TWIN COIL FERRITE®
AM ANTENNA

BY

C.CRANE

PLEASE READ ALL THE INSTRUCTIONS COMPLETELY BEFORE USE AND SAVE THIS MANUAL FOR FUTURE REFERENCE.

Introduction / Owners Record

Thank you for purchasing the Twin Coil Ferrite® AM Antenna by C. Crane. The antenna can be used on a small portable or desktop radio with excellent results. It is also the first AM antenna that can provide exceptional improvement to a large home stereo system. It can actually reduce static and radio noise on AM.

For your future reference:

Serial No. (Found inside battery compartment): _____

Date of purchase/ Name & address of dealer: _____

_____

Unpacking

The box should contain the Antenna Element, AC 9 Volt Adapter, 5' PS2 Connection Cable, Tuner Control, 1/8" Mono to RCA Connector Patchcord, 1" Piece of Hook and Loop Fastener for Ferrite Stick, Mounting Screws, RCA Female Patchcord to Two Bare Wire Ends, and the Ferrite Stick.

One Year Limited Warranty.

If anything is missing or damaged, please contact C. Crane immediately. We recommend that you keep the box in the unlikely event that your product needs servicing.

Safety Instructions

Please read **IMPORTANT SAFETY INSTRUCTIONS** before use. It is important to read and understand all instructions. Keep these precautions and instructions where all who will use this antenna will read them.

WARNING: To prevent fire or electric shock hazard do not expose this product to rain or moisture.

CAUTION: To reduce the risk of electric shock, do not open the unit. No user serviceable parts inside. Refer servicing to qualified service personnel.

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

THE LIGHTNING FLASH AND ARROWHEAD WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF "DANGEROUS VOLTAGE" INSIDE THE ANTENNA.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE BACK. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

THE EXCLAMATION POINT WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF IMPORTANT INSTRUCTIONS ACCOMPANYING THIS ANTENNA.

READ BEFORE OPERATING EQUIPMENT
SAVE THESE INSTRUCTIONS

1. Read and understand all safety and operating instructions before the Twin Coil Ferrite AM Antenna by C. Crane is operated.
2. **Retain Instructions:** The safety and operating instructions should be retained for future reference.
3. **Heed Warnings:** All warnings on this appliance and all operating instructions should be followed.
4. **Water and Moisture:** The Twin Coil Ferrite AM Antenna should not be used near water. Do not use near a bathtub, washbowl, laundry tub, kitchen sink, wet basement, swimming pool, etc. Risk of electric shock may result.
5. Unplug the Twin Coil Ferrite AM Antenna from the AC power adapter before cleaning. Only use a damp cloth for cleaning the exterior surfaces of the antenna.
6. Do not place the Twin Coil Ferrite AM Antenna on an unstable cart, stand, bracket or table. The antenna may fall, causing serious personal injury and or damage to the antenna may result.
7. **Heat:** Never put the Twin Coil Ferrite AM Antenna in direct sunlight or behind glass such as a car's interior. The antenna should be kept away from heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.
8. **AC Wall Adapter:** The AC Wall Adapter should be positioned so it is not walked on, pinched, or items placed on top of it. All power and connector cables should be routed away from walkways or areas of foot traffic to avoid being tripped on. Always unplug the AC power adapter by gripping the adapter unit and pulling it out of the wall socket. Never pull on the cord. Always operate the Twin Coil Ferrite AM Antenna using the correct supplied AC wall adapter. Adapters that are not correctly rated can damage the antenna. If you are not sure of the correct AC wall adapter, consult your dealer.
9. Never insert objects of any kind into the Twin Coil Ferrite AM Antenna through openings. The objects may touch dangerous voltage points or short out parts causing damage to the antenna.

10. If the antenna is stored for long periods of time, unplug it from the wall outlet and remove the batteries. This will prevent damage caused by lightning or power line surges and battery acid from leaking inside of the antenna.

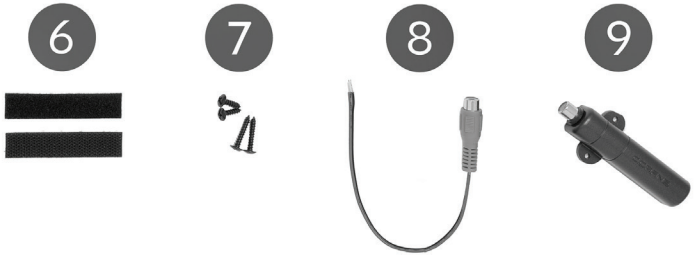
11. Never attempt to service the Twin Coil Ferrite AM Antenna by C. Crane yourself. Removing the cover may expose you to dangerous voltage levels and will void the warranty. Refer all servicing to authorized service personnel.

12. The Twin Coil Ferrite AM Antenna by C. Crane should be serviced by qualified service personnel when:
    a) Objects have fallen or liquid has been spilled into the antenna;
    b) The antenna has been exposed to rain;
    c) The antenna does not appear to operate normally or exhibits a marked change in performance; or
    d) The antenna has been dropped or the enclosure damaged.

13. The user should not attempt to service this antenna beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Table of Contents

1) Antenna Element
2) AC 9 Volt Adapter
3) 5’ PS2 Connection Cable
4) Tuner Control
5) 1/8” 5’ Mono to RCA Connector Patchcord



6) 1” Piece of Hook & Loop Fastener for Ferrite Stick
7) Mounting Screws
8) RCA Female Patchcord to Two Bare Wire Ends
9) Ferrite Stick

Initial Setup

The first time you use the Twin Coil Ferrite AM Antenna by C. Crane it takes time, planning, and a little bit of patience. You will need to re-check and re-tune the unit to find the best position.

After you have found the best spot for the Tuner Control, Ferrite Stick, and Antenna Element, you can take the time to secure and make permanent the installation to your liking. The Ferrite Stick can be fixed to the radio using the included hook and loop fastener.

If you have a problem finding a location for the Antenna Element that produces good results, be sure to try different areas within 50' of your radio. If you find a good position, you have the option of locating the Antenna Element there. If you need to mount the Antenna Element away from the radio for best reception, you may order additional cable in longer lengths.

Please refer to *ccrane.com* for optional accessories.

Connection to Radio and Antenna

These instructions cover the basic setup.
Attach one end of the 5' PS2 cable to the jack, labeled To Antenna, on the back of the Tuner Control unit. The arrow on the plug should face up. Please, DO NOT force the plug into the Tuner Control. It will plug in nicely when the pins are aligned.

Tuner Control

Connecting Antenna Element

The other end of the PS2 cable will plug into the jack on the Antenna Element labeled **To Control Box**. The arrow on this plug should also face up.

Antenna Element

Connection to Power

The AC adapter is simply plugged into the wall and then into the jack labeled: “9V DC” on the back of the Tuner Control.

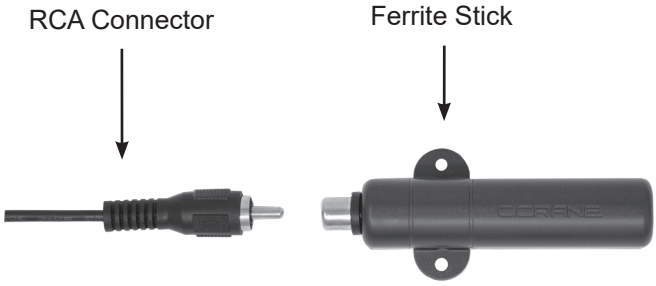
Battery Installation (Optional)

Remove the battery compartment cover on the bottom of the Tuner Control. Connect the battery. The antenna will run for approximately 45 hours on battery power. the 9 Volt battery (not included) is automatically disconnected when the AC adapter is plugged in.
Note: *Operating on battery power can improve reception over AC power.*

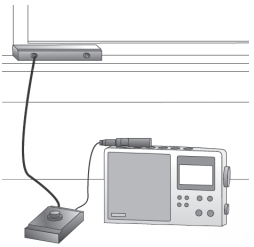
With a Portable Radio

To use the Twin Coil Ferrite AM Antenna with a radio that does not have antenna connectors:

1. Find the patchcord with the 1/8” x RCA male connector.
2. Insert the RCA plug into the Ferrite Stick.
3. Insert the other end of the patchcord into the jack labeled To Radio on the Tuner Control. (See photo on page 9.)

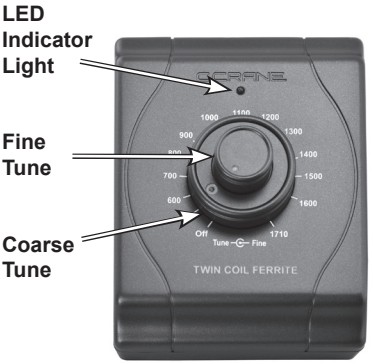


With a Portable Radio (Continued)



Place the Tuner Control in a comfortable location relative to your radio. Place the Antenna Element a few feet away. If the Antenna Element is placed too close to the radio, it will cause noise on your radio.

1. Place the Ferrite Stick on top of the radio near the center. Placement will vary depending on where the internal AM antenna of the radio is located.



2. For testing purposes, tune your radio to any weak AM station. It is important that the station be weak so you can clearly detect the improvement in reception.

3. Rotate the Fine Tune control, it will click on and the red LED indicator light will come on. Turn the Coarse Tune control knob slowly and you will likely notice a change in reception at some point on the dial. Adjust the control knob until you notice the most improvement on your signal. Now you can use the Fine Tune control for further refinement.

4. Move the Ferrite Stick around the radio to find the position that affects the signal the most. This position is the "sweet spot", or the best position.

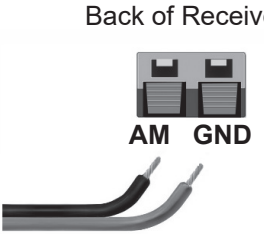
5. Again, adjust the Fine Tune on the Tuner Control for the best reception possible.

6. Now you can orientate the Antenna Element for best reception. In most cases, the Antenna Element does not have to be adjusted again. When radio noise is a problem, try rotating the Antenna Element in the direction which reduces noise to a minimum.

With a Home Stereo

You can directly connect the Twin Coil Ferrite AM Antenna by C. Crane to a home stereo by connecting the 1/8” Mono x RCA control patchcord to the RCA x two wire patchcord, as shown.

You can then attach one wire to the Ground and one wire to the AM terminal on the back of the receiver, as shown below. Most of the time you will find spring clips or screw terminals. It will not matter which wire you connect to which terminal.



Next, plug the other end into the jack labeled To Radio on the Tuner Control. If you want to experiment or if your receiver does not have antenna terminals, you can also use the Ferrite Stick on whatever “loop” or “loopstick antenna” that was supplied with the receiver.

1. Tune your radio to any weak AM frequency. It is important that the station be weak so you can clearly detect the improvement in reception.
2. Rotate the Fine Tune control, it will click on and the red LED light indicator will come on. Turn the Coarse Tune control knob slowly and you will likely notice a change in reception at some point on the dial. Turn the Coarse Tune control until you notice the most signal improvement.
3. Adjust the Fine Tune control for the best reception possible.
4. Now orientate the Antenna Element for best reception. In most cases, the Antenna Element does not have to be adjusted again.

After you have found the best spot for the Tuner Control and Antenna Element you can take the time to secure and make permanent the installation to your liking.

With a Loop Antenna

Occasionally a home receiver will include a loop type antenna. You can use the Ferrite Stick in conjunction with a loop, as shown at right. Move the Ferrite Stick around until you find the “sweet spot” that works best.

With a Loop Antenna (Continued)

Some older receivers have a ferrite stick similar to the one we provide. In this case, for best reception, put them parallel to each other and find the “sweet spot”.

In either case, you can use the hook and loop fastener to keep the Ferrite Stick in place.

Remote Installation of Antenna Element

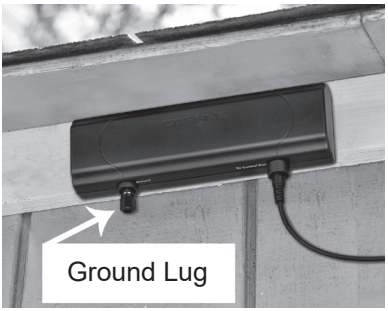
If after thorough testing, you find the Antenna Element must be mounted outdoors for best reception, you may order additional cable in longer lengths (refer to *ccrane.com* for optional accessories). Generally, you will only need to mount the antenna outdoors if radio noise and static reduce reception indoors.

When planning your remote installation try not to make vertical runs with the long cables. If the cable is vertical, it will pick up more radio noise than if you run it horizontally because most radio noise is vertically polarized. You can run a cable up to 75’ by using a special order cable coupler (refer to *ccrane.com* for optional accessories). At 100’ you will experience about a 25% loss in the performance.

Always mount the Antenna Element in a sheltered area to protect it from water. Two mounting holes are provided on the back to help install the unit. Refer to page 14 for important information regarding Outdoor Installation Precautions.

If using outdoors, apply silicone grease to the cable connector before plugging into the Antenna Element. Also apply Coax-Seal to the perimeter seam of the plastic case, screw holes, cable connection and ground lug. This will provide water resistance.

Grounding the Antenna Element



If radio noise is present, many times grounding the Antenna Element will reduce it significantly. It is not necessary to ground the antenna if there is no radio noise.

The easiest way to ground the Antenna Element is to use a #10 solid copper wire attached to a grounding rod inserted into the ground three to four feet deep. The end of the wire is then connected to the ground lug on the Antenna Element. The wire can either be wrapped around the lug or shaped with needle nose pliers first. You can mount the Antenna Element away from where you have placed the grounding wire attached to the grounding rod but it is best to keep the distance as short as possible. If there is radio noise, the lead from the grounding point to the Antenna Element may pick up additional radio noise. Moisture content of the soil may affect performance. Damp soil is better than dry soil.

Outdoor Installation Precautions - Lightning Protection

Lightning poses a serious hazard to you and to your radio equipment. Your antenna is a conductor. If it is struck by lightning (or touched by a live power line), it will conduct this electricity into your home.

Safety precautions require that you equip your antenna with lightning protection equipment. The equipment needed and installation methods can vary from area to area.

We recommend that you hire a licensed, bonded, and experienced professional to help with outside installations. An injury, of any kind, is simply not worth it. Please be careful!

Radio Noise

If radio noise and static are a problem, start by finding a place as close as possible to the radio where the static is absent. This is done by tuning a portable radio to a point on the AM dial where there is no station and static is at a high level. Bring the portable near an outside wall or even outside up to 50’ away from your host radio. When you find a place without static, this is where you may want to mount the Antenna Element. Please refer to Grounding the Antenna Element above, and Radio Noise Troubleshooting on page 15 for additional information.

Radio Noise Troubleshooting

AM radio noise problems and possible solutions.

If you hear an annoying buzz when listening to AM radio, it's most likely radio noise. Here are some of the usual culprits:

- Dimmer switch (even in an adjacent room).
- Lights: fluorescent light, "touch lamp" type fixtures, automatic night lights, motion-activated outdoor lights, dying bulbs, blinking bulbs.
- Nearby television or computer.
- Electronic bug and pest controllers.
- Faulty electrical switch.
- Radios & scanners.
- Dirty insulators on a nearby power pole.
- Electric blanket.
- Smoke detectors that run from an AC current (battery operated units are OK).
- C-Pap machines.

Now what can you do about it?

- Turn off the circuit breakers to see if the noise stops, and if the source comes from inside your house. Turn off one circuit at a time to isolate the source of the noise.
- Using a battery-operated radio, check if the interference comes from the AC 120V line, through the air, or both. To locate the direction of the noise, turn the radio until you hear the loudest noise. The front and the back of the radio will point to the noise origin.
- If the noise comes from outside, carry the radio around the neighbor hood to check for the origin of the noise. Ask your neighbors if they hear the same noise.
- If you suspect a power pole, call the utility company. Dirty power pole insulators are sometimes a cause of hard-to-find radio interference.
- Sometimes grounding can greatly reduce the hum from AC line noise. Unfortunately, most radios do not have a ground connection. Finding a good earth ground may also be difficult.

For more detailed information, please visit;
ccrane.com/radio-noise

General Specifications

Size:	Tuner: 3.25" W x 4.25" H x 1.25" D Antenna: 8.5" W x 2.5" H x 1.25"D
Weight:	Tuner: 4.5 ozs. Antenna: 8.5 ozs.
AC Power:	AC Adapter (Included): 9V, 100 mA, center tip negative, 2.1 mm tip.
DC Power:	9 V Battery (Not Included).
Power Consumption:	11 mA.
Gain:	-37 dBm /vm.
Output Impedance:	<50 Ohms.
AM Antenna:	Single ferrite element with twin coil.
Input Jacks:	Tuner: 2.1 mm jack for AC adapter PS2 jack for connecting cable to antenna element.
Output Jacks:	Antenna: PS2 jack for connecting cable to tuner. Tuner: 1/8" jack for connecting patch cord to radio.
Warranty:	60 day satisfaction guarantee. 1 year warranty parts & labor.

Model: Twin Coil Ferrite AM Antenna
ANSI C63.4: 2003
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 RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Patent #US 6,529,169 B2

NOTICE: Any changes or modifications not expressly approved by the party responsible for compliance could void the users authority to operate the equipment.

Phone: 1-800-522-8863 Web: *ccrane.com*

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