MICROWAVE ANTENNAS
KS-15676 HORN-REFLECTOR AND WAVEGUIDE SYSTEM MAINTENANCE
RIGID WAVEGUIDE AND RESTRAINER

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1. GENERAL

1.01 This section outlines the maintenance methods to be employed to repair damage to, or correct malfunction of, the ED-63945, Groups 1, 2, 3, and 4 rectangular waveguide assemblies; ED-59409-70, Groups 1, 2, 3, 5, 7, 15, and 16 circular waveguide assemblies; and P-37B600 and P-37B619 restrainer assemblies.

2. ED-63945 RECTANGULAR WAVEGUIDE

2.01 Tighten loose nuts and bolts in accordance with Section AA266.030 (J68335).

2.02 If the rectangular waveguide is misaligned, it shall be realigned in accordance with Section AA266.030 (J68335). If there are holes, cracks, dents, or other deformations of the waveguide that will impair transmission, the waveguide shall be replaced.

3. EQUIPMENT REQUIRED FOR REPLACING CIRCULAR WAVEGUIDE OR RESTRAINER

1 — "B" Waveguide Replacer
2 — 1/2-inch open-end Wrenches
2 — 1/2-inch Sockets, 3/8-inch Drive
2 — Short 3/8-inch Drive Extensions
2 — 3/8-inch Drive Ratchet Wrenches
2 — 25/32-inch open-end Wrenches*
2 — Scribers

* Necessary for disassembling restrainer assembly.

4. ED-59409-70 CIRCULAR WAVEGUIDE (REPLACING DAMAGED WAVEGUIDE)

4.01 Replacing damaged 3-inch circular waveguide will be accomplished by using a "B" waveguide replacer. When the use of this tool is impractical, special rigging will be required to support the waveguide run. Cases of this nature shall be referred to supervision for appropriate action. The "B" waveguide replacer consists of the following items, see Fig. 1.

(a) Two hinged frames each having two spherical head pins.

(b) Two lock pins.

(c) Four clevis joints.

(d) Four threaded rods.

(e) Two turnbuckles.

4.02 Mark the location of attachment to the tower member of the restrainer brackets at the upper and lower flanges of the damaged waveguide section. This will permit restoring the restrainer brackets to their proper position and alignment after the waveguide run has been repaired.

4.03 Attach a rope to each restrainer assembly and then disconnect the restrainer assemblies from the tower members.

4.04 Lower or raise the respective restrainer assemblies clear of the flanges of the damaged waveguide section, and secure with ropes to convenient tower members.

4.05 Remove two of the flange bolts that form a line approximately perpendicular to the tower face. Do this at each end of the damaged section or waveguide.

4.06 Assemble the split frames (see Fig. 1) with rods and turnbuckles, above and below the flanges of the adjacent sound waveguide sections.

4.07 Rotate the turnbuckles by hand only, keeping the frames approximately level, until the assembly is tightened enough to support the waveguide load.

Caution: Excessive tightening of the assembly will serve no purpose and may cause damage to the waveguide and/or flanges.

4.08 After the frame is tightened enough to support the waveguide, the replacement section (ED-59409-71) should be raised to a position convenient to the men removing the damaged section.

4.09 Tie a rope around the damaged waveguide section, and the tower, to support the section after it has been removed from the waveguide run.

4.10 Remove the remaining bolts in each flange and back off on the turnbuckles, lowering the lower assembly of waveguide sections a maximum of 1 inch.

4.11 Remove the damaged section and install the new section. After the O ring and wafer are in place, install six bolts with nuts and lockwashers in the fixed flange of the replacement section and the joining section. Tighten in accordance with Section 402-421-203.

4.12 Tighten the turnbuckles until the open pair of flanges are almost in contact, with O ring and wafer in place, and install six bolts with nuts and lockwashers. Tighten the turnbuckles until the flanges are in contact. While raising the waveguide by tightening the turnbuckles, simultaneously tighten the bolts in the rotatable flange of the replaced section.

4.13 The turnbuckles should be tightened only until a definite resistance is felt in the turnbuckles. The change in force necessary to rotate the turnbuckles is sudden and very evident.

Caution: When the change is felt, stop taking up on the turnbuckles because further action may damage the waveguide.

4.14 Six bolts must be tightened in both rotatable flange and fixed flange before the waveguide replacement tool is removed; then remove the tool and install the remaining bolts, nuts, and lockwashers.

4.15 Return the waveguide restrainers to the original location previously marked on the tower.

4.16 Check cross polarization per Section 402-421-206 or -207.

5. P-37B600 AND P-37B619 WAVEGUIDE RESTRAINERS (REPLACING DAMAGED RESTRAINER TUBE)

5.01 Replacing 3-inch circular waveguide restrainers will be accomplished by using a "B" waveguide replacer. When the use of this tool is impractical, special rigging will be required to support the waveguide run. Cases of this nature shall be referred to supervision for appropriate action.

5.02 Mark the location of attachment to the tower member of the damaged and one adjacent restrainer tube bracket at the upper and lower flanges of the waveguide section, which must be removed to permit changing the damaged tube. These marks will permit restoring the restrainer brackets to their proper position and alignment after the waveguide section has been reinstalled.

5.03 Remove the "U" bolts holding the damaged restrainer tube and secure the tube so that it will be within the confines of the waveguide replacement tool when it is installed. (See Fig. 2.)

5.04 Attach ropes to the sound restrainer assembly and the saddle of the damaged assembly and disconnect them from the tower members.

5.05 Lower or raise the good assembly clear of the flange of the waveguide section, and secure it with rope to a convenient tower member. Secure the saddle of the damaged assembly to the tower.

5.06 Remove two of the flange bolts that form a line approximately perpendicular to the tower face. Do this at each end of the waveguide section to be removed.

5.07 Assemble the split frames (Fig. 2) with rods and turnbuckles above and below the flanges of the adjacent waveguide sections.

5.08 Rotate the turnbuckles by hand only, keeping the frames approximately level, until the assembly is tightened enough to support the waveguide load.

Caution: Excessive tightening of the assembly will serve no purpose and may cause damage to the waveguide and/or flanges.

5.09 The waveguide may have had a slight torsional stress imposed during installation. If a torsional stress is present, a slight rotation will take place, causing misalignment of the bolt holes. Therefore, note the direction of rotation that takes place when the bolts are removed so that the waveguide may be returned to its original position.

5.10 Remove the remaining bolts in each flange and back off on the turnbuckles lowering the lower assembly of waveguide sections a maximum of 1 inch.

5.11 Remove the waveguide section and then remove the damaged tube. Pass the new tube over the waveguide and secure in position until the waveguide has been reinstalled. Make up flanged joint in accordance with Section 402-421-203.

5.12 Tighten the turnbuckles until the open pair of flanges are almost in contact with O ring and wafer in place and install six bolts with nuts and lockwashers. Tighten the turnbuckles until the flanges are in contact. While raising the waveguide by tightening the turnbuckles, simultaneously tighten the bolts in the mating flanges.

5.13 The turnbuckles should be tightened until a definite resistance is felt in the turnbuckles. The change in force necessary to rotate the turnbuckles is sudden and very evident.

Caution: When the change is felt, stop taking up on the turnbuckles because further action may damage the waveguide.

5.14 Six bolts must be tightened in both flanges before the waveguide replacement tool is removed; then remove the tool and install the remaining bolts, nuts, and lockwashers.

5.15 Install the waveguide restrainers at the location marks that were made before the restrainer assemblies were removed.

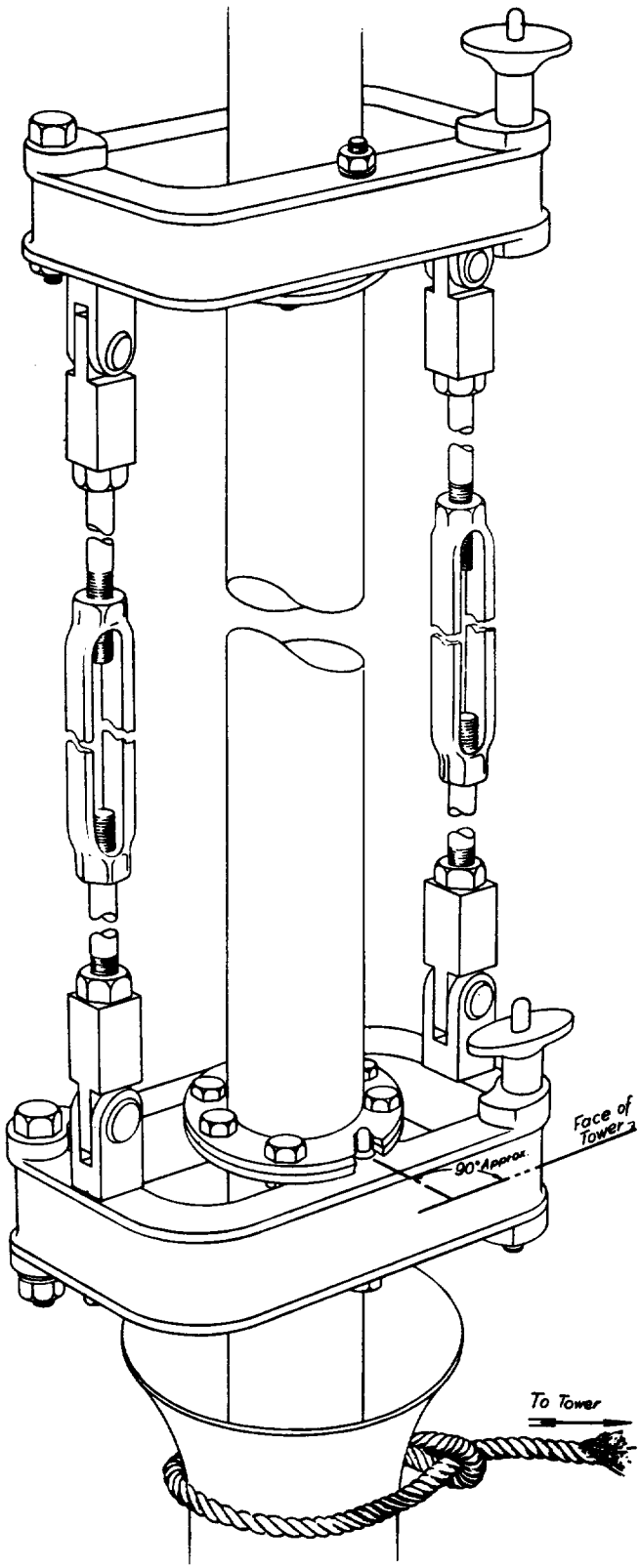

Fig. 1 – Replacing Damaged Waveguide

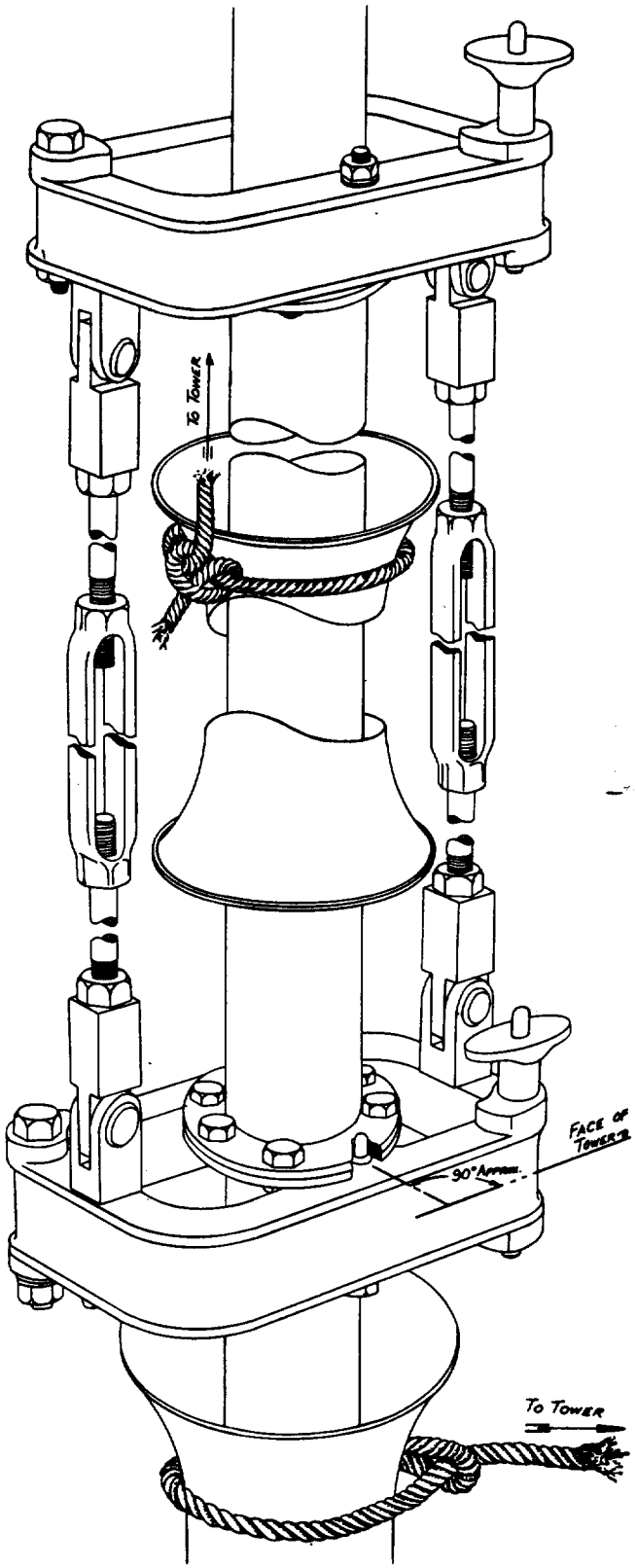

Fig. 2 – Replacing Damaged Waveguide Restrainer