PrimUS MEDICAL

PRIMECARE® AP50

BLOWER ASSEMBLY OWNER'S MANUAL

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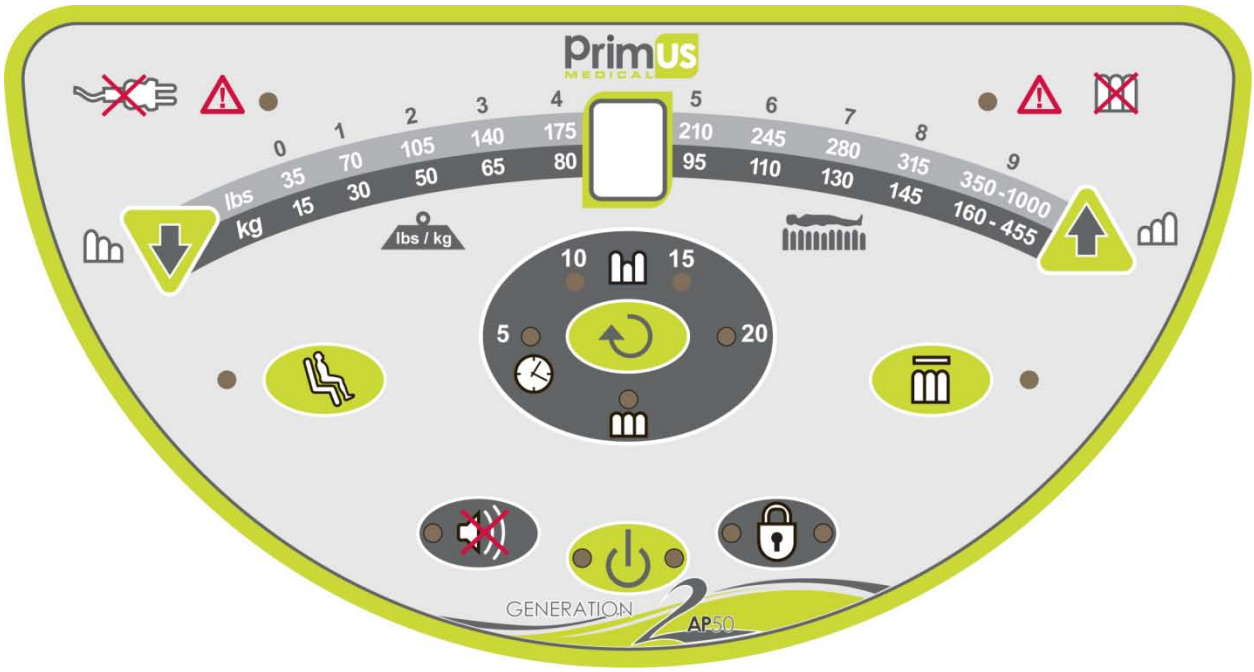
OPERATING INSTRUCTIONS
AP-50 SERIES

Generation 2 AP-50
ALTERNATING PRESSURE SYSTEM



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DANGER:

♦EXPLOSION HAZARD♦
DO NOT USE IN THE PRESENCE OF FLAMMABLE ANESTHETICS

Caution:

- Do not use in the presence of smoking materials or open flame. Air flowing through air mattress will support combustion.
- Risk of electrical shock, do not remove control unit cover.
- Refer servicing to qualified service personnel.

Warning:

- Never drop or insert any object into any opening of the control unit.

MANUFACTURER'S LIABILITY

PRIMUS MEDICAL will be liable for any effects on safety, reliability and performance of the AP-50 Dynamic low pressure system whenever changes, readjustments, or repairs have been carried out by a factory authorized service center or a technician of PRIMUS MEDICAL, or whenever the control unit and mattress system has been used according to the following operating instructions.

PRIMUS MEDICAL's liability under the warranty is the repair or replacement provided and, in no event, shall PRIMUS MEDICAL's liability exceed the purchase price paid by the customer of the product. Under no circumstances shall PRIMUS MEDICAL be liable for any loss, direct, indirect, incidental, or special damage arising out of or in connection with the use of this product.

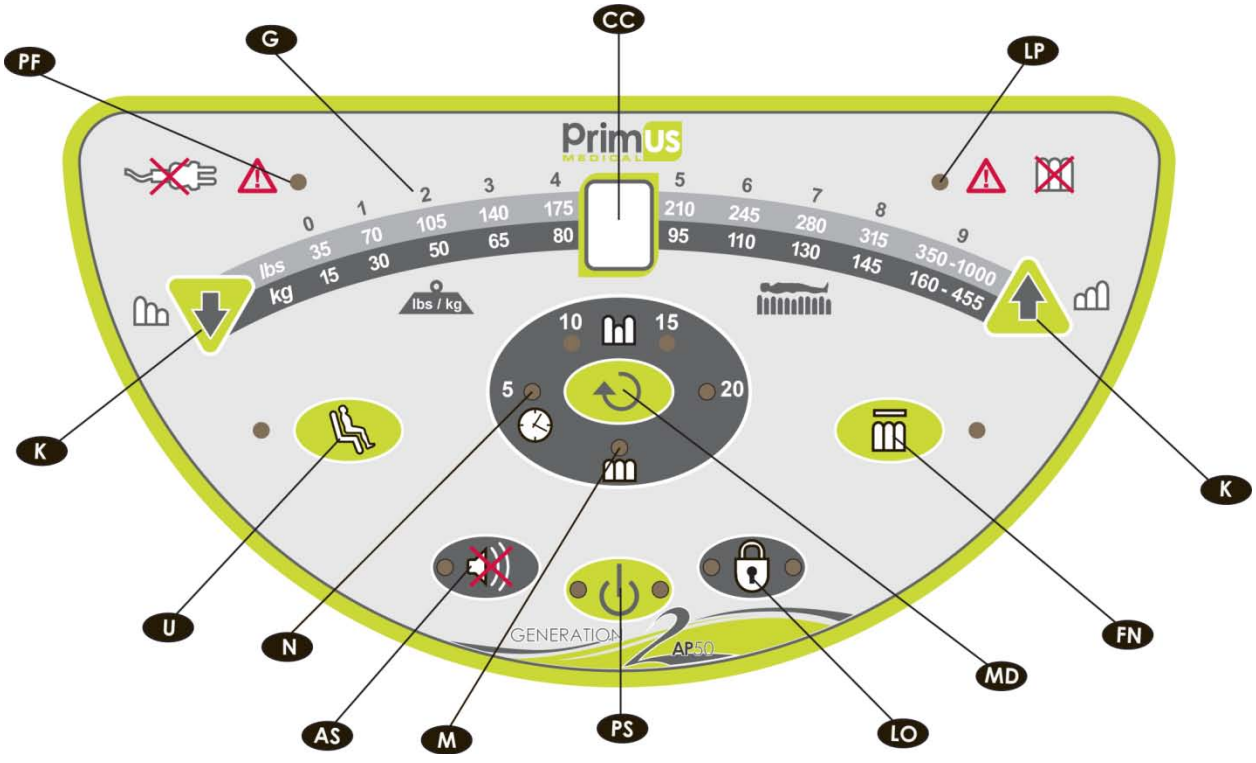
EXPLATION OF SYMBOLS USED ON THIS DEVICE

See fig. 1

SYMBOL	EXPLANATION
(CC) COMFORT CONTROL LEVEL	Seven segment LED displays the patient comfort pressure level
(MD) Therapy	To select **ALTERNATING PRESSURE** (AP) therapy mode of **STATIC** mode. Press 'MD' to activate Static Mode (indicate by LED '**M**') or AP Mode. AP mode requires the selection of an AP time (the selected time will be indicated by the LEDs noted by '**N**').
(K) Soft and Firm Keys	Used to adjust patient comfort pressure levels up or down.
(PS) Power Switch	Press power switch to turn ON or OFF the unit. Amber Light On = Main Power is On but Control Unit is Off, Green Light On = Control Unit is operating
(U) Upright	Activates patient fowler boost mode. In patient fowler position the control unit boosts pressure in the mattress to avoid patient bottoming out.
(FN) Max Inflate / Low Air Loss	Press "FN" key to select Max Inflate mode or Low Air Loss (LAL). Availability of the LAL option is configurable and may be disabled in some units. Max inflate will automatically timeout after 45 minutes and return to the previous setting. Max Inflate may also be disengaged before the 45 minute timeout with this button.
(LP) Low Pressure	Audiovisual alarm in the event of mattress hose disconnection.
(G) Display Panel	Displays all of the ECO-ZONE™ product functions
(AS) Alarm Silence	Mute audio alarm
(PF) Power Fail	Audiovisual alarm in the event of power outage. Has internal memory, will retain previous settings during power outage.
(LO) LOCK	Lock out key completely locks the control panel, including the power switch.

	**Indicates the point of attachment of the equipment to earth (Grounding Point)**
	**Attention: Instructs end user / care giver / operator to refer to the manual**
	**Indicates that the degree of protection against electrical shock is TYPE BF**
	**Not for use in presence of flammable anesthetics**
	**Risk of electrical shock, do not remove back.**

Fig. 1



AP-50 SYSTEM (Figure -1 Page 13) :

The AP-50 System is a dynamic (alternating) low pressure system used to provide pressure reduction. It consists of a control unit (A) which is used to inflate a mattress replacement system (B). The control unit is designed to provide continuous static or alternating pressure at required patient comfort levels. The ABS/PVC blend enclosure houses a high output air pump (42 LPM), an alternating pressure valve, a bright back lit digital display and a microcontroller which controls all of the above components, and provides desired patient comfort pressure levels.

The mattress replacement system (B) is comprised of a durable cordura base (C) with a safety 2" convoluted foam base, 5" or 8" (inflated) air cushions (D) and covered with a vapor permeable, water proof, low friction and low shear nylon quilted top sheet (E) with zipper or straps to fasten the top sheet to the mattress base. The complete mattress system has 10 straps (F) in several areas so it can be easily fastened to any size hospital bed.

AP-50 DYNAMIC LOW PRESSURE SYSTEM FEATURES

CONTROL UNIT (A) {Figure -2 Page 14} :

- High flow (42 LPM) air output and quiet operating control unit, Max flow mode (W) inflates mattress in 5 to 15 minutes depending on the size of the mattress. Has 30 minute Max Flow timer.
- State of the art microcontroller technology unit for accurate patient comfort pressure values and dynamic times.
- Highly visible and bright back lit 2x16 character LCD digital display panel (G) displaying current mode (H), A/P cycle time, count down timer (I), and desired patient comfort pressure level (J).
- Ergonomically designed and easy to operate attractive patient comfort control (K) and mode (L) knobs, to set mode and comfort levels. The knobs retract into the display panel cavity to avoid tampering and also to protect the knobs from damaging.
- 1 to 99 levels of patient comfort level control with bar graph display.
- Static (non alternating) mode (M).
- Dynamic (alternating) mode (N) with 1 to 30 minutes adjustable dynamic (alternating) pressure cycle times.
- Alarm Silence mode (O) to mute audio chime.
- Integrated handle/hanger (P) for easy carrying and hanging of the control unit from the foot board of the bed.
- 14' long detachable 16 AWG hospital grade power cord (Q).
- Durable and attractive dual rugged chrome-plated brass ¼" flow couplings (R) for quick connection and disconnection (CPR deflation). Some units may have plastic quick connectors.
- Control unit has short circuit / over voltage protection with dual fused IEC connector (S).

SUPPORT SURFACE (MATTRESS / OVERLAY) (B) {Figure - 1 Page 13} :

- Self contained mattress replacement system / mattress overlay system (B) with easily detachable components for cleaning.
- Detachable urethane coated, 70 Denier nylon taffeta, flame retardant / water repellent, mildew resistant, low friction and low shear, 5" or 8" high (inflated) lateral tubular air cushions (T) (16 to 20).
- Detachable zippered or strapped highly breathable urethane coated, 70 Denier nylon, flame retardant / water repellent, highly vapor permeable, anti-microbial, low friction and low shear quilted reusable top sheet (E).
- 2" convoluted safety foam enclosed in the base (C) to support the patient in the event of loss of air pressure in the mattress.
- The mattress has a Bi-lumen tubing (V) with easy to use two quick connect and disconnect connectors (R).

TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

	U.S.	INTL.
Input Voltage AC:	120V	220 / 240V
Input Frequency:	60 Hz	50 Hz
Current:	1A	0.5 A
Power Consumption:	120 W	120 W
Circuit Protection: (Fast Blow Fuse):	Dual Fused 250V, 1A	Dual Fused 250V, 1A
Mode Of Operation:	Continuous	Continuous

PERFORMANCE SPECIFICATIONS

	U.S.	INTL.
Max Flow:	42~52 LPM	42~52 LPM
Max Flow Pressure:	40 ± 10	40 ± 10 mmHg
Max Flow Timer:	30 minutes	30 minutes
Support Surface Inflation Time:	5 to 15 minutes	

Patient Comfort Control Pressures

Min Pressure:	6 ± 4 mmHg	6 ± 4 mmHg
Max Pressure:	30 ± 8 mmHg	30 ± 8 mmHg
Cycle Time:	1to 30 Min	1 to 30 Min

Patient Contact:
Control unit and mattress have **Latex-Free** components.

MECHANICAL SPECIFICATIONS

Control Unit (A)

Dimensions, LxWxH: 12" x 5 3/4" x 10 .5" (29.54cm x 14 x 27cm)
Weight: 10 lbs. (4 .5Kgs)
Power Cord: 14' Long detachable 16 AWG Hospital Grade
Connection: ¼" flow Chrome-Plated or plastic quick couplings
Packaging: 1Piece per Box

Support Surface (B)

Description	Inflated Dimensions LxWxH	Weight
Overlay:	80"x36"x5" (203x89x13cm)	8 lbs. 3.6 Kgs.
Mattress:	80"x36"x10" (203x89x25.5cm)	23 lbs. 10.5 Kgs.

ENVIRONMENTAL SPECIFICATIONS

Operating Conditions:

Ambient Temperature: 40° ~ 104° F
10° ~ 40° C
Relative Humidity: 30% ~ 75% Non-Condensing
Atmospheric Pressure: 700 hPa to 1060 hPa

Storage And Shipping Conditions:

Ambient Temperature: -40° ~ 158° F
-40° ~ 70° C
Relative Humidity: 10% ~ 100%
Atmospheric Pressure: 500 hPa to 1060 hPa

Protection Against Harmful Ingress Of Liquids:

Ordinary Protection (IPXO)

SAFETY AGENCY APPROVALS

ETL Listed:

2003311 ETL LISTED CONFORMS TO UL STD 60601-1 CERTIFIED TO CAN/CSA STD C22.2 NO. 601.1

To standard for safety of Medical Electrical Equipment

Conforms To: UL STD 60601-1 with respect to
Electrical Shock, Fire and Mechanical Hazards

Certified To: CAN/CSA STD C22.2 No. 601.1

CE Mark: CE

Flame Resistance: Unit components meet UL 94V-0.
Mattress components pass
California117.

SAFETY INSTRUCTIONS

- To avoid damaging your AP-50 control unit (A), before operating be sure the AC power (X) available at your location matches the power requirements printed on the boiler plate label (Y) on the back of the control unit.

- To avoid electric shock, always plug in the power cord of the control unit into a properly grounded power source (X).
- Do not insert items into any openings of the control unit (A). Doing so may cause fire or electrical shock by shorting internal components.

- Do not spill liquids or food on or into the control unit (A). In the event of any spillage, immediately turn off the control unit and disconnect it form the power source (X). Send the control unit for servicing by a factory authorized service technician.

- Care should be taken such that the inlet air vent of the control unit (A) is not blocked, and kept away from any heat sources or radiators during the operation of the unit.

- Care should be taken such that the power cord (Q) of the control unit is not pinched or any objects placed on the power cord, and also ensure it is not located where it can be stepped on or tripped over.
- Do not attempt to service the control unit except as explained in this operating instructions manual, contact factory for servicing instructions. Always follow operating and service instructions closely.

♦ **WARNING:** Before opening the control unit (A) enclosure, make sure the control unit is turned off and unplugged from its power source (X). The control unit enclosure should only be opened by a factory authorized qualified service technical personnel.

SYSTEM SET-UP

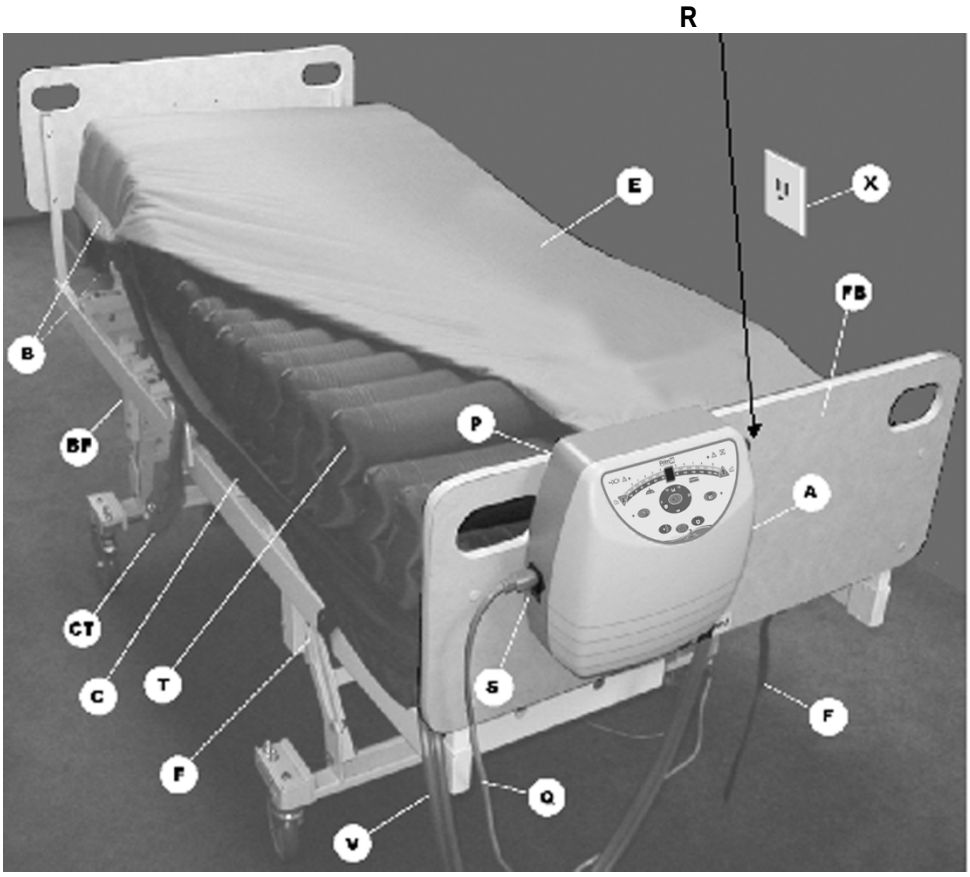


Figure - 1

PLEASE NOTE:

It is highly recommended that the AP-50 SYSTEM should always be used on beds that are equipped with standard hospital side rails.

Please raise all 4 side rails on the bed and lock them in position after the patient is on the mattress.

Refer to the Diagrams on Page 6 , 11

1. Before using the AP-50 dynamic low pressure system remove any non AP-50 mattress system from the bed frame (BF).

2. Unroll the AP-50 mattress (B) and place it on the bed frame (1A). Note: Make sure that the hose end of the mattress is towards the foot of the bed.

3. There are ten nylon black straps with buckles (F), two strap at the head of the mattress, two on the foot of the mattress, and three on the each side of the mattress. Loop each strap around the bed frame and fasten it securely to the bed frame using the buckle.

4. Pull the hanger (P) on the back of the control unit (A) and suspend the control unit from the foot board (FB) of the bed frame (BF). If the bed frame you are using does not have a foot board, place the control unit (A) on its feet on a flat surface underneath the bed near the foot of the bed frame (BF). **Note:** Care should be taken such that the air inlet vent or (air filter) on the control unit is not covered, and the control unit is not placed on the floor in such a manner that it is a hazard for flow of traffic.

5. Turn small mode knob (L) to "Stand By" (SB) position. Uncoil the power cord (Q) and plug the cord into the appropriate AC power source (X) which is properly grounded. The unit will go through the system initialization routine and once it is complete the display will read stand by and the orange stand by led lights up.

Note: Care should be taken such that the power cord (Q) of the control unit is not pinched or any objects placed on the power cord, and also ensure it is not located where it can be stepped on or tripped over.

6. Connect the matting coupling inserts (CI) on the mattress bi-lumen hose assembly (V) into the chrome-plated coupling bodies (R) located on the top right side of the control unit (A) respectively and lock them in place. Note: Press mating connectors in place until an audible click is heard from both the connectors. Make sure the connectors have good connection by gently tugging on both the hoses. Also care should taken such that the mattress hose is freely suspended with out being pinched or kinked.

OPERATING INSTRUCTIONS

*Operation process may vary by blower interface design. All questionable function should refer to page 6 for proper head unit operation

Refer To The Diagram On Pages 6, 11

button/operation interface may differ from the following notes due to product updates. Refer to the diagram on page 6, for more information on control/operation.

1. Make sure the mattress hose assembly (V) is connected securely to the control unit (A). Also make sure the CPR Tag (CT) connector is securely connected into the mattress manifold on the side of the mattress.

INITIAL POWER UP

2. During initial power up (when power cord (Q) is plugged into the power source), the control unit (A) will display "SYSTEM INITIALIZING" for a brief moment and then displays "CHECKING LINE VOLTAGE" and go through a system initialization routine for few seconds. Once the routine is complete the display (G) will either read "DETECTED 60 HZ" "90 - 110 VAC " or "DETECTED 50 HZ" "220-240 VAC" for a brief moment and then it will display "STAND BY" on the digital display.

3. If the unit is in stand by mode (SB) the display will read "STAND BY", if the mode knob (L) is turned to MAX FLOW mode (W) the pump will come on full blast.

4. If the power comes on after a power outage, the control unit will go through it system initialization routine for few seconds, and then display the current mode function and the current comfort control level. The control unit will resume the desired function.

MAX FLOW (W)

5. This mode is used to rapidly inflate the mattress. During this mode a series of beeps will sound every 3 minutes as a reminder that MAX FLOW mode has been activated. MAX FLOW mode will be active for 30 minutes, after 30 minutes the air pump in the unit will shut off and the display will Flash "MAX FLOW TIME OUT" for a brief period of time and if no action is taken the microprocessor will default to the "STATIC" mode and set the patient comfort level to the comfort control level knob setting until different mode is chosen. In the event the mattress reaches max inflate pressure before the 30 minutes the display panel will flash " MAX FLOW REACHED" and the control unit will default to the "STATIC" mode as described in the above lines. During the MAX FLOW mode the mattress will not exceed more than 55 ± 15 mmHg pressure. Note: The audible beep can be muted if desired by activating alarm silence mode.

6. The mattress (B) will inflate to its normal size in 0 5 ≈ 20 minutes. (Inflation time depends on the size of the mattress). **Note:** Mattress can be rapidly inflated within 3 minutes using an external Rapid Inflator / Deflator Blower.

7. To set MAX FLOW mode (W) gently push the small mode knob, the knob will pop up slowly. Turn the knob to the "MAX FLOW" position until the green LED lights up. The display will read "MAX FLOW" and the count-down time (I) "30.00" on the top and the comfort control level (T) bar graph will be displayed to full scale on the bottom row.

STATIC (M)

8. To set STATIC mode (M) gently turn the knob to the "STATIC" position until the green LED lights up. The display will read "STATIC" time will be "NONE" on the top row and the comfort control level bar graph will display the desired patient comfort pressure level on the bottom row.

9. In the STATIC mode all the air cushions in the mattress will be maintain at a constant desired patient comfort pressure.

DYNAMIC (A/P) Alternating Pressure

10. To set DYNAMIC (ALTERNATING) mode (N) gently turn the knob to the "DYNAMIC" position until the green LED lights up. The display will read "DYNAMIC" time will be "1.00" on the top row and the comfort control level bar graph will display the desired patient comfort pressure level on the bottom row. The DYNAMIC cycle time can be set by turning the knob to a desired time Min 1minute and Max 30 minutes, the corresponding DYNAMIC cycle time will be displayed below the TIME on the display panel.

11. In the DYNAMIC mode the odd air cushion in the mattress will be maintain at a constant desired patient comfort pressure, and the even air cushions will deflate from desired patient comfort pressure to zero pressure depending on the cycle time for the first half of the DYNAMIC cycle and visa versa for the second half of the cycle and continue back and forth.

Alarm Silence (AS)

12. During "MAX FLOW" mode and in the event of the control unit sensing an abnormal condition, such as low pressure or power outage the audio (MAX FLOW mode) visual signal will be activated to alert the care giver. If desired the care giver can mute the audible signal by activating the Alarm Silence mode (AS) to keep the patient from being disturbed.

13. To set Alarm Silence mode (AS) gently turn the knob to the "Alarm Silence" position until the green LED lights up. The display will read "ALARM SILENCE" "BEEP ON" for a brief period of time and then resume the normal set mode settings.

14. To deactivate the "Alarm Silence" mode turn knob to "Alarm Silence" position until the green LED turn off.

15. If the knob is left in "Alarm Silence" position the microprocessor will default the control unit to DYNCMIC mode and the cycle time to 30 minutes and unit resume its normal default operation.

PATIENT COMFORT CONTROL LEVEL (T)

16. The K-1 mattress is designed for patients weighting between 50 ≈ 350 lbs. (22 Kgs. ≈ 160 Kgs.). By turning the comfort control knob (K) towards the SOFT position reduces the pressure setting, and by turning the knob towards the FIRM position increases the pressure. The patient comfort pressure ranges from SOFT 6 ± 4 mmHg to FIRM 32 ± 6 mmHg, The mattress inflation and deflection pressure is monitored by the microprocessor and processor depending on the desired patient comfort level increases or decrease the speed of the air pump to provide the appropriate air low into the mattress to maintain the desired pressure in the mattress.

17. Once the mattress is inflated to its normal size with the patient lying on it, set the COMFORT CONTROL LEVEL knob to the desired patient comfort position. Custom patient comfort level can be achieved by adjusting the comfort control level knob to softer or firmer settings. Wait 5 minutes for the mattress pressure to stabilize, verify the appropriate pressure required to support the patient by performing a simple "four finger check". Make sure that the patient is lying flat on his or her back in the middle of the mattress. Place four fingers of your hand directly underneath the sacral region of the patients body, there should be a minimum of 3 to 4 finger width clearance between the bottom of the patient and the safety foam base. Repeat this procedure until the desired patient comfort pressure is achieved.

RECOMMENDED PRESSURE SETTINGS

18. For rapid inflation of the mattress set mode knob to "Max Flow" position by gently turning the knob until "Max Flow" green LED turns on.

19. For extra firm support during Patient ingress / egress, or Patient wound care, or Patient turning, or Patient cleaning it is recommended to set the comfort control knob to max comfort control settings.

20. During patient Fowler positioning or in case of Patients who's weight to height ratio is below the normal average, it is recommended to set the comfort control knob to 10% more than their actual weight settings.

LOCKED (LO)

21. During "**LOCKED**" mode all the control unit functions and keys including the power key will be locked out to avoid tampering of the patient settings.

FAILURE MODES

LOW PRESSUE ALARM (OPTIONAL)

22. In the event of the control unit sensing an abnormal condition, such as low pressure (mattress hose disconnection) the microprocessor will activate an audio visual signal to alert the care giver by flashing “LOW PRESSURE” on the display and turning on the buzzer. Once the failure mode is corrected the audio visual signal will cease and unit starts operating its set mode.

P0WER FAIL (Z)

23. In the event of the control unit sensing an abnormal condition, such as power outage the microprocessor will activate an audio visual signal to alert the care giver by flashing the orange “POWER FAIL” LED and turning on the buzzer. The display goes blank during this failure mode. Once the failure mode is corrected the audio visual signal will cease and unit starts operating its set mode.

CPR FUNCTION

Refer To The Diagram On Page 13 & 14

NOTE : The mattress should be deflated before performing CPR on the patient.

1. To deflate the mattress or for CPR function, disconnect the mattress bi-lumen hose (V) from the control unit by pressing the two quick release button on the coupling bodies (R) and simultaneously pulling the hoses (V) from the control unit (A).

2. Also disconnect the red CPR tab (CT) connectors located on the side of the mattress on the patient right side towards the head.

3. In Case of CPR emergency, for quick deflation of the mattress use a pair of scissors or knife to cut both hoses on the mattress. Also unzip the top sheet from the foot to the head by pulling the zipper located at the patient right foot corner near the exit location of the hose assembly. Disconnect few air cushions which are directly below the patient chest from the mattress by pressing the quick release button on the connector in one hand and pulling the air cushion connector in the other hand.

PATIENT TRANSPORTATION (PT)

1. To transport a patient without removing the patient of the bed, turn knob to "STATIC" mode wait few minutes for the mattress to stabilize, kink both hoses on the mattress such that the air inside the mattress does not escape. While kinking the hoses disconnect the hoses from the control unit by pressing the quick release button on both the coupling bodies (R) and simultaneously pulling the hoses (V) from the control unit (A).

2. The mattress hoses still kinked connect the coupling inserts on the hose into the coupling bodies and lock them in place.

3. Turn off the control unit by turning the knob to "Stand By" position until the orange LED lights up. Disconnect the power cord from the power source and roll it up on the control unit securely.

CLEANING PROCEDURE

WARNING

CONTROL UNIT

♦ Before attempting to clean the U.S., or the International control unit, turn off the unit and disconnect the control unit power cord from the power source. ♦

♦ **DO NOT HEAT, STEAM AUTOCLAVE, OR IMMERSE THE CONTROL UNIT IN LIQUIDS** ♦

1. Ware eye goggles and rubber gloves before staring the cleaning procedure.

2. The following germicidal detergent / disinfectant is recommended by the EPA as hospital disinfectants.
   a. Hi-Tor Germicidal Detergent
   By Huntington Laboratories, Inc.
   Indiana
   EPA # 303-91

Note: A fresh spray bottle of disinfectant / detergent solution should be prepared every day to clean the control unit.

3. By following the preparation instructions provided with the germicidal detergent /disinfectant solution, prepare the required amount of disinfectant solution or mild detergent solution.

4. Pour required amount of the germicidal solution into a spray bottle.

5. Using a brush or a cloth wipe off dust. If necessary, spray the exterior of the top and the bottom enclosures, power cord and the cord plug with the prepared disinfectant / detergent solution. Using a damp cloth wipe down the sprayed surface cleanly. **Note: Do not spray excess amount of solution on the control unit.**

6. Once the control unit is clean, wipe the unit, the power cord and the cord plug down dry with a clean dry cloth.

7. Place the control unit to dry in a cool and dry area for an hour before operating the unit again. If the control unit is not used immediately place the control unit in a plastic bag and store it in a storage area.

8. After the cleaning operations are completed remove and dispose the rubber gloves appropriately. Wash your hands thoroughly with antibacterial soap.

MATTRESS

9. Ware eye goggles and rubber gloves before staring the cleaning procedure.

10. Follow steps 2 through 4 above to prepare disinfectant solution.

11. Using damp cloth wipe down the air cushions and the mattress base. Once the air cushions and the base is clean, wipe them down dry with a clean dry cloth.

12. Air cushions should washed periodically, top sheet will require more frequent washing. Set wash cycle to Heavy load and warm water. Once the water is full add manufacturer suggested quantity of laundry detergent and/ or standard hospital disinfectants. If the air cushions or the top sheet becomes soiled with human waste, or blood clean immediately by wiping down. Use hospital recommended laundry detergent and/ or disinfectant per manufacturer's instructions. **Note: Use non-chlorine bleach detergent.**

13. Once the washing cycle is complete, make sure excess water from inside the air cushions is completely removed. Set the dryer to lowest heat settings, and operate the dryer until the air cushions or the top sheets are completely dry.

14. Leave the mattress to dry in a cool and dry area for an hour before using. If the mattress is not used immediately roll the mattress and insert it into a plastic bag and store it in a storage area.

15. After the cleaning operations are completed remove and dispose the rubber gloves appropriately. Wash your hands thoroughly with antibacterial soap.

CARE AND STORAGE

1. When control unit is not in use, turn off the unit, disconnect the power cord from the power source and wrap the cord around the control unit. Wrap the control unit and the power cord in a plastic bag and cable tie it so that dust cannot enter the bag.

2. Roll the mattress and place it in a plastic bag and tie wrap the bag.

3. Store the control unit and the mattress in a storage area designated to medical electronic product storage.

TROUBLESHOOTING GUIDE

THE FOLLOWING INFORMATION IS FOR FACTORY AUTHORIZED SERVICE FACILITIES AND FACTORY QULAFIED SERVICE PERSONNELL ONLY

PRIMUS MEDICAL will make available on request service manual, circuit diagrams, component lists, calibration instructions, quality control acceptance test procedures, or other information which will assist the factory qualified technical personnel to repair those items deemed repairable by the manufacturer.

PROBLEM	CAUSE	SOLUTION
A. Mattress Not Inflating / Not Alternating Properly	1. Mattress hose disconnected	1. Connect hose connectors and lock them in place
	2. Air hose kinked or split	2. Unkink hose or replace split hose
	3. Major leak in the air cushions or overlay pad	3. Replace leaking air cushions or overlay pad
	4. kinked or split manifold	4. Unkink manifold or replace split manifold
	5. Control unit not working	5. Send control unit back to factory for repair
	6. Timing motor malfunction	6. Send control unit back to factory for repair

B. No Power	1. Control Unit OFF	1. Check power source and turn on unit
	2. Power cord disconnected	2. Connect power cord to the power source
	3. No power in the power source	3. Check power source has power and turn it "ON"
	4. Power outage	4. Wait till the power source has power
	5. Blown fuse	5. Replace blow fuse with an equivalent fuse

PREVENTIVE MAINTENANCE

It is important to periodically test the AP-50 Dynamic Low Pressure System to verify the proper functionality. If the control unit air pressure reading is out of specification, it can result in poor or reduced patient support.

NOTE: All preventive maintenance service, performance and electrical tests, or repairs should be performed only by factory authorized and qualified technical personnel.

Preventive Maintenance Schedule

The following tests should be performed every 6 to 9 months and all test data should be recorded, a device history record on each control unit should be maintained.

1. Electrical Tests

The following or similar Hi-pot Tester and Electrical Current Leakage Analyzer should be used to perform electrical tests.

a. ROD-L Hi-pot Tester (120 / 240 Models)
b. Bio-Tek Analyzer, (120V AC Models)
c. Bio-Tek Analyzer, (220 / 240V AC Models)

To perform the leakage current test on the control unit please follow the manufacturer's or factory authorized test instructions for setting-up and performing the electrical tests.

Caution: Risk of electric shock, proper precautionary measures should be taken while performing electrical tests.

A. Hi-pot Test

If no alarm sounds, or no red "fail" light appears, the test is complete in about 60 seconds. The control unit passes Hi-pot test.

B. Leakage Current Test

Switch function switch to leakage current position and test the following power configurations.

Polarity Switch	Ground Switch
1. Normal Polarity	Closed Ground
2. Reverse Polarity	Closed Ground
3. Reverse Polarity	Open Ground
4. Normal Polarity	Open ground

120 V Models
PASS $\leq$ 100 µA
FAIL $>$ 100 µA

220 / 240 Models
PASS $\leq$ 500 µA
FAIL $>$ 500 µA

C. Ground Impedance Test

Switch the polarity switch to "OFF" and function switch to ground wire resistance position.

120V and 220 / 240V Models

PASS ≤ .1 Ω
FAIL > .1 Ω

2. Performance Tests

The following Flow and Pressure gauges should be used to perform functional tests.

a. Flow gauge, 0 ~ 50 LPM
b. Pressure gauge, 0 ~ 100 mmHg
c. Quick disconnect dual hose assembly

To perform the functional tests on the control unit please follow the factory authorized test instructions for setting-up and performing the functional tests.

A. Flow Test

Connect the dual hose connector to the control unit and the flow gauge. Turn on the unit and set the comfort control knob to max weight position, record flow reading.

PASS ≥ 30 LPM

B. Pressure Test

Connect the dual hose connector to the control unit and the pressure gauge. Turn on the unit and set the comfort control knob to Soft / Firm position, record reading. Set mode knob to Max Flow position and record data.

Note: Since the test is performed with out the mattress connected to the control unit, the minimum pressure in one of the air out let ports will be zero.

120 and 220 /240 V AC Models

Soft Position
PASS - 2 ~12 mmHg

Firm Position
PASS - 26 ~ 40 mmHg

Max Flow Position
PASS - 40 ~ 70 mmHg

C. Alternating Pressure Test

Connect the dual hose connector to the control unit and the pressure gauge. Turn on the unit and set the comfort control knob to Soft / Firm weight position, and the mode knob to Dynamic position and record alternating air pressure value in both zones.

120 and 220 / 240 V AC Models

Soft Position

Zone-1: PASS - 2 ~12 mmHg
Zone-2: PASS - 0 mmHg

Firm Position

Zone-1: PASS - 26 ~ 40 mmHg
Zone-2: PASS - 0 mmHg

ACCESSORIES

300108:	AP-50 Control Unit
300061:	Mattress Replacement System, A/P
300115:	Mattress Overlay System, A/P
300119:	Quilted Breathable Top Sheet

♦ **Note:** To place an order or if you have any questions regarding the AP-50 control unit and its warranties, please call the PRIMUS MEDICAL customer service at 877-638-2776, email: sales@primusmedical.com. ♦

WARRANTY

PRIMUS MEDICAL warrants the AP-50 control unit and the mattress for a period of ONE (1) year from the original date of purchase.

PRIMUS MEDICAL standard warranty is extended to the original buyer purchasing the equipment directly from PRIMUS MEDICAL or through its authorized dealers. All warranty periods, where applicable, commence on the date of purchase from PRIMUS MEDICAL or its authorized dealers.

PRIMUS MEDICAL's sole obligation and liability under this warranty is limited to (at PRIMUS MEDICAL's option) the repair or replacement by PRIMUS MEDICAL's authorized personnel of any parts or assemblies, which upon test and examination by PRIMUS

MEDICAL, prove to be defective. This equipment may be returned prepaid to PRIMUS MEDICAL after notification has been given and approval obtained for the return. Please call your PRIMUS MEDICAL sales representative or the Customer Service phone number below to arrange for warranty services.

PRIMUS MEDICAL's liability under the warranty is the repair or replacement provided and, in no event, shall PRIMUS MEDICAL's liability exceed the purchase price paid by the customer of the product. Under no circumstances shall PRIMUS MEDICAL be liable for any loss, direct, indirect, incidental, or special damage arising out of or in connection with the use of this product.

The control unit warranty does not cover normal maintenance such as cleaning, periodic electrical tests, performance tests, and updating of equipment or parts thereof. This warranty shall be void and not apply if the control unit, including any of its parts, is modified without PRIMUS MEDICAL's written authorization, is attempted to be repaired by personnel not authorized by PRIMUS MEDICAL, is not maintained in accordance with the prescribed preventive maintenance schedule, is used with accessories or parts not authorized by PRIMUS MEDICAL, or is damaged due to misuse, mishandling, abuse, negligence, accident, fire, or inadequate packaging by owner for shipment of the control unit for service, upgrade, repair, retrofit, or product return. All reasonable freight charges for valid factory approved warranty returns will be reimbursed. PRIMUS MEDICAL makes no guarantee of clinical results.

♦ **THE WARRANTY STATED ABOVE (INCLUDING ITS LIMITATIONS) IS THE ONLY WARRANTY MADE BY PRIMUS MEDICAL AND IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PRIMUS MEDICAL SHALL NOT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND.**