Optical Wavelength Laboratories

OPERATIONS GUIDE

400x USB Video Inspection Scope

Model Number:
VS-400-H

Revision 1.00

OWL-INC.COM

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INTRODUCTION

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INTRODUCTION

BEFORE YOU BEGIN

All personnel testing optical fibers should be adequately trained in the field of fiber optics before using any fiber optic test equipment.

If the user is not completely familiar with testing fiber optics, they should seek competent training. Such training can be acquired from a variety of sources, such as local hands-on training classes.

Valuable information about fiber optic testing can also be gathered from reading printed literature carefully or by thoroughly reading supplied operations manuals.

Fiber optic testers vary from other types of test equipment due to issues such as:

1) standards-based testing
2) proper fiber optic test procedures (FOTPs)
3) "zeroing" or referencing of power levels
4) determining the correct link budget to pass or fail by

Complete understanding of each of these issues is critical for performing proper fiber optic tests.

ABOUT THIS MANUAL

Throughout this manual you will find various symbols that assist with understanding the procedures outlined in this manual. Below is a list of these symbols and a short description of their purpose:

Shows a helpful tip that will make a procedure go more smoothly

Tells the user some useful information about the successful completion of a procedure

Warns the operator of a potentially dangerous condition

INTRODUCTION

DESCRIPTION

The VS-400-H is a hand-held video microscope with 400x magnification, allowing for inspection of both multimode and singlemode fiber connector endfaces and optical ports for cleanliness and quality.

REQUIREMENTS

A PC or laptop equipped with a USB port is required for downloading captured endface and port images from the VS-400-H.

ADVANTAGES

Video microscopes offer three distinct advantages over traditional direct-view microscopes:

Eye safety. Even with IR filters and other eye safety precautions, viewing endfaces and ports through a direct-view scope can be harmful to the eyes, due to high-intensity optical radiation directly entering the eye. Video microscopes completely isolate the eye from potentially dangerous incoming light, which instead falls upon a small video camera.

Large viewing area. Images on a video screen are much larger than when viewed through a direct-view scope, and thus easier to see.

Larger viewing area also reduces eye strain caused by squinting through a viewfinder.

Image capture. Digital images of fiber endfaces/ports are stored an SD card which has been provided with the unit. Stored traces can be downloaded to hard disk for later retrieval.

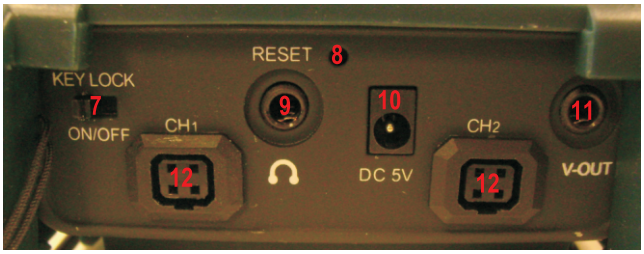
INTRODUCTION

PORTS

Top View

1	**Power button**	Hold to power ON and OFF
2	**MIC**	Not used
3	**Power indicator LED**	Indicates when unit is powered on
4	**Charger indicator LED**	Indicates when unit is being charged
5	**SD card slot**	Contains an SD card for external storage of endface images
6	**USB port**	Provides connection for downloading endface images to PC/laptop

Bottom View



7	**KEYLOCK**	Not used
8	**RESET**	Resets the unit in case the unit locks up
9	**Headset jack**	Not used
10	**Charger port**	Charges the internal battery pack; battery charger included
11	**Video Out port**	Not used
12	**CH1/CH2**	Connects video inspection probe

INTRODUCTION

BUTTONS

	While inspecting endfaces:	While in menu system:
	Records end-face as a video file	Nothing
	Zooms in on image	Moves selection up
	Nothing	Deletes video/image files
	Places inspection grid on screen	Moves selection left
	Adjust contrast/brightness/color settings	Selects highlighted menu option
	Records end-face as an image file	Moves selection right
	Toggles which probe port is in use	Nothing
	Zooms out on image	Moves selection down
	Returns user to menu system	Returns to previous menu level

OPERATION

POWER ON/OFF

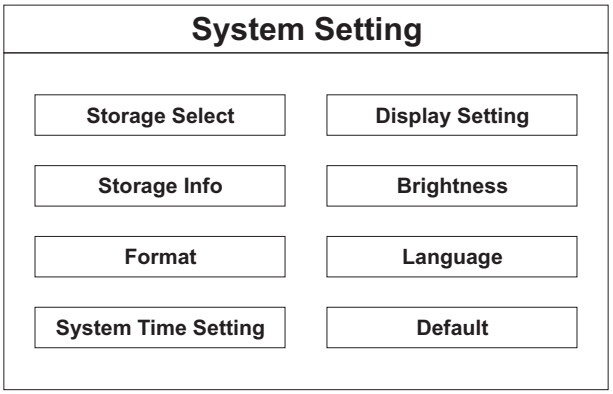
Press and hold the POWER button to power ON and OFF.

While the unit is powered on, the blue power indicator LED will be lit.

Once powered on, the videoscope display will show the input of the currently selected probe.

INITIAL SYSTEM SETUP

Before using the videoscope for the first time, it is recommended to configure the user preferences found in the System Settings menu. This menu can be accessed from the inspection screen by pressing the BACK button, then selecting the Setting option (icon looks like a gear).



Storage Select Sets the storage location to either internal memory or SD card.

Storage Info Views the statistics for internal memory or SD card.

Format Allows the user to format the internal memory or SD card.

System Time Setting Sets the time/date stamp in the device. The time/date stamp appears on the LCD display when inspecting fiber endfaces.

Display Setting Sets the output mode of the videoscope.

Brightness Sets the brightness level of the LCD display.

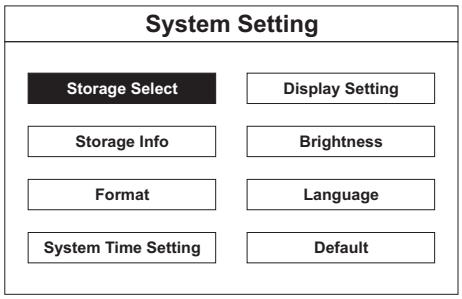
Language Sets the language option.

Default Resets the videoscope to factory default settings.

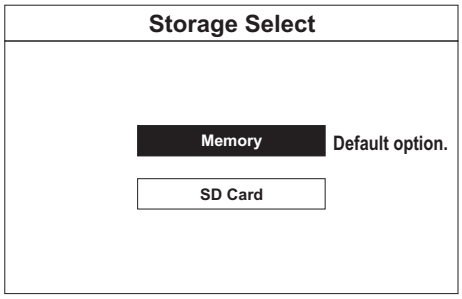
OPERATION

STORAGE SELECT

1. Use the arrow keys to highlight the **Storage Select** menu option, then press Enter.



2. Use the arrow keys to highlight **Memory** or **SD Card**. This will determine where endface images and videos will be stored.

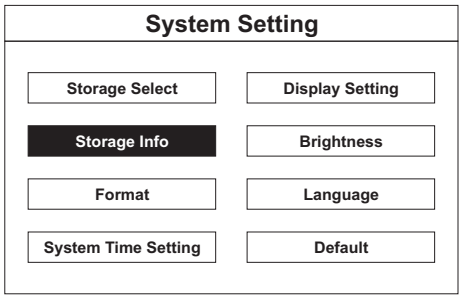


3. Press Enter to confirm. The user will be returned to the System Setting menu.

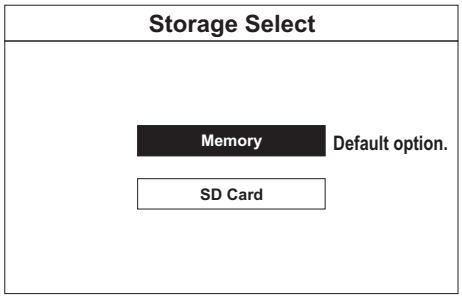
OPERATION

STORAGE INFO

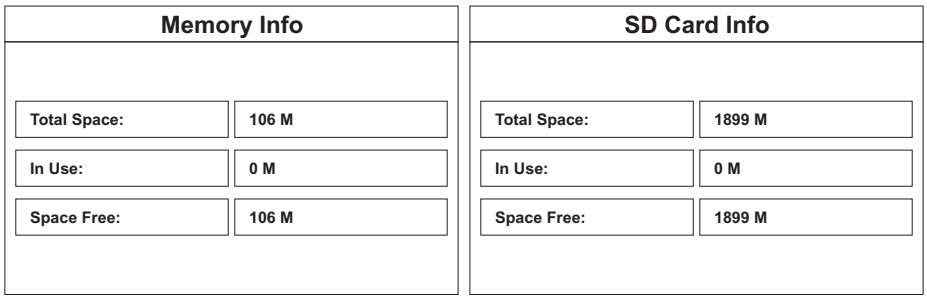
1. Use the arrow keys to highlight the **Storage Info** menu option, then press Enter.



2. Use the arrow keys to highlight **Memory** or **SD Card**.



3. Press Enter to see the statistics of the selected option, including total memory, memory in use, and memory remaining.

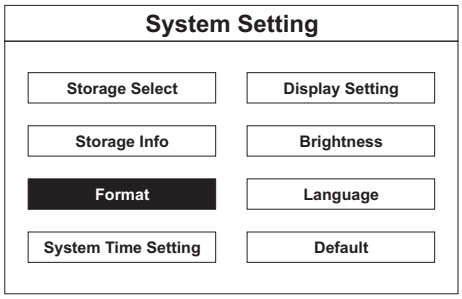


4. Press the BACK button twice to return to the System Setting menu.

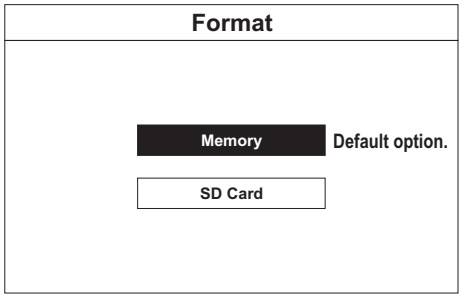
OPERATION

FORMAT

1. Use the arrow keys to highlight the **Format** menu option, then press Enter.



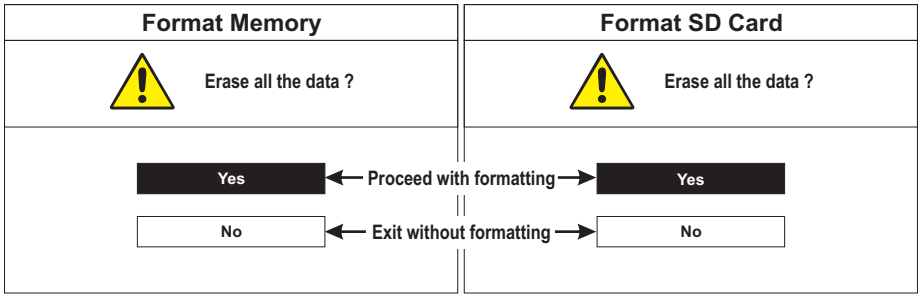
2. Use the arrow keys to highlight **Memory** or **SD Card**.



3. Press Enter to format the selected memory option.

4. To exit without formatting the selected menu option, highlight **No** and press Enter, or press the Back button. This will return the user to the **Format** selection screen.

   To proceed with formatting the selected menu option, highlight **Yes** and Press Enter. Once formatting is complete, the user will be returned to the **Format** selection screen.



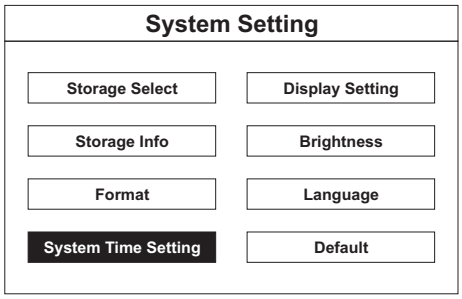
CAUTION!
Formatting will erase all of the data stored on the selected memory option.

5. Press the Back button to return to the **System Setting** menu.

SYSTEM TIME SETTING

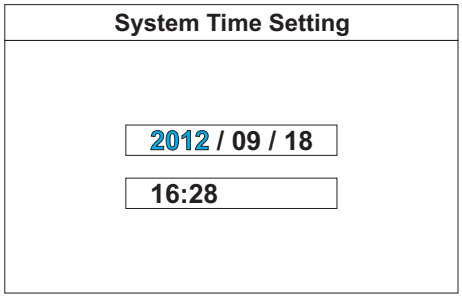
1. Use the arrow keys to highlight the **System Time Setting** menu option, then press Enter.

   This time and date will appear on the LCD display while inspecting fiber endfaces.



2. Use the left and right arrow keys to highlight the next value.

   Use the up and down arrow keys to change the highlighted value.

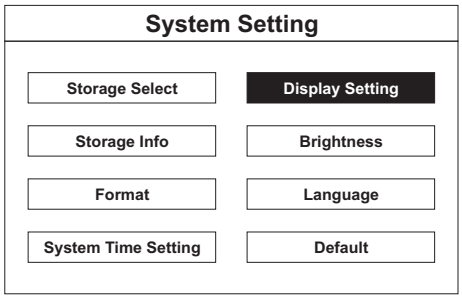


NOTE: the time is displayed as a 24-hour clock.

3. When finished setting the time and date, press Enter to save the time and date, and return to the **System Setting** menu.

DISPLAY OUTPUT SETTING

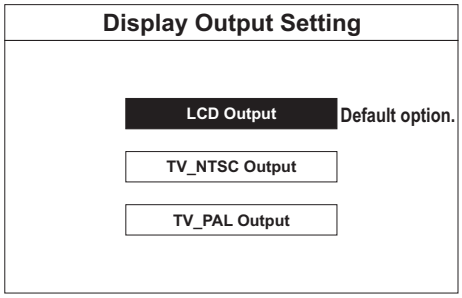
1. Use the arrow keys to highlight the **Display Setting** menu option, then press Enter.



2. For normal hand-held operations, always use the **LCD Output** option.

   If you wish to send the output to an external monitor, select the appropriate TV Output option.

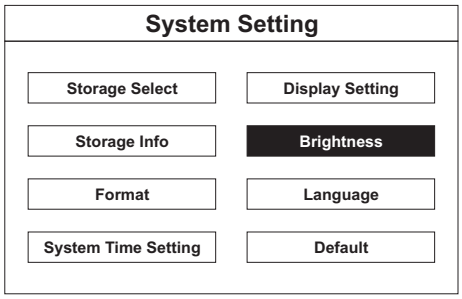
   Use the supplied composite video cable to connect the videoscope to the external monitor.



3. When finished selecting the **Display Output Setting**, press Enter to return to the **System Setting** menu.

BRIGHTNESS

1. Use the arrow keys to highlight the **Brightness** menu option, then press Enter.

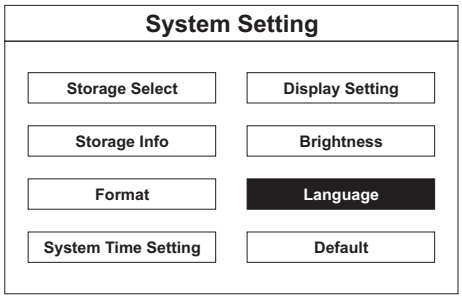


2. Press the left arrow to decrease (−) the LCD brightness.
Press the right arrow to increase (+) the LCD brightness.

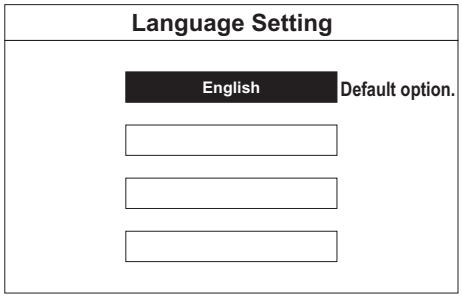
3. When finished setting the **Brightness**, press Enter to save the brightness level and return to the **System Setting** menu.

LANGUAGE

1. Use the arrow keys to highlight the **Language** menu option, then press Enter.



2. It is highly recommended to leave this option set to **English**.

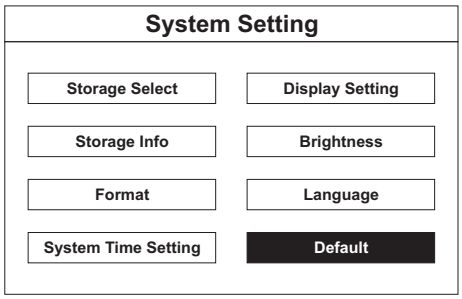


3. When finished setting the **Language Setting**, press Enter to save the brightness level and return to the **System Setting** menu.

DEFAULT

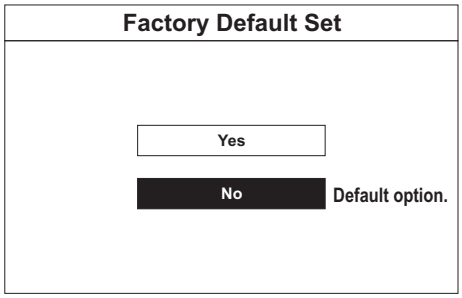
1. Use the arrow keys to highlight the **Default** menu option, then press Enter.

   This menu option allows the user to set the user preferences to factory defaults.



2. To exit without re-setting factory defaults, press the Back button, or select **No** and press Enter.

   To re-set the videoscope to factory settings, highlight **Yes** and press Enter.

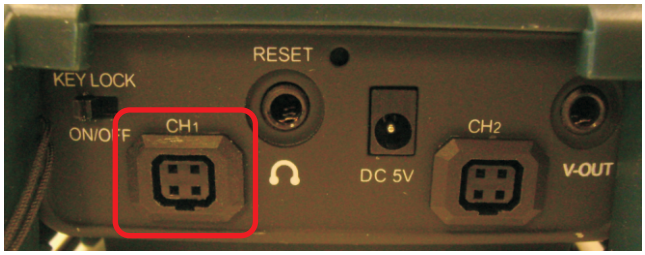


The user will be returned to the **System Setting** menu.

OPERATION

VIEWING FIBER ENDFACES

1. With the unit powered OFF, connect the probe to the port labeled CH1 on the bottom of the unit.



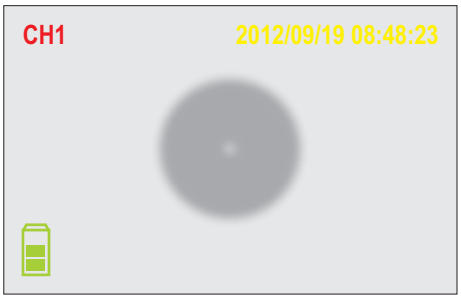
2. Attach the appropriate probe tip for the connector or port to be inspected. Several probe top options are included with the VS-400-H.

3. Power ON the VS-400-H. The LCD display will initially show a test pattern.

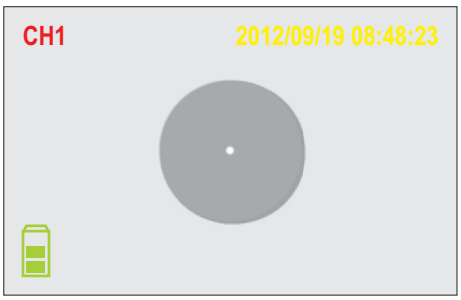
   A blank screen will appear that includes the probe channel number, time and date, and battery status.

4. Connect the probe to the connector or port to be inspected.

   Initially the image may be out of focus.



5. Using the focus adjustment wheel on the probe, focus the image on the LCD display.

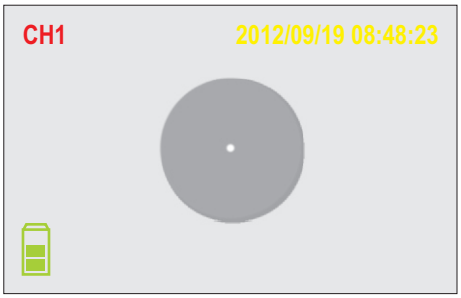


6. If any obstructions are found on the image, remove the probe from the connector/port.

   Clean the connector/port, then re-inspect.

ZOOM IN/OUT

While inspecting fiber endfaces, the user can zoom in or out on the image.

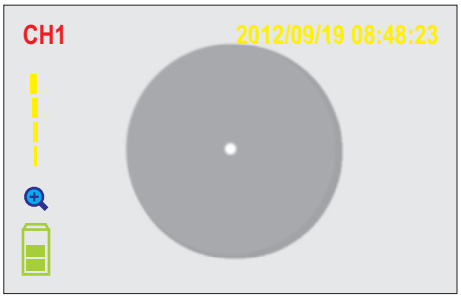



ZOOM IN


ZOOM OUT

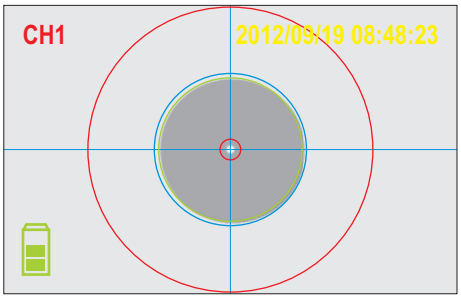
A magnifying glass icon will appear when the image is being zoomed in on.

Four levels of zoom are available, each level indicated by a yellow bar above the magnifying glass



SHOW/HIDE INSPECTION GUIDELINES


SHOW/HIDE INSPECTION GUIDELINES



The inspection grid places guidelines on the LCD display to denote "zones" where obstructions are observed.

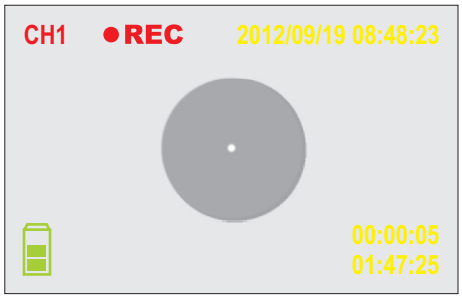
Pay special attention to obstructions that occur in or near the very center of the endface (this is the fiber core).


NOTE: if the fiber endface image is not perfectly centered on the LCD display, the grid will not be placed properly.

SAVING ENDFACE IMAGES

Once the endface image is sufficiently focused, the user can either capture the image to a video file, or a still image file.

SAVING VIDEO FILES



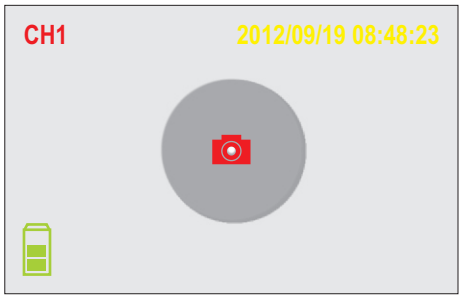
Press the Video button to begin recording the video.

At the bottom right of the screen, the video duration and remaining video capacity will be shown.

At the top of the screen, the RECORD icon will appear.

Press the BACK button to end the video recording.

SAVING STILL IMAGE FILES



Press the Camera button to save a still image of the endface.

A camera icon will briefly appear in the center of the LCD display, confirming the image has been saved to memory.

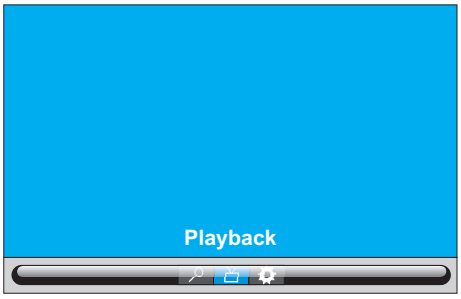
OPERATION

RETRIEVING ENDFACE IMAGES

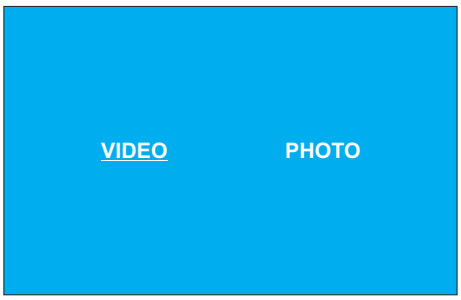
From the endface viewer screen, press BACK to enter the main menu screen.

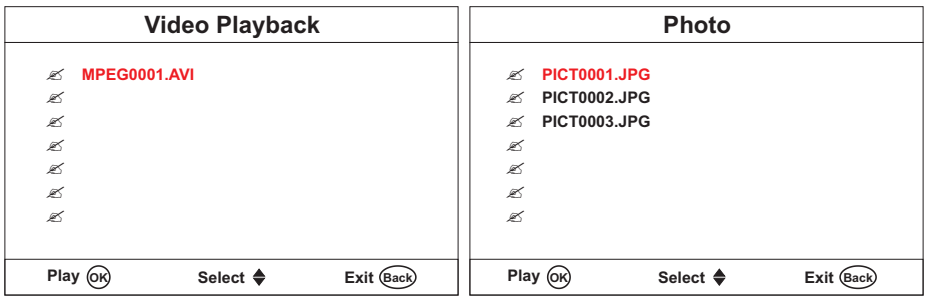
By default, the Check Up option will be selected.

Press the right arrow to highlight the Playback option, then press ENTER.



Select VIDEO or PHOTO.





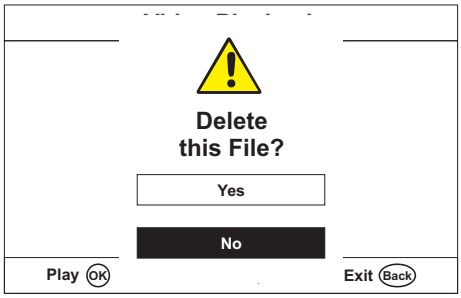
Select the file to preview.

Select next or previous filename in the list.

Return to the main menu.

DELETING ENDFACE IMAGES

Deletes the highlighted filename.



When prompted:

Choose **YES** to delete the file.

Choose **NO** to return to the file selection screen without deleting the file.

CONNECTING THE VIDEOSCOPE TO PC/LAPTOP

INSTALLING VIDEOSCOPE ON PC/LAPTOP

Connect the VS-400-H to a working USB port on a PC or laptop, and power the unit ON by holding the power button for a few seconds.

Most Windows operating systems already include a USB driver for the VS-400-H, so the USB driver may install automatically without the need for user intervention. In this case, "balloons" will appear near the System Tray showing installation status information.

Once the drivers are successfully installed, the VS-400-H will be assigned a drive letter (such as H:\), and will operate as a standard Mass Storage device (similar to a USB flash drive).

The drive letter assigned to the videoscope will refer to:

- SD card memory when the SD card is installed
- internal memory when the SD card is not installed

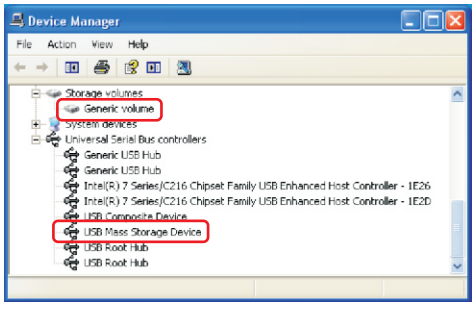
The files can then be copied from the videoscope to a location on the PC/laptop.

VERIFYING INSTALLATION OF THE USB DRIVER

The following information applies to a PC/laptop running Windows XP or later.

USB driver installation can be verified by accessing the Device Manager through Control Panel.

Device information for the VS-400-H can be found under the sections titled **"Storage volumes"** and **"Universal Serial Bus controllers"**.



NOTE: the USB driver information will only appear if the VS-400-H is connected via the supplied USB cable, and is powered on.

If the either of these device entries shows an error, un-install the device from Device Manager, and re-install.

USING THE SD CARD

REMOVING THE SD CARD

If data is stored on the SD card, the SD card can be removed from the videoscope, and be inserted directly into a computer equipped with a SD card slot.

1. Power OFF the VS-400-H.
2. Press on the top of the SD card to detach it from the SD card slot. The card slot is spring-loaded.

A USB-based SD card reader is also supplied with the VS-400-H.

REPLACING THE SD CARD

If data is stored on the SD card, the SD card can be removed from the videoscope, and be inserted directly into a computer equipped with a SD card slot.

1. Power OFF the VS-400-H.
2. Insert the SD card into the SD card slot, then push down until the SD card “clicks” in.