

Chim-Scan® Operations Manual



Series 450 Color System

 **CAUTION** 
Secure Camera Equipment in
all applications.
If NOT, Damage or Personal
injury can occur.

Due to continuing improvements, actual product may differ slightly from photo.

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Precautions

- * Use the unit for appropriate levels of inspection. Do not use in wet areas.
- * Use caution for all 120-240V applications. Do not cut the grounding prong on the power supply plug, or modify powers or cables **this will void all warranties if done.**
- * Do not abuse the cable connectors. Never carry the camera by the cable, or yank them apart when disconnecting.
- * Do not submerge the system in any water, or use outside while raining or snowing without proper protection.
- * For best application and proper visibility, it is best that the chimney be swept before scanning.
- * Do not drop the LCD or monitor systems. Do not break the seals on either cameras, monitors, LCD screens, or control boxes. There are no user serviceable parts inside.
- * If any seals have been broken all warranties are Void.

Precautions-2

- * Do not lay anything on top the LCD that may crush the screen. This will damage the screen beyond repair.(NON-WARRANTY REPAIR)
- * Do not take the VCR's , CD burners, or Compact Flash recorders out of the case. They are designed to stay in the cases at all times.(when applicable)
- * **Use a stabilizer, at all times on the camera, whether it is a whisker, blowfish, or soft bristle chimney brush.**
- * **(WARRANTY IS VOIDED IF A STABILIZER IS NOT USED)**
- * Do not operate the C-Scan or Chim-Scan systems in **ambient** temperatures exceeding 122 degrees or lower than 14 degrees. If it's a Series 400 keep them at room temperature at all times for proper operation. If not, the Computer will sense a humidity change and will not operate until the temperature and humidity are stable and dry.
- * Because of the expense of the units, its important to list the system on your business insurance under Inland Marine for theft and damage. Look for and record the serial number on this equipment and keep it in a safe place.
- * **CAUTION Secure Camera Equipment in all applications. If not, Damage or Personal injury can occur.**

Enhancing Education

We would encourage all owners of the C-Scan and Chim-Scan systems to continue their education and knowledge of the chimney and venting industries by attending these course as outlined below.

- * CSIA continuing Certification programs
- * CSIA Diagnosis and Documentation Seminars Levels 1 and 2
- * F.I.R.E. Programs
- * NFI Venting Technologies and Installer Classes
- * WETT Programs/ Canada
- * “First Friday Seminars” held monthly at Estoban headquarters in Fairfield, Iowa

Video Scanning / Interpretation

Video scanning is a procedure, more than a technique. Following a path from one chimney section to another, following a procedure, makes the scan a complete close up picture of how the chimney was built, and what is taking place within the chimney. Each chimney tells a story, even the most sooty ones.

The camera position or angle play an important part in familiarizing yourself with the new perspective. We recommend that you start with the 15 degree angle. This provides you with the ability to look at the chimney interior without “Too Much Information”.

When the need for more information or better detail is needed, the camera can be switched to the 90 degree angle, which can produce sharp close details of specific areas within the chimney.

The basis of your opinion will need to be from a documentable source. Once the operator becomes familiar with the equipment and the visual perspectives the system reveals, guidelines set forth from the individual building codes and use of the inspection guidelines set forth in NFPA 211(2006) Chapter 13 and Chapter 14 will be of great benefit. Also, you will need to understand the manufacturer's installation instructions, concerning installations of their products, especially prefabricated fireplaces and chimney relining systems, whether they may be stainless steel or cast in place.

Series 450 layout

Whiskers attached
to outside of case

15" LCD Monitor

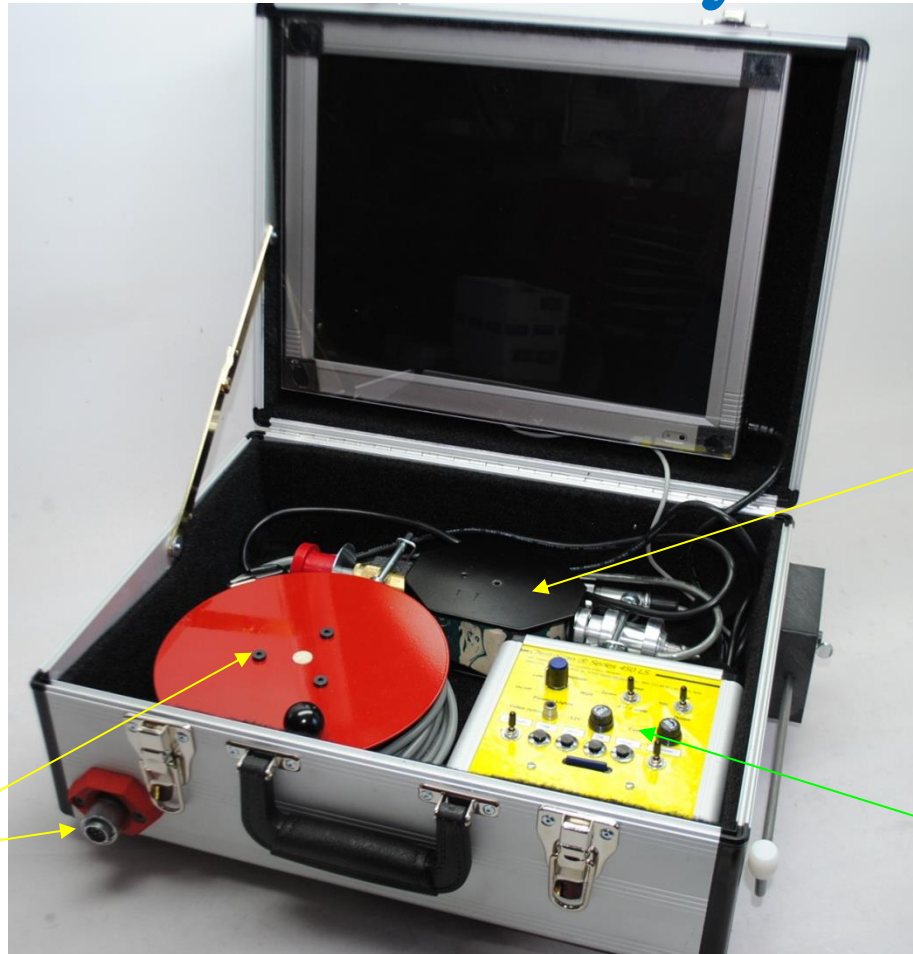
Chim-Scan Camera

120V to 12V
power supply built
in controller for
camera operations.

Control Box with built
in SD Recorder.

120V to 12V power
supply built in
controller for camera
operations.

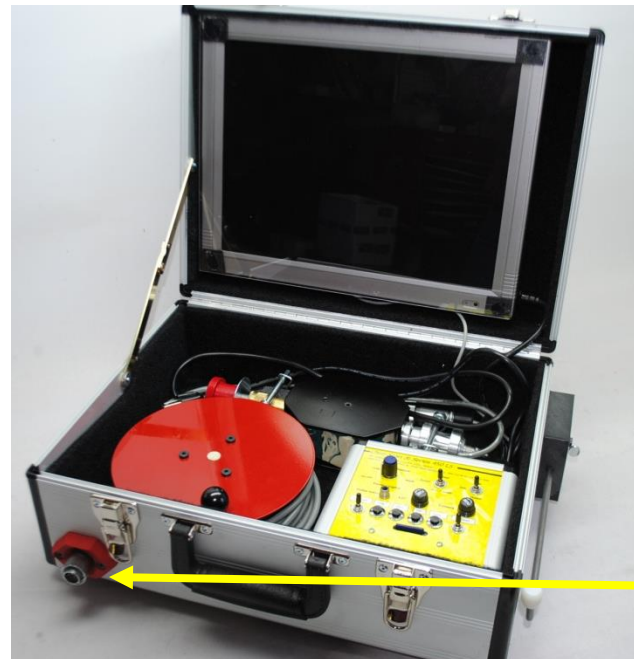
50 ft of cable
located inside
the slip ring reel



Due to continuing improvements, actual product may differ slightly from photo.

Start Up Procedures

- * **0.01 Open the latch to the case**
- * **0.02 Pull the controller from the case. All that will be necessary is to plug in the 120V (240V optional) cord into a 120V(240V) receptacle and place the USB cord into the back/side of the computer.**
- * **0.03.1 Series 400 purchased without the interior reeler will need to be connected to the side of the control box.**
0.03.2 Series 400 with the reeler, pull cable out of the case as the scan progresses up or down the chimney. When completed, use the knob on the top of the reeler and return the cable back onto the reeler.



Case Stabilizer and 15" Monitor



If your case has a Stabilizer,
Loosen thumb nut and extend
stabilizer while scanning.

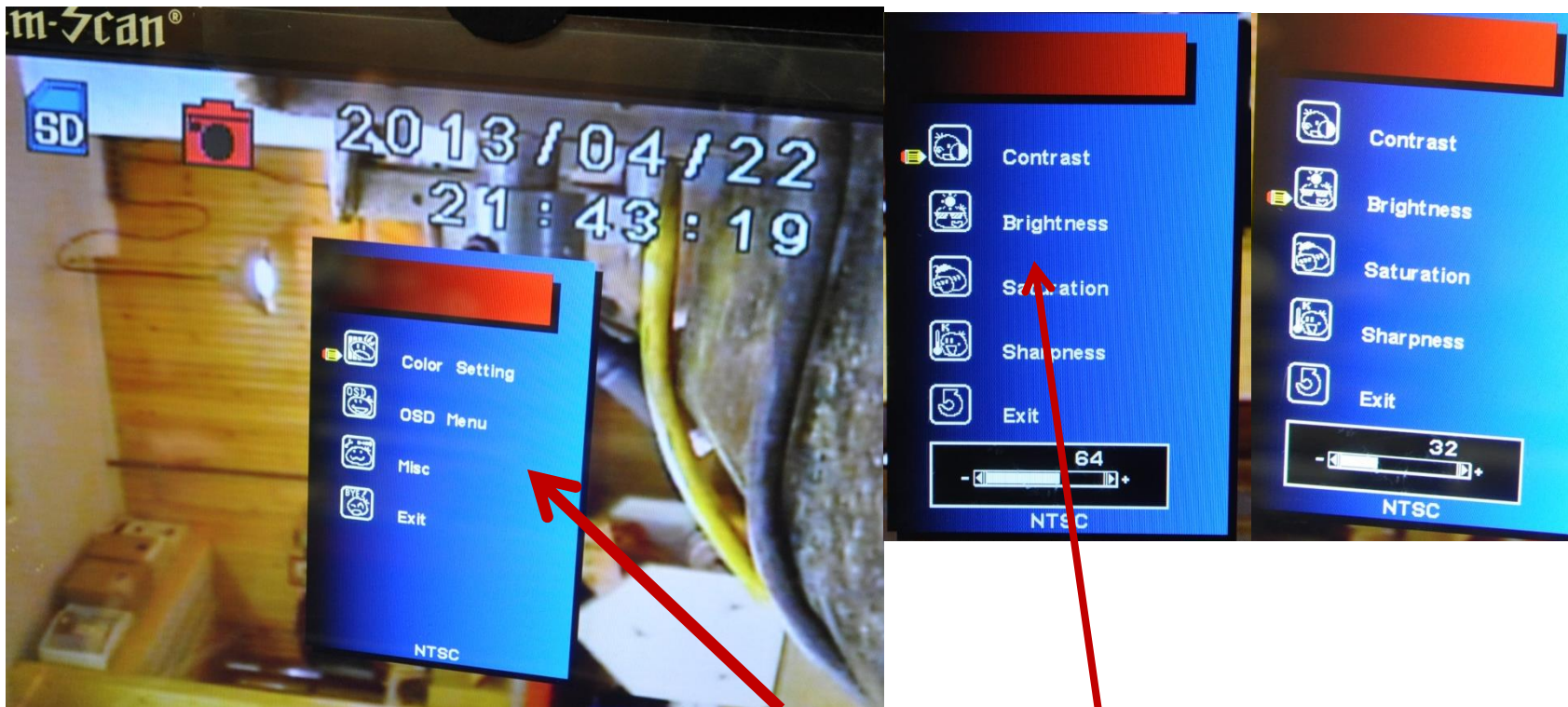


- Monitor on/off control is the bottom button on the side.

Due to continuing improvements, actual product may differ slightly from photo.

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Adjusting Color Settings on 15" Monitor



Press MENU on side of monitor and this screen will appear, with highlight by Color Setting.

Press MENU again and screen will show options.

Use + and – to move up and down to select item to adjust.

Then press MENU to select.

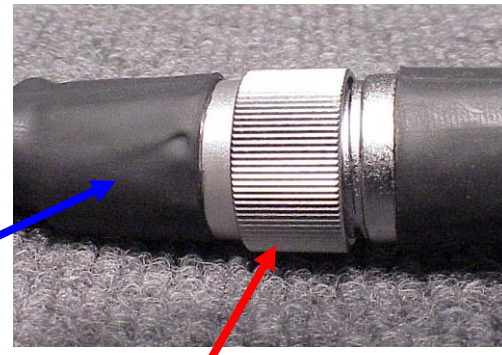
Use + and – to make changes. Then MENU to set.

And continue until settings are where you want them.

Cable Connectors

- * The cables are set to connect in a prescribed way.
- * Be sure not to push too hard when setting them together.
- * Align the detents push together and turn the locking ring.
- * To take apart loosen the ring first then pull the connectors apart.
- * **Do not twist the connector body, only the ring should turn.**

Align connector
detents



Connector body

Ring

Series 450 Control Box



If the unit has a "Video ByPass" 3 way switch, the SD Recorder can be bypassed.

In Center position, only the Video Out pin will work.

Push switch to one side and you will have a live camera image on LCD screen.

Push switch to opposite position and the image from the camera is routed through the SD Recording device showing time & date etc.

Microphone Switch

SD Recorder controls and card

Power/ Light control

Optional Keyboard Jack

OPTIONAL
LightHouse CAMERA controls

IF you have an Auto Focus TILT Camera:

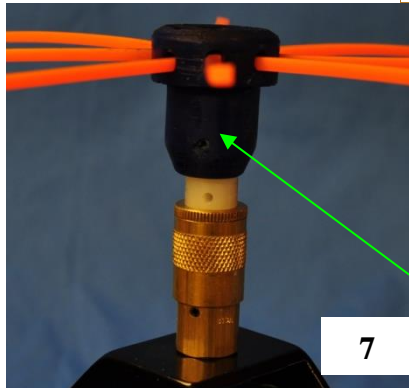
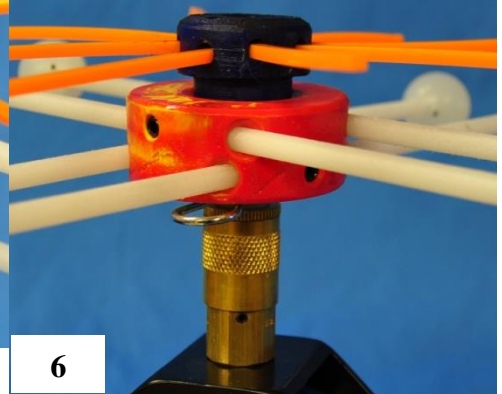
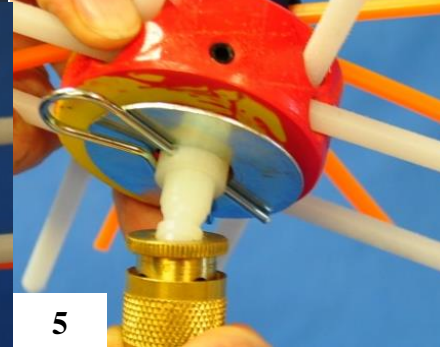
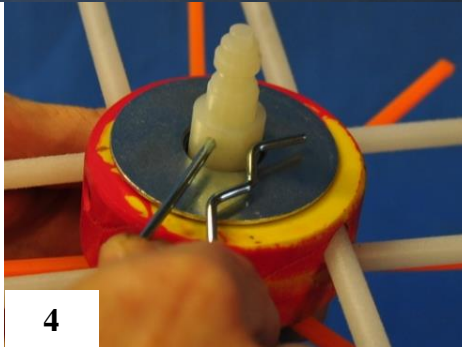
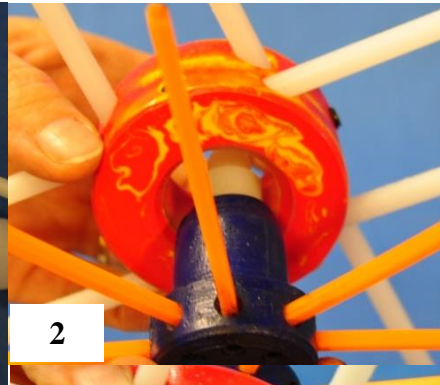
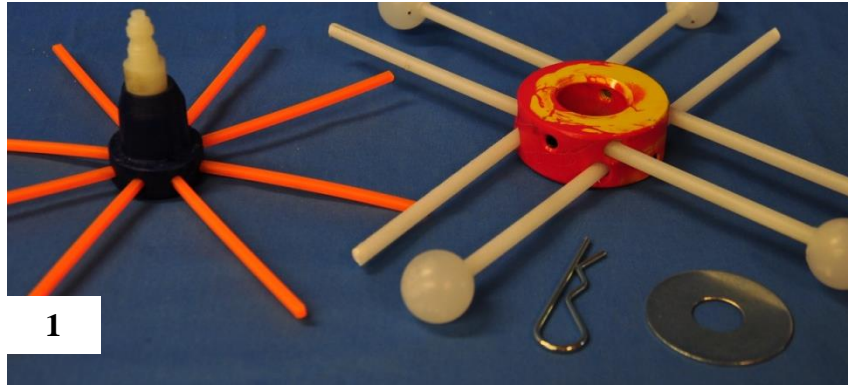
Zoom- By pushing the knob up for close up and down for farther away provides the image clarity to be changed. The zoom works on the auto focus systems only, because the camera will automatically focus.

Switch for the tilt

Be sure to place the camera into home position before entering a chimney or past a damper.

Due to continuing improvements, actual product may differ slightly from photo.

STABILIZERS – Whisker and Mini-Whisker/hub holder



1. Remove the clip pin from the mini-whisker Hub.
- 2 & 3. Then place the whisker on the hub.
4. Place large washer on hub and insert clip pin.
- 5 & 6. Place the hub on the female connector,
on top of camera. Then you can adjust white whiskers to the
size of the interior liner or the chimney using your T-Wrench.
7. The mini-whisker can be used by itself for Pre-Fabs or
smaller flues.

Due to continuing improvements, actual product may differ slightly from photo.

LightHouse Camera

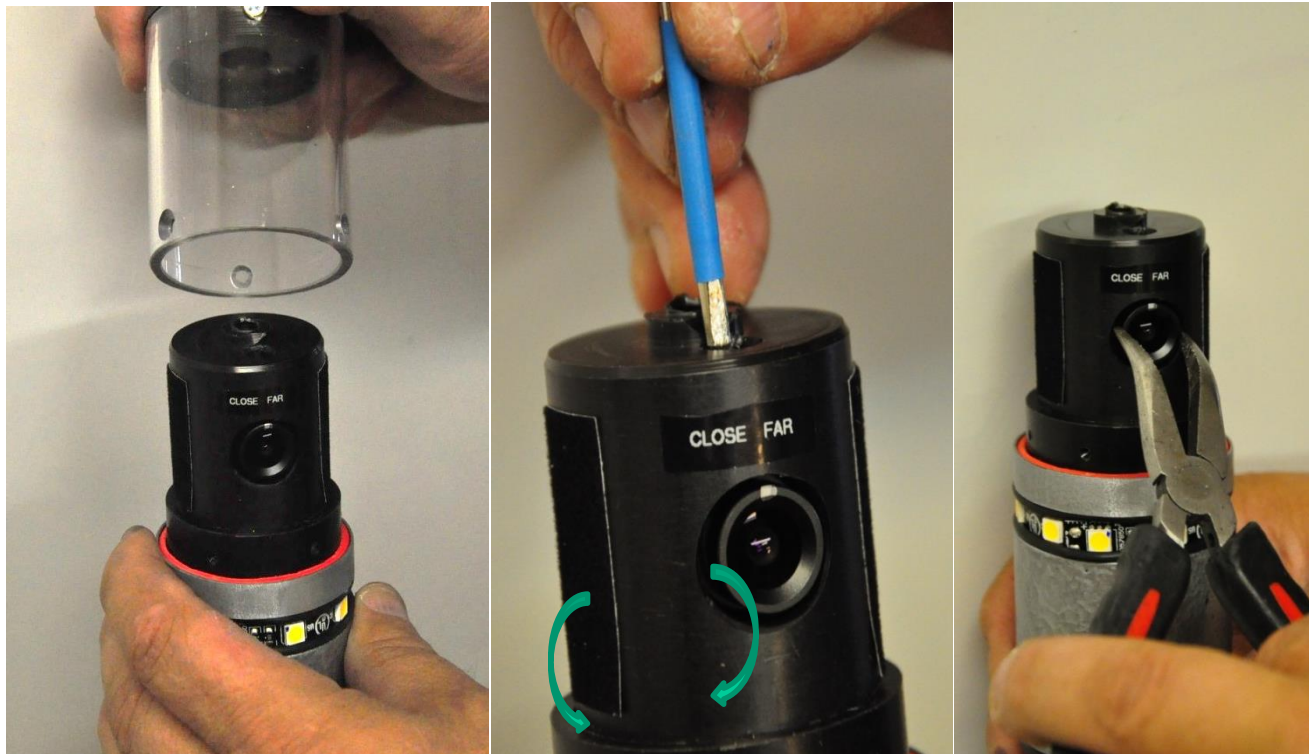
- Lighthouse Camera with continual 360° rotation and 9 LED lights. Rotates continually with adjustable lights.
- Control box toggle switch powers rotation from left, stop or right.
- Replacement glass is available.
- If you have a Series 450, there may also be a Pan/Speed control. You may adjust your rotation speed.



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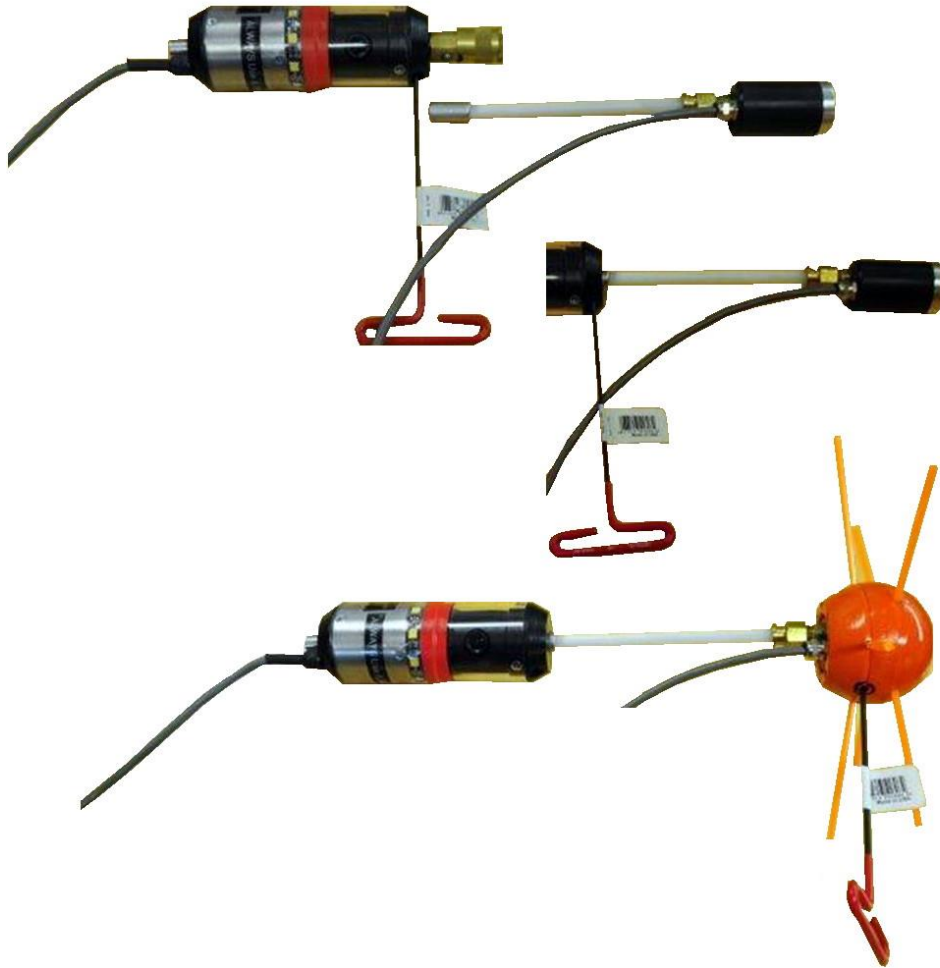
We placed an extra hole at the top of the rotator so you could change the focal point if you wish.

First remove the screws at the bottom of the clear cylinder next to the lights. . Then use a tiny flat screw driver to loosen the screw on top of the lens (not too much or it may fall out). Use a set of needle nose pliers and gently rotate the lens to either set for smaller flues or larger flues.



Counterclockwise for close up, clockwise for larger flues. I have it set to see 8", 16x16 liners.

Using the Enviroflex & the Lighthouse



To use both camera's at once.

1. Use Tee wrench to remove Kwik-Lock female connector
2. Insert short white rod making sure the flat side is toward the set screw
3. Tighten set screw
4. Attached Enviro to short white rod; if not already attached. Also this will go easier if the cables are not connected to the Y-adaptor
5. Slide Modified Dryer Ball on to Enviro and tighten set screw.

REMEMBER: ONLY Tighten Set screws till snug,
DO NOT over tighten. Over tightening will lead to issues in the future.

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How to Operate SD Recorder

Use **left** or **right** for viewing images in mode or changing items in menu

Press the **snap** button for capturing a image

Press **mode** to view the captured images

Press **OK** for menu items

Press **menu** for time and date changes. Up and down to change digits in time and date

Use **Display** to choose a folder.



To remove card, press in with finger to unlock. To insert press in until you feel it lock in place

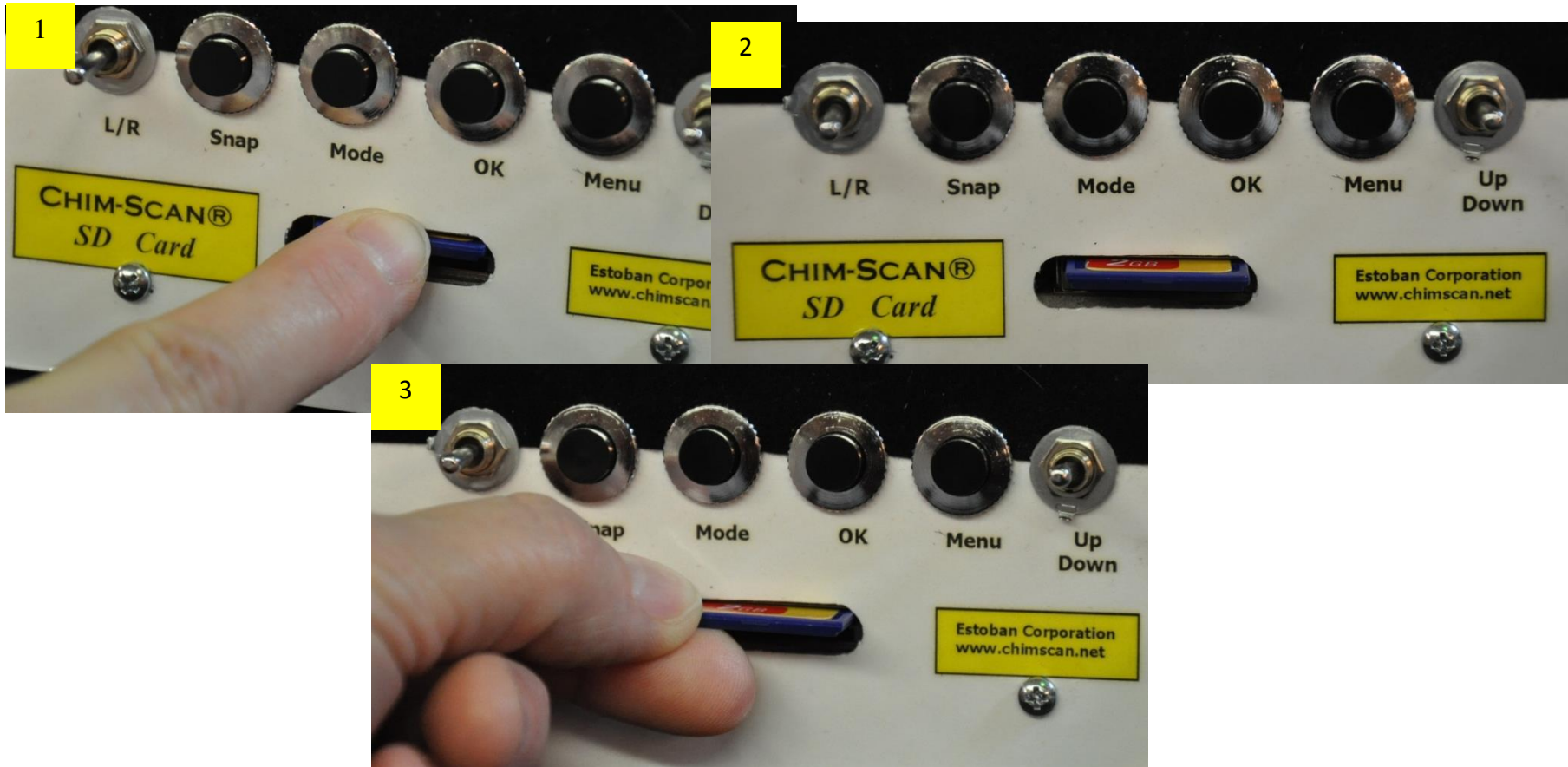
Turn Audio Mic ON to use with Video recording

Unit will operate on up to a 16G SD Card.

Due to continuing improvements, actual product may differ slightly from photo.

SD card insert and retrieval

Unit will operate on up to a 16G SD Card.



Due to continuing improvements, actual product may differ slightly from photo.

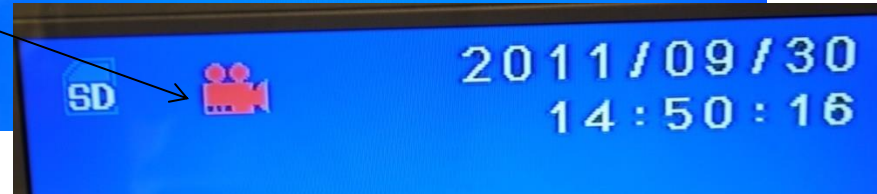
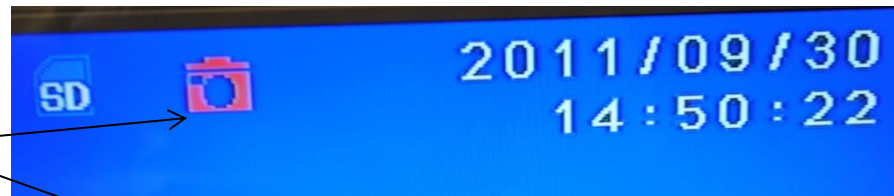
Copyright 2014 Estoban Corporation

Screen views

After starting system,
The screen will show the if you are in
Still mode or video mode.

The “Down” button will change from
Still to video and back.

Time and date are displayed on the
screen. They do not show on your
image.



View images captured go to mode. Use
the L/R to see the images.

**If you record VIDEO, press mode,
then press down to start video. Or
you may put in any computer and it
will come up as an AVI file to view.**



If you have folders from multiple dates, press
“Display” to view all folders.

Use “Up and Down” to select folder you want.

Then press “OK” to view.

Press “Mode” to return to live image.

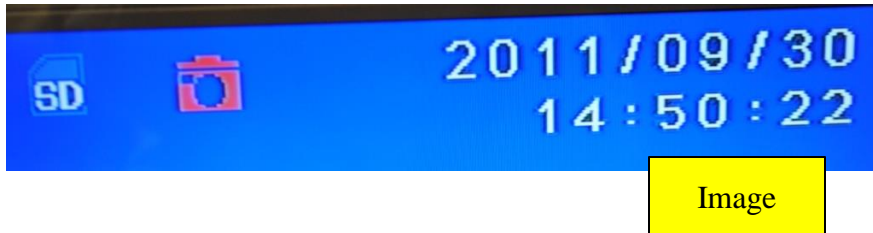


How to capture your images or video

To capture images:

1. Make sure SD card is in Recorder and it is engaged.

2. Use “Down” to change from camera to video.
3. A camera icon will appear in the top left corner of screen like shown in the picture labeled Image.
4. Press the ‘Snap’ button to take a picture.

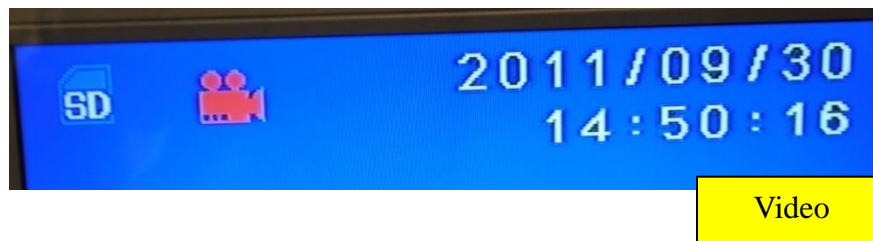


ICONS will appear in top left corner even if the SD card is not engaged

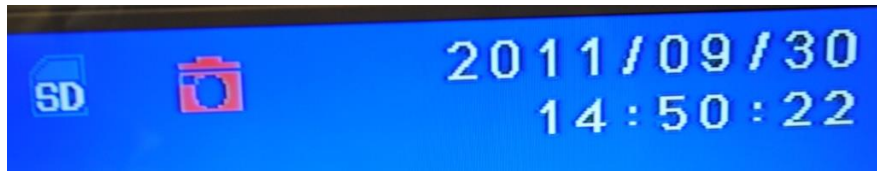
To record a Video:

1. Make sure SD card is in Recorder and it is engaged.

2. Use “Down” to change from camera to video.
3. A Video camera icon will appear in the top left corner of screen like shown in the picture labeled Video.
4. Press the ‘Snap’ button to start recording the video.
5. Be sure to turn “Audio” ON if you wish to narrate.
6. To stop recording press ‘Snap’ again.

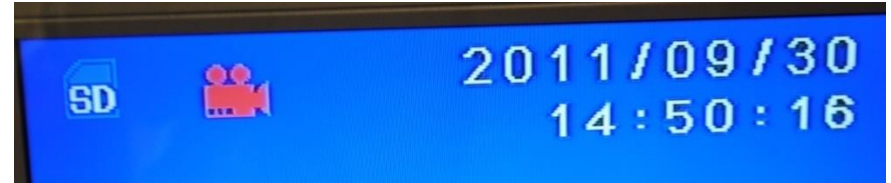


How to preview your images or video



Image

Remember to view IMAGES you must have a Camera in the Top Left Corner



Video

Remember to view VIDEO you must have a Video Camera in the Top Left Corner

Reviewing Image or Video



1. Press Mode to enter playback mode. If there is no file in the memory, it will show "No File" and return to preview mode. In playback mode, press 'Mode' to enter view mode.
2. Use LF/RT to forward or rewind the image or video.
3. Push the Mode to go back to live image.
4. For Video (AVI file), push Down to start playing. Press 'Ok' to stop playing
5. During playing, push down to pause and push down again to resume.
6. During playing, press RT to fast forward, can set speed of x2, x4, x8
7. During Playing, the icon of playing and pause will be shown.

Motion Detector -

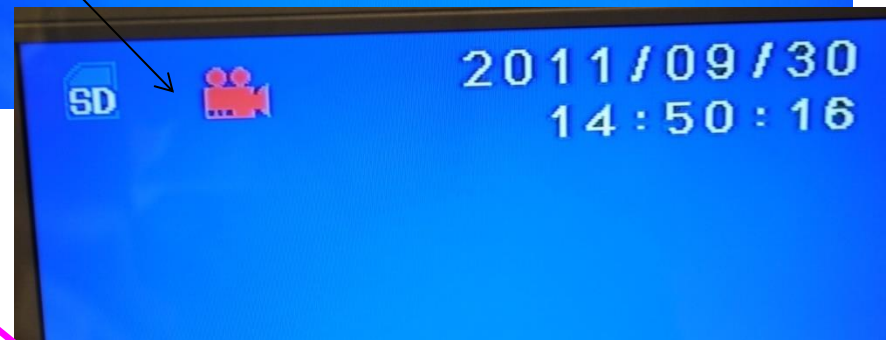
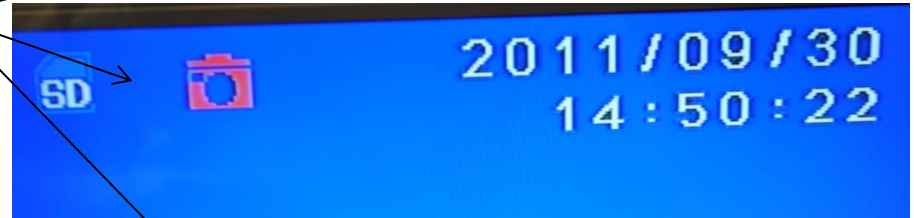


When using your unit, if there is an ‘eye’ here the motion detector has been turned on and pictures will be taken every time it senses movement.

The motion detector needs to be off in order to do a productive scan.

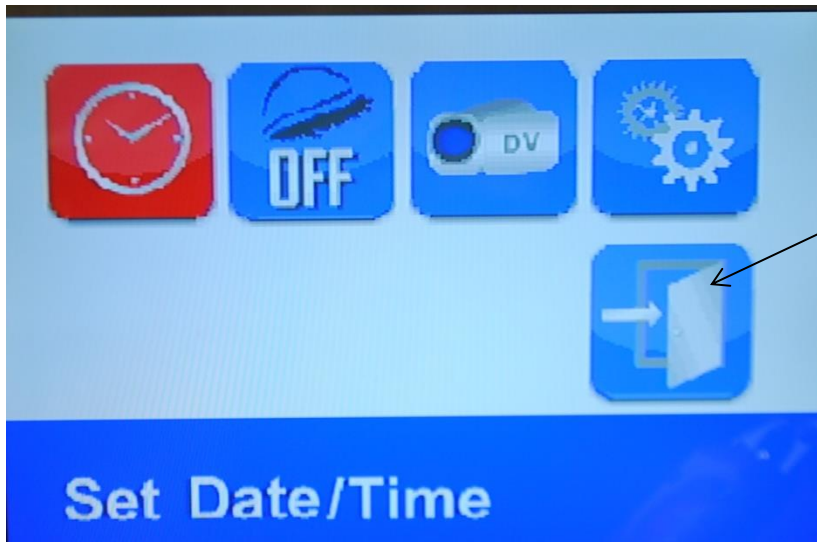
To turn it off – Push the “UP” button.

When your unit leaves the factory, the motion detector has been turned off.



Menu

When menu Option is
Highlighted in a **RED box** press
OK to Open it



Exit from the menu



Use the L/R to go through the commands.
Make sure the motion detector is OFF. The
indicator on the screen will show a movie
camera for video and a still camera to
capture photos.



Menu to Review or Delete Images

Press MODE to review.

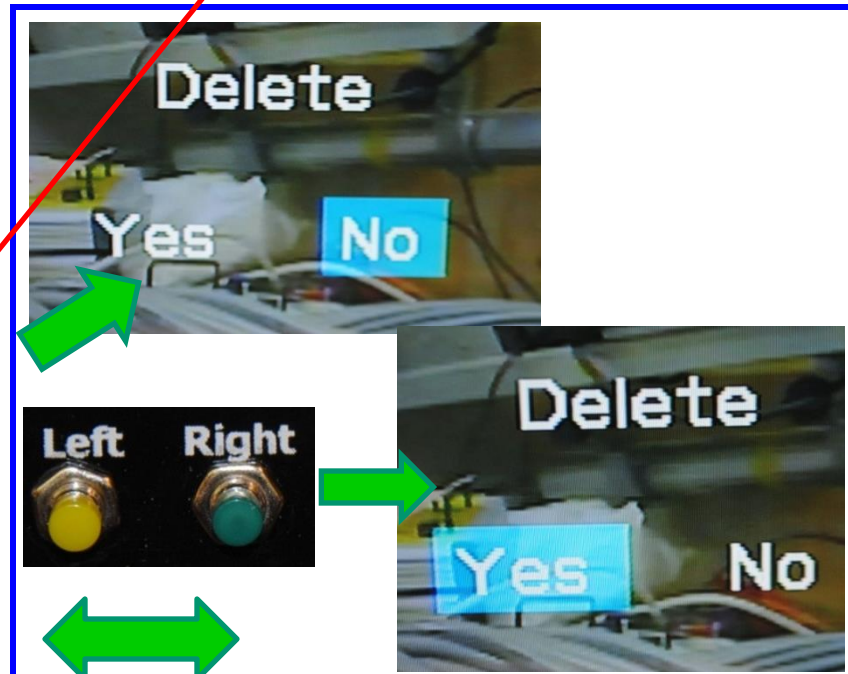
To delete photos, while in MODE, press MENU.



Use the L/R to go through the commands to the setup icon.

In the current frame it will delete one image. Or move to the next box and delete all the images in the memory.

To clear the SD card go to the next icon, to Delete All, use the L/R switch to change from the No to YES and press OK. The images from the SD card are cleared off.



Changing Battery for Time & Date



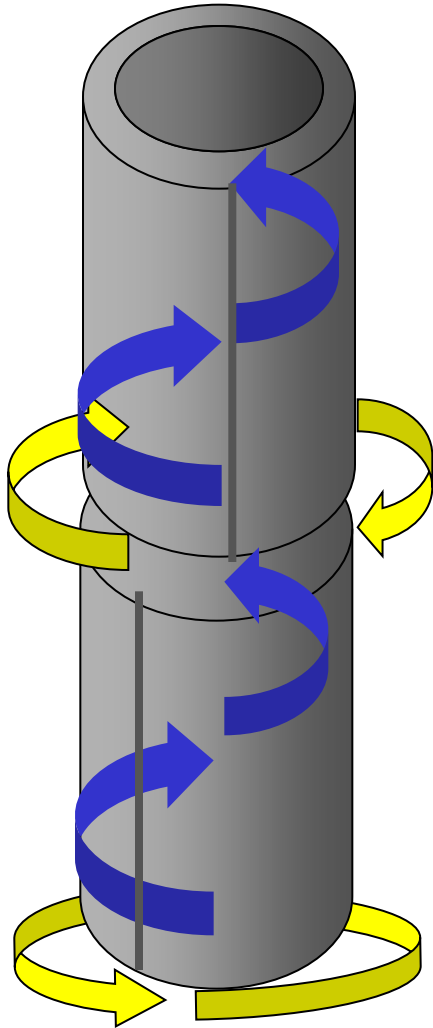
- Occasionally you will need to replace the two AA batteries to keep time and date stamp accurate.
- Remove two screws from battery cover at top of control box.
- Being careful not to pull wires from controller, replace the batteries and put cover back in place.



Photos from the Interior



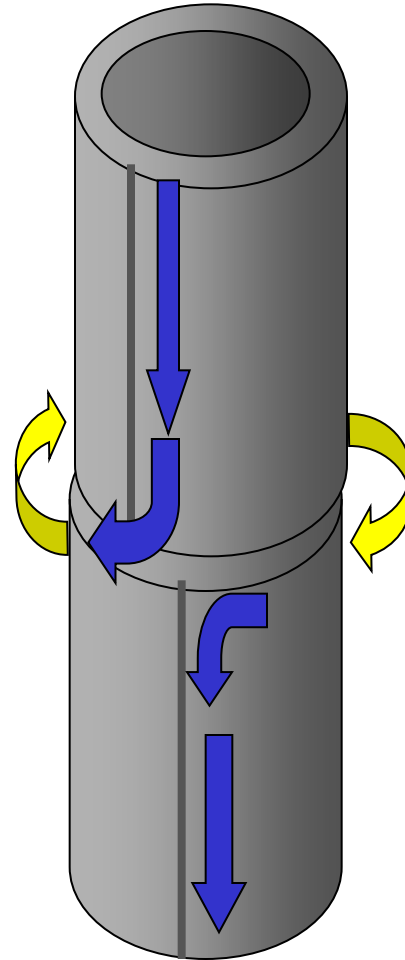
Scanning Pattern for Round Liners



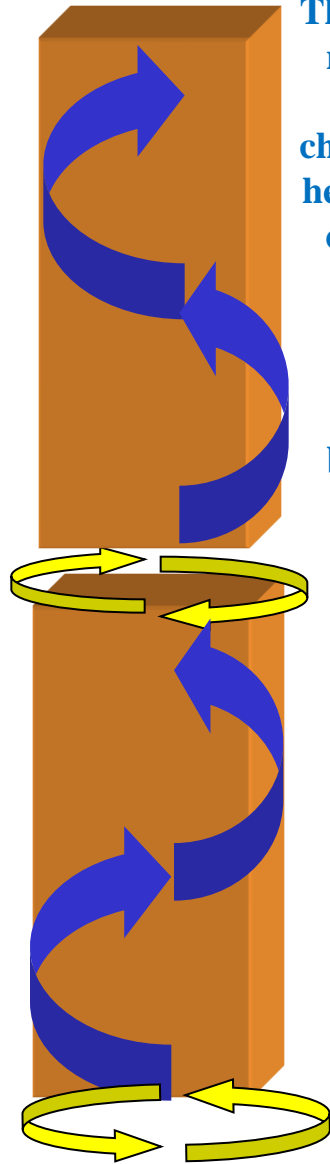
There are two ways to create a procedure for scanning prefabricated or metal liners.

The first is to use a barber pole rotation within the flue.

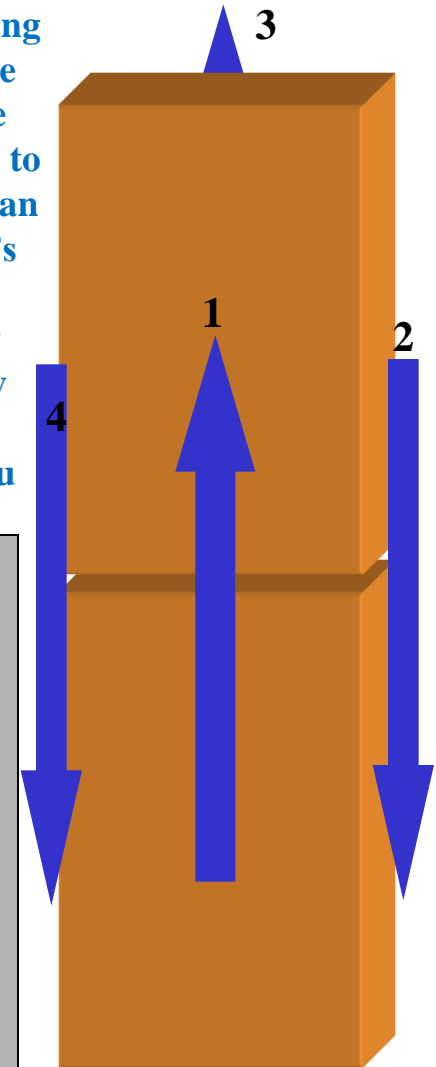
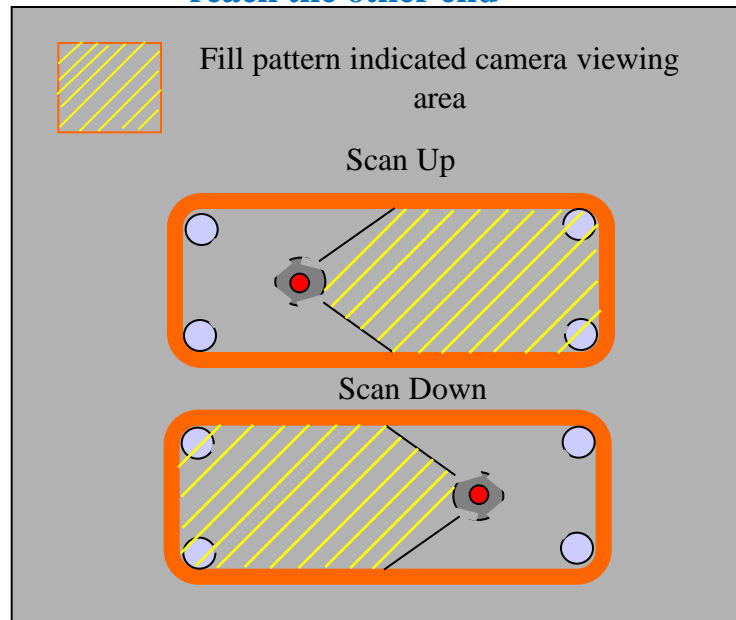
The other is to follow the seam of the liner. It is best to combine the two approaches, do one going in one direction the other on the return. This way all the seams and joints are accounted for and if any abnormalities appear on the side wall of the liners, they should be seen



Scanning Pattern for Square & Rectangle Liners



There are two ways to create a procedure for scanning masonry chimneys. The first is to use a barber pole rotation within the flue. This works well in square chimneys and round liners also. For rectangle liners to help keep the camera in focus, it may be easier to scan one side at a time, pausing at the joint to review it's condition. Other considerations for these liners especially for 6"x18" is to use a modified whisker which would allow the operator the ability to view three sides at a time. At the termination (top or bottom) change the position and start again till you reach the other end



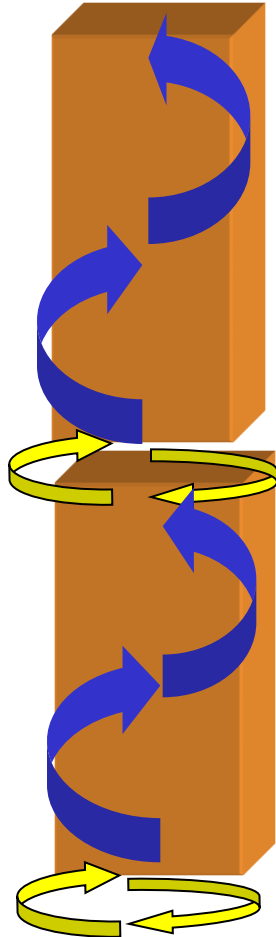
Scanning Procedures 1

- * The first step in creating a thorough scan is a procedure. Zero degree
- * For front view or zero degree, place the stabilizer behind the camera head, insert into the chimney or vent and move forward. Move the camera at a rate which will allow the client to comprehend the imagery.
- * For sectional liner or pipe slow down or stop at each joint for further study, be sure that it is connected properly and locked. The liner should not have any bends or tears.
- * Continue to the next section. The sides of the pipe will be on the outside corners of the screen.



Scanning Procedures 2

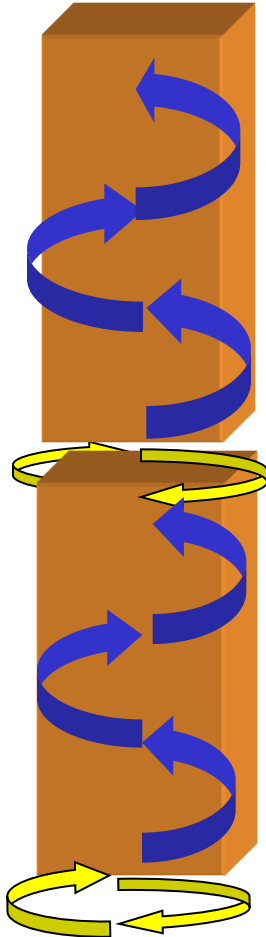
- * For 15 degree



- * With the appropriate stabilizers, on the top of the camera, push the camera into the chimney and evaluate the thimble-cleanout area, or fireplace damper and acclimate yourself to the interior flue area.
- * Move the camera in a circular motion while pushing the camera up the flue. Since your view will be mostly the full side of the liner, be sure to view all sides before moving into the next liner
- * Once you reach a joint be sure to spin the camera 360 degrees until the complete joint has been viewed. Check to see whether the liners are intact (Void of any cracks) and aligned with the next liner. If they are misaligned, allowing infiltration air or condensate from leaving the liner cavity, note the defect. All building codes do require that the flue liners be stacked on top of each other, sealed with the appropriate cement and struck smooth in the interior of the liner. **If this is not found, and the joint is open or will allow the products of combustion to escape to the interior of the chimney, this should be noted and inform the client.**

Scanning Procedures 3

* For 90 degree



- * With the appropriate stabilizers, on the top of the camera, push the camera into the chimney and evaluate the thimble, cleanout area and fireplace damper, acclimate yourself to the interior flue area.
- * Move the camera in a circular motion while pushing the camera up the flue. Create a barber pole fashion view of the liner
- * Once you reach a joint be sure to spin the camera 360 degrees until the complete joint has been viewed. Then reverse the spin direction and continue to the next liner joint. This will keep the camera cable from becoming twisted onto the Kwik-Lock rods. (Regular rods right hand only)
- * Be sure that the joints are intact, and placed on top of the next liner squarely. If not be sure to note the defect.

Scanning From the Bottom Up

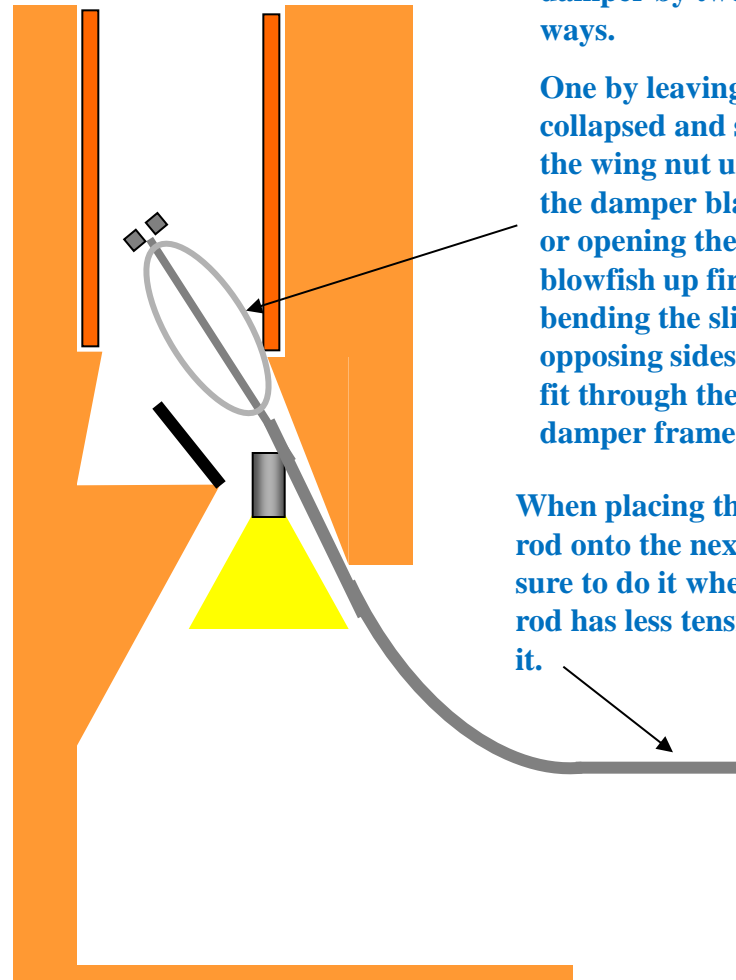
Fireplace scanning using a blowfish / whisker / brush

With either the 15 degree, 90 degree or tilt bracket, place the camera below the blowfish. Let the wheels hit the back wall of the smoke chamber, or the bottom of the first liner.

Angle the camera to pass the damper and begin the scan.

When bringing the camera through the damper, remember to turn it to the side so the lights will not rub on the damper frame. If the operator is using the whiskers or brush, the procedure is the same, only they may need to guide the camera into the first flue liner.

Using whiskers, the operator may wish to take the whisker hub off the camera and reattach it above the damper. Or slowly push the whiskers through the damper. (Masonry fireplaces only not prefab. Use the blowfish or special brush)



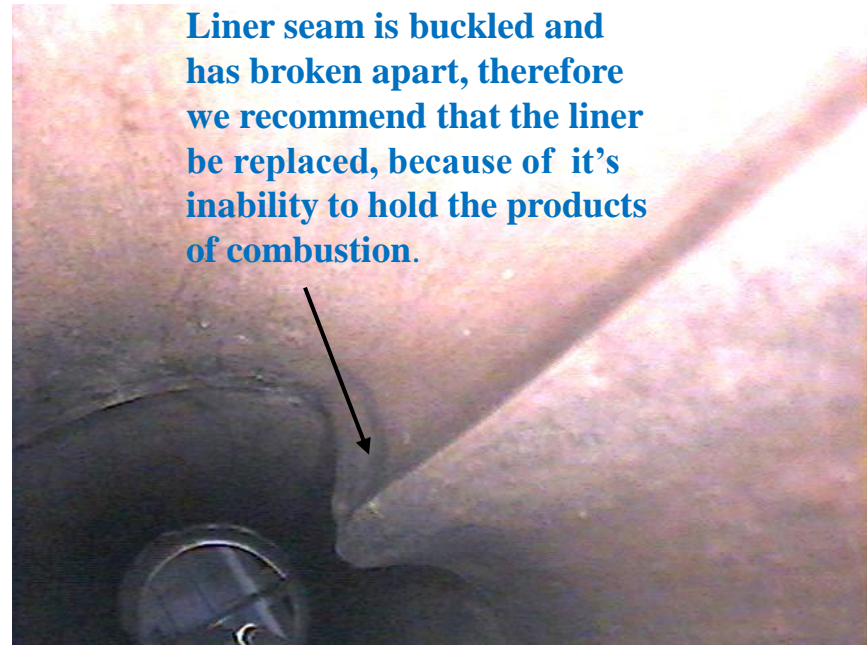
The blowfish can be placed through the damper by two ways.

One by leaving it collapsed and sliding the wing nut up past the damper blade, or opening the blowfish up first and bending the slides to opposing sides and fit through the damper frame.

When placing the next rod onto the next, be sure to do it where the rod has less tension on it.

Prefabricated Chimneys

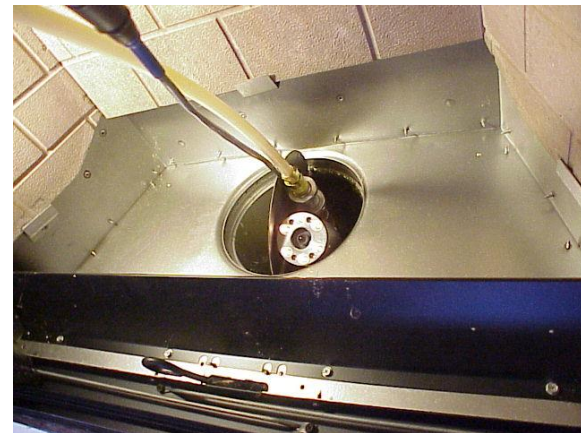
- * One of the most important issues with scanning prefabricated chimneys or stainless relines is the ability to visually see that the liner is not out of round, dented, or buckled in any way.
- * Also check whether the liner seams and joints are still intact. In this case the 15 degree view will clarify the degree of separation or buckle.
- * In stainless relines using sectional pipe, check the rivet holes for any elongation. (90 degree bracket)



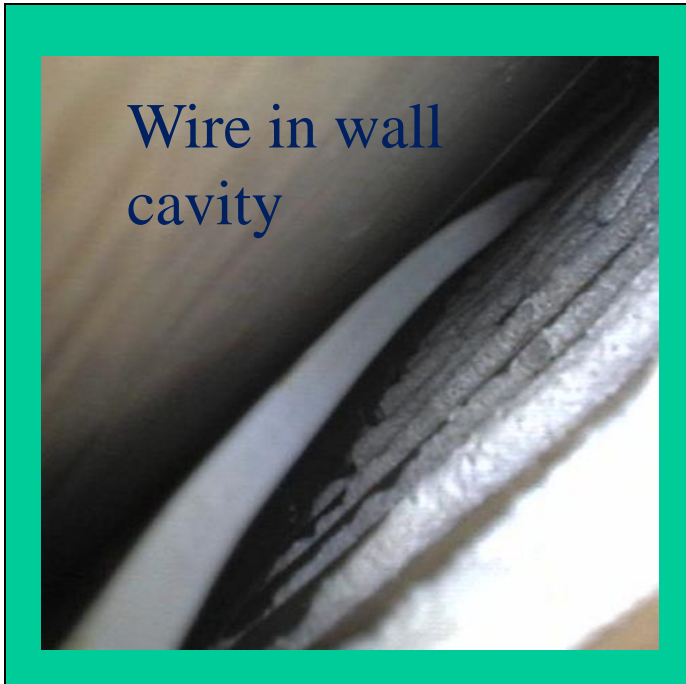
The 15 degree angle works well in spotting defects such as warped liners.

Prefabricated Chimneys

- * **Passing through Prefab dampers**
- * **Place the Special Wakefield brush into the top connector of the bracket**
- * **Whether 90 or 15 degree push the brush to one side of the damper**
- * **With your hand, guide the camera assembly through the damper**
- * **When returning back through the damper remember to turn the camera sideways,(parallel to the damper) and guide the camera again with your hand.**
- * **Using this process will not cause any undo stress on the damper assembly or the camera.**



Wall Cavity or Prefab. Chase Applications



The camera systems have the ability to be used in many applications that may help identify specific area such as chase enclosures or studded walls

The 5 Principles Needed for Proper Scans

In order to perform interior chimney scans, it is very important to follow a procedure. If not then the information can be interpreted as unbelievable. We have designed the product in such a manner to provide the basic essentials needed to produce believable imagery that can be repeated or documented. But part of this process will depend on the operator. If they do not comply with these principles then the scan can have undesirable results

- 1 Clarity of Image.** The C-Scan and Chim-Scan have been designed to have remote focus capabilities. Therefore the operator can change the focal length to provide the viewers with sharp imagery
- 2 Illumination-** All the systems are provided with built in lighting control. From the interior 6 lights which can be varied at the control box, to include an optional exterior light for dark flues or larger size.
- 3 Position-** Each system is supplied with camera brackets that will provide an angle which will enhance the scan. Whether positioning the camera perpendicular to the chimney wall, or angling down at 15 degree, or viewing straight up or down. Each bracket offers the operator a choice to provide the viewers an understanding of the interior of the chimney or ductwork.
- 4 Stability-**Each unit is supplied with a set of adjustable stabilizers to keep the camera stable within the chimney. The camera should be kept from wobbling within the chimney. Lack of stability will produce scans that are incomplete and erratic.
- 5 Delivery-**This part of the scan is in control by the operator. It is best done by using a procedure and moving the camera at a rate that is understandable to the audience.

Clarity

The camera systems are designed to produce focused images for the viewer to see whether in B&W or color. Clarity will be based on the camera's ability to focus on the sides of the liner, producing a crisp image and with proper light. Position will define the image. Both the remote and auto focus cameras have the ability to focus from 1/2" to infinity anywhere within the flue.

If the camera is a fixed focus model, positioning will become vital to create image clarity. In most cases, the lens is set for 3-4 inches away from the camera. Therefore, in smaller flue applications, 90-degree viewing may become a problem. We recommend using an angled bracket or tilt mechanism to allow the viewer to produce a clear image.



Light, focus ability and position can make a real difference on the results

Illumination

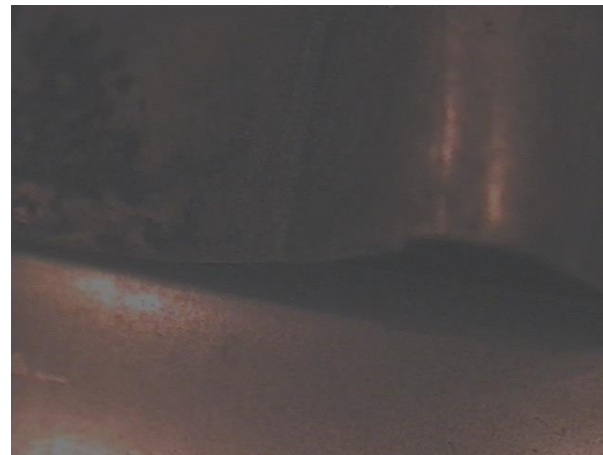
The camera must have adequate light to provide a discernable image to the viewer.

Whether you need internal lights, or external halogen lighting, C-Scan™ & Chim-Scan® systems provide variable lighting sources to deliver the image quality needed to produce a distinguishable image.

Differing textures within the flue will respond differently to lighting. From glazed liners to black soot, all create challenges for illuminating the area.

*Interior lighting provides the broadest coverage, especially in 90 degree viewing.

*Exterior will work best on angled bracketing.



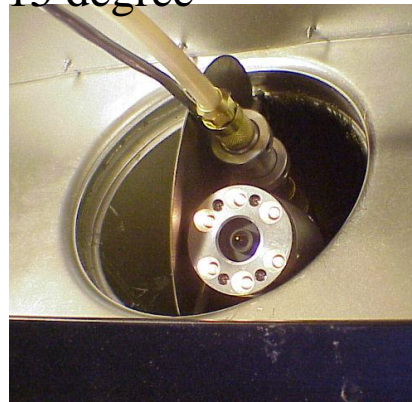
Position

The position or angle of the camera should make the image show the object in question in its best position for discernment. The 0 & 15 degree angle offer more area to view at a time, while the 90degree offers better detail, but less viewing area.

90 degree



15 degree



0 degree



Stability

The camera must be kept stable within the flue. The lack of control of the camera contributes to poor imagery and more time for interpretation or misinterpretation. All units, either C-Scan or Chim-Scan, come equipped with Chimney Whiskers or use the optional Blowfish to provide stability for the camera, allowing for optimal operation and clarity with imagery that stays in focus. *All units manufactured by Estoban Corp. must be used with a stabilizer. If not, the warranty will be voided.*



Delivery

The most important about delivery is a two part system. First is the process of a system. Follow a plan, or procedure. First move the camera through the chimney liner in such a way that the viewer can comprehend what they are seeing. This can be accomplished by using rods which have locked connectors allowing left to right or up and down movement.

C-Scan & Chim-Scan units are equipped with Kwik-Lock Rod ends. These rods allow the operator to turn left, right, up or down while keeping control of the camera. If the operator is using regular chimney sweep rods, then they can only turn right. Therefore at each connection unwrap the camera cable from the rod.

With the remote/auto focus, variable lighting, Whiskers or Blowfish for stability, the systems are user friendly when used in conjunction with the Kwik-Lock Rods.



1) Simply align male end into connector



2) Pull back the indented ring past the button. Push the male into the connector. Roll the male end till the ring will release.



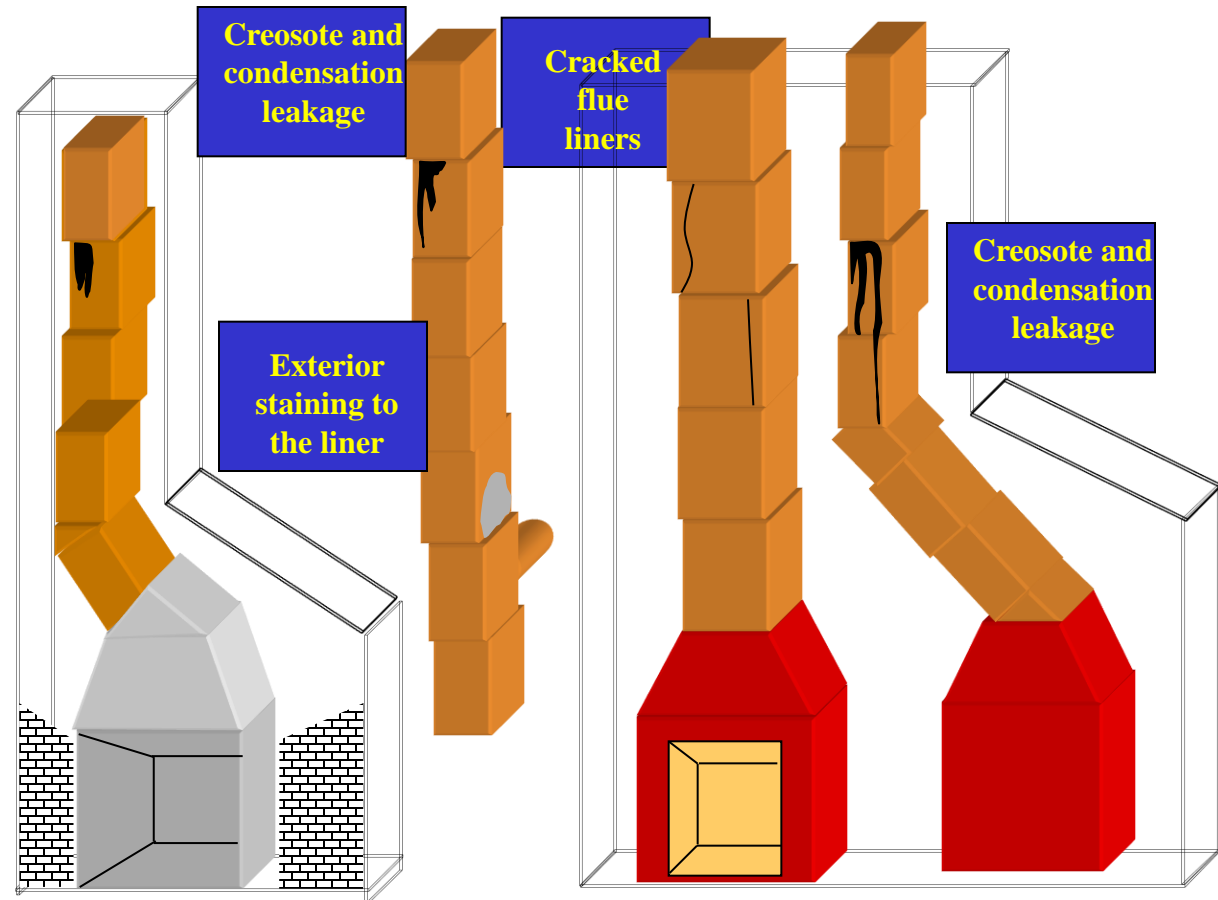
3) Release and the ring will snap into place. Twist the outside ring past the button for security.

Masonry Chimneys

Remember all Model Building codes do make reference to the flue liners and their position in relation to one another. Please check with the authority having jurisdiction on current code references and those adopted earlier.

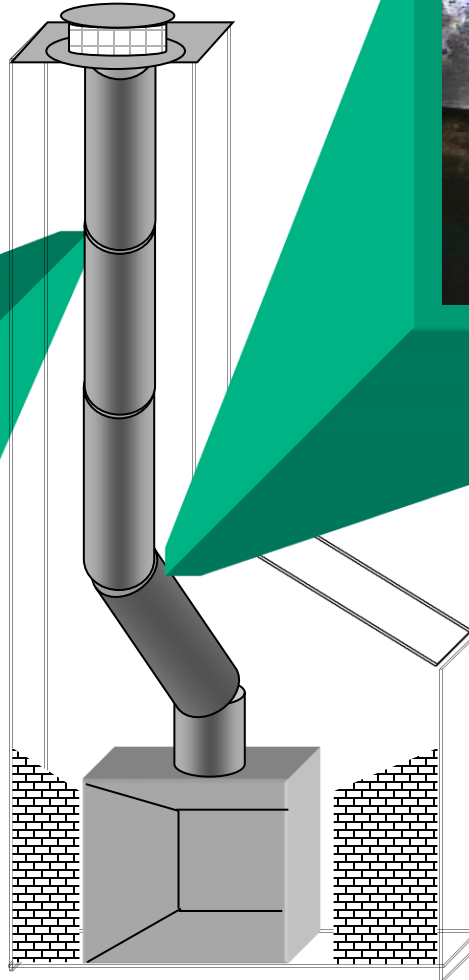
It is the concept of all building codes that a chimney vent all the products of combustion. Therefore misaligned liners, open mortar joints, cracked liners can impede the chimney from doing its intended function.

Condensation, creosote, and smoke are products of combustion. If they not are allowed to escape into the chimney interior, this deficiency should be noted and reported to the client.



Prefabricated Chimneys

All manufacturers of metal chimneys provide a way to fasten the sections together. Whether it is pop rivets to tabs, be acquainted with the different types of connections and there proper attachment.



Discoloration near joints or irregularities should be noted



Warranty

- All SD Recorders, LCD screens and Digital recorder carry a 90 day limited warranty (shipping not included).
- All fixed, auto focus and remote focus camera's and interior LED lights in these models, carry 1 year parts and labor. (shipping not included).
- All control boxes carry 1 year parts and labor (shipping not included)
- All LED Exterior lights carry a 90 day warranty parts and labor (shipping not included).
- All incandescent screw in lights, cables, and stabilizers are non-warranted items.
- **All warranties will be voided if Either the whiskers or blowfish or special brushes supplied by Estoban are not used.**
- **Use ONLY kwik lock rods, button lock rods, torque fit rods or CeCure rods. Warranty will be void if other rods used.**
- All prices and design specification are subject to changes without written notice. This manual is copyright by Estoban Corporation. No part of this manual shall be copied without written permission from the Estoban Corporation. All directive may be sent to, 1643 Hwy 34 west, Fairfield, Ia. 52556
- Phone: 641-472-7643 e-mail info@chimscan.net www.chimscan.net
- **CAUTION** Secure Camera Equipment in all applications. If not, Damage or Personal injury can occur.