

810HD 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 .750 long bolts and if 3 layers 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 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

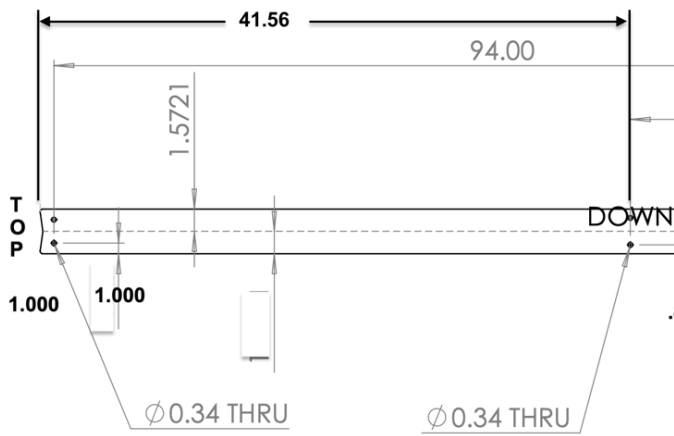


Figure 3

3. Determine which end of the legs are the top. The location of the first hole relative to the top (41.56 inches) is shown in the Figure 3. Mark the top of legs for reference.



3. For the 810HD, assemble two legs and a top shelf collar bracket, together as shown in Figure 4. Note that the top of the leg is marked top and will be connecting to the outside of the top shelf bracket.



Figure 4



Figure 5

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



Figure 6

5. Looking at the Figure 4, 5 and 6 below, 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 7

6. Attach the leg to the collar bracket and upper and lower shelf assembly as shown below in Figure 7 using the shorter 5/16"-18 x 3/4" bolts , flat washers and lock-nuts. Hand-tighten the hardware at this time



Figure 8

7. 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 6. Hand-tighten the hardware at this time.



Figure 9

8. As you can see by the Figure 9, 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 10



Figure 11

9. For the 810HD Attach the 2 rotor shelves to 2 of the *upper* shelf brackets with 4 each 5/16"-18 x 1" bolts and locknuts as shown in Figure 12. Because these brackets can be rotated to support both the Yaesu and the Hy-Gain type of rotators you will need to verify that the rotor mounting holes are 3.31" (Yaesu, Figure 11) or 3.00" (Hy-Gain) apart, and then lightly snug these bolts.



Figure 12

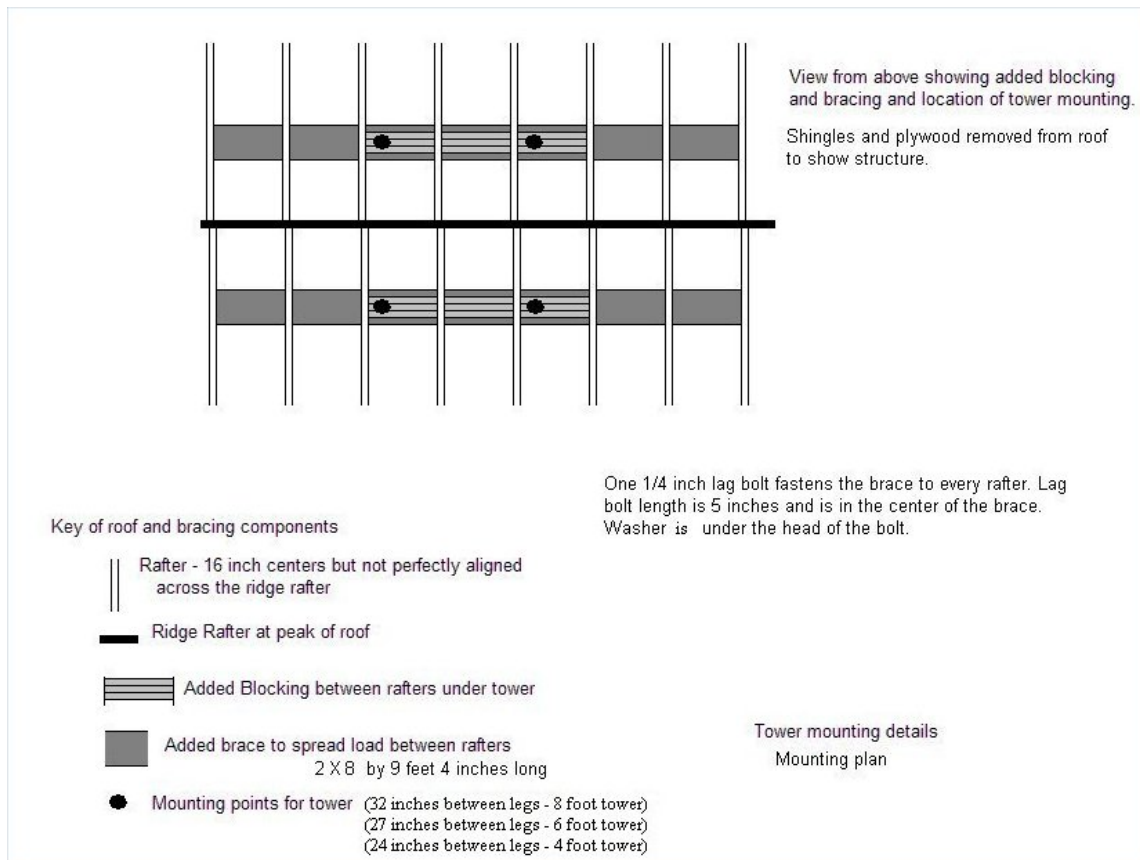
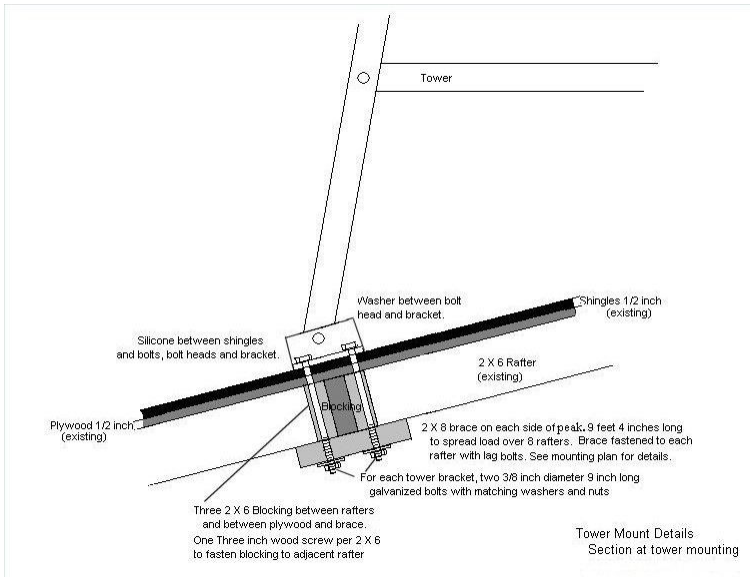
10. Attach a foot on each leg with 3/8"-16 x 1" bolts, locknuts as shown below. Hand-tighten the hardware at this time. Install the rotor and mast to make sure everything fits and aligns with the thrust bearing. You can decide at this time if you wish to secure the rotor onto the rotor shelf before or after placing the tower on the roof. 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.



Figure 13 The finished 810HD Roof Tower Assembly.

Roof Mounting Information

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 or galvanized 3/8"-16 x 10 to 12 inch long all-thread are recommended. For older roofs you may need to spread the load over 8 rafters (4 on each side).



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-810HD Parts List (per tower)

☐ Top collar bracket (2" x 1.2" x 5" x 3/16")	4	☐ Lower shelf (mitered) (2" x 2" x 22½" x 3/16")	4
☐ Long cross braces (2" x 30" x 3/16")	8	☐ Upper rotor support – (2" x 2" x 15 x 3/16")	2
☐ Tower foot – (2" x 2" x 6" x 3/16")	4	☐ Upper shelf (mitered) – (2" x 2" x 15 x 3/16")	4
		☐ GS-065 with hardware (optional)	1
☐ Hardware for collar and other 2 layers alum:		5/16"-18 x 3/4" SS bolt	24
5/16" flat-washer SS	24	5/16" nylon lock-nut SS	24
☐ Hardware for 3 layers alum:			
5/16" "-18 x 1.0" SS bolt	8	5/16" nylon lock-nut SS	8
5/16" flat-washer SS	8		
☐ Hardware for feet			
3/8"-16 x 1.0" SS bolt	4	3/8"-16 nylon lock-nut SS	4
3/8 flat washer SS	4		

Weights:

Hardware package with 24 count bolts:	765 g,	Hardware with 36 count bolts:	1008 g,
IO-045HD parts: with Mast Bearing:	20.1 lbs	IO-045HD parts: without Mast Bearing:	16.6 lbs
IO-610HD parts: with Mast Bearing:	22.9 lbs	IO-610HD parts: without Mast Bearing:	19.8 lbs
IO-810HD parts: with Mast Bearing:	28.7 lbs	IO-810HD parts: without Mast Bearing:	25.4 lbs
IO-815HD parts: with Mast Bearing:	36.8 lbs	IO-815HD parts: without Mast Bearing:	33.4 lbs

☐ 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"))	4	7.4 lbs
☐ Mast-72 (1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 72"))	4	5.6 lbs
☐ Mast-60(1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 60"))	4	4.7 lbs
☐ Mast-48 (1.5" sch 40 alum pipe (1.60" x 1.90" x .150 "wall x 48"))	4	3.8 lbs
☐ Mast Clamp	1	1.0 lbs
☐ Upper Shelve Option for 045	1	3.7 lbs

Customer Name: _____ Date: _____ Inspector: _____

Tower Height	7.92 feet (95 inches)
Shipping Weight	62 lbs.
Base Width	32 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	Yaesu
Thrust Bearing Mounting Options	Yaesu GS-065 2.5 inches
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	6061-T6511 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
Lockwashers/nylon locknuts coat with Nickle Anti-Seize	Yes
Climbable	Yes – with tower climbing belt or harness