


TRACKER[®]

Classic Receiver





Congratulations! The Tracker Classic Receiver System will provide you with state of the art radio-location technology for hunting dogs and pets. This User's Guide is intended to provide you with information on the functions of the equipment as well as the basics of radio-location techniques in order to get the most out of your system.

IMPORTANT:

READ ALL INSTRUCTIONS CAREFULLY before operating the receiver.

Warnings:

1. Never operate the unit with a headset at high volume levels
2. Be careful to keep the receiver dry and minimize exposure to rain, snow or other liquids.
3. Changes or modifications to this receiver, not approved by Tracker Radio Systems, Inc. could void your authority to operate this receiver under FCC regulations.

FCC ID: MWBFTV-466

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference that may cause undesired operation.

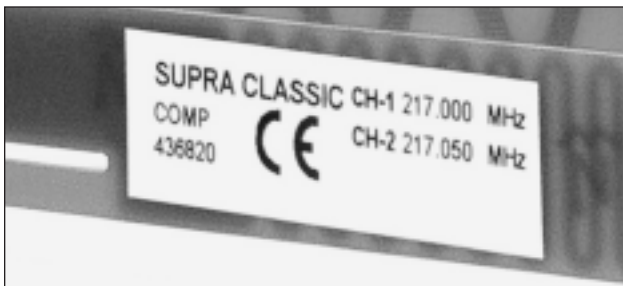
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Features:

- Fixed crystal receiver capable of monitoring a maximum of two frequencies
- Available in Frequencies ranging from 216 MHz through 220 Mhz
- Manual gain control mode
- Row of 11 LEDs indicate strength of signal
- Near button (attenuator) to assist in locating transmitters at short distances
- Low battery indicator
- Toggle channel selection button with indicator lights
- Automatic shut-off
- Headphone jack/mute plug
- Patented, virtually unbreakable antenna elements incorporating steel hinges with 10 year warranty
- Rugged body, CNC milled from a solid aluminum bar and powder coated
- Splash proof design

Model number and serial number are on left rear antenna.



Receiver upgrades:

The Classic is sold as a one or two dog unit. If your receiver was purchased to monitor a single frequency, you can return the receiver to Tracker Radio and have a second crystal installed to monitor a second collar. Charges are assessed for upgrading and shipping.

CLASSIC RECEIVER

The Tracker CLASSIC receiver is a directional receiver marketed for a variety of applications including hunting dogs, falconry, pet tracking, remote control airplanes and model rockets. The antennas fold alongside the body of the receiver to create the most easily transportable receiver/antenna combination available anywhere in the world.

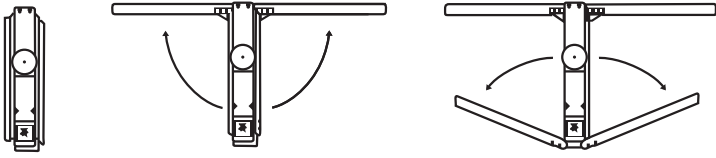
Below is a review of the important features of the Classic receiver.

Integrated Antenna:

A key feature of the Tracker CLASSIC receiver is the integrated folding antenna. Tracker antennas feature steel hinges connecting the antenna elements to the receiver. You will notice that the antennas are made of virtually unbreakable circuit board material. The patented design allows the mechanical length of the antenna to be significantly shorter than the required electrical length.

Operating the receiver:

To use the receiver, first unfold the antennas before activating the receiver. The receiving antennas are situated on the front of the receiver and, when fully extended, are perpendicular to the axis of the receiver. The reflecting antennas are located to the back and, when fully extended, form a 75 degree angle to the axis of the receiver. All four elements need to be extended when tracking.



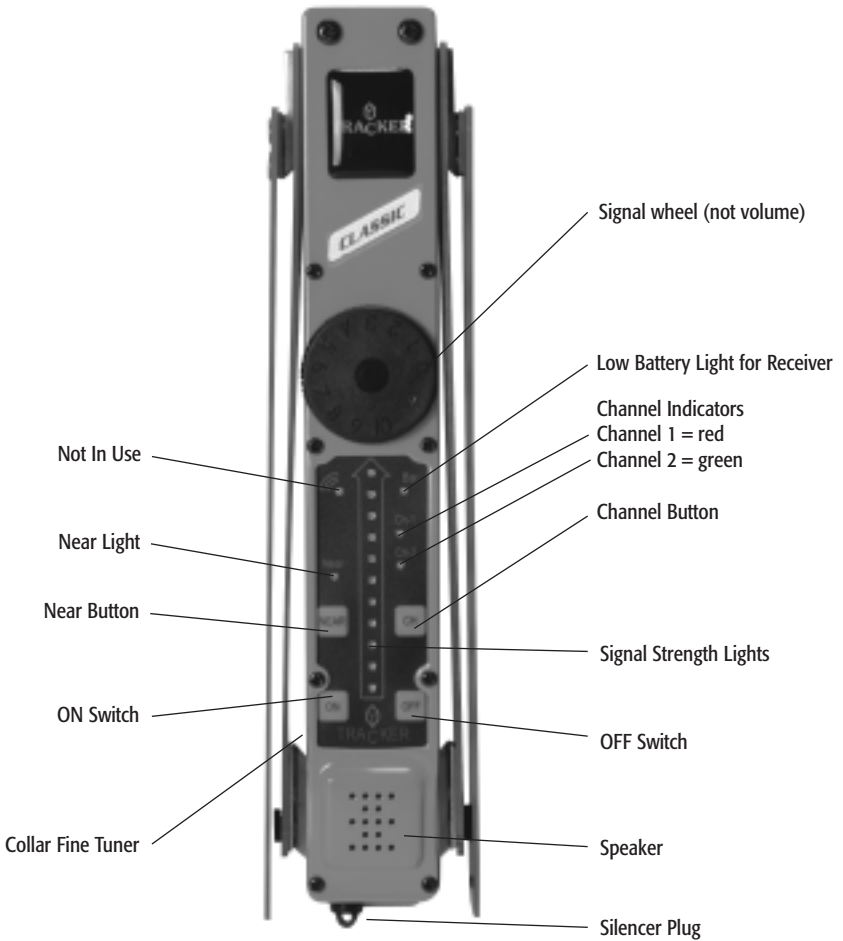
Grasp the receiver in one hand with your thumb close to the gain wheel. For best results, be careful not to touch the antenna as you track. In particular, do not allow the rear antennas to rest on your wrist or forearm, as this can affect the bearing accuracy.



Correct way to hold Receiver

Controls:

front



back

Operating the Classic Receiver:

Turning the receiver ON:

Press and hold the ON/OFF switch for approximately 1 to 2 seconds. CH 1 will illuminate when receiver is on.

Turning the receiver OFF:

Press and hold the ON/OFF switch for approximately 1 - 2 seconds. All lights will be extinguished when unit is off.

Changing Channels:

Use the CH button to switch between Channel 1 and Channel 2. The CH1 indication light is red and the CH2 light is green.

Setting the Gain:

The gain should be set carefully in order to detect the transmitter and to help in direction finding. A gain setting that is too high will make it difficult to determine a bearing to the transmitter. To set the Gain, turn the gain wheel to the lowest level where an audible beep is heard and only green LEDs are illuminated in the direction of strongest signal. This will provide the most precise indication of bearing to the transmitter.

Near Mode:

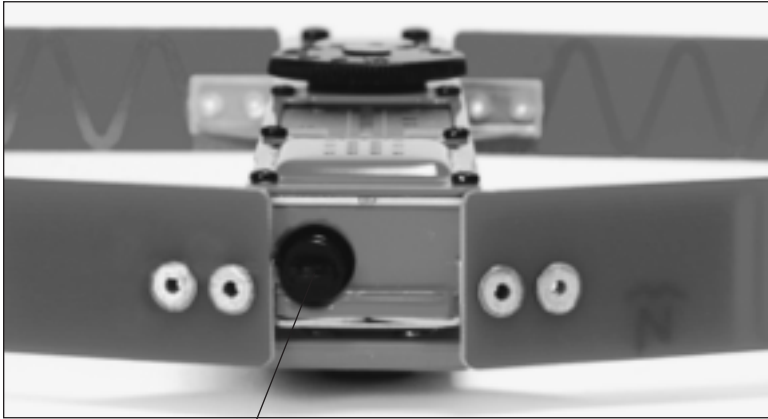
Pressing the NEAR button will activate the attenuator (red light above button will illuminate). Near mode is useful when seeking to locate a dog that is less than a 1/2 mile from the receiver. The NEAR button makes it easier to set the gain level by reducing the sensitivity.

Frequency Fine Adjustment:

All transmitters exhibit a certain amount of frequency drift based on temperature and atmospheric conditions. Tracker has incorporated an adjustment wheel on the left side of the receiver to fine-tune the frequency in order to assure maximum distance tracking and adjusting the pitch of the beep to make it more audible. To adjust the frequency, select the correct channel and

rotate the wheel to maximize the received signal (as indicated by the LEDs or speaker). The adjustment wheel will modify the frequency reception for each channel. If tracking two dogs, try to set the wheel so a strong signal is heard on both dogs.

Headphone Plug/Sound cut-off:



Headphone Jack

- In:** Sound on
- Out ($\frac{1}{8}$ "):** Sound off
- Removed:** For headphones (internal speaker off when Headphones/external speaker is used)

The Headphone Jack takes a standard mini ($\frac{1}{8}$ ") Headphone Plug (Headphones sold separately) Note that the speaker is OFF when the Headphones are plugged in. The signal is audible in both headphone speakers. When removing the plug to allow the use of headphones, pull straight out. A string fed through the hole in the plug may help with removal.

IMPORTANT NOTE: Do not attach a ring or other attachment to plastic plug for purposes of a safety strap. This may cause the plug to break off requiring factory service. Use metal flange adjacent to the headphone jack to attach receiver to holster, belt, etc.

Automatic Shut-off:

The Tracker receiver features an automatic shut-off circuit that will guard against running down the batteries if the receiver is inadvertently left on. Most receivers are set to shut down after 15 minutes if the ON button is not re-pushed.

Changing the Batteries:

1. Start by turning the receiver upside down to allow access to battery compartment.
2. Loosen the retaining screw on the battery cover and remove the cover exposing the two 9 Volt batteries.
3. Replace BOTH batteries with 9 Volt batteries of same type and equal strength. New 9 volt Alkaline batteries are recommended.
4. Replace the battery compartment cover - start by inserting forward edge in slot at the front end of the compartment.
5. Tighten the retaining screw.



Maintenance:

The CLASSIC receiver is designed to provide years of trouble-free operation. You can prolong the life of your system by following these simple suggestions:

1. Store the unit in a dry place at room temperature when not in use.
2. Minimize the contact with water. Tracker receivers are among the most water resistant on the market but no unit is waterproof. Do not store receiver in a wet holster. If unit is submerged in water or becomes soaked, immediately remove the batteries and ship unit to Tracker Radio where it can be chemically cleaned and dried. **WARNING:** If a receiver is stored wet and left to dry, pockets of water may be left under components. This will cause corrosion and damage, even though unit is working.
3. When batteries are weak, replace BOTH at the same time. Both batteries should be identical type (9V - non rechargeable, etc.). Good quality alkaline batteries are recommended. Rechargeable batteries may be used but, if employed, the low battery indicator may not provide much, if any, warning.
4. If the receiver becomes soiled, the body and antenna can be cleaned with alcohol or damp cloth.
5. If the antennas fold in and out with difficulty, **DO NOT** lubricate. Lubrication requires a special non-penetrating conductive lubricant and is best accomplished by sending the unit to Tracker for service.
6. Do not try to adjust the forward/front antennas as it may cause damage to the circuit board, If forward/front Antennas are loose (will not stay in the open position), send unit in for service.

USING YOUR SYSTEM

Getting Started

It is important to acquaint yourself with the features of the receiver before using it in the field. While your system is simple yet powerful, you will need some time to become proficient in its use and be able to “read” the signal in different locations.

It is highly recommended that you practice first before taking your dog hunting.

A Transmitter broadcasts a distinctive pulse in a specific frequency in all directions. The Classic receives the signal and provides an indication of the signal strength. The signal strength of the transmitter detected by the receiver will depend on many factors such as distance to the transmitter, presence of obstacles, signal bounce and antenna polarization.

The observed strength of the signal depends on the amplitude of the wave detected by the receiver. The higher the signal amplitude, the greater the signal indicated by the Tracker receiver. Radio waves spread in all directions from the source of the transmission. As the spreading signals travel away from the source their amplitude decreases and the indicated signal level is reduced. The antenna’s function is to receive the waves for the receiver to process. The unique antenna of the Tracker Classic is designed to favor reception from one direction. When the Classic is pointing in the direction of the transmitter, the signal will be stronger.

The degree of difficulty in locating a dog fitted with a radio collar can vary considerably. Key factors include, landscape, natural and man-made obstructions (trees, buildings, power lines, etc.) and weather conditions. These factors influence the strength of

HINT: Make sure you take the time to familiarize yourself with the controls before tracking a transmitter in the field. With a little practice you will become a proficient tracker.

the signal received, either by attenuating (reducing the strength of the signal) or creating a reflection that will indicate a “false position” where the signal will “bounce off” an object. Understanding how the signal is influenced by these factors will vastly improve your ability to locate your dog.

To become proficient with the operation of the receiver, you should consider activating a transmitter, and have someone in your family or group place it in an open area free from obstructions (where it can be relocated, if necessary). A good distance to start would be at least several hundred yards. Turn on the receiver, select the correct channel and reduce the gain setting so that only 2 to 3 LEDs (green) are illuminated in the direction of the strongest signal. Once this is completed, keep the receiver on and walk toward the strongest signal sweeping continuously in a 180 degree arc that contains the strongest signal. As you approach the transmitter (indicated by the signal becoming stronger) continue to reduce the gain (turn knob counter-clockwise) so that only a few LEDs are illuminated in the direction of the strongest signal. If any of the red LEDs are illuminated it is a signal to reduce the gain. You should quickly locate the transmitter after a little practice. After you become proficient in locating the transmitter in a flat area (line-of-sight), you are ready to practice in more challenging landscape.

The speed of the sweep is important. If you sweep too fast, it will be difficult to get an accurate reading. A steady sweep is best to start in order to get an initial reading. Once you have an initial bearing indication, verify that your bearing is correct by making a few sweeps in other directions. Practice will provide you with the correct technique.

In the line-of-sight exercise, you should have noted several characteristics of the signal:

- The bearing of strongest signal was consistent.
- The signal strength diminished in a consistent pattern as you varied 30 or more degrees right or left of the true bearing to the transmitter.

It is important to remember the characteristics of a line-of-sight situation as it will aid in “reading” the signal in the field.

HINT! Pay particular attention to the gain control setting. It is much easier to track a transmitter when the gain is set at the lowest setting that yields an audible signal. If you see red LEDs, that is your indication to reduce the gain.

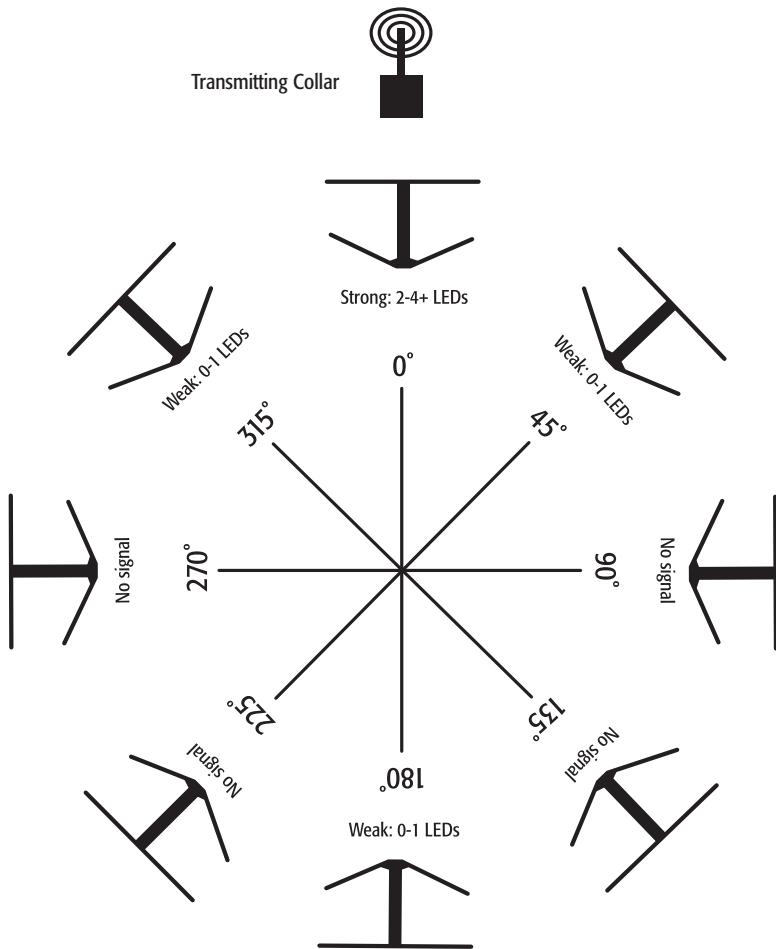


Figure 1: Typical receiver behavior in line-of-sight situations

Next, repeat the practice procedure in an area similar to your hunting area (open fields, forested area, etc.). By this point, you should have mastered the few controls that are required on the Tracker receiver. This is important as your attention should be focused on analyzing the signal rather than operating the receiver. If the channel is set correctly and the gain level is set correctly, your attention can then be focused on interpreting the signal. As you proceed with more complicated searches, it is important to keep moving as you are processing new data points at each new location rather than re-sampling the same data point when stationary.

Follow a similar procedure as in the previous example. Have someone hide the transmitter in an area that will provide a range of obstructions (physical and/or man-made). Unfold the antennas, activate the receiver, select the correct channel and determine if a signal is present. If the signal is heard, slowly sweep 360 degrees to ascertain the direction of strongest signal. You may notice that you receive a relatively similar strength signal from two or more directions. Under these circumstances, first try to ascertain whether a hillside or other obstruction is the source of the "bounce" signal. While there is no universal method for analyzing multiple strong signals, try the following when encountering a "bounce signal candidate:"

- Move to another location some distance away and repeat the procedure. Try to remember the bearing that you received strong signals at the first location and note if another strong signal comes from a common bearing.
- If you can easily reach a higher elevation (increasing the odds for a line-of-sight signal), take another reading.
- If the object (house, hillside, etc.) at the source of the bounce is small, try moving perpendicular to a line between you and the source of the signal. Often if the angle is

changed the strength of the signal will change significantly. If this occurs, review the initial angle to create a possible candidate bearing to the transmitter or eliminate this bearing (bounce signal).

- Implement a “process of elimination” strategy. If the signal is difficult to “read” remove from consideration all line-of-sight locations that you do not receive a strong signal.

You will notice that the signal in the open field led you directly to the transmitter while in hilly area the bearing changed slightly as you move around obstacles and hills. This signal “bounce” is completely normal and eventually, with practice, you will be able to “read” the signal in relation to the terrain.

A signal is not required to be line-of-sight to yield a good bearing. In gentle rolling topography with few obstructions, radio waves can follow the contour of the ground and provide a good bearing. However, distance estimation is complicated as the signal is attenuated (strength reduced) while following ground contours. Often the bearing will change slightly as you approach the transmitter across rolling landscape.

EFFECTIVE RANGE

Transmitter and Receiver location will effect the range we can detect the signal from the transmitter. On flat open country with few obstructions (trees, large rocks, homes, etc.) we will get maximum range out of our system. In steep hilly terrain or in a large city, the range can be reduced significantly.

Distance can be estimated after you have gained experience tracking in the same terrain using the same transmitter. You may note that a signal received at a gain level of 6 is much farther away than one received on a gain level of 5 in the same terrain. The gain scale is logarithmic not linear. This means the change

in gain from 1 to 2 is very small as compared to the change in gain from 5 to 6, i.e. gain at 1 to 2 is for 50 to 100 ft. while gain at 5 to 6 is for ½ mile to 2 miles. This is not an exact measure, the ranges will be different depending on all of the factors involved. NOTE - If the signal is not line-of-sight, distance estimation is not reliable.

ADVANCED TOPICS AND SPECIAL SITUATIONS

Obstacles

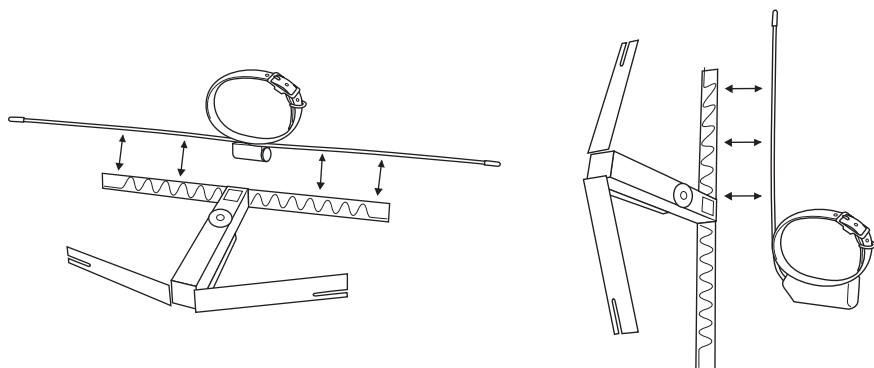
Think about what happens to the signal strength of your favorite radio station when your vehicle enters a tunnel. Generally the signal becomes very faint or you lose it altogether. The same effect can be experienced when searching for a cell phone signal in a deep canyon. Radio waves at certain frequencies have great difficulty penetrating rock and other solid objects. Therefore, it is generally more challenging to locate an object in rugged terrain rather than on a flat plain.

Signal Bounce

The term that professionals use to describe the behavior of radio waves deflecting and reflecting off objects is "signal bounce." Many different types of substances reflect radio waves including rock (particularly shear cliffs), water and wet vegetation. "Bounce" has a tendency to complicate radio-location, as the signal will be affected by the composition and shape of the reflecting object. This phenomenon has the potential to create strong signals in several discrete directions. Signal Bounce should not be intimidating - we just need to learn how to manage it.

Polarization

The signal will be strongest when the orientation of the receiver antenna matches the orientation of the transmitting antenna. For example, if the transmitting antenna is perpendicular to the ground, the signal strength detected by the receiver will be greatest when the antennas are positioned vertically. You can test this for yourself by activating a transmitter and orienting the antenna



on the transmitter parallel to the ground. Then turn on the receiver and test the signal strength with the antennas parallel and perpendicular to the antenna on the transmitter. Knowing the optimal orientation of the receiver can aid in radio-location.

Overhead Utilities

Power lines are excellent re-radiators of radio waves and can complicate radio-location. Like signal bounce, it is all very manageable once you understand the limitations of tracking near power lines especially high voltage transmission lines.

Use in and around a vehicle

The receiver can be operated from a motor vehicle, however, many older vehicles produce considerable interference and make signal reception difficult (particularly a weak signal) when the engine is running. When using the receiver without an external antenna it is best to shut off the vehicle and move at least 20 feet away. Be cautious of reflected signals off the vehicle. It might be necessary to take readings from different points from around the vehicle to get a good bearing.

Location of transmitter

There is a reason why TV and radio transmitters are located on hilltops and towers - it provides maximum range for the signal. Conversely, the closer to the ground the transmitter is situated, the shorter the effective receiving range. Locating an object that has fallen into a well or is flat on the ground is more difficult given the reduced effective range of the signal.

Location of receiver

Similar to the location of the transmitter, any given signal can be received at greater distance if the receiving antenna is high in the air, therefore, a stronger signal may be obtained by positioning the receiver higher off the ground. NOTE: It is much worse for the Receiver to be in a depression than the transmitter.

TRANSMITTERS:

For many applications, Tracker markets transmitters with the Classic receivers, as a package. See the Quick Start Guide for your transmitter type or download off of www.trackerradio.com

TROUBLESHOOTING:

Receiver will not turn on

1. Make sure you are pressing and holding the ON/OFF button for at least 1 second.
2. Remove battery cover and check to make sure batteries are connected and battery clip wires are ok. If wires are broken or frayed, send unit in for service.
3. Use a battery tester, not a Multimeter/volt meter to assure that both batteries have sufficient strength.
4. Try replacing batteries. If unit still does not turn on, send unit in for service.

Receiver is on but no sound is heard from speaker

1. Make sure gain control is set high enough to be able to activate speaker.
2. Insure the Black Plastic Mute/Silencer plug is all the way in the Headphone Jack.
3. Remove the plug.
4. If there is still no sound from the internal speaker, send unit in for service.

Distorted Audio or loss of Signal

1. If audio is distorted all the time, send unit in for repair.
2. Check frequency fine adjustment for both channels

Antenna/s loose or too tight

1. DO NOT try to tighten or adjust the front antennas, this can damage the circuit board and will void your warranty.
2. Rear Antennas can be adjusted with a screwdriver (screws are located under battery retaining cover.) Antennas should be snug but move smoothly in and out. Note: these are steel screws in an aluminum body, so please be careful not to strip the threads. If antennas cannot be adjusted for smooth operation, send unit in for repair. DO NOT oil or try to lubricate the antennas, this can possibly damage the internal electronics and void your warranty.

Direction Accuracy

1. Insure antennas are fully extended.
2. Insure the back/reflecting antennas are not resting on forearm or any part of you body.
3. If rear antennas are loose, adjust with a screwdriver for smooth but snug operation (see above for explanation).
4. Check for corrosion on antenna rotating points/hinges. If present, send unit in for service.
5. If none of the above causes are apparent and the problem persists send unit in for service.
6. Do not touch antenna elements with any part of your body as it may influence direction accuracy.

NOTE: DO NOT put any mewtallic or metal tape or stickers on the antennas.

Reduced reception

1. If low Battery Indicator is on, change batteries in receiver.
2. Replace battery/s in collar (transmitter).
3. If available, compare reception with another Receiver with same transmitter. If range is considerably less, send unit in for service.

Gain control abrupt change

1. Check battery
2. If problem is still present the Gain control Potentiometer may be defective and requires service.

Other Problems:

NOTE: All problems listed below require the Unit sent in for service.

1. LED/indicator light that will not illuminate
2. Broken antenna element
3. Broken Battery Clip
4. Squeal from speaker that sounds like a bomb dropping. If this occurs, note the channel this occurred on and send the unit in for service.
5. Unit submerged or soaked: Remove batteries immediately, and send unit in for service.

Warning! If you allow a wet receiver to dry, the unit may initially function normally, but there will be areas that will continue to corrode and the unit will eventually fail and require service. When the receiver eventually fails the electronic circuit boards may be so badly damaged they will require replacement, costing \$200.00 or more, and warranty will be voided. Therefore, it is strongly recommended that you send the receiver in for service if you think the unit may have gotten wet inside.

How to send in a unit for repair:

Package receiver in holster and original box if possible, or box with good padding, and include a note with the following information:

- Name and Address and phone/e-mail address of sender
- Copy of warranty paperwork or receipt
- Brief description of problem.
- Include your e-mail address for notifications of the following:
 - We have received your shipment
 - Estimates of repairs over \$150, and
 - Return shipment of your items

The technicians would appreciate as much information as you can provide in order to reduce repair time so that they can ship your unit back as quickly as possible. The description "it doesn't work" is not particularly helpful.

We recommend that you insure the unit


Send to:

Tracker Radio Systems
800 S. Industry Way
Suite 160
Meridian, ID 83642

CLASSIC RECEIVER SPECIFICATIONS:

Weight with Batteries	10.7 oz (420g)
Dimensions (antenna folded)	8¼" x 2" x 11/2" (206 x 48 x 30 mm)
Dimensions (antenna unfolded)	8¼" x 16" x 11/2" (206 x 405 x 30 mm)
Spurious emission	< 2 pW
Operating voltage	7 - 10 V DC
Battery types (2 pcs)	9V/6LR61 - 6AM6EU
Current consumption	Max 70 mA
Sensitivity	>-130 dB / .078°V
Operating temperature	-14 to 131° F (-10 to + 55° C)
Available Frequencies	216.000-220.000 MHz

Tracker Inc. reserves all the rights for any specification change.

 The equipment complies the essential requirements of EU directive 1999/5/EY.



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