Richmar REX Combo Pneumatic Compression System User Manual

Richmar REX Combo Pneumatic Compression

System User Manual

REX
recovery exercise X-trainer

Combo Pneumatic Compression System

USER MANUAL

3507.22.01.A

Richmar

Contents

1. INTRODUCTION

Thank you for purchasing The REX Combo Pneumatic Compression System (Models: DVTREX-L or DVTREX-U) and garments. The durable, high quality material used in the manufacturing of these products will ensure that you experience long-lasting and uninterrupted performance. The REX Recovery Exercise X-trainer has a pump and dual lower extremity garments with air cells. The patient puts the garments on, the pump inflates the air cells to compress muscles, promote venous blood return and to help prevent deep venous thrombosis. Should any problems occur, please contact the dealer where your REX System was purchased or call Tech Support at 800-376-7263.

Manufactured for: Richmar, A Compass Health Brands Company 6753 Engle Road Middleburg Heights, OH 44130 Ph: 800-376-7263 www.richmarweb.com

2. IMPORTANT SAFETY INFORMATION SYMBOL DEFINITIONS

Symbol	Explanation	Location
	Refer to Documentation before using	On back of device and instruction manual
	The Pump is Class II Protection	On back of device
	The garments is Type BF-Applied part	On back of device
	Separate collection for waste electrical and electronic equipment. Please dispose of the device/accessory/packing in accordance with the legal obligation in your area	On back of device
LOT	The manufacturer's batch code	On garments
SN	The manufacturer's serial number	On back of device
IP21	Device is protected against the ingress of vertically dripping water and the hazardous parts are protected against access to objects equal to or larger than 12.5mm (1/2").	On back of device
	Wash by hand maximum temperature 104°F (40°C)	On the care labeling code of the garment
	Do not bleach	On the care labeling code of the garment
	Do not iron	On the care labeling code of the garment
	Drip line drying in the shade	On the care labeling code of the garment
	Do not dry clean	On the care labeling code of the garment
	Do not tumble dry	On the care labeling code of the garment

The precautionary instructions found in this section and throughout this manual are indicated by specific symbols. Understand these symbols and their definitions before operating this equipment. The definition of these symbols are as follows.

⚠ **Caution:** Text with a "CAUTION" indicator will explain possible safety infractions that could have the potential to cause minor to moderate injury or damage to equipment.

⚠ **Warning:** Text with a "WARNING" indicator will explain possible safety infractions that will potentially cause serious injury and equipment damage.

Danger: Text with a "DANGER" indicator will explain possible safety infractions that are imminently hazardous situations that would result in death or serious injury.

Read instruction manual before operating. Be sure to comply with all "Contraindications, Warnings, Cautions and Adverse Reactions" in the manual. Failure to follow may cause harm to user or device and/or may void the

warranty.

3. BASIC SAFETY PRECAUTIONS

⚠ **WARNINGS:**

- If device was not ordered by or recommended by a physician, the pressure should not be set any higher than 120mmHg. High pressure should be set with caution on patients with peripheral arterial occlusive disease.
- Caution must be raised for patients with insensitive, irritated, sunburned, bruised or broken skin, or with skin conditions such as skin cancer, dermatitis, eczema, or psoriasis in or around treatment sites. Should changes in skin appearance occur such as blisters, redness, discoloration, welts or other noticeable changes in the skin, or if burning, itching, increased swelling should occur, discontinue use and consult with a physician.
- Discontinue use immediately in the event of increased pain, numbness or tingling and contact a physician.
  When using an electrical appliance, basic safety precautions should always be followed.
- In the event of a power failure, disconnect the garment from the pump to release any residual air and pressure in the garment.
- Use this product only for its intended use as described in this manual
- DO NOT use if damaged or defective if device has a damaged electrical cord or plug, has been dropped or damaged in any manner, dropped into water, or if the product shows any signs of deterioration.
- DO NOT place near a heat source or water.
- DO NOT carry this device by the power cord or use the cord as a handle.
- Keep this device out of reach of children or pets.
- DO NOT take the pump, garment or tubing apart.
- Use only accessories that are recommended by the manufacturer.
- NEVER use pins or other metallic fasteners with this product.
- DO NOT place the device on a soft surface such as a pillow or mattress, under a blanket or other covering, as this could overheat the system and cause it to malfunction.

⚠ **WARNINGS:**

- Only use the power supply provided with the system.
- To avoid risk of strangulation, DO NOT leave a baby or child unattended with or near the power supply or tubing.
- The attachments are designed for single person use only.
- No modification of this equipment is allowed. DO NOT attempt to take apart the system.
  If problems occur or parts replacement are needed, please contact your dealer or contact tech support @ 800-376-7263.

⚠ **CAUTION:**

- If equipment no longer works or is damaged and needs to be disposed of, please comply with your local disposal laws of electronic equipment.
- Please consult a physician before using this device, if:
  - You are pregnant or feel weak

    - You have an implant at the site of application
    - You have a cardiac pacemaker
- DO NOT bend or fold the hose.
- DO NOT store the garments near needles, scissors or other sharp object as they may damage the garments.
- To avoid damage and risk of electric shock, DO NOT use the system near water and NEVER spill any kind of liquid on the system. Should this occur, turn device off and disconnect immediately and contact your dealer or the manufacturer.
- Keep any open ports, connection points & power inlet free of debris.
- DO NOT puncture or otherwise damage the attachments, as this may cause the system to operate incorrectly and will void the warranty.
- DO NOT hold the unit or attachments by the tubing.
- DO NOT wrap the tubing around the garments, as it could cause damage to the tubes, not covered by the warranty.

DANGER:

- DO NOT use in the presence of flammable anaesthetics.
- Slip and fall hazard. DO NOT stand or walk while wearing garments.
- DO NOT use the compressor to direct pressurized air towards your eyes, nose, mouth or ears. Doing so may lead to serious injury.
- DO NOT use where aerosols (spray) being used or where oxygen is being administered.
- DO NOT store the garments near a stove, cigarette or other heat generating devices as this is a fire hazard.

4. GENERAL SPECIFICATIONS

MAIN MACHINE
The REX Recovery Exercise X-trainer includes the main pump, dual lower extremity garments and backpack.

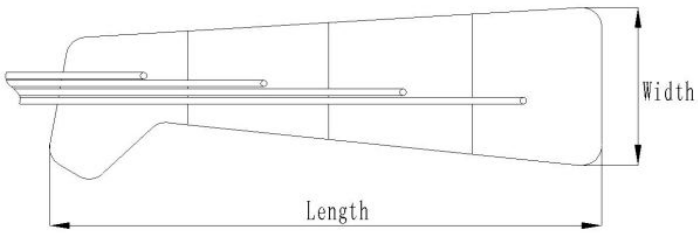
DIMENSIONS:	285mm H x 175mm W x 130mm D
WEIGHT:	2.6 Kg
Power:	110-125Vac 60Hz 50VA
Power Plug:	JL-201 AC125V 10A 2-pole without earthling contact.
Power Cable:	NISPT-1 2*0.824mm
Garment Material:	Thermoplastic Urethane
Therapy Time:	0-30 mins
Min/Max Pressure:	20-200mm Hg
Number of Chambers per Garment:	4
Cycle Time:	70s

* Power supply cord and cable can be only replaceable by service personnel.

GARMENT
Garment size (customer size is available):

Garment size (customer size is available):

REF	Length (inch/cm)	Width (inch/cm)
DVTREX-LE-L	44/110	14/35
DVTREX-LE-U	44/110	16/40



5. INDICATIONS FOR USE

The REX Recovery Exercise X-trainer is intended to temporarily relieve minor muscle aches and/or pains, and to temporarily increase circulation to the treated areas.

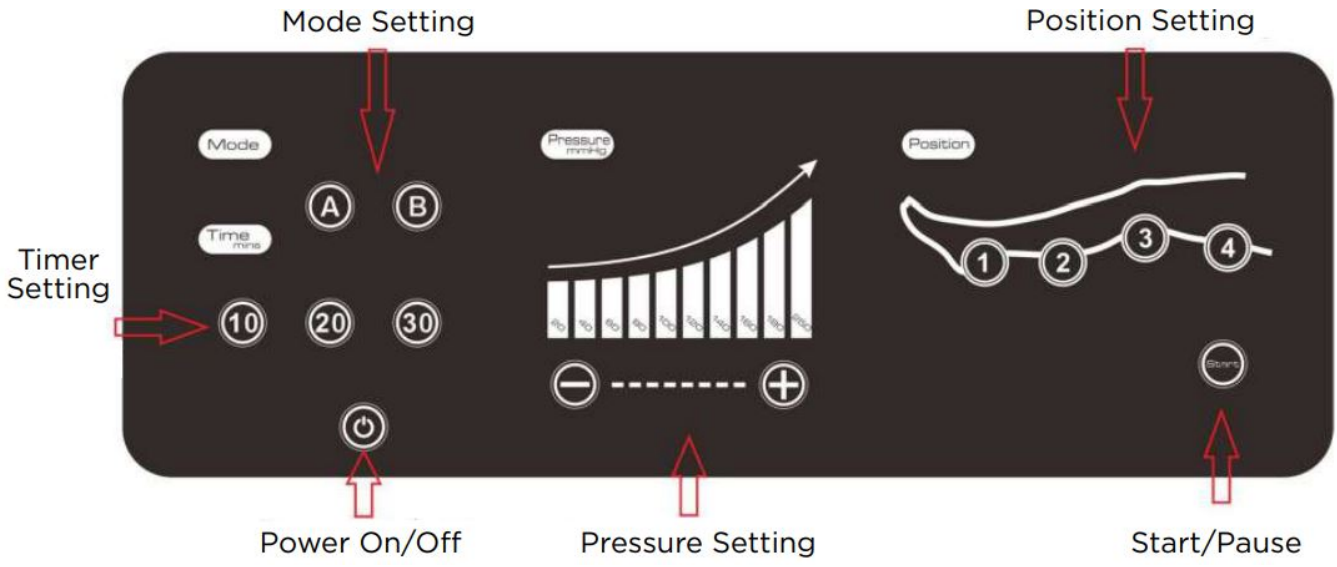
6. CONTRAINDICATIONS

- DO NOT use this product if you are experiencing inflammation, an infection, pain of unknown origin, or bleeding (internal or external) at or near the site of application or if you have a wound at or near the site of application.
- DO NOT use-this product if you have any of the following conditions:
  - Acute pulmonary edema
  - Acute thrombophlebitis
  - Acute nongenerative cardiac failure
  - Acute infections
  - Patients with documented deep vein thrombosis
  - Episodes of Pulmonary embolism
  - Wounds lesions or tumours at or in the vicinity of application
  - Where increased venous and lymphatic return is undesirable
  - Bone fractures or dislocations at or in the vicinity of application

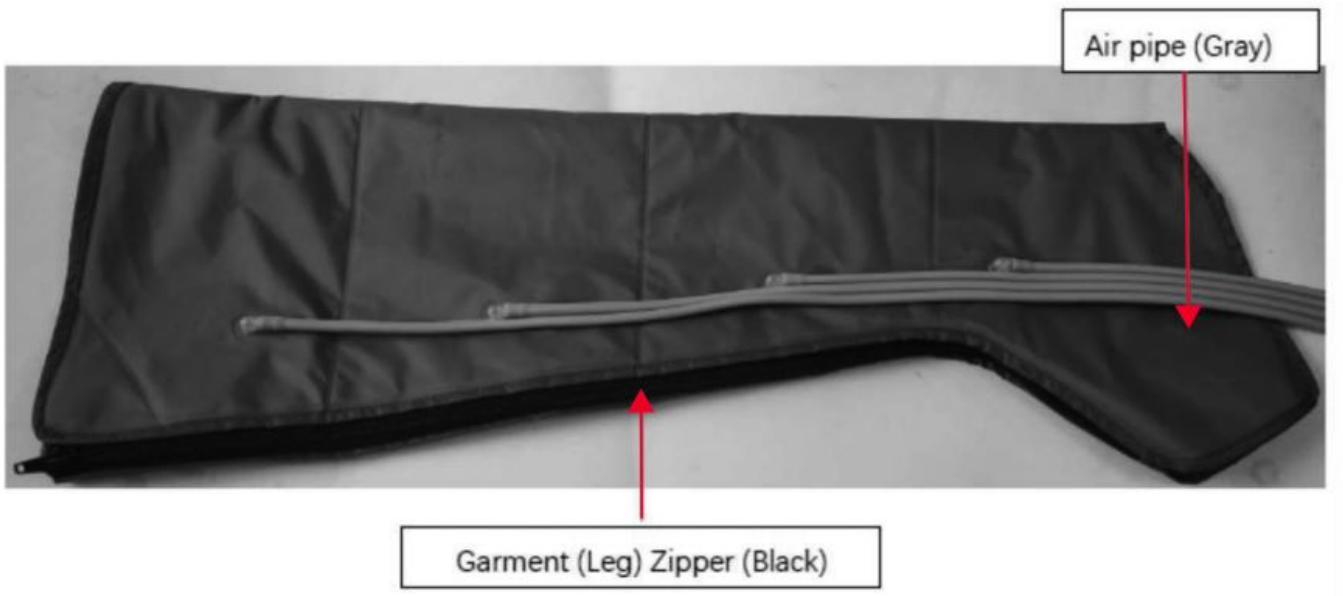
7. SYSTEM AND COMPONENTS

Pneumatic Compression Pump

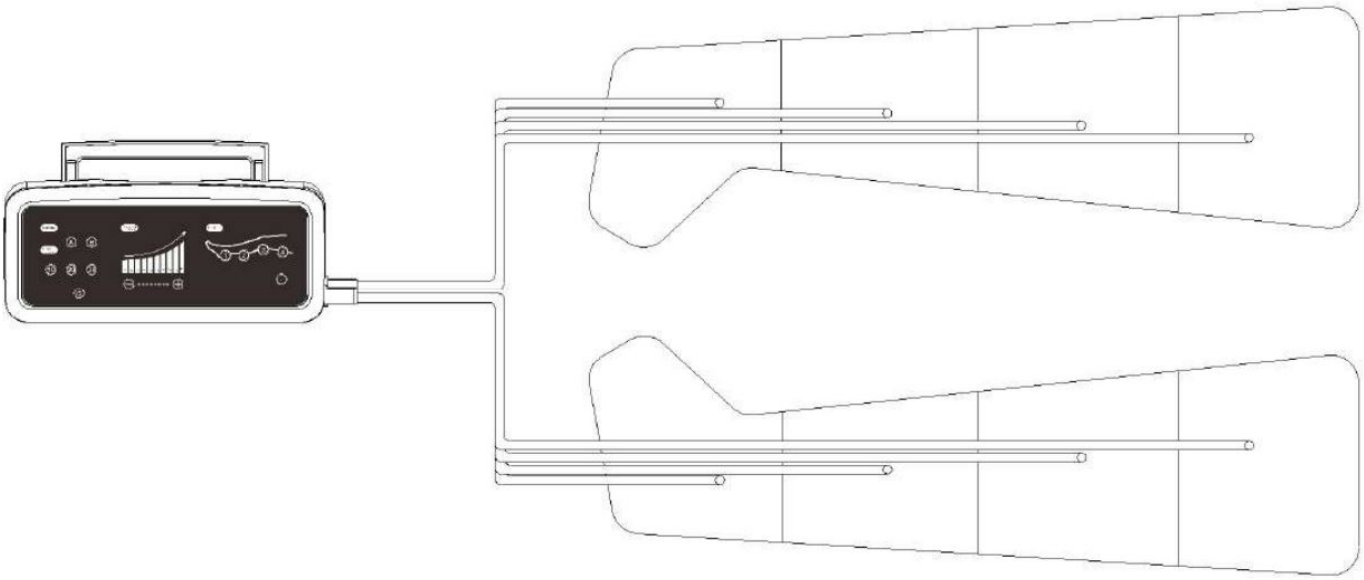
CONTROLS & DISPLAY



Garments for Leg Use



CONNECT WITH PUMP

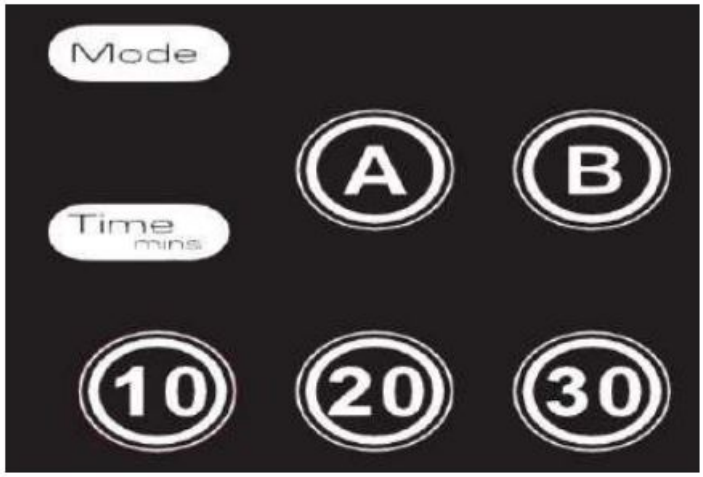


8. OPERATING INSTRUCTIONS

⚠ **WARNING**
When removing the garments from the packaging, avoid using sharp objects that could puncture or tear the garment.

1. Plug the pump into an outlet close to where the treatment will be administered.
2. Put the Garments on each leg and pull up the zipper.
   NOTE: Lower Extremity Garments inflate/deflate simultaneously and tubing is already attached to the garments. Must put both garments on to work properly.
3. Connect the other end of the tubing to the side of the pump as indicated above. To remove the tubing from the pump, press the quick disconnect thumb tab on the connect and gently pull.
4. Turn the pump on by pressing the power on/off button. The front panel will light up.

5. There are two pumping modes to choose from. Please see the below pictures for the correct therapeutic Mode A or B.
6. Set the timer by choosing between 10, 20 or 30 mins. When the timer is done, the device will automatically stop and go into standby mode.
   NOTE: Recommended treatment time is 30 mins per day unless otherwise specified by a physician.



Mode A Loop:

Channels	Time							
	10S	5S	5S	5S	5S	5S	10S	10S
1	●	●	○	○	○	○	○	○
2	○	●	●	●	○	○	○	○
3	○	○	○	●	●	●	○	○
4	○	○	○	○	○	●	●	○

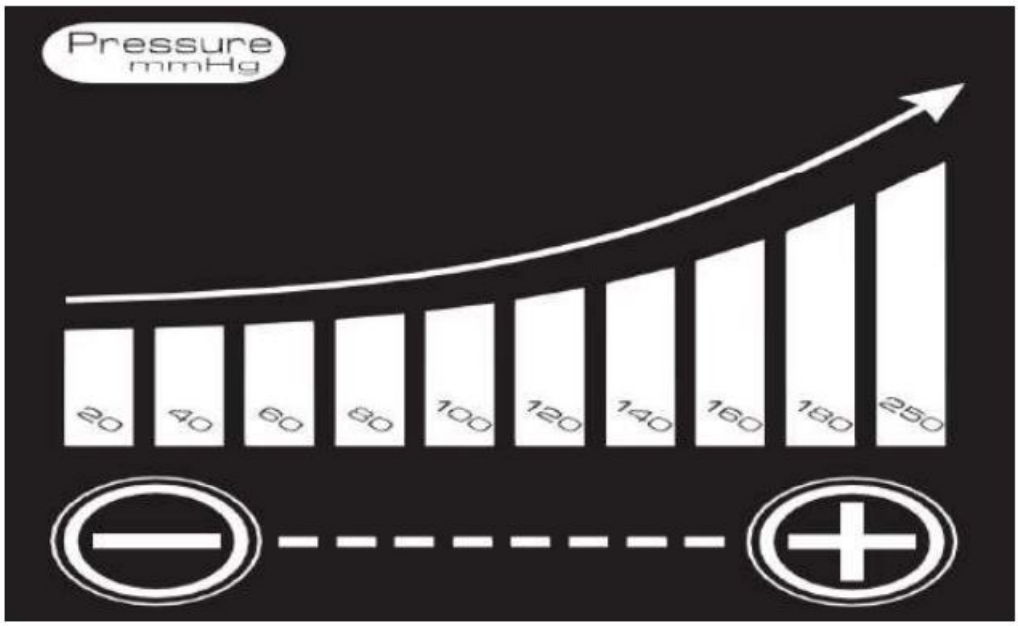
Mode B Loop:

Channels	Time					
	10S	10S	10S	10S	5S	8S
1	●	●	●	●	○	○
2	○	●	●	●	●	○
3	○	○	●	●	●	○
4	○	○	○	●	●	○

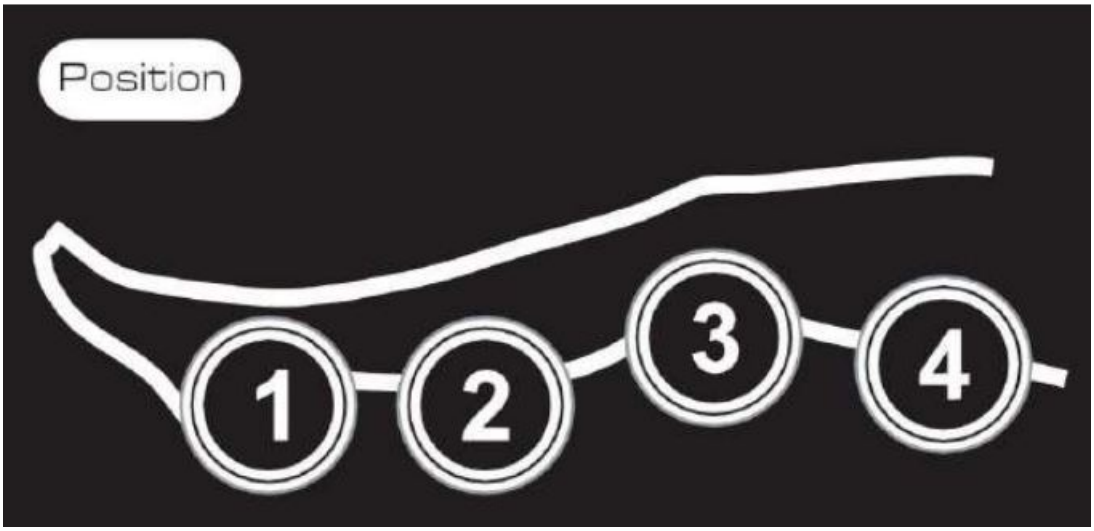
● Inflate
○ Deflate

The Grey color represents the way each chamber is being inflated. A cycle of about 70 seconds.

7. Set the pressure setting based on physician recommendation. If no parameters are given by a physician, it is recommended to start with the minimum pressure and gradually increase. Pressure should not be uncomfortable or cause pain. The pressure setting ranges from 20 to 200mm Hg (+/-20mm Hg). The max pressure of the pump core is 230 to 260mmHg. The max flow of the pump core is 16L-18L/min



8. Position Setting Press corresponding number shown below based on how many chambers you want to inflate.



9. Start / Pause Press the start button when you are ready for the pump to start. Press again if you want to pause the pump.

10. Turn Device Off Press the on/off button once treatment is complete. It is recommended to unplug the pump if device will not be used for extended periods of time.

⚠ **WARNING**
DO NOT try to service or maintain the device while in use.

9. MAINTENANCE AND STORAGE

⚠ **WARNING**
Only an authorized technician may open the pump. Before cleaning, unplug power cord from electrical outlet. DO

NOT allow liquids to enter the pump, as this can present an electrical hazard. ALWAYS allow the pump to dry before using. DO NOT use bleach on the pump.

Exterior Pump Case Cleaning Instructions: Clean the exterior case and tubing with a damp (not wet) cloth using mild soap and water solution once per month as needed.

Garment Cleaning/Disinfecting Instructions:

1. Disconnect garment from device. Open garment to expose all sides either by separating Velcro type hook and loop or by unzipping (depending on type of garment).
2. Cleaning solution should consist of 10mL of laundry detergent per 5L of warm tap water. Use either a large sink or plastic tub able to hold enough solution (depending on size and quantity of garments) to completely submerge the garment leaving the latch connector bars out of the water.
3. Garment should be soaked for 5-10 minutes.
4. Thoroughly rinse garment with warm tap water and allow to air dry.

⚠ **WARNING**
NEVER allow the Connectors to be submerged into the water. If water enters the inside of the garment, damage may occur to the device.

Hard to remove soil on surface of garment may require additional washing by hand with a clean towel while submerged. Avoid using any abrasive materials such as scrubbing pads or chemicals that could cause damage to the exterior surface of garment.

⚠ **WARNING**
DO NOT place garment in washing machine.

⚠ **WARNING**
DO NOT use the tubing or valves as “handles” for carrying, handing or storing garment.

10. DEVICE STORAGE

The device should be stored in a clean, dry area between 59 to 77°F (15 to 25°C). However, short-term exposure to temperatures -4 to 111°F (-20 to +44°C) will not harm the unit. To maximize the pump’s life, time should be allowed for the pump to adjust to room temperature when it has been exposed to extreme temperatures.

PUMP ENCLOSURE	Constructed of ABS/PA-765
	UL FLAME RATING: V-0
ENVIRONMENTAL SPECIFICATIONS	**For transport and storage:**
	Ambient temperature: -4°F to +131°F (-20°C to +55°C)
	Relative humidity: 10% -90%RH
	Atmospheric pressure: 80KPa to 106KPa
	For operation:
	Ambient temperature: +41°F to +95°F (+5°C to +35°C)
	Relative humidity: 15% - 85%
	Atmospheric pressure: 86KPa to 106KPa

11. TROUBLESHOOTING

If the corrective action does not solve the problem, then call your distributor or Tech Support at 800-376-7263.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
The pump will not turn on.	No electricity	Check the electrical wall outlet to be sure that the pump is plugged into the outlet correctly. Check the circuit breaker to be sure there is power to the outlet.
	Damaged power cord	Unplug the power cord and look for any damage or defects.
One garment inflates but the second one does not.	Tubing not connected or blocked	Check the garment tubing to be sure they are connected to the pump and to the garment properly. Check the tubing for kinks, punctures, twists and/or folds.
	Damaged garment	Check the garment for damage and leaks.
Regardless of the pressure setting, the garments are applying very low pressure.	Defective garment	Check the garment for adequate connection to the device, leaks, kinks, punctures, twists and/or folds.
	An internal problem	Contact Tech Support for additional help.
The device is making strange and/or loud noises.	Device is on an uneven or unstable surface	Move to a more stable and even surface.
	An internal problem	Contact Tech Support for additional help.

NOTE: In addition to possessing proper tools and testing equipment, authorized service personnel have access to all electrical schematics, calibration instrumentation and criteria and an inventory of authorized replacement parts. Only authorized personnel can repair device. Please contact your distributor or Tech Support for any repairs.

12. ELECTRICAL SPECIFICATIONS/EQUIPMENT CLASSIFICATION

The device's interior components are "double insulated" and do not require a "protective ground." The device is equipped with an 18 gauge, 2-wire, 6.5ft. Power cord, secured through the pump casing with a Heyco strain relief brushing as well as an additional "hold-down" clamp for added safety.

1. Class of protection against electrical shock: CLASS II EQUIPMENT

2. The degree of protection against electric shock: APPLIED PART-TYPE BF
3. Mode: Regular continuous work
4. According degree of protection against ingress of water: IP21
5. The current software revision Version 1.5

EMC Manufacturer's Declaration

Device electromagnetic emissions—manufacturer's declaration		
The device is intended for use in the electromagnetic environment specified below. The customer or the user of this device should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment— guidance**
RF emissions CISPR 11	Group 1	This device uses RF energy only for its internal functions. 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	This device is suitable for use in domestic establishment and in establishment directly connected to low voltage power supply network which supplies building used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Not applicable	

Guidance and manufacturer's declaration—electromagnetic immunity			
The device is intended for use in the electromagnetic environment specified below. The customer or the user of this device should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment—guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±8kV contact ±2kV, ±4kV, ± 8kV, ±15kV air	±8kV contact ±2kV, ±4kV, ± 8kV, ±15kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrostatic 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	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line to line ± 2 kV line to earth	±1 kV line to line	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 IEC 61000-4-11	<5 % U_T (>95% dip in U_T) for 0.5 cycles <5 % U_T (>95% dip in U_T) for 1 cycles 70% U_T (30% dip in U_T) for 25/30 cycles <5 % U_T (>95% dip in U_T) for 5/6 sec	<5 % U_T (>95% dip in U_T) for 0.5 cycles <5 % U_T (>95% dip in U_T) for 1 cycles 70% U_T (30% dip in U_T) for 25/30 cycles <5 % U_T (>95% dip in U_T) for 5/6 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the device requires continued operation during power mains interruptions, it is recommended that this device be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m, 30A/m	3 A/m, 30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in typical commercial or hospital environment.
NOTE: U_T is the AC mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration—electromagnetic immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user of this device should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment—guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 15 kHz to 80 MHz 6 Vrms in ISM and amateur radio bands 3 V/m 80 MHz to 2.5 GHz 10V/m 80MHz to 2.7Ghz **385MHz-5785MHz** **Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)**	3 Vrms 15 kHz to 80 MHz 6 Vrms in ISM and amateur radio bands 3 V/m 80 MHz to 2.5 GHz 10V/m 80MHz to 2.7Ghz **385MHz-5785MHz** **Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)**	Portable and mobile RF communications equipment should be used no closer to any part of this device including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = [3,5/V_1]xP^{½}$ $d = 1.2xP^{½}$ 80MHz to 800MHz $d = 2.3xP^{½}$ 800MHz to 2.7GHz 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 meters (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 to all situations. Electromagnetic propagations is affected by absorption and reflections from structures, objects and people.

[a]Field strengths from fixed transmitters, such as base stations for 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 this device is used exceeds the applicable RF compliance level above, this device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device.

[b]Over the frequency range 150 kHZ to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and this device

This device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of this device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device 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 $d = 1.2xP^{½}$	80 MHz to 800 MHz $d = 1.2xP^{½}$	800 MHz to 2.5 GHz $d = 2.3xP^{½}$
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.
Note 1: At 80 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.

13. WARRANTY INFORMATION

Please contact your dealer in case of a claim under the warranty. If you have to send the unit back to your provider, enclose a copy of your receipt and state what the defect is. The following warranty terms apply:

1. The warranty period for device is one year from date of purchase (accessories have a six month warranty). In case of a warranty claim, the date of purchase has to be proven by means of the sales receipt or invoice.
2. Repairs under warranty DO NOT extend the warranty period either for the device or for the replacement parts.
3. The following is excluded under the warranty:

- All damage which has arisen due to improper treatment, e.g. non-observance of the user instruction.
- All damage which is due to repairs or tampering by the customer or unauthorized third parties.
- Damage which has arisen during transport from the manufacturer to the consumer or during transport to the retailer.
- Accessories which are subject to normal wear and tear.

Liability for direct or indirect consequential losses caused by the unit is excluded even if the damage to the unit is accepted as a warranty claim. All products must be returned in original packaging and must contain all components, accessories and user manuals. If any components are missing, you will be responsible for the cost of the replacement component and the 25% restocking fee.

All returns must be approved with a Return Authorization Number. Please call our Customer Service Team at (800) 376-7263 to obtain a Return Authorization Number. Provide the following information when calling:

- Item Number
- Original Order Number
- Product Serial Number/Lot Number
- Reason for Return

The Return Authorization Number must be marked clearly on the returned carton and is valid for 10 business days from the date of issue.

Returns will not be accepted on items that are:

- Missing their serial number
- Special order items
- Returned more than 30 days after delivery
- Returned without notification

Documents / Resources

	Richmar REX Combo Pneumatic Compression System [pdf] User Manual REX Combo Pneumatic Compression System, REX Compression System, Combo Pneumatic Compression System, Compression System

References

- Richmar