



OPERATION MANUAL



INSPECTORCAMERAS.COM

CONTENTS

INTRODUCTION	4
General Safety Rules	4
Application	4
KNOW YOUR TOOL	5
Camera Head	5
Cable Unit	5
Control Box	5
Remote Control	5
Package Contents	5
SPECIFICATIONS	6-7
INSTALLATION	
1. Install Cable Reel (fig. 6)	7
2. Install Control Box (fig. 7)	8
3. Install Camera Head (fig. 8)	8
4. Install Guide Fitting	9
23mm Camera Head	9
14mm Camera Head	
5. Install SD Card	9
6. Turn on the DVR	9
FUNCTION GUIDE & OPERATING INSTRUCTIONS	
1. Insert the card	10
2. Turn on/off	10
3. Function Buttons	10
4. Parameter Settings	10
5. File Management	10

CONTENTS

WIRELESS KEYBOARD OPERATION	11
Text Input	11
Backstage Operation	12
METER COUNTER OPERATION	12
PUSH CABLE & CAMERA OPERATION	13
Retrieving the Push Cable	13
BATTERY SAFETY & USE GUIDE	14
Using Safety	14
Using Guide	14
OTHER INFORMATION	15
Troubleshooting	15
FCC Statement	15
CE	15
EMC	15

INTRODUCTION

This pipe inspection system is a unique set of tools that helps you locate and diagnose problems in a pipeline system. The system is widely used in inspections of sewers, central air conditioning, chimneys, plumbing, building maintenance, pipe ventilation systems, and other places.

The following pages provide you with the information to understand the functions of the Scout 3-PRO camera and it's accessories. This manual provides important notes to help you avoid accidents, damage, and injury.

GENERAL SAFETY RULES

Read all safety warnings and instructions. Failure to follow warnings and instructions may result in electric shock, fire.

- 1 Save this operation manual for future reference.
- 2 Do not operate this device in explosive atmospheres, such as in the presence of flammable liquids, gases, hazardous chemicals, superheated liquid, or heavy dust. It may create sparks that may ignite dust or fumes.
- 3 The camera head and the push cable are waterproof (when the camera is installed on the cable); however, the keyboard and the DVR inside the control box are not. Do not expose them to water or rain when the control box is open as this may cause internal damage.
- 4 Avoid using this device in environments of extreme cold, heat, or humidity as it may damage the device.
- 5 Do not drop or press hard on the device.
- 6 Always back up your data before inserting your SD memory card into this system. The manufacturer is not responsible for any data lost or damaged on your SD memory card.
- 7 Do not disconnect the unit while recording or playing back the video. This may damage the SD memory card.
- 8 Only qualified persons are allowed to repair this device. Service or maintenance performed by an unqualified person could result in injury or further damage.
- 9 Do not use this device in places where there is high voltage equipment. This device doesn't contain high voltage insulation.

APPLICATION

Suitable for pipes at diameter of 25mm-200mm. Ability to go through 90° bends in pipe DN45mm (for 23mm camera with 5.2mm rod); and in pipe DN32mm (for 14mm camera with 4.8mm rod) and in pipe DN52mm (for 23mm camera with 6.8mm rod).

KNOW YOUR TOOL

This pipe inspection system includes the following four main parts: camera head, cable reel, frame, and control box. The camera head includes bright white LEDs and a highly scratch-resistant sapphire lens cover.

Flexible stainless-steel spring and associated components make the camera head easily go through bends in the pipe. The battery pack provides a long-lasting power supply for the system and the DVR monitor can record videos and take photos. The stable and open composite structure is very easy to clean.

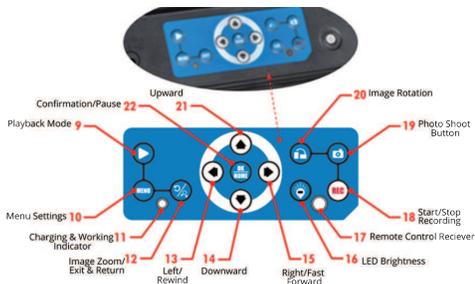
CAMERA HEAD

1. Sapphire Lens
2. PC lens
3. Stainless Steel Shell
4. Stainless Steel Spring
5. Camera O-ring
6. Gold Connector



FIG. 1
Camera Head

KNOW YOUR TOOL



CONTROL BOX

1. Power Button
2. SD card slot
3. Sunshade
4. High-definition color LCD display
5. DC input
6. Meter counter zero-set button
7. Wireless keyboard
8. Aviation socket
9. Playback mode
10. Menu settings
11. Charging and working indicator
12. Image zoom/exit and return
13. Select left/rewind
14. Downward selection
15. Select right/fast forward
16. LED brightness
17. Remote control receiver
18. Start/stop recording
19. Photo shoot button
20. Image rotation
21. Upward selection
22. Confirmation/Pause

REMOTE CONTROL

1. Menu settings
2. Playback mode
3. Reserved function expansion
4. Image zoom /exit and return
5. Upward selection
6. Confirm / Pause
7. Select left / rewind
8. Select right / fast forward
9. Select downward
10. Image rotation
11. LED brightness
12. Start / stop recording
13. Photo shoot button

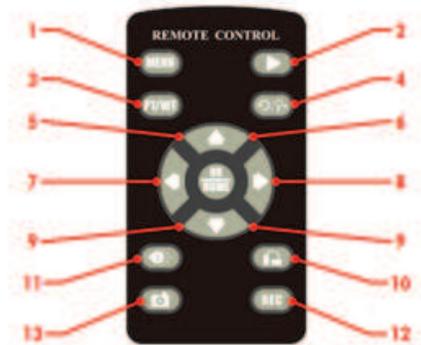


FIG. 4
Remote Control

Frame and Cable Wheel

1. Frame
2. Wireless Keyboard Receiver
3. Socket (connect to toolbox)
4. Push Cable
5. Cable Connector (To Camera)

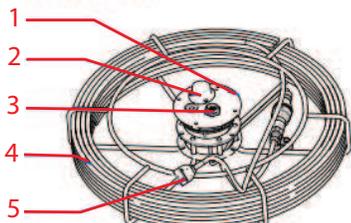
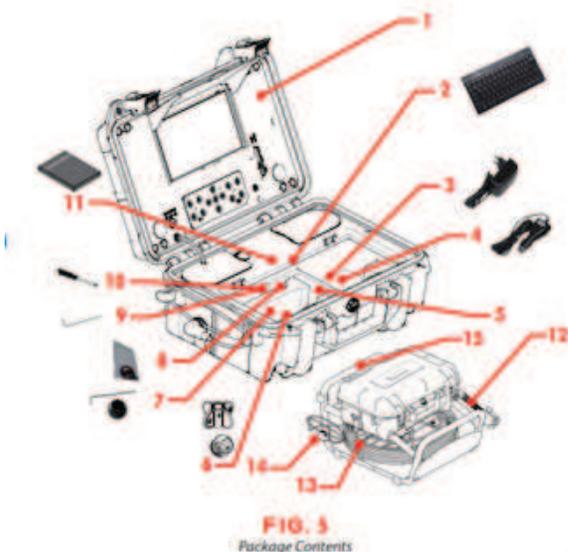


Figure 3. Frame and Cable Reel

PACKAGE CONTENTS

1. Panel with DVR
2. Wireless keyboard
3. Adapter
4. Car charger
5. Remote control
6. 46mm and 80mm skids for 23mm camera
7. 28mm skid for 14mm camera head
8. Screw (2x), nut (2x) and waterproof-ring for 23mm camera head / waterproof-ring for 14mm camera head
9. Hexagon Key
10. Screwdriver
11. Operation manual
12. Camera Head
13. Coil Wheel
14. Connect Cables
15. Support Frame



SPECIFICATIONS

	ITEM	PARAMETER	
General	Operating Temperature	-10 to 50C / 14 to 122F	
	Operating Humidity	30% RH to 90% RH	
	Storage Temperature	-20 to 60C / 4 to 140F	
	Power Adapter	Input: 100-240V AC, Output: 12V DC 1500mA	
	Measurements	20" x 15" x 13" (LxWxH)	
	Weight	24 lbs.	
Camera		Ø23MM CAMERA HEAD	Ø14MM CAMERA HEAD
	Sensor	1/30 CMOS	1/40 CMOS
	TV Line	420/480 TV Line	400 TV Line
	View Angle	120°	90°
	Focus Distance	20cm (approx)	6-8cm (approx)
	Depth of Field	100cm (approx)	20cm (approx)
	Camera Size	Ø23mm x 51mm (main body)	Ø14mm x 21mm (main body)
	Camera Length	155mm	125mm
	Front Lens	Sapphire	Sapphire
	Shell Material	304# Stainless Steel	304# Stainless Steel
	Lighting	Built-in 15x LED (white)	Built-in 4 x LED (white)
	Waterproof	20m water (camera fix on cable)	10m water (camera fix on cable)
	Power Supply	DC 9-15V	DC 9-15V
	Current Consume	40 mA (LED off), 95 mA (LED on)	40 mA (LED off), 60 mA (LED on)
DVR	Screen	Super bright high-definition color LCD screen	
	Screen Resolution	1024 x 600	
	Image	Support image rotation	
	Video Resolution	AHD 1080P / AHD 720P / CVBS D1	
	Video Encoding	High Compression H 264	
	Photo Resolution	1920 X 1080	
	Audio Recording	Support local sound	
	Output	TV output	
	External Memory	Support SD memory card up to 32GB	
	LED Driver	Built-in dimmer	
	Play Back	Video and photo	
	Language	English, Simplified Chinese, Traditional Chinese, Japanese, Korean, Russian German, French, Italian, Spanish, Portuguese, Thai	
	Power Supply	DC 6-12V input	
	Current Consume	700 mA max	
	Battery Capacity	7.4V 5200 mAh Li-ion Battery	
Single Charge Work Time	~ 6 hours		
Charge Time	~ 8 hours		

SPECIFICATIONS

ITEM	PARAMETER			
Wireless Keyboard	Keyboard Compatibility	Support specific PC wireless keyboard		
	Typing Language	English		
	Max Characters	384		
	Hide Characters	Quick one key hiding		
	Precision of Meter	Counter \pm 0.5%		
	Meter and Feet Switch	Support		
	Re-set to Zero	Support		
	Power Consumption	40 mA@12v DC		
Cable Reel	Cable Diameter	Ø4.8mm	Ø5.2mm	Ø6.8mm
	Cable Length	30M/100'	40???????	35M/155' or 40M/130'
Control Box	Size	20 x 15 x 13 inches (L x W x H)		
	Box Color	Black		

INSTALLATION

To reduce the risk of injury or damage to the system, follow these procedures for proper assembly.

1. INSTALL CABLE REEL (FIG. 6)

Put the cable reel into the frame from the right side, then, place it in the proper direction and tighten the screws and nut. Pull out the cable with care, thread it through the hook, and lead the cable out.

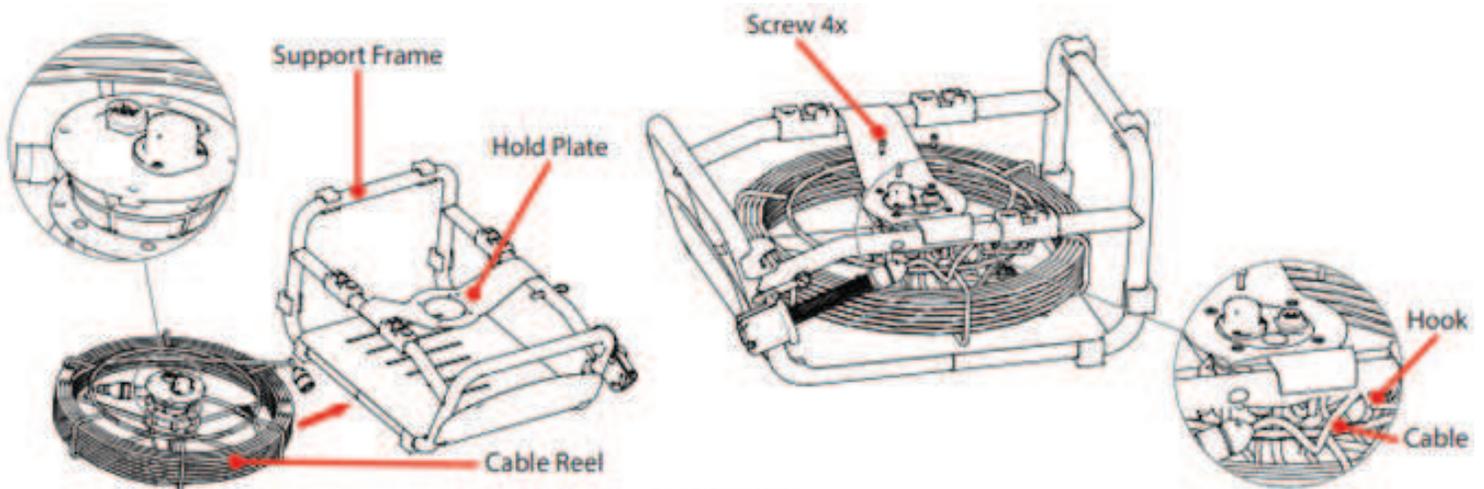


FIG. 6
Install Cable Reel

2. INSTALL CONTROL BOX (FIG. 7)

- 1 Plug one end of the spring cable into the cable wheel aviation socket according to the direction (direction of long straight cable), and tighten the screw.
- 2 Clip the control box holder into the **fixed seat** on the frame and push it inside according to the direction.
- 3 Thread the **ball lock pin** through the control box holder and the frame.
- 4 Connect the other end of the **spring cable** with the aviation socket of the toolbox and tighten the screw (direction of long spring cable)

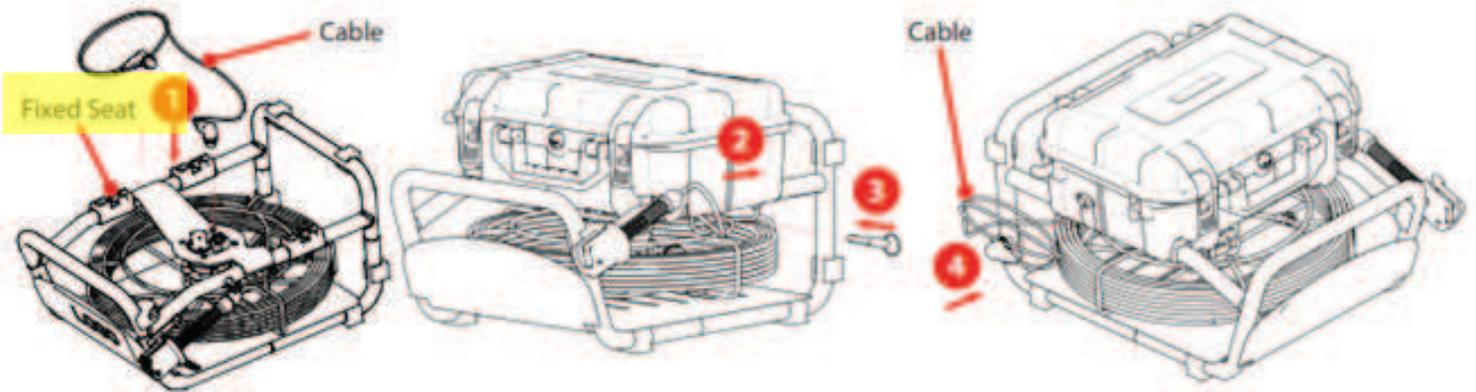


FIG. 7
Install Control Box Unit

3. INSTALLING THE CAMERA HEAD (FIG. 8)

Hold the cable connector in one hand, then screw the camera onto the cable hand tight. No tools required.

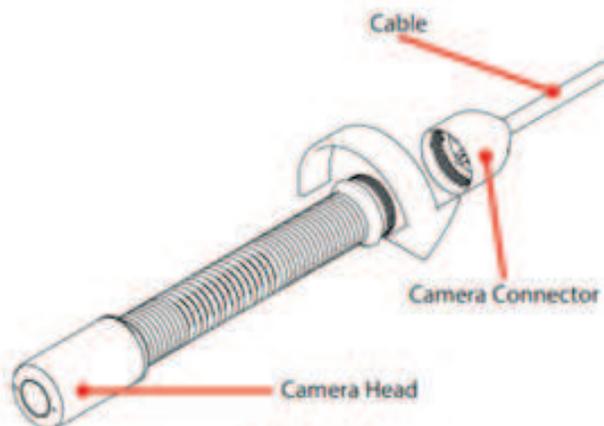


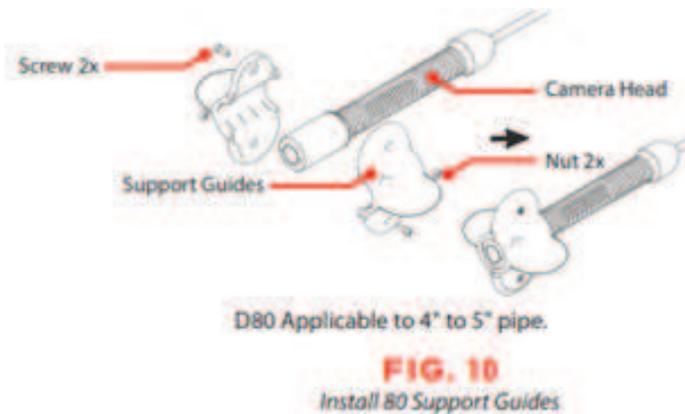
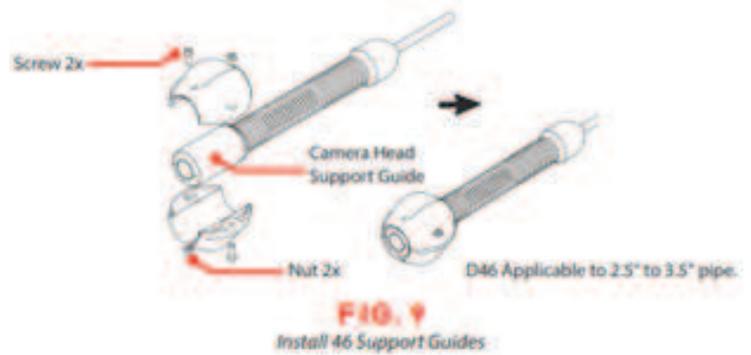
FIG. 8
Install Camera Head

4. INSTALLING SKIDS

Skids are used to keep the camera head in the center of different sized pipes and to protect the camera head from damage. We recommend you always use skids.

23mm Camera Head

1. Install the 46mm skid (Figure 9). Mount the skid onto the stainless-steel camera head. Then, tighten the screw with a screwdriver.



2. Install 80mm Skid (Figure 10).

Mount the 80mm skid onto the stainless steel camera head. Then tighten the screw with a screwdriver.

5. INSTALL SD CARD (FIG. 12)

The SD card needs to be inserted into the DVR card slot with the corner of the SD card facing down. Be sure that the contacts are facing the screen side.



6. TURN ON THE DVR

FIG. 12
Install SD Card

FUNCTION GUIDE & OPERATING INSTRUCTIONS

1. Live Video

Press  to turn on/off DVR to enter the live video mode, then press  to enter playback mode.

Press  to start/stop recording.

Press  to mirror and/or reverse the image.

Press  to adjust the brightness of the cameras LEDs.

Press  to take a picture.

2. Video Option

Press  to enter the video option menu.

Press  and  to select items that you need

Press  to confirm the selection

Press  or  to change the value.

Press  to save the settings.

Press  to exit the video option and save.

Video Seg: 10min/ 20min/30min. Set 10-30min to restrict the file recording length.

Older files will be recorded over with new files when the SD card is full. Set OK to close this function.

Sound: Turn on/off the local sound in Video Recording.

Timestamp: Enable/Disable time stamp on screen.

3. Playback

Press  to enter the playback. The user can browse, preview, and playback media files.

Press  and  to browse and select media files.

Press  to confirm the selection and preview the media file.

Press  to preview the previous file.

Press  to preview the next file.

Press  to playback video.

Press  to enter the play settings.

4. Playing Movie

To pause/play movie, press .

Press the  to stop playing movie.

Press  to rewind.

Press  to fast forward.

Press  to set the speed of rewinding/forwarding.

5. SETUP

Press  to enter the preferences of Record/Playback.

Press  to enter Setup menu.

The following items are in the setup menu:

- Format: format SD card.
- LCD: LCD brightness.
- Language: English, German, French, Spanish, Italian, Chinese, Japanese, Russian, Portuguese.
- Sys. Reset: Reset all setting.
- Light frequency, 50Hz / 60Hz, specifying your ambient light frequency.
- Date input: To set date and time.

WIRELESS KEYBOARD OPERATIONS

The wireless keyboard text writer is used to type characters that display on the screen. The characters can be displayed on a recorded video or a captured photo. It supports a max. 384 characters.

TEXT INPUT

- Type the characters with the wireless keyboard. Use the arrow keys to move the cursor, the backspace key to delete, and the enter key to add a new line.
- Use the Esc key to hide or show all characters. Press Ctrl + Del to delete all characters.
- You can type and edit characters while recording. The typing and editing will be recorded in the video files.
- The typed characters will be stored in the memory.

BACKSTAGE OPERATIONS

You can press the “F1” or “F2” keys within 5 seconds after the DVR monitor starts to enter backstage operations.

- The first line is reserved for the user to type the company name, name of the operator, phone number, etc. The content won't be hidden by pushing the ESC button. You can edit the contents by using F1 key, then press the Enter key to save and exit.
- Refer to the meter counter information prior to using this operation. Use the F2 background key to select the unit of length or the total length of the push cable (this is designed if the total length of the push cable is changed). When the “L=” flashes, press the up or down arrow key to select the unit of length, or the correct total length. Press the enter key to save and exit.

METER COUNTER OPERATION

- Press the green button to set the meter to zero .
- To change the unit of length or the total length of the push cable, please refer to the F2 backstage operation contents on the wireless keyboard.

NOTE 1: The deviation of the MC will increase if the total length is not correct. Select the correct total length to decrease the deviation. Use this function to change the displayed total length when the push cable is cut off for more than 3 meters.

NOTE 2: Turn on the system before pulling out the push cable from the cable reel. This will decrease the deviation of the MC.

PUSH CABLE & CAMERA OPERATION

- 1** Always wear rubber gloves while operating the camera for health/safety reasons. Properly positioning the cable reel will save time and effort to push the cable.
- 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.
- Try to keep the push cable away from the sharp edges of a pipe entry as this may cause damage. If the camera does not seem to go any further, do not force push the camera into the pipe. Try another entry if possible.

NOTE: Hands should be close to the line opening. Don't continue to push if the cable catches on the edge of the entry to the pipe.

- 2** Always try to run water down the pipe undergoing inspection. This will keep the system much cleaner and allow you to push with less friction. If the water is preventing you from seeing an area of importance, temporarily turn it off.
- 3** When pushing the cable through the pipeline, be steady and slow, only going a short distance at a time. Keep your hands at the entrance to control the push cable and prevent it from sticking, scratching, or bending.

- 4 When inspecting a pipe, most of the time a slow steady push through the system works best. At changes in direction, it is usually necessary to give a little extra push around the bends. Back the camera head approximately 8" (20cm) from the bend, if necessary, and give it a quick push, popping the camera through the turn, using the least amount of force required. Try to be gentle as possible, and avoid trying to hammer or snap the camera head through corners. After some practice, you may learn that the best way to inspect a section of pipe is to push through quickly. Then draw the camera back slowly and evenly.
- 5 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 camera head. If necessary, take advantage of any standing water in the pipe to wash the front of the camera by jiggling it in the water.
- 6 When you place the camera head into the pipe, it may be necessary to adjust the lighting setting to maximize the picture quality.
- 7 The system can travel through multiple 45- and 90-degree bends. Do not try to force it through a P-trap or tee if there is a large amount of resistance.

NOTE: Do not try to use the camera head to clear obstructions. This System is a diagnostic tool, not a drain cleaner. Using the camera head to clear obstructions could damage the camera head or cause it to get caught on the obstruction.

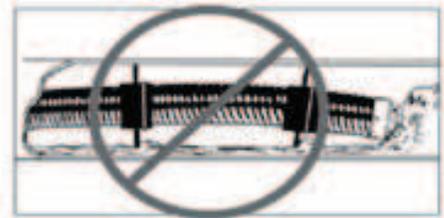


FIG. 14
Improper Operation

- 8 Do not attempt to remove or store the push cable on the reel solely by turning the reel itself. You can manually push or pull the cable from the reel to wind or unwind it.
- 9 If the camera sits in a pipe, or an enclosed environment, heat will build-up. This may lead to the camera head overheating which will cause fuzzy lines to appear on the monitor. If this happens, turn off the system, remove the camera from the pipe and let the camera head cool for 10 to 15 minutes. Running water into the line will also help cool the camera head. Always use the minimum illumination required to maximize picture quality and to avoid excessive heat build-up.

NOTE: The camera head can get HOT! When finished with your inspection, or if taking a prolonged break in the middle of the inspection, turn the system off.

PUSH CABLE & CAMERA OPERATION

Retrieving the Push Cable

- 1 Once the inspection has been completed, pull the push cable back with a slow, steady force. Do not exert excessive force as this could damage the camera or push cable. The push cable may get hung up while being retrieved and may need to be manipulated as done during insertion.
- 2 While retrieving the push cable, running water can be used to easily remove the cable from the pipe. As you retrieve the camera head, you can use wipes to clean the cable.

NOTE: NEVER USE SOLVENTS to clean any part of the system. Substances like acetone and other harsh chemicals can cause cracking of the camera ring, which could affect the waterproofing.

- 3 Store the push cable on the cable reel. One hand holds the push cable, the other hand holds the machine in place. Slowly push the cable back into the reel. The reel will rotate holding the cable inside.

NOTE: Push the cable a little at a time. Pushing too much of the cable all at once can cause it to bend or brake.

BATTERY SAFETY & USE GUIDE

USER SAFETY

Read the following battery precautions before charging the camera to reduce the risk of electrical shock.

- Recharge batteries with accessory charging units.
- Always check the power units before using the equipment to be sure there is no problem. Use of instruments and systems.
- Never connect the car charger to any 24-volt cigarette lighter slot. This will harm the battery and DVR.
- Do not short circuit; it may cause a fire or electrical shock.
- Do not charge the battery in the rain or wet conditions. Water entering the charger will increase the risk of electrical shock.
- If the charger and battery are damaged, do not use them. This may cause electrical shock.
- Don't disassemble the case, only a qualified repair person can repair and provide maintenance.
- Properly dispose of the battery. Exposure to high temperatures can cause the battery to explode. Please follow all applicable battery disposal regulations.

USER GUIDE

Follow the steps below to reduce the injury while operating the machine.

- Power indicator LED will be red during charging and will be green when charged fully. If the battery is empty for a long time, it will pre-charge the battery automatically in 10 minutes, and the LED will blink red.
- The camera needs approximately 8 hours to charge the battery fully.
- You can use a power adaptor or car charger to charge the battery.

Troubleshooting

Problem	Probable fault location	Solution
Meter is not accurate	Knurled wheel slip	Fit the cable into the guide slot and hook.
	not set to zero	Press green button to set zero.
No image	Cable connection is faulty or loose	Check cable connection, clean, and reconnect if necessary
	Camera connector is soiled	Clean the camera connector
	Wrong SD memory card	Turn off power and replace SD card
	Wrong setting	Enter the setup menu and select reset
DVR Cannot boot	No power	Recharge
	Transient short circuit in the cable causes the battery short circuit for protection.	Recharge the DVR more than 2 hours with adaptor or car-charger to activate the battery.
Cannot input Characters	The wireless keyboard low battery	Change battery
	Wireless Keyboard or Receiver is faulty	Check the Keyboard Receiver and the keyboard on a PC
The deviation of Meter Count is more than 0.5%	select the wrong total length	Re-select the correct total length. You can press F2 key when the machine boots within 5 sec to enter the background to select it.
	Pull out the cable more than 3 meters before turning on the system.	Turn on the system before pulling out the push cable from the cable reel.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation. Any changes or modification not approved by the party responsible for compliance could void the

CE This product complies with standards including Low Voltage Device Directive 73/ 23/EEC;

EMC Directive 89/ 336/EEC. It passed the subject tests by the authority concerned and is authorized to bear CE mark.



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