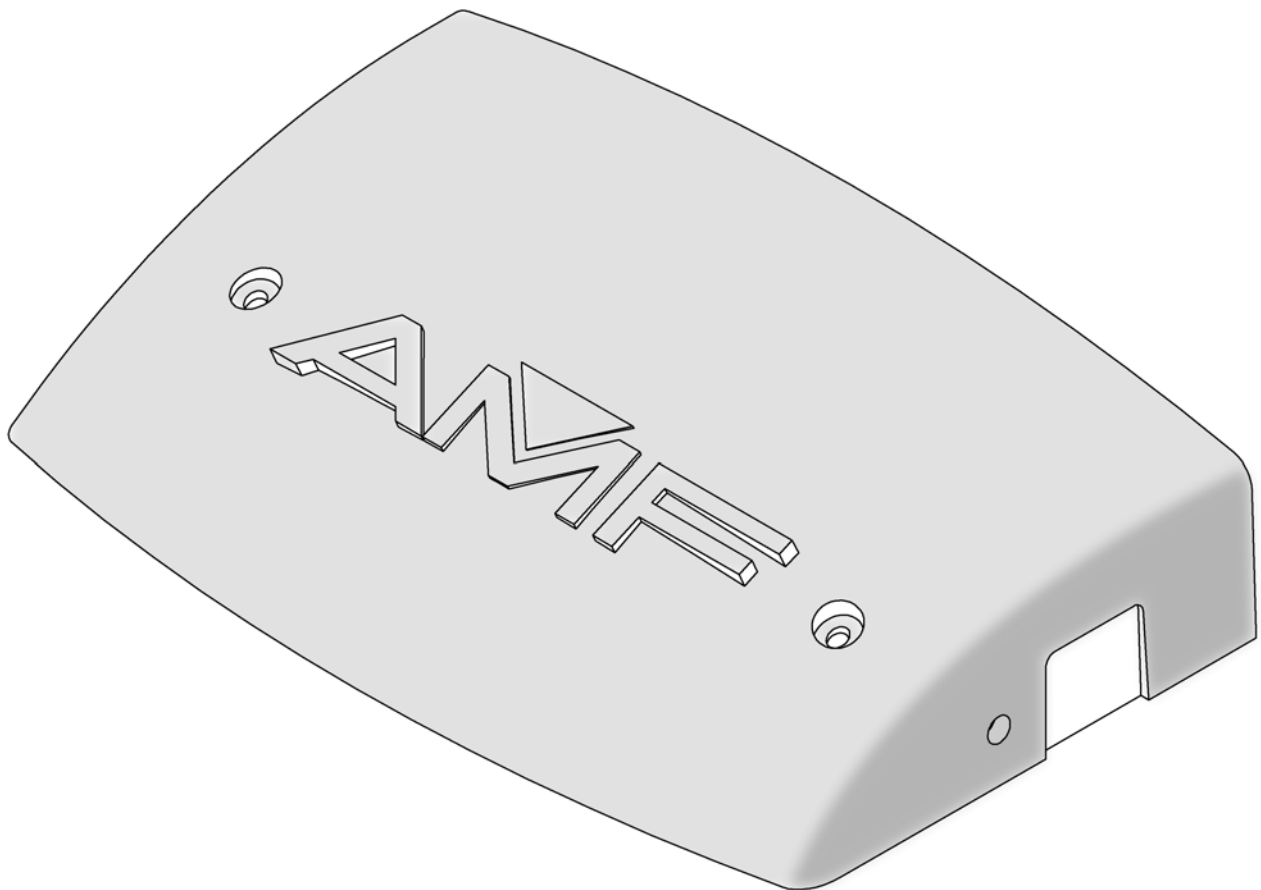




# **RADARAY XL*i***

## **INSTALLATION & SERVICE MANUAL**



**P/N 400-088-006**

**Revision A**



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# **Radaray XLi**

## **Installation and Service Manual - P/N 400-088-006**

**Rev. A**

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## **1.0 General Information**

The Radaray XLi provides a means of detecting encroachment upon the foul line on a pair of lanes. The unit employs two (2) retro-reflective photoeyes. All that is required externally are reflectors mounted across the lanes from the Radaray unit. The Radaray XLi is designed to be used only with the XLi Pinspotter Chassis.

The unit is powered by 12 VDC at .100 Ampere from the XLi Chassis. When a foul is detected (the optical path between the unit and the external reflector is broken), an independent signal for that lane is sent to the chassis telling it that a foul occurred. Also, a sinking 12 VDC signal is activated for 12 seconds which lights the LED for that lane (mounted in the control unit cover) and causes a beeper to sound for approximately 1.5 seconds.



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## **2.0 Installation and Alignment Procedure**

### **2.1 Installation**

#### **Foul Detector Chassis (088-000-163)**

The Foul Detector Chassis mounts above the underlane track (Use alignment marks stamped on the Radaray chassis). It should be positioned as square as possible with the lanes for ease of alignment and proper operation. The sensor has two “bubble” lenses, one used to emit the light signal and one to receive it.

**Note** - ABC/WIBC equipment specifications require that, “The beam of the foul detecting device shall be set not more than 1/4 inch beyond the approach side of the foul line.” Be sure that the installation of your Radaray unit complies with the ABC/WIBC specifications.

The installation sequence is as follows:

1. Mark the location of the three mounting holes using the Radaray chassis as a template. Drill pilot holes as necessary for the three mounting screws. A typical pilot hole should be 5/32" in diameter.
2. Plug the ten position RADARAY connector on the ball return cable (088-000-015) into the receptacle on the back of the unit.
3. Secure the chassis with the three self-tapping #10 x 1" hex head screws provided.
4. Before installing the cover, install the reflector and complete the alignment procedure.
5. Install the cover. Secure each side using the two 1/4-20 x 1/2" screws provided.

#### **Reflector Unit (088-000-128)**

The reflector unit mounts at the end of the common lane division capping. The unit should be positioned so that the center of the reflectors is in line with the approach edge of the foul line. The installation sequence is as follows:

1. Mark the location of the two mounting holes (forward and rear) using the base as a template. Then drill pilot holes as necessary for the two mounting screws. A typical pilot hole should be 5/32" in diameter.
2. Secure the reflector base with the two self-tapping #10 x 1" hex head screws.
3. Install the cover using the two 1/4-20 x 1/2" machine screws.



### 2.2 Alignment Procedure

The Foul Detector is prealigned at the factory. On installations where the mounting surface is level and the foul detector is square to the lanes, additional alignment may not be necessary. In any event, alignment should be verified after installation.

Each optical assembly has one axis of adjustment which is horizontal (left and right). It is only necessary to slightly loosen the mounting screws to align the optics. The screws should not be completely removed.

An orange indicator lamp (LED) is built in to the optical assembly and is used to indicate the proper alignment of the optics. When poorly aligned, the LED will not be lit. If the alignment is close, the LED will be blinking. At best alignment, the blinking will stop and the LED will show a solid light.

To align the optical assemblies, use the following procedure:

Make certain that there is a clear path between the foul detector optics and the retro-reflector mounted in the housing across the lane from the unit.

1. Turn on the Radaray from the pinspotter chassis or handheld unit (See Section 3.0 Operation).
2. Remove the Radaray cover.
3. Loosen the two mounting screws slightly, allowing the optical assembly to rotate from side to side. Rotate the assembly until the LED obtains a solid light. Secure the screws. The horizontal alignment is now complete.
4. Replace the Radaray cover and test the unit to make sure that everything is still aligned.

**Note** - It is very unlikely that the vertical alignment will be incorrect. Apply some slight pressure on either side of the sensor bracket to determine if it needs to be adjusted. Remember, vertical adjustment should only be done if the horizontal alignment adjustments do not yield a solid light on the LED. If the vertical alignment is not correct, carefully use a pair of needle nose pliers and slightly bend the sensor bracket to tilt the sensor up or down as needed.

### 2.3 Single Side Operation

In an installation where only one detector is used (an odd number of lanes, for example), the foul detector for the unused lane can be deactivated through the chassis using the same procedure as mentioned in Section 3.0 Operation.

### 3.0 Operation

The pinspotter chassis is capable of showing when a lane has the foul detector on or in warning mode. On the Main Screen, you will see symbols just to the left of the lane numbers that tell you what mode the foul detectors are in (shown in Figure 1). If neither of the icons for the foul detector is displayed, then the foul detector is off.

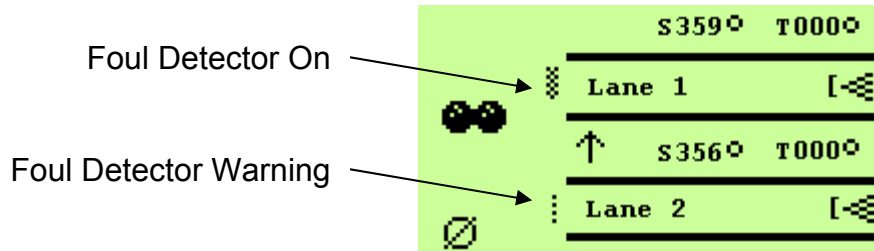


Figure 1, Foul Detector Icons

- ☒ Foul Detector On - Foul lights are turned on and a foul will count on the scoring.
- ☒ Foul Detector Warning - Foul lights are turned on and a foul will not affect the scoring.

The foul detector modes can be changed through the pinspotter chassis of handheld unit by using the following steps (see Figure 2).

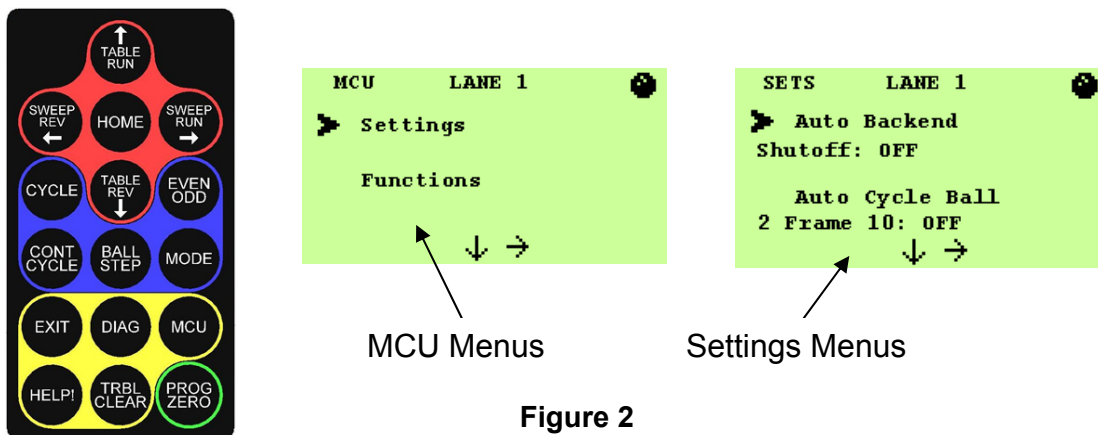


Figure 2

1. Press the **[MCU]** button to go into the *MCU Menus*.
2. Press the **[→]** button to select the *Settings Menu*.
3. Scroll down by using the **[↓]** button until the flashing arrow is next to *Foul Detector*.
4. Pressing the **[→]** button will cycle through the possible choices for the foul detector.

Once you have finished selecting the appropriate setting for the foul detectors, press the **[EXIT]** button twice to return to the *Main Screen*.



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## 4.0 Maintenance

The system is designed to operate properly with a significant amount of dust and dirt accumulation on the optics. However, it is advisable to perform periodic cleaning of the reflector surfaces and optical windows.

**Note** - IT IS RECOMMENDED THAT THE OPTICAL SURFACES BE COVERED DURING ANY LANE MAINTENANCE THAT GENERATES LARGE AMOUNTS OF DUST AND DIRT OR ALLOWS CHEMICALS TO SPLASH ABOUT.

Cleaning recommendations follow:

1. Use a clean non-abrasive cloth to gently wipe the face of the reflectors on the reflector unit and the optics window on the chassis cover.
2. If gently wiping does not remove the dirt, as may be the case for grease or wax accumulation, a mild soap (such as dishwashing liquid soap) and water solution may be used. First wash and then gently wipe dry.



**DO NOT USE ABRASIVE CLEANERS OR STRONG SOLVENTS AS THEY MAY PERMANENTLY DAMAGE THE SURFACES!**

3. The black plastic covers may be cleaned with a protective cleaner such as ARMOR ALL, but care should be taken to protect the optical windows as described above. For this reason, it is recommended that the cleaner be sprayed on a non-abrasive rag and then the unit be gently wiped clean.

ARMOR ALL is a registered trademark of Armor All Products Corporation.



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## **5.0 Replacement Parts**

**088-000-090 FOUL DETECTOR (Comes with Foul Detector 088-000-163 and Spare Reflector Kit 088-000-128)**

**088-000-163 FOUL DETECTOR (Without FOUL DETECTOR SPARE REFLECTOR KIT)**

**088-000-128 FOUL DETECTOR SPARE REFLECTOR KIT**

**088-000-165 FOUL DETECTOR BASE WITH ELECTRICAL**

**088-000-074 COVER, RADARAY W/LED**

**088-000-079 LENS, FOUL DETECTOR**



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