

***microAIR***®

***MA90 Series***

***MA90Z Alternating Rotation  
with On Demand True Low  
Air Loss System***

***MA95Z Alternating Rotation  
and True Low Air Loss System***

**DEALER:** This manual **MUST** be given to the user of the product.

**USER:** **BEFORE** using this product, read this manual and save for future reference.

For more information regarding  
Invacare products, parts, and services,  
please visit [www.invacare.com](http://www.invacare.com)



***Yes, you can.®***

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## **WARNING**

**DO NOT** use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as owner's manuals, service manuals or instruction sheets supplied with this product or optional equipment. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

Procedures other than those described in this manual must be performed by a qualified technician.

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## **ACCESSORIES WARNING**

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

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## **SPECIAL NOTES**

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
DANGER	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury.

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## **NOTICE**

**THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.**

**Check all parts for shipping damage and test before using. In case of damage, DO NOT use. Contact Invacare Customer Service Department for further instruction.**

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*NOTE: Updated versions of this manual are available on [www.invacare.com](http://www.invacare.com).*

# TABLE OF CONTENTS

<b>SPECIAL NOTES .....</b>	<b>2</b>
<b>REGISTER YOUR PRODUCT .....</b>	<b>4</b>
<b>TYPICAL PRODUCT PARAMETERS .....</b>	<b>5</b>
Electrical Parameters.....	5
Performance Parameters.....	5
Mechanical Parameters .....	6
Environmental Parameters.....	6
<b>LABEL LOCATION .....</b>	<b>7</b>
<b>SECTION 1—GENERAL GUIDELINES .....</b>	<b>8</b>
Contraindications .....	8
Installation .....	8
Entrapment May Occur.....	8
Fire Hazard.....	9
Smoking .....	9
Anesthesia Equipment.....	9
Oxygen .....	9
Electrical .....	9
<b>SECTION 2—OPERATION .....</b>	<b>10</b>
Installing the Mattress Replacement System .....	10
Installing the Side Rails .....	11
Installing the Power Unit .....	11
Connecting the Hose.....	12
Connecting the Power Cord .....	13
Using the Front Panel .....	14
Power Button.....	14
Turn Button (MA90Z) .....	15
Turn Time Button (MA90Z) .....	15
Turn Angle Button (MA90Z) .....	15
Rotation Button (MA95Z) .....	15
Select Button (MA95Z) .....	15
Hold Button (MA95Z) .....	16
Firm/Soft Buttons.....	16
Automatic Wireless Fowler .....	16
Manual Operation of the Fowler .....	16
About Automatic Wireless Mode .....	16
Programming the Automatic Wireless Fowler Transmitter .....	17
Mode Button (MA90Z).....	18
Max Inflate Button (MA95Z) .....	18
Lock/Alarm Silence Button .....	19
Power Fail LED .....	19

# TABLE OF CONTENTS

Low Pressure LED .....	19
Displaying the Total Run Time (MA95Z) .....	19
Powering Up the System .....	19
Placing the Patient on the Mattress .....	20
Transferring Patient From/To a Gurney .....	20
Transferring Patient From/To a Wheelchair .....	21
Preparing for CPR Procedure .....	21
<b>SECTION 3—MAINTENANCE AND TROUBLESHOOTING .....</b>	<b>23</b>
Cleaning the System .....	23
Storing the System .....	24
Changing the Filter .....	25
Troubleshooting .....	25
<b>LIMITED WARRANTY .....</b>	<b>28</b>

## REGISTER YOUR PRODUCT

The benefits of registering include:

1. Safeguarding your investment.
2. Ensuring long-term maintenance and servicing of your product.
3. Receiving updates with product information, maintenance tips and industry news.

**Register ONLINE at [warranty.invacare.com](http://warranty.invacare.com)**

Please have your model number and purchase date available to complete your registration.

Any registration information you submit will only be used by Invacare Corporation and protected as required by applicable laws and regulations.

# TYPICAL PRODUCT PARAMETERS

## Electrical Parameters

	MA90Z	MA95Z
<b>INPUT VOLTAGE AC:</b>	90 V	
<b>INPUT FREQUENCY:</b>	60 Hz	
<b>CURRENT:</b>	1 A	2 A
<b>MAXIMUM POWER CONSUMPTION:</b>	30 ± 10 W	150 ± 10 W
<b>CIRCUIT PROTECTION:</b>	Dual fused, 250 V, 1 A fast blow fuses	Dual fused, 250 V, 5 A fast blow fuses
<b>MODE OF OPERATION:</b>	Continuous	

## Performance Parameters

	MA90Z	MA95Z
<b>WEIGHT CAPACITY</b> STANDARD MATTRESS: BARIATRIC MATTRESS:	350 lbs 1000 lbs	
<b>PRESSURE ZONE:</b>	2	
<b>MAXIMUM FLOW:</b>	50 ± 15 LPM	1275 ± 100 LPM
<b>MAXIMUM PRESSURE:</b>	35 ± 5 mmHg	
<b>MAXIMUM FLOW TIMER:</b>	30 minutes	15 minutes
<b>SUPPORT SURFACE INFLATION TIME:</b>	5 - 10 minutes	25 - 60 seconds
<b>PATIENT COMFORT CONTROL PRESSURES:</b> SOFT PRESSURE: FIRM PRESSURE:	8 ± 4 mmHg 32 ± 4 mmHg	
<b>ROTATION TIME:</b>	10, 20, 30, 60 minutes	5 minutes - 4 hrs
<b>ROTATION ANGLE:</b>	0 - 30° ± 5°	0 - 40° ± 5°
<b>PATIENT CONTACT:</b>	Control unit and mattress have Latex-Free components	

**Mechanical Parameters**

	MA90Z	MA95Z
<b>CONTROL UNIT DIMENSIONS (L X W X H):</b>	15" x 6½" x 11"	
<b>CONTROL UNIT WEIGHT:</b>	15 lbs	
<b>CONTROL UNIT POWER CORD:</b>	10 - 14 Feet Long, Hospital Grade	
<b>CONTROL UNIT CONNECTION:</b>	Quad Flow - Four ¼" Single Quick Coupling	Triple Flow - Two ½" and One ¼" Single Magnetic Quick Coupling
<b>CONTROL UNIT PACKAGING:</b>	1 piece/box	
<b>AIR FILTER:</b>	None	Charcoal Air Filter with Fire Retardant

**Environmental Parameters**

	MA90Z/MA95Z
<b>OPERATING CONDITIONS</b> AMBIENT TEMPERATURE: RELATIVE HUMIDITY: ATMOSPHERIC PRESSURE:	50° - 95° F 30% - 75% Non-Condensing 70 - 106 kPa
<b>STORAGE AND SHIPPING CONDITIONS</b> AMBIENT TEMPERATURE: RELATIVE HUMIDITY: ATMOSPHERIC PRESSURE:	-40° - 158° F 10% - 100% 50 - 106 kPa

# LABEL LOCATION

**DANGER-EXPLOSION HAZARD: DO NOT** use in the presence of flammable anesthetics.

**CAUTION:** Equipment should be connected to a properly grounded receptacle (3-prong). Risk of Electrical shock. **DO NOT** remove back. Disconnect air hose before administering CPR.

## ⚠ **ATTENTION**

**Clean Filter Every 5 months and Whenever Dirty. Remove Filter, Wash, Dry & Replace.**

*NOTE: MA95Z only.*

*NOTE: This label is on the back of the unit and also contains the serial number.*



## ⚠ **WARNING**

**Patient entrapment with bed side rails may cause injury or death. Mattress MUST fit bed frame and side rails snugly to prevent patient entrapment. Follow the manufacturer's instructions. Monitor patient frequently. Read and understand the Owner's/Operator's Manual prior to using this equipment. Invacare product manuals are available at [www.invacare.com](http://www.invacare.com) or your dealer.**

**Label part number I I50708 Rev A**

*NOTE: This label is on the foot end of the mattress cover (not shown).*

# SECTION I—GENERAL GUIDELINES

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## **WARNING**

**SECTION I - GENERAL GUIDELINES** contains important information for the safe operation and use of this product.

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## **Contraindications**

ALWAYS consult the patient's physician before using the MA90Z and MA95Z systems.

## **Installation**

The MA90Z and MA95Z systems **MUST** be installed on medical bed frames with side rails. The side rails **MUST** be in the raised position whenever a patient is on the bed.

Controls on the footboard may be obstructed by the power unit on a few bed frames. It may be necessary to relocate the power unit. Refer to Installing the Power Unit on page 11.

Check that air hoses and power cord are clear of moving bed components before placing a patient on the bed. Operate all bed frame motorized functions through their full range of motion to be certain that there is no pulling, interference or pinching.

DO NOT strap the mattress to the bed frame at the head and foot ends. Secure ALL mattress straps. Secure the straps to the bed deck at the head and foot ends and to the frame at the center of the bed. Otherwise damage to the mattress will occur when the head and foot ends are raised. Refer to Installing the Mattress Replacement System on page 10.

## **Entrapment May Occur**

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## **WARNING**

Patient entrapment with bed side rails may cause injury or death. **Mattress MUST** fit bed frame and side rails snugly to prevent patient entrapment. Follow the manufacturer's instructions. Monitor patient frequently. Read and understand the Owner's/Operator's Manual prior to using this equipment. Invacare product manuals are available at [www.invacare.com](http://www.invacare.com) or your dealer.

Proper patient assessment and monitoring, and proper maintenance and use of equipment is required to reduce the risk of entrapment. Variations in bed rail dimensions, and mattress thickness, size or density could increase the risk of entrapment. Visit the FDA website at <http://www.fda.gov> to learn about the risks of entrapment. Review "A Guide to Bed Safety", published by the Hospital Bed Safety Workgroup, located at [www.invacare.com](http://www.invacare.com). Use the link located under each bed rail product entry to access this bed safety guide.

Refer to the owner's manuals for beds and rails for additional product and safety information.

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Assist rails with dimensions different from the original equipment supplied or specified by the bed manufacturer may not be interchangeable and may result in entrapment or other injury.



## Fire Hazard

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### **DANGER**

#### Smoking

**DO NOT SMOKE** while using this device. This system uses room air for circulation through the mattress. A cigarette can burn a hole in the bed surface and cause damage to the mattress. Also, patient clothing, bed sheets, etc. may be combustible and cause a fire. Failure to observe this warning can result in severe fire, property damage and cause physical injury or death.

Smoking by visitors in the room will contaminate the system. Therefore, visitor smoking is **NOT** permitted.

#### Anesthesia Equipment

There is an explosion risk if used with flammable anesthetics.

#### Oxygen

There is a possible fire hazard when used with oxygen administering equipment other than nasal mask or half bed tent type. The oxygen tent should **NOT** extend below mattress support level.

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## Electrical

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### **DANGER**

**Electrical shock hazard. DO NOT** remove cover. Refer to qualified service personnel.

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Before performing any maintenance to the power unit, disconnect the power cord from the wall outlet.

**DO NOT** insert items into any openings of the control unit. Doing so may cause fire or electric shock by shorting the internal components

The control unit **MUST** be kept away from all heat sources and radiators during operation.

Connect the equipment to properly grounded three prong wall outlet using 10-14 ft hospital grade power cord provided with the product.

Grounding reliability depends upon a properly grounded receptacle (3-prong).

## SECTION 2—OPERATION

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### CAUTION

The control unit and mattress on the MA90Z series are designed to be used as a system. **DO NOT** replace mattresses or control units with other models or other brands. Otherwise, damage to the system may occur. Contact your supplier to get the correct replacement if needed.

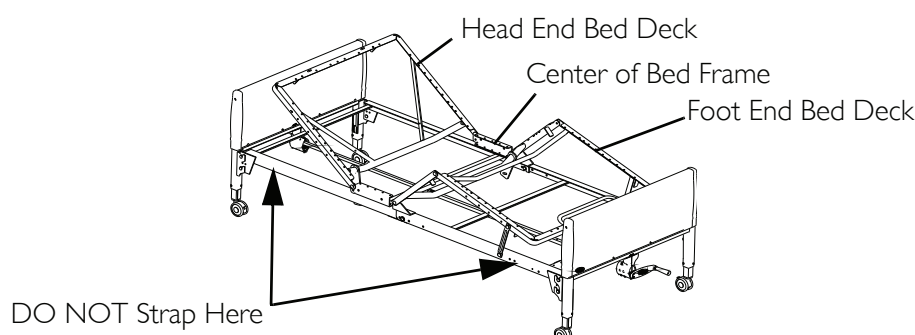
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## Installing the Mattress Replacement System

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### CAUTION

**DO NOT** strap the mattress to the bed frame at the head and foot ends. Secure **ALL** mattress straps. Secure the straps to the bed deck at the head and foot ends and to the frame at the center of the bed. Otherwise damage to the mattress will occur when the head and foot ends are raised.



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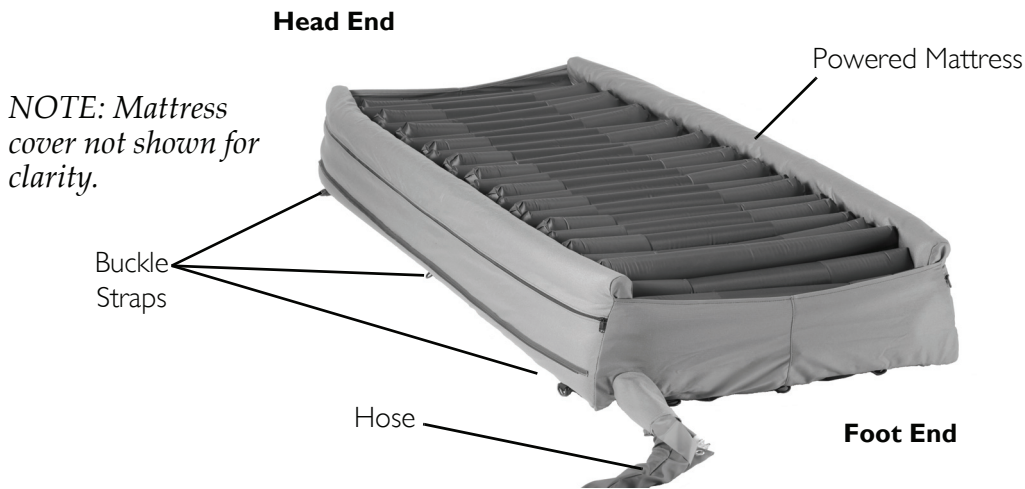
*NOTE: For this procedure, refer to FIGURE 2.1.*

*NOTE: The powered mattress comes with ten nylon buckle straps.*

1. Remove the original foam mattress from the bed.
2. If necessary, lower the side rails to facilitate installation of the mattress.
3. Unroll the powered mattress and place it on the bed frame.

*NOTE: Ensure that the hose is towards the foot end of the bed.*

4. Use the buckle straps to secure the powered mattress to the bed deck in the following locations:
  - Head End - Head End Bed Deck
  - Foot End - Foot End Bed Deck
  - Center - Center of the Bed Frame



**FIGURE 2.1** Installing the Mattress Replacement System

## Installing the Side Rails

### **⚠ WARNING**

Patient entrapment with bed side rails may cause injury or death. **Mattress MUST** fit bed frame and side rails snugly to prevent patient entrapment. Follow the manufacturer's instructions. Monitor patient frequently. Read and understand the **Owner's/Operator's Manual** prior to using this equipment. Invacare product manuals are available at [www.invacare.com](http://www.invacare.com) or your dealer.

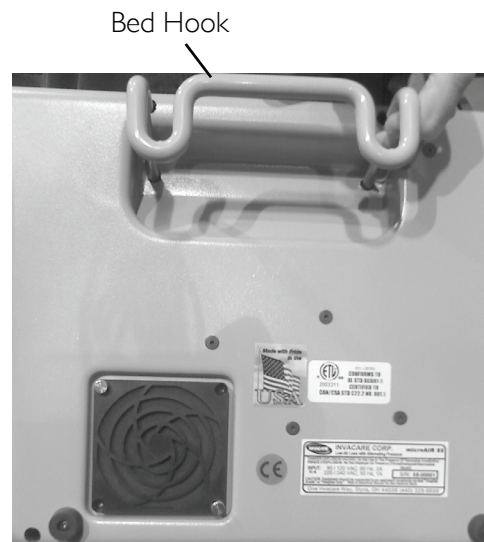
*NOTE: Refer to the instructions provided with the side rails for the installation procedure.*

## Installing the Power Unit

*NOTE: For this procedure, refer to FIGURE 2.2.*

1. Pull out the bed hook on the back of the control unit.
2. Place the control unit on the footboard.

*NOTE: If the bed does not have a footboard, place the control unit on a flat surface, leaving room for the hose to hang down.*



**FIGURE 2.2** Installing the Power Unit

## Connecting the Hose

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### **CAUTION**

**Ensure that the hose connecting the control unit to the mattress is routed such that it cannot be stepped on, kinked, squeezed or otherwise damaged.**

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*NOTE: For this procedure, refer to FIGURE 2.3.*

1. Locate the hose at the foot end of the mattress.
2. Locate the control unit connector on the right side of the control unit.
3. Perform one of the following:
  - MA90Z - Perform the following steps (Detail “A”):
    - i. Squeeze and hold the tabs on the hose connectors.
    - ii. Insert the hose connectors into the control unit connector.
    - iii. Push the hose connectors onto the control connector until an audible click is heard.

*NOTE: The audible click indicates that the hose connector(s) are properly engaged with the control connectors.*

- MA95Z - Perform the following steps (Detail “B”):
  - i. Lift and hold the connector cover up .
  - ii. Push the hose connector onto the control connector .
  - iii. Ensure the hose connector is flush with the control unit connector.

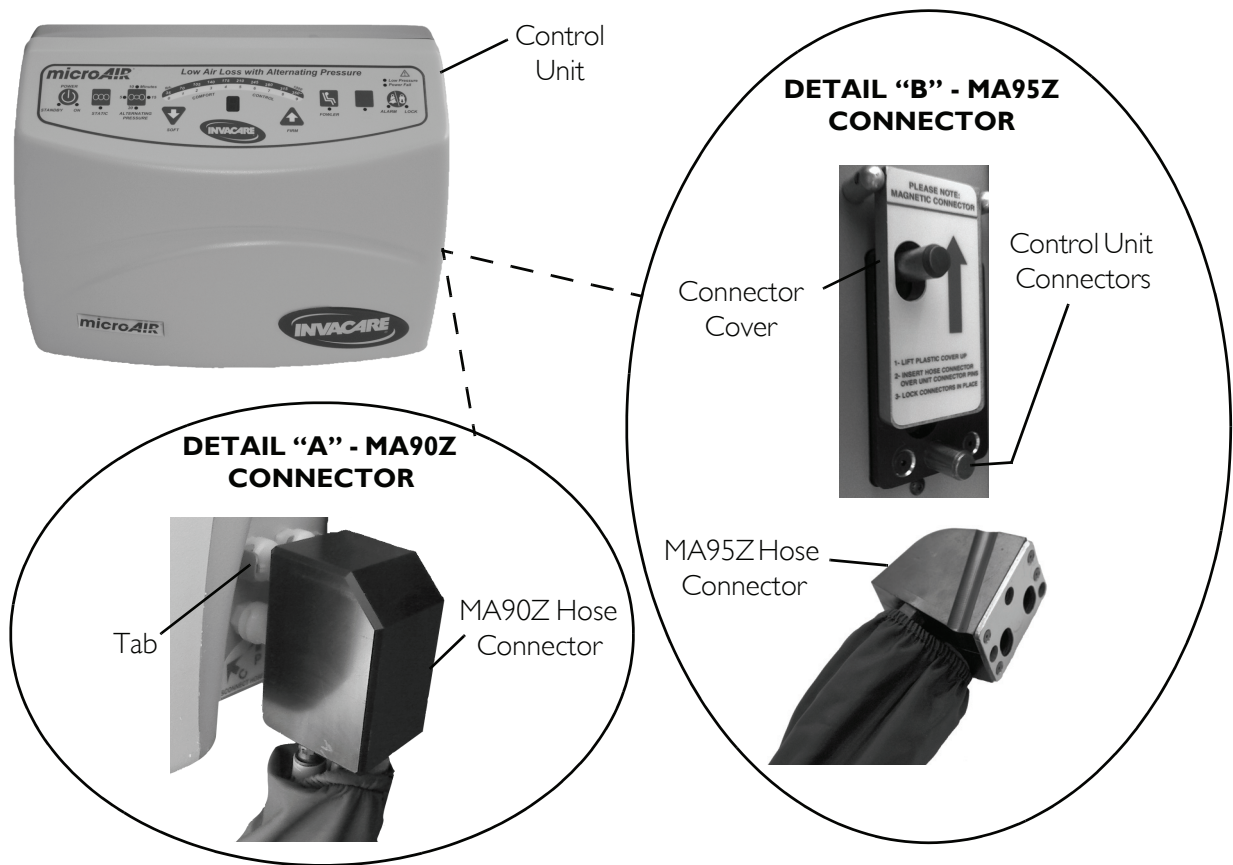


FIGURE 2.3 Connecting the Hose

## Connecting the Power Cord

### **⚠ WARNING**

**DO NOT** alter plug to fit a non-conforming outlet. Instead, have an electrician install a properly grounded outlet. Failure to use the correct plug and outlet can result in a potential safety hazard.

### **CAUTION**

Ensure that the power cord of the control unit is not pinched, or has any objects placed on it, and also ensure it is not located where it can be stepped on or tripped over.

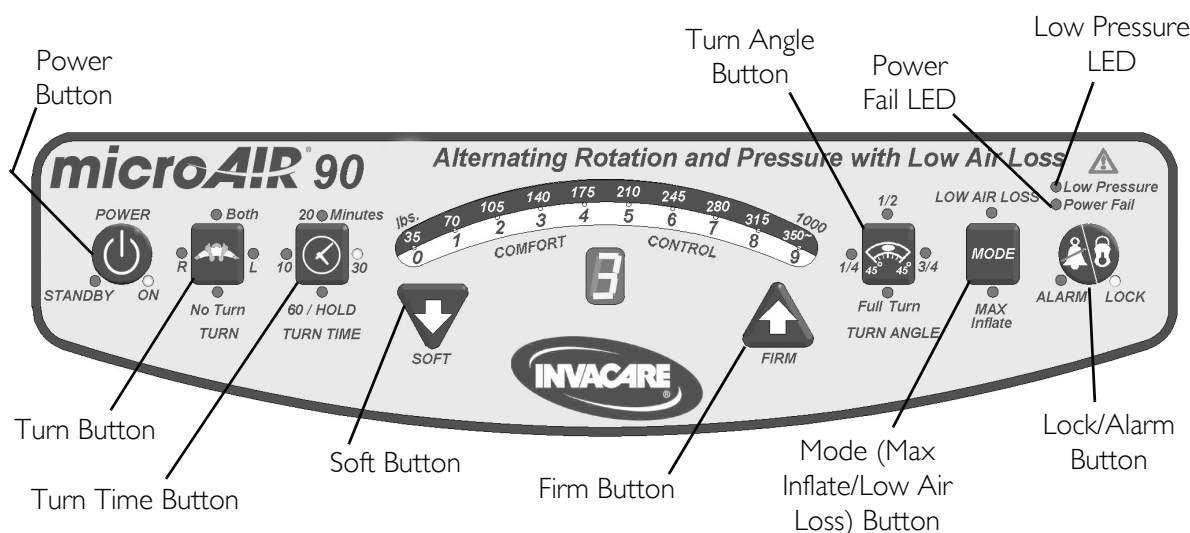
1. Examine the hospital grade power cord supplied with the control unit.
2. Perform one of the following:
  - If the plug is damaged - Call your supplier for a replacement hospital grade cord.
  - If the plug is not damaged - Plug the end of the supplied hospital grade power cord into the power outlet on the side of the control unit.
3. Plug the other end of the plug into a properly grounded outlet on the wall.

*NOTE: Once the unit is plugged in, an AMBER LED on the control unit is lit indicating that the system is in STAND BY mode.*

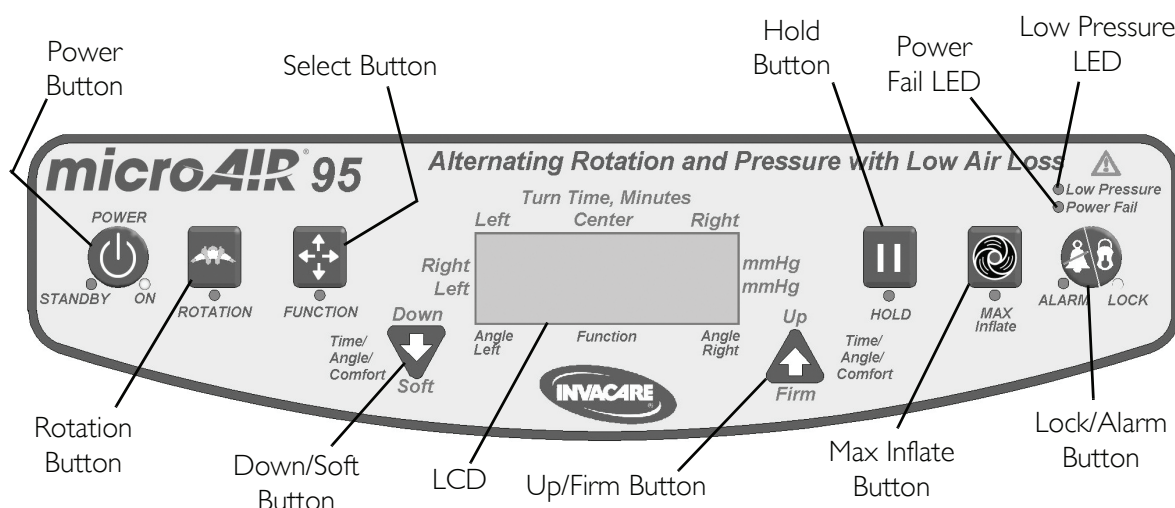
## Using the Front Panel

NOTE: For this procedure, refer to FIGURE 2.4.

**DETAIL “A” - MA90Z FRONT PANEL**



**DETAIL “B” - MA95Z FRONT PANEL**



**FIGURE 2.4 Using the Front Panel**


### Power Button

1. To turn the control unit on or off, press and release the Power button (⏻).

NOTE: Once the unit is plugged in, an AMBER LED on the control unit is lit indicating that the system is in STAND BY mode. Once the Power button is pressed and released, a GREEN LED illuminates indicating that the control unit is on.

If the power comes on after a power outage, the control unit will go through its system initialization routine for a few seconds and then resume the desired function.

## Turn Button (MA90Z)

1. Press the Turn button () to select one of three rotation modes or to set the unit to No Turn (Static) mode.

*NOTE: The rotation modes are right, left or both and all three modes include alternating pressure therapy.*

*NOTE: When No Turn is selected, all of the air cushions are maintained at a constant pressure.*

## Turn Time Button (MA90Z)

1. Press the Turn Time button () to select one of four rotation times.

*NOTE: The rotation times are 10, 20, 30 and 60 minutes.*

## Turn Angle Button (MA90Z)

1. Press the Turn Angle button () to select one of four rotation angles.

*NOTE: The rotation angles are  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and full rotation ( $45^\circ$ ).*


## Rotation Button (MA95Z)

1. Press the Rotation button () to select Static mode or Alternating Rotation mode.

*NOTE: When the LED is on, Alternating Rotation mode has been selected.*

*NOTE: In Static mode, the LED is off and all air cushions are maintained at a constant pressure.*

## Select Button (MA95Z)

1. Press the Select button () to move the pointer on the LCD to Function.
2. Press the Firm or Soft button until the desired function displays. Available functions are:


FUNCTION	DESCRIPTION
<b>LEFT</b>	Rotation to the Left side. The time indicates the rotation duration.
<b>CENTER</b>	Rotation to Center. The time indicates the rotation duration.
<b>RIGHT</b>	Rotation to the Right side. The time indicates the rotation duration.
<b>STATIC</b>	Static mode. All air cushions maintain constant pressure.





FUNCTION	DESCRIPTION
<b>PULSE</b>	Pulse mode. The pulse time indicates the time between pulses. For example, 5 minutes is selected. In this example, all of the air cushions in the mattress will deflate for 4 seconds and inflate for 5 minutes (the selected time).
<b>FOWLER</b>	Fowler Mode. The pressure will increase to prevent the patient from bottoming out.
<b>MULTI (PULSE + STATIC)</b>	Pulse and Static mode.

3. Use the Select button to move the pointer to the times or attributes available for the selected function.
4. Use the Firmer or Softer buttons to change the times or attributes.

### Hold Button (MA95Z)

1. Press the Hold button () to pause the mattress in the current position. The mattress will remain in this position until the Hold button is pressed again.


### Firm/Soft Buttons

1. Select comfort pressure settings by pressing Firm () or Soft () buttons.
  - Soft Button - Pressing this button reduces the pressure in the mattress.
  - Firm Button - Pressing this button increases the pressure in the mattress.

*NOTE: The patient comfort pressure ranges from Soft ( $6\pm4$  mmHg) to Firm ( $32\pm6$  mmHg). The Comfort Control LED displays the patient comfort pressure levels and provides a guide to the caregiver to set approximate comfort pressure level depending on the patient weight. If the patient's weight to height ratio is above average, increase the pressure setting by approximately 20%. MA90Z models display levels from 0 to 9 and MA95Z models display the mmHg from 6 to 32.*

### Automatic Wireless Fowler

#### Manual Operation of the Fowler

1. Press the Select button () to move the pointer on the LCD to Function.
2. Use the Firm and Soft buttons until Fowler displays.

*NOTE: When this mode is activated, the control unit increases the pressure in the mattress to prevent the patient from bottoming out.*

#### About Automatic Wireless Mode

When the bed articulates to 45°, the transmitter in the head of the mattress signals the control unit to increase the pressure in the mattress by 80% to prevent the patient from bottoming out.



**Programming the Automatic Wireless Fowler Transmitter**

1. Ensure the transmitter is inside the mattress pocket located on the right side of the mattress at the head end.
2. Ensure the mattress is in a flat position.
3. Ensure the control unit is plugged in, and the LCD displays STAND BY.
4. Perform one of the following:

- MA90Z - Perform the following steps:

- i. Press and hold the Turn Angle and Max Inflate buttons.

*NOTE: The Fowler LED is lit and L displays in the LCD Display.*

- ii. Raise the bed to 45°.

*NOTE: The control unit will beep and will return to Standby.*

- iii. Perform one of the following:

- Cancel - Press the Turn Angle button to exit Fowler Transmitter Setup without linking to a transmitter.
- Save - Wait 60 seconds without pressing a key.

- MA95Z - Perform the following steps:

- i. Press and hold the Hold and Max Inflate buttons.

- ii. AUTO FOWLER LEARN MODE will display.

- iii. PLACE BED IN FLAT POSITION will display.

- iv. CONTINUE -> SELECT will display.

- v. Press the Select button.

- vi. PLACE BED IN FOWLER/UPRIGHT POSITION will display.

- vii. TRANSMITTER DETECTED will display.

- viii. The control unit will beep.

- ix. STAND BY will display.

## Mode Button (MA90Z)

1. Press the Mode button () to select the Max Inflate Mode or the Low Air Loss mode.

- Max Inflate Mode - In this mode, the mattress inflates rapidly to maximum firmness (pressurized to  $35 \pm 6$  mmHg). A series of beeps sound every three minutes as a reminder that the Max Inflate mode is active. After 30 minutes, the Max Inflate mode deactivates and the control unit defaults to the previous setting.


*NOTE: It takes 5-10 minutes for the MA90Z mattress to inflate fully (inflation time depends on size of mattress).*

*NOTE: Max Inflate mode can be manually disengaged by pressing the Max Inflate button. This will deactivate the Max Inflate LED.*

*NOTE: It is recommended that Max Inflate setting be used during patient ingress/egress, patient wound care, patient turning or patient cleaning.*

- Low Air Loss Mode - In this mode, the mattress goes into on-demand low air loss relief mode.

## Max Inflate Button (MA95Z)

1. Press the Max Inflate button () to select the max inflate mode and inflate the mattress rapidly to maximum firmness (pressurized to  $35 \pm 6$  mmHg). A series of beeps sound every three minutes as a reminder that the Max Inflate mode is active. After 30 minutes, the Max Inflate mode deactivates and the control unit defaults to the previous setting.


*NOTE: It takes 25-60 seconds for the MA95Z mattress to inflate fully (inflation time depends on size of mattress).*

*NOTE: It is recommended that Max Inflate setting be used during patient ingress/egress, patient wound care, patient turning or patient cleaning.*

2. Perform one of the following:
  - MA90Z - Press the Max Inflate button again to manually disengage Max Inflate mode.
  - MA95Z - Select a different setting to exit Max Inflate mode.

*NOTE: This will deactivate the Max Inflate LED.*

## Lock/Alarm Silence Button

1. Press the Lock/Alarm Silence button () to select one of the following modes:
  - Lock Mode - Pressing this button locks out all control unit functions, including the On button, to prevent any tampering with the settings. Press the button for approximately 3-5 seconds for the Lock LED to activate.

*NOTE: The Lock LED illuminates when in this mode.*

- Alarm Silence mode - Pressing this button silences the alarm that sounds in the event of power failure or when the hose is disconnected from the control unit.

*NOTE: The Alarm LED illuminates when in this mode.*

## Power Fail LED

In the event of power outage, an alarm sounds and the Power Fail LED flashes AMBER. The control unit has internal memory and retains the previous settings during the power outage.

*NOTE: During a power outage, the MA90Z mattress retains the air as long as the mattress is connected to the control unit.*

## Low Pressure LED

In the event that the mattress hose disconnects, an alarm sounds and Low Pressure LED flashes AMBER. Once the low pressure problem is fixed, the control unit resumes operation in the previously set mode.

## Displaying the Total Run Time (MA95Z)

Every time the control unit is plugged in, the LCD screen displays the Run Time in hours and minutes. For example, 2,584 hours and 25 minutes displays as 002584 Hours 000025 Minutes.

To display the Run Time during use:

1. Ensure the control unit is plugged in and the Standby LED is On.
2. Press and hold the Soft and Firm Buttons at the same time.
3. The LCD screen displays the Run Time as described above.

## Powering Up the System

*NOTE: For this procedure, refer to FIGURE 2.4.*

1. Turn on the power to the system by pressing the Power button on the control unit.

*NOTE: Once the button is released, a GREEN LED illuminates when the unit is on.*

## Placing the Patient on the Mattress

1. Press the Mode button or Max Inflate button to turn on the control unit to maximum flow.

*NOTE: In this mode, the Max Inflate LED lights up.*

2. After the mattress is fully inflated, place the patient on the bed.
3. Ensure that the patient's feet are towards the foot end of the mattress (the end with the hose).
4. Center the patient on the bed from side-to-side and head-to-foot.

*NOTE: Special positioning may be required with contracted patients to provide comfortable positions.*

5. After placing the patient, make certain no objects will fall under the patient, such as feeding tubes, IV's etc.
6. Wait five minutes for the mattress pressure to stabilize.
7. Set the comfort pressure to the desired comfort level.
8. Verify that the patient has not bottomed out by performing the following steps:
  - A. Ensure that the patient is lying flat on his/her back in the middle of the mattress.
  - B. Place four fingers between the air cushions directly underneath the sacral region of the patient's body.
  - C. Ensure that there is 3 to 4-finger width clearance between the bottom of the patient and the bed frame.
  - D. Adjust the comfort setting, if needed.
  - E. Wait five minutes for the mattress pressure to stabilize.
  - F. Repeat STEPS A-E until patient has not bottomed out and patient comfort is achieved.
9. If the patient feels that the bed is too soft/hard, press the Soft or Firm button to adjust the comfort settings.
10. Use a regular pillow to help support and stabilize the patient's head.

## Transferring Patient From/To a Gurney

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### **WARNING**

**ALWAYS engage the wheel locks of the bed and the wheel locks of the gurney before transferring the patient between the bed and the gurney.**

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1. Engage the wheel locks of the bed. Refer to the owner's manual provided with the bed.
2. Engage the wheel locks of the gurney. Refer to the owner's manual provided with the gurney.
3. Press the Max Inflate button to achieve maximum mattress pressure.

4. Raise or lower the bed to match the gurney height. Refer to the owner's manual provided with the bed.
5. When the mattress has reached maximum firmness, perform one of the following:
  - Bed to Gurney Transfer - Slide the patient onto the gurney.
  - Gurney to Bed Transfer - Slide the patient onto the bed.

## Transferring Patient From/To a Wheelchair

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### **⚠ WARNING**

**ALWAYS engage the wheel locks of the bed and the wheel locks of the wheelchair before transferring the patient between the bed and the wheelchair.**

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1. Engage the wheel locks of the bed. Refer to the owner's manual provided with the bed.
2. Engage the wheel locks of the wheelchair, if applicable. Refer to the owner's manual provided with the wheelchair.
3. Press the Max Inflate button to achieve maximum mattress pressure.
4. Raise or lower the bed to match the wheelchair height. Refer to the owner's manual provided with the bed.
5. When the mattress has reached maximum firmness, perform one of the following:
  - Bed to Wheelchair Transfer - Slide the patient onto the wheelchair.
  - Wheelchair to Bed Transfer - Slide the patient onto the bed.

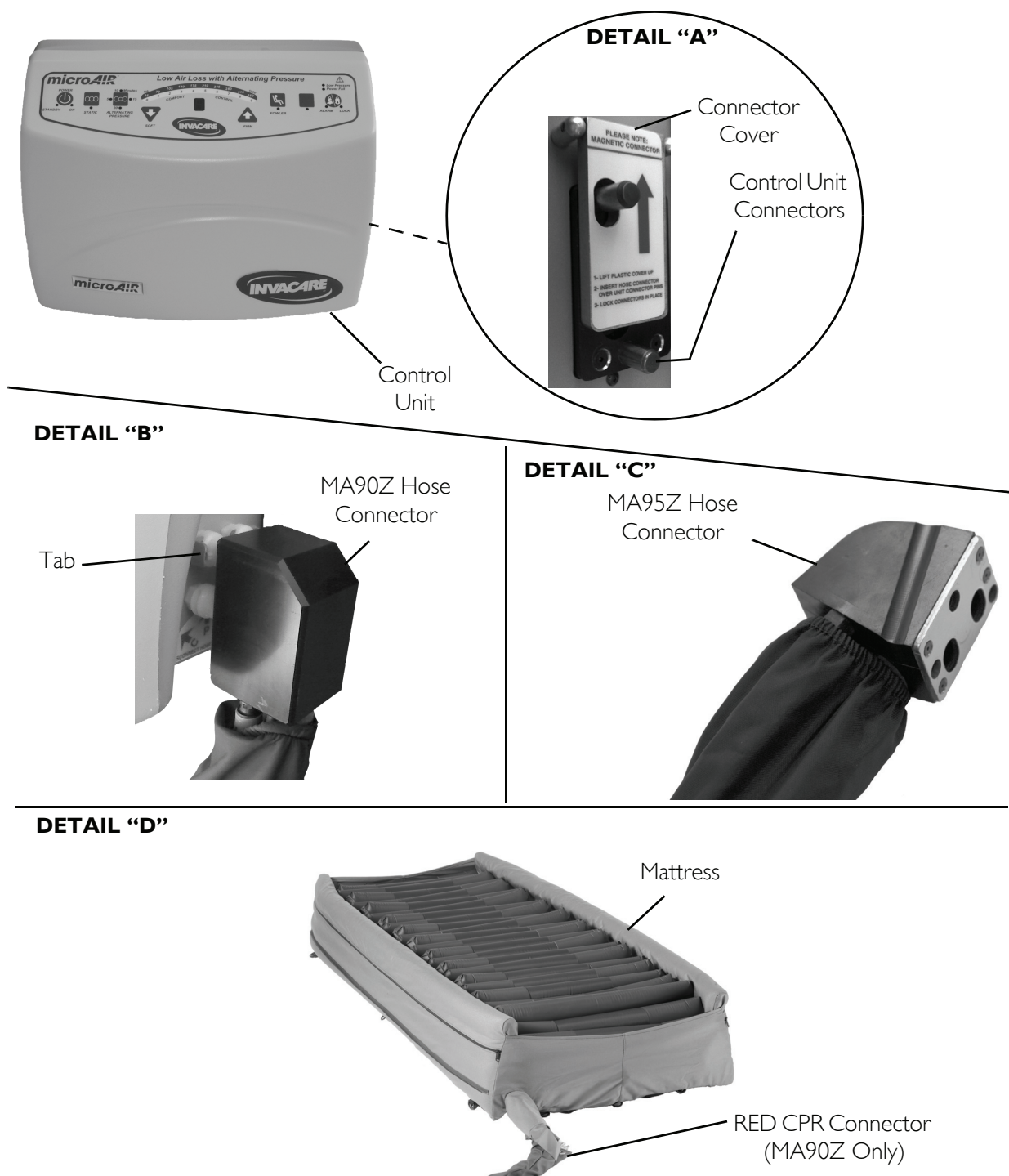
## Preparing for CPR Procedure

*NOTE: For this procedure, refer to FIGURE 2.5.*

1. Perform one of the following:
  - MA90Z - Press and hold the tabs on the hose connector (Detail "B").
  - MA95Z - Lift the connector cover (Detail "A").
2. Pull the hose connector (Details "B" and "C") from the control unit connectors.

*NOTE: MA95Z Only - If the hose connector is difficult to release, pull the hose connector down and then away .*

3. MA90Z Only - Disconnect the RED CPR connector located on the hose (Detail "D").



**FIGURE 2.5** Preparing for CPR Procedure

# SECTION 3—MAINTENANCE AND TROUBLESHOOTING

## Cleaning the System

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### **WARNING**

**Before cleaning or disassembling the MA90 series, check the underside of the mattress folds for sharp objects such as scissors, needles, etc. These objects should be removed and discarded before proceeding with further cleaning or disassembly; otherwise injury or damage to the product may occur.**

**Because of potential risk of infectious exposure, cleaning with the patient on the bed is not recommended.**

**All equipment should be inspected. Any item that is visibly soiled with the patient's blood or other body fluids should be properly cleaned or removed.**

**Laundry workers should treat all soiled bedding as if it were contaminated with pathogenic microorganisms.**

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1. Remove the bedding.
  2. If necessary, inflate the mattress.
  3. Ensure that the control unit is off.
  4. Unplug the power cord from the wall outlet.
  5. Ensure that the underside of the mattress is clear of all sharp objects.
  6. Examine the surface of the control unit and mattress assembly components for visible blood or body fluids.
  7. Perform one of the following:
    - If blood is present, decontaminate the product.
      - i. Remove all visible soil with disposable paper towels.
      - ii. Scrub the area with freshly prepared effective phenolic detergent disinfectant solution.
    - If blood is not present, remove any soil from the cover with paper towels.
- NOTE: If soiled, the cover should be removed, cleaned and decontaminated.*
8. Perform the following steps to clean the mattress cover:
    - A. Using a clean sponge or paper towel, wipe down the cover surface with a dilute detergent solution of quaternary cleaner disinfectant or other germicidal detergent solution.
    - B. Remove the cover and launder it using the following method:

## **CAUTION**

**Laundry workers should always wash their hands before working with clean bedding.**

**DO NOT overload the machine.**

**DO NOT use chlorine bleach because it may damage the fabric coating.**

**High air temperatures will damage the fabrics and void the Invacare warranty.**

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- i. Place the cover in a washing machine.
  - ii. Wash with warm water (below 120°F).
  - iii. Add detergent and disinfectant according to the manufacturer's instructions.
  - iv. Remove excess water.
  - v. Set the dryer to the lowest setting (below 120°F).
  - vi. Dry the cover until it is completely dry.
9. Perform the following steps to clean the control unit and hose fittings:
  - A. Wipe all controls, chassis and hose fittings with a quaternary disinfectant solution.
  - B. Using a nylon brush, gently clean all crevices as they can harbor microorganisms.
  - C. Air dry all treated surfaces.
10. Perform the following steps to clean the mattress components (air cushions, mattress base, etc.):
  - A. Using a clean sponge or paper towel, wipe down the mattress components with a dilute detergent solution of quaternary cleaner disinfectant or other germicidal detergent solution.
  - B. Wipe the mattress components with a clean dry cloth.

## **Storing the System**

1. Ensure that the control unit is off and disconnect the power cord from the wall outlet.
2. Clean the system. Refer to Cleaning the System on page 23.
3. Disconnect the air hose connector from the control unit and allow air to vent from the mattress.
4. Gently roll up the mattress with minimal handling and agitation.
5. Ensure the cover surface is inside the roll.
6. Store the unit, keeping the mattress with the control unit.

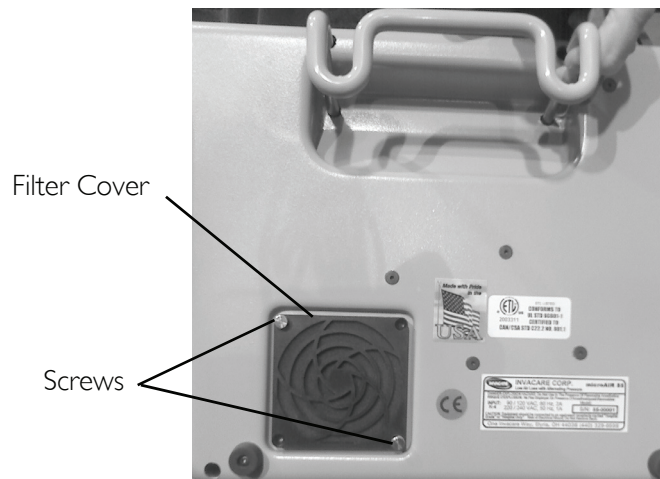


## Changing the Filter

*NOTE: For this procedure, refer to FIGURE 3.1 on page 25.*

Clean the filter every 5 months or whenever it is dirty.

1. Remove the two screws securing the filter cover to the back of the control unit.
2. Remove the filter.
3. Wash the filter with water and a mild detergent.
4. Dry the filter completely.
5. Install the filter into the back of the control unit.
6. Secure the filter cover to the back of the control unit using the two screws.



**FIGURE 3.1** Changing the Filter

## Troubleshooting

PROBLEM	CAUSE	SOLUTION
Mattress not inflating Not alternating properly	Mattress hose disconnected	Connect hose connectors and lock them in place
	Air hose kinked or split	Unkink hose or replace split hose
	Major leak in the air cushions or overlay pad	Replace leaking air cushions or overlay pad
	Kinked or split manifold	Unkink manifold or replace split manifold
	Has power and fuse is good, control unit does not come on	Send unit back for repair
	Not alternating, solenoid or valve malfunction	Send control unit back to factory for repair
	No air, pump or blower malfunction.	Send unit for repair

PROBLEM	CAUSE	SOLUTION
No power	Control unit off	Check power source and turn on unit
	Power cord disconnected	Connect power cord to the power source
	No power in the power source	Check power source has power and turn it On
	Power outage	Wait till the power source has power
	Blown fuse	Replace blown fuse with an equivalent fuse

# NOTES

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# LIMITED WARRANTY

**PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.**

This warranty is extended only to the original purchaser who purchases this product when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the mattress and cover when purchased new and unused to be free from defects in materials and workmanship for a period of one year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants the control unit when purchased new and unused to be free from defects in materials and workmanship for a period of two years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the back cover. Provide dealer's name, address, model number, and the date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number.

Invacare Corporation will issue a return authorization. The defective unit or parts must be returned for warranty inspection using the serial number, when applicable, as identification within thirty days of return authorization date. **DO NOT** return products to our factory without our prior consent. C.O.D. shipments will be refused; please prepay shipping charges.

**LIMITATIONS AND EXCLUSIONS: THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR OR FAILURE TO ADHERE TO THE ENCLOSED INSTRUCTIONS. IN ADDITION, THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED; PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE; OR PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT INCLUDING, BUT NOT LIMITED TO: MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE; PRODUCTS DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL; PRODUCTS REPAIRED BY ANYONE OTHER THAN AN INVACARE DEALER, SUCH EVALUATION SHALL BE SOLELY DETERMINED BY INVACARE.**

**THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER EXPRESS WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. INVACARE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.**

**THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.**



**Yes, you can.**

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