

HANDBOOK OF
MAINTENANCE INSTRUCTIONS

for

RADIO
RECEIVING SET
AN/ARR-5

RESTRICTED

(For Official Use Only)

★
Approved 29 NOVEMBER 1944

**RESTRICTED
AN 08-30ARR5-2**

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SAFETY NOTICE

This equipment may employ high voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution should be exercised when working with the equipment.

Destruction of Abandoned Materiel in the Combat Zone

In case it should become necessary to prevent the capture of this equipment and when ordered to do so, DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED, OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

Means:—

1. Explosives, when provided.
2. Hammers, axes, sledges, machetes, or whatever heavy object is readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper, or wood.
4. Grenades and shots from available arms.
5. Burying all debris or disposing of it in streams or other bodies of water, where possible and when time permits.

Procedure:—

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.
2. Demolish all panels, castings, switch- and instrument-boards.
3. Destroy all controls, switches, relays, connections, and meters.
4. Rip out all wiring and cut interconnections of electrical equipment. Smash gas, oil, and water-cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part, whether rotating, moving, or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.
8. Bury or scatter all debris.

DESTROY EVERYTHING!



Unsatisfactory Report

For U. S. Army Air Force Personnel:

In the event of malfunctioning, unsatisfactory design, or unsatisfactory installation of any of the component units of this equipment, or if the material contained in this book is considered inadequate or erroneous, an Unsatisfactory Report, AAF Form No. 54, or a report in similar form, shall be submitted in accordance with the provisions of Army Air Force Regulation No. 15-54, listing:

1. Station and organization.
2. Nameplate data (type number or complete nomenclature if nameplate is not attached to the equipment).
3. Date and nature of failure.
4. Radio model and serial number.
5. Remedy used or proposed to prevent recurrence.
6. Handbook errors or inadequacies, if applicable.

For U. S. Navy Personnel:

Report of failure of any part of this equipment during its guaranteed life shall be made on Form N. Aer. 4112, "Report of Unsatisfactory or Defective Materiel," or a report in similar form, and forwarded in accordance with the latest instructions of the Bureau of Aeronautics. In addition to other distribution required, one copy shall be furnished to the inspector of Naval Materiel (location to be specified) and the Bureau of Ships. Such reports of failure shall include:

1. Reporting activity.
2. Nameplate data.
3. Date placed in service.
4. Part which failed.
5. Nature and cause of failure.
6. Replacement needed (yes-no).
7. Remedy used or proposed to prevent recurrence.

For British Personnel:

Form 1022 procedure shall be used when reporting failure of radio equipment.

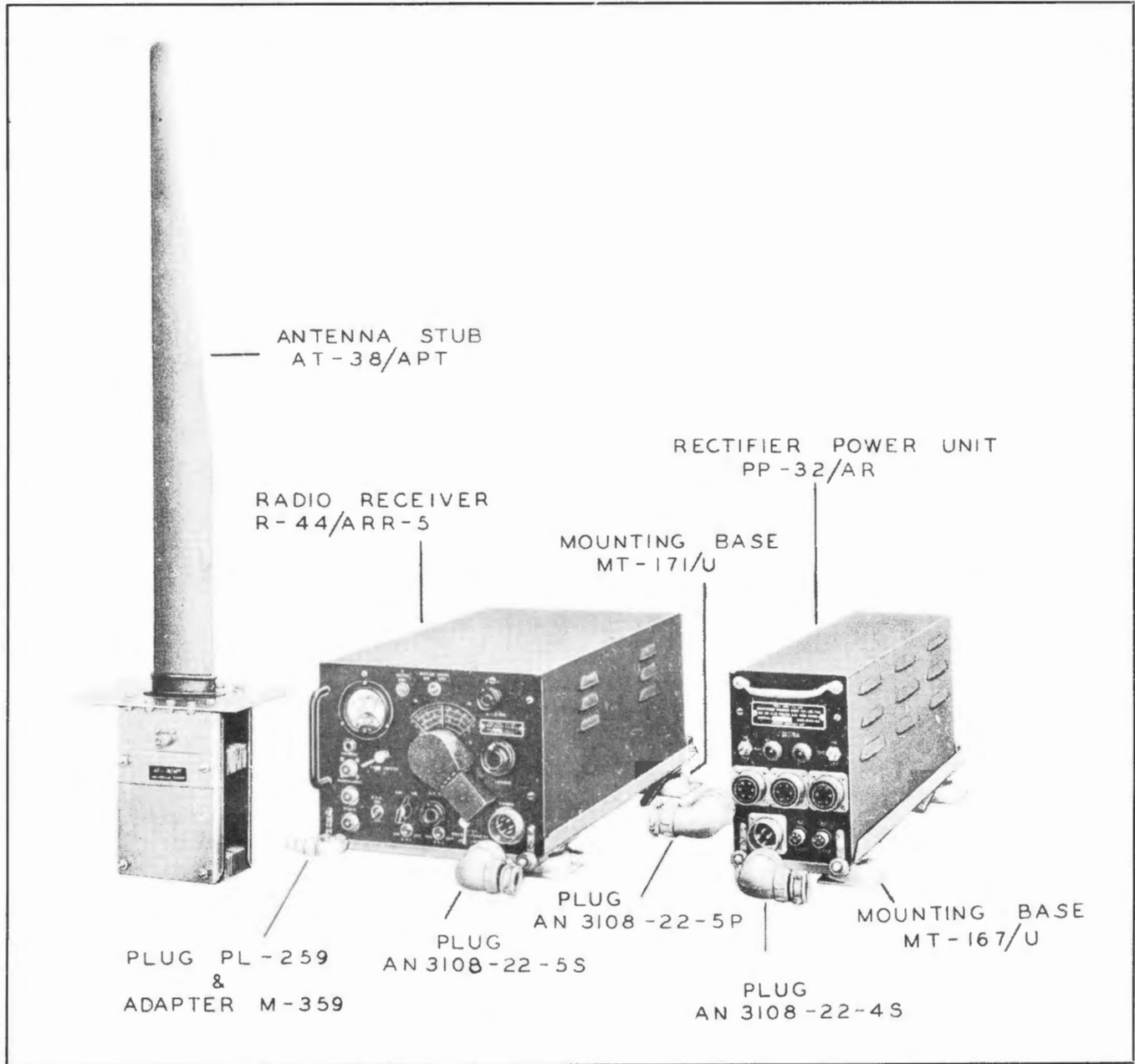


Figure 1-1—Radio Receiving Set AN/ARR-5, Major Assemblies

SECTION I GENERAL DESCRIPTION

1. GENERAL.

a. Radio Receiving Set AN/ARR-5 is an airborne search receiver intended to locate radio frequency channels of enemy radar and communications equipment operating in the frequency range 27.8 to 143 megacycles. It may operate in conjunction with Radar Indicator Assembly AN/APA-6 or AN/APA-11, Panoramic Adapter AN/APA-10 and BC-1032.

b. Radio Receiving Set AN/ARR-5 accepts either amplitude modulated or frequency modulated telephone signals and unmodulated continuous wave (C-W) code signals. It covers a frequency range from 27.8 to 143 megacycles and is equipped with an adjustable sector motor-driven scanning device.

c. Its outlets provide 50 milliwatts of audio power for headsets (600 to 8000 ohms), video output for an oscilloscope and an output that can be used to give panoramic presentation on Panoramic Adapter AN/APA-10.

d. Radio Receiving Set AN/ARR-5 operates from

either 80 or 115 volts, 400 to 2600 cps. and requires approximately 175 watts. The motor-drive for scanning operates from 24 volts D-C and requires less than 0.5 ampere.

e. Radio Receiving Set AN/ARR-5 consists of the following major units:

(1) Radio Receiver R-44/ARR-5.

(2) Mounting Base MT-171/U, which provides mounting facilities for the receiver.

(3) Rectifier Power Unit PP-32/AR, which supplies the necessary power for the receiver, and which can also supply power to two additional receivers with approximately the same power requirements.

(4) Mounting Base MT-167/U, which provides a mounting for the rectifier power unit.

(5) Antenna Stub AT-38/APT or Antenna Stub AT-38A/APT.

f. The type of antenna used is not critical; any antenna approximately 30 inches in length is satisfactory.

2. EQUIPMENT SUPPLIED.

The following table lists the equipment supplied:

| Quantity | Name of Unit | Army Type Designation | Navy Type Designation | Over-all Dimensions (inches) | Weight (pounds) | Numerical Reference Numbers |
|----------|----------------------|---------------------------|-------------------------|---|-----------------|-----------------------------|
| 1 | Antenna Stub | AT-38/APT or AT-38A/APT | AT-38/APT or AT-38A/APT | 29½ High | 6 | |
| 1 | Radio Receiver | R-44/ARR-5 | R-44/ARR-5 | 21¼ Long 10¼ Wide 7¾ High | 35 | 1-199 |
| 1 | Mounting Base | MT-171/U | MT-171/U | 22¾ Long 10¾ Wide 2½ High | 2.18 | |
| 1 | Rectifier Power Unit | PP-32/AR | PP-32/AR | 21 Long 5 Wide 7¾ High | 25 | 200-299 |
| 1 | Mounting Base | MT-167/U | MT-167/U | 22¾ Long 6 Wide 2½ High | 1.81 | |
| 1 | Plug | AN3108-22-4S (PL-Q230) | AN3108-22-4S | 1-19/32 Dia. Rt. Angle 2-11/32 X 1-5/16 | .24 | |
| 1 | Plug | AN3108-22-5P | AN3108-22-5P | 1-19/32 Dia. Rt. Angle 2-11/32 X 1-5/16 | .20 | |
| 1 | Plug | AN3108-22-5S (PL-Q228) | AN3108-22-5S | 1-19/32 Dia. Rt. Angle 2-11/32 X 1-5/16 | .23 | |
| 1 | Plug | PL-259 | | ¾ Long 1½ Long | .05 | |
| 1 | Adapter | M-359 | | 2-3/32 Dia. Rt. Angle 17/32 X 13/16 | .076 | |
| 3 | Cable Clamp | AN3057-12 (M-293) | AN3057-12 | 1¾ Dia. 1-3/16 Long | .061 | |

3. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

The following table lists the equipment required but not supplied:

| Quantity | Name of Unit | Army Type Designation | Navy Type Designation | Required Characteristics |
|-------------|-----------------------|-----------------------|-----------------------|--|
| As Required | Radio Frequency Cable | RG-8/U | RG-8/U | 52 Ohms Nominal Impedance 80 or 115 volt output 400 to 2600 cps. 600 to 8000 Ohms Extension cord for Headset with Jack JK-26 on one side and Plug PL-55 on the other side |
| 1 | Radio Frequency Plug | UG-21/U | UG-21/U | |
| 1 | Adapter | UG-27/U | UG-27/U | |
| 1 | Inverter | | | |
| 1 | Headset | HS-23 or HS-33 | | |
| 1 | Cord | CD-307-A | | |

4. DESCRIPTION OF ASSEMBLIES.

a. ANTENNA STUB AT-38/APT or AT-38A/APT.—Each antenna stub is a streamlined 29-inch mast made of maple impregnated with phenolic and copper plated. The copper coating is connected to a co-axial connector at the base of the antenna assembly.

b. RADIO RECEIVER R-44/ARR-5.—This radio receiver is mounted in a standard aircraft radio case

size B1-D with all controls and receptacles except the scanning motor speed control located on the front panel.

c. RECTIFIER POWER UNIT PP-32/AR.—This rectifier power unit is mounted in a standard aircraft radio case size A1-D with all controls and receptacles located on the front panel.

SECTION II**INSTALLATION AND ADJUSTMENT****1. INSTALLATION.***a.* PRELIMINARY PROCEDURE.

(1) UNPACKING.—Carefully unpack and inspect the various components for any possible damage during shipment. Check to determine whether or not all necessary components were contained in the packages. In case of damage or loss of components in shipment, an unsatisfactory report form should be submitted immediately.

(2) BENCH TEST.

(*a*) Before proceeding it will be necessary to determine whether the installation will be supplied with 80 or 115 volts alternating current. After this has been determined proceed as follows:

1. Remove the Rectifier Power Unit PP-32/AR from its dust cover.

2. Check the power transformer T_{200} to see that it is wired for the supply voltage that is to be used. (See figure 2-1.) If it is not wired correctly make the proper change.

3. Replace the rectifier power unit in its dust cover.

(*b*) If power is available at the bench, the set may be checked for proper operation as outlined in paragraph 2*c*, this section. (Refer to paragraph 1*b*, this section, for power connections and cabling required.)

b. INSTALLATION.

(1) ANTENNA STUB AT-38/APT OR ANTENNA STUB AT-38A/APT.

(*a*) The location of the antenna will depend on the type of installation used for the particular airplane. (See figure 8-1 for outline dimensions.) In general the following precautions should be observed:

1. The antenna should be in the lower half of the airplane with no metal surfaces obstructing its view of the ground.

2. The antenna should be located at a point as free from reflecting surfaces as possible. That is, to say, such objects as pitot tubes, wing surfaces or other antennas.

3. It must be out of the line of fire of all guns mounted on the aircraft.

4. When the airplane is on the ground, the antenna should clear obstructions which might tear the antenna from its mounting.

(*b*) Before the antenna is installed in any type of aircraft it is necessary to determine whether vertically or horizontally polarized signals are to be received. If the enemies' antenna system is known, install the antenna accordingly. When receiving over short distances, the receiver antenna should be erected in the same plane as the transmitting antenna. For long dis-

tance reception the received signals are more often horizontally polarized, which dictates the use of a horizontal antenna.

(2) RADIO RECEIVER R-44/ARR-5 AND
RECTIFIER POWER UNIT PP-32/AR.

(a) Fasten Mounting Base MT-171/U for the receiver and Mounting Base MT-167/U for the rectifier power unit side by side within the aircraft so that:

1. They will be relatively close to the antenna.
2. They will be close to the power source.
3. Ventilation will not be obstructed. They should not be closer than two inches to the fuselage.
4. The front panels of the units are easily accessible to the operator.

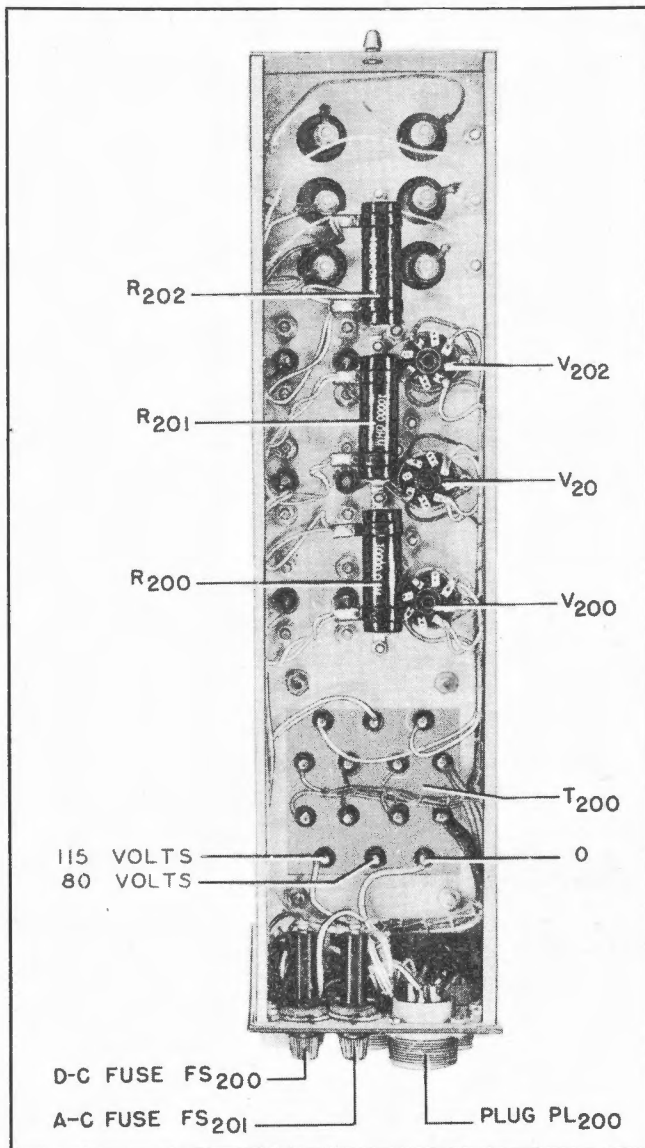


Figure 2-1—Rectifier Power Unit PP-32/AR—Showing 115-Volt and 80-Volt Connections

Note

Be sure the two mounting bases are bonded to the fuselage. Bonding the receiver and rectifier power unit to each other may help remove excess noise in the headset.

(b) After the receiver and rectifier power unit have been unpacked and before mounting on the standard aircraft radio mountings, make sure that all tubes, especially the acorn tubes, are firmly located in their sockets. (See figure 2-2.) The receiver's acorn tubes can be reached by removing the covers of the r-f section and re-radiation suppressor section which are held in place by hex-head screws and thumb screws. There are four acorn tubes in all to check, three in the r-f section and one in the re-radiation suppressor.

1. Check the tube in the re-radiation suppressor compartment to see that it is inserted in its socket with the plate lead passing through the socket into the r-f compartment.

2. Check the three tubes in the r-f section to see that they are inserted with the short end of the body in the socket.

(c) Place the receiver on Mounting Base MT-171/U and the rectifier power unit on Mounting Base MT-167/U and tighten the locking nuts at each side of the front panel securely. Tie down the nuts with safety wire.

(3) CABLING.

Note

Cable used shall be according to Specification AN-J-C-48 and shielded wire shall be according to Specification 95-27273.

(a) Cut the Radio Frequency Cable RG-8/U to the right length and solder Plug PL-259 on the receiver end (if a right angle connection is desired, use Adapter M-359). Solder Radio Frequency Plug UG-21/U to the antenna end (if a right angle connection is desired, use Adapter UG-27/U). (See figures 8-4 and 8-5.)

Note

When installing Radio Frequency Cable RG-8/U see that there are no sharp bends in the cable. Keep it protected to prevent personnel from damaging it in any way.

(b) Construct the inter-connecting cable between the rectifier power supply and the receiver by connecting similarly lettered terminals of two plugs AN3108-22-5S and AN3108-22-5P with suitable lengths of AN20 wire. (See figure 8-5.) Attach Cable Clamp AN3057-12 to the plugs to take the strain from the connector's contacts. Connect plug AN3108-22-5S to the receptacle marked "POWER" on the receiver panel and plug AN3108-22-5P to any one of the three power outlet receptacles on the panel of the rectifier power supply.

(c) Connect the power wiring to plug AN3108-22-4S according to the following tabulation and attach

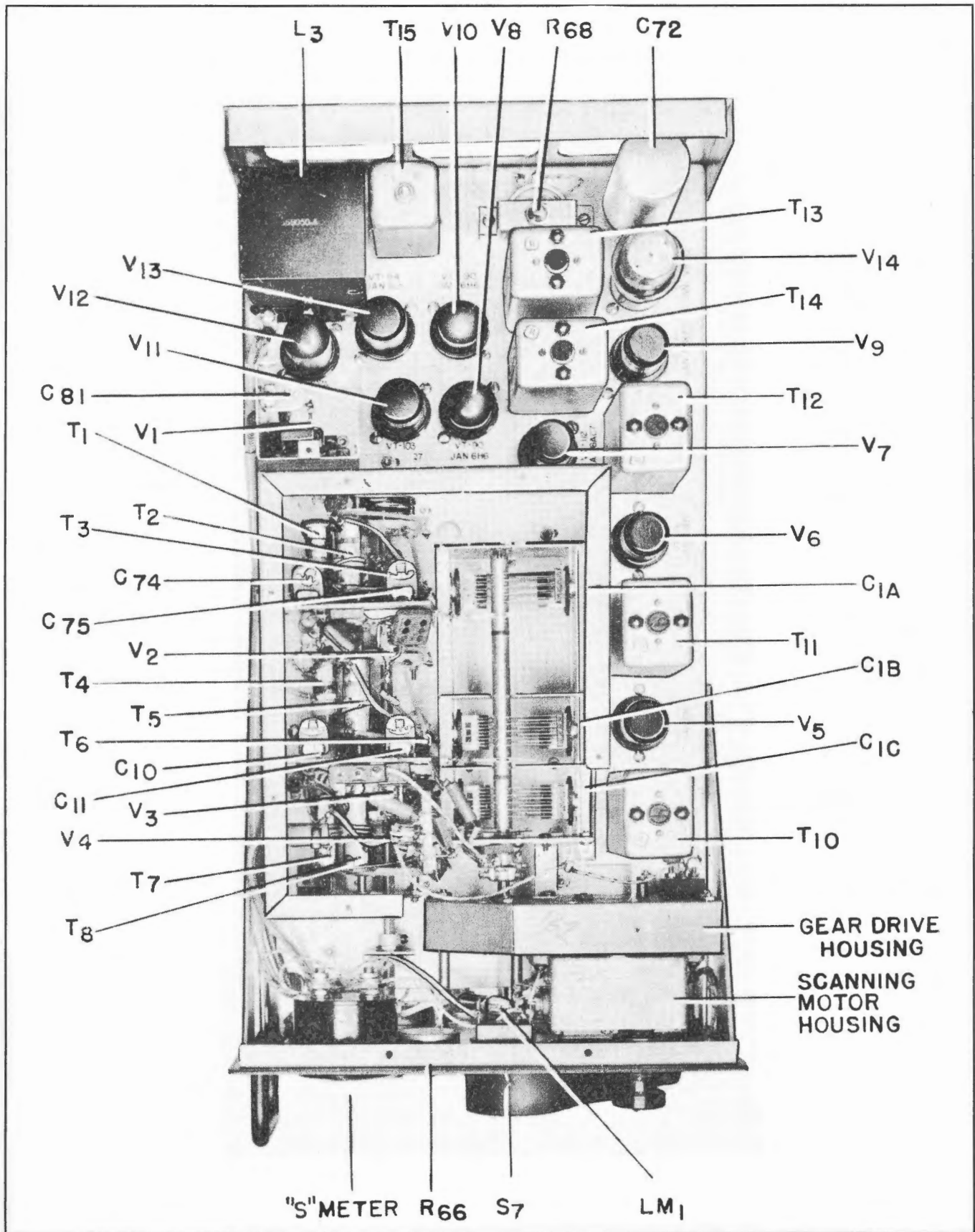


Figure 2-2—Radio Receiver R-44/ARR-5—Showing Location of Acorn Tubes

cable clamp AN3057-12 to the plug to take the strain from the connector's contacts.

1. Ungrounded (hot) a-c lead to terminal A. (Wire AN20.)
2. Positive d-c lead to terminal B. (Wire AN20.)
3. Grounded (neutral) a-c lead to terminal C. (Wire AN20.)
4. Negative d-c lead (ground) to terminal D. (Wire AN20.)

WARNING

The voltages exposed inside the receiver and rectifier power units are high, and care must be taken so that the operator's hands do not contact any of the circuit connections during adjustment. Do not insert plug AN3108-22-4S until all interconnecting cables have been installed and checked.

(d) If Panoramic Adapter AN/APA-10 is to be used, connect the Plug PL-259 (with Adapter M-359) of the panoramic adapter cord to the receiver's receptacle (Socket SO-239) marked "PANORAMIC."

(e) If Radar Indicator Assembly AN/APA-6 or AN/APA-11 is to be used, connect Plug PL-259 (with Adapter M-359) of the analyzer cord to the receiver's receptacle (Socket SO-239) marked "VIDEO."

(f) Plug either Headset HS-23 or HS-33 into the jack marked "PHONES" with Cord CD-307-A.

(g) After checking over the wiring of the interconnecting cables, and setting the two power switches of the rectifier power supply at "OFF," insert plug AN3108-22-4S into the power input receptacle on the panel of the rectifier power supply.

2. AFTER-INSTALLATION CHECK.

a. GENERAL PRECAUTIONS.

(1) Before making any adjustments or repairs requiring work inside the units, remove the power cord from the main supply receptacle on the panel of the rectifier power supply.

(2) Do not operate the motor driven scanning unit longer than necessary to accomplish a specific task. This precaution is to eliminate unnecessary wear on the gear drive.

(3) Do not probe around any wiring or components in the r-f section. Moving the components and wiring may change their inductance or capacity enough at these high frequencies to cause serious misalignment of the r-f stages. The receivers are properly aligned before shipment and should not require any realignment.

(4) The "A.C." and "D.C." power switches on the rectifier should be in the "OFF" position when the equipment is not operating.

b. PRELIMINARY CHECK.—Before operating this

equipment check the following vital points in the installation to see that:

(1) The a-c power source of the aircraft is operating and has the correct voltage and frequency.

(2) The d-c power source of the aircraft is operating and has the correct voltage and polarity.

(3) The inter-connecting cables between the rectifier power unit and the aircraft's power source, the rectifier power unit and the receiver, and the receiver and antenna are properly and securely wired. (If the panoramic adapter and radar indicator assembly are used, check their cables and see that each is connected to the correct outlet on the panel of the receiver.)

(4) All tubes are securely in place.

(5) The receiver and rectifier power unit are securely fastened to their mountings.

(6) There are no objects near the dust cover of the rectifier power unit which will obstruct the air flowing through the ventilator holes.

(7) The antenna and its cable receptacle are electrically and mechanically secure.

(8) The following components on the front panel of the receiver and rectifier power unit are in place and securely held.

(a) Power connectors (one on the receiver and two on the rectifier power unit).

(b) Antenna connector on the receiver.

(c) Sector adjustment mechanism cover.

(d) Two 5-ampere fuses and their holders located on the panel of the rectifier power unit.

(e) Panoramic and video connectors if used.

c. OPERATIONAL CHECK.

(1) PRELIMINARY ADJUSTMENTS.—Make the following preliminary adjustments:

(a) Open sector adjustment cover on front panel and loosen thumb set screw; then close cover.

(b) Set the following switches on the receiver panel to the "OFF" position. (See figure 2-3.)

1. "B.F.O."

2. "A.N.L."

3. "A.V.C."

4. "MOTOR DRIVE."

(c) Set the "SELECTIVITY" switch at "STAND BY."

(d) Connect Headset HS-23 or HS-33 to the jack marked "PHONE" on the receiver panel.

(2) STARTING THE EQUIPMENT.—Start the equipment by setting the "A.C." and "D.C." power switches of Rectifier Power Unit PP-32/AR at "ON." This turns on the tube filaments and heaters of both power unit and receiver. Illumination of the pilot lights adjacent to these switches indicates the voltage is present. The pilot light illuminating the receiver tuning dial scale indicates that the filament voltage is reaching the receiver.

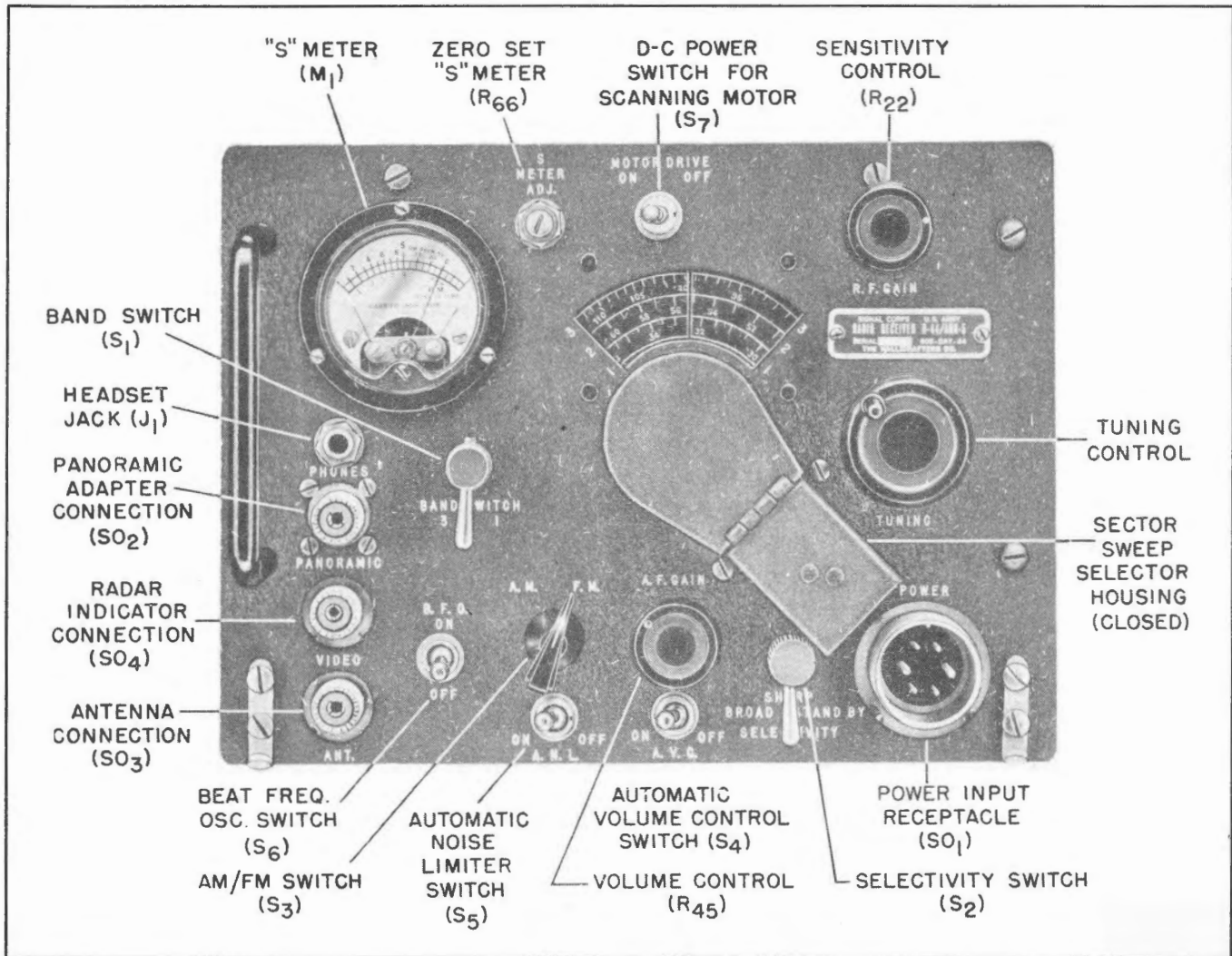


Figure 2-3—Radio Receiver R-44/ARR-5—Front View

(3) RECEPTION OF AMPLITUDE MODULATED SIGNALS.—Check reception of these signals as follows:

(a) Set the "BAND SWITCH" at position "1," "2," or "3" depending upon the range of frequencies to be covered.

(b) Set the "A.M.-F.M." switch to the "A.M." position.

(c) Turn the "R.F. GAIN" control clockwise as far as it will go.

(d) Set the "A.V.C." switch at "ON."

(e) Turn the "A.F. GAIN" control counter-clockwise as far as it will go (minimum gain).

(f) Set the "SELECTIVITY" switch at "BROAD." This puts the "B" voltage on the tubes in the receiver.

(g) Turn the "A.F. GAIN" control clockwise until the noise level or signal level suits the operator.

(h) Tune for a signal with the "TUNING" control. Tune for maximum reading as indicated by the tuning meter (M₁).

(i) If an excessive noise level is present in the headset it may be attenuated somewhat by setting the "SELECTIVITY" switch at "SHARP" or setting the "A.N.L." switch at "ON" or both.

Note

When receiving amplitude modulated signals the tuning meter indicates the strength of the carrier received when the "R.F. GAIN" control is in the extreme clockwise (maximum gain) position. The "A.V.C." switch must be at "ON" or this meter will not operate. To obtain relative reading, it is best to leave the "R.F. GAIN" control in the extreme clockwise (maximum gain) position as changing the position of the "R.F. GAIN" control will change the "S" meter readings.

(4) RECEPTION OF FREQUENCY MODULATED SIGNALS.—Check reception as follows:

(a) Set the "A.M.-F.M." switch at "FM."

(b) Leave the "R.F. GAIN" control turned clockwise as far as it will go.

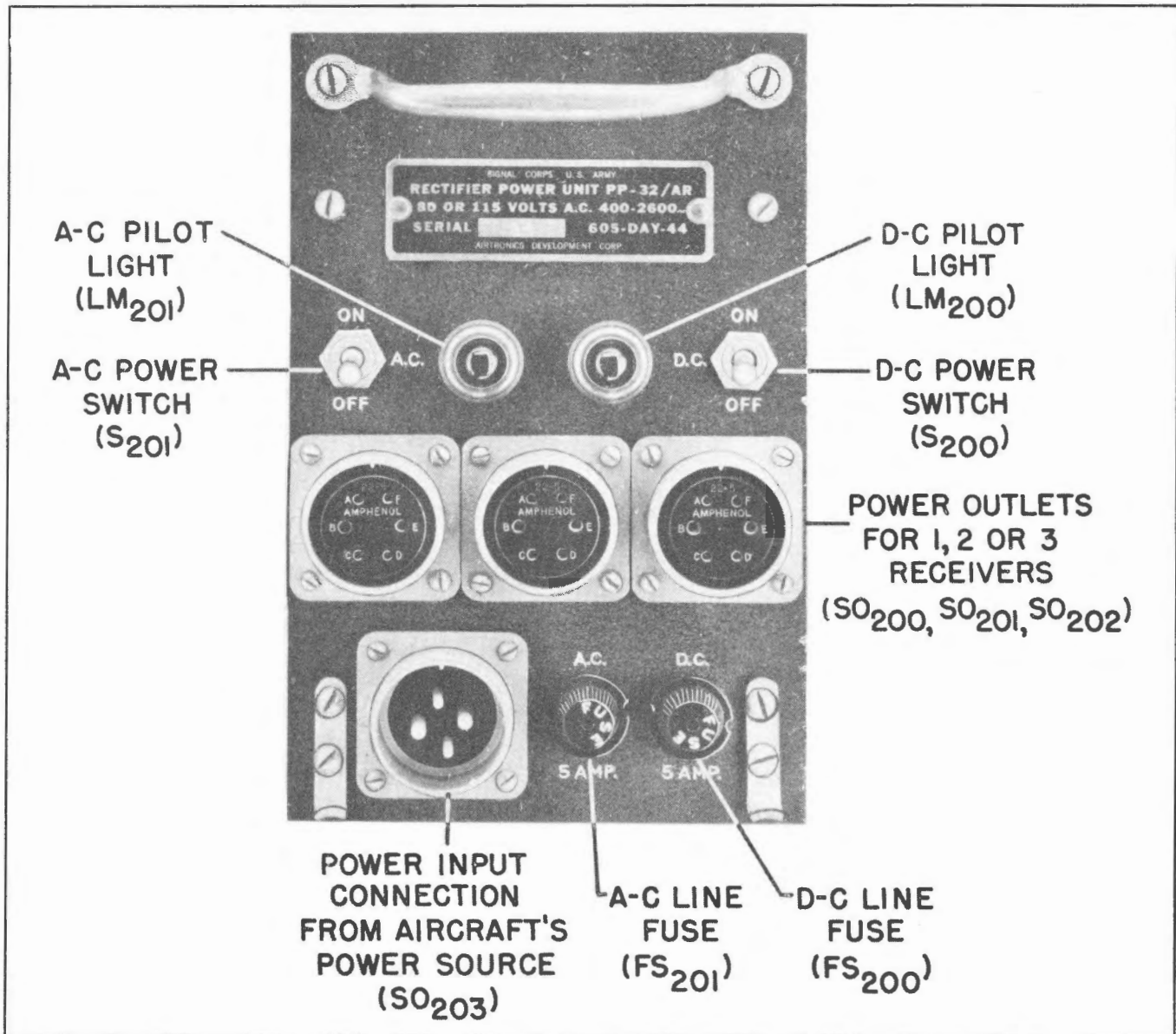


Figure 2-4—Rectifier Power Unit PP-32/AR—Front View

(c) Set the "A.V.C." and "A.N.L." switches at "OFF."

(d) Leave the "SELECTIVITY" switch set at "BROAD" (the entire band width is required for best performance.)

(e) Set the frequency of reception with the "TUNING" control. Tune for zero reading as indicated by the tuning meter (M₁).

Note

When receiving frequency modulated signals the tuning meter will deflect to one side when approaching a carrier, then swing back to center (zero position) and to an equal deflection on the other side as the carrier is passed, and then return to zero when the receiver is tuned beyond the carrier. The zero position

of the pointer in the middle of the swing represents the correct setting of the "TUNING" control for resonance. The zero position of the "S" meter is adjusted (using "S METER ADJ.") at the factory and should not need further adjustment.

(5) RECEPTION OF C-W CODE SIGNALS.—
Check reception of these signals as follows:

(a) Set up the controls as for reception of amplitude modulated signals. (Refer to this section, paragraph 2c(3), steps (a) through (g).)

(b) Set "A.V.C." switch at "OFF."

(c) Set "B.F.O." switch at "ON."

(d) Set the frequency of reception with the "TUNING" control. Tune for the 1000 cycle note.

Note

The B.F.O. whistle may also be used to locate weak phone signals. Tune the signal in until zero beat is obtained, then switch off the B.F.O.

(e) To disable the receiver temporarily, set the "SELECTIVITY" switch at "STAND BY." (This removes the "B" voltage from the receiver's tubes but leaves their filaments hot for instant use.)

(f) To turn the receiver and power supply completely off set the "A.C." power switch on the panel of the rectifier power unit at "OFF." If the scanning motor has been used set the "D.C." power switch on the panel of the power unit at "OFF" also.

(6) PROCEDURE FOR MOTOR DRIVEN SCANNING.

(a) Select the frequency band to be scanned and set "BAND SWITCH."

(b) Open dust cover over sector sweep adjustment mechanism on front panel.

(c) Adjust cams to cover the sector of the total band and tighten down thumb screw. (Refer to section III, paragraph 2c for adjustment details.)

(d) Check to see that the "D.C." switch on the rectifier power unit panel is set at "ON."

(e) Set the "MOTOR DRIVE" switch on the front panel of the receiver at "ON." The sector sweep mechanism should start scanning, tripping the toggle switch and reversing the dial rotation at the end of each scanning run. Readjust the cam setting if necessary to sweep the desired frequency range exactly. (If the d-c polarity is reversed, the scanning mechanism will not reverse automatically.)

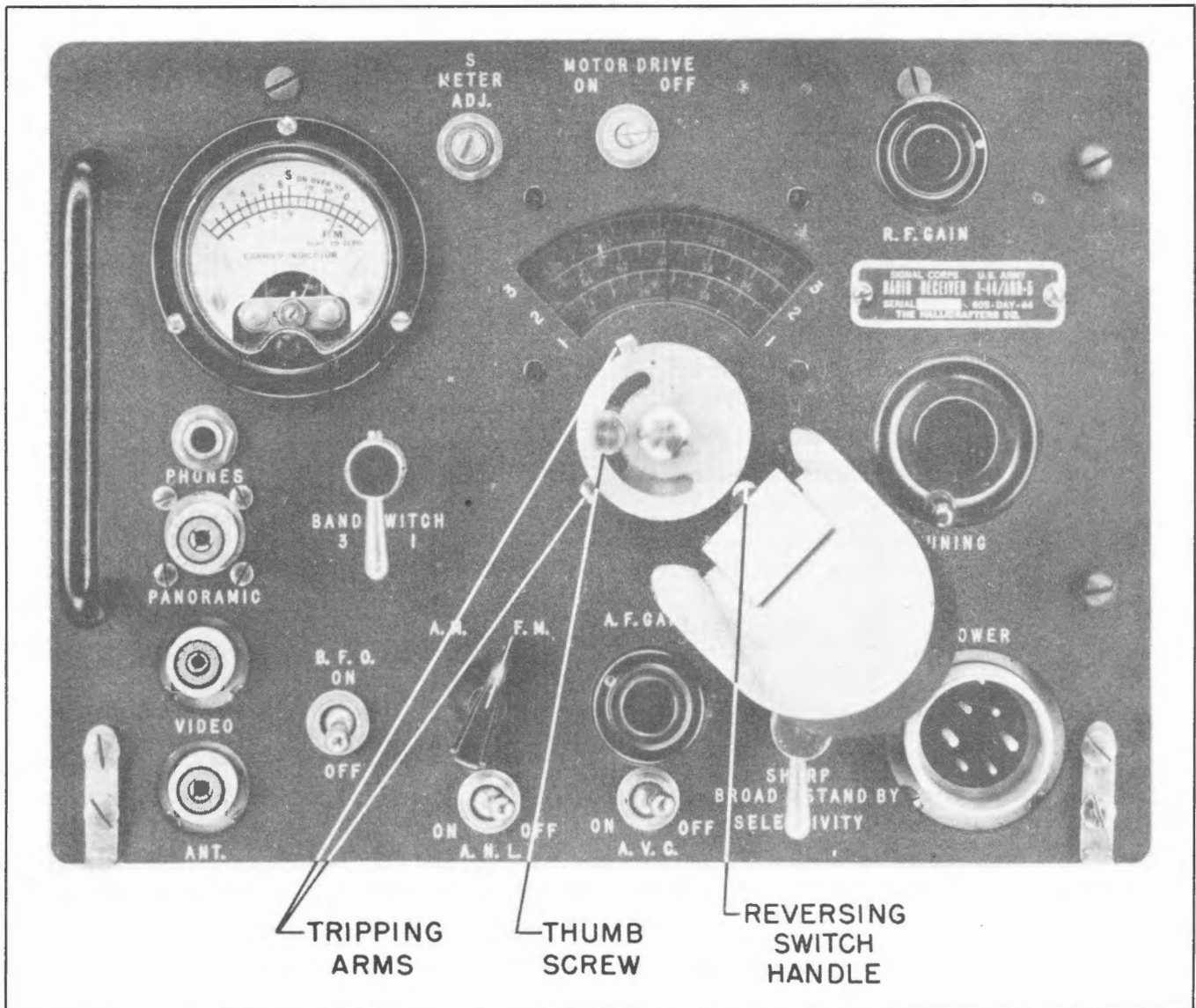


Figure 2-5—Radio Receiver R-44/ARR-5—Front View Showing Sector Sweep Selector Mechanism.

Note

The speed of scanning is believed to be about right when the set leaves the factory, however, the speed may be controlled over a two to one ratio by adjusting rheostat (R68) inside the receiver unit. This rheostat is located on top and at the rear of the chassis. (See figure 5-1.)

(f) To avoid passing over a signal when scanning, it is desirable to have certain of the controls set as follows:

1. "R.F. GAIN" in the extreme clockwise (maximum gain) position.
2. "A.F. GAIN" in the extreme clockwise (maximum gain) position.
3. "SELECTIVITY" switch at "BROAD."
4. "A.N.L." switch set at "OFF."

(g) To shut off the scanning mechanism temporarily set the "MOTOR DRIVE" switch on the panel of the receiver at "OFF." Set both the "MOTOR DRIVE" switch and the "D.C." power switch on the panel of the power unit at "OFF" when shutting down the scanning circuit completely.

(7) TURNING THE EQUIPMENT OFF.

(a) To turn the equipment off for short periods of time remove only the B voltage from the receiver tubes by setting the "SELECTIVITY" switch at "STAND-BY."

(b) To turn the equipment off completely proceed as follows:

1. Set "SELECTIVITY" switch at "STAND-BY."
2. Set "MOTOR DRIVE" switch at "OFF."
3. Set "A.C." switch of rectifier power unit at "OFF."
4. Set "D.C." switch of rectifier power unit at "OFF."

5. Set the "B.F.O.," "A.N.L.," and "A.V.C." switches at "OFF."

(8) INDICATIONS OF NORMAL OPERATION.

(a) In general, it can be said that the equipment is operating if either a signal or the background noise can be heard in the headset.

(b) The following visual indications give evidence of normal operation.

1. Normal illumination of the pilot light adjacent to the "A.C." power switch on the panel of Rectifier Power Unit PP-32/AR indicates that the a-c input circuit voltage is normal and that there are no shorts overloading this circuit.

2. Normal illumination of the pilot light adjacent to the "D.C." power switch on the panel of Rectifier Power Unit PP-32/AR indicates that the 24-volt d-c circuit is operating and not being overloaded.

3. The pilot light illuminating the receiver's tuning dial scale indicates that the filament voltage is reaching the receiver.

4. With the "A.M.-F.M." switch set at "AM," the "SELECTIVITY" switch at either "BROAD" or "SHARP," and the "A.V.C." switch at "ON," the tuning meter needle should swing to the left to its zero signal level position if no carrier is being received.

5. With the "A.M.-F.M." switch set at "FM," the "SELECTIVITY" switch at either "BROAD" or "SHARP," and the "R.F. GAIN" control in its extreme clockwise (maximum gain) position, the tuning meter needle should stay at its reference mark. Tuning through a f-m carrier should swing the needle first to one side and then the other of the reference mark.

(c) It is essential that the a-c supply voltage be 115 volts ± 5 volts, or 80 volts ± 4 volts at any frequency from 400 to 2600 cycles per second.

SECTION III OPERATION

1. STARTING AND STOPPING THE EQUIPMENT.

a. TO START.—Perform the following steps to start equipment:

(1) Check to see that the "SELECTIVITY" switch is in the "STAND-BY" position, and the "MOTOR DRIVE" switch on the receiver is set at "OFF."

(2) Set the "A.C." and "D.C." power switches on the rectifier power unit at "ON" and allow at least 15 seconds for the equipment to warm up.

(3) Set the "SELECTIVITY" switch at either its "SHARP" or "BROAD" position. This turns on the receiver and the equipment is ready for use.

(4) If automatic scanning is desired set the "MOTOR DRIVE" switch at "ON" after adjusting the sector sweep mechanism to cover the desired range. (Refer to section III, paragraph 2c for details.)

b. TO STOP.—To turn off the equipment, set the switches in the following sequence:

(1) Set the "MOTOR DRIVE" switch at "OFF" (receiver).

(2) Set the "SELECTIVITY" switch at "STAND-BY" (receiver).

(3) Set the "A.C." and "D.C." power switches at "OFF" (rectifier power unit).

(4) Set the "B.F.O.," "A.N.L.," and "A.V.C." switches at "OFF" (receiver).

2. OPERATION.

a. For normal operation it is only necessary to make the following adjustments at the panel of the receiver:

(1) Select the type of reception (f-m or a-m signal) with the "AM.-FM." switch.

(2) Set the selectivity required with the "SELECTIVITY" switch. (Use "BROAD" setting for f-m reception and either position for a-m reception.)

(3) Select the frequency of reception by setting the "BAND SWITCH" and "TUNING" control.

(4) Adjust the "R.F. GAIN" and "A.F. GAIN" controls for the desired volume level. Keep the "R.F. GAIN" control turned up as high as the strength of the carrier will permit, that is, at the point where the receiver doesn't block up.

(5) Turn the "B.F.O." switch to "ON" for c-w code reception.

b. In special cases the following controls may be used as follows:

(1) In cases of extreme background noises such as ignition noise, static, etc. when receiving a-m signals ("AM.-FM" switch at "AM"), set the "A.N.L." switch at "ON." The automatic noise limiter circuit will cut down this background noise in most cases.

(2) When receiving a-m signals that are varying

greatly in intensity, hence requiring constant adjustment of the gain controls, it is more convenient to switch on the "A.V.C." switch, set the "R.F. GAIN" control at maximum gain, and adjust the "A.F. GAIN" control for the desired volume. This automatic volume control switch provides an automatic control of the receiver volume within certain limits.

c. For automatic scanning the following adjustments are necessary:

(1) The thumb screw on the sector cams should be loose when the automatic scanning device is not in use. The screw is captivated and will not drop off.

(2) Set the receiver to the lowest frequency in the sector to be covered.

(3) With the tripping arms hanging down, swing the arm nearest the switch around until it rests against the reversing switch handle and tighten the thumb screw slightly.

(4) Set the receiver to the highest frequency in the sector to be covered.

(5) Hold the tripping arm of the sector sweep cam that was just set, loosen the thumb screw, swing the free tripping arm around to the reversing switch handle and then lock the sector sweep mechanism in place with the thumb screw.

(6) Set the "MOTOR DRIVE" switch at "ON" and check the scanning range. Readjust slightly if necessary to cover the range exactly.

SECTION IV
THEORY OF OPERATION

1. GENERAL FUNCTIONING.

a. The essential function of Radio Receiving set AN/ARR-5 is to search for enemy radar and communications equipments operating in the frequency range from 27.8 to 143 megacycles.

b. Rectifier Power Unit PP-32/AR operates from the plane's power source and an inverter. It has three identical output receptacles that supply a-c and d-c operation voltages for the receiver.

c. Radio Receiver R-44/ARR-5 is a very high frequency radio receiver capable of receiving amplitude and frequency modulated radio signals within a frequency range from 27.8 to 143 megacycles. It is equipped with an adjustable sector motor driven scanning device. The circuit is a conventional super-heterodyne receiver preceded by one stage of tuned radio frequency amplification and a re-radiation suppressor stage. The intermediate frequency amplifier terminates in both amplitude and frequency modulation detector circuits which are switched to the same audio amplifier by means of "A.M.-F.M." switch thus providing either type of reception. Visual and aural outputs are provided. The visual reception facilities

are provided by the "VIDEO" and "PANORAMIC" outlets and the aural reception is provided by the "PHONE" outlet. These three outlets are located on the front panel of the receiver.

2. DETAILED DESCRIPTION.

a. RECTIFIER POWER UNIT PP-32/AR.

(1) MECHANICAL.—Rectifier Power Unit PP-32/AR is built into a standard aircraft radio case size A1-D and is shock mounted by Mounting Base MT-167/U. (See figure 8-3 for outline dimensions and mounting details.)

(2) ELECTRICAL. (See figures 8-7 and 8-9.)

(*a*) The aircraft's a-c and d-c power sources are connected to the power unit through power input receptacle AN3102-22-4P as follows:

| Contact | Conductor Size | Circuit |
|---------|----------------|--|
| A |AN20..... | 80 or 115 v. a.c. (hot) |
| B |AN20..... | + 24 v. d.c. |
| C |AN20..... | 80 or 115 v. a.c. (neutral and ground) |
| D |AN20..... | — 24 v. d.c. (ground) |

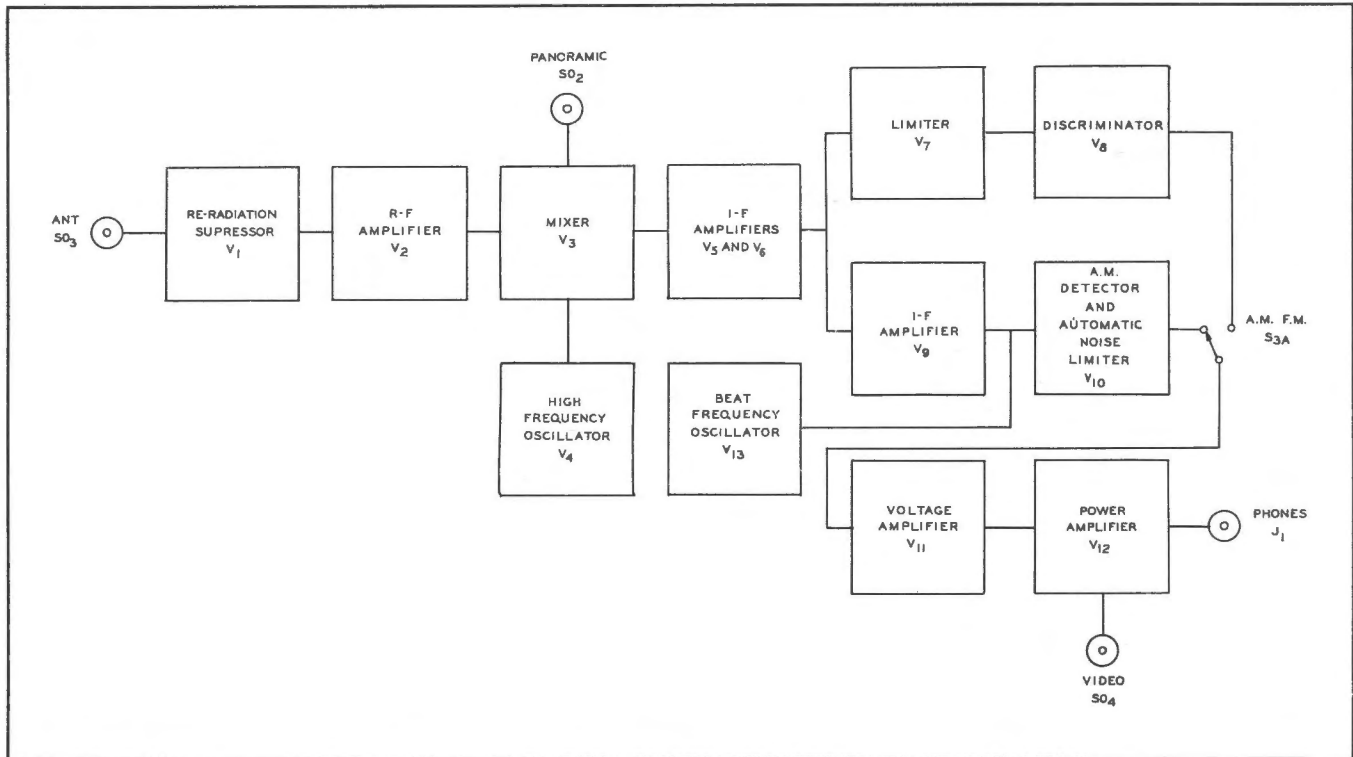


Figure 4-1—Radio Receiver R-44/ARR-5—Block Diagram

(b) The 24-volt direct current goes through the d-c line fuse and switch to the three outlets (AN3102-22-5S). The d-c pilot light is wired in on the load side of the switch so it indicates that the d-c voltage is available at the three outlets.

(c) The alternating current voltage is fed through the a-c line fuse and switch to the primary of the power transformer which is tapped for operation from either 80 or 115 volts alternating current. It has one high voltage secondary winding, three 5-volt rectifier filament windings, and one 6.3-volt filament winding for the receiver tubes. The pilot light is connected across the 6.3-volt winding.

(d) The plates of the three JAN-5R4GY rectifier tubes are operated in parallel as full wave rectifiers, but with their filaments wired to separate filament windings so that three separate high voltage sources are available. Each high voltage source is filtered with a choke and capacitor connected as a low pass L-section filter with choke input. A bleeder resistor is connected across each high voltage source. The three output circuits are connected as follows to the three receptacles AN3102-22-5S located on front panel of power unit:

| Contact | Conductor Size | Circuit |
|---------|----------------|---|
| A |AN20..... | B— (ground) |
| B |AN20..... | Filament (6.3 volts a.c. at 5 amperes) |
| C |AN20..... | 24-volts d.c. (minus) |
| D |AN20..... | 24-volts d.c. (plus) |
| E |AN20..... | Filament (6.3 volts a.c. at 5 amperes) |
| F |AN20..... | B+ (270 volts d.c. at 150 milliamperes) |

b. RADIO RECEIVER R-44/ARR-5.

(1) MECHANICAL.

(a) Radio Receiver R-44/ARR-5 is built into a standard aircraft radio case size B1-D and is shock mounted by Mounting Base MT-171/U. (See figure 8-2 for outline dimensions and mounting details.)

(b) The sector sweep or scanning mechanism consists of a motor assembly, a magnetic clutch, a gear train, and a sector selector mechanism. The motor assembly and magnetic clutch are held in one cast aluminum frame. The motor consists of a high speed armature rotating in a permanent magnet field. The motor drives a speed reducing gear train which in turn drives the magnetic clutch. The magnetic clutch consists of a solenoid housed in a steel shell. When energized the magnetic field pulls the wall of the adjacent gear, being driven by the worm gear, up against the clutch housing which then transmits the motion to the gear train driving the tuning capacitor of the receiver. The magnetic clutch winding is connected to the "MOTOR DRIVE" so that the clutch is engaged only while the motor is running. This allows the tuning capacitor to be turned manually free of the motor drive gear train.

(c) The tuning capacitor gear train consists of spring gears to prevent back lash or lost motion. The "TUNING" control and clutch are connected to the gear train by a slipping spring loaded clutch to prevent damage due to overdrive of the tuning capacitor shaft beyond its stops. This will occur during automatic scanning if the sector selector set screw adjustment is loose, since the reversing switch must be

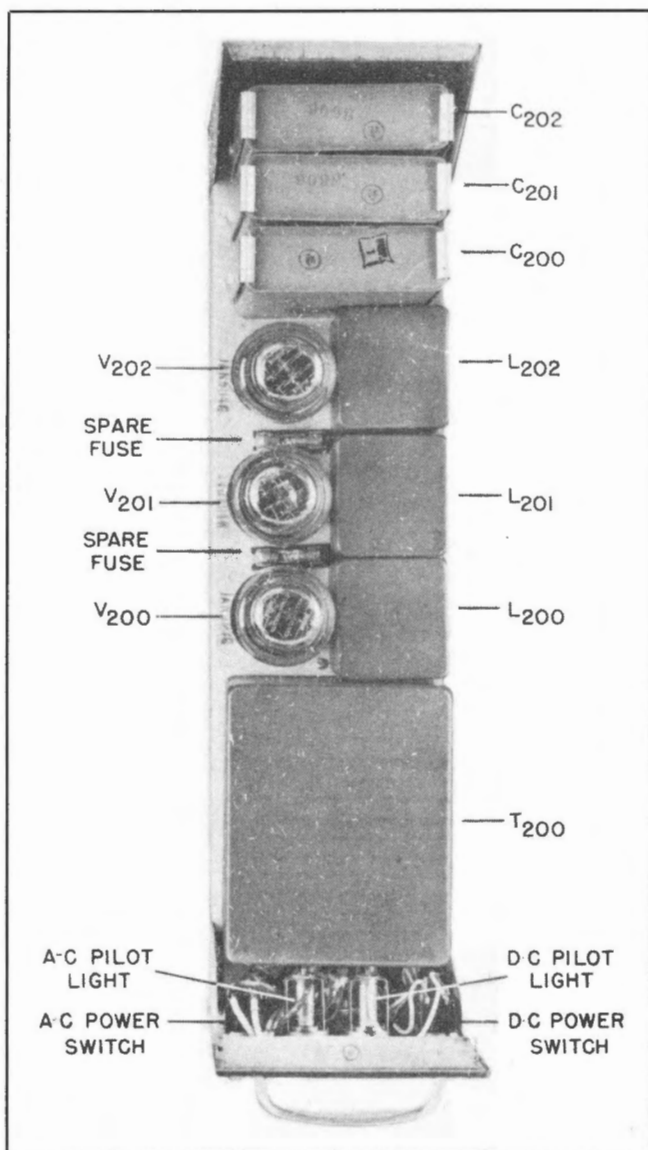


Figure 4-2—Rectifier Power Unit PP-32/AR—Top View

tripped at the end of each scanning run. The sector selecting mechanism is located on the panel under the hinged cover. It consists of a pair of adjustable discs equipped with tripping arms that engage the reversing switch handle as they rotate on the shaft carrying the calibrated dial of the receiver.

(2) ELECTRICAL. (See figures 8-6 and 8-8.)

(a) The receiver covers a frequency range from 27.8 megacycles to 143 megacycles in three bands. The "BAND SWITCH" (S1) on the receiver panel selects the desired band. Band "1" is from 27.8 to 47.5 megacycles, band "2" is from 47 to 83 megacycles, and band "3" is from 82 to 143 megacycles.

(b) The signal is picked up by Antenna Stub AT-38/APT or AT-38A/APT which is a 29-inch copper plated maple mast. The signal is fed to the receiver by a concentric line that terminates in a Plug PL-259 equipped with an Adapter M-359.

(c) The signal enters the receiver at the antenna input receptacle, Socket SO-239 marked "ANT." and is fed to the re-radiation suppressor tube (V1) grid through an impedance matching network R73, C81, and L4. The purpose of the re-radiation suppressor stage is to prevent the receiver from radiating a signal generated within it during reception.

(d) The signal voltage from the plate of the re-radiation suppressor tube (V1) is coupled to the grid of the r-f amplifier tube (V2) by transformer T1, T2, or T3 depending on the frequency range being tuned. The proper transformers in the r-f stages are selected by the "BAND SWITCH" (S1A to S2G) and tuned by the main tuning capacitor (C1A to C1C).

(e) After being amplified by the r-f stage the signal is fed to the grid of the mixer tube (V3) through transformer T4, T5, or T6. In this stage another signal from the high frequency oscillator stage (V4) is heterodyned with the received signal to produce a third whose frequency is equal to the intermediate amplifier channel band-pass frequency of 5.25 megacycles. The plate of the mixer tube (V3) is connected to the "PANORAMIC" receptacle, Socket SO-239 through isolating resistor R6 to provide an i-f signal voltage for the panoramic adapter which is connected externally when required.

(f) The high frequency oscillator (tube V4) is a tuned plate untuned grid circuit whose frequency is controlled by transformers T7, T8 and T9 and tuning capacitor C1C. In band No. 1 the oscillator frequency is 5.25 megacycles higher than the signal frequency and in bands No. 2 and No. 3 the oscillator frequency is 5.25 megacycles lower than the signal frequency. The output of the oscillator is coupled to the cathode of the mixer tube (V3) by capacitor C13.

(g) The intermediate frequency amplifier consists of transformers T10, T11, T12 and T13 and tubes V5, V6, and V9. The "R.F. GAIN" control R22 is connected in series with the cathodes of tubes V5 and V6 and ground and controls the gain of these i-f stages by varying the self bias voltage developed. The band width of the i-f system is expanded by a third winding on transformer T10, T11, and T12 which increases the transformers coefficient of coupling when switched into the circuit by the "SELECTIVITY" switch S2A to S2C.

(b) The intermediate frequency amplifier terminates in two types of detectors, namely the amplitude modulation detector and the frequency modulation detector.

1. The amplitude modulation detector consists of a diode in tube V10 which is fed by the secondary of transformer T13. The diode load consists of resistors R49, R51, R52, and R53 connected in series. From this voltage divider network is taken the audio voltage, automatic volume control voltage and automatic noise limiter voltage. The audio voltage is fed

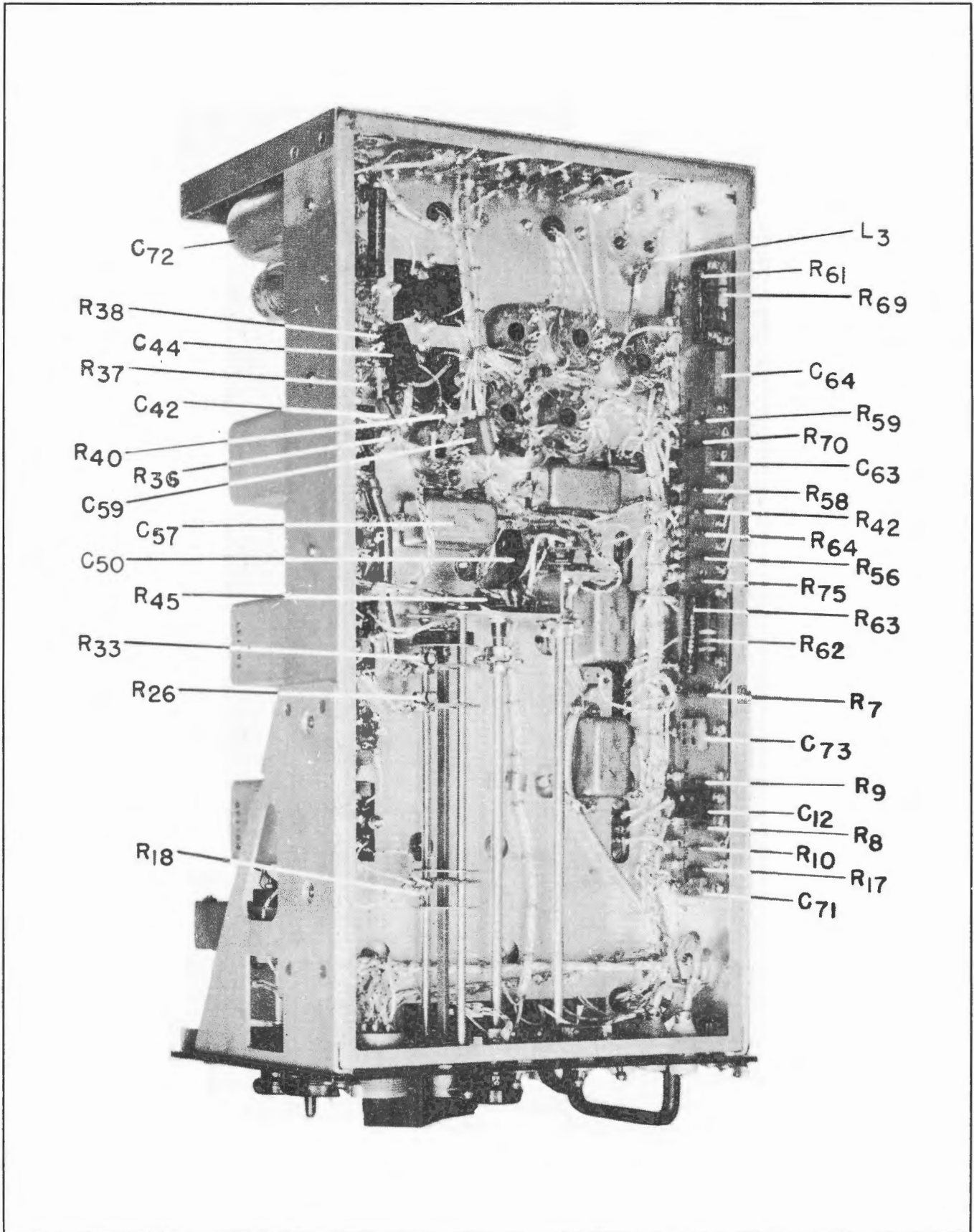


Figure 4-3—Radio Receiver R-44/ARR-5—Bottom View (Left)

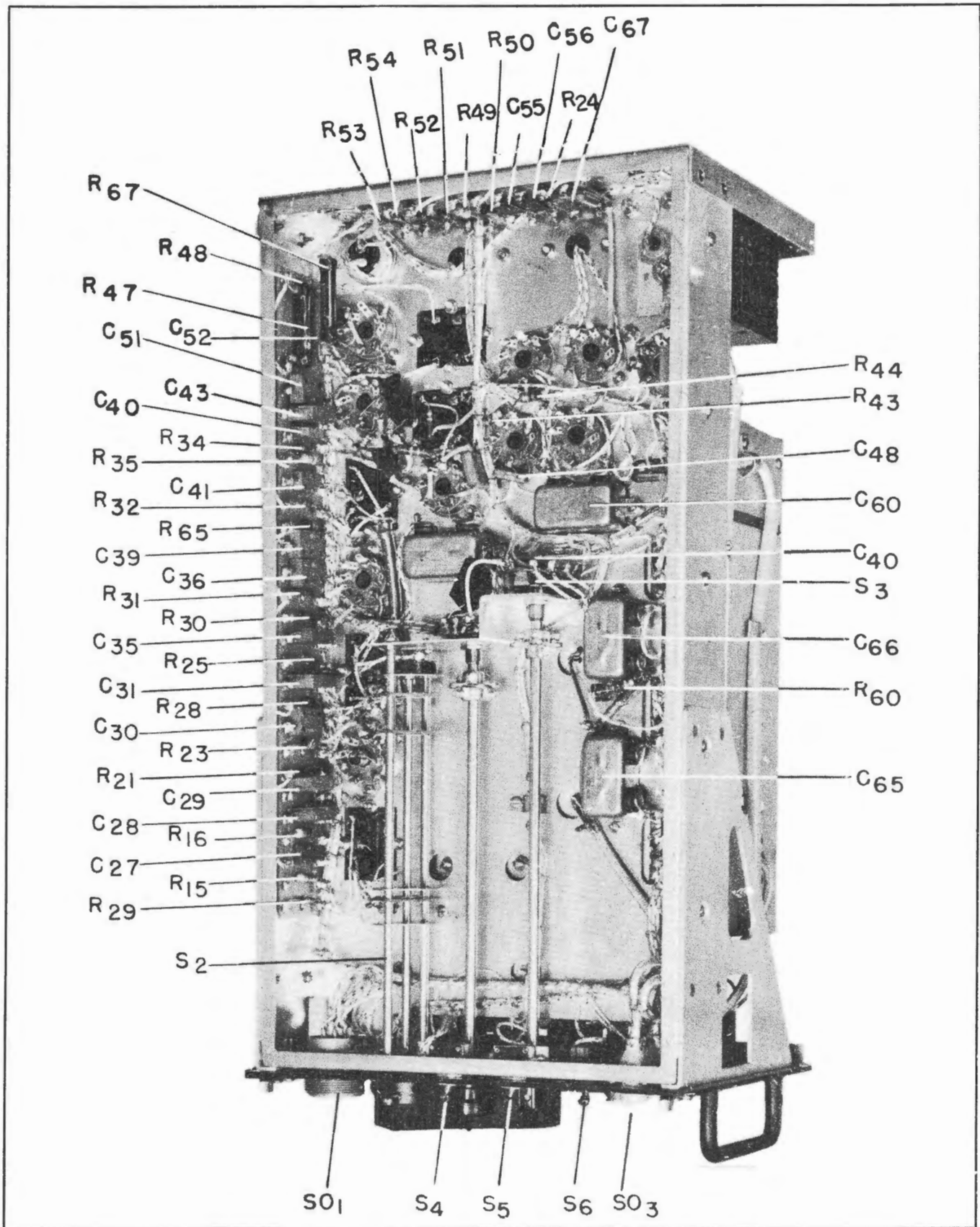


Figure 4-4—Radio Receiver R-44/ARR-5—Bottom View (Right)

to the audio amplifier through the "A.M.-F.M." switch section S3A. The automatic volume control voltage is applied to the first and second intermediate frequency amplifier tube grids (V5 and V6) through resistor capacitor isolating network R19, R29 and C26 for tube V5 and R27, R28 and C34 for tube V6. The "A.V.C." switch S4 shorts out the a-v-c voltage when automatic volume control is not required. The automatic noise limiter is switched into the circuit by the "A.N.L." switch S5.

2. The noise limiter circuit functions as follows: Capacitor C57 becomes charged by the rectified carrier voltage and the time constant of this capacitor and the rest of the diode network associated with it is such that the audio frequency variations do not alter this charge. During a severe noise pulse, however, the cathode of the diode plate connected to capacitor C57 becomes more negative than the charge held by C57, hence, current flows shorting the audio voltage to ground through capacitor C57 until the cathode voltage of the a-n-l diode reaches a higher negative potential than its plate.

3. The frequency modulation detector consists of a limiter stage and discriminator stage. The limiter tube (V7) grid is fed by the secondary winding of transformer T12 as is the grid of the third intermediate amplifier tube (V9) for amplitude modulation detection. The limiter stage operates as a saturated amplifier in which the output of the stage remains constant over a large range of input levels, hence, the amplitude variations are eliminated. The constant level signal output of this stage is coupled to the discriminator stage by discriminator transformer T14. Transformer T14, tube V8 and load resistors R43 and R44 converts the frequency variations in the frequency modulated carrier into amplitude variations of audio signal. The de-emphasis network R42 and C49 attenuates the high frequency end of the audio range since these frequencies were emphasized at the transmitter. From the de-emphasis network the audio signal is fed to the "A.M.-F.M." switch section S3A.

(i) The audio amplifier consists of voltage amplifier tube V11 and power amplifier tube V12. The audio signal from the a-m detector and f-m discriminator is fed to the grid of tube V11 through capacitor C50 and "A.F. GAIN" control R45. The power amplifier tube V12 is resistance capacity coupled to tube V11. The output of tube V12 feeds the headset load through capacitor C66. Negative feedback is applied to the cathode of tube V11 from the plate of the output tube (V12) through C66 and R60 to improve the over-all frequency response of the amplifier and take care of the variations in load impedance (600 to 8000 ohms) provided by the various headsets used with the equip-

ment. The voltage for the "VIDEO" jack is obtained at the cathode of the output tube (V11) across resistor R69. The network R70, R59, R61, and C64 is an equalizer to accommodate the variable load in the plate circuit of the output tube.

(j) The tuning meter (M1) is used to indicate proper tuning for both amplitude modulation and frequency modulation reception.

1. When receiving amplitude modulated signals the meter indicates a change in the plate current drawn by the intermediate amplifier tube (V6). The tube (V6) draws maximum current with zero signal level and decreases as the signal level increases. The meter and series resistor R66 ("S METER ADJ.") are shunted by resistor R65. The meter adjustment (R66) sets the zero carrier level reading. Switch sections S3C and S3D place the meter in the circuit when the "FM-AM" switch is in its "AM" position.

2. When receiving frequency modulated signals the tuning meter indicates an unbalanced current flowing between the junction of resistors R42 and R43 to ground. As the receiver is tuned across the carrier the unbalanced current first flows in one direction and then the other, hence, the characteristic swing of the tuning meter. Note that the *on tuned carrier* position of the tuning meter is also its normal resting position.

(k) The beat frequency oscillator stage consists of a triode oscillator tube (V13) and a resonant circuit (T15). Transformer T15 is adjusted to resonate at the i-f frequency plus approximately 1000 cps by varying its inductance with a moving iron core.

(l) The scanning motor consists of a wound armature rotating in a fixed permanent magnet field. Resistor R39 is connected in series with the armature to limit the starting current to a safe value. Variable resistor R68 adjusts the motor speed by controlling the d-c potential at the armature of the motor. A noise filter is built into the motor to eliminate commutator hash generated at the motor's brushes. The filter consists of a Pi-section low-pass network (C61, L7, C85 and C62, L6, C84) in each of the two armature leads. The reversing switch S8 merely reverses the polarity of the d-c supplied to the armature winding. Since the polarity of the motor's field remains fixed by the permanent magnet, the direction of armature rotation reverses when switch S8 is thrown. The clutch connecting the motor drive to the gear train driving the tuning condenser is operated electrically from the 24-volt d-c source. It consists of a solenoid (L5) which revolves with the tuning condenser gear train. When excited the solenoid pulls the gear adjacent to it up against its housing forming a friction drive. The gear adjacent to the solenoid is driven by a worm gear on the motor gear train within the casting. The clutch and motor both are controlled by the front panel switch (S7) marked "MOTOR DRIVE."

SECTION V MAINTENANCE

IMPORTANT

Periodic inspections prescribed herein represent minimum requirements. If, because of local conditions, peculiarities of equipment, or abnormal usage, they are found insufficient to attain satisfactory operation of equipment, local authority should not hesitate to increase their scope or frequency.

1. INSPECTION.

a. GENERAL.—It is necessary that Radio Receiving Set AN/ARR-5 be inspected periodically. A rough check should be made on the ground before each flight to assure operation of the equipment.

b. PREFLIGHT CHECK.

(1) ANTENNA STUB AT-38/APT OR AT-38A/APT.—Inspect the antenna and make certain that the following conditions are satisfied:

(*a*) The antenna is securely held by its mounting clamp.

(*b*) The mounting clamp is securely fastened to the structural members of the aircraft.

(*c*) The copper strap connecting the antenna stub to the connector located on the mounting clamp is mechanically secure, and making good electrical contact at both ends.

(*d*) No moisture, dust, or corrosion is present on the antenna cable connector contacts and threads.

(*e*) The antenna cable is securely held in place.

(2) RECTIFIER POWER UNIT PP-32/AR.—Inspect the power unit and make certain that the following conditions are satisfied:

(*a*) All tubes are securely held in their sockets.

(*b*) Excessive dust, moisture and corrosion are removed from interior components.

(*c*) The case is secured to the chassis by the screw type fastener at the rear of the cabinet.

(*d*) Mounting Base MT-167/U is securely fastened to the aircraft and its shock absorber movement is unobstructed.

(*e*) The power unit is securely resting in the shock mounting frame.

(*f*) The two 5-ampere fuses are in their fuse holders and adequate spares are available. (Two spare fuses are located between the rectifier tubes.)

(*g*) Both pilot lights are in their sockets and operative.

(*b*) The cable connector contacts and threads are free from dust, moisture and corrosion.

(*i*) Any obstructions which will prevent an adequate flow of air through the ventilating louvers are removed.

(3) RADIO RECEIVER R-44/ARR-5.—Inspect the receiver and make certain that the following conditions are satisfied:

(*a*) All 14 tubes and the pilot light are securely held in their sockets and the filaments light when the a-c switch on the power unit is set at "ON."

(*b*) All set screws on the shaft couplings and bushings for the band switch, dial audio gain control, and "A.M.-F.M." switch are securely in place.

(*c*) Excessive dust, moisture, and corrosion are removed from interior components.

(*d*) The gear drive should be oiled with a minute amount of light machine oil at the bearings and gear surfaces.

IMPORTANT

Use oil sparingly so as to prevent the accumulation of dust on vital parts.

(*e*) The cabinet is secured to the chassis by the two screw type fasteners at the rear of the cabinet and the two screws on top of the cabinet just back of the front panel.

(*f*) Mounting Base MT-171/U is securely fastened to the aircraft and its shock absorber movement is unobstructed.

(*g*) The receiver is securely resting in the shock mounting frame.

(*b*) All control knobs are in place and securely attached.

(*i*) Cable connectors are free of dust, moisture, and corrosion at their contacts and threads.

(*j*) Check operation of receiver as outlined in section II, paragraph 2*c*.

(*k*) If the sensitivity of the receiver begins to fall off. (Input of 10 microvolts modulated at 400 cps should give 11 volts audio output across 8,000 ohms load.) The tubes should be individually tested. In replacing original tubes which have tested O.K. care should be exercised to return them to the same socket. Acorn tubes should be handled with care and inserted into the socket with the short end of the body in the socket, with the exception of the tube in the re-radiation suppressor compartment.

Note

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

(4) AIRCRAFT POWER SOURCE.—Make certain that the aircraft power source and inverter are operating satisfactorily. The d-c mains should be supplying 24 to 28 volts and the a-c mains should be supplying 80 or 115 volts at 400 to 2600 cps depending upon the installation.

c. DAILY CHECK.

(1) Check the Antenna Stub AT-38/APT or AT-38A/APT as follows:

(a) Check the mounting to see that it is secure and that the antenna has not been damaged in any way.

(b) Check connections between the antenna, radio frequency cable, and the receiver. Make certain the plugs are free of moisture and dust and see that they are properly seated.

(c) Inspect Radio Frequency Cable RG-8/U to see that there are no kinked or dented sections.

(2) Check Rectifier Power Unit PP-32/AR as follows:

(a) Check to see that the rectifier power unit is fastened securely in its mounting base and that the mounting base is fastened securely in the aircraft.

(b) Check all plugs to see that they are free of moisture and dust and are properly seated.

(c) Check the "A.C." and "D.C." power switches and their respective pilot lights.

(d) Remove the unit from its dust cover and check all tubes to see that they are properly seated. Check the two spare fuses and, if bad, replace with 5-ampere fuses.

(e) Visually check for any electrical defects such as spark overs and faulty wiring.

(f) Replace the unit in its dust cover and fasten it into place.

(3) Check Radio Receiver R-44/ARR-5 as follows:

(a) Check the receiver to see that it is fastened securely in its mounting base and that the mounting base is mounted securely in the aircraft.

(b) Check all plugs to see that they are free of moisture and dust and that they are properly seated.

(c) Check the "TUNING" control, the "BAND-SWITCH," "B.F.O.," "A.M.-F.M.," "A.N.L.," "A.V.C.," "MOTOR DRIVE," and "SELECTIVITY" switches for mechanical defects.

(d) Remove the unit from its dust cover and check the tubes to see that they are properly seated.

(e) Visually check for electrical defects such as spark overs and faulty wiring.

(f) Replace the unit back in its dust cover and fasten it in place.

(g) Refer to section II, paragraph 2c, and make an operational check of the unit.

d. ARMY 100-HOUR CHECK

(NAVY 120-HOUR CHECK).

(1) Check Antenna Stub AT-38A/APT or AN-38A/APT as follows:

(a) Check to see that the antenna is held securely by its mounting clamp and that the mounting clamp is fastened securely.

(b) Check the copper strap between the antenna stub and connection or mounting clamp to see that it is mechanically secure and that it is making good electrical contact.

(c) Check cable connector contacts and threads to see that they are free from moisture, corrosion, and dust.

(d) Check the radio frequency cable to see that it is held securely in place and there are no kinked or dented portions.

(2) Check Rectifier Power Unit PP-32/AR as follows:

(a) Check the unit to see that it is mounted securely in its mounting base and that the mounting base is mounted securely in the aircraft.

(b) Check the bonding straps between the rectifier power unit and the fuselage of the aircraft. Make certain that they are mechanically tight and are making good electrical contact.

(c) Remove the unit from its dust cover and check for corrosion, faulty wiring and bad connections.

(d) Check the "A.C." and "D.C." power switches and their respective pilot lights for mechanical and electrical faults.

(e) Check all plug pins and sockets for corrosion and dirt.

(f) Check all tubes for which testing equipment is available; reinstall serviceable tubes in the same sockets from which they were removed.

(g) Check the two fuse holders for corrosion and dirt. Also check the two spare fuses for electrical continuity. Replace with 5-ampere fuses if bad.

(b) Replace the unit back in its dust cover and fasten into place. Replace all cabling that has been removed during these checks with the exception of the power input cable.

(3) Check Radio Receiver R-44/ARR-5 as follows:

(a) Check the receiver to see that it is mounted securely in its mounting base and that the mounting base is mounted securely in the aircraft.

(b) Check the bonding straps between the receiver and the fuselage. Make certain that they are mechanically tight and making good electrical contact.

(c) Remove the unit from its dust cover and check for corrosion, faulty wiring, and bad connections.

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(d) Check all switches and other contact points (such as plug pins and sockets) for mechanical and electrical faults. On exposed contacts, remove all corrosion and check for proper tension on contacts.

(e) Check condensers C1A, C1B, and C1C for dirt and corrosion between the plates.

(f) Check all tubes when testing equipment is available; reinstall all serviceable tubes in the same sockets from which they were removed.

(g) Check the motor commutator for undesired grooving, check for wear and freedom of movement. Check armature to see that it turns freely.

(h) Check the gear drive assembly for worn bearings and presence of dust or other foreign particles. Place a small amount of light lubricating oil on bearings and gears after they are clean.

(i) Replace the unit in its dust cover and fasten it into place. Replace all cabling that has been removed in these checks.

(j) Replace input power cable on the rectifier power unit.

(k) Refer to section II, paragraph 2c and make an operation check of the unit.

(l) Using Frequency Meter TS-174/U, test the receiver for normal reception and check the dial calibration on all three bands.

(m) If a signal generator (Ferris 18C or General Radio 804B or equal) is available, check the receiver sensitivity as follows:

1. Connect the signal generator to the antenna connector and wire a dummy resistor (50-ohm non-inductive resistor) across the signal generator terminals.

2. Apply a 400 cps modulated r-f signal of 10 microvolts to the input of the receiver. This should give an audio output of 11 volts across an 8000-ohm load.

(n) Turn off all test equipment and Radio Receiving Set AN/ARR-5. (Refer to section II, paragraph 2c(7) for instructions in turning off the radio receiving set.)

2. TROUBLE SHOOTING INSTALLED EQUIPMENT.

a. GENERAL.—When Radio Receiving Set AN/ARR-5 is not operating properly, a few simple checks should be made.

(1) Check the input voltages to see that they are correct.

(2) Check both units by replacing them with another unit that is known to be in good working order.

(3) If the trouble still prevails, check all interconnecting cables.

(4) Visually inspect both units for physical indications of trouble.

b. TROUBLE CHART. — The following chart lists some probable troubles, their symptoms, location, and remedy.

| <i>Symptom</i> | <i>Trouble Location</i> | <i>Remedy</i> |
|--|---|--|
| No signal or background noise heard in headset. | Aircraft's power supply. Cabling between units. Burned out fuses in the rectifier power unit. Tube failure in either the receiver or the rectifier power unit. | Check fuses and switches in circuit. Check cabling. Check the power source which will consist of batteries and an inverter. Check all plugs for proper seating to insure good contact. Check all cables for shorts or open circuits. Replace with spare 5-ampere fuses located between the tubes in the rectifier power unit. If fuses continue to burn out check for shorts. Replace tube. |
| Background noise but weak signals or no signals. | Antenna circuit. | Check plugs for good connections. Check cable for shorts and open circuit. |
| Receives signals spasmodically accompanied by noise. | Cabling. Rectifier power unit or receiver. | Check all plugs for good connections. Check all cabling for shorts and open circuits. Check all tubes to see that they are properly seated. Check for any physical defects such as loose connections. |

3. TROUBLE SHOOTING AT REPAIR DEPOT.

The following chart lists symptoms of improper operation and their likely causes:

| <i>Symptoms</i> | <i>Likely Source of Trouble</i> |
|--|--|
| Receiver's sensitivity very low and calibrate dial shows incorrect frequency of reception. | Receiver out of alignment in both the r-f and i-f stages. Defective tubes in the r-f and i-f stages. |
| "B.F.O." switch set at "ON" but no 1000-cycle note for c-w reception as noted by listening in headset. | Defective BFO tube (V13). Defective switch (S6). BFO coil (T15) adjustment has been tampered with and requires readjustment. |

Note

The tube sockets used with the acorn tubes in the r-f stages frequently give trouble because their contacts spread apart breaking the connection between the tube and the circuit. This can be remedied by carefully bending them back to their original position.

4. MAINTENANCE OF GEAR DRIVE ASSEMBLY.

a. The brushes in the scanning motor should be checked once a month and replaced when worn short. Access to the brushes is had by removing the plate of the motor housing.

b. The gears should be inspected for dust and foreign particles once a month and cleaned and oiled when necessary.

5. RECEIVER ALIGNMENT.

a. GENERAL.—This receiver has been carefully aligned at the factory and alignment should not be attempted unless it is known that the adjustments have been tampered with or that tubes of a different manufacturer have been substituted. The equipment needed will be:

- (1) Signal Generator capable of tuning from 5 to 140 megacycles (Ferris Model 18C Microvolter or Signal Generator I-72).
- (2) Non-metallic screw driver.
- (3) 50-ohm non-inductive resistor for dummy antenna.
- (4) Output meter.

b. I-F ALIGNMENT.

(1) Disconnect the grid of the JAN-954 converter tube (V3) and connect the signal generator output between the grid and ground. Make the connection with a small clip or wind a piece of flexible wire around the grid terminal, but do not attempt to solder a lead to the terminal as the heat is sure to crack the glass envelope. Connect the output meter to the phone jack.

(2) Set the controls on the receiver as follows:

- (*a*) "R.F. GAIN" control at maximum gain (extreme clockwise).
- (*b*) "A.F. GAIN" control at maximum gain (extreme clockwise).

(*c*) "SELECTIVITY" switch at "SHARP."

(*d*) "A.M.-F.M." switch at "A.M."

(*e*) "BAND SWITCH" at band "2."

(*f*) "A.V.C." switch at "OFF."

(*g*) "A.N.L." switch at "OFF."

(*b*) "B.F.O." switch at "OFF."

(3) Set the signal generator frequency at 5.25 megacycles and with the 400-cycle modulation turned on; align transformer T10, T11, T12, and T13, by adjusting the position of the two iron cores in each transformer (slugs 1, 2, 3, 4, 5, 6, 7, and 8) for maximum audio output as indicated on the output meter connected to the phone jack. (See figure 5-1 for location of these adjustment screws.) A bakelite screw driver with a metal or insulated tip is necessary for accurate alignment.

(4) Repeat the alignment procedure outlined above at least once to insure an accurate alignment.

(5) After the i-f transformers are tuned, glyptal the iron slug adjustment screws to keep them in place.

c. DISCRIMINATOR TRANSFORMER (T14) ALIGNMENT.

(1) Set the "SELECTIVITY" switch at "BROAD" and "A.M.-F.M." switch at "F.M."

(2) With the signal generator set at the 5.25 megacycles i-f frequency and with the 400-cycle modulation on, rotate the iron slug adjustment screw for No. 10 adjustable iron core in the secondary winding of transformer T14 until the signal level on the output meter drops to zero. This null point is approached very suddenly, therefore, the control must be turned very slowly. (See figure 5-1 for location of this slug adjustment screw.)

(3) Now detune this adjustment slightly so that the output meter gives a readable indication.

(4) Adjust the primary iron core (slug No. 9) of the discriminator transformer for maximum response.

(5) Reset the secondary slug (No. 10) until the output again drops to zero.

(6) Detune the signal generator to a frequency lower than the i-f frequency until the maximum output point is reached. Note the output meter reading and

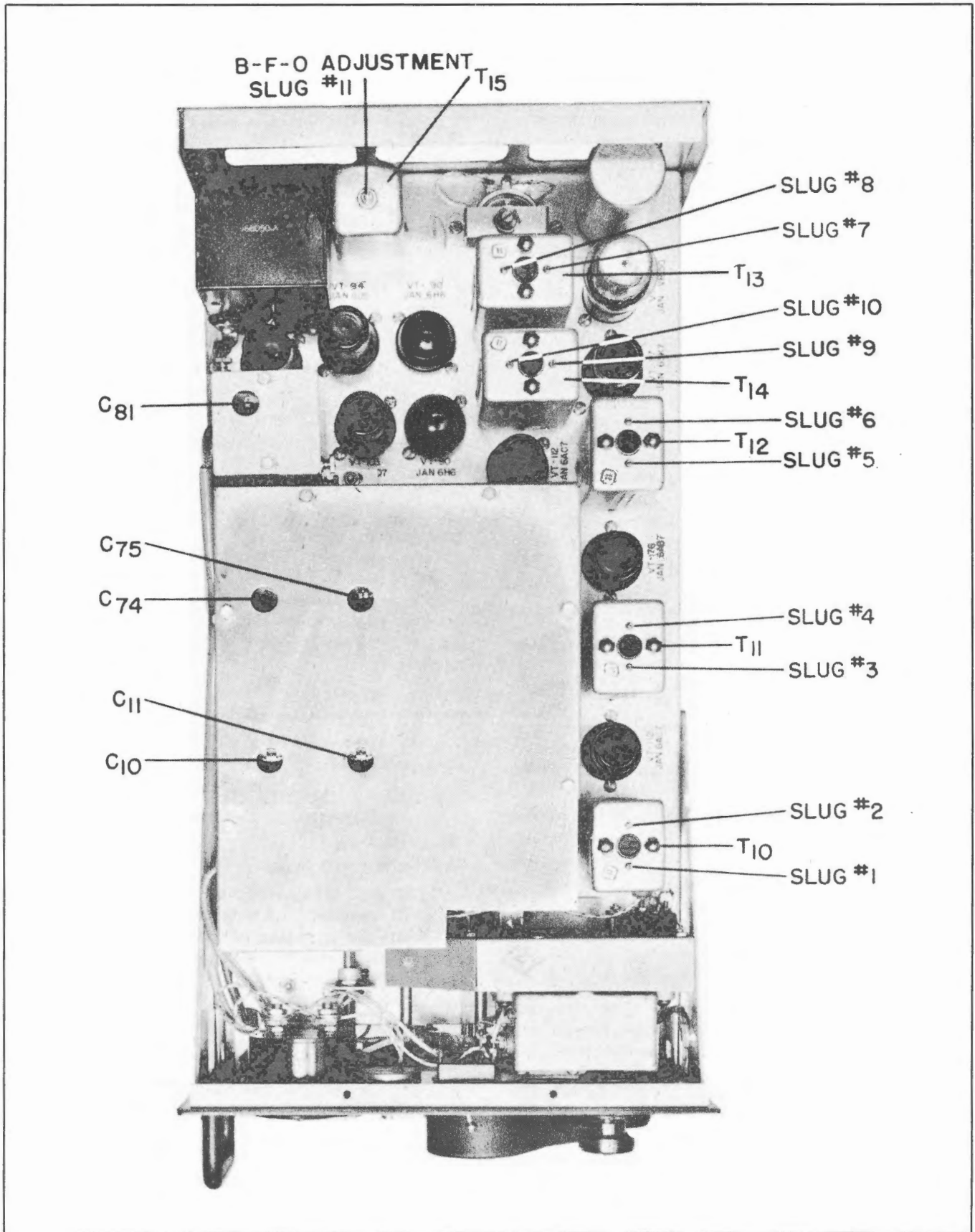


Figure 5-1—Radio Receiver R-44/ARR-5—Top View Showing Alignment Points

the frequency deviation from the i-f frequency (5.25 megacycles).

(7) Repeat the procedure in (6) using a frequency above the i-f frequency. The frequency deviation and maximum output in both cases should be the same for good balance. If they are not, then tune the signal generator to the lower of the two peaks and adjust the primary slug (No. 9) until the output rises an amount equal to about one half the difference of the two outputs previously noted.

(8) Retest the balance as above and readjust the primary slug (No. 9) until both maximum readings are alike when the signal generator is detuned approximately the same amount on either side of resonance (5.25 megacycles). If a balance cannot be obtained, it is an indication that the discriminator transformer secondary slug (No. 10) has been adjusted off its proper center and will require a very slight readjustment in either direction. The direction of adjustment that will cause the off-tune peaks to assume the same values is the correct one. Care must be taken in adjusting the discriminator secondary control as even a very slight misadjustment will result in distortion in the frequency modulated signals.

(9) After the transformer is tuned, glyptal the iron slug adjustment screws to keep them in place.

d. B.F.O. ADJUSTMENT.

(1) With the signal generator connected as for i-f alignment above, set the generator's frequency to 5.25 megacycles and turn off the 400-cycle modulation.

(2) Turn the receiver's "B.F.O." switch to "ON" and back off the "A.F. GAIN" control slightly.

(3) Adjust the iron core screw on top of transformer T15 until a 1000-cycle note is obtained in the headset. The headset should replace the output meter from this operation. Note that the 1000-cycle note appears at the two settings of this screw either seating is usable. It merely means that the oscillator is set 1000 cycles above or below the i-f frequency.

e. R-F ALIGNMENT.—See figure 5-2 for location of alignment controls.

(1) Connect the signal generator to the antenna connector and wire the dummy antenna resistor (50-ohm noninductive resistor) across the generator terminals. Connect the output meter to the jack marked "PHONES."

(2) Set the controls on the receiver as for i-f amplifier alignment. (Refer to paragraph 2*b*(2), this section.)

(3) Turn on 400-cycle tone modulation on signal generator.

(4) Align the three bands as follows:

(a) BAND "1."

1. Set the signal generator and receiver at 45 megacycles.

2. Adjust the trimmer capacitor C18 for maximum output. Note that the frequency at which the receiver's oscillator operates on this band is higher than the signal frequency.

3. Adjust the trimmer capacitors C9 and C76 for maximum output.

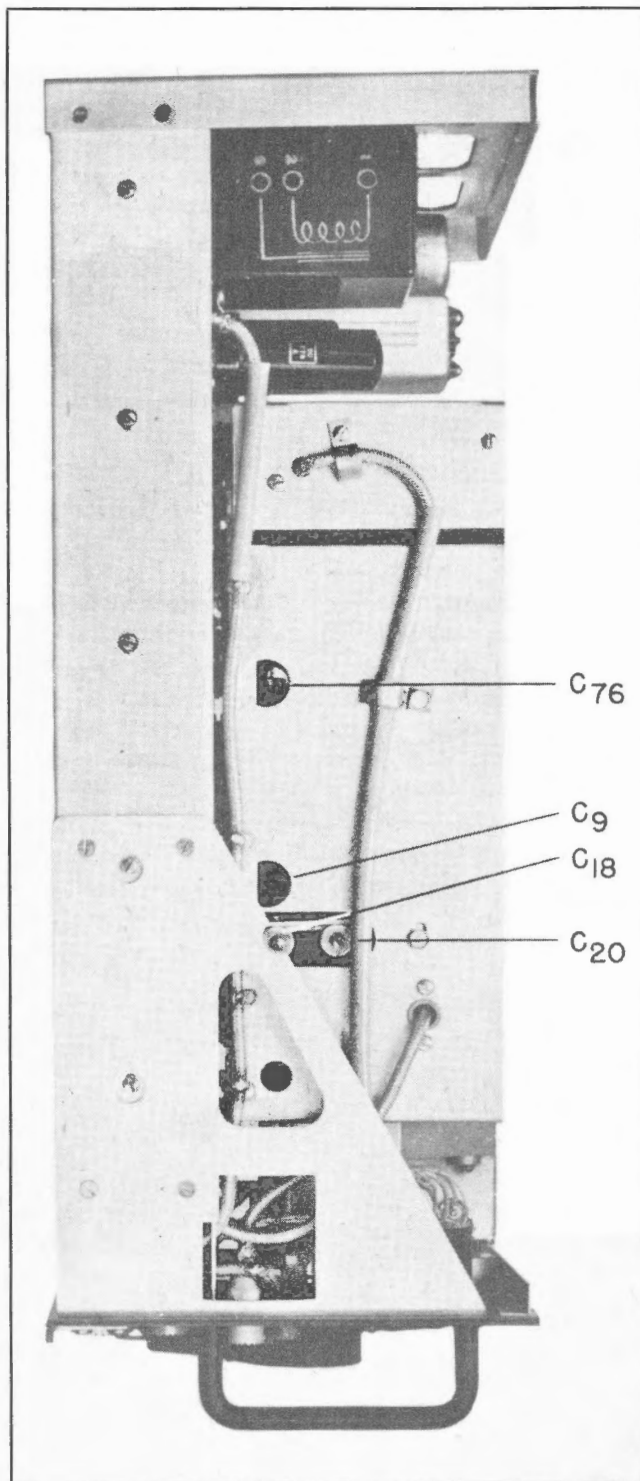


Figure 5-2—Radio Receiver R-44/ARR-5—Side View Showing Alignment Points

4. Set signal generator and receiver at 30 megacycles.

5. Set padder capacitor C19 for maximum output while rocking the tuning control to obtain the optimum setting of the padder.

6. Repeat operations 1 through 5, above, for alignment of the high frequency end of the band as described.

(b) BAND "2."

1. Set signal generator and receiver at 80 megacycles.

2. Adjust trimmer capacitor C20 for maximum output. Note that the frequency at which the receiver's oscillator operates on this band is lower than the signal frequency.

3. Adjust trimmer capacitors C10 and C74 for maximum output.

4. No padder capacitor adjustment is provided for the low frequency end of this band.

5. Check the 60 megacycles check point for alignment.

(c) BAND "3."

1. Set signal generator and receiver at 135 megacycles.

2. Adjust trimmer capacitors C11 and C75 for maximum output. Rock the tuning control while making the adjustment to obtain the optimum settings.

3. It is not recommended that the frequency of the oscillator in this band be adjusted except at the factory or at a depot. Should it be impractical to return the receiver to a depot or factory for adjustment, make the following adjustments.

a. Remove the top cover of the r-f unit and locate the high frequency oscillator coil T9.

b. Set the signal generator and receiver at 135 megacycles.

c. Locate the white celanese wire on the coil form of transformer T9, and carefully shift its position for maximum output. Note that the frequency at which the receiver's oscillator operates on this band is lower than the signal frequency.

d. Set the signal generator and receiver at 90 megacycles.

e. Locate the heavy tinned wire on the coil form of transformer T9 and carefully shift the turns until maximum signal output is obtained. Note that this transformer does not have a padding capacitor.

f. Recheck the high frequency end of the band and then cement the windings in place with "Q-Max" or equivalent low loss cement.

g. Set the signal generator and receiver at 135 megacycles.

h. Reset trimmer capacitors C11 and C75 for maximum output.

6. VOLTAGE AND RESISTANCE READINGS.

The voltage readings shown in the following table were made under these conditions: 1. "A.M.-F.M." switch at "A.M."; 2. "A.F. GAIN" and "R.F. GAIN" controls at maximum gain (extreme clockwise); 3. "A.V.C.," "A.N.L.," and "B.F.O." switches at "ON"; 4. "SELECTIVITY" switch at "SHARP"; 5. "MOTOR DRIVE" switch at "ON"; and 6. "A.C." and "D.C." switches at "ON."

The resistance readings were taken with the controls set as mentioned above but with the tubes, pilot lights, and all connectors to the front panel removed.

All voltage and resistance readings shown in the table are between the terminal indicated and the chassis or ground. Unless otherwise specified voltages are direct current. The resistance readings are in ohms.

Note

All readings were taken with a Weston Model 772.

a. RADIO RECEIVER R-44/ARR-5.

| Component | Connection | Pin | Voltage to ground (1,000-ohm/volt meter) | Voltage to ground (20,000-ohm/volt meter) | Resistance to Ground |
|-----------------------------------|-----------------|----------------|--|---|-------------------------|
| Tube V ₁ (JAN-956) | Heater | H | 0 | 0 | 0 |
| | Cathode | K | .7 | .7 | 300 |
| | Heater | H | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Control grid | Bottom | 0 | 0 | 5,000 |
| | Plate | Top | 32 | 34 | 4,000 |
| | Screen grid | G ₂ | 20 | 27 | 100,000 |
| | Suppressor grid | G ₃ | 0 | 0 | 0 |
| Tube V ₂ (JAN-956) | Heater | H | 0 | 0 | 0 |
| | Cathode | K | 3 | 3 | 300 |
| | Heater | H | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Control grid | Bottom | 0 | 0 | 8 |
| | Plate | Top | 115 | 115 | 10,500 |
| | Screen grid | G ₂ | 115 | 115 | 7,500 |
| | Suppressor grid | G ₃ | 3 | 3 | 0 |
| Tube V ₃ (JAN-954) | Heater | H | 0 | 0 | 0 |
| | Cathode | K | 3.6 | 4 | 2,200 |
| | Heater | H | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Control grid | Bottom | 0 | 0 | 0 |
| | Plate | Top | 152 | 152 | Very high |
| | Screen grid | G ₂ | 70 | 90 | Very high |
| | Suppressor grid | G ₃ | 0 | 0 | 0 |
| Tube V ₄ (JAN-955) | Heater | H | 0 | 0 | 0 |
| | Cathode | K | 0 | 0 | 0 |
| | Heater | H | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Control grid | G | -.15 | -.3 | 25,000 |
| | Plate | P | 108 | 108 | Very high |
| Tube V ₅ (JAN-6AC7) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Suppressor grid | 3 | 0 | 0 | 0 |
| | Control grid | 4 | 0 | 0 | 1.3 megohm |
| | Cathode | 5 | 3.2 | 3.2 | 400 |
| | Screen grid | 6 | 210 | 225 | 55,000 |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate | 8 | 300 | 300 | 10,000 |
| Tube V ₆ (JAN-6AB7) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Suppressor grid | 3 | 0 | 0 | 0 |
| | Control grid | 4 | 0 | 0 | 1.3 megohm |
| | Cathode | 5 | 2 | 2 | 220 |
| | Screen grid | 6 | 152 | 152 | Very high |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate | 8 | 300 | 300 | 10,000 |
| Tube V ₇ (JAN-6AC7) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Suppressor grid | 3 | 0 | 0 | 0 |
| | Control grid | 4 | 0 | -.2 | 350,000 |
| | Cathode | 5 | 0 | 0 | 0 |
| | Screen grid | 6 | 73 | 73 | Very high |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate | 8 | 75 | 73 | Very high |
| Tube V ₈ (JAN-6H6) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate #2 | 3 | -.3 | -.5 | 100,000 |
| | Cathode #2 | 4 | 0 | -.2 | 200,000 |
| | Plate #1 | 5 | -.3 | -.7 | 100,000 |
| | No connection | 6 | -.3 | -.7 | 100,000 |
| | Heater | 7 | 0 | 0 | 0 |
| | Cathode #1 | 8 | 0 | 0 | 0 |
| Tube V ₉ (JAN-6SK7) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Suppressor grid | 3 | 3.6 | 3.8 | 300 |
| | Control grid | 4 | 0 | 0 | 500,000 |
| | Cathode | 5 | 3.6 | 3.8 | 300 |
| | Screen grid | 6 | 115 | 115 | 7,000 |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate | 8 | 280 | 280 | 10,000 |

a. RADIO RECEIVER R-44/ARR-5—Continued.

| Component | Connection | Pin | Voltage to ground (1,000-ohm/volt meter) | Voltage to ground (20,000-ohm/volt meter) | Resistance to Ground |
|---|---------------|-----|--|---|-------------------------|
| Tube V ₁₀ (JAN-6H6) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Plate #2 | 3 | 0 | -.25 | 1.7 megohms |
| | Cathode #2 | 4 | 0 | -.15 | 600,000 ohms |
| | Plate #1 | 5 | -.3 | -.55 | 800,000 ohms |
| | No connection | 6 | 0 | 0 | Very high |
| | Heater | 7 | 0 | 0 | 0 |
| | Cathode #1 | 8 | 0 | 0 | 0 |
| Tube V ₁₁ (JAN-6SQ7) | Shield | 1 | 0 | 0 | 0 |
| | Control grid | 2 | 0 | 0 | 1 megohm |
| | Cathode | 3 | 1.6 | 2 | 3,600 |
| | No connection | 4 | 0 | 0 | Very high |
| | No connection | 5 | 0 | 0 | Very high |
| | Plate | 6 | 145 | 210 | 180,000 |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Heater | 8 | 0 | 0 | 0 |
| Tube V ₁₂ (JAN-6V6) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Plate | 3 | 135 | 135 | 17,000 |
| | Screen grid | 4 | 130 | 140 | 80,000 |
| | Control grid | 5 | — | — | 500,000 |
| | No connection | 6 | — | — | Very high |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Cathode | 8 | 7.4 | 7.4 | 350 |
| Tube V ₁₃ (JAN-6J5) | Shield | 1 | 0 | 0 | 0 |
| | Heater | 2 | 0 | 0 | 0 |
| | Plate | 3 | 125 | 125 | 36,000 |
| | No connection | 4 | 0 | 0 | Very high |
| | Control grid | 5 | 0 | -.3 | 50,000 |
| | No connection | 6 | 0 | 0 | Very high |
| | Heater | 7 | 6.3 (a-c) | 6.3 (a-c) | Very high |
| | Cathode | 8 | 0 | 0 | 0 |
| Tube V ₁₄ (JAN-OD3/ VR-150-30) | No connection | 1 | 0 | 0 | 0 |
| | Cathode | 2 | 0 | 0 | 0 |
| | Jumper | 3 | 152 | 152 | 13,000 |
| | No connection | 4 | — | — | — |
| | Plate | 5 | 152 | 152 | 13,000 |
| | No connection | 6 | — | — | Very high |
| | Jumper | 7 | 152 | 152 | Very high |
| | No connection | 8 | — | — | Very high |

b. RECTIFIER POWER UNIT PP-32/AR.

Note

Measurements made with no external load.

| Component | Connection | Pin | Voltage to ground (1,000-ohm/volt meter) | Voltage to ground (20,000-ohm/volt meter) | Resistance to Ground |
|--|---------------|-----|--|---|-------------------------|
| Power input Socket | A-C | A C | 115 (a-c)* | 115 (a-c)* | Very high |
| | D-C | B D | 24* | 24* | Very high |
| Power Outlets SO ₂₀₀₄ , SO ₂₀₁₁ and SO ₂₀₁₂ | Ground | A | 0 | 0 | 0 |
| | A-C | B E | 6.3 (a-c)* | 6.3 (a-c) | Very high |
| | D-C | C D | 24* | 24* | Very high |
| | D-C | F | 340 | 340 | 10,000 |
| Tube V ₂₀₀ V ₂₀₁ and V ₂₀₂ (JAN-5U4G or (JAN-5R4GY) | No Connection | 1 | 0 | 0 | Very high |
| | Filament | 2 | 340 | 340 | 10,000 |
| | No Connection | 3 | 0 | 0 | Very high |
| | Plate #2 | 4 | 390 (a-c) | 390 (a-c) | 3.4 |
| | No Connection | 5 | 0 | 0 | Very high |
| | Plate #1 | 6 | 390 (a-c) | 390 (a-c) | 3.4 |
| | No Connection | 7 | 0 | 0 | Very high |
| | Filament | 8 | 340 | 340 | 10,000 |

*Voltage measured between terminals indicated.

SECTION VI SUPPLEMENTARY DATA

1. TYPICAL PERFORMANCE DATA.

a. The input to Rectifier Power Unit PP-32/AR is as follows:

- 115 volts a.c., 400 to 2600 cps. . . .
 - 1.3 amps. with 1 receiver.
 - 2.0 amps. with 2 receivers.
 - 2.7 amps. with 3 receivers.
- 80 volts a.c., 400 to 2600 cps. . . .
 - 1.85 amps. with 1 receiver.
 - 2.85 amps. with 2 receivers.
 - 3.85 amps. with 3 receivers.
- 24 volts d.c., running current. . . .
 - 0.25 amp. with 1 receiver.
 - 0.50 amp. with 2 receivers.
 - 0.75 amp. with 3 receivers.

b. The output of Rectifier Power Unit PP-32/AR and input to Receiver R-44/ARR-5 is as follows:

- 270 volts a.c. at 135 milliamperes for each receiver.
- 24 volts d.c. at .25 ampere (motor running) for each receiver.
- 6.3 volts a.c. at 4.5 amperes, frequency of 400 to 2600 cps for each receiver.

c. The sensitivity of Radio Receiver R-44/ARR-5 is as follows: with a 400-cps modulated r-f signal input to the receiver of 10 microvolts on the first band, 10 microvolts on the second band, and 10 microvolts on the third band, the audio output of the receiver should be at least 15 milliwatts into a 8000-ohm load or 11 volts across an 8000-ohm load.

2. TUBE COMPLEMENT.

a. The tube complement of Radio Receiver R-44/ARR-5 consists of:

| Quantity | Type Designation | Function |
|----------|----------------------------|--|
| 1 | Tube JAN-956 (V1) | Re-radiation suppressor |
| 1 | Tube JAN-956 (V2) | R-F amplifier |
| 1 | Tube JAN-954 (V3) | Mixer |
| 1 | Tube JAN-955 (V4) | High frequency oscillator |
| 1 | Tube JAN-6AC7 (V5) | First i-f amplifier |
| 1 | Tube JAN-6AB7 (V6) | Second i-f amplifier |
| 1 | Tube JAN-6SK7 (V9) | Third i-f amplifier |
| 1 | Tube JAN-6H6 (V10) | A-M detector and automatic noise limiter |
| 1 | Tube JAN-6AC7 (V7) | F-M limiter |
| 1 | Tube JAN-6H6 (V8) | F-M discriminator |
| 1 | Tube JAN-6SQ7 (V11) | Audio amplifier |
| 1 | Tube JAN-6J5 (V13) | Beat frequency oscillator |
| 1 | Tube JAN-6V6 (V12) | Power amplifier |
| 1 | Tube JAN-OD3 VR-150, (V14) | Voltage regulator |

b. The tube complement of the Rectifier Power Unit PP-32/AR consists of:

| Quantity | Type Designation | Function |
|----------|--|-----------|
| 3 | Tube JAN-5U4G (recommend JAN-5R4GY when available) | Rectifier |

3. FUSE COMPLEMENT.

| Type No. | Stock No. | Current Rating | Location | |
|-------------|-----------|----------------|------------------------------------|-----------------------------|
| | | | Active Fuse | Spare Fuse |
| 4AG (FU-35) | 3Z1935 | 5 amps. | Front panel (rectifier power unit) | Inside rectifier power unit |
| 4AG (FU-35) | 3Z1935 | 5 amps. | Front panel (rectifier power unit) | Inside rectifier power unit |

4. PILOT LIGHT COMPLEMENT.

| Type Designation | Stock No. | Location |
|------------------|-----------|--|
| Mazda 44 (LM-27) | 2Z5927 | Dial illumination and pilot light (receiver) |
| Mazda 47 (LM-52) | 2Z5952 | A-C on-off indicator |
| Mazda 49 (LM-49) | 2Z5949 | D-C on-off indicator |

5. TYPICAL CHARACTERISTIC CURVES.

Figures 6-1 to 6-6, which follow, show typical characteristic curves of Radio Receiving Set AN/ARR-5.

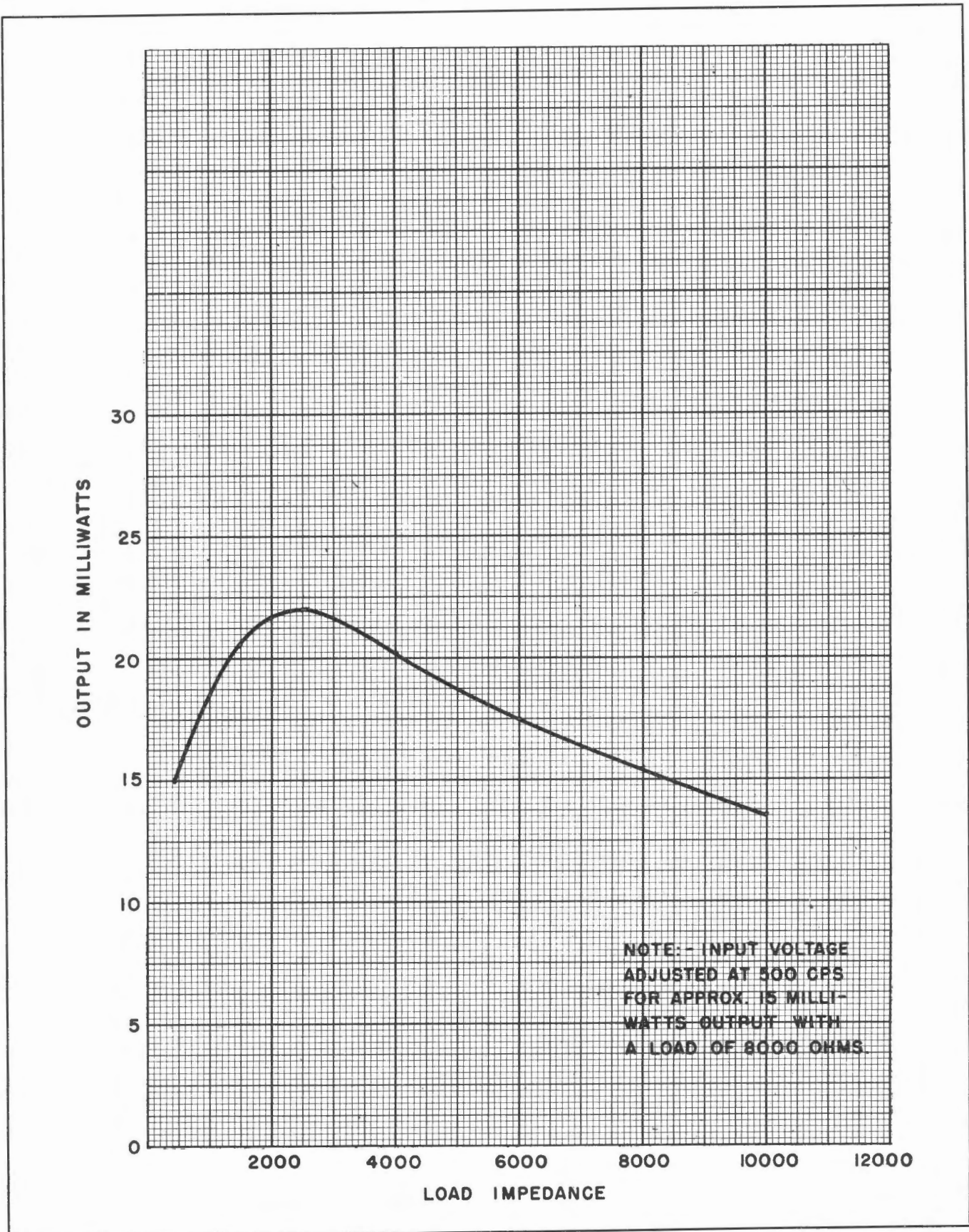


Figure 6-1—Output vs. Load Impedance for Radio Receiving Set AN/ARR-5

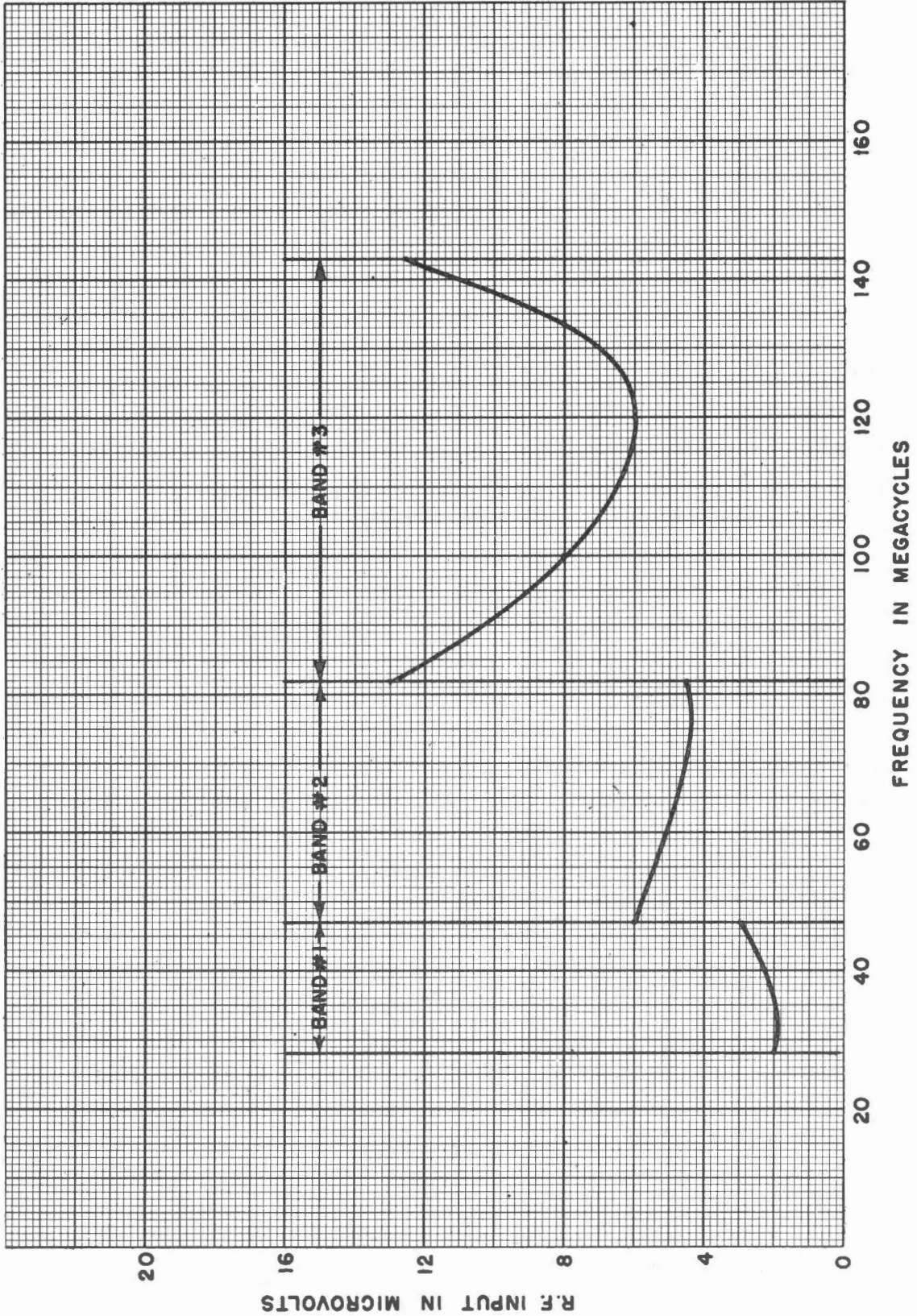


Figure 6-2—Sensitivity of Radio Receiving Set AN/ARR-5

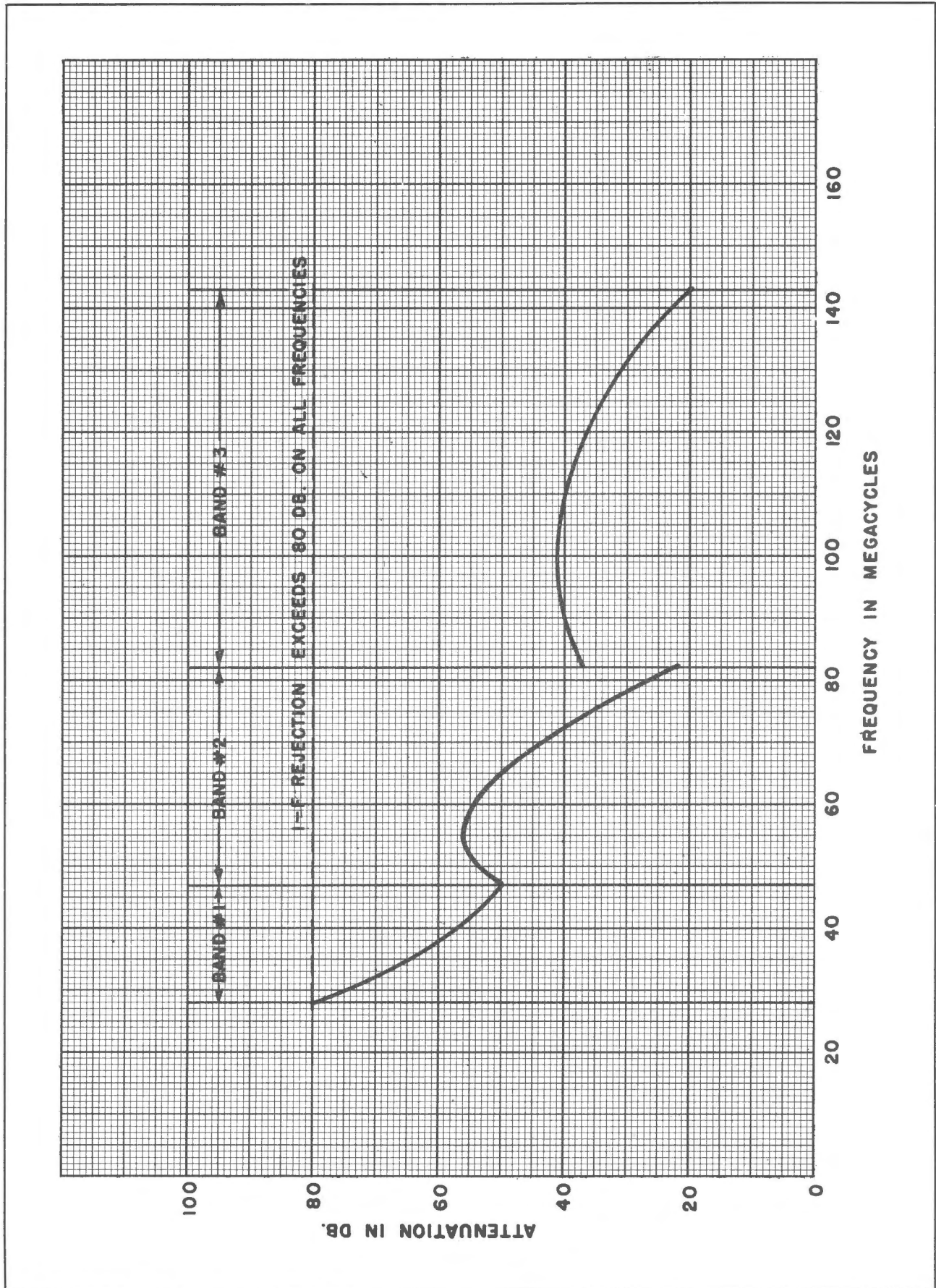


Figure 6-3—I-F and Image Frequency Rejection for Radio Receiving Set AN/ARR-5

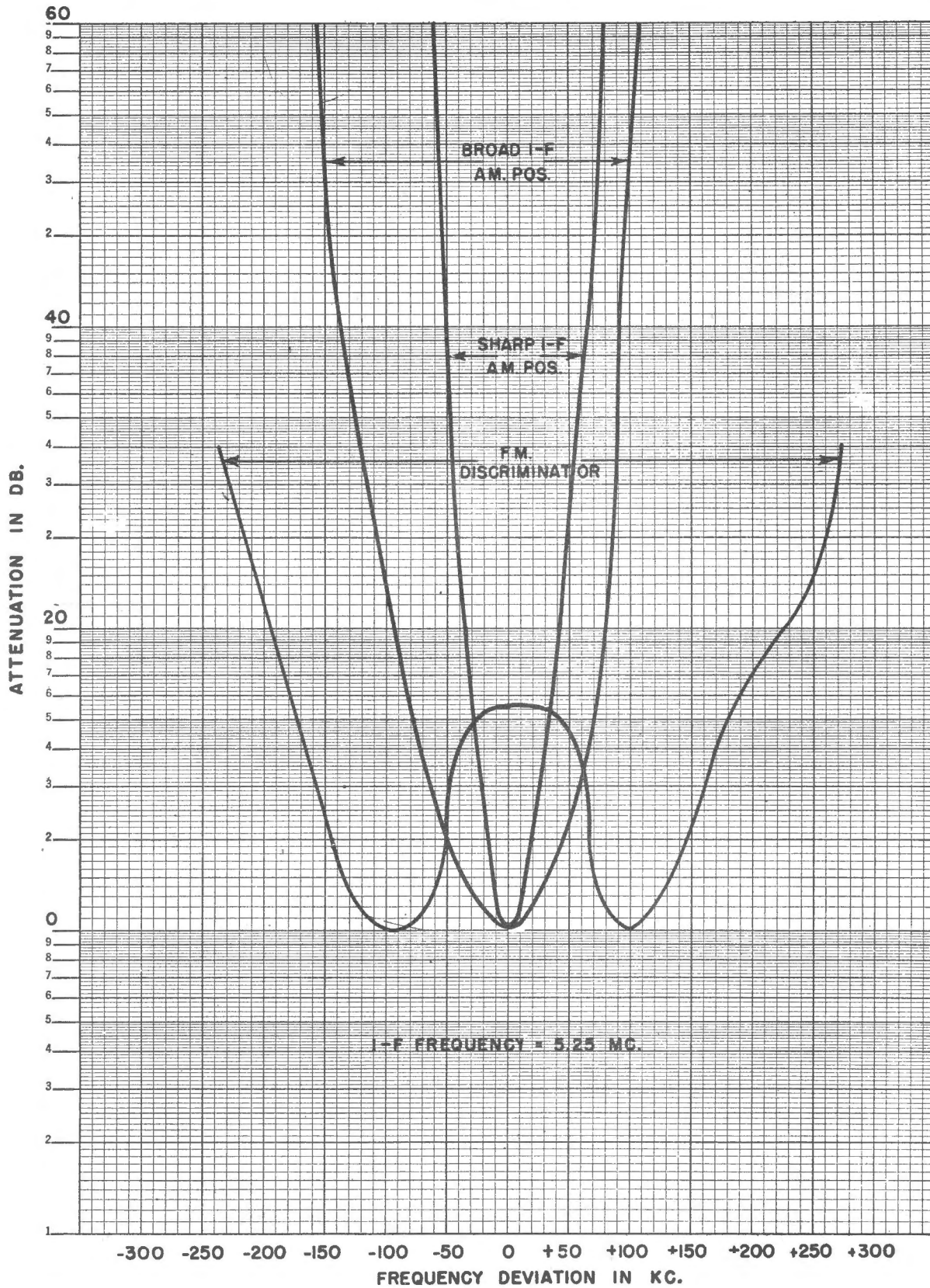


Figure 6-4—I-F Selectivity for Radio Receiving Set AN/ARR-5

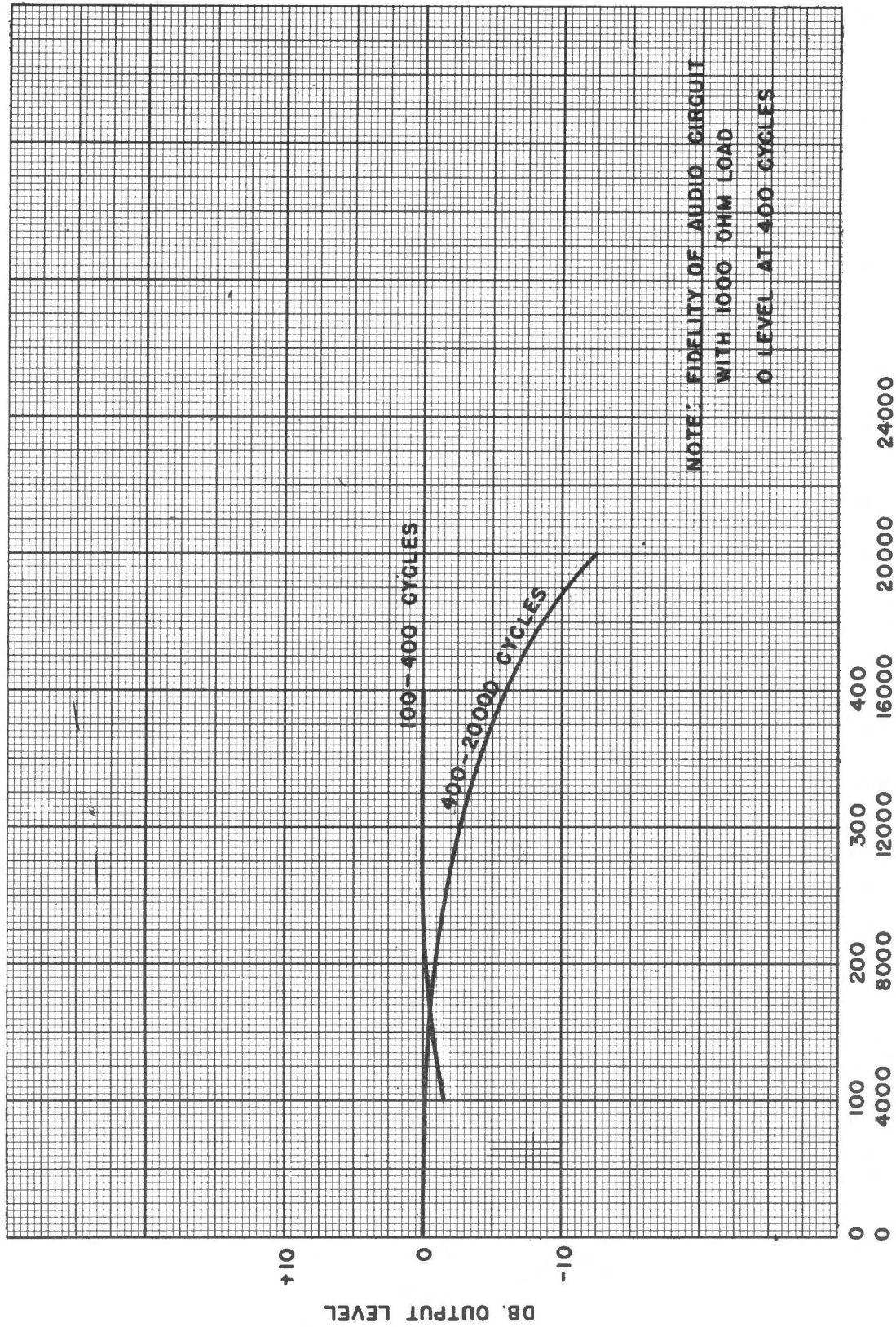


Figure 6-5—Audio Fidelity for Radio Receiving Set AN/ARR-5 (1000-ohm Load)

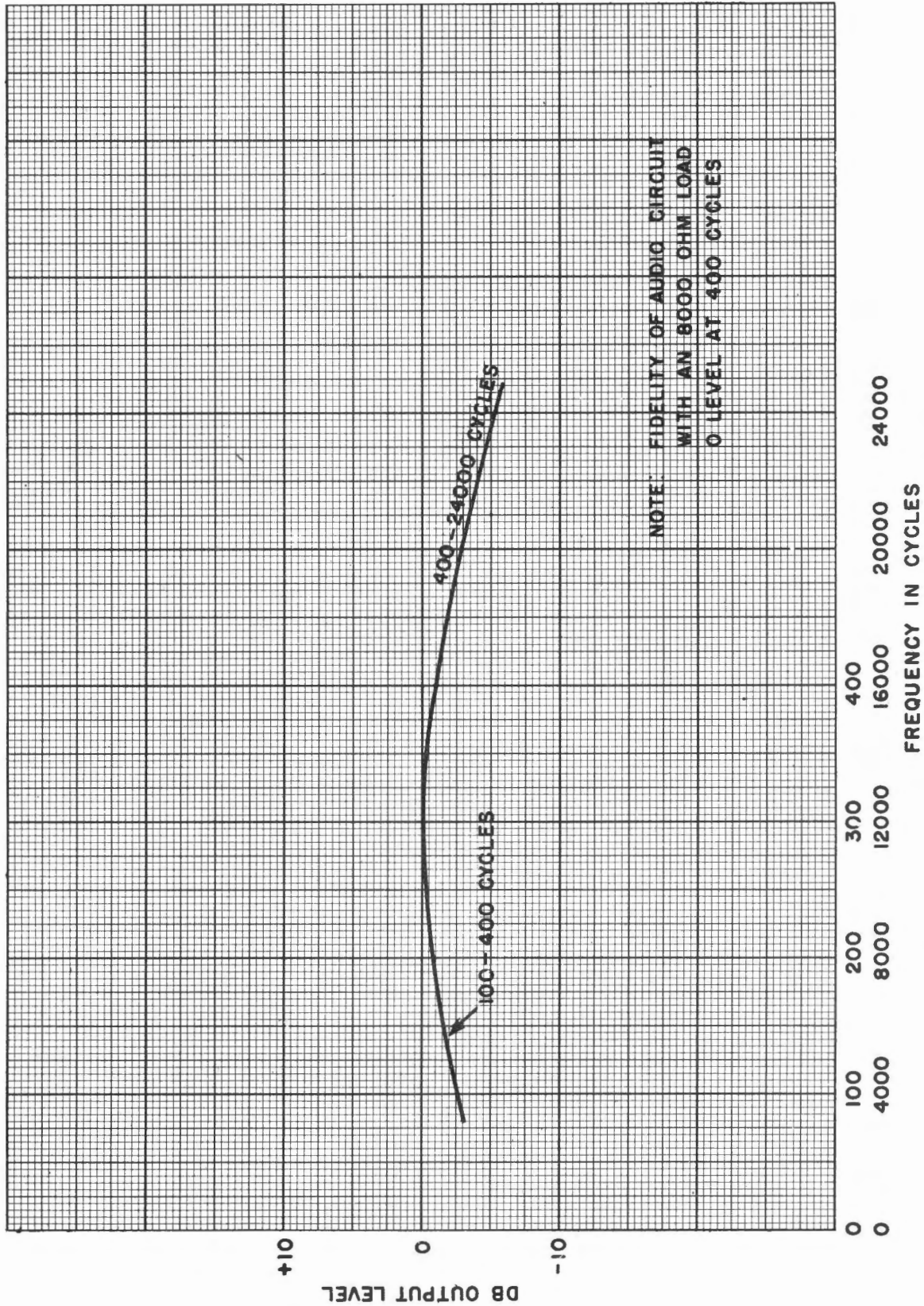


Figure 6-6—Audio Fidelity for Radio Receiving Set AN/ARR-5 (8000-ohm Load)

SECTION VII
PARTS CATALOG*Introduction**Table of Parts*

The parts listed in this table do not constitute a complete electrical and mechanical breakdown of the equipment. The table lists all electrical parts together with such operative mechanical parts as are subject to loss or failure, with the exception of structural and minor parts such as standard bolts, screws, nuts, and the like. In some instances individual detail parts of a sub-assembly may not be listed as separate items, since replacement of such items is impractical.

Ordering of Spare Parts

Each Service using this list has established certain depots and service groups for the storage and issue of spare parts to its organizations requiring them. The regulations of each Service should be studied to determine the method and source for requisitioning spare parts. The information in this list, as to manufacturer's or contractor's name, type, model, or drawing number, is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from the manufacturer or a wholesale or retail store except under emergency conditions as covered by existing regulations of the Service concerned.

U. S. Army Personnel: This table is for information *only* and is not to be used as a basis for requisitioning parts. Authorities for obtaining maintenance items are as follows: 1. For using organizations: applicable Service publications of the 00-30 series of AAF Technical Orders. 2. For higher maintenance and supply echelons: applicable Service publications of the 08-55 series of AAF Technical Orders.

COLOR CODE

CAPACITORS (MMFD)

| COLOR | NUMERAL | VOLTS | MULTIPLIER | TOLERANCE |
|----------|---------|-------|---------------|-----------|
| BLACK | 0 | | 1 | 1% |
| BROWN | 1 | 100 | 10 | 2% |
| RED | 2 | 200 | 100 | 3% |
| ORANGE | 3 | 300 | 1,000 | 4% |
| YELLOW | 4 | 400 | 10,000 | 5% |
| GREEN | 5 | 500 | 100,000 | 6% |
| BLUE | 6 | 600 | 1,000,000 | 7% |
| VIOLET | 7 | 700 | 10,000,000 | 8% |
| GRAY | 8 | 800 | 100,000,000 | 9% |
| WHITE | 9 | 900 | 1,000,000,000 | 5% |
| GOLD | | 1000 | 0.1 | 10% |
| SILVER | | 2000 | 0.01 | 20% |
| NO COLOR | | 500 | | |

RESISTORS (OHMS)

| COLOR | A 1ST DIGIT | B 2ND DIGIT | C MULTIPLIER |
|--------|----------------|----------------|-----------------|
| SILVER | | | 0.01 |
| GOLD | | | 0.1 |
| BLACK | | 0 | 1.0 |
| BROWN | | 1 | 10 |
| RED | | 2 | 100 |
| ORANGE | | 3 | 1,000 |
| YELLOW | | 4 | 10,000 |
| GREEN | | 5 | 100,000 |
| BLUE | | 6 | 1,000,000 |
| PURPLE | | 7 | 10,000,000 |
| GRAY | | 8 | 100,000,000 |
| WHITE | | 9 | |

D - TOLERANCE CODE:
 GOLD = 5% SILVER = 10% NO COLOR = 20%

BODY COLOR (NEW COLOR ARRANGEMENT ONLY) INDICATES TYPE OF RESISTOR, AS FOLLOWS:-
 BLACK - COMPOSITION, NON-INSULATED
 TAN, OLIVE OR WHITE - COMPOSITION, INSULATED
 DARK BROWN - WIRE-WOUND, INSULATED

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|--|--|-------------------------------------|
| R ₁ | 3RC21AE271K — — | RESISTOR: Fixed; 270 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long; same as R ₇₄ . | Cathode bias for tube V ₂ . | AWS RC21AE71K | |
| R ₂ | 3RC21AE102K — — | RESISTOR: Fixed; 1000 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long; same as R ₃ , R ₄ , R ₈ , R ₁₇ , R ₃₁ , R ₄₈ , R ₇₁ . | Voltage drop for screen of tube V ₃ . | AWS RC21AE102K | |
| R ₃ | — — — | RESISTOR: Same as R ₂ . | Plate decoupling for tube V ₂ . | | |
| R ₄ | — — — | RESISTOR: Same as R ₂ . | Voltage drop for screen of tube V ₃ . | | |
| R ₅ | 3RC21AE222K — — | RESISTOR: Fixed; 2200 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long. | Cathode bias for tube V ₃ . | AWS RC21AE222K | |
| R ₆ | 3RC21AE273K — — | RESISTOR: Fixed; 27,000 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long. | Panoramic decoupling. | AWS RC21AE273K | |
| R ₇ | 3Z6610-175 — — | RESISTOR: Fixed; 10,000 ohm $\pm 10\%$; 10 watt; wire wound; coated with baked vitreous enamel; $1\frac{3}{4}$ in. long x $\frac{3}{8}$ in. dia.; two radial No. 18 B&S leads $1\frac{1}{2}$ in. long bonded to solder lugs. | Plate decoupling for tubes V ₂ and V ₁ . | IRC Type AB | 24BG103E |
| R ₈ | — — — | RESISTOR: Same as R ₂ . | Screen decoupling for tube V ₃ . | | |
| R ₉ | 3RC21AE104K — — | RESISTOR: Fixed; 100,000 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads $1\frac{1}{2}$ in. long; same as R ₂₉ , R ₃₉ , R ₄₃ , R ₄₆ , R ₆₅ , R ₇₆ , R ₇₇ . | Screen decoupling for tube V ₃ . | AWS RC21AE104K | |
| R ₁₀ | 3RC21AE331K — — | RESISTOR: Fixed; 330 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads $1\frac{1}{2}$ in. long; same as R ₂₅ , R ₃₂ , R ₃₈ . | Plate decoupling for tube V ₄ . | AWS RC21AE331K | |
| R ₁₁ | 3RC21AE472K — — | RESISTOR: Fixed; 4700 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads $1\frac{1}{2}$ in. long; same as R ₇₃ , R ₇₇ . | Grid return. | AWS RC21AE472K | |
| R ₁₂ | 3RC21AE223K — — | RESISTOR: Fixed; 22,000 ohm $\pm 10\%$; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads $1\frac{1}{2}$ in. long. | Grid return for tube V ₄ . | AWS RC21AE223K | |

| | | | | | |
|-----------------|-----------------------|--|--|----------------|---------|
| R ₁₃ | 3RC21AE330K — — | RESISTOR: Fixed; 33 ohm $\pm 10\%$; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads 1 1/2 in. long; same as R ₃₆ , R ₆₅ . | Grid current control for tube V ₄ . | AWS RC21AE330K | 23AO11 |
| R ₁₄ | 3Z5996-15 — — | RESISTOR: Fixed; 6 ohm $\pm 10\%$; 1/2 watt; carbon; insulated; 0.215 in. dia. x 7/16 in. long; humidity resistance not specified; two axial No. 20AWG wire leads 1 1/2 in. long. | Grid current control for tube V ₄ . | ER type 504 | |
| R ₁₅ | 3RC21AE100K — — | RESISTOR: Fixed; 10 ohm $\pm 10\%$; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long; same as R ₁₆ . | Plate decoupling for tube V ₃ . | AWS RC21AE100K | |
| R ₁₆ | | RESISTOR: Same as R ₁₅ . | Plate decoupling for tube V ₃ . | | |
| R ₁₇ | | RESISTOR: Same as R ₃ . | Plate decoupling for tube V ₃ . | | |
| R ₁₈ | 3RC21AE180K — — | RESISTOR: Fixed; 18 ohm $\pm 10\%$; 1/2 watt; carbon; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads 1 1/2 in. long. | 1st I-F band expansion. | AWS RC21AE180K | |
| R ₁₉ | # | RESISTOR: Shown for reference only; included in transformer T ₁₀ assembly. | A-V-C decoupling for tube V ₃ . | | |
| R ₂₀ | # | RESISTOR: Shown for reference only; included in transformer T ₁₅ assembly. | Grid return for tube V ₁₃ . | | |
| R ₂₁ | 3RC21AE391K — — | RESISTOR: Fixed; 390 ohm $\pm 10\%$; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Cathode bias for tube V ₆ . | AWS RC21AE391K | |
| R ₂₂ | 2Z7269-69 — — | POTENTIOMETER: Radio frequency gain control; 10,000 ohm $\pm 20\%$; carbon; No. 8 reversed taper; shaft 7/8 in. long x 1/4 in. dia.; 3 solder lug terminals with variable contact located in the center between the fixed contacts which are 1-1/16 in. apart, no taps. | R-F GAIN control. | OT type 125 | 25CO66G |
| R ₂₃ | 3RC21AE393K — — | RESISTOR: Fixed; 39,000 ohm $\pm 10\%$; 1/2 watt; carbon; insulated 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Voltage drop for screen of tube V ₆ . | AWS RC21AE393K | |
| R ₂₄ | 3RC30AE273K — — | RESISTOR: Fixed; 27,000 ohm $\pm 10\%$; 1 watt; carbon; insulated 0.280 in. dia. x 0.716 in. long; humidity resistant; two axial No. 20AWG wire leads 1 1/2 in. long. | Plate decoupling for tube V ₁₃ . | AWS RC30AE273K | |
| R ₂₅ | | RESISTOR: Same as R ₁₀ . | Plate decoupling for tube V ₆ . | | |
| R ₂₆ | 3Z5998-14 — — | RESISTOR: Fixed; 8 ohm $\pm 10\%$; 1/2 watt; carbon; no other specifications available; same as R ₃₃ , R ₆₅ . | 2nd I-F band expansion. | ER Special | 23AO19 |
| R ₂₇ | # | RESISTOR: Shown for reference only; included in transformer T ₁₁ assembly. | A-V-C decoupling for tube V ₆ . | | |
| R ₂₈ | | RESISTOR: Same as R ₉ . | A-V-C decoupling for tube V ₆ . | | |
| R ₂₉ | | RESISTOR: Same as R ₉ . | A-V-C decoupling for tube V ₆ . | | |
| R ₃₀ | 3RC21AE221K — — | RESISTOR: Fixed; 220 ohm $\pm 10\%$; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Cathode bias for tube V ₆ . | AWS RC21AE221K | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5 MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|---|----------------------------------|----------------------------------|
| R ₃₁ | | RESISTOR: Same as R ₂ . | Voltage drop for screen of tube V ₆ . | | |
| R ₃₂ | | RESISTOR: Same as R ₁₀ . | Plate decoupling for tube V ₆ . | | |
| R ₃₃ | | RESISTOR: Same as R ₂₆ . | 3rd I-F band expansion. | | |
| R ₃₄ | 3RC21AE274K — — | RESISTOR: Fixed; 270,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long; same as R ₃₂ , R ₃₃ . | Grid return for tube V ₇ . | AWS RC21AE274K | |
| R ₃₅ | 3RC21AE473K — — | RESISTOR: Fixed; 47,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long; same as R ₄₉ . | Grid return for tube V ₇ . | AWS RC21AE473K | |
| R ₃₆ | | RESISTOR: Same as R ₁₃ . | Parasitic suppressor for tube V ₇ . | | |
| R ₃₇ | 3RC21AE474K — — | RESISTOR: Fixed; 470,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads 1 1/2 in. long; same as R ₃₄ . | Grid return for tube V ₉ . | AWS RC21AE474K | |
| R ₃₈ | | RESISTOR: Same as R ₁₀ . | Cathode bias for tube V ₉ . | | |
| R ₃₉ | 3RC31AE150K — — | RESISTOR: Fixed; 15 ohm \pm 10%; 1 watt; carbon; insulated; 0.310 in. dia. x 1.28 in. long; humidity resistant; two axial No. 20 leads 1 1/2 in. long. | Voltage drop for armature of scanning motor. | AWS RC31AE150K | |
| R ₄₀ | 3RC31AE103K — — | RESISTOR: Fixed; 10,000 ohm \pm 10%; 1 watt; carbon; insulated; 0.310 in. dia. x 1.28 in. long; humidity resistant; two axial No. 20AWG wire leads 1 1/2 in. long. | Voltage drop for screen of tube V ₇ . | AWS RC31AE103K | |
| R ₄₁ | 3RC21AE153K — — | RESISTOR: Fixed; 15,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads 1 1/2 in. long. | Primary loading on discriminator transformer T ₄ . | AWS RC21AE153K | |
| R ₄₂ | 3RC21AE244J — — | RESISTOR: Fixed; 240,000 ohm \pm 5%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG leads 1 1/2 in. long. | Deemphasis network for FM detection. | AWS RC21AE244J | |
| R ₄₃ | | RESISTOR: Same as R ₉ . | Diode load for tube V ₈ . | | |

| Resistor Label | Resistor Part Number | Resistor Description | Diode Load for tube V ₈ | Diode Load for tube V ₉ | Diode Load for tube V ₁₀ | Diode Load for tube V ₁₁ | Diode Load for tube V ₁₂ |
|-----------------|----------------------|---|--|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| R ₄₄ | 2Z7273-52 | RESISTOR: Same as R ₉ . | A.F. GAIN control. | | | | |
| R ₄₅ | — | POTENTIOMETER: Audio frequency gain control; 1 megohm \pm 20%; carbon; No. 6 taper; shaft 1 in. long x 1/2 in. dia.; 3 solder lug terminals with the variable contact located between the fixed contacts which are 1-7/16 in. apart, no taps. | | | | | |
| R ₄₆ | 2RC41AE682K | RESISTOR: Fixed; 6800 ohm \pm 10%; 2 watt; carbon; insulated; 0.342 in. dia. x 1.76 in. long; humidity resistant; two axial No. 19AWG wire leads 1 1/2 in. long. | Bleeder for plate and screen voltage supply. | | | | |
| R ₄₇ | 3Z6575-6 | RESISTOR: Fixed; 7500 ohm \pm 10%; 10 watt; wire wound; coated with baked vitreous enamel; 3/8 in. O.D. x 1 1/4 in. long; humidity resistance not specified; resistance wire bonded to a lug at each end to which No. 18AWG wire leads 1 3/8 in. long are attached; same as R ₃₈ . | Voltage drop for screen of tube V ₉ . | | | | |
| R ₄₈ | — | RESISTOR: Same as R ₉ . | Plate decoupling for tube V ₉ . | | | | |
| R ₄₉ | — | RESISTOR: Same as R ₃₈ . | Load for 2nd det. diode of tube V ₁₀ . | | | | |
| R ₅₀ | 3RC21AE105K | RESISTOR: Fixed; 1 megohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Filter for A-N-L diode of tube V ₁₀ . | | | | |
| R ₅₁ | — | RESISTOR: Same as R ₉ . | Load for 2nd det. diode of tube V ₁₀ . | | | | |
| R ₅₂ | — | RESISTOR: Same as R ₃₄ . | Load for 2nd det. diode of tube V ₁₀ . | | | | |
| R ₅₃ | — | RESISTOR: Same as R ₃₄ . | Load for 2nd det. diode of tube V ₁₀ . | | | | |
| R ₅₄ | — | RESISTOR: Same as R ₂₆ . | A-V-C filter. | | | | |
| R ₅₅ | — | RESISTOR: Same as R ₂₆ . | Parasitic suppressor for tube V ₂ . | | | | |
| R ₅₆ | 3RC21AE332K | RESISTOR: Fixed; 3300 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Cathode bias for tube V ₁₁ . | | | | |
| R ₅₇ | 3RC21AE150K | RESISTOR: Fixed; 15 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Current limiter for grid of tube V ₄ . | | | | |
| R ₅₈ | 3RC21AE154K | RESISTOR: Fixed; 150,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Plate load for tube V ₁₁ . | | | | |
| R ₅₉ | 3RC21AE394K | RESISTOR: Fixed; 390,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Grid return for tube V ₁₂ . | | | | |
| R ₆₀ | 3RC21AE374K | RESISTOR: Fixed; 330,000 ohm \pm 10%; 1/2 watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads 1 1/2 in. long. | Feed back between tube V ₁₂ and tube V ₉ . | | | | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

MODEL: RADIO RECEIVING SET AN/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|--|--|-------------------------------------|
| R ₆₁ | 3ZK6030-63 — — | RESISTOR: Fixed; 300 ohm \pm 10%; 10 watt; wire wound; coated with baked vitreous enamel; $\frac{3}{8}$ in. O.D. x $1\frac{1}{4}$ in. long; humidity resistance not specified; the resistance wire is bonded at each end to a solder lug to which No. 18AWG wire leads $1\frac{3}{8}$ in. long are attached. | Cathode bias for tube V ₁₂ . | IRC type AB | 24BG301E |
| R ₆₂ | 3RC41AE683K — — | RESISTOR: Fixed; 68,000 ohm \pm 10%; 2 watt; carbon; insulated; 0.342 in. dia. x 1.76 in. long; humidity resistant; two axial No. 19AWG wire leads $1\frac{1}{2}$ in. long. | Voltage drop for screen of tube V ₁₂ . | AWS RC41AE683K | |
| R ₆₃ | — — — | RESISTOR: Same as R ₄₇ . | Plate load for tube V ₁₂ . | | |
| R ₆₄ | 3RC21AE564K — — | RESISTOR: Fixed; 560,000 ohm \pm 10%; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long. | "S" meter current limiter for FM operation. | AWS RC21AE564K | |
| R ₆₅ | — — — | RESISTOR: Same as R ₁₃ . | "S" meter shunt | | |
| R ₆₆ | 2Z7268-40 — — | POTENTIOMETER: "S" meter adjustment control; 1500 ohm \pm 20%; wire wound; st. line taper; shaft $\frac{1}{8}$ in. long x $\frac{1}{4}$ in. dia.; slotted $1/16$ in. x $1/16$ in. x $\frac{1}{4}$ in.; 3 solder lug terminals with the variable contact lug located between the fixed contact lugs, terminals are 60 degrees apart; body is $1-7/16$ in. dia. x $9/16$ in. deep, mounted by a bushing $\frac{1}{2}$ in. long; screw driver adjustment. | for AM operation. "S" METER ADJ. | | 25A091 |
| R ₆₇ | 3Z200-89 — — | RESISTOR: Fixed; 2,000 ohm \pm 10%; 10 watt; wire wound; coated with baked vitreous enamel; $\frac{3}{8}$ in. O.D. x $1\frac{1}{4}$ in. long; humidity resistance not specified; resistance wire bonded at each end to a solder lug to which No. 18AWG wire leads $1\frac{3}{8}$ in. long are attached. | Current limiter for voltage regulator tube V ₁₄ . | IRC type AB | 24BG202E |
| R ₆₈ | 2Z7278-38 — — | POTENTIOMETER: Motor rheostat; 200 ohm; wire wound; 3 watt; shaft $9/16$ in. long; 3 solder lug contacts 25 degrees apart, no taps. | Scanning motor speed adjustment. | U type 3PA-200 | 25A508 |
| R ₆₉ | 3RC21AE470K — — | RESISTOR: Fixed; 47 ohm \pm 10%; $\frac{1}{2}$ watt; carbon; insulated; 0.249 in. dia. x 0.655 in. long; humidity resistant; two axial No. 21AWG wire leads $1\frac{1}{2}$ in. long. | Cathode bias for tube V ₁₂ . | AWS RC21AE470K | |
| R ₇₀ | — — — | RESISTOR: Same as R ₉ . | Grid return for tube V ₁₂ . | | |
| R ₇₁ | 3RC21AE103K — — | RESISTOR: Fixed; 10,000 ohm \pm 10%; $\frac{1}{2}$ watt; carbon; insulated; humidity resistant; two axial No. 21AWG leads $1\frac{1}{2}$ in. long; same as R ₇₀ . | Plate decoupling for tube V ₁ . | AWS RC21AE103K | |
| R ₇₂ | — — — | RESISTOR: Same as R ₉ . | Voltage drop for screen of tube V ₁ . | | |
| R ₇₃ | — — — | RESISTOR: Same as R ₁₁ . | Antenna termination impedance. | | |

| | | | | | |
|-----------------|---|------------|--|--|--|
| R ₇₄ | RESISTOR: Same as R ₁₁ . | | | | |
| R ₇₅ | Not used. | | | | |
| R ₇₆ | RESISTOR: Same as R ₇₁ . | | | | |
| R ₇₇ | RESISTOR: Same as R ₁₁ . | | | | |
| C _{1A} | CAPACITOR: Variable; air; minimum capacity 3 micromicrofarads, maximum capacity 54.7 micromicrofarads; 3 section, 5 rotor and 4 stator plates with double spacing between plates; bakelite insulation; no trimmers; shaft 1/2 in. long x 0.375 in. dia.; mounts by 3 No. 6-32 NC2 thd. spade bolts 15/16 in. long (2 on the front frame and 1 on the rear frame); all wipers and shaft silver plated at point of contact, front section rotor grounded to frame, other two rotor sections insulated from front section and frame; mtg. centers 6 1/8 in. x 1 3/4 in., aluminum plates; silver plated brass rotor shaft; cadmium plated frame and hardware. Not used. | | | | |
| C _{1B} | | 3D9054VE7 | | | |
| C _{1C} | | | | | |
| C ₂ | | | | | |
| C ₃ | | | | | |
| C ₄ | CAPACITOR: Fixed; mica dielectric; 2200 micromicrofarads ±20%; 500 V.D.-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 1/8 in. long; same as C ₆ . | 3K3022214 | | | |
| C ₅ | CAPACITOR: Fixed; mica dielectric; 330 micromicrofarads ±20%; 500 V.D.-C working; case 51/64 in. long x 15/32 in. wide x 7/32 in. thick; humidity resistant; two axial No. 20AWG wire leads 1 1/8 in. long; same as C ₃ , C ₁₄ , C ₁₅ , C ₂₁ , C ₂₂ , C ₃₃ , C ₇₇ , C ₇₉ , C ₈₀ . | 3K2033111 | | | |
| C ₆ | CAPACITOR: Same as C ₄ . | | | | |
| C ₇ | CAPACITOR: Fixed; ceramic dielectric; 10 micromicrofarads ±10%; 500 V.D.-C working; -0.00055 micromicrofarad/micromicrofarads/degree Cent. temp. coeff.; case 0.625 in. long x 0.225 in. O.D.; two No. 22AWG wire leads 1 1/2 in. long; power factor not to exceed 0.1% at 1500 KC. Not used. | 3D9010-34 | | | |
| C ₈ | | | | | |
| C ₉ | CAPACITOR: Adjustable; ceramic dielectric; minimum capacity 4 micromicrofarads; maximum capacity 20 micromicrofarads; two plates; two solder lug terminals; mounting bracket of C.R. steel specially shaped to hold the capacitor in a vertical position from the mounting surface; same as C ₁₀ , C ₁₁ , C ₇₅ , C ₇₆ , C ₈₁ and C ₇₄ . | 3D9020V-21 | | | |
| C ₁₀ | CAPACITOR: Same as C ₉ . | | | | |
| C ₁₁ | CAPACITOR: Same as C ₉ . | | | | |
| C ₁₂ | CAPACITOR: Fixed; mica dielectric; 10,000 micromicrofarads ±20%; 300 V.D.-C working; case 1-1/32 in. long x 41/64 in. wide x 11/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 3/8 in. long; same as C ₄₄ , C ₅₀ . | 3K4010314 | | | |
| C ₁₃ | CAPACITOR: Same as C ₅ . | | | | |

Cathode bias for tube V₁.

Secondary loading for transformer T₄.

Plate load for tube V₂.

Receiver tuning.

48C119
OM type 715-4-60 modified

Cathode by-pass for tube V₂.

AWS CM30A222M

Screen by-pass for tube V₂.

AWS CM20A331K

Plate return for tube V₂.

47A006

CRL type 811-077

High frequency coupling between tubes V₂ and V₃.

Secondary trimmer for transformer T₄.

44A076

H Special

Secondary trimmer for transformer T₅.
Secondary trimmer for transformer T₆.

AWS CM40A103M

Screen supply filter for tube V₃.

Coupling between tubes V₄ and V₅.

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Gov. No. Dwg. or Spec. No. |
|------------------|---|---|---|--|--|
| C ₁₄ | | CAPACITOR: Same as C ₃ . | Screen by-pass for tube V ₃ . | | |
| C ₁₅ | | CAPACITOR: Same as C ₃ . | Plate supply filter for tube V ₄ . | | |
| C ₁₆ | 3DK9050-72.1 — — | CAPACITOR: Fixed; ceramic dielectric; 50 micromicrofarads ±10%; 500 V.D-C working; —0.00075 micromicrofarad/micromicrofarad/degree cent. temp. coeff.; case 0.625 in. long x 0.225 in. O.D.; two No. 22AWG wire leads 1½ in. long; power factor not to exceed 0.1% at 1500 KC. | Coupling between oscillator tuned circuits and plate of tube V ₄ . | | 47A025 |
| C ₁₇ | 3K3010211 — — | CAPACITOR: Fixed; mica dielectric; 1000 micromicrofarads ±20%; 500 V.D-C working; case 1-1/16 in. long x 15/32 in. wide x 7/32 in. thick; humidity resistant; two axial No. 20AWG wire leads 1½ in. long. | Coupling between oscillator tuned circuits and grid of tube V ₄ . | AWS CM25A102K | |
| C ₁₈ | 3D9012V-3 — — | CAPACITOR: Adjustable; air dielectric; minimum capacity 1 micromicrofarad, maximum capacity 12 micromicrofarads; bakelite insulation; two solder lug terminals; one at each end; case 1-3/32 in. long x 0.441 in. dia.; hex. hd. screw 5/64 in. thick for adjustment; same as C ₂₀ . | Secondary trimmer for transformer T ₇ . | MN type 22-5230 | 48A031 |
| C ₁₉ | 3D9500V-5 also shipped as 3D9495V-1 — — | CAPACITOR: Adjustable; mica dielectric; 450 micromicrofarads, adjustable ±10%; bakelite mounting insulation; two solder lug terminals to which are attached No. 18AWG tinned copper leads 1 in. long, both leads insulated from the frame; special mounting frame L shaped 1 in. x ⅞ in. x 1 in.; octagon condenser frame ¼ in. dia. | Secondary padder for transformer T ₇ . | UE type S81A | 44A050 |
| C ₂₀ | | CAPACITOR: Same as C ₁₈ . | Secondary trimmer for transformer T ₈ . | | |
| C ₂₁ | | CAPACITOR: Same as C ₃ . | Filament by-pass for tube V ₃ . | | |
| C ₂₂ | | CAPACITOR: Same as C ₃ . | Filament by-pass for tube V ₃ . | | |
| C ₂₃ | | CAPACITOR: Same as C ₃ . | Filament by-pass for tube V ₃ . | | |
| C ₂₄ | | | Filament by-pass for tube V ₄ . | | |
| C ₂₅ | | | Primary trimmer for transformer T ₁₀ . | | |
| C ₂₆ | | | Secondary trimmer for transformer T ₁₀ . | | |
| C ₂₇ | 3K2056011 — — | CAPACITOR: Shown for reference only; included in transformer T ₁₀ assembly. CAPACITOR: Fixed; mica dielectric; 56 micromicrofarads ±10%; 500 V.D-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1½ in. long; same as C ₄₂ , C ₄₈ , C ₆₅ , C ₆₆ . | A-V-C by-pass for tube V ₆ . Plate return for tube V ₃ . | AWS CM20A560K | |

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|-----------------|-----------|--|---|------------------|
| C ₂₉ | 3K401031 | CAPACITOR: Fixed; mica dielectric; 10,000 micromicrofarads $\pm 10\%$; 500 V.D-C working; case 1-1/32 in. long x 41/64 in. wide x 11/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 3/8 in. long; same as C ₂₉ , C ₃₀ , C ₃₁ , C ₃₃ , C ₃₆ , C ₃₉ , C ₄₃ , C ₅₁ , C ₅₂ . | Cathode by-pass for tube V ₆ . | |
| C ₃₀ | --- | | Cathode by-pass for tube V ₆ . | |
| C ₃₁ | --- | | Screen by-pass for tube V ₅ . | |
| C ₃₂ | # | CAPACITOR: Shown for reference only; included in transformer T ₁₁ assembly. | Plate return for tube V ₃ . | |
| C ₃₃ | | | Primary trimmer for transformer T ₁₁ . | |
| C ₃₄ | | | Secondary trimmer for transformer T ₁₁ . A-V-C by-pass for tube V ₆ . | |
| C ₃₅ | --- | | Cathode by-pass for tube V ₆ . | |
| C ₃₆ | --- | | Screen by-pass for tube V ₆ . | |
| C ₃₇ | # | CAPACITOR: Shown for reference only; included in transformer T ₁₂ assembly. | Primary trimmer for transformer T ₁₂ . | |
| C ₃₈ | | | Secondary trimmer for transformer T ₁₂ . | |
| C ₃₉ | --- | | Plate return for tube V ₆ . | |
| C ₄₀ | 3K2047111 | CAPACITOR: Fixed; mica dielectric; 470 micromicrofarads $\pm 10\%$; 500 V.D-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 1/8 in. long; same as C ₃₉ , C ₇₁ , C ₇₈ . | Grid return by-pass. | AWS CM20A471K |
| C ₄₁ | 3K2010111 | CAPACITOR: Fixed; mica dielectric; 100 micromicrofarads $\pm 10\%$; 500 V.D-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 1/8 in. long. | Grid return by-pass for tube V ₇ . | AWS CM20A101K |
| C ₄₂ | --- | | Coupling between tubes V ₆ and V ₉ . | |
| C ₄₃ | --- | | Cathode by-pass for tube V ₉ . | |
| C ₄₄ | --- | | Screen supply filter for tube V ₇ . | |
| C ₄₅ | # | CAPACITOR: Shown for reference only; included in transformer T ₁₄ assembly. | Primary trimmer for transformer T ₁₄ . | |
| C ₄₆ | | | Capacity coupling in discriminator transformer T ₁₄ . | |
| C ₄₇ | | | Secondary trimmer for transformer T ₁₄ . | |
| C ₄₈ | --- | | Cathode by-pass for tube V ₈ . | |
| C ₄₉ | --- | | Deemphasis filter. | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5 MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|--|---|---|--|--|-------------------------------------|
| C ₄₀ | | CAPACITOR: Same as C ₁₉ . | Audio coupling. | | |
| C ₅₁ | | CAPACITOR: Same as C ₂₈ . | Screen by-pass for tube V ₉ . | | |
| C ₅₂ | | CAPACITOR: Same as C ₂₈ . | Plate return for tube V ₉ . | | |
| C ₃₈ } C ₃₄ } | # | CAPACITOR: Shown for reference only; included in transformer T ₁₃ assembly. | Primary trimmer for transformer T ₁₃ . Secondary trimmer for transformer T ₁₃ . | | |
| C ₃₅ | | CAPACITOR: Same as C ₂₇ . | R-F by-pass in 2nd det. diode load. | | |
| C ₃₆ | | CAPACITOR: Same as C ₂₇ . | R-F by-pass in 2nd det. diode load. | | |
| C ₃₇ | 3D177A — — | CAPACITOR: Fixed; oil-filled paper dielectric; 500,000 microfarads —6 + 14%; 400 V.D-C working; case hermetically sealed metal 1-13/16 in. long x 1 in. deep x 1/8 in. high; 2 mounting feet with 3/8 in. mounting center; 2 solder lug terminals insulated from the case; built in accordance with U. S. Army Spec. No. 71-516-() and Signal Corps Dwgs. SCD-513-() and RL-D-6222; same as C ₆₅ , C ₆₇ . | Filter in A-N-L diode of tube V ₁₀ . | IC type 6BA50 | 46A050 |
| C ₈₈ | | Not used. | | | |
| C ₃₉ | 3K3022211 — — | CAPACITOR: Fixed; mica dielectric; 2200 microfarads ±10%; 500 V.D-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 1/8 in. long; same as C ₆₇ . | Screen by-pass for tube V ₇ . | AWS CM30A222K | |
| C ₄₀ | 3DB10-73 — — | CAPACITOR: Fixed; paper dielectric; 20 microfarad —10 + 75%; 25 V.D-C working; case hermetically sealed metal 2 1/8 in. long x 1 in. deep x 13/16 in. high; 2 mounting feet with 2 1/8 in. mounting centers; 2 solder lug terminals insulated from the case. | Cathode by-pass for tube V ₄ . | IC type 1B113 | 46A011 |
| C ₆₁ | 3DA3-5 — — | CAPACITOR: Fixed; mica dielectric; 3000 microfarads ±10%; 500 V.D-C working; case 3/4 in. long x 3/4 in. wide x 1/4 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 1/4 in. long; same as C ₆₁ . | R-F filter in scanning motor armature | CD type IW | 47BV302ES |
| C ₆₂ | | CAPACITOR: Same as C ₆₁ . | R-F filter in scanning motor armature. | | |
| C ₆₃ | 3K4082211 — — | CAPACITOR: Fixed; mica dielectric; 8200 microfarads ±10%; 500 V.D-C working; case 1-1/32 in. long x 41/64 in. wide x 11/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1 3/8 in. long; same as C ₆₄ . | Coupling between tubes V ₁₁ and V ₁₂ . | AWS CM40A822K | |

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|-----------------|-----------|--|---|--------------------|
| C ₆₄ | | CAPACITOR: Same as C ₆₃ . | Equalizer for load variation in plate circuit of tube V ₁₂ . | |
| C ₆₅ | | CAPACITOR: Same as C ₆₇ . | Screen by-pass for tube V ₁₂ . | |
| C ₆₆ | | CAPACITOR: Same as C ₆₇ . | Audio coupling between load and plate of tube V ₁₂ . | |
| C ₆₇ | | CAPACITOR: Same as C ₅₉ . | Plate by-pass for oscillator tube V ₁₃ . | |
| C ₆₈ | # | CAPACITOR: Shown for reference only; included in transformer T ₁₅ assembly. | Resonating capacitor for B-F-O. | 46A059 |
| C ₆₉ | | | | |
| C ₇₀ | | Not used. | Plate decoupling for tube V ₃ . | |
| C ₇₁ | | CAPACITOR: Same as C ₄₀ . | Plate and screen supply filter. | IRC type CIE5070 |
| C ₇₂ | 3DKB4-66 | CAPACITOR: Fixed; oil-filled paper dielectric; long x 1½ in. dia.; case insulated from capacitor; 2 insulated solder lug terminals at base; mounted by a ¾ in. dia. No. 16th. stud ⅝ in. long with washer and 1 in. hex. nut; made in accordance with Signal Corps Spec. No. 71-516-E. | | |
| C ₇₃ | 3K3020212 | CAPACITOR: Fixed; mica dielectric; 2000 micromicrofarads ± 5%; 500 V.D-C working; case 53/64 in. square x 9/32 in. thick; humidity resistant; two axial No. 18AWG wire leads 1⅛ in. long. | Plate supply decoupling for tubes V ₂ and V ₆ . | AWS type CM30A202J |
| C ₇₄ | | CAPACITOR: Same as C ₉ . | Secondary trimmer for transformer T ₂ . | |
| C ₇₅ | | CAPACITOR: Same as C ₉ . | Secondary trimmer for transformer T ₃ . | |
| C ₇₆ | | CAPACITOR: Same as C ₉ . | Secondary trimmer for transformer T ₁ . | |
| C ₇₇ | | CAPACITOR: Same as C ₅ . | Plate return for tube V ₁ . | |
| C ₇₈ | | CAPACITOR: Same as C ₄₀ . | Screen by-pass for tube V ₁ . | |
| C ₇₉ | | CAPACITOR: Same as C ₅ . | Filament by-pass for tube V ₁ . | |
| C ₈₀ | | CAPACITOR: Same as C ₅ . | Cathode by-pass for tube V ₁ . | |
| C ₈₁ | | CAPACITOR: Same as C ₉ . | Antenna termination impedance. | |
| C ₈₂ | | Not used. | Additional coupling between tubes V ₁ and V ₂ . | |
| C ₈₃ | | CAPACITOR: Same as C ₇ . | Motor brush hash filter. | CE type M |
| C ₈₄ | 3DA8-24 | CAPACITOR: Fixed; molded paper; 8000 micromicrofarads —10 +60%; 600 V.D-C working; humidity resistant; molded case 13/16 in. square x 21/64 in. thick; 2 axial No. 20AWG leads 1-5/16 in. long; same as C ₈₅ . | Motor brush hash filter. | 46A076 |
| C ₈₅ | | CAPACITOR: Same as C ₈₄ . | | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5 MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|---|--|-------------------------------------|
| T ₁ | 2C4180-44/C4 — — | TRANSFORMER: Radio frequency, 27.8 to 47 megacycles; one primary and one secondary winding; primary 28½ turns of No. 34SCE single layer winding with a Q of 89 at 5 megacycles with 94 microfarads; secondary 5½ turns of No. 22DC braid with a Q of 161 at 25 megacycles with 95 microfarads; air core; bakelite tube coil form 1½ in. long x ½ in. O.D. x ⅜ in. I.D.; mounting and electrical connection by 4 solder lugs; 2 at each end of the form; same as T ₄ . | Coupling between tubes V ₁ and V ₂ on band 1. | SWI type 652 | 51A266 |
| T ₃ | 2C4180-44/C3 — — | TRANSFORMER: Radio frequency, 46 to 82 megacycles; one primary and one secondary winding; primary 11½ turns of No. 34SCE single layer winding (counter-clockwise) with a Q of 83 at 10 megacycles with 94 microfarads; secondary 2½ turns of No. 18DC braid single layer winding (clockwise) with a Q of 173 at 45 megacycles with 85 microfarads; air core; bakelite tube coil form 1½ in. long x ½ in. O.D. x ⅜ in. I.D.; mounting and electrical connection by 4 solder lugs; 2 at each end of the form; same as T ₄ . | Coupling between tubes V ₁ and V ₂ on band 2. | SWI type 655 | 51A269 |
| T ₃ | 2C4180-44/C5 — — | TRANSFORMER: Radio frequency, 82 to 143 megacycles; one primary and one secondary winding; primary 8¼ turns of No. 36SCE single layer winding with a Q of 69 at 18 megacycles with 91 microfarads; secondary 1¼ turns of No. 14 solid copper single layer winding with a Q of 173 at 65 megacycles with 92.5 microfarads; air core; solid bakelite coil form ⅞ in. long x ¼ in. dia.; mounting and electrical connection by extended leads of coil windings; same as T ₄ . | Coupling between tubes V ₁ and V ₂ on band 3. | SWI type 658 | 51A272 |
| T ₄ | | TRANSFORMER: Same as T ₁ . | Coupling between tubes V ₂ and V ₃ on band 1. | | |
| T ₅ | | TRANSFORMER: Same as T ₃ . | Coupling between tubes V ₂ and V ₃ on band 2. | | |
| T ₆ | | TRANSFORMER: Same as T ₃ . | Coupling between tubes V ₂ and V ₃ on band 3. | | |
| T ₇ | 2C4180-44/C1 — — | TRANSFORMER: Radio frequency, 27.8 to 47 megacycles; one primary and two secondary windings; primary 1¼ turns of No. 34SCE with a Q of 63 at 40 megacycles with 93 microfarads; first secondary 4½ turns of No. 22DC braid with a Q of 160 at 30 megacycles with 89 microfarads; second secondary 2½ turns of No. 29SSE with a Q of 96 at 35 megacycles with 86 microfarads; air core; bakelite tube form 1½ in. long x ½ in. O.D.; mtg. and electrical connection by 6 solder lugs, 3 at each end of the form. | Oscillator tuned circuit for band 1. | SWI type 653 | 51A267 |

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|-----------------|--|--|---------------|--------|
| T ₈ | <p>2C4180-44/C2</p> <p>TRANSFORMER: Radio frequency, 46 to 82 megacycles; one primary and two secondary windings; primary $\frac{3}{4}$ turn of No. 30SC braid, with a Q of 92 at 50 megacycles with 104 microfarads; first secondary 2$\frac{1}{2}$ turns of No. 18DC braid with a Q of 176 at 40 megacycles with 92 microfarads; second secondary $\frac{1}{2}$ turn of No. 22DC braid with a Q of 157 at 60 megacycles with 89 microfarads; air core; bakelite tube coil form 1$\frac{5}{8}$ in. long x $\frac{1}{2}$ in. O.D.; mounting and electrical connection by 6 solder lugs, 2 at one end, 3 at the other end and 1 about 13/24 in. from the end of the coil form.</p> | Oscillator tuned circuit for band 3. | SWI | 51A273 |
| T ₉ | <p>2C4537-27/T9</p> <p>TRANSFORMER: Radio frequency, 82 to 143 megacycles; two primary and two secondary windings; first and second primary each 9/16 turn of No. 26 plain enamel with a Q of 88 at 44 megacycles with 97.3 microfarads; first secondary 1$\frac{1}{2}$ turns of No. 16 bare copper wire with a Q of 119 at 60 megacycles with 95 microfarads; second secondary 2 turns of No. 28DC braid with a Q of 155 at 60 megacycles with 97 microfarads; air core; xx bakelite tube coil form 1$\frac{5}{8}$ in. long x $\frac{3}{8}$ in. dia.; mounting and electrical connection by extended leads and a single solder lug (for finish of 2nd secondary winding), at the primary winding end of the coil form.</p> | | | |
| T ₁₀ | <p>2Z9643.67</p> <p>TRANSFORMER: Intermediate-frequency, 5.25 megacycles; one primary and three secondary windings; primary 16$\frac{1}{2}$ turns single layer winding on adjustable polyiron core assembly; first secondary 1$\frac{1}{2}$ turns single layer winding on same form as primary; second secondary 21$\frac{1}{2}$ turns single layer winding on adjustable polyiron core assembly; third secondary 2$\frac{1}{2}$ turns wound on same form as second secondary; coil forms black bakelite 3-21/64 in. long x $\frac{1}{2}$ in. dia. with iron cores adjusted by brass bolts threaded 6-32 notched for screw driver; coil forms mounted at base to black bakelite board 7/32 in. thick x 1-25/32 in. long x 1$\frac{1}{8}$ in. wide and at top to black bakelite board 5/32 in. thick x 1-17/32 in. long x 1$\frac{1}{2}$ in. wide; additional support is had by two brass brackets 3-32 in. long x $\frac{1}{4}$ in. wide bent at each end at right angles to form a $\frac{1}{2}$ in. square mounting surface with a hole 0.145 in. dia. extruded and tapped 6-32 NC 2; a fixed ceramic trimmer capacitor (C_{24}) 100 microfarads, 300 V.D.-C working for primary winding; a fixed ceramic trimmer capacitor (C_{25}) 100 microfarads; 300 V.D.-C working for secondary winding; a fixed resistor (R_{19}) 100,000 ohms, $\frac{1}{4}$ watt within the shield can, and a fixed capacitor (C_{26}) 1000 microfarads, 300 V.D.-C working connected between terminal No. 5 and ground lug at base of unit complete the assembly; aluminum shield can 4 in. high x 1$\frac{1}{8}$ in. long x 1-7/16 in. wide with 4 spade lugs centered one on each side of shield mounted 9/32 in. from base, top has a $\frac{1}{2}$ in. dia. hole centered and 4 holes 0.144 in. dia., centered by pairs at right angles to each other and sides of shield with 29/32 in. and 13/16 in. mounting centers; solder lug terminals base numbered 1 thru 8 and a 7$\frac{1}{2}$ in. insulated stranded wire lead brought out through a hole in the side of the shield provide connections.</p> | Coupling between tubes V ₃ and V ₅ . | EW Special | 50C140 |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|---|--|----------------------------------|----------------------------------|
| T ₁₁ | 2Z9643.68 — — | TRANSFORMER: Intermediate frequency, 5.25 megacycles; one primary and three secondary windings; primary 16½ turns single layer winding on adjustable polyiron core assembly; first secondary 1½ turns winding on same form as primary; second secondary 20 turns single layer winding on adjustable polyiron core assembly; third secondary 2½ turns winding on same form as second secondary; coil forms black bakelite 3-21/64 in. long x ½ in. dia. with iron cores adjusted by brass bolts threaded 6-32 notched for screw driver; coil forms mounted at base to a black bakelite board 7/32 thick x 1-25/32 in. long x 1⅝ in. wide, and at the top to black bakelite board 5/32 in. thick x 1-17/32 in. long x 1⅝ in. wide; additional support is had by two brass brackets 3.32 in. long x ¼ in. wide bent at each end at right angles to form a ¼ in. square mounting surface with a hole 0.145 in. dia. extruded and tapped 6-32 NC 2; a fixed ceramic trimmer capacitor (C ₃₂) 100 microfarads, 300 V.D.C. working for primary; a fixed ceramic trimmer (C ₃₃) 100 microfarads, 300 V.D.C. working for secondary; a fixed resistor (R ₂₇) 100,000 ohm, ¼ watt, within the shield can, and a fixed capacitor (C ₃₄) 1000 microfarads 300 V.D.C. working connected between terminal No. 8 and ground lug at base of unit complete the assembly; aluminum shield can 4 in. high x 1⅝ in. long x 1-7/16 in. wide with 4 spade lugs centered one on each side of shield mounted 9/32 in. from base, top has a ½ in. dia. hole centered and 4 holes 0.144 in. dia. centered by pairs at right angles to each other and to the sides of the shield with 29/32 in. and 13/16 in. mounting centers; solder lug terminals at the base numbered 1 thru 8 provide connections. | Coupling between tube V ₆ and tubes V ₉ and V ₇ . | EW Special | 50C142 |
| T ₁₂ | 2Z9643.69 — — | TRANSFORMER: Intermediate-frequency, 5.25 megacycles; one primary and three secondary windings; primary 16½ turns single layer winding on adjustable polyiron core assembly; first secondary 1½ turns winding on same form as primary; second secondary 20½ turns single layer winding on adjustable polyiron core assembly; third secondary 2½ turns winding on same form as second secondary; coil forms black bakelite 3-21/64 in. long x ½ in. dia. with iron cores adjusted by brass bolts threaded 6-32 notched for screw driver; coil forms mounted at base to a black bakelite board 7/32 in. thick x 1-25/32 in. long x 1⅝ in. wide; and at the top to a black bakelite board 5/32 in. thick x 1-17/32 in. long x 1⅝ in. wide; additional support is had by two brass brackets 3.32 in. long x ¼ in. wide bent at each end at right angles to form a ¼ in. square mounting surface with a hole 0.145 in. dia. extruded and tapped 6-32 NC 2; a fixed ceramic trimmer capacitor (C ₃₇) | | | |

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| <p>T₁₃</p> | <p>2Z9643.70</p> | <p>100 microfarads; 300 V.D-C working for primary; a fixed ceramic trimmer capacitor (C₄₈) for secondary within the shield can complete the assembly; aluminum shield can 4 in. high x 1 1/8 in. long x 1-7/16 in. wide with 4 spade lugs centered one on each side of shield mounted 9/32 in. from base, top has a 1/2 in. dia. hole centered and 4 holes 0.144 in. dia. centered by pairs at right angles to each other and sides of shield with 29/32 in. at base numbered 1 thru 8 provide connections.</p> | <p>Coupling between tubes V₉ and V₁₀.</p> | <p>EW Special</p> | <p>50C143</p> |
| <p>TRANSFORMER: Intermediate-frequency, 5.25 megacycles; one primary and one secondary winding; primary 17 1/2 turns single layer winding on adjustable polyiron core assembly; secondary 17 1/2 turns single layer winding, then spaced and continued for 7 1/2 turns more for a total of 25 turns on adjustable polyiron core assembly; coil forms black bakelite 3-21/64 in. long x 1/2 in. dia. with iron cores adjusted by brass bolts threaded 6-32 notched for screw driver; coil forms mounted at base to a black bakelite board 7/32 in. thick x 1-25/32 in. long x 1 1/8 in. wide and at top to a black bakelite board 5/32 in. thick x 1-17/32 in. long x 1 1/8 in. wide; additional support is had by two brass brackets 3.32 in. long x 1/4 in. wide bent at each end at right angles to form a 1/4 in. square mounting surface with a hole 0.145 in. dia. extruded and tapped 6-32 NC 2; 2 fixed ceramic trimmer capacitors (C₄₃ and C₄₄) 100 microfarads; 300 V.D-C working for primary and secondary within the shield can complete the assembly; aluminum shield can 4 in. high x 1 1/8 in. long x 1-7/16 in. wide with 4 spade lugs centered one on each side of shield mounted 9/32 in. from base, top has a 1/2 in. dia. hole centered and 4 holes 0.144 in. dia. centered by pairs at right angles to each other and sides of shield with 29/32 in. and 13/16 in. centers; solder lug terminals at base numbered 1 thru 8 provide connections.</p> | <p>TRANSFORMER: Discriminator, 5.25 megacycles; one primary and one secondary winding; primary 25 turns single layer winding on adjustable polyiron core assembly; secondary 31 turns center tapped single layer winding on polyiron core assembly; coil forms black bakelite 3-21/64 in. long x 1/2 in. dia. with iron cores adjusted by brass bolts threaded 6-32 notched for screw driver; coil forms mounted at base to a black bakelite board 7/32 in. thick x 25/32 in. long x 1 1/8 in. wide and at top to a black bakelite board 5/32 in. thick x 1-17/32 in. long x 1 1/8 in. wide; additional support is had by two brass brackets 3/32 in. long x 1/4 in. wide bent at each end at right angles to form a 1/4 in. square mounting surface with a hole 0.145 in. dia. extruded and tapped 6-32 NC 2; 2 fixed ceramic trimmer capacitors (C₄₅ and C₄₇) 50 microfarads, 300 V.D-C working; and a fixed ceramic coupling capacitor (C₄₆) 25 microfarads, 300 V. D-C working, within the shield can complete the assembly; aluminum shield can 4 in. high x 1 1/8 in. long x 1-7/16 in. wide with 4 spade lugs centered one on each side of shield mounted 9/32 in. from base, top has a 1/2 in. dia. hole centered and 4 holes 0.144 in. dia. centered by pairs at right angles to each other and sides of shield with 29/32 in. and 13/16 in. centers; solder lug terminals at base numbered 1 thru 8 provide connections.</p> | <p>Discriminator coupling between tubes V₇ and V₈.</p> | <p>EW Special</p> | <p>50C144</p> | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5 MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|---|---|----------------------------------|-------------------------------------|
| T ₁₅ | 2Z9644.9 — — | TRANSFORMER: Radio-frequency, 5.25 megacycles; 15 1/8 turns of 15/44 DSE single layer winding tapped 3 1/8 turns and 10 1/8 turns, coil has a Q of 82 ± 20% at 5.25 megacycles; bakelite tube coil form 1 1/2 in. long x 1/2 in. O.D. x 0.409 in. I.D.; mounted in an aluminum shield can 3 in. long x 1 3/8 in. square with two spade lugs at the base, has a single hole at the top to mount the coil form; adjustable iron core; all connections are made to solder lugs within the assembly to which insulated leads are attached and brought out the base; assembly includes a fixed resistor (R ₃₀) 47,000 ohm ± 10%; 1/2 watt, carbon, insulated, 0.249 in. dia. x 0.655 in. long, humidity resistant, two axial No. 21AWG wire leads; a fixed capacitor (C ₆₈) mica dielectric, 100 microfarads ± 10%, 500 V.D.-C working molded case 53/64 in. square x 9.32 in. thick, humidity resistant, two axial No. 18AWG wire leads; and a fixed capacitor (C ₆₉) mica dielectric, 160 microfarads ± 5%, 500 V.D.-C working, molded case 1-1/16 in. long x 15/32 in. wide x 7/32 in. thick, two axial No. 20AWG wire leads. | Tuned circuit for B.F.O. | EW Special | 54CO23 |
| L ₁ | 3C1081-13G — — | REACTOR: Radio-frequency; 42 turns of No. 28 SCE single layer winding; inductance 4.2 microhenries ± 10%; d-c resistance 0.25 ohms ± 70%; coated with Chinese blue brushing lacquer; molded bakelite coil form 1/8 in. long x 9/32 in. dia.; two No. 20AWG wire leads 1 1/2 in. long; air core. | R-F choke in filament lead of tube V ₄ . | SWI type 662 | 53A009 |
| L ₂ | 3C1081-13F — — | REACTOR: Radio-frequency; 75 turns of No. 38SCE single layer winding; inductance 15.5 microhenries ± 10%; d-c resistance 4.1 ohms ± 3%; coated with Chinese red brushing lacquer; molded bakelite coil form 15/16 in. long x 5/32 in. dia.; two No. 20AWG wire leads 1 1/2 in. long; air core. | R-F choke in plate lead of tube V ₄ . | SWI type 661 | 53A008 |
| L ₃ | 3C375-10 — — | REACTOR: Filter; inductance 2 henries — 10 + 20% @ 150 milliamperes; iron core; completely shielded by case 3 in. long x 3 1/2 in. wide x 3-1/16 in. high; 3 mounting holes on each end with 7/8 in. x 2-1/16 in. mounting centers; 2 solder lug terminals and riveted grounding terminal at base of the assembly; breakdown voltage between windings and case or core not less than 2000 volts D-C; sealed for salt water immersion for 100 hours at 29.4°C (85°F.); vibration range 2 to 50 C.P.S. up to 10g. acceleration. | Plate and screen supply filter. | ST | 56B050 |
| L ₄ | 3C375-11 — — | REACTOR: Radio-frequency; 10 turns of No. 26 SCE single layer space winding; bakelite rod coil form 1/4 in. O.D. x 15/16 in. long; two axial wire leads 1/32 in. dia. x 1 in. long; winding sprayed with fungaside lacquer. | Antenna terminating impedance. | EW | 53A058 |

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| L ₆ | 3C375-26 — — | REACTOR: 20 turns of No. 24 E copper single layer winding on bakelite rod 11/16 in. long x 1/2 in. dia.; drilled 1/8 CT SK 1/64 at each end two holes 0.04 in. dia. with centers 17/32 in. apart and 0.14 in. off center are for ends of windings. REACTOR: Same as L ₆ . | Motor filter inductance. | HC Special | 53A062 |
| L ₇ | | | Motor filter inductance. | HC Special | 53A062 |
| S _{1A} | 3Z9903E-11.6 — — | SWITCH WAFER: Ceramic; oval shape 5/32 in. thick x (1 1/8 x 1 7/8 in.); two mounting holes 0.144 in. dia., with 1-9/16 in. mounting centers; 3 position; 6 lug type terminals all mounted on one side of wafer; rotor section consists of a shorting contact and a selector contact; keyed shaft. | BAND SWITCH, r-f stage transformer primary. | CRL Special | 62A038 |
| S _{1B} | 3Z9903E-11.3 — — | SWITCH WAFER: Ceramic; oval shape 5/32 in. thick x (1 1/8 in. x 1 7/8 in.); two mounting holes 0.144 in. dia. with 1-9/16 in. mounting centers; 3 position, 5 lug type terminals all mounted on one side of wafer; rotor section consists of a shorting contact and a selector contact; keyed shaft. | BAND SWITCH, r-f stage transformer secondary. | CRL Special | 62A035 |
| S _{1C} | | SWITCH WAFER: Same as S _{1A} . | BAND SWITCH, mixer stage transformer primary. | | |
| S _{1D} | | SWITCH WAFER: Same as S _{1B} . | BAND SWITCH, mixer stage transformer secondary. | | |
| S _{1E} | | SWITCH WAFER: Same as S _{1B} . | BAND SWITCH, oscillator stage transformer primary, coupling winding. | | |
| S _{1F} | 3Z9903E-11.4 — — | SWITCH WAFER: Ceramic; oval shape 5/32 in. thick x (1 1/8 in. x 1 7/8 in.); two mounting holes 0.144 in. dia. with 1-9/16 in. mounting centers; 3 position, 5 lug type terminals all mounted on one side of wafer; rotor section consists of a shorting contact and a selector contact; keyed shaft. | BAND SWITCH, oscillator stage transformer primary, coupling winding. | CRL Special | 62A036 |
| S _{1G} | 3Z9903E-11.5 — — | SWITCH WAFER: Ceramic; oval shape 5/32 in. thick x (1 1/8 in. x 1 7/8 in.); two mounting holes 0.144 in. dia. with 1-9/16 in. mounting centers; 3 position, 5 lug type terminals all mounted on one side of the wafer; rotor section consists of a shorting contact and a selector contact; keyed shaft. | BAND SWITCH, oscilloscope stage transformer. | CRL Special | 62A037 |
| S ₂ | 3Z9825-62.104 — — | SWITCH: Rotary selector; 3 position single pole, 3 sections, shorting type contacts; bakelite wafers oval shaped 1 7/8 in. x 1 1/8 in. x 1/16 in. thick, first wafer 3-7/16 in. from index plate preceded by a shield 1/2 in. away separated from the following sections by a shield 3/16 in. away; other two sections 3/4 in. apart located 3-7/16 in. from the shield; overall length of frame 9 1/2 in.; mounted by a 3/8-32 bushing 3/8 in. long at the front; shaft 3/4 in. long x 1/4 in. dia.; an A-C switch, toggle action, is mounted at the rear of the assembly and is closed in clockwise and center position, open in counterclockwise position. | SELECTIVITY switch. | OM Special | 60B164 |
| S ₃ | 3Z9825-29.14 — — | SWITCH: Rotary selector; single pole double throw; single section; non-shorting type teeth for rotor contacts at terminals 5 and 8; wax impregnated bakelite wafer 1/16 in. thick and having 1-9/16 in. mtg. centers located 3/32 in. from steel indexing plate; mounted by a 1/2 in. bushing 3/8-32 ANS thread; shaft 1 in. long x 1/4 in. dia. | AM/FM switch. | OM type 1838CH | 60A189 |

TABLE OF PARTS

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MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

MODEL: RADIO RECEIVING SET AN/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|----------------------------------|--|-------------------------------------|
| S ₄ | 3Z9858-8-22 — — | SWITCH: Toggle, single pole single throw; 3 amperes at 250 volts; steel case $\frac{1}{2}$ in. x $1\frac{1}{16}$ in. x $1\frac{1}{16}$ in., bushing $1\frac{1}{32}$ in. dia. 32 threads per inch for $1\frac{1}{32}$ in.; fibre separators $1\frac{1}{32}$ in. wide x $1\frac{1}{32}$ in. long, brass mechanism, solder lug terminals; same as S ₅ , S ₆ . SWITCH: Same as S ₄ . | A.V.C. switch. | HH type 20994 AC | 60A116 |
| S ₅ | | SWITCH: Same as S ₄ . | A.N.L. switch. | | |
| S ₆ | | SWITCH: Same as S ₄ . | B.F.O. switch. | | |
| S ₇ | 3Z9849-9-2 — — | SWITCH: Toggle, double pole single throw; 3 amperes at 250 volts; bakelite case $1\frac{1}{32}$ in. x $9\frac{1}{16}$ in. x $\frac{1}{2}$ in., bushing $1\frac{1}{32}$ in. dia. 32 threads per inch for $1\frac{1}{32}$ in.; solder lug terminals. | Motor drive switch. | CH type 8360 KZ | 60A123 |
| S ₈ | 3Z8142.1-1 — — | SWITCH: Toggle, double pole double throw; 3 amperes at 250 volts molded bakelite case $1\frac{1}{32}$ in. long x $1\frac{1}{16}$ in. wide x $2\frac{1}{32}$ in. deep; mounted by $\frac{3}{8}$ in. long bushing with $1\frac{1}{32}$ in. -32 thread; 6 solder lug terminals at rear with pole connections in the center. | Scanning motor reversing switch. | CH type 8363 | 60A169 |
| J ₁ | 2ZK5598-8 — — | JACK: Phone; single circuit (open); tip and sleeve contacts with sleeve grounded; bakelite insulation, mounted by $\frac{3}{8}$ in. long brass bushing with $\frac{3}{8}$ in. -32 thread, includes a $\frac{5}{8}$ in. O.D. washer and $\frac{1}{2}$ in. brass hex. nut; overall dimensions of jack $1\frac{1}{4}$ in. wide including solder lug terminals x $\frac{1}{8}$ in. deep. | PHONES outlet. | U type 2A | 36A002 |
| SO ₁ | 2Z8799-208 — — | RECEPTACLE: Cable connector; $1\frac{1}{16}$ in. x $1\frac{1}{4}$ in. O.D.; 6 contacts, solder lug terminals at rear; silver plated die cast zinc, mtg. plate $1\frac{1}{2}$ in. square located $27\frac{1}{32}$ in. from front, locking bushing threaded $1\frac{1}{8}$ -18, 4 mtg. holes with $1\frac{1}{4}$ in. mtg. centers; male, contacts lettered A thru F on the face. | POWER outlet. | AP type AN3102-225P | 10A131 |
| SO | 2Z8799-239 — — | RECEPTACLE: Coax-cable connector; $1\frac{1}{16}$ in. x 0.625 in. O.D.; single contact, solder lug terminal at the rear; silver plated finish mica filled bakelite; mtg. plate 1 in. square located $\frac{5}{8}$ in. from the face of the plug; female; 4 mtg. holes with $23\frac{1}{32}$ in. mtg. centers; same as SO ₁ , SO ₂ . | PANORAMIC outlet. | AP type 83-IR | 10A056 |
| SO ₃ | | RECEPTACLE: Same as SO ₂ . | ANT. outlet. | | |
| SO ₄ | | RECEPTACLE: Same as SO ₂ . | VIDEO outlet. | | |
| M ₁ | 3F864-2 — — | METER: "S" meter, calibrated 160-0-40 microamperes; body 2.156 in. dia. x 1.492 in. deep round flush type mtg. plate 2.625 in. O.D. with 3 mtg. holes 120 degrees apart includes 2 terminals $1\frac{1}{10}$ in. apart threaded $\frac{1}{4}$ -28 NC-2 and supplied with 2 washers and 2 hex. nuts each, which protrude $\frac{5}{8}$ in. from the rear of the meter. | Tuning meter. | MCM type 2001 | 82B068 |

39A003

| | | | | GE type 44 | |
|-----------------|--------------|---|--|------------|--|
| LM ₁ | 2Z5927 | LAMP: Bayonet base; 6-8 volts 250 milliamperes; glass bulb; brown head. | Dial illumination and pilot light. | | |
| V-1 | 2J956 | TUBE: Electron; type JAN-956 (VT-238). | RE-radiation suppressor | | |
| V-2 | 2J956 | TUBE: Same as V-1. | R-F amplifier. | | |
| V-3 | 2J954 | TUBE: Electron; type JAN-954 (VT-120). | Mixer. | | |
| V-4 | 2J955 | TUBE: Electron; type JAN-955 (VT-121). | High Frequency oscillator. | | |
| V-5 | 2J6AC7 | TUBE: Electron; type JAN-6AC7 (VT-112). | First I-F amplifier. | | |
| V-6 | 2J6AB7/1853 | TUBE: Electron; type JAN-6AB7 (VT-186). | Second I-F amplifier | | |
| V-7 | 2J6AC7 | TUBE: Same as V-5. | F-M limiter. | | |
| V-8 | 2J6H6 | TUBE: Electron; type JAN-6H6 (VT-90). | F.M. discriminator. | | |
| V-9 | 2J6SK7 | TUBE: Electron; type JAN-6SK7 (VT-117). | Third I-F amplifier. | | |
| V-10 | 2-J6H6 | TUBE: Same as V-8. | A.M. detector and automatic noise limiter. | | |
| V-11 | 2J6SQ7 | TUBE: Electron; type JAN-6SQ7 (VT-103). | Audio amplifier. | | |
| V-12 | 2J6V6 | TUBE: Electron; type JAN-6V6 (VT-107). | Power amplifier. | | |
| V-13 | 2J6J5 | TUBE: Electron; type JAN-6J5 (VT-94). | Beat frequency oscillator. | | |
| V-14 | 2JOD3/VR-150 | TUBE: Electron; type JAN-OD3/VR-150 (VT-139). | Voltage regulator. | | |

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MODEL: RADIO RECEIVING SET AN/ARR-5 MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|---|--|-------------------------------------|
| 100 | 2Z8675.41 — — | TUBE SOCKET: Acorn type; steatite base 3/16 in. thick x 7/8 in. I.D. x 1 1/4 in. O.D.; 5 beryllium-copper, silver-plated contacts with 2 contacts anchored to prevent turning; 3 contacts located 30 degrees apart, with other two contacts at opposite angles 60 degrees apart; top and side surfaces glazed, 2 holes 5/32 in. dia. x 1-5/16 in. centers provide mtg. | Socket for tubes V ₂ , V ₃ , 4 ₄ and V ₁ . | JO type 235 | 6A075 |
| 101 | 2Z8795.12 — | TUBE SOCKET: High dielectric, mica filled bakelite body 3 1/64 in. thick x 1-7/64 in. dia. eight solder lug contacts; steel mtg. plate 0.031 in. thick molded to body 9/64 in. from face of socket and having 2 holes of 5/32 in. dia. x 1 1/2 in. mtg. centers, unmarked. | Socket for tube V ₆ , V ₉ , V ₁₀ , V ₇ , V ₈ , V ₁₁ , V ₁₄ , V ₁₂ and V ₁₃ . | AP type MIP8TM | 6A200 |
| 102 | 2Z8795.12-1 — — | TUBE SOCKET: Same as 101 except it includes a steel, cad. plated center shield of sufficient thickness to withstand 48 hours of salt water immersion without evidence of corrosion. | Socket for tube V ₆ . | AP type MIP8TM | 6A201 |
| 103 | 3G1770-14.2 — | GROMMET: Black fibre; 5/32 in. I.D. x 1/4 in. O.D. x 7/32 in. long. | | | 8A070 |
| 104 | 3G1770-16 — | GROMMET: Black fibre; 3/8 in. I.D. x 1/2 in. O.D. x 1/4 in. long. | Feed thru bushing. | LD | 8A071 |
| 105 | 3G1770-20.4 — | GROMMET: Black fibre; 3/8 in. I.D. x 1/8 in. O.D. x 5/16 in. long. | Feed thru bushing. | LD | 8A380 |
| 106 | 2Z5040-360 — | HOOD: Co-axial cable receptacle; brass, 1 in. square at base x 0.02 in. thick, 4 mtg. holes 1/4 in. dia. x 23/32 in. square mtg. centers, 0.635 in. body dia. for 3/16 in. from base then tapered to 0.344 in. dia. for 1/2 in. from base, overall depth 3/4 in.; 4 solder holes at neck have 0.125 in. dia. | Shield bond for cables for sockets SO ₂ , SO ₃ , and SO ₄ . | AP type 83-IH | 10A055 |
| 107 | 2Z5849.8 — — | KNOB: Molded bakelite; 1 1/8 in. O.D. x 5/8 in. deep with a brass insert 1/2 in. O.D. x 1/4 in. I.D. x 7/16 in. deep and having a single 8-32 x 1/4 set screw. Marked on face with white dot located 180 degrees from set screw position. | A-F and R-F gain control knobs. | MM special | 15B004 |
| 108 | 2Z5843.16 — — | KNOB, ASSEMBLY: Consists of a tapered bat type handle 1/8 in. long x 0.164 in. O.D. min, knob bushing 1/2 in. O.D. x 1/2 in. long, with a shaft hole 1/4 in. dia. x 5/16 in. deep. Secured by 3 set screws 8-32 x 1/8 in., located 90 degrees apart. Pilot set screw located 168 degrees (clockwise) from center of handle. | Selectivity and band switch knobs. | H type 15A022 | 15A022 |
| 109 | 2Z5848 — — | BAR KNOB: Molded bakelite; body 25/32 in. O.D. with bar pointer 1/4 in. long x 5/8 in. deep and having a 8-32 x 3/16 slotted headless cup point set screw at broad end; shaft hole is 1/2 in. deep. | A-M and F-M selector switch handle. | KK type | 15A028 |

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|-----|-----------|--|--------------|--------|
| 110 | 2Z5843.17 | <p>KNOB ASSEMBLY: Molded bakelite; consists of a knob $1\frac{1}{2}$ in. O.D. x $21/32$ in. deep body with a $7/32$ in. dia. hole through the rim of the knob to hold a handle $1\text{-}3/32$ in. long x $1/4$ in. dia. A brass insert 0.252 in. I.D. x $1/2$ in. deep, has a set screw $8\text{-}32$ x $1/4$ located 180 degrees from the handle. The handle is staked to the knob by a 0.025 in. thick brass washer.</p> | HD Special | 15A029 |
| 111 | 3H3100A-2 | <p>MOTOR AND GEAR ASSEMBLY: Consists of 27.5 V.D.C motor; hash filter assembly including resistor R_{39}, capacitors C_{61} and C_{62} and reactors L_6 and L_7; bearing and plate assembly; bakelite motor gear and shaft assembly; worm gear and shaft drive assembly; overall dimensions $3\frac{3}{8}$ in. x $4\frac{7}{8}$ in. x $4\text{-}15/32$ in.; 2 mtg. feet on each side of motor housing with 3.125 in. x 1.345 in. and 1.750 in. centers; solder lug terminals insulated from case by feed-thru bushings.</p> | HC Special | 20D017 |
| 112 | 2Z4928-15 | <p>HANDLE: Steel; 0.375 in. dia. stock with a right angle bend at each end so that it protruded $1\frac{3}{4}$ in. from mounting surface; a hole at each end drilled for $3/4$ in. deep and tapped $10\text{-}24$ provides mtg., mounting centers 4 in.</p> | WK type 2876 | 30A109 |
| 113 | 2Z9058 | <p>SECTOR SWEEP CONTROL: Consists of two indexing discs, a driving arm, a captivated thumb screw, a sleeve and hub assembly; indexing discs of half hard brass, dull nickel plate, $1\frac{1}{8}$ in. O.D. x $.468\text{-}.470$ in. I.D. x 0.050 in. thick, slot $5/64$ in. cut 180 degrees on $3/64$ in. radius (to center line of slot); tripping arm on front disc $11/32$ in. x $5/32$ in. at rt. angle to plane of disc., tripping arm on rear disc $7/16$ in. x $5/32$ in. at rt. angle to plane of disc., tripping arms located $7/8$ in. from center of disc and 90 degrees clockwise from center of slot; driving arm of 0.062 in. cold rolled steel, dull nickel plate, contains $.470\text{-}.468$ in. shaft hole and $6\text{-}32$ tapped thumb screw hole 0.515 in. between centers, arm dimensions $3/8$ in. wide x 0.062 in. thick with $1/4$ in. radius from center of tapped hole and $3/8$ in. radius from center of shaft hole; captivated thumbscrew of type 303 stainless steel; passivate treated; $3/8$ in. O.D. x $13/16$ in. long; tapped screw $6\text{-}32$ N.C.-$2\text{-}5/16$ in. long, body has coarse straight knurl $1/4$ in. long, body necked below knurl with $1/8$ in. radius, $1/16$ in. shoulder below necked position of body; hub of type 303 stainless steel, $1/2$ in. O.D. $.054\text{-}.056$ in. x $.464\text{-}.462$ in. dia. $3/8$ in. from front face of hub, followed by a $1/16$ in. x $.383\text{-}.385$ in. dia. straight knurled shoulder, remaining length smooth cut at root diameter of knurled shoulder, shaft hole $.375\text{-}.373$ in. dia x $9/16$ in. deep., two Allen head $6\text{-}32$ x $1/8$ in. parkerized steel set screws 90 degrees apart located $3/4$ in. from front face of hub; components assembled as follows: front indexing disc, half hard brass washers $7/8$ in. O.D. x $.376\text{-}.375$ in. I.D., rear indexing disc, driving arm staked to hub, 303 stainless steel sleeve $1/2$ in. O.D. x $.376\text{-}.375$ in. I.D. x approx. $3/16$ in. long with $.120\text{-}.118$ in. x $.464\text{-}.462$ in. O.D. shoulder staked to hub, set screw and $3/8$ in. O.D. x $.141\text{-}.140$ in. I.D. x $.015$ in. brass washer form clamping mechanism to hold indexing discs in place.</p> | C Special | 60B171 |
| | | To remove chassis from cabinet and carry. | | |
| | | Adjust sector sweep mechanism. | | |
| 114 | 2Z8202.16 | <p>SWITCH SHAFT: Brass; $10\text{-}5/32$ in. long x $1/4$ in. dia., flatted for $5/16$ in. x $1/32$ in. at each end. Flats at opposite sides.</p> | CHM Special | 74A089 |
| | | A-M- and F-M switch shaft. | | |

* NOTE: The preceding mechanical items use a reference No. instead of a reference symbol.

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

MODEL: RADIO RECEIVING SET AN/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|---|--|-------------------------------------|
| 115 | 2Z8202.15 — — | SWITCH SHAFT ASSEMBLY: Consists of brass shaft 12-25/32 in. long x 0.249 in. dia. flatted on opposite sides to 0.185 in. dia., and 2 hole mtg. index plate, 3 positions 60 degrees apart. Index assembly includes two 0.192 in. dia. steel balls with beryllium copper spring and a 0.038 in. thick stainless steel clicker plate 1 3/8 in. x 1 7/8 in. (oval) having 1-9/16 in. mtg. centers and located at one end of the shaft. | Bandswitch shaft and index. | OM Special | 74B098 |
| 116 | 2Z2727-14 — — | TUBE CLIP: Acorn type; copper; 5/64 in. wide strip bent to form a spring action clamp 13/32 in. long and having a 3/32 in. dia. space at the center. | Lead connections for tubes V ₃ , V ₄ , and V ₅ . | RCA type 9939 | 76A060 |
| 117 | 2Z5883-100 — — | PILOT LAMP SOCKET: Bayonet base type; 13/32 dia. x 1-17/32 in. long including a 25/32 in. long x 7/16 in. wide x 0.032 in. thick single hole 0.144 in. dia. mtg. foot. Two solder lug contacts. | Socket for Lamp LM ₁ . | DR type 236CH | 86A025 |
| 118 | 2Z9401 — — | TERMINAL STRIP: One lug; brass solder lug riveted to a cerese AA wax impregnated bakelite strip 3/4 in. long x 3/8 in. wide x 1/16 in. thick to which is riveted a brass mtg. foot having a 0.14 in. dia. mtg. hole; riveting centers 3/8 in.; mounts with bottom edge of bakelite horizontal to chassis. | Circuit tie lug. | CN type 1513W1 | 88A085 |
| 119 | 2Z9401.6 — — | TERMINAL STRIP: Same as 118 except the unit mounts with bottom edge vertical to the chassis. | Circuit tie lug. | CN type | 88A086 |
| 120 | 2Z9402.37 — — | TERMINAL STRIP: Two lugs, brass solder lugs riveted to a cerese AA wax impregnated bakelite strip 1 1/8 in. long x 3/8 in. wide x 1/16 in. thick to which is riveted a brass mtg. foot (centered between the lugs) having a 0.14 in. dia. mtg. hole; solder lugs and mtg. foot have 3/8 in. riveting centers; mounts with bottom edge horizontal to chassis. | Circuit tie lug. | CN type 1520W1 | 88A091 |
| 121 | 2Z9401.37 — — | TERMINAL STRIP: One lug; brass solder lug riveted to a vacuum wax impregnated bakelite strip (Zopher No. 1539 wax) 3/4 in. long x 3/8 in. wide x 1/16 in. thick to which is riveted a brass mtg. foot having a 0.14 in. dia. mtg. hole; riveting centers 3/8 in.; mounts with bottom edge of bakelite horizontal to chassis. | Circuit tie lug. | CN type 1510 modified | 88A502 |
| 122 | 2Z9401.36 — — | TERMINAL STRIP: One lug; brass solder lug riveted to a vacuum wax impregnated bakelite strip (Zopher No. 1539 wax) 3/4 in. long x 3/8 in. wide x 1/16 in. thick to which is riveted a brass mtg. foot having a 0.14 in. dia. mtg. hole; riveting centers 3/8 in.; mounts with bottom edge of bakelite horizontal to chassis. | Circuit tie lug. | CN type 1510 W1 modified | 88A516 |

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|-----|----------------------|--|--|----------------|--------|
| 123 | 2Z9402.100 — — | TERMINAL STRIP: Two lugs; brass solder lugs riveted to a vacuum wax impregnated bakelite strip (Zopher No. 1539 wax) 1 1/8 in. long x 3/8 in. wide x 1/16 in. thick to which is riveted a brass mtg. foot 3/16 in. from one end; riveting centers 3/8 in. apart and 7/64 in. from bottom edges of strip; unit mounts with bottom edge of strip horizontal to chassis. | Circuit tie lug. | CN type 1529W1 | 88A517 |
| 124 | 2Z9403.57 — — | TERMINAL STRIP: Three terminals; 21/32 in. long x 3/32 in. dia.; flattened ends for soldering, tinned brass, spaced 1/4 in. apart with center lug located in center of strip; lugs inserted in natural linen base bakelite strip 1 1/2 in. long x 5/16 in. wide x 3/32 in. thick, two 0.140 in. dia. mtg. holes spaced 1 1/8 in. apart and 3/16 in. in from end of strip; assembly vacuum wax impregnated. | Circuit tie lug. | HJ | 88A527 |
| 125 | 2Z9402.97 — — | TERMINAL STRIP: Two terminals, 21/32 in. long x 3/32 in. dia., flattened ends for soldering, tinned brass, spaced 1/4 in. apart and 5/32 in. from bottom edge and 1/2 in. from end of strip; lugs inserted in natural linen base bakelite strip, 1 1/4 in. long x 5/16 in. wide x 3/32 in. thick, two 0.144 in. dia. mtg. holes spaced 1/8 in. apart and 3/16 in. in from end of strip; assembly vacuum wax impregnated. | Circuit tie lug. | HJ | 88A529 |
| 126 | 2Z9420.13 — — | RESISTOR BOARD: Wax impregnated bakelite (Zopher No. 1539 wax); 20 terminals, solder lugs, spaced in two rows of 10 each 1-7/16 in. x 1/2 in. apart; two hollow mtg. spacers 3/4 in. O.D. x 11/32 in. long, tapped 6-32, are spaced 4 in. apart with the left spacer 1 3/4 in. off center, and are riveted to the back side of the board; board dimensions 5 in. x 1-13/16 in. x 1/16 in.; marked "C ⁶⁷ , R ₉₄ , C ₆₆ , C ₆₅ , R ₉₃ , R ₉₂ , R ₉₁ , R ₉₀ , R ₈₉ , and R ₈₈ ," reading left to right; fungicide sprayed with Mass Walstein No. 86 or Inslx. No. 95T. | Resistor and capacitor mounting board. | MF Special | 88A136 |
| 127 | 2Z9440-29 — — | RESISTOR BOARD: Wax impregnated bakelite (Zopher No. 1539 wax); 40 terminals, solder lugs, located in two rows 1-7/16 in. apart, reading left to right along length of board by pairs;—stations 1 thru 6, 1/2 in. apart; 6 thru 8, 1 in.; 8 to 9, 1/2 in.; 9 to 10, 1 1/2 in.; 10 thru 18, 1/2 in.; 18 to 19, 1 1/2 in. (note: stations 19 and 20 have solder lugs on bottom row only); 19 to 20, 1/2 in.; and 20 to 21, 1 in.; five hollow mtg. spacers 3/4 in. O.D. x 11/32 in. long, tapped 6-32, are spaced 3 1/2 in. apart with the left most spacer 1/4 in. x 29/32 in. from the underside end of the board; board dimensions 14 1/2 in. x 1-13/16 in.; marked "C ₇₁ , C ₁₇ , R ₁₀ , R ₉ , C ₁₈ , R ₉ , C ₇₃ , R ₇ , R ₆₃ , R ₇₅ , R ₅₆ , R ₆₄ , R ₆₅ , C ₆₈ , R ₇₆ , R ₆₉ , C ₆₄ , R ₆₁ and R ₆₉ ," from left to right; fungicide sprayed with Mass Walstein No. 86 or Inslx. No. 95T. | Resistor and capacitor. | MF | 88B137 |
| 128 | 2Z9440-28 — — | RESISTOR BOARD: Wax impregnated bakelite (Zopher No. 1539 wax); 52 terminals, solder lugs located in two rows 1-7/16 in. apart, reading left to right along length of board by pairs, stations 1 to 2, 1 1/2 in. apart (note: no lug in bottom row at station 2 and no lug in top row at station 3), stations 2 thru 27, 1/2 in. apart; five hollow mtg. spacers 3/4 in. O.D. x 11/32 in. long tapped 6-32, spaced 3 1/2 in. apart, left most spacer 1/4 in. from end and 29/32 in. from bottom edge, mounted on back side of board, board dimensions 14 1/2 in. x 1-13/16 in. x 1/16 in.; marked "R ₄₆ , R ₄₇ , C ₆₂ , C ₆₃ , C ₄₀ , R ₃₄ , R ₃₅ , C ₄₁ , R ₃₂ , R ₆₆ , C ₃₉ , C ₃₆ , R ₃₁ , R ₃₀ , C ₃₅ , R ₃₂ , C ₃₁ , R ₂₆ , R ₃₀ , R ₃₁ , C ₂₉ , C ₁₈ , R ₁₉ , C ₂₇ , R ₁₅ and R ₂₅ ," from left to right; fungicide sprayed with Mass Walstein No. 86 or Inslx. No. 95T. | Resistor and capacitor mounting board. | MF Special | 88B138 |

* NOTE: The preceding mechanical items use a reference No. instead of a reference symbol.

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5

MODEL: RADIO RECEIVING SET AN/ARR-5

| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
|------------------|---|--|--|----------------------------------|----------------------------------|
| 129 | 2Z3764-22 — — | DIAL ASSEMBLY: Tuning; consists of dial, two dial plates and dial mtg. insert; vinylite dial approx. 4-7/16 in. O.D. x 13/32 in. I.D., calibrated in 3 scales, scale No. 1 for band 1 27.8 to 47 MC., scale No. 2 for band 2 46 to 82 MC., scale No. 3 for band 3 82 to 143 MC., scale No. 1 1 1/2 in. radius from center of disc, scale No. 2 1 3/4 in. radius, scale No. 3 2 in. radius; dial plates cold rolled steel, dull nickel plate finish; 2 in. O.D. x .409/.407 in. I.D. x 0.037 in. thick; dial insert of brass, dull nickel plate finish, 1/2 in. O.D. x 0.252 in. I.D. x 25/64 in. long, shoulder .406/.404 in. O.D. x 9/64 in. long, located 1/4 in. from face of insert, 2 Allen head 8-32 x 1/4 nickel plated brass set screws 90 degrees apart mount assembly to shaft; components assembled as follows: dial plate next to shoulder of insert followed by dial then second dial plate staked to insert bushing. | Main tuning dial. | C Special | 83B186 |
| 130 | 3H3100-15 — — | GEAR DRIVE ASSEMBLY: Tuning; consists of gear box assembly (Hallicrafters part No. 71C156), motor clutch assembly (Hallicrafters part No. 74B099), shim plate (Hallicrafters part No. 63A123) and gear drive motor (refer to reference No. 111 for description). | Main tuning condenser automatic drive. | C Special | 71D159 |
| 131 | 2Z8406-4 — — | ABSORBER: Shock; steel frame 2 3/8 in. square x 3/4 in. high with 4 holes 3/16 in. dia., centered with 1-15/16 in. x 1-15/16 in. centers, square at base then cupped in center on a 1 1/8 in. dia., a hole 0.255 in. dia. at center permits mounting to receiver mtg. frame; a steel plate 1-7/16 in. O.D., and a rubber bumper 1-7/16 in. O.D., x 3/8 in. thick are located on the top and underneath the base frame and are held in place by the receiver mtg. frame bolt. | Shock absorber for Mounting Base MT-171/U. | US type 5150-C | 16A067 |
| 132 | 3H3100-23/B5 — — | MOTOR BRUSH: Carbon; 5/16 in. long x 1/8 in. square, grooved and cut at an angle at top to provide seat for tension spring retainer, includes a wire lead approx. 1/2 in. long. | Motor commutator brush. | DI Special | 80A083 |
| 203 | 6R57400-6 — — | WRENCH: Hard steel; to fit a No. 6 Allen head set screw; hex shape 0.062 in. across flats 1 1/8 in. long with 90 degree bend, then 23/32 in. long; parkerized finish. | Tool. | ALM type 6-32 | 33A035 |
| 204 | 6R57400 — — | WRENCH: Steel; to fit a No. 8 Allen head set screw; 5/64 in. hex stock 1-25/32 in. long, then 90 degree bend on a 3/16 in. radius for a 3/8 in. length. | Tool. | ALM type 8-32 | 33A060 |

SC-D-10382-3

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|--|--|--|----------------------------|
| 2Z6763-171 — — | MOUNTING RECEIVER: Mounting Base MT-171/U for Radio Receiver R-44/ARR-5; same as Mounting Base MT-167/U with the following exceptions; width 9 3/4 in. between center of rear hold down assembly; width 8 3/4 in. between center of shockmount holes; approximate weight of unit is 3 1/4 pounds; mounts case 9-9/16 in. long x 10 1/4 in. wide. | Mounting base for Radio Receiver R-44/ARR-5. | |
| 2A3391-38 — or | ANTENNA STUB: Antenna Stub AT-38/APT; quarter wave; consists of streamlined phenolic impregnated maple mast which is covered with suitable conductive material; exact shape obtained by cutting off the tip (small end) of Antenna AN-155-A so that active length is 29 in.; operates from 93 to 113 megacycles; includes mounting for holding mast perpendicular to ship; mounting consists of four fitted blocks, two side plates, a plate for riveting to skin of ship, and a grommet for weather proofing. | Antenna. | |
| 2A3391-38A — — | ANTENNA STUB: ANTENNA Stub AT-38A/APT; same as Antenna Stub AT-38/APT except reinforcing plate is furnished by aircraft manufacturer; four fitted blocks, one of which is slotted to pass 5 1/2 in. of Radio Frequency Cable RG-8/U; two side plates one drilled for mounting one right angle bracket for supporting Radio Frequency Jack UG-22/U, inside plates and grommet for weather proofing. | | |
| R ₂₀₀ 3Z6610-188 — — | RESISTOR: Fixed; 10,000 ohm $\pm 20\%$; 20 watt; wire wound; humidity resistant; body 2 1/2 in. long x 3/4 in. O.D. x 1/2 in. I.D.; two No. 18AWG radial leads 1 1/2 in. long. | Bleeder resistor for A-C operation. | ELR type RE 7510 24A835 |
| R ₂₀₁ | RESISTOR: Same as R ₁ . | Bleeder resistor for A-C operation. | |
| R ₂₀₂ | RESISTOR: Same as R ₁ . | Bleeder resistor for A-C operation. | |
| C ₂₀₀ 3DB8-112 — — | CAPACITOR: Fixed; oil-filled paper dielectric; 8 microfarad $\pm 10\%$; 600 V.D-C working; hermetically sealed steel case 4 3/4 in. high x 3 3/4 in. wide x 1 1/4 in. deep; two screw spade lug terminals extend 1/8 in. from base with centers 2 in. apart and are insulated from case; held to chassis by special mtg. clamps with mtg. centers 4 in. apart. | Output filter capacitor for A-C operation. | CD type TJH10080 46A063 |
| C ₂₀₁ | CAPACITOR: Same as C ₁ . | Output filter capacitor for A-C operation. | |
| C ₂₀₂ | CAPACITOR: Same as C ₁ . | Output filter capacitor for A-C operation. | |

* NOTE: The preceding mechanical items use a reference No. instead of a reference symbol.

TABLE OF PARTS

NOTE: Parts listed which are indicated by a # sign in column 2 are not available as spare parts and are listed for reference purposes only.

| MODEL: RADIO RECEIVING SET AN/ARR-5 | | MAJOR ASSEMBLY: RADIO RECEIVER R-44/ARR-5 | | | |
|-------------------------------------|---|--|--------------------------------------|--|-------------------------------------|
| Reference Symbol | Army Stock Number Navy Stock Number British Ref. Number | Name of Part and Description | Function | Mfr. and Desig. or Standard Type | Cont. or Govt. Dwg. or Spec. No. |
| T ₂₀₀ | 2Z9619-60 — — | TRANSFORMER: Power; one primary and five secondary windings; primary 110-120 V.A-C tapped for 78-84 V.A-C 400 to 2600 cycles; 1st secondary 6.3 V.A-C 5 amperes; 2nd secondary 5 V.A-C 3 amperes; 3rd secondary 5 V.A-C 3 amperes; 4th secondary 5 V.A-C 3 amperes; 5th secondary to provide 270 V.D-C ± 20 V.D-C 130 milliamperes out of a filter consisting of a type 5U4G rectifier, a 2 henry input choke and an 8 mfd. output capacitor, center tapped, d-c resistance 6 ohms, hermetically sealed metal case 5 $\frac{3}{8}$ in. long x 4-3/16 in. wide x 4-1/16 in. high; upright mtg. with 4 mtg. bolts spaced 4 $\frac{1}{2}$ in. x 3 in. mtg. centers; 14 solder lug type terminals at base protrude $\frac{1}{4}$ in. from case, insulated from case by an insulating bushing 7/16 in. O.D., spaced in 2 rows of 3 each, 2-27/32 in. apart in a line 1-15/64 in. from ends of case and 1-3/32 in. from sides of case with 1 in. between lugs, and 2 rows of 4 each, 1 $\frac{1}{4}$ in. apart in a line 2-1/16 in. from ends of case and 31/32 in. from sides of case with $\frac{3}{4}$ in. between lugs; iron core. | Power supply. | HP type 100560 | 52A087 |
| L ₂₀₀ | 3C375-16 — — | REACTOR: Filter; inductance 2 henries 150 milliamperes; d-c resistance 32 ohms ± 10%; iron core; hermetically sealed metal case 2-13/32 in. long x 2-5/32 in. wide x 2-21/32 in. high; upright mtg. with 4 mtg. bolts spaced 1-13/32 in. x 1-9/32 in. mtg. centers; 2 solder lug terminals centered 1-9/32 in. apart; insulated from case by an insulating bushing 7/16 in. O.D.; iron core. | Filter inductance for A-C operation. | HP type 56A053 | 56A053 |
| L ₂₀₁ | | REACTOR: Same as L ₁ . | Filter inductance for A-C operation. | | |
| L ₂₀₂ | | REACTOR: Same as L ₁ . | Filter inductance for A-C operation. | | |
| S ₂₀₀ | 3Z9849.105 — — | SWITCH: Toggle; double pole single throw; 6 amperes at 125 V.; molded bakelite case 1-3/32 in. x 1-1/16 in. x 2-1/32 in.; bushing 15/32 in. dia. 32 threads per inch for 11/32 in.; 4 solder lug type terminals located at rear of assembly. | "ON-OFF" D-C switch. | CH type 8370K4 | 60A188 |
| S ₂₀₁ | | SWITCH: Same as S ₁ . | "ON-OFF" A-C switch. | | |
| FS ₂₀₀ | 3Z1935 — — | FUSE: Type 4AG; 5 amperes @ 25 volts; 1 $\frac{1}{4}$ in. long x 9/32 in. dia.; glass body with nickel plated copper alloy caps $\frac{3}{8}$ in. long; blowing time ± 60 minutes @ 135% rated current; vibration factor 500. | Line protection for D-C operation. | LF type 35 | 39A315 |
| FS ₂₀₁ | | FUSE: Same as FS ₂₀₀ . | Line protection for A-C operation. | | |

| | | | | | |
|-------------------|--|--|---|---------------|---------------------------|
| LM ₂₀₀ | 2Z5949 — — | PILOT LAMP: Bayonet base; 28 volts @ 100 milliamperes; glass bulb. | "D-C ON-OFF" indicator. | GE type 47 | 39A004 |
| LM ₂₀₁ | 2Z5952 — — | PILOT LAMP: Bayonet base; 6-8 volts @ 150 milliamperes; glass bulb; blue bead. | "A-C ON-OFF" indicator. | GE type 1820 | 39A011 |
| V-200 | 2J5R4GY OR 2J5U4G — — | TUBE: Electron; type JAN-5R5GY. TUBE: Electron; type JAN-5U4G. (VT-244). | Rectifier. | | |
| V-201 | 2J5R4GY OR 2J5U4G — — | TUBE: Same as V-200. | Rectifier. | | |
| V-202 | 2J5R4GY OR 2J5U4G — — | TUBE: Same as V-200. | Rectifier. | | |
| 200 | 2Z8659-6 — — | NOTE: The following items use a reference number instead of a reference symbol. TUBE SOCKET: High dielectric black bakelite body 3 1/64 in. thick x 1-7/64 in. dia.; eight solder lug contacts; steel mtg. plate 0.031 in. thick molded to body 9/64 in. from face of socket and having 2 holes of 5/32 in. dia. x 1 1/4 in. mtg. centers; unmarked. | Tube socket for tubes type JAN 5R4GY. | AP type MIP-8 | 6A035 |
| 201 | 2Z5991-7 — — | PILOT LAMP SOCKET: Bayonet type; metal body, fibre washer insulation; mounted by a U shaped spring steel frame 7/16 in. wide x 1 in. long (each arm) and 21/32 in. across (at base of U), bent at right angles; solder lug terminals at rear of assembly. | Socket for pilot lamps LM ₂₀₀ and LM ₂₀₁ . | DR type 80 | 86A026 |
| 202 | 3Z1939.1 — — 2Z6763-167 — — | FUSE POST: Type 4AG extractor post; mtg. hole 5/8 in. clearance, length under panel 2 1/4 in.; one solder lug terminal at rear and one solder lug terminal on side of case; finger operated knob; weight 24 gms. MOUNTING; RECTIFIER: Mounting Base MT-167/U for Rectifier Power Unit PP-32/AR; consists of rectangular metal frame; two rear hold down assemblies (right and left); two front clamp assemblies; four rubber shock-mounts; 19-11/16 in. of side angle to face of rear hold down assembly; width 4 1/8 in. between centers of rear hold down assembly pins; length 16-1/16 in. between centers of shockmount holes; width 3 1/2 in. between centers of shockmount holes. | Socket for line fuses FS ₂₀₀ and FS ₂₀₁ . Mounting base for Rectifier Power Unit PP-32/AR. | LF type 1212B | 6A215 SC-D-10382-B |

INDEX TO PARTS MANUFACTURERS

| <i>Manufacturer</i> | <i>Symbol</i> | <i>Manufacturer</i> | <i>Symbol</i> |
|---|---------------|-----------------------------------|---------------|
| American Phenolic Corp. | AP | Howard-Pacific | HP |
| Any manufacturer meeting the applicable American Standard Association specification | ASA | Industrial Condenser Corp. | IC |
| Crowe Nameplate & Mfg. Co. | C | International Resistance Co. | IRC |
| Cornell-Dublier Elec. Corp. | CD | E. F. Johnson & Co. | JO |
| Cutler-Hammer, Inc. | CH | Kurz-Kasch | KK |
| Capitol Hardware Mfg. Co. | CHM | Lamicold Fabricators Co. | LD |
| Cinch Mfg. Co. | CN | Litelfuse Inc. | LF |
| Centralab | CRL | McClintock Meter Co. | MCM |
| Chicago Telephone Supply Co. | CT | Micarta Fabricators | MF |
| Diehl Mfg. | DI | Micamold Radio Corp. | MIC |
| Drake Mfg. Co. | DR | Meisner Mfg. Co. | MN |
| Electrical Reactance Corp. | ELR | Midwest Molding | MM |
| Erie Resistor Co. | ER | Oak Mfg. Co. | OM |
| Electronic Winding Corp. | EW | R.C.A. Mfg. Co., Inc. | RCA |
| General Electrical Co. | GE | Standard Transformer Corp. | ST |
| The Hallicrafters Co. | H | S. W. Inductor Co. | SWI |
| Hedman & Co. | HC | Utah Radio Products Co. | U |
| Harry Davies Molding Co. | HD | Underwood Elec. Co. | UE |
| Hart & Hegeman Elec. Co. | HH | U.S. Rubber Co. | US |
| Howard B. Jones | HJ | Weber-Knapp Co. | WK |
| | | Allen Mfg. Co. | ALM |

SECTION VIII
DRAWINGS

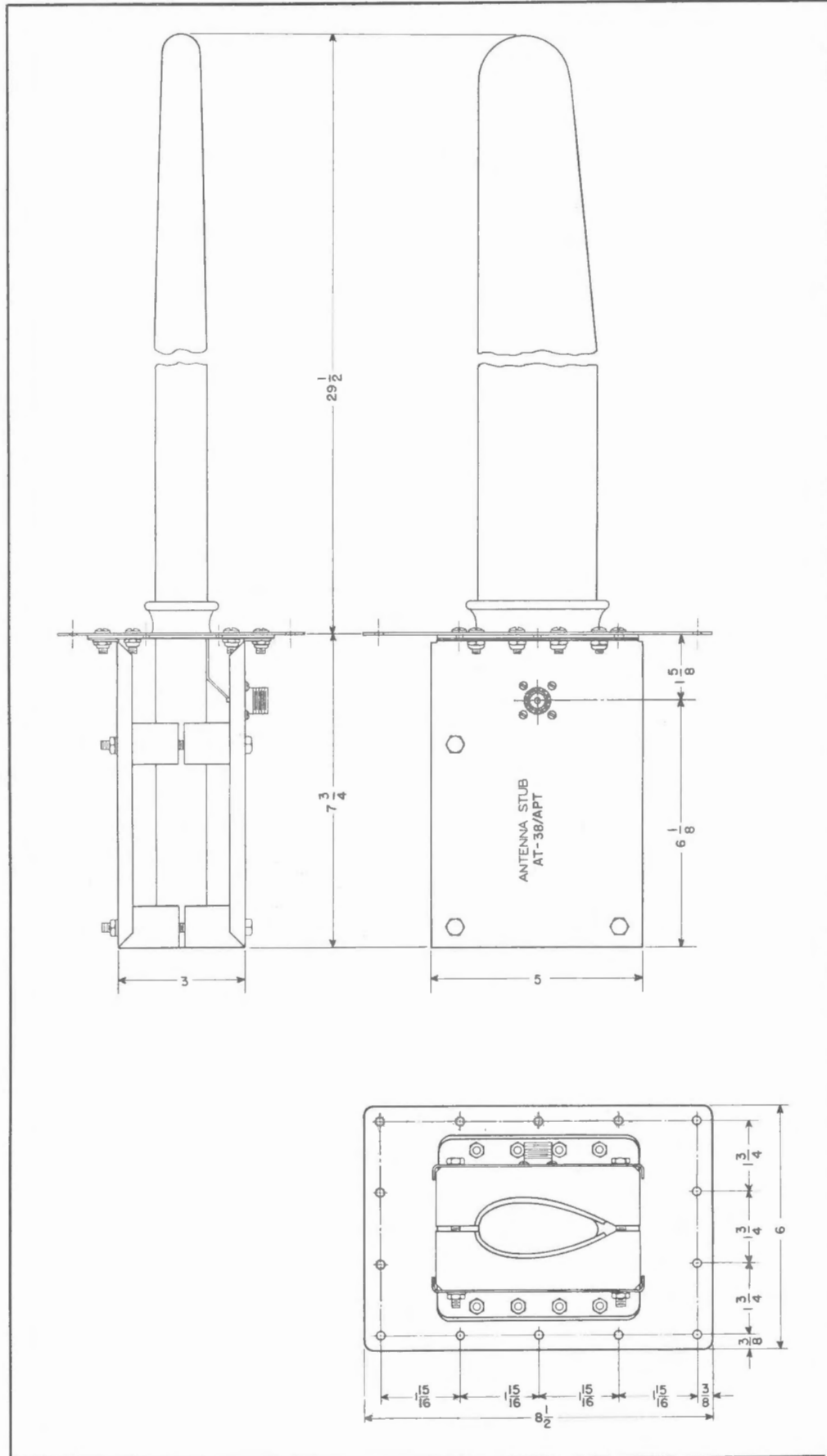


Figure 8-1—Antenna Stub AT-38/APT—Outline Dimensions

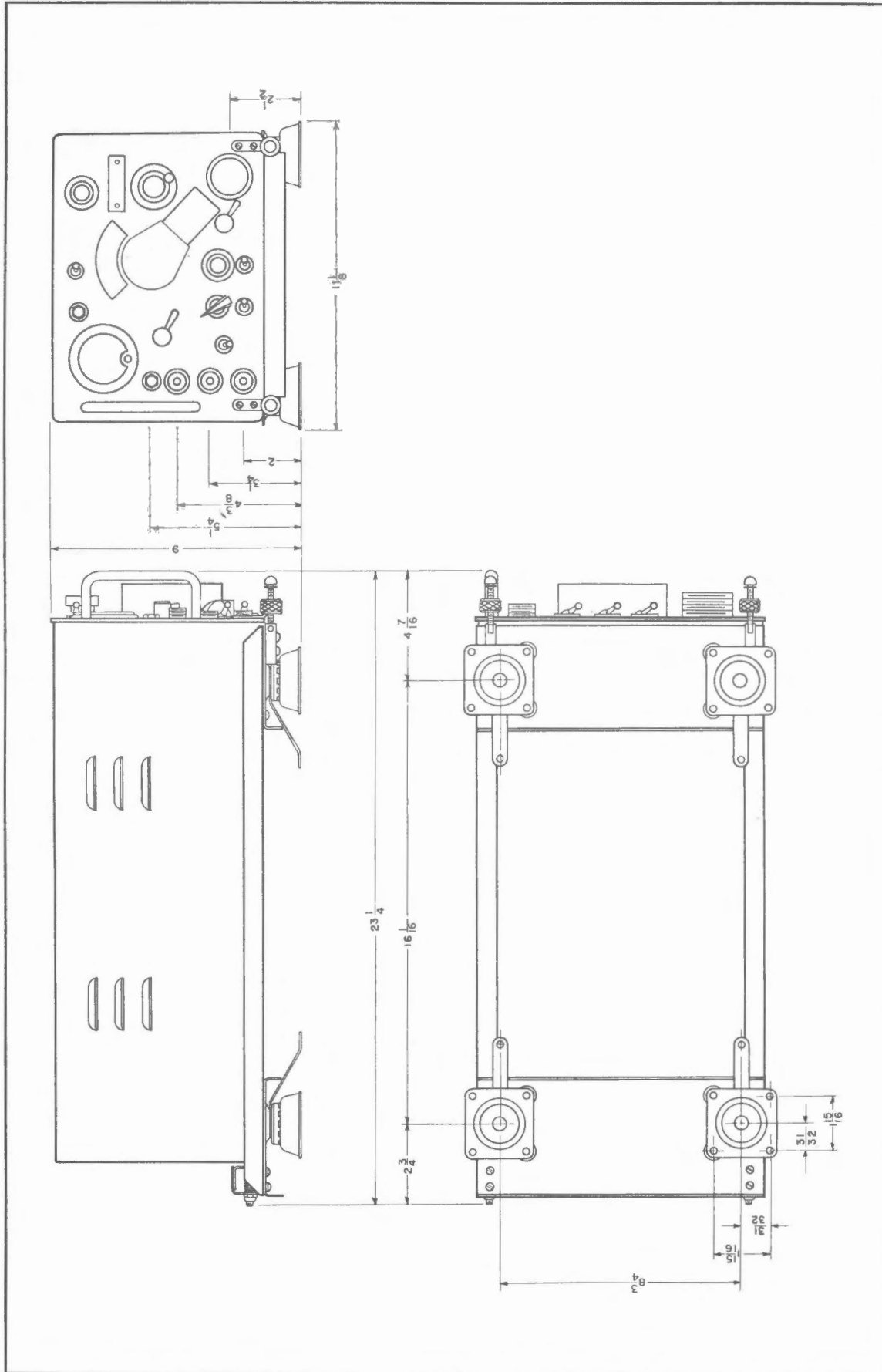


Figure 8-2—Radio Receiver R-44/ARR-5—Outline Dimensions

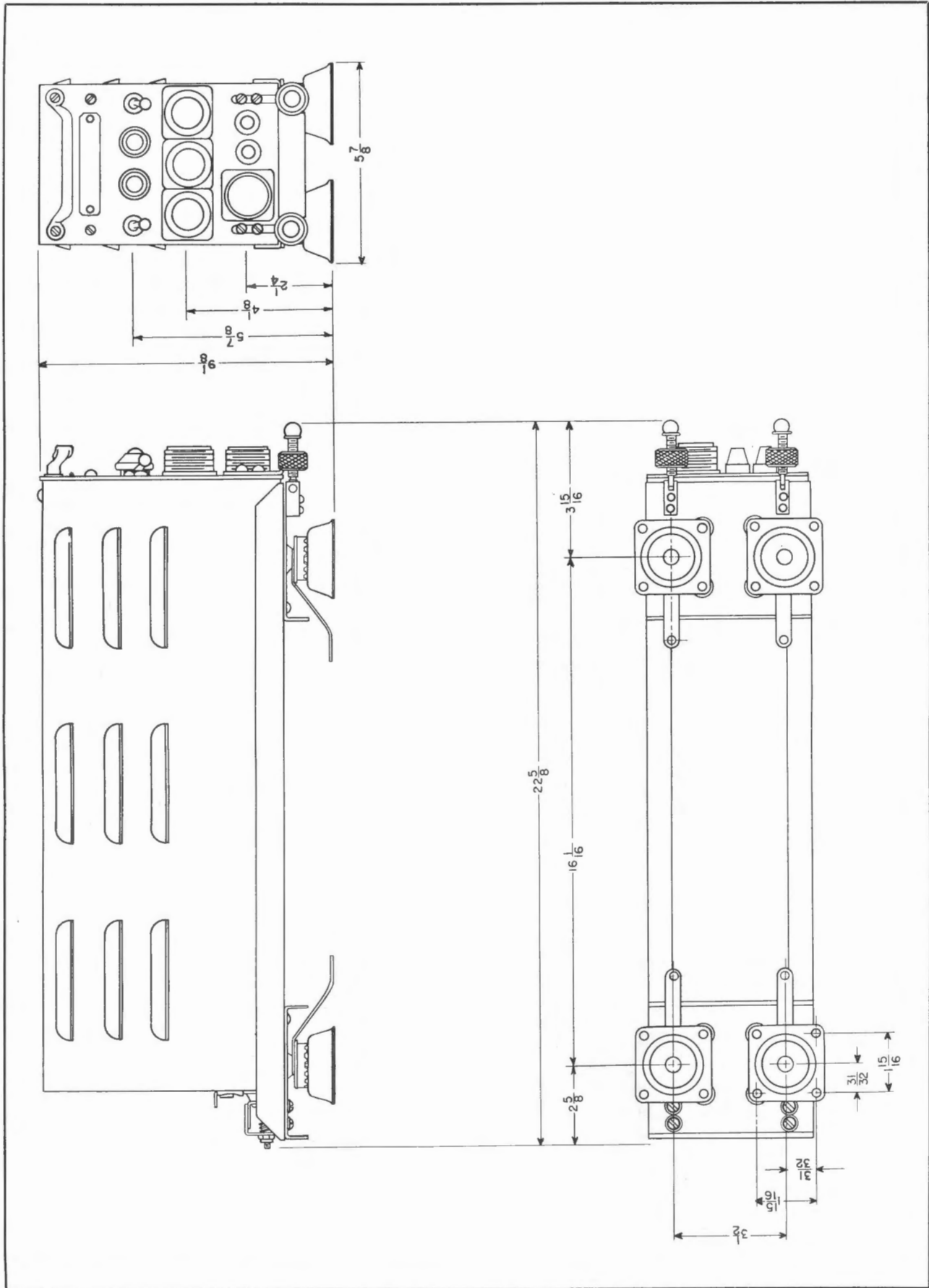
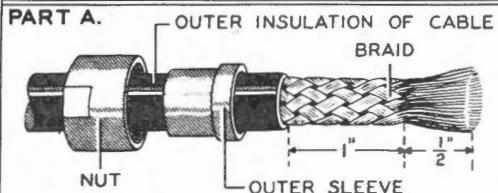


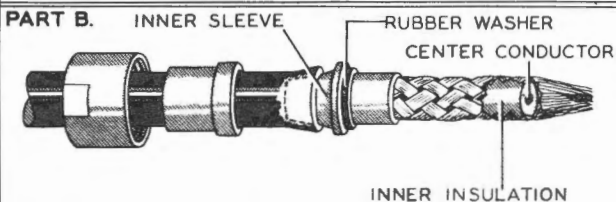
Figure 8-3—Rectifier Power Unit PP-32/AR—Outline Dimensions

INSTALLATION INSTRUCTIONS
RADIO FREQUENCY PLUG UG-21/U *

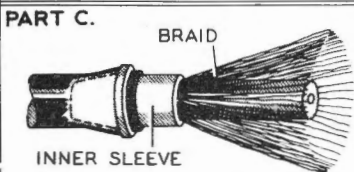
NOTE:- THESE PLUGS WILL CAUSE A MIS-MATCH OF IMPEDANCE IN THE CIRCUIT UNLESS THE INSTRUCTIONS GIVEN BELOW ARE FOLLOWED EXACTLY. EXTREME CARE MUST BE TAKEN IN CUTTING THE CABLE INSULATION SO THAT NO AIR GAPS EXIST BETWEEN THE INSULATION OF THE CABLE AND THE PLUG.



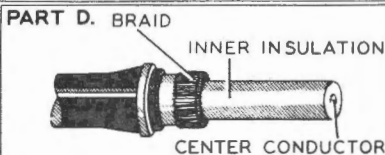
- STEP 1. SLIDE NUT AND OUTER SLEEVE OVER CABLE.
STEP 2. CUT OFF OUTER INSULATION $1\frac{1}{2}$ INCHES FROM END OF CABLE.
STEP 3. FAN SHIELD BRAID $\frac{1}{2}$ INCH IN FROM THE END.



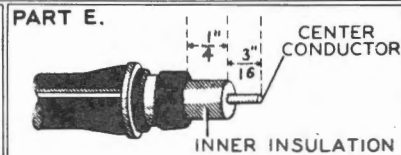
- STEP 4. CUT INNER INSULATION AND CENTER CONDUCTOR $\frac{1}{2}$ INCH IN FROM END OF BRAID.
STEP 5. TWIST FANNED END OF BRAID.
STEP 6. SLIDE INNER SLEEVE OVER BRAID AND UNDER OUTER INSULATION.
STEP 7. CHECK TO BE SURE RUBBER WASHER IS ON INNER SLEEVE.



STEP 8. SEPARATE AND FAN THE BRAID BACK TO END OF INNER SLEEVE.

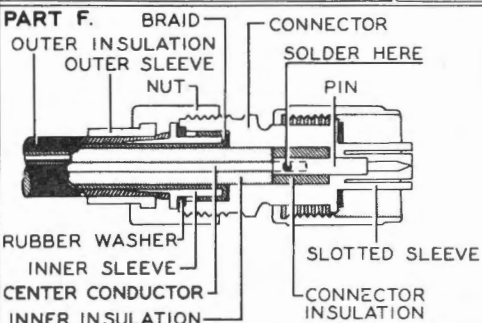


STEP 9. FOLD BRAID BACK OVER SLEEVE AND TRIM AS SHOWN.

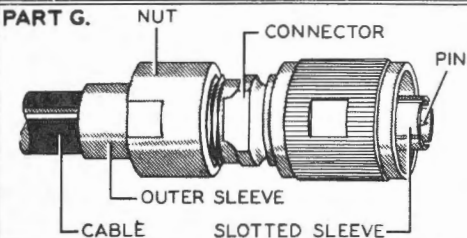


STEP 10. CUT INNER INSULATION AND CENTER CONDUCTOR EXACTLY TO DIMENSIONS SHOWN. BE SURE INSULATION IS CUT EVENLY AND AT A 90° ANGLE TO CENTER CONDUCTOR.

STEP 11. TIN CENTER CONDUCTOR



- STEP 12. REMOVE PIN FROM CONNECTOR AND FIT OVER CENTER CONDUCTOR. SOLDER THROUGH HOLES IN THE SIDE. REMOVE ALL SOLDER FROM EXTERIOR OF PIN.
STEP 13. FORM BRAID BY FORCING INTO CONNECTOR.
STEP 14. ASSEMBLE PIN IN PLUG TO CHECK POSITION. THE TIP OF THE PIN SHOULD BE FLUSH WITH SLOTTED SLEEVE OF CONNECTOR. SEE PART G.



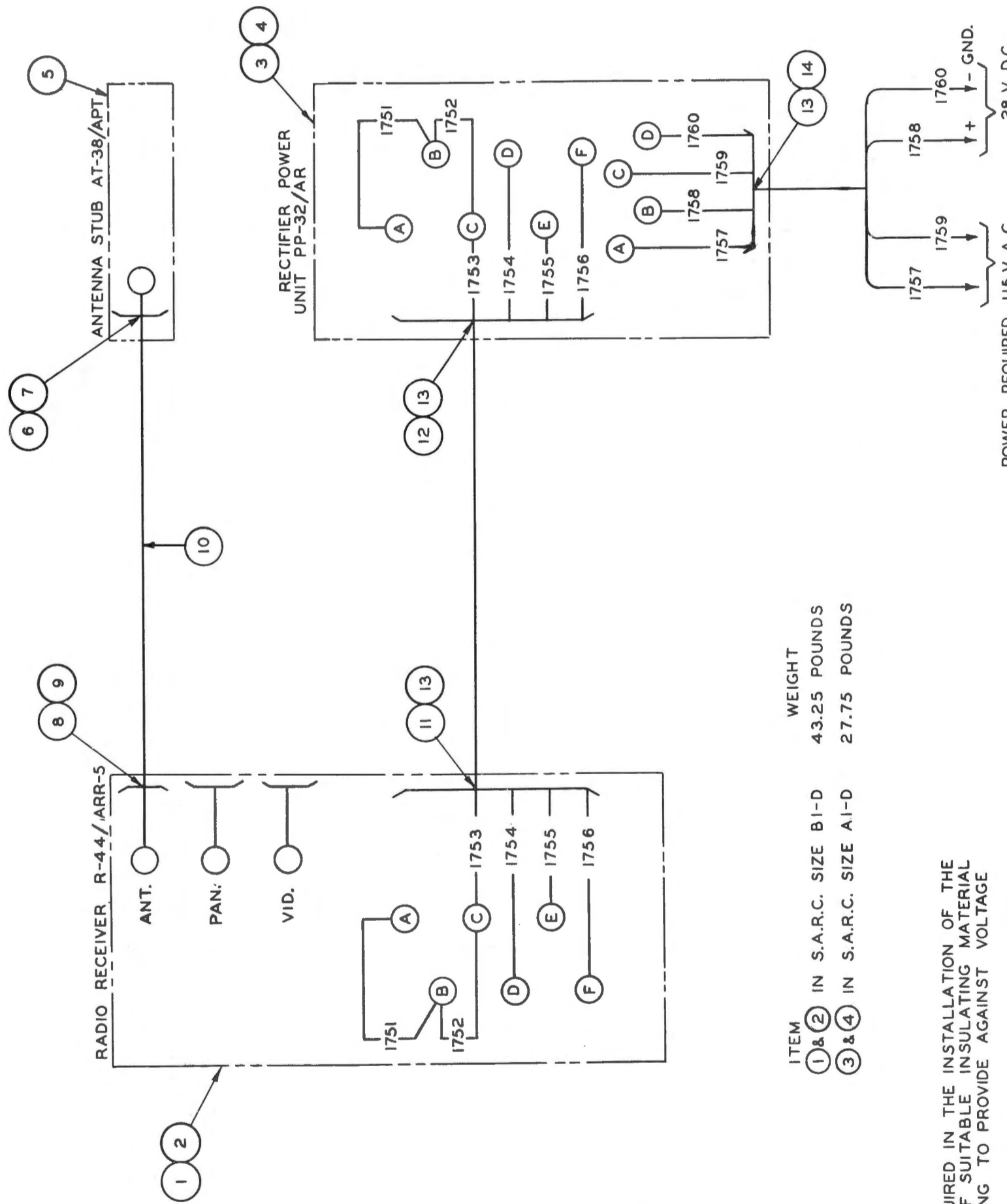
STEP 15. SLIDE CABLE INTO CONNECTOR AND TIGHTEN NUT WITH A WRENCH.

NOTE:- CONNECTOR MUST NOT BE ALLOWED TO TURN WHEN NUT IS TIGHTENED.

NOTE:- PLUG AND JACK ARE PUT ON CABLE IN THE SAME MANNER.

Figure 8-4—Radio Frequency Plug UG-21/U—Installation Instructions

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| REF. NOTE | WIRE NO. | MAXIMUM OPERATING VOLTAGE | MAXIMUM ALLOWABLE RESISTANCE (IN OHMS (71°C) PERMITTED) | MINIMUM CABLE SIZE |
|-----------|----------|---------------------------|---|--------------------|
| | 1751 | 0 | | AN20 |
| | 1752 | 0 | | AN20 |
| | 1753 | 0 | | AN20 |
| | 1754 | 28 V. DC. | 4.000 | AN20 |
| | 1755 | 6.3 V. AC. | 0.200 | AN20 |
| | 1756 | 270 V. DC. | 7.000 | AN20 |
| | 1757 | 115 V. AC. | 0.166 | AN20+⊗ |
| | 1758 | 28 V. DC. | 1.000 | AN20 ⊗ |
| | 1759 | 115 V. AC. | 0.166 | AN20 |
| | 1760 | 0 | 0.020 | AN20 |

NOTE:
1- ALL TERMINAL STRIPS REQUIRED IN THE INSTALLATION OF THE WIRING SHALL BE MADE OF SUITABLE INSULATING MATERIAL AND WITH TERMINAL SPACING TO PROVIDE AGAINST VOLTAGE BREAKDOWN.
2- RECTIFIER POWER UNIT PP-32/AR HAS RECEPTACLES FOR 3 PLUGS AN3108-22-5P TO CONNECT 3 RECEIVERS IF DESIRED.

ITEM WEIGHT
1 & 2 IN S.A.R.C. SIZE B1-D 43.25 POUNDS
3 & 4 IN S.A.R.C. SIZE A1-D 27.75 POUNDS

POWER REQUIRED 115 V. A.C.
TO OPERATE: 400/2600 CYCLES
1 RECEIVER 175 WATTS 8 WATTS
2 RECEIVER 250 WATTS 15 WATTS
3 RECEIVER 375 WATTS 20 WATTS
SEE NOTE 2

| ITEM | QUAN REQ'D | COMPONENT PARTS | | | SPECIFICATION OR INSTALLATION DRAWING |
|------|------------|-----------------------|--------------|------------------------|---------------------------------------|
| | | DESCRIPTION | TYPE NO. | EQUIPMENT NOMENCLATURE | |
| 1 | 1 | RADIO RECEIVER | R-44/ARR-5 | | H44G3448 |
| 2 | 1 | MOUNTING BASE | MT-171/U | | H44G3448 |
| 3 | 1 | RECTIFIER POWER UNIT | PP-32/AR | | |
| 4 | 1 | MOUNTING BASE | MT-167/U | | H44G3448 |
| 5 | 1 | ANTENNA STUB | AT-38/APT | | |
| 6 | 1 | RADIO FREQUENCY PLUG | UG-21/U | | H44D3867 |
| 7 | 1 | ADAPTER | UG-27/U | | |
| 8 | 1 | PLUG | PL-259 | | H43G11747 |
| 9 | AS REQ'D | ADAPTER | M-359 | | H43G11747 |
| 10 | AS REQ'D | RADIO FREQUENCY CABLE | RG-8/U | | |
| 11 | 1 | PLUG | AN3108-22-5S | | AN9534 |
| 12 | 1 | PLUG | AN3108-22-5P | | AN9534 |
| 13 | 3 | ADAPTER | AN3057-12 | | AN3057 |
| 14 | 1 | PLUG | AN3108-22-4S | | AN9534 |

Figure 8-5—Radio Receiving Set AN/ARR-5—Wiring Diagram

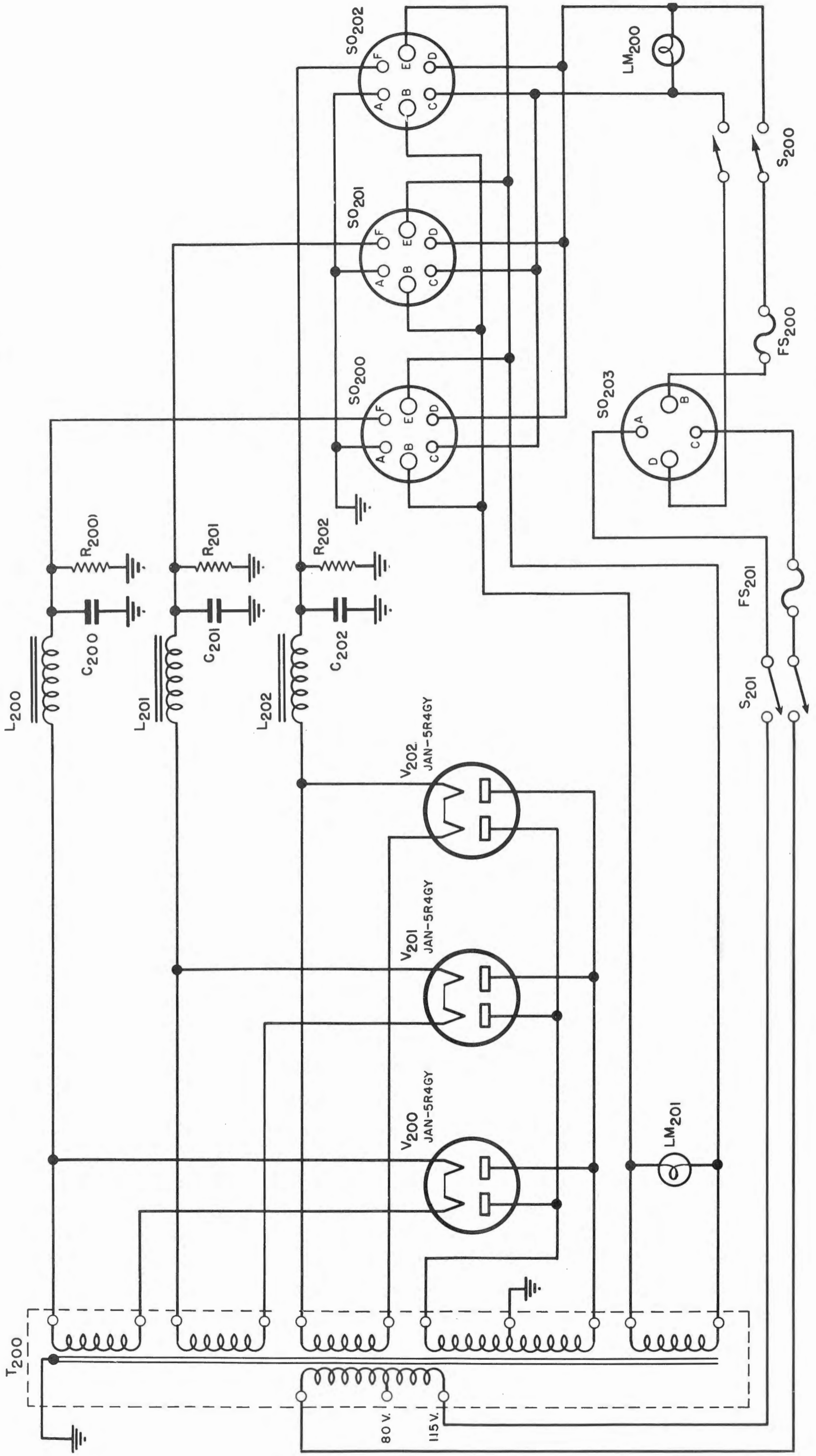
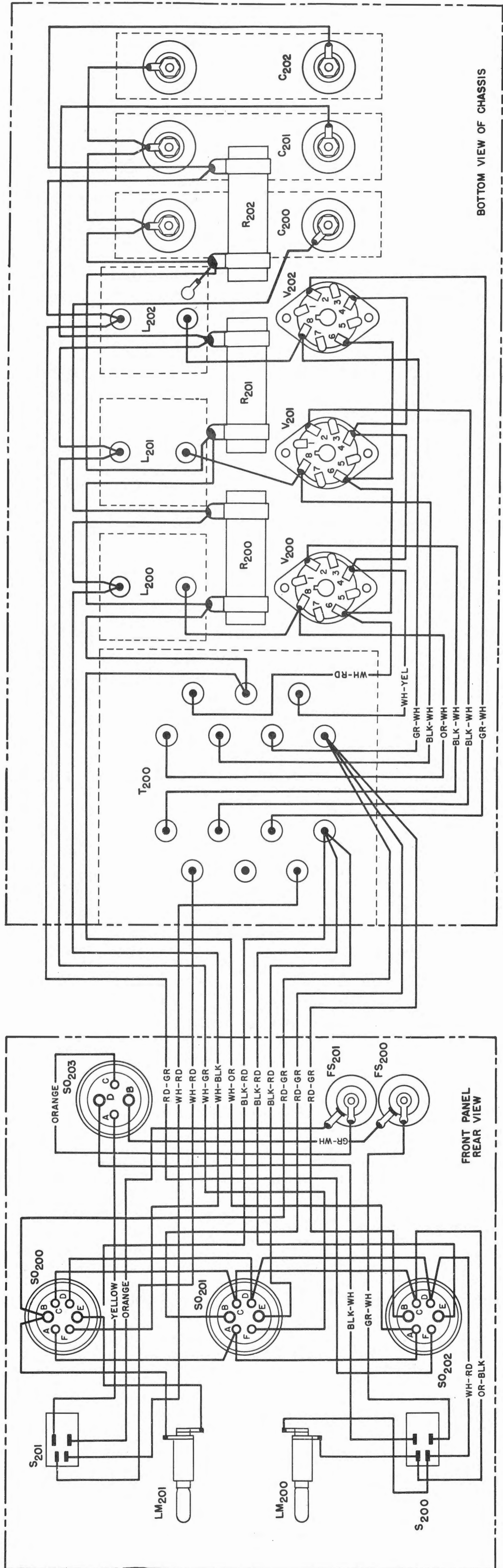


Figure 8-7—Rectifier Power Unit PP-32/AR—Schematic Diagram



BOTTOM VIEW OF CHASSIS

FRONT PANEL
REAR VIEW

Figure 8-9—Rectifier Power Unit PP-32/AR—Practical Wiring Diagram