

Gen-Eye X-POD Plus[®] **Video Pipe Inspection/Location Systems** **Operating Instructions**



Your Gen-Eye X-POD Plus Video Pipe Inspection/Location System 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. 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 X-POD Plus Video Pipe Inspection/Location Systems.

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.

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.

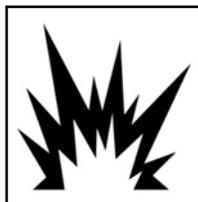
CAUTION

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. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. 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. **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.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **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.
5. **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.
6. **Keep all electric connections dry and off the ground.** Reduces the risk of electric shock.
7. **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. **Remove adjusting keys or switches before turning the tool on.** A wrench or key that is left attached to a rotating part of the tool may result in personal injury.

4. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
5. **Always wear safety glasses and rubber soled, non-slip shoes.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.
6. **Rubber glove inserts should be worn for health and safety reasons.** Sewer lines are unsanitary and may contain harmful bacteria.
7. **Check to make sure pipes are not electrically hot.** In some cases, ground circuits may be returned to cast iron pipes causing them to be electrically charged. Care should be taken to check the entire length on any pipe you are going to inspect.
8. **Prevent object and liquid entry.** Never push objects of any kind into this product through the openings as they may touch dangerous voltage points or short circuit to parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

Tool Use and Care

1. **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
2. **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.
3. **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
4. **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.
5. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
6. **Maintain tools with care.** Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
7. **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.
8. **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 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

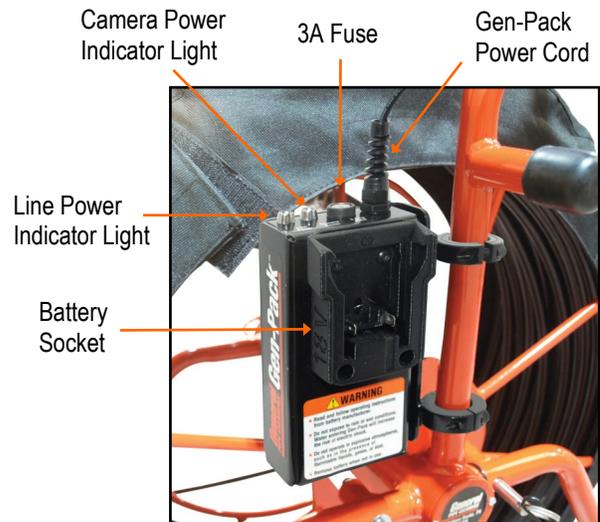
1. **Do not use tool if switch does not turn it ON or OFF.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.

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 cleaning 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. Neutralize or remove corrosive drain cleaners in the drain before starting the job.
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. **Protect against lightening.** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power surges.
8. **Protect against excessive heat.** The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
9. **Only operate the X-POD Plus with the 15 volt power supply included with the Command Module or the Gen-Pack battery adapter using the Milwaukee M18 battery or equivalent.**
10. **Do not plug a hard drive into the external USB port.** External hard drives are not supported with X-POD Plus monitors.
11. **Do not use a USB flash drive larger than 64 GB.** The recording drive could be damaged and data could be lost if a larger flash drive is used.
12. **Do not operate the X-POD Plus Command Module with both the 10-pin reel connector and the Probe Rod connected at the same time.**

FEATURES



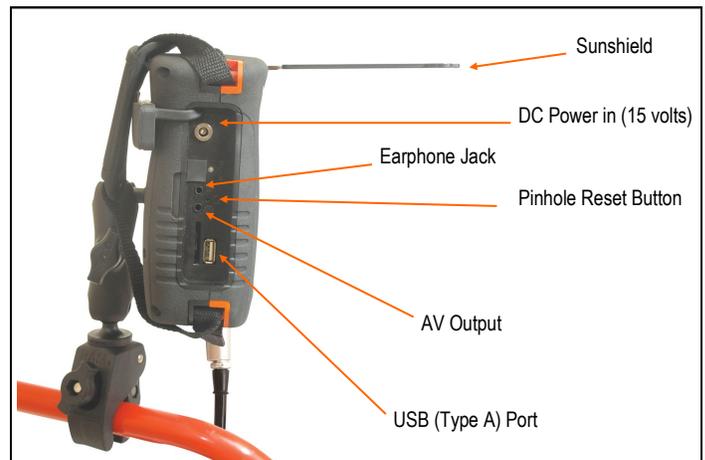
Gen-Pack

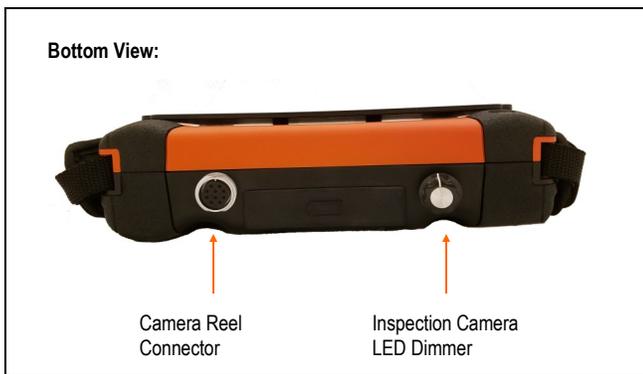
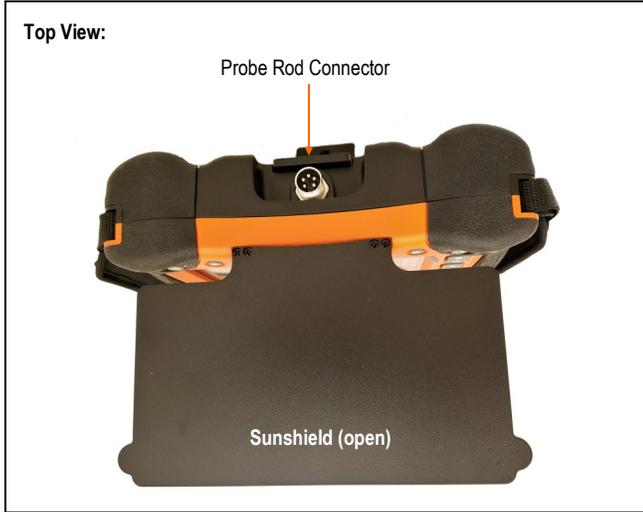


ABOUT THE INSPECTION CAMERA

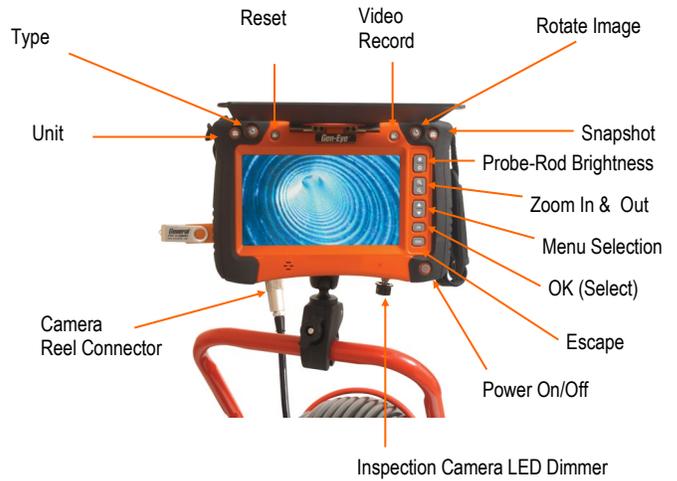
The Gen-Eye video pipe inspection and location system is manufactured for harsh environments, however, it should be handled with care. Use the Gen-Eye as an inspection tool only, never as a drain cleaning tool. Damage may occur if the camera head is dropped or "buted" severely against the pipe or any other hard surface. Once you see the obstruction, remove the camera head from the line and use the proper tool to clear the stoppage.

The stainless steel camera housing is made to protect the camera and internal electronics. However, it can be damaged by severe impacts which could cause failure of the O-ring seals or the electronics within. The camera, housing, and lens should be checked thoroughly after each use for signs of damage and, if required, should be corrected prior to further use.





Command Module Controls



	Long press to power ON or OFF
	Zoom in the live camera image from 1X to 4X
	Zoom out the live camera image from 4X to 1X
	Open Image viewer from image mode or Video viewer from video mode Browse image and video files Scroll in the Programming Menu Restart a video in video viewer
	Browse image and video files Scroll in the Programming Menu Restart a video in video viewer
OK	Press to open the Function Programming Menu Press to enter and confirm functions
ESC	Press to return to the prior menu or to the main display
	Press to take and store a snapshot Decrement a programming value
	Press to start/stop video recording Increment a programming value Open the video trash utility from the video viewer
	Rotate the record image 90 degree While in live image mode, press this button to set Brightness, Contrast, and Grey scale
Unit	Press to switch distance counter from Imperial to Metric
Type	Press to switch distance counter from Standard Reel to Mini-Reel
Reset	Press to reset distance counter to zero

Note: Brightness buttons on panel only control Probe Rod lights. Use knob under monitor to control inspection camera lights.

GEN-EYE X-POD PLUS COMMAND MODULE

The Command Module should not be used in wet locations or in the rain, as moisture may cause damage to the unit.



Icons

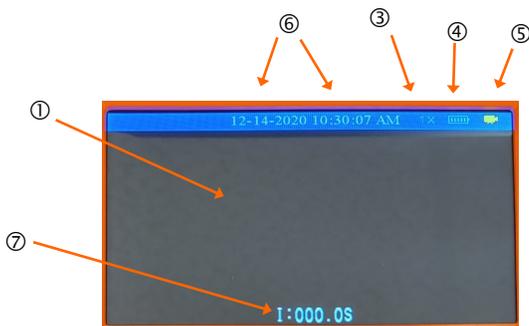
This is a list of the most commonly displayed icons. Menu and other icons are presented the instruction manual sections where they apply.

 	The red video icon is shown while video is being recorded; the yellow video icon is shown when in the standby video mode.
 	The red camera icon is shown when a snapshot image is taken; the yellow camera icon is shown when in the standby image mode.
1X...4X	Camera zoom levels
00:00:00	Video recording elapsed timer
2015-12-14	Date (YYYY:MM:DD)
22:56:25	Clock time (HH:MM:SS)
	USB Flash Drive successfully formatted
	Error signal indicating that images or videos were not saved to USB Flash Drive (typically due to lack of free space on a storage device)
 	Video Play and Pause icons
 	Video fast-forward and fast-rewind
000.0	Distance counter

Main Display

The main display appears as shown.

- | | |
|--|---|
| 1. Camera image area | 5. Mode icon (video or photo) |
| 2. Video recording elapsed timer (not shown below) | 6. Date and Time |
| 3. Magnification level (zoom) | 7. Distance Counter (shown as Imperial measurement, zero feet, set for Standard reel) |
| 4. Battery power status | |



Function Programming Menu



- Press the OK button to open the main function menu.
- Use the up and down arrow buttons to scroll to one of the 5 menu options.
- Press OK to open a highlighted selection.
 1. Storage Device management (USB Flash)
 2. Date and Time setting
 3. AV HDMI output selection (PAL or NTSC)
 4. Factory default reset and Firmware version

Storage Device (USB Flash Drive)

From the main menu, use the arrow buttons to scroll to the Storage Device icon and press OK to open it. There are three rows to select from in this menu.

1. (Row 1) Select a storage device (USB Flash Drive) with the OK button. You may also view the remaining storage capacity of the selected device.
2. (Row 2) Formatting utility. Use the OK button to format the selected device. The Check icon will appear when formatting is complete. The duration of formatting depends on the memory size of the storage device.
3. (Row 3) Press the OK button to return to main menu.

Set Date/Time and Auto Power Off

From the main menu, use the arrows to scroll to the Date/Time icon and press OK to open it. There are three rows to select from in this menu.

1. (Row 1) Set the year, month, and day. Use the UP and DOWN arrow buttons to select the year, month, or day field (digits highlight when selected) and use the VIDEO (increase) and PHOTO (decrease) buttons to set the date.
2. (Row 2) Set the clock (hours, minutes, seconds). Use the UP and DOWN arrow buttons to select the hours, minutes, and seconds field and use the VIDEO (increase) and PHOTO (decrease) buttons to set the time.
3. (Row 3) Auto Power Off can be set for 30, 25, 20, 15, 10, 5, and 0 minutes (center digits). Selecting the yellow Return icon will change the icon to red which disables the Auto Power Off utility.

AV Output Selection

1. From the main menu, use the arrow buttons to scroll to the AV Output icon and press OK to open it.
2. Use the arrow buttons to highlight the desired output signal (NTSC or PAL) and press OK. The display will exit the programming mode and return to the main operating menu.
3. Use the ESC button to cancel the output selection process, if desired, and return to the programming main menu.

Factory Default Reset and Firmware Version

1. From the main menu, use the arrow buttons to scroll to the Factory Default icon and press OK to open it.
2. There are three rows of options in this menu: The top row is the Factory Default reset icon. To revert to factory settings, highlight this icon with the arrow buttons and press the OK button.
3. The middle row is the abort function. Press OK with the RETURN symbol highlighted to return to the main function menu.
4. The bottom row shows the firmware version number.

Image and Video Files

Use this menu to view stored images and videos on the main unit display.

1. From the main menu, use the arrow buttons to scroll through the File Management icon and press OK.
2. Use the UP and DOWN arrows to scroll through the available image and video storage folders and files. Folder names are derived from the Date (i.e. 20181231). Files names are derived from the Date and Time of the recording (i.e. 20181231123845).
3. Press the OK button to open the folder or file.
4. Use the arrow buttons to highlight an image or video and press OK to view it.
5. For video, use the arrow buttons (short press) to restart video. Press and hold the arrow buttons to Fast-Forward (UP arrow) or fast-rewind (DOWN arrow). Use the OK button to Pause or Resume the video.
6. Use the VIDEO button to open the trash utility. Use an arrow button to highlight the check mark (delete) or the 'X' (keep video). Press OK to complete function.

Tip: You may enter the image or video review mode directly from the main opening display by pressing the UP arrow button without having to access the function menu. Use the arrow buttons to scroll the folders and files, and use the OK button to open an image or video. Restart, fast-forward/rewind, trash, and pause/resume functions operate in the same way as described in this section.

Video Recording, Viewing and Deleting

1. Press the Video button (movie camera icon) to begin recording. The yellow video icon (upper right) turns red while recording and the elapsed timer (upper left) begins counting.
2. Press the Video button again to stop recording. The red video icon will return to yellow and the elapsed timer will reset to zero. The hourglass icon is shown when a recording (.avi) is being saved to the Flash Drive.
3. The 'X' error symbol appears if the storage device does not have enough free space.
4. To view videos, press the UP arrow from the main display and a list of video recordings will appear. Use the arrows to highlight a video and press OK to view it.
5. The following features are available when viewing a video:
6. Short press of either arrow button jumps back to the beginning.
7. Long press of a button fast-forwards (UP) or fast-rewinds (DOWN).

8. Use OK to Pause or Resume.
9. Use ESC button to return to the main display.
10. The Video button opens the trash utility. Use arrows to highlight the check mark (delete video) or the 'X' (keep video). Press OK to complete function.

Image Capturing, Viewing, and Deleting

1. Press the image button (camera icon) to take a snapshot of the screen. The yellow icon (upper right) will briefly turn red and return to yellow when the snapshot (.jpg) has been stored on the USB Flash Drive. The hourglass appears while the image is being saved.
2. The red error symbol will appear if the storage device does not have enough free space.
3. Press the UP arrow to open the image files. Use the arrow keys to scroll and use OK to open an image. The date and Time the image was taken is also shown.
4. Use the OK button to rotate the image (90° rotation with each press of the button).
5. Use the CAMERA button to select a zoom level (from 1X to 10X).
6. Use the Video button to open the trash utility. Use the arrow buttons to highlight the check mark (delete image) or the 'X' (keep image), and then press OK.
7. Press ESC to return to the stored image list. Press ESC again to return to the main display.

Power Input

The Power input is located on the left side of the Command Module. Only operate the X-POD Plus with the 15 volt power supply supplied with monitor, or the Gen-Pack battery adapter.

Gen-Pack™ Battery Adapter

The Gen-Pack™ Battery Adapter lets you operate your sewer inspection camera in remote locations where access to power is limited. The 2Ah battery can last up to 4.5 hours; the 5Ah battery can last up to 12 hours. Battery life depends on the type of battery used, system settings, air temperature and other factors. The battery adapter is protected by a 3A fuse to safeguard your investment.

To operate the Gen-Pack:

1. Plug the Gen-Pack cord into the power input on the side of the Command Module.
2. Slide the battery into the battery socket until it clicks into place. Use only Milwaukee M18 battery or equivalent. Batter and charger not included.
3. Two lights should turn on. The Line Power light indicates you're getting power from the battery. The Camera Power light indicates the fuse is good.
4. Remove the battery when not in use. Squeeze the tabs on either side of the battery to remove socket.

Battery Warnings

- **Charge in a well-ventilated area.** Do not block charger vents. Keep clear to allow proper ventilation. Do not allow smoking or open flames near a charging battery pack. Vented gases may explode.
- **Do not short circuit.** A battery pack will short circuit if a metal object makes a connection between the positive and negative contacts on the battery pack. Do not place a battery pack near anything that may cause a short circuit, such as coins, keys, or nails in your pocket. A short circuited battery pack may result in fire and personal injury.
- **Store battery pack and charger in cool, dry place.** Do not store battery pack where temperatures may exceed 120° F (50° C). Do not store in direct sunlight, in a vehicle or metal building during the summer.
- **Do not burn or incinerate battery packs.** Battery packs may explode, causing personal injury or damage. Toxic fumes are created when battery packs are burned.
- **Battery chemicals cause serious burns.** Never allow contact with skin, eyes, or mouth. If a damaged battery pack leaks battery chemicals, use rubber or neoprene gloves to dispose of it. If skin is exposed to battery fluids, wash with soap and water and rinse with vinegar. If eyes are exposed to battery chemicals, immediately flush with water for 20 minutes and seek medical attention. Remove and dispose of contaminated clothing.

Voice-Over Microphone

This unit includes an internal microphone so you can add commentary to your videos. The Microphone is “live” and records while video is recorded. Audio may be monitored during recording by inserting an earphone into the jack on the left side on the monitor. Audio can be heard through the speaker in the Command Module during video playback.

Distance Counter

To insure the distance counter is as accurate as possible, be sure the system is set for the reel size you are using. Press the TYPE button on the Command Module—either “S” for the standard reel or “M” for the Mini-Reel will appear to the right of the distance on the screen. Check that the monitor is set for the correct unit of measure by pressing the UNIT button—“I” for Imperial (feet and inches) or “M” for Metric will appear to the left of the distance. Before you begin an inspection, be sure to reset the distance counter to zero by pressing the RESET button to see 000.0 appear on the screen.

Wi-Fi Transmitter

The internal Wi-Fi Transmitter allows you to monitor and record inspections on your smartphone or tablet. See “How to set up the Wi-Fi feature” on page 13 (for Apple devices) and page 14 (for Android devices).

SET UP

Connecting Gen-Eye X-POD Plus Command Module to GL Reel

The Docking Arm allows the Command Module to be mounted on any GL Reel. To attach the Command Module to the Docking Arm:

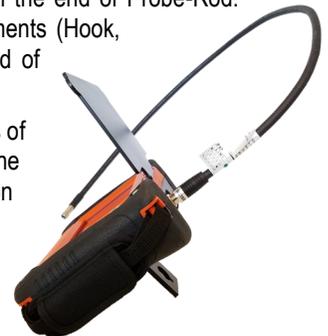
1. Thread the two bolts through the mounting plate and into the holes in the back of the Command Module, then tighten.
2. Adjust the Command Module on any axis to allow for the best viewing angle, then tighten the knobs.
3. Attach the 10-pin connector from the camera reel to the connector at the bottom of the Command Module.
4. Connect the AC power supply cord or Gen-Pack cord to the Power-In jack on the left side of the Command Module.



Set up for Probe Rod

1. Disconnect 10-pin connector from the camera reel cable.
2. Unbolt the Command Module from the Docking Arm for mobile use.
3. Remove the protective cover from the connector on top of the Command Module and attach the 3-foot Probe Rod.
4. Plug in the AC power cord or Gen-Pack power supply.
4. Remove protective sleeve from the end of Probe-Rod. Thread the Probe-Rod attachments (Hook, Mirror, & Magnet) onto the end of the Probe Rod as needed.

NOTE: To adjust the brightness of the camera lights, use only the LED Dimmer Control located on the Command Module panel.



CAMERA AND REELS



Table 1—Reel Selection Guide

Reel Type	Pipe Sizes	Lengths Available
Standard Reel	3" to 10" (75 to 250mm)	200, 300, or 400 ft. (60, 90 or 120m)
Mini Reel	1-1/2" to 4" (38 to 100mm)	100 or 200 ft. (30 or 60m)

SELF-LEVELING COLOR CAMERA

The self-leveling color camera automatically keeps the picture right side up as the camera glides through the line. You always have an upright picture on the monitor, making it easier for you and your customers to follow the action.

CAMERA TRANSMITTER (512HZ)

The camera assembly includes a 512 Hz transmitter, located safely in the spring behind the camera head. When the Command Module is turned on, the transmitter is automatically activated.

NOTE: CARE SHOULD BE TAKEN WHEN GUIDING THE CAMERA IN THE LINE AS EXCESSIVE BENDING AND TWISTING MORE THAN 180 DEGREES MAY DAMAGE ELECTRONICS IN THE SPRING.

SKIDS

It is highly recommended that you use a skid at all times to protect the camera head from abrasion in the pipe. Skids lift the camera off the bottom of the pipe and center it in the line for a better view and to allow the camera to glide more easily through the line.

The standard reel comes with 2", 3", and 6" trap skids. Other optional skids are available for 6", 8" and 10" lines:

GL-SK



GL-URS-1

To attach the skid, slide it over the front of the camera head, with the lip of the skid at the front. Make sure the camera body is clean and the set screws are tightened only until they touch the camera body. Do not over tighten, as you may damage the camera housing.

INSPECTION CAMERA OPERATION

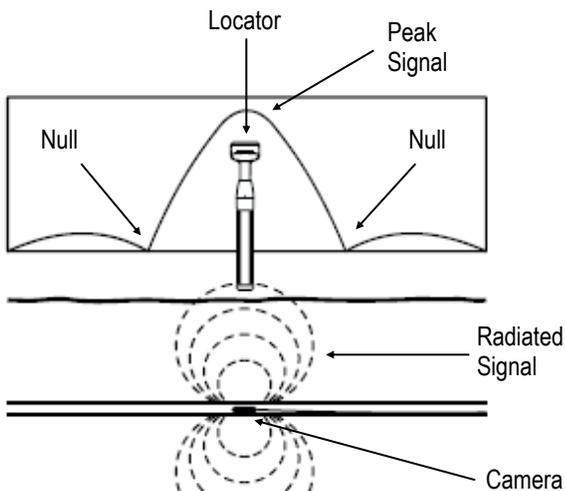
1. Connect camera cable and power cord.
2. Insert USB Flash Drive (Part #184490) into port of the left side of the Command Module. 
3. Press and hold POWER button. Start up screen will appear in a few seconds.
4. When the image from the camera appears on the screen, begin the inspection. To adjust the brightness of the camera lights, use the LED Dimmer Control located at the bottom of the Command Module.
5. Release the reel lock and loosen the drag break on the side of the reel.
6. Slide the camera into the line. Be sure that the push rod is rated for the size pipe you are inspecting. Be careful not to force the camera around tight bends. If you see an obstruction, stop. Do not attempt to clear the pipe by using the camera head as a battering ram. Always use the proper tool for the job.
7. 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. In some cases white or lighter colored objects may cause the picture to "flare" or "wash out". If this happens, simply adjust the light level until a good picture is achieved.
8. 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.
9. 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.
10. Should resistance become extreme, or the camera gets entangled or stuck, slowly push and pull back and forth to free it. Do not force the camera through a collapsed pipe.
11. To record video or snapshots of inspection, see page 7.
12. When inspection is complete, retract Push-Rod from drain and secure in the reel.

Tip: It's often helpful to have a small stream of water running in the line to clean the Push-Rod and Camera Head while it's still in the drain line.



CAMERA LOCATION

1. Turn on Gen-Eye X-POD 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 Command Module. 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.

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.

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

CAMERA REMOVAL

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

CAMERA FOCUS

All Gen-Eye X-POD Plus 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.

ADDITIONAL MAINTENANCE TIPS

- 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 spring is attached to the cable via three (3) 4-40 x 1/2" stainless steel hex socket cap screws. This connection includes an O-ring sealing the connection from water leakage. This connection should be checked after every use to ensure that the screws have not loosened during the course of the inspection.
- If disconnecting the camera from the push rod, make sure that the O-ring is in good condition and/or replaced when replacing the camera onto the push rod.
- 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.

TROUBLESHOOTING COMMAND MODULE

No Picture AND No Lights:

- Press and hold the Power Switch on the Command Module for 5 seconds to turn on unit.
- If using AC power source, make sure power source is "live". If using DC power source, make sure battery is charged, check Gen-Pack power lights, and check fuse.
- 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 and connectors from the camera back to the Command Module, including the cable reel.
- Disconnect main power and contact the factory service department.

Picture BUT No Lights:

- Check if Power switch is ON.
- Check to see if LED Dimmer control (located at the bottom of the Command Module) is turned up.
NOTE: Dimmer buttons on the face of the Command Module are for Probe-Rod only, not the inspection camera (reel).
- Check cable for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect main power and contact the factory service department.

No Picture, Lights OK

- Press and hold the Power Switch on the Command Module for 5 seconds to turn on unit.
- If using AC power source, make sure power source is "live". If using DC power source, make sure battery is charged, check Gen-Pack power lights, and check fuse.
- Check the interface cord for possible damage or intermittent problem by flexing the cable.
- Check the Push-Rod for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect the main power source and contact the factory service department.

Dark Picture

- 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 LED Dimmer control is turned up.
NOTE: Dimmer buttons on the face of the Command Module are for Probe-Rod only, not the inspection camera (reel).
- Disconnect the main power source and contact the factory service department.

Bad or Grainy Picture

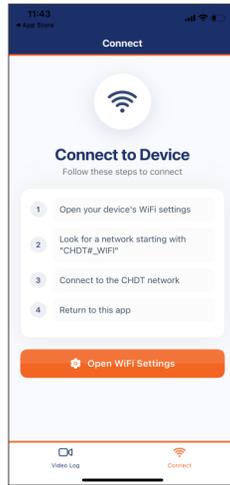
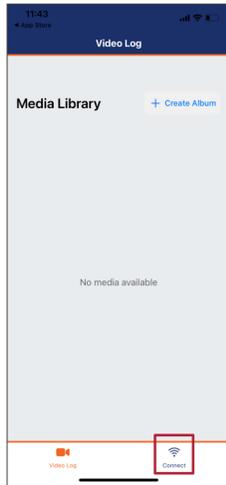
- Check the camera lens for dirt, grime, scratches or other foreign matter.
- Check the lights in the camera head to see if they are not supplying sufficient light due to weak, dirty, or burned out bulbs.
- Check for external electrical noise being radiated by outside sources, such as a power station,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

No Power from Gen-Pack Battery Adapter

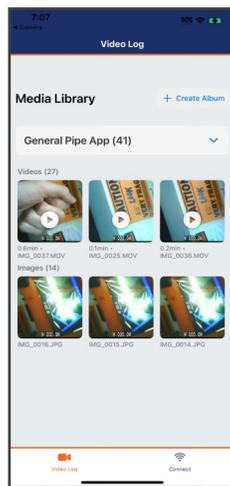
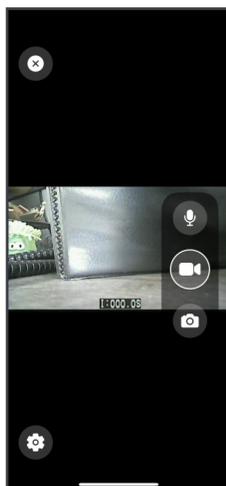
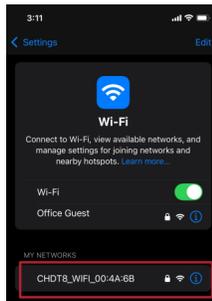
- Incorrect battery. Use only Milwaukee M18 or equivalent.
- Allow the battery to fully recharge.
- Check fuse. Replace with 3A.
- Cold weather can reduce battery life. Keep unit warm in cold weather.
- Do not charge the battery in extreme weather (temperatures below 30°F or above 104°F).
- Do not store battery pack where temperatures may exceed 120° F (50° C).
- Battery is worn out and needs to be replaced.
- Contact the factory service department.

How to Set-Up the Wi-Fi Feature for Gen-Eye X-POD Plus 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.



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.



	Icon Key: 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.

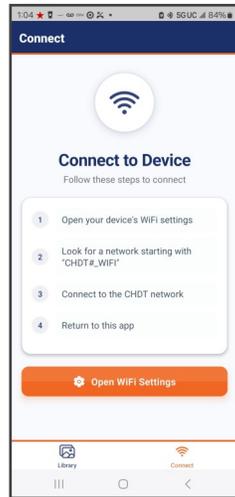
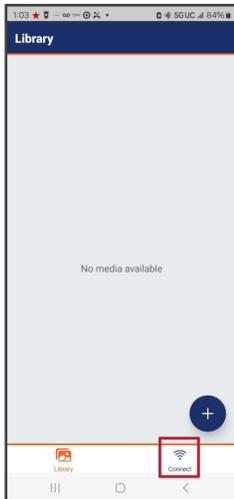
The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.

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.

How to Set-Up the Wi-Fi Feature on Gen-Eye X-POD Plus 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.

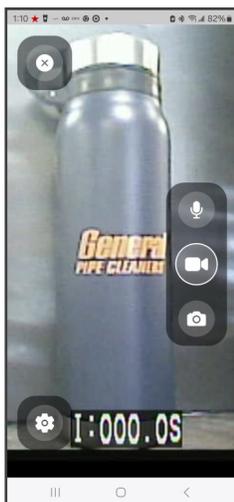
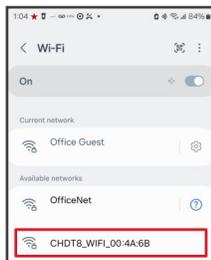
	Icon Key: Settings—Allows you to adjust the brightness and contrast.
	Microphone—Tap to record audio. *NOTE to include audio in your recording, you must tap the microphone first, then tap the video camera icon to begin recording.
	Video Camera—tap to begin/end recording video.
	Camera—tap to take snap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

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2. To include audio in your video recording, tap the microphone icon first, then tap the video camera icon to begin recording with audio. 
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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**
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