

# Armada Technologies Pro700 Wire and Valve Locator Operating instructions



**WARNING – Read and understand the instructions before operating this unit. Failure to do so could lead to injury or death.**

The Armada Technologies Pro700 wire and valve locator is designed to find lost valves and broken or severely damaged wires, and trace their paths. The complete Pro700 kit consists of;

- (1) Pro700R Receiving Wand
- (1) Pro700T Transmitter and Carrying Case
- (1) ProH1 Mono Headset
- (1) ProGS Ground Stake
- (1) Set of Black/Red Connecting Leads
- (1) Operating Manual

Please be sure that all items are included before operating the Pro700.

**Theory of Locating** - Cable Locators consist of a transmitter and a receiver or wand. In operation, a transmitter places a specific frequency signal onto the metallic conductor you are trying to trace. This placing of an AC signal onto a cable produces an electrical current and an electromagnetic field around that cable. If the wand is close enough, this signal is received and amplified by the wand.

It is very important to understand that the circuit you are creating follows the laws of physics and electricity. A cable locator transmitter creates an electrical current (AC) that travels down the cable, through grounding to the earth, and then back to the transmitter through the ground stake. The tracing signal will always travel on the path of least

resistance. If there is too much resistance or no circuit path, no current will flow and no locate will be possible. So keep in mind that when a signal is heard, it is because the signal has a complete path that is creating an electrically friendly way for the signal to travel back to the transmitter. The signal doesn't just randomly wander through the dirt. It follows a path provided for it, whether it is a pipe, wire, and reinforcing bar. Etc.

It is also important to note that in the tracing circuits, a return path needs to be present. Basically, the return path completes the circuit. In most cases, this will be the earth ground as the signal transmits down the cable and returns to the ground stake. However, any return is possible, so a common wire could work. Or if you have a looped wire, like a dog fence, the loop itself returns to the start and therefore provides a 'ground' instead of the ground stake. You don't have to use a ground stake but you do have to give the signal a way to return to the transmitter.

**Battery Installation** - The Pro700 transmitter requires 8 “D” cell batteries. The Pro700 receiver requires one 9v battery. To install the batteries in the Pro700 transmitter, open the case and remove the 2 holding screws on the battery compartment located on the right side of the unit. Place the batteries in the holder, orienting them in accordance with positive and negative poles. Turn on the Pro700T and push the red battery test button. A good reading of 8 or higher on the analog meter while depressing the battery test button indicates a successful battery install. If no response is seen, try adjusting the batteries to insure good connection. If still no response, be sure the batteries are good and fresh.

The Pro700 receiver battery compartment is located on the underside of the Pro700R unit. Remove the 2 screws and the battery compartment cover. Install the 9 volt battery and replace the cover and screws. Turn the unit on and depress the battery test button located on the backside of the Pro700R receiver. The analog needle should peg to the right. If not, try a new battery.

**WARNING – Do not touch the red and black clips that connect the transmitter to the cable when the power is on. There is danger of injury or death should this occur.**

**Operation** – Disconnect the wire you wish to trace and the common wire from the clock. With the transmitter off, connect the red alligator lead to the wire you want to trace (common or station) and the black alligator lead to the included ground stake. Insert the ground stake into the soil or earth ground perpendicular to the path of the wire and as far from the transmitter as possible. Do not connect to the clock as signal may cause damage if the clock is not voltage protected. Do not use common grounds such as pipes or electrical grounds unless you have no choice. An independent ground stake usually works better than a common ground.

Turn the Pro700 transmitter on. Adjust the power output knob and increase the power until a reading between 4 and 8 is achieved. **If you cannot achieve a reading of 4, turn the unit off and retry your grounding operation above.** A good ground is crucial for optimum operation. Soil conditions can also affect this and you may wish to moisten the grounding area. Also, re-check batteries for proper connection and operation.

Do not overpower the unit by turning it up past 10 on the meter. You won't hurt the unit but you will waste battery power for no additional performance.

**Tracing Wire** - After the Pro700 transmitter has been properly connected and verified to have a good ground and power, turn on the Pro700 receiver by turning the volume knob on the front of the receiver. Place the receiver near the operating Pro700 transmitter. A beeping sound should be heard indicating that the receiver is working properly. A high pitched tone could indicate that you are too close to the receiver or your batteries are low. A fading signal indicates low battery.

The volume control on the front of the receiver regulates the loudness of the receiver, both headphones and external speaker. Additionally, the analog meter on the front of the receiver will indicate the reception power level visually. After connecting and turning on the transmitter and turning on the receiver, point the receiver toward the ground and listen for the beeping signal. The closer you are to the cable, the louder the signal should be except for directly over the cable. Directly over the cable, the Pro700 works on the NULL principle. This means that the signal nulls or stops when the receiver is directly over the cable. If you are a little to the left or right, the signal will be loud but directly pointing the receiver at the cable produces virtually no signal. In this way, the user will know the exact location of the wire or cable being traced.

**Finding Faults** – Breaks or severe wire damage can be found with the Pro700. The setup of the unit is the same as when tracing wire. The difference comes in the reception. Whereas the traced wire continues to emit a signal along the path of the cable, a break will cause the signal to stop at the point of break. A nick or damage will cause the signal drop to a lower level but not necessarily end. Either the speaker or the analog meter on the receiver will indicate this drop. The faulted area will also produce a “hot spot” of signal right at the cut as the signal is lost to ground.

Be sure the cable or wire you are tracking is grounded. The signal needs a path to return to the ground stake and without it, you will not get a good locate. A bad ground is indicated on the transmitter analog meter when the needle cannot achieve a 4 or better even at full power. In many cases, a direct buried cable fault will provide this grounding and allow for a locate.

Do not let the receiver level go above 10. You are looking for a drop in signal and you may not see it if the analog meter is pegged to the right.

The greater the damage, the greater the drop off in signal. Conversely, minimal damage or weak grounding will show little change and are sometimes so small as to be un-locatable with the Pro700. Practice and experience will help immensely in this task.

**Finding Solenoids and Valves** – Finding solenoids and the attached valves is easy to do. If you want to find a particular valve, connect the red lead of the transmitter to the station wire leading to that valve and the black to ground as described above. Connect the Pro700 as above and begin your locate. When you reach the point where a valve/solenoid is located, the signal will expand into a large (approx 2-4ft) diameter area of signal. This is your indication that you are over a valve or solenoid. Additionally, the signal should not continue past this point.

There may be more than one valve on the cable being traced. You may wish to continue past the first valve located to determine if other valves are also located on this wire.

**Helpful Hints** – Increases in signal strength and/or the size of the area it is occurring from usually indicates some type of anomaly in the cabling. Things that could cause this are valves (as described above), nicks, cuts, bad splices, or cut wires. Good condition cable does not normally change the tone or strength, other than a very gradual loss of reception over distance, but it is possible. Slack loops of extra wire left in the ground at installation are an example of a condition that would cause an increase of signal and yet have no problem.

Also, ground condition makes a huge difference in the performance of cable locators. Basically a path is being created from the transmitter, through the cable, out through the ground and back to the ground stake. Any mistake in any of these links will cause the locator to not work properly. Be sure your ground stake is secure and in the dirt and that the transmitter is connected to the cable you want to track.

In addition, the more conductive the soil, the better. As moisture is a good conductor, the wetter the better. Dry sandy desert soil is not a good transmitter of signal and you will experience better results in moist soil. If you are in the desert, a little water at the ground stake may help.

The best way to really learn the Pro700 is to use it. Set up a test site at your home or office and get used to how it works. There is no substitute for experience in the art of locating. Good luck!

For more information on how to set up and operate the Pro700, either click the YouTube link or scan our QR code below. For more Armada troubleshooting videos, visit our YouTube channel: **ArmadaTech** (one word).

<https://www.youtube.com/watch?v=CS2VJQG2c-I>



**Warranty – Armada Technologies warranties all products for 12 months from manufacturing defects from the date of retail purchase. Armada Technologies will repair or replace any component that is returned to Armada Technologies within 12 months of purchase and does not exhibit signs of abuse or misuse. It is Armada Technologies sole discretion to determine this condition. Armada Technologies also reserves the right to require a proof of purchase in order to determine date and validity of purchase.**

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REV 02/2015