LS-9500

ROTATION WITH ON-DEMAND LOW AIR LOSS SYSTEM

OPERATING INSTRUCTIONS MANUAL

drive™

TABLE OF CONTENTS

DANGER:

♦EXPLOSION HAZARD♦
DO NOT USE IN THE PRESENCE OF FLAMMABLE ANESTHETICS

Caution:

- Do not use in the presence of smoking materials or open flame. Air flowing through air mattress will support combustion.
- Risk of electrical shock, do not remove control unit cover.
- Refer servicing to qualified service personnel.
- Equipment should only be connected to a properly grounded three pronged wall outlet, using 10~14 foot (305~427 cm) hospital grade power cord provided with the product.

Warning:

- Never drop or insert any object into any opening of the control unit.

The LS-9500 ROTATION LAL SYSTEM should always be used on beds that are equipped with standard hospital side rails.

Please raise all 4 side rails on the bed and lock them in position after the patient is on the mattress.

EXPLANATION OF SYMBOLS USED ON THIS DEVICE

SYMBOL	EXPLANATION
Power / Lock	To Turn The Unit On / Off, Switch. And also to lock the unit.
Soft / Firm	To select appropriate patient comfort pressure levels.
Auto Firm	Press Auto Firm key for rapid inflation of the mattress.
Low Air Loss	To Select On demand Low Air Loss Or Max Inflate.
Select Turn	Select turn mode.
Time	Select turn time.
Turn	Select turn angle.
Power Fail	Light flashes along with the buzzer noise in the event of a power outage.
Power / Lock	Press and hold power / lock key until it beeps and the light is on, this locks out all control unit function keys including power.
Low Pressure	In the event the hose is disconnected an audio/visual alarm will sound
CPR	CPR Label

LS-9500SYSTEM:

The LS-9500 System is a ROTATION system used to provide pressure reduction and pulmonary therapy. It consists of a control unit, which is used to inflate an overlay or a mattress replacement

system. The control unit is designed to provide continuous ROTATION at required patient comfort levels. The ABS/PVC blend enclosure houses a medium output air pump (42~50 LPM), solenoids, and a micro-controller, which controls all of the above components, and provides desired patient comfort pressure levels.

LS-9500 Control Unit Features

- High capacity air output and quiet operating control unit
- Patient comfort control panel features an adjustable Soft/Firm key to provide variable pressure to accommodate the patient's weight or comfort.
- Illuminated POWER key.
- Injection molded ABS enclosure.
- Two integrated hooks for easy hanging of the control unit from the foot board of the bed
- Sixteen foot long hard wired hospital grade power cord.
- 1/4" flow gang coupling connector for Quick connection and disconnection.
- Control unit has short circuit / over voltage protection.

TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

	U.S.	INTL.
Input Voltage AC:	120V	220 / 240V
Input Frequency:	60 Hz	50 Hz
Current:	1A	0.5 A
Maximum Power Consumption:	35 ± 10 W	20 ± 10 W
Circuit Protection:	Dual fused, 250V, 1A fast blow fuses.	
Mode Of Operation:	Continuous	Continuous

PERFORMANCE SPECIFICATIONS

	U.S. / INTL.
Zone:	2
Max Flow:	42~50 LPM
Max Inflate Pressure:	35 ±6 mmHg
Max Inflate Timer:	30 minutes
Support Surface Inflation Time:	5~15 minutes.

Patient Comfort Control Pressures

Soft 1 Pressure:	6 ± 4 mmHg
Firm 10 Pressure:	32 ± 6 mmHg
Therapy Time in Minutes:	10, 20, 30, 60

MECHANICAL SPECIFICATIONS

Control Unit (A)

Dimensions, LxWxH:	12" x 5.75 " x 10.5" (29.5cm x 14 x 27cm)
Weight:	9 lbs. (4Kgs)

Power Cord:	10'/14' (305~427 cm) Long detachable 16~18 AWG Hospital Grade.
Connection:	¼" flow plastic quick couplings
Packaging:	1 Piece per Box.

Air Filter: None.

ENVIRONMENTAL SPECIFICATIONS

Operating Conditions:

Ambient Temperature:	40° ~ 104° F 10° ~ 40° C
Relative Humidity:	30% ~ 75% Non-Condensing
Atmospheric Pressure:	700 hPa to 1060 hPa

Storage And Shipping Conditions:

Ambient Temperature:	-40° ~ 158° F -40° ~ 70° C
Relative Humidity:	10% ~ 100%
Atmospheric Pressure:	500 hPa to 1060 hPa

Protection Against Harmful Ingress Of Liquids:
Ordinary Protection (IPXO)

Patient Contact:

Control unit and the mattress have **Latex** free components.

SAFETY AGENCY APPROVALS

ETL Listed:

To standard for safety of Medical Electrical Equipment

Conforms To: UL STD 60601-1 with respect to Electrical Shock, Fire and Mechanical Hazards

Certified To: CAN/CSA STD C22.2 No. 601.1

CE Mark: CE

SAFETY INSTRUCTIONS

- To avoid damaging your LS-9500 control unit (A), before operating be sure the AC power (X) available at your location matches the power requirements printed on the product identification label on the back of the control unit.

- To avoid electric shock, always plug in the power cord of the control unit into a properly grounded power source (X).

- Do not insert items into any openings of the control unit (A). Doing so may cause fire or

electrical shock by shorting internal components.

- Do not spill liquids or food on or into the control unit (A). In the event of any spillage, immediately turn off the control unit and disconnect it form the power source (X). Return the control unit for servicing to a factory authorized service center.

- Care should be taken such that the control unit (A) is not blocked, and kept away from any heat sources or radiators during the operation of the unit.

- Care should be taken such that the power cord (Q) of the control unit is not pinched, or has any objects placed on it, and also ensure it is not located where it can be stepped on or tripped over.

- Do not attempt to service the control unit except as explained in this operating instructions manual. Contact factory for servicing instructions. Always follow operating and service instructions closely.

♦ **WARNING:** Before opening the control unit (A) enclosure, make sure the control unit is turned off and unplugged from its power source (X). The control unit enclosure should only be opened by a factory authorized qualified service technician. ♦

SYSTEM SET-UP

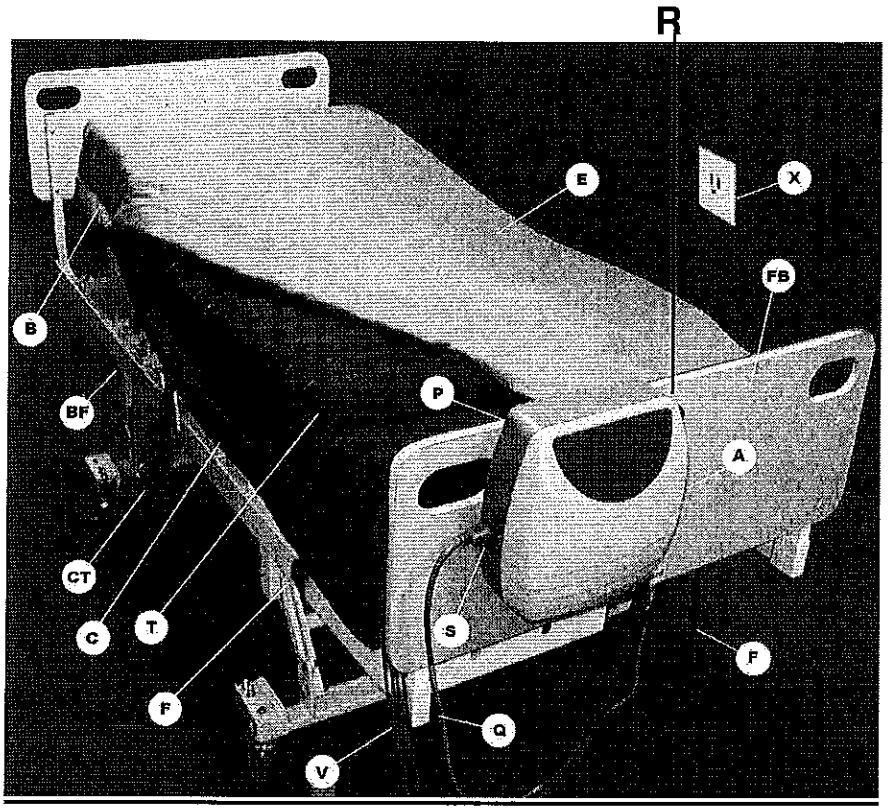
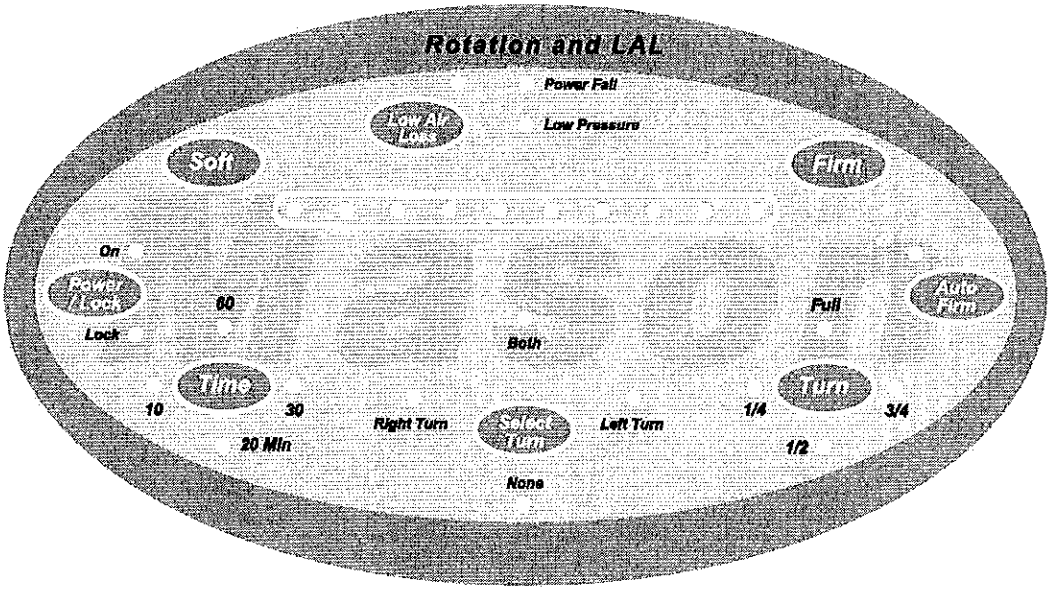


Figure-1



PLEASE NOTE:

The LS-9500 ROTATION LAL SYSTEM should always be used on beds that are equipped with standard hospital side rails.

Please raise all 4 side rails on the bed and lock them in position after the patient is on the mattress.

Refer To the Figure-1 on Page 9

1. Before using the LS-9500 ROTATION SYSTEM remove any non LS-9500 mattress system from the bed frame (BF).

2. Unroll the LS-9500 mattress (B) and place it on the bed frame (BF). Note: Make sure that the hose end of the mattress is towards the foot of the bed.

3. Pull the hooks (P) on the back of the control unit (A) and suspend the control unit from the footboard (FB) of the bed frame (BF). If the bed frame you are using does not have a footboard, place the control unit (A) on its bottom surface on a flat surface underneath the bed near the foot of the bed frame (BF). **Note:** Care should be taken such that the control unit is not placed on the floor in such a manner that it is a hazard for flow of traffic.

4. Uncoil the power cord (Q) and plug the cord into the appropriate AC power source (X), which is properly grounded. **Note:** Care should be taken such that the power cord of the control unit is not pinched, or any objects placed on it, and also ensure it is not located where it can be stepped on or tripped over.

5. Connect the mating coupling inserts on the mattress bi-lumen hose assembly (V) into the coupling bodies (R) located on the top right side of the control unit (A) respectively and lock them in place. Note: Press mating connectors in place until an audible click is heard from both the connectors. Make sure the connectors have a good connection by gently tugging on both the hoses. Also, care should be taken such that the mattress hose is freely suspended without being pinched or kinked.

OPERATING INSTRUCTIONS

Refer To the Figure 1 Page 9

1. Make sure the mattress hose assembly (V) is connected securely to the control unit (A). Also make sure the CPR Tag (CT) connector is securely connected into the mattress manifold on the side of the mattress.

INITIAL POWER UP

2. During initial power up (when power cord (Q) is plugged into the power source), the control unit (A) will be in "STAND BY".

3. If the unit is in stand by mode (SB), press the power switch and the green power LED will turn on.
4. If the power comes on after a power outage, the control unit will go through its system initialization routine for few seconds and then resume the desired function.

AUTO FIRM

5. This mode is used to rapidly inflate the mattress. During this mode a series of beeps will sound every 3 minutes as a reminder that AUTO FIRM mode has been activated. AUTO FIRM mode will be active for 30 minutes, after 30 minutes the unit will default to previous memory setting.

6. The mattress (B) will inflate to its normal size in 5 ≈ 15 minutes. (Inflation time depends on the size of the mattress).

ON-DEMAND LOW AIR LOSS

7. Press Mode key to select low air loss mode.

STATIC

8. To set STATIC mode press "Select Turn" key to "STATIC" position, green LED lights up.

9. In STATIC mode (no rotation or center position) all the air cushions in the mattress will be maintain at a constant desired patient comfort pressure.

ROTATION

10. To select desired ROTATION mode, press "Select Turn" key until "Both or Right or Left" position green LED lights up.

11. ROTATION time is 10, 20, 30, and 60 minutes, custom cycle time can be programmed at the factory. To set TURN times press "Time" key and select appropriate time.

12. To set TURN angle, press "Turn" Angle key and select appropriate angle, ¼", ½", ¾", and full turn.

PATIENT COMFORT CONTROL LEVEL

13. By pressing SOFT (1) key pressure can be reduced. By pressing FIRM (10) key pressure can be increased.

14. For extra firm support during Patient ingress / egress, or Patient wound care, or Patient ROTATION, or Patient cleaning, it is recommended to set the comfort level to FIRM 10 LED setting.

LOCKOUT

15. The control unit settings can be protected from being tamped with, by pressing and holding the "Power/Lock" key until the green lock LED turns on. To deactivate the lock function press and hold the "Power/Lock" key until the lock LED turns off.

FAILURE MODES

P0WER FAIL

16. In the event of power outage the microprocessor will activate an audiovisual signal to alert the caregiver by flashing the amber "POWER FAIL" LED and ROTATION on the buzzer. Once the power is restored to the control unit the audiovisual signal will cease and unit resumes operating its set mode.

LOW PRESSURE

17. In the event the hose is disconnected the microprocessor will activate an audiovisual signal to alert the caregiver by flashing the amber "LOW PRESSURE" LED and turning on the buzzer. Once the hose is connected the alarm will cease and the control unit will resume operating its set mode.

CPR FUNCTION

Refer To Figure 1 on Page 9

1. To deflate the mattress / overlay pad or for CPR function, press the quick release buttons on both the coupling bodies, and simultaneously pull the hose from the control unit flange connector.

2. If OPTIONAL CPR tag is present on the mattress / pad, disconnect the red CPR tab connectors located on the side of the mattress.

CLEANING PROCEDURE

WARNING

CONTROL UNIT

- Before attempting to clean the control unit please turn off the unit and disconnect the control unit power cord from the power source.

- **DO NOT HEAT, STEAM AUTOCLAVE, OR IMMERSE THE CONTROL UNIT IN LIQUIDS**

1. Wear eye goggles and rubber gloves before starting the cleaning procedure.

2. The following germicidal detergent / disinfectant are recommended by the EPA as hospital disinfectants.

    a. Johnson Wax, Virex 128, EPA Registration Number 47371-130-4822.

    b. Quaternary Detergent-Disinfectant by Airkem Professional Products, Division of Ecolab, Inc., Ecolab Center, St. Paul, Minnesota. EPA registration number: EPA # 42964-5.

    c. Hi-Tor Germicidal Detergent by Huntington Laboratories, Inc. Huntington, Indiana. EPA registration number: EPA # 303-91.

Note: A fresh spray bottle of disinfectant / detergent solution should be prepared every day to clean the control unit.

3. By following the preparation instructions provided with the germicidal detergent /disinfectant solution, prepare the required amount of disinfectant solution or mild detergent solution.

4. Pour required amount of the germicidal solution into a spray bottle.

5. Using a brush or a cloth wipe off dust. If necessary, spray the exterior of the front and back of control unit, power cord and the cord

plug with the prepared disinfectant / detergent solution. Using a damp cloth wipe down the sprayed surface cleanly. **Note: Do not spray excess amount of solution on the control unit.**

6. Once the control unit is clean, wipe the unit, the power cord and the cord plug dry with a clean dry cloth.

7. Place the control unit in a cool and dry area for an hour before operating the unit again. If the control unit is not used immediately, place the control unit in a plastic bag and store it in a storage area designated for medical electronic products.

8. After the cleaning operations are completed remove and dispose the rubber gloves appropriately. Wash your hands thoroughly with antibacterial soap.

CARE AND STORAGE

1. When control unit is not in use, turn off the unit, disconnect the power cord from the power source and wrap the cord around the control unit. Wrap the control unit and the power cord in a plastic bag and cable tie it so that dust cannot enter the bag.

2. Roll the mattress and place it in a plastic bag and tie wrap the bag.

3. Store the control unit and the mattress in a storage area designated for medical electronic product storage.

TROUBLESHOOTING GUIDE

THE FOLLOWING INFORMATION IS FOR FACTORY AUTHORIZED SERVICE FACILITIES AND FACTORY QUALIFIED SERVICE PERSONNELL ONLY.

Mason Medical will make available (on request) service manual, circuit diagrams, component lists, calibration instructions, quality control acceptance test procedures, or other information which will assist the factory qualified technical personnel to repair those items deemed repairable by the manufacturer.

PROBLEM	CAUSE	SOLUTION
A. Mattress Not Inflating / Not Alternating Properly	1. Mattress hose disconnected	1. Connect hose connectors and lock them in place
	2. Air hose kinked or split	2. Un-kink hose or replace split hose
	3. Major leak in the air cushions or overlay pad	3. Replace leaking air cushions or overlay pad
	4. Kinked or split	4. Un-kink

	manifold 5. Control unit not working 6. Timing motor malfunction	manifold or replace split manifold 5. Send control unit back to factory for repair 6. Send control unit back to factory for repair
B. No Power	1. Control Unit OFF 2. Power cord disconnected 3. No power in the power source 4. Power outage 5. Blown fuse	1. Check power source and turn on unit 2. Connect power cord to the power source 3. Check power source has power and turn it "ON" 4. Wait till the power source has power 5. Replace blown fuse with an equivalent fuse

PREVENTIVE MAINTENANCE

It is important to periodically test the LS-9500 ECONOMY ALTERNATING PRESSURE / ROTATION SYSTEM to verify the proper functionality. If the control unit air pressure reading is out of specification, it can result in poor or reduced patient support.

NOTE: All preventive maintenance service, performance and electrical tests, or repairs should be performed only by factory authorized and qualified technical personnel.

Filter: non-replaceable

- **Note:** To place an order or if you have any questions regarding the LS-9500 systems and its warranties, please call the MASON MEDICAL customer service 800 233 4454.

WARRANTY

MASON MEDICAL warrants the LS-9500 System for a period of ONE (1) year from the original date of purchase.