



"LET OUR IMAGE ENHANCE YOUR IMAGE"

Operating Instructions
MedRx Deluxe Video OtoScope System

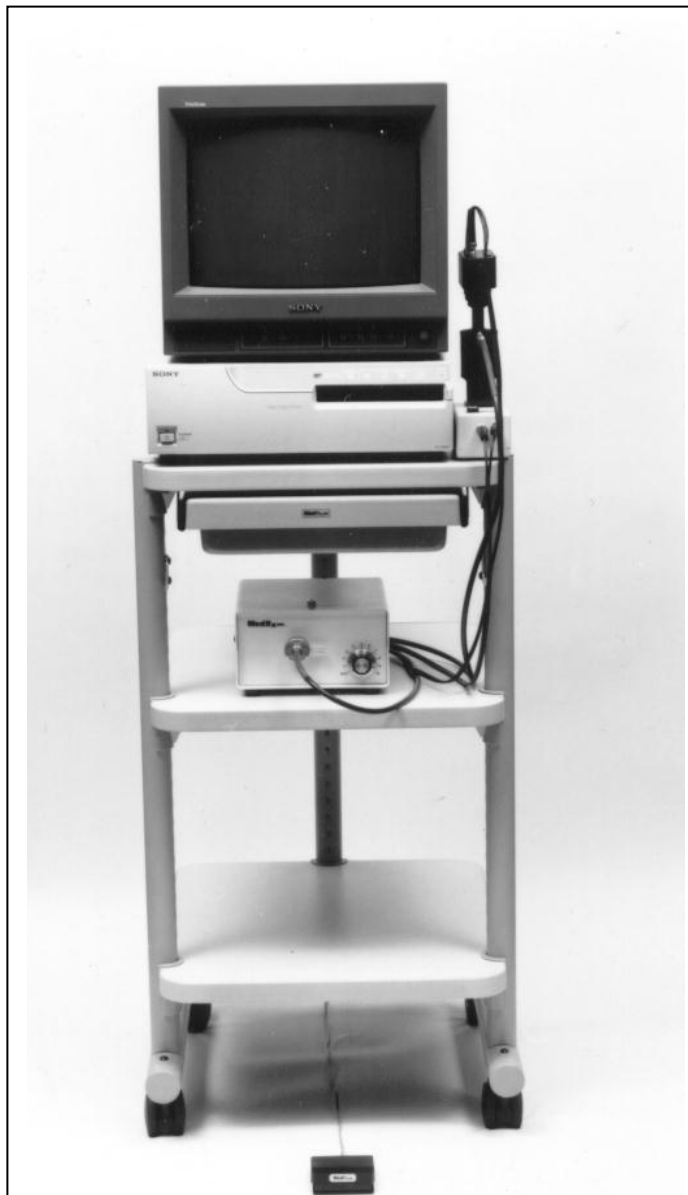


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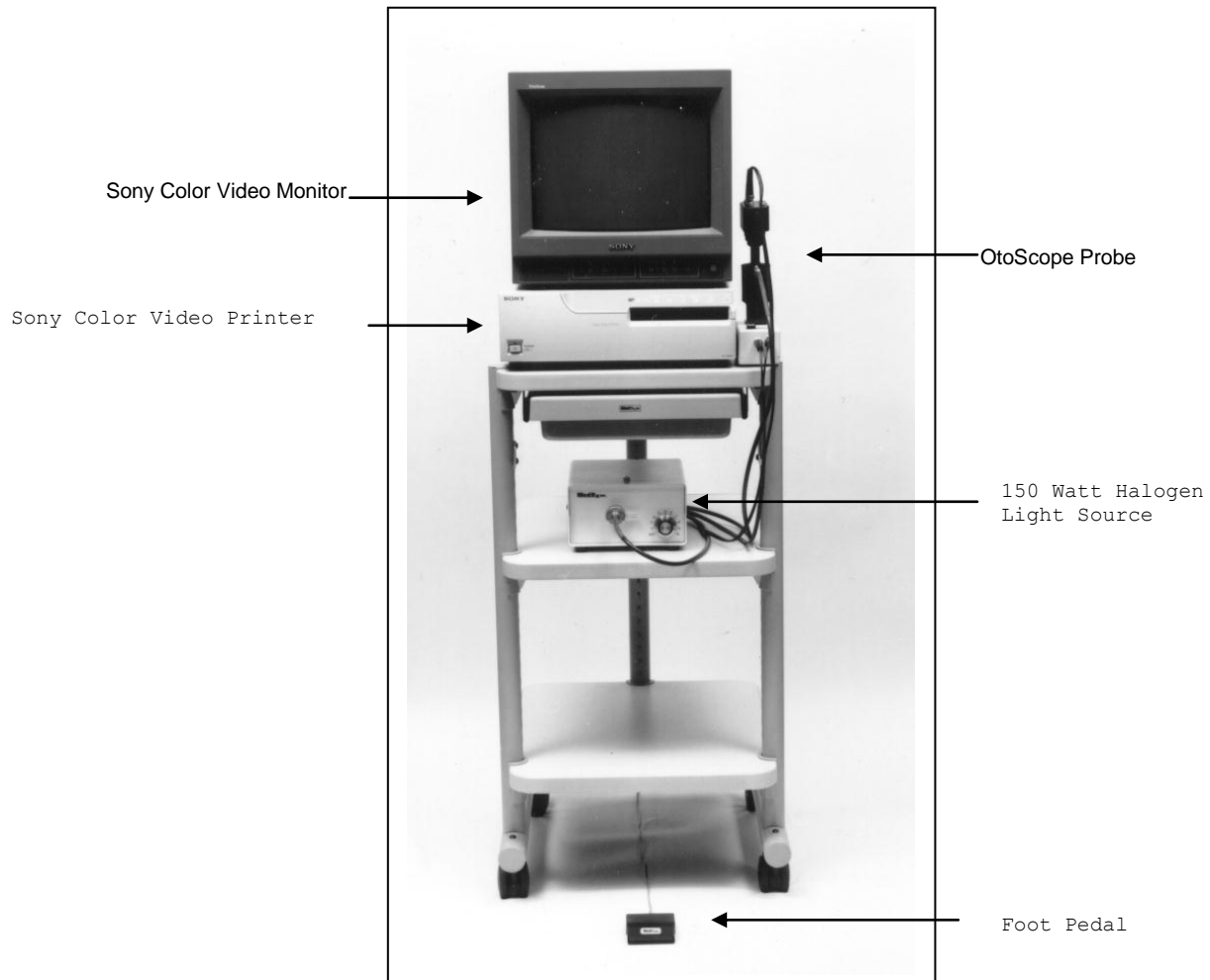
Introduction to the MedRx Video OtoScope System

The Deluxe Video OtoScope System:

- MedRx Patented OtoScope Probe
- MedRx High Resolution Camera
- High Resolution Sony Color Video Monitor
- High Resolution Sony Color Video Printer with Stop Action Foot Pedal
- 0 – 150 Watt Halogen Light Source
- Universal Fiber Optic Cable
- Print Film Pack
- 3mm Specula
- Carrying Case
- All Necessary Cables and Attachments
- One Year Warranty

Options:

- Full Image/Radiograph Lens with Adjustable IRIS
- Mobile Cart with Storage Drawer and AC Power Strip
- Extended Warranty



Accessories and System Components

Camera/Probe Assembly

This hand held assembly part includes the custom designed and patented optical probe and high resolution color video camera. These are the key components to the system. The camera operates on 12V DC provided from the control box.

Color Monitor

The high-resolution video monitor has one video input and one video output jacks. The single video output jack can be used to pass the image displayed on the monitor to an additional video storage/display device.

Color Video Printer

The printer freezes and reproduces the image viewed by the camera/probe assembly. This image is a valuable and informative tool to help educate your client. The video signal is routed from the back of the control box to the input of the video printer, then from the output of the printer to the input of the video monitor. The printer has a socket on its back panel, which is labeled Remote 2. When a momentary contact foot switch is plugged into this socket, one can either freeze or release the image by depressing the foot switch.

Control Box

The control box serves several functions. First, it is the stand on which the camera/probe assembly rests. The camera/probe fits into the middle of the stand with the probe pointing down. Second, it is the master control switch for the camera. An indicator light illuminates when the ON/OFF switch on top of the control box is in the ON position. For reference purposes, the end of the control box closest to the on/off switch is called the front.

The camera/probe assembly plugs into the front of the control box by using the twin lead power cable as the connector. In addition, main power flows to the rear of the control box from the power module, which is plugged into the power strip. The camera image is carried to the printer by the connection from the rear of the control box to the "video in" socket on the printer.

Foot Switch

The foot switch is a convenient way to control the video printer freeze function. It allows for hands free operation of the image freeze. The remote foot switch must be plugged into the socket labeled Remote 2 on the rear panel of the video printer.

Fiber Optic Cable

The cable, containing thousands of high-grade glass fibers, connects the light source to the probe. The connection to the probe uses a connector which pushes on and locks in place on the probes optical socket. The connector is released from the probe by pulling firmly on the connector.

Twin Lead Power Cable

This cable is bi-directional so either end can be connected to the camera. The other end connects to the front of the control box.

Jumper Cable

The 24" long cable couples the video signal between the printer video output and the monitor video input.

Power Module

This is a 2" (w) x 1 1/2" (h) x 2 1/4" (d) black cube with a 120V AC power plug on one side and an attached cord on the other side which plugs into the rear of the control box. This power module supplies a constant power of 12V DC to the camera/probe and provides a high degree of voltage regulation.

Should the power module fail, replace it with one from MedRx. A lower quality replacement could cause the camera power supply voltage to fluctuate, resulting in **camera damage**. (The camera warranty is voided if the proper power module is not used).

Light Source

This high quality 150-watt variable intensity light source is designed to provide a small spot of high intensity light which enhances the quality of the image. A fiber optic cable transfers the light from the light source to the probe. A 3/4 rotation of the dial is usually appropriate. However, some adjustment may be necessary for optimum image clarity.

Mobile Cart

The cart allows for storage, interoffice mobility, and an easily viewed screen. The cart is 17" wide, 22" deep, and comes with two shelves, and a power strip. For stability of the system it is recommended that the cart be pulled rather than pushed.

Custom Carrying Case – Accessory

Transports and stores your video OtoScope equipment. Optional sizes available for purchase.

Full Image Lens - Accessory (Option)

This lens is interchangeable with the probe lens and allows you to demonstrate to your patient how to insert the hearing instrument in the ear. If a CIC (completely-in-the-canal) hearing instrument is being used, you can show your patient that the CIC is not visible. This lens is very useful for any type of documentation.

Print Packs – Accessory

For use with the UP-2300 printer only, 200 per pack.

Cerumen Management Tools (Curettes) – Accessory

Replace the speculum on the tapered tip of the probe with a curette, and insert into the canal to remove cerumen.

Speculum - Accessory

A reusable 3mm-speculum cover is used to protect the probe tip. Welsh Allyn 3mm (Part Number: 24303)

Lamp EJA 150 - Accessory

This bulb, used in the light source, lasts approximately 200 hours. We suggest you keep a spare bulb on hand.

Assembly and Installation

Installation Instructions

Although no specific order is required for connecting the Video OtoScope System, it is sometimes helpful to understand the flow of the signal from the camera to the monitor. The following instructions follow the path of the video signal flow. Before you put the system together, please refer to page 6 for connecting instructions, and page 7 for the wiring diagram.

After unpacking the individual components, the interconnecting wires can be installed. Connect the camera to the control box with the 8' twin lead cable, which plugs into the back of the camera and the front of the control box. One of the plugs, called a BNC, plugs in and turns 1/8 of a turn to lock the plug in place. The power plugs straight into the camera and the control box.

The power module plugs into the power strip and into the back of the control box. The 18" long cable that comes out of the back of the control box with the BNC connector on the end plugs into the video input on the back of the printer.

The 24" jumper cable with the BNC connectors on each end plugs into the video output of the printer and the video input of the monitor. The jumper cable is bi-directional so either end plugs into the printer or monitor.

The printer, monitor, and light source need to be plugged into the power strip. (The fiber optic cable needs to be attached into the light source and the probe.)

Caution: Take care to avoid the following circumstances that could cause extensive damage to your fiber optic cable:

- Do not roll chairs or carts over the cable.
- Do not close the carrying case on the cable.
- Do not pull or yank the cable to disconnect it from the camera.

Instructions for Attaching/Disconnecting Fiber Optic Cable to Probe

To Connect

Push the connector end into the probe as shown in figure 1.

To Disconnect

With thumb and forefinger, gently pull the connector away from the probe.

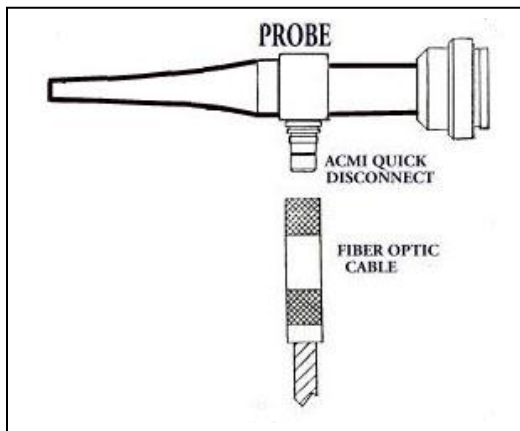
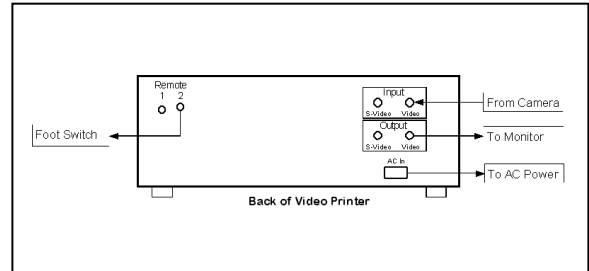


Figure 1

Insuring Proper Picture Quality

When setting up the printer, the input video plug goes to the scope. The output video plug goes to the monitor, and the Remote #2 goes to the foot switch.

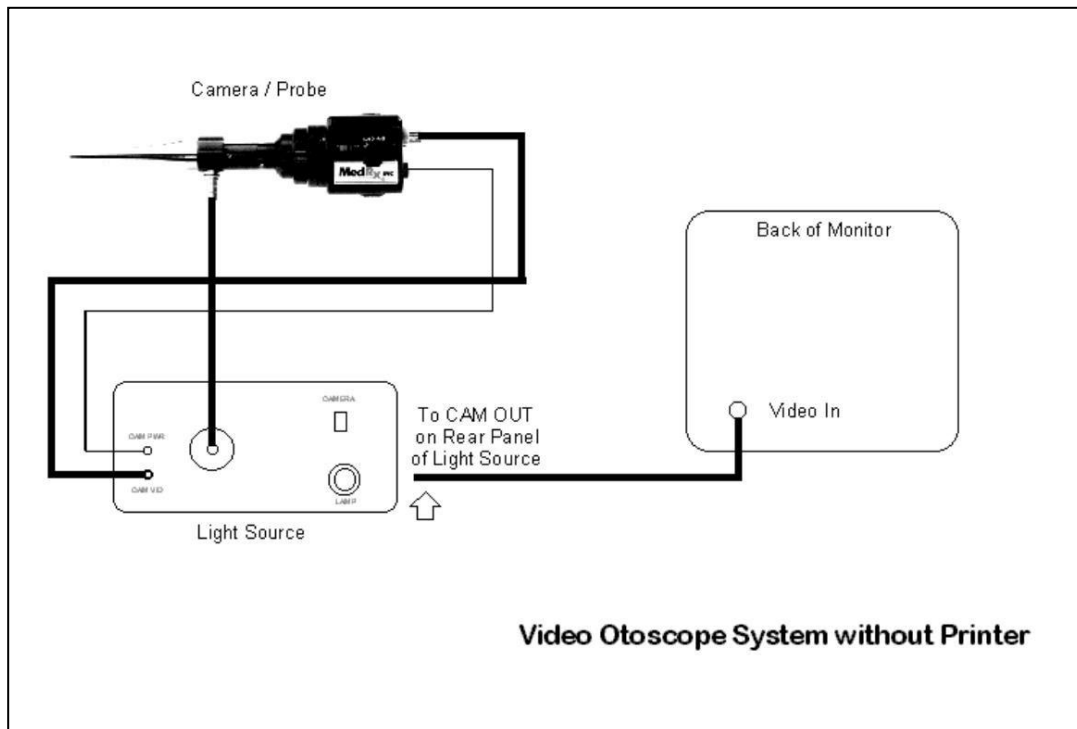
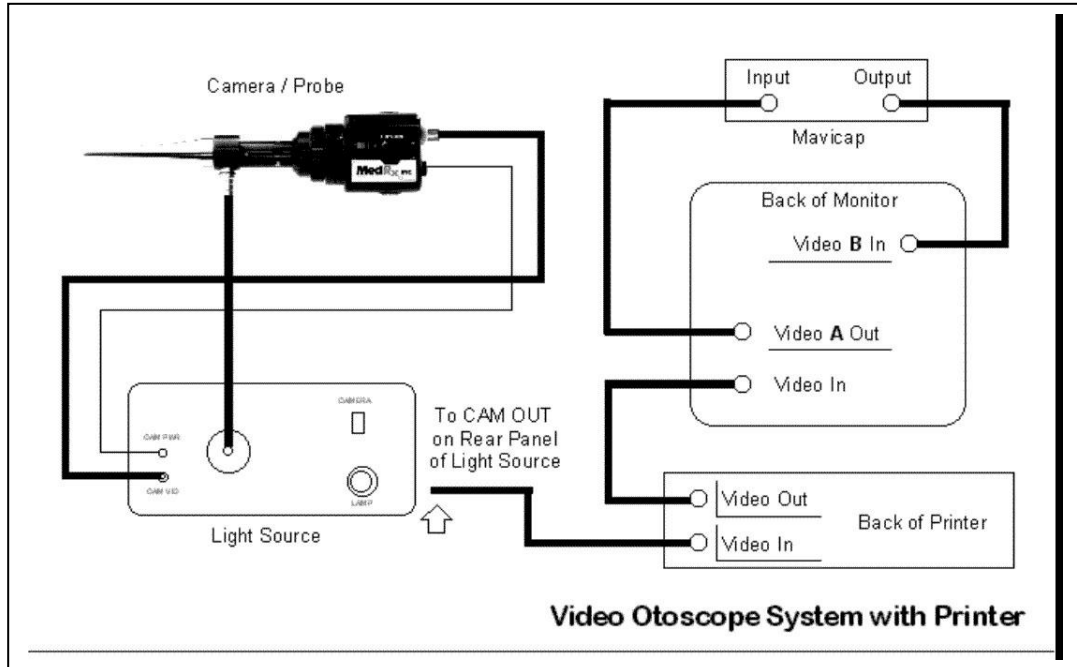


Back of UP-2300 Printer

Fuzzy Video Images

Cerumen and/or fog on the lens tip most often cause fuzzy video images. You can correct or prevent either condition by using an alcohol wipe on the lens tip before and after each use.

MedRx Wiring Diagram



Operating Instructions for Using the MedRx Video OtoScope System

Turning on the Video OtoScope System

Master Switch

The master switch is located on the power strip. When the cart is used, the power strip is mounted under the top shelf of the cart.

Video Monitor

The video monitor power switch is located on the front of the monitor. An indicator light on the front of the monitor turns green when the power is on.

Printer

The printer power switch is located on the front of the printer. An indicator light turns green when the power is on and the printer is ready to print.

Light Source

The light source intensity is controlled by rotating a knob located on the front of the light box. The light source should be turned to 3/4 intensity. Once the probe is in the ear, you may need to adjust the intensity control to achieve an optimum picture. When in the standby mode, leave the light

on but turn the intensity down to the lowest setting.

Camera

The camera power switch is located on the top of the camera control box. An indicator light turns red when the power is on. If no picture is showing, check to see that the printer and monitor are turned on and that all connections are correct.

Suggested Operating Procedure

- * Leave the monitor, camera, and the printer in the on position and control all pieces of equipment with the master switch on a power strip.
- * The light source can be left on for long periods of time, but the lamp intensity should be turned down except when being used. Following this guideline will greatly extend the bulb life, which is estimated to be about 200 hours. We suggest you keep a spare bulb on hand at all times.

Using the Deluxe Hand Held Camera Probe

CAUTION: The deluxe hand held camera probe/assembly is only to be used by a person qualified in the use of an OtoScope. Misuse can cause a patient pain and possible injury.

CAUTION: The deluxe hand held camera probe/assembly is only to be used by a person qualified in the use an Ootoscope. Misuse can cause a patient pain and possible ear damage. The speculum cover is always to be used with the system. The speculum cover must be cleaned or replaced between usage per accepted medical practice procedures.

Prior to insertion, the probe should be held within 1/4" of a known object, such as your finger, to check the quality of the image. Sometimes the lens is smeared with cerumen or other matter and will need to be vigorously cleaned with an alcohol wipe in order to provide a clear image.

The monitor should be observed as the probe is inserted into the ear. Once the desired image is obtained, press the foot pedal to freeze the image for further study. Once an acceptable frozen image is displayed on the system monitor, pressing the print button located on the front of the printer can make a print of the image held in memory.

Practice is essential to achieving optimum picture quality. Cerumen and/or fog on the lens tip most often cause fuzzy video images. You can correct or prevent either condition by using an alcohol wipe on the lens tip before and after each use.

Using the Printer

For maximum performance of the system, familiarization with the many capabilities of the printer is recommended.

How the Printer Effects the Image on the Monitor

The video signal, which originates at the camera, travels through the control box and into the printer. It is processed in the printer and is then sent to the monitor. When the printer is off, the video signal will pass through it, although it won't freeze or print a picture.

Freezing the Image

The printer has the capability of storing and displaying 1, 2, 4, or 16 images on the screen or any combination thereof. Images are simply stored by pressing the Capture button located on the front of the printer, or by pressing the Foot Pedal.

Toggleing Between a Stored Image and a Live Picture

Once an image is stored, you may want to continue looking at live pictures to see if there might be a better view available than the one that is stored. Source/Memory: Source is a live moving picture as displayed by the camera, and Memory is the last frame stored in the printer. This Source/Memory button allows you to toggle back and forth between a stored picture and a live picture. The stored picture remains stored in the printer unless the printer power is turned off or another image is stored. Only the last stored picture is held in the printer's memory, except in cases where 1/4 or 1/16 frame splits are being taken. The arrow keys allow movement for editing.

Printer Settings

The printer settings have been set to optimum standards as pertains to use with the MedRx Video system. It is recommended that the customer not change the current settings. If, however, the settings accidentally get changed the following are the preferred factory settings:

Settings:

```
COLOR ADJUST
▶/COL/LAY/PRN/IN/OUT/
LOAD COLOR: 1/2/3
CYN - RED : -4 .....
MAG - GRN : -5 .....
YEL - BLU : -4 .....
DARK      : 4 .....
LIGHT     : 0 .....
SHARPNESS : 8 .....
INTERPOL. : OFF/ON
SAVE COLOR: 1/2/3 [EXEC]
```

```
LAYOUT SETUP
▶/COL/LAY/PRN/IN/OUT/
MEMORY    : FRAME/FIELD
MULTI PIX : 1/2H/4/16
SEPARATE  : * * * * *
WINDOW    : PRESS[>]
CAPTION   : PRESS[>]
```

```
WINDOW SETUP
▶LAY SETUP : PRESS[>]
H START    : -24 DOT(S)
V START    : +10 DOT(S)
H WIDTH    : 864 DOTS
V WIDTH    : 460 DOTS
```

```
CAPTION ON          16
MEDRX_VETSCOPES_
(888)_392-1234__
-----
ABCDEF GHIJKLMN
OPQRST UVWXYZ
0123456789+-=%
' " , . ; : ( ) [ ] { } < >
! ? & / * # $ % & # ~ ! ' ^
↑ ↓ ← → INS DEL SP OFF ON EXIT
```

```

PRINTER SETUP
▶/COL/LAY/PRN/IN/OUT/
PRINT QTY : 1 [1~9]
INTERVAL  : * * * * *
GAMMA     : S/NORMAL/H
SYSTEM    : PRESS[>]
FUNCTION  : PRESS[>]

```

```

SYSTEM SETUP
▶PRN SETUP : PRESS[>]
BAUDRATE  : 12/2400/48/
BEEP      : OFF/ON
APPLI.    : STANDARD /

```

```

FUNCTION SETUP
▶PRN SETUP : PRESS[>]
AUTO LIVE : OFF/ON
IMMED. CAP. : OFF/ON
RM2 FUNC  : / CAP/SRC /
CLEAR     : / PAGE /

```

```

INPUT SETUP
▶/COL/LAY/PRN/IN/OUT/
INPUT SEL : VIDEO/SV
HUE       : 0 .....i.....
COLOR     : 0 .....i.....
GAIN      : 0 .....i.....
OFFSET    : 0 .....i.....
AGC       : OFF/ON

```

```

OUTPUT SETUP
▶/COL/LAY/PRN/IN/OUT/
DISPLAY   : OFF/ON
SOURCE    : THRU/EE
MONI C-R  : 0 .....i.....
MONI M-G  : 0 .....i.....
MONI Y-B  : 0 .....i.....

```

• **Layout 1/2 Multi Pictures**

Since it is possible to have combinations of full, 1/2, 1/4, and 1/16 pictures combined on one monitor screen for both viewing and picture printing, it is important to know that each successive picture captured is stored on top of whatever was on the screen before. For example, if 1/4 and/or 1/16 frames are to be captured on top of a full frame picture, the full frame must be captured first. When the split function is being used, the operator can select which quadrant to use to print the split frame. The split function is learned best through trial and error. The printer manual can assist in better understanding the split function.

• **Caption**

Up to 45 characters of alphanumeric information can be printed at the bottom edge of each picture. Once this information is entered through the keypad, it will be repeated on each print until changed, even if the power has been turned off. We recommend you practice installing your names and telephone numbers.

• **Printer Setup**

Print Quantity
It is possible to print from 1 to 9 prints at a time by cycling the print quantity option. Before printing multiple copies, keep the print quantity at 1 until a satisfactory print is obtained. The number of prints can be changed using the directional keys located behind the front panel.

Please read the printer manual to become proficient with all the printer functions.

Using Monitor

Settings:

- Contrast - Max
- Brightness – 05
- Chroma – 03
- Phase - Standard

For additional support, please call MedRx at 1(888) 392-1234, 9:00 a.m. - 5:00 p.m., EST.

Care, Maintenance, and Storage

Your MedRx Video OtoScope has been designed to provide years of trouble-free service. Do not remove or open the cabinets of the equipment, as there are no user serviceable components inside.

Cleaning

To keep your system looking new, wipe the exterior of the components with a soft cloth. Stubborn stains may be removed using a cloth moistened with water and mild detergent. Do not allow debris or fluid to enter in the components.

IMPORTANT:

- **THE PROBE TIP COVER SHOULD BE RETAINED AND USED FOR ADDITIONAL TRANSPORTATION PROTECTION OF THE VIDEO SCOPE OPTICS WHILE IN OR OUT OF THE FOAM CASE**
- **MEDRX SUGGESTS THAT AFTER USING THE LIGHT SOURCE, TO REDUCE INTENSITY ON THE DIMMER TO LOWEST POINT AND LET THE BULB COOL FOR 1 – 2 MINUTES PRIOR TO TURNING THE LIGHT SOURCE OFF.**
- **TO REDUCE EQUIPMENT SLIPPAGE DURING CART MOVEMENT, MEDRX HAS PROVIDED RUBBER FEET TO APPLY TO THE FRONT OF THE MONITOR AND DOUBLE-STICK VELCRO TO FASTEN THE CONTROL BOX/CAMERA STAND TO THE SIDE OF THE PRINTER.**

Since the Video Ootoscope incorporates glass lenses for image transmission and fibers for illumination it is breakable. Although the tip is tapered to improve durability, any impact or crushing to the tip may cause serious damage to the instrument.

Video Ootoscope Disinfecting

The Video Ootoscope is sealed so that it may be wiped with the following surface cleaners to disinfect:

75% alcohol
Chlorhexiderm
Cidex
Nolvasan
Parvocide
Parvosol
Roccal
Synphenol

The scope should NEVER be heat sterilized, gas sterilized or soaked in liquid because damage may result.

Use an alcohol wipe to clean the lens on the end of the OtoScope probe, or a common disinfectant.

Operational Tips

When using the camera be sure camera is in the upright position – so you can read the horizontal writing on the side. This helps orientation of the UP/DOWN on video screen.

Transportation and Storage

When transporting or storing your video OtoScope, it is best to use the original packing case or similar packaging. Store the system in a cool, dry location and do not place your system in direct sunlight. Care must be taken to protect the system from shock, moisture damage and mishandling. Do not place heavy objects on any of the system's components. Remove the batteries from any wireless remote controls if they are not going to be used for extended periods of time.

To assure proper operation and warranty protection, use manufacturer's replacement components only.

For proper care of the video monitor and printer, please refer to the appropriate operator's manual (included in the original packaging).

Trouble Shooting Guide

<u>Problem</u>	<u>Main Cause</u>	<u>Solution</u>
Fuzzy or out of focus picture	Dirty probe tip (dried cerumen) When changing adapters on camera, make sure space ring is removed with adapters.	Vigorously clean probe tip with an alcohol wipe
No picture on 13" monitor	Short in twin lead cable Source/Memory button in memory	Replace twin lead cable Push to Source on printer or memory
Indicator light switch on control box not on	Power supply not plugged in Short in twin leads cable	Plug in power supply Unplug twin cable from control box; see if light comes on, if so replace twin leads cable
Can't freeze picture	Printer not on Foot switch not plugged in	Turn on printer Plug in foot switch
No light from probe tip	Light source not on Bulb burnt out	Turn on light source Replace bulb
Picture is dark	Switch on back of camera in wrong position Light source too low	Move camera shutter switch to off position Turn up intensity of light source
Printer alarm constantly on	Mechanical failure	Call MedRx for service
Can't clean probe	Probe dropped and physically damaged	Call MedRx for service

This guide was designed to assist you in diagnosing minor problems. Should service be needed, please call MedRx for Technical Support Monday-Friday, EST 9:00 a.m.-5:00 p.m. at 1(888) 392-1234.

Limited Warranty

MedRx, Inc. warrants the MedRx Video OtoScope System to be free from defects in material and workmanship for one year from the time of purchase. If this system fails to perform as specified during this period, the purchaser is responsible for calling MedRx at (888) 392-1234. The company's representative will advise the owner to either return specific components or the entire system to:

MedRx, Inc.
1200 Starkey Road #105
Largo, FL

MedRx will repair or replace any defective parts, fully test and calibrate the system and/or components and ship the system promptly back to the owner. There is no cost for this warranty service, provided the system is one year old or

less and has not been misused, abused, or damaged. Such damage includes, but is not limited to, dropping, exposure to excessive heat (greater than 100 degrees F), and water/liquid damage. Repair or replacement of the system as provided under this warranty is the sole and exclusive remedy of the purchaser. MedRx shall not be liable for any consequential or incidental damages, or for breach of any express or implied warranty. Except to the extent of applicable law, any implied warranty, merchantability or fitness of this product is limited to the duration of this warranty.

MedRx will, at its discretion, service and repair out of warranty components at the purchaser's request, charging for parts and labor as necessary.

Components Registration for Customer Information

Probe Serial Number: _____

Camera Serial Number: _____

Printer Serial Number: _____

Light Serial Number: _____

Monitor Serial Number: _____

Date Purchased _____

MedRx Video OtoScope System Technical Specifications

Sony UP-2300 Color Video Printer

- 310 DPI resolution
- 37 second print speed
- 8 bit image quality (256 gradations)
- 16.7 million colors per dot
- Y/C and composite video inputs
- 200 sheet print media capacity
- Multiple pictures on one sheet capability
- UL-1950 safety standard

Sony Trinitron 13M53 Color Video Monitor

- Screen Size 13 1/18"
- Trinitron CRT with P-22 phosphors
- 15 kg weight
- AC 100 to 240 V, 50/60 Hz

Fiber Optic Light Source

- 150 watt
- Infinitely variable
- Thermal overload protected
- Fan cooled
- 3 amp circuit breaker
- EPA or EKE reflector lamp
- 115 VA. or 220 VA. (special)
- 9-1/2" long, 4-3/4" wide, 6-1/4" high
- On/off switch incorporated in intensity control

Handset

- High grade lens elements
- Anti-reflective coatings
- 60 degree field of view
- High resolution color camera
- 0-3" depth of field
- 203 gram total weight, balanced design · 5.5" total length
- Tapered conical SS probe for durability
-

Mobile Cart

- Sturdy construction, 300 lb. + capacity
- Two shelf standard
- Three shelf optional
- 42 pounds shipping weight
- Six outlet power strip installed
- Color matched to printer/monitor
- Rolling/lockable castors
- 35" high, 17" wide, 22" deep

Additional System Features Include:

- High quality glass fiber optic cable
- Custom control box with handset holder
- Printer foot switch
- Camera power/signal cable
- Instructions/wiring diagram
- Alcohol swabs
- Printer/monitor bridge cable
- Full image lens
- Specula

MedRx Video OtoScope Handset Technical Specifications

THE HANDSET CONSISTS OF TWO PRIMARY COMPONENTS, THE VIDEO CAMERA AND THE PROBE.

Video Camera

- 1/3 inch pick-up element
- 420K pixels
- Horizontal resolution 420 TV lines
- 5 lux minimum illumination interchangeable to a 3 lux
- CS lens mount
- 153 grams total weight
- Adjustable white balance
- -10" to +40"C operating temperature
- 42mm (W) x42mm (H)x 53mm (L)
- BNC video output socket
- 12V DC +/- 10% voltage requirement

Deluxe Probe

- Field of view 60 degree + 10-5 degree
- Focal plane from tip .25" (+/- .125")
- 360 degree glass fiber light at tip
- Conventional optical elements, color corrected
- Minimum intensity 750 FC at 1"
- Working length 1.125" from shoulder
- Tip diameter .120"
- Tapered tip
- Stainless steel body
- Serialized
- Integral glare reduction filter
- 50 grams total weight
- Normal erect image orientation
- Overall length 3.22"
- Body diameter .7"
- Maximum diameter 1.225" dia.
- Swivel mount
- FFA.OS fiber optic socket
- CS mount
- Impervious to alcohol cleaning

Note: The camera and probe are sold as a matched system with MedRx proprietary coupling and focusing techniques. Should either the camera or probe become defective either part can be replaced; however, the process must be accomplished at the MedRx USA manufacturing facility. Neither the probe nor the camera can be sold separately.

Comment: While system specifications may serve some benefit in comparing various products, discretion must be used in determining overall system performance. It is suggested that a logical system test might involve the comparison of color printouts of the same subject, such as a known ear canal, using various systems. The MedRx system has been optimized with respect to each specified component. Claims of specifications of individual components do not reflect the overall optimization of the system as will be evidenced through such a test. System optimization provides the end user with the best value for the investment. That is the MedRx commitment.