LUMEX®
by graham-field

SELECT SERIES
LS200 ALTERNATING PRESSURE / LOW AIR LOSS MATTRESS SYSTEM

USER MANUAL

LS200-INS-LAB-RevD19

Read this manual before operating your Mattress System.

Save this manual for future use.

CONTENTS

1 INTRODUCTION

Congratulations on your purchase of the Lumex LS200 Alternating Pressure / Low Air Loss Mattress System. This guide covers its use. The following pages will provide you with important safety, setup and operating instructions as well as maintenance and warranty information. Read this manual carefully before operating your Mattress System and refer to it as often as needed. Consult your authorized distributor or healthcare professional with any questions or concerns regarding safe and effective techniques for operating your Mattress System.

INTENDED USE

The Lumex LS200 Alternating Pressure / Low Air Loss Mattress System is designed to aid in the treatment and prevention of pressure ulcers while optimizing user comfort. The Mattress System is intended for use by those who are at least fifteen years in age.

Info: This device can be used in home healthcare and professional healthcare environments.

CONTRAINDICATIONS FOR USE

⚠ **WARNING: DO NOT use this product in the presence of flammable anesthesia. There is a possible fire hazard when this product is used with certain oxygen delivery equipment.**

⚠ **WARNING: This device is not AP / APG protected.**

⚠ **WARNING: Occasional repositioning of patient is required when using this mattress system.**

⚠ **WARNING: The Mattress System has a minimum weight capacity of 88 lb (40 kg) and maximum weight capacity of 350 lb (158 kg), EVENLY DISTRIBUTED.**

SYMBOL DEFINITION

Symbol	Meaning
	Type BF Protection against electronic shock
	Refer To Instruction Manual / Booklet
	Caution, consult accompanying documents
	Keep dry

Symbol	Meaning
	Class II equipment
	Waste disposal
	Alternating current
	SGS product certification mark

2 SAFETY PRECAUTIONS

⚠ **WARNING: IMPORTANT: Before using this device, read and adhere to the following safety precautions and warnings. Failure to do so could result in serious personal injury or damage to your Mattress System.**

⚠ **WARNING: Caregivers should be sure to discuss Safety Information, Risks and Precautions and Contraindications with the patient (or the patient's legal guardians) and the patient's family.**

Always consult your healthcare professional to determine safe methods most suitable for your individual abilities. Protect yourself, your attendant and Mattress System by having it serviced regularly. If you experience any malfunction, contact GF Tech Support at 1.770.368.4700 or your GF authorized distributor immediately, as a hazardous condition could result, causing personal injury or damage to your Mattress System.

Periodic inspection, adjustment and replacement of worn parts are necessary to provide years of excellent service. Refer to *CARE AND MAINTENANCE* section of this manual.

Maintenance MUST be performed by qualified personnel ONLY.

SIGNIFICANCE OF SAFETY STATEMENTS

Note the following special statements, used throughout this manual, and their significance:

⚠ **DANGER: Indicates a potential hazard situation or unsafe practice that, if not avoided, will result in death or serious personal injury.**

⚠ **WARNING: Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in death or serious personal injury.**

⚠ **CAUTION: Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in minor or moderate personal injury.**

▲ **NOTICE: Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in product or property damage.**

Info: Provides application recommendations or other useful information to ensure that you get the most from your product.

DANGER: TO REDUCE THE RISK OF ELECTROCUTION

⚠ **Always unplug this product immediately after using.**

⚠ **Do not use this product while bathing.**

⚠ **Do not place or store this product where it can fall or be pulled into a tub or sink.**

⚠ **Do not place this product in or drop into water or other liquid.**

⚠ **Do not reach for product that has fallen into water. Unplug immediately.**

WARNING: TO REDUCE THE RISK OF BURNS, ELECTROCUTION, FIRE, OR PERSONAL INJURY

⚠ **WARNING: Important! Read and understand these instructions before assembling or using the Select Mattress System. If you do not understand any part of these warnings, cautions or instructions, contact a healthcare professional for direction in the use of this product. If the Select Mattress System is not properly assembled, personal injury and damage to the Select Mattress System could result.**

⚠ **WARNING: Do not leave this product unattended when plugged in.**

⚠ **WARNING: Always use close supervision when this device is used by or near children, the physically challenged, or those who require close supervision.**

⚠ **WARNING: If components are damaged or missing, contact your GF authorized distributor immediately. DO NOT use substitute parts. Use only Lumex replacement parts. The use of non-Lumex replacement parts could cause personal injury, property damage, and void the warranty.**

⚠ **WARNING: Unauthorized modification of your Mattress System could cause personal injury, property damage, and void the warranty.**

⚠ **WARNING: The Mattress System has a minimum weight capacity of 88 lb (40 kg) and maximum weight capacity of 350 lb (158 kg), EVENLY DISTRIBUTED.**

⚠ **WARNING: GF Health Products, Inc. assumes no responsibility for any damage or injury caused by improper assembly or use of this product.**

⚠ **WARNING: Check all parts for shipping damage before using. In case of damage, DO NOT USE the equipment. Contact the carrier or your GF authorized distributor for further instructions.**

⚠ **WARNING: Keep open flame and heating devices away from the mattress system.**

⚠ **WARNING: Avoid Fire Hazards – To minimize risk of fire, connect the power cord directly into a wall-mounted outlet. Do not use extension cords or multiple outlet strips.**

⚠ **WARNING: No Smoking in Bed – Smoking in bed can be dangerous. To avoid the risk of fire, smoking in bed must never be allowed.**

⚠ **WARNING: Keep sharp objects away from the mattress system.**

⚠ **WARNING: If pain, irritation, numbness, swelling, or redness occur, discontinue use and contact a healthcare professional.**

⚠ **WARNING: Position power cable and pump at the foot end of bed to prevent any risk of strangulation by cable.**

⚠ **WARNING: Ensure this device is used with stable power or UPS.**

⚠ **WARNING: This device should not be used adjacent to or stacked with other equipment.**

⚠ **WARNING: Medical electrical equipment needs special precautions regarding EMC and needs to be installed according to the EMC information provided.**

⚠ **WARNING: Patient Entrance / Exit – Caregiver should always aid patient in exiting the bed. Make sure a capable patient knows how to get out of bed safely (and, if necessary how to release the side rails) in case of fire or other emergency.**

⚠ **WARNING: Brakes – Caster brakes should always be locked once the bed is in position. Verify wheels are locked before any patient transfer to or from the bed.**

⚠ **WARNING: Bed Height – To minimize risk of falls or injury, the bed should always be in the lowest practical position when patient is unattended.**

⚠ **WARNING: Head of Bed Elevation – Keep head of bed as low as possible to help prevent patient migration.**

⚠ **WARNING: Bed Frame – Always use a standard healthcare bed frame with safeguards or protocols that may be appropriate. Frame and side rails must be properly sized relative to the mattress to help minimize any gaps that might entrap a patient's head or body. Check the bed frame labeling or with the manufacturer for dimensions prior to mattress placement.**

⚠ **WARNING: Side Rails / Patient Restraints – Whether and how to use side rails or restraints is a decision that should be based on each patient's needs and should be made by the patient and the patient's family, physician and caregivers, with facility protocols in mind. Caregivers should assess risks and benefits of side rail / restraint use (including entrapment and patient falls from bed) in conjunction with individual patient needs and should discuss use or non-use with patient and / or family. Consider not only the clinical and other needs of the patient but also risks of fatal or serious injury from falling out of bed and from patient entrapment in or around the side rails, restraints or other accessories.**

Consult a caregiver and carefully consider the use of bolsters, positioning aids or floor mats, especially with confused, restless or agitated patients. It is recommended that side rails (if used) be locked in the full upright position when the patient is unattended. Make sure a capable patient knows how to get out of bed safely (and, if necessary, how to release the side rails) in case of fire or other emergency. Monitor patients frequently to guard against patient entrapment.

⚠ **WARNING: To help prevent inadvertent bed exits or falls, ensure the distance between the top of side rails (if used) and top of mattress (without compression) is approximately 4.5 inches / 11.4 cm. Consider individual patient size, position (relative to the top of the side rail), and patient condition in assessing fall risk.**

⚠ **WARNING: I.V. and Drainage Tubes – I.V. and drainage tubes should always have slack for Alternating Pressure and other patient movements.**

⚠ **WARNING: Skin Care – Monitor skin conditions regularly and consider adjunct or alternative therapies for high acuity patients. Give extra attention to skin over any raised side bolster and to any other possible pressure points and locations where moisture or incontinence may occur or collect. Early intervention may be essential to preventing skin breakdown.**

⚠ **WARNING: Fluids – Avoid spilling fluids on pump controls. If spills do occur, unplug unit immediately and clean fluid from pump wearing rubber gloves while it is unplugged to avoid any possibility of shock. Once fluid is removed, check operation of components in area of spill. Fluids remaining on controls can cause corrosion, which may cause components to fail or operate erratically, possibly producing potential hazards for patient and staff.**

⚠ **WARNING: Power Cord – Ensure power cord is kept free from all pinch points and moving parts and is not trapped under casters. Improper handling of the power cord can cause damage to the cord, which may possibly produce risk of fire or electric shock.**

⚠ **WARNING: General Protocols – Follow all applicable safety rules and institution protocols concerning patient and caregiver safety.**

⚠ **WARNING: Waste Disposal – At the end of this product's useful life, dispose of it in accordance with local requirements, or contact the manufacturer for advice.**

⚠ **WARNING: Cancer and Reproductive Harm - www.p65warnings.ca.gov.**

⚠ **WARNING: GF Health Products, Inc. specifically disclaims responsibility for any bodily injury or property damage which may occur during any use which does not comply with federal, state or local laws or ordinances.**

NOTICES

▲ **NOTICE: Do not drop the pump.**

3 FEATURES

PUMP AND MATTRESS SYSTEM

Description

The Lumex LS200 Alternating Pressure / Low Air Loss Mattress System is a specialized mattress replacement unit that utilizes low air loss technology with specialized mattress design that provides pressure management for the treatment of pressure ulcers. The 2:1 alternating function also provides active prevention for pressure relief, especially for those in acute care and long term care settings (the cells inflate and deflate in a 2:1 cycle, meaning 1/2 of the body is always supported at any one time). The Lumex LS200 Alternating Pressure / Low Air Loss Mattress System offers “cell on cell therapy”, whereby the cell is split in two where the bottom cells do not deflate if the upper cells are completely deflated in order to provide extra protection and “zero” pressure comfort for the patient in the event of a power failure and the mattress deflates. The soft-firm adjustment allows the patient to adjust the firmness or softness of the surface for optimal comfort with a comfort level dial.

PUMP FEATURES

- Alternation time is set to 12 minute cycle (see **ALTERNATE function** on page 13); or instead, the caregiver can select the STATIC function (see **STATIC function** on page 13).
- Low Pressure failures will produce an audio alarm for added safety. The alarm can be temporarily muted by pushing the pump front panel ALARM RESET button, resetting the alarm for 20 minutes.
- The foot board mounting hanger provides convenient placement on the bed.

Pump front panel

Pump rear view

MATTRESS FEATURES

- Individual air cushion design for maximum pressure distribution.
- Vented air cushion provides true low air loss therapy.
- Cell on cell design for “zero” pressure comfort during loss of power.

4 HANDLING PROCEDURES: UNPACKING, STORAGE, AND WASTE DISPOSAL

UNPACKING

1. Check for any obvious damage to the carton or its contents. If damage is evident, notify the carrier or your GF authorized distributor.
2. Open shipping container.

▲ **NOTICE: Do not use sharp instruments to open boxes. Damage to mattress could result.**

3. Remove contents.
4. Remove Mattress System from protective plastic cover.

   The mattress may appear wrinkled when unpacked. To remove wrinkles, allow mattress up to 24 hours to accommodate. Wrinkles will not affect inflation or function. Mattress may be used immediately if needed.
5. Check mattress surface for tears or cracking; do not use if tears or cracking are present.

STORAGE

Follow the guidelines below whenever this system is being stored or transported to another location:

Temperature	Storage / Transport	41°F ~ 140°F (5°C ~ 60°C)
RH (Relative Humidity)	Storage / Transport	15% ~ 90% non-condensing

Control Unit (Pump)

1. Check the power cord and plug for abrasions or excessive wear.
2. Plug in the unit and verify air flows from the units hose connection ports.
3. Place in plastic bag for storage.

Mattress Overlay

1. Check the air manifold for kinks or breaks. Replace if necessary.
2. Twist open the CPR plug at the head of the mattress and disconnect the air feed tubes. All of the air will be expelled. Starting at the head of the mattress roll towards the foot of the bed. Use the base mounted straps to secure.
3. Place the system in a plastic bag for storage.
4. Store in a dry, controlled climate room.
5. DO NOT place other objects on top of the repackaged Mattress System.

WASTE DISPOSAL

This Product has been supplied from an environmentally aware manufacturer that complies with the WEEE. This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to local legislation. Please be environmentally responsible and recycle this product through your recycling facility at its end of life or dispose of it in accordance with local regulations.

5 SETUP

⚠ **WARNING: Always use a standard healthcare bed frame with appropriate safeguards and protocols. Frame and side rails must be properly sized relative to the mattress to help minimize any gaps that might entrap a patient's head or body.**

MATTRESS INSTALLATION

1. Ensure bed is level and brakes are locked.
2. Remove existing mattress from bed frame.
3. Replace the mattress with the mattress replacement system. Orient mattress so that the air tube is at the foot of the bed.

   If re-installing the Select Mattress System onto a new frame or for a new patient, check mattress surface for staining and soiling; clean and / or disinfect as required (see **CARE AND MAINTENANCE** section).
4. Ensure mattress is properly positioned with no gaps between mattress and bed frame or side rails.
5. Secure straps on bottom of mattress to the bed frame.

PUMP INSTALLATION

⚠ **WARNING: Avoid Fire Hazards – To minimize risk of fire, connect the power cord directly into a wall-mounted outlet. Do not use extension cords or multiple outlet strips.**

Pump Rear View

Pump Front Panel

1. Place pump on a horizontal surface or hang the pump on the foot board of the bed frame with built-in hanger on back of pump.
2. Connect pump hoses to mattress — attach the air tube connectors to the socket on the right pump front panel as shown at right.

   Ensure air hoses are not kinked and will not be pinched by any articulated bed mechanisms.

3. Attach cover to mattress.
4. Ensure POWER switch is in the OFF position.
5. Plug pump into a properly grounded wall outlet; **ensure power to this outlet is not controlled by a wall switch.** The unit will turn on initiating compression, then turn off.

6 OPERATING INSTRUCTIONS

PATIENT PLACEMENT AND NURSING CARE

Read all sections of this manual before patient placement. Carefully review the Contraindications, Safety Information, and Risks and Precautions sections prior to placing a patient on any Mattress System. When transferring patient, follow all applicable safety rules and institution protocols.

OPERATION

Skin Care

- Remove excess moisture and keep skin dry and clean.
- Check patient's skin regularly, particularly in areas where incontinence and drainage occur.
- Ensure linens under patient are not wrinkled.
- Early intervention may be essential to preventing serious skin breakdown.

Incontinence / Drainage

- Use moisture-impermeable underpads for incontinent patients.
- Wipe mattress surface clean and replace bed linens as required (see Care and Cleaning section for cleaning instructions, if needed).

General Operation

Avoid contact of sharp instruments with the Mattress. Punctures, cuts and tears may prevent proper inflation and air pressure maintenance.

Pump Front Panel

1. Turn the pump POWER switch, above, to the ON position (the POWER LED, also shown above, will illuminate).

Pump Front Panel

2. Press and hold the pump front panel MODE button, shown above, for one second to select therapy mode. The selected MODE LED will now be illuminated; default mode is ALTERNATE.
3. Allow time for full mattress inflation.
4. After the mattress is fully inflated, the caregiver can transfer the patient to the mattress. Center patient side-to-side and head-to-foot on mattress. **Note: the mattress can be inflated while a patient is lying on it.**
5. Use the pressure adjustment knob, shown above, to set mattress pressure comfort level setting according to patient's weight and comfort needs.

STATIC mode

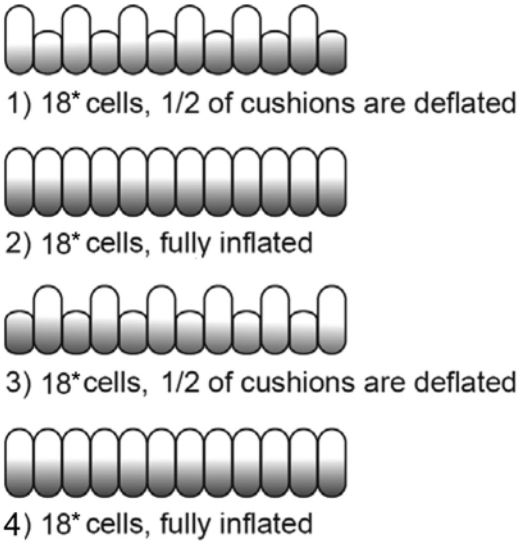
Press and hold the MODE button, shown at top of page, for one second to select STATIC mode, and adjust the pressure adjustment knob, also shown above, to achieve the maximum patient comfort. In STATIC mode, the system provides True Low Air Loss therapy through cell micro vents.

Perform a pressure hand check by placing your hand under the patient buttocks between cells and bottom of mattress. The patient should have at least 1 1/2 in. (4 cm) of clearance between the buttocks and the bottom of the mattress.

ALTERNATE mode

Pump Front Panel

Press and hold the MODE button, shown above, for one second to select ALTERNATE mode and enable the two-one alternating function. Alternating time is pre-set and not adjustable.



The cycle time, shown above, is twelve minutes:

1) four minutes deflate “A” cells
2) two minutes STATIC
3) four minutes deflate “B” cells
4) two minutes STATIC

**** Info: The first three cells on the mattress head end ALWAYS remain in STATIC mode.***

Low pressure alarm

Pump Front Panel

The pump is equipped with an audible low pressure alarm which enables the pump to audibly alert the caregiver to a low pressure issue with the mattress system.

The low pressure alarm can be muted for twenty minutes by pressing the pump front panel ALARM RESET button, shown above.

⚠ **WARNING: The low pressure alarm requires operator response to prevent the patient from bottoming out.**

Info: The low pressure alarm is automatically disengaged for 45 minutes when control unit is first powered on to ensure no alarms are raised during initial inflation.

CPR DEFLATION

⚠ **WARNING: For quick mattress deflation:**

1. **Level the bed.**
2. **Turn the pump off and disconnect the hose connector, shown at right, from the pump.**
3. **Lower or remove side rail on caregiver's side if necessary.**
4. **Release the CPR quick deflation valve at head end of the mattress (patient left).**

⚠ **WARNING: During power outage, the pump will stop functioning, the POWER LED indicator may flash, and the power failure alarm may sound; these are normal. The pump will return to its normal operation when power is resumed.**

After CPR is performed

1. Reconnect pump hoses to mattress and turn pump back on.
2. Raise or install side rail if necessary.
3. Reconfigure bed and accessories as in initial placement.

7 CARE AND MAINTENANCE

Proper care and maintenance are essential to keeping your Select Mattress System in a safe operating condition. In addition to inspecting the unit before each use, periodic maintenance checks should be done.

It is very important to have a strict cross infection, cleaning and disinfection policy in line with current infection control guidelines.

⚠ **WARNING: Inspect the mattress before each use. Ensure all hardware and accessories are secure and the pump is functioning properly.**

⚠ **WARNING: Service and repair of the Select Mattress System MUST be performed by qualified personnel ONLY.**

⚠ **WARNING: Unauthorized modification of the Mattress System or the use of non-Lumex replacement parts may change the structure of the Mattress System and could create a hazardous condition, which may result in serious injury and will void the warranty.**

⚠ **WARNING: The pump contains no serviceable components. DO NOT attempt to open the pump. If service is required, consult GF Tech Support at 1.770.368.4700 for further information.**

When you believe a component or part is not functioning properly, immediately contact GF Tech Support at 1.770.368.4700, as a potentially hazardous condition could exist.

CLEANING AND DISINFECTION

Cleaning and Disinfection of the Mattress and Cover

⚠ **WARNING: Ensure pump power is off and unplug the power cord from the wall outlet before cleaning any part of the mattress system.**

▲ **NOTICE: DO NOT use phenol based cleaning solutions.**

1. Remove the bedding.
2. Examine the surface of the mattress assembly components for visible blood or body fluids.
3. Perform one of the following:
   a. If blood is present, decontaminate the whole mattress product in line with current hospital or Nursing Home Guidelines.
   b. If blood is not present, remove any soil from the cover with paper towels.

⚠ **WARNING: If grossly soiled, the cover should be removed, cleaned and decontaminated.**

4. Using a clean sponge or paper towel, wipe down the cover surface and cells with a diluted detergent solution or recommended cleaner disinfectant or other germicidal detergent solution.
5. Cleaning and disinfection may be carried out on the cover with hand hot water and a neutral detergent or with a sodium hypochlorite solution (0.1% or 1000 parts per million available chlorine).
6. Alternatively remove the cover and launder, at 160° F / 70° C using normal detergents. It is essential that articles be thoroughly dried after all cleaning procedures and before storage.

Cleaning and Disinfection of the Pump

⚠ **WARNING: Ensure pump power is off and unplug the power cord from the wall outlet before cleaning the pump.**

▲ **NOTICE: Do not flood any part of the pump with cleaning solution. Do not immerse the pump in liquid.**

▲ **NOTICE: Avoid spilling any liquid on pump. If spills do occur, clean fluid from pump wearing rubber gloves or while unit is unplugged to avoid any possibility of shock. Once liquid is removed, check operation of components in area of spill. Any liquid remaining on pump can cause corrosion, which may cause components to fail or operate erratically, possibly producing potential hazards for patient and staff.**

Clean the pump weekly using a clean, damp soft cloth and mild detergent.

1. Wipe all controls, chassis and hose fittings with a damp cloth and a mild detergent.
2. Using a clean nylon brush, gently clean all crevices, as they can harbor micro organisms.
3. Air dry all treated surfaces.

The pump casing is manufactured from ABS plastic; if the case is soiled, the pump can be wiped down with a sodium hypochlorite solution to dilution of 1000 ppm or any EPA-approved hospital grade disinfectant (do not use phenol base cleaning solution).

INSPECTION / SYSTEM CHECK-OUT

Check each of the following before placing the Mattress System with a new patient:

1. Check mattress surface for tears or cracking; do not use if tears or cracks are present.
2. Ensure mattress is free of stains and is not overly faded.
3. Ensure air inlet hoses and connectors on mattress and pump are clean and undamaged.
4. Ensure pump and power cord are clean and undamaged.
5. Ensure pump hanger brackets are secure and operate correctly.
6. Ensure ON / OFF Power switch and comfort control knob both operate correctly.
7. Attach pump to Alternating Pressure hoses and power up to ensure there are no air leaks.

MAINTENANCE

⚠ **WARNING: Switch off the electrical supply to the pump and disconnect the power cable from the wall before replacing the air filter.**

Replace the air filter

1. Remove air filter cover (shown at right).
2. Replace used filter with new filter.
3. Replace air filter cover.

Pump Rear View

STORAGE

See section 4: **HANDLING PROCEDURES: UNPACKING, STORAGE, AND WASTE DISPOSAL**.

8 TROUBLESHOOTING

⚠ **WARNING: Service and repair of the Select Mattress System MUST be performed by qualified personnel ONLY.**

The following list of problems, their causes and solutions will assist you in determining what may be causing your Select Air Mattress not to function as designed. If a problem occurs which is not listed below, contact GF Tech Support at 1.770.368.4700 for further information. Do not attempt to repair components or parts, as this may invalidate your warranty or cause further problems that may result in patient injury. Stop using your mattress immediately if it is not functioning correctly or any warning beeps are heard.

If any of the following notifications occurs, follow the steps below to troubleshoot:

Review all selections of this manual before troubleshooting any Select Mattress System.

Do not attempt any troubleshooting not shown in this manual or where the remedy recommends contacting a GF authorized distributor. Any unauthorized service, modification, alteration, or misuse may lead to serious injury, product damage, and void the warranty.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Air is pumping out from the control unit but mattress is not inflating	Faulty power source — improper voltage may cause the pump to function abnormally and damage the control unit	Use a power regulator
	Kinks in the air tubes	Adjust the air tubes to enable smooth air flow
	Leakage from the air cells	Replace air cell if faulty
	Leakage from air tube between mattress and pump	Replace with new air tubes
	Improper air tube connection	Re-connect the air tubes
The pump is not functioning	Power cord or power voltage	Use a power regulator
	Faulty fuse	Replace the fuse
Some of the air cells are not properly inflated	Kinked connection between air cells and manifold	Correct kinking between air cells and manifold
	Leakage from the air cells	Replace air cell if faulty

⚠ **WARNING: If you experience a problem with your mattress system and are unable to service it yourself, contact GF Tech Support at 1.770.368.4700 or your GF authorized distributor.**

9 SPECIFICATIONS

MATTRESS OVERLAY (Applied Part)		
Model	**Description**	**Specification**
LS200M	Dimensions (L x W x H)	80 in. x 36 in. x 8 in. (203.2 cm x 91.4 cm x 20.3 cm)
	Weight	20 lb (9.1 kg)
	Top Cover Material	Navy Nylon coated with PU + Single Quilting
	Bottom Cover Material	Black polyester laminated with PVC

PUMP			
Model	**Description**		**Specification**
LS200P	Dimensions (L x W x H)		10.16 in. x 4.6 in. x 6.38 in. (25.8 cm x 11.7 cm x 16.2 cm)
	Weight		4.85 lb. (2.2 kg)
	Cycle Time		12 min. (4 min. A Deflate, 2 min. STATIC, 4 min. B Deflate, 2 min. STATIC)
	Flow Rate (direct from pump)		4.5L / min. compressor
	Pressure		16~32 (± 6) mmHg
	Rated Voltage & Frequency		AC 110-120V 60 Hz
	Fuse Rating		T1AL 250V
	Maximum Current		0.1A
	Power Cable		12.5 ft, non-shielding, AC powered
	Classification (Electrical)		Class II, Type BF Not AP or AGP type 
	Temperature	Operation	59°F ~ 104°F (15°C ~ 40°C)
		Storage / Transport	41°F ~ 140°F (5°C ~ 60°C)
	RH (Relative Humidity)	Operation	30% ~ 75% non-condensing
		Storage / Transport	15% ~ 90% non-condensing
	Operation Atmospheric Pressure Range		700 hPa to 1060 hPa
	Operation Altitude		-1017 feet to 9,843 feet (-310 meters to 3000 meters)
	Mode of Operation		Continuous
	Safety Standard		IEC60601-1 / IEC60601-1-2 / IEC60601-1-11
	Expected Service Life		Three years
	International Protection Rating / Ingress Protection Rating	IP21	Protection against solids: 12.5mm; fingers or similar objects
			Protection against liquids: Dripping water (vertically falling drops) shall have no harmful effect

10 LIMITED WARRANTY

SCOPE OF WARRANTY

GF Health Products, Inc. ("GF") warrants to the Original Purchaser only that it will replace or repair components, at GF's sole discretion, that are defective in material or workmanship under normal use and service. All warranties are conditioned upon the proper use of the products strictly in accordance with good commercial practice and applicable GF instructions and manuals, including proper use and maintenance. To the extent that a component is warranted by a third party, GF conveys all of its rights under that warranty to the original purchaser, to the extent permitted. Original Purchaser is one who purchases this product new and unused from GF or a GF Distributor.

This limited warranty shall only apply to defects that are reported within the applicable warranty period and which, upon examination by GF or its authorized representative, prove to be a warranty item. This limited warranty is not transferable.

The warranted components and time period are set forth below:

Mattress: twelve months
Pump: two years

The applicable warranty period shall commence from date of shipment to the Original Purchaser, unless there is an expiration date on the component in which case the warranty shall expire on the earlier of warranty period or the expiration date.

OBTAINING WARRANTY SERVICE

This limited warranty shall only apply to defects that are reported to the Distributor from whom the Customer purchased the product within the applicable warranty period. If there is not a Distributor, you must contact GF directly by calling 1.770.368.4700, sending a fax request to 1.770.368.2386, or by e-mailing a request to cs@grahamfield.com. Specific directions will be provided by the Customer Service Representative. Failure to abide by the specific directions will result in denial of the warranty claim.

EXCLUSIONS

The warranty does not cover and GF shall not be liable for the following:

1) Defects, damage, or other conditions caused, in whole or in part, by misuse, abuse, negligence, alteration, accident, freight damage, tampering or failure to seek and obtain repair or replacement in a timely manner;
2) Products which are not installed, used, or properly cleaned and maintained as required in the official manual for the applicable product;
3) Products considered to be of a non-durable nature including, but not limited to: casters, filters, fuses, gaskets, lubricants, and charts;
4) Accessories or parts not provided by GF;
5) Charges by anyone for adjustments, repairs, replacement parts, installation or other work performed upon or in connection with such products which are not expressly authorized in writing, in advance, by GF;
6) Any labor or shipping charges incurred in the replacement part installation or repair;
7) Costs and expenses of regular maintenance and cleaning; and
8) Representations and warranties made by any person or entity other than GF.

ENTIRE WARRANTY, EXCLUSIVE REMEDY AND CONSEQUENTIAL DAMAGES DISCLAIMER

THIS WARRANTY IS GF'S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. GF MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IF ANY MODEL OR SAMPLE WAS SHOWN TO THE CUSTOMER, SUCH MODEL OR SAMPLE WAS USED MERELY TO ILLUSTRATE THE GENERAL TYPE AND QUALITY OF THE PRODUCT AND NOT TO REPRESENT THAT THE PRODUCT WOULD NECESSARILY CONFORM TO THE MODEL OR SAMPLE IN ALL RESPECTS.

THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PARTS. GF SHALL NOT BE LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, SPECIAL, INDIRECT, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO: DAMAGES FOR LOSS OF PROFITS OR INCOME, LOSS OF USE, DOWNTIME, COVER, OR EMPLOYEE OR INDEPENDENT CONTRACTOR WAGES, PAYMENTS AND BENEFITS.

The warranties contained herein contain all the representations and warranties with respect to the subject matter of this document, and supersede all prior negotiations, agreements and understandings with respect thereto. The recipient of this document hereby acknowledges and represents that it has not relied on any representation, assertion, guarantee, warranty, collateral contract or other assurance, except those set out in this document. Some states do not allow the exclusion of certain remedies; in those instances that state's law will control. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

For additional information on this product or this warranty, please contact a GF Customer Service Representative.

NOTES:

1) Additional terms and conditions may apply.
2) Freight claims must be notated on the appropriate shipping documents and must be made with immediacy. International, federal and state regulations govern specific requirements for freight claims. Failure to abide by those regulations may result in a denial of the freight claim. GF will assist you in filing the freight claim.
3) Claims for any short shipment must be made within three (3) days of the invoice date.

11 EMC RELATED NOTIFICATION

⚠ **WARNING: Medical electrical equipment needs special precautions regarding EMC and needs to be installed according to the EMC information provided. Careful consideration of this information is essential when stacking or collocating equipment and when routing cables and accessories.**

⚠ **WARNING: RF mobile communications equipment can affect medical electrical equipment.**

Manufacturer's declaration-electromagnetic emissions		
The LS200 is intended for use in the electromagnetic environment (for home and professional healthcare) specified below. The customer or the user of the LS200 should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment-guidance (for home and professional healthcare environment)**
RF emissions CISPR 11	Group 1	The LS200 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 B	The LS200 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations /flicker emissions IEC 61000-3-3	Not applicable	

Recommended separation distance between portable and mobile RF communications equipment and the LS200

The LS200 is intended for use in an electromagnetic environment (for home and professional healthcare) in which radiated RF disturbances are controlled. The customer or the user of the LS200 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the LS200 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 $d = 1{,}2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1{,}2\sqrt{P}$	**800 MHz to 2,7 GHz** $d = 2{,}3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (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.

NOTE1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Manufacturer's declaration-electromagnetic immunity

The LS200 is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the LS200 should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance (for home and professional healthcare environment)
Electrostatic discharge(ESD) IEC 61000-4-2	Contact:±8 kV Air±2 kV,±4 kV,±8 kV,±15 kV	Contact:±8 kV Air±2 kV,±4 kV,±8 kV,±15 kV	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	± 2kV for power supply lines ± 1kV for input/output lines	± 2kV for power supply lines Not applicable	Mains power quality should be that of a typical home healthcare environment.
Surge IEC 61000-4-5	± 0.5kV, ±1kV line(s) to line(s) ± 0.5kV, ±1kV,± 2kV line(s) to earth	± 0.5kV, ±1kV line(s) to line(s) Not applicable	Mains power quality should be that of a typical home healthcare environment.
Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	Voltage dips: 0 % U_T; 0,5 cycle 0 % U_T; 1 cycle 70 % U_T; 25/30 cycles Voltage interruptions: 0 % U_T; 250/300 cycle	Voltage dips: 0 % U_T; 0,5 cycle 0 % U_T; 1 cycle 70 % U_T; 30 cycles Voltage interruptions: 0 % U_T; 300 cycle	Mains power quality should be that of a typical home healthcare environment. If the user of the LS200 requires continued operation during power mains interruptions, it is recommended that the LS200 be powered from an uninterruptible power supply or a battery.
Power frequency(50, 60 Hz) magnetic field IEC 61000-4-8	30 A/m 50 Hz or 60 Hz	30 A/m 60 Hz	The LS200 power frequency magnetic fields should be at levels characteristic of a typical location in a typical home healthcare environment.

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

*During DIP interference, the pump will outage. The air cells connected with pump still have air inside which won't affect the use and function of the system.

*During DIP, pump will show abnormal but won't affect essential performance and no need to worry the basic safety.

Manufacturer's declaration-electromagnetic immunity

The LS200 is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the LS200 should assure that it is used in such and environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance (for home and professional healthcare environment)
Conducted RF IEC 61000-4-6	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	**Portable and mobile RF communications equipment should be used no closer to any part of the** LS200 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC 61000-4-3	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	**Recommended separation distance:** $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P}$ 80MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800MHz to 2,7 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). Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Manufacturer's declaration-electromagnetic immunity

Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

The LS200 is intended for use in the electromagnetic environment (for home and professional healthcare) specified below.

The customer or the user of the LS200 should assure that it is used in such an environment.

Test frequency (MHz)	**Band** [a] (MHz)	**Service** [a]	**Modulation** [b]	**Maximum power** (W)	**Distance** (m)	**IMMUNITY TEST LEVEL** (V/m)	**Compliance LEVEL** (V/m) (for home and professional healthcare)
385	380 –390	TETRA 400	Pulse modulation b) 18 Hz	1,8	0,3	27	27
450	430 – 470	GMRS 460, FRS 460	FM c) ± 5 kHz deviation 1 kHz sine	2	0,3	28	28
710	704 – 787	LTE Band 13, 17	Pulse modulation b) 217 Hz	0,2	0,3	9	9
745							
780							
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation b) 18 Hz	2	0,3	28	28
870							
930							
1 720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation b) 217 Hz	2	0,3	28	28
1 845							
1 970							
2 450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation b) 217 Hz	2	0,3	28	28
5 240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation b) 217 Hz	0,2	0,3	9	9
5 500							
5 785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

a) For some services, only the uplink frequencies are included.

b) The carrier shall be modulated using a 50 % duty cycle square wave signal.

c) As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

Caution: If abnormal behavior is observed due to EM disturbances, please relocate the device accordingly.

Caution: Please do not use any other cables or accessories not approved by the manufacturer in this manual to avoid negative influence on electromagnetic compatibility.

12 INDEX

1.770.368.4700

Information contained herein is subject to change.
The most current and complete product information can be found on our website.
www.grahamfield.com

Follow us on

Manufactured for GF Health Products, Inc.
Made in Taiwan