

TM 11-897

C 2

TECHNICAL MANUAL

RADIO RECEIVERS R-274/FRR, R-274A/FRR, R-274C/FRR, AND R-274D/FRR

TM 11-897

CHANGES No. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 8 March 1962

TM 11-897, 14 May 1952, is changed as follows:

The manual is changed so that it also applies to Radio Receivers R-274A/FRR and R-274C/FRR.

Change the title of the manual to—RADIO RECEIVERS R-274/FRR, R-274A/FRR, R-274C/FRR, AND R-274D/FRR.

Page 19, paragraph 30. Add the following after subparagraph d:

e. *Crystal Phasing Control C161* (fig. 33). Lubricate the shaft on C161 sparingly with light oil at monthly intervals. Lubricating Oil (LO),

specification VV-L-820, 4-ounce spout can, Federal stock No. 9150-252-6173, is suitable.

f. *Selectivity Switch S1* (fig. 33). Clean and lubricate the contacts every 90 days. For cleaning, use Cleaning Compound (Federal stock No. 7930-395-9542). Lubricate with Colloidal Graphite Lubricating Oil (OG 11), specification MIL-L-3572, Federal stock No. 9150-261-7905.

Warning: Cleaning compound is flammable, and its fumes are toxic. Do not use it near a flame; provide adequate ventilation.

526-520

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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Units organized under following
 TOE's (2 cy ea UNOINDC):
 11-7
 11-16
 11-57
 11-98
 11-117
 11-155
 11-157
 11-500 (Tms AA-AE) (4)
 11-557
 11-587
 11-592
 11-597
 32-500

NG: None.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

C 1, TM 11-897
TO 16-35R274-5

TECHNICAL MANUAL

RADIO RECEIVERS R-274/FRR AND R-274D/FRR

CHANGES }
No. 1 }DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 12 May 1954

TM 11-897, 14 May 1952, is changed as follows:
The title of the manual is changed to read:

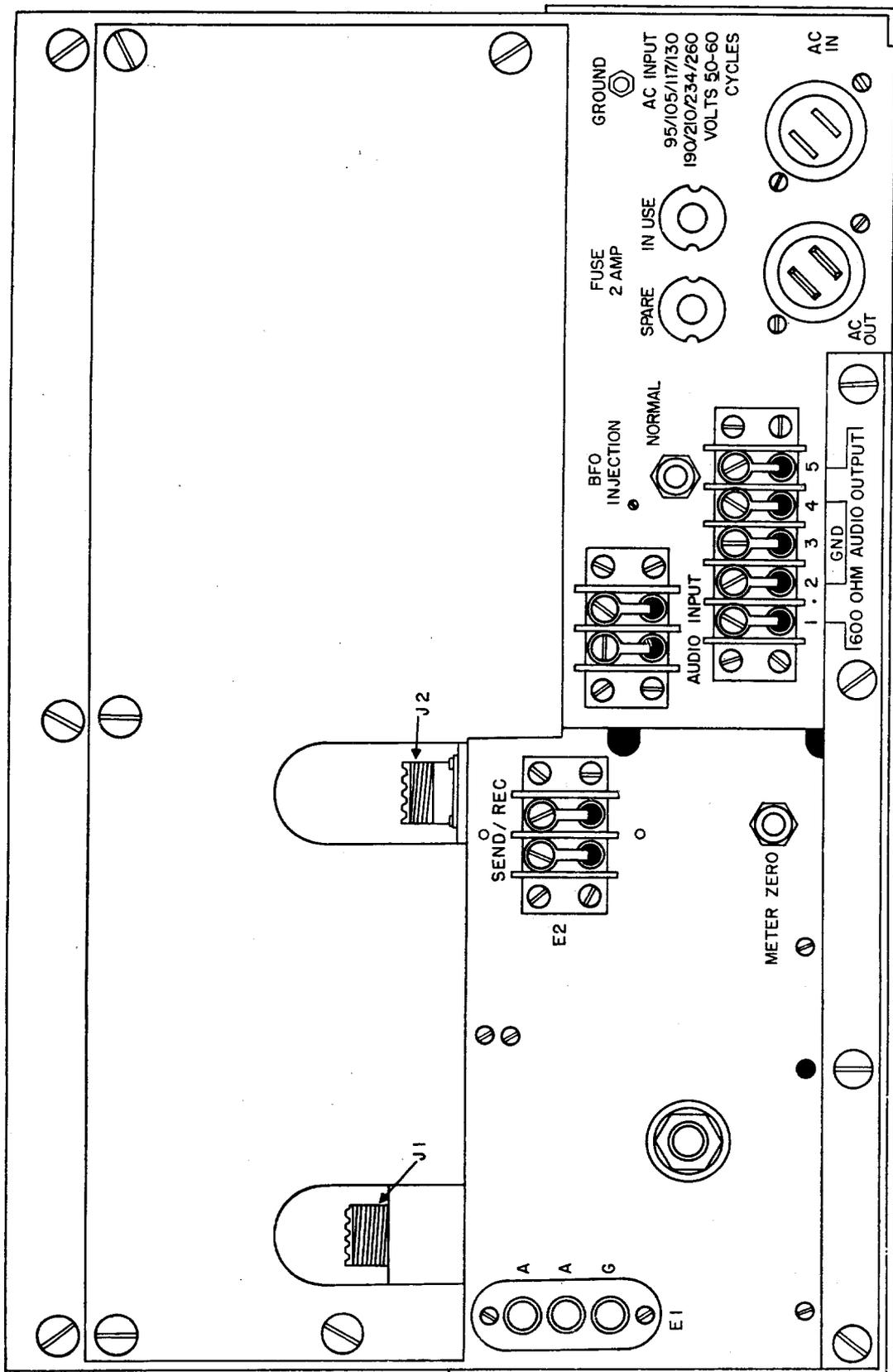
RADIO RECEIVERS R-274/FRR AND R-
274D/FRR

Add "and R-274D/FRR" after Radio Receiver
R-274/FRR throughout the manual, except in the
following places:

- Figure 2. Caption.
- Paragraph 63. Chart; Figures 32 and 43.
- Figure 32. Caption.
- Figure 43. Caption.

7. Description of Radio Receiver R-274/FRR

Radio Receiver R-274/FRR * * * switch of
the receiver. A neon lamp is connected across the
leads to the contacts of the antenna disabling relay
of Radio Receiver R-274D/FRR on serial numbers
674 through 1266, Order No. 3464-Phila-52. The
The purpose of this lamp is to protect the input
antenna coil from damage due to high voltage
static surges.



TM 897-C1-2

Figure 2.1. (Added) Radio receiver R-274D/FRR, rear view.

10.1. Differences in Models

(Added)

The design of Radio Receiver R-274D/FRR includes an antenna disabling relay which was not used in the unlettered model. This relay (K2) shorts the receiver to ground, thereby preventing damage to the receiver antenna coils during transmission. The relay is mounted under the chassis near the rear of the rf turret (fig. 32.1). On Order No. 3464-Phila-52, serial numbers 674 through 1266, a neon lamp (E53) has been added across the antenna contacts of the antenna disabling relay K2 (fig. 14.1). In addition to this modification, other minor changes have been made. They are as follows:

a. Terminal strip E2, used for remote standby operation in the B+ circuit, now is used to connect disabling relay coil K2 to external circuits.

b. Capacitor C77 is deleted from the circuit.

c. The band numbering is from 1 through 6 instead of I through VI.

d. The lettering on the rear panel is revised (fig. 2.1).

Figures 3 and 34. Interchange the captions of figures 3 and 34.

14. Connections

The external connections * * * the receiver connections.

* * * * *

c. To provide * * * two retaining screws. **In Radio Receiver R-274D/FRR, the remote standby circuit is replaced by an antenna disabling circuit. The connections of the relay coil are brought out to terminal board E2. It is necessary to apply 12 volts dc across these terminals to disable the receiver.**

* * * * *

Figure 6. The following note is added near the "SWITCH (REMOTE)" call-out:

NOTE. IN THE D MODEL, A CONTROLLING SOURCE OF 12 VOLTS DC IS NEEDED INSTEAD OF THE REMOTE SWITCH.

17.1. Antijamming Procedures

(Added)

When the radio is being jammed by unwanted signals, the immediate superior officer must be notified promptly. However, the operator must not cease operating the equipment under any

condition. One or more of the following instructions may be used for obtaining the maximum intelligibility from the desired signals during the jamming process.

a. *AM Signals Jammed by CW, Pulse, FM, AM, Bagpipe, or Other Noise Signals.*

(1) Vary the FREQUENCY TUNING control knob through several degrees on either side of the desired signal. This may provide a degree of copy of the desired signal.

(2) Operate the ANL OFF toggle switch to the ON position. Strong jamming pulses may be clipped and the desired signal may become intelligible.

(3) Operate the SELECTIVITY control to various positions and repeat (1) above for each change in position. Some read-through may be possible.

(4) Vary the RF GAIN control knob in both directions. At one point, the jamming signal effect may be decreased.

(5) Operate the SELECTIVITY control knob to the CRYSTAL position. Vary the CRYSTAL PHASING control dial and at the same time, repeat the instructions in (1) above.

(6) If it is possible, change the direction, length, and height of the antenna. The strength of the jamming signal may be reduced.

(7) If the antenna is the whip, or dipole type, change it from a horizontal plane to that of vertical, or vice versa. Try it at various angles, for best reception, until either the horizontal or vertical plane is reached.

(8) If the above instructions fail to produce the desired results, request a change in frequency.

(9) If the jamming action is so thorough that communication is impossible, report the condition to the immediate superior officer. Use another method to get the message through and *continue to operate.*

b. *CW Signals Jammed by CW, Pulse, AM, FM, Bagpipe, or Other Noise Signals.*

(1) Vary the BFO PITCH dial control. The characteristic tone pitch of the desired signal may be separated from that of the jamming signal.

(2) Repeat the instructions in a above.

18. Radiophone Reception

a. VFO Operation.

* * * * *

(8) When the receiver * * * the SEND position. In Radio Receiver R-274D/FRR, the remote standby circuit is replaced by an antenna disabling circuit. The connections of the relay coil are brought out to terminal board E2. It is necessary to apply 12 volts dc across these terminals to disable the receiver.

* * * * *

Figures 9 and 32. Interchange the captions of figures 9 and 32.

28. Performing Preventive Maintenance

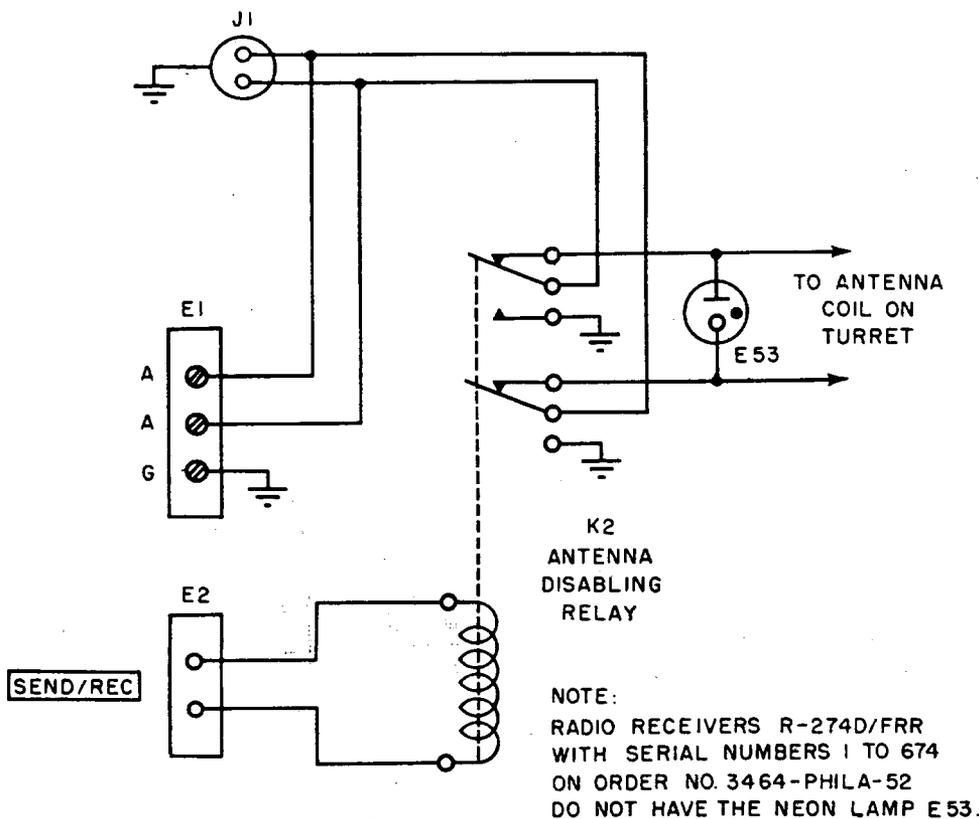
There are certain * * * in this material.

* * * * *

MONTHLY

Visually inspect the following. Tighten and clean if necessary.

What to check	How to check
* * *	* * *
16. Relay contacts of K1 and K2.	16. Inspect for pits and build-ups and for improper alinement.



TM 897-CI-10

Figure 14.1. (Added) Radio receiver R-274D/FRR, antenna disabling relay schematic.

40. 1st R-F Amplifier

(fig. 14)

* * * * *

b. In the partial * * * terminal A of E1. In Radio Receiver R-274D/FRR the signal from

antenna connectors E1 and J1 must pass through the contacts of relay K2 before reaching the antenna coil. The relay is normally in the receive (REC) position with the antenna connected to the antenna coil. The relay is actuated to the SEND position by application of 12 volts dc at the termi-

nals of E2 from an external source. In this position, the antenna input leads are both grounded to the chassis through a set of relay contacts and the antenna coil is an open circuit. This prevents the transmitter rf radiation from causing damage to the antenna coil. A neon lamp is connected across the antenna disabling relay contacts on serial numbers 674 through 1266 of Order No. 3464-Phila-52. This lamp prevents damage to the antenna coil due to the high voltage static surges. Figure 14.1 is a schematic diagram of the relay circuit. Capacitor C22 (ANT ADJ) * * * lower frequency band.

42. 1st Mixer
(fig. 15)

b. The signal from * * * image rejection ratio. Capacitor C77 is deleted from the circuit in Radio Receiver R-274D/FRR.

Figure 27. The following note is added:
IN THE D MODEL, THE LOWER LEG OF CAPACITOR C204 CONNECTS TO 24V INSTEAD OF GROUND.

Figure 28. The following note is added:
IN THE D MODEL, TERMINAL BOARD E2 IS NOT CONNECTED IN PARALLEL WITH SWITCH S6.

Figure 29. The following note is added:
IN THE D MODEL, THE LOWER LEG OF CAPACITOR C204 CONNECTS TO 24V INSTEAD OF GROUND.

60. Power Supply

c. The h-v (high-voltage) * * * remote control switch. In Radio Receiver R-274D/FRR, the remote switch does not act to open and close the B+ circuit. Instead, terminal board E2 is the

termination of relay coil K2 which requires an external source of 12 volts dc to actuate the relay.

61. Control Circuits

Terminal board E2 * * * of circuit operation. In Radio Receiver R-274D/FRR, the remote switching does not act to open and close the B+ circuit. Instead, terminal board E2 is the termination of relay coil K2, which requires an external source of 12 volts dc to actuate the relay.

63. Trouble-Shooting Data

Take advantage of * * * following trouble-shooting data:

Fig. No.	Title
32	Radio * * * view.
32, 1	Radio Receiver R-274D/FRR, rf chassis bottom view.
43	Radio * * * diagram.
43, 1	Radio Receiver R-274D/FRR, schematic diagram.

70. D-c Resistance of Transformers and Coils

The d-c resistances of the transformer windings and the coils in the receiver are listed below:

a. Coils and Transformers not in R-F Turret.

Transformer or coil	Terminals or winding	Resistance (ohms)
L67	Measured across coil.....	Less than .5
K2	Measured across coil.....	135

Figures 9 and 32. Interchange the captions of figures 9 and 32.

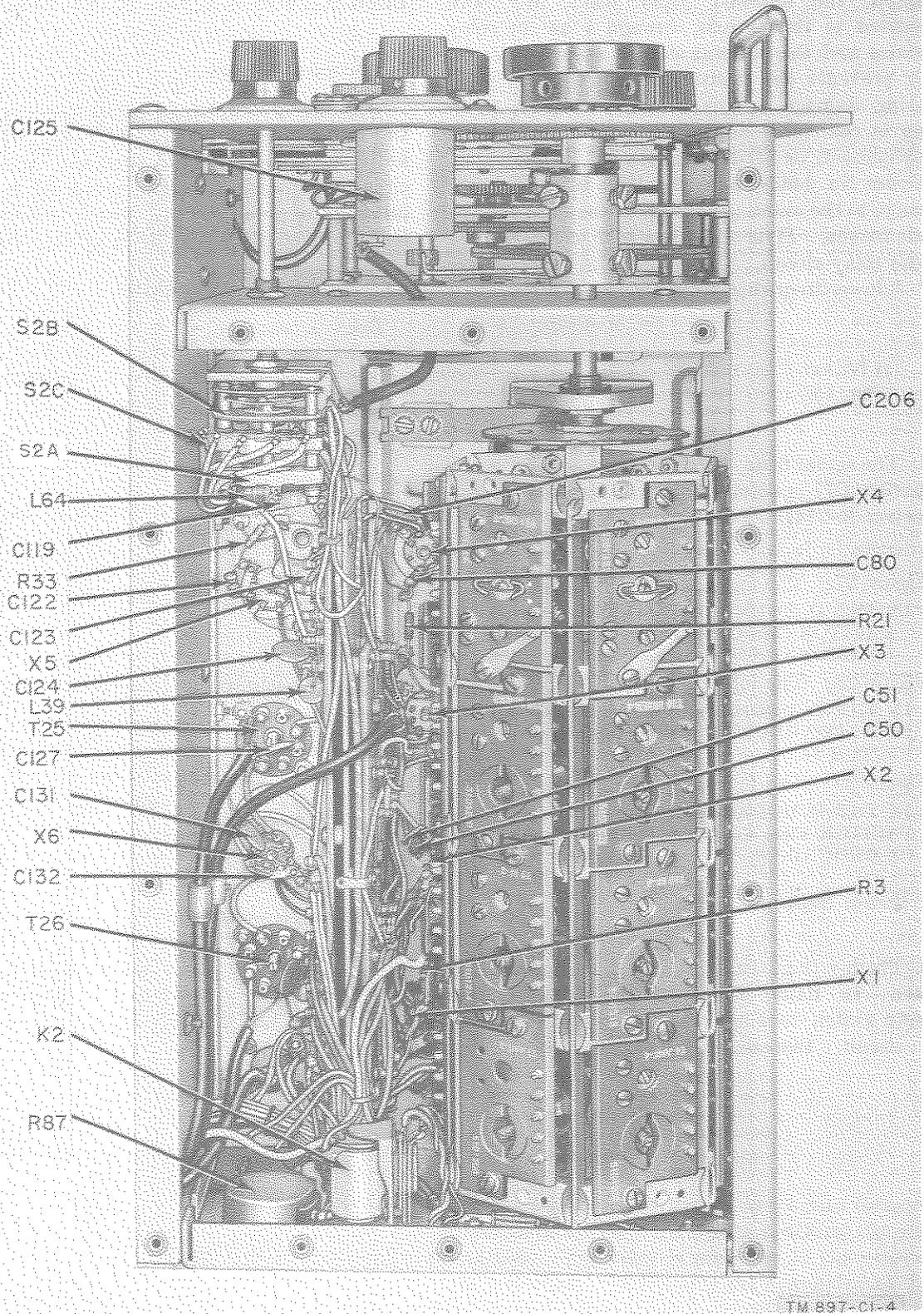


Figure 32.1. (Added) Radio receiver R-274D/FRR, rf chassis bottom view.

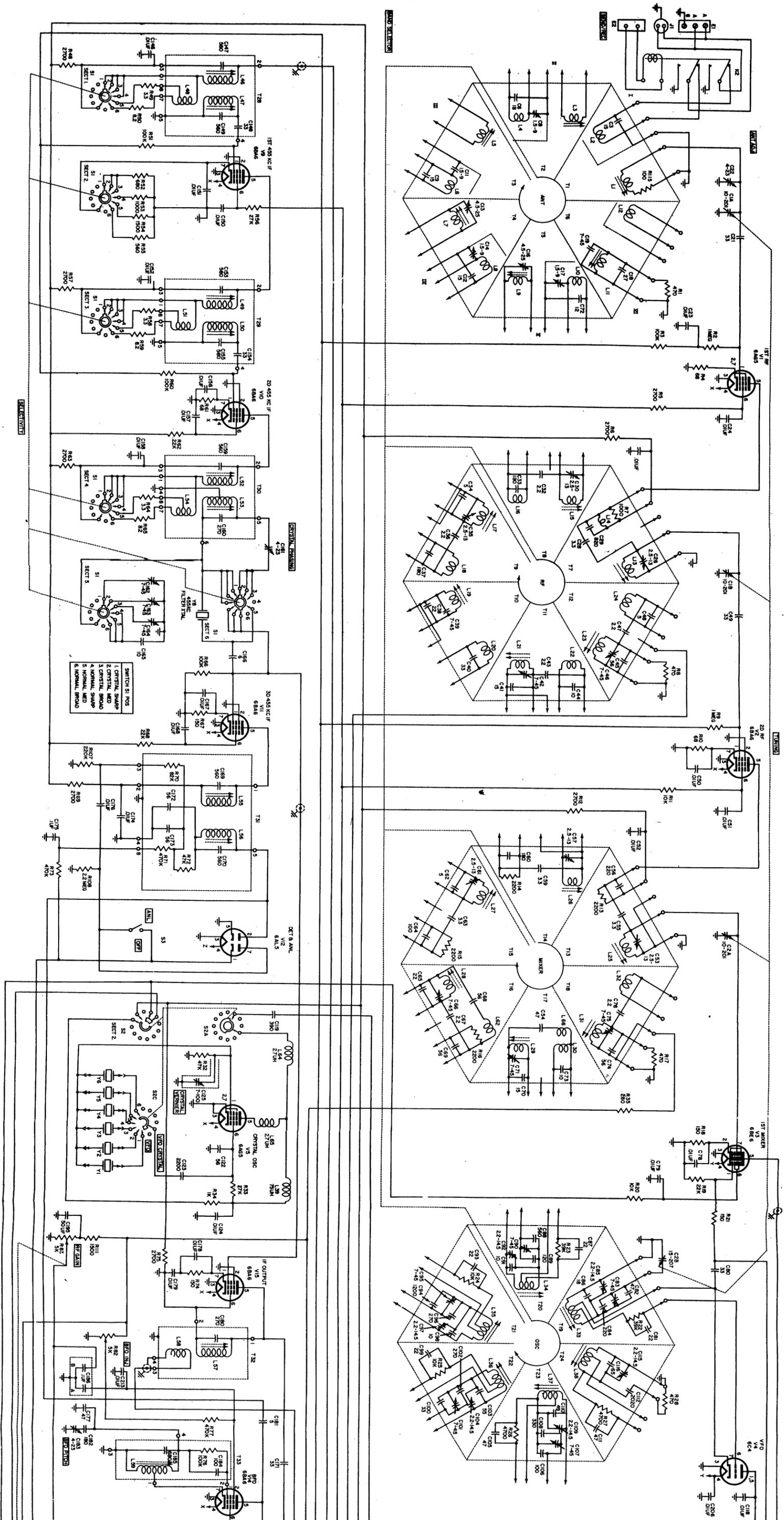
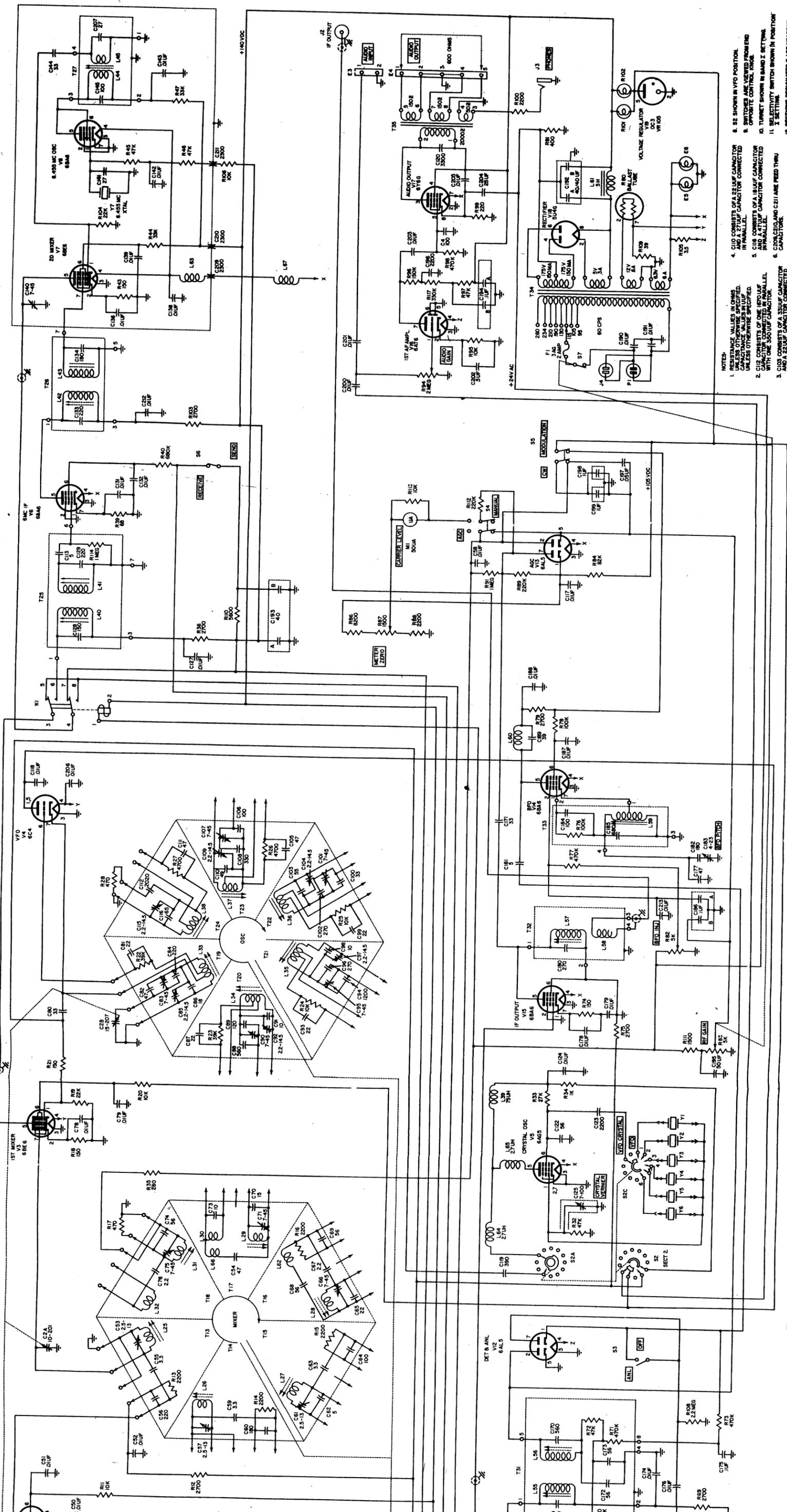


Figure 49.1. (Added) Radio receiver R-874D/F RR, schematic diagram.

TM 897-C1-1



- NOTES:
1. TUNING RANGE VALUES IN BRACKET UNLESS OTHERWISE SPECIFIED. CAPACITANCE VALUES IN U.P. UNLESS OTHERWISE SPECIFIED.
 2. C12 CONSISTS OF ONE 180 P.F. CAPACITOR AND ONE 330 P.F. CAPACITOR IN PARALLEL.
 3. C103 CONSISTS OF A 33 U.F. CAPACITOR AND A 22 U.F. CAPACITOR CONNECTED IN PARALLEL.
 4. C104 CONSISTS OF A 22 U.F. CAPACITOR AND A 10 U.F. CAPACITOR CONNECTED IN PARALLEL.
 5. C118 CONSISTS OF A 18 U.F. CAPACITOR AND A 27 U.F. CAPACITOR CONNECTED IN PARALLEL.
 6. C204, C210, AND C211 ARE FEED THRU CAPACITORS.
 7. C205, C206, AND C207 ARE NEAREST TO TUBE SOCKETS.
 8. S2 SHOWN IN V.F.O. POSITION.
 9. SWITCHES ARE VIEWED FROM REAR OPPOSITE CONTROL KNOB.
 10. TURNET SHOWN IN BAND 1 SETTING.
 11. SELECTIVITY SWITCH SHOWN IN POSITION 1 SETTING.
 12. SECTIONS DESIGNATED I ARE NEAREST TO TUBE SOCKETS.
 13. K=1000.

Figure 49.1. (Added) Radio receiver R-274D/FRR, schematic diagram.

Figures 34, and 3. Interchange the captions of figures 3 and 34.

78. Disassembly of Complex Parts

This paragraph contains * * * parts may result.

* * * * *

e. R-f Turret (figs. 32 and 32.1). The removal of * * * chassis as follows:

* * * * *

80. Mechanical Adjustments

* * * * *

d. (Added) *Relays K1 and K2*. The two relays do not require mechanical adjustment. If the trouble is caused by mechanical misalignment, the faulty relay should be replaced with a new one. Dirty contacts are to be cleaned with a burnishing tool.

87. CARRIER LEVEL Meter Adjustment

* * * * *

b. With the set on and the AGC-MANUAL switch in the AGC position, the RF GAIN-AC control at maximum, the SELECTIVITY switch at the NORMAL MED position, and the receiver tuned to a 100-uv signal (signal generator output injected through 100-ohm resistance at antenna terminals), the needle should indicate 0 db on the meter scale. The METER ZERO * * * BAND III, 5.0 mc.

**APPENDIX II
IDENTIFICATION TABLE OF PARTS**

Rescinded

Figure 43.1. The following note is added:

14. IN RADIO RECEIVER R-274D/FRR, SERIAL NUMBERS 674 THROUGH 1266 ON ORDER NO. 3464-PHILA-52, A NEON LAMP E53 IS CONNECTED ACROSS THE ANTENNA DISABLING RELAY CONTACTS.

526-520

BY ORDER OF THE SECRETARY OF THE ARMY:

M. B. RIDGWAY,
*General, United States Army,
 Chief of Staff.*

OFFICIAL:

JOHN A. KLEIN,
*Major General, United States Army,
 Acting The Adjutant General.*

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Units org under fol T/O & E:

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 11-128A, Sig Depot Co (2)
 11-500A (AA thru AE), Sig
 Admin Team (2)
 11-587, Sig Base Maint Co (2)
 11-592, Hq & Hq Co, Sig Base
 Depot (2)
 11-597, Sig Base Depot Co (2)

NG: None.

USAR: None.

Unless otherwise noted, distribution applies to CONUS and overseas.
 For explanation of abbreviations used, see SR 320-50-1.