



Race Management System

Installation and Troubling Shooting Guide

1. Installation

A proper initial installation will help to create an environment for the optimal performance of the Westhold Race Management System (RMS) as well as help prevent problems in the future.

1.1 Antenna Installation

The antenna loop consists of insulated copper wiring with a 470 ohm resistor on one end. Many different gauges of wiring can be used. Heavier gauge wire may be more durable over time, but can be harder to work with. Using a 20 or 24 gauge wire will work

Trouble Shooting the RMS

1. Introduction

This document describes how to spot signs of poor performance and methods for trouble-shooting these problems. It will focus on identifying and addressing these issues. The document is structured such that the most common problems are described towards the beginning of the document and the more rare problems are towards the end.

2. Transmitter Mounting

Symptoms:

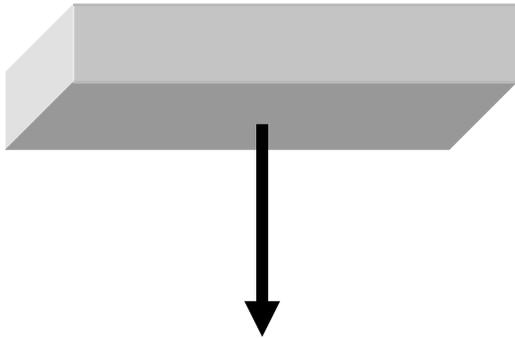
- 1. Missed crossings**
- 2. Low hits and or power numbers**

Hit numbers go from 1-255 on older IDU systems. Newer IDEC systems can go much higher. This is the number of times the system “sees” the transmitter as it crosses the loop. When the cars are traveling slowly you should see higher numbers, for example 100+ at parade speed (up to 30-50 Miles per hour). As the vehicles travel faster the numbers will get smaller as the system “sees” the transmitters are in detection range for a shorter amount of time. This is normal. However, if the numbers are dropping under 20 hits then this indicates possible mounting problems – either poor location or incorrect orientation.

Fixes:

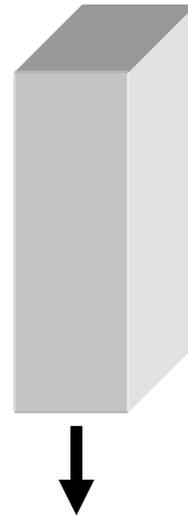
- 1. The most common problem is incorrect mounting position of the transponder. Most problems can be resolved by proper mounting**

Transponder Mounting



1) The label side should face down toward the track for the rechargeable (yellow) and the hardwire (orange) transponders.

2) No metal should be between the label and the track.



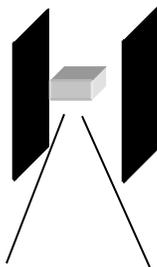
For the activated-car (green) and the activated-kart (blue) units this is the proper orientation.

- Label side of the rechargeable (yellow) and hardwire (orange) transponders faces down toward the track. It does not matter which way the lights face. Those are just indicators of battery life. The activated-car (green) and the activated-kart (blue) are oriented so the labels are upright (see image on right)

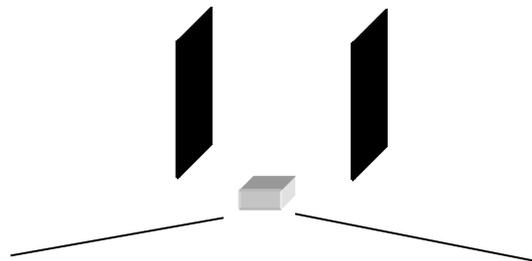
- No metal or carbon fiber between transponder and track. The transponder must have a clear shot to the ground.

Note: Signals can go through plastic so it is possible to use a piece of plastic as a mounting plate.

It is possible to recess the transponder, however keep in mind that recessing the transponder can create problems such as shown below.

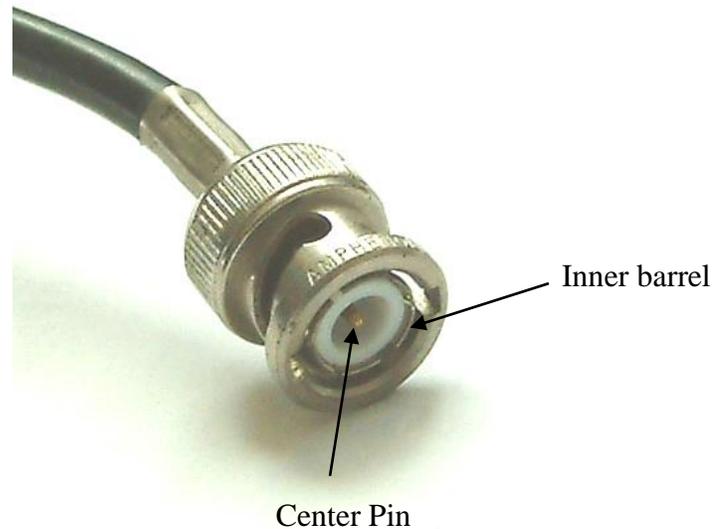


Poor location: Narrow window for detection. The signal can't be seen



Good location: No metal to block the signal. The detection window is very

2. Cabling Problems are another source of problems. Usually the symptoms are poor hit or power numbers. Usually cable problems are random and the effects cut across all transponders. Note that sometimes these problems are intermittent. This can happen with a bad connection. Sometimes the hit and power numbers look good and sometimes they do not.



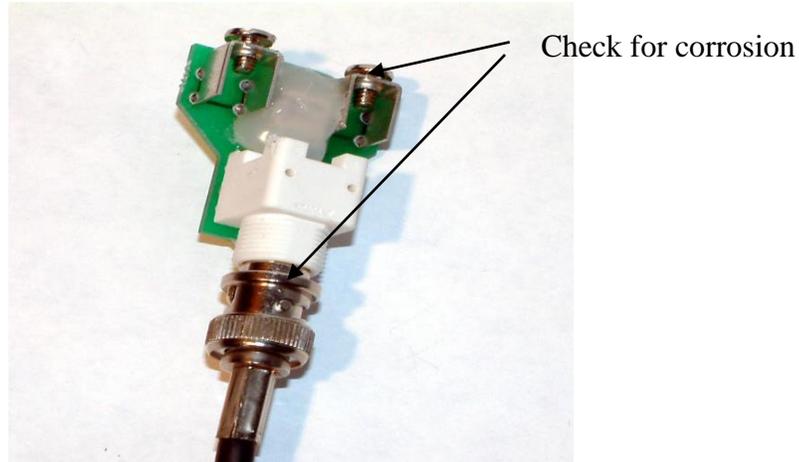
Make sure the center pin and inner barrel are flush on both ends of the cable. This is often the source of low hit numbers.

Other things to check for:

Measure the resistance (ohms) between the center pin and outer barrel with the balun connected on the other end. It should read only 2-3 ohms. If it's more than a few ohms difference from these numbers you have a problem. If you see 0 ohms or if you see an open or some large number then there is something wrong with the cable or connector.

NOTE: AMB/MyLaps will measure 100,000 (ie 100K) ohms. Their balun includes a 100K resistor.

Check the balun end of the coax as well. Also see if there are signs of corrosion at the below indicated areas.



Check antenna loop for proper resistance. Disconnect the antenna loop from the balun terminals and measure between the two ends of the loop. It should read about 470 ohms. If it is within +/- 50 ohms then the reading is ok. If you see large resistance or an open it means there is a break in the loop.

Loops are not as likely to have problems as the balun and coax, but they can be the source of inconsistent detection. It's generally the interfaces between the different pieces that are the points of failure.

3. RF Interference is one of the most uncommon problems. However, sometimes other equipment can cause interference. If there are any electronic devices immediately next to or on top of the IDU or IDEC decoding equipment or the coax cable move the devices away. Usually a few feet is sufficient.