

# TM 9-1430-254-34

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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DS AND GS MAINTENANCE MANUAL:  
ACQUISITION ANTENNA-RECEIVER-TRANSMITTER GROUP  
(NIKE-HERCULES AND IMPROVED NIKE-HERCULES  
AIR DEFENSE GUIDED MISSILE SYSTEM AND  
NIKE-HERCULES ANTI-TACTICAL BALLISTIC MISSILE SYSTEM)

This manual was downgraded to Unclassified by Change 2.

This copy is a reprint which includes current  
pages from Changes 1 through 8.

*C9 POSTED*

*C10 POSTED 11-6-85*

*HEADQUARTERS, DEPARTMENT OF THE ARMY*  
*DECEMBER 1959*

## WARNING

### HIGH VOLTAGE

is used in the operation of this equipment

### DEATH ON CONTACT

may result if personnel fail to observe safety precautions

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Normally, repairmen should not be permitted to work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and is competent in administering first aid. When the Ordnance-maintenance technician is aided by operators, he should warn them about dangerous areas.

Whenever possible, power to the equipment should be cut off before beginning work on equipment. Particular care must be taken to ground any capacitor likely to hold a dangerous potential. When working inside the equipment after the power has been turned off, always ground every part before touching it.

Care should be taken not to contact high-voltage connections or 120-volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, only one hand should be used for working on electronic equipment. This precaution reduces the probability of current flowing through vital organs of the body, thereby causing fatal injuries.

### EXTREMELY DANGEROUS POTENTIALS

greater than 500 volts exist in the following units:

**Warning:** Potentials less than 500 volts may cause death under certain conditions; therefore, reasonable precautions should be taken when working in all units of the acquisition radar system.

Acquisition antenna-receiver-transmitter group:

Acquisition modulator

Acquisition receiver-transmitter

## Section II. DATA

### 8. Physical Data

The height of the LOPAR antenna-receiver-transmitter group is 17 feet 9 inches from the ground to the top of the antenna assembly. The outermost rotating member is 8 feet from the center of rotation. Table IV lists the un-

crated measurements and weights for major units of this group.

### 9. Electronic Data

Electronic data for the LOPAR antenna-receiver-transmitter group is contained in TM 9-1430-250-20/1 or TM 9-1430-250-20/5.

Table IV. Physical Data

Unit	Length (feet)	Width (feet)	Height (feet)	Diameter (feet)	Weight (pounds)	Cubical measure- ment (cubic feet)
Acquisition antenna	16	5	6		820	480
Acquisition antenna pedestal			2½	3½	483	24
Acquisition modulator			2½	3½	282	23
Acquisition receiver-transmitter			3	3½	355	25
Antenna pedestal leg	6	2½	7½		(ea) 187	120

## Section III. DIFFERENCES AMONG MODELS

### 10. General

a. There are differences among models that affect maintenance procedures. These differences exist because of production changes not covered by MWO changes. This manual provides detailed coverage for differences among models in the section covering the materiel affected.

b. Brief descriptions of these differences among models are contained in (1) through (6) below.

- (1) LOPAR antenna-receiver-transmitter group 8173713 (fig. 2) is used in system serial numbers 1001 through 1020. LOPAR antenna-receiver-transmitter group 9000228 (fig. 2) is used in system serial numbers 1021 and above. This difference among models exists because of major modifications to the acquisition antenna pedestal 8513363. The old and new pedestals are not interchangeable because of the increased reliability with the new units. Antenna pedestal 8513363 (fig. 61) is used in system serial numbers 1001 through 1020, and antenna pedestal 9002671 (fig. 62) is used in system serial numbers 1020 and above. Changes to antenna pedestal 8513363

are described in (a) through (f) below.

- (a) Acquisition antenna drive 8515267 (fig. 75) is replaced with acquisition antenna drive 8513894.
- (b) AC motor 8515037 (fig. 75) is replaced with ac motor 9010200 or 9017218.
- (c) Gear assembly 7616015 (K, fig. 77) is replaced with speed reducer gear assembly 8513899.
- (d) Gear assembly 7616014 (J, fig. 77) is replaced with speed reducer gear assembly 8513903.
- (e) Dial (fig. 61) is removed.
- (f) Dust seal cover (fig. 89) is replaced with dust seal covers (fig. 90).
- (2) Acquisition RF power supply control 9000009 (fig. 103) is used in system serial numbers 1001 through 1145, and acquisition RF power supply control 8158120 (fig. 116) is used in system serial numbers 1146 and above. An adjustable bias supply is added to RF power supply control 9000009 in series with the noise meter. Physical appearance of the acquisition RF power supply control (fig. 103) is changed by addition of a METER

ZERO adjustment (fig. 116). These two units are interchangeable.

- (3) Centrifugal fan 8516183 (fig. 120) is used in system serial numbers 1001 through 1058, and centrifugal fan 9010088 is used in system serial numbers 1059 and above. This change was made to provide a blower with an air-flow switch instead of a pressure switch. These fans are interchangeable and fan 8516183 will be used for replacement until the supply is exhausted.
- (4) Acquisition antenna 9000289 is used in system serial numbers 1001 through 1070, and acquisition antenna 8158132 is used in systems 1071 and above. This difference among models exists because of replacement of the elevation scan hydraulic system with an electro-mechanical system. The two acquisition antennas are interchangeable. Changes to acquisition antenna 9000289 are described in (a) through (d) below.
  - (a) Hydraulic control unit 8607284 (fig. 14) is replaced with electro-mechanical control box 9007806 (fig. 16).
  - (b) Primary actuator 8011416 (fig. 23) is replaced with primary actuator 8159580 (fig. 27).
  - (c) Secondary actuator 8011415 (fig. 23) is replaced with secondary actuator 8159579 (fig. 27).
  - (d) The hydraulic hoses and tube assemblies (fig. 18) are removed from the acquisition antenna. Primary actuator cable 8158045 (fig. 16) and secondary actuator cable 8158046 are added for interconnecting the actuators and electro-mechanical control.
- (5) (Deleted).
- (6) The LOPAR antenna-receiver-transmitter group used in the Improved

NIKE-HERCULES system differs from that used in the basic NIKE-HERCULES system. This difference exists because of certain components that are peculiar to the improved system. These peculiar components are listed in (a) through (d) below.

- (a) LOPAR antenna-receiver-transmitter group 9156627 (fig. 2.1).
- (b) Acquisition antenna 9156580 (1, fig. 2.1).
- (c) Acquisition antenna pedestal 9156545 (fig. 96.2).
- (d) Acquisition-receiver-transmitter 9156628 (fig. 126.1).
- (7) LOPAR antenna-receiver-transmitter group 9996347 (fig. 2.1) is used in selected systems having Bell System TD-2 rejection capabilities.
- (8) Acquisition receiver-transmitter 10185056 (fig. 126.1) is used in selected systems having TVI rejection capabilities.

## 11. MWO Difference Among Models

a. There are differences among models that exist because of MWO changes to selected basic NIKE-HERCULES systems.

b. A brief description of these differences are contained in (1) through (4) below.

- (1) LOPAR antenna-receiver-transmitter group 9000228 (fig. 2) is replaced with LOPAR antenna-receiver-transmitter group 9156627 (fig. 2.1).
- (2) Acquisition antenna 8158132 (fig. 7) is replaced with acquisition antenna 9156580 (1, fig. 2.1).
- (3) Acquisition antenna pedestal 9002671 (fig. 62) is replaced with acquisition antenna pedestal 9156545 (fig. 96.2).
- (4) Acquisition-receiver-transmitter 8515397 (fig. 97) is replaced with acquisition-receiver-transmitter 9156628 (fig. 126.1).



HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
Washington, D. C., 6 January 1981

DS and GS Maintenance Manual

ACQUISITION ANTENNA-RECEIVER-TRANSMITTER GROUP  
(NIKE-HERCULES AND IMPROVED NIKE-HERCULES  
AIR DEFENSE GUIDED MISSILE SYSTEMS AND  
NIKE-HERCULES ANTI-TACTICAL BALLISTIC MISSILE SYSTEM)

TM 9-1430-254-34, 22 December 1959, is changed as follows:

1. The pages affected by this change appearing in the following listing are to be inserted in the manual after MWO 9-1430-254-50-1-10 has been applied. New or changed material is indicated by a vertical line in the margin of the page. Added or revised illustrations are indicated by a letter suffix adjacent to the identification number.

Remove pages

172.17  
172.18  
172.31 — 172.34

Insert pages

172.17  
172.18  
172.31 — 172.34

2. This transmittal sheet should be filed in the front of the publication for reference purposes.

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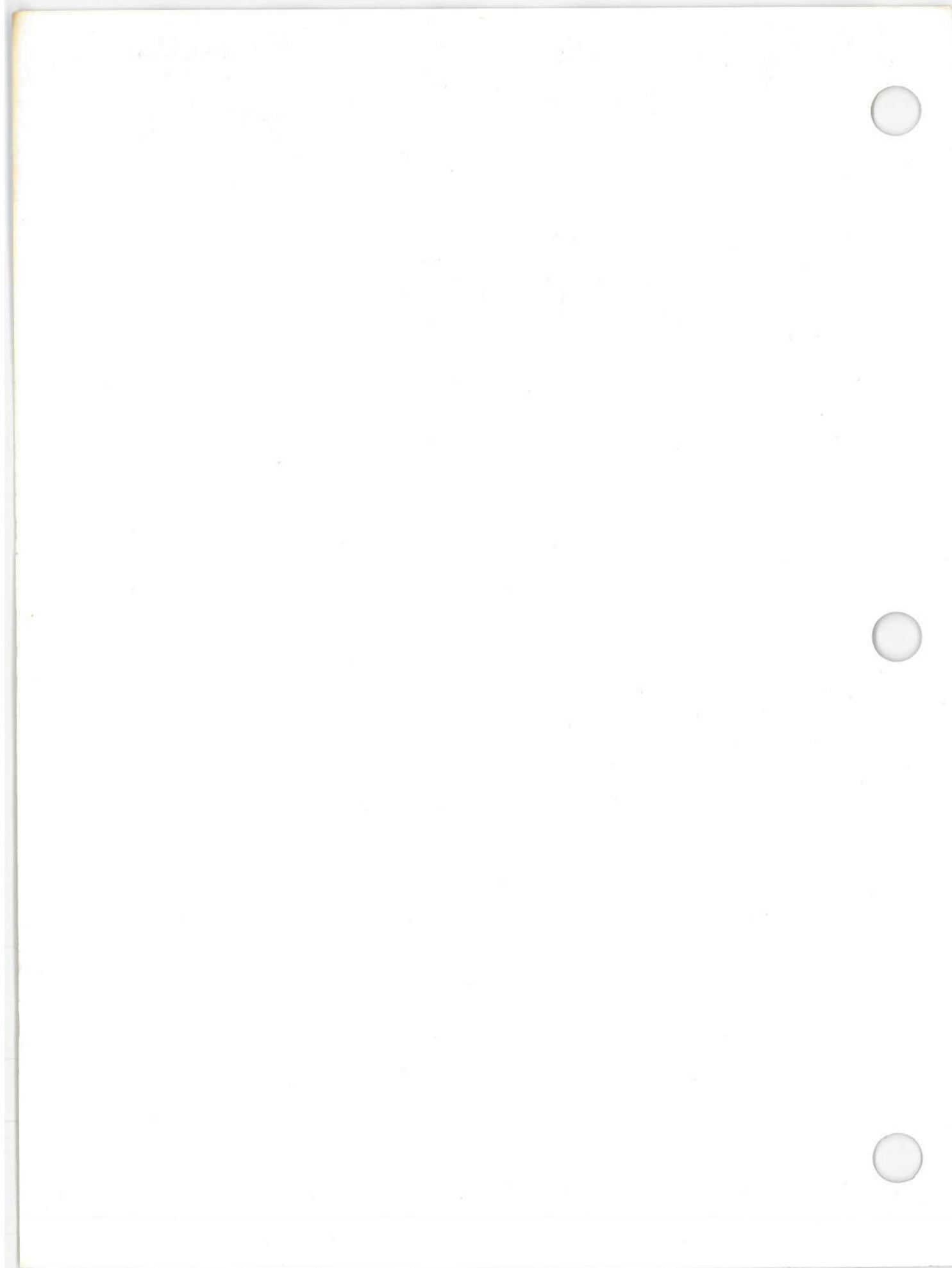
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To be distributed in accordance with DA Form 12-32, Section II, Direct and General Support Maintenance requirements for NIKE-HERCULES and Improved NIKE-HERCULES Missile System.



Change )  
 )  
No. 9 )

HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
Washington, D. C., 17 June 1979

DS and GS Maintenance Manual:

ACQUISITION ANTENNA-RECEIVER-TRANSMITTER GROUP  
(NIKE-HERCULES AND IMPROVED NIKE-HERCULES  
AIR DEFENSE GUIDED MISSILE SYSTEMS AND  
NIKE-HERCULES ANTI-TACTICAL BALLISTIC MISSILE SYSTEM)

TM 9-1430-254-34, 22 December 1959, is changed as follows:

1. The pages affected by this change appearing in the following listing, are to be inserted in the manual after the applicable MWO has been applied or if the equipment in use is of the applicable production cut-in serial number or higher. New or changed material is indicated by a vertical line in the margin of the page. Added or revised illustrations are indicated by a letter suffix adjacent to the identification number.

Remove pages	Insert pages	Effectivity	
		MWO	Production cut-in serial no.
1 - 6, 6.1/(6.2 blank), 7, 8	i, ii, 1 - 3	None	All systems
None	172.13 - 172.34	9-1430-254-50-1-10	None

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By Order of the Secretary of the Army:

**BERNARD W. ROGERS**  
*General, United States Army*  
*Chief of Staff*

Official:

**J. C. PENNINGTON**  
*Major General, United States Army*  
*The Adjutant General*

Distribution:

To be distributed in accordance with DA Form 12-32, Section II, Direct and General Support Maintenance requirements for Improved NIKE-HERCULES Missile System.



# W A R N I N G



RA PD 461691

## RADIATION HAZARD

The equipment covered by this technical manual contains the following radioactive tubes:

ATR5921	OA2WA	OC3
ATR5922	OB2WA	TR5927

Refer to TB ORD 648 for a complete listing of all radioactive tubes and for safety precautions to be exercised while handling, disposing, or in the presence of radioactive tubes.

**WARNING****RADIO-FREQUENCY RADIATION HAZARD**

Radio-frequency radiations from radar antennas and associated equipment could present a potential hazard to battery personnel. The effect of rf radiation is not cumulative but it could be hazardous. Rf radiation heats the body tissues and when the intensity is high may produce enough heat to damage the tissues permanently. Damage to the body tissue is not immediately apparent. Precautions should be taken to insure that personnel are not exposed to rf radiations of hazardous intensity levels.

A power level of 10 milliwatts per square centimeter, although not considered potentially hazardous, is stipulated by AR 40-583 as the maximum permissible exposure level for personnel subjected to rf radiation fields. Personnel should not be permitted to enter areas where they may be exposed to levels above 10 milliwatts per square centimeter.

A power intensity of 10 milliwatts per square centimeter is present along the axis of the transmitted beam at the following distances from IMPROVED NIKE-HERCULES radar antennas. In each instance, the intensity rapidly diminishes as the distance is increased.

ANTENNA	DISTANCE
High Power Acquisition Radar-Non Scanning	430 Feet
High Power Acquisition Radar-Scanning	33 Feet
Low Power Acquisition Radar-Non Scanning	125 Feet
Missile Tracking Radar-NIKE-AJAX Mode	255 Feet
Target Tracking Radar-Wide Pulse Mode	355 Feet

The intensity of the beam from target tracking radar in the narrow pulse mode, the low power acquisition radar when scanning, the missile tracking radar in the NIKE-HERCULES Mode, and the target ranging radar is inconsequential under operating conditions.

This information is based upon average power outputs and may be used as a guide to prevent radio-frequency radiation hazards.

## TECHNICAL MANUAL

No. 9-1430-254-34

HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
WASHINGTON, D. C., 22 December 1959

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## CHAPTER 1 INTRODUCTION

### Section I. GENERAL

#### 1. Scope

a. These instructions are published for the use of personnel responsible for direct support (DS) and general support (GS) maintenance of the LOPAR antenna-receiver-transmitter group (fig. 2.1). These instructions contain information on maintenance which is beyond the scope of tools, equipment, or supplies normally available at the organizational level.

b. Items to be removed or installed in accordance with this manual are identified by a reference number in the text. After removal, these items are normally tested in accordance with UUT procedures. For a cross-reference of reference numbers to UUT procedures, see TB 9-4900-250-35/1.

c. Refer to TB 9-1425-250-15/1 for configuration history of the system.

d. The instructions in this manual are intended for maintenance specialists thoroughly trained in electronics maintenance practices but not necessarily familiar with the LOPAR antenna-receiver-transmitter group.

e. Exploded view illustrations used in this manual may show exploded parts that are not authorized for replacement and that are not involved with the depicted maintenance operation. Identification of parts on such illustrations is restricted to those parts directly involved with the depicted operation and normally includes only parts that are authorized for the specific level of maintenance.

*Figure 1 (Deleted)*

#### 2. Maintenance Allocation

The prescribed maintenance responsibilities apply as reflected in the allocation of maintenance parts, tools, and materials by listings in the appropriate supply manuals.

#### 3. Related Publications

For a complete list of related publications (TM's, TB's, and MWO's), refer to TM 9-1425-250-L.

#### 4. Technical Manual Effectivity

a. This manual is technically correct for all NIKE-HERCULES systems (Basic, Improved, and ATBM), provided the modification work orders (MWO's) listed on the transmittal sheet of each change have been applied.

b. There are differences among models that affect maintenance procedures. These differences exist because of production changes not covered by MWO's. These differences among models are covered in the appropriate text.

#### 5. Nomenclature

An alphabetical listing of technical manual nomenclature, with a cross-reference to official nomenclature, is contained in the appropriate unit schematic manual.

#### 6. Forms, Records, and Reports

Refer to TM 38-750 for instructions on the use and completion of all forms required for operating and maintaining this equipment.

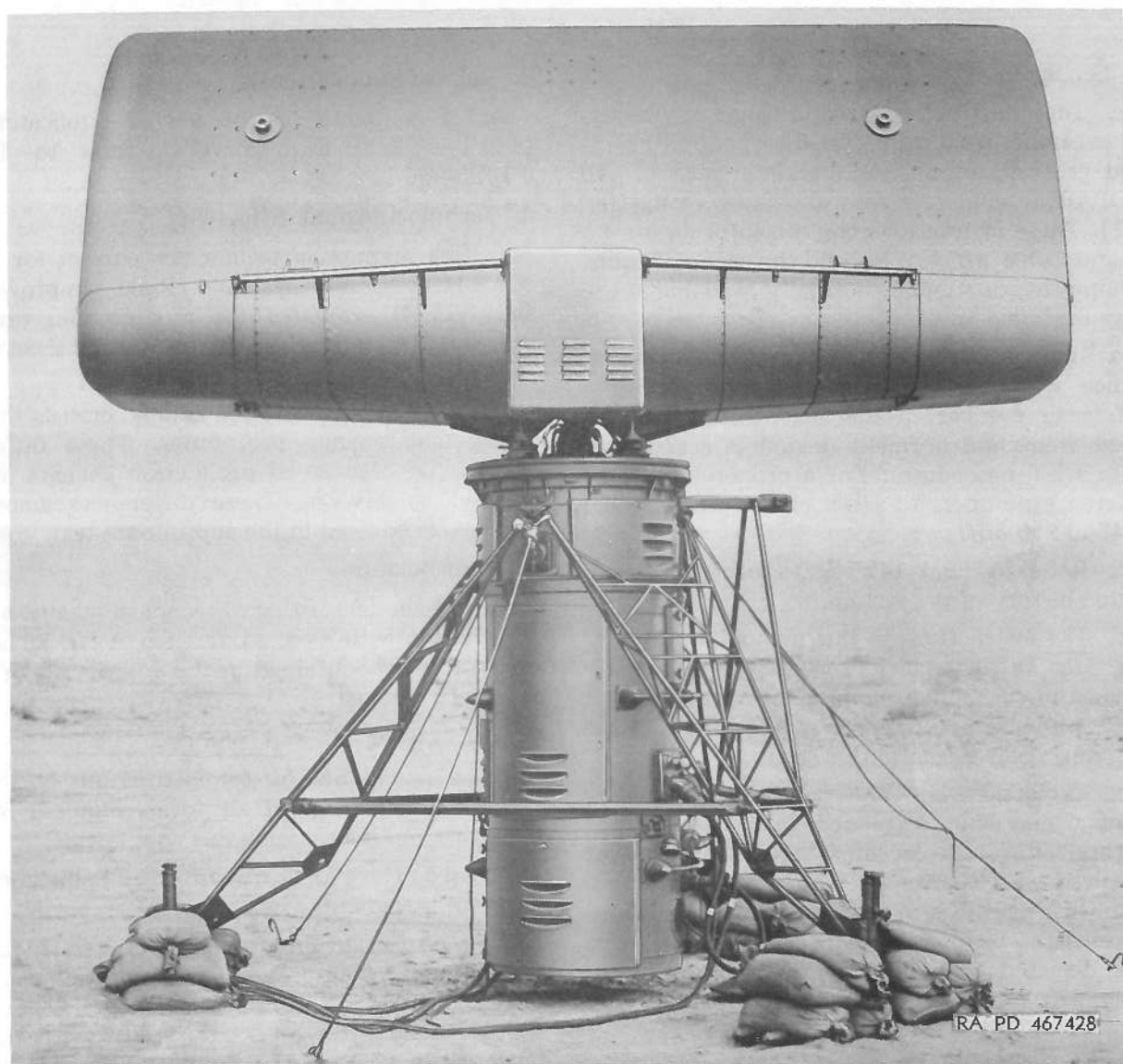
#### 7. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to: Commander, U. S. Army Missile Materiel Readiness Command, ATTN: DRSMI-NPMH, Redstone Arsenal, Ala. 35809.

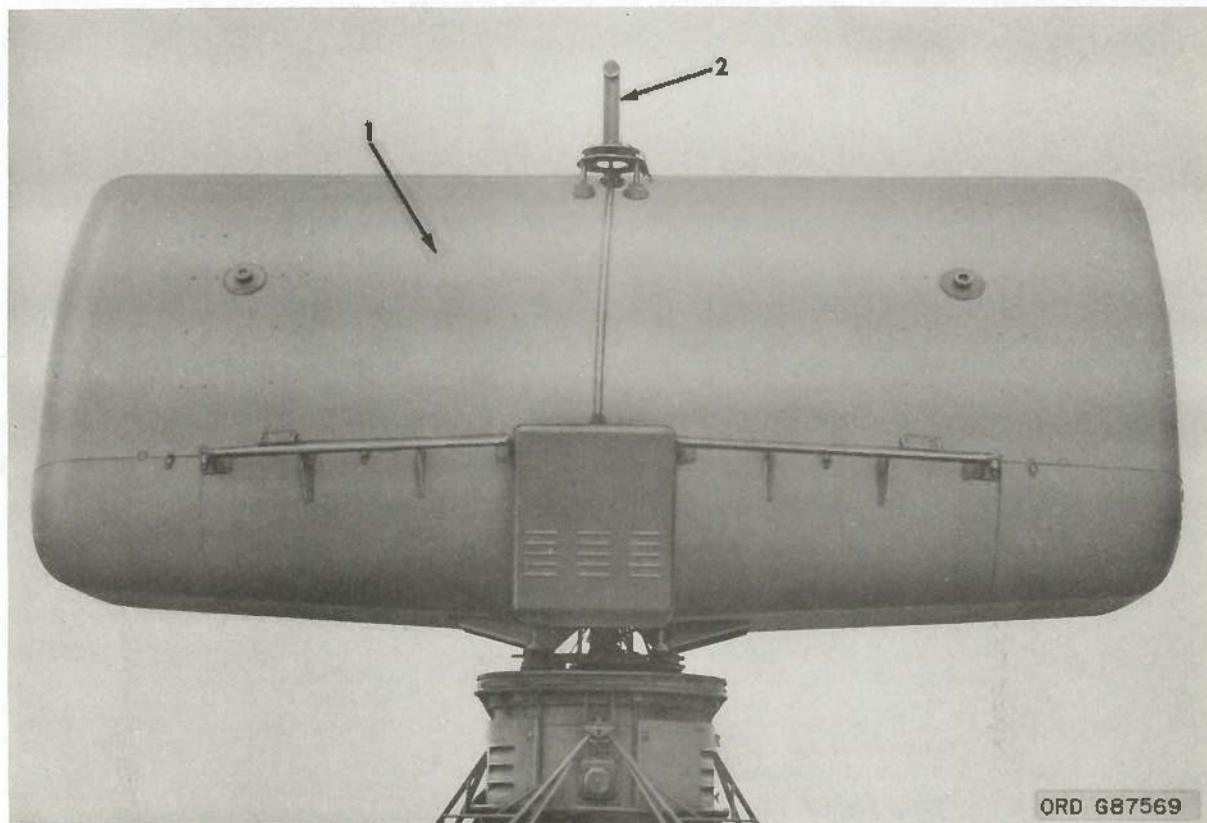
*Table I (Deleted)*

*Table II (Deleted)*

*Table III (Deleted)*



*Figure 2. LOPAR antenna-receiver-transmitter group 8173713 or 9000228.*



1—Acquisition antenna 9156580

2—Auxiliary antenna 9990666

*Figure 2.1. LOPAR antenna-receiver-transmitter group 9156627 or 9996347.*





## CHAPTER 2

### PARTS, SPECIAL TOOLS, AND EQUIPMENT

#### 12. General

Repair parts, tools, and equipment, over and above those available to the using organization, are supplied to Direct and General Support Units for maintaining and repairing the LOPAR antenna-receiver-transmitter group.

#### 13. Parts

Maintenance parts are listed in TM 9-1430-250-35P/2/1 which is the authority for requisitioning replacements.

#### 14. Common Tools and Equipment

Standard and commonly used tools and equipment having general application are not covered in this volume. Such tools and equipment are listed in SM 9-4-4935-NO6 and SM 9-4940-J29-4 and are authorized for issue by Tables of Allowances and Tables of Organization and Equipment.

#### 15. Special Tools and Equipment

The special tools and equipment listed in table V are necessary to perform the maintenance described in this manual.

*Table V. Special Tools and Equipment*

Item	Part no.	References		Use
		Figure	Paragraph	
Bar, alinement.....	7659278	3..... 12.....	23e..... 25b.....	To aline antenna reflector assembly and waveguide assembly of acquisition antenna.
Bar, clamp.....	7687225	3..... 34.....	33c(4).....	Used as a temporary support to hold secondary reflector group in correct position after removal of secondary actuator from acquisition antenna.
Fixture, adjusting.....	8235440	5..... 96.....	72b(17).....	To adjust two level assemblies of acquisition orientation level.
Fixture, antenna clamp alinement.....	7659283	5..... 67.....	56h.....	To position left clamp assembly and right clamp assembly on acquisition antenna pedestal.
Fixture, checking.....	8235439	5..... 94.....	72b(7).....	To aline bracket assembly of acquisition orientation level.
Fixture, clamping.....	7686096	3..... 15.....	23j..... 25e..... 32k.....	To hold secondary reflector group stationary and parallel to primary antenna plate assembly during removal and installation of secondary actuator.
Fixture, reflector assembly holding.....	7659280	4..... (J, fig. 32)	32n.....	Used as a dolly during disassembly and assembly of antenna reflector assembly of acquisition antenna.
Fixture, waveguide alinement.....	7686092	4..... 60.....	52b.....	To aline waveguide with antenna base assembly.
Fixture, slipring.....	7620499	6..... (C, fig. 66)	55k.....	To hold slipring assembly until installed on acquisition antenna pedestal.
Wrench, crowfoot type, 1/4-in.-sq drive, 9/16 opening.	AN8508-9	3.....	132e..... 133i..... 137f..... 138f.....	To remove electrical contact from flare tube union on bottom of socket shield of electron tube V2 of acquisition modulator.

*Note.* If a requirement exists for any of the tools listed in Table V, the supporting Depot should be contacted relative to obtaining the tools on a loan basis.

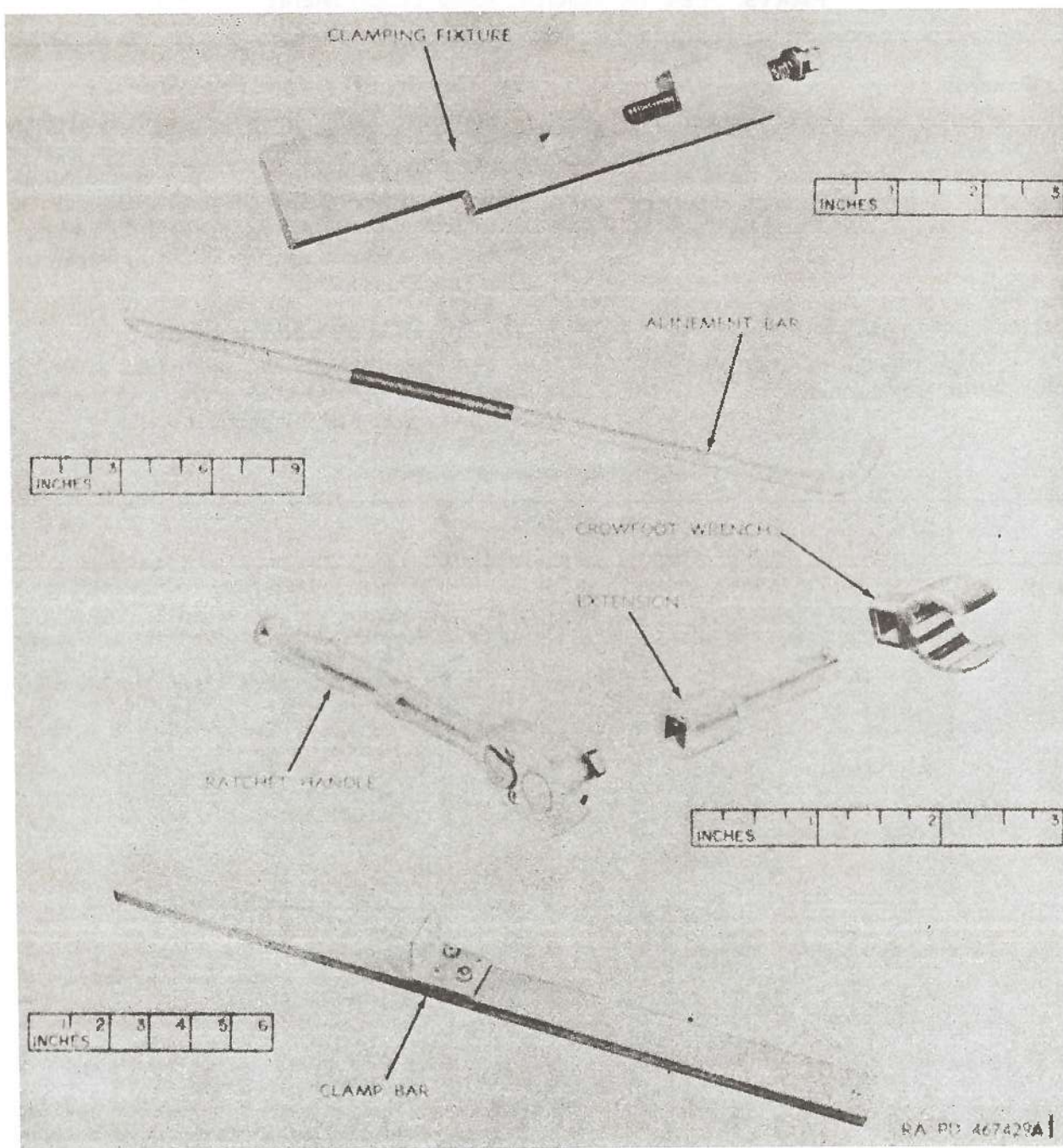


Figure 3. Special tools layout No. 1.

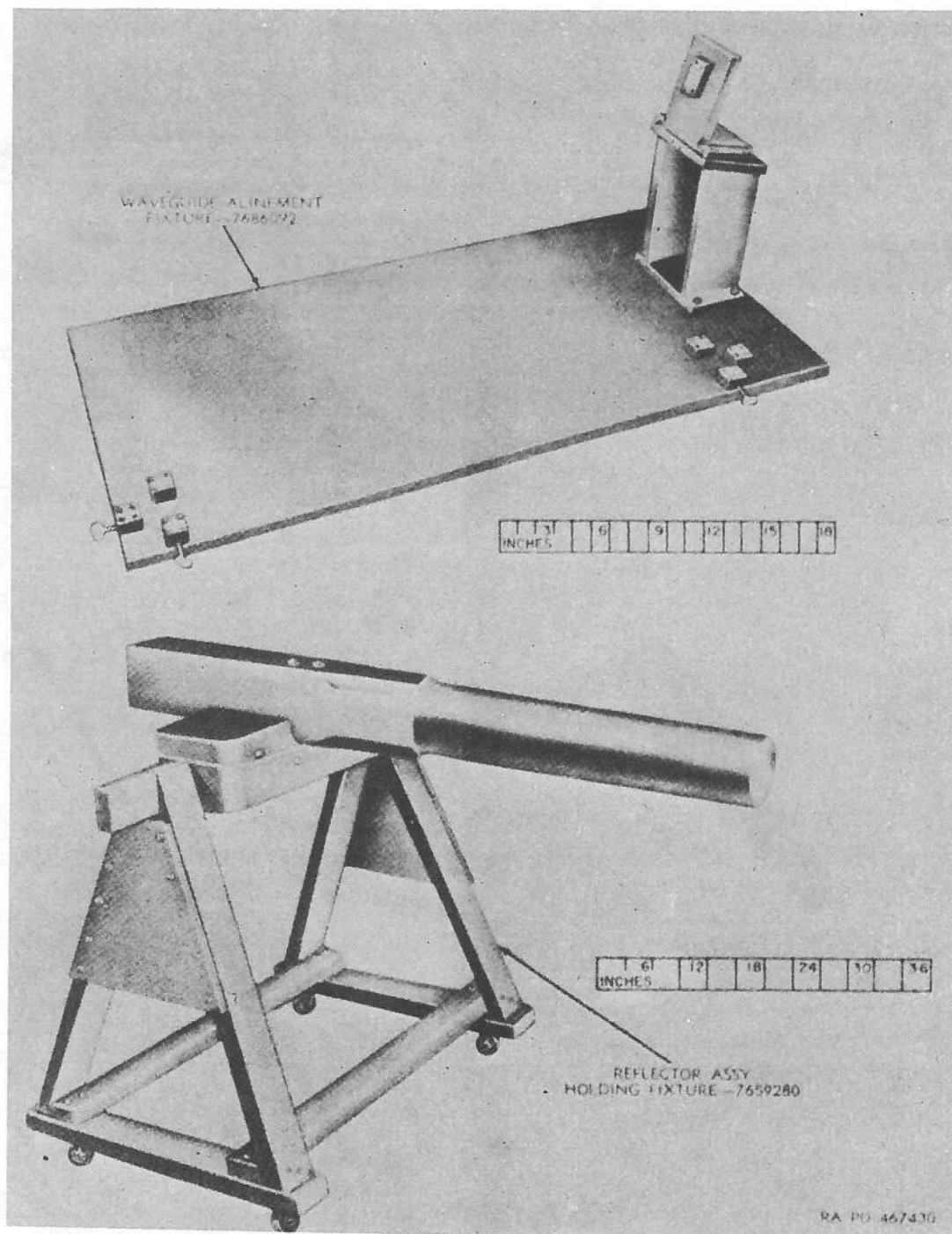


Figure 4. Special tools layout No. 2.

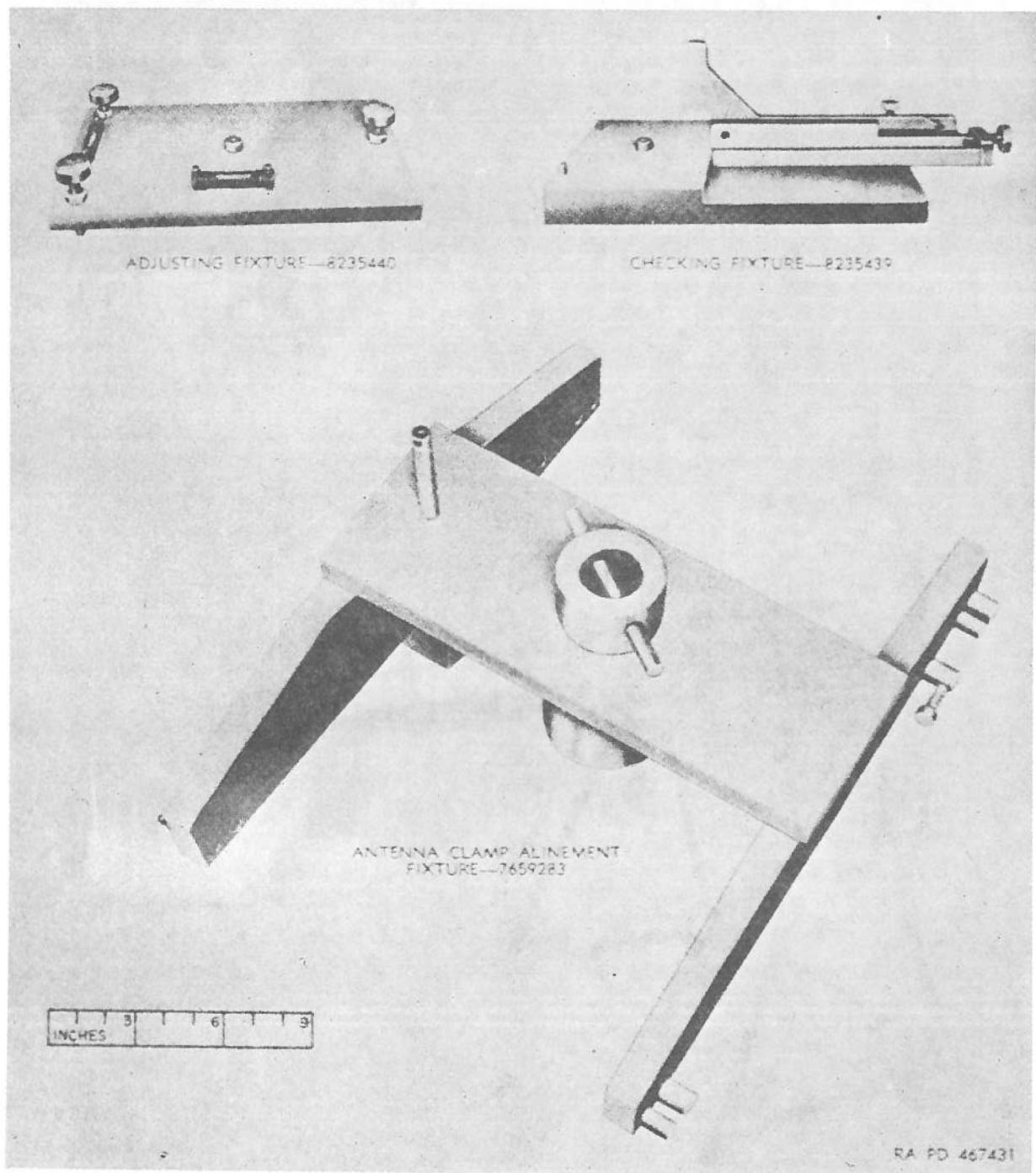


Figure 5. Special tools layout No. 3.



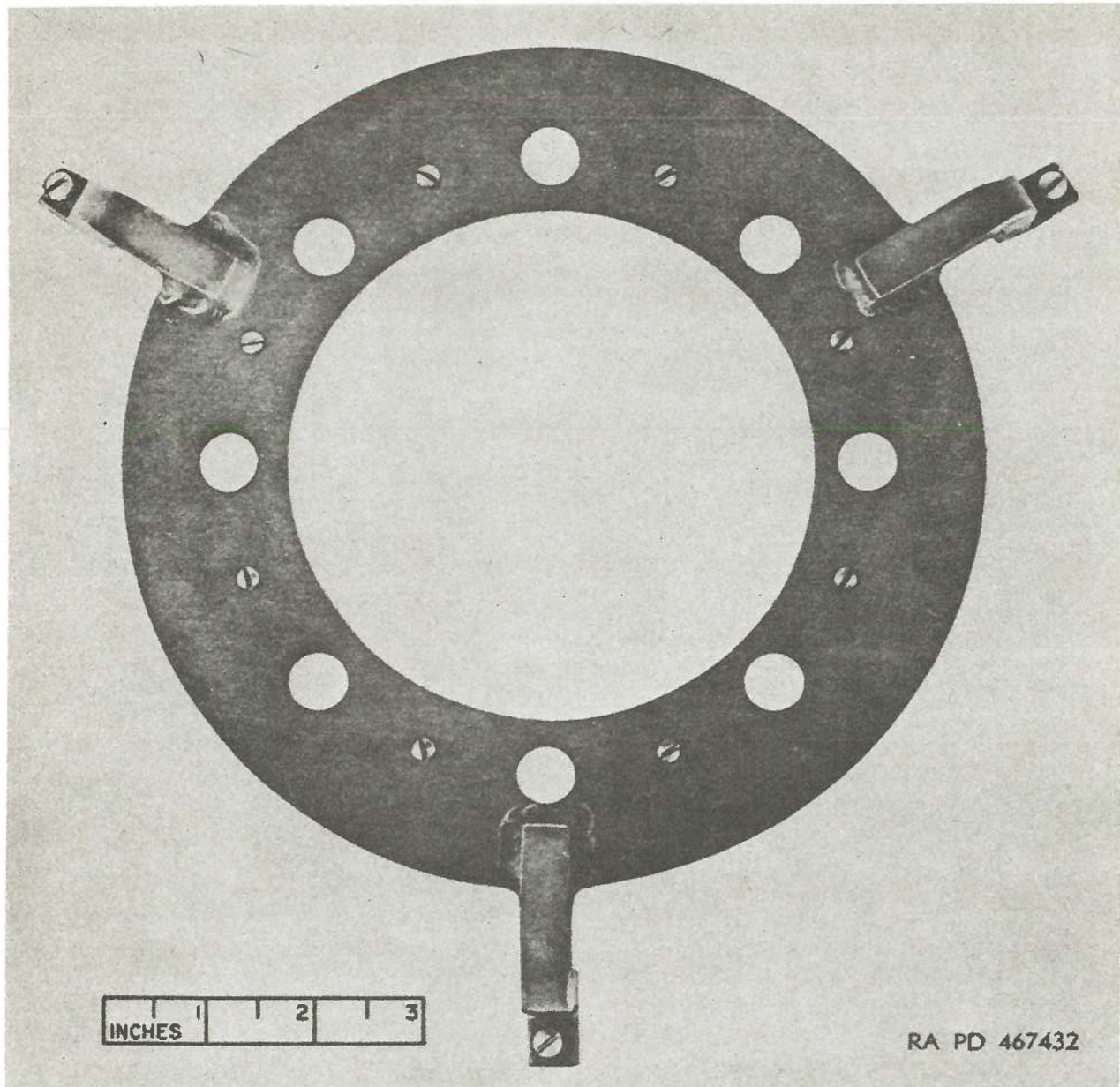


Figure 6. Slip ring fixture 7620499.

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## CHAPTER 3

## ACQUISITION ANTENNA 9000289, 8158132 OR 9156580

## Section I. GENERAL

**16. Acquisition Antenna 9000289**

This antenna is used in system serial numbers 1001 through 1070. It is equipped with hydraulic actuators (fig. 23) and a hydraulic control unit (fig. 14). Procedures peculiar to this antenna are contained in sections III, V, and VIII of this chapter.

**17. Acquisition Antenna 8158132**

This antenna is used in system serial numbers 1071 and above. It is equipped with electro-mechanical actuators (fig. 27) and an electro-

mechanical control box (fig. 16). Procedures peculiar to this antenna are contained in paragraphs 24, 25, 29, 31, and 48-50.

**17.1 Acquisition Antenna 9156580**

This antenna (1, fig. 2.1) is used in selected systems. It is equipped with auxiliary antenna 9990666 (2, fig. 2.1) and acquisition antenna radome assembly 9156585 (fig. 7.1). Maintenance procedures peculiar to acquisition antenna 8158132 are also applicable to this antenna.

## Section II. ACQUISITION ANTENNA RADOME ASSEMBLY

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Note.** Removal, field maintenance and installation procedures for acquisition antenna radome assembly 9156585 (fig. 7.1) are similar to procedures for radome assembly 7611322.

**18. Removal of Acquisition Antenna Radome Assembly 7611322**

a. Remove acquisition antenna and IFF equipment from acquisition antenna pedestal (TM 9-1430-251-10/1).

**Note.** The key letters shown in parentheses in b through j below refer to figure 8.

b. Release five catches (G) on right cover assembly (H) and five catches on left cover assembly (R) and remove cover assemblies from antenna.

c. Release two catches on antenna rails (N) and remove 28 $\frac{3}{4}$ -inch-long cover assembly (L).

d. Remove two round cover assemblies (A).

e. Disassemble and assemble round cover assemblies.

f. Unfasten mounting strap (fig. 7).

g. Release 12 catches holding radome assembly (B) to antenna base assembly (K).

**Caution:** Use four technicians to remove the radome assembly from the antenna base assembly to prevent possible damage to the radome assembly due to its awkward size.

h. Lift radome assembly off antenna base assembly.

i. Remove hexagon jamnut (E) and cap assembly (D) from each trunnion support (F).

**19. Field Maintenance of Acquisition Antenna Radome Assembly 7611322**

**Note.** Repair of damage up to 3 inches maximum dimension in outer skin only of radome assembly and right or left cover assemblies is contained in TM 9-1430-253-20/1 or TM 9-1430-253-20/2. The instructions in this paragraph are for damage to outer skin (fig. 9) up to 11 inches maximum dimension or damage to honeycomb core up to 7 inches maximum dimension.

a. Remove any temporary patch.

**Caution:** Total thickness of outer skin, faying skin, and under skin is only 0.016 inch. Exercise care to prevent cutting the adjacent layer.

**Note.** Circle should be large enough to extend 4 to 6 inches beyond damaged portion of honeycomb core, but should not exceed 12 inches in diameter.

b. With a sharp cutting edge, cut circle (B, fig. 9) only through outer skin. This circle should be

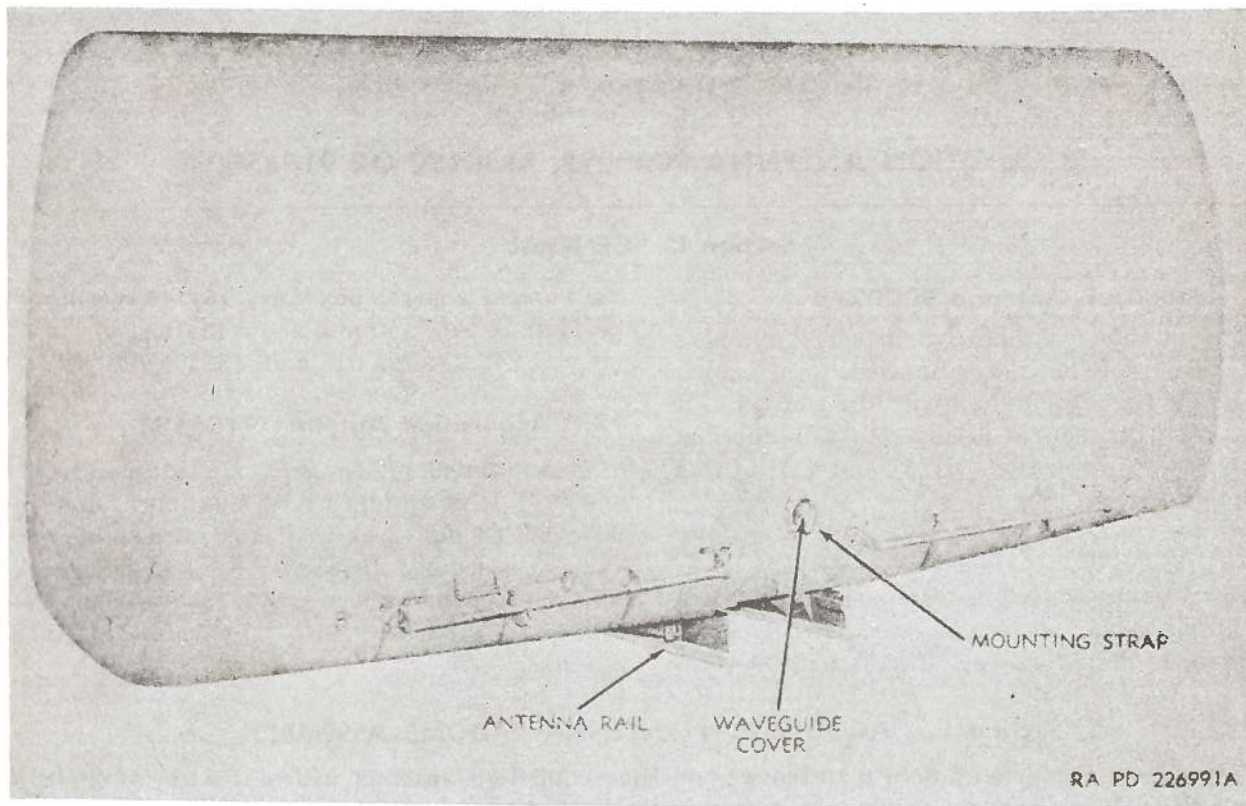
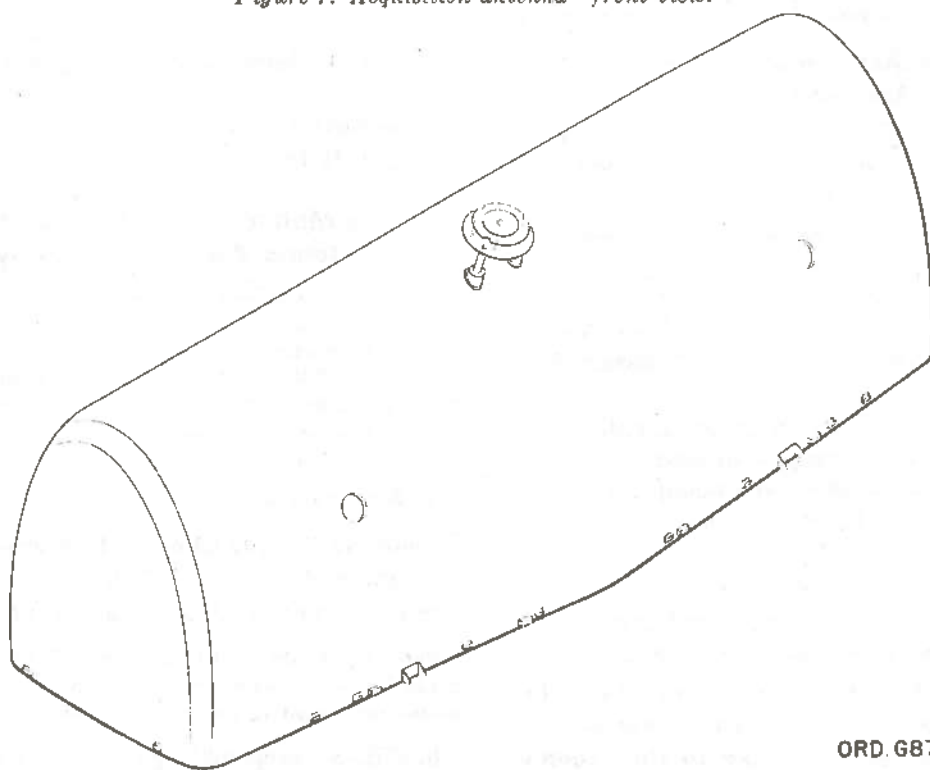
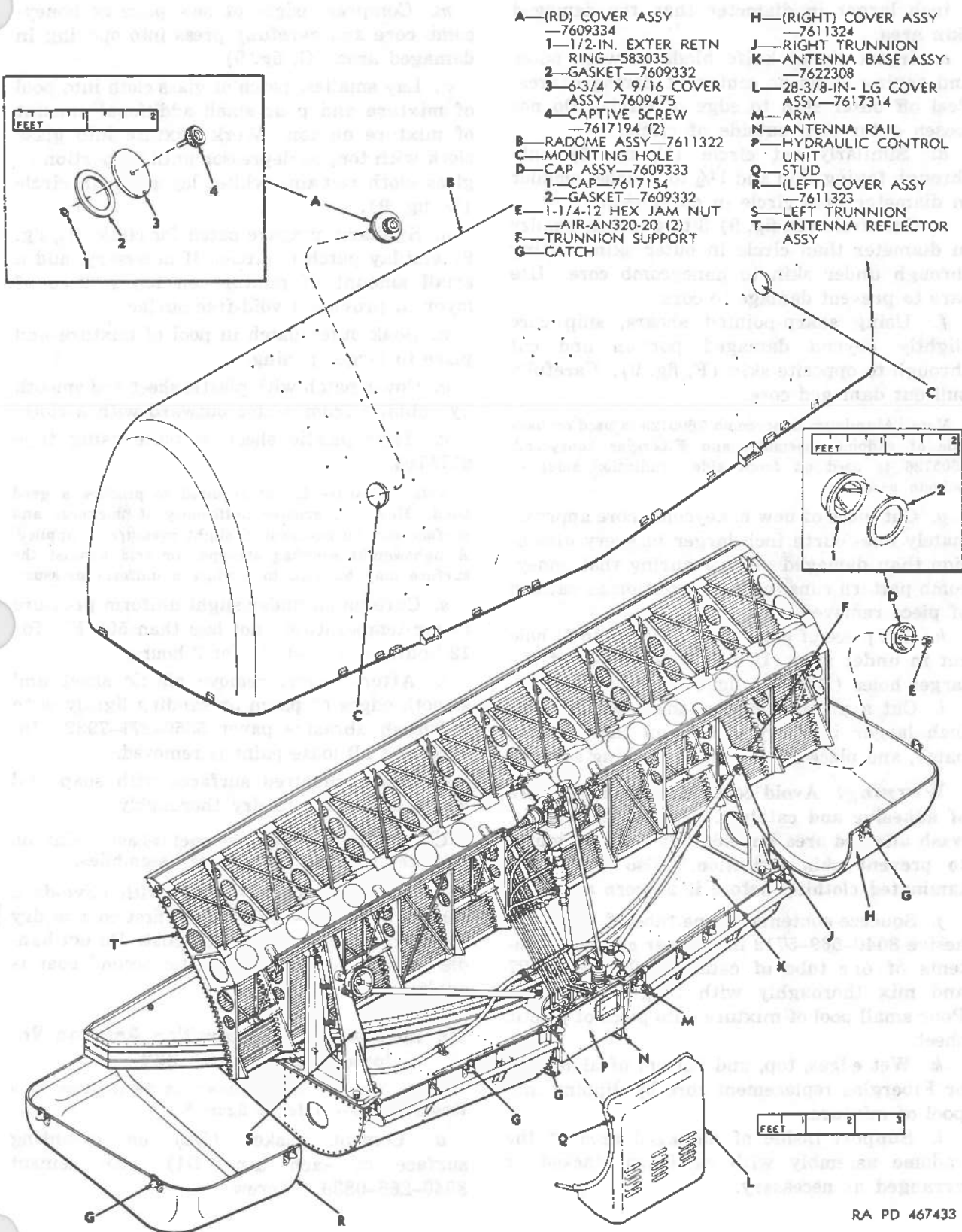


Figure 7. Acquisition antenna—front view.



ORD. G875701

Figure 7.1. Acquisition antenna radome assembly 9156585.



RA PD 467433

Figure 8. Removal and installation of acquisition antenna radome assembly and cover assemblies.



1 inch larger in diameter than the damaged skin area.

c. Insert tip of knife blade between outer and faying skins at center of damaged area. Peel off outer skin to edge of circle. Do not loosen outer skin outside of circle.

d. Similarly cut circle (C, fig. 9) only through faying skin and  $1\frac{1}{2}$  to 2 inches smaller in diameter than circle in outer skin.

e. Cut circle (D, fig. 9) 3 to 4 inches smaller in diameter than circle in outer skin, cutting through under skin to honeycomb core. Use care to prevent damage to core.

f. Using sharp-pointed shears, snip core slightly beyond damaged portion and cut through to opposite skin (F, fig. 9). Carefully pull out damaged core.

*Note.* Aluminum honeycomb 7605725 is used on back side of radome assembly, and Fiberglas honeycomb 7605726 is used on front side (radiation side) of radome assembly.

g. Cut piece of new honeycomb core approximately one-fourth inch larger in every dimension than damaged piece, insuring that honeycomb pattern runs in same direction as pattern of piece removed.

h. Cut piece of glass cloth 8019497 to fit hole cut in under skin (D, fig. 9) and each of the larger holes (B and C, fig. 9).

i. Cut a piece of plastic sheet 8019495 one inch larger in every dimension than largest patch, and place on flat, level, working surface.

**Warning:** Avoid contact with the mixture of adhesive and catalyst. If contact is made, wash affected area immediately for 15 minutes to prevent skin irritation. Also wash contaminated clothing before it is worn again.

j. Squeeze contents of one tube of liquid adhesive 8040-569-5719 into paper cup with contents of one tube of catalyst 8040-569-5727 and mix thoroughly with tongue depressor. Pour small pool of mixture onto piece of plastic sheet.

k. Wet edges, top, and bottom of aluminum or Fiberglas replacement core by dipping into pool of mixture.

l. Support inside of damaged area of the radome assembly with sandbags stacked or arranged as necessary.

m. Compress edges of new piece of honeycomb core and carefully press into opening in damaged area (G, fig. 9).

n. Lay smallest patch of glass cloth into pool of mixture and pour small additional amount of mixture on top. Work mixture into glass cloth with tongue depressor until no portion of glass cloth remains white; lay patch in circle (D, fig. 9).

o. Similarly prepare patch for circle (C, fig. 9) and lay patch in circle. If necessary, add a small amount of mixture on top surface of layer to provide a void-free surface.

p. Soak outer patch in pool of mixture and place in large opening.

q. Cover patch with plastic sheet and smooth by rubbing from center outward with a cloth.

r. Tape plastic sheet in place using tape 8175704.

*Note.* Pressure is not required to produce a good bond. However, greater uniformity of thickness and surface can be obtained if slight pressure is applied. A lightweight sandbag strapped or held against the surface may be used to produce a uniform pressure.

s. Cure patch under slight uniform pressure at air temperature (not less than 50° F.) for 12 hours or at 150° F. for 2 hours.

t. After curing, remove plastic sheet and smooth edges of patch by sanding lightly with 240-mesh abrasive paper 5350-271-7932. Insure that all loose paint is removed.

u. Wash repaired surfaces with soap and water and allow to dry thoroughly.

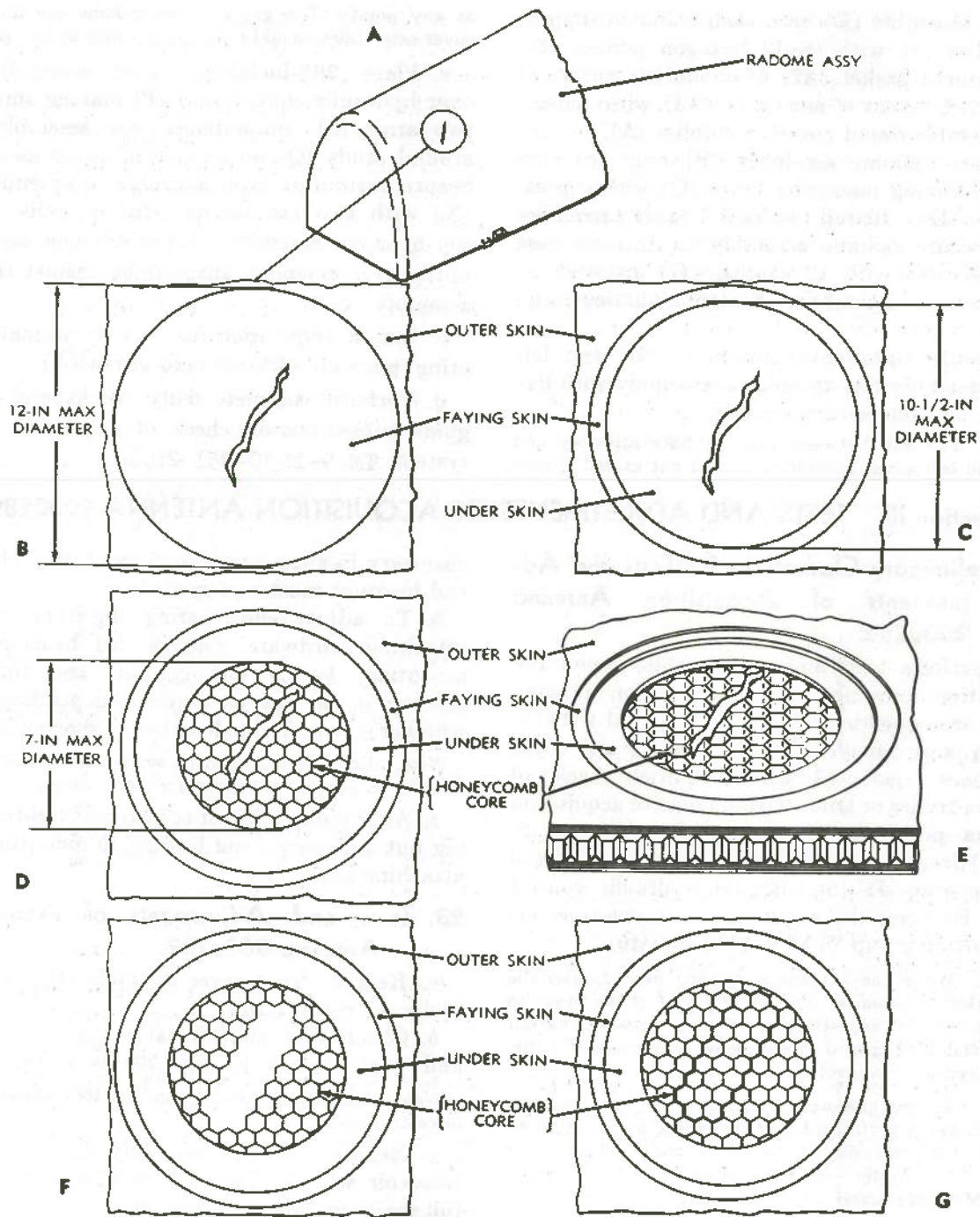
**Caution:** Do not use metal-base paint on surfaces of radome or cover assemblies.

v. Spray repaired surface with olive-drab enamel 8010-297-9586. Allow first coat to dry thoroughly and apply second coat. Do not handle for at least 18 hours after second coat is applied.

## 20. Installation of Acquisition Antenna Radome Assembly 7611322

*Note.* The key letters shown in parentheses in a through e below refer to figure 8.

a. Cement gasket (D2) on mounting surface of each cap (D1) with cement 8040-266-0839. Screw



RA PD 226604

Figure 9. Outer skin and honeycomb core repair procedure.

one cap assembly (D) onto each trunnion support (F) and secure with 1½-12 hexagon jamnut (E).

b. Cement gasket (A2) on mounting surface of each 6¼ x ¾ cover assembly (A3) with cement and assemble round cover assemblies (A).

c. Place radome assembly (B) over trunnion support alining mounting holes (C) with cap assemblies (D). Install two round cover assemblies (A). Secure radome assembly to antenna base assembly (K) with 12 catches (G) mounted on antenna base assembly. Fasten mounting strap (fig. 7).

d. Secure right cover assembly (H) and left cover assembly (R) to radome assembly with five catches on each cover assembly.

*Note.* The gap between antenna base assembly and right and left cover assemblies should not exceed ¼ inch

at any point. The gap between radome assembly and cover assemblies should not exceed ¼ inch at any point.

e. Place 28½-inch-long cover assembly (L) over hydraulic control unit (P) making sure that two arms (M) on antenna base assembly seat around studs (Q) on outside of cover assembly. Secure bottom of cover assembly to antenna rails (N) with two catches mounted on rails. Push top of cover assembly toward antenna assembly until cover assembly snaps tight against radome assembly.

f. Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).

g. Perform complete daily checks and wave-guide pressurization check of acquisition radar system TM 9-1430-251-20/1).

### Section III. TESTS AND ADJUSTMENTS OF ACQUISITION ANTENNA 9000289

#### 21. Preliminary Operations for Tests and Adjustments of Acquisition Antenna 9000289.

To perform tests and adjustments, mount the acquisition antenna on the acquisition antenna trailer or acquisition antenna truck (TM 9-1430-251-10/1) and remove radome assembly and cover assemblies (par. 18 b-h). Position back of antenna trailer or truck within 6 feet of acquisition antenna pedestal. Connect wiring harness (S, fig. 63) from top of acquisition antenna pedestal to connector J1 (fig. 10) on hydraulic control unit. Energize the acquisition antenna-receiver-transmitter group (TM 9-1430-250-10).

*Note.* When the antenna is tower mounted, place the acquisition antenna on the working area of the tower to perform tests and adjustments. Wiring harness (S, fig. 63) is of sufficient length to be connected to connector J1 (fig. 10) on hydraulic control unit.

*Note.* To energize acquisition antenna when maintenance is being performed in Field Shop, apply 120-volt, 3-phase, 400-cycle power to pins J, H, and C, of connector J1 (fig. 10). Apply -28 volts to pin T of J1. Connect pin D of J1 to neutral.

#### 22. End Bearing Adjustment

a. In order to perform linkage adjustments

necessary in subsequent portions of this chapter, end bearings must be adjusted.

b. To adjust end bearing (fig. 11), remove attaching hardware, remove end bearing from mounting, loosen locking nut, and turn end bearing in or out as required depending upon whether it is desired to lengthen or shorten linkage.

*Note.* End bearing must be turned in complete turn in order to provide access to lubrication fitting.

c. After completion of adjustment tighten locking nut and secure end bearing to mounting with attaching hardware.

#### 23. Tests and Adjustments of Acquisition Antenna 9000289.

a. Remove front cover assembly (fig. 10) from hydraulic control unit.

b. Check that shutoff valve (fig. 14) is open and that draincock (fig. 10) is closed.

*Note.* Only system serial numbers 1001 through 1021 have draincock.

c. Remove indicator assembly (fig. 14) and fill reservoir with hydraulic fluid 9150-265-9412 full mark on indicator assembly.

d. Using jogging switch S1 (fig. 10), operate antenna reflector assembly (fig. 12) sufficiently to

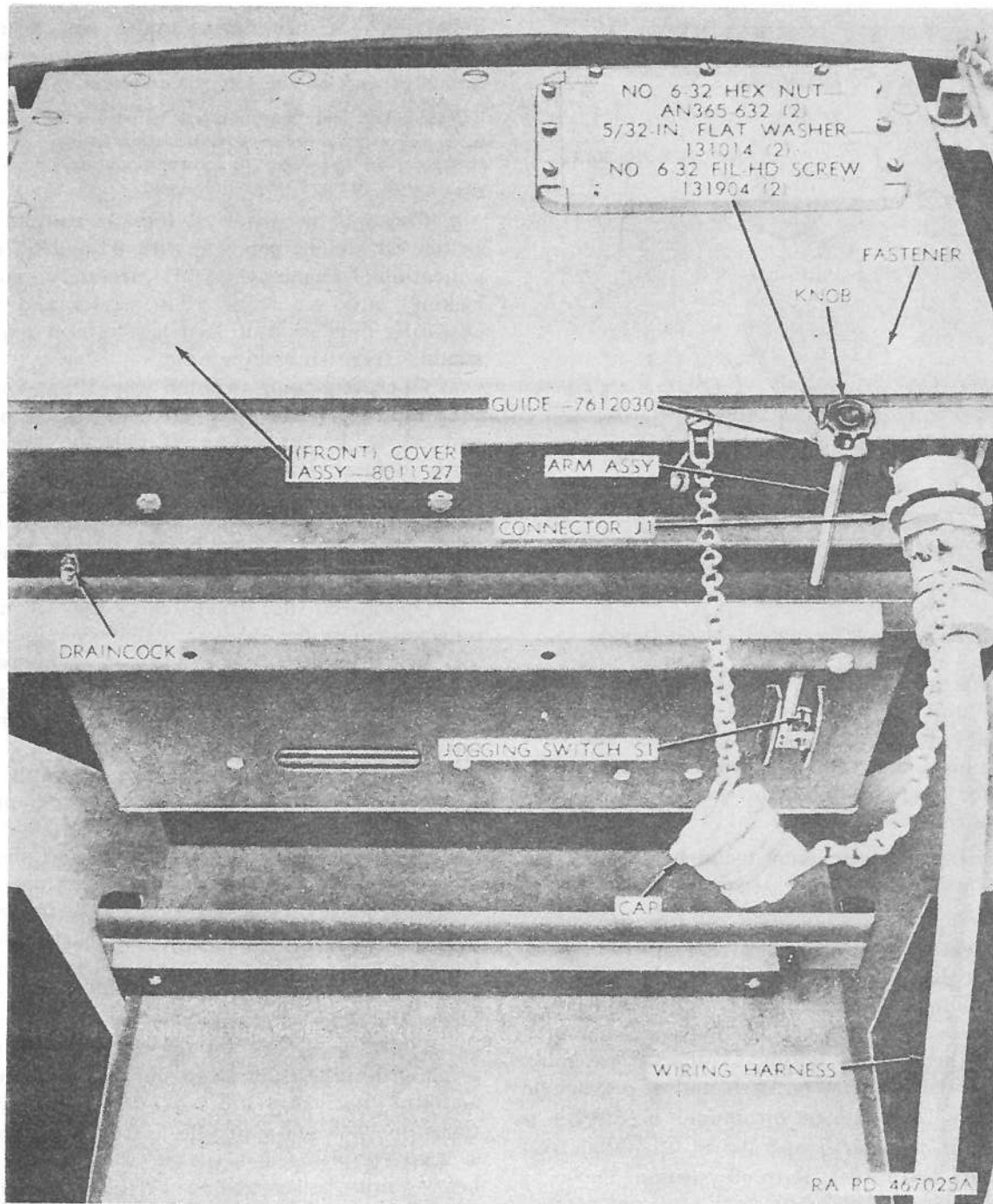


Figure 10. Hydraulic control unit—bottom view.

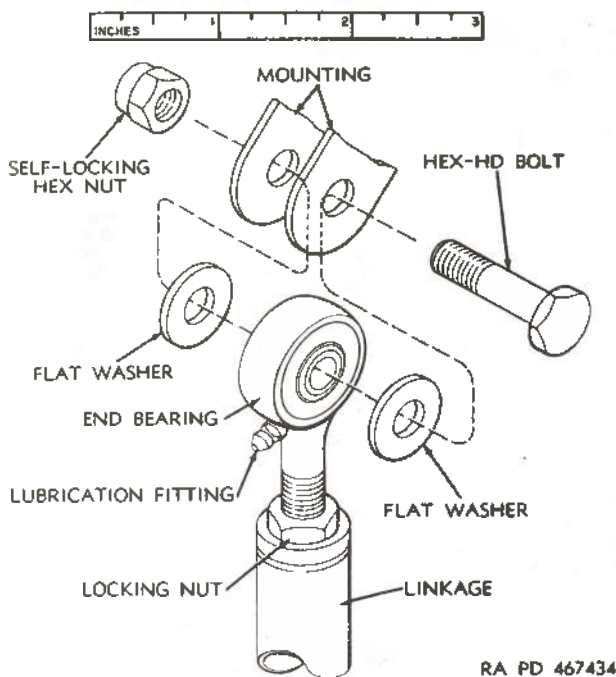


Figure 11. End bearing adjustment—typical.

check for leaks of components of the hydraulic control unit (fig. 14) and of the primary and secondary actuators (R and S, fig. 18) and connecting hoses and tube assemblies (fig. 18). Also check for malfunctions of levers and links of the antenna reflector assembly.

**Warning:** Maintenance technicians must stay clear of antenna reflector assembly while it is in motion.

e. Operate jogging switch S1 (fig. 10) to position indicator disk (fig. 13) at the  $4\frac{1}{2}^\circ$  scale indication. Using alignment bar 7659278 (fig. 12) measure the distance between the leading edge of fourth bar on the primary antenna reflector assembly and spot-drilled rivet on each end of waveguide assembly. This dimension should be  $23\frac{1}{2} \pm \frac{1}{16}$  inches. If necessary, operate S1 to obtain this dimension and return S1 to off position.

f. Check that mounting screws (fig. 13) holding scale are approximately centered in slots of scale. The indicator disk should coincide with  $4\frac{1}{2}^\circ$  scale

indication. If necessary, adjust end bearings (par. 22) on connector link assembly to position indicator disk at the  $4\frac{1}{2}^\circ$  scale indication.

*Note.* The end bearing must be turned in complete turns to provide access to lubrication fitting. It may, therefore, be necessary to loosen mounting screws and adjust scale to meet this requirement.

g. Contacts on switch S1 (figs. 14 and 52) and switch S2 should coincide with  $0^\circ$  and  $9^\circ$  scale indications, respectively. If necessary, loosen locking nuts on adjustment screws and with adjusting nuts position switches to meet requirements. Tighten locking nuts.

h. Operate jogging switch S1 (fig. 10) and check that indicator disk (fig. 52) contacts S1 at  $0^\circ$  and S2 at  $9^\circ$  on scale. If reflector assembly stops before indicator disk completes the  $0^\circ$  and  $9^\circ$  limits of travel, adjust end bearing (par. 22) on upper end of primary actuator to meet limits. If end bearing of actuator must be adjusted, repeat steps e through g above.

i. Operate S1 (fig. 10) and check that secondary reflector group (fig. 15) is activated when indicator disk (fig. 13) is at  $4\frac{1}{2}^\circ$  scale indicator. If necessary, loosen locking nut on adjustment screw, adjust screw to meet requirements, and tighten locking nut.

j. Operate S1 (fig. 10) to set indicator disk (fig. 13) at exactly  $4\frac{1}{2}^\circ$  on scale. Using clamping fixture 7686096 (fig. 15), check  $1.777 \pm 0.002$ -inch dimension between front edge of second plate of primary antenna plate assembly and front edge of second plate on each secondary reflector group. Tighten clamping bolt against primary reflector plate to make certain that front edge of plate is firm against clamping fixture. Front edge of secondary reflector should then be against clamping fixture as shown. If the secondary reflector is not within these limits, disconnect the secondary actuator (par. 28a) and make the necessary full turns on both end bearings. If one end bearing is screwed into the actuator, the opposite end bearing must be screwed out by the same amount. Connect secondary actuator (par. 28b). This dimension (fig. 15) must be maintained throughout the entire length of the antenna. If necessary,



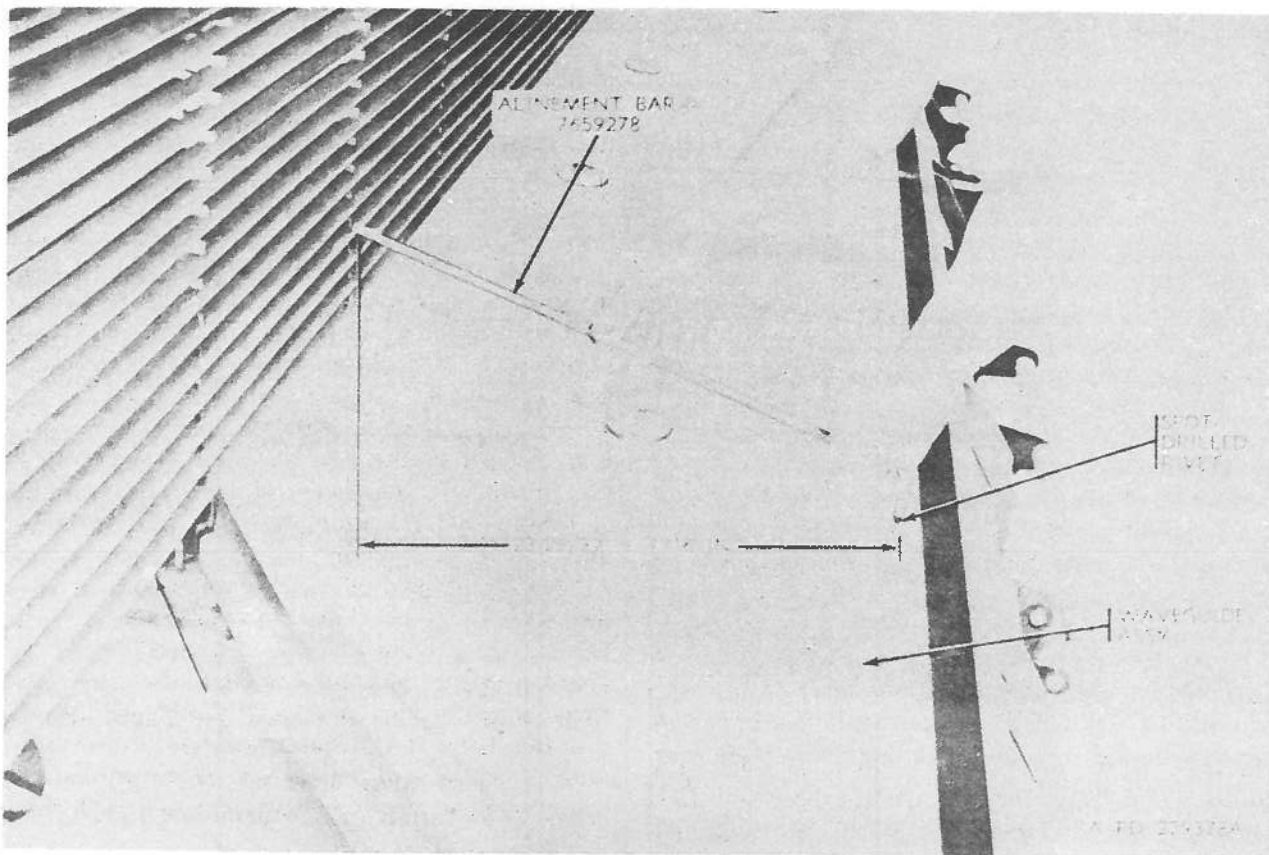


Figure 12. Alinement of antenna reflector assembly.

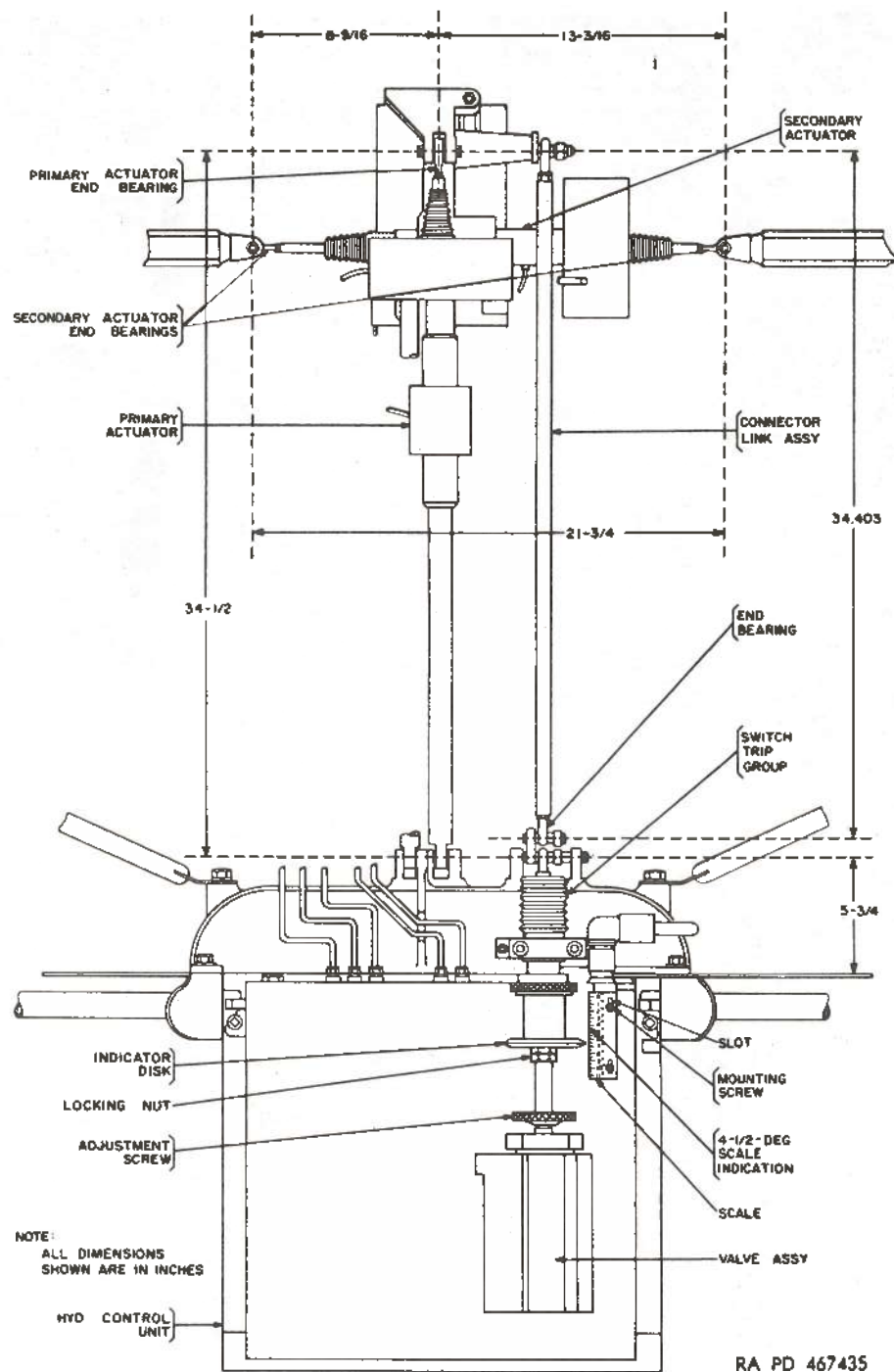
loosen locking nut at each end of control lever link (fig. 34) on back of secondary reflector group and adjust link by turning clockwise or counterclockwise as necessary to meet requirements. Tighten locking nut and remove clamping fixture.

k. With indicator disk still at  $4\frac{1}{2}^\circ$  position (fig. 13), if  $1.777 \pm 0.002$ -inch dimension cannot be obtained in *j* above, check  $21\frac{1}{4}$ -inch,  $13\frac{3}{16}$ -inch, and  $8\frac{5}{16}$ -inch dimensions of secondary actuator. If necessary, disconnect secondary actuator (par. 28a) and adjust end bearings of actuator to obtain correct dimensions. Connect secondary actuator (par. 28b).

l. Operate S1 (fig. 10) and using a stopwatch, check time required for indicator disk (fig. 13) to move from 0 to 9 degrees on scale. Adjust time

to  $20 \pm 1$  seconds by turning setscrew (fig. 14) in the left check valve clockwise to increase time or counterclockwise to decrease time. Similarly adjust to  $20 \pm 1$  seconds the time required for indicator disk to move from  $9^\circ$  to  $0^\circ$  by turning setscrew in right check valve.

m. To adjust the antenna for normal operation, which is scan condition No. 2, loosen locking nut (figs. 14 and 52) on adjustment screw and with adjusting nuts, position switch S2 contact to the  $4\frac{1}{2}^\circ$  scale indication. Similarly adjust the position of switch S1 contact so that the secondary actuator (fig. 13) starts to inject the secondary reflector group (fig. 15) at  $2^\circ$  scale indicator. Injection should be complete at  $3^\circ$  scale indication. Check that reflector assembly elevates and depresses automatically between  $0^\circ$  and  $4\frac{1}{2}^\circ$ . For limits



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Figure 13. Acquisition antenna adjustments.

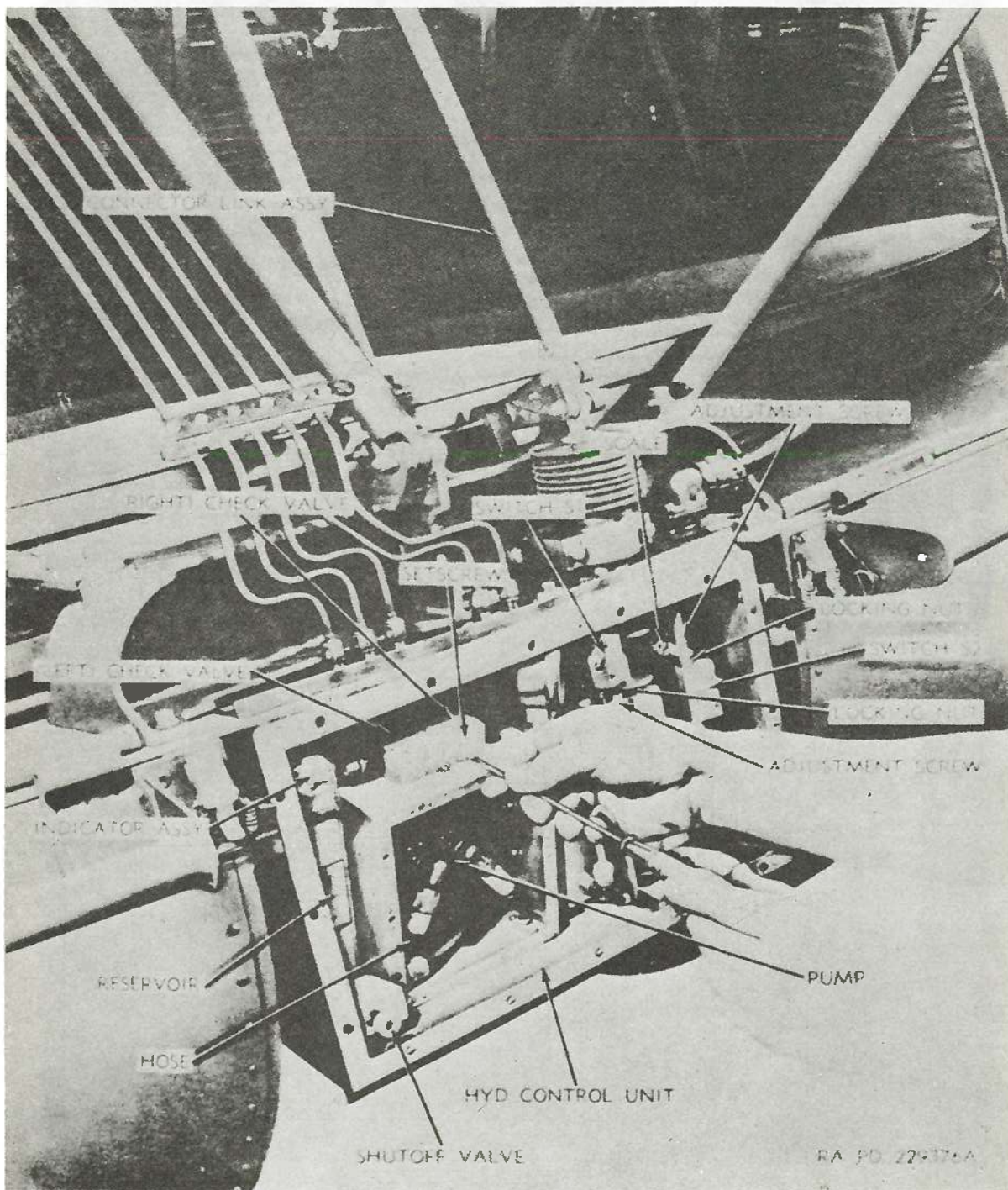


Figure 14. Performing acquisition antenna elevation-speed adjustments.

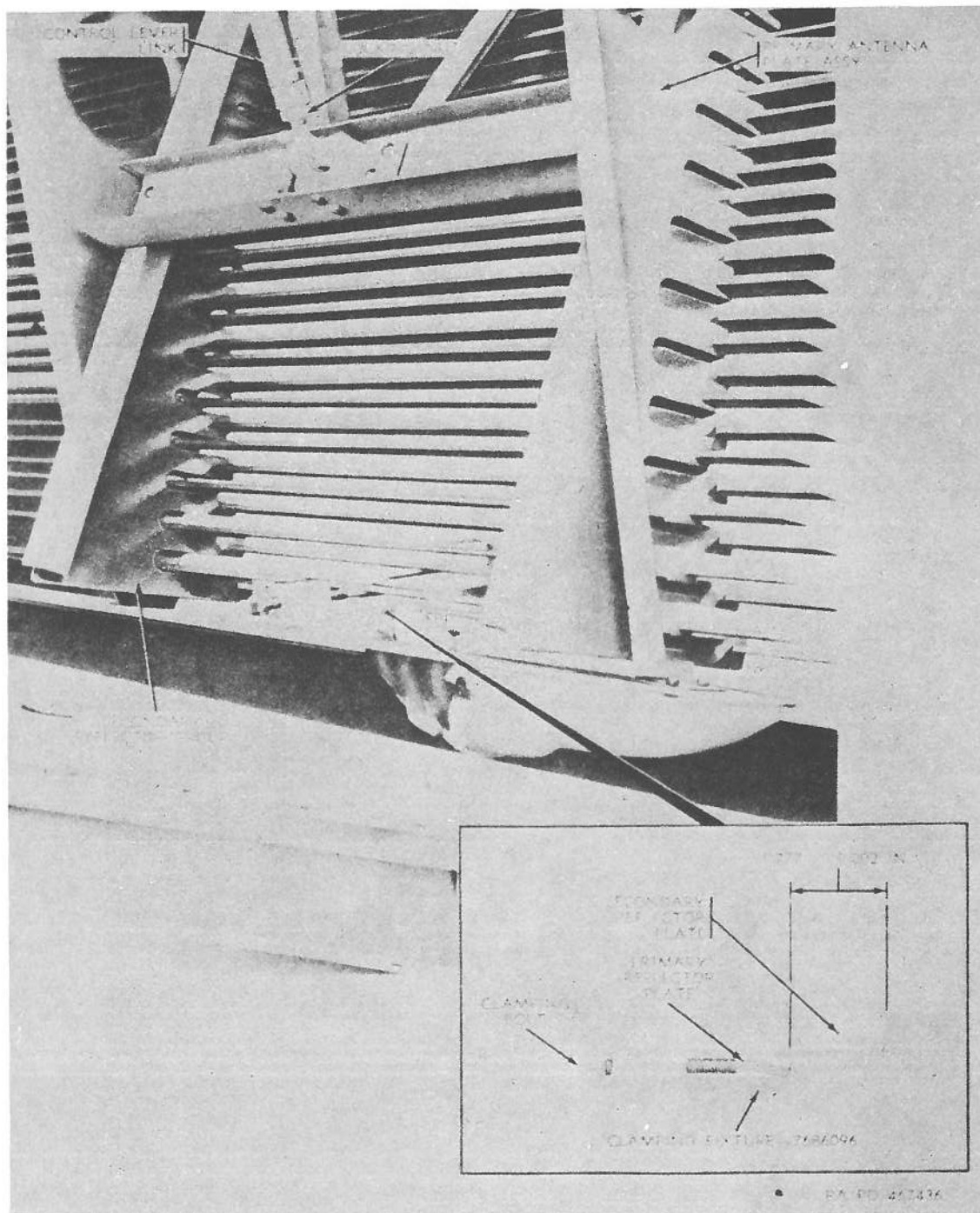


Figure 15. Using clamping fixture 7686096.



of other scan conditions, refer to TM 9-1430-251-20/1.

n. Install front cover assembly (fig. 10).

o. Turn MAIN POWER switch on acquisition power control panel to the off position.

p. Disconnect wiring harness from connector J1 on hydraulic control unit and install cap on J1.

q. Install radome assembly and cover assemblies (par. 20 c-e).

r. Install acquisition antenna in normal operating position TM 9-1430-251-10/1.

s. Perform complete daily checks and waveguide pressurization check of acquisition radar system TM 9-1430-251-20/1.

## Section IV. TESTS AND ADJUSTMENTS OF ACQUISITION ANTENNA 8158132

### 24. Preliminary Operations for Tests and Adjustments of Acquisition Antenna 8158132.

To perform tests and adjustments, mount the acquisition antenna on the acquisition antenna trailer or acquisition antenna truck (TM 9-1430-251-10/1 and remove radome assembly and cover assemblies (par. 18 b-g). Position back of antenna trailer or truck within 6 feet of acquisition-antenna pedestal. Connect wiring harness (S, fig. 63) from top of acquisition antenna pedestal to connector J6 (fig. 16) on electro-mechanical control box. Energize the acquisition antenna-receiver-transmitter group (TM 9-1430-250-10/1.

### 25. Tests and Adjustments of Acquisition Antenna 8158132

a. Remove cover assembly (fig. 16) from electro-mechanical control box.

**Warning:** Maintenance technicians must stay clear of antenna reflector assembly while it is in motion.

b. Operate jogging switch S4 (fig. 17) to position moving pointer at the  $4\frac{1}{2}^\circ$  scale indication with scale in midposition of its adjustment travel. Using alinement bar 7659278 (fig. 12) measure the distance between the leading edge of fourth bar on the primary antenna reflector assembly and spot-drilled rivet on each end of waveguide assembly. This dimension should be  $23\frac{3}{4} \pm \frac{1}{8}$  inches. If necessary, operate S4 to obtain this dimension and readjust position of

scale by loosening scale mounting screws so that moving pointer is at the  $4\frac{1}{2}^\circ$  scale indication.

c. Loosen locking nuts (fig. 17) above and below switch on switch rod and with adjusting nuts, adjust position of switches S2 and S3 on switch rods so that primary actuator (fig. 16) cycles between  $0^\circ$  and  $9^\circ$  when S4 is operated. Tighten locking nuts (fig. 17).

d. Operate S4 (fig. 17) and check that secondary reflector group (fig. 15) is activated when moving pointer (fig. 17) is at  $4\frac{1}{2}^\circ$  scale indication. If necessary, adjust position of switch S1 on switch rod with adjusting nuts to meet requirements.

e. Operate S4 to set moving pointer at exactly  $4\frac{1}{2}^\circ$  on scale. Using clamping fixture 7686096 (fig. 15), check  $1.777 \pm 0.002$ -inch dimension between front edge of second plate of primary antenna plate assembly and front edge of second plate on each secondary reflector group. If the secondary reflector is not within these limits, disconnect the secondary actuator (par. 28a), and make the necessary full turns on both end bearings. If one end bearing is screwed into the actuator, the opposite end bearing must be screwed out by the same amount. Connect secondary actuator (par. 28b). This dimension (fig. 15) must be maintained throughout the entire length of the antenna. If necessary, loosen locking nut at each end of control lever link (fig. 34) on back of secondary reflector group and adjust link by turning clockwise or counterclockwise as necessary to meet requirements. Tighten locking nuts and remove clamping fixture.



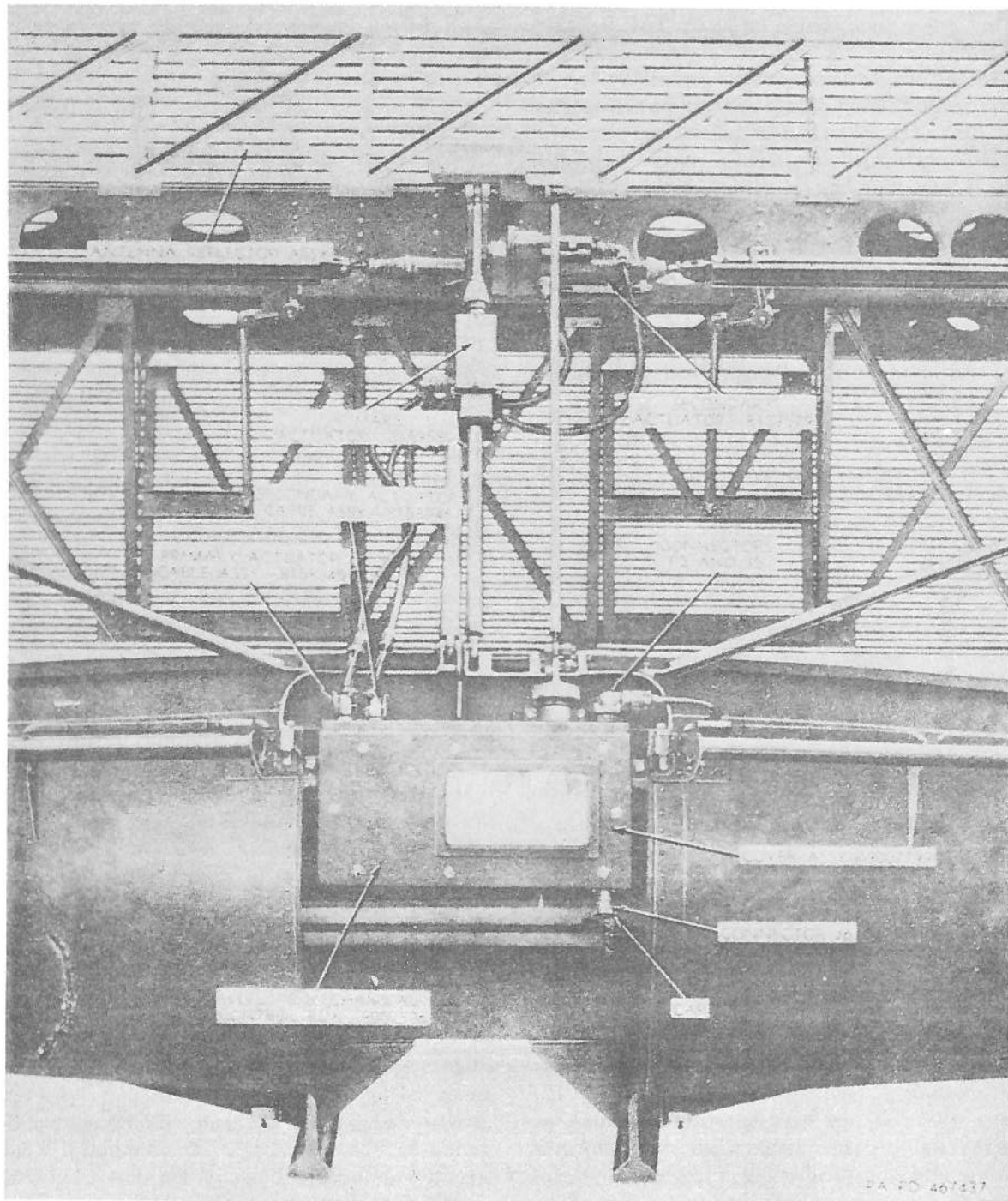


Figure 16. Electro-mechanical control box 9007806—locational view.

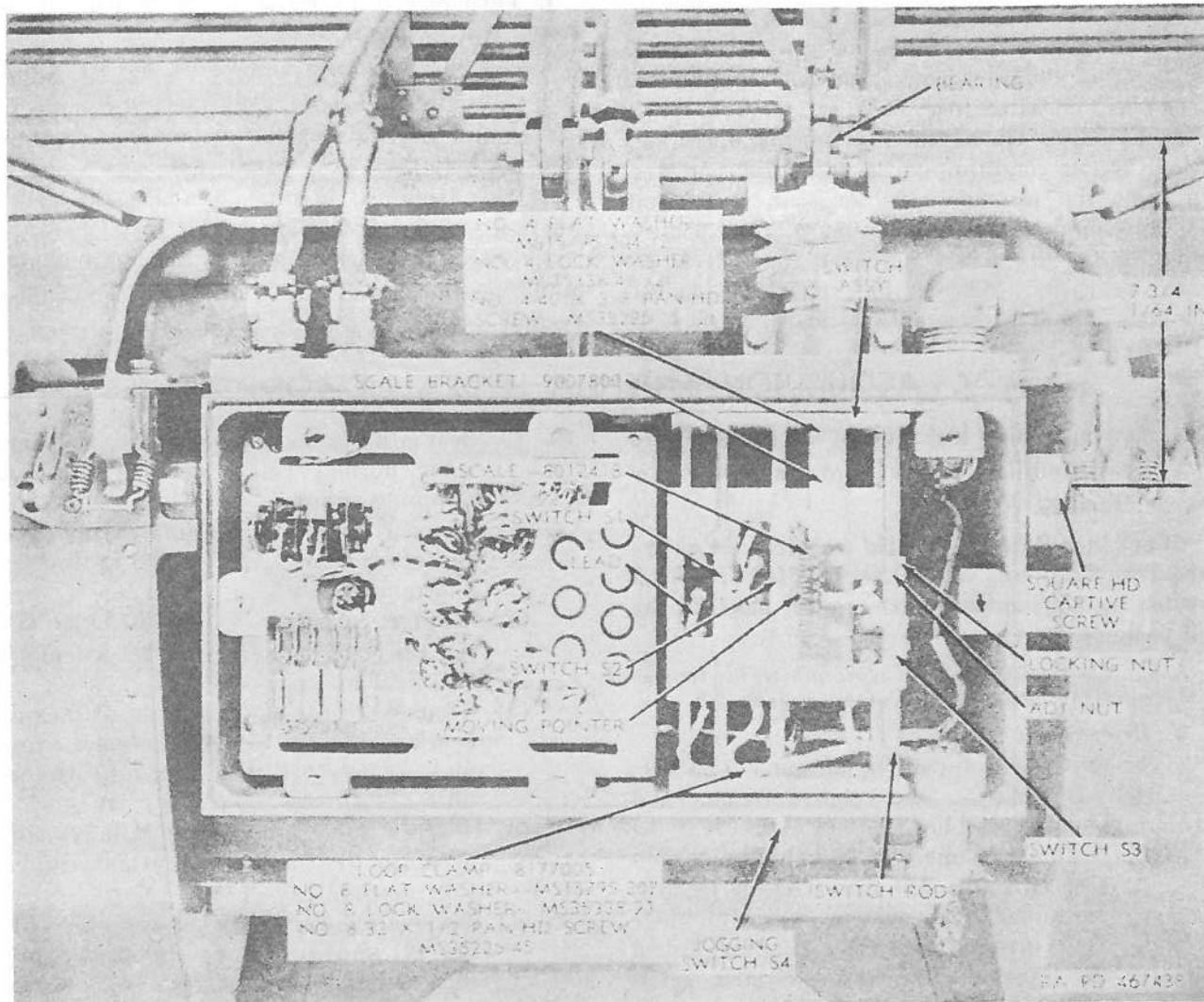


Figure 17. Electro-mechanical control box—cover assembly removed.

f. With moving pointer (fig. 17) still at  $4\frac{1}{2}^\circ$  indication, if  $1.777 \pm 0.002$ -inch dimension cannot be obtained in *e* above, check  $21\frac{1}{4}$ -inch,  $13\frac{3}{8}$ -inch, and  $8\frac{1}{8}$ -inch dimensions (fig. 13) of secondary actuator. If necessary, disconnect secondary actuator (par. 28a) and adjust end bearings of actuator to obtain correct dimensions. Connect secondary actuator (par. 28b).

g. To adjust the antenna for normal operation, which is scan condition No. 2, adjust S2 (par. 25c) to limit the primary reflector scan to  $0^\circ$  and  $4\frac{1}{2}^\circ$  scale indications and adjust S1 (par. 25c) to energize the secondary actuator (fig. 16) at  $2^\circ$  scale indication. Check that reflector assembly elevates and depresses automatically between  $0^\circ$

and  $4\frac{1}{2}^\circ$ . For limits of other scan conditions, refer to TM 9-1430-251-20/1.

h. Install cover assembly (fig. 16).

i. Turn MAIN POWER switch on acquisition power control panel to off.

j. Disconnect wiring harness (S, fig. 63) from connector J6 (fig. 16) and install cap on J6.

k. Install radome assembly and cover assemblies (par. 20 c-e).

l. Install acquisition antenna in normal operating position TM 9-1430-251-10/1.

m. Perform complete daily checks and waveguide pressurization check of acquisition radar system TM 9-1430-251-20/1.

## Section V. ACQUISITION ANTENNA HYDRAULIC COMPONENTS

### 26. Removal and Installation of Hoses, Tube Assemblies, and Hydraulic Valve Assembly 7612325

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

*Note.* The key letters shown in parentheses in a through c below refer to figure 18 unless otherwise indicated.

#### a. Removal.

(1) Remove acquisition antenna (TM 9-1430-251-10/1 and remove radome and cover assemblies (par. 18 b-h).

(2) Drain hydraulic fluid from hydraulic control unit (fig. 10) into a clean 1-gallon container. On system serial numbers 1001 through 1021, this is accomplished by opening draincock. System serial numbers 1022 through 1149 do not have a draincock, and it is necessary to disconnect hose (fig. 14) from left elbow on pump and drain hydraulic fluid through this hose. Manually operate the primary actuator (R) and secondary actuator (S) to facilitate removal of hydraulic fluid from hoses and tube assemblies. This is accomplished by grasping the actuators

near either end and moving them through their normal travel distance with a pumping action.

(3) Unscrew hose coupling nuts (P) at each end of six hoses (A, B, C, D, E, and Q) and remove hoses.

(4) Remove hydraulic valve assembly (P, fig. 19) from mounting bracket assembly (M, fig. 19).

(5) Remove two clamps (F, fig. 19) and brackets (G, fig. 19) from antenna trunnion assembly (F) and from tube assemblies (J-N).

(6) Unscrew tube coupling nut at lower end of each of five tube assemblies and remove tube assemblies.

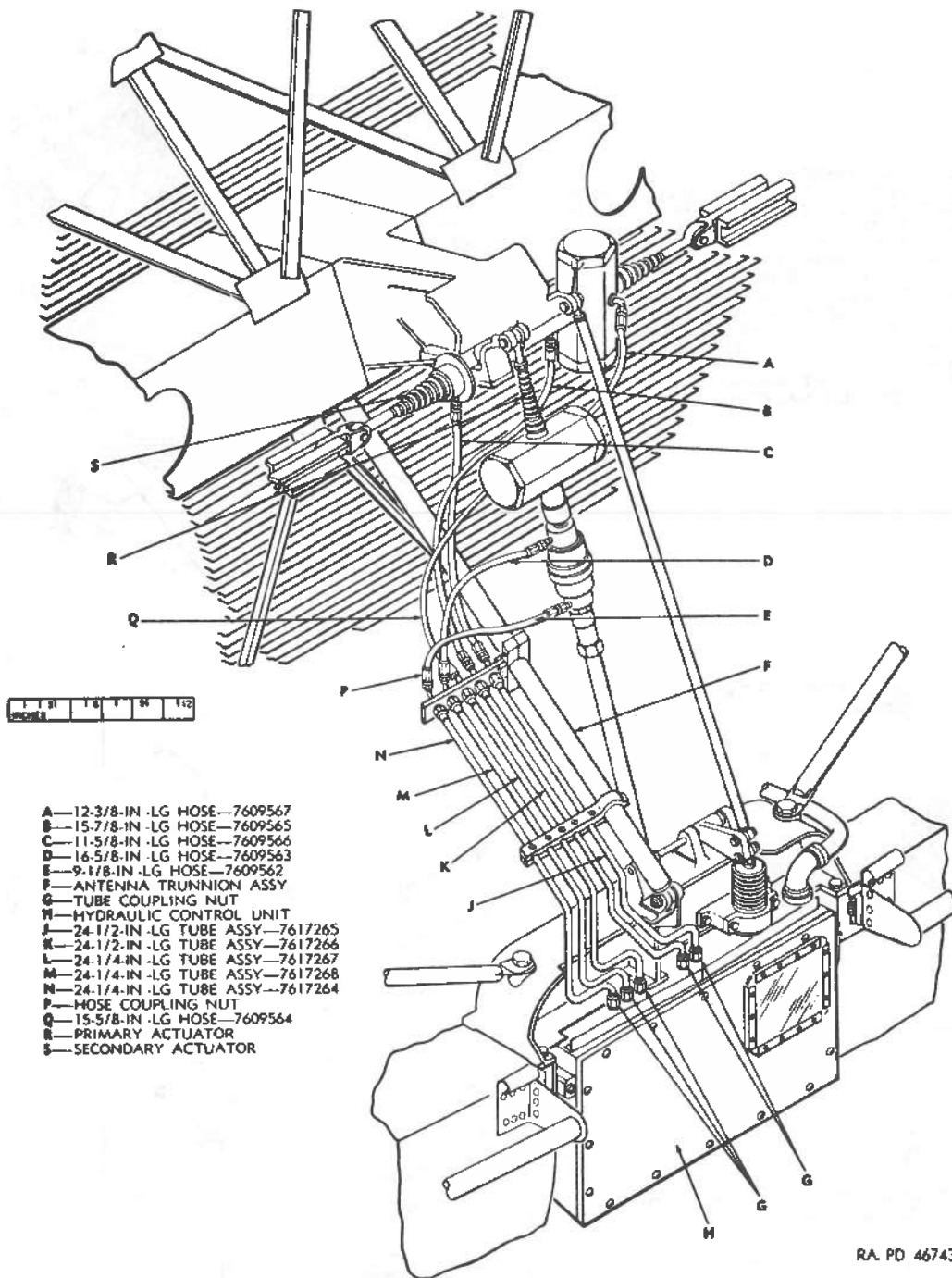
(7) Remove mounting bracket assembly (M, fig. 19) and cap (A, fig. 19) from trunnion assembly.

b. *Disassembly and Assembly of Hydraulic Valve Assembly 7612325.* Disassemble and assemble hydraulic valve assembly (fig. 20).

#### c. Installation.

(1) Install hydraulic valve assembly (P, fig. 19) on mounting bracket assembly (M, fig. 19).

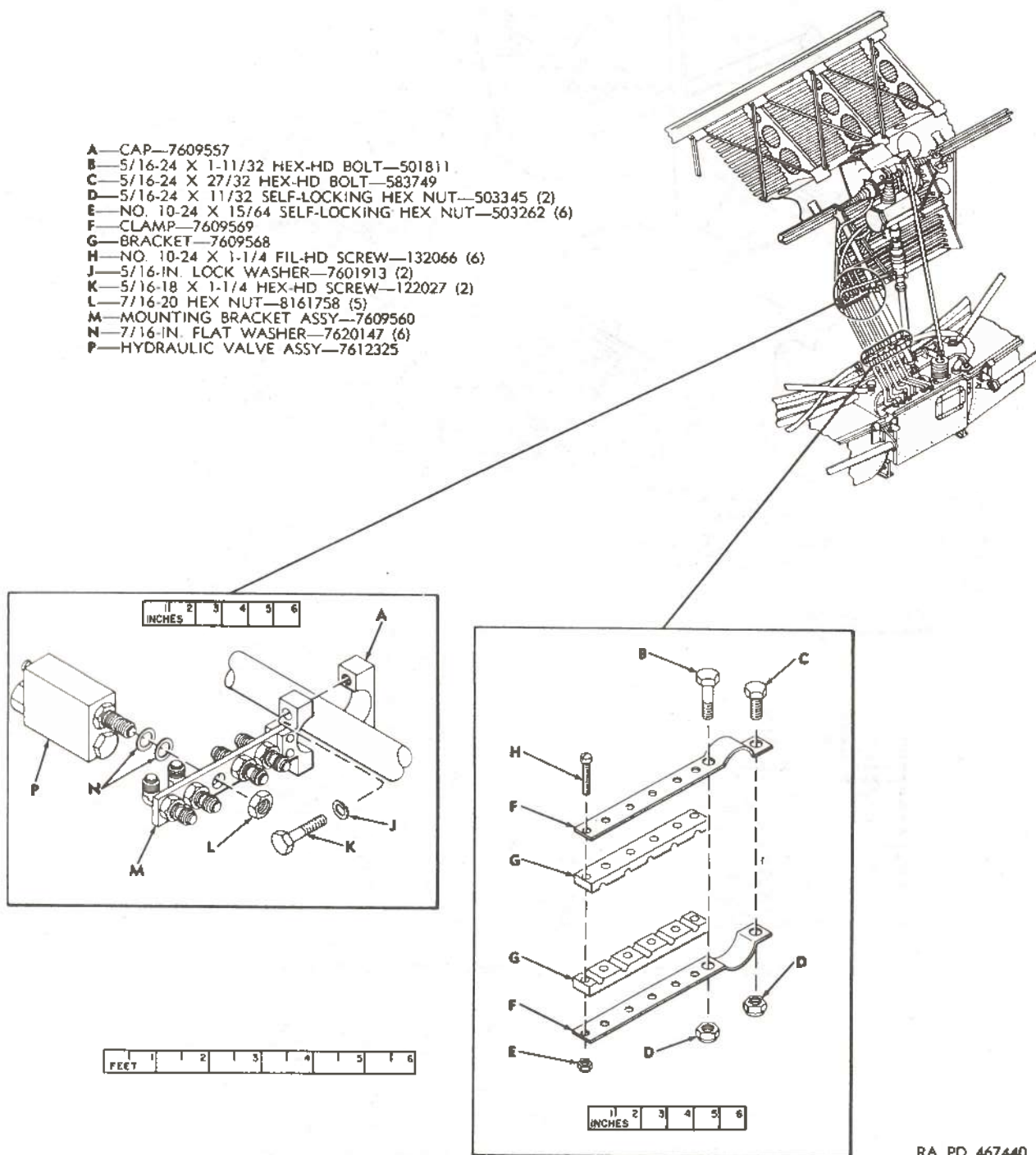
(2) Connect upper ends of three  $24\frac{1}{4}$ -inch-long tube assemblies (N, M, and L) and



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Figure 18. Removal and installation of hoses and tube assemblies.

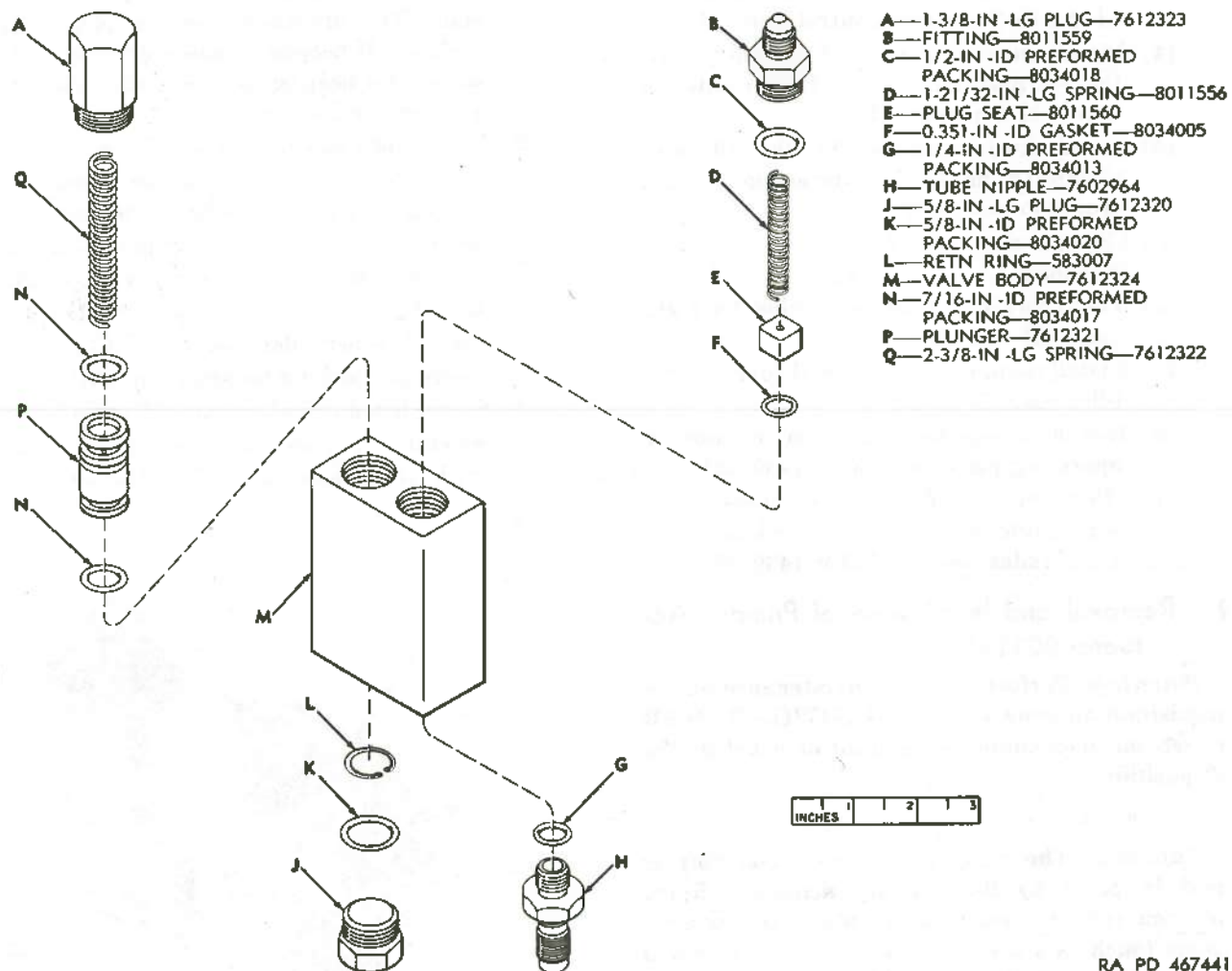
- A—CAP—7609557
- B—5/16-24 X 1-11/32 HEX-HD BOLT—501811
- C—5/16-24 X 27/32 HEX-HD BOLT—583749
- D—5/16-24 X 11/32 SELF-LOCKING HEX NUT—503345 (2)
- E—NO. 10-24 X 15/64 SELF-LOCKING HEX NUT—503262 (6)
- F—CLAMP—7609569
- G—BRACKET—7609568
- H—NO. 10-24 X 1-1/4 FIL-HD SCREW—132066 (6)
- J—5/16-IN. LOCK WASHER—7601913 (2)
- K—5/16-18 X 1-1/4 HEX-HD SCREW—122027 (2)
- L—7/16-20 HEX NUT—8161758 (5)
- M—MOUNTING BRACKET ASSY—7609560
- N—7/16-IN. FLAT WASHER—7620147 (6)
- P—HYDRAULIC VALVE ASSY—7612325



RA PD 467440

Figure 19. Removal and installation of mounting bracket assembly, clamp, and hydraulic valve assembly.





RA PD 467441

Figure 20. Hydraulic valve assembly 7612325—exploded view.

- two 24½-inch-long tube assemblies (K and J) to mounting bracket assembly (M, fig. 19).
- (3) Connect lower ends of tube assemblies (J-N) to hydraulic control unit (H).
- (4) Install mounting bracket assembly (M, fig. 19) and cap (A, fig. 19) on antenna trunnion assembly (F).
- (5) Install two brackets (G, fig. 19) and clamps (F, fig. 19) on tube assemblies and trunnion assembly.
- (6) Connect six hoses (A, B, C, D, E, and Q) as shown.
- (7) Test hoses and tube assemblies for leaks (pars. 21 and 23 a-d).
- (8) Install radome assembly and cover assemblies (par. 20 c-e).
- (9) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (10) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

## 27. Removal and Installation of Primary Actuator 8011416

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

### a. Removal.

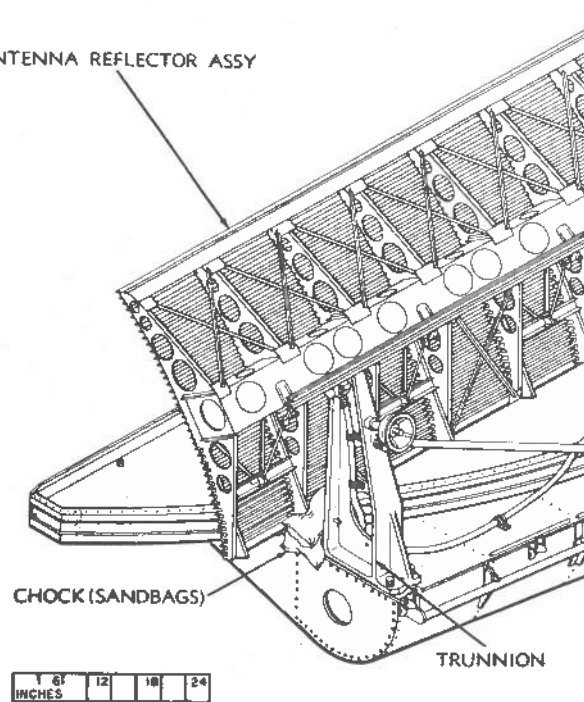
**Caution:** The antenna reflector assembly is held in place by the primary actuator. Brace antenna reflector assembly in place by placing a chock (such as a sandbag) between each trunnion and antenna reflector assembly (fig. 21).

- (1) Remove acquisition antenna (TM 9-1430-251-10/1 and radome and cover assemblies (par. 18 b-h).
- (2) Drain hydraulic system (par. 26a(2)).
- (3) Disconnect hoses (A, D, E, and Q, fig. 18) from primary actuator (R, fig. 18).
- (4) Remove primary actuator (V, fig. 22).

**Note.** The key letters shown in parentheses in b below refer to figure 22 unless otherwise indicated.

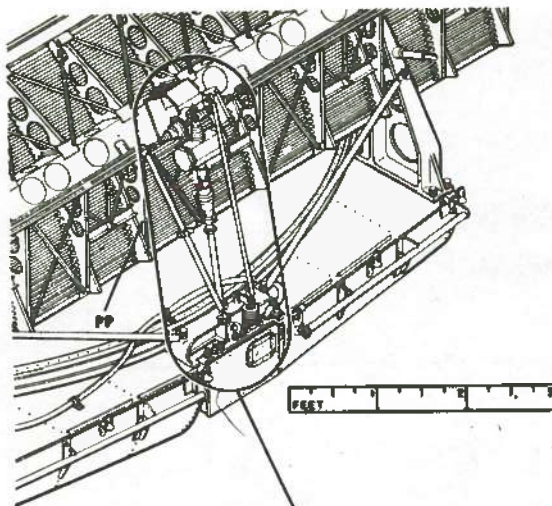
### b. Installation.

- (1) Check dimension (fig. 23) on primary actuator between center of pivot on lower end and center of end bearing on upper end. This dimension shall be  $34\frac{3}{4} \pm \frac{1}{4}$  inches. If necessary, loosen locking nut, screw end bearing in or out as required, and tighten locking nut.
- (2) Install primary actuator (V) with tee connector (fig. 23) on brake assembly turned toward antenna reflector assembly (PP). Secure upper end of actuator to center bracket group (B) with  $\frac{5}{8}$ -24 x  $2\frac{3}{4}$  hexagon-head bolt (D), four  $\frac{1}{2}$ -inch flat washers (C), and  $\frac{5}{8}$ -24 self-locking hexagon nut (BB).
- (3) Secure lower end of actuator (V) and lever assembly (Y) to mounting bracket (R) with shaft assembly (U),  $\frac{1}{2}$ -inch flat



RA PD 467442

Figure 21. Bracing antenna reflector assembly in place.



- A—RUBBER HOSE GROUP—  
G-231156
- B—CENTER BRACKET  
GROUP
- C—11/32-IN. FLAT  
WASHER—120393 (5)
- D—5/16-24 X 2-3/32  
HEX-HD BOLT—  
AIR-AN175-20A
- E—STUD ASSY—7609306 (2)  
1—9/32-IN.-ID FLAT  
WASHER—120392  
2—SPRING—7609255  
3—RETN RING—583027  
4—SPRING RETAINER—  
7609291  
5—SPRING RETAINER—  
7609298  
6—2-5/32-IN.-LG STUD—  
7609303  
7—COTTER PIN—188736  
8—1/4-20 HEX NUT—  
125115
- F—CONNECTOR LINK  
ASSY—7609309
- G—LOCKING NUT
- H—STUD ASSY—7609306
- J—SWITCH TRIP GROUP
- K—5/16-18 X 2 HEX-HD  
SCREW—AIR-AN655-20
- L—11/32-IN. FLAT  
WASHER—120393 (4)
- M—END BEARING—7609289
- N—1/4-20 HEX NUT—  
7600027
- P—9/32-IN. FLAT  
WASHER—120392 (3)
- Q—7/32-IN. FLAT  
WASHER—446161
- R—MOUNTING BRACKET
- S—NO. 10-24 SELF-LOCKING  
HEX NUT—503262

- T—0.316 X 5/8 X 0.062  
FLAT WASHER—  
7609202 (2)
- U—SHAFT ASSY—7609307
- V—PRIMARY ACTUATOR—  
8011416
- W—NO. 10-24 SELF-  
LOCKING HEX NUT—  
503262 (2)
- X—7/32-IN. FLAT  
WASHER—446161 (2)
- Y—LEVER ASSY—7609308
- Z—SPRING RETAINER—  
7609298
- AA—SPRING—7609255
- BB—5/16-24 SELF-LOCKING  
HEX NUT—503345
- CC—5/16-18 HEX NUT—  
AIR-AN365-518
- DD—TRUNNION ASSY—  
7617144
- EE—5/16-24 X 1-7/32  
HEX-HD BOLT—  
AIR-AN175-11A
- FF—5/16-IN. LOCK  
WASHER—7601913
- GG—1/4-20 HEX NUT—  
134551 (2)
- HH—1/4-IN. LOCK  
WASHER—120380 (2)
- JJ—LUBR FITTING—7617879
- KK—FITTING—MS15003-1
- LL—ANCHOR BLOCK—  
7612778
- MM—9/32-IN. FLAT  
WASHER—120392 (2)
- NN—1/4-20 X 1-1/2 FIL-HD  
SCREW—132282 (2)
- PP—ANTENNA REFLECTOR  
ASSY

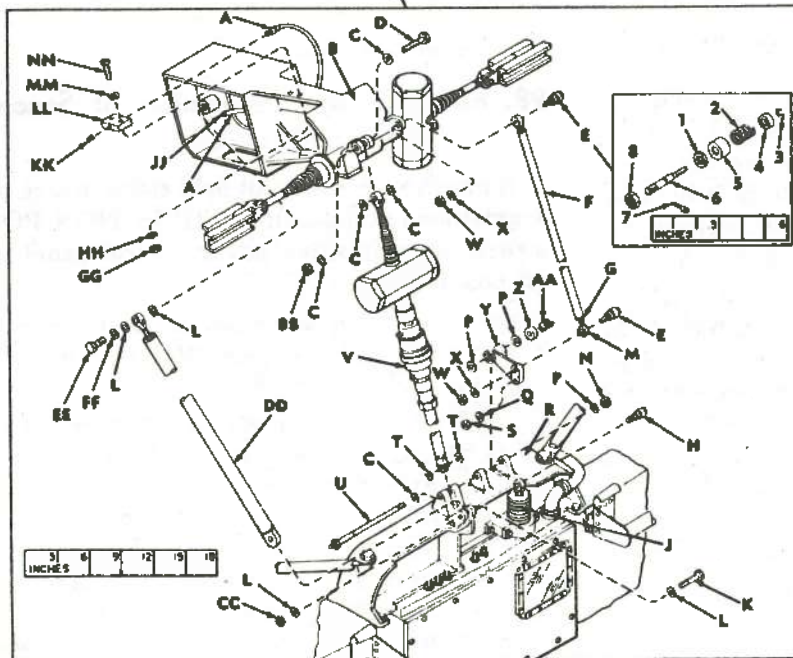


Figure 22. Removal and installation of primary actuator 8011416.

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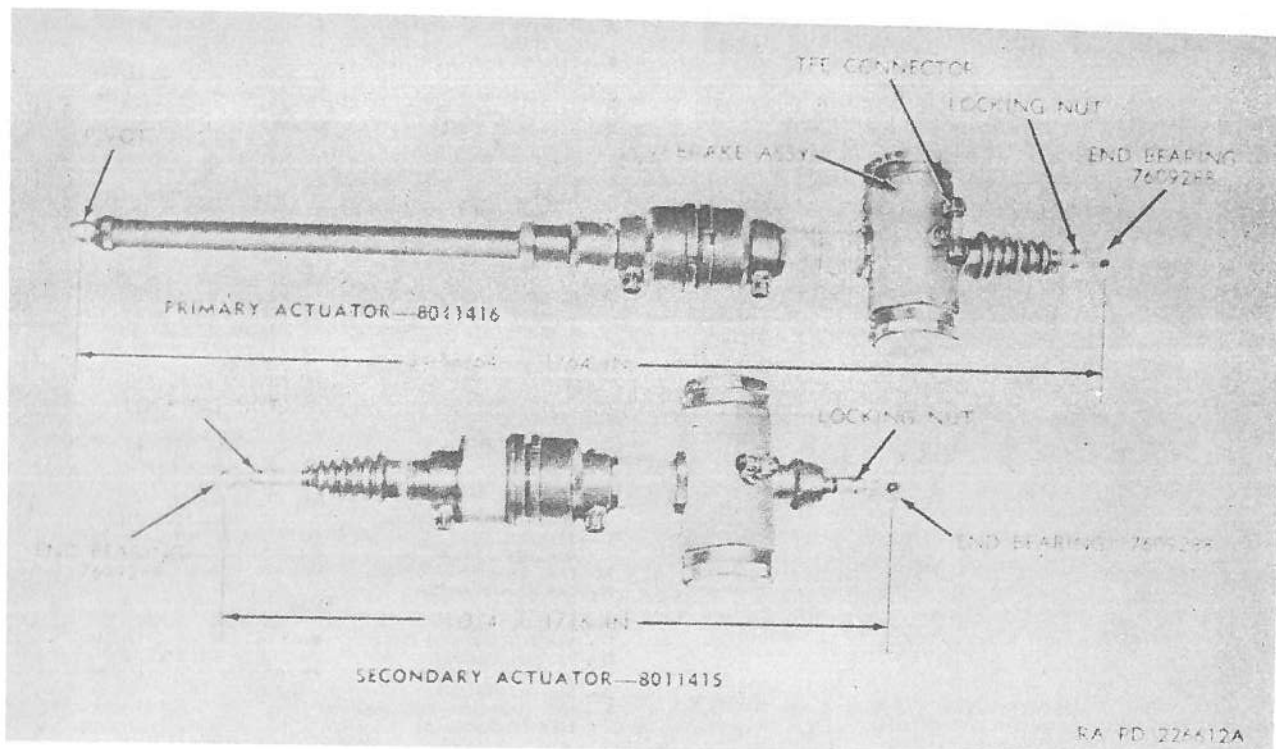


Figure 23. Primary and secondary actuators—hydraulic.

washer (C), two 0.316 x  $\frac{1}{8}$  x 0.062 flat washers (T), two  $\frac{1}{2}$ -inch flat washers (P), spring retainer (Z), spring (AA),  $\frac{1}{2}$ -inch flat washer (P), and  $\frac{1}{4}$ -20 hexagon nut (N). Remove chocks between antenna reflector assembly and each trunnion (fig. 21).

- (4) Connect four hoses (A, D, E, and Q, fig. 18) to actuator.
- (5) Lubricate pivot (fig. 23) and end bearing on primary actuator with grease 9150-261-8298.
- (6) Perform tests and adjustments of antenna (pars. 21 and 23 a-p).
- (7) Install radome assembly and cover assemblies (par. 20 c-e).
- (8) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (9) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

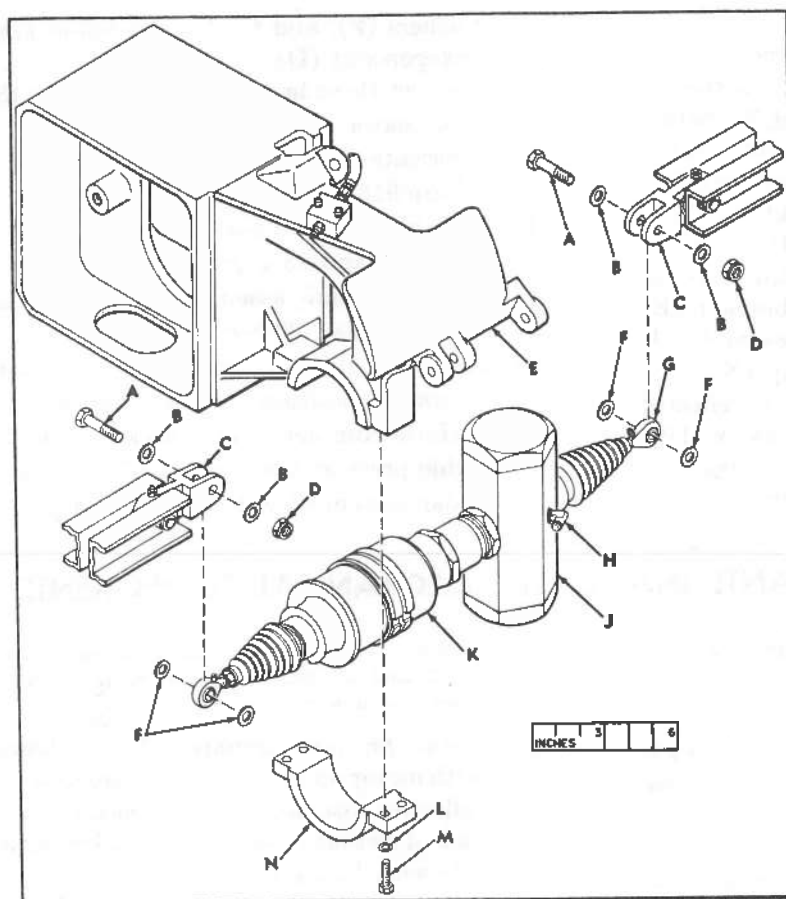
## 28. Removal and Installation of Secondary Actuator 8011415

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

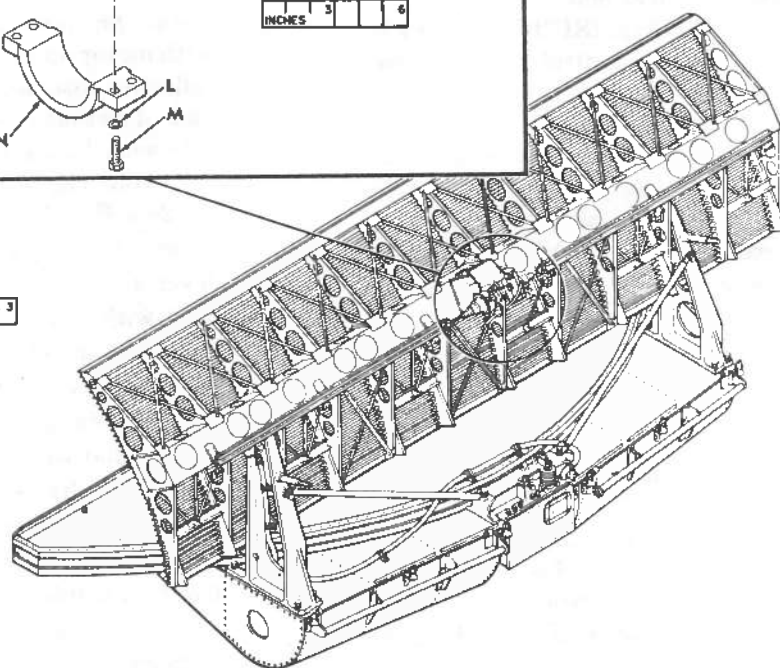
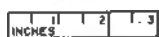
*Note.* The key letters shown in parentheses in a and b below refer to figure 24 unless otherwise indicated.

### a. Removal.

- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).
- (2) Drain hydraulic system (par. 26a(2)).
- (3) Remove three hoses (A, B, and C, fig. 18) from secondary actuator (S, fig. 18).
- (4) Remove hexagon nut (D), four flat washers (B and F), and hexagon-head bolt (A) securing each end of actuator to reflector lever assemblies (C).
- (5) Remove cap (N) and actuator.



- A—0.312-24 X 1-15/32 HEX-HD BOLT—AIR-AN175-13A (P/O REFLECTOR ASSY—7620453)
- B—11/32-IN. FLAT WASHER—120393 (P/O REFLECTOR ASSY—7620453)
- C—REFLECTOR LEVER ASSY (P/O REFLECTOR ASSY—7620453)
- D—5/16-24 X 11/32 SELF-LOCKING HEX NUT—503345 (P/O REFLECTOR ASSY—7620453)
- E—CENTER BRACKET
- F—0.316-IN. FLAT WASHER—7609202 (P/O REFLECTOR ASSY—7620453)
- G—END BEARING—7609288
- H—ELBOW
- J—BRAKE ASSY
- K—SECONDARY ACTUATOR—8011415
- L—7/32-IN. FLAT WASHER—446161 (4) (P/O REFLECTOR ASSY—7620453)
- M—NO. 10-24 X 29/32 HEX-HD BOLT—7611886 (4) (P/O REFLECTOR ASSY—7620453)
- N—CAP—7609329 (P/O REFLECTOR ASSY—7620453)



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Figure 24. Removal and installation of secondary actuator 8011415.



*b. Installation.*

- (1) Check dimension (fig. 23) between centers of end bearings on secondary actuator. This dimension shall be  $21\frac{3}{4} \pm \frac{1}{8}$  inches. If necessary, loosen locking nuts, screw end bearings in or out to meet requirements, and tighten locking nuts.
- (2) Aline end bearings (G) with reflector lever assemblies (C) and mount secondary actuator (K) to center bracket (E) so that elbow (H) on brake assembly (J) is facing outward. Install cap (N).
- (3) Secure each end of actuator to reflector lever assembly with 0.312-24 x  $1\frac{1}{2}$  hexagon-head bolt (A), two  $\frac{1}{2}$ -inch flat washers (B), two 0.316-inch flat

washers (F), and  $\frac{1}{8}$ -24 x  $1\frac{1}{2}$  self-locking hexagon nut (D).

- (4) Connect three hoses (A, B, and C, fig. 18) to actuator.
- (5) Lubricate end bearings (fig. 23) with grease 9150-261-8298.
- (6) Perform tests and adjustments of antenna (pars. 21 and 23 a-p).
- (7) Install radome assembly and cover assemblies (par. 20 c-e).
- (8) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (9) Perform complete daily checks and wave-guide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

## Section VI. ACQUISITION ANTENNA ELECTRO-MECHANICAL COMPONENTS

### 29. Removal and Installation of Primary Actuator 8159580

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

*a. Removal.*

**Caution:** The antenna reflector assembly is held in place by the primary actuator. Brace antenna reflector assembly in place by placing a chock (such as a sandbag) (fig. 21) between each trunnion and antenna reflector assembly.

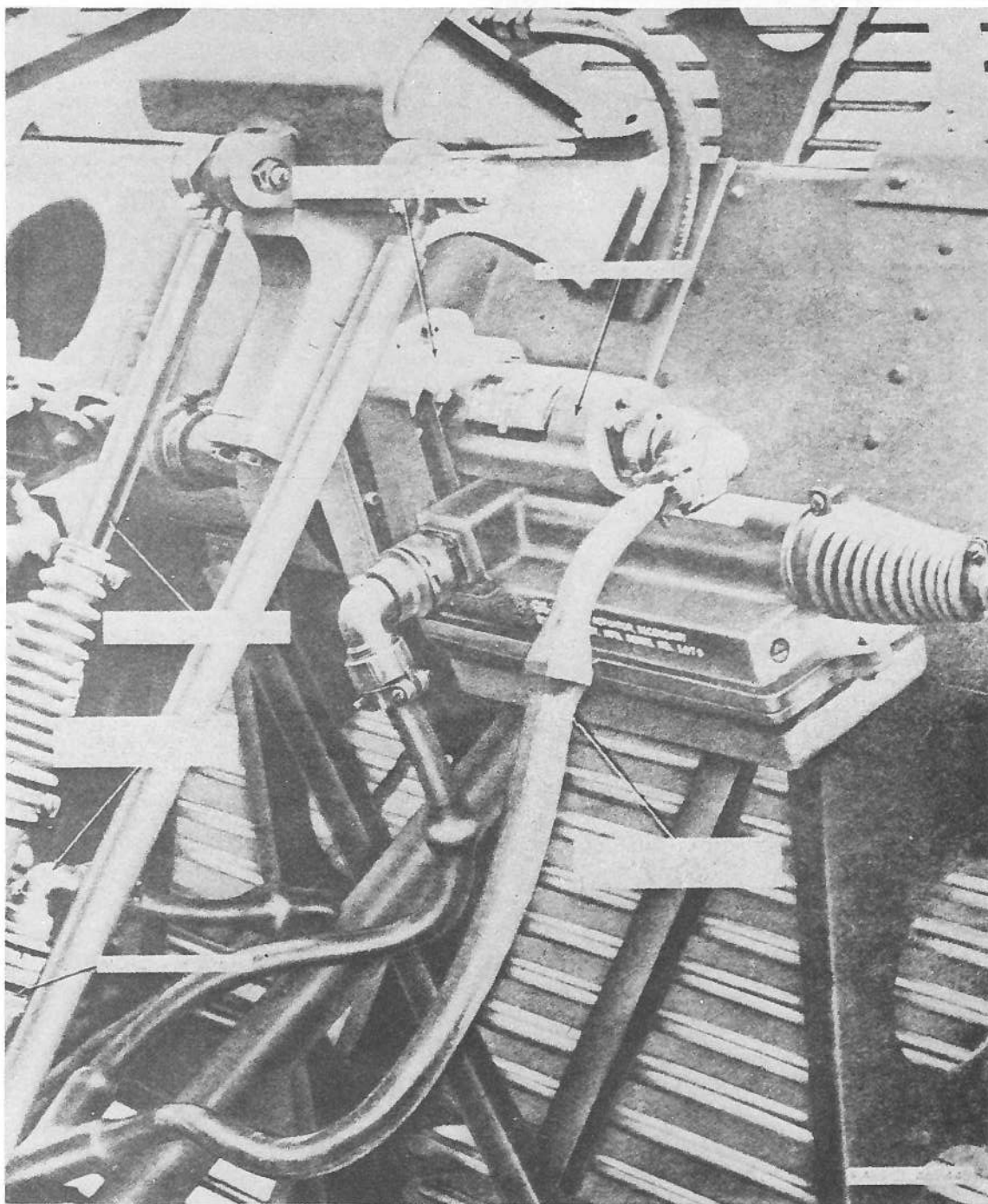
- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).
- (2) Remove primary actuator cable assembly (fig. 25).
- (3) Remove primary actuator (V, fig. 26).

*b. Installation.*

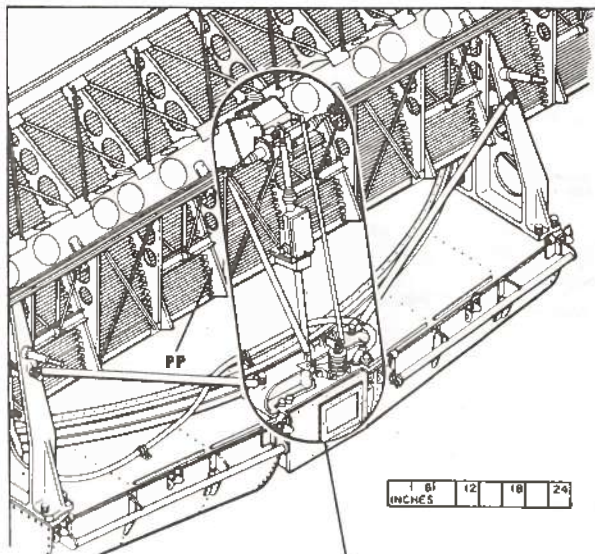
- (1) Check dimension (fig. 27) on primary actuator between center of pivot on lower end and center of end bearing on upper end. This dimension shall be  $34\frac{3}{4} \pm \frac{1}{4}$  inches. If necessary, loosen locking nut, screw end bearing in or out as required, and tighten locking nut.

*Note.* The key letters shown in parentheses in (2) and (3) below refer to figure 26 unless otherwise indicated.

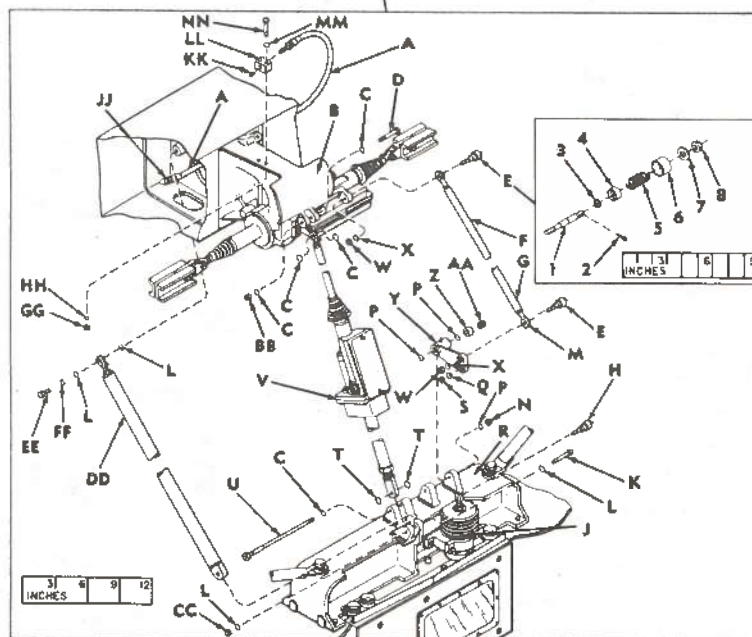
- (2) Install primary actuator (V) as shown, with motor up and turned toward antenna reflector assembly (PP). Secure upper end of actuator to center bracket group (B) with  $\frac{1}{8}$ -24 x  $2\frac{1}{2}$  hexagon-head bolt (D), four  $\frac{1}{2}$ -inch flat washers (C), and  $\frac{1}{8}$ -24 self-locking hexagon nut (BB).
- (3) Secure lower end of actuator (V) and lever assembly (Y) to mounting bracket (R) with shaft assembly (U),  $\frac{1}{2}$ -inch flat washer (C), two 0.316 x  $\frac{3}{4}$  x 0.062 flat washers (T), two  $\frac{3}{32}$ -inch flat washers (P), spring retainer (Z), spring (AA),  $\frac{3}{32}$ -inch flat washer (P), and  $\frac{1}{4}$ -20 hexagon nut (N). Remove chocks between base of antenna reflector assembly and each trunnion (fig. 21).
- (4) Connect primary actuator cable assembly (fig. 16) to actuator.
- (5) Lubricate pivot (fig. 27) and end bearing on primary actuator with grease 9150-261-8298.



*Figure 25. Electro-mechanical actuators—locational view.*



- A—RUBBER HOSE GROUP—  
G-231156
- B—CENTER BRACKET  
GROUP
- C—1 1/32-IN. FLAT  
WASHER—120393 (5)
- D—5/16-24 X 2-3/32  
HEX-HD BOLT—  
AIR-AN175-20A
- E—STUD ASSY—7609306 (2)  
1—2-5/32-IN.-LG STUD—  
7609303  
2—COTTER PIN—188736  
3—RETN RING—583027  
4—SPRING RETAINER—  
7609291  
5—SPRING—7609255  
6—SPRING RETAINER—  
7609298  
7—9/32-IN.-ID FLAT  
WASHER—120392  
8—1/4-20 HEX NUT—  
125115
- F—CONNECTOR LINK  
ASSY—7609309
- G—LOCKING NUT
- H—STUD ASSY—7609306
- J—SWITCH TRIP GROUP
- K—5/16-18 X 2 HEX-HD  
SCREW—AIR-AN655-20
- L—1 1/32-IN. FLAT  
WASHER—120393 (4)
- M—END BEARING—7609289
- N—1/4-20 HEX NUT—  
7600027
- P—9/32-IN. FLAT  
WASHER—120392 (3)
- Q—7/32-IN. FLAT  
WASHER—446161
- R—MOUNTING BRACKET
- S—NO. 10-24 SELF-LOCKING  
HEX NUT—503262
- T—0.316 X 5/8 X 0.062  
FLAT WASHER—  
7609202 (2)
- U—SHAFT ASSY—7609307
- V—PRIMARY ACTUATOR—  
8159580
- W—NO. 10-24 SELF-  
LOCKING HEX NUT—  
503262 (2)
- X—7/32-IN. FLAT  
WASHER—446161 (2)
- Y—LEVER ASSY—7609308
- Z—SPRING RETAINER—  
7609298
- AA—SPRING—7609255
- BB—5/16-24 SELF-LOCKING  
HEX NUT—503345
- CC—5/16-18 HEX NUT—  
AIR-AN365-518
- DD—TRUNNION ASSY—  
7617144
- EE—5/16-24 X 1-7/32  
HEX-HD BOLT—  
AIR-AN175-11A
- FF—5/16-IN. LOCK  
WASHER—7601913
- GG—1/4-20 HEX NUT—  
134551 (2)
- HH—1/4-IN. LOCK  
WASHER—120380 (2)
- JJ—LUBR FITTING—7617879
- KK—FITTING—M515003-1
- LL—ANCHOR BLOCK—  
7612778
- MM—9/32-IN. FLAT  
WASHER—120392 (2)
- NN—1/4-20 X 1-1/2 FIL-HD  
SCREW—132282 (2)
- PP—ANTENNA REFLECTOR  
ASSY



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Figure 26. Removal and installation of primary actuator 8159580.



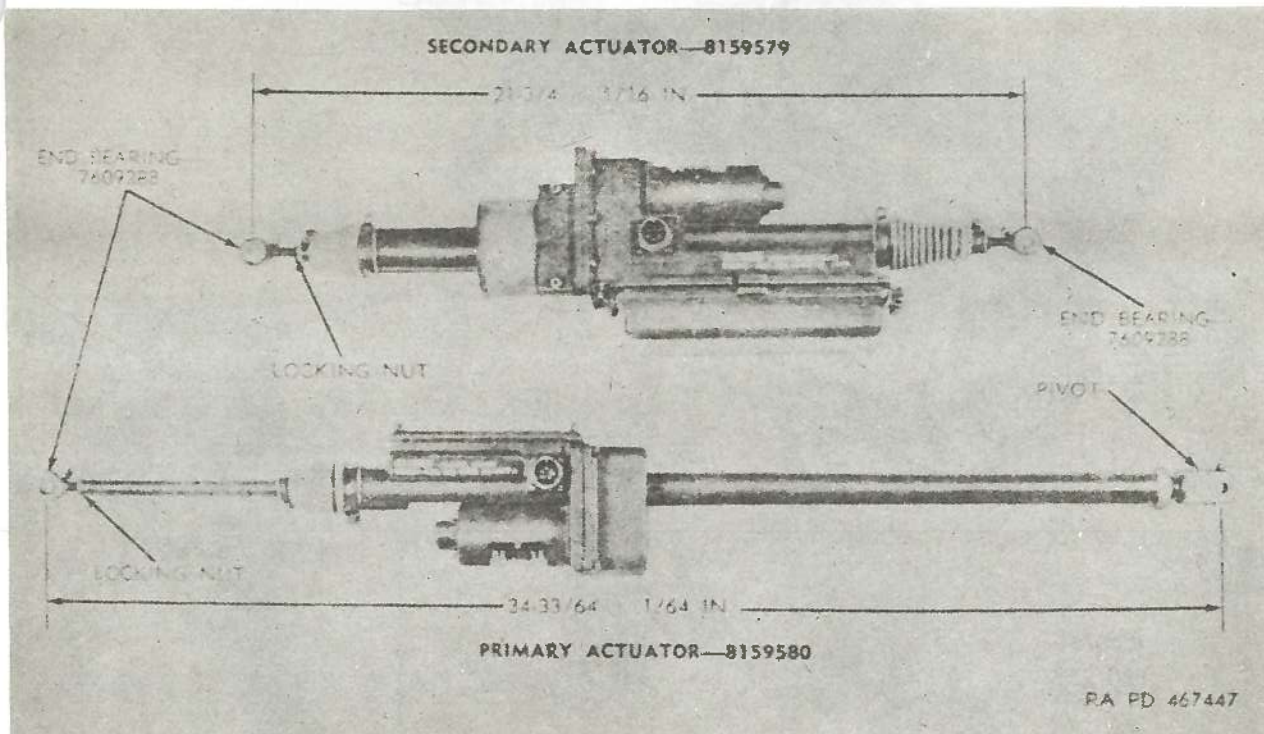


Figure 27. Primary and secondary actuators—electro-mechanical

- (6) Perform tests and adjustments of antenna (pars. 24 and 25 a-j).
- (7) Install radome assembly and cover assemblies (par. 20 c-e).
- (8) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (9) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

### 30. Removal and Installation of Secondary Actuator 8159579

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

#### a. Removal.

- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).

- (2) Remove secondary actuator cable assembly (fig. 16).

*Note.* The key letters shown in parentheses in (3) and (4) below refer to figure 28.

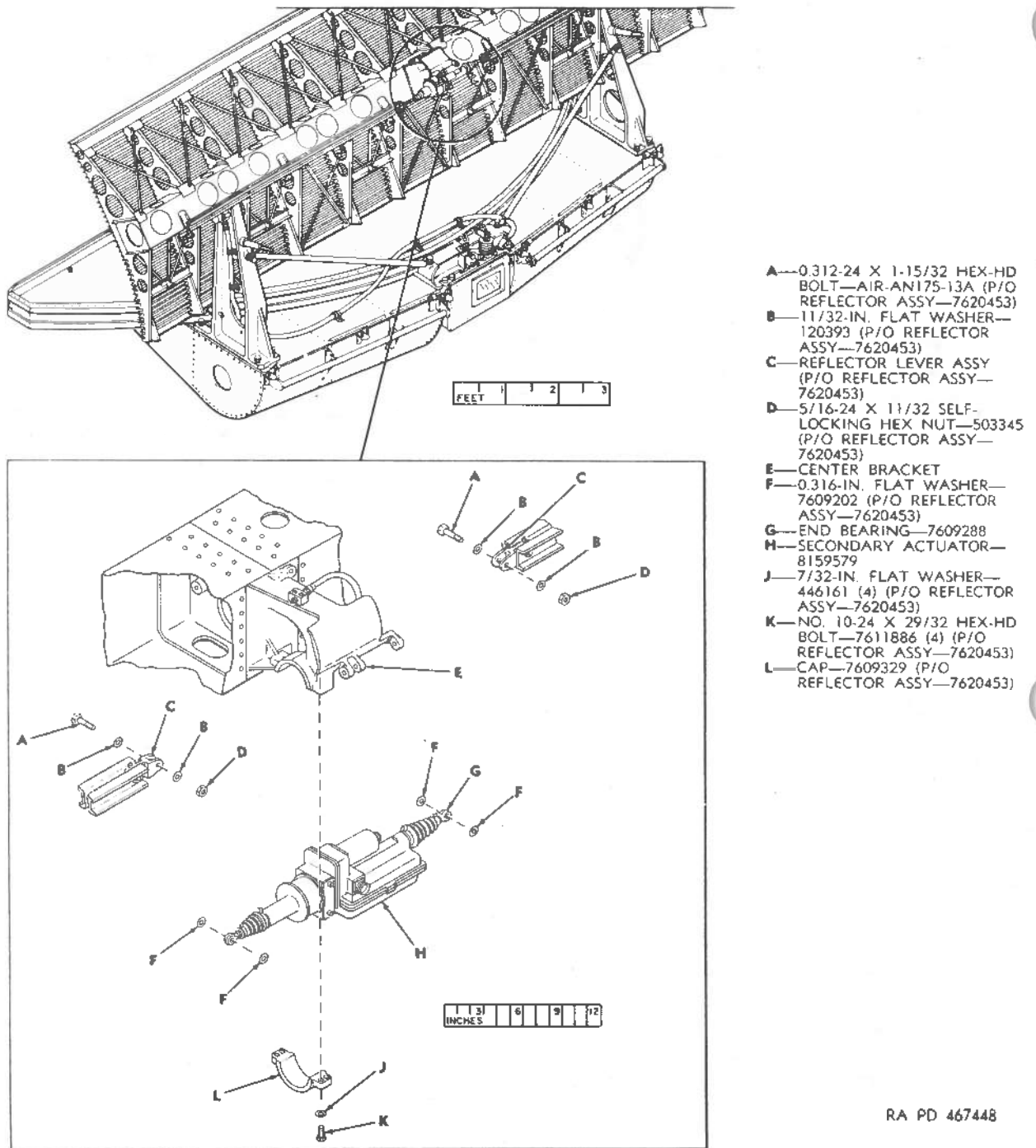
- (3) Remove hexagon nut (D), four flat washers (B and F), and hexagon-head bolt (A) securing each end of secondary actuator (H) to reflector lever assemblies (C).

- (4) Remove cap (L) and actuator.

#### b. Installation.

- (1) Check dimension (fig. 27) between centers of end bearings on secondary actuator. This dimension shall be  $21\frac{3}{4} \pm \frac{1}{16}$  inches. If necessary, loosen locking nuts, screw end bearings in or out to meet requirements, and tighten locking nuts.

*Note.* The key letters shown in parentheses in (2) and (3) below refer to figure 28.



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Figure 28. Removal and installation of secondary actuator 8159579.



- (2) Align end bearings (G) with reflector lever assemblies (C) and mount secondary actuator (H) to center bracket (E) with motor on top and to the right. Install cap (L).
- (3) Secure each end of actuator to reflector lever assembly with 0.312-24 x 1 $\frac{1}{2}$  hexagon-head bolt (A), two  $\frac{1}{2}$ -inch flat washers (B), two 0.316-inch flat washers (F), and  $\frac{5}{16}$ -24 x  $\frac{1}{2}$  self-locking hexagon nut (D).
- (4) Connect secondary actuator cable assembly (fig. 16) to actuator.
- (5) Lubricate end bearings (fig. 27) with grease 9150-261-8298.
- (6) Perform tests and adjustments of antenna (pars. 24 and 25 a-j).
- (7) Install radome assembly and cover assemblies (par. 20 c-e).
- (8) Install acquisition antenna in normal operating position (TM 9-1430-251-16 /1)
- (9) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20 /1)

### Removal and Installation of AC Motor 8159610

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

*Note.* The procedure for removal and installation of the motors on both the primary and secondary actuators is similar. No differentiation between actuators is made in the instructions below. The primary actuator is illustrated.

#### a. Removal.

- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).
- (2) Disconnect actuator cable assembly (fig. 16) from actuator.
- (3) Remove four fillister-head screws (fig. 29), lockwashers, and flat washers.
- (4) Remove motor.

#### b. Installation.

- (1) Place ac motor (fig. 29) in position on actuator making sure that gear on motor is properly meshed with mating gear in actuator.
- (2) Secure motor with four No. 6 flat washers, No. 6 lockwashers, and No. 6-32 x  $\frac{3}{4}$  fillister-head screws.
- (3) Connect actuator cable assembly (fig. 16) to motor.
- (4) Install radome assembly and cover assemblies (par. 20 c-e).
- (5) Install acquisition antenna in normal operating position (TM 9-1430-251-10 /1)
- (6) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20 /1)

## Section VII. ANTENNA REFLECTOR ASSEMBLY

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

### 32. Removal of Antenna Reflector Assembly 7620453

- a. Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).

- b. Remove hoses and tube assemblies (par. 26a (2)-(7)), or primary and secondary actuator cable assemblies (fig. 16).

- c. Remove primary actuator (par. 27a(4) or par. 29a (2) and (3)).

- d. Remove secondary actuator (par. 28a (4) and (5) or par. 30a (2)-(4)).

*Note.* The key letters shown in parentheses in c and d below refer to figure 22.

- e. Remove connector link assembly (F).

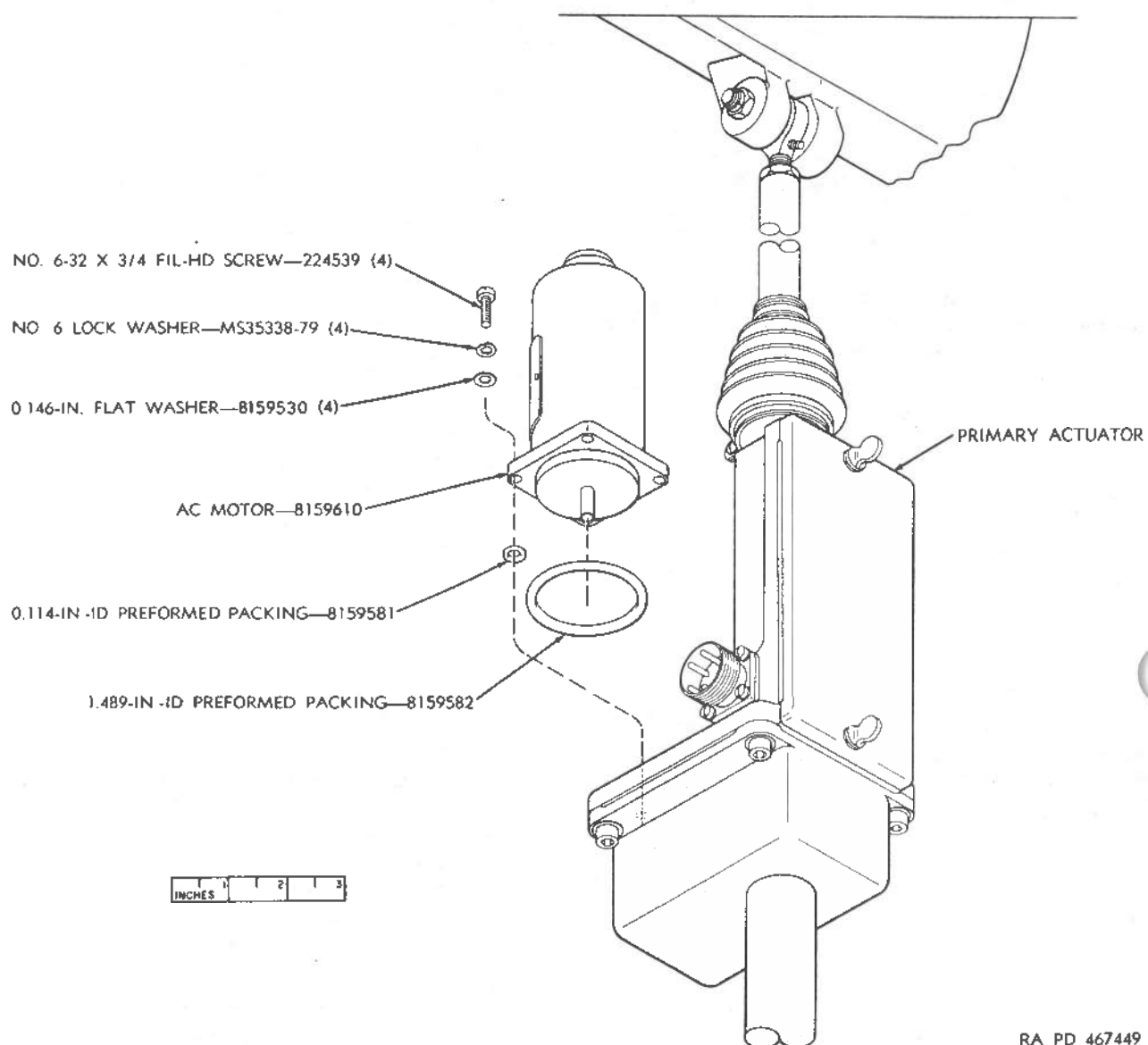


Figure 29. Removal and installation of ac motor.

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f. Remove anchor block (LL). Unscrew lubrication fitting (JJ) from upper end of trunnion assembly (DD) and remove rubber hose group (A).

g. Remove trunnion assembly.

*Note.* The key letters shown in parentheses in *h* through *m* below refer to figure 30 unless otherwise indicated.

h. Remove cover assembly (JJ) from cover plate assembly (RR) on left trunnion (GG).

i. Remove cover plate assembly (RR) and gasket (SS) from trunnion. Leave plate assembly attached to cable assembly (fig. 31).

j. Remove two crossarm assemblies (S and FF).

k. Place six clamping fixtures 7686096 (fig. 15) on reflector assembly and tighten clamping bolt to hold secondary reflector stationary and parallel to primary reflector while repairs are being made.

l. Remove gear assembly (D) from shaft of antenna reflector assembly (M) in left trunnion.

m. Remove two caps (G and L) and lift reflector assembly off trunnions.

n. Mount antenna reflector assembly (K, fig. 32) on holding fixtures 7659280 (J, fig. 32) to prevent damage to reflector assembly and to facilitate repairs.

### 33. Field Maintenance of Antenna Reflector Assembly 7620453

a. *Inspection.* Inspect reflector assembly for bent, loose, or twisted bars or structural members. If any of these conditions exist, reflector assembly must be replaced.

b. *Disassembly.*

- (1) Remove shafts (D and Q, fig. 32) from reflector assembly.

*Note.* The key letters shown in parentheses in (2) through (6) below refer to figure 33.

- (2) Remove two lever assemblies (E) from 63 $\frac{3}{4}$ -inch-long lever links (F).
- (3) Detach six upper end bearings (V) from bellcrank lever assemblies (N). Detach six lower end bearings (AA) from secondary reflector chassis (CC) and remove six control lever links (T) with end bearings attached.

- (4) Remove end bearings (V and AA) and hexagon nuts (U and BB) from control lever links.

*Note.* Hexagon nuts (U) and end bearings (V) at top of lever links have right-hand threads, and hexagon nuts (BB) and end bearings (AA) at bottom of lever links have left-hand threads.

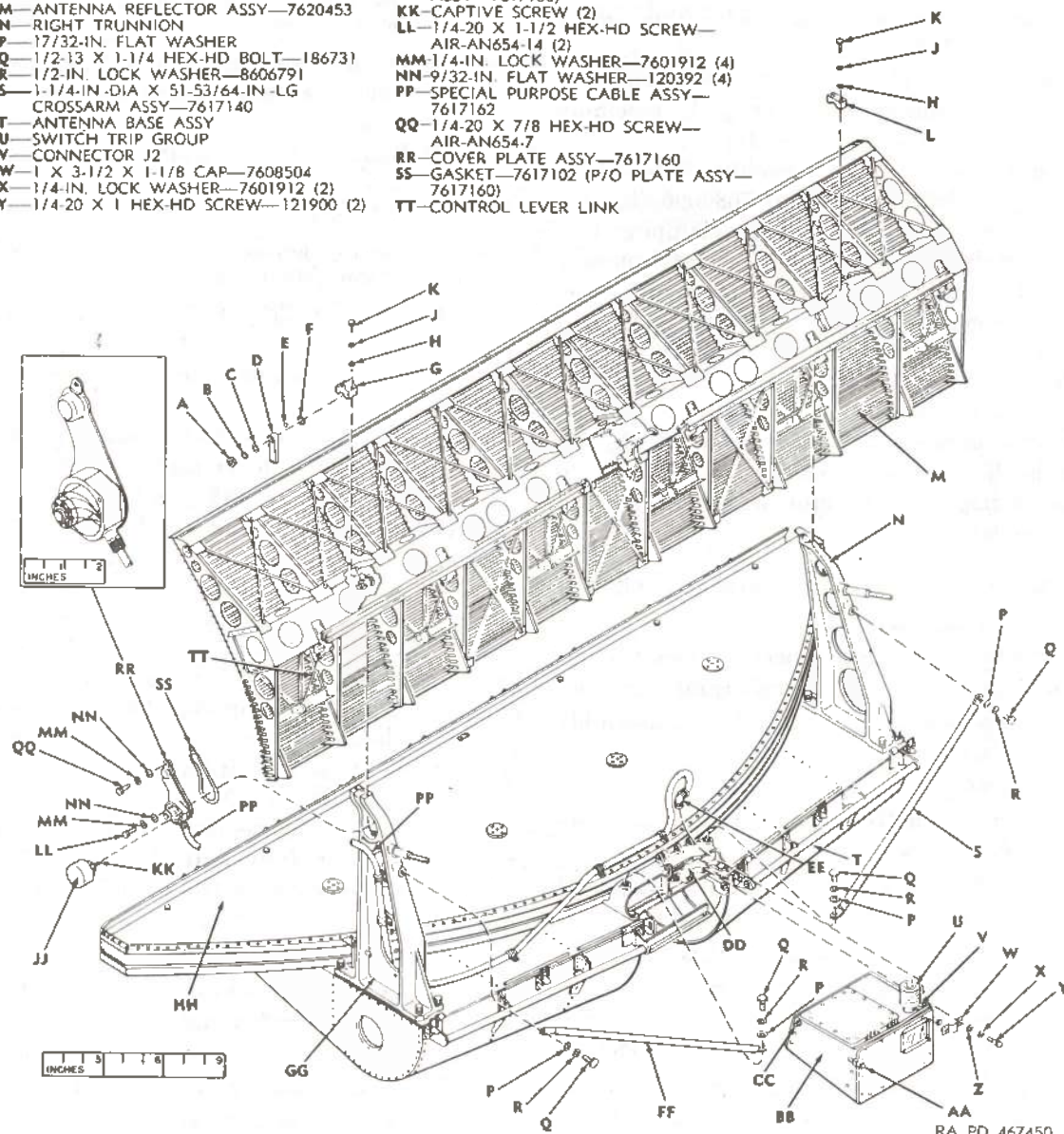
- (5) Detach four lever links (F) from six bellcrank lever assemblies and remove links.
- (6) Remove six bellcrank lever assemblies from studs (X).

c. *Assembly.*

*Note.* The key letters shown in parentheses in (1) through (8) below refer to figure 33.

- (1) Install bellcrank lever assembly (N) on each of six studs (X).
- (2) Mount two 63 $\frac{3}{4}$ -inch-long lever links (F) on three bellcrank lever assemblies on each side of reflector assembly (K).
- (3) Install one lever assembly (E) in end of each pair of 63 $\frac{3}{4}$ -inch-long lever links.
- (4) Secure each end of clamp bar 7687225 (fig. 34) to a lever assembly fingertight with one  $\frac{5}{16}$ -24 x 1 $\frac{1}{2}$  hexagon-head bolt (J), two  $\frac{1}{2}$ -inch flat washers (B), two 0.316-inch flat washers (H), and one  $\frac{5}{16}$ -24 self-locking hexagon nut (G). Using C clamp (fig. 34) secure angle of clamp bar to center bracket.
- (5) Turn  $\frac{5}{16}$ -24 left-hand threaded hexagon nut (BB) to full travel on each of six lower end bearings (AA). Screw end bearing fully into left-hand threaded end of each control lever link (T).
- (6) Turn  $\frac{5}{16}$ -24 hexagon nut (U) to full travel on each of six upper end bearings (V). Screw end bearing fully into right-hand threaded end of each control lever link.
- (7) Adjust upper and lower end bearings so that threads are equalized at both ends of each control lever link and so that link is of the proper length to be installed

- A—1/2-13 HEX NUT—120366  
 B—1/2-IN. LOCK WASHER—8606791  
 C—17/32-IN. FLAT WASHER—120396  
 D—GEAR ASSY—7617106  
 E—1/8 X 5/8 KEY—7611884  
 F—1.265 X 1-3/4 X 0.091 FLAT WASHER—7609274  
 G—2-3/4 X 2-1/16 X 2 CAP—7609280  
 H—9/32-IN. FLAT WASHER—120392 (3)  
 J—1/4-IN. LOCK WASHER—7601912 (3)  
 K—1/4-20 X 2 HEX-HD BOLT—8606825 (4)  
 L—1-1/4 X 2-3/4 X 1-1/4 CAP—7609313  
 M—ANTENNA REFLECTOR ASSY—7620453  
 N—RIGHT TRUNNION  
 P—17/32-IN. FLAT WASHER  
 Q—1/2-13 X 1-1/4 HEX-HD BOLT—186731  
 R—1/2-IN. LOCK WASHER—8606791  
 S—1-1/4-IN.-DIA X 51-53/64-IN.-LG CROSSARM ASSY—7617140  
 T—ANTENNA BASE ASSY  
 U—SWITCH TRIP GROUP  
 V—CONNECTOR J2  
 W—1 X 3-1/2 X 1-1/8 CAP—7608504  
 X—1/4-IN. LOCK WASHER—7601912 (2)  
 Y—1/4-20 X 1 HEX-HD SCREW—121900 (2)  
 Z—9/32-IN. FLAT WASHER—120392 (2)  
 AA—SQ-HD CAPTIVE SCREW (2)  
 BB—HYDRAULIC CONTROL UNIT—8607284  
 CC—GUIDE STUD  
 DD—ALINEMENT BLOCK  
 EE—CONNECTOR P2  
 FF—1-1/4-IN.-DIA X 51-53/64-IN.-LG CROSSARM ASSY—7617141  
 GG—LEFT TRUNNION  
 HH—WAVEGUIDE (PILLBOX) ASSY  
 JJ—COVER ASSY—7617105 (P/O PLATE ASSY—7617160)  
 KK—CAPTIVE SCREW (2)  
 LL—1/4-20 X 1-1/2 HEX-HD SCREW—AIR-AN654-14 (2)  
 MM—1/4-IN. LOCK WASHER—7601912 (4)  
 NN—9/32-IN. FLAT WASHER—120392 (4)  
 PP—SPECIAL PURPOSE CABLE ASSY—7617162  
 QQ—1/4-20 X 7/8 HEX-HD SCREW—AIR-AN654-7  
 RR—COVER PLATE ASSY—7617160  
 SS—GASKET—7617102 (P/O PLATE ASSY—7617160)  
 TT—CONTROL LEVER LINK



RA PD 467450

Figure 30. Removal and installation of antenna reflector assembly 7620453.

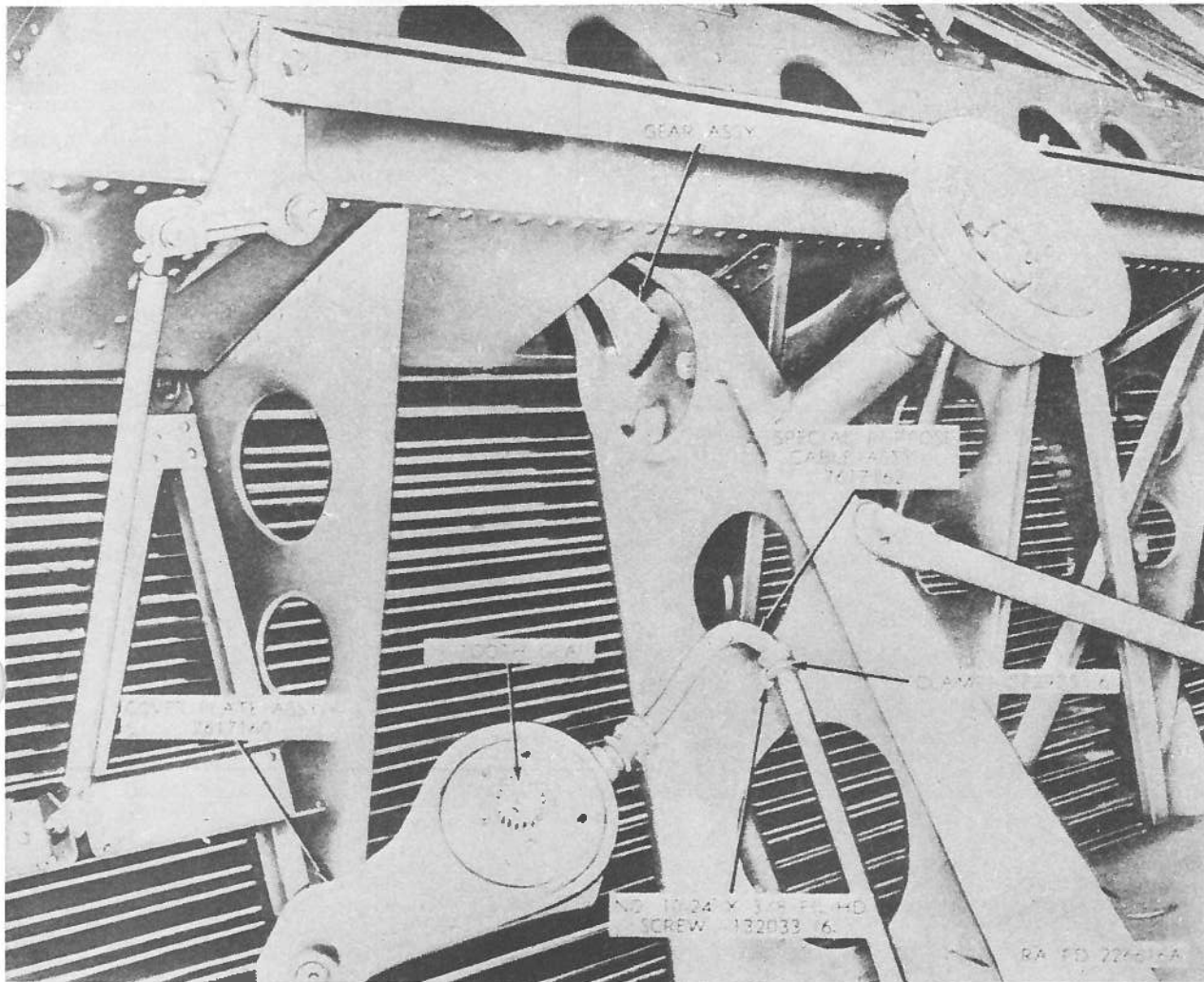
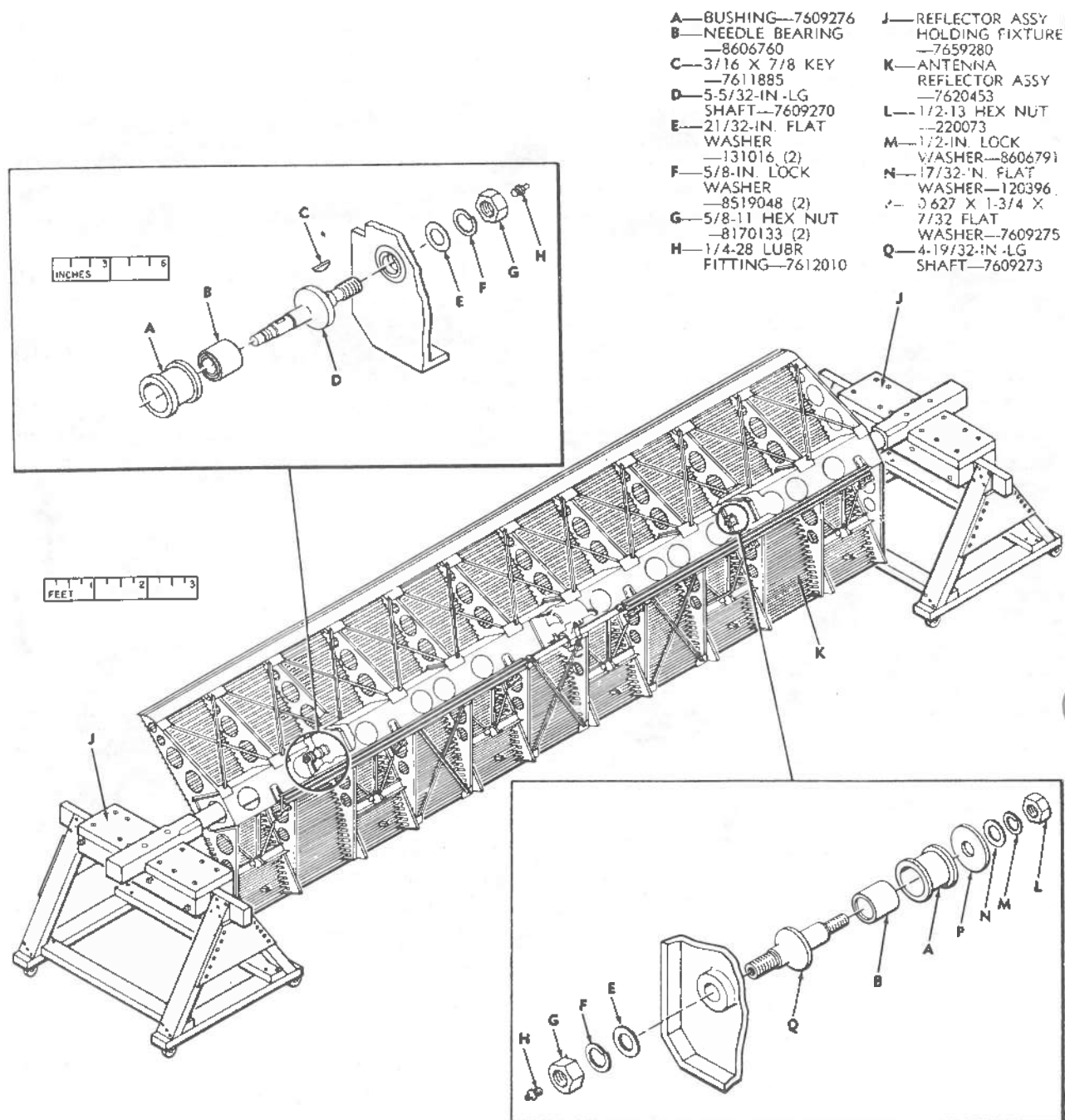


Figure 31. Cover plate assembly—partially removed.





RA PD 467451

Figure 32. Partial disassembly and assembly of antenna reflector assembly.

as determined by holding link in installed position.

- (8) Install six control lever links securing lower end bearings to secondary reflector chassis (CC) and upper end bearings in clevis of bellcrank lever assembly.
- (9) Tighten  $\frac{1}{8}$ -24 right-hand threaded hexagon nut against upper end of each of six control lever links and  $\frac{1}{8}$ -24 left-hand threaded hexagon nut against lower ends of lever links.

*Note.* The key letters shown in parentheses in (10) through (13) below refer to figure 32.

- (10) Install  $5\frac{1}{2}$ -inch-long shaft (D) and  $\frac{3}{16}$  x  $\frac{1}{8}$  key (C) in antenna reflector assembly (K). Install  $\frac{1}{4}$ -28 lubrication fitting (H).
- (11) Install needle bearing (B) and bushing (A) on  $5\frac{1}{2}$ -inch-long shaft.
- (12) Install  $4\frac{1}{2}$ -inch-long shaft (Q) in antenna reflector assembly. Install  $\frac{1}{4}$ -28 lubrication fitting (H).
- (13) Install needle bearing (B) and bushing (A) on  $4\frac{1}{2}$ -inch-long shaft.

*Note.* After installation of levers, links, and shafts, all lubrication fittings must be accessible and lubricated with grease 9150-261-8298.

### 34. Installation of Antenna Reflector Assembly 7620453

*Note.* The key letters shown in parentheses in a through f below refer to figure 30.

a. Place antenna reflector assembly (M) onto right trunnion (N) and left trunnion (GG) and install  $2\frac{1}{4}$  x  $2\frac{1}{2}$  x 2 cap (G) on left trunnion and  $1\frac{1}{4}$  x  $2\frac{1}{4}$  x  $1\frac{1}{4}$  cap (L) on right trunnion.

b. Remove six clamping fixtures 7686096 (fig. 15) from reflector assembly.

c. Install  $\frac{1}{8}$  x  $\frac{1}{8}$  key (E), 1.265 x  $1\frac{1}{4}$  x 0.091 flat washer (F), and gear assembly (D) on shaft of reflector assembly.

d. Cement gasket (SS) to mounting surface of cover plate assembly (RR) with cement 8040-266-0839.

e. Mesh teeth of 18-tooth gear (fig. 31) with teeth of gear assembly inside left trunnion and mount cover plate assembly on left trunnion. Secure cover assembly (JJ) to cover plate assembly.

f. Install two  $1\frac{1}{4}$ -inch-diameter x  $51\frac{5}{16}$ -inch-long crossarm assemblies (FF and S).

*Note.* The key letters shown in parentheses in g through o below refer to figure 22.

g. Mount lower end of trunnion assembly (DD) to mounting bracket (R).

h. Mount upper end of trunnion assembly to center bracket group (B) on antenna reflector assembly (PP).

i. Install rubber hose group (A). Screw lubrication fitting (JJ) onto fitting of end bearing on trunnion and lubricate fitting (KK) with grease 9150-261-8298.

j. Remove two hexagon nuts (fig. 34), eight flat washers, and two hexagon-head bolts holding clamp bar. Remove clamp bar and C-clamp.

k. Install secondary actuator (par. 28b (1)-(5) or par. 30b (1)-(5)).

l. Install primary actuator (par. 27b (1)-(5) or par. 29b (1)-(5)).

*Note.* Distance between centers of end bearings (fig. 13) on connector link assembly must be  $34.403 \pm 0.010$  inches. To adjust distance, loosen locking nut (G), screw end bearing (M) in or out as required, and tighten locking nut.

m. Install connector link assembly (F). Lubricate fittings on connector link end bearing (fig. 13) with grease 9150-261-8298.

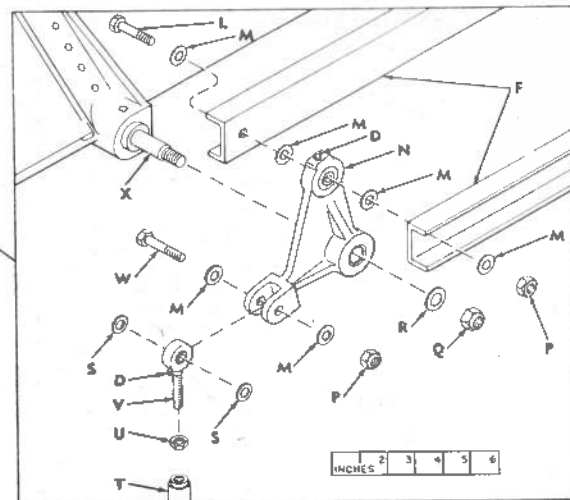
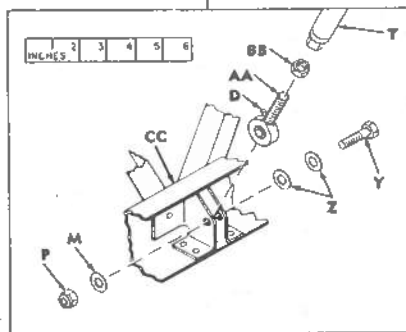
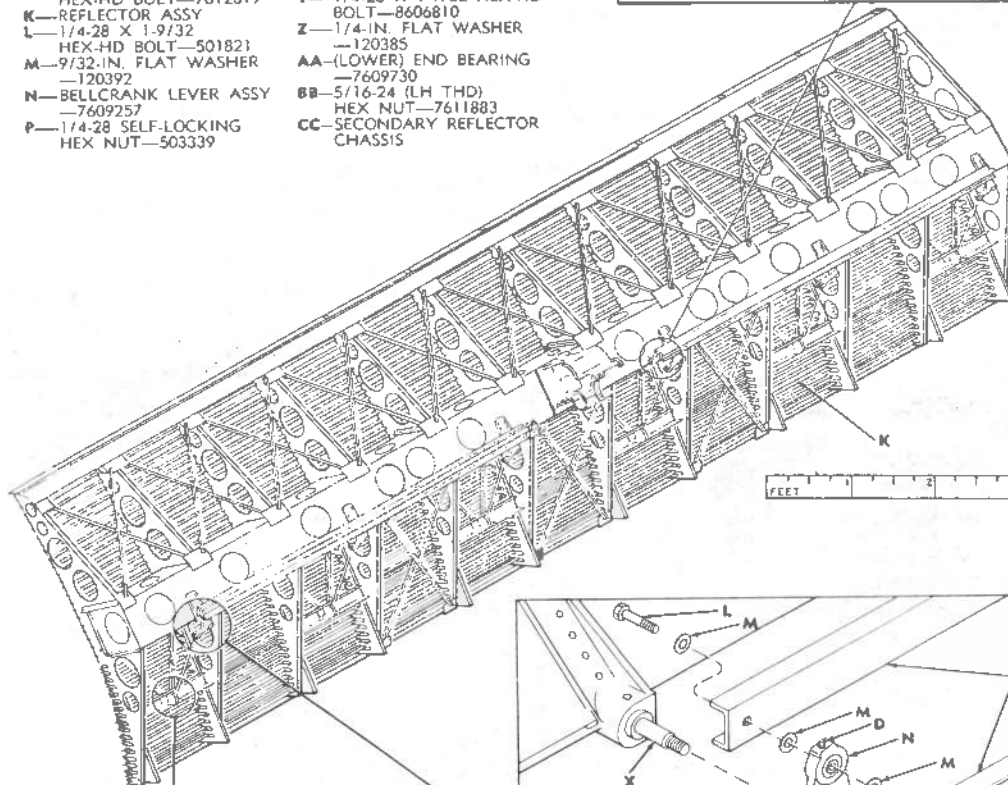
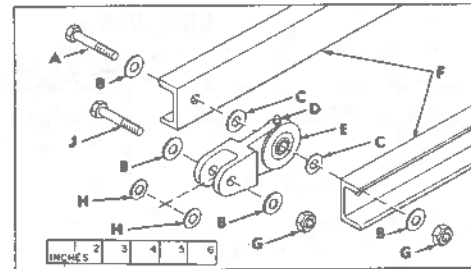
n. Install hoses and tube assemblies (par. 26c (1)-(7)) or primary and secondary actuator cable assemblies (fig. 16).

o. Perform tests and adjustments (pars. 21-23 or 24 and 25).

### 35. Removal and Installation of Transmitter Synchro 7674818

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

- A—5/16-24 X 1-11/32  
HEX-HD BOLT—501811  
B—11/32-IN. FLAT WASHER  
—120393  
C—0.320 X 5/8 X 1/32  
FLAT WASHER—7609511  
D—LUBR FITTING  
E—LEVER ASSY—7609256  
F—63-3/8-IN-LG LEVER  
LINK—7617110  
G—5/16-24 SELF-LOCKING  
HEX NUT—503345  
H—0.316-IN. FLAT WASHER  
—7609202  
J—5/16-24 X 1-15/32  
HEX-HD BOLT—7612819  
K—REFLECTOR ASSY  
L—1/4-28 X 1-9/32  
HEX-HD BOLT—501821  
M—9/32-IN. FLAT WASHER  
—120392  
N—BELLCRANK LEVER ASSY  
—7609257  
P—1/4-28 SELF-LOCKING  
HEX NUT—503339  
Q—3/8-16 SELF-LOCKING  
HEX NUT—8606820  
R—13/32-IN. FLAT WASHER  
—120394  
S—0.257 X 9/16 X 1/16  
FLAT WASHER—7609203  
T—CONTROL LEVER LINK  
—7609260  
U—5/16-24 HEX NUT  
—8161462  
V—(UPPER) END BEARING  
—7609289  
W—1/4-28 X 1-1/32 HEX-HD  
BOLT—8606811  
X—STUD—7609258  
Y—1/4-28 X 1-1/32 HEX-HD  
BOLT—8606810  
Z—1/4-IN. FLAT WASHER  
—120385  
AA—(LOWER) END BEARING  
—7609730  
BB—5/16-24 (LH THD)  
HEX NUT—7611883  
CC—SECONDARY REFLECTOR  
CHASSIS



RA PD 467452

Figure 33. Antenna reflector assembly—partially exploded view.

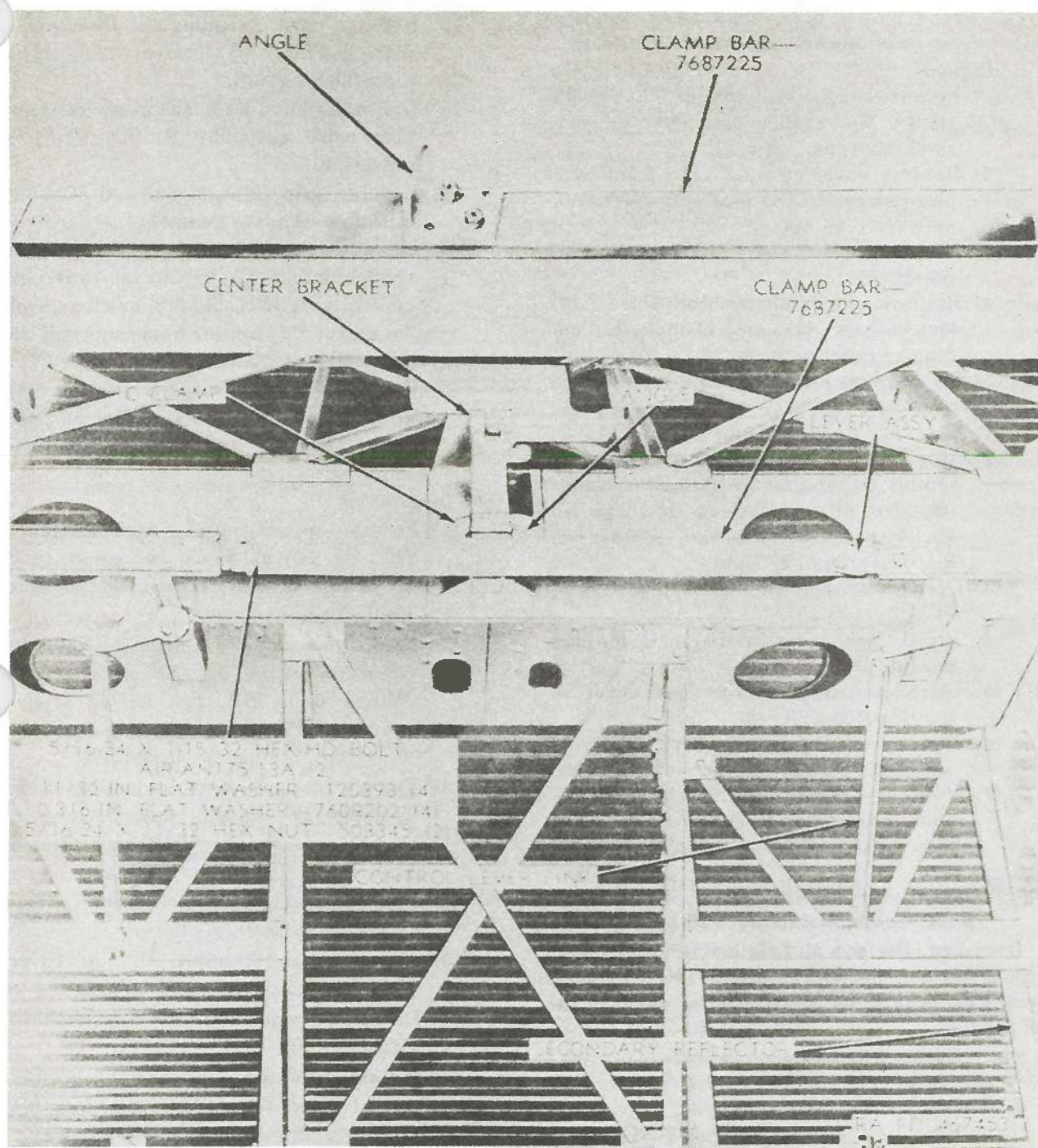


Figure 34. Installation of clamp bar.



*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 35 unless otherwise indicated.

*a. Removal.*

- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome assembly and cover assemblies (par. 18 *b-h*).
- (2) Remove cover assembly (L) from cover plate assembly (B) located on left trunnion (GG, fig. 30).
- (3) Disconnect five leads (F) from synchro group (A).
- (4) Remove three fillister-head screws (J), lockwashers (H), and clamps (G) and remove synchro group.
- (5) Disassemble synchro group.

*b. Installation.*

- (1) Assemble synchro group (A).
- (2) Mount synchro group in cover plate assembly (B) and secure with three clamps (G), No. 10 lockwashers (H), and No. 10-24 x  $\frac{1}{2}$  fillister-head screws (J). Leave screws fingertight.
- (3) Connect wiring leads to synchro group (TM 9-1430-257-35).
- (4) Install cover assembly (L) on cover plate assembly.
- (5) Install radome assembly and cover assemblies (par. 20 *c-e*).
- (6) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (7) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

### 36. Removal and Installation of Special Purpose Cable Assembly 7617162.

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 35 unless otherwise indicated.

*a. Removal.*

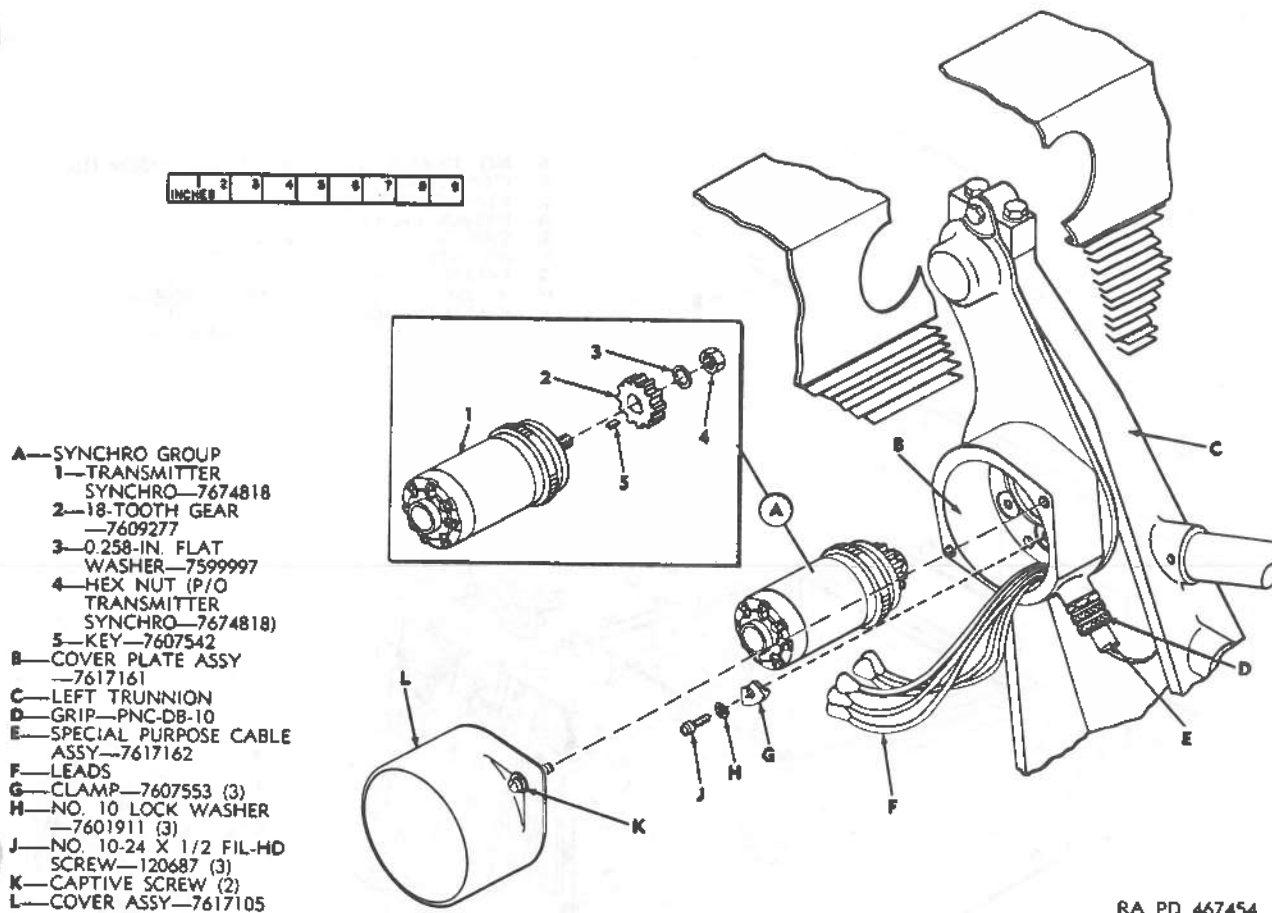
- (1) Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 *b-h*).

- (2) Remove cover assembly (L) from cover plate assembly (B) located on left trunnion (GG, fig. 30).
- (3) Disconnect five leads (F) of special purpose cable assembly (E) from synchro group (A).
- (4) Unscrew grip (D) and pull end of cable out of cover plate assembly.
- (5) Disconnect connector P2 (EE, fig. 30) from connector J2 (V, fig. 30) on hydraulic control unit (BB, fig. 30), or disconnect connector P2 (fig. 16) from connector J5 on electro-mechanical control box.
- (6) Remove six fillister-head screws (fig. 31) and six clamps securing special purpose cable assembly and remove cable assembly.

*b. Installation.*

- (1) Position special purpose cable assembly (PP, fig. 30) as shown and secure with six clamps (fig. 31) and six No. 10-24 x  $\frac{1}{2}$  fillister-head screws.
- (2) Attach connector P2 (EE, fig. 30) to connector J2 (V, fig. 30) on hydraulic control unit (BB, fig. 30) or attach connector P2 (fig. 16) to connector J5 on electro-mechanical control box.
- (3) Thread five leads of special purpose cable assembly (E) through small opening in cover plate assembly (B) and secure grip (D).
- (4) Connect wiring leads to synchro group (A) (TM 9-1430-257-35).
- (5) Install cover assembly (L) on cover plate assembly.
- (6) Install radome and cover assemblies (par. 20 *c-e*).
- (7) Install acquisition antenna in normal operating position (TM 9-1430-251-10/1).
- (8) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).





RA PD 467454

Figure 35. Removal and installation of transmitter synchro 7674818.

## Section VIII. HYDRAULIC CONTROL UNIT

### 37. Removal of Hydraulic Control Unit 8607284.

**Warning:** Perform all field maintenance on the acquisition antenna with ACQUISITION POWER switch on acquisition power control panel in the off position.

a. Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).

b. Drain hydraulic system (par. 26a(2)).

c. Disconnect lower ends of five tube assemblies (J-N, fig. 18) from hydraulic control unit (H, fig. 18).

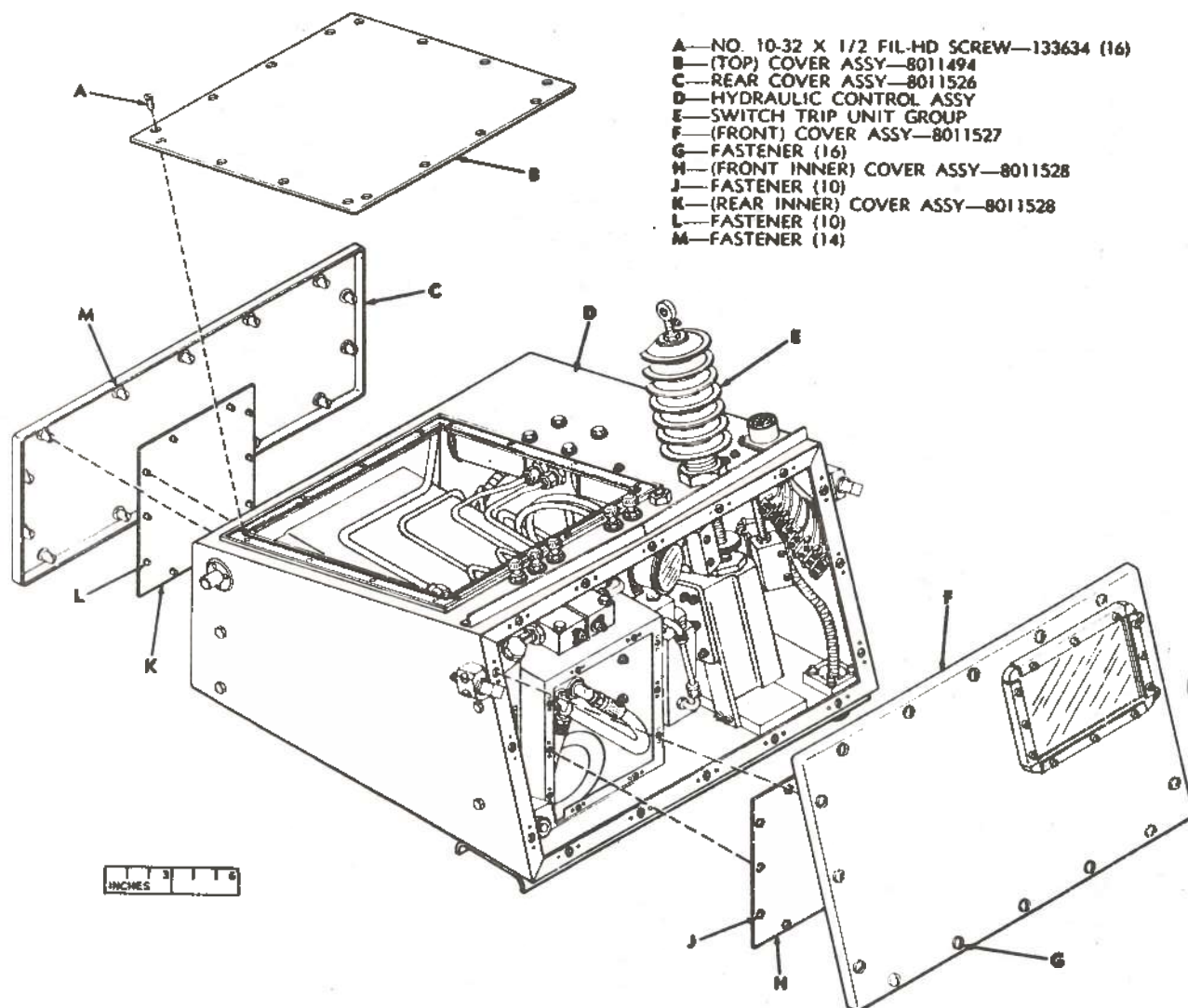
*Note.* The key letters shown in parentheses in d through g below refer to figure 30 unless otherwise indicated.

d. Disconnect connector P2 (EE) from connector J2 (V).

e. Remove hexagon nut (S, fig. 22), flat washer (Q, fig. 22), and stud assembly (H, fig. 22) connecting end bearing of switch trip group (J, fig. 22) to lever assembly (Y, fig. 22).

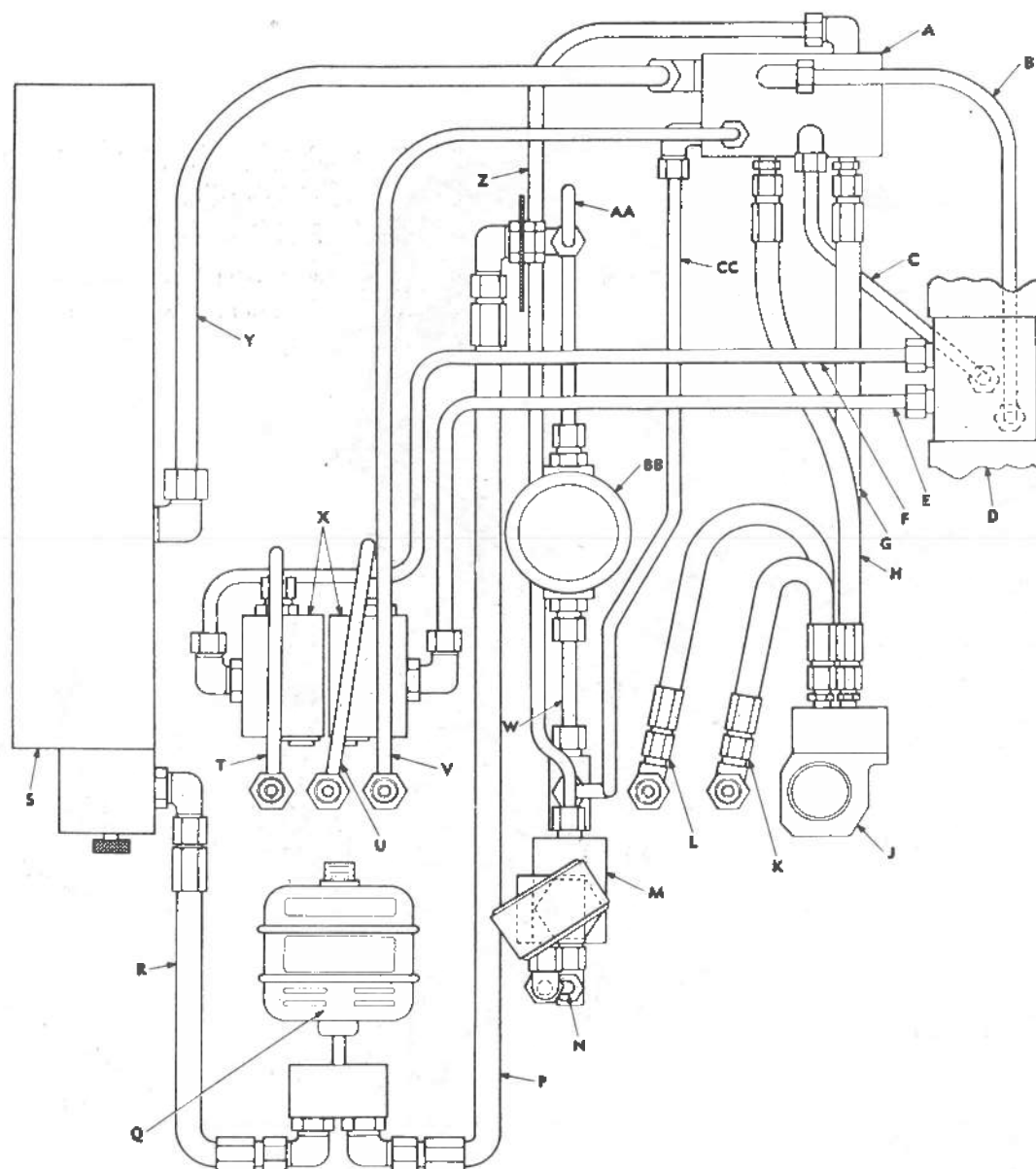
f. Remove cap (W).

g. Remove two hexagon nuts (fig. 10), flat washers, and fillister-head screws securing guide. Rotate knob and guide 90 degrees clockwise to disengage arm assembly from jogging switch S1.



RA PD 467455

Figure 36. Removal and installation of cover assemblies.



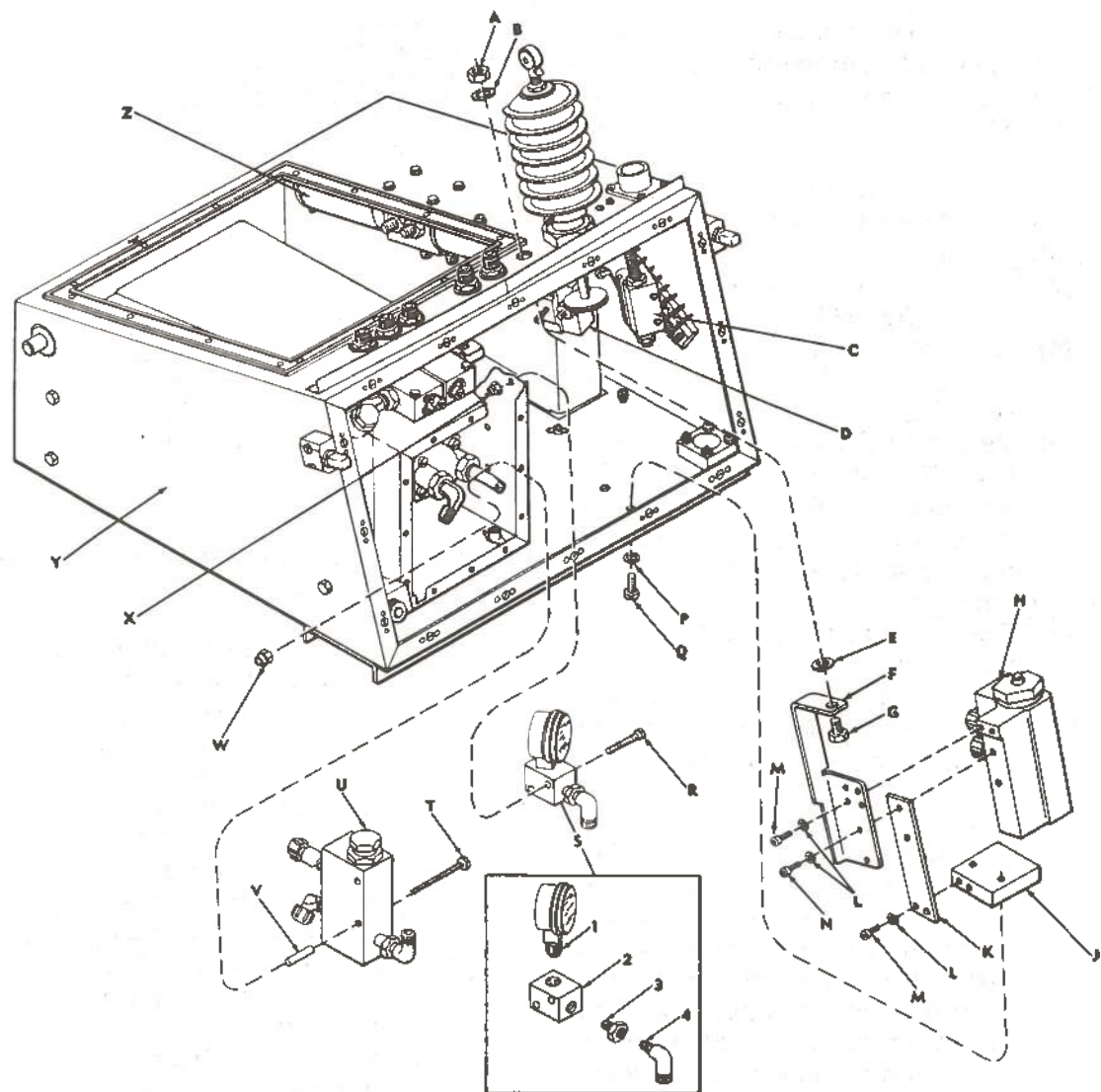
A—FITTING ASSY  
B—1/4-IN.-OD TUBE ASSY—8011610  
C—1/4-IN.-OD TUBE ASSY—8011611  
D—SOLENOID VALVE ASSY  
E—1/4-IN.-OD TUBE ASSY—8011614  
F—1/4-IN.-OD TUBE ASSY—8011616  
G—HOSE—8011606  
H—HOSE—8011604  
J—HYDRAULIC VALVE ASSY

K—HOSE—8011596  
L—HOSE—8011605  
M—RELIEF VALVE ASSY  
N—1/4-IN.-OD TUBE ASSY—8011453  
P—HOSE—8011607  
Q—PUMP  
R—HOSE—8011414  
S—RESERVOIR  
T—1/4-IN.-OD TUBE ASSY—8011617

U—1/4-IN.-OD TUBE ASSY—8011608  
V—1/4-IN.-OD TUBE ASSY—8011619  
W—1/4-IN.-OD TUBE ASSY—8011609  
X—CHECK VALVE ASSY  
Y—3/8-IN.-OD TUBE ASSY—8011618  
Z—1/4-IN.-OD TUBE ASSY—8011615  
AA—1/4-IN.-OD TUBE ASSY—7612316  
BB—FILTER  
CC—1/4-IN.-OD TUBE ASSY—8011613

RA PD 467456

Figure 37. Removal and installation of tube assemblies and hoses.



- |  |   |
|--|---|
| A—1/2-13 X 7/16 HEX NUT—120378               | R—NO. 10-24 X 1-1/2 FIL-HD SCREW—588508 (2)         |
| B—1/2-IN. LOCK WASHER—120384                 | S—GAGE GROUP  |
| C—RIGHT SWITCH ASSY S2                       | 1—GAGE ASSY—8011601                                 |
| D—LEFT SWITCH ASSY S1                        | 2—ADAPTER—8011599                                   |
| E—SHIM—8011520                               | 3—REDUCER—7610265                                   |
| F—BRACKET—8017918                            | 4—ELBOW—7602953                                     |
| G—1/2-13 X 1 HEX-HD CAP SCREW—7617417        | T—NO. 10-32 X 2-5/16 HEX-HD BOLT—8020614 (2)        |
| H—HYDRAULIC VALVE ASSY—8150411               | U—RELIEF VALVE ASSY—8011589                         |
| J—MOUNTING BLOCK—8150422                     | V—SPACING COLLAR—8011516                            |
| K—MOUNTING STRAP—8011515                     | W—NO. 10-32 X 3/8 SELF-LOCKING HEX NUT—503209 (2)   |
| L—NO. 10 LOCK WASHER—MS35338-24 (6)          | X—NO. 10-24 X 15/64 SELF-LOCKING HEX NUT—503262 (2) |
| M—NO. 10-24 X 1/2 HEX-SOCKET BOLT—583893 (4) | Y—DRAWER ASSY                                       |
| N—NO. 10-24 X 3/4 HEX-SOCKET BOLT—435872 (2) | Z—SOLENOID VALVE ASSY                               |
| P—1/4-IN. FLAT WASHER—8606711 (2)            |   |
| Q—1/4-28 X 1/2 FIL-HD SCREW—587130 (2)       |   |

RA PD 467457

Figure 38. Hydraulic control unit—partially exploded view No. 1.

h. Loosen two square-head captive screws (AA) and remove hydraulic control unit (BB) from antenna base assembly (T).

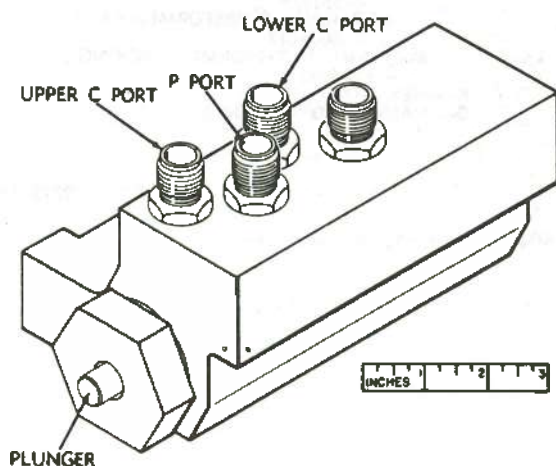
### 38. Field Maintenance of Hydraulic Valve Assembly - 8150411

#### a. Removal.

- (1) Remove cover assemblies (F and B, fig. 36).
- (2) Remove hoses (G, H, K, and L, fig. 37) and two 45° elbows (BB, fig. 45).
- (3) Remove hydraulic valve assembly (H, fig. 38), shim (E, fig. 38), bracket (F, fig. 38), mounting strap (K, fig. 38) and mounting block (J, fig. 38).

#### b. Inspection.

- (1) Connect upper C port (fig. 39) and lower C port of valve assembly to a hydraulic pressure gage capable of indicating hydraulic pressures up to 200 psi.
- (2) Using missile component hydraulic test stand (fig. 40) apply hydraulic pressure of 160 psig to P port (fig. 39) of valve assembly for a minimum of 1 hour. No external leakage shall occur and hydraulic pressure gage connected to upper C port shall indicate a constant pressure of 160 psig. Gage connected to lower



RA PD 229350A

Figure 39. Hydraulic valve assembly 8150411.

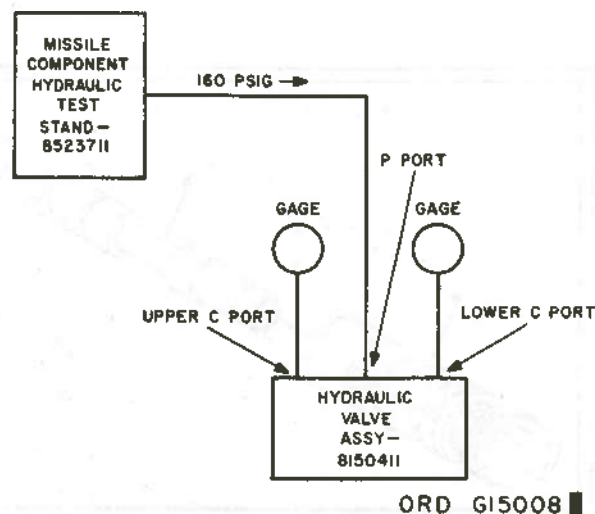


Figure 40. Test of hydraulic valve assembly - block diagram.

C port shall indicate zero pressure throughout the test.

- (3) Push plunger (fig. 39) of valve assembly down and secure in down position for a minimum of 1 hour. No external leakage shall occur and hydraulic pressure gage connected to lower C port shall indicate a constant pressure of 160 psig. Gage connected to upper C port shall indicate zero pressure throughout the test.
- (4) Turn off hydraulic pressure and remove hydraulic line and gages from valve assembly.

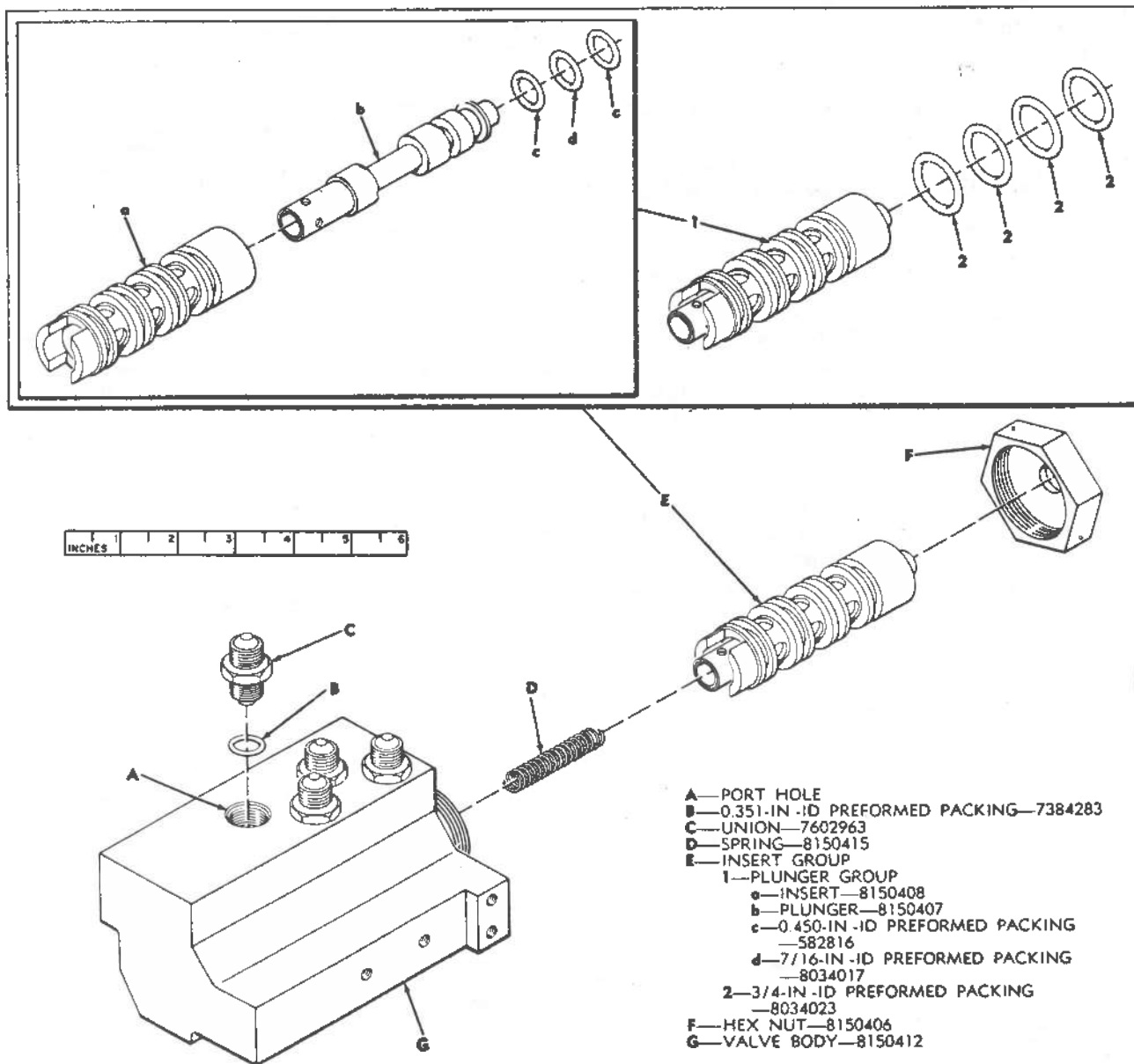
c. Disassembly. Disassemble hydraulic valve assembly (fig. 41).

d. Assembly.

**CAUTION: BEFORE ASSEMBLY, APPLY CLASS B-4 BLACK SEALING COMPOUND 8030-174-2599 TO THREADS OF ALL ELBOWS, UNIONS, REDUCERS, TUBE ASSEMBLIES, AND HOSES. REMOVE ALL EXCESS TO AVOID GETTING SEALING COMPOUND INTO HYDRAULIC SYSTEM.**

- (1) Assemble hydraulic valve assembly (fig. 41).
- (2) Perform hydraulic pressure test on hydraulic valve assembly (fig. 39) according to b above.





*e. Installation.*

*Note.* The key letters shown in parentheses in (1) and (2) below refer to figure 38.

- (1) Install mounting block (J) on drawer assembly (Y).
- (2) Install mounting strap (K) and bracket (F) on hydraulic valve assembly (H).
- (3) Install bracket and attached parts on drawer assembly.
- (4) Secure mounting strap to mounting block.

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (5) Install hoses (G, H, K, and L, fig. 37) and two 45° elbows (BB, fig. 45).
- (6) Install top cover assembly (B, fig. 36) and front cover assembly (F, fig. 36).

### 39. Installation of Hydraulic Control Unit 8607284

*Note.* The key letters shown in parentheses in a through d below refer to figure 30 unless otherwise indicated.

*a.* Install hydraulic control unit (BB) in antenna base assembly (T) and secure with two square-head captive screws (AA).

*b.* Rotate knob (fig. 10) and guide 90 degrees counterclockwise and engage jogging switch S1 and arm assembly. Secure guide with two No. 6-32 fillister-head screws,  $\frac{1}{2}$ -inch flat washers, and No. 6-32 hexagon nuts.

*c.* Secure switch trip group (U) with 1 x 3½ x 1½ cap (W), two  $\frac{1}{2}$ -inch flat washers (Z),  $\frac{1}{4}$ -inch lock-washers (X), and  $\frac{1}{4}$ -20 x 1 hexagon-head screws (Y).

*d.* Attach connector P2 (EE) to connector J2 (V).

*e.* Secure end bearing of switch trip group (J, fig. 22) to lever assembly (Y, fig. 22) with stud assembly (H, fig. 22),  $\frac{1}{2}$ -inch flat washer (Q, fig. 22), and No. 10-24 self-locking hexagon nut (S, fig. 22).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

*f.* Connect lower ends of five tube assemblies (J-N, fig. 18) to hydraulic control unit (H, fig. 18).

*g.* Perform acquisition antenna tests and adjustments (sec. III).

### 40. Field Maintenance of Relief Valve Assembly 8011589 and Gage Group

*a. Removal.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove cover assemblies (F, B, and H, fig. 36).
- (3) Remove tube assemblies (Z, CC, W, and N, fig. 37).
- (4) Remove and disassemble gage group (S, fig. 38).
- (5) Remove relief valve assembly (U, fig. 38) and two spacing collars (V, fig. 38).

*b. Inspection.*

*Note.* The key letters shown in parentheses in (1) through (3) below refer to figure 42.

- (1) Connect right port (H) of relief valve assembly to a hydraulic pressure gage capable of indicating hydraulic pressures up to 200 psi.
- (2) Connect R port (R) of relief valve assembly to hydraulic reservoir return of missile component hydraulic test stand (fig. 43).
- (3) Apply hydraulic pressure to P port (N) of relief valve assembly. Loosen hexagon nut (B) and adjust cap (A) so that check valve (E1) operates between 145 and 160 psi. Tighten hexagon nut. Allow valve operating pressure to remain on relief valve assembly for a minimum of 1 hour. No external leakage shall occur.
- (4) Turn off hydraulic pressure and disconnect hydraulic lines and gage from relief valve assembly.

- A—CAP—8011582
- B—1-20 X 3/16 SELF-LOCKING HEX NUT—8011587
- C—SPRING—8011557
- D—TAPPET—8011583
- E—CHECK VALVE ASSY—8011588
  - 1—CHECK VALVE—8011586
  - 2—9/16-IN -ID PREFORMED PACKING—8034019
  - 3—CYLINDER LINER—8011585
  - 4—PLUG GROUP
    - a—5/16-IN -ID PREFORMED PACKING—546925
    - b—PLUG—8011584
- F—15/16-IN -ID PREFORMED PACKING—8034026
- G—VALVE BODY—8011581
- H—RIGHT PORT
- J—SEAL NUT—8607117
- K—0.327-IN -ID REDUCER—7610265
- L—90-DEG ELBOW—7602953
- M—ACCESS HOLE
- N—P PORT
- P—PIPE REDUCER—8176607
- Q—TEE—7611973
- R—R PORT

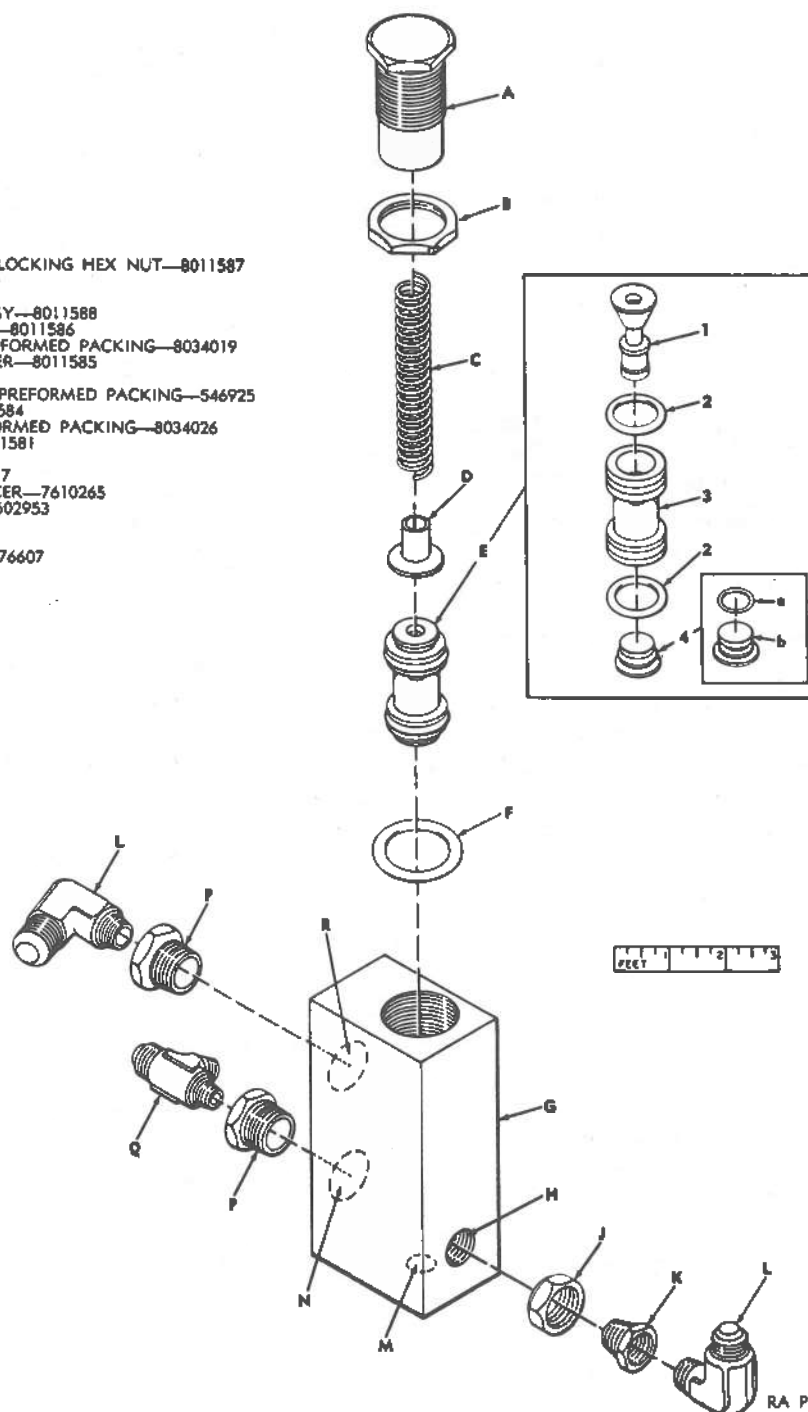


Figure 42. Relief valve assembly 8011589—exploded view.

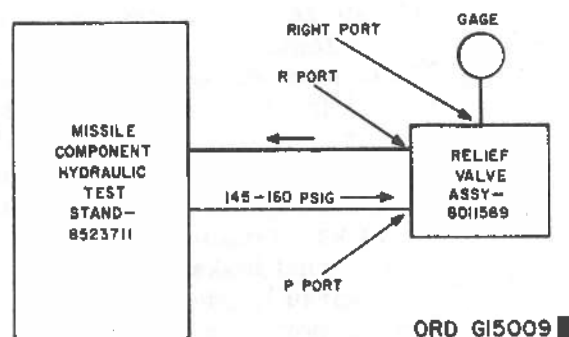


Figure 43. Test of relief valve assembly—block diagram.

*c. Disassembly.* Disassemble relief valve assembly (fig. 42).

*Note.* The check valve assembly (E, fig. 42) is pushed out of position in valve body (G, fig. 42) through access hole (M, fig. 42) in bottom of valve body.

*d. Assembly.*

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (1) Assemble relief valve assembly (figs. 42 and 44).

- (2) Perform hydraulic test on relief valve assembly according to *b* above.

*e. Installation.*

- (1) Install two spacing collars (V, fig. 38) and relief valve assembly (U, fig. 38).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (2) Assemble and install gage group (S, fig. 38).
- (3) Install  $\frac{1}{2}$ -inch-od tube assemblies (N, W, CC, and Z, fig. 37).
- (4) Install front inner cover assembly (H, fig. 36), top cover assembly (B, fig. 36), and front cover assembly (F, fig. 36).
- (5) Install hydraulic control unit (par. 39).

#### 41. Field Maintenance of Solenoid Valve Assembly 8011469

*a. Removal of Solenoid Valve Assembly 8011469.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove cover assemblies (F, B, and C, fig. 36).
- (3) Remove tube assemblies (E, F, C, and B, fig. 37).

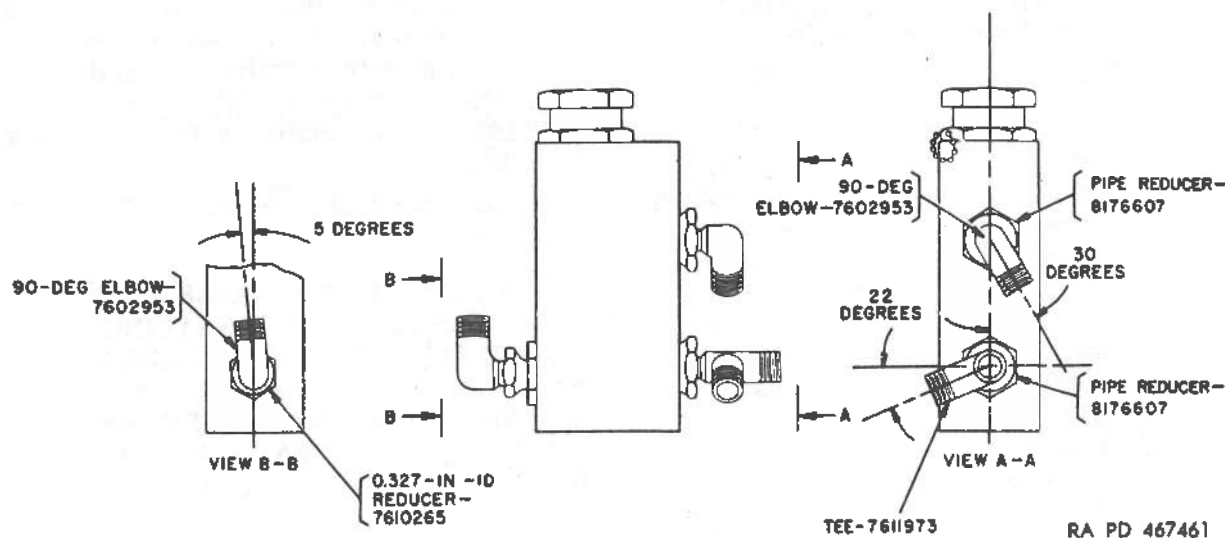


Figure 44. Positioning of tee and 90° elbows in valve body 8011581.

- (4) Disconnect and tag leads from each end of solenoid valve assembly (A, fig. 45). Remove solenoid valve assembly.

Note. The key letters shown in parentheses in b and c below refer to figure 46.

b. Disassembly of Solenoid Valve Assembly - 8011469.

- (1) Disconnect and tag two leads (P and Q) from each of two terminal boards (F).
- (2) Remove terminal board and plate insulator (G) from each of two cover groups (H).
- (3) Remove cover group from each of two shields (L) and remove shield from each of two coils (N).
- (4) Remove two grommets (H2) and one preformed packing (H1) from each cover (H3).
- (5) Remove coil from each of two tube groups (M) and remove tube groups from valve assembly (Y). Remove plunger (M1) from each of two tubes (M2). Remove preformed packing (V) from each end of valve assembly.

c. Inspection of Valve Assembly - 8011467.

- (1) Connect right C port (W) and left C port (X), of valve assembly, each to a hydraulic pressure gage capable of indicating hydraulic pressures up to 200 psi. Connect R port (S) of valve assembly to return hydraulic reservoir of missile component hydraulic test stand (fig. 47).
- (2) Position pins (U) at each end of valve assembly in midposition. When they are in midposition each pin protrudes 0.187 inch from retainer (T).
- (3) Apply hydraulic pressure of 160 psig to P port (R) of valve assembly for a minimum of 1 hour. No external leakage shall occur and pressure gages attached to right C port and left C port shall

indicate zero pressure throughout the test.

- (4) Move pins of valve assembly to full left position by pressing pin on right side of valve all the way in and allow hydraulic pressure of 160 psig to remain on valve assembly for 1 hour. No external leakage shall occur and hydraulic gage connected to left C port shall indicate 160 psig and the gage connected to right C port shall indicate zero pressure throughout the test.
- (5) Move pins of valve assembly to full right position by pressing pin on left side of valve all the way in and allow hydraulic pressure of 160 psig to remain on valve assembly for 1 hour. No external leakage shall occur and hydraulic gage connected to right C port shall indicate 160 psig and the gage connected to the left C port shall indicate zero pressure throughout the test.
- (6) Turn off hydraulic pressure and remove all hydraulic lines and gages from valve assembly.

d. Disassembly of Valve Assembly - 8011467. Disassemble valve assembly (fig. 48).

e. Assembly of Valve Assembly - 8011467.

CAUTION: BEFORE ASSEMBLY, APPLY CLASS B-4 BLACK SEALING COMPOUND 8030-174-2599 TO THREADS OF ALL ELBOWS, UNIONS, AND REDUCERS. REMOVE ALL EXCESS TO AVOID GETTING SEALING COMPOUND INTO HYDRAULIC SYSTEM.

- (1) Assemble valve assembly (fig. 48).
- (2) Perform hydraulic pressure test on valve assembly (Y, fig. 46) according to c above.

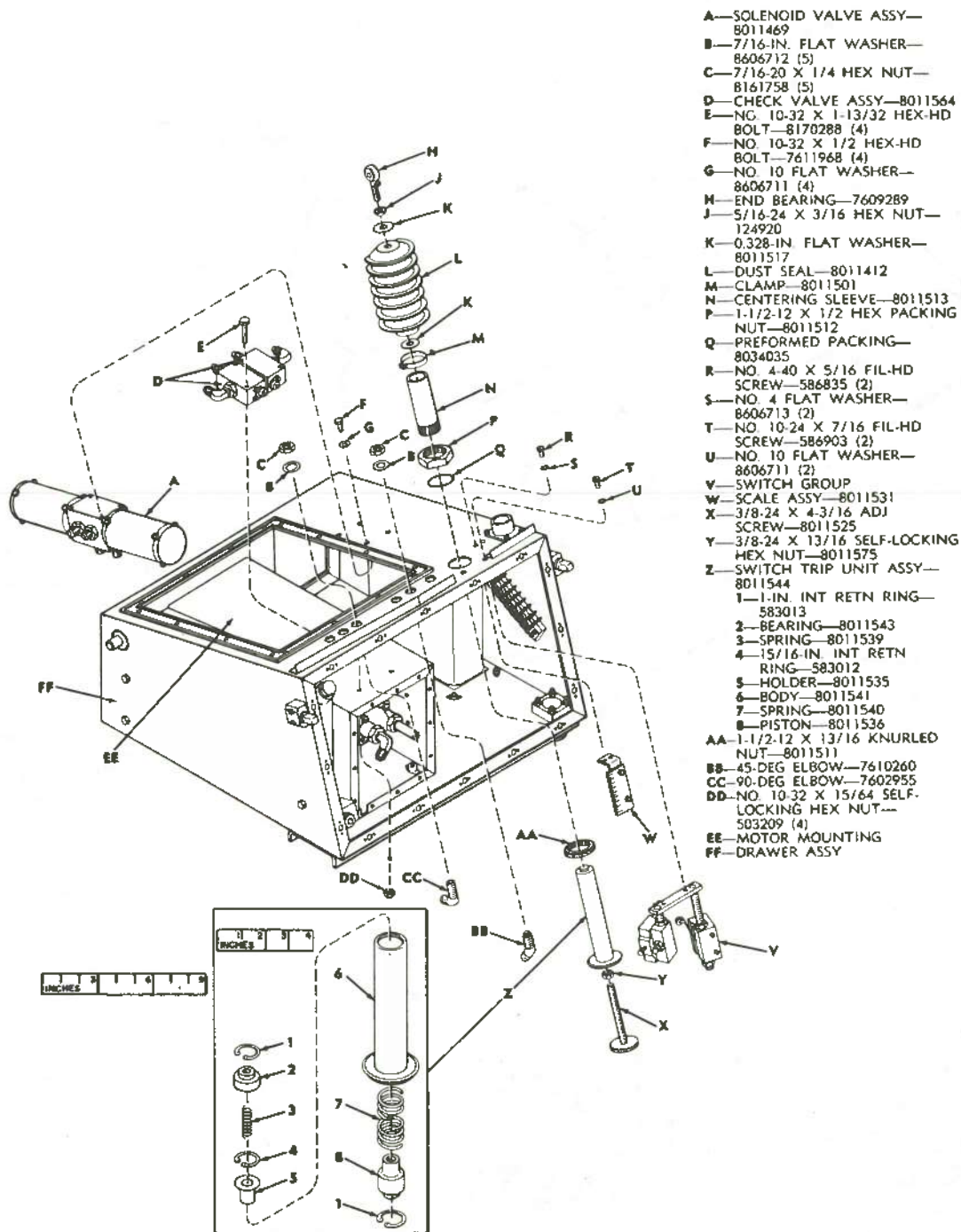
f. Assembly of Solenoid Valve Assembly - 8011469.



Note. The key letters shown in parentheses in (1) through (8) below refer to figure 46.

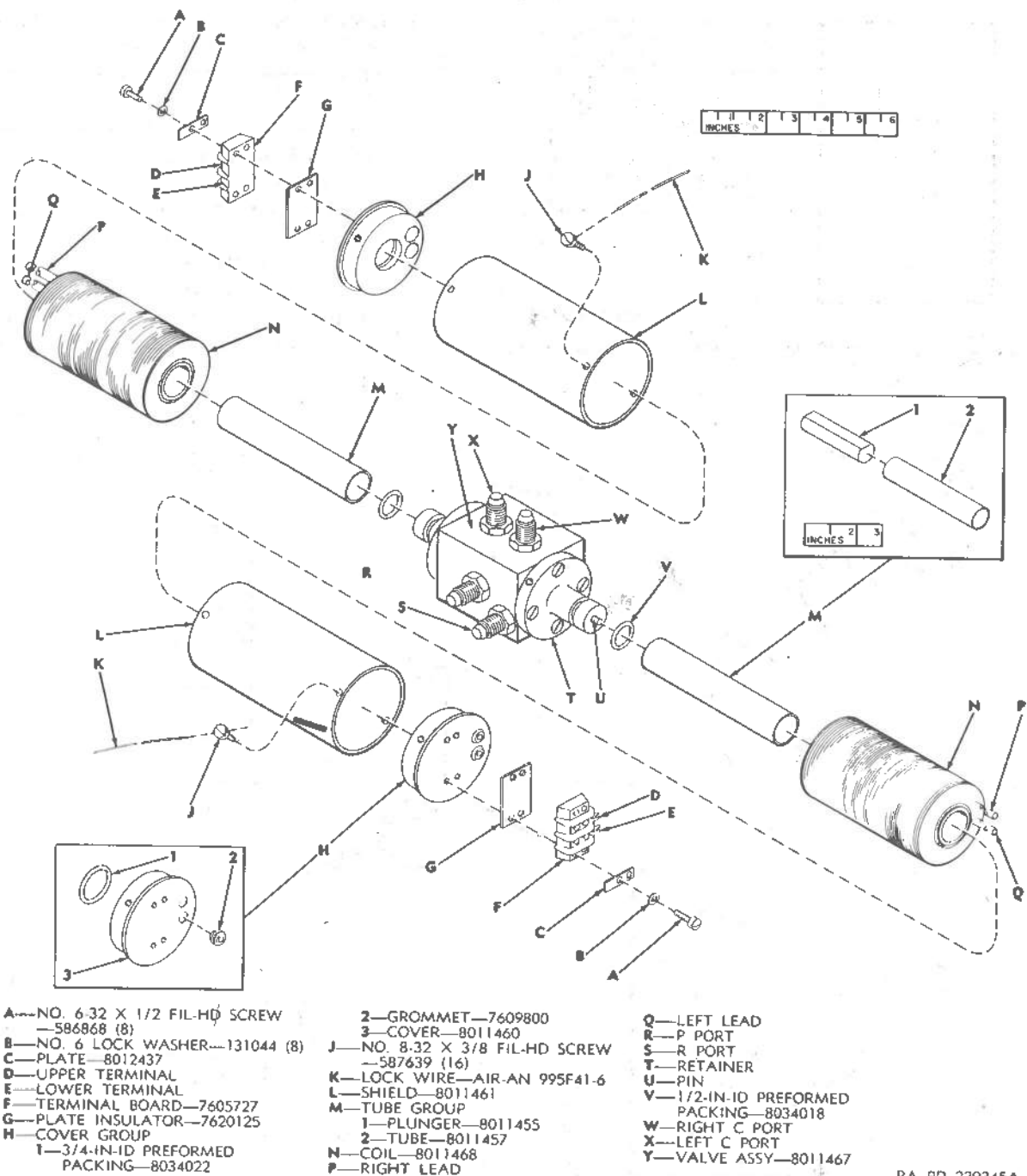
- (1) Install new 1/2-inch-id pre-formed packing (V) on each retainer (T) of valve assembly (Y).
- (2) Install plunger (1) in each of two tubes (M2) and install tube group (M) on each retainer of valve assembly.
- (3) Install coil (N) on each of two tube groups.





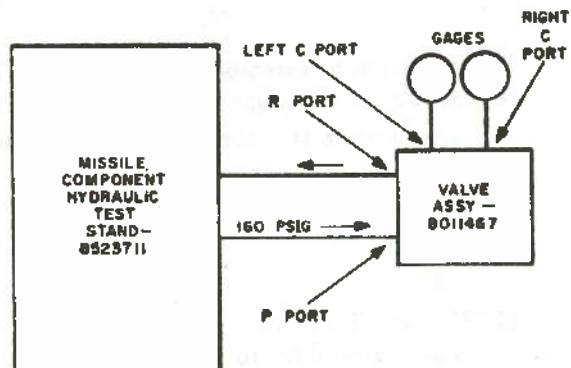
RA PD 467462

Figure 45. Hydraulic control unit—partially exploded view No. 2.



RA PD 229345A

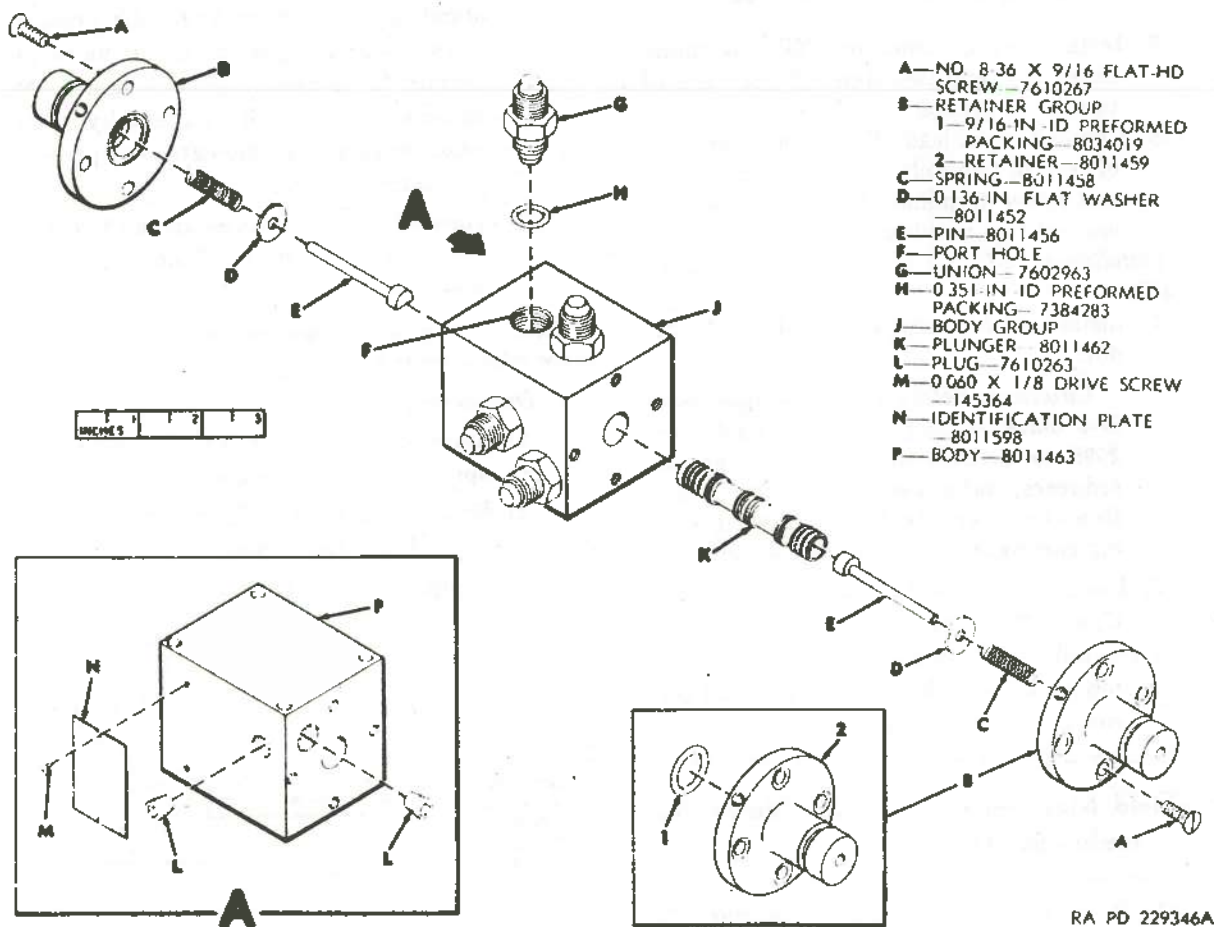
Figure 46. Solenoid valve assembly 8011469—partially exploded view.



ORD G15010

Figure 47. Test of valve assembly 8011467—block diagram.

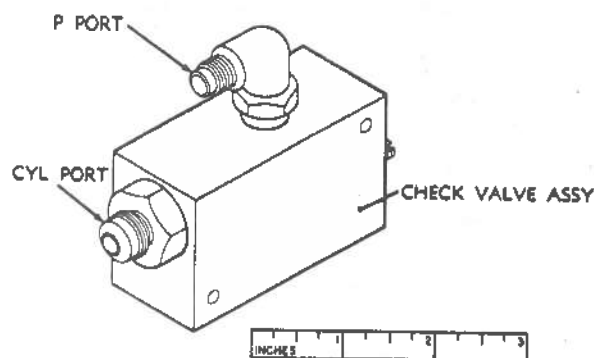
- (4) Install shield (L) on each of two retainers and secure each with four No. 8-32 x  $\frac{3}{4}$  fillister-head screws (J) and lock wire (K).
- (5) Install new  $\frac{3}{4}$ -inch-id preformed packing (H1) and two grommets (H2) in each of two covers (H3).
- (6) Pull left lead (Q) and right lead (P) of each of two coils through grommets of cover group (H) and install cover group in each of two shields. Secure each cover group with four No. 8-32 x  $\frac{3}{4}$  fillister-head screws and lock wire.



RA PD 229346A

Figure 48. Valve assembly 8011467—partially exploded view.





RA PD 229356A

Figure 49. Check valve assembly 8011564.

- (7) Install plate insulator (G), terminal board (F), and two plates (C) on each of two cover groups.
- (8) Connect right lead (P) and left lead (Q) of each of two coils to upper terminal (D) and lower terminal (E), respectively, of each of two terminal boards.

*g. Installation of Solenoid Valve Assembly 8011469.*

- (1) Install solenoid valve assembly (A, fig. 45).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (2) Install 1/4-inch-od tube assemblies (E, F, C, and B, fig. 37).
- (3) Install front cover assembly (F, fig. 36), top cover assembly (B, fig. 36), and rear cover assembly (C, fig. 36).
- (4) Install hydraulic control unit (par. 39).

## 42. Field Maintenance of Check Valve Assembly 8011564

*a. Removal.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove cover assemblies (F, B, and H, fig. 36).

- (3) Remove tube assemblies (E, F, U, and T, fig. 37) and two 90° elbows (CC, fig. 45) associated with tube assemblies (U and T, fig. 37).

- (4) Remove two check valve assemblies (D, fig. 45).

*b. Inspection.*

- (1) Connect CYL port (fig. 49) of check valve assembly to hydraulic pressure gage capable of indicating hydraulic pressures up to 200 psi.
- (2) Using missile component hydraulic test stand (fig. 50) apply hydraulic pressure of 160 psig to P port of check valve assembly for a minimum of 1 hour. No external leakage shall occur and hydraulic pressure gage shall indicate zero pressure throughout the test.
- (3) Turn off hydraulic pressure and remove hydraulic line and gage from check valve assembly.

*Note.* The key letters shown in parentheses in c and d below refer to figure 51.

*c. Disassembly.*

- (1) Remove adjustment screw group (K), spring (G), and plunger (F).
- (2) Drive spring pin (D) from valve body (C) and remove liner group (E).
- (3) Complete disassembly.

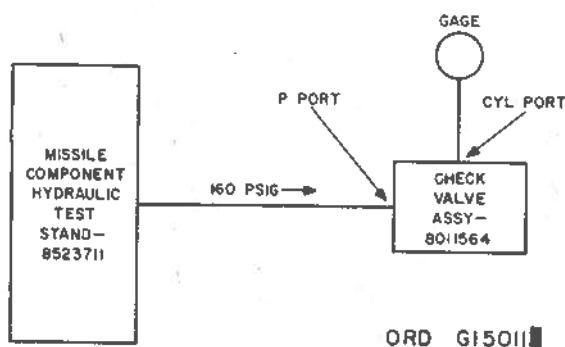
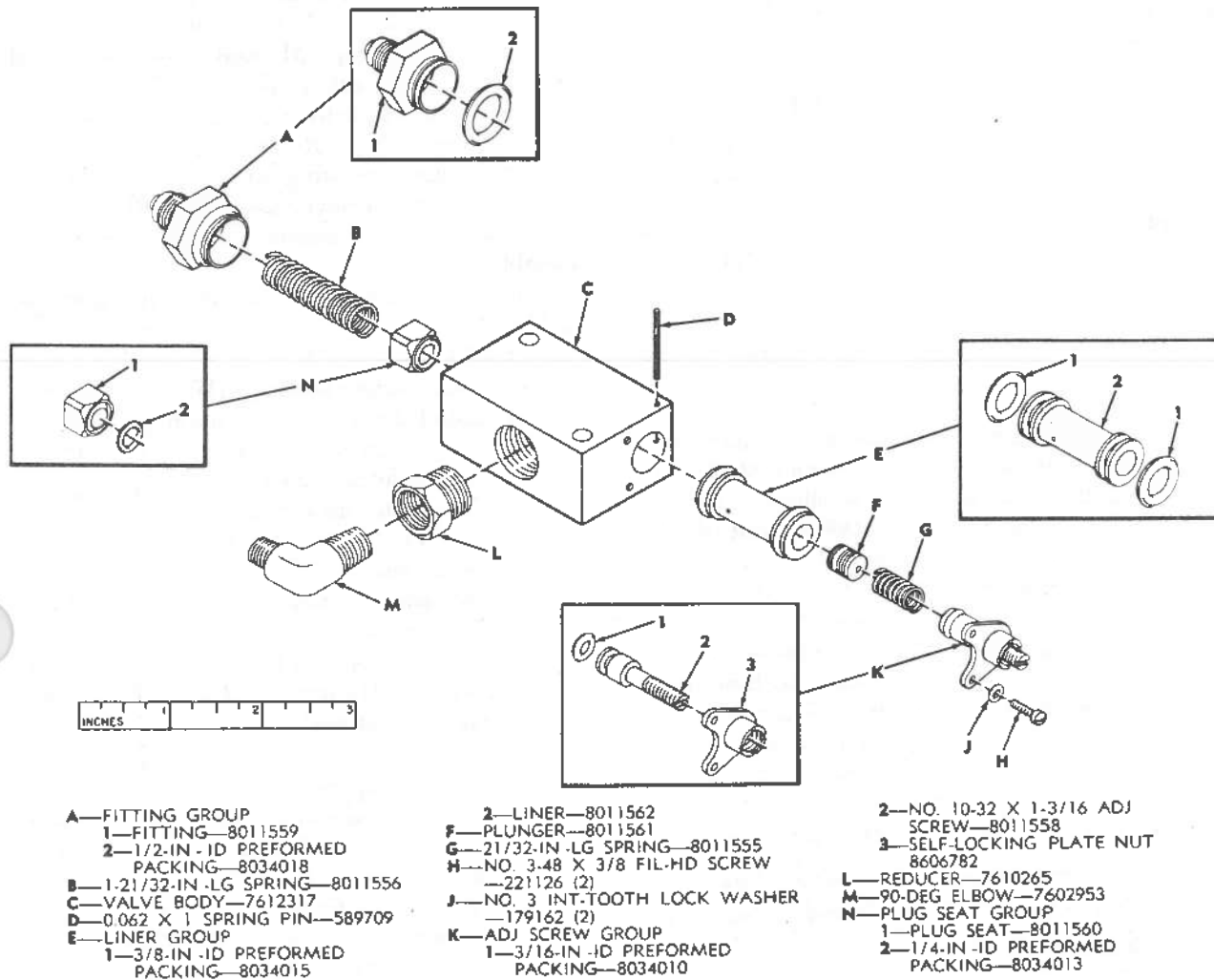


Figure 50. Test of check valve assembly—block diagram.



RA PD 467465

Figure 51. Check valve assembly 8011564—exploded view.

*d. Assembly.*

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (1) Install two new  $\frac{3}{8}$ -inch-id preformed packings (E1) on liner (E2) and install liner group (E) in valve body (C).
- (2) Drive 0.062 x 1 spring pin (D) in position in valve body.
- (3) Complete assembly.
- (4) Perform hydraulic pressure test on check valve assembly (fig. 49) according to *b* above.

*e. Installation.*

- (1) Install two check valve assemblies (D, fig. 45) on top of motor mounting (EE, fig. 45).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (2) Install two 90° elbows (CC, fig. 45), associated with tube assemblies (U and T, fig. 37), and install  $\frac{1}{4}$ -inch-od tube assemblies (E, F, U, and T, fig. 37).
- (3) Install front inner cover assembly (H, fig. 36), top cover assembly (B, fig. 36), and front cover assembly (F, fig. 36).
- (4) Install hydraulic control unit (par. 39).

### 43. Field Maintenance of Switch Trip Unit Assembly 8011544, Switch Group, and Scale Assembly

*Note.* The key letters shown in parentheses in *a* through *d* below refer to figure 45 unless otherwise indicated.

*a. Removal.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove hydraulic valve assembly (par. 38a).
- (3) Remove and tag six leads from switch group (V) and remove switch group.
- (4) Remove scale assembly (W).

- (5) Hold end bearing (H) to prevent from turning and loosen hexagon nut (J). Hold switch trip unit assembly (Z) to prevent from dropping and remove end bearing (H), hexagon nut (J), flat washer (K), and switch trip unit.

- (6) Loosen clamp (M) and remove dust seal (L), flat washer (K), and clamp.

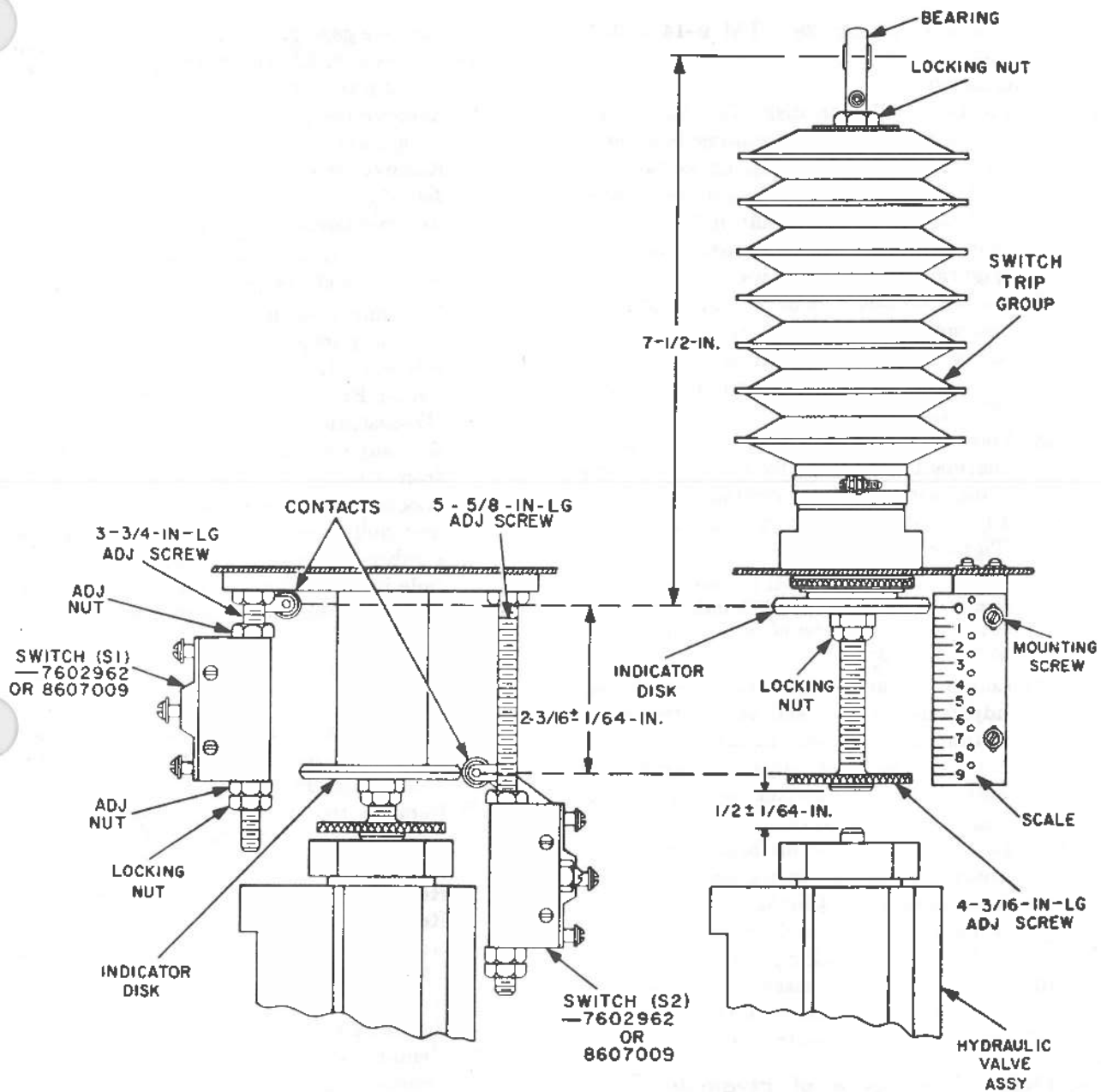
- (7) Remove knurled nut (AA) from centering sleeve (N). Remove centering sleeve, hexagon packing nut (P), and packing (Q) from drawer assembly (FF).

*b. Disassembly.* Disassemble switch trip unit assembly (Z).

*c. Assembly.* Assemble switch trip unit assembly (Z).

*d. Installation.*

- (1) Install scale assembly (W).
- (2) Install  $1\frac{1}{2}$ -12 x  $\frac{1}{2}$  hexagon packing nut (P) on centering sleeve (N). Install new preformed packing (Q) and centering sleeve on drawer assembly and secure with  $1\frac{1}{2}$ -12 x  $\frac{1}{4}$  knurled nut (AA).
- (3) Install clamp (M), 0.328-inch flat washer (K), and dust seal (L) on centering sleeve. Tighten clamp.
- (4) Install  $\frac{5}{16}$ -24 x  $\frac{3}{16}$  hexagon nut (J) on end bearing (H) and 0.328-inch flat washer (K) on dust seal.
- (5) Install switch trip unit assembly (Z) in centering sleeve. Screw bearing into trip unit assembly with grease fitting on bearing pointing toward front of drawer assembly. Tighten  $\frac{5}{16}$ -24 x  $\frac{3}{16}$  hexagon nut fingertight. Lubricate bearing with grease 9150-261-8298.
- (6) Install  $\frac{5}{16}$ -24 x  $\frac{1}{16}$  self-locking hexagon nut (Y) on  $\frac{5}{16}$ -24 x  $\frac{1}{4}$  adjusting screw (X) and install adjusting screw in switch trip unit assembly. Tighten self-locking hexagon nut fingertight.
- (7) Install switch group (V).
- (8) Connect leads to right switch assembly S2 (C, fig. 38), left switch assembly S1 (D, fig. 38), and solenoid valve



RA PD 467466

Figure 52. Hydraulic control unit—adjustments.

assembly (Z, fig. 38) (TM 9-1430-257-35).

*e. Adjustments.*

- (1) Position indicator disk (fig. 52) in extreme top position by pulling bearing at top of switch trip group up as far as it will go. Loosen two mounting screws and adjust scale so that indicator disk coincides with 0-degree mark on scale. Tighten mounting screws.
- (2) Loosen locking nut on  $4\frac{1}{8}$ -inch-long adjustment screw and position adjustment screw for a dimension of  $\frac{1}{2} \pm \frac{1}{4}$  inch above top of hydraulic valve assembly. Tighten locking nut.
- (3) Loosen locking nut on  $3\frac{1}{4}$ -inch-long adjustment screw and by use of adjusting nuts, set center of contact on switch S1 at 0-degree mark on scale as shown. Tighten locking nuts.

*Note.* Center of switch contacts can be determined by measuring 0.1875 inch from top of roller contact to center of pin securing contact to switch assembly.

- (4) Loosen locking nuts on  $5\frac{1}{2}$ -inch-long adjustment screw and set switch S2 to obtain a dimension of  $2\frac{3}{4} \pm \frac{1}{4}$  inches between center of contact on switch S1 and center of contact on switch S2. Tighten locking nuts.
- (5) Loosen locking nut on bearing and turn bearing in or out as required to obtain a dimension of  $7\frac{1}{2}$  inches between center of bore in bearing and center of indicator disk. Tighten locking nut.
- (6) Install top cover assembly (B, fig. 36) and front cover assembly (F, fig. 36).
- (7) Install hydraulic control unit (par. 39).

#### 44. Field Maintenance of Hydraulic Pump Group

*a. Removal.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove five cover assemblies (fig. 36).
- (3) Remove tube assemblies (Z, CC, W, and N, fig. 37).

- (4) Remove gage group (S, fig. 38).
- (5) Remove relief valve assembly (U, fig. 38) and two spacing collars (V, fig. 38).
- (6) Remove tube assemblies (E, F, U, V, and T, fig. 37).
- (7) Remove two check valve assemblies (D, fig. 45).
- (8) Remove hoses (P and R, fig. 37).

*Note.* The key letters shown in parentheses in (9) through (12) below refer to figure 53.

- (9) Disconnect connector P1 (K) from hydraulic pump group (N). Loosen cable adapter (L) and disconnect from connector P1.
- (10) Disassemble connector P1 (TM 9-1400-257-35) and remove and tag four leads from P1.
- (11) Loosen knurled compression nut (M) and pull loose end of wiring harness assembly (C) through cable adapter and hole in knurled compression nut.
- (12) Remove hydraulic pump group (N).

*Note.* The key letters shown in parentheses in b and c below refer to figure 54.

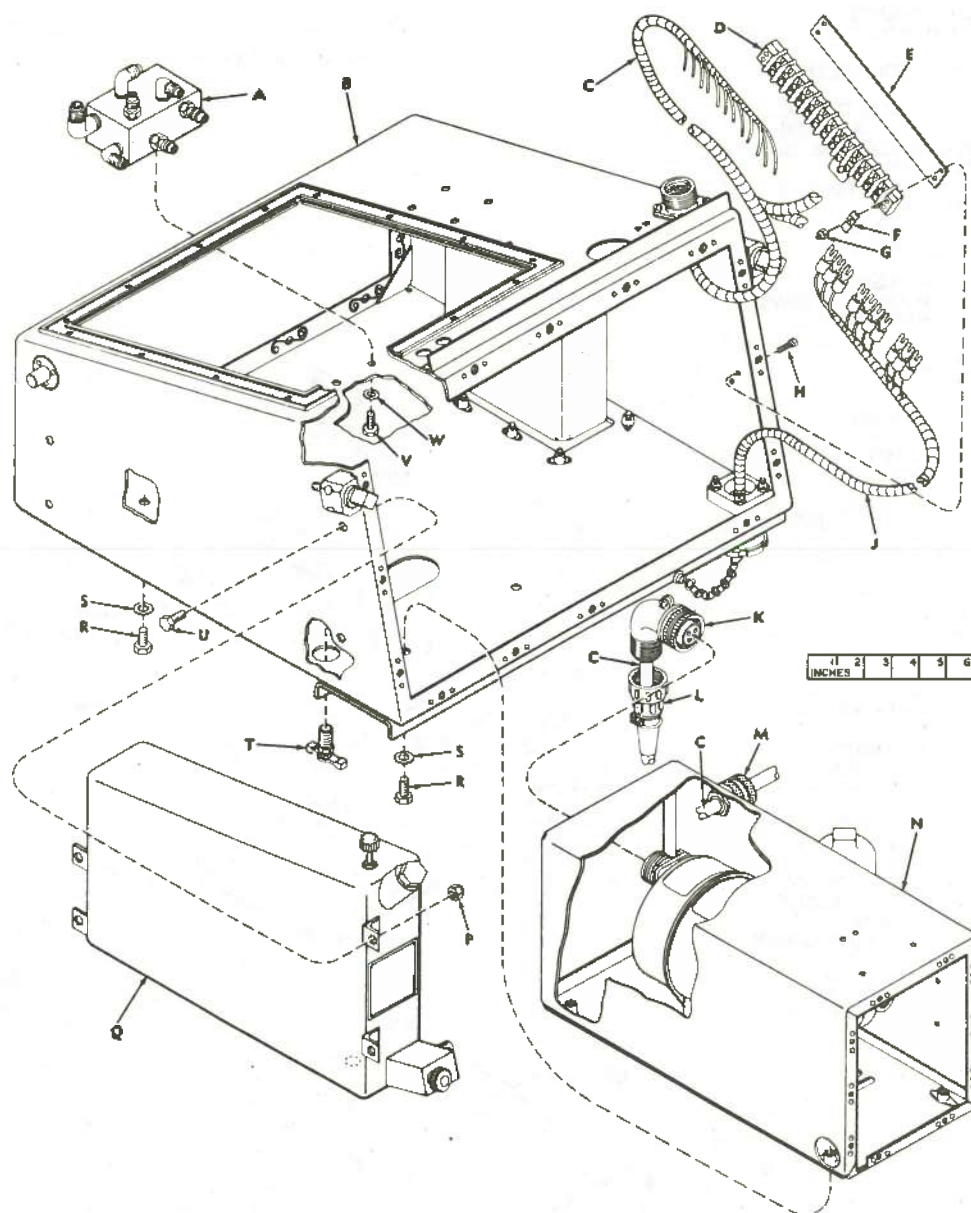
*b. Disassembly.*

- (1) Remove clamp (R) from each of two guide rails (U) and remove pump group (S) from motor mounting (V).
- (2) Remove two mounting plates (S8) and four mounts (S7) from base of pump (S1).
- (3) Remove 90° elbow (S3) from pump.
- (4) Remove 90° elbow (S4) from pump.
- (5) Remove filter (L) and two spacing collars (N) from motor mounting.
- (6) Remove two reducers (J) and two preformed packings (K) from filter.
- (7) Remove and disassemble electrical box connector (C).
- (8) Remove and disassemble 90° elbows (H) and (A).

*c. Assembly.*

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies,





- |                                 |                               |                              |
|---------------------------------|-------------------------------|------------------------------|
| A—FITTING ASSY—8011533          | J—WIRING HARNESS ASSY—8011622 | R—1/4-28 X 17/32 HEX-HD BOLT |
| B—DRAWER ASSY                   | K—CONNECTOR (P1)—8175625      | —7601600 (4)                 |
| C—WIRING HARNESS ASSY—7612101   | L—CABLE ADAPTER—7620137       | S—9/32-IN. FLAT WASHER       |
| D—TERMINAL BOARD (E1)—7601917   | M—(KNURLED) COMPRESSION NUT   | —120392 (4)                  |
| E—INSULATOR—8591837             | (P/O ELECTRICAL BOX           | T—DRAINCOCK—7610284          |
| F—BLANK MARKING PLATE—7622474   | CONNECTOR—8606756)            | U—1/4-28 X 21/32 HEX-HD BOLT |
| G—NO. 6-32 SELF-LOCKING HEX NUT | N—HYDRAULIC PUMP GROUP        | —7601599 (4)                 |
| —503238 (4)                     | P—1/4-28 SELF-LOCKING HEX NUT | V—1/4-28 X 9/16 HEX-HD SCREW |
| H—NO. 6-32 X 5/8 FIL-HD SCREW   | —503339 (4)                   | —8606955 (2)                 |
| —586869 (4)                     | Q—RESERVOIR ASSY—8011477      | W—1/4-IN. FLAT WASHER        |
|                                 |                               | —8606711 (2)                 |

RA PD 467467

Figure 58. Hydraulic control unit—partially exploded view No. 3.

TM 9-1430-254-34

- A—90-DEG ELBOW—7602955
- B—7/16-20 X 1/4 HEX NUT—8161758
- C—ELECTRICAL BOX CONNECTOR—8606756
  - 1—HEX NUT (P/O ELECTRICAL BOX CONNECTOR—8606756)
  - 2—NIPPLE (P/O ELECTRICAL BOX CONNECTOR—8606756)
  - 3—RUBBER BUSHING (P/O ELECTRICAL BOX CONNECTOR—8606756)
  - 4—COMPRESSION NUT (P/O ELECTRICAL BOX CONNECTOR—8606756)
- D—15/32-IN. FLAT WASHER—120395
- E—7/16-24 X 3/16 HEX NUT—8011602
- F—0.351-IN-ID PREFORMED PACKING—7384283
- G—UNION—7602963
- H—90-DEG ELBOW—7610261
- J—REDUCER—7610266
- K—0.468-IN-ID PREFORMED PACKING—7387778
- L—FILTER—7602956
- M—1/4-28 X 2-17/32 HEX-HD BOLT—7601611 (2)
- N—SPACING COLLAR—8011516
- P—5/16-24 X 7/8 SOCKET-HD BOLT—191244 (2)
- Q—5/16-IN. LOCK WASHER—MS35338-26 (2)
- R—CLAMP—8011522
- S—PUMP GROUP
  - 1—PUMP—8016646
  - 2—7/16-20 X 1/4 HEX NUT—8161758
  - 3—90-DEG ELBOW—7602955
  - 4—90-DEG ELBOW—7610262
  - 5—9/16-18 X 3/8 HEX NUT—7761683
  - 6—1/4-28 X 1-1/16 CLEVIS BOLT—8606855 (4)
  - 7—MOUNT—8011403
  - 8—MOUNTING PLATE—8011497
  - 9—1/4-28 X 5/16 SELF-LOCKING HEX NUT—503339 (4)
- T—1/4-28 X 5/16 SELF-LOCKING HEX NUT—503339 (2)
- U—GUIDE RAIL
- V—MOTOR MOUNTING—8011595

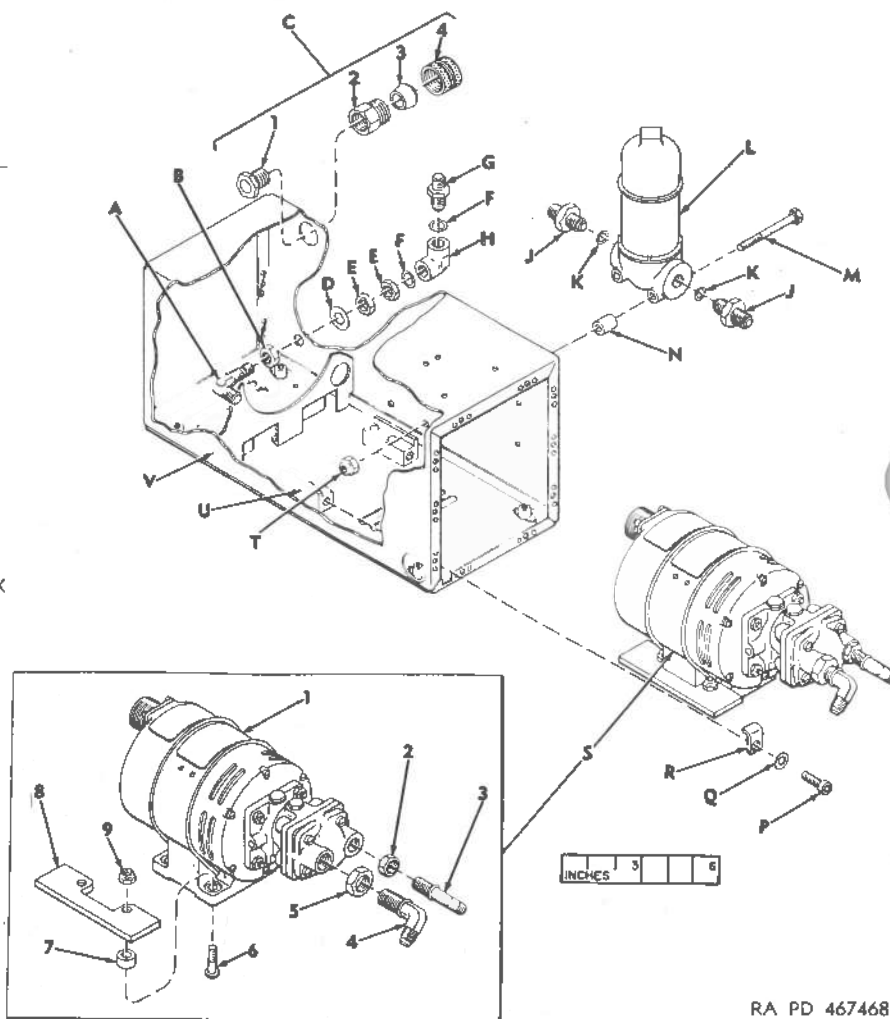


Figure 54. Hydraulic pump group—partially exploded view.

RA PD 467468

and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (1) Install new 0.468-inch-id preformed packing (K) on each of two reducers (J) and install reducers on filter (L).
- (2) Install filter and two spacing collars (N) on motor mounting (V).
- (3) Install 90° elbow (A), 90° elbow (H), union (G), and associated parts.
- (4) Install electrical box connector (C).
- (5) Install four mounts (S7) and two mounting plates (S8) on pump (S1).
- (6) Install 90° elbow (S4) on pump.
- (7) Install 90° elbow (S3) on pump.
- (8) Install pump group (S) on two guide rails (U).

*d. Installation.*

*Note.* The key letters shown in parentheses in (1) through (5) below refer to figure 53.

- (1) Install hydraulic pump group (N) in drawer assembly.
- (2) Loosen knurled compression nut (M) and push four leads of wiring harness assembly (C), that connect to connector P1 (K), through hole in knurled compression nut and through cable adapter (L).
- (3) Connect three leads of wiring harness assembly to connector P1 (TM 9-1430-257-35). Assemble connector P1 (TM 9-1400-250-35).
- (4) Connect cable adapter to connector P1 and attach connector P1 to hydraulic pump group.
- (5) Tighten knurled compression nut.
- (6) Install two check valve assemblies (D, fig. 45).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (7) Install ¼-inch-od tube assemblies (E, F, U, V, and T, fig. 37).
- (8) Install two spacing collars (V, fig. 38)

and relief valve assembly (U, fig. 38).

- (9) Install gage group (S, fig. 38).
- (10) Install ¼-inch-od tube assemblies (N, W, CC, and Z, fig. 37).
- (11) Install hoses (P and R, fig. 37).
- (12) Install rear inner cover assembly (K, fig. 36), rear cover assembly (C, fig. 36), top cover assembly (B, fig. 36), front inner cover assembly (H, fig. 36), and front cover assembly (F, fig. 36).
- (13) Install hydraulic control unit (par. 39).

## 45. Field Maintenance of Reservoir Assembly 8011477

*a. Removal.*

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove hydraulic pump group (par. 44a (2)-(12)).
- (3) Remove tube assembly (Y, fig. 37).
- (4) Remove draincock (T, fig. 53) from underside of reservoir assembly (Q, fig. 53) through hole in base of drawer assembly (B, fig. 53). This draincock is used on system serial numbers 1001 through 1021 only.
- (5) Remove reservoir assembly from drawer assembly.

*b. Disassembly.* Disassemble reservoir assembly (fig. 55).

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

*Note.* Replace all preformed packings in reservoir assembly with new ones during assembly.

*c. Assembly.* Assemble reservoir assembly (fig. 55).

*d. Installation.*

- (1) Install reservoir assembly (Q, fig. 53) in drawer assembly (B, fig. 53).
- (2) Install draincock (T, fig. 53) in reservoir assembly. This draincock is used on system serial numbers 1001 through 1021 only.

- (3) Install  $\frac{3}{8}$ -inch-od tube assembly (Y, fig. 37).
- (4) Install hydraulic pump group (par. 44d (1)-(12)).
- (5) Install hydraulic control unit (par. 39).

#### 46. Removal and Installation of Fitting Assembly 8011533

##### a. Removal.

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove five cover assemblies (fig. 36).
- (3) Remove tube assemblies (Z, Y, V, CC, C, and B, fig. 37) and 90° elbow (CC, fig. 45) associated with tube assembly (V, fig. 37).
- (4) Remove hoses (H and G, fig. 37).
- (5) Remove fitting assembly (A, fig. 53).

##### b. Installation.

**Caution:** Before assembly, apply class B-4 black sealing compound 8030-174-2599 to threads of all elbows, unions, reducers, tube assemblies, and hoses. Remove all excess to avoid getting sealing compound into hydraulic system.

- (1) Install fitting assembly (A, fig. 53).
- (2) Install hoses (H and G, fig. 37).
- (3) Install 90° elbow (CC, fig. 45) associated with tube assembly (V, fig. 37) and install  $\frac{3}{8}$ -inch-od tube assembly (Y, fig. 37) and  $\frac{1}{4}$ -inch-od tube assemblies (Z, V, CC, C, and B, fig. 37).
- (4) Install rear inner cover assembly (K, fig. 36), rear cover assembly (C, fig. 36), top cover assembly (B, fig. 36), front inner cover assembly (H, fig. 36), and front cover assembly (F, fig. 36).
- (5) Install hydraulic control unit (par. 39).

#### 47. Removal and Installation of Wiring Harness Assemblies and Relay Assembly

##### a. Removal.

- (1) Remove hydraulic control unit (par. 37).
- (2) Remove five cover assemblies (fig. 36).

*Note.* The key letters shown in parentheses in (3) and (4) below refer to figure 53.

- (3) Remove and tag 22 leads of wiring harness assemblies (C and J) from terminal board (D).
- (4) Remove two blank marking plates (F), terminal board, and insulator (E).

*Note.* The key letters shown in parentheses in (5) through (10) below refer to figure 56.

- (5) Remove connector J2 (C) and gasket (D) from drawer assembly (A).
- (6) Disassemble connector J2 (TM 9-1400-257-35) and remove and tag five leads from connector.
- (7) Disconnect connector P2 (F) from connector J1 (Q). Remove relay assembly (R). Perform electrical test of relay assembly (TM 9-1430-255-34).
- (8) Remove wiring harness assembly (E) from drawer assembly.
- (9) Remove cap assembly (N) from connector J1 (M).
- (10) Remove connector J1 and carefully pull wiring assembly (K) through spacing block (J) and hole in drawer assembly. Remove gasket (L) from wiring assembly and spacing block from drawer assembly.

##### b. Installation.

*Note.* The key letters shown in parentheses in (1) through (6) below refer to figure 56.

- (1) Install relay assembly (R) on drawer assembly (A). Connect connector P2 (F) to connector J1 (Q).
- (2) Pull five-lead end of wiring harness assembly (E) up through hole in top of drawer assembly and through hole in  $1\frac{1}{2}$ -inch-id gasket (D). Connect five leads of wiring assembly to connector J2 (C) (TM 9-1430-257-35). Assemble connector J2.
- (3) Install connector J2 (C) and  $1\frac{1}{2}$ -inch-id gasket (D) on drawer assembly.
- (4) Pull 10-lead end of wiring assembly (K) through hole in spacing block (J), hole in bottom of drawer assembly, and hole in 1-inch-id gasket (L). Connect 10 leads of wiring assembly to connector J1

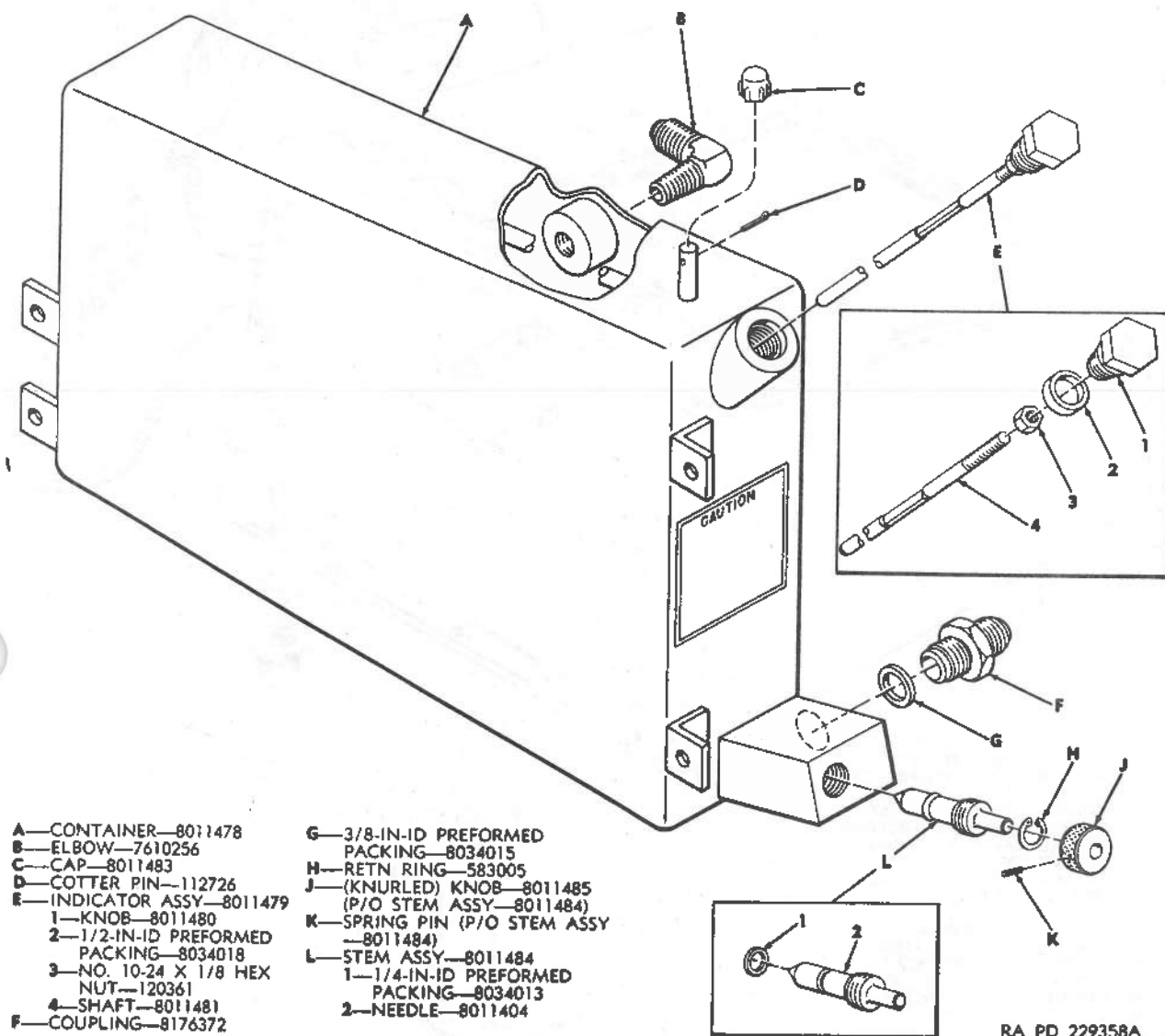
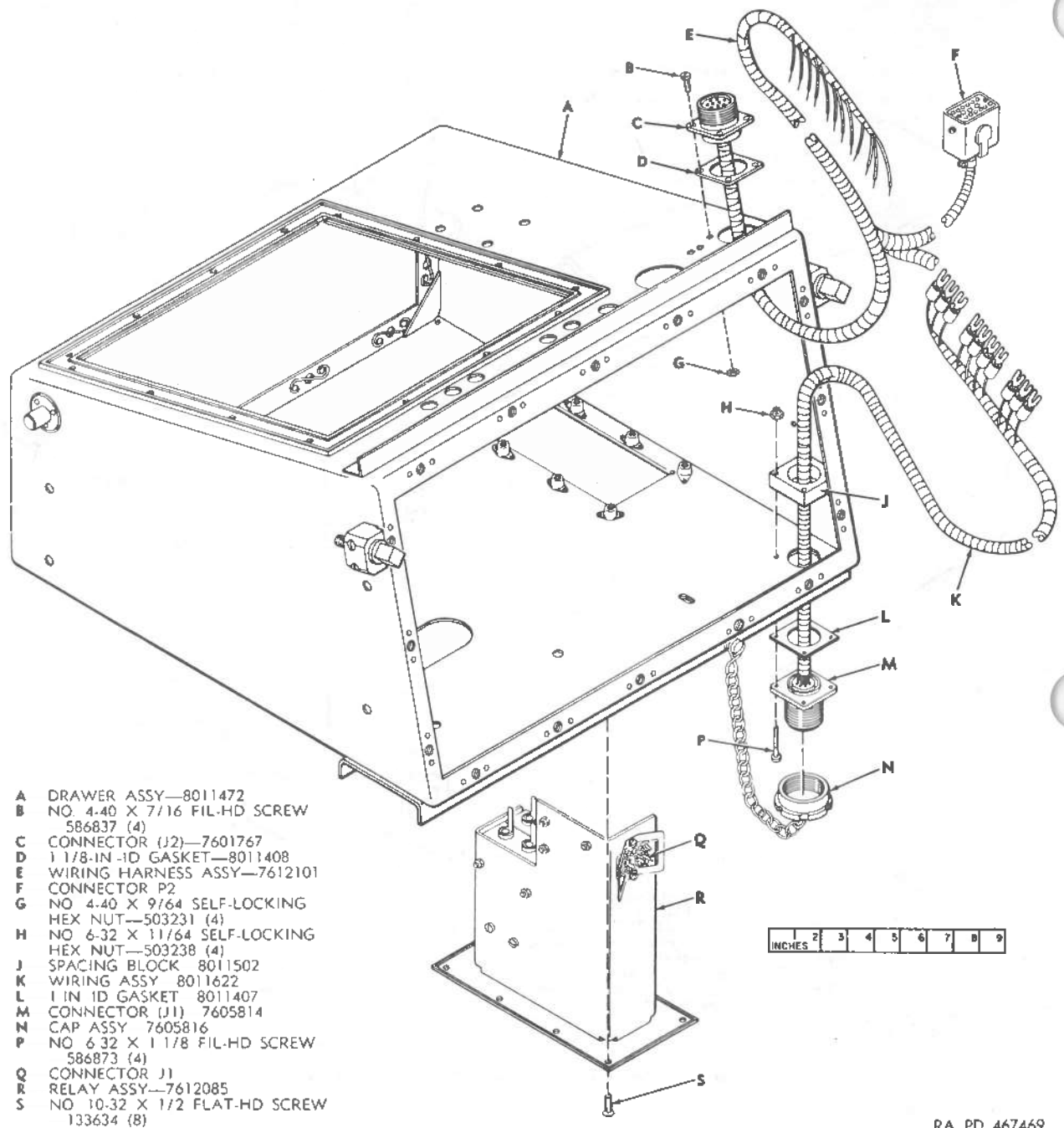


Figure 55. Reservoir assembly 8011477—exploded view.





RA PD 467469

Figure 58. Hydraulic control unit—partially exploded view No. 4.

- (M) (TM 9-1430-257-35). Assemble connector J1.
- (5) Install connector J1, 1-inch-id gasket, and spacing block on drawer assembly.
  - (6) Install cap assembly (N) on connector J1.
- Note.* The key letters shown in parentheses in (7) and (8) below refer to figure 53.
- (7) Install insulator (E), terminal board E1 (D), and two blank marking plates (F).

- (8) Connect 22 leads of wiring harness assemblies (J) and (C) to terminal board (TM 9-1430-257-35).
- (9) Install rear inner cover assembly (K, fig. 36), rear cover assembly (C, fig. 36), top cover assembly (B, fig. 36), front inner cover assembly (H, fig. 36), and front cover assembly (F, fig. 36).
- (10) Install hydraulic control unit (par. 39).

### Section IX. ELECTRO-MECHANICAL CONTROL BOX

*Note.* The removal and installation procedures for electro-mechanical control box 9007806 and hydraulic control unit 8607284 are similar. Reference is made to text and illustrations of hydraulic control unit where possible to prevent duplication.

#### 48. Removal of Electro-Mechanical Control Box 9007806

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with acquisition power switch on acquisition power control panel in the off position.

- a. Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).
- b. Disconnect primary and secondary actuator cable assemblies (fig. 16) from electro-mechanical control box.
- c. Perform steps (par. 37 d, e, f, and h).

#### 49. Field Maintenance of Electro-Mechanical Control Box 9007806

##### a. Disassembly.

*Note.* The key letters shown in parentheses in (1) through (8) below refer to figure 57.

- (1) Remove cover assembly (AA) and gasket (BB).
- (2) Disconnect leads (fig. 17) from switches S1, S2, and S3. Remove loop clamp from switch assembly.
- (3) Remove scale bracket with scale attached.

- (4) Remove two hexagon nuts (Z).
- (5) Remove bearing (Q). Loosen clamp (K) and remove. Remove dust seal (T), pivot bearing (W), shaft (J), collar (L), gasket (M), and sleeve bearing (N) as shown.
- (6) Remove two screws (E), lockwashers (D), flat washers (C), and pre-formed packings (B).
- (7) Remove two screws (P), lockwashers (D), and flat washers (C) and remove switch assembly (Y).
- (8) Remove control panel (CC).

b. *Field Maintenance of Control Panel 9154368 or 9988941.* Perform field maintenance of control panel (TM 9-1430-255-34).

c. *Disassembly and Assembly of Switch Assembly 9008725.* Disassemble and assemble switch assembly (fig. 58).

##### d. Assembly.

*Note.* The key letters shown in parentheses in (1) through (7) below refer to figure 57.

- (1) Place switch assembly (Y) in position and secure with two

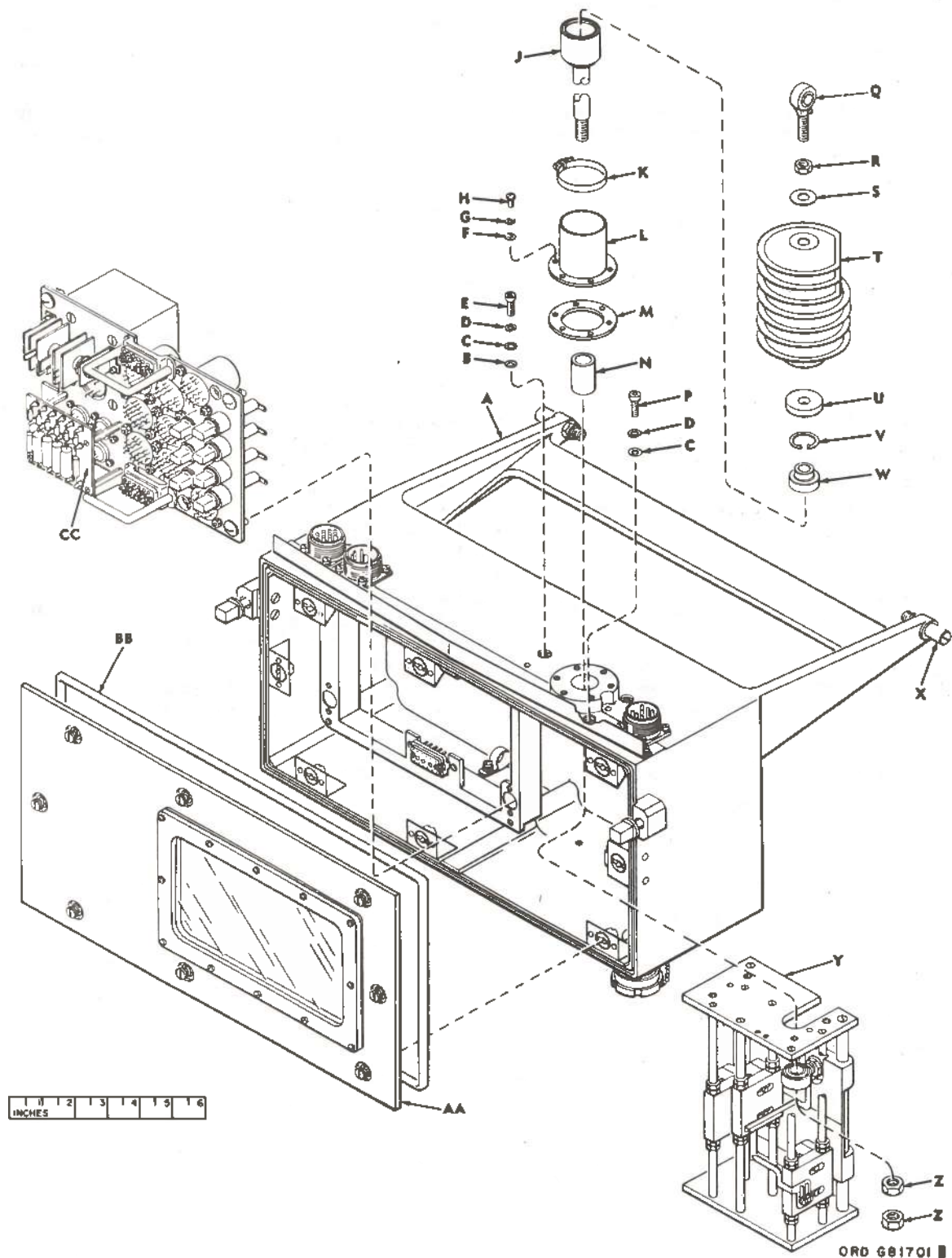
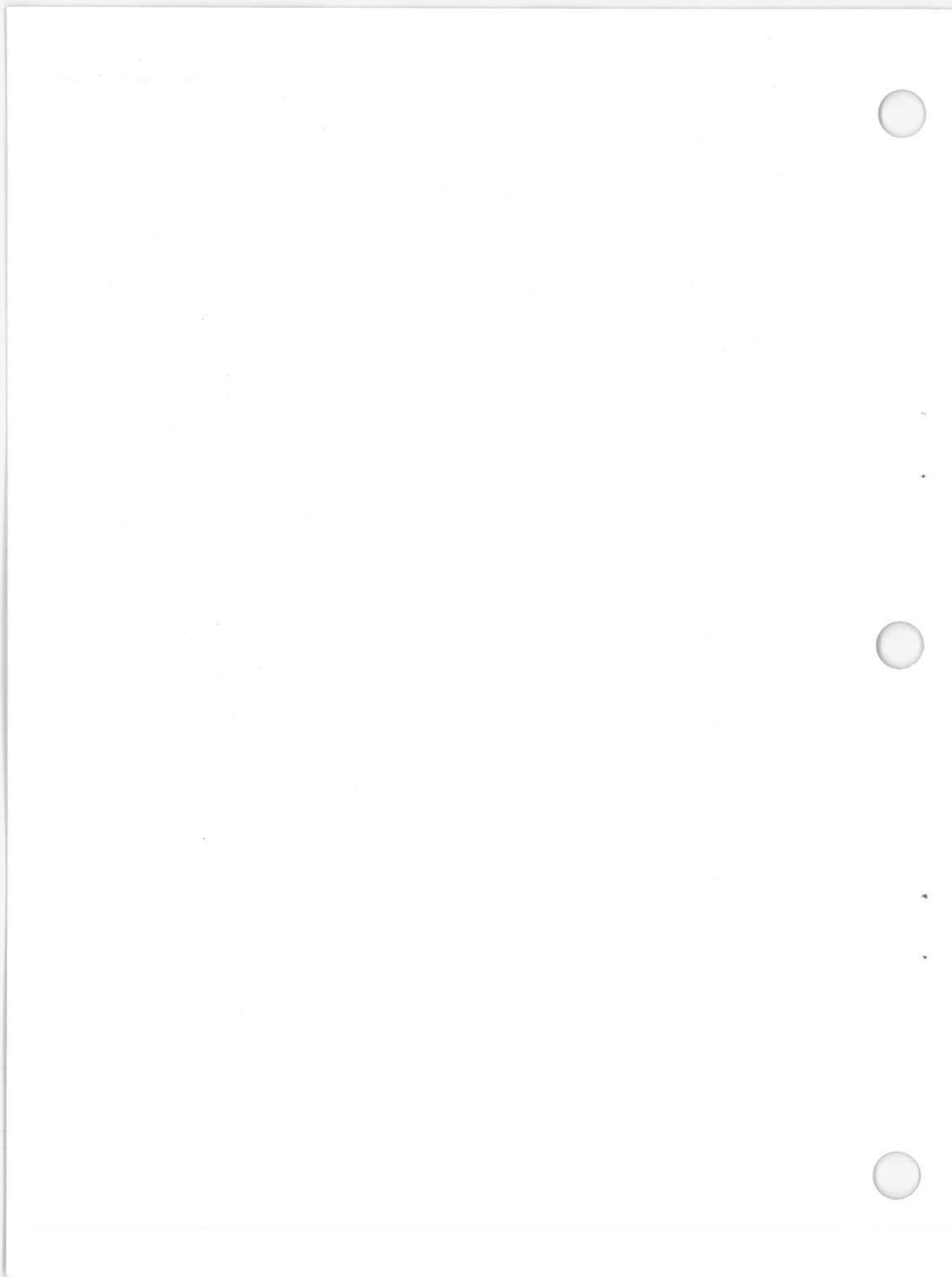


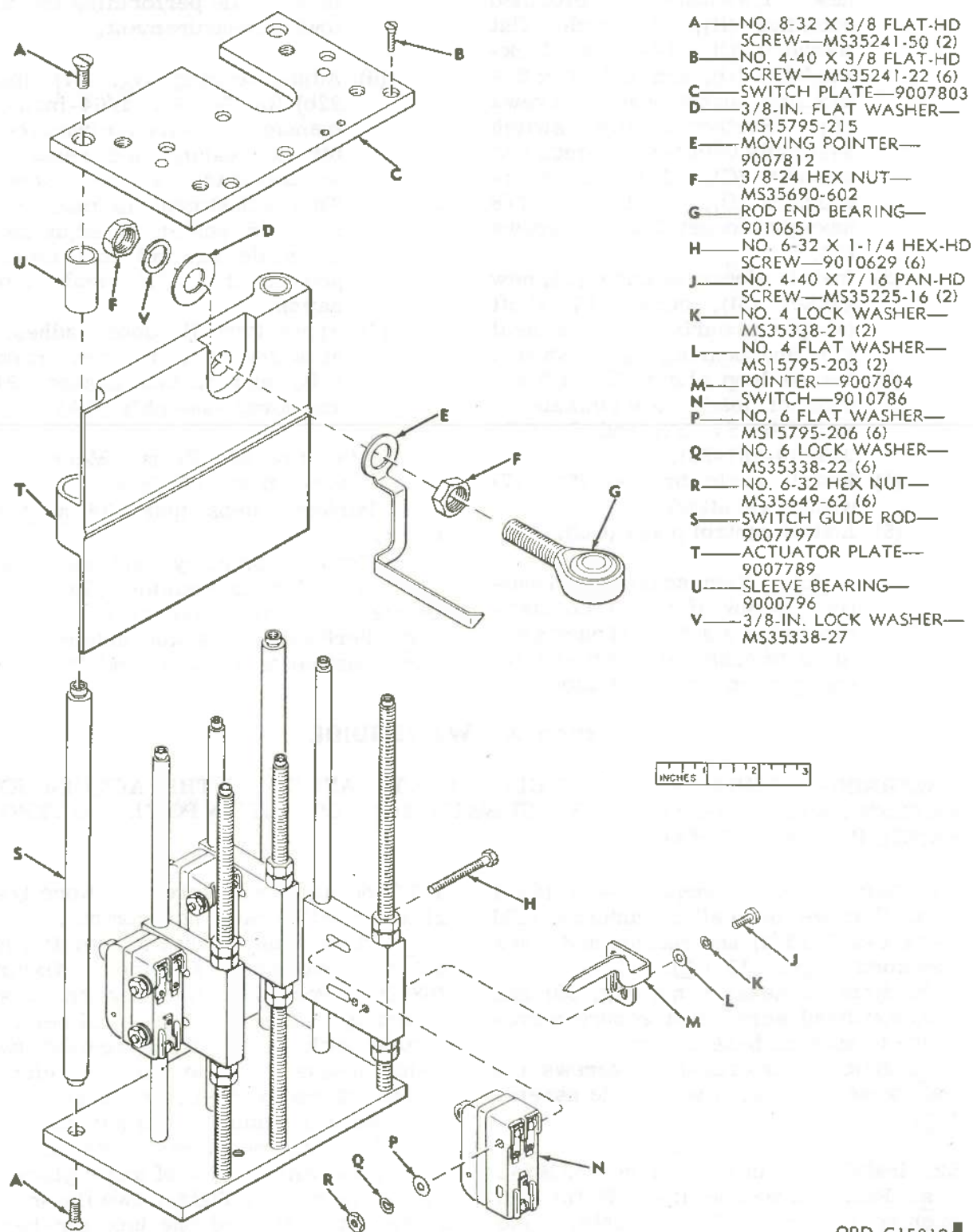
Figure 57. Disassembly and assembly of electro-mechanical control box 9007806.

A—Control box 9007805	Q—Bearing 7609289
B—1/4-in.-id preformed packing MS29513-10	R—Hex jam nut 455502
C—1/4-in. flat washer MS15795-210 (4)	S—5/16-in. flat washer MS15795-213
D—1/4-in. lock washer MS35338-24 (4)	T—Dust seal 8011412
E—1/4-20 x 3/4 hex-socket-hd screw MS35457-35 (2)	U—Spacer 9007790
F—No. 4 flat washer MS15795-204 (6)	V—Retn ring 583013
G—No. 4 lock washer MS35338-40 (6)	W—Pivot bearing 8011543
H—No. 4-40 x 7/16 pan-hd screw (6)	X—Guide stud
J—Shaft 8157947	Y—Switch assy 9007825
K—Clamp 8011501	Z—3/8-24-in. hex nut MS35690-622
L—Collar 8157946	AA—Cover assy 9007799
M—Gasket 9007791	BB—Gasket 9007795
N—Sleeve bearing 9016649	CC—Control panel 9154368 (U/O system serial nos
P—1/4-20 x 7/8 hex-socket-hd screw MS35457-36 (2)	1071-1306) or control panel 9988941 (U/O sys-
	tem serial nos 1307-)

Figure 57. Disassembly and assembly of electro-mechanical control box 9007806—legend.







ORD G15012

Figure 58. Disassembly and assembly of switch assembly - 9007825.

new 1/4-inch-id preformed packings (B), 1/4-inch flat washers (C), 1/4-inch lock-washers (D), and 1/4-20 x 3/4 hexagon-socket-head screws (E). Further secure switch assembly with two 1/4-inch flat washers (C), 1/4-inch lock-washers (D), and 1/4-20 x 7/8 hexagon-socket-head screws (P).

- (2) Install sleeve bearing (N), new gasket (M), collar (L), shaft (J), pivot bearing (W), dust seal (T), and bearing (Q) as shown.
- (3) Install loop clamp (fig. 17) and connect leads to terminals on switches S1, S2, and S3 (TM 9-1430-257-35).
- (4) Install scale bracket (fig. 17) with scale attached.
- (5) Install control panel (CC).

Note. Turn square-head captive screw (fig. 17) counter-clockwise a sufficient number of turns to cause threads to be fully engaged in thread of mounting

block while performing the following measurement.

- (6) Adjust bearing (fig. 17) (par. 22b) for  $7\text{-}3/4 \pm 1/64$ -inch dimension measured between center of bearing and center of square-head captive screw. This adjustment is made with scale in center of adjustment on scale bracket and moving pointer at  $4\text{-}1/2^{\circ}$  scale indication.
- (7) Apply type II rubber adhesive 8040-266-0822 to new gasket (BB) and install gasket (BB) and cover assembly (AA).

#### 50. Installation of Electro-Mechanical Control Box - 9007806

- a. Perform steps (par. 39 a, c, d, and e).
- b. Connect primary and secondary actuator cable assemblies (fig. 16) to electro-mechanical control box.
- c. Perform acquisition antenna tests and adjustments (pars. 24 and 25).

## Section X. WAVEGUIDE

**WARNING: PERFORM ALL FIELD MAINTENANCE ON THE ACQUISITION ANTENNA WITH ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL IN THE OFF POSITION.**

#### 51. Removal of Waveguide - 8516941

- a. Remove acquisition antenna (TM 9-1430-251-10/1) and radome and cover assemblies (par. 18 b-h).
- b. Remove hexagon nut (fig. 59) and hexagon-head screw that secure waveguide to antenna base assembly.
- c. Remove two flat-head screws and pull waveguide from waveguide assembly.

#### 52. Installation of Waveguide - 8516941

- a. Push waveguide (fig. 59) through opening in waveguide assembly. Aline screw holes in waveguide with corresponding holes in waveguide assembly and antenna base assembly. Secure waveguide fingertight with two No. 10-32 x 5-3/16 flat-head screws, one 1/4-20 x

1-1/2 hexagon-head screw, and one 1/4-20 x 3/8 self-locking hexagon nut.

- b. Place antenna base assembly (fig. 60) on waveguide alinement fixture 7686092. Position rail of antenna base assembly between blocks of alinement fixture with rail resting against two inside blocks and one forward block. Tighten three thumbscrews to aline antenna base assembly on alinement fixture. Position end of waveguide against angle plate with locator of angle plate in end of waveguide. Tighten two flat-head screws (fig. 59) and one hexagon-head screw.

- c. Loosen three thumbscrews (fig. 60) and slip antenna base assembly backward so that waveguide clears locator of angle plate. Remove antenna base assembly

C1

TM 9-1430-254-34

from alinement fixture.

d. Install radome assembly and cover assemblies (par. 20 c-e).

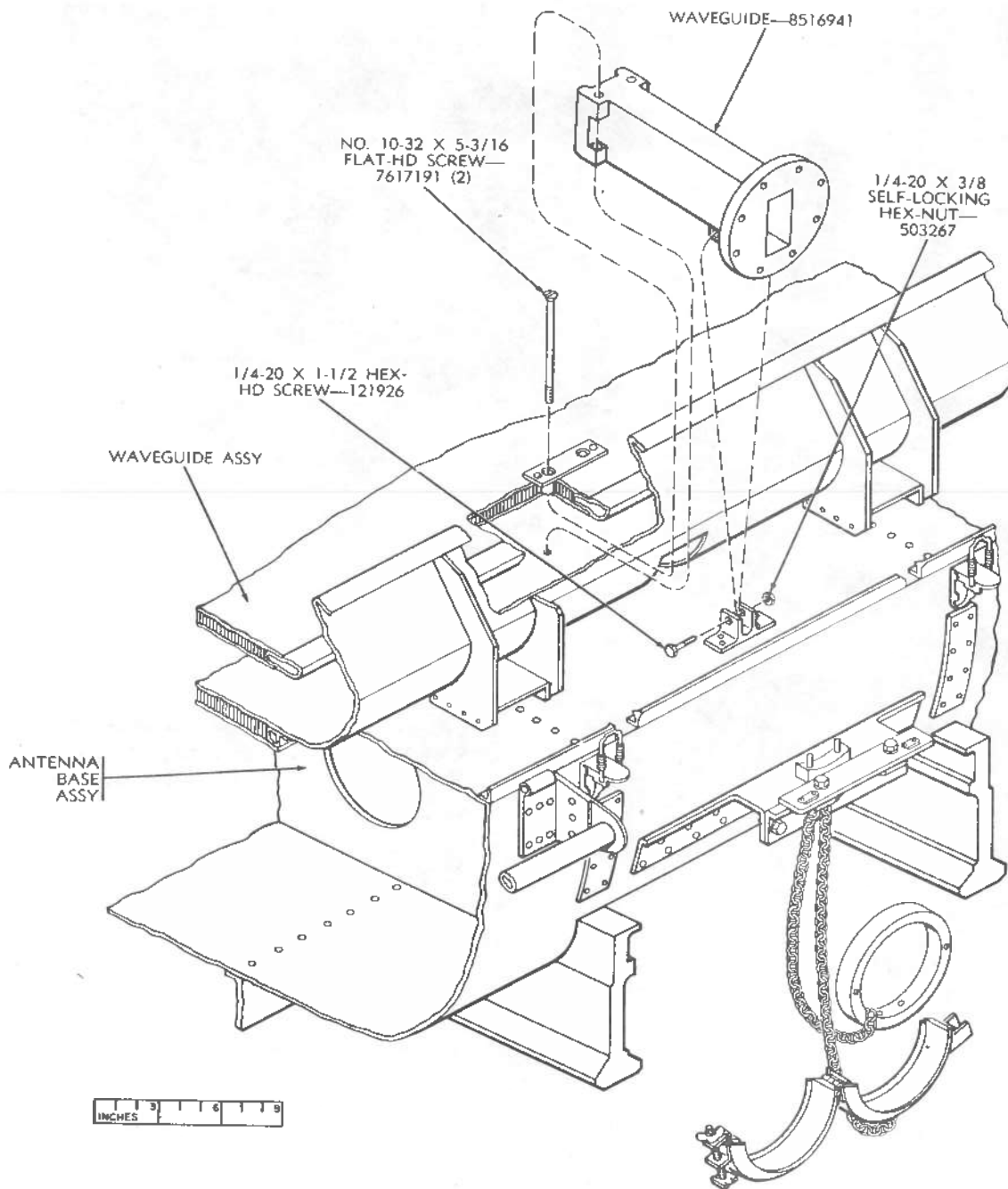
e. Install acquisition antenna in normal operating position (TM 9-1430-251-

10/1).

f. Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

Dr. John W. Smith

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1234 Main Street  
City, State 12345  
Phone: (123) 456-7890



RA PD 467472

Figure 59. Removal and installation of waveguide.



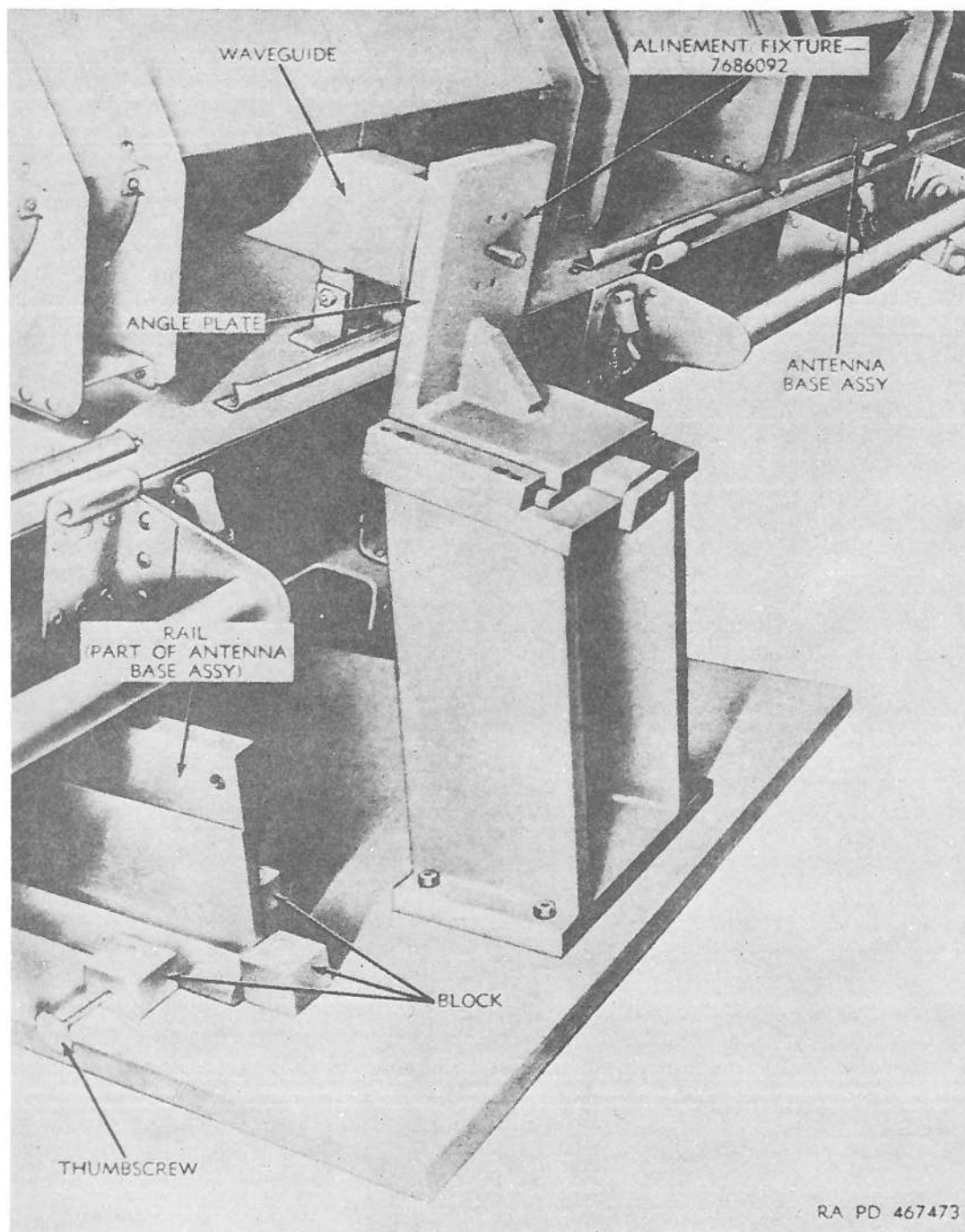


Figure 80. Alinement of waveguide using alinement fixture.

## CHAPTER 4

### ACQUISITION ANTENNA PEDESTAL 8513363 OR 9002671

#### Section I. GENERAL

##### 53. Scope

Acquisition antenna pedestal 8513363 is used in system serial numbers 1001 through 1020. Acquisition antenna pedestal 9002671 is used in system serial numbers 1021 above. The two antenna pedestals have certain components which are common to both. However, other components are peculiar to the separate pedestals.

This chapter provides coverage for both the common and peculiar components.

##### 54. Illustration Coverage

Either antenna pedestal 8513363 (fig. 61) or 9002671 (fig. 62) may be illustrated when the maintenance procedure is identical for both pedestals.

#### Section II. ACQUISITION SLIPRING

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

##### 55. Removal of Acquisition Antenna Slipring 7620498

a. Remove acquisition antenna (fig. 7) and acquisition antenna pedestal (fig. 61 or 62) (TM 9-1430-251-10/1).

*Note.* The key letters shown in parentheses in b through d below refer to figure 63.

b. Unbuckle six belts (J3 and T) on top of turntable (U) and release four cable assemblies (A, B, C, and D) and one wiring harness (S).

*Note.* It is not necessary that cable assemblies and wiring harness be removed from pedestal in order to remove and install slipring.

c. Remove right clamp assembly (E) and left clamp assembly (W).

d. Remove 5½-inch clamp (R) and clamp group (J).

*Note.* The key letters shown in parentheses in e and f below refer to figure 64.

e. Remove cover (C) and unscrew plug (D). Unscrew and remove cap (E) from coaxial rod

(T). Loosen eight captive screws (N) and remove waveguide assembly (P).

f. Remove upper rotary coupler group (M) and preformed packing (Q) from cover group (R).

**Caution:** Lift the cover group straight up to avoid damaging coaxial rod.

g. Remove cover group.

h. Disconnect connectors P17 (fig. 65) and P18 from connectors J7 and J8, respectively.

i. Remove binding-head screws and lockwashers from outer terminals. Bend outer-ring numbered leads back against turntable and return screws and washers to outer terminals.

j. Remove hexagon nuts and lockwashers securing inner-ring numbered leads to inner terminals. Detach and tag leads and return lockwashers and nuts to inner terminals.

*Note.* The key letters shown in parentheses in k through m below refer to figure 66.

k. Secure slipring fixture 7620499 (C) to three brackets (fig. 65) on acquisition slipring with

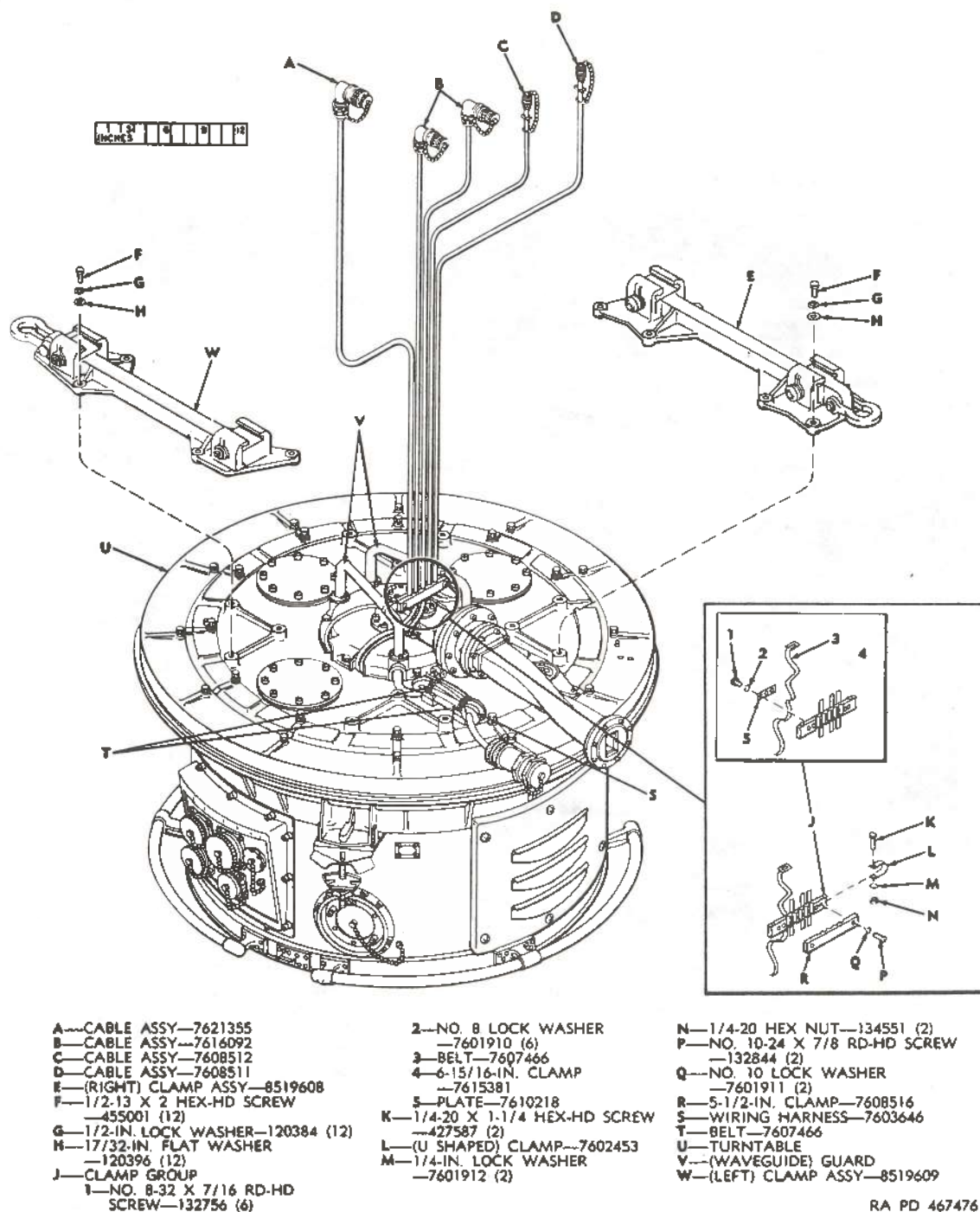


Figure 63. Removal and installation of clamp assemblies.

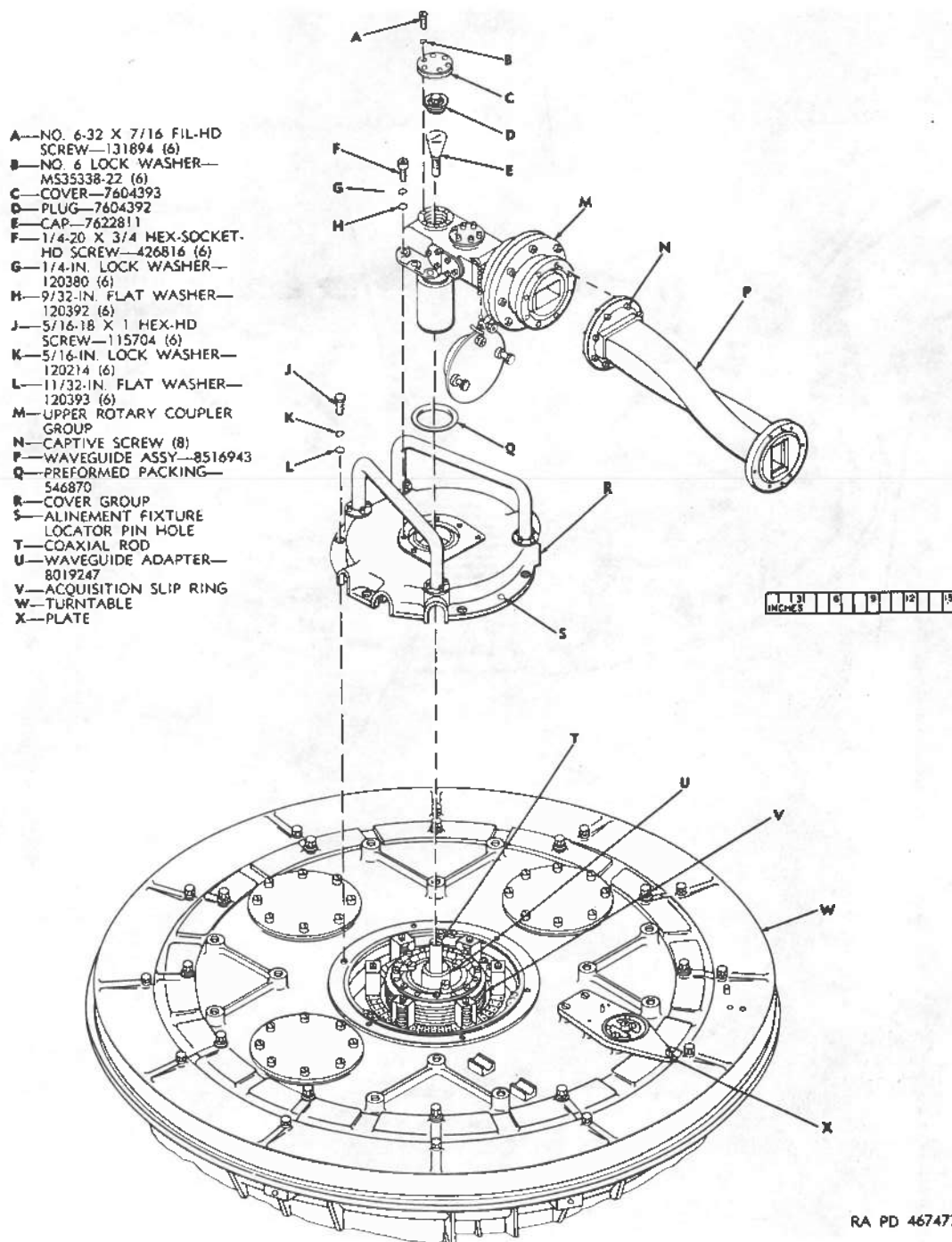


Figure 64. Removal and installation of upper rotary coupler group and cover group.

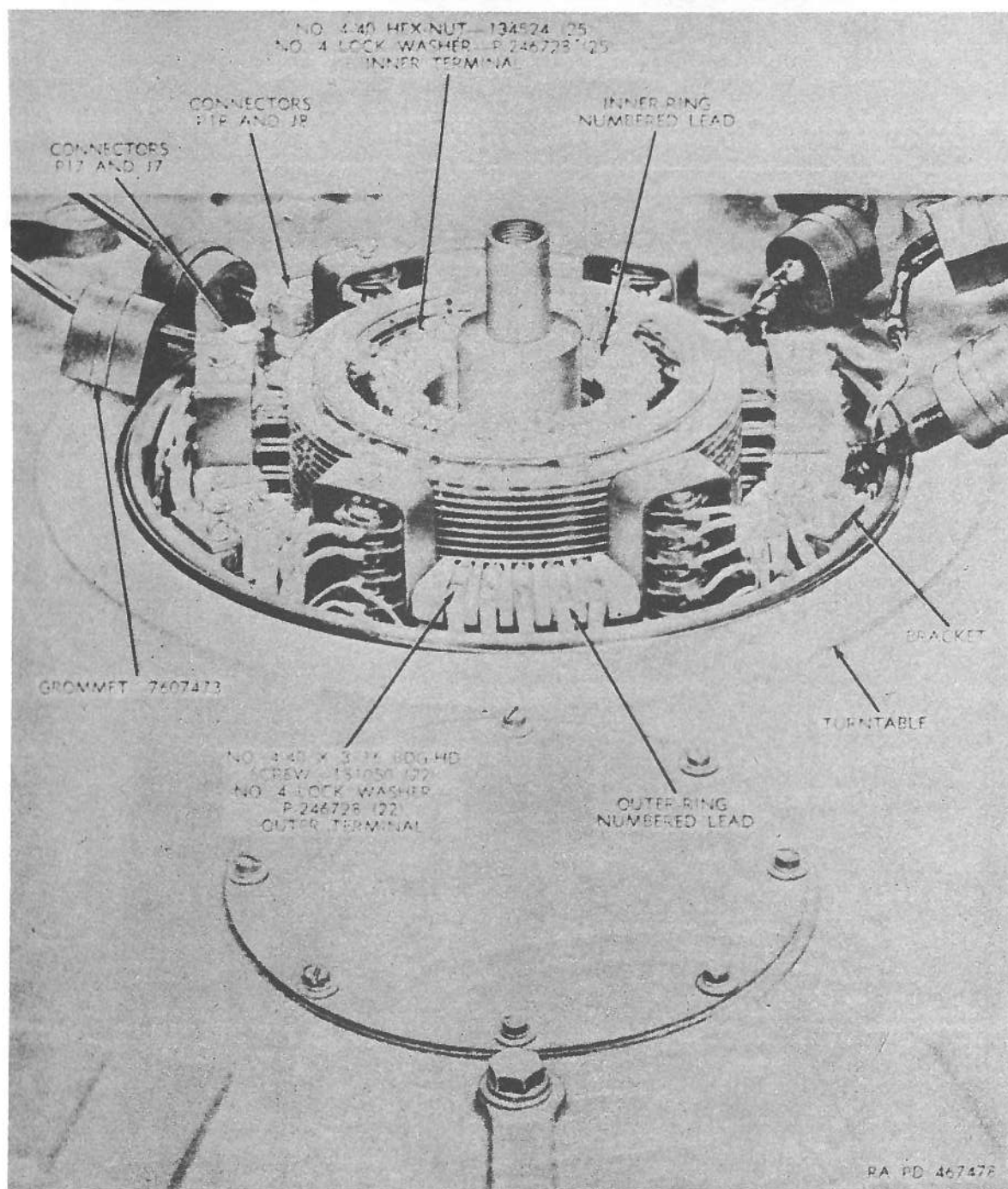


Figure 85. Acquisition slipring 7620498—installed.



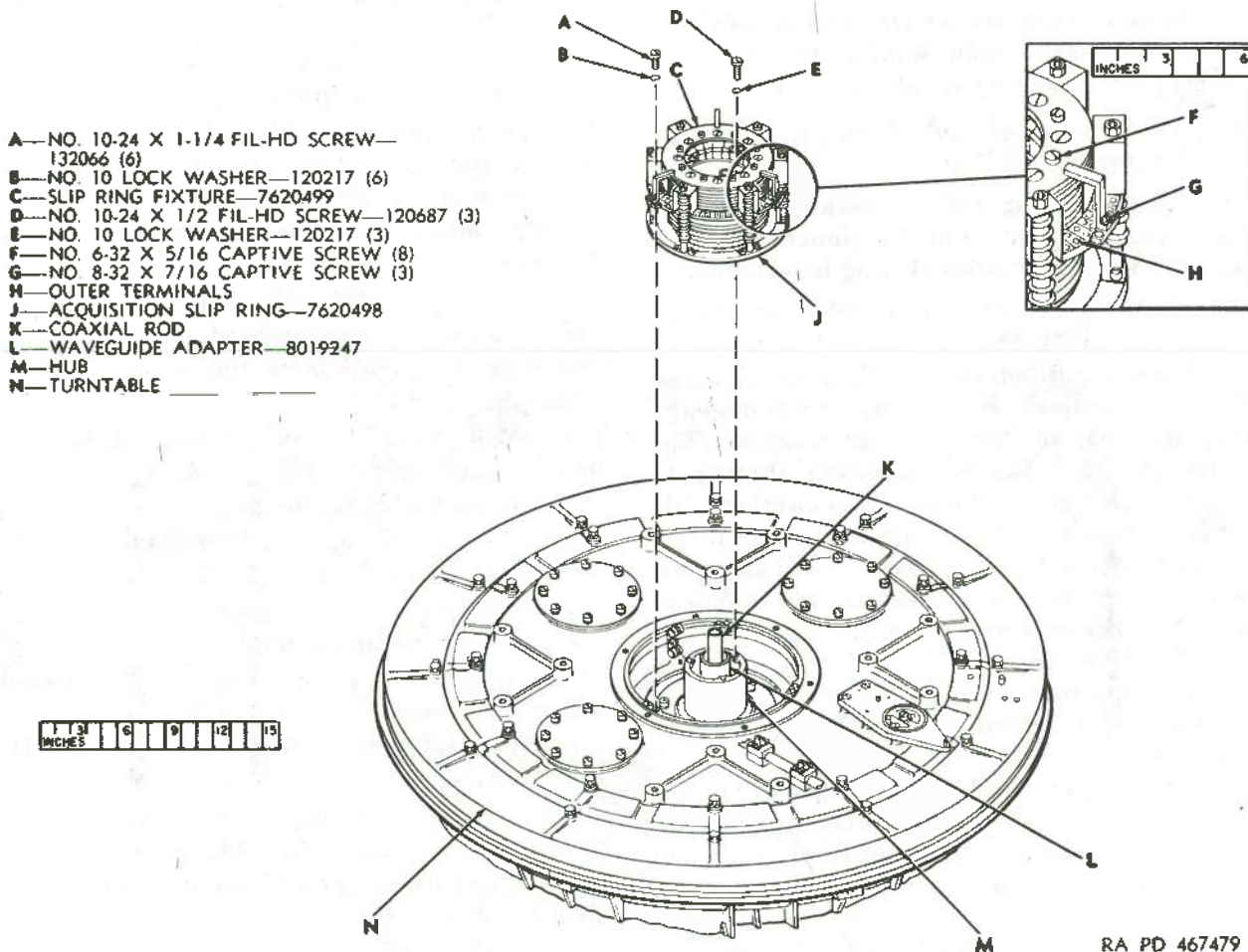


Figure 66. Removal and installation of acquisition slipring.

## Section III. ROTARY COUPLER

cov

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

**57. Removal of Rotary Coupler 8019245**

- a. Perform steps (par. 55 a, b, d, e, and f).
- b. Turn acquisition antenna pedestal on its side and remove bottom plate (fig. 68).

*Note.* The key letters shown in parentheses in e through g below refer to figure 70 unless otherwise indicated.

- c. Remove outer cover (K) and pull sliding frame (E) out to fully extended position.
- d. Remove six screws (7, fig. 69), lockwashers (N), and one flat washer (W).
- e. Remove two screws (R), lockwashers (S), and flat washers (T) securing lower rotary coupler group (V) to bracket (U).
- f. Disconnect nonmetallic hose assembly (3, fig. 69) from elbow on lower rotary coupler group (2, fig. 69).
- g. Loosen clamp (X) and remove lower rotary coupler group, and 7½-inch-od shim (L). Remove eight screws (AA), lockwashers (Z), boot assembly (Y), and clamp.

**Caution:** The 7½-inch-od shim is a laminated shim. Make certain that none of the laminations adhere to mounting surface for lower rotary coupler group.

**58. Field Maintenance of Rotary Coupler 8019245****a. Inspection.**

- (1) Examine inside (waveguide) areas of upper rotary coupler group (fig. 71) and lower rotary coupler group (fig. 72) for any burned spots.
- (2) Using a fine grade of crocus cloth (grade No. 400 (10/0) or above) polish the waveguide to remove spot.

**b. Disassembly.**

- (1) Disassemble upper rotary coupler group (fig. 71).
- (2) Disassemble lower rotary coupler group (fig. 72).

**c. Assembly.**

*Note.* Bearing surfaces and waveguide openings must be wiped clean with a lint-free cloth before assembly.

- (1) Assemble lower rotary coupler group (fig. 72).

- (2) Assemble upper rotary coupler group (fig. 71).

**59. Installation of Rotary Coupler 8019245**

*Note.* The key letters shown in parentheses in a through i below refer to figure 70 unless otherwise indicated.

- a. Install cover group (R, fig. 64) on turntable (W, fig. 64). With parallel bar 5017462, hold 7½-inch-od shim (fig. 73) in position against mounting surface for lower rotary coupler group and using 12-inch vernier depth gage 41-G-153, measure distance between mounting surface on cover and mounting surface for lower rotary coupler group. This distance must be  $9.500 \pm 0.003$  inches including thickness of shim. In order to obtain this dimension it may be necessary to peel laminations from 7½-inch-od shim (fig. 73). Each lamination of shim is 0.002 inch thick. Remove cover group after dimension has been obtained.

- b. Place 7½-inch-od shim (L) on top of flange (M) of lower rotary coupler group (V) with brass side of shim down.

- c. Position flat washer (W) below flange on lower rotary coupler group.

- d. Align holes in flat washer and shim with holes in flange of lower rotary coupler group and install lower rotary coupler group (2, fig. 69) as shown with one flat washer (W), six lock washers (N) and hexagon-socket-head screws (P).

- e. Secure lower rotary coupler group to bracket (U) with two flat washers (T), lock washers (S), and hexagon-socket-head screws (R).

- f. Install boot assembly (Y) with eight lock washers (Z) and hexagon-socket-head screws (AA). Install clamp (X).

- g. Connect nonmetallic hose assembly (3, fig. 69) to elbow on lower rotary coupler group (2, fig. 69).

- h. Secure sliding frame (E) and install outer cover (K) and bottom plate (fig. 68).

- i. Complete assembly of acquisition antenna pedestal (par. 56 i-p).

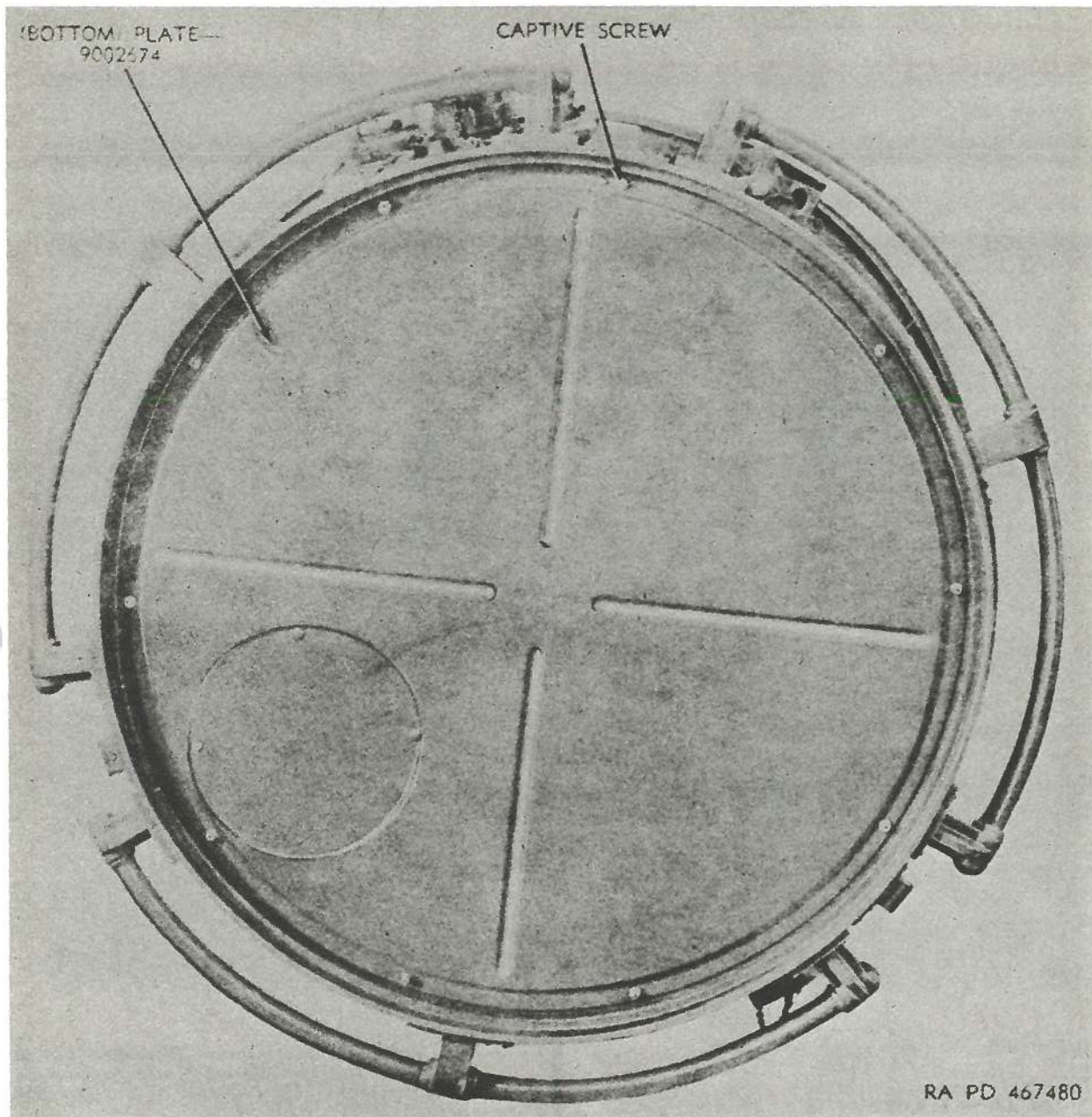
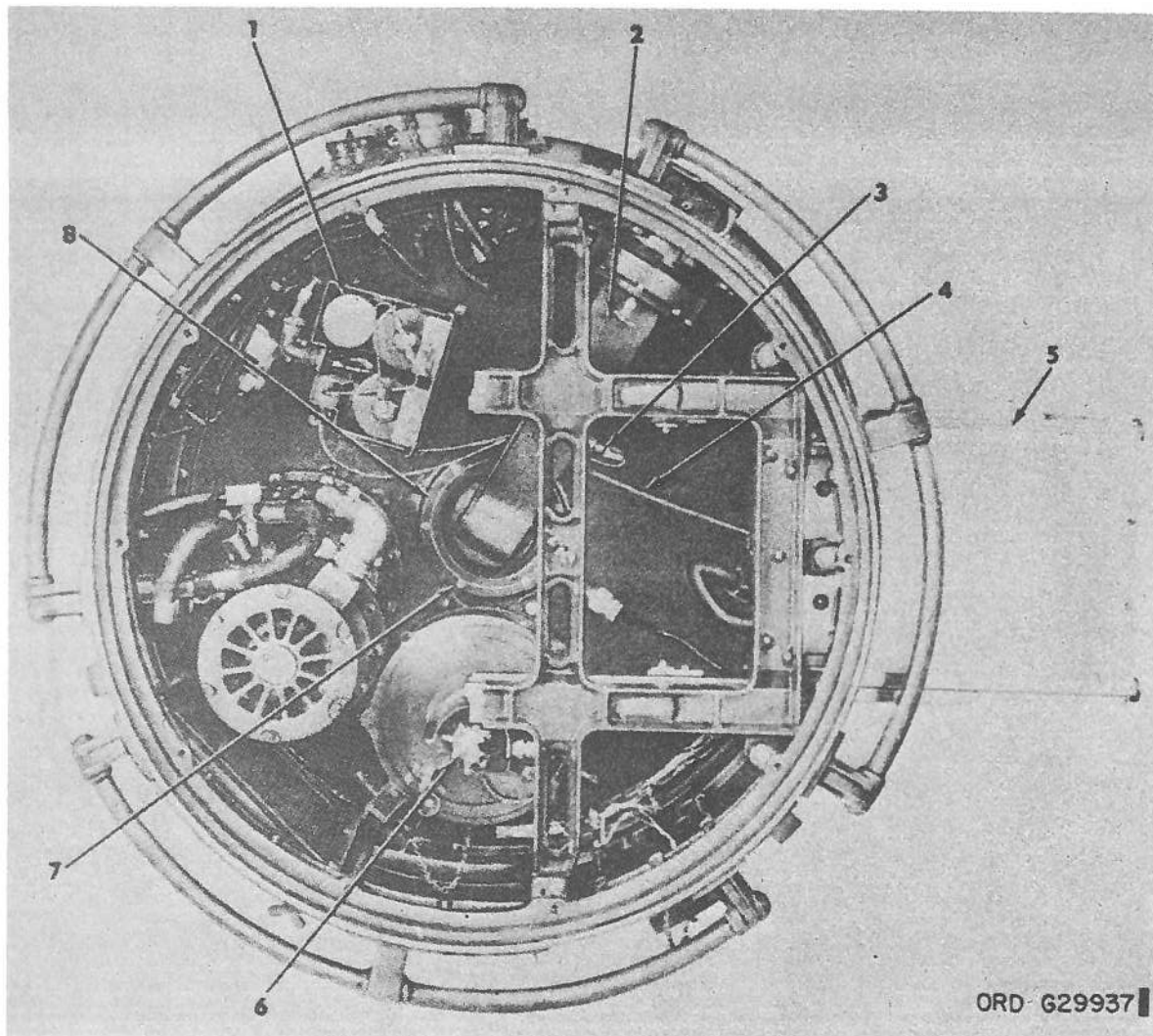


Figure 68. Acquisition antenna pedestal—bottom view.



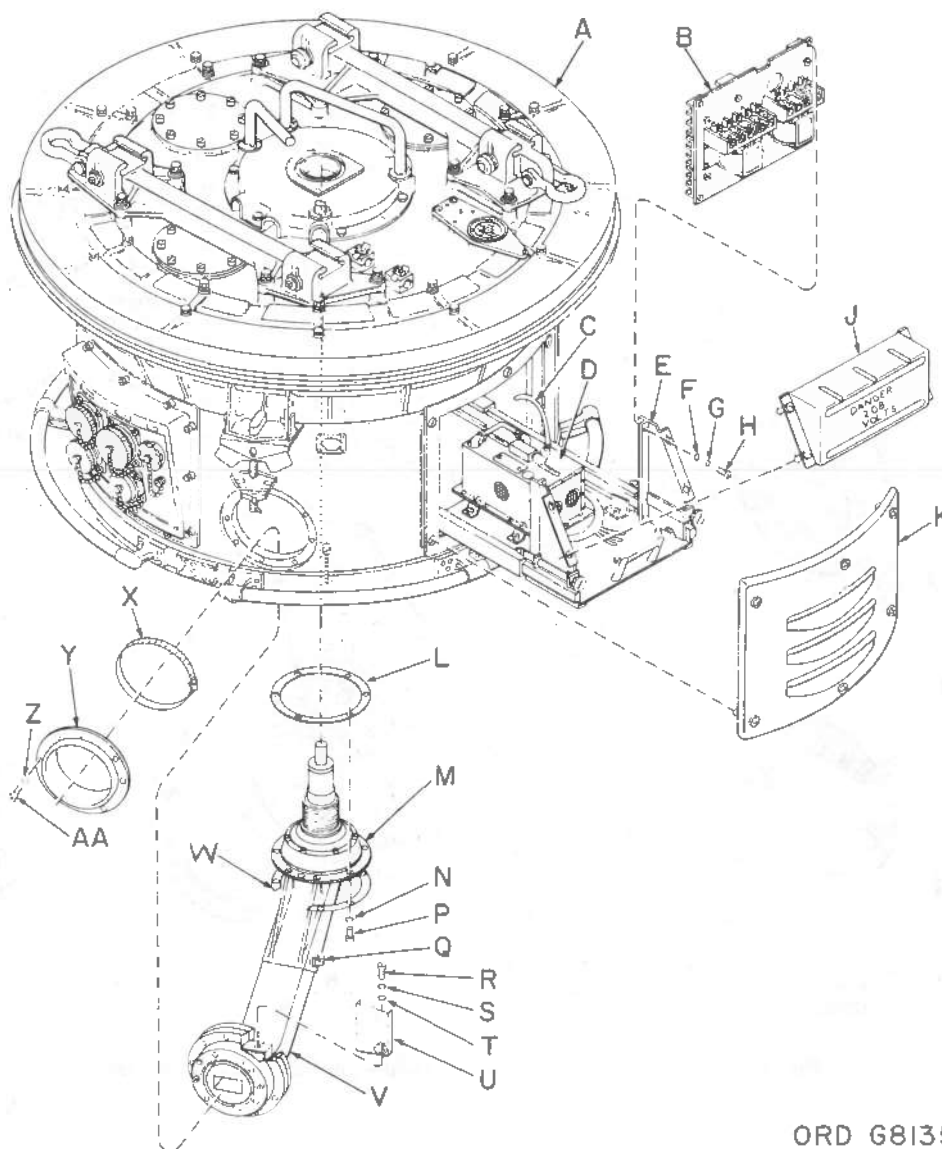


ORD G29937

- 1—Dehumidifier 9150649
- 2—Lower rotary coupler group
- 3—Nonmetallic hose assy 9154394
- 4—Nonmetallic hose assy 9154395
- 5—Sliding frame
- 6—Synchro transmitter

- 7— $\frac{1}{4}$ -20 x  $\frac{5}{8}$  hex-socket-hd screw 5304-042-6747 (6) (u/o system serial nos. 1001-1110) or  $\frac{1}{4}$ -20 x  $\frac{5}{8}$  hex-socket-hd screw 5305-042-6816 (6) (u/o system serial nos. 1111-)
- 8—6 $\frac{1}{2}$ -in. fl washer 5310-761-6074

Figure 69. Acquisition antenna pedestal—bottom view with bottom plate removed and sliding frame extended.

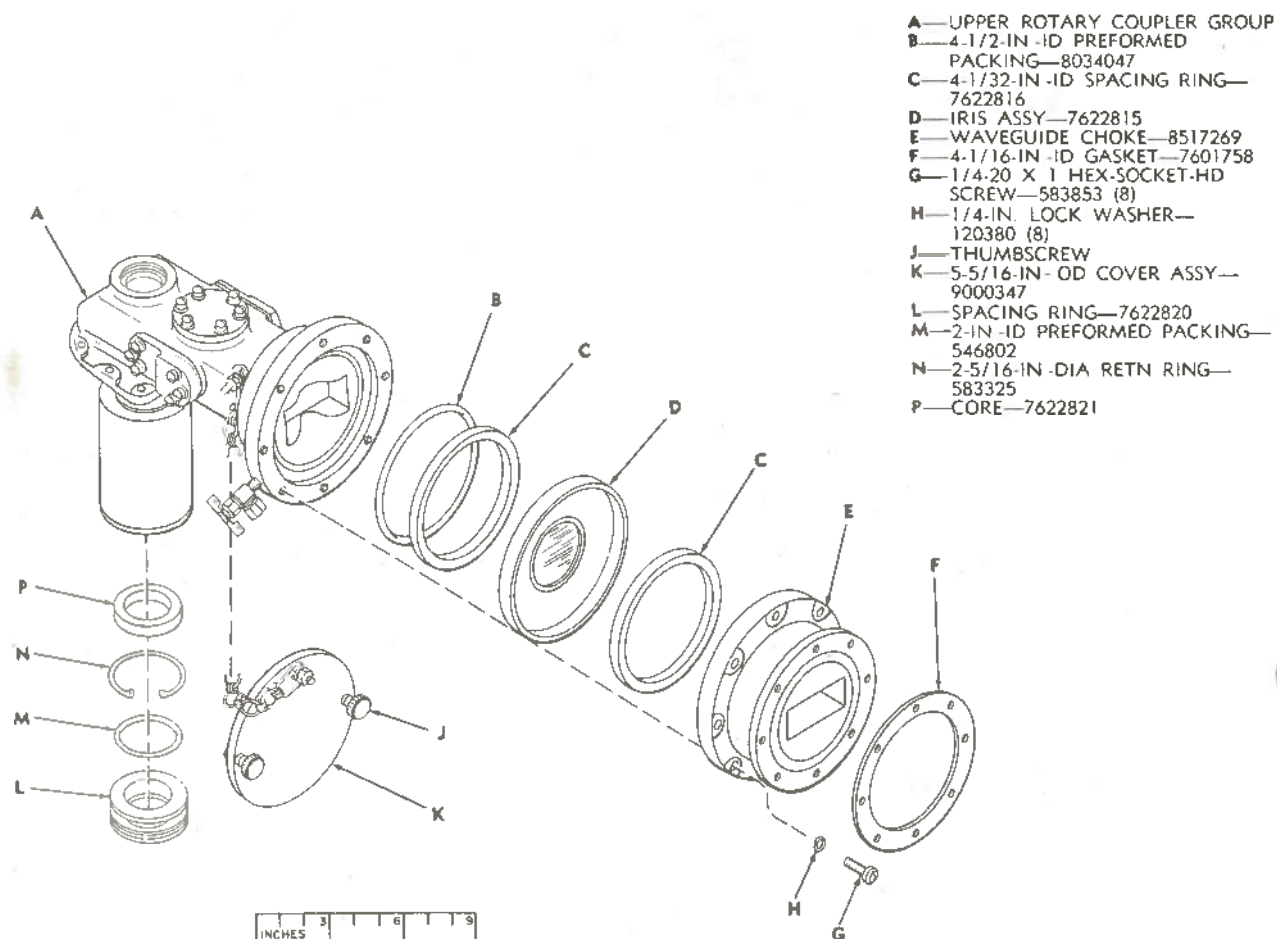


ORD G81351

- A—Acquisition antenna pedestal 8513363 or 9002671
- B—Relay assy 5945-535-9556
- C—Hose assy 9154395
- D—Compressor 1285-342-4763
- E—Sliding frame
- F— $\frac{1}{8}$ -in. fl washer 5310-013-1015 (4)
- G—No. 8 lock washer 5310-012-1841 (4)
- H—No. 8-32 x  $\frac{1}{2}$  hex-socket-hd screw 5305-058-3886 (4)
- J—Protective cover 8173456
- K—Outer cover 8173433
- L— $7\frac{1}{2}$ -in-od shim 7607588
- M—Flange
- N— $\frac{1}{4}$ -in. lock washer 5310-012-0380 (6)

- P— $\frac{1}{4}$ -20 x  $\frac{5}{8}$  hex-socket-hd screw 5305-042-6747 (6) (u/o system serial nos. 1001-1110) or  $\frac{1}{4}$ -20 x  $\frac{5}{8}$  hex-socket-hd screw 5305-042-6816 (6) (u/o system serial nos. 1111-)
- Q—45-deg elbow
- R— $\frac{1}{4}$ -20 x  $\frac{1}{2}$  hex-socket-hd screw 5305-021-6278 (2)
- S— $\frac{1}{4}$ -in. lock washer 5310-012-0380 (2)
- T— $\frac{1}{8}$ -in. fl washer 5310-012-0392 (2)
- U—Bracket
- V—Lower rotary coupler group
- W—Fl washer 5310-298-8682
- X—Clamp 4730-561-7751
- Y—Boot assy 1430-564-9915
- Z— $\frac{1}{4}$ -in. lock washer 5310-012-3080 (8)
- AA— $\frac{1}{4}$ -20 x  $\frac{1}{2}$  hex-socket-hd screw 5305-021-6278 (8)

Figure 70. Removal and installation of lower rotary coupler group and relay assembly.



RA PD 467483

Figure 71. Upper rotary coupler group—partially exploded view.

#### Section IV. ACQUISITION ANTENNA DRIVE 8515267 OR 8513894

*Note.* Acquisition antenna drive 8515267 is used in system serial numbers 1001 through 1020. Acquisition antenna drive 8513894 is used in system serial numbers 1021 and above.

##### 60. Field Maintenance of AC Motor 8515037, 9010200 or 9017218

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

*Note.* AC Motor 8515037 is used with acquisition antenna drive 8515267. AC Motor 9010200 or 9017218 is used with acquisition antenna drive 8513894. AC Motors 9010200 and 9017218 are interchangeable.

##### a. Removal.

- (1) Remove acquisition antenna (fig. 7) and acquisition antenna ped-



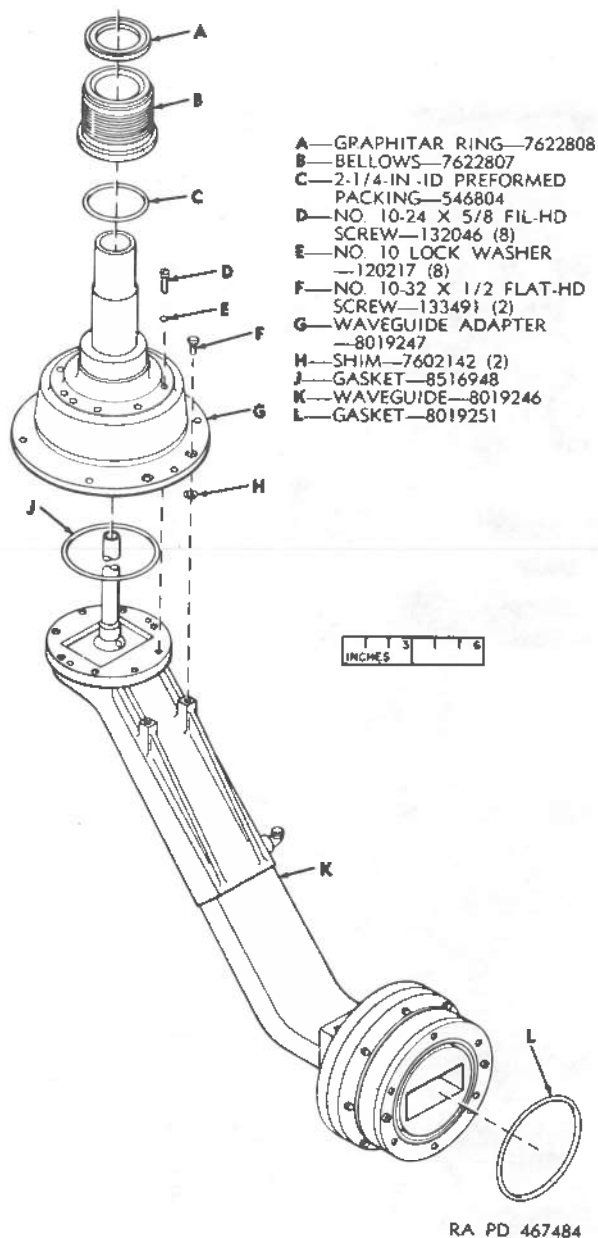


Figure 72. Lower rotary coupler group—partially exploded view.

- (1) Remove cap (fig. 61 or 62) (TM 9-1430-251-10/1).
- (2) Remove cap (fig. 61 or 62) from OIL DRAIN. Open drain-cock (fig. 74) and drain oil from acquisition antenna drive (TM 9-1430-253-20/1).
- (3) Turn antenna pedestal on its side and remove bottom plate (fig. 68).

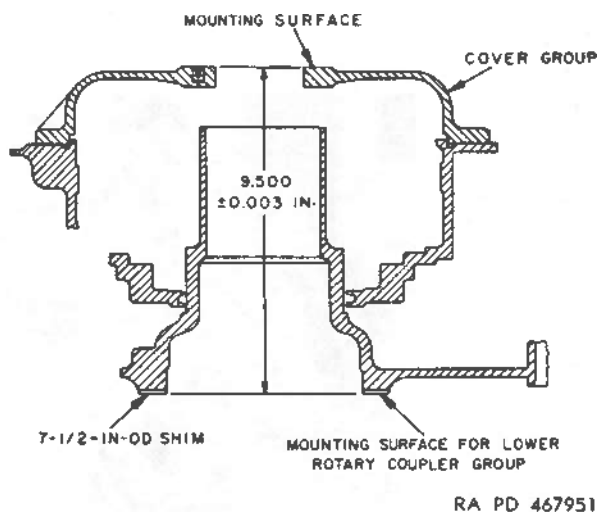


Figure 73. Installation tolerance for rotary coupler.

- (4) Disconnect connector P6 (fig. 75) from connector J1.
- (5) Remove twelve hexagon-head screws (fig. 75), lockwashers, ac motor, and gasket (L, fig. 76).

**b. Field Maintenance of AC Motor - 8515037 or 9010200.**

**Note.** The key letters shown in parentheses in (1) and (2) below refer to figure 76.

- (1) Disassembly. Remove oil seal (R).
- (2) Assembly.

**Note.** Felt washer (T) and flat spacing washer (S) are not used with replacement oil seal (R). Discard old felt and washer upon removal.

- (a) Coat new seal lips liberally with petroleum base grease 9150-240-2250.
- (b) Slide seal gently onto motor shaft. Install preformed packing (U) and seal retainer (V).
- (c) Allow seal to center itself on shaft and tighten roundhead screws (BB) gently without disturbing this alignment.

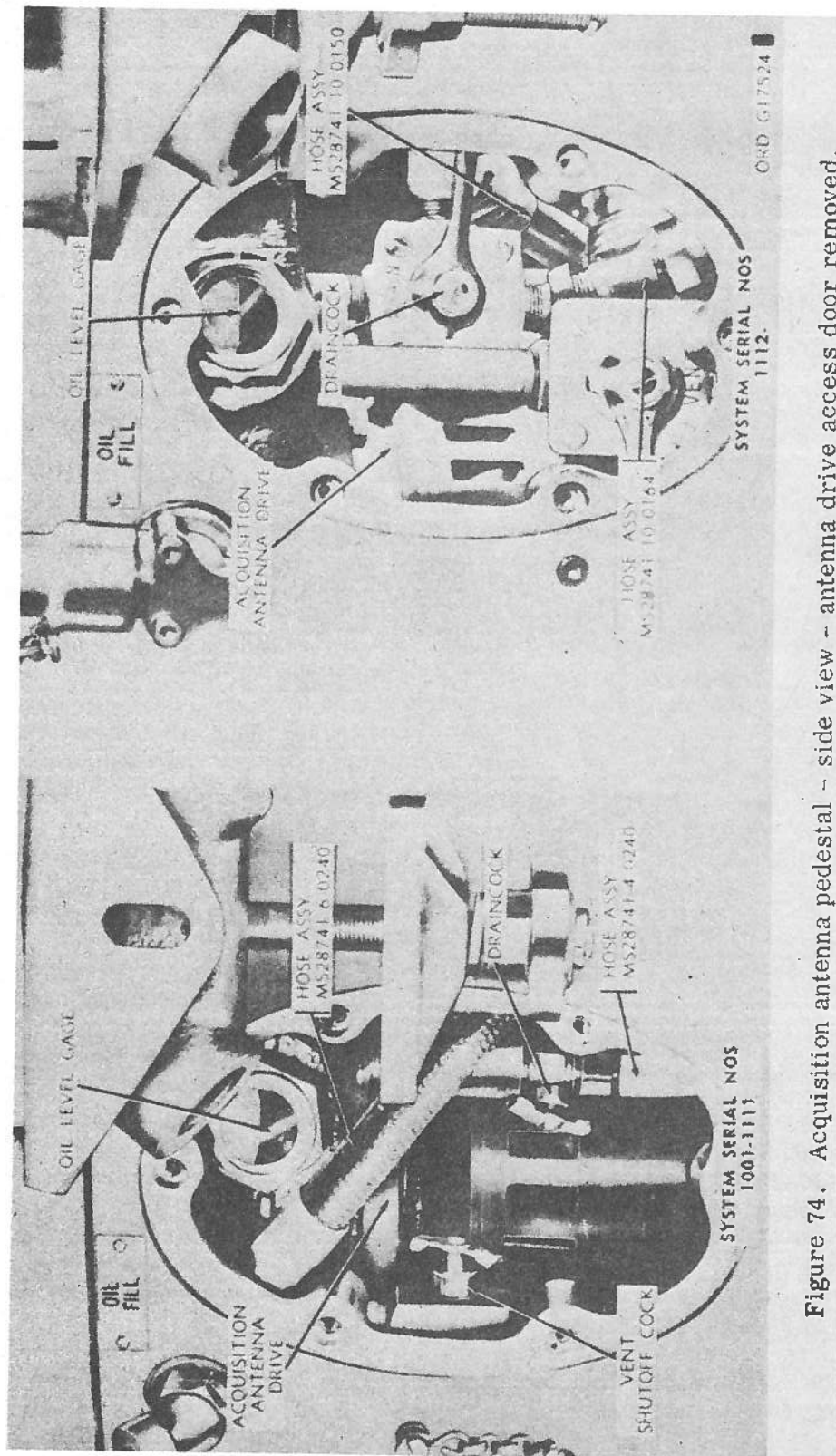


Figure 74. Acquisition antenna pedestal - side view - antenna drive access door removed.

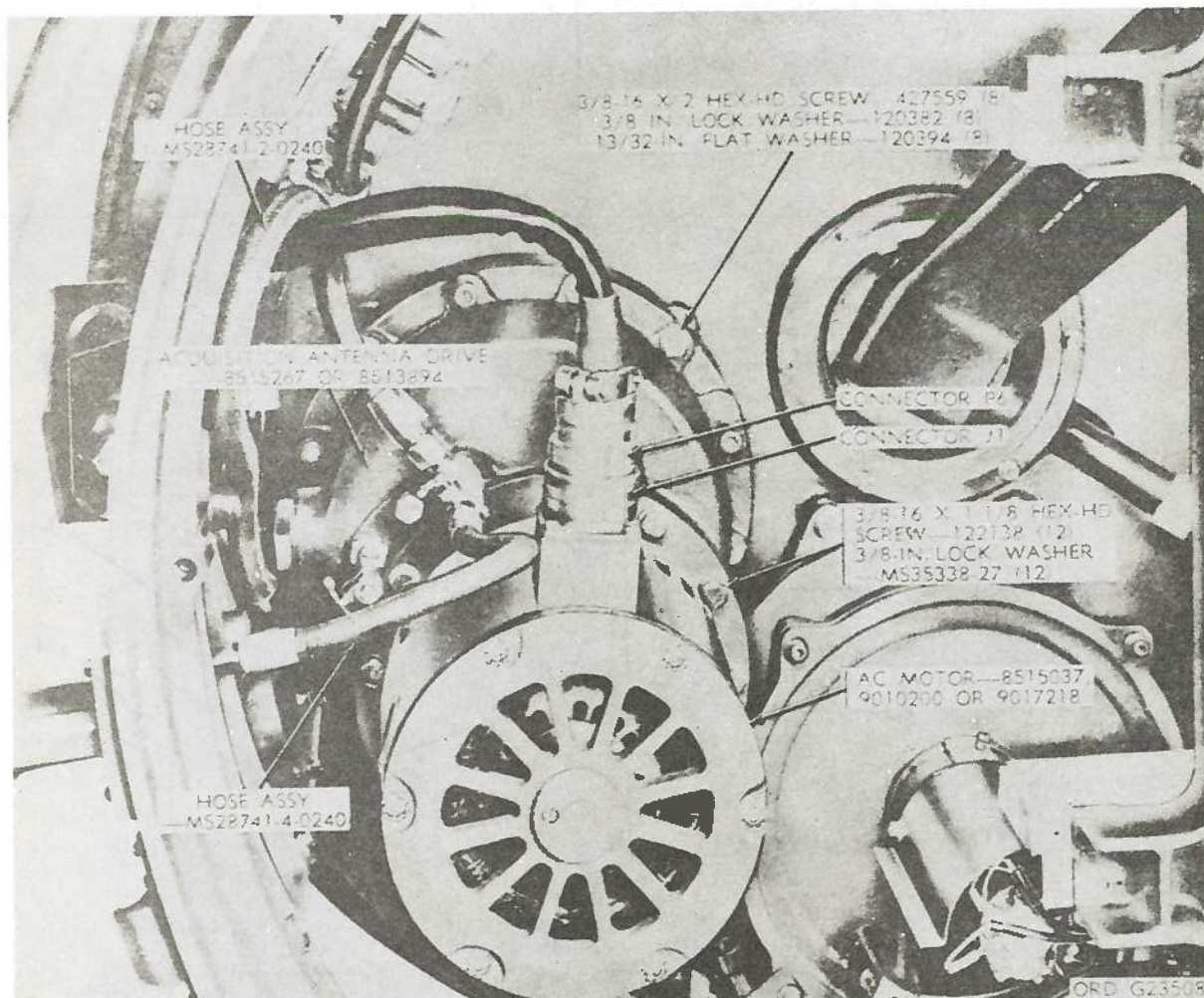
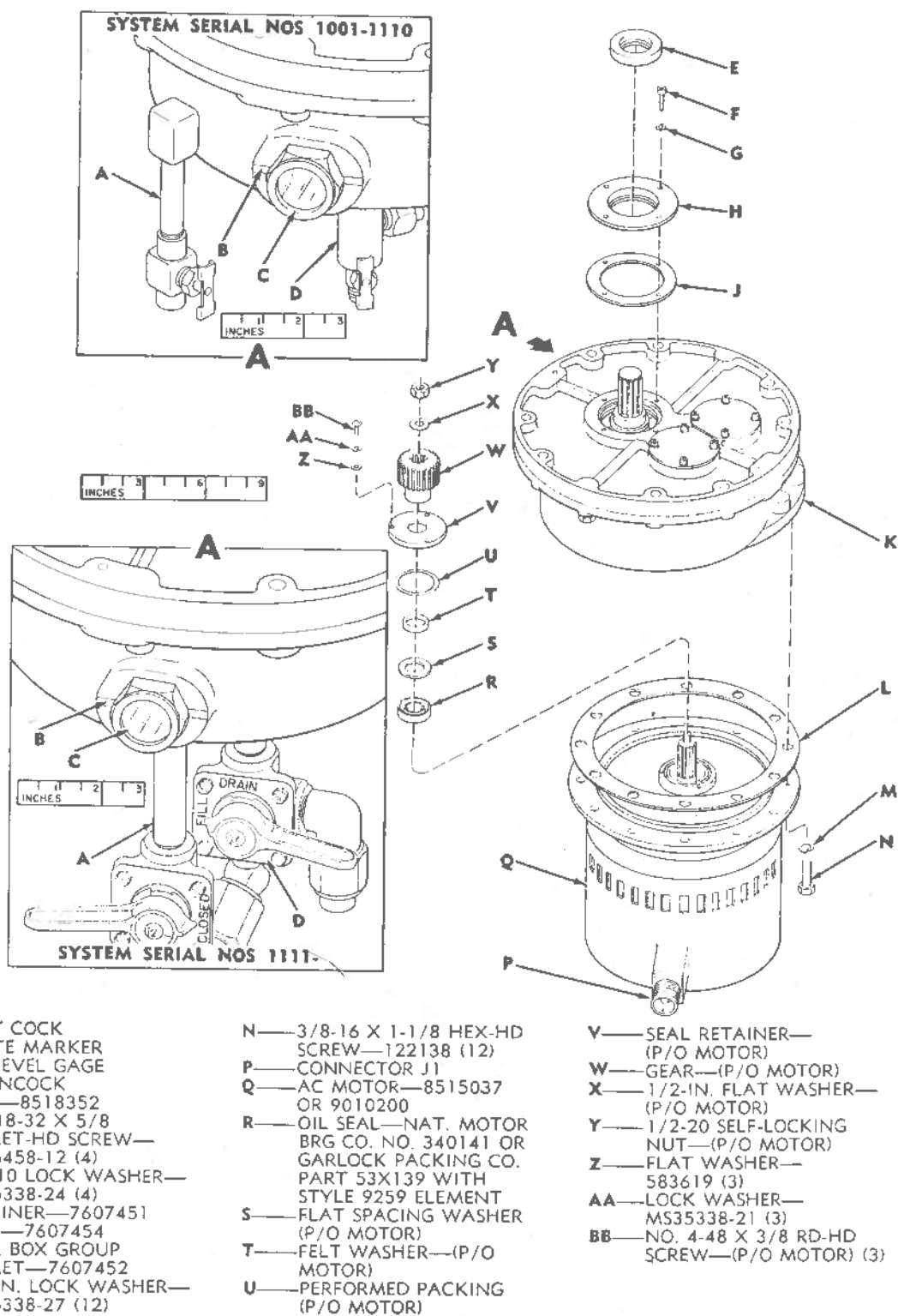
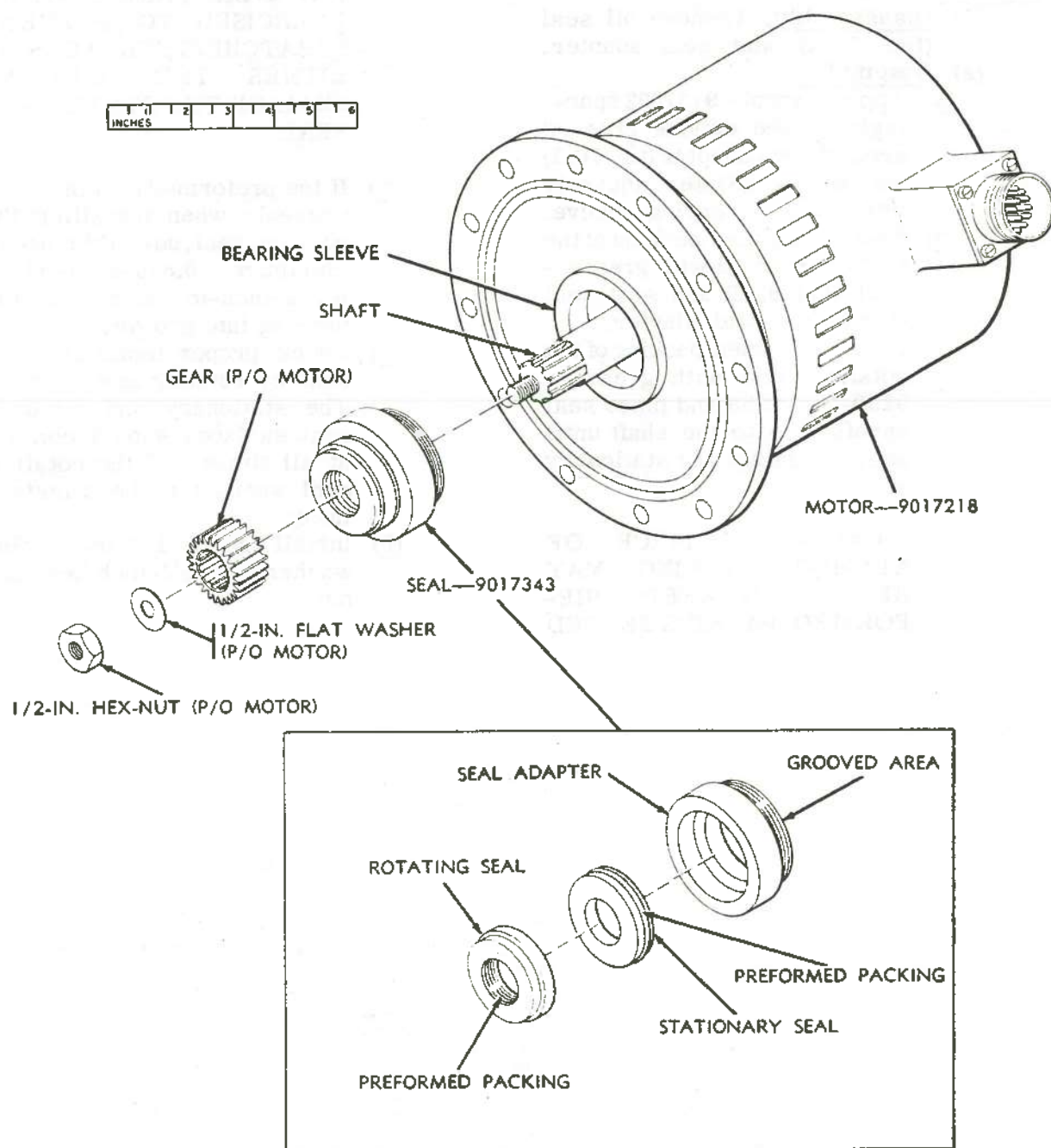


Figure 75. Acquisition antenna pedestal - partial bottom view.



ORD G17518

Figure 76. Antenna drive - partially exploded view.



RA PD 476930

Figure 76.1. AC Motor - partially exploded view.



b.1 Field Maintenance of AC Motor - 9017218.

- (1) Disassembly. Remove oil seal (fig. 76.1) and seal adapter.
- (2) Assembly.
  - (a) Apply glyptol - 9137092 sparingly to the outside grooved area of seal adapter (fig. 76.1) and press adapter squarely into motor bearing sleeve.
  - (b) Coat preformed packing of the stationary seal with grease - 9150-261-8289 and seat seal firmly into seal adapter.
  - (c) Coat preformed packing of the rotating seal with grease - 9150-261-8289 and place seal carefully onto the shaft until seated against the stationary seal.

CAUTION: A PIECE OF ALUMINUM TUBING MAY BE USED TO KEEP PREFORMED PACKING SEATED

WHILE ASSEMBLING SEAL. HOWEVER, CARE MUST BE EXERCISED TO PREVENT SCRATCHING SURFACES OF EITHER THE ROTATING SEAL OR THE STATIONARY SEAL.

- (d) If the preformed packing rolls unevenly when installing the rotating seal, use a thin tube of aluminum 0.810-inch-od x 0.770-inch-id to reseat the packing into groove.
- (e) Check proper installation of seal by rotating motor shaft. The stationary and rotating seal surfaces should contact at all times. If the rotating seal wobbles recheck installation.
- (f) Install gear, 1/2-inch flat washer and 1/2-inch hexagon nut.

c. *Installation.*

- (1) Install new gasket (L, fig. 76) and install ac motor (fig. 75) with twelve  $\frac{3}{8}$ -inch lockwashers and  $\frac{3}{8}$ -16 x 1  $\frac{1}{2}$  hexagon-head screws.
- (2) Close draincock (fig. 74) and fill antenna drive with grade 30 oil 9150-265-9432 to level of white markers (B, fig. 76) at center of oil level gage (C, fig. 76) (TM 9-1430-253-29/1).
- (3) Connect connector P6 (fig. 75) to connector J1 on antenna drive.
- (4) Install bottom plate (fig. 68) on acquisition antenna pedestal.
- (5) Install acquisition antenna pedestal (fig. 61 or 62) and acquisition antenna (fig. 7) (TM 9-1430-251-10/1).
- (6) Perform complete daily checks and pressurization check of acquisition radar system (TM 9-1430-251-20/1).
- (7) After the acquisition antenna pedestal has been in normal operation for approximately 4 hours, remove antenna drive access door (fig. 61 or 62) and check for signs of oil leakage into acquisition antenna drive motor. Install antenna drive access door. If signs of oil leakage into motor are present, replace oil seal in motor (b(2) (a) through (c)) above.

**Caution:** The acquisition antenna-receiver-transmitter group can be tipped over easily with the acquisition modulator and receiver-transmitter removed. Tie antenna securely before removing modulator and receiver-transmitter.

*Note.* Access to the antenna drive motor may be gained by removing the acquisition modulator (TM 9-1430-251-10/1) and the acquisition receiver-transmitter (TM 9-1430-251-10/10). The bottom plate (fig. 68) of the antenna pedestal can then be removed leaving the antenna drive motor easily accessible for field maintenance.

## 61. Removal of Antenna Drive 8515267 or 8513894

- a. Perform steps (par. 60a (1)-(4)).

b. Remove hose assemblies (fig. 74).

c. Remove eight hexagon-head screws (fig. 75), lockwashers, and flat washers.

d. Remove antenna drive.

## 62. Field Maintenance of Antenna Drive 8515267 or 8513894

### a. *Disassembly.*

- (1) Remove ac motor (Q, fig. 76).

*Note.* In legend of figure 77, where a component is listed with two Ordnance numbers, the Ordnance number listed first is used on antenna drive 8515267. The second Ordnance number is used on antenna drive 8513894.

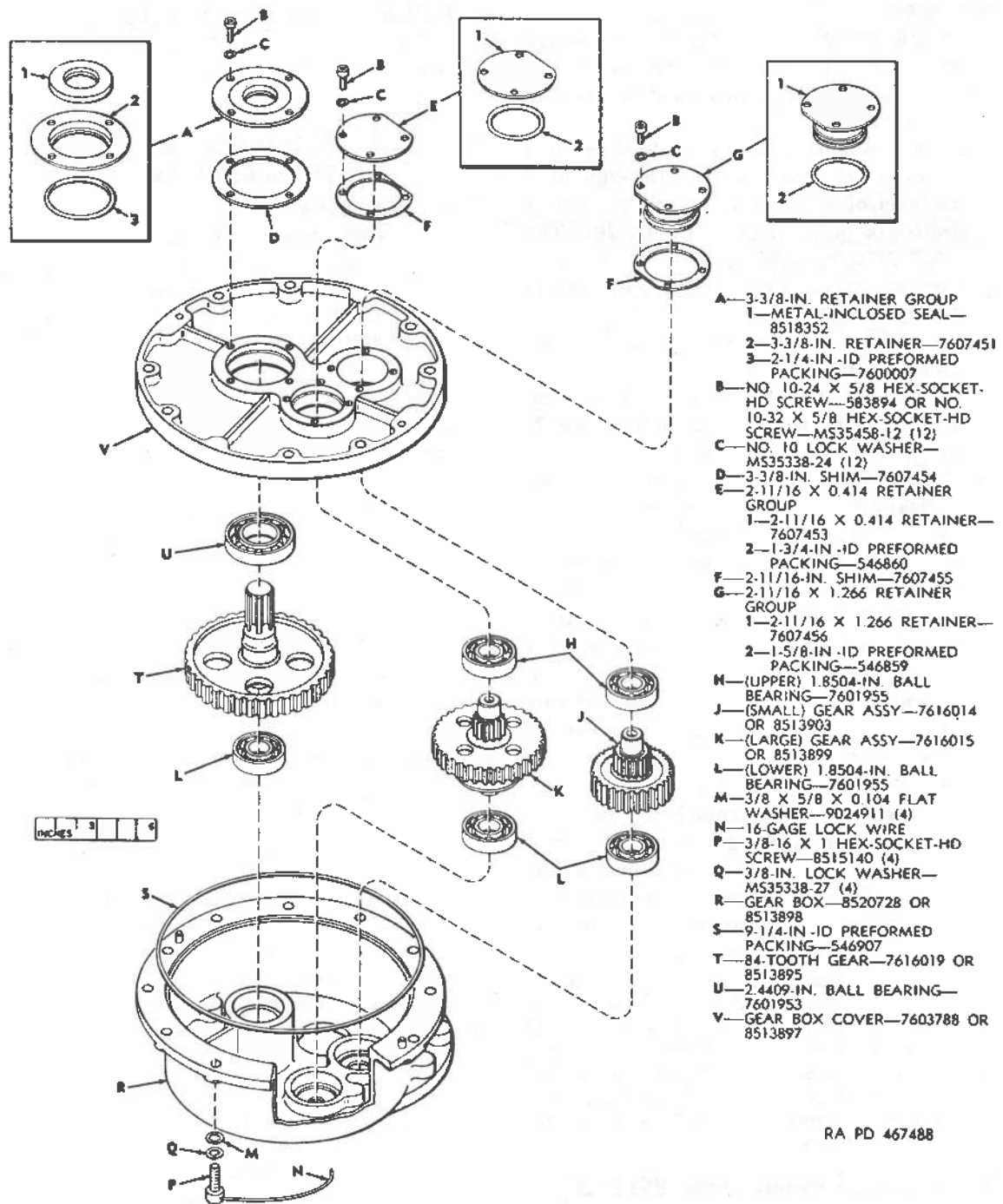
- (2) Disassemble gear box group (fig. 77).

*Note.* The key letters shown in parentheses in b below refer to figure 77.

### b. *Assembly.*

- (1) Press upper and lower 1.8504-inch ball bearings (H and L) onto small gear assembly (J).
- (2) Press lower 1.8504-inch ball bearing (L) and 2.4409-inch ball bearing (U) onto 84-tooth gear (T).
- (3) Press upper and lower 1.8504-inch ball bearings (H and L) onto large gear assembly (K).
- (4) Press 84-tooth gear, large gear assembly, and small gear assembly into place in gear box (R).
- (5) Place  $\frac{9}{16}$ -inch preformed packing (S) in groove in bottom of gear box cover (V) and secure gear box cover to gear box with four  $\frac{3}{8}$ -inch flat washers (M), (do not use flat washers on antenna drive 8515267),  $\frac{3}{8}$ -inch lockwashers (Q), and  $\frac{3}{8}$ -16 x 1 hexagon-socket-head screws (P). Lockwire the four screws to each other with approximately 3 feet of 16-gage lock wire (N). Make sure that upper 1.8504-inch ball bearings (H) and 2.4409-inch ball bearing (U) and associated gear (T) and gear assemblies (J and K) seat properly and rotate freely.

*Note.* In steps (6) and (9), shims (D and F) must provide clearance between ball bearings



RA PD 467488

Figure 77. Gear box group—partially exploded view.

(U and H) and bottom edges of retainers (A2, E1, and G1). Laminations may be peeled from shims to provide clearance. Each lamination of shim is 0.002 inch thick.

- (6) Install  $3\frac{3}{8}$ -inch shim (D),  $2\frac{1}{4}$ -inch-id pre-formed packing (A3), and  $3\frac{3}{8}$ -inch retainer (A2) over 84-tooth gear (T).
- (7) Apply cement 8168640 or equivalent to outer circumference of metal-inclosed seal (A1) and press seal with wiper edge downward into  $3\frac{3}{8}$ -inch retainer (A2).
- (8) Assemble  $2\frac{1}{16}$  x 1.266 retainer group (G) and  $2\frac{1}{16}$  x 0.414 retainer group (E).
- (9) Install two  $2\frac{1}{16}$ -inch shims (F), one  $2\frac{1}{16}$  x 1.266 retainer group (G), and one  $2\frac{1}{16}$  x 0.414 retainer group (E).

*Note.* The key letters shown in parentheses in (10) through (12) below refer to figure 76.

- (10) Place gasket (L) on motor (Q). Set gear box group (K) on motor, carefully meshing gear (W) of motor with gear in gear box group. Align center of connector J1 (P) on motor 90° to the right

of center of oil level gage (C) on gear box and install motor.

- (11) Close draincock (fig. 74) and fill antenna drive with grade 30 oil 9150-265-9432 to level of white markers (B) at center of oil level gage (C) (TM 9-1430-253-20/1).
- (12) Test for oil leakage by inverting acquisition antenna drive for 15 minutes. If oil leakage occurs, tighten four screws (F) and repeat test. If leakage persists, replace seal (E) and test again. If oil leakage occurs around gasket (L) with antenna drive in upright position, tighten screws (N). If leakage persists, replace gasket.

### 63. Installation of Antenna Drive 8515267 or 8513894

a. Install acquisition antenna drive (fig. 75) with eight  $1\frac{1}{2}$ -inch flat washers,  $\frac{3}{8}$ -inch lockwashers, and  $\frac{3}{8}$ -16 x 2 hexagon-head screws.

b. Connect two hose assemblies (fig. 74) to antenna drive.

c. Perform steps (par. 60c (3)-(7)).

## Section V. COMPRESSOR

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

### 64. Removal of Compressor 7605715

- a. Remove outer cover (K, fig. 70) and pull sliding frame (E, fig. 70) out to fully extended position.
- b. Disconnect hose assembly (fig. 78) from 90° elbow.
- c. Disconnect connector P16 from connector J1.
- d. Remove four hexagon-socket-head screws, lockwashers, and flat washers and remove compressor.

### 65. Field Maintenance of Compressor 7605715

#### a. Disassembly.

*Note.* The key letters shown in parentheses in (1) through (5) below refer to figure 79.

- (1) Disconnect tube assembly (B) from 90° elbow (R).

- (2) Remove 14 roundhead screws (Y) and lockwashers (X). Lift case (A) from plate (L).
- (3) Remove loop clamp (N) and wiring harness (W). Connector J1 (S) is part of wiring harness.
- (4) Disconnect leads (F) from relay (Q). Remove four screws (P) and relay.
- (5) Remove four fillister-head screws (D) and lockwashers (C) securing bracket (G) and motor (E) to gearcase and pump assembly (M). Remove bracket, motor, and coupling (J).

*Note.* The key letters shown in parentheses in (6) through (9) below refer to figure 80.

- (6) Remove tube assembly (D).
- (7) Remove three cartridge fuses (J) and fuse holders (H).

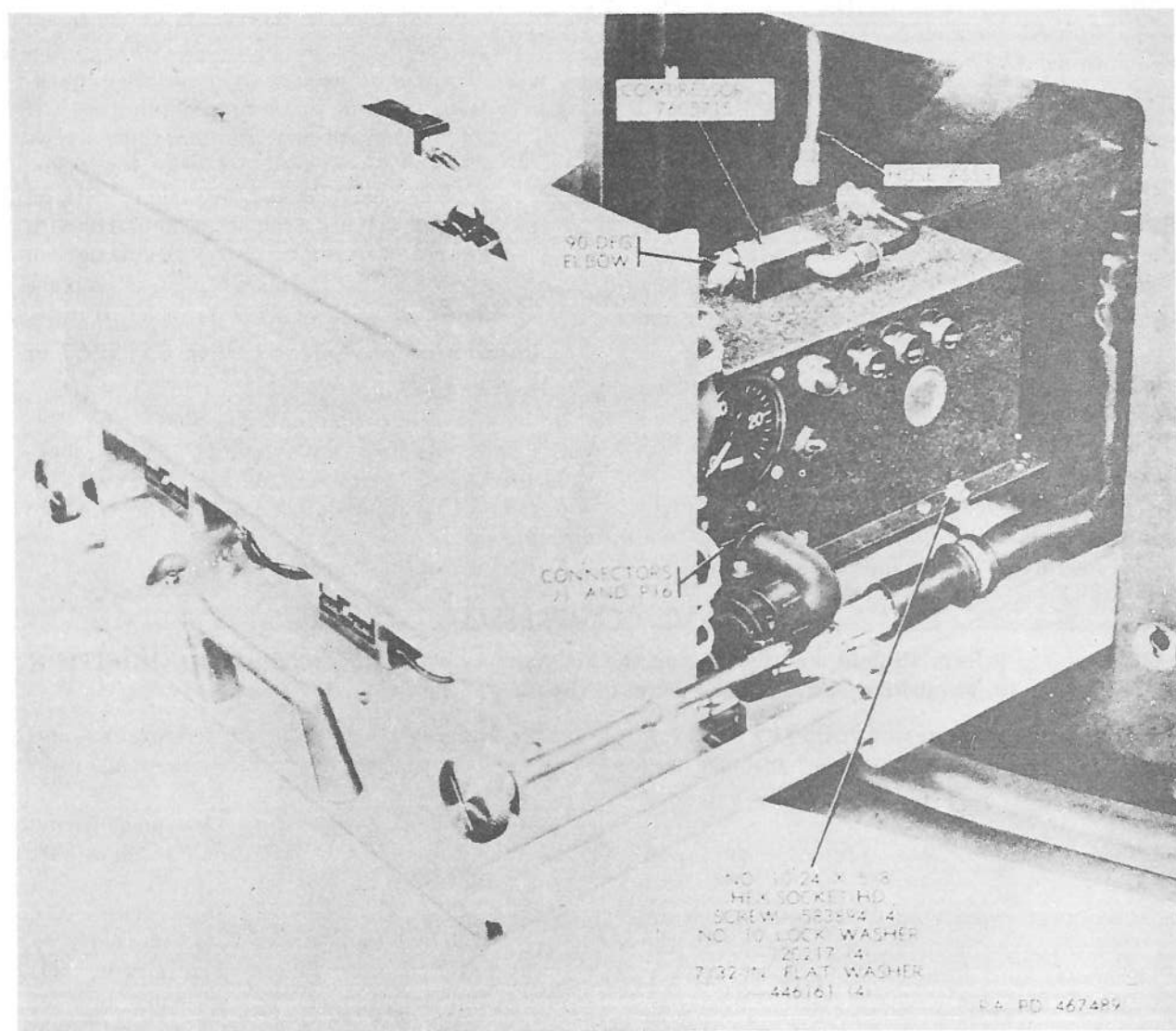
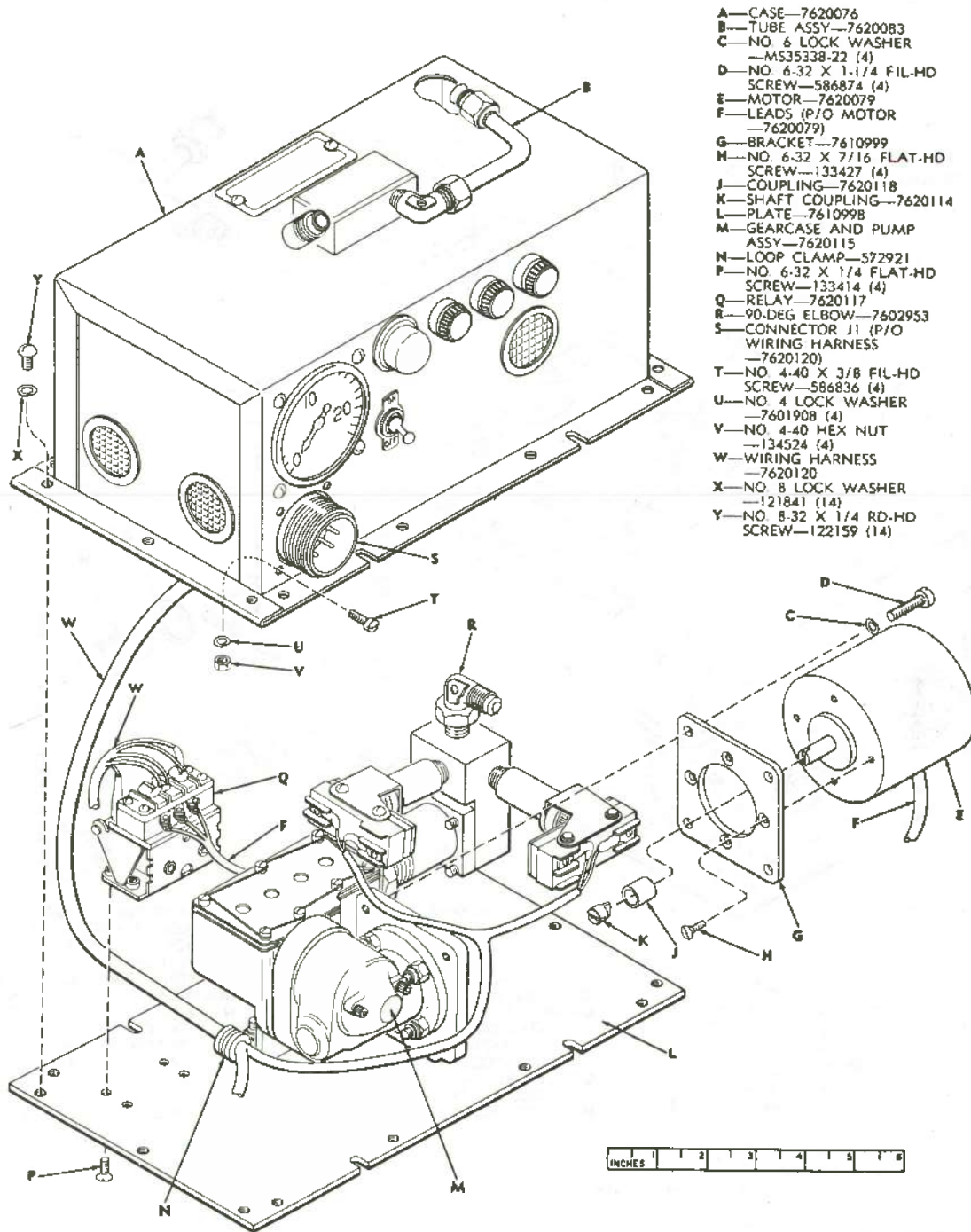


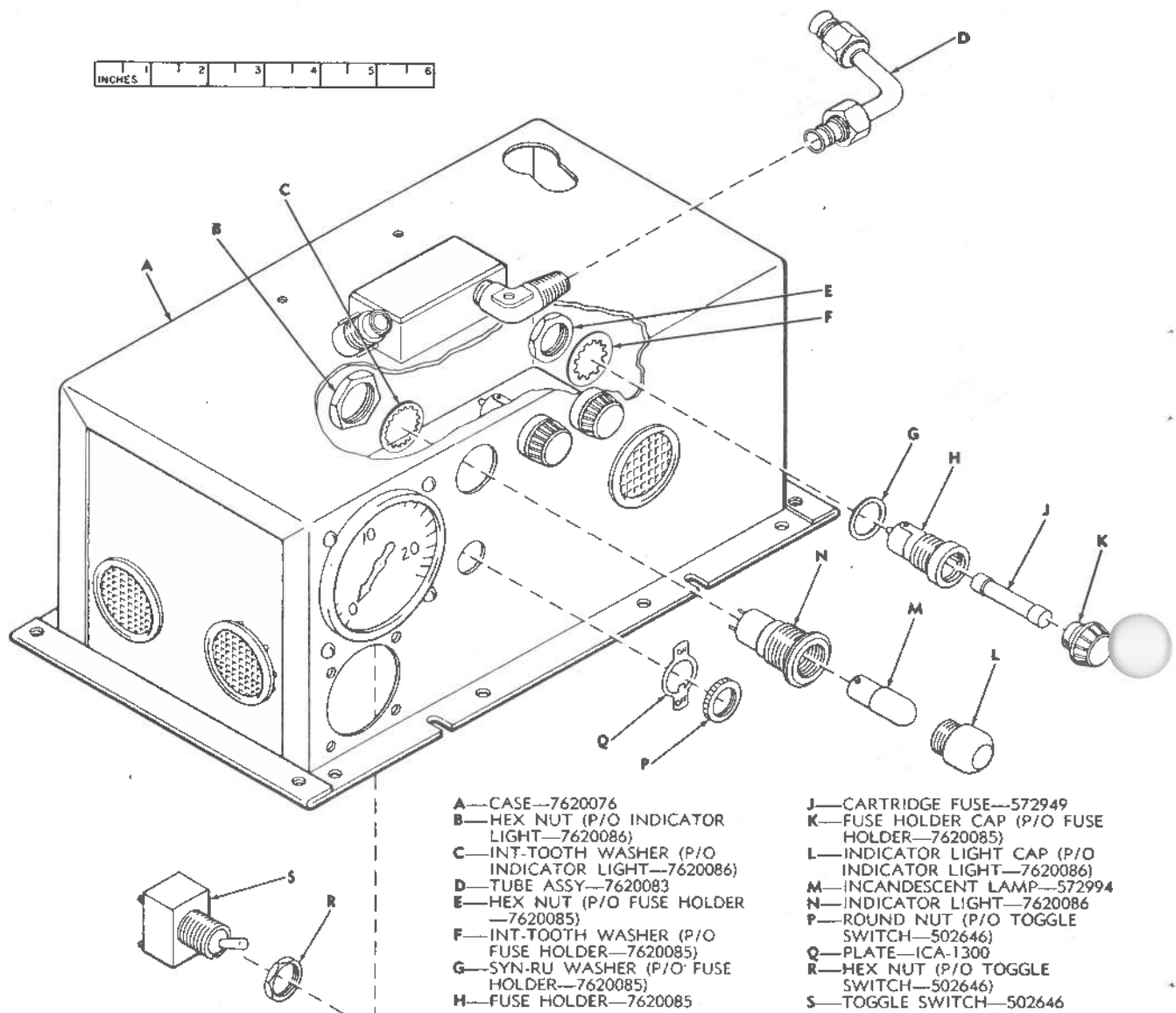
Figure 78. Removal and installation of compressor.





RA PD 467490

Figure 79. Compressor—partially exploded view No. 1.



RA PD 467491

Figure 80. Compressor—partially exploded view No. 2.

- A—90-DEG ELBOW—7602953
- B—MANIFOLD—EII-14165
- C—CASE—7620076
- D—NO. 6-32 X 5/8 RD-HD SCREW—AIR-AN515DD-6-10 (4)
- E—NO. 10 LOCK WASHER—131183 (4)
- F—NO. 10-24 X 5/8 FIL-HD SCREW—544396 (4)
- G—90-DEG ELBOW—AIR-AN822-2D
- H—GAGE GROUP
  - 1—RELIEF VALVE—7620119
  - 2—90-DEG ELBOW—AIR-AN822-2D
  - 3—TEE—AIR-AN917-1D
  - 4—NIPPLE—AIR-AN911-1D
  - 5—GAGE—7620077
  - 6—CLOSE NIPPLE—1/8-27NPT
  - 7—MANIFOLD—7620078
  - 8—PLUG—8176335
- J—TUBE ASSY—7620082

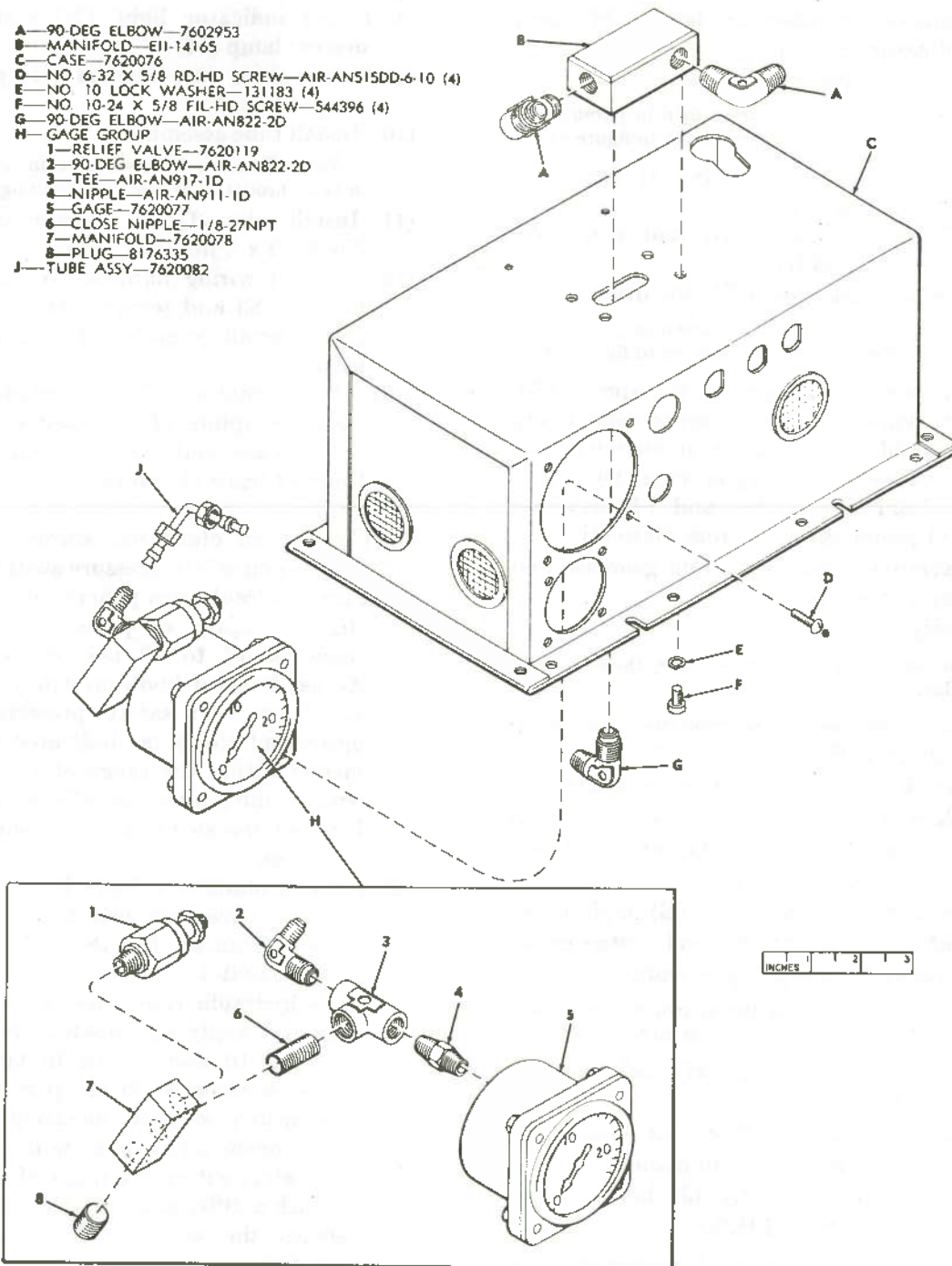


Figure 81. Compressor—partially exploded view No. 3.

RA PD 467492

- (8) Remove incandescent lamp (M) and indicator light (N).
- (9) Remove toggle switch (S).

*Note.* The key letters shown in parentheses in (10) through (12) below refer to figure 81.

- (10) Remove tube assembly (J) from 90° elbows (G and H2).
- (11) Remove manifold (B) and three 90° elbows (A and G).
- (12) Remove gage group (H) and disassemble.

*Note.* The key letters shown in parentheses in (13) through (15) below refer to figure 82.

- (13) Remove switch group (E), spring (B), and valve (A) from gearcase and pump assembly (F). Disassemble switch group.
- (14) Remove two hexagon nuts (K), four flathead screws (G), and lift gearcase and pump assembly from plate (H).
- (15) Remove bracket (J) from gearcase and pump assembly.

*b. Assembly.*

*Note.* The key letters shown in parentheses in (1) through (3) below refer to figure 82.

- (1) Install bracket (J) on gearcase and pump assembly (F).
- (2) Install gearcase and pump assembly on plate (H) and secure with four No. 8-32 x ½ flathead screws (G) and two No. 8-32 hexagon nuts (K).
- (3) Assemble switch group (E) and install valve (A), spring (B), and switch group on gearcase and pump assembly.

*Note.* The key letters shown in parentheses in (4) through (6) below refer to figure 81.

- (4) Assemble gage group (H) and install in case (C).
- (5) Install three 90° elbows (A and G) in manifold (B) and install manifold.
- (6) Install tube assembly (J) between two 90° elbows (G and H2).

*Note.* The key letters shown in parentheses in (7) through (10) below refer to figure 80.

- (7) Install toggle switch (S).

- (8) Install indicator light (N) and incandescent lamp (M).

- (9) Install three fuse holders (H) and cartridge fuses (J).

- (10) Install tube assembly (D).

*Note.* The key letters shown in parentheses in (11) through (13) below refer to figure 79.

- (11) Install relay (Q) and secure with four No. 6-32 x ¼ flathead screws (P).

- (12) Connect wiring harness (W) according to figure 83 and secure with loop clamp (N). Install connector J1 (S) of wiring harness.

- (13) Attach motor (E) to bracket (G). Install coupling (J) and secure bracket to gearcase and pump assembly (M). Connect leads (F) to relay.

*c. Adjustments.*

- (1) Connect an ohmmeter across terminals (fig. 84) on safety pressure switch.

- (2) Using hydraulic component air test stand (fig. 85), apply air pressure within the range of 17 to 23 psi to 90° elbow. Adjust knurled knob on safety pressure switch so that safety pressure switch opens and closes (as indicated on ohmmeter) within the range of 17 to 23 psi with a differential of 2½-psi minimum between the switch opening and closing pressures.

- (3) Remove ohmmeter leads from terminals of safety pressure switch and connect across terminals (fig. 86) of operating pressure switch.

- (4) Using hydraulic component air test stand (fig. 87), apply air pressure within the range of 10 and 16 psi to 90° elbow. Adjust knurled knob of operating pressure switch so that operating pressure switch opens and closes (as indicated on ohmmeter) within the range of 10 and 16 psi with a differential of 3½-psi minimum between the switch opening and closing pressures.

- (5) Remove ohmmeter leads from operating pressure switch.

- A—VALVE—7620116  
 B—SPRING—7620081  
 C—NO. 6 LOCK WASHER—MS35338-22 (4)  
 D—NO. 6-32 X 1-1/4 FIL-HD SCREW—586874 (4)  
 E—SWITCH GROUP  
 1—PRESSURE OPERATING SWITCH—7620132  
 2—REDUCER—7610265  
 3—BODY—7620080  
 4—PRESSURE SAFETY SWITCH—7620133  
 F—GEARCASE AND PUMP ASSY—E11-41412  
 G—NO. 8-32 X 5/8 FLAT-HD SCREW—133495 (4)  
 H—PLATE—7610998  
 J—BRACKET—E11-13996  
 K—NO. 8-32 HEX NUT—AIR-AN365DB32 (2)  
 L—NO. 8 LOCK WASHER—121841 (2)  
 M—NO. 8-32 X 7/8 FIL-HD SCREW—587641 (2)

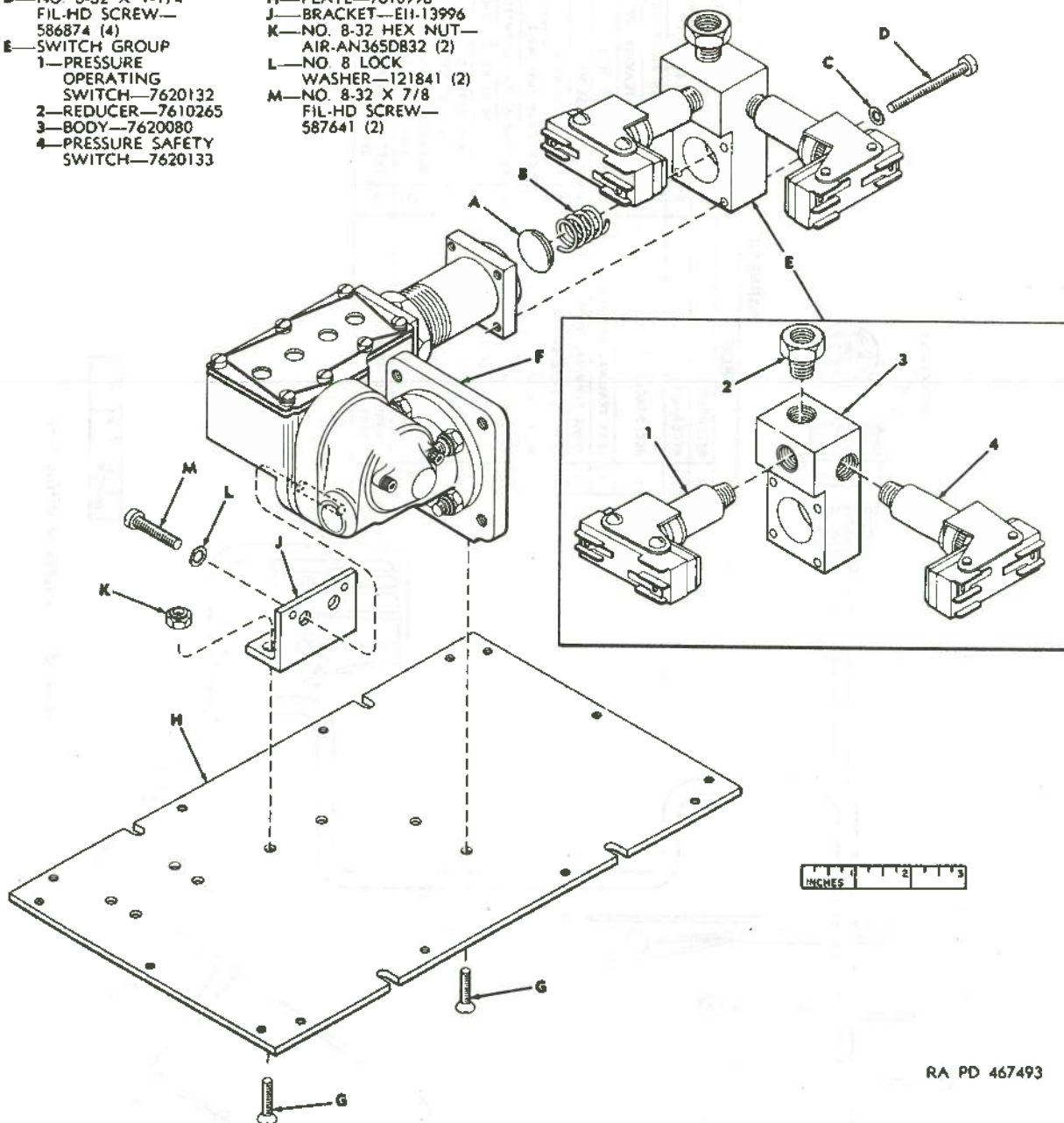


Figure 82. Compressor—partially exploded view No. 4.

RA PD 467493

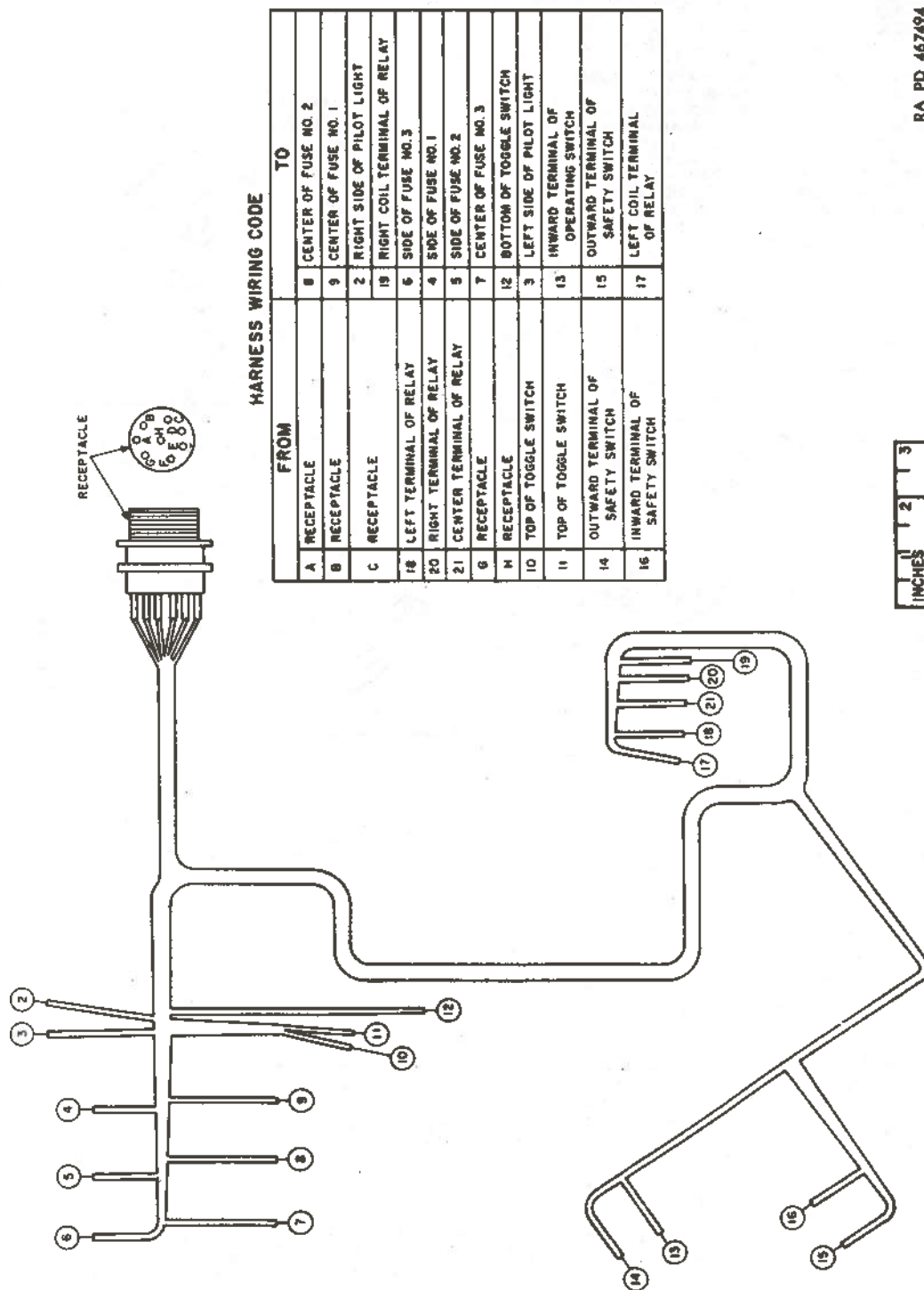


Figure 83. Compressor wiring harness.

RA PD 467494



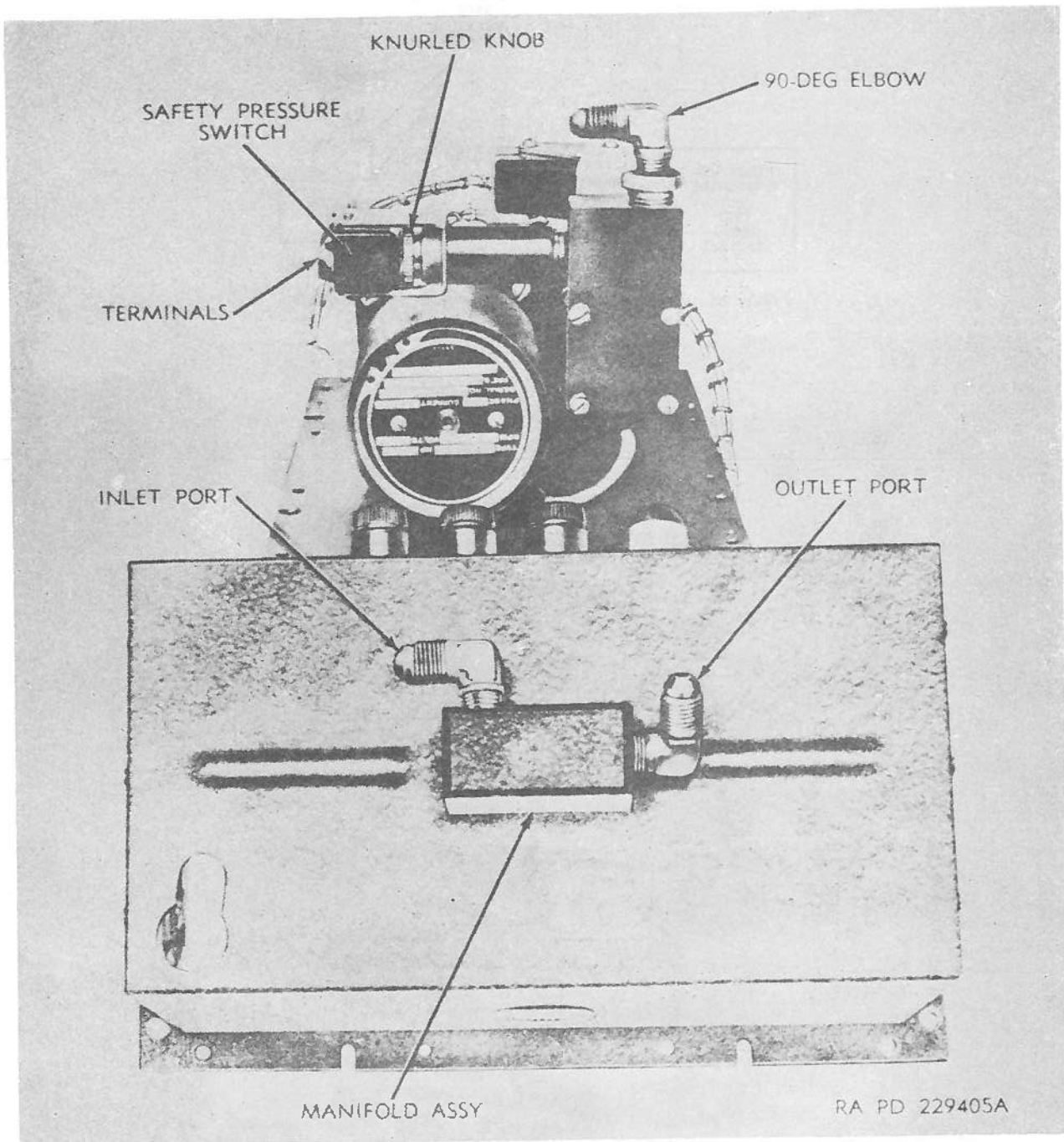


Figure 84. Safety pressure switch adjustment.

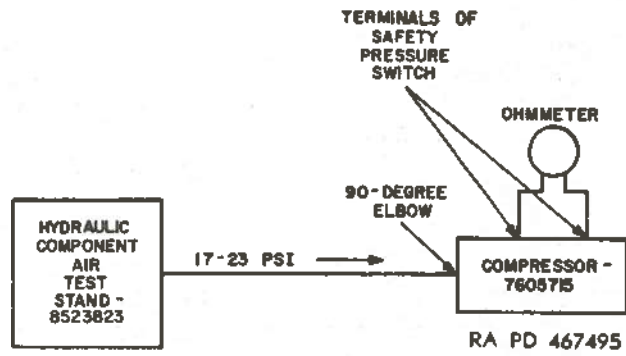


Figure 85. Test of safety pressure switch—block diagram.

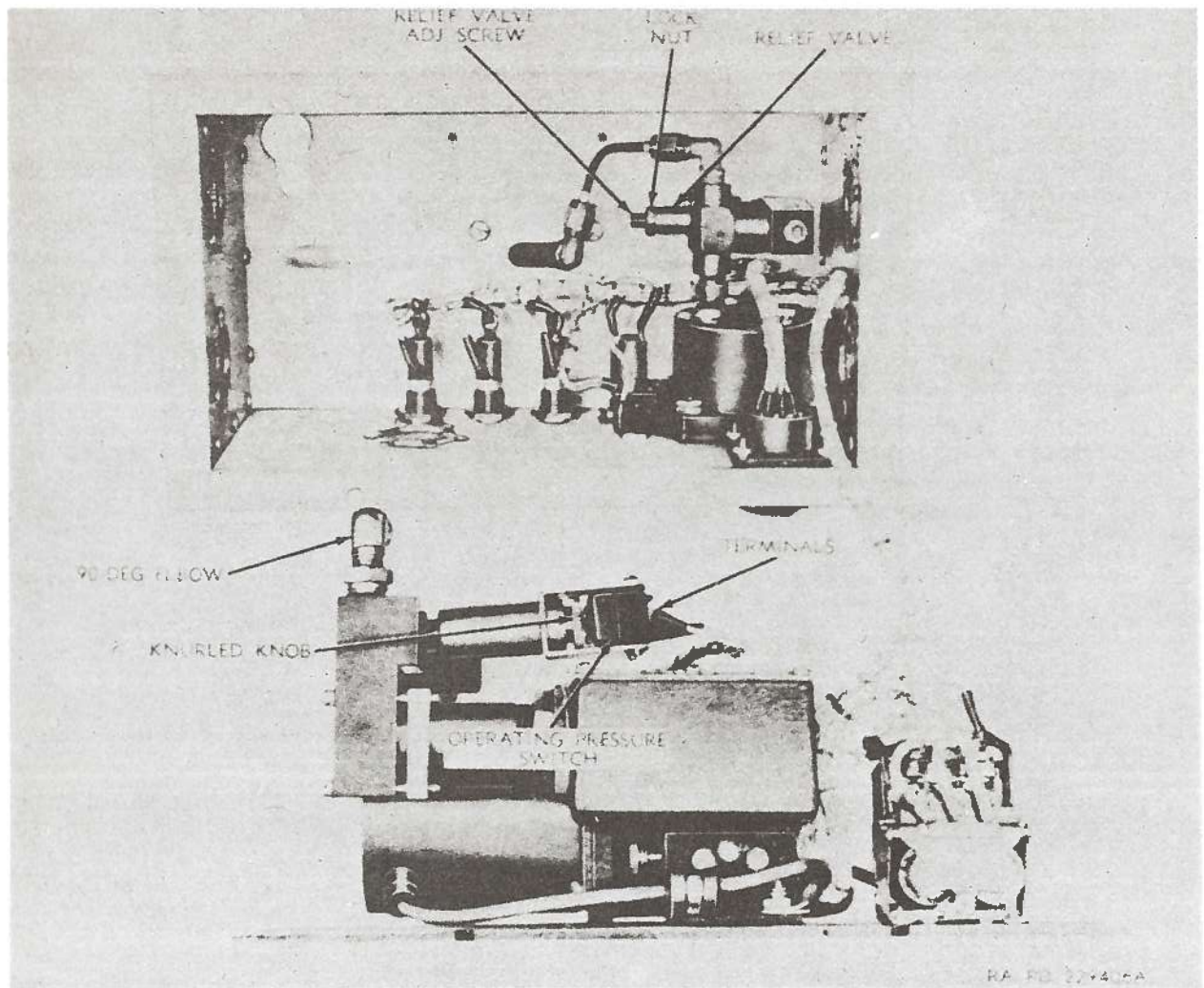


Figure 86. Operating pressure switch and relief valve adjustments.

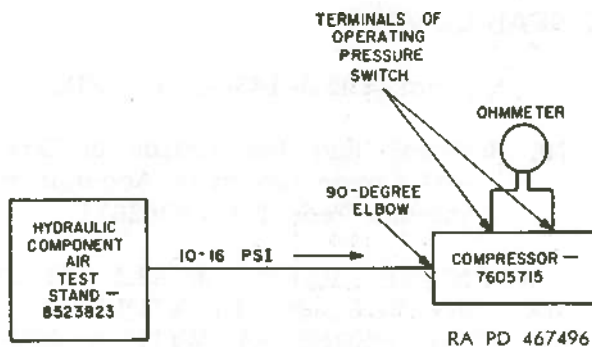


Figure 87. Test of operating pressure switch—block diagram.

- (6) Cap outlet port (fig. 84) on manifold assembly and using hydraulic component air test stand (fig. 88) apply air pressure of approximately 25 psi to inlet port of manifold assembly.
- (7) Increase air pressure to 30 psi, loosen locknut (fig. 86), and adjust relief valve adjusting screw so that valve operates at 30 psi.
- (8) Decrease air pressure to 21 psi for approximately 30 minutes. No drop in air pressure shall occur.
- (9) Remove air pressure from manifold assembly (fig. 84).

Note. The key letters shown in parentheses in (10) and (11) below refer to figure 79.

- (10) Position case (A) on plate (L) and secure with 14 No. 8 lockwashers (X) and No. 8-32 x 1/4 roundhead screws (Y).
- (11) Connect tube assembly (B) to 90° elbow (R).

#### 66. Installation of Compressor - 7605715

- a. Install compressor (fig. 78) and secure with four 7/32-inch flat washers, No. 10 lockwashers, and No. 10-24 x 5/8 hexagon-socket-head screws.
- b. Attach connector P16 to connector J1.
- c. Attach hose assembly to 90° elbow.
- d. Secure sliding frame (E, fig. 70) in acquisition antenna pedestal and replace outer cover (K, fig. 70).
- e. Perform waveguide pressurization check (TM 9-1430-251-20/1).

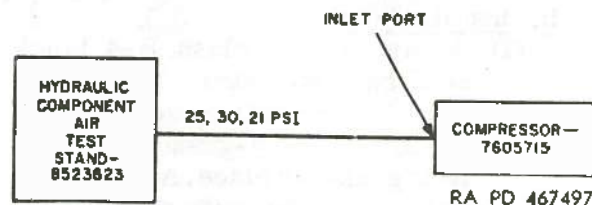


Figure 88. Test of relief valve—block diagram.

## Section VI. RELAY ASSEMBLY

Note. The key letters shown in parentheses in 67 and 68 below refer to figure 70.

**WARNING:** PERFORM ALL FIELD MAINTENANCE ON THE ACQUISITION ANTENNA PEDESTAL WITH ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL IN THE OFF POSITION.

#### 67. Removal of Relay Assembly - 8517984

- a. Remove outer cover (K) and pull sliding frame (E) out to fully extended position.
- b. Remove protective cover (J) and disconnect external leads from relay assembly (B) (TM 9-1430-257-35).
- c. Remove relay assembly.

#### 68. Installation of Relay Assembly - 8517984

- a. Install relay assembly (B) and connect external leads to relay assembly (TM 9-1430-257-35).
- b. Install protective cover (J).
- c. Secure sliding frame (E) in its recess in acquisition antenna pedestal (A) and install outer cover (K).
- d. Perform antenna azimuth check (TM 9-1430-251-20/1).

## Section VII. DUST SEAL COVERS

## 69. Removal and Installation of Dust Seal Cover on Acquisition Antenna Pedestal - 8513363

**WARNING: PERFORM ALL FIELD MAINTENANCE ON THE ACQUISITION ANTENNA PEDESTAL WITH ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL IN THE OFF POSITION.**

Note. The key letters shown in parentheses in a and b below refer to figure 89.

a. Removal.

- (1) Remove acquisition antenna (fig. 7) and acquisition antenna pedestal (fig. 61) (TM 9-1430-251-10/1).
- (2) Remove antenna clamp assemblies (A and T), mounting plate (H), cover (J), and 33-3/8-inch-od gasket (K).

b. Installation.

- (1) Apply coat of class B-4 black sealing compound 8030-174-2599 on mounting surface for 33-3/8-inch-od-gasket (K). Lay new gasket in place. Aline screw holes in gasket with screw holes in mounting surface and apply coat of sealing compound to top of gasket.
- (2) Aline locating hole (M) in 40-3/4-inch-diameter cover (J) with locating hole in turntable group (N). Install 3/16-inch flat washer (P), No. 8 lock-washer (Q), and No. 8-32 x 1/2 roundhead screw (R) in locating hole.
- (3) Install 23 straps (S) and mounting plate (H).
- (4) Install antenna clamp assemblies (A and T).
- (5) Install acquisition antenna pedestal (fig. 61) and acquisition antenna (fig. 7) (TM 9-1430-251-10/1).
- (6) Perform complete daily checks and waveguide pressurization check of acquisition radar sys-

tem (TM 9-1430-251-20/1).

## 70. Removal and Installation of Dust Seal Cover Group on Acquisition Antenna Pedestal - 9002671

**WARNING: PERFORM ALL FIELD MAINTENANCE ON THE ACQUISITION ANTENNA PEDESTAL WITH ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL IN THE OFF POSITION.**

Note. The key letters shown in parentheses in a and b below refer to figure 90.

a. Removal.

- (1) Remove acquisition antenna (fig. 7) and acquisition antenna pedestal (fig. 62) (TM 9-1430-251-10/1).
- (2) Remove antenna clamp assemblies (A and B), mounting plate (J), dust seal cover (K), 36-3/8-inch-id gasket (X), inner cover (T), 30-1/2-inch-id gasket (S), and felt seals (R).

b. Installation.

- (1) Apply rubber adhesive 8024365 to bottom surface of felt seal grooves (Q). Install new felt seals (R) in grooves and cement ends of felts together.
- (2) After allowing cement to dry, apply oil 9150-231-6686 to felts to such a point that felts are saturated but have no leakage.
- (3) Apply rubber adhesive - 8162031 to bottom surface of new 30-1/2-inch-id gasket (S), install gasket and inner cover (T).
- (4) Apply rubber adhesive - 8162031 to bottom surface of new 36-3/8-inch-id gasket (X), install gasket and dust seal

**CAUTION: EXERCISE CARE TO KEEP OIL FROM BEING SPILLED ON PAINTED SURFACES.**

C1

TM 9-1430-254-34

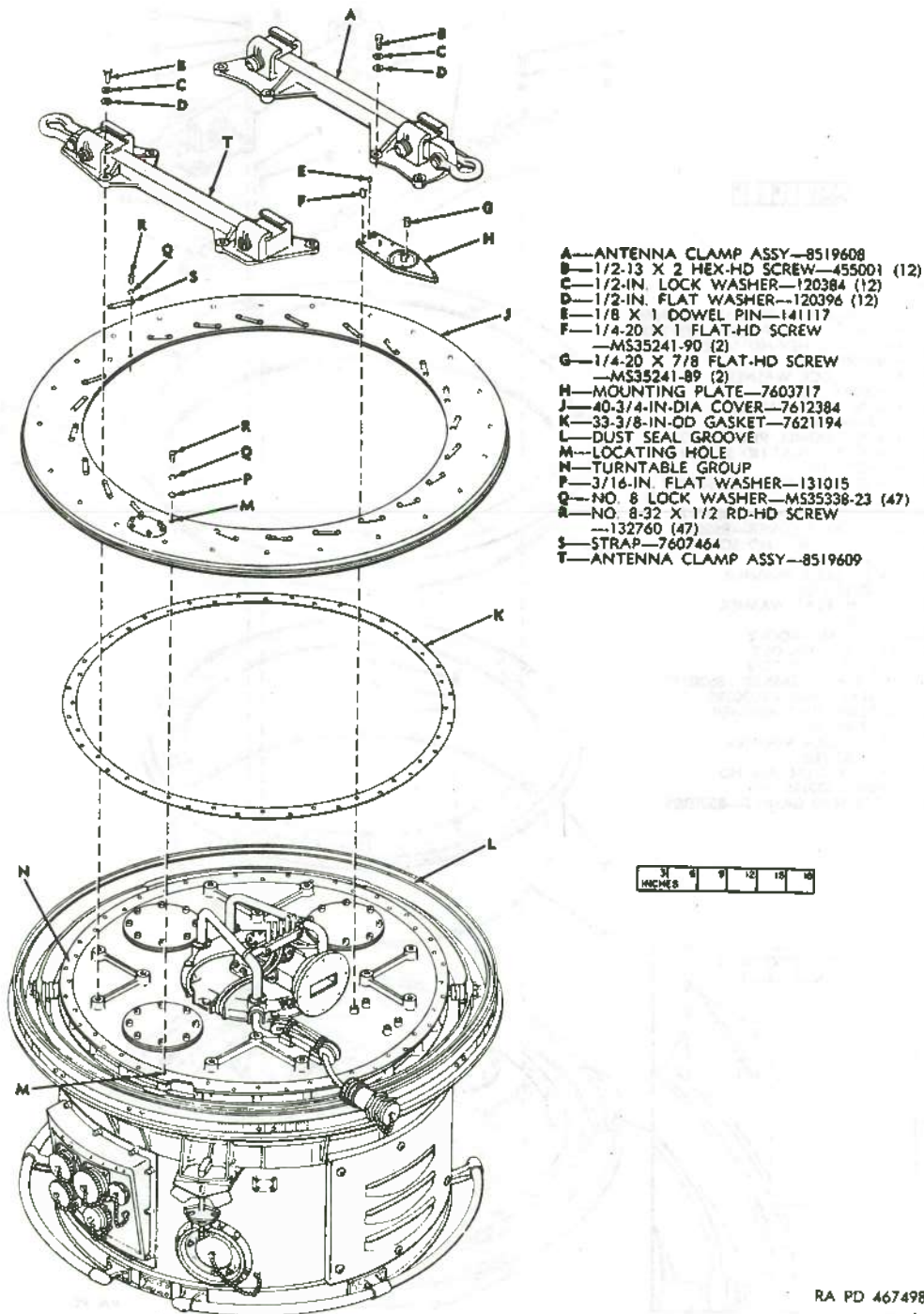
- cover (K).
- (5) Install antenna clamp assemblies (A and B) and mounting plate (J).
  - (6) Install acquisition antenna pedestal (fig. 62) and acquisition

antenna (fig. 7) (TM 9-1430-251-10/1).

- (7) Perform complete daily checks and waveguide pressurization check of acquisition radar system (TM 9-1430-251-20/1).

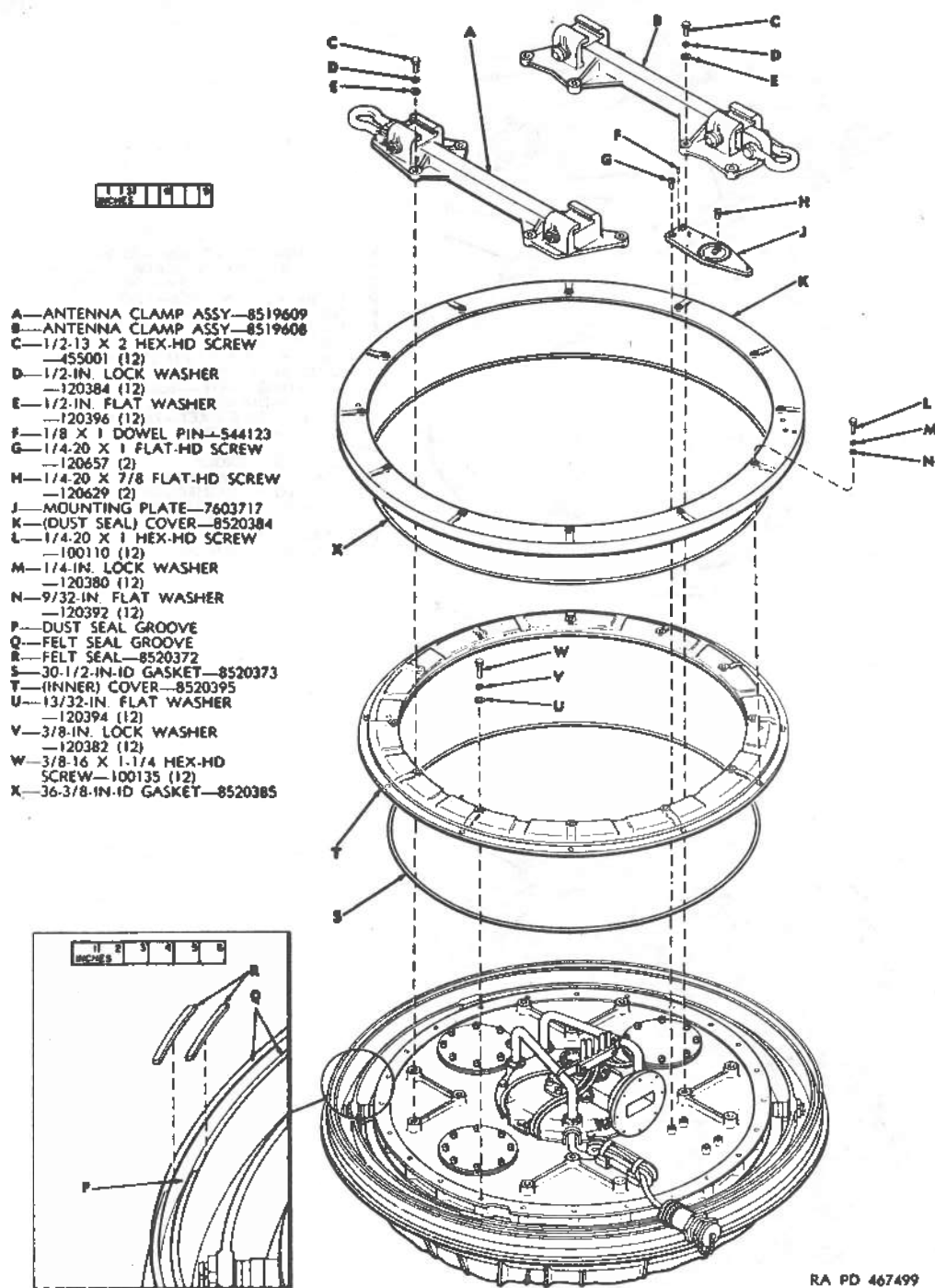






RA PD 467498

Figure 89. Acquisition antenna pedestal 8513363—removal and installation of dust seal cover.



RA PD 467499

Figure 90. Acquisition antenna pedestal 9002671—removal and installation of dust seal covers.

## Section VII.1. TURNTABLE ASSEMBLY

**Warning:** Perform all maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on the acquisition power control panel in the off position.

**Note.** The acquisition antenna pedestal is equipped with six upper support rollers (11, fig. 90.1). Each roller is mounted on an eccentric shaft for use in adjustment. The procedures in paragraphs 70.1 through 70.3 are applicable to all six rollers.

### 70.1. Removal of Upper Support Roller

- a. Remove dust seal cover (par 69a or par. 70a).
- b. Rotate turntable group until notch (7, fig. 90.1) is adjacent to upper support roller (11, fig. 90.1) being removed. Loosen setscrew (13, fig. 90.1). Remove associated hardware and the upper support roller.
- c. Remove all grease from the upper and lower surfaces of the roller track (16, fig. 90.1).

### 70.2. Disassembly and Assembly of Upper Support Roller

- a. *Disassembly.* Disassemble upper support roller (11, fig. 90.1).
- b. *Assembly.* Assemble upper support roller (11, fig. 90.1).

### 70.3. Installation of Upper Support Roller

**Note.** Do not apply grease to roller track surfaces before adjustments are made.

- a. Rotate turntable group until notch (7, fig. 90.1) is adjacent to the upper support roller being installed.
- b. Place upper support roller (11, fig. 90.1) in notch and install roller. Tighten round nut (8, fig. 90.1) only fingertight.
- c. Using a spanner wrench on retainer (10, fig. 90.1) set upper support roller to a clearance of 0.0005 to 0.001 inch between roller and upper face of roller track (16, fig. 90.1). Make certain roller track is firmly seated on lower support roller when clearance is measured. Tighten setscrew (13, fig. 90.1) and round nut (8, fig. 90.1).
- d. Rotate turntable group 360 degrees. Check that binding does not occur and that clearance

remains as set in c above. Secure round nut with key washer (9, fig. 90.1).

- e. Apply grease 9150-261-8298 to both surfaces of roller track (16, fig. 90.1).
- f. Install dust seal cover (par. 69b or par. 70b).

### 70.4. Removal of Turntable Assembly

- a. Remove acquisition antenna slipring (par. 55 or par. 73.5).
- b. Remove eight clamps (3, fig. 90.2) with attached cables and wiring.
- c. Remove six upper support rollers (par. 70.1).
- d. Remove cover assembly (4, fig. 90.1). Rotate turntable group (12, fig. 90.1) until hole is directly over synchro-drive gear (6, fig. 90.1). Lock the two halves of the gear together with screw (5, fig. 90.1)

**Caution:** To prevent damage to gear on bottom of turntable group or coaxial rod in hub of antenna drive group, care must be exercised when lifting turntable group from antenna drive group.

- e. Remove turntable group (12, fig. 90.1).

### 70.5. Disassembly and Assembly of Turntable Group

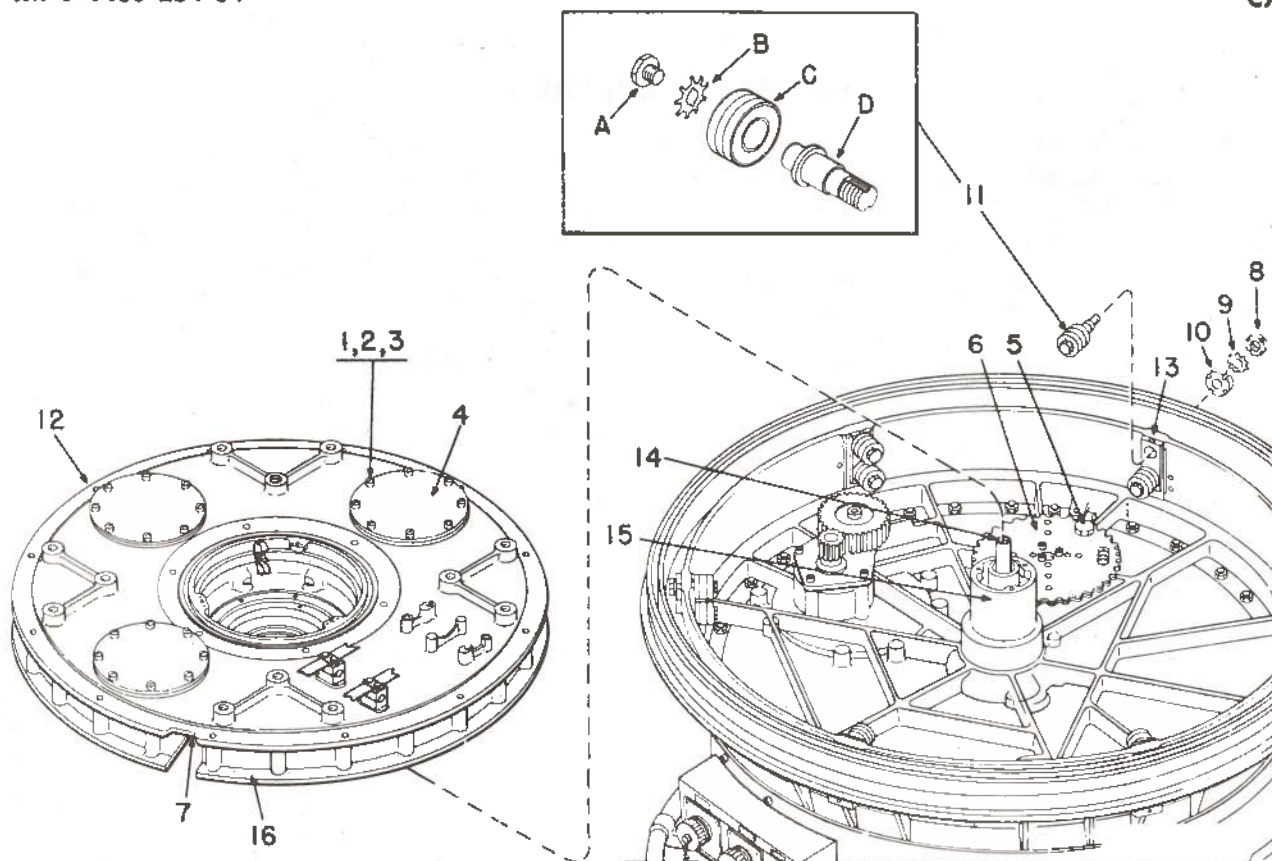
- a. *Disassembly.* Disassemble turntable group as shown in figure 90.2.
- b. *Assembly.* Assemble turntable group as shown in figure 90.2.

### 70.6. Installation of Turntable Assembly

**Note.** Apply a light coat of grease 9150-261-8298 to the teeth of all gears before installing turntable assembly.

**Caution:** Install turntable group carefully to prevent damage to coaxial rod (14, fig. 90.1) and gear on bottom of turntable group.

- a. Install turntable group (12, fig. 90.1) in antenna drive group. Carefully mesh gears and make certain roller track is against all lower support rollers.
- b. Install six upper support rollers (par. 70.3).



ORD G296139

- 1—10-24 x 1/2 fil-hd screw 9157790-74 (8)
- 2—No. 10 lock washer 9157798-14 (8)
- 3—No. 10 flat washer MS15795-708 (8)
- 4—7-1/8-in. cover assy 7607460
- 5—1/4-20 x 3/4 hex-hd screw 180020
- 6—Synchro-drive gear
- 7—Notch
- 8—0.664-32 round nut 8516288
- 9—Key washer 711204 (6)
- 10—Retainer 7607646 (6)

- 11—Upper support roller 8519970 (6)
- A—Stud 7612290
- B—Lock washer 7612291
- C—1.75-in. ball bearing 9000811
- D—2-1/2-in.-lg shaft 8519969
- 12—Turntable group
- 13—1/4-28 x 3/16 setscrew 222418 (6)
- 14—Coaxial rod
- 15—Hub
- 16—Roller track

Figure 90.1. Acquisition antenna pedestal—removal and installation of turntable assembly.

c. Rotate turntable group (12, fig. 90.1) until hole is directly over synchro-drive gear (6, fig. 90.1). Remove screw (5, fig. 90.1) holding the halves of the gear together.

d. Install cover assembly (4, fig. 90.1), tighten screws handtight only.

e. Install cables and wiring on turntable group and secure with eight clamps (3, fig. 90.2).

f. Install acquisition antenna slipring (par. 56).

*Note.* The acquisition antenna pedestal is equipped with six lower support rollers. The procedures in paragraphs 70.7 through 70.9 are applicable to all six rollers.

#### 70.7. Removal of Lower Support Roller

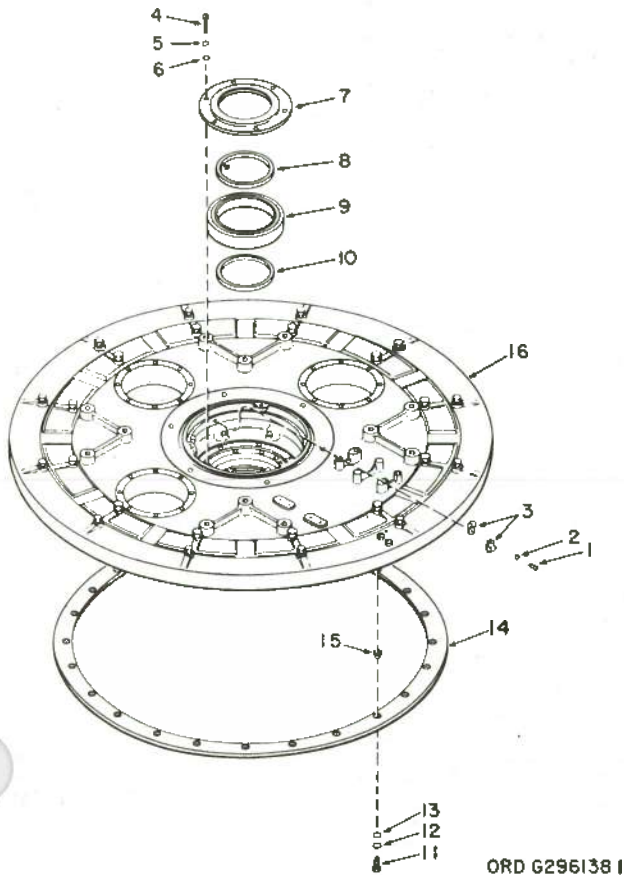
- a. Remove turntable assembly (par. 70.4).
- b. Remove lower support roller (8, fig. 90.3).

#### 70.8. Disassembly and Assembly of Lower Support Roller

- a. *Disassembly.* Disassemble lower support roller (8, fig. 90.3).
- b. *Assembly.* Assemble lower support roller (8, fig. 90.3).

#### 70.9. Installation of Lower Support Roller

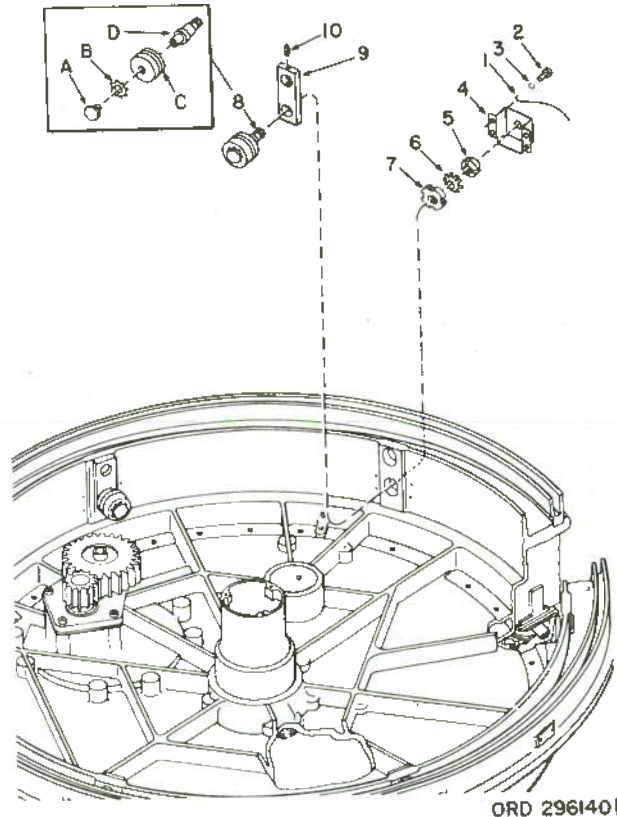
- a. Install lower support roller (8, fig. 90.3).
- b. Install turntable assembly (par. 70.6).



ORD G296138 I

- 1—6-32 x 1/2 screw 9157790-41 (4)
- 2—No. 6 lock washer 9157798-8 (4)
- 3—Loop clamp MS21919G5 (8)
- 4—5/16-18 x 1/2 fl-hd screw 9157796-59 (6)
- 5—0.333-in. lock washer 9157798-23 (6)
- 6—0.375-in. flat washer MS15795-713 (6)
- 7—7.875-in. retainer 7616024
- 8—Nonmetallic washer 7607462
- 9—6-1/2-in. ball bearing 712105
- 10—Nonmetallic washer 7607462
- 11—5/16-18 x 1 hex-socket-hd screw 9986530-3 (24)
- 12—0.333-in. lock washer 9157798-23 (24)
- 13—0.328-in. flat washer 7607476
- 14—Roller track 7621195
- 15—Sleeve bearing 7607475 (24)
- 16—Turntable

Figure 90.2. Turntable group—removal of roller track.



ORD 2961401

- 1—Wire 8516287 (6)
- 2—No. 10-24 x 1/2 hex-hd 8517014 (24)
- 3—0.218-in flat washer MS27183-8 (24)
- 4—Cover 8173533 (6)
- 5—0.664-32 round nut 8516288 (6)
- 6—Key washer 711204 (6)
- 7—Retainer 7607646 (6)
- 8—Lower support roller 7612287 (6)
- A—Stud 7612290
- B—Lock washer 7612291
- C—1.75-in. ball bearing 9000811
- D—2-1/4-in-lg shaft 7612293
- 9—3-1/2-in-lg bracket 7616079 (6)
- 10—1/4-28 x 3/16 setscrew 222418 (6)

Figure 90.3. Acquisition antenna pedestal—partial view.





## Section VIII. ACQUISITION ORIENTATION LEVEL

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

### 71. Removal of Acquisition Orientation Level 7614258

If acquisition orientation level (fig. 91) is mounted, open lid, loosen captive screw, and remove from plate (X, fig. 64).

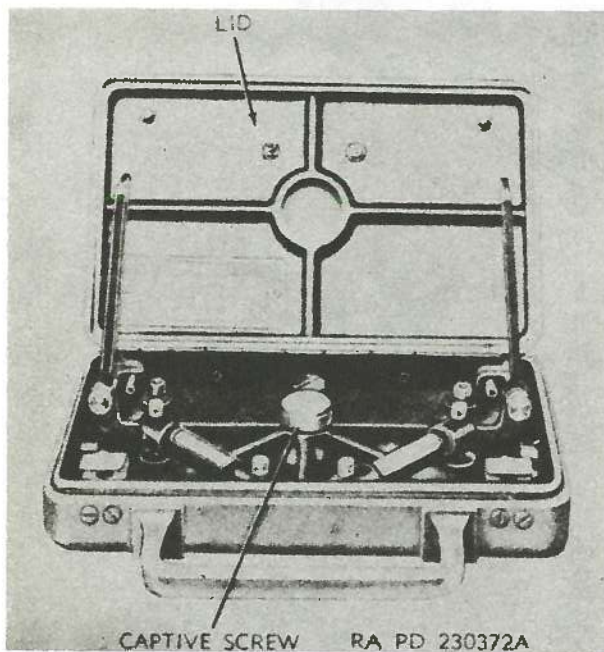


Figure 91. Acquisition orientation level 7614258.

### 72. Field Maintenance of Acquisition Orientation Level 7614258

#### a. Disassembly.

- (1) Disassemble acquisition orientation level (fig. 92).
- (2) Disassemble bracket assembly (fig. 93).

#### b. Assembly and Adjustment.

**Note.** The key letters shown in parentheses in (1) and (2) below refer to figure 93.

- (1) Tie a knot in one end of six-inch length of cord (A4) and thread cord through

countersunk hole in lower end of sight (A3). Thread other end of cord through hole in top of sight. Wrap cord once in a clockwise direction around No. 2-56 x  $\frac{1}{8}$  binding-head screw (A1) between head of screw and No. 2 lock-washer (A2). Pull cord tight and tighten binding-head screw.

- (2) Install sight assembly (A) and sight (D) on bracket (B). Tighten hexagon nuts against bracket so that sight assembly and sight can be raised through a 90° arc, but will remain stationary in any position along arc to which they are set. Fold sight and sight assembly down against bracket.

**Note.** The key letters shown in parentheses in (3) through (6) below refer to figure 92.

- (3) Install handle (R), two receptacles (N), and thumbscrew (G).
- (4) Install bracket assembly (A) and secure, fingertight, with two No. 10-24 x  $\frac{1}{2}$  hexagon-socket screws (B) and one No. 10-24 x  $\frac{1}{4}$  pivot (E).
- (5) Apply class B-4 black sealing compound 8030-174-2599 to threads of four No. 8-32 x  $\frac{1}{2}$  hexagon-socket setscrews (S) and install setscrews, fingertight, in bottom of case (T).
- (6) Apply class B-4 black sealing compound 8030-174-2599 to threads of two No. 10-24 x  $\frac{1}{2}$  hexagon-socket setscrews (F) and install setscrews, fingertight, in bracket assembly.
- (7) Place acquisition orientation level (fig. 94) on checking fixture 8235439 and secure with captive screw.
- (8) Using vertical adjusting screw, position blade point at zero mark on indicator block.

- A—BRACKET ASSY—7604277
- B—NO. 10-24 X 5/8 HEX. SOCKET-HD SCREW—583894 (2)
- C—NO. 10 LOCK WASHER—MS35338-24 (2)
- D—NO. 10 FLAT WASHER—7601541 (2)
- E—NO. 10-24 X 7/8 PIVOT—7598020
- F—NO. 10-24 X 3/4 HEX. SOCKET SETSCREW—589141 (2)
- G—1/4-20 X 1-1/8 THUMBSCREW—7598024
- H—NO. 6-32 X 15/16 EXTER. RELIEVED-BODY SCREW—7598025 (4)
- J—LEVEL ASSY—7604280
- K—SPACER—7598030
- L—NO. 4-40 X 1/4 HEX NUT—134524 (4)
- M—NO. 4 LOCK WASHER—131043 (4)
- N—RECEPTACLE—7599232
- P—NO. 10 LOCK WASHER—MS35338-24 (2)
- Q—NO. 4-40 X 7/16 BDG-HD SCREW—583906 (4)
- R—HANDLE—7608441
- S—NO. 8-32 X 1/4 HEX-SOCKET SETSCREW—583957 (4)
- T—CASE—7614259
- U—NO. 10-24 X 5/8 HEX. SOCKET-HD SCREW—583894 (2)
- V—NO. 8-32 X 3/8 HEX. SOCKET SCREW—583885 (2)
- W—HINGE—7598023
- X—NO. 4-40 X 1/4 BDG-HD SCREW—544526 (10)
- Y—CASE LID—7614260

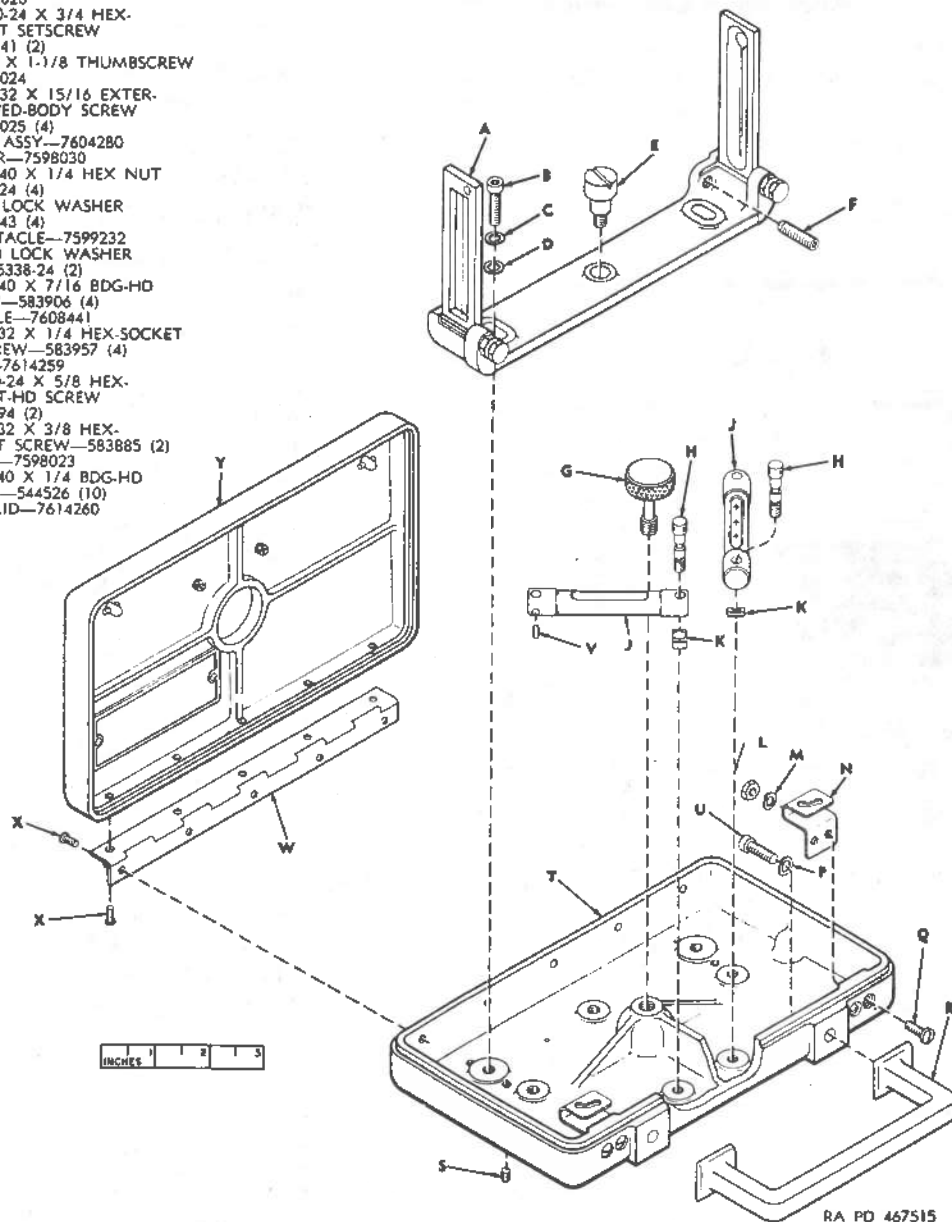


Figure 92. Acquisition orientation level 7614258—partially exploded view.

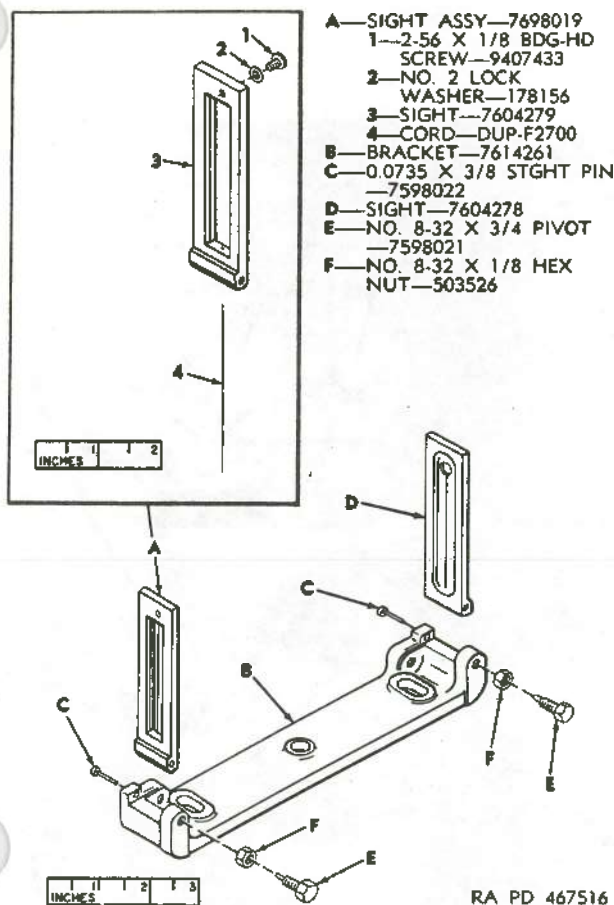


Figure 93. Bracket assembly 7604277—exploded view.

- (9) Fold out sight and sight assembly. Place indicator block against sight and sight assembly alternately and move blade in or out, as required, by means of horizontal adjusting screw. The cord of the sight assembly and the slit of the sight must be exactly parallel to the blade edge.
- (10) If slit in sight and cord in sight assembly are not parallel to blade edge, remove orientation level from checking fixture 8235439 and adjust bracket assembly by means of four No. 8-32 x  $\frac{1}{4}$  hexagon-socket setscrews (fig. 95). Repeat steps (7) through (10) above until cord and slit are parallel.

- (11) The slit in the sight (fig. 94) and cord in sight assembly must simultaneously be aligned with the blade edge without changing the position of horizontal adjusting screw. This adjustment is made by loosening or tightening two No. 10-24 x  $\frac{1}{4}$  hexagon-socket setscrews (F, fig. 92) in bracket assembly to meet above requirements.

*Note.* The key letters shown in parentheses in (12) through (16) below refer to figure 92.

- (12) Tighten two No. 10-24 x  $\frac{1}{4}$  hexagon-socket-head screws (B) and one pivot (E).
- (13) Fold sight (fig. 94) and sight assembly down and remove orientation level from checking fixture 8235439.
- (14) Install case hinge (W) and case lid (Y).
- (15) Apply class B-4 black sealing compound 8030-174-2599 to threads of two No. 8-32 x  $\frac{1}{4}$  hexagon-socket screws (V) and install, fingertight, in level assemblies (J).
- (16) Apply class B-4 black sealing compound 8030-174-2599 to threads of four No. 6-32 x  $\frac{1}{16}$  externally-relieved-body screws (H) and install level assemblies with screws fingertight.
- (17) Place orientation level (fig. 96) on adjusting fixture 8235440.
- (18) Adjust three jack screws until adjusting fixture is level as indicated by a zero indication on the test level assemblies.
- (19) Adjust two level assemblies in orientation level for zero indications by adjusting four No. 6-32 x  $\frac{1}{16}$  externally-relieved-body screws. After requirements are met, tighten four externally-relieved-body screws and two setscrews. Check to see that level assemblies remain at zero indication.

### 73. Installation of Acquisition Orientation Level 7614258

Remove orientation level from adjusting fixture and install on plate (X, fig. 64) on acquisition antenna pedestal or return to storage.

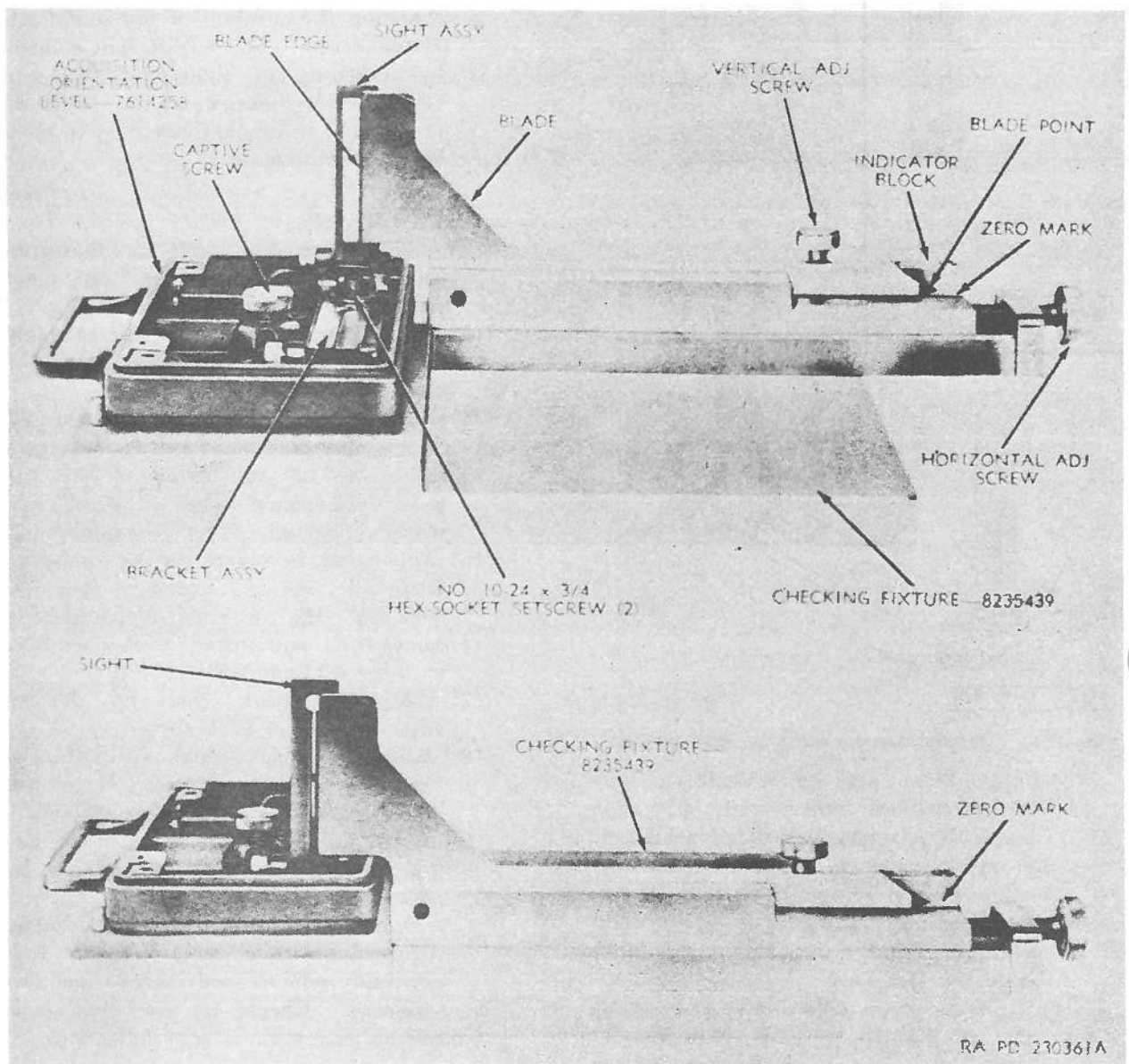


Figure 94. Checking fixture 8235439—in use.

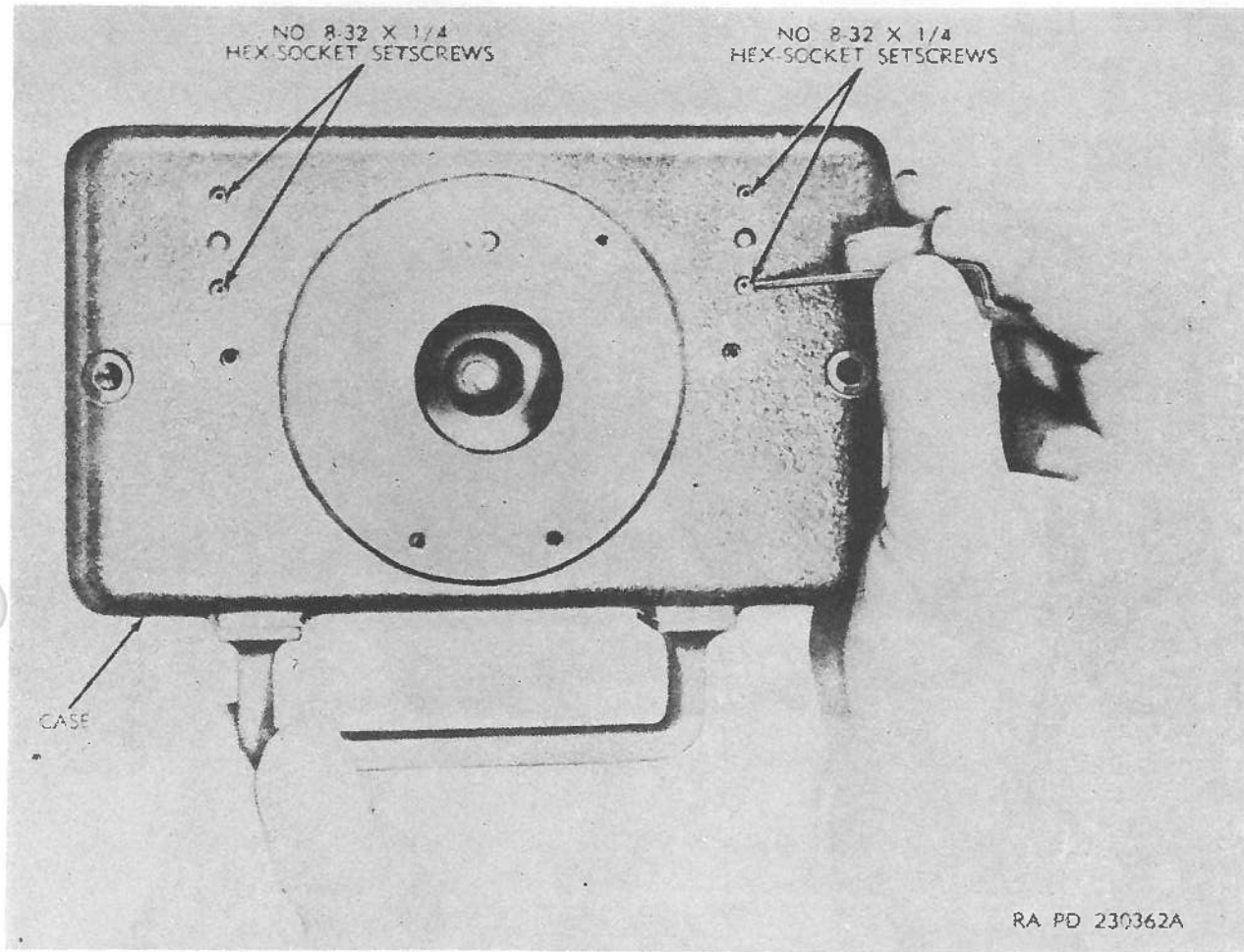


Figure 95. Acquisition orientation level 7614258—bottom view.



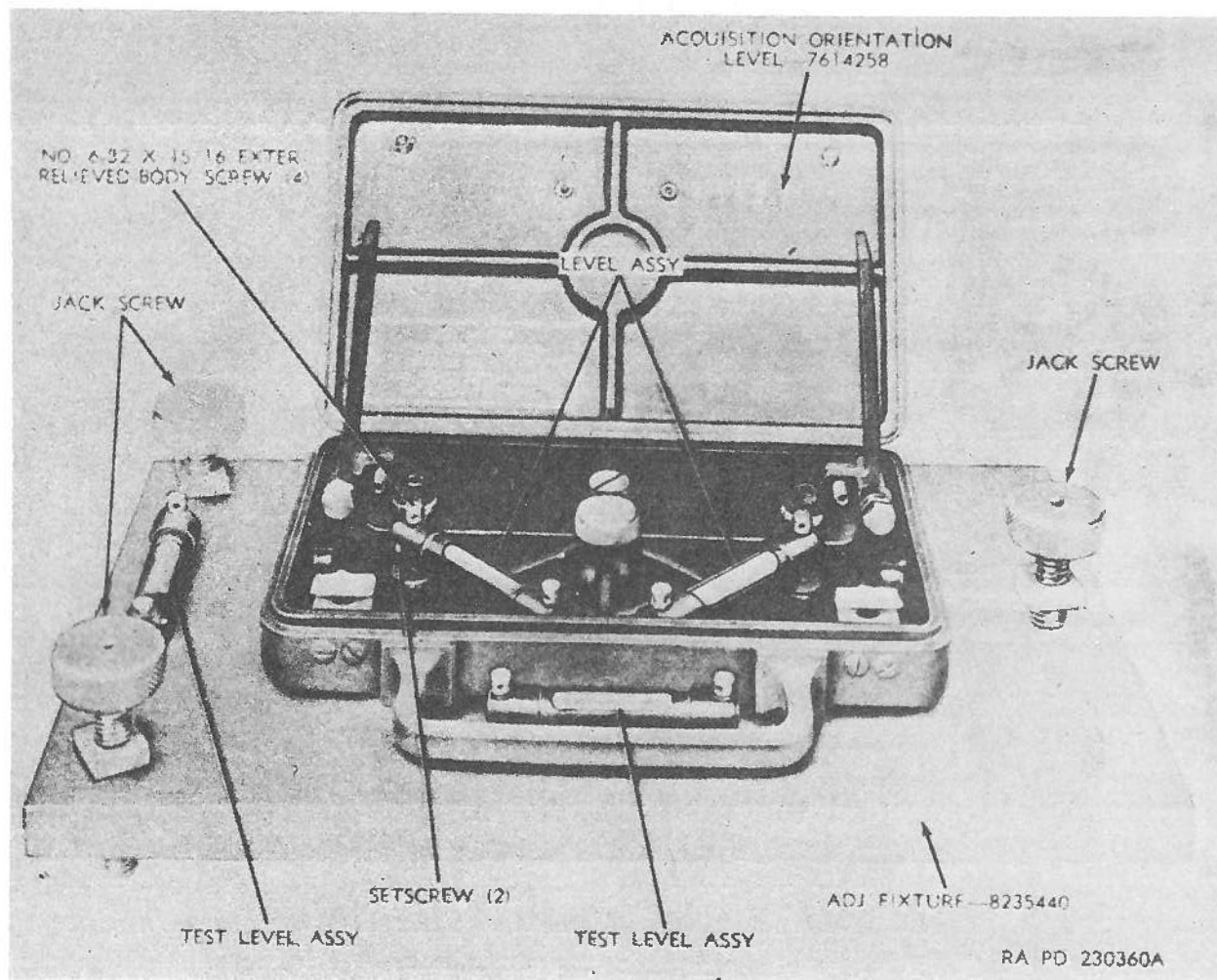
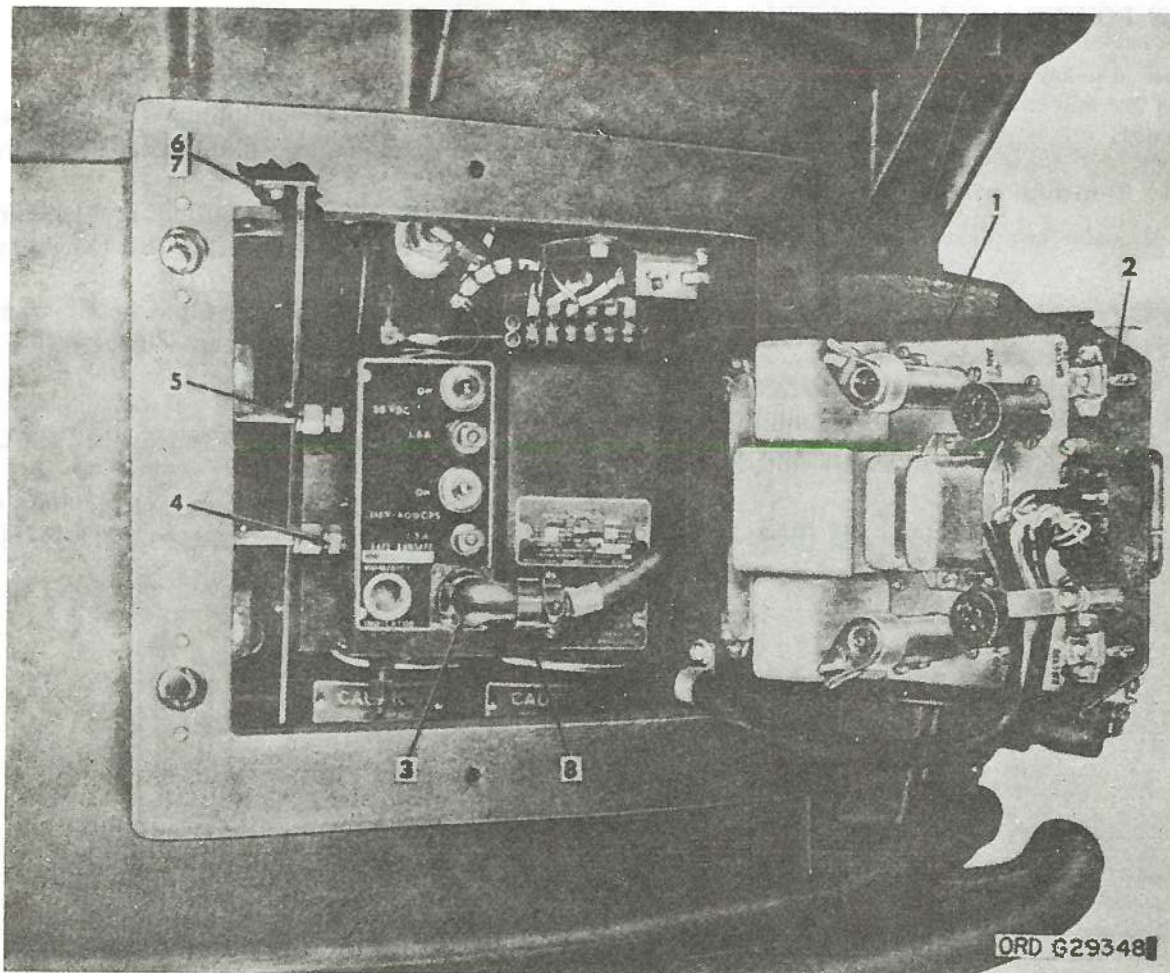


Figure 96. Adjusting fixture 8235440—in use.





- |  |   |
|--|---|
| 1—Panel                                | 5—Inlet nonmetallic hose assy 9154395           |
| 2—Fastener (2)                         | 6—No. 10-24 x 1/2 fl-hd screw 5305-012-0687 (4) |
| 3—Connectors P7 and J1                 | 7—No. 10 lock washer 5310-012-0380 (4)          |
| 4—Outlet nonmetallic hose assy 9154394 | 8—Dehumidifier 9150649                          |

Figure 96.1. Acquisition antenna pedestal—removal and installation of dehumidifier.

## Section IX. DEHUMIDIFIER

**Warning:** Perform all field maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

*Note.* The key numbers shown in parentheses in paragraph 73.1 and 73.2 refer to figure 96.1 unless otherwise indicated.

### 73.1. Removal of Dehumidifier

- a. Loosen two fasteners (2) and open panel (1).
- b. Disconnect connector P7 (3) from connector J1.
- c. Disconnect outlet hose assembly (4) and inlet hose assembly (5) from dehumidifier (8).
- d. Remove four screws (6) and lock washers (7).
- e. Remove dehumidifier (8) through opening in antenna pedestal.

### 73.2. Installation of Dehumidifier

- a. Install new dehumidifier (8) and secure with four washers (7) and fillister-head screws (6).
- b. Attach inlet nonmetallic hose assembly (5) from the compressor (fig. 78), to dehumidifier (8).
- c. Attach outlet nonmetallic hose assembly (4), from the lower rotary coupler group (2, fig. 69), to the dehumidifier (8).
- d. Connect connector P7 (3) to connector J1.
- e. Close panel (1) and secure with two fasteners (2).
- f. Perform pressurization and dehumidifier checks (TM 9-1430-251-20/1) or (TM 9-1430-251-20/2).

## CHAPTER 4.1

## ACQUISITION ANTENNA PEDESTAL 9156545

## Section I. GENERAL

## 73.3. Scope

Acquisition antenna pedestal 9156545 is used in selected systems. This antenna pedestal has certain components which are common to antenna pedestal 8513363 or 9002671. Maintenance procedures for the peculiar components are covered in this chapter.

## 73.4. Illustration Coverage

Acquisition antenna pedestal 9156545 (fig. 96.2) is illustrated for the peculiar components. Acquisition antenna pedestal 8513363 or 9002671 may be illustrated for the common components.

## Section II. ACQUISITION SLIPRING

**Warning:** Perform all maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on acquisition power control panel in the off position.

## 73.5. Removal of Acquisition Antenna Slipring

a. Remove acquisition antenna (TM 9-1430-251-10/1 and acquisition antenna pedestal (fig. 96.2).

*Note.* It is not necessary that cable assemblies and wiring harness be removed from pedestal in order to remove and install slipring.

b. Unbuckle four belts (J3, fig. 63) and remove clamp (R, fig. 63). Remove cables (A, B, C, and D, fig. 63) from clamp group (J, fig. 63).

c. Remove clamp group from pedestal.

d. Remove waveguide assembly (2, fig. 96.2).

**Caution:** To prevent damage to coaxial rod (28, fig. 96.2) make certain that upper rotary coupler group is lifted vertically.

e. Remove upper rotary coupler group (10, fig. 96.2).

f. Remove cover group (R, fig. 64).

g. Remove acquisition slipring (par. 55, h through m).

## 73.6. Installation of Acquisition Slipring

a. Install acquisition slipring (par. 56, a through f).

b. Install new preformed packing (11, fig. 96.2).

c. Aline upper rotary coupler group (10, fig. 96.2) with coaxial rod (28, fig. 96.2) and install upper rotary coupler group.

d. Install waveguide (2, fig. 96.2).

e. Assemble and install clamp group (J, fig. 63).

f. Place cable assemblies (A, B, C, and D, fig. 63) in notches of clamp group and install clamp (R, fig. 63).

g. Coil cable assemblies and fasten in place with four belts (J3, fig. 63).

h. Install acquisition antenna pedestal (fig. 96.2) and acquisition antenna (TM 9-1430-251-10/1).

i. Perform complete daily checks and adjustments and waveguide pressurization check of acquisition radar system.

## Section III. ROTARY COUPLER 9142492

**Warning:** Perform all maintenance on the acquisition antenna pedestal with ACQUISITION POWER switch on the acquisition power control panel in the off position.

## 73.7. Removal of Rotary Coupler

*Note.* The key numbers shown in parentheses in a through h below refer to figure 96.2 unless otherwise indicated.

a. Remove upper rotary coupler group (par. 73.5, a through e).

b. Turn acquisition antenna pedestal on its side and remove bottom plate (fig. 68).

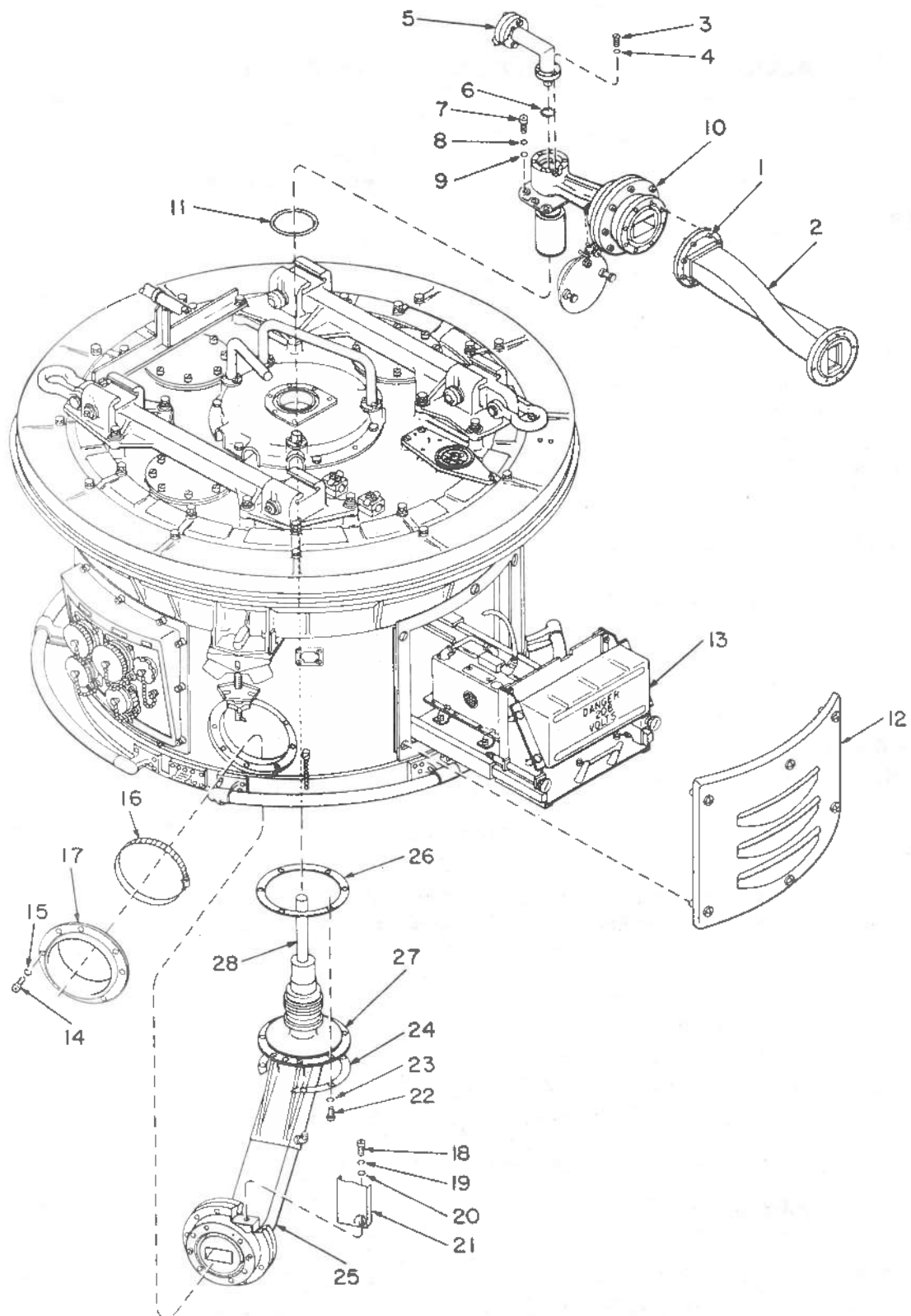


Figure 96.2. Acquisition antenna pedestal 9156545.

- 1—Captive screw (8)
- 2—Waveguide assy 8516943
- 3—1/4-20 x 5/8 hex-socket-hd screw 9157796-46 (3)
- 4—1/4-in. lock washer 9157798-20 (3)
- 5—R.F. transmission line 9991524
- 6—1-in-id preformed packing 501462
- 7—1/4-20 x 3/4 hex-socket-hd screw 9157796-47 (6)
- 8—1/4-in. lock washer 9157798-20 (6)
- 9—0.281-in-id flat washer MS15795-710 (6)
- 10—Upper rotary coupler group
- 11—3-in-id preformed packing 546870
- 12—Outer cover 8173433
- 13—Sliding frame
- 14—1/4-20 x 1/2 hex-socket-hd screw 9157796-45 (8)
- 15—1/4-in. lock washer 9157798-20 (8)
- 16—Clamp 8518436
- 17—Boot assy 8513730
- 18—1/4-20 x 1/2 hex-socket-hd screw 9157796-45 (2)
- 19—1/4-in. lock washer 9157798-20 (2)
- 20—1/4-in. flat washer MS15795-710 (2)
- 21—Bracket
- 22—1/4-20 x 3/4 hex-socket-hd screw 9157796-47 (6)
- 23—1/4-in. lock washer 9157798-20 (6)
- 24—Flat washer 8520394
- 25—Lower rotary coupler group
- 26—7-1/2-in-od shim 7607588
- 27—Flange
- 28—Coaxial rod

Figure 96.2.—Continued

c. Remove outer cover (12) and pull sliding frame (13) out to fully extended position.

d. Disconnect connector P19 (1, fig. 96.3) from connector J1 (2, fig. 96.3).

e. Disconnect nonmetallic hose assembly (3, fig. 96.3) from lower rotary coupler group (4, fig. 96.3).

f. Remove eight screws (14), lock washers (15).

g. Loosen clamp (16) and remove boot assembly (17).

h. Remove two screws (18), lock washers (19) and flat washers (20).

i. Hold lower rotary coupler group (25) in position and remove six screws (22), lock washers (23) and flat washers (24).

j. Carefully rotate lower rotary coupler group (4, fig. 96.3) as required, and remove from antenna pedestal.

k. Remove shim (26).

**Caution:** The 7 1/2-inch-od shim is laminated. Make certain that none of the laminations adhere to mounting surface for lower rotary coupler group.

### 73.8. Maintenance of Rotary Coupler

a. Disassemble upper rotary coupler group (fig. 96.4).

b. Examine inside areas of waveguide for burned spots.

c. Using fine crocus cloth, grade No. 400 (10/0) or above, polish the waveguide to remove spot.

**Note.** Bearing surfaces and waveguide openings must be wiped clean with a lint-free cloth before assembly.

d. Assemble upper rotary coupler group (fig. 96.4).

### 73.9. Installation of Rotary Coupler

a. With parallel bar 5017462, hold 7 1/2-inch-od shim (fig. 73) in position against mounting surface for lower rotary coupler group and using 12-inch vernier depth gage 41-G-153, measure distance between mounting surface on cover and mounting surface for lower rotary coupler group. This distance shall be  $9.500 \pm 0.003$  inches including thickness of shim. In order to obtain this dimension it may be necessary to peel laminations from 7 1/2-inch-od shim (fig. 73). Each lamination of shim is 0.002 inch thick.

**Note.** The key numbers shown in parentheses in b through h below refer to figure 96.2 unless otherwise indicated.

b. Align holes in shim (26) with holes in flange (27) and install shim with brass side against flange.

**Caution:** To prevent damage to coaxial rod (28) guide rod through opening in mounting surface for lower rotary coupler group (fig. 73).

c. Install lower rotary coupler group (25).

d. Install boot assembly (17) and secure with eight lock washers (15) and screws (14).

e. Install and tighten clamp (16).

f. Connect connector P19 (1, fig. 96.3) to connector J1 (2, fig. 96.3).

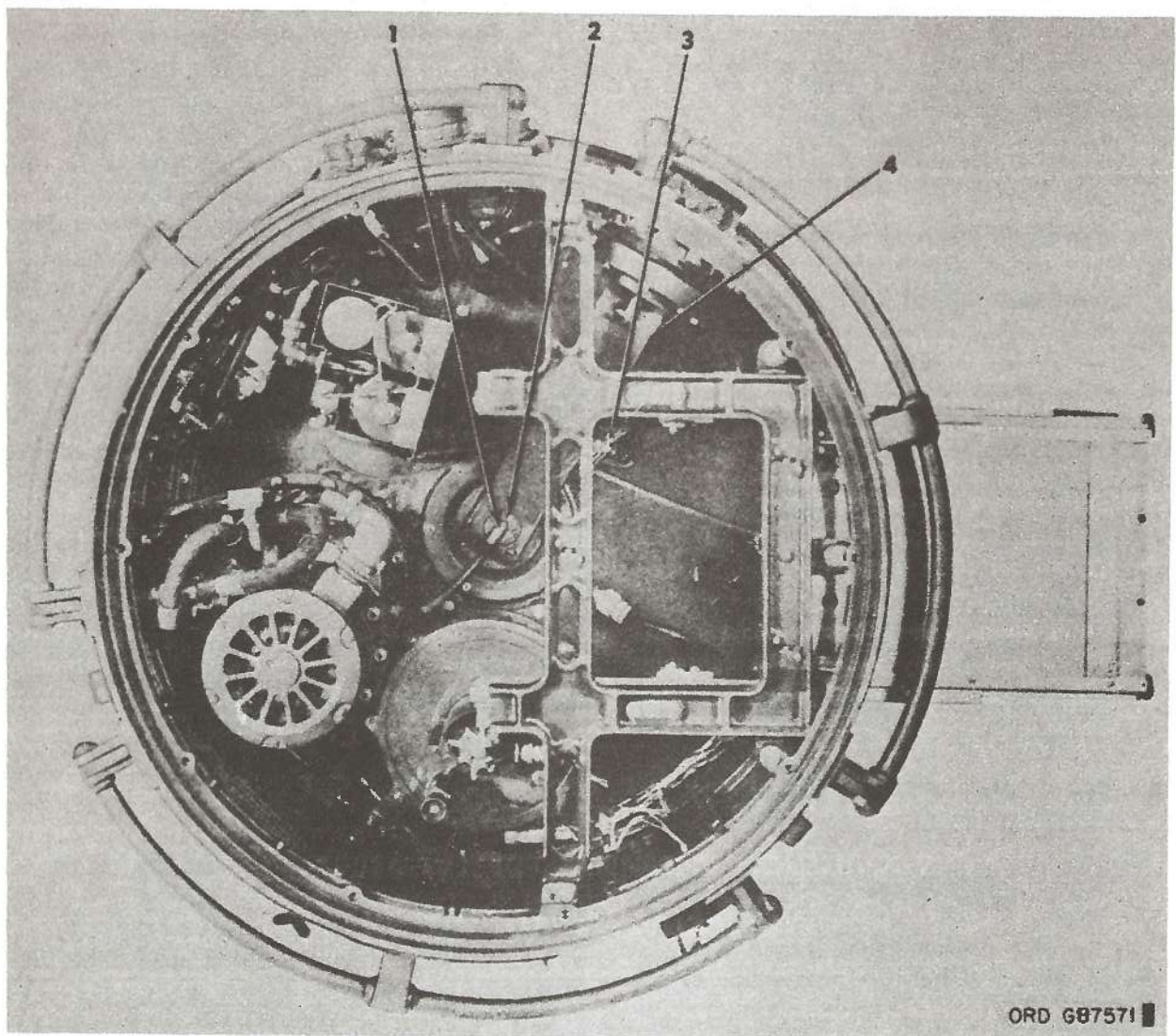
g. Connect nonmetallic hose assembly (3, fig. 96.3) to lower rotary coupler group (4, fig. 96.3).

h. Push sliding frame (13) into antenna pedestal and install outer cover (12).

i. Install bottom plate (fig. 68).

j. Install upper rotary coupler group (par. 73.6, b through i).





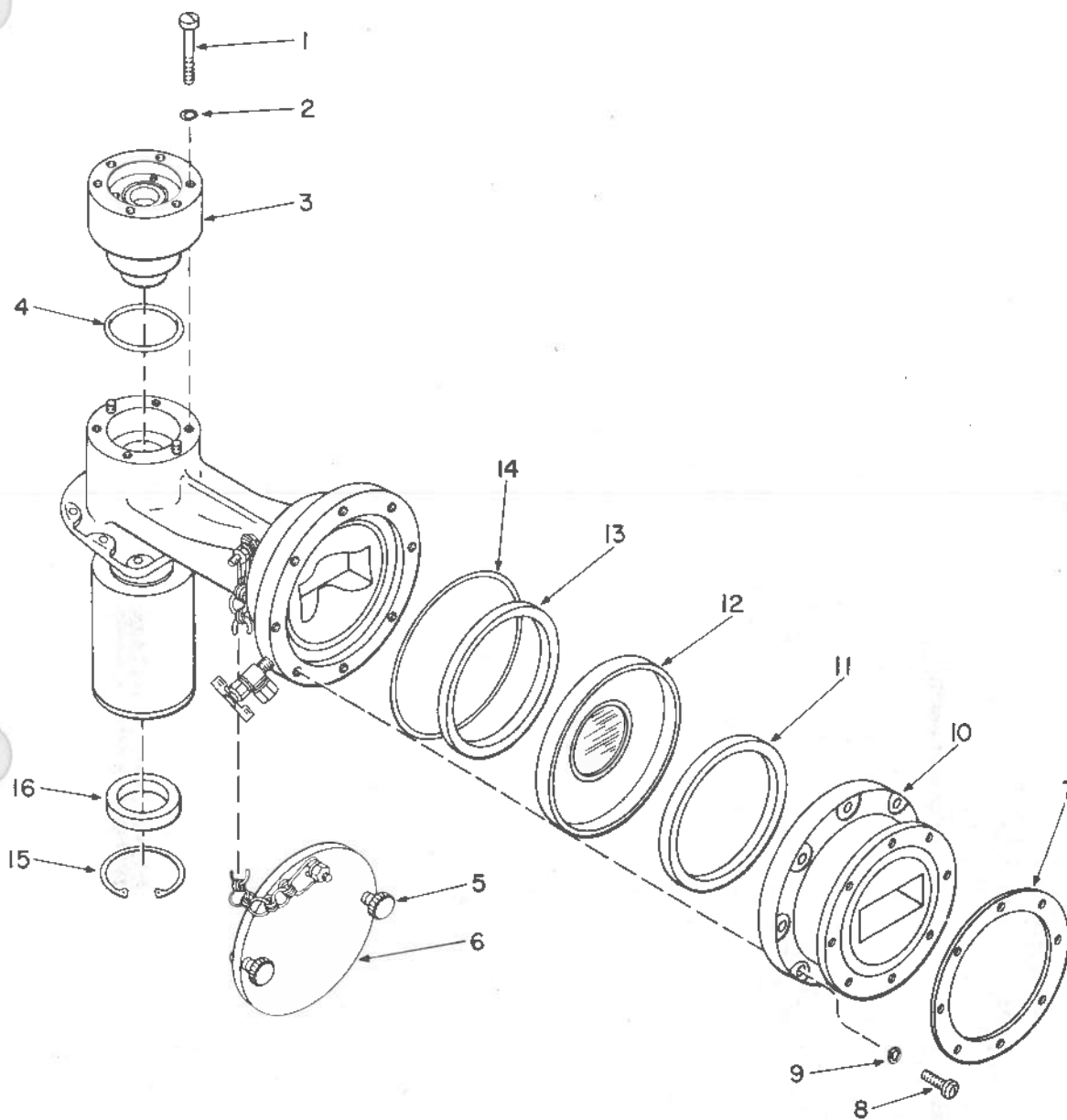
ORD 687571

1—Connector P19  
2—Connector J1

3—Nonmetallic hose assy 9154394  
4—Lower rotary coupler group

Figure 96.3. Acquisition antenna pedestal 9156545—bottom view with bottom plate removed.





ORD G296142 I

- 1—1/4-20 x 3/4 hex-socket-hd screw 9157796-47 (4)
- 2—1/4-in. lock washer 9157798-20 (4)
- 3—Rotary coupler subassembly 9991537
- 4—2-1/4-in-id preformed packing 546803
- 5—Thumbscrew
- 6—5-5/16-od cover assy 9000347
- 7—4-1/16-id gasket 7601758
- 8—1/4-20 x 1 hex-hd screw 9157796-49 (8)

- 9—1/4-in. lock washer 9157798-20 (8)
- 10—Waveguide choke 8517269
- 11—4-1/32-in-id spacing ring 7622816
- 12—Iris assy 7622815
- 13—4-1/32-in-id spacing ring 7622816
- 14—4-1/4-in-id preformed packing 546858
- 15—2-1/4-in-dia retn ring MS16625-2225
- 16—Core 7622821

Figure 96.4. Upper rotary coupler group—partially exploded view.



## CHAPTER 5

### ACQUISITION RECEIVER-TRANSMITTER 8515397 or 9984085

*Note.* The acquisition receiver-transmitter can be replaced as a single unit. Refer to TM 9-1430-251-10/1 for and installation procedures. Refer to TM 9-1430-259-34 for type 4 tests.

#### Section I. FREQUENCY AND POWER METER

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

#### 74. Removal of Frequency and Power Meter 8173652

- a. Remove frequency and power meter cover (B, fig. 97).
- b. Loosen two socket-head setscrews (fig. 98).
- c. Loosen fastener and swing frequency and power meter outward.

*Note.* The key letters shown in parentheses in d through g below refer to figure 99.

- d. Disconnect connector P9 (E) from attenuator (D).
- e. Remove cable (F) from nylon loop clamp (K).
- f. Disconnect connector P24 (C) from connector J1 (B).
- g. Lift frequency and power meter until hinge pins (A) are clear of fixed hinge sections (G) and remove.

#### 75. Field Maintenance of Frequency and Power Meter 8173652

Perform field maintenance of the frequency and power meter (TM 9-1430-259-34).

#### 76. Installation of Frequency and Power Meter 8173652

*Note.* Hinge pins (fig. 98) must be in hinges before the frequency and power meter can be installed.

*Note.* The key letters shown in parentheses in a through d below refer to figure 99.

- a. Align frequency and power meter so that hinge pins (A) can be inserted into fixed hinge sections (G).
- b. Secure cable (F) with nylon loop clamp (K).
- c. Attach connector P9 (E) to attenuator (D).
- d. Attach connector P24 (C) to connector J1 (B).
- e. Tighten two socket-head setscrews (fig. 98).
- f. Close and secure frequency and power meter.
- g. Perform transmitter frequency and power measurements (TM 9-1430-251-20/1).
- h. Install frequency and power meter cover (B, fig. 97).

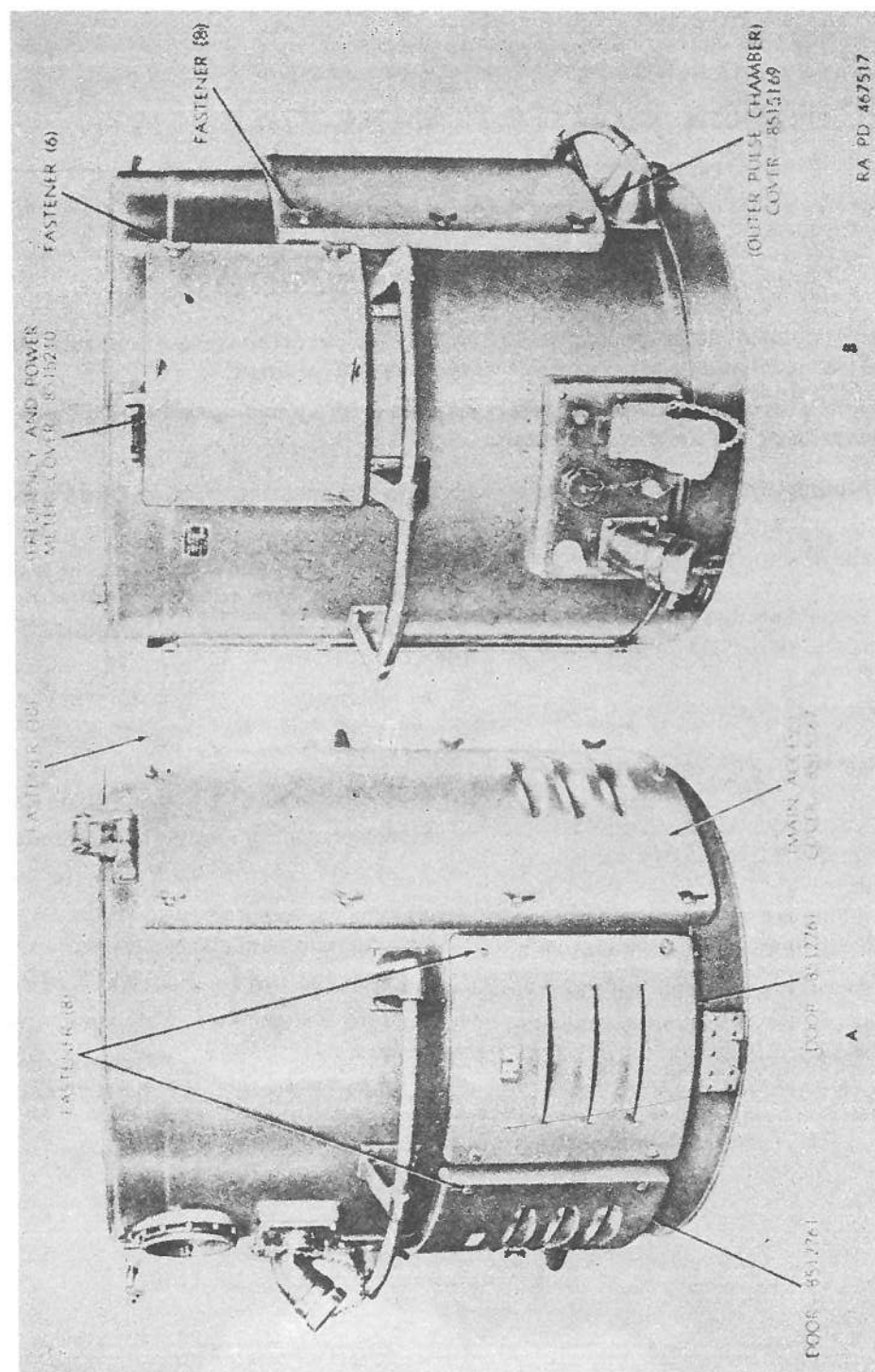


Figure 97. Acquisition receiver-transmitter. 8515397 or 9984085.

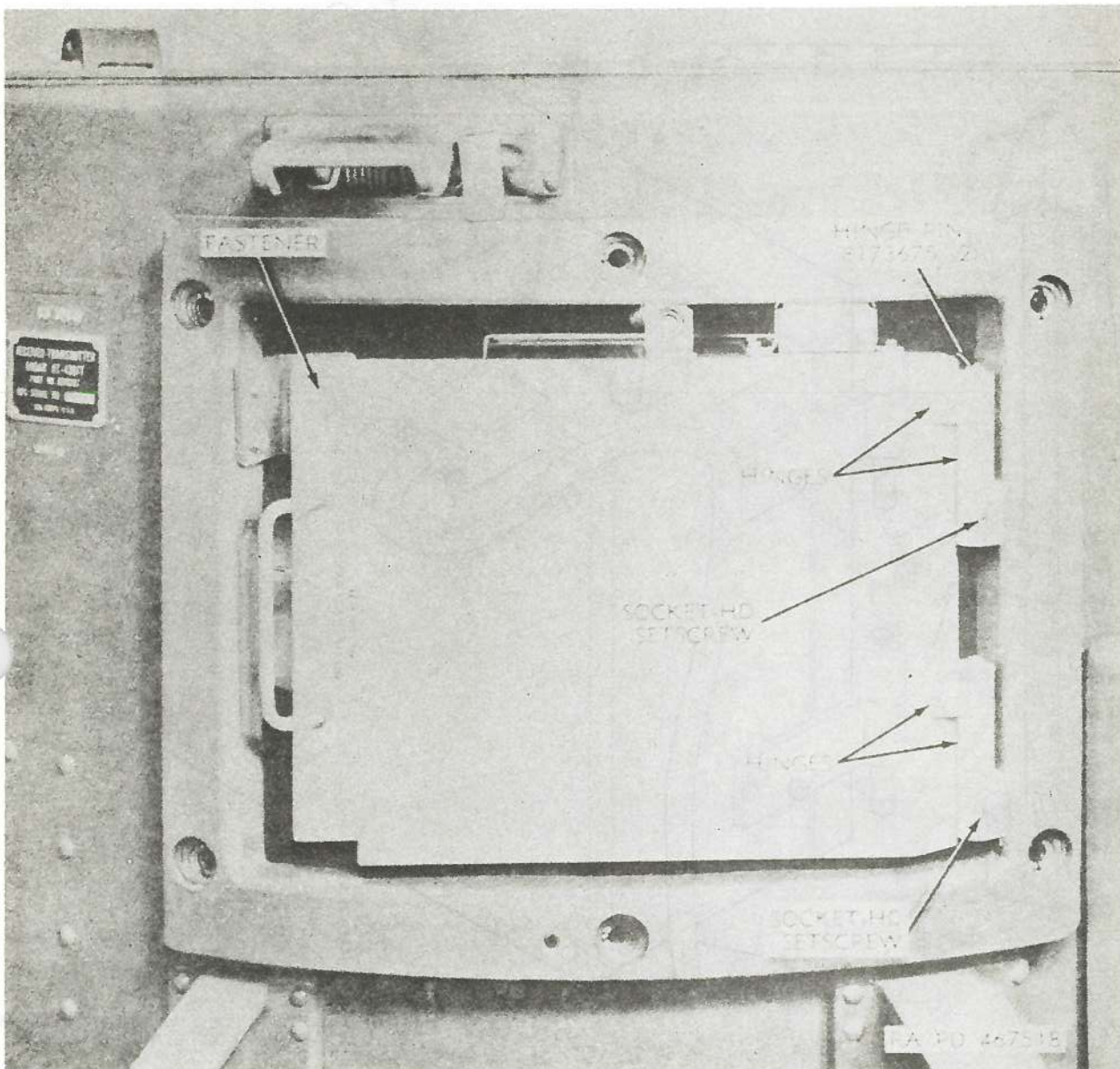
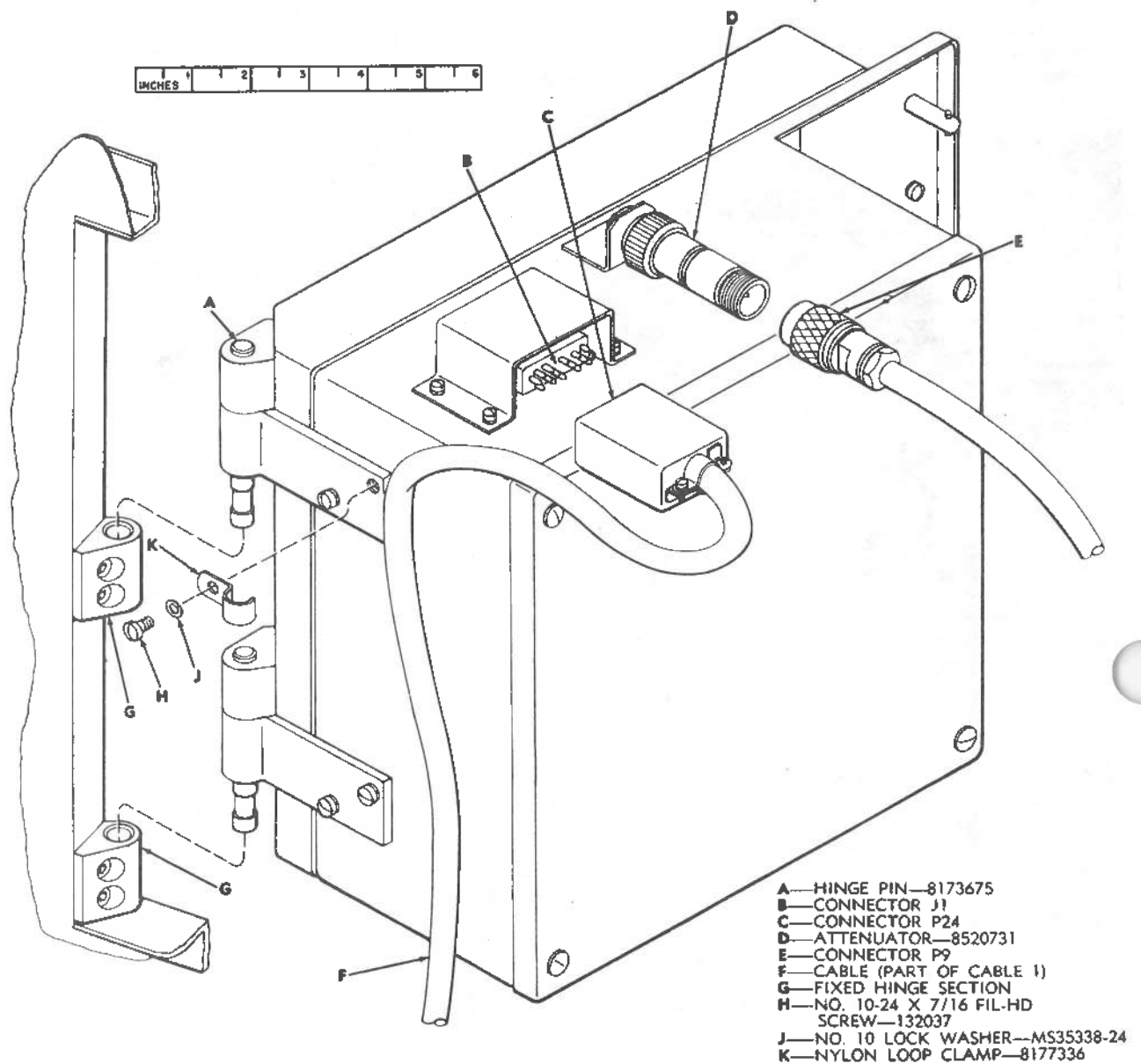


Figure 98. Frequency and power meter 8173652—installed.



RA PD 467519

Figure 99. Frequency and power meter 8173652—partially exploded view.



## Section II. MAGNETIC CIRCUIT

**Warning:** Perform all maintenance on the acquisition receiver-transmitter with the ACQUISITION POWER switch on the acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

*Note.* For removal and installation of auxiliary magnetic circuit 8516184 or auxiliary traveling wave tube (TWT) amplifier 10658131 (4, fig. 126.5), refer to paragraphs 125.7 and 125.7.1, respectively.

### 77. Removal of Magnetic Circuit 8516184

a. Remove the main access cover (A, fig. 97).  
b. Loosen the fasteners and swing the acquisition RF power supply control (fig. 103) outward.

c. Pivot the protective cover board (fig. 100) downward to expose the terminals of the terminal board.

d. Disconnect the eight cable leads from the terminal board.

e. Disconnect the white-blue lead from terminal 9 of the terminal board and remove the lead from the cable clamp.

f. Remove the frequency and power meter cover (B, fig. 97).

g. Loosen the fastener (fig. 98) and swing the frequency and power meter outward.

h. Disconnect connectors P19 and P20 (fig. 101) from connectors J34 and J33, respectively.

i. Loosen the four socket-head captive screws (fig. 100).

j. Remove the magnetic circuit through the opening vacated by the frequency and power meter in g above.

k. Remove the electron tube (fig. 100) from the magnetic circuit as follows:

- (1) Loosen the two roundhead screws on the cover assembly that secure the cable leads.
- (2) Loosen the four roundhead screws on the cover assembly and remove it from the cable leads.
- (3) Remove the mandrel from the cable leads.
- (4) Carefully pull the electron tube from the magnetic circuit.

#### 77.1. Removal of TWT Amplifier 10658131

a. Remove the main access cover (A, fig. 97).  
b. Loosen the fasteners and swing the acquisition RF power supply control outward.

c. Locate and disconnect the TWT amplifier leads attached at E1, TB5-2, and TB5-3 or -6.

d. Remove the circuit leads from the clamps.

e. Remove the frequency and power meter cover (B).

f. Loosen the fastener (fig. 98) and swing the frequency power meter outward.

g. Disconnect connectors P19 and P20 (fig. 101) from connectors J34 and J33, respectively.

h. Loosen the four mounting screws.

i. Remove the TWT amplifier through the power meter opening.

*Note.* TWT amplifier 10658131 is a self-contained TWT amplifier and magnetic circuit. Maintenance is not authorized for this unit.

### 78. Maintenance of Magnetic Circuit 8516184

a. Remove the four screws (G, fig. 102) and lockwashers (H), pull the cover (E) away from the magnetic circuit sufficiently to grasp the white-blue lead (J), hold the lead to prevent damage to the lead and remove the cover.

b. Remove the grommet (F).

c. Remove the clamp (C).

d. Unscrew the bushing (B) from the stud (A) and remove the bushing.

e. Remove the two plungers (M).

f. Install the two plungers.

g. Install the electrical conduit bushing (B).

h. Secure the white-blue lead (J) to the magnetic circuit with the clamp (C).

i. Install the rubber grommet (F).

j. Insert the white-blue lead through the grommet and install the cover (E).

### 79. Installation of Magnetic Circuit 8516184

a. Install the electron tube (fig. 100) in the magnetic circuit as follows:

- (1) Carefully insert the electron tube and install the mandrel.
- (2) Install the cover assembly over the cable leads and position it against the

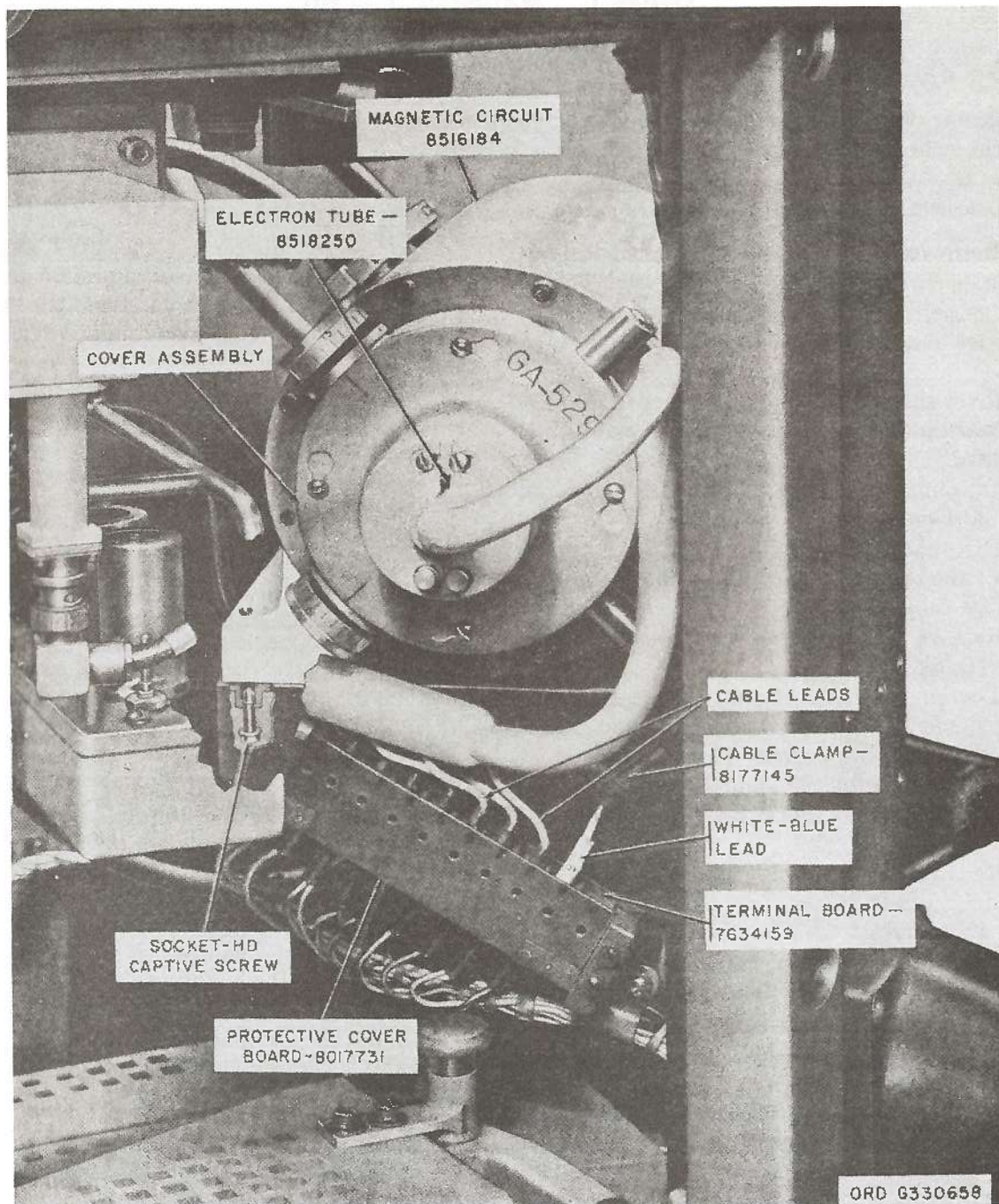


Figure 100. Magnetic circuit—installed.

face of the magnetic circuit. Aline and tighten the four roundhead screws.

(3) Tighten the two screws to secure the cable leads.

b. Position the magnetic circuit (fig. 101)

for mounting by inserting it through the opening vacated by the frequency and power meter (fig. 98).

c. Secure the the magnetic circuit with four socket-head captive screws (fig. 100).

d. Insert the white-blue lead through the cable clamp and connect the lead to terminal 9 of the terminal board.

e. Connect the eight numbered cable leads to the correspondingly numbered terminals of the terminal board.

f. Close the protective cover board over the terminals of the terminal board.

g. Attach connectors P19 and P20 (fig. 101) to connectors J34 and J33, respectively.

h. Close the frequency and power meter (fig. 98) and secure with the fastener.

i. Install the frequency and power meter cover (B, fig. 97).

j. Perform the TWT amplifier checks and adjustments as follows:

(1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.

(2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(3) On ATBM systems, refer to TM 9-1430-251-12/2.

k. Install the main access cover (A).

### 79.1 Installation of TWT Amplifier 10658131

*Note.* For initial installation of TWT amplifier 10658131 to replace magnetic circuit 8516184, perform a through k below. To install the replacement TWT amplifier, perform c through k below.

a. Remove magnetic circuit 8516184 (para 77).

b. Connect the single wire, packaged with TWT amplifier 10658131, between TB1-3 and TB5-2, routing it behind the magnetron blower duct.

c. Position the TWT amplifier for mounting by inserting it through the power meter opening.

d. Secure the TWT amplifier with four mounting screws.

e. Insert the cable into the clamps.

f. Connect the TWT amplifier leads to TB5 and E1 as indicated by the lead markings.

g. Attach connectors P19 and P20 (fig. 101) to connectors J34 and J33, respectively.

h. Close and secure the frequency and power meter (fig. 98).

i. Install the frequency and power meter cover (B, fig. 97).

j. Close and secure the acquisition RF power supply control.

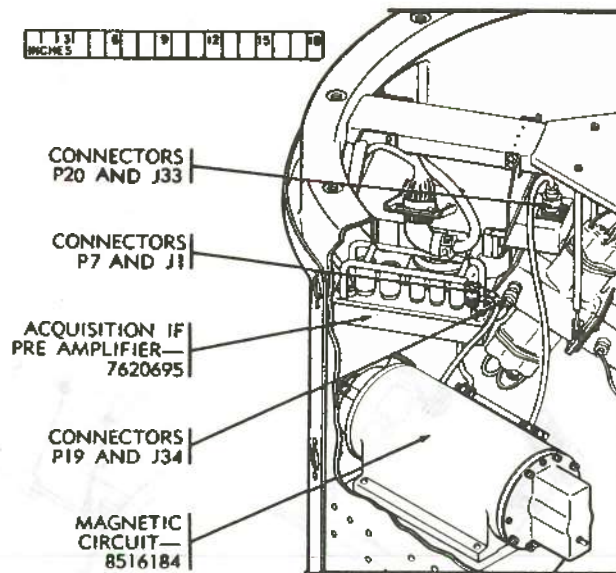
k. Perform the monthly receiver sensitivity checks and video level checks as follows:

(1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.

(2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(3) On ATBM systems, refer to TM 9-1430-251-12/2.





RA PD 467521

Figure 101. Acquisition receiver-transmitter 8515397—cutaway view.

### Section III. POWER SUPPLY SUBASSEMBLY

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

#### 80. Removal of Power Supply Subassembly 8173790

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.
- c. Remove magnetron electron tube (fig. 104) (TM 9-1430-253-20/1) This is necessary to make power supply subassembly accessible.

*Note.* The key letters shown in parentheses in d through f below refer to figure 105.

- d. Remove power supply subassembly cover (N).
- e. Disconnect and tag seven leads of cable 1 (E) from terminal board (H) and remove cable 1 from nylon loop clamp (D).
- f. Remove five socket-head screws (F) and lockwashers (G) and remove power supply subassembly.

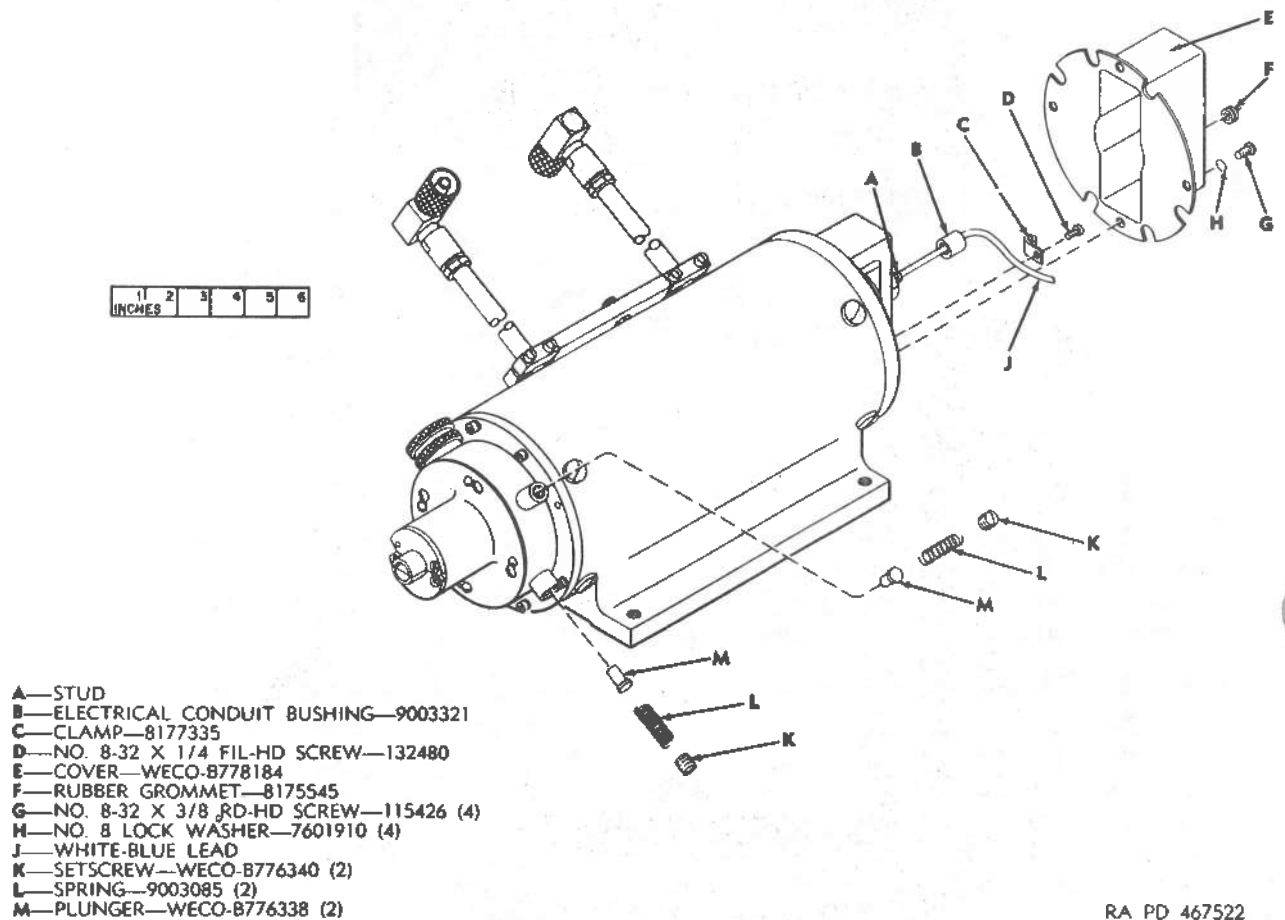
#### 81. Field Maintenance of Power Supply Subassembly 8173790

- a. Disconnect and tag leads and remove components of the power supply subassembly (fig. 105).
- b. Install components of the power supply subassembly and connect leads (TM 9-1430-257-35).

#### 82. Installation of Power Supply Subassembly 8173790

*Note.* The key letters shown in parentheses in a through c below refer to figure 105.

- a. Position the power supply subassembly (fig. 104) in the acquisition receiver-transmitter as shown and secure with five  $\frac{1}{4}$ -inch lockwashers (G) and  $\frac{1}{4}$ -20 x  $\frac{3}{4}$  socket-head screws (F).



RA PD 467522

Figure 102. Magnetic circuit 8516184—partially exploded view.



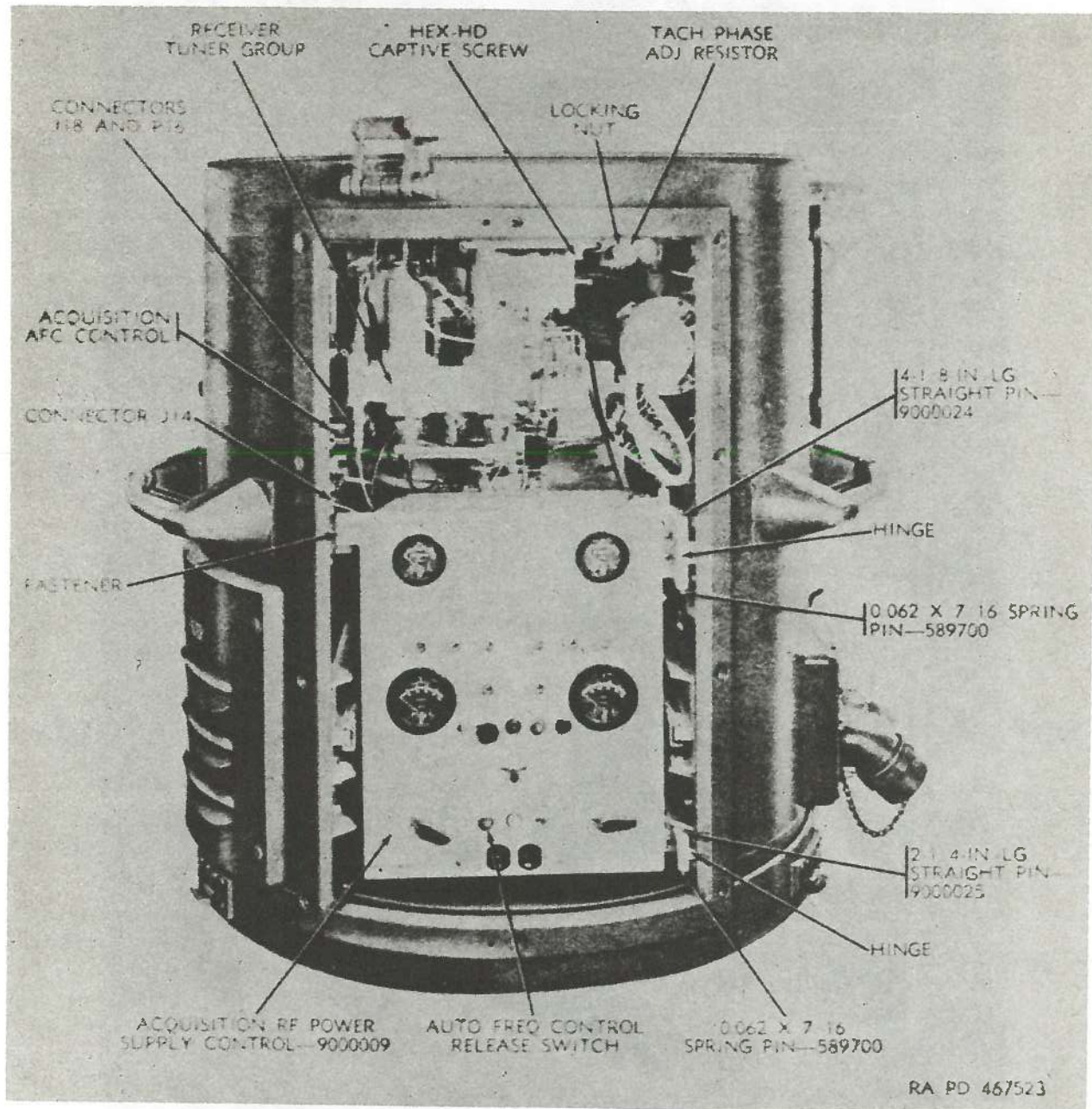


Figure 108. Acquisition receiver-transmitter 8515377 or 9904085--  
main access cover removed.

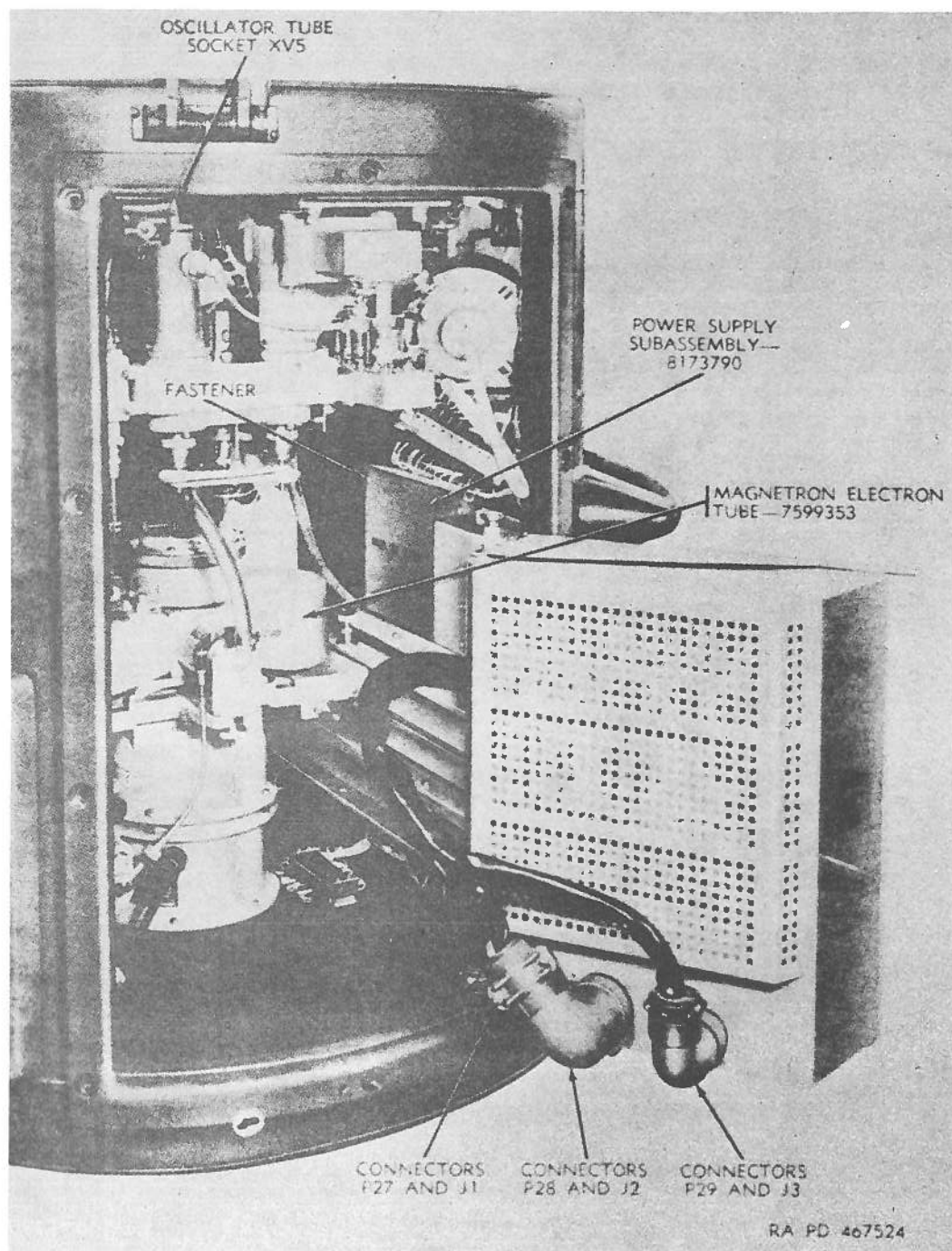
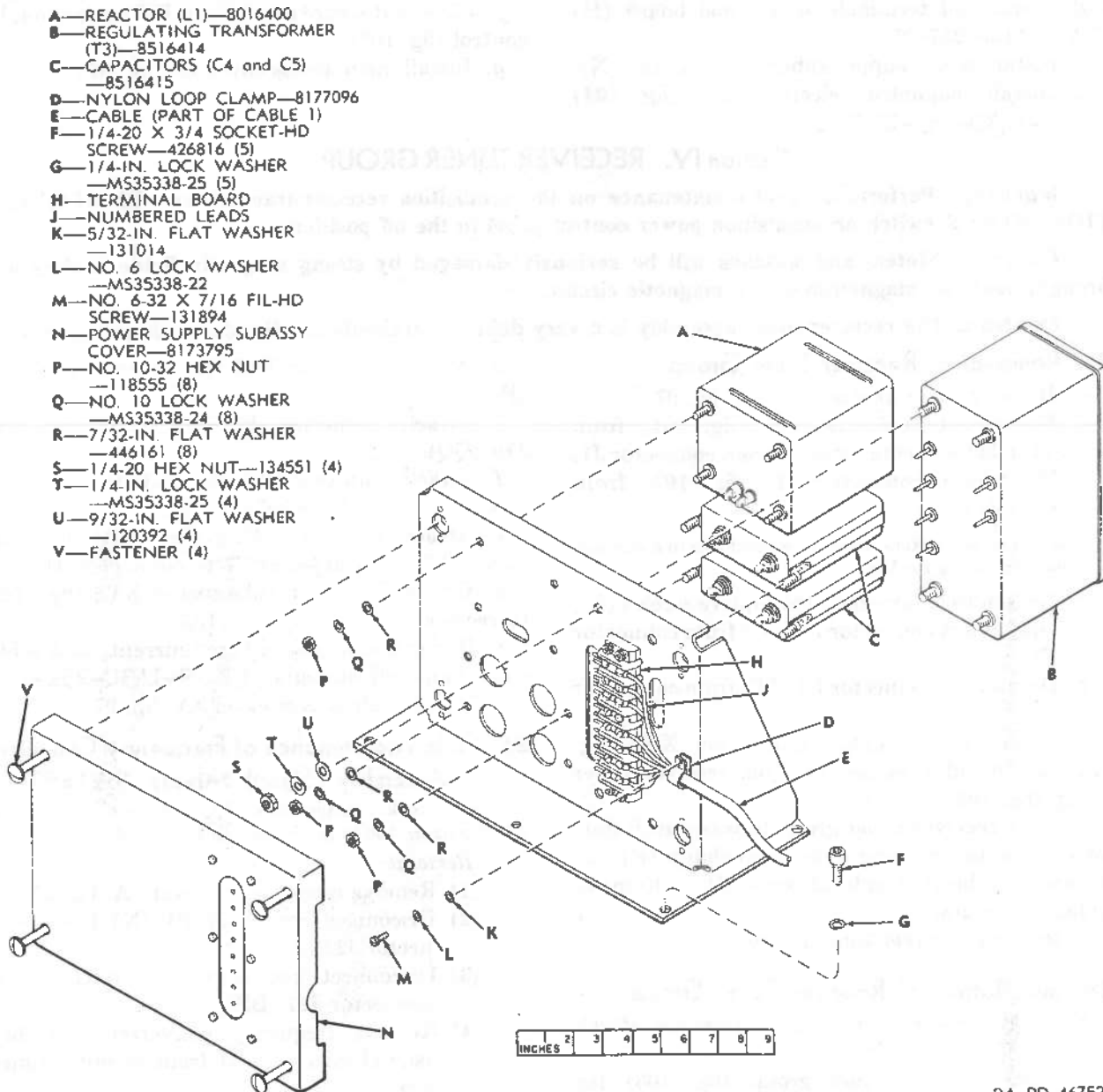


Figure 104. Power supply subassembly—installed.



RA PD 467525

Figure 105. Power supply subassembly 8173790—exploded view.

b. Secure cable 1 (E) with nylon loop clamp (D) and connect seven numbered leads to correspondingly numbered terminals of terminal board (H) (TM 9-1430-257-35).

c. Install power supply subassembly cover (N).

d. Install magnetron electron tube (fig. 104) (TM 9-1430-253-20/1).

e. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

f. Close and secure acquisition RF power supply control (fig. 103).

g. Install main access cover (A, fig. 97).

## Section IV. RECEIVER TUNER GROUP

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

**Caution:** The receiver tuner assembly is a very delicate mechanism. Handle with extreme care.

### 83. Removal of Receiver Tuner Group

a. Remove main access cover (A, fig. 97).

b. Disconnect connector P20 (fig. 101) from connector J33 and connector P7 from connector J1.

c. Disconnect connector P16 (fig. 103) from connector J18.

*Note.* The key letters shown in parentheses in d through h below refer to figure 106.

d. Loosen two hexagon-head captive screws (L).

e. Disconnect connector P13 (G) from connector J12 (F).

f. Disconnect connector P2 (PP) from connector J19 (QQ).

g. Disconnect oscillator tube socket XV5 (fig. 104), a pull off type socket, from receiver tuner group (fig. 103).

h. Slide receiver tuner group forward until flat-head screw (J) securing nylon loop clamp (E) can be seen on bottom side of slide (H). Remove nylon loop clamp.

i. Remove receiver tuner group.

### 84. Installation of Receiver Tuner Group

*Note.* The key letters shown in parentheses in a through e below refer to figure 106.

a. Slide receiver tuner group (fig. 103) far enough into slide to support weight of receiver tuner.

b. Secure cable (D) with nylon loop clamp (E).

c. Slide receiver tuner fully into slide and secure with two hexagon-head captive screws (L).

d. Attach connector P13 (G) to connector J12 (F).

e. Attach connector P2 (PP) to connector J19 (QQ).

f. Attach connector P16 (fig. 103) to connector J18.

g. Attach connector P20 (fig. 101) to connector J33 and connector P7 to connector J1.

h. Connect oscillator tube socket XV5 (fig. 104) to receiver tuner group (fig. 103).

i. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

j. Install main access cover (A, fig. 97).

### 85. Field Maintenance of Frequency Converter Assembly (Signal Mixer) 7621829

*Note.* The key letters shown in parentheses in a below refer to figure 106 unless otherwise indicated.

#### a. Removal.

(1) Remove main access cover (A, fig. 97).

(2) Disconnect connector P1 (N) from connector J22 (AA).

(3) Disconnect connector P4 (GG) from connector J21 (BB).

(4) Remove frequency converter assembly (signal mixer) (CC) from receiver tuner group.

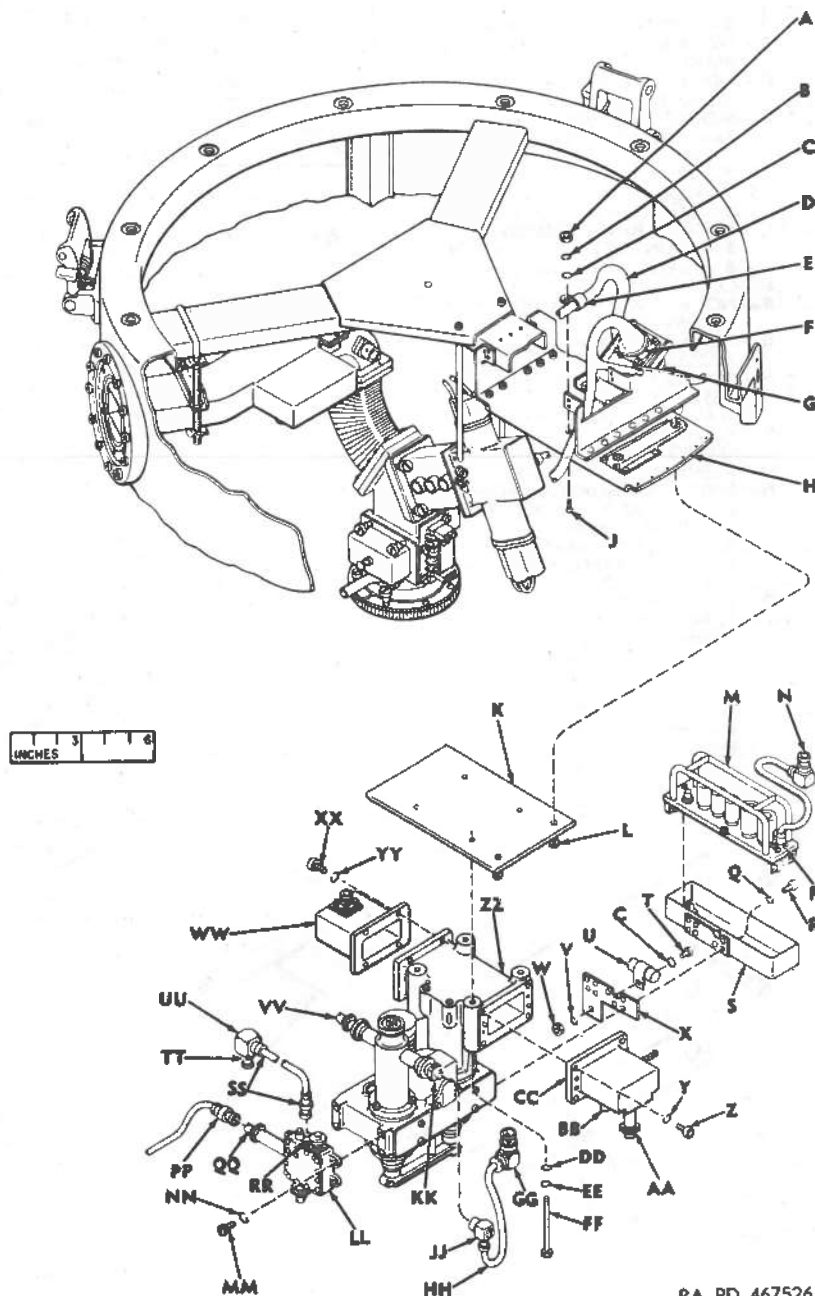
#### b. Disassembly and Assembly.

*Note.* The key letters shown in parentheses in (1) through (14) below refer to figure 107.

**Caution:** Crystal unit (A2) is extremely delicate. Handle carefully to avoid damage.



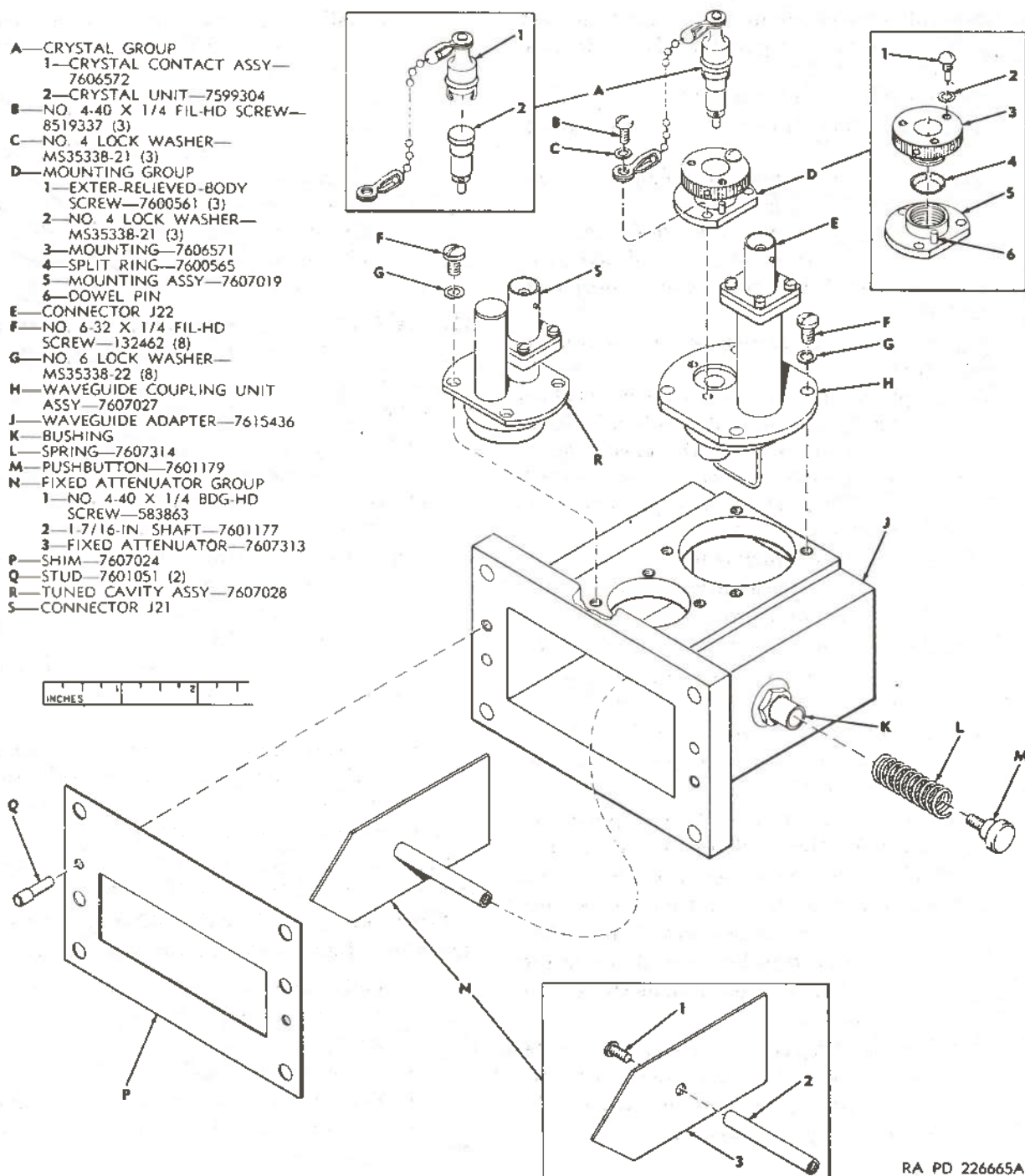
- A—NO. 6-32 HEX NUT—134530
- B—NO. 6 LOCK WASHER—MS35338-22
- C—5/32-IN. FLAT WASHER—131014
- D—CABLE (PART OF CABLE 2)
- E—NYLON LOOP CLAMP—8177145
- F—CONNECTOR J12
- G—CONNECTOR P13
- H—SLIDE
- J—NO. 6-32 X 1/2 FLAT-HD SCREW—133432
- K—MOUNTING PLATE—8516984
- L—HEX-HD CAPTIVE SCREW (2)
- M—ACQUISITION IF PRE AMPLIFIER—7620695
- N—CONNECTOR P1
- P—CAPTIVE SCREW (4)
- Q—NO. 10 LOCK WASHER—MS35338-24 (4)
- R—NO. 10-24 X 1/2 BDG-HD SCREW—583918 (4)
- S—COVER (FURN/W AMPLIFIER ASSY—7620695)
- T—NO. 6-32 X 7/16 FIL-HD SCREW—131894
- U—CAPACITOR (C15)—8519275
- V—NO. 6 LOCK WASHER—MS35338-22
- W—NO. 6-32 HEX NUT—134530
- X—MOUNTING PLATE—8520802
- Y—NO. 10 LOCK WASHER—MS35338-24 (4)
- Z—NO. 10-24 X 3/4 INT WRENCHING BOLT—435872 (4)
- AA—CONNECTOR J22
- BB—CONNECTOR J21
- CC—FREQUENCY CONVERTER ASSY (SIGNAL MIXER)—7621829
- DD—9/32-IN. FLAT WASHER—120392 (4)
- EE—1/4-IN. LOCK WASHER—MS35338-25 (4)
- FF—1/4-20 X 3-5/8 BOLT—8516988 (4)
- GG—CONNECTOR P4
- HH—(FRONT) RF CABLE—7601364
- JJ—CONNECTOR P6
- KK—CONNECTOR J16
- LL—FREQUENCY CONVERTER ASSY (AFC MIXER)—7621830
- MM—NO. 10-24 X 5/8 FIL-HD SCREW—132046 (4)
- NN—NO. 10 LOCK WASHER—MS35338-24 (4)
- PP—CONNECTOR P2
- QQ—CONNECTOR J19
- RR—CONNECTOR J20
- SS—CONNECTOR P3
- TT—(REAR) RF CABLE—7601028
- UU—CONNECTOR P5
- VV—CONNECTOR J11
- WW—COAXIAL TO WAVEGUIDE ADAPTER—8513096
- XX—NO. 10-24 X 3/4 INT WRENCHING BOLT—435872 (4)
- YY—NO. 10 LOCK WASHER—MS35338-24 (4)
- ZZ—RECEIVER TUNER ASSY—7621790



RA PD 467526

Figure 106. Receiver tuner group—exploded view.

- A—CRYSTAL GROUP
  - 1—CRYSTAL CONTACT ASSY—7606572
  - 2—CRYSTAL UNIT—7599304
- B—NO. 4-40 X 1/4 FIL-HD SCREW—8519337 (3)
- C—NO. 4 LOCK WASHER—MS35338-21 (3)
- D—MOUNTING GROUP
  - 1—EXTER-RELIEVED-BODY SCREW—7600561 (3)
  - 2—NO. 4 LOCK WASHER—MS35338-21 (3)
  - 3—MOUNTING—7606571
  - 4—SPLIT RING—7600565
  - 5—MOUNTING ASSY—7607019
  - 6—DOWEL PIN
- E—CONNECTOR J22
- F—NO. 6-32 X 1/4 FIL-HD SCREW—132462 (8)
- G—NO. 6 LOCK WASHER—MS35338-22 (8)
- H—WAVEGUIDE COUPLING UNIT ASSY—7607027
- J—WAVEGUIDE ADAPTER—7615436
- K—BUSHING
- L—SPRING—7607314
- M—PUSHBUTTON—7601179
- N—FIXED ATTENUATOR GROUP
  - 1—NO. 4-40 X 1/4 BDG-HD SCREW—583863
  - 2—1-7/16-IN. SHAFT—7601177
  - 3—FIXED ATTENUATOR—7607313
- P—SHIM—7607024
- Q—STUD—7601051 (2)
- R—TUNED CAVITY ASSY—7607028
- S—CONNECTOR J21



RA PD 226665A

Figure 107. Frequency converter assembly (signal mixer) 7621829—partially exploded view.



- (1) Pull crystal group (A) straight up and out of mounting group (D). Remove crystal group.
- (2) Remove crystal unit (A2).
- (3) Remove and disassemble mounting group (D).
- (4) Remove waveguide coupling unit assembly (H).
- (5) Remove tuned cavity assembly (R).
- (6) Drive two studs (Q) out of flange of waveguide adapter (J) and remove shim (P).
- (7) Remove and disassemble fixed attenuator group (N).
- (8) Apply sealing compound 8030-174-2598 to threads of No. 4-40 x  $\frac{1}{4}$  binding-head screw (N1), position carboned side of fixed attenuator (N3) toward  $1\frac{1}{8}$ -inch shaft (N2), and assemble fixed attenuator group (N).
- (9) Apply sealing compound 8030-174-2598 to threads of pushbutton (M) and install fixed attenuator group.
- (10) Position shim (P) on waveguide adapter (J) and press two studs (Q) into waveguide adapter.
- (11) Install tuned cavity assembly (R).
- (12) Install waveguide coupling unit assembly (H).
- (13) Insert split ring (D4) into mounting assembly (D5). Screw mounting (D3) fully into mounting assembly; then unscrew mounting until one of its three tapped holes passes dowel pin (D6) and install externally-relieved-body screw (D1) in first hole counterclockwise from dowel pin.
- (14) Install crystal unit (A2). If crystal contact assembly (A1) does not seat in mounting, unscrew mounting sufficiently to permit seating.

*c. Installation.*

*Note.* The key letters shown in parentheses in (1) through (3) below refer to figure 106.

- (1) Install frequency converter assembly (signal mixer) (CC) on receiver tuner group.
- (2) Connect connector P1 (N) to connector J22 (AA).
- (3) Connect connector P4 (GG) to connector J21 (BB).
- (4) Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).
- (5) Install main access cover (A, fig. 97).

## 86. Field Maintenance of Frequency Converter Assembly (AFC Mixer) 7621830

*Note.* The key letters shown in parentheses in a below refer to figure 106 unless otherwise indicated.

*a. Removal.*

- (1) Remove main access cover (A, fig. 97).
- (2) Disconnect connector P16 (fig. 103) from connector J18.
- (3) Disconnect connector P2 (PP) from connector J19 (QQ).
- (4) Disconnect connector P3 (SS) from connector J20 (RR).
- (5) Loosen two hexagon-head captive screws (L) and slide receiver tuner group (fig. 103) forward.
- (6) Remove frequency converter assembly (AFC mixer) (LL) from receiver tuner group.

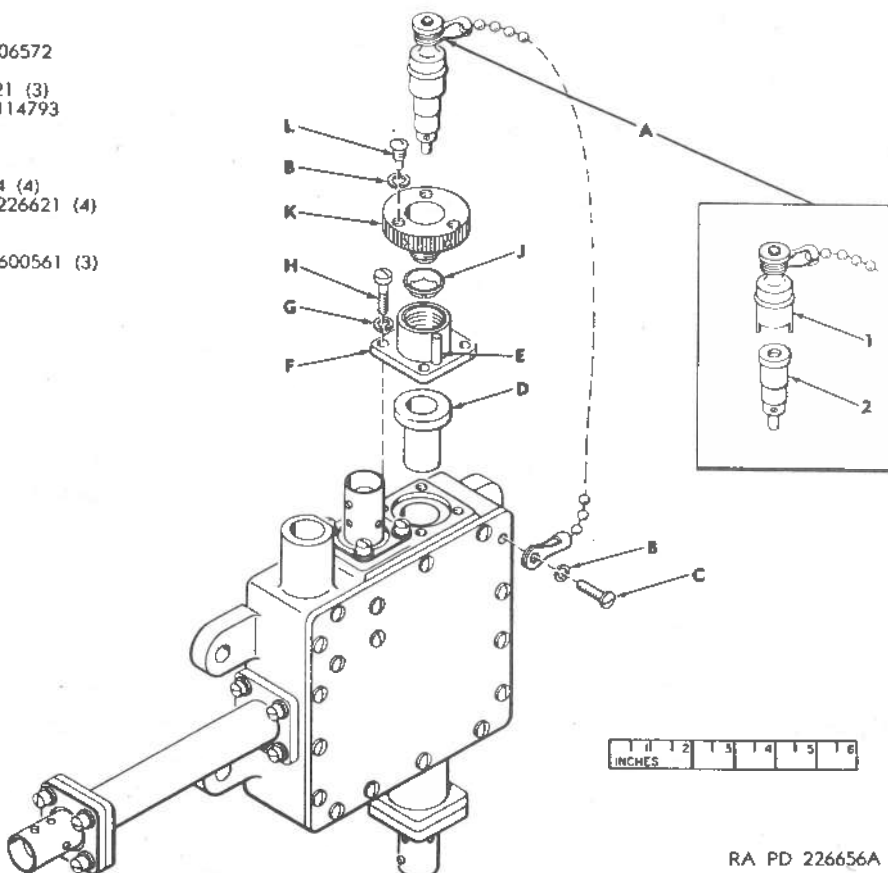
*b. Disassembly and Assembly.*

*Note.* The key letters shown in parentheses in (1) through (7) below refer to figure 108.

**Caution:** Crystal unit (A2) is extremely delicate. Handle carefully to avoid damage.

- (1) Pull crystal group (A) straight up and out of mounting (K). Remove crystal group.
- (2) Remove crystal unit (A2).
- (3) Remove mounting (K) and split ring (J).
- (4) Remove mounting assembly (F) and insulating sleeve (D).
- (5) Install insulating sleeve (D) and mounting assembly (F).

- A—CRYSTAL GROUP
  - 1—CRYSTAL CONTACT ASSY—7606572
  - 2—CRYSTAL UNIT—7599304
- B—NO. 4 LOCK WASHER—MS35338-21 (3)
- C—NO. 4-40 X 1/4 RD-HD SCREW—114793
- D—INSULATING SLEEVE—7601062
- E—DOWEL PIN
- F—MOUNTING ASSY—7607031
- G—0.102-IN. LOCK WASHER—7605724 (4)
- H—NO. 3-56 X 3/8 FIL-HD SCREW—226621 (4)
- J—SPLIT RING—7600565
- K—MOUNTING—7606571
- L—EXTER-RELIEVED-BODY SCREW—7600561 (3)



RA PD 226656A

Figure 108. Frequency converter assembly (AFC mixer) 7621830—partially exploded view.

- (6) Install split ring (J) and screw mounting (K) fully into mounting assembly (F); then unscrew mounting until one of its three tapped holes passes dowel pin (E) and install externally-relieved-body screw (L) in first hole counterclockwise from dowel pin.
- (7) Install crystal unit (A2). If crystal contact assembly (A1) does not seat in mounting (K), unscrew mounting sufficiently to permit seating.

*c. Installation.*

*Note.* The key letters shown in parentheses in (1) through (5) below refer to figure 106.

- (1) Install frequency converter assembly (AFC mixer) (IL) on receiver tuner group.
- (2) Slide receiver tuner group (fig. 103) into slide and secure with two hexagon-head captive screws (L).
- (3) Connect connector P2 (PP) to connector J19 (QQ).
- (4) Connect connector P16 (fig. 103) to connector J18.
- (5) Connect connector P3 (SS) to connector J20 (RR).
- (6) Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).
- (7) Install main access cover (A, fig. 97).

## 87. Field Maintenance of Coaxial to Waveguide Adapter 8513096

*a. Removal.*

- (1) Remove frequency and power meter cover (B, fig. 97).
- (2) Loosen fastener (fig. 98) and swing frequency and power meter outward.
- (3) Disconnect connectors P20 and J33 (fig. 101).
- (4) Remove coaxial to waveguide adapter (WW, fig. 106) from receiver tuner group.

*b. Installation.*

- (1) Installation coaxial to waveguide adapter (WW, fig. 106) on receiver tuner group.

- (2) Connect connectors P20 and J33 (fig. 101).
- (3) Close and secure frequency and power meter (fig. 98).
- (4) Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).
- (5) Install frequency and power meter cover (B, fig. 97).

## 88. Removal and Installation of Electrical Contact Assembly 7606356

*Note.* The key letters shown in parentheses in a and b below refer to figure 109.

*a. Removal.*

- (1) Remove receiver tuner group (par. 83).
- (2) Loosen upper tube shield (P) and remove electron tube V5 (Q). Remove tube shield.
- (3) Remove housing (S) from receiver tuner assembly.
- (4) Remove adapter ring (D).
- (5) Disconnect lead from terminal 3 of variable resistor (GG) and remove dust seal (CC).
- (6) Remove lower tube shield (F) containing electrical contact assembly (E) from receiver tuner assembly.

*Note.* Electrical contact assembly is installed in lower tube shield with adhesive and must be loosened before removal.

- (7) Remove electrical contact assembly from lower tube shield.

*b. Installation.*

- (1) Apply adhesive 8024365 to surface of lower tube shield (F) that will contact surface of electrical contact assembly (E) when installed.
- (2) Seat electrical contact assembly in lower tube shield and remove surplus adhesive.
- (3) Insert lead of electrical contact assembly through shaft (DD) and install lower tube shield.
- (4) Install dust seal (CC) and connect lead of electrical contact assembly to terminal 3 of variable resistor (GG).

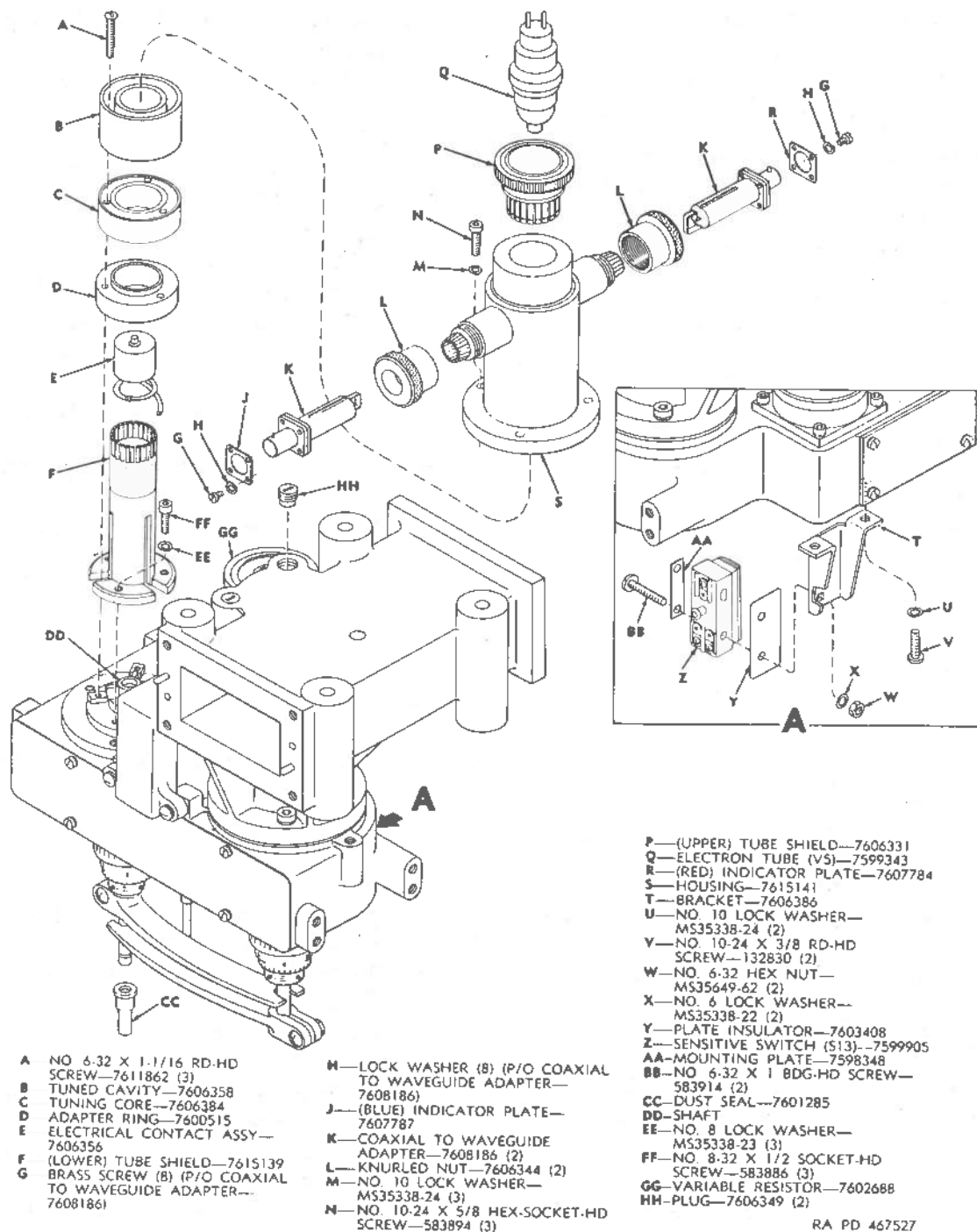


Figure 109. Receiver tuner assembly 7621790—partially exploded view No. 1.

- (5) Install adapter ring (D).
- (6) Install housing (S).
- (7) Install electron tube V5 (Q).
- (8) Install receiver tuner group (par. 84).

## 89. Removal and Installation of Coaxial to Waveguide Adapter 7608186

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 109 unless otherwise indicated.

### *a. Removal.*

- (1) Remove main access cover (A, fig. 97).
- (2) Disconnect connector P6 (JJ, fig. 106) from connector J16 (KK, fig. 106) or connector P5 (UU, fig. 106) from connector J11 (VV, fig. 106) as applicable.
- (3) Loosen knurled nut (L) and remove coaxial to waveguide adapter (K).
- (4) Remove blue indicator plate (J) or red indicator plate (R) from waveguide adapter as applicable.

### *b. Installation.*

- (1) Install blue indicator plate (J) or red indicator plate (R) as applicable on coaxial to waveguide adapter (K).
- (2) Install waveguide adapter on receiver tuner assembly.
- (3) Tighten knurled nut (L).
- (4) Connect connector P5 (UU, fig. 106) to connector J11 (VV, fig. 106) or connector P6 (JJ, fig. 106) to connector J16 (KK, fig. 106) as applicable.
- (5) Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).
- (6) Install main access cover (A, fig. 97).

## 90. Removal and Installation of Sensitive Switch S13 7599905

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 109 unless otherwise indicated.

### *a. Removal.*

- (1) Remove main access cover (A, fig. 97).
- (2) Remove bracket (T), with sensitive switch S13 (Z) attached, from receiver housing assembly.

- (3) Disconnect and tag leads from sensitive switch S13.
- (4) Remove sensitive switch S13 from bracket.

### *b. Installation.*

- (1) Install sensitive switch S13 (Z) on bracket (T).
- (2) Connect leads to sensitive switch S13 (TM 9-1430-257-35).
- (3) Install bracket.
- (4) Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).
- (5) Install main access cover (A, fig. 97).

## 91. Removal and Installation of Plug 7606349

### *a. Removal.*

- (1) Remove receiver tuner group (par. 83).
- (2) Remove mounting plate (K, fig. 106).
- (3) Remove plug HH, fig. 109).

### *b. Installation.*

- (1) Install plug (HH, fig. 109).
- (2) Install mounting plate (K, fig. 106).
- (3) Install receiver tuner group (par. 84).

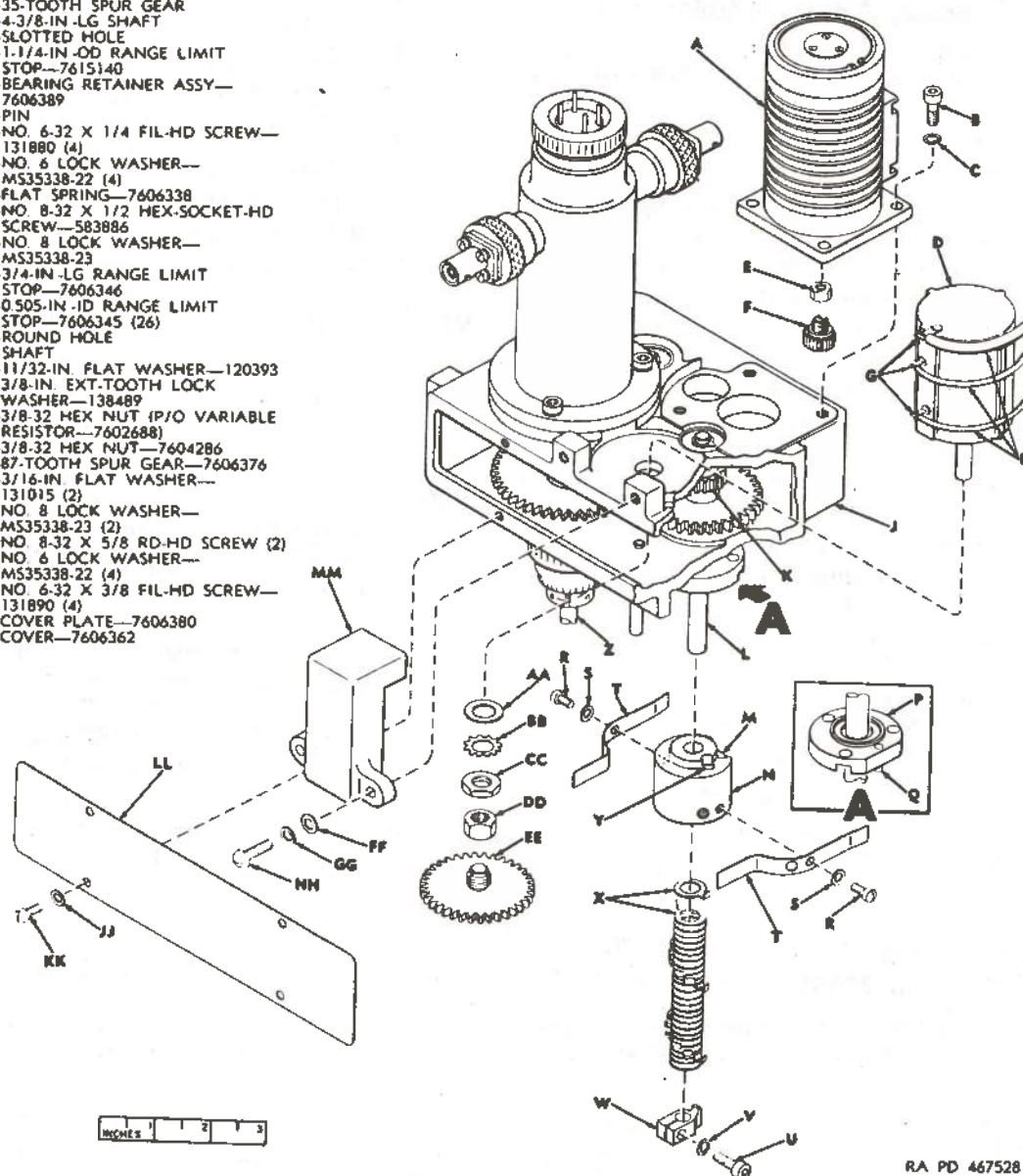
## 92. Removal and Installation of Variable Resistor 7602688

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 110.

### *a. Removal.*

- (1) Remove receiver tuner group (par. 83).
- (2) Remove cover (MM).
- (3) Disconnect three leads (H) from variable resistor (D).
- (4) Remove cover plate (LL).
- (5) Loosen hexagon nut (DD) and remove 87-tooth spur gear (EE) from shaft of variable resistor.
- (6) Remove hexagon nut (CC), external-tooth lockwasher (BB), and flat washer (AA) from shaft of variable resistor.
- (7) Remove variable resistor from housing group (J).

- A—MOTOR-GENERATOR—7605334
- B—NO. 8-32 X 1/2 HEX-SOCKET-HD SCREW—583886 (4)
- C—NO. 8 LOCK WASHER—MS35338-23 (4)
- D—VARIABLE RESISTOR—7602688
- E—SELF-LOCKING HEX NUT—7604253
- F—20-TOOTH SPUR GEAR—7604252
- G—TERMINALS 1, 2, AND 3
- H—BLACK, BROWN, AND GREEN LEADS
- J—HOUSING GROUP
- K—35-TOOTH SPUR GEAR
- L—4-3/8-IN.-LG SHAFT
- M—SLOTTED HOLE
- N—1-1/4-IN.-OD RANGE LIMIT STOP—7615140
- P—BEARING RETAINER ASSY—7606389
- Q—PIN
- R—NO. 6-32 X 1/4 FIL-HD SCREW—131880 (4)
- S—NO. 6 LOCK WASHER—MS35338-22 (4)
- T—FLAT SPRING—7606338
- U—NO. 8-32 X 1/2 HEX-SOCKET-HD SCREW—583886
- V—NO. 8 LOCK WASHER—MS35338-23
- W—3/4-IN.-LG RANGE LIMIT STOP—7606346
- X—0.505-IN.-ID RANGE LIMIT STOP—7606345 (26)
- Y—ROUND HOLE
- Z—SHAFT
- AA—11/32-IN. FLAT WASHER—120393
- BB—3/8-IN. EXT-TOOTH LOCK WASHER—138489
- CC—3/8-32 HEX NUT (P/O VARIABLE RESISTOR—7602688)
- DD—3/8-32 HEX NUT—7604286
- EE—87-TOOTH SPUR GEAR—7606376
- FF—3/16-IN. FLAT WASHER—131015 (2)
- GG—NO. 8 LOCK WASHER—MS35338-23 (2)
- HH—NO. 8-32 X 5/8 RD-HD SCREW (2)
- JJ—NO. 6 LOCK WASHER—MS35338-22 (4)
- KK—NO. 6-32 X 3/8 FIL-HD SCREW—131890 (4)
- LL—COVER PLATE—7606380
- MM—COVER—7606362



RA PD 467528

Figure 110. Receiver tuner assembly 7621790—partially exploded view No. 2.



*b. Installation.*

- (1) Mount replacement variable resistor (D) on housing group (J) and secure with  $\frac{1}{2}$ -inch flat washer (AA),  $\frac{1}{2}$ -inch external-tooth lockwasher (BB), and  $\frac{3}{8}$ -32 hexagon nut (CC).
- (2) Connect green, brown, and black leads (H) to terminals 1, 2, and 3 (G), respectively, on variable resistor (D).
- (3) Install cover (MM).
- (4) Rotate shaft of variable resistor clockwise until resistance between terminals 3 and 1 is 2,600 ohms. Manually rotate shaft (Z) to maximum clockwise position. Start  $\frac{3}{8}$ -32 hexagon nut (DD) onto hub of 87-tooth spur gear (EE). Slide 87-tooth spur gear onto shaft of variable resistor. Mesh 87-tooth spur gear with 35-tooth spur gear (K). Aline 87-tooth spur gear (fig. 111) with 35-tooth spur gear. Tighten  $\frac{3}{8}$ -32 hexagon nut (DD).
- (5) Install cover plate (LL).
- (6) Install receiver tuner in receiver-transmitter (par. 84).

### 93. Removal and Installation of Range Limit Stops

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 110 unless otherwise indicated.

*a. Removal.*

- (1) Remove receiver tuner group (par. 83).
- (2) Loosen socket-head screw (U) and remove  $\frac{3}{4}$ -inch-long range limit stop (W), and

twenty-six 0.505-inch-id range limit stops (X).

- (3) Remove four fillister-head screws (R) and lockwashers (S), and remove two flat springs (T) from  $1\frac{1}{4}$ -inch-od range limit stop (N). Remove  $1\frac{1}{4}$ -inch-od range limit stop from  $4\frac{3}{4}$ -inch-long shaft (L).

*b. Installation.*

- (1) Install two flat springs (T) on replacement  $1\frac{1}{4}$ -inch-od range limit stop (N).
- (2) Apply light film of oil 9150-257-5449 to rubbing surfaces of  $1\frac{1}{4}$ -inch-od range limit stop and to twenty-six 0.505-inch-id range limit stops (X).
- (3) Place  $1\frac{1}{4}$ -inch-od range limit stop on  $4\frac{3}{4}$ -inch-long shaft (L). Aline pin (Q) of bearing retainer assembly (P) with slotted hole (M) in  $1\frac{1}{4}$ -inch-od range limit stop.
- (4) Closely stack twenty-six 0.505-inch-id range limit stops, tab sides upward, onto  $4\frac{3}{4}$ -inch-long shaft. Fit tab of top 0.505-inch-id range limit stop into round hole (Y) in  $1\frac{1}{4}$ -inch-od range limit stop.
- (5) Press  $\frac{3}{4}$ -inch-long range limit stop (W) onto  $4\frac{3}{4}$ -inch-long shaft. Push stop firmly against range limit stops (X) and secure by tightening No. 8-32 x  $\frac{1}{2}$  hexagon-socket-head screw (U).
- (6) Install receiver tuner in receiver-transmitter (par. 84).

## Section V. NOISE GENERATOR

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

### 94. Removal of Noise Generator 8520785

- a.* Remove main access cover (A, fig. 97).
- b.* Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.
- c.* Remove receiver tuner group (par. 83 *b-i*).

*Note.* The key letters shown in parentheses in *d* through *g* below refer to figure 112.

*d.* Disconnect connector P19 (Q) from connector J34 (R).

*e.* Disconnect noise generator leads (A) from terminal board (K).

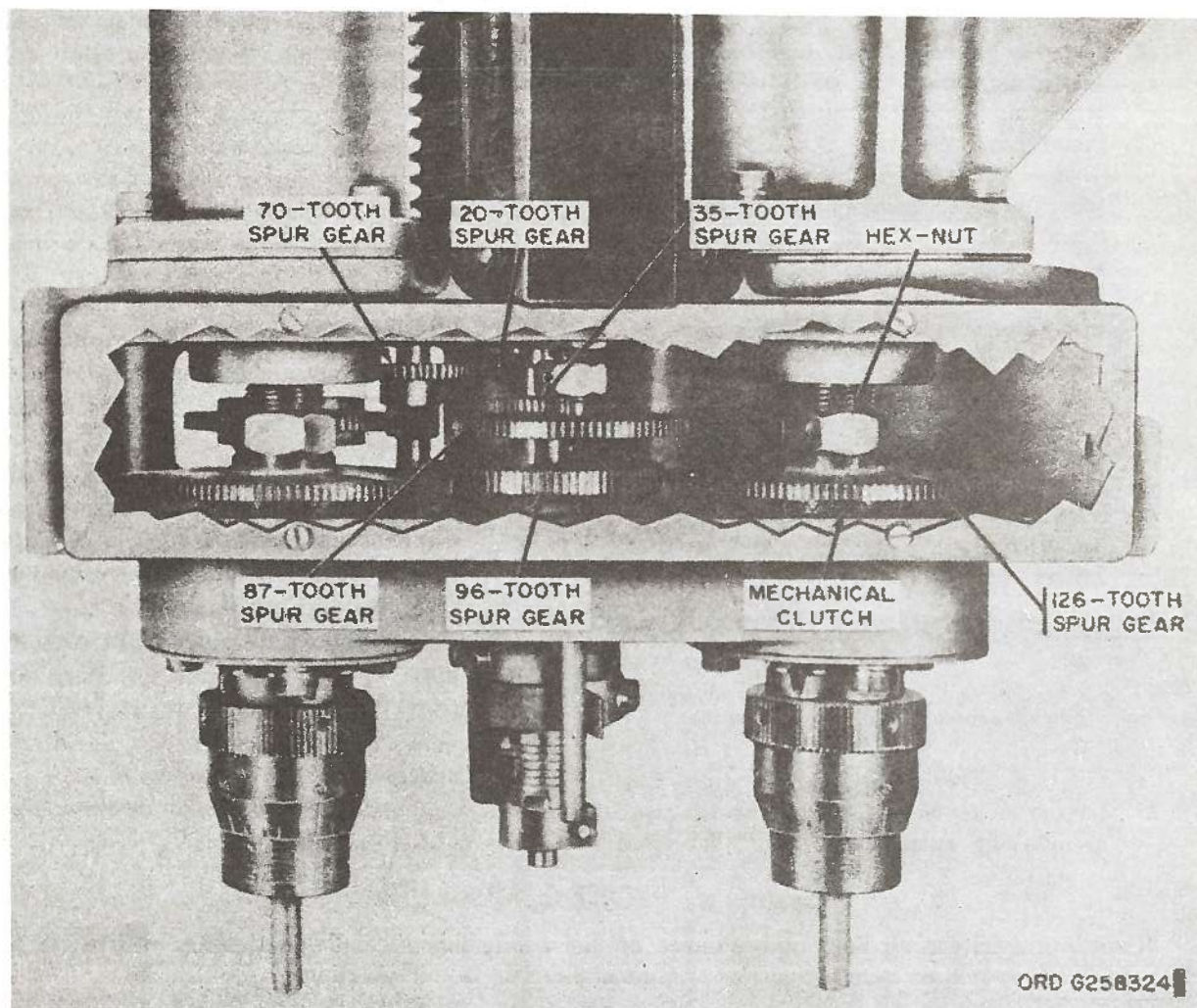
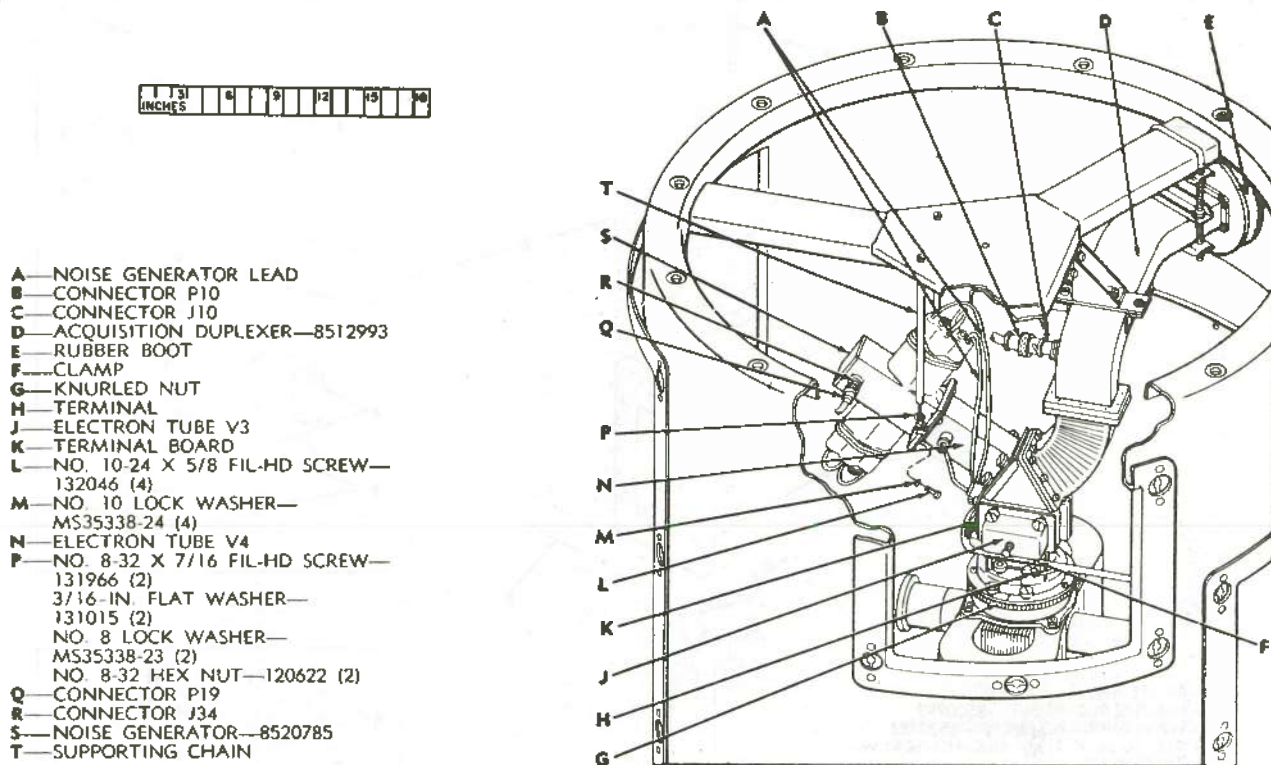


Figure 111. Receiver tuner assembly—interior view—typical.



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Figure 112. Noise generator and acquisition duplexer—installed.

f. Remove four fillister-head screws (L) and lockwashers (M).

g. Disconnect supporting chains (T) from noise generator (S) and remove noise generator.

## 95. Field Maintenance of Noise Generator

*Note.* The key letters shown in parentheses in *a* and *b* below refer to figure 113.

### a. Disassembly of Noise Generator.

- (1) Remove thumbscrew (M) and remove bottom cap group (L).
- (2) Remove electron tubes (G, H, J, and K).
- (3) Remove top cap group (E).
- (4) Remove probe shell (A).
- (5) Remove waveguide probe (B).
- (6) Remove probe sheath (F).
- (7) Disassemble top cap group and bottom cap group.

### b. Assembly of Noise Generator.

- (1) Place probe sheath (F) in installed position in waveguide adapter (C) and install waveguide probe (B) and probe shell (A).
- (2) Place wire marker (E2) numbered 2 on AWG No. 20 white-red wire (E1) and wire marker (E2) numbered 3 on AWG No. 20 white wire (E5) and solder terminal lugs (E3) to wires.
- (3) Insert wires (E1 and E5) through 16-inch length of 0.186-inch-id insulating material (E6).

*Note.* After completing installation, with wires (E1 and E5) extended, tip of terminal lugs (E3) shall extend  $18 \pm \frac{1}{8}$  inches above top surface of top cap (E7). Bend in wire (E4) shall be  $2\frac{1}{2}$  inches above top surface of top cap.

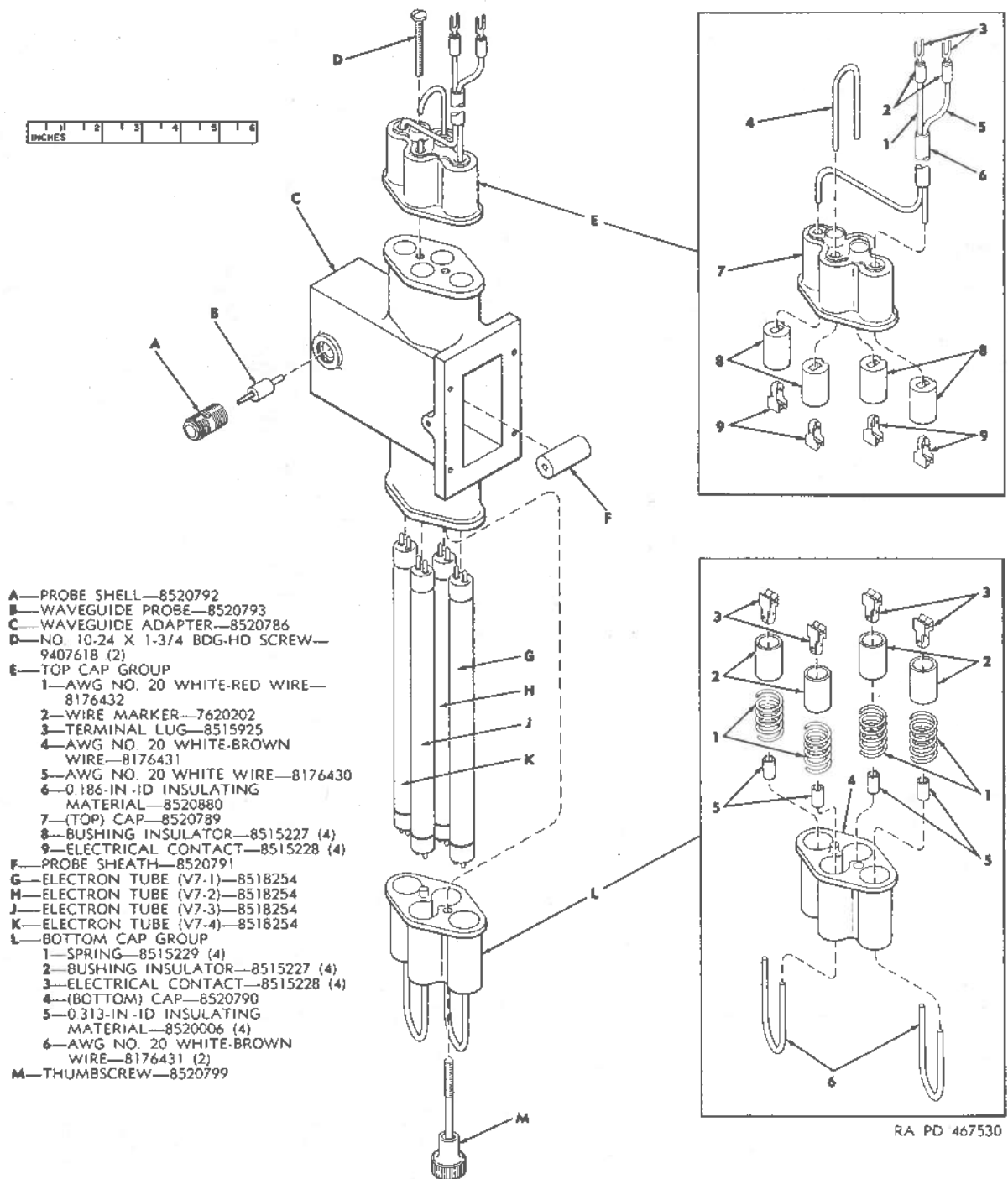


Figure 113. Noise generator 8520785—exploded view.



- (4) Install four electrical contacts (E9).
- (5) Apply antiseize compound 8020-251-3983 to threads of two No. 10-24 x 1 3/4 binding head screws (D) and install top cap group (E) on waveguide adapter (C).
- (6) Place 1/2-inch length of 0.313-inch-id insulating material (L5) inside spring (L1).  
*Note.* After completing installation, bend in wire (L6) shall be 2 1/2 inches below bottom surface of bottom cap (L4).
- (7) Assemble bottom cap group (L).
- (8) Install electron tubes V7-1 through V7-4 (G, H, J, and K).
- (9) Apply antiseize compound 8030-251-3983 to threads of thumbscrew (M) and install bottom cap group.
- (10) Check for continuity between terminal lugs (E3) to determine completeness of circuit through electron tube V7-1 through V7-4 which are connected in series.

## 96. Installation of Noise Generator 8520785

*Note.* The key letters shown in parentheses in a through d below refer to figure 112.

- a. Mount noise generator (S) on electron tube V4 (N).
- b. Secure supporting chains (T) to sides of noise generator.
- c. Attach connector P19 (Q) to connector J34 (R).
- d. Connect noise generator leads (A) to terminal board (K) (TM 9-1430-257-35).
- e. Install receiver tuner group (par. 84 a-h).
- f. Close and secure acquisition RF power supply control (fig. 103).
- g. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20 /1).
- h. Install main access cover (A, fig. 97).

## Section VI. MAGNETRON TUNING DRIVE

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

### 97. Removal of Magnetron Tuning Drive 8173723

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

*Note.* The key letters shown in parentheses in c through e below refer to figure 114.

- c. Unscrew coupling (L) on flexible shaft (D) from magnetron tuning drive (N).
- d. Disconnect and tag two leads (Q and S) from resistor R3 (P).
- e. Remove two socket-head screws (fig. 115) and lockwashers; remove mounting bracket (E) with magnetron tuning drive attached.
- f. Remove magnetron tuning drive from mounting bracket.

### 98. Field Maintenance of Magnetron Tuning Drive 8173723

Perform field maintenance of the magnetron tuning drive (TM 9-1430-259-34).

### 99. Installation of Magnetron Tuning Drive 8173723

- a. Assemble magnetron tuning drive to mounting bracket (fig. 115).
- b. Install mounting bracket (E, fig. 114) with magnetron tuning drive attached.
- c. Connect leads to resistor R3 (P, fig. 114) (TM 9-1430-257-35).

*Note.* The key letters shown in parentheses in d below refer to figure 114.

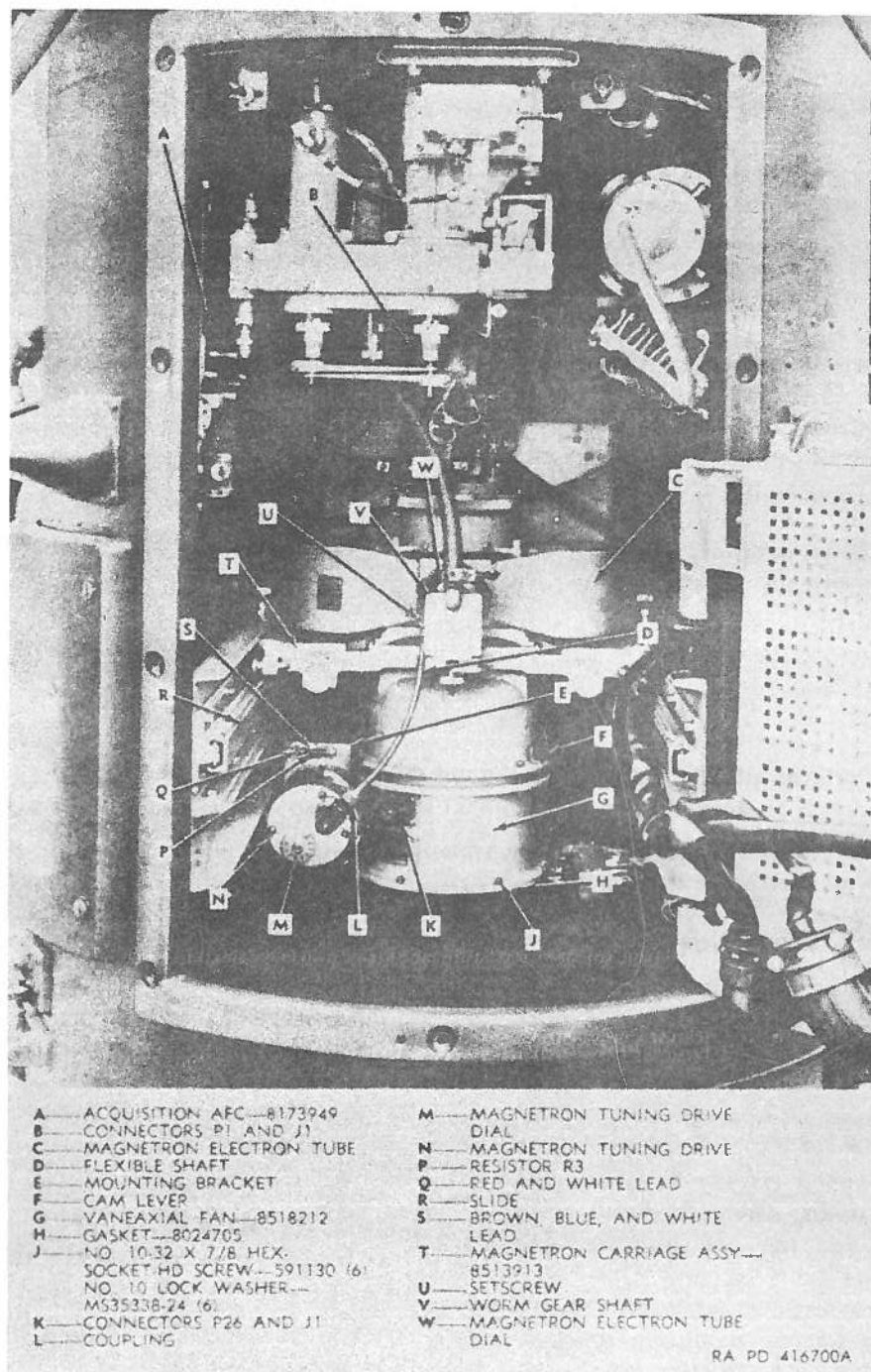
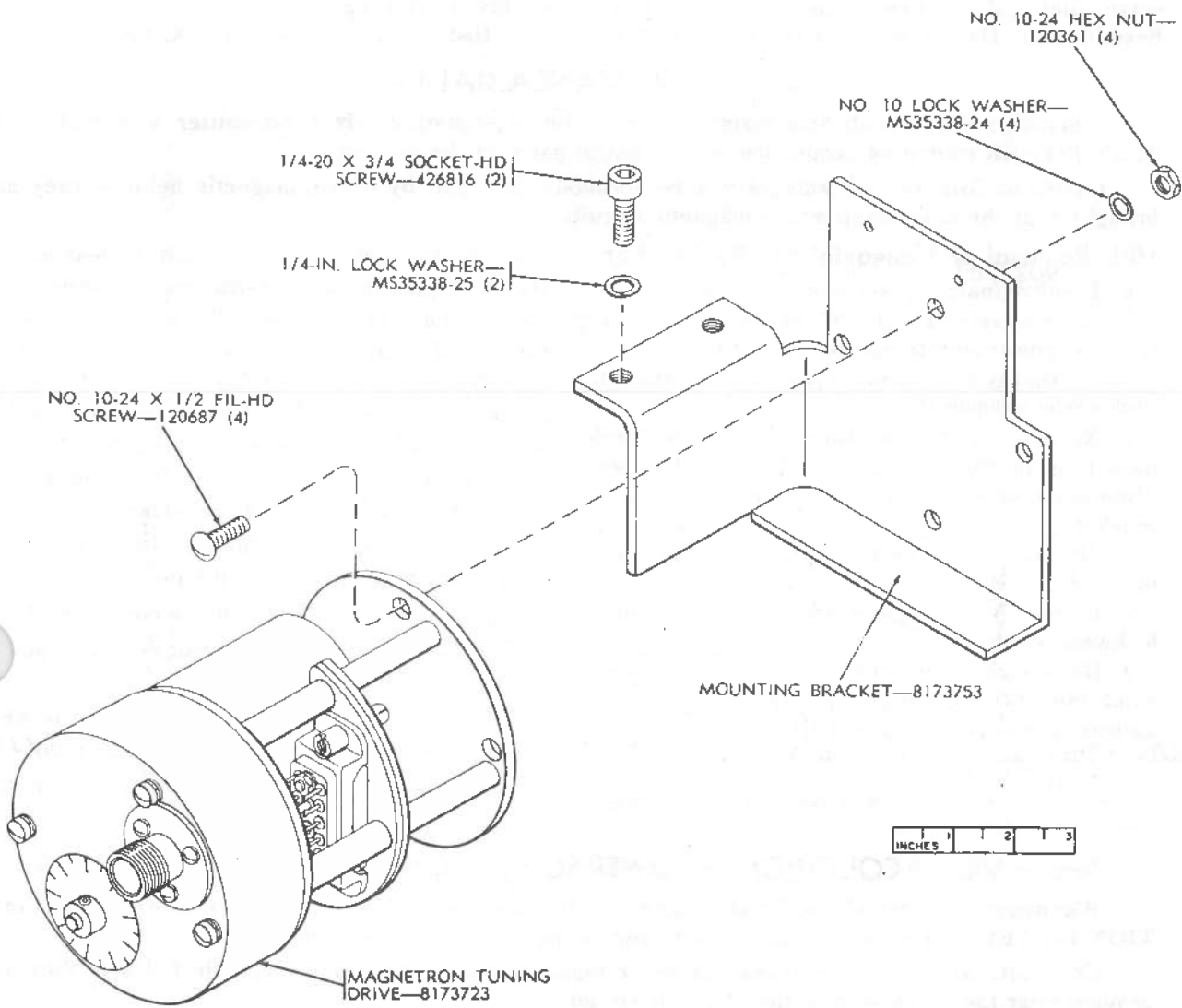


Figure 114. Magnetron tuning drive and vaneaxial fan—locational view.





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Figure 115. Magnetron tuning drive and mounting bracket—partially exploded view.

d. Manually rotate worm gear shaft (V) on magnetron electron tube (C) until magnetron electron tube dial (W) and magnetron tuning drive dial (M) indicate the same. Connect flexible shaft (D) to magnetron tuning drive (N).

e. Perform magnetron tuning drive coupling checks and adjustments (TM 9-1430-251-20/1).

f. Close and secure acquisition RF power supply control (fig. 103).

g. Install main access cover (A, fig. 97).

## Section VII. VANEAXIAL FAN

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

### 100. Removal of Vaneaxial Fan 8518212 or 9024983

a. Remove main access cover (A, fig. 97).

b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

*Note.* The key letters shown in parentheses in c through f below refer to figure 114.

c. Remove magnetron tuning drive (N) and mounting bracket (E) (par. 97 c-e). Do not dismount magnetron tuning drive from mounting bracket.

d. Disconnect connector P26 (K) from connector J1.

e. Remove six hexagon-socket-head screws and lockwashers (J).

f. Raise cam levers (F) on each side of vaneaxial fan (G) to upright position and remove vaneaxial fan (G) and gasket (H).

### 101. Installation of Vaneaxial Fan 8518212 or 9024983

*Note.* The key letters shown in parentheses in a through d below refer to figure 114.

a. Install new gasket (H) and vaneaxial fan (G) in acquisition receiver-transmitter positioning fan so that connector J1 (K) is in position as illustrated. Apply antiseize compound 8030-241-3983 to threads of six No. 10-32 x  $\frac{3}{8}$  hexagon-socket-head screws (J). Secure fan and gasket with six No. 10 lockwashers and six No. 10-32 x  $\frac{3}{8}$  hexagon-socket-head screws (J). Lower cam levers (F) on each side of vaneaxial fan.

b. Install magnetron tuning drive (N) and mounting bracket (E) (par. 99 b and c).

c. Attach connector P26 (K) to connector J1.

d. Close and secure acquisition RF power supply control (fig. 103).

e. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

f. Install and secure main access cover (A, fig. 97).

## Section VIII. ACQUISITION RF POWER SUPPLY CONTROL 9000009 OR 8158120

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

*Note.* Acquisition RF power supply control 9000009 (fig. 103) is used in system serial numbers 1001 through 1145. Acquisition RF power supply control 8158120 (fig. 116) is used in system serial numbers 1146 and above. Removal and installation instructions below apply to both models.

### 102. Removal of Acquisition RF Power Supply Control 9000009 or 8158120

a. Remove main access cover (A, fig. 97).

b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

c. Disconnect connectors P27 (fig. 104), P28, and P29 from connectors J1, J2, and J3, respectively.

d. Close acquisition RF power supply control (fig. 103) and remove 0.062 x  $\frac{3}{8}$  spring pins from

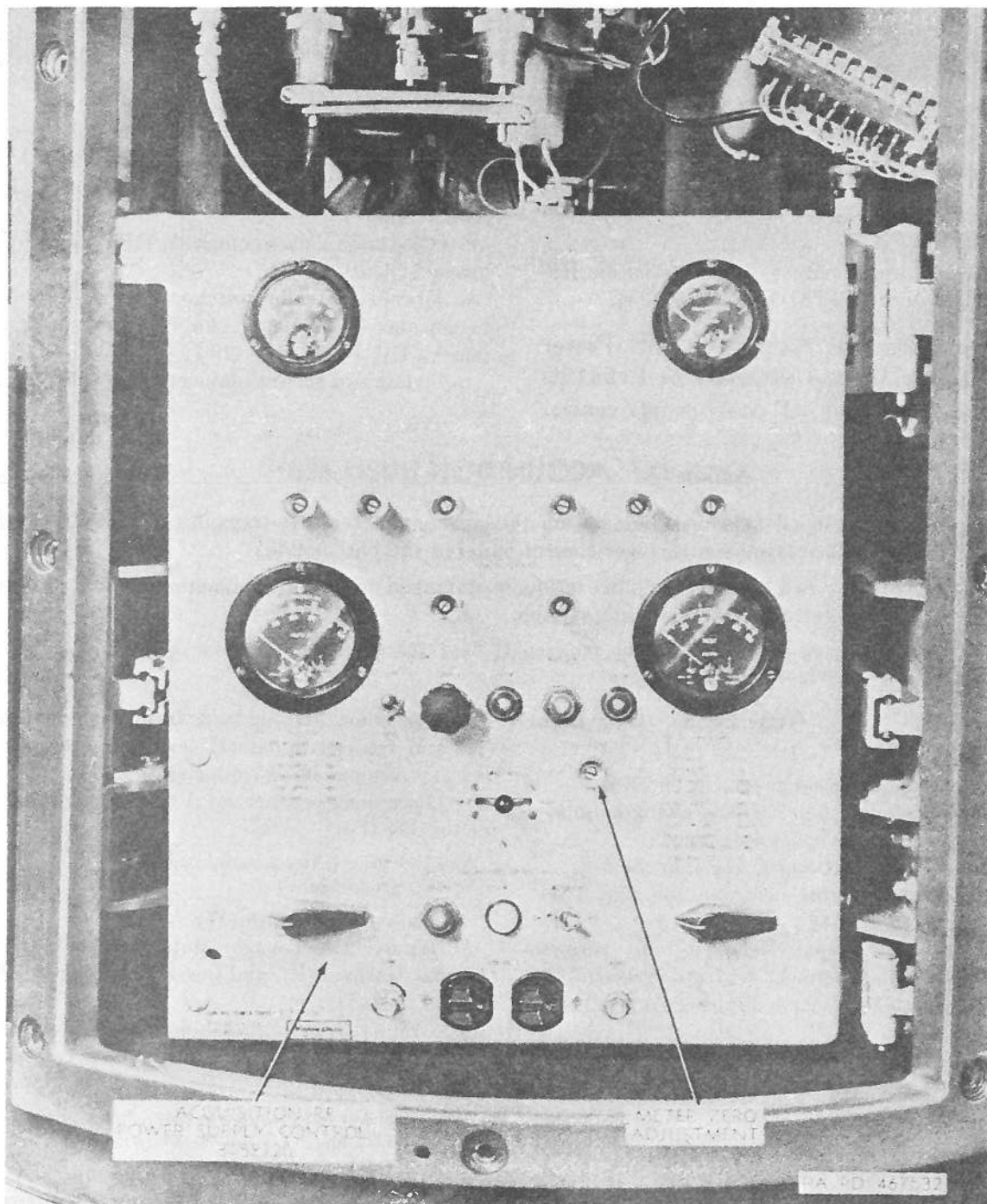


Figure 116. Acquisition receiver-transmitter—interior view.

holes in 2¼-inch-long straight pin and 4½-inch-long straight pin.

e. Manually support acquisition RF power supply control and remove straight pins.

f. Remove acquisition RF power supply control.

### 103. Field Maintenance of Acquisition RF Power Supply Control 9000009 or 8158120

Perform field maintenance of the acquisition RF power supply control (TM 9-1430-259-34).

### 104. Installation of Acquisition RF Power Supply Control 9000009 or 8158120

a. Mount acquisition RF power supply control

(fig. 103) in position shown and secure by inserting 4½-inch-long straight pin and 2¼-inch-long straight pin into hinges. Drive 0.062 x ¾ spring pins into holes in straight pins.

b. Swing acquisition RF power supply control (fig. 103) outward and attach connectors P27 (fig. 104), P28, and P29 to connectors J1, J2, and J3, respectively.

c. Close and secure acquisition RF power supply control (fig. 103).

d. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20/1).

e. Install and secure main access cover (A, fig. 97).

## Section IX. ACQUISITION DUPLEXER

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

**Note.** It is recommended that the acquisition duplexer (D, fig. 112) and the noise generator (S, fig. 112) be removed as a group whenever the duplexer is removed.

### 105. Removal of Acquisition Duplexer 8512993

a. Remove main access cover (A, fig. 97).

b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

c. Remove receiver tuner group (par. 83 b-i).

d. Remove magnetron electron tube (fig. 104) (TM 9-1430-253-20/1).

e. Loosen six externally-relieved-body screws (B, fig. 120) and disconnect waveguide assembly (A, fig. 120) from acquisition duplexer (Z, fig. 117).

**Note.** The key letters shown in parentheses in f through j below refer to figure 112 unless otherwise indicated.

f. Disconnect connector P10 (B) from connector J10 (C).

g. Disconnect connector P21 (T, fig. 117) from connector J1 (U, fig. 117).

h. Remove electron tube V3 (J) (TM 9-1430-253-20/1) Place protective tape over openings of acquisition duplexer and electron tube V3.

i. Disconnect and tag leads from terminal board (K) and from terminal (H) exposed by removal of V3. Remove leads from clamp (F).

j. Disconnect connector P19 (Q) from connector J34 (R).

**Note.** The key letters shown in parentheses in k through m below refer to figure 117.

k. Loosen hose clamp (W).

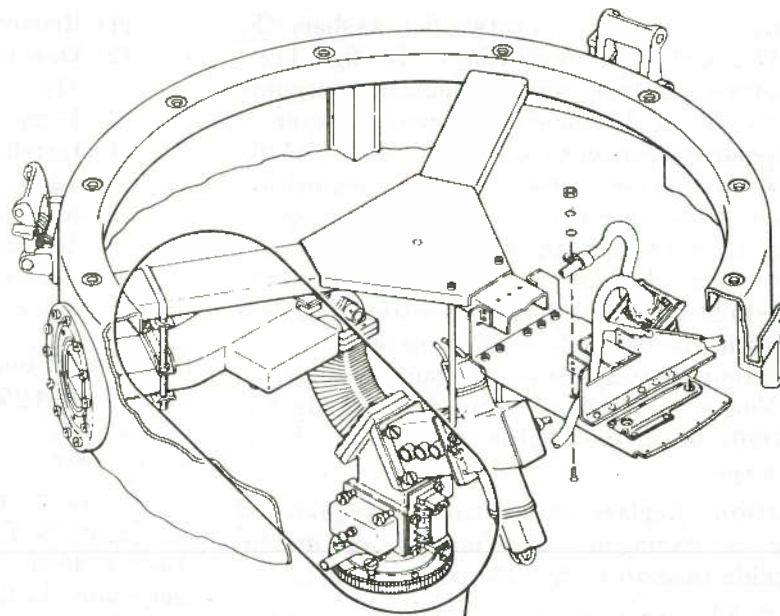
l. Remove two hexagon nuts (V), lockwashers (E), flat washers (F), and lower clamping bar (G) from U bolt (D).

m. Manually support acquisition duplexer and remove two hexagon socket-head screws (R) and lockwashers (S).

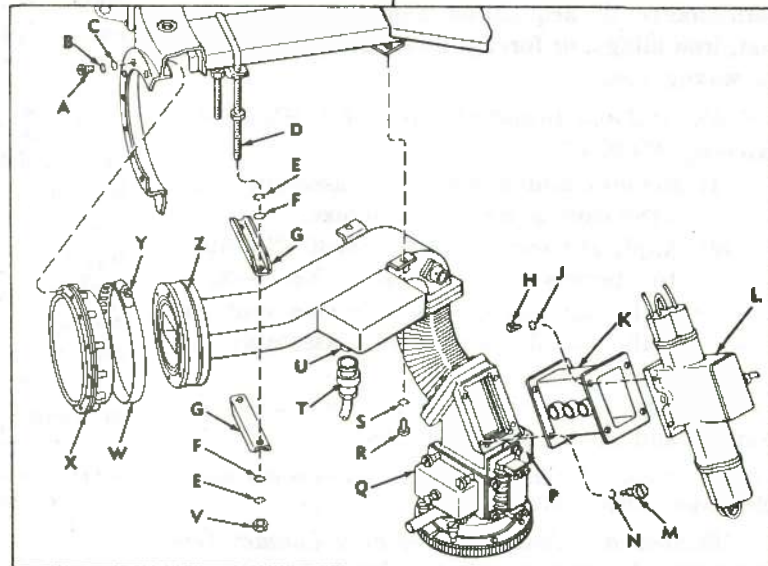
**Note.** The key letters shown in parentheses in n through p below refer to figure 112 unless otherwise indicated.

n. Manually support acquisition duplexer (D) and noise generator (S), and remove supporting chains, ) from noise generator.

o. Remove acquisition duplexer group, upper



- A—NO. 8-32 X 3/4 HEX-SOCKET-HD SCREW—583888 (12)
- B—NO. 8 LOCK WASHER—MS35338-23 (12)
- C—3/16-IN. FLAT WASHER—131015 (12)
- D—U BOLT
- E—1/4-IN. LOCK WASHER—MS35338-25 (4)
- F—9/32-IN. FLAT WASHER—120392 (4)
- G—CLAMPING BAR—8515145 (2)
- H—NO. 10-24 X 5/8 FIL-HD SCREW—132046 (4)
- J—NO. 10 LOCK WASHER—MS35338-24 (4)
- K—ELECTRON TUBE (V4)—7599347
- L—NOISE GENERATOR—8520785
- M—THUMBSCREW—8520695 (4)
- N—NO. 10 LOCK WASHER—MS35338-24 (4)
- P—ELECTRON TUBE (V3)—7599346
- Q—ELECTRON TUBE (V2)—7599345
- R—NO. 10-24 X 1/2 HEX-SOCKET-HD SCREW—583893 (2)
- S—NO. 10 LOCK WASHER—MS35338-24 (2)
- T—CONNECTOR .P21
- U—CONNECTOR J1
- V—1/4-20 HEX NUT—134551 (2)
- W—HOSE CLAMP—8518436
- X—RUBBER BOOT—8513028
- Y—ADJUSTMENT SCREW
- Z—ACQUISITION DUPLEXER—8512993



RA PD 467533

Figure 117. Removal and installation of acquisition duplexer.



clamping bar (G, fig. 117), two flat washers (F, fig. 117), and two lockwashers (E, fig. 117). Place protective tape over openings in waveguide assembly (A, fig. 120) and acquisition duplexer.

p. Remove electron tube V4 (N) (TM 9-1430-253-20/1) and noise generator from acquisition duplexer. Place protective tape over openings in electron tube V4 and acquisition duplexer.

q. Remove electron tube V2 (Q, fig. 117) (TM 9-1430-253-20/1). Place protective tape over openings in electron tubes and duplexer.

r. Examine waveguide for any burned spots.

s. Using a fine grade of crocus cloth (grade No. 400 (10/0) or above) polish the waveguide to remove spot.

**Caution:** Replace silver plated waveguides if plating is damaged. The interior of middle waveguide assembly (fig. 118) is silver plated.

## 106. Field Maintenance of Acquisition Duplexer 8512993

**Caution:** Exercise care when performing maintenance of acquisition duplexer to prevent dust, iron filings, or foreign material from entering the waveguides.

a. *Removal and Installation of Middle Waveguide Assembly 8513000.*

(1) Remove middle waveguide assembly (fig. 118) from acquisition duplexer.

(2) Apply antiseize compound 8030-251-3983 to threads of twenty-four No. 8-32 x  $\frac{1}{4}$  hexagon-socket-head screws and install middle waveguide assembly in acquisition duplexer.

b. *Removal and Installation of Collet 7603741.* Remove and install collet (fig. 118).

*Note.* The key letters shown in parentheses in c and d below refer to figure 119.

c. *Removal and Installation of Four-Contact Terminal Board 9003238 and Associated Components.*

(1) Remove four-contact terminal board (W) and associated components.

(2) Install terminal board and associated components.

d. *Removal and Installation of Capacitor 7602856.*

(1) Remove aperture plate (E).

(2) Disconnect and tag leads from capacitor (H).

(3) Remove capacitor.

(4) Install capacitor and connect associated leads (TM 9-1430-257-35).

(5) Apply antiseize compound 8030-251-3983 to threads of No. 6-32 x  $1\frac{1}{4}$  fillister-head screw (F) and No. 6-32 x  $1\frac{1}{4}$  fillister-head screw (D) and install aperture plate (E).

## 107. Installation of Acquisition Duplexer 8512993

*Note.* The key letters shown in parentheses in a through e below refer to figure 112 unless otherwise indicated.

a. Remove protective tape from openings in electron tube V4 (N) and acquisition duplexer (D). Install electron tube V4 (K, fig. 117) and noise generator (L, fig. 117) on acquisition duplexer.

b. Replace gasket (fig. 118) with new gasket.

c. Remove protective tape from opening in waveguide assembly (A, fig. 120). Install upper clamping bar (G, fig. 117). Hold upper clamping bar in place and position acquisition duplexer between threaded rods of U bolt (D, fig. 117), inserting end of duplexer in rubber boot (X).

**Caution:** Support acquisition duplexer manually until it has mechanical support throughout its length.

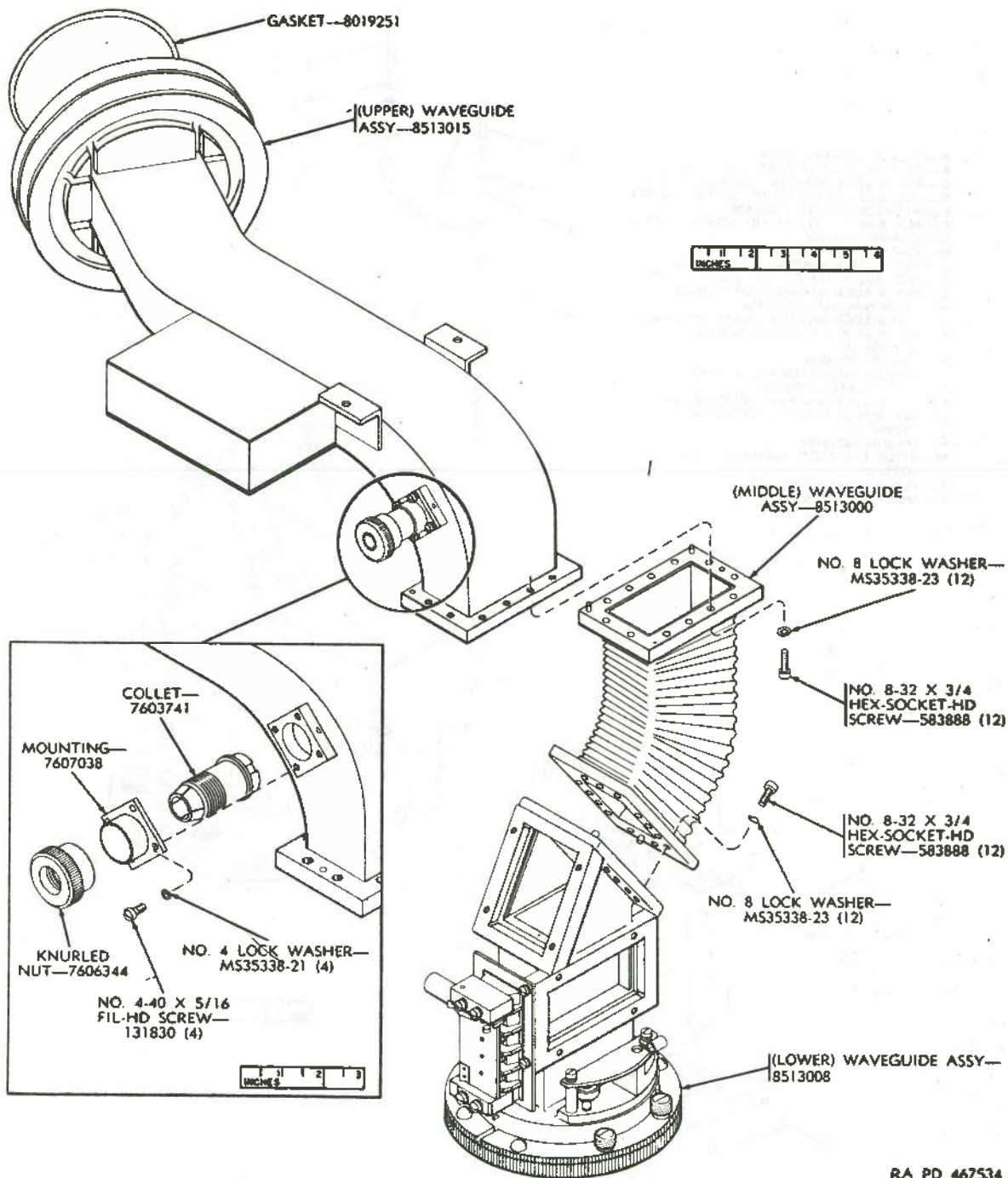
d. Fasten duplexer to waveguide assembly (A, fig. 120) with six  $\frac{1}{8}$ -18 x  $1\frac{1}{4}$  externally-relieved-body screws (B, fig. 120). Insert screws only to a depth sufficient to lend a measure of support to end of duplexer. Do not tighten screws.

e. Secure supporting chains (T) to sides of noise generator.

*Note.* The key letters shown in parentheses in f through n below refer to figure 117 unless otherwise indicated.

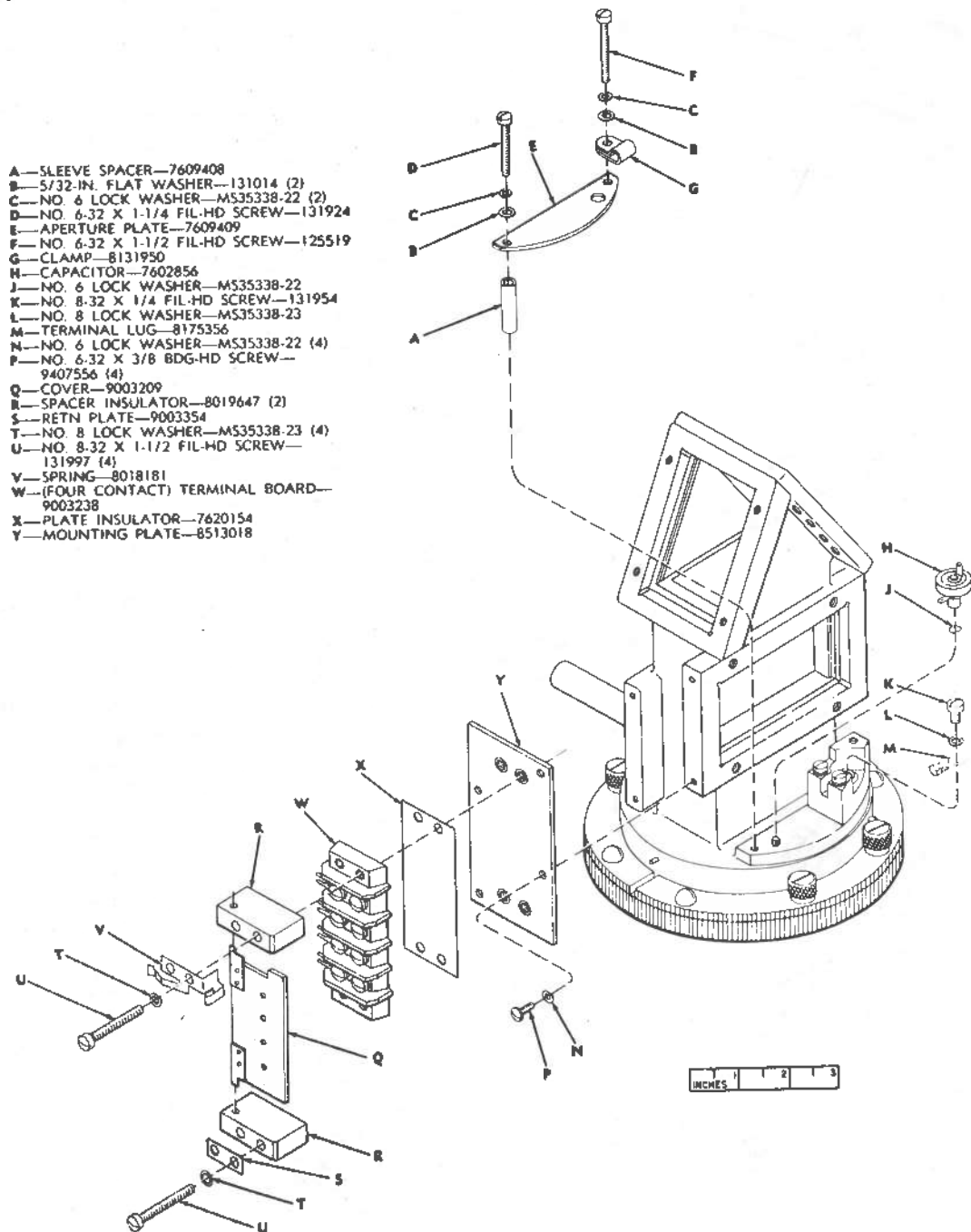
f. Install lower clamping bar (G) on U bolt and secure with two  $\frac{1}{8}$ -inch flat washers (F),  $\frac{1}{4}$ -inch lockwashers (E), and  $\frac{1}{4}$ -20 hexagon nuts (V). Tighten hexagon nuts sufficiently to hold clamping bar on U bolt.

g. Install two No. 10 lockwashers (S) and No. 10-24 x  $\frac{1}{2}$  hexagon-socket-head screws (P), fingertight.



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Figure 118. Acquisition duplexer 8512993—partially exploded view.



RA PD 467535

Figure 119. Lower waveguide assembly 8513008—partially exploded view.

h. Install magnetron electron tube (fig. 104) (TM 9-1430-253-20/1). Use the magnetron (fig. 104) as an alignment fixture for final positioning of acquisition duplexer.

i. Secure waveguide assembly (A, fig. 120) to duplexer by securely tightening six 5/16-18 x 1-1/8 externally-relieved-body screws which were started in d above.

j. Clamp rubber boot (X) to end of duplexer with hose clamp (W).

**CAUTION:** IN k BELOW, TIGHTEN HEXAGON NUTS SIMULTANEOUSLY TO APPLY AN EVEN PRESSURE ACROSS THE FULL WIDTH OF DUPLEXER. IF ONE HEXAGON NUT IS TIGHTENED TOO MUCH, THE DUPLEXER WILL BE CRUSHED WHEN THE OTHER HEXAGON NUT IS TIGHTENED TO ITS NORMAL POSITION. EXCESSIVE PRESSURE ON BOTH HEXAGON NUTS WILL ALSO CRUSH DUPLEXER.

k. Secure duplexer between clamping bars by tightening two 1/4-20 hexagon nuts (V).

l. Tighten two No. 10-24 x 1/2 hexagon-socket-head screws (R).

m. Connect leads (TM 9-1430-257-35) and secure leads with clamp (F, fig. 112).

n. Install electron tubes V2 (Q) and V3 (P) (TM 9-1430-253-20/1).

o. Attach connectors P19 and P10 (Q and B, fig. 112) to connectors J34 and J10 (R and C, fig. 112), respectively.

p. Attach connector P21 (T, fig. 117) to connector J1 (U, fig. 117).

q. Install receiver tuner group (par. 84 a-h).

r. Close and secure acquisition RF power supply control (fig. 103).

s. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20/1).

t. Install and secure main access cover (A, fig. 97).

## Section X. FAN 8516183 OR 9010088

**WARNING:** PERFORM ALL FIELD MAINTENANCE ON THE ACQUISITION RECEIVER-TRANSMITTER WITH ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL IN THE OFF POSITION.

**CAUTION:** METERS AND WATCHES WILL BE SERIOUSLY DAMAGED BY STRONG MAGNETIC FIELDS IF THEY ARE BROUGHT NEAR THE MAGNETRON OR THE MAGNETIC CIRCUIT.

Note. Fans 8516183 and 9010088 (fig. 120) differ as shown. Removal procedures for the two fans are identical.

### 108. Removal of Fan - 8516183 or 9010088

Note. The key letters shown in parentheses in a through j below refer to figure 120 unless otherwise indicated.

a. Remove two doors (E).

b. Remove main access cover (A, fig. 97).

c. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

d. Remove acquisition AFC (A, fig. 114) (TM 9-1430-253-20/1).

e. Place identifying tags on four air hoses (F).

f. Loosen four hose clamps (H) and push clamps up on hoses.

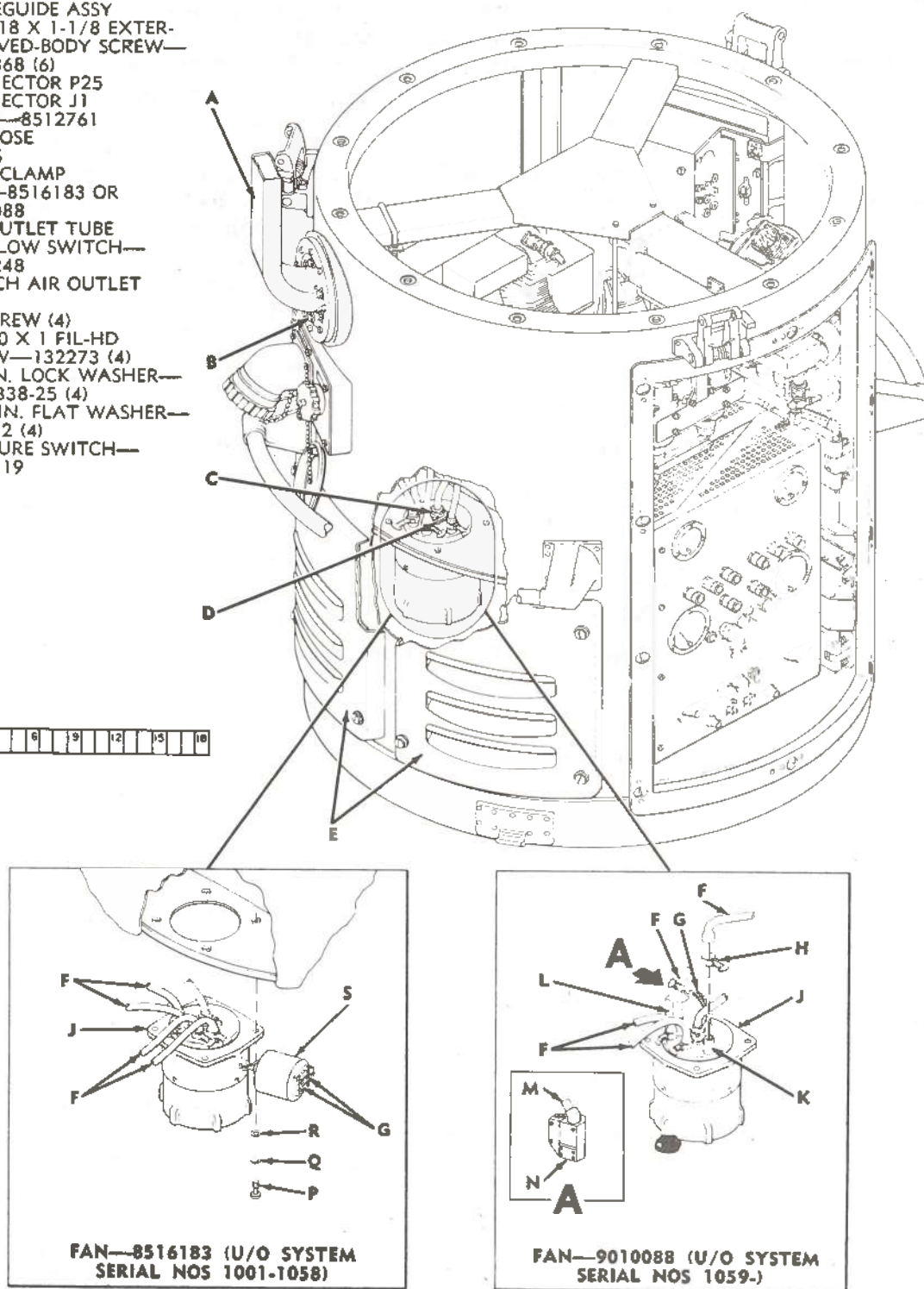
g. Disconnect connector P25 (C) from J1 (D).

h. Remove four screws (P), lockwashers (Q), and flat washers (R). Lower fan (J) from mounted position.

i. Remove four air hoses from fan and remove fan.

j. Disconnect leads (G) from pressure switch (S) and unscrew pressure switch from fan (J); or disconnect leads (G) from airflow switch (L), loosen four setscrews (N), and remove airflow switch from fan (J) as applicable.

- A—WAVEGUIDE ASSY
- B—5/16-18 X 1-1/8 EXTER-  
RELIEVED-BODY SCREW—  
8512868 (6)
- C—CONNECTOR P25
- D—CONNECTOR J1
- E—DOOR—8512761
- F—AIR HOSE
- G—LEADS
- H—HOSE CLAMP
- J—FAN—8516183 OR  
9010088
- K—AIR OUTLET TUBE
- L—AIR FLOW SWITCH—  
9011248
- M—SWITCH AIR OUTLET  
TUBE
- N—SETSCREW (4)
- P—1/4-20 X 1 FIL-HD  
SCREW—132273 (4)
- Q—1/4-IN. LOCK WASHER—  
MS35338-25 (4)
- R—9/32-IN. FLAT WASHER—  
120392 (4)
- S—PRESSURE SWITCH—  
9003819



ORD G17522

Figure 120. Removal and installation of fan - 8516183 or 9010088.



## 109. Installation of Fan - 8516183

Note. The key letters shown in parentheses in a through g below refer to figure 120.

a. Apply antiseize compound 8030-251-3983 to threads of pressure switch (S) and screw switch tight into fan (J).

b. Connect leads (G), one to each terminal of pressure switch.

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The document also notes that accurate records are necessary for the preparation of financial statements and for the calculation of taxes.

2. The second part of the document describes the various methods used to collect and analyze data. It includes a detailed discussion of the different types of data that can be collected, such as financial data, operational data, and customer data. It also discusses the various techniques used to analyze this data, including statistical analysis, data mining, and machine learning.

3. The third part of the document discusses the importance of data security and privacy. It notes that the collection and analysis of data can pose significant risks to the privacy of individuals and to the security of the organization. It therefore emphasizes the need for robust security measures to protect the data and to ensure that it is used only for the purposes for which it was collected.

4. The fourth part of the document discusses the importance of transparency and accountability. It notes that the collection and analysis of data can be a complex and often opaque process. It therefore emphasizes the need for transparency in the process and for accountability for the results. It also notes that transparency and accountability are essential for the trust of the public and for the legitimacy of the organization.

5. The fifth part of the document discusses the importance of ongoing monitoring and evaluation. It notes that the collection and analysis of data is an ongoing process that must be monitored and evaluated regularly. It therefore emphasizes the need for ongoing monitoring and evaluation to ensure that the process is effective and that it is able to adapt to changing circumstances.

6. The sixth part of the document discusses the importance of communication and collaboration. It notes that the collection and analysis of data is a complex task that requires the input of many different people and departments. It therefore emphasizes the need for communication and collaboration to ensure that the process is successful.

7. The seventh part of the document discusses the importance of training and education. It notes that the collection and analysis of data is a complex task that requires a high level of skill and knowledge. It therefore emphasizes the need for training and education to ensure that the people involved in the process are able to perform their duties effectively.

8. The eighth part of the document discusses the importance of ethics and legal compliance. It notes that the collection and analysis of data can raise a number of ethical and legal issues. It therefore emphasizes the need for ethics and legal compliance to ensure that the process is conducted in a responsible and lawful manner.

9. The ninth part of the document discusses the importance of innovation and research. It notes that the collection and analysis of data is a constantly evolving field that requires ongoing innovation and research. It therefore emphasizes the need for innovation and research to ensure that the process remains effective and relevant.

10. The tenth part of the document discusses the importance of the future of data collection and analysis. It notes that the field of data collection and analysis is expected to continue to grow and evolve in the future. It therefore emphasizes the need for continued investment in the field to ensure that it remains a key part of the organization's operations.

c. Mount fan (J) in operating position with four  $\frac{1}{2}$ -inch flat washers (R),  $\frac{1}{4}$ -inch lockwashers (Q), and  $\frac{1}{4}$ -20 x 1 fillister-head screws (P).

d. Lubricate outer surfaces of air outlet tubes (K) and 1 inch of the inner surfaces of air hoses (F) with a thin coat of electrical insulating compound 5970-224-5276.

e. Install four air hoses.

f. Attach connector P25 (C) to connector J1 (D).

g. Mount and secure two doors (E).

h. Install acquisition AFC (A, fig. 114) (TM 9-1430-253-20/1).

i. Close and secure acquisition RF power supply control (fig. 103).

j. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

k. Install and secure main access cover (A, fig. 97).

### 110. Installation of Fan 9010088

*Note.* The key letters shown in parentheses in a through k below refer to figure 120.

a. Mount fan (J), less airflow switch (L), in operating position with four  $\frac{1}{2}$ -inch flat washers (R),  $\frac{1}{4}$ -inch-lockwashers (Q), and  $\frac{1}{4}$ -20 x 1 fillister-head screws (P).

b. Lubricate outer surface of switch air outlet tube (M) with a thin coat of electrical insulating compound 5970-224-5276. Identify air hose (F) to be attached to airflow switch, and with the same compound lubricate 1 inch of inner surface of air hose, and install air hose on switch.

c. Loosen four setscrews (N), install switch on fan (J) in position shown, and secure setscrews.

d. Connect leads (G), one to each terminal of switch.

e. Lubricate outer surfaces of three air outlet tubes (K) and 1 inch of the inner surfaces of air hoses (F) with a thin coat of electrical insulating compound 5970-224-5276.

f. Install remaining air hoses.

g. Attach connector P25 (C) to connector J1 (D).

h. Mount and secure two doors (E).

i. Install acquisition AFC (A, fig. 114).

j. Close and secure acquisition RF power supply control (fig. 103).

k. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

l. Install and secure main access cover (A, fig. 97).

## Section XI. PULSE TRANSFORMER

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C3, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

### 111. Removal of Pulse Transformer 8519043

a. Remove main access cover (A, fig. 97).

b. Loosen fastener (fig. 103) and swing acquisition RF power supply control outward.

c. Remove receiver tuner group (par. 83 b-i).

d. Remove magnetron electron tube (C, fig. 114) (TM 9-1430-253-20/1).

e. Remove acquisition duplexer (par. 105 e-o).

f. Disconnect and tag leads from terminals 3, 5, and 7 of pulse transformer (D, fig. 121) (TM 9-1430-257-35).

g. Disconnect connector P1 (B, fig. 114) from connector J1.

h. Remove mounting bracket group (R, fig. 122) and extension stud (V, fig. 122) or spacer

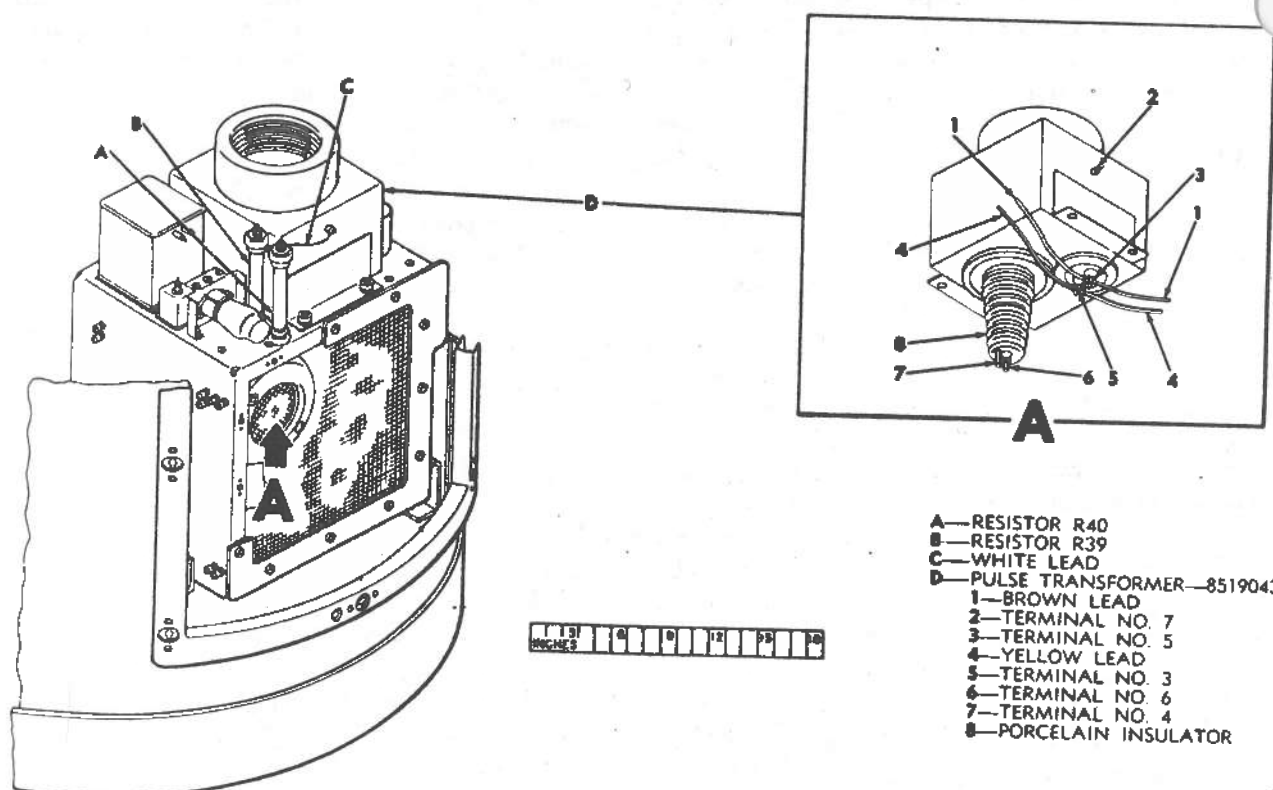
(X) from porcelain insulator (W, fig. 122).

i. Remove pulse transformer (A, fig. 122), gasket (D, fig. 122), and gasket (T, fig. 122).

### 112. Installation of Pulse Transformer 8519043

*Note.* The key letters shown in parentheses in a through e below refer to figure 122 unless otherwise indicated.

a. Install new  $3\frac{1}{8}$ -inch-id gasket (T), new

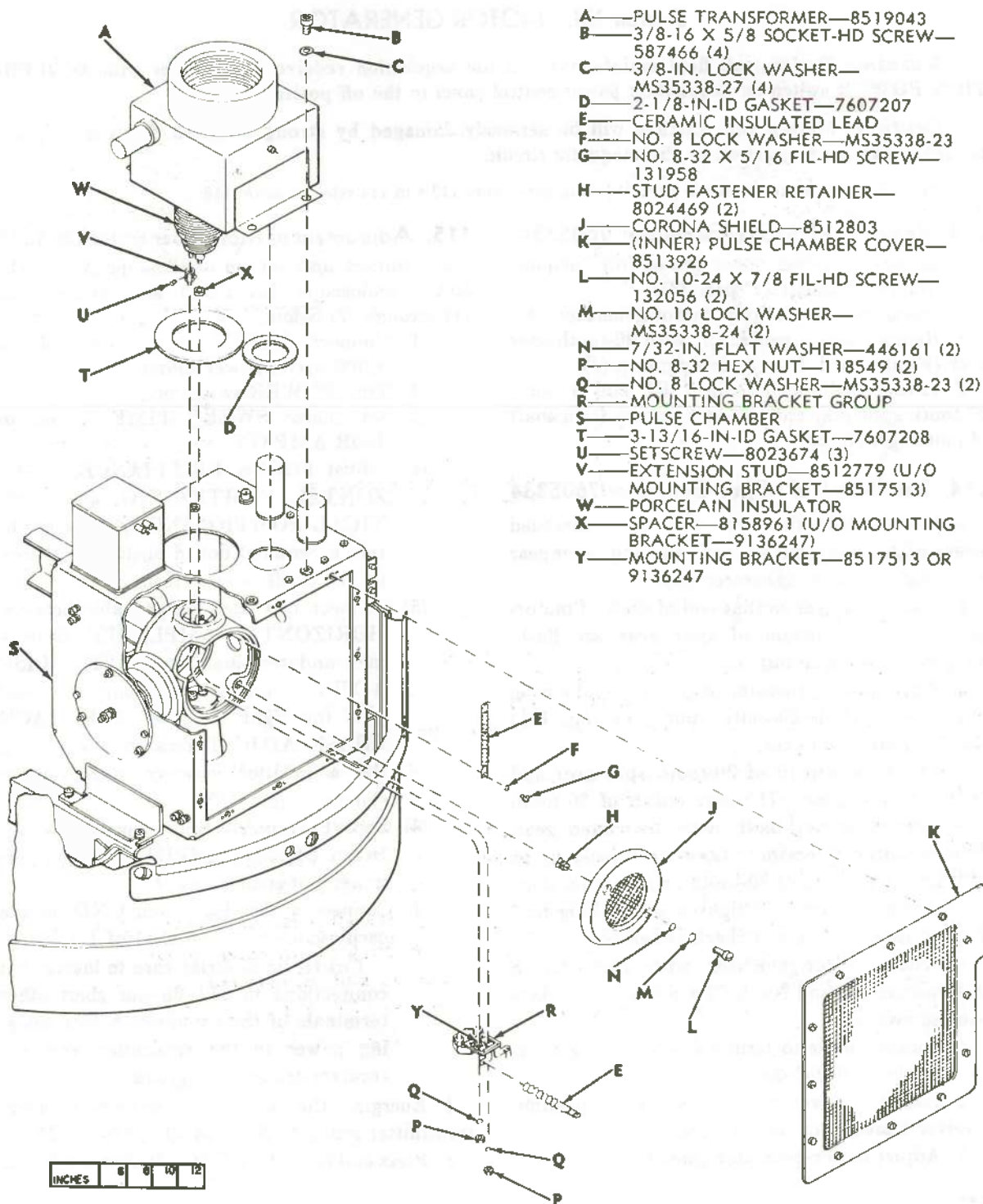


RA PD 467537

Figure 121. Pulse transformer—electrical connections.

- a. Install 2 1/8-inch -io gasket (D) and pulse transformer (A) on pulse chamber (S).
- b. Install extension stud (V) or spacer (X) and install mounting bracket group (R) on terminals No. 4 and No. 6 (D7 and D6, fig. 121), respectively.
- c. Connect two brown leads to terminal No. 5 and two yellow leads to terminal No. 3 of pulse transformer (TM 9-1430-257-35).
- d. Connect white lead (C, fig. 121) from ungrounded junction of resistors R39 and R40 (B and A, fig. 121) to terminal No. 7 (D2, fig. 121) on pulse transformer.
- e. Install magnetron electron tube (C, fig. 114) (TM 9-1430-253-20/1).

- f. Attach connector P1 to connector J1 (B, fig. 114).
- g. Install acquisition duplexer group (par. 107 a-o).
- h. Install receiver tuner group (par. 84 a-h).
- i. Close and secure acquisition RF power supply control (fig. 103).
- j. Install pulse chamber cover (B, fig. 97).
- k. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20/1).
- l. Install main access cover (A, fig. 97).



RA PD 470931

Figure 122. Removal and installation of pulse transformer.



## Section XII. MOTOR-GENERATOR

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

**Note.** The key letters shown in parentheses in paragraphs 113 and 114 refer to figure 110.

### 113. Removal of Motor-Generator 7605334

- a. Remove receiver tuner group from acquisition receiver-transmitter (par. 83).
- b. Disconnect leads from motor-generator (A).
- c. Remove motor-generator, with 20-tooth spur gear (F) attached, from housing group (J).
- d. Loosen self-locking nut (E) and remove 20-tooth spur gear and self-locking nut from shaft of motor-generator.

### 114. Installation of Motor-Generator 7605334

- a. Start self-locking nut (E) onto threaded sleeve of 20-tooth spur gear (F) and slide spur gear onto shaft of motor-generator (A).
- b. Place spur gear so that end of shaft of motor-generator and bottom of spur gear are flush. Tighten self-locking nut.
- c. Place motor-generator in position on housing group (J). Mesh 20-tooth spur gear (fig. 111) with 70-tooth spur gear.
- d. Check alinement of 20-tooth spur gear and 70-tooth spur gear. If entire width of 20-tooth spur gear does not mesh with associated gear, remove motor-generator. Loosen self-locking nut (E), adjust position of 20-tooth spur gear on shaft of motor-generator, and tighten self-locking nut. Repeat step c above and check alinement.
- e. Secure motor-generator with four No. 8 lockwashers (C) and No. 8-32 x 1/2 hexagon-socket-head screws (B).
- f. Connect leads to terminals on motor-generator (TM 9-1430-257-35).
- g. Install receiver tuner group in acquisition receiver-transmitter (par. 84 a-h).
- h. Adjust motor-generator (par. 115).

### 115. Adjustment of Motor-Generator 7605334

- a. Connect and set up oscilloscope AN/USM-50A (oscilloscope LA-239C) as instructed in (1) through (7) below.
  - (1) Connect INPUT to 115-volt, 50 to 1,000 cycle, power source.
  - (2) Turn POWER switch on.
  - (3) Set coarse SWEEP TIME control to HOR AMP ON.
  - (4) Adjust FOCUS, BRILLIANCE, HORIZONTAL POSITIONING, and VERTICAL POSITIONING controls to obtain a centered dot of medium brilliance on the oscilloscope screen.
  - (5) Connect one oscilloscope cable between HORIZONTAL AMPLIFIER INPUT jack and terminal 3 of TACH PHASE ADJUST resistor (fig. 103); (terminal 3 is the right terminal of the TACH PHASE ADJUST resistor when facing the acquisition receiver-transmitter as shown in figure 103).
  - (6) Connect second oscilloscope cable between SIGNAL INPUT jack and terminal 5 of connector J14.
  - (7) Connect a test lead from GND on the oscilloscope to terminal 11 of J14.

**Caution:** Exercise care to insure that connections to J14 do not short other terminals of the connector before applying power to the acquisition antenna-receiver-transmitter group.

- b. Energize the acquisition antenna-receiver-transmitter group (TM 9-1430-250-10/1).
- c. Press and hold the AUTO FREQ CONTROL

RELEASE switch (fig. 103) to establish a hunt condition.

d. Adjust HORIZONTAL AMPLIFIER GAIN, MULTIPLIER, and VERTICAL GAIN controls on the oscilloscope as required to obtain an ellipse on the screen approximately 2 inches long and positioned 45° to the right or left of vertical.

e. Loosen locking nut (fig. 103) and adjust TACH PHASE ADJUST resistor to convert

the ellipse to a straight diagonal line. Tighten locking nut following adjustment.

f. Deenergize the acquisition antenna-receiver-transmitter group (TM 9-1430-250-10/1).

g. Set oscilloscope POWER switch to OFF.

h. Disconnect the oscilloscope from the acquisition receiver-transmitter and source of power.

i. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

j. Install main access cover (A, fig. 97).

### Section XIII. COMPONENTS OF ELECTRICAL BOX 8513914

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C3, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

**Note.** The key letters shown in parentheses in paragraphs 116 through 118 refer to figure 123 unless otherwise indicated.

#### 116. Removal and Installation of Standoff Insulator 8512797

- a. Remove pulse transformer (par. 111).
- b. Disconnect remaining leads from corona shield group (H).
- c. Remove lead (J) from electrical contact (T).
- d. Remove electrical contact.
- e. Remove corona shield group (H) and sleeve bushing (U) from electrical equipment box (A).
- f. Remove standoff insulator (V).
- g. Install standoff insulator in electrical equipment box.
- h. Install corona shield group.
- i. Install electrical contact (T) and lead (J).
- j. Connect leads which were disconnected in step b above to corona shield group (TM 9-1430-257-35).
- k. Install pulse transformer (par. 112).

#### 117. Removal and Installation of Capacitor C3 8016503

- a. Remove outer pulse chamber cover (B, fig. 97).
- b. Remove inner pulse chamber cover (K, fig. 122) and corona shield (J, fig. 122).

- c. Remove lead (J) from electrical contact (T).
- d. Remove electrical contact from corona shield group (H).

e. Remove capacitor C3 (Z) and corona shield (W) from electrical equipment box (A).

f. Inspect gasket (AA) and replace gasket if damaged.

g. Install capacitor C3 and corona shield in electrical equipment box.

h. Install electrical contact (T) and lead (J) in corona shield group.

i. Install corona shield (J, fig. 122) and inner pulse chamber cover (K, fig. 122).

j. Install outer pulse chamber cover (B, fig. 97).

k. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20/1).

#### 118. Removal and Installation of Sensitive Switch S2 or Sensitive Switch S3 7602749

a. Remove outer pulse chamber cover (B, fig. 97).

b. Remove inner pulse chamber cover (K, fig. 122).

## 122. Removal of Magnetron Carriage Assembly 8513913

- a. Remove magnetron electron tube (fig. 104) (TM 9-1430-253-20 /1).
- b. Lift magnetron carriage assembly (T, fig. 114) from slides.

*Note.* The key letters shown in parentheses in paragraphs 123 and 124 refer to figure 126.

## 123. Disassembly of Magnetron Carriage Assembly 8513913

- a. Remove clamp (E) and bolt (BB) from magnetron carriage assembly.
- b. Remove spring pin (W).
- c. Remove knob (J) and clevis (T) from magnetron carriage assembly.
- d. Remove spring pin (S).
- e. Remove headless pin (Q) from magnetron carriage assembly.
- f. Remove spring pin (X) and pin (U). Remove carriage roller (V).
- g. Remove shoulder bolt (A) and remove carriage roller (B).

## 124. Assembly of Magnetron Carriage Assembly 8513913

- a. Apply antiseize compound 8030-251-3983 to threads of externally-relieved-body bolt (BB) and install clamp (E).

- b. Apply antiseize compound 8030-251-3983 to threads of two No. 8-32 x  $\frac{1}{8}$  fillister-head screws (M) and install headless pin (Q).

- c. Install 0.125 x  $\frac{1}{8}$  spring pin (S) in headless pin.

- d. Rotate headless pin 90 degrees from position shown. Emplace clevis (T) so that slot in clevis is engaged with spring pin. Install knob (J).

- e. Secure clevis to knob with 0.125 x  $\frac{1}{8}$  spring pin (W).

- f. When installing carriage roller (V), place roller and headed shoulder pin in installed position and drill and ream hole through shoulder pin for 0.078 x  $\frac{1}{8}$  spring pin (X) and install spring pin.

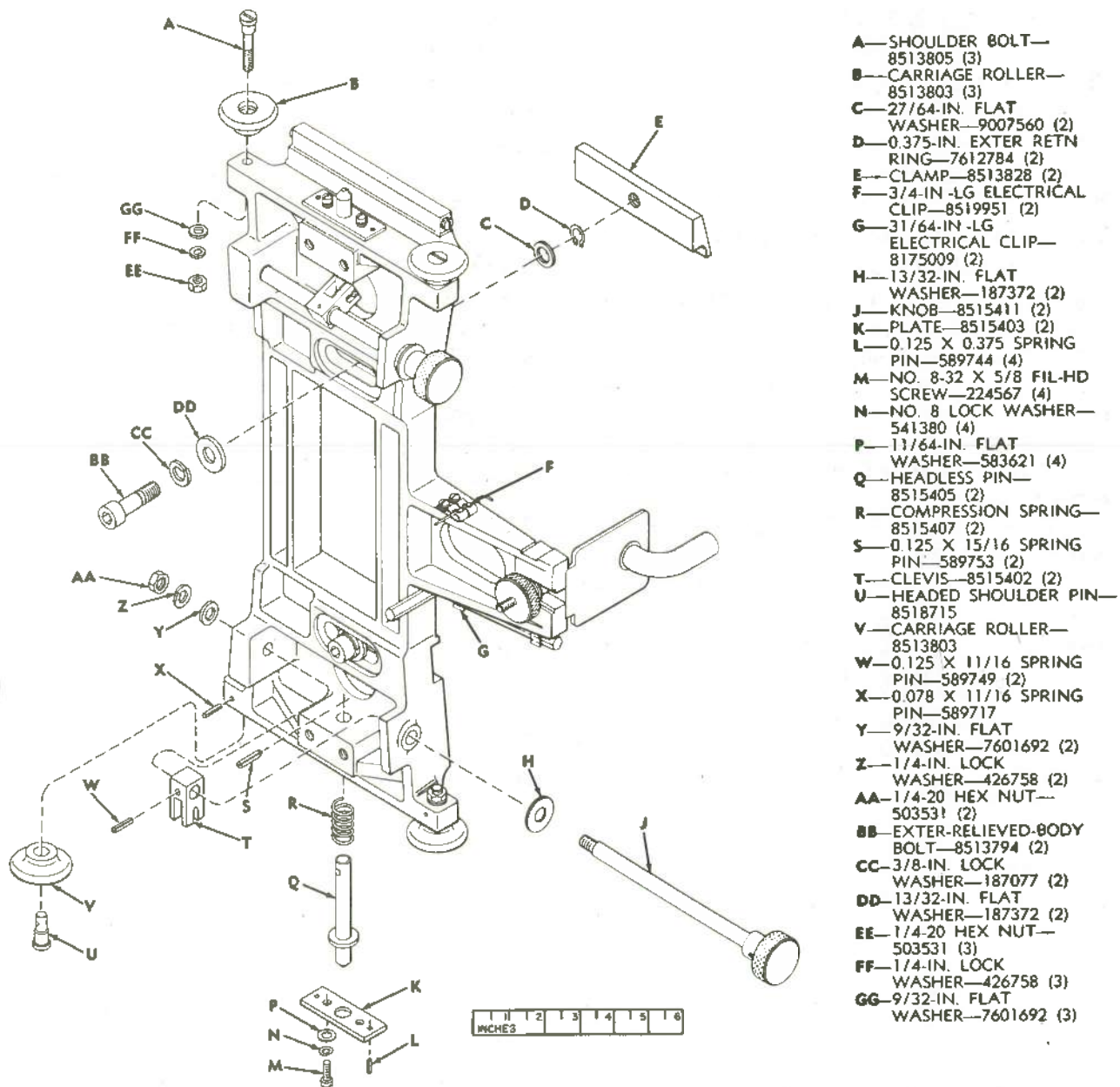
- g. When installing carriage roller (B), apply antiseize compound 8030-251-3983 to threads of shoulder bolt (A) and install roller.

## 125. Installation of Magnetron Carriage Assembly 8513913

- a. Pull slides (R, fig. 114) forward and fit magnetron carriage assembly (T, fig. 114) in slides.

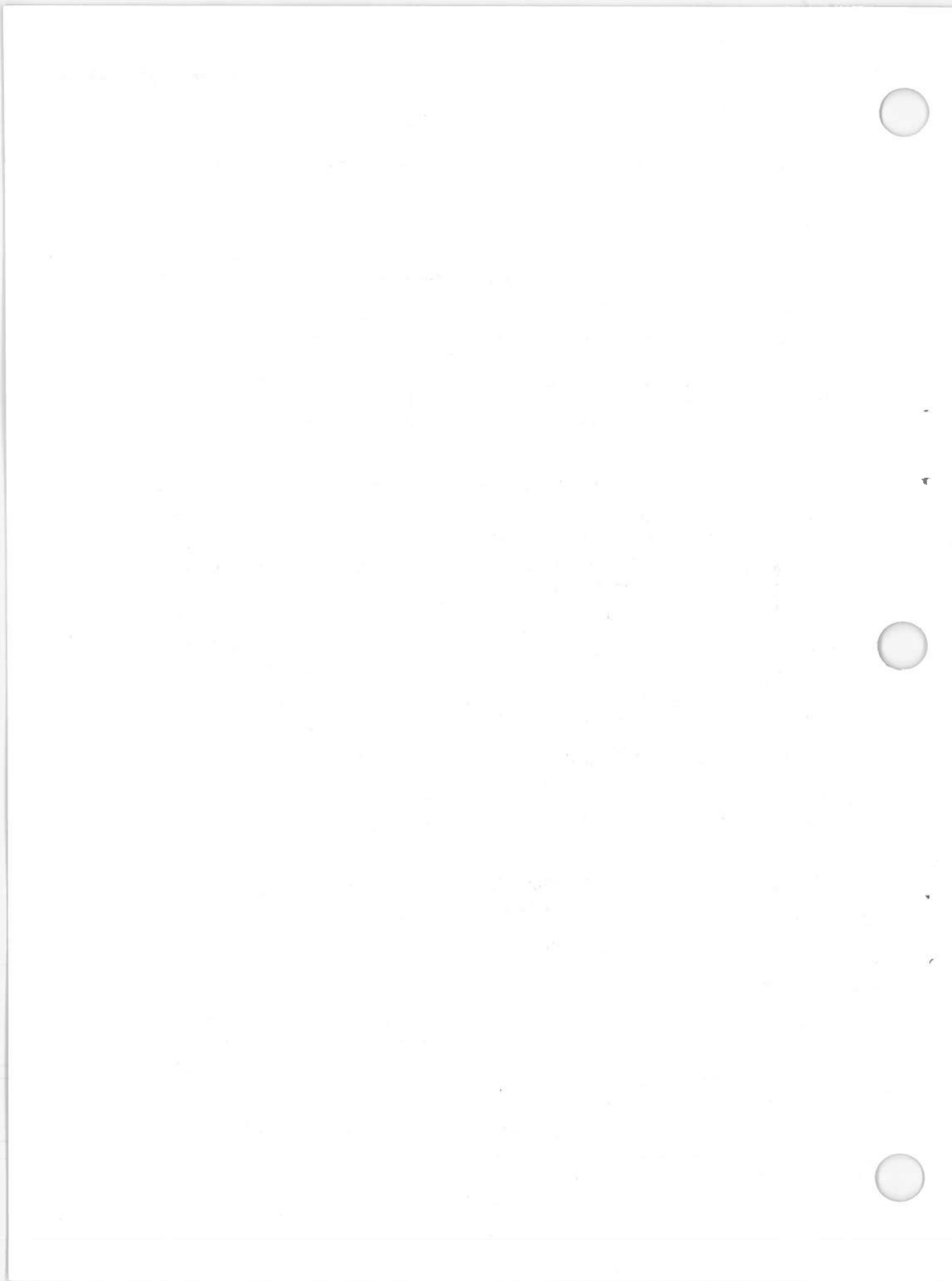
- b. Install magnetron electron tube (fig. 104) (TM 9-1430-253-20/1).

- c. Perform antenna voltage, current, and AFC checks and adjustments and transmitter frequency and power measurements (TM 9-1430-251-20/1).



RA PD 467542

Figure 126. Magnetron carriage assembly 8613913—partially exploded view.





*c. Removal and Installation of Four-Contact Terminal Board 9003238 (18, Fig. 126.20) and Associated Components.*

- (1) Remove four-contact terminal board and associated components.
- (2) Install terminal board and associated components.

*d. Removal and Installation of Capacitor and Arc Suppressor Lead.*

- (1) Remove aperture plate (6, fig. 126.20).
- (2) Disconnect and tag leads from capacitor (10).
- (3) Remove capacitor.
- (4) Remove cable clamp (14) and arc suppressor lead (9, fig. 126.19).
- (5) Install arc suppressor lead (9) and cable clamp (14, fig. 126.20).
- (6) Install capacitor (10) and associated leads; secure all leads.
- (7) Install post and aperture plate (6) securing with two flat washers (2) and fillister-head screws (1).

**125.32. Installation of Acquisition Duplexer 13034767**

*a. Remove protective tape from openings in electron tube V4 (10, fig. 126.18) and acquisition duplexer. Install electron tube V4 and noise generator (11) on acquisition duplexer.*

*b. Replace gasket (1, fig. 126.19) with new gasket.*

*c. Remove protective tape from opening in upper waveguide assembly (2, fig. 126.19). Install upper clamping bar in place and position acquisition duplexer between threaded rods of U-bolt (4, fig. 126.18), inserting end of duplexer in rubber boot (19).*

**Caution:** Support acquisition duplexer manually until it has mechanical support throughout its length.

*d. Fasten duplexer to waveguide assembly (1, fig. 126.16) with six externally relieved body screws (2). Insert screws only to a depth sufficient to lend a measure of support to end of duplexer. Do not tighten screws.*

*e. Secure supporting chains (20, fig. 126.17) to sides of noise generator.*

*f. Install lower clamping bar (7, fig. 126.18) on U-bolt and secure with two flat washers (6), lockwashers (5) and hexagon nuts (17). Tighten hexagon nuts sufficiently to hold clamping bar on U-bolt.*

*g. Install two lockwashers (16) and hexagon-socket-head screws (15) fingertight.*

*h. Install magnetron electron tube (TM 9-1430-253-12/4, INH, or TM 9-1430-253-12/2, ATBM). Use the magnetron as an alignment fixture for final positioning of acquisition duplexer.*

*i. Secure waveguide assembly (1, fig. 126.16) to duplexer by tightening six externally relieved body screws (2) started in *d* above.*

*j. Clamp rubber boot (19, fig. 126.18) to end of duplexer with hose clamp (18).*

**Caution:** In *k* below, tighten hexagon nuts simultaneously to apply an even pressure across the full width of duplexer. If one hexagon nut is tightened too much, the duplexer will be crushed when the other hexagon nut is tightened to its normal position. Excessive pressure on both hexagon nuts will also crush duplexer.

*k. Secure duplexer between clamping bars by tightening two hexagon nuts (17).*

*l. Tighten two hexagon-socket-head screws (15).*

*m. Connect leads to terminal board TB6 (10, fig. 126.19) and terminal (8) and secure leads with clamp (7).*

*n. Connect main solid-state S-band (or TWT) amplifier connectors P19 (4, fig. 126.8) to J1, and P10 to J10.*

*o. Remove protective tape and install electron tubes V2 (14, fig. 126.18) and V3 (13).*

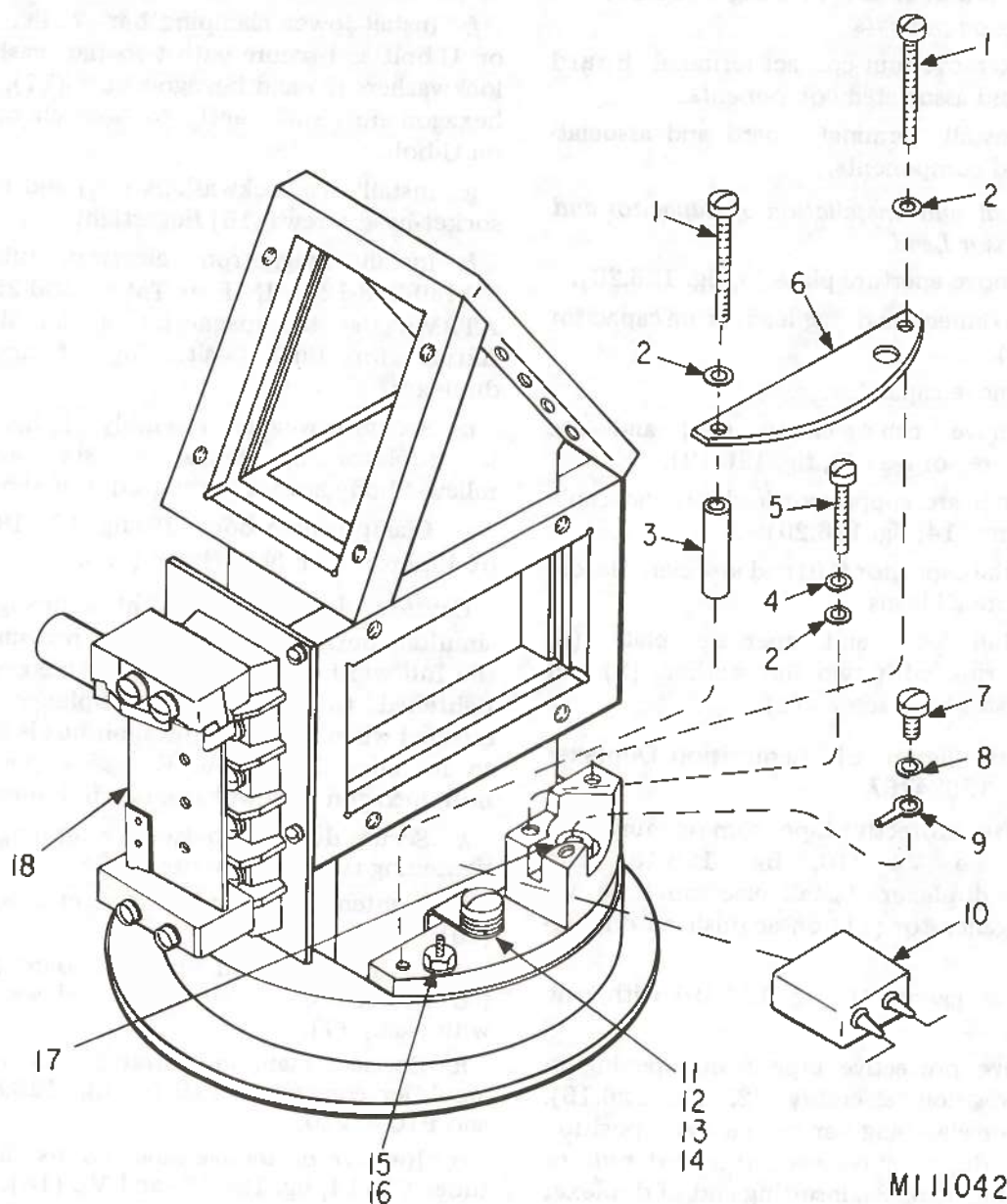
*p. Install receiver-tuner group (para 125.19).*

*q. Close acquisition RF power supply control and secure with fastener (15, fig. 126.9).*

*r. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-255-12/1, INH, or TM 9-1430-251-12/2, ATBM).*

*s. Install main access cover (A, fig. 97).*





M111042

- 1—No. 6—32 X 1 1/4 fil-hd screw (2)
- 2—No. 6 fl washer (4)
- 3—Post
- 4—No. 6 lockwasher (2)
- 5—No. 6—32 X 1 fil-hd screw (2)
- 6—Plate
- 7—No. 8—32 X 1/4 fil-hd screw
- 8—1/4-in. lockwasher
- 9—Terminal

- 10—Capacitor
- 11—No. 6—32 X 3/8 fil-hd screw
- 12—No. 6 lockwasher
- 13—No. 6 fl washer
- 14—Clamp—NAS1397P28
- 15—No. 6 lockwasher
- 16—Terminal
- 17—Terminal
- 18—Terminal board

Figure 126.20. Duplexer subassembly 11513370—partially exploded view.

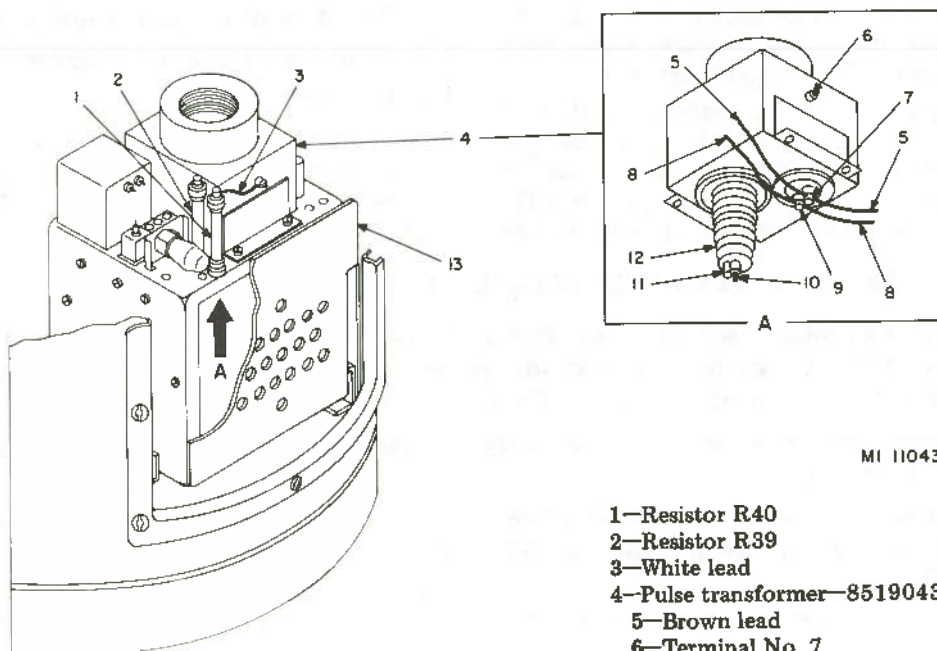
## Section VIII. PULSE TRANSFORMER

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C3, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

## 125.33. Removal of Pulse Transformer 8519043

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.
- c. Remove receiver tuner group (para 125.17).
- d. Remove magnetron electron tube (2, fig. 126.13) (TM 9-1430-253-12/4, INH, or TM 9-1430-253-12/2, ATBM).
- e. Remove acquisition duplexer (para 125.30).
- f. Disconnect and tag leads from terminals 3, 5, and 7 of pulse transformer T1 (4, fig. 126.21).



MI 11043

- 1—Resistor R40
- 2—Resistor R39
- 3—White lead
- 4—Pulse transformer—8519043
- 5—Brown lead
- 6—Terminal No. 7
- 7—Terminal No. 5
- 8—Yellow lead
- 9—Terminal No. 3
- 10—Terminal No. 6
- 11—Terminal No. 4
- 12—Porcelain insulator
- 13—Cover—11513256

Figure 126.21. Pulse Transformer—electrical connections.

g. Disconnect connector P1 from connector J1 on the pulse transformer.

h. Remove two nuts (15, fig. 126.22) and lockwashers (13) and remove the brown and yellow leads from terminals T1-4 and T1-6, respectively; remove remainder of mounting bracket group with capacitor (10) attached.

i. Remove four socket-head screws (2) and lockwashers (3) and remove pulse transformer T1 (1).

#### 125.34. Installation of Pulse Transformer 8519043

a. Install capacitor (10, fig. 126.22) to mounting brackets (11 and 12) if extension stud (17) is not present, or to two brackets (11), if extension stud is present.

b. Install pulse transformer T1 (1) to magnetron hot box and secure with four socket-head screws (2) and lockwashers (3).

c. Install spacer (19) and extension stud if present and install capacitor (10) with brackets to T1-4 and T1-6 terminals; connect the brown lead (20) from L2-1 to T1-4 and yellow (21) lead from L2-3 to T1-6. Secure both leads to the

pulse transformer terminals with lockwashers (13) and nuts (15).

d. Connect two brown leads (5, fig. 126.21) to terminal number 5 and two yellow leads (8) to terminal number 3 of pulse transformer T1.

e. Connect white lead (3) from ungrounded junction of resistors R39 and R40 (2 and 1) to terminal number 7 (6) on the pulse transformer.

f. Install magnetron electron tube (TM 9-1430-253-12/2, ATBM, or TM 9-1430-253-12/4, INH).

g. Connect connector P1 to J1 on the pulse transformer.

h. Install acquisition duplexer group (para 125.32).

i. Install receiver tuner group (para 125.19).

j. Close and secure acquisition RF power supply control.

k. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-12/2, ATBM, or TM 9-1430-255-12/1, INH).

### Section IX. COMPONENTS OF ELECTRICAL BOX 11513255

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C3, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.35. Removal and Installation of Sensitive Switch S2 or Sensitive Switch S3 7602749

a. Remove outer pulse chamber cover (B, fig. 97).

b. Remove inner cover (13, fig. 126.21).

c. Disconnect and tag leads from switch to be removed and remove switch S2 or S3 (8, fig. 126.22) as applicable and remove two pan-head screws (5) and lockwashers (4) from each switch.

d. When removing switch S3, loosen two setscrews (7) and remove locking collar (6); remove setscrews from locking collar.

e. When installing sensitive switch S3, coat threads of two setscrews (7) with polysulphide sealer 8030-00-507-3154 and install locking collar on switch so that collar will permit switch

to disengage and will prevent interlock override feature of switch from operating.

f. Install sensitive switch S2 or sensitive switch S3 as applicable, securing each with two pan-head screws (5) and lockwashers (4).

g. Check with ohmmeter between contacts C and NO of installed sensitive switch (8) for infinity indication when switch is not actuated and zero ohms when switch shaft is moved to operating position by installation of inner cover.

h. Connect leads to sensitive switch S2 or S3 as applicable.

i. Install inner cover (13, fig. 126.21).

j. Install outer pulse chamber cover (B, fig. 97).

k. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-12/2, ATBM, or TM 9-1430-255-12/1, INH), and transmitter power measurements (para 125.36).

## CHAPTER 5.1

## ACQUISITION RECEIVER-TRANSMITTER 9156628 OR 10185056

*Note.* The acquisition receiver-transmitter can be replaced as a single unit. Refer to TM 9-1430-251-10 for removal and installation procedures. Refer to TM 9-1400-250-35/5/3 for type 4 tests.

## Section I. GENERAL

## 125.1. Scope

Acquisition receiver-transmitter 9156628 and 10185056 (fig. 126.1) are used in selected systems. These receiver-transmitters differ from acquisition receiver-transmitter 8515397 because of changed or added components and the relocation of certain common components. Re-

moval and installation procedures are not provided for components that are common to both receiver transmitters. However, these components are illustrated, where necessary, to show location and connectors. Maintenance procedures for the changed or added components are covered in this chapter.

## Section II. RECEIVER TUNER GROUP

**Warning:** Perform all maintenance on the acquisition receiver-transmitter with the ACQUISITION POWER switch on the acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

**Caution:** The receiver tuner assembly is a very delicate mechanism. Handle with extreme care.

## 125.2. Removal of Receiver Tuner Group 9156628

- a. Remove the main access cover (A, fig. 97).
- b. Disconnect connector P13 (1, fig. 126.2) from connector J12.
- c. Disconnect connectors P16 and P2 (1 and 2, fig. 126.1) from connectors J18 and J19, respectively.
- d. Disconnect connectors P23 (3), P44 (4), and P45 (5) from connectors J1, J3, and J2, respectively.
- e. Disconnect connectors P22 (6), P42 (7), and P43 (8) from connectors J1, J2, and J3, respectively.
- f. Disconnect connectors P20 and P20 (2 and 3, fig. 126.2) from connectors J24 and J17, respectively.
- g. Loosen the two hexagon-head captive screws (9, fig. 126.1) and remove the receiver tuner group (10).

## 125.3. Removal of Receiver Tuner Group 10185056

- a. Remove the main access cover (A, fig. 97).
- b. Disconnect connector P13 (1, fig. 126.2) from connector J12.

c. Disconnect connectors P16 and P2 (1 and 2, fig. 126.1) from connectors J18 and J19, respectively.

d. Disconnect connector P23 (3) and P45 (5) from connectors J1 and J2, respectively.

e. Disconnect connectors P22 (6) and P42 (7) from connectors J1 and J2, respectively.

f. Disconnect connectors P20 and P20 (2 and 3, fig. 126.2) from connectors J24 and J17, respectively.

g. Loosen the two hexagon-head captive screws (9, fig. 126.1) and remove the receiver tuner group (10).

## 125.4. Installation of Receiver Tuner Group 9156628

a. Install the receiver tuner group (10, fig. 126.1) and secure with two hexagon-head captive screws (9).

b. Connect connectors P20 and P20 (3 and 2, fig. 126.2) to connectors J17 and J24, respectively.

c. Connect connectors P22, P42, and P43 (6, 7, and 8, fig. 126.1) to connectors J1, J2, and J3, respectively.



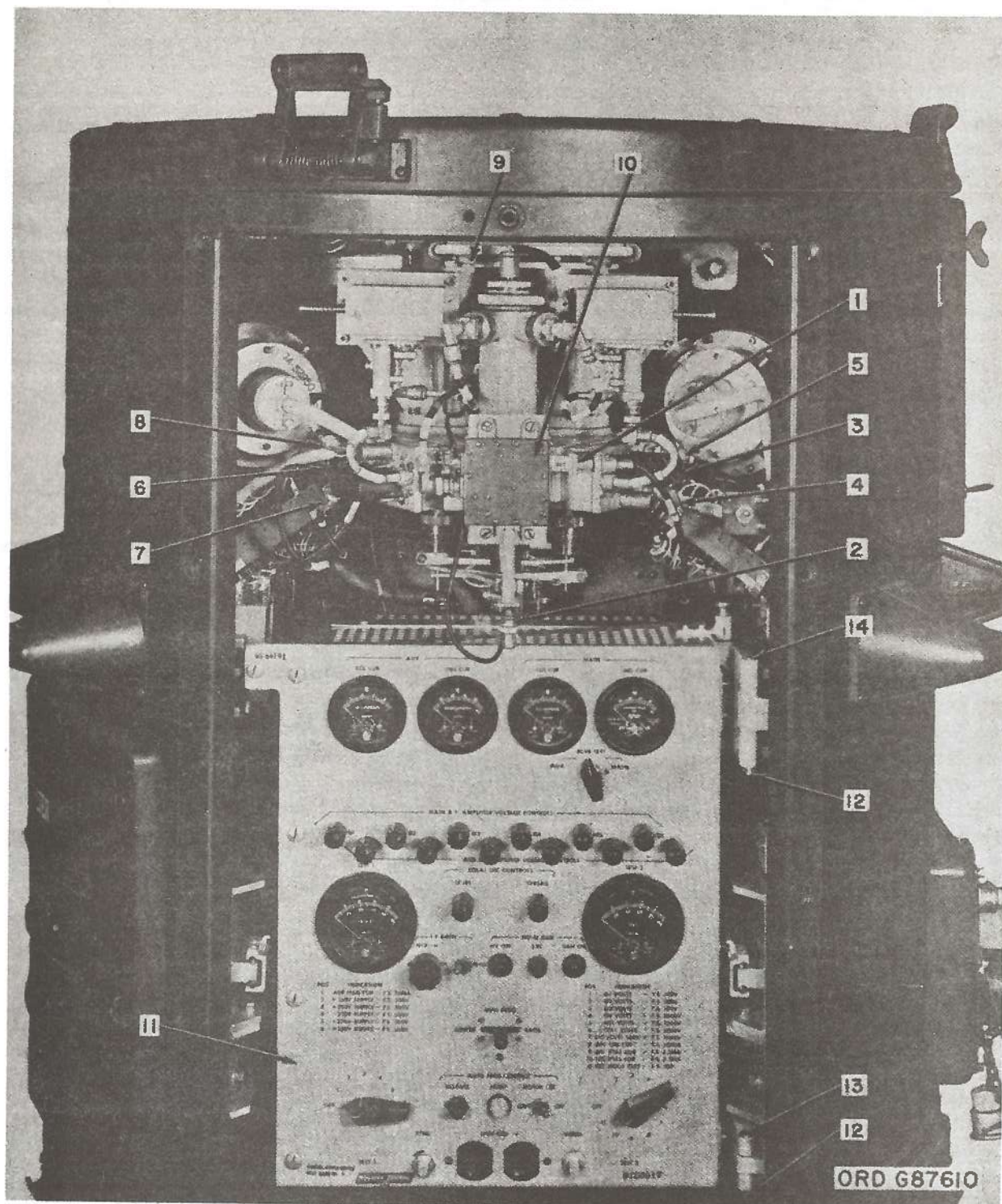


Figure 126.1. Acquisition receiver-transmitter 9156628 or 10185056.

- 1—Connectors P16 and J18
- 2—Connectors P2 and J19
- 3—Connectors P23 and J1
- 4—Connectors P44 and J3
- 5—Connectors P45 and J2
- 6—Connectors P22 and J1
- 7—Connectors P42 and J2

- 8—Connectors P43 and J3
- 9—Hex hd captive screw (2)
- 10—Receiver tuner group
- 11—Acquisition RF power supply control 9156017
- 12—0.062 x 7/16 spg pin MS171435 (2)
- 13—1-31/32-in-lg str pin 5315-565-0811
- 14—3.844-in-lg str pin 9000024

Figure 126.1. Acquisition receiver-transmitter 9156628 or 10185056—legend.

d. Connect connectors P23 (3), P44 (4), and P45 (5) to connectors J1, J3, and J2, respectively.

e. Connect connectors P16 (1) and P2 (2) to connectors J18 and J19, respectively.

f. Connect connector P13 (1, fig. 126.2) to connector J12.

g. Perform the antenna voltage, current, and AFC checks as follows:

- (1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.
- (2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.
- (3) On ATBM systems, refer to TM 9-1430-251-12/2.

h. Install the main access cover (A, fig. 97).

#### 125.4.1. Installation of Receiver Tuner Group 10185056

a. Install the receiver tuner group (10, fig. 126.1) and secure with two hexagon-head captive screws (9).

b. Connect connectors P20 and P20 (3 and 2, fig. 126.2) to connectors J17 and J24, respectively.

c. Connect connectors P22 and P42 (6 and 7, fig. 126.1) to connectors J1 and J2, respectively.

d. Connect connectors P23 (3) and P45 (5) to connectors J1 and J2, respectively.

e. Connect connectors P16 (1) and P2 (2) to connectors J18 and J19, respectively.

f. Connect connector P13 (1, fig. 126.2) to connector J12.

g. Perform the antenna voltage, current, and AFC checks and adjustments as follows:

- (1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.
- (2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.
- (3) On ATBM systems, refer to TM 9-1430-251-12/2.

h. Install the main access cover (A, fig. 97).

#### 125.5. Maintenance of Main Frequency Converter Assembly (Signal Mixer) 9989320 or Auxiliary Frequency Converter Assembly (Signal Mixer) 9990516

*Note.* Removal, maintenance, and installation procedures for the main and auxiliary frequency converter assemblies (signal mixers) are identical except for cable connections; therefore, only the main frequency converter assembly is covered. Refer to figure 126.3 for cable connections to the auxiliary frequency converter assembly.

##### a. Removal.

- (1) Remove the main access cover (A, fig. 97).
- (2) Disconnect connectors P1 and P4 (6 and 12, fig. 126.3) from connectors J32 (7) and J31 (13), respectively.
- (3) Remove the main frequency converter assembly (signal mixer) (16).

b. *Disassembly and Assembly.* Disassemble and assemble the main frequency converter assembly (signal mixer) (para 85b).

##### c. Installation.

- (1) Install the main frequency converter assembly (signal mixer) (16).
- (2) Connect connectors P1 (6) and P4 (12) to connectors J32 (7) and J31 (13), respectively.
- (3) Perform the antenna voltage, current, and AFC checks and adjustments as follows:
  - (a) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.
  - (b) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.
  - (c) On ATBM systems, refer to TM 9-1430-251-12/2.
- (4) Install the main access cover (A, fig. 97).



### 125.6. Removal and Installation of Variable Resistor

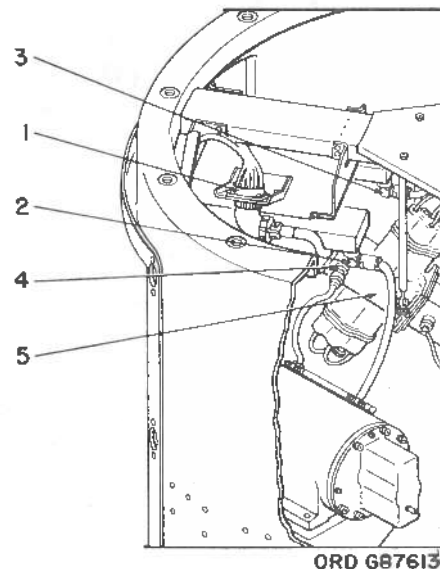
#### a. Removal.

- (1) Remove the receiver tuner group (para 125.3).
- (2) Remove the mounting plate (5, fig. 126.3).
- (3) Remove the protective cover (4, fig. 126.4). Disconnect and tag the three leads (5) from the variable resistor (11).
- (4) Disconnect connector P1 (6, fig. 126.3) from connector J32 (7). Remove the main IF amplifier (8) and the amplifier mounting plate (10).
- (5) Loosen the hexagon nut (6, fig. 126.4) and remove the 87-tooth spur gear (7) from the shaft of the variable resistor.
- (6) Remove the hexagon nut (8), internal tooth lockwasher (9), and flat washer (10) from the shaft of the variable resistor.
- (7) Remove the variable resistor (11) from the housing (12).

#### b. Installation.

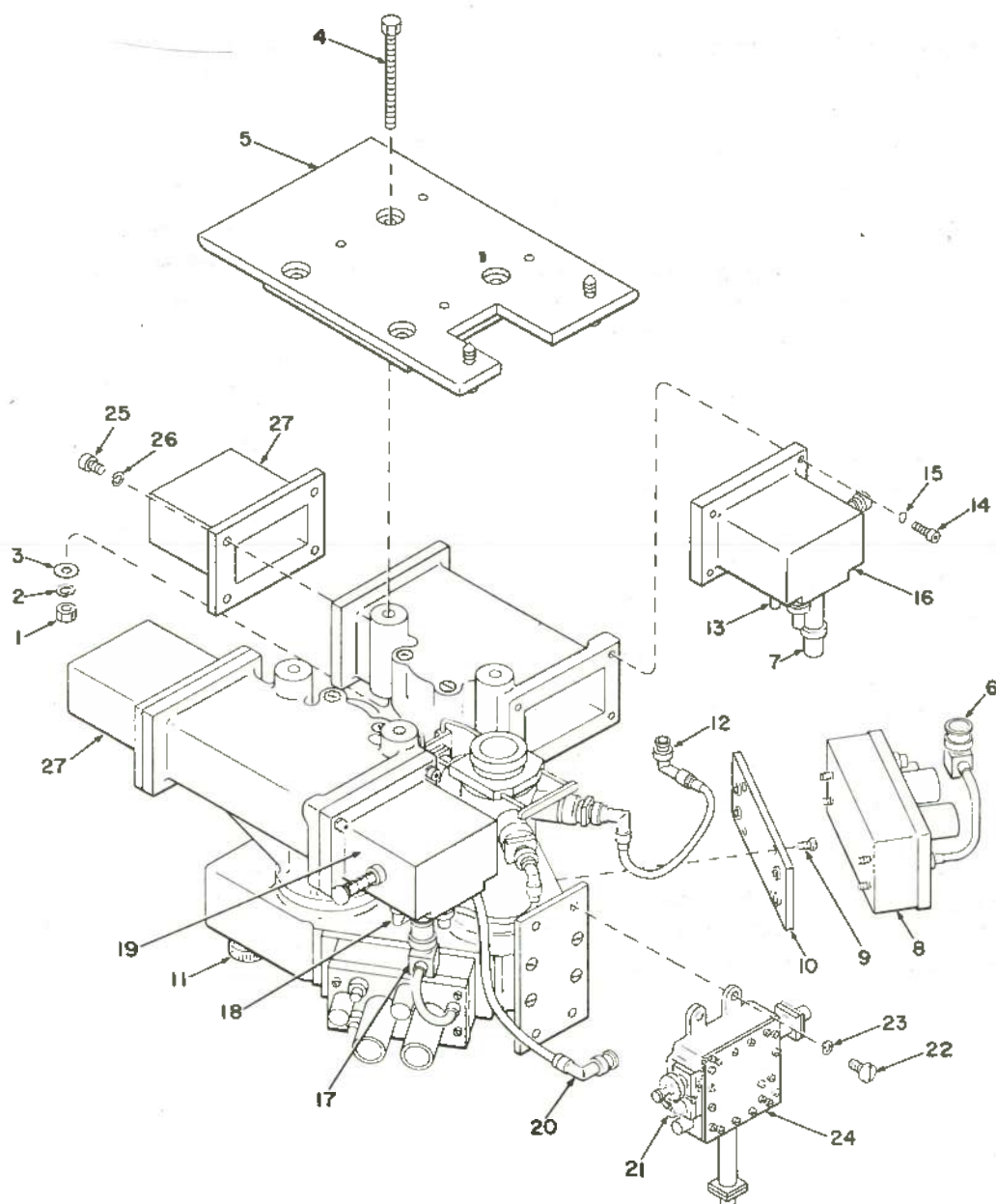
- (1) Mount the replacement variable resistor (11) on the housing (12) and secure with the flat washer (10), internal tooth lockwasher (9), and hexagon nut (8).

- (2) Connect the leads (5) (TM 9-1430-259-34) and install the protective cover (4).



- 1—Connectors P13 and J12
- 2—Connectors P20 and J24
- 3—Connectors P20 and J17
- 4—Connectors P19 and J1
- 5—Main noise generator 8520785

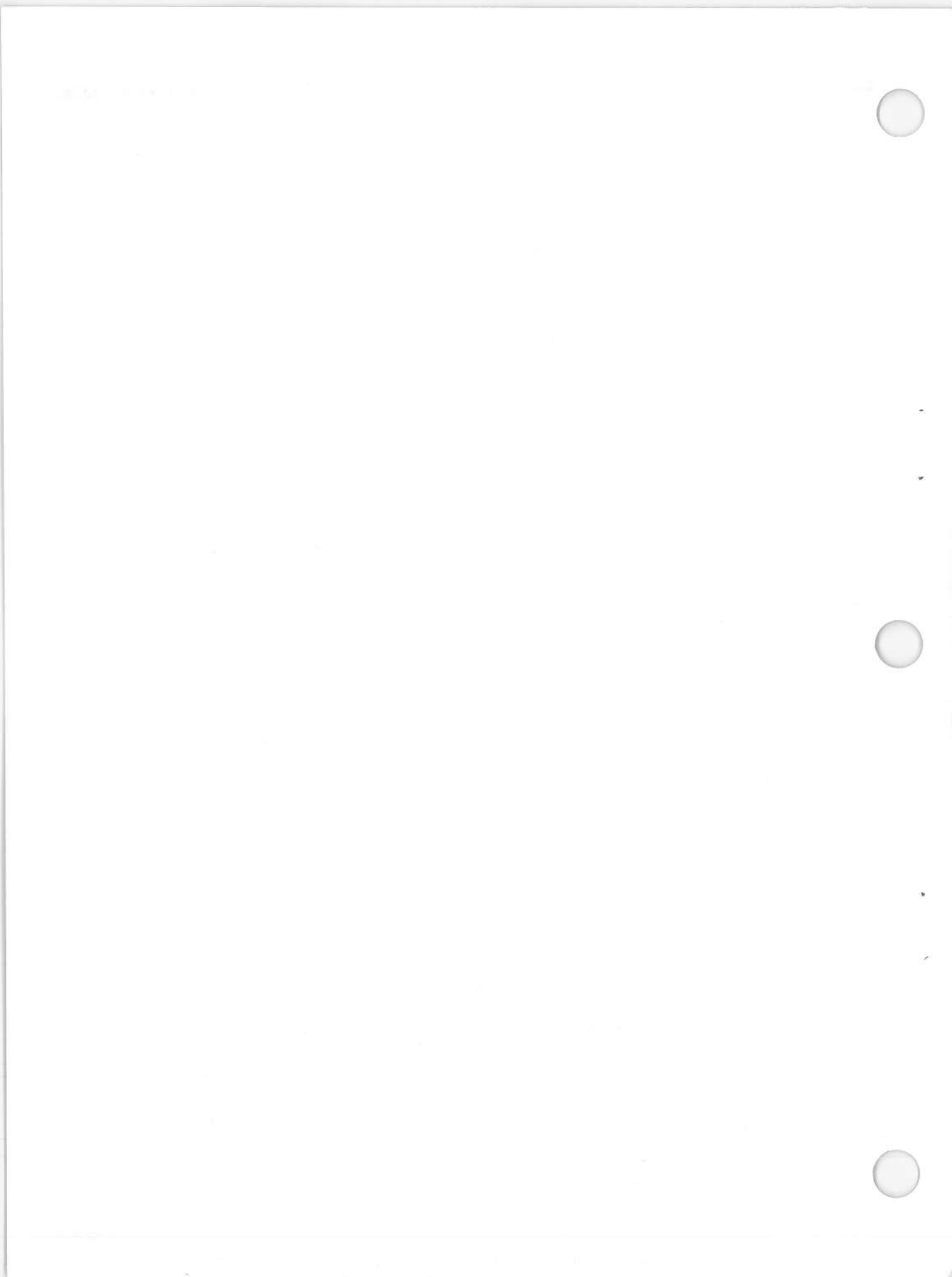
Figure 126.2. Acquisition receiver-transmitter 9156628 or 10185056—cutaway view.

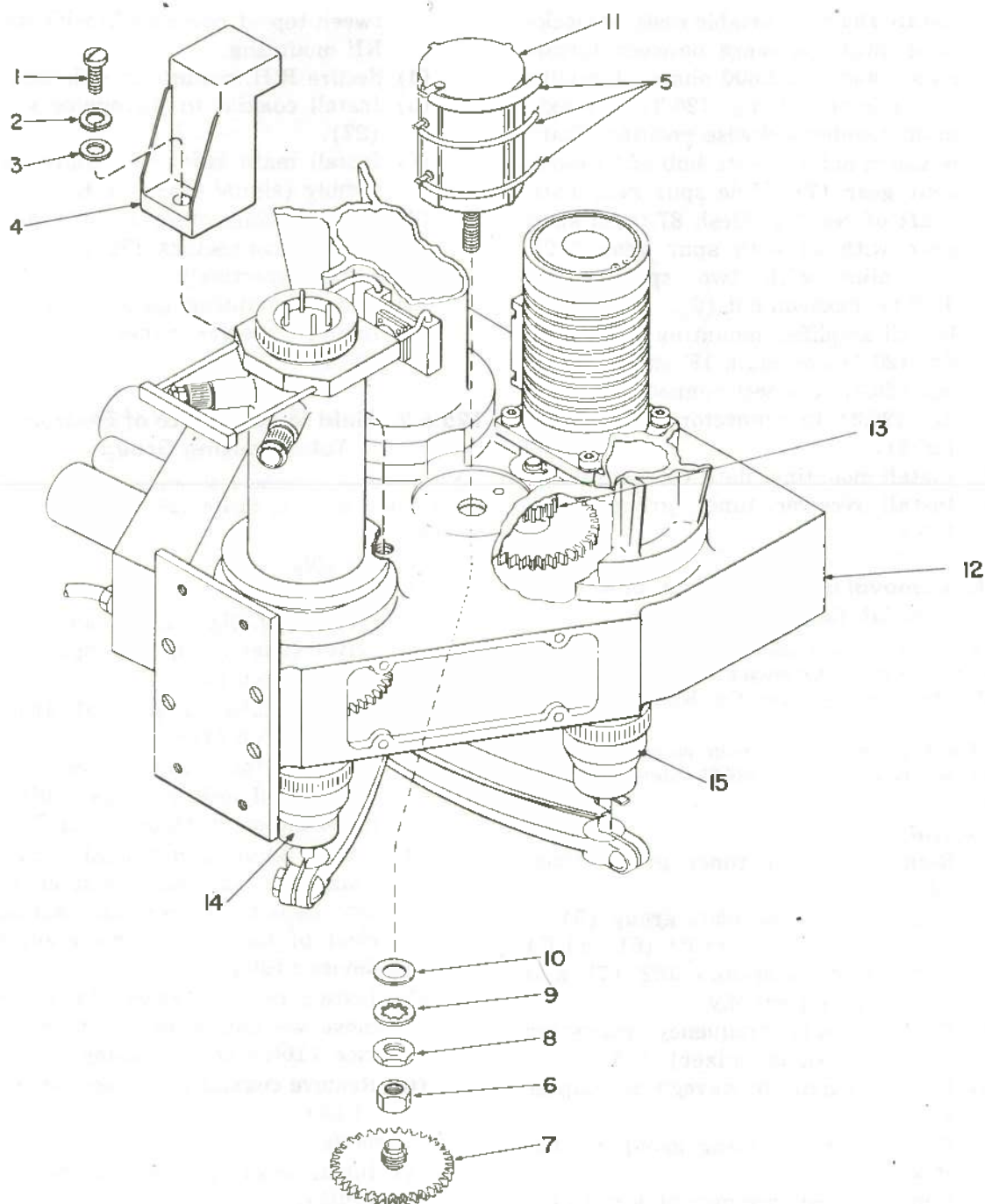


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| 1— $\frac{1}{4}$ -20 hex. nut 9157795-8 (4)                        | 16—Main frequency converter assembly (signal mixer) 9989320      |
| 2— $\frac{1}{4}$ -in. lockwasher 9157798-20 (4)                    | 17—Connectors P1 and J42   |
| 3— $\frac{1}{4}$ -in. fl washer 9157794-12 (4)                     | 18—Connectors P41 and J41  |
| 4— $\frac{1}{4}$ -20 x $3\frac{1}{2}$ hex. hd screw MS35307-20 (4) | 19—Auxiliary frequency converter assembly (signal mixer) 9990516 |
| 5—Mounting plate group   | 20—Connector P3  |
| 6—Connector P1   | 21—Connector J20   |
| 7—Connector J32  | 22—No. 10-24 x $\frac{5}{8}$ pan-h screw 9157788-75 (4)          |
| 8—Main IF amplifier 9156573 or 10185029                            | 23—No. 10 lockwasher 9157798-14 (4)                              |
| 9—No. 6-32 x $\frac{3}{8}$ FH screw 9157792-46 (4)                 | 24—Frequency converter assembly (AFC mixer) 7621830              |
| 10—Amplifier mounting plate 9990529                                | 25—No. 10-24 x $\frac{3}{4}$ hex. soc-hd screw 9157796-41 (4)    |
| 11—Knob  | 26—No. 10 lockwasher 9157798-14 (4)                              |
| 12—Connector P4  | 27—Coaxial to waveguide adapter 1430-564-9902 (2)                |
| 13—Connector J31   |  |
| 14—No. 10-24 x $\frac{3}{4}$ hex. soc-hd screw 9157796-41 (4)      |  |
| 15—No. 10 lockwasher 9157798-14 (4)                                |  |

Figure 126.3. Receiver tuner group—partially exploded view.





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Figure 126.4. Removal and installation of variable resistor.

- (3) Rotate shaft of variable resistor clockwise until resistance between terminals 1 and 3 is 2,600 ohms. Manually rotate knob (11, fig. 126.3) to maximum counterclockwise position. Start hexagon nut (6) onto hub of 87-tooth spur gear (7). Slide spur gear onto shaft of resistor. Mesh 87-tooth spur gear with 35-tooth spur gear (12) and align with two spur gears. Tighten hexagon nut (6).
- (4) Install amplifier mounting plate (10, fig. 126.3) and main IF amplifier (8, fig. 126.3). Connect connector P1 (6, fig. 126.3) to connector J32 (7, fig. 126.3).
- (5) Install mounting plate (5, fig. 126.3).
- (6) Install receiver tuner group (par. 125.4).

#### 125.6.1. Removal and Installation of RH or LH Mounting Group

*Note.* The removal and installation procedures for both LH and RH mounting groups are identical, therefore, only the procedures for the RH mounting is covered.

*Note.* The key numbers shown in parentheses in *a* and *b* below refer to figure 126.3 unless otherwise indicated.

##### *a. Removal.*

- (1) Remove receiver tuner group (par. 125.3).
- (2) Remove mounting plate group (5).
- (3) Disconnect connectors P1 (6) and P4 (12) from connectors J32 (7) and J31 (13), respectively.
- (4) Remove main frequency converter assembly (signal mixer) (16).
- (5) Remove coaxial to waveguide adapter (27).
- (6) Remove RH mounting group (1, fig. 126.4.1).
- (7) Remove impedance matching rod (1F, fig. 126.4.1).

##### *b. Installation.*

- (1) Install impedance matching rod (1F, fig. 126.4.1).
- (2) Place RH mounting group (1, fig. 126.4.1) on housing (7, fig. 126.4.1).
- (3) Adjust shim (fig. 126.4.2), by adding or peeling laminations, to obtain a clearance of  $0.125 \pm 0.001$ -inch be-

tween top of cover and inside wall of RH mounting.

- (4) Secure R.H. mounting on housing.
- (5) Install coaxial to waveguide adapter (27).
- (6) Install main frequency converter assembly (signal mixer) (16).
- (7) Connect connectors P1 (6) and P4 (12) to connectors J32 (7) and J31 (13), respectively.
- (8) Install mounting plate group (5).
- (9) Install receiver tuner group (par. 125.4).

#### 125.6.2. Field Maintenance of Electron Tube Housing Group

*Note.* The key numbers shown in parentheses in *a* and *b* below refer to figure 126.4.1 unless otherwise indicated.

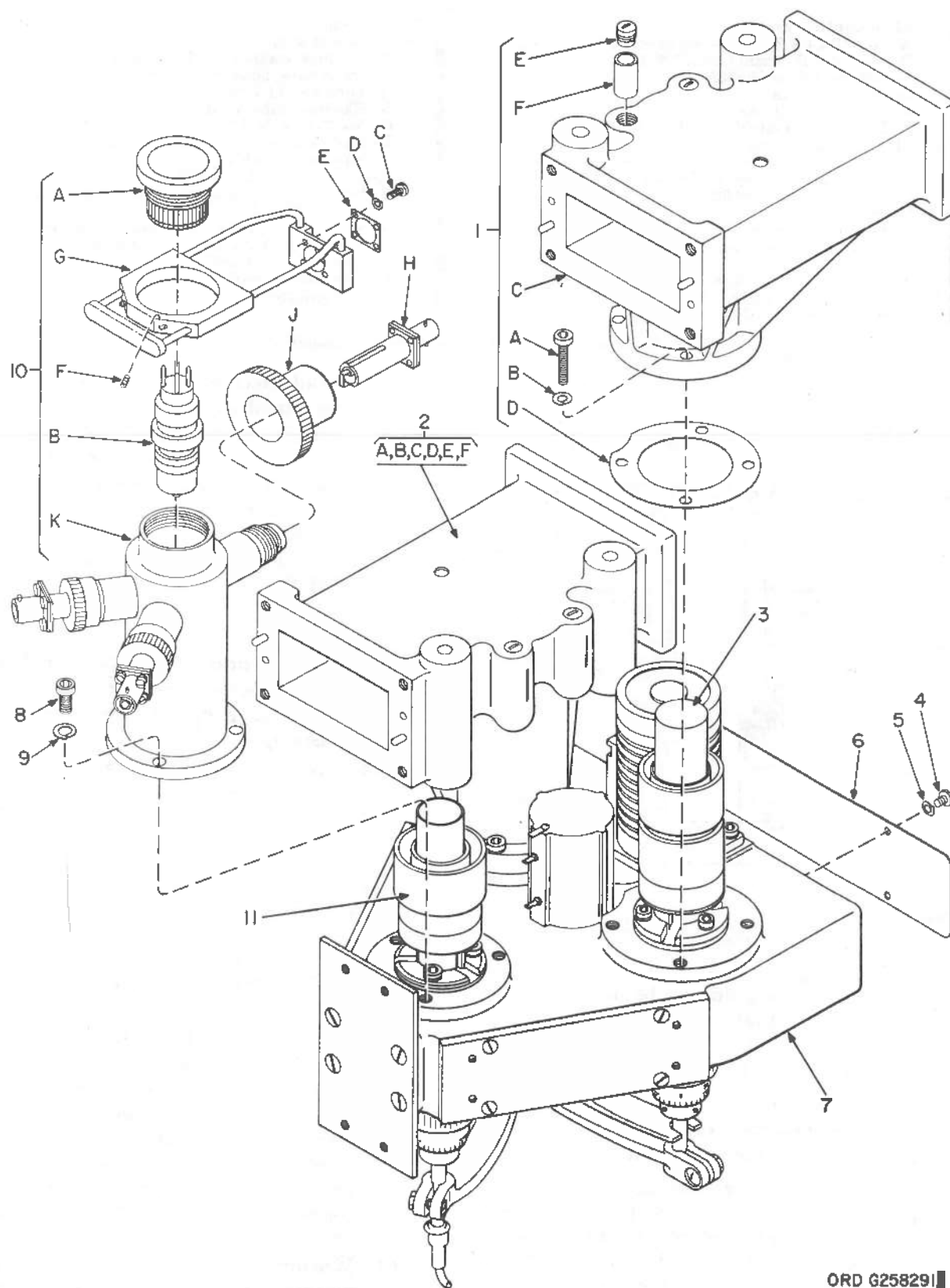
##### *a. Disassembly.*

- (1) Loosen two hexagon head captive screws (9, fig. 126.1) and pull receiver tuner group (10, fig. 126.1) to the extended position.
- (2) Remove tube shield (10) and electron tube V5 (10B).
- (3) Remove four fillister head screws (10C) and lock washers (10D). Remove indicator plate (10E).
- (4) Loosen knurled nut (10J) and push coaxial to waveguide adapter (10H) into housing (10K) until adapter is clear of bar on waveguide adjusting device (10G).
- (5) Loosen two setscrews (10F) and remove waveguide probe adjusting device (10G) from housing (10K).
- (6) Remove coaxial to waveguide adapter (10H).

##### *b. Assembly.*

- (1) Install coaxial to waveguide adapter (10H).
- (2) Place waveguide probe adjusting device (10G) on housing (10K).
- (3) Extend coaxial to waveguide adapter (10H) until seated in adjusting device. Place indicators plate (10E) over end of adapter and secure plate and adapter to adjusting device with four lock washers (10D) and fillister head screws (10C).





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Figure 126.4.1. Receiver tuner group—partially exploded view.

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| <ul style="list-style-type: none"> <li>1—RH mounting group               <ul style="list-style-type: none"> <li>A—No. 10-24 x 1/2 socket hd screw 9157796-42 (4)</li> <li>B—No. 10 lock washer 9157798-14 (4)</li> <li>C—RH mounting 9990523</li> <li>D—Shim 7606348</li> <li>E—Plug 7606349 (2)</li> <li>F—Impedance matching rod 7600498 (2)</li> </ul> </li> <li>2—LH mounting group               <ul style="list-style-type: none"> <li>A—No. 10-24 x 1/2 socket hd screw 9157796-42 (4)</li> <li>B—No. 10 lock washer 9157798-14 (4)</li> <li>C—LH mounting 9990524</li> <li>D—Shim 9156693</li> <li>E—Plug 7606349 (2)</li> <li>F—Impedance matching rod 7600498 (2)</li> </ul> </li> <li>3—Cover               <ul style="list-style-type: none"> <li>4—No. 6-32 x 3/8 fil hd screw 9157790-39 (6)</li> <li>5—No. 6 lock washer 9157798-8 (6)</li> <li>6—Access cover 9990531</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>7—Housing               <ul style="list-style-type: none"> <li>8—No. 10-24 x 1/2 socket hd screw 9157796-40 (3)</li> <li>9—No. 10 lock washer 9157798-14 (3)</li> </ul> </li> <li>10—Electron tube housing group               <ul style="list-style-type: none"> <li>A—Tube shield 7606331</li> <li>B—Electron tube V5 JAN6BL6</li> <li>C—No. 3-56 x 3/8 fil hd screw 9157791-15 (4)</li> <li>D—Lock washer (p/o coaxial to waveguide adapter 7608186)</li> <li>E—Indicator plate 7607784</li> <li>F—Setscrew (p/o waveguide probe adjusting device 9990501)</li> <li>G—Waveguide probe adjusting device 9990501</li> <li>H—Coaxial to waveguide adapter 7608186 (3)</li> <li>J—Knurled nut 9156692</li> <li>K—Housing 9156695</li> </ul> </li> <li>11—Local oscillator tuner group</li> </ul> |
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Figure 126.4.1. Receiver tuner group—partially exploded view—legend.

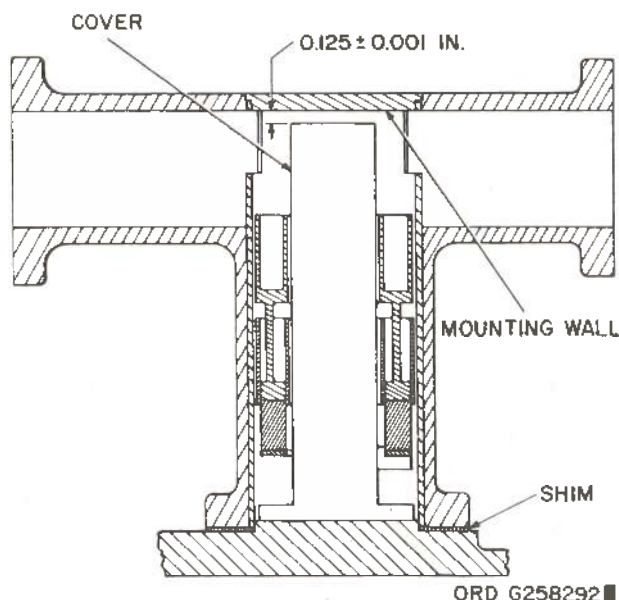


Figure 126.4.2. Adjustment of RH or LH mounting group.

- (4) Aline waveguide probe adjusting device so that coaxial to waveguide adapter will move in and out of housing without binding.

**Caution:** Use care in tightening two setscrews (10F) to prevent distortion of housing (10K).

- (5) Apply sealing compound 8030-174-2599 to threads of two setscrews (10F) and secure waveguide probe adjusting device (10G) to housing (10K).
- (6) Tighten knurled nut (10J).

- (7) Install electron tube V5 (10B) and tube shield (10A).
- (8) Push receiver tuner group (10, fig. 126.1) into receiver-transmitter and secure with two hexagon head captive screws (9, fig. 126.1).
- (9) Perform antenna voltage, current and AFC checks and adjustments (TM 9-1430-251-20 or TM 9-1430-251-20/2).

### 125.6.3 Removal and Installation of Main Pres-selector Tuner Group or Auxiliary Pres-selector Tuner Group

**Note.** The procedures in *a* and *b* below apply to either the main pres-selector tuner group (17, fig. 126.4.3) or auxiliary pres-selector tuner group (21, fig. 126.4.3). However, only the main pres-selector tuner group is covered.

**Note.** The key numbers shown in parentheses in *a* and *b* below refer to figure 126.4.3 unless otherwise indicated.

#### *a. Removal.*

- (1) Remove RH mounting group (par. 125.6.1a).
- (2) Rotate knob (11, fig. 126.3) to maximum counterclockwise position, hold knob in this position, and record reading of main pres-selector micrometer dial (15 fig. 126.4).
- (3) Loosen three hexagon nuts (1, 5, and 9) and remove vernier clamp (4), connecting link (8) and vernier clamp (12).
- (4) Measure and record distance between bottom surface of control dial (13B) and end of shaft (17C).

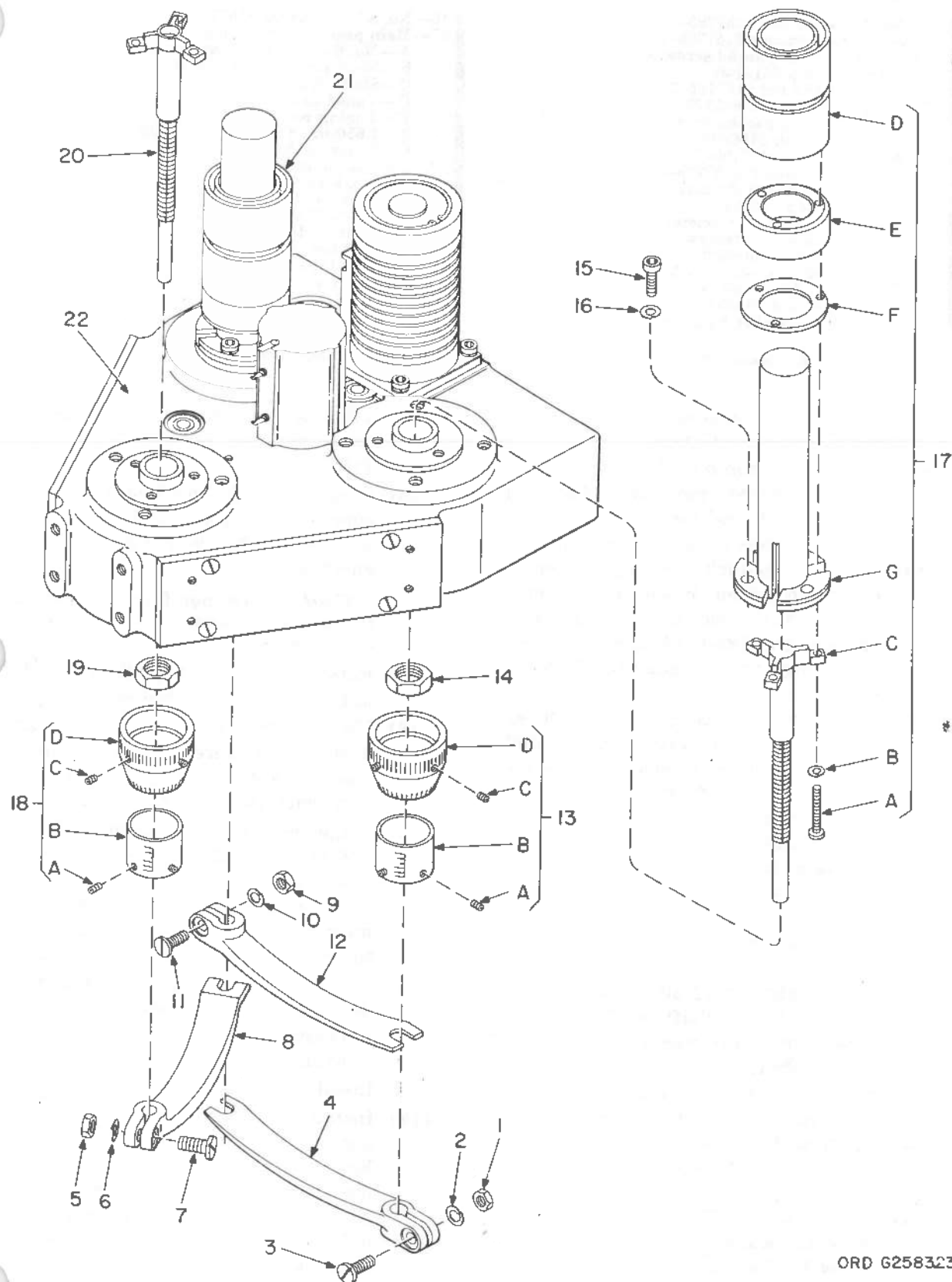


Figure 126.4.3. Receiver-tuner group—partially exploded view.

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| <ul style="list-style-type: none"> <li>1—No. 10-24 hex nut 9157795-7</li> <li>2—No. 10 lock washer 9157798-14</li> <li>3—No. 10-24 x <math>\frac{3}{4}</math> pan-hd screw 9157788-76</li> <li>4—Vernier clamp 7615146</li> <li>5—No. 10-24 hex nut 9157795-7</li> <li>6—No. 10 lock washer 9157798-14</li> <li>7—No. 10-24 x <math>\frac{3}{4}</math> pan-hd screw 9157788-76</li> <li>8—Connecting link 9156697</li> <li>9—No. 10 hex nut 9157795-7</li> <li>10—No. 10 lock washer 9157798-14</li> <li>11—No. 10-24 x <math>\frac{3}{4}</math> pan-hd screw 9157788-76</li> <li>12—Vernier clamp 7615146</li> <li>13—Main preselector micrometer dial               <ul style="list-style-type: none"> <li>A—No. 6-32 x <math>\frac{1}{4}</math> setscrew 583939 (2)</li> <li>B—Control dial 7606382</li> <li>C—No. 6-32 x <math>\frac{1}{8}</math> setscrew 583937 (4)</li> <li>D—Control dial 7606383</li> </ul> </li> <li>14—0.468-32 hex nut 7606379</li> <li>15—8-32 x <math>\frac{1}{2}</math> hex socket hd screw 9157796-33 (3)</li> </ul> | <ul style="list-style-type: none"> <li>16—No. 8 lock washer 9157798-11 (3)</li> <li>17—Main preselector tuner group               <ul style="list-style-type: none"> <li>A—No. 6-32 x 1 fil hd screw 9157790-45 (3)</li> <li>B—No. 6 lock washer 9157798-8 (3)</li> <li>C—Shaft 7615144</li> <li>D—Tuned cavity 7615147</li> <li>E—Tuning core 7606384</li> <li>F—1.656-in-od retn ring 7606385</li> <li>G—Cover 7615142</li> </ul> </li> <li>18—Local oscillator micrometer dial               <ul style="list-style-type: none"> <li>A—No. 6-32 x <math>\frac{1}{4}</math> setscrew 583939 (2)</li> <li>B—Control dial 7606382</li> <li>C—No. 6-32 x <math>\frac{1}{8}</math> setscrew 583937 (4)</li> <li>D—Control dial 7606383</li> </ul> </li> <li>19—0.468-32 hex nut 7606379</li> <li>20—Shaft 7615138</li> <li>21—Auxiliary preselector tuner group</li> <li>22—Housing</li> </ul> |
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Figure 126.4.3. Receiver-tuner group—partially exploded view—legend.

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| <ul style="list-style-type: none"> <li>(5) Loosen two setscrews (13A) and remove control dial (13B).</li> <li>(6) Loosen hexagon nut (14).</li> <li>(7) Remove three hexagon socket head screws (15) and lock washers (16).</li> <li>(8) Remove access cover (6, fig. 126.4.1).</li> <li>(9) Using a <math>\frac{3}{4}</math>-inch open-end wrench, carefully loosen hexagon nut (fig. 111) until the mechanical clutch disengages the 126-tooth spur gear but not enough to disengage the 96-tooth spur gear.</li> <li>(10) Grasp base of main preselector tuner group (17) and rotate control dial (13D) counter clockwise, at the same time carefully lift main preselector tuner group vertical until shaft (17C) is disengaged.</li> <li>(11) Disassemble main preselector tuner group (17).</li> </ul> <p>b. Installation.</p> <ul style="list-style-type: none"> <li>(1) Assemble main preselector tuner group (17).</li> <li>(2) Apply light film of oil 9150-257-5449 to threads of shaft (17C). Grasp base of main preselector tuner group and carefully insert shaft (17C) into housing (22) until shaft is engaged.</li> <li>(3) Hold main preselector tuner group firmly and rotate control dial (13D) clockwise until cover (17G) is seated on housing (22).</li> <li>(4) Secure cover (17G) to housing with three lock washers (16) and hexagon socket head screws (15).</li> </ul> | <ul style="list-style-type: none"> <li>(5) Tighten hexagon nut (14) until all axial play is removed from shaft (17C).</li> <li>(6) Check shaft for binding by rotating control dial (13D). If shaft is binding loosen hexagon nut (14) until shaft is free.</li> </ul> <p><b>Caution:</b> Do not force control dial to turn after shaft has reached end of travel.</p> <ul style="list-style-type: none"> <li>(7) Rotate control dial (13D) clockwise until shaft has reached end of travel.</li> <li>(8) Place control dial (13B) onto shaft. Measure distance recorded in a(4) above, place dial in position and secure with two setscrews (13A).</li> <li>(9) Make certain that knob (11, fig. 126.3) is in the maximum counter-clockwise position, hold knob in this position, and adjust main preselector micrometer dial (15, fig. 126.4) to the reading recorded in a(2) above.</li> <li>(10) Tighten hexagon nut (fig. 111) until the 126-tooth spur gear engages the mechanical clutch, being careful not to change the dial adjustment.</li> <li>(11) Install access cover (6, fig. 126.4.1).</li> <li>(12) Install vernier clamp (12), connecting link (8), and vernier clamp (4). Rotate knob (11, fig. 126.3) to the maximum clockwise position, and adjust vernier clamps and connecting link to the proper positions on shafts. Tighten hexagon nuts (9, 5, and 1).</li> </ul> |
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- (13) Rotate knob, (11, fig. 126.3) fully counterclockwise, then fully clockwise to make certain the receiver tuner operates without binding in any position.
- (14) Install RH mounting group (par. 125.6.1b (11)-(8)).
- (15) Perform mechanical test of receiver tuner group (par. 125.6.7). If unit fails mechanical test, recheck procedures in (6), (12), and (13) above.
- (16) Install receiver tuner group (par. 125.4).

#### 125.6.4. Removal and Installation of 96-Tooth Spur Gear

*Note.* The key numbers shown in parentheses in *a* and *b* below refer to figure 126.4.4 unless otherwise indicated.

##### *a. Removal.*

- (1) Remove variable resistor (par. 125.6a).
- (2) Disconnect and tag leads from motor-generator (A, fig. 110).
- (3) Remove motor-generator, with 20-tooth spur gear (F, fig. 110) attached, from housing group (J, fig. 110).
- (4) Rotate knob (11, fig. 126.3) to maximum counterclockwise position and hold in this position.
- (5) Record readings on the local oscillator micrometer dial (14, fig. 126.4), and main preselector micrometer dial (15, fig. 126.4).

**Caution:** To prevent damage to tuning plungers do not rotate knob (11, fig. 126.3) or micrometer dials after removal of range limit stop.

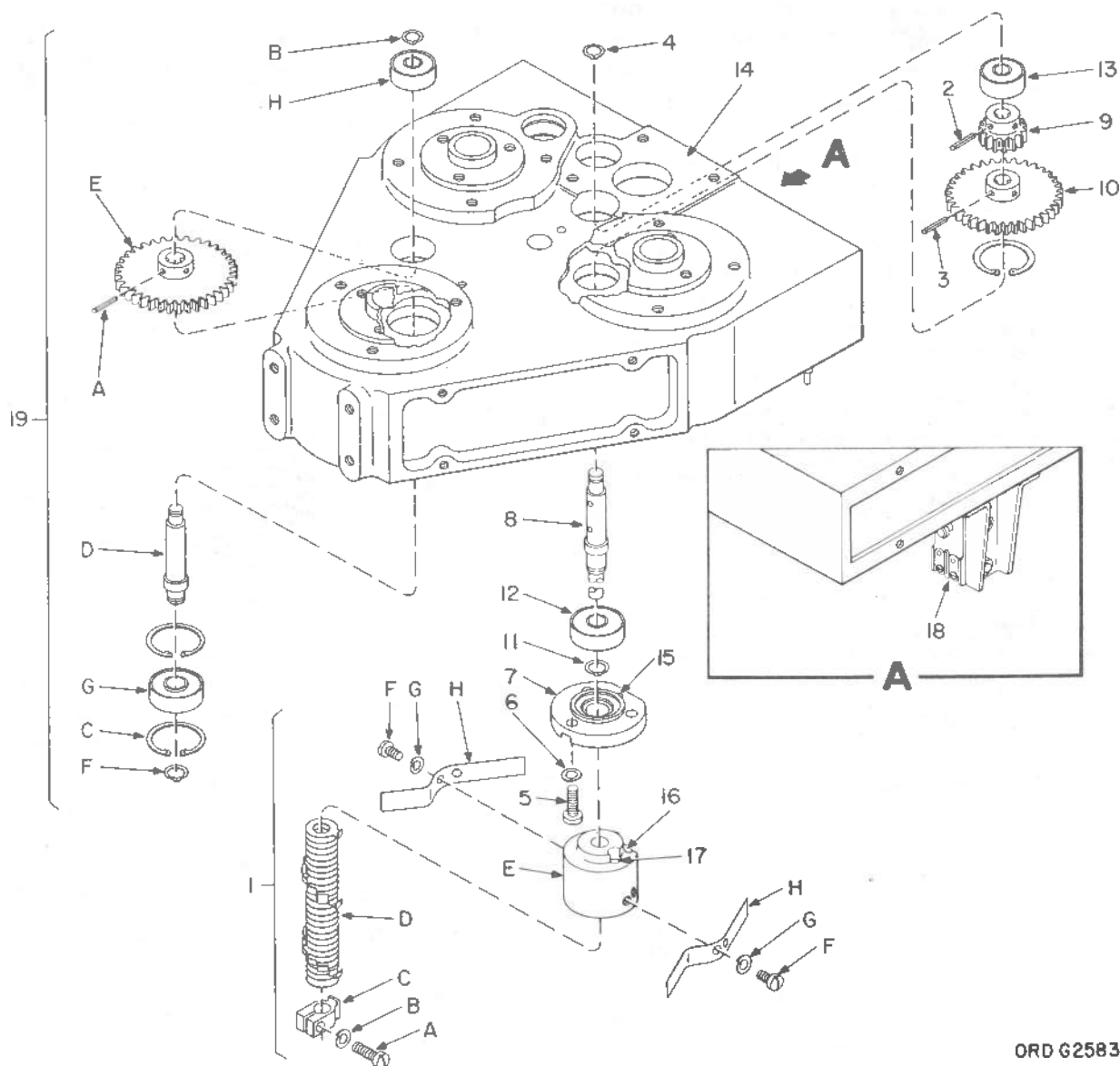
- (6) Loosen hexagon socket head screw (1A) and remove range limit stop (1C), twenty-six key washers (1D) and range limit stop (1E). Remove two springs (1H).
- (7) Remove access cover (6, fig. 126.4.1).
- (8) Remove spring pin (2) from 35-tooth spur gear (9) and spring pin (3) from 96-tooth spur gear (10).
- (9) Remove external retaining ring (4).
- (10) Remove three fillister head screws (5) and lock washers (6).

- (11) Remove bearing retainer assembly (7).
- (12) Remove shaft (8) with ball bearing (12) attached.
- (13) Remove spur gears (9 and 10) from housing (14).
- (14) Remove retaining ring (11) and ball bearing (12) from shaft (8).
- (15) Remove ball bearing (13).

##### *b. Installation.*

- (1) Place new spur gear (10) onto shaft (8). Obtain No. 6-32 x  $\frac{1}{8}$  setscrew from stock and secure gear to shaft with pilot hole in gear alined with hole in shaft.
- (2) Using pilot hole in gear and hole in shaft as a guide, drill and ream hole through gear and shaft for 0.094-in. spring pin.
- (3) Loosen setscrew and remove spur gear from shaft. Return setscrew to stock.
- (4) Install ball bearing (13) into housing (14).
- (5) Place ball bearing (12) on shaft (8) and secure with external retaining ring (11).
- (6) Adjust the local oscillator micrometer dial (14, fig. 126.4) and the main preselector micrometer dial (15, fig. 126.4) to the readings recorded in *a*(5) above.
- (7) Place 96-tooth spur gear (10) into position in housing (14) and mesh with two 126-tooth spur gears (fig. 111). Holding 96-tooth spur gear in position insert shaft (8) through housing (14) and hub of gear.
- (8) Place 35-tooth spur gear (9) in position on top of 96-tooth spur gear (10) and install shaft (8) through hub of the gear and bearing (13).
- (9) Install bearing retainer assembly (7) and secure with three lock washers (6) and fillister head screws (5).
- (10) Repeat (6) above to make certain the gears are meshed properly.
- (11) Install external retaining ring (4).
- (12) Rotate 35-tooth spur gear (9) on shaft until hole in hub is alined with





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| 1—Range limit stop group                                  | 11— $\frac{3}{8}$ -in. ext. retn ring MS16624-4037 |
| A—No. 8-32 x $\frac{1}{2}$ hex socket hd screw 9157796-33 | 12—22-MM-od ball bearing 700156                    |
| B—No. 8 lock washer 9157798-11                            | 13—19-MM-od ball bearing 700018                    |
| C—Range limit stop 7606346                                | 14—Housing   |
| D—Key washer 7606345 (26)                                 | 15—Pin   |
| E—Range limit stop 7615140                                | 16—Slotted hole                                    |
| F—No. 6-32 x $\frac{1}{4}$ fil hd screw 9157790-37 (4)    | 17—Hole  |
| G—No. 6 lock washer 9157798-8 (4)                         | 18—Sensitive switch S13                            |
| H—Spring 7606338 (2)                                      | 19—Shaft and gear group                            |
| 2—0.094 x 0.562 spring pin MS171497                       | A—0.094 x 0.562 spring pin MS171497                |
| 3—0.094 x 0.562 spring pin MS171497                       | B—15/64-in. ext. retn ring 583026                  |
| 4—15/64-in. ext. retn ring 583026                         | C—0.866-in. int. retn ring 592671                  |
| 5—No. 8-32 x $\frac{1}{2}$ fil hd screw 9157790-56 (3)    | D—Shaft 9156691                                    |
| 6—No. 8 lock washer 9157798-11 (3)                        | E—96-tooth spur gear 7606377                       |
| 7—Bearing ret.assy 7606389                                | F— $\frac{3}{8}$ -in. ext retn ring MS16625-4075   |
| 8—4 $\frac{1}{2}$ -in.-lg shaft 7606360                   | G—22-MM-od ball bearing 700156                     |
| 9—35-tooth spur gear 7606375                              | H—22-MM-od ball bearing 700018                     |
| 10—96-tooth spur gear 7606377                             |  |

Figure 126.4.4. Receiver-tuner group—partially exploded view.

- hole in shaft and install spring pin (2).
- (13) Rotate shaft (8) until hole in hub of 96-tooth spur gear (10) is alined with hole in shaft and install spring pin (3).
  - (14) Install two springs (1H) on range limit stop (1E).
  - (15) Apply light film of oil 9150-257-5449 to contact surfaces of range limit stop (1E) and twenty-six key washers (1D).
  - (16) Place range limit stop (1E) on shaft and aline pin (15) with slotted hole (16) on range limit stop.
  - (17) Stack twenty-six key washers (1D), tab sides upward, onto shaft. Fit tab of top key washer into hole (17) in range limit stop (1E).
  - (18) Adjust knob (11, fig. 126.3) to obtain readings recorded on micrometer dials in *a*(5) above.
  - (19) Make certain that shaft does not rotate and install range limit stop (1C) on shaft and position vertically so that key washers (1D) do not bind.
  - (20) Rotate range limit stop (1C) counterclockwise until range limit stop group (1) actuates sensitive switch (18).
  - (21) Secure range limit stop by tightening hexagon socket head screw (1A).
  - (22) Install access cover (6, fig. 126.4.1).
  - (23) Place motor-generator (A, fig. 110) with 20-tooth spur gear attached in position on housing group (J, fig. 110). Mesh 20-tooth spur gear (fig. 111) with 70-tooth spur gear.
  - (24) Secure motor-generator with four lock washers (C, fig. 110) and hexagon socket head screws (B, fig. 110).
  - (25) Connect leads to terminals on motor-generator (TM 9-1430-259-34).
  - (26) Install variable resistor (par. 125.6, 1-5).
  - (27) Perform mechanical test of receiver tuner group (par. 125.6.7).
  - (28) Install receiver tuner group (par. 125.4 *a-f*).

- (29) Adjust motor-generator (par. 115).
- (30) Perform antenna voltage current and AFC checks and adjustments (TM 9-1430-251-20 or TM 9-1430-251-20/2).
- (31) Install main access cover (A, fig. 97).

#### 125.6.5. Removal and Installation of Shaft and Gear Group

*Note.* The key numbers shown in parentheses in *a* and *b* below refer to figure 126.4.4 unless otherwise indicated.

##### *a. Removal.*

- (1) Remove receiver tuner group (par. 125.3).
- (2) Remove mounting plate group (5, fig. 126.3).
- (3) Disconnect connector P1 (17, fig. 126.3) from connector J42.
- (4) Remove auxiliary IF amplifier and amplifier mounting plate (TM 9-1430-253-20 or TM 9-1430-253-20/2).
- (5) Rotate knob (11, fig. 126.3) to maximum counterclockwise position, hold in this position and record reading on local oscillator micrometer dial (14, fig. 126.4).
- (6) Remove spring pin (19A).
- (7) Remove external retaining ring (19B) and internal retaining ring (19C).
- (8) Push shaft (19D) with attached ball bearing (19G) from housing (14).
- (9) Remove 96-tooth spur gear (19E) from housing (14).
- (10) Remove external retaining ring (19F) and ball bearing (19G) from shaft (19D).
- (11) Remove ball bearing (19H) from housing (14).

##### *b. Installation.*

- (1) Install ball bearing (19H) into housing (14).
- (2) Place ball bearing (19G) onto shaft (19D) and secure with external retaining ring (19F).

- (3) Place 96-tooth spur gear (19E) into housing (14) and install shaft (19D) with ball bearing (19G) attached. Secure with internal retaining ring (19C) and external retaining ring (19B).
- (4) Rotate knob (11, fig. 126.3) to maximum counterclockwise position and set local oscillator micrometer dial to reading recorded in a(5) above.
- (5) Mesh 96-tooth spur gear (19E) with two 126-tooth spur gears and adjust 96-tooth spur gear on shaft so that bottom of gear is flush with bottom of the two 126-tooth spur gears. Obtain No. 6-32 x  $\frac{1}{8}$  setscrew from stock and secure 96-tooth spur gear to shaft.
- (6) Using pilot hole in hub of 96-tooth spur gear (19E) as a guide, drill and ream hole through gear and shaft for 0.094-in. in spring pin.
- (7) Install spring pin (19A) and remove setscrew and return to stock.
- (8) Install amplifier mounting plate and auxiliary IF amplifier (TM 9-1430-253-20 or TM 9-1430-253-20/2).
- (9) Connect connector P1 (17, fig. 126.3) to connector J42.
- (10) Install mounting plate group (5, fig. 126.3).
- (11) Perform mechanical test of receiver tuner group (par. 125.6.7).
- (12) Install receiver tuner group (par. 125.4).

#### 125.6.6. Removal and Installation of Shaft 7615145

*Note.* The removal and installation procedures for shaft 7615145, located in the local oscillator tuner group (11, fig. 126.4.1), main preselector tuner group (12, fig. 126.4.3), and auxiliary preselector tuner group (21, fig. 126.4.3), are similar. This paragraph covers procedures for the removal and installation of shaft 7615145 located in the local oscillator tuner group with notes, where applicable, for procedures pertaining to the other two shafts located in the main and auxiliary preselector tuner groups.

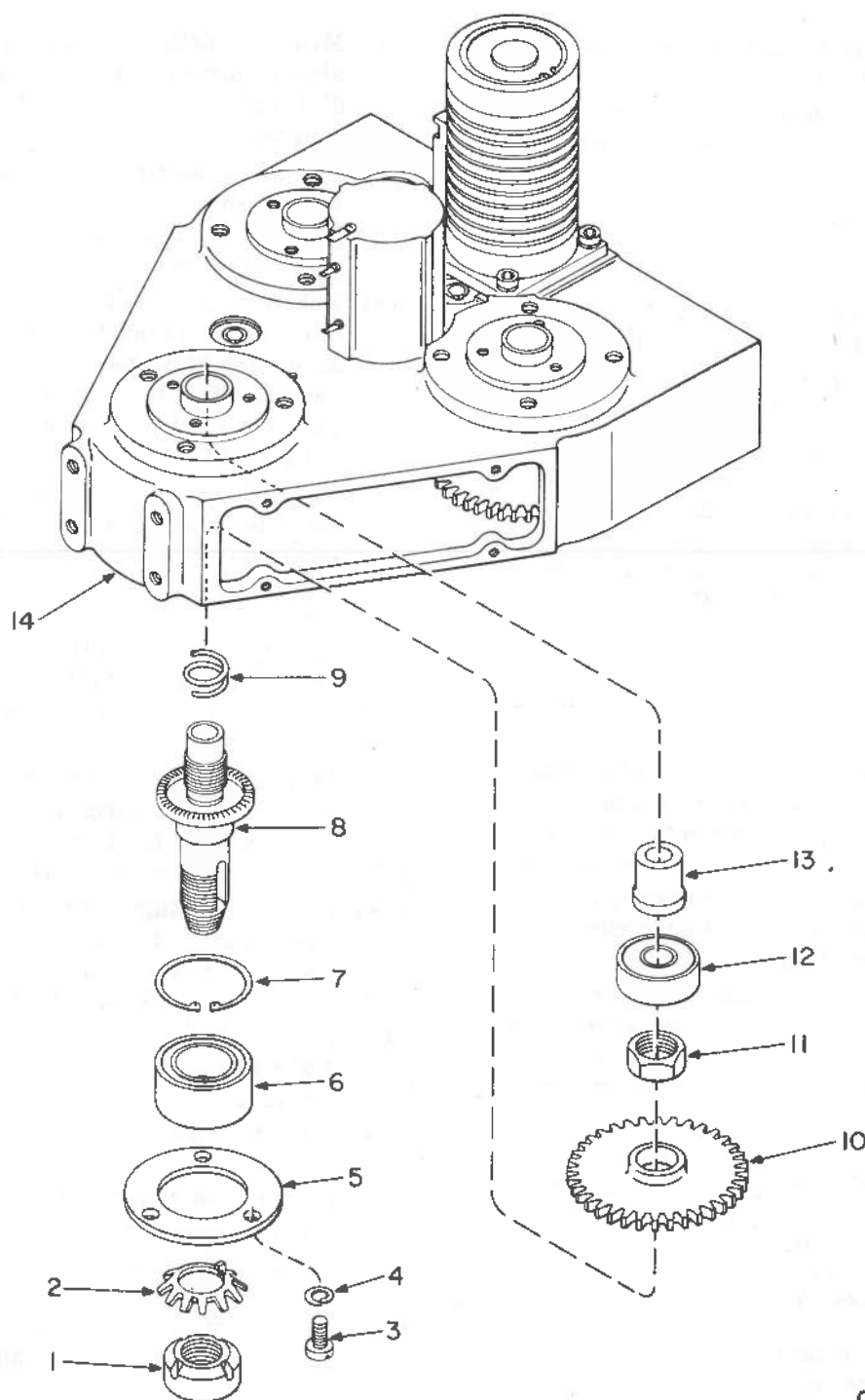
##### a. Removal.

*Note.* When removing shaft from main preselector tuner group or auxiliary preselector tuner group omit (1) through (14) below and perform procedures in paragraph 125.6.3a (1)-(10).

- (1) Remove receiver tuner group (par. 125.3).
- (2) Remove mounting plate group (5, fig. 126.3).
- (3) Loosen tube shield (10A, fig. 126.4.1). Remove electron tube V5 (10B, fig. 126.4.1).
- (4) Remove three socket head screws (8, fig. 126.4.1) and lock washers (9, fig. 126.4.1).
- (5) Remove housing (10K, fig. 126.4.1).
- (6) Remove adapter ring (D, fig. 109).
- (7) Disconnect lead from terminal 3 of variable resistor (GG, fig. 109) and remove dust seal (CC, fig. 109).
- (8) Remove lower tube shield (F, fig. 109) containing electrical contact assembly (E, fig. 109) and lead.
- (9) Rotate knob (11, fig. 126.3) to maximum counterclockwise position, hold knob in this position and record reading of local oscillator micrometer dial (10, fig. 126.4).
- (10) Loosen two hexagon nuts (1 and 5) and remove vernier clamp (4) and connecting link (8).
- (11) Measure and record distance between bottom surface of control dial (18B) and end of shaft (20).
- (12) Remove local oscillator micrometer dial (18).
- (13) Remove hexagon nut (19).
- (14) Rotate shaft (20) counterclockwise until free. Remove shaft from housing (22).
- (15) Remove main IF amplifier (8, fig. 126.3) and amplifier mounting plate (10, fig. 126.3).

*Note.* The key numbers shown in parentheses in (16) through (20) below refer to figure 126.4.5.

- (16) Straighten tooth on external tooth key washer (2) and remove round nut (1) and key washer (2).
- (17) Remove bearing retainer (5), ball bearing (6), and internal retaining ring (7).
- (18) Loosen hexagon nut (11) until shaft (8) is released, and remove shaft and spring (9).



ORD G258437

- 1—0.586-32 round nut 7606359
- 2—0.616-in. ext. tooth key washer 7611980
- 3—No. 10-24 x 1/2 socket hd screw 9157796-39 (3)
- 4—No. 10 lock washer 9157798-14 (3)
- 5—1-9/32-in. bearing ret. 7606366
- 6—1.312-in.-od ball bearing 714453
- 7—1 3/8-in. int. retn ring MS16625-4137

- 8—Shaft 7615145
- 9—1/32-in.-lg. spring 7606368
- 10—126-tooth spur gear 7606373
- 11—5/8-24 hex nut 7606361
- 12—1.125-in.-od ball bearing 7612002
- 13—9.376-in.-id sleeve bearing 7606371
- 14—Housing

Figure 126.4.5. Receiver-tuner group—partially exploded view.

- (19) Remove 126-tooth spur gear (10) and hexagon nut (11).
- (20) Remove ball bearing (12) and sleeve bearing (13) from housing (14).

*b. Installation.*

*Note.* The key numbers shown in parentheses in (1) through (7) below refer to figure 126.4.5, unless otherwise indicated.

- (1) Install sleeve bearing (13) and ball bearing (12) in housing (14).
- (2) Place hexagon nut (11) and 126-tooth spur gear (10) into proper position in housing (14).
- (3) Place spring (9) on shaft (8) and insert shaft into housing (14). Install 126-tooth spur gear (10) and hexagon nut (11) onto shaft. Tighten hexagon nut sufficiently to allow end of shaft to be inserted into ball bearing (12).
- (4) Install shaft (8) into ball bearing (12).
- (5) Hold shaft in position and install internal retaining ring (7), ball bearing (6), and bearing retainer (5).
- (6) Install external tooth key washer (2) and round nut (1). Secure round nut by bending tooth of key washer into slot on round nut.
- (7) Tighten hexagon nut (11) sufficiently to mesh 126-tooth spur gear (10) with adjacent spur gear, but not enough to engage mechanical clutch (fig. 111).

*Note.* When installing shaft in main preselector tuner group or auxiliary preselector tuner group omit (8) through (23) below and perform procedures in paragraph 125.6.3b (2)-(14).

*Note.* The key numbers shown in parentheses in (8) through (12) below refer to figure 126.4.3.

- (8) Apply light film of oil 9150-257-5449 to threads of shaft (20) and install shaft. Rotate shaft clockwise until seated.
- (9) Install hexagon nut (19) and tighten until all axial play is removed from shaft (20) without causing shaft to bind.
- (10) Install local oscillator micrometer dial (18).

- (11) Measure distance recorded in a(11) above, loosen setscrews on control dial (18B) and secure dial in position on shaft.
- (12) Install connecting link (8) and vernier clamp (4). Adjust connecting link and vernier clamp to proper position on shafts.
- (13) Rotate knob (11, fig. 126.3) to maximum counterclockwise position. Hold knob in this position and adjust local oscillator micrometer dial (10, fig. 126.4) to reading recorded in a(9) above.
- (14) Tighten hexagon nut (fig. 111) until the 126-tooth spur gear engages the mechanical clutch, being careful not to change micrometer dial adjustment.
- (15) Insert lead of electrical contact assembly through shaft (DD, fig. 109) and install lower tube shield (F, fig. 109).
- (16) Install dust seal (CC, fig. 109) and connect lead to terminal 3 of variable resistor (GG, fig. 109).
- (17) Install adapter ring (D, fig. 109).
- (18) Install housing (10K, fig. 126.4.1) and secure with three lock washers (9, fig. 126.4.1) and hexagon socket head screws (8, fig. 126.4.1).
- (19) Install electron tube V5 (10B, fig. 126.4.1) and tighten tube shield (10A, fig. 126.4.1).
- (20) Install mounting plate group (5, fig. 126.3).
- (21) Perform mechanical test of receiver tuner group (par. 125.6.7). If receiver tuner fails the test, recheck (9) and (12) above.
- (22) Install amplifier mounting plate (10, fig. 126.3) and main IF amplifier (8, fig. 126.3).
- (23) Install receiver tuner group (par. 125.4).

### 125.6.7. Mechanical Test of Receiver Tuner Group

*a. General.*

- (1) The receiver tuner should start, run and reverse directions with minimum



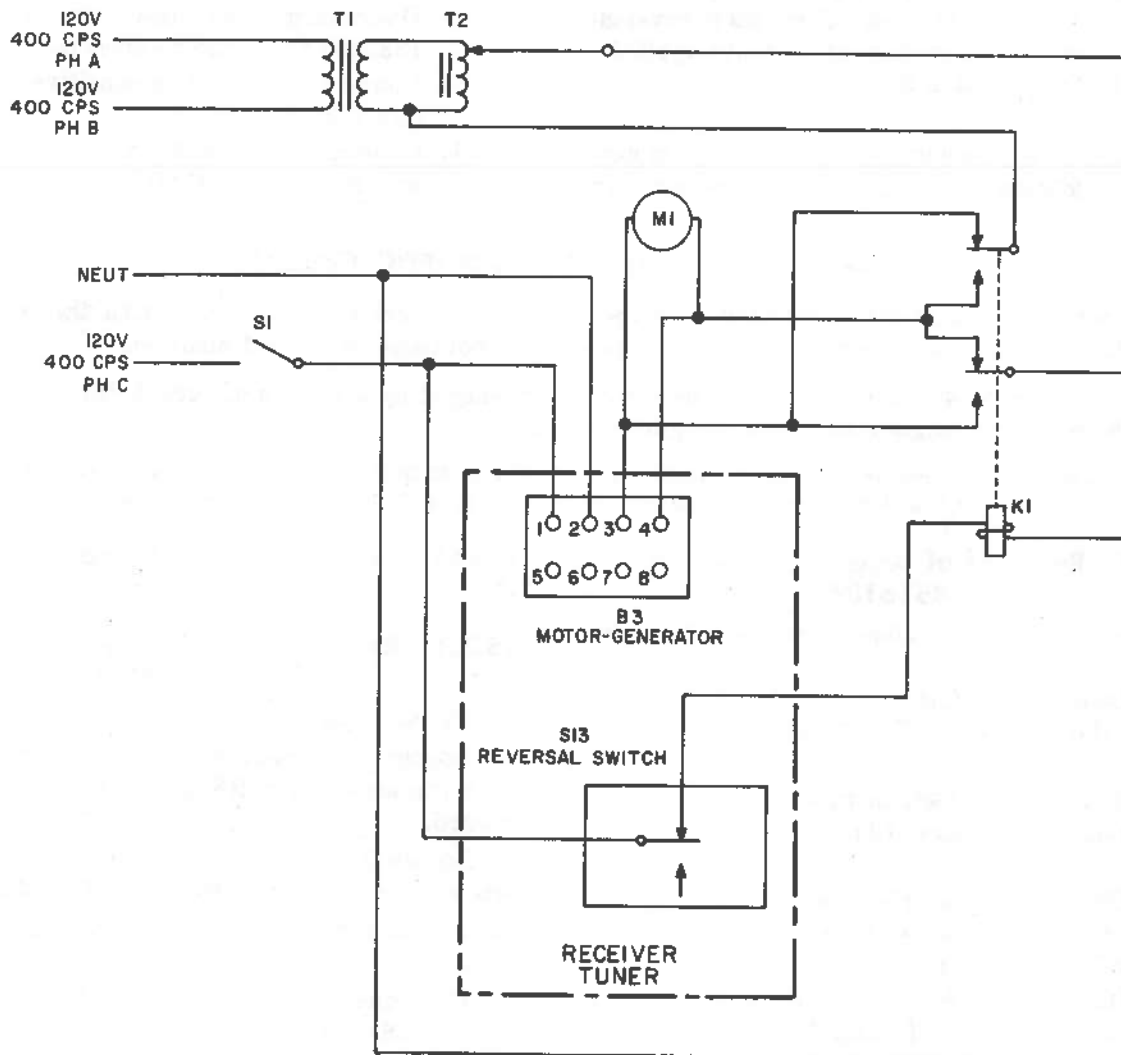
power applied to the motor-generator. This test is required after removal and installation of any gear or shaft or the limit stops.

- (2) A test unit constructed according to the circuit in figure 126.4.6 or a unit of test equipment capable of performing the same function is required.

*Note.* The procedures in *b* through *d* below are performed in sequence with the same test circuit connections.

*b. Start test.*

- (1) Disconnect and tag leads from motor-generator (A, fig. 110).
- (2) Disconnect and tag leads from sensitive switch S13 (18, fig. 126.4.4).
- (3) Connect test circuit (fig. 126.4.6) to receiver tuner.
- (4) Apply power to test circuit and adjust transformer T2 until meter M1 indicates 15 volts.
- (5) Close switch S1.



APPARATUS LIST

K1-RELAY, DPDT 9975275-2  
 M1-0-150V AC VOLTMETER 8011120  
 S1-DPST SWITCH 9001494  
 T1-208V TO 120V, 400 CPS POWER TRANSFORMER 7605692  
 T2-115V, 400-2600 CPS VARIABLE VOLTAGE TRANSFORMER 7614618

ORD G258439

Figure 126.4.6. Test circuit for mechanical test of receiver tuner group.

- (6) The motor-generator shall start with a maximum of 15 volts applied.
- (7) Open switch S1.
- (8) Repeat (5), (6), and (7) above for six different start positions of the receiver tuner.

*c. Reversal Test.*

*Note.* Allow the motor-generator to operate through three reversals.

- (1) Close switch S1.
- (2) The motor-generator shall start and run continuously after each reversal with a maximum of 15 volts applied.
- (3) Open switch S1.

*d. Run Test.*

- (1) Close switch S1. After the motor-generator starts, adjust transformer

T2 until meter M1 indicates 12 volts. The motor-generator shall run continuously, with a maximum of 12 volts applied, until reversal switch S13 is actuated.

- (2) Open switch S1.
- (3) Adjust transformer T2 until meter M1 indicates 15 volts. Perform (1) and (2) above to check the operation of the motor-generator in the reverse direction.
- (4) Disconnect the test circuit (fig. 126.4.6) from the receiver tuner.
- (5) Connect the leads to sensitive switch S13 (18, fig. 126.4.4).
- (6) Connect the leads to the motor-generator (A, fig. 110).

### Section III. AUXILIARY MAGNETIC CIRCUIT

**Warning:** Perform all maintenance on the acquisition receiver-transmitter with the ACQUISITION POWER switch on the acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

*Note.* For removal and installation of main magnetic circuit 8516184, or main traveling wave tube (TWT) amplifier 10658131 (1, fig. 126.5), refer to paragraphs 77 and 79, or 77.1 and 79.1, respectively.

#### 125.7. Removal of Auxiliary Magnetic Circuit 8516184

- a.* Remove the receiver tuner group (para 125.3).
- b.* Loosen the fastener (2, fig. 126.5) and swing the acquisition RF power supply control (3) outward.
- c.* Remove the electron tube from the auxiliary magnetic circuit (4).
- d.* Disconnect the white-blue lead from terminal 9 of the terminal board (5) and remove the lead from the cable clamp (1, fig. 126.6).
- e.* Disconnect connectors P19 and P20 (2 and 5) from connectors J10 and J1, respectively.
- f.* Loosen four socket-head captive screws

- (3) and remove the auxiliary magnetic circuit (4).

#### 125.7.1. Removal of Auxiliary TWT Amplifier 10658131

- a.* Remove the main access cover.
- b.* Loosen the fastener (2, fig. 126.5) and swing the acquisition RF power supply control outward.
- c.* Locate and disconnect the TWT amplifier leads attached at E1, TB5-2, and TB5-3 or -6.
- d.* Remove the TWT amplifier leads from the clamp.
- e.* Disconnect connectors P19 and P20 (2 and 5, fig. 126.6) from connectors J10 and J1, respectively.

- 1—Main magnetic circuit 1430-564-9966 or main TWT amplifier 10658131
- 2—Fastener
- 3—Acquisition RF power supply control 9156017
- 4—Auxiliary magnetic circuit 8516184 or auxiliary TWT amplifier 10658131

- 5—Terminal board
- 6—Connectors P27 and J1
- 7—Connectors P28 and J2
- 8—Connectors P29 and J3
- 9—Connectors P55 and J7

*Figure 126.5. Acquisition receiver-transmitter 9156628 or 10185056—legend.*

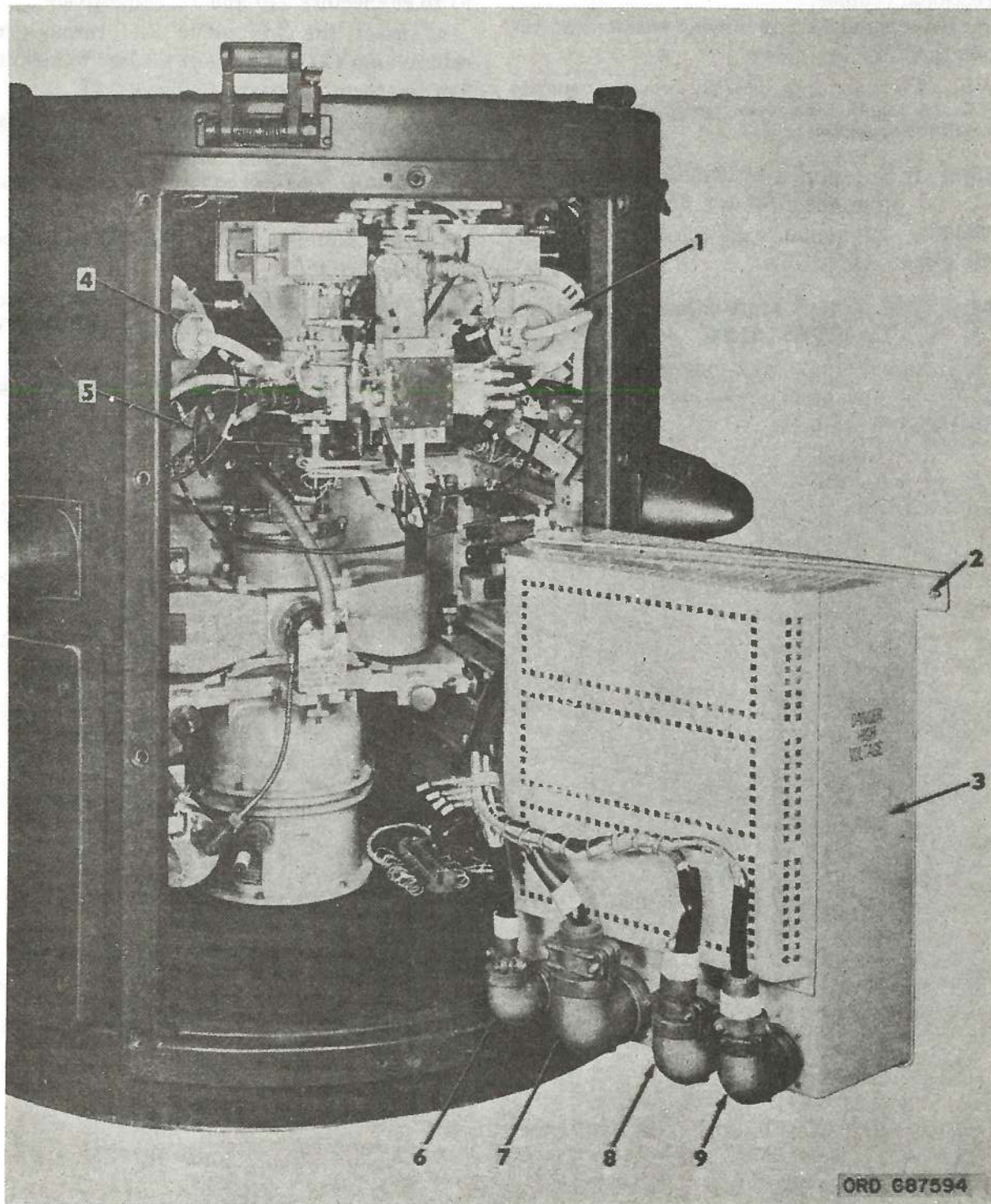


Figure 126.5. Acquisition receiver-transmitter 9156628 or 10185056.

f. Disconnect the power meter cable from the directional coupler.

g. Loosen the four mounting screws and remove the TWT amplifier.

*Note.* TWT amplifier 10658131 is a self-contained TWT and amplifier magnetic circuit. Maintenance is not authorized for this unit.

### 125.8. Maintenance of Auxiliary Magnetic Circuit 8516184

Perform maintenance on the auxiliary magnetic circuit (para 78).

### 125.9. Installation of Auxiliary Magnetic Circuit 8516184

a. Install the auxiliary magnetic circuit (4, fig. 126.6) and secure with four socket-head captive screws (3).

b. Connect connectors P19 and P20 (2 and 5) to connectors J10 and J1, respectively.

c. Insert the white-blue lead through the cable clamp (1) and connect the lead to terminal 9 of the terminal board (5, fig. 126.5)

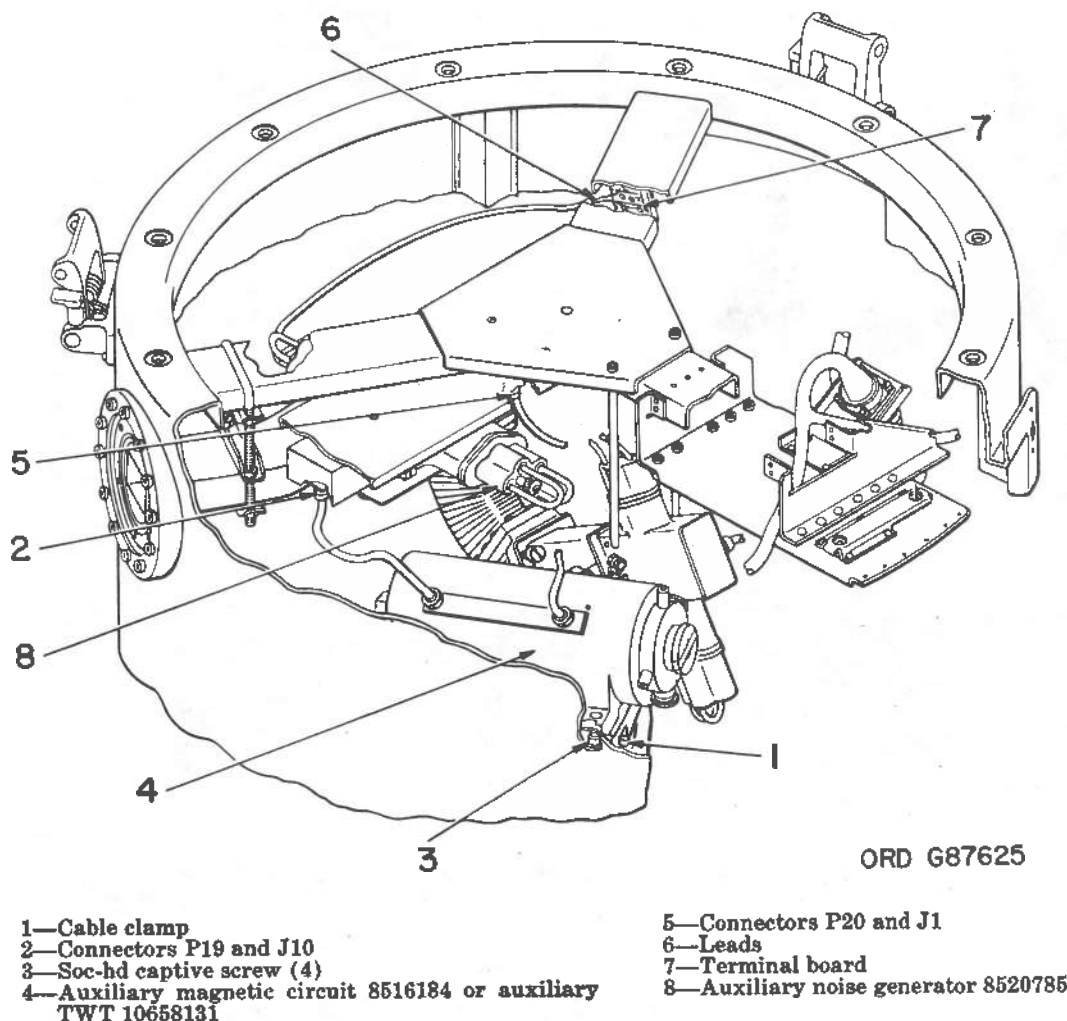
d. Install the electron tube in the auxiliary magnetic circuit (4), (TM 9-1430-253-20/1).

e. Install the receiver tuner group (para 125.4 a through f).

f. Close and secure the acquisition RF power supply control (3).

g. Perform the TWT amplifier, antenna voltage, current, and AFC checks and adjustments as follows:

(1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.



ORD G87625

- 1—Cable clamp
- 2—Connectors P19 and J10
- 3—Soc-hd captive screw (4)
- 4—Auxiliary magnetic circuit 8516184 or auxiliary TWT 10658131

- 5—Connectors P20 and J1
- 6—Leads
- 7—Terminal board
- 8—Auxiliary noise generator 8520785

Figure 126.6. Acquisition receiver-transmitter 9156628—cutaway view.



(2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(3) On ATBM systems, refer to TM 9-1430-251-12/2.

h. Install the main access cover (A, fig. 97).

### 125.9.1. Installation of Auxiliary TWT Amplifier 10658131

*Note.* For initial installation of TWT amplifier 10658131 to replace magnetic circuit 8516184, insure that TB5-2 is connected to TB1-3 as described in paragraph 79.1 a and b; then, for initial installation or replacement of the TWT amplifiers, perform a through h below.

a. Install the auxiliary TWT amplifier and secure with four mounting screws.

b. Connect connectors P19 and P20 (2 and 5, fig. 126.6) to connectors J10 and J1, respectively.

c. Insert the cable into the clamps.

d. Connect the TWT amplifier leads to TB5 and E1 as indicated by the lead markings.

e. Connect the power meter cable.

f. Close and secure the acquisition RF power supply control.

g. Perform the weekly receiver sensitivity checks, video level adjustments, and antenna voltage, current, and AFC checks as follows:

(1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.

(2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(3) On ATBM systems, refer to TM 9-1430-251-12/2.

h. Install the main access cover.

## Section IV. AUXILIARY NOISE GENERATOR

**Warning:** Perform all maintenance on the acquisition receiver-transmitter with the ACQUISITION POWER switch on the acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

*Note.* When performing maintenance on main noise generator (5, fig. 126.2), remove receiver tuner group (para 125.3). For removal, maintenance, and installation procedures, refer to paragraphs 94, 95, and 96, respectively. Refer to (4, fig. 126.2) for connectors.

### 125.10. Removal of Auxiliary Noise Generator

a. Remove the main access cover (A, fig. 97).

b. Loosen the fastener (2, fig. 126.5) and swing the RF power supply control outward.

c. Remove the receiver tuner group (para 125.3 b through g).

d. Disconnect connectors P20 and P19 (5 and 2, fig. 126.6) from connectors J1 and J10, respectively.

e. Disconnect and tag the auxiliary noise generator leads (6) from the terminal board (7).

f. Remove four pan-head screws (1, fig. 126.7) and lockwashers (2).

g. Remove two retaining straps (3 and 4) and four cushions (5).

h. Remove the auxiliary noise generator (6) with the coaxial to waveguide adapter (9) attached.

i. Remove the coaxial to waveguide adapter.

### 125.11. Maintenance of Auxiliary Noise Generator

Perform maintenance of the auxiliary noise generator (para 95).

### 125.12 Installation of Auxiliary Noise Generator

a. Install the coaxial to waveguide adapter (9, fig. 126.7) on the auxiliary noise generator (6).

b. Place the four cushions (5) and retaining straps (4 and 3) on the auxiliary noise generator (6) and install the noise generator.

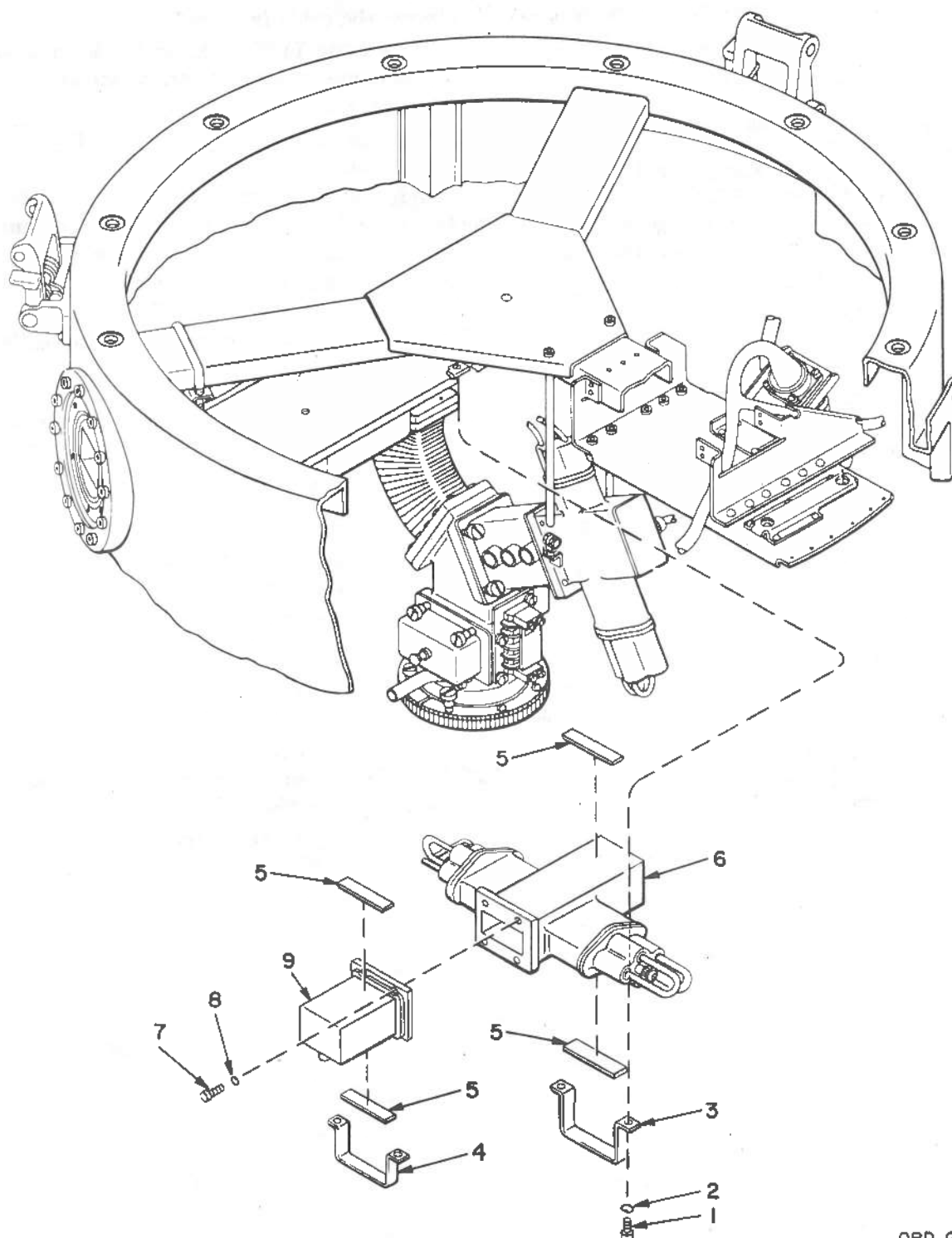
c. Connect the auxiliary noise generator leads (6, fig. 126.6) to terminals 2 and 3 of the terminal board (7) (TM 9-1430-257-35).

d. Connect connectors P20 and P19 (5 and 2, fig. 126.6) to connectors J1 and J10, respectively.

e. Close and secure the RF power supply control (3, fig. 126.5).

f. Install the receiver tuner group (para 125.4).





ORD G87626

- 1—10-24 x 1 pan-hd screw 9157788-78 (4)
- 2—No. 10 lockwasher 9157798-14 (4)
- 3—Retn strap 9990549
- 4—Retn strap 9990548
- 5—Cushion 9990550 (4)

- 6—Auxiliary noise generator 1430-535-4597
- 7—10-24 x  $\frac{1}{2}$  hex-socket-hd screw 9157796-40 (4)
- 8—No. 10 lock washer 9157798-14 (4)
- 9—Coaxial to waveguide adapter 1430-564-9902

Figure 126.7. Removal and installation of auxiliary noise generator.

## Section V. ACQUISITION RF POWER SUPPLY CONTROL 9156017

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron or the magnetic circuit.

*Note.* Acquisition RF power supply control 9156017 (11, fig. 126.1) is used in selected systems.

*Note.* The key numbers shown in paragraphs 125.13 and 125.15 below refer to figure 126.5 unless otherwise indicated.

### 125.13. Removal of Acquisition RF Power Supply Control 9156017

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (2) and swing acquisition RF power supply control (3) outward.
- c. Disconnect connectors P27 (6), P28 (7), P29 (8), and P55 (9) from connectors J1, J2, J3, and J7, respectively.
- d. Close acquisition RF power supply control and remove spring pins (12, fig. 126.1) from holes in straight pin (13, fig. 126.1) and straight pin (14, fig. 126.1).
- e. Manually support acquisition RF power supply control and remove straight pins.
- f. Remove acquisition RF power supply control.

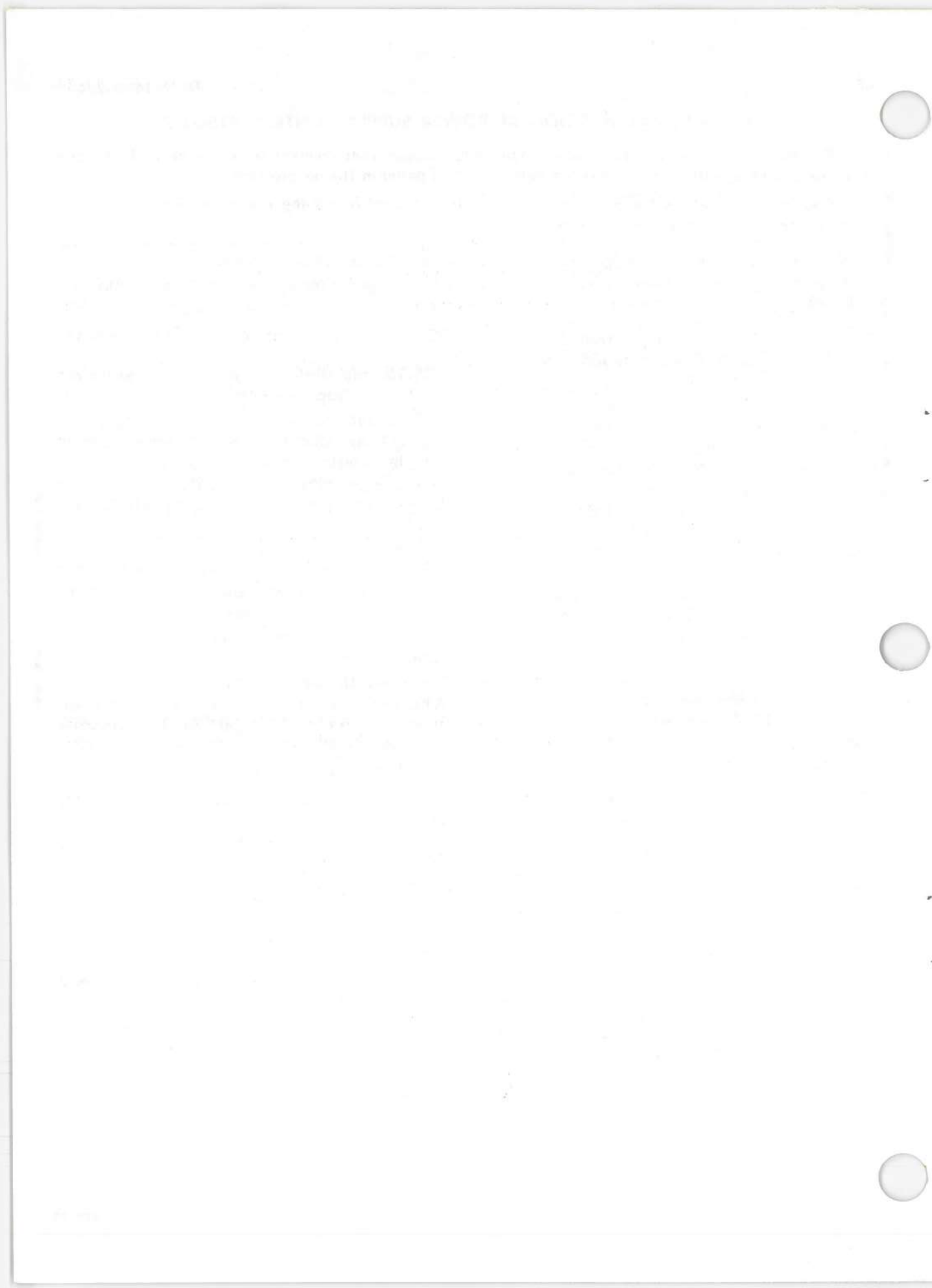
### 125.14. Field Maintenance of Acquisition RF Power Supply Control 9156017

Perform field maintenance of the acquisition

RF power supply control (TM 9-1430-259-34).

### 125.15. Installation of Acquisition RF Power Supply Control 9156017

- a. Mount acquisition RF power supply control (11, fig. 126.1) in position shown and secure by inserting straight pins (14, fig. 126.1) and straight pins (13, fig. 126.1) into hinges. Drive spring pins (12, fig. 126.1) into holes in straight pins.
- b. Swing acquisition RF power supply control (3) outward and connect connectors P27 (6), P28 (7), P29 (8), and P55 (9) to connectors J1, J2, J3, and J7, respectively.
- c. Close and secure acquisition RF power supply control.
- d. Perform antenna voltage, current, and AFC checks and adjustments and receiver sensitivity checks (TM 9-1430-251-20/1) or (TM 9-1430-251-20/2).
- e. Install main access cover (A, fig. 97).



## CHAPTER 6

### ACQUISITION MODULATOR 8512354

#### Section I. VANEAXIAL FAN

**Warning:** Perform all field maintenance on the acquisition modulator with ACQUISITION POWER switch on acquisition power control panel in the off position.

##### 126. Removal of Vaneaxial Fan 8517073

*Note.* The key letters shown in parentheses in a through e below refer to figure 127.

- a. Remove filter covers (B).
- b. Disconnect connector P6 (fig. 128) from connector J9.
- c. Remove vaneaxial fan assembly (D).
- d. Remove mounting plate assembly (D4) from vaneaxial fan (D3).
- e. Remove gasket (D4b) from mounting plate group (D4a).

##### 127. Installation of Vaneaxial Fan 8517073

*Note.* The key letters shown in parentheses in a through e below refer to figure 127.

- a. Cement new gasket (D4b) to mounting plate group (D4a) with synthetic rubber-to-metal adhesive 8024365.
- b. Install vaneaxial fan (D3) on mounting plate assembly (D4).
- c. Apply antiseize compound 8030-251-3983 to threads of six No. 10-32 x  $\frac{1}{4}$  fillister-head screws (C). Install vaneaxial fan assembly (D) in acquisition modulator (A).
- d. Connect connector P6 (fig. 128) to connector J9.
- e. Install two filter covers (B).

#### Section II. INPUT TRANSFORMER T1

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

##### 128. Removal of Input Transformer T1 7605560

- a. Remove outer cover (fig. 129).
- b. Remove inner cover.

*Note.* The key letters shown in parentheses in c through g below refer to figure 130.

- c. Disconnect tube cap connector (F) from electron tube V1 (K).
- d. Disconnect leads of electron tube V1 (K) from terminal board TB1 (J).
- e. Loosen two captive screws (H) and turn clamps (G) to release electron tube V1. Pull electron tube forward and remove.

- f. Disconnect leads from input transformer T1 (D).
- g. Remove input transformer T1 (D) and gasket (M).

##### 129. Installation of Input Transformer T1 7605560

*Note.* The key letters shown in parentheses in a through f below refer to figure 130.

- a. Install new gasket (M) and input transformer T1 (D) in acquisition modulator (E).
- b. Connect leads to input transformer T1 (TM 9-1430-257-35).

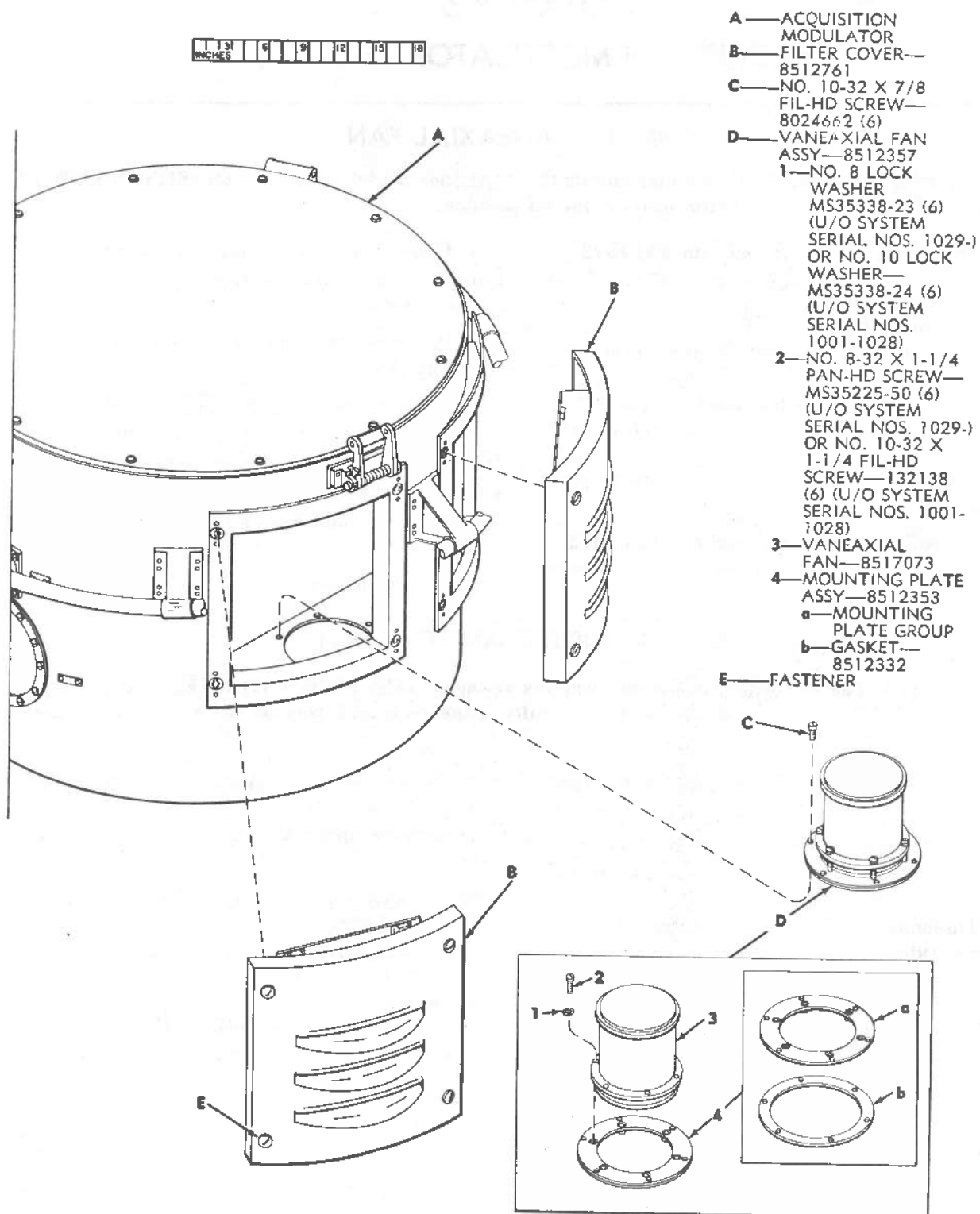


Figure 127. Removal and installation of vaneaxial fan.



## CHAPTER 5.2

## ACQUISITION RECEIVER-TRANSMITTER 13034769

*Note:* The acquisition receiver-transmitter can be replaced as a single unit. Refer to TM 9-1430-251-10 for removal and installation procedures. Refer to TM 9-1425-250-34-5-2 for type 4 tests.

## Section I. GENERAL

## 125.16. Scope

Acquisition receiver-transmitter 13034769 differs from the 10185056 model in that the TVI kit (Chapter 7) is removed and differs from the 10185056 and 9156628 models in that the frequency and power meter is deleted and a coaxial magnetron and associated changes to the magnetron hot box, magnetron carriage, and airducts are installed. Removal and installation procedures are not provided for components that are common to both receiver transmitters. However, these components are illustrated, where necessary, to show location and connectors. Maintenance procedures for the changed or added components are covered in this chapter.

## Section II. RECEIVER TUNER GROUP

*Warning:* Perform all maintenance on the acquisition receiver-transmitter with the ACQUISITION POWER switch on the acquisition power control panel in the off position.

*Caution:* Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

*Caution:* The receiver tuner assembly is a very delicate mechanism. Handle with extreme care.

## 125.17. Removal of Receiver Tuner Group 13034769

- a. Remove the main access cover (A, fig. 97).
- b. Disconnect connector P13 (1, fig. 126.8) from connector J12.
- c. Disconnect connectors P16 and P2 (1 and 2, fig. 126.9) from connectors J18 and J19, respectively.
- d. Disconnect connectors P23 (3), P44 (4), and P45 (5) from connectors J1, J3, and J2, respectively.
- e. Disconnect connectors P22 (6), P42 (7), and P43 (8) from connectors J1, J2, and J3, respectively.
- f. Disconnect connectors P20 and P20 (2 and 3, fig. 126.8) from connectors J24 and J17, respectively.
- g. Loosen the two hexagon-head captive screws (9, fig. 126.9) and remove the receiver tuner group (10).

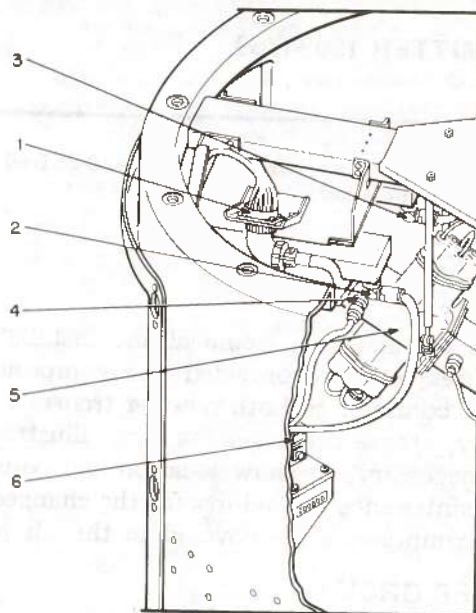
## 125.18. Maintenance of Main Frequency Converter Assembly (Signal Mixer) 9989320 or Auxiliary Frequency Converter Assembly (Signal Mixer) 9990516

*Note:* Removal, maintenance, and installation procedures for the main and auxiliary frequency converter assemblies (signal mixers) are identical except for cable connections; therefore, only the main frequency converter assembly is covered. Refer to Figure 126.10 for cable connections to the auxiliary frequency converter assembly.

## a. Removal.

- (1) Remove the main access cover (A, fig. 97).
- (2) Disconnect connectors P1 and P4 (6 and 12, fig. 126.10) from connectors J32 (7) and J31 (13), respectively.
- (3) Remove the main frequency converter assembly (signal mixer) (16).

b. *Disassembly and Assembly.* Disassemble and assemble the main frequency converter



MI 11031

- 1—Connectors P13 and J12
- 2—Connectors P20 and J24
- 3—Connectors P20 and J17
- 4—Connectors P19 and J1
- 5—Main noise generator 8520785
- 6—Solid-state RF amplifier (S-band) 10667919

Figure 126.8. Acquisition receiver-transmitter 13034769—cutaway view.

assembly (signal mixer) (para 85b).

*c. Installation.*

- (1) Install the main frequency converter assembly (signal mixer) (16).
- (2) Connect connectors P1 (6) and P4 (12) to connectors J32 (7) and J31 (13), respectively.

(3) Perform the antenna voltage, current, and AFC checks and adjustments as follows:

(a) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(b) On ATBM systems, refer to TM 9-1430-251-12/2.

(4) Install the main access cover (A, fig. 97).

### 125.19. Installation of Receiver Tuner Group 13034769

a. Install the receiver tuner group (10, fig. 126.9) and secure with two hexagon-head captive screws (9).

b. Connect connectors P20 and P20 (3 and 2, fig. 126.8) to connectors J17 and J24, respectively.

c. Connect connectors P22, P42, and P43 (6, 7, and 8, fig. 126.9) to connectors J1, J2, and J3, respectively.

d. Connect connectors P23 (3), P44 (4), and P45 (5) to connectors J1, J3, and J2, respectively.

e. Connect connectors P16 (1) and P2 (2) to connectors J18 and J19, respectively.

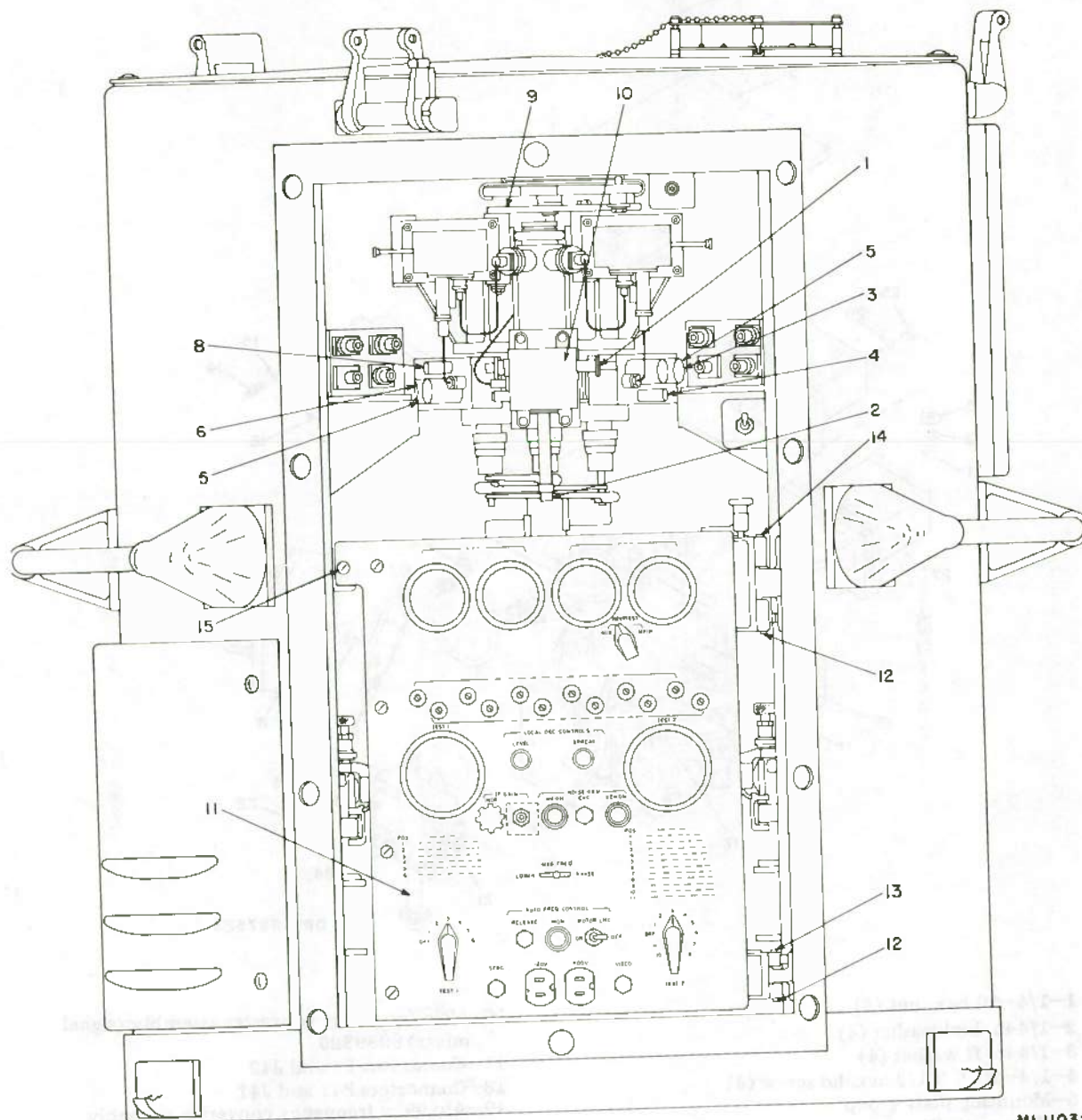
f. Connect connector P13 (1, fig. 126.8) to connector J12.

g. Perform the antenna voltage, current, and AFC checks as follows:

(1) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.

(2) On ATBM systems, refer to TM 9-1430-251-12/2.

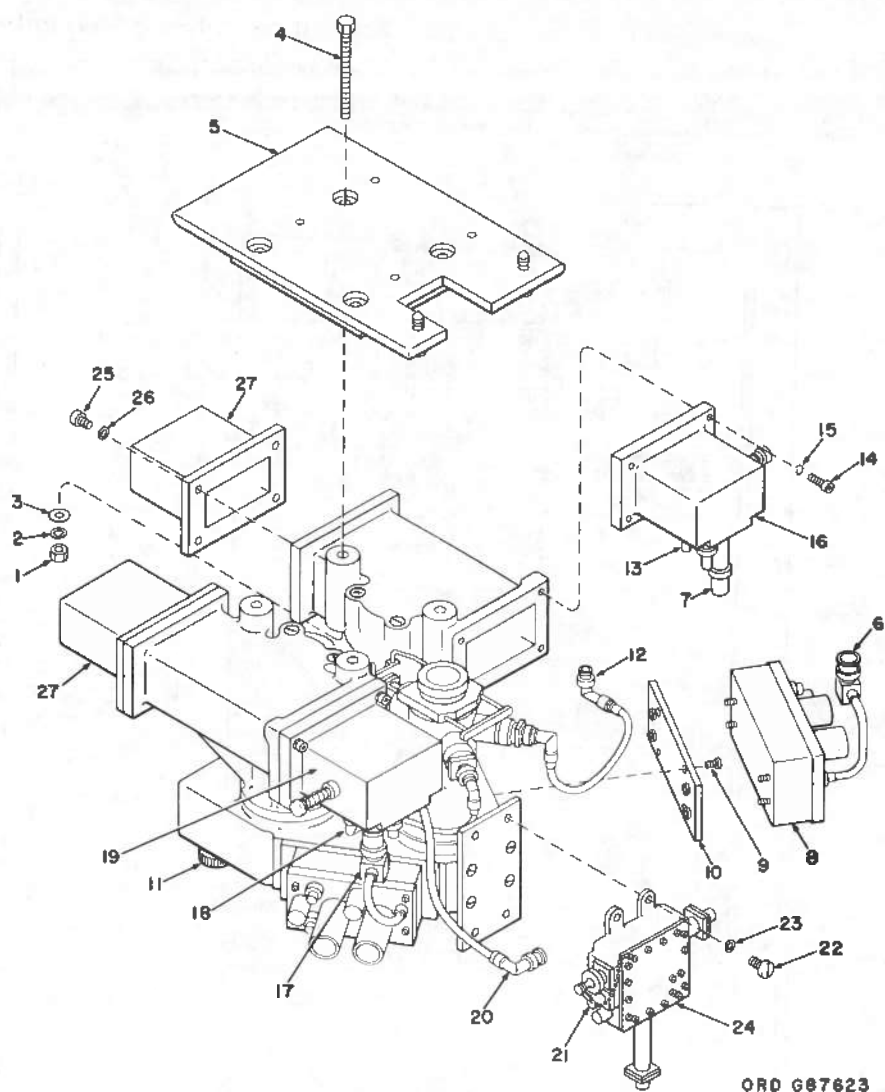
h. Install the main access cover (A, fig. 97).



MI 11032

- |                          |  |
|--------------------------|--|
| 1—Connectors P16 and J18 | 8—Connectors P43 and J3                        |
| 2—Connectors P2 and J19  | 9—Hex. hd captive screw (2)                    |
| 3—Connectors P23 and J1  | 10—Receiver tuner group                        |
| 4—Connectors P44 and J3  | 11—Acquisition RF power supply control 9156017 |
| 5—Connectors P45 and J2  | 12—0.062 X 7/16 spg pin (2)                    |
| 6—Connectors P22 and J1  | 13—1-31/32-in-lg str pin                       |
| 7—Connectors P42 and J2  | 14—3.844-in-lg str pin                         |
|                          | 15—Fastener                                    |

Figure 126.9. Acquisition receiver-transmitter 13034769.



ORD G67623

- 1—1/4-20 hex. nut (4)
- 2—1/4-in. lockwasher (4)
- 3—1/4-in. fl washer (4)
- 4—1/4-20 X 3 1/2 hex. hd screw (4)
- 5—Mounting plate group
- 6—Connector P1
- 7—Connector J32
- 8—Main IF amplifier 9156573
- 9—No. 6-32 X 3/8 FH screw (4)
- 10—Amplifier mounting plate 9990529
- 11—Knob
- 12—Connector P4
- 13—Connector J31
- 14—No. 10-24 X 3/4 hex. soc-hd screw (4)
- 15—No. 10 lockwasher (4)

- 16—Main frequency converter assembly (signal mixer) 9989320
- 17—Connectors P1 and J42
- 18—Connectors P41 and J41
- 19—Auxiliary frequency converter assembly (signal mixer) 9990516
- 20—Connector P3
- 21—Connector J20
- 22—No. 10-24 X 5/8 pan-hd screw (4)
- 23—No. 10 lockwasher (4)
- 24—Frequency converter assembly (AFC mixer) 7621830
- 25—No. 10-24 X 3/4 hex. soc-hd screw (4)
- 26—No. 10 lockwasher (4)
- 27—Coaxial to waveguide adapter 1430-564-9902 (2)

Figure 126.10. Receiver tuner group—partially exploded view.



### Section III. MAGNETRON TUNING DRIVE

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.20. Removal of Magnetron Tuning Drive 8173723

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.
- c. Unscrew coupling (5, fig. 126.11) on flexible shaft (3) from magnetron tuning drive (6).
- d. Disconnect and tag two leads from resistor R3 (9).
- e. Remove two socket-head screws (10), lockwashers (11), and flat washers (12); remove mounting bracket (7, fig. 126.11) with magnetron tuning drive attached.

- f. Remove magnetron tuning drive from mounting bracket.

#### 125.21. Installation of Magnetron Tuning Drive 8173723

- a. Assemble magnetron tuning drive to mounting bracket (fig. 126.12).
- b. Install mounting bracket (7, fig. 126.11) with magnetron tuning drive attached.
- c. Connect leads to resistor R3 (9).
- d. Connect flexible shaft (3) to magnetron tuning drive (6).
- e. Close and secure acquisition RF power supply control (fig. 126.9).
- f. Install main access cover (A, fig. 97).

### Section IV. MAGNETRON CARRIAGE ASSEMBLY

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C3, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.22. Removal of Magnetron Carriage Assembly 11513386

- a. Remove magnetron tube (2, fig. 126.13) (TM 9-1430-253-12/4, INH, or TM 9-1430-253-12/2, ATBM).
- b. Slide out and lift magnetron carriage assembly (4) from mounting rails.

#### 125.23. Disassembly of Magnetron Carriage Assembly 11513386

**Note:** Since the magnetron carriage assembly is symmetrical, only one end will be discussed.

- a. Drive out two spring pins (2, fig. 126.14) and remove two rollers (3) and shafts (4).
- b. Remove two pan-head screws (7) and lockwashers (6); remove guide (5).
- c. Unscrew two knurled knobs (23) and remove knurled knobs and flat washers (12); remove clamp (25).
- d. Remove ring (22) from each pin (26) and remove pins and studs (24).

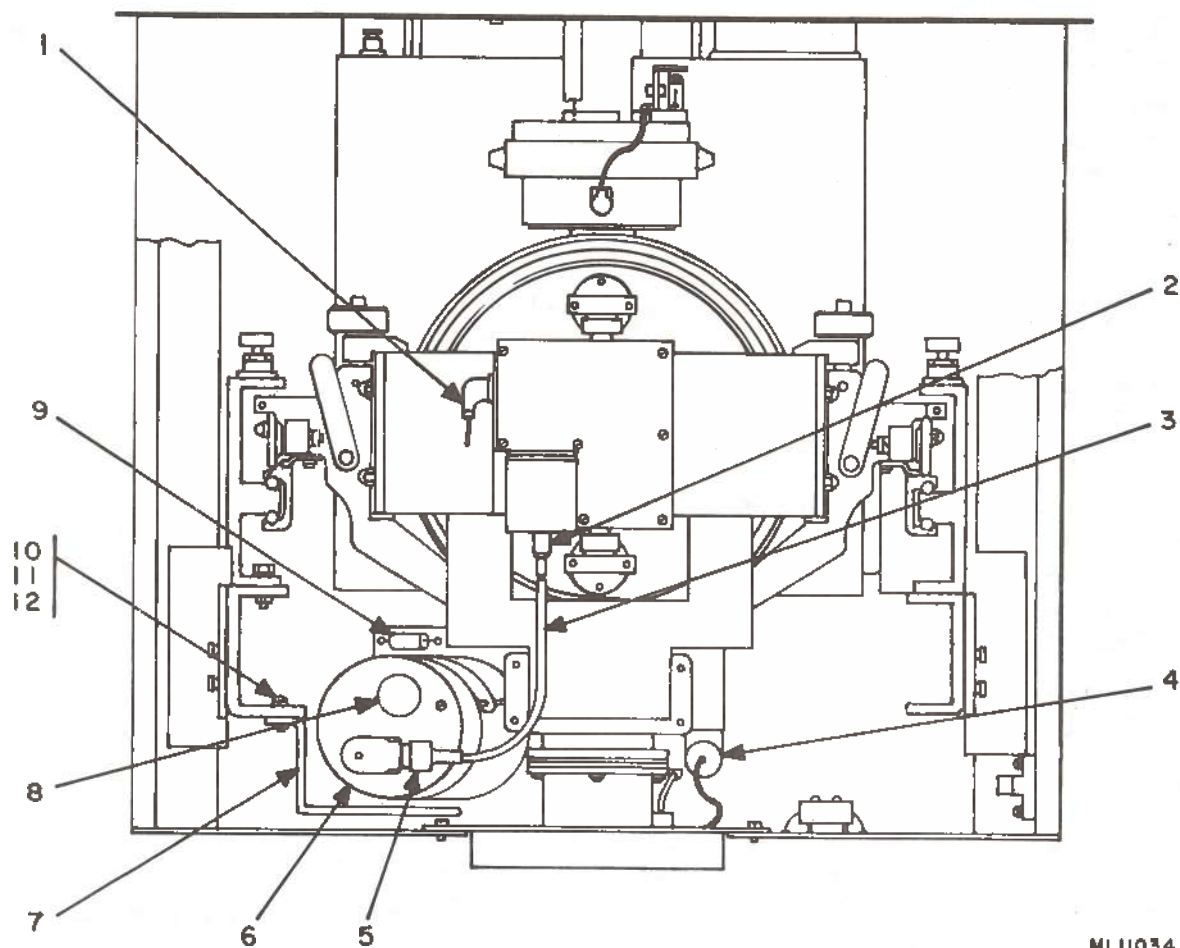
- e. Drive out spring pin (28); remove ring (27) and slide out rod (15); remove block (29).

- f. Drive out spring pin (13) and remove two socket-head cap screws (16) and lockwashers (17); remove plate (18), bearing (19), pin (20), spring (21), and bearing (19).

#### 125.24. Assembly of Magnetron Carriage Assembly 11513386

- a. Apply antiseize compound (8030-00-274-4170) to socket-head cap screws (16, fig. 126.14) and install bearings (19), spring (21), pin (20), and plate (18) onto carriage assembly; secure plate with two lockwashers (17) and socket-head cap screws.
- b. Install spring pin (13) in pin (20) and rotate approximately 90 degrees from the position shown.
- c. Emplace block (29) so that the slot in block engages with spring pin (13).
- d. Install rod (15) with lever (14) and washer





MI 11034

- 1—Connector P56
- 2—Setscrew (2)
- 3—Flexible shaft—8517508
- 4—Connector P26
- 5—Coupling—9000378
- 6—Magnetron tuning drive—8173723

- 7—Mounting bracket—11513302
- 8—Magnetron tuning drive dial
- 9—Resistor R3
- 10—1/4-20 X 3/4 soc-hd screw (2)
- 11—Lockwasher—1/4-in. (2)
- 12—1/4-in. fl washer

Figure 126.11. Magnetron tuning drive—locational view.

### Section III. MAGNETRON TUNING DRIVE

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.20. Removal of Magnetron Tuning Drive 8173723

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.
- c. Unscrew coupling (5, fig. 126.11) on flexible shaft (3) from magnetron tuning drive (6).
- d. Disconnect and tag two leads from resistor R3 (9).
- e. Remove two socket-head screws (10), lockwashers (11), and flat washers (12); remove mounting bracket (7, fig. 126.11) with magnetron tuning drive attached.

- f. Remove magnetron tuning drive from mounting bracket.

#### 125.21. Installation of Magnetron Tuning Drive 8173723

- a. Assemble magnetron tuning drive to mounting bracket (fig. 126.12).
- b. Install mounting bracket (7, fig. 126.11) with magnetron tuning drive attached.
- c. Connect leads to resistor R3 (9).
- d. Connect flexible shaft (3) to magnetron tuning drive (6).
- e. Close and secure acquisition RF power supply control (fig. 126.9).
- f. Install main access cover (A, fig. 97).

### Section IV. MAGNETRON CARRIAGE ASSEMBLY

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitors C2, C6, C7, C8, and C9.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.22. Removal of Magnetron Carriage Assembly 11513386

- a. Remove magnetron tube (2, fig. 126.13) (TM 9-1430-253-12/4, INH, or TM 9-1430-253-12/2, ATBM).
- b. Slide out and lift magnetron carriage assembly (4) from mounting rails.

#### 125.23. Disassembly of Magnetron Carriage Assembly 11513386

**Note:** Since the magnetron carriage assembly is symmetrical, only one end will be discussed.

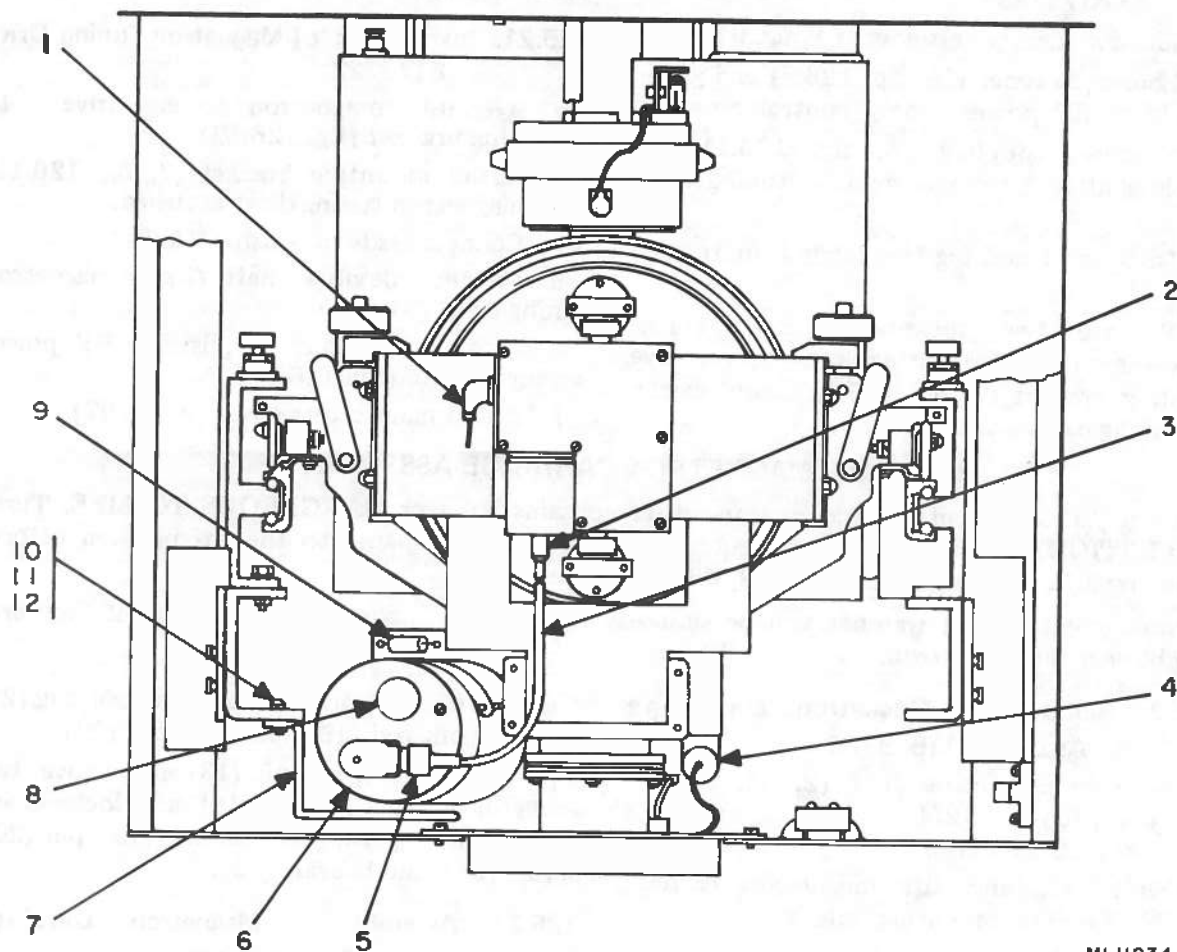
- a. Drive out two spring pins (2, fig. 126.14) and remove two rollers (3) and shafts (4).
- b. Remove two pan-head screws (7) and lockwashers (6); remove guide (5).
- c. Unscrew two knurled knobs (23) and remove knurled knobs and flat washers (12); remove clamp (25).
- d. Remove ring (22) from each pin (26) and remove pins and studs (24).

- e. Drive out spring pin (28); remove ring (27) and slide out rod (15); remove block (29).

- f. Drive out spring pin (13) and remove two socket-head cap screws (16) and lockwashers (17); remove plate (18), bearing (19), pin (20), spring (21), and bearing (19).

#### 125.24. Assembly of Magnetron Carriage Assembly 11513386

- a. Apply antiseize compound (8030-00-274-4170) to socket-head cap screws (16, fig. 126.14) and install bearings (19), spring (21), pin (20), and plate (18) onto carriage assembly; secure plate with two lockwashers (17) and socket-head cap screws.
- b. Install spring pin (13) in pin (20) and rotate approximately 90 degrees from the position shown.
- c. Emplace block (29) so that the slot in block engages with spring pin (13).
- d. Install rod (15) with lever (14) and washer

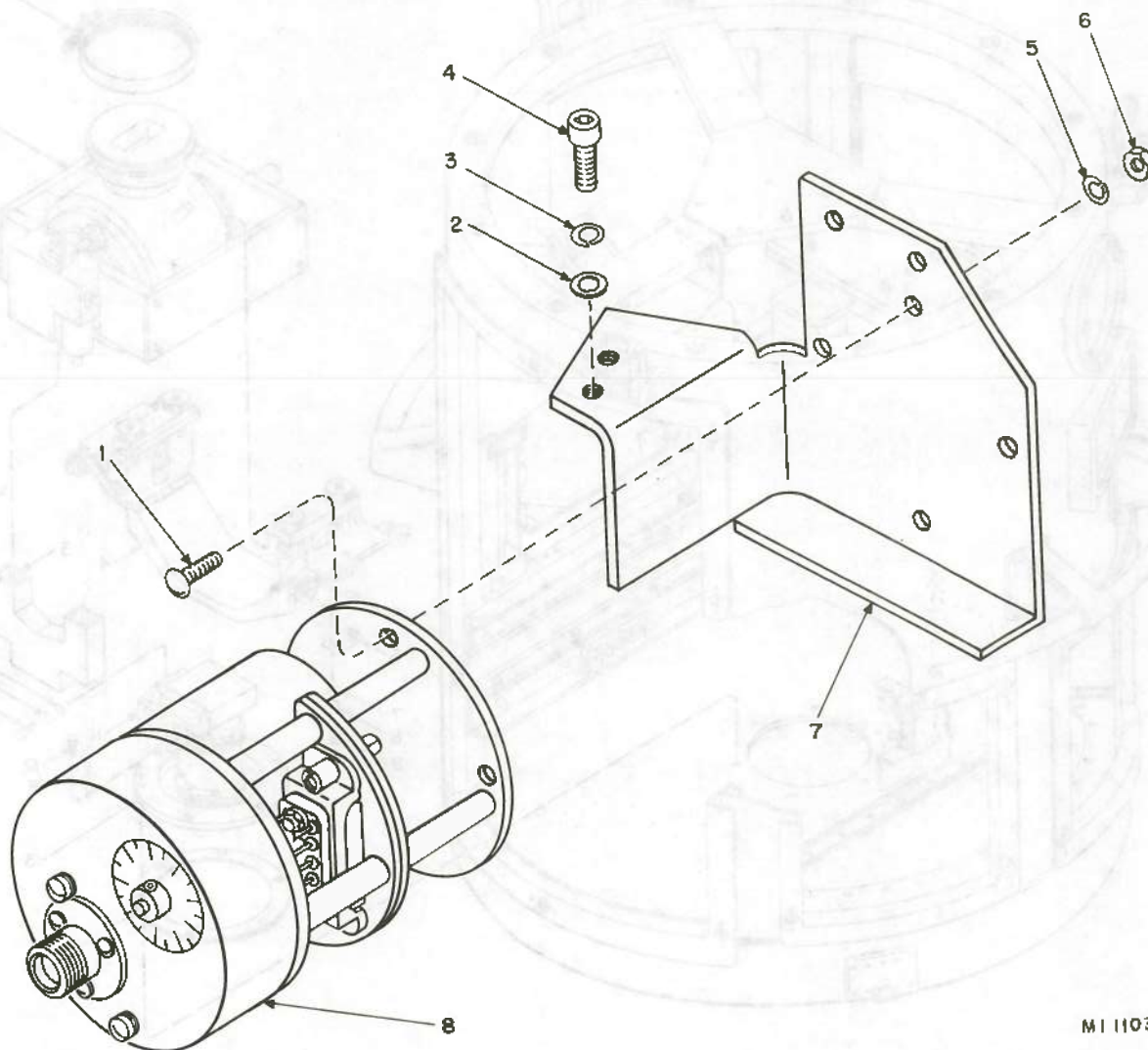


MI 11034

- 1—Connector P56
- 2—Setscrew (2)
- 3—Flexible shaft—8517508
- 4—Connector P26
- 5—Coupling—9000378
- 6—Magnetron tuning drive—8173723

- 7—Mounting bracket—11513302
- 8—Magnetron tuning drive dial
- 9—Resistor R3
- 10—1/4-20 X 3/4 soc-hd screw (2)
- 11—Lockwasher—1/4-in. (2)
- 12—1/4-in. fl washer

Figure 126.11. Magnetron tuning drive—locational view.

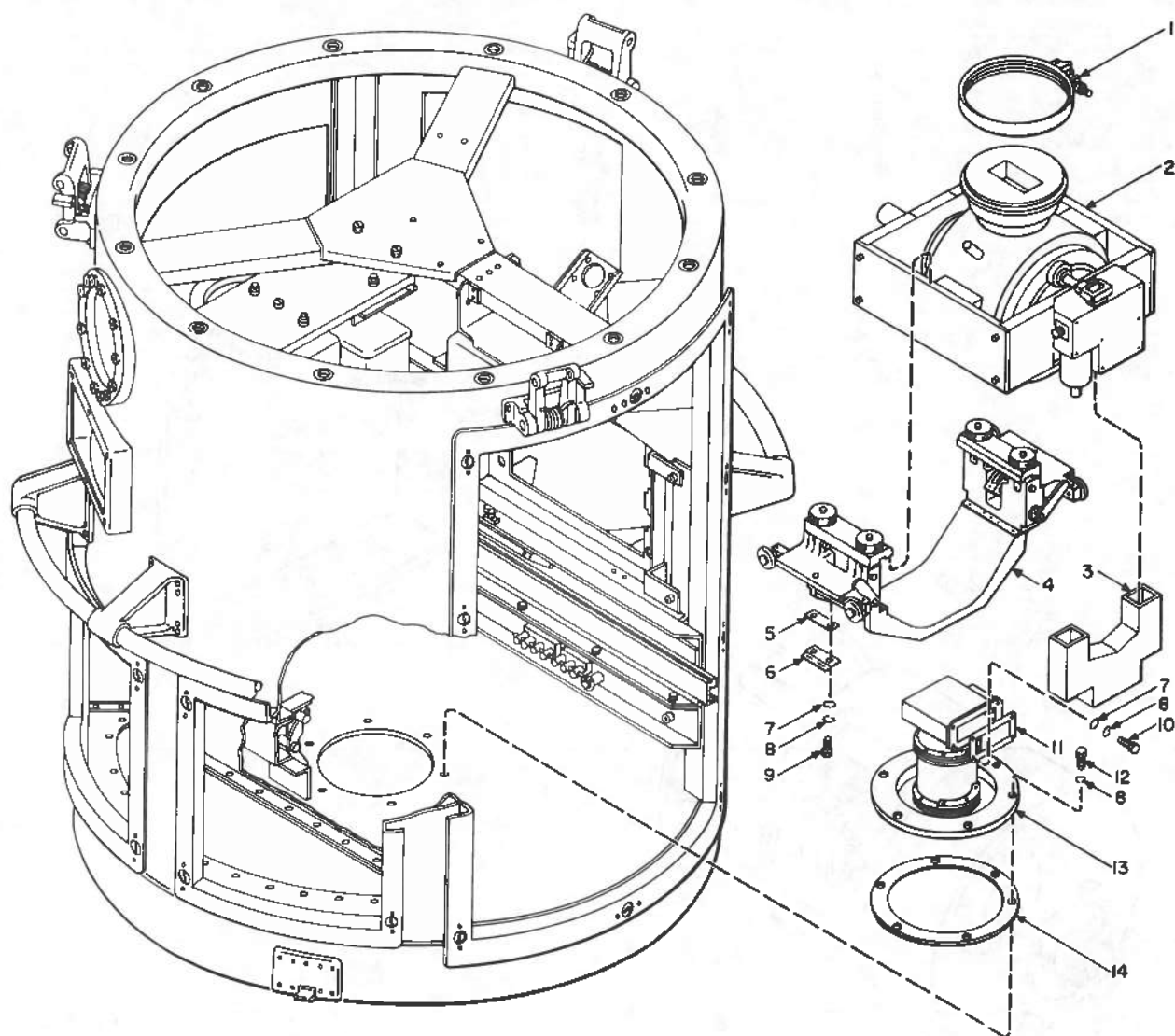


MI 11035

- 1—No. 10—24  $\times$  1/2 fil hd screw (4)
- 2—1/4-in. fl washer (2)
- 3—1/4-in. lockwasher (2)
- 4—1/4—20  $\times$  3/4 soc-hd screw (2)

- 5—No. 10 lockwasher (4)
- 6—No. 10—24 hex. nut (4)
- 7—Mounting bracket—11513302
- 8—Magnetron tuning drive—8173723

Figure 126.12. Magnetron tuning drive and mounting bracket—partially exploded view.



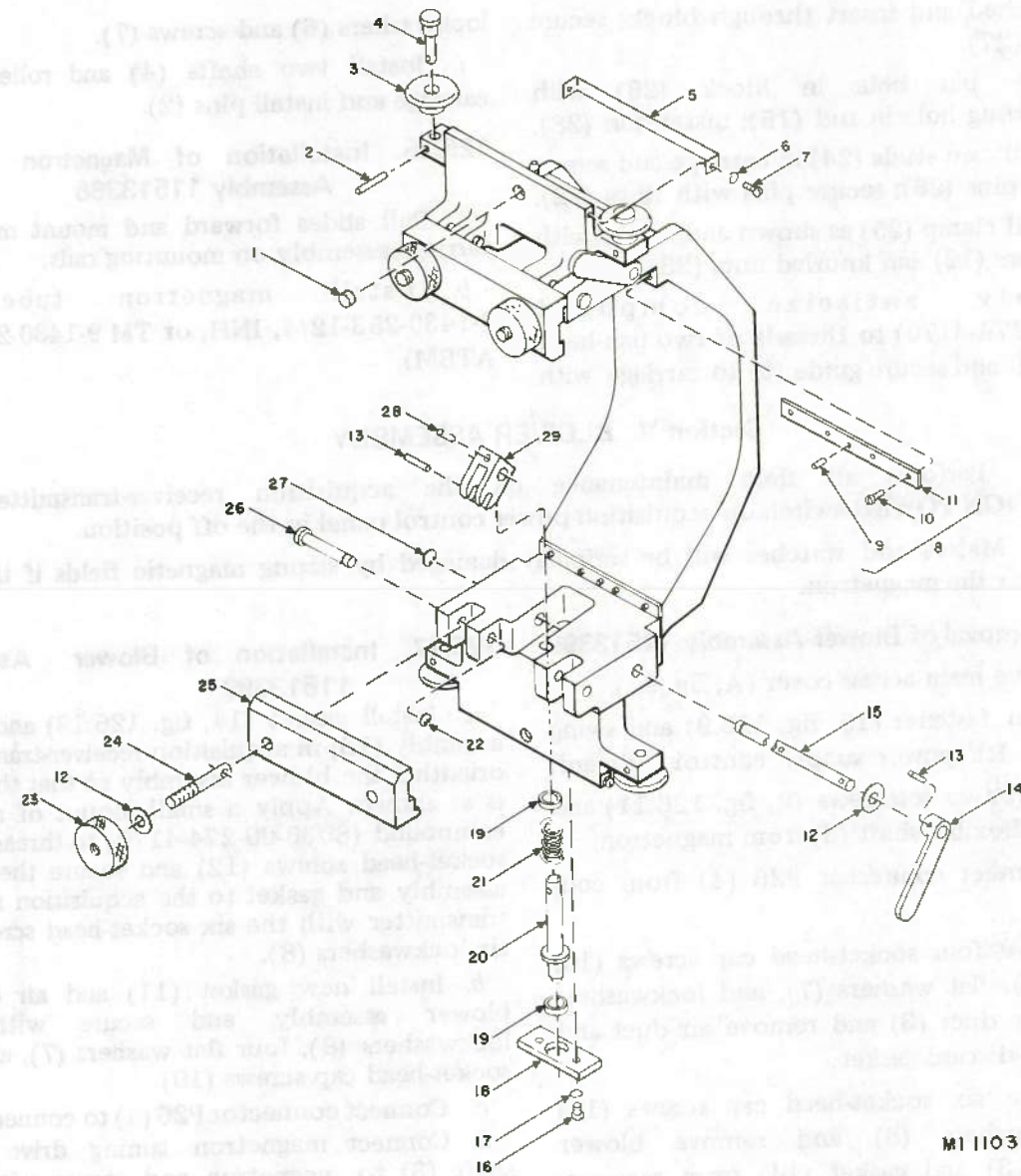
MI 11036

- 1—Rim clinching clamp—11513167
- 2—Magnetron electron tube—10668074
- 3—Air duct—11513393
- 4—Magnetron carriage assembly—11513386
- 5—Spacer—11513380
- 6—Clip—11513379
- 7—No. 10 fl washer (8)

- 8—No. 10 lockwasher (8)
- 9—No. 10—24 X 1/2 soc-hd screw (4)
- 10—No. 10—24 X 3/4 soc-hd screw (4)
- 11—Gasket—11513364
- 12—No. 10—32 X 3/4 soc-hd screw (6)
- 13—Blower assembly—11513399
- 14—Gasket—11513365

Figure 126.13. Acquisition receiver-transmitter—13034769—partially exploded view.





M111039

- |                                    |                         |
|------------------------------------|-------------------------|
| 1—Plug                             | 17—No. 8 lockwasher (4) |
| 2—0.062 X 5/8 spg pin              | 18—Plate                |
| 3—Roller                           | 19—Bearing              |
| 4—Shaft                            | 20—Rod                  |
| 5—Guide strip                      | 21—Spring               |
| 6—No. 6 lockwasher (4)             | 22—Retaining ring       |
| 7—No. 6-32 X 5/16 pan-hd screw (4) | 23—Nut                  |
| 8—Carriage                         | 24—Stud                 |
| 9—0.188 X 0.620 str rod            | 25—Clamp                |
| 10—No. 4-40 X 1/2 pan-hd screw (4) | 26—Pin                  |
| 11—Strip                           | 27—Retaining ring       |
| 12—0.406 id fl washer              | 28—1/8 X 1 spg pin      |
| 13—0.125 X 0.625 spg pin           | 29—Block                |
| 14—Lever                           |                         |
| 15—Rod                             |                         |
| 16—No. 8-32 X 1/2 soc-hd screw (4) |                         |

Figure 126.14. Magnetron carriage—11513386.

(12) attached and insert through block; secure with ring (27).

e. Aline pin hole in block (29) with corresponding hole in rod (15); install pin (28).

f. Install two studs (24) in carriage and secure with two pins (26); secure pins with rings (22).

g. Install clamp (25) as shown and secure with two washers (12) and knurled nuts (23).

h. Apply antiseize compound (8030-00-274-4170) to threads of two pan-head screws (7) and secure guide (5) to carriage with

lockwashers (6) and screws (7).

i. Install two shafts (4) and rollers (3) to carriage and install pins (2).

#### 125.25. Installation of Magnetron Carriage Assembly 11513386

a. Pull slides forward and mount magnetron carriage assembly on mounting rails.

b. Install magnetron tube (TM 9-1430-253-12/4, INH, or TM 9-1430-253-12/2, ATBM).

### Section V. BLOWER ASSEMBLY

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

#### 125.26. Removal of Blower Assembly 11513399

a. Remove main access cover (A, fig. 97).

b. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.

c. Loosen two setscrews (2, fig. 126.11) and disconnect flexible shaft (3) from magnetron.

d. Disconnect connector P26 (4) from connector J1.

e. Remove four socket-head cap screws (10, fig. 126.13), flat washers (7), and lockwashers (8) from air duct (3) and remove air duct and gasket (11); discard gasket.

f. Remove six socket-head cap screws (12) and lockwashers (8) and remove blower assembly (13) and gasket (14) from receiver-transmitter. Disassemble blower assembly as required (fig. 126.15).

#### 125.27. Installation of Blower Assembly 11513399

a. Install gasket (14, fig. 126.13) and blower assembly (13) in acquisition receiver-transmitter, orienting the blower assembly so that the flange is as shown. Apply a small amount of antiseize compound (8030-00-274-4170) to threads of six socket-head screws (12) and secure the blower assembly and gasket to the acquisition receiver-transmitter with the six socket-head screws and six lockwashers (8).

b. Install new gasket (11) and air duct to blower assembly and secure with four lockwashers (8), four flat washers (7), and four socket-head cap screws (10).

c. Connect connector P26 (4) to connector J1.

d. Connect magnetron tuning drive flexible shaft (3) to magnetron and secure with two setscrews.

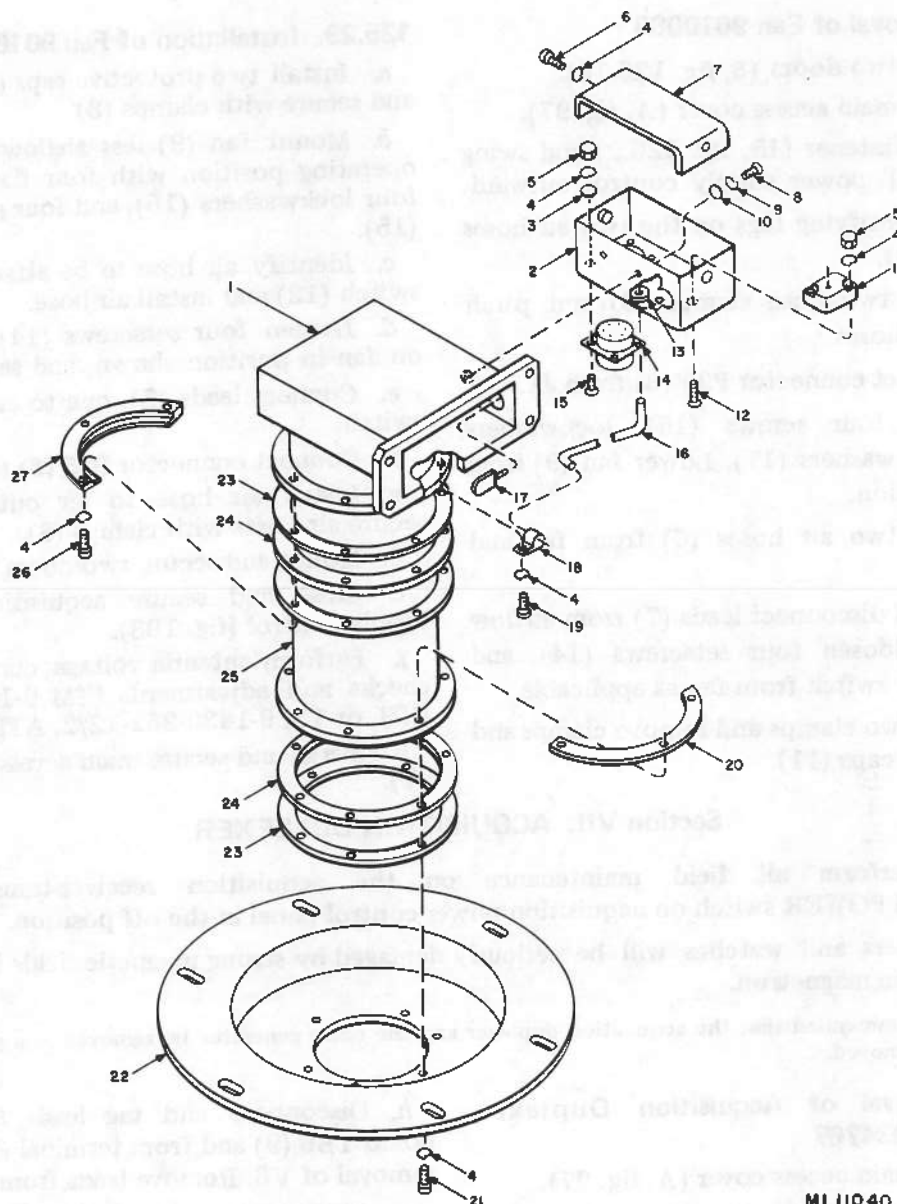
e. Close acquisition RF power supply control and secure with fastener (fig. 103).

f. Install main access cover (A, fig. 97).

### Section VI. FAN

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.



MI 11040

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| 1—Air duct transition—11513397     | 15—No. 4-40 X 7/16 pan-hd screw (4) |
| 2—Chassis—11513363                 | 16—Sleeving                         |
| 3—No. 4 fl washer (4)              | 17—Arm                              |
| 4—No. 4 lockwasher (20)            | 18—Clamp                            |
| 5—No. 4-40 nut (6)                 | 19—No. 4-40 X 3/4 soc-hd screw      |
| 6—No. 4-40 X 5/16 pan-hd screw (2) | 20—Clamp ring                       |
| 7—Cover—11513362                   | 21—No. 4-40 X 1/2 soc-hd screw (6)  |
| 8—No. 10-24 X 1/4 pan-hd screw (2) | 22—Air intake enclosure             |
| 9—No. 10 lockwasher (2)            | 23—Gasket—11513396                  |
| 10—No. 10 fl washer (2)            | 24—Seal plate—11513395              |
| 11—Switch—8606885                  | 25—Fan—11513165                     |
| 12—No. 4-40 X 7/8 pan-hd screw (2) | 26—No. 4-40 X 5/8 soc-hd screw (5)  |
| 13—Grommet                         | 27—Clamp ring                       |
| 14—Connector                       |                                     |

Figure 126.15. Blower assembly—11513399.

**125.28. Removal of Fan 9010088**

- a. Remove two doors (5, fig. 126.16).
- b. Remove main access cover (A, fig. 97).
- c. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.
- d. Place identifying tags on the two air hoses (6, fig. 126.16).
- e. Loosen two hose clamps (8) and push clamps up on hoses.
- f. Disconnect connector P25 (3) from J1.
- g. Remove four screws (15), lockwashers (16), and flat washers (17). Lower fan (9) from mounted position.
- h. Remove two air hoses (6) from fan and remove fan.
- i. Label and disconnect leads (7) from airflow switch (12), loosen four setscrews (14), and remove airflow switch from fan as applicable.
- j. Loosen two clamps and remove clamps and two protective caps (11).

**125.29. Installation of Fan 9010088**

- a. Install two protective caps (11, fig. 126.16) and secure with clamps (8).
- b. Mount fan (9) less airflow switch (12) in operating position with four flat washers (17), four lockwashers (16), and four pan-head screws (15).
- c. Identify air hose to be attached to airflow switch (12) and install air hose.
- d. Loosen four setscrews (14), install switch on fan in position shown, and secure setscrews.
- e. Connect leads (7), one to each terminal of switch.
- f. Connect connector P25 (3) to J1.
- g. Install air hose to air outlet tube (10); secure air hoses with clamps (8).
- h. Mount and secure two doors (5).
- i. Close and secure acquisition RF power supply control (fig. 103).
- j. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-255-12/1, INH, or TM 9-1430-251-12/2, ATBM).
- k. Install and secure main access cover (A, fig. 97).

**Section VII. ACQUISITION DUPLEXER**

**Warning:** Perform all field maintenance on the acquisition receiver-transmitter with ACQUISITION POWER switch on acquisition power control panel in the off position.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

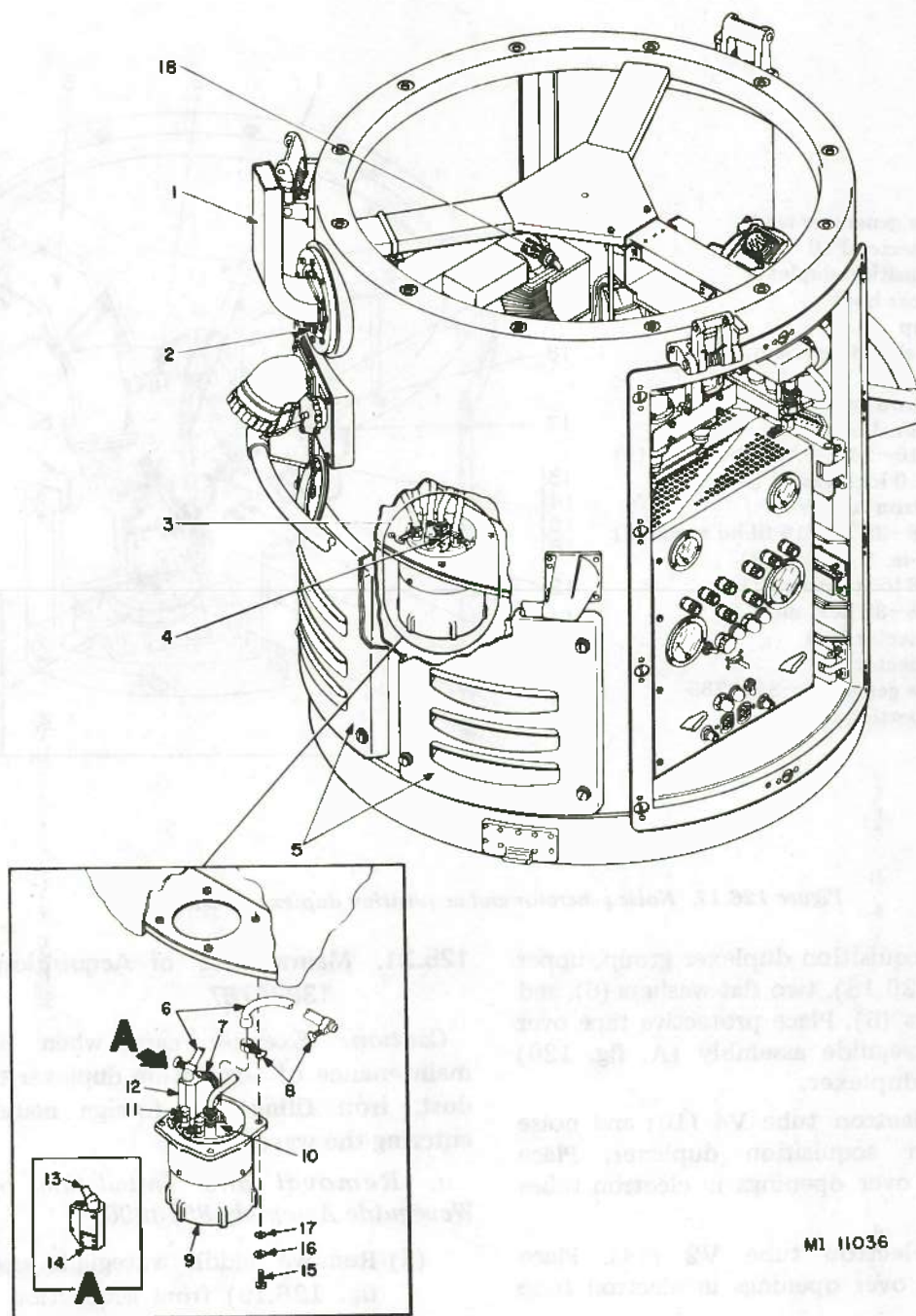
**Note:** It is recommended that the acquisition duplexer and the noise generator be removed as a group whenever the duplexer is removed.

**125.30. Removal of Acquisition Duplexer 13034767**

- a. Remove main access cover (A, fig. 97).
- b. Loosen fastener (15, fig. 126.9) and swing acquisition RF power supply control outward.
- c. Remove receiver-tuner group (para 125.17).
- d. Remove magnetron electron tube (2, fig. 126.13) (TM 9-1430-253-12/2, ATBM, or TM 9-1430-253-12/4, INH).
- e. Loosen six externally relieved body screws (2, fig. 126.16) and disconnect waveguide assembly (1) from acquisition duplexer.
- f. Disconnect connector P10 (18) from J10.
- g. Remove electron tube V3 (8, fig. 126.17). Place protective tape over openings of acquisition duplexer and electron tube V3.

- h. Disconnect and tag leads from terminal board TB6 (9) and from terminal (7) exposed by removal of V3. Remove leads from clamp (5).
- i. Disconnect main solid-state S-band (or TWT) amplifier connector P19 (17) from J1.
- j. Loosen hose clamp (18, fig. 126.18).
- k. Remove two hexagon nuts (17), lockwashers (5), flat washers (6), and lower clamp (7) from U-bolt.
- l. Manually support acquisition duplexer and remove two hexagon socket-head screws (15) and lockwashers (16).
- m. Manually support acquisition duplexer (3, fig. 126.17) and noise generator (19) and remove supporting chains (20) from noise generator.





M1 11036

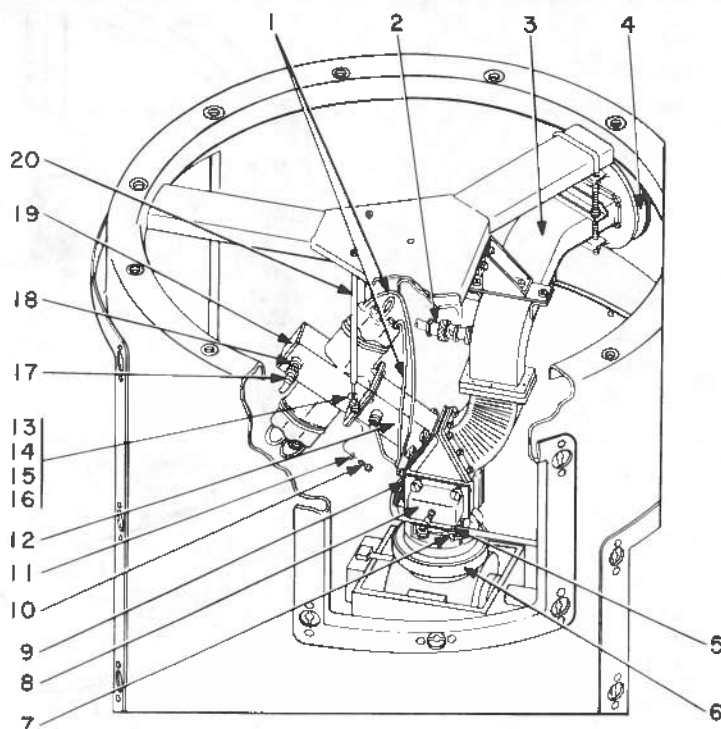
- 1—Waveguide assembly
- 2—5/16-18 X 1-1/8 exter-relieved body screw (6)
- 3—Connector P25
- 4—Connector J1
- 5—Door—8512761
- 6—Air hose
- 7—Leads
- 8—Hose clamp
- 9—Fan

- 10—Air outlet tube
- 11—Cap
- 12—Airflow switch—9011248
- 13—Switch air outlet tube
- 14—Setscrew (4)
- 15—1/4-20 X 1 fil-hd screw (4)
- 16—1/4-in. lockwasher (4)
- 17—9/32-in. fl washer (4)
- 18—Connector P10

Figure 126.16. Removal and installation of fan—9010088.



- 1—Noise generator lead
- 2—Connector P10
- 3—Acquisition duplexer
- 4—Rubber boot
- 5—Clamp
- 6—Rim clinching clamp
- 7—Terminal
- 8—Electron tube V3
- 9—Terminal board
- 10—No. 10—24 X 5/8 fil-hd screw (4)
- 11—No. 10 lockwasher (4)
- 12—Electron tube V4
- 13—No. 8—32 X 7/16 fil-hd screw (2)
- 14—3/16-in. fl washer (2)
- 15—No. 8 lockwasher (2)
- 16—No. 8—32 hex. nut (2)
- 17—Connector P19
- 18—Connector J1
- 19—Noise generator—8520785
- 20—Supporting chain



MI 11037

Figure 126.17. Noise generator and acquisition duplexer—installed.

n. Remove acquisition duplexer group, upper clamp (7, fig. 126.18), two flat washers (6), and two lockwashers (5). Place protective tape over openings in waveguide assembly (A, fig. 120) and acquisition duplexer.

o. Remove electron tube V4 (10) and noise generator from acquisition duplexer. Place protective tape over openings in electron tubes and duplexer.

p. Remove electron tube V2 (14). Place protective tape over openings in electron tube and duplexer.

q. Examine waveguide for any burned spots.

r. Using a fine grade of crocus cloth (grade No. 400 (10/0) or above) polish the waveguide to remove spot.

**Caution:** Replace silver plated waveguides if plating is damaged. The interior of middle waveguide assembly is silver plated.

### 125.31. Maintenance of Acquisition Duplexer 13034767

**Caution:** Exercise care when performing maintenance of acquisition duplexer to prevent dust, iron filings, or foreign material from entering the waveguides.

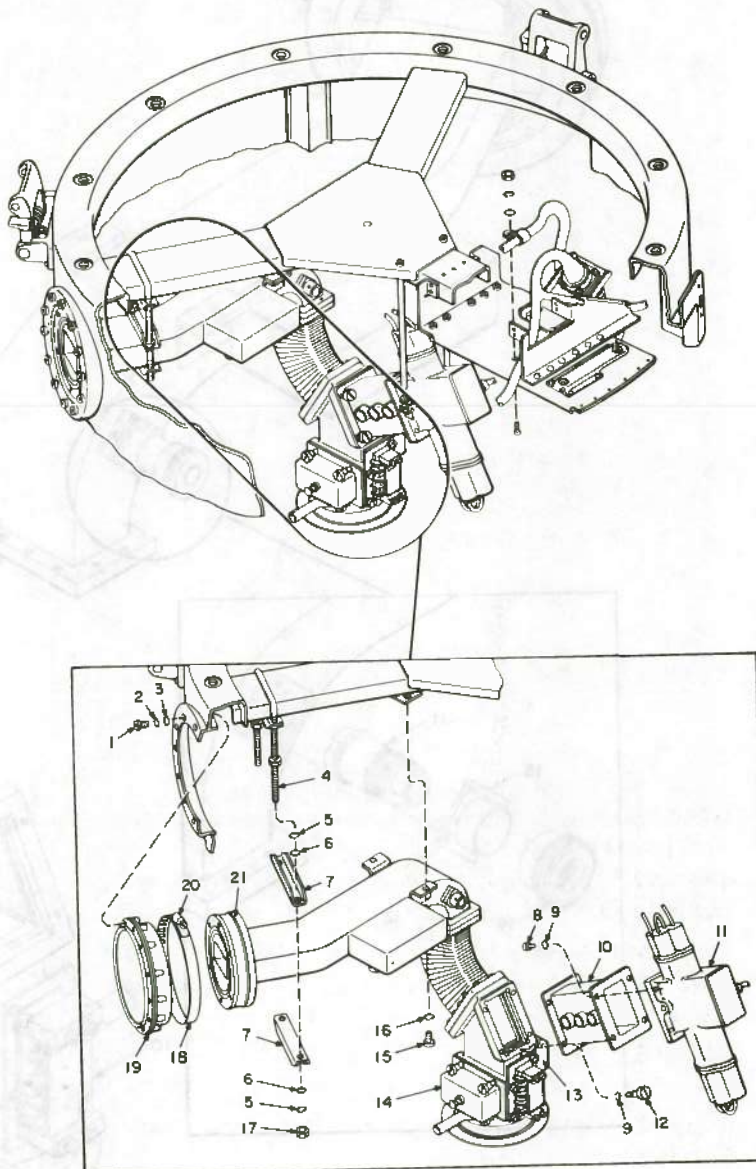
#### a. Removal and Installation of Middle Waveguide Assembly 8513000.

(1) Remove middle waveguide assembly (3, fig. 126.19) from acquisition duplexer.

(2) Apply antiseize compound (8030-00-274-4170) to threads of twenty-four hexagon-socket-head screws (5) and install middle waveguide assembly in acquisition duplexer.

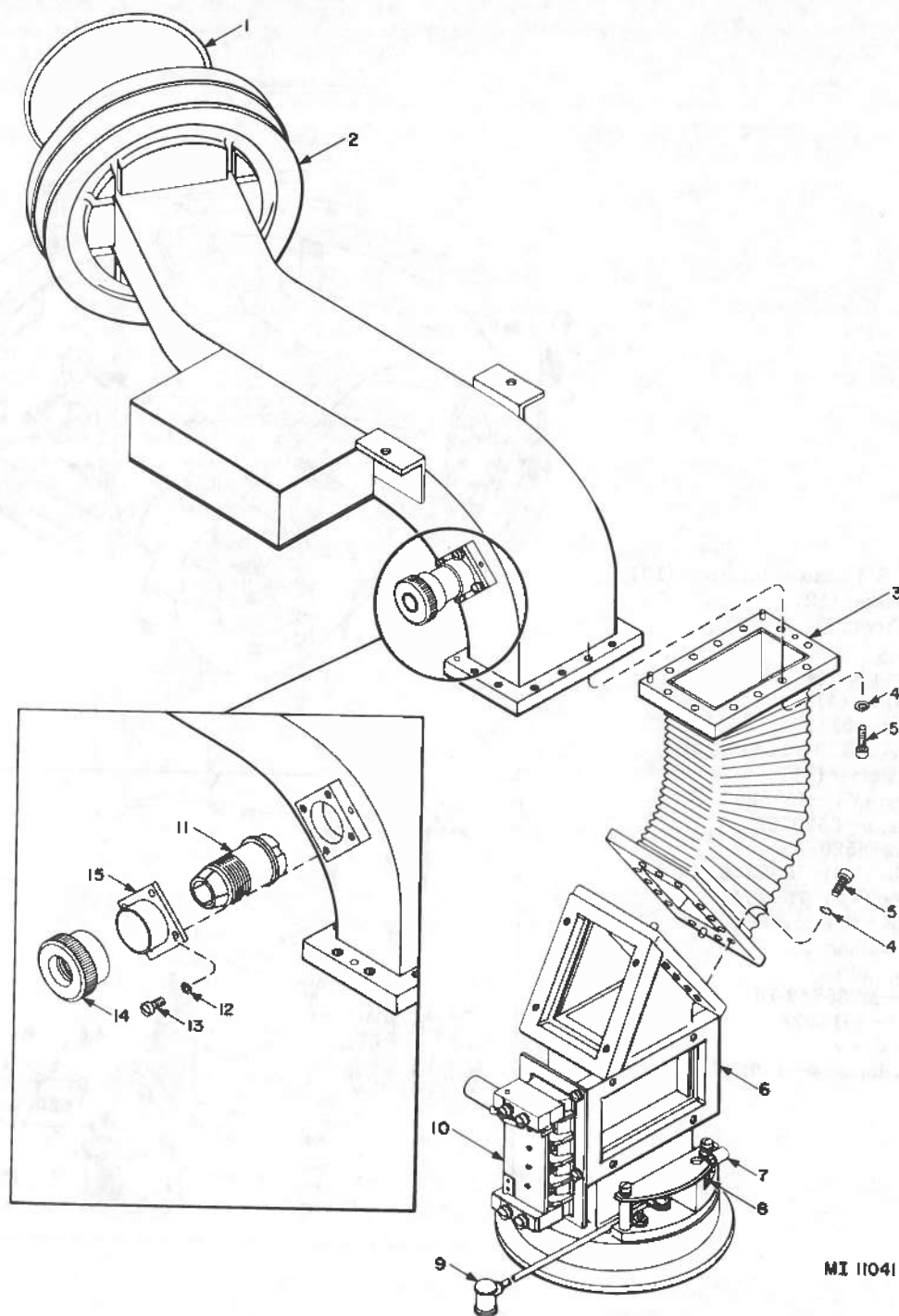
#### b. Removal and Installation of Collet 7603741. Remove and install collet (11, fig. 126.19).

- 1—No. 8—32 X 3/4 hex-soc-hd screw (12)
- 2—No. 8 lockwasher (12)
- 3—No. 8 fl washer (12)
- 4—U-bolt
- 5—1/4-in. lockwasher (4)
- 6—1/4-in. fl washer (4)
- 7—Clamping bar—8515145
- 8—No. 10—24 X 5/8 fil-hd screw (4)
- 9—No. 10 lockwasher (4)
- 10—Electron tube (V4)—7599347
- 11—Noise generator—8520785
- 12—Thumbscrew—8520695
- 13—Electron tube (V3)—7599346
- 14—Electron tube (V2)—7599345
- 15—No. 10—24 X 1/2 hex-soc-hd screw (2)
- 16—No. 10 lockwasher (2)
- 17—1/4—20 hex. nut (2)
- 18—Hose clamp—MS35842-16
- 19—Rubber boot—8513028
- 20—Adjustment screw
- 21—Acquisition duplexer—13034767



MI 11033

Figure 126.18. Removal and installation of acquisition duplexer.

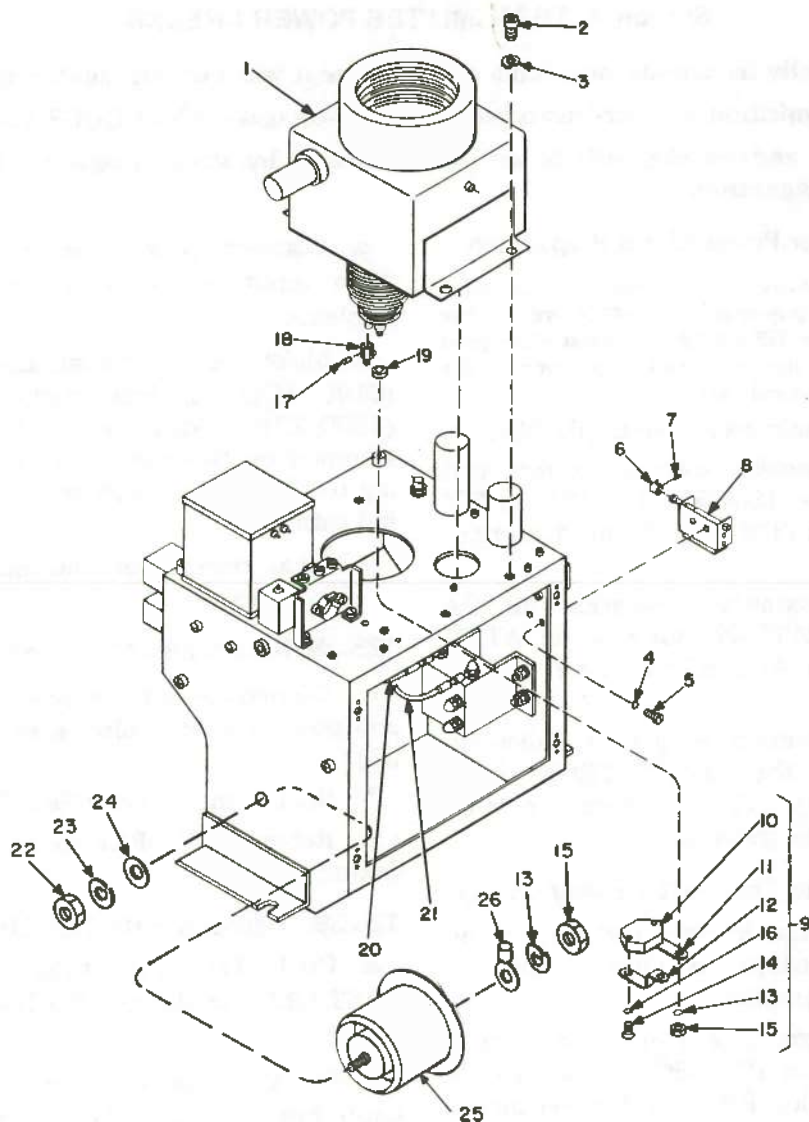


MI 11041

- 1-Gasket-8019251
- 2-Waveguide assembly-8513015
- 3-Waveguide assembly-8513000
- 4-No. 8 lockwasher (12)
- 5-No. 8-32 X 3/4 hex-soc-hd screw (12)
- 6-Waveguide assembly-11513391
- 7-Clamp-NAS1397P2B
- 8-Terminal-8515927

- 9-Arc suppressor lead-11513203
- 10-Terminal board-9003238
- 11-Collet-7603741
- 12-No. 4 lockwasher
- 13-No. 4-40 X 5/16 fil-hd screw
- 14-Knurled nut-7606344
- 15-Mounting-7607038

Figure 126.19. Acquisition duplexer 13034767—partially exploded view.



MI 11044A

- 1—Pulse transformer—8519043
- 2—3/8-16 X 5/8 soc-hd screw (4)
- 3—3/8-in. lockwasher (4)
- 4—No. 6 lockwasher (4)
- 5—No. 6-32 X 1/4 pan-hd screw (4)
- 6—Locking collar
- 7—No. 4-40 X 1/8 setscrew
- 8—Sensitive switch—7602749
- 9—Mounting bracket group
- 10—Capacitor (C6)
- 11—Mounting bracket—11513360
- 12—Mounting bracket—11513359
- 13—No. 8 lockwasher (3)

- 14—No. 6-32 X 7/8 pan-hd screw (2)
- 15—No. 8-32 hex. nut (3)
- 16—No. 6 lockwasher (2)
- 17—No. 4-40 X 3/16 setscrew (3)
- 18—Extension stud
- 19—Spacer
- 20—Brown lead
- 21—Yellow lead
- 22—1/4-in.—28 hex. nut
- 23—1/4-in. lockwasher
- 24—1/4-in. flat washer
- 25—Capacitor (C3)
- 26—Yellow lead

Figure 126.22. Removal and installation of components of electrical equipment box.

## Section X. TRANSMITTER POWER CHECKS

**Warning:** Potentially hazardous radiation levels are present when the transmitter is energized.

**Warning:** The acquisition receiver-transmitter contains voltages DANGEROUS TO LIFE.

**Caution:** Meters and watches will be seriously damaged by strong magnetic fields if they are brought near the magnetron.

### 125.36. Transmitter Power Check Preparation

*Note.* Before testing the acquisition receiver-transmitter, obtain RF power meter HP-435C with power cable and power sensor HP-8481A. This test is designed to check the output power of the transmitter with the antenna as the load (normal use).

- a. Remove the main access cover (fig. 97).
- b. Perform the weekly antenna, current, and AFC checks (TM 9-1430-255-12/1, INH, or TM 9-1430-251-12/2, ATBM), but do not deenergize the transmitter.
- c. Obtain a maximum indication on the ANTENNA ELEVATION indicator on ATBM systems, or on the ANT ELEV meter on INH systems.
- d. Obtain a minimum frequency indication (3100 MHz) on the MAGNETRON FREQUENCY meter on ATBM systems or MAG FREQ meter on INH systems.

### 125.37. Perform the Transmitter Power Checks

- a. On the acquisition antenna pedestal, set the antenna disable switch to OFF. Point the antenna in a clear direction.
- b. Connect power cable from power input jack on power meter HP-435C to 120V 400 ~ jack on the acquisition RF control power supply control. Energize the power meter and adjust for normal operation and for a range of 20 dbm.

- c. Connect power sensor HP-8481A cable from input connector J1 on the waveguide duplexer.

- d. Make power measurements at the low (3100 MHz), middle (3300 MHz), and high (3500 MHz) ends of the band, adding the values stamped on the waveguide coupler corresponding to these frequencies to the RF power meter indications.

The average power shall equal or exceed 57.78 dbm.

### 125.38. Return the LOPAR to Normal Operation

- a. Deenergize and disconnect RF power meter and power sensor; replace main access cover (fig. 97).
- b. Set the antenna disable switch to ON.
- c. Return the LOPAR to the proper operating frequency.

### 125.39. Deenergize the LOPAR Transmitter

- a. On INH systems, set the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.
- b. On ATBM systems, rotate the high voltage knob fully ccw and depress the LOPAR H.V. SUPPLY OFF switch-indicator.



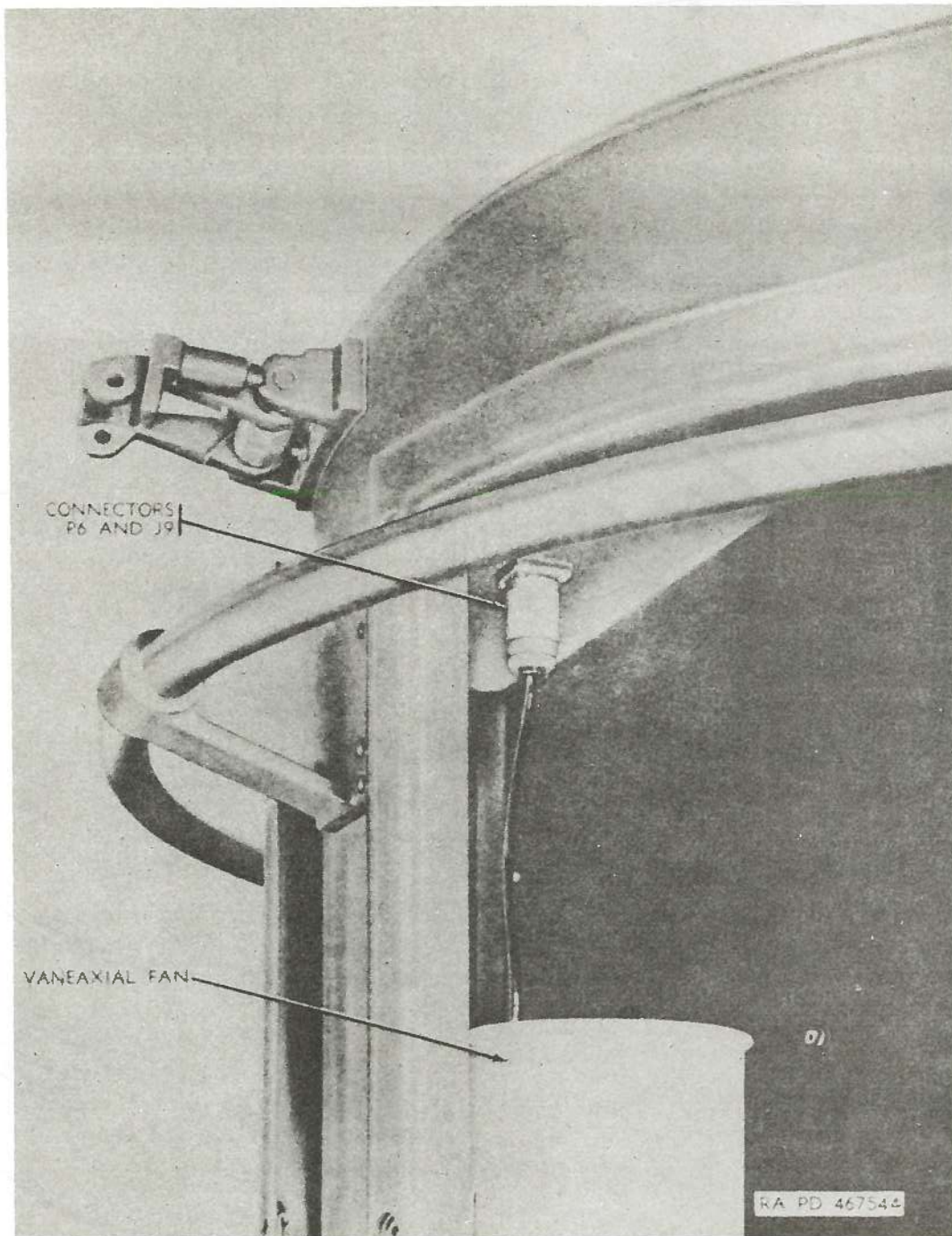


Figure 128. Vaneaxial fan—locational view.

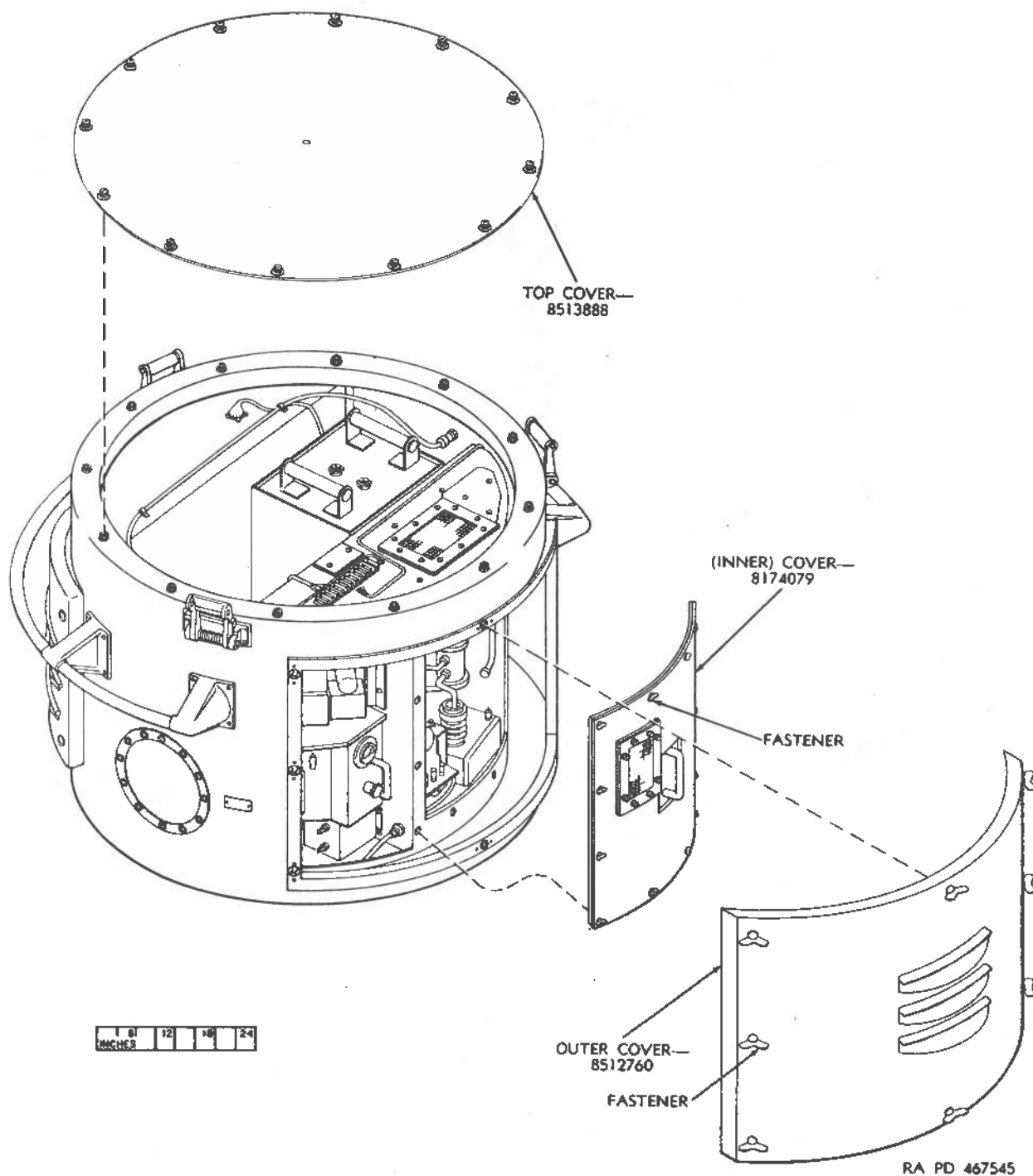
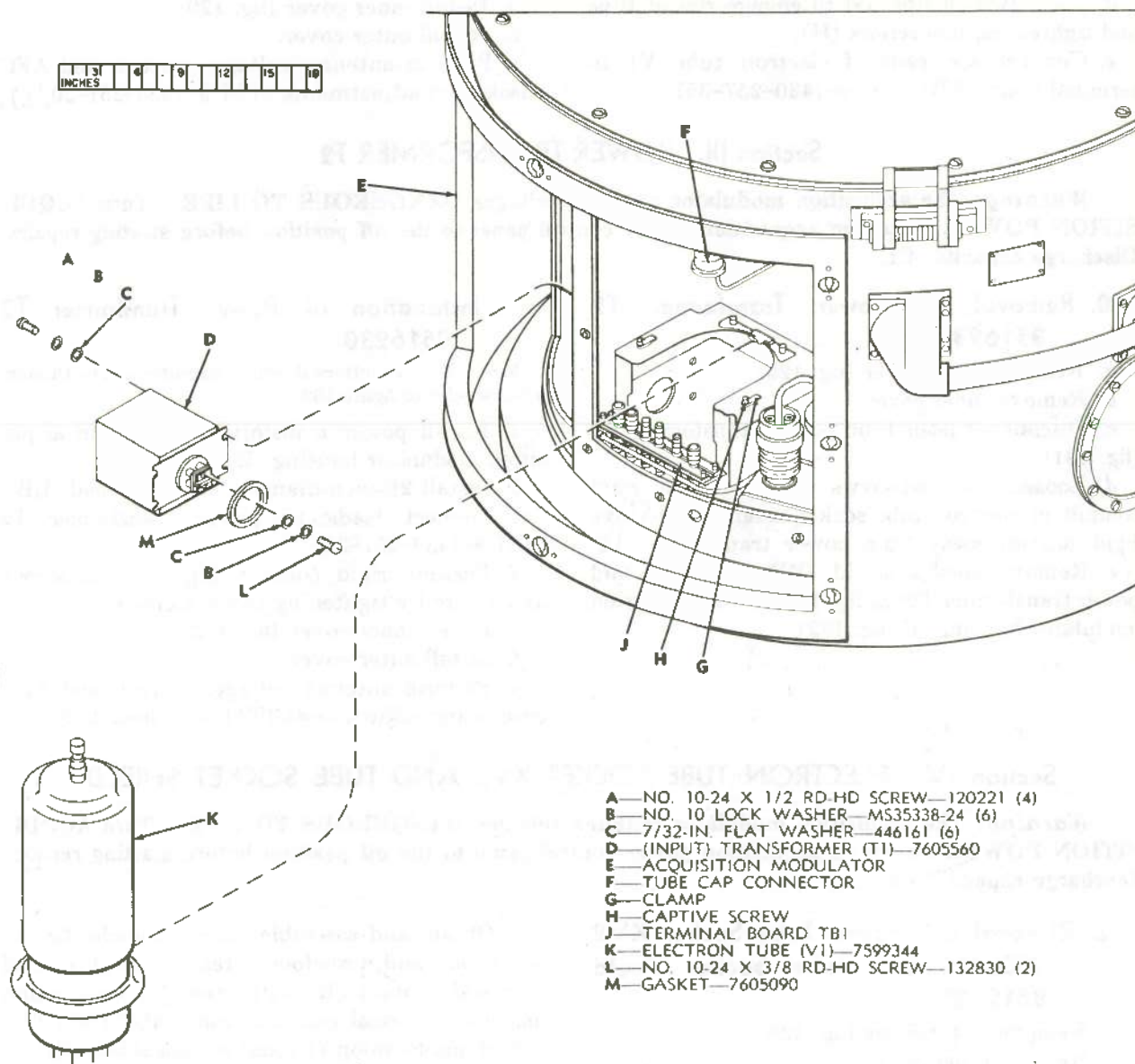


Figure 129. Acquisition modulator—partially exploded view.



RA PD 467546

Figure 130. Removal and installation of input transformer T1.

- c. Install electron tube V1 (K) in acquisition modulator.
- d. Turn two clamps (G) to engage rim of tube and tighten captive screws (H).
- e. Connect six leads of electron tube V1 to terminal board TB1 (TM 9-1430-257-35).

- f. Connect tube cap connector (F) to electron tube V1.
- g. Install inner cover (fig. 129).
- h. Install outer cover.
- i. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

### Section III. POWER TRANSFORMER T2

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

#### 130. Removal of Power Transformer T2 8516230

- a. Remove outer cover (fig. 129).
- b. Remove inner cover.
- c. Disconnect leads from power transformer T2 (fig. 131).
- d. Loosen two setscrews which secure rigid conduit in electron tube socket assembly. Move rigid conduit away from power transformer T2.
- e. Remove corona shield (BB, fig. 132) and power transformer T2 (Z, fig. 132) from acquisition modulator housing (E, fig. 132).

#### 131. Installation of Power Transformer T2 8516230

*Note.* The key letters shown in parentheses in a through c below refer to figure 132.

- a. Install power transformer T2 (Z) in acquisition modulator housing (E).
- b. Install 2½-inch-diameter corona shield (BB).
- c. Connect leads to power transformer T2 (TM 9-1430-257-35).
- d. Position rigid conduit (fig. 131) as shown and secure by tightening two setscrews.
- e. Install inner cover (fig. 129).
- f. Install outer cover.
- g. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20 /1).

### Section IV. ELECTRON TUBE SOCKET XV2 AND TUBE SOCKET SHIELD

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

#### 132. Removal of Electron Tube Socket XV2 9000400 and Tube Socket Shield 8512825

- a. Remove outer cover (fig. 129).
- b. Remove inner cover.
- c. Remove tube cap connector (fig. 131) from electron tube V2.
- d. Depress and turn knurled knob to release tube clamp assembly. Remove electron tube V2.

*Note.* The key letters shown in parentheses in e through l below refer to figure 132.

- e. Obtain and assemble ratchet handle (fig. 3), extension, and crowfoot wrench. Grip end of electrical contact (R) with crowfoot wrench and unscrew electrical contact from tube union (P).
- f. Remove union (P) and corona shield (Q).
- g. Loosen two setscrews (fig. 131) which secure electrical contact to electron tube socket assembly.
- h. Disconnect leads from terminals 3 and 4 of power transformer T2 (TM 9-1430-257-35).
- i. Remove four screws (LL). Lift electron tube socket XV2 (KK) and spring (JJ) sufficiently

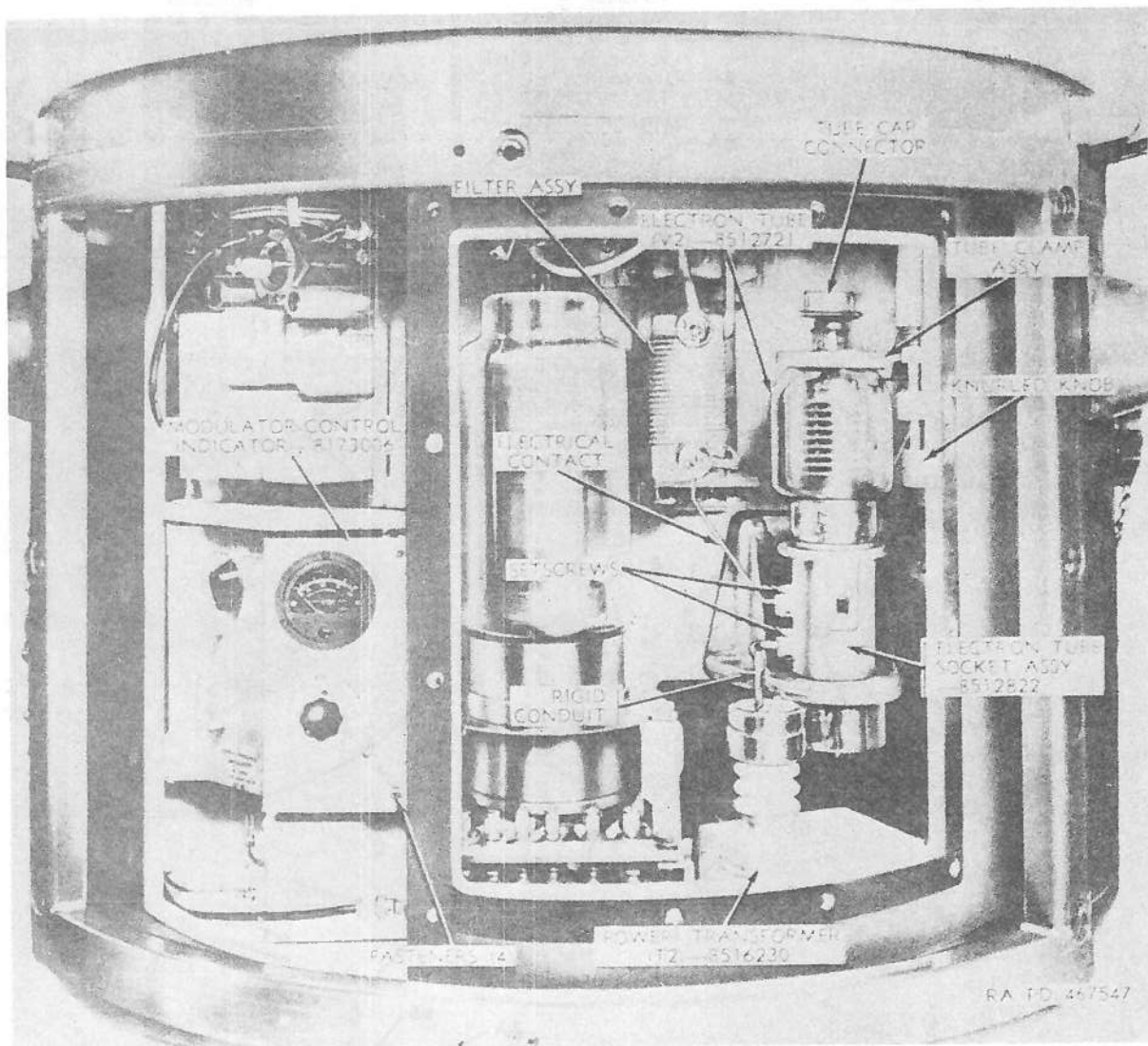


Figure 131. Acquisition modulator - interior view.



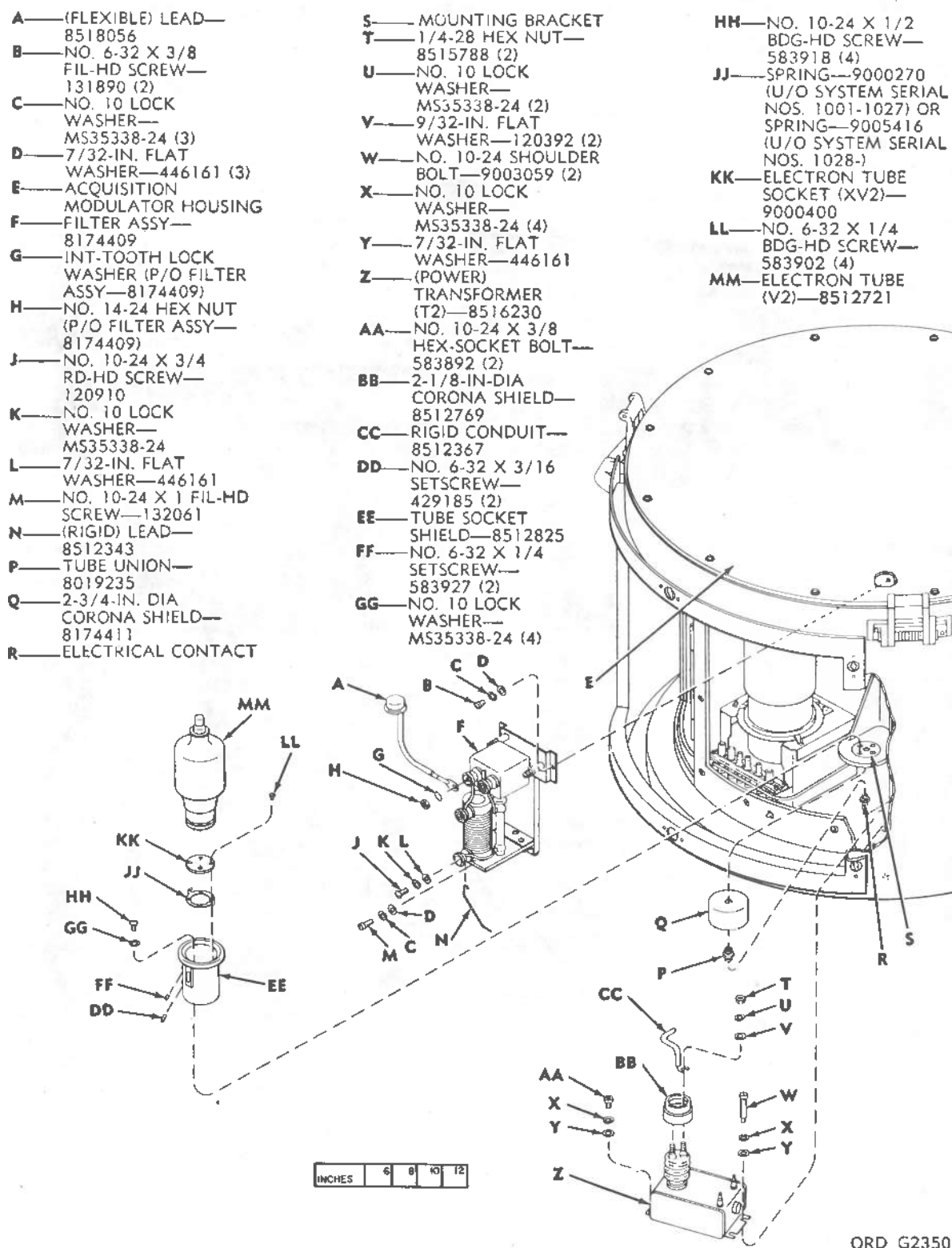


Figure 132. Acquisition modulator - partially exploded view.

to permit access to screws (HH). Remove four screws (HH) and lockwashers (GG).

j. Remove electron tube socket assembly (fig. 131) from acquisition modulator.

k. Disconnect leads from electron tube socket XV2 (KK) and remove tube socket. Remove spring (JJ).

l. Remove rigid conduit (CC) from tube socket shield (EE).

### 133. Installation of Electron Tube Socket XV2 - 9000400 and Tube Socket Shield - 8512825

Note. The key letters shown in parentheses in a through j below refer to figure 132.

a. Place tube socket shield (EE) on mounting bracket (S) and align holes in bottom of shield with holes in bracket. Secure shield with four No. 10 lockwashers (GG) and No. 10-24 x 1/2 binding-head screws (HH).

b. Insert spring (JJ) into tube socket shield. On systems up to and including system serial number 1027, it is necessary to align mounting holes in spring with holes in tube socket shield.

c. Connect white-red lead between terminal located at bottom of tube socket shield and terminal 3 of electron tube

socket XV2 (KK). Insert second white-red lead through rigid conduit (CC) and through hole into which rigid conduit (fig. 131) connects to electron tube socket assembly. Connect second lead to terminal 2 of electron tube socket.

d. Align slot in electron tube socket XV2 with tab inside tube socket shield. Coat threads of four No. 6-32 x 1/4 binding-head screws (LL) with sealing compound - 8030-174-2598 and secure electron tube socket to tube socket shield.

e. Connect rigid conduit to tube socket shield and secure with two No. 6-32 x 3/16 setscrews (DD).

f. Connect leads to power transformer T2 (TM 9-1430-257-35).

g. Connect electrical contact (fig. 131) to electron tube socket assembly with two No. 6-32 x 1/4 setscrews (FF).

h. Install 2-3/4-inch-diameter corona shield (Q) and tube union (P).

i. Using ratchet handle (fig. 3), extension, and crowfoot wrench, connect electrical contact (R) to union.

j. Install electron tube V2 (MM) and connect tube cap connector (fig. 131).

k. Install inner cover (fig. 129).

l. Install outer cover.

m. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

## Section V. FILTER ASSEMBLY

**WARNING:** THE ACQUISITION MODULATOR CONTAINS VOLTAGE DANGEROUS TO LIFE. TURN ACQUISITION POWER SWITCH ON ACQUISITION POWER CONTROL PANEL TO THE OFF POSITION BEFORE STARTING REPAIRS. DISCHARGE CAPACITOR C1.

### 134. Removal of Filter Assembly 8174409

a. Remove outer cover (fig. 129).

b. Remove inner cover.

c. Disconnect flexible and rigid leads (A and N, fig. 132) from filter assembly (F, fig. 132).

d. Remove filter assembly from acquisition modulator housing (E, fig. 132).

### 135. Disassembly and Assembly of Filter Assembly - 8174409

Note. The key letters shown in parentheses in a through c below refer to figure 133.

a. Disassemble filter assembly (fig. 133).

b. Apply antiseize compound - 8030-251-3983 to threads of No. 6-32 x 4-3/4 round-head screw (T).

c. Assemble filter assembly and solder 1-13/16-inch-long bus bar (AA) and 2-15/16-inch-long bus bar (GG) to re-

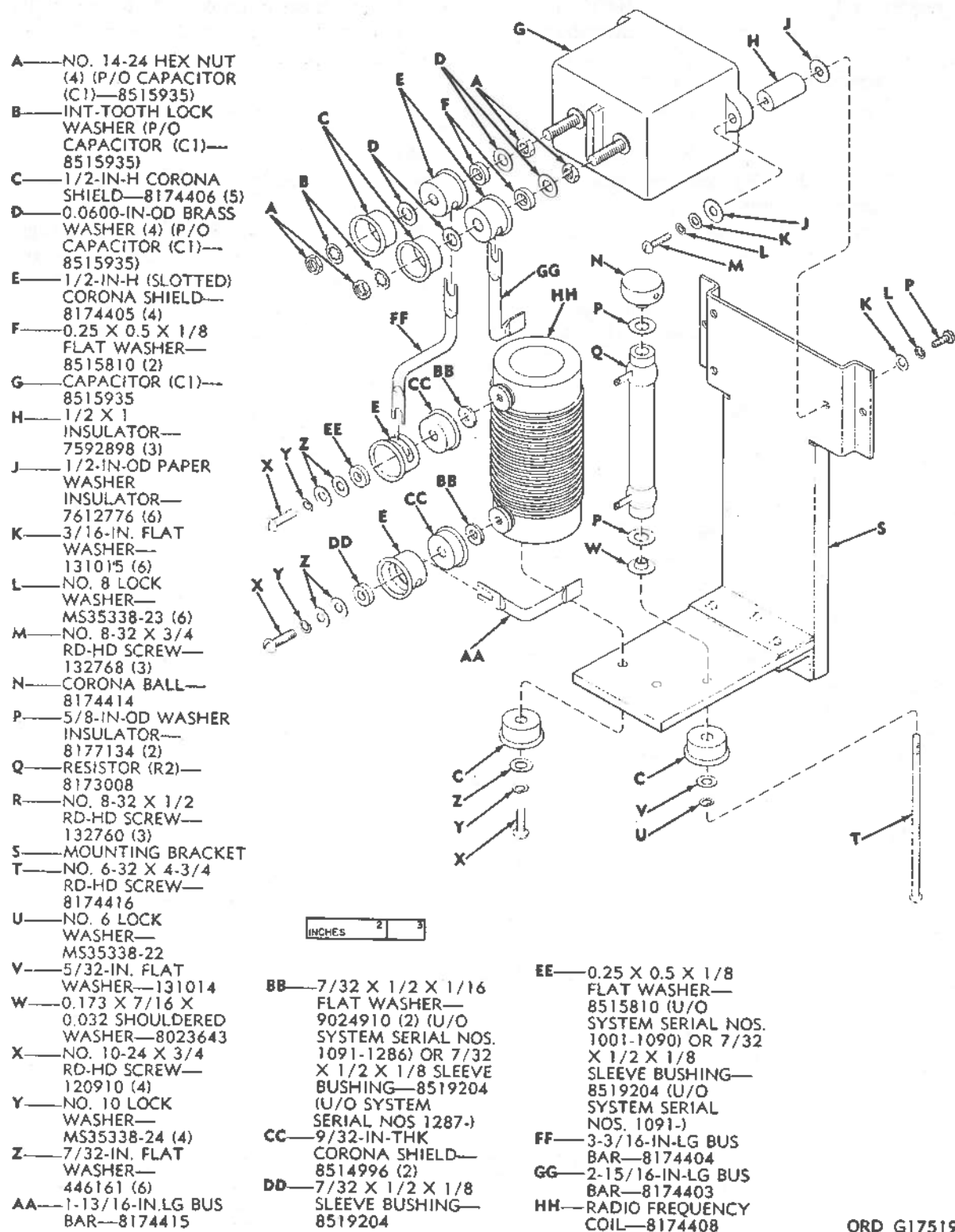


Figure 133. Filter assembly - exploded view.

C1

TM 9-1430-254-34

sistor R2 (Q).

136. Installation of Filter Assembly -  
8174409

a. Install filter assembly (F, fig. 132).  
b. Connect leads to filter assembly  
(TM 9-1430-257-35).





- c. Install inner cover (fig. 129).
- d. Install outer cover.

- e. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

## Section VI. PULSE FORMING NETWORK Z1

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

**Caution:** The acquisition antenna-receiver-transmitter group can be tipped over easily with the acquisition modulator removed. Tie antenna securely before removing modulator.

### 137. Removal of Pulse Forming Network Z1 7608157

- a. Disconnect connector P13 (B, fig. 134) from connector J1.

- b. Disconnect connectors P12, P14, and P15 (A, fig. 134) from connectors J6, J5, and J2, respectively.

- c. Using sufficient personnel to support acquisition modulator, lift modulator by handle, release three catches, and remove modulator.

*Note.* The key letters shown in parentheses in d through h below refer to figure 135 unless otherwise indicated.

- d. Remove outer door (H).
- e. Remove inner door (F).
- f. Using ratchet handle (fig. 3), extension, and rowfoot wrench, disconnect electrical contact (R, fig. 132) from tube union (P, fig. 132).
- g. Loosen six setscrews (D) and remove electrical contacts (M and J).
- h. Remove corona shields (S and L).
- i. Remove top cover (fig. 129).
- j. Remove six internal wrenching bolts (fig. 136), lockwashers, and flat washers and remove pulse forming network Z1.

### 138. Installation of Pulse Forming Network Z1 7608157

- a. Place pulse forming network Z1 (fig. 136) in position and secure network with six  $1\frac{3}{8}$ -inch flat washers,  $\frac{3}{8}$ -inch lockwashers, and  $\frac{3}{8}$ -24 x  $\frac{3}{8}$  internal wrenching bolts.

- b. Install top cover (fig. 129).

*Note.* The key letters shown in parentheses in c through j below refer to figure 135 unless otherwise indicated.

- c. Apply antiseize compound 8030-243-3286 to threads of  $1\frac{1}{8}$ -inch-od corona shield (L).

- d. Apply sealing compound 8030-174-2598 to threads of  $\frac{3}{8}$ -24 x  $\frac{1}{4}$  setscrew (K) and install corona shield (L).

- e. Apply antiseize compound 8030-243-3286 to threads of  $\frac{3}{8}$ -24 round nut (N), install  $2\frac{1}{8}$ -inch-diameter corona shield (S), and connect lead (Q).

- f. Connect  $6\frac{1}{8}$ -inch-long electrical contact (J) to corona shield (L). Using ratchet handle (fig. 3), extension, and crowfoot wrench, connect electrical contact (J) to tube union (P, fig. 132).

- g. Connect  $6\frac{1}{8}$ -inch-long electrical contact (M) to corona shields (E and L).

- h. Apply sealing compound 8030-174-2598 to threads of six No. 6-32 x  $\frac{1}{8}$  setscrews (D) and secure electrical contacts (M and J).

- i. Install inner door (F).

- j. Install outer door (H).

- k. Using sufficient personnel to support acquisition modulator (A, fig. 134), lift modulator into mounting position. Aline alinement arrows and secure modulator with three catches.

- l. Connect connectors P12, P14, and P15 to connectors J6, J5, and J2, respectively.

- m. Connect connector P13 (B, fig. 134) to connector J1.

- n. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20 /1).

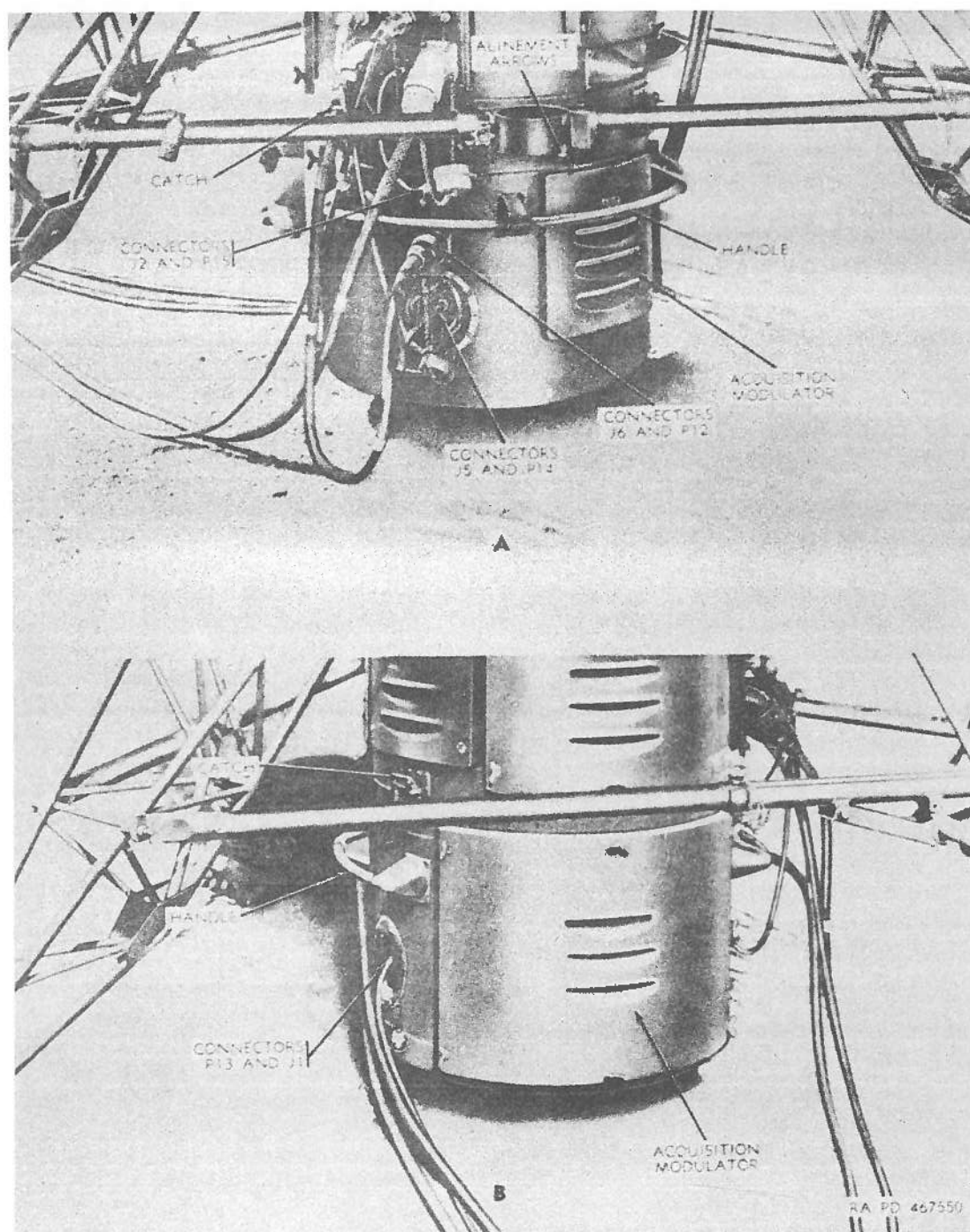


Figure 134. Removal and installation of acquisition modulator.

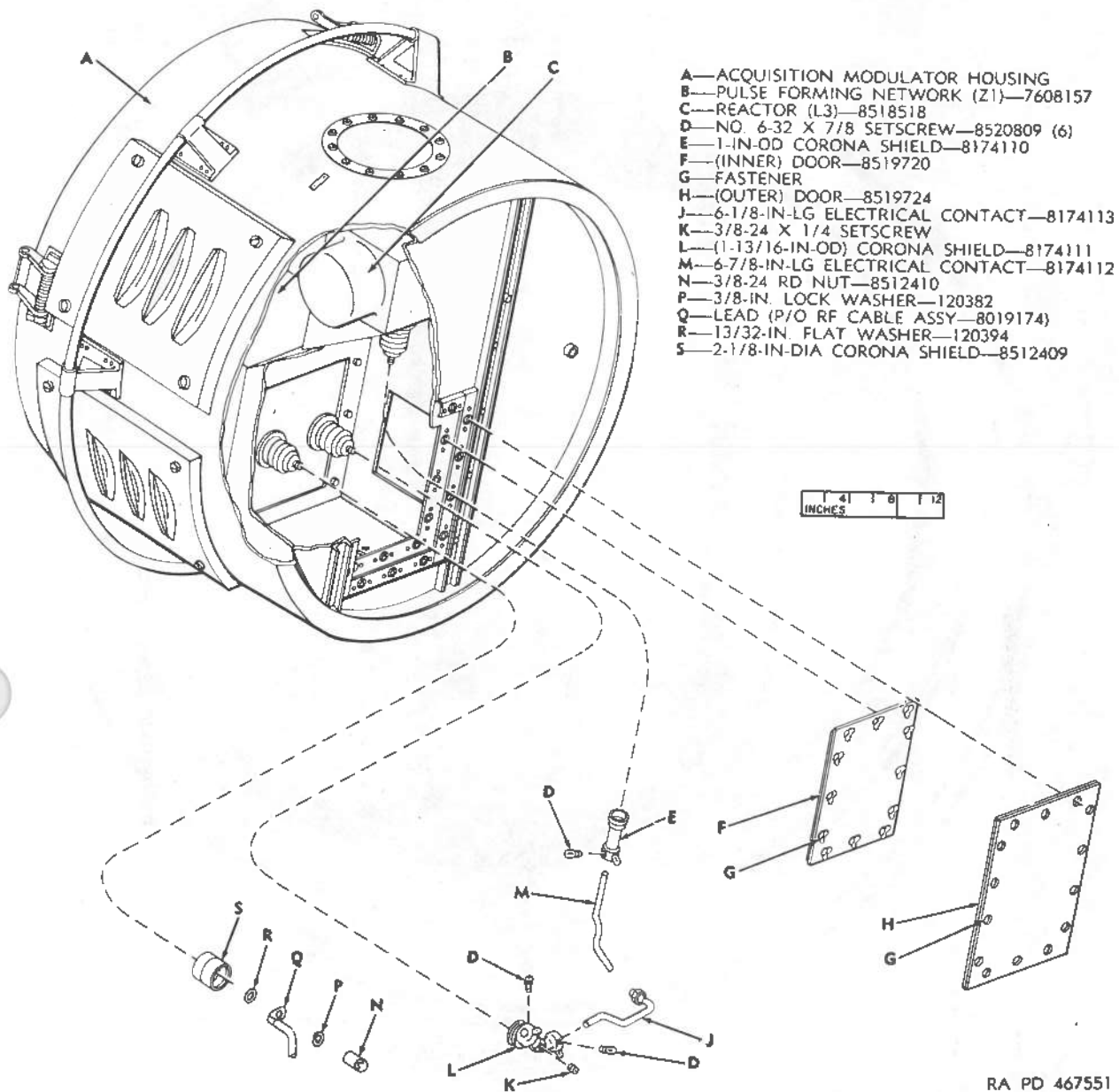


Figure 135. Acquisition modulator—partially exploded view.

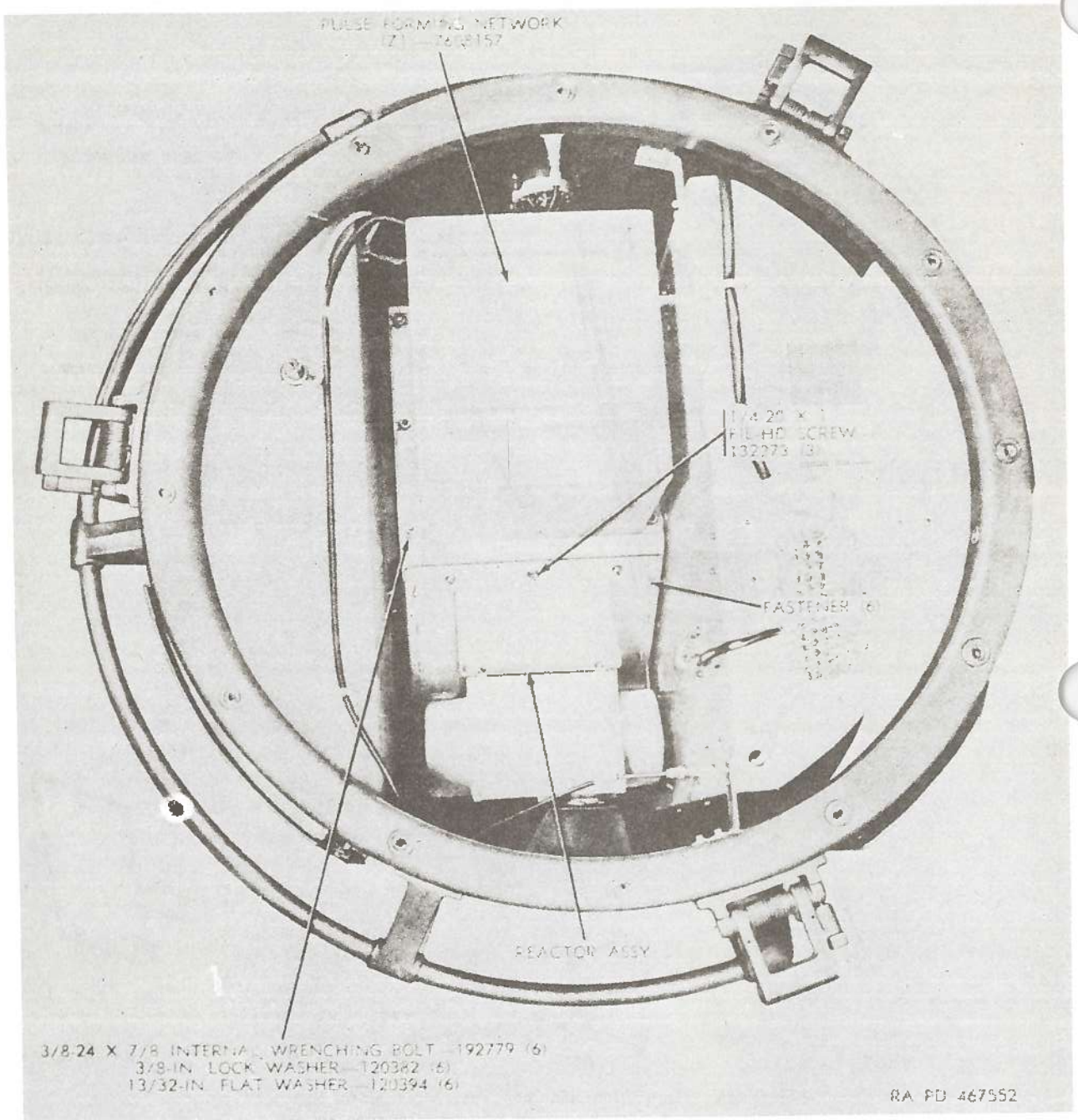


Figure 136. Acquisition modulator—top cover removed.



## Section VII. REACTOR ASSEMBLY

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

**Caution:** The acquisition antenna-receiver-transmitter group can be tipped over easily with the acquisition modulator removed. Tie antenna securely before removing modulator.

### 139. Removal and Disassembly of Reactor Assembly 8174077

a. Disconnect connector P13 (B, fig. 134) from connector J1.

b. Disconnect connectors P12, P14, and P15 (A, fig. 134) from connectors J6, J5, and J2, respectively.

c. Using sufficient personnel to support modulator, lift modulator by handle, release three catches, and remove modulator.

*Note.* The key letters shown in parentheses in d through g below refer to figure 135.

d. Remove outer door (H).

e. Remove inner door (F).

f. Loosen setscrews (D) and remove electrical contact (M).

g. Remove corona shield (E).

h. Remove top cover (fig. 129).

i. Loosen eight externally-relieved-body screws (fig. 137) securing dust and moisture seal boot.

j. Loosen six fasteners (fig. 136) and three fillister-head screws. Remove reactor assembly.

k. Remove gasket (fig. 138) from reactor L3.

l. Remove reactor L3 from mounting bracket.

### 140. Assembly and Installation of Reactor Assembly 8174077

a. If necessary replace 0.439-inch-long clips (fig. 138).

b. Secure new gasket to reactor L3 with retaining ring.

c. Install reactor assembly (fig. 136) and secure with six fasteners and three  $\frac{1}{4}$ -20 x 1 fillister-head screws.

d. Secure dust and moisture seal boot (fig. 137) in position shown with eight externally-relieved-body screws.

e. Install top cover (fig. 129).

f. Apply antiseize compound 8030-251-3983 to threads of 1-inch-od corona shield (E, fig. 135) and install corona shield.

g. Apply sealing compound 8030-174-2598 to threads of four No. 6-32 x  $\frac{1}{8}$  setscrews (D, fig. 135) and install  $6\frac{1}{8}$ -inch long electrical contact (M, fig. 135).

h. Install inner door (F, fig. 135).

i. Install outer door (H, fig. 135).

j. Using sufficient personnel to support acquisition modulator (A, fig. 134), lift modulator into mounting position. Aline alinement arrows and secure modulator with three catches.

k. Connect connectors P12, P14, and P15 to connectors J6, J5, and J2, respectively.

l. Connect connector P13 (B, fig. 134) to connector J1.

m. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20 /1).



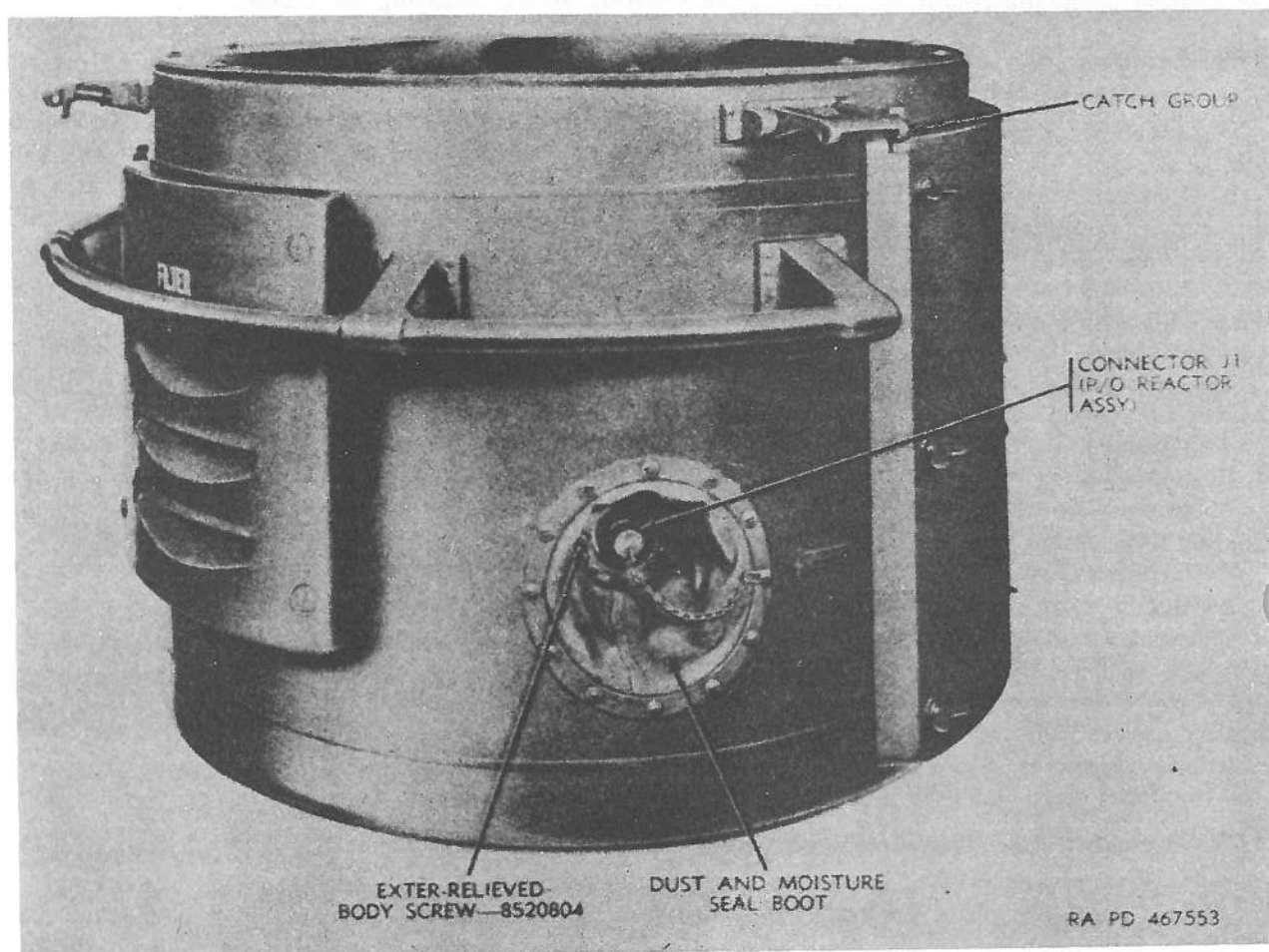


Figure 137. Acquisition modulator—side view.

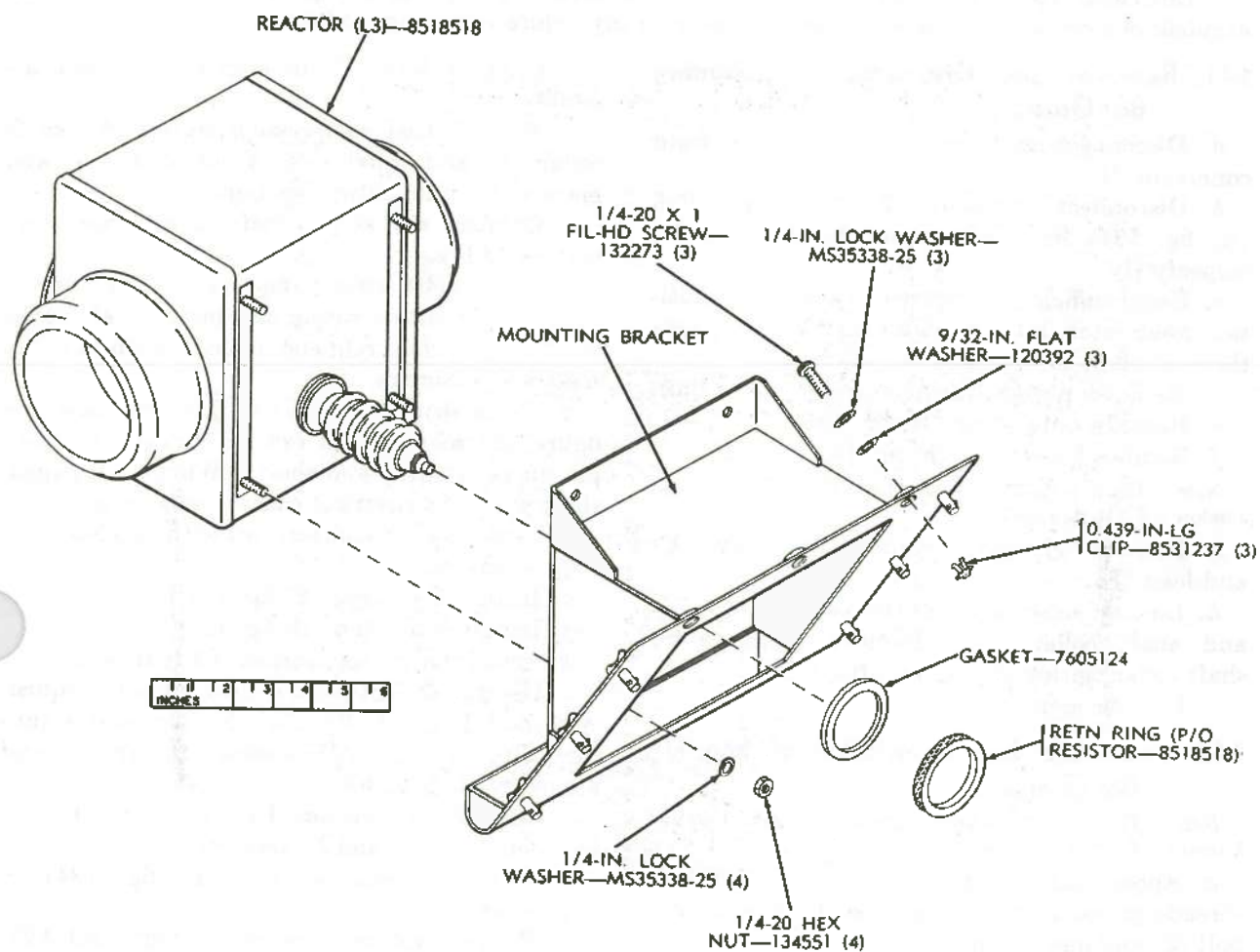


Figure 138. Reactor assembly 8174077—exploded view.

## Section VIII. SHORTING BAR GROUP

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

**Caution:** The acquisition antenna-receiver-transmitter group can be tipped over easily with the acquisition modulator removed. Tie antenna securely before removing modulator.

### 141. Removal and Disassembly of Shorting Bar Group

a. Disconnect connector P13 (B, fig. 134) from connector J1.

b. Disconnect connectors P12, P14, and P15 (A, fig. 134) from connectors J6, J5, and J2, respectively.

c. Using sufficient personnel to support acquisition modulator, lift modulator by handle, release three catches, and remove modulator.

d. Remove power transformer T2 (par. 130).

e. Remove outer door (H, fig. 135).

f. Remove inner door (F, fig. 135).

*Note.* The key letters shown in parentheses in g through i below refer to figure 139.

g. Remove electrical contact assembly (E) and lead (F).

h. Loosen setscrews (U) in switch stop (V) and shaft collar (T). Remove switch stop, shaft collar, spring (S), and shaft (W).

i. Remove arm (Y).

### 142. Assembly and Installation of Shorting Bar Group

*Note.* The key letters shown in parentheses in a through k below refer to figure 139.

a. Apply sealing compound 8030-174-2598 to threads of  $\frac{1}{8}$ -inch-thick-head No. 10-24 shoulder bolt (Z) and install arm (Y).

b. Install electrical contact assembly (E).

c. Connect lead (F) to electrical contact assembly.

d. Place helical compression spring (S), shaft collar (T), and switch stop (V) on shaft (W) and place shaft in mounting position.

e. Connect and secure shaft to electrical contact assembly.

f. Push shaft collar (fig. 140) to compress helical compression spring and secure shaft collar on shaft, 7 inches from end of shaft, with two No. 8-32 x  $\frac{3}{16}$  setscrews (U).

g. Place switch stop (V) in position shown in figure 140 so that arm can be engaged between pin on switch stop and shaft. When so engaged, shaft will hold electrical contact as shown.

h. Secure switch stop on shaft with two No. 8-32 x  $\frac{3}{16}$  setscrews (U).

i. Install inner door (F, fig. 135).

j. Install outer door (H, fig. 135).

k. Install power transformer T2 (par. 131).

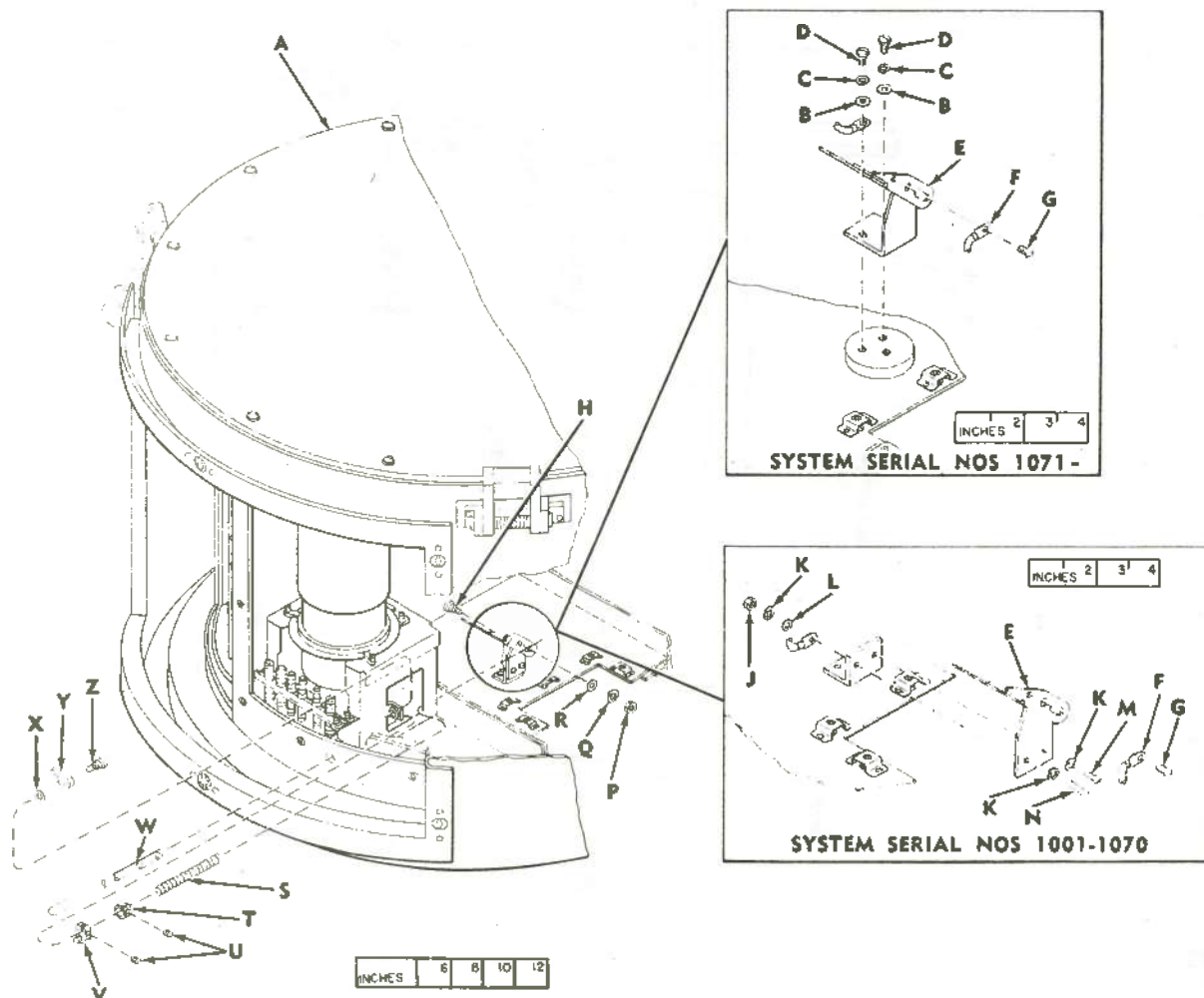
l. Using sufficient personnel to support acquisition modulator (A, fig. 134), lift modulator into mounting position. Aline alinement arrows and secure modulator with three catches.

m. Connect connectors P12, P14, and P15 to connectors J6, J5, and J2, respectively.

n. Connect connector P13 (B, fig. 134) to connector J1.

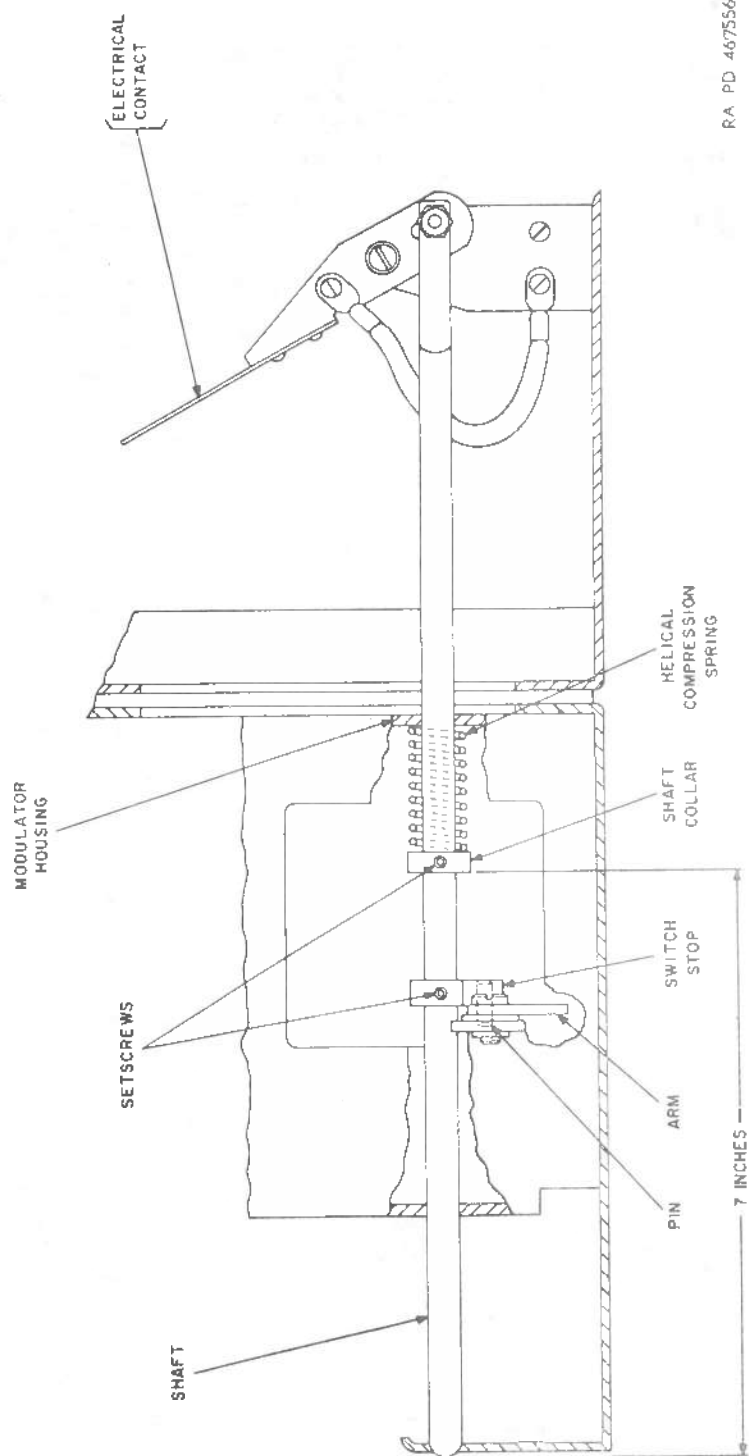
o. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

- A**—ACQUISITION MODULATOR HOUSING  
**B**—0.187-IN. FLAT WASHER—MS15795-207 (3)  
**C**—NO. 8 LOCK WASHER—MS35338-23 (3)  
**D**—NO. 8-32 X 1/2 PAN-HD SCREW—MS35225-45 (3)  
**E**—ELECTRICAL CONTACT ASSY—8511062 (U/O SYSTEM SERIAL NOS 1001-1070) OR ELECTRICAL CONTACT ASSY—9140222 (U/O SYSTEM SERIAL NOS 1071-)  
**F**—LEAD—8518172  
**G**—NO. 6-32 X 5/16 RD-HD SCREW—121839  
**H**—(3/32-IN. THK-HD) NO. 10-24 SHOULDER BOLT—8174423  
**J**—NO. 6-32 HEX NUT—134530 (2)  
**K**—NO. 6 LOCK WASHER—MS35338-22 (4)  
**L**—5/32-IN. FLAT WASHER—131014 (2)  
**M**—NO. 6-32 X 7/16 RD-HD SCREW—132700  
**N**—NO. 6-32 X 5/8 RD-HD SCREW—129028  
**P**—NO. 10-24 HEX NUT—120361  
**Q**—NO. 10 LOCK WASHER—120217  
**R**—7/32-IN. FLAT WASHER—446161  
**S**—HELICAL COMPRESSION SPRING—9000168  
**T**—SHAFT COLLAR—8174421  
**U**—NO. 8-32 X 3/16 SETSCREW—192208 (4)  
**V**—SWITCH STOP—8174402  
**W**—SHAFT—8511002  
**X**—9/32-IN. FLAT WASHER—120392  
**Y**—ARM—8174425  
**Z**—(1/8-IN-THK-HD) NO. 10-24 SHOULDER BOLT—8511003



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Figure 139. Removal and installation of shorting bar group.

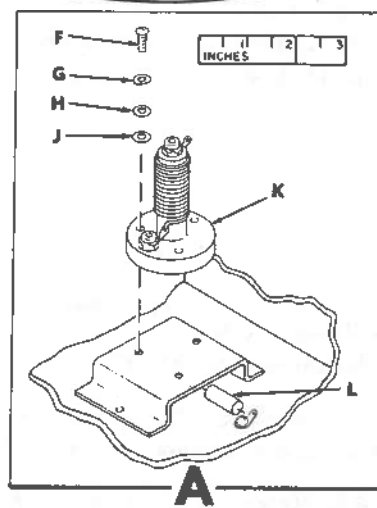
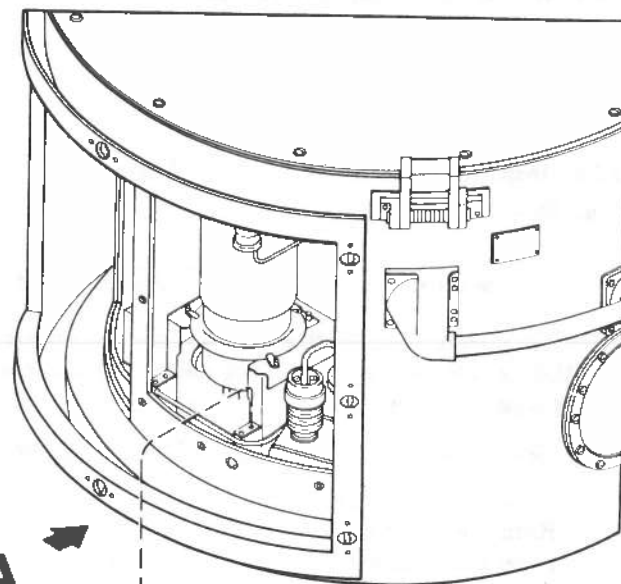
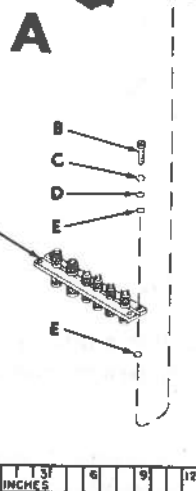
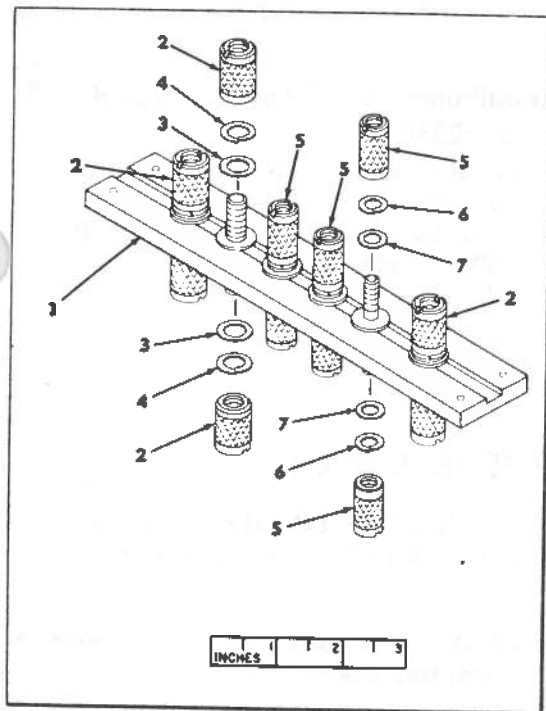


RA PD 467556

Figure 140. Adjustment of shorting bar group.



- A**—TERMINAL BOARD GROUP
- 1**—TERMINAL BOARD—8512350
- 2**—1/4-20 KNURLED NUT—8512730 (6)
- 3**—9/32-IN. FLAT WASHER—120392 (6)
- 4**—1/4-IN. LOCK WASHER—MS35338-25 (6)
- 5**—NO. 10-24 KNURLED NUT—8512684 (6)
- 6**—NO. 10 LOCK WASHER—MS35338-24 (6)
- 7**—7/32-IN. FLAT WASHER—446161 (6)
- B**—NO. 10-24 X 7/8 FIL-HD SCREW—132056 (4)
- C**—NO. 10 LOCK WASHER—MS35338-24 (4)
- D**—7/32-IN. FLAT WASHER—446161 (4)
- E**—GASKET—7598154 (8)
- F**—NO. 6-32 X 5/8 RD-HD SCREW—129028 (3)
- G**—NO. 6 LOCK WASHER—MS35338-22 (3)
- H**—5/32-IN. FLAT WASHER—131014 (3)
- J**—5/32-IN. WASHER INSULATOR—7599104 (3)
- K**—COIL (L1)—7602773
- L**—RESISTOR (R1)—573200



RA PD 467557

Figure 141. Removal and installation of terminal board TB1.

## Section IX. COIL L1

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

## 143. Removal of Coil L1 7602773

- a. Remove electron tube V1 (par. 128 a-e).
- b. Disconnect and tag leads from coil L1 (K, fig. 141).
- c. Remove coil L1.

b. Connect leads to L1 (TM 9-1430-257-35).

c. Install electron tube V1 (par. 129 c-f).

d. Install inner cover (fig. 129).

e. Install outer cover.

f. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

## 144. Installation of Coil L1 7602773

- a. Install coil L1 (K, fig. 141).

## Section X. TERMINAL BOARD TB1 AND ASSOCIATED COMPONENTS

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

## 145. Removal of Terminal Board TB1 8512350

- a. Remove outer cover (fig. 129).
- b. Remove inner cover.
- c. Disconnect leads from terminal board TB1 (J, fig. 130).
- d. Remove terminal board group (A, fig. 141).
- e. Disassemble terminal board group.

## 146. Installation of Terminal Board TB1 8512350

- a. Assemble terminal board group (A, fig. 141).
- b. Install terminal board group.
- c. Connect leads to terminal board TB1 (J, fig. 130) (TM 9-1430-257-35).
- d. Install inner cover (fig. 129).
- e. Install outer cover.
- f. Perform antenna voltage, current, and AFC checks and adjustments (TM 9-1430-251-20/1).

## Section XI. DUST AND MOISTURE SEAL BOOT

**Warning:** The acquisition modulator contains voltages DANGEROUS TO LIFE. Turn ACQUISITION POWER switch on acquisition power control panel to the off position before starting repairs. Discharge capacitor C1.

**Caution:** The acquisition antenna-receiver-transmitter group can be tipped over easily with the acquisition modulator removed. Tie antenna securely before removing modulator.

## 147. Removal of Dust and Moisture Seal Boot 8513132

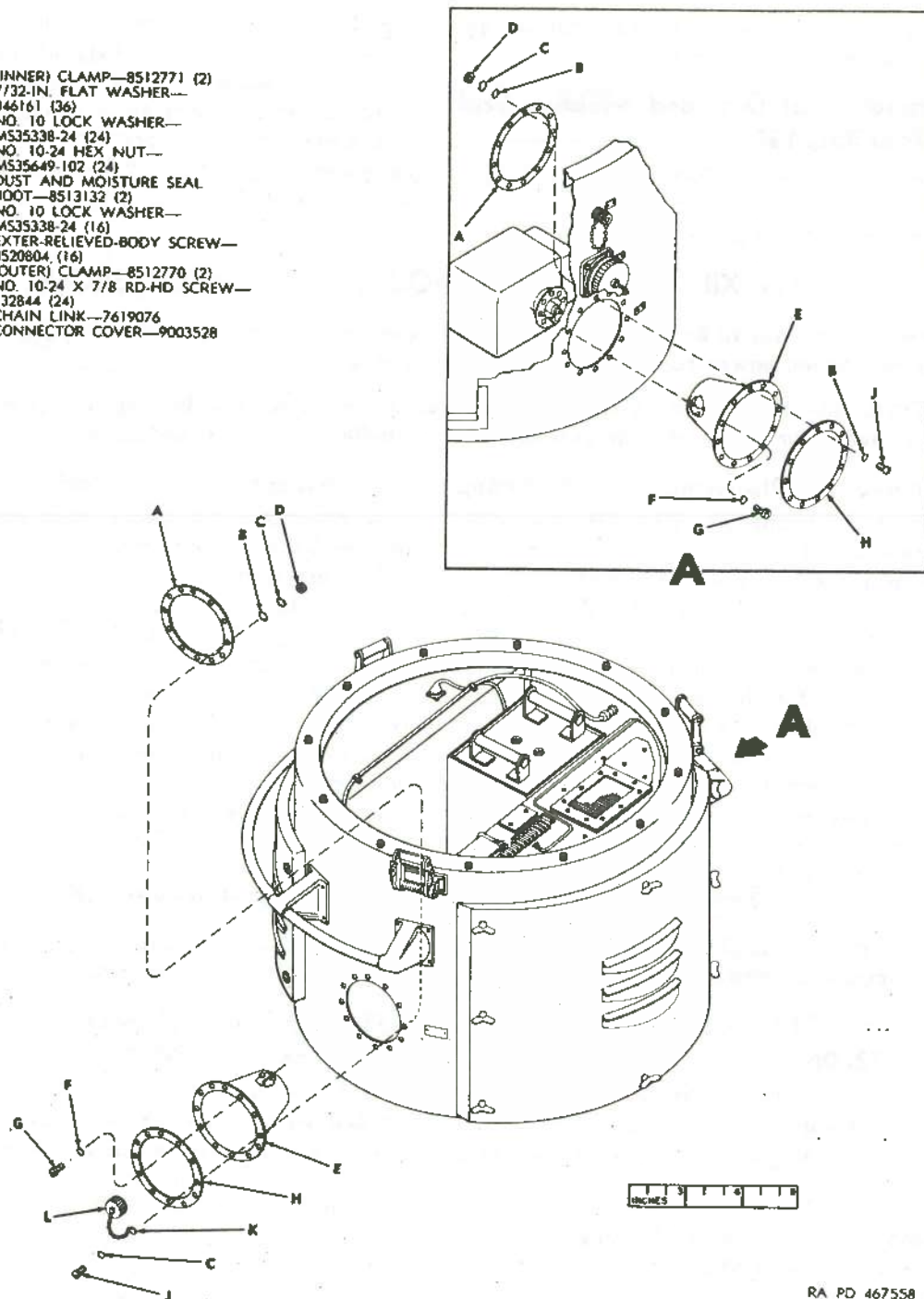
- a. Disconnect connector P13 (B, fig. 134) from connector J1.
- b. Disconnect connectors P12, P14, and P15

(A, fig. 134) from connectors J6, J5, and J2, respectively.

c. Using sufficient personnel to support modulator, lift modulator by handle, release three catches, and remove modulator.

d. Remove top cover (fig. 129).

- A—(INNER) CLAMP—8512771 (2)
- B—7/32-IN. FLAT WASHER—446161 (36)
- C—NO. 10 LOCK WASHER—MS35338-24 (24)
- D—NO. 10-24 HEX NUT—MS35649-102 (24)
- E—DUST AND MOISTURE SEAL BOOT—8513132 (2)
- F—NO. 10 LOCK WASHER—MS35338-24 (16)
- G—EXTER-RELIEVED-BODY SCREW—8520804 (16)
- H—(OUTER) CLAMP—8512770 (2)
- J—NO. 10-24 X 7/8 RD-HD SCREW—132844 (24)
- K—CHAIN LINK—7619076
- L—CONNECTOR COVER—9003528



RA PD 467558

Figure 142. Removal and installation of dust and moisture seal boot.

Description	Part no.	Federal stock no.	Qty.
KIT, SPECIAL PURPOSE: for intermediate frequency amplifier 9156573	5956577	1430-740-1502	2 <sup>a</sup>
Consisting of:			
CAPACITOR, FIXED, CERAMIC DIELECTRIC: 300v dc, 0.01 $\mu$ f $\pm$ 0% -20%	8175005		3
COIL, CHOKE, RADIO FREQUENCY: s winding, s layer, unshielded, 3 $\mu$ h rated ind, 1.05 ohm dc resistance	7599845		2
COIL, RADIO FREQUENCY: 13 turns, s layer wound type, solid plastic coil form, 3/16 od, 7/16 lg, w/2 wire lead type term., 0.25 $\mu$ h	7627374	5950-219-6710	1
COVER, ELECTRICAL CONNECTOR: metallic, 9/16 dia, 9/16 lg	9003872	5975-606-0793	1
INSULATION SLEEVING, ELECTRICAL: flex. plastic, 0.04 id, 0.009 wall thk, 1-ft lg	8034679-528		1
NUT, PLAIN, HEXAGON: corr-res-S, pass-fin., no. 4-40NC-2B, 0.25 w across flats, 0.094 thk	9157795-4	5310-754-4406	1
TERMINAL STUD: br cond, 7/32 dia, 13/16 lg	7599087	5940-271-4337	1
WASHER, LOCK: split, med, corr-res-S, pass-fin., no. 4 screw size	9157798-2	5310-042-9609	1

<sup>1</sup> One modification kit 1430-740-1500 is required to modify each system.

<sup>2</sup> One modification kit 1430-740-1501 is required for each system, and one kit is required to modify each intermediate frequency amplifier 7620695 stocked as direct or general support repair parts.

<sup>3</sup> Two modification kits 1430-740-1502 are required to modify each system, and one kit is required to modify each intermediate frequency amplifier 9156573 stocked as direct support repair parts.

## 156. Disposition of Excess Parts and Materials

Return excess parts and materials to stock in accordance with standard procedures.

## 157. Installation of Components Eliminating TVI

a. Perform the receiver-sensitivity check and the AJD channel-sensitivity check before performing the steps below.

b. Deenergize the system as follows:

- (1) On NIKE-HERCULES systems, refer to TM 9-1430-250-10.
- (2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-253-12/4.
- (3) On ATBM systems, refer to TM 9-1430-253-12/2.

c. Set the antenna-disable switch to OFF.

d. Remove the access covers from front and rear of the acquisition receiver-transmitter (fig. 97).

e. Loosen the fastener (2, fig. 126.5) and swing the acquisition RF power supply control outward.

f. Remove the acquisition AFC amplifier-relay assembly, retaining the mounting hardware. Take the assembly to a safe work area.

g. Change the wiring and electrical components in amplifier-relay assembly 9156675 and

intermediate frequency amplifier 7620695 as follows:

- (1) Disconnect the cable connectors, release four captive fasteners, and remove intermediate frequency amplifier 7620695 from its bottom cover and place the chassis in a safe storage area.
- (2) Unsolder and disconnect the following wires from RF transmission line switch (K2) 9976399.

Wire	Terminal
BLK	K2-6
YEL	K2-5
GRN	K2-4

- (3) Remove and retain the hardware securing switch K2 to mounting bracket 9156678. Remove and retain K2.
- (4) Remove and retain the hardware securing mounting bracket 9156678 to mounting channel 9156676. Discard the mounting bracket.
- (5) Mount drilling template 10185315 on the channel as shown in figure 143 and secure using the two No. 6 x 3/8 pan-head screws retained in (4) above.
- (6) Drill four 0.173-inch diameter holes through the channel using a No. 17 drill.

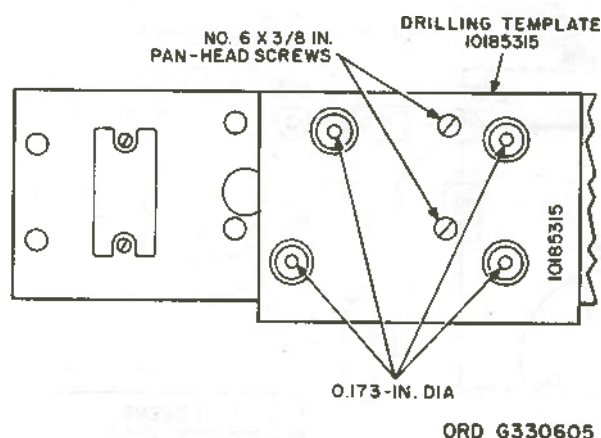


Figure 143. Mounting channel 9156676—partial view showing drilling locations.

- (7) Remove and retain the hardware securing the drilling template. Remove the template.
- (8) Remove and retain the hardware securing the cover and RF cable retainer bracket to relay assembly 92663-G615523. Remove and retain the cover and bracket.
- (9) Remove and retain the hardware securing mounting bracket 10185071 to relay assembly 92663-G615523.
- (10) Install RF transmission line switch K2, retained in (3) above, on mounting bracket 10185071 and secure using the three No. 6 flat washers 9157794-8, three No. 6 lockwashers, and three No. 6 hexagon nuts retained in (3) above.
- (11) Cut to length as indicated and connect and solder the following wires to switch K2:

Note. Terminals K2-4 and K2-5 are located on the left side of K2 with K2-4 near the corner. Terminal K2-6 is on the opposite side of K2-4.

Wire	Length (inches)	Part no.	Connect to
GRN	2½	MPD1506-E20U5	K2-4
YEL	2	MPD1506-E20U4	K2-5
BLK	3	MPD1506-E20U0	K2-6

- (12) Install the switch and bracket assembly to relay assembly 92663-G615523 and secure using the three No. 6 × 1/4

pan-head screws and three No. 6 lockwashers retained in (9) above.

- (13) Connect and solder the wires, connected to K2 in (11) above, to the following terminals on the inside of relay assembly 92663-G615523.

Wire	Terminal
BLK	E6
YEL	E5
GRN	E4

- (14) Position the relay assembly on the mounting channel at the four holes drilled in (6) above. Secure the assembly using the four No. 6 × 3/8 pan-head screws and four No. 6 lockwashers retained in (4) and (8) above, and four No. 6 flat washers 9157794-8 and four No. 6 hexagon nuts 9157795-5.
- (15) Connect the coaxial cables which are components of the relay assembly as follows:

Cable connector	Color	Connect to
P37	ORN	K2-1
P38	BLU	K2-2
P39	WHT	K2-3

- (16) Position the three coaxial cables in the three cut-out areas of the relay assembly and secure using the RF cable retainer bracket and the two No. 4 × 1/4 pan-head screws and two No. 4 lockwashers retained in (8) above.
- (17) Install the cover, retained in (8) above, on the relay assembly and secure using the four No. 4 × 3/8 pan-head screws and four No. 4 lockwashers retained in (8) above.
- (18) Connect and solder the wires, disconnected in (2) above, to the following terminals on the outside of the relay assembly.

Wire	Terminal
BLK	E6
YEL	E5
GRN	E4

- (19) Remove the cable marker sleeve stamped 9993611 from the wiring harness and in the same relative location install cable marker sleeve



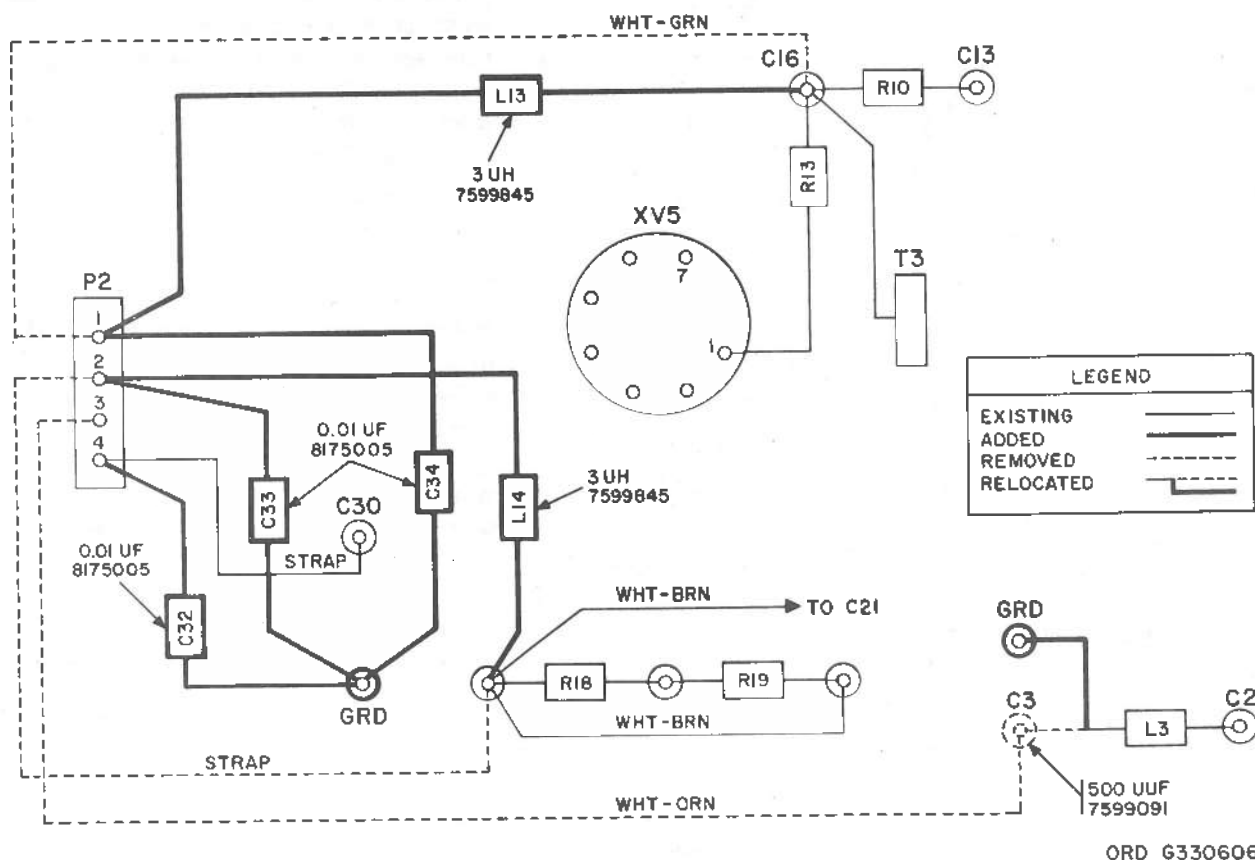


Figure 144. Intermediate frequency amplifier 7620695—partial wiring diagram.

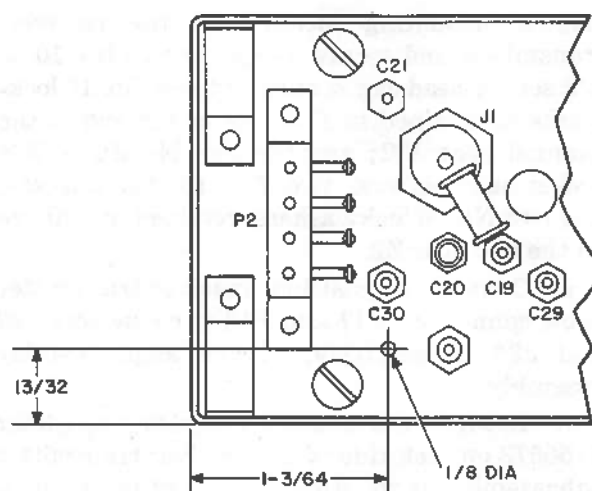
- 8034668-47 stamped 10185102. Secure the sleeve to the harness using tape 9007067.
- (20) Remove stamping "D153884" from the inside of the bottom cover from which the amplifier was removed in (1) above. Stamp "GS-67704" in the same relative location inside the cover.
  - (21) Stamp part number "10184940" on the upper side of the bottom cover in a convenient location. Covercoat the new stampings.
  - (22) Remove stamping "9156675" from the amplifier-relay assembly. Stamp "10185052" at the same location.
  - (23) Change wiring and electrical components in intermediate frequency amplifier 7620695 retained in (1) above, and as follows:
    - (a) Unsolder and disconnect the lead of coil L3 which is connected to capacitor C3 as shown in figure 144.
    - (b) Unsolder, disconnect, and remove the white-orange wire between C3 and P2-3, the white-green wire between P2-1 and C16, and the strap wire between P2-2 and the standoff terminal near P2 as shown in figure 144.
    - (c) Remove and discard 500- $\mu$ f capacitor (C3) 7599091 (fig. 144) and one No. 3 lockwasher 426213.
    - (d) Remove and retain the electron tube shields and the electron tubes from the chassis.
- Caution:** Care should be exercised when drilling the chassis to prevent damage to the wiring and electrical components.

- (e) Lay out, center punch, and drill the 1/8-inch-diameter hole through the electrical equipment chassis as shown in figure 145. Using the same drill, enlarge the hole from which C3 was removed in (c) above. De-bur the two holes.
- (f) Install one stud terminal 7599264 in each of the two holes, drilled or enlarged in (e) above, on the wiring side of the chassis and secure using two No. 4 lockwashers 9157798-2 and two No. 4 hexagon nuts 9157795-4.
- (g) Connect and solder the lead of coil L3, disconnected in (a) above, to the added terminal.
- (h) Equip with insulation sleeving 8034679-528 as necessary, and connect and solder the following electrical components as indicated below and as shown in figure 144.

Component	Part no.	Connect between
Capacitor, 0.01 $\mu$ f, C32	8175005	P2-4 and added terminal <sup>1</sup>
Capacitor, 0.01 $\mu$ f, C33	8175005	P2-2 and added terminal <sup>1</sup>
Capacitor, 0.01 $\mu$ f, C34	8175005	P2-1 <sup>1</sup> and added terminal
Coil, 3 $\mu$ h, L13	7599845	P2-1 and C16
Coil, 3 $\mu$ h, L14	7599845	P2-2 and stand-off terminal from which the strap wire was removed in (c) above.

<sup>1</sup> An additional lead will be added to this terminal.

- (i) Using the universal stamping kit, remove stamping "C3" near the added terminal. Stamp "GRD" near each of the terminals installed in (f) above.
- (j) Remove stamping "D153884" from the inside of the bottom cover assembly and in the same relative location stamp "GS-67704". Install the bottom cover assembly on the chassis.



NOTE:  
ALL DIMENSIONS SHOWN ARE IN INCHES.

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Figure 145. Intermediate frequency amplifier 7620695—partial view showing drilling location.

Make the following stamping changes on the amplifier:

Remove	Add	Location
D153884	GS-67704	End of bottom cover near P1
AM-1059/MS		Side of bottom cover
7620695		Side of bottom cover
	10184940 AMPLIFIER, IF	Side of bottom cover on which a bracket is riveted
	10184940 AMPLIFIER, IF	Along edge on top of chassis above stampings V5 and V4

Install the electron tubes and electron tube shields, retained in (d) above, on the chassis.

- (24) Install the amplifier chassis into the bottom cover and connect connector P1 of the amplifier to connector J44 of the relay assembly, and connector P1 of connector-resistor assembly Z2 to connector J1 of the amplifier.
- h. Install the amplifier-relay assembly in its

original mounting location in the receiver-transmitter and secure using the two No. 10  $\times$  1/2 socket-head cap screws and two No. 10 lockwashers, retained in *f* above, at the end of the channel near J22; and the two No. 10  $\times$  5/8 socket-head screws, two No. 10 flat washers, and two No. 10 lockwashers, retained in *f* above on the end near Z2.

i. Connect acquisition receiver-transmitter cable connectors P17 and P18 to connectors J29 and J30, respectively, of the amplifier-relay assembly.

j. Locate intermediate frequency amplifier 9156573 on each side of the receiver-transmitter subassembly at the upper center of the acquisition receiver-transmitter. Disconnect connector P43 from J3 of the left-hand amplifier and discard cable assembly 9990800. Disconnect connector P44 from J3 of the right-hand amplifier and discard cable assembly 9990801.

k. Disconnect the remaining connectors, loosen the four captive screws in each, and remove two intermediate frequency amplifiers 9156573 to a safe work area.

l. Change wiring and electrical components in two intermediate frequency amplifiers 9156573 as outlined below:

- (1) Remove and retain the cover from the bottom of the amplifier.
- (2) Unsolder, disconnect, and discard 91-ohm, 1/2-watt resistor R5 (fig. 146) between J3 and the ground terminal near J1.
- (3) Unsolder, disconnect, and discard 360-ohm, 1/2-watt resistor R4 (fig. 146) between J2 and J3.
- (4) Unsolder, disconnect, and remove yellow wire between J1-E and 500- $\mu$ f capacitor C8.
- (5) Unsolder and disconnect the following wires as shown in figure 146:

Wire	Disconnect from	Other end connected to
BRN	J1-A	C12
WHT	J1-B	C13
RED	Ground terminal near J3	J1-H

- (6) Remove and retain the electron tube shields and electron tubes V1 and V2 from the chassis.

**Caution:** Care should be exercised when drilling the chassis to prevent damage to the wiring and electrical components.

- (7) Lay out, center punch, and drill the 1/8-inch-diameter hole from the top of the electrical equipment chassis as shown in figure 147. Debur the hole.
- (8) Install stud terminal 7599087 on the wiring side of the chassis using No. 4 lockwasher 9157798-2 and No. 4 hexagon nut 9157795-4.
- (9) Using the universal stamping kit, change the stamping on the wiring side of the chassis as follows. Covercoat the stampings.

Remove	Stamp	Locate new stamping
C5	C5	Between capacitor and transformer T2
J3	GRD	Above terminal near J3
	GRD	Below ground terminal between C5 and J1

- (10) Connect and solder the following wires, disconnected in (5) above, as indicated below and as shown in figure 146.

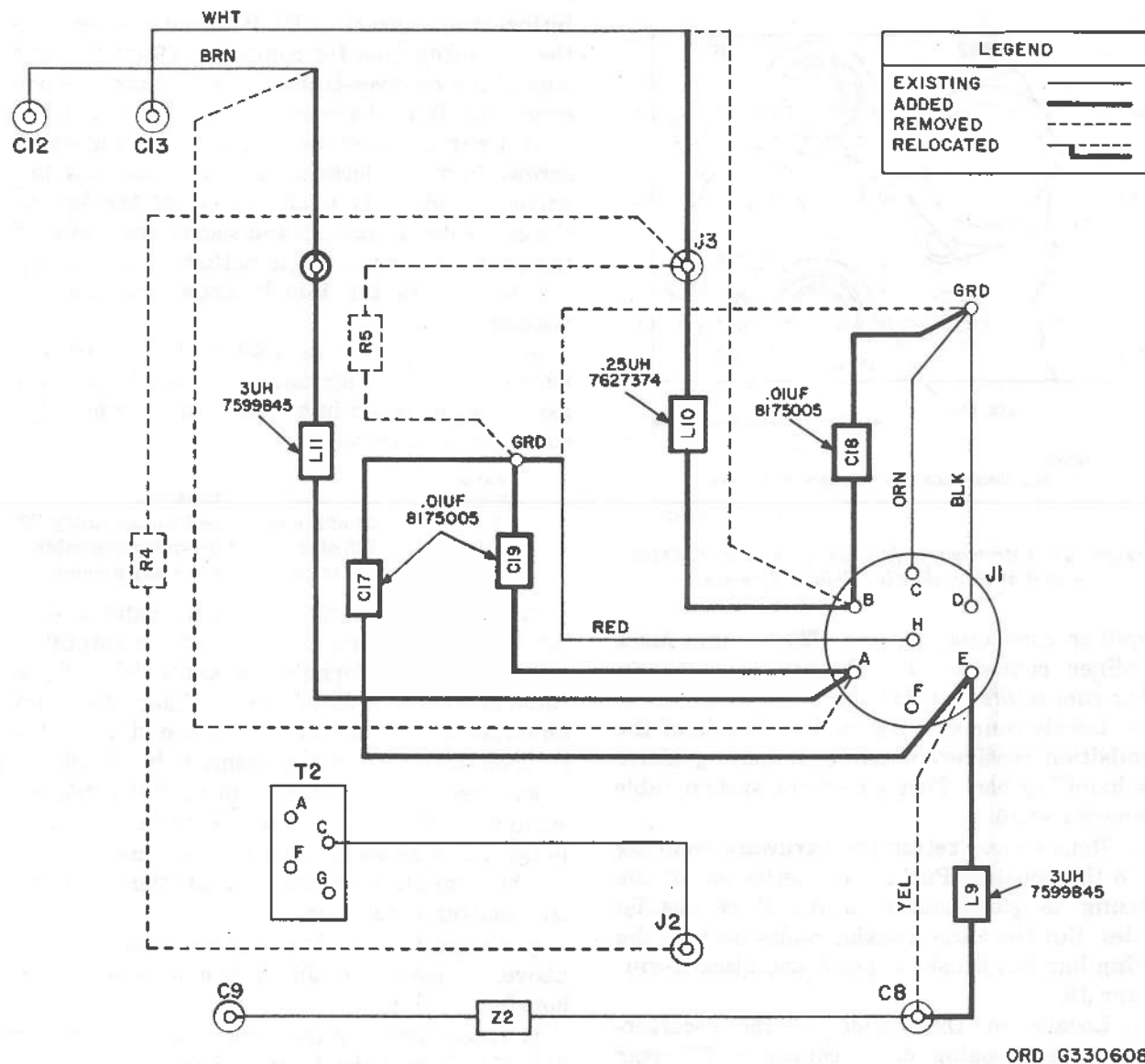
Wire	Connect to	Other end is connected to
BRN	Added terminal <sup>1</sup>	C12
WHT	J3 <sup>1</sup>	C13
RED	GRD near C5 <sup>1</sup>	J1-H

<sup>1</sup> An additional lead will be added to this terminal.

- (11) Equip with insulation sleeving 8034679-528 as necessary; connect and solder the following electrical components as indicated below and as shown in figure 146.

Component	Part no.	Connect between
Capacitor, 0.01 $\mu$ f, C18	8175005	J1-B <sup>1</sup> and GRD near J3
Coil, 0.25 $\mu$ h, L10	7627374	J1-B and J3
Coil, 3 $\mu$ h, L11	7599845	J1-A <sup>1</sup> and added terminal
Capacitor, 0.01 $\mu$ f, C19	8175005	J1-A and GRD near C5 <sup>1</sup>
Capacitor, 0.01 $\mu$ f, C17	8175005	J1-E <sup>1</sup> and GRD near C5
Coil, 3 $\mu$ h, L9	7599845	J1-E and capacitor C8

<sup>1</sup> An additional lead will be added to this terminal.



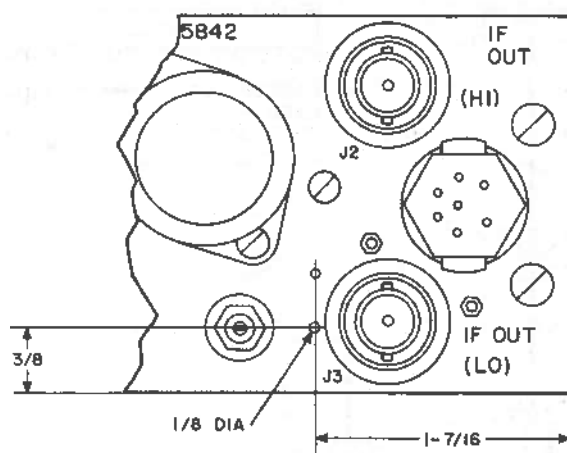
**Figure 146. Intermediate frequency amplifier 915657S—partial wiring diagram.**

- (12) Install cover 9003872 on connector J3, and the cover, retained in (1) above, on the bottom of the amplifier.
- (13) Install the electron tubes and electron tube shields, retained in (6) above, on the chassis.
- (14) Using the universal stamping kit, remove stamping "J3", "IF OUT (LO)", and "(HI)" from the top of the chassis.
- (15) Remove part number "9156573" and "GS-64189" from the side of the chassis and in the same relative loca-

tion, stamp "10185029" and "GS-67705". Covercoat all new stampings.

m. Install one intermediate frequency amplifier 10185029 on each side of the receiver-transmitter subassembly and secure by engaging the four captive screws in each.

n. Connect connector P1 of the left-hand amplifier to connector J42 of converter subassembly 9990516. Connect P1 of the right-hand amplifier to J32 of converter subassembly 9989320. Connect acquisition receiver-transmitter wiring harness connector P22 to left-hand



NOTE:  
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Figure 147. Intermediate frequency amplifier 9156178  
—partial view showing drilling location.

amplifier connector J1, and P23 to right-hand amplifier connector J1. Do not connect any other connectors at this time.

*o.* Locate connector J6 on the left side of the acquisition receiver-transmitter housing above the handling bar. Disconnect the system cable connector at J6.

*p.* Remove and retain the hardware securing J6 to the housing. Pull the connector out of the housing to gain access to the three coaxial cables. Cut the three coaxial cables back to the wiring harness breakout point and discard connector J6.

*q.* Locate on the inside of the receiver-transmitter housing cable connector P7 near the amplifier-relay assembly and P42 and P45 near the receiver-transmitter subassembly. Cut back the three connector cables at the breakout points and discard the connectors.

*r.* Remove and retain the hardware securing connector J3 to the outside of the receiver-transmitter housing. Pull J3 away from the housing to gain access to the wiring harness.

*s.* Locate through J3 opening the wiring harness cable marker sleeve stamped 9990788. Remove the sleeve, and in the same relative location install cable marker sleeve 8034668-58 stamped 10185060 and secure to harness using tape 9007067.

*t.* Install RF cable assembly 92663-G615292

by inserting connectors P7, P43, and P44 through the mounting hole for connector J6 on the left side of the receiver-transmitter housing. Secure connector J6 to the housing using the three  $1/4 \times 3/4$  pan-head screws, one  $1/4 \times 1$  pan-head screw, four  $1/4$  lockwashers, and one  $1/4$  flat washer retained in *p* above. Orient the key of the connector to the top and secure the chain of the connector cover to the bottom-right mounting hole using the 1-inch screw and the flat washer.

*u.* Route connectors P43 and P44 of the added cable assembly under the amplifier-relay assembly, installed in *h* above, and connect the connectors as follows:

Cable connector	Connect to
P7	J1 of connector-resistor assembly Z2
P43	J38 of the amplifier-relay assembly
P44	J37 of the amplifier-relay assembly

*v.* Connect connector P47 of RF cable assembly 10185059 to connector J39 of the amplifier-relay assembly. Connect connector P45 of the cable assembly to J2 of intermediate frequency amplifier 10185029 installed on the right of the receiver-transmitter subassembly in *m* above.

*w.* Connect connector P46 of RF cable assembly 10185058 to connector J40 of the amplifier-relay assembly, and P42 to connector J2 of the amplifier on the left of the receiver-transmitter subassembly.

*x.* Connect the system cabling, removed in *o* above, to connector J6 on the outside of the housing.

*y.* Close and secure control-power supply 9156017. Install the front and rear access covers, retained in *d* above, and secure by engaging the captive fasteners.

*z.* Remove and retain the hardware securing identification plate 9990594 to the right side of the receiver-transmitter housing. Record the serial number and discard the plate.

*aa.* Using the stamping kit, stamp the serial number recorded in *z* above on identification plate 10185393. Install the new plate on the housing and secure using the four No. 4  $\times$  3/16 pan-head screws retained in *z* above.

*ab.* Set the antenna disable switch to ON and return the system to normal operation.

*ac.* Perform the receiver-sensitivity and AJD channel-sensitivity checks as follows:



- (1) On NIKE-HERCULES systems, refer to TM 9-1430-253-12/5.
- (2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-255-12/1.
- (3) On ATBM systems, refer to TM 9-1430-251-12/2.

## 158. General Support Repair Parts

Modify intermediate frequency amplifiers 9156573 and 7620695 only if necessary to support systems with special purpose TVI kits installed.

## Section II. BELL SYSTEM TD-2 KIT

### 159. Purpose

The purpose of this kit is to reduce interference between the Bell System TD-2 Communication System and the RCDC by adding an RF filter.

### 160. Parts Required

Description	Part no.	Federal stock no.	Qty.
BRACKET, mounting	9996469		1
BRACKET, mounting, channel	9991935		1
GASKET	7601758	5330-291-5665	1
GASKET	8019251	1430-569-5978	1
NUT, PLAIN, HEXAGON: S, cd- or zn-pl, 1/4-20UNC-2B, 7/32 thk, 7/16 od	MS35690-402	5310-550-0777	2
PLATE, mounting	92663-G448017		1 <sup>1</sup>
SCREW, CAP, SOCKET-HEAD: corr-res-S, 1/4-20UNC-2A x 3/8	9157796-48	5305-754-4509	10
SCREW, CAP, SOCKET-HEAD: S, zn-chromate fin., 1/4-20UNC-2A x 3/8	MS35291-5	5305-207-0912	2
SCREW, CAP, SOCKET-HEAD: S, zn-chromate fin., 1/4-20UNC-3A x 3/8	MS35457-34	5305-042-6747	8
SCREW, CAP, SOCKET-HEAD: S, zn-chromate fin., 1/4-20UNC-3A x 3/4	MS35457-35	5305-042-6816	2
SCREW, CAP, SOCKET-HEAD: S, zn-chromate fin., 1/4-20UNC-3A x 1	MS35457-37	5305-579-5697	2
SCREW, CAP, SOCKET-HEAD: fl-fl h, S, cd-pl w/chromate fin., 3/8-16UNC-3A x 1 1/2	MS16997-101		4 <sup>1</sup>
SEAL, WAVEGUIDE: lead	9991897-5		1
SUPPORT, angle	9996466		1
SUPPORT, angle	9996467		1
WASHER, FLAT: S, cd-pl, 1/4 screw size	MS27183-10		14
WASHER, LOCK: split, carb-S, 1/4 screw size	MS35338-25	5310-012-0380	12
WASHER, LOCK: carb-S, 3/8 screw size	MS35338-27	5310-543-2705	4 <sup>1</sup>
WASHER, LOCK: split, corr-res-S, 1/4 screw size	9157798-20	5310-839-2625	10
WAVEGUIDE ASSEMBLY	92663-G392812		1
WAVEGUIDE ASSEMBLY	92663-G392813		1

<sup>1</sup> This item will not be included in all kits.

### 161. Disposition of Excess Parts and Materials

Retain all parts removed during the installation of the special purpose kit. They will be required when the kit is removed.

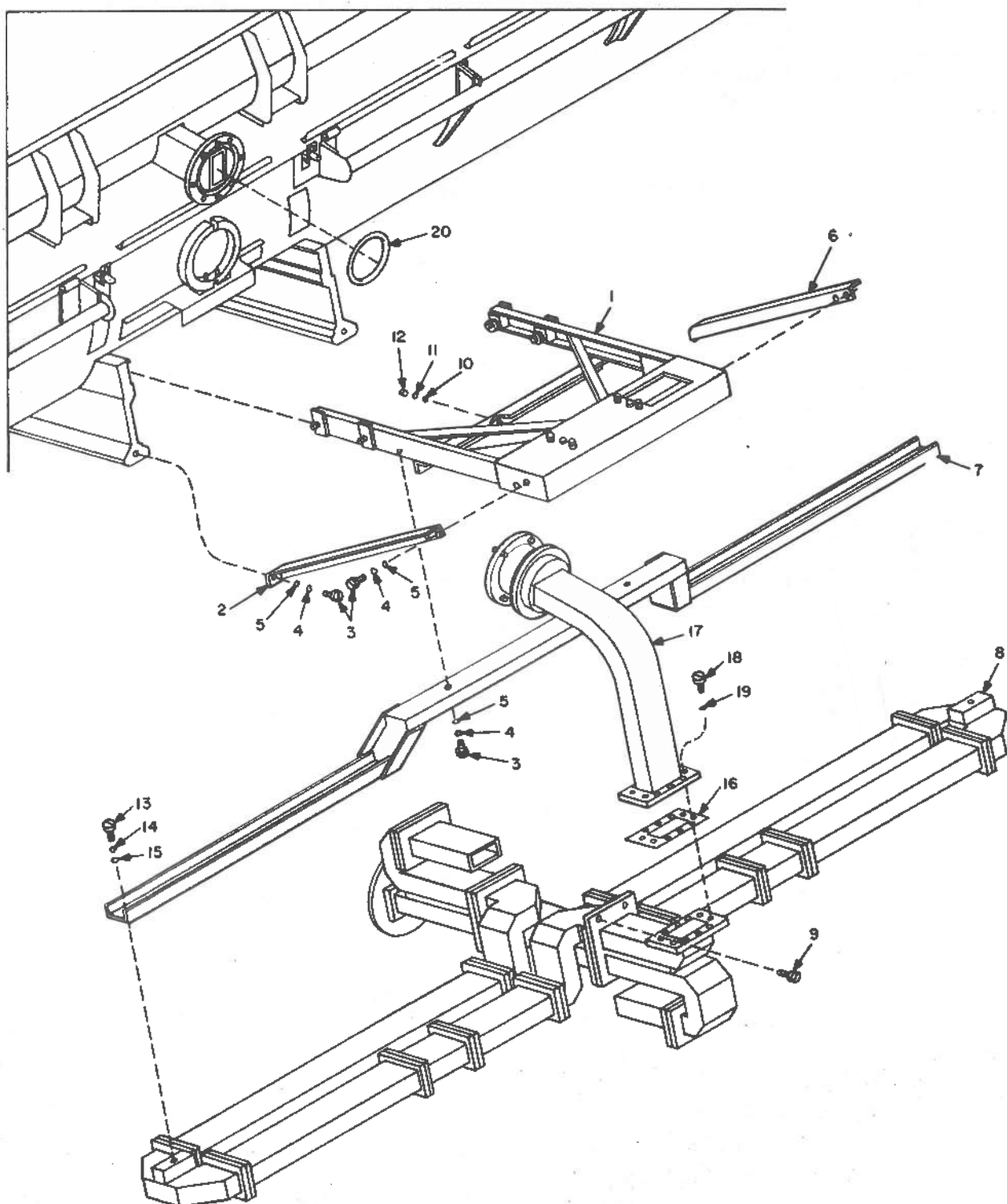
### 162. Installation of TD-2 Kit

**Warning:** High voltages are present in this equipment; insure that deenergizing procedures are followed.

*Note.* TD-2 hardware is to be retained by sites. If the waveguide assembly (8, fig. 148) is disassembled, assemble it using figure 148 as a guide before beginning the modification. If assembled, proceed with a through ah below.

a. Deenergize the system as follows:

- (1) On NIKE-HERCULES systems, refer to TM 9-1430-250-10.
- (2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-253-12/4.



ORD G330610

Figure 148. Installation of the waveguide assembly.

- |  |  |
|--|--|
| 1—Mounting bracket 9996469 (1)                                       | 11— $\frac{1}{4}$ -in. lockwasher MS35338-25 (12)                      |
| 2—Angle support 9996467 (1)  | 12— $\frac{1}{4}$ -20 hex.nut MS35690-402 (2)                          |
| 3— $\frac{1}{4}$ -20 x $\frac{1}{2}$ soc-hd cap screw MS35457-35 (2) | 13— $\frac{1}{4}$ -20 x $\frac{1}{2}$ soc-hd cap screw MS35457-34 (8)  |
| 4— $\frac{1}{4}$ -in. lockwasher MS35338-25 (12)                     | 14— $\frac{1}{4}$ -in. lockwasher MS35338-25 (12)                      |
| 5— $\frac{1}{4}$ -in. fl washer MS27183-10 (14)                      | 15— $\frac{1}{4}$ -in. fl washer MS27183-10 (14)                       |
| 6—Angle support 9996466 (1)  | 16—Waveguide seal 9991897-5 (1)  |
| 7—Mounting bracket 9991935 (1)                                       | 17—Waveguide assembly 92663-G392812 (1)                                |
| 8—Waveguide assembly 92663-G392813 (1)                               | 18— $\frac{1}{4}$ -20 x $\frac{1}{2}$ soc-hd cap screw 9157796-48 (10) |
| 9— $\frac{1}{4}$ -20 x 1 soc-hd cap screw MS35457-37 (2)             | 19— $\frac{1}{4}$ -in. lockwasher 9157798-20 (10)                      |
| 10— $\frac{1}{4}$ -in. fl washer MS27183-10 (14)                     | 20—Gasket 8019251 (1)  |

Figure 148. Installation of the waveguide assembly—legend.

- (3) On ATBM systems, refer to TM 9-1430-253-12/2.
- Turn off the power generators.
  - Set the antenna disable switch to OFF.
  - Obtain the antirotational lock from the trailer-mounted electronic shop and lock the antenna in place.
  - Disconnect the IFF antenna cable from the IFF antenna.
  - Loosen the four captive screws which secure the IFF antenna to the mounting bracket.
  - Remove the IFF antenna from the mounting bracket and place it in a safe storage area.
  - Loosen the four captive bolts and remove the two screws securing the mounting bracket.
  - Loosen the hardware securing flexible waveguide 8516942 to the antenna, and remove and retain the hardware securing twisted waveguide 8516943 to the rotary coupler. Remove the two waveguide sections as an assembly.
  - Inspect the gasket on the flange of the rotary coupler for damage. Remove and discard the gasket if it is damaged. Clean the flange of the rotary coupler and install gasket 7601758 using a suitable gasket adhesive.
  - Install the mounting bracket between the two antenna guide rails and secure by tightening the four captive bolts furnished with the mounting bracket.
  - Place the waveguide assembly (8) into position as shown in figure 148.

**Caution:** Support the waveguide assembly along its entire length until it is securely fastened. Be sure that the gasket is between the mounting surfaces.

m. Raise the waveguide assembly (8) until the round flange is within approximately one-eighth inch of the mating flange of the rotary coupler. Start the two socket-head cap screws and the two lockwashers, retained in *i* above,

by sliding them down into the slots in the top of the waveguide and thread them into the rotary coupler. When these two screws have started, slide the flanges slowly together by pressing on the support frame and tighten the screws into place.

n. Secure the center of the waveguide assembly (8) to the mounting bracket (1) using two socket-head cap screws (9), two flat washers (10), two lockwashers (11), and two hexagon nuts (12).

o. Complete the attachment of the waveguide assembly (8) to the flange of the rotary coupler using the six hexagon-head cap screws and the six lockwashers retained in *i* above.

p. Mount the mounting bracket (7) between the mounting bracket (1) and the waveguide assembly (8); temporarily secure it to each end of the waveguide assembly (8) using two socket-head cap screws (13).

q. Using figure 149 as a guide, mark the locations for two 9/32-inch-diameter holes on the mounting bracket (7) as shown.

**Note.** The holes in the mounting bracket (1) are inaccessible; consequently, the locations for the holes in the mounting bracket (7) must be made in accordance with figure 149.

r. Remove and retain the hardware and move the mounting bracket (fig. 149) to a suitable work area.

**Note.** In some kits, the holes in the mounting bracket will already exist in the correct locations; in this case, disregard *s* through *y* below.

s. Complete the markings for the locations of the two 9/32-inch-diameter holes in accordance with figure 149.

**Warning:** Exercise extreme caution while drilling or filing magnesium because magnesium chips and filings are highly flammable. Dispose of all chips and filings immediately by either burying them or purposely igniting

NOTE:  
ALL DIMENSIONS SHOWN ARE IN INCHES.

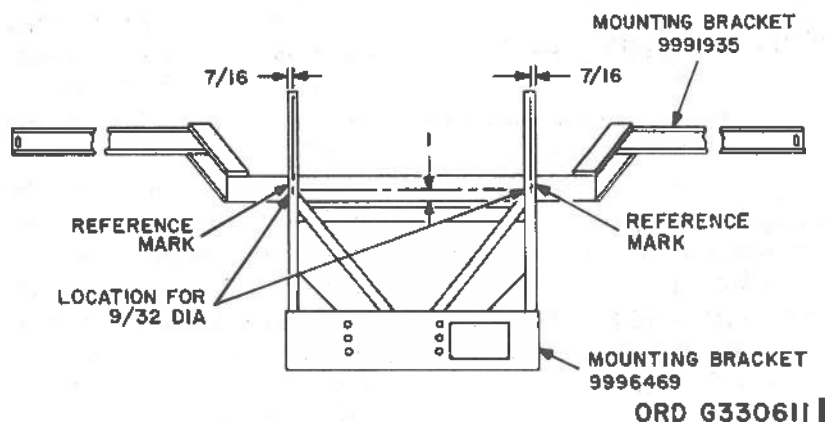


Figure 149. Location of holes in mounting bracket 9991935.

them in an open area. Personnel igniting magnesium chips or filings should be advised of the possible explosive flammability of magnesium. Use protective goggles during all drilling and filing operations.

t. Drill the two 9/32-inch-diameter holes located in s above.

u. Finish the edges of the drilled holes as outlined in TM 9-1400-250-35.

v. Install the mounting bracket (7, fig. 148) beneath the mounting bracket (1) and secure using two socket-head cap screws (3), two lockwashers (4), and two flat washers (5).

w. Secure each end of the waveguide assembly (8) to the mounting bracket (7) using the two socket-head cap screws, retained in r above, two lockwashers (14), and two flat washers (15).

x. Install the angle support (2) between the mounting bracket (1) and the left antenna guide rail and secure using three socket-head cap screws (13), three lockwashers (4), and three flat washers (5). Coat the screw threads with sealing compound.

y. Install the angle support (6) between the mounting bracket (1) and the right antenna guide rail and secure using three socket-head cap screws (13), three lockwashers (4), and three flat washers (5). Coat the screw threads with sealing compound.

z. Place the waveguide seal (16) on the waveguide assembly (8).

aa. Install the waveguide assembly (17) on the waveguide assembly (8) and secure using 10 socket-head cap screws (18) and 10 lockwashers (19).

ab. Install the gasket (20) between the flange of the waveguide assembly (17) and the flange of the waveguide on the acquisition antenna. Secure the gasket using the captive screws furnished with the flexible waveguide.

ac. Install the IFF antenna on the antenna mounting bracket and secure with the four IFF antenna mounting bolts furnished with the antenna mounting bracket.

ad. Check the clearance between the IFF antenna and the waveguide assembly installed in aa above. If there is no clearance, remove the IFF antenna and install mounting plate 92663-G448017 on the antenna using four socket-head cap screws MS16997-101 and four lockwashers MS35338-27. Install the antenna and the mounting plate on the antenna mounting bracket.

Note. Mounting plate 92663-G448017 serves as a spacer to provide proper clearance between the IFF antenna and the waveguide assembly.

ae. Connect the IFF antenna cable to the IFF antenna.

af. Remove the antirotational lock from the

antenna and store it in the trailer-mounted electronic shop.

*ag.* Set the antenna disable switch to ON.

*ah.* Return the system to normal operation.

### **163. Removal of the Bell System TD-2 Kit**

**Warning:** High voltages are present in this equipment; insure that deenergizing procedures are followed.

*a.* Deenergize the system as follows:

(1) On NIKE-HERCULES systems, refer to TM 9-1430-250-10.

(2) On Improved NIKE-HERCULES systems, refer to TM 9-1430-253-12/4.

(3) On ATBM systems, refer to TM 9-1430-253-12/2.

*b.* Turn off the power generator.

*c.* Set the antenna disable switch to OFF.

*d.* Obtain the antirotational lock from the trailer-mounted electronic shop and lock the antenna in place.

*e.* Disconnect the IFF antenna cable from the IFF antenna.

*f.* Loosen the four captive screws which secure the IFF antenna to the mounting bracket.

*g.* Remove the IFF antenna from the mounting bracket and place in a safe storage area.

*h.* Loosen the four captive bolts securing the mounting bracket (1, fig. 148) to the antenna guide rails.

*i.* Remove the two socket-head cap screws (3), two lockwashers (4), and two flat washers (5) securing the angle support (2) to the antenna guide rails.

*j.* Loosen the hardware securing the waveguide assembly (8) to the waveguides on the antenna and to the rotary coupler. Remove the waveguide assembly (8) and the mounting bracket (1) as an assembly and store in a safe place.

*k.* Install the bracket, removed in paragraph 162 *h*, and the waveguide assembly removed in paragraph 162 *i*.





## APPENDIX

## REFERENCES

## 1. Publication Indexes

DA pamphlets in the 310-series and Pam 108-1 should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to materiel covered in this technical manual.

## 2. Supply Manuals

The following supply manuals of the Department of the Army Supply Manuals pertain to this materiel:

*a. General.*

Introduction ..... ORD 1

*b. Repair and Rebuild.*

Field and Depot Maintenance: TM 9-1430-250-35P/2

Radar Course Directing Central, Repair Parts and Special Tool Lists for Antenna-Receiver-Transmitter Group, Acquisition OA-1601/T and OA-1596/T (NIKE-HERCULES Antiaircraft Guided Missile System).

Stock List of Components of Sets, Kits, and Outfits: Shop SM 9-4-4935 NO. 2

Sets, Special, Field Maintenance, NIKE-AJAX/HERCULES Guided Missile Materiel Set A 4935-606-5231, Set B 4935-605-7757, Set C 4935-606-5232, Set D 4935-605-7756, Set E 4935-606-5233, Set F 4935-605-7755 (NIKE-AJAX/HERCULES Antiaircraft Guided Missile System).

Stock List of Components, of Sets, Kits, and Outfits: Shop SM 9-4-4940 NO. 2

Sets, Special, Field Maintenance, NIKE-AJAX/HERCULES Guided Missile Materiel Shop No. 1 4940-611-7908, Shop No. 2 4940-611-7909 (NIKE-AJAX/HERCULES Antiaircraft Guided Missile System).

## 3. Forms

The following forms pertain to this materiel:

DA Form 5-31, Shop Job Order Register  
DA Form 9-1, Materiel Inspection Tag

DA Form 9-12, Inspection of Ordnance Equipment  
DA Form 9-79, Parts Requisition  
DA Form 9-80, Job Order File  
DA Form 9-81, Exchange Part or Unit Identification Tag

DA Form 9-110, Guided Missile Component Evaluation Data Report

DA Form 11-3, Shop Tag

DA Form 421, Stock Record Card

DA Form 461-5, Limited Technical Inspection

DA Form 468, Unsatisfactory Equipment Record

DA Form 829, Rejection Memorandum

DA Form 1546, Request for Issue or Turn-In

DA Form 2028, Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8, or 9 (cut sheet)

DD Form 6, Report of Damaged or Improper Shipment

DD Form 250, Materiel Inspection and Receiving Report

DD Form 787, Electronic Failure Report

DD Form 787-1, Electronic Failure Report-Signal Equipment.

## 4. Other Publications

The following explanatory publications contain information pertinent to this materiel and associated equipment.

*a. General.*

Accident Reporting and Records. AR 385-40

Army Safety Policy..... AR 385-10

Authorized Abbreviations and Brevity Codes. AR 320-50

Dictionary of United States Army Terms. AR 320-5

Electronic Failure Report..... AR 700-39

First Aid for Soldiers..... FM 21-11

Guided Missile Component Evaluation Data Report. AR 700-37

Military Symbols..... FM 21-30

Military Training..... FM 21-5

Ordnance Maintenance and General Supply in the Field. FM 9-10

Ordnance Major Item and Major Combinations and Pertinent Publications. SB 9-1

Safety: Accident Reporting and AR 385-40  
AR 385-40 Records.

Techniques of Military Instructions. FM 21-6

Unsatisfactory Equipment Report. AR 700-38

*b. Repair and Maintenance.*

Antiaircraft Fire Control Systems M33, T33, and M38 (T38);

NIKE and CORPORAL Guided Missile Systems: Handling and Disposal of Radioactive Tubes.

Electrical Tests and Minor Maintenance of Alternating Current and Universal Motors. TB ORD 669

Electron Tube Test Sets TV-7/U, TV-7A/U, and TV-7B/U. TM 11-5083

Electronic Multimeter TS-505/U. TM 11-5511

Frequency-Power Meter ME-51/UP. TM 11-320

Instruction Guide: Operation and Maintenance of Ordnance Material in Extreme Cold (0° to -65°F.). TM 9-2855

Instruction Guide: Ordnance Preservation, Packaging, Storage and Shipping. TM 9-1005

Lubrication ..... TM 9-2835

Maintenance and Care of Hand Tools. TM 9-867

Multimeters TS-352/U, TS-352A/U, and TS-352B/U. TM 11-5527

Operation of Signal Equipment at Low TB SIG 219 Temperatures.

Ordnance Maintenance: Materials TM 9-1007

Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel, and Related Materials Including Chemicals, Lubricants, Indicators, and Hydraulic Fluids.

Oscilloscope AN/USM-50A and AN/USM-50B. TM 11-5129

Painting Instructions for Field Use. TM 9-2851

Solder and Soldering..... TB SIG 222

Test Data for Electron Tube Test Sets, TV-7/U, TV-7A/U, and TV-7B/U. TB 11-5083-1

*Note.* For technical manuals of the NIKE-HERCULES and Improved NIKE-HERCULES Air Defense Guided Missile Systems and the NIKE-HERCULES and Improved NIKE-HERCULES Air Defense Guided Missile Systems Type 4 Equipment, refer to paragraph 3.

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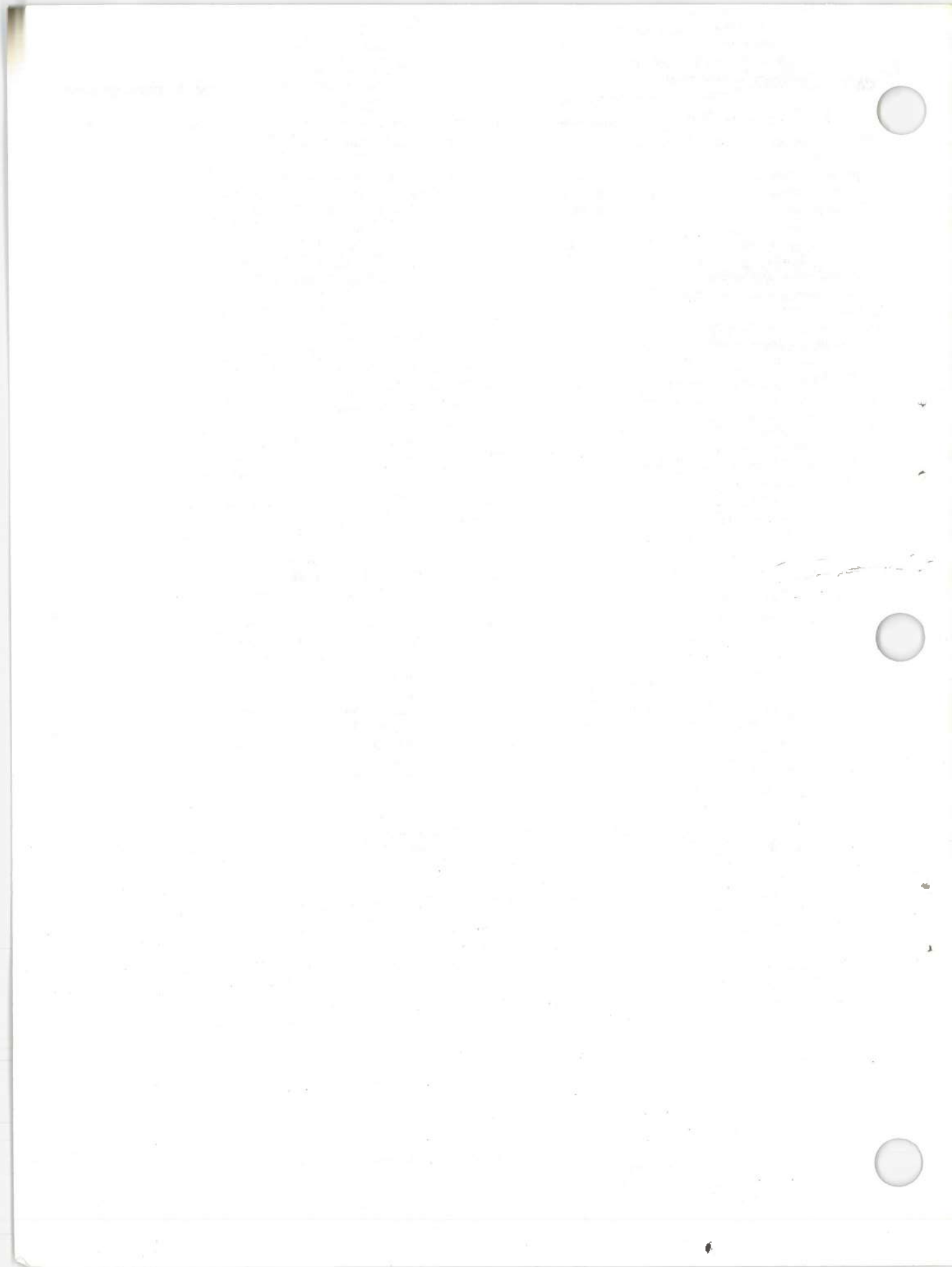
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By Order of *Wilber M. Brucker*, Secretary of the Army:

**L. L. LEMNITZER,**  
*General, United States Army,*  
*Chief of Staff.*

**Official:**

**R. V. LEE,**  
*Major General, United States Army,*  
*The Adjutant General.*

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Bliss (12), Ft Sheridan (9), Ft  
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US ARADSCH (100)  
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Columbus GENDEP (None)

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Sec, Columbus GENDEP (None)  
Ord Dep (1) except  
Letterkenny Ord Dep (6)  
Black Hills Ord Dep (5)  
Rossford Ord Dep (10)  
Savanna Ord Dep (3)  
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Wingate Ord Dep (3)  
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Army Terminals (2)  
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Indiana Arsenal (None)  
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Rock Island Arsenal (2)  
Springfield Armory (2)  
Army Rkt & GM Agcy (9)  
Ord Dist (1) except  
Chicago Ord Dist (None)  
Cleveland Ord Dist (2)  
New York Ord Dist (5)  
Philadelphia Ord Dist (4)  
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Fld Comd, Def Atomic Spt Agcy  
(20)  
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9-227 (3)  
9-229 (1)  
9-377 (1)  
9-500 DD (3)  
9-510 FA (3)  
44-544 (1)  
44-545 (1)  
44-546 (1)  
44-547 (1)  
44-548 (1)

NG: Units organized under following TOE's: 44-545 (4); 44-546 (1); 44-547 (1).

USAR: None.

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







