MEDICAL POSITIONING
INCORPORATED

Owner's Manual

Stress EchoBed®

Owner _____

Model _____

Serial # _____

Date _____

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Stress EchoBed® / Stress EchoBed® Dual Set Up

Introduction

Your Stress EchoBed®/Stress EchoBed® Dual has been tested to insure perfect operation on day one. Please closely inspect your Stress EchoBed®/Stress EchoBed® Dual when you receive it to insure no damage has occurred during shipment. Because your bed is a complex piece of equipment you are offered the following precautions.

Stress EchoBed®

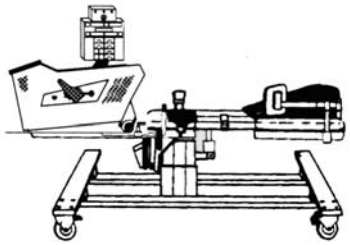


Figure 1

View of Stress EchoBed® Dual without Ergometer/Computer

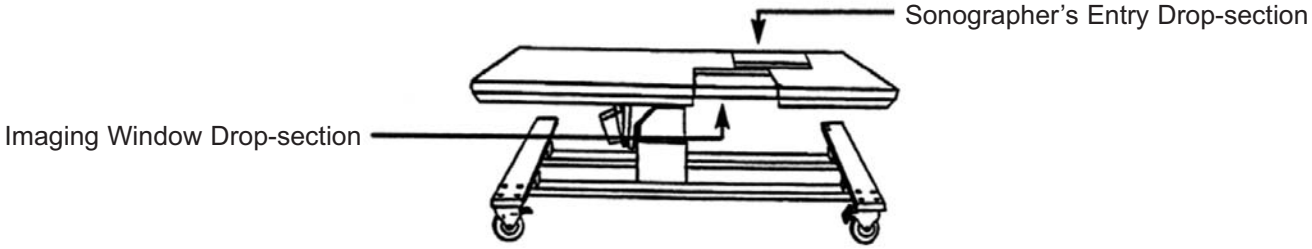


Figure 2

To Avoid Injury or Damage

To reduce the risk of electrical shock, do not remove secured covers. Refer servicing to qualified personnel.

Lock all casters before using equipment.

Place hand wand on hook or holder when not in use.

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked "hospital only" or "hospital grade".

Protect vinyl upholstery from sharp objects and abrasion to avoid damage.

Refer to instructions located in this manual for vinyl cleaning recommendations.

Do not use abrasives to clean painted surfaces.

Risk class is 2G.--120 VAC, 50 to 60hz.

In This Section

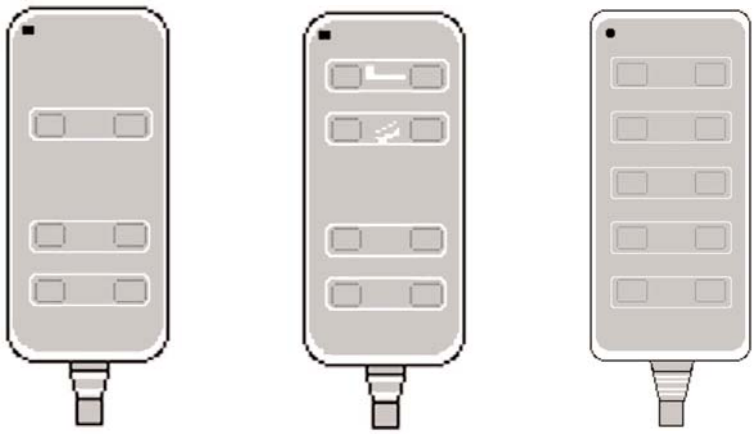
Your Stress EchoBed®/Stress EchoBed® Dual has been shipped to you in “plug and play” condition. In this section you will perform an initial test of your Stress EchoBed® / Stress EchoBed® Dual to insure that each function is in correct working order. After reviewing this manual you are ready to begin using your Stress EchoBed® / Stress EchoBed® Dual.

Test Procedures

Step	Action
1	After removing padding and packaging materials, locate primary power supply cord and attach to suitable grounded 120 VAC outlet.
2	To test actuator functions, locate the hand control wand and depress each function button one at a time. (Depressing multiple buttons simultaneously may prevent motors from operating.)

If any function does not operate, perform the test procedures listed in the **“Trouble-shooting Guide”** located in this manual

Depending on the functions your bed is equipped with your hand-wand will look like one of the following:



Single Function Two Function Three Function

Figure 3

Safety Features

In This Section

This section lists the safety features built into your Stress EchoBed®/Stress EchoBed® Dual.

Safety Features

The Stress EchoBed® is equipped with multiple automated safety features to prevent danger or damage during use. The entire system is electrically isolated and loop grounded to UL/IEC 60601-1 and CAN/CSA c22.2 No. 601.1 Hospital Standards.

The actuator assemblies are current overload protected. If overloaded, the actuators will stop and reset automatically.

The sealed hand-held wand operates the actuators by directing small amounts of low voltage D.C. current to the control box. All of the actuator drives are equipped with current overload sensors which automatically prevent over-extension.

The Stress EchoBed® is equipped with total locking, sealed bearing, braking casters at all four corners.

When equipped with Trendelenburg, a level indicator is located on the sides of the bed surface to allow quick repositioning to level after Trendelenburg procedures.

MEDICAL POSITIONING, INC.
1717 Washington Street
Kansas City, MO 64108

ECHOBED/TABLE AND STRESS ECHOBED/TABLE EXAMINATION PLATFORMS

	Stress EchoBed / Table *(with ergometer)*	**EchoBed / Table** *(without ergometer)*
Maximum Distributed Load:	1,000 Lbs.	1,000 Lbs.
Voltage:	120 VAC	120 VAC
Amperage:	2.6 A	1.6 A
Leakage Current:	<100 uA	<100uA
Cycle:	60 Hz	60 Hz
Duty Cycle:	10%	10%

UL 60601-1 CLASSIFICATIONS:

-Class 1 Equipment
-Type B Applied part
-Degree Of Protection Against Ingress Of Water / IPX0
-Equipment Not Suitable For Use In Flammable Anesthetic Mixture

All electrical circuitry is isolated from chassis.
Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked “Hospital Only” or Hospital Grade”.
The power cord is to be used for mains disconnection.


Type B
Applied Part


Attention
Consult Accompanying
Documents


Protective Earth

MEDICAL EQUIPMENT WITH RESPECT TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL 60601-1 AND CAN/CSA c22.2 NO. 601.1

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked “Hospital Only” or Hospital Grade”

Transportation and storage:
Temperature range within -40 to +70 degrees C
Relative humidity range within 10% to 100%
Atmospheric pressure range within 500 to 1060 hPa

Patient Positioning

Introduction

Medical Positioning, Inc. is the only provider of the patented drop-section which allows a sonographer to:

- place the patient in a full left lateral decubitus position
- improve image clarity
- reduce image acquisition time
- provide uninhibited access to the apical window
- expand intercostal spaces (with SafeTwedge™)
- reduce foreshortening of apical images

The American Society of Echocardiography provides supporting commentary in the "Recommendations for Quantitation of Two Dimensional Echocardiograms" on the value of the drop-section as well as the optimum patient position for performing an echocardiogram.

It is recommended that for obtaining optimum apical views, the patients be positioned in steep lateral recumbency for examination. Once this position has been achieved, it should be maintained with a wedge or pillow...(When) the patient is in a steep left lateral position, it is frequently difficult to transect the true apex unless there is a mattress with a scoop or excavation at the point where the apex impulse is generally located. Lack of specialized examining tables makes quantitative measurements more difficult in the critical care setting where modifying the bed is not practical.[1]

With your imaging surface from Medical Positioning, Inc., you are well-equipped to start improving the quality of your images.

In This Section

Stress EchoBeds®/Stress EchoBed® Dual (SEB) with Lateral Tilt are equipped with a safety hip belt and a padded patient shoulder restraint. You will learn how to correctly position a patient on the imaging surface so the SEB can be tilted laterally to optimize the results of your echo studies. **Before you begin, be sure the casters are in the locked position. Refer to the "Caster Use" section for detailed instructions.**

Bed Preparation

Step	Action
1	Place a SafeTwedge™ flush with the head end of the bed (the end opposite the ergometer). Position the SafeTwedge™ so it is centered evenly between the sides of the bed.

1 Nelson B. Schiller, MD, et al.."Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiograms," Journal of the American Society of Echocardiography, 1989, Vol. 2, pp. 358-367

Step	Action
2	Locate the restraint lock knob on the top of the shoulder restraint adjusting bar. Lift the restraint lock knob and rotate it 1/4 turn to the “Unlocked” position. (See Figure 4)

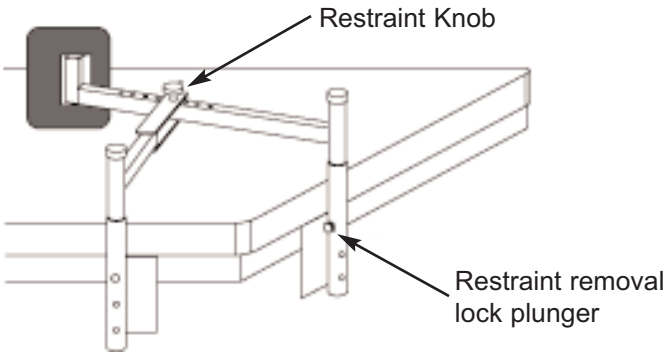


Figure 4

3	Swing the restraint adjusting bar and pad to the outside edge of the bed. (You may prefer to remove the shoulder restraint from the bed. To do so, lock the restraint lock knob. On the restraint there are columns at the head and side of the bed. At the column at the head of the bed, pull out and turn the locking plunger 1/4 turn. Lift the restraint to remove. Reinstall in reverse order.)
4	Lift and turn the handle of the ergometer slide lock to the “Disengaged” position. (See Figure 5)

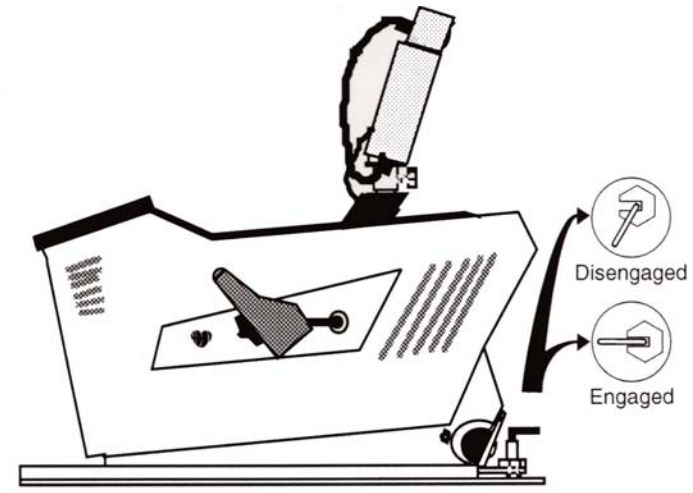


Figure 5

Step	Action
5	Slide the ergometer as far away from the head of the bed as possible, turn the handle of the ergometer slide lock and put it down in the “engaged” position. Move the ergometer as needed to allow the slide lock to drop into a hole in the slide base.
6	Position the wide safety belt across the bed surface and press the Velcro tab at the buckle end of the belt against the Velcro tab on the side of the bed. Also place the narrow belt retractor tip in the belt holder on the opposite side of the bed. (See Figure 6)

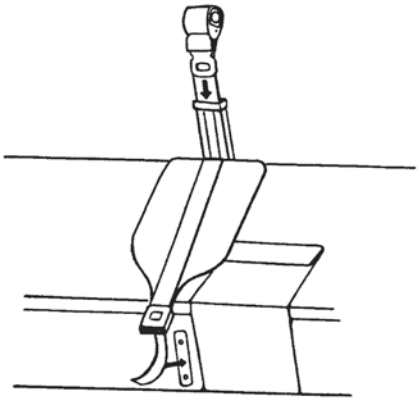


Figure 6

Patient Positioning Procedure

Step	Action
1	With the imaging window drop-section closed, ask the patient to lie on his or her back on the bed. Have the patient slide toward the head or foot of the bed so his or her heart is positioned directly over the imaging window drop-section. Next, position the patient’s hips so they are over the wide safety belt and his or her right hip is against the narrow belt holder.

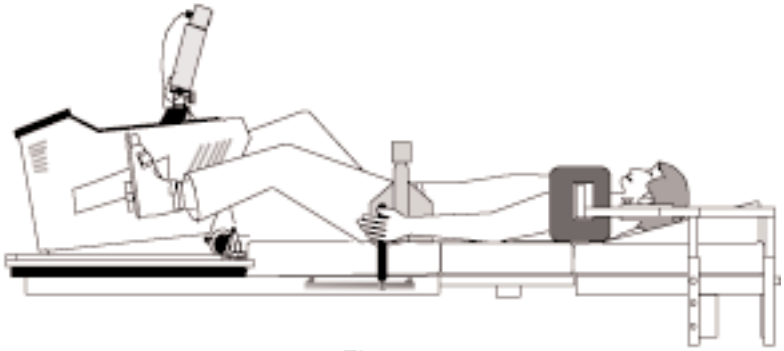


Figure 7

Note: Position the ergometer so patient’s knees remain bent through all positions of pedal rotation

Step	Action
2	Explain to the patient that you will be putting a safety belt around his or her hips and will be positioning the shoulder restraint pad against his or her shoulder. Tell him or her that this is so he or she will stay in position when the bed is tilted. Also explain that you will be opening the imaging window drop-section. While the patient will not feel any discomfort, do not surprise the patient by opening the drop section or tilting the bed without warning.
3	Pull the wide safety belt buckle loose from the Velcro™ and position the belt over the patient's left hip.
4	Reach across the patient with your other hand and remove the belt retractor from the belt holder.
5	Hold the retractor in the "Extend" position (See Figure 8) and pull the retractor toward you across the patient.
6	Rotate the retractor to the "Lock" position (See Figure 8) and insert the retractor tip in the buckle of the wide belt creating a "sling" around the patient's hips.
7	Allow the connected retractor and buckle to move toward the belt holder on the far side of the bed (this removes slack) and gently lay the retractor on the patient. The retractor will take up the excess slack in the narrow belt.

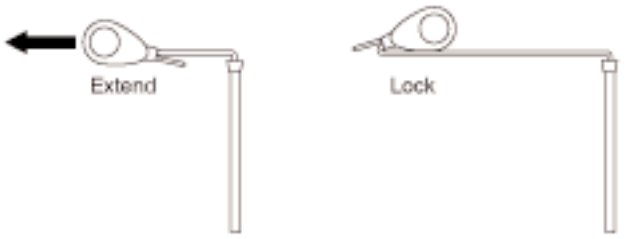


Figure 8

8	Reposition the shoulder restraint as needed. If not unlocked, lift the lock knob on the restraint adjusting arm and turn 1/4 turn. Swing the restraint adjusting arm to position the pad against the patient's shoulder.
9	Press the pad firmly against the patient's shoulder to hold the patient securely when the bed is tilted laterally. Rotate the restraint lock knob 1/4 turn on the adjusting arm and allow it to engage in one of the locking holes in the adjusting arm. (See Figure 4)

Step	Action
10	Lift the ergometer slide lock (See Figure 5), slide the ergometer towards the patient.
11	Place the patient's feet in the ergometer boots. (See Figure 9) The ergometer boots should be large enough to accommodate most patients with shoes on. If not, the patient can exercise comfortably without shoes.
12	Adjust and fasten the Velcro™ straps on the ergometer boots to provide a snug fit. (Be sure the patient's heel is all the way back in the boot.)
13	Slide the ergometer to a position so that when the pedals are rotated away from the patient, his or her legs still have a slight bend at the knee. Do not position the ergometer so the patient's legs can be fully extended during exercise. (See Figure 7)
14	Turn the handle on the ergometer slide lock to allow it to go down into a hole in the slide base. Move the ergometer closer to the patient if necessary to allow the slide lock to drop into the next available hole in the slide base.

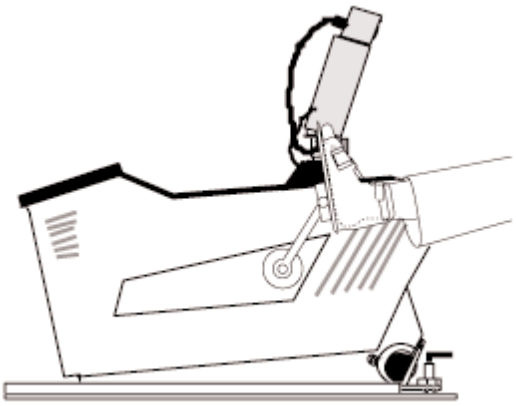


Figure 9

Sonographer Positioning (Dual)

Introduction

The Stress EchoBed® Dual is designed to both improve images and maximize sonographer ergonomics. The two drop-sections built into the table are identified as the “imaging window drop-section” and the “Sonographer’s entry drop-section”. The Sonographer's entry drop-section on the right of the patient provides a place for the right-sided sonographer to sit close to the patient while maintaining an upright position during imaging.

Once you have properly positioned the patient on his or her left side over the imaging window drop-section (see Patient Positioning for instructions) you are ready to place yourself in the proper position, open the imaging window drop-section and begin imaging the patient.

In This Section

You will learn how to correctly position yourself on your Stress EchoBed® Dual in order to insure maximum comfort and continued upright posture while you are imaging your patients.

Sonographer Positioning Procedure

Before you begin this procedure, please familiarize yourself with the “Patient Positioning Procedure” and the Stress EchoBed® Dual “Operation”. In preparation for an echocardiography study, and before you work with any patient, lower the Sonographer’s entry drop-section and seat yourself on the table, facing the head of the bed and perpendicular to where the patient will be located. Place your ultrasound unit in close proximity to where you are seated to minimize the reach from the table to the ultrasound unit. For maximum comfort, it is important that you be able to maintain an upright position while you are operating both the controls on your ultrasound unit and the transducer. With your equipment in the proper place, you are ready to begin working with a patient.

Step	Action
1	Prior to beginning an echo procedure, familiarize the patient with the Stress EchoBed® Dual. Explain to the him/her that you will be opening the drop-sections, that their opening will be slightly noisy, but the patient will be both comfortable and secure throughout the procedure.
2	Insure the patient is in the correct position as described in the preceding section “Bed Preparation” and “Patient Positioning”. Tell the patient that you will be opening the Sonographer’s entry drop-section. While the patient will not feel anything, *do not surprise the patient by opening the drop-section without warning*. Open the Sonographer’s entry drop-section and enter the cut-out area of the table. Seat yourself on the table, facing the head of the bed and perpendicular to the patient.

Step	Action
3	Tell the patient that you will be opening the imaging window drop-section. Again, the patient will not feel anything, however, do not surprise the patient by opening the drop-section without warning. Lower the imaging window drop-section by activating the remote release as described in the “Remote Drop-section Operation” on page I - 20.
4	You are now ready to begin imaging the patient.

Operation

Introduction

The Stress EchoBed®/Stress EchoBed® Dual is shipped assembled and ready for use. Each function has been pre-tested to insure perfect working order on day one. Your control wand and Stress EchoBed® may not be equipped with all of the described functions. A **“Troubleshooting Guide”** is included to instruct you in the event of a malfunction.

The Stress EchoBed® is designed for the sonographer that sits on the left side of the patient. This model is equipped with a single drop-section, the imaging window drop-section.

The Stress EchoBed® Dual is designed for the sonographer that sits on the right side of the patient and reaches over the patient to scan. The Stress EchoBed® Dual is equipped with two drop-sections:

1) An imaging window drop-section
2) the Sonographer’s entry drop-section

The Sonographer's entry drop-section on the right of the patient provides a place for the sonographer to sit, facing the head of the bed and parallel to the patient.

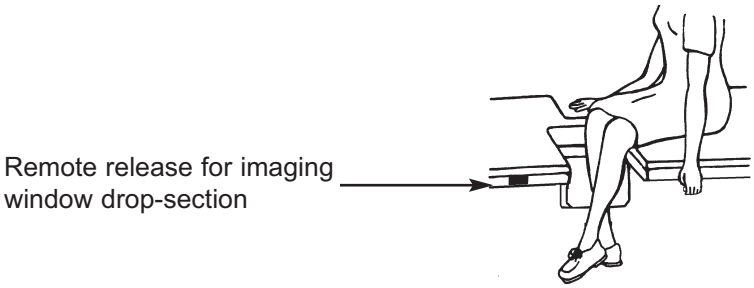


Figure 10

This position, close to the patient, provides several advantages for the right sided sonographer. First, the sonographer’s drop-section allows increased control of patient location and greater access to the intercostal imaging areas. In addition, it allows the sonographer to maintain a more upright position and should reduce stress to the shoulder, back and wrist of the sonographer.

Hand-Wand Procedure - Memory Positoning Instructions

Your hand-wand will contain appropraite function for the bed shipped.

Step	Action
1	Initialize all of the actuators by running each actuator (one at a time) to it's fully retracted position. Lower the height actuator all the way down. Position the lateral tilt actuator to level. Place the bed in reverse Trendelenburg position (the Trendelenburg actuator is fully retracted in this position).
2	Using the buttons on the hand-wand, utilizing as many of the actuator motors as necessary but running only one actuator at a time, place the bed in the desired position for the first memory selection. When you are satisfied with the position attained, press and hold the [P1] and [M] buttons at the same time. An audible tone will be produced by the actuator control box when the memory position is stored.
3	Repeat step 2 for memory positions 2 and 3, using the [P2] button for memory position 2 and the [P3] button for memory position 3.
4	To change any of the stored memory positions, repeat steps 1 and 2 for the position you wish to change. It is not necessary to reprogram all of the positions in order to change only one or two of them.

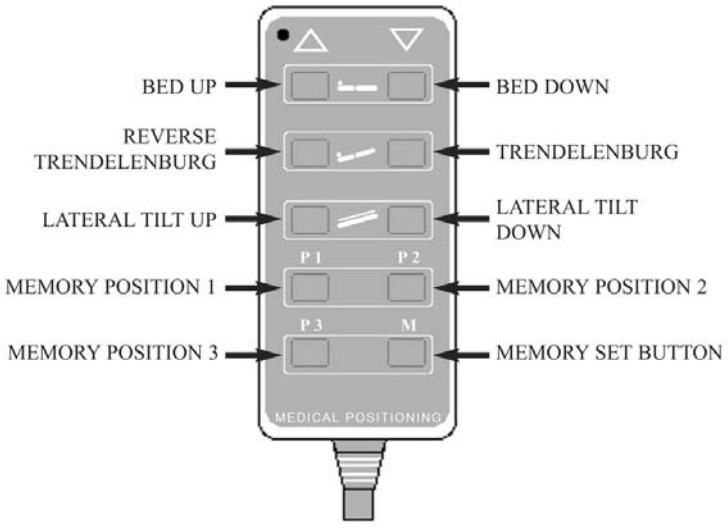


Figure 11

Hand-Wand Placement

The hand-wand attaches to the bed in one of the two (2) following ways:

Beds with safety rails - The hand-wand has a hook installed on the back which is designed to hang on the safety rail. (See Figure 12)

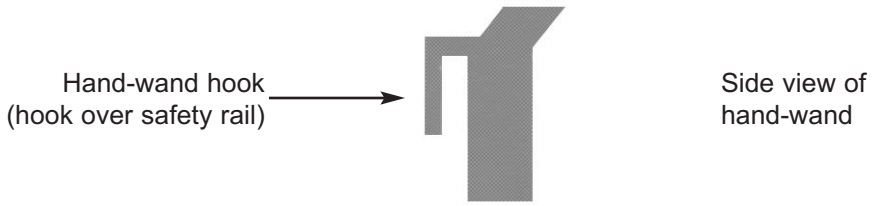


Figure 12

Beds without safety rails - The hand-wand has a Velcro strip on the back and the bed has Velcro on the side. (See Figure 13)

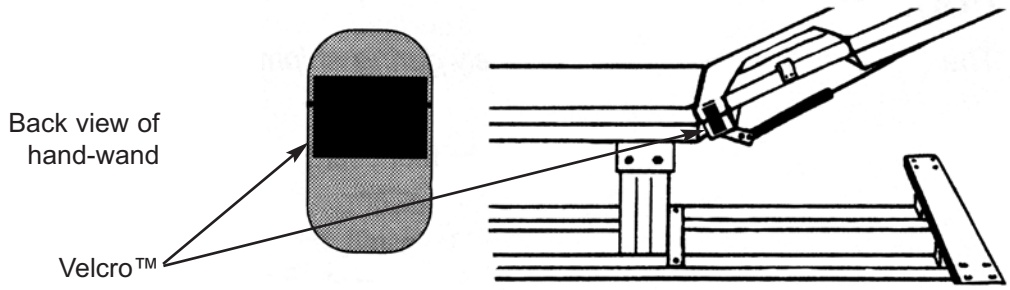


Figure 13

Drop-Section (Imaging Window Only)

The drop-section is designed to be opened or closed easily with one hand. ***Do not place other hand within the drop-section area during operation.***

Step	Action
1	To open the drop-section, locate the metal handle mounted on the bottom of the drop-section at the front edge. (See Figure 14)

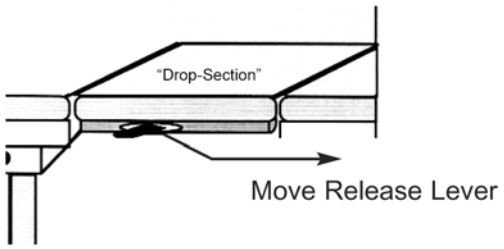


Figure 14

2	Pulling the handle outward, from under the drop-section, will release the latch mechanism and allow the drop-section to swing open. Do not abruptly yank or jerk on handle, it is designed to work with a smooth, steady pull.
3	To close the drop-section, grasp the pull tab (fabric loop) located on the front edge of the drop-section and lift the drop-section smoothly until it is securely in the full, upright and locked position. (See Figure 15)

Figure 15

I*t is not necessary to "slam" the drop-section closed. Slamming the drop-section closed will startle the patient and may result in damage to the mechanism*. After closing, always lift up on the drop-section to assure that is totally locked before patient entry or exit

Dual Drop-Sections / Remote Drop-Section Operation

The imaging window drop-section and the Sonographer's entry drop-section are designed to be opened or closed easily with one hand. Additionally, the imaging window drop-section may be opened remotely by using the remote release handle conveniently located adjacent to the Sonographer's entry drop-section. Follow Steps 1 and 2 for manual operation of either drop-section, and proceed to Step 3 for remote operation of the imaging window drop-section. ***Do not place hands within the drop-section area during operation.***

Step	Action
1	To open the drop-section, locate the metal handle mounted on the bottom of the drop section at the front edge. (See Figure 16)

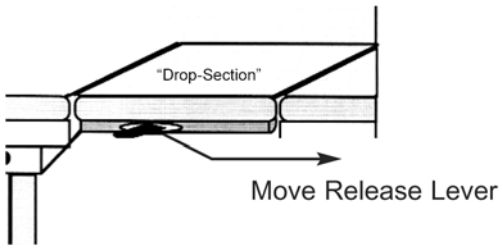


Figure 16

2	Pulling the handle outward, from under the drop-section, will release the latch mechanism and allow the drop-section to swing open. Do not abruptly yank or jerk on handle, it is designed to work with a smooth, steady pull. *To close either drop-section, proceed to Step 4*
3	**To use the remote release for the imaging window drop-section**, position the patient in left lateral decubitus position, pull out on the lever handle far enough to allow the imaging window drop-section to open. You can accomplish this step while seated. (See Figure 17)

Figure 17

Step	Action
4	To close the drop-section, grasp the pull tab (fabric loop) located on the front edge of the drop section and lift the drop-section smoothly until it is securely in the full, upright and locked position. (See Figure 18)

Figure 18

I*t is not necessary to "slam" the drop-section closed. Slamming the drop-section closed will startle the patient and may result in damage to the mechanism*. After closing, always lift up on the drop-section to assure that is totally locked before patient entry or exit

Caster Use for Individual Lock Casters

The casters installed on your Stress EchoBed®/Stress EchoBed® Dual are total locking casters. When in the locked position, the caster is prevented from both rolling and swiveling. Before beginning any procedure involving a patient, be sure the casters are in the locked position.

Step	Action
1	To lock the caster, step down on the outermost edge of the black locking tab located at the top of the caster wheel. (See Figure 19)

To lock

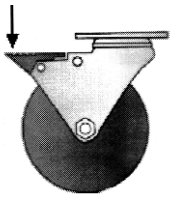


Figure 19

2	To unlock the caster step down on the top, innermost edge of the locking tab OR lift up on the outermost edge of the tab. (See Figure 20)

To unlock

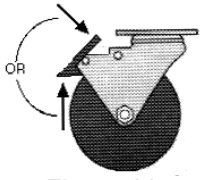


Figure 20

Ergometer Controller

Computer Controller Use

The computer controller provides protocols (both pre-programmed and user program mable) to allow predetermined and precise exercise regimes to achieve desired levels of patient exercise. The computer controller will produce a cadence tone or a rhythmic beep to assist the patient to match his or her pedaling speed to the protocol. The patient's performance through the stages of a protocol is also monitored and displayed. An additional timer automatically begins timing when the protocol ends to indicate post exercise time.

The computer controller and the protocols provide repeatable exercise sequences that are easy to set up and use. Any one of seven pre-programmed protocols or seven protocols you design and program, can be selected. An additional manual protocol also allows you to choose and manually change or vary the ergometer resistance setting before and during exercise.

In This Section

You will learn how to mount, connect, and remove the computer controller. The display and control of the computer controller are also described in this section. You will also learn how to program your own exercise protocol and how to set up, start, and stop a protocol.

Also, in this section you will find the information in each of the preprogrammed channels plus a form to record programs created in your laboratory.

Mounting the Computer Controller

To avoid dropping the computer controller on a patient, do not install or remove the computer controller while the patient is on the bed. The computer control cable must be disconnected from the computer controller before you install or remove the computer controller. Use the following procedure to mount and connect the computer controller on the ergometer

Step	Action
1	Loosen (Rotate counter-clockwise) the controller swivel mount tensioner and slide computer controller onto metal tube at the top of the ergometer. Position the controller so that it is facing the side of the bed you will be imaging from. Turn the con troller swivel mount tensioner clockwise until the controller is secure. (See Figure 21)

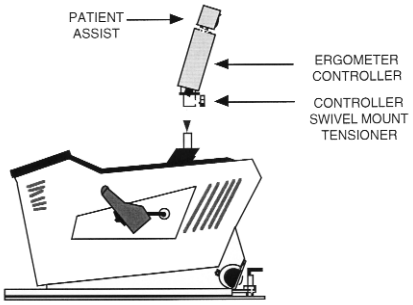


Figure 21

2 Holding the computer type connector on the end of computer controller control cable (cable coming out of the top of the ergometer). Align it with the connector on the back of the computer controller. Push the cable connector firmly into place. (See Figure 22). Be careful not to bend the computer connector pins. Tighten the screw knobs of the connector to the computer controller

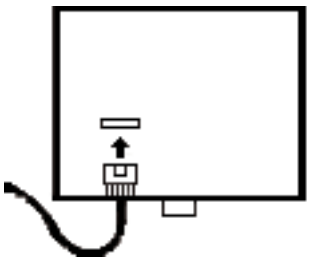


Figure 22

3 To remove the computer controller, disconnect the computer controller control cable by unscrewing the knobs. Then, grasping the connector, pull it out from the rear panel. Never pull directly on the wires.

4 Turn the swivel mount tensioner counterclockwise to loosen. Lift the computer controller off of the support tube.

How To Use the Computer

This section describes the computer controller display (read-outs) and controls, how to use fixed protocols, how to program a protocol, and how to use the manual protocol.

Displays and Controls

This section describes the controls and display (read-outs) on the computer controller. The top portion of the computer controller front panel contains all the displays. The Patient Monitor band (green) is the first line of displays across the top of the front panel. They are used to show measured parameters. Below that are the Program Presets (blue). They are used to show current protocol progress and programming information. Below the displays, the computer controller controls are used to setup, program, and operate the computer controller. The Operational Controls (green) on the left side are used to select protocols to control the operation of the computer controller . The pogramming Controls on the right side (blue) are used to create custom protocols or to control the manual operation of the ergometer.

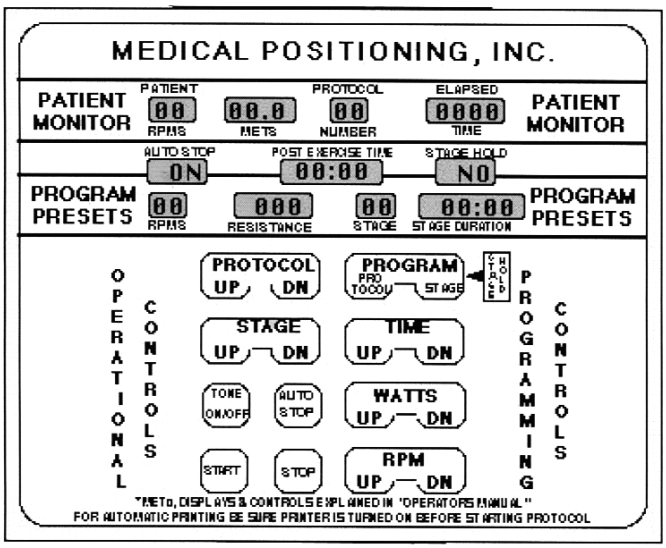


Figure 23

Refer to Figure 23 for the dsplay and controls described below.

Display	Description
PATIENT RPMS	The patient's pedaling rate is shown in revolutions per minute.

Display	Description
METS	Metabolic Equivalents - Multiples of resting oxygen uptake. This value is dependent upon the weight of the patient. METS as displayed on the Medical Positioning, Inc. computer controllers are based on a body weight of 154 lbs (70 kg). If higher precision is desired, the value obtained can be corrected for the actual weight of the patient using the following calculations.

$$\frac{154 \text{ lbs}}{\text{patient weight (lbs)}} \times \text{METS Displayed} = \text{METS (Corrected for patient weight)}$$

$$\frac{70 \text{ kg}}{\text{patient weight (kg)}} \times \text{METS Displayed} = \text{METS (Corrected for patient weight)}$$

PROTOCOL NUMBER	The number from 1 to 15 is shown to indicate the selected protocol.
ELAPSED TIME	This display shows the total time that the patient has pedaled in minutes and seconds since the protocol in use was started.
POST EXERCISE TIME	This display shows time in minutes and seconds beginning when the protocol ends or when the patient stops pedaling before a protocol is finished. (The letters PROG will be shown in this display when a protocol is being pro grammed)
PEDAL RATE	This display shows the programmed pedal rate in revolutions per minute at which the patient should be pedaling for a given stage in a protocol. When programming a new protocol, this display shows the pedal rate being set in a protocol stage. When previewing a protocol, it shows the pedal rate set for a stage of a protocol. (The cadence tone is synchronized to this display.)
RESISTANCE	This display shows the resistance in watts that the ergometer is providing to oppose the patient's pedaling while a protocol is in use. When programming a new protocol, this display also shows the resistance being set in a protocol stage. When previewing a protocol, it shows the resistance set for a stage of a protocol.
STAGE	This display shows the current stage of the protocol that is currently running. When programming a new protocol, this display shows the stage being programmed. When previewing a protocol, it shows the stage of a protocol.

Display	Description
STAGE DURATION	This display shows the duration in minutes and seconds of the current protocol stage while a protocol is in use. This display serves as a timer and shows the time remaining in a given stage. The display counts down from the programmed stage time to zero during the progress of the stage. When programming a new protocol, this display also shows the duration being set in a protocol stage. When previewing a protocol, it shows the stage duration set for a stage of a protocol.
AUTO STOP	Displays “ON” or “NO” indicating if the automatic protocol stop feature is enabled (ON) or disabled (NO) . See Setting Automatic Protocol Stop in this manual.
STAGE HOLD	Displays “ON” or “NO” indicating if the stage hold feature is enabled (ON) or disabled (NO).

Control	Description
PROTOCOL-UP/DN	This control is used to select the protocol you wish to use, preview, or program. Pressing the UP side moves to the next higher numbered protocol and pressing the DN side moves to the next lower numbered protocol. When UP or DN is pressed and held, the computer controller will scroll through the protocols. This control can be used any time the ergometer is turned on except when a protocol is in progress.
STAGE-UP/DN	This control is used to select the stage of the selected protocol you wish to use, preview, or program. Pressing the UP side moves to the next higher numbered stage and pressing the DN side moves to the next lower numbered stage. This control can be used any time the ergometer is turned on.
TONE	This control is used to turn the cadence tone on or off. If the cadence tone is on, press this control to turn it off. If the cadence tone is off, press this control to turn it on.
AUTO STOP	This control is used to turn the automatic protocol stop on or off. See the setting **Automatic protocol stop in this manual**.
STAGE HOLD	This control is used to hold or “pause” a stage during a protocol. Pressing the “Program Stage” button while a protocol is running will place the protocol in a paused move. The total lapsed time will continue but the stage will not advance. Pressing it a second time will resume normal operation. You can confirm the status of this feature in the “Stage Hold” window of the controller.
START	This control is used to start the selected protocol.
STOP	This control is used to stop the selected protocol. Press this control a second time to place the computer controller in the Ready mode. During an exercise protocol, the controller will recognize the termination of exercise in one of two ways. If the stop button is pressed, pedaling resistance is eliminated and the post exercise timer begins. If the patient stops pedaling for ten seconds, this also signals the end of the procedure, the pedaling resistance is eliminated, and the post exercise timer begins. (The automatic protocol stop feature can be disabled. See “ “Defaulting Automatic Protocol Stop” following this section.) With either stop condition, the STOP control must be pressed an additional time to return the controller to the Ready mode.

Control	Description
PROGRAM PROTOCOL/STAGE	This control is used in programming a protocol to select the number of the protocol that will be programmed. Continual pressing of the PROTOCOL side cycles through the programmable protocols (11-15) until the desired protocol number for programming is dis played. Pressing the STAGE side cycles to the next higher stage of the protocol that is being programmed.
TIME-UP/DN	This control is used to program the time in minutes and seconds for a protocol stage. Pressing the UP side will cycle to the next higher selection for time. Pressing the DN side will cycle to the next lower selection for time. Time is increased or decreased in 15 second increments.
WATTS UP/DN	This control is used to program the amount of resistance in Watts for a protocol stage. Pressing the UP side will cycle to the next higher selection for resistance. Pressing the DN side will cycle to the next lower selection for resistance. Watts are increased or decreased in 5 watt increments.
RPM UP/DN	This control is used to program the desired patient pedaling rate in revolutions per minute for a protocol stage. Pressing the UP side will cycle to the next higher selection for RPM. Pressing the DN side will cycle to the next lower selection for RPM. RPM is increased or decreased in 5 RPM increments.
VOLUME CONTROL	The speaker is located on the front of the patient coach. When the tone is on, the computer controller will beep at a rate that the patient can use to adjust his or her pedaling speed to the rate set for the protocol stage. The volume level of the cadence tone is controlled by turning the VOLUME CONTROL KNOB. Turn the VOLUME CON TROL KNOB in either direction as needed to increase or decrease the volume.

How to Program a Protocol

In this section, you will learn how to program a protocol. Protocol numbers 1 through 10 are fixed and cannot be changed. Protocols 11 through 14 can be programmed or altered with up to 10 stages. Protocol 15 is a manual program where you can manually increase or decrease the ergometer resistance and/or leave it at the selected resistance level for as long as needed. Refer to “Displays and Controls” and Figure 23 for the location and description of displays and controls mentioned in the following procedure. A program that you create can be recorded. Use the following procedure to program a protocol.

Step	Action
1	If the ergometer is turned off, set the main power switch on the ergometer to ON. The ergometer main power switch is located on the end of the ergometer nearest the foot of the bed. Wait 10 seconds before proceeding to the next step.
2	Press the PROGRAM-PROTOCOL control. The computer controller will enter the Programming mode and PROG will be shown in the POST EXERCISE TIME display. The number 11 will be shown in the PROTOCOL NUMBER display and the number 1 will be shown in the STAGE dis play.
3	If you want to program or alter a protocol other than number 11, press the PROGRAM-PROTOCOL control as needed to show the protocol numbers 12 through 14 in the PROTOCOL NUMBER display. *If you want to program or alter a stage other than number 1, press the PRO GRAM-STAGE control to show the stage number that you wish to change in the STAGE display.*
4	Press the TIME-UP or -DN control to select the desired time for stage duration for the selected stage as shown in the STAGE DURATION display.
5	Press the WATTS-UP or -DN control to select the desired amount of resistance for the selected stage as shown in the RESISTANCE display.
6	Press the RPM-UP or -DN control to select the desired patient pedaling rate in revolutions per minute for the selected stage as shown in the PEDAL RATE display.
7	Press the PROGRAM STAGE control to program or alter the next stage of the protocol. Each time you press the PROGRAM STAGE control, the protocol program is saved for that stage.
8	Repeat steps 4 through 7 for all remaining stages to be programmed.
9	When all the stages have been programmed, press the PROGRAM STAGE control to save the last stage. The protocol program will be available for use.

10	To **SAVE** the protocol in permanent memory and exit the programming mode, press START. If you are not planning to use the protocol that you just programmed, you may press STOP after the protocol begins. Starting and running or starting and stopping a new protocol stores the protocol in memory. It will remain in memory until a new protocol is programmed in this channel.
11	To alter any or all stages of a previously programmed protocol, perform steps 1 through 10.
12	To program the manual protocol, protocol 15, perform step 1 and press the PROTOCOL UP/DN control as needed to show the number 15 in the PROTOCOL NUMBER display. Press the WATTS UP/DN control to show the desired amount of initial resistance in the RESISTANCE display.
13	Press the WATTS-UP/DN control at anytime during the protocol to change the resistance as desired.

Running a Protocol

In this section, you will learn how to set up, use, and stop a protocol with the ergometer. Any one of 15 protocols can be selected and used. Protocol numbers 1 through 10 contain fixed pre-programmed exercise steps (See protocol list in this manual). Protocols 11 through 14 can contain protocols that you have programmed (See “How to Program a Protocol”). Protocol 15 allows you to manually increase or decrease the ergometer resistance and leave it at the selected resistance level for as long as needed.
Refer to “Displays and Controls” and Figure 23 for the location and description of displays and controls mentioned in the following procedure. Use the following procedure to set up, use, and/or stop a protocol. *This procedure is to be followed after the patient has been positioned on the bed.*

Step	Action
1	Set the main power switch on the side of the ergometer to ON. Allow 10 seconds for the computer to complete internal self diagnostics before proceeding. If the power is already on, press the STOP control to place the computer in the Ready mode. The computer controller will then be ready to use the protocol that was last run, beginning with stage one.
2	Press the PROTOCOL-UP or -DN control (as needed) until the number of the desired protocol is shown in the PROTOCOL NUMBER display. This number is the exercise protocol that the patient will be using. The conditions of each protocol (time, resistance, etc.) are described on pages I-34 to I-37. If you will be using protocol 15, proceed to “Using Manual Protocol 15” further in this section.

Step	Action
3	If you prefer to begin a protocol at a stage other than stage one, you can start at another stage in the protocol by pressing the STAGE-UP or -DN control until the number of the desired stage is shown in the STAGE indicator.
4	You can select to have the cadence tone be on or off during the protocol. Either before you start or during the exercise protocol, the cadence tone can be changed from ON to OFF or from OFF to ON by pressing the TONE control. You can adjust the volume of the tone by turning the VOLUME ADJUST KNOB clockwise or counterclockwise.
5	If you will be using the cadence tone, tell the patient that he or she will need to begin pedaling when the computer controller begins beeping and to pedal in rhythm with the beeps. (For example, if the patient has his or her right foot fully forward at the tone, the patient should complete one revolution of the pedals and have the same foot in the same position - fully forward - at the next tone.) If you have turned off the cadence tone, tell the patient to start pedaling when you press the START control and to begin pedaling faster or slower as needed to illuminate the green light in the center of the “Patient Assist”. If the protocol you will be using will change the pedaling rate, tell the patient that this will happen and that he or she will have to change how fast they are pedaling during the exercise protocol.
6	When you and the patient are ready to begin, press the START control and tell the patient to begin pedaling.
7	When the patient achieves target heart rate you can tell the patient to stop pedaling. If the AUTOMATIC PROTOCOL STOP (see SETTING AUTOMATIC PROTOCOL STOP later in this manual) is turned on, the protocol will stop automatically when pedal revolutions have stopped for 10 seconds. You can also stop the protocol at any time by pressing the STOP control. Note that if the patient stops pedaling before the protocol is finished, and the AUTOMATIC PROTOCOL STOP is turned on, the computer controller will stop the protocol ten seconds after the pedals have stopped turning. Once an exercise protocol is stopped by either of the above methods, all of the information including the protocol elapsed time and stage duration elapsed time remain on the displays for patient charting. The information will remain on the display until the STOP button is pushed again. When a protocol is finished or has otherwise been stopped, the POST EXER-

	CISE TIME display will begin keeping track of the time since the protocol was stopped and will provide a series of audible tones every minute during post exercise.
8	To return the computer to the Ready mode, press the STOP control a second time after the protocol has stopped. The computer controller will then be ready to use the protocol that you just completed and the first stage will be selected.
9	If this or another protocol is to be set up and run, repeat steps 2 through 8.

Using Manual Protocol

Protocol 15 is used if you want to manually set, adjust, or vary the resistance of the ergometer without having any automatic protocol steps running. This protocol is used to give the patient a fixed or variable resistance for an indefinite amount of time. The stage duration timer is not available while using protocol 15. Refer to “Displays and Controls” and Figure 23 for the location and description of indicators and controls mentioned in the following procedure. Use the following procedure for protocol 15.

Step	Action
1	Set the main power switch on the front of the ergometer to ON. Allow 10 seconds for the computer to complete internal self diagnostics before proceeding. If the power is already on, press the STOP control to place the computer in the Ready mode.
2	Press the PROTOCOL-UP or -DN control until the number 15 is shown in the PROTOCOL NUMBER display.
3	Select and program the pedal rate and watts of resistance at which you wish the test to begin.
4	When you and the patient are ready to begin, press the START control and tell the patient to begin pedaling.
5	At any time during the procedure you can change the resistance or pedal rate using the appropriate control.
6	When you and the patient are finished with the exercise, press the STOP control.
7	To return the computer to the Ready mode, press the STOP control again.

Setting Automatic Protocol Stop

The Medical Positionimg, Inc. Stress Echo® Computer allows you to automatically stop the protocol and start post exercise timing after the patient has ceased pedaling for 10 seconds. This feature allows you to ignore the controller and begin post exercise imaging.

When the controller goes into the post exercise timer mode, a brief burst of tones are sounded to alert both you and the patient to the end of the test. The post exercise timer display is in the center of the controller (see figure 23). Once the post exercise timer has begun, the computer controller sounds a series of tones every minute. This tone is a reminder for other measurements such as post test blood pressure.

Anytime the ergometer is turned on and before beginning a procedure, press the "Auto Stop" button. Confirm the status in the "Auto Stop" window of the controller. (ON for enabled and NO for disabled)

Patient Coach

Using the Patient Coach

This section describes the patient control audio and controls. The patient control is attached to the computer via a Velcro™ strip.

Control	Description
PEDAL SPEED INDICATOR LIGHT	These lights indicates patient pedaling speed. Left amber light indicates patient is pedaling too slow, green light indicates correct speed, right amber light indicates patient is pedaling too fast. This features allows you to use visual to judge patient progress in lieu of audio cadence.
VOLUME ADJUST KNOB	Rotate to adjust volume of cadence. Note: Cadence tone can be turned on or off using the **TONE** BUTTON on the ERGOMETER CONTROLLER.

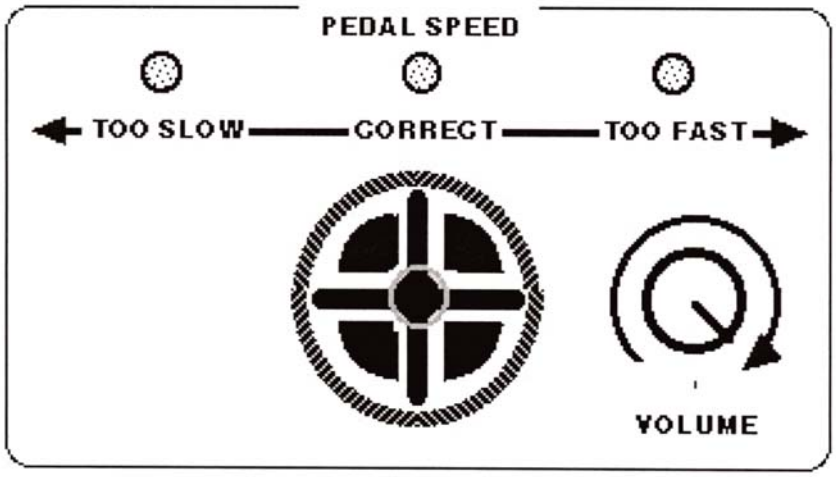


Figure 24

Connecting The Patient Coach

This section describes the connecting the patient coach to the computer. Usually, the computer and patient assist are sent as one preattached unit.

Step	Action
1	Place the patient coach on top of the ergometer controller facing the patients head. The Velcro™ fasteners on both units will secure them together.
2	Secure the RS232 type wiring connector to the back of the patient coach and the bottom of the ergometer controller.

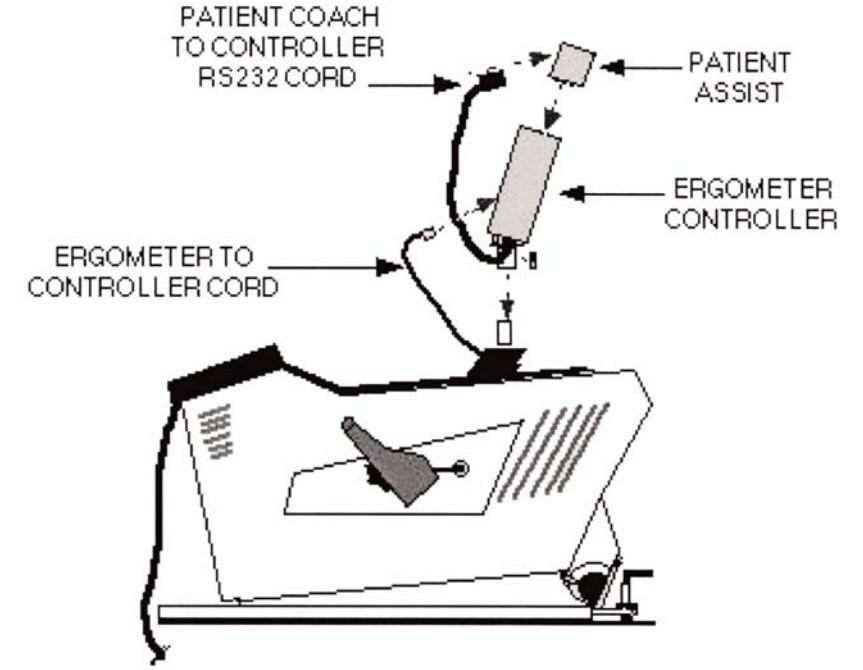


Figure 25

Stress Exercise Protocols

Note: Each protocol uses a constant 60 RPM pedal speed.

Protocol # 1 ***1 Minute Per Stage*** ***10 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	15	25	35	45	55	65	75	85	95	105
METS	2	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4
Length of Stage	1	1	1	1	1	1	1	1	1	11
Accumulated Time	1	2	3	4	5	6	7	8	9	20

Protocol # 2 ***1 Minute Per Stage*** ***15 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	25	40	55	70	85	100	115	130	145	160
METS	2.5	3.2	3.9	4.7	5.4	5.9	6.9	7.6	8.3	9.1
Length of Stage	1	1	1	1	1	1	1	1	1	11
Accumulated Time	1	2	3	4	5	6	7	8	9	20

Protocol # 3 ***1 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	25	50	75	100	125	150	175	200	225	250
METS	2.5	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5
Length of Stage	1	1	1	1	1	1	1	1	1	11
Accumulated Time	1	2	3	4	5	6	7	8	9	20

Protocol # 4 ***1 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	50	75	100	125	150	175	200	225	250	275
METS	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5	14.7
Length of Stage	1	1	1	1	1	1	1	1	1	11
Accumulated Time	1	2	3	4	5	6	7	8	9	20

Protocol # 5 ***2 Minute Per Stage*** ***10 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	15	25	35	45	55	65	75	85	95	105
METS	2	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4
Length of Stage	2	2	2	2	2	2	2	2	2	2
Accumulated Time	2	4	6	8	10	12	14	16	18	20

Stress Exercise Protocols continued

Note: Each protocol uses a constant 60 RPM pedal speed.

Protocol # 6 ***2 Minute Per Stage*** ***15 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	25	40	55	70	85	100	115	130	145	160
METS	2.5	2.8	3.9	4.7	5.4	6.1	6.9	7.6	8.3	9.1
Length of Stage	2	2	2	2	2	2	2	2	2	2
Accumulated Time	2	4	6	8	10	12	14	16	18	20

Protocol # 7 ***2 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	25	50	75	100	125	150	175	200	225	250
METS	2.5	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5
Length of Stage	2	2	2	2	2	2	2	2	2	2
Accumulated Time	2	4	6	8	10	12	14	16	18	20

Protocol # 8 ***2 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	50	75	100	125	150	175	200	225	250	275
METS	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5	14.7
Length of Stage	2	2	2	2	2	2	2	2	2	2
Accumulated Time	2	4	6	8	10	12	14	16	18	20

Protocol # 9 ***3 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	25	50	75	100	125	150	175	200	225	250
METS	2.5	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5
Length of Stage	3	3	3	3	3	3	3	3	3	3
Accumulated Time	3	6	9	12	15	18	21	24	27	30

Protocol # 10 ***3 Minute Per Stage*** ***25 Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	50	75	100	125	150	175	200	225	250	275
METS	3.7	4.9	6.1	7.3	8.6	9.8	11	12.2	13.5	14.7
Length of Stage	3	3	3	3	3	3	3	3	3	3
Accumulated Time	3	6	9	12	15	18	21	24	27	30

Stress Exercise Protocols continued

Note: Each protocol uses a constant 60 RPM pedal speed.

Protocol # 11 ☐ ***Minute Per Stage*** ☐ ***Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS										
METS										
Length of Stage										
Accumulated Time										

Protocol # 12 ☐ ***Minute Per Stage*** ☐ ***Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS										
METS										
Length of Stage										
Accumulated Time										

Protocol # 13 ☐ ***Minute Per Stage*** ☐ ***Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS										
METS										
Length of Stage										
Accumulated Time										

Protocol # 15 ☐ ***Minute Per Stage*** ☐ ***Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS										
METS										
Length of Stage										
Accumulated Time										

Protocol # 15 ☐ ***Minute Per Stage*** ☐ ***Watt Increments***	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
WATTS	**ANY VALUE FROM 0 TO 300 WATTS**									
METS										
Length of Stage	**SINGLE STAGE - CHANGES WHEN USER INITIATES UP TO 60 SECONDS**									
Accumulated Time										

Maximum of 10 stages per protocol
Higher Wattages may be adjusted manually

Medical Positioning, Inc.
1-800-593-3246

Ergometer
Quick Use Reference Guide*

TO BEGIN

- Position patient on the bed
- Secure patient's feet in ergometer pedal boots
- Adjust ergometer for proper bend in patient's knee
- Adjust bed to desired position
- Explain stress procedure to patient
- Turn on ergometer and select exercise protocol
- Press computer START button Have patient begin pedaling
- Encourage the patient throughout the exercise

PEAK EXERCISE

- Acquire images as quickly as possible (If image acquisition is delayed, you can ask the patient to start pedaling again to reestablish peak heart rate)
- Obtain post test information per your protocol

WHEN FINISHED

- Remove patient's feet from ergometer pedal boots
- Slide ergometer out away from patient
- Assist the patient in sitting and then standing

*** Explanation for quick steps detailed in owner's manual**

Troubleshooting Guide

A **"Troubleshooting Guide"** is included to instruct you in the event of a malfunction. If you are experiencing any of the following symptoms, this guide may help you quickly solve the problem. If, after consulting this guide, you are still unable to operate your Ergometer please contact Medical Positioning at 1-800-593-3246. Please have the following information ready when you call:

1. Model Number or Name of Product
2. Date Received
3. Condition When Received
4. Symptom (or problem) Encountered & Result of Troubleshooting Procedure

Symptom	Probable Cause	Suggestion
Ergometer or computer do not turn on	Power cord for bed is not completely plugged in at wall power receptacle	Push power cord plug securely into wall power receptacle
	Ergometer power cord is not completely plugged in at bed power strip	Push ergometer power cord plug securely into bed power strip
	Wall power receptacle not supplying 120 VAC power	Check power availability or plug bed into another wall power receptacle
	Circuit breaker on bed's plug strip is tripped	Check circuit breaker on power strip and reset by pushing in.
Computer does not come on	Ergometer power switch not on	Turn switch on
	Cable is loose or disconnected at computer	Firmly push connector on to computer
Cannot set or program computer	Ergometer power switch not on	Turn switch on
	Cable is loose or disconnected at computer	Firmly push connector on to computer
	Bed or ergometer power problem	Refer to symptom "Ergometer or computer do not come on"
	Ergometer power switch not on	Turn switch on
No pedal resistance	Bed or ergometer power problem	Refer to symptom "Ergometer or com puter do not come on"

Symptom	Probable Cause	Suggestion
No Actuator Function Actuator(s) Not Running	Power cord not plugged all the way in wall receptacle	Push power cord securely into receptacle.
	Power outlet receptacle not supplying 120 VAC power	Check power availability or plug unit into another receptacle
	The power cord may be separated from the control box	Inspect power availability light on control box (See Figure 26)
	On supine ergometer units, the power strip circuit protector may be tripped	Check circuit protector to ensure that it is not tripped
	Hand wand not properly connected to control box	Securely press end of hand-wand power cord into control box. Inspect control box continuity light on hand wand.
	Actuator power cord not fully connected to control box	Securely press end of actuator power cord receiver (figure 26)

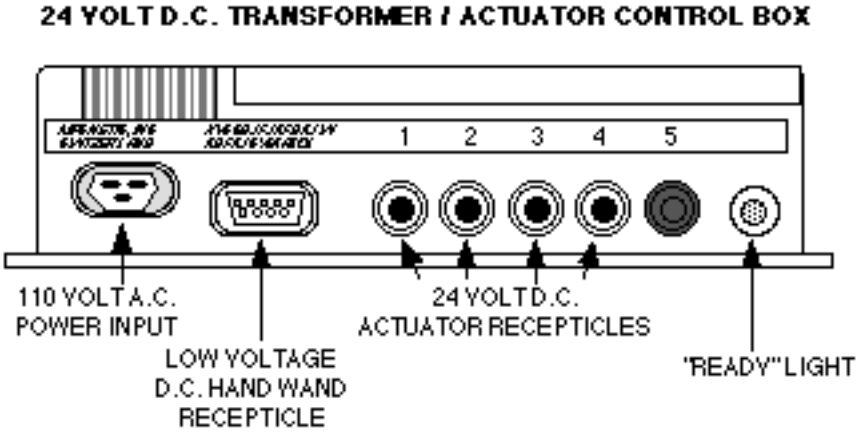


Figure 26

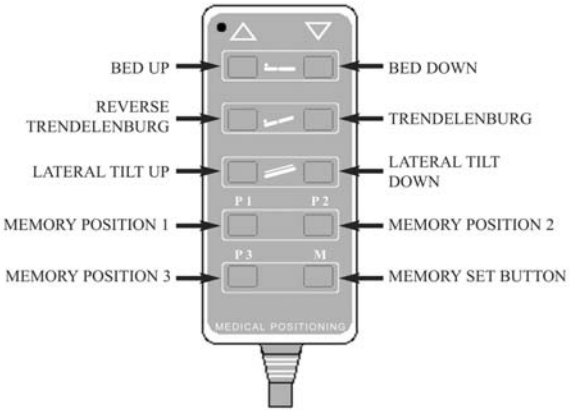


Figure 27

Troubleshooting Test: Ergometer/Computer Controller

Introduction

An internal self-test is performed on the computer controller each time it is turned on. No further function testing is required for the computer. The ergometer function test consists of verifying that it is providing resistance to movement of the pedals.

In This Section

You will be instructed how to perform the ergometer function test to verify it is operating properly.

Tools Required

No tools are required to perform the ergometer function test.

Ergometer Function Test

Step	Action
1	Turn the main power switch on the front of the ergometer to OFF. Wait 5 seconds.
2	Before turning the power on again, press and hold the RPM-UP button. While you hold the RPM UP button, turn the main power switch to ON.
3	Release the RPM-UP button after the displays on the computer controller come on.
4	The automatic protocol stop will be disabled and remain disabled until the main power has been shut off.
5	Press the PROTOCOL-UP or -DN control until the number 15 is displayed in the PROTOCOL NUMBER indicator.
6	Press the WATTS-UP or -DN control until the number 25 is displayed in the RESISTANCE display.
7	Rotate the ergometer pedals by hand and verify there is some resistance to pedal movement.
8	While continuing to turn the pedals, press the WATTS-UP control until the number 40 is displayed in the RESISTANCE display.
9	Continue to rotate the ergometer pedals by hand and verify that there is more resistance to pedal movement than in step 7.
10	Contact Medical Positioning, Inc. at 1-800-593-3246 with the following information: Product Model Number (if known) Product Serial Number (located inside of drop section) Date Purchased Description of problem and results of function test

Ergometer Removal and Replacement

Introduction

The ergometer can be removed and its mounting area covered with an insert so the entire surface of the bed can be used.

In This Section

In this section you will learn how to remove the ergometer from the bed and to re-install it. You will also learn how to install an insert over the ergometer mounting area which provides a padded surface over the entire length of the bed. **Before you begin, be sure the casters are in the locked position, refer to the "Caster Use" section for detailed instructions.**

Ergometer Removal Procedure

Warning! The ergometer weighs over 70 pounds. You could be hurt or the ergometer could be damaged if you attempt to lift the ergometer by yourself. **Always use two people to remove or install the ergometer.**

Step	Action
1	Action Lift and turn the handle of the ergometer slide lock located in front of the ergometer to disengage it. (See Figure 28) Slide the ergometer as far toward the head of the bed as possible, and turn the ergometer slide lock handle to engage the lock. Move the ergometer as needed so the lock drops into a hole in the slide.

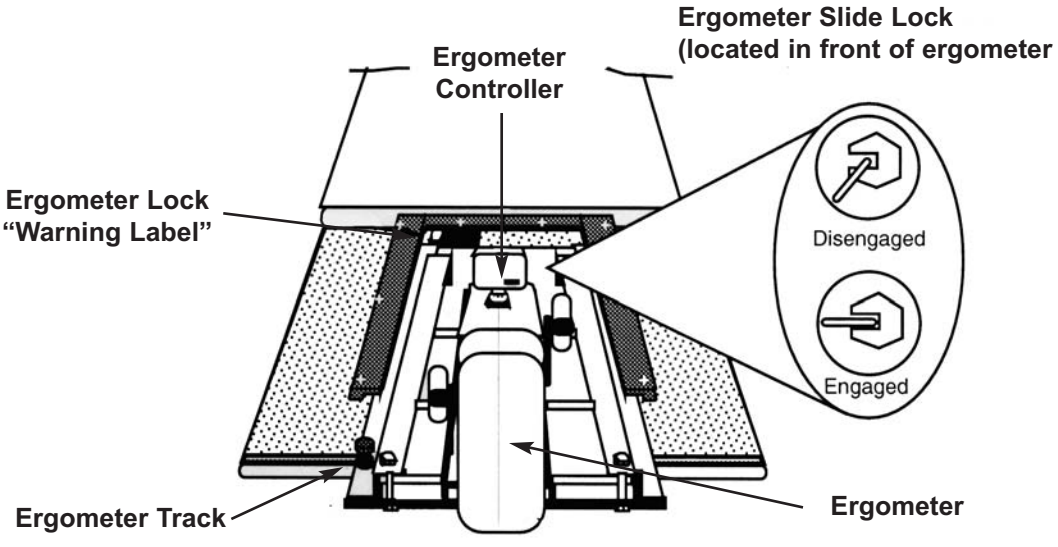


Figure 28

Step	Action
2	Follow the power cord from the back of the ergometer to the power strip and unplug the ergometer from the power strip.
3	Pull the ergometer power cord and plug through the retaining strap under the bed. *The power cord must be completely detached from the bed before the ergometer can be removed.*
4	Lift up on the track lock knob located towards the back of the track assembly. While pulling up on the ergometer track lock, pull the entire track assembly away from the head of the bed a few inches to disengage the track lock from the receiver mounted on the bed surface. (see Figure 29)
5	Slowly slide the entire track assembly away from the head of the bed. (approximately 12 inches) The ergometer slide lock will come to rest at the end of the channel in the track base.
6	Momentarily lift the handle of the ergometer slide lock (approximately 1/2 inch) while pulling the entire track assembly further away from the head of the bed. This temporary lift will disengage the ergometer slide lock from both the channel and the track base. Allow the ergometer slide lock to reengage into the hole in the track (so that the ergometer **can not** slide independently of the track) after the track has been moved far enough from the head of the bed so that the ergometer slide lock is out of the channel. **DO NOT LEAVE SLIDE LOCK IN DISENGAGED POSITION WHILE REMOVING ERGOMETER TRACK ASSEMBLY.**
7	Using two people, slide the entire track assembly to the end of the bed. Lift the assembly from the bed and set aside

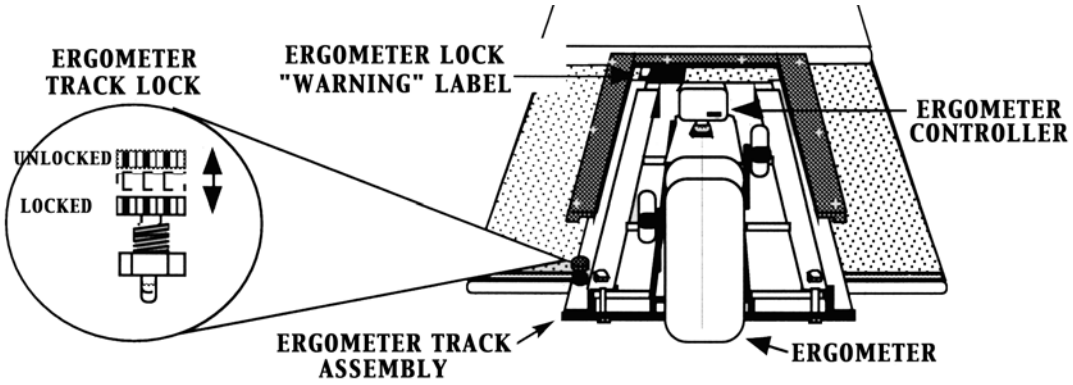


Figure 29

Insert Installation and Removal Procedure

Step	Action
1	Position the insert over the ergometer mounting area with “thin” edge adjacent to vinyl on bed. The hook and loop strips on the underside of the insert will fasten it to the bed. (See Figure 30)
2	To remove the insert, lift the insert from the bed, separating the hook and loop strips.

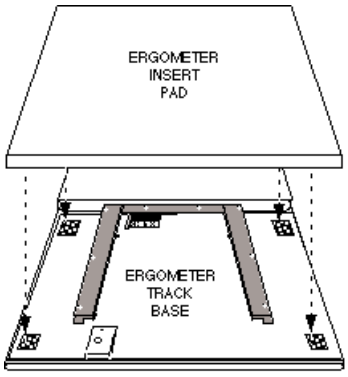


Figure 30

Ergometer Installation Procedure

Step	Action
1	Remove the insert, if installed. (See Insert Installation and Removal Procedure.)
2	**Using two people**, rest the ergometer track assembly on the foot end of the bed, in line with the track restraint guides. (see Figure 31)

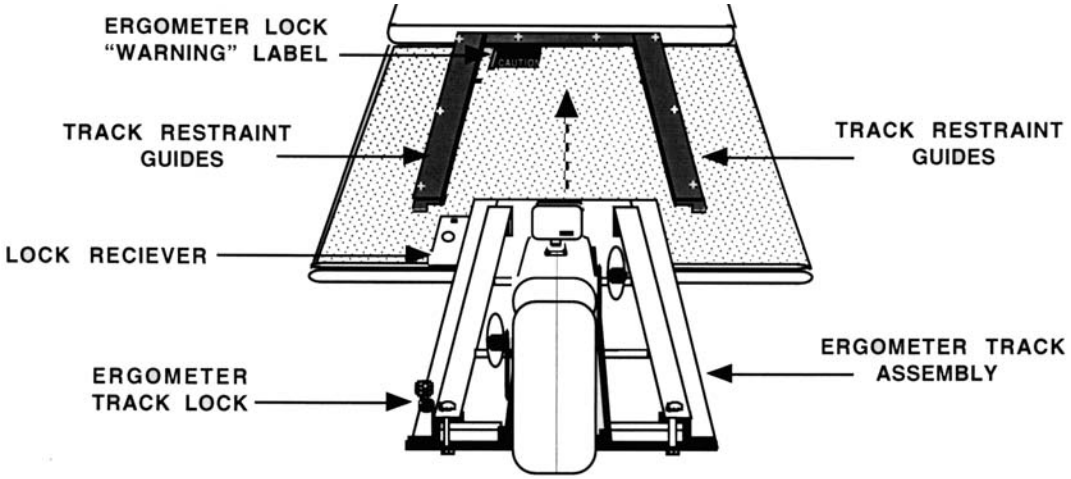


Figure 31

Step	Action
3	Slowly push the entire track assembly towards the head of the bed aligned between the track restraint guides until the ergometer slide lock (see Figure 29) comes into contact with the back edge of the track base.
4	Momentarily lift the handle of the ergometer slide lock while pushing the entire track assembly further into the track restraint guides until the red “warning” label is fully covered by the track and the ergometer slide lock is fully engaged in the track lock receiver. (See Figures 31 & 32)

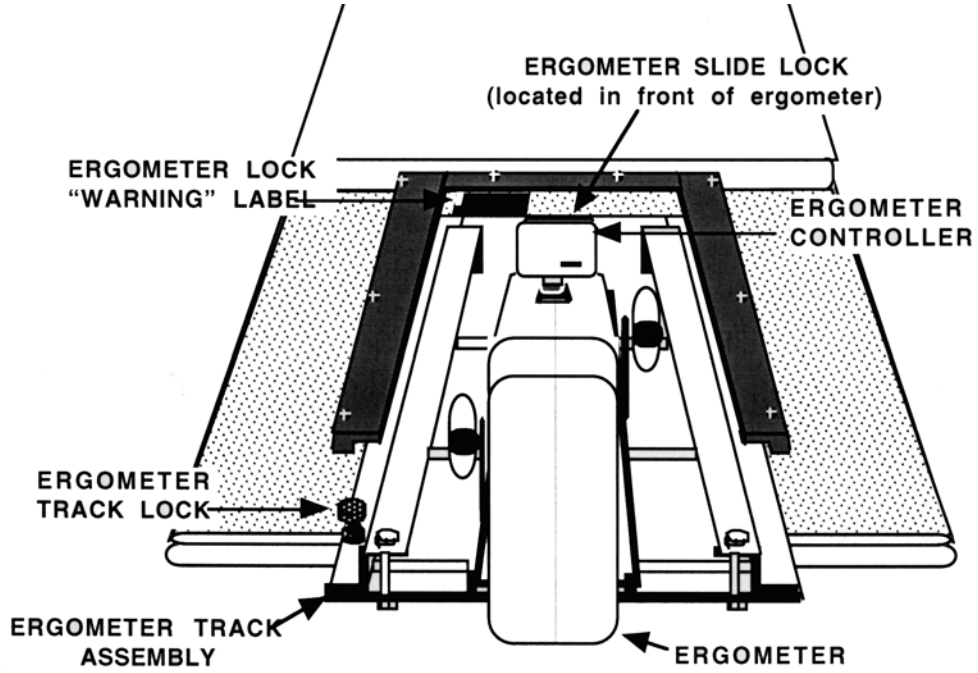


Figure 32

5	Inspect and test before using the ergometer. (see figures 29 & 30) The ergometer track lock should be fully engaged in the track lock receiver. No part of the red “warning label” should be visible.
6	Route the ergometer power cord over the end of the bed, through the retaining strap under the bed and plug the ergometer power cord plug into the power strip.

Maintenance and Cleaning

Preventative Maintenance

The following Preventative Maintenance should be performed annually:

- Visually inspect all mechanical assemblies and moving parts on the product insuring smooth, steady operation
- Visually inspect all fasteners (bolts, nuts, screws, etc.) to insure all are fully installed. Tighten as necessary.
- Visually inspect all electrical cables and wires for signs of abrasion or other damage. If damaged, replace.
- Visually inspect all electrical connections to insure they are fully and properly connected. Reconnect as necessary.
- Visually inspect the hand wand or foot control. If damaged, replace.
- Operate all drop-section latch mechanisms to insure proper engagement of latch into receiver. Adjust if necessary.
- Operate all motors to insure full extension, retraction and correct operation. The motors are permanently lubricated and require no maintenance.
- Operate all accessories to insure proper attachment and operation. Tighten, adjust or replace if necessary

Remote Release Maintenance

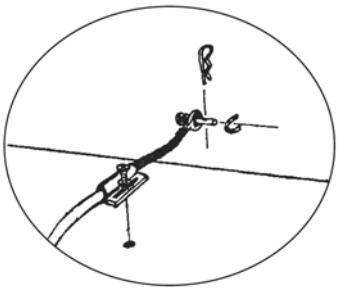
The Stress EchoBed® Dual has a remote release drop-section for right-handed scanners. The remote release mechanism may require minor adjusting after use. If you find that the remote release is not working as it should, please proceed with these instructions.

Tools Required

Phillips Head Screwdriver

Procedure

This procedure is performed with the drop-section closed. Located under the imaging window drop-section is the control cable for the remote release handle. (See Figure 33) The cable is equipped with an adjustable mounting tab. Should it be necessary, adjustment is performed in the following manner.



View of Remote Release Cable Installation

Figure 33

Remote Release Maintenance (cont.)

The following may help you determine whether you need to tighten the cable or loosen the cable.

Tighten the cable: When opening the imaging window using the remote release, the drop-section does not respond properly. In this event, follow steps 1, 2, and 4.

Loosen the cable: When closing the drop-section after use, one or both sides of the drop-section do not fully engage or latch securely. In this event, follow steps 1, 3, and 4.

Step	Action
1	Locate and loosen the Phillips Head screw that holds the mounting tab in place. (See Figure 32)

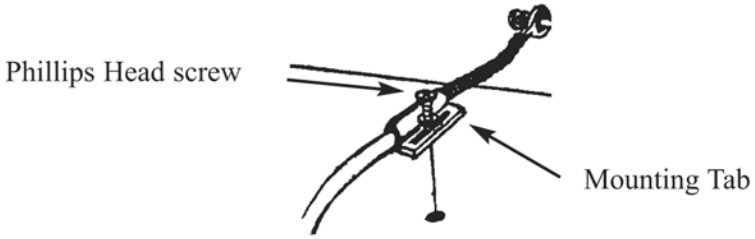


Figure 34

2	To tighten the cable, (take up the slack in the cable) slide the mounting tab towards the center of the bed. (See Figure 35)
	Be careful when tightening the cable, (moving the mounting tab). Only tighten enough to take-up slack in the cable. Taking up too much slack in the cable may prevent the drop section latch from fully engaging.
3	To loosen the cable, (increase slack to allow more secure closure) slide the mounting tab away from the center of the bed. (See Figure 35)
4	Re-tighten the Phillips head screw in the mounting tab to lock-in the adjustment.

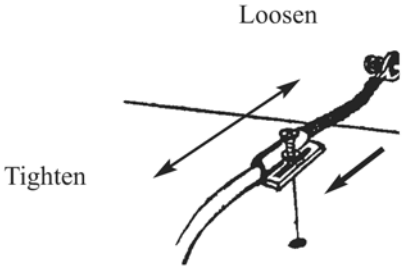


Figure 35

Non-Pinch Closure

The non-pinch closure flaps, located at the back edge of both the imaging window drop-section, and the Sonographer's entry drop-section prevent the patient from being pinched when either drop section is closed after imaging.

Examine the non-pinch closure flap with the drop-section open and closed. The flap attaches to the bed surface with hook and loop tape that has been permanently attached to the surface.

The drop-section should not be operated without the non-pinch closure flap in place. The flap is attached to the bed with hook and loop tape and can easily be adjusted whenever necessary. (See Figure 36)

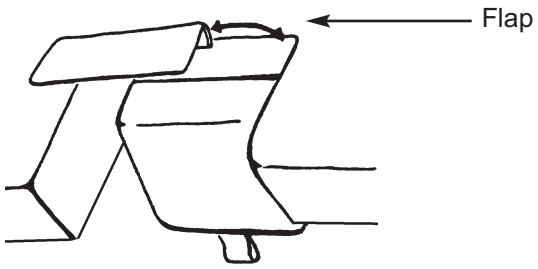


Figure 36

Occasionally the flap may become bent or creased. When that occurs, remove the flap from the bed surface by separating the hook and loop tapes. Next, return the flap back to original shape by bending it farther in the opposite direction of the bend or crease and allowing it to spring back to flat.

Should the flap require replacement, you may order one through Medical Positioning, Inc. at 1-800-593-ECHO (3246).

Cleaning Instructions

Please note that substances such as imaging gels and alcohol will not damage the vinyl surface when immediately removed. Studies have shown that exposure for longer than a few minutes can damage the top coat and will eventually discolor vinyl.

The painted metal and plastic surfaces can be cleaned with normal cleaners and disinfectant.

Step	Action
1	Clean and/or disinfect with liquid cleaner of choice being careful to follow label instructions provided with cleaner. (Always test a small area first to determine suitability of solution)
2	Wipe the surface clean with a wet cloth after applying cleaners and disinfectant to remove excess residue build-up.

ALWAYS READ MANUFACTURERS INSTRUCTIONS AND WARNINGS BEFORE USING ANY CLEANING PRODUCT OR DISINFECTANT.

The vinyl upholstered surfaces can be cleaned in one of the following ways:

Step	Action
1	When caught quickly, most everyday stains like grease, blood and black felt tip pens can be wiped right off. Use mild soap and water. For more stubborn stains, a variety of concentrated and solvent type cleansers may be used without damaging the surface (including alcohol, naphtha and bleach), as long as they are thoroughly rinsed off with water. Abrasive household cleaners and steel wool should be avoided - see the guide for complete care and cleaning procedures
2	Everyday soil can usually be removed using a soft cloth or sponge with mild soap and water. Spills and accidents require immediate attention for best results. In many cases, stains may be cleaned simply with warm water alone. If the stain is allowed to set, more concentrated cleaners may be required.

The following guide covers many of the most common staining agents. During independent laboratory testing, many were allowed to stand for up to 40 hours with excellent cleaning results.

Generally speaking, always start with the mildest cleaning agents first. **Never use harsh powdered abrasive cleansers or steel wool.** Products containing bleach, ammonia or alcohol (Lysol™) should be wiped from the surface with a wet cloth after use. Residue from these products will damage vinyl surfaces

Step	Action
1	Remove excess spill with damp cloth. Clean with 1:1 mix of Ivory™ soap and water. Rinse with clean water and dry.
2	Use straight application of concentrated cleaners such as Formula 409™ or Fantastik™ Spray Cleaner. Then wipe with clean cloth.
3	Use a 1:1 mix of ammonia and water or a 1:4 mix of bleach and water. Rinse with clean water and dry.
4	Use straight application of naphtha (lighter fluid). Rinse thoroughly with clean water and pat surface dry. (see note below)
5	Use 1:1 mix of isopropyl alcohol and water. If stain persists, use straight alcohol. Rinse thoroughly with clean water pat surface dry. If stains remain, use a 1:1 mix of acetone and water. Rinse with clean water and pat sur face dry. (see note below)

Note: For cleaning that requires steps 4 or 5 - use a soft cotton cloth saturated with the cleaning material, rub the stain in circles 10 times. Pat dry with another soft cotton cloth and check results.

This information is not a guarantee and does not relieve the user from the responsibility of the proper and safe use of the product and all cleaning agents.

Formula 409™ is a trademark of the Clorox Company.
Fantastik™ Spray Cleaner is a trademark of the Texize Division of Dow consumer Products, Inc.
Ivory™ is a trademark of Procter and Gamble
Lysol™ is a trademark of Reckitt & Colman Inc.

Ergometer Cleaning Guidelines

Ergometer maintenance consists only of surface cleaning as needed. The exposed surfaces of the computer and ergometer can be cleaned with normal cleaners and disinfectant. Do not spray cleaner or any liquid directly onto the ergometer or the computer controller.

Step	Action
1	Clean and/or disinfect the outer surfaces of the ergometer and/or computer by applying cleaner or disinfectant to a clean cloth and wiping surfaces. Be sure to follow instruc tions provided with cleaner or disinfectant.
2	After cleaner and/or disinfectant has been applied, wipe surfaces clean with a damp cloth.

Warranty

Hospital Models

StressEchoBed®

1 Year - Parts and Labor
1 Year - Electronic Controllers
5 Years - All Electrical, Mechanical and Structural Parts

This product is fully guaranteed against defects in material or workmanship, for the period indicated above commencing with receipt by the original end user. If a product fails due to a manufacturing defect, we will repair or authorize repairs to the product without charge or replace it at our option.

We use only the finest materials available, but even these premium quality materials will not last forever. Repairs due to normal wear, accident, improper care, or negligence, where we are not at fault, will be performed for a reasonable charge. The warranty does not apply if the product has been modified without the advance written permission of Medical Positioning, Inc.

Medical Positioning, Inc. makes no other warranty, either expressed or implied, with respect to this product. Medical Positioning, Inc. specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

The remedies provided herein are customer's sole and exclusive remedies. In no event shall Medical Positioning be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

Product shall not be returned to Medical Positioning Inc. without prior written authorization from Medical Positioning, Inc. If a product is returned without prior authorization, customer is responsible for all shipping charges and any applicable duties and/or taxes. When a repair is made on site, (solely) at the request of the customer, the customer is responsible for all travel costs.

FDA Registered Establishment — **FDA Listed**

U.S. Patents: 6,353,949 B1; 5,950,262; 5,919,131; 347,691; ,184,363; 5,461,739; 6,367,104 B1; 5,250,262; 5,367,104 B1; 6,832,399 B2; 6,557,196 B2; 7,082,268: **International Patents:** 195 81 706; 2,304,568; Additional Patents Pending

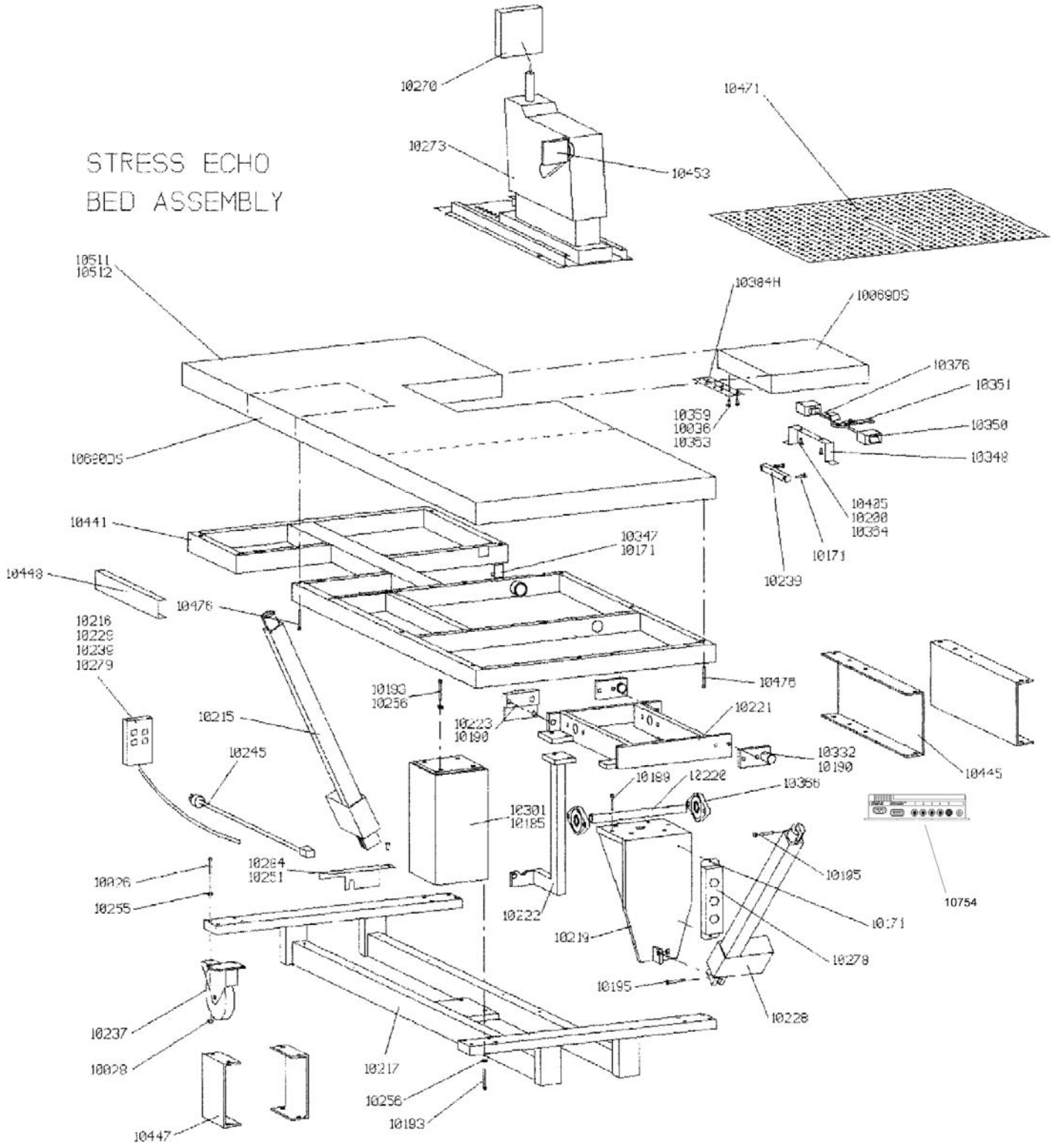
WARR08310901

Medical Positioning, Inc.
1717 Washington St. Kansas City, MO 64108 | T: 816-474-1555 | 1-800-593-3246
www.MedicalPositioning.com

Parts List Stress EchoBed®

Part #	Description
10217	FRAME, BASE
10441	FRAME, BED
10512	FRAME, DUAL BED
10219	PLATE, TOP
10220	SHAFT, TRENDELENBURG
10312	SPACER, COLUMN
10332	BRACKET, PIVOT
10221	FRAME, TRENDELENBURG
10301	COLUMN, FIXED HEIGHT
10222	BRACKET, LOWER LATERAL TILT
10223	BRACKET, UPPER LATERAL TILT
10224	BRACKET, BED
10225	BRACKET, PEDESTAL
10251	PROTECTOR, PLUG
10307	TRAY, SMALL
10308	TRAY, LARGE
10253	FRAME, LATERAL TILT
10302	BRACKET, TABLE
10102	LINK, TRENDELENBURG
10188	BOLT, HEX, 1/4-20 X 3/4"
10026	BOLT, HEX, 5/16-18 X 1 1/2"
10189	BOLT, HEX,5/16-18 X 2" GRADE 8
10027	BOLT, HEX, 3/8-16 X 1"
10343	BOLT, HEX, 3/8-16 X 1" GRADE 8
10190	BOLT, HEX, 3/8-16 X 2" GRADE 8
10191	BOLT, HEX, 3/8-16 X 3" GRADE 8
10192	BOLT,HEX, 1/2-13 X 2 1/2" GRADE 8
10193	BOLT, HEX, 10mm X 40mm
10194	BOLT, HEX, 10mm X 50mm
10195	BOLT, SHOULDER, 12mm X 35mm
10057	SCREW, PHILLIPS PAN HEAD, #8 X 3/4"
10116	NUT, NYLOCK 1/4-20
10028	NUT, HEX, 5/16-18
10196	NUT, HEX, 5/16-18 GRADE 8
10197	NUT, HEX, 3/8-16 GRADE 8
10198	NUT, HEX, 1/2-13 GRADE 8
10199	NUT, NYLOCK, 10mm
10275	NUT, 5/16” ACORN
10255	WASHER, INTERNAL TOOTH, 5/16"
10254	WASHER, INTERNAL TOOTH, 3/8"
10140	WASHER, LOCK, 3/8"
10256	WASHER, INTERNAL TOOTH, 10mm
10205	WASHER, MACHINE BUSHING, 7/8 X 1 3/8-18 GA.
10056	WASHER, LOCK 1/2"
10238	BEARING, #GEZ014
10342	BEARING, FLANGE #EF1620-16
10240	COLLAR,SET SCREW, 7/8" ID
10284	GROMMET, CATERPILLAR #2692
10239	LEVEL, POCKET 5"
10245	POWER CORD 16/3 SJT
10278	POWER STRIP #ULHC4-15
10025	CASTER, PLATE #22-5156-45
11049	ACTUATOR, HT / TLG10-ADXXA-022
10726	ACTUATOR, LT / MAX10-B200395A161MA-000
10729	ACTUATOR, TB / MAX30-A130345A1710A-000
10734	WAND, 1 MOTOR #EHA2A-21B10J-524

Part #	Description
10736	WAND, 2 MOTOR H/LT #EHA2B-21B00J-525
10735	WAND, 2 MOTOR H/TR #EHA2B-21B00J-545
10739	WAND, 3 MOTOR H/T/L #EHA2C-21B00J-525
10754	DC CONTROL BOX, KOM23-120AM-000
10041	ERGOMETER TRACK KIT
10270	ERGOMETER CONTROLLER
10273	ERGOMETER
10453	ERGOMETER PEDAL / BOOT
10471	TRACK BASE, STRESS ECHO BED
10622	PATIENT ASSIST


STRESS ECHO
BED ASSEMBLY
10270
10273
10453
10471
10511
10512
10384H
10069DS
10620DS
10376
10351
10359
10036
10353
10350
10348
10405
10200
10384
10171
10239
10441
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10448
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10332
10190
10445
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12220
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10301
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10754
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10251
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10255
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10219
10105
10171
10278
10195
10228
10237
10028
10217
10256
10193
10447

Figure 36

Accessories

Collapsible Safety Rail Operation

Introduction

Collapsible Safety Rails are an accessory item that may have been purchased on your Stress EchoBed® or may be installed at a later date.

In This Section

You will be instructed on how to operate the collapsible safety rails.

Collapsible Safety Rail Operation Procedure

Step	Action
1	To remove the safety rail, hold the safety rail with one hand (to prevent it from dropping) while you pull the release button with the other hand. (See Figure 37)
2	To lower or replace the safety rail, pull the release button, insert and lower the safety rail all the way down. Let go of the release button.
3	To raise the rail, lift the safety rail until the locking tab of the release button engages the locking hole in the safety rail preventing it from further movement.

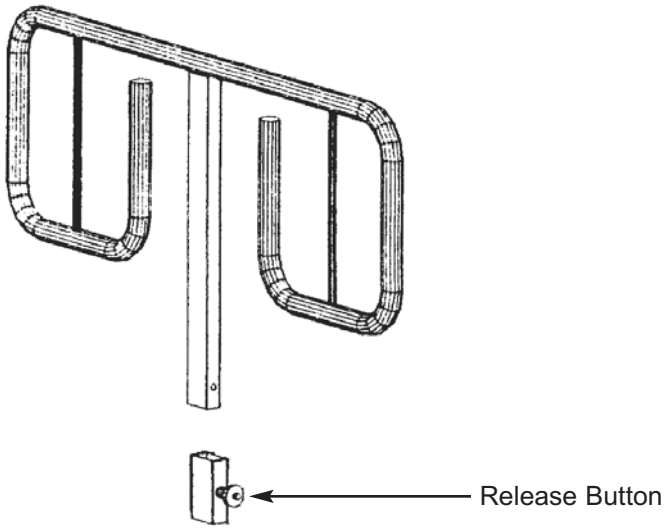


Figure 37

Pediatric / Geriatric Adapter Use

Introduction

The pediatric/geriatric adapter can be placed over the open drop-section imaging window to lessen the size of the opening when imaging smaller patients. It should be removed when not in use.

In This Section

You will be instructed on how to properly place the Pediatric / Geriatric Adapter.

Pediatric / Geriatric Adapter use

In order to use the pediatric/geriatric adapter it is necessary to first remove the non-pinch closure flap.

Step	Action
1	Lower the drop-section.
2	Remove the non-pinch closure flap by grasping one side of the flap and gently separating the hook and loop attachment.
3	Position the adapter locator flanges within the imaging area. (See Figure 38)

Important: When the adapter is not required, simply lift up and out to remove. ***Replace the non-pinch closure flap to insure patient comfort and safety.***

4	With the drop-section lowered, align the top edge of the non-pinch closure flap, (within the access cavity) with the top edge of the bed surface.
5	Press the hook and loop attachment strips together.

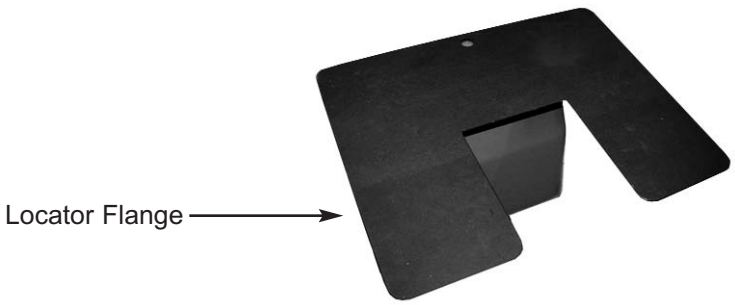


Figure 38

Paper Roll Holder Installation

Introduction

The paper roll holder and cutter is an accessory item that may have been purchased with your Stress EchoBed® or may be installed at a later date.

In This Section

If purchased with your product, the paper roll holder was pre-installed at the factory to insure proper fit, then removed to prevent damage during shipment. You will be instructed on how to reinstall the paper roll holder.

Paper Roll Holder Installation

Tools Needed: 1 Phillips Head Screwdriver

Step	Action
1	Install the paper roll holder at the head of the bed as shown in Figure 39, using the 4 (four) #8 screws provided. Carefully place the screws through the paper roll holder mounting brackets and re-install into the bed. **Do not over tighten the mounting screws. Over tightening may cause the threads to strip.**

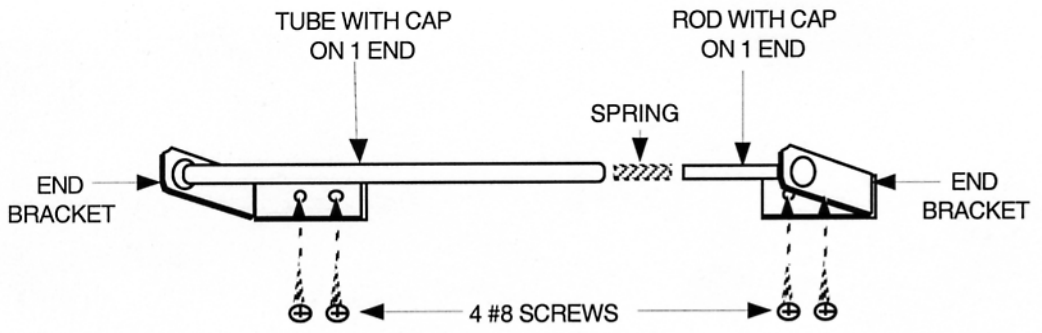


Figure 39

I.V. Pole Holder

Introduction

The I.V. Pole Holder is mounted near the head-end of the bed. If an alternative mounting position is desired, it can be repositioned by removing the two(2) phillips head screws from the bottom of the bracket, moving to the alternative position and re-installing the two(2) phillips head screws.

I.V. Pole Holder Procedure

Step	Action
1	Insert 1/2” diameter I.V. Pole base into holder

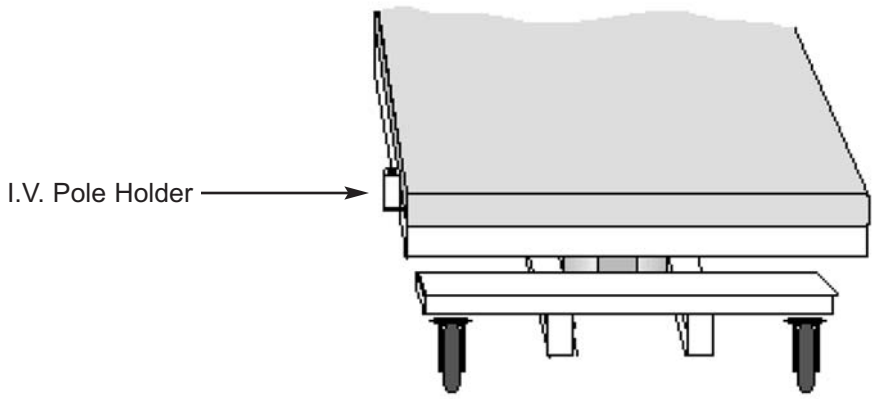


Figure 40

Stress EchoBed®

Specifications for Models 1604, 1624, 1636

Multi-Purpose Testing System

Model

1604 - Lateral Tilt 0- 40°
1624 - Height Adjustable 24”-34”
Lateral Tilt 0- 40°
1636 - Height Adjustable 24”-34”
Trend/ rev. Trend. ±15
Lateral Tilt 0- 40°

Stress System

Computer Controller

- One button operation
- 10 preset exercise protocols, 4 programmable protocols, 1 manual protocol
- Display includes METS, watts, stage, elapsed time, rpm, post exercise time
- Automatic post exercise mode with one minute audibles
- Manual protocol override
- Audible and visual patient coach

Ergometer

- Electomagnetic resistance, self calibrating
- 14 position “positive lock” track adjustment (accommodates patients 4’6” to 6’6”)
- Removable with nylon channel and quick release and lock mechanism
- Ball bearing supported pedal assembly
- Boot style pedal/ankle supports

LENGTH	78”
WIDTH	30”
WEIGHT	465 lbs.
FOAM	Cal. B.F.T.B. #117
VINYL	Fed. Spec. Cec-A-680A D.O.T. FAR 25.8536, M.V.S. 302 Port of NY/ Boston F.D. Code
ELECTRICAL	120 VAC, 3.2 amps max, 50/60 Hz, UL 601, CSA 222.2 No. 601.1, IEC 60601-1

Optional

- Ergometer insert
- Printer
- Foot Switch (Does not support memory positioning)

Exam Surface

- Proven faster image acquisition
- Anatomically/Ergonomically correct imaging area
- 14" x 14" Exam drop section
  One hand rapid release
  Patented non-pinch closure
- IV pole holders
- Corner bumpers
- Patented patient restraint system
- 2 Collapsible/Removable safety rails
- #817 SafeTwedge™
- #820 SafeTwedge™
- Paper roll holder & cutter
- Synchronized, dual latch bolt locks with stainless steel receiver plates
- 7 Standard vinyl colors
- Leg support compatible
- Head support compatible

Platform

- 3 Position memory hand controller
- Sonographer ergonomics and patient transfer system
- Vascular positioning
- Blood pressure restoration system
- 1,250 lb. Load capacity
- 500 lb. Lift capacity
- 5 inch, 2-waylocking sealed bearing casters
- Electrically controlled pedestal base
- Underwriters Laboratory listed for hospital use (UL 544 & CSA Standards)
- Electrically isolated, 24V/DC motion control system with current overload protection circuit
- Sealed, water resistant, low voltage, control wand with self-retracting, coiled power cord

FDA Registered Establishment — **FDA Listed**

U.S. Patents: 6,353,949 B1; 5,950,262; 5,919,131; 347,691; ,184,363; 5,461,739; 6,367,104 B1; 5,250,262; 5,367,104 B1; 6,832,399 B2; 6,557,196 B2; 7,082,268: **International Patents:** 195 81 706; 2,304,568; Additional Patents Pending

WARRANTY

5 Years - All electrical, mechanical and structural parts
1 Year - Parts and labor
(see Warranty for complete details)

MPSS0808

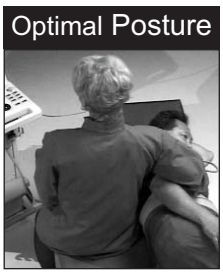
Stress EchoBed® Dual

Specifications for Models 1704, 1724, 1736

Multi-Purpose Testing System

Model

1704 - Lateral Tilt 0- 40°
1724 - Height Adjustable 24”-34”
Lateral Tilt 0- 40°
1736 - Height Adjustable 24”-34”
Trend/ rev. Trend. ±15
Lateral Tilt 0- 40°



Model 1736 Shown

Stress System

Computer Controller

- One button operation
- 10 preset exercise protocols, 4 programmable protocols, 1 manual protocol
- Display includes METS, watts, stage, elapsed time, rpm, post exercise time
- Automatic post exercise mode with one minute audibles
- Manual protocol override
- Audible and visual patient coach

Ergometer

- Electomagnetic resistance, self calibrating
- 14 position “positive lock” track adjustment (accommodates patients 4’6” to 6’6”)
- Removable with Nylon channel and quick release and lock mechanism
- Ball bearing supported pedal assembly
- Boot style pedal/ankle supports

LENGTH	78”
WIDTH	30”
WEIGHT	475 lbs.
FOAM	Cal. B.F.T.B. #117
VINYL	Fed. Spec. Cec-A-680A D.O.T. FAR 25.8536, M.V.S. 302 Port of NY/ Boston F.D. Code
ELECTRICAL	120 VAC, 3.2 amps max, 50/60 Hz, UL 601, CSA 222.2 No. 601.1, IEC 60601-1

Optional

- Ergometer insert
- Printer
- Foot Switch (Does not support memory positioning)

FDA Registered Establishment — **FDA Listed**

U.S. Patents: 6,353,949 B1; 5,950,262; 5,919,131; 347,691; ,184,363; 5,461,739; 6,367,104 B1; 5,250,262; 5,367,104 B1; 6,832,399 B2; 6,557,196 B2; 7,082,268: **International Patents:** 195 81 706; 2,304,568; Additional Patents Pending

Exam Surface

- Proven faster image acquisition
- Anatomically/Ergonomically correctimaging area
- 14" x 14" Exam drop section
  One hand rapid release
  Patented non-pinch closure
- 14" x 12" Right sided sonographers 2 way drop section w/ exam side remote release
- Sonographer drop section extension
- IV pole holder
- Corner bumpers
- Patented patient restraint system
- 2 Removable safety rails
- #817 SafeTwedge™
- Paper roll holder & cutter
- Synchronized, dual latch bolt locks with stainless steel receiver plates
- 7 Standard vinyl colors
- Leg support compatible
- Head support compatible

Platform

- 3 Position memory hand controller
- Sonographer ergonomics and patient transfer system
- Vascular positioning
- Blood pressure restoration system
- 1,250 lb. Load capacity
- 500 lb. Lift capacity
- Electrically controlled pedestal base
- Underwriters Laboratory listed for hospital use (UL 544 & CSA Standards)
- Electrically isolated, 24V/DC motion control system with current overload protection circuit
- Sealed, water resistant, low voltage, control wand with self-retracting, coiled power cord
- 5 inch, 2-way locked sealed bearing casters

WARRANTY

5 Years - All electrical, mechanical and structural parts
1 Year - Parts and labor (see Warranty for complete details)

MPSS0808