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Colin Hinson

In the village of Blunham, Bedfordshire.

12P5-3SCR718-13

~~AN 16-40SCR718-13~~

**Handbook  
Overhaul Instructions**

**RADIO SET  
SCR-718-C**

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**A**

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## SECTION I

### DESCRIPTION AND LEADING PARTICULARS

#### 1-1. PURPOSE OF HANDBOOK.

1-2. This Handbook of Overhaul Instructions provides information concerning the inspection and overhaul of Radio Set SCR-718-C by Overhaul and Repair Departments (Bureau of Aeronautics) and Depots (Department of the Air Force)

#### 1-3. SCOPE OF HANDBOOK.

1-4. This handbook is intended for use with Radio Set SCR-718-C manufactured by Radio Corporation of America, Camden, New Jersey. Components of this equipment were procured under Air Force Contracts 2157-DAY-DE and 2209-DAY-

DE, and under Navy Contracts NXsa-4456 and NXsa 23763. More detailed information on the equipment supplied is contained in the Handbook of Service Instructions for Radio Set SCR-718-C.

#### Note

Information contained in the Handbook of Service Instructions will not be repeated in this publication except where required for clarity.

## SECTION II

### SPECIAL OVERHAUL TOOLS AND TEST EQUIPMENT

#### 2.1. INTRODUCTION.

2-2. This section contains listings of special overhaul tools and test equipment required to perform operations and tests described in following sections. These are in addition to general-purpose tools and test equipment normally used during overhaul, and to those listed in the Handbook of Service Instructions.

#### 2-3. SPECIAL TEST EQUIPMENT.

2-4. One special test set, Power Meter, RCA Type TX-1119, is required to check the peak power output of the transmitter.

#### 2-5. SPECIAL TOOLS.

2-6. No special tools are required for the overhaul of Radio Set SCR-718-C.

## SECTION III

### SPECIALIZED MAINTENANCE AND REPAIR

#### 3-1. INTRODUCTION.

3-2. This section provides instructions for the removal and replacement of special parts not usually attempted at Field and FASRon activities. The procedures are designed to afford the quickest method for removing a part from a component, or replacing a part in a component. After a special part has been replaced, appropriate performance checks should be made, as directed elsewhere in this section.

#### 3-3. REMOVAL AND REPLACEMENT OF SPECIAL PARTS.

3-4. U-H-F OSCILLATOR ASSEMBLY (RADIO RECEIVER AND TRANSMITTER BC-788-C).

3-5. REMOVAL. Refer to figure 3-1 and proceed as follows:

- a. Remove tube shield (1) and tube (2).
- b. Remove lower spring lock (3) from the adjusting screw of L129.
- c. Remove handle (4) from chassis.
- d. Unsolder white lead from C160 (5), and two brown leads from C157 (6).
- e. Remove shield (7) from u-h-f compartment (8).
- f. Remove four machine screws (9) that hold u-h-f compartment to chassis (heads of screws are inside u-h-f compartment).
- g. Remove six machine screws (10) that fasten front panel to chassis.
- h. Hold front panel (11) away from chassis, and lift u-h-f compartment (8) out of chassis.

3-6. REPLACEMENT. Replace u-h-f oscillator assembly by reversing removal procedure.

3-7. PERFORMANCE CHECK. After the u-h-f oscillator assembly has been replaced in Radio Receiver and Transmitter BC-788-C, check as directed in the performance check in Section VI of the Handbook of Service Instructions.

3-8. LOCAL OSCILLATOR AND MIXER ASSEMBLY (RADIO RECEIVER AND TRANSMITTER BC-788-C).

3-9. REMOVAL. Refer to figure 3-1 and proceed as follows:

- a. Remove tube shields (12) and tubes (13).
- b. Remove lower spring lock (14) from the adjusting screw of L131.
- c. Remove handle (15) from front of chassis.
- d. Unsolder blue lead from C113 (16), and brown lead from C112 (17), and unsolder bus (18) that joins pin 1 of X101 to T-102.
- e. Slip off shield (19), and remove four machine screws (20) that hold u-h-f compartment (21) to chassis (heads of screws are inside u-h-f compartment).
- f. Remove six machine screws (10) that fasten front panel (11) to chassis.
- g. Hold front panel (11) away from chassis, and lift u-h-f compartment (21) out of chassis.

3-10. REPLACEMENT. Replace local oscillator and mixer assembly by reversing removal procedure.

3-11. PERFORMANCE CHECK. After the local oscillator and mixer assembly has been replaced in Radio Receiver and Transmitter BC-788-C, check as directed in the performance check in Section VI of the Handbook of Service Instructions.

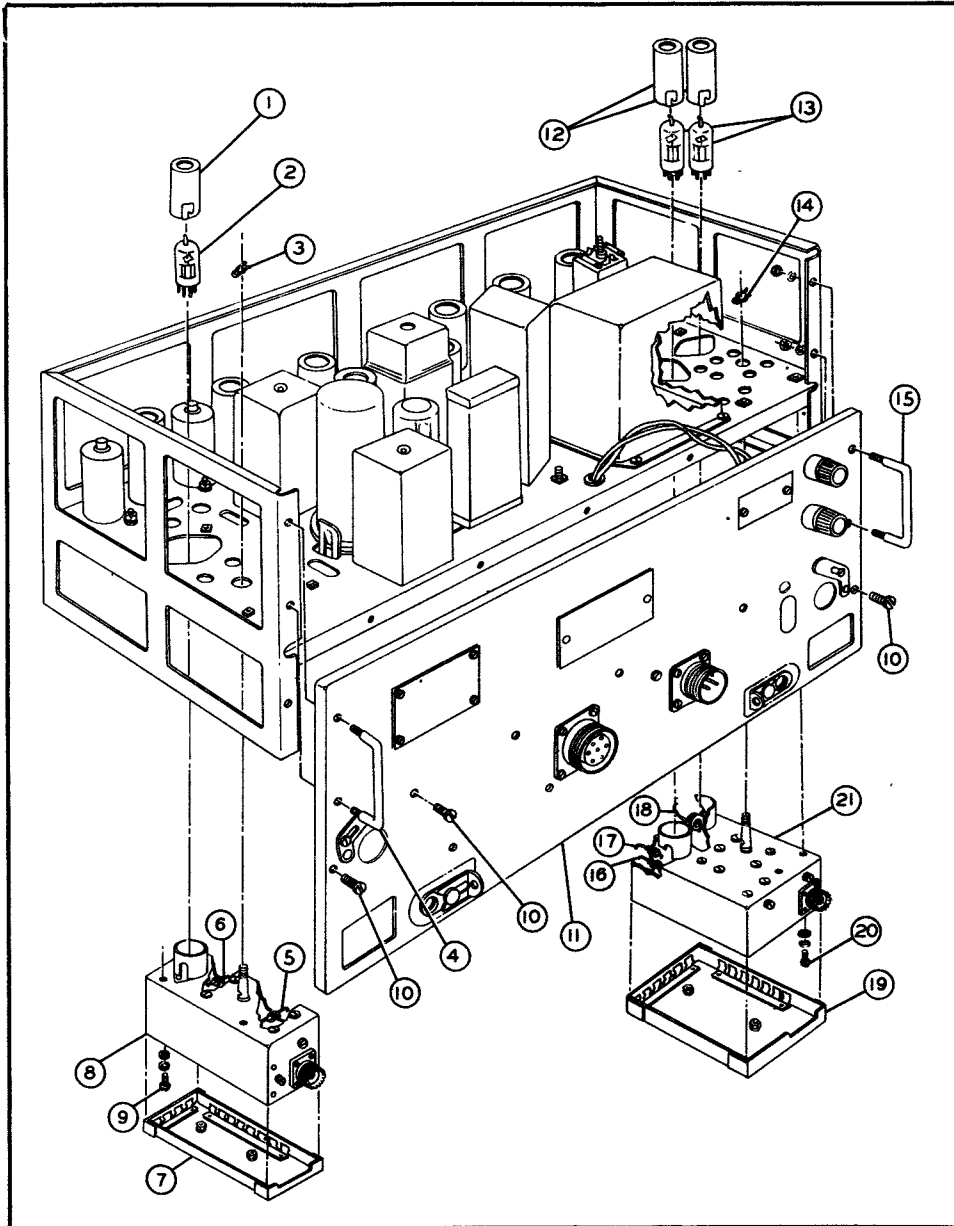


Figure 3-1. Radio Receiver and Transmitter BC-788-C, Exploded View



## SECTION IV

### DISMANTLING AND DISASSEMBLY

#### 4-1. INTRODUCTION.

4-2. This section describes dismantling procedures to prepare the equipment for overhaul. Since this equipment contains no mechanical items, no disassembly procedure will be required.

#### 4-3. DISMANTLING.

##### 4-4. RADIO RECEIVER AND TRANSMITTER BC-788-C.

4-5. Remove chassis from dust cover, and remove fuses, electron-tube shields, electron tubes, and

crystal Y101 from the chassis. Also remove the covers from the two u-h-f compartments.

##### 4-6. INDICATOR I-152-C.

4-7. Remove chassis from dust cover, and remove electron-tube shields, electron tubes, indicator lamps, and cathode-ray tube from the chassis. (See Handbook of Service Instructions for removal of cathode-ray tube).

##### 4-8. MOUNTING FT-455-A.

4-9. Remove the four holder-type vibration mounts from mounting rack.

## SECTION V

### CLEANING

#### 5-1. INTRODUCTION.

5-2. This section presents an outline of procedures for cleaning the dismantled components of Radio Set SCR-718-C.

5-3. Where a single cleaning procedure is permissible because of the similar nature of many parts, such parts wherever possible are grouped under common headings, alphabetically arranged, in paragraph 5-7. Component cleaning procedures are alphabetically arranged under paragraph 5-37. These latter procedures are in tabular form, arranged to facilitate reference by paragraph to the procedure for cleaning similar parts of each equipment.

5-4. Cleaning of finished surfaces is duly considered, in order that brush touch-up of minor damage to finish may conclude the cleaning procedure.

5-5. Reference in this section to "solvent" shall be understood as indicating a mixture comprising methylene chloride, 25%; perchlorethylene, 5%; and solvent, Federal Spec P-S-661, 70%, by volume. All referenced cleaning materials and protective agents are listed and identified in TABLE 5-1.

#### WARNING

Perform washing and rinsing operations involving solvent under a ventilated hood. Avoid breathing solvent vapor; wear a suitable mask when necessary. Also avoid continuous contact with solvent. Use goggles, gloves, and apron to prevent irritation due to prolonged contact. Change clothing that has become saturated with solvent.

TABLE 5-1  
CLEANING MATERIALS AND  
PROTECTIVE AGENTS

<i>Material</i>	<i>Specification</i>	<i>ASO Stock No.</i>
Solvent; a mixture by volume of: Methylene chloride 25 percent Perchloroethylene 5 percent Solvent; dry-cleaning 70 percent	MIL-M-6998  Fed. Spec O-T-236 Fed. Spec P-S-661	  R51-T-4459-200 R51-C-1326-75
Cloth: crocus, fine grade Cloth: cotton, non-linting Detergent: powder (Dreft) Paper: lens tissue  Paper: tissue, fine grade Tool: burnishing Trichloroethylene	   Fed. Spec UU-P-313  AN-O-T-631	     R41-T-3080 R51-T-5780

5-6. References to air jet or to compressed air in Section V signify a hand-operated air nozzle supplied with clean, dry, compressed air at a pressure of 25 to 28 psi, maximum, unless otherwise stated.

### WARNING

Goggles should be worn when using air jet to blow dust and dirt from equipment. Other persons should be warned away from hazardous area or working enclosure.

#### 5-7. SIMILAR PARTS.

#### 5-8. CABLE: COVERED.

a. Clean outer surface of rubber or vinylite-covered cables, or conduits of flexible vinylite, by wiping dirt from surfaces with solvent-moistened, lintless cloth.

b. Wipe dry, using dry, clean, lintless cloth.

c. Treat any connector terminations as directed in paragraph 5-12.

#### 5-9. CABLE: OPEN, LACED.

a. Remove dust and dirt, using soft-bristled brush in conjunction with air jet.

b. Treat connector terminations as directed in paragraph 5-12.

#### 5-10. CHASSIS, WIRED.

5-11. Wired chassis, containing terminal boards, resistor and capacitor assemblies and subassemblies, sockets, switches, relays, and other wired parts, are cleaned for inspection as follows:

### CAUTION

Blasting small coils, leads, and other delicate parts by too close an approach with the air jet nozzle should be avoided. Due caution in use of brushes on delicate parts is recommended.

### Note

When cleaning wiring and cables, note the original dress; and restore immediately upon completion of cleaning.

a. Clean all surfaces, parts, and wiring with soft-bristled brushes in conjunction with air jet.

b. Clean all fuse holders as directed in paragraph 5-22.

c. Clean all tube sockets as directed in paragraph 5-34.

d. Clean all connectors (except coaxial), as directed in paragraph 5-12.

e. Clean all coaxial connector contacts as directed in paragraph 5-13.

f. Clean glass and ceramic insulators as directed in paragraph 5-23.

g. Clean all relays as directed in paragraph 5-31.

h. Complete chassis cleaning by wiping down all finished surfaces with clean lintless cloth moistened with solvent.

i. Dry and polish these surfaces, using dry, clean, lintless cloth.

j. Make touch-up repairs on minor damage to finish.

k. Protect from dust, moisture, and physical damage, pending inspection.

#### 5-12. CONNECTORS, PLUGS OR RECEPTACLES.

a. Remove dust with air jet and nonmetallic brush.

b. Wash insulation and contacts with solvent applied with small camel's-hair brush.

**CAUTION**

Solvent should not be permitted to run into sleeves (or conduit) covering conductors attached to contact terminals of the insert.

c. Dry with air jet.

**5-13. CONTACTS, COAXIAL CONNECTOR.**

5-14. Clean these silver-plated contacts, including their insulating members, by wiping away dust and dirt with solvent-moistened lintless cloth. Then dry carefully, using clean, dry, lintless cloth.

**5-15. COVERS, DUST: LARGE.**

5-16. Clean dust covers too large for immersion in solvent baths as follows:

- a. Clean dust from all surfaces with air jet.
- b. Support cover over drip pan, and wash all surfaces with lintless cloth kept wet with solvent.
- c. Go over all surfaces with clean lintless cloth moistened with clean solvent.
- d. Dry in dust-free area or enclosure.
- e. Touch up any minor damage to finish.

**5-17. COVERS, DUST: SMALL.**

5-18. Clean dust covers small enough for immersion in solvent baths as follows:

- a. Blow away dust with air jet.
- b. Immerse in solvent bath and scrub all surfaces, holes, and recesses with nonmetallic brushes.
- c. Raise from bath and let drain.
- d. Rinse well in bath of clean solvent, and raise to drain and dry.
- e. Make touch-up repairs to minor damage to finish.

**5-19. FUSES, ENCLOSED.**

5-20. Clean the glass bodies and metal ferrules of these fuses by wiping dirt from all surfaces, using solvent-moistened lintless cloth. Wipe dry with clean lintless cloth.

**5-21. GASKETS, SEALS, OR OTHER ITEMS MADE FROM RUBBER OR NEOPRENE**

- a. Wipe away any grease spots with clean cloth.
- b. Immerse in bath of warm water containing 2 ounces of Dreft detergent per gallon, and wash clean with cloth.
- c. Rinse well in clean warm water.
- d. Dry with air jet.
- e. Protect from dust, grease, and high temperatures pending inspection.

**5-22. HOLDER, FUSE: EXTRACTOR POST.**

- a. Clean interior, using small swab of solvent-moistened lintless cloth over an orange stick.
- b. Wipe outer surfaces with solvent-moistened lintless cloth.
- c. Dry thoroughly with air jet.

**5-23. INSULATORS, GLASS OR GLAZED CERAMIC, OR PHENOLIC.**

5-24. Glass or ceramic terminal-post insulators and tube-cap insulators should be cleaned after parts to which they are attached have been cleaned. Proceed as follows:

- a. Wipe with clean, lintless cloth moistened with solvent.
- b. Wipe down carefully with clean, dry, lintless cloth.

**5-25. LAMPS, INDICATOR.**

5-26. Clean indicator lamps by wiping with solvent-moistened lintless cloth; then dry and polish with clean, dry, lintless cloth.

**5-27. MOUNTS, VIBRATION: HOLDER TYPE.**

5-28. Clean detached mounts as follows:

- a. Blow dust from surfaces with air jet.
- b. Wipe clean of any grease or remaining dirt, using solvent-moistened, lintless cloth.
- c. Make up washing bath by dissolving two ounces of detergent powder (Dreft) per gallon of warm water, immerse mounts, and agitate them in bath a few minutes. Raise and drain.
- d. Rinse mounts in warm-water bath, drain, and dry with air jet.

**5-29. RACKS, MOUNTING.**

5-30. Clean as directed in paragraph 5-15.

**5-31. RELAY K101.**

- a. Remove dust by careful use of air jet and soft-bristled brush.
- b. Clean dirty (not pitted or burned) contacts, using burnishing tool (ASO Stock No. R41-T-3080).

**Note**

Before using tool, clean its burnishing surface with alcohol. Do not allow fingers to touch this surface after cleaning, or prior to use.

**CAUTION**

Contact-supporting members should not be bent or forced beyond their normal operating limits while burnishing contacts.

c. Blow away any burnishing dust with air jet, operating the relay armature while blowing.

d. Wash all surfaces of all contacts with trichlorethylene (AN-O-T-631) applied with clean camel's-hair brush.

e. Dry, and remove whitish film at same time by passing small strips of clean white writing paper back and forth between closed contacts.

#### 5-32. SHIELDS, TUBE.

5-33. Clean as follows:

a. Wipe with solvent-moistened lintless cloth.

b. Dry with clean, dry, lintless cloth.

#### 5-34. SOCKETS, TUBE.

a. Use orange sticks dressed to wedge ends to remove any resin adhering to silver-plated contacts. Clean contacts, after removing any resin coating, by applications of small brush dipped in solvent.

### CAUTION

Metal tools should not be used to remove resin or other foreign matter (not including tropicalization) from silver-plated contacts of sockets. Damage to plating will result in possible equipment failure later on because of corrosion that is likely to follow. Existing corrosion on contacts should not be disturbed. Its presence indicates positive damage to plating, and necessity for tube-socket replacement.

b. Clean all surfaces with soft-bristled brush in conjunction with air jet.

c. Use clean, lintless cloth, moistened lightly with solvent, to remove any spots of foreign matter still adhering to socket body (or wafer) surfaces.

d. Dry all parts with air jet.

#### 5-35. TUBES, ELECTRON.

5-36. Tubes are cleaned for inspection as follows: (Observe WARNING below when cleaning cathode-ray tubes).

a. Wipe glass or metal envelope lightly, using clean, lintless cloth slightly moistened with solvent; avoid obliterating type marking.

b. Wipe side of tube base.

c. With soft-bristled brush, clean bottom of base and tube contacts.

### Note

Abrasives or metal tools should not be used to remove corrosion deposits which occasionally may be present on tube contacts. Corrosion here indicates damage to contact plating, and inspection will probably order replacement.

### WARNING

When cleaning cathode-ray tubes, guard against breakage. Wear goggles and gloves, and keep coat sleeves down over forearms for protection against fragments of flying glass. Obtain medical attention at once for any skin abrasion caused by a fragment of a broken tube. Coatings of fluorescent chemicals on interior faces of these tubes are toxic. Do not handle broken parts or fragments with bare hands. Dispose of tube pieces and fragments in a safe manner.

#### 5-37. COMPONENTS.

5-38. In the following paragraphs, instructions are given for cleaning the parts and dismantled components of the equipment.

#### 5-39. ANTENNA AT-4/ARN-1.

5-40. Clean antenna body and supporting stubs by wiping with a solvent-moistened lintless cloth and then drying with a dry lintless cloth. Be sure to clean the porcelain insulator thoroughly. Clean the coaxial connector as directed in paragraph 5-13. Make minor repairs to finish using AN-L-21 or AN-L-29 lacquer, or AN-E-7 or AN-E-3 enamel. Extensive damage to finish may require complete refinishing. Use two coats of the above-mentioned lacquer, or one coat of enamel.

### CAUTION

Do not paint the glazed ceramic insulator or allow paint to be spattered on it, as serious impairment in operating efficiency will result.

#### 5-41. INDICATOR I-152-C.

5-42. Clean as directed in TABLE 5-2 and paragraph 5-43.

TABLE 5-2  
CLEANING INDICATOR I-152-C

<i>Items To Be Cleaned</i>	<i>Procedure Paragraph</i>
Dust cover, large	5-15
Tube shields	5-32
Electron tubes (including cathode-ray tube)	5-35
Indicator lamp	5-25
Receptacles	5-12
Wired chassis	5-10
Porcelain and phenolic insulators	5-23
Tube sockets	5-34
Rubber gasket	5-21
Plastic window	5-43
Rubber visor	5-21
Bezel	5-17

**Section V**  
**Paragraph 5-43 to 5-50**

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5-43. WINDOW, PLASTIC. Clean the transparent protective window of the cathode-ray tube as follows:

- a. Wash in warm detergent bath (two ounces Dreft per gallon of water).
- b. Rinse in clean warm water.
- c. Dry with air jet.
- d. Polish with lens tissue.

5-44. MOUNTING FT-455-A.

5-45. Clean the detached shock mounts as directed in paragraph 5-27, and the mounting rack as directed in paragraph 5-15.

5-46. MOUNTING MT-14/ARN-1.

5-47. Clean the attached shock mounts by brushing with a soft-bristled brush dipped in detergent bath. Wash with clean water, and dry with air jet. Clean the mounting rack as directed in paragraph 5-15, taking care not to allow solvent to splash on the rubber inserts.

5-48. RADIO RECEIVER AND TRANSMITTER BC-788-C.

5-49. Clean as directed in TABLE 5-3 and paragraph 5-50.

5-50. RESONANT LINES. If contact surfaces of resonant lines are badly corroded, carefully remove corrosion by polishing gently with crocus cloth. Turn the appropriate adjusting screws so

that the shorting bars are moved to the extreme positions, so that corrosion can be removed from the lines at the points where they are normally set. After removing corrosion, blow out with air jet, and then wipe the surfaces carefully with a clean, dry, soft, lintless cloth. If lines are not badly corroded, use air jet and cloth as instructed above.

**TABLE 5-3**  
**CLEANING RADIO RECEIVER AND**  
**TRANSMITTER BC-788-C**

<i>Items To Be Cleaned</i>	<i>Procedure Paragraph</i>
Dust cover, large	5-15
Dust cover, small	5-17
Electron tubes	5-35
Receptacles	5-12
Coaxial connector contacts	5-13
Wired chassis	5-10
Fuses	5-19
Fuse holder	5-22
Porcelain and phenolic insulators	5-23
Relay	5-31
Tube shields	5-32
Tube sockets	5-34
Resonant lines	5-50

## SECTION VI

### INSPECTION

#### 6-1. INTRODUCTION.

6-2. This section contains procedures for inspection of dismantled SCR-718-C equipment for defects resulting from damage, wear, or deterioration. The procedures are arranged alphabetically by part name or subject matter, for easy reference. To avoid needless repetition, similar parts are grouped under one heading.

6-3. The suggested inspection procedures are designed to uncover defects which are most likely to be encountered in equipment subjected to normal usage. However, an activity or inspector may, from experience or because of unusual climatic or operational conditions, find it necessary to make more detailed inspection of certain parts or assemblies.

#### 6-4. DETAILED INSTRUCTIONS.

##### 6-5. ANTENNA AT-4/ARN-1.

6-6. The antenna should be inspected for the following defects:

- a. Physical damage to the surfaces, such as dents or breaks.
- b. Marred paint or silver plating.
- c. Cracked, chipped, or broken ceramic insulator.
- d. Damage to threads, center contact, or molded plastic insulation of cable connector.

##### 6-7. CABLES.

6-8. Inspect power, interconnecting, and antenna transmission cables as follows:

- a. Look for physical damage to outer surfaces, lacing, or flexible plastic conduit.
- b. Test for loose lacings.
- c. Inspect for defective connectors as directed in paragraph 6-19.
- d. Inspect solder connections to connector terminals, where possible, for loose connections, broken strands of wire, and excess solder.
- e. Look for damaged, or inadequate insulation at conductor terminations.
- f. See that each conductor bears a complete code number.
- g. Test for lack of continuity, shorted conductors, grounds between conductors and connector

bodies or cable shields, and discontinuity between shields and connector bodies. The conventional point-to-point continuity test is suggested as a means of locating these electrical defects.

#### Note

A megger test, to detect insulation defects in cables, is included in Section VII of this handbook.

##### 6-9. CAPACITORS, FIXED.

6-10. METAL-ENCASED TYPE. Inspect metal-encased capacitors for the following defects:

- a. Damage to case, such as dents or holes.
- b. Oil leakage at case seams or around terminals.
- c. Cracked or broken insulation at terminals.
- d. Loose, broken, or corroded terminals.
- e. Loose mountings.

6-11. MOLDED TYPE. Inspect molded capacitors for case damage such as cracks or breakage. Also look for loose, broken, or corroded leads.

6-12. CERAMIC TYPE. Inspect ceramic capacitors for body damage such as cracks or breakage; and for loose, broken, or corroded leads.

##### 6-13. CHASSIS, WIRED.

6-14. Inspect the receiver-transmitter chassis and indicator chassis frames for physical damage and corrosion. Continue the inspection by items as listed in TABLE 6-1.

TABLE 6-1  
INSPECTION OF WIRED CHASSIS

<i>Items To Be Inspected</i>	<i>Reference Paragraph</i>
Capacitors, fixed	6-9
Coils, air core and powdered-iron core	6-17
Connectors, cable	6-19
Holders, fuse: extractor post (receiver-transmitter only)	6-31
Potentiometers (indicator only)	6-35

TABLE 6-1 (Continued)

<i>Items To Be Inspected</i>	<i>Reference Paragraph</i>
Relay (receiver-transmitter only)	6-40
Resistors	6-42
Sockets, tube	6-46
Soldered connections	6-47
Switches (indicator only)	6-49
Terminal boards	6-51
Transformers and reactors, iron core	6-53
Wiring	6-63

6-15. Continue inspection of the receiver-transmitter wired chassis by carefully examining the u-h-f compartments, as follows:

- a. See that silver plating is not worn or tarnished.
- b. Check shorting bars on resonant lines for positive contact.
- c. Examine adjusting screws for damage to head or thread. Turn screws to test for binding or looseness.

6-16. Continue inspection of the indicator wired chassis as follows:

- a. Check the top cap that connects to V201 for cracked or broken molded plastic, and for deformed, loose, broken, or corroded contact member. Check the associated wire for damaged or deteriorated insulation, and for defective terminal connections.
- b. Check the spring clip which holds the bottom cover on the socket of V201 for looseness, deformation, and corrosion.
- c. Examine the contact of indicator lamp I201 for looseness, tarnish, and corrosion.

6-17. COILS, AIR CORE AND POWDERED-IRON CORE.

6-18. Inspect enclosed choke coils, r-f coils, and i-f transformers for the following defects:

- a. Physical damage to cases, such as dents or holes.
- b. Loose mountings or missing mounting hardware.
- c. Loose or broken terminals.
- d. Cracked or broken terminal boards.
- e. Damaged threads or slots on adjusting screws.

**Note**

Step e does not apply to the i-f transformers in this equipment, since they are pretuned and the adjusting screws are pinched or nipped and then sealed.

6-19. CONNECTORS, CABLE.

6-20. Inspect cable connectors, both plugs and receptacles, as follows:

- a. Look for broken or deformed connector shell, threaded coupling ring, and cable clamp.
- b. Carefully examine threads for damage.
- c. Inspect molded plastic for cracks, breaks, or signs of arcing.
- d. Examine contact pins and sleeves for deformation, corrosion, and damage to plating.
- e. See that there are no loose or missing contact pins and machine screws.

6-21. COVERS, DUST: LARGE.

6-22. Inspect component dust covers for the following defects:

- a. Deformation, punctures, and opened seams.
- b. Damage to finish, and corrosion.
- c. Damaged fastener devices.

6-23. COVERS, DUST: SMALL.

6-24. Inspect u-h-f compartment covers for deformation, loose handles, and loose, corroded, or deformed bonding strips.

6-25. CRYSTAL UNITS.

6-26. Inspect Y101 crystal units for the following defects: cracked or broken case, defaced name plate, loose or corroded contact pins, and poor solder connection at pin tips.

6-27. FUSES, ENCLOSED.

6-28. Inspect fuses for cracked or broken glass, loose or corroded terminals, and continuity. Be sure to use the low-resistance range for the continuity check; the resistance should be zero.

6-29. GASKETS, RUBBER.

6-30. Inspect rubber parts for deformation and damage (tears, creases, folds, or elongation), rough surfaces, imbedded foreign matter, and loss of resiliency. Check the latter by stretching or compressing moderately, noting any failure to return to original shape.

6-31. HOLDERS, FUSE: EXTRACTOR POST.

6-32. Inspect fuse holders and extractor posts for cracked or broken bodies, and for defective locking action. Look for corrosion or physical damage to ferrule contacts, and for loose, broken, poorly soldered, or corroded terminal connections.

6-33. LAMPS, INDICATOR.

6-34. Inspect these small lamps for loose, cracked, or broken glass envelope; internal darkening; corrosion of contact ring or base; and damage to insulation or base threads.

## 6-35. POTENTIOMETERS.

6-36. Inspect potentiometers for corrosion of shafts, cases, and other visible parts; loose mountings; and physical damage. Rotate to determine whether action is too rough, too loose, or too tight.

**Note**

Loosen lock nuts on R227, R237, and R240 before attempting to rotate these controls.

## 6-37. RACKS, MOUNTING.

6-38. The frames of the mounting racks are inspected as follows:

a. Look for deformation, corrosion, loose rivets, and loose studs.

b. Examine any threaded fasteners for damage to threads over complete length of travel.

6-39. Inspect vibration mounts, part of mounting racks, as follows:

a. Check metal parts for corrosion and deformation.

b. Examine the elastic composition members for deep cracks or other physical damage.

c. Check for loss of resiliency by distorting manually and noting return to normal position upon release. Sluggish return or failure to return completely to normal position indicates a defective mount.

## 6-40. RELAY K101.

6-41. Inspect relay K101 as follows:

a. Check mountings and mechanical parts for looseness, physical damage, and corrosion.

b. Inspect coils for looseness or corrosion (verdigris) particularly at points where leads emerge from coils, for loose leads, and for cuts, gouges, etc. Look for loose, broken, or charred insulation on coils.

c. Look for loose, broken, corroded, or poorly soldered terminals.

d. Examine bakelite on relay for cracks or breaks.

e. See that armature pivots and space between armature and pole faces are free of foreign matter. Manually operate armature to check for sluggish or erratic action.

f. Inspect relay contacts for dirt, misalignment, improper separation in the open position, and failure to make positive contact with wiping action in the closed position.

## 6-42. RESISTORS.

6-43. Inspect all resistors for cracked, broken, blistered, or charred bodies; and loose, broken, poorly soldered, or corroded terminal connections.

## 6-44. SHIELDS, TUBE.

6-45. Inspect all tube shields for marred finish, damage or deformation to shell, including locking grooves, and damaged or missing tube spring.

## 6-46 SOCKETS: TUBE.

a. Inspect all tube sockets for loose or missing bolts or nuts, cracked or broken body, and signs of arcing between contacts, or between contacts and chassis.

b. Examine sockets for broken, deformed, or corroded contacts; and loose, poorly soldered, broken, or corroded terminal connections.

## 6-47. SOLDERED CONNECTIONS.

**Note**

Soldered joints are as susceptible to trouble as many other parts of the equipment. Because of the great number of joints, thorough inspection is required to ensure normal operation and simplify trouble-shooting.

6-48. Inspect soldered connections as follows:

a. Look for cold-soldered or "rosin" joints. These joints present a porous or dull rough appearance. Check for strength of bond with the point of a tool; often the solder can be dislodged or readily crumbled. Test any rosin-covered joint — it is apt to be a poor one.

b. Examine for excess solder, protrusions from the joint, pieces adhering to adjacent insulation, and particles or droppings lodged between adjacent joints, conductors, or other parts.

c. Conversely, inspect for insufficient solder, i.e., wire at joint not entirely covered by solder. Also look for loose, unsoldered strands of wire protruding from conductor at joint, and insulation stripped back too far from joint, or badly frayed at joint.

d. Check for corrosion (verdigris) on copper conductor at joint, particularly under spaghetti sleeves. (This type of corrosion will eventually eat entirely through the copper.)

e. Try all conductors, to see whether any are partially or entirely broken off at solder joint.

## 6-49. SWITCHES.

6-50. Inspect power switch and range change switch as follows:

a. Check for loose mounting, loose or corroded terminals, and cracked, broken or charred insulating material.

b. Test switch for loose, rough, or erratic action.

## 6-51. TERMINAL BOARDS.

6-52. Inspect these parts for cracked, broken or charred surfaces; for loose, broken, poorly



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**Paragraph 6-53 to 6-64**

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soldered, or corroded terminal connections; and for loose or missing mounting hardware.

**6-53. TRANSFORMERS AND REACTORS, IRON CORE.**

6-54. Inspect power transformers and filter choke for the following defects:

- a. Damage to case, such as dents and holes.
- b. Loose mountings and missing hardware.
- c. Cracked or broken terminal insulators.
- d. Loose, broken, or corroded terminals.

**6-55. TUBES, ELECTRON.**

6-56. Electron tubes are inspected as follows:

a. Inspect envelope for cracked glass or dented metal, separation from base, and obliterated markings.

b. Check base for cracked, chipped, or broken body or key, and for charring of base between contacts.

c. Look for loose or missing top cap, and deformed, broken or misaligned base contacts. Check for corrosion or other damage to contact plating, and for poor solder connection at tips of contact pins.

**6-57. TUBE, CATHODE-RAY.**

6-58. Noting WARNING, inspect the KRT tube as directed in paragraph 6-55.

**WARNING**

There is danger from flying glass fragments when the envelope is broken and collapsed by the high vacuum. It is recommended that goggles and gloves be worn. Handle tube gently and rest it on soft material. Keep tools and hard objects away.

**6-59. VISOR, RUBBER.**

6-60. Inspect this component as directed in paragraph 6-29.

**6-61. WINDOW, PLASTIC.**

6-62. Inspect the plastic indicator window for cracks or tears, holes, discoloration, deep scratches, or numerous fine scratches or abrasions which reduce transparency. The center cap should not be dented and the paint should not be chipped.

**6-63. WIRING.**

6-64. Inspect open and laced wiring of chassis, terminal boards, and parts of equipment by checking insulation for physical damage and charring; wires in general for breakage, and for improper dress in relation to adjacent wiring or chassis; and all soldered connections for defects outlined in paragraph 6-47.

## SECTION VII

## REPAIR AND REPLACEMENT

**7-1. INTRODUCTION.**

7-2. This section contains instructions for the repair or replacement of worn, damaged, or defective parts. Such faulty parts are usually detected by visual inspection in Section VI, or by tests performed in Section IX, or XI. Included are only those repair and replacement instructions which are not obvious and those repairs which are economically advisable.

**7-3. GENERAL INSTRUCTIONS.**

7-4. Before any part which requires unsoldering is removed, a wiring diagram should be made. This diagram should show the color coding of the wires and the location of associated soldering points. In cases where lacing must be removed, or in high-frequency or video circuits, where lead dress may be critical, the routing of wires should be noted. If the connections which are to be unsoldered are tropicalized, this protective coating should be removed before using the soldering iron. For this cleaning purpose, use thinner such as cellulose nitrate dope and lacquer thinner, specification MIL-T-6094, but restrict its use to the contact only.

7-5. Repaired parts or replacement parts which are to be installed in the SCR-718-C equipment should be visually inspected as described in Section VI. If any of the following parts are repaired or drawn from stock for replacement purposes, they should also be inspected visually and then tested as described in the indicated paragraph: cables, paragraph 7-8; capacitors, paragraph 7-10; relay K101, paragraph 7-14.

7-6. After a critical part, such as a tunable coil, has been repaired or replaced, it will be necessary to adjust it and/or associated parts or circuits. The required adjustment procedures will be found in the Handbook of Service Instructions.

**Note**

The i-f transformers of SCR-718-C equipment are pretuned and sealed; therefore, they are not to be realigned.

**7-7. DETAILED INSTRUCTIONS.****7-8. CABLES.**

7-9. Repair or replacement of the equipment power, interconnecting, or antenna transmission cables can be accomplished as directed in the cable fabrication procedures in Section III of the Handbook of Service Instructions.

**7-10. CAPACITORS.**

7-11. Capacitors in the equipment which show signs of physical damage or deterioration, detected in Section VI, should be tested for insulation resistance. New capacitors drawn from stock for replacement purposes should be similarly tested. This applies to new capacitors of all types, but particularly to paper capacitors and to capacitors which have been stored under tropical conditions. The capacitor must be clean and dry before the test is performed; see Section V for cleaning instructions.

7-12. MICA AND CERAMIC DIELECTRIC TYPES. Measure the insulation resistance between the terminals of mica and ceramic capacitors, using a megohm bridge such as the Biddle 628-TA. The d-c potential used for the test should be at least 100 volts, but not greater than the rated voltage of the capacitor. Application of the test voltage should be limited to 2 minutes. The insulation resistance, measured within temperature limits of 20°C and 25°C (68°F and 77°F) and relative humidity limits of 0 to 80 percent, should be greater than 7500 megohms.

7-13. PAPER-DIELECTRIC TYPES. Measure the insulation resistance of paper-dielectric capacitors as described in paragraph 7-12. The specifications to be met are contained in two graphs, figure 7-1 for capacitors with nonmetallic cases and figure 7-2 for metal-cased capacitors. The latter type must be given an additional test for insulation resistance, that between each terminal and the metal case. This final measurement should be greater than 3000 megohms.

**7-14. RELAY K101.**

7-15. Any relay, either in the equipment or drawn from stock, which shows signs of physical damage or deterioration after inspection in Section VI, should be tested for acceptability in the following manner:

a. Measure the resistance of the coil; it should be no more than 6000 ohms at 25°C (77°F).

b. Test operating characteristics using a d-c supply of not more than 300 volts, a suitable variable resistance, and a 0 to 10-ma meter. The relay contacts should close in a positive manner at 5 ma and greater, and should open when current is reduced to not less than 1.75 ma.

c. With 7 ma coil current, the contact pressure should be greater than 30 grams.

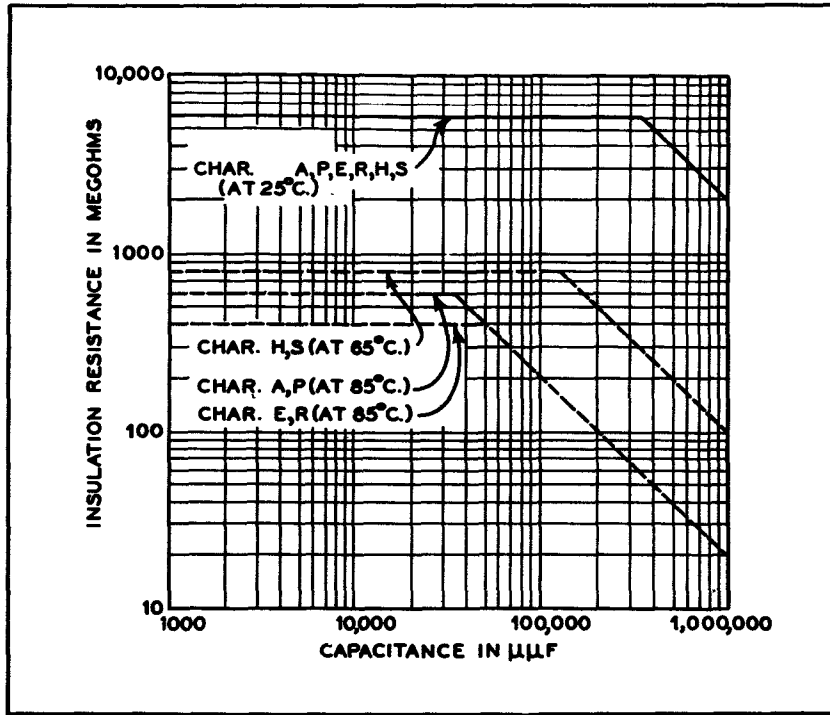


Figure 7-1. Insulation Resistance, Capacitors in Nonmetallic Cases

**CAUTION**

Maximum operating current is 8 ma;  
do not exceed this limit.

d. Test for leakage by applying 500 volts, ac, (rms) for one minute between the coil terminals, shorted together, and the relay frame.

7-16. RETROPICALIZATION.

7-17. Moisture and fungi-resistant coating materials, Spec JAN-C-173, should be applied to portions of the equipment where the original protective coating has been disturbed or has deteriorated, as directed in AFTO No. 16-1-41 and/or JAN-T-152.

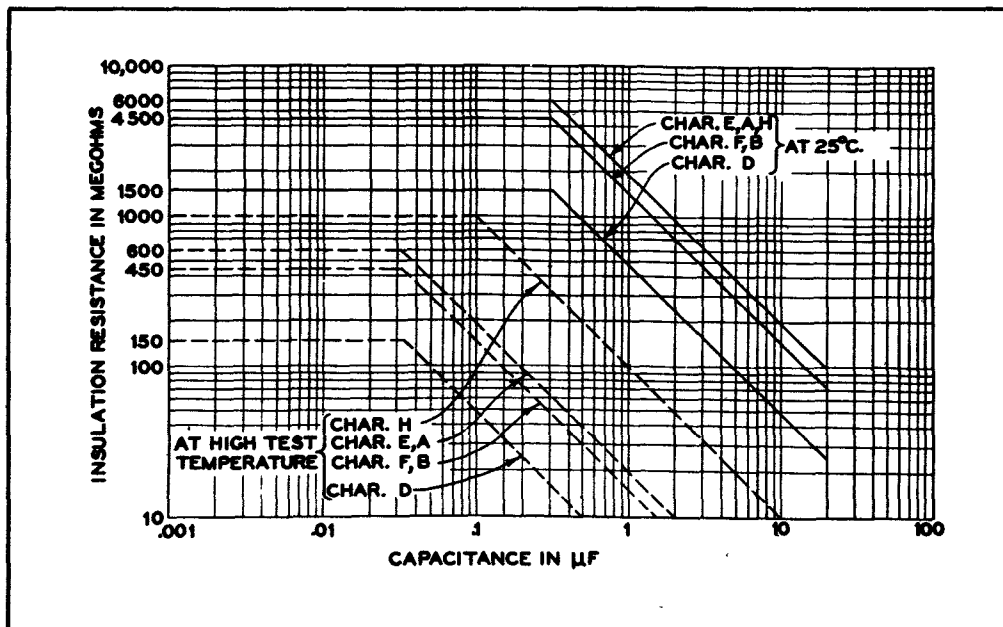


Figure 7-2. Insulation Resistance, Capacitors in Metal Cases

## SECTION VIII

### REASSEMBLY AND TESTING OF SUBASSEMBLIES AND ASSEMBLIES

#### 8-1. INTRODUCTION.

for the overhaul of Radio Set SCR-718-C, as indicated in paragraph 4-1, no reassembly procedures are required.

8-2. Since no disassembly procedures are required

## SECTION IX

### REASSEMBLY AND TESTING OF COMPONENTS

#### 9-1. INTRODUCTION.

9-2. This section contains instructions for reassembling the dismantled components of the equipment and for tests to be performed on each component. When instructions indicate that repairs to damaged tropicalization finishes are to be made, AFTO No. 16-1-41 should be followed, using Moisture and Fungus Resistant Coating Materials, Spec JAN-C-173.

9-3. As each component is reassembled, it should be mounted and interconnected in a bench-test setup for tests and adjustments. The tests of the components will consist of the performance checks given in Section VI of the Handbook of Service Instructions. In cases where a component must be subjected to a special test, such test will follow the performance check.

9-4. Insofar as possible, all tubes should be tested in a dynamic mutual-conductance tube tester, to determine suitability for re-use. Any tubes with low transconductance should not be used (or low emission in the case of rectifiers).

#### 9-5. REASSEMBLY.

#### 9-6. INDICATOR I-152-C.

9-7. Install electron tubes, electron-tube shields, cathode-ray tube (see Handbook of Service Instructions), and indicator lamp in the indicator chassis. Place top cap on V201 and see that molded plastic cover is in place on bottom of V201 tube

socket and that spring-metal strip holds the cover in place. Repair damage to tropicalization as directed in paragraph 9-2. Insert chassis in its dust cover.

9-8. TESTS. Check operation as directed in the performance check for Indicator I-152-C in Section VI of the Handbook of Service Instructions.

#### 9-9. MOUNTING FT-455-A.

9-10. Replace the four holder-type vibration mounts on mounting rack.

#### 9-11. RADIO RECEIVER AND TRANSMITTER BC-788-C.

9-12. Install electron tubes, crystal Y101, electron-tube shields, and fuses (one active, one spare) in the receiver-transmitter chassis. Fasten tube clamp on V110, and be certain that clamping devices for V113 and Y101 grip the tube and crystal respectively. Repair damage to tropicalization as directed in paragraph 9-2. Insert chassis in its dust cover.

9-13. TESTS. Check operation as directed in the performance check for Radio Receiver and Transmitter BC-788-C, in Section VI of the Handbook of Service Instructions. In addition, measure the peak power output of the transmitter, using suitable test equipment such as RCA Power Meter, Type TX-1119. The minimum acceptable values are 7 watts on the times-one range and 5 watts on the times-ten range.

## SECTION X

### FINAL REASSEMBLY

#### 10-1. REASSEMBLY INSTRUCTIONS.

10-2. Because of the physical make-up of Radio Set SCR-718-C, final reassembly of components must be accomplished before performing tests in

Section IX. For this reason, instructions for final reassembly of the equipment are given where required in Section IX, and are not presented in this section.

## SECTION XI

### INSPECTION AND TESTING

#### 11-1. INTRODUCTION.

11-2. This section contains instructions for inspection and testing of newly overhauled Radio Sets SCR-718-C. These instructions include careful examination of the components to be sure that they are complete and undamaged, and comprehensive checks of every function of the radio set. Minimum performance values and acceptable tolerance data are included in the check procedures.

11-3. It is assumed that each component has passed rigid requirements in a bench-test setup. therefore, a final test of the complete equipment should result in normal indications throughout the prescribed performance chart.

#### 11-4. PRELIMINARY INSPECTION.

11-5. The reassembled equipment must be visually inspected as follows:

a. Check each component for scratches, dents, and other damage which may have occurred during reassembly or in subsequent handling.

b. See that front-panel hardware of receiver-transmitter is complete. This includes: component name plate, second name plate which should read FUSES AND TAP ARRANGED FOR 115 VOLT OPERATION, and covers for adjustment screws A, C, R, and T. See that active and spare fuses are in place.

c. See that front-panel hardware of indicator is complete and firmly fastened. This includes:

two pointer knobs, two knurled knobs, indicator lamp, and small bracket with hole for safety wire, which mounts below scale switch.

d. See that covers are in place on the two u-h-f compartments of the receiver-transmitter, the insulating cover is in place on bottom of V201, and all tube shields are correctly installed.

e. Make sure that all repairs and replacements made during overhaul are satisfactory, and see that all required changes and modifications to be made during overhaul have been completed.

#### Note

Marking of equipments required by Government T.O.'s or other instructions to indicate overhaul or the incorporation of changes shall be applied during inspection and test (if not previously applied to subassemblies, assemblies, or components during overhaul and reassembly).

#### 11-6. TESTING.

11-7. As a test of performance, proceed with the routine check in Section V of the Handbook of Service Instructions. The trouble-reference column need only be used in the event of abnormal indications, in which case the trouble can be localized quickly and the inspection may proceed. Do not operate the equipment for a period longer than 5 minutes with the transmitter improperly

terminated. Although Antenna AT-4/ARN-1 constitutes a proper termination for the transmitter, its use in the service shop is not recommended because of undesirable radiation. Test Set TS-10B/APN, TS-10C/APN, or TS-23/APN is recommended, since each provides a nonradiating termination for the transmitter.

11-8. When the performance of the equipment is known to be satisfactory, a 2-hour run-in test should be performed, using Test Set TS-23/APN so that the B supply voltage may be metered. The chassis should be in their respective dust covers for this test. The circle size and pulse height should be observed periodically for undue fluctuation. At the end of the 2-hour period, the loop sensitivity check in the Handbook of Service In-

structions should be repeated. This completes the final check.

#### **11-9. FINAL INSPECTION.**

11-10. After tests and adjustments are completed, perform the following inspection:

- a. Ascertain that lock nuts are tight on R227, R237, and R240.
- b. See that alignment tool and Allen wrench are in their respective holders.
- c. See that adjustment covers are fastened over adjustment holes.
- d. Test chassis and dust covers for snug fit. Slide or turn dust-cover fasteners and see that they are secure. Safety-wire two slide fasteners on receiver-transmitter.

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