

NRG Systems 60m XHD

Goalpost Boom Instructions

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Goalpost Boom Instructions

INTRODUCTION

Goalpost booms are designed for power performance measurements, to meet the requirements of IEC 61400-12-1 Ed. 1.0. This assembly supports two anemometers at 60 meters above the tower base. Configurations of this boom are available for Thies or WindSensor anemometers.

WARNING AND NOTICES

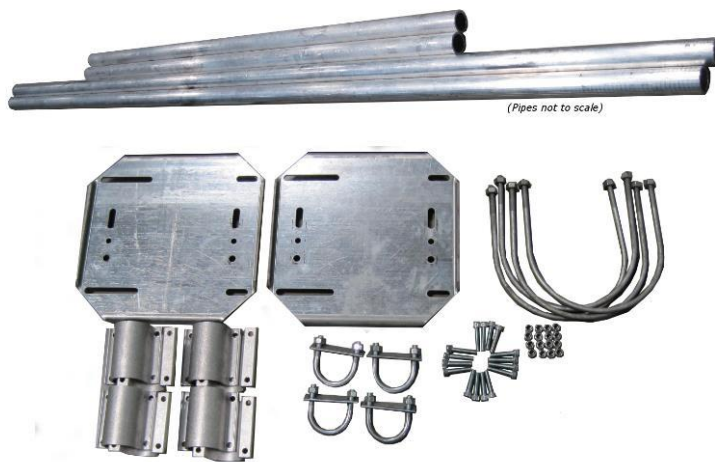


Notes throughout the document.

Warnings throughout the document.

MATERIALS & TOOLS

In the Kit(s)



Required Tools

Tools

- 1) 1/8" Ball End Hex Key (Allen Wrench) for tightening set screws in adapters
- 2) Tape measure
- 3) Torque Wrench (minimum 11 ft-lbs (15 N-m))
- 4) 1/4" Hex Drive Bit (to fit torque wrench) for Mega-Gridlock Clamps
- 5) 1/4" Ball End Tee Handle Hex Key
- 6) 11/16" Deep Socket Nut Drivers (to fit torque wrench) for tightening 8-inch U-Bolts
- 7) 1/2" Socket Nut Driver (to fit torque wrench) for tightening 2-inch U-Bolts.
- 8) Pliers (for removal of e-clips)
- 9) Electrical tape



SECTION 1: PROCEDURE

Step 1: Unpack boxes

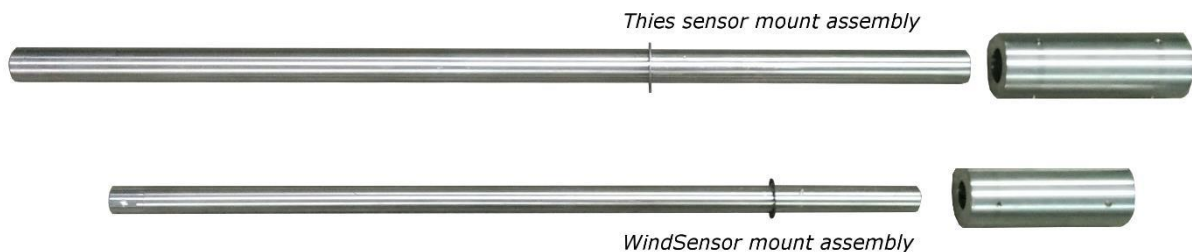
- 2 - Crossbars (8 ½ foot pipes)
- 2 - Uprights (5 foot pipes)
- 2 - Brackets (12" X 12")
- 4 - 2-inch U-Bolt/nut sets
- 4 - 8-inch U-Bolt/nut sets
- 8 - aluminum pipe clamshell clamps
- 16 - nuts (5/16-18)
- 16 - Socket Head Cap Screws (5/16-18 x 1 ½)
- 16 - Socket Head Cap Screws (5/16-18 x 1 ½)

The Thies configuration includes:

- 2- Adapters (2 ½" diameter X 7")
- 4 -¼-20 x ¼ set screws
- 4 -¼-20 x 5/8 set screws
- 2- Stems (1 5/16" diameter x 3 ft)
- 2- e-clips (for 1 3/8" shaft)

The Windsensor configuration includes:

- 2- Adapters (2 3/8" diameter X 6")
- 4- ¼-20 x ¼ set screws
- 4- ¼-20 x 5/8 set screws
- 2- Stems (1" diameter x 2 1/2 ft)
- 2- e-clips (for 1" shaft)





Step 2: Assemble Goalpost Boom

1) Lay the four pipes out in a flat area

2) Install clamps

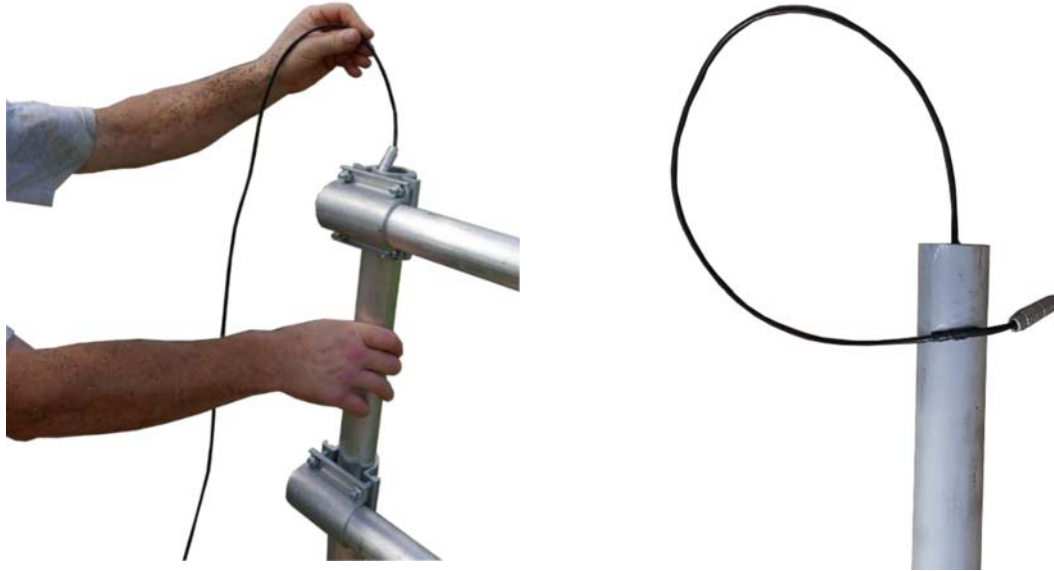
- a. Set up a pair of pipe clamps at a time
- b. Face the screws the same way on all of the clamps
- c. The nuts are captured by the clamp, so only a ¼" hex drive or bit is needed
- d. Start with the bottom corners of the structure
- e. Keep the two faces of the clamp parallel to each other
- f. Align the clamps with the ends of the pipe
- g. Tighten enough to grip but still slip at this point

3) Set distance from cross bar bracket to cross bar bracket at 15 inches



4) Feed sensor cables up through the bottom of the uprights

- h. Turn the boom upside down and feed the sensor cables through
- i. Right the boom carefully so as not to damage cables
- j. Tape the sensor cables temporarily



5) *Adjust tower height*

- k. Remove the top tube section of the tower (or don't install it in the first place).
IMPORTANT: The Goalpost boom for the 60mXHD was not designed as an additional tube on the tower or to be attached to the current top tube design. It must be connected to the 8 inch tube containing the #6 guying to allow for adjustment. Do not connect it to the traditional top tube of the tower that is only fastened with screws.

6) *Mount the Goalpost Boom on the tower*

- l. Lay both brackets on the top tube in the same orientation with the long slots crossing the tower axis. The lower bracket should be placed at a distance from the top of level 6 guyring to the center of the bracket being 4' $\frac{3}{4}$ " (1.24 m). All measurements can be found in the Goalpost Compliance drawing shown on page 8 below.





- m. Use the 8-Inch U-bolts to hold the brackets and align them in plane with one another
- n. Bottom edge of lowest crossbar should be 1.24m (48 $\frac{3}{4}$ ") from top of guy ring
- o. Brackets should be 15 inches from center to center
- p. U-bolts should be finger tight at this point
- q. Lay the boom on the brackets
- r. Install the 2 inch U-bolts
- s. Measure on diagonals to check for squareness; loosen U-bolts and Grid-lock clamps to square up and center the boom on the tower, then retighten
- t. Torque all U-bolts and Grid-lock clamp bolts @ 11 ft-lbs. (15 N-m)

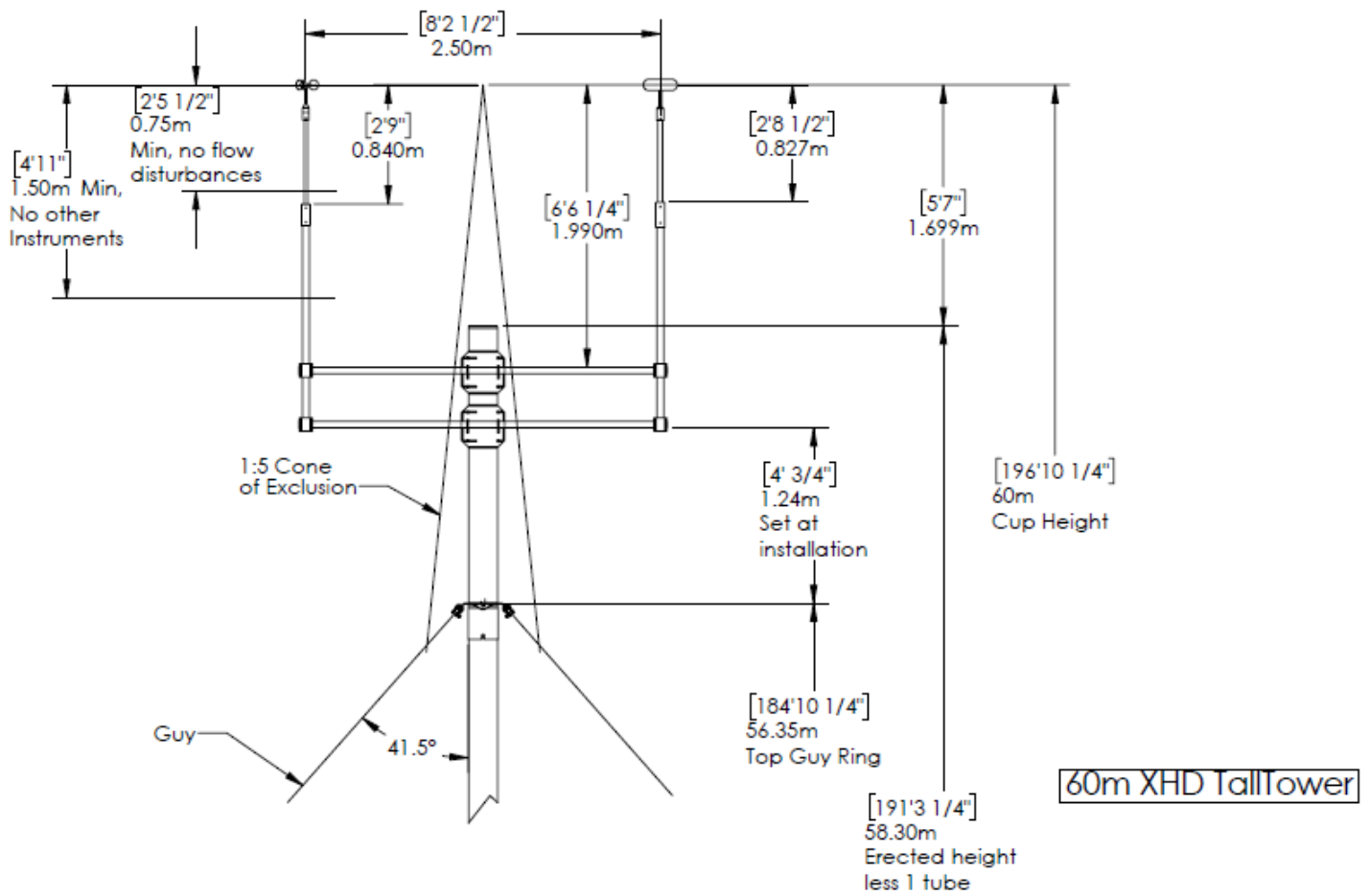
7) Mount sensors on boom

- u. Run connector through sensor stem assembly
- v. Mount stem assembly on boom, tighten set screws
- w. Install sensors
- x. Test sensors using data logger



Section 2: Drawings

Goalpost Boom Compliance Drawing





Goalpost Boom Thies and Windsensor Combo

