OPERATOR'S MANUAL

LT-300 SD / LT-300 HD DIGITAL VIDEO COLPOSCOPE

V7.0-241118A

LUTECH

Contents

Key Information

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

1. Product Information

Model:	LT-300 SD, LT-300 HD, REF# LT-300 SD-M, LT-300 HD-M
Product:	Digital Video colposcope
Applied Part:	None. Product does not come into contact with patient.
Electrical Class	Class II
FDA	FDA 510K
CE	CE

2. Manufacturer

Lutech Industries, Inc.
105 Remington Blvd., Suite C, Ronkonkoma, NY 11779, U.S.A.
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F: (631) 619-0723
www.lutechmedical.com
Info@lutechmedical.com

3. EU Representative

Arazy Group GmbH
The Squaire 12, Am Flughafen,
60549 Frankfurt am Main
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Tel: +49 69 95932-5090
Fax: +49 69 95932-5200

4. Version

This instruction for use will update without notice.
Version: 7.0

5. Markings

The following marks are included on the product:

Mark	Description
	Protect Against Water
	Fragile Contents

	Manufacturer
	Serial Number
	Rx Only
	Medical Device
	Do Not Stack Above 6 Boxes
	Transport/Storage Temperature Range
	Transport/Storage Pressure Range
	Transport/Storage Humidity Range

6. Classification

The following is the classification information:

Classification Principle	**Classification**
Type of protection against electric shock.	Class II
Degree of protection against electric shock.	Type B
Mode of operation	Continuous operation
Degree of protection against ingress of water.	Normal device.
Degree of safety in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.	Non AP or APG equipment
Type of management	Type II. Classification code 6822

7. Support and Maintenance

7.1 Warranty

Lutech warrants the LT-300 SD and LT-300 HD digital video colposcopes, when new, to be free of defects in material and workmanship and to perform in accordance with manufacturer's specifications for a period of one year commencing on the date of purchase from Lutech or its authorized distributors. Extended warranty is available. Please ask a Lutech representative or your representative for more information. Lutech, or its authorized distributor, service center, or agents (collectively, “Repair Center”), will either repair or replace any components found to be defective or operating outside of manufacturer's specifications within the warranty period at no cost to the customer. It shall be the purchaser's responsibility to return the colposcope to the Repair Center. This warranty does not cover breakage or failure due to improper use, modification, neglect, accidents, or shipping damage. In Addition, this warranty is also void if the instrument is not used in accordance with the instruction manual or if repaired by someone other than a Lutech Repair Center. Purchase date determines warranty requirements. No other express warranty is given. Please keep the packaging material for future transportation and/or storage needs.

WARRANTY LIMITATIONS: THE DURATION OF ANY IMPLIED WARRANTY OR CONDITION, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ON THIS PRODUCT SHALL BE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE. IN NO EVENT SHALL LUTECH BE LIABLE FOR ANY LOSS, INCONVENIENCE OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHERWISE, RESULTING FROM BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OR CONDITION, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE WITH RESPECT TO THIS PRODUCT, EXCEPT AS SET FORTH HEREIN.

7.2 After Sales Service

The standard warranty for the LT-300 SD and LT-300 HD colposcopes is 1 year from the date of purchase. Warranties may vary from 1-3 years depending on purchase terms. Please ask your Lutech representative or distributor for more details.

Please contact Lutech if you need technical support or service.

Lutech Industries, Inc.
105 Remington Blvd., Suite C
Ronkonkoma, NY 11779
(631) 676-7432
service@lutechmedical.com

Service hours: 8:30 AM – 4:30 PM EST
Not including holidays or weekends.

Before calling the manufacturer, distributor, or authorized service center, please have the following information on hand:

- Product model number
- Product serial number
- Detailed issue with the product (including how to replicate the issue if available).

Alternatively, you can visit www.lutechmedical.com and fill out a service request form to obtain an RMA number.

Warranty is not covered if:

- The colposcope frame has been opened or tampered with in any way.
- The damage is caused by misuse, physical damage, or carelessness.
- The damage is caused by lack of proper maintenance.
- The damage is caused by maintenance or repair made by unapproved persons or companies.
- The damage is done by unstable voltage.
- The damage is done by natural disasters.

8. Indication for Use

The LT-300 SD and LT-300 HD digital video colposcopes are used for the magnified viewing of the vagina, cervix, and external genitalia in order to assist medical professionals in the process of identifying abnormalities and selecting areas for biopsy. The colposcope is a tool used by the medical personnel during examination and is not able to give any diagnosis on its own. It is intended to be used only by trained and qualified medical personnel in hospitals, clinics, and private offices, and not intended for home use.

9. Device Benefits

The LT-300 SD and LT-300 HD digital video colposcopes is designed for the benefit of the user as well as the patient. The camera element and viewing options allow for a high definition, clear and magnified view of the exam area, providing an easier method for the medical personnel to reach a conclusion or gather samples. The ergonomic design separates it from traditional colposcopes to help maintain correct posture of the user during the exam. This decreases any discomfort that are associated with the examination process for the user, such as back pain, eye strain, neck pain, migraines…etc. It's intuitive user interface allows for quick training and on boarding of new medical professionals. The digital components connect to TVs or computer screens, allowing for easy training of multiple students a time, instead of one by one like those provided by the traditional colposcopes. The auto focus features allow for a faster examination, cutting down on awkward moments and discomfort for the patient. Its small footprint allows it to fit into small exam rooms or certain mobile examination vehicles.

10. Safety Terminology

The terms "WARNING", "CAUTION" and "NOTE" are used throughout this manual to point out hazards and to designate a degree or level of seriousness. Familiarize yourself with their definitions and significance.

CONTRAINDICATIONS: Contraindications indicate a circumstance where the equipment is absolutely forbidden for use.

WARNING: Warnings indicate a potential hazard or unsafe practice which, if not avoided, could result in death or serious injury.

CAUTION: Cautions indicate a potential hazard or unsafe practice which, if not avoided, could result in minor personal injury or product damage.

NOTE: Notes provide application tips or other useful information to assure the best possible user experience.

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

10.1 Hardware Risks

CONTRAINDICATIONS:

- **There are no known contraindications.**

WARNING:

- **Please confirm the imaging system is in normal working condition before operation.**
- **Check all cables before use. Take notice to avoid cables intertwining on the neck of patient and replace any bad cables and connectors immediately.**
- **The device can only be used on one patient at a time.**
- **The device must be grounded to avoid short circuiting the system.**
- **The device should only be used in the correct patient environment.**
- **Colposcope must be powered off and disconnected from AC power before cleaning.**
- **Keep the camera away from extreme humidity. During operation, avoid splashing any liquid near the colposcope. If liquid is splashed onto the colposcope, it may cause the device to malfunction.**
- **Never place the camera in an environment where the temperature is higher than 131°F (55□C) or under direct high temperature radiation of thermal therapeutic or microwave devices.**

- **This device is not meant to be in contact with the patient. Please avoid contact between the device and the patient during use.**
- **Make sure the power cord is properly plugged into a power socket with proper ground protection.**
- **Any peripheral electronics attached to the video colposcope (i.e., monitor, computer, etc.) should comply with IEC 60601-1 (General Requirements for Safety, Medical Electrical Equipment) or other relevant IEC standards depending on the type of peripheral device used.**
- **The device should only be connected to parts and accessories that are supplied by Lutech. Lutech cannot assure the safety of the device when used in conjunction with an unapproved part or accessory. Lutech cannot assure the safety of the unapproved device that is being connected to the LT-300 SD and LT-300 HD digital video colposcopes.**
- **Always turn the colposcope off first before plugging in or unplugging the video cable.**
- **Never stare at the lights around the lens.**
- **At any point during the use of the colposcope, if any liquid gets splashed onto the outer casing or the lens of the colposcope, immediately stop using the device and wipe the liquid off. Please follow the instructions set forth in chapter 6 of the manual under Cleaning and Maintenance.**
- **At any point during the use of the colposcope, if any liquid gets splashed onto the colposcope and gets inside the casing, please turn off the colposcope right away and call your technician or the manufacturer. The device should be checked by an authorized technician to make certain it is working accurately before being put back to use.**
- **Do not attempt to immerse any part of the equipment in cleaning solutions.**
- **Do not let any liquid enter the inner casing of the camera. If water enters the inner casing of the camera, call your technician or service center for assistance.**
- **Do not immerse the cable into any liquid or let any liquid touch or enter the electrical connection portions of the cable.**
- **Always disconnect the colposcope from any power source before disassembling any components or parts.**
- **The colposcope should always be operated by trained and authorized medical personnel and according to the requirements of the Operator's Manual. For any questions or concerns, please contact the manufacturer or authorized repair/service center.**
- **Do not use product in anesthetic, flammable, and explosive environments due to potential fires or explosions.**
- **The LT-300 SD and LT-300 HD digital video colposcopes should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the user must be alert and monitor the LT-300 SD and LT-300 HD digital video colposcopes to verify it is operating within the manufacturer standards.**
- **The LT-300 SD and LT-300 HD digital video colposcopes are class I equipment and is intended for use in a hospital or medical office environment. The LT-300 SD and LT-300 HD digital video colposcopes can encounter difficulties in ensuring electromagnetic compatibility in other environments because of both conducted and radiated disturbances.**
- **Electromagnetic fields may interfere with the normal function of the system. Therefore, make sure that the external device complies with EMC requirements. X-ray machine or magnetic resonance devices may possibly cause interference because they can produce high intensity electromagnetic radiation.**

CAUTION:

- **Federal law restricts the sale of this device to, or by the order of, a physician or other licensed medical professional.**
- **Without the written approval of the manufacturer, user shall not remove or modify the colposcope or any of its attachments and accessories. Nor shall the user use any accessories which do not comply with the manufacturer's requirements.**
- **When not in use, the colposcope should be turned off and the camera should be covered to prevent dust accumulation.**

- **To prevent accidental power failure and other potential accidents, use UPS (uninterruptible power source) systems with the colposcope.**
- **Do not disconnect from AC power without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**
- **Do not disconnect any cables without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**
- **Do not use the device with other electrical devices.**
- **Keep cellular phones and other communication devices away from the colposcope.**
- **If the user suspects that the colposcope is not functioning properly, please contact Lutech for support.**
- **To ensure safe usage of this device, please follow all instructions contained within this manual. The information contained is not a substitute for current medical requirements and/or regulations. The manual cannot replace actual experience of a doctor or nurse.**
- **Always take notice of the warnings, cautions and notes provided throughout this manual.**
- **Do not use strong solvents such as acetone to clean any part of the colposcope.**
- **Do not use abrasive materials (such as steel wool) to clean the colposcope.**
- **Do not leave any solvent residue on the device. If residue is present, wipe it off quickly with a cloth damp with distilled water. Then pat dry with a dry cloth.**
- **The outer shell of the colposcope may not be opened by anyone other than a trained Lutech technician/engineer or a Lutech approved technician/engineer. Approval from Lutech must be obtained in writing and signed by the Management. Opening the outer shell of the colposcope without proper training may put the person in risk of an electrical shock.**

NOTE:

- **Video colposcope is not a treatment device. It is a non-contact examination device. Use only as directed.**
- **This manual should be placed near the device for easy user reference. Read the manual thoroughly before using the device to ensure proper operation and safety.**
- **Assembly and disassembly of the colposcope should only be performed by trained and authorized personnel.**
- **The lens of the camera should always be covered when not in use.**
- **The LT-300 SD and LT-300 HD digital video colposcopes meet the requirements of the electromagnetic compatibility in IEC60601-1-2.**
- **Portable and mobile RF communication devices should be kept away from the LT-300 SD and LT-300 HD digital video colposcopes as it may influence performance.**
- **A colposcope examination is only a secondary means of examination and the results found through colposcopy are not the end result. Other tests should be conducted to determine the result, ultimately confirming a diagnosis.**
- **Colposcope lenses are precision optical instruments and must be handled with care. Gently use the colposcope and avoid collision with anything that may move the lens. Offsetting the lens would result in a deterioration of the image quality.**
- **Avoid using the colposcope in bright environments as it will decrease image quality.**
- **When using the colposcope, stay away from RF lines whenever possible. This includes audio or video sources.**
- **If the power is suddenly turned off during normal use, it will not injure the operator or the patient. Please follow the user manual to properly power off the device. When power is restored, operate the equipment normally in accordance with the user manual.**
- **Removable power cables that are not part of the original system or additional extension cords should not be used with the colposcope.**

10.2 Software Risks

NOTE:

- **The LT-300 SD and LT-300 HD digital video colposcopes can be used with various viewing or video editing software. It is the end user's responsibility to choose the software that works best for them as well as complies with all regulatory requirements within their territory.**
- **The LT-300 SD and LT-300 HD may also be integrated into telemedicine and hospital EMR software systems as an add-on hardware device depending on their software. In most cases, the colposcope will work with any software that allows video input and file attachments.**

Chapter 1: Introduction

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

Thank you for choosing the LT-300 SD and LT-300 HD digital video colposcope!

The LT-300 SD and LT-300 HD digital video colposcopes are a video colposcope with advanced electronic imaging technology. This technique is different from traditional optical colposcope as it does not have eyepieces. Doctors may use the mini-LCD screen to focus in on the target area and then observe the patient on a monitor. The LED light source and continuously magnified image will allow the presentation of subtle details. In addition, The LT-300 SD and LT-300 HD digital video colposcopes can be used for diagnosis and/or guiding treatment.

1.1 Scope

The LT-300 SD and LT-300 HD digital video colposcopes are devices designed to permit direct viewing of the tissues of the vagina and cervix by a telescopic system located outside the vagina. It is used to help medical personnel with identifying abnormalities and select areas for biopsy.

The LT-300 SD and LT-300 HD digital video colposcopes can be used for the clinical examination of the cervix, vulva, and vagina as well as for guiding medical procedures. It is composed of a light source, cables, and component parts.

1.2 Features

- The LT-300 SD and LT-300 HD digital video colposcopes have high quality color image display technology.
- Advanced color image module, circular LED group light source, and control circuit all integrate into one handheld camera.
- The LT-300 HD digital video colposcope displays crystal clear imaging in high definition.
- Button control is provided for the convenient operation of zoom in/out, focus, freeze, green filter, and more.
- The remote control operates the colposcope without shaking the unit, allowing stability of image and faster exam times.
- The LT-300 SD and LT-300 HD digital video colposcopes allow the image to be displayed on a monitor, allowing the doctor and patient to observe the examination. In this manner, the doctor can explain the diagnosis, such as cervical lesions, and suggest treatment to the patient.
- The LT-300 SD and LT-300 HD digital video colposcope also displays the image on a small LCD screen on the rear of the colposcope to aid in focusing and visual diagnosis.
- The LT-300 SD and LT-300 HD digital video colposcopes are great teaching tools and may be used in classrooms and teaching hospitals to train residents and other medical professionals.

1.3 System and Main Components

The basic LT-300 SD and LT-300 HD digital video colposcopes are composed of a camera, image processing unit, and a vertical stand. The swing arm stand and monopod are an optional feature.

Camera: The camera is composed of a high-resolution color SONY image module, circular LED group light source, control circuit, batteries, and power adapter. It is mainly used to control the zoom in, zoom out, focus, green filter, timing, and freeze functions.

Camera Specifications:

	LT-300 SD, LT-300 SD-M	LT-300 HD, LT-300 HD-M
Camera	Sony 1/2.8-type CMOS	1/2.8-type 2M STARVIS 2
Camera Resolution	Standard	High
No. of Effective Pixels	2.13 Megapixels	2.13 Megapixels
Focus	Manual/Auto	Manual/Auto
Lens	5.2mm-104mm	4.3mm-129.0mm
Depth of Field	F/1.5 to F/3.5 (5.2mm-104mm)	F/1.6 to F/4.7 (4.3mm-129.0mm)
Optical Magnification	1～20	1～30
Digital Magnification	21～30	60～120
Field of View at working distance under 5x, 15x magnification	75mm (5x), 31mm (15x)	70mm (5x), 26mm (15x)
TVL	≥1000	≥1000
Light Source	Circular cool led group light	Circular cool led group light
Brightness	Adjustable, 14 levels	Adjustable, 14 levels
Green Filter	Adjustable, 70 levels	Adjustable, 70 levels
Output	HDMI(1080P60), USB3.0(1080P60)	HDMI(1080P60), USB3.0(1080P60)
Image Freeze	Yes	Yes
Working Distance	7.1 – 17.3 inch	5.1-15.7 inch
Horizontal Angle	63.2° (wide end) - 1.7° (tele end)	64°(wide end) - 2.4°(tele end)
Remote	Yes	Yes
Color Temperature	Indoor light (3700° K) Outdoor light (5100° K)	2500～7500 K
White Balance	Auto/Adjustable	Auto/Adjustable
Illumination	Max 10000 lx	Max 10000 lx
UV Filter	No	Yes
Focusing Distance Setup	Yes	Yes
Timer	Yes	Yes
Safety	IEC 60601-1	IEC 60601-1
Battery Power	2 Hours	2.5 Hours
Charging Time	3.5 Hours	3.5 Hours
Image Quality	High	Super

Vertical, Swing Arm or Monopod Stand: The vertical, swing arm or monopod stand is used to support the camera and connect with the video cable.

Vertical Stand Specifications:

Measurement of the vertical stand is taken with the camera base mount on and the colposcope off.

	LT-300 SD	LT-300 HD
Max. Height	42 in (106 cm)	42 in (106 cm)
Min. Height	31 in (78 cm)	31 in (78 cm)
Wheel Base	Four 360° swivel casters with locking mechanisms.	

Remote Control: The remote control must be attached to the colposcope camera. It allows control for zoom, freeze, manual focus and change of color filters. It obtains power from the colposcope camera. There are no batteries within the remote.

Anti-Glare Lens: The Anti-glare Lens is optional and is mounted in the front of the camera's outer enclosure. The lens may be used to manage and minimize glare during the examination.

Foot Pedal: The foot pedal is optional and will only work if the colposcope is used in conjunction with a computer and a compatible video viewing/editing software, EMR software, or telemedicine software.

Image Processing Unit: The Image Processing Unit (IPU) includes the power supply and the image processing module. The IPU converts video signals for output from the colposcope to a monitor or computer.

Mini LCD Screen: The colposcope has a 2.5-inch color LCD screen on the back of the camera for real time observation.

1.4 Installation Preparation

To ensure electric assembly safety, please place the colposcope in an environment that is reasonably dust free, without corrosive or combustible gas, or extreme temperature or humidity.

Carefully unpack all the components of the colposcope and check it with the packing list. Ensure that all components are present and in good working order.

When using the colposcope with a monitor, keep a space of at least 5cm between the monitor and the wall to ensure good air ventilation.

When using the colposcope with a computer system, please reference the minimum requirements below.

Minimum computer requirements:

- Type: PC
- CPU dual-core above 2.4GHz CPU
- RAM of at least 3GB
- Hard disk space of 200 GB or more
- HD products should have HDMI interface.
- Monitor: with wall-mount Dimension
- SD: not less than 1920×1080 dpi; 1080P, with HDMI interface
- HD: not less than 1920 x 1080 dpi; 1080P, with HDMI interface
- 2x USB3.0 high speed interface
- Operating System: WINDOWS 7, WINDOWS 10 or WINDOWS 11

Please keep the room clean and avoid static discharge directed at the unit, noise interference, and direct sun. Extreme temperature can affect the accuracy of the monitor and damage accessories or circuits.

When the device is transported from one location to the next, please take note of the environment. Water condensation might result due to exposure to humidity and temperature difference. Please ensure that there is no water condensing in the device before use.

Operating rooms should be ventilated, and protected from static discharge, noise interference, and strong power surges.

To ensure safety during use, the user must use proper grounding for the colposcope, especially when used together with any microwave machine or high frequency device.

1.5 Unpacking and Inspecting

Make sure the proper side is facing up when opening the box by following the markings on the packaging. After unpacking the camera and accessories, keep the packing materials properly stored for return service if necessary. Keep packing material away from children.

Carefully check the device and the accessories against the packing list supplied by the manufacturer and see if there is anything missing or damaged. If anything is damaged or missing, please contact the manufacturer or distributor immediately.

Disposal of packaging material should be done according to local waste disposal rules.

1.6 Additional Information

This manual explains the performance, operation, and maintenance of the system. If schematic diagrams, key component lists or any other materials are needed by an authorized technician, please contact the manufacturer.

NOTE: This manual should be placed near the device for easy user reference. Read the manual thoroughly before using the device to ensure proper operation and safety.

Chapter 2: Camera and Stand Assembly

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

This chapter explains the camera composition and installation process.

2.1 Camera Composition

The LT-300 SD and LT-300 HD digital video colposcopes includes a camera, circular LED group light source, control circuit, enclosure and remote.

Diagram 2.1-1

1	Lens Cap
2	LED Group Light
3	Enclosure
4	Mini LCD Screen
5	Function Buttons
6	Battery Compartment
7	Remote Hook
8	Remote with Function Buttons
9	Anti-glare Lens

2.2 What's included with the Colposcope

Depending on the colposcope configuration you have purchased, you will receive the following standard components:

Digital Video Colposcope with Vertical Stand		
Component	**LT-300 SD**	**LT-300 HD**
Colposcope Camera	LT-300 SD Camera	LT-300 HD Camera
Remote (no battery required)	1	1
Anti-glare Lens	1	1
Power Box-03 (Includes box, 2 attachment rings, 4 screws and Allen wrench)	1 set	1 set
Power Adapter (15V)	1	1
HDMI Cable (approx. 9.8 feet (3M))	1	1
USB3.0 Cable (approx. 10 feet (3M))	1	1
Vertical Stand (Includes: Camera Base Mount, Wheel Base, 4 Casters with locks and pre-threaded Main Cable) or Swing Arm Stand (Includes: Camera Base Mount, Wheel Base, 4 Casters with locks, Main Cable, Ad-justable Arm for colposcope, Laptop Tray, Power Box Bracket. VESA mount for monitor, Tray for Foot Pedal and Power Strip w/ bracket)	1	1
3-Pedal Foot Switch	1	1
USB drive loaded with the Lutech Viewer	1	1

Mobile Digital Video Colposcope		
Component	**LT-300 SD-M**	**LT-300 HD-M**
Colposcope Camera	LT-300 SD Camera	LT-300 HD Camera
Remote (no battery required)	1	1
Anti-glare Lens	1	1
Power Box-M (attached to the Colposcope Camera)	1	1
Power Adapter (15V)	1	1
Mounting bracket for Camera	1	1
Camera case	1	1
USB3.0 Cable (approx. 10 feet (3M) or 1 foot)(depending on order)	1	1
Monopod Stand (Includes: carrying bag) (depending on order)		
3-Pedal Foot Switch or Wireless (depending on order)	1	1
USB drive loaded with the Lutech Viewer	1	1

NOTE: For replacement cables or other accessories, please contact your distributor or Lutech representative.

2.3 Pre-Assembly Check List

Ensure all parts are present before assembly.

2.3.1 Vertical Stand Configuration

The colposcope with vertical stand configuration will come with the following parts:

- Colposcope camera with Anti-glare Lens attached
- Camera base mount with camera base plate attached
- Vertical tube with the Power Box attached and the main cable pre-threaded

- Anti-roll wheel base with 4 casters with locking mechanisms
- Wheel base screw set, including: 1 screw, 1 locking washer, 1 flat washer, 1 Allen wrench

2.3.2 Swing Arm Stand Configuration

The swing arm stand is an optional accessory for the colposcope. It will come with the following parts:

- Colposcope camera with Anti-glare Lens attached
- Camera base mount with camera base plate attached
- adjustable swing arm sections with cable management covers, laptop tray w/ cable management covers, Power Box w/ mounting bracket, VESA mount for monitor, tray for foot pedal and power strip w/ bracket and the main cable.
- Anti-roll wheel base with 4 casters with locking mechanisms

2.4 Colposcope with Vertical Stand Assembly

To assemble the colposcope on the vertical stand, follow the steps below.

1. Take out the Vertical Stand tube and inspect it. The Vertical Stand tube should have the main cable pre-threaded inside and the Power Box attached on the lower portion of the tube. If the main cable or the Power Box is not already assembled, please see section 2.6 Troubleshooting.

Diagram 2.4-1

2. Place the Wheel Base in front of you with the longer legs toward you.

Diagram 2.4-2

3. Insert the Vertical Stand tube into the Wheel Base with the extension knob toward you.

Diagram 2.4-3

4. Place the split lock washer onto the screw first. Then place the flat washer on as shown in diagram 2.4-4.

Diagram 2.4-4

5. Place the screw into the bottom of the wheel base in the center. Attach the Vertical Stand tube to the wheel base by tightening the screw using the 6mm Allen key provided as show in diagram 2.4-5.

Diagram 2.4-5

6. Take the main cable connector coming out of the bottom hole on the Vertical Stand tube and connect it to the bottom of the Power Box.

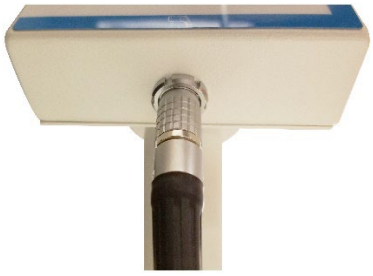

Diagram 2.4-6

NOTE: There is a bump on top of the red dot on the main cable connector. This bump will fit into the notch located on the Power Box connector. Make sure to match the bump to the notch. The cable will plug in easily. Do not force it in.

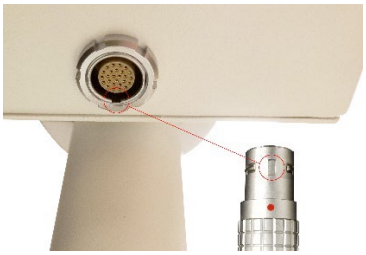

Diagram 2.4-7

7. The Camera Base Plate should already be attached to the bottom of the colposcope. If that is the case, skip to step 10. If not, detach the camera base plate from the camera base mount by turning the knob located at the top of the Camera Base Mount counterclockwise.

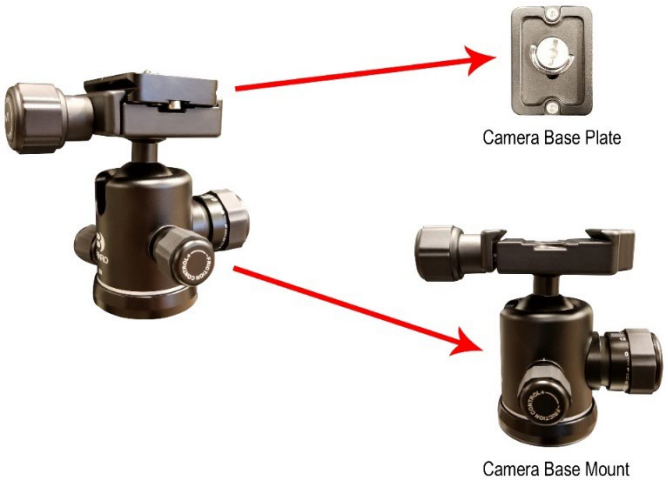

Diagram 2.4-8

8. Align the screw on the camera base plate to the hole on the bottom of the camera head.

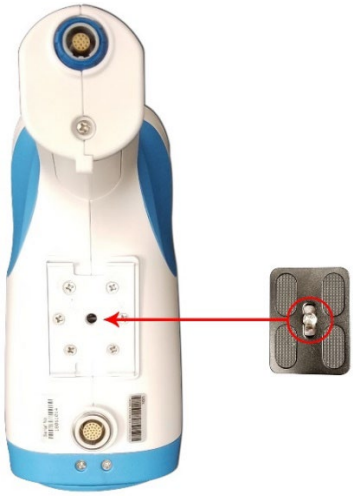

Diagram 2.4-9

9. Turn the camera base plate over and pull out the ring on the other side. Place the camera base plate screw over the hole under the colposcope camera. Turn the ring clockwise to attach the camera base plate onto the bottom of the camera. Press the ring back when done to tuck it out of the way.

Diagram 2.4-10

10. Place the camera mount on the Vertical Stand and turn clockwise to tighten as shown below.

Diagram 2.4-11

11. There are 2 phases to opening the Stand Mount release knob. Turn the Base Plate Release Knob counterclockwise until it cannot turn anymore. Pull the knob outward to allow it to continue turning. Continue turning counterclockwise until it stops. The base mount is now fully open and is ready to receive the Camera, which is attached to the camera base plate.

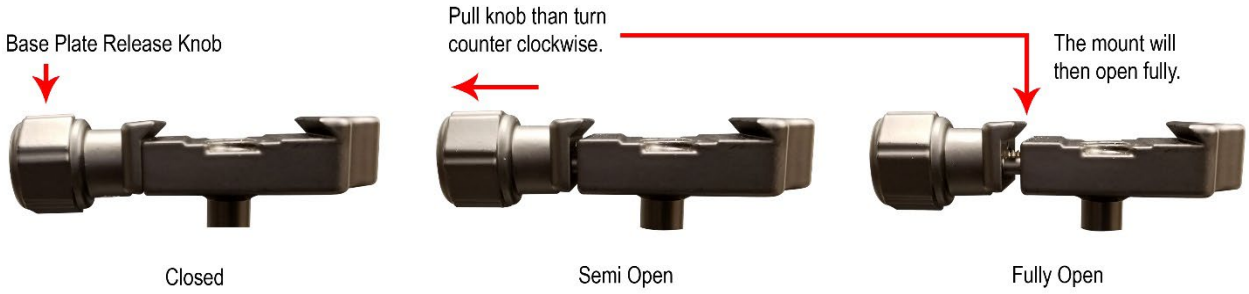

Diagram 2.4-12

12. Plug the main cable coming out of the top of the vertical tube into the connector located on the bottom of the colposcope camera.

    NOTE: There is a bump on top of the red dot on the main cable connector. This bump will fit into the notch located on the connector located on the bottom of the colposcope camera. Make sure to match the bump to the notch. The cable will plug in easily. Do not force it in. When unplugging this cable, do not use any twisting motion. You may pull the cable straight outward, and please be sure the camera is powered off when unplugging anything.

Diagram 2.4-13

13. Slide the camera base plate onto the camera mount and tighten the base plate release knob clockwise to secure the colposcope.

Diagram 2.4-14

CAUTION:

- **Do not let go of the colposcope camera without ensuring that the base plate release knob is tightened correctly, and the camera head is stable.**
- **Do not let go of the colposcope camera until the ball lock is tightened. The ball lock and friction control knob both adjust the tension on the ball socket and can both be used to customize the movement of the camera.**

Diagram 2.4-15

14. Plug the remote into the connector located on the bottom of the colposcope camera handle.

NOTE: There are 2 protruding bars on top of the remote cable connector. These bars will fit into the grooves on the connector located on the bottom of the colposcope handle. Make sure to match the bars to the grooves. The cable will plug in easily. Do not force it in. When unplugging this cable, do not use any twisting motion. You may pull the cable straight outward, and please be sure the camera is powered off when unplugging anything.

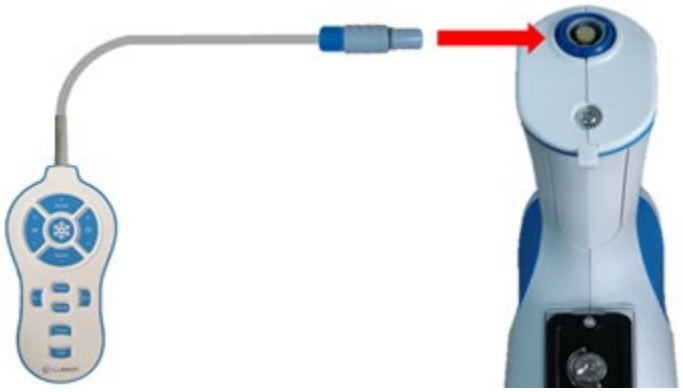

Diagram 2.4-16

15. Use the Vertical Stand extension knob to adjust the colposcope to the desired height.

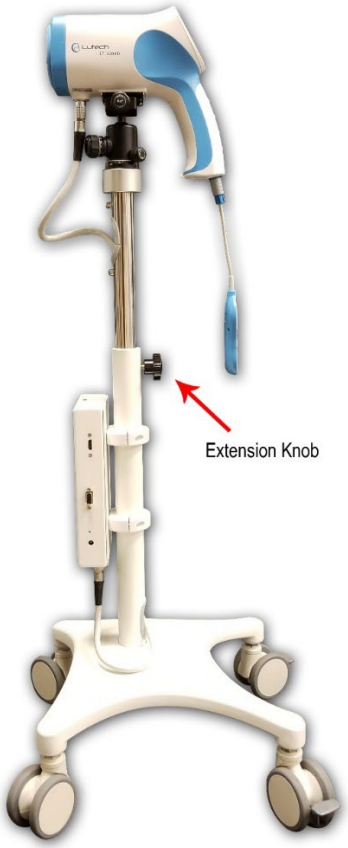

Diagram 2.4-17

Assembly is now complete.

2.5 Colposcope with Swing Arm Stand Assembly

To assemble the colposcope on the swing arm stand, follow the steps below.

1. Remove the vertical track and inspect it. Align the vertical track, ensuring the end with 3 holes is positioned at the bottom, and line it up with the wheel base. Insert and loosely secure screws labeled a, b, and c with washers from beneath the wheel base using the provided Allen key (screwdriver for M6 screws). It is recommended to loosely install all 4 screws before fully tightening them.

Diagram 2.5-1

2. Slide footswitch holder onto track and position it 1/2 inch above the wheel base. Tighten knob to secure it in place.

Diagram 2.5-2

3. Insert the articulated arm into the track and slide it halfway down. Tighten the knob to secure it in place.

Diagram 2.5-3

4. Attach the hydraulic arm to the articulated arm. 2) Adjust the horizontal tension of the hydraulic arm joint using a H2.5/2.5mm Allen key on the set screw shown in “Diagram 2.5-4.2.” 3) Adjust the vertical tension of the hydraulic arm using an H5/5mm Allen key if needed. See "Diagram 2.5-4.3” below. This helps to set the arms weight resistance. To accurately set the weight resistance you will need to attach the camera and camera bracket.

Diagram 2.5-4

5. Screw the mounting bracket onto the hydraulic arm. Make sure to tighten all the knobs on the mounting bracket before attempting to attach it.

Diagram 2.5-5

6. Insert the Cable Management backplate with Power strip into the track opposite to the articulated arm as close as possible to the wheel base. Tighten knob to secure it in place.

Diagram 2.5-6

7. Insert the Power Box into the track. Leave about 3 inches of space above and below the Power Box for clearance of the Main Cable and USB cable connections.

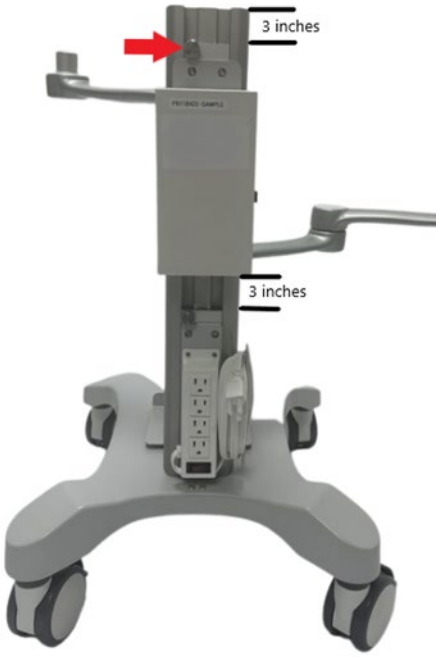

Diagram 2.5-7

8. If not using a laptop, please skip to step 10. If using a laptop, insert the laptop holder arm into the track. Leave about 3 inches above and below the arm. Tighten knob to secure it in place.

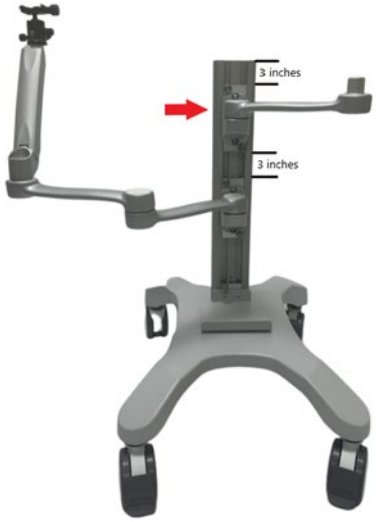

Diagram 2.5-8

9. Attach laptop tray using 3 x screws (F).

Diagram 2.5-9

10. If you do not plan on using a monitor, attach the column cover (no VESA mount) and tighten using 4 x Screws (D) using the Allen key. (Screwdriver for M6 screws.)

Diagram 2.5-10

11. If using a monitor, attach the column cover with the VESA Pole adapter, and tighten the 4 x screws (D) using the provided Allen key. (Screwdriver for M6 screws)

Diagram 2.5-11

12. Attach the cord management clip marked (h.) in “Diagram 2.5-12” by sliding it on to the VESA mount pole. Then attach the “Secure Ring for VESA mount” marked (g.) in “Diagram 2.5-12” by sliding it over the VESA mount pole. Using the provided Allen key and set screws in the bag labeled “Secure Ring for VESA mount. Screwdriver For Set,” insert a set screw into the securing ring. Set this ring at the desired monitor height by rotating the Allen key clockwise until it is snug. Finally, slide in and secure the VESA mount bracket atop the secure ring and lock it in place by using the lever attached to the back of the VESA mount bracket.

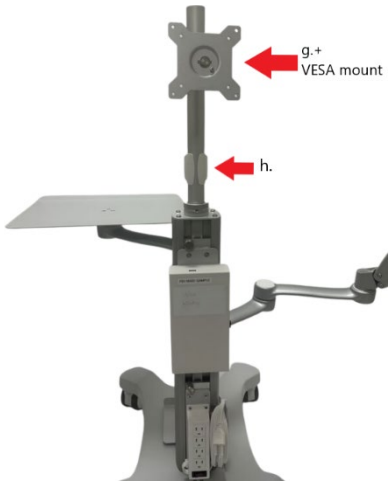

Diagram 2.5-12

13. Attach monitor to the VESA mount using the provided screws.

    NOTE: You can adjust the tension of the VESA mount to allow it to rotate easily.

    WARNING: Be careful when adjusting the position of the bracket while a monitor is attached. Moving the bracket's positioning while a heavy monitor is attached may result in the stand being more susceptible to tipping over. We suggest that the VESA mount always faces towards the longer legs of the wheel base. We recommend using a monitor that is less than 27 inches and lighter than 22 pounds.

Diagram 2.5-13

14. Remove the cable routing covers by pulling on the ends closest to the vertical track to release them from the Hydraulic Arm and Articulated Arm. Thread the Main Cable through the underside of the arms, ensuring you leave enough slack at each joint to avoid excessive tension. Reinstall the routing covers once the main cable is properly routed. Note that there is also a cable routing cover for threading the USB cable connected to the laptop or Power Box underneath the laptop arm.

Diagram 2.5-14

15. If not already attached, attach the Camera base plate as pictured. Turn the silver ring clockwise to secure it to the camera. Press the ring down to tuck it out of the way.

Diagram 2.5-15

16. Connect the Main Cable to the Camera and Power Box by aligning the notch or red dot to ensure it inserts smoothly.

NOTE: There is a bump on top of the red dot on the main cable connector. This bump will fit into the notch located on the connector located on the bottom of the colposcope camera and Power Box. Make sure to match the bump to the notch to allow the cable to plug in easily. Do not force it in. When unplugging the cable, do not use a twisting motion. You may pull the cable straight outward, but please be sure the camera is powered off when disconnecting the main cable.

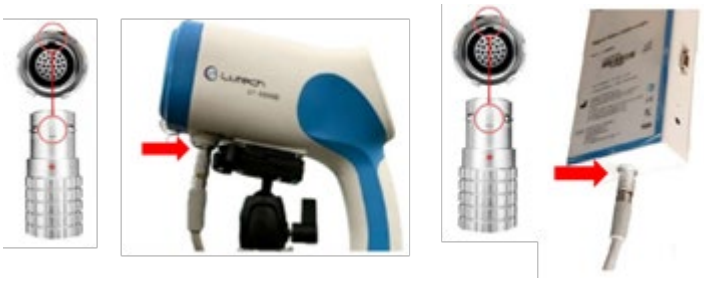

Diagram 2.5-16

NOTE: Please adjust the cable if needed so that there is enough cable slack near the colposcope camera head to allow it to move easily.

17. Slide the camera base plate onto the camera mount and tighten the base plate release knob clockwise to secure the colposcope.

Diagram 2.5-17

CAUTION:

- **Do not let go of the colposcope camera without ensuring that the base plate release knob is tightened correctly, and the camera head is stable.**
- **Do not let go of the colposcope camera until the ball lock is tightened. The ball lock and friction control knob both adjust the tension on the ball socket and can both be used to customize the movement of the camera.**

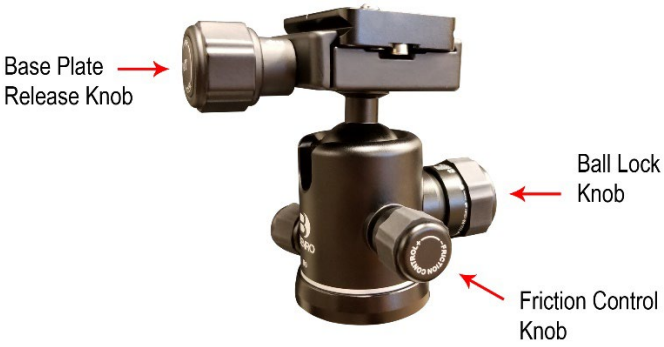

Diagram 2.5-18

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18. Plug the remote into the connector located on the bottom of the colposcope camera handle.

NOTE: There are 2 protruding bars on top of the remote cable connector. These bars will fit into the grooves on the connector located on the bottom of the colposcope handle. Make sure to match the bars to the grooves. The cable will plug in easily. Do not force it in.

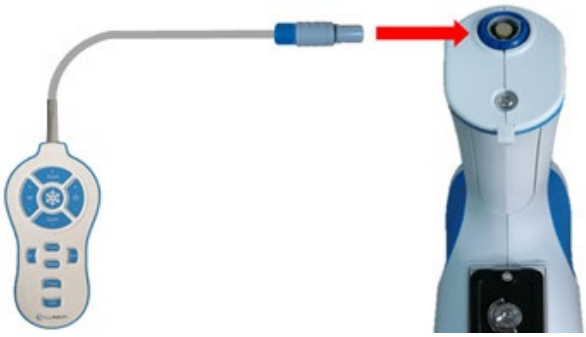


Diagram 2.5-19

19. Sometimes, the user may wish to change the default tension set for the swing arm. The swing arm is adjusted to move smoothly and easily, while maintaining enough tension to prevent it from swinging uncontrollably. To adjust the tension of the swing arm, see section 3.3 Swing Arm Stand Adjustment of this manual.

2.6 Mobile Colposcope

The mobile colposcope does not come with a vertical stand nor a swing arm stand. The mobile colposcope is fully functional without any stand. However, if a mobile or portable stand is required, users may elect to purchase a stand such as a monopod or a tripod. Typically, these are stands that work with portable camera equipment and are available widely in the market. Follow the guidance noted below to select the appropriate monopod or tripod.

2.6.1 Monopod and Tripod Requirements:

1. Select a monopod or tripod that comes with the type of screw connector as shown in left photo below. Mounting bracket knob functions are also specified in right photo below.

2. Or select a monopod or tripod that will allow such a connector to screw on as this Mounting bracket is provided by Lutech.
3. Select a monopod or tripod that has wide spreading and stable legs. Legs should be weighted properly to prevent tip overs.

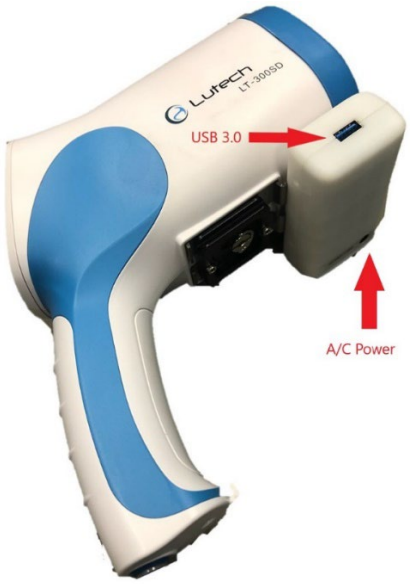
4. At the maximum height, the monopod or tripod should be able to bear the weight of the colposcope camera head, which is 2.2 lbs with the Power Box attached.

NOTE: When using the mobile colposcope with any mobile stand, please ensure to handle with care. Make sure that the camera and stand is positioned carefully so as not to tip over.

2.6.2 Mobile Colposcope Assembly

1. If a mobile stand, such as a monopod or tripod is being used, please make sure that it adheres to the guidance provided in section 2.6.1 Monopod and Tripod Requirements.
2. Follow the instructions provided by the monopod and tripod instructions for use to set up the stand.
3. After attaching the Mounting bracket on the monopod or tripod, mount the Colposcope camera head by opening the knob as shown below. Make sure to tighten the knob to secure the camera head in place.

4. Connect the Power and USB cables to the respective ports on the mobile Power Box as shown in the diagram below.



5. If using the phone holder (optional), wrap the phone holder around the handle and back end of the colposcope head. Refer to the instructions included with the phone holder for details.
6. Insert the phone into the phone holder before use.
7. Connect the remote onto the bottom of the colposcope.

Assembly is now complete.

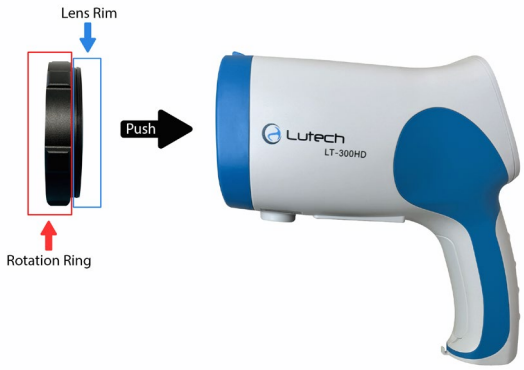
2.7 Anti-glare Lens Installation and Removal

The Anti-glare Lens is an innovation from Lutech. All Lutech colposcopes come preinstalled with the Anti-glare lens to assist with glare control.

To install the Anti-glare Lens, follow the steps below.

NOTE: Never touch the lens directly. Always grip the rotation ring when using or moving the lens.

1. To install the Anti-glare Lens, hold the lens by the rotation ring with one hand and the colposcope camera with the other.



2. Push the lens rim all the way into the circular space in front of the colposcope camera. The lens should fit snuggly within this space.
3. Rotate the rotation ring a couple of times to make sure the lens is not loose and will not fall out of the colposcope.

Installation is now complete.

To remove the Anti-glare Lens, follow the steps below.

NOTE: Never touch the lens directly. Always grip the rotation ring when using or moving the lens.

1. To remove the Anti-glare Lens, grip the rotation ring with one hand and the colposcope camera with the other.
2. Slowly pull the lens out of the camera enclosure. Make sure to grip tightly so that you do not drop the lens.

2.8 Troubleshooting

2.8.1 Vertical Stand Assembly Troubleshooting

No.	Problem	Solution
1.	The main cable is not threaded into the vertical stand.	Take the main cable and thread it into the hole located at the top of the vertical tube. Feed it through the pole until you can pull it out from the hole located on the bottom of the vertical tube. It doesn't matter which end you thread into the hole. Connectors on both ends are identical. 

2.	The Power Box is not attached to the vertical tube.	There should be 2 Power Box assembly rings and 4 screws. Each ring is a semi-circle.  The rest of the ring is already attached to the Power Box.  Take the Power Box and place it on the vertical stand on the opposite side as the extension knob. Place it in the space between the hole on the bottom of the tube and the extension knob (approximately 3-4 inches above the top of the hole).  **NOTE: The user can change the orientation of the Power Box based on comfort preferences and surrounding equipment.** Use the screws provided to join the semi circles and attach the Power Box to the vertical tube. ***Use caution** while tightening these screws and be sure to **evenly secure** them to prevent damage to the rings.

2.8.2 Swing Arm Stand Assembly Troubleshooting

No.	Problem	Solution
1.	The main cable is not threaded into the swing arm assembly.	Remove the cable routing covers by pulling on the ends closest to the vertical track to release them from the Hydraulic Arm and Articulated Arm. 

		Thread the Main Cable through the underside of the arms, ensuring you leave enough slack at each joint to avoid excessive tension. Reinstall the routing covers once the main cable is properly routed. 

2.9 Tips and Suggestions

The vertical stand is designed to allow multiple users to maneuver it to their individual comfort zone. For optimal comfort and ergonomics, try some of the tips below.

Tip 1: Pick a wheel base position.

The legs of the Wheel base allow for multiple ways of usage depending on personal spatial preference. It is recommended that the user chooses the position that is most comfortable to him/her. The inner tube as well as the camera head can be turned independently from the rest of the vertical stand. This allows the adjustment of the wheel base without restraint from other parts of the device.

Tip 2: Consider the location of peripheral devices.

It is recommended that the user consider the layout of the room and the location of equipment that will be attached to the colposcope. Depending on the location of such devices, the Power Box should be positioned in a way to allow the connector panel to face the devices. This will cause less tension to the attached cords and provide a smoother and more comfortable feel during use.

Chapter 3: Colposcope Adjustments

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

3.1 Camera Angle Adjustment

The colposcope camera sits on the camera mount, which allows it to rotate 360° horizontally and approximately 70° vertically, depending on the allowances of the wire and handles. By adjusting the ball lock knob, the user can customize the tightness of the ball socket. When the tension is right, the head of the colposcope can be moved freely and will stay in position after the movement is complete and the user has let go of the camera without having to tighten any knobs.

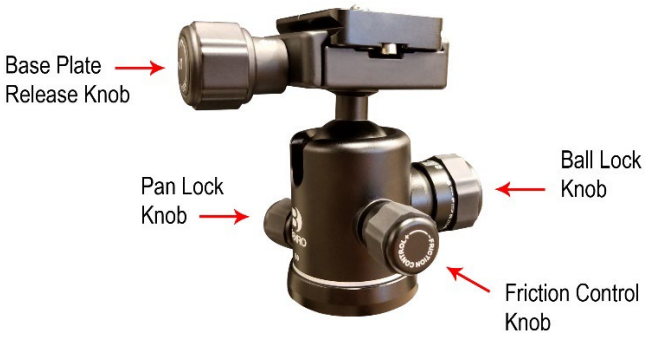


Diagram 3.1-1

3.2 Vertical Stand Adjustment

Turn the vertical tube extension knob counterclockwise to loosen the internal extension tube. Slide the internal extension up or down to the desired height. Turn the extension knob clockwise to tighten the grip and hold the internal extension tube in place.

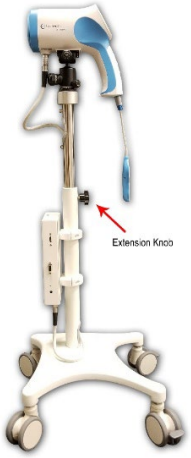


Diagram 3.2-1

NOTE: If the main cable has not been connected to the colposcope camera head yet, make sure to hold onto it during height adjustment of the internal extension tube so that it doesn't fall backwards into the tube.

3.3 Swing Arm Stand Adjustment

Hold the colposcope and adjust the swing arm by moving it up, down, left, and right. The swing arm should respond easily to the user's guidance. At the desired height or position, let go of the colposcope. The swing arm should stay where it is placed.

Diagram 3.3-1

Sometimes, the user may wish to change the default tension set for the swing arm. The swing arm is adjusted to move smoothly and easily, while maintaining enough tension to prevent it from swinging uncontrollably. To adjust the stiffness in the horizontal movement of the hydraulic arm joint shown below in "Diagram 3.3-2" use a H2.5/2.5mm Allen key on the set screw shown in "Diagram 3.3-3" below. To adjust the vertical tension of the hydraulic arm, use a H5/5mm Allen key on the hex head bolt shown in "Diagram 3.3-4" below. This helps to set the arms weight resistance. To accurately set the weight resistance you will need to attach the camera and camera bracket.

Diagram 3.3-2

Diagram 3.3-3

Diagram 3.3-4

NOTE: If you are still having issues setting the tension of the vertical movement, you can tighten the hex head bolts with a H2.5/2.5mm Allen key on the hydraulic arm assembly to offer extra resistance. See "Diagram 3.3-5" below for which bolts to tighten.

Diagram 3.3-5

3.4 Casters Adjustment

The wheel base comes with 4 casters with locking mechanisms. Press down on the locking mechanism to lock the wheel in place. Lift up on the locking mechanism to regain movement.

Diagram 3.4-1

CAUTION: To stop the vertical stand from moving, 2 of the casters must be locked. Locking 1 is not enough to stop the vertical stand completely.

3.5 Remote Hanger

The user may request an extra-long remote cord. To assist with cord management, the remote has a notch built into the back side. Turn the remote upside down and place the notch onto the hook located on the bottom of the colposcope handle.

Diagram 3.5-1

Chapter 4: TV Screen or Workstation Setup

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

At the user's discretion, the colposcope may be connected to a TV screen or a computer (desktop or laptop). The TV screen is used as an option if there is no need to retain any pictures or videos from the colposcopy. The computer will allow the user to save pictures and video from the exam and integrate it into their EMR or reporting systems. Below is a comparison of functions to help you decide what you may need.

	TV Screen Connection	Computer Connection
Save Pictures	No	Yes
Save Videos	No	Yes
Create Reports	No	Yes
Work with Foot Pedals	No	Yes
Telemedicine	No	Yes

NOTE: Lutech works with various telemedicine companies by providing the LT-300 SD and LT-300 HD colposcope as an accessory for their telemedicine units. If you have a telemedicine infrastructure in place, you may be able to obtain the LT-300 HD as an add-on component. Please contact your telemedicine representative for more information.

4.1 TV Screen Setup

If there is no need to save pictures or video, you can simply connect the colposcope to a TV monitor.

NOTE: To use the colposcope with a TV screen, it must be connected to an AC power source. It will not work on battery power.

The Power Box connectors are all labeled in the front.

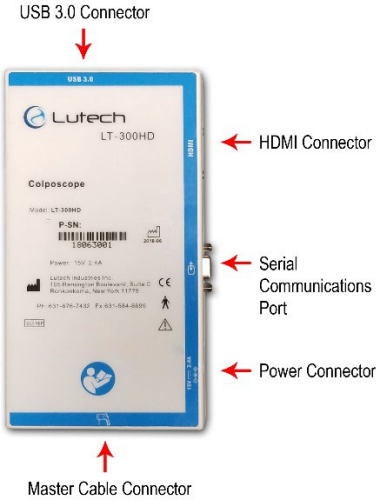


Diagram 4.1-1

To connect the LT-300 SD or LT-300 HD colposcope to a TV monitor, follow the steps below.

1. Make sure the colposcope is turned off.
2. Connect the HDMI cable provided with the colposcope to the Power Box. Connect the other end to the TV.
3. Connect the colposcope's power adapter to the Power Box and then plug the power adapter into a wall socket.
4. Turn the colposcope on by pressing the power button located on top of the mini-LCD screen.

The colposcope is now connected to the TV and is ready for use.

The following is a diagram of the connections:

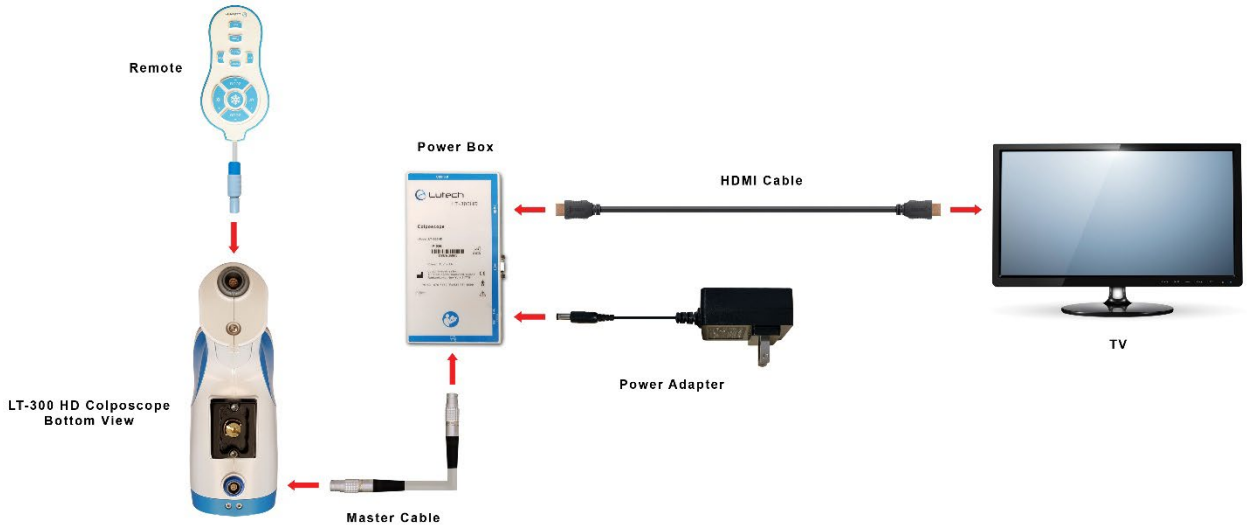


Diagram 4.1-2

CAUTION:

- **Do not disconnect from AC power without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**
- **Do not disconnect any cables without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**

4.2 Computer Setup

If you would like to save pictures or videos and create reports, then the colposcope must be connected to a computer and the computer must have video software that can take live streaming video and save it as a picture or a video.

4.2.1 Connecting the Colposcope to a Computer

NOTE: To use the colposcope with a computer, it must be connected to an AC power source. It will not work on battery power.

The Power Box connectors are all labeled in the front.

Diagram 4.2.1-1

To connect the LT-300 HD colposcope to a computer, follow the steps below.

1. Make sure the colposcope is turned off.
2. Depending on the workstation environment you have, you may or may not need to turn off the computer or system. Please ask your EMR or Telemedicine representative for more information if you are unsure.
3. Connect the USB cable provided with the colposcope to the Power Box. Connect the other end to the computer.
4. Connect the USB connector from the foot pedal to the computer, or the USB dongle for the wireless footswitch.
5. Connect the colposcope's power adapter to the Power Box and then plug the power adapter into a wall socket.
6. Turn the colposcope on by pressing the power button located on top of the mini-LCD screen.

The colposcope is now connected to the computer and is ready for use.

The following is a diagram of the connections:

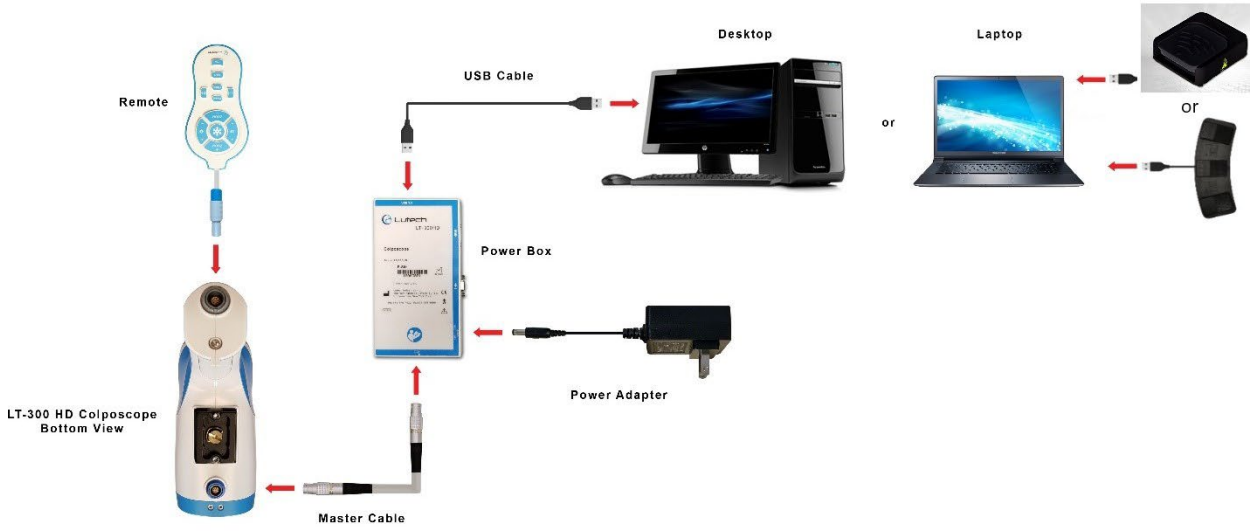


Diagram 4.2.1-2

CAUTION:

- **Do not disconnect from AC power without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**
- **Do not disconnect any cables without first turning the camera and the Power Box off or you may damage the camera or Power Box components.**

4.3 Connecting the Mobile Colposcope to Computer/Smartphone

To connect the LT-300 SD-M/HD-M colposcope to a Computer or Smartphone, follow the steps below.

1. Make sure the colposcope is turned off.
2. Depending on the workstation environment you have, you may or may not need to turn off the computer or system. Please ask your EMR or Telemedicine representative for more information if you are unsure.
3. Connect the USB cable provided with the Mobile Colposcope to the Power Box. Connect the other end to the computer or smartphone. A smartphone will require a USB-A to USB-C or USB-A to Micro USB adapter.
4. For the foot pedal, connect the USB connector(wired) or USB dongle(wireless) to the computer, if supplied.
5. Connect the colposcope's power adapter to the Power Box and then plug the power adapter into a wall socket.
6. Turn the colposcope on by pressing the power button located on top of the mini-LCD screen.

The colposcope is now connected to the computer or smartphone and is ready for use.

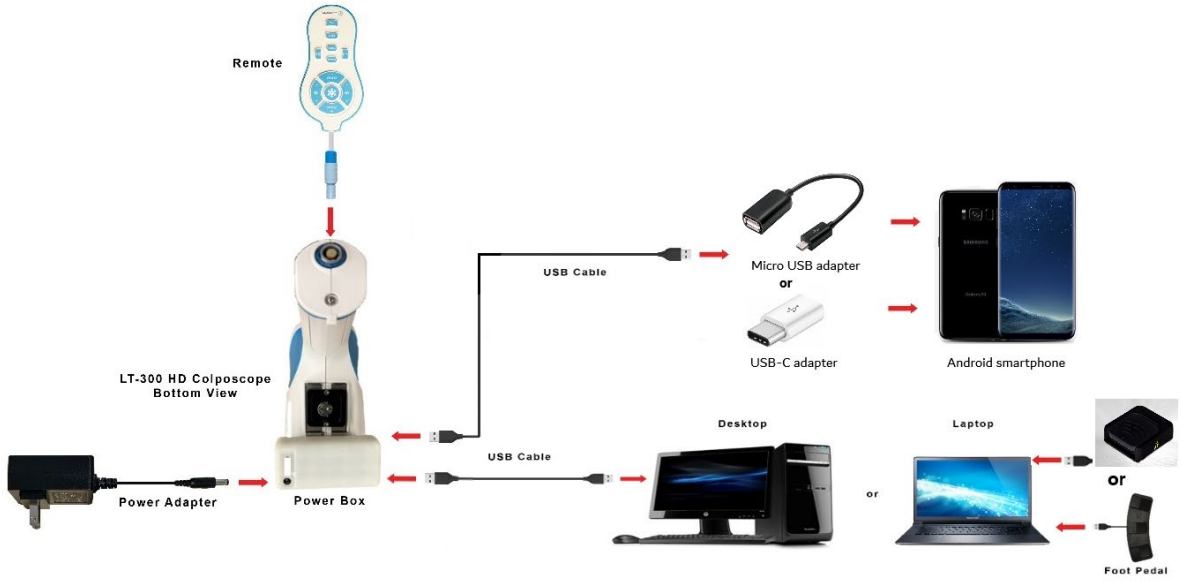


Diagram 4.3-1

Optional: If using the Anti-glare Lens, firmly press the lens into the blue front enclosure, and rotate accordingly to reduce glare. See separate instructions for this specific optional attachment.

Optional: If using the silicon phone holder, slip the phone holder on through the handle of the camera, and press it to fit onto the back end (LCD part) of camera head until tightly secured. The smartphone can now be inserted into the phone holder. See separate instructions for this specific optional attachment.

4.4 Colposcope Workstation

The workstation is an optional cart system where the colposcope is attached to peripheral devices in an organized setup. A workstation environment may include any of the following elements:

- Lutech workstation
- A computer (desktop or laptop) with the minimum specifications noted in Section 1.4 Installation Preparation
- A printer
- Multiple monitors
- A telemedicine unit with the capability of integrating with the LT-300 HD colposcope (Please contact your hospital engineer or telemedicine provider for details. The colposcope will work with most software that allows video input and attachment of files.).
- An EMR system with the capability of integrating with the LT-300 HD colposcope (Please contact your hospital engineer or EMR provider for details. The colposcope will work with most software that allows video input and attachment of files.).
- A video/photo capture software such as the Lutech Viewer. Please refer to Chapter 6 for details on the Lutech Viewer.

For information on optional workstation setups, please contact your distributor or Lutech representative.

Chapter 5: Camera Operation

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

WARNING:

- **At any point during the use of the colposcope, if any liquid gets splashed onto the outer casing or the lens of the colposcope, immediately stop using the device and wipe the liquid off. Please follow the instructions set forth in chapter 6 of the manual under Cleaning and Maintenance.**
- **At any point during the use of the colposcope, if any liquid gets splashed onto the colposcope and gets inside the casing, please turn off the colposcope right away and call your technician or the manufacturer. The device should be checked by an authorized technician to make certain it is working accurately before being put back to use.**

5.1 Preliminary Check List

Before using the colposcope, check the following to ensure safe operation:

- Make sure there is no mechanical damage.
- Inspect all the cables, parts and accessories and make certain they have all been installed accurately and securely.
- Inspect all parts and make sure they are in good condition.
- Inspect the external condition of the colposcope to make sure it is clean and that there is no damage to the enclosure.
- Make sure there are no liquids on the outer surface, lens, or inside the colposcope.
- Check to make sure the connection between the camera, camera mount, and vertical stand is tight, secure, and stable.
- Check to make sure the Anti-glare Lens is on securely if using.

If any damage is found or any necessary parts or accessories are missing, do not use the colposcope. Please contact the hospital engineer or manufacturer-authorized service center immediately.

5.2 Function Buttons

Function buttons on the camera:

Diagram 5.2-1

1	Power: Turns colposcope ON/OFF
2	Green/White Filter: Toggles between the preset green filter and the white filter.
3	Freeze: Freezes the live feed image on the screen.
4	Zoom In: Focus in on one area, magnifying it.
5	Zoom Out: Focus out from one area, to see more of the object being examined.
6	Power indicator: When the colposcope connected to an AC power source, the indicator light will turn green.

Function buttons on the remote:

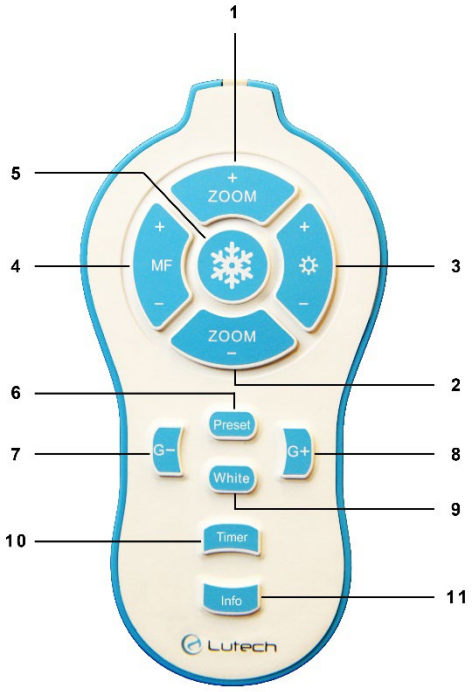


Diagram 5.2-2

1	Zoom In: Focus in on one area, magnifying it.
2	Zoom Out: Focus out from one area, to see more of the subject being examined.

3	Increase/Decrease Brightness: Increases/Decrease the brightness level of the LED circular light source.
4	Manual Focus In/Out: Adjust manual focus of the image to allow clarification of either the center or peripherals of the image.
5	Freeze: Freezes the live feed image on the screen. Press again to unfreeze the image.
6	Preset: Saves a green filter level for quick access. Short press: Go to the last green filter level saved. Long press: Save the current green filter level as the preset green filter level.
7	Decrease Green Filter: Gradually decrease the amount of green filter added to the image.
8	Increase Green Filter: Gradually increase the amount of green filter added to the image.
9	White Filter: Return the image to its natural state and takes away any color filters applied to it.
10	Timer: The timer can be used for tests such as the acetic acid test. Press to start a timer starting from 0 with increments of 1 second. Press again to stop. Once stopped, the timer will disappear from the screen.
11	Info: Display information on magnification level and focus mode on the screen. NOTE: This does not affect the timer.

5.3 Anti-glare Lens Operation

CAUTION: Do not use the Anti-glare Lens if it is cracked, warped, discolored or damaged in any way. Take the lens off and use the colposcope without the lens. Replacement lenses may be ordered from Lutech.

To manage glare while using the colposcope, rotate the Anti-glare Lens continuously to the left or to the right to minimize the glare you see within the image. The glare will not go away entirely without adjustment of the light source, however, the location and the intensity of the glare will shift, allowing the user to see changes in the tissue more clearly.

5.4 Tips for Achieving Optimal Image Clarity

The following are tips for obtaining optimal image quality and clarity.

- The LT-300 SD colposcope has a working distance range of 7.1 – 17.3 inches. For a typical colposcopy, the recommended working distance is 15 inches from the subject.
- The LT-300 HD colposcope has a working distance range of 5.1 - 15.7 inches. For a typical colposcopy, the recommended working distance is 12 inches from the subject.

- The higher the magnification used, the farther away the colposcope should be from the subject.
- Using the vertical or swing arm mount, maneuver the colposcope camera into place. Use the function buttons to zoom, focus, and adjust brightness and color filters.
- The zoom function is accompanied by auto focus. As you zoom, the camera will adjust its focus automatically for clarity. If your image is not focusing after zooming, try zooming out and zooming back in. Adjust the manual focus if needed. If that does not work, you may have to move the camera manually and adjust the distance between the camera and the object under observation.
- The camera should be able to rotate smoothly but still stay in place when you let go. If it does not, then the ball lock and friction knobs may require adjustment. Please reference Chapter 3.
- Pressing the manual focus button will override the autofocus feature. Once the zoom +/- button is pressed the camera will begin to autofocus again.
- Use the Anti-glare Lens with the colposcope to manage and minimize glare.

Chapter 6: Lutech Viewer

The Lutech Viewer is a viewing software that can stream live video from your Lutech colposcope as well as other video enabled devices onto your computer screen. The Lutech Viewer will allow you to save pictures and videos from the streaming graphics in a location on your computer of your choosing for future reference.

6.1 Safety Terminology

6.1.1 WARNING

WARNING:

- **Please read the User Manual for the Lutech Viewer completely before starting use.**
- **Please note that the Lutech Viewer does not contain encryption and cannot be used to reliably and safely store or transfer pictures or videos if secure or encrypted transfer and storage are required.**
- **If the Lutech Viewer is used for medical exams, the healthcare professional in charge of the medical exam must have procedures in place to safely store or transfer patient data in compliance with the healthcare regulations of that territory.**
- **The Lutech Viewer is not locked and there are no sign-in options. Therefore, if using for medical purposes, please only install it where patient data can be protected and where it is only accessible to trained and authorized medical personnel.**
- **The Lutech Viewer will work with Lutech colposcopes but may also work with a variety of other video devices. Lutech makes no claim or guarantees that it will work with any specific video device. User may choose to use the Lutech Viewer at their own discretion.**
- **Other viewers or media software will work to capture pictures and videos from the Lutech colposcopes. If the intention is to find a software to use with the Lutech colposcope, please consult with your facilities engineer to establish which software is most appropriate for your needs while protecting patient privacy and the facility's security infrastructure.**

6.1.2 NOTE

NOTE:

- **The Lutech Viewer cannot load previously saved pictures or videos.**
- **The Lutech Viewer does not store any historical data, images, or files. All files are saved within a folder in a location on the computer or server of the user's choosing at the end of the session. The user is ultimately responsible for the safe transfer, storage, and processing of these files.**
- **The Lutech Viewer cannot play any video. Video playback uses the default video player within the computer.**
- **Be sure to have the colposcope turned on and connected to the computer before launching the software.**
- **The Lutech Viewer software version may be updated without notice.**

6.1.3 Copyright

6.2 Installation

The Lutech Viewer is a free viewer that comes with the Lutech Colposcope. It is loaded onto a USB stick and can be found within the colposcope box. If there is no USB stick within the colposcope box, please contact Lutech for assistance.

Lutech Industries, Inc.
(631) 676-7432
service@lutechmedical.com

6.2.1 Computer Specification Requirements

The following are the minimum and recommended computer system requirements for the operation of the Lutech Viewer.

	Minimum System Requirements	**Recommended System Requirements**
CPU	2.4 GHz dual-core processor	3 GHz dual-core processor
USB	2x USB3.0 ports	At least 2x USB3.0 ports
RAM	3 GB RAM	4 GB RAM
Storage	200 GB available space	At least 200 GB available space
OS	Windows 7, Windows 10 or Windows 11 **NOTE: The Lutech Viewer is not compatible with Chrome OS, MAC or tablets.**	Windows 7, Windows 10, Windows 11 **NOTE: The Lutech Viewer is not compatible with Chrome OS, MAC or tablets.**
Display	1920*1080	1920*1080
Display Percentage	100%	100%

6.2.2 Downloading the Software

If you have purchased a Lutech colposcope, you would have gotten the Lutech Viewer on the USB drive that came with the colposcope. If you did not get this USB drive, you may request a download link from your Lutech representative. Please contact Lutech by phone or email during operating hours.

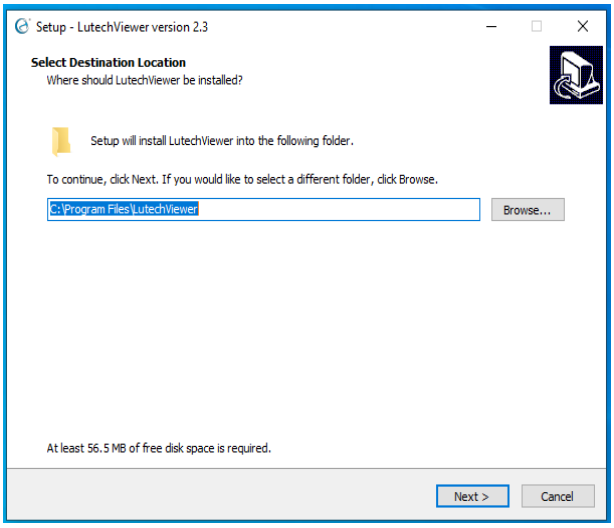
6.2.3 Installing the Software

Follow the steps below to install the Lutech Viewer onto your computer.

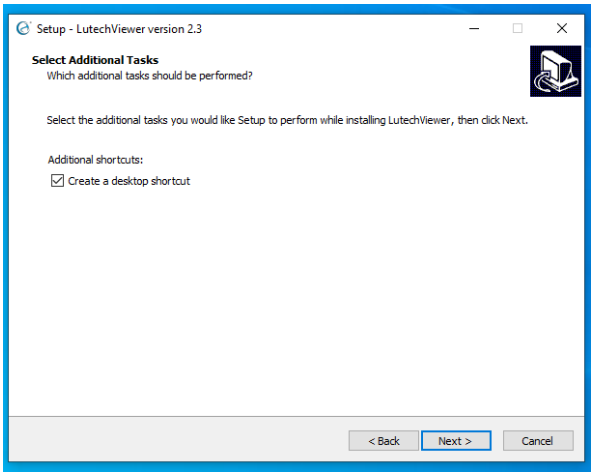
1. Connect the USB stick to the computer or download the software from the Lutech website.
2. Using file manager, open your USB stick folder or the download folder. Locate the Lutech Viewer file.

3. Double click the “LutechViewer” file to start installation.

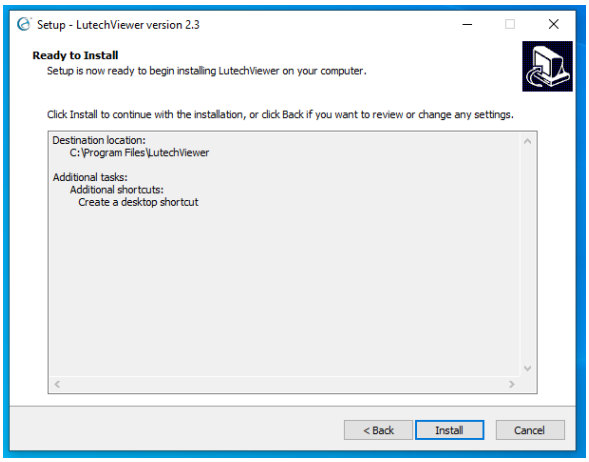
4. The installation manager will automatically select a destination folder. Click the “Next” button to continue. Please double check this directory to make sure it is where you want to place this software.



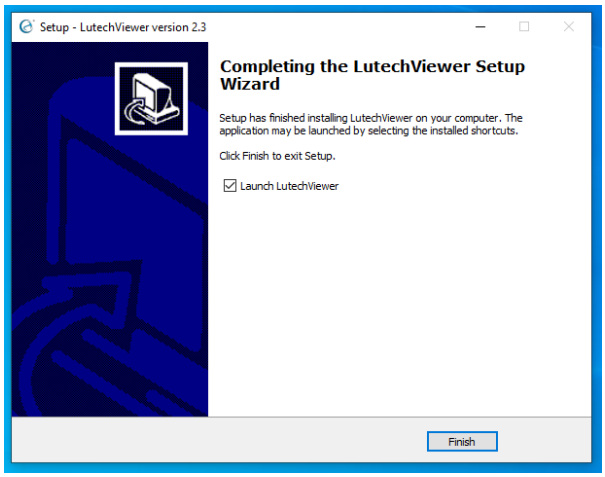
5. Select “Create a desktop shortcut”, which will place the Lutech Viewer icon on your desktop. This will allow you to quickly open the software when needed. Click the “Next” button to continue.



6. The software is now ready to install. Click the “Install” button to continue.



7. The installation is now complete. Check the box next to “Launch LutechViewer” if you would like to start the software when you click on the “Finish” button. Otherwise, click the “Finish” button to complete installation and exit the installation screen.

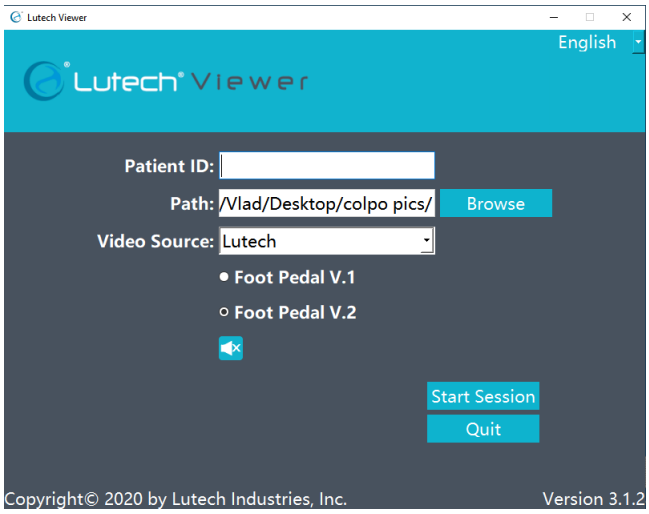


When you are ready to start the Lutech Viewer program, find the Lutech Viewer shortcut icon on the desktop and double click it. This will launch the Lutech Viewer.

6.3 Operation

6.3.1 Main Screen

When the program starts, you will be presented with the Main Screen below.

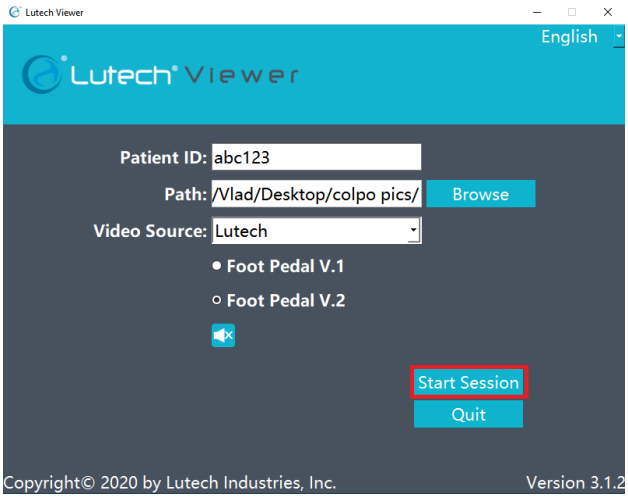


To continue, you must fill in the fields below.

Field	Description
Patient ID	The Patient ID is any combination of alphanumeric value designated by the user. There is a maximum of 20 characters allowed. **NOTE: The following symbols cannot be used within the Patient ID. field: \< > ? * : | "/** The Patient ID will be used in the name of the automatically generate folder where all pictures and videos from this session will be saved. The Patient ID will also be used in the naming structure of the picture and video files. **NOTE: At the start of each new session, the Patient ID field will be cleared automatically and will need to be filled in to continue.**
Path	Use the Browse button to the right of the Path field to choose where the pictures and videos will be saved. When the session starts, a folder containing the reference number within its name will automatically be generated in the location specified within the Path field. **NOTE: The path field will remain for all sessions unless manually changed. Once changed, it will stay the same unless changed again.**
Video Source	The Lutech Viewer will automatically detect video sources within the Lutech colposcopes. Please connect the colposcope to the computer first. Make sure that the Power Box is connected to AC power. Then open the software. This field should automatically fill in with one of the following video source options: • Lutech • xVideo card • JS3330video card • Live Streaming Video Device card **NOTE: If the colposcope is not connected at the time, the video source will pick up any other type of video card available to the computer.**

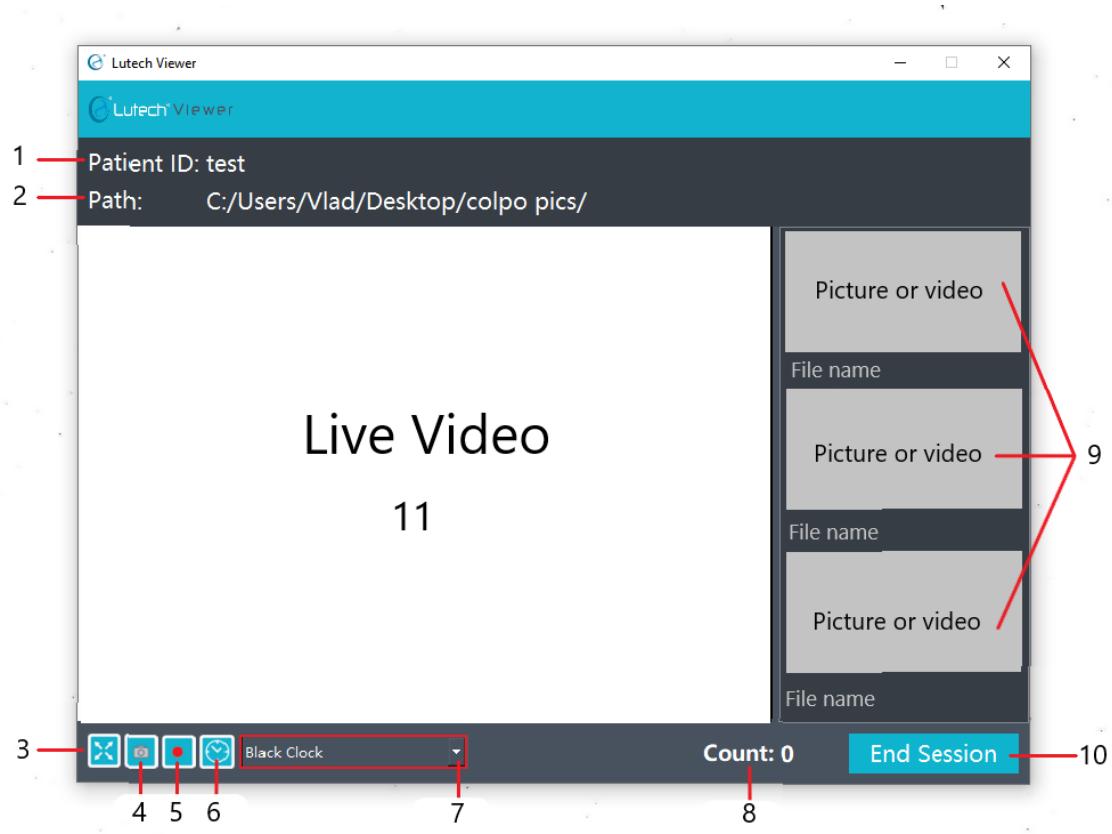
	NOTE: Please refer to Section 3.8.1 Video Source Troubleshooting for assistance.
Foot Pedal V1	Select this box if the Lutech foot pedal you received was from July of 2019 and older. (Ex: July 2019, June 2019, 2018, 2017…etc.) Make sure your caps lock is off. **NOTE: Selecting Foot Pedal V.1 will clear the selection for Foot Pedal V.2.** **NOTE: Please refer to Section 3.8.2 Foot Pedal Troubleshooting for assistance.**
Foot Pedal V2	Select this box if the Lutech foot pedal you received was from August of 2019 and newer. (Ex: August 2019, September 2019, 2020…etc.) Your V.2 foot pedal should also be noted in the packing list. **NOTE: Selecting Foot Pedal V.2 will clear the selection for Foot Pedal V.1.** **NOTE: Please refer to Section 3.8.2 Foot Pedal Troubleshooting for assistance.**
	This button controls whether or not the software will play a soft ping audio sound when capturing photos during your session.
Language Menu	Click the dropdown menu on the top right hand side and select your preferred language. Available languages include: English, French, Arabic, Polish, Spanish, Italian, Romanian, Dutch

When all the fields on the Main Screen are filled out, press Start Session to begin.



6.3.2 Session Window

The following is the Session Window.



The Session Window consists of the following areas.

No.	Description
1	Patient ID. This area displays the Patient ID for the session. This information cannot be changed from this window. To change this information, end the session and enter the correct identifier as the Patient ID on the main screen.
2	Path. This area displays the path location for the session. This information cannot be changed from this window. To change this information, restart the session and enter the correct Path on the main screen.
3	Full Screen Mode button. Press this button to go into full screen mode. Prese the ESC button to return to the Session Window.
4	Picture button. Press to take a picture of what's currently in the live video area. All pictures will be saved in the JPEG format in 1920 x 1080 resolution.
5	Record On/Off button. Press this button to start recording what's in the live video area. The red circle icon within the button will change to a gray square. Press the gray square button to stop recording. NOTE: The video stops recording as soon as you press the gray square stop recording button. However, the icon may take up to 3 seconds to change back to the red circle default button.
6	Clock Overlay. Press this button to enable an opaque clock overlay during viewing. Note: This overlay will carry over to the photo taken while it is active. The overlay will not transfer to videos taken.
7	Clock Overlay color change. This dropdown menu will allow you to change the clock overlay color either Black or White.
8	Counter. This will show you a numeric tally of how many total photos & videos were taken during the session.
9	Picture/Video Log. This area shows all the pictures and videos you have taken during this session.

10	End Session button. This ends your session.
11	Live Video area. This area displays the live video feed from the colposcope.

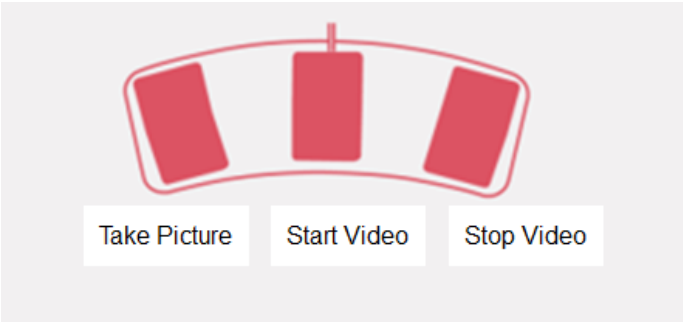
6.3.3 Foot Pedal

The picture and record On/Off buttons will also work with a foot pedal. Ask your Lutech Representative about the foot pedal if you do not have access to one. The foot pedal should automatically engage with the software once it's plugged into the computer and offers a hands free way of taking pictures and videos during the session. It functions the same way as the buttons located on the lower left corner of the Session Window.

Note: The wireless footswitch is only capable of taking pictures. It will not start or stop a video.

The following are foot pedal button designations.

Three Button Foot Pedal



Wireless Foot Pedal

Three Button Foot Pedal:

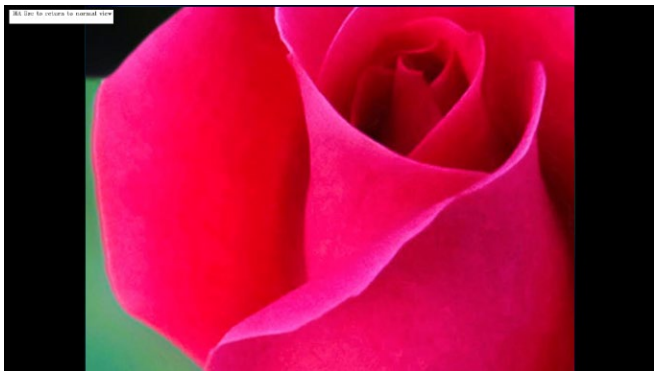
Button	Function
Left Pedal: Take Picture	Press this pedal to take a picture of what's currently in the live video area. All pictures will be saved in the JPEG format in 1920 x 1080 resolution.
Middle Pedal: Start Video	Press this pedal to start recording what's in the live video area. All videos will be saved at max resolution as an AVI file.
Right Pedal: Stop Video	Press this pedal to stop recording what's in the live video area.

Wireless Foot Pedal:

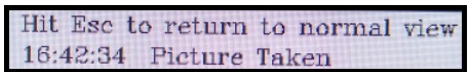
Button	Function
One Pedal: Take Picture	Press this pedal to take a picture of what's currently in the live video area. All pictures will be saved in the JPEG format in 1920 x 1080 resolution. This pedal is not capable of taking videos. If you would like to start or stop video capture please used the buttons on Lutech Viewers interface.

6.3.4 Full Screen Mode

Click on the Full Screen Button  located at the bottom left corner of the Session Window to enter Full Screen Mode.



Pictures and Videos can be taken during Full Screen Mode using the foot pedal. The upper left corner displays confirmation messages of actions taken while in Full Screen Mode.



To exit Full Screen Mode, press ESC on your keyboard. This will return you to the Session Window.

6.3.5 Picture Review

To review a picture taken during this session, double click on the thumbnail of the picture located in the picture/video log area. The picture will be displayed in a new larger window. Click on the X on the upper right corner to close this new window when done.

NOTE: Be careful not to click on the X located on the Session Window. This will close the Lutech Viewer instead.

6.3.6 Video Review

To review a video taken previously this session, double click on the thumbnail of the video located in the picture/video log area. The video files will have a icon overlay. The video will open using the default media player on the computer. Click on the X on the upper right corner to close the media player when done.

NOTE: Be careful not to click on the X located on the Lutech Viewer window. This will close the Lutech Viewer instead.

6.3.7 End Session

When you are finished with the session, press the “End Session” button. A warning message will pop up for you to confirm your selection.

NOTE: When a session ends, no other file can be saved by the software within that session folder. When a new session is started, the picture/video log area will be empty and a new folder will be created. Therefore, please be sure that the session is truly complete before ending it.

Click “OK” to end the session. This will return you to the Main Screen. From here, you may choose to start a new session or press the “Quit” button to close the software. Alternately, you may also click on the X located on the upper right corner to close the software.

6.3.8 Test Session

NOTE: Always test the software out before you have a live session.

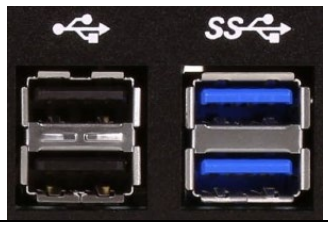
Start the software and enter all the information required. Take some pictures as well as videos using the buttons on the Lutech Viewer software as well as the foot pedals. End the session when done. Navigate to the folder path you have entered to see if pictures and videos have been saved accurately.

If there are any issues, please see Section 3.9 Troubleshooting or contact your Lutech Representative.

6.4 Lutech Viewer Troubleshooting

The following troubleshooting sections list some common issues and their solutions.

6.4.1 Video Source Troubleshooting

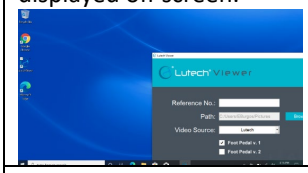
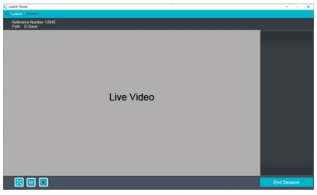
Problem	Solution
The Video Source is not detecting any video cards.	Make sure the colposcope is connected to the computer with the USB cable that came with the colposcope. Make sure that AC power is connected to the Power Box and the green light on the Power Box is illuminated. Turn off the software and restart it while the colposcope is properly connected.
The Video Source does not match any of the Lutech cards described above.	Turn off the software. Connect the colposcope to the computer and restart the software. Make sure that AC power is connected to the Power Box and the green light on the Power Box is illuminated.
The Video Source is correct but the image quality and/or speed is poor.	Make sure to use the USB 3.0 cable that came with the colposcope. Make sure that the computer you are using has a USB 3.0 connector and meets the minimum required computer specifications listed within this manual. Using a USB 2.0 port will significantly reduce image quality and speed. **NOTE: The USB 3.0 port is sometimes identified by a "SS" or "3.0" near the port. It may also contain a blue component within the jack. See below for examples.** 

6.4.2 Foot Pedal Troubleshooting

Problem	Solution
The Foot Pedal is not working and never worked.	Make sure the Foot Pedal is connected correctly.
	Go back to the Main Screen. Try using the other Foot Pedal option. If using Foot Pedal V.1, switch to Foot Pedal V.2 and vice versa.
	If using Foot Pedal V.1, make sure the caps lock is OFF.
	Make sure the Foot Pedal is connected correctly.

The Foot Pedal was working but stopped suddenly.	If using Foot Pedal V.1, make sure the caps lock is OFF. You may have typed something and turned on caps lock by accident.

6.4.3 Display Troubleshooting

Problem	Solution
Part of the software is displayed off screen. 	Please make sure the resolution for your computer is set to 1920*1080 at 100%. Additionally, you can now resize your window accordingly to a size you feel comfortable with while viewing.
Gray screen with “Live Video” 	Please confirm that all connections are secured properly. Then reboot the Viewer software. This is generally caused by the USB plug being unplugged or not properly secured. The other main cause of this is a permissions issue on your PC. Consult whoever is in charge of administrator settings on this PC and have them adjust accordingly.
"Failed to execute script_video" error message	Please confirm that you are using the latest version of Lutech Viewer. This is generally caused by Lutech Viewer already running in the background. Please confirm that it is closed down. You may need to Ctrl+Alt+Del and close any instance of Lutech Viewer already running. Alternatively, this may be a permissions issue on this PC. Consult whoever is in charge of administrator settings on this PC and have them adjust accordingly.

6.4.4 Saving Files Troubleshooting

Problem	Solution
None of the pictures or videos saved.	Please check the current path to the save location. Make sure it is where you were looking for the files and that no one has accidentally changed it. **CAUTION: The Lutech Viewer does not have any security logins so please only install the software in a location that is accessible only to trained and authorized professionals.**
	Please make sure that none of the following symbols were entered into the Reference No. field: \ < > ? * : | "/ The software should have given you an error message if you unknowingly put the symbols in. Please make sure you have the latest version of the software. If not, please contact your Lutech Representative for an update.

If additional assistance is required, please contact Lutech. We will be happy to assist you.

6.5 Folder Naming Structure

When the user clicks on the Start Session button, a folder is created using the Reference No. and the current Date and Time in the location specified by the Path.

For example:

Reference No.: 12345abc.

Date: January 28, 2020.
The date portion will be expressed in the year | month | day format within the folder file name. In this case, it would show up as 2020 | 01 | 28 or 20200128.

Time: 14:30:01
This is 2:30pm and 1 second in 24 hour format. The time portion will be expressed as hour | minutes | seconds. In this case, the time portion will be expressed as 143001.

Folder Name: 12345abc20200128143001
The folder name is created by using the format below:
Reference No. + Date + Time.

Each session will generate its own folder within the location specified by the Path. No two folders will have the same file name. Even if the same reference number is used back to back, the Date and/or Time will be different, thereby creating a different folder name.

6.6 Picture and Video Naming Structure

Picture and Video file names are created using the Reference No. and the current Date and Time in the folder created within the location specified by the Path.

For example:

Reference No.: 12345abc.

Date: January 28, 2020.
The date portion will be expressed in the year | month | day format within the folder file name. In this case, it would show up as 2020 | 01 | 28 or 20200128.

Time: 14:30:26
This is 2:30pm and 26 seconds in 24 hour format. The time portion will be expressed as hour | minutes | seconds. In this case, the time portion will be expressed as 143026.

File Name: 12345abc20200128143026
The file name is created by using the format below:
Reference No. + Date + Time.

If images are taken within the same second, multiple images will be shown on the picture log but only the last image will be saved to folder.

Chapter 7: Cleaning and Maintenance

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

7.1 Cleaning

To ensure the longevity and performance of the equipment, please pay attention to the maintenance requirements of the colposcope.

7.1.1 Cleaning the colposcope enclosure and vertical stand

NOTE: This section refers to the cleaning of the enclosure and the vertical stand. DO NOT use this section to clean the mini-LCD or the camera lens.

To clean the colposcope enclosure and vertical stand, please follow the steps below.

1. Turn off the colposcope and unplug it from the power supply.
2. Disconnect all cables, accessories, and peripheral devices.
3. Make sure the lens cap is on.

NOTE: If the area around the lens requires cleaning, stop and go to Section 6.1.3 Cleaning the lens. Clean the lens and surrounding lens area first before proceeding here.

4. Wipe the outer frame with a clean cloth dampened with distilled water when it is necessary per hospital or clinic cleaning policy.
5. Only disinfect the enclosure and vertical stand when it's necessary by wiping it with an agent such as 70% isopropyl alcohol or according to your hospital's regulations.
6. Then pat dry with a dry cloth.
7. Allow the colposcope to dry completely before using.

NOTE:

- **Do not soak the cloth in liquid and use it to wipe the colposcope. Only dampen the cloth to avoid too much liquid from getting onto the colposcope.**
- **Do not pour liquid on the colposcope and do not submerge.**
- **Do not allow any liquid to get inside the colposcope. If any liquid gets into the colposcope, please call the hospital technical team or an authorized Lutech repair center for assistance. Do not use the colposcope.**
- **Do not allow any liquid to get onto the lens. If any liquid gets onto the lens, please see section 6.1.3 Cleaning the lens.**
- **Do not allow any liquid to get onto the mini-LCD screen. If any liquid gets onto the mini-LCD screen, please see section 6.1.3 Cleaning the lens.**
- **Do not touch the cloth to the lens. Only special camera cleaning cloth or tissues may be used for the lens.**
- **Do not allow any liquid to get inside the connectors located on the colposcope or the Power Box.**
- **Do not use steel wire brushes, metal polishing agents or any abrasive materials that will cause damage to the colposcope panel, frame, and display screen.**
- **Do not autoclave the colposcope.**

7.1.2 Cleaning the colposcope cables

To clean the cables, please follow the steps below.

1. Turn off the colposcope and unplug it from the power supply.
2. Disconnect all the cables from the colposcope, Power Box, and wall socket.
3. Using a clean cloth dampened with distilled water and gently wipe the cables. Making sure to avoid the opening of the connectors.
4. Only disinfect the cables when it's necessary by wiping it with an agent such as 70% isopropyl alcohol or according to your hospital's regulations.
5. Then pat dry with a dry cloth.
6. Allow the cables to dry completely before using.

NOTE:

- **Do not allow any liquid into the connectors of the cables.**
- **Do not submerge the cables in liquid.**
- **Avoid using alcohol based, amino or acetone-based cleaners.**
- **Do not autoclave the cables.**

7.1.3 Cleaning the Colposcope/Anti-glare Lens, mini-LCD screen, and the LED circular light

NOTE:

- **The lens should only be cleaned with special cleaning cloth designed for cameras or video cameras. Using any other material may damage the lens.**
- **Never touch the lens directly with your fingers.**
- **Never submerge the lens in liquids.**
- **Do not get the lens wet. If liquids are spilt onto the lens, clean it per instructions from the manual.**
- **Do not use the lens near extreme heat.**
- **Do not clean the lens with any abrasive cleaners.**
- **Take care not to scratch the lens.**
- **Always cover the lens while not in use.**

CAUTION:

- **Do not use rubbing alcohol or eyeglass tissues to clean a lens. Each of these may contain additional chemicals that can damage or leave a coating on the lens.**
- **Do not use anything other than lens cloth or lens tissue to wipe the lens.**
- **Only clean your lens when absolutely necessary. Every time you clean your lens, you risk scratching or damaging it.**
- **Do not let any liquid enter into the inner casing of the camera. If water enters into the inner casing of the camera, call your technical team or an authorized Lutech service center for assistance. Do not use the colposcope.**

The lens is a vital component of the colposcope and must be kept as clean as possible. Dust accumulation and fingerprints or smudges on the lens can affect colposcope performance, such as the appearance of spots, lowering image quality and weakening image contrast. Any fingerprints left on the camera lens are harmful to the lens

coating, so they must be removed as quickly as possible. Should any liquid, gel or body fluid get on the lens, it must be removed as soon as possible. If the device is not in use, please cover the lens.

The following is the process for cleaning the camera and Anti-glare Lenses. You may use the same method and materials to clean the surrounding circular LED light system and the mini-LCD screen.

To clean the lenses, please follow the steps below.

1. Make sure the colposcope is turned off and the power cord is disconnected from the wall socket.
2. Use an air blower or a soft bristled lens brush to gently remove dust or dirt from the lens.
3. If there are any liquid, gel, or body fluid on the lens, use a clean lens tissue or lens cloth to wipe it away. Wipe gently and use as many lens cloths/tissues as needed.

NOTE: Never wipe a lens with a dry cloth.

NOTE: Do not use your breath, which may cause condensation and damage to the lens.

4. If there are no liquid, gel, or body fluids, then lightly brush the lens with a special lens brush.
5. If there are smudges, moisten the lens cloth with some commercially accepted lens cleaner that is specific to cleaning high end camera lenses. Then wipe in a circular motion from center outward to the sides. Wipe gently and use as many lens cloths/tissues as needed.

NOTE: Never wipe a lens with a dry cloth.

NOTE: Never spray or splash any cleaning liquid onto the lens directly. Always spray it onto the microfiber cloth first and then use that to wipe the lens.

NOTE: Microfiber clothes that are more "fluffy" in texture are more absorbent than the silky ones so they will be better at removing liquid residue, finger prints and water from your lenses.

6. Repeat this process with the lens cap to avoid transference of dirt from the cap to the lens.
7. Allow the lens to dry completely before use.

7.2 Maintenance

Proper maintenance will extend the life of your colposcope. Please perform the following maintenance work every six (6) months or as per hospital or clinic maintenance policy.

1. Check the cables regularly for any damage. If any damage is found, replace cables immediately.
2. Check the tightness of knobs and nuts of the vertical stand and camera regularly. If loose, readjust the height or angle of the camera and then tighten the knobs/nuts.
3. Cover the colposcope when not in use to prevent dust from accumulating on the device, especially the lens. Lens cap must always be on the lens when the colposcope is not in use.
4. Clean the colposcope as needed or as per hospital or clinic cleaning policy.
5. Ensure the equipment is grounded properly by plugging it into an AC receptacle with ground included. Speak to the relevant department (such as building maintenance department) to ensure the AC receptacles where the colposcope will be used is properly grounded.
6. If there are frequent disturbances in the power grid where the equipment is being used, prepare equipment that will be able to stabilize the power voltage.

7.3 Battery

WARNING:

- **Replace the battery immediately if it is damaged or the capacity is exhausted.**
- **Only use batteries that are provided by the manufacturer. Please contact your distributor or the manufacturer for replacements.**
- **Always turn the colposcope off first and disconnect the power cord from the colposcope as well as the AC power source before replacing the battery.**
- **Always disconnect the main cable from the colposcope before replacing the battery.**

Battery is not required for the operation of the LT-300 SD and LT-300 HD digital video colposcopes. The colposcopes are meant to be used with the power cord plugged into the wall socket. However, should the necessity arise, the colposcope may be used on battery power.

NOTE: To use the colposcope with a TV or Computer, the colposcope must be plugged in to an AC outlet.

The battery is meant to stay inside the colposcope. Should the battery require replacement, the end user must contact their distributor or the manufacturer for a replacement.

Battery Life Span	1000 charges or 5 years.
Work Duration	2 to 2.5 hours
Time for Full Charge	3.5 hours
Charging Method	Automatic. As long as the colposcope is plugged into a working wall socket, the batteries will recharge automatically.
Indicator Light	When the colposcope is plugged into the wall socket, the indicator light will be green.
Type	Li-ion

Please reference the appendix for more battery details.

Tips on prolonging battery life:

- Remove the battery if the colposcope will be placed into storage for longer than 30 days at a time.
- The battery should be fully charged once every 30 days if the colposcope is not in use.

CAUTION: Should the battery fail to work or is damaged, it must be replaced immediately. Please contact your colposcope representative or your hospital engineer for a replacement battery.

NOTE:

- **Please dispose of old batteries per local requirements.**
- **Do not use or place the batteries near a heat source.**
- **Do not reverse the positive and negative pole of battery during use.**
- **Only authorized and trained personnel may remove the battery.**

7.4 Storage

When the colposcope is not in use, cover the colposcope and store in a dry, clean and relatively dust free area. Make sure the lens cap is always on the colposcope when it is not in use.

For long term storage, remove the battery and follow the above instructions. Then reference Appendix A, Section II for specifications of the storage environment.

NOTE:

- **Please dispose of old batteries per local requirements.**
- **Do not use or place the batteries near a heat source.**
- **Only authorized and trained personnel may remove the battery.**

7.5 Transportation

When transporting the colposcope, avoid external weather conditions. If necessary, dismantle the colposcope and place in original packaging for transport. Use environmental conditions suggested for storage while transporting the colposcope. If transporting the colposcope in a moving vehicle, please lock the colposcope in place to prevent movement of any kind. Do not rely solely on the caster locks.

WARNING: The caster locks on the wheel base are not enough to keep the colposcope from moving during transportation. Use alternate methods to immobilize the colposcope during transportation for the safety of the equipment and personnel.

7.6 Device Disposal

To avoid environmental contamination when discarding the device, the user should clean it according to the cleaning procedures contained herein and then dispose of it according to the regulations as set forth in the jurisdiction of the device's location.

Do not discard electrical devices as normal waste. They should be collected separately for recycling.

Chapter 8: Troubleshooting

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

8.1 Troubleshooting

Malfunction	Potential Cause	Solution
The camera is loose and will not stay in the position I place it when I let go.	The knob on the camera base mount is loose.	Tighten the knob on the camera base mount by rotating it clockwise.
	The camera base mount is damaged.	Replace the camera base mount.
There is no signal on the TV or computer screen even though the colposcope is turned on and the lights are working.	The cable may not be connected properly.	Check the connection between the cable and the Power Box to make sure the cable is connected correctly.
	If using a software, the software may not be open on the computer.	Open the software.
	The cable may be damaged.	If another cable is available, check using the other cable. If another cable is not available, please contact Lutech's service center.
	The camera may be damaged.	Please contact Lutech's service center.
The image cannot be captured or a black screen is displayed.	The cable may not be connected properly.	Check the connection between the cable and the Power Box to make sure the cable is connected correctly.
	Capture card driver may not have installed correctly.	Reinstall the capture card according to instructions. Please note that some capture cards do not have drivers. Check with your Lutech representative for details.
	Capture card may be damaged.	Replace the capture card.
	Foot switch may be damaged.	Replace foot switch.
The camera buttons are not working.	The remote might be damaged and is interfering with the camera button signals.	Disconnect the remote to see if the camera buttons work. If it does, then the problem might be the remote. Please contact Lutech's service center.
	If unrelated to the remote, the buttons or internal connections might be damaged.	Please contact Lutech's service center.
The remote buttons are not working.	The internal connections might be damaged.	Try using the buttons on the camera. If that doesn't work, then the camera may be damaged. Please contact Lutech's service center.

	The remote might be damaged.	If the camera buttons work, then the problem may be the remote. Please contact Lutech's service center.
The vertical stand is not moving well.	The caster (wheel) locks may be engaged.	Check to see if the locking mechanism on the casters are down. If it is, lift up to disengage the lock. All 4 casters have locks so make sure all 4 are disengaged.

For any questions or concerns, please contact the manufacturer or authorized repair/service center.

WARNING:

- **Always disconnect the colposcope from any power source before disassembling any components or parts.**
- **The colposcope should always be operated by trained and authorized personnel and according to the requirements of the Operator's Manual.**

Appendix A– Specification

NOTE: Unless specifically noted for one or the other, the following information is true for both the LT-300 SD and the LT-300 HD digital video colposcopes.

I. Power Supply/Adapter

Adapter Model	UE36LCP1-150240SPA
Adapter Input	100-240V, 50/60Hz, 0.9A
Adapter Output	15V, 2.4A
Power Box Input Power	＜30VA
Power Box Output Power	15V, 1.7A
Colposcope Input Power	15V, 1.7A

II. Battery

Battery Life Span	1000 charges or 5 years.
Work Duration	2 to 2.5 hours
Time for Full Charge	3.5 hours
Charging Method	Automatic. As long as the colposcope is plugged into a working wall socket, the batteries will recharge automatically.
Indicator Light	When the colposcope is connected to an AC power source, the indicator light is turned on. When the colposcope is not connected to an AC power source and is using battery power, the indicator light is off.
Output	7.4V 2200mAh
Model Number	18650-2S
Type	Li-ion

III. Grounding

Ensure the equipment is grounded properly by plugging it into an AC receptacle with ground included. Speak to the relevant department (such as building maintenance department) to ensure the AC receptacles where the colposcope will be used is properly grounded.

IV. Environmental Specifications

The LT-300 SD and LT-300 HD digital video colposcopes Imaging System is designed for hospital use. Only qualified and trained personnel may use the system. Make sure the environment under which the colposcope operates is clean, properly ventilated, protected against shock, noise, and strong electrical interference. In addition, the colposcope should not be placed under direct sunlight. The following are environmental guidelines for the operation and storage of the colposcope.

	Operation	**Storage**
Environmental Temperature	41°F~104°F (5°C ~40°C)	-4°F~140°F (-20°C ~+60°C)
Relative Humidity	30%-85%	30%-90%
Atmospheric Pressure	54.0kPa～106.0kPa	54.0kPa～106.0kPa

V. Colposcope Specifications

Colposcope Specifications

	LT-300 SD / LT-300 SD-Mobile	LT-300 HD / LT-300 HD-Mobile
Camera	Sony 1/2.8-type CMOS	1/2.8-type 2M STARVIS 2
Camera Resolution	Standard	High
Image Quality	High	Super
Pixels	2.13 Mega Pixels	2.13 Mega Pixels
Output	HDMI(1080P60), USB3.0(1080P60)	HDMI(1080P60), USB3.0(1080P60)
Focus	Manual/Auto	Manual/Auto
Lens	5.2mm-104mm	4.3mm-129.0mm
Depth of Field	F/1.5 to F/3.5 (5.2mm-104mm)	F/1.6 to F/4.7 (4.3mm-129.0mm)
Optical Magnification	1～20	1~30
Digital Magnification	21～30	60～120
Field of View at working distance under 5x, 15x magnification	75mm (5x), 31mm (15x)	70mm (5x), 26mm (15x)
TVL	≥1000	≥1000
Light Source	Circular cool LED group light	Circular cool LED group light
Brightness	Adjustable, 14 levels	Adjustable, 14 levels
Green Filter	Adjustable, 70 levels	Adjustable, 70 levels
Image Freeze	Yes	Yes
Working Distance	inch	inch
Horizontal Angle	63.2°(wide end) - 1.7°(tele end)	64°(wide end) - 2.4°(tele end)
Remote	Yes	Yes
Color Temperature	Indoor light (3700° K) Outdoor light (5100° K)	2500~ 7500 K
White Balance	Auto/Adjustable	Auto/Adjustable
Illumination	Max 10000 lx	Max 10000 lx
UV Filter	No	Yes
Focusing Distance Setup	Yes	Yes
Timer	Yes	Yes
Battery Power	2 hours	2.5 hours

Vertical Stand

Measurement of the vertical stand is taken with the camera base mount on and the colposcope off.

	LT-300 SD	LT-300 HD
Max. Height	42 in (106 cm)	42 in (106 cm)
Min. Height	31 in (78 cm)	31 in (78 cm)
Adjustable Height Range	11.4 in (30 cm)	11.4 in (30 cm)
Wheel Base	Four 360° swivel casters with locking mechanisms. 13 x 13 inches	
Weight	20.8 lbs (without colposcope)	

Swing Arm Stand

Measurement of the swing arm stand is taken with the camera base mount on and the colposcope off.

	LT-300 SD	LT-300 HD

Max. Height (without colposcope camera with VESA mount)	45.75 in (116.2 cm)	45.75 in (116.2 cm)
Min. Height (without colposcope camera and VESA mount)	31.4 in (79.7 cm)	31.4 in (79.7 cm)
Adjustable Height Range	13.25 in (33.6cm)	13.25 in (33.6cm)
Wheel Base	Four 360° swivel casters with locking mechanisms.	
Wheel Base Dimensions	22.0 in (55.9 cm) x 19.0 in (48.3 cm)	
Weight	44 lb (without colposcope)	

Monopod Stand (if provided by Lutech)

Measurement of the monopod stand is taken with the camera base mount on and the colposcope off.

	LT-300 SD	**LT-300 HD**
Max. Height	69.12 in (175.51 cm)	70.12 in (178.1 cm)
Min. Height	19.5 in (49.5 cm)	20.5 in (52.0 cm)
Adjustable Height Range	49.62 in (126.03)	49.62 (126.03 cm)
Monopod	3 adjustable legs with rubber feet	
Weight	2.5 lb (without colposcope)	

Direction of View

Camera Horizontal Rotation	0-360°
Vertical Stand Height Adjustment	Approx. 11.2 in (28.4 cm)
Angle of Pitch	0-70°

Minimum Computer Requirements

Processor	≥2.4GHz
Memory	≥3 GB
Hard disk	≥200GB

Physical Specification

Part	L x W x H	Weight
Camera Only	8.25 x 3.25 x 8 in (20.95 x 8.25 x 20.32 cm)	2 lb (0.9 kg)
LT-300 SD Camera on Vertical Stand		
Fully Contracted	13.5 x 13.5 x 35 in (34.3 x 34.3 x 88.9 cm)	26 lb (11.8 kg)
Fully Extended	13.5 x 13.5 x 46 in (34.3 x 34.3 x 116.8 cm)	
LT-300 HD Camera on Vertical Stand		
Fully Contracted	13.5 x 13.5 x 36 in (34.3 x 34.3 x 91.4 cm)	26 lb (11.8 kg)
Fully Extended	13.5 x 13.5 x 47 in (34.3 x 34.3 x 119.4 cm)	
LT-300 HD Camera on Vertical Stand		
Fully Contracted	16.0 x 16.0 x 19.5 in (40.6 x 40.6 x 49.5 cm)	4.5 lb (2.04 kg)
Fully Extended	16.0 x 16.0 x 69.12 in	

	(40.6 x 40.6 x 175.5 cm)	
LT-300 HD Camera on Vertical Stand		
Fully Contracted	16.0 x 16.0 x 20.5 in (40.6 x 40.6 x 52.0 cm)	4.5 lb (2.04 kg)
Fully Extended	16.0 x 16.0 x 70.12 in (40.6 x 40.6 x 178.1 cm)	

VI. Monitor

Minimum requirements for a viewing monitor are as follows:

Type	Color Display
Size	≥15”
Horizontal Definition	≥550TVL
Refresh Rate	≥60Hz
Brightness	≥250cd/m2
Viewing Angle	≥150°
Contrast	≥400:1