Duet

LAL Alternating Anti-Decubitus System

User Manual

Prius Healthcare USA

580 Corporate Center
4025 Tampa Road, #1117
Oldsmar, FL 34677, USA

TEL: (813)854-5464
FAX: (813)854-5442

Content

Warning

- Connect the Master Control unit to a proper power source.
- Do not use the system in the presence of any flammable gases. (such as Anesthetic Agents)
- Keep the blower and mattress away from open flame.
- Keep sharp objects away from the mattress.
- The device is not AP/APG protected.
- Do not place a heating device on or close to the mattress system.

⚠Caution

- The Alternating System should always be used in accordance with your Institutions pressure care guidelines.
- Re-positioning of the patient is always recommended when using an alternating pressure air mattress (APAM).
- The Control unit should only be repaired by an authorized technician.
- Do not drop the control unit.
- Do not store the system in direct sunlight or extreme cold conditions.
- Operation Temp: 15-35°C (59-104℉) R.H. : 30-75 %

1. The Purpose of this Manual

This operation manual is mainly focused on the set up, cleaning and routine maintenance of the ***Duet LAL Alternating Anti-Decubitus System***. We recommend you keep this manual available to answer question related to the system.

2. Product Description

The ***Duet LAL Alternating Anti-Decubitus System*** is a unique and innovative specialty mattress replacement unit. The system utilizes true low air loss technology with a high flow rate that provides pressure management for the treatment of pressure ulcers.

The advanced 3 in 1 alternating therapy 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 3:1 cycle, meaning 2/3 of the body is always supported at any one time).

The system is also primarily designed for at risk patients or step-down intensive care units. It features continuous lateral rotation therapy at approximately 40 degrees, which gently turns the patient from side to side to significantly lower the risk of infection, pneumonia and other pulmonary complications that significantly add to patient care costs and length of stay.

The Duet Control Unit Features

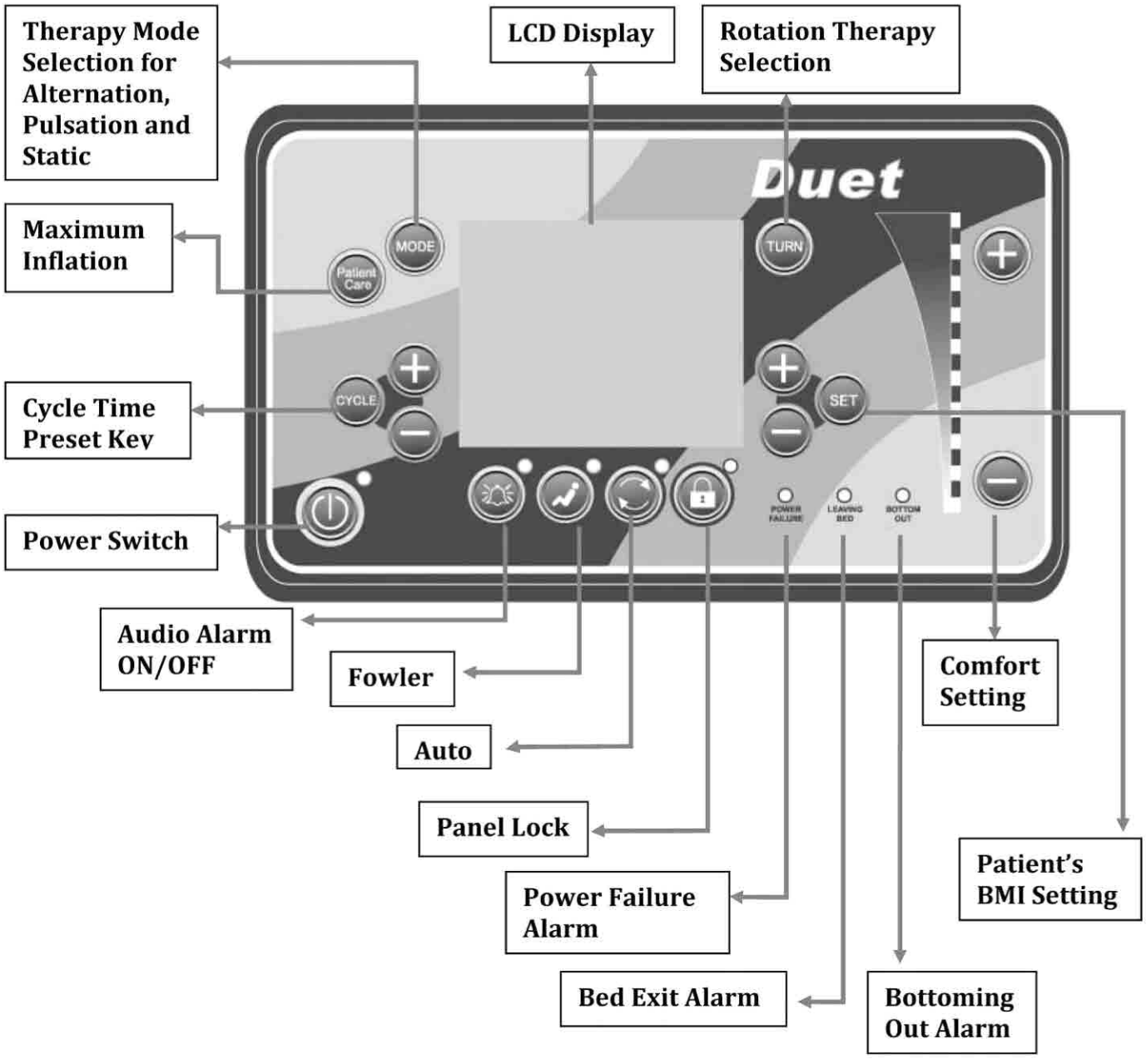
- User-friendly controls
- Large LCD display
- Rapid CPR deflation
- Patient Care mode provides quick maximum inflation within seconds to help transfers and nursing procedures
- Incorporates sensor technology with Auto Mode to continuously monitor the mattress pressure based on patient's height and weight
- Lock out function prevents tampering with settings
- Fowler mode gives added support to help prevent bottoming out while patient is in a sitting position

Mattress Features

- Low Air Loss, Pulsation, Alternation, Static and Lateral Rotation for outstanding pressure redistribution results
- Highly vapor permeable and oversized pliable quilted nylon top cover providing low shear, friction and moisture protection
- Rapid CPR deflation
- 2" convoluted foam base for additional safety support
- Recommended maximum safe working load up to 600 lbs

⚠Caution

Alternating pressure therapy is not recommended for patients who have serious pain or pain-sensitive symptoms. In these cases please contact ***Prius Healthcare USA*** for an alternative therapeutic support surface option.



3. Technical Data

Master Control Unit

Model No.	FC-PHR0012
Model Name	Duet
Size (inch) LxWxH	12.4“ x 11“ x 13.9“
Weight	14.3lbs
Cycle Time (min)	3 - 95
Min Operating Pressure	15+/- 5mmHg
Max Operating Pressure	32 +/- 5mmHg
Max Flow-rate	≧4.5 l/min
Rated Voltage	AC 110-120V
Max Current	5 Amp
Fuse Rating	T5AH 250V
Rated Frequency	60 Hz
Classification	Class I, Type BF Not AP/APG type 
Mode of Operation	Continuous
Environment (Temperature)	Operation: 15°C to 35°C (59°F to 95°F)
	Storage:5°C to 60°C (41°F to 140°F)
Environment (Humidity)	Operation: 30% to 75% non-condensing
	Storage: 30% to 90% non-condensing
Standard	IEC 60601-1, CAN/CSA C22.2 No. 601.1, IEC 60601-1-2

Mattress Replacement

Model No	FM-PHR0009
Size (inch)	36”(W)x80”(L)x10”(H)
Weight (lbs)	39.6
Cells Number	18 cells
Cells Material	Nylon coated with PU
Cover Material	Nylon woven fabric w/ PU coating finish
Base Material	Woven Polyester fabric w/ PVC backing

Symbol Definition

	Refer to Accompanying Documents
	Waste Disposal
	Type BF Applied Part
	Alternating Current
	Caution

4. Instruction for Proper Use 

1. Remove the existing mattress from the bed frame.
2. Replace the standard mattress with the Duet LAL Alternating Anti-Decubitus mattress replacement system (position the mattress so that the air tube is at the foot of the bed).
3. Secure straps beneath the mattress to the bed frame.
4. Position the control unit on the foot board of the bed frame.
5. Attach the air tube connector to control unit's socket.

6. Verify that air hoses are not kinked under the mattress.
7. Attach cover to mattress.
8. Check CPR release to ensure it is set to the “Close” position.

9. Plug in the control unit and turn on the power switch located on the lower left corner of the control panel (the STANDBY LED will illuminate).

10.  Press the STANDBY/OPERATE switch button on the control panel (OPERATE LED will illuminate and the control unit will be operational).

Control Unit Feature

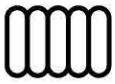
Patient Care Function 

1. Press the Patient Care button for fast inflation. Allow 4 to 7 minutes for full inflation. When Patient Care is activated “MAX” is displayed in LCD panel.
2. When the mattress is fully inflated, the caregiver can transfer the patient onto the mattress. (Note: the mattress can be inflated while a patient is laying on it).
3. Press Patient Care button again to return to previous setting.

Note: If Patient Care function is activated for 30 minutes, the system will automatically reset to previous setting.

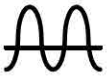
Mode Function 

- When control unit is swithed on, the unit will automatically default to Static therapy. To change to another therapy press the Mode button until the desired therapy is displayed. Avalable therapies are Alternation Pulsation and Static.

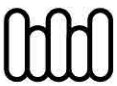
Static Funciton 

- Press the "MODE" button to select the Static funciton and adjust the Comfort Setting if necessary by pressing the +/- button to increase or decrease air pressure in the mattress
- When the STATIC function is selected the time display will remain blank.
- To ensure proper inflation perform a hand check on the mattress. This is done by placing a hand under the patient's buttocks between the cells and foam. The patient should have at least 2 inches of clearance between the buttocks and the bottom of the mattress.
- Static mode provides low air loss therapy only.

  Note: The caregiver can select the "Static Mode" to provide the patient with only low air loss therapy.

Pulsation Function 

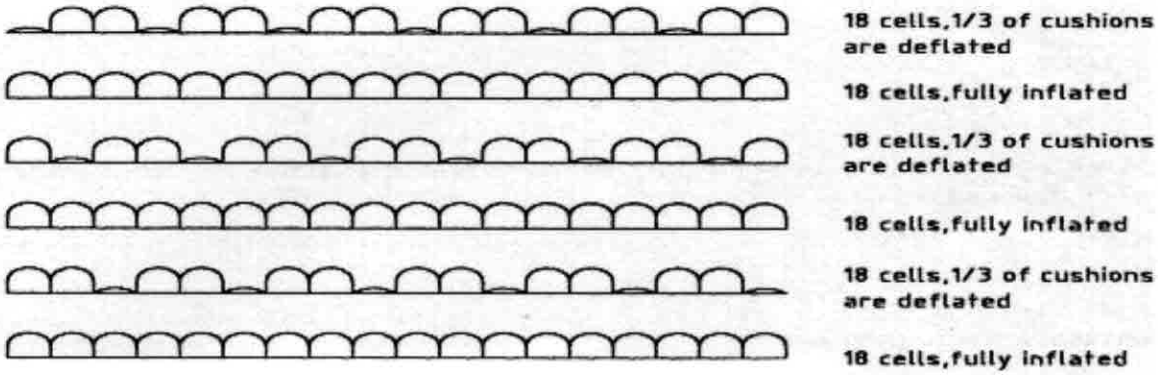
- Press the Mode button to select Pulsation function to enable pulsation pressure-relieving therapy.

Alternate Function 

- Press the "MODE" button to select the Alternate functions to enable the 3-1 alternating functions.
- Press "CYCLE" button 

and adjust the alternating cycle time by pressing +/- to set from 3 to 95 minutes.

Alternation Cycle Illustration

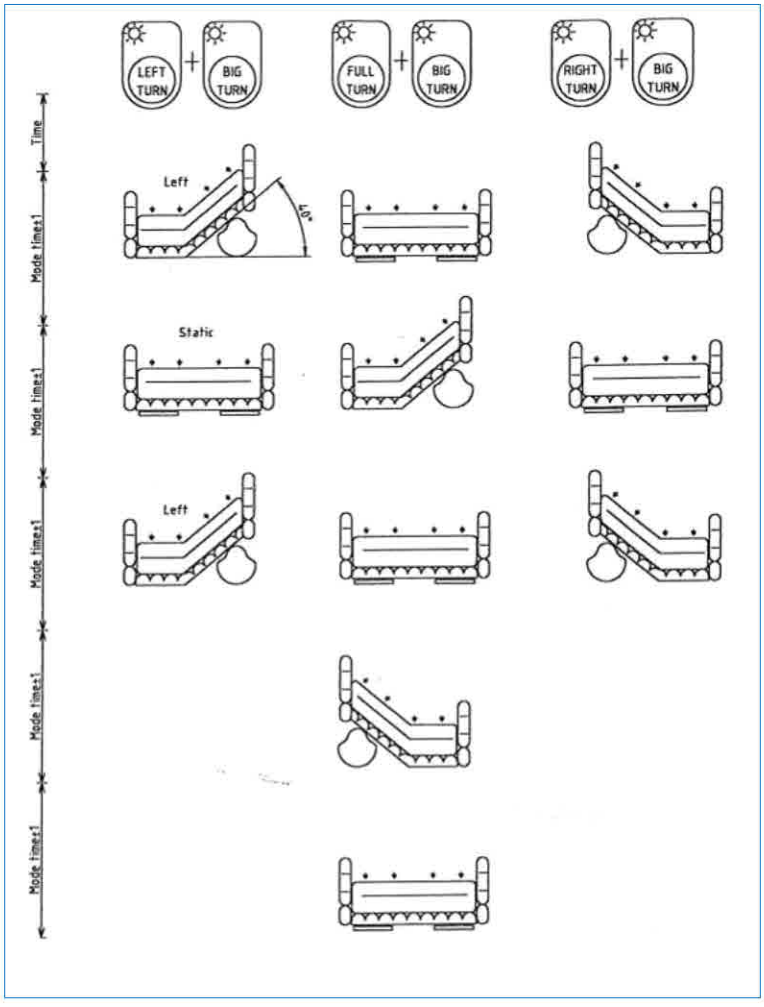


Turning Fuction 

- Press the "TURN" button to select LEFT,RIGHT or FULL TURN to enable rotation pressure-relieving therapy.
- Press "CYCLE" button to set rotation cycle time from 3 to 95 minutes and hold postion “Hd“.

Note: without setting the cycle time, the mattress will default to a 40 degrees HOLD POSITION status where “Hd” is displayed in the Time Window. Hold function is only engaged in Left and Right Turn.

Turning Illustration Diagram



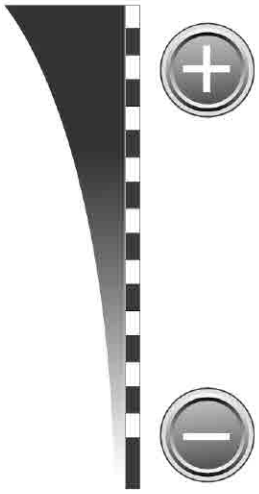
Alarm Reset

The Alarm is triggered when a power failure is detected. The alarm can be muted by pressing the Alarm button.

Lock Button

1. The ***Duet LAL Alternating Anti-Decubitus System*** is equipped with auto-locking intelligence. All function keys will be automatically disabled if the control panel is not in operation for 3 minutes, when this function is engaged an amber LED will illuminate.
2. To unlock the control panel, simply press and hold the "LOCK" button for 5 seconds.

Comfort Level Setting



PATIENT WEIGHT		
LEVEL	STANDARD (LBS)	BARIATRIC (LBS)
1	80	350
2	100	420
3	125	490
4	150	560
5	175	630
6	200	700
7	225	775
8	250	850
9	275	925
10	300	1000

Note: The pressure level settings on the weight chart are only a guideline. The proper adjustment of the pressure level must be applied according to the individual patient.

CPR Deflation

The air hose connectors can be disconnected from the controller to quickly release the air in an emergency situation where CPR is to be performed.

5. Cleaning

The Mattress

The mattress should be cleaned on the bed weekly using a damp soft cloth and mild detergent. If top cover or base cover becomes grossly soiled, put on clean gloves, plastic gown and eye protection and, remove top and base covers. Dispose of in accordance to your facilities standard operating procedures for handling contaminated waste, replace with clean covers.

Covers can be washed and thermally disinfected in a washing machine by following the procedures below: **(NOTE: Never use phenol based cleaning solutions)**

Industrial	Break washes	Cold	10 minutes
	Main washes	60°C (140°F)	6 minutes
	Main washes	70°C (158°F)	10 minutes
	Extraction		2 minutes
	Cold Rinses		
	Extraction		5 minutes
Domestic	Pre-wash	Cold	
	Main Wash	70°C (158°F)	10 minutes
	Extraction		2 minutes
	Cold Rinses		
	Extraction		5 minutes

Tumble Drying or Tunnel Drying is not recommended.
Mattress Cells can be wiped over with a solution of sodium hypochlorite1000ppm or any other non-phenolic germicidal solution.

The Master Control Unit

⚠ Caution

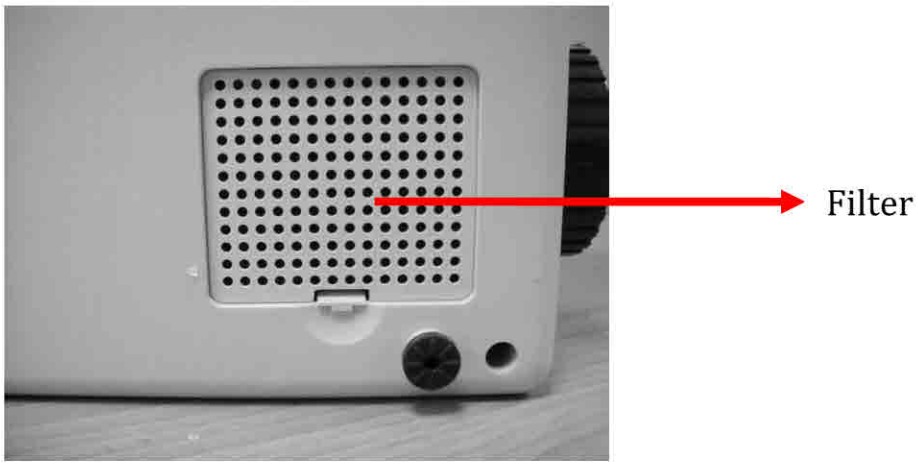
SWITCH OFF THE ELECTRICAL SUPPLY TO THE BLOWER AND DISCONNECT THE POWER CORD FROM THE MAIN SUPPLY BEFORE CLEANING AND INSPECTION

The blower unit should also be cleaned weekly using a damp soft cloth and mild detergent.
The blower casing is manufactured from ABS plastic, if the case is soiled the blower can be wiped down with a sodium hypochlorite solution diluted to 1000ppm or any EPA approved hospital grade disinfectant. **(NOTE: Do not use phenol based cleaning solution)**.

The air filter should also be checked and cleaned as often as possible at a minimum of every six months. The air filter can be removed by pinching center of the filter and pulling outward from the back of the control unit. (Is this accurate? Based on picture below there appers to be a cover over the filter.)

Replace Air Filter

1.Remove air filter and replace with a new one.
2.Use a soft bristle to remove dust and difficult dried-on soil.



NOTE:

1. Do not use phenol based cleaning solutions.
2. Switch off the electrical supply to the blower and disconnect the power cord from the main supply before cleaning and inspection)

Waste Disposal

This Product has been supplied by an environmentally aware manufacturer that complies with the WEEE.
This product may contain substances that can be harmful to the environment if disposed of in places that are not approved by your local, state and federal laws. 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 or excessive wear.
- Plug in the unit and verify air flow from the units hose connection ports.
- Place in plastic bag for storage.

Mattress:

- Check the air manifold for kinks or breaks. Replace if necessary.
- Twist the CPR plug at the head of the mattress and disconnect the air feed tubes. All the air will now be expelled. Starting at the head end, the mattress can now be rolled up and placed in a plastic bag for transportation and / or storage.

It is recommended the above guidelines are followed whenever this system is being stored or transported to another location:

Temperature limitations:	5°C ~ 60°C
Relative Humidity:	30% to 90%

7. Maintenance & Troubleshooting

No daily maintenance is required. This equipment should only be serviced by a qualified, authorized technician . For common troubleshooting tips please refer to the following chart.

Symptom	Inspection Procedures	Possible Solution
The blower is not functioning.	1. Check power source connection. 2. Check for blown fuse.	1. Connect to proper power source. 2. Replace fuse. 3. Refer to qualified service technician if problem persist.
Low pressure LED is constantly illuminated or The mattress is not inflating while blower is in operation.	1. Check hoses and hose connections. 2. Check CPR valve. 3. Check air cells for leakage other then where designed .	1. Make sure all connectors are securly fastened and hoses are not leaking. 2. Make sure CPR valve is set to “CLOSE” position. 3. Replace faulty air cell if necessary. 4. Refer to qualified service technician if problem persist.
Blower is noisy.	1. Make sure blower is resting on a solid surface.	1. Reposition the blower. 2. Refer to qualified service technician if problem persist.

8. EMC Related Notifications

Guidance and manufacturer's declaration – electromagnetic emissions		
The blower is intended for use in the electromagnetic environment specified below. The customer or the user of the blower should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR 11	Group 1	The blower 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 blower 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	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Recommended separation distances between portable and mobile RF communications equipment and the blower			
The blower is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the blower can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the blower 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 2,5 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, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1 At 80 MHz and 800 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 manufacturer's declaration – electromagnetic immunity			
The blower is intended for use in the electromagnetic environment specified below. The customer or the user of the blower 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	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	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	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±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	Mains power quality should be that of a typical commercial or hospital environment.
interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % *U*T (>95 % dip in *U*T) for 0,5 cycle 40 % *U*T (60 % dip in *U*T) for 5 cycles 70 % *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 70 % *U*T (30 % dip in *U*T) for 25 cycles <5 % *U*T (>95 % dip in *U*T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the blower requires continued operation during power mains interruptions, it is recommended that the blower be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	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 a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity

The blower is intended for use in the electromagnetic environment specified below. The customer or the user of the blower 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	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the blower including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1{,}2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/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,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 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, an electromagnetic site survey should be considered. If the measured field strength in the location in which the blower is used exceeds the applicable RF compliance level above, the blower should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Blower.

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

9. Warranty

- Prius Healthcare guarantees this equipment to be free from defects in material and workmanship for up to 12 months from the date of delivery.
- All warranty work will be performed at the service address below, shipping charges prepaid
- At Manufacturers descreton we agree to service, repair or replace any equipment or part found to be defective at no charge.
- This warranty excludes equipment damaged through shipping, tampering, improper maintenance, careless, accident, negligence or misuse, or products which 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 Prius Healthcare be liable for any direct, indirect of consequential damages or losses resulting from the use of equipment.
- Warranty is non-transferrable.

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