ESC®

MEDICAMS

SERVICE & INSTRUCTION MANUAL

CO_2 INSUFFLATOR FOR LAPROSCOPY

CO_2- 30L ADVANCE

CONTENTS

1. GENERAL INFORMATION

1.1. INTRODUCTION

- **CO_2 Insufflator**
- **Model:** *CO_2-30L Advance*
- **Operating Manual**

Thank you for purchasing the *CO2 insufflator* **unit**. To use the insufflator properly and to get the best from it carefully read this operation manual use. After reading the manual, we suggest you to keep it in a convenient place for quick reference.

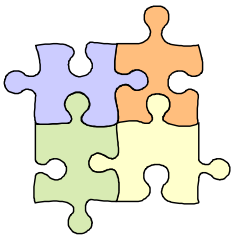
In order to instruct the user of CO_2 insufflator of the capabilities and limitations of this unit is a Greater deal of information must be provided. The user must be given more than the facts and specifications. Ideally he should be given a complete understanding of this equipment so he can use the insufflator in all situations and recognize potential hazards before they occur.

Taking into consideration all the above factors we have tried to make this manual more user friendly.

1.2. SCOPE

- **Congratulations**

Our *CO_2 Insufflators* are next generation newly designed with outstanding technical features. This unit is controlled by microprocessor of the latest technology. Stable pressure balance in the abdomen is guaranteed by high gas flow and low insufflations pressure.



2. INSTALLATION

2.1 UNPACKING AND HANDLINGS

Carefully unpack the package and remove *CO_2 INSUFFLATOR* from its packing material observes for the mechanical damage. Return the instrument if any mechanical defect is observed. Check the *CO_2 INSUFFLATOR* Performa to ensure receiving of all accessories.

- **Accessories**

1. 3 Mtr. Power Cord - 1no.
2. Silicone Patient Tube with Connectors - 1no.
3. High Pressure Inlet Tube with Connectors - 1no.
4. Spanner - 1no.

2.2 INSTALLATION

1. The Insufflator should be at a higher elevation than the patient. This will reduce the risk of patient fluid flowing back into the Insufflator and contaminating internal components.
2. The Insufflator should also be kept near your viewing monitor. This will keep the Insufflator in view while you are performing a surgical procedure.
3. The attached cabling should not interfere with the procedure performed.

2.3 INITIAL SETUP PROCEDURE

Follow these steps after choosing a location for your CO_2 Insufflator.

1. Make sure the main power switch located on the rear panel is in the off position.
2. Connect Inlet tube to the machine and the other end of the tube to Pre regulator output.
3. Set the Pre regulator output pressure to around 2.8 to 3 bars.
4. Check for leaks. If a leak is found, turn off CO_2 supply and retighten connections.
5. Connect power cord to the rear of the device and to a grounded “3 prong” outlet.

   Perform an initial performance test after your CO_2 Insufflator is setup. Instructions are provided in the following section.

3. OPERATION

3.1. CO_2 INSUFFLATOR IN LAPROSCOPIC SURGERY

Laproscopic surgery is sometimes called keyhole surgery. This approach minimizes blood loss and pain and also speeds the patient's recovery time. For the surgeon there is greater risk for error such as damage to surrounding organs due to mishandling instruments or limited vision. Sometimes a laproscopy is used to diagnose a problem as well as treat one. Generally, laproscopy is day surgery and there is no need for the patient to stay overnight.

Laproscopic technology uses a small video camera and a few customized instruments to perform surgery with minimal tissue injury. The camera along with the instruments are inserted into the abdomen or chest through small incisions. A fiber optic cable system connected to a 'cold' light source (halogen or xenon), to illuminate the operative field, inserted through a 5 mm or 10 mm cannula or trocar to view the operative field. The surgeon can explore the whole cavity without the need of making large incisions through skin and muscle. After the cut is made in the umbilical area (belly button), a special needle is inserted to start insufflation. Or essentially blown up like a balloon, with carbon dioxide gas. A CO_2 insufflator to regulate pressure is connected to the needle which is then removed and replaced with a 10mm trocar. This elevates the abdominal wall above the internal organs like a dome to create a working and viewing space. CO_2 is used because it is common to the human body and can be absorbed by tissue and removed by the respiratory system. It is also non-flammable, which is important because electrosurgical devices are commonly used in laparoscopic procedures. The camera shows the surgeon what he needs to see in order to perform the necessary surgery by inserting his instruments through other small incisions.

The ESC CO_2 Insufflator is a complete new designed line of CO_2 insufflators with outstanding techical features. The units are controlled by microprocessors of the latest generation. Stable pressure balance in the abdomen is guaranteed by high gas flow performance and low insufflation pressure. ESC CO_2 Insufflator meets all your needs in minimal invasive surgery. Its unique feature is a 20 & 30 liter per minute gas insufflation that delivers excellent stability of pressure and higher level of patient safety.

3.2. INSUFFLATOR FEATURES

- Advanced High Speed Microprocessor Circuitry allows for superior accuracy and performance in delivery and measurement of CO_2.
- The unique control algorithm stabilizes the pneumoperitonium even at a high leakage rate.
- Assures rapid delivery of gas and provide immediate response for all procedures, especially when suction occurs.
- Inexpensive Temperature Controlled Gas Warmer (optional) reduces chill effect of high flow insufflation and lessens telescope fogging.
- Double Safety for Patient: Hardware and Software Controlled with Automatic Over-Pressure Gas Release System during build-up of Excess Pressure to avoid overpressure above 50mmHg.
- High Gas flow rate with precise electronic regulation.
- Display for Gas Consumption.
- Separate Digital Displays for Real-time values and Set values of Pressure and Flow Rate.
- Availability in two different models with 1 to 20 ltr/min and 1 to 30 ltr/min Flow Rate.
- Insufflation pressure is regulated from 3 to 25 mm Hg.
- Easy to operate.
- Compact Light Weight.

3.3 PERFORMANCE FEATURES:-

Advance Flow Control

- The Co_2 30L Advance Insufflators stands for AFC (Advance Flow Control Insufflations) for precise and safe gas flow control.

Software

- Software controlled pressure release mechanism prevents dangerous pressure build-up in the abdomen when using such apparatus as laser or argon beamers.

Safety

- Automatic self check, activated each time is switched on, makes sure all electronic and pneumatic components are in good running order.

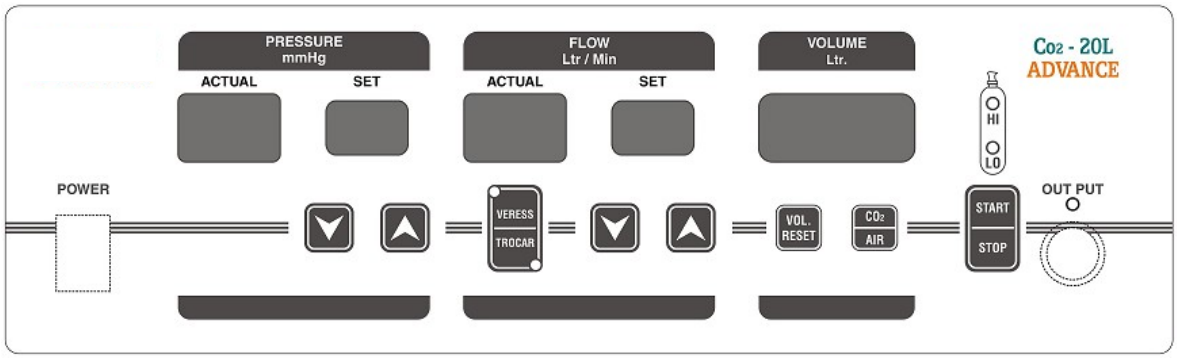
System Gas Heater

- This unit comes with build-in high efficiency gas heater. The gas heater is pre adjusted and works on a plug and play basis fully automatically.

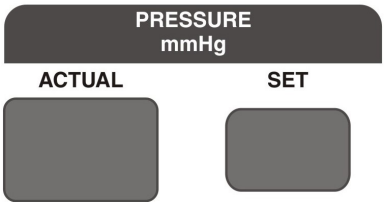
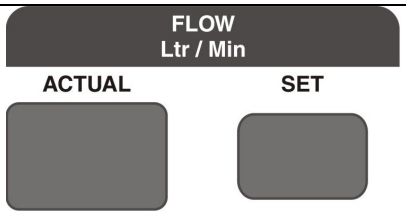
Real Time Data Display

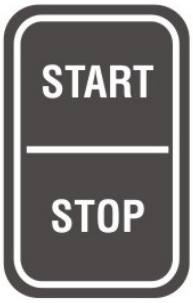
- LED 7 segment display for set pressure, actual pressure, set volume, Gas consumption volume, and start stop LED and cylinder status LED.

3.4 OPERATING CONTROLS (FRONT VIEW)



Controls for CO_2-20L Advance Insufflator

Steps	Description
	This switch illuminates to indicate the main switch is on. Push the switch up to turn the main power on.
	**SET** To set the Insufflation pressure of CO_2 Gas from 3 to 25 mmHg as per user requirement. **ACTUAL** pressure is aprox value of SET pressure
	**SET** To set the flow rate of CO_2 Gas from 1 to 30 Ltr/Min as per user requirement. **ACTUAL** flow is aprox value of SET flow
	**UP /DOWN KEY** Press up/down key to set the value of flow and pressure

Steps	Description
	**START / STOP key** Function of key to start or stop the process of insufflation
	**HI/LO INDICATOR** This indicator shows weather CO2 gas bottle is full or empty.
	**VERESS/TROCAR Key.** This key is for selection of needle type. As pressing this key indicator shows respective key selection
	Selection key for CO2 gas or air Mode (optional).
	**VOLUME DISPLAY** It shows volume of CO_2 Gas utilized in Liter. **VOL RESET KEY** reset the volume of gas consumption at any time
	**OUTPUT Connector** To connect the silicon patient tube.

BACK PANEL :

	DESCRIPTION
MAINS SOCKET	The Three-prong plug on the power cord connects to the mains receptable providing 230 volts 50 HZ power.
IN PUT	Connect the CO_2 gas cylinder tube to the INPUT

3.5 ACCESSORIES

Accessories Pictures	Name of Accessories
	3 Mtr. Power Cord
	Silicone Patient Tube With Trocar Connector
	High Pressure Inlet Tube with Connectors
	Spanner

4. MAINTENANCE

4.1. OPERATOR AND PATIENT SAFETY

- **Precautions**

The following precautions should be taken while using the CO_2 Insufflator.

1. Do not modify any part of the Co2 Insufflator or the included apparatus.
2. Do not disassemble any portion of this device.
3. Do not insert any object into the Insufflator case.
4. This device should only be serviced by factory trained and authorized personnel.

4.2. PERFORMANCE CHECK

A performance check should be done when first setting up your CO_2 Insufflator. It is also recommended that a performance check be conducted prior to each procedure.

- **Insufflator**

1. Secure open end of the patient gas tube to the device.

2. Make sure the Insufflator is off and the Pressure is set to 0 mmHg.

3. Using a closed zip-lock bag, insert your Veress needle into the bag, and attach the luer-lock hub to the end.

4. The bag should not fill with gas while the Pressure is set to 0 mmHg.

5. Set the Insufflator Pressure Dial to 15 mmHg. The bag should fill with CO_2 until it reaches a pressure of 15 mmHg. Do not use the machine if the bag bursts. Contact for technical assistance.

4.3 PATIENT / OPERATIVE USE

Preoperative Steps :

Note: CO_2 Insufflation is only required for laparoscopy. Follow the instructions below after successfully completing the Performance Check on page no. 10.

1. Turn on CO_2 supply.
2. Check all connections and listen for leaks. If a leak is found, turn off the CO_2 supply and retighten connections.
3. Turn the main power switch on.

Operative Steps :

NOTE: Properly trained personnel should perform laparoscopic procedures.

- Push the start button to start insufflation.
- Adjust the pressure to the desired pressure setting.
- Adjust the flow rate to the expected value. If the pressure is not attained increase the flow rate till it reaches the set pressure. If the pressure indicator is over shooting reduce the flow rate.
- Turning the Insufflator off will cause the pressure to steadily decrease.
- Always purge the air from the system with CO_2 prior to performing any procedure.
- During all laparoscopic procedures, it is important to maintain adequate pressure monitoring. Do not exceed recommended limits, as this will compromise patient health. Pressing excessively on the abdominal wall during puncture techniques may cause excessive abdominal pressure.
- Once the laparoscopic procedure is complete, press the stop button to turn off insufflation.

4.4. MAINTENANCE AND TROUBLESHOOTING

Cleaning and Maintenance

- Keep in dust and moisture free area.
- Clean with a soft dry cloth.

Insufficient Insufflation

1. Check the CO_2 Supply gauge to determine if there is sufficient CO_2 pressure.
2. Check all hoses for kinks and obstructions, particularly the patient connection hose. Is the bacteria filter plugged from micro- or macroscopic debris?
3. Check to make sure A/C power cord is fully seated into the power module and is connected to a grounded outlet and that power is on; displays should illuminate and fan motors should be audible.
4. Make sure patient hose is connected to insufflation portal of Veress needle or primary portal.
5. Make sure port is open on Veress needle or stop-cock of primary portal. Port control should point at the patient hose indicating that the port is OPEN.

4.5. SPECIFICATIONS

Model	**CO_2 - 30L ADVANCE**
Insufflation Pressure	4 -30mmHg
Dimension (W x H x D)	290mmx105mmx260mm
Weight	5 kg
Gas	CO_2 (Medical)
Gas Connection	UNF 7/16”
Power Consumption	20 Watts Maximum
Input Pressure Minimum	3 Bar
Output Connection	9 to 10 mm ID tube
Flow Rate Setting	1 to 30 Ltrs/min
Keyboard	Feather Touch
Gas Warmer	Builtin
Input Supply Voltage	230 VAC + 15% @50/60 Hz (110 V optional)