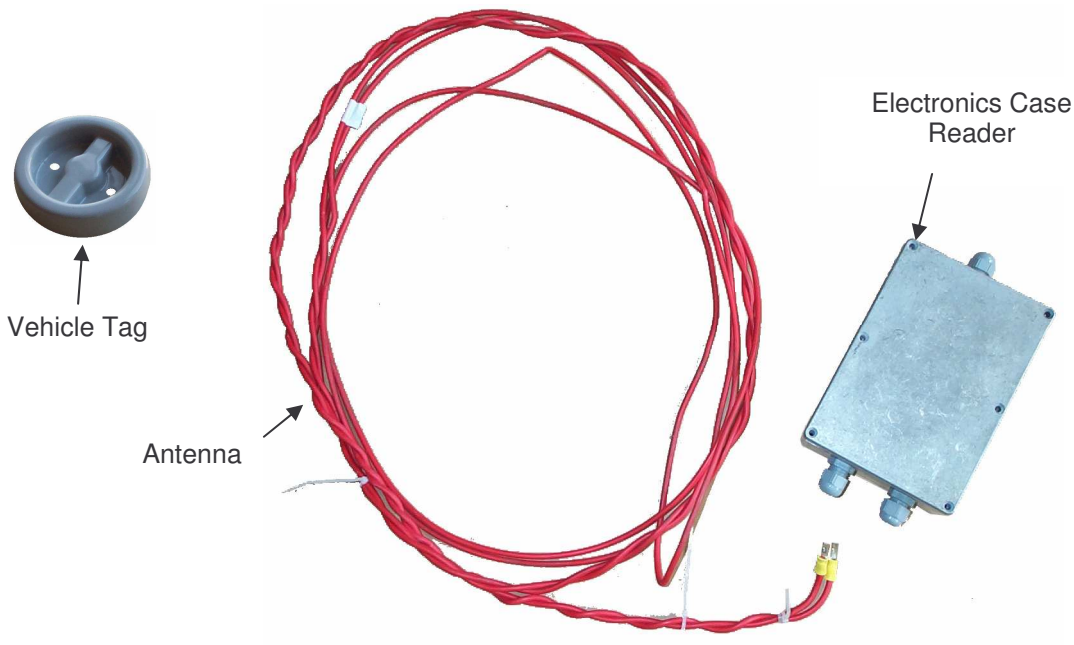
"GROUND LOOP" PROXIMITY READER

• Description of Components



• Reader's Specifications (Characteristics)

Power supply : ..... 12 VDC (12 - 15)
Consumption : ..... 500 typ. - up to 900 mA depends on antenna tuning
Connection : ..... 5 points cable terminal

Features

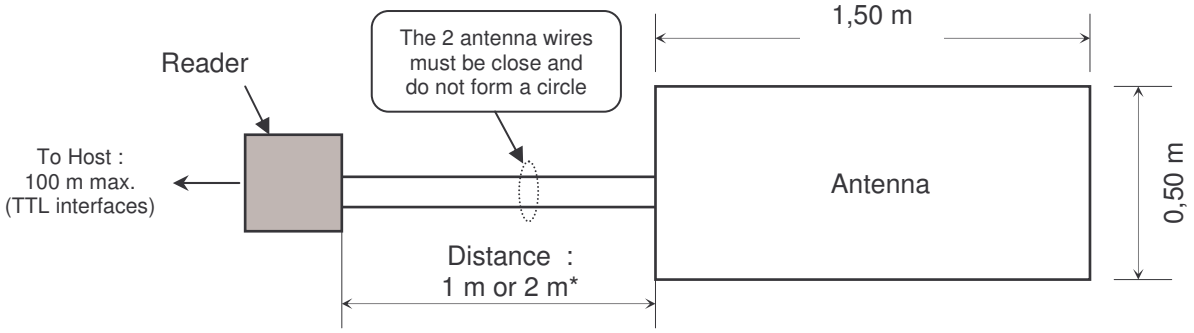
- Manual tuning to adjust the reader's sensitivity to the environment.
- Possibility for a deported Led or buzzer as read indicators.
- Possibility of automatic temporization of transmission of same read code approximately every 2 seconds.

• Mechanic

Antenna: 150 x 50 cm
Single Cable, 6²

Casing : 171 x 121 x 55 mm
Weatherproof Aluminum IP67

• Installation Configuration



(*) Antenna to Reader distance : 1m or 2m max to be specified when ordering.

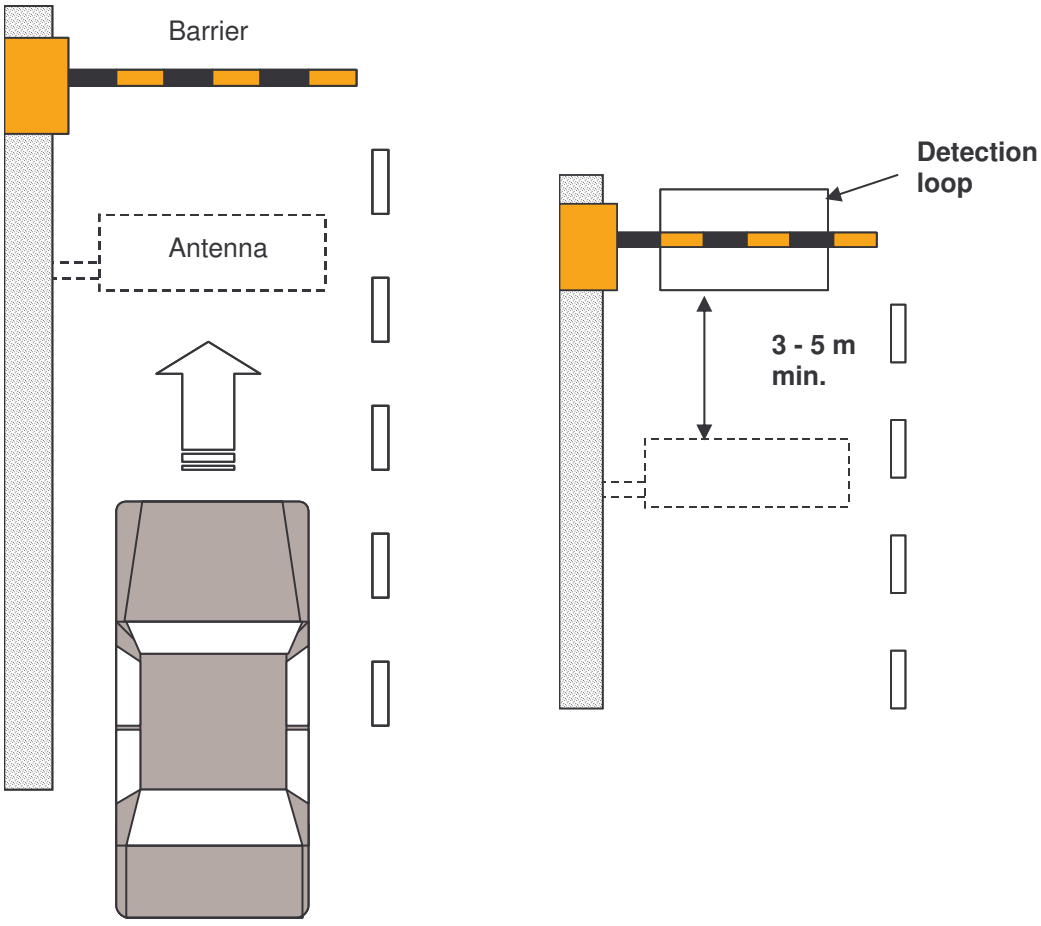
Antenna Installation

Dig a trench in the floor at the antenna rectangular dimensions, perpendicularly and centered to the vehicles traffic axe.

> **CAUTION :**
> **The antenna shape and dimensions (150 cm x 50 cm) must be respected**
> **Changing the shape or size can reduce the reading performance.**

A minimum distance of 3 to 5 m is required between an existing detection loop and the antenna.

• Example of installation



Recommandations

- Close proximity of several ground loop readers could involve a coupling that can cause simultaneous readings from several antennas or blindness.
- Do not install the reader close to a conductive closed loop.
- Do not install the reader on a metallic or conductive closed loop support.
- Install the reader far from any metallic conductive mass: If you can't, 20 cm distance of the sides and 50 cm of the back of the reader is required.
- Make sure to connect the 0V to the ground.

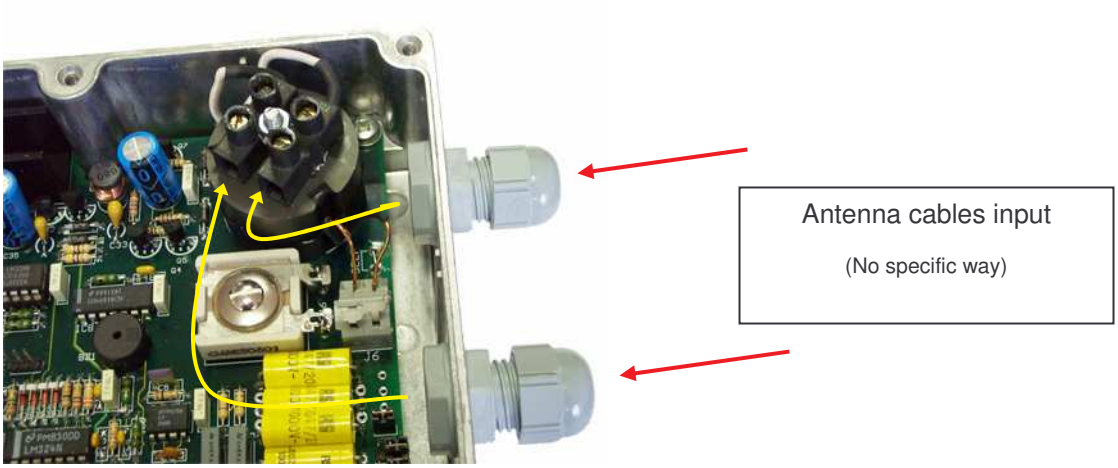
Disturbing Environments

Avoid all electromagnetic disturbance sources such as:

- Data transmission cables
- Power supply units and cables
- Variators
- Power Backups
- Computer screens
- Detection loops
- Armed concrete
- All type of equipments not compliant with CEM norms

Connections / Tunings

Antenna connection



Antenna connections must be made as indicated above.

Cabling

Link the power and communication cables to the terminal, as indicated.
Maxi distance between the reader and the controller is **100 m (Wiegand and Data/Clock interfaces)**

Recommended Cables : Multi-pair shielded cable. In case of remote power supply :

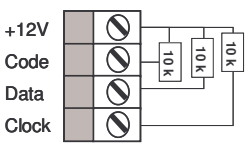
1 pair 6/10° up to 30m
2 pairs 6/10° up to 60m
3 pairs 6/10° up to 100m

or

1 pair 9/10° up to 50m
2 pairs 9/10° up 100m

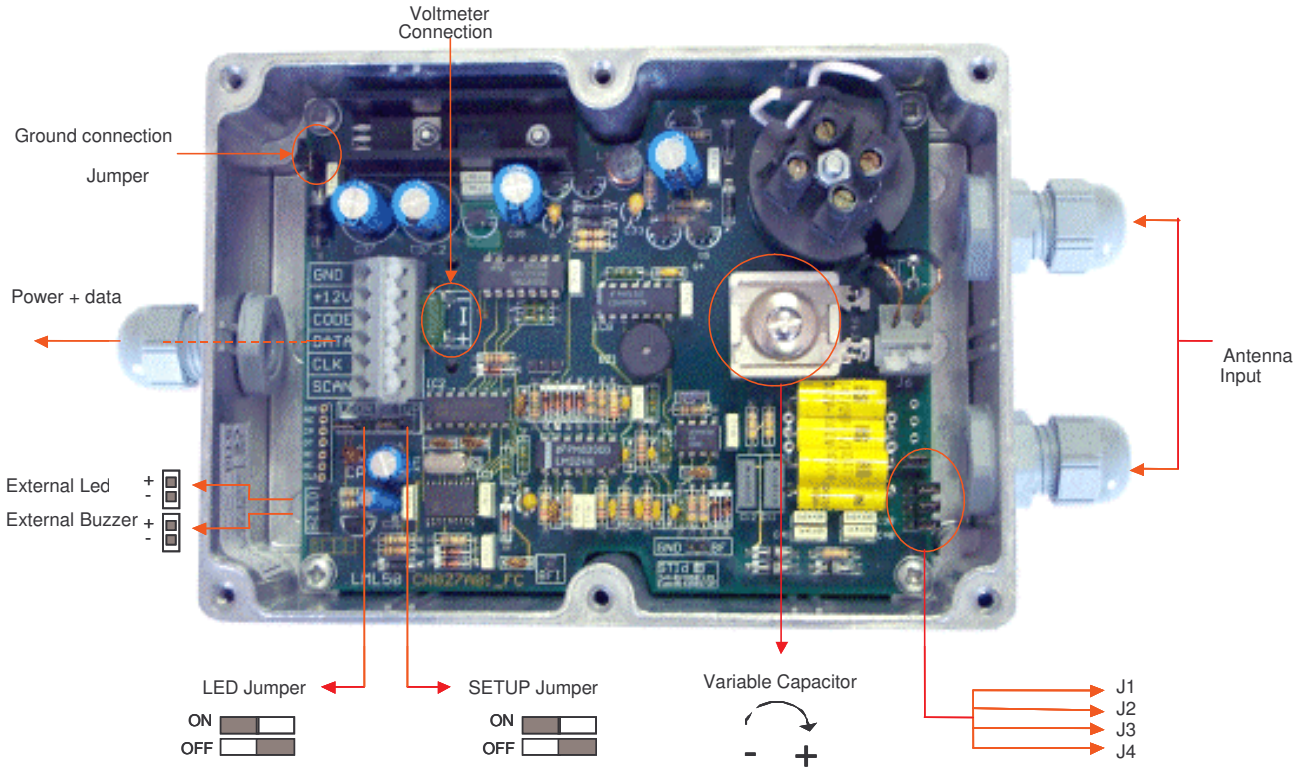
IMPORTANT NOTE:
If pull-up resistors for data signals are not present on the host unit to which the reader is connected, it is necessary to add 10KΩ resistors on the reader connector.

Pull up resistor connection



Pinout Data/Clock (2x)	Pinout Wiegand (3x)
0V	0V
+12V	+12V
Code	Data 0
Data	Data 1
Clock	Clock

Electronic board (general view)



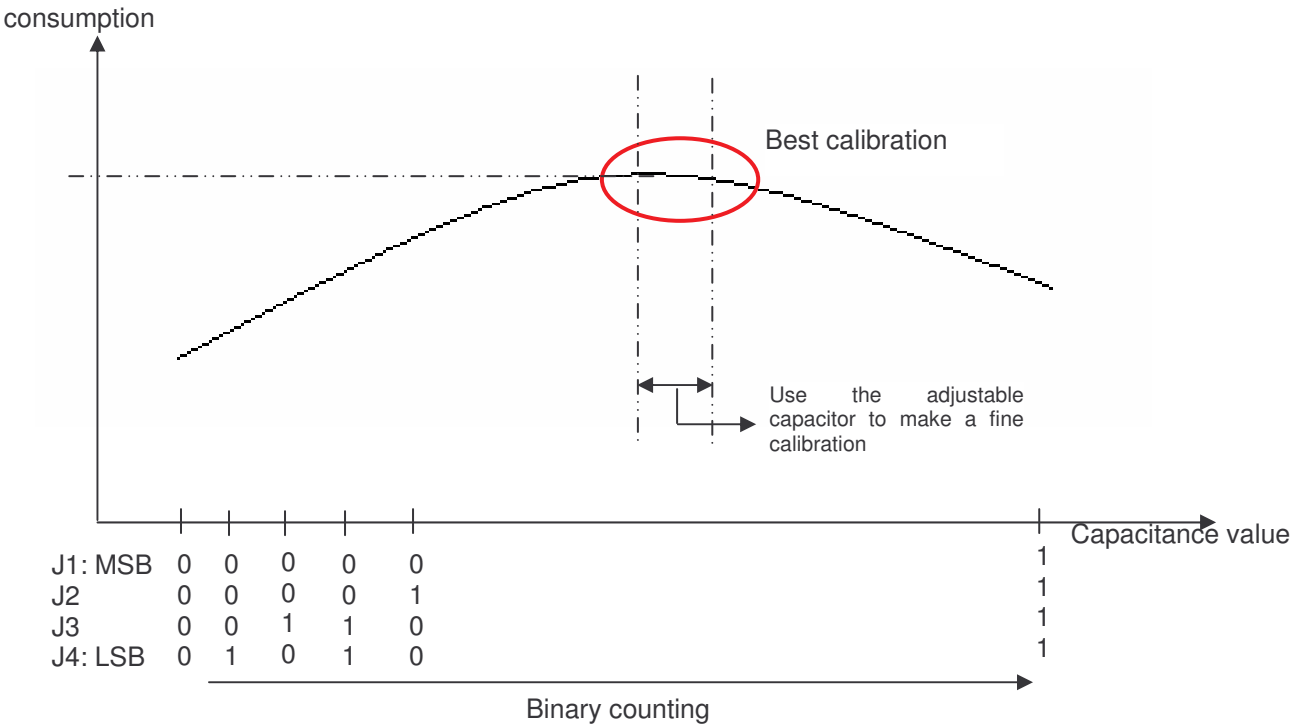
Operatin test

- Give the antenna its final shape and power on the reader
- Present a tag in front of the antenna
- Check the good detection (if the distance is not correct, modify the calibration)
  To control the detection, use the LED on the main board.
- Connect the data lines

Calibration

The reader is calibrated before delivering, but it is possible that the reader need to be re-calibrated to adjust to its environment.

- Connect a voltmeter (DC) to check the consumption (see the main board view for the voltmeter connection). Consumption = measure x 10
- Usually, you get the best possible performances when the reader's consumption is maximum (usually maximum is around 700 mA (measure 70mV)).
- To correctly calibrate the reader you need to find the right capacitance value (jumper J1, J2, J3, J4 and adjustable capacitor). For more details, check the scheme and the algorithm above.
- The ground jumper can be used to reduce perturbations.

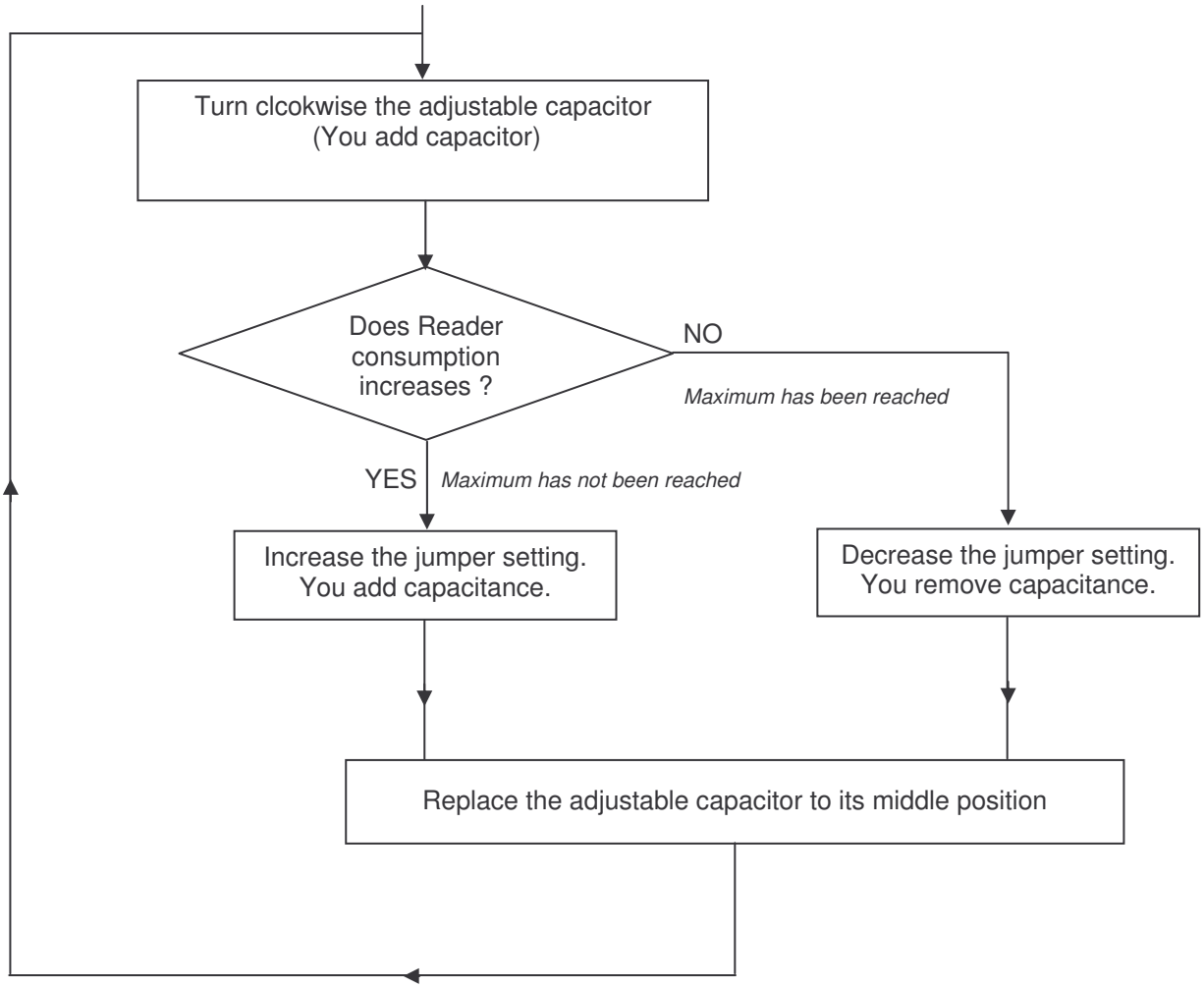


J1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
J2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
J3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
J4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Decimal value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Calibration algorithm

The goal of this algorithm is to find the best jumper setting by a dichotomy method.

- If the consumption increase when capacitance value is increased, the maximum consumption value has been already reached. So you have to decrease the total capacitance value by modifying the jumper setting.
- If the consumption decrease when capacitance value is increased, the maximum consumption value has not been already reached. So you have to increase the total capacitance value by modifying the jumper setting



During the algorithm process, if you go back to the last jumper setting, it is because you are near the best calibration setting. Try, with the adjustable capacitor, to find the maximum consumption (try it with the 2 different jumper setting).

Optimization

If you do not have the best performances, some simple tips could help you to get them.

- Verify the wiring
- Analyze the environment to find possible causes of perturbation
- Verify that the 0V is connected to a **clean** ground
- Measure the power supply. In some cases, the power supply doesn't succeed to drive enough current and its voltage drop. If you have less than 12V, the performance can be reduced a lot
- Measure the consumption. If you don't have 700 mA, you need to calibrate the reader to its environment (see the calibration section).
- Try to move the reader and/or change its orientation.

TIPS: You can use a 12V battery to power the reader and it will be easier to move it.

CAUTION: All detection tests need to be done with the embedded 'CP' LED.

If you move the reader and get better performance on a new place, it means the initial place was not compliant for long range 125 kHz readers.

Vehicle Tag TVL-R01

General View

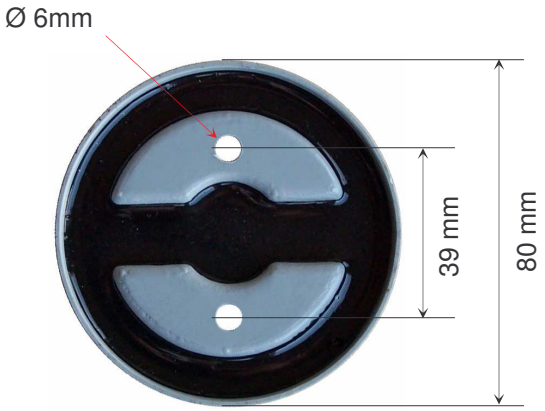
Top view

Bottom view

¾ view

Dimensions

Thickness : 17 mm

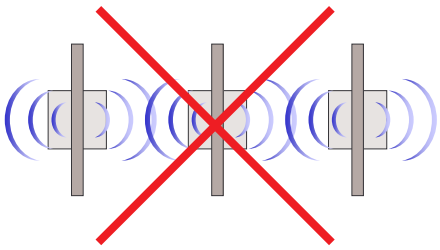


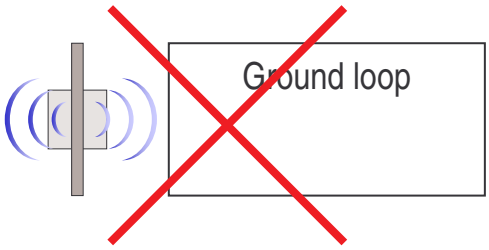
Recommendations

- The tag should be attached under the vehicle by the 2 holes, parallel to the ground.
- If the tag is to be fixed on a metallic support, insert a spacer of 10 mm thickness. The tag should not be hidden by any metallic part of the vehicle frame.

Readers installation examples

NO





YES