MEDIVATORS®

CER OPTIMA®

Endoscope Reprocessing System

User Manual

MEDIVATORS
A Cantel Medical Company

50097-776-EN Rev F

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Chapter 1

INTRODUCTION

Using this Manual

This manual is for the MEDIVATORS® CER OPTIMA® automatic endoscope reprocessor which is available in the following models:

- CER-1 OPTIMA, Single endoscope reprocessing capability
- CER-2 OPTIMA, Single or dual endoscope reprocessing capability

This manual describes the features of the reprocessor, how to setup and operate the reprocessor, and maintenance and troubleshooting procedures to keep the reprocessor in good operating order.

Throughout the manual are notes, service notes, cautions, and warnings which provide additional important information. An example of each is illustrated below.

Indications for Use

MEDIVATORS CER OPTIMA Endoscope Reprocessing System, washes, disinfects and rinses flexible endoscopes, including fiberoptic, ultra-sound and video endoscopes between patient uses. The CER OPTIMA System is indicated to provide high level disinfection, using RAPICIDE® High-Level Disinfectant, Glutaraldehyde disinfectant or Ortho-phthaladehyde (also known as OPA) disinfectant, for heat sensitive semi-critical endoscopes. Manual cleaning of endoscopes is required prior to placement in the CER OPTIMA system.

Note: A note refers to relevant information not covered in the main body of the text.

Service: A service note refers to operations or repairs only a trained service technician may perform.

Caution! A caution describes actions and conditions that may cause damage to or destruction of the equipment.

Warning! A warning describes actions and conditions that may cause severe personal injury or death to the operator or patient.

Safety

This section outlines general safety guidelines for proper operation and service of the reprocessor. Failure to follow these guidelines may result in severe injury or death to the patient and/or operator. Read and understand all operating and service procedures before attempting to operate the reprocessor. If the equipment is not used as specified, the the ability of the equipment to high level disinfect an endoscope may be at risk. Contact your Medivators representative if you have any questions regarding the safe and correct way to operate and service this equipment.

Intended Use

Only properly trained individuals may operate or service the reprocessor. Never use the reprocessor for any purpose other than the manufacturer's specific indications for use. It is the responsibility of the facility to maintain and ensure that adequate training is provided to operators. It is recommended that the facility conduct regular training of all personnel concerned with the operation and maintenance of this equipment, including emergency procedures for safe handling of an accidental chemical spill. Attendance records of the training should be maintained and evidence of understanding demonstrated.

Operator Safety

Avoid biological contamination and chemical burns–always wear appropriate personal protective equipment when handling endoscopes or disinfectant solutions. Never open the reprocessor lid during operation.

Moving the CER OPTIMA® Endoscope Reprocessing System

Before moving the CER OPTIMA Endoscope Reprocessing System, ensure the electrical cord, disinfectant tubing, drain line and water supply line are either disconnected or are appropriate lengths to accommodate the relocation of the machine. Failure to do so may result in damage to the machine. While moving the CER OPTIMA Endoscope Reprocessing System, ensure the machine remains in an upright position. Moving or resting the machine in any orientation other than an upright position may result in damage to the machine. Take precautions to ensure the machine does not tip over which could result in damage to the machine or personal injury. The machine may be placed upon a mobile cart or dolly. When loading or unloading the machine onto or off of a cart or dolly, utilize appropriate lifting equipment or manpower to avoid damage to the machine or personal injury.

Note: To avoid injury or death from an electrical insulation breakdown within the unit, the GFI (ground fault interrupter) circuit breaker should be checked for proper operation on an annual basis.

Note: If during the use of this equipment you see or smell smoke, immediately disconnect the unit from the power supply, discontinue use and call Medivators Technical Support at 1-800-444-4729.

Note: Prior to undertaking any service or maintenance operation, or when resetting the GFI ensure that the CER OPTIMA® system is disconnected from the main power supply. If service or maintenance operations are to be conducted on the water system, ensure that the CER OPTIMA system is isolated from the main water supply.

Warning! The reprocessor must be protectively grounded.

Installation and Maintenance

For complete system installation instructions and details, refer to the:

- CER OPTIMA Pre-site Installation Instructions
- CER OPTIMA Water Filtration Installation Instructions
- CER OPTIMA Installation Instructions

Upon installation, position the equipment so the power on/off switch is readily accessible by the operator. Ensure compliance with the installation documents before operating the system.

- The reprocessor must be properly grounded.
- The disinfectant immersion period (contact time) is fixed in the CER OPTIMA's software, specific to the high level disinfectant that is displayed on the screen at the start of the cycle.
- All pressure regulators are factory-preset. Do not adjust the settings. Contact Medivators Technical Support for assistance.
- Do not use alcohol or alcohol-based products to clean the reprocessor cabinet.
- The hook-ups are not autoclavable and must be reprocessed by low temperature disinfection only.
- Replacement parts must be ordered from the manufacturer to maintain the warranty.
- Regularly inspect reprocessor for basin damage, pipe and tubing damage, which may result in leaks.
- Ensure CER OPTIMA unit is level prior to operation. Place a bubble level on the front and side edges of the basin. Level the unit using the four (4) adjustable feet on the bottom of the reprocessor. To adjust the level of the reprocessor, rotate the foot clockwise to raise up, or counterclockwise to lower the corner. When the basin is full of liquid, the level of the liquid should be even around the top of the basin.

Proper maintenance will ensure effective disinfection and prolong the life of the reprocessor.

Water Quality and Filtration

Potable water is the minimum standard. Incoming water must be pre-filtered to a minimum of 1 micron. Use a cold water line with a pressure of 40 to 60 PSI that will supply a flow rate of 2.5 to 3 GPM (9.4 LPM to 11.4 LPM) to the water filtration system. The cold water supply should not exceed 104°F (40°C).

- The high performance 0.2-micron absolute water filter included with the reprocessor is a bacterial-retentive filter. This filter removes all microorganisms and particles greater than 0.2-micron.

- The routine maintenance schedule recommends replacing the 0.2-micron water filter every 6 months or sooner, depending on the pre-filtration system and the quality of the incoming water. Never use a nominal 0.2 micron water filter.
- Incoming water supplied (upstream of the external pre-filtration system) should be shut-off at the end of every work day. Ensure this water supply is turned on prior to operating the reprocessor.
- The pre-filtration system should be monitored for excessive pressure drop indicating blocked filter membranes. If this occurs replace the water filter.

Chemicals

The CER OPTIMA® endoscope reprocessing system is designed for use with RAPICIDE® High-Level Disinfectant, Glutaraldehyde disinfectant, or Ortho-phthaladehyde (also known as OPA) disinfectant. Refer to the American National Standard recommended practice titled, *Chemical Sterilants and High Level Disinfectants: A guide to Selection and Use* (AAMI TIR7:1999) and/or *Safe Handling and Biological Decontamination of Reusable Medical Devices in Health Care Facilities and in Nonclinical Settings* (AAMI/ANSI ST35:2003). These documents are available from the Association for the Advancement of Medical Instrumentation.

The CER OPTIMA also allows the use of detergents for endoscope washing, or 70% Ethyl Alcohol and Isopropyl Alcohol for end-of-cycle endoscope drying.

For all chemicals used within the CER OPTIMA endoscope reprocessing system, refer to the respective chemical labeling, directions-for-use (DFU) and/or material safety data sheet (MSDS) for chemistry constituents, as well as for safety and handling guidelines. These documents should be displayed and stored near the CER OPTIMA endoscope reprocessing system for easy access in the event of a chemical spill or emergency resulting in contact with any chemical that is considered hazardous.

In case of an emergency in which eye or skin contact, or inhalation occurs, such as release of toxic or pathogenic material, or leakage from a disinfectant container, or detergent (alkaline, acidic, non-enymatic or enzymatic) container, always refer to the manufacturer's labeling, directions for use and/or Materials Safety Data Sheet (MSDS), for first aid measures, accidental release measures and exposure controls/personal protection. Call the emergency telephone number located on the MSDS if additional manufacturer's information is needed.

Detergent Solution

If the user decides to incorporate a pre-wash in the reprocessing cycle, MEDIVATORS recommends the use of a medical-grade detergent solution which is bacteriostatic, low foaming, free-rinsing and having a neutral pH.

Caution! Never use household detergent in the reprocessor.

Disinfectant Solution

The CER OPTIMA endoscope reprocessing system is designed for use with RAPICIDE High-Level Disinfectant (HLD), Glutaraldehyde HLD, or Ortho-phthaladehyde (also known as OPA) HLD.

Medivators only recommends the use of the HLD that is legally marketed and FDA cleared as a high-level disinfectant/sterilant for use on flexible endoscopes and medical devices/instruments. Refer to the FDA website to confirm the HLD is cleared for use.

It is the user's responsibility to ensure the HLD used per the disinfectant manufacturer's instructions, including the proper contact time, use temperature, and post rinses. Refer to the high level disinfectant manufacturer's directions for use for further instructions.

Monitoring Disinfectant Potency

High Level Disinfectant (HLD) testing must be performed before each reprocessing cycle. The minimum required concentration (MRC) testing of the high level disinfectant (HLD), ensures the HLD is at an effective level of potency, so that it can be used to disinfect an endoscope or medical device. Testing the potency prior to starting a reprocessing cycle, confirms the disinfectant's MRC potency, and that it can be used to achieve high level disinfection of an endoscope or medical device.

Use only the disinfectant manufacturer's recommended test strips to test the potency of the HLD. If the high level disinfectant is below the minimum required concentration, then discard the used disinfectant and replace it with new disinfectant, prior to initiating a reprocessing cycle. Refer to the test strip manufacturer's instructions, for further details and step-by-step use instructions.

Endoscope Precleaning and Testing

All endoscopes must be manually precleaned prior to disinfection. Follow the endoscope manufacturer's instructions and established professional guidelines to properly preclean the endoscope.

- Endoscopes with elevator wire channels require additional manual cleaning and disinfection steps.
- Leak test endoscopes prior to disinfection procedures.

Electromagnetic Compatibility

The CER OPTIMA® endoscope reprocessing system meets all safety requirements of International standard IEC 61326-1 for medical electrical equipment and is suitable for use in laboratory environments.

Caution! Portable and mobile communication devices can affect electrically-operated medical equipment.

Caution! Medical Electrical Equipment needs special precautions regarding EMC and need to be installed and put into service according to the EMC information provided in the accompanying document.

Caution! The use of accessories, components and cables other than those specified by Medivators, as replacement parts for internal components or for external accessories and connections, may result in increased emissions or decreased immunity of the CER OPTIMA® Endoscope Reprocessing System.

Caution! The pins of any connectors identified with an ESD warning symbol should not be touched.

Connections, with this symbol, should not be made unless ESD precautionary procedures are used.

Note: All personnel involved in the operation, installation and or maintenance of the CER OPTIMA Endoscope Reprocessing System received and explanation of the ESD warning symbol and training in ESD precautionary procedures.

Endoscope Hookups

Endoscopes attach to the CER OPTIMA basin connectors using specific tubing hookups. For proper endoscope hook-up identification, refer to the interactive "Hookup Guide" located on the Medivators website at www.medivators.com. Medivators Customer Support can also assist in endoscope hookup identification by calling 1-800-444-4729.

EACH ENDOSCOPE HOOKUP IS INTENDED ONLY FOR CONNECTION WITH SPECIFIC ENDOSCOPE MODELS IDENTIFIED IN THE MEDIVATORS ONLINE HOOKUP. PROPER ENDOSCOPE MODEL AND HOOKUP COMBINATION, INCLUDING CONNECTIONS FOR ALL APPROPRIATE ENDOSCOPE CHANNELS THAT REQUIRE A SEPARATE REPROCESSING CONNECTION, MUST BE VERIFIED PRIOR TO CONNECTION.

The online hookup guide is available at: http://www.medivators.com/HookupLookup/.

Refer to the online hookup guide for additional notes and considerations specific to individual endoscope models.

- Endoscopes must be thoroughly cleaned according to the manufacturer's instructions and established professional society guidelines prior to hookup connection. Failure to properly clean and prepare endoscopes may result in inadequate high level disinfection and/or damage to the endoscope.

- Endoscopes must be inspected for damage and verified to be in proper working order prior to hookup connection. If cleaning or leak testing identifies endoscope damage or channels that may be restricted or obstructed, the endoscope should be repaired before further reprocessing. Connection of hookups to damaged endoscopes, or endoscopes with restricted or obstructed channels may result in inadequate high level disinfection.
- Users operating MEDIVATORS AERs and hookups must be trained and competent in the understanding of endoscope channel systems. Prior to hookup connection, users must verify that the hookup used contains connections for all appropriate endoscope channels that requiring a separate reprocessing connection.
- Ensure proper alignment of all connectors with the endoscope mating parts prior to attachment. Misalignment may cause damage to hookup components and/or mating parts.
- All connectors and adapters must remain firmly attached and unrestricted for the entire disinfection cycle to ensure adequate high level disinfection. Users must inspect the endoscope and hookup combination to verify proper connection and flow.
- Remove connectors from mating parts by griping the connector directly and detaching from the endoscope. Do not remove connectors by pulling on tubing.
- Hookups must be periodically checked to ensure their functionality is not impaired. Hookups should be inspected for damaged or worn connectors, missing components, kinked/blocked tubing or other signs of deterioration. If signs of damage or deterioration are found, the hookup should be replaced.
- Modifications or repairs to hookups which do not correspond to the manufacturer's specifications may result in inadequate high level disinfection and/or damage to endoscopes.
- Leak testing should be carried out in accordance with endoscope manufacturer's recommendations prior to hookup connection.
- Install all necessary waterproof caps, plugs and cleaning adapters prior to immersion.
- Do NOT autoclave MEDIVATORS hookups.
- Avoid biological contamination. Always wear personal protective equipment when handling endoscopes.

Medivators makes no claim of high-level disinfection efficacy when these instructions are not followed, or when this hookup is used with endoscopes other than those specified in the online hookup guide.

Cleaning and Disinfection

Always follow established professional guidelines while cleaning and disinfecting endoscopes. The following organizations have published recommended guidelines.

Society of Gastroenterology
Nurses and Associates
401 North Michigan Ave.
Chicago, IL 60611-4267
TEL: (800) 245-7462
FAX: (312) 321-5194
http://www.sgna.org/

Association for Professionals in
Infection Control and Epidemiology, Inc.
1275 K Street, NW, Suite 1000
Washington, DC 20005-4006
TEL: (202) 789-1890
FAX: (202) 789-1899
http://www.APICinfo@apic.org

American Society for
Gastrointestinal Endoscopy
13 Elm Street
P. O. Box 1565
Manchester, MA 09144-1314
TEL: (978) 526-8330
FAX: (978) 526-4018
http://www.asge.org/

American Society for
Testing and Materials
100 Bar Harbor Drive
West Conshohocken, PA 19428-2959
TEL: (610) 832-9585
FAX: (610) 832-9555
http://www.astm.org/

Association of Operating
Room Nurses
2170 So. Parker Rd., Suite 300
Denver, CO 80231-5711
TEL: (303) 755-6304
FAX: (303) 750-3462
http://www.aorn.org/

Canadian Society of Gastroenterology
Nurses & Associates
P.O. Box 366
36 Adelaide Street East
Toronto, Ontario M5C 2J5
http://www.webray.com/csgna

British Society of Gastroenterology
3 St. Andrews Place
Regents Park, London NW1 4LB
01144-171-387-3534
BSG@mailbox.u2cc.ac.uk.

Guidance and Manufacturer's declaration - electromagnetic emissions

The CER OPTIMA® Endoscope Reprocessing System is intended for use in the electromagnetic environment specified below. The customer or the user of the CER OPTIMA system should assure that it is use in such an environment.

Emissions test	Compliance	Electromagnetic Environment - guidance
RF emissions CISPR 11	Group 1	The CER OPTIMA system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The CER OPTIMA system is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded: WARNING! This equipment/system is intended for use by healthcare professionals only. This equipment/system may cause radio interference or may disrupt the operation of nearby equipment. It maY BE NECESSARY TO TAKE MITIGATION MEASURES, SUCH AS RE-ORIENTING OR RELOCATING THE CER Optima system or shielding the location.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer's declaration - electromagnetic emissions

The CER OPTIMA Endoscope Reprocessing System is intended for use in the electromagnetic environment specified below. The customer or the user of the CER OPTIMA system should assure that it is use in such an environment.

Immunity test	IEC 61326-1 test level	Compliance level	Electromagnetic Environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/ output lines	± 2 kV for power supply lines ± 1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines	<5 % U_T (>95% dip in U_T) for 0,5 cycle 40 % U_T (60% dip in U_T) for 5 cycle 70 % U_T (30% dip in U_T) for 25 cycle <5 % U_T (>95% dip in U_T) for 5s	<5 % U_T (>95% dip in U_T) for 0,5 cycle 40 % U_T (60% dip in U_T) for 5 cycle 70 % U_T (30% dip in U_T) for 25 cycle <5 % U_T (>95% dip in U_T) for 5s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the CER OPTIMa system requires continued operation during power mains interruptions, it is recommended that the CER OPTIMA be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-6	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: U_T is the a.c. mains voltage prior to application of the test level.

Guidance and Manufacturer's declaration - electromagnetic immunity

The CER OPTIMA® Endoscope Reprocessing System is intended for use in the electromagnetic environment specified below. The customer or the user of the CER OPTIMA system should assure that it is use in such an environment.

Immunity test	IEC 61326-1 test level	Compliance level	Electromagnetic Environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 Vrms 80 MHz to 2,5 GHz	3 Vrms 3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the CER OPTIMA system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = [\frac{3,5}{V_1}] \sqrt{P}$ $d = [\frac{3,5}{E_1}] \sqrt{P}$ 80 MHz to 800 MHz $d = [\frac{7}{E_1}] \sqrt{P}$ 800 MHz to 2,5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol. 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations fro radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the CER OPTIMA system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-or is used exceeds the applicable RF compliance level above, the CER OPTIMA system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the CER OPTIMA system.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than $[V_1]$ V/m.

Recommended separation distance between portable and mobile RF communications equipment and the CER OPTIMA® Endoscope Reprocessing System

The CER OPTIMA system is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the CER OPTIMA system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and CER OPTIMA system as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	**Separation distance according to frequency of transmitter (m)**		
	150 kHz to 80 MHz $d = [\frac{3,5}{V_1}]\sqrt{P}$	**80 MHz to 800 MHz** $d = [\frac{2,5}{E_1}]\sqrt{P}$	**800 MHz to 2,5 GHz** $d = [\frac{7}{E_1}]\sqrt{P}$
0,01	0.12	0.12	0.23
0,1	0.37	0.37	0.74
1	1.2	1.2	2.3
10	3.7	3.7	7.4
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Specifications

Dimensions **Chassis Dimensions** (height - width - depth)	 16 X 22 X 20-inches 33-inches with lid open 41 x 56 x 51cm 84cm Add 4" to width when barcode scanner mounted
Weight **CER-1 OPTIMA** (120V) **CER-2 OPTIMA** (120V) **CER-1 OPTIMA (230V)** **CER-2 OPTIMA (230V)**	 71 lb 32 kg (approx) 77 lb 35 kg (approx) 75 lb 34 kg (approx) 81 lb 37 kg (approx)
Electrical Requirements **Electrical** **Fuses** **Power Cord**	 120 VAC 60 Hz, 1Φ, 360 WATTS 230/240 VAC 50/60 Hz, 1Φ, 360 WATTS Two 4.0 AMP Slo Blo Fuses (120VAC CER OPTIMA) Two 2.0 AMP Slo Blo Fuses (230/240 CER OPTIMA) Hospital grade – 10 feet (2.4m) Removable
Ambient temperature range for operation	50°F - 86°F (10°C - 30°C)
Storage and Transportation **Maximum Humidity** **Temperature** **Altitude**	 80%, non-condensing 41°F - 158°F (5°C – 70°C) Up to 2000 meters
Safety Classification:	1, Ordinary protection The reprocessor is not suitable for use in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide.
Installation over-voltage	Category: II
Pollution Degree	2
CER-1 OPTIMA water consumption	HLD/RINSE cycle with 2 final rinses: 11 gal (42 liters) FULL cycle with 2 final rinses: 16 gal (60 liters) *For machines running OPA disinfectant, add 4 gal (15 liters) for third rinse
CER-2 OPTIMA water consumption	HLD/RINSE cycle with 2 final rinses: 13 gal (49 liters) FULL cycle with 2 final rinses: 20 gal (75 liters) * For machines running OPA, add 5 gal (19 liters)/cycle for third rinse
Basin Channels	8-10 psi per channel 8.5 - 10 ml/sec flow rate
Electrical Safety Certifications:	ETL Intertek Listed #75811, UL Standard 61010-1, EN Standard 61010-1, Laboratory Equipment: CAN/CSA Standard C22.2, No. 61010-1, CE 0050
Method of Reprocessing Endoscopes:	• External surface immersed in high-level disinfectant. • Internal channels purged by forced fluids.
Environmental Rating	Standard
Mode of Operation	Continuous
Degree of Mobility	Counter top or cart mount
Basin operating capacity	3.44 gallons (13L) Model CER-1 OPTIMA 4.6 gallons (17.4L) Model CER-2 OPTIMA
Reservoir operating capacity	4 gallons (15.1L) Model CER-1 OPTIMA 5 gallons (18.9L) Model CER-2 OPTIMA

CHAPTER 2

PLUMBING & ELECTRICAL SPECIFICATIONS

Reference the "CER OPTIMA® Pre-site Installation Instructions" the "CER OPTIMA Installation Instructions" and the "CER OPTIMA Water Filtration Installation Instructions" for further CER OPTIMA Installation details.

Water Supply

Water flow rate into reprocessor is a minimum of 2 to 3 gallons (7.6 L to 11.3 L) /minute.

Water pressure: Minimum 40 psi (2.8 bar)
Maximum 60 psi (4.1 bar)

Temperature: Water supply [not to exceed 104°F (40°C)]

Note: Endoscope manufacturers recommend that endoscopes not be exposed to temperatures above 130°F (55°C).

A shut off valve is required.

The water inlet fitting on the reprocessor and on the pre-filter side (water inlet side) of the water filtration system is ¾-inch male hose thread. All reprocessors and prefilter systems are supplied with a ¾-inch female thread, 5-foot, flexible, stainless hose.

All tubing necessary to connect the water filtration system to the reprocessor is included with the system. The water filtration system can be installed in-line.

The water supply can tee off the supply under a counter or can be a dedicated line.

Local plumbing regulations vary regarding installation of:

- Vacuum breakers for the water inlet.
- Backflow protection for the drain.

Note: Medivators recommends that the user check local regulations regarding anti siphon valves and vacuum breakers before attempting to install any reprocessor models.

Note: Always TURN OFF the water supply at the end of the day!

Drain

A facility drain pipe having a minimum 1-1/2 inch diameter must be placed at least 1 foot below the CER OPTIMA® Endoscope Reprocessing System drain fitting to ensure complete draining of fluids from the unit.

The drain fitting on the reprocessor is 1 1/4-inch OD with ¾-inch ID pipe thread. It is recommended that the reprocessor be installed with the 4-foot flexible drain hose supplied with each reprocessor. The drain pipe must contain an air gap at the point where the CER OPTIMA system drain tubing enters it.

The facility drain must be capable of handling a discharge rate of 5 gallons per minute (19L per minute). A facility drain having a dishwasher type drain Y is not an acceptable drain method and cannot be used. The drain Y does not provide adequate drain flow rates and must not be used.

Consult with local plumbing regulations for information regarding backflow protection for drain.

Electrical Requirements

All Reprocessor models:

The following power is required for each of the following:

CER OPTIMA ENDOSCOPE REPROCESSING SYSTEM			
MODEL	**VOLTAGE**	**CURRENT**	**FUSE SIZE**
CER-1 OPTIMA	120 VAC	3 AMPS	(2) 4 AMP Type 3AG 250 VAC Slo-Blo, Power Inlet, PN CF02-0000 (2) 2.5 AMP 5x20mm 250V Slo-Blo, Internal Pump, PN 31600-041
CER-1 OPTIMA	230/240 VAC	1.5 AMPS	(2) 2 AMP Type 3AG 250 VAC Slo-Blo, Power Inlet, PN CF02-0003 (2) 2.5 AMP 5x20mm 250V Slo-Blo, Internal Pump, PN 31600-041
CER-2 OPTIMA	120 VAC	3 AMPS	(2) 4 AMP Type 3AG 250 VAC Slo-Blo, Power Inlet, PN CF02-0000 (2) 2.5 AMP 5x20mm 250V Slo-Blo, Internal Pump, PN 31600-041
CER-2 OPTIMA	230/240 VAC	1.5 AMPS	(2) 2 AMP Type 3AG 250 VAC Slo-Blo, Power Inlet, PN CF02-0003 (2) 2.5 AMP 5x20mm 250V Slo-Blo, Internal Pump, PN 31600-041
Disinfectant Transfer Pump (optional)	120 VAC 230/240 VAC	0.50 AMPS 0.25 AMPS	(1) 1.5 AMP, 250V Slo-Blo, PN MF02-0004 (2) 1 AMP, 250V Slo-Blo, PN 31600-003
Disinfectant Reservoir Heater (optional)	120 VAC 230/240 VAC	3.5 AMPS 1.75 AMPS	(1) 5 AMP, 250V Slo-Blo, PN 31600-025 (2) 2.0 AMP, 250V Slo-Blo, PN CF02-0003

Total current draw for one CER OPTIMA model and all 120 VAC attachments is 7 AMPs.

Note: For maximum safety, Medivators recommends the CER OPTIMA system only be connected to an electrical outlet containing a ground fault interrupter (GFI) or residual current device (RCD). A Hospital Grade electrical cord is supplied with each machine.

CHAPTER 3

INSTALLATION

Installation Instructions

Reference the “CER OPTIMA® Pre-site Installation Instructions”, the “CER OPTIMA Installation Instructions” and the “CER OPTIMA Water Filtration Installation Instructions” for further CER OPTIMA Installation details.

Counter Top Installations

All models

Counter top must be a minimum of 24-inches (61cm) deep. It is necessary to cut two, 2-inch (5.1cm) holes in the counter top to allow passage of the drain pipe and disinfectant reservoir tubing from under the counter. Two additional holes are necessary if the water inlet and electricity are under the counter.

Cart Mounted Installation

All models

The design of the cart provides easy access to the disinfectant reservoir, connection tubing, and water filtration system.

Figure 1. CER OPTIMA SYSTEM

Water Filtration System

Connection of Filtration System to the Water Source.

Figure 2. Water Filtration Unit

Tap into the water line. This must be done by qualified personnel.

Attach the provided male quick connect to the water line.

Connect the water line to the female quick connect fitting on the pre-filter side of the filtration system.

Connection of the filtration system hose to the reprocessor.

- Connect the provided stainless steel hose between the hose fitting on the post filter side and the blue hose fitting on the back of the reprocessor.

Installation, Sanitization and Maintenance of Water Filtration System.

Note: Water filters must be replaced every three to six months depending on water quality. A pressure differential across the gauges of 5 psi or more indicates a need to replace one or both filters. Medivators supplied replacement parts and filters must be used to assure proper operation and efficacy of the reprocessors. Filters must be dry at the time of installation.
For replacement filters, call your local Medivators representative or Medivators Customer Support (1-800-444-4729).

- Turn **OFF** the water supply to the system at the source.
- Press **START** to remove pressure from the housings.
- Press the **STOP** button.
- Remove the filters and clean housings using soap and water and then rinse thoroughly.
- Place the pre-filter into the pre-filter housing. Both ends of this filter are open.
- Place the 0.2-micron post-filter into the blue post-filter housing with the orange O-ring UP and the closed end DOWN. You may need to moisten the O-ring with water or water-based lubricant. Make sure that the O-ring is at the top and fits tightly onto the peg in the top of the housing.

Using the Disinfectant Transfer Pump.

- Screw the housings into the bracket. Make sure the filters are well seated into the peg in the lid of the housing. If the pre-filter and the gasket are not properly seated, the housing will not screw into the bracket.
- Disconnect the water line from the inlet side of the filtration system.
- Connect the outlet of the transfer pump to the inlet side of the filtration system.

Figure 3. Transfer Pump Connected to Prefilter and Solution

- Insert the inlet tubing of the transfer pump into a one gallon disinfectant container.
- Press **START** on the reprocessor.
- Turn the transfer pump **ON** until the pre-filter canister is filled up and the disinfectant solution starts flowing continuously in the basin.
- Press the **STOP** button on the reprocessor.
- Turn the transfer pump **OFF.**
- Allow the filters to soak for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.
- Reconnect the water line to the inlet side of the filtration system.
- Turn the water **ON**.
- Press **START** and allow the wash cycle to run in order to rinse the disinfectant out of the basin. When all of the water has drained out of the sink, press **STOP**.

Without using the Disinfectant Transfer Pump.

- Fill each housing with approximately 40-ounces of high level disinfectant.
- Screw the housings into the bracket. Make sure that the filters are well seated into the peg in the lid of the housing. If the pre-filter and the gasket are not properly seated, the housing will not screw into the bracket.
- Allow the filters to soak for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.
- Turn water **ON**.
- Press **START** on the reprocessor.
- As soon as HLD begins to flow into the basin, press **STOP**.
- Allow the system to stand filled with disinfectant for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.
- Press **START** and allow the wash cycle to run in order to rinse the HLD out of the basin. When all of the water has drained out of the sink, press **STOP**.

Reprocessor Installation

Air Filter

Insert the air filter into the connection point label "**AIR FILTER**" located on the reprocessor's back panel. NOTE: the air filter can be attached directly to the CER OPTIMA® unit, or it can be attached using the Air Filter connection tubing. The air filter connection tubing may allow easier accessibility to the air filter, depending on the use location of the CER OPTIMA unit. Refer to the "*Maintenance and Troubleshooting*" section for details on changing the air filter.

Caution! The CER OPTIMA system is designed to be used with the MEDIVATORS air filter. Failure to use the air filter could result in unit damage.

Barcode Reader

Mount the barcode reader bracket onto the CER OPTIMA unit right side panel using the two mounting screws. Insert the barcode reader electrical connection end into the CER OPTIMA unit connection point labeled "Barcode" located on the reprocessor's back panel. Place the barcode reader into the holder.

Data

If using the optional CER OPTIMA Data Management Package, then insert the USB data cable into the connection point labeled "**DATA**" located on the reprocessor's back panel.

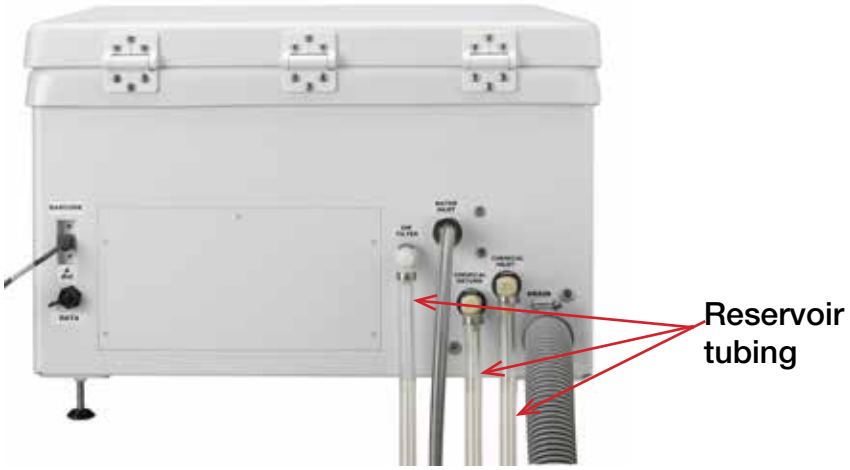

Figure 4. Rear of Model CER-2 OPTIMA Reprocessor

Water

See Water Supply Section

Drain

Connect the flexible drain hose to the fitting labeled "**DRAIN**" fitting on the back of the reprocessor and attach the screw clamp.

The drain must be 12-inches below the drain fitting on the reprocessor.

Eliminate all loops in the drain hose in order for fluids to drain completely. An open drain or air gap is required. Never use a dishwasher attachment for the CER OPTIMA® drain connection.

Incomplete draining can result in an alarm condition or dilution of HLD.

Electrical Cord

If using a High Level Disinfectant that requires heating, plug the electrical cord FIRMLY into the power entry module located on the front of the disinfectant reservoir. Plug the other end into a standard 120 VAC AC power outlet. Press the reservoir's power switch to turn **ON** the power to the disinfectant reservoir's heaters. Refer to the Operation section on adjusting the disinfectant reservoir's temperature.

Refer to Figure 8.

Connect the disinfectant reservoir tubing having the right-angled connector and the contained disinfectant filter, to the connection point labeled "**CHEMICAL INLET**" located on the reprocessor's back panel. Connect the other end having the straight connector to any one of the mating disinfectant reservoir connectors.

Connect the disinfectant reservoir tubing having the right-angled connector and no disinfectant filter, to the connection point labeled "**CHEMICAL RETURN**" located on the reprocessor's back panel. Connect the other end having the straight connector to any one of the mating disinfectant reservoir connectors.

Use the supplied plug, to block off the unused connection point located on the disinfectant reservoir.

For all reprocessor models, plug the electrical cord FIRMLY into the power entry module on the right side of the reprocessor. Plug the other end into a standard AC power outlet.

Caution! Only outlets outfitted with a ground fault interrupter (GFI) can be used.

Power

Press the power switch to turn **ON** the power to the reprocessor.

Printer

The CER OPTIMA® Endoscope Reprocessing System uses thermal printer paper to document all machine functions. Ensure the printer is loaded with a fresh roll of printer paper before operating the machine or performing a cycle. The printer paper will show a small pink/red colored line when the paper roll is nearing empty. If the paper is empty or runs out during a print cycle, the cycle performed can be reprinted by selecting the Print touchpad. The cycle data is available to print until either the "**START**" touchpad is pressed which starts a new reprocessing cycle, or until the CER OPTIMA unit is shut off. Refer to the "*Maintenance and Troubleshooting*" section for details on changing the printer paper.

Alcohol

Only use 70% Ethyl Alcohol or Isopropyl Alcohol for end-of-cycle endoscope drying. The CER OPTIMA system has a compartment that houses the alcohol bottle, which is located on the front left-hand side of the CER OPTIMA unit and is labeled "**ALCOHOL**". To open the alcohol compartment, press in on the small door indentation and then release; the door will now pop open slightly. Open the door fully to reveal alcohol bottle. The alcohol bottle should be checked daily as part of the Quality Assurance Test, and refilled or replaced if low. The alcohol compartment is designed to allow the use of round or oblong sized 500ml volume alcohol bottles.

If the alcohol runs out during a reprocessing cycle, the alcohol sensor will detect a low flow condition and display a "**LOW ALCOHOL**" message in the LCD display. The operator will now have the opportunity to replace or refill the alcohol bottle. If the alcohol bottle is not addressed within 2 minutes, then the cycle will be aborted and the endoscope cycle will need to be rerun. Refer to the "Maintenance and Troubleshooting" section for details on replacing or refilling the alcohol bottle.

Basin Drain Screen

Make sure the basin drain screen is positioned over the CER OPTIMA basin drain opening (remove the label tape that secured the drain screen in place during shipping). The basin drain screen is used to prevent any loose items from entering the drain, which would restrict fluid flow and could damage the internal workings of the machine resulting in the need for servicing.

Channel Connectors

Attach the channel connectors to the quick-release connections in the basin. Be sure to attach them firmly until they "**click**" in.

Accessory Bag

Place the accessory bag with drawstring into the basin.

> **Caution:** DO NOT place the accessory bag over drain screen. Incomplete draining could result. DO NOT hang the accessory bag over the liquid level switch

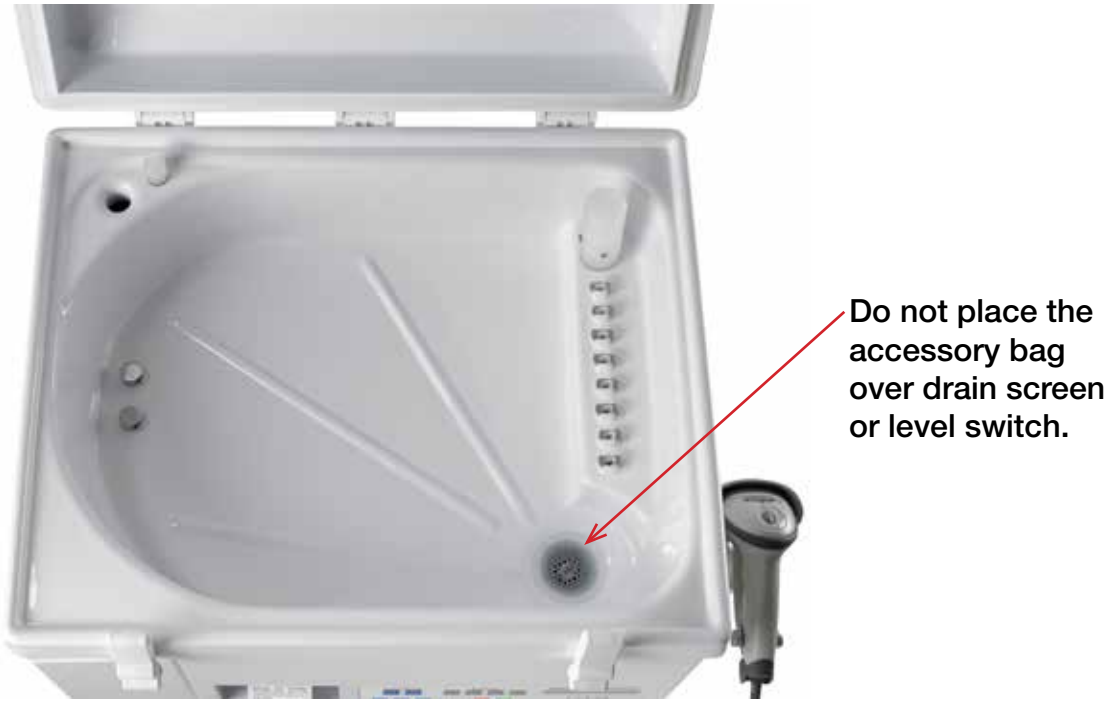

Figure 5. View of empty basin

Disinfectant Reservoir

The reservoir can be installed:

- Under the counter.
- On the bottom of the custom cart.

> **Caution!** Do not put the reservoir next to the reprocessor. The HLD may seep back into the basin overnight. The reservoir must be lower than the basin.

Filling and Emptying the Disinfectant Reservoir

> **Caution!** Always use personal protective clothing when handling and transferring disinfectant.

Recommended Filling Method

Figure 6. Disinfectant Transfer Pump

1. Plug the Disinfectant Transfer Pump into a power outlet.
2. Connect the Transfer Tube Set between the pump and the reservoir.

Place the rigid end of tube “A” into the disinfectant container and the opposite end to the inlet of the transfer pump.

Connect tube “B” between the outlet of the pump and the reservoir.

Connect tube “B” between the outlet of the pump and the adapter.

- Turn the pump **ON** at the switch.

Note: Ensure that there are no leaks. If leaks are seen, turn the pump OFF.

Note: There must be 4 gallons (15.1L) of HLD in disinfectant reservoir of Model CER-1 OPTIMA. There must be 5 gallons (18.9L) of HLD in the disinfectant reservoir of Model CER-2 OPTIMA.

- Fill the disinfectant reservoir until all the disinfectant has been transferred and turn the pump **OFF**.
- Flush the Transfer Pump with clear water. Refer to “*Flushing the Transfer Pump and all tubing*”.

Alternative Filling Methods

Method 1

- For a CER-1 OPTIMA, pour 4 gallons (15.1L) of new high level disinfectant into the CER OPTIMA® basin, and initiate a Manual “**Basin to Reservoir**” cycle to transfer the disinfectant to the disinfectant reservoir. Refer to “*Cycle Selection: Automatic or Manual*” section for further details on initiating the Manual cycle.
- For a CER-2 OPTIMA, pour 5 gallons (18.9L) of new high level disinfectant into the CER OPTIMA basin, and initiate a Manual “**Basin to Reservoir**” cycle to transfer the disinfectant to the disinfectant reservoir. Refer to “*Cycle Selection: Automatic or Manual*” section for further details on initiating the Manual cycle.

Method 2

- Pour 4 gallons (15.1L) of disinfectant into the disinfectant reservoir of Model CER-1 OPTIMA.
- Pour 5 gallons (18.9L) of disinfectant into the disinfectant reservoir of Model CER-2 OPTIMA.

Figure 7. Disinfectant Transfer Pump

Empty the reservoir using Transfer Pump and Tube set

Note: Some local, regional, or national agencies require neutralization of the solution prior to disposal. Use the MEDIVATORS MediNewt™ system if disinfectant neutralization is required.

1. Plug the Transfer Pump into a standard power outlet.
2. Connect the Transfer Tube set between the pump and the reservoir.
3. Place the rigid end of tube “A” into the drain or solution container and the opposite end to the outlet of the transfer pump.
   - Connect tube “B” between the inlet of the pump and the reservoir.
4. Turn the pump **ON** at the switch.

Note: Ensure that there are no leaks. If leaks are seen, turn the pump OFF.

5. Continue to pump until all of the disinfectant has been pumped out of the reservoir. (You might need to lift one end of the reservoir to remove all disinfectant.)
6. Turn the pump **OFF**.
7. Flush the Transfer Pump with clear water. Refer to *"Flushing the Transfer Pump and all tubing"*.

Alternative Emptying Method

Emptying using Manual Method

1. Press **BASIN to DRAIN**, and **START**.
2. When air bubbles begin to form in the basin and all the disinfectant has been pumped from the reservoir, press **STOP**.
3. Press **MANUAL, DRAIN** and **START.**
4. When all disinfectant in the basin have been drained, press **STOP**.
5. Remove remaining disinfectant from the reservoir using a suction pump or rubber gloves and absorbent lint free cloths.
6. Press **MANUAL, DRAIN** and **START.**
7. When all disinfectant in the basin have been drained, press STOP.
8. Rinse the disinfectant from the basin and dilute disinfectant in the drain, by turning the reprocessor **ON** and pressing **START**. Allow the reprocessor to complete the wash cycle and the rinse cycle if necessary.
9. Press **STOP**.

Flushing the Transfer Pump and all tubing

10. Connect the adapter to the Transfer Pump Tubing.
11. Place the adapter into the drain.
12. Connect the remaining end of the tubing to the outlet of the pump.
13. Connect tube "A" to the inlet of the pump.
14. Place the inlet tubing into a container of fresh water.
15. Turn the pump **ON** and flush the system with fresh water.
16. Remove the tubing from the fresh water until all the water is pumped from the tubing.
17. Turn the pump **OFF** and disconnect the tubes.

CHAPTER 4

OPERATION

Note: Effective endoscope reprocessing can only be accomplished by a complete and thorough manual precleaning process. This process must be completed prior to the immersion of an endoscope in disinfectant solution using the automated endoscope reprocessor.

The CER OPTIMA® Endoscope Reprocessing System will effectively reprocess immersible endoscopes available from the different manufacturers. Endoscopes containing an elevator wire channel can be reprocessed in this unit, but special care must be taken to ensure it is properly pre-cleaned, prior to disinfection. Always follows the endoscope manufacturer's reprocessing instructions.

Power

The power switch for all models of the endoscope reprocessor is located on the right side of the unit.

> **Caution:** Turning the power ON and then OFF during a cycle will reset the reprocessor. To avoid an overflow, any fluids remaining in the basin must be either returned to the reservoir or manually drained before restarting.

Water Supply

> Note: Always turn off the water supply at the end of the day!

The water supplies should always be turned on at the start of the day, and shut off at the end of the day.

Heated Disinfectant Reservoir

> Note: There is a temperature loss of at least 2ºC between the disinfectant reservoir and the reprocessing basin, therefore it is essential to initially set the disinfectant reservoir temperature 2ºC higher than the actual disinfectant use temperature as confirmed by reading the disinfectant reservoir temperature display. During a reprocessing cycle, the disinfectant temperature in the basin is displayed on the CER OPTIMA® Endoscope Reprocessing System front panel LCD display.

1. The digital temperature controller located on the disinfectant reservoir can be set between ambient temperature and a maximum of 51ºC. It is important that the temperature is set 2ºC higher than the disinfection temperature recommended by the disinfectant manufacturer (for RAPICIDE® disinfectant 35ºC +2°C = a reservoir temperature of 37°C).
2. The heater temperature can be adjusted in one degree increments by turning the set point knob. Turning the knob clockwise will increase the temperature; counterclockwise will decrease the temperature. The LED display will indicate the temperature that has been selected and the window next to the ºC marking should be illuminated to indicate degrees Celsius *(figure 9)*.

3. To confirm the actual temperature of the disinfectant in the reservoir, the CER OPTIMA® system front panel LCD will display the disinfectant temperature during the HLD reprocessing cycle step. It will also document this information on the cycle printout.
4. There is a port cap located on the top of the disinfectant reservoir. This port is used to allow the insertion of a test strip to test the efficacy of the disinfectant. A hemostat has been provided to facilitate insertion and withdrawal of the test strip *(figure 8)*.

Figure 8

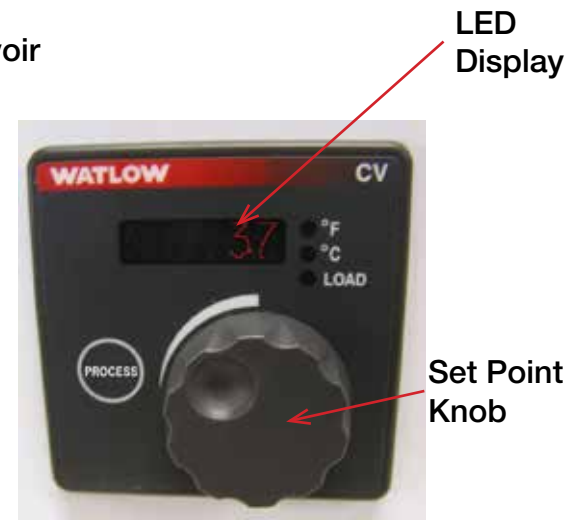

Figure 9

Control Panel

The control panel allows the operator to select a cycle, adjust cycle settings, view system and cycle status, view alarm conditions, and fully operate the reprocessor.

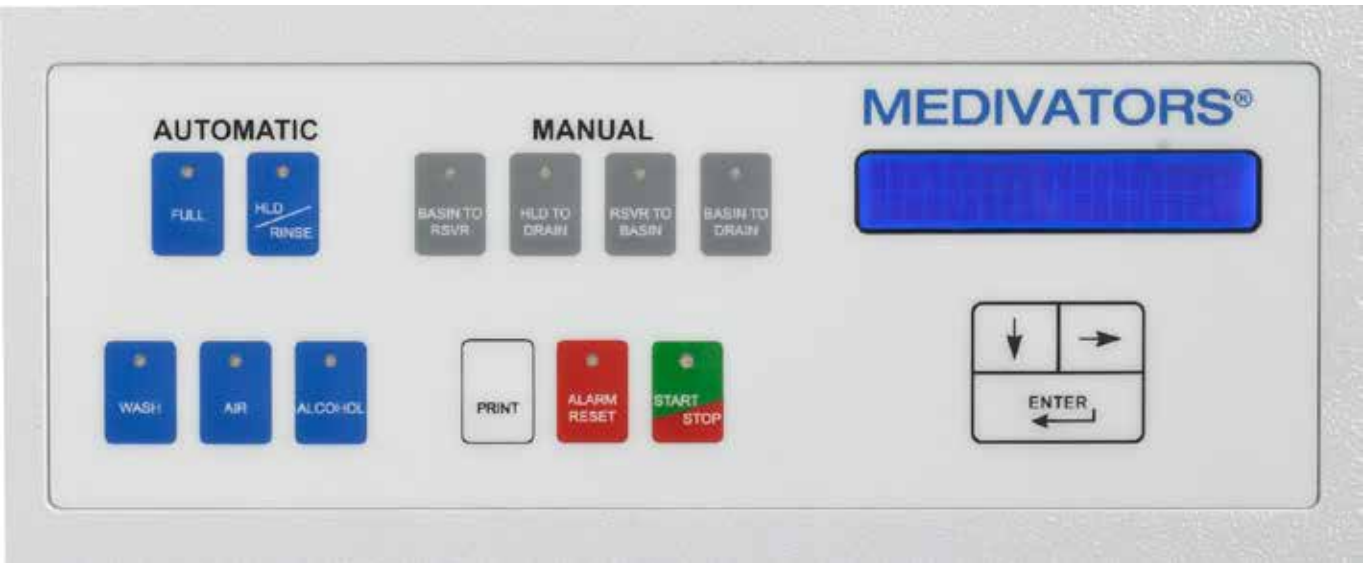

Figure 10. Control Panel

Function Keys

The function keys control the operation of the CER OPTIMA® endoscope reprocessor.

AUTOMATIC Cycles

In the AUTOMATIC mode, the CER OPTIMA system will control all reprocessing cycle functions. Two different AUTOMATIC functions are available depending on the type of cycle the operator wants to perform.

- FULL Cycle: Sets the reprocessing cycle to automatically provide a detergent wash/flush, rinse, HLD exposure, post-rinses (HLD dependent) and air and alcohol endoscope flushing (if selected).
  - The HLD exposure time is pre-set based on the HLD in-use which also determines the number of post rinses required (per the HLD manufacture's recommendations).
  - The WASH time is pre-selected by the operator:
    - The CER-1 OPTIMA allows a 2, 3 or 5 minutes wash time
    - The CER-2 OPTIMA allows a 3 or 5 minute wash time
  - If a detergent wash is desired, then the detergent is manually dispensed by the operator during the WASH phase of the cycle.
  - The AIR time and ALCOHOL volume is pre-selected by the operator when setting up the cycle.
  - The AIR time is selectable from 0, 3, 5, and 10 minutes

- The ALCOHOL volume is selectable from:
  - CER-1 OPTIMA: 0, 30, and 60cc's
  - CER-2 OPTIMA: 0, 30, 60 and 120cc's

- HLD/RINSE Cycle: Sets the reprocessing cycle to automatically provide a 1 minute water purge, HLD exposure, post-rinses (HLD dependent) and air and alcohol endoscope flushing (if selected).
  - The HLD exposure time is pre-set based on the HLD in-use which also determines the number of post rinses required (per the HLD manufacture's recommendations).
  - A WASH step is not allowed during the HLD/RINSE cycle.
  - The AIR time and ALCOHOL volume is pre-selected by the operator when setting up the cycle.
  - The Air time is selectable from 0, 3, 5, and 10 minutes
  - The ALCOHOL volume is selectable from:
    - CER-1 OPTIMA: 0, 30, and 60cc's
    - CER-2 OPTIMA: 0, 30, 60 and 120cc's

MANUAL Cycles

In the **MANUAL** mode, the CER OPTIMA® system allows the operator to control individual cycle functions of the reprocessor. The CER OPTIMA allows a number of different MANUAL functions to be performed, depending on the type of cycle the operator wants to run.

Note: Manual cycles are not to be used to reprocess an endoscope or medical device. Always use an Automatic cycle to reprocess/high level disinfect endoscope or medical device.

- **BASIN to RSVR**: Pressing the **MANUAL** "**BASIN** to **RSVR**" touchpad selects the disinfectant transfer operation from the basin into the reservoir.
- **HLD to DRAIN**: Pressing the **MANUAL** "**HLD** to **DRAIN**" touchpad selects the disinfectant transfer operation from the reservoir into the basin and then immediately down the drain. The **HLD CYCLE COUNT** will be reset to "0" when the **START** key is pressed. This allows the operator to easily replace the high-level disinfectant, and reset the cycle counter at the same time.
- **RSVR to BASIN**: Pressing the **MANUAL** "**RSVR** to **BASIN**" touchpad selects the disinfectant transfer operation from the reservoir into the basin.
- **BASIN to DRAIN**: Pressing the **MANUAL** "**BASIN** to **DRAIN**" touchpad selects the disinfectant transfer operation from the basin and then immediately down the drain.
- **WASH**: Shutting of all **AUTOMATIC** and **MANUAL** functions and then pressing the **WASH** button alone, allows a separate **WASH** cycle to be performed. The **WASH** time is pre-selected by the operator, prior to starting the cycle.
  - The CER-1 OPTIMA allows a 0, 2, 3 or 5 minutes wash time
  - The CER-2 OPTIMA allows a 0, 3 or 5 minute wash time

- **AIR**: Shutting of all **AUTOMATIC** and **MANUAL** functions and then pressing the **AIR** button alone, allows a separate **AIR** cycle to be performed. The **AIR** time is pre-selected by the operator from 0, 3, 5, and 10 minutes, prior to starting the cycle.
- **ALCOHOL**: Shutting of all **AUTOMATIC** and **MANUAL** functions and then pressing the **ALCOHOL** button alone, allows a separate ALCOHOL cycle to be performed. The **ALCOHOL** volume is pre-selected by the operator, prior to starting the cycle.
  - The CER-1 OPTIMA allows for 0, 30 or 60cc's volume
  - The CER-2 OPTIMA allows for 0, 30, 60 or 120cc's volume
- **COMBINATION of WASH, AIR and/or ALCOHOL**: Shutting of all **AUTOMATIC** and **MANUAL** functions and then pressing any combination of **WASH, AIR** and **ALCOHOL** buttons, allows a separate cycle to be performed. The WASH, AIR and **ALCOHOL** settings are pre-selected by the operator, prior to starting the cycle.

START/STOP

Pressing the **START/STOP** key, begins or ends the selected cycle.

- When a cycle in-progress is stopped, the CER OPTIMA® system will clear the basin of any residual fluids, purge all tubing lines, and reset itself so it is ready for a new cycle. The LCD display screen will indicate when the unit is clearing itself, and also once it is ready for a new cycle to be initiated.

PRINT

Pressing the **PRINT** key at the end of an **AUTOMATIC** or **MANUAL** cycle provides a hardcopy printout summarizing the endoscope reprocessing cycle.

- If the **AUTO** print function is activated, then the test results will automatically print at the completion of the cycle. Multiple printouts can be received if the **PRINT** touchpad is pressed, until a new cycle **START** is initiated or until the unit is powered off.
- If the **MANUAL** print function is activated, then the operator will need to press **PRINT** at the completion of the reprocessing cycle. Additional printouts can be received if the **PRINT** touchpad is pressed again, until a new cycle **START** is initiated or until the unit is powered off.
- The printout documents all reprocessing cycle log data and pertinent test information including: CER OPTIMA model and serial number, date & time, cycle performed, a blank line for each Endoscope ID, Operator ID, and Patient ID (if activated), or the Endoscope ID, Operator ID, and Patient ID number if using the barcode, HLD type, cycle settings, MRC verification (if activated), and all individual cycle steps.
- The printer paper has a shelf life based upon its storage conditions. It is important to understand these storage conditions to ensure a long printed cycle retention. Refer to "*Maintenance and Troubleshooting*" chapter to review the printer paper storage conditions.

ALARM RESET

The **ALARM RESET** key allows cycle alarms to be reset.

The CER OPTIMA® system continuously monitors for alarm conditions during a reprocessing cycle. This includes sensor monitoring and also electronic software monitoring for cycle anomalies. The cycle alarm feature detects and then alerts the operator by an audible alert tone, and also a visual notification on the display screen.

A cycle alarm can be caused by:

- Low HLD Level
- Low Water Level
- Reprocessing Cycle Timeout
- HLD Temp Out of Range
- Low Alcohol
- Lid Open Timeout
- Cycle Phase Timeout
- Cycle Aborted

When an alarm is indicated, the reprocessing cycle is stopped and the CER OPTIMA unit will clear the basin of any residual fluids, purge all tubing lines and reset the unit so it is ready to run a new cycle. The LCD display screen will indicate when the unit is clearing itself, and also once it is ready for a new cycle to be initiated.

LCD Display Screen

The front panel incorporates a 2 line, 20 segment LCD Display Screen, which is used to provide useful information to the operator.

The Display Screen shows:

- Upon power up, the control panel will have a standard display of:
  - Date and Time (in 24 hour military time)
  - HLD cycle count
- Selected **AUTOMATIC** or **MANUAL** cycle information including:
  - Cycle selected
  - Cycle parameter settings
- **AUTOMATIC** or **MANUAL** reprocessing cycle status including:
  - HLD disinfectant type
  - HLD temperature (during HLD phase)
  - Cycle time remaining (in minutes)
  - Current reprocessing cycle phase
  - Cycle Pause due to lid open
  - Alarm conditions

Arrow & Enter Keys

The **ARROW** and **ENTER** keys provide operator access to special CER OPTIMA® Endoscope Reprocessing System sub-menus. These menus allow the CER OPTIMA unit to run, display and print a reprocessing cycle custom configured by an operator.

With all **AUTOMATIC** and **MANUAL** functions turned off, press the ↓ (down) arrow key to change the display screen and toggle through the following sub-menus:

- Set Date
- Print Options
- Set Time
- HLD Cycle Cnt Reset
- Endoscope ID
- Operator ID
- Patient ID
- HLD MRC Check
- Barcode Reader
- Active Database
- Enable Alcohol
- Factory Defaults
- Service Menu: YES NO (accessible by Medivators Service Technician only)

While toggling through the sub-menus, press the **ENTER** key to select a menu, and press the → (right) arrow and **ENTER** keys to activate or deactivate the sub-menu function. Entering any of the sub-menus will allow the respective field or function to be activated and changed.

All changes activated through the sub-menu will be retained in the CER OPTIMA system memory, and will be used as the default setting upon system power on.

LEDs

The front panel keypad LED lights are used to indicate the status of the unit. The lights are on steady when a setting has been selected, and will blink when that phase of the cycle is occurring. The color green also indicates what is activated, and red indicates a **STOP** condition.

Automatic (Full) Cycles

AUTOMATIC FULL CYCLE

Reprocessing Step	Full LED	HLD/Rinse LED	Wash LED	Air LED	Alcohol LED	Start/Stop LED
Wash (Fill/Circulation/Drain)	Blinking	Off	Blinking	Off	Off	On - Green
Rinse (Drain/Air)	Blinking	Off	Off	Off	Off	On - Green
HLD Disinfect	Blinking	Off	Off	Off	Off	On - Green
Rinse 1 (Fill/Drain/Air)	Blinking	Off	Off	Off	Off	On - Green
Rinse 2 (Fill/Drain/Air)	Blinking	Off	Off	Off	Off	On - Green
Rinse 3 (Fill/Drain/Air) OPA HLD Dependant	Blinking	Off	Off	Off	Off	On - Green
Air (2 minutes plus user selected time)	Blinking	Off	Off	Blinking	Off	On - Green
Alcohol (use selected volume)	Blinking	Off	Off	Off	Blinking	On - Green
Cycle Completion	On	Off	Off	Off	Off	Off - Red

Note: Basin to Reservoir, HLD to Drain, Reservoir to Basin, and Basin to Drain LEDs are OFF during AUTOMATIC FUNCTIONS

AUTOMATIC HLD/RINSE CYCLE

Reprocessing Step	Full LED	HLD/ Rinse LED	Wash LED	Air LED	Alcohol LED	Start/Stop LED
Rinse (Drain/Air)	Off	Blinking	Off	Off	Off	On - Green
HLD Disinfect	Off	Blinking	Off	Off	Off	On - Green
Rinse 1 (Fill/Drain/Air)	Off	Blinking	Off	Off	Off	On - Green
Rinse 2 (Fill/Drain/Air)	Off	Blinking	Off	Off	Off	On - Green
Rinse 3 (Fill/Drain/Air) OPA HLD Dependant	Off	Blinking	Off	Off	Off	On - Green
Air (2 minutes plus user selected time)	Off	Blinking	Off	Blinking	Off	On - Green
Alcohol (use selected volume)	Off	Blinking	Off	Off	Blinking	On - Green
Cycle Completion	Off	On	Off	Off	Off	Off - Red

Note: Basin to Reservoir, HLD to Drain, Reservoir to Basin, and Basin to Drain LEDs are OFF during AUTOMATIC FUNCTIONS

MANUAL FUNCTIONS

Function	Start/Stop LED	Basin to Reservoir LED	HLD to Drain LED	Reservoir to Basin LED	Basin to Drain LED	Wash LED	Air LED	Alcohol LED
Basin to Reservoir	On - Green	Blinking	Off	Off	Off	Off	Off	Off
Basin to Reservoir Completion	Off - Red	On	Off	Off	Off	Off	Off	Off
HLD to Drain	On - Green	Off	Blinking	Off	Off	Off	Off	Off
HLD to Drain Completion	Off - Red	Off	On	Off	Off	Off	Off	Off
Reservoir to Basin	On - Green	Off	Off	Blinking	Off	Off	Off	Off
Reservoir to Basin Completion	Off - Red	Off	Off	ON	Off	Off	Off	Off
Basin to Drain	On - Green	Off	Off	Off	Blinking	Off	Off	Off
Basin to Drain Completion	Off - Red	Off	Off	Off	ON	Off	Off	Off
Wash	On - Green	Off	Off	Off	Off	Blinking	Off	Off
Wash Completion	Off - Red	Off	Off	Off	Off	On	Off	Off
Air	On - Green	Off	Off	Off	Off	Off	Blinking	Off
Air Completion	Off - Red	Off	Off	Off	Off	Off	On	Off
Alcohol	On - Green	Off	Off	Off	Off	Off	Off	Blinking
Alcohol Completion	Off - Red	Off	Off	Off	Off	Off	Off	On
Wash and Air	On - Green	Off	Off	Off	Off	Blinking	Blinking	Off
Wash and Air Completion	Off - Red	Off	Off	Off	Off	On	On	Off
Wash and Alcohol	On - Green	Off	Off	Off	Off	Blinking	Off	Blinking
Wash and Alcohol Completion	Off - Red	Off	Off	Off	Off	On	Off	On
Air and Alcohol	On - Green	Off	Off	Off	Off	Off	Blinking	Blinking
Air and Alcohol Completion	Off - Red	Off	Off	Off	Off	Off	On	On
Wash, Air and Alcohol	On - Green	Off	Off	Off	Off	Blinking	Blinking	Blinking
Wash, Air and Alcohol Completion	Off - Red	Off	Off	Off	Off	On	On	On

Note: Full, and HLD/Rinse LEDs are OFF during MANUAL FUNCTIONS

Prepare Endoscopes for Reprocessing

A manual, thorough cleaning of endoscopes is always necessary immediately after each patient use. Clean within 5-minutes to prevent blood, mucous or other debris from drying. Follow the instructions in the current ASTM guideline, for reprocessing of flexible endoscopes. Always wear the recommended personal protective gear when reprocessing endoscopes.

1. Flush all exterior and interior channel surfaces of the instrument as soon as possible after use. We recommend a medical grade Detergent and Pre-soak.
2. Leak test all immersible endoscopes as required by the manufacturer prior to immersion in fluid.
3. Manufacturers of immersible instruments may require protection of electrical connections prior to immersion. Please consult instrument instruction manual.
4. ALWAYS REMOVE gas sterilization venting cap (ETO venting cap) located at distal end of light guide plug of instrument before immersing. Refer to endoscope manufacturer's instructions.
5. Ensure that waterproof cap is connected to videoscopes prior to disinfection.
6. Remove and THOROUGHLY CLEAN by brushing all removable buttons and valves. Rinse with water to remove detergent. Examples: suction control valves, air/water control valves, biopsy inlet seals (forceps channel valve rubber).
7. Place all removable parts in the provided accessory bag.
8. Use only lint free cloths during precleaning. Do not use gauze, cotton swab, or other lint producing cleaning aids. These products shed fibers which can become caught in the channels of endoscopes or in the components of the reprocessor.
9. Attach channel-cleaning adapters. Refer to endoscope manufacturer's guidelines and Channel Connector Guide for connection of channel connectors for each model of endoscope.

Place Endoscopes into Reprocessor

1.Load one endoscope into model CER-1 OPTIMA. *Refer to Figure 11.*

   a. Place the control head of the endoscope with the control wheels UP over the drain cover. Loop the insertion tube clockwise and the umbilical counterclockwise. The light guide plug will fit in the outside of the dome on a CER-1 OPTIMA.

2. Load two endoscopes into model CER-2 OPTIMA. *Refer to Figure 12.*

   a. For two endoscopes, place the first instrument as indicated above.

   b. Attach all channel connectors before loading the second instrument.

   c. Place the head of the second endoscope with control wheels down; towards the right rear of the basin; to the left of the liquid level tower. Coil the insertion tube counterclockwise and the umbilicus clockwise.

Note: In order to immerse some video endoscopes, it is necessary to place the head of the first endoscope with the control wheels up at the left rear of the basin. The second endoscope can be placed with the head at the left front of the basin with the control wheels down.

Figure 11. One Endoscope loaded into CER-1 OPTIMA basin

Figure 12. One and Two endoscopes loaded into the CER-2 OPTIMA basin

Endoscope Hookups

Endoscopes attach to the CER OPTIMA® basin connectors using specific tubing hookups. For proper endoscope hookup identification, use the online interactive "*Hookup Guide*" located on the Medivators website at: http://www.medivators.com/HookupLookup/.

The online Hookup Guide also contains specific notes on individual endoscope models. Medivators Customer Support can also assist in endoscope hookup identification by calling 1-800-444-4729.

The CER OPTIMA system is initially supplied with tubing hookups as follows:

- A tubing hookup used for the Quality Assurance test containing the male Luer lock. This hookup allows measurement of individual basin port channel flows during the QA test.
- A set of right-angled basin connectors for attaching to the basin channel ports. A basin connector should always be attached to any unused basin channel port during a reprocessing cycle. The right-angled basin connectors divert fluid flow into the basin, rather than coming straight up.

Note: A basin connector must always be attached to any unused port in the CER OPTIMA system basin, when running any cycle.

CAUTION! EACH ENDOSCOPE HOOKUP IS INTENDED ONLY FOR CONNECTION WITH SPECIFIC ENDOSCOPE MODELS IDENTIFIED IN THE MEDIVATORS ONLINE HOOKUP. PROPER ENDOSCOPE MODEL AND HOOKUP COMBINATIONS, INCLUDING CONNECTIONS FOR ALL APPROPRIATE ENDOSCOPE CHANNELS THAT REQUIRE A SEPARATE REPROCESSING CONNECTION, MUST BE VERIFIED PRIOR TO CONNECTION.

Power CER On

Using the power switch located on the right side of the unit, turn the CER OPTIMA® Endoscope Reprocessing System on. The CER OPTIMA will now power-up as indicated by the lights illuminating and the display screen showing the date and time, and the HLD Cycle Count. The HLD cycle count represents the number of reprocessing cycles run on the HLD disinfectant contained within the CER OPTIMA's reservoir.

The QUALITY ASSURANCE (QA) test must be performed every day upon unit power on. If the unit is left powered on continuously, then the CER OPTIMA will reset at midnight, and require the QA test to be performed before a cycle can be run. Refer to the Quality Assurance section for further details on performing the QA test.

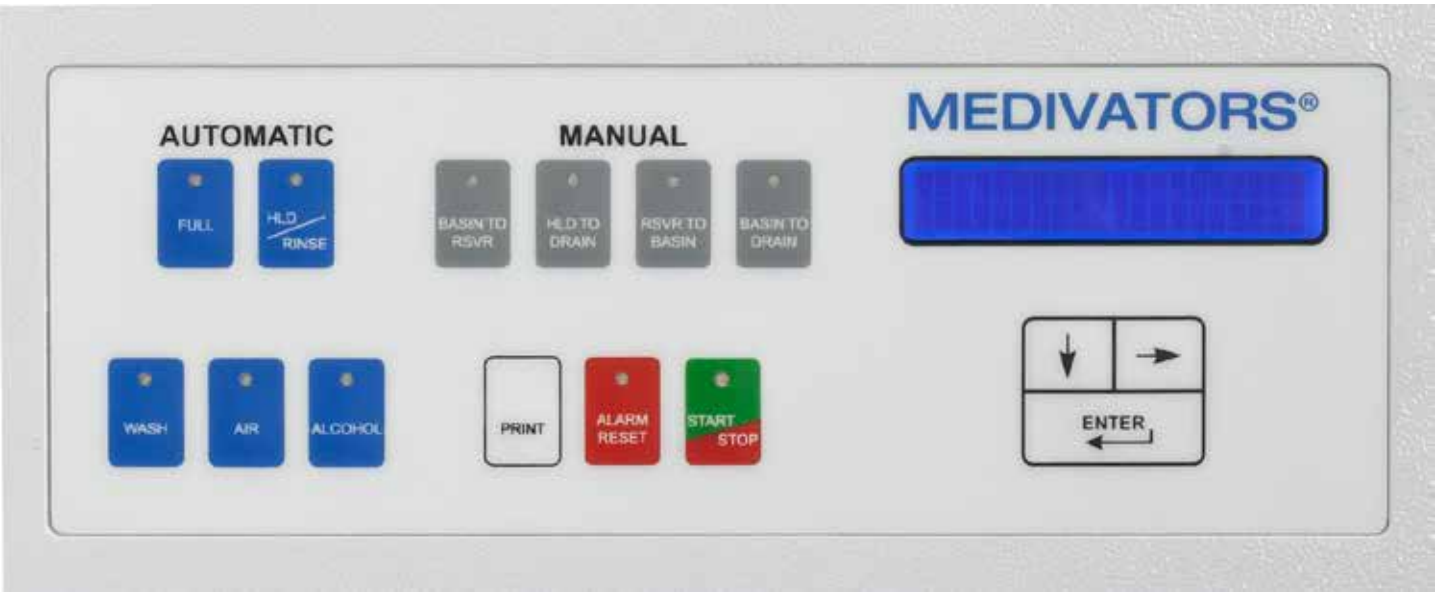

Figure 13. CER OPTIMA Control Panel

Cycle Selection: Automatic or Manual

Use the control panel keys to select the cycle to be run on the CER OPTIMA® endoscope reprocessor.

Selecting an AUTOMATIC Cycle

The CER OPTIMA system allows for either an **AUTOMATIC** "**FULL**" or "**HLD/RINSE**" cycle. The difference between the two cycles is the **WASH** phase; the **FULL** cycle includes the **WASH** phase while the **HLD/RINSE** cycle omits the WASH phase.

- **AUTOMATIC "FULL" Cycle:** Sets the reprocessing cycle to automatically include a wash/flush (detergent is user optional), rinse, HLD exposure, post-rinses (HLD dependent) and air and alcohol endoscope flushing (if selected).
  - Press the **AUTOMATIC** "**FULL**" key, and the LED light will now illuminate.
  - Press the **WASH** key multiple times to cycle through and select the desired cycle wash time:
    - The CER-1 OPTIMA allows a 2, 3 or 5 minutes wash time
    - The CER-2 OPTIMA allows a 3 or 5 minute wash time
  - Press the **AIR** key multiple times to cycle through and select the desired air purge time of 0, 3, 5 and 10 minutes.
    - Press the **ALCOHOL** key multiple times to cycle through and select the desired alcohol flush volume of:
    - CER-1 OPTIMA: 0, 30, and 60cc's
    - CER-2 OPTIMA: 0, 30, 60 and 120cc's
  - Press **START/STOP** key to begin the **FULL** cycle.
  - If Endoscope ID, Operator ID, and/or Patient ID are activated, then they will automatically display on the screen in sequence after **START** has been selected. Use the barcode reader to scan the endoscope, operator and/or patient ID information. Press **ENTER** to bypass if no information is available. The barcode reader allows the ID data to be recorded and printed, or transferred to the optional CER OPTIMA Data Management Program at the completion of the cycle.
  - If MRC Verification is activated, then confirm the result of the HLD MRC CHECK by pressing **ENTER** for Yes, and the **ARROW** key for No. Refer to the test strip manufacturer's directions for use for instructions on testing the MRC of the HLD.

Figure 14

  - The reprocessing cycle will now start, and the **START/STOP** light will illuminate green. The front panel display will show disinfectant type, cycle time remaining in minutes (counting down as the cycle progresses), and the reprocessing step in progress.

- If detergent is preferred for the wash phase, then manually add the detergent when the "WASH" led light is blinking and the display screen shows WASH.
- During the **HLD** phase, the basin disinfectant temp will be displayed in Celsius ±1°C.
- If the CER OPTIMA® system cover is opened during the reprocessing cycle, the cycle will pause and the display screen will show **CLOSE COVER**. The CER OPTIMA system cover must be closed within two minutes or the cycle will be aborted.
- If an error is detected during the cycle, the **ALARM** will sound and the **ALARM RESET** light will blink continuously. The display screen will show the error; refer to the Troubleshooting section for further details on resolving the error. Press the **ALARM RESET** key to clear the alarm. The CER OPTIMA system will now automatically empty the basin of any fluids, purge all tubing lines and return the unit so it is ready to run a new cycle. The LCD display screen will indicate when the unit is fully cleared. Note: In an alarm condition, the reprocessing cycle will need to be repeated for the device.
- Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press PRINT to manually generate a cycle report.
- Note: The reprocessing cycle data is retained in the CER OPTIMA unit until either the next endoscope reprocessing cycle is started, or until system power is shut off.
- The completed reprocessing cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.
- Open the CER OPTIMA cover and confirm all tubings have remained connected to the endoscope for the full duration of the endoscope reprocessing cycle. If a hookup tubing is disconnected from the endoscope, then the endoscope reprocessing cycle must be repeated. The endoscope can only be removed from the CER OPTIMA basin, if all of the hookup tubings have been confirmed to have been attached during the reprocessing cycle.

Caution! An endoscope having a loose or disconnected hookup tubing at the completion of a reprocessing cycle must be treated as still being contaminated and cannot be used for a patient procedure. The endoscope reprocessing cycle must be repeated. Do not use this endoscope on a patient.

- Note: The **AUTOMATIC** "**FULL**" cycle parameters settings for **WASH, AIR**, and **ALCOHOL** are retained in the CER OPTIMA's memory. The next time the **AUTOMATIC** "**FULL**" cycle is selected, the default settings will automatically be used.

- **AUTOMATIC "HLD/RINSE" Cycle:** Sets the reprocessing cycle to automatically include a rinse, HLD exposure, post-rinses (HLD dependent) and air and alcohol endoscope flushing (if selected).
  - Press the **AUTOMATIC** "**HLD/RINSE**" key, and the LED light will now illuminate.
  - Press the **AIR** key multiple times to cycle through and select the desired air purge time of 0, 3, 5 and 10 minutes.

- Press the **ALCOHOL** key multiple times to cycle through and select the desired alcohol flush volume of:
  - CER-1 OPTIMA: 0, 30, and 60cc's
  - CER-2 OPTIMA: 0, 30, 60 and 120cc's
- Press **START/STOP** key to begin the **HLD/RINSE** cycle.
- If Endoscope ID, Operator ID, and/or Patient ID are activated, then they will automatically display on the screen in sequence after **START** has been selected. Use the barcode reader to scan the endoscope, operator and/or patient ID information. Press **ENTER** to bypass if no information is available. The barcode reader allows the ID data to be recorded and printed, or transferred to the optional CER OPTIMA® Data Management Program at the completion of the cycle.
- If MRC Verification is activated, then confirm the result of the **HLD MRC CHECK** by pressing **ENTER** for Yes, and the **ARROW** key for No. Refer to the test strip manufacturer's directions for use for instructions on testing the MRC of the HLD.
- The reprocessing cycle will now start, and the **START/STOP** light will illuminate green. The front panel display will show disinfectant type, cycle time remaining in minutes (counting down as the cycle progresses), and the reprocessing step in progress.
- During the HLD phase, the basin disinfectant temp will be displayed in Celsius ±1°C.
- If the CER OPTIMA cover is opened during the reprocessing cycle, the cycle will pause and the display screen will show **CLOSE COVER**. The CER OPTIMA cover must be closed within two minutes or the cycle will be aborted and **CYCLE CANCELLED** will be displayed.
- If an error is detected during the cycle, the **ALARM** will sound and the **ALARM RESET** light will blink continuously. The display screen will show the error; refer to the Troubleshooting section for further details on resolving the error. Press the **ALARM RESET** key to clear the alarm. The CER OPTIMA will now automatically empty the basin of any fluids, purge all tubing lines and return the unit so it is ready to run a new cycle. The LCD display screen will indicate when the unit is fully cleared. Note: In an alarm condition, the reprocessing cycle will need to be repeated for the device.
- Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
- Note: The reprocessing cycle data is retained in the CER OPTIMA system until either the next endoscope reprocessing cycle is started, or until system power is shut off.
- The completed reprocessing cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.
- Open the CER OPTIMA unit cover and confirm all tubing have remained connected to the endoscope for the full duration of the endoscope reprocessing cycle. If a hookup tubing is disconnected from the endoscope, then the endoscope reprocessing cycle must be repeated. The endoscope can only be removed from the CER OPTIMA basin, if all of the hookup tubings have been confirmed to have been attached during the reprocessing cycle.

Caution! An endoscope having a loose or disconnected hookup tubing at the completion of a reprocessing cycle must be treated as still being contaminated and cannot be used for a patient procedure. The endoscope reprocessing cycle must be repeated. Do not use this endoscope on a patient.

- Note: The **AUTOMATIC** "**HLD/RINSE**" cycle parameters settings for **AIR**, and **ALCOHOL** are retained in the CER OPTIMA® system memory. The next time the **AUTOMATIC** "**HLD/RINSE**" cycle is selected, the default settings will automatically be used.

Selecting a MANUAL Cycle

The CER OPTIMA system allows for a number of different operator controlled MANUAL cycles to be performed including:

1. **BASIN to RSVR** – Use to transfer new HLD disinfectant into the reservoir.
2. **HLD to DRAIN** – Use to discard used HLD disinfectant to drain.
3. **RSVR to BASIN** – Use to transfer HLD disinfectant from the reservoir into the basin.
4. **BASIN to DRAIN** – Use to discard basin fluids to drain.
5. **WASH** – Use to run an independent wash cycle on a device.
6. **AIR** – Use to air purge a device when attached with connection tubing.
7. **ALCOHOL** – Use to alcohol flush a device when attached with connection tubing.
8. **COMBINATION** of **WASH, AIR** and **ALCOHOL** – Use to wash, air purge and/or alcohol flush a device.

- **MANUAL "BASIN to RSVR**" Cycle: Sets the reprocessing cycle to transfer disinfectant from the basin into the reservoir.
  - Press the **MANUAL** "**BASIN** to **RSVR**" key, and the LED light will now illuminate.
  - Press **START/STOP** key to begin transferring HLD disinfectant from the basin into the reservoir. The **START/STOP** light will illuminate green, the **BASIN** to **RESERVOIR** key will begin blinking, and the display screen will show **BASIN** to **RSVR**.
  - The CER OPTIMA cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - At completion of the cycle, press **START/STOP** to end. The light will now turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "HLD to DRAIN" Cycle**: Sets the reprocessing cycle to transfer disinfectant from the reservoir into the basin and immediately down the drain, all in one step. Note: The HLD CYCLE COUNT will be rest to "0" when the **START** key is pressed. This allows the operator to easily replace the high-level disinfectant, and automatically reset the cycle counter at the same time.
  - Press the **MANUAL** "**HLD** to **DRAIN**" key, and the LED light will now illuminate.
  - Press **START/STOP** key to begin transferring HLD disinfectant from the reservoir into the basin and down the drain. The **START/STOP** light will illuminate green, the **HLD** to **DRAIN** key will begin blinking, and the display screen will show **HLD** to **DRAIN**.
  - The CER OPTIMA® system cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - At completion of the cycle, press **START/STOP** to end. The light will now turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "RSVR to BASIN" Cycle**: Sets the reprocessing cycle to transfer disinfectant from the reservoir into the basin.
  - Press the **MANUAL** "**RSVR** to **BASIN**" key, and the LED light will now illuminate.
  - Press **START/STOP** key to begin transferring HLD disinfectant from the reservoir into the basin. The **START/STOP** light will illuminate green, the **RSVR** to **BASIN** key will begin blinking, and the display screen will show **RSVR** to **BASIN**.
  - The CER OPTIMA cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - At completion of the cycle, press **START/STOP** to end. The light will now turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "BASIN to DRAIN" Cycle**: Sets the reprocessing cycle to transfer basin solutions to drain.
  - Press the **MANUAL** "**BASIN** to **DRAIN**" key, and the LED light will now illuminate.
  - Press **START/STOP** key to begin transferring basin solutions from the basin to drain. The **START/STOP** light will illuminate green, the **BASIN** to **DRAIN** key will begin blinking, and the display screen will show **BASIN** to **DRAIN**.
  - The CER OPTIMA® system cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - At completion of the cycle, press **START/STOP** to end. The light will now turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "WASH" Cycle**: Sets the reprocessing cycle to perform a separate Wash cycle.
  - Press the MANUAL "**WASH**" key to cycle through and select the desired cycle wash time:
    - The CER-1 OPTIMA allows a 2, 3 or 5 minutes wash time
    - The CER-2 OPTIMA allows a 3 or 5 minute wash time
  - The Wash LED light will now illuminate.
  - Press **START/STOP** key to begin the wash cycle. The **START/STOP** light will illuminate green, the Wash key will begin blinking, and the display screen will show Wash and cycle time remaining in minutes.
  - If detergent is preferred for the wash phase, then manually add the detergent now.
  - The CER OPTIMA cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "AIR" Cycle:** Sets the reprocessing cycle to perform a separate Air purge cycle.
  - Press the **MANUAL** "**AIR**" key multiple times to cycle through and select the desired air purge time of 0, 3, 5 and 10 minutes. The Air LED light will now illuminate.
  - Press START/STOP key to begin the air cycle. The **START/STOP** light will illuminate green, the **AIR** key will begin blinking, and the display screen will show AIR and cycle time remaining in minutes.
  - The CER OPTIMA® system cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press PRINT to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **MANUAL "ALCOHOL" Cycle**: Sets the reprocessing cycle to perform a separate Alcohol purge cycle.
  - Press the **MANUAL** "**ALCOHOL**" key multiple times to cycle through and select the desired air purge volume of:
    - The CER-1 OPTIMA allows for 0, 30 or 60cc's volume
    - The CER-2 OPTIMA allows for 0, 30, 60 or 120cc's volume
  - The Alcohol LED light will now illuminate.
  - Press **START/STOP** key to begin the alcohol cycle. The **START/STOP** light will illuminate green, the Alcohol key will begin blinking, and the display screen will show **ALCOHOL** and cycle time remaining in minutes.
  - The CER OPTIMA system cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

- **Combination MANUAL "WASH, AIR and/or ALCOHOL" Cycle**: Sets the reprocessing cycle to perform any combination of Wash, Air and Alcohol cycles.
  - Press the **MANUAL** "**WASH**", "**AIR**" and/or "**ALCOHOL**" keys to select the desired cycle.
  - Pressing the **MANUAL** "**WASH**" key multiple times to cycle through and select the desired cycle wash time:
    - The CER-1 OPTIMA allows a 2, 3 or 5 minutes wash time
    - The CER-2 OPTIMA allows a 3 or 5 minute wash time
  - The Wash LED light will now illuminate.
  - Press the **MANUAL** "**AIR**" key multiple times to cycle through and select the desired air purge time of 0, 3, 5 and 10 minutes. The Air LED light will now illuminate.
  - Press the **MANUAL** "**ALCOHOL**" key multiple times to cycle through and select the desired air purge volume of:
    - The CER-1 OPTIMA allows for 0, 30 or 60cc's volume
    - The CER-2 OPTIMA allows for 0, 30, 60 or 120cc's volume
  - The Alcohol LED light will now illuminate.
  - Press **START/STOP** key to begin the cycle. The **START/STOP** light will illuminate green, the selected Wash, Air and/or Alcohol keys will begin blinking, and the display screen will show Wash, Air and/or Alcohol and cycle time remaining in minutes.
  - If the Wash phase is selected and detergent is preferred, then manually add the detergent when the "**WASH**" led light is blinking and the display screen shows **WASH**.
  - The CER OPTIMA® system cover can be opened during the cycle; however, be careful of spraying fluids. Wearing appropriate PPE is required.
  - Upon cycle completion, the audible tone will sound, the **START/STOP** light will turn red, and the display screen will show Cycle Completed. The printer will automatically generate a printed cycle report (if auto-print enabled), or press **PRINT** to manually generate a cycle report.
  - Note: The cycle data is retained in the CER OPTIMA system until either the next cycle is started, or until system power is shut off.
  - The completed cycle data will be automatically transferred to the optional CER OPTIMA Data Management Program (if connected) at the completion of the cycle.

Shutdown

Use the following process to shutdown the reprocessor at the end of the day.

1. Close the incoming water line shutoff valve.
2. Wipe out the CER OPTIMA® unit basin using a lint-free cloth only. Do not use gauze, cotton swab, towel or other lint-producing cleaning aids. These materials shed fibers which can block endoscope channels or the internal working components of the reprocessor.
3. The CER OPTIMA system outer surfaces, including basin, touch panel and lid can be sanitized with an EPA-registered sanitizer.

Warning! Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling sanitizer.

Quality Assurance Test

To verify the CER OPTIMA system is operating properly, the Quality Assurance test must be performed prior to the first use of the day. The Quality Assurance (or QA) test is used to confirm the unit is delivering the correct amount of fluid and air through the CER OPTIMA basin connectors.

If the Quality Assurance test fails, then contact your authorized MEDIVATORS representative to schedule servicing on the CER OPTIMA system.

The CER OPTIMA system requires the QA test be performed whenever the unit is first powered on. If the CER OPTIMA unit is left powered on all of the time, then it will require the QA test to be performed immediately following midnight before a cycle can be run. Additionally, the QA test can be performed at any time by shutting off all **AUTOMATIC** and **MANUAL** cycle modes, and then pressing **START.**

Turn on the incoming water supply at the beginning of the day, and power on the CER unit by pressing the CER's main power switch.

1. Press **START** to initiate the Quality Assurance test.

   Screen display = "Quality Assurance, Scan Operator".
2. Scan the operator to document who is performing the QA test, or press **ENTER** to skip.
3. Verify Basin Drain Screen

   Screen display = "Verify Drain Screen, Press Enter Key"

   a. Verify the basin drain screen is positioned over the CER OPTIMA basin drain opening.

   b. Remove and inspect the drain screen to ensure it is not worn or damaged.

   c. Clean the basin drain screen to ensure it is free of debris which could block and slow the draining of fluids.

   d. Replace the drain screen if worn, damaged or blocked.

e. Reinsert the basin drain screen over the CER OPTIMA® unit drain opening, ensuring it is securely in place.

f. Press the **ENTER** arrow key to continue the test.

> **Caution!** A basin drain screen must always be in place.
> Failure to use this item could result in unexpected servicing of the CER OPTIMA unit, due to small endoscope components getting inside the internal working hydraulics and mechanisms of the CER OPTIMA unit.

4. Verify Touchpad Panel Display

   Screen display = "Quality Assurance, Verify Panel".

   a. All front panel lights LEDs will now illuminate, the LCD display will show a distinct uniform pattern, and the buzzer will sound for about 1 second.

   b. After about 5 seconds, the QA test will automatically continue.

5. Verify Water Flow

   Screen display = "Quality Assurance, Verify Water Flow".

   a. Attach a channel connector having a male Luer lock connector to each CER OPTIMA basin port.

   b. Press **START** and water will begin flowing into the into the basin.

   c. Wait for water to begin pumping through the channel connectors.

   d. Verify water is flowing through each individual channel connector.

   e. If water flow through any connector appears low or inadequate, then recheck using a different channel connector having a male Luer lock to identify if the problem is due to the connector or the CER OPTIMA unit. Measure the fluid flow if still low or inadequate.

> Note: Water flow will differ depending on the type of connector being used.
> When using the male Luer lock, the fluid flow should be a minimum of 100mL (approximately 4oz.) in less than 15 seconds as measured using a graduated cylinder.

   f. Contact your authorized Medivators representative if the water flow test fails.

   g. Press the **ENTER** arrow key to continue the test.

6. Verify Air Flow

   a. While holding all tubing under the water, examine each tube for vigorous bubbling.

   b. Allow basin to completely drain of water.

   c. Contact your authorized Medivators representative if the air flow test fails.

   d. Press the Enter arrow key to continue the test.

Quality Assurance Test Completion

The CER OPTIMA® Endoscope Reprocessing System will automatically generate a printout upon completion of the QA test.

Note: Contact your local representative or MEDIVATORS Customer Support (1-800-444-4729) if water or air does not flow through all of the channel connectors.

1. HLD Reservoir Level

   Examine the level of disinfectant in the CER OPTIMA reservoir daily. For a CER-1 OPTIMA, at least 4 gallons (15.1L) of HLD is required; for a CER-2 OPTIMA, at least 5 gallons (18.9L) of HLD is required. Examine this level daily to ensure a MINIMUM of 4 or 5 gallons is maintained in the reservoir at all times, depending on model.

Note: An increase in the HLD level could mean dilution of disinfectant. A decrease in the HLD level could indicate a loss of disinfectant.

2. High Level Disinfectant MRC Testing

   HLD testing must be performed before every reprocessing cycle. The MRC testing ensures the HLD is at an effective level of potency and can be used to disinfectant an endoscope. Use only the manufacturer's test strips to test the potency of the HLD. If the high-level disinfectant is below the minimum required concentration, then discard the used disinfectant and replace it with new disinfectant, prior to initiating a reprocessing cycle. Refer to the test strip manufacturer's instructions, for further details and step-by-step use instructions.

3. Heated Disinfectant Temperature

   If using heated disinfectant, VERIFY correct HLD temperature by reading disinfectant reservoir thermometer. Refer to disinfectant manufacturer's labeling for correct temperature and add 2°C to ensure correct basin temperature. Adjust reservoir temperature if needed.

4. Disinfectant and Air Filters, and Basin Drain Screen

   Confirm the disinfectant filter, air filter and basin drain screen are in place and in use at all times. Also, verify the filters are being replaced regularly as specified. The disinfectant filter requires replacement during every HLD replacement, and the air filter requires replacement every 3 months. The basin drain screen is to be inspected daily during every Quality Assurance Test, and replaced if worn, damaged or clogged. Refer to the "Maintenance and Troubleshooting" section for further details.

5. Check Alcohol Bottle Level

   Open the alcohol bottle access door and confirm the level of alcohol in the bottle, replace or refill if low. Use only 70% isopropyl alcohol or 70% ethyl alcohol for end-of-cycle endoscope drying.

6. Accessory Bag

   Endoscope accessories such as buttons and valves may be disinfected in the CER OPTIMA® endoscope reprocessing system using the supplied accessory bag. Never place small items directly in the basin, as it could result in damage to the CER OPTIMA system. Also, never place the accessory bag near or over the CER OPTIMA drain which will block fluid flow. Always place the accessory bag under the endoscope away from the drain.

7. Channel Connectors

   Inspect channel connectors daily to ensure functional condition. Replace if damaged or worn.

CHAPTER 5

MAINTENANCE & TROUBLESHOOTING

Introduction

If a problem occurs, please use this section to locate the cause. It is best to review main topics to help identify the problem. Listed below are possible solutions to problems which might occur.

> Note: Contact your local representative or Medivators Customer Support (1-800-444-4729) if problem is not resolved after using the Troubleshooting Guide.

System Maintenance

Alcohol

Only use 70% Ethyl Alcohol or Isopropyl Alcohol for end-of-cycle endoscope drying.

The CER OPTIMA® endoscope reprocessing system has a compartment that houses the alcohol bottle, which is located on the front left-hand side of the CER OPTIMA unit and is labeled "**ALCOHOL**".

The alcohol bottle should be checked daily as part of the Quality Assurance Test, and refilled or replaced if low. The alcohol compartment is designed to allow the use of round or oblong sized 500ml volume alcohol bottles. If the alcohol runs out during a reprocessing cycle, the alcohol sensor will detect a low flow condition and display a 'Low Alcohol" message in the LCD display. The operator will now have the opportunity to replace or refill the alcohol bottle. If the alcohol bottle is not addressed within 5 minutes, then the cycle will be aborted and the endoscope cycle will need to be rerun.

To replace or refill the alcohol bottle:

Step 1: Locate a new bottle of 70% Ethyl Alcohol or Isopropyl Alcohol.

Step 2: Open the Alcohol compartment by pressing in on the small door indentation and then releasing; the door will pop open slightly. Open the door fully to reveal the alcohol bottle.

Step 3: Carefully slide the alcohol bottle out of the alcohol compartment, and then loosen and remove the alcohol bottle cap and associated uptake tube.

Figure 15

Step 4: Remove and replace, or refill, the alcohol bottle.

Step 5: Reinsert the uptake tube into the alcohol bottle, tighten the alcohol bottle cap, and place the full alcohol bottle back into the alcohol compartment.

Step 6: Close the alcohol compartment door.

Figure 16

Printer Paper

Changing the Printer Paper

The CER OPTIMA® endoscope reprocessing system uses thermal print paper to document all machine functions. Ensure the printer is loaded with a fresh roll of printer paper before operating the machine or performing a cycle. The printer paper will show a small pink/red color line when the paper roll is nearing empty. If the paper is empty or runs out during a print cycle, the cycle performed can be reprinted by selecting the Print touchpad. The cycle data is available to print until either the "START" touchpad is pressed which starts a new reprocessing cycle, or until the CER OPTIMA unit is shut off. The printer will automatically detect when the thermal paper roll has run out, and indicate this condition with a flashing light on the printer module.

Figure 17

To replace the printer paper

Step 1: Pull the lever on the front of the printer door upwards, until the door is released from its locked position (to avoid damage, do not use excessive force). Remove the empty paper spindle.

Figure 18

Step 2: Locate a new paper roll and reel off about 2 inches of paper. Place the new paper roll in the printer paper compartment with the leading edge of the paper coming off the top of the paper roll.

Figure 19

Step 3: Close the printer paper access door, you should hear it click into place. Tear the excess paper off by pulling it in an upward angled direction. The paper will tear against the serrated plastic edge.

Printer Paper Storage Conditions

The printer paper has a shelf life based upon its storage conditions. It is important to understand and follow these storage conditions for both opened and unopened printer paper, to ensure a long printed cycle retention. For optimal printer paper storage, the following conditions should be followed as closely as possible:

Unopened printer paper rolls

- Store in a dark place at 23°C (74°F) and 50% relative humidity.
- Store in original paper roll packaging (Do not open or remove rolls from individual packaging).
- Do not store in direct sunlight.
- Do not store in an area that may be subject to the presence of NOx, Sox, or Ozone.

Opened and printed printer paper

- Store in a dark place at 23°C (74°F) and 50% relative humidity.
- Do not store in direct sunlight.
- Must not come into contact with NOx, Sox, or Ozone.
- Must not come into contact with plastic matter including: plastic file, desk mat, etc.
- Must not come into contact with oils or fats, solvents, chemicals, drugs or cosmetics.
- Must not come into contact with stationary items including: adhesive tape, mending tape, fluorescent pen, oil-based pen, and non-starch glue.
- Must not come into contact with water or chemicals of any sort.
- Must not be stamped on either side.

Basin Drain Screen

Confirm the basin drain screen is in place and in use at all times. The basin drain screen is to be inspected daily during every Quality Assurance Test, and replaced it worn, damaged or clogged.

Changing the Basin Drain Screen

Step 1: Verify the basin drain screen is positioned over the CER OPTIMA® endoscope reprocessing system basin drain opening.

Step 2: Remove and inspect the drain screen to ensure it is not worn or damaged.

Step 3: Clean the basin drain screen to ensure it is free of debris which could block and slow the draining of fluids.

Step 4: Replace the drain screen if worn, damaged or blocked

Step 5: Reinsert the basin drain screen over the CER OPTIMA drain opening, ensuring it is securely in place.

> **Caution!** A basin drain screen must always be in place. Failure to use this item could result in unexpected servicing of the CER OPTIMA unit, due to small endoscope components getting inside the internal working hydraulics and mechanisms of the CER OPTIMA unit.

Disinfectant Filter

Changing the Disinfectant Filter

The CER OPTIMA unit uses a disinfectant filter which must be replaced whenever the high level disinfectant is changed out.

To replace the Disinfectant Filter:

Step 1: Locate a new disinfectant filter.

Step 2: Disconnect the used disinfectant filter located in the CER OPTIMA Chemical Inlet tubing. Disconnect the filter using the quick-connect fittings, noting the color-coded mating connectors.

Step 3: Insert the new disinfectant filter into the color-matching mating connectors. Push in until a snap-lock is heard. Verify the new disinfectant filter is firmly secured in place.

Step 4: Record the date of the disinfectant filter change in the Filter Log, and discard the used filter.

Air Filter

Changing the Air Filter:

The CER OPTIMA® Endoscope Reprocessing System uses an air filter to ensure only filtered air is delivered into the unit and into the endoscope. The air filter condition is to be monitored weekly and replaced every three (3) months.

To replace the air filter

Step 1: Locate a new air filter.

Step 2: Disconnect the used air filter from the CER OPTIMA system back panel by pressing the quick-release

Figure 20

Step 3: Insert the color-matching connector of the new air filter into the CER OPTIMA system air filter connector; push in until a snap-lock is heard. Verify the new air filter is firmly secured in place.

Step 4: Record the date of the air filter change in the Filter Log, and discard the used filter.

Troubleshooting Guide

Problem	Cause	Corrective Action
Rinse alarm triggered	Water valve is closed	Open water valve
	Main water pressure is low	Increase water pressure to 40 – 60 psi
	Water filters clogged	Replace filters
	Water hose is kinked	Remove kink
	Inlet valve screen is plugged	Clean screen
	Float tower is covered	Uncover float tower
	Drain solenoid is leaking	Contact MEDIVATORS Customer Support for replacement/repair.
	Water solenoid is defective	Contact MEDIVATORS Customer Support for replacement/repair.
	Float sensor is defective	Contact MEDIVATORS Customer Support for replacement/repair.
Reprocessor stops in mid cycle	Fluctuation in power source voltage	Call facility maintenance
	Power cord is not securely connected	Ensure power cord is securely in place
	Alarm is activated	Refer to section regarding alarm
HLD lost through overflow drain	Machine not level overflow drain	Adjust the machine's leveling feet
	Float tower is covered	Ensure nothing is covering or wrapped around the float tower
	Defective float sensor	Contact MEDIVATORS Customer Support for replacement/repair.
Water runs through the overflow or overflows the basin	Float tower is covered and the machine is not leveled	Uncover the float and level the machine using the leg stands
	Machine not level	Level the machine
	Float sensor defective	Contact MEDIVATORS Customer Support for replacement/repair
HLD reservoir is overfilling or	Waste drain hose is sitting higher than the drain	Lower the drain hose below drain connection on the back of the machine
Water is left in basin after rinse cycle	Drain hose has a kink	Remove kink
	Drain screen is plugged	Clean drain screen and ensure drain is not blocked
	Basin is not draining fast enough	Contact MEDIVATORS Customer Support for replacement/repair
	Mother board not activating rinse drain solenoid	Contact MEDIVATORS Customer Support for replacement/repair
	Drain solenoid coil is defective	Contact MEDIVATORS Customer Support for replacement/repair
	Drain solenoid is not draining fast enough	Contact MEDIVATORS Customer Support for replacement/repair

Problem	Cause	Corrective Action
	Solution out solenoid is leaking water (Only applies to overfilling reservoir)	Contact Medivators Customer Support for replacement/repair
	Drain screen is plugged	Clean or replace drain screen
	Water pressure is too high	Verify water pressure is set between 40 and 60 PSI
Losing HLD during cycles	HLD lost in the drain	Contact Medivators Customer Support for replacement/repair
	Drain screen plugged	Clean screen and make sure nothing is blocking the drain or Contact Medivators Customer Support replacement/repair
	HLD OUT quick disconnected is leaking	Contact Medivators Customer Support replacement/repair
	Fluid collecting in basin	Do not reprocess water bottles, syringes or any containers - they may collect and retain fluid. Contact Medivators Customer Support for replacement/repair
	Solution OUT solenoid not draining fast enough	Contact Medivators Customer Support for replacement/repair
	Machine is not leveled	Contact Medivators Customer Support for replacement/repair
	Motherboard activating drain cycle all the time	Contact Medivators Customer Supportt for replacement/repair
No lights on control panel	Power cord disconnected	Reconnect power cord
	Switch is turned OFF	Turn ON power switch
	Fuse is blown	Replace fuse
	Motherboard is defective	Contact Medivators Customer Support for replacement/repair
	Control panel is defective	Contact Medivators Customer Support for replacement/repair
	Ribbon cables are loose	Ensure ribbon cables are connected
No air flow through channel connectors	Air filter clogged	Change Air Filter
	Kink in hook up tube	Remove kink
	Channel connector is not fully inserted	Reinsert channel connector
	Check valve inline with alcohol manifold is leaking air	Contact Medivators Customer Support for replacement/repair
	ASW leaking air through main pump manifold	Contact Medivators Customer Support for replacement/repair
	Defective air pump	Contact Medivators Customer Support for replacement/repair

Problem	Cause	Corrective Action
	No power to ASW	Contact Medivators Customer Support for replacement/repair
	Loose internal air pump tubing	Contact Medivators Customer Support for replacement/repair
No fluid flowing through channel connectors	Kink in channel connector tubing	Remove kink in tubing
	Channel connectors not fully inserted	Reinsert channel connectors until they “clicks” into place
	Main pump not activated by motherboard	Contact Medivators Customer Support for replacement/repair
	Main pump does not rotate	Contact Medivators Customer Support for replacement/repair
	ASWs clogged	Contact Medivators Customer Support for replacement/repair
	Air is flowing instead of fluid	Contact Medivators Customer Support for replacement/repair
HLD not completely filling the basin and/or HLD alarm triggered	Disinfectant Filter clogged	Change Disinfectant Filter
	Kink in HLD-in tubing	Remove kink
	Reservoir has insufficient solution	Fill reservoir at least to the minimum fill line
	The HLD-in quick connectors are worn or not fully inserted	Replace or reinsert channel connector until it “clicks” into place
	Leaking HLD through the drain	Contact Medivators Customer Support for replacement/repair
	One or more OSC pump not working properly	Contact Medivators Customer Support for replacement/repair
	Float sensor defective	Contact Medivators Customer Support for replacement/repair

Reprocessing Cycle Times

Note: All reprocessor models are capable of using EITHER the full automatic cycle OR the HLD/rinse cycle.

Note: If using RAPICIDE® or Glutaraldehyde high-level disinfectants, then the CER OPTIMA® system will use 2 post rinses immediately following the HLD step. If using an CIDEX® OPA high-level disinfectant, then the CER OPTIMA will use 3 post rinses immediately following HLD step. CIDEX OPA requires these complete rinse cycles after disinfectant has contacted the endoscope or medical devices.

"Full" Automatic Cycle

Step	Cycle	Minimum Time (in minutes)	Maximum Time (in minutes)
1	Wash	CER-1: 2, 3 or 5 minutes; CER-2: 3 or 5 minutes	5.0
2	Drain/Air Purge	2.0	2.0
3	Rinse	Depends on water flow	6.0
4	Drain/Air Purge	2.0	2.0
5	HLD IN	Depends on disinfectant type in use	
6	HLD/Out/Air Purge	2.0	2.0
7	Rinse	Depends on water flow	6.0
8	Drain/Air Purge	2.0	2.0
9	Rinse	Depends on water flow	6.0
10	Drain/Air Purge	2.0	2.0
11	Air (if chosen)	3, 5 or 10	3, 5 or 10
12	Alcohol (if chosen)	CER-1: 30, or 60 cc's; CER-2: 30, 60 or 120 cc's	3, 5 or minutes (Depends on air settings)

"HLD/Rinse" Automatic Cycle

Step	Cycle	Minimum Time (in minutes)	Maximum Time (in minutes)
1	Rinse	1.0	1.0
2	Drain/Air Purge	1.0	1.0
3	HLD IN	Depends on disinfectant type in use	
4	HLD/Out/Air Purge	2.0	2.0
5	Rinse	Depends on water flow	6.0
6	Drain/Air Purge	2.0	2.0
7	Rinse	Depends on water flow	6.0
8	Drain/Air Purge	2.0	2.0
9	Air (if chosen)	3, 5 or 10	3, 5 or 10
10	Alcohol (if chosen)	CER-1: 30, or 60 cc's; CER-2: 30, 60 or 120 cc's	3, 5 or 10 minutes (Depends on air setting)

Glossary of Terms

basin	chamber into which the endoscope is placed for disinfection.
cleaning	physical removal of organic debris from an endoscope.
control panel	operator interface used to program and operate the reprocessor.
custom program	disinfection program other than the default program.
cycle	sequence of phases in the disinfection process: detergent flush, basin fill, disinfection, rinse, alcohol purge, and air purge.
default program	disinfection cycle program supplied with the reprocessor.
disinfection procedure	pre-programmed series of phases that collectively constitute a specified disinfection protocol. Function any operation other than a disinfection program, example: disinfectant dump function.
HLD High Level Disinfection	process defined by the CDC that destroys all vegetative bacteria, viruses, and fungi, but not necessarily all bacterial endospores.
idle state	standby operating state during which no program cycles or other functions are in progress.
MRC	Minimum Recommended Concentration.
phase	specific portion of a disinfection cycle.
reservoir	container that holds disinfectant, alcohol, or detergent.
restrictor adapter	used to simulate a scope during certain operations. This part is supplied with the reprocessor installation kit.
running state	operating state during which a program is in progress, or some other function is occurring (i.e., any state other than idle or stop).
station	part of the system used to disinfect a single endoscope. The station includes the basin, fluid reservoir, valves, hoses, pump, and compressor.
status indicator	blinking symbol on the control panel display indicating the current operating state.
status log	stored record of recent disinfection cycles containing usage history, error status, and processed endoscope serial numbers.
stop state	operating state during which a disinfection protocol is in progress, but the current cycle is suspended.

APPENDIX

WARRANTIES

Limited Warranty

Subject to the terms below, Medivators Inc. (the "Company") warrants that its products (the "Products") will conform to the Company's written specifications (where applicable) and will be free from defects in material and workmanship under normal use and service for the following periods (the "Warranty Period"):

Endoscope reprocessors and associated equipment, and Irrigation Pumps: fifteen (15) months from date of shipment from the Company or one (1) year from the date of installation, whichever occurs first.

Consumables, accessories, and Product service parts, including, but not limited to, endoscope hookups, filters, printers, printer supplies, test strips, accessory bags, and service parts for products: ninety (90) days from the date of installation or one hundred and twenty (120) days from the date of shipment, whichever occurs first.

Disposable Products: warranted for single use. The Warranty Period will not in any case exceed the expiration date on the Product label.

The warranty does not cover, and the Company will have no warranty obligation whatsoever with respect to, any damage to a Product caused by or associated with: (i) external causes, including without limitation, accident, vandalism, acts-of-God, power failure or electric power surges, (ii) abuse, misuse or neglect of the Product by the customer or use of unauthorized third party filters or other consumables and accessories, (iii) usage not in accordance with product instructions, (iv) the customer's failure to perform required preventive maintenance, or (v) servicing or repair not authorized by the Company.

Limitation of Remedy

The warranty obligation of the Company hereunder is limited to (at its option) (i) the repair or replacement of the defective Products or any parts it deems defective, or (ii) a refund of the purchase price. This will be customer's exclusive remedy for a covered defect.

In order to recover under the warranty, the customer must notify the Company in the state (if in the U.S.A.) or the country of installation, of the defect (describing the problem in reasonable detail) prior to the expiration of the Warranty Period and within thirty (30) days of discovery of the defect. Upon receiving the Company's official "Returned Material Authorization" (RMA), the customer must promptly return the defective part or Product to the Company (or the service center indicated on the RMA), freight and insurance prepaid. The Company will not be responsible for any damage during shipment.

Warranty Disclaimer

THE WARRANTY ABOVE IS THE COMPANY'S ENTIRE WARRANTY OBLIGATION TO THE PURCHASER OF PRODUCTS. IT IS IN LIEU OF ALL OTHER WARRANTIES OF THE COMPANY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND THE COMPANY DOES NOT REPRESENT OR WARRANT THAT ANY PRODUCT WILL MEET

CUSTOMER'S REQUIREMENTS. THE COMPANY'S RESPONSIBILITY FOR DEFECTS IN A PRODUCT IS LIMITED SOLELY TO REPAIR, REPLACEMENT OR REFUND OF THE PURCHASE PRICE AS SET FORTH IN THIS WARRANTY STATEMENT.

TO THE EXTENT PERMITTED BY LAW, THE COMPANY SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO CUSTOMER FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE OR SPECIAL DAMAGES OR LOSSES, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY MALFUNCTIONS, DELAYS, LOSS OF PROFIT, INTERRUPTION OF SERVICE, OR LOSS OF BUSINESS OR ANTICIPATORY PROFITS, EVEN IF THE COMPANY HAS BEEN APPRISED OF THE LIKELIHOOD OF SUCH DAMAGES OCCURRING.

This Warranty gives the customer of Products specific legal rights, and customers may also have other rights which vary from jurisdiction to jurisdiction.

In no event shall the Company's liability exceed the original purchase price of the covered Product.

No representative or agent of the Company has any authority to bind the Company to any other representation or warranty with respect to the Products, and the customer accepts the Products subject to all of the terms above

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