

# **Gen-Eye Micro-Scope3<sup>®</sup> Video Pipe Inspection System Operating Instructions**



Your Gen-Eye Micro-Scope3 Video Pipe Inspection 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](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 Micro-Scope3 Video Pipe Inspection System.

## 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.

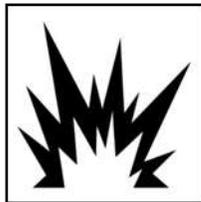
### **CAUTION**

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

**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.

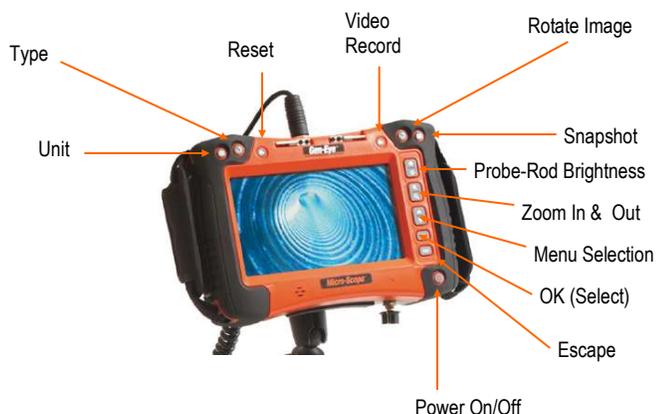
## SPECIFIC SAFETY RULES

1. **Keep the device out of the reach of children.**
2. **Do not look directly into the camera lens at the end of the probe rod.** Your eyesight may be seriously damaged.
3. **Do not forcibly bend, twist or elongate the probe rod.**
4. **Strong impact on the device may result in the breakage of the camera lens at the tip of the insertion tube.**
5. **Do not use or store the device at a temperature higher than 140°F (60°C) or lower than -4°F (-20° C).**
6. **Store the device in a dry and adequately ventilated environment.**
7. **Keep the device away from acid or alkaline solutions, oil or gas, and do not use it in an atmosphere containing their vapors.**
8. **Do not remove the flash drive while data is being saved to the card.** This may cause the data to be lost or the flash drive to be damaged.
9. **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.
10. **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.
11. **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.
12. **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. Neutralize or remove corrosive drain cleaners in the drain before starting the job.
13. **Do not operate machine if operator or machine is standing in water.** Will increase risk of electrical shock.
14. **Wear safety glasses and rubber soled, non-slip shoes.** Use of this safety equipment may prevent serious injury.
15. **Protect against lightning.** 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.
16. **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.
17. **Only operate the Micro-Scope2 with the 15 volt power supply included with the Command Module.**
18. **Do not plug a hard drive into the external USB port.** External hard drives are not supported with Micro-Scope3 monitors.
19. **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.

## FEATURES



## Command Module Controls



## ATTACHMENTS



- A. Hook = pick up tool
- B. 45° Mirror = gives you a 90° view
- C. Magnet = use to pick up metal objects

To use the attachments:

1. Unscrew chrome tip from the end of the Probe Rod and thread on the desired attachment.
2. Tighten securely before use.

## Icons

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

	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 Menus Restart a video in video viewer
	Browse image and video files Scroll in the Programming Menus Restart a video in video viewer
<b>OK</b>	Press to open the Function Programming Menu Press to enter and confirm functions
<b>ESC</b>	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 bottom to set Brightness, Contrast, and Grey scale

	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.
<b>1X...4X</b>	Camera zoom levels
<b>00:00:00</b>	Video recording elapsed timer
<b>2015-12-14</b>	Date (YYYY:MM:DD)
<b>22:56:25</b>	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

## GEN-EYE MICRO-SCOPE3 COMMAND MODULE

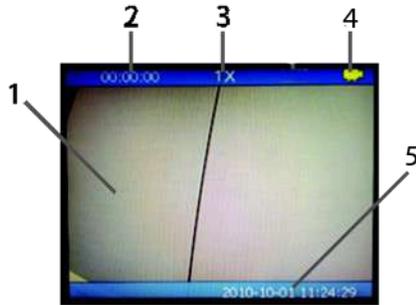
The Command Module should not be used in wet locations or in the rain, as moisture may cause damage to the unit.



## Main Display

The main display appears as shown.

1. Camera image area
2. Video recording elapsed timer
3. Magnification level (zoom)
4. Mode icon (video or photo)
5. Date and Time



## 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
  5. Stored Image/Video folders/files navigation



## 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). File 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

NOTE: The Gen-Eye Micro-Scope is equipped with an integral microphone. The microphone is always on. Therefore, if you are recording video, please be aware that you are also recording audio.

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. To delete the files, remove the USB flash drive and place it in your computer or laptop.

## Image Capturing & Viewing

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 4X).
6. To delete the files, remove the USB flash drive and place it in your computer or laptop.

## RECORDING THE INSPECTION ON ANOTHER DEVICE

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.

### Wi-Fi

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.

## Setting up Wi-Fi

See pages 8 and 9 for instructions for Apple and Android devices.

## 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 though the speaker in the Command Module during video playback.

## Power Input

Power input is located on the left side of the Command Module. Only operate the Micro-Scope3 with the 15 volt power supply supplied with monitor.

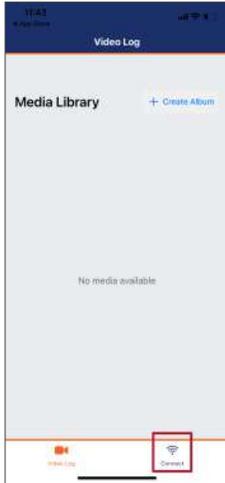
## CAMERA REEL

Reel Type	Pipe Sizes	Lengths Available
Micro-Reel	1-1/2" to 4" (38 to 100mm)	100 ft. (30 m)

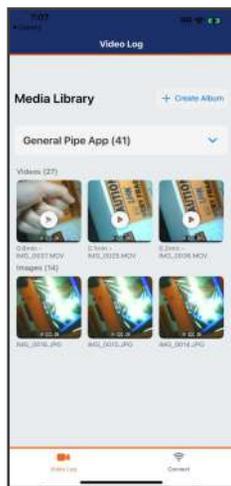
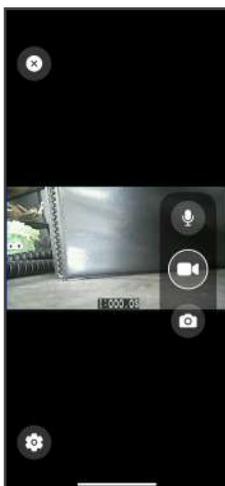
**NOTE: The micro push rod is designed to be used in 1-1/2" to 3" lines ONLY. Do not use it in larger or smaller lines, or you may damage the push rod.**

## How to Set-Up the Wi-Fi Feature for Gen-Eye 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.



	<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.

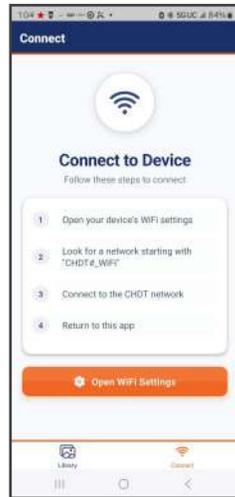
The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.

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.

## How to Set-Up the Wi-Fi Feature on Gen-Eye 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. *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.

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.



## SET UP - COMMAND MODULE

1. To set up for the Probe rod, connect the Probe Rod to the connector at the top of the Command Module.
2. To set up for pipe inspection, mount the hand-held Command Module onto the reel by first threading the mounting ball with two lock washers into the back of the unit. Then slide the mounting ball into the end of the extender and ball assembly at the center of the reel. Adjust the Command Module for the desired viewing angle and tighten the knob on the extender.
3. Connect the Interface Cord from the reel to the connector at the top of the Command Module.
4. Insert flash drive into USB slot on the left side of the Command Module.
5. If using AC power, plug power adapter into the left side of the Command Module.
6. Press the POWER button for 3 – 5 seconds to turn the Command Module on. The Start-Up screen is shown briefly, followed by the Status screen for 5 seconds.



The status screen shows the capacity of the flash drive.



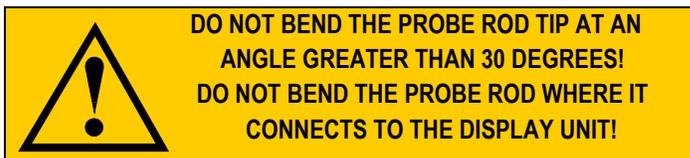
3. Press and hold POWER button. Start up screen will appear in a few seconds.
4. When the image from the camera appears on the screen, begin the inspection. To adjust the brightness of the camera lights, use the LED Dimmer Control located on the face of the Command Module.
5. Make sure you have established live image on the monitor prior to recording. Use the ZOOM IN or ZOOM OUT buttons as required to capture the image needed. You can also use the ROTATE button to rotate the image as needed.
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.

## INSPECTION CAMERA OPERATION



**NOTE: The micro push rod is designed to be used in 1-1/2” to 4” lines ONLY. Do not use it in larger or smaller lines, or you may damage the push rod.**

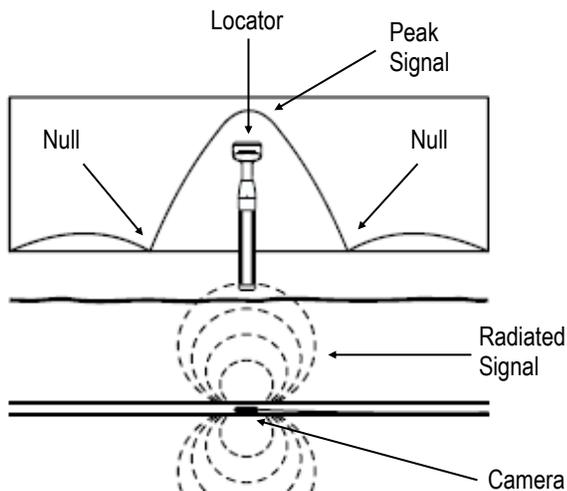


1. Connect camera cable and power cord.
2. Insert USB Flash Drive (Part #184490) into port of the left side of the Command Module.



## CAMERA LOCATION

1. Turn on Gen-Eye 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



**DISCONNECT MACHINE FROM POWER SOURCE  
BEFORE PERFORMING MAINTENANCE ON MACHINE!**

### CAMERA 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.

### CABLE AND REEL ASSEMBLY CLEANING

WHEN CLEANING THE REEL ASSEMBLY DO NOT USE A POWER WASHER. WATER MAY GET INTO UNSEALED AREAS SUCH AS THE REEL HUB ASSEMBLY AND SLIP RING HOUSING CAUSING DAMAGE AND VOIDING THE WARRANTY.

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.

## TROUBLESHOOTING COMMAND MODULE

### No Picture AND No Lights:

- Check to see if the Main Power switch is ON. Check to make sure the power source is "live" (for 120 volt AC) or check to see if the light is lit on the cigarette lighter plug (for 12 volt DC).
- 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 on the panel of the Command Module) is turned up.
- 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

- Check Monitor power switch is ON. Check to make sure the power source is "live" (for 120 volt AC) or that the battery is charged.
- 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.

### No Picture, only words on display after turning the power on:

- Check that the Probe Rod or push rod is correctly connected to the display unit.

### Unable to record still photos or video:

- Flash drive not present, incorrectly inserted, full or faulty.
  - Check that a flash drive is present and correctly inserted into display unit.
  - Check flash drive capacity.
  - Check if flash drive will work in other devices.

### All Display unit functions frozen/failed:

- Reboot system
  - Insert a pin into the hole located on the side of the display unit. The system will restart automatically.

### Distance counter doesn't work:

**NOTE: This model Gen-Eye does not have a distance counter. The unit, type and reset buttons, and the 000.0 display are used on the X-POD Plus.**

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