

GENERAL DYNAMICS
SATCOM Technologies

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ASSEMBLY MANUAL

2.4 Meter 4 Piece C-Band Rx/Tx
Antenna Feed System

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2.4 Meter C-Band Rx/Tx Antenna Feed System

D	Add Conover Address	4/20/16	RAH
C	Revised to correct hardware lists and usage.	8/16/13	R.F.
B	Revised Company Name, Logo, and Part Tables	7/14/09	RAH
A	Revised for Molded Reflector	10-23-95	RF
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SECTION I INTRODUCTION

1.0 GENERAL INFORMATION

This manual describes the assembly and installation of General Dynamics' C-Band Rx/Tx Feed System. The C-Band Rx/Tx Feed System is a rugged, reliable antenna system, which will operate in C-Band frequencies with high efficiency and at the same time successfully withstand the effects of the environment.

SECTION II FEED SUPPORT ASSEMBLY

2.0 FEED SUPPORT ASSEMBLY

As shown in figure 2.0-1, assemble the following items in the listed sequence. Do not tighten any hardware until step 4.

Step 1: Attach a feed rod (item# 2) to each side of the reflector using a 5/16-18 x 1.00" bolt, [2] flat washers, [1] lock washer, and [1] hex nut (item# 3, 7, 8, 10) for each rod. See detail "A".

Step 2: Attach the other end of each feed rod to the feed support tube (item# 1) with the 5/16-18 x 3.25" bolt, [2] flat washers, [1] lock washer and [1] hex nut (item# 5, 7, 8, 10). See detail "B".

Step 3: Attach the feed support tube to the bottom of the reflector with [2] 5/16-18 x 1.50" bolts, [4] flat washers, [2] lock washers, and [2] hex nuts (item# 4, 7, 8, 10). See detail "C".

Step 4: Tighten all feed support hardware securely at this time.

PARTS LIST - FEED SUPPORT ASSEMBLY			
ITEM#	PART#	DESCRIPTION	QTY
1	0490-485	FEED SUPPORT TUBE	1
2	0176-230	FEED ROD	2
3	8031-008	5/16-18 x 1.00" BOLT	2
4	8031-012	5/16-18 x 1.50" BOLT	2
5	8031-026	5/16-18 x 3.25" BOLT	1
6	8201-041	5/16" FLAT WASHER	10
7	8202-041	5/16" LOCK WASHER	5
8	8101-009	HEX NUT, 5/16-18	5

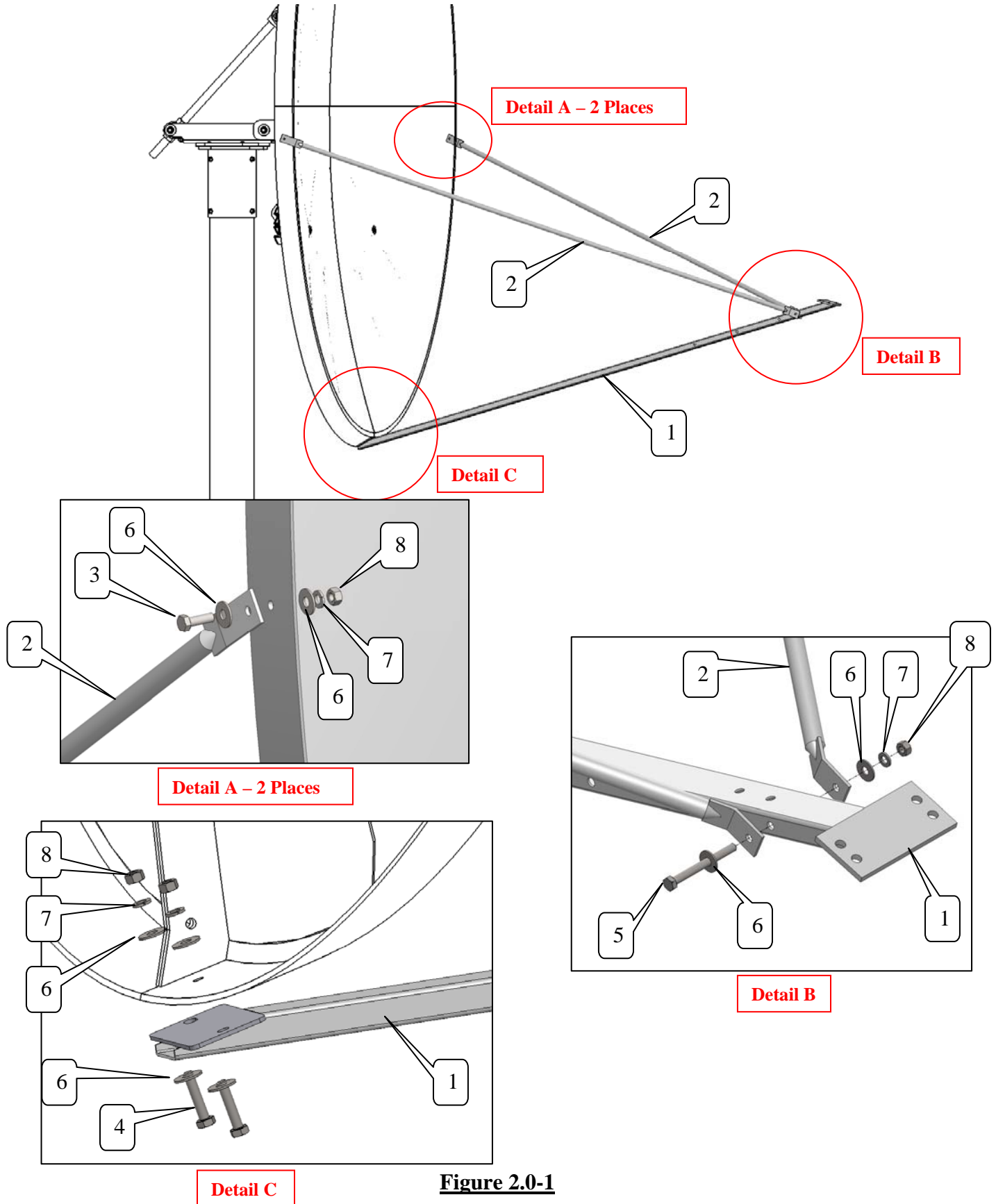
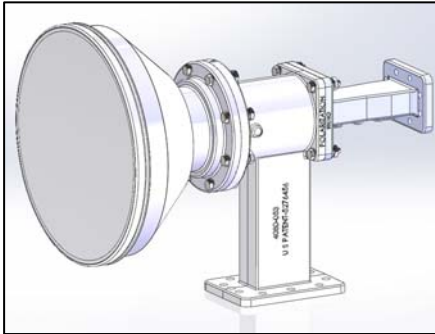


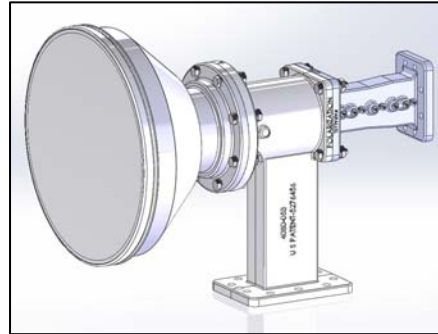
Figure 2.0-1

2.1 FEED ASSEMBLY

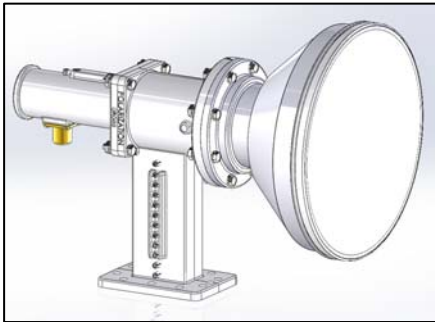
NOTE: General Dynamics' 2.4m Rx/Tx C-band antenna system is available with either Linear Polarization (Cross-Pol or Co-Pol) or Circular Polarization. Each configuration is also available with either WR137 or Type N Tx interface. All are supplied with WR229 Rx flange. Identification of each feed configuration is illustrated below.



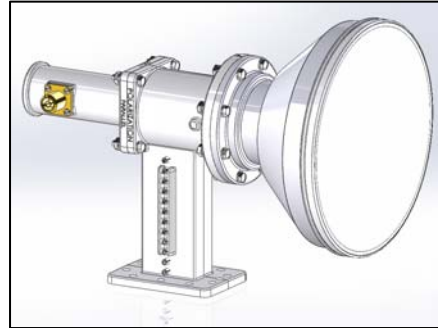
Cross-Pol – WR137 Tx



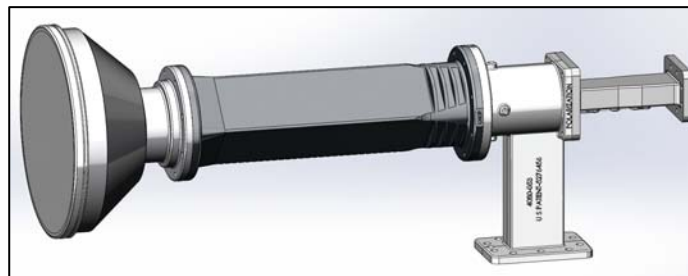
Co-Pol – WR137 Tx



Cross-Pol – Type N Tx



Co-Pol – Type N Tx



Circular Polarization – WR137 Tx



Circular Polarization – Type N Tx

2.1-A LINEAR POLARIZATION (CROSS-POL AND CO-POL) FEEDS

The feed assembly is shipped from the factory as a complete feed horn/OMT assembly. The transmit port of the OMT assembly can be either Type N connector interface or WR137 waveguide interface. And the assembly can be configured for cross-pol operation or co-pol operation. See Section 2.1 for feed assembly identification.

- Step 1:** Refer to the parts list table below and Figures 2.1-1 and 2.1-2.
- Step 2:** Attach the bottom feed mounting bracket (item #2) oriented as shown to the feed support with [4] 3/8-16 x 1.25" bolts, [4] lock washers, and [4] 3/8-16 hex nuts (item #7,8,9). See Figure 2.1-1. Tighten securely.
- Step 3:** Place the neck of the feed horn/OMT assembly (item #1) into the feed mounting bracket and secure with the top mounting bracket (item #3) using [2] 5/16-18 x 1.00" bolts, [2] lock washers, and [2] 5/16-18 hex nuts (item #4,5,6) as shown in Figure 2.1-2. Snug but do not tighten until after final polarization adjustment has been made.

PARTS LIST – LINEAR CROSS-POL & CO-POL			
<u>ITEM#</u>	<u>PART#</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1	Varies	LINEAR FEED ASSEMBLY	1
2	0211-420	FEED MOUNTING BRACKET - BOTTOM	1
3	0211-419	FEED MOUNTING BRACKET – TOP	1
4	8031-008	5/16-18 x 1.00" BOLT	2
5	8202-041	5/16" LOCK WASHER	2
6	8101-009	5/16-18 HEX NUT	2
7	8032-010	3/8-16 x 1.25" BOLT	4
8	8202-042	3/8" LOCK WASHER	4
9	8102-007	3/8-16 HEX NUT	4

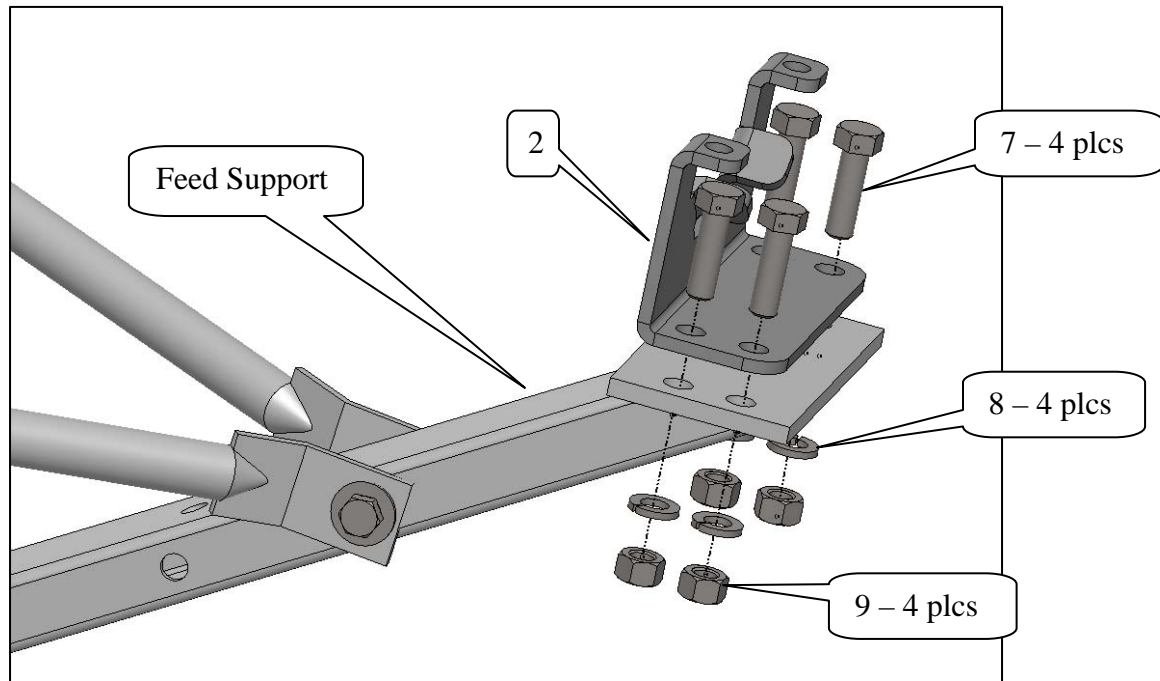


Figure 2.1-1

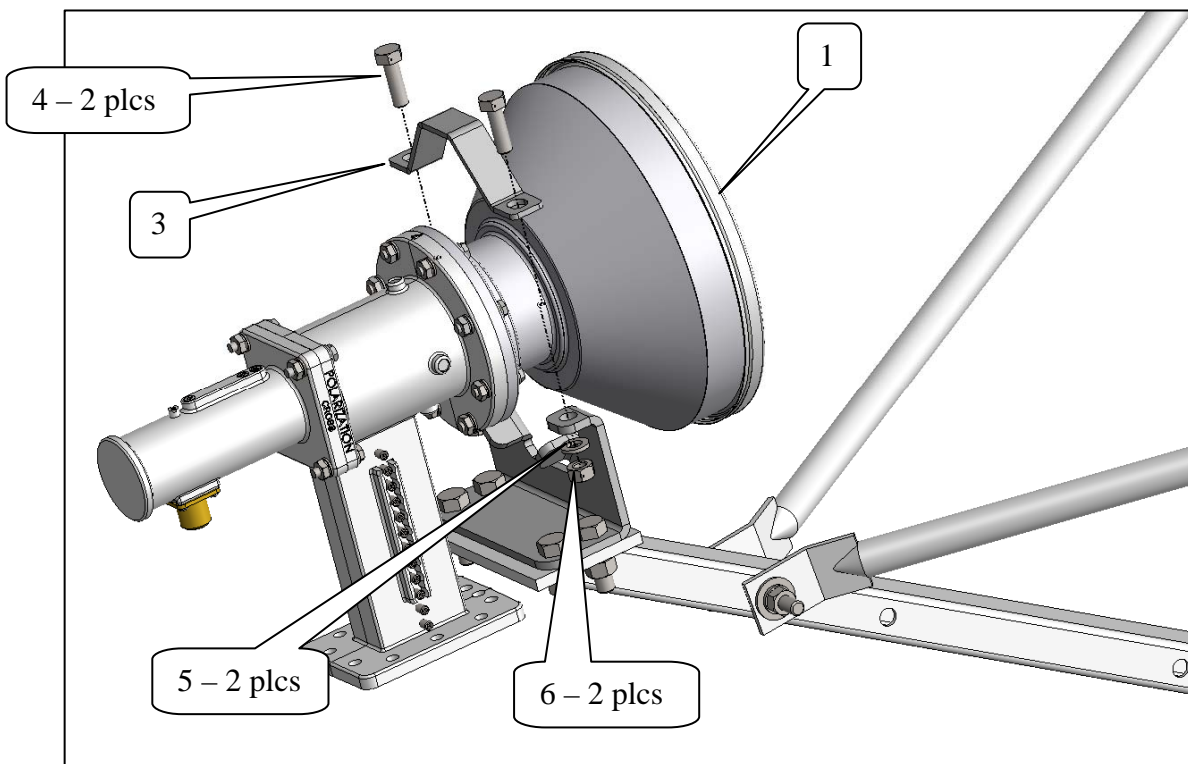


Figure 2.1-2

2.1-B CIRCULAR POLARIZATION

The feed assembly is shipped from the factory as a complete feed horn/circular polarizer/OMT assembly. The transmit port of the OMT assembly can be either Type N connector interface or WR137 waveguide interface. See Section 2.1 for feed assembly identification.

Note: The circular polarized feed assembly can be either Left Hand Circular Polarization (LHCP) or Right Hand Circular Polarization (RHCP). For left hand polarization, the "LHCP" on the flange of the circular polarizer will be aligned with the arrow on the OMT. For right hand polarization, the "RHCP" will be aligned with the arrow on the OMT.

Installers should keep in mind that right hand and left hand polarization refers to the transmission of signals from the feed to the reflector. Then the reflector reverses the signal. Therefore a "LHCP" feed system results in an antenna system that transmits a Right Hand Circular Polarized signal, and receives a Left Hand Circular Polarized signal.

- Step 1: Refer to the parts list table below and Figures 2.1-3 and 2.1-4.
- Step 2: Attach the polarizer mounting bracket (item #2) and the bottom feed mounting bracket (item #3) oriented as shown to the feed support with [4] 3/8-16 x 1.25" bolts, [4] lock washers, and [4] 3/8-16 hex nuts (item #10,11,12). See Figure 2.1-3. Tighten securely.
- Step 3: Attach the polarizer mounting bracket (item #2) to the feed support with [2] 5/16-18 x 1.50" bolts, [2] lock washers, and [2] 5/16-18 hex nuts (item #6,7,8). See Figure 2.1-3. Tighten securely.
- Step 4: Attach the remaining bottom feed mounting bracket (item #3) to the polarizer mounting bracket with [4] 3/8-16 x 1.00" bolts, [4] lock washers, and [4] 3/8-16 hex nuts (item #9,11,12). Do not tighten. **NOTE: Refer to figure 2.1-3 to be sure that the brackets are oriented correctly.**
- Step 5: Place the circular feed assembly (item #1) into the brackets and secure by fastening [1] top feed mounting bracket (item #4) over the neck of the feed horn with [2] 5/16-18 x 1.00" bolts, [2] lock washers, and [2] hex nuts (item #5,7,8). Fasten the remaining top feed mounting bracket (item #4) over the neck of the circular polarizer with [2] 5/16-18 x 1.50" bolts, [2] lock washers, and [2] hex nuts (item #6,7,8). Tighten the 3/8" hardware in the feed mounting bracket (4 places, from step #4) to the circular polarizer bracket. Tighten the 5/16" hardware in the [2] top feed mounting brackets (4 places). The antenna system is now ready to be aligned to the satellite.

PARTS LIST - CIRCULAR POLARIZATION			
ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	Varies	CIRCULAR FEED ASSEMBLY	1
2	0181-744	POLARIZER MOUNTING BRACKET	1
3	0211-420	FEED MOUNTING BRACKET - BOTTOM	2
4	0211-419	FEED MOUNTING BRACKET - TOP	2
5	8031-008	5/16-18 x 1.00" BOLT	2
6	8031-012	5/16-18 x 1.50" BOLT	4
7	8202-041	5/16" LOCK WASHER	6
8	8101-009	5/16-18 HEX NUT	6
9	8032-008	3/8-16 x 1.00" BOLT	4
10	8031-010	3/8-16 x 1.25" BOLT	4
11	8202-042	3/8" LOCK WASHER	8
12	8201-007	3/8-16 HEX NUT	8

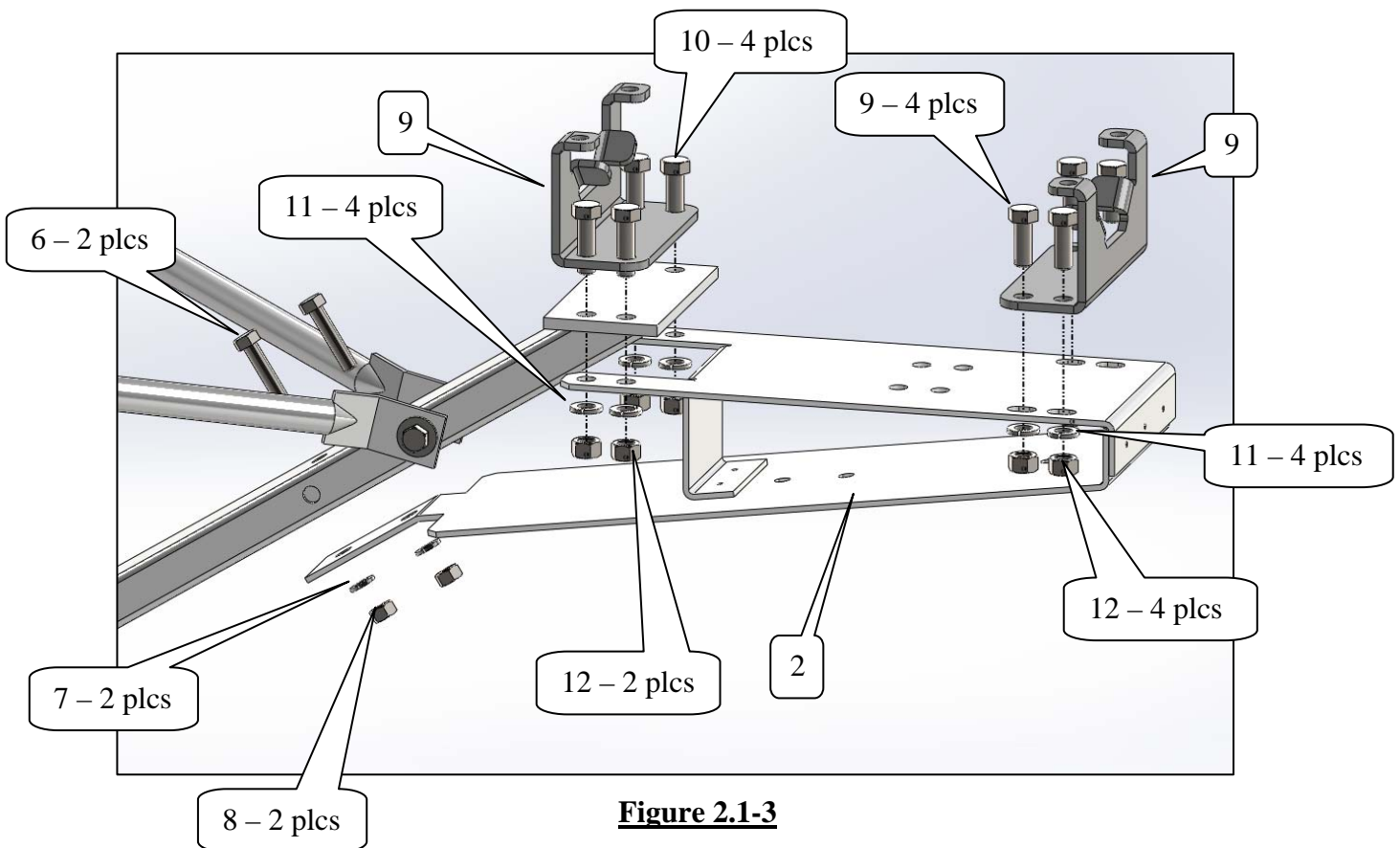


Figure 2.1-3

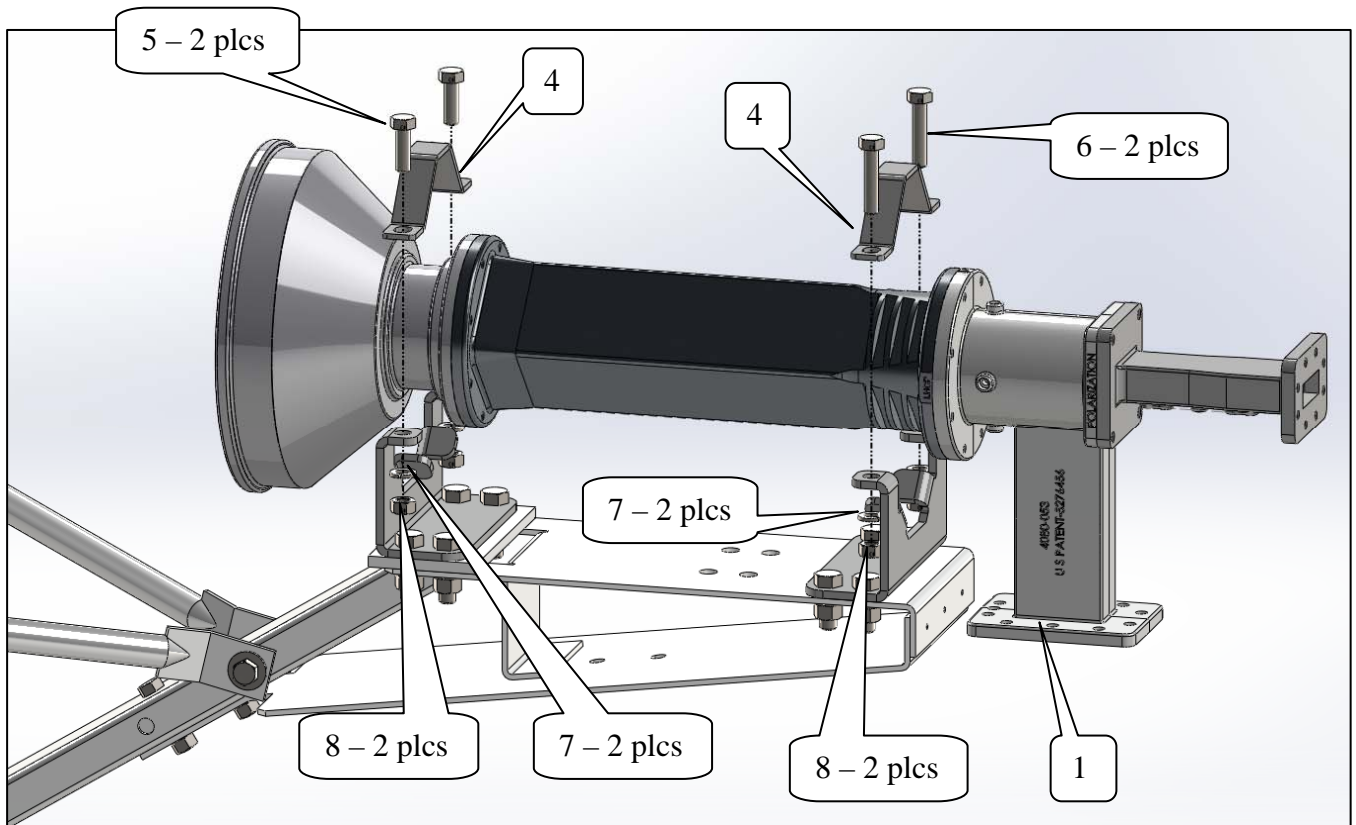


Figure 2.1-4

2.2 LNB/LNA ATTACHMENT

STEP 1. Apply silicone grease to gasket (item#1) and place gasket in groove in flange of LNA/LNB (customer supplied).

STEP 2. Attach LNA/LNB to side port (Rx) flange of OMT with (10) 1/4-20 x 1.00" bolts, (10) 1/4" flat washers, (10) 1/4" lock washers, and (10) 1/4-20 hex nuts (item# 2,3,4,5). **Note: The above is intended as a general instruction. It may be necessary to adjust the hardware quantity and/or direction of insertion depending on the LNA/LNB being used.**

STEP 3. Tighten 1/4" hardware securely.

PARTS LIST - FEED SUPPORT ASSEMBLY			
ITEM#	PART#	DESCRIPTION	QTY
1	0171-073	GASKET, CPR WR229G FLANGE HALF-THICK	1
2	8023-008	BOLT, 1/4-20 X 1.00" TYPE 304 S.S. STD.	10
3	8201--36	FLATWASHER, 1/4" S.S. STD.	10
4	8202-031	LOCKWASHER, 1/4" S.S. STD.	10
5	8100-005	NUT, HEX, 1/4-20 S.S. STD.	10

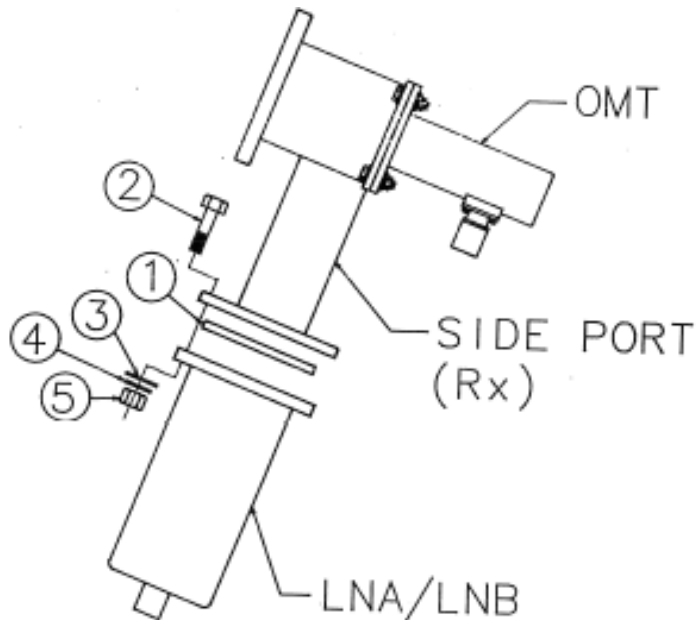


FIGURE 2.2-1