



Installing The LM Series Self-Supporting Tower



Beacon Pole, LLC
TILT your way to the Top!
1-800-842-7622

VIDEO



Scan Me

Dear Friend,

We are excited that you purchased our LM-4 Series Self-Supporting Tower. We are a small, innovative Texas company employing modern CNC fabrication techniques and high strength materials to make self supporting towers that are build to last.



The LM-Series self-supporting towers offer an easier, safer, most economical and lower cost installation solution. We offer towers made in the USA with solid engineering solutions that rise to meet the industry standard. Although, there are several internet tower options on the market, there are three things that make our patented tower unique.

Safety. Our towers do not require a climber to mount the receiver/ antenna. The tower can easily be lowered by the owner, the receiver mounted to the tower, then erected vertically. Once vertical, the tower can be rotated from the ground to dial in the best reception for the receiver. That's the patented part of the design.

Appearance. There are no ugly supports or guyed wires necessary for anchoring the tower to the ground. Our towers are much more aesthetically appealing than anything else offered on the market. Our towers require a very limited amount of space.

Most Economical. For comparable towers of similar height, our towers are significantly less expensive and the installation process is much less complicated allowing for even more savings. Although less complicated, caution is necessary and safety is of utmost importance.

We can supply special heavier towers/masts for larger radio/antenna or when multiple units are required for AP and Backhaul, as in micro-pop applications. Please contact us with your special requirements.

You should be completely satisfied with your experience. If you have any questions about us, our products, or even shipping, please reach out! We support you every step of the way. If there is an issue, our customer service staff is ready to help you via email or by phone.

Sincerely,
Beacon Pole, LLC
beacon@b-pole.com
1.800.842.7622

Safety First

- *Please read through the instructions before beginning this project.*
- *We recommend a licensed, well qualified contractor or Internet Service Provider be employed to install the tower/mast, however, It is laid out here for a Do It Yourself Installation, which is the most economical option.*
- *Installers must wear appropriate personal protective Safety Gear Including:*
 - *Steel Toed Shoes*
 - *Safety Glasses*
 - *Work Gloves*
 - *Hard Hat*
- *Always consider that any tower/mast may fail in extreme circumstances. Never place any tower/mast where it could fall and strike power lines or buildings.*
- *Do Your Homework.*
 - *Get underground utilities marked before installation.*
 - *Mark pipes and electric cables before drilling or trenching.*
 - *Keep tower/masts away from power lines, height +15ft.*
- *Bury and cement the ground pole to the minimum specified depth.*
- *Ground the radio/antenna using a separate copper conductor and ground rod to local code.*
- *Install lightning/power surge protection in Ethernet cable at base of pole and where it enters a building.*
- *Do not overload the tower/mast with multiple or oversized antennas, lighting or cameras.*
- *Keep Alert.*
 - *Installation of any tower/mast should not be attempted in windy conditions. Don't raise or lower tower/mast in more than a gentle breeze.*
 - *Always stand and work to the sides of the Cheek Plates.*
 - *No one should stand under or in the path of the tower/mast while it is being assembled, raised, or lowered.*
 - *Inspect all tools, winch & accessories, cable, and ladder for wear or damage.*

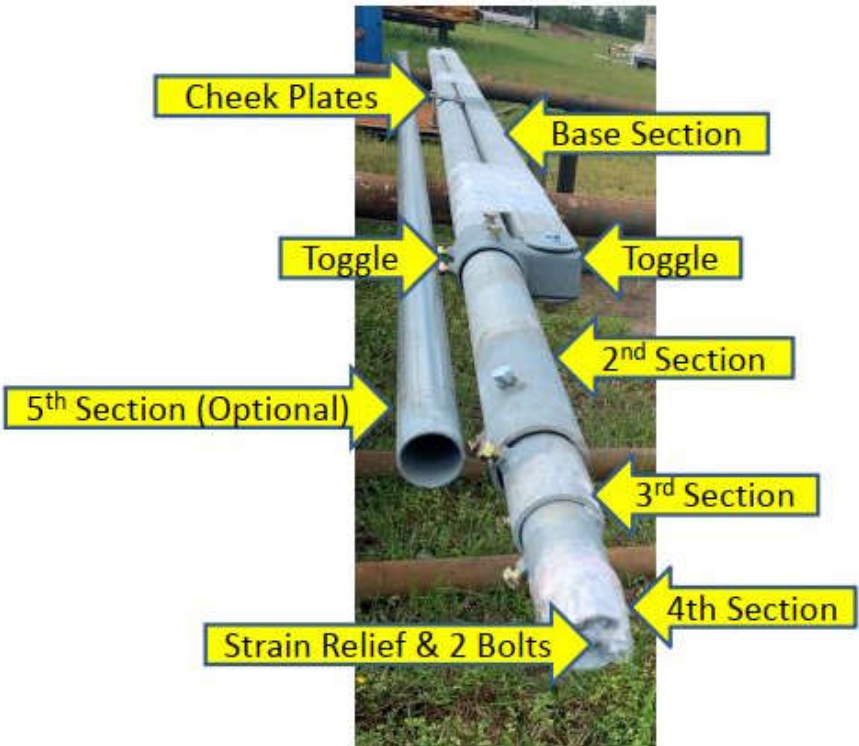
A Few Words About Wind....

Beaufort Number	Wind Speed (miles/hour)	Wind Speed (km/hour)	Wind Speed (knots)	Description	Wind Effects on Land
0	< 1	< 1	< 1	Calm	Calm. Smoke rises vertically.
1	1-3	1-5	1-3	Light Air	Wind motion visible in smoke.
2	4-7	6-11	4-6	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	12-19	7-12	Gentle Breeze	Leaves and smaller twigs in constant motion.
4	13-18	20-28	11-16	Moderate Breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	29-38	17-21	Fresh Breeze	Small trees begin to sway.
6	25-31	39-49	22-27	Strong Breeze	Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult.
7	32-38	50-61	28-33	Near Gale	Whole trees in motion. Some difficulty experienced walking into the wind.
8	39-46	62-74	34-40	Gale	Twigs and small branches break from trees. Cars veer on road.
9	47-54	75-88	41-47	Strong Gale	Larger branches break from trees. Light structural damage.
10	55-63	89-102	48-55	Storm	Trees broken and uprooted. Considerable structural damage.
11	64-72	103-117	56-63	Violent Storm	Widespread damage to structures and vegetation.
12	> 73	> 117	> 64	Hurricane	Considerable and widespread damage to structures and vegetation. Violence.

- *Wind force varies as the square of wind speed.*
- *The force on an object at 4 mph is 4 times greater than the force at 2 mph.*
- *The force on an object at 8 mph is 16 TIMES GREATER than the force at 2 mph.*
- *Never raise or lower a mast if the wind speed is greater than 8 mph*
- *The Ventusky App is good for wind speed, gusts, and forecasts.*
- *Wind is often calmest in the early morning.*

LM-4 Major Parts Identification As Shipped

- (1) Base Section
- (1) 2nd Section
- (1) 3rd Section
- (1) 4th Section
- (1) 5th Section (Optional)
- (2) Cheek Plates & Bolts
- (1) Toggle & Bolts
- (1) Strain Relief
- (2) Grub Bolts



One Year Limited Warranty

All of our towers/masts include a one year limited warranty on parts if installation is followed per these instructions.

Tools Required

- (1) 10' Heavy Duty Stepladder (not pictured)
- Equipment to Drill and Cement Base Section or Hire a Contractor To Complete This Portion
- (2) 10" Spud Wrenches
- (2) Magnetic Spirit Levels
- (1) Fish Tape 100'
- (1) 24-30" Steel Wrecking Bar
- (1) 24" Pipe Wrench (Aluminum if Available)
- Ethernet / Cat 5 or Cat 6 Cable (Usually Provided by your ISP)
- Conduit (Only if preferred, but not necessary)
- (1) 120v Electric Winch with Cable
- (1) Base Mounting Plate to Lower Tower/Mast
- (2) U-Bolts
- (1) 1-Ton Forged Lifting Hook/Safety Clip (See Picture on Page 6)
- (1) 5/16" Bow Shackle
- (1) Lifting Strap (See Picture on Page 6)
- (1) Strap Clamp with Buckle
- (1) 5" OD Pulley
- (1) Emergency Manual Winch Crank



DIY Installation Kit (Optional)

- (1) 12v Electric Winch with Cable (not pictured)
- (1) Base Mounting Plate to Lower Tower/Mast (not pictured)
- (2) U-Bolts
- (1) 1-Ton Forged Lifting Hook/Safety Clip
- (1) 5/16" Bow Shackle
- (1) Lifting Strap
- (1) Strap Clamp with Buckle
- (1) 5" OD Pulley
- (1) Emergency Manual Winch Crank

Call to order
979.865.4300
or order on-line at
www.b-pole.com



*Lifting Hook / Safety Clip and
5/16" Bow Shackle*

*NOTE: Shackle is a required
component to prevent cable abrasion.*



*Lifting Strap Configuration
for 2nd Section*

1. Select A Good Location...

- *Well away from power lines (tower/mast height + 15').*
- *Avoid Structures.*
- *Mark Underground Utilities*
- *Consider Distance to POE point (<200').*
- *Use a Hand-Digger to check for obstructions before power drilling.*
- *Separate sections in tower/mast shipping bundle, layout and inspect.*



2. Drill Foundation Hole

- *12" Diameter 6—7' Deep.*
- *6' is minimum for LM3 & LM4*
- *7' is minimum for LM5*
- *Clear out dirt to bottom.*



3. Place Bottom Section in Hole

- Use 8' long 2x10 to Guide Bottom Section into hole.
- Set Base Section against board.
- Carefully walk Base Section up (May take 3 persons) or use a loader.
- Don't stand under the Section while raising; use ropes.
- Center and Orient Bottom Section.
- Tower/mast folds down opposite Cheek Plates.
- Conduit, only if preferred but is not necessary. It is not included with the Installation Kit. If preferred for the Ethernet Cable, this is the time to at least set the elbow that will go through the cement.



4a. Plumb Base Section & Cement



4b. Cementing

- *Spirit Level to Plumb (both directions) after 12" of Cement Fill.*
- *Check Plumb after each foot of fill.*
- *Be SURE of orientation and plumb—There is no adjustment later.*
- *Double Check Conduit Section is appropriately in place.*



4c. Allow Cement To Cure 2-3 Days

- *Temperature affects curing time.*
- *Check premix bag for mix and cure details.*



5. Install 2nd Section

- *Check Base Section is Plumb.*
- *Using 10' Stepladder, Install 5" Pulley.*
- *Use Supplied 5/8" Bolt and Locknut.*
- *Snug but do not over-tighten Bolt.*
- *Pulley should turn freely.*
- *Note position of step ladder is to the side of the Cheek Plates.*



6. Lift 2nd Section

- *Bottom of 2nd Section has three holes.*
- *Place Winch opposite and below Cheek Plates.*
- *Place Toggle on 2nd Section 7-1/2' from end with holes.*
- *Snug Grub Bolts.*
- *Attach Lifting Strap near bottom (See Page 6 for Configuration).*
- *Align 2 small holes horizontally with larger hole facing down.*
- *Attach Lifting Strap and winch section into position between Cheek Plates.*
- *Install 1/2" Bolt through Cheek Plates and bottom section through outer most hole.*
- *Snug with 1/2" lock nut*



7. Winch 2nd Section To Vertical

- *Reinstall 5/8" bolt, washers and lock-nut through Clevis and Toggle*
- *Relocate Lifting Strap to just below Toggle.*
- *Toggle is 7.5' above base of 2nd Section.*
- *Winch 2nd section within about 4" of Pulley.*



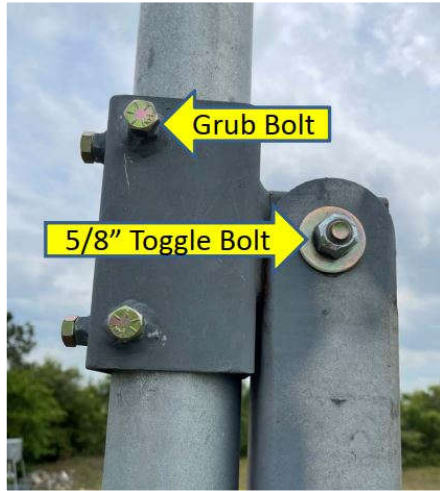
8. Attaching Toggle

- *Note installer's position is to the side of Cheek Plates.*
- *Snug Strap Clamp with Buckle around Base and Second Sections about 18" below Pulley (See Page 6 for Configuration).*
- *Remove 5/8" Bolt and Pulley.*
- *Loosen Toggle and lower into clevis at top of 1st Section.*
- *Reinstall 5/8" bolt, washers and locknut through clevis and Toggle.*
- *Strap Clamp may be moved up or down to align holes.*
- *Tighten all four toggle bolts.*
- *Note that 2nd section remains bolted to Cheek Plates outermost holes.*



9. Toggle Connection Completed

- *Toggle in place with 5/8" bolt, washers and locknut.*
- *Snug up locknut to the point where washers can't be turned by hand.*
- *Tighten 4 x 1/2" Grub Bolts on toggle.*



10. Lowering 2nd Section

- *Move Winch to just below Cheek Plates on opposite side.*
- *Place Lifting Hook/Safety Clip through large hole in 2nd Section as shown.*
- *Check Winch is ready.*
- *Remove 1/2" Bolt through Cheek Plates and 2nd Section.*
- *The load is now on the Winch.*
- *Reinstall 1/2" Bolt through bottom Cheek Plate holes.*
- *Pull cable out to lower top of 2nd Section.*
- *Note position of installers to sides of Cheek Plates.*



11. Install 3rd and Subsequent Sections

- *Locate 3rd Section (2-7/8" OD) Mark a line 24" from bottom (end without Grub Bolts).*
- *Set ladder to side of 2nd Section, within reach of Grub Bolts. Loosen Grub Bolts several turns.*
- *Insert end of 3rd Section into 2nd Section to 2' line and tighten Grub Bolts (About 40 ft-lbs.).*
- *Adjust Winch to facilitate insertion of next Sections.*
- *4th Section is 2-3/8" OD.*



12. Running Cable and Ground

- *Optionally, Ethernet Cable may be run inside tower/mast.*
- *Push Fish Tape through tower/mast from terminal end to pull cable and ground through.*
- *Install Strain Relief at top of tower/mast to support Ethernet Cable.*



13. Insert Radio and Secure Cable

- *Adjust Azimuth to approximate Final Compass Bearing.*
- *Note Drip Loop.*



14. Raising & Securing the Tower/Mast

- *Winch tower/mast to vertical. Tower/mast will bow quite a bit while near horizontal.*
- *Stop Winch when 2nd section enters between Cheek Plates. Don't over pull.*
- *If necessary, use wrecking bar to align bottom of second section between Cheek Plates.*
- *If necessary, use Strap Clamp to pull section fully into position between Cheek Plates.*
- *Install ½" x 4-½" Bolt through outermost Cheek Plated holes as shown to secure 2nd Section (Don't disconnect winch before this step is complete).*
- *NOTE – No bolts pass through 2nd Section.*
- *The bottom Cheek Plate Bolt is centered below 2nd Section .*



15. Adjusting Azimuth

- *Using stepladder, loosen the four Grub Bolts on the Toggle.*
- *There will be an audible “click” as the 2nd section drops to rest on the 1/2” x 4.5” center (lower cheek plate bolt.)*
- *2nd Section is now resting on the bottom ½” bolt through the Cheek Plates, and is free to rotate.*
- *Use 24” Pipe Wrench to engage 2nd Section above Cheek Plates, and rotate the section as needed to maximize signal strength.*
- *Re-tighten the 4 Grub Bolts on the Toggle (30 ft-lbs).*
- *Install 2 each ½” x 1- ½” Bolts nearest the Base Section and snug (Do not over tighten).*



16. Preparing to Service the Radio: Center Lift Hole

- *Inspect winch for damage and wear; install beneath cheek plates.*
- *Check to be sure lift hole is centered between cheek plates and facing out.*
- *If not, loosen 2 rear (nearest base section) grub bolts on cheek plates.*
- *Loosen 4 grub bolts on toggle.*
- *Using a pipe wrench, rotate 2nd Section to center lift hole.*
- *Re-tighten 4 grub bolts on toggle, and connect winch hook.*
- *Before lowering mast, always insure that 4 Grub Bolts on Toggle are tight!*



17. Lowering Tower/Mast To Service Radio

- *Check that large hole in 2nd Section is centered and facing out between Cheek Plates so that Lifting Hook can be inserted (See Page 6 Picture for Configuration).*
- *If not, loosen Toggle Grub Bolts and rotate 2nd Section as needed to center large hole between Cheek Plates.*
- *Re-tighten Toggle Grub Bolts*
- *Before lowering tower/mast, always insure that 4 Grub Bolts on Toggle are tight.*
- *Connect winch hook through lift hole.*
- *Remove outboard (farthest from base) ½" bolt through cheek plates.*
- *Let out a few inches of winch cable*
- *Use pry bar to push base of 2nd section out until cable is tight.*
- *Let cable out and rest mast terminal end on sawhorse.*



Beacon Pole, LLC is Affiliated with J&G Sales, Inc.

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