

# 190-1xx

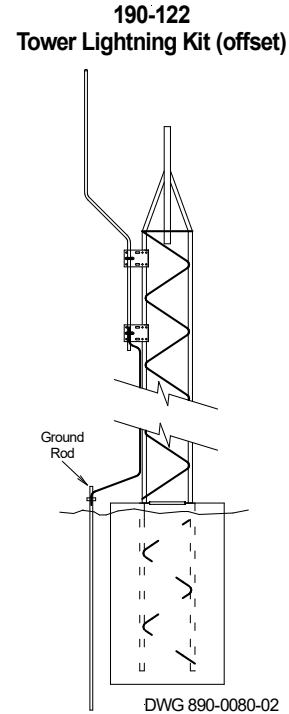
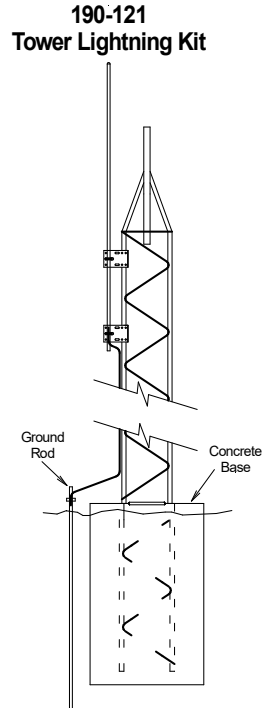
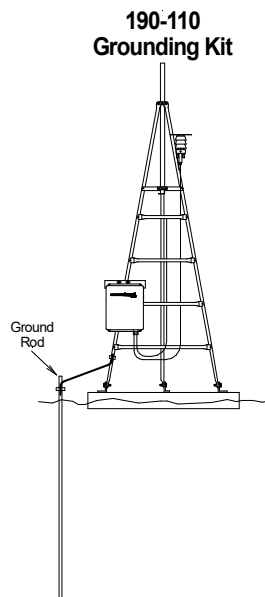
User Manual

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190-110 Grounding Kit

190-121 Tower Lightning Kit

190-122 Tower Lightning Kit (offset)



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## Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

## Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

## Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

## Address

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## 1 FORWARD

Thank you for purchasing NovaLynx products. NovaLynx has been designing and manufacturing weather instruments since 1988. NovaLynx represents several well-known brands of quality manufacturers, including Gill Instruments, RM Young, Kipp & Zonen, and Vaisala. It is our hope that our products will meet all your monitoring requirements.

## 2 INTRODUCTION

Meteorological equipment is constantly exposed to the worst elements of nature including lightning. Typically, weather stations are installed on the tops of hills, buildings, and tall towers for the best exposure possible in order to achieve maximum quality of the data. Such installations are prime targets for lightning strikes and are often hit by lightning more than once a month.

The failure of many meteorological stations using electronic data collection can be directly attributed to poor or no lightning protection. NovaLynx grounding systems conduct electrical charges caused by lightning or static built-up directly to earth ground.

NovaLynx **190-110 Grounding Kit** includes one ground rod, clamps, and four feet of #4 copper wire. The kit may be used to ground the base of a tripod or tower, or serve as an earth grounding point for an enclosure containing electronic equipment. NovaLynx series **190-5xx Tripods** (3', 5' and 10') are good candidates for earth grounding.

When connected to a metal structure such as a tower, the ground rod will dissipate static build-up. If actual lightning strikes are anticipated the support structure's ability to carry the current should be assessed carefully, and the #4 wire supplied with the kit should be replaced with 2/0 copper cable and a ¾" ground rod clamp (sold separately).

NovaLynx **190-121** and **190-122 Tower Lightning Kits** include one ground rod, clamps, and one lightning rod with two mounting brackets for securing it to the top of the tower. Heavy gauge copper cable (sold separately) connects the lightning rod to the ground rod. The **190-121** lightning rod is straight, while the **190-122** rod has an offset to allow clearance for the tail of propeller-type wind sensors. The total offset is approximately 20" (50 cm) when mounted on a tower with 12.5" (32 cm) leg spacing.

## 3 DISCLAIMER

NovaLynx Grounding Kits and Tower Lightning Kits provide a measure of protection from static build-up and lightning, but cannot protect against all hazards. See warranty for limitations.

## 4 KIT CONTENTS

Part Number	Description	190-110 Grounding Kit	190-121 Lightning, Straight Rod	190-122 Lightning, Offset Rod
71301700	5/8" Ground Rod Clamp	1		
71301705	3/4" Ground Rod Clamp		1	1
71301710	Grounding Pipe Clamp	1		
71301712	5/8" Galvanized Wire Rope Clamp		2	2
71301800	5/8" x 8' Straight Copper Clad Rod	1	2	1
71301801	5/8" x 8' Angled Copper Clad Rod, Tower			1
72390003	11" Stainless Steel Cable Tie Self-Lock		20	20
72440403	U-Bolt with plate and nuts		4	4
80130000	Mounting Plate		2	2
330-T605000	#4 Copper Wire, Green, PVC jacket	4 feet, included		
330-T605004	2/0 Copper Cable, Bare (order per foot)		Order Separately	Order Separately

Ground Rod Clamp



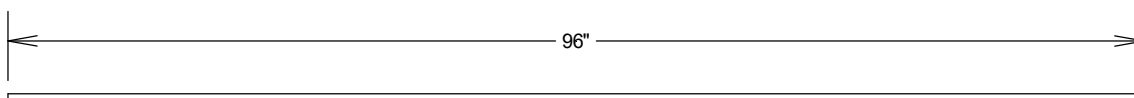
Grounding Pipe Clamp



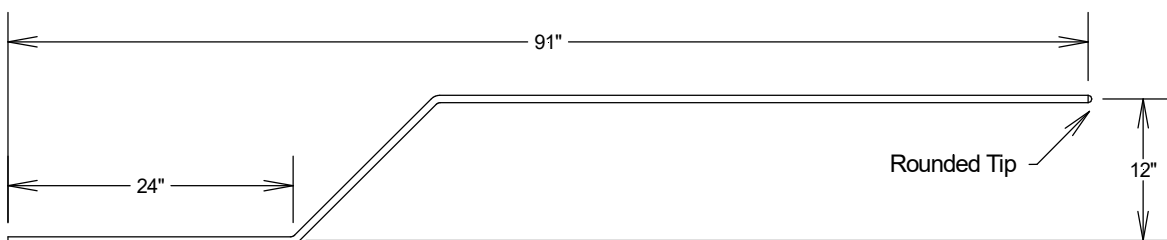
Stainless Steel Cable Tie



Lightning Rod Mounting Plate (2 each)



8' Ground Rod / Straight Lightning Rod  
PN 71301800



Offset Lightning Rod  
PN 71301801

## 5 INSTALLATION

**WARNING** – NEVER WORK ON OR NEAR A TOWER OR TRIPOD WHEN THERE IS ANY POSSIBILITY OF A STORM THAT MAY CAUSE LIGHTNING.

**WARNING** – DO NOT INSTALL THE LIGHTNING ROD NEAR OVERHEAD POWER LINES TO AVOID ELECTRICAL SHOCK.

**WARNING** – DISCONNECT ANY POWER SOURCES THAT MAY BE CONNECTED TO THE INSTRUMENTS ON THE TOWER OR TRIPOD BEFORE WORKING IN THE AREA.

**WARNING** – DO NOT INSTALL THE GROUND ROD UNTIL YOU HAVE MADE CERTAIN THERE ARE NO BURIED POWER LINES, TELEPHONE CABLES, FIBER OPTIC CABLES, GAS PIPELINES, WATER PIPES, SANITARY SYSTEMS, OR ANY OTHER INSTALLATIONS THAT WOULD BE DAMAGED IF PENETRATED BY THE GROUND ROD.

**WARNING** – DO NOT ALLOW ANYONE TO STAND NEAR OR BELOW THE TOWER OR TRIPOD WHILE INSTALLING THE LIGHTNING ROD.

**CAUTION** – WEAR SAFETY GOGGLES AND GLOVES WHILE INSTALLING THE GROUND ROD.

### 5.1 Ground Rod Installation

The installation should begin from the ground up, starting with the ground rod. The ground rod should be driven into soil as close to the tower or tripod base as possible. Use the full length of the rod, and drive it in until the top of the rod is within 3 to 4 inches of the soil surface. *TIP: install the ground clamp on the rod before driving it in, as the top of the rod may mushroom making installation of the clamp difficult. Don't lose the clamp by driving it below ground.*

### 5.2 Grounding Kit Installation

The **195-110 Grounding Kit** includes 4 feet of #4 copper wire. Strip one end of the wire and connect it to the ground rod using a ground rod clamp (Figure 1). Install the grounding pipe clamp (Figure 2) on the closest leg of the tower or tripod. Route the wire to the clamp so that there are no tight bends in the wire. Cut off any excess wire, then strip the end of the wire before attaching it to the grounding pipe clamp. *NOTE: NovaLynx weather stations include a ground lug mounted at the bottom of the enclosure. A grounding wire should be connected from the lug to the grounding pipe clamp, where the two wires can be clamped together.*

Figure 1

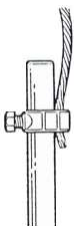
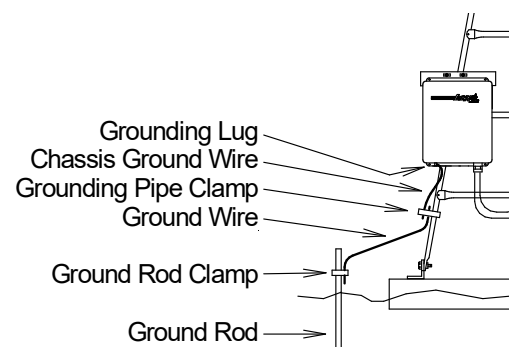
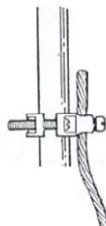


Figure 2



### 5.3 Tower Lightning Kit Installation

Install the ground rod first (Section 5.1). Use care while installing the copper cable to avoid kinks or sharp bends. It should curve smoothly with a radius not less than 8 inches at any point. Attach the 2/0 bare copper cable to the ground rod using a ground rod clamp (Figure 1). Route the cable up the nearest leg of the tower, securing it every two feet using the stainless steel cable ties provided with the kit (Appendix A).

Install two mounting brackets spaced approximately 1.5 feet apart near the top of the tower, or clamp them to the top mast if it is strong enough to support the lightning rod. Make sure that the tip of the lightning rod will be well above any other equipment mounted on the tower or tripod.

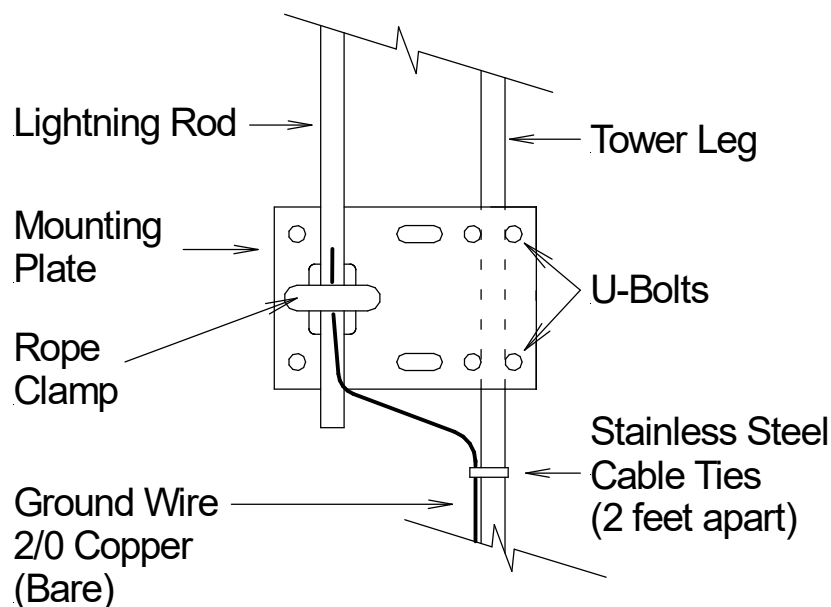
**CAUTION** – USE GREAT CARE WHILE INSTALLING THE LIGHTNING ROD INTO THE BRACKETS TO ENSURE IT DOES NOT FALL THROUGH THE CLAMPS AND CAUSE INJURY. MAKE SURE NO ONE IS BELOW THE TOWER OR TRIPOD WHILE INSTALLING THE LIGHTNING ROD.

Insert the lightning rod into the "rope clamps" on the mounting brackets and tighten the upper rope clamp to hold the rod. If the rod is the offset type, angle the upper part of the rod as far away from the tower as possible.

Refer to the **Lightning Rod Mounting Plate** photo (Page 5) and the detail drawing below. Feed the end of the 2/0 bare copper cable into the lower rope clamp parallel to the lightning rod and tighten the rope clamp, leaving a little slack in the cable but **NOT** enough slack to form a "U" shape. Trim the excess copper cable leaving 2-3 inches of overlap under the clamp. Tighten all fasteners securely. Complete the installation by securing the copper cable to the tower leg using stainless steel cable ties spaced two feet apart.

### Lower Mounting Plate Detail

DWG 890-0079-01



## APPENDIX A STAINLESS STEEL CABLE TIE INSTALLATION

The copper cable that connects the lightning rod to the ground rod must be fastened securely to the tower or tripod. Stainless steel cable ties should be placed along the cable at two foot intervals.

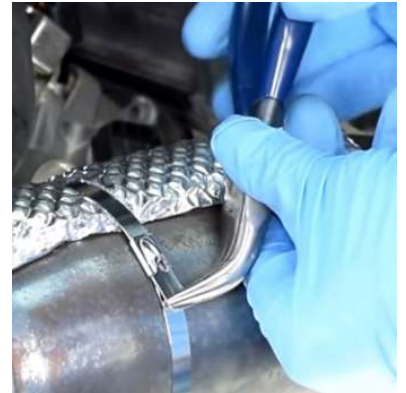
The cable ties provided with the kit are "self locking", but to ensure they will not work loose over time the free end of each strap can be trimmed and folded for a tight, tidy installation.

**Step 1** Wrap the stainless steel tie around both the copper cable and tower leg at the desired location. Feed the free end of the cable tie into the "head" and pull the strap snug.



**Step 2** Use lineman's pliers to partially cut the strap, leaving  $\frac{3}{4}$ " free. The pliers will score the metal, weakening it so that you can fold it back and forth until it snaps off.

**Step 3** Grip  $\frac{1}{4}$ " of the end of the strap using angled needle-nosed pliers. Fold the end underneath.



**Step 4** Pinch the folded end flat.

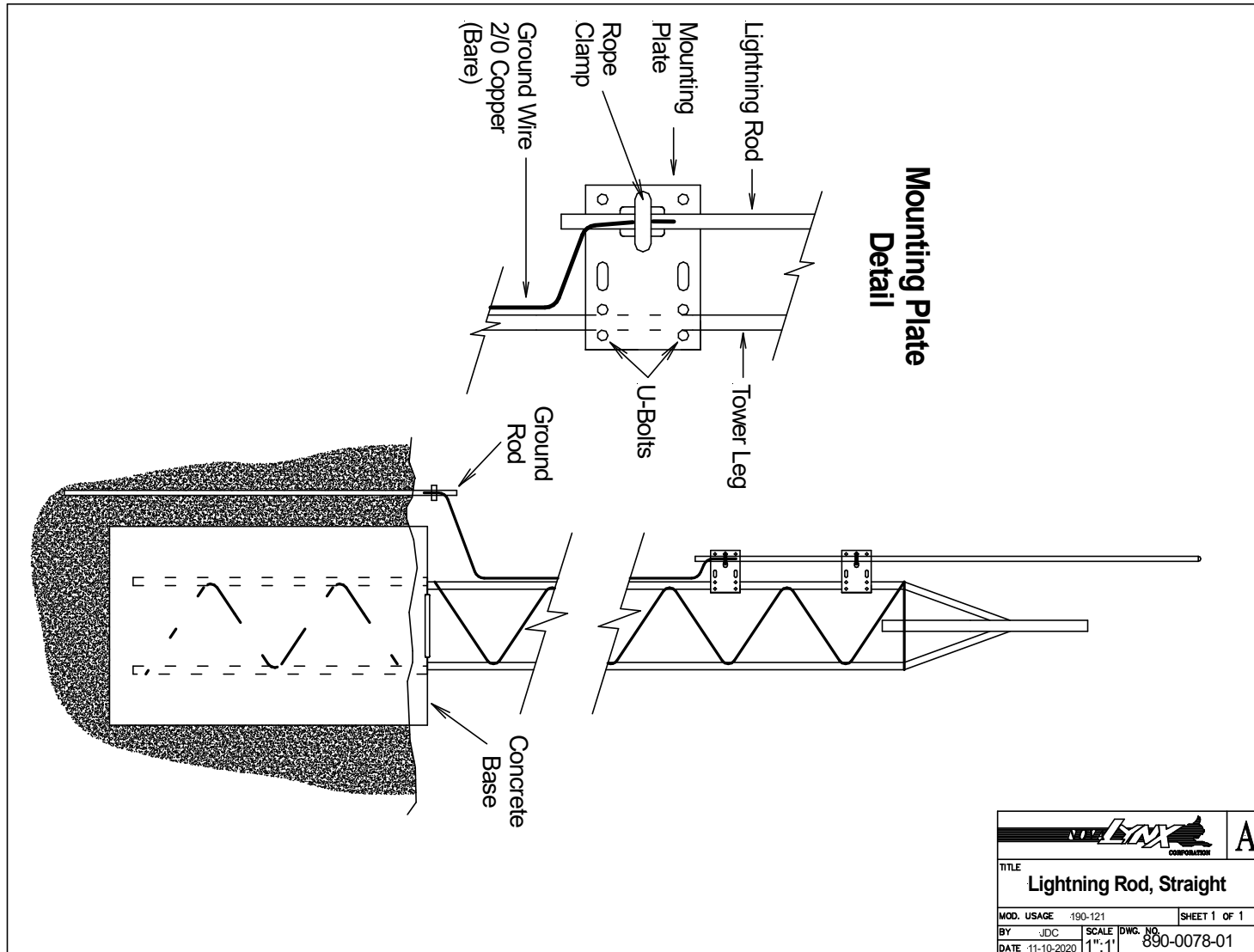
**Step 5** Grip the folded end and fold it under once more. This will snug the strap to the tower. Pinch the end flat for a tidy look.



Images captured from <https://www.youtube.com/watch?v=ecS2ZwjWo-g>



APPENDIX B TOWER INSTALLATION, STRAIGHT



APPENDIX C TOWER INSTALLATION, OFFSET

