

Gen-Eye SD™

Video Pipe Inspection/Location System

Operating Instructions



Your Gen-Eye 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

GENERAL SAFETY RULES



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 SD Video Pipe Inspection/Location System.

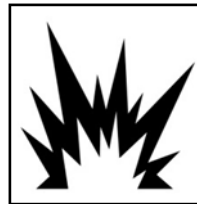


This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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.

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.

GENERAL SAFETY RULES

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.

FEATURES



ABOUT THE INSPECTION CAMERA

- The camera, although manufactured for the harsh environments in which it will be used, 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 standard 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.

Gen-Eye SD Command Module



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

Fuses for line voltage, camera and camera lights are located behind the LCD monitor panel. Should replacement become

necessary, replace only with the same value and type as the original. Never substitute fuses as damage may occur and may void your warranty. However, if the fuses continue to trip for no apparent reason, please consult the factory and do not use the system until the problem has been determined.

Camera Transmitter (512HZ)

The standard camera system includes a 512 Hz transmitter, which is located safely in the spring behind the camera. When the Command Module 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.

Pre-Inspection Procedure

On arrival to the job site and after checking for a properly grounded receptacle (see "Gen-Eye SD Command Module"), set the SD Command Module in an easily viewable position where it will not interfere with the inspection.

For AC Voltage Operation:

Plug the socket end of the AC cord into the AC socket on the panel of the Command Module. 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 panel of the Command Module. 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 SD COMMAND MODULE FIRST, THEN INTO THE WALL OR 12VDC SOCKET. NEVER PLUG INTO THE AC SOCKET OR DC SOURCE FIRST.



SET UP

1. Check and make sure the LED Dimmer Control is set at the "min" position.
2. Unwind the interface cord from the side of the reel and plug it into the Reel input connector on the panel of the SD Command Module. Insure the connector is properly aligned and then tighten.
3. Once all connections have been checked, plug the other end of the AC cord (or DC cord) into the appropriate power source (120VAC or 12VDC).
4. Set the power switch on the Command Module to

KEYBOARD/COUNTER OPERATING INSTRUCTIONS

KEY	FUNCTION
F1	Cursor ON/OFF
F2	Clear screen and place cursor at home position (i.e. top left corner)
F4	Press [F4] followed by [+] or [-] and five digits. Press [ENTER] to confirm
F5	Save current on-screen text to memory page
F6	Time and Date ON/OFF toggle
[ENTER]	Move cursor to next line
↵	Backspace erases letter and goes back one position.
[ESC]	[ESC] followed by 1-9 recalls saved pages on screen
[CTRL]-D	Set Time/Date. [ENTER] to quit
[CTRL]-C	Reposition counter in one of the four corners and the bottom center of the screen
[CTRL]-B	Type black characters with white border
[CTRL]-F	Turn flashing characters ON
[CTRL]-N	Turn flashing characters OFF
[CTRL]-W	Type white characters

COUNTER SET UP

Before starting the inspection, and only after you have placed the camera in the line, you should make sure to zero your counter. This is your starting point for measurements.

TO SET THE COUNTER

To set the counter to a preset value, press the F4 key. Then press either “+” or “-” followed by five digits (numbers). To set the counter to +0000.0 press [F4] followed by [ENTER].

SETTING TIME/DATE

Hold [CTRL] and press D. “YYMMDDHHMMSSam” appears on the screen. Type in the correct time and date in this order: year, month, day, hour, minutes, seconds, am/pm (a for AM and p for PM). If you wish to quit, simply hit the [ENTER] button and date and time entry line will disappear.

(Note that the clock mode is 12 hour—i.e. 01 to 12.)

SAVING A PAGE

To save a page to memory, go to the page you wish to save by pressing [ESC] followed by 1-9 (ex. [ESC]+[5]). Type text on screen. Press [F5] to save screen text to selected page.



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)

SKIDS

Depending on the size of pipe you are inspecting, you may need to use the supplied skid so the camera is centered 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 or the larger finned sleeve in 6" and larger pipes.

The skids 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.

OPERATION



1. Slowly push the camera into the pipe. Make sure the spring does not kink or double back on itself.
2. 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.
3. Lighting may be adjusted to highlight various pipe conditions and objects as desired. In some cases white or lighter colored objects may cause the picture to “flare” or “wash out”. If this happens, simply turn the light control down until a good picture is achieved.
4. 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.
5. 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.
6. 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.

RECORDING THE INSPECTION

1. Make sure you have established live image on the monitor prior to recording.
2. Insert an SD card into the SD card reader.

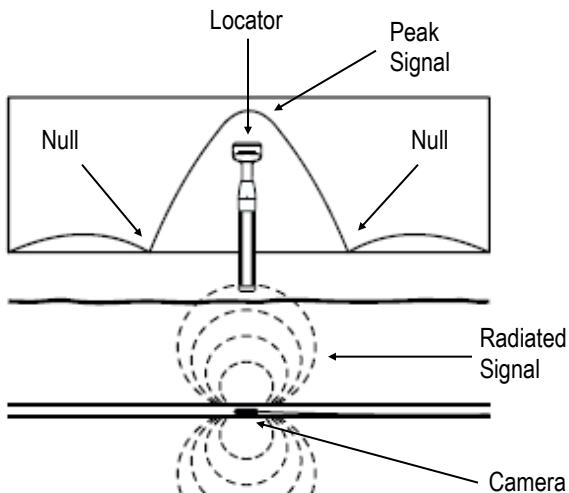


3. To start the recording process, press the [REC] button on the SD Recorder or the SD Recorder remote control.
4. To end the recording, press the [STOP] button on the SD Recorder or the SD Recorder remote control.



CAMERA LOCATION

1. Turn on Gen-Eye Camera system by plugging in and turning on monitor.
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.

LIGHT HEAD REPLACEMENT

The light heads for the Gen-Eye SD 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

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.

CAMERA REMOVAL FROM THE CABLE AND REEL ASSEMBLY



DISCONNECT MACHINE FROM POWER SOURCE BEFORE REMOVING CAMERA FROM REEL ASSEMBLY!

TO PREVENT DAMAGE TO THE CAMERA AND/OR SYSTEM, DISCONNECT POWER FROM THE CONTROL UNIT BEFORE REMOVING OR RECONNECTING THE CAMERA TO THE REEL .

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.). In the event the camera needs to be returned to the factory, the following instructions should be used with extreme care; to remove the camera head and spring from the end of the cable:

1. On standard reels, disconnect the complete camera and spring assembly by removing the 3 screws (4-40 x ½ SSTL) that are countersunk into the cone-shaped aluminum coupler at the end of the push cable. The screws can be removed using the Xcelite allen wrench provided with the unit. Screws should be removed very carefully and simultaneously. Each screw should be turned approximately one (1) full turn alternatively, so as not to damage the connector. While backing out each screw, hold the connector and camera assembly together until all the screws are out and then unplug the camera from the cable reel taking care not to lose the O-ring or screws.
2. After unplugging the camera, inspect the O-ring for any damage, and if worn, replace it with a new one. Also, when replacing any O-rings, make sure there is no dirt or grit on it, as it may not seal properly, and apply silicon grease or petroleum jelly to the O-ring for proper sealing.
3. To reconnect, carefully align the rear connector on the camera assembly, and the cable reel connector. When aligned, push the connectors together and replace the screws. (If the connectors do not align properly, turn the camera body slowly while slightly pushing the two connectors together until you feel them align properly together.)

DO NOT FORCE THE CONNECTORS TOGETHER. DAMAGE MAY OCCUR TO THE CONNECTORS.

CAMERA FOCUS

All Gen-Eye SD 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 CONTROL UNIT FUNCTIONS AND CONTROLS

The SD Command Module 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 available: The 3-prong AC plug on the AC cord, and a cigarette lighter-type plug on the 12 VDC cord.

Microphone ON/OFF Switch

Turn this switch to the ON position to record your voice. Be sure you do not accidentally have the switch ON as it will record any audio in the vicinity of the SD Command Module.

Condenser Microphone

This is the actual microphone that receives the audio for recording purposes. If you hear audio feedback (a screeching sound) when trying to use the microphone, it is because the volume control on the SD Command Module is turned up too high.

AC Power Input Socket

The supplied AC power cord is plugged into this socket for main power to the unit.

DO NOT PLUG IN BOTH AC AND DC CORDS AT THE SAME TIME!

Cable Reel Input Socket, 10 Pin

This is used to connect the interface cord from the cable reel to the SD Command Module.

Main Power Select Switch

After selecting either the 120 volt AC power cord or the 12 volt DC power cord, plug it in and turn this switch to the appropriate setting to power up the SD Command Module.

Camera Lights (Variable Intensity Control)

Controls light output and intensity on camera light head.

Camera Test Terminal

Use this connector to troubleshoot video or light problems.

1. Disconnect the system from the power source.
2. Remove camera from cable assembly and plug into Camera Test Terminal.
3. If the lights are still not working, chances are that one or more of the lights will need replacement. Contact General for service.



This will help isolate where camera video or light problems may be originating. Example: If the lights were not working when the camera was connected through the cable reel, but they do work when you plug directly to the front panel, this indicates a problem with the light wire somewhere in the cable reel. (Always check fuses first.)

Fuses

The SD Command Module contains three replaceable fuses located behind the front LCD panel; one each for the camera power (0.5 amp), AC line (3 amp), and camera lights (0.25 amp). These are rated at 250 volts and are approximately 1/4" diameter x 1-1/4" long.

IF THE FUSES CONTINUE TO "TRIP" DO NOT USE THE SYSTEM. TRY TO DETERMINE THE CAUSE OR HAVE A QUALIFIED PERSON CHECK OUT THE PROBLEM.

TROUBLESHOOTING COMMAND MODULE

No Picture AND No Lights:

- Check to see if the Main Power switch is ON.
- Check that the SD Recorder power is ON.
- Check that Monitor Power is ON and SOURCE is set to the proper 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 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 Main Power switch is ON, and in correct position.
- Check to see if LIGHT power switch is ON and intensity control is turned up.
- Check cable for possible breaks or intermittent open circuits by flexing the cable.

No Picture, Lights OK

- Check Monitor 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 see if the CAMERA power fuse has "tripped". If so, replace with same value.
- Check to see if the monitor brightness and contrast controls are turned up.
- Check the interface cord for possible damage or intermittent problem by flexing the cable.
- Check the cable for possible breaks or intermittent open circuits by flexing the cable.
- Remove the camera from the cable assembly and plug it into the Camera Test Terminal.
- Disconnect the main power and contact the factory service department.

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.

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 cable for possible breaks or intermittent open circuits by flexing the cable.
- Remove the camera from the cable assembly and plug it into the Camera Test Terminal.
- Disconnect the main power source and contact the factory service department.

Not Recording

- Always check record and play functions prior to inspections to ensure that the SD recorder is working properly.
- Check that there is enough memory available on the SD card.
- Check whether the inserted SD card is formatted correctly.
- Check that the SD card hasn't been "locked".
- Disconnect the main power source and contact the factory service department.

**FOR ALL OTHER FUNCTIONS RELATIVE TO
THE SD RECORDER OR MONITOR UNIT,
PLEASE CONSULT YOUR RECORDER OR MON-
ITOR OWNER'S MANUAL.**

**FOR MORE INFORMATION
CONTACT THE DRAIN BRAINS® AT:**

General
PIPE CLEANERS

412-771-6300 or 800-245-6200

www.drainbrain.com
info@drainbrain.com

GENERAL'S LIMITED WARRANTY

General's **Gen-Eye SD** video pipe inspection/location system carries a two-year warranty against defect in materials except as noted below. Should any part break or fail to work properly in the two years following purchase, it will be repaired or replaced at our discretion at no charge.

Damage due to negligence, improper usage, failure to follow instructions, accidents, or alteration from original design is not covered by this warranty.

In order to handle any adjustment with a minimum of delay, please follow this procedure:

1. Return the part to your wholesaler, and have them notify us immediately, with complete information on the problem.
2. We must have the serial number, the date of purchase, and the name of the wholesaler from whom you tool was purchased. To activate your Gen-Eye warranty, your warranty card, which has this information, must be filled out and sent to us immediately after your machine is purchased.
3. We will then advise your wholesaler if the part should be returned to us and assign a return goods authorization (RGA) number. Ship freight prepaid, and you will be compensated for these charges if it is determined that the part is defective.

If repairs are necessary due to conditions beyond our control, or if the item is out of warranty, we will do the work at the lowest possible cost, but a charge will be made.

This warranty is made in place of all other warranties, express, statutory or implied, including those of merchantability and of fitness for purpose. General shall not be responsible for any incidental or consequential damages.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the exclusion of limitation of incidental or consequential damages, so these limitations may not apply to you.

**General Wire Spring Co,
1101 Thompson Avenue
McKees Rocks, PA 15136
412-771-6300 www.drainbrain.com**