

610HD Compact Tower – Assembly and Installation – updated Sept 15, 2026

Please carefully follow the steps outlined below to properly assemble and install your heavy duty, roof mount tower. It is important to know that there are flat washers and nylon locking nuts for each bolt. The tower is designed to have the bolts start with a flat washer added and then enter from the outside and connect to the nuts on the inside. The only exception is the foot mounting. The flat washer is located in-between the leg and the foot. Note that the metals are “laser cut” and may have sharp edges so wear appropriate gloves then handling the metal. Where the cross braces and shelves bolt to the legs, you may need to feed the bolt in partially as you screw the nut on, as the area is congested. There are 3 types of bolts in this design: 5/16”-18 x .750”, 5/16”-18 x 1.00”, and 3/8”-16 x 1.00” (used to connect the feet), So the question of where to use the 1 inch and .750” long bolts? Here is the rule; if you are connecting 2 layers of aluminum – use .75 long bolts and if 3 sheets of aluminum – use 1.0” long bolts.

A second thing that is even more important to know is to NOT use a power driver to assemble the bolts and nuts. The hardware is stainless steel and in my experience is if you turn the bolt fast with a drill / nut driver, they tend to gall. When this happens the bolt and nut become inseparable and must be cut off with a disk grinder. Note that we include a anti-seize compound. Please use the nickel anti-seize on the threaded portions of the stainless-steel bolts.

1. Remove all items from the packages and compare them to the parts list at the end of this document to make sure all parts are present and identified.
2. Begin by assembling the 4 top angle brackets to the bottom of the GS-065 thrust bearing, using the 4 bolts and lock-washers supplied with the mast bearing. Note these are 8mm metric. Save the other parts (used for guy wires) in the bearing box to use when you connect the mast. Tighten all bolts securely, leaving equally spaced gaps at each corner. Notice how the sides of the collar pieces have an 8-degree draft angle built into the fabrication. This makes assembly easy and precise.



Figure 1



Figure 2

3. Determine which end of the legs are the top. The location of the hole relative to the top is shown in the Figure 3.

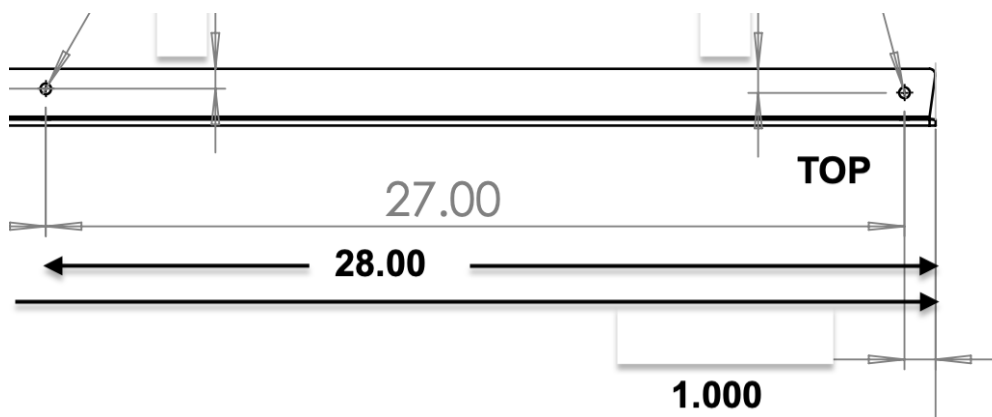


Figure 3.

4. Assemble *top* of the two legs into a top shelf collar bracket, together as shown in Figure 4.

NOTE: Because of a space constraint, The top collar section uses (8) 3/4" long 5/16 "

The 5/16"- 18 x 3/4" bolts, flat washers and lock-nuts bagged separately. Place the lock-nuts just slightly loose on these bolts.



Figure 4

5. Continue to assemble the bottom and top shelf bracket and 2 cross braces together with the 5/16"-18 x 1" bolts, flat washers and lock-nuts as shown in Figure 5.



Figure 5

6. Looking at the Figure 5, 6 and 7, notice how the left side of the tower's bottom and top shelf bracket and cross braces are assembled with two temporary 5/16"-18 x 1" bolts holding the top parts in place.



Figure 6



Figure 7

7. Attach the leg to the collar bracket and upper and lower shelf assembly as shown below in Figure 8

remembering to using the shorter 5/16"-18 x 3/4" bolts for the collar. Hand-tighten the hardware at this time

Figure 8

8. Repeat this same process to assemble the fourth leg assembly complete with upper and lower shelves and cross braces, identical to the one assembled in Step 7. Hand-tighten the hardware at this time.



Figure 9





Figure 10

9. As you can see by the Figure 10, the assembly has been rolled over 90 degrees so gravity will be in your favor to put on the last set of parts . Assemble the cross braces, upper shelf bracket and lower shelf bracket using 5/16"-18 x 1" bolts and locknuts. Hand-tighten the hardware at this time



Figure 11



Figure 12

10. Attach the 2 rotor shelves to 2 of the lower shelf brackets with 4 each 5/16"-18 x 1" bolts and locknuts as shown above in Figure 12. Verify that all rotor mounting holes are 3.31" (Yaesu) or 3.00" (Hy-Gain) apart, then tighten these bolts securely.





Figure 13 The finished 610HD Roof Tower Assembly.

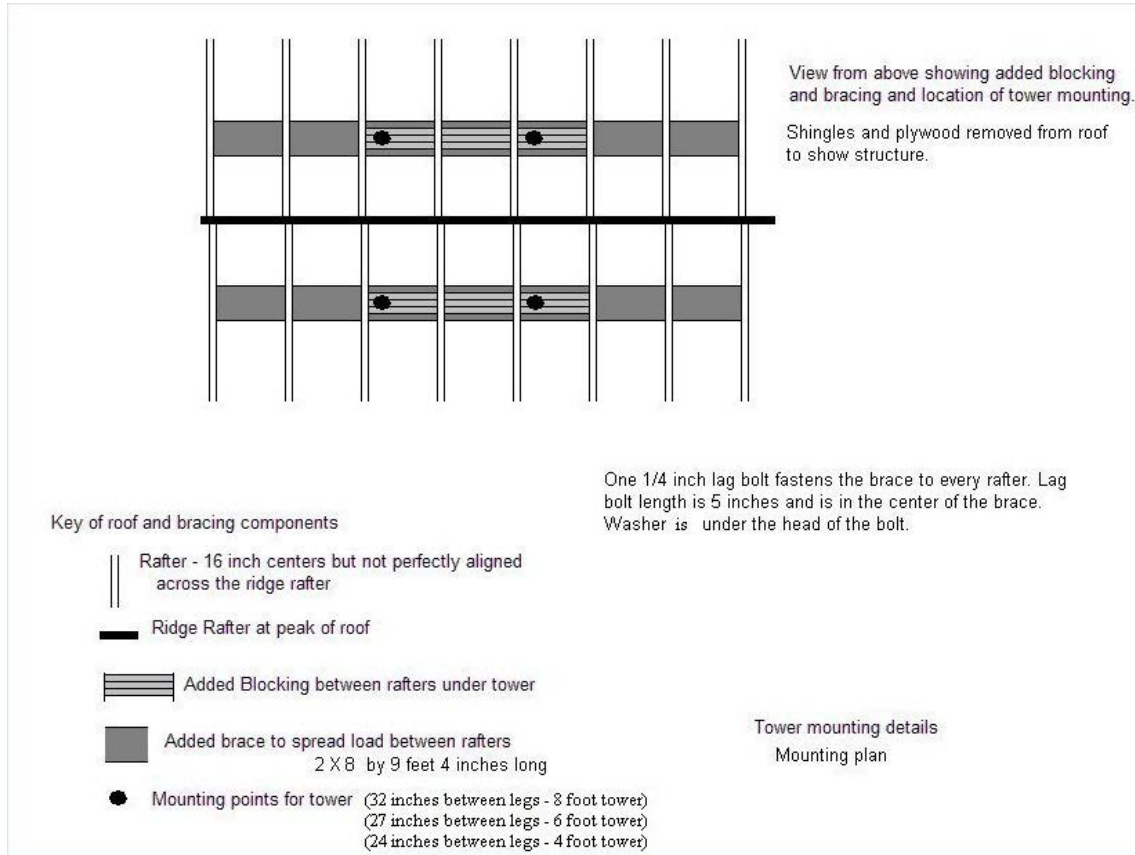
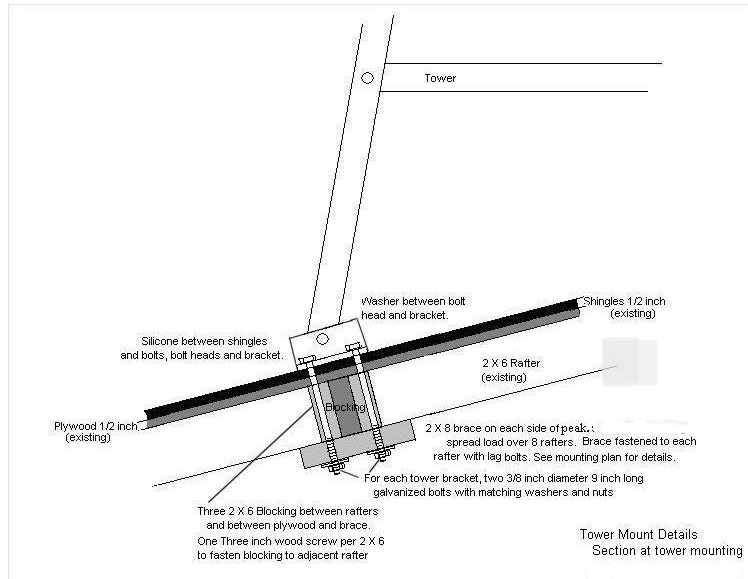
11. Attach a foot on each leg with $\frac{3}{8}$ "-16 x 1" bolts, locknuts as shown below. Note that the feet can mount two different ways depending on how you may want the tower to tilt. Hand-tighten the hardware at this time.

12. Install the rotor and mast to make sure everything fits and aligns with the thrust bearing. If you use a 2" OD mast you should find the mast will be 90 degrees vertical in relation to the rotator. If you have a different sized mast, there are instructions with most of the rotator manufacturers how to shim the rotator clamp. 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.

13. Once the tower is setting up on level ground you can finish tightening the bolts up making sure that all of the pieces are coming together flush and it feels sturdy.

610HD ROOF MOUNTING GUIDELINES

You will need to determine how you wish to attach the tower to your roof. In an illustration 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. The feet mounting holes are drilled to accept 3/8" bolts. Stainless steel 3/8"-16 x 12 inch long all-thread, with nylon locking nuts and flat washers are usually used as its difficult to find long bolts of the correct length. . Mastix "Pitch pads" are recommended for sealing the holes between the feet and around the shingles.



Please use the link: <https://carlsontowers.com/helpful-resources/> to download the latest installation manual. If you have a discrepancy in the parts list please contact sales@carlsontowers.com.

IO-610HD Parts List (per tower)

☐ Top collar bracket (2" x 1.2" x 5" x 3/16")	4	☐ Upper shelf (mitered) (2" x 2" x 12" x 3/16")	4
☐ Lower shelf (mitered) (2" x 2" x 16" x 3/16")	4	☐ Rotor shelf – (2" x 2" x 15 x 3/16") (13.8")	2
☐ Short Cross braces (2" x 20" x 3/16")	8	☐ Tower foot – (2" x 2" x 6" x 3/16")	4
☐ GS-065 with hardware	1		

☐ Hardware for collar and other 2 layers alum:	5/16"-18 x 3/4" SS bolt	24
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5/16" flat-washer SS	24	5/16" nylon lock-nut SS	24
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☐ Hardware for 3 layers alum:	
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5/16" "-18 x 1.0" SS bolt	8	5/16" nylon lock-nut SS	8
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5/16" flat-washer SS	8
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☐ Hardware for Collar:	
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5/16"-18 x 3/4" SS bolt (for collar)	4	5/16" flat-washer SS	4
5/16" nylon lock-nut SS	4		

Weights:

IO-045HD parts: with Mast Bearing:	20.1	IO-045HD parts: without Mast Bearing:	16.6
IO-610HD parts: with Mast Bearing:	22.9	IO-610HD parts: without Mast Bearing:	19.8
IO-810HD parts: with Mast Bearing:	28.7	IO-810HD parts: without Mast Bearing:	25.4
IO-815HD parts: with Mast Bearing:	36.8	IO-815HD parts: without Mast Bearing:	33.4

☐ Tower Legs (2" x 2" x 50" x 3/16")	4	14.0 lbs
☐ Tower Legs (2" x 2" x 74" x 3/16")	4	20.4 lbs
☐ Tower Legs (2" x 2" x 95" x 3/16")	4	26.8 lbs

☐ Mast-95 (1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 95"))	1	7.4 lbs
☐ Mast-72 (1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 72"))	1	5.6 lbs
☐ Mast-60(1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 60"))	1	4.7 lbs
☐ Mast-48 (1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 48"))	1	3.8 lbs
☐ Mast Clamp	1	1.0 lbs
☐ Fully Threaded Rod 3/8-16 x 12"	8	2.0 lbs

Customer Name: _____ Date: _____ Inspector: _____

Specifications	IO-610HD
Tower Height	6 feet (72 inches)
Shipping Weight	49 lbs.
Base Width	27 inches
Max. Antenna Wind Area at tower top	12 sq. ft. at 80 mph
Max. Antenna + Rotor + Mast weight	200 lbs.
Tower Top Width	5 inches
Rotor Plate location from Top	41.5 inches (bottom shelf)
Maximum Mast Diameter	2.5 inches
Maximum Mast Length	7 feet (84 inches)
Rotor Mounting Options	Hy-Gain or Yaesu
Thrust Bearing Mounting Options	Yaesu GS-065
Fixed (non-rotating) Mast Option	UMB-1
Leg and shelf material	6061-T6 aluminum (3/16" thick x 2" angle)
Foot material	6061-T6 aluminum (1/4" thick x 2" angle)
X-Brace material	5052-H32 aluminum (3/16" x 2" flat)
Assembly Hardware	5/16"-18 18-8 stainless steel
Foot to Leg hardware	3/8"-16 18-8 stainless steel
Nylon Locknuts - coat with Nickel Anti-Seize	Yes
Climbable	Yes – with tower climbing belt or harness