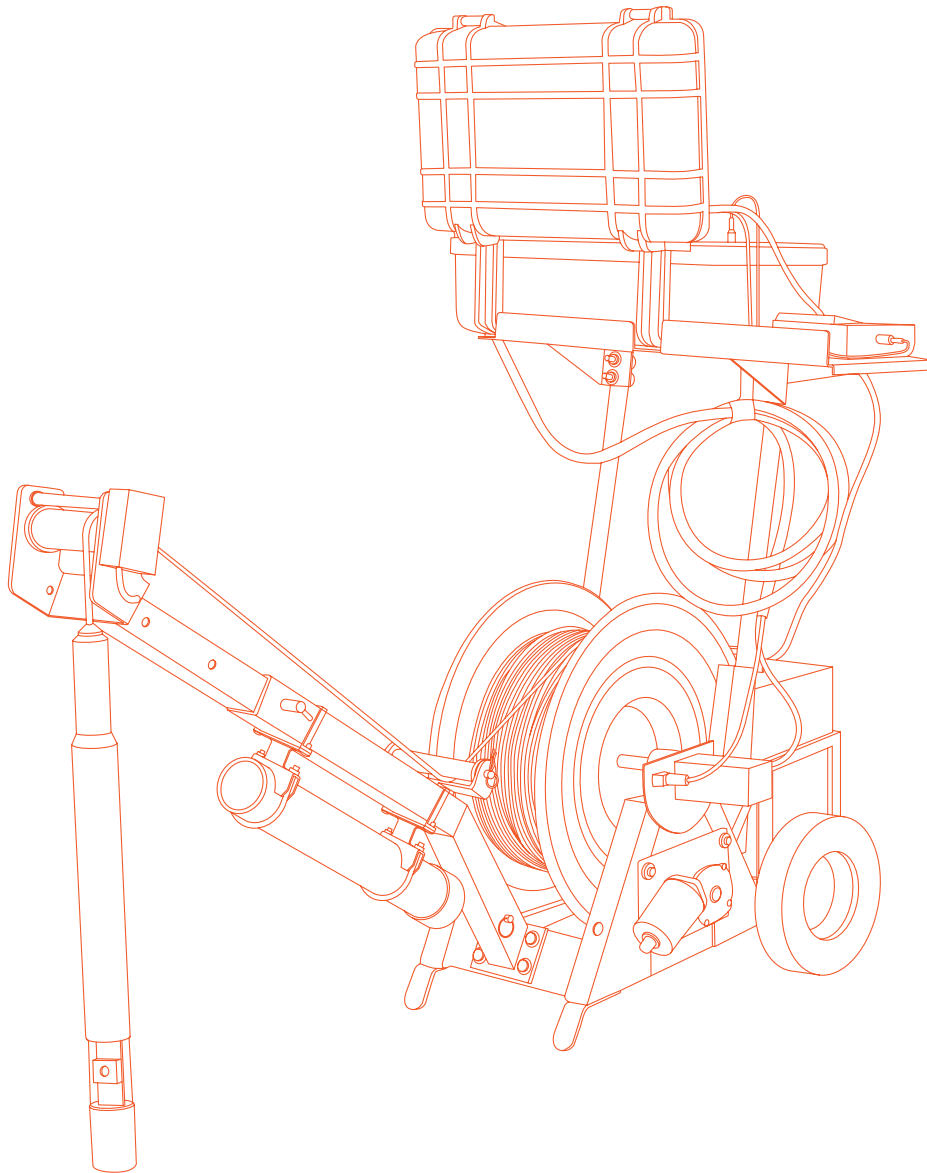




**STRATACAM™**  
BOREHOLE CAMERA

# Operations Manual

Edition 3.0



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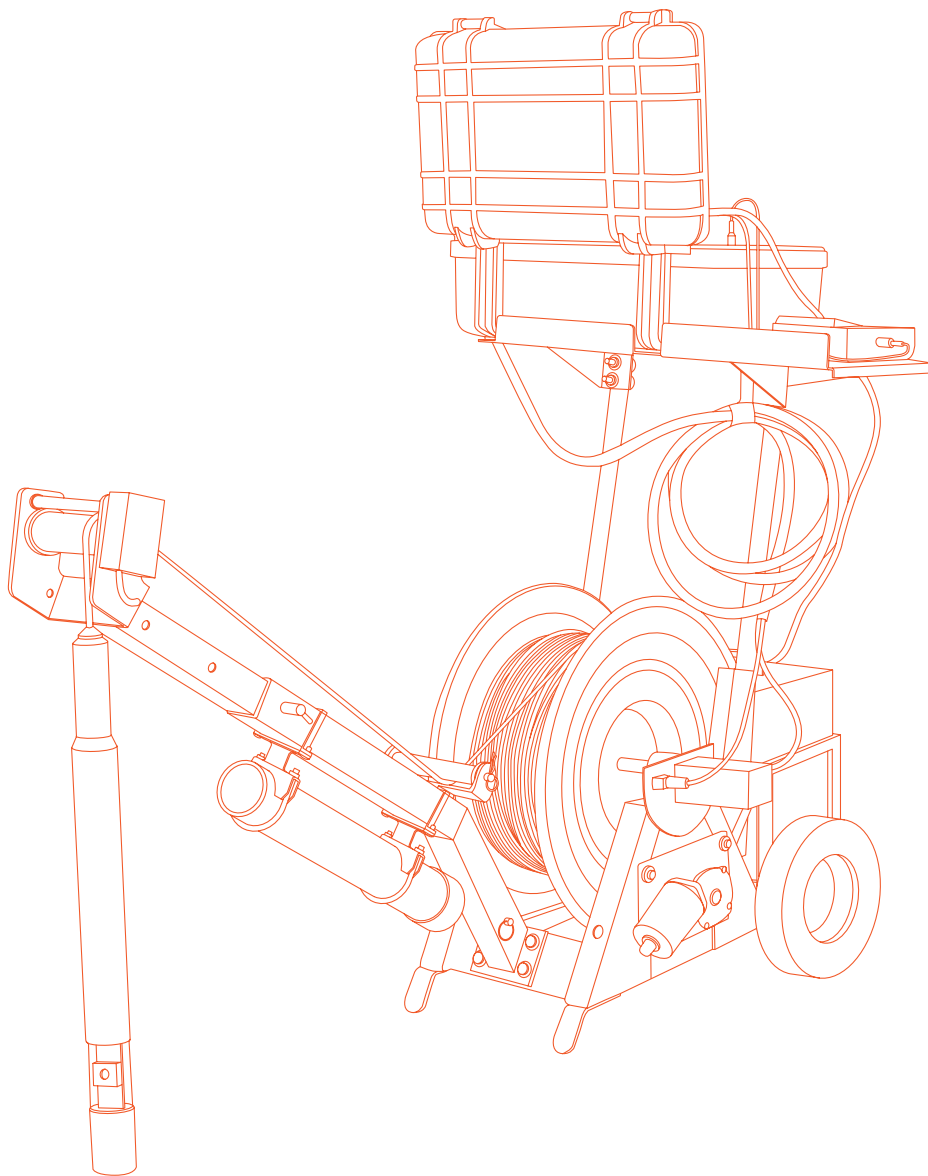
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# Chapter 1

## Introduction



## Overview

This section gives an overview of the StrataCam™ Borehole Camera, a list of all the components included and overviews of the StrataCam™ Borehole Camera and the StrataCam™ Control Box.

### 1.1 Congratulations On Your Purchase

Congratulations on your purchase of a StrataCam™ Borehole Camera system. This Operations Manual provides instructions on the use of the camera and the hardware supplied with it.

### 1.2 Ensuring That All StrataCam™ Hardware Has Been Received

**NOTE:** Images and details of these hardware components are presented in **Chapter 2**.

1. StrataCam™ Cable Unit
2. StrataCam™ Cable Unit - Mounting Plate
3. StrataCam™ Cable Unit - Nuts and Bolts
4. StrataCam™ Cable Unit - Power and Control Cable
5. StrataCam™ Battery
6. StrataCam™ Battery - Power Adapter
7. StrataCam™ Battery - Power Cable
8. StrataCam™ Battery - Alternate Power Cable
9. StrataCam™ Camera
10. StrataCam™ Camera - Centralizer
11. StrataCam™ Camera - Bag
12. StrataCam™ Control Box
13. StrataCam™ Control Box - Monitor
14. StrataCam™ Control Box - Monitor Hood (If you have purchased the Video Capture Upgrade, this item will be for the Laptop, not the Control Box)
15. StrataCam™ Control Box - Monitor Remote and Manual
16. StrataCam™ DVD Recorder (If you have purchased the Video Capture Upgrade, this item will not be present)
17. StrataCam™ DVD Recorder - Power Cable (If you have purchased the Video Capture Upgrade, this item will not be present)
18. StrataCam™ DVD Recorder - Video Cable
19. StrataCam™ Battery Mount
20. StrataCam™ Camera Hangers
21. StrataCam™ Camera Tube

#### Video Capture Upgrade Components

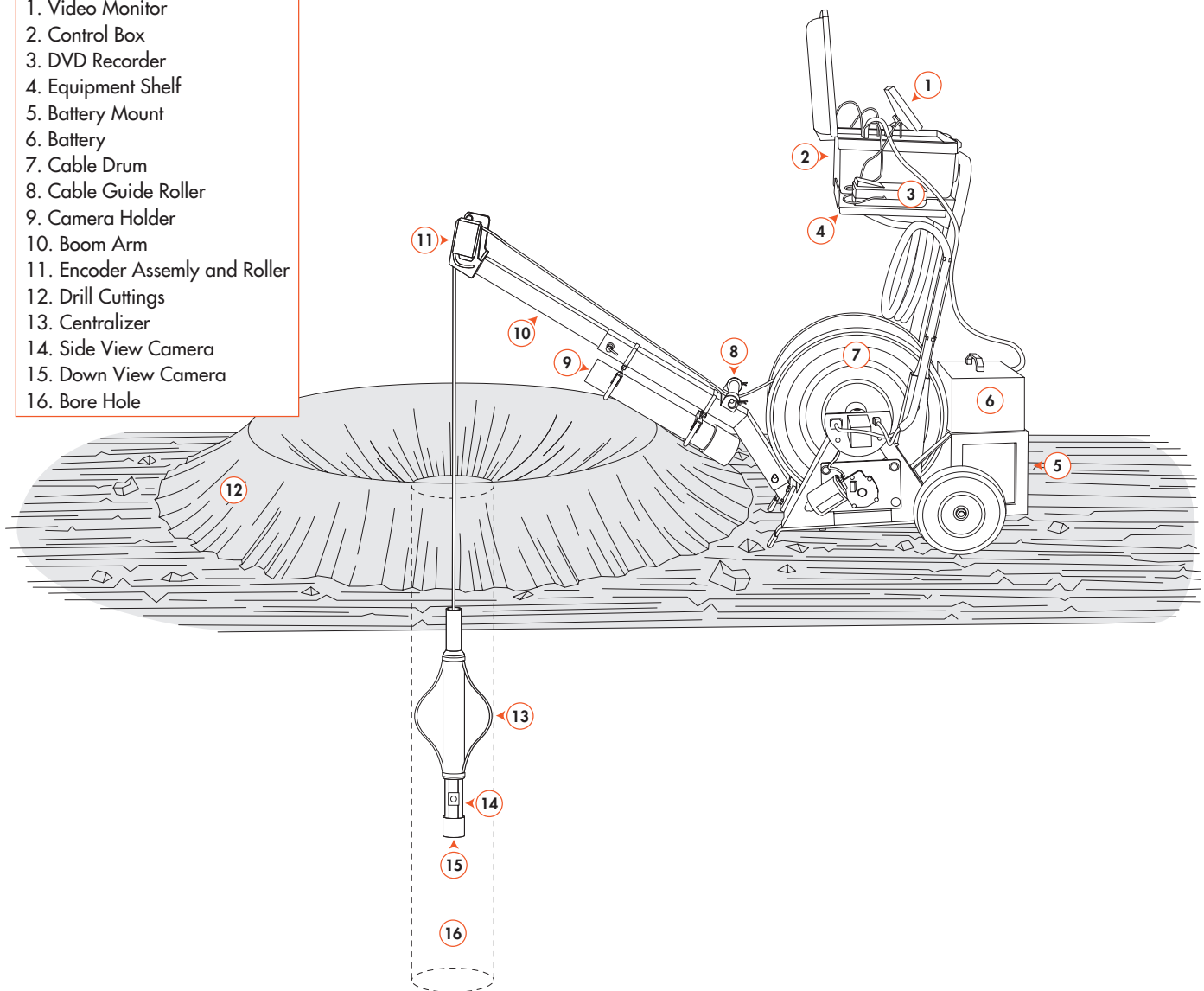
22. StrataCam™ Laptop Plate
23. StrataCam™ Laptop
24. StrataCam™ Video Capture Box

Please check that all of the above components are accounted for before proceeding further in the manual. If a component is not present, please contact **MREL Group of Companies Limited**.



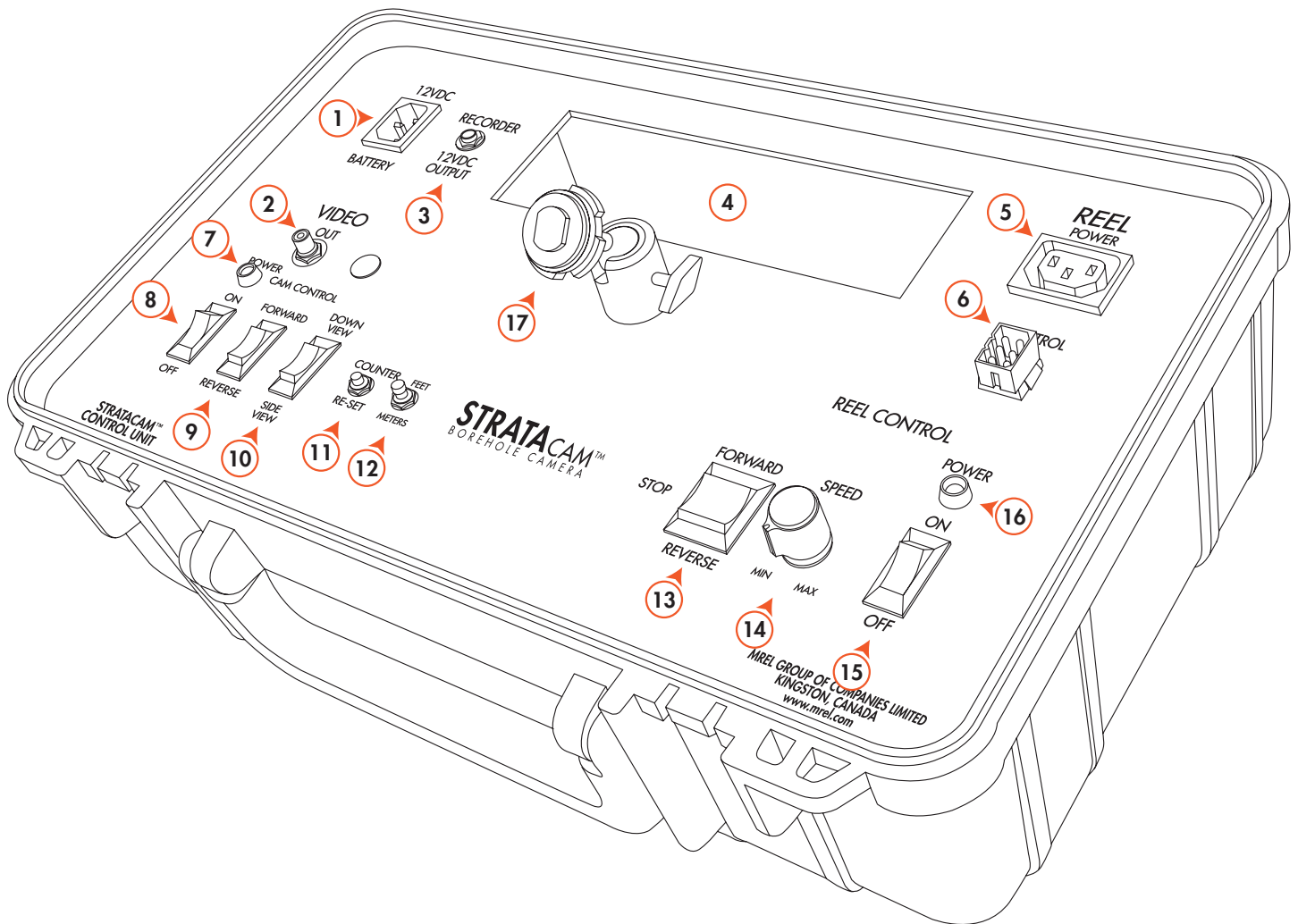
## 1.3 StrataCam™ Borehole Camera Overview

1. Video Monitor
2. Control Box
3. DVD Recorder
4. Equipment Shelf
5. Battery Mount
6. Battery
7. Cable Drum
8. Cable Guide Roller
9. Camera Holder
10. Boom Arm
11. Encoder Assembly and Roller
12. Drill Cuttings
13. Centralizer
14. Side View Camera
15. Down View Camera
16. Bore Hole



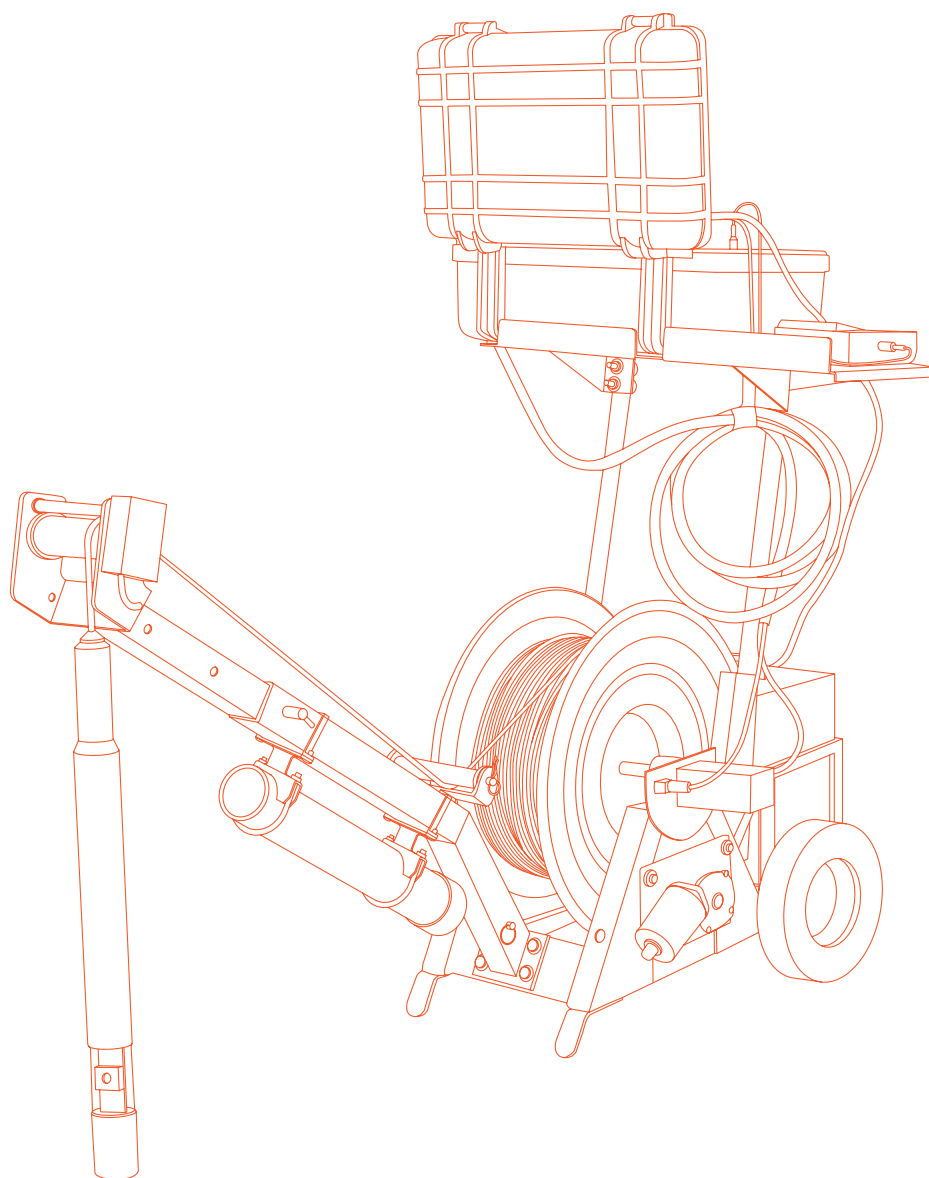
## 1.4 StrataCam™ Control Box Overview

1. 12 VDC Power Connection from Battery Pack
2. Video Signal output connection to DVD Recorder
3. 12 VDC power out to DVD Recorder
4. LCD Colour Video Monitor Storage Well and LCD Monitor Connection Cable
5. Motor Power and Control Connection to Reel Assembly
6. Control Function, Video, and Depth Encoder connection to Reel Assembly
7. Camera and Control Unit Power On Indicator Lamp
8. Camera and Control Unit Power ON/OFF Switch
9. Camera Rotation FORWARD-REVERSE Switch
10. Camera DOWN VIEW/SIDE VIEW Selector Switch
11. Depth COUNTER RE-SET Switch
12. Measurement Unit FEET/METERS Switch
13. Reel Assembly Motor drive FORWARD-REVERSE Switch
14. Reel Assembly Motor drive Speed Control Knob
15. Reel Assembly Motor drive Power ON/OFF Switch
16. Reel Assembly Motor drive Power ON Indicator Lamp
17. LCD Colour Video Monitor Mounting Adapter



## Chapter 2

### Hardware Components



## Overview

This Chapter describes all of the hardware components provided with the StrataCam™ Borehole Camera.

### 2.1 StrataCam™ Cable Unit

The Cable Unit of the unit houses the cable, electric reeling motor and the depth encoder. The unit has its **Boom Arm** rotated into its compact travel/storage position but can be rotated to extend out over the borehole.

The large wheels are designed to assist the operator in moving the **StrataCam™ Borehole Camera** around the mine site from hole to hole.



#### 2.1.1 StrataCam™ Cable Unit - Mounting Plate

The **Mounting Plate** attaches to the **StrataCam™ Cable Unit** at working height to provide a comfortable platform for the **StrataCam™ Control Box** and **DVD Recorder**.



#### 2.1.2 StrataCam™ Cable Unit - Nuts and Bolts

The mounting hardware is used to connect the **Mounting Plate** to the **Cable Reel**. Also included in the bag, are the **Fuse** for the **StrataCam™ Battery** and the **Small Screws** for the **StrataCam™ Centralizer**.



#### 2.1.3 StrataCam™ Cable Unit - Power and Control Cable

This cable connects the **Cable Reel** to the **StrataCam™ Control Box**. It provides power and communication between the two units.



## 2.2 StrataCam™ Battery

The **StrataCam™ Battery** is a **12-Volt DC** power source for the unit to operate independently.



### 2.2.1 StrataCam™ Battery - Power Adapter

The **Power Adapter** is used to charge the **StrataCam™ Battery** from an **AC** power source. The adapter is compatible with **100-240 VAC** and **50-60Hz** power sources.



### 2.2.2 StrataCam™ Battery - Power Cable

This cable provides power from the **Battery** to the **StrataCam™ Control Box** to power the unit.



### 2.2.3 StrataCam™ Battery - Alternate Power Cable

This cable can be connected to a **12VDC** power source, such as an automotive battery, to power the **StrataCam™ Borehole Camera** from a vehicle.



## 2.3 StrataCam™ Camera

The **StrataCam™ Camera** connects to the end of the cable on the **Cable Reel** to be lowered down the borehole. The unit has two cameras, one which rotates to view the sides of the borehole, and one looking downward. Each camera has its own independent **LED Light Source** to illuminate the target. The **StrataCam™ Camera** can be operated from temperatures **0°C - 60°C (32°F - 140°F)**.



### 2.3.1 StrataCam™ Camera - Centralizer

The **Centralizer** slip over the **StrataCam™ Camera** and are adjustable to fit within borehole diameters from **4" - 16" (100 mm - 406 mm)**. The **Centralizer** provide stability to the images captured by the **StrataCam™ Borehole Camera** and also protect the camera from side impact.



### 2.3.2 StrataCam™ Camera - Bag

The **Camera Bag** is used to protect the **StrataCam™ Camera** when it is not in use.



## 2.4 StrataCam™ Control Box

The **StrataCam™ Control Box** is the operator's interface with the **StrataCam™ Borehole Camera**. It controls the **Cable Reel** to lower or raise the **StrataCam™ Camera**. The unit allows the user to switch between camera views, and therefore which image is being recorded to the

**DVD Recorder**. The position of the camera is displayed on the screen with the appropriate user-selected units of measurement (feet or metres). The location of the camera is displayed relative to the to the location at which the user reset the depth-counter to zero.

It is recommended to reset the depth-counter to zero when the camera is positioned at the top of the borehole. This will provide an accurate display of the camera depth at all times.



### 2.4.1 StrataCam™ Control Box - Monitor

This is the main display for the **StrataCam™ Borehole Camera**. It is stored in the storage well inside the **StrataCam™ Control Box**.



### 2.4.2 StrataCam™ Control Box - Monitor Hood

This cover is affixed to the **StrataCam™ Control Box Monitor** with the provided velcro fasteners, and provides shade to the monitor for ease of use in direct sunlight or bright conditions.

If you have purchased the **StrataCam™ Video Capture Upgrade**, you will receive a different Monitor Hood which is used on the **StrataCam™ Video Capture Laptop**.



### 2.4.3 StrataCam™ Control Box - Monitor Remote and Manual

The **Remote and Manual** for the **StrataCam™ Control Box Monitor** are included with the unit to describe all of the functions of the monitor, and to allow for ease of use with the **Control Box Monitor Hood** installed.



## 2.5 StrataCam™ DVD Recorder

The **DVD Recorder** is an important component of the **StrataCam™ Borehole Camera**. This unit allows the operator to record the images that are displayed on the **Control Box Monitor** in realtime. Instructions on using the **StrataCam™ DVD Recorder** are included in **Section 4.1.3**.

If you purchased the **StrataCam™ Video Capture Upgrade**, then this item will not be present.



### 2.5.1 StrataCam™ DVD Recorder - Power Cable

This cable is connected to the **StrataCam™ Control Box** and the **DVD Recorder** to provide power to the **DVD Recorder** unit.

If you purchased the **StrataCam™ Video Capture Upgrade**, then this item will not be present.



### 2.5.2 StrataCam™ DVD Recorder - Video Cable

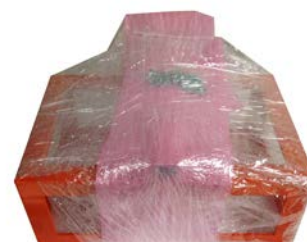
The **Video Cable** connects the **StrataCam™ Control Box** to the **DVD Recorder** to transmit the video signal from the screen to the **DVD Recorder**.



## 2.6 StrataCam™ Battery and Camera Mounts

### 2.6.1 StrataCam™ Battery Mount

The **Battery Mount** attaches to the **StrataCam™ Cable Unit** to provide storage for the **StrataCam™ Battery**. Shown to the left packaged with the required nuts and bolts.



## 2.6.2 StrataCam™ Camera Mount and Tube

The **Camera Mount** attaches to the **StrataCam™ Boom Arm** to provide a storage for the **StrataCam™ Camera**. Shown to the left packaged with the required nuts and bolts as well as the **StrataCam™ Camera Tube** needed to hold the Camera



## 2.7 StrataCam™ Video Capture Upgrade Components

### 2.7.1 StrataCam™ Laptop Mount

The **Laptop Mount** attaches to the **Mounting Plate** to provide a platform for the **Video Capture Laptop**.



### 2.7.2 StrataCam™ Video Capture Laptop

The **StrataCam™ Video Capture Laptop** is used in conjunction with the **StrataCam™ Video Capture box** to record the video taken by the **StrataCam™**.



### 2.7.2 StrataCam™ Video Capture Box

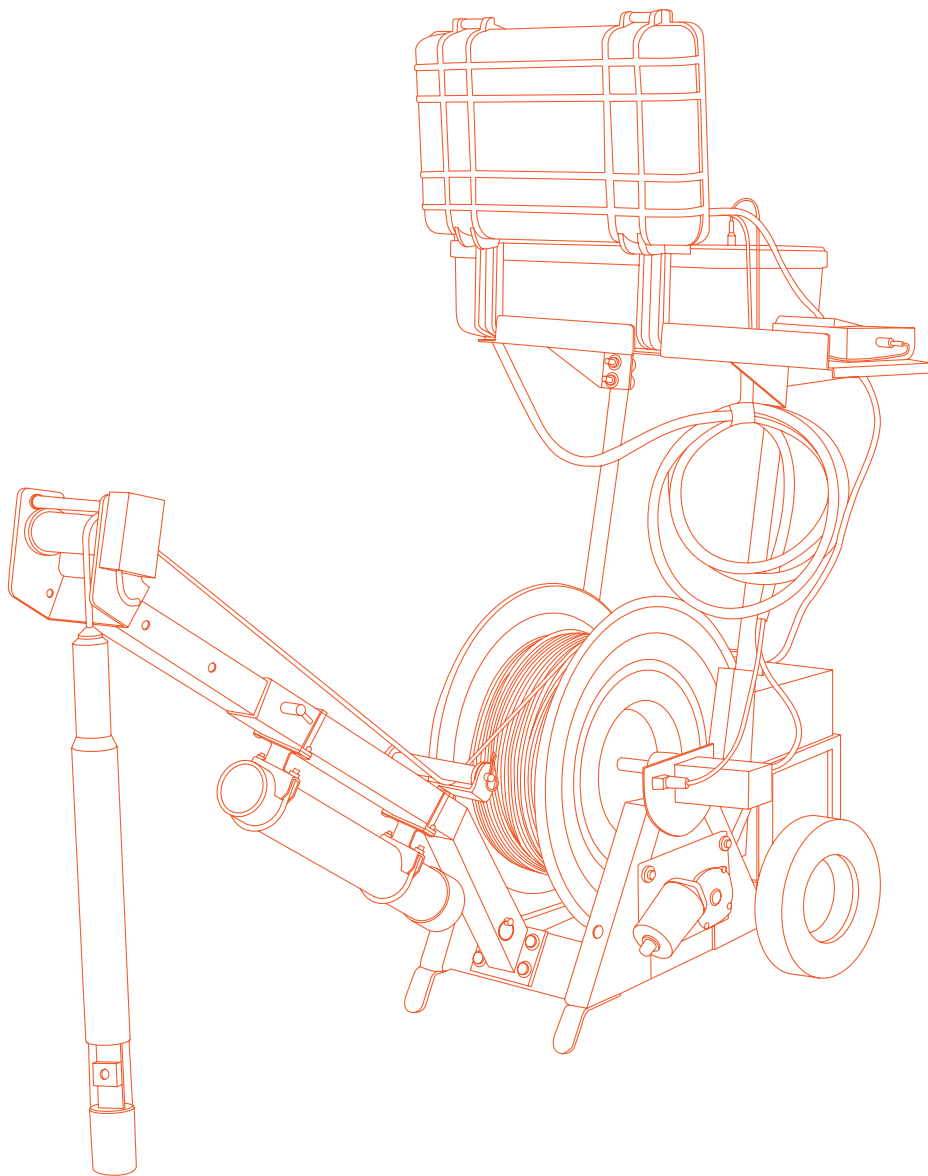
The **StrataCam™ Video Capture Box** is located in the lid of the **StrataCam™ Control Box** and in conjunction with the **StrataCam™ Video Capture Laptop** is used to record video taken by the **StrataCam™**.





## Chapter 3

### Setting Up the StrataCam™



## Overview

This Chapter describes in detail setting up the StrataCam™ for the first time. This should be completed by the Operator before the StrataCam™ Borehole Camera goes into the field to ensure all of the components have been received and that the StrataCam™ Borehole Camera is ready for use.

### 3.1 StrataCam™ Setup

#### 3.1.1 StrataCam™ Battery Setup - Insert Fuse

Place the **Fuse** into the **Battery** as shown to the right in **Figure 1**. The **Fuse** is in the bag of **Nuts and Bolts** as shown in **Section 2.1.2**. The **StrataCam™ Battery** is equipped with a **Digital Volt Meter Display** that will not operate unless the **Fuse** is installed.

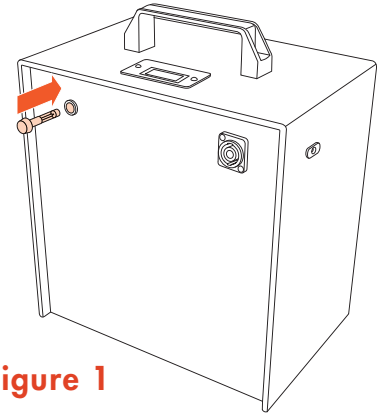


Figure 1

#### 3.1.2 StrataCam™ Battery Setup - Recharge

Recharge the **Battery** as shown to the right in **Figure 2**, using the **StrataCam™ Battery Power Adapter** shown in **Section 2.2.1** for **24 hours** before use. The **Battery** will not charge if the **Fuse** is not installed.

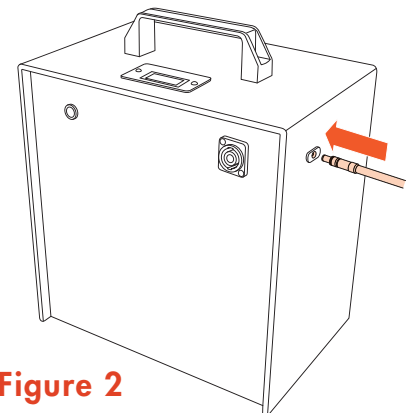


Figure 2

**STOP**

Ensure that the **Battery** has been recharged for the full **24 hours** before using the **StrataCam™**.

#### 3.1.3 StrataCam™ Cable Unit Setup - Boom Arm Repositioning

Pull out the pin as marked in **Figure 3** below and rotate the now free **Boom Arm** to the position show in **Figure 4**. Replace the pin into the **Boom Arm**, fixing it on to the main **StrataCam™** body.

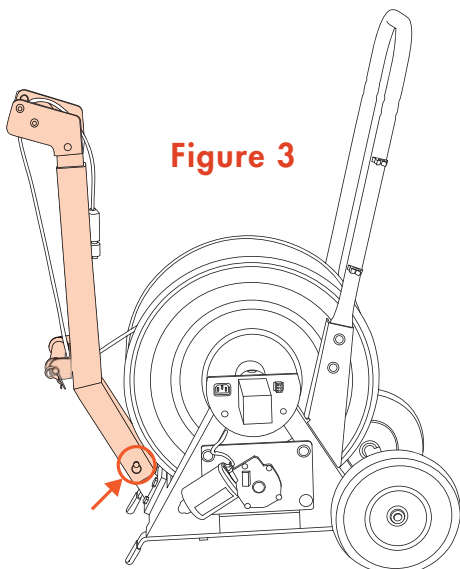


Figure 3

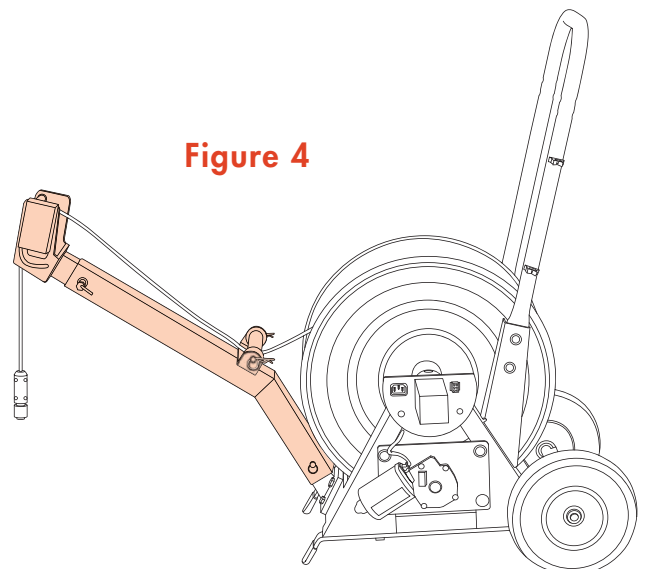


Figure 4

### 3.1.4 StrataCam™ Cable Unit Setup - Mounting Plate

Mount the **Mounting Plate** onto the **StrataCam™ Cable Unit** as shown to the right in **Figure 5**, using the **Nuts and Bolts** shown in **Section 2.1.2**. Be sure to use 2 washers on either side when mounting, as shown in the small close up.

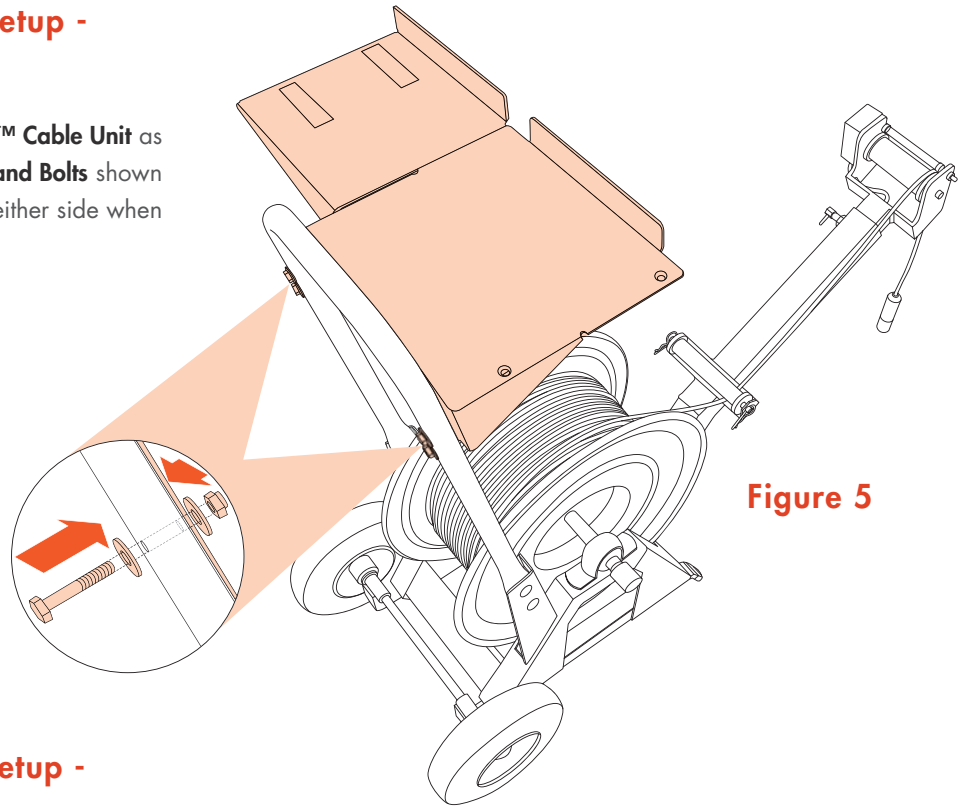


Figure 5

### 3.1.5 StrataCam™ Cable Unit Setup - DVD Recorder

Remove the **StrataCam™ DVD Recorder** from its packaging and place it on the **Mounting Plate** as shown to the right in **Figure 6**, lining up the velcro to secure it onto the **Mounting Plate**.

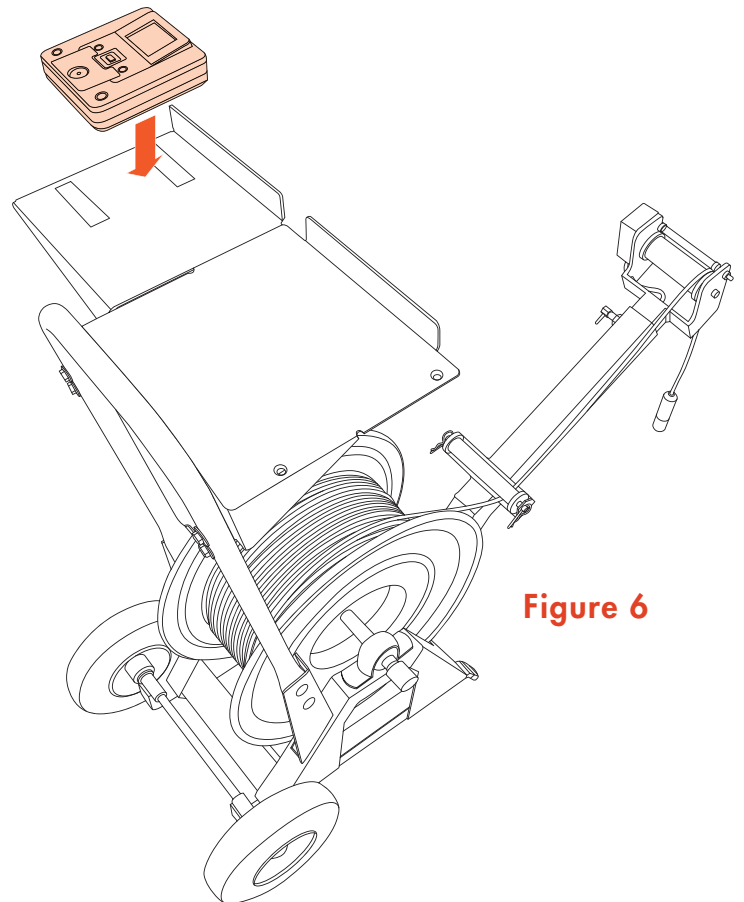
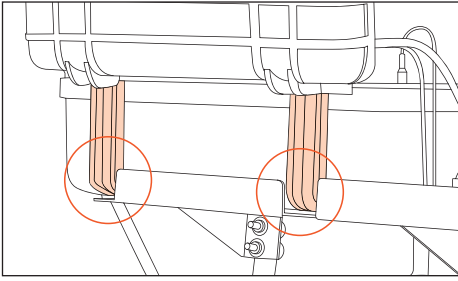


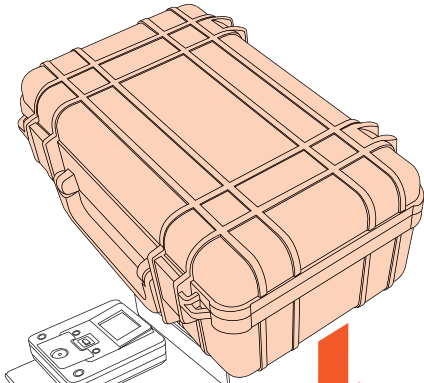
Figure 6



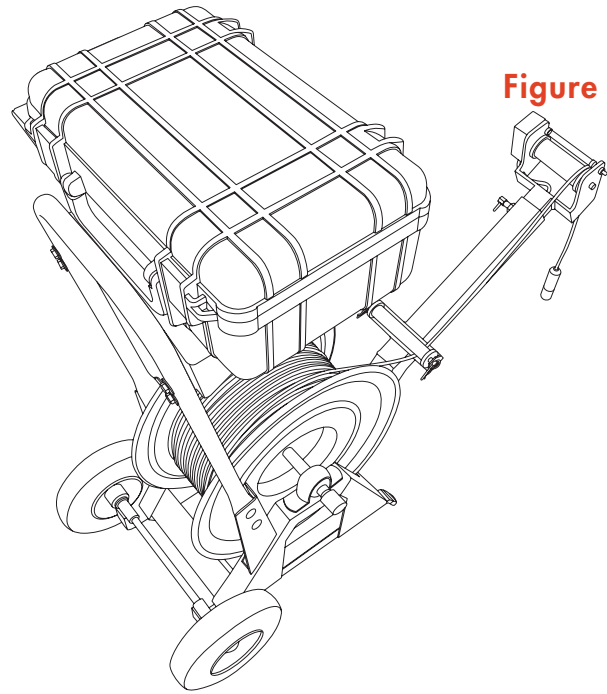
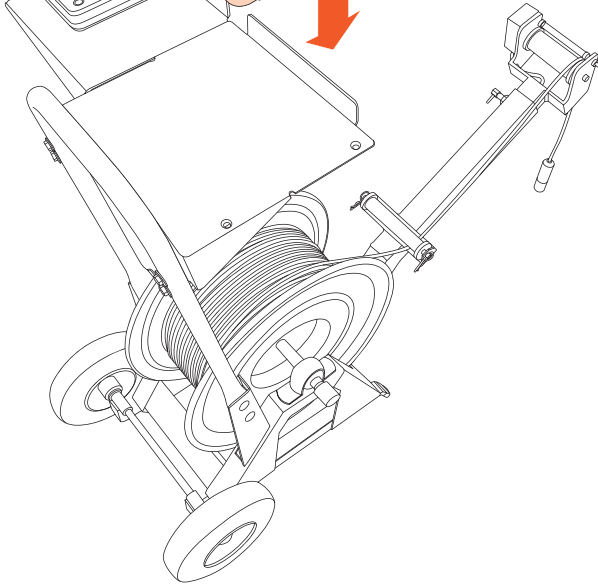
### 3.1.6 StrataCam™ Cable Unit Setup - Control Box

Place the **StrataCam™ Control Box** on the **Mounting Plate** as shown to the left in **Figure 7**, lining up the back of the **StrataCam™ Control Box** with the gaps in the **Mounting Plate**, as shown in the small close up. When complete, your **StrataCam™ Borehole Camera** will look like **Figure 8**.

**NOTE:** Line up the back of the **StrataCam™ Control Box** with the gaps in the **Mounting Plate**. This will ensure the **Control Box** provides enough space for the Operator to use the **StrataCam™ Cable Unit Handle** effectively to transport the unit.



**Figure 7**

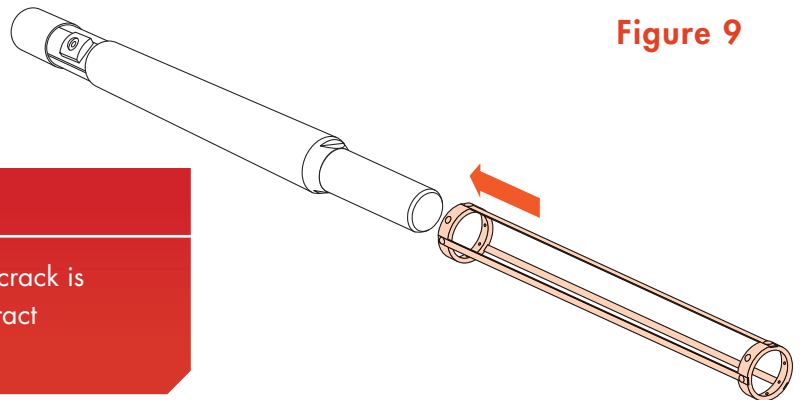


**Figure 8**

## 3.2 StrataCam™ Camera Setup

### 3.2.1 StrataCam™ Camera Setup - Centralizer

Slide the **StrataCam™ Camera Centralizer**, highlighted in **Figure 9**, on to the **StrataCam™ Camera**.



**Figure 9**

## STOP

Inspect the camera before using for any cracks. If a crack is found, do not use the **StrataCam™ Camera** and contact **MREL Group of Companies Limited**.

### 3.2.2 StrataCam™ Camera Setup - Centralizer

Position the **Centralizer** on the **StrataCam™ Camera** just above the **Side View Port**. Once the **Centralizer** is in position, secure the portion of the **Centralizer** closest to the **Side View Port** into position using the small screws from the **Nuts and Bolts** bag shown in **Section 2.1.2**.

**NOTE:** Ensure that the **Centralizer** is mounted above the **Side View Camera** as shown in **Figure 10**.

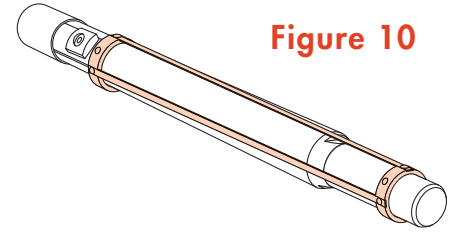


Figure 10

### 3.2.3 StrataCam™ Camera Setup - Camera Sheath

Unscrew the **StrataCam™ Camera Sheath** as highlighted in **Figure 11**.

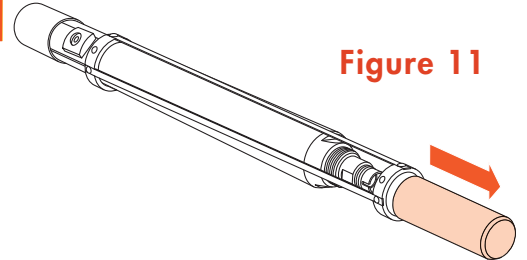


Figure 11

### 3.2.4 StrataCam™ Camera Setup - Camera Sheath

Locate the **Connection End** of the video cable hanging from the **Boom Arm** on the **StrataCam™ Cable Unit** and pass it through the **StrataCam™ Camera Sheath** as shown in **Figure 12**.

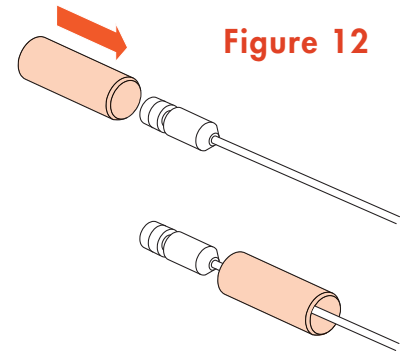


Figure 12

### 3.2.5 StrataCam™ Camera Setup - Connecting Camera

Before connecting the **StrataCam™ Camera** to the **Connection End** inspect the O-rings in both connectors to be sure they are clear of debris or any contamination. Also check for any wear or damage. The O-rings should also be lubricated on a regular basis. Use a **NEMA-Rated O-ring lubricant**.

Now connect the **Connection End** into the **StrataCam™ Camera**, as shown in **Figure 13**. The **Connection End** will fit only one way, and twist clockwise to secure the **StrataCam™ Camera** connection.

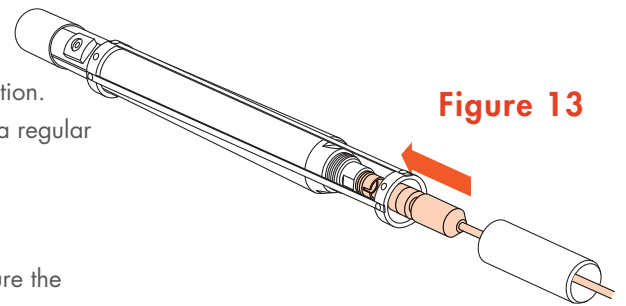


Figure 13

### 3.2.6 StrataCam™ Camera Setup - Reconnecting the Camera Sheath

Slide the **Camera Sheath** back down over the **Connection End** as shown in **Figure 14** and twist clockwise to secure it to the **Camera**.

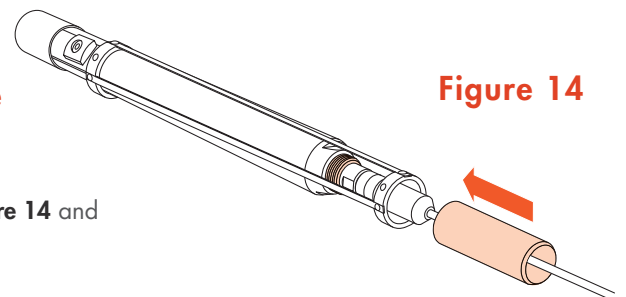
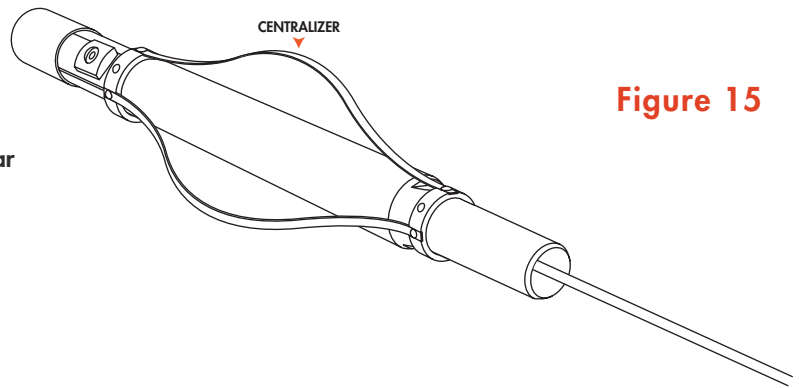


Figure 14

### 3.2.7 StrataCam™ Camera Setup - Centralizer

Position the **Upper Collar** on the **StrataCam™ Camera** so that the **Centralizer** (as marked in **Figure 15**) is extended to approximately ½ inch less than the diameter of the drill hole being inspected. Once in position, secure the **Upper Collar** to the **StrataCam™ Camera** with screws provided in the **Nuts and Bolts Bag** (**Section 2.1.2**).

Your **StrataCam™ Camera** should now look like **Figure 15**.

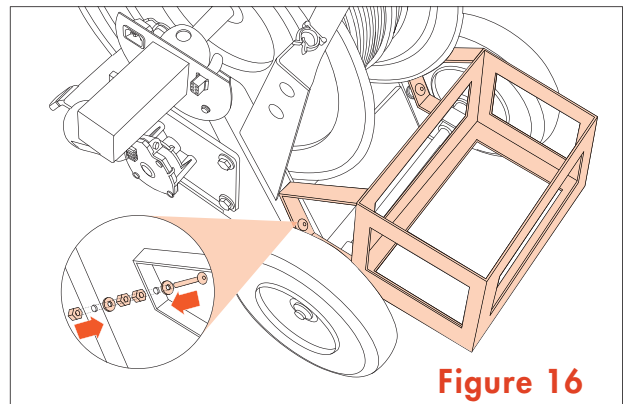


**Figure 15**

## 3.3 StrataCam™ Battery Mount and Camera Mount

### 3.3.1 StrataCam™ Battery Mount

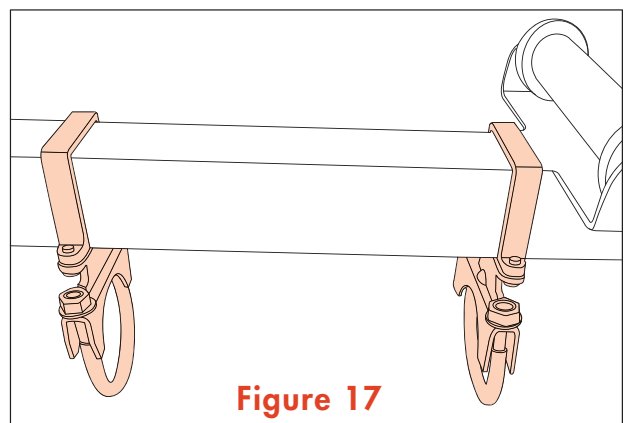
Mount the **Battery Mount** onto the **StrataCam™ frame** as shown to the right in **Figure 17**, using the **Nuts and Bolts** shown in **Section 2.1.2**. Be sure to use 2 washers on either side when mounting, as shown in the small close up.



**Figure 16**

### 3.3.2 StrataCam™ Camera Mounts

Mount the **Camera Mounts** onto the **StrataCam™ Boom Arm** as shown to the right in **Figure 18**, using the **Nuts and Bolts** shown in **Section 2.1.2**.



**Figure 17**

### 3.3.3 StrataCam™ Camera Tube

Place the **Camera Holder Tube** into the **Camera Mounts** as shown in **Figure 18**.

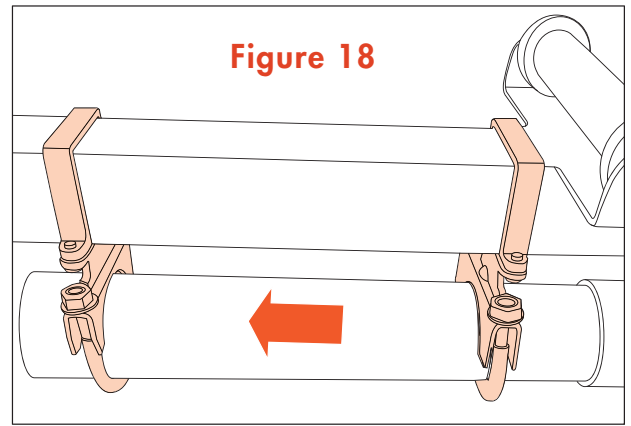


Figure 18

## 3.4 StrataCam™ Connections

If you have purchased the **Video Capture Upgrade**, start at **section 3.4.5** and then see **Section 3.8**.

### 3.4.1 StrataCam™ Connections - DVD Recorder Power

Connect the **StrataCam™ DVD Recorder Power Cable** shown in **Section 2.5.1**, to the power outlet on the **DVD Recorder** as shown in **Figure 19**.

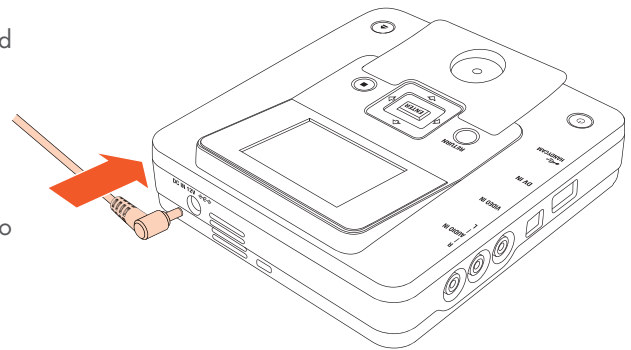


Figure 19

### 3.4.2 StrataCam™ Connections - Control Box Video Power

Connect the other end of the **DVD Recorder Power Cable** shown in **Section 2.5.1**, to the **RECORDER 12VDC OUTPUT** outlet on the **StrataCam™ Control Box** as shown in **Figure 20**.

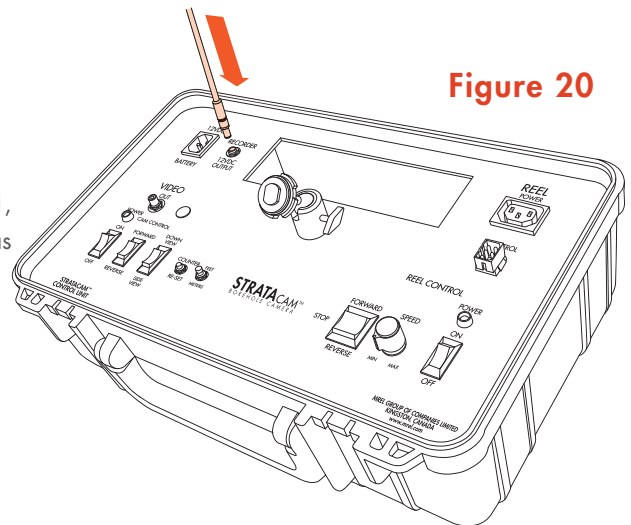


Figure 20

### 3.4.3 StrataCam™ Connections - DVD Recorder Video

Connect the **StrataCam™ DVD Recorder Video Cable** shown in **Section 2.5.2**, to the yellow **VIDEO** outlet on the **StrataCam™ DVD Recorder** as shown in **Figure 21**.

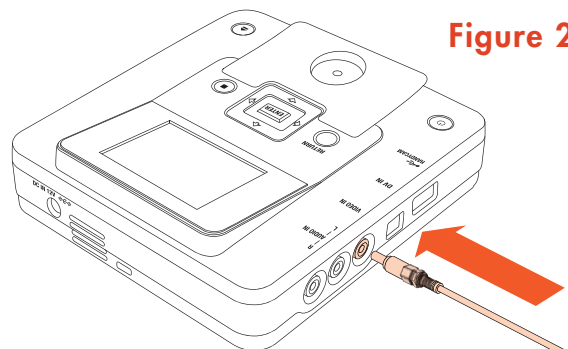


Figure 21

### 3.4.4 StrataCam™ Connections - Control Box Video Out

Connect the other end of **StrataCam™ DVD Recorder Video Cable** shown in **Section 3.5.2**, to the VIDEO OUT outlet on the **StrataCam™ Control Box** as shown in **Figure 22**.

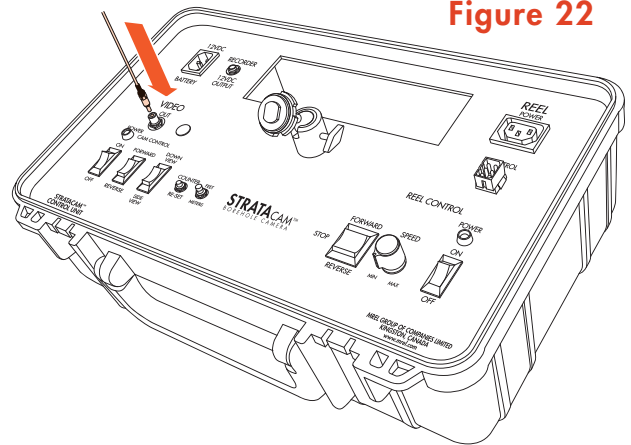


Figure 22

### 3.4.5 StrataCam™ Connections - Cable Unit Power

Connect the **Power Cable** of the **StrataCam™ Power and Control Cable** shown in **Section 2.1.3**, to the outlet on the **StrataCam™ Cable Unit** as shown in **Figure 23**.

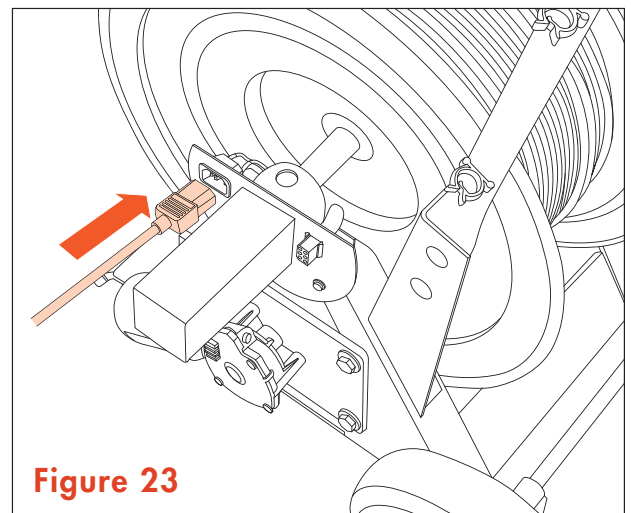


Figure 23

### 3.4.6 StrataCam™ Connections - Cable Unit Control

Connect the **Control Cable** of the **StrataCam™ Power and Control Cable** shown in **Section 2.1.3**, to the outlet on the **StrataCam™ Cable Unit** as shown in **Figure 24**.

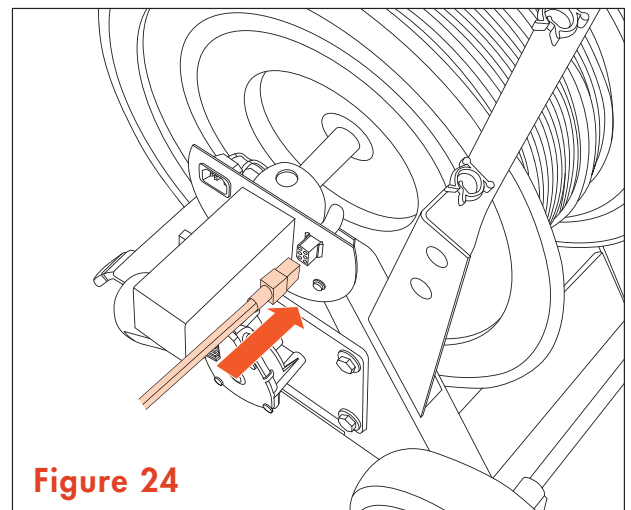


Figure 24



### 3.4.7 StrataCam™ Connections - Control Box Reel Power

Connect the other end of the **Power Cable** of the **StrataCam™ Power and Control Cable** shown in **Section 2.1.3**, to the **REEL POWER** outlet on the **StrataCam™ Control Box** as shown in **Figure 25**.

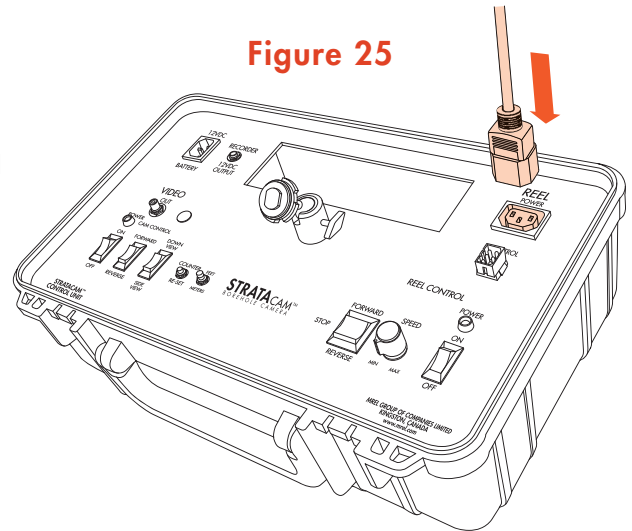


Figure 25

### 3.4.8 StrataCam™ Connections - Control Box Reel Control

Connect the other end of the **Control Cable** of the **StrataCam™ Power and Control Cable** shown in **Section 2.1.3**, to the **CONTROL** outlet on the **StrataCam™ Control Box** as shown in **Figure 26**.

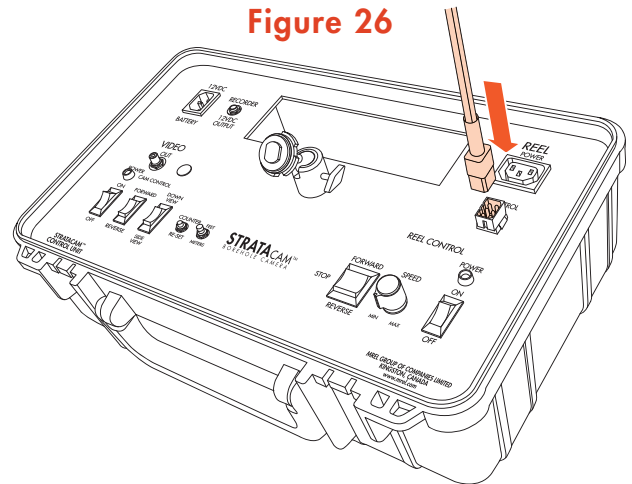


Figure 26

### 3.4.9 StrataCam™ Connections - Battery Power

Connect the **StrataCam™ Battery Power Cable** shown in **Section 2.2.2**, to the **StrataCam™ Battery** outlet on the **StrataCam™ Battery** as shown in **Figure 27**. The **Battery Power Cable** will only fit one way, and is disconnected by retracting the collar and twisting it counter-clockwise.

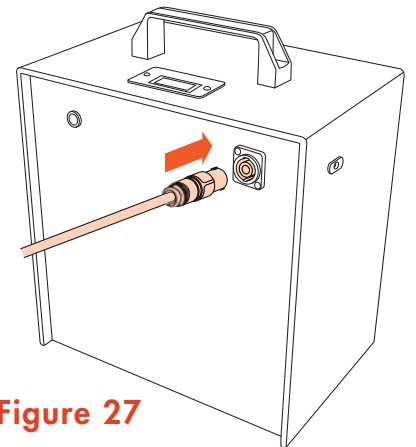


Figure 27

### 3.4.10 StrataCam™ Connections - Control Box Power

Connect the other end of **StrataCam™ Battery Power Cable** shown in **Section 2.2.2**, to the **12 VDC BATTERY** outlet on the **StrataCam™ Control Box** as shown in **Figure 28**.

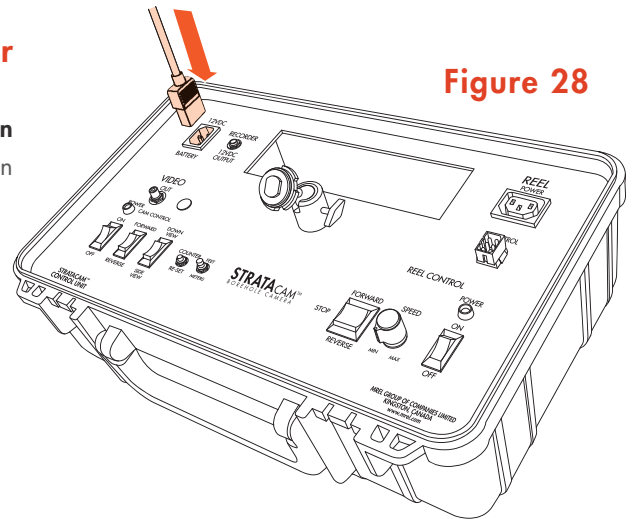


Figure 28

## 3.5 StrataCam™ Monitor Installation

### 3.5.1 StrataCam™ Monitor Installation - Mounting

Slide the **StrataCam™ Monitor** on to the **Monitor Arm** as shown in **Figure 29**. Use the small close up as a guide. Secure the **Monitor** by twisting the backing plate of the **Monitor Arm**, and tighten the **Ball Joint** so that the **Monitor** is oriented at a comfortable height and direction.

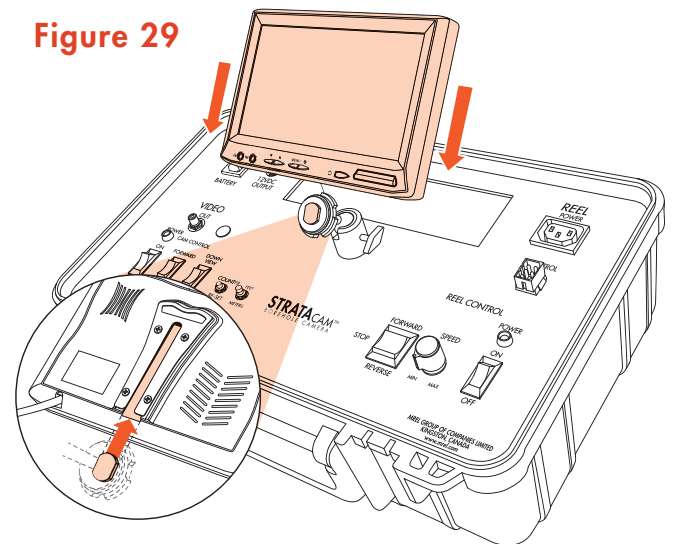


Figure 29

### 3.5.2 StrataCam™ Monitor Installation - Monitor Connection

Connect the cable coming out of the **Monitor** to the cable inside the **Storage Compartment** as shown in **Figure 30**. Use the small close up as a guide.

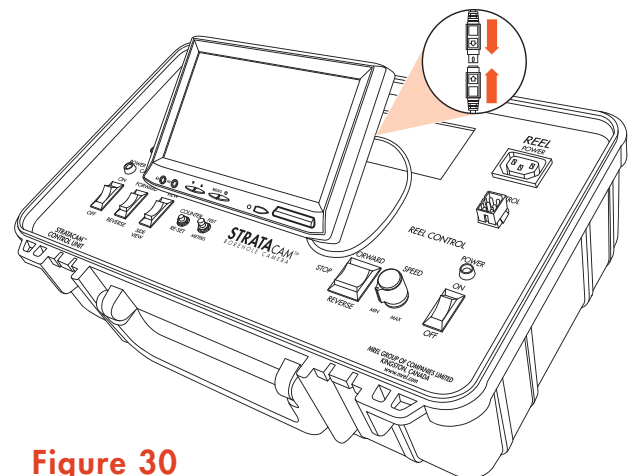
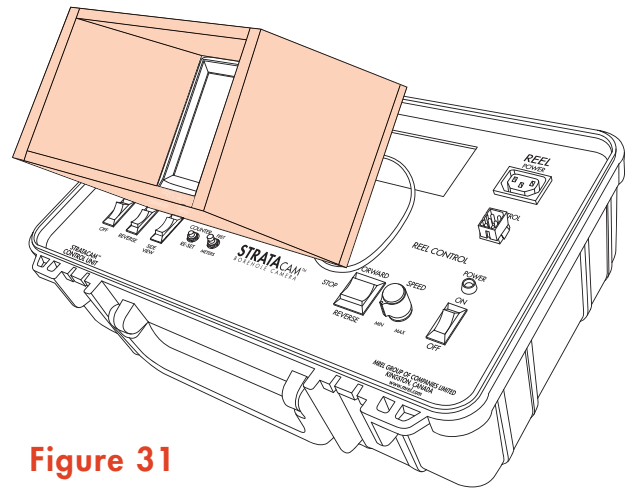


Figure 30

### 3.5.3 StrataCam™ Monitor Installation - Monitor Hood (Optional)

When using the **StrataCam™ Borehole Camera** in direct sunlight or bright areas, use the **Monitor Hood** to shield the **StrataCam™ Monitor** from light, as shown in **Figure 31**. The **Monitor Hood** is affixed to the **StrataCam™ Monitor** using velcro pads that are adhered to the back of the **StrataCam™ Monitor** by removing their plastic backings. These pads come already attached to the velcro on the **Monitor Hood**.

**NOTE:** Use of the **Monitor Hood** will inhibit the function of the buttons on the **StrataCam™ Monitor**. To adjust **Brightness**, **Contrast**, **Saturation**, and **Hue** settings with the **Monitor Hood** installed, use the **StrataCam™ Monitor Remote Control** enclosed in the **Monitor** packaging.



**Figure 31**

If you have purchased the **StrataCam™ Video Capture Upgrade** this item will be replaced with a hood for the **StrataCam™ Video Capture Laptop**.

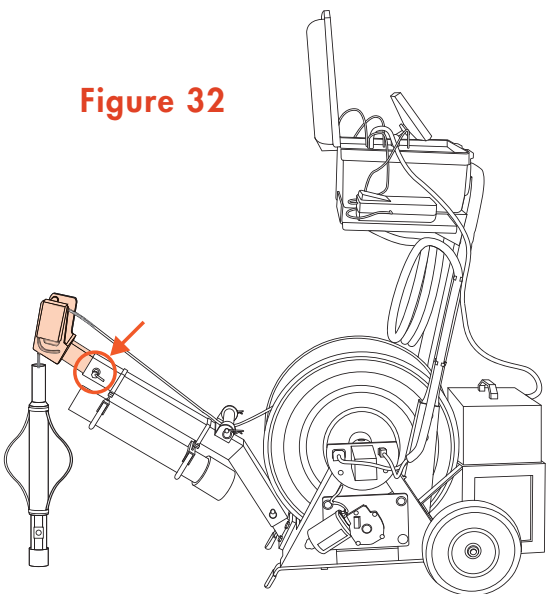
**The StrataCam™ Borehole Camera is now complete and ready to use.**

## 3.6 StrataCam™ Boom Arm Extension

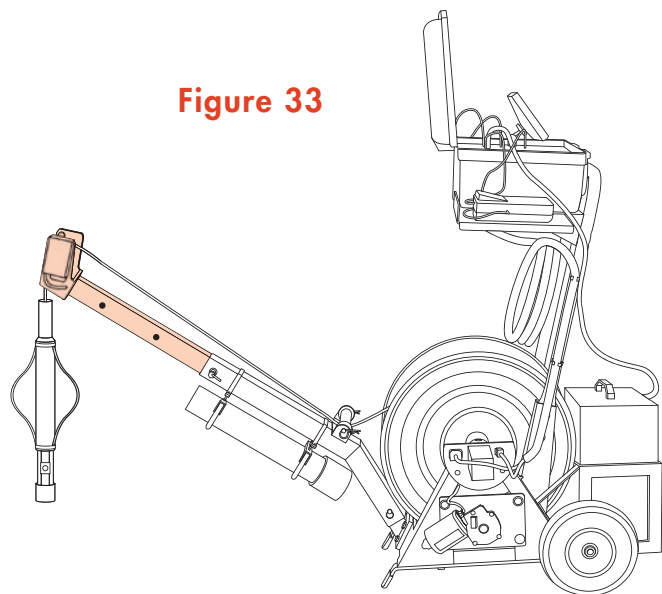
To extend the **Boom Arm**, retract the pin marked in **Figure 32**, and pull out the upper portion of the **Boom Arm** highlighted in **Figure 30**. The upper portion of the **Boom Arm** has holes corresponding to specific lengths that the it can be extended to. The **Boom Arm** can be extended as shown in **Figure 30**.

Once in the desired position, retighten the pin marked in **Figure 33**, making sure that the pin passes through the inner hole of the highlighted **Boom Arm**.

**Figure 32**



**Figure 33**



## 3.7 StrataCam™ Storage

When finished with the **StrataCam™ Borehole Camera**, unplug all of the cables from the each component, leaving the **StrataCam™ Control Box** and **StrataCam™ DVD Recorder** in place. Be sure to store all of the cables together with the **StrataCam™ Battery** for easy setup next time. Remove the **Monitor** and **Monitor Hood** (if used) and place inside the Storage well inside the **StrataCam™ Control Box**. Close the lid of the **StrataCam™ Control box**. Return the **Boom Arm** to the lowest position as shown in **Figure 32**. Your **StrataCam™ Borehole Camera** should now look like **Figure 34**.

Next remove the **StrataCam™ Camera** and place it inside the **StrataCam™ Camera Bag**.

### IMPORTANT

Keep the camera secure and protected at **all times**, and inspect for cracks every time you use it. Nearly all cracks occur during storage or transportation.

Remove the pin from the **Boom Arm** (recall **Figure 3**) and rotate the **Boom Arm** to its storage and transportation position as shown in **Figure 35**, and reinstall the pin.

The **StrataCam™ Borehole Camera** can now be safely stored ready for its next use.

Figure 34

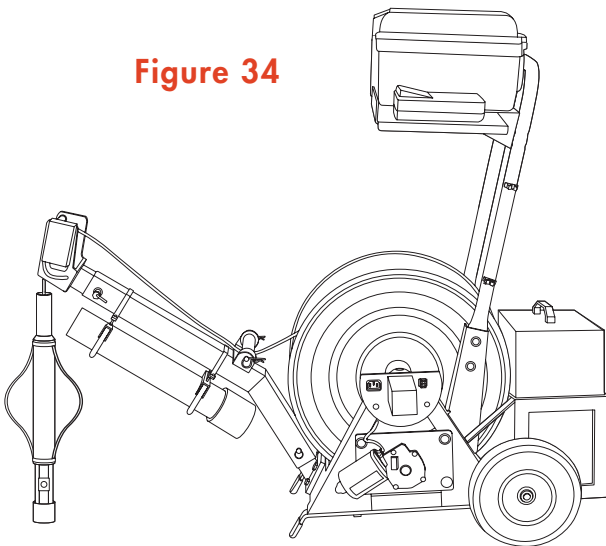
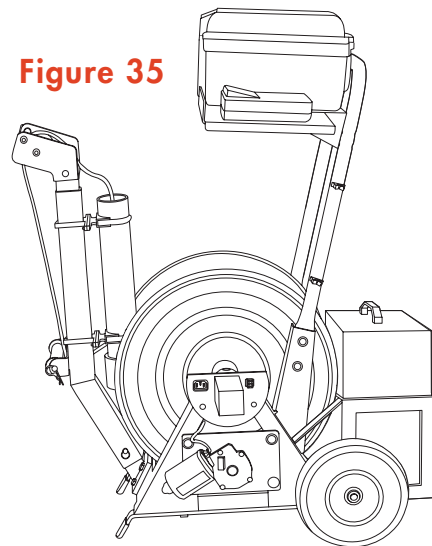


Figure 35



## 3.8 StrataCam™ Video Capture Upgrade

If you have purchased the **Video Capture Upgrade**, the connections for the additional components are as follows:

### 3.8.1 StrataCam™ Cable Unit Setup - Laptop Mounting Plate

Mount the **StrataCam™ Controller Laptop Mounting Plate** onto the **StrataCam™ Mount plate** as shown to the right in **Figure 36**, using the **Nuts and Bolts** shown in **Section 2.1.2**. View the close up for nut configuration.

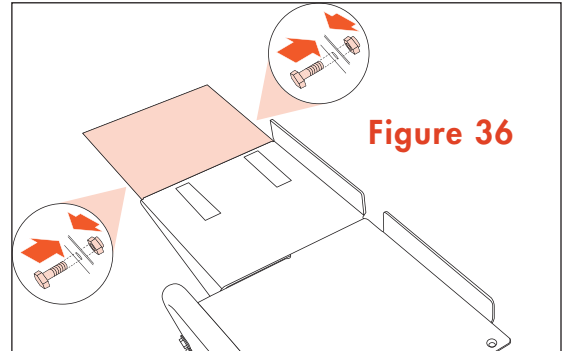


Figure 36

### 3.8.2 StrataCam™ Video Capture Laptop - Setup

Place the **StrataCam™ Controller Laptop** on attached **Laptop Mounting Plate** as shown in **Figure 37**.

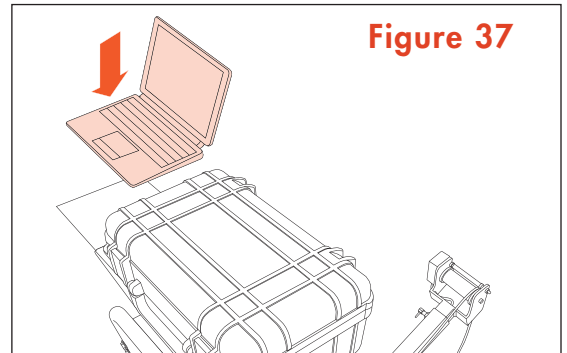


Figure 37

### 3.8.3 StrataCam™ Connections - Control Box Video Out

Connect the yellow **Video Out** wire from the **Video Capture Box** located in the **StrataCam™ Controller box lid** as shown in **Figure 38**.

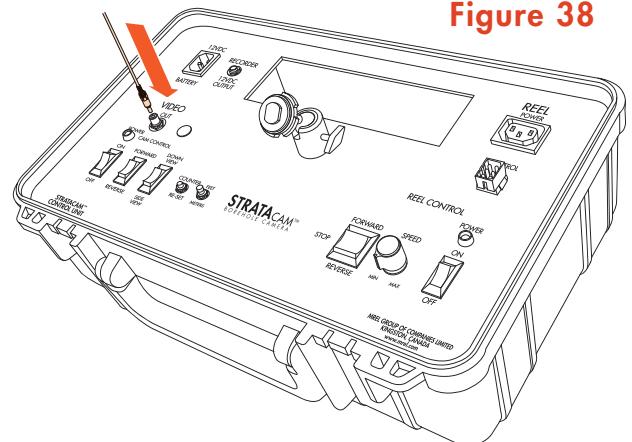


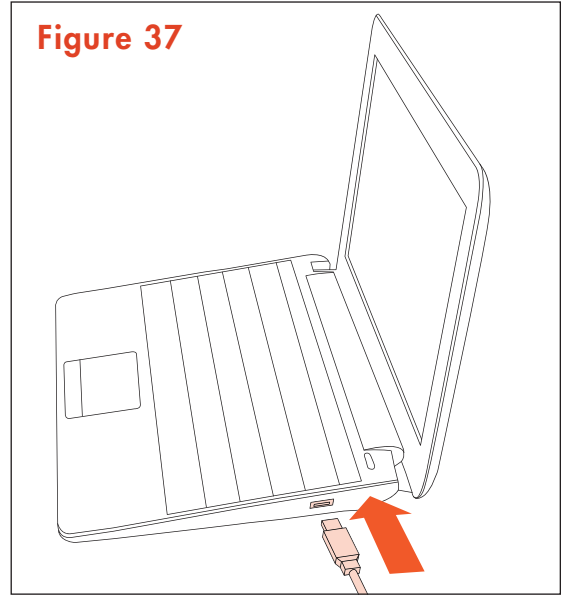
Figure 38

### 3.8.4 StrataCam™ Connections - Control Box USB Out

Connect the USB cable from the Video Capture Box located in the **StrataCam™ Controller box lid** into the **USB port** on the side of the **StrataCam™ Controller Laptop** as shown in **Figure 39**.

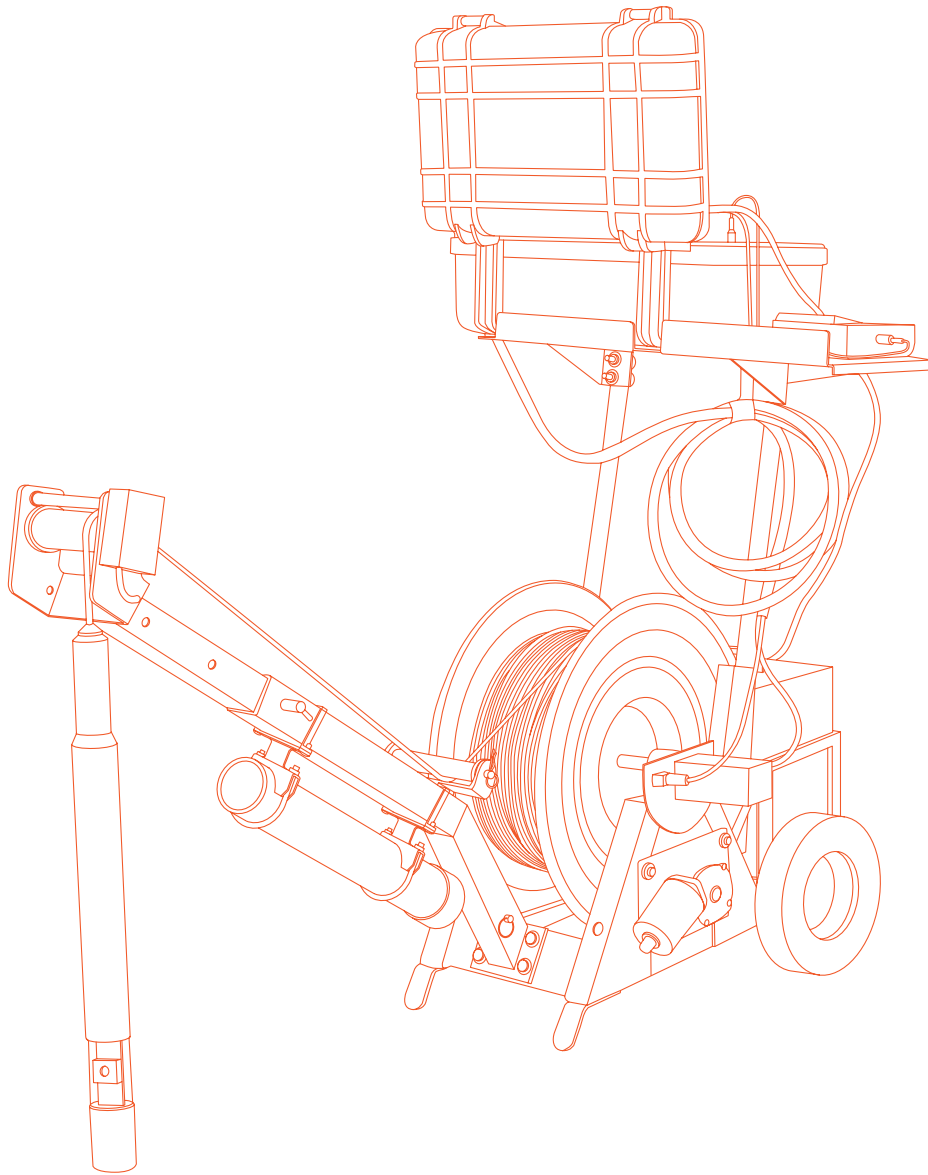
**The StrataCam™ Borehole Camera with Video Capture Upgrade is now complete and ready to use.**

**Figure 37**



## Chapter 4

### StrataCam™ Usage In The Field



## Overview

The StrataCam™ Borehole Camera is used to clearly view and accurately record the physical location of geological strata, weak/strong boundaries, ore/waste boundaries, coal seams, top of coal, water surface or ingress points, in-situ fractures, cavities, and irregularities. With the StrataCam™ Borehole Camera, you can make sure your Borehole is clean and ready for explosives without worry.

### 4.1 StrataCam™ Borehole Camera in the Field

#### 4.1.1 Positioning Your StrataCam™ Borehole Camera

Position the **StrataCam™ Borehole Camera** over the hole as shown in **Figure 31**.

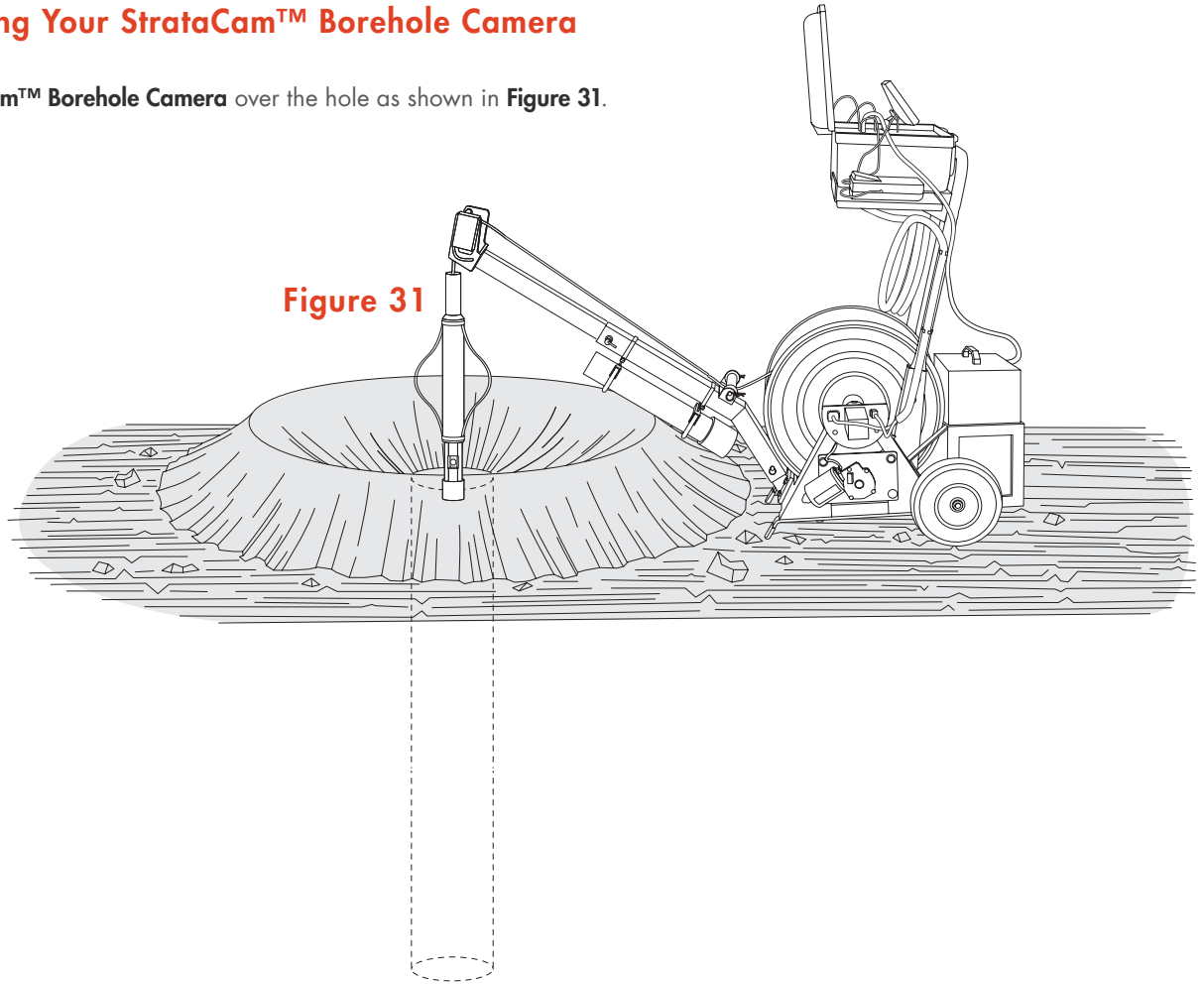
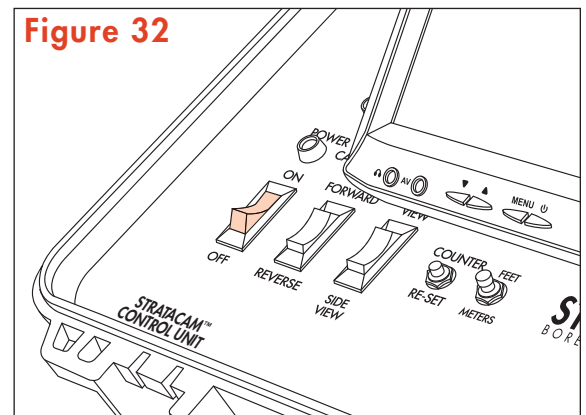


Figure 31

## IMPORTANT

One fully charged **StrataCam™ Battery** will last approximately 4 - 5 hours of normal usage. This time may be increased or reduced depending on the use of the **StrataCam™ DVD Recorder**, and rotation of the **StrataCam™ Camera** or **Reel Assembly Drive Motor**.

Figure 32





### 4.1.2 Using The StrataCam™ Borehole Camera

Once in position over the Borehole, press the **POWER ON** switch below the **CAMERA CONTROL** text on the right side as shown in **Figure 32**. The light directly above this button should now illuminate.

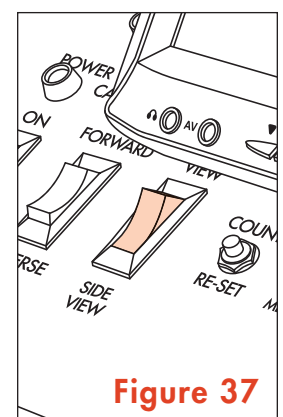
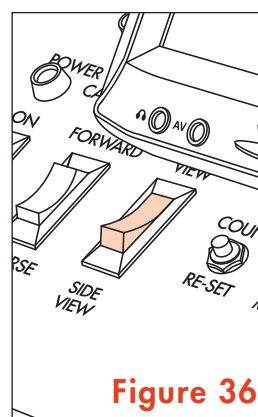
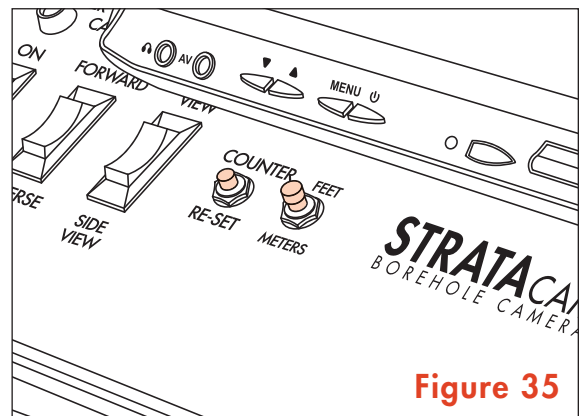
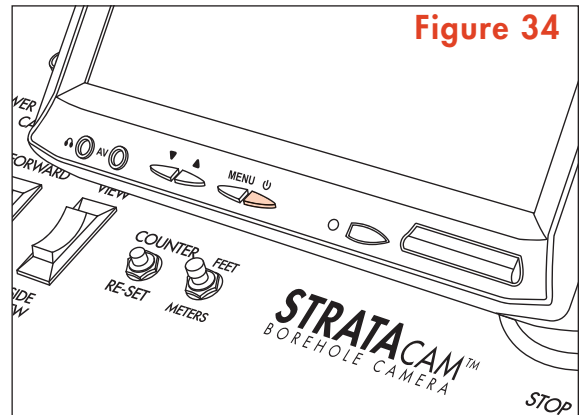
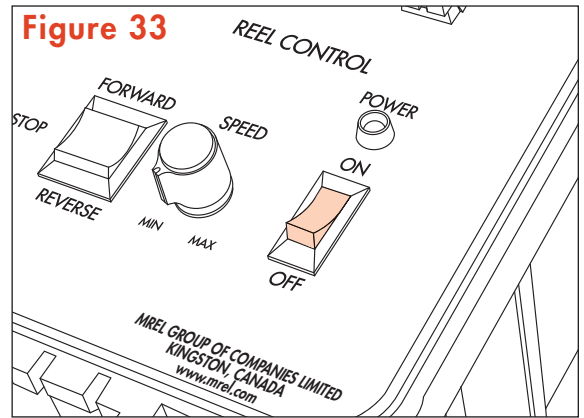
Next, press the **Power On** switch below the **REEL CONTROL** text on the right side as shown in **Figure 33**. The light directly above this button should now illuminate.

Press the **Monitor Power button** as shown in **Figure 34**. With the camera on, the monitor should display what the camera currently sees situated above the borehole.

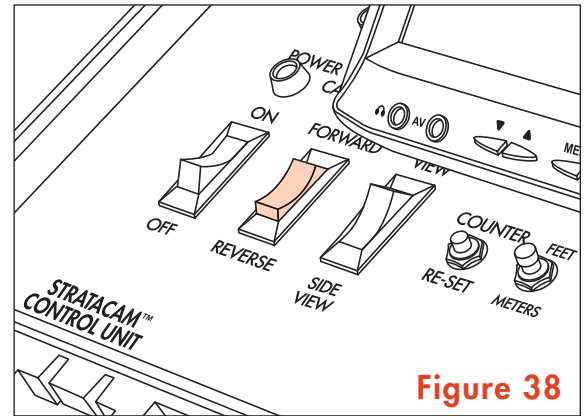
Displayed on the **Monitor** is the current depth of the camera. You can switch from feet to metres by pressing the **FEET/METERS** button as shown in **Figure 35**. To reset the counter back to zero, press the **COUNTER RE-SET** button, also shown in **Figure 35**. This button should be pressed once the **StrataCam™ Camera** is operating and positioned at the collar of the borehole. This will ensure the most accurate description of the depth of the **StrataCam™ Borehole Camera**.

Once the **StrataCam™ Camera** is positioned at the collar of the borehole, the **RE-SET** button should be pressed.

Now would also be a good time to switch between camera views and check the cameras' operation. Press the **DOWN VIEW** button to switch to the **Down View Camera** as shown in **Figure 36**. Press the **SIDE VIEW** button to switch to the **Side View Camera** as shown in **Figure 37**.

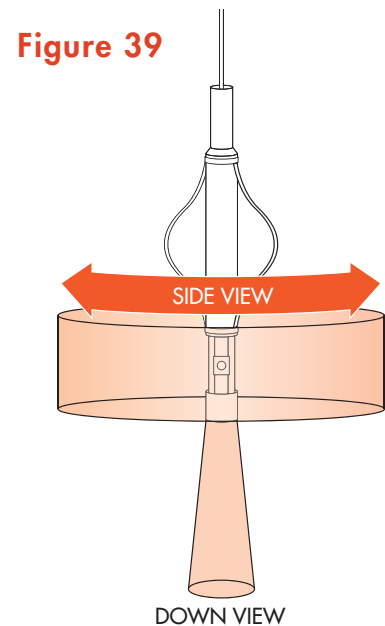


Pressing the switch highlighted in **Figure 38** will rotate the **Side View Camera** along the horizontal plane, as illustrated in **Figure 39**. To understand the field of view presented in each of the cameras, see **Figure 39**.



**Figure 38**

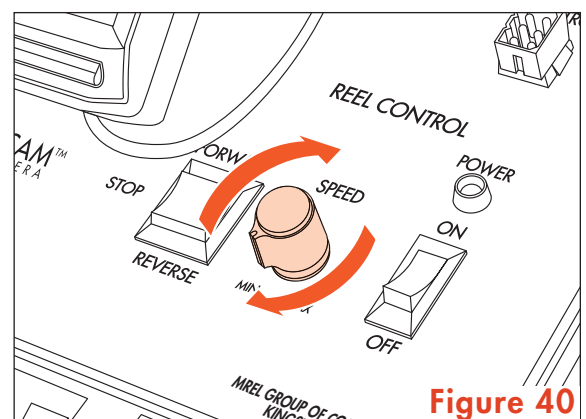
Once you are satisfied that all of the **StrataCam™ Borehole Camera's** components are working correctly, check the monitor for correct display information and reset the depth counter. You are now ready to lower the camera into the borehole.



**Figure 39**

### 4.1.3 Lowering the StrataCam™ Borehole Camera

To begin lowering the camera, adjust the **Speed Control knob** to **MIN** as shown in **Figure 40**.



**Figure 40**

Next, press **FORWARD** on the **Forward-Reverse Switch** as shown in **Figure 41**. Increase the speed of the camera until you are satisfied with the rate of descent. Be sure to note the depth of the borehole you are investigating so that you do not strike the bottom of the borehole with the camera.

## IMPORTANT

Be sure to note the depth of the borehole you are investigating so that you do not strike the bottom of the borehole with the camera.

The operator can move the **Forward-Reverse Switch** to the middle position to stop the reel, or reduce the rate of descent using the **Speed Control Knob** to investigate any interesting features observed.

If you wish to make a permanent record of the borehole, refer to **section 4.1.4** below for instructions on the operation of the **DVD Recorder**.

Once you have completed checking the borehole, you can now start reversing the camera back up. Press the **REVERSE** button as shown in **Figure 42** to start reversing the camera. Again adjust the **Speed Control knob**, shown in **Figure 40**, to allow the camera to return to the surface at a safe speed.

Once the **StrataCam™ Camera** is back at the top of the **Boom Arm**, be sure to set the **Speed Control knob** to the **MIN** setting. This will ensure the **StrataCam™ Camera** does not move too quickly next time you use the **StrataCam™ Borehole Camera**.

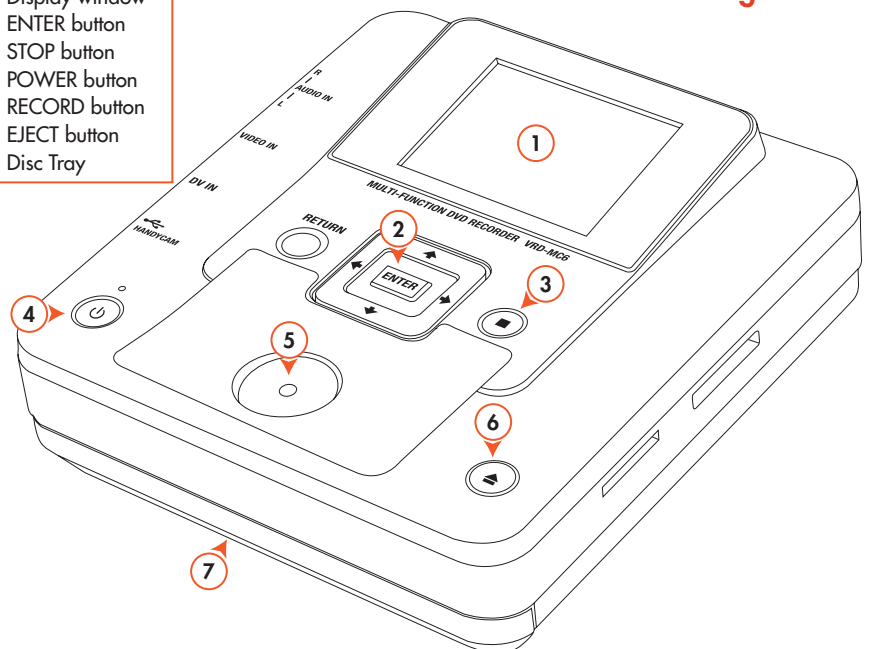
### 4.1.4 Recording What The StrataCam™ Borehole Camera Sees

If you have purchased the **Video Capture Upgrade**, please go to **Section 4.1.5** to learn how to use the upgrade components.

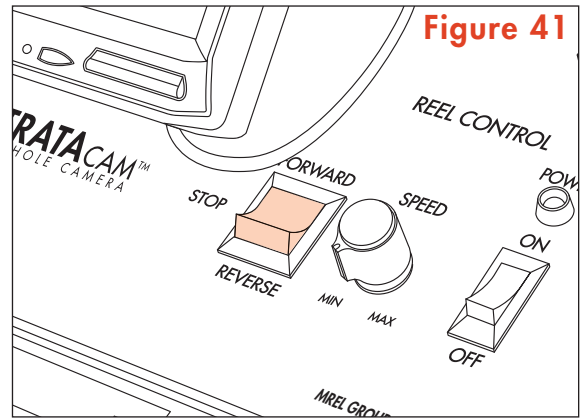
Please review the **DVD Recorder** in **Figure 43** to get accustomed to the layout and buttons of the **DVD Recorder**.

**NOTE:** For more detail in the operation of the **DVD Recorder**, please refer to the in-depth manual that accompanies the **DVD Recorder** inside the **DVD Recorder** box.

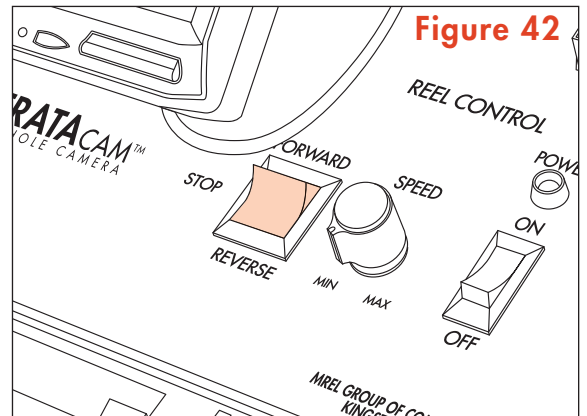
1. Display window
2. ENTER button
3. STOP button
4. POWER button
5. RECORD button
6. EJECT button
7. Disc Tray



**Figure 43**



**Figure 41**



**Figure 42**

Begin by pressing the **POWER** button shown in **Figure 44**. The Display window should now light up and prompt you to insert a blank DVD.

Press the **EJECT** button shown in **Figure 45** and the **Disc Tray** shown in **Figure 46** will open. Place a **DVD** into the **Disc Tray**, and close the tray.

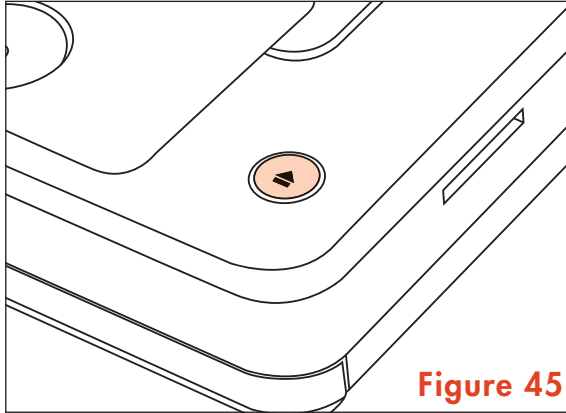


Figure 45

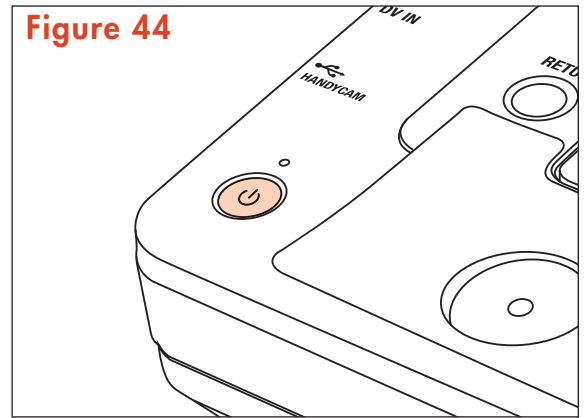


Figure 44

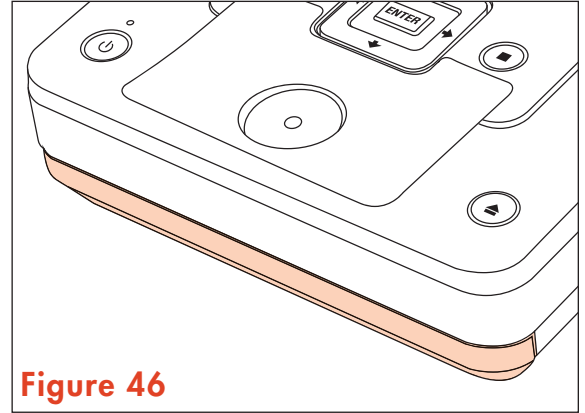


Figure 46

The **DVD Recorder Display Window** on the **DVD Recorder** will now say it is **"LOADING"**. Wait for the **DVD Recorder** to load the disc, the **DVD Recorder** will now ask you to **"FORMAT"** the disk. Select **"Yes"**. When finished, the **Display Window** should show the same image as displayed on the **StrataCam™ Control Box Monitor**.

## CAUTION

Press the Menu Button and scroll to Setup to choose the quality of the recording. The higher the quality the less recording time you have.

Video Quality	Record Time
HQ	1:01:07
HSP	1:31:41
SP	2:02:15
LP	3:03:23
SLP	6:06:46

The **DVD Recorder** is now officially ready to begin recording the survey, press the **RECORD** button as shown in **Figure 47**.

To **Pause** the recording, press the **RECORD** button during recording. To resume recording, press the **RECORD** button again.

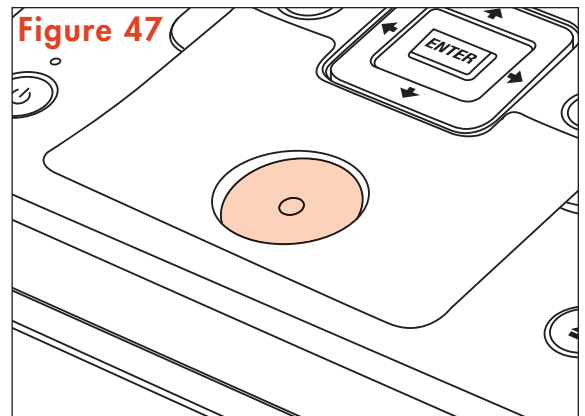


Figure 47

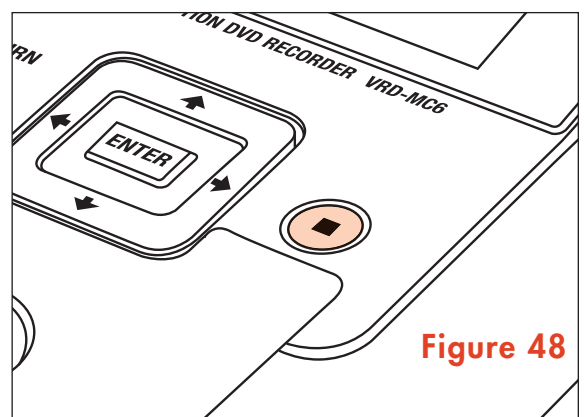


Figure 48

When you have completed recording what you need, press the **STOP** button shown in **Figure 48** to end the chapter on the disk. The next time you press **Record**, you will begin a new chapter. After you have stopped recording you will need to finalize the **DVD** so it can be played on any **DVD** player.

## IMPORTANT

For the recorded DVD to work on other DVD devices, you have to finalize the disc.

**NOTE:** Once a **DVD** has been finalized, the **StrataCam™ DVD Recorder** can no longer record to the **DVD**.

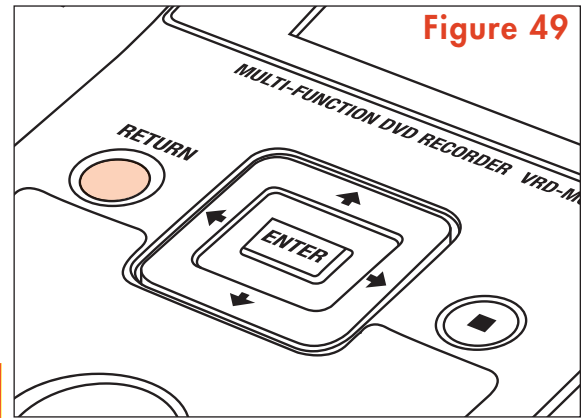


Figure 49

To finalize the disk, press the **RETURN** button shown in **Figure 49**. The **Display Window** will list the menu options. Scroll down to **SETUP** and select that option. Then scroll down to **FINALIZE DISC** and select that option. The **Display Window** on the **DVD Recorder** will then ask you to confirm your decision. Scroll up to **YES** and press the **ENTER** button again to finalize the disc.

Finalizing can take a few minutes but it is necessary to finalize the disk for playback in a DVD player or computer.

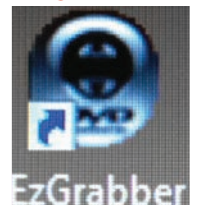
You should now be fully versed in setting up and using the **StrataCam™ Borehole Camera** in the field.

If you have any questions or comments, please contact **MREL Group of Companies Limited**.

### 4.1.5 Using the StrataCam™ Video Capture Upgrade components

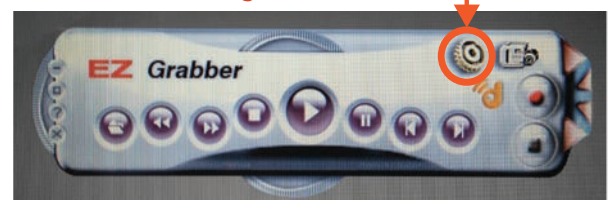
Power on the **Video Capture Laptop** and when fully loaded, double click the **EZ Grabber Icon** on the desktop (as shown in **Figure 50**)

Figure 50



To setup the recording parameters for the videos that you will record, press the circles button as shown in **Figure 51**.

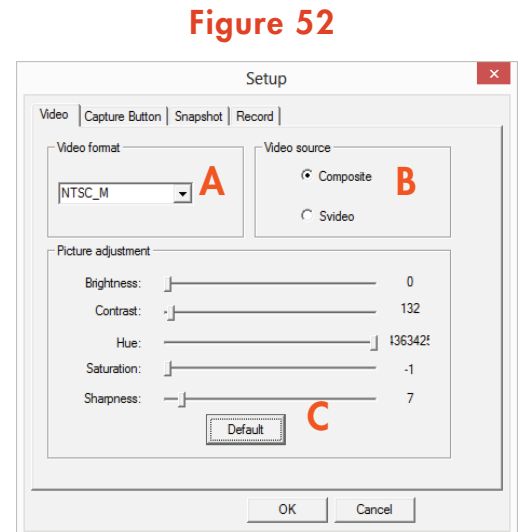
Figure 51



In the **EZ Grabber Setup** and under the **Video** tab, Choose **NTSC\_M** video format (as shown at **A** in **Figure 52**)

Next choose **Composite** for video source as shown at **B** in **Figure 52**.

If needed, adjust the picture as required using the controls shown at **C** in **Figure 52**.



**Figure 52**

Under the **Capture Button** tab, select **Capture Video** as shown at **A** in **Figure 53**.

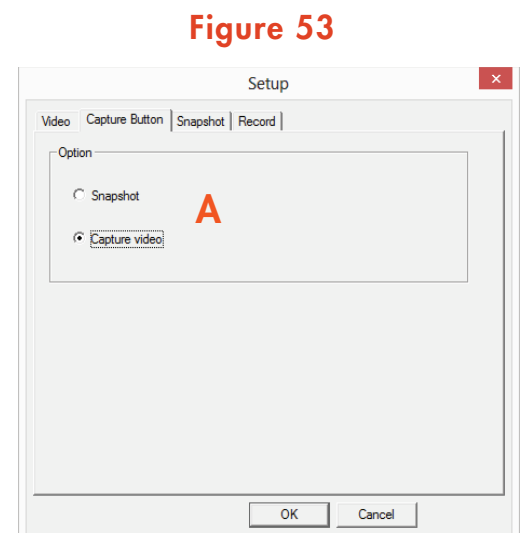
Under the **Record** tab, we recommend you choose **MPG4** for the video format (as shown at **A** in **Figure 54**)

Finally, choose the save folder on the **Video Capture Laptop** where you would like the video recordings to be saved.

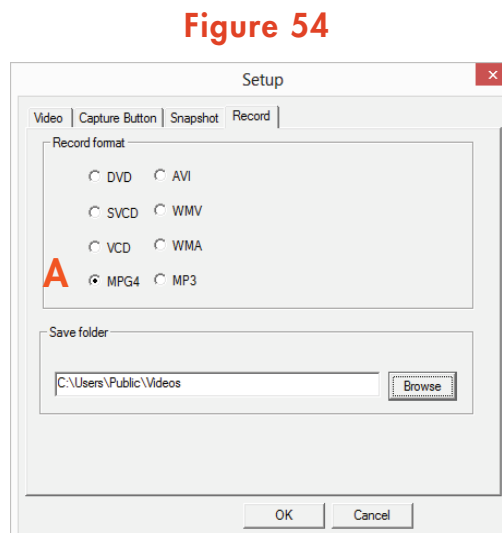
To start recording the video displayed on the **LCD Monitor**, press the **REC** button as shown in **Figure 55**.

A red light will flash while recording. Press the rec button again to stop recording.

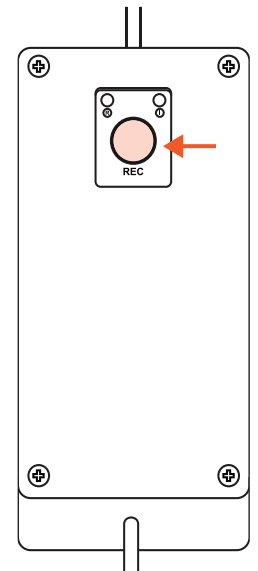
When you have completed your video, open the folder where you specified above to see the video just recorded.



**Figure 53**



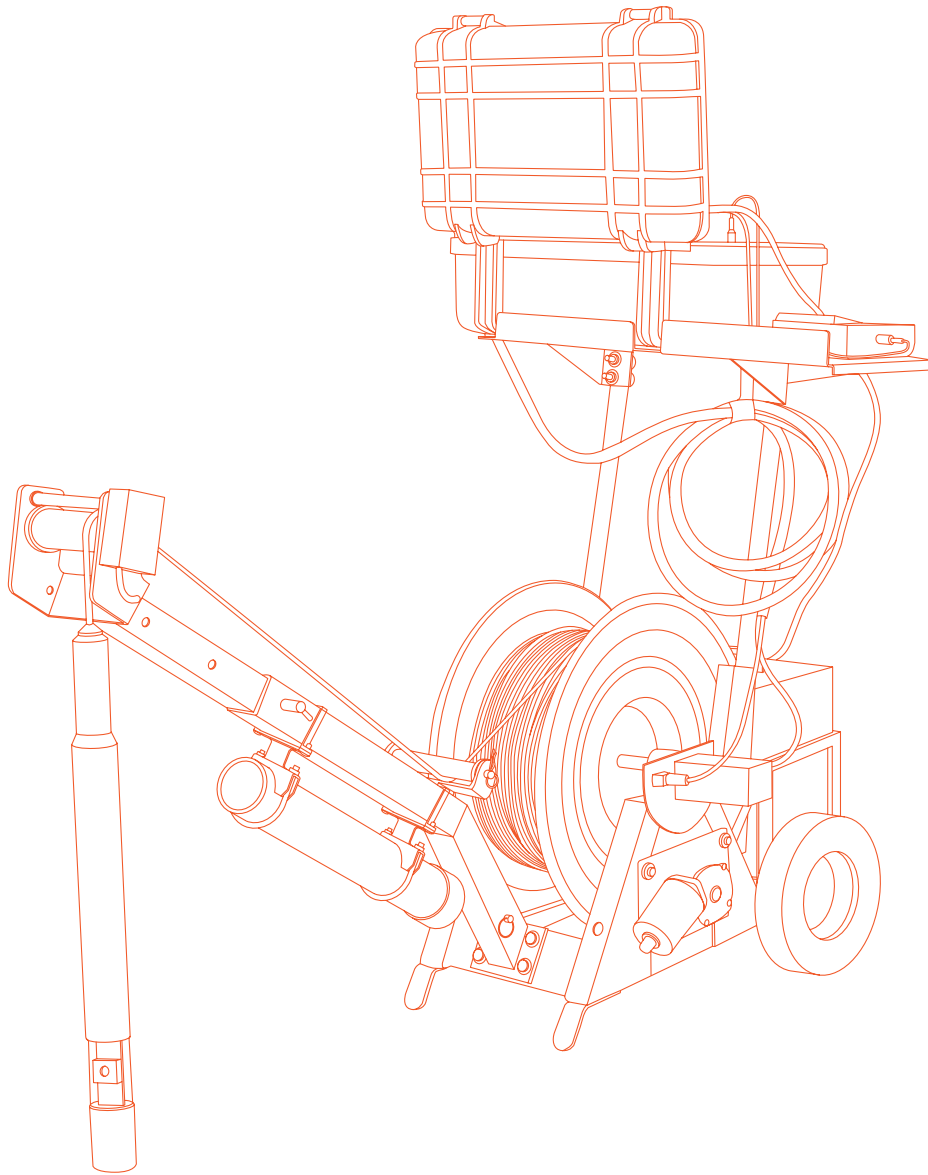
**Figure 54**



**Figure 55**

## Chapter 5

### Troubleshooting



## 5.1 Troubleshooting

### StrataCam™ Battery Voltage Too Low

This is the number one cause of problems with the system. Always keep your **StrataCam™ Battery** fully charged and make a habit of returning it to AC power for charging after each use.

The volt meter on the **StrataCam™ Battery** takes a long time to move from 12.5 to 12.0 and from 12.0 to 11.5. However, it moves much faster from 10.5 to 10.0 to 9.5. So always keep a close eye on the volt meter display on the **StrataCam™ Battery**.

### StrataCam™ Battery Not Charging

This can be caused by one of two reasons: Either the **Fuse** has not been plugged into the back of the **StrataCam™ Battery**, or the **StrataCam™ Battery** has sat idle (not charging) for too long and it's past the point of taking a charge. If that's the case, you may need a new **StrataCam™ Battery**.

You can also use the **StrataCam™ Battery Alternate Power Cable** (Section 3.2.3) and run directly from the 12 VDC battery terminals of your vehicle.

### Jumping Digits on the Monitor

Usually an indication that the **StrataCam™ Battery** is too low. It can also be caused by the **StrataCam™ Camera** and the **StrataCam™ Control Box** being slightly out of tune with each other. This usually will not result in wrong readings, but it's distracting. If you can't clear it up by re-charging the battery, you should contact **MREL Group of Companies Limited**.

### Camera View Won't Switch From Down View To Side View Or Vice Versa

This is usually the result of a **StrataCam™ Battery** being too low on power. Bypassing the **StrataCam™ Battery** with the **StrataCam™ Battery Alternate Power Cable** may help this.

### Camera Won't Rotate, Or Will Rotate Only In One Direction

This is usually the result of a **StrataCam™ Battery** being too low on power. By-passing the **StrataCam™ Battery** with the **StrataCam™ Battery Alternate Power Cable** may help this.

### DVD Will Not Play In DVD Player

After recording onto a **DVD**, remember you have to finalize the **DVD** before it is able to play in a **DVD Player**.

To finalize the disk, press the **RETURN** button shown in **Figure 49**. The **Display Window** will list the menu options. Scroll down to "**SETUP**" and select that option. Then scroll down to **FINALIZE DISC** and select that option. The **Display Window** on the **DVD Recorder** will then ask you to confirm your decision. Scroll up to **YES** and press the **ENTER** button again to finalize the disc.



## The Depth Counter Is Inaccurate

This can happen when the cable is not going directly off the bottom roller of the **Boom Arm**, directly down the borehole. If you have a tripod over the hole and the cable is running uphill to the tripod, or even at a flat angle, it's possible that the cable will slip as it contacts the bottom roller (where the encoder is for the depth counter). You can eliminate that slippage by installing a roller at the bottom of the **Boom Arm**, and running the cable from there up to the tripod. In this way, the cable keeps the same amount of contact on the bottom roller.

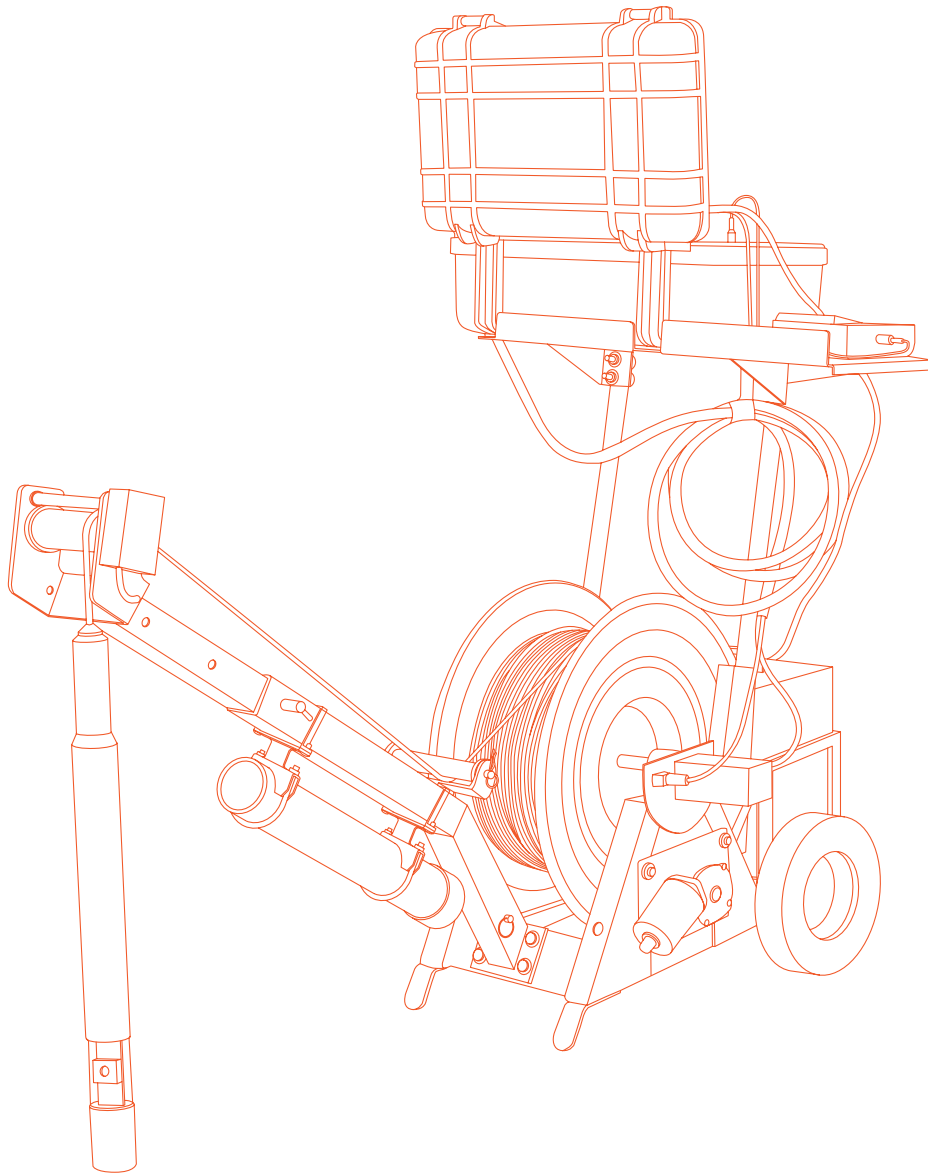
## Problem Not Found?

If you have a problem that is not outlined in this section, please review each section of this manual and follow all instructions for the beginning. If the problem still persists, please contact **MREL Group of Companies Limited**. Our contact information is in **Chapter 6**.



## Chapter 6

### Contacting MREL for Technical Support



## 6.1 Contacting MREL

### MREL Group of Companies Limited

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Canada

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**Tel:** +1-613-545-0466

**Fax:** +1-613-542-8029

**Email:** [support@mrel.com](mailto:support@mrel.com)

MREL looks forward to providing you with assistance.





MREL is committed to product innovation; accordingly product may undergo specification improvements without notice.

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