Content

Warning

- Connect the Master Control unit to a proper power source
- Don't use the system in the presence of any flammable gases (such as Anesthetic agents)
- Keep the pump and mattress away from any source of liquid or open flame
- Keep mattress away from sharp object
- The device is not AP/APG protected
- Don't place the heating device close to the mattress system

Caution

- Use the mattress under the physician's instruction
- Re-position the patient in certain period of time is still necessary when using this system
- The Control Unit can only be repaired by authorized distributor. (The circuit diagram, repairable component parts list, and service manual are released only to an authorized distributor)
- Do not drop the control unit
- Do not store the system in direct sunlight or extreme cold conditions

1. Purpose of this Manual

This operation manual is mainly focused on the set up, cleaning and routine maintenance of the Rhythm Turn-Function Air Therapy Support System. We recommend you keeping this manual handy to answer most of your questions related to this system.

2. Product Description

The Rhythm Turn system, operated blower unit, is a very unique innovation of a specialized mattress replacement. The system is primarily designed for at risk patients or step-down intensive care units. It features continuous lateral rotation therapy in two different degrees (20 degrees and 40 degrees), which gently turns the patient from side to side to significantly lower the risk of infection, pneumonia and other pulmonary complications – illnesses that significantly ad to patient care costs and length of stay.

Master Control Unit Features

- The Master Control Unit is user friendly designed and most of the functions are self explained
- Rotation angle can be independently selected for 20 degrees or 40 degrees
- Rotation time can be adjusted in 3 min increments to 95 mins. Or the caregiver can even select the Static Function that will seize the Rotation Function and provide only the True Low Air Loss Therapy
- Auto Firm Function provides a uniform firmness for nursing procedure
- Power failures produce an audio alarm for added safety
- 10 digital scales of Soft/Firm Comfort Control
- Double insulation to provide minimum noise while operating
- Foot board mounting rack provides the convenience of placement.

Mattress Features

- Individual air cushion design for maximum pressure distribution
- Each air cushion has orifices to provide true Low Air Loss therapy
- LAL Turning Mattress replacement, eliminating the compromising effects of an existing mattress
- Permanent inflated bed rails for added safety.

3. Technical Data

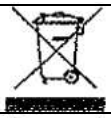
Master Control Unit

Model Name	**Rhythm Turn**
Model No.	FC-PHR0010
Size(cm)	45(L) x 17.3 (W) x 27.5(H)
Weight (kg)	5.8
Dwell time	3 ~ 95
Max Operating Pressure	61mmHg
Rated voltage	AC 110-120V
Rated frequency	60 Hz
Max current	5A
Fuse rating	5A 250V
Classification	Class I, Type BF Not AP or AGP type 
Operation temperature	15°C - 35°C
Operation humidity	30% -75%
Mode of operation	Continuous
Standard	IEC 60601-1 CAN/CSA C22.2 No. 601.1, IEC 60601-1-2

Rhythm Turn Replacement

Model No.	FM-PHR0013
Size(cm)	91(L) x 203(W) x 20(H)
Weight (kg)	20
Cell Material	TPU
Cover Material	AD with Quilting
Based Material	Nylon laminated PVC

Symbol Definition

	Refer to Accompanying Document
	Waste Disposal
	Type BF Applied Part
	Alternating current
	Warning

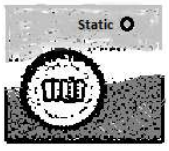
4. Instruction for Proper Use

1. Remove the existing mattress from the bed frame
2. Replace the standard mattress with LAL Turning Mattress Replacement and make sure to orient the mattress so that the air tube is placed at the foot of the bed
3. Secure the straps beneath the mattress to the bed frame
4. Hang the Master Control Unit on the foot-board of the bed frame. Attach the air tubes connectors to the socket on the left panel of the Master Control Unit. Be careful on the colour matching between the connectors and socket. (black connectors to black socket, red connector to red socket)
5. Ensure the air hoses are not kinked under the mattress (could be verified by a simple visual check) For details on Air Hose connection please refer to the Explode Diagram
6. Zip the low shear top cover to the mattress. The top cover should loosely fit to the mattress
7. Carefully plug the power cord into a properly grounded power source. Turn on the master mechanical power switch on the right side panel. The STANDBY LED should illuminate

8. Push the STANDBY/OPERATE button on the front panel. The OPERATE LED should now light and the Master Control Unit Should now start to spin

9. Push AUTO FIRM button for fast inflation. Allow 4-7 minutes for full inflation. After the mattress is fully inflated, the caregiver can now transfer the patient on to the mattress. Push the AUTO FIRM again to release the fast inflation mode. (Note: the mattress can be inflated with the patient lying on top)

10. Static Function: Push the static button and adjust the Comfort Control by pressing the SOFT/FIRM button to achieve the maximum patient comfort. On this mode the system provides true Low Air Loss therapy. Perform a hand check by placing a hand under the patient's buttocks between cells and foam. The patient should have at least 4 cm of clearance between the bottom of the mattress.

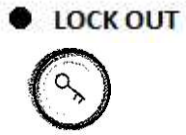


11. Turning time can be adjusted by the CYCLE button. The time can be adjusted from 3 minutes to 95 minutes. (When Static Function is selected, the time window would not show any digits.)

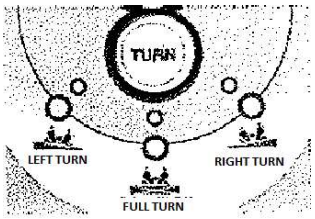
12. The Master control unit is equipped with power failure alarm. With this function enabled, the control unit generates a horn sound to signal to the operator that the main power has failed. The alarm can be disabled by pushing the alarm reset button on the front panel.

CAUTION: Immediate response by the operator is required with the power failure alarm

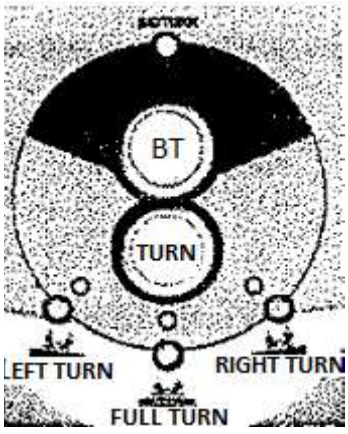
13. **LOCK-OUT**: The Master Control Unit is also equipped with a manual locking-out function. All function keys will be automatically disabled if the LOCK-OUT button has not been touched. When lock-out has been engaged, the "LOCK-OUT" button will illuminate.
UNLOCKING: Unlocking the control panel is easy. Simply press the "LOCK OUT" button on the control panel for 3-5 seconds or recycle the power by turning it off and on by the main power switch.



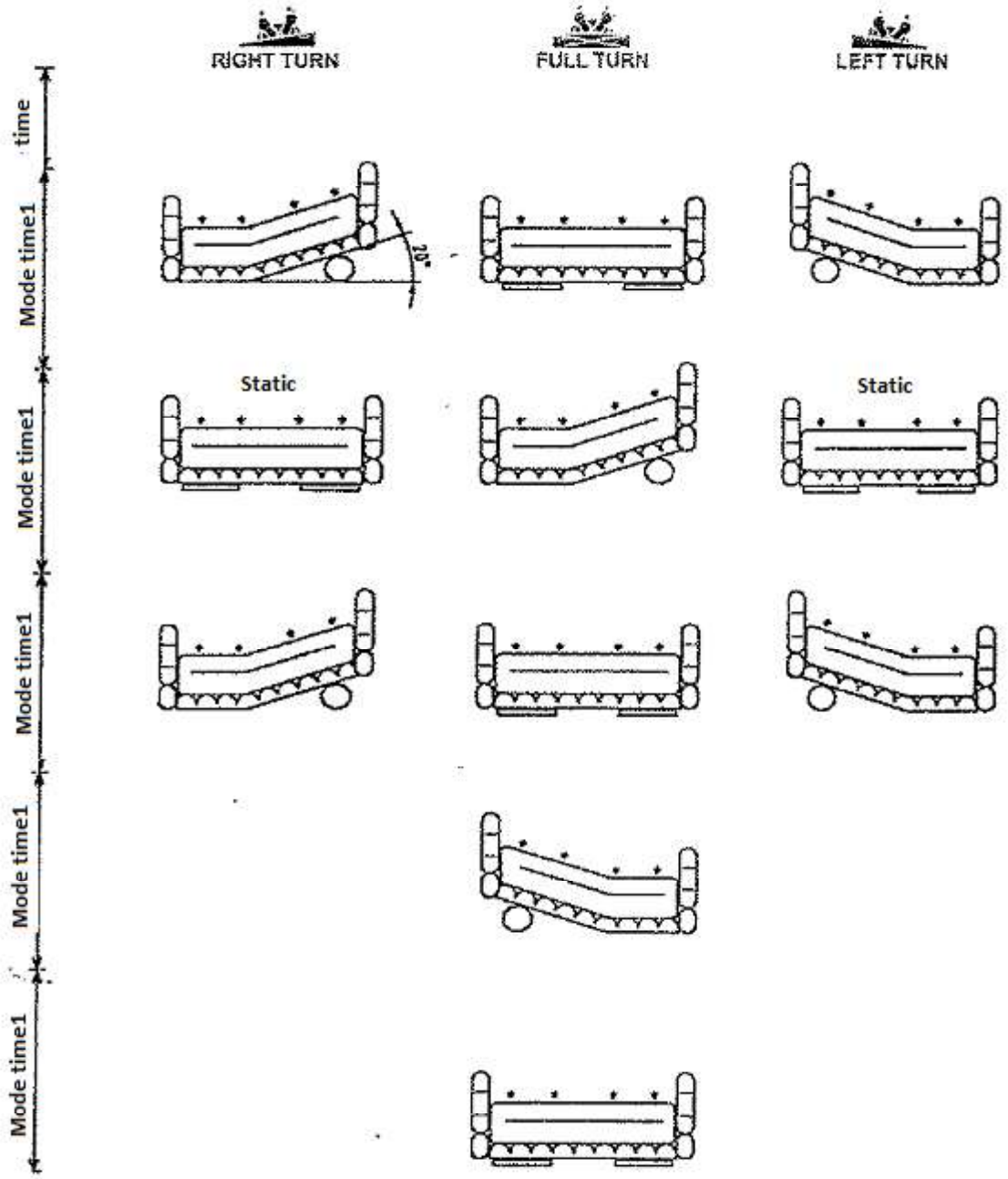
14. 20 degrees turning function can be activated by pressing the TURN and select desired turning therapy, LEFT TURN allows the mattress to turn left and back to horizontal. RIGHT TURN would have the same affect but turning to the right. The FULLY TURN allows for full function of turning to left and right and should always activated with timer setting. The timer can be set by CYCLE button



15. 40 Degrees turning function can be activated by pressing the BT button and follow the operation instruction on step 14.



Mattress Turning Illustration



5. Cleaning

The Mattress

The mattress should be cleaned on the bed weekly using a damp soft cloth and mild detergent.
If the top sheet (top cover) or base (bottom cover) becomes overly soiled, put on clean gloves, plastic gown and eye protection before removing top sheet or base and dispose of according to standard in function control procedures. Replace with clean covers. Covers can be washed and thermally disinfected in a washing machine following below procedure: (Never use phenol based cleaning solutions)

Industrial cleaning

Break wash	cold	10 mins
Main wash	60° C	6 mins
Main wash	72° C	10 mins
Extraction		2 mins
3 cold rinses		
Extraction		5 mins

Domestic cleaning

Pre-wash	cold	
Main wash	72° C	10mins
Extraction		2 mins
Cold Rinses		
Extraction		5 mins

Tumble Drying or Tunnel Drying is not recommended.
Mattress cells can be wiped over with a solution of sodium hypochlorite 1000ppm or any other non-phenolic germicidal solution.

The Master Control Unit

CAUTION

SWITCH OFF THE ELECTRICAL SUPPLY TO THE PUMP AND DISCONNECT THE POWER CORD FROM MAIN SUPPLY BEFORE CLEANING AND INSPECTION

The master control unit should also be cleaned weekly using a damp soft cloth and mild detergent.

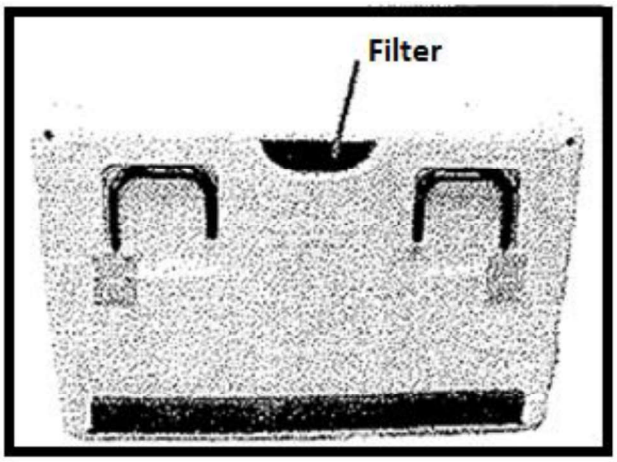
The pump casing is manufactured from ABS plastic and if the case is soiled the pump can be wiped down with a sodium hypochlorite solution to dilution of 1000ppm or any EPA-approved hospital grade disinfectant. (Don't use phenol based cleaning solution)

The air filter should also be cleaned and check as often as possible at a minimum of every six months. The air filter can be removed by punching the centre of the filter and pulling it outward from the back of the Therapy control unit.

Replace Air Filter

1. Remove Air filter and replace a new filter

Use a soft bristle brush to remove dust and difficult dried-on soil.



Waste Disposal

This product has been supplied from an environmentally aware manufacturer that complies with the WEEE (Waste Electrical and Electronic Equipment Directive).

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to the legislation.

Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

6. Storage and Care

Master Control Unit

- Check the power cord and plug for abrasions and excessive wear
- Plug in the unit and verify air flow from the hose connection ports
- Place in plastic bag for storage

Mattress Replacement System

- Check the air manifold for kinks or breaks. Replace if necessary
- 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
- Place the system in a plastic bag for storage

It is recommended that the following guidelines are used whenever the system is being stored or transported to another location

Temperature limitations	5° C – 60° C
Relative humidity	30% - 75%

7. Maintenance and Troubleshooting

No daily maintenance is required. The equipment should only be serviced by authorized technical personnel. In case of minor problems refer to the following.

Symptom	Inspection Procedure	Possible Solutions
The air is flowing out from the control unit but the mattress is not inflating.	1. Is the power source correct? Improper voltage may cause the pump to function abnormally and damage the control unit 2. Do the air tubes allow smooth airflow? Is an air tube kinked? 3. Is there any air leakage from the air cells? 4. Is there any air leakage from air tube between mattress and control unit? 5. Has the air tube been connected properly?	1. Use power regulator 2. Adjust the air tubes to enable smooth air flow 3. Replace with newer air tubes 4. Replace with new air tubes 5. Re-connect the air tubes.
The Control Unit is not working	1.Check the power cord and the power voltage 2. Check the fuse	1. Use a power regulator 2. Replace with a new fuse
Some air cell have abnormal low air pressure while the air pressure for other air cells is normal.	1. Is the connection between air cells and the manifold kinked? 2. Is there any air leakage from the air cells?	1. Adjust the connection between cells and manifold 2. Replace with a new air cell

8. EMC related notifications

Guidance and manufactures declaration – electromagnetic emissions		
The air pump is intended for use in the electromagnetic environment specified below. The customer or the user of the air pump should assure that it is used in such as environment		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The air pump 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 air pump is suitable for use in all establishments, including domestic establishment and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes
Harmonic emissions IEC 610000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Recommended separation distances between portable and mobile RF equipment and the air pump			
The air pump is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the air pump can help prevent electromagnetic interferences by maintaining a minimum distance between portable and mobile RF communication equipment (transmitters) and the air pump as recommended below, according to the maximum output of power of the communications equipment.			
Rated Maximum output of power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d=1.2\sqrt{P}$	80MHz to 800 MHz $d=1.2\sqrt{P}$	800 MHz to 2.5 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 metres (m) can be estimated using the equation applicable to the frequency of the transmitter, whereas *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.			

Guidance and manufacturers declaration – electromagnetic immunity			
The equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the air pump should assure that it is used in such an environment.			
Immunity test	**IER 60601 test level**	**Compliance level**	**Electromagnetic environment – guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	6 kV contact 8 kV air	6 kV contact 8 kV air	Floor 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 6100-4-4	2 kV for power supply lines 1 kV for input/output lines	2 kV for power supply lines 1 kV for input/output lines	Main power quality should be that of a typical commercial or hospital environment
Surge IEC 6100-4-5	1 kV line(s) to line(s) 2 kV line(s) to earth	1 kV line(s) to line(s) 2 kV line(s) to earth	Main power quality should be that of a typical commercial or hospital environment
Interruptions and voltage variations on power supply input lines IEC 6100-4-11	<5% *U*T (>95% dip in *U*T) for 0.5 cycle 40% *U*T (60% dip in *U*T) for 5 cycles 7-% *U*T (30% dip in *U*T) for 25 cycles <5% *U*T (>95% dip in *U*T) for 5 sec	<5% *U*T (>95% dip in *U*T) for 0.5 cycle 40% *U*T (60% dip in *U*T) for 5 cycles 7-% *U*T (30% dip in *U*T) for 25 cycles <5% *U*T (>95% dip in *U*T) for 5 sec	Main power quality should be that of a typical commercial or hospital environment. If the user of the equipment requires continued operation during power main interruptions, it is recommended that the equipment be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 6100-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment
NOTE: *U*T is the arc. mains voltage prior to application of the test level			

Guidance and manufacturers' declaration – electromagnetic immunity			
The equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the air pump should assure that it is used in such an environment.			
***Immunity* Test**	**IEC 60601 Test level**	**Compliance level**	**Electromagnetic environment – guidance**
			Portable and mobile RF communications equipment should be used no closer to any part of the air pump, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Conducted RF IEC 61000-4-6	3 Arms 150 kHz to 80 MHz	3 Arms	**Recommended separation distance** $d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz Where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in metres (m) Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol 

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a. Field strengths from fixed transmitters, such as base stations 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 and electromagnetic site survey should be considered. If the measured field strength in the locations in which the air pump is used exceeds the applicable RF compliance level above, the air pump should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the air pump.
b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m

9. Warranty

- Blake Medical Distribution guarantees that this equipment is free from defects in materials and workmanship. Our obligation under this warranty is limited to the repair of equipment returned to the place of purchase within 12 months of delivery date
- We agree to service/adjust any equipment returned, and to replace or repair any part that is proven to be a warranty defect, at no charge
- This warranty excludes equipment damage through shipping, tampering, improper maintenance, carelessness, accident, negligence or misuse, or products that have been altered repaired or dismantled other than with the manufacture's written authorization and by its approved procedures and by properly qualified technicians
- In no event shall Blake Medical Distribution be liable for any direct, indirect or consequential damages or losses resulting from the use of the equipment