All Metals Locator
Highly Advanced PI Technology

OPERATIONS MANUAL

ISSUED: MAY 2022
PN 1539600 REV B

GARRETT®
METAL DETECTORS

SAFETY

Operators must fully read this *RECON-PRO* Operations Manual before using this detector, must always follow the Standard Operating Procedures of their governing organization and must be fully trained in hazardous search operations. The operational procedures described in this manual are general guidelines for the use of the *RECON-PRO* All Metals Locator and are not intended to be substituted for the Standard Operating Procedures provided by the user's governing organization.

WARNING

The *RECON-PRO* is an electronic instrument that detects targets which contain metallic components only. Detection is limited by the size, shape, material and distance of a metallic object. Any item without metal components WILL NOT be detected. Very small metal parts containing "specialized" metal alloys may not be detectable (a pre-test of such samples is recommended before field searching).

WARNING

When searching for targets in hazardous areas extreme care must be practiced to avoid physical contact with devices that contain activation mechanisms (example: tripwires, detonators, pressure fuses). Be aware that the actual buried target may be larger in size than the detected metal component.

WARNING

Under NO CIRCUMSTANCES should the *RECON-PRO* detector be used as a probing device or as a digging tool. Once a buried target is detected, trained specialists with proper tools are recommended for the excavation of the detected target.

WARNING

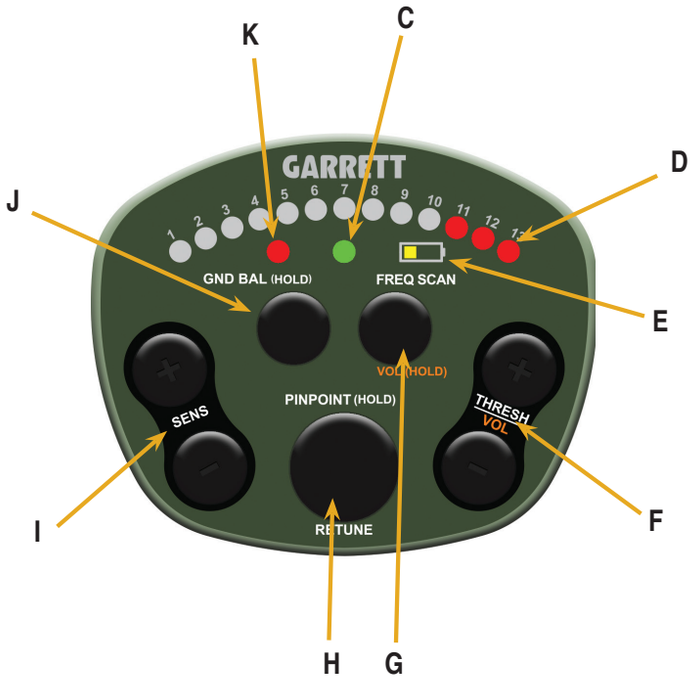
There are numerous Improvised Explosive Devices (IEDs) that can be hidden in various containers, some disguised in normal looking consumer items. Extreme caution must be taken when approaching such devices as they may contain unknown components. The use of a metal detector as the primary means of detecting such targets may not be the appropriate procedure as the magnetic influence of the detector could possibly cause activation. This precaution may apply to undocumented conventional type munitions and mines with magnetically influenced triggering devices.

WARNING

Battery Safety: The *RECON-PRO* is supplied with rechargeable batteries that may contain small amounts of harmful substances.

- ***Caution:*** Always fully charge batteries before use.
- ***Caution:*** Do not short circuit. Serious burns may result.
- ***Caution:*** Do not dispose of batteries in a fire. They may explode.
- ***Caution:*** Do not open or mutilate batteries. They may contain an electrolyte which is toxic and harmful to the skin and eyes.
- ***Caution:*** The battery charger supplied is intended for use with nickel metal hydride batteries only. Do not attempt to charge other types of batteries.
- This equipment may be used with high quality alkaline or lithium batteries.
- Do not put the batteries in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations and your company's safety standards.
- Recycling centers and retailers with recycling programs may be found at www.rbrc.org.

OPERATING CONTROLS
(Functional Layout Guide)



A: Power Switch ON/OFF
B: Headset Connector
C: Power ON LED Indicator
D: Signal Strength LED Indicator
E: Low Battery LED Indicator
F: Threshold Level (+, -)
F + G: Volume Level (Hold G; Press +, -)
G: Frequency Scan (Quick Press)
H: Audio Retune (Quick Press)
H: Pinpoint Function (Hold Down)
H + A: Factory Reset (Hold H; switch unit on)
I: Sensitivity Level (+, -)
J: Ground Balance (Hold Down)
K: Ground Balance Indicator (Red LED ground balance in progress)

Note: When adjusting any setting, the initial button press shows the current setting. Subsequent presses within 1.5 seconds will adjust the setting.

Note: All changes made to the settings are saved when the unit is switched OFF. Perform Factory Reset to restore settings to Factory values.

AML-750 FACTORY/DEFAULT SETTINGS

Sensitivity:	10
Threshold:	7
Volume:	10
Ground Balance:	Neutral

TABLE OF CONTENTS

1.0 GENERAL DESCRIPTION OF THE *RECON-PRO* AML-750

The *RECON-PRO AML-750* (All Metals Locator) has been purpose-designed for professional user groups worldwide. Garrett's innovative Advanced Pulse Technology allows the *RECON-PRO* to be used in all soil and all shallow water conditions.

The unit's advanced pulse induction technology assures consistent and high sensitivity detection in most soils without the need for ground balancing. For areas with highly mineralized soils, an accurate ground balance function is provided. This addresses areas with conductive and magnetic stones such as Magnetite and Hematite. With this feature, operator performance and safety is optimized.

Compact, lightweight, well-balanced, and rugged the *RECON-PRO* is highly suited for the most challenging work conditions. Simple controls allow the user to fully concentrate on the detection tasks. A built-in low battery warning alarm provides the operator approximately 30 minutes to return to a safety zone with a fully functional detector.

Further enhancements include:

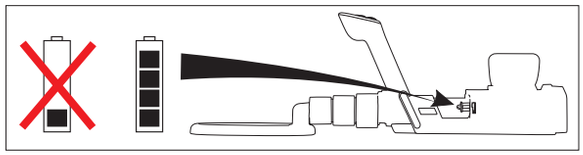
- an automated Frequency Scan/RF Interference (RFI) cancellation function;
- motion-mode (i.e., dynamic mode) operation that helps maintain a stable background signal level to enhance perception of faint target signals;
- a static-mode pinpoint function to precisely locate targets;
- a fully collapsible telescoping shaft;
- one-hand operation;
- adjustable volume level;
- adjustable audio threshold level;
- adjustable sensitivity control; and
- standard AA-battery operation. (TWO sets of rechargeable batteries are supplied with each *RECON-PRO*.)

2.0 FIELD GUIDE

This Field Guide is intended to serve as a reference guide for the recommended *RECON-PRO* operational procedures. However, **all operators must completely read and understand the ENTIRE manual BEFORE commencing search operations.** This section is only intended as a reminder.

2.1 Install batteries.

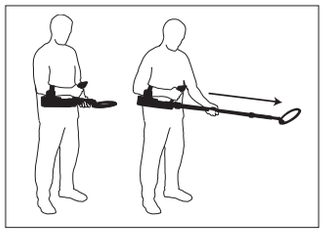
Insert a set of fully charged batteries at the start of each day's work.



See Section 5.1.2 for more details.

2.2 Adjust coil, shaft and armrest.

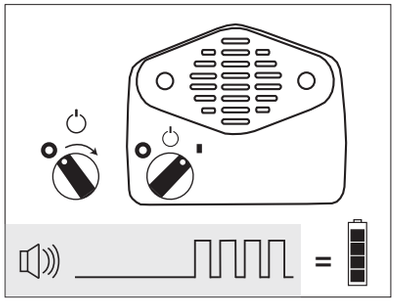
Disengage the armrest, shaft rotation lock and shaft nuts and adjust to desired position.



See Section 5.1.3 for more details.

2.3 Switch on the detector and check batteries.

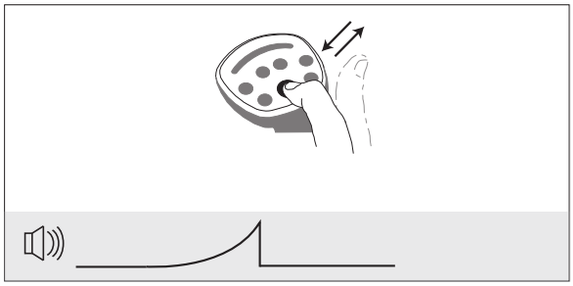
Switch on and listen for four audio beeps indicating fully-charged batteries.



See Section 5.1.6–5.1.7 for more details.

2.4 **Verify audio retune function.**

Press and release center RETUNE button to quickly cancel out unwanted ambient signals.

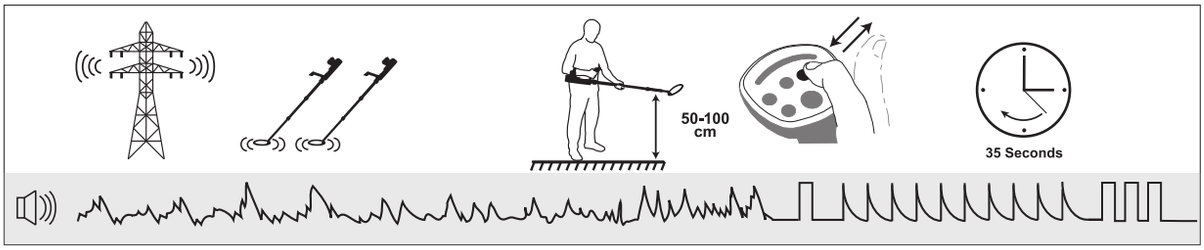


See Section 5.1.9 for more details.

2.5 **Perform RFI cancellation with Frequency Scan (if needed).**

Operating near power lines, etc. may cause interference. To check, hold search head stationary 50–100 cm above ground and listen for signal interference. If present, press and release FREQ SCAN button. The noise cancellation function lasts for 35 seconds as indicated by the scanning LEDs and audio pings. Completion is indicated by a triple-beep.

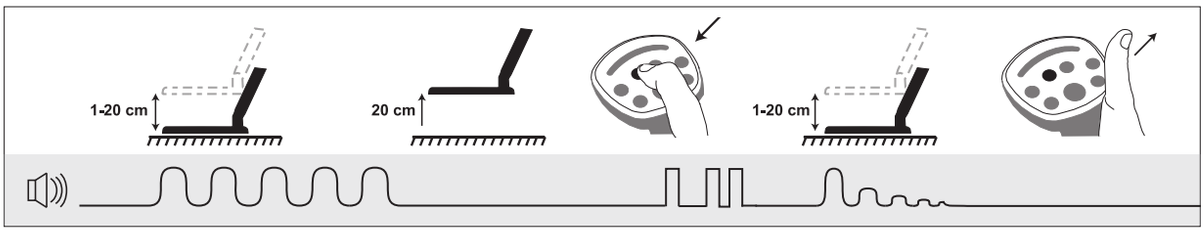
(In urban areas with high levels of mixed RFI sources, it may be necessary to reduce the detector's sensitivity level by one or more steps below maximum sensitivity. In this case, target detection sensitivity will be reduced.)



See Section 5.1.8 for more details.

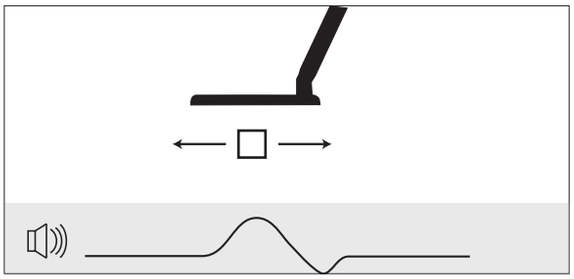
2.6 **Check ground response and perform ground cancellation (if needed).**

Locate an area free of metal objects and check ground response by quickly and repeatedly raising and lowering the search head to the ground from approximately 1 cm to 20 cm. If there is a repeatable sound variation, initiate ground cancellation. Raise the search head 20 cm above the ground and press and hold the Ground Balance (GND BAL) button. Wait for the double beep; then quickly lower and raise the search head to the ground from approximately 1 cm to 20 cm repeatedly until the ground response is completely eliminated; typically 3 to 7 seconds. Release the button.



See Section 5.1.12 for more details.

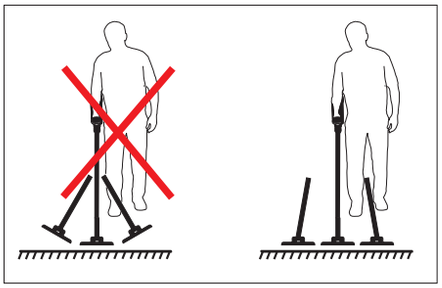
2.7 **Perform detector sensitivity check.**
Pass a known object under center of the search head. Verify audible and LED response.



See Section 5.1.13 for more details.

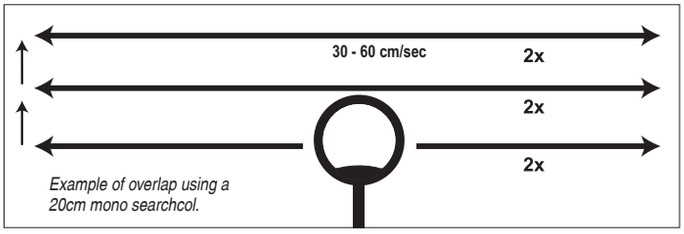
2.8 **Use proper sweep of search head.**
Sweep with search head 1-2 cm above the ground at a sweep speed of approximately 30-60cm/second. Keep the search head parallel to the ground surface; do not raise or tilt search head at the ends of the swing.

Note: Search head must be in motion for detection.



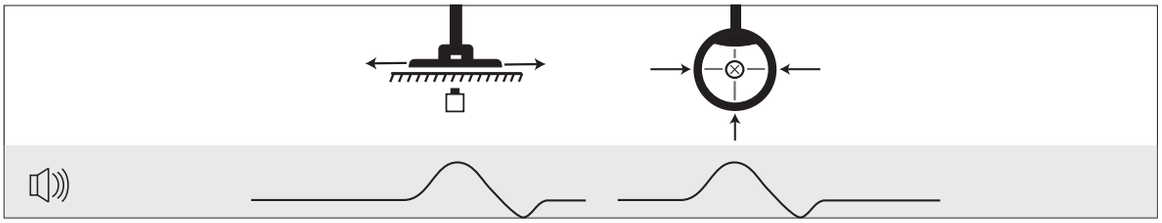
See Section 5.2.1 for more details.

2.9 **Overlap sweeps.**
Repeat each swing at least 2 times in each direction. Advance search head forward by half its width and repeat sweep pattern to assure full search coverage.



See Section 5.2.1 for more details.

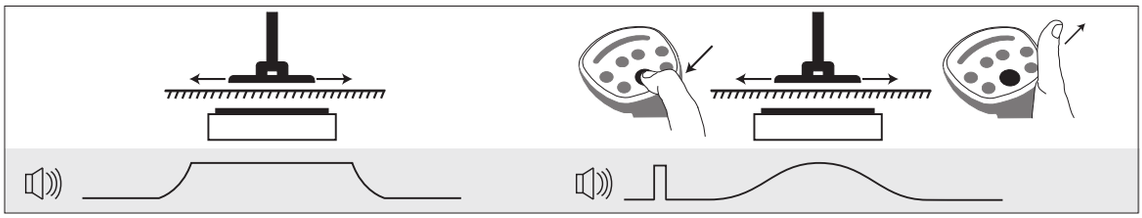
2.10 **Locate normal-sized target.**
For most targets, the peak response will occur at the center of the search head. Use side-to-side and front-to-back sweeps over the target to facilitate a crosshair indication of the target location.



See Section 5.3.1 for more details.

2.11 **Locate large target.**

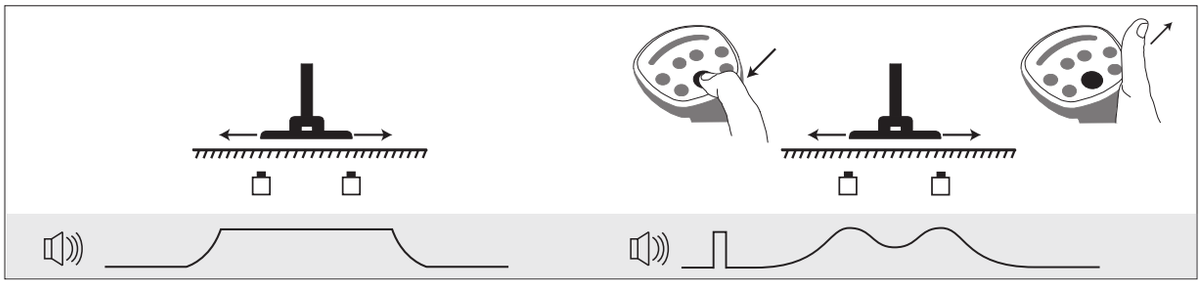
Large targets often produce a flat, wide response. To precisely locate a large target, position the search head to the side of the target's suspected location. Press and hold the center Pinpoint button and sweep search head completely over target in side-to-side and front-to-back motions. A noticeable peak response occurs over the center of the large target. Release button after target is located.



See Section 5.3.2 for more details.

2.12 **Separating adjacent targets.**

Multiple targets in close proximity often respond as one large target. To determine if two targets exist and to separate the two targets, position search head to the side of the target's location. Press and hold Pinpoint button and sweep back and forth over targets' entire location. Multiple targets will produce separate peak responses.



See Section 5.4.1 for more details.

3.0 *RECON-PRO* AML-750 MAIN COMPONENTS

The *RECON-PRO AML-750* detector includes the following components.

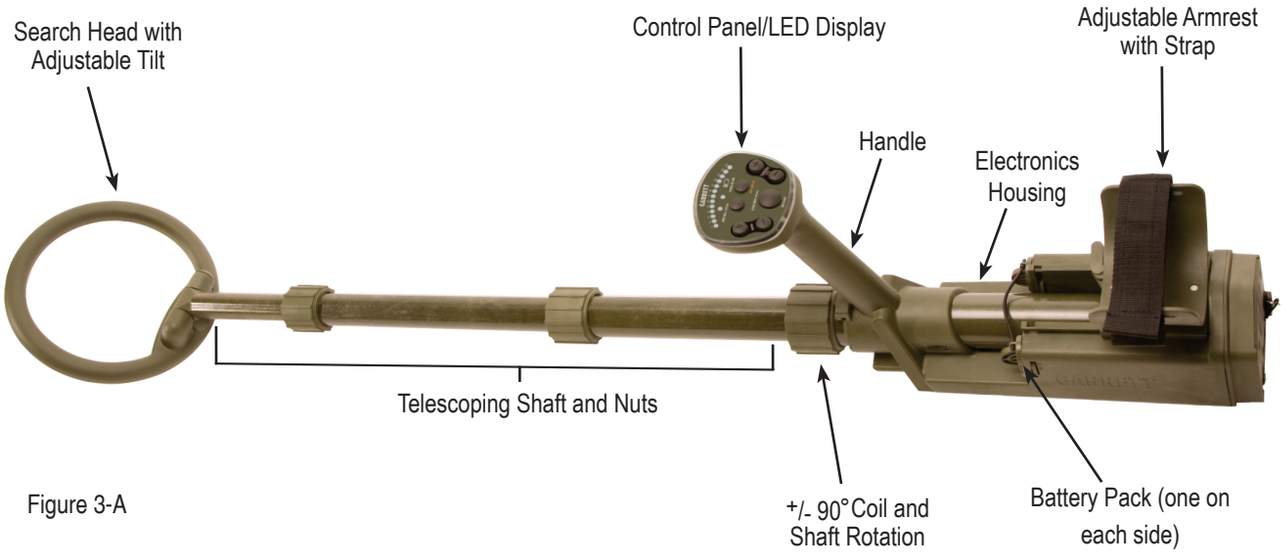


Figure 3-A

3.1 Electronics Housing

All electronics are contained in the electronics housing *(see Figure 3-A)*. The battery packs are sealed in separate compartments to provide additional protection of the electronics.

3.2 Search Head and Telescopic Shaft

This view of the *RECON-PRO (see Figure 3-A)* shows the search head, which is waterproof and can be rotated (+) or (-) 90 degrees and tilted if desired. This illustration shows the 20 cm search coil. Your detector may be equipped with one or more coils of differing sizes and configurations.

The *RECON-PRO*'s telescopic shaft allows the unit to be collapsed to as short as 20 inches (508 mm) from its fully extended length of 63 inches (1600 mm). The cable for the search head is contained within this telescopic shaft to prevent damage. The detector shaft is made of a rigid fiberglass material to prevent twisting or flexing of the shaft during operation.

3.3 Loudspeaker, LED Display, and Headset

The loudspeaker is located on the back of the electronics housing *(see Figure 3-B)*. Audio signals are broadcast through this speaker (with the headset not connected).

In addition to audio alerts of metallic objects, the LED Display on the control panel shows a series of red lights to indicate the signal strength of a metallic object *(see Figure 3-C)*.

The headset connects securely to the back of the *RECON-PRO* just below the loudspeaker. Optional headsets are available for the *RECON-PRO (see pg. 34).*

Figure 3-B

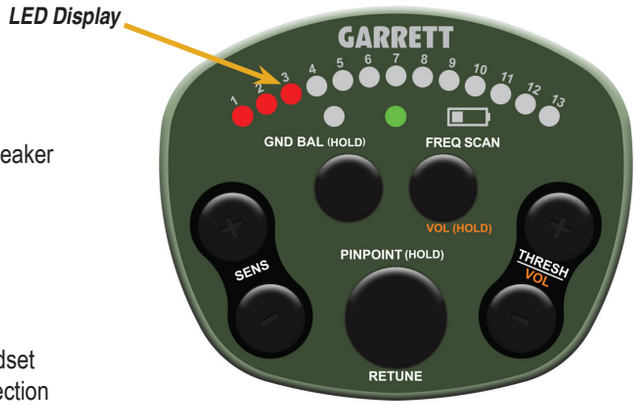


Figure 3-C

4.0 *RECON-PRO* FEATURES AND FUNCTIONS

4.1 Power Switch ON/OFF (A)

The unit's main power ON/OFF switch is located on the electronic housing's back panel *(see Figure 4-A)*.

Figure 4-A

4.2 Control Panel Functions

Each of the control panel's functions and buttons are described below *(see Figure 4-B)*.

4.2.1 Power ON Indicator (C)

This green LED indicates the detector has been powered on.

4.2.2 Signal Strength Indicators (D)

Three LEDs light up in red from left to right to indicate the strength of a metallic target's signal. No lighted LEDs indicates zero signal response; three LEDs at far right indicate full signal response.

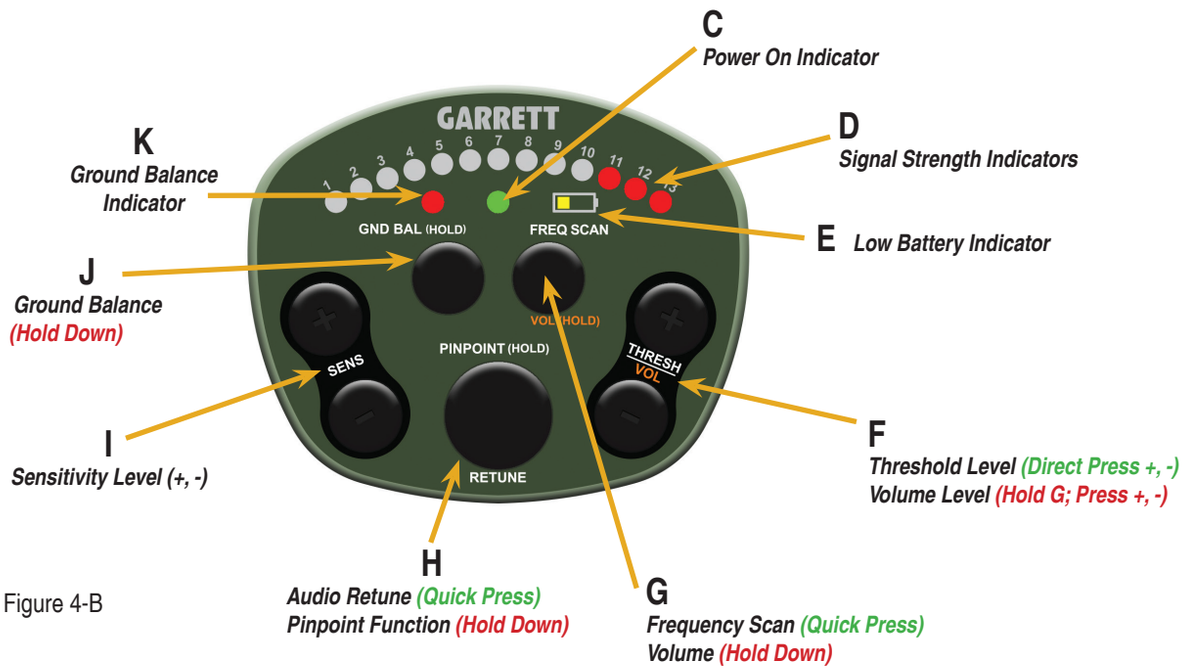


Figure 4-B

4.2.3 **Low Battery LED Indicator (E)**
This yellow LED will begin blinking when the detector has approximately 30 minutes of battery life remaining. Refer to Sections 5.1.7 and 5.2.5 for details on the Low Battery LED Indicator.

4.2.4 **Audio Threshold Level / Volume Level Buttons (F)**
Directly press the Threshold (+, -) buttons to increase or decrease the detector's background audio threshold level. To increase or decrease the detector's volume level, press and hold the FREQ SCAN/VOL Button (G); then use the Volume (+, -) buttons.

4.2.5 **Frequency Scan / Volume Button (G)**
This button is used for two purposes, Frequency Scan and Volume (as described above). For Frequency Scan, press and release this button (see Section 5.1.8 for details).

4.2.6 **Audio Retune / Pinpoint Button (H)**
This button is used for two purposes, Audio Retune and Pinpoint. To reset the audio/LED response to zero, quickly press and release this button (see Section 5.1.9). For the Pinpoint Function, press and hold down this button (see details on Pinpointing in Section 5.3.2).

4.2.7 **Sensitivity Adjustment Buttons (I)**
Increase sensitivity, as is practicable, to achieve greater detection depth and detection of small objects while maintaining sufficiently stable operation. Decrease sensitivity as needed to reduce interference and maintain stable operation when erratic operation cannot be resolved with ground balance or frequency scan.

Use the Sensitivity (+, -) buttons to increase or decrease sensitivity. The signal strength LEDs will temporarily indicate new sensitivity level.

Note: The Sensitivity function does not affect the AudioThreshold function.

4.2.8 **Ground Balance Button (J)**
To ground balance the detector, hold down this button (see details in Section 5.1.12).

4.2.9 **Ground Balance Indicator (K)**
This red LED will light to indicate that a ground balance procedure is in process.

5.0 OPERATIONAL PROCEDURES

Garrett recommends using the following operational procedure each time the *RECON-PRO* is deployed for search operations. In addition to these instructions, the Standard Operating Procedures (SOPs) provided by the local authority may take priority. In cases where the operator has donned heavy protective clothing, an appropriate headset should be used.

5.1 Setup and System Check for Operation

5.1.1 Unpack the unit.

Remove the *RECON-PRO* from the transportation case *(see Figure 5-A)* and inspect for any physical damages.

Figure 5-A

5.1.2 Install batteries.

Insert a set of batteries; Garrett recommends fully charged batteries at the start of each day's work. The *RECON-PRO* uses eight AA batteries and is delivered with one set of alkaline batteries. The *RECON-PRO* also accepts NiMH rechargeable or lithium AA batteries if a charging source is not available. *(See Section 7.2 for complete details on battery replacement and battery charging.)*

5.1.3 Adjust the search head and shaft.

Fold open the search head. Disengage the armrest and the shaft rotation locks. Rotate the shaft assembly to level and release the spring-loaded rotation lock to allow it to automatically reengage. Next, loosen the shaft nuts, extend the telescopic shaft to the desired operating length and tighten the shaft nuts *(see Figure 5-B)*. Tilt the search head so that it is parallel to the ground surface.

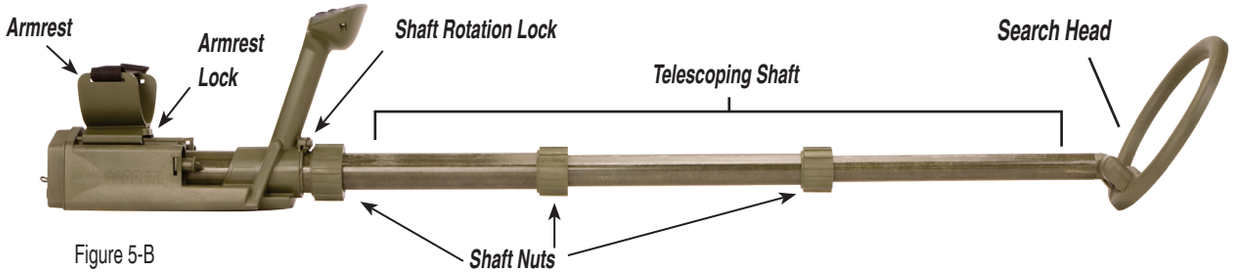


Figure 5-B

5.1.4 **Adjust the armrest.**

Adjust the armrest to a comfortable position and use the armstrap if desired. To move the armrest forward or backward, open the armrest locking lever by aligning it parallel to the detector shaft. Slide the armrest to the desired position and lock the lever by swinging it perpendicular to the detector shaft (see Figure 5-C).

Figure 5-C (series)

Open armrest locking lever and slide armrest.

Lock armrest locking lever perpendicular to shaft.

5.1.5 **Attach the headset (if used).**

Remove the dust cap from the headset connector on the back panel *(see Figure 5-D)*. Ensure the headset connector is clean. Align the headset plug with the connector pins in the proper orientation. If the detector will be submerged, be sure to lubricate the O-ring on the headset connector with silicone grease.

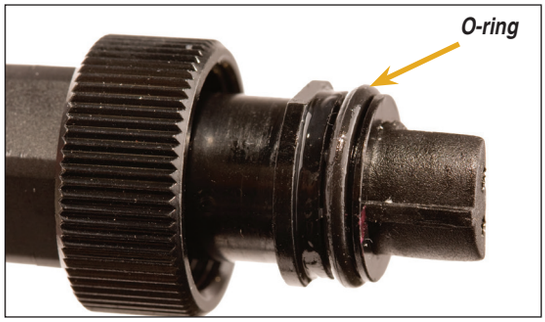
Fully insert the connector until it snaps snugly into place. Slide the metal locking collar onto the threads and tighten by hand *(see Figure 5-E)*. DO NOT over tighten.

Figure 5-D (series)

Remove dust cap on back panel.

Align and fully insert connector.

Figure 5-E (series)



Lubricate O-ring for underwater operation.

Hand-tighten connector collar.

5.1.6 **Switch on the detector.**

Take the *RECON-PRO* to an area clear of electrical interference and metallic objects. Raise the search head approximately one meter above the ground, away from metal objects. The On/Off switch is located on the back of the electronics housing *(see Figure 5-F)*.

Figure 5-F
Detector shown in power On position.

5.1.7 **Verify battery level.**

Immediately after switching on the detector, listen for one to four audio beeps indicating the charge level of the batteries. Four (4) beeps indicates fully charged. Three (3) beeps indicates approximately 75% battery charge. Two (2) beeps indicates approximately 50% battery charge. One (1) beep and a flashing low battery warning light indicates low charge and the batteries must be replaced before commencing search operations. If no beep is heard after switching the detector on, verify the batteries have been properly installed.

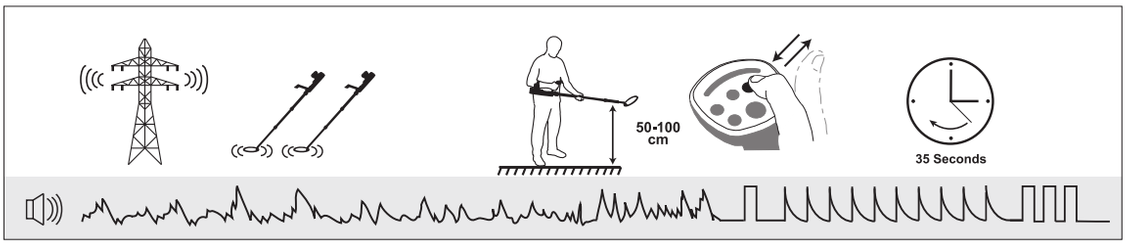
5.1.8 **Perform Frequency Scan/RFI cancellation (if needed).**

Operating near power lines, other detectors, etc. may cause interference. To check for interference, hold the search head stationary approximately one meter above the ground and listen for variations in signal response. If there are fluctuations in the response (i.e. noise), press and release the FREQ SCAN button to activate the RFI noise cancellation function *(see Figure 5-G)*.

The noise cancellation function lasts for 35 seconds and is indicated by the scanning LED display and audio pings. The search head must remain stationary during the entire noise cancellation function. The scanning LED display will cease and the detector will produce a triple-beep indicating the noise cancellation function is complete. The RFI setting remains in the detector's memory until the next time this function is performed, even after power is switched off and the batteries are removed. This same RFI procedure can be used to allow multiple detectors to work in close proximity—as close as four meters. Refer to Section 5.4.2 for detailed instructions.

Note: If you have accidentally activated a frequency scan and wish to abort, press the FREQ SCAN button again to stop the function. The RFI setting will return to its previous value.

Figure 5-G

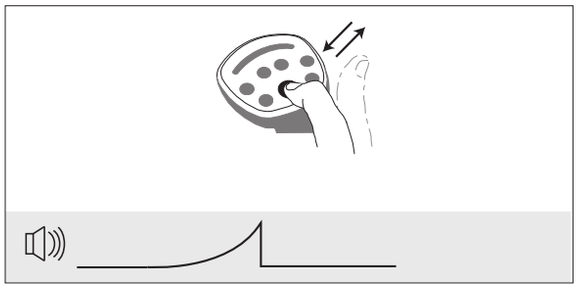


5.1.9 **Verify audio Retune function.**

Press and release the center Audio Retune button *(see Figure 5-H)* to instantly reset the audio/LED response to zero. Use this function to quickly cancel out unwanted ambient signals such as when the detector's audio/LED response has drifted to an elevated level.

Retune is rarely required unless a very large response persists and does not automatically decay away.

Figure 5-H



5.1.10 **Adjust Sensitivity.**

Increase the sensitivity setting to achieve greater detection depth and enhanced detection of small targets. Be aware, however, that increasing sensitivity can also increase the detector's susceptibility to electrical interference and other external conditions.

The *RECON-PRO* has thirteen (13) settings for sensitivity. The default sensitivity setting is 10. Use the SENS (+) and (-) buttons to adjust to your preferred level *(see Figure 5-I)*.

In general, set sensitivity as high as possible while still achieving sufficiently stable operation. Use higher sensitivity settings when searching for very small or very deep targets. Use lower sensitivity levels in locations where the detector is behaving erratically (due to excessive metallic trash, electrical interference or the presence of other metal detectors) and the erratic operation cannot be resolved with ground balance or a frequency scan.

Figure 5-I

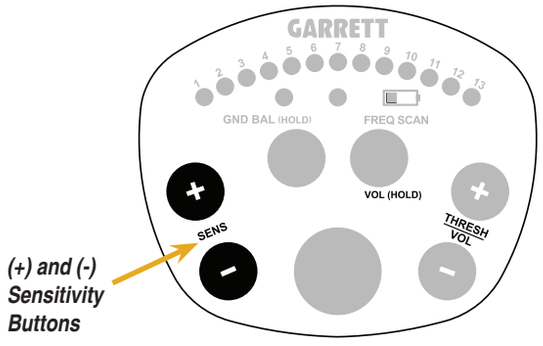
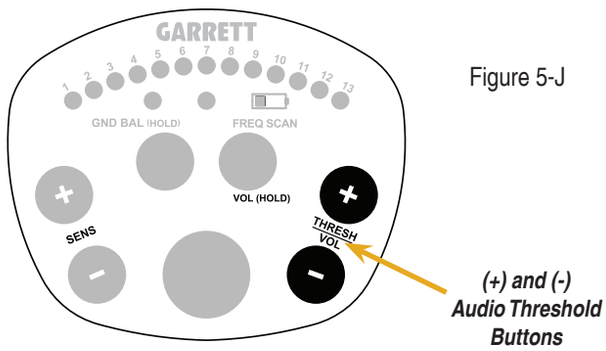


Figure 5-J



5.1.11 **Adjust Audio Threshold.**

Adjust the audio threshold to your preferred level using the Threshold (+) and (-) buttons *(see Figure 5-J)*. The default threshold setting is seven, barely audible. It is recommended the threshold be set to a barely audible level, or just below, based on hearing ability and surrounding audio conditions. This will provide optimum perception of target response.

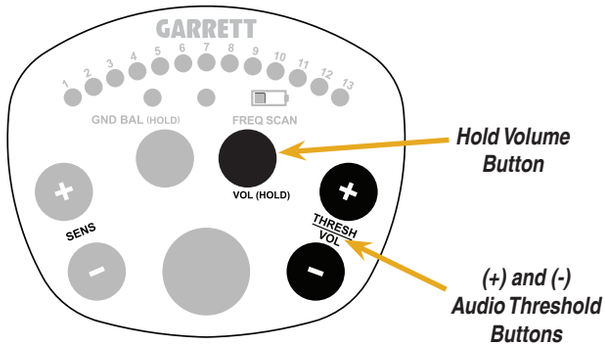
When a weak signal response is indicated from a low metal content target or deeper buried target, the operator can increase the background Audio Threshold by pressing the (+) Threshold button. This will increase the audible response from the target for a better detection result.

The operator can adjust the Audio Threshold to the most desired working setting (this setting adjustment is beneficial in mitigating background sounds).

5.1.12 **Adjust Audio Volume.**

Adjust audio volume to your preferred level by holding the FREQ SCAN/VOL button and using the Volume (+) and (-) buttons *(see Figure 5-K)*. Note that the Volume adjustment only controls the maximum audio level produced by a large target and does not affect the audio level or sensitivity of a faint signal.

Figure 5-K



5.1.13 **Check ground response and perform ground balance (if needed).**

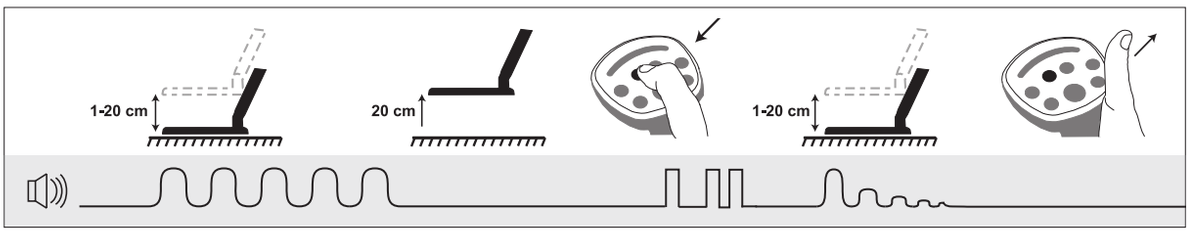
The *RECON-PRO*'s highly advanced Pulse Induction technology enables this unit to ignore mineralization such as magnetite and laterite soils. In more difficult soils, magnetic or conductive stones may be encountered. A magnetic or conductive stone ("hot rock") can be described as a concentration of iron mineral that causes a detector to recognize it as metal. The advanced technology of the *RECON-PRO* allows it to ignore nearly all hot rocks; only the most extreme hot rocks will produce a response.

To determine if extreme ground conditions exist, locate an area free of metal objects by sweeping the search head back and forth several times at 1-2 cm above the ground. Now check the ground response by quickly raising and lowering the search head to the ground several times from approximately 1 cm to 20 cm. If the signal response is steady or unchanged, the ground balance setting is correct and the *RECON-PRO* is ready for search operations.

If there is a repeatable sound variation during the ground check procedure, initiate the ground cancellation as follows *(see Figure 5-L)*.

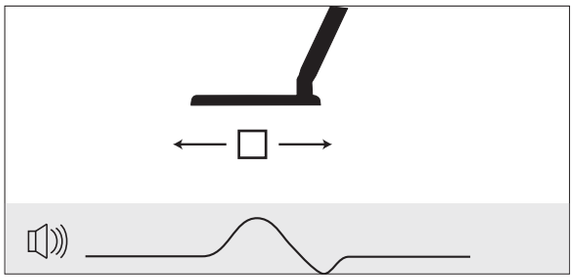
Raise the search head approximately 20 cm above the ground and press and hold the Ground Balance button. After one second, a double beep will occur indicating the ground balance mode. While continuing to hold the button, quickly lower and raise the search head to the ground from approximately 1 cm to 20 cm, repeatedly. Continue to lower and raise the search head repeatedly until the ground response is completely eliminated; typically takes 3 to 7 seconds. Release the Ground Balance button.

Figure 5-L



5.1.14 **Perform detector sensitivity check.**
Set sensitivity to the appropriate level, select a test piece that is appropriate to your detection needs, and pass it across the center of the search head. Verify an audible response is heard and indicated on the LED bar graph *(see Figure 5-M)*. If needed, adjust the Audio Threshold to where the response is clearly audible. If there is NO SIGNAL response from your test target, DO NOT place the detector into operation. *Have it checked for service or repair!*

Figure 5-M



Scan your test piece under the center of your search head.

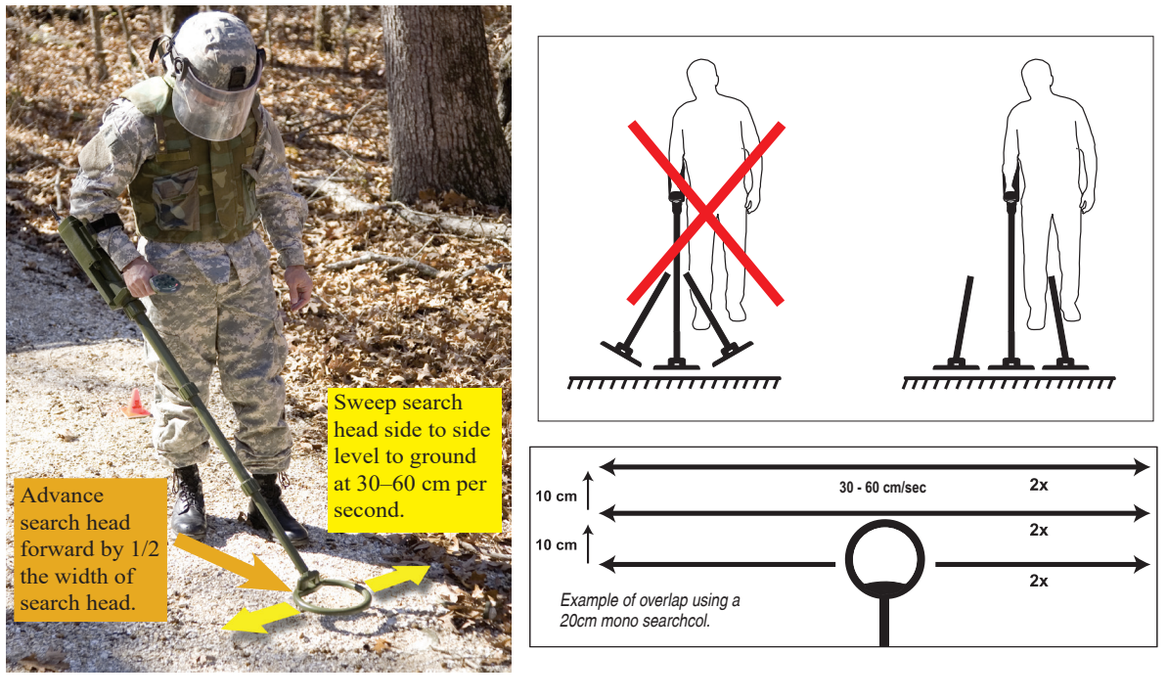
5.2 Target Search Procedures

5.2.1 Use proper sweep of search head.

For optimum detection depth, the search head must be in motion and should be swept as close to the ground surface as possible (approximately 1-2 cm) without making continuous contact with the ground. Sweep your search head in a straight line from side to side at a speed of about 30 to 60 cm per second *(see Figure 5-N)*.

Always keep the search head parallel to the ground surface along the entire sweep pattern, being careful not to raise or tilt the search head, especially at the ends of the swing. Raising or tilting the search head may result in reduced detection of buried targets.

Figure 5-N



5.2.2 Overlap sweeps.

Each sweep should be repeated several times in the same location *(see Figure 5-L)*. If no target is detected, advance the search head forward by half the width of the search head and repeat the sweep pattern. This is a progressive search technique to assure full search coverage in patterned areas of operation.

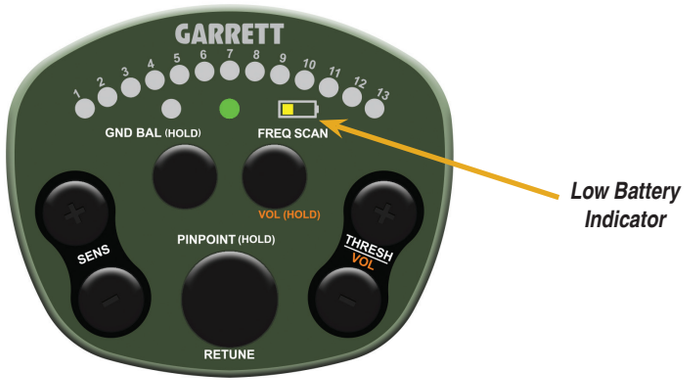
5.2.3 Do not contact targets.

In conditions where targets may protrude above the surface, first perform the sweep pattern with the search head higher above the ground surface (approximately 5–10 cm) or where the operator can visually assure there is no contact between the search head and foreign objects. If no target is detected, then repeat the sweep in the same location with the search head closer to the ground surface (approximately 1-2 cm if possible). Proceed forward using this “higher” then “lower” search technique progressively. **AT NO TIME should the Detector or Search Head come in contact with any hazardous objects!**

5.2.4 **Watch for hazards.**
Operators are also advised to use visual observation while conducting the detector sweep procedures. Some hazards (e.g. trip wires) can be identified visually in advance of the search head sweeping procedure.

5.2.5 **Observe warning alarms.**
During operation, the yellow low-battery warning light will begin flashing when there is approximately thirty (30) minutes of battery life remaining (*see Figure 5-O*). In addition to the flashing LED, a brief audio alarm will sound every 60 seconds. The purpose of this early-warning feature is to provide sufficient time to exit the search area to a safety zone, while maintaining full detector operation. (See Section 7.2 for information on battery management options.)

Figure 5-O

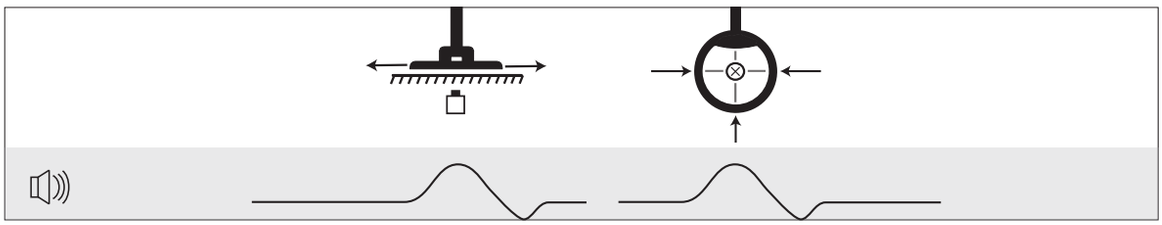


5.3 Determine Target Location and Metal Type

Once a target is detected by the *RECON-PRO*, the operator is alerted by both audio and visual signals. The operator should then determine the precise location and approximate size and depth of the object. In addition, the tone of the audio signal may provide an indication of possible metal type.

5.3.1 **Locate normal-sized target.**
For most targets, the peak response will occur at the center of the search head. By performing a repeating sweeping motion over the target, the operator will be able to precisely locate the target by the peak response at the center of the search head *(see Figure 5-P)*. Side-to-side and front-to-back sweeps over the target will facilitate a crosshair indication of the target location. For example, first scan side-to-side over the target and note the location of the peak response. Then scan front-to-back over this peak response to locate the overall maximum response (i.e. form a crosshair).

Figure 5-P

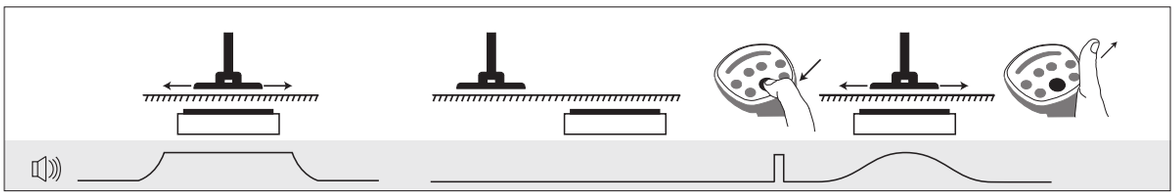


5.3.2 **Locate large target.**

Large targets often produce a flat, wide response, making it difficult to precisely locate its position using the method described above. To precisely locate large targets, use the following method.

Position the search head to the side of the target's suspected location. Press and hold the center button to activate the Pinpoint function *(see Figure 5-Q)*. While continuing to hold the Pinpoint button, sweep the search head over the entire target in side-to-side and front-to-back motions. The detector will automatically adjust the response so that a noticeable peak occurs over the center of the large target. Once the target is located, release the Pinpoint button to return to normal operation.

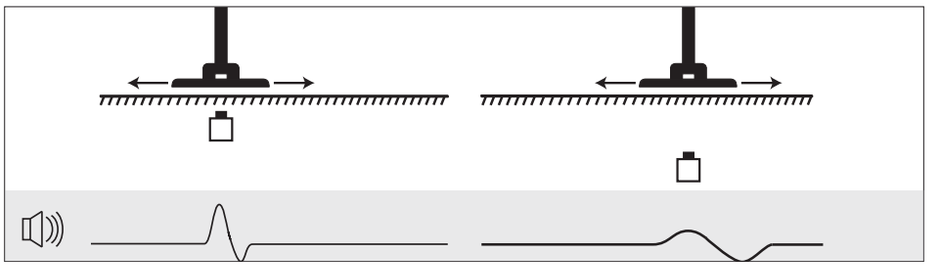
Figure 5-Q



5.3.3 **Determine size and depth.**

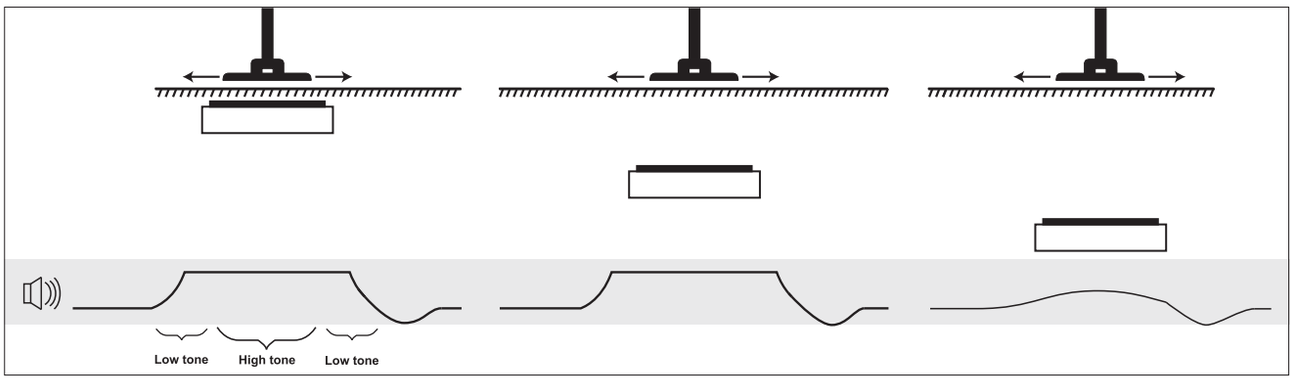
The target's approximate size and depth can be estimated based on the magnitude and width of its response *(see Figure 5-R for illustrations)*. This is a learned skill with the following general guidelines:

Figure 5-R



A. Small target near the surface will produce an abrupt, narrow response with a magnitude up to full-scale.

B. Small target at medium depth will produce a smooth response and faint magnitude.



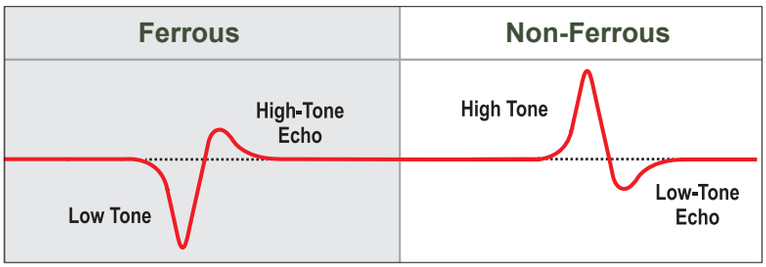
C. Large target near the surface will produce a wide, full-scale response, often switching tone polarity as the search head passes over the target.

D. Large target at medium depth will produce a wide, full-scale response.

E. Large target deeply buried will produce a wide, smooth response with magnitude up to full-scale.

5.3.4 **Determine metal type.**
The tone (i.e. pitch) of the audio response indicates the target's possible metal type *(see Figure 5-S).* Most, but not, all ferrous targets produce a LOW tone followed by a HIGH tone echo and most, but not all, non-ferrous targets produce a HIGH tone followed by a LOW tone echo.

Figure 5-S

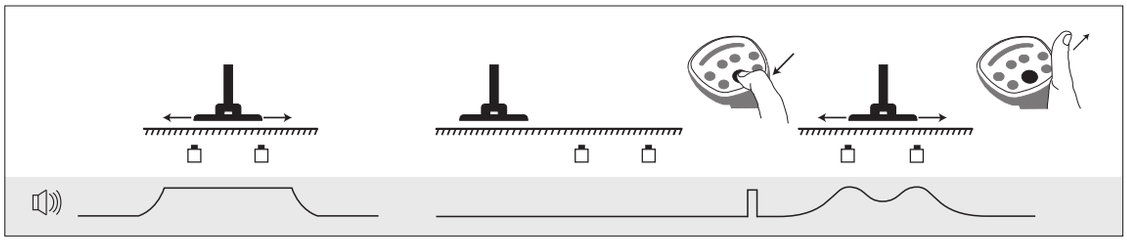


5.4 Advanced Search Procedures

5.4.1 **Separating Adjacent Targets**
Multiple targets in close proximity will often respond as one large target *(see Figure 5-T)*. Perform the following procedure to determine if two targets exist and to separate the two targets:

1. Position the search head to the side of the target's location.
2. Activate the Pinpoint function and slowly sweep back and forth over the target's entire location, keeping the Pinpoint button pressed.
3. Multiple targets will produce separate peak responses.
4. Targets as close as 20cm can be separated, depending on the size of the targets.
5. Note that a thin, flat non-ferrous object (e.g. coin) on edge or a narrow, elongated ferrous object (e.g. bolt) laying flat may also produce two separate peak responses.

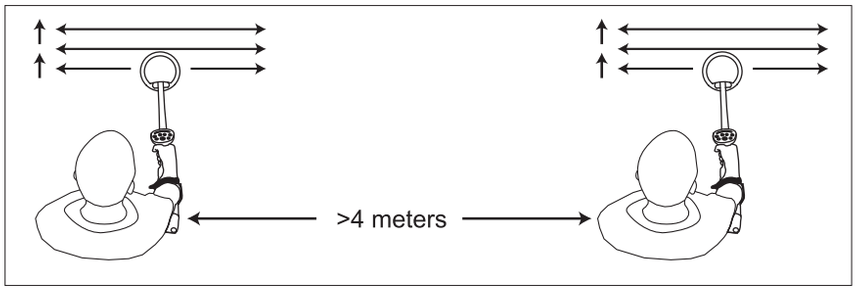
Figure 5-T



5.4.2 **Operating Multiple Units**
Multiple detectors are capable of operating simultaneously to within four meters of each other *(see Figure 5-U)*. Perform the following procedure to achieve compatible operation of two or more detectors:

1. Switch on the first detector only, perform the RFI Cancellation process and leave the detector switched on and stationary.
2. Position the second detector 2 to 3 meters away from the first detector.
3. Switch on the second detector and perform the RFI Cancellation process while maintaining the 2 to 3 meter separation.
4. The detectors will now operate to within 4 meters of each other without significant crosstalk interference. If crosstalk interference remains significant then either repeat steps 1 to 3 or increase the separation between detectors during operation.
5. Repeat steps 2 to 4 for additional detectors.

Figure 5-U

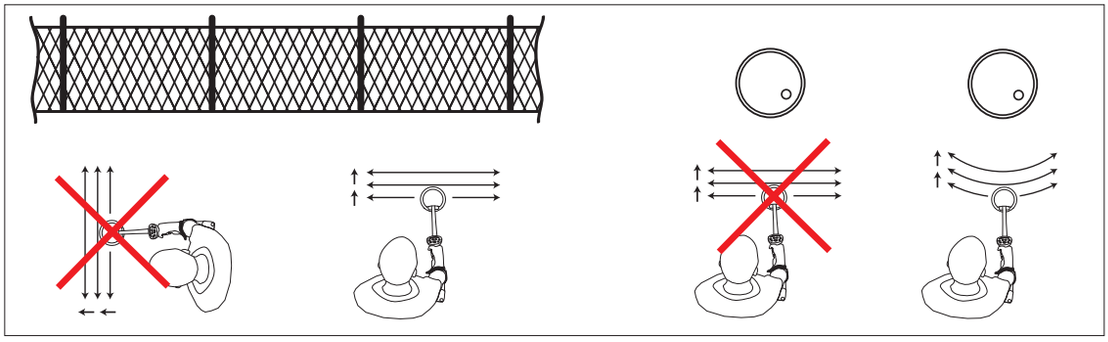


5.4.3 Operating Near Large Metal Structures

Large metal structures such as metal fencing, rail lines, etc. produce very large detection signals, making it difficult to operate in the vicinity. However, with rigorous training and precise technique the operator can become proficient at operating the detector in these conditions. Observe the following procedure and guidelines when operating near a Large Metal Structure (LMS):

1. Begin the scanning process at a distance sufficient to not detect the LMS.
2. Precisely sweep the search head such that it maintains a constant distance from the LMS. As examples, for a straight elongated object such as a fence, sweep in straight line parallel to the fence; for a circular object such as barrel, sweep in circular arc around the barrel *(see Figure 5-V)*.
3. After completing the sweep at that position, advance the search head forward by half its width and press the Reset button if needed to cancel the response produced by the LMS.
4. Repeat steps 2 and 3 in order to advance the search head towards the LMS.
5. Note, as the search head advances closer to the LMS it becomes more important to precisely maintain a constant distance from the LMS during each sweep. In addition, it may be necessary to advance the search head in increments smaller than half its width.

Figure 5-V



5.5 Operational Error Avoidance

The *RECON-PRO* is designed to eliminate operator errors.

- By placing the On/Off switch on the main electronic unit, it cannot accidentally be switched off by control panel functions.
- The ground cancellation feature of the *RECON-PRO* will not cancel any metallic targets.
- Low battery alert provides approximately 30 minutes of full operation to return to a safety zone.

6.0 OPERATOR WORKING POSITIONS

6.1 Standing Position

In the normal standing position, the operator should extend the telescoping shaft to a comfortable distance *(see Figure 6-A)*.

6.2 Kneeling Position

For precision scanning of a tight search area, it is often preferable for the operator to sweep the ground while in a kneeling position. Collapse the length of the telescoping shaft so that the search head can be comfortably swept at a 1-2 cm height above the ground while kneeling *(see Figure 6-B)*.

Figure 6-A

Figure 6-B

6.3 Prone Position

When pinpointing a metallic target, it is often preferable for the operator to assume a prone position on the ground. Collapse the length of the telescoping shaft so that the search head can be comfortably swept at a 1-2 cm height above the ground while the operator is in a prone position *(see Figure 6-C)*. Note that the *RECON-PRO* can be operated with the telescopic shaft fully collapsed.

Figure 6-C

7.0 CARE AND MAINTENANCE

7.1 Cleaning and Storage

7.1.1 Once the operational mission is completed, the exterior of the detector should be cleaned of mud, saltwater and other debris. Clean the search head, telescopic shaft (fully extended), and the electronics housing, using clean water and soap if needed. Do not apply any chemicals or oils to the detector.

In some cases it may be necessary to remove the entire shaft assembly from the electronics housing for additional cleaning. See section 7.3 for instructions to remove and reinstall telescopic shaft. Once removed, fully extend the telescopic shaft and flush the inside of the shaft using clean water and a spray nozzle if needed. Clean the areas of the electronics housing that hold the shaft. Clean the search head connectors if needed. Once the electronics housing and shaft have dried (inside and out), reinstall the search head/shaft assembly.

7.1.2 Dry the detector completely before collapsing the extension shaft. Protect your detector from dust and sand as much as possible. Do not store it in a vehicle trunk or any outdoor storage device during hot summer months or outdoors in sub-freezing weather.

7.1.3 For long term storage, remove batteries and close battery covers.

7.1.4 The key to prolonging the life of the *RECON-PRO* is the correct stowage of the detector into its hard transportation case whenever the detector is not in use.

7.2 Battery Management Options

7.2.1 Battery Replacement

The *RECON-PRO* uses eight AA batteries. Alkaline, lithium, or NiMH rechargeable batteries can be used.

The *RECON-PRO*'s battery compartments are located on either side of the detector's armrest *(see Figure 7-A)*. Press in the battery cover and give it a quarter turn counter-clockwise to release the lock and pull to remove *(see Figure 7-B)*. Tip the detector forward to allow the battery pack to slide out *(see Figure 7-C)*.

Figure 7-A

Figure 7-B

When installing the individual batteries into the battery pack, ensure they are aligned with the correct polarity, as indicated by the plus and minus markings on the inside of the battery pack. Reinstall the battery pack with the correct polarity as indicated by the plus and minus markings on the side of the detector *(see Figure 7-D)*; then slide it in. Replace the battery cover and give it a quarter-turn clockwise to lock into place. Repeat this process for the batteries on the opposite side of the detector. If the detector will be submerged, be sure to lubricate the O-rings on each battery cover *(see Figure 7-E)*.

Figure 7-C

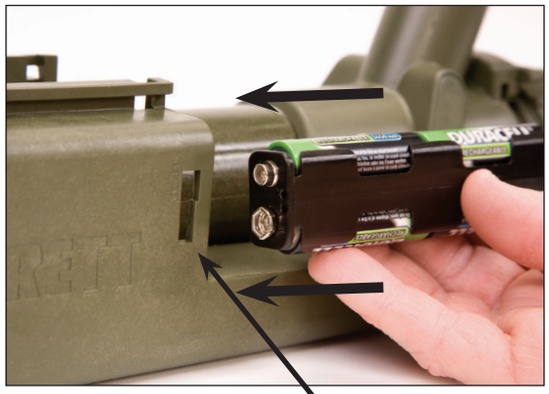
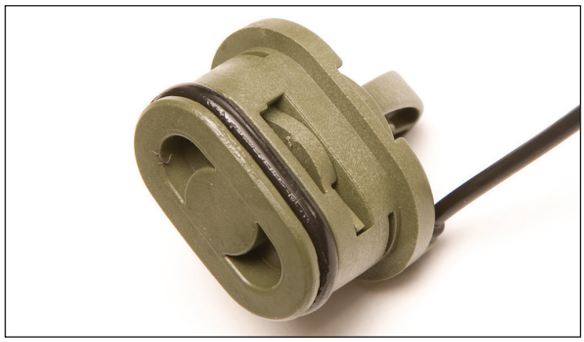


Figure 7-D (see inset below)



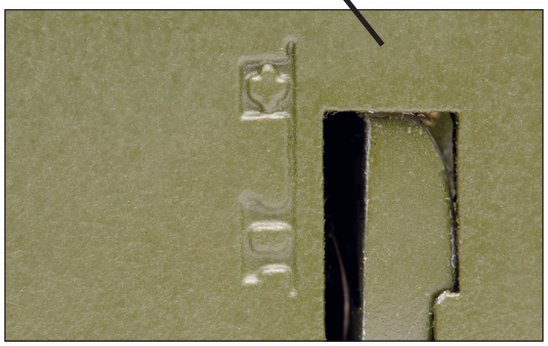


Figure 7-E

7.2.2 Battery Charging

Some *RECON-PRO* packages include two sets of rechargeable batteries, to allow one set to be charged while the other set is in use. This Garrett charger (included with some packages, and an optional accessory item for other packages) accepts from one to eight AA batteries at a time for charging *(see Figure 7-F)*.

Figure 7-F

Note: Use only Ni-MH type batteries on this charger.
Caution: Do not attempt to recharge lithium, alkaline or carbon batteries.

Eight independent channels with individual LEDs indicate charging status for each battery. Red LED indicates rapid charging in progress. Green LED indicates the battery is fully charged. Flashing red LED indicates the battery is faulty or not suitable for charging. A flashing green LED indicates the battery is undergoing a discharge cycle.

A special solar charging kit is also available as an option. See Section 9 for information.

7.3 Search Head/Shaft Assembly Removal and Installation

7.3.1 Perform the following procedure to remove the search head/shaft assembly.

1. Fully collapse the telescopic shaft and tighten the shaft nuts *(see Figure 7-G)*.
2. Remove the armrest by disengaging the armrest lock and sliding the armrest forward and off *(see Figure 7-H)*. It will be necessary to remove one battery cover to allow the cuff to fully slide forward. Alternately, leave the battery cover in place and slide the armrest forward, but do not remove.

Figure 7-G

Figure 7-H

3. Disengage the shaft rotation lock *(see Figure 7-I)* and, while continuing to hold the lock open, rotate the shaft 180° such that the coil is upside down *(see Figure 7-J)*.

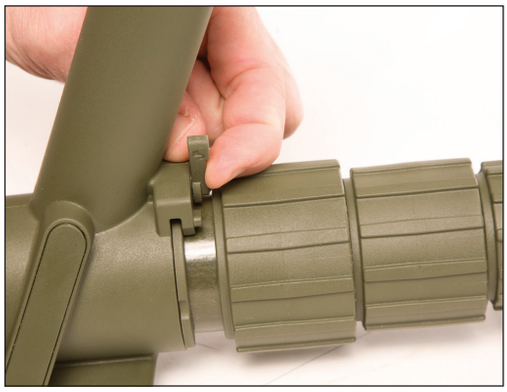


Figure 7-I

Figure 7-J

4. Partially slide the shaft assembly out to access the search head connector.
5. Slide the connector cover down the cable to expose the connector. Loosen and disconnect from the electronics housing by hand *(see Figures 7-K)*.

Figure 7-K

6. Remove the search head/shaft assembly from the electronics housing *(see Figures 7-L).*

Figure 7-L

7.3.2 Perform the following procedure to install the search head/shaft assembly.

1. Fully collapse the telescopic shaft and tighten the shaft nuts.
2. Partially slide the shaft into the electronics housing.
3. Reattach the search head connector by properly aligning the pins *(see Figure 7-M)*, fully inserting the connector and tightening the collar by hand.

Figure 7-M

4. Note that it may be necessary to rewind the coiled cable so that it will properly fit inside the shaft assembly. To do so, spin the shaft assembly counterclockwise (when viewing from the search head looking toward the detector) a few revolutions such that the shaft assembly easily slides over the coiled cable; two to four revolutions is usually sufficient.
5. Rotate the shaft assembly to the 180° position (i.e. coil upside down) and fully insert into the electronics housing.
6. Disengage the shaft rotation lock, rotate the shaft to the desired position and release the spring-loaded rotation lock to automatically reengage.

7.4 Search Head Tension Adjustment on the 20cm Search Head

The operator can adjust the 20cm Search Head to desired tension using a coin or a flat-head screwdriver. Turn the screw clockwise to increase tension *(see Figure 7–N)*. When properly tightened, the search head should maintain its position while still allowing tilting during operation. **Do not overtighten.**

Figure 7-N

7.5 Search Head Adjustment on the 11” x 13” (28cm x 33cm) Search Head

7.5.1 Perform the following procedure to adjust the search head assembly.

1. Fold open the searchcoil. Loosen the coil nut, slide stem mount to front position, and hand-tighten nut *(see Figures 7-O to 7-R)*.
2. To increase tension on the search head, turn the nut clockwise by hand *(see Figure 7-S)*. When properly tightened, the search head should maintain its position parallel to the ground while still allowing tilting during operation. **Do not overtighten.**

Figure 7-O

Figure 7-P

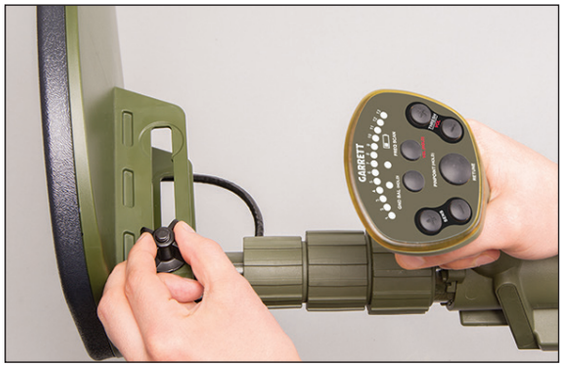


Figure 7-Q

Figure 7-R

Figure 7-S

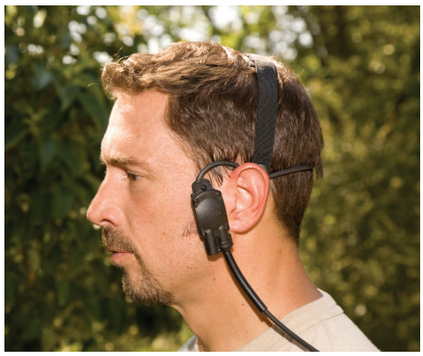
8.0 PARTS LIST—*RECON-PRO AML-750*

Description	Part Number
Headsets	
Land, MS-2 with 4-pin connector	1627340
Tactical	1624500
Underwater	2202101
Searchcoil/Shaft Assembly	
20 cm. Mono, Open	2234000
25x31 cm. DD, Open	2234600
28x33 cm. DD, Closed	2235300
28x33 cm. Mono, Closed	2235200
38x50 cm. Mono, Open	2234100
Transportation	
Hard Case (holds 1 detector)	1624000
Soft Carry Case	1616700
Green Backpack	1624100
Compact Backpack	1624800
Replacement Parts	
Battery Holder, 4 “AA”	9434100
Battery NiMH “AA”	9434200
Charger Kit (includes charger pack, 110/240 VAC and 12 VDC adaptors)	1624300
Cuff Assembly	2266500
Battery Cover Assembly	2266600
User Manual, English	1539600
User Manual, Spanish	1539610
Field Guide	1555800
Test Piece	1624600
Maintenance	
Spanner Wrench	1625200
Tool Kit	1625100

Service Items	Part Number
Shaft Assembly	2346200
Search Head, 20 cm	2345600
Search Head, 38x50 cm	2346000
Search Head, 25x31 cm. DD	2348600
Search Head, 28x33 cm. DD	2349800
Search Head, 28x33 cm. Mono	2349700
Shaft Lock Replacement Kit	2266900
Rotation Lock Replacement Kit	2267000
Power Knob with Wrench	2266700
Speaker, 45mm	9432000
Screw Assortment	2267100
O-Ring Kit	2267200
Cuff Strap	9851300

9.0 OPTIONAL ITEMS

Low Profile Tactical Headset, 4-Pin
Part No. 1624500
Sound is bone conductive and does not block the operator's hearing channels. It is design to be worn snugly on the operator's head just in front of the ear. Waterproof to 3 meters.



Tool Kit
Part No. 1625100
This field repair kit includes the tools required to service the *RECON-PRO*. Includes tamper proof screwdriver, spanner wrench for stem maintenance and silicon grease for o-ring seals.

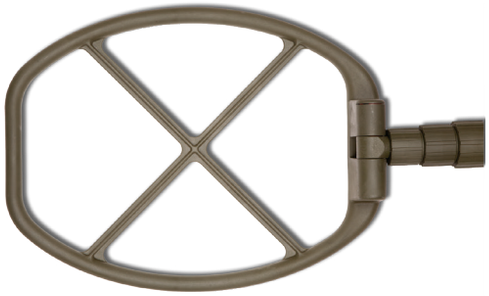
Shaft Nut Spanner Wrench
Part No. 1625200
For advanced cleaning of your *RECON-PRO*, this special tool is used to remove the interior stem nuts.

MS-2 Land Headset, 4-Pin
Part No. 1627340
Heavy duty volume-control headphones. Comfortable headband and ear cushions. Folds down for easy storage and transport.

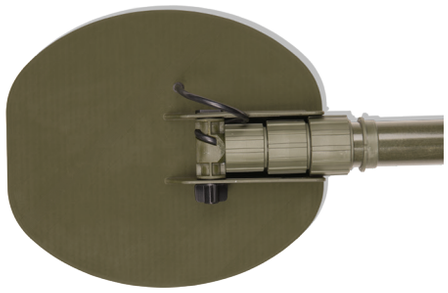
Underwater Headset, 4-Pin
Part No. 2202101
Heavy duty submersible headphones. Large ear cushions provide comfort while blocking environmental sounds.

PRO-POINTER® AT Pinpointing Detector
Part No. 1140900
This all terrain pinpointer is fully waterproof to 3 meters and has a Fast Retune feature to quickly tune out environmental challenges such as highly mineralized ground. Includes proportional audio/ vibration pulse rate target indicators and 360° side scan detection area. LED light for low light uses.

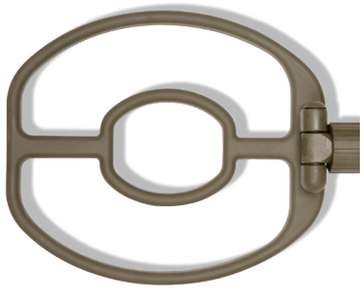
15” x 20” (38 x 50 cm) Deepseeker®
Part No. 2234100
Use for locating larger and more deeply buried objects. Reduces response to small debris. Includes searchcoil and full stem assembly.



11” x 13” (28 x 33cm)
Mono or DD Closed Coil Searchcoil
Center mount, solid coil design is more resistant to impact and is well balanced. Solid top surface can be used to locate tiny nuggets.
Mono version: PN: 2235200
DD version: PN: 2235300



10” x 12” (25 x 31 cm) DD Open-Coil Design
Part No. 2234600
Excellent detection on large and small targets. Open design is ideal for water hunting.



8" (20cm) Mono Searchcoil
Part No. 2234000
Excellent sensitivity on small targets. Enhanced maneuverability in heavy scrub and tight areas. Light weight. Includes searchcoil and full stem assembly.

Coil Covers
Part No. 1608300 8” Mono Coil
Provide solid protection for searching rocky soil areas. Light weight.

Note: A full selection of searchcoil covers is available for all coils. Visit garrett.com for selection and pricing.

Detector Sling
PN: 1626300
Connects to detector to reduce weight when searching.

Hard Case
Part No. 1624000
Military grade plastic. Holds soft case with detector and coils.

Green Backpack
Part No. 1624100
Durable soft case houses detector and accessories.

Soft Carry Case
Part No. 1616700
Compact soft case, designed to house *Recon Pro*, searchcoil, batteries, and headset.

Charger Kit
Part No. 1624300
Includes charger pack, 110/240 VAC and 12 VDC adaptors**.**

Cuff Assembly
Part No. 2266500

Battery Cover Assembly
Part No. 2266600

Battery, NiMH “AA”
Part No. 9434200

Test Piece
Part No. 1624600

Battery Holder, 4 “AA”
Part No. 9434100

To see Garrett's complete collection of metal detector accessories, please visit www.garrett.com and view products in the Countermine Division.

10.0 SPECIFICATIONS

Detector Weight: 6.25 Lbs (2.83 Kg)
(Operational with batteries and 20 cm search head)

Detector Weight: 12 Lbs (5.44 Kg)
(with backpack, extra batteries, charger, manual)

Detector Weight: 10.56 Lbs (4.79 Kg)
(with backpack)

Detector Weight: 24.15 Lbs (10.95 Kg)
(complete with transportation case)

Detector Length: 19.8 in (504 mm)
(folded for storage)

Detector Length: 24.5 in (620mm)
(fully retracted-in operation)

Detector Length: 63 in (1600 mm)
(fully extended-in operation)

Operating Temperature: -10 F to 149 F (-23 C to 65 C) ; Alkaline, NiMH batteries
-40 F to 149 F (-40 C to 65 C) ; Lithium batteries
-72 F to 158 F (-58 C to 70 C) ; Storage temperature (without batteries)

Power Source: Eight NiMH “AA” or 8 “AA” alkaline batteries

Warranty: 24 Month, limited parts and labor

Design Standard: MIL STD 810 G

11.0 CONTACT INFORMATION:

Garrett Countermine/ERW Division
Phone: 1-972-494-6151
Email: cm-erw@garrett.com
Web: www.garrett.com

12.0 WARRANTY INFORMATION:

Garrett Electronics, Inc. (“Garrett”) warrants that each piece of equipment manufactured by Garrett is protected by the following limited parts and labor warranty for a period of 24 (twenty-four) months (the “Warranty”). During this 24-month period Garrett will inspect and evaluate all equipment returned to its authorized repair station or factory to determine if the equipment meets Garrett’s performance specifications. Garrett will repair or replace at no charge to the owner all parts determined faulty. This Warranty does not cover batteries nor any and all failures caused by abuse, tampering, theft, battery acid or other contaminants and equipment repairs made by an unauthorized party.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT ANY ORAL STATEMENTS ABOUT THE MERCHANDISE DESCRIBED IN THIS CONTRACT MADE BY SELLERS’ REPRESENTATIVES, IF ANY SUCH STATEMENTS WERE MADE, DO NOT CONSTITUTE WARRANTIES, SHALL NOT BE RELIED UPON BY THE BUYER, AND ARE NOT A PART OF THIS CONTRACT FOR SALE. THE ENTIRE CONTRACT IS EMBODIED IN THIS WRITING. THIS WRITING CONSTITUTES THE FINAL EXPRESSION OF THE PARTIES’ AGREEMENT AND IS A COMPLETE AND EXCLUSIVE STATEMENT OF THE TERMS OF THIS AGREEMENT.

The parties agree that the Buyers’ sole and exclusive remedy against Seller shall be for the repair and replacement of defective parts. The Buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost sales, lost profits, injury to person or property) shall be available to him.

Special Notice to Foreign Customers: Terms of this Warranty may vary depending on the country in which this equipment was purchased and delivered. Any claims based on this Warranty must be made to Garrett’s local representative or agent. Do not attempt to return any Garrett equipment to the factory in the United States without written authorization from Garrett’s local agent or representative.

GARRETT®
METAL DETECTORS

Made in the USA

PN 1539600 REV B