

MICROWAVE ANTENNAS  
KS-16320 PASSIVE REFLECTORS  
INSTALLATION  
ASSEMBLY OF LIST 1 REFLECTOR

**1. GENERAL**

**1.01** This section describes the assembly of KS-16320, List 1 passive reflectors.

**1.02** The list 1 passive reflectors are shipped in two wooden crates with an additional piece, as follows:

(a) One wooden crate containing aluminum parts, telescoping strut, bolts, nuts, and lockwashers.

Approximate dimensions — 8-1/2 by 6-1/2 by 2 feet

Approximate weight — 440 pounds

(b) One wooden crate containing upper and lower mounts, mounting angles, and U bolts.

Approximate dimensions — 4 by 4 by 1 feet

Approximate weight — 230 pounds

(c) One piece consisting of 4-inch O.D. by 14-foot long steel pipe.

Approximate weight — 130 pounds

**1.03** The reflector equipment should be delivered to the installation site in substantial coincidence with the intended time of installation. The following remarks are not intended to cover the case of prolonged storage.

**2. UNLOADING**

**2.01** The smaller of the two wooden crates, which contains the steel mounting members and the pipe mount, should be unloaded in the vicinity of the installation location.

**Caution:** *All ground assembly work is to be performed at a distance from the base of the supporting structure greater than one-third the maximum height at which work will be done aloft.*

**2.02** The larger crate, containing the aluminum reflector parts, should be unloaded at a location accessible to the installation, and affording the best available combination of level, smooth terrain. Consideration should also be given to the protection of parts from damage due

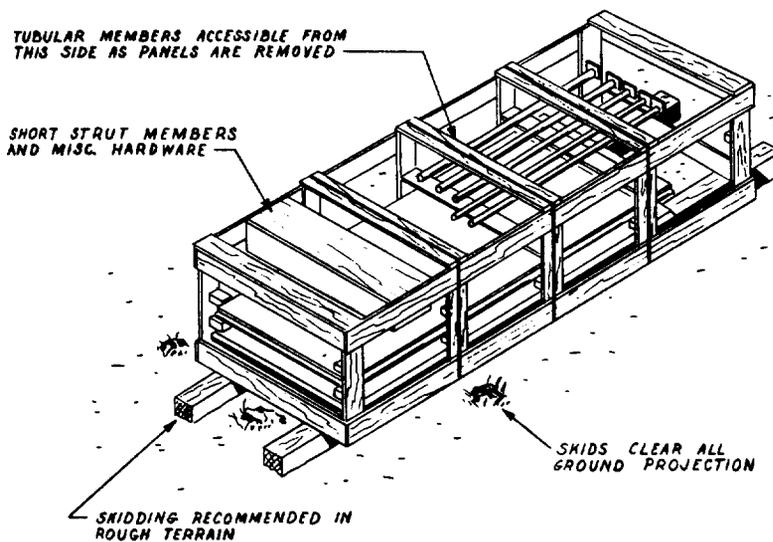
to falling objects, ground operations, trampling by wild or domestic animals (e.g. deer, cows, etc), or other hazards to which the reflector may otherwise be exposed during assembly.

**2.03** If the use of electrically operated tools etc, is intended, consideration must be given to the availability of proper power facilities.

**2.04** Since the larger crate is of open construction, the contents are visible. The crate should be unloaded flat, as shown in Fig. 1 of this section, so that the tubular members which are strapped to the interior bracing are visible from the top and will be immediately available when the top panels are removed. If the area is sufficiently flat and smooth, the crate may be placed directly on the ground. If rocks or other surface projections might damage the parts, the crate must be set on skids or the equivalent, as shown in Fig. 1 of this section, to clear the obstructions.

**2.05** Each crate should be opened carefully after it has been properly placed. The packing list with each crate must be preserved at least until a complete checkoff of all required parts has been made, as noted below. It may then be disposed of at the discretion of local supervision. Remove parts carefully; place the tubular members in a convenient temporary location and arrange the labeled cloth bags of bolts and miscellaneous hardware items so that they will be accessible during assembly of the reflector and will not be lost. The shipment should be checked thoroughly for completeness with the aid of Fig. 1 in Section 402-423-400. *If any parts are found to be missing or apparently damaged, report the fact promptly to supervision.*

**2.06** The strut assembly, Item 32B, Fig. 1, in Section 402-423-400, and the top mount assembly, Item 10B in the same figure, are not required until the reflector is ready for immediate installation. These pieces must be suitably protected from loss or damage during any interim period.



## NOTES:

1. LIST 1 REFLECTOR - ARRANGE THREE SKIDS APPROX. 8 FT. LONG AND 2 FT. APART.
2. LIST 2 REFLECTOR - ARRANGE TWO SKIDS APPROX. 12 FT. LONG AND 3 FT. APART.

Fig. 1 — Placement of Shipping Crate for KS-16320 Passive Reflector

### 3. ASSEMBLY OF REFLECTOR

**Note:** Every precaution must be taken during the assembly operation to avoid damage to the reflector face. Dents or distortions due to resting the reflector on sharp objects, or to improper handling or stepping onto the unsupported face or framework may cause sufficient mechanical damage to degrade the electrical characteristics of the reflector.

**3.01** At least two men are required to remove the reflector, Item 4, Fig. 3, in Section 402-423-400, from the crate and place it face down on the deck, as shown in Fig. 2 of this section.

**3.02** Each square butt plate (or flange) in the aluminum frame and on the separate tubular members is painted distinctively. The parts are assembled by matching the corresponding colors. Fig. 3 in Section 402-423-400 shows the assembled reflector and indicates the color coding.

**3.03** The 3/8-16 by 1-1/4-inch aluminum bolts with nuts and split lockwashers are provided for assembling the reflector. Insert the bolts as required and *place lockwashers on all bolts before applying the nuts*. Install bolts and nuts finger tight as the parts are fitted.

**3.04** It is necessary to reach the center of the reflector face to connect the lower ends of members 11, Fig. 3, in Section 402-423-400, to brackets provided on member 7 of the list 1 reflector. Place a suitable plank across the reflector, supported by several cross members, so that the connections can be made without imposing concentrated loads on the reflector.

**3.05** When all parts have been assembled, tighten all bolts using 5/8-inch wrenches. *Exercise care in tightening to avoid stripping threads or shearing the bolts.* Final tightening of butt plates should be done at random rather than in sequence. A checkoff list as shown below should be employed to avoid overlooking any connection.

**3.06** Assemble guide clamps, Items 33B, Fig. 1, in Section 402-423-400, as shown in enlarged view A-A of that figure. The projecting ends of the lower pieces face the center of the reflector. Since the clamps cannot be accurately positioned until the reflector is placed on the lower mount during installation, push them to the outer edges of reinforcing tube, Item 8, Fig. 3, in Section 402-423-400, and clamp them just tightly enough to hold them temporarily in place.

Joining Members	Color	No. Bolts	Tightened *
1 and 16	White	4	
1 and 16	Blue and White	4	
7 and 11	—	1	
7 and 11	—	1	
10 and 13	Blue	4	
10 and 14	Red and Blue	4	
9 and 15	Yellow	4	
9 and 15	Gray	4	
9 and 16	Red	4	
9 and 16	Orange	4	
13 and 15	Blue and Orange	4	
13 and 15	White and Red	4	

\* Indicate by check mark when all bolts at connection have been tightened.

#### 4. INSPECTION

4.01 Immediately upon completion of assembly, the reflecting surface should be inspected for flatness. Turn the reflector over carefully so that it is supported by one 8-foot edge and by the bracing structure, as shown in Fig. 3 of this section. Stand a short distance away and sight along one 6-foot edge in the plane of the face. If the face is flat, it will be possible to sight

so that only its near edge is visible. Now lay a taut string across the face in several positions being careful to avoid rivet heads. There should be not more than 1/8-inch between the reflecting surface and the string at any point, as determined by visual inspection.

4.02 *If the reflector fails to conform to the above requirements, the fact should be reported promptly to supervision.*

#### 5. TEMPORARY STORAGE

5.01 If an assembled reflector is to be left stored out-of-doors overnight, or where circumstances warrant that precautions be taken to prevent damage, it should be placed face down on a smooth surface in the manner indicated for assembly in Fig. 2 of this section. Drive stakes into the ground near the corners and fasten ropes securely from the stakes to the adjacent tubing connections on the back of the reflector frame, to prevent the reflector from being overturned by winds, etc. *Every precaution must be taken in such a case to avoid the possibility that the reflector be trampled by animals or exposed to other hazards peculiar to the location.*

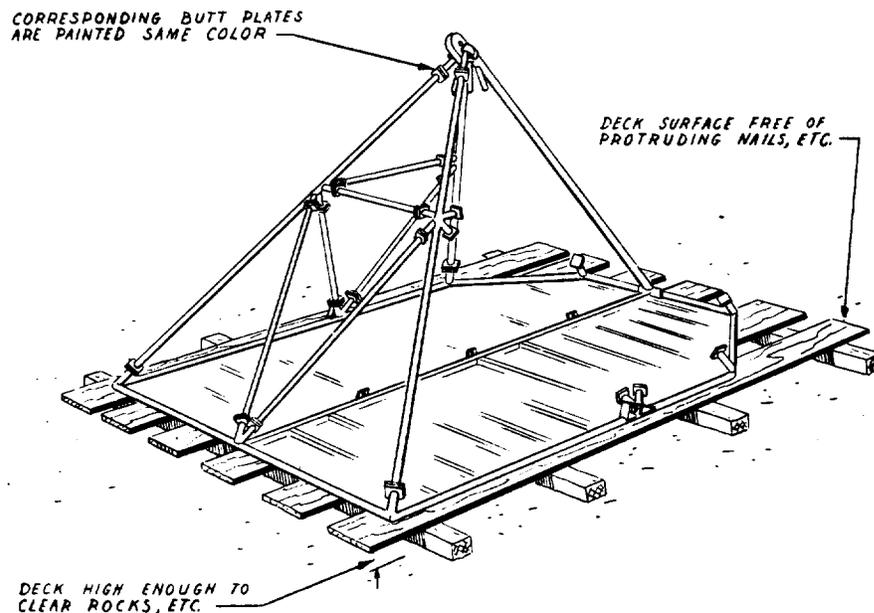
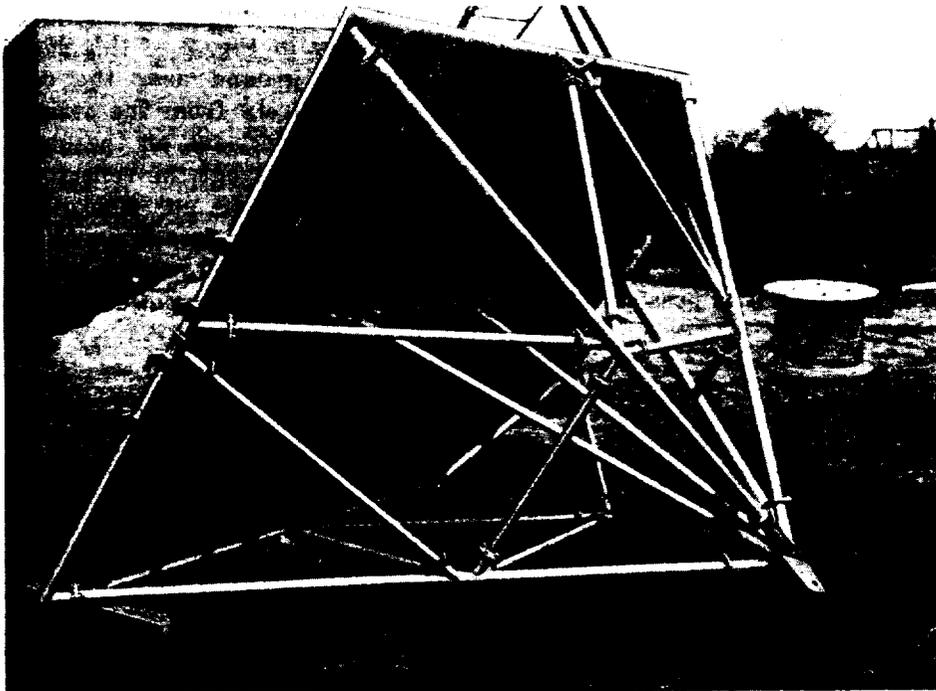


Fig. 2 — Method of Assembling KS-16320 Passive Reflector



**Fig. 3 — KS-16320 Passive Reflector Arranged for Inspection of Surface**