Inspection Camera Kit - 40mm



Please read these instructions completely before operating this system.

OPERATOR'S MANUAL

CAMTEK
SURVEILLANCE PRODUCTS
For all your drain camera needs

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SAFETY SYMBOLS

In this operator's manual and on the product, safety symbols and signal words are used to communicate important safety information. This section is provided to improve understanding of these signal words and 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.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



NOTICE indicates information that relates to the protection of property.

GENERAL SAFETY RULES

Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Work Area



- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not operate equipment in explosive atmospheres, which includes liquids, gases, or dust. Equipment can create sparks which may ignite the dust or fumes.
- Keep children and by-standers away while operating equipment.

Personal Safety



- Do not overreach. Keep proper footing and balance at all times. This enables better control of the equipment in unexpected situations.
- Stay alert, watch what you are doing and use common sense when operating equipment. Do not use equipment while you are tired or under the influence of drugs, alcohol or medication.
- Use personal protective equipment. Always wear eye protection & gloves while operating.

Electrical Safety



- Do not expose equipment to rain or wet conditions. Water entering equipment will increase the risk of electrical shock.
- Do not operate the system or a camera control unit with electrical components removed. Exposure to internal parts increases the risk of injury.
- Keep all electrical connections dry and off the ground. Do not touch equipment or plugs with wet hands. This reduces the risk of electrical shock.
- 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.

Equipment Use and Care



- Do not use equipment if the switch does not turn it ON and OFF. Any equipment that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/or the battery pack from the equipment before making any adjustments, changing accessories or storing.
- Use the equipment and accessories in accordance with these instructions, considering the working conditions and the work to be performed. Use of the equipment for operations different from those intended could result in a hazardous situation.

- Use only accessories that are recommended by the manufacturer for your equipment. Accessories that may be suitable for one piece of equipment may become hazardous when used with other equipment.
- Do not force equipment. Use the correct equipment for your application. The correct equipment will do the job better and safer at the rate for which it is designed.
- Practice good hygiene. Use hot, soapy water to wash hands and other exposed body parts exposed to drain contents after handling or using drain inspection equipment. Do not eat or smoke while operating or handling drain inspection equipment. This will help prevent contamination with toxic or infectious material.
- Turn OFF camera when not in use. This will prolong the unit's life and avoid excessive heat build-up.

Servicing And Repairs

NOTICE

Have your equipment serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the equipment is maintained. This will also determine your warranty claim in the event of equipment failure.

SPECIFIC SAFETY RULES

WARNING

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.

- Be sure that the unit is plugged into a properly grounded outlet. If in doubt, check the outlet before plugging in the 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 the 3m or 5m patch cables which are supplied
- 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.
- 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.

EQUIPMENT OVERVIEW

Camera

NOTICE

- 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 KNOCKED 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 seal.
- The standard camera spring is attached to the cable via 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 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.

Standard Equipment

- Camera Reel
- Camera Head
- Camera Skids
- Remote control
- Patch lead
- Battery Pack
- 16GB USB drive
- Operator manual
- IR Remote control

Specifications

Available Cable Length	60m
Reel Weight	60m (15kg)
Reel Dimensions	60m (420mm)
Power Source	240V/60Hz or 12vdc
Pushrod Diameter	8mm reinforced fibre glass push rod.
Camera Type	Stainless Steel
Camera Size & Weight	Length mm, Diameter 40mm
Camera Pressure rating	1 Bar (PSI)
Camera Resolution	700TVL
Lighting	12 High Intense Adjustable LEDS
Operating Environment / Temperature	0 degrees C to 50 degrees C
Altitude	2000m

SYSTEM COMPONENTS

Inspection Camera Kit 40mm includes: The Camera Head, the Cable Reel and Frame and the Monitor Control Unit.



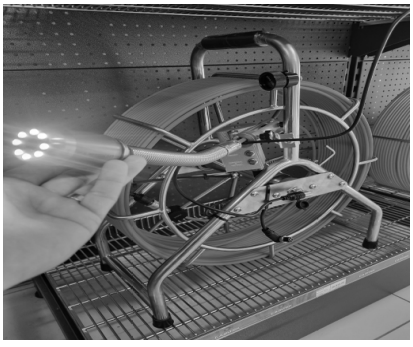
Complete Camera Kit

Cable Reel

The pushrod is housed in a handheld metal drum, which is lightweight easy to use the Slip rings inside the drum's hub provide a rotating electrical connection between the drum and frame and allow operation at any angle.

The new reels include a built-in meter counter above the slip ring which measures the distance the cable has travelled inside the pipe and can also display the day, date, time. The meter counter also allows you to measure a custom distance from any starting point in the line.

1. Frame
2. Camera Connect Screw Socket
3. Meter Counter
4. Handle
5. Guide



Push Rod Reel with Handle

Camera Head

The camera head has adjustable LEDS and an advanced-design, scratch-resistant sapphire Lens. This, coupled with the stainless-steel housing allows the camera to withstand repeated stresses and impacts in normal operating environments.

1. Camera housing



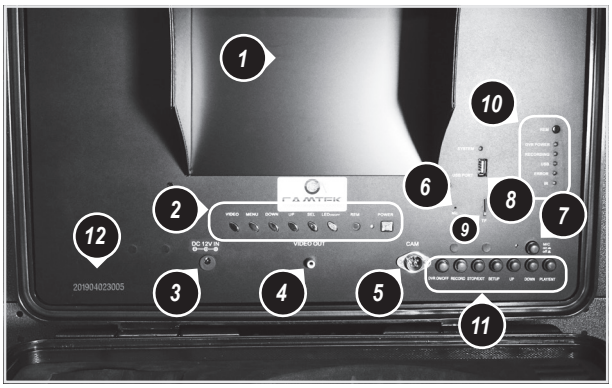
Monitor Control Unit & Recorder

WARNING

Be sure you are familiar with the camera system unit and have read its operator's manual carefully.

The Monitor Control Unit provides power to the camera reel and system accessories. It also provides a control that adjusts the camera's lighting and DVR (digital video recorder). Monitor Control Units may be powered by a 220-volt AC source or the supplied 12VDC Lithium powered battery.

1. 10" Monitor
2. Monitor Control functions
3. DC 12V Input
4. Video Output
5. Cable reel connection point
6. Microphone
7. Microphone On/Off Button
8. USB Stick Input
9. SD card slot (not used) firmware upgrades only
10. DVR (digital video recorder) LEDS
11. DVR control Functions
12. Item Serial Number



Monitor Control Unit Functions

OPERATING & ASSEMBLY INSTRUCTIONS

WARNING

Always wear eye protection to protect your eyes against dirt and other foreign objects.

- When inspecting drains that might contain hazardous chemicals or bacteria, wear appropriate protective equipment, such as latex gloves, goggles, face shields or respirators to prevent burns and infections.
- Do not operate this equipment if operator or machine is standing in water.
- Operating machine while in water increases the risk of electrical shock. Rubber soled, non-slip shoes can help prevent slipping and electric shock, especially on wet surfaces.
- Follow operating instructions to reduce the risk of injury from electrical shock and other causes.

Basic Assembly Instructions

WARNING

Make sure all equipment is properly set up and the battery is fully charged. Fully charged battery will have all five red LEDS illuminated.

- Put the Fuse into the jack located at the side of the Battery Box.
- Plug the Power Adapter Cord into the wall AC socket and the other end into the DC 12V-Input Jack on Monitor.
- If you choose to use the charged battery, plug the power output cord of the battery to the DC 12V-Input Jack of the Monitor, then press the button on the battery.

- The user can also charge the battery while using the device in the following way:
- plug the Charger to the wall AC socket and the other end to the jack on the Battery and connect the power output cord of the battery to the DC 12V-Input Jack of the monitor, then press the battery's button.

WARNING

Note: Don't misuse the power cord and battery charger cable, otherwise the system cannot work properly, or the battery pack may be damaged.





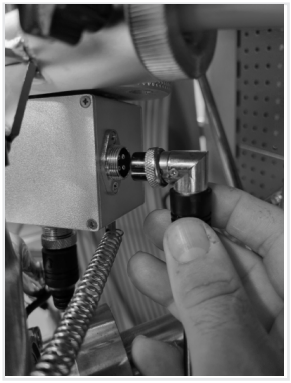
Screw the Camera Head into the Reel's Socket. Screw the Camera to the Reel Cable and connect the Reel to the Monitor





Plug the battery lead and plug into the Monitor control unit then press "on".





Plug camera patch lead into monitor control unit then plug lead into cable reel.





Leave the camera head and reel connected until the DVR operation LEDS appear (approx. 10 sec.). If you do not see an image on the monitor, check to make sure its power is turned ON.

NOTICE

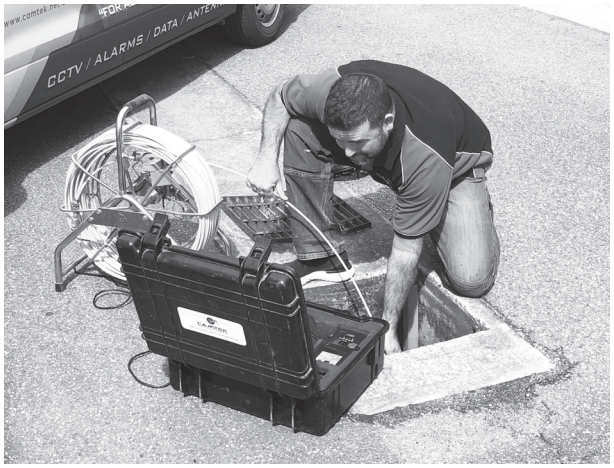
Video 1 on the monitor is live view mode, Video 2 on the monitor is the DVR (digital video recorder) mode.

Performing a Pipe Inspection

WARNING

Inspecting a pipe is done by pushing the camera into the pipeline gradually while observing the monitor.

- When pushing, the end of your stroke should be as close to the entry as possible. Standing too far back (with an excess of cable between your hands and the entry) may cause the cable to fold on itself outside the entry and damage the cable.
- Folding the pushrod on the sharp edge of an entry can cause it to snap. Caution must be used to avoid bending the pushrod on sharp corners. This can cause pushrod failure.
- If the camera just does not seem to want to go any farther, do not force the camera. Try another entry-point if one is available. Or, try running water down the line.



Camtek Inspection System in Use

WARNING

The system can travel through multiple 45 and 90-degree bends. Do not, however, try to force it through a P-trap or Tee if there is a large amount of resistance.

Using the Meter Counter

- Press either meters or feet for correct display measurement

Resetting the Meter Counter Zero-Point

- You can also reset this system zero point at any time with a press on the Zero Key. It is good practice to do this, for example, at the entrance to a pipe.



Meter Counter Function

Retrieving the Camera

- Once the inspection has been completed, pull the pushrod back with slow, steady force.
- Continue running water down the line if possible, to help clean the pushrod. A towel can be used to wipe off the pushrod as it is withdrawn.
- Pay attention to the force required to withdraw the pushrod. The pushrod and camera may get hung up while being retrieved and may need to be manipulated as done during insertion.
- Do not force the pushrod or exert excessive force. This could damage the camera or pushrod.
- When pulling the pushrod, keep clear of any sharp edges and do not pull at sharp angles to the inlet to prevent damage to the pushrod jacket.

Spring Assembly

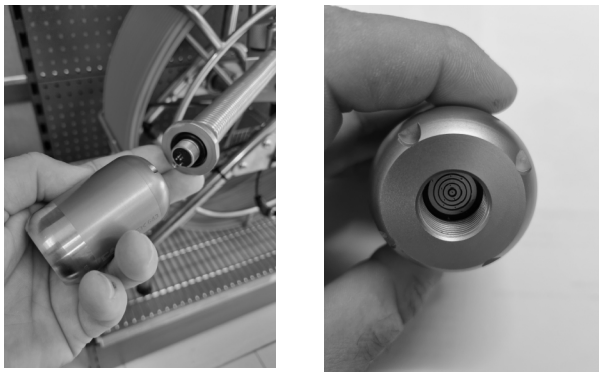
- The spring assembly is the area where foreign matter is most likely to accumulate.
- Within the spring is the splice between the pushrod and a connector. Should sharp objects or harsh chemicals be allowed to remain in this area for long periods, they may wear on these components.
- Stretch the spring end-to-end as far as the internal safety cables allow to check this area.

Removing Camera Head from the Reel

Before removing the camera head for the first time, be sure to read the following instructions.

WARNING

Bending, twisting or leaving the camera head pogo stick connectors exposed to the elements will lead to premature failure due to corrosion and is not covered by warranty. Do not bend or damage these connectors, use the black end cap to cover when not in use or leave the camera head attached to the reel.



Camera Head Connection

Handy Hints for Operation

NOTICE

Run water down the pipe undergoing inspection if possible.

- This will keep the system much cleaner and allow you to push noticeably farther with less friction. This will also help you locate the bottom of the pipe. This can be accomplished by feeding a hose with a small amount of flow into the entry or occasionally flushing a toilet that drains to the pipe.
- When inspecting a pipe, it is usually necessary to give a little extra push in the bends.
- Back the camera head approximately 7” from the bend, if necessary and give it a quick push, “popping” the camera through a turn, using the least amount of force required.
- Be as gentle as possible. Do not hammer or snap the camera head through corners. The best way to inspect a section of pipe in some situations is to push the camera through quickly and draw the camera back home slowly and evenly. It is easier to control the camera when pulling than when pushing.
- Make sure the sapphire window is clean prior to entry.
- Some users claim that a slight film of detergent on the lens minimizes the possibility of grease sticking to the Lens.

Accessories

WARNING

The following accessories have been designed to function with the Camtek Inspection Camera Kit 22mm.

- Other accessories suitable for use with other equipment may become hazardous when used with the Camtek Inspection Camera Kit 22mm. To reduce the risk of serious injury, only use accessories specifically designed and recommended for Camtek Inspection Camera Kit 22mm.

RECORDING OPERATION

- Set the Screen video button on Video 2.
- Take off the isolation sheet from the remote-control battery.
- Press the remote-control button power button “ON” to enter the recording system you can see DVR system recorder interface once the unit has initiated. (normally take about 10-15 seconds)
- Insert your USB stick into the USB Port, you can see USB stick connected on the screen when the green LED light indicator is on.



Record - USB Stick Inserted

NOTICE

Please note: When you plug in the USB stick for the first time please be sure to format the USB Stick in a computer and format it via FAT32. (more info in troubleshooting page)

- Press record to start the recording, the RECORDING Red LED light will come on.
- In recording, press the RECORDING button again, the DVR will take a photo and it is saved in the USB stick (The snap shooting function is only available for new firmware versions).
- Press stop button to stop recording.
- Press button play to review recording.

Recording Time Limit

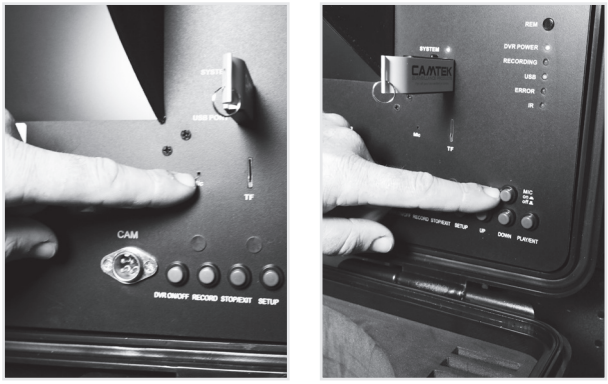
- Sometimes you may forget to stop the recording after it is initiated. This unit is featured with a recording time limit. The default time limit is 60 minutes. If recording time over 1 hour, the system will record with a new file.

Scheduled Recording

- You can schedule a recording in advance. Simply enable the schedule recording in the SETUP and then the unit will ask user to setup timing. Recording schedule can be used once. You must set up schedule again for the next recording.

Voice Recording

- A microphone button located on the front panel allows the user to press the button on to record a voice while the video is recording (This function is only available for new versions).



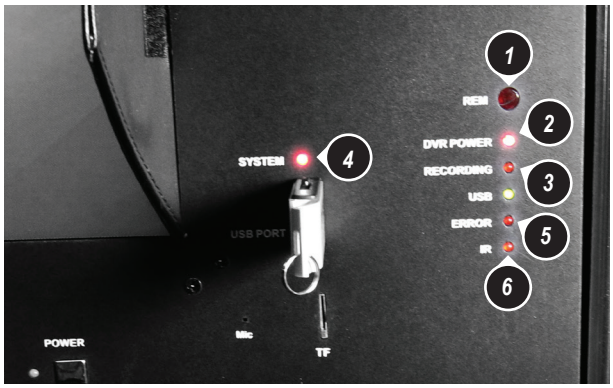
Microphone and Microphone ON/OFF Button

Video Recording Format

- The default video recording resolution is 640*480. One-hour recording will take up storage of 500MB
- User may select 320*240 to save storage space.

LED Indicators

1. REM: IR Remote receiving window
2. Power: It indicates that the system is on
3. Recording: It will blink during recording
4. USB: It indicates that USB device is connected
5. Error: It indicates that the system or USB/ micro SD device has error
6. IR: It blinks when the remote control is in use for Recording Video
7. The recorded video files will be found in a directory of USB devices.
8. You can use the on-screen menu or press (REC) button to start recording. Press (■/ EXIT) button to stop recording. During the recording, the screen will display recording time and time limit (up to 60 minutes).

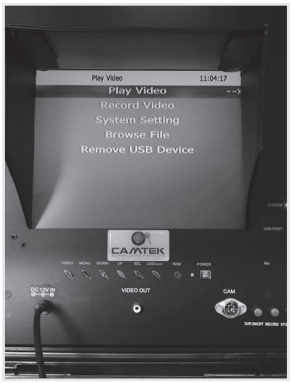


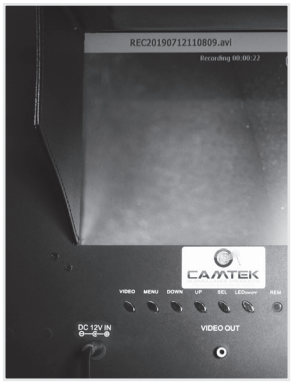
LED Indicators

Video Playing

- You can use on-screen menu to enter “play video” mode. The unit will display the recorded video and other compatible videos stored in USB stick.
- It will not list the non-compatible videos.
- Select the video file.

- When you enter “play video” mode, the set will display all the available video files on the screen.
- You can use [▲] or [▼] button to select desired video and press [►/ENT] button to play.
- Press and hold [▲] or [▼] button to go to previous or next video.
- Use [►/ENT] button to start or pause the playing. Use [■/exit] button to stop or go back to previous menu.
- The screen will display “loading, please wait …” for a few seconds before playing videos.

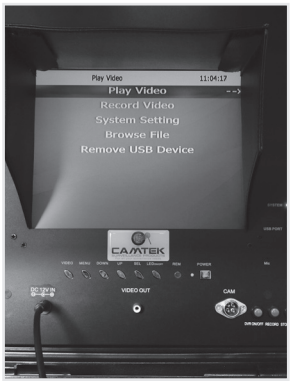




Record Interface and Video Record Mode

Fast Forwarding and Rewinding

- You can use [►] or [◄] button on the remote control to fast forwarding or rewinding (1x, 2x, 4x, or 8x, speed). Always press[►/ENT] button to go back to normal playing.



File Selection and Playback

Compatible Video Format

- Divx4/Divx5/MPEG1/MPEG2/MPEG4 (MPEG4 video file format: .avi,.m4v, .MPG, MPEG, .VOB) Note: The video player of the device may not support some downloaded videos.

Video Software Installation (may be required for older computers)

- Generally, the recorded videos can be played on any computer purchased after the year 2006. If you cannot open the recorded document on computer this mean your computer does not have the correct media player with the required codecs to play the file.
- Go to the website: **https://kmplayer.en.softonic.com** and download “KMPlayer” software for free.
- Please use this player to play the video files from the device.

Recharging the Battery

- Plug the charger into the AC socket on the wall and insert the other end into the DC Jack on the battery box.
- The battery can be charged while the battery box is on and the device is being used. However, once the power in the battery runs completely out, it can only be charged when the battery box is turned off.
- The charge LED will be red during the process of charging and will turn green when charging is finished (normal charging time: 5 – 6 hours).



WARNING

IMPORTANT MESSAGE: Do not overcharge the battery! Overcharging can result in acid leakages and cause damage to the battery and components

Battery Specifications

- Total Power: 12W
- LI-ION Battery: 12VDC, 6600mAh
- Charger: 13.5V, 800mA
- Charge Time: 6 Hours
- Working Time: Approximately 200 Minutes
- Protective Voltage: 8.1V
- The Voltage Before Discharging: 12.6V
- Load Current: 1100 Ma (Input 12.2V Hour)

TROUBLE SHOOTING GUIDE

No Picture AND No Lights

- Check to see if the Main Power switch is ON. Check that the USB Recorder light is ON (green). Check that Monitor Power is ON (red) and SOURCE is set to the proper position (video 1) 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 Camtek service department.



No Picture on Monitor

Picture BUT No Lights

- Check if Main Power switch is ON, and in correct position. Check to see if the LIGHT power switch is ON and intensity control is turned up. Check cable for possible breaks or intermittent open circuits by flexing the cable and camera head spring.



Lights When Operating Correctly

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 enough 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 (ie another compatible reel). Disconnect the main power source and contact Camtek service department.



Inspect Camera Lens

Not Recording

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

WARNING

Please note: USB Drives might need to be formatted on a computers prior to use, please following the instruction on how to do this below:

Plug USB into Computer and find the name of the drive. IE: F drive, E drive etc.

- Go to my computer and find the USB drive
- Right click on the drive
- Go to Format
- Make sure file system is set to FAT32
- Start format.

WARNING

Please note: Formatting the USB stick will delete everything from the card so make sure you back any video footage you may want to keep before doing this.

Camteks Limited Warranty

CAMTEKS CAMERA pipe inspection/location system carries a one-year warranty against defect in materials except as noted below. Should any part break or fail to work properly in the ONE year 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 CAMTEK, and notify us immediately, with complete information on the problem.
2. We must have the serial number, the date of purchase.
3. 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. CAMTEK 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.

Please note: Equipment warranty is void if used with a high pressure a Jetter (cleaner).

For More Information Contact
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Notes



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