

## INSTRUMENT PROBLEMS

PRODUCT	PROBLEM/SYMPTOM	PROBABLE CAUSE
ALL	INSTRUMENT DEAD - NO AUDIO OR VISUAL INDICATION	<ul style="list-style-type: none"> <li>- Dead batteries</li> <li>- Loose battery connections</li> <li>- Battery tray not located properly (Transmitters)</li> <li>- Circuit board failure</li> <li>- Blown output fuse (FFL Transmitter)</li> <li>- Blown DC input fuse(Transmitters)</li> <li>- Connected to line with &gt;250v ambient voltage</li> </ul>
ALL	AUDIO SPEAKER NOT WORKING	<ul style="list-style-type: none"> <li>- Broken loudspeaker</li> <li>- Loudspeaker driver circuit failure</li> <li>- Loose connection to loudspeaker</li> <li>- Blown output fuse (FFL Transmitter)</li> <li>- Blown DC input fuse (Transmitters)</li> <li>- Connected to line with &gt;250v ambient voltage</li> </ul>
ALL	RECEIVER WON'T FIND TRANSMITTER TONE	<ul style="list-style-type: none"> <li>- Transmitter/Receiver at different frequencies</li> </ul>
ALL	VERY SHORT BATTERY LIFE	<ul style="list-style-type: none"> <li>- Old batteries have been used</li> <li>- One or more batteries inserted incorrectly (polarity)</li> <li>- Standard - not Alkaline – batteries have been used</li> </ul>
ALL	PUSH-BUTTON CONTROLS DON'T WORK	<ul style="list-style-type: none"> <li>- Not pressing hard or long enough</li> <li>- Application requested not allowed at that time</li> <li>- Switch pad failure</li> </ul>
ALL	STICKY CONTROL KNOBS	<ul style="list-style-type: none"> <li>- Dirt trapped between knob and housing</li> <li>- Switch/Potentiometer failure</li> </ul>
RX	HEADPHONES CRACKLE OR FAIL	<ul style="list-style-type: none"> <li>- Loose headphone socket/plug connection</li> <li>- Faulty volume control on headphones (if fitted)</li> <li>- Headphones failure</li> <li>- Circuit board failure</li> </ul>
RX	DISPLAY/METER NOT WORKING	<ul style="list-style-type: none"> <li>- Broken meter/display</li> <li>- Circuit board failure</li> <li>- Display overheated (in direct intense sunshine)</li> </ul>
RX	ERRATIC/STICKING METER	<ul style="list-style-type: none"> <li>- Damaged meter</li> </ul>
RX	DIGITAL DISPLAY BLANKS OUT	<ul style="list-style-type: none"> <li>- Display overheated (in direct intense sunshine)</li> </ul>
RX	DIGITAL DISPLAY FLASHES	<ul style="list-style-type: none"> <li>- Extreme low batter condition</li> </ul>
RX	DIGITAL DISPLAY REACTS SLOWLY	<ul style="list-style-type: none"> <li>- Display suffering from extreme cold</li> </ul>
RX	INSTRUMENT WILL NOT "TURN OFF"	<ul style="list-style-type: none"> <li>- Faulty on/off switch</li> </ul>
RX	GAIN CONTROL TURNS BUT DOES NOT WORK	<ul style="list-style-type: none"> <li>- Knob loose</li> <li>- Faulty Potentiometer</li> </ul>
RX	DEPTH INCORRECT & NO CURRENT	<ul style="list-style-type: none"> <li>- "Sonde" mode selected</li> </ul>
RX	AUTO TEST SAYS FAL	<ul style="list-style-type: none"> <li>- Test performed near signal source</li> <li>- Circuit board/aerials failure</li> </ul>
RX	DEPTH IN METERS NOT FEET/INCHES	<ul style="list-style-type: none"> <li>- Digital display has been set to metric</li> </ul>

RX	DISPLAY SHOWS ERR	- Error situation exists
TX	TRANSMITTER ON BUT NO OUTPUT TONE	- Blown output fuse (FFL Transmitter) - Loose wire at plug or clip of connection leads - Bad connection to target line or ground
TX	TRANSMITTER TONE PULSES	- Low batteries
500	PROBLEMS FITTING TRANSONDE	- Damaged threads
500	TRANSONDE LEAKS WHEN UNDER PRESSURE BUT CLOSED	- Damage to housing or seals
500	FLOW TEST INDICATES BAD CALIBRATION	- Internal damage
500	FILTER SCREEN DAMAGED INLET	- Grit/sand in pipe system
500	CONTINUOUS TONE (HEADPHONES) AT HIGH SENSITIVITY LEVELS	- Audio circuit overloaded - Incorrect impedance headphones used
500	VERY SHORT BATTERY LIFE	- On/off control switched on accidentally - Poor quality battery

**ALL** = Transmitters & Receivers **RX** = Receivers **TX** = Transmitters

**500** = RD500

## APPLICATION PROBLEMS

PROBLEM / SYMPTOM	PROBABLE CAUSE
NO TONE BEING TRANSMITTED	<ul style="list-style-type: none"> <li>- Dead batteries</li> <li>- Blown output fuse</li> <li>- Loose or broken lead connections</li> <li>- Bad connection to service</li> <li>- Bad ground connection</li> </ul>
TONE BEING TRANSMITTED BUT RECEIVER WON'T LOCATE	<ul style="list-style-type: none"> <li>- Transmitter/Receiver at different frequencies</li> <li>- Wrong mode selected</li> <li>- Target too deep</li> <li>- Noisy environment</li> </ul>
RECEIVER PICKS UP TONE EVERYWHERE	<ul style="list-style-type: none"> <li>- Inductive mode; too close to transmitter</li> <li>- Transmitter grounded to another structure/service</li> <li>- Receiver gain set too high</li> <li>- Transmitter frequency is too high</li> <li>- Direct short to ground</li> <li>- Reinforcing bar or steel structure</li> <li>- Tone on adjacent lines/ground return currents</li> <li>- High ferrous content in ground rock</li> </ul>
DISTANCE OK BUT MORE REQUIRED	<ul style="list-style-type: none"> <li>- Ground stake too close to target line</li> <li>- Wrong frequency selected</li> <li>- More power from transmitter required</li> </ul>
TONE LOCATED ON SEVERAL LINES	<ul style="list-style-type: none"> <li>- Transmitter grounded to another line</li> <li>- Other lines between ground stake and target line</li> <li>- Receiver gain is set too high</li> <li>- Commonly bonded lines</li> <li>- Transmitter frequency is too high</li> <li>- Transmitters output is too high</li> </ul>
RAPID LOSS (OR REDUCTION) IN TONE FROM TARGET LINE OR TRANSMIT DISTANCE VERY SHORT	<ul style="list-style-type: none"> <li>- Direct short to ground close to point of signal application</li> <li>- Large diameter line with no or bad insulation</li> <li>- Wrong frequency selected</li> <li>- (Pipes) Insulated joint close to point of signal application</li> <li>- (Cables) Loss of electrical continuity on conductor used for locating</li> <li>- Target line goes deeper</li> <li>- Target line has laterals</li> </ul>
TONE REDUCES THEN, SOME DISTANCE LATER, INCREASES	<ul style="list-style-type: none"> <li>- Line has entered conduit system</li> <li>- Line has gone deeper and then shallow</li> </ul>
TONE PULSES	<ul style="list-style-type: none"> <li>- Low battery</li> <li>- Tone beating against similar frequency from another source</li> </ul>
CLAMP (COUPLER) WILL NOT TRANSMIT	<ul style="list-style-type: none"> <li>- Clamp jaws not closed</li> <li>- Target line not grounded at both ends</li> </ul>
SONDE SIGNAL FADES AND STOPS	<ul style="list-style-type: none"> <li>- Sonde has entered metal pipe/conduit</li> </ul>
RECEIVER WON'T PEAK CONSISTENTLY	<ul style="list-style-type: none"> <li>- Receiver not oriented correctly to target line</li> <li>- Field distortion</li> </ul>

WIDE PEAK RESPONSE – CANNOT REDUCE		<ul style="list-style-type: none"> <li>- Large diameter target line</li> <li>- Deep target line</li> <li>- Overhead interference</li> <li>- Local short or open</li> <li>- Inductive mode; airborne signal from transmitter being located</li> </ul>
RECEIVER WON'T NULL		<ul style="list-style-type: none"> <li>- This is not the target line</li> <li>- Field distortion</li> </ul>
PEAK/NULL MODES GIVE DIFFERENT LOCATIONS (Please note: Depth readings may be inaccurate)		<ul style="list-style-type: none"> <li>- Interference or tone from adjacent lines</li> <li>- Target line changes direction at a tee or at a manhole/valve or point of rapid depth change</li> <li>- Wrong line has been identified</li> <li>- Inductive mode; too close to transmitter</li> </ul>
NO POWER (60Hz) RESPONSE (ON KNOWN CABLE)		<ul style="list-style-type: none"> <li>- No current is flowing on line -</li> <li>- Currents may be phase balanced</li> </ul>
NO RADIO (RF) RESPONSE		<ul style="list-style-type: none"> <li>- No RF signal is flowing on line</li> </ul>
SCRATCHY AUDIO SIGNAL		<ul style="list-style-type: none"> <li>- Interference present</li> </ul>
DEPTH MEASUREMENT IS INACCURATE		<ul style="list-style-type: none"> <li>- Interference or tone from adjacent lines</li> <li>- Target line changes direction at a tee or at a manhole/valve or point of rapid depth change</li> <li>- Inductive mode; too close to transmitter</li> <li>- Wrong line has been identified</li> <li>- Instrument out of calibration</li> <li>- Depth reading being noted from wrong scale</li> </ul>
DISPLAY INDICATES "NO CD"		<ul style="list-style-type: none"> <li>- No CD reference tone is present</li> </ul>
MISMATCHED UTILITY		<ul style="list-style-type: none"> <li>- Interference or tone from adjacent lines</li> <li>- Target line changes direction at a tee or at a manhole/valve or point of rapid depth change</li> <li>- Inductive mode; too close to transmitter</li> <li>- Wrong line has been identified</li> </ul>
RD500	TRANSONDE WON'T PULSE OR RUNS CONTINUALLY	<ul style="list-style-type: none"> <li>- Valve seat obstructed by foreign object</li> <li>- Water pressure outside operating parameters</li> <li>- Outlet hose not fitted</li> <li>- (Fire plug/water meter) Extension pipes not used</li> <li>- "Check valve" exists close to point of Transonde application</li> </ul>
RD500	TRANSONDE PULSES A FEW TIMES AND THEN STOPS	<ul style="list-style-type: none"> <li>- Adjustment being made too rapidly</li> <li>- Water pressure is varying</li> <li>- Valve seat obstructed by foreign object</li> <li>- Filter screen is clogged</li> </ul>
RD500	TRANSONDE PULSES FASTER THAN DESIRED	<ul style="list-style-type: none"> <li>- Adjustment being made too rapidly</li> <li>- Water pressure is varying</li> <li>- Valve seat obstructed by foreign object</li> <li>- Filter screen is clogged</li> </ul>
RD500	TRANSONDE STOPS AFTER RUNNING FOR A FEW MINUTES	<ul style="list-style-type: none"> <li>- Outlet hose not fitted or not tight</li> <li>- Transonde not applied tightly</li> <li>- (Fire plug/water meter) extension pipes not used</li> <li>- Water pressure is high</li> </ul>
RD500	TRANSONDE PULSING IS INTERRUPTED BY PERIODS OF CONTINUOUS FLOW	<ul style="list-style-type: none"> <li>- Water pressure is varying</li> <li>- Tee handle locknut is loose</li> </ul>

RD500	RECEIVER GIVES WIDE, FLAT RESPONSE	- This is not unusual
RD500	SIGNAL VERY FAINT	- Under hard surfaces (roads, sidewalks, etc.) - Pressure wave is weak - Sandy or "loose" or saturated surfaces - Loose rock infested soil
SHEATH FAULT LOCATION	NO FAULT FOUND	- Fault too high a resistance or does not exist - (Power cable) Target may be uninsulated concentric neutral
	RX NEEDLE SWINGS INTERMITTENTLY	- Not a fault zone