

INSTALLATION INSTRUCTIONS

SERIES 9000 EARTH STATION ANTENNA

FEED ASSEMBLY

PUBLICATION NO. 33N032B

**Scientific
Atlanta**

**READ INSTRUCTIONS THOROUGHLY
BEFORE BEGINNING ASSEMBLY**

INTRODUCTION

These instructions describe how to assemble the feed onto the Series 9000 Earth Station Antenna. Instructions for both single and dual polarization feeds are included. The assembly is completed in three stages; first the feed is assembled, then the supports are installed on the antenna, and finally the feed is attached to the supports.

The step-by-step instructions are keyed to the exploded drawings and to the parts list by item numbers which are shown in parenthesis.

FEATURES

- Compact size minimizes signal blockage
- Protective cover for LNA/LNC
- Excellent cross-polarization rejection
- Polarization can be manually adjusted from edge of reflector
- Meets current and proposed FCC sidelobe envelope.

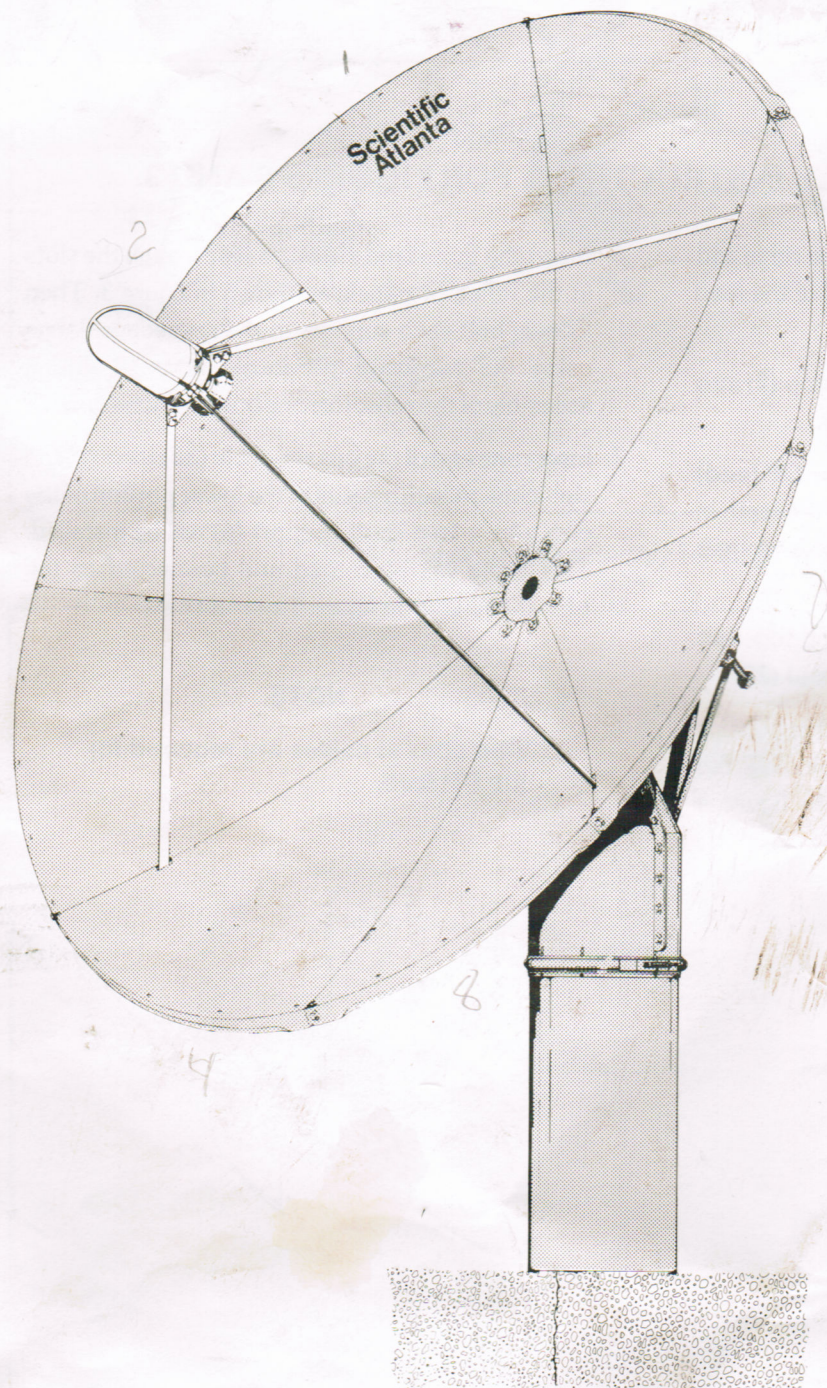


Figure 1. Singularly Polarized Feed

PARTS LIST FOR FIGURES 2 AND 3

| ITEM | DESCRIPTION | PART NO. | ITEM | DESCRIPTION | PART NO. |
|------|------------------|----------|------|----------------------|----------|
| 1 | Gear, Feed Shaft | 299773 | 20 | Screw, 10-24 x 3/4 | 299384 |
| 2 | Rotation Stop | 299748 | 21 | Screw, 10-24 x 1-3/8 | 299385 |
| 3 | Feed Housing | 299745 | 22 | Washer, No. 10 Flat | 88535 |
| 4 | Feed Horn, SP | 299746 | 23 | Nut, 10-24 | 299386 |
| 5 | Feed Support | 300084 | 31 | Grease | 299837 |
| 12 | Feed Horn, DP | 299802 | 32 | Coaxial Cable | N/A |

STEP-BY-STEP ASSEMBLY INSTRUCTIONS FOR FIGURES 2 AND 3.

1. Apply a thin coating of grease **(31)** to the ridge and groove surfaces (A and B) of each half of the feed housing **(3)**.
2. Insert feed shaft gear **(1)** and rotation stop **(2)** into one side of one half of feed housing **(3)**.
3. Place feed horn **(4 for SP feed or 12 for DP feed)** into feed housing **(3)**, making sure that the teeth in the feed horn mesh with the teeth in the feed shaft gear **(1)**.
4. Bolt the two halves of the feed housing together using hardware items **(20)**, **(21)**, **(22)**, and **(23)**.
5. Manually rotate feed horn **(4 or 12)** within housing to ensure smooth operation with no binding. Set this assembly aside until called for in figure 4 instructions.
6. Insert the three feed supports **(5)** through the slots in the reflector panels as shown in figure 3. Then loosely bolt each support to the respective flange using the hardware previously installed during assembly of the reflector; one bolt on each support.
7. Insert one end of the coaxial cable **(32)** through the slot in the reflector panel at the lower portion of the dish where feed shaft support **(6)** will be installed. This cable will be routed and connected to the LNA/LNC later in figure 4 instructions.

NOTE

Two coaxial cables are required for the DP feed.

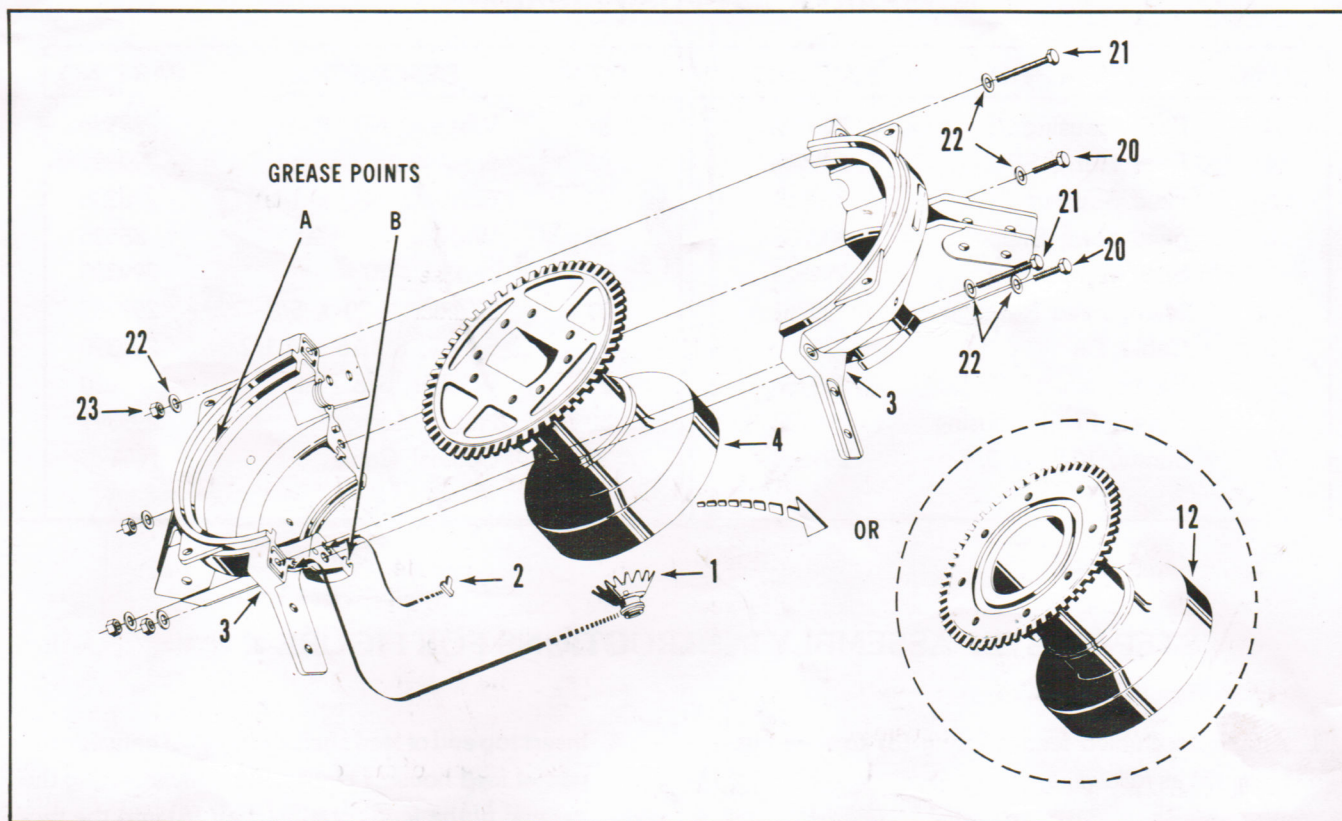


Figure 2. Feed Housing Assembly For Single or Dual Polarization Feed

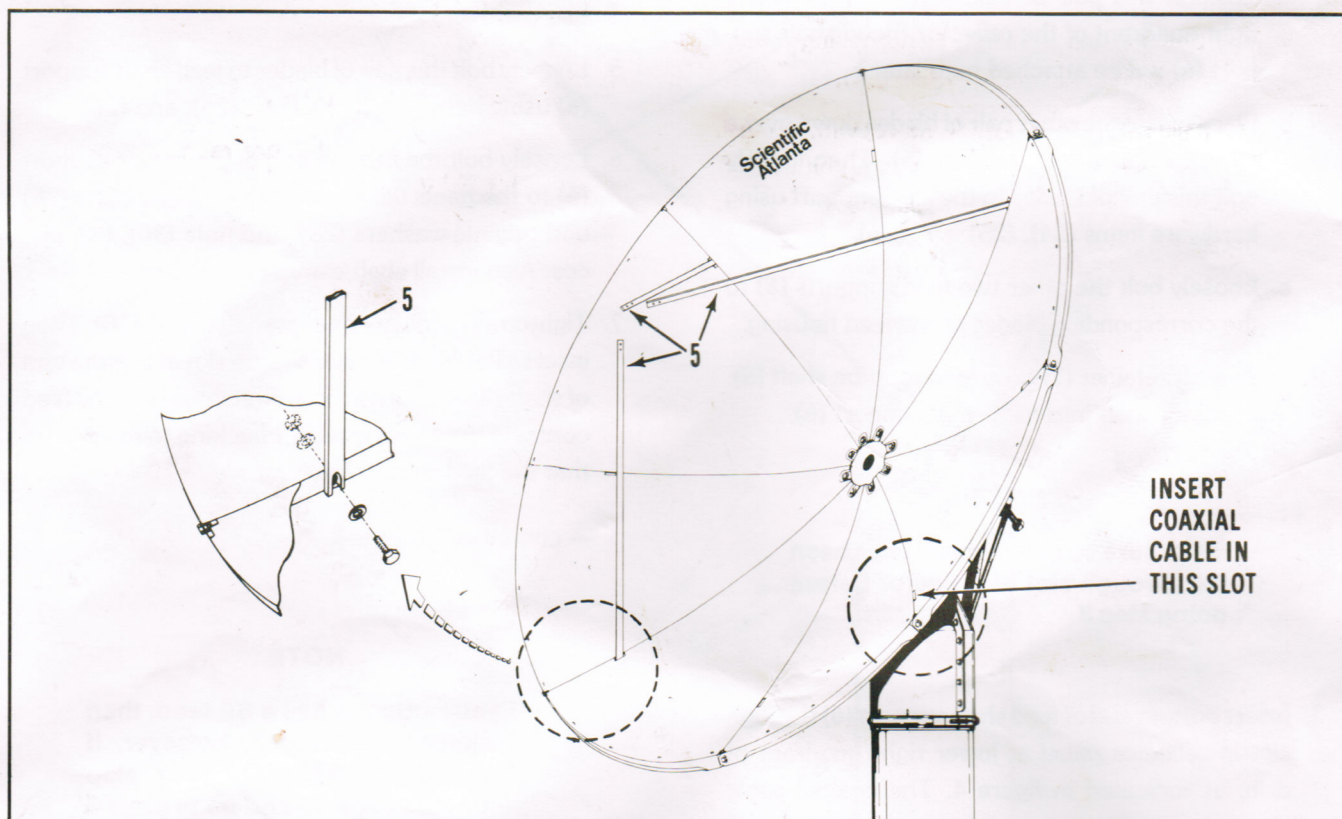


Figure 3. Installation of Feed Supports

PARTS LIST FOR FIGURE 4

| ITEM | DESCRIPTION | PART NO. | ITEM | DESCRIPTION | PART NO. |
|------|----------------------|----------|------|-----------------------|----------|
| 3 | Feed Housing | 299745 | 22 | Washer, No. 10 Flat | 88535 |
| 4 | Feed Horn, SP | 299746 | 23 | Nut, 10-24 | 299386 |
| 5 | Feed Support | 300084 | 24 | Screw 1/4-20 x 1-1/4 | 299388 |
| 6 | Feed Shaft Support | 300085 | 25 | Washer, 1/4 Flat | 88536 |
| 7 | Shaft Retainer | 299829 | 26 | Nut, 1/4-20 | 299389 |
| 8 | Shaft, Feed Rotation | 299761 | 27 | Screw 1/4-20 x 5/8 | 299387 |
| 9 | Cable Tie | 75907 | 28 | Screw, 3/8-16 x 1-1/2 | 299390 |
| 10 | Clamp, Shaft | 299750 | 29 | Washer, 3/8 Flat | 88520 |
| 11 | Cover, Feed Housing | 299732 | 30 | Nut, 3/8-16 | 299391 |
| 20 | Screw, 10-24 x 3/4 | 299384 | 32 | Coaxial Cable | N/A |

STEP-BY-STEP ASSEMBLY INSTRUCTIONS FOR FIGURE 4.

1. Attach assembled feed housing (3) to feed supports (5) as follows:
 - a. Locate the hole between the pair of feed housing blades that allows access to the feed shaft gear. Position this pair of blades toward the lower right quadrant of the reflector. (Feed shaft support (6) will be attached here later.)
 - b. Place one of the other pair of blades down over a corresponding feed support (5). Then loosely bolt this pair of blades to the feed support using hardware items (24), (25), and (26).
 - c. Loosely bolt the other two feed supports (5) to the corresponding blades of the feed housing.
2. Slide shaft retainer (7) onto feed rotation shaft (8). Then insert shaft into feed shaft support (6).
4. Insert top end of feed shaft support (6) between the pair of feed housing blades, carefully inserting the flat end of the feed rotation shaft (8) into the rectangular opening of feed shaft gear (1 in figure 2). Rotating the feed slightly will help in aligning the two parts.
5. Loosely bolt this pair of blades to feed shaft support (6) using hardware items (24), (25), and (26).
6. Loosely bolt the bottom end of feed shaft support (6) to the panel flange using new longer bolts (28) and original washers (29), and nuts (30), two places. Also install shaft clamp (10) as shown.
7. Tighten all hardware except shaft clamp (10). Then insert a flat-blade screwdriver in slot at bottom end of shaft (8) and turn in both directions until the feed contacts the rotation stop, checking to make sure that the feed rotates freely.

NOTE

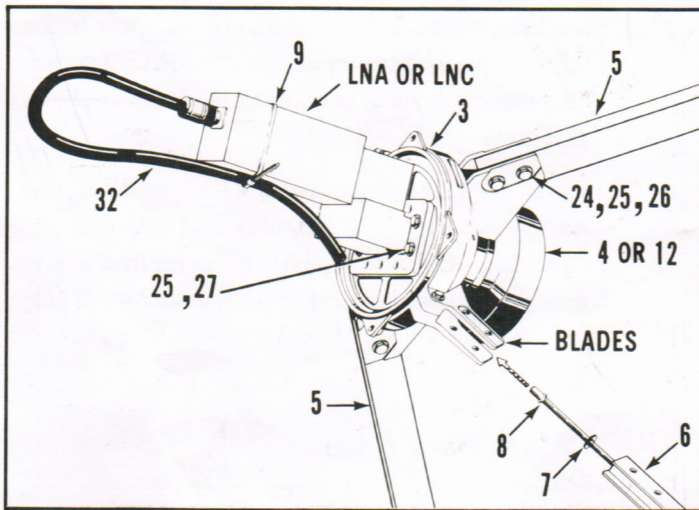
Make sure coaxial cable(s) has been fed through slot in reflector before doing step 3.

3. Insert bottom end of feed shaft support (6) through slot in reflector panel at lower right quadrant of dish, as indicated in figure 4. The coaxial cable should be on the open or grooved side of the feed shaft support.

— continued on page 6 —

NOTE

If your antenna has a SP feed, then continue with step 8; however, if your antenna has a DP feed, skip steps 8 through 11 and go to page 6 and follow assembly instructions for DP feed.



Detail A
(SP Feed Shown)

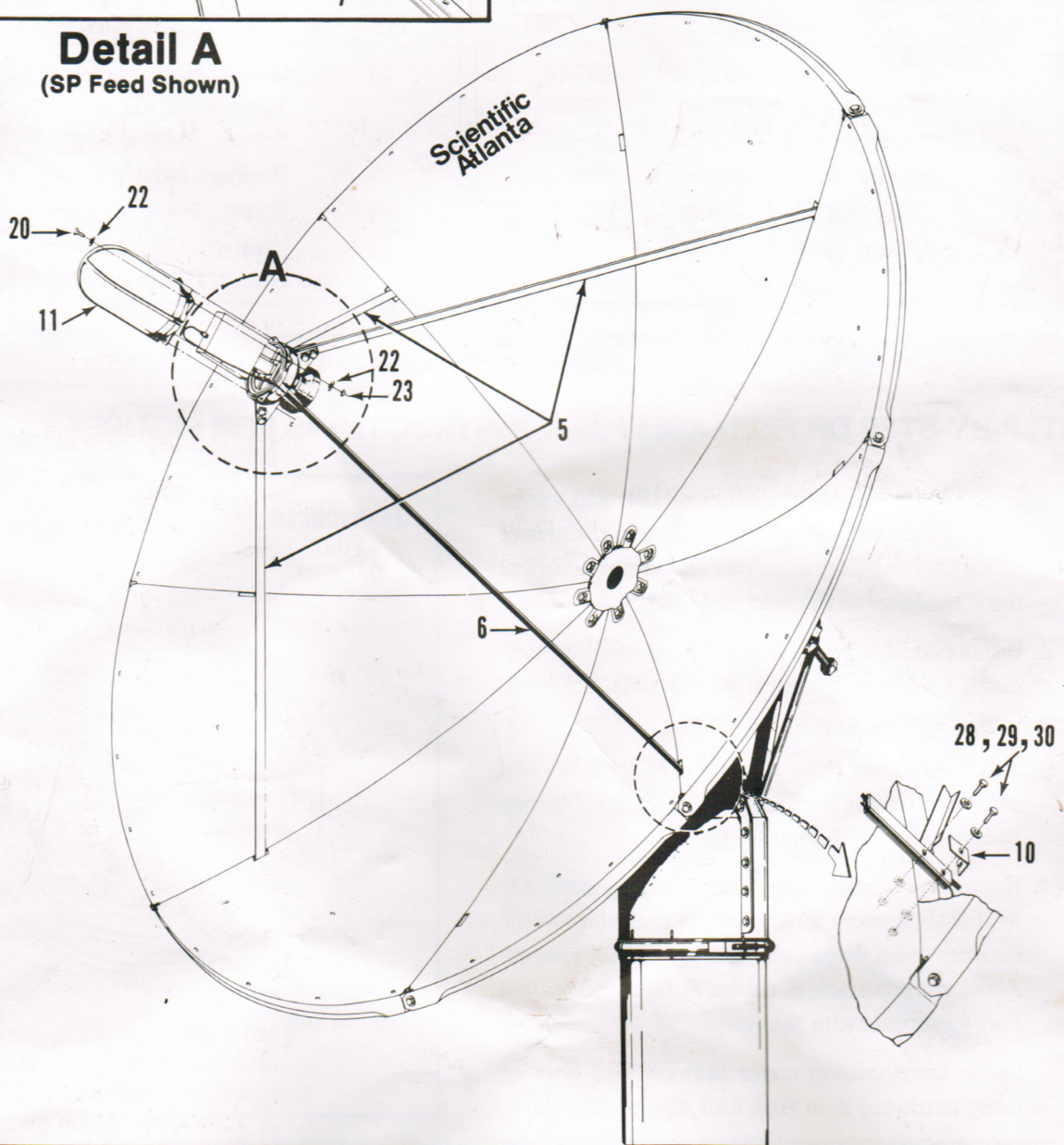


Figure 4. Installation of Feed, Feed Shaft Support, and Cover

8. Install LNC (low noise converter) or LNA (low noise amplifier) as applicable, to feed (4) using hardware items (25) and (27), four places.
9. Attach coaxial cable to LNC or LNA and secure with cable tie (9) as shown. Make loop radius no larger than 5 inches.

10. Route the coaxial cable down along the groove in feed shaft support (6) and secure the cable to the support using three cable ties (9) equally spaced. Allow enough slack in cable at feed end so that it can rotate with feed.
11. Install feed housing cover (11) on feed housing using hardware items (20, (22), and (23), four places. Make sure the opening in cover for the cable to exit is positioned directly over the feed shaft support (6).

PARTS LIST FOR FIGURES 5, 6, AND 7

| ITEM | DESCRIPTION | PART NO. | ITEM | DESCRIPTION | PART NO. |
|------|-----------------------|----------|------|--|----------|
| 6 | Feed Shaft Support | 300085 | 16 | Screw, 10 x 3/8 Pan HD, Type A or AB SST | 76228 |
| 9 | Cable Tie | 75907 | 20 | Screw, 10-24 x 3/4 | 299384 |
| 12 | Feed Horn, DP | 299802 | 22 | Washer, No. 10 Flat | 88535 |
| 13 | Orthomode Transducer | 299741 | 24 | Screw, 1/4-20 x 1-1/4 | 299388 |
| 14 | Mounting Plate, Cover | 299827 | 25 | Washer, 1/4 Flat | 88536 |
| 15 | Cover, Feed Housing | 299826 | 26 | Nut, 1/4-20 | 299389 |

STEP-BY-STEP DP FEED ASSEMBLY INSTRUCTIONS FOR FIGURES 5, 6, AND 7.

1. Install orthomode transducer (13) and cover mounting plate (14) to DP feed (12) using hardware items (20) and (22), eight places. Be sure to orient the transducer to the feed as shown in figure 5.
2. Install two LNCs or LNAs (as applicable) to transducer (13) using hardware items (24), (25), and (26), four places each unit.
3. Attach coaxial cables to each LNC or LNA and secure with cable tie (9) as shown. Make cable loop radius no larger than 5 inches.
4. Route the coaxial cables down along the groove in feed shaft support (6) and secure the cables to the support using three cable ties (9) equally spaced. Allow enough slack in cables at feed end so that they can rotate with the feed.
5. Install feed housing cover (15) on feed housing using hardware item (16), four places.

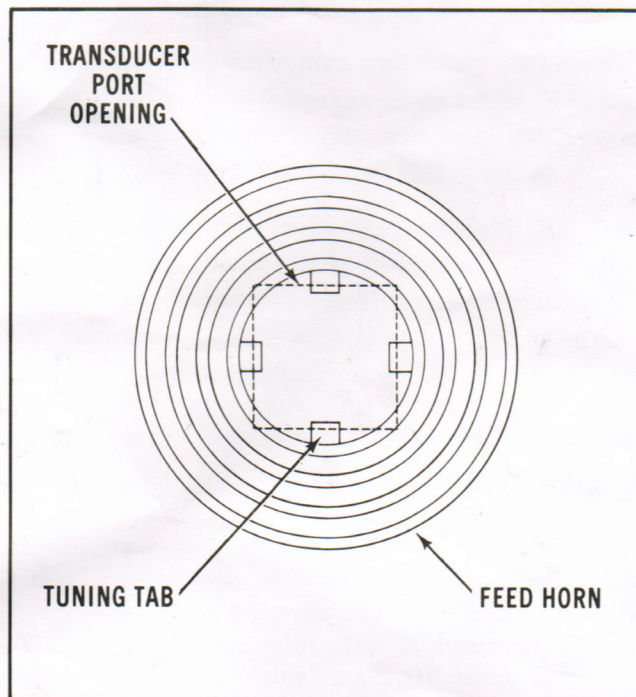


Figure 5. Orientation of Transducer To Feed Horn

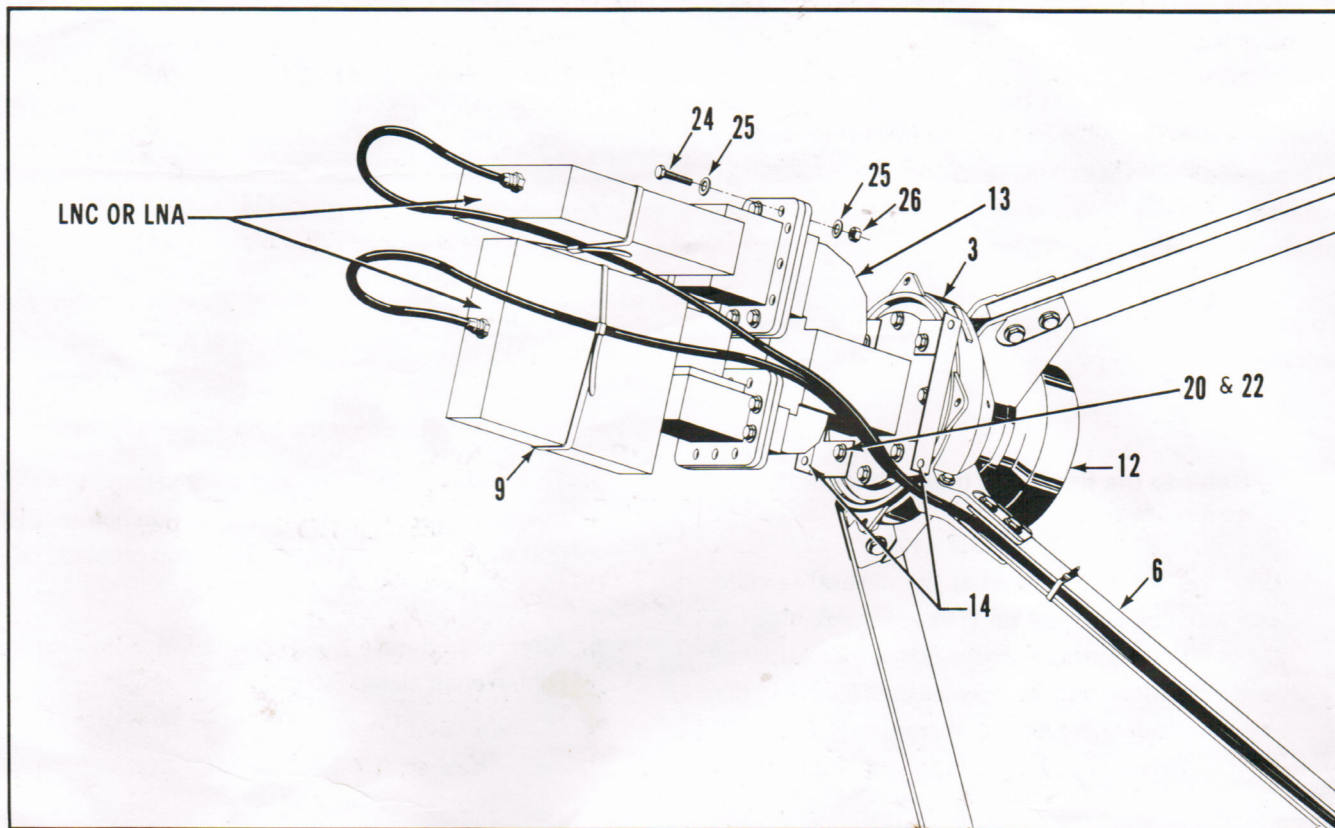


Figure 6. Installation of Transducer and LNC or LNA to Feed

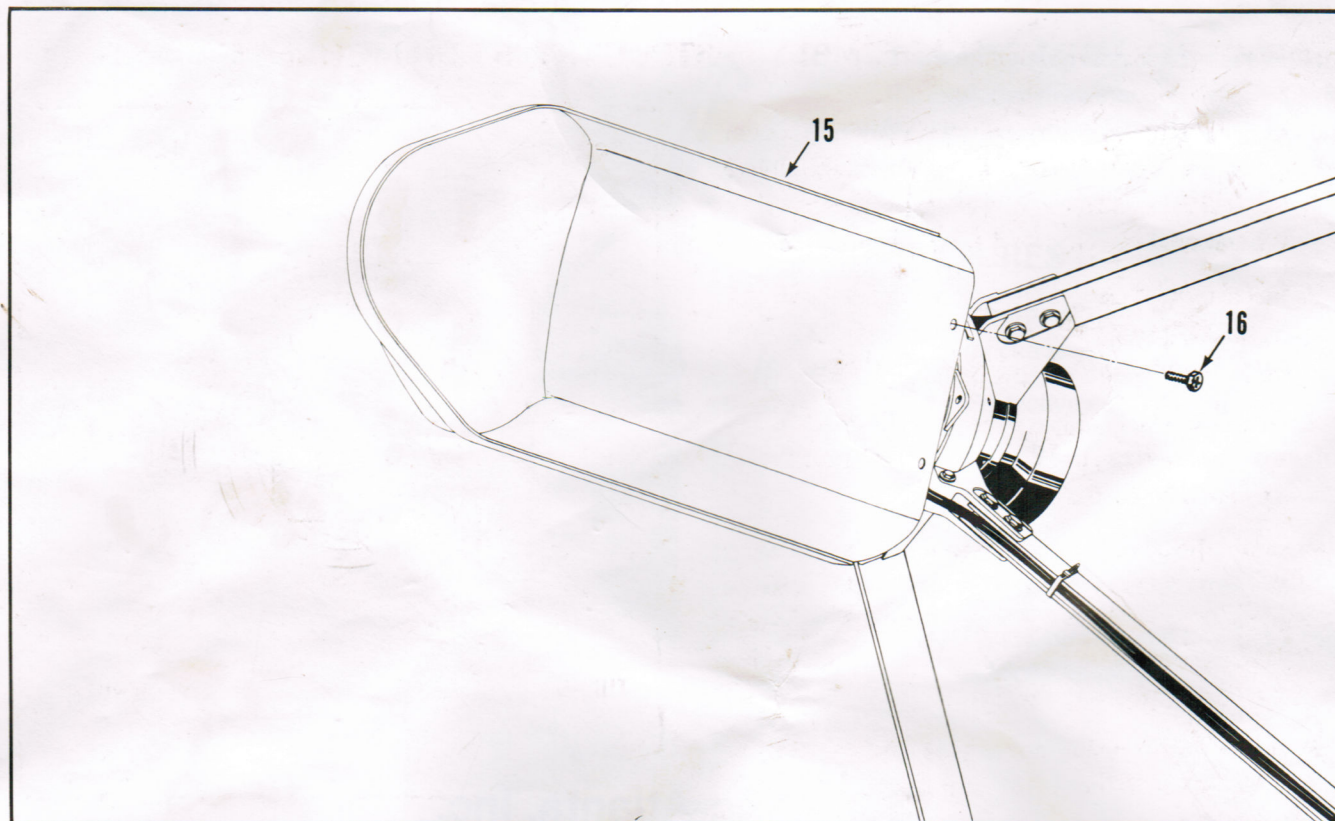


Figure 7. Installation of Feed Cover

POLARIZATION ADJUSTMENT

The feed polarization adjustment is made after all electronics are connected and the antenna is aimed at the desired satellite and must be readjusted if the antenna is pointed at another satellite. (Refer to the foundation installation manual, Publication No. 33N035Z, for satellite aiming coordinates.)

To adjust the feed polarization, perform the following procedure:

NOTE

Refer to the figures in this publication as necessary.

1. With the antenna pointed at the desired satellite and with the shaft clamp **(10)** loosened, insert a flat-blade screwdriver into the slot at the bottom of feed shaft **(8)** and turn clockwise until feed rotation is prevented by the rotational stop.
2. Turn the feed shaft counterclockwise two full turns. (One full turn of the feed shaft rotates the feed 90 degrees.) The feed is now in the "starting" position and is free to rotate approximately 180 degrees in either direction before hitting the mechanical stop.
3. Use your receiver's signal strength meter for observation during the following adjustment.
4. Turn the feed shaft in either direction until a peak signal is observed on the signal strength meter.
5. To obtain the opposite feed polarization, turn the feed shaft one full turn in the direction opposite to that turned in step 4 from where you obtained the peak signal.
6. After completing the polarization adjustment, tighten shaft clamp **(10)**.

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