

# *Operating Instructions for* **General Gen-Eye Spectra™** *Video Pipe Inspection/Location System*



Your Gen-Eye Spectra Video Pipe Inspection/Location System is designed to give you years of trouble-free, profitable service. However, no machine is better than its operator. We therefore suggest you read these directions through carefully before using your machine on a job. This will enable you to operate the Gen-Eye Spectra more efficiently and more profitably. Failure to follow these instructions may cause personal injury to operator or damage to equipment.

**SAVE THESE INSTRUCTIONS!**

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

## SAFETY INSTRUCTIONS



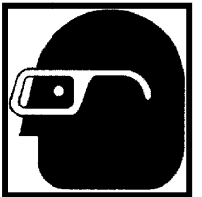
# WARNING



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. 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.



Use safety equipment. Always wear safety glasses and rubber soled, non-slip shoes.

## READ AND UNDERSTAND ALL INSTRUCTIONS!

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

Call General's customer service department at 412-771-6300 if you have any questions.

## SAVE THESE INSTRUCTIONS!

## GENERAL SAFETY INFORMATION

### Work Area Safety

- **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
- **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.

- **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

### Electrical Safety

- **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 UL approved tester or 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 user.
- **Avoid body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators.** There is an increased risk of electrical shock if your body is grounded.
- **Don't expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electrical shock.
- **Do not abuse 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 electrical shock.
- **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 electrical shock.
- **Connect the tool to an AC power supply that matches the name plate specification.** Incorrect voltage can cause electric shock or burns.
- **Use only three-wire extension cords which have three-prong grounding plugs and three-pole receptacles which accept the tool's plug.** Use of other extension cords will not ground the tool and will increase the risk of electrical shock.
- **Use proper extension cords.** Insufficient conductor size will cause excessive voltage drop and loss of power.
- **Keep all electric connections dry and off the ground. Do not touch plugs or tools with wet hands.** Reduces the risk of electrical 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 medications.** A moment of inattention while operating power tools may result in serious personal injury.
- **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.
- **Do not over-reach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
- **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.
- **Rubber gloves should always be worn for health and safety reasons.** Sewer lines are unsanitary and may contain harmful bacteria.
- **Heed Warnings.** All warnings on the product and in the Operator's Manual should be adhered to.
- **Use proper accessories.** Do not place this product on any unstable cart or surface. The product may fall causing serious injury to a child or adult and serious damage to the product.
- **Prevent object and liquid entry.** Never push objects of any kind into this product through 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.
- **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.

## Tool Use and Care

- **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.
- **Store idle tools out of reach of children and untrained persons.** Tools are dangerous in the hands of untrained users.

- **Maintain tools with care.** Properly maintained tools are less likely to cause injury.
- **Check 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.
- **Use only accessories that are recommended by manufacturer for your model.** Accessories that may be suitable for one tool may be hazardous when used on another tool.
- **Inspect tool and extension cords periodically and replace if damaged.** Damaged cords increase the risk of electric shock.
- **Disconnect plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce risk of starting tool accidentally.
- **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.
- **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.

## Service

- **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified repair personnel could result in injury.
- **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 electrical shock or injury.
- **Provide proper cleaning.** Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use damp cloth for cleaning.

- **Conduct a safety check.** Upon completion of any service or repair to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

### Specific Safety Information

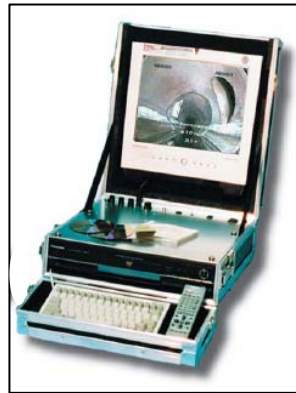
- **Be sure that the unit is plugged into a properly grounded receptacle.** If in doubt, check receptacle before plugging in machine. Check the power cord to see that there are no cuts or frays, and that the grounding prong on the plug is still in place.
- **If the power cord supplied with the machine is not long enough, be sure to use 3-wire 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.
- **Neutralize or remove corrosive drain cleaners from drain before starting.** Exposure to these chemicals can cause injury to the operator and damage the equipment.
- **Do not operate machine if operator or machine is standing in water.** Will increase the risk of electrical shock.

### 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 camera spring is attached to the cable via three (3) 4-40 x ½” 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.

### COMMAND MODULE



The 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 on the top panel for easy accessibility. 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. If the Command Module does not seem to be operating properly or if you suspect a problem with the electronics, do not operate it and call the factory for a service center near you.

### Camera Transmitter (512HZ)

Your 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.

### ⚠ CAUTION

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 previous page - Command Module), set the 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 side 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 side 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.

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

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5. Set the Power switch on the control unit front panel to either 120 VAC (up) or 12 VDC (down) position, depending on which voltage you have plugged the power cord into. With the power switch in the "ON" position, the DVD video recorder and monitor turn on automatically. If there is no picture, check all connections and repeat the above steps.

DVD RECORDER REQUIRES TIME TO INITIALIZE (APPROX. 30 SECONDS) BEFORE A PICTURE APPEARS.

6. Once the picture has been established, turn on the camera light power switch and slowly turn the Light Intensity Control clockwise until the camera starts to light, and if OK return the control to "MIN."

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If you wish to record your inspection, make sure you insert a blank DVD-R disc into the recorder and press [RECORD] on the DVD recorder or remote control.

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**OPERATION**



1. Check and make sure the Camera Light Head Intensity 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 side panel of the Command Module. Make sure the connector is properly aligned and then tighten.
3. Plug the keyboard connector into the connector on the top panel.
4. 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).



**KEYBOARD/COUNTER OPERATING INSTRUCTIONS**

KEY	FUNCTION
F1	On screen ON/OFF button
F2	Clears on screen text except the counter reading and time/date. The cleared text will not be lost permanently if it is saved in the first place.
F3	Reverses F2 (Brings back up screen text cleared earlier.)
F4	Set counter (resets counter to zero)
F4 + [ENTER]	Clear counter to +0000.0
[ESC] + 1 to 8	Selects memory pages 1 to 8. To view various pages, press [ESC] followed by page #. The default page on start up is 1.
F5	Saves text and counter information. (Note that by saving new text the old text will be lost. To avoid this, save new information onto a different page by selecting one of the other pages. See ESC + 1 to 8.)
F6	TIME & DATE – ON/OFF switch
F8	Clears screen only and homes the cursor (cursor is not shown on power up).
[ENTER]	Positions cursor next to line
←	Back arrow key erases letter and goes back one position.
ESC	Followed by 1 to 8 selects memory pages 1 to 8.
[CTRL]-D	Set Time/Date. Enter to accept, ESC (followed by a page number) to quit.

**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 RESET THE COUNTER**

Press the F4 key, followed by ENTER key to zero the counter on screen.

**TO SET THE COUNTER**

To set the counter to a preset value, press the F4 key, followed by five digits (numbers). Example: To set the counter to two and a half feet, press F4, followed by three zero's, a 2, and a 5. (0002.5)

**SETTING TIME/DATE**

Hold [CTRL] and press D. "hhmmssamMMDDYY" appears on the screen. Type in the correct time and date in this order: hour, minutes, seconds, am/pm, month, day, and year. When ready, press [ENTER]. (Note that the clock mode is 12 hour – i.e. 01 to 12.)



**Table 1 – Reel Selection Guide**

Reel Type	Pipe Sizes	Lengths Available
Standard Reel	3" to 10" (75 to 300mm)	200 ft., 300 ft. or 400 ft. (60, 90 or 120m)
Mini Reel	2" to 6" (50 to 150mm)	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 or sleeve assembly so the camera is centered of 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.

## INSPECTION PROCEDURE

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

For operation of DVD recorder or optional HDD hard drive, see the manufacturer’s operating instructions.

## CAMERA LOCATION

1. The transmitter (located near the camera) is already activated.
2. Switch the Locator ON and check that the battery indicator shows at least one bar. Replace batteries as needed.
3. Make sure the Locator is set for the same frequency as the transmitter by pressing the Frequency button (FREQ) until the desired frequency appears on the display.

4. Press Antenna Select (ANT SEL) so that the indicator arrow points to TWIN PEAK.
5. Press the UP arrow so that the gain bar is at the maximum setting.
6. Hold the Locator blade vertical and in line with the camera head (handle of the Locator at 90 degrees to the camera head). If you are not sure of the direction of the pipe, hold the locator above the drain opening and rotate it until you obtain the maximum signal. **Note:** The camera must be stationary to be precisely pinpointed.
7. Move the Locator forward and backward, and side to side along the camera path until you obtain a peak response on the display.
8. If the display indicates a maximum signal of 100, reduce the gain by pressing the DOWN arrow to keep the display at approximately 50% – 70%.
9. Repeat step 7 and 8 as you narrow your search area.
10. A small ghost signal may appear in front and behind the peak reading. Lower the gain button until you receive only one signal.
11. When you can only receive the signal in a small, one-foot square area, you’ve located the camera. Mark the spot.



**Tip:** It’s much easier to locate the camera when it’s closer to the drain opening than when it’s 100 feet away. Push the camera five or ten feet into the line, then do your first location. Mark the spot and push the camera ahead another five or ten feet, then repeat. When you’re done, you’ll have the whole line traced and marked.

## DEPTH MEASUREMENT

1. Recheck the camera location using the steps outlined above.
2. Rest the tip of Locator on the ground, holding it vertically above the pinpointed position of the camera head.
3. Press the DEPTH button. The LCD screen will indicate the depth of the camera.
4. You can select the unit of measurement (feet, inches, meters, centimeters) by pressing the DEPTH button and the DOWN arrow at the same time.

**Note:** An indication of four dashes on the display can be caused by too much or too little signal strength. Adjust the gain and recheck the depth measurement.

**See complete Locator instruction manual for more information.**

## **MAINTENANCE**

### **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 Spectra 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**

#### **⚠ WARNING**

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**

#### **⚠ CAUTION**

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

#### **⚠ CAUTION**

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



**CAMERA FOCUS**

All Gen-Eye Spectra 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 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 supplied: 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 control unit.

**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 monitor is up too high.

**Light Power Switch**

Flip this switch to turn on the LED lights on the camera head. This switch must be in the "ON" position to use the light intensity control and adjust the brightness of the lights.

**AC Power Input Socket**

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

**⚠ CAUTION**  
DO NOT PLUG IN BOTH AC AND DC CORDS AT THE SAME TIME.

**DC Power Input Socket**

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

**Cable Reel Input Socket, 10 Pin**

This is used to connect the interface cord from the cable reel to the 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 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. Remove the camera from the cable reel and plug the camera directly into the top panel (which bypasses the cable reel). 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 Command Module contains three easily replaceable fuses located on the front 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 ¼" diameter x 1-¼" long.

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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.

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**Keyboard Input Socket**

Plug in the keyboard (located in the lid of the case) to this connector. Always plug the keyboard in before turning on the main power switch.

## **REEL AND CABLE ASSEMBLY MAINTENANCE**

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

### **⚠ WARNING**

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.

## **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 that the DVD recorder is on.
- Check that the monitor power is on and SOURCE is set to the V2 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.
- Check all three fuses.
- Disconnect main power and contact the factory service department.

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

- Check to see if the Main Power switch is ON, and in correct position. If OK >
- Check to see if light intensity control is turned up. If OK >
- Check to see if LIGHT power fuse has “tripped”. If so, replace with same value.
- Remove camera from cable assembly and plug into Camera Test Terminal.

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**BEFORE USING THE CAMERA TEST TERMINAL, DISCONNECT THE POWER SOURCE FROM THE SYSTEM**

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### **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 that monitor SOURCE is in the V2 position.
- Check if DVD power is on.
- Press the “LINE IN” button on your remote control.
- 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 Gel Rod 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.

### **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 Gel Rod 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.

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**DISCONNECT POWER SOURCE FROM THE SYSTEM PRIOR TO CONNECTING TO THE TEST TERMINAL.**

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### **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.

- Check that the DVD recorder is displaying the correct input (AV2 REAR). Press the [SOURCE] button on the remote repeatedly to select the correct signal (AV2).

**Not Recording**

- Always check record and play functions prior to inspections to ensure that the DVD recorder is working properly.
- Check that there is enough space on the disc.
- Check whether the inserted disc has already been used for recording by another DVD recorder.
- Check whether you have inserted a recordable disc.

**DVD Disc Not Finalizing**

- It is recommended that you use a DVD disc by the same manufacturer as the DVD recorder.
- Be sure you are using a DVD-R disc format. (There is also a DVD+R on the market so this can be a common mistake when purchasing DVD media.)

***FOR ALL OTHER FUNCTIONS/OPERATIONS  
RELATIVE TO THE DVD/MONITOR UNIT  
PLEASE CONSULT YOUR DVD RECORDER  
AND/OR MONITOR OWNER'S MANUAL.***

**GENERAL'S LIMITED WARRANTY**

General's **Gen-Eye Spectra** 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 Spectra 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.**  
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