



## 2.4 m Side Mount Boom Lattice Installation

For NRG Boom Kits #7372/#9334, #7373/#9335, #7374/#9336, #14027

### INTRODUCTION

Lattice booms are used to mount anemometers and wind direction vanes to lattice towers. Made of galvanized steel, the 2.4 m (95 inches) boom resists corrosion and holds sensors away from tower to avoid tower shadowing effects.

#### **Booms #7372, #7373, #7374 | 1/2" Diameter Mounting Stem**

The 1/2 inch mounting stem is for NRG Class 1, #40C, 200P, & 200M sensors.

The overall height is 18.7 inches (47.50cm). Height of cup centerline is 20 inches (50.8 cm) above the 3/4 inch boom cross section.

#### **Booms #9334, #9335, #9336 | WindSensor Extension**

This boom includes an extension piece to mount a WindSensor P2546 anemometer to the 95" boom.

Using the WindSensor extension, the mounting stem is 11.4 inches (28.96 cm) high. Height of the cup centerline is 20 inches (50.8 cm) above the boom cross section.

- To mount a Thies FCA, use kit #9334 and add Thies adapter #9344.

#### **Boom #14027 | 1" Diameter Mounting Stem**

The 1 inch mounting stem is for the NRG S1 anemometer.

The overall height is 14.23 inches (47.50cm). Height of cup centerline is 21 inches (53.3 cm) above the 1 inch boom cross section.



## 2.4m Boom | Lattice Towers

### INSTALLATION – SINGLE BOOM

#### Step 1.1 | Unpack Box

##### ***Box of 1 Boom Contents (Kit #7372/#9334)***

- 8 Sets of 1/2" Bolts/Nuts/Washers
- 4 Slotted Strut Channels
- 2 Strut Channel 90° Bracket
- 8 3/8" flat washers
- 4 U-bolts | 1" diameter
- 4 U-bolts | 2" diameter
- 1 Triangular boom leg assembly (Part A)
- 1 Boom extension with 90° bend (Part B)
- 2 Screws for mounting Part A to Part B
- 1 WindSensor 25mm mounting adapter (Kit #9334 only)



## 2.4m Boom | Lattice Towers

### Step 1.2 | Install the Boom Extension (Part B) onto the Boom (Part A)

Locate the 5-holed sleeve on the end of Part A. The two holes for the #10-32 self-tapping screws on the boom sleeve should be oriented toward the top of the tower (Figure 2).



*Figure 1 | Boom sleeve with holes visible*

Insert Part B into the 5-holed sleeve and align with the stem shaft pointing straight up. Line up the holes in the straight pipe of Part B to the holes in the sleeve.

Using a 5/16" nutdriver, carefully install the 2" self-tapping screws into the holes in the sleeve (Figure 3). Be careful not to overtighten and strip the holes in the sleeve.



*Figure 2 | Installing the self-tapping screws*



## 2.4m Boom | Lattice Towers

### Step 1.3 | Assemble the Mounting Brackets

Fasten together (2) strut channels to form a right angle using a 90° strut channel accessory and (4) sets of 1/2" hardware. Use 3/4" wrenches to tighten the hardware (Figure 3). The open side of the strut channels should be facing inward. Repeat so that you have (2) L-shaped pieces assembled (Figure 4).



*Figures 3 & 4 | Assembling the brackets & Completed brackets*



## 2.4m Boom | Lattice Towers

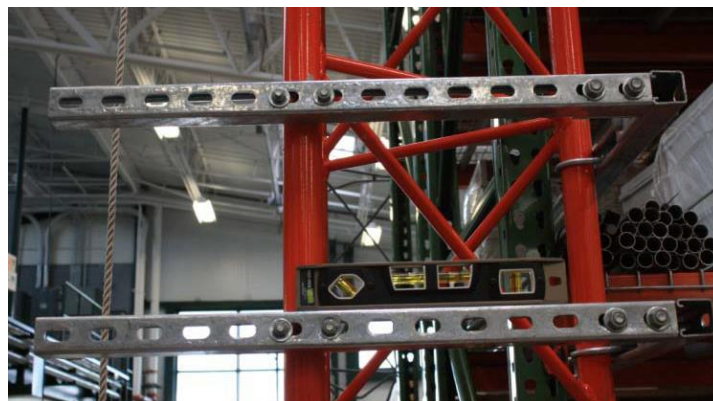
### Step 1.4 | Attach Mounting Brackets to the Tower

Fasten both brackets to the tower, 9" apart from each other, using the 2" dia. U-bolts (Figure 5).



*Figure 5 | Brackets attached to the tower*

Once loosely secured, level the brackets and verify that they are parallel to each other (Figure 6). Tighten the U-bolts and secure the brackets.



*Figure 6 | Leveled & mounted brackets*



## 2.4m Boom | Lattice Towers

### Step 1.5 | Attach the Boom to the Mounting Brackets

Attach the appropriate boom extension and sensor to boom.

Fasten the boom to the bracket using (4) 1" dia. U-bolts (Figure 7). Make sure boom is level before fully tightening the boom to the bracket.



*Figure 7 | Attaching the boom to the brackets using U-bolts*



## 2.4m Boom | Lattice Towers

### INSTALLATION – DOUBLE BOOMS

Sometimes it is advantageous to mount two booms at the same height. NRG offers four kits to mount 2.4m booms onto lattice structures: #7373/#9335 (180° orientation) & #7374/#9336 (120° orientation).

- Kits #7373 & #7374 are for NRG instruments that mount to 1/2" diameter pipe.
- Kits #9335 & #9336 are for WindSensor anemometers and also include a WindSensor mount #9165 for each boom.
- To mount a Thies FCA, use kit #9335 or #9336 and add Thies adapter #9344.

#### Step 2.1 | Unpack Box

##### ***Box of 2 Booms Contents (180°)***

- 16 Sets of 1/2" Bolts/Nuts/Washers
- 6 Slotted Strut Channels
- 4 Strut Channel 90° Bracket
- 16 3/8" flat washers
- 8 U-bolts | 1" diameter
- 8 U-bolts | 2" diameter
- 2 Triangular boom leg assemblies (Part A)
- 2 Boom extension with 90° bend (Part B)
- 4 Screws for mounting Part A to Part B
- 2 WindSensor 25mm mounting adapters (Kit #9335 only)

##### ***Box of 2 Booms Contents (120°)***

- 16 Sets of 1/2" Bolts/Nuts/Washers
- 4 Slotted Strut Channels
- 16 3/8" flat washers
- 8 U-bolts | 1" diameter
- 8 U-bolts | 2" diameter
- 2 Triangular boom leg assemblies (Part A)
- 2 Boom extension with 90° bend (Part B)
- 4 Screws for mounting Part A to Part B
- 2 WindSensor 25mm mounting adapters (Kit #9336 only)





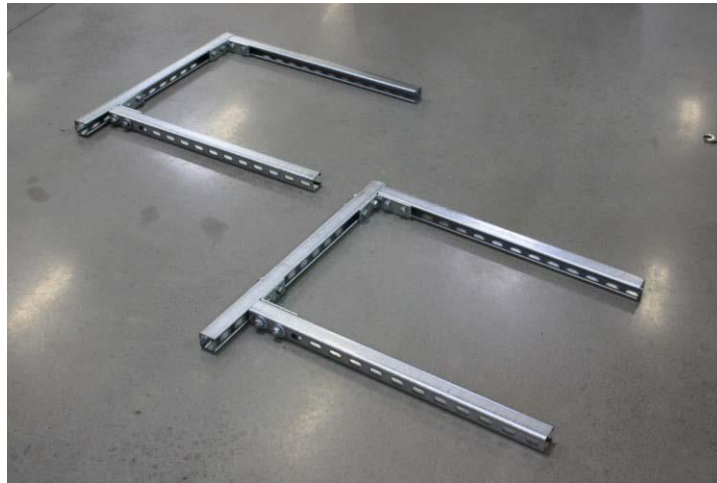
## 2.4m Boom | Lattice Towers

### Step 2.2 | Assemble the Brackets

#### ***180° Orientation***

Assemble the mounting brackets using the 90° corner pieces and 1/2" hardware. See Step 1.3 and Figures 3 & 4 for more details.

When finished, the assembled mounting brackets should form square “U” shapes (Figure 8). Overall width depends on the dimensions of the lattice structure.



*Figure 8 | Assembled mounting brackets*

#### ***120° Orientation***

The strut channels bolt directly to the tower, so no pre-assembly is needed.





## 2.4m Boom | Lattice Towers

### Step 2.3 | Mount the Brackets to the Tower

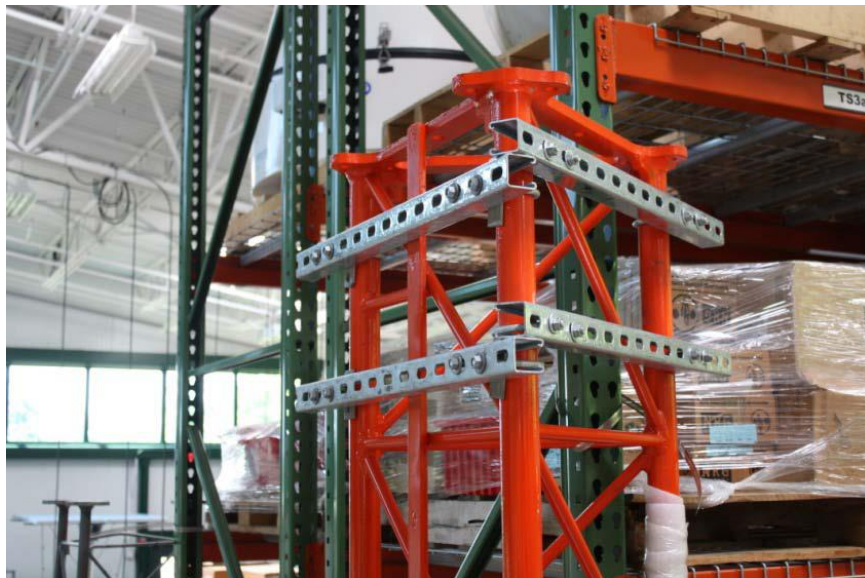
#### **180° Orientation**

Fasten both brackets to the tower, 9" apart from each other, using the 2" dia. U-bolts. Once loosely secured, level the brackets and verify that they are parallel to each other.

Tighten the U-bolts and secure the brackets.

#### **120° Orientation**

Fasten 2 strut channels 6" apart to the tower using (2) 2" U-bolts. Fasten the remaining strut directly above the first strut on the adjacent side.



*Figure 9 | Bracket assemblies attached to the tower*

### Step 2.4 | Attach Sensors & Booms to Mounting Brackets

Attach the appropriate boom extensions and sensors to boom.

Fasten each boom to the brackets using (4) 1" dia. U-bolts. Make sure boom is level before fully tightening the boom to the bracket.



### SENSOR REPLACEMENT

Sensor maintenance/replacement for lattice booms is an easy process that can be performed up-tower without having to fully disconnect the boom. This process is easiest with the assistance of a rope and pulley.

#### Step 3.1 | Attach Rope & Pulley

Attach a pulley to the lattice tower at least 1m directly above the boom.

Attach one end of the rope at an arm's length (balancing point) to the top of the boom. Tighten rope and tie off loose end to hold the boom.

#### Step 3.2 | Remove Upper U-bolts

Remove both (upper) U-Bolts holding the boom to the top strut channel.

Ensure that the rope is secure enough to hold the boom steady. Loosen the (lower) U-bolts holding the boom to the bottom strut channel enough to allow the boom to pivot downwards.

#### Step 3.3 | Lower/Pivot the Boom Downwards

Use the rope to lower the end of the boom downwards. Once the boom shaft is vertical, tie off the rope and perform the sensor replacement.

#### Step 3.4 | Raise and Re-Secure the Boom to the Tower

After performing the sensor replacement, use the rope to raise the boom back to its original position. Secure it back in place using the 1" dia. U-bolts.

Derig the rope and pulley once the boom is secured.