

# Metal Detector with Depth Read-Out

OWNER'S MANUAL — Please read before using this equipment.

With your RadioShack Metal Detector, you can hunt for coins, relics, jewelry, gold, and silver just about anywhere. This electronically advanced metal detector is versatile, easy to use, and offers superior performance when hunting for smaller objects (such as gold nuggets or small pieces of jewelry). The metal detector's other features include:

**Dual Liquid Crystal Display** — displays the probable type of metal being detected and the probable depth of the target item.

**Slow Sweep Discrimination** — distinguishes between different metals efficiently, even when the detector is swung at slow speeds.

**Three-Tone Audio Discrimination** — sounds distinctive tones for different categories of metal objects to make target identification easier.

**Eight Inch Waterproof Search Coil** — lets you use your metal detector in almost any weather conditions.

## TREASURE HUNTER'S CODE OF ETHICS

All treasure hunters might be judged by the example you set. Here are a few basic rules you should follow while using your metal detector:

- Always get permission before searching any site.
- Respect the rights and property of others.
- Observe all national, state, and local laws while treasure hunting.
- Never destroy historical or archaeological treasures. If you are not sure about an object you have found, contact a museum or historical society in your area.
- Leave the land and vegetation as it was. Fill in any holes you dig.
- Use your detector only in safe areas.
- Dispose of any junk you find only in approved areas. Do not leave it for the next treasure hunter to find.

## CHOOSING A SEARCH COIL

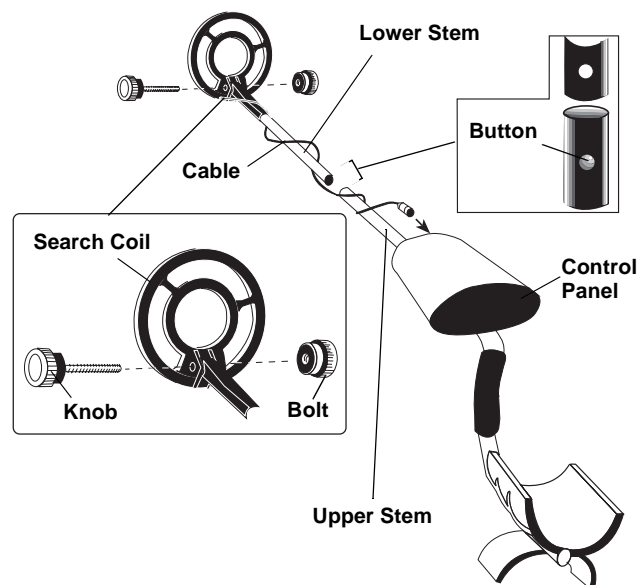
The best search coil to use depends on *where* you use the detector and the *desired target*. Your local RadioShack store carries a variety of search coils.

- If you are looking for deeply-buried objects, a medium-sized search coil (such as the supplied standard 8 inch search coil) is more efficient.
- If you are looking for tiny, coin-sized objects not buried too deeply, or if you are gold prospecting, a 4 inch search coil might work better.

## PREPARATION

### Assembling the Metal Detector

Assembling your metal detector is easy and requires no special tools.

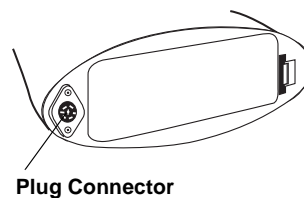


1. Using the supplied bolt and knurled knob, attach the search coil to the lower stem. Do not fasten the bolt all the way.
2. Press the button on the upper end of the lower stem, then slide the lower stem into the upper stem, allowing the button to stop at the desired length.

Adjust the stem to a length that lets you maintain a comfortable upright posture, with your arm relaxed at your side and the search coil parallel to the ground.

3. Wind the search coil's cable around the stem. Leave enough slack in the cable to let you adjust the search coil when you are hunting on uneven ground.
4. Tighten the knob at the end of the search coil.
5. Insert the search coil's plug into the matching connector on the control housing. Be sure the holes and pins line up correctly.

Do not force it! The plug fits only one way.



**Caution:** When disconnecting the cable, pull it out by the plug. Do not pull on the cable.

## Installing Batteries

Your metal detector requires two 9V batteries (not supplied) for power. For the best performance and longest life, we recommend RadioShack alkaline batteries.

### Cautions:

- Use only fresh batteries of the required size and recommended type.
  - Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.
1. Press down on the battery compartment cover's tab and lift the cover out.
  2. Snap the batteries into the terminals. 9V batteries fit only one way — do not try to force them.
  3. Place the batteries inside the compartment.
  4. Replace the cover.

When the low battery indicator stays on continuously, the metal detector does not power on, the sound becomes weak or distorted or will not tune properly, or the metal detector stops operating properly, replace the batteries.

You can extend battery life by using headphones (see “Using Headphones”).

**Warning:** Dispose of old batteries promptly and properly. Do not burn or bury them.

**Caution:** If you do not plan to use the metal detector for a week or longer, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

## RESETTING THE METAL DETECTOR

The metal detector might lock up and sound a continuous tone if you have low battery voltage or are testing the detector with the search coil near a large metal object.

If the metal detector locks up, try the following:

- Reset the detector by turning it off, then back on.
- Check and replace the batteries, as necessary.
- Move to a different testing location.

## USING HEADPHONES

You can connect a pair of stereo headphones (not supplied) to the metal detector so you can listen to it privately. Using headphones also saves battery power and makes it easier to identify subtle changes in the sounds you hear for better detection results. We recommend using a set of headphones with an independent volume control. Your local RadioShack store carries a wide variety of headphones.

To connect headphones to the metal detector, insert the headphones' 1/4-inch (6.35-mm) plug into the **HEADPHONE** jack on the front panel.

## Listening Safely

To protect your hearing, follow these guidelines when you use headphones.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

## Traffic Safety

Do not wear headphones while operating your metal detector near high-traffic areas.

Even though some headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

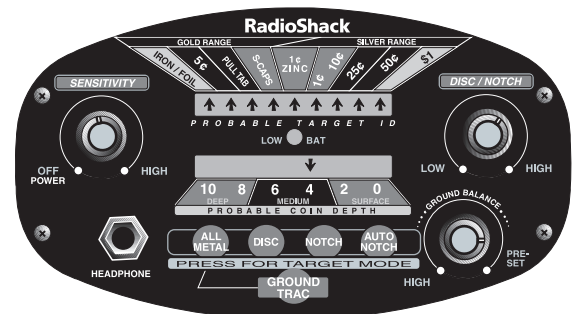
## TURNING THE DETECTOR ON/OFF

To turn on the metal detector, rotate **POWER/SENSITIVITY** clockwise. The detector sounds three beeps, display arrows appear, and the low battery indicator lights briefly.

The metal detector is preset to the **ALL METAL** mode. To set the metal detector to the desired mode, follow the Steps in the desired mode's section under “Setting the Mode” on Page 4.

To turn off the metal detector, rotate **POWER/SENSITIVITY** counterclockwise toward **OFF**.

## UNDERSTANDING THE DISPLAY



### Notes:

- The target indicators are used as approximations of what is being targeted. Many other types of metal can fall under any one of these indicators. There is always a “trash-to-treasure” ratio when detecting. The display provides a visual reference to minimize the trash only. It cannot completely eliminate all trash items.
- When the arrow points to a coin, the detector could be sensing either a coin or another type of metal (such as jewelry, tokens, medals, or even junk metal).

**PROBABLE TARGET ID** — Shows the probable identity of the target object, including various coins and metal objects, with a range from **GOLD** to **SILVER** (other types of metal fall under both spectrums). When the detector senses a target, an arrow appears to indicate the probable target being detected.

- **1¢ ZINC** — Indicates that the target is probably a zinc penny. Other targets (such as large gold) also fall into this category.
- **S-CAPS** — Indicates that the target probably is a screw cap or other type of metal, such as a bottle cap. Medium-sized gold falls into this range, as well as large aluminum items.
- **PULL TAB** — Indicates that the target is probably a pull-tab. Some small gold objects also read as pull-tabs.
- **IRON/FOIL** — Indicates that the target is probably iron or foil. Some oxidized (rusty) iron occasionally registers in the silver range.

**PROBABLE COIN DEPTH** — Displays an arrow steadily at the estimated depth (in inches) for coin-sized objects until another target's depth is detected.

**LOW BAT Indicator** — Blinks when you turn on the power and lights steadily when the batteries need to be replaced.

## TESTING AND USING THE METAL DETECTOR

To learn how the metal detector reacts to different metals, you should test it before you use it the first time.

This metal detector is a very sensitive and deep-seeking detector. It responds loudly to many targets that other detectors would only emit a weak signal for. Because of this, trash metal and other sources of interference might cause confusing signals.

Most good targets respond with a strong, repeatable signal. If a signal does not repeat after sweeping the search coil directly over the suspected target a few times, it is more than likely trash metal. False signals can be caused by trashy ground, electrical interference, or by large irregular trash objects. These signals are easily recognized by their often broken or non-repeatable nature.

Dig only those targets that emit a strong repeatable signal. As you sweep the search coil back and forth over the ground, learn to recognize the difference between the signals that occur at random and signals that are stable and repeatable.

**Remember:** While in **DISC**, **NOTCH**, or **AUTO NOTCH** modes, movement is required for the metal detector to target and identify an item.

### Air Testing

#### Notes:

- In **DISC**, **NOTCH**, or **AUTO NOTCH** mode, the search coil will not detect without motion. To test in these modes, you must move the object, since the metal detector is stationary.
  - If you are using a coin, the metal detector detects it more easily if you hold it so a flat side (not the edge) is parallel with the surface of the search coil.
1. Remove any watches, rings, or other metal jewelry you are wearing, then place the metal detector on a wooden or plastic table.
  2. Select either **ALL METAL**, **DISC**, **NOTCH**, or **AUTO NOTCH**.
  3. Adjust the search coil so it faces up.

**Note:** Never test the metal detector on a floor inside a building. Most buildings have metal of some kind in the floor, which might

interfere with the objects you want to test, or mask the signal completely.

4. Move a sample of the material you want the detector to find (such as a gold ring or a coin) about 1–2 inches above the search coil.

## Outdoor Testing and Use

1. Find an area on the ground outside where there is no metal.
2. Place a sample of the material you want the metal detector to find (such as a gold ring or a coin) on the ground.

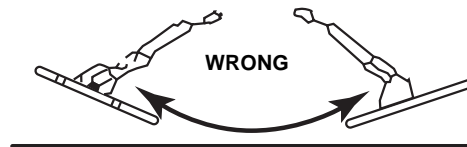
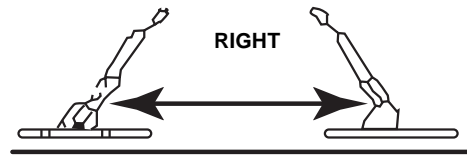
**Note:** If you are using valuable metal, such as gold, to test the metal detector, mark the area where you placed the item to help you find it later. Do not place it in tall grass or weeds.

3. Adjust the stem length, as necessary (see Step 2 under “Assembling the Metal Detector” on Page 1).
4. Turn on the metal detector.
5. *In the ALL METAL mode*, make any settings or adjustments as described in “Using the ALL METAL Mode” on Page 4.

Hold the search coil level and about 1–2 inches above the ground and slowly pass the metal detector over the target item. The metal detector sounds a continuous tone for as long as the target is under the search coil. Motion is not required to detect a target.

*In the DISC, NOTCH, or AUTO NOTCH mode*, make any settings or adjustments as described in “Using the DISC Mode,” “Using NOTCH Mode,” or “Using AUTO NOTCH Mode” on Page 4.

Slowly and continuously move the search coil over the area where you placed the sample, sweeping the search coil in a side-to-side motion.



## Search Coil Sweeping Hints

- Sweep slowly, from side-to-side — hurrying makes you miss targets or causes the metal detector to give you false signals.
- Keep the search coil level with the ground, about 1–2 inches from the surface. Do not sweep the search coil as if it were a pendulum. Raising the search coil while sweeping or at the end of a sweep causes false readings.
- When repetitively passing the search coil over the object, allow a few seconds to pass to give the detector a chance to recover from its last reading.
- Slightly overlap your sweeps as you move forward.

## SETTING THE MODE

The metal detector distinguishes between ferrous and non-ferrous metals. Ferrous metals contain iron, while non-ferrous metals (such as gold, silver, copper, platinum, aluminum, lead, and zinc) do not.

You can set the metal detector to discriminate between a variety of precious and non-precious metals, then follow the instructions in “Outdoor Testing and Use” on Page 3 to use the metal detector.

To select the desired mode, press **ALL METAL**, **DISC**, **NOTCH**, or **AUTO NOTCH** while the power is on.

**Note:** The metal detector is preset to begin in the **ALL METAL** mode.

### Using the ALL METAL Mode

Set the metal detector to **ALL METAL** to detect all types of metal without discrimination.

**Note:** **DISC/NOTCH** does not affect operation in this mode.

1. See “Adjusting GROUND BALANCE” on Page 5 to set **GROUND BALANCE** properly, ensuring proper mineral elimination.
2. Push **GROUND TRAC** after adjusting **GROUND BALANCE** to lock in the setting.

Each time you adjust **GROUND BALANCE**, press **GROUND TRAC**.

The metal detector sounds a medium tone for all targets.

### Using the DISC Mode

Set the metal detector to **DISC** (motion discriminate) mode to detect valuable metal objects while rejecting most junk targets.

1. Press **DISC** to select that mode.
2. Adjust **DISC/NOTCH** to differentiate between various types of metals. Rotate **DISC/NOTCH**:
  - *fully counterclockwise* to detect all metals (including iron, nickels, and gold rings, along with pull-tabs and copper or silver coins).
  - *slightly clockwise* to eliminate small iron objects, then medium iron objects.
  - *more clockwise* to eliminate larger iron objects, followed by items such as foil and aluminum, while still detecting silver and copper (depending on how high **DISC/NOTCH** is set).
  - *fully clockwise* to eliminate most gold and nickels.

Three distinct tones sound when the metal detector targets an item. See “Understanding Three-Tone Audio Target Identification (ATI)”.

### Using NOTCH Mode

Set the metal detector to **NOTCH** to create a variable rejection threshold that detects nickels, gold rings, and silver or copper coins while eliminating most iron targets, pull-tabs, and foil.

**Note:** Some pull-tabs or tab pieces have nearly the same detection properties as nickels and some gold rings. These items cannot be separated.

1. Press **NOTCH** to select that mode.

2. Place the rejection target on the ground and pass the metal detector over it.
3. As you pass the metal detector over the rejection item, adjust **DISC/NOTCH** to the point at which the tab (or any other desired object) is rejected so the metal detector does not sound a tone.
4. To test the **NOTCH** setting, set a nickel on the ground and pass the metal detector over it to make sure it is still accepted.

Three distinct tones sound when the metal detector targets an item. (See “Understanding Three-Tone Audio Target Identification (ATI)”.)

### Using AUTO NOTCH Mode

Set the metal detector to **AUTO NOTCH** to have the metal detector automatically discriminate target items, rejecting most iron junk targets while detecting nickels and small gold items. You can also adjust the discrimination threshold to be wider (eliminating more junk targets), but the starting position remains the same.

**Note:** You cannot detect some gold rings while in **AUTO NOTCH** mode. You may also detect a small percentage of pull-tabs, especially those that are broken in half.

1. Press **AUTO NOTCH** to select that mode.
2. Rotate **DISC/NOTCH** toward **HIGH** to increase the **NOTCH** width to reject screw caps and zinc pennies, while still detecting nickels and gold rings.
3. Adjust **DISC/NOTCH** to widen the discrimination window.

For example, you can eliminate zinc pennies and screw caps by turning **DISC/NOTCH** clockwise.

Three distinct tones sound when the metal detector targets an item. (See “Understanding Three-Tone Audio Target Identification (ATI)”.)

## UNDERSTANDING THREE-TONE AUDIO TARGET IDENTIFICATION (ATI)

When the metal detector is in **DISC**, **NOTCH**, or **AUTO-NOTCH** modes, its Audio Target Identification (ATI) system automatically classifies metal objects into three categories, to make it easier to identify the type of target being detected. The detector sounds three distinct tones to distinguish between categories of detected items.

**Note:** When operating in the **ALL METAL** mode, ATI shuts down, and the metal detector emits only one constant tone (medium) when it detects a target.

Target Object	Sounding Tone		
	Low	Medium	High
small gold and nickel items	X		
larger gold* items (still reading in the <b>GOLD RANGE</b> of the <b>PROBABLE TARGET ID</b> )		X	
old/new pull-tabs <sup>†</sup> , some gold and zinc pennies (dated after 1982), quarters and dimes		X	
silver, brass, and copper — including pennies, dated prior to 1982 — in any mode, except <b>ALL METAL</b>			X
iron <sup>‡</sup> or steel — in <b>DISC</b> mode	X		

\* When specifically hunting for gold items, dig for items that sound both medium and low tones.

† Usually, old or new pull-tabs emit a low tone, or no tone at all (if in the **NOTCH** mode). If a pull-tab is broken, bent, folded in half, or oxidized, it may emit a low tone.

‡ If the iron target item is highly oxidized, it may sound a high tone and read in the **SILVER RANGE** on the **PROBABLE TARGET ID**. In **NOTCH** and **AUTO-NOTCH** modes, the metal detector usually does not detect iron, unless oxidized, then it sounds a high tone.

## SETTING THE CONTROLS

### Adjusting SENSITIVITY

Use **SENSITIVITY** to filter out terrain conditions that can cause false signals, such as around broadcasting antennas and power lines, for example. For maximum depth of detection, always set **SENSITIVITY** as high as possible, but not so high that the target readout becomes erratic and false tones sound.

Rotate **SENSITIVITY** clockwise to *increase*, or counterclockwise to *decrease* the detector's sensitivity.

To determine how high to adjust **SENSITIVITY**, rotate **SENSITIVITY** clockwise while listening for false signals; if the metal detector starts to chatter (emit false signals), reduce **SENSITIVITY** slightly until the chatter stops.

### Adjusting DISC/NOTCH

**DISC/NOTCH** adjusts the metal detector for different levels of discrimination.

*In the DISC mode*, increase the level of discrimination by turning the control clockwise (away from) **LOW**.

**Note:** As **DISC/NOTCH** is set higher, some gold items do not sound.

*In the NOTCH mode*, **DISC/NOTCH** establishes a reject window. Items falling within this window will not be detected.

In the **NOTCH** mode, the width of the rejection window is fixed.

Adjust **DISC/NOTCH** to move the threshold window to different object settings while retaining the fixed window width.

### Adjusting GROUND BALANCE

When searching in the **ALL METAL** mode, it is important that the detector be ground balanced to offset the effects of any minerals present in the soil or to balance the effects of saltwater when you search near the ocean.

1. To ground balance the metal detector for a particular area, rotate **GROUND BALANCE** all the way clockwise to **PRESET**.
2. Lift the search coil about waist high in the air.
3. Press **GROUND TRAC**. (To allow the unit to stabilize, press **GROUND TRAC** two or three times when first ground balancing.)
4. Lower the search coil to about 1 inch above the ground. If the metal detector does not sound a tone, then the **PRESET** position is the proper ground balance for that area.

5. If a tone sounds, lift the search coil about waist high in the air again and rotate **GROUND BALANCE** slightly counterclockwise (toward **HIGH**), then press **GROUND TRAC**.

6. Lower the search coil to about 1 inch above the ground. If the metal detector does not sound a tone, then the setting is correct. If a tone sounds, repeat Steps 5–6 until no tone sounds.

**Note:** Always make sure that there is no metal on top of or under the ground where you will be ground balancing, otherwise you will not be able to determine if the tone being emitted is caused by mineralization or metal. If you think you might be over metal, move to another spot and proceed.

**Important:** When adjusting **GROUND BALANCE** counterclockwise, be careful to turn it in small increments to ensure that you achieve the optimum threshold level. If you feel you have turned the knob too far counterclockwise, you can turn it clockwise using the same ground balancing procedure until a tone sounds, then rotate it back counterclockwise slightly until a tone no longer sounds.

### Saltwater Balancing

Use the same steps as “Adjusting **GROUND BALANCE**” to balance the effects of saltwater. Set **GROUND BALANCE** higher to balance out saltwater effects.

If **GROUND BALANCE** is moved or reset, press **GROUND TRAC**.

## FIELD TECHNIQUES

### Pinpointing a Target

Accurately pinpointing a target makes digging it up easier. Accurate pinpointing takes practice, and we suggest you practice finding and digging up small metal objects on your own property before you search other locations.

Sometimes, targets are difficult to accurately locate due to the sweep direction. Try changing your sweep direction to pinpoint a target.

1. When the metal detector detects a buried target and sounds a tone, continue sweeping the search coil over the target in a narrowing side-to-side motion.

As you slowly move the search coil side-to-side, make a visual note of the exact spot on the ground where the metal detector beeps.

2. Stop the search coil directly over that spot on the ground.
3. Move the search coil straight forward away from you and straight back toward you a few times.

Again, make a visual note of the spot on the ground at which the beep sounds.

4. Repeat Steps 1 and 2 at a right angle to the original search line, making an X-pattern. The target should be directly below the center of the X, at the point of the loudest response.

# TROUBLESHOOTING

We do not anticipate that you will have any problems with your metal detector. However, if your metal detector is not operating properly, follow these suggestions to eliminate the problem. If the metal detector still does not operate properly, take it to your local RadioShack store for assistance.

Problem	Possible Cause	Suggestion
The metal detector is emitting false signals in the field.	<b>SENSITIVITY</b> may be set too high.	Adjust <b>SENSITIVITY</b> back slightly until the false signaling disappears. See "Adjusting SENSITIVITY" on Page 5.
	You are moving the search coil too quickly.	Swing your search coil slowly.
	Some false signals occur on highly rusted metals.	If the signal does not repeat over the same area while passing the search coil over it, then the target is usually not worthwhile.
The display is not locking in or identifying while passing over a target, and the metal detector emits more than one tone over the same target.	This usually happens when there is more than one object in the area you are sweeping. If it is an odd piece of metal that the detector cannot recognize, the metal detector does not lock in.	Search another location.
	Sometimes, oxidation can make the display ID arrows and tones jump around.	
	<b>SENSITIVITY</b> may be set too high.	Adjust <b>SENSITIVITY</b> back slightly until the false signaling disappears. See "Adjusting SENSITIVITY" on Page 5.
The metal detector is not stable and has a pulsing, distorted tone (rather than a clear one).	The area you are searching may be trashy.	Search another location.
		Adjust <b>GROUND BALANCE</b> . See "Adjusting GROUND BALANCE" on Page 5.
The metal detector does not function or operates erratically.	Another metal detector may be within 15 feet of your metal detector.	Move to another area. Do not operate two or more metal detectors within 15 feet of each other.
The detector emits a constant loud tone or repeating tones.	The batteries may be weak.	Replace the batteries with new ones.

# CARE

Keep the metal detector dry; if it gets wet, wipe it dry immediately. The search coil is waterproof and may be submerged in either fresh or saltwater. Be careful to prevent water from entering the chassis. After using the search coil in saltwater, rinse it with fresh water to prevent corrosion of the metal parts. Use and store the metal detector only in normal temperature environments. Handle the metal detector carefully; do not drop it. Keep the metal detector away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

Modifying or tampering with the metal detector's internal components can cause a malfunction and might invalidate its warranty. If your metal detector is not performing as it should, take it to your local RadioShack store for assistance.

### Limited One-Year Warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from RadioShack company-owned stores and authorized RadioShack franchisees and dealers. EXCEPT AS PROVIDED HEREIN, RadioShack MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, RadioShack SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF RadioShack HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

In the event of a product defect during the warranty period, take the product and the RadioShack sales receipt as proof of purchase date to any RadioShack store. RadioShack will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of RadioShack. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover: (a) damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, lightning or other incidence of excess voltage or current; (b) any repairs other than those provided by a RadioShack Authorized Service Facility; (c) consumables such as fuses or batteries; (d) cosmetic damage; (e) transportation, shipping or insurance costs; or (f) costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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