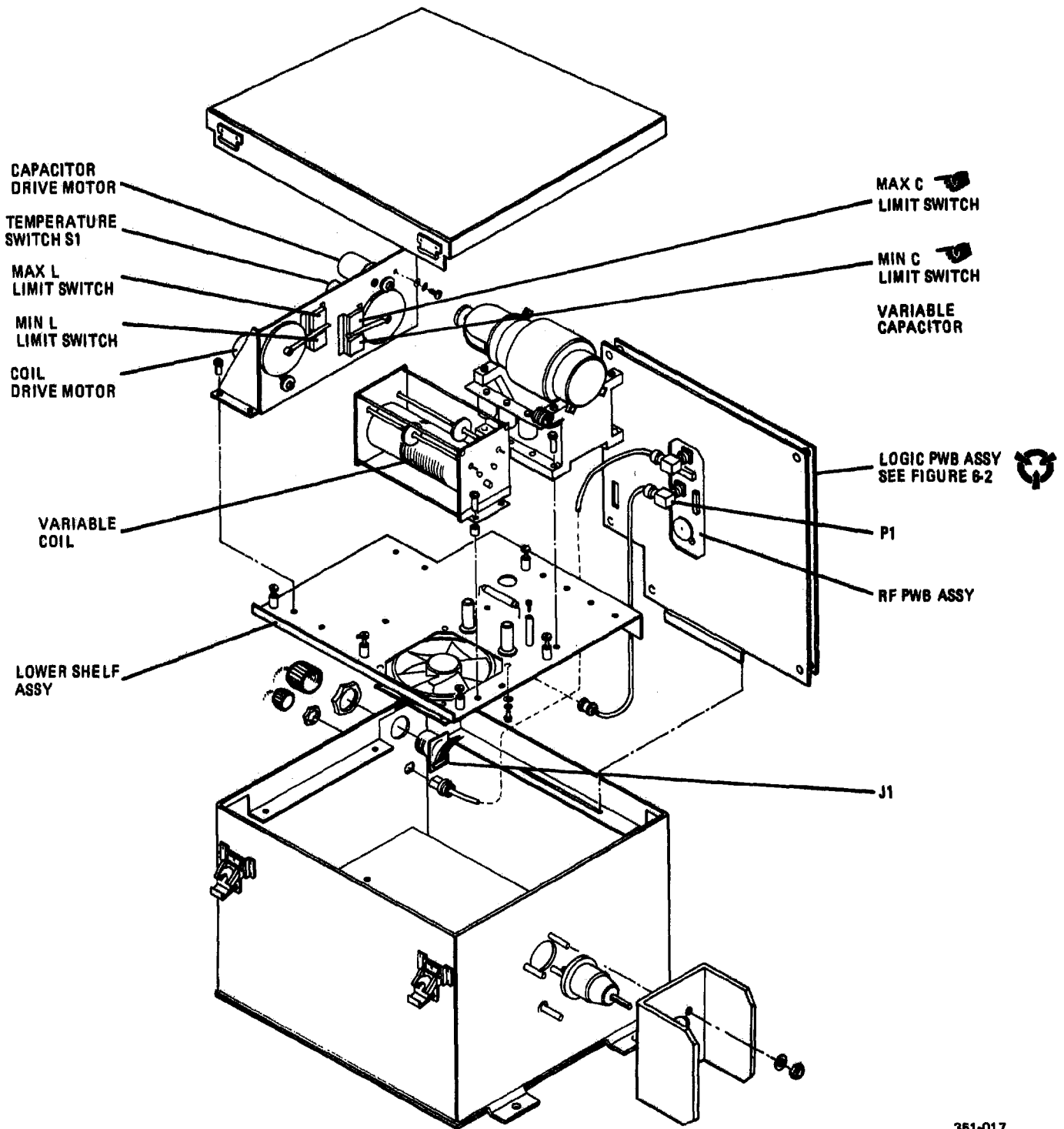
These adjustments are interrelated and should always be done together.

- C31, Reflected Power Adjustment
- R71, Phase Error Adjustment
- C36, Load Error Adjustment



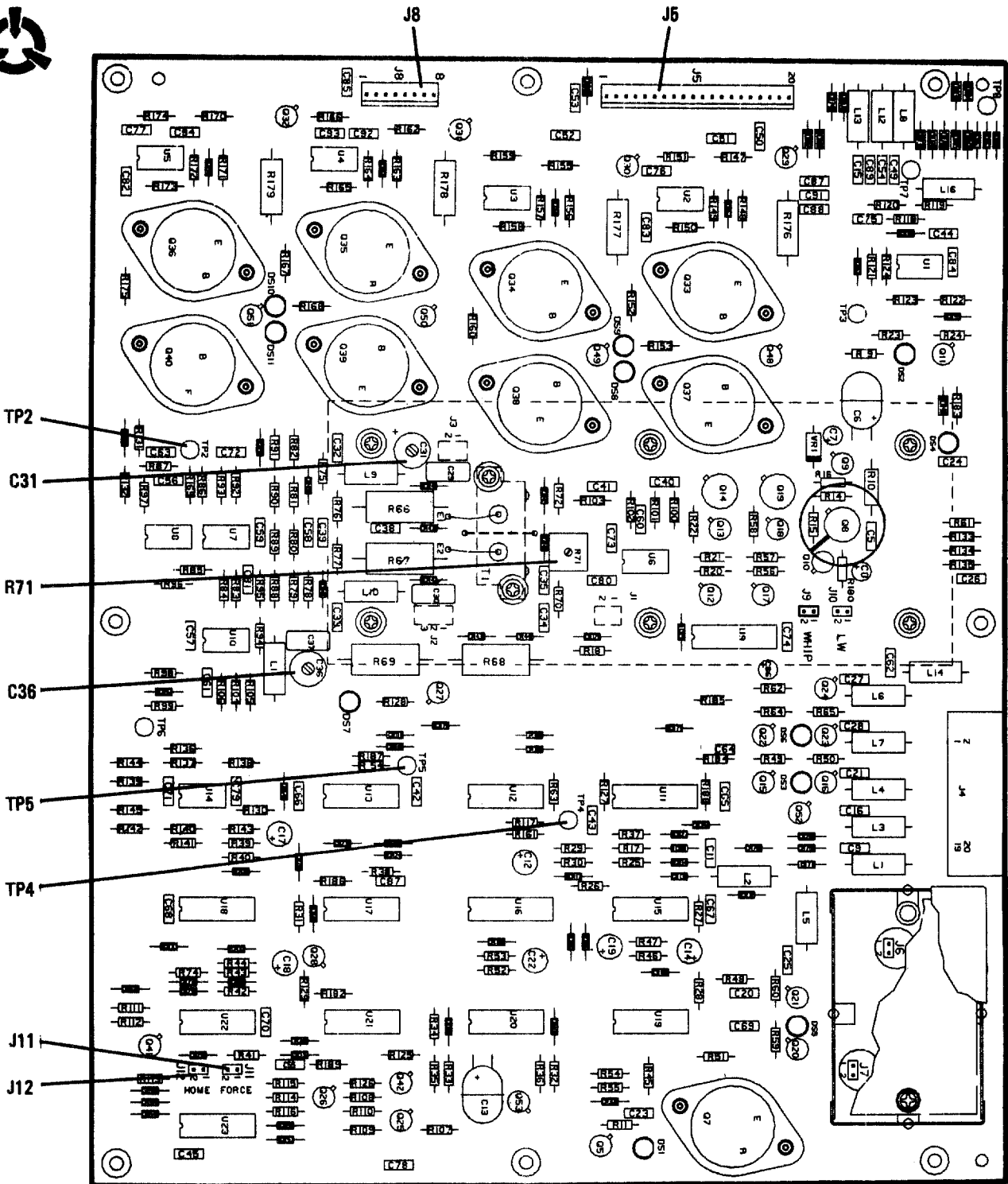
High RF voltages may be present in the coupler during this alignment.

- (1) Connect a dummy load to the RF output connector of the antenna coupler.
- (2) Turn on the transceiver. Set the frequency to 29.999 MHz in CW mode.
- (3) Tune the antenna coupler either with a momentary closure of the CW key or by pressing [2ND] [TX KEY] [2ND] [TX KEY]. The coupler will either (a) attempt to tune twice and then fault, going into the BYPASS mode, or (b) tune properly.



351-017

Figure 6-1. 100/500 Watt Antenna Coupler



351-016A

Figure 6-2. Logic PWB Assy Component Layout

- (4) Remove the top cover of the coupler.
- (5) Loosen the five captive screws and raise the top shelf to its upright position.
- (6) Using a jumper, short the temperature switch (S1) output to ground (this is an insulated standoff on the outboard side of the motor mounting plate (see figure 6-1). This will place the coupler into BYPASS mode.
- (7) Disconnect the RF output coax connector P1 from J2 on the RF PWB Assembly. See figure 6-1.
- (8) Connect a 50 ohm dummy load to J2 on the RF PWB Assembly.
- (9) Connect an HP410C (DC volt range) voltmeter between TP2 and ground on the Logic PWB Assembly (see figure 6-2). Use 0.5 Vdc scale.
- (10) Key the transceiver with the CW key.
- (11) Adjust C31 on the Logic PWB Assembly for a voltage null (a dip in the meter reading).

NOTE

Since the capacitor can be rotated a full 360 degrees (that is, from minimum capacitance to maximum capacitance and back to minimum capacitance), be careful not to mistake the capacitor null for a voltage null. A capacitor null is when the voltage null occurs at either maximum or minimum capacitance. (Figure 6-3 shows how the capacitor looks at either minimum or maximum capacitance).

- (12) Connect the HP410C voltmeter between TP5 and ground. Use 1.5 Vdc scale.
- (13) Adjust C36 for 0 Vdc \pm 200 mV.
- (14) Connect the voltmeter between TP4 and ground. Use 5 Vdc scale.
- (15) Adjust R71 for +0.0 Vdc \pm 100 mv.
- (16) Unkey the transceiver, disconnect the load from J2, connect the RF output coax

connector P1, disconnect the jumper from S1, lower the top shelf, and replace the top cover, making sure that all hardware is secure.

- (17) Turn system OFF to reset from coupler BYPASS Mode (enabled in step 6-3 a (6)).

b. Lower Shelf Assembly, A2

NOTE

The following procedures are done with the Lower Shelf Assembly out of the antenna coupler.

(1) Variable Coil L1 Limit Switch Adjustment

CAUTION

In the next step, do not rotate the coil beyond the limit switch activation point (audible click is heard), or the switch activation lever may be bent.

- (a) Using finger contact on the non-metallic coil surface, rotate the variable coil L1 clockwise (as viewed from the driven end of the coil) toward minimum inductance until the MIN L limit switch (figure 6-1) actuates (an audible click should be heard). The mechanical end stop of the coil should be between 5/8 and 3/4 of a turn clockwise from this point.
- (b) If the mechanical end stop is more than 3/4 of a turn or less than 5/8 of a turn clockwise from this point, do steps (c) - (f).
- (c) Adjust the coil so that it is 5/8 of a turn from the mechanical end stop.
- (d) Loosen the screw securing the coil limit switch assembly.
- (e) Move the switch assembly slightly in the appropriate direction and retighten the screw.

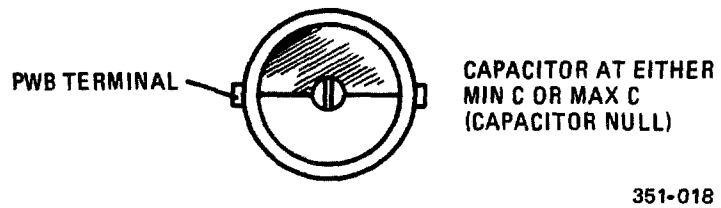


Figure 6-3. Capacitor C31

NOTE

If the initial setting was less than 5/8 of a turn from the mechanical end stop, rotate the limit switch assembly upwards. If the initial setting was greater than 3/4 of a turn, rotate the switch assembly downwards.

- (f) Recheck where the limit switch actuates and repeat this procedure if necessary.

(2) Variable Coil Roller Alignment

- (a) There should be 18 turns of the coil between the TUNE roller and the FOLLOWER roller. Refer to figure 6-4 for the correct alignment. If the alignment is not correct, do steps (b) - (d).
- (b) Adjust the coil so that the tune roller is one turn away from the mechanical end stop at MIN L.
- (c) Adjust the follower roller by carefully lifting the roller off the coil and sliding it to the 20th turn from the mechanical end stop.
- (d) Carefully engage the roller on the coil wire.

(3) Variable Capacitor C1 Limit Switch Adjustment**CAUTION**

In the next step, do not rotate the capacitor beyond the limit switch activation point (audible click is heard), or the switch activation lever may be bent.

- (a) Rotate the variable capacitor shaft counterclockwise (as viewed from the driven end of the capacitor) until the MAX C limit switch (see figure 6-1) actuates (an audible click should be heard). At this time, the blue end bell on the capacitor should be tight.
- (b) Rotating the capacitor shaft an additional 1/4 to 1/2 turn should cause the end bell to become loose. If the end bell becomes loose at the same time as or before the limit switch actuates or if the end bell is still tight after an additional half turn after the limit switch actuates, then do steps (c) - (e).
- (c) Loosen the screw securing the capacitor limit switch assembly.
- (d) Move the switch assembly slightly in the appropriate direction and retighten the screw.

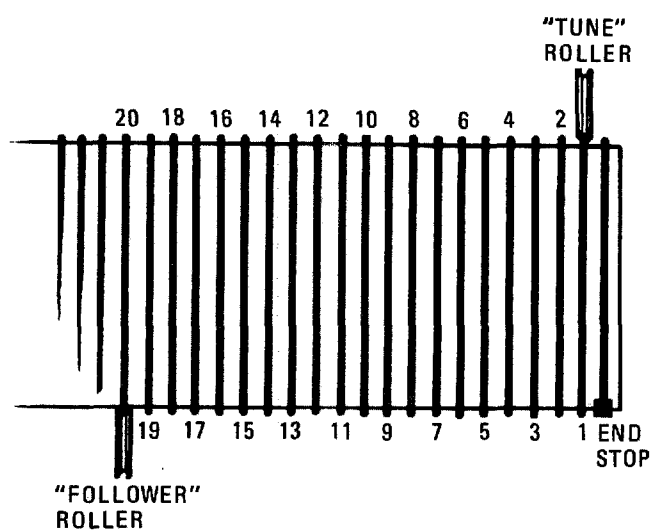
NOTE

If the end bell became loose before the additional 1/4 turn, rotate the switch assembly slightly downwards. If the end bell did not become loose until after the additional 1/2 turn, move the limit switch assembly slightly upwards.

- (e) Retighten the screw securing the switch assembly and repeat steps (a) and (b) above.

c. Case Assembly**Ball Gap Assembly Adjustment**

The gap between the acorn nut and the brass standoff on the antenna terminal should be 0.090 to 0.100 inch (2.3 to 2.5 mm). If not, adjust the acorn nut as required to obtain this specification. See figure 6-5.



351-019

Figure 6-4. Variable Coil Roller Alignment

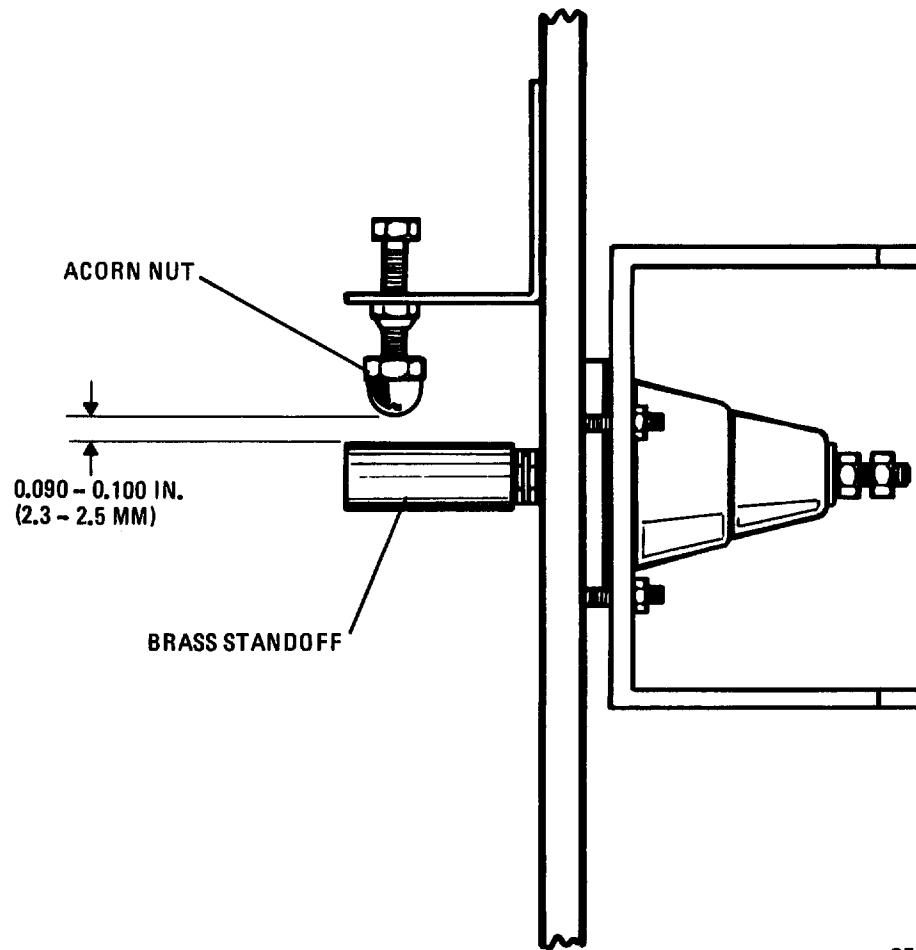


Figure 6-5. Ball Gap Assy Adjustment

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 100/500 Watt Antenna Coupler, T.O. 31R2-2URC-111). 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 100/500 Watt Antenna Coupler (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
Logic PWB Assy, A1.....	6-5
Lower Shelf Assy, A2.....	6-6

6-5. LOGIC PWB ASSY, A1.

a. Preliminary Procedure.

- (1) Remove the good Logic PWB Assy from the test-bed 100/500 Watt Antenna Coupler, and replace it with the faulty Logic PWB Assy. Leave the coupler cover off, and prop up the Logic PWB Assy in its test position.

- (2) Connect a dummy load to the output (J5) of the 100/500 Watt Antenna Coupler.
- (3) Power up the 100/500 Watt Antenna Coupler from the front panel of the 100 Watt Transceiver.
- (4) Check for the presence of the following voltages on the Logic PWB Assy:

<u>Voltage:</u>	<u>Measure at:</u>
+13.6 Vdc	+ side of C6
+10 Vdc	+ side of C8
-10 Vdc	U1, pin 4

- a) If the +13.6 Vdc is bad, check for a problem with the input connector J4. If the circuit breaker in the 100 Watt Transceiver trips out, look for a shorted capacitor (e.g., C5, C6, C89).
- b) If the +10 Vdc is bad, look for a problem with Q8-Q10, VR1, or their associated components.
- c) If the -10 Vdc is bad, look for a problem in the -10 V Converter PWB Assy. This is a standard switching power supply circuit which takes the +10 Vdc from the Logic PWB Assy, feeds it into an oscillator consisting of Q1, Q2, and the primary of T1, and then rectifies out the positive half cycles in the secondary with CR2 and CR3. The resulting negative ripple voltage is filtered by C5, C6, C8, and L3, producing the -10 Vdc.

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

- b. Interpreting the BIT Codes. Use the fault codes listed below as a guide in troubleshooting the Logic PWB Assy. Refer to the section corresponding to the fault code you get. In the event that the test runs without generating a fault code, start at the beginning of the following procedures and work your way through to the end.

3-01

This fault code indicates that the 100/500 Watt Antenna Coupler was not able to achieve a VSWR less than 2:1 within 20 seconds after a tune cycle was initiated. In normal operation (i.e., after a successful tune), this fault code indicates that the VSWR has become 2:1 or greater.

(1) Check the operation of the motor drive circuits as follows:

(a) Short the J12 posts together with a screwdriver. The coil motor should move toward MIN L, and the capacitor motor should move toward MAX C. LEDs DS8 and DS11 should be illuminated while the motors are turning and should go off when the motors reach their end stops.

i. If the coil motor malfunctions, look for a problem either in the driver transistors (Q33, Q38, or their associated components), in the amplifiers (U14, U2, U3, or their associated components), or in the driver switch (Q29 or its associated components).

ii. If the capacitor motor malfunctions, look for a problem either in the driver transistors (Q35, Q40, or their associated components), in the amplifiers (U14, U4, U5, or their associated components), or in the driver switch (Q31 or its associated components).

When the J12 posts are shorted, you should see the following signal levels:

High	Low
CR54-A,-K	U14-7
U3-1	U3-5
U2-5	U3-7
U2-7	U2-1

If both motors function correctly, proceed to step b. If neither motor functions correctly, check for a problem with L/C Home Switch Q41, CR56, servo disable buffer U11, servo disable

switch Q27, or their associated components (if the servos are disabled, LED DS7 should be on).

(b) Short the J11 posts together with the screwdriver. The motors should now move in the opposite direction (toward MAX L and MIN C). LEDs DS9 and DS10 should be illuminated while the motors are turning and should go off when the motors reach their end stops (and when the screwdriver is removed from J11).

i. If the coil motor malfunctions, look for a problem either in the driver transistors (Q34, Q37, or their associated components), in the L Force Switch (Q25, Q42, U21B, CR57, or their associated components), or in the driver switch (Q30 or its associated components).

ii. If the capacitor motor malfunctions, look for a problem either in the driver transistors (Q36, Q39, or their associated components), in the C Force Switch (Q26 or its associated components), or in the driver switch (Q32 or its associated components).

When the J11 posts are shorted, you should see the following signal levels:

<u>Low</u>	<u>High</u>
CR54-A,-K	U14-7
U14-6	U3-5
U3-1	U3-7
U2-5	U2-1
U2-7	

If both motors function correctly, proceed to step 2.

(2) Check the output of the sawtooth generator at TP3. You should see a sawtooth wave varying from 0 V to +3 Vdc. If this signal is not correct, look for a problem in U1, CR60, or their associated components.

(3) Momentarily apply a ground to the cathode of CR13. This should generate a TUNE PULSE, which should cause the following

things to happen:

- (a) All the flip flops on the Logic PWB Assy should be reset. Look for the following voltage levels:

- High at U17-11 (Homing Flip Flop)
- High at U13-10 (RF Present Flip Flop)
- High at U13-4 (Ready Flip Flop)
- High at U15-3 (Tune Time Fault Flip Flop)
- Low at U19-3 (Tune 1/Tune 2 Flip Flop)

- (b) The momentary high at U17-11 is the HOMING signal, which turns on Q22, LED DS6, and Q23, sending a KEY DISABLE signal (low) to the 100 Watt Transceiver.
- (c) The low at U17-10 is the HOME signal, which turns on L/C Home Switch Q41 and causes the servo motors to move to their home positions (MIN L, MAX C).
- (d) The high at U13-10 is applied through CR11 to U9-14, which causes U9-15 to go low, turning off Q12-Q14, turning on Q11, causing the Bypass Relay on the Lower Shelf Assy to deenergize and LED DS2 to illuminate.
- (e) The high at U13-4 turns on Q20, LED DS5, and Q21, causing a TUNE PWR REQUEST signal (low) to be sent to the 100 Watt Transceiver.

If none of the above events takes place, look for a problem in U15 and its associated components. If only one or two of the events fail to occur, trace the signal lines leading to and from the flip flop controlling the event. For example, if the Tune Time Fault Flip Flop fails to reset, suspect Q53, U20, U19, or their associated components. Or, if the KEY DISABLE LED DS6 fails to come on, suspect U17, CR22, Q22, or one of their associated components.

- (4) When the servo motors reach their home positions, as indicated by LEDs DS8 and DS11 going out, check for the following:

- (a) Pins 1 and 2 of U17 go low, generating a high at U17-3. This high should cause the Homing Flip Flop to change

state (U17-11 should go low and U17-10 should go high).

- (b) The low on U17-11 should cause the KEY DISABLE LED DS6 to go out.

- (5) If all the above events take place as described, make a 5 MHz change in the frequency and key the transceiver in CW mode. Then check whether the following events occur:

- (a) Both inputs (pins 1 and 2) to NAND-gate U22A should go high (the KEY line, which is low, is inverted by U11B; the RF ON signal is high, indicating the presence of RF at the FWD PWR Detector--check for a high at TP6), which produces a low at its output. This low does two things: it latches U9A through U16F, causing the Bypass Relay to remain deenergized; and it, along with the ground at U18-8, causes the output of U18C (pin 10) to go high.
- (b) After a 150 ms delay, the high at U18-10 causes the RF Present Flip Flop to change state. The low at U13-10 removes the high from U9-14; but since U9A is latched, the Bypass Relay remains deenergized.
- (c) The high at U18-10 is also applied to one input of NAND-gates U22B-U22D. If the other input to NAND-gate U22C is also high, which it should be if the Phase Polarity Detector Q28 is switched off, indicating a phase angle of zero or less (capacitive), the output of U22C is a low. This low, combined with the low from the MAX C limit switch, produces a high at the output of U18D. This high is called the COIL FORCE signal, which when applied to U21-5 causes the coil drive motor to start moving away from its home position.

NOTE

This situation, where the Phase Polarity Detector is switched off, causing the coil drive motor to start moving away from its home position, occurs only at low frequencies (approximately 1.6 to 3.0 MHz).

- (d) The low at U13-10 also causes the BYPASS signal to go low at U9-14, which causes the output of exclusive-OR-gate U12C to go high, initiating another KEY DISABLE (DS6 comes on again).
- (e) The KEY DISABLE causes the output of U22A-3 to change state, which unlatches U9A through U16F, causing U9-15 to go high. This energizes the Bypass Relay and causes DS2 to go off. At the same time, U9-1 goes low, causing the output of U12C to go low, which removes the KEY DISABLE (DS6 goes off).

If any of the above events fails to occur, trace out the corresponding signal path.

- (6) At this point, if everything has proceeded according to plan, the coupler should be attempting a Tune 1 tuning cycle. The motors should be under the control of the Load Detector Amplifier (U10A) and the Phase Detector Amplifier (U6B). Check the outputs of these amplifiers at TP5 and TP4, respectively. These should be DC voltages between -10 and +10 V, which may be positive or negative depending on the output of the phase detector circuits. These voltages should decrease as the motors move toward their tune point. If either of these voltages seems incorrect, check the inputs to the amplifiers, specifically the voltage divider networks. Check the adjustment of R71 and C36 (see the alignment procedures in Section II of this chapter).
- (7) Check the outputs of the 2:1 VSWR and 1.2:1 VSWR Threshold Detectors, U8A and U8B respectively. U8-1 should be low if the VSWR is 2:1 or greater; U8-7 should be high if the VSWR is 1.2:1 or greater. These levels should switch as the motors approach their tune point.
 - (a) Check the voltage at TP2. This voltage should go less positive as the tune point is approached. If it doesn't, look for a problem in the Refld Pwr Buffer (U7B and its associated components) or in the Refld Pwr Detector (CR41 and

its associated components). Check the adjustment of C31 (see the alignment procedures in Section II of this chapter).

- (b) Check the output of Fwd Pwr Buffer U7A (pin 1). The voltage here should go more positive as the tune point is approached. (The Fwd Pwr Buffer and the Fwd Pwr Detector circuitry should be good, or the RF ON signal at TP6 probably wouldn't have been generated earlier in this procedure).
- (8) If all of these circuits appear to be good, then look for a problem on the RF PWB Assy or in the interconnecting wiring between the RF PWB Assy and the Logic PWB Assy. If you have a known good RF PWB Assy, swap it with the one on the faulty Logic PWB Assy and see if that corrects the problem. Make sure that when the Bypass Relay energizes, K1 on the RF PWB Assy also energizes. Otherwise, the coupler will never be able to tune because the variable coil and capacitor will not be switched in the RF path.
- (9) The coupler should tune successfully on its first attempt (this is accomplished if the output of the 2:1 VSWR Detector goes high, which causes the output of the Ready Flip Flop to go low and disables the Tune Time Fault Flip Flop by keeping Q53 turned on with a high at U17-4). If it doesn't, then the procedure outlined above should uncover the problem. However, if you want to check the operation of the coupler during a Tune 2 cycle, look for the following actions to occur:
 - (a) The coil motor keeps driving until it reaches the MAX L position. At this point, the MAX L limit switch closes, placing a ground at pin 7 of U11C. This causes U11-6 to go high, which places a high at U19-6, causing the Tune 1/Tune 2 Flip Flop to change state, which generates the positive TUNE 2 pulse at U19-3.
 - (b) The TUNE 2 pulse (which is applied to U15-13 through inverter U16C) does the same things as the TUNE 1 pulse, except that it does not reset the RF Present Flip Flop. This enables the

coupler to continue trying to tune without interruption during the whole Tune 1/Tune 2 tuning process.

- (c) The high at U19-3 is also applied to U9-7, which causes U9-10 to go high. This turns on Q17-Q19, energizing the Long Wire Relay and causing DS4 to illuminate.

CODE 2

This fault code indicates that the internal temperature of the 100/500 Watt Antenna Coupler has reached 95 ° C.

This fault code is declared when Q13 conducts, placing a ground on the collector, which is fed back to the transceiver as the THERMAL FAULT signal. Q13 is turned on by a high at U20-10, which in turn is caused by a low at U20-8 (since U20-9 is tied high). U20-8 is normally held high through pullup resistor R61 but goes low when the thermal switch in the Lower Shelf Assy closes. Since we know that the fault is in the Logic PWB Assy, there can be only two causes:

- (a) A failure in one of the components mentioned above, which causes the fault to be declared without the thermal switch closing; or
- (b) Failure of the fan to turn on when the coupler is being used with a 500 Watt Linear Power Amplifier, which can be traced to a problem with fan driver Q7, NOR-gate U21D, CR75, or one of their associated components. The presence of the 500 Watt Linear Power Amplifier can be simulated by grounding the cathode of CR75. Keying the transceiver in CW mode should then cause the fan to turn on and cause LED DS1 to illuminate.

6-6. LOWER SHELF ASSY, A2.

a. Preliminary Procedure.

- (1) Remove the good Lower Shelf Assy from the test-bed 100/500 Watt Antenna Coupler, and replace it with the faulty Lower Shelf Assy. Leave the coupler cover off, and prop up the Logic PWB Assy in its test

position.

- (2) Connect a dummy load to the output (E1/E2) of the 100/500 Watt Antenna Coupler.
- (3) Power up the 100/500 Watt Antenna Coupler from the front panel of the 100 Watt Transceiver.
- (4) Run the receive-transmit BIT test.

- b. Interpreting the BIT Codes. Use the fault codes listed below as a guide in troubleshooting the Lower Shelf Assy. Refer to the section corresponding to the fault code you get. In the event that the test runs without generating a fault code, start at the beginning of the following procedures and work your way through to the end.

3-01

This fault code indicates that the 100/500 Watt Antenna Coupler was not able to achieve a VSWR less than 2:1 within 20 seconds after a tune cycle was initiated. In normal operation (i.e., after a successful tune), this fault code indicates that the VSWR has become 2:1 or greater.

- (1) Check the operation of the motor drive circuits as follows:
 - (a) Short the J12 posts together with a screwdriver. The coil motor should move toward MIN L, and the capacitor motor should move toward MAX C. LEDs DS8 and DS11 should be illuminated while the motors are turning and should go off when the motors reach their end stops.
 - i. If one motor moves but the other doesn't, the motor may be faulty or there may be an open in the wiring.
 - ii. If either LED fails to go off when the motors reach their home positions, suspect a problem with the MAX C or MIN L limit switch.

If both motors function correctly, proceed to step b.

- (b) Short the J11 posts together with the screwdriver. The motors should now move in the opposite direction (toward MAX L and MIN C). LEDs DS9 and DS10 should be illuminated while the motors are turning and should go off when the motors reach their end stops. If either LED fails to go off when the motors reach their end stops, look for a problem with the MIN C or MAX L limit switch.

In both the above cases, check for any mechanical binding in the motors that might be slowing them down. If both motors function correctly, proceed to step 2.

- (2) Check the operation of the Long Wire Adapter Relay K1 by applying a ground to the anode of CR40 on the Logic PWB Assy. The relay should energize, inserting the Capacitor Assy in series with the signal path. DS4 should illuminate when this happens.
- (3) Check the operation of the Bypass Relay K2 by applying a ground to the cathode of CR7 on the Logic PWB Assy. This should cause the relay to deenergize, shorting the

input of the coupler to the output and causing DS2 to illuminate.

CODE 3-02

This fault code indicates that the temperature inside the coupler reached 95 ° C.

- (1) This fault code usually indicates a failure in the fan B1. The fan should come on only if a 500 Watt Linear Power Amplifier is connected to the coupler and only if the system is keyed. If you have a 500 Watt Linear Power Amplifier connected, key the system and check that the fan comes on. If you don't have a 500 Watt Linear Power Amplifier connected, you can simulate one by grounding the cathode of CR75 on the Logic PWB Assy. If the fan fails to come on, the problem could be either the fan itself or the connecting wiring. Try connecting the fan directly to a DC power supply (+13.5 Vdc) and see if it will run.
- (2) If the fan appears to be working properly, check for a problem with thermal switch S1. S1 could be permanently shorted, or it could be closing at too low a temperature.

Section IV. REMOVAL/REPLACEMENT PROCEDURES

6-7. REMOVAL/REPLACEMENT

PROCEDURES. The following removal/replacement procedures are for the internal components of the Lower Shelf Assy only. Removal/replacement procedures for the Lower Shelf Assy itself and for the Logic PWB Assy are contained in the On-Equipment Manual, T.O. 31R2-2URC-111.

NOTE

The following procedures assume that the Lower Shelf Assy is removed from the coupler chassis.

(1) Variable Coil L1

Removal:

- (a) Manually (or, if possible, using the J12 shorting posts) move the variable coil to its home position. This is the position of minimum inductance, in which the coil rollers should be in their maximum clockwise position (toward the rear of the coil).
- (b) Lift the four clips on the coupling.
- (c) Remove the nut at the rear of the variable coil. Disconnect the uninsulated silver wire (going to the variable capacitor) and the white wire (going to the Long Wire Capacitor Assy).
- (d) Remove the four Phillips mounting screws holding the variable coil to the Lower Shelf Assy.
- (e) Remove and keep the spacer blocks at each end of the coil.
- (f) Carefully pull the variable coil to the rear and remove it.

Replacement:

- (f) Manually move the coil rollers to their maximum clockwise position (toward the rear of the coil).

- (g) Adjust the coil rollers for 20 turns spacing. See the alignment procedures in Section II of this chapter.
- (h) Mate the coil side of the coupling to the motor side of the coupling.

NOTE

Check the alignment of the coil shaft and the motor shaft before tightening the mounting screws.

- (i) Position the variable coil on the Lower Shelf Assy, and secure it with the four Phillips mounting screws.
- (j) Connect the uninsulated silver wire and the white wire to the post at the rear of the variable coil, and secure them with the nut.
- (k) Check the tension on the end plate contact with a gram gauge. The tension should be 25-50 grams.
- (l) Do the following adjustment procedures (see Section II):
 - Variable Coil L1 Limit Switch Adjustment
 - Variable Coil Roller Alignment

(2) Variable Capacitor C1

Removal:

- (a) Manually (or, if possible, using the J12 shorting posts) move the variable coil to its home position. This is the position of maximum capacitance, in which the capacitor shaft should be fully clockwise.
- (b) Lift the four clips on the coupling.
- (c) Loosen the nuts securing the white wire to the RF PWB Assy and the uninsulated silver wire to the variable coil assembly.

- (d) Remove the two nuts holding the clamp at the shaft end of the variable capacitor. Slide the clamp forward.
- (e) Remove the capacitor by tilting the shaft end up and sliding the capacitor out of the rear clamp. (The rear clamp should be loose because you loosened the nut in step c. If necessary, loosen--but do not remove--the other two nuts holding the clamp to the mount.)
- (f) Remove the clamp (with the white wire still attached) from the shaft end of the capacitor.

Replacement:

- (g) Manually rotate the capacitor shaft to its maximum clockwise position. You can use the coupling as a knob.
- (h) Slip the clamp (with the white wire from the RF PWB Assy attached) onto the shaft end of the capacitor.
- (i) Set the capacitor into its mounts, sliding the rear end into the rear clamp and orienting the capacitor so that the ceramic nipple protruding from its side is facing the variable coil assembly. Make sure that the ceramic nipple is at least 1 inch away from the long wire capacitor assembly.
- (j) Mate the capacitor side of the coupling to the motor side of the coupling and snap the clips.

NOTE

Check the alignment of the capacitor shaft and the motor shaft before tightening the mounting screws.

- (k) Install the nuts securing the front (shaft end) capacitor clamp to the mount.
- (l) Tighten all the nuts on the capacitor clamps.
- (m) Do the following adjustment procedure (see Section II):

Variable Capacitor C1 Limit Switch Adjustment

(3) Servo Drive Motors

Removal:

- (a) Lift the four clips on both motor drive couplings.
- (b) Remove the four Phillips screws holding the Servo Drive Assy to the Lower Shelf Assy.
- (c) Carefully disengage the Servo Drive Assy from the variable coil and capacitor assemblies.

NOTE

Once the Servo Drive Assy is separated from the variable coil and capacitor assemblies, be careful not to disturb the positions of the gears. This will ensure that the limit switch settings do not change.

- (d) Unsolder the appropriate motor leads.
- (e) Remove the three motor mounting screws.
- (f) Remove the motor from the Servo Drive Assy mounting plate.

Replacement:

- (g) Reverse the order of the above steps.
- (h) Check the following adjustments (see Section II):

Variable Coil L1 Limit Switch Adjustment
Variable Capacitor C1 Limit Switch Adjustment

(4) Limit Switches

Removal:

- (a) Unsolder the appropriate switch leads.
- (b) The limit switches for the variable capacitor can be removed from their

mounting bracket by simply removing the two mounting screws. To remove the limit switches for the variable coil, however, you may need to remove the Servo Drive Assy (see section 3 above), unless you have an offset Phillips screwdriver.

Replacement:

(c) Reverse the order of the above steps.

(d) Check the following adjustments (see Section II):

Variable Coil L1 Limit Switch Adjustment
Variable Capacitor C1 Limit Switch Adjustment

(5) Long Wire Capacitor Assy

Removal:

(a) Unsolder the four leads from the end capacitors. Also, unsolder the 100 megohm resistor.

(b) Remove the two Phillips screws (and nuts) holding the Long Wire Capacitor Assy to the variable capacitor mounts.

(c) Remove the Long Wire Capacitor Assy.

NOTE

The capacitors in the Long Wire Capacitor Assy may also be removed individually by removing the appropriate Phillips mounting screw and, if necessary, unsoldering the lead wires.

CHAPTER 7

ILLUSTRATED PARTS BREAKDOWN

Section 1. INTRODUCTION

7-1. PURPOSE. This chapter lists, illustrates, and describes the detail parts for the 100/500 Watt Antenna Coupler. 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 100/500 Watt Antenna Coupler 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 100/500 Watt Antenna Coupler 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 alphanumeric 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-113

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-Benrus 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 AII 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	Ampere 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 Philips 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	Cardlon 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 Erle 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-Dubiller 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	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 Milburn 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	44655	Ohmite Manufacturing Company 3601 W. Howard Street Skokie, IL 60076	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	46384	Penn Engineering and Manufacturing Corporation Old Easton Road P.O. Box 1000 Danboro, PA 18916	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 Summeytown Pike North Wales, PA 19454	49671	RCA Corporation 30 Rockefeller Plaza New York, NY 10020	55566	R A F Electronic Hardware, Inc. 95 Silvermine Road Seymour, CT 06483
32039	Zeus Industrial Products, Inc. Ft. Thompson Street Raritan, NJ 08869	50157	Midwest Components, Inc. 1981 Port City Blvd. P.O. Box 787 Muskegon, MI 49443	56289	Sprague Electric Company 87 Marshall Street North Adams, MA 01247
32097	PCC Pertec Division Pertec Computer Corporation 9600 Irontdale Avenue Chatsworth, CA 91311	50173	Curt Straub Enterprises 444 W. Ocean Blvd. Suite 1106 Long Beach, CA 90802	56637	RCD Components, Inc. 330 Bedford Street Manchester, NH 03101
32284	Rotron Controls Division Rotron, Inc. Woodstock, NY	50434	Hewlett-Packard Company Optoelectronics Division 640 Page Hill Road Palo Alto, CA 94304	56699	Mepco/Electra, Inc. 6071 St. Andrews Road Columbia, CS 29210
32293	Intersil Inc. Subsidiary of General Electric Company 10710 N. Tantau Avenue Cupertino, CA 95014	51144	IDI Electric Canada LTD 33 Fuller Road Box 159 Ajax, Ontario Canada L1S 2E1	57074	Alberox Corporation New Bedford, MA
32848	Thompson Industries Division of W M F Container Corporation 2501 E. Magnolia Street Phoenix, AZ 85036	51984	NEC America, Inc. 2741 Prosperity Avenue Fairfax, VA 22031	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	52458	Magnum Electric Corporation 6385 Dixie HWY Erie, MI 48133	57771	Stimpson Company, Inc. 900 Sylvan Avenue Bayport, NY 11705
32997	Bourns, Inc. Trimpot Division 1200 Columbia Avenue Riverside, CA 92507	52559	Metraplex Corporation Berkshire Industrial Park Bldg. 3 Bethel, CT 06801	57921	Bourns, Inc. Precisions/Controls Division 1200 Columbia Avenue Riverside, CA 92507
34335	Advanced Micro Devices 901 Thompson Place Sunnyvale, CA 94086	52760	Minnesota Mining and Manufacturing Company Electro Products Division 341 Factory Road Addison, IL 60101	57922	Bourns, Inc. Precisions/Controls Division 1200 Columbia Avenue Riverside, CA 92507
34553	Amperex Electronic Corporation Component Division Hauppauge, NY	53373	Midland-Ross Corporation Cambion Division Barnstead Road Pittsfield, NH 03263	57924	Bourns, Inc. Networks Division 12155 Magnolia Avenue Riverside, CA 92503
		53894	Aham, Inc. 27901 Front Street Rancho California, CA 92390	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 Global 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	Gochenaux 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	80045	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 Phillips Corporation Mt. Vernon, NY	80063	U.S. Army Communications And Electronics Materiel Readiness Command Logistics Engineering Directorate Fort Monmouth, NJ 07703	83330	Kulka Smith, Inc. A North American Phillips Company 1913 Atlantic Avenue Manasquan, NJ 08736
75915	Tracor Littelfuse, Inc. 800 E. Northwest HWY Des Plaines, IL 60016	80101	General Electronics, Inc. Paterson, NJ	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	80103	Veeco Instruments, Inc. Lambda Electronics Division 515 Broad Hollow Road Melville, NY 11747	86797	Rogan Corporation 3455 Woodhead Drive Northbrook, IL 60062
76385	Minor Rubber Company, Inc. 49 Ackerman Street Bloomfield, NJ 07003	80294	Bourne Instruments, Inc. 135 Magnolia Avenue Riverside, CA 92506	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	80372	Marine Corps. Navy Annex Washington, DC 20380	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	81073	Grayhill, Inc. 561 Hillgrove Avenue P.O. Box 10373 La Grange, IL 60525	89110	AMP, Inc. Capltron Division 1595 S. Mt. Joy Street Elizabethtown, PA 17022
77342	AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	81095	Triad-Utrad Division Litton Systems, Inc. National City, CA	89265	AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671
77347	Poulsen and Wardon, Inc. Los Angeles, CA	81249	Library Efficiency Corporation New York, NY	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	81349	Mil Spec	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	81483	International Rectifier 9220 Sunset Blvd. Los Angeles, CA 90069	91836	Kings Electronics Company, Inc. 40 Marbledale Road Tuckahoe, NY 10707
78488	The Stackpole Corporation 201 Stackpole Street St. Marys, PA 15857	81564	Arted Company, Inc. 50 Warehouse Street Springfield, MA 01118	91929	Honeywell, Inc. Micro Switch Division 11 W. Spring Street Freeport, IL 61032
79061	Vaco Products Company 1510 Skokie Blvd. Northbrook, IL 60062	81814	Zierick Manufacturing Company Radio Circle Mt. Kisco, NY 10549	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 Phillips 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	Mepco/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 Fulling Mill P.O. Box 3608 Harrisburg, PA 17105	00779
		99313	Varian Associates, Inc. Microwave Tube Division 611 Hansen Way Palo Alto, CA 94303	Amperex Electronic Corporation Component Division Hauppauge, NY	34553
94696	Magnecraft Electric Company 5575 N. Lynch Avenue Chicago, IL 60630		NAME AND ADDRESS	FSCM	
			Acme Electric Corporation Cuba, NY	00159	Amperex Electronic Corporation Ferroxcube Division 5083 Kings HWY Saugerties, NY 12477
95146	Alco Electronic Products, Inc. 1551 Osgood Street North Andover, MA 01845		Advanced Micro Devices 901 Thompson Place Sunnyvale, CA 94086	34335	
			Aham, Inc. 27901 Front Street Rancho California, CA 92390	53894	Amperex Electronic Corporation Semiconductor Solid State and Active Devices-Electro Optical Devices Providence Pike Slatersville, RI 02876
95275	Vitramon, Inc. Box 544 Bridgeport, CT 06601		Airpax Corporation Frederick Division A North American Philips Company Husky Park P.O. Box 500 Frederick, MD 21701	82415	
95987	WH Brady Company 727 W. Glendale Avenue Milwaukee, WI 53209		Alberox Corporation New Bedford, MA	57074	Amphenol RF Operations An Allied Company 33 E. Franklin Street Danbury, CT 06810
96214	Texas Instruments, Inc. Equipment Group 13500 N. Central EXPY P.O. Box 660246 M/S 3137 Dallas, TX 75266		Alco Electronic Products, Inc. 1551 Osgood Street North Andover, MA 01845	95146	Aromat Corporation 250 Sheffield Street Mountainside, NJ 07092
96238	Dataproducts New England, Inc. Barnes Park North Wallingford, CT 06492		Alden Products Company 117 N. Main Street P.O. Box 860 Brockton, MA 02403	01009	Arrow Hart Canada LTD Scarborough, Ontario Canada M8Z 2R4
96804	Bell Industries, Inc. JW Miller Division 19070 Reyes Avenue P.O. Box 5825 Compton, CA 90224		Alliance Engineering, Inc. Alliance, OH	92891	Arted Company, Inc. 50 Warehouse Street Springfield, MA 01118
96906	Mill Spec		Allied Amphenol Products Bendix Connector Operations 40-60 Delaware Street Sidney, NY 13838	77820	Atlantic India Rubber Works, Inc. 571 W. Polk Street Chicago, IL 60607
97520	Basler Electric Company RT 143 P.O. Box 269 Highland, IL 62249		Allied Devices Corporation 2365 Milburn Avenue P.O. Drawer E. Baldwin, NY 11510	29964	Augat, Inc. 33 Perry Avenue P.O. Box 799 Attleboro, MA 02703
97942	Westinghouse Electric Corporation Defense and Electronic Systems Center Baltimore-Washington Airport P.O. Box 1897 MS 984 Baltimore, MD 21203		Amerace Corporation Esna Division 2330 Vauxhall Road Union, NJ 07083	72962	AVX Ceramics Division of AVX Corporation 19th Avenue South P.O. Box 867 Myrtle Beach, SC 29577
98003	Nielsen Hardware Corporation 770 Wethersfield Avenue P.O. Box 568 Hartford, CT 06141		Amerace Corporation Buchanan Crimptool Products Division 1065 Floral Avenue Union, NJ 07083	83079	Basler Electric Company RT 143 P.O. Box 269 Highland, IL 62249
98291	Seaelectro Corporation BICC Electronics 40 Lindeman Drive Trumbull, CT 06611		American Trans-Coil Corporation 124-06 101st Avenue Richmond Hill, NY 11419	18212	Beckman Instruments, Inc. Beckman Electronic Technologies Subsidiary of Smith Kline/Beckman Corporation 2500 Harbor Blvd. Fullerton, CA 92634
98410	ETC-Molex, Inc. Subsidiary of Molex, Inc. 5201 Richmond Road Bedford Heights, OH 44146		AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	77342	Belden Corporation Subsidiary of Cooper Industries, Inc. 2000 S. Batavia Avenue Geneva, IL 60134
98734	Hewlett-Packard Company Manufacturing Division Palo Alto, CA		AMF, Inc. Potter and Brumfield Division 200 Richland Creek Drive Princeton, IN 47671	89265	Bell Industries, Inc. JW Miller Division 19070 Reyes Avenue P.O. Box 5825 Compton, CA 90224
99120	Plastic Capacitors, Inc. 2623 N. Pulaski Road Chicago, IL 60639		AMP, Inc. Capitron Division 1595 S. Mt. Joy Street Elizabethtown, PA 17022	89110	Bergquist Company, Inc., The 5300 Edina Industrial Blvd.
99167	Sundstrand Aviation Operations Unit of Sundstrand Corporation 4747 Harrison Avenue P.O. Box 7002 Rockford, IL 61125				55285

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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 Phillips 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. Precisions/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. Precisions/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 Globar 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 Walkill, 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 Sumneytown 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	Mil Spec	96906	National Semiconductor Corporation 2900 Semiconductor Drive Santa Clara, CA 95051	27014
Magnum Electric Corporation 6385 Dixie HWY Erie, MI 48133	52458	Millen Division Electronic Instrument and Specialty Corporation 42 Pleasant Street Stoneham, MA 02180	57285	NEC America, Inc. 2741 Prosperity Avenue Fairfax, VA 22031	51984
Marine Corps. Navy Annex Washington, DC 20380	80372	Mini-Circuits Laboratory Division of Scientific Components Corporation 2625 E. 14th Street Brooklyn, NY 11235	15542	Neilsen Products Company Lake Elmo, MN	00758
Marson Corp. 130 Crescent Avenue Chelsea, MA 02150	10054	Minnesota Mining and Manufacturing Company Industrial Tape Division 3M Center St Paul, MN 55101	26066	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 Industrial Coated Abrasives Division 3M Center St. Paul, MN 55101	28124	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	Minnesota Mining and Manufacturing Company Energy Systems 3M Center Bldg. 551 St. Paul, MN 55101	30142	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 Irondale 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-Berrous 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	Sealectro 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				

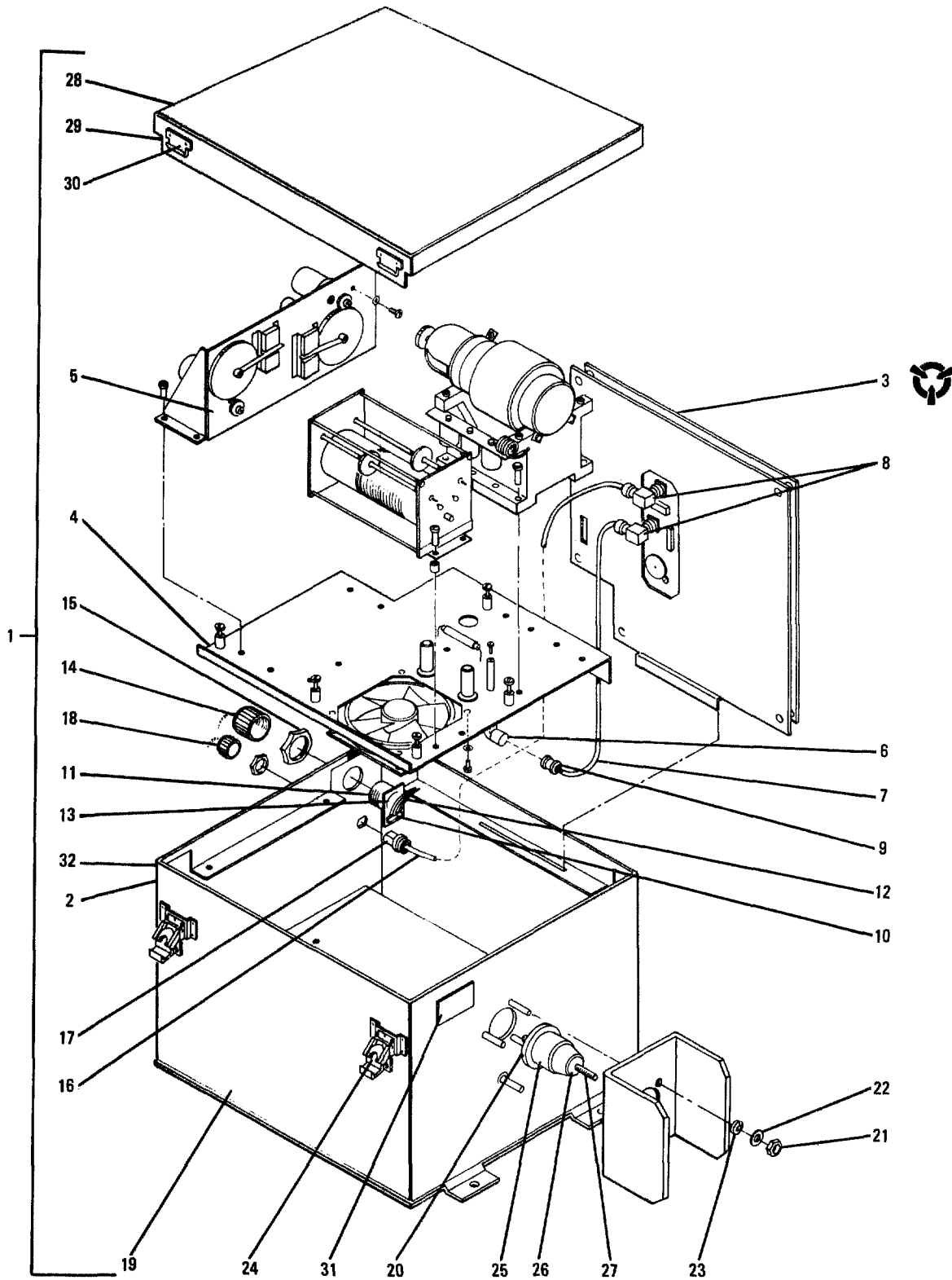
T.O. 31R2-2URC-113

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 Kohinor, 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 Material 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	7th Position	8th Position	9th Position
P Procurement	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			
	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			
	D Depot Kit							
	B In Both Kits							
M Manufacture	O Organization	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			
	F Intermediate							
	D Depot							
A Assemble	O Organization	D Remove/Replace at Depot Level	D Overhaul at Depot	A Special Handling	U Nonexpendable Support Equipment, Organizational and Intermediate NF2			
	F Intermediate							
	D Depot							
X Nonprocured	A Requisition NHA	D Remove/Replace at Depot Level	L Repair at Depot					
	B Reclamation from IM							
	C Mfg Drawings							

Section II. MAINTENANCE PARTS LIST

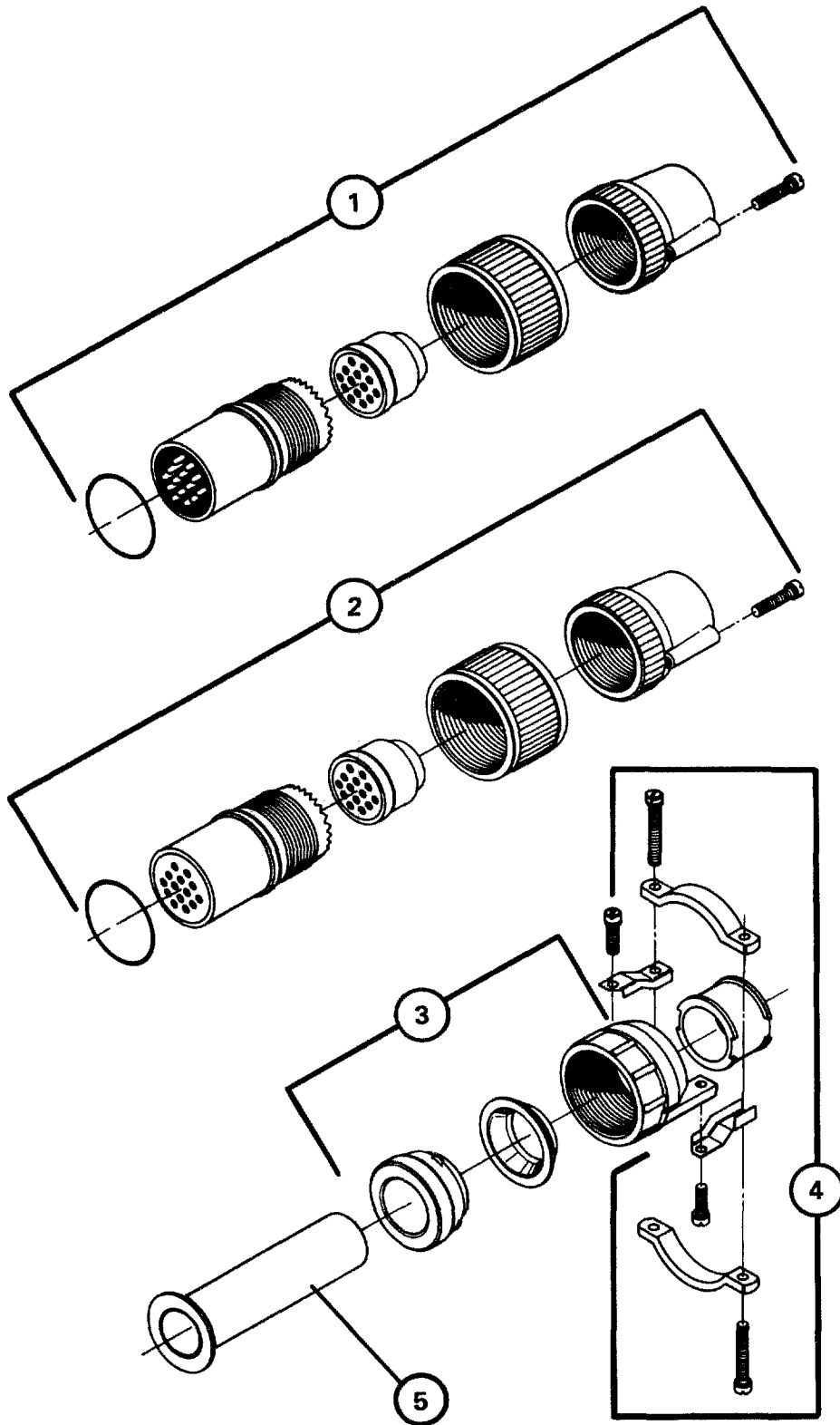


351-022

Figure 7-1. 100/500 Watt Antenna Coupler, CU-2310/URC, Exploded View

Figure & Index Number	Part Number	FSCM	Description 1 2 3 4 5 6 7	Units Per Assy	Usable On Code	SMR Code
7-1 -	10094-0000	14304	COUPLER, ANTENNA *	1		PEODD
- 1	10094-0100	14304	. COUPLER, ANTENNA	1		PAODD
- 2	10094-0002	14304	. PLATE IDENTIFICATN	1		XB
- 3	10094-3000	14304	. CIRCUIT CARD ASSY, A1	1		PAODD
- 4	10094-0120	14304	. LOWER SHELF ASSY, A2	1		PAODD
- 5	10094-1000	14304	. SERVOMECHANISM, A2A1	1		XA
- 6	KC-79-110	91836	. CONNECTOR, RCPT, ELEC	1		PADZZ
- 7	10094-0550	14304	. CABLE ASSY, RF, A2W2	1		MDO
- 8	KC-59-105	91836	. CONNECTOR, RCPT, ELEC	1		PAOZZ
- 9	M39012/16-0014	81349	. CONNECTOR, RCPT, ELEC	1		PAOZZ
- 10	10094-0140	14304	. CABLE ASSY, RF, A3	1		PAOZZ
- 11	10-74720-27P	77820	. CONNECTOR, RCPT, ELEC	1		XA
- 12	10094-0560	14304	. CABLE ASSY, RF, A3W1	1		XA
- 13	10094-0149	14304	. CIRCUIT CARD	1		XA
- 14	10-37087-20	77820	. CAP, PROT, DUMR SEAL	1		XA
- 15	1960-1151	14304	. WASHER, FLAT (AP)	1		PADZZ
- 16	10094-0540	14304	. CABLE ASSY, RF, W1	1		MDO
- 17	M39012/03-0503	81349	. CONNECTOR, RCPT, ELEC	1		PAOZZ
- 18	M39012/25-0012	81349	. CAP, PROT, DUMR SEAL	1		PAOZZ
- 19	10094-0502	14304	. CASE ANTENNA CPLR	1		XB
- 20	423-0015	14304	. GASKET	1		MDD
- 21	8045NP	73734	. NUT, PLAIN, HEX (AP)	6		PAOZZ
- 22	3242513	21340	. WASHER, FLAT (AP)	6		PAOZZ
- 23	1390	73734	. WASHER, LOCK (AP)	4		PAOZZ
- 24	H-6611	14304	. CATCH, CLAMPING	4		XB
- 25	SA-17546	57074	. INSULATOR BOWL	1		XB
- 26	423-0012	14304	. GASKET	1		MDD
- 27	423-0049	14304	. ROD, MODIFIED	1		XB
- 28	10094-0510	14304	. COVER, ACCESS	1		XB
- 29	10094-0521	14304	. GASKET	4		MDD
- 30	H-6612	14304	. STRIKE, CATCH	4		XB
- 31	MP-0745	14304	. PLATE IDENT	1		MDO
- 32	10094-0071	14304	. PLATE IDENTIFICATIO	1		MDO

*Includes Installation Kit 10094-0060. See figure 7-2.



351-021

Figure 7-2. Installation Kit for 100/500 Watt Antenna Coupler

Figure & Index Number	Part Number	FSCM	Description	Units Per Assy	Usable On Code	SMR Code
			1 2 3 4 5 6 7			
7-2 -	10094-0060	14304	INSTALLATION KIT	1		XB
- 1	MS3106A20-27P	81349	. CONNECTOR, PLUG, ELEC	1		PAOZZ
- 2	MS3106A20-27S	96906	. CONNECTOR, RCPT, ELEC	1		PAOZZ
- 3	M85049/1-12B	81349	. CLAMP, CABLE	2		PAOZZ
- 4	10-36233-243	77820	. CLAMP, CABLE	2		PAOZZ
- 5	MS3420-12B	96906	. BUSHING, ELECTRICAL	2		XB

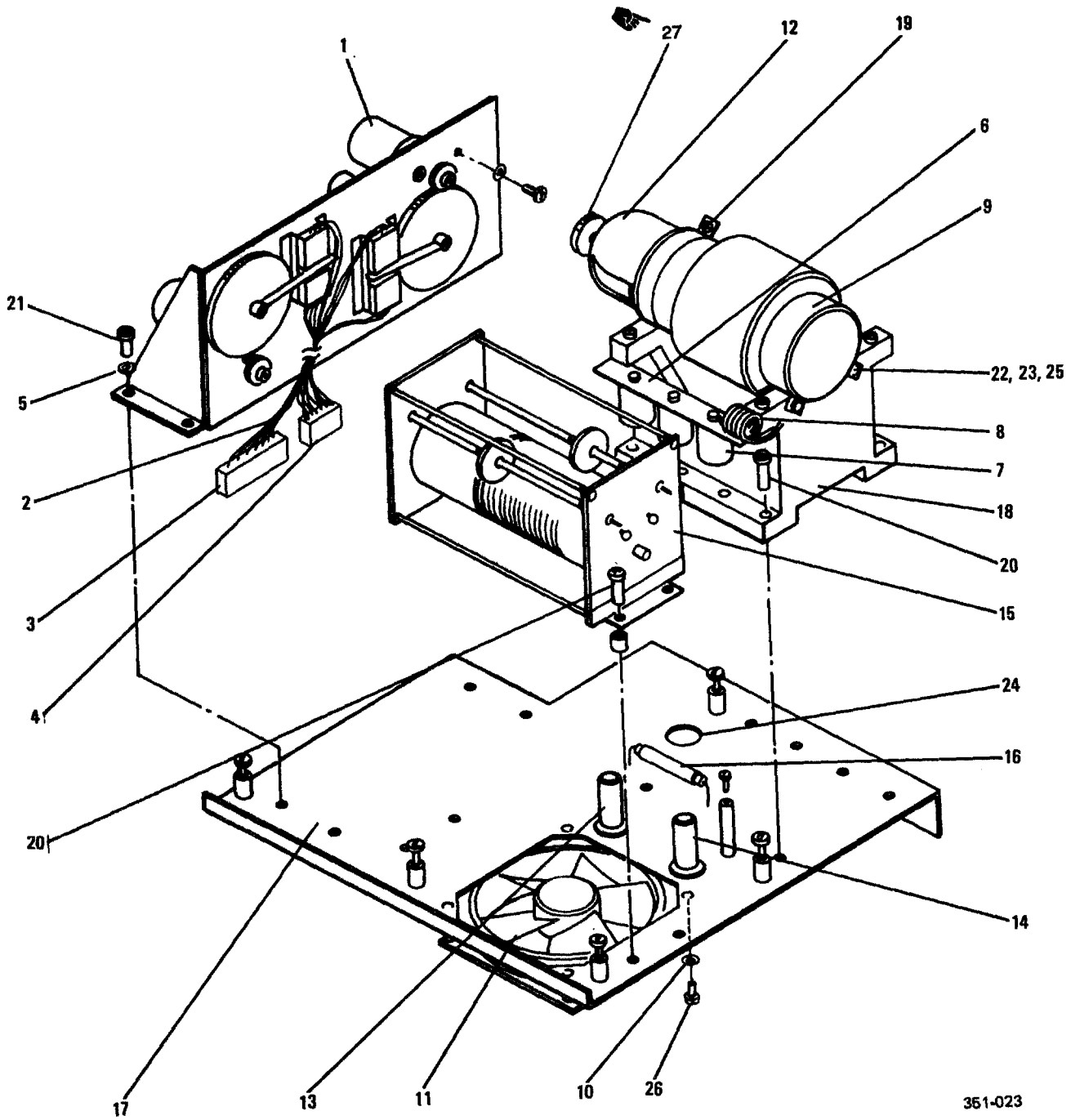
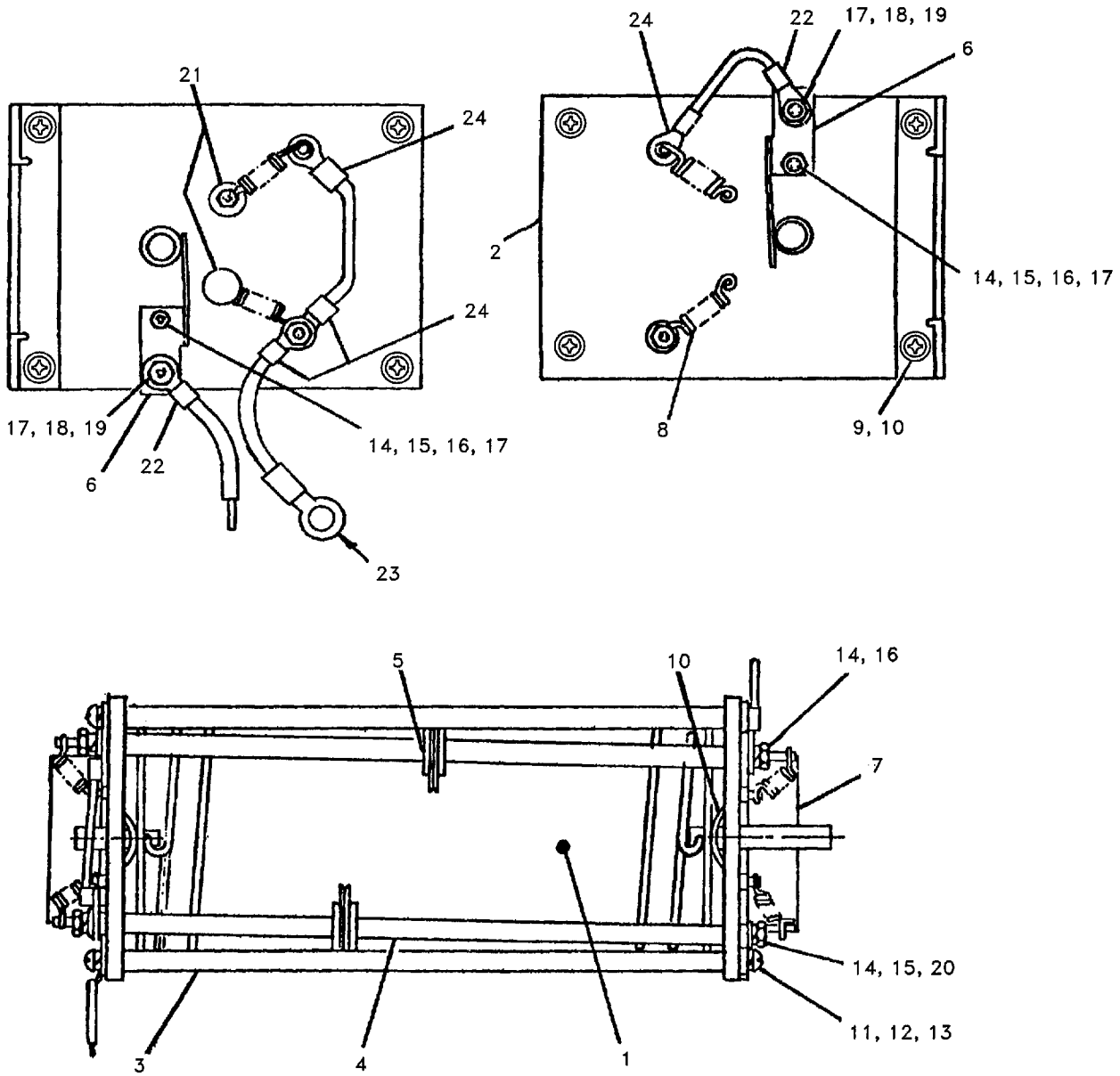


Figure 7-3. Lower Shelf Assy, A2

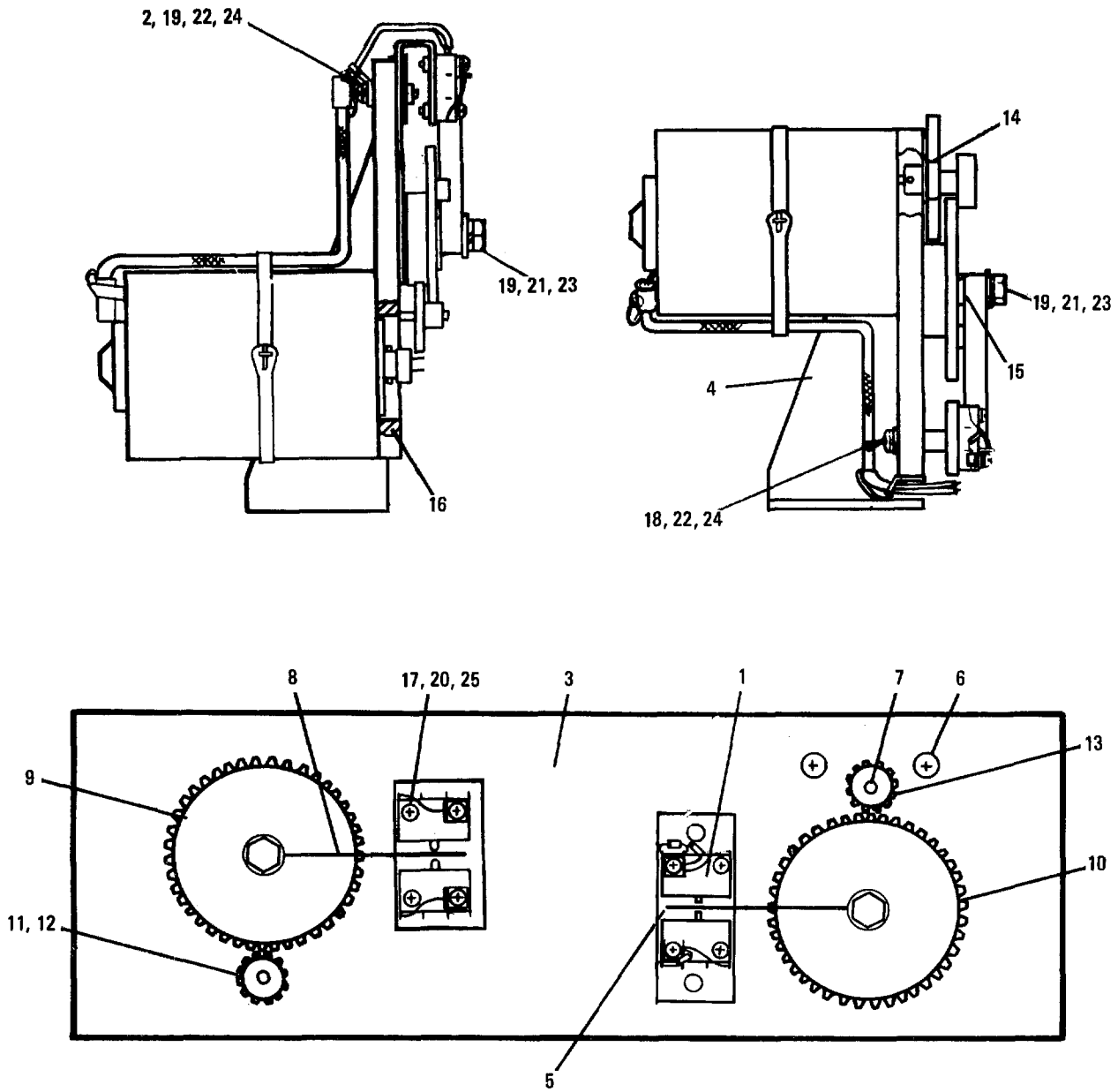
FIG & INDEX NO.	PART NUMBER	FSCM	DESCRIPTION							UNITS PER ASSY	USABLE ON CODE	SMR CODE
			1	2	3	4	5	6	7			
7-3-	10094-0120	14304	LOWER SHELF ASSY, A2							1		PAODD
-1	10094-2030	14304	. MOTOR ASSY, ELEC							2		PADZZ
-2	10094-0570	14304	. CABLE ASSY, RF, A2A1W1							1		PAOZZ
-3	22-01-3207	27264	. CONNECTOR, PLUG, ELEC.....							1		XA
-4	22-01-3087	27264	. CONNECTOR, PLUG, ELEC.....							1		XA
-5	MS35338-137	96906	. WASHER, LOCK (AP)							4		PAOZZ
-6	10094-0130	14304	. CIRCUIT CARD ASSY, A2A3							1		XA
-7	HT50V400JA	21052	. CAPACITOR, FXD, CE.....							3		PADZZ
-8	10094-0135	14304	. COIL, RF.....							1		PADZZ
-9	10094-0134	14304	. STRAP, RETAINER.....							2		XB
-10	MS35338-136	96906	. WASHER, LOCK (AP)							4		PADZZ
-11	028868	82877	. FAN, TUBEAXIAL.....							1		PAOZZ
-12	C95-0001-000REVF	14304	. CAPACITOR, VARIABLE							1		PADZZ
-13	RF56D-12S	73905	. RELAY							1		PADZZ
-14	RF65D-12S	73905	. RELAY							1		PADZZ
-15	10094-2000	14304	. COIL, RF.....							1		PADLD
-16	MVX2-100MEG	75042	. RESISTOR, FXD, COMP.....							1		PADZZ
-17	10094-0121	14304	. BRACKET, SHELF							1		XB
-18	1960-1132	14304	. BRACKET							2		XB
-19	1960-1133	14304	. RETAINER, CAPACITOR.....							2		XB
-20	MS51957-48	96906	. SCREW, MACHINE (AP)							13		PAOZZ
-21	MS51957-45	96906	. SCREW, MACHINE (AP)							9		PAOZZ
-22	MS35338-138	96906	. WASHER, LOCK (AP)							8		PAOZZ
-23	MS35650-304	96906	. NUT, PLAIN, HEX (AP)							8		PAOZZ
-24	MS21266-2N	96906	. GROMMET							5		PADZZ
-25	MS51958-66	96906	. SCREW, MACHINE (AP)							4		PAOZZ
-26	MS51957-31	96906	. SCREW, MACHINE (AP)							4		PADZZ
-27	Z06-0011-006	14304	FLEX COUPLER							1		PAFZZ



L9908553

Figure 7-4. RF Coil Assy

Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
7-4 -	10094-2000	14304	COIL,RF							1		PADLD
- 1	10094-2015	14304	. COIL FORM ASSY							1		PADZZ
- 2	1960-1111	14304	. PLATE END							2		XB
- 3	1960-1113	14304	. SPACER							4		XB
- 4	1960-1114	14304	. SHAFT							2		XB
- 5	1960-1115	14304	. CONTACT ELECTRICAL							2		XB
- 6	1960-1119	14304	. CONTACT SPRING							2		XB
- 7	1960-1112	14304	. BRACKET MTG							2		XB
- 8	LE-016A-001	84830	. SPRING							4		XB
- 9	MS24693-C29	96906	. SCREW,MACHINE (AP)							4		PAOZZ
- 10	5804-128-1	86928	. WASHER,SPRING,TNSN							2		PADZZ
- 11	MS35338-136	96906	. WASHER,LOCK (AP)							4		PADZZ
- 12	MS15795-805	96906	. WASHER,FLAT (AP)							4		PADZZ
- 13	MS51957-31	96906	. SCREW,MACHINE (AP)							4		PAOZZ
- 14	8034	73734	. NUT,PLAIN,HEX (AP)							6		PAOZZ
- 15	MS35338-97	96906	. WASHER,LOCK (AP)							6		PAOZZ
- 16	MS15795-903	96906	. WASHER,FLAT (AP)							2		PAOZZ
- 17	MS35196-14	96906	. SCREW,MACHINE (AP)							2		PAOZZ
- 18	MS35338-98	96906	. WASHER,LOCK (AP)							2		PAOZZ
- 19	8037	73734	. NUT,PLAIN,HEX (AP)							2		PAOZZ
- 20	MS15795-804	96906	. WASHER,FLAT (AP)							1		PADZZ
- 21	75535	73734	. NUT,PLAIN,HEX (AP)							2		PAOZZ
- 22	61306	79061	. TERMINAL LUG							2		PADZZ
- 23	MS25036-153	96906	. TERMINAL LUG							1		PADZZ
- 24	61304	79061	. TERMINAL LUG							4		PADZZ



351-025

Figure 7-5. Servomechanism, A2A1