

# **Gen-Eye POD™ & MINI-POD™ Video Pipe Inspection/Location System Operating Instructions**



Your Gen-Eye POD/MINI-POD is designed to give you years of trouble-free, profitable service. However, no machine is better than its operator.

Read, understand and follow all safety warnings and instructions provided with the product. Failure to follow the warnings and instructions may result in electric shock and/or serious injury. Save all warnings and instructions for future reference.

**SAVE THESE INSTRUCTIONS!**

***General***  
**PIPE CLEANERS**



**WARNING**

Read and understand operator's manual before using this machine. Failure to follow operating instructions could result in death or serious injury.

**WARNING!** Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury. Replacement manuals are available upon request at no charge, or may be downloaded from our website, [www.drainbrain.com](http://www.drainbrain.com). Instructional videos are available for download on our website, and may be ordered. If you have any questions or problems, please call General's customer service department at 412-771-6300.

**SAVE THESE INSTRUCTIONS!**

**These instructions are intended to familiarize all personnel with the safe operation and maintenance procedures for the Gen-Eye POD & Gen-Eye MINI-POD.**

**SAFETY SYMBOLS**

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
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**DANGER**

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

**WARNING**

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**CAUTION**

CAUTION indicates a hazard with a low level of risk which, if not avoided, will result in minor or moderate injury.

**WARNING**



Electric shock resulting in death can occur if you plug this machine into an improperly wired outlet. If the ground wire is electrified, you can be electrocuted by just touching the machine, even when the power switch is off. A ground fault circuit interrupter will not protect you in this situation. Use a UL approved tester to determine if the outlet is safe.



Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite the dust or fumes.



Always wear safety glasses and rubber soled, non-slip shoes. Use of this safety equipment may prevent serious injury.

## GENERAL SAFETY RULES



### WARNING

Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

### SAVE THESE INSTRUCTIONS!

#### Work Area

1. **Keep work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

#### Electrical Safety

1. **Grounded tools must be plugged into an outlet, properly installed and grounded in accordance with all codes and ordinances. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. **This plug will fit a polarized outlet only one way (one blade is wider than the other).** If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way.
3. **Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is grounded.
4. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
5. **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
6. **When operating a power tool outside use an outdoor extension cord marked "W-A" or "W".** These cords are rated for outdoor use and reduce the risk of electric shock.
7. **Keep all electric connections dry and off the ground.** Reduces the risk of electric shock.
8. **Do not touch plugs or tools with wet hands.** Reduces the risk of electric shock.

#### Personal Safety

1. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
3. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
4. **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

#### Tool Use and Care

1. **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
2. **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventative safety measures reduce the risk of starting the tool accidentally.
3. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
4. **Inspect for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
5. **Only use accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

#### Service

1. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified repair personnel could result in a risk of injury.
2. **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

## SPECIFIC SAFETY RULES



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Electric shock resulting in death can occur if you plug this machine into an improperly wired outlet. If the ground wire is electrified, you can be electrocuted by just touching the machine, even when the power switch is off. A ground fault circuit interrupter will not protect you in this situation. Use a UL approved tester to determine if the outlet is safe.



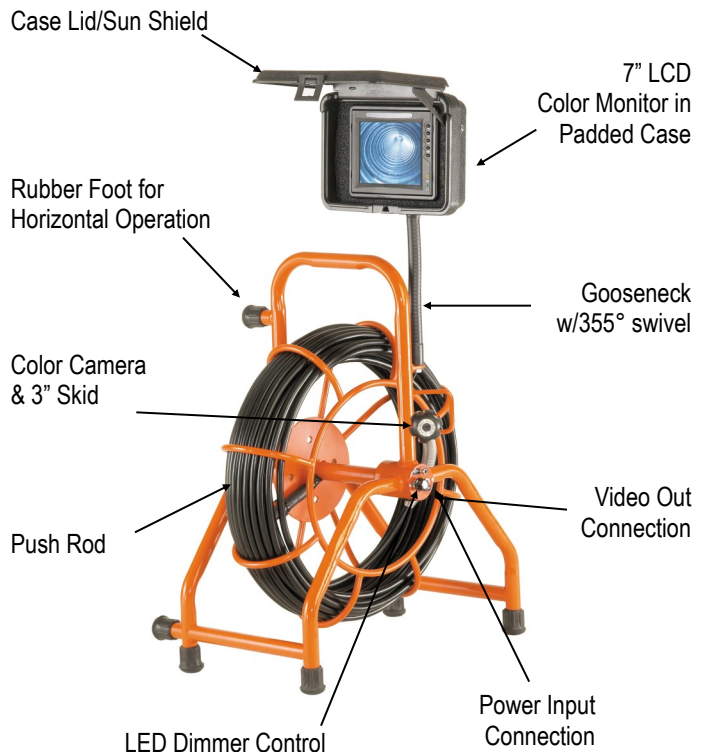
Always wear safety glasses and rubber soled, non-slip shoes. Use of this safety equipment may prevent serious injury.

1. **Wear rubber gloves.** Sewer lines are unsanitary and may contain harmful bacteria.
2. **Be sure that the unit is plugged into a properly grounded receptacle.** If in doubt, check receptacle before plugging in machine. Check the power cord to see that there are no cuts or frays, and that the grounding prong on the plug is still in place.
3. **If the power cord supplied with the machine is not long enough, be sure to use a 16 gauge heavy duty extension cord no more than 50 feet long and in good condition.** Using lighter cords can result in severe power loss and motor overheating.
4. **Be careful when inspecting drains where cleaning chemicals have been used.** Avoid direct contact with corrosive drain cleaners. Drain cleaning chemicals can cause serious burns, as well as damage the cable and camera.
5. **Do not operate machine if operator or machine is standing in water.** Will increase risk of electrical shock.
6. **Wear safety glasses and rubber soled, non-slip shoes.** Use of this safety equipment may prevent serious injury.
7. **Only use this tool in the application for which it was designed. Follow the instructions on the proper use of the machine.** Other uses or modifying the machine for other applications may increase risk of injury.
8. **The Gen-Eye POD should not be used in wet locations or in the rain.** Moisture may cause damage to the unit.
9. **The POD will operate on 120vAC and 12vDC Line Voltage. When using 120 volts AC, care should be taken to ensure that it is plugged into a properly grounded receptacle to prevent damage to the unit.** If the intended receptacle is not properly grounded, do not use it and look for another one.
10. **If the POD does not seem to be operating properly, or if you suspect a problem with the electronics, do not operate it and call the factory for a service center near you.**

## ABOUT THE INSPECTION CAMERA

- Although manufactured for the harsh environments in which it will be used, the camera should be treated carefully as damage may occur if dropped or “buted” severely against the pipe or any other hard surface. The stainless steel camera housing is made to protect the camera and electronics to a large extent; however, it can be damaged by denting which may cause possible failure of the protective and watertight O-ring seals that may cause the camera to fail. The camera, housing, and front viewing lens should be checked thoroughly after each use for signs of damage and if required should be corrected prior to further use.
- The camera should always be cleaned and inspected after every use as dirt, grime and grease can cause unnecessary problems such as failure of the camera seals.
- The camera lens, front nose piece and lights should be cleaned and checked after every use for possible damage to the lens or light covers and to prevent a build up of dirt and grime which may cause a degradation of the video picture.
- Should camera disassembly be required for any reason (for replacing seals, etc.) always ensure the camera has first been cleaned and taken to a clean area for disassembly. Take extra precaution to avoid dirt getting into the camera body and any mating components such as the nosepiece, main body, and connectors.

## FEATURES



### CAMERA TRANSMITTER (512 HZ)

Your system includes a 512Hz transmitter, which is located safely in the spring behind the camera. When the POD is turned on, the transmitter will be automatically activated.

**CARE SHOULD BE TAKEN WHEN USING THE TRANSMITTER IN THE SPRING AS EXCESSIVE BENDING AND TWISTING MORE THAN 180 DEGREES MAY DAMAGE THE UNIT.**

**Table 1 - Reel Capacity**

Reel Type	Pipe Sizes	Lengths Available
Full Size POD Reel	3" to 10" (75 to 250 mm)	200 ft. (60 m)
Mini POD Reel	1-1/2" to 4" (38 to 100 mm)	125 or 175 ft. (38 or 54 m)

### SKID

Depending on the size of pipe you are inspecting, you may need to use the supplied skid so the camera is centered or off the bottom of the pipe. Care should be taken so the skids do not snag in the pipe.



Under normal operating situations, the camera is used with the smaller protective sleeve in 4" lines. The full size POD includes a 6" skid for use in larger lines.

The skid supplied should be slipped onto the camera with the lip of the sleeve at the front. Make sure the camera body is clean and the set screws tightened only until they touch the camera body. Do not over tighten as you may damage the camera housing.

### MONITOR

- Use caution when carrying or storing the POD. Do not drop or strike the LCD monitor.
- The normal operating range of the LCD monitor is 32°F to 104°F. The picture may not be displayed normally if operated outside of this range. Do not operate or store in vehicle in temperatures below -4°F, or exceeding 180°F
- Functions are as follows:

**Power:** ON/OFF

**AV:** Select Input 1, 2, or 3

**Menu:** Adjust brightness, contrast, or invert picture. Use Volume Buttons to adjust.

**Vol +:** Increase current option value.

**Vol - :** Decrease current option value.

The remote control may also be used for these functions.

### PICTURE INVERTER

For units without a self-leveling camera, you can use the picture inverter built into the monitor. Press the MENU button several times until the up and down arrows appear on the monitor. Press the UP or DOWN buttons to invert picture.

## SET UP

1. On arrival to the job site and after checking for a properly grounded receptacle, set the POD in an easily viewable position where it will not interfere with the inspection.

The POD can be used in both the vertical and the horizontal positions.



2. Check and make sure the Light Head Intensity Control is set at the "low" position.
3. FOR AC VOLTAGE OPERATION: Plug the socket end of the AC cord into the AC socket on the side of the POD. When using 120 volts AC, care should be taken to ensure that it is plugged into a properly grounded receptacle to prevent damage to the unit.



FOR DC VOLTAGE OPERATION: Plug the socket end of the DC cord into the DC socket on the side of the POD. When using 12 volts DC, the unit plugs into a vehicle's cigarette lighter. For 12VDC, the vehicle engine must be running to operate the camera system.

**The AC or DC cord should always be plugged into the POD first, then into the wall or 12VDC socket. NEVER plug into the AC socket or DC source first.**

4. Ensure the power switch on the LCD monitor is on.

## OPERATION

1. Release the latch and open the monitor case. The lid acts as a sun shield. Adjust position of the monitor to the optimum viewing angle using the gooseneck and swivel. NOTE: The monitor is limited to 355 degrees of rotation. Do not force the monitor to swivel beyond this point or damage could occur.
2. Release the locking pin and drag brake located behind the reel. Then, slowly push the camera into the pipe. Make sure the spring does not kink or double back on itself.
3. Once the camera is in the pipe, adjust the lights to a level which produces the best picture with the least amount of light. This will vary depending on pipe conditions. You may also adjust the brightness and contrast controls on the monitor.
4. Lighting may be adjusted to highlight various pipe conditions and objects as desired. In some cases, white or lighter-colored object may cause the picture to “flare” or “wash out”. If this happens, simply turn the light control down until a good picture is achieved.
5. Push the camera slowly and carefully during the inspection - taking note of the pipe condition for possible hazards that may entangle or damage the camera on entry or retrieval.
6. When negotiating a corner, care should be taken not to butt the nose of the camera against the sidewall with any force. It would be better to let the camera “work” its way around the corner. If resistance is encountered when turning the corner and there is no visible signs of blockage, turning the push rod or pulling the camera back and forth slowly sometimes helps.
7. Should resistance become extreme, or the camera gets entangled or stuck, slowly push back and forth to free it. Sometimes turning the push rod may also help. If the camera is visible you may be able to free it with your hand or some other means.
8. When storing the Gen-Eye POD between uses, the gooseneck/monitor assembly can be folded down for more compact storage.








## RECORDING THE INSPECTION

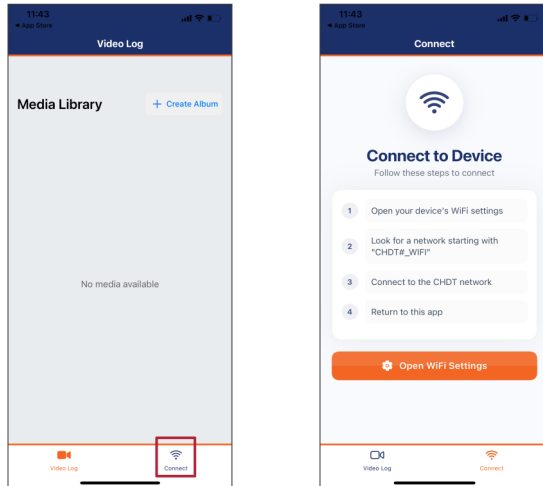
If you wish to record your inspection, you can plug an external recording device into the VIDEO OUT connection in the hub of the reel.

If your unit is equipped with Wi-Fi, you can use your smart phone or tablet to record still images or video. Follow the directions on the following pages for “How to Set-Up the Wi-Fi Feature” for the type of device you are using.





## How to Set-Up the Wi-Fi Feature for Gen-Eye POD Camera Systems On an Apple device

1. Make sure the Command Module is turned ON and you are next to the unit.
2. On your cell phone, tablet, or other Wi-Fi enabled device, go to the App Store. **NOTE:** You must have an Apple account set up before proceeding.
3. Search for and download:  iOS icon “General Pipe Cleaners App”.
4. Upon opening the App, you will be routed to the Media Library Screen.

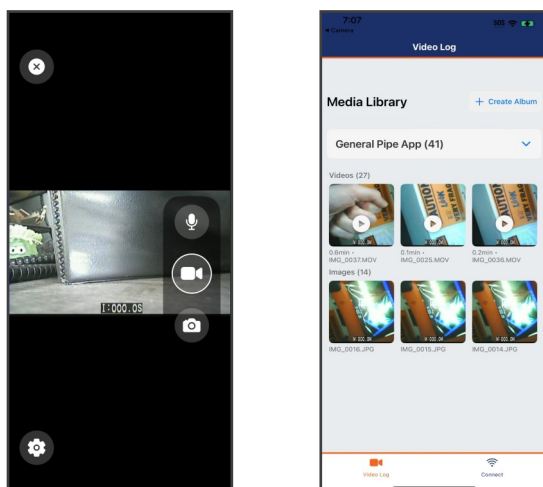
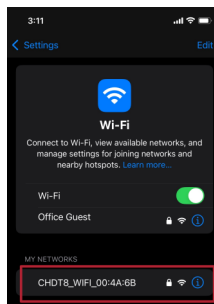
	<b>Icon Key:</b> Settings—Allows you to adjust the brightness and contrast.
	Microphone—Tap to record audio. *NOTE to include audio in your recording, you must tap the microphone first, then tap the video camera icon to begin recording.
	Video Camera—tap to begin/end recording.
	Camera—tap to take screenshots.




The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.





1. You are now ready to record video or take snap shots. 
2. To include audio in your video recording, tap the microphone icon first, then tap the video camera icon to begin recording with audio. 
3. To start recording video, tap the video camera icon. (Tap it again to end recording). 
4. To adjust the brightness, contrast, tap the settings icon and select your desired settings. 
5. To view your snap shots and recordings, navigate to Library or the photo/video gallery application on your device. You can view your photos/videos in your device's gallery.

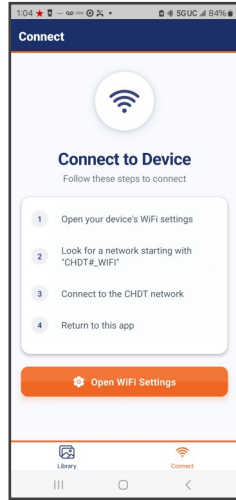
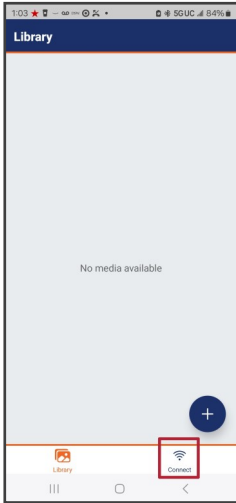
5. From the Media Library screen, select “Connect”.
6. From the connect screen, select “Open WiFi Settings”.
7. Open your device’s WiFi Settings. Look for a network starting with “CHDT#\_WIFI”. Connect to the CHDT Network. **Password: 12345678**
8. Return to the General Pipe Cleaners App.
9. When the app opens, you should see the image transmitted by the camera on your screen.
10. Grant the General Pipe Cleaners App access to your devices microphone, camera, and photo gallery when prompted.







## How to Set-Up the Wi-Fi Feature on Gen-Eye POD Camera Systems On an Android device

1. Make sure the Command Module is turned ON and you are next to the unit.
2. On your cell phone, tablet, or other Wi-Fi enabled device, go to the Play Store (Android). **NOTE:** You must have a Google account set up before proceeding.
3. Search for and download "General Pipe Cleaners App".  Android icon
4. Upon opening the app you will be routed to the media library.

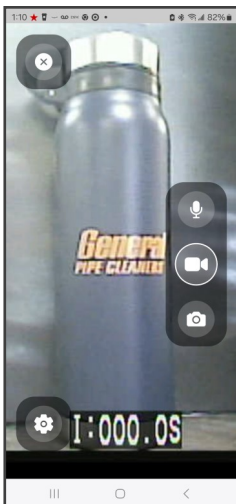
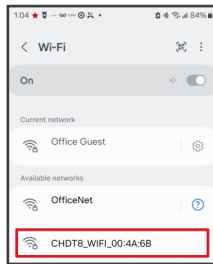
	<b>Icon Key:</b> Settings—Allows you to adjust the brightness and contrast.
	Microphone—Tap to record audio. <i>*NOTE to include audio in your recording, you must tap the microphone first, then tap the video camera icon to begin recording.</i>
	Video Camera—tap to begin/end recording video.
	Camera—tap to take snap shots.



The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.

1. You are now ready to record video or take snap shots. 
2. To include audio in your video recording, tap the microphone icon first, then tap the video camera icon to begin recording with audio. 
3. To start recording video, tap the video camera icon. (Tap it again to end recording). 
4. To adjust the brightness, contrast, tap the settings icon and select your desired settings. 
5. To view your snap shots and recordings, navigate to Library or the photo/video gallery application on your device. You can view your photos/videos in your device's gallery.

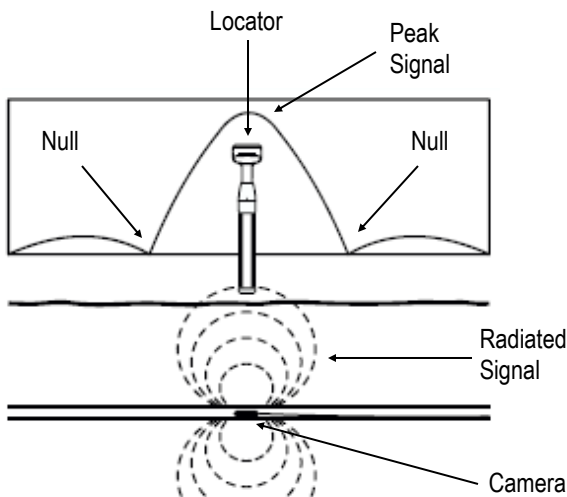
5. From the media library screen, select "Connect".
6. From the Connect screen, select "Open WiFi Settings".
7. Look for a network starting with "CHDT#\_WIFI". Connect to the CHDT network. **Password: 12345678**
8. Return to the General Pipe Cleaners App.
9. When the app opens, you should see the image transmitted by the camera on your screen.
10. Grant the General Pipe Cleaners App access to your devices microphone, camera, and photo gallery when prompted.





## CAMERA LOCATION

1. Turn on Gen-Eye Prism Camera system.
2. Press and hold the Hot Spot Locator On/Off button. Check battery strength on display.
3. Press MODE icon until indicator displays Sonde/Camera Head mode.
4. Press Antenna Select icon until indicator displays Total Field configuration.
5. Set Locator to 512Hz by pressing FREQ button until 512 Hz appears on display.
6. Press up arrow button to increase GAIN to maximum sensitivity.
7. Push camera head/Sonde only 10 to 15 feet into the line before starting the location process.
8. Stand near pipe entrance and hold the Gen-Eye Hot Spot Locator so that the blade is pointed at 45 degree angle, out and down towards the ground at the approximate distance of the transmitter.
9. Rotate in a circle, listening to the signal strength indicator tone. If you receive full signal strength in every direction, press and release the DOWN ARROW button to reduce the GAIN, or sensitivity of the device. Repeat process until you receive a strong-steady tone from just one direction. Reduce gain further if necessary to clarify exact direction.
10. Hold Hot Spot Locator blade perpendicular to the ground and walk in the direction of the strongest signal.
11. As you walk, reduce gain by pressing and releasing down arrow button as often as necessary to keep signal strength indicator near the 50% level. (Signal Strength levels in the 100% range will erode accuracy. Always aim to keep the signal strength near 50%.)
12. The radio waves propagating from the transmitter look like this:



Notice that there is a PEAK signal over the exact location of the transmitter, and two NULL points on either side of the PEAK, lined up parallel with the lay of pipe.

13. Watch the Gen-Eye Hot Spot monitor display as you approach the transmitter's location.
14. When you reach the vicinity of a NULL point the screen will produce this display:



Simply follow the arrows to find the exact spot. When you are over the NULL point, the screen will produce this display.

15. When you reach the vicinity of the PEAK the screen will produce this display:



Follow the arrow to pinpoint the location of the transmitter. Simply rotate the flat edge of the locator blade relative to the arrows on the outside of the 'compass' to determine the orientation of the transmitter. When the display shows this graphic:



you will have the exact location of the transmitter and the lay of the pipe.

16. Find and mark the location of both the NULL and the PEAK points.
17. Push the camera ahead another 10-20 feet and repeat the process. Duplicate every 10-20 feet until the problem area is visible on the Gen-Eye monitor. At the completion of this process the entire line will be traced and marked.

## **MAINTENANCE**

### **CAMERA AND MONITOR CLEANING**

After every use, the camera should be cleaned and checked for possible damage that may have occurred during the inspection. External scuffing of the camera housing is normal and should be of no concern; however, use the trap skid to protect the camera and help it slide around elbows more easily.

The camera lens is made of sapphire and should be cleaned with a soft, damp cloth. Grease, dirt, or scratches will affect the quality of the video picture.

Use only soft cloth and non-ammonia glass cleaner to clean the LCD monitor.

### **LIGHT REPLACEMENT**

The light heads for the Gen-Eye POD cameras use LED lighting and cannot be replaced by the operator. These lights use very little power. Unless physically damaged or extreme voltage is applied to them, they should last indefinitely. If replacement is necessary, the camera should be returned to the factory.

The camera lights are wired in a series/parallel configuration. This means that there are 4 sets of 4 (color camera) each wired together. Each set is wired in series and then the 4 sets are wired in parallel. Therefore, should one lamp burn out in one set, the other sets will still remain lit.

### **CABLE AND REEL ASSEMBLY CLEANING**

The cable and reel assembly should be kept clean from dirt. When rewinding the cable back onto the reel after an inspection, it is good practice to use a clean rag to wipe off any debris the cable may have.

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**DO NOT USE A PRESSURE WASHER TO CLEAN REEL ASSEMBLY. WATER MAY GET INTO UNSEALED AREAS CAUSING DAMAGE AND VOIDING THE WARRANTY.**

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### **CAMERA REMOVAL**

The camera and associated electronics are not user serviceable. Servicing should be left to qualified personnel (your dealer can advise you with regards to service, etc.).

### **CAMERA FOCUS**

All Gen-Eye POD cameras are pre-focused at the factory from approximately 3" to infinity and should not require any focus adjustments. Should focus adjustments be required, please call the factory.

### **CAMERA FUNCTIONS AND CONTROLS**

The POD is designed to supply all operating voltages and functions to your camera system and should be treated with care. Protecting the unit from excessive shock and jarring will prolong its life.

Separate AC and DC power cords are supplied; the AC plug on the AC cord and a cigarette lighter type plug on the 12v DC cord.

### **CAMERA LIGHTS (VARIABLE INTENSITY CONTROL)**

Controls the light output and intensity on the camera light head.

## **TROUBLESHOOTING**

### **No Picture AND No lights:**

- Check to make sure the power source is "live" with your Household Circuit Analyzer.
- Check that the monitor power button is in the on position.
- Check to make sure that the camera lens is not covered or looking at a surface that provides no detail, therefore any image detail.
- Check all connections.
- Disconnect main power and contact the factory service department.

### **Picture, BUT No Lights:**

- Check to see if light intensity control is turned up.
- Check push rod for possible breaks or intermittent open circuits by flexing the cable.
- If the lights are still not working, chances are that one or more of the lights will need replacing. Contact the factory service department.

### **No Picture, BUT Lights:**

- Check Monitor power switch is depressed (on). Check to make sure the power source is "live" with your Household Circuit Analyzer.
- Check that the AV button is set to Input 1.
- Check to see if the monitor brightness and contrast controls are turned up.
- Check the push rod cable for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect the main power and contact the factory service department.

### **Picture Upside Down or Backwards:**

- Press Menu button until arrows appear.
  - To Invert Picture: Select Red "UP" arrow using volume buttons.
  - To Reverse Picture: Select Red "LEFT" arrow using volume buttons.

### **Dark Picture**

- Check to see if the monitor brightness and contrast controls are turned up.
- Check the Light Head to see if it is not supplying sufficient light due to weak, dirty, or burned out bulbs.
- Check to see if the Light Head intensity control is turned up.
- Disconnect the main power source and contact the factory service department.

## TROUBLESHOOTING CONTINUED

### Monitor Not Responding to Remote Control:

- Check whether batteries have sufficient power. Replace as necessary.
- Check whether batteries are correctly installed in remote control.
- Check remote control sensor lens on monitor and distance/angle of the remote control.

### Bad or Grainy Picture

- Check the camera lens for dirt, grime, scratches or other foreign matter.
- Check the Light Head to see if it is not supplying sufficient light due to weak, dirty, or burned out bulbs.
- Check for external electrical noise being radiated by outside sources, such as a power station, etc.
- Check the push rod cable for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect the main power source and contact the factory service department.

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