TrailMaster® Active Infrared Trail Monitor Alignment

Two-piece Active Infrared trail monitors have been found to be the most accurate Infrared technology available for trail monitoring. When properly set-up and aligned they are 100% accurate.

WHY ALIGNMENT IS SO IMPORTANT

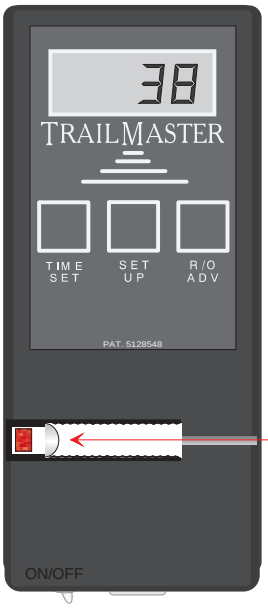
The TrailMaster® family of *Active Infrared* trail monitors consist of two parts, an infrared RECEIVER (the larger unit) and a infrared TRANSMITTER (the smaller unit). ***BOTH the RECEIVER and the TRANSMITTER MUST be aligned for the system to give reliable results.***

The **RECEIVER** (large unit) is aligned using the **ALIGNMENT SIGHT LINE**, (sight line), located on the front of the RECEIVER.

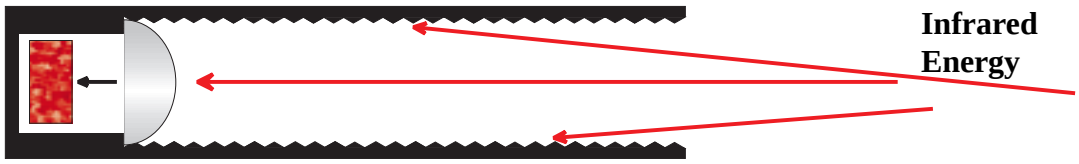
The **TRANSMITTER** (small unit) is aligned with the aid of the **RED ALIGNMENT LIGHT,** (alignment light), located on the side of the RECEIVER.

RECEIVER

The RECEIVER has a light tube inside of the case. The light tube has optics built into it to focus the infrared energy coming from the TRANSMITTER and to prevent the sun's energy from entering the receiving element. The light tube is designed so that the infrared energy must come ***straight*** into the light tube in order to reach the receiving device with maximum energy. The infrared energy cannot be seen well by the RECEIVER if it comes in from wide angles. The light tube and optics are very much like a telescope with the infrared detecting device looking through the scope. This means that the RECEIVER has a narrow field of view, about 1 cm in diameter.



RECEIVER with Light Tube exposed

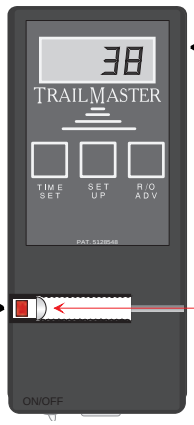


Light Tube

Sight Line

The Sight Line is molded into the front of the RECEIVER case, directly above the light tube.

RECEIVER



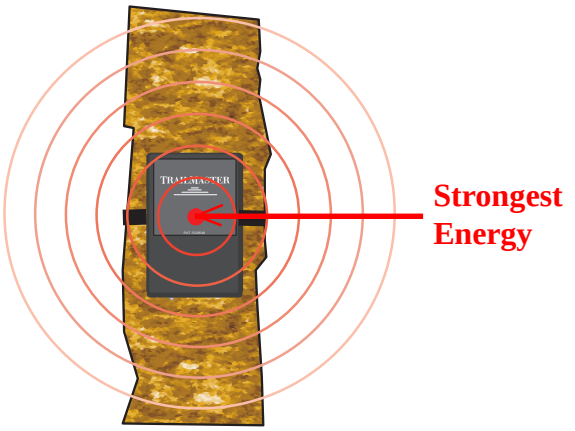
Red Alignment Light is located on the side of the RECEIVER

Sight Line

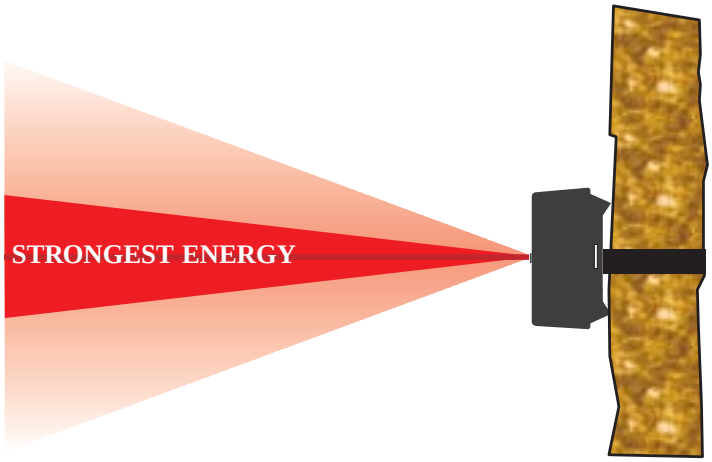
RECEIVER with Light Tube exposed

TRANSMITTER

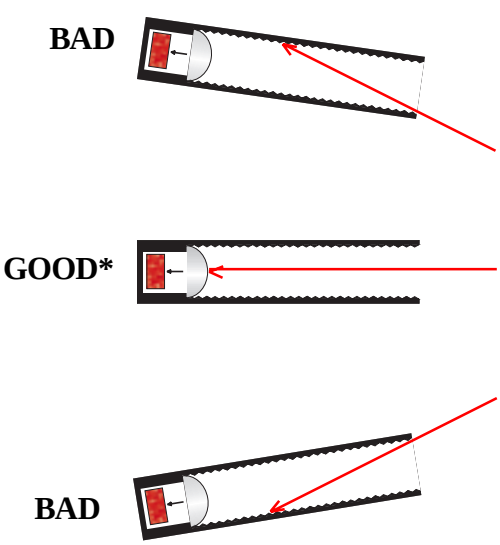
The TRANSMITTER transmits pulses of invisible infrared energy in a beam that is very much like a flashlight's beam. The center of the TRANSMITTER'S infrared beam contains the strongest infrared energy. The edges of the beam have weaker infrared energy. When aligning the TrailMaster® system, it is important to place the RECEIVER in the center of the TRANSMITTER'S beam so that the RECEIVER receives the strongest infrared energy from the TRANSMITTER. The width of the TRANSMITTER'S beam is about 17 degrees. The further the beam goes the wider it gets. At 90 feet the beam is about 27 feet wide.

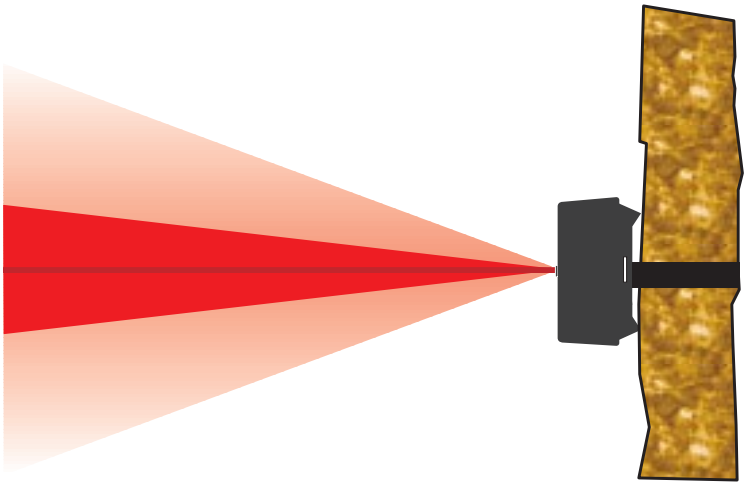


TRANSMITTER
(Front View)



TRANSMITTER
(Side View)





***Ideally the center of the TRANSMITTER'S beam will be aimed directly at the center of the RECEIVER'S light tube.**

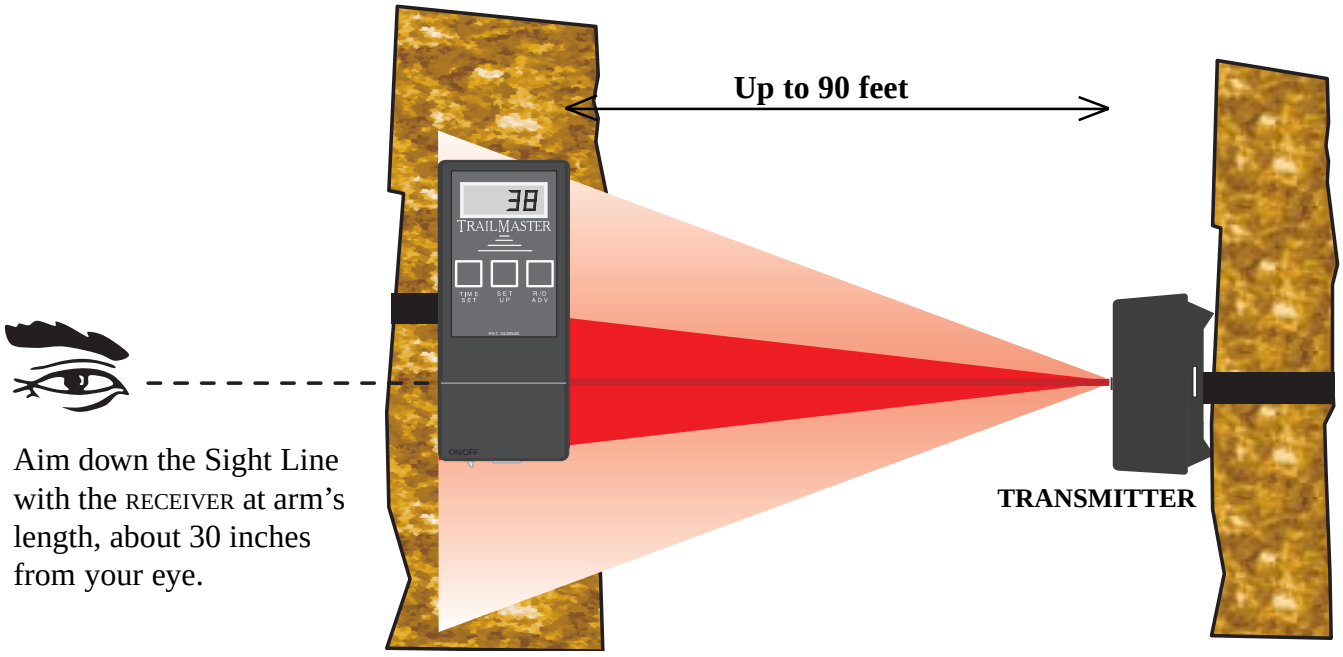
SET UP and ALIGNMENT

Start by loosely strapping both the TRANSMITTER and the RECEIVER to trees on either side of the spot you wish to monitor. The trees should be big enough that they are not going to move in the wind. The TRANSMITTER and the RECEIVER can be separated by up to 90 feet.

RECEIVER Alignment (larger unit)

1. From the side of the RECEIVER, aim down the Sight Line on the front of the RECEIVER so that the light tube in the RECEIVER is aimed at the center of the TRANSMITTER. Aim down the Sight Line on the RECEIVER like you would aim the sights on a pistol. The RECEIVER should be held at arm's length, about 30 inches from your eye.
2. Once you have the RECEIVER aimed at the TRANSMITTER, tighten the strap on the RECEIVER so that it will stay in place on the tree.
3. Look down the Sight Line again and verify that the RECEIVER has not moved while you were tightening the strap. If the RECEIVER is still aimed at the center of the TRANSMITTER the alignment of the RECEIVER is finished and the position of the RECEIVER should not be changed.
4. It is now time to align the TRANSMITTER.

Using the Sight Line to align the RECEIVER is extremely important. The Sight Line must be used every time the unit is set up in order to achieve the best results from your system.

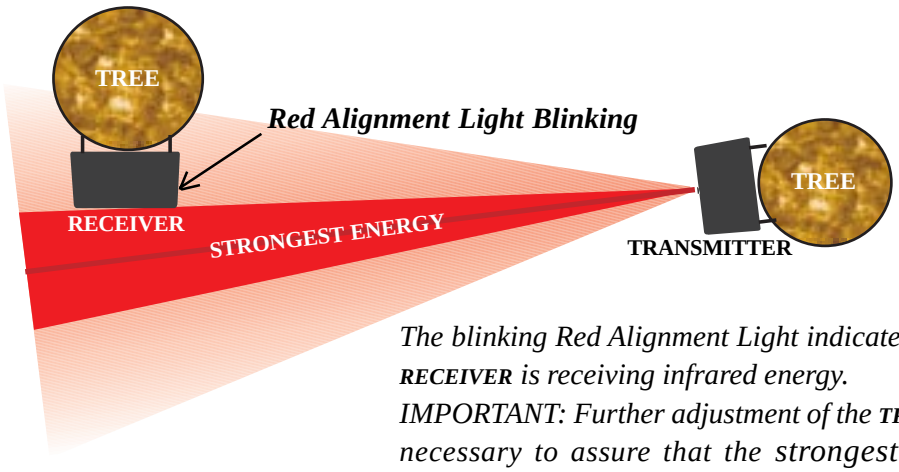


Side view of RECEIVER alignment process using the SIGHT LINE

TRANSMITTER Alignment (Smaller unit)

1. Place the RECEIVER in the Set Up mode by pressing the SET UP button on the RECEIVER until the display shows ***S. UP***. **Even though the Red Alignment Light is on the RECEIVER, it is used to aid in the alignment of the TRANSMITTER.**
2. Go to the TRANSMITTER that is loosely strapped to the tree.
3. Look back at the RECEIVER. You will probably see that the RECEIVER's Red Alignment Light is blinking, indicating that the RECEIVER is receiving infrared energy from the TRANSMITTER even though the TRANSMITTER may not be well-aligned. (See Fig. 1 below)

Overhead view of TRANSMITTER alignment



The blinking Red Alignment Light indicates that the ***RECEIVER*** *is receiving infrared energy.*
IMPORTANT: Further adjustment of the ***TRANSMITTER*** *is necessary to assure that the strongest part of the* ***TRANSMITTER's*** *beam is centered on the* ***RECEIVER.***

Fig. 1

4. Rotate the TRANSMITTER around the tree to the left while watching the Red Alignment Light on the RECEIVER. When the TRANSMITTER is rotated far enough to the left of the RECEIVER, the Alignment Light will go out indicating that you have reached the right edge of the TRANSMITTER's infrared beam. Remember this spot. (See Fig. 2 below).

Overhead view of TRANSMITTER alignment

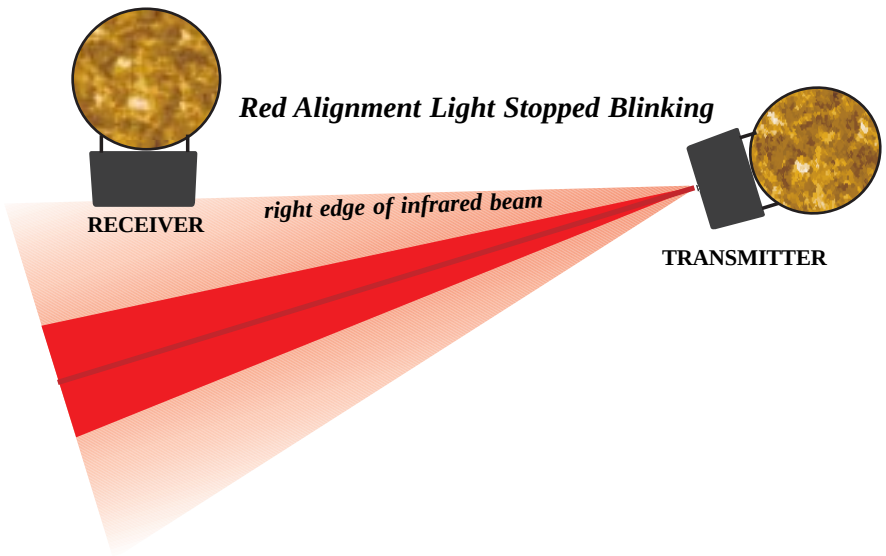


Fig. 2

5. Rotate the TRANSMITTER around the tree to the right while watching the Red Alignment Light on the RECEIVER. The red alignment light should once again start blinking indicating that the RECEIVER is receiving infrared energy from the TRANSMITTER. Keep rotating the TRANSMITTER to the right. When the TRANSMITTER is pointed far enough to the right of the RECEIVER, the Alignment Light will go out indicating that you have reached the right edge of the TRANSMITTER'S infrared beam. Remember this spot. (See Fig. 3 below).

Overhead view of TRANSMITTER alignment

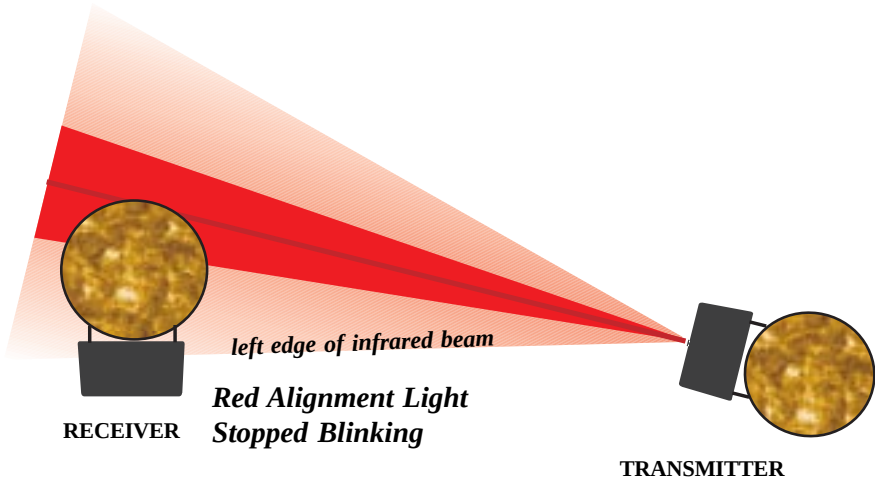
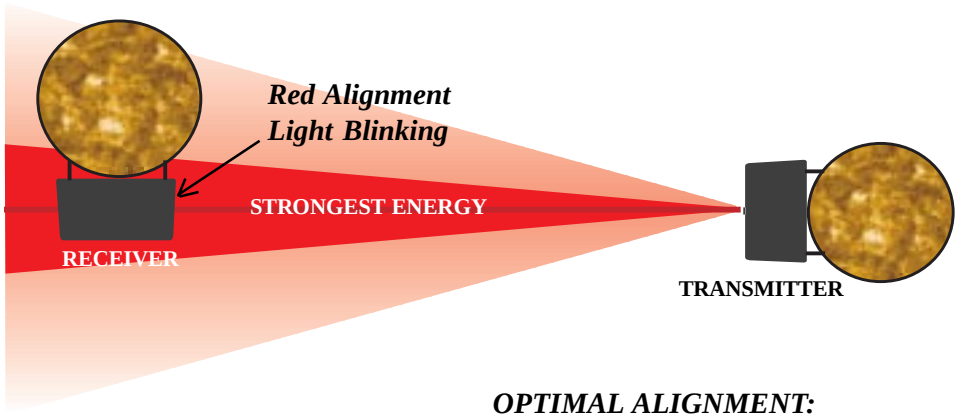


Fig. 3

6. Rotate the TRANSMITTER to the midpoint between the two edges. The horizontal center of the TRANSMITTER'S beam should now be pointed at the center of the light tube in the RECEIVER. The TRANSMITTER horizontal alignment is now optimized. (See Fig. 4 below.)

Overhead view of TRANSMITTER alignment



OPTIMAL ALIGNMENT:
Strongest energy is centered on receiver.

Fig 4

7. If the tree that the TRANSMITTER is mounted on is leaning toward or away from the RECEIVER it may be necessary to check the vertical alignment of the TRANSMITTER. Tilt the TRANSMITTER up and down to locate the center of the vertical beam using a procedure similar to Steps 4-6, going up and down rather that left to right. Once the center of the vertical beam is found it may be necessary to shim either the top or the bottom of the TRANSMITTER to compensate for the lean of the tree. (See Fig. 5-8 below.)

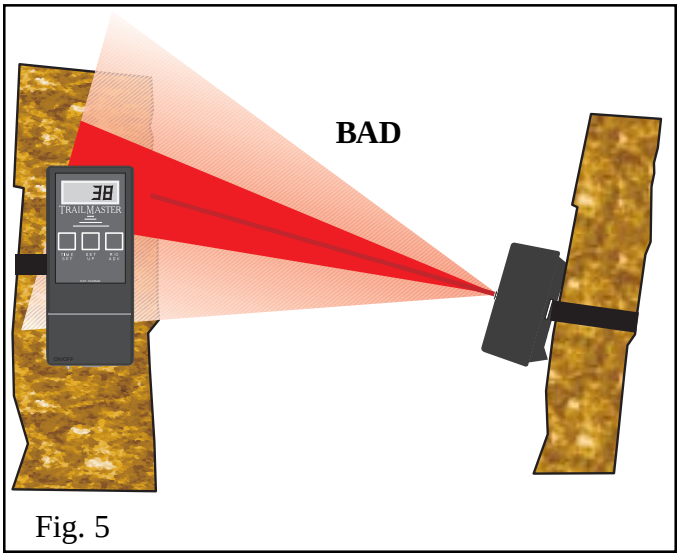


Fig. 5

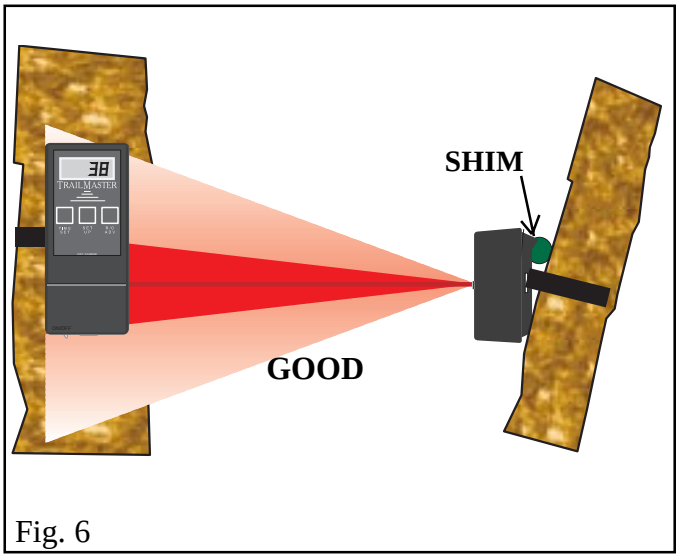


Fig. 6

The SHIM can be a piece of branch or other object used to optimize the vertical alignment of the TRANSMITTER.

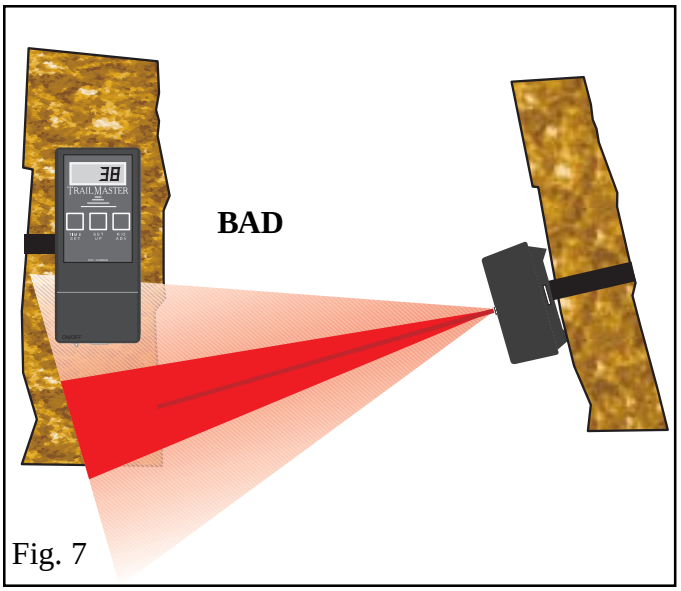


Fig. 7

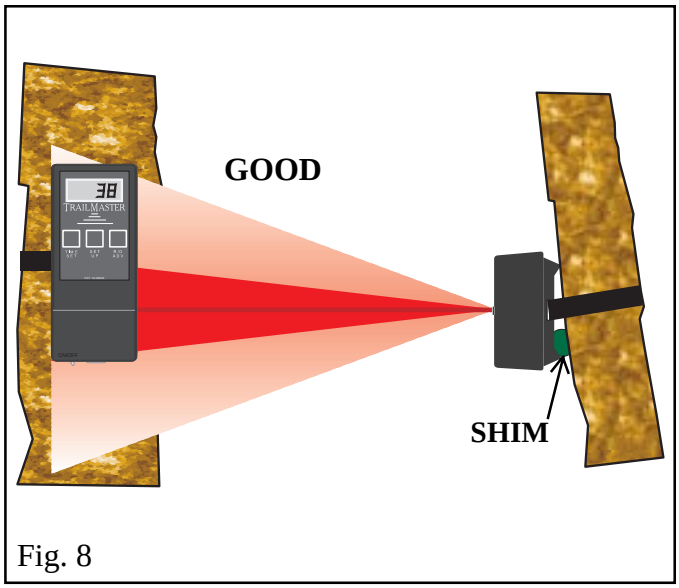


Fig. 8

This procedure will help you to achieve optimal alignment of the **TRAILMASTER®** ***Active Infrared*** trail monitor. As you become more familiar with the procedure, you may be tempted to use only the Red Alignment Light and neglect the Sight Line thinking it is unimportant. Neglecting to use this complete procedure will result in inconsistent operation of the monitor. The Red Alignment Light does not indicate the optimal alignment of both the **TRANSMITTER** and the **RECEIVER**. *It is necessary to use the Sight Line to align the* ***RECEIVER*** *every time the monitor is set up.* Once you are familiar with this procedure, it will take less than five minutes to achieve optimal alignment.

Remember, to get the best possible data or photographs, proper alignment is critical!
You have purchased the best technology available -- TAKE THE TIME TO SET IT UP PROPERLY.
When checking your monitor always check the alignment using both the Sight Line and the Red Alignment Light.