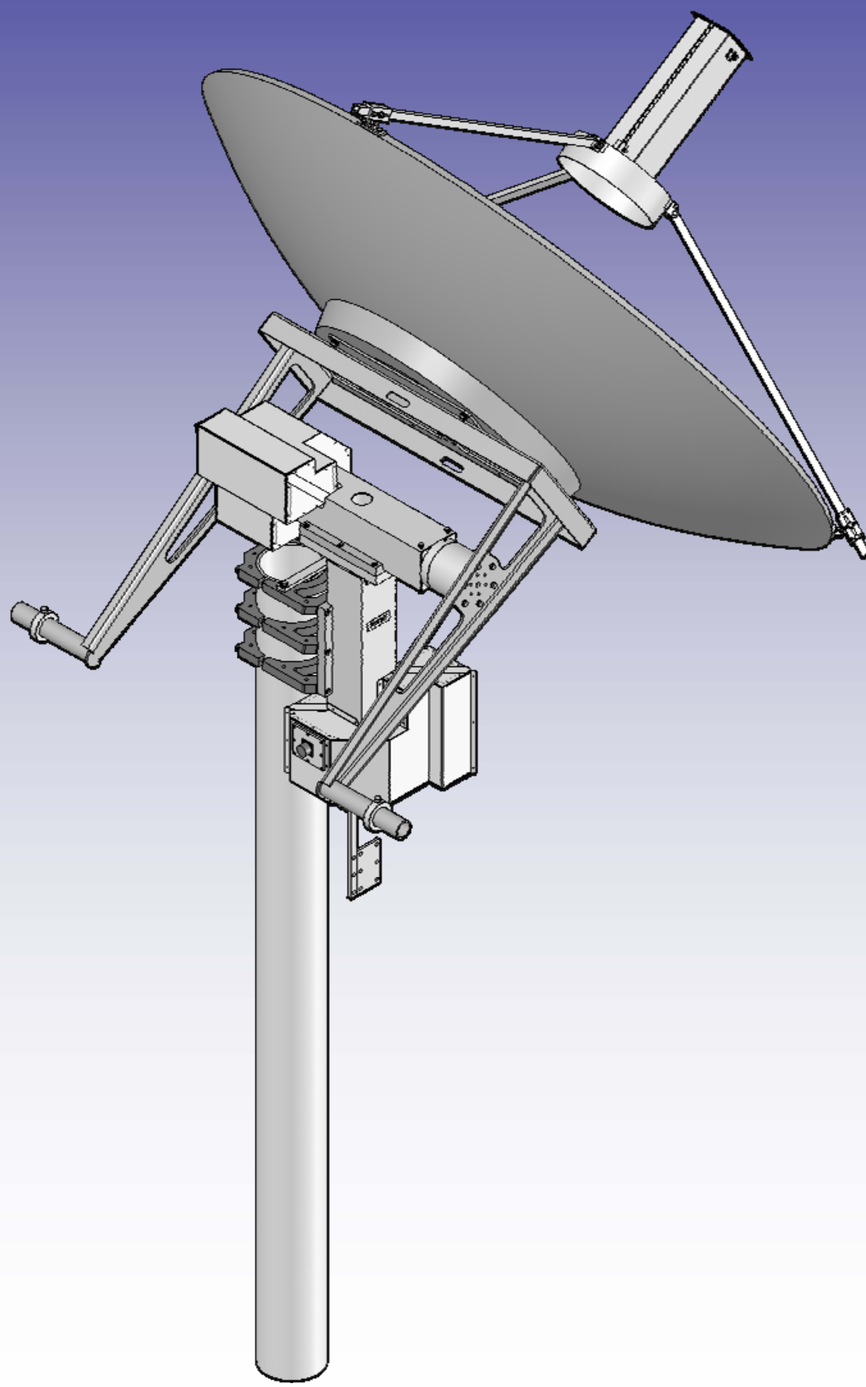
M2 Antenna Systems, Inc.
Model No: SYSTEM SAMPLE 3
2 AXIS WITH L-BAND FEED



M2 Antenna Systems, Inc. 4402 N. Selland Ave. Fresno, CA 93722
Tel: (559) 432-8873 Fax: (559) 432-3059 Web: www.m2inc.com

05/19/09
Rev.00

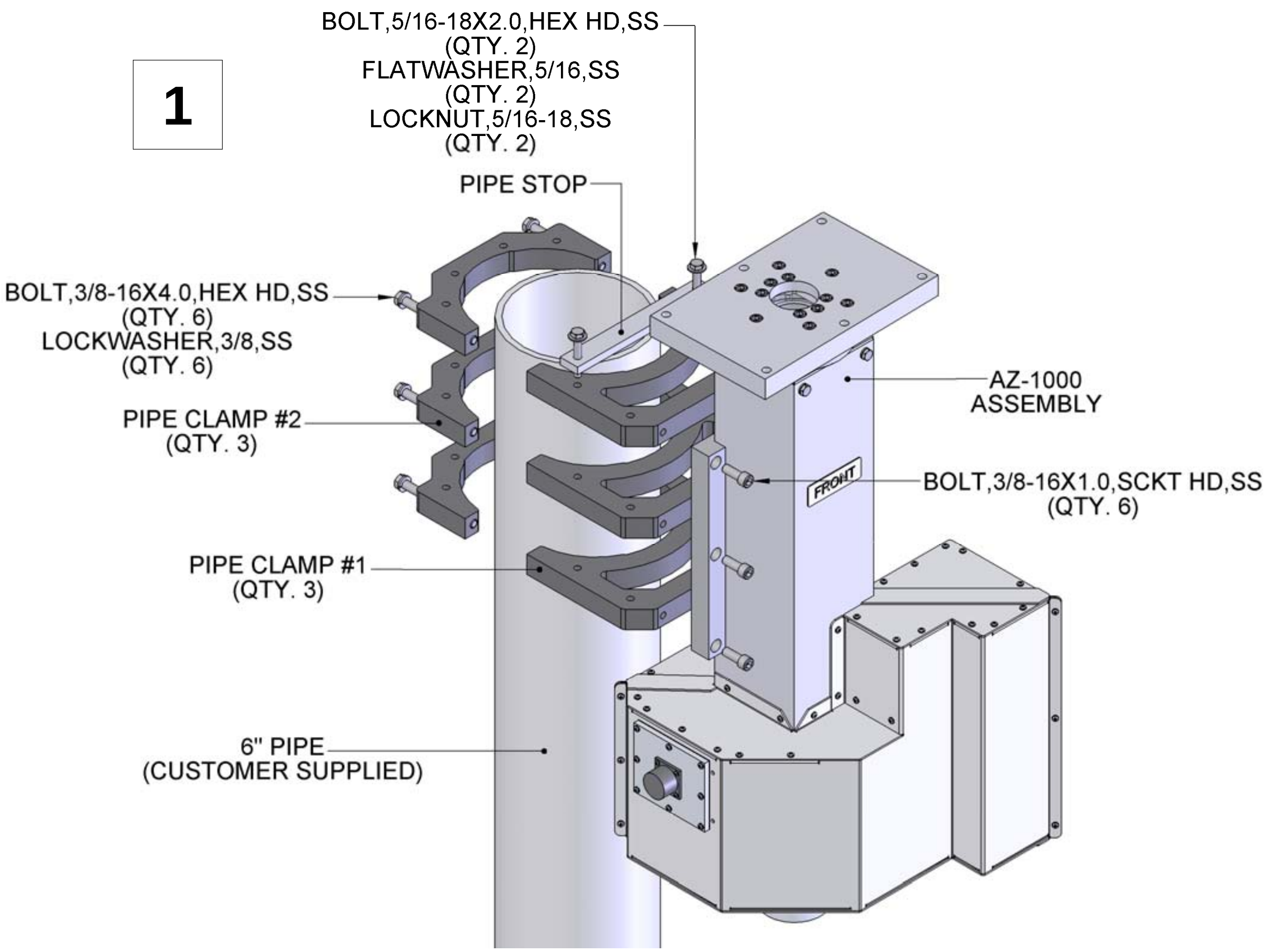
ASSEMBLY MANUAL

BEFORE YOU BEGIN: Look over all the DRAWINGS to get familiar with the various parts and assemblies in the system. Tools handy for assembly process: screwdriver, 11/32, 7/16, 1/2, 9/16 and 5/8" spin-tites, end wrenches and/or sockets, measuring tape.

Note:
All installations are unique in some way, which means it's OK to preassemble certain hardware, or rearrange the assembly process to meet specific site requirements. A quick review of the assembly notes and drawings should help firm up the appropriate strategy. Please remember to double-check all hardware for tightness BEFORE it becomes inaccessible.

Two containers of zinc paste (Penetrox, Noalox, or equiv.) have been provided to enhance and maintain the quality of all electrical junctions on this system. Apply a thin coat wherever two pieces of aluminum come in contact or any other electrical connections are made. It is also useful on screws and bolt threads as an ANTI SEIZE compound.

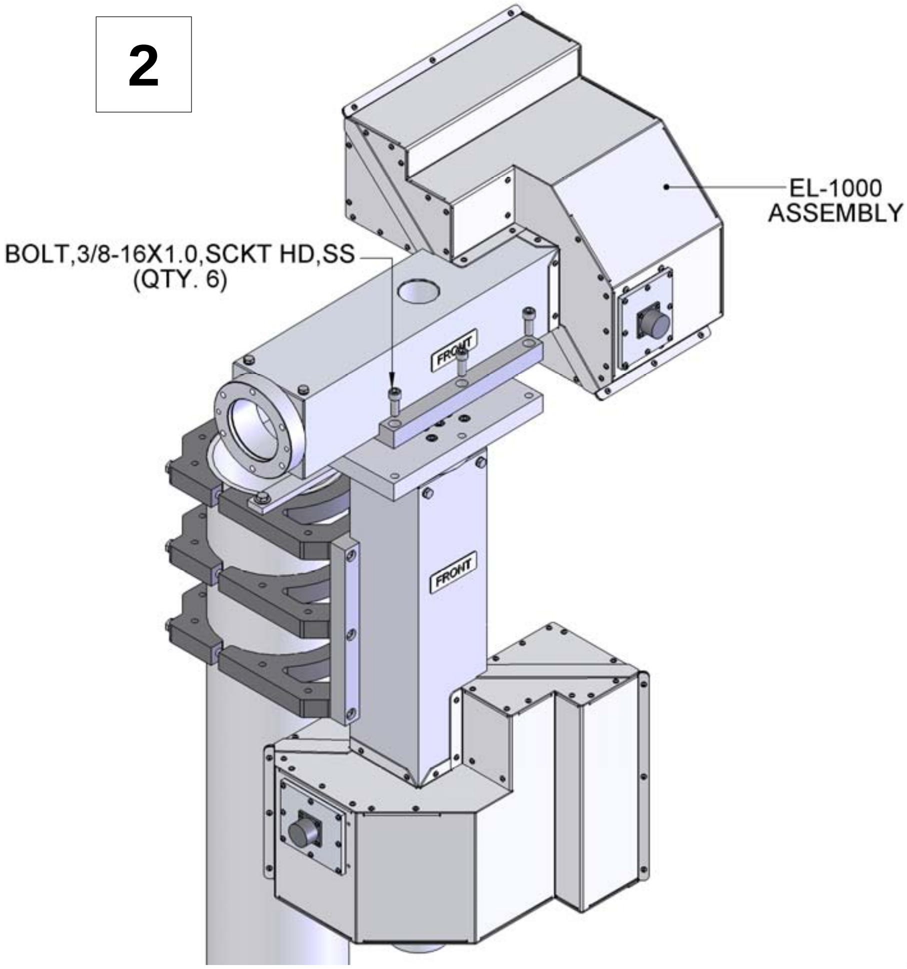
1



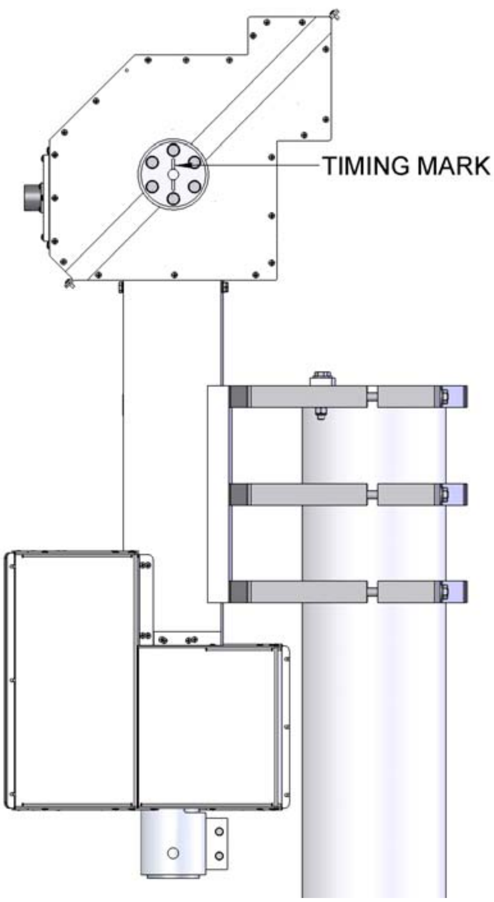
1. Install #1 pipe clamps to AZ-1000 assembly.
2. Install #2 pipe clamps to #1 pipe clamps. Do not tighten hardware during this step. Clamps must be loose in order to slide onto pipe.
3. Slide system onto pipe, position and lightly tighten all six bolts.

ASSEMBLY MANUAL

2



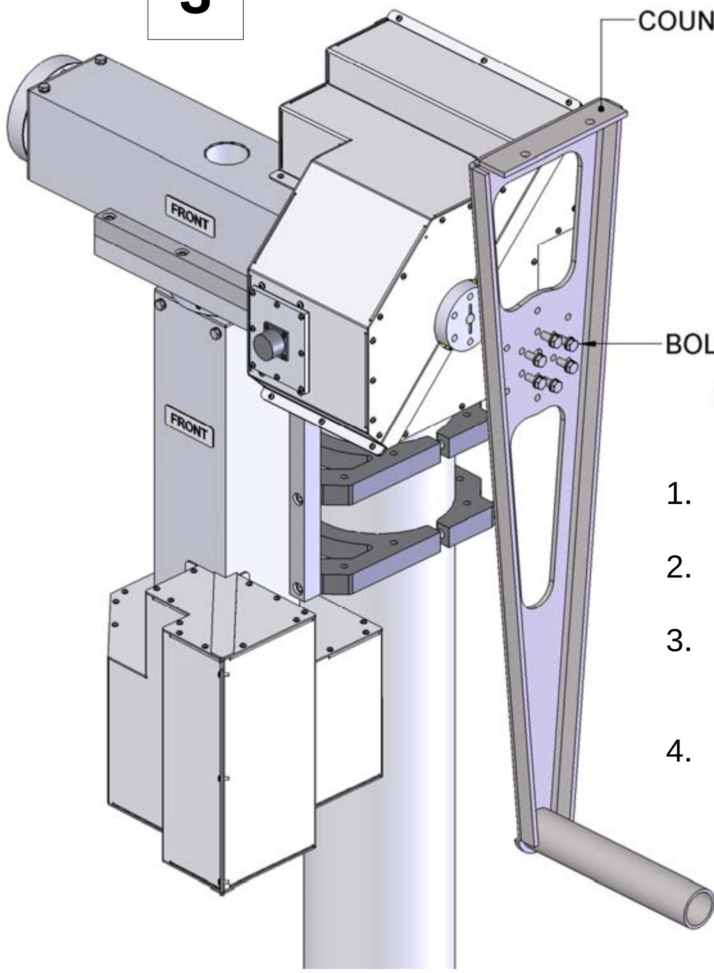
1. Install EL-1000 assembly to AZ-1000 assembly.



Note: Timing mark on EL-1000 gear spacer protruding from cover. This mark represents EL system at 90 degrees. This will help you align counter balance arms properly.

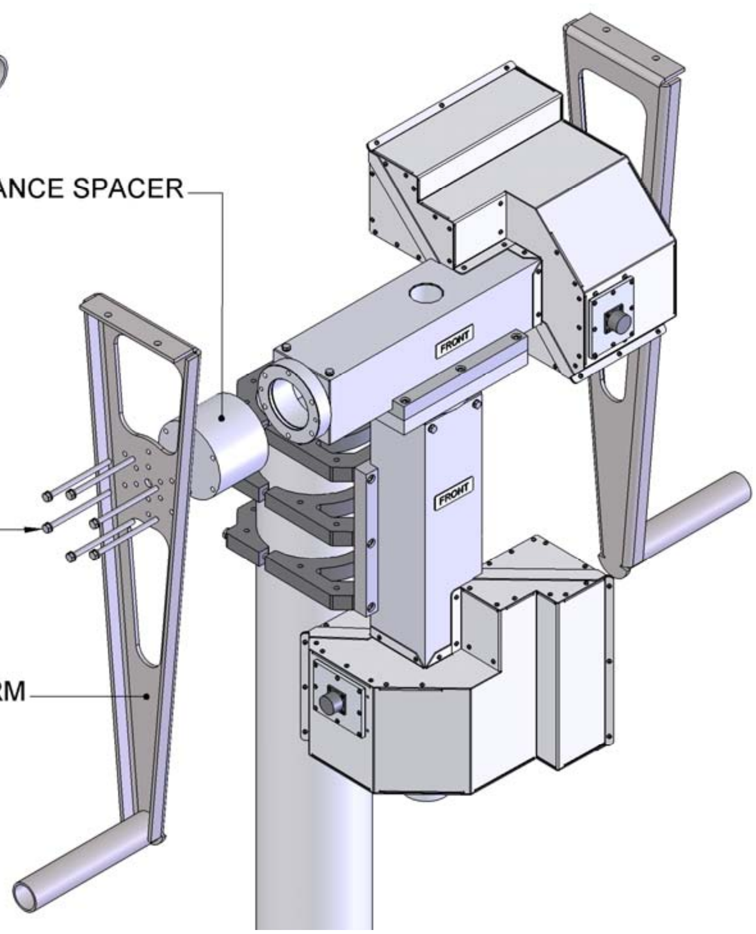
ASSEMBLY MANUAL

3

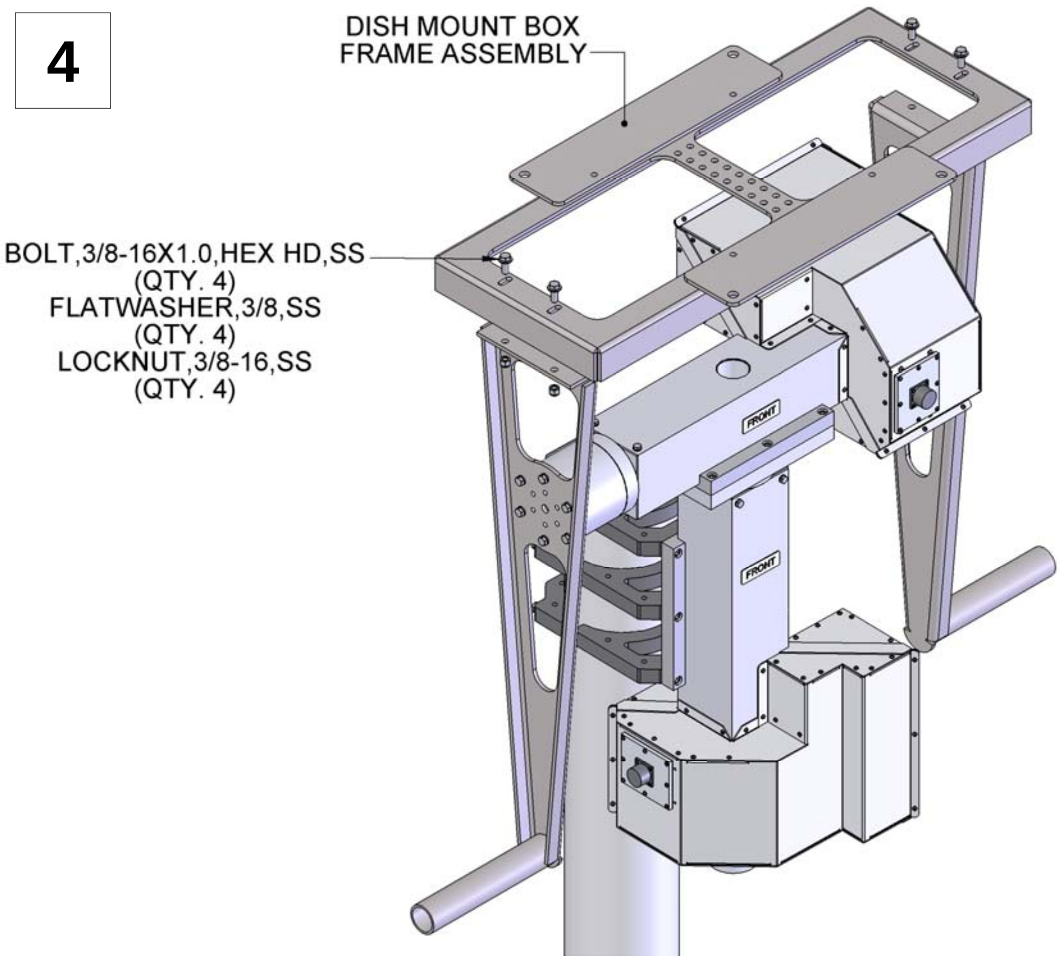


Note: With counter balance arm in this position, the dish would be mounted at 90 degrees, pointing straight up.

1. Add C-Balance Arm, align with all six holes and insert hardware as shown above.
2. Add C-Balance Spacer. Make sure all six bolt holes line-up. Hold C-Balance Spacer in place.
3. Add C-Balance Arm, align with all six holes and insert hardware as shown above. (Note: Both arms must be parallel to each other).
4. Check all hardware for tightness and inspect your work.



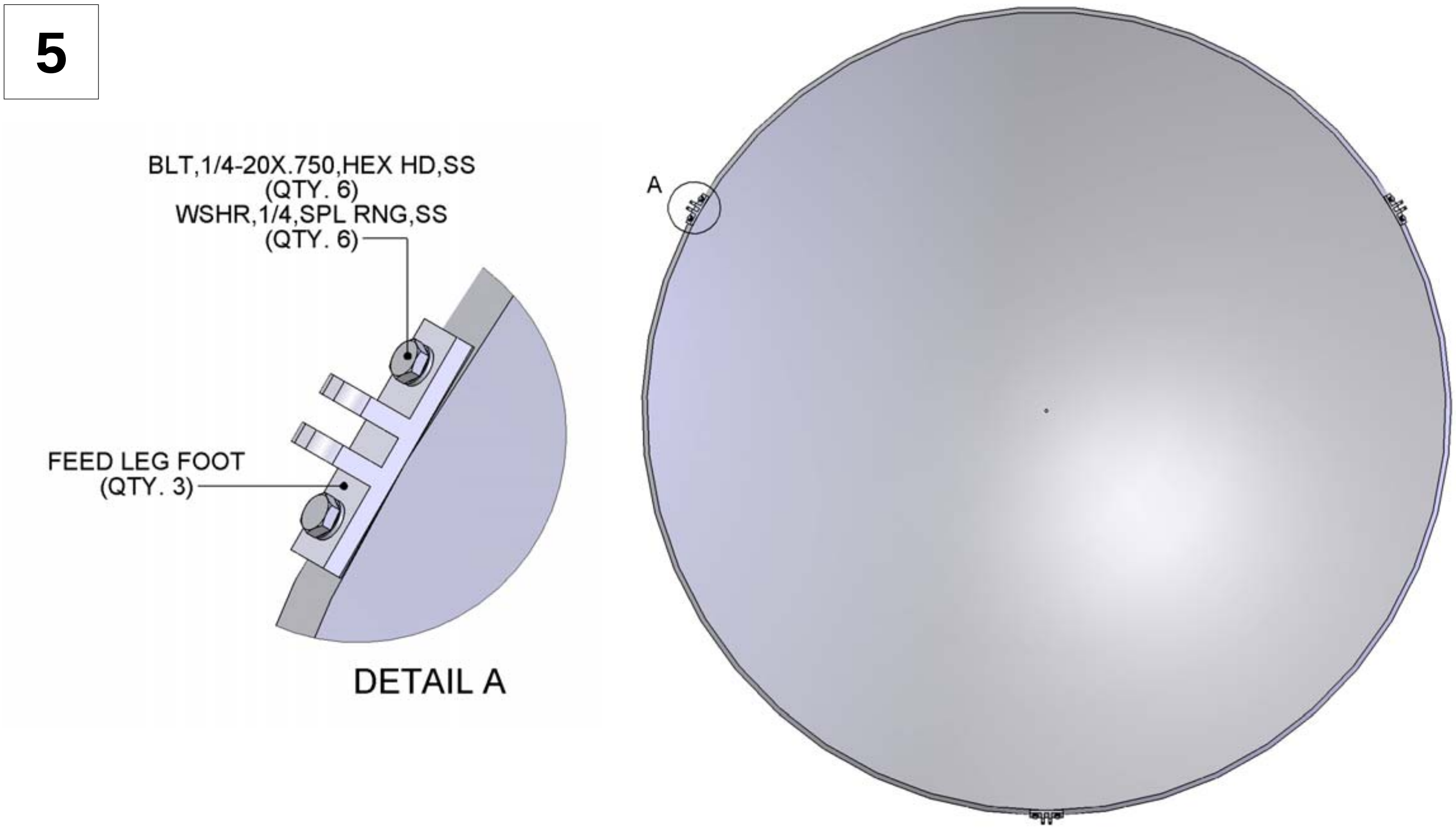
4



1. Install Dish Mount Box Frame Assembly.

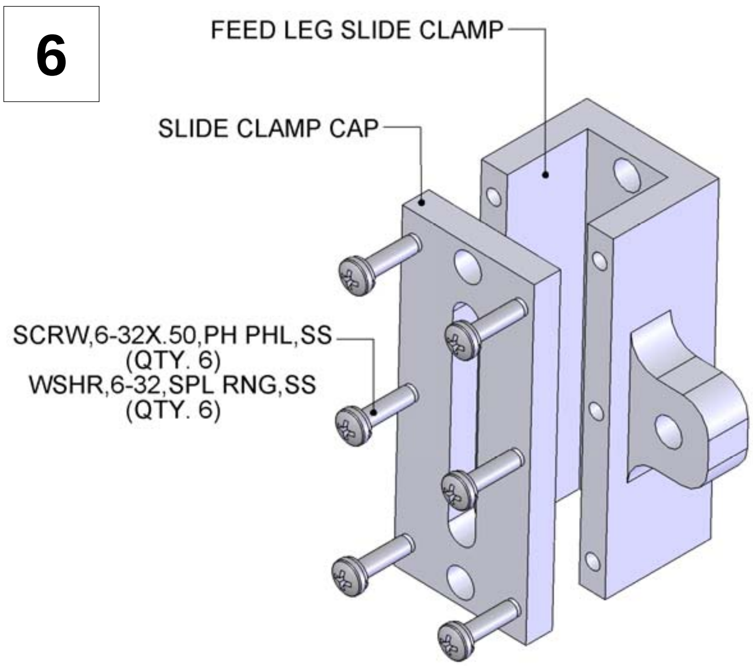
ASSEMBLY MANUAL

5



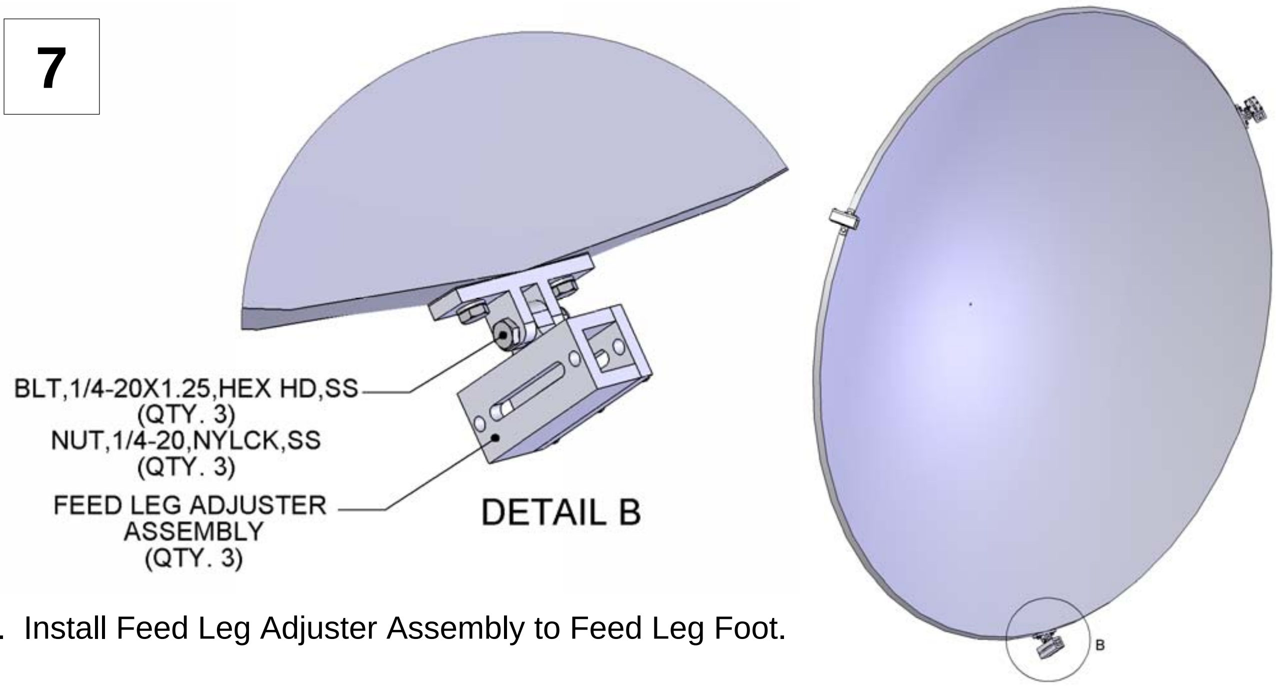
1. Prepare dish for installation. Begin by installing Feed Leg Foot Bracket on dish as shown in Detail A.

6



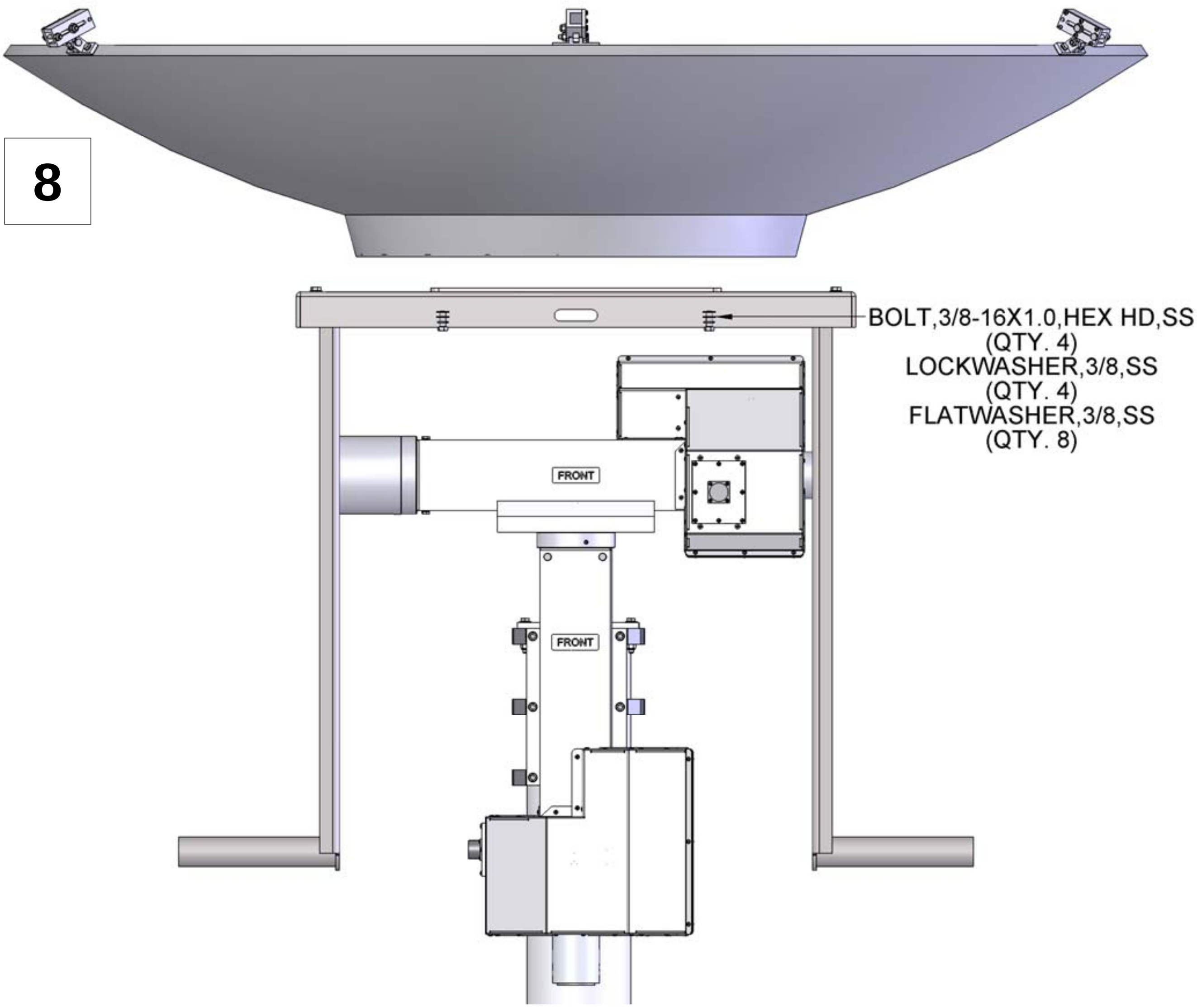
1. Pre-assemble Feed Leg Adjuster Assemblies, (Qty. 3).

7



1. Install Feed Leg Adjuster Assembly to Feed Leg Foot.

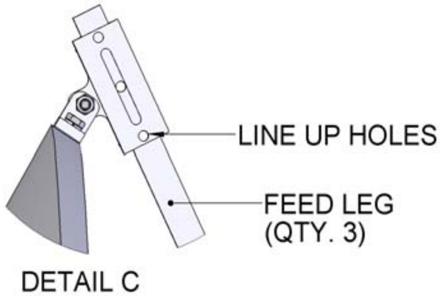
8



1. Install Dish to Dish Mount Box Frame Assembly.

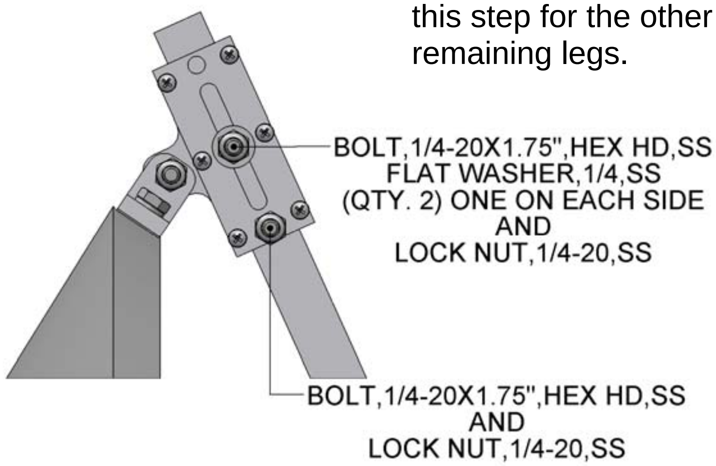
ASSEMBLY MANUAL

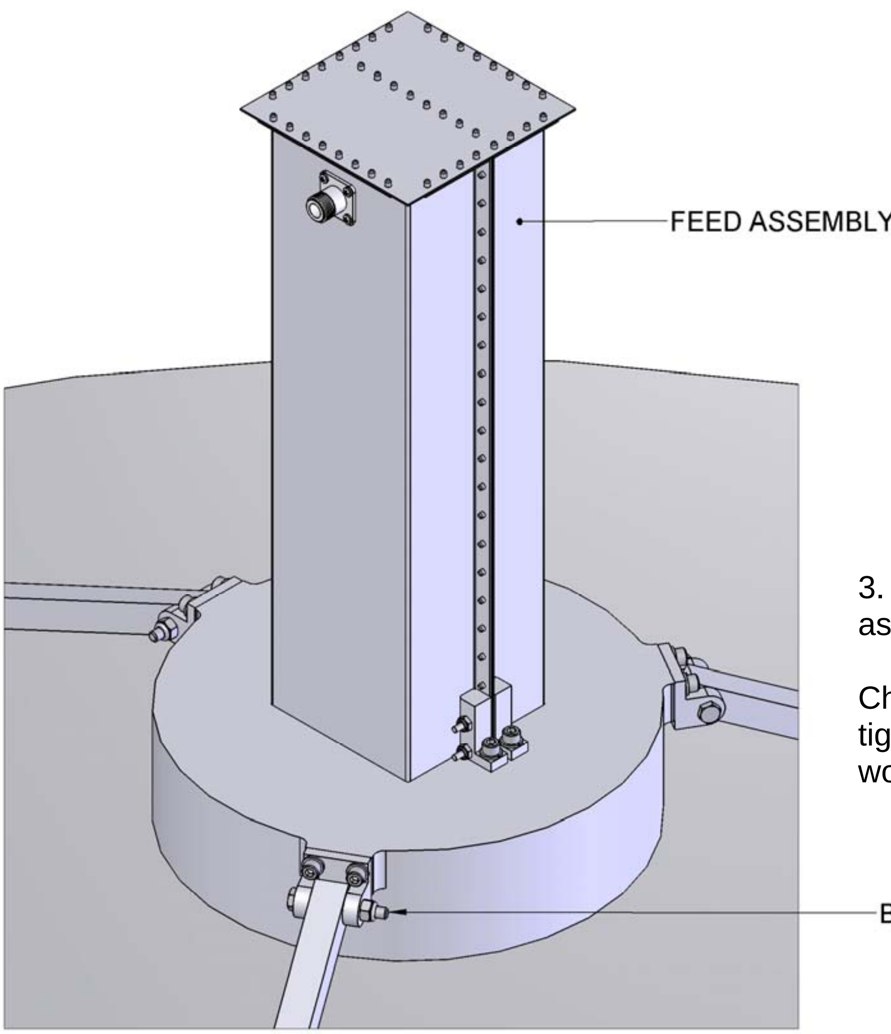
9



1. Install Dish Feed Legs. Line up holes as shown in detail C.

2. Secure Dish Feed Legs. Repeat this step for the other two remaining legs.

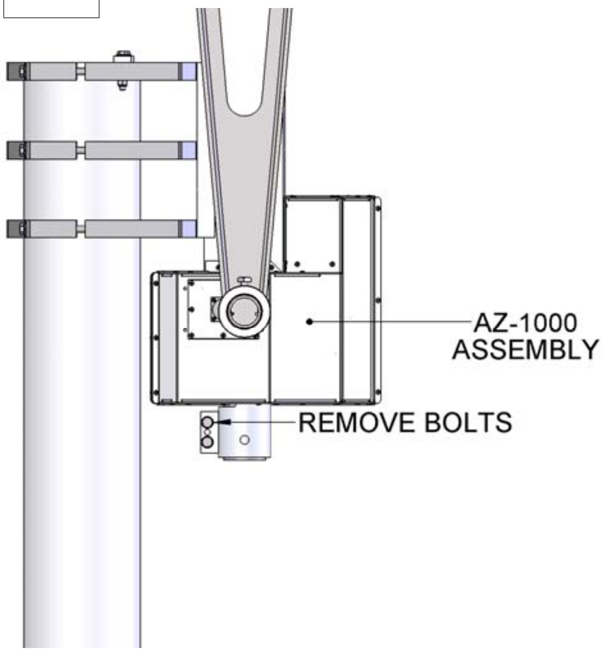


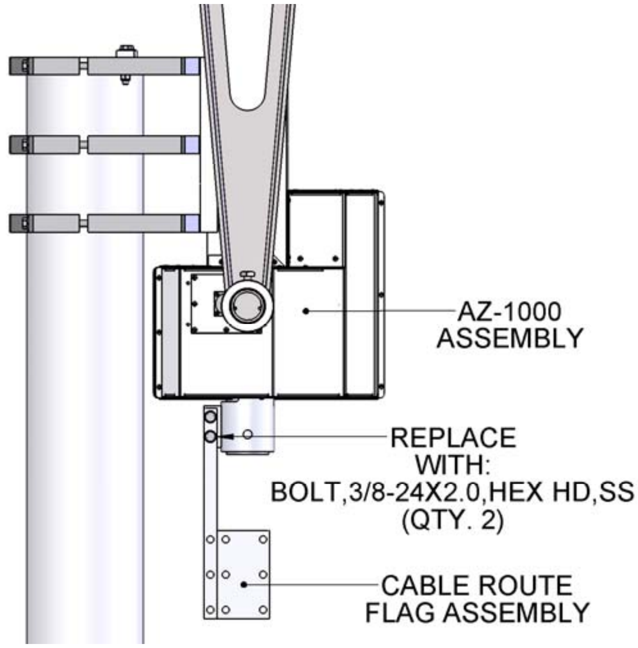


3. Install feed assembly as shown.

Check all hardware for tightness and inspect your work.

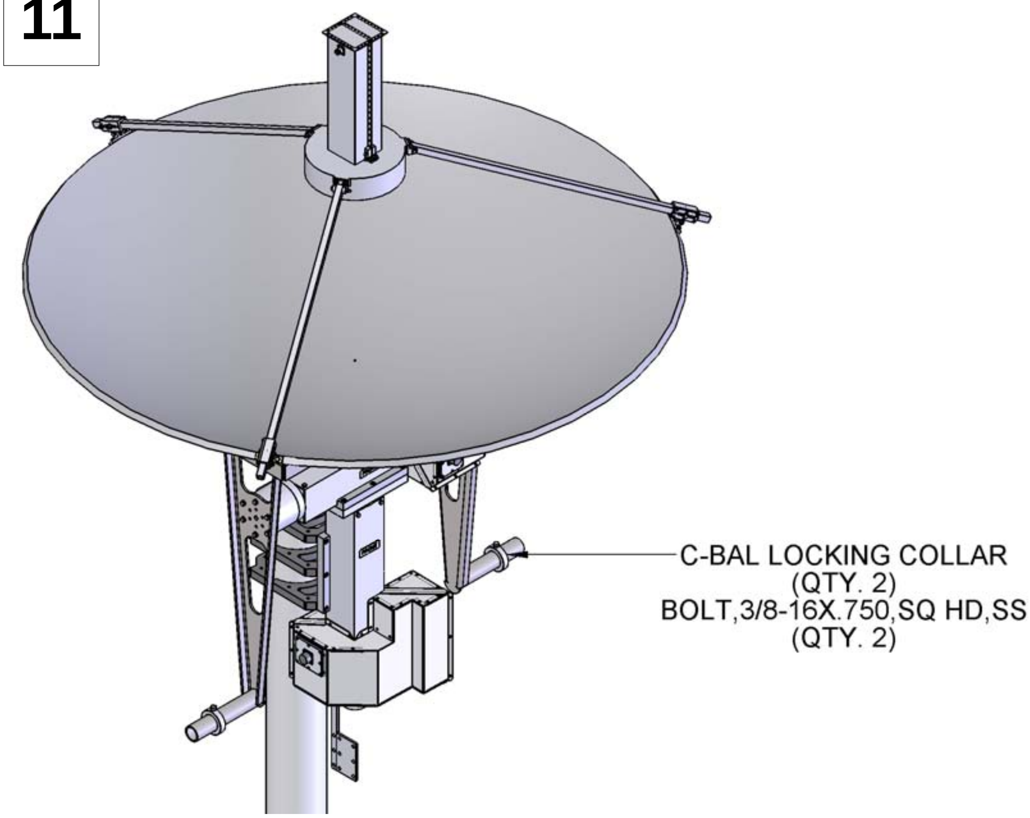
10





1. Install Cable Route Flag Assembly.

11



1. Install C-Balance locking collars with proper weights as desired to help counter balance the system.

PARTS & HARDWARE

DESCRIPTION	QTY
AZ-1000 Assembly	1
EL-1000 Assembly	1
Box Frame Assembly	1
C-Balance Arm	2
Feed Leg	3
Feed Leg, Foot	3
Feed Leg, Slide Clamp	3
Feed Leg, Clamp Cap	3
6” Pipe Clamp #1	3
6” Pipe Clamp #2	3
6” Pipe Stop	1
C-Balance Arm Spacer	1
C-Balance Locking Collar	2
Cable Route Flag Assembly	1
L-Band Feed Assembly	1
14” Nylon Tie	5
8” Nylon Tie	15
5 Pin Female Right Angle Connector Assembly	1
Shrink Tubing 1/8” x 4”	1
Zinc Paste (Penetrox, Noalox or Equivalent) container	2

HARDWARE	QTY
BAG #1 (STEP 1)	
Bolt, 3/8-16 x 4” Hex Head S.S.	6
Bolt, 3/8-16 x 1” Socket Head S.S.	6
Lock Washer, 3/8” S.S.	6
Bolt, 5/16-18 x 2” Hex Head S.S.	2
Flat Washer, 5/16” S.S.	2
Lock Nut, 5/16-18 S.S.	2
BAG #2 (STEP 2)	
Bolt, 3/8-16 x 1” Socket Head S.S.	6
BAG #3 (STEP 3)	
Bolt, 5/16-18 x 4-3/4” Hex Head S.S.	6
Bolt, 5/16-18 x 3/4” Hex Head S.S.	6
Lock Washer, 5/16” S.S.	12
BAG #4 (STEP 4)	
Bolt, 3/8-16 x 1” Hex Head S.S.	4
Flat Washer, 3/8” S.S.	4
Lock Nut, 3/8-16 S.S.	4

PARTS & HARDWARE

BAG #5 (STEP 5)
Bolt, 1/4-20 x 3/4” Hex Head S.S. 6
Lock Washer, 1/4” S.S. 6

BAG #6 (STEP 6)
Screw, 6-32 x 1/2”, Pan Head Phil S.S. 18
Lock Washer, 6-32 S.S. 18

BAG #7 (STEP 7)
Bolt, 1/4-20 x 1-1/4” Hex Head S.S. 3
Lock Nut, 1/4-20 S.S. 3

BAG #8 (STEP 8)
Bolt, 3/8-16 x 1” Hex Head S.S. 4
Lock Washer, 3/8” S.S. 4
Flat Washer, 3/8” S.S. 8

BAG #9 (STEP 9)
Bolt, 1/4-20 x 2” Hex Head S.S. 3
Bolt, 1/4-20 x 1-3/4” Hex Head S.S. 6
Flat Washer, 1/4” S.S. 6
Lock Nut, 1/4-20 S.S. 9

BAG #10 (STEP 10)
Bolt, 3/8-24 x 2” Hex Head S.S. 2

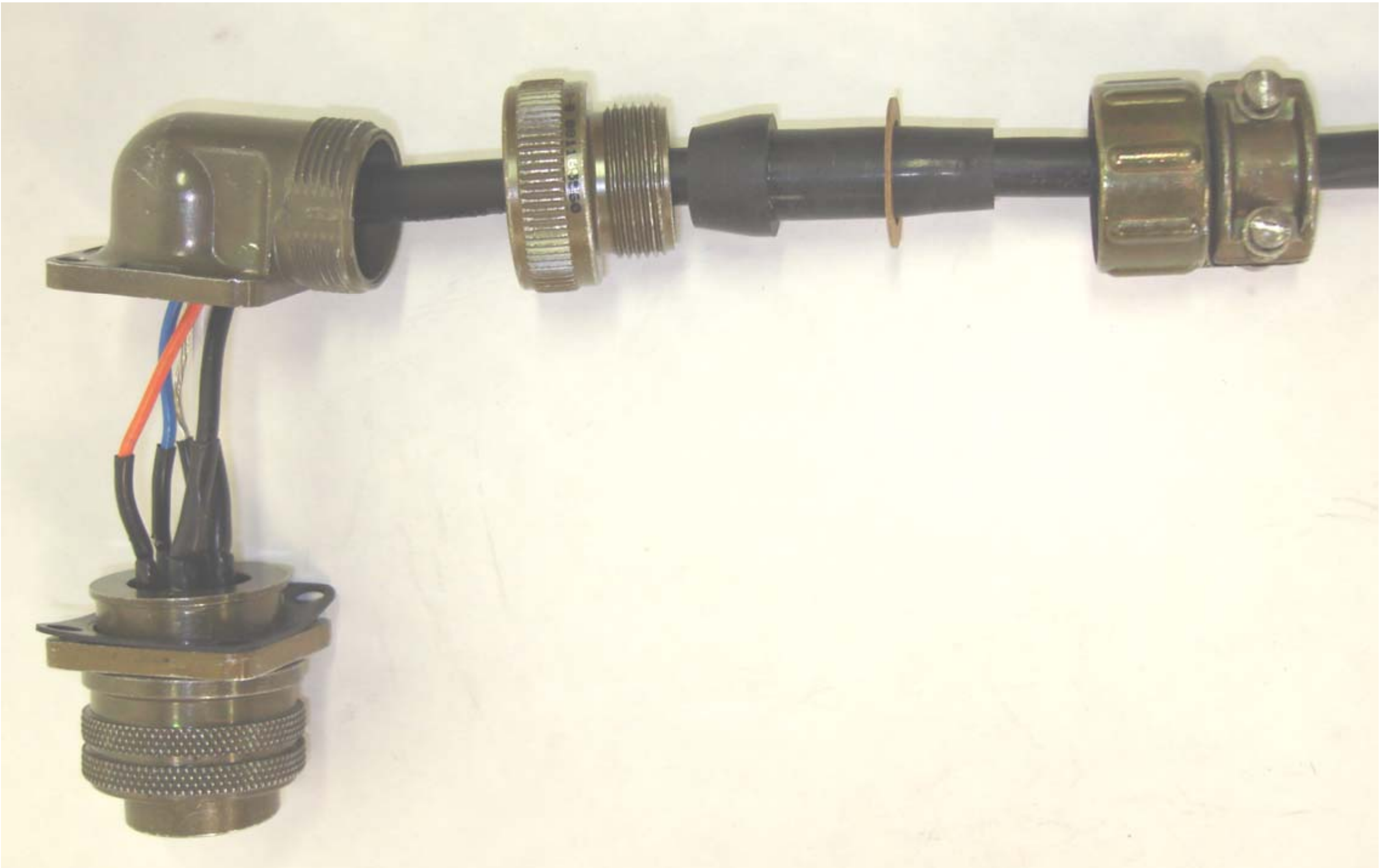
BAG #11 (STEP 11)
Bolt, 3/8-16 x 3/4” Square Head S.S. 2

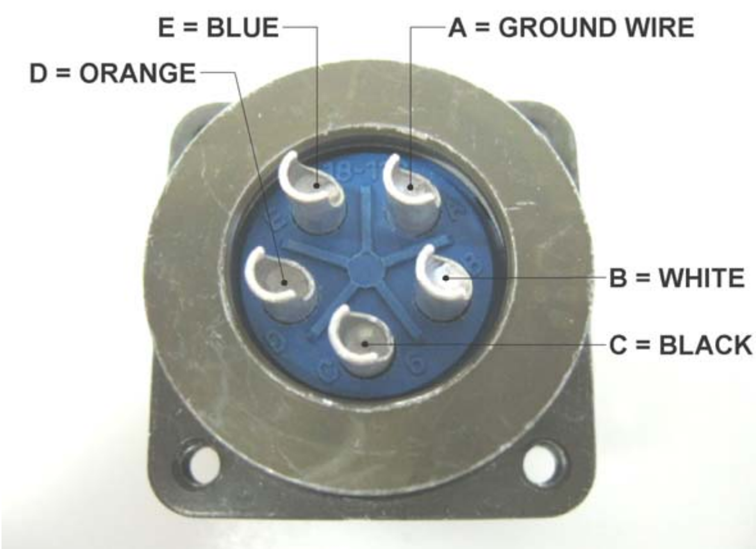
BAG #12 (Miscellaneous Hardware)
Screw, 8-32 x 1/2” Set S.S. 4
Screw, 6-32 x 1/2” Pan Head Phil S.S. 12
Lock Nut, 6-32 S.S. 12
Allen Key, 5/64”. 1

Carefully manufactured by:

M2 Antenna Systems, Inc.
4402 N. Selland Ave. Fresno, CA 93722
(559) 432-8873 Fax (559) 432-3059
Web: www.m2inc.com

5 PIN CONNECTOR WIRE DETAIL

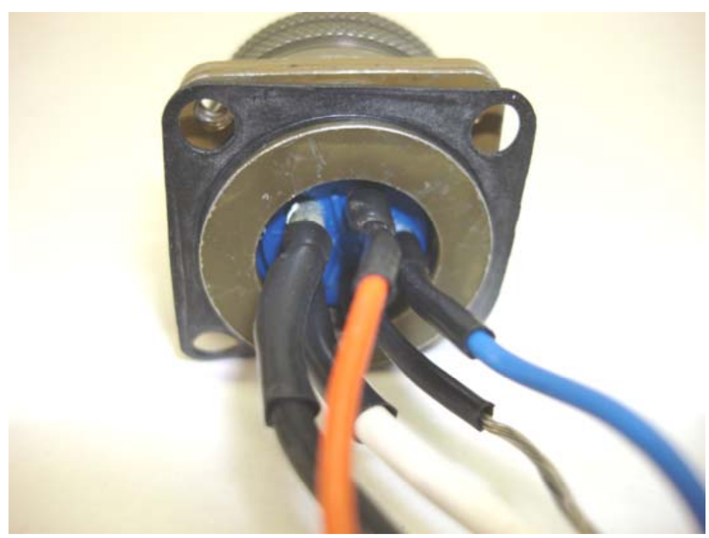




Note: Connector picture taken from back shell of right angle connector.

2. Match colors and letters and solder wires to connector pins as shown above. Use supplied shrink tubing (3/4” per wire) to cover solder connections.

1. Route cable thru connector assembly as shown above.



MAINTENANCE & SPARE PARTS LIST

90 day maintenance

1. Visual inspection of complete system, look for rust or corrosion and loose hardware.
2. Manually move each axis individually and LISTEN for smooth operation.
3. Check cables for wear and cracking.
4. Check each axis for physical looseness and or backlash (adjust if necessary).
5. Remove covers, check and clean any excessive foreign debris.
6. Grease main gear and worm gear.
7. Lubricate polarity chain with chain lubricant.
8. Check for proper operation of each axis.
9. Replace covers.

1 year maintenance

1. Visual inspection of complete system, look for rust or corrosion and loose hardware.
2. Manually move each axis individually and LISTEN for smooth operation.
3. Check cables for wear and cracking.
4. Check each axis for physical looseness and or backlash (adjust if necessary).
5. Remove covers, check and clean any excessive foreign debris.
6. Check AZ-1000 and EL-1000, thrust block oil-light bearings for wear.
7. Check main load bearings for each individual axis and look for radial slop and or bearing binding.
8. Grease main gear and worm gear.
9. Check physical limit switch operation.
10. Check for proper operation of each axis.
11. Replace covers.

SYSTEM SPARE PARTS LIST

AZ/EL motor gear box / thrust block assembly. 1
Bearing 3”, drive side / coast side.. 2
Reed switch (AZ/EL).. 4
Limit switch (AZ/EL)... 2
RC2800PRKX2SU.. 1

TROUBLESHOOTING

Troubleshooting

1. Motors not moving.
A. Check for voltage coming out of control box.
B. Check for voltage at motor **(AZ / EL=42 VDC POL=26 VDC).**
C. Check all wiring from control box to motor.
D. Check motor for binding.

2. No pulse from motors.
A. Check all wiring from reed switch to control box.
B. Replace reed switch.

3. Gear binding.
A. Check Gears for Grease.
B. Check gear bolts for looseness.
C. Check gears for foreign debris.
D. Adjust thrust block adjustment.

4. Excess backlash
A. Inspect worm and worm gear for wear.
B. Inspect for thrust block bearing wear.
C. Inspect system for loose hardware.
D. Adjust thrust block adjustment.

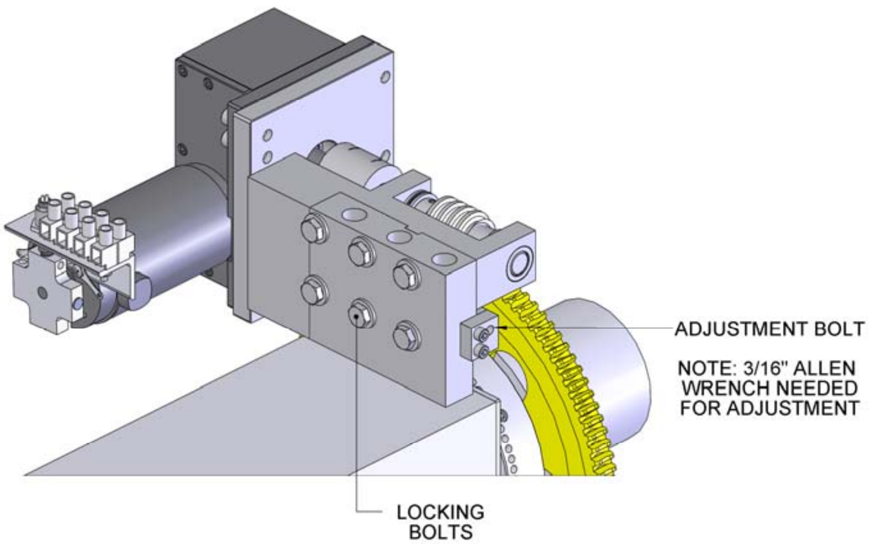
5. Excess 3” bearing movement
A. Inspect bearing for radial movement.
B. Replace 3” bearing assembly.

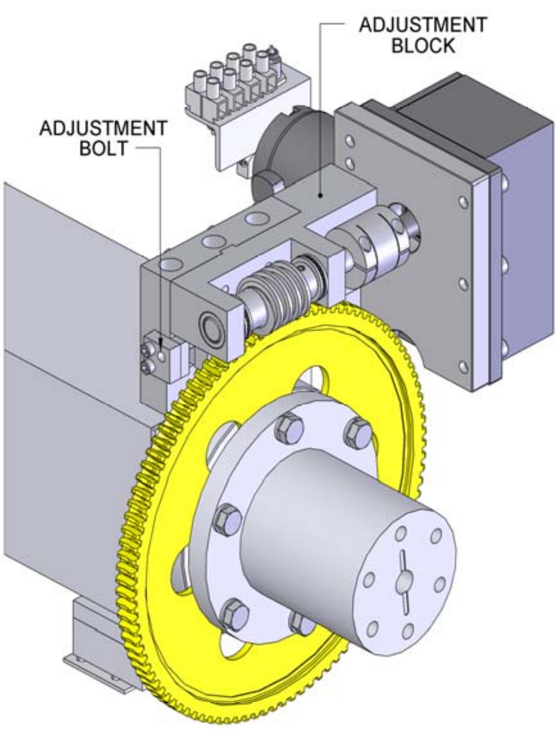
6. 3” Bearing Binding
A. Disassemble bearing assembly and inspect for lubrication and foreign debris. Reassemble and test. Replace if necessary.

For more complete maintenance and technical assistance, please contact M2 Antenna Systems, Inc. at **(559) 432-8873**.

.

WORM & WORMGEAR ADJUSTMENT





NOTE:
SOME PARTS ARE NOT SHOWN FOR CLARITY

Excessive backlash may develop after using system for some time. We have incorporated a built in backlash adjustment block to keep backlash at a minimum.

Please review drawings shown for more detailed information.

To adjust system:

1. Slightly loosen locking bolts to hand tight.

2. Use a 3/16" Allen wrench to turn adjustment bolt.

3. One full turn of the adjustment bolt will move adjustment block 0.010 of an inch.

4. Clockwise rotation of the adjustment bolt will move the adjustment block down, moving the worm closer to the worm gear and removing backlash.

5. Counter clockwise rotation of the adjustment bolt will move the adjustment block up, moving the worm away from the worm gear and creating more backlash.

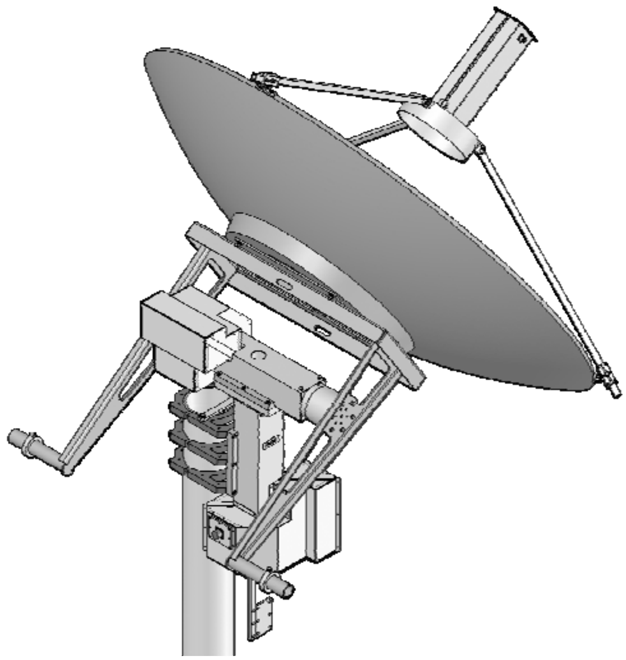
6. Adjustments should be made with the motor running. Use the motor drive sound as gauge for friction between worm and worm gear.

Note: To much friction may cause gear binding in rarely used sections of the worm gear. Some finesse maybe required.

7. Tighten locking bolts and test system. Listen for motor running sound for smooth system operation and minimal

WARRANTY INFORMATION

12 Month Limited Warranty



This warranty gives you specific legal rights. You may also have other rights which will vary from state to state or province to province.

M2 warrants the **3-Axis** Positioner unit against defects in material and workmanship for a **period of 12 months** from date of purchase. During the warranty period, **M2** will, at its option, either repair or replace products or components which prove to be defective. The warranty shall not apply to defects or damage resulting from:

- Improper or inadequate maintenance by user
- Improperly prepared installation site
- Unauthorized modifications or misuse
- Accident, abuse, or misapplication
- Normal wear

M2 specifically does not warrant this product for any direct, indirect, consequential, or incidental damages arising from the use or inability to use the product. Some states or provinces do not allow the exclusion or limitation of liability for consequential or incidental damages so the above limitation may not apply.

In the event repair or replacement are necessary, purchaser shall contact M2 for return authorization. In many cases this contact can simplify and expedite the repair / replacement process and help reduce costs and downtime.

The purchaser shall be responsible for packing the product properly for return and for charges to ship the product to **M2**. Always include with the shipment, a statement detailing the problem / failure and any other pertinent observations. Insuring the product for shipment is recommended. Use the original packing materials whenever possible. **M2** is responsible for charges **(in the United States)** to return the repaired / replacement product only where warranty service is involved.

M2 Antenna Systems, Inc. 4402 N. Selland Ave. Fresno, CA 93722
(559) 432-8873 Fax (559) 432-3059 Web: www.m2inc.com