

## W8IO – 815HD and 815HD-065 Roof Mount Tower Assembly and Installation

19 Jan 2017



**NOTE: The photos show the "X-Braces" on the inside of the legs. These have been moved to the outside of each leg. The photos will be updated when new photos are available. The 2 rotor shelves are now ¼" thick and are attached with 3/8" – 16 x 1" hardware.**

Please carefully follow these steps to properly assemble and install your heavy duty 8 foot roof mount tower.

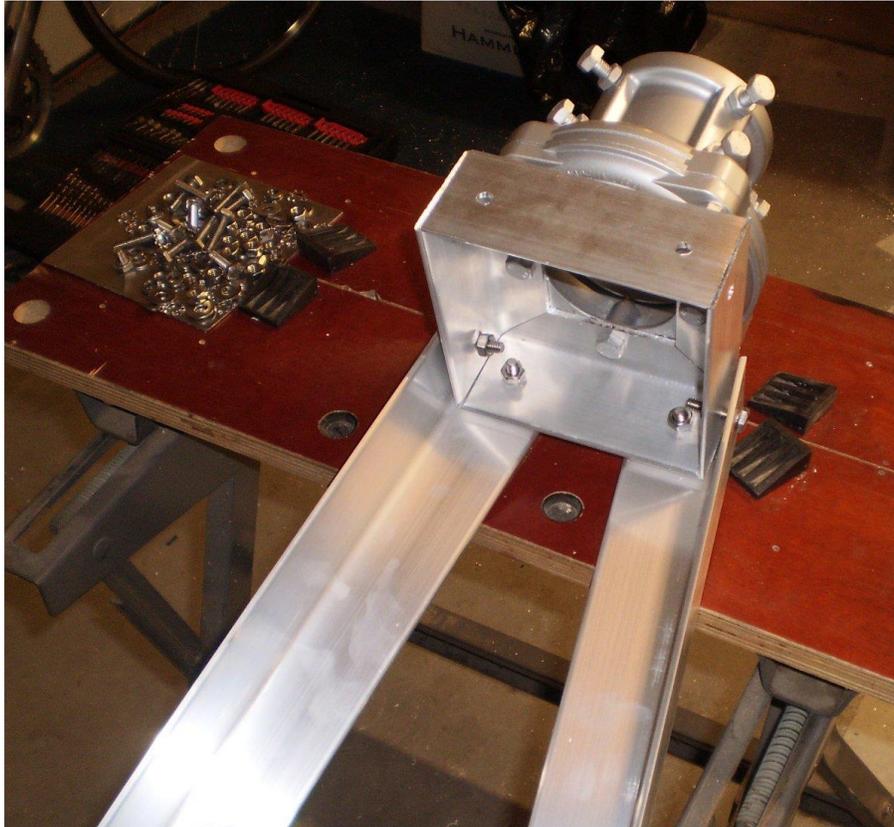
1. Remove all items from the packages and make sure all parts are there. Refer to the parts list at the end of this manual. Model IO-815HD-065 includes the Yaesu GS-065 Thrust Bearing. Model IO-815HD does not.
2. Begin by assembling the 4 top angle brackets to the bottom of the Yaesu GS-065 thrust bearing, using the 4 bolts and 4 lock-washers supplied with the bearing. Save the other parts for future use if you wish to eventually re-purpose the thrust bearing. Tighten all bolts securely, leaving equally spaced gaps at each corner.



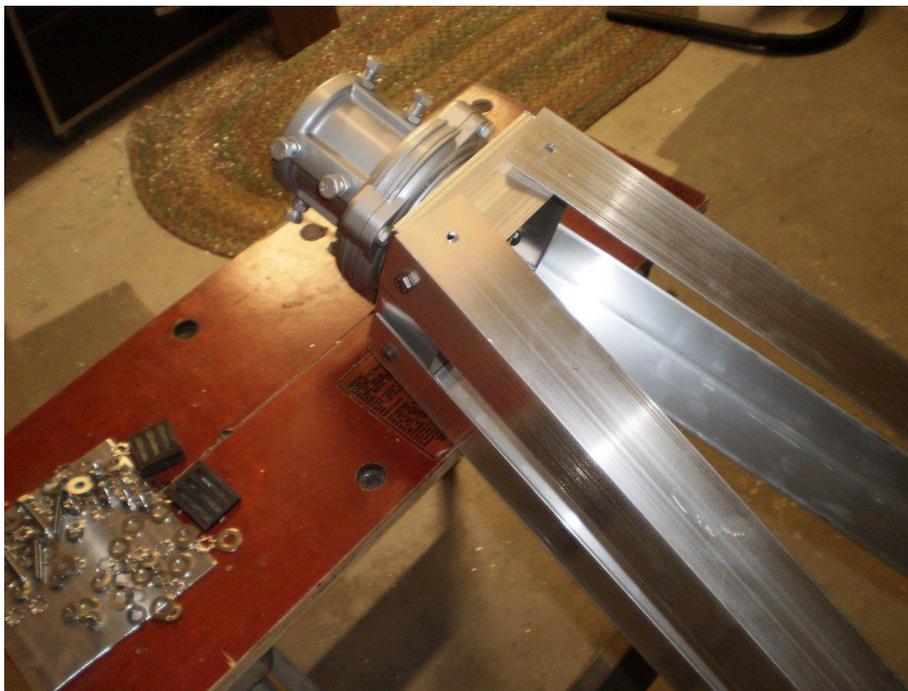
3. Assemble a right leg, a left leg, top shelf bracket, bottom shelf bracket (without rotor shelf mounting holes) and 2 cross braces together as shown below, using 4 each of the 5/16"-18 x 1" bolts, lock-washers and nuts. Assemble the cross braces together with a 5/16"-18 x 3/4" center bolt, then place the cross brace assembly on the floor. Place the 2 legs down onto the cross braces. Insert the four 5/16 inch bolts from underneath through each hole. Place the top and bottom shelf brackets onto the bolts, then place and loosely hand-tighten the nuts with lockwashers. **The legs should have the feet attachment holes facing the floor.**



4. Attach the leg assembly to the top angle bracket assembly as shown below using 4 each of the 5/16"-18 x 1" bolts, lock-washers and nuts. Loosely hand-tighten the hardware at this time.



5. Assemble a second leg assembly identical to the one assembled in Step 3. Lay this assembly on top of the first leg assembly. **The feet attachment holes should be facing up.** Attach to the top assembly as shown below. Use 4 each 5/16"-20 x 1" bolts, lock-washers and nuts. Loosely hand-tighten the hardware at this time.



6. Tilt the assembled structure upright and spread the legs apart by about 32 inches (similar to unfolding a step ladder). Assemble the cross braces **on the outside of the legs**, the remaining lower shelf brackets **on the inside of the legs** and upper shelf brackets (**on the inside of the legs**) on each of the 2 open sides as shown below, using 5/16"-20 x 1" bolts, lock-washers and nuts. Loosely hand-tighten the hardware at this time.



7. Attach the 2 each  $\frac{1}{4}$ " x 22" rotor shelves to 2 of the lower shelf brackets with 4 each  $\frac{3}{8}$ "-16 x 1" bolts, lock-washers and nuts as shown above. Verify that all rotor mounting holes are 3.31" (Yaesu) or 3.0" (Hy-Gain) apart, then tighten these bolts securely.



8. Attach the "V" braces to the lower shelf and adjacent legs with  $\frac{5}{16}$ "-18 x 1" bolts, lockwashers and nuts as shown above. Attach a foot on each leg with  $\frac{3}{8}$ "-16 x 1.25" bolts, lockwashers and nuts as shown above. Hand-tighten the hardware at this time.

9. Make sure that the tower is on a level surface. Place a level across the top of the thrust bearing, then tighten the 8 bolts that hold the top angle brackets to the 4 legs. There will be a small gap between the legs and the top brackets even when tight. Make sure that the thrust bearing AND rotor shelves are both level in 2 orthogonal directions. Securely tighten the remainder of the hardware at this time except for the 3/8" bolts that hold the feet.

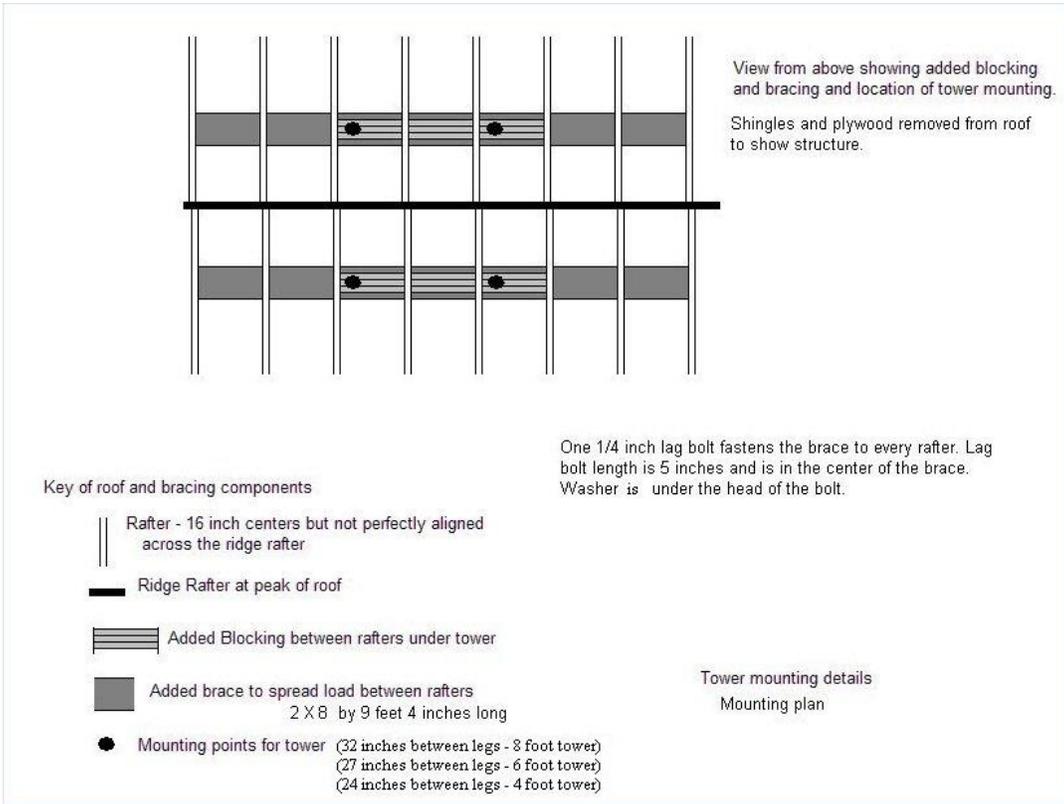
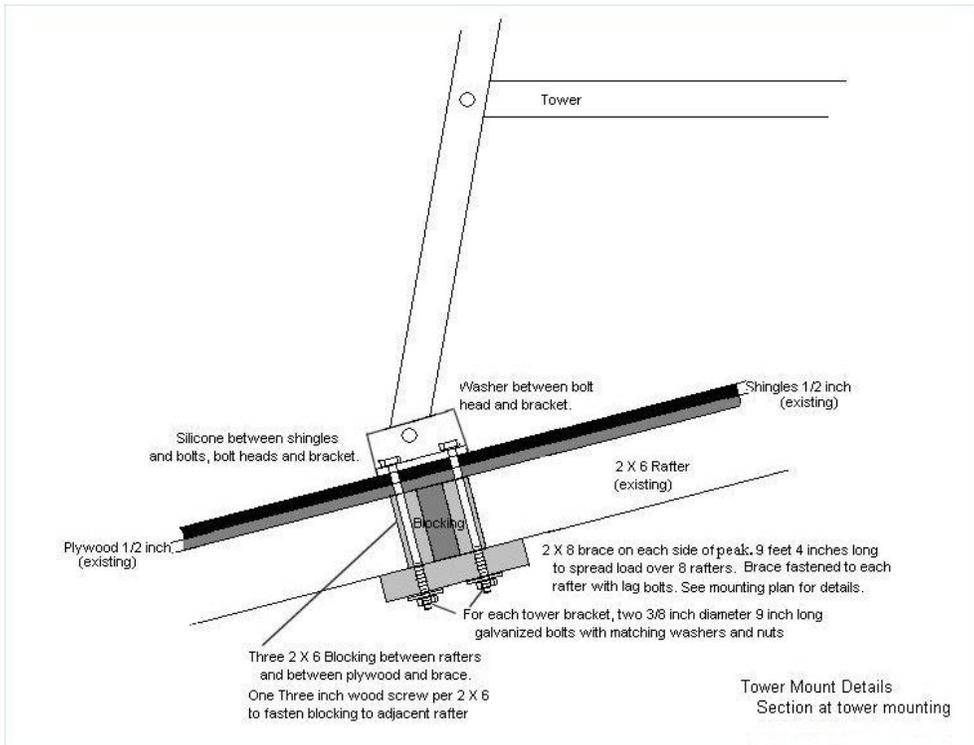


Installation

10. Install the rotor and mast to make sure everything fits and aligns with the thrust bearing. You can decide at this time if you wish to secure the rotor onto the rotor shelf before or after placing the tower on the roof. The IO-815HD roof tower weighs close to 70 pounds without the rotor or mast installed. We recommend that you have at least 4 people to lift and install this tower. **DO NOT ALLOW THE TOWER OR MAST TO COME INTO CONTACT WITH ELECTRICAL POWER LINES!**

11. Long 3/8" bolts are recommended to attach the tower to your roof. The feet mounting holes are drilled to accept 3/8" bolts. These may need to be enlarged if larger bolts are used.

12. Below you can view recommended mounting procedures for a sloped roof with asphalt shingles. Other mounting methods may be used depending on your particular roof.



One 1/4 inch lag bolt fastens the brace to every rafter. Lag bolt length is 5 inches and is in the center of the brace. Washer is under the head of the bolt.

Key of roof and bracing components

- || Rafter - 16 inch centers but not perfectly aligned across the ridge rafter
- Ridge Rafter at peak of roof
- ▨ Added Blocking between rafters under tower
- Added brace to spread load between rafters 2 X 8 by 9 feet 4 inches long
- Mounting points for tower (32 inches between legs - 8 foot tower) (27 inches between legs - 6 foot tower) (24 inches between legs - 4 foot tower)

Tower mounting details Mounting plan

**IO-815HD Parts List (per tower)**

Right Leg (1/4" x 2" x 2" x 96")	2	Lower shelf bkt drilled (3/16" x 2" x 2" x 22")	2
Left Leg (1/4" x 2" x 2" x 96")	2	Lower shelf bracket (3/16" x 2" x 2" x 22")	2
Top angle bracket (3/16" x 2" x 2" x 5")	4	Upper shelf bracket (3/16" x 2" x 2" x 15.5")	4
Rotor shelf square edges (1/4" x 2" x 2" x 22")	2	Cross braces (3/16" x 2" x 30")	8
Tower foot – square edges (2" x 2" x 6")	4	V braces (3/16" x 2" x 24")	8
5/16"-18 x 1" SS bolt	40	3/8"-16 x 1.25" SS bolt	4
5/16" split lock-washer SS	40	3/8"-16 x 1" SS bolt	4
5/16"-18 nut SS	40	3/8"-16 nut SS	8
Yaesu GS-065 with hardware ( <b>IO-810-065 only</b> )	1	3/16" split lock-washer SS	8