

**MOBILE MULTI – INSTALLATION & USER GUIDE*****Serial numbers starting with XM or YM***

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## WARNINGS



**Attention: Fire, explosion and burn hazard.**

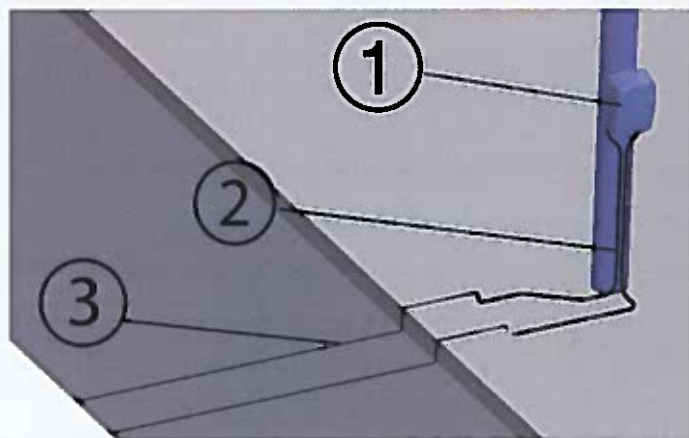
Do not short circuit, crush, disassemble, heat above 100 °C (212 °F) or incinerate the components of your Eco-Counter counting system.



We remind you that your Eco-Counter remains a measuring system, and therefore it should always be handled with care.

## COUNTING SYSTEM INFORMATION

### GENERAL OVERVIEW



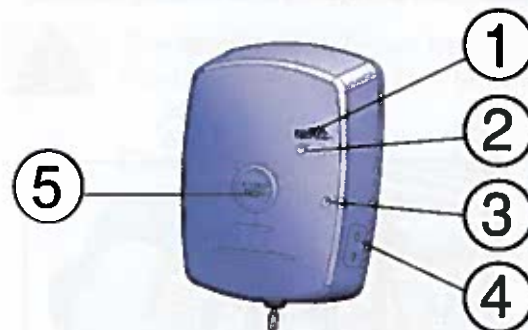
- |   |                |
|---|----------------|
| 1 | PYRO-Box       |
| 2 | Shock Absorber |
| 3 | Pneumatic TUBE |

Example of a "MULTI" configuration with "Mini-TUBEs"

See the section « Configurations », page 5, to learn more about the possible configurations.

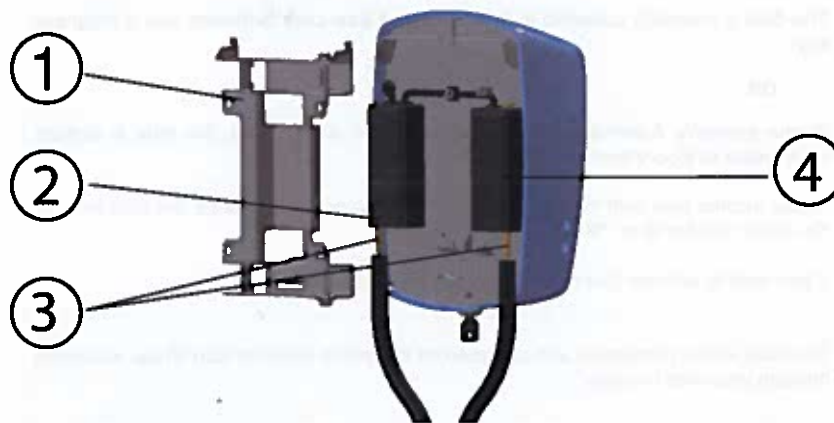
## COMPONENTS

### PYRO-Box - Front view



- |   |  |
|---|--|
| 1 | LED allowing to visualize the counting system's activity.  |
| 2 | Wake-up zone used to put the PYRO-Box in its connection-ready state.   |
| 3 | Only to be used under the guidance of Customer Service.  |
| 4 | Holes for the lenses of the PYRO Sensor. There are holes on both sides of the PYRO-Box, to point the PYRO Sensor either direction as required. |
| 5 | Only to be used under the guidance of Customer Service.  |

### PYRO-Box - Back view

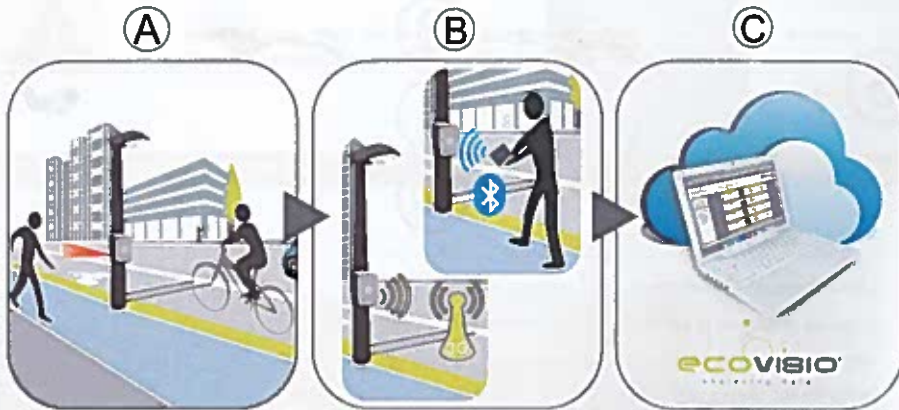


- |   |                                |
|---|--------------------------------|
| 1 | Mounting plate                 |
| 2 | "OUT" TUBE Transducer          |
| 3 | Tubing of the TUBE transducers |
| 4 | "IN" TUBE Transducer           |

## OPERATING PRINCIPLE

The Mobile MULTI counts and classifies pedestrians and cyclists while extracting directional data.

Operating Principles:



**A** The sensor detects someone passing and sends a signal to the PYRO-Box, which records a count.

The data is manually collected in-field using the Eco-Link Software and a magnetic key

OR

**B** If your system's Automatic Transmission function is activated, the data is directly transmitted to Eco-Visio via GPRS/3G.

*If your system was sent from the factory with this function activated, the third letter of the serial number is an "H".*

*If you wish to activate this function, please contact Eco-Counter.*

**C** The data is then processed and analyzed on the online platform Eco-Visio, accessed through your web browser.

## POSSIBLE CONFIGURATIONS













The Mobile MULTI can be configured for different site modes described in this section.

Once the system is installed, the following must be verified in Eco-Link:

- The proper counting mode.
- The proper setting for the TUBE Sensor.

These two steps are required for proper operation.



COUNTING MODE	"PEDESTRIAN" MODE Pedestrian monitoring only Direction recognition	"BICYCLE" MODE Bicycle monitoring only Direction recognition	"MULTI" MODE Pedestrian AND bicycle monitoring User classification and direction recognition	"INDEPENDENT" MODE Counts pedestrians on a sidewalk while counting bicycles on the nearby bike lane. User classification and direction recognition
<b>Mini-TUBES</b>  Ø 9 mm (0.35") L 6 m (20') + <b>Shock absorbers</b> Ø 15 mm (0.5") L 150 cm (60")	 Pedestrian monitoring only Direction recognition	 Bicycle monitoring only Direction recognition	 Pedestrian AND bicycle monitoring User classification and direction recognition	 Counts pedestrians on a sidewalk while counting bicycles on the nearby bike lane. User classification and direction recognition
<b>Selective TUBES</b>  Ø 15 mm (0.5") L 9 m (30')	 Motorized vehicles are ignored from the counts <b>Warning!</b> If there are high volumes of bicycle and/or motor vehicle traffic then traffic must travel in one direction only.	 Motorized vehicles are ignored from the counts <b>Warning!</b> If there are high volumes of bicycle and/or motor vehicle traffic then traffic must travel in one direction only.	 <b>Improper configuration</b> The PYRO Sensor must not be pointed at motorized vehicles	 Motorized vehicles are ignored from the counts <b>Warning!</b> If there are high volumes of traffic on the shared lane then traffic must travel in one direction only.

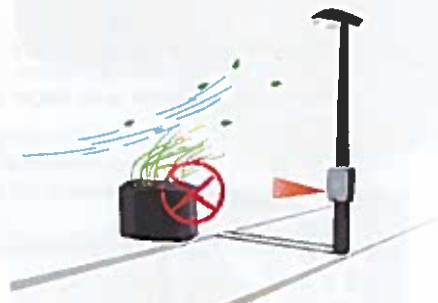
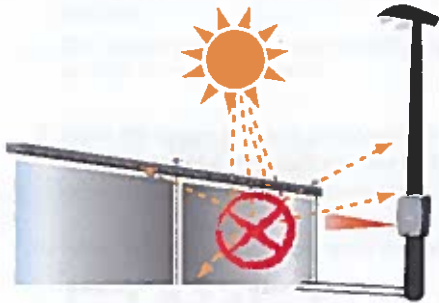
Note that you can use Selective TUBES instead of Mini-TUBES.

# INSTALLATION

## CHOOSING THE INSTALLATION SITE

### FOR THE PYRO-BOX, AVOID:

- **Heat sources** in front or next to the PYRO Sensor
  - Radiator
  - Surface exposed to sunlight
- **Moving objects or vegetation** in front of the PYRO Sensor
  - Door
  - Bushes, branches, etc.



- **Motor vehicles** in front of the PYRO Sensor  
This will cause counting issues
- **Window or reflective surface** in front of the PYRO Sensor
  - Point the PYRO Sensor at a non-metallic and non-reflective flat surface



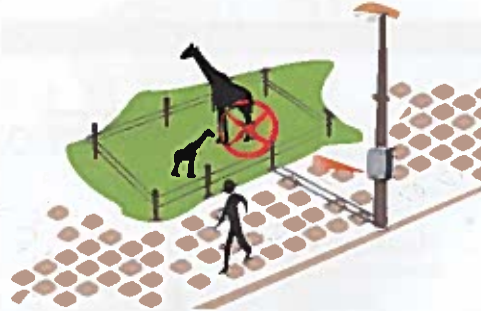
- **Locations where traffic flow is congested**

- Rest spots, information posters, steep surfaces, etc.



- **Locations where undesired objects could be counted**

- Animals, cars, undesired pedestrians or cyclists



- **Paths wider than 4 meters (15')**

- The PYRO Sensor has a range of 4 meters (15'). Beyond 4 meters, detection performance is no longer guaranteed.



## Verify Network Coverage

(Automatic Transmission Equipped Counters Only)

- Counting systems with the Automatic Transmission Feature activated: select a location with sufficient cellular network coverage.

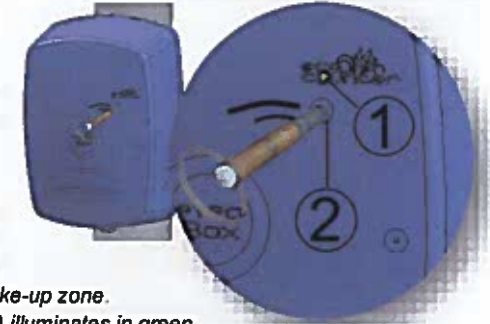
Proceed as follows to verify the network coverage:

1. Wave the magnetic key over the wake-up zone (2) of the PYRO-Box.

When waving the magnetic key, the LED (1) illuminates in green.

Then the LED flashes blue at regular intervals.

This allows you to wake your PYRO-Box up from power-saving mode.



2. Wave the magnetic key 6 times over the wake-up zone. When waving the magnetic key, the LED (1) illuminates in green. After waving the magnetic key six times, the LED illuminates blue with regular flashes.
3. When the LED is solid blue, go to the following webpage:



If you do not have a mobile device with Internet connection, follow the instructions in the section "Automatic data transmission", page 28, to verify the network coverage.



## FOR THE TUBES, AVOID:

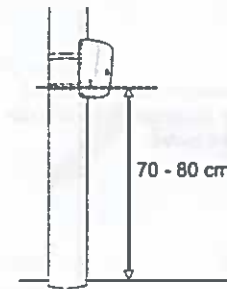
- Non-rigid ground surface (e.g. snow, grass, mud, etc.)**  
*The pulses will not be strong enough to trigger counts.*
- Areas where there will be more than one centimeter (1/2") of snow covering the TUBE**  
*The pulses will not be strong enough to trigger counts.*
- Places where cyclists or motorized vehicles stop (e.g. before an intersection) or accelerate**  
*The system expects users to travel at constant speed for the algorithm to work.*  
  
*Speed is an important discrimination criterion, and false positives will happen if motorized vehicles or bicycles travel too slowly.*
- Congested or very slow traffic**  
*The TUBEs must be installed perpendicular to the flow of traffic for accurate detection.*
- Areas where there is a curve or turn in the road/bike path**  
*There must be no gap between the TUBE and the ground surface for accurate detection.*
- Areas where the ground surface is not flat**

## INSTALLATION INSTRUCTIONS

- Longevity:**
  - Mini-TUBEs: Install the Mini-TUBEs for periods of less than three months.
  - Selective TUBEs: Selective TUBEs can withstand around 250,000 car passages.

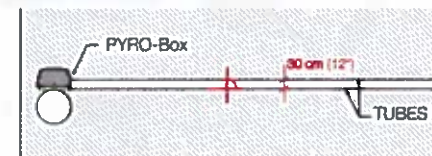
- Height of the lower hole: Between 70 cm and 80 cm (27.5" - 31.5") from the ground.**

*Installing the PYRO Sensor at a different height may cause counting issues.*



- Distance between the TUBEs: 30 cm (12")**

*A higher or lower distance may cause counting issues.*

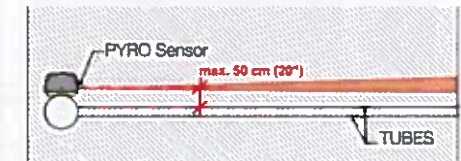


Top View

- Max. gap between the PYRO Sensor and the TUBEs: 50 cm (20")**

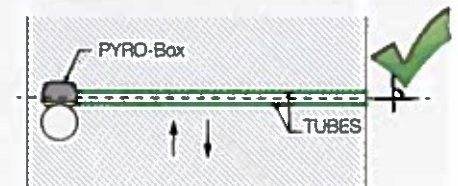
*A gap of more than 50 cm (20") may cause counting issues.*

*Align the TUBEs with the PYRO Sensor.*



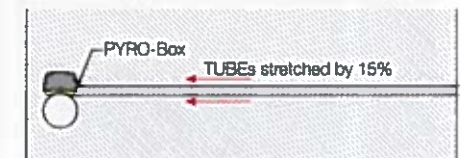
Top View

- PYRO Sensor and TUBEs perpendicular to the flow of traffic**



- TUBEs stretched by 15% towards the PYRO-Box**

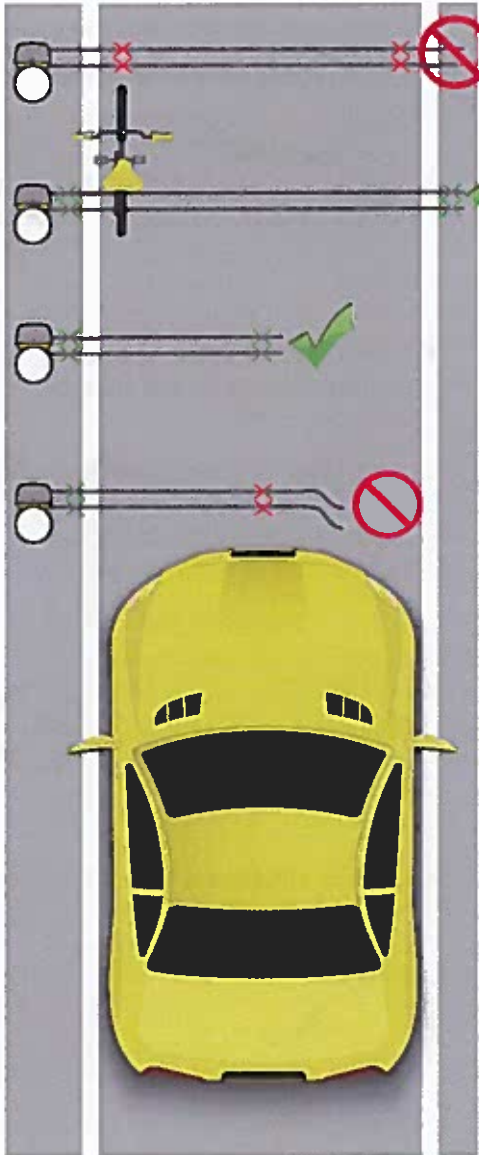
*This is the optimal tension for proper detection.*



Top View

• **The nails are away from the path of travel.**

Users must not go over the nails.



→ Bicycles and cars would be going over the nails.

→ The nails are away from the path of travel.

→ The nails are away from the path of travel.

→ The nails are away from the path of travel BUT the fasteners are too far away from end piece.

REQUIRED EQUIPMENT



ecolink

Eco-Link software

List of compatible devices with Eco-Link:

- Laptop: Connect to Eco-Visio online software and download the Eco-Link software from the "Downloads" interface.  
Compatibility: Windows XP and more - Bluetooth connectivity required.

- Android-based tablet or smartphone

Download Eco-Link via the Google Play Store.

PYRO-BOX



TUBES



Always use Pneumatic TUBEs supplied by Eco-Counter.

Using Pneumatic TUBEs other than those delivered by Eco-Counter may cause the system to malfunction.



Only for asphalt or equivalent: Drill with a 6 mm Ø drill bit (1/4") (optional if you install the system in a soft soil)

- Selective TUBEs: Road tape

E.g. Polyken 860 PE/Butyl "Road Tape"

- Mini-TUBEs: Insulate adhesive tape to secure the fasteners in place on the TUBEs

E.g. Pro Flex Patch & Shield Tape

## PROCEDURE

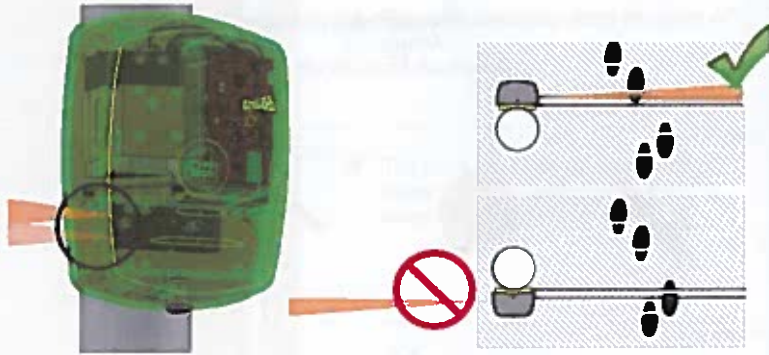
### 1. INSTALLING THE PYRO-BOX



#### Risk of bodily harm!

Wearing protective gloves and protective glasses is recommended during installation!

**ATTENTION!** Facing the PYRO-Box, the standard factory configuration places the PYRO Sensor on the left side. Make sure that the PYRO sensor faces the TUBEs.



#### ACCEPTABLE DIAMETER OF THE POST

- Minimum acceptable diameter: 50 mm (2")
- Maximum acceptable diameter: 200 mm (8")

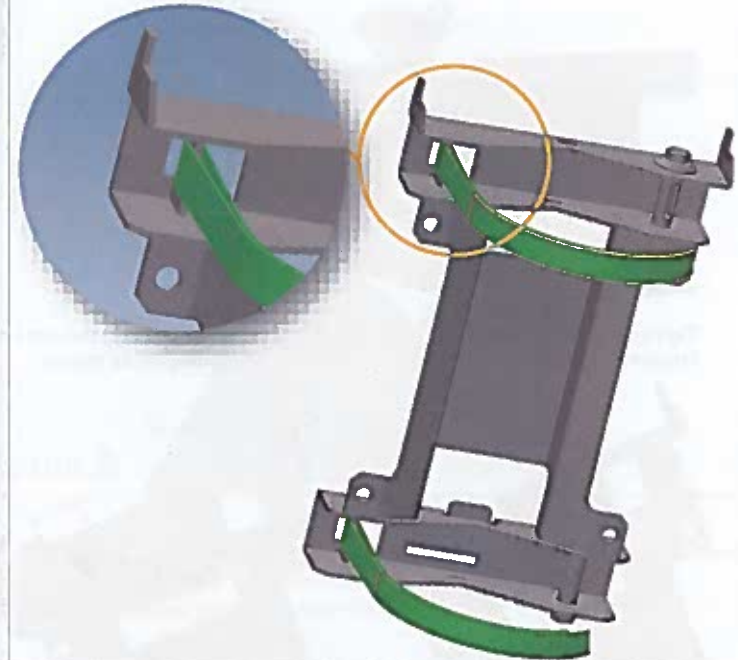
# 1

Fold the provided bands in half.  
Make sure that the crease is in the exact center.



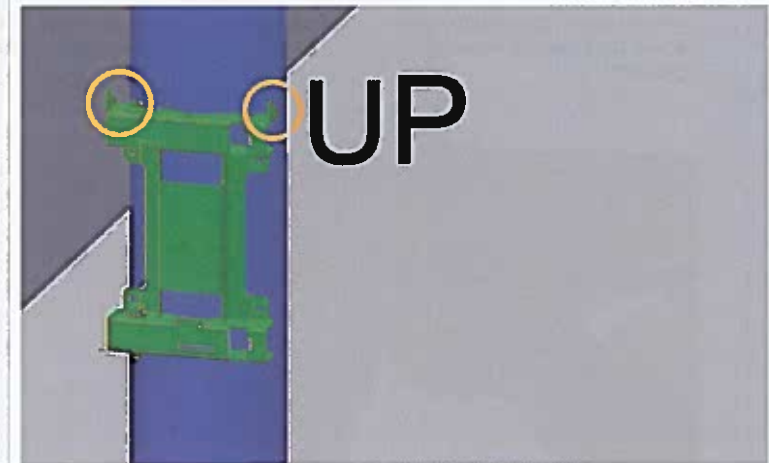
Feed the bands through the left side of the mounting plate as shown below:

# 2



Offer the mounting plate up to the bracket in the following position:

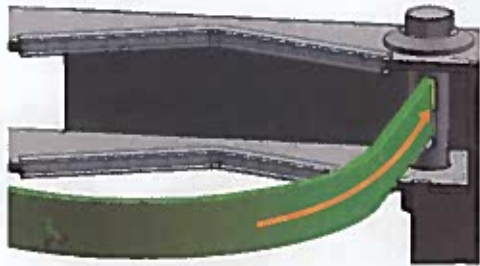
# 3



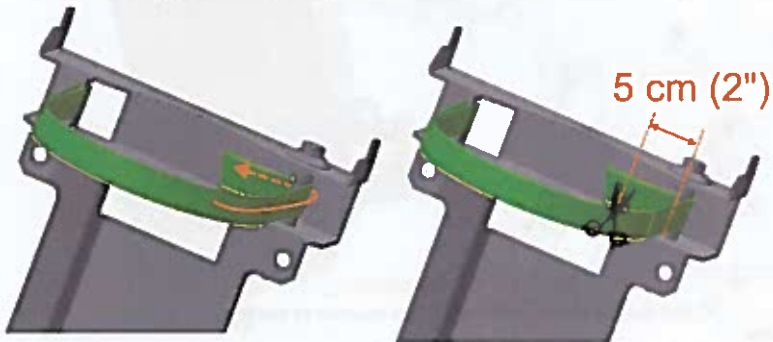


# 4

Put the upper banding around the post and insert the two ends into the slot on tensioning bolt as shown.

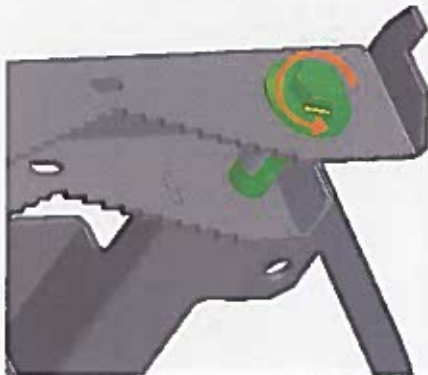


Tighten the band around the post by pulling the excess through the slot on the tensioning bolt, as shown. Then, cut the excess banding off as shown:



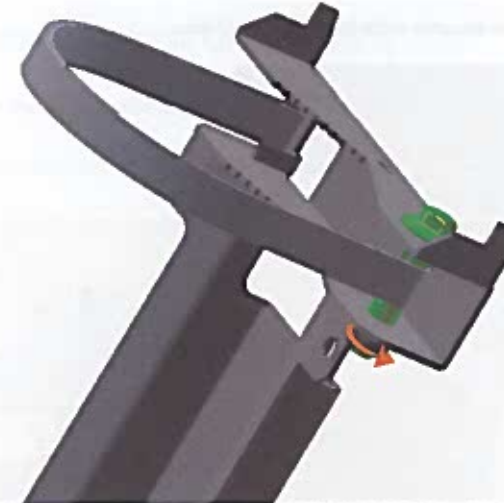
# 5

Turn the upper bolt counter-clockwise using the 10-mm open-end wrench until the band is partially tightened, then hold that wrench in place while the bottom bolt is tightened.



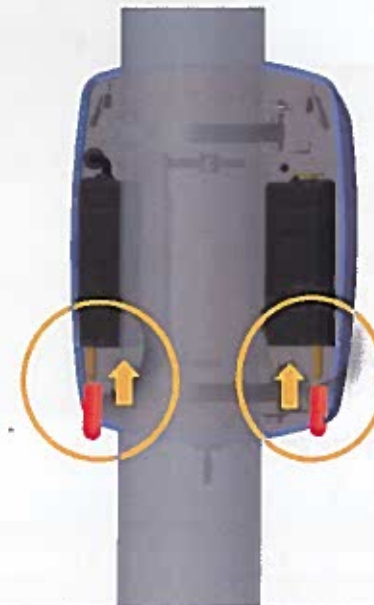
# 6

While holding the upper 10-mm open-end wrench in place, turn the 13-mm open-end wrench counter-clockwise on the bottom bolt to further tighten the band.




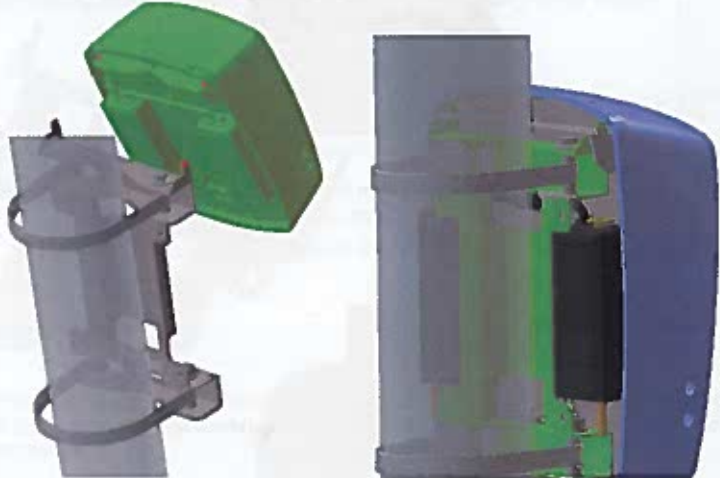
# 7

*If you use the counting system in "Pedestrian" counting mode, close the tubing of the TUBE transducers using the supplied caps. The caps protect the transducers from dirt.*



- 1** Unlock the security latch for your PYRO-Box.


- 2** Affix the PYRO-Box to the mounting plate as shown.

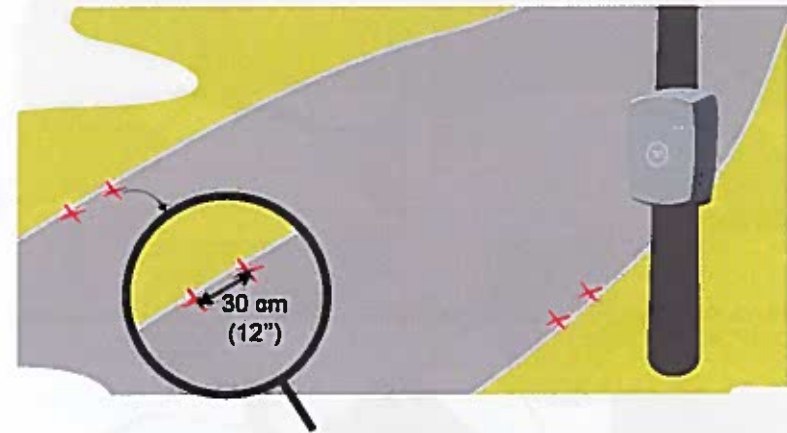

- 3** Make sure that the PYRO-Box is securely fastened.
- 4** Lock the security latch for your PYRO-Box.

2 INSTALLING THE TUBES

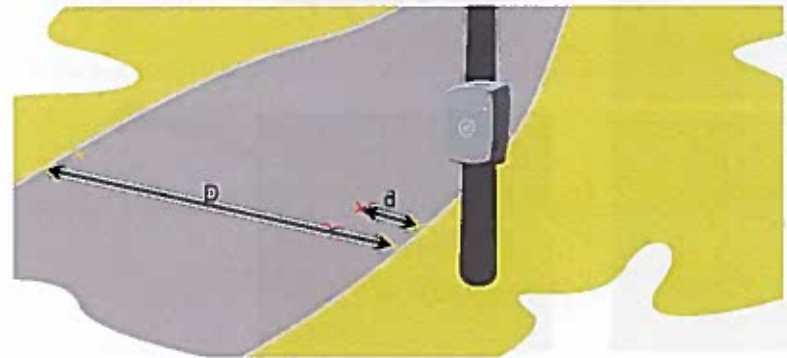
2.1. MARKING THE POSITION WHERE THE TUBES WILL BE FIXED

a. Mark a position on the ground where you will hammer the nails.

*Attention! Follow the installation instructions on page 11.*



b. Likewise, mark a position as shown below:

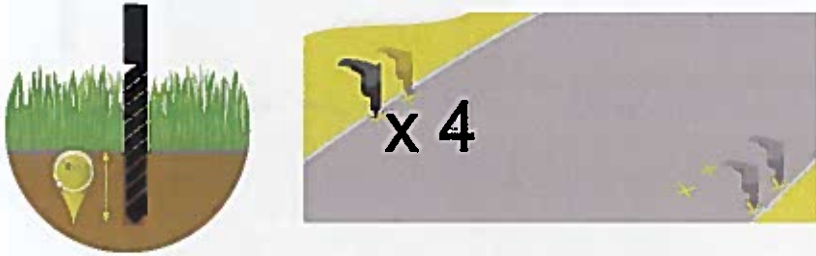


$d = 15\% D$

<i>D (in meters)</i>	<i>D (in feet)</i>	<i>d (in meters)</i>	<i>d (in inches)</i>
7	23'	1	39 1/2"
6	19.5'	0.9	35"
5	16'	0.75	29 1/2"
4	13'	0.6	23 1/2"

## 2.2. DRILLING THE FIXING HOLES

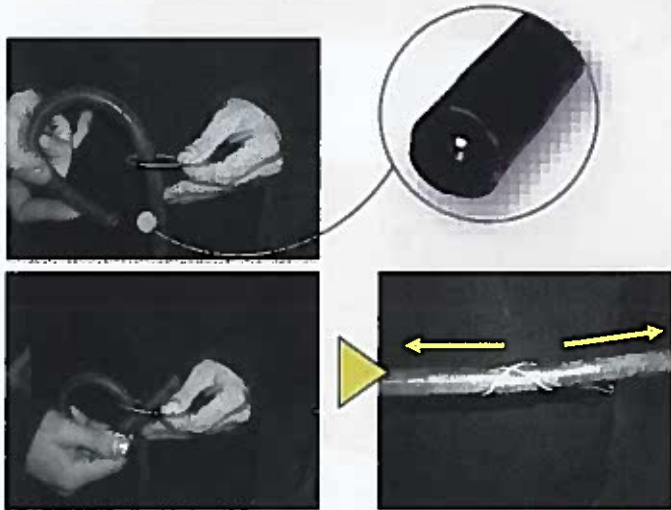
- Asphalt or equivalent: Pre-drill the points marked in step 1 to a depth of 2 cm ( $\frac{1}{2}$ ").



## 2.3. PREPARING THE PNEUMATIC TUBES

### SELECTIVE TUBES

- Thread a fastener on the closed end of the Pneumatic TUBE and then proceed as shown to affix the fastener to the Pneumatic TUBE:



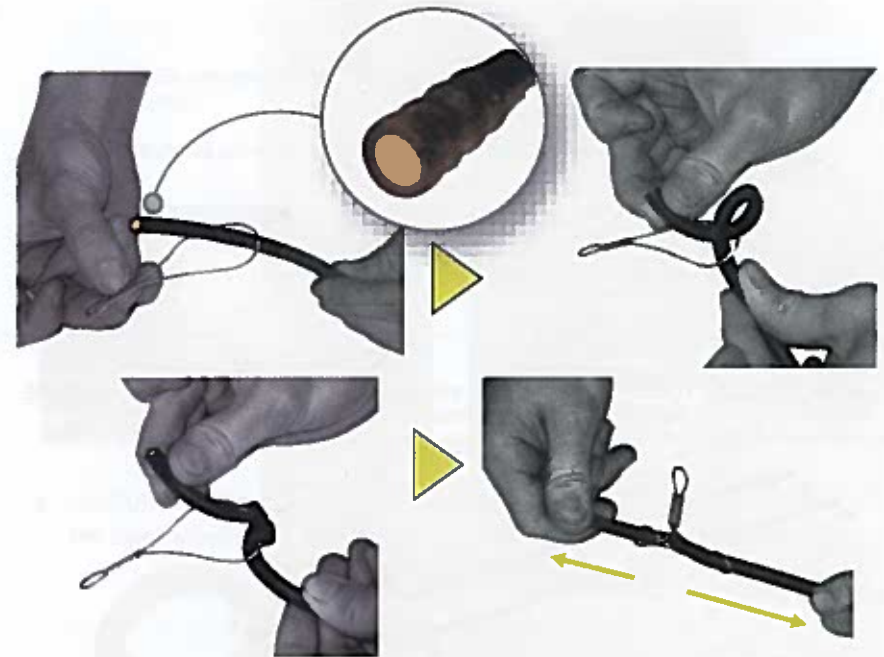
If the plug, as shown above, is no longer attached, simply knot the end of the TUBE.



The end of the TUBE must be closed. If not, this will cause the system to malfunction.

### MINI-TUBES

- Thread a fastener on the closed end of the Mini-TUBE and then proceed as shown to affix the fastener to the Mini-TUBE:



If the plug, as shown above, is no longer attached, simply knot the end of the TUBE.



The end of the TUBE must be closed. If not, this will cause the system to malfunction.



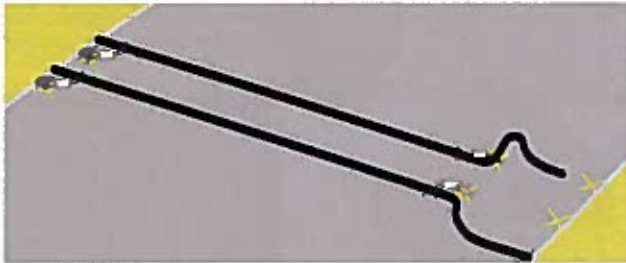
#### 2.4. ANCHORING THE CLOSED END OF THE PNEUMATIC TUBE

- Feed the nail through the fastener and hammer the assembly into the ground to secure the TUBE.

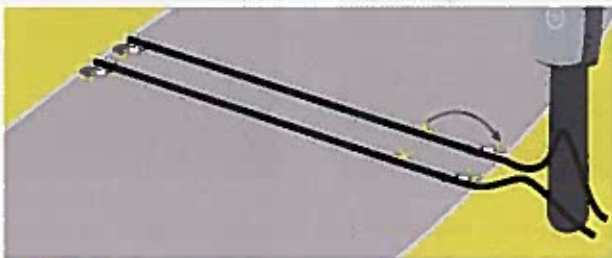


#### 2.5. TENSIONING THE PNEUMATIC TUBE

- a. Lay the Pneumatic TUBE over the road and affix a second fastener to the pneumatic TUBE while aligning it with the point marked at a distance equivalent to the width - 15 %.



- b. Stretch the Pneumatic TUBE towards the PYRO-Box and hammer in the fastener. There should be little lateral movement in the TUBEs and they should snap back to their original position very rapidly if displaced.



The Selective TUBE is equipped with an integrated material that filters out signal rebounds, so it is very important that you do not cut the TUBE to fit the counting site. Instead, lay the surplus TUBE on the shoulder.

#### 2.6. ADDING ROAD TAPE

##### MINI-TUBES

- a. Mini-TUBEs are very thin and the fastener will tend to slide on the TUBE if not secured with adhesive tape.

Wrap insulating adhesive tape around the two fasteners to secure them in place.



- b. Mini-TUBEs: connect the shock absorbers to the TUBES. The shock absorber is a 150 cm (60") long TUBE with a diameter of 15 mm (0.5").

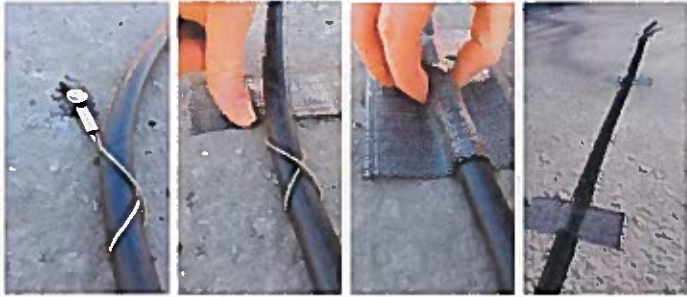


Shock absorber

##### SELECTIVE TUBES

- a. Before installing tape, make sure that the surface is dry.
- b. Sweep away dirt/dust/gravel.
- c. Add squares of road tape approximately 12.5 cm (5") long over each fastener to fully cover them. This will improve their longevity.
- d. Press tape down firmly.

- e. Add road tape over the TUBEs every 70 to 90 cm (2' to 3'). This will help to secure the TUBEs in place.



When applying the tape, make sure it follows the lines of the TUBE to maximize the surface area of the TUBE and street surface that the tape adheres to.

GOOD



BAD



### 3. MAKING THE CONNECTIONS

a.

#### Mini-TUBEs

- If you have Mini-TUBEs, connect the shock absorbers to the transducers.

#### Selective TUBEs

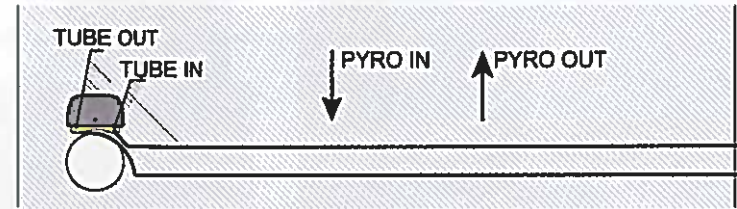
- Attach the Pneumatic TUBEs to the transducers, as shown.



**Attention! Make sure to orientate IN and OUT direction senses in the same way as on the PYRO sensor.**

- For a count in the "IN" direction, the bicycle must touch first the "IN" TUBE.
- For a count in the "OUT" direction, the bicycle must touch first the "OUT" TUBE.

### Orientation of IN and OUT direction senses on the PYRO and TUBE Sensors:



- b. Tighten the TUBEs on the tubing of the transducers using tightening collars.



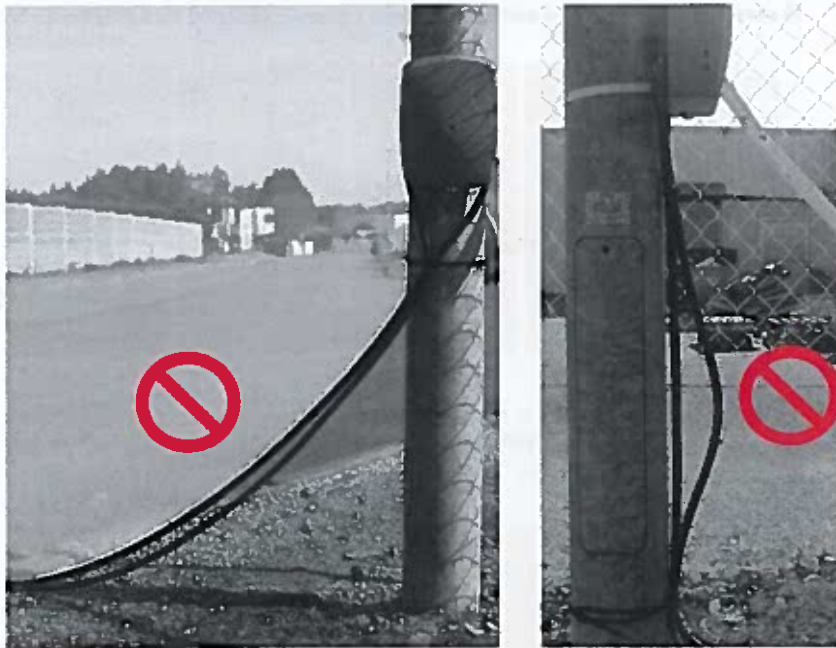
- c. Secure the TUBEs to the post **without pinching them**.  
If the TUBE is pinched, pulses are not transmitted to the PYRO-Box. In this case, no count is triggered.

**Avoid:**

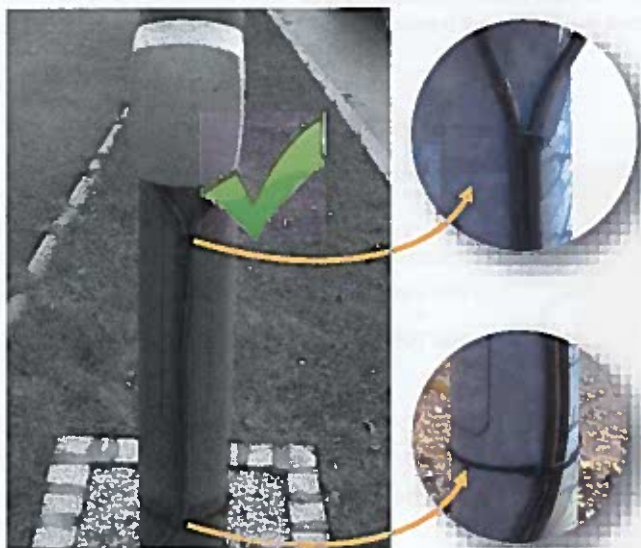


*The use of metal fasteners may damage the TUBE.  
+  
The TUBE is pinched. No count will be triggered.*





The TUBE can easily be pulled out. There must be no gap between the TUBE and the post.



#### 4. ADJUSTING THE SETTINGS

a. Select the proper counting mode using Eco-Link:

- "Pedestrian" Mode
- "Bicycle" Mode
- "MULTI" Mode  
OR
- "Independent" Mode

**"PEDESTRIAN" MODE. Risk of material damage!** Protect the tubing of the transducers with the caps supplied.

*This will protect the tubing from dirt.*

b. Select the proper setting for the TUBEs.

#### 5. TESTING THE SYSTEM

##### PEDESTRIAN DETECTION

**This verification must be made for "Pedestrian", "MULTI" or "Independent" modes.**

a. Wait at least five minutes before checking the counting function.

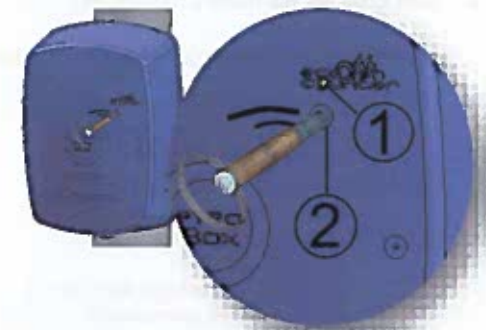
The PYRO Sensor needs to adapt to its surroundings (light, temperature, etc.).

b. Wave the magnetic key over the wake-up zone (2) of the PYRO-Box.

When waving the magnetic key, the LED (1) illuminates in green.

Then the LED flashes blue at regular intervals.

This allows you to wake your PYRO-Box up from power-saving mode.

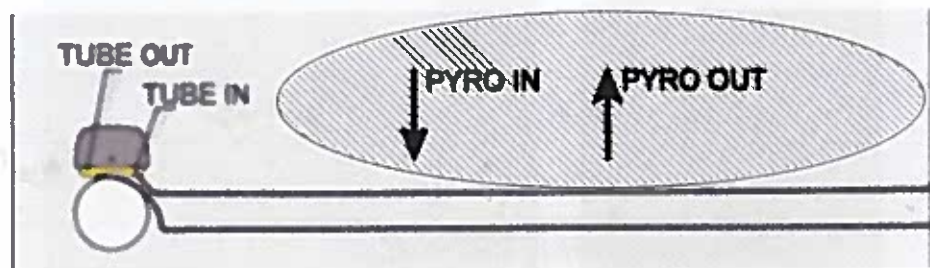


c. Simulate passages in front of the PYRO Sensor and verify the counts on Eco-Link.



Follow the instructions in the section *Making Verifications of Counts* in the Eco-Link software guide, if necessary.

IN and OUT direction senses are affected as follows by default:



#### BICYCLE DETECTION

This verification must be made for "Bicycle", "MULTI" or "Independent" modes.

- Follow steps b and c in the previous section.

Ride over the TUBEs with a bicycle to perform the tests.

#### AUTOMATIC DATA TRANSMISSION

- If the LED is switched off, wave the magnetic key once over the wake-up zone.
- Start Eco-Link and make a modem test.

Follow the section *Testing a modem* in the Eco-Link software guide if necessary.

## USE INSTRUCTIONS

### VIEWING THE DATA

- If you have a system with the **Automatic Transmission Feature** activated:

Activate the counting site in our online software, **Eco-Visio**.

Follow the instructions in the document **Eco-Visio: Quick Start Guide** to proceed.

The data is sent automatically once a day by 3G communication.

- **Systems with Manual Data Collection:**

- Retrieve the data using Eco-Link before leaving the installation site.
- Transfer data to Eco-Visio online software.

Follow the instructions in the document **Eco-Visio: Quick Start Guide** to proceed.

### MAINTAINING THE COUNTING SYSTEM

#### INSTRUCTIONS

##### PYRO-BOX

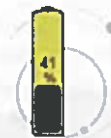
- The internal battery can provide up to ten (10) years of battery life depending on usage profile. Return the PYRO-Box to Eco-Counter for an internal battery replacement and service.
- Replace the modem battery every two (2) years.  
Order a battery Ref. 1701.
- PYRO-Box with manual data collection: Retrieve the data preferably once a month and each time you move the system to a new counting site.

**Maximum time between data retrievals: 18 months.**  
**After 18 months, the data erases.**

- Clean the lenses of the PYRO Sensor and the outside of the PYRO-Box with a soft damp cloth.
- Ensure that the holes the PYRO sensor is facing out of are not obstructed.

#### Tips!

- Update the battery gauge in your online Eco-Visio account.



This allows you to check the battery level at any moment.

- If your system's Automatic Transmission function is activated, set Eco-Alerts in Eco-Visio to alert you by e-mail in the event of null data, over-counting, etc.

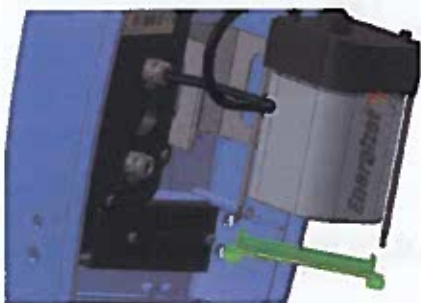
#### TUBES

- Check up on the TUBEs at least once per week:
  - Make sure that they snap back to their original position very rapidly if displaced.
  - If not, tighten the TUBEs again. See **Tensioning the Pneumatic TUBE**, page 22, if necessary.

- Make sure that the nails are still in place: If the nails pop out, replace them with longer nails.
  - Replace the TUBEs if they are damaged or punctured.
  - Selective TUBEs: Check tape and re-tape if necessary.
- Always use Mini-TUBEs with shock absorbers. Using Mini-TUBEs without shock absorbers causes the system to overcount.

#### REPLACING THE MODEM BATTERY

- a. Unscrew the battery support bar to free the battery from its bracket.



- b. Write the date of the next battery replacement on the new battery.
- c. Check the operation of the modem. See **"Automatic data transmission"**, page 28.

## CUSTOMER SERVICE

### HARDWARE

The entire system is guaranteed for 2 years starting from the date printed on the warranty certificate (the warranty certificate is delivered with your product).

In the rare case that there is a problem with a part in your system, the product must be returned with the Product Return Sheet. Please contact us to receive this sheet.

The logger serial number (please see the warranty certificate delivered with the product) must be identified on the Product Return Sheet.

The warranty cannot be implemented in the case of mishandling, incorrect installation (by someone other than Eco-Counter), or any other reason listed in the warranty certificate.

If the product can be repaired, a quote will be submitted to the customer prior to repair.

Any product damaged as a result of mishandling or improper use will be either replaced or repaired according to the parts price list used at the time of the request.

### SOFTWARE

Problems related to the use of the software can be dealt with remotely.

Please do not hesitate to contact Customer Service for assistance:

#### Europe / World

Tel: +33 (0)2.96.48.48.83

Fax: +33 (0)2.96.48.69.60

Email: [support@eco-counter.com](mailto:support@eco-counter.com)

#### North America

Toll Free: 1-866-518-4404

Phone: 1-514-849-9779

Email: [help@eco-counter.com](mailto:help@eco-counter.com)



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