



**ELECTRIC SURGI-STRETCHER  
MODEL 5E8 / 5D8**



**HYDRAULIC SURGI-STRETCHER  
MODEL 578**

## **OPERATING MANUAL**

**READ THIS MANUAL BEFORE OPERATING YOUR STRETCHER.**

**SAVE THIS MANUAL FOR FUTURE USE.**

**THE MOST CURRENT VERSION OF THIS MANUAL CAN BE FOUND ONLINE AT  
[WWW.HAUSTED.COM](http://WWW.HAUSTED.COM).**

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## INTRODUCTION — A WORD FROM GF HEALTH PRODUCTS, INC.

This manual contains important information on proper use and maintenance of the Hausted Surgi-Stretcher. All personnel involved in the use and maintenance of this equipment must carefully review and comply with the warnings, cautions and instructions contained in this manual. These instructions are important to protect the health and safety of personnel operating model 578 / 5E8 / 5D8 and should be retained in a conveniently accessible area for quick reference.

Complete instructions for uncrating and putting your new equipment in service, as well as equipment drawings, have been furnished. If missing, contact GF Health Products, Inc. for replacement copies, giving the serial number and model number of the unit.

GF Health Products, Inc. carries a complete line of accessories for use with these stretchers; your representative will gladly review these with you.

### Indications for Use

The Hausted Surgi-Stretchers are intended for use in patient treatment, transport or recovery.

The articulating head piece with dual operating control knobs allows adjustability and precise movement of the head section. Patient positioning is convenient and easy for both care provider and patient with the electric/battery powered controls for adjustment of height, backrest and knee flex.

### Service Information

A thorough preventive maintenance program is essential to safe and proper unit operation. This manual contains maintenance schedules and procedures which should be followed for satisfactory equipment performance.

We encourage you to contact GF Health Products, Inc. with maintenance concerns.


### Advisory

A listing of the safety precautions to be observed when operating and servicing this equipment can be found in Section 1 of this manual. Do not operate or service the equipment until you have become familiar with this information. Any alteration of this equipment not authorized or performed by GF Health Products, Inc., could affect its operation, will void the warranty, could violate national, state, and local regulations, and could jeopardize your insurance coverage.

*Info: Column 1 below applies only if product was purchased outside the U.S.*

	<table border="1"><tr><td>EC</td><td>REP</td></tr></table>	EC	REP
	EC	REP	
<p><b>EC Authorized Representative:</b> CEpartner4U BV ESDOORNLAAN 13 3951DB MAARN The Netherlands +31(0)6 516 536 26</p>			

	<p><b>Manufactured by:</b> GF Health Products, Inc. One Graham-Field Way Atlanta GA 30340-3140 1.770.368.4700 Main 1.770.368.2386 Fax www.grahamfield.com www.Hausted.com</p>
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	<p><b>Class 1 Equipment Type B Equipment</b> Equipment not suitable for use in the presence of flammable anesthetic mixture with air or oxygen or nitrous oxide. IPX6 Not suitable for continuous operation (Duty Cycle: 10% 2 Min in 18 Min)</p>
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*Info: The base language of this document is ENGLISH. Any translations must be made from the base language document.*



# 1 LIST OF WARNINGS AND CAUTIONS

**⚠ IMPORTANT: Before using the Surgi-Stretcher, please read and adhere to the following safety precautions and warnings. Failure to do so could result in serious personal injury or damage to the Stretcher.**

Always consult your healthcare professional to determine safe methods most suitable for your individual abilities. Protect yourself, your attendant, and the Surgi-Stretcher by having it serviced regularly. If you experience any malfunction, contact your Graham-Field authorized distributor immediately, as a hazardous condition could result, causing personal injury or damage to the Stretcher.

Periodic inspection, adjustment and replacement of worn parts are necessary to provide years of excellent service. Maintenance **MUST** be performed by qualified personnel **ONLY**.

**SAVE THESE INSTRUCTIONS.**

## SIGNIFICANCE OF SAFETY STATEMENTS

Please note the following special statements, used throughout this manual, and their significance:

- ⚠ DANGER:** Indicates a potential hazard situation or unsafe practice that, if not avoided, will result in death or serious personal injury.
- ⚠ WARNING:** Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in death or serious personal injury.
- ⚠ CAUTION:** Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in minor or moderate personal injury.
- ▲ NOTICE:** Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in product or property damage.

*Info: Provides application recommendations or other useful information to ensure that you get the most from your product.*

## DANGER / WARNING / CAUTION / NOTICE Summary

The following is a listing of the safety precautions which must be observed when operating and servicing this equipment. These precautions are repeated (in whole or in part), where applicable, throughout the manual.

### **DANGER: To Reduce the Risk of Burns, Fire, or Electric Shock**

- ⚠ DANGER: SHOCK HAZARD — To reduce the risk of electric shock, do not remove the cover. Unit is to be serviced by qualified personnel only.**
- ⚠ DANGER: PERSONAL INJURY HAZARD — The batteries are wired in series; failure to connect the same way can cause batteries to explode.**
- ⚠ DANGER: SHOCK HAZARD — To avoid the risk of electric shock, this equipment must only be connected to supply mains with protective earth.**

### **WARNING: To Reduce the Risk of Personal Injury**

- ⚠ WARNING: LACERATION HAZARD — When cutting bands always use a tool specifically designed for that purpose. This will help to avoid personal injuries frequently incurred when bands are cut and tension released.**
- ⚠ WARNING: Do not sit on end — tipping may occur.**
- ⚠ WARNING: Ensure IV rod is inserted completely into socket up to the arrow before applying load.**

## **WARNING — CAUTIONS AND PROPER OPERATION**

- ⚠ WARNING:** This product has a maximum weight capacity of 226 kilograms (500 lb) for 578 models and 327 kilograms (720 lb) for 5E8 / 5D8 models, **EVENLY DISTRIBUTED.**
- ⚠ WARNING:** Patient entry, egress and transfer should always be done with the brakes locked.
- ⚠ WARNING:** The brakes should always be locked and patient side rails up when patient is not in transport.
- ⚠ WARNING:** Clip patient pendant to rail when not in use – keep cord clear of moving parts.
- ⚠ WARNING:** All electric powered stretchers are equipped with a built-in battery back-up system, but the unit should remain plugged into wall receptacle during normal use. The battery back-up is intended for transport and **EMERGENCY** only.
- ⚠ WARNING:** The Fowler backrest quick drop handle is intended to be used to lower patient during **EMERGENCY** situations only.
- ⚠ WARNING:** Ensure rail is locked before leaving patient.
- ⚠ WARNING:** The lockout panel deactivates both the patient pendant and the control panel.
- ⚠ WARNING:** Do not sit on foot end or head end – tipping may occur.
- ⚠ WARNING:** To turn on electric controls, plug into wall receptacle. To turn off, remove plug from wall receptacle. Electric powered stretchers do not have a separate on / off switch.
- ⚠ WARNING:** Always disconnect the power source whenever troubleshooting or servicing any electric powered stretcher.
- ⚠ WARNING:** Do not modify the equipment without the authorization of the manufacturer.
- ⚠ WARNING:** This product can expose you to chemicals including Di(2-ethylhexyl)phthalate (DEHP) which is known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov/furniture](http://www.P65Warnings.ca.gov/furniture).
- ⚠ WARNING:** When lowering the rails, ensure patient and caregiver body and extremities are clear of pinch points before operating the rail.

## **ELECTROMAGNETIC COMPATIBILITY (EMC) INFORMATION**

- ⚠ WARNING:** Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this manual.
- ⚠ WARNING:** Electronic equipment may be influenced by Radio Frequency (RFI). Caution should be exercised with regard to the use of portable communications in the area around such equipment. Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Hausted equipment including specified Hausted equipment cables. Degradation of the performance of the Hausted equipment could result.
- ⚠ WARNING:** If RFI causes erratic behavior, unplug the electric Hausted equipment immediately. Leave unplugged while transmission is in progress.
- ⚠ WARNING:** The use of accessories, transducers, and cables other than those specified by the manufacturer may result in increased emissions or decreased immunity of the Hausted equipment. GF cables and accessories include motor cables, mains cable, pendant cables, and back up battery and cable.

- ⚠ WARNING:** This equipment should not be used adjacent to or stacked with other equipment. If adjacent or stacked use with other equipment is necessary, this Hausted equipment and the other equipment should be observed to verify that they are operating normally.
- ⚠ WARNING:** The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is usually required) this equipment might not offer adequate protection to radio frequency communication services. The user might need to take mitigation measures, such as relocating or reorienting the equipment.

## 2 UNCRATING INSTRUCTIONS

### IMPORTANT — REPORT ANY SHIPPING DAMAGE IMMEDIATELY:

⚠ **WARNING:** Inform shipper of any damage — leave carton intact. Leave equipment in the receiving area until inspection is complete.

### NOTICE — POSSIBLE EQUIPMENT DAMAGE:

▲ **NOTICE:** The crate contains fragile, expensive medical equipment. Uncrate and handle carefully. If after uncrating the equipment you find any damage (no matter how slight), report the damage to GF Health Products, Inc.

### WARNING — PERSONAL INJURY HAZARD:

⚠ **WARNING:** When cutting bands, always use tool specifically designed for that purpose. This will help avoid personal injuries possibly incurred when bands are cut and tension is released.

### ENVIRONMENTAL CONDITIONS

Operating	
Temperature	5°C to 40°C
Relative Humidity	20% to 90% @ 30°C
Atmospheric Pressure	700 to 1060 hPa

Storage and Transport	
Temperature	-10°C to 50°C
Relative Humidity	20% to 90% @ 30°C
Atmospheric Pressure	700 to 1060 hPa

### UNPACKING INSTRUCTIONS

**IMPORTANT:** Follow each step in the order shown in these instructions.

Your Hausted equipment has been carefully packed at our manufacturing plant to ensure safe shipment to your medical facility. There are several procedures you must follow to put your new equipment in service. These procedures only take a few minutes to complete and all are required to ensure proper operation of the equipment.

1. Cut the two bands around the shipping carton.
2. Remove the top half of the carton and cut one side of the bottom half.
3. Remove the equipment from the carton.
4. Check to see if all features of the equipment work properly. If all the features work, advance to step 5. If any features do not work properly, call GF Health Products, Inc. at 1.770.368.4700.

*Info: Although the equipment has been fully charged prior to shipment, plug the unit into a wall socket prior to checking any electric features.*

5. Clean the equipment using mild detergent to remove any dirt accumulated during shipment, and place the equipment into service.

### 3 OPERATING INSTRUCTIONS

#### 3.1 SURGI-STRETCHER SPECIFICATIONS

*Info: All dimensions, unless otherwise specified, are in inches. All dimensions are  $\pm 0.375$ . GF Health Products, Inc. reserves the right to change specifications without notice.*

Model	Electric/Battery Powered Standard Width 5E8EYEST 5D8EYEST	Electric/Battery Powered Wide Width 5E8EYXST 5D8EYXST	Hydraulic Standard Width 578EYEST	Hydraulic Wide Width 578EYXST
Height Range: High	30 in [76 cm] $\pm 1$ in		32 in [81 cm]	
Height Range: Low	22 in [56 cm] $\pm 1$ in		24 in [61 cm]	
Overall Width	29.75 in [75.6 cm]	34.5 in [87.6 cm]	29.75 in [75.6 cm]	34.5 in [87.6 cm]
Overall Length	88.5 in [225 cm]			
Patient Surface Width	25 in [63.5 cm]	30 in [76 cm]	25 in [63.5 cm]	30 in [76 cm]
Patient Surface Length	81.5 in [207 cm]			
Backrest Degree of Movement	0° - 80°		0° - 90°	
Knee Flex Degree of Movement	0° - 60°		0° - 75°	
Trendelenburg / Reverse Trendelenburg	10° $\pm 2$ °		16°	
Retracto Rail Height	14 in [35.5 cm]			
Retracto Rail Length	49 in [125 cm]			
Casters	8 in Tente® [20 cm]			
Maximum Weight Capacity (EVENLY DISTRIBUTED)	720 lb [327 kg]		500 lb [227 kg]	
Power	5E8: 120V / 5D8: 230V		—	
Mattress Pad Thickness	3 in [8 cm]			

#### Electrical Specifications (Applies to 5E8 Models Only)

Product Classification:	1
Input Voltage:	120V~, 60Hz
Amperage:	Max. 4.0A
Duty Cycle:	10% 2 Min in 18 Min
IP Rating:	IPX6
Grounding Protection:	Type B

#### Electrical Specifications (Applies to 5D8 Models Only)

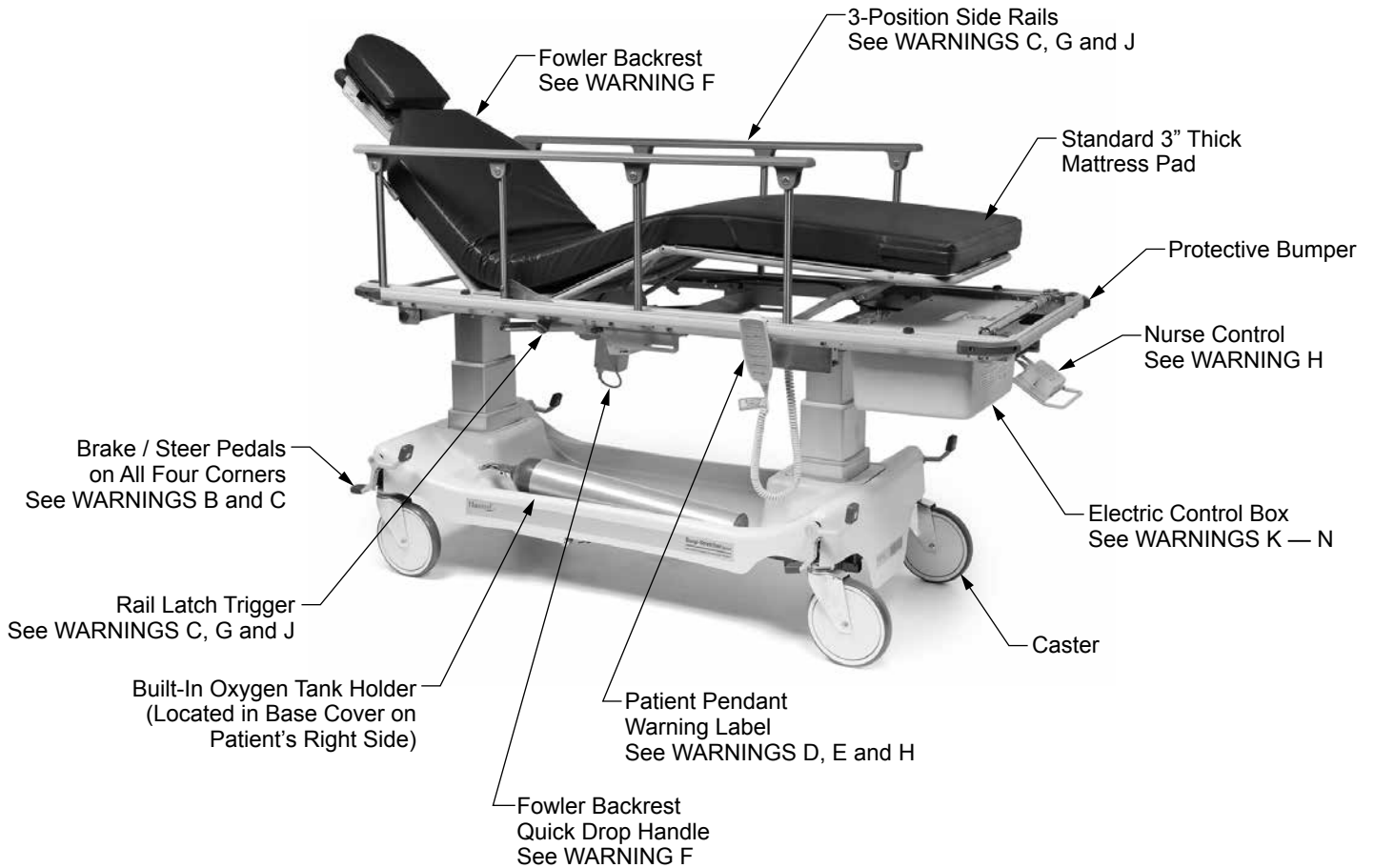
Product Classification:	1
Input Voltage:	230V~, 50/60Hz
Amperage:	Max. 2.0A
Duty Cycle:	10% 2 Min in 18 Min
IP Rating:	IPX6
Grounding Protection:	Type B

## 3.2 FEATURES, WARNINGS AND PROPER OPERATION OPERATING INSTRUCTIONS

### WARNINGS – CAUTIONS AND PROPER OPERATION (See Diagram on following page)

- ⚠ **WARNING: Do not sit on end – tipping may occur.**
  
- ⚠ **A. WARNING: The stretchers have a warning label located at the head end stating: Maximum patient weight 226 kilograms (500 lbs.) for 578 models and 327 kilograms (720 lbs.) for 5E8 / 5D8 models.**
- ⚠ **B. WARNING: Patient entry, egress and transfer should always be done with the brakes locked.**
- ⚠ **C. WARNING: The brakes should always be locked and patient side rails up when patient is not in transport.**
- ⚠ **D. WARNING: The patient pendant has a warning label stating: Clip pendant to rail when not in use – keep cord clear of moving parts.**
- ⚠ **E. WARNING: All electric stretchers are equipped with a built-in battery back-up system, but it is recommended that the unit remain plugged into wall receptacle during normal use. The battery back-up is recommended for transport and EMERGENCY only.**
- ⚠ **F. WARNING: The Fowler backrest quick drop handle is intended to be used to lower patient during EMERGENCY situations only.**
- ⚠ **G. WARNING: Ensure rail is locked before leaving patient.**
- ⚠ **H. WARNING: The lockout panel deactivates both the patient pendant and the control panel.**
- ⚠ **I. WARNING: Floors must be smooth and level to maintain optimum fifth wheel steering. Fifth wheel steering functions can be influenced by floor irregularities (bumps or dips) greater than 1/2" (13 mm) across the span of the stretcher.**
- ⚠ **J. WARNING: When lowering the rails, ensure patient and caregiver (or attendant) body and extremities are clear of pinch points before operating the rail.**
- ⚠ **K. WARNING: To turn on electric controls, plug into wall receptacle; to turn off, remove plug from wall receptacle. The electric powered stretchers do not have a separate on / off switch.**
- ⚠ **M. WARNING: Always disconnect the power source whenever servicing any electric powered stretcher.**
- ⚠ **N. WARNING: The batteries are wired in series; failure to install or rewire the same way may cause the batteries to explode.**

## Features (Shown in Illustration of 5E8EYXST below)



## WARNINGS — CAUTIONS AND PROPER OPERATION (See List on Previous Page)

### 3.3 BRAKING AND STEERING OPERATION (ALL MODELS)

#### 3.3.1 Applying the Brakes

Activate the four wheel central braking system by depressing the red pedal at any of the four corners of the unit (Figure 3-1) to approximately 45°. All four caster wheels should then be locked from swiveling and rotating.



Figure 3-1

#### 3.3.2 Releasing the Brakes

Release the brakes by depressing the green pedal at any corner of the unit until the pedal is in a horizontal position (Figure 3-2). All four wheels should then rotate and swivel freely.



Figure 3-2

**⚠ WARNING: Ensure the brakes are locked when the patient is not being transported.**

#### 3.3.3 Applying the Steering Lock / Fifth Wheel

From any corner of the stretcher, depress the green pedal downward into locked position (Figure 3-3). Push the stretcher forward. Either one caster at the foot end will lock into nonswivel mode, or the optional fifth wheel will lower and apply pressure to the floor, thus guiding the stretcher along a straight path with minimal steering effort by the attendant.



Figure 3-3

**⚠ WARNING: Floors must be smooth and level to maintain optimum fifth wheel steering. Fifth wheel steering functions can be influenced by floor irregularities (bumps or dips) greater than 1/2" (13 mm) across the span of the stretcher.**

#### 3.3.4 Releasing the Steering Lock / Fifth Wheel

Release the steering lock by depressing the red pedal at any corner of the unit until the pedal is in a horizontal position (Figure 3-2). All four casters should then rotate and swivel freely, and / or the optional fifth wheel will retract.



### 3.4 STRETCHER TOP HEIGHT ADJUSTMENT (578 HYDRAULIC MODELS)

▲ **NOTICE:** Do not stand on the pedals.

#### 3.4.1 Height Adjustment

Press the pump pedal to the floor (Figure 3-4), then release. Repeat this process until desired height is reached. Use smooth strokes on the pedal to ensure patient comfort.



Figure 3-4

#### 3.4.2 Lowering the Litter Top

Press down on the two release pedals at the same time (Figure 3-5) until desired height is reached.



Figure 3-5

#### 3.4.3 Trendelenburg Adjustment

Place the unit at maximum height (see **Height Adjustment** above). Press down on the release pedal nearest the head end (Figure 3-6) until desired position is reached, then remove pressure.



Figure 3-6

#### 3.4.4 Reverse Trendelenburg Adjustment

Place the unit at maximum height (see **Height Adjustment** above). Press down on the release pedal nearest the foot end (Figure 3-7) until desired position is reached, then remove pressure.



Figure 3-7

### **3.5 BACKREST / KNEE FLEX OPERATION (578 HYDRAULIC MODELS)**

#### **3.5.1 Raising the Backrest / Knee Flex**

To elevate the backrest or knee flex, flip the crank handle upward and rotate the crank handle clockwise (Figure 3-8). When the desired position is reached, stop the rotating motion and return the crank handle to its original position (Figure 3-9).

#### **3.5.2 Lowering the Backrest / Knee Flex**

To lower the backrest or knee flex, flip the crank handle upward and rotate the crank handle counterclockwise (Figure 3-8). When the desired position is reached, stop the rotating motion and return the crank handle to its original position (Figure 3-9).

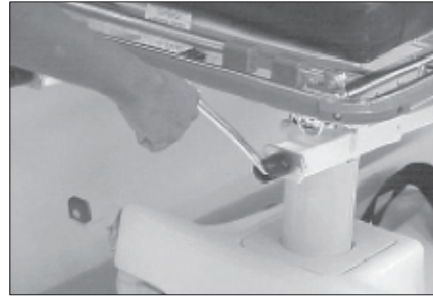


Figure 3-8

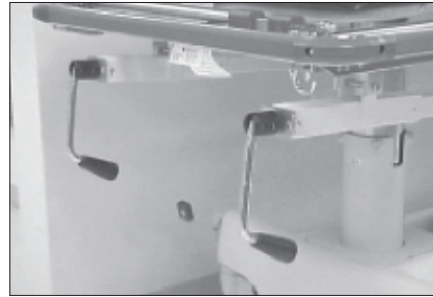


Figure 3-9

## 3.6 ELECTRIC CONTROL LOCATIONS (5D8 AND 5E8 MODELS)

### 3.6.1 Nurse Control Panel

To access the nurse control panel pull out on the handle located at the head end of the unit, under the top. (Figures 3-10 and 3-11).

### 3.6.2 Patient Pendant Control

The patient pendant has an adjustable location and may be located along either side rail (Figure 3-12).

▲ **NOTICE: Clip pendant to rail when not in use. Keep cord clear of moving parts.**

### 3.6.3 Plug Locations

The stretcher is equipped with a battery back up for transport but the unit should be plugged into a wall receptacle when not in transport. The plug is stored on a hook under the head end of top section patient left (Figure 3-13). Remove the coiled plug from the hook and plug into the nearest wall receptacle. Do not position the unit so that it is difficult to disconnect the plug.

⚠ **WARNING: This stretcher is equipped with a built-in battery back-up system, but the unit should remain plugged into wall receptacle during normal use. The battery back-up is intended for transport and EMERGENCY only.**



Figure 3-10



Figure 3-11



Figure 3-12



Figure 3-13

### 3.6.4 Emergency Electric Backrest Override

The unit is equipped with a Fowler backrest quick drop handle which is located under the stretcher top on the patient right (Figure 3-14). This option is only to be used in an emergency situation. The label states: Emergency drop backrest. Pull handle to activate.

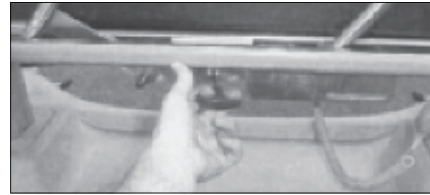


Figure 3-14

### 3.6.5 Low Battery Indicator Light

The unit is equipped with a low battery indicator light, located on the nurse control panel positioned just above row 3 column 3, which will blink when the battery is low and needs charging (Figure 3-15). If use of the unit is continued without being attached to a power supply, the battery indicator light will cease to blink and will remain illuminated. This indicates that the battery charge is critically low and a power source is needed.



Figure 3-15

### 3.6.6 Charge Indicator Light

The charge indicator light is positioned in the left bottom corner of the nurse control panel at row 3, column 1 (Figure 3-15), and will illuminate whenever the unit is plugged in to the wall.

## 3.7 STRETCHER TOP ADJUSTMENT (5E8 AND 5D8 ELECTRIC MODELS)

**⚠ WARNING:** The lockout panel deactivates both the patient pendant and the control panel.

### 3.7.1 Hand Pendant Functions

#### Foot Section Adjustment

**Raising:** Press the first button on the second row of buttons on the pendant (Figure 3-16). Hold until the desired angle is achieved.

**Lowering:** Press the second button on the second row of buttons on the pendant. Hold until the desired angle is achieved.

**⚠ WARNING: PERSONAL INJURY HAZARD —**

**Do not transport patient in chair configuration (tipping may occur).**

**Do not sit or stand on foot section (tipping may occur).**

#### Back Section Adjustment

**Raising:** Press the first button on the first row of buttons on the pendant (Figure 3-17). Hold until the desired incline is achieved.

**Lowering:** Press the second button on the first row of buttons on the pendant. Hold until the desired recline is achieved.

#### Simultaneous Back and Foot Section Adjustment

**Raise Back Section / Foot Section:** Press the first button on the third row of buttons on the pendant. Hold until the desired angle is achieved.

**Lower Back Section / Foot Section:** Press the second button on the third row of buttons on the pendant (Figure 3-18). Hold until the desired height is achieved.

#### Height Adjustment

**Raising:** Press the first button on the fourth row of buttons on the pendant. Hold until the desired height is achieved.

**Lowering:** Press the second button on the fourth row of buttons on the pendant (Figure 3-19). Hold until the desired height is achieved.



Figure 3-16



Figure 3-17



Figure 3-18



Figure 3-19

## Trendelenburg Adjustment (Hand Pendant)

**Lockout:** See Section 3.7.3 **Lockout** instructions.

**Pendant — Trendelenburg:** Press and hold the second button on the bottom row of buttons (Figure 3-20) until desired angle is achieved.

**Pendant — Reverse Trendelenburg:** Press and hold the first button on the bottom row of buttons (Figure 3-21) until desired angle is achieved.

## 3.7.2 Nurse Control Functions

### Back Section Adjustment

Press and hold the first button on the top row (top left). At the same time, press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-22) until the desired angle is achieved.

### Foot Section Adjustment

Press and hold the second button on the top row. At the same time, press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-23) until the desired angle is achieved.

### Height Adjustment

Press and hold the third button on the top row. At the same time, press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-24) until the preferred height is achieved.



Figure 3-20



Figure 3-21



Figure 3-22



Figure 3-23



Figure 3-24



### **Trendelenburg Adjustment**

Press and hold the last button on the top row (top right). At the same time, press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-25) until the desired Trendelenburg angle is achieved.



Figure 3-25

### **Simultaneous Back and Foot Section Adjustment**

Press and hold the third button from the right on the second row (row 2, column 3). At the same time press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-26) until the desired angle is achieved.



Figure 3-26

### **Neutral Return**

The neutral return button is a function that allows the unit to return to its naturally retracted position where the patient surface will completely flatten, and the top surface will travel vertically to its maximum or minimum height, depending on the direction of travel specified. To initiate neutral return, press and hold the second button from the right on the second row (row 2, column 2). At the same time, press and hold the UP or DOWN arrow button which corresponds to the desired direction of travel (Figure 3-27).



Figure 3-27

### 3.7.3 Lockout

When a function of the stretcher is locked out, a lockout indicator light located above that function will become illuminated (Figure 3-28). In order to initiate the lockout of a function, press and hold the Lock button (row 2, column 1). At the same time, press the button corresponding to the function that needs to be locked out. In order to unlock a function, repeat until the lock out indicator light located above that function is no longer illuminated. No light above a function means that function is unlocked and ready to use.



Figure 3-28



Figure 3-29

#### Back Section Lockout

Press the Lockout Button simultaneously with the first button on the top row (Figure 3-29) of the control panel.

#### Foot Section Lockout

Press the Lockout Button simultaneously with the second button on the top row (Figure 3-30) of the control panel.



Figure 3-30

#### Height Lockout

Press the Lockout Button simultaneously with the third button on the top row (Figure 3-31) of the control panel.



Figure 3-31

#### Trendelenburg Lockout

Press the Lockout Button simultaneously with the fourth button on the top row (Figure 3-32) of the control panel.



Figure 3-32



## 3.8 PATIENT RAIL OPERATION (ALL MODELS)

**⚠ WARNING:** Always ensure the rail is locked in position before leaving the patient unattended.

### 3.8.1 Raising the Rail

Grasp the rail top cap in the middle of the rail (Figure 3-33) and lift.

### 3.8.2 Half Height

Grasp the rail and lift the red trigger under the litter top (Figure 3-34) while lowering the rail. When the rail starts to move down, release the trigger. Lower the rail until it locks into half height position.

### 3.8.3 Lowering the Rail

Grasp the rail and lift the red trigger under the litter top (Figure 34) while lowering the rail. Continue to lift the trigger until the rail is all the way down.

**⚠ WARNING:** When lowering the rails, ensure patient and caregiver body and extremities are clear of pinch points before operating the rail (Figure 3-35).

**⚠ WARNING:** Ensure both rails are in upright locked position before leaving patient.

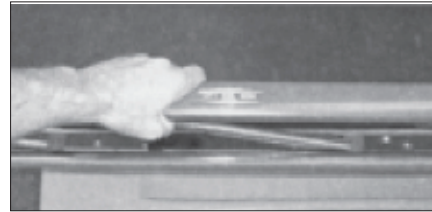


Figure 3-33

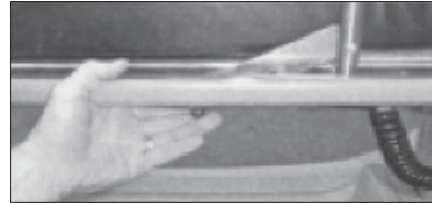


Figure 3-34



Figure 3-35

## 3.9 EYE HEADREST (ALL MODELS)

### 3.9.1 Pre-Op / Post-Op Head Extension — Pushbar

To remove the head extension, rotate both knobs on the extension ends counterclockwise (Figure 3-36). With both knobs loosened, pull out on the extension. To install the extension, slide the extension tube ends over the Fowler pins (Figure 3-37), push the extension all the way onto the pins, then tighten both knobs (Figure 3-36) on the extension ends.



Figure 3-36



Figure 3-37

### 3.9.2 Adjusting the Eye Headrest

Remove the head extension, see “Pre-op / Post-op Head Extension — Pushbar” instructions. Grasp the right ball style knob (Figure 3-38). Rotate the knob counterclockwise to articulate the head section upward (Figure 3-39). Rotate the knob clockwise to articulate head section downward.

Once the upward articulation has been set, grasp the left ball style knob (Figure 3-40). Rotate the knob counterclockwise to adjust the height of the head rest (Figure 3-41).



Figure 3-38



Figure 3-39

### IMPORTANT

*After understanding which knob creates which action, quick and smooth adjustment can be achieved by rotating the knobs simultaneously (Figure 3-42).*



Figure 3-40



Figure 3-41



Figure 3-42

### 3.9.3 Mounting the Wrist Rest

Place the wrist rest in one of the three square sockets under the headrest (Figure 3-43).

Rotate the “T” knob on the back of the rest (Figure 3-44) clockwise to secure it.

**⚠ WARNING: Ensure the wrist rest is securely mounted before applying pressure.**



Figure 3-43



Figure 3-44

### 3.10 PERMANENTLY MOUNTED IV ROD OPERATION (ALL MODELS)

Refer to Figure 3-45.

**⚠ WARNING: PERSONAL INJURY HAZARD — Ensure IV Rod is inserted completely into socket up to the arrow before applying any load.**

#### 3.10.1 Putting IV Rod in up position

1. Grasp IV Rod and rotate upward until it stops.
2. Push down on IV Rod until it slides firmly into rod hinge socket.

#### 3.10.2 Extending IV Rod

1. Rotate screw collar, or large screw collar, until loosened adequately to allow inner tube to easily slide up or down within outside tube.
2. Lift up on top of IV Rod until desired height is achieved.
3. Tighten collar screw(s) until hand tight.

#### 3.10.3 Retracting IV Rod

1. Support extended portion of IV Rod with one hand.
2. Rotate screw collar until loosened.
3. Lower IV Rod until desired height is achieved, then retighten screw collar.
4. Repeat process with second screw collar as required.

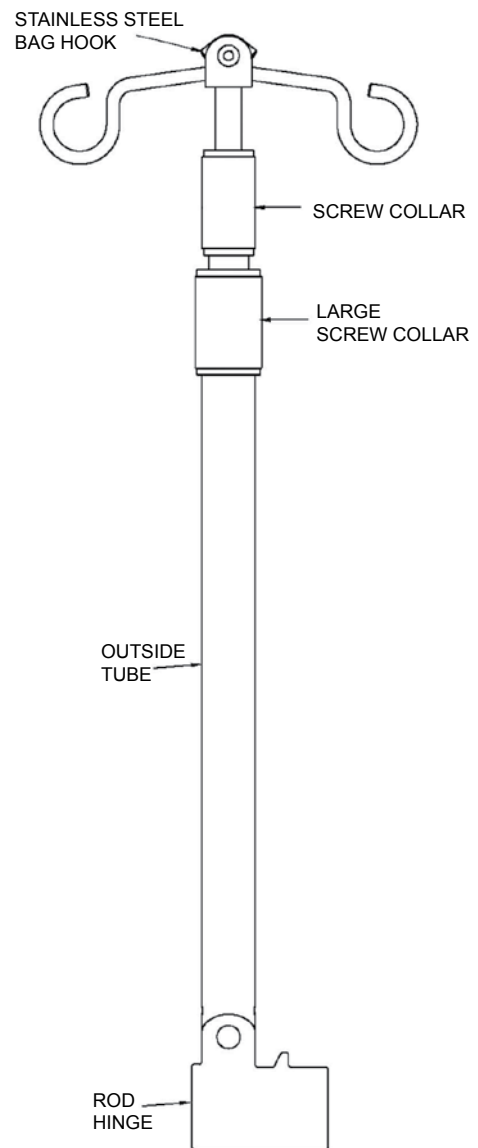


Figure 3-45

## 4 TROUBLESHOOTING GUIDE

### 4.1 ELECTRIC POWERED STRETCHERS

**⚠ DANGER: SHOCK HAZARD** — To reduce the risk of electric shock, do not remove the cover. Unit is to be serviced by qualified service personnel (minimum 1 year medical equipment service and repair experience) only.

**⚠ DANGER: SHOCK HAZARD** — Always disconnect the power source whenever troubleshooting or servicing any electric powered stretcher.

If	Then
One motor or one column does not move but all others are operating correctly.	Step 1: Check all motor and column plug connections at the controller.
	Step 2: If a column does not move: Check the connection at the column.
	Step 3: Plug a connector from the faulty component into a different socket. If the component does not run: Replace that component.
	If the component runs: Test pendant by plugging a functioning component into the non-functioning socket on the controller. If this component does not run, replace the pendant. If replacing the pendant does not fix the problem, then replace the controller.
Nothing moves.	Step 1: Plug unit into main supply wall receptacle, then observe the pilot light on the controller. If the pilot light is off: Replace the controller. If the pilot light is on: 1. Check the nurse control plug connection at the controller. 2. Check the pendant control plug connection at the controller. 3. Ensure all lockout functions are deactivated. 4. Contact GF Health Products, Inc. for further help and instruction.
The unit runs when plugged into wall receptacle, but does not run on battery backup.	Step 1: Plug unit into a wall receptacle overnight. If the batteries do not hold a charge, replace the batteries (section 4.2).

GF Health Products, Inc. may be contacted at 1.770.368.4700 for additional information required to service or repair the equipment.

### 4.2 BATTERY REPLACEMENT INSTRUCTIONS

**⚠ DANGER: SHOCK HAZARD** — To reduce the risk of electric shock, do not remove the cover. Unit is to be serviced by qualified service personnel (minimum 1 year medical equipment service and repair experience) only.

**⚠ DANGER: SHOCK HAZARD** — Always disconnect the power source whenever troubleshooting or servicing any electric powered stretcher.

**⚠ DANGER: PERSONAL INJURY HAZARD** — The batteries are wired in series; failure to connect the same way can cause batteries to explode.

The batteries are the only field serviceable components — do not attempt to repair the circuit boards.	
Battery replacement	Step 1: Remove the controller. Step 2: Remove the 4 screws from the right half, located on top of controller. Step 3: (After 4/11/00) replace (2) batteries with VISION CP1213, 12V 1.3 Ah (Hausted P/N 075759 – 2 required, for CB-12 controllers). Step 4: Ensure battery connector is in place on left side of batteries. Step 5: Replace cover.

## 5 PREVENTIVE MAINTENANCE FOR THE USER

Component	Cleaning Procedure	Schedule	Cleaning Agent *	Special Notes
Pads / Mattresses	Wipe with damp cloth to remove any foreign material	After each use	Routine hospital grade disinfectants, soap and water	Use only medium strength cleaners Do not steam clean or pressure wash
Stretcher	Wipe with damp cloth to remove any foreign material		Routine hospital grade disinfectants, soap and water	Lubricate pivot points after cleaning
Electrical components	Wipe external surfaces ONLY with damp cloth to remove any foreign material		Routine hospital grade disinfectants, soap and water	Use only medium strength cleaners
Mechanical stretcher components	Wipe with damp cloth to remove any foreign material		Routine hospital grade disinfectants, soap and water	Lubricate pivot points after cleaning
Mechanical accessories	Wipe with damp cloth to remove any foreign material		Routine hospital grade disinfectants, soap and water	Lubricate pivot points after cleaning
Procedure		Schedule	Material	
Lubricate all moving and sliding parts and hinge points		Every 3 months	Lubricating oil, light-duty grease, wax stick lubricant or Never-Seez lubricant	
<b>⚠ NEVER LUBRICATE GAS SPRING, MOTOR, OR MECH-LOCK SHAFTS ⚠</b>				
Inspect all fasteners to ensure proper fit, position and tightness, including nuts, bolts, etc.		Every 3 months	Proper size wrench and screwdriver	
Inspect all surfaces and remove any sharp or burred areas; apply touch-up paint where required			Metal file, proper color paint (specify color when ordering)	
* Disinfecting and Cleaning Upholstery - ALWAYS follow manufacturer's recommended dilution				
Disinfectants for vinyl products	Phenolic disinfectants are the best choice for vinyl			
	Properly diluted quaternaries are also acceptable for vinyl			
	Quaternary / Isopropyl disinfectants ARE NOT recommended for vinyl			
Disinfectants for urethane products	Quaternary disinfectants are recommended for urethane			
	Quaternary / Isopropyl disinfectants are recommended for urethane			
	Phenolics SHOULD BE AVOIDED on urethane.			
Disinfectants for all products	All fabrics may be cleaned with a 1:10 dilution of household bleaches containing 5.25% sodium hypochlorite as recommended by the Centers for Disease Control in Atlanta, Georgia; there is no harmful effect on the fabric			
	Disinfectants applied at full concentration or in highly concentrated solutions will decrease the useful life of fabric			
	Iodophor-type disinfectants used on fabric may result in staining			
Soils or Stains	Use neutral soapsuds and lukewarm water; DO NOT use harsh cleansers, solvents or detergents			
Hard-To-Clean Spots	Use standard household / vinyl cleansers and a soft bristle brush on troublesome spots or stains; presoak heavy, dried-on soil			
Laundering	Laundering Vinyl-laminated, Polyurethane-coated, or Rubber-coated fabric IS NOT recommended; laundering may substantially decrease the useful life of the fabric			

**▲ NOTICE – POSSIBLE EQUIPMENT DAMAGE HAZARD: Steam cleaning and pressure washing of stretcher is not recommended and can void warranty.**

*Info: For more detailed information, please contact GF Health Products, Inc. at 1.770.368.4700.*

*Info: In addition to the User Preventive Maintenance, a more detailed Preventive Maintenance Program is also required to keep the equipment in good working order. This Preventive Maintenance Program is found on our website, at [www.Hausted.com](http://www.Hausted.com).*

## 6 OPTIONAL ACCESSORIES

Universal Accessories	
H000E1700	IV Rod, 42" Fixed Height
H000018	IV Rod, Telescoping Stainless 27" to 50" Height 2-Section with Holder
HSA400700	Surgical Accessories Rail - Pair
HSA400500	Surgical Armboard with 1" Pad (Includes Surgical Support Rails)
H000012	Safety Strap with Buckle
HAPC01200	Safety Strap, Hook and Loop
HSA400600	Oxyflex II with Flexible Support Structure and Adapter
HSA007900	Oxyflex II with Flexible Support Structure and Tuck Plate
HSA008000	Disposable Oxyflex II Diffusion Tray Including 24" Tube (Qty 25)
HSA080000	Foot Switch – Electric Hi/Lo (Electric Models Only)
EYE Only Accessories	
HSA078500	Wrist Rest, Dual Lateral
HSA078600	Wrist Rest, Full U (Over the Brow)
HP150830477B	Headrest 2" with Lateral Support
HP150830448B	Headrest 3" with Lateral Support
HSA063500B	Headrest 4" with Lateral Support
H06884600	Extension Footboard / Monitor Shelf with Chart Holder
H00CR7B00	Extension Footboard Combination with Chart Holder
H00CR6B00	Endboard with Chart Holder

**⚠ WARNING:** It is recommended that only accessories approved by GF Health Products, Inc. be used with this device. The use of accessories, transducers, and cables other than those specified by the manufacturer may result in increased emissions or decreased immunity of the Hausted equipment.

*Info: To order accessories, or for more detailed information on accessories, please contact GF Health Products, Inc. at 1.770.368.4700.*

# 7 GF HEALTH PRODUCTS, INC. LIMITED WARRANTY FOR HAUSTED BRAND STRETCHERS AND CHAIRS

## SCOPE OF WARRANTY

GF Health Products, Inc. ("GF") warrants to the original purchaser only that it will replace or repair components, at GF's sole discretion, that are defective in material or workmanship under normal use and service. All warranties are conditioned upon the proper use and maintenance of the products strictly in accordance with good commercial practice and applicable GF instructions and manuals. To the extent that a component is warranted by a third party, GF conveys all of its rights under that warranty to the original purchaser, to the extent permitted.

This limited warranty shall only apply to defects that are reported in accordance with the provisions set forth in this warranty document within the applicable warranty period and which, upon examination by GF or its authorized representative, prove to be a warranty item. This limited warranty is not transferable.

The warranted components and time period are set forth below :

COMPONENT.....	PARTS WARRANTY .....	LABOR WARRANTY*
Frame.....	5 years .....	1 year
Casters.....	1 year .....	1 year
Electrical components.....	1 year .....	1 year
Hydraulics .....	1 year .....	1 year
Optional accessories .....	1 year .....	1 year
Patient weighing system .....	1 year .....	1 year
Pneumatic gas springs.....	1 year .....	1 year
Upholstered pads.....	1 year .....	1 year
Replacement parts** .....	90 days	

\* The Labor Warranty applies only to products purchased within the U.S. Labor is not warranted for products purchased outside the U.S.

\*\* The warranty period is as designated above. If a part is replaced under warranty, the original warranty period will not be affected. All other replacement parts will be subject to the warranty period specified.

The applicable warranty period shall commence from date of shipment to the original customer, unless there is an expiration date on the component in which case the warranty shall expire on the earlier of warranty period or the expiration date.

## OBTAINING WARRANTY SERVICE

**Obtaining Warranty Service Inside the U.S.:** A GF Customer Service Representative must authorize warranty service. Please contact the GF Customer Service department by calling 1.770.368.4700 or by e-mailing a request to [cs@grahamfield.com](mailto:cs@grahamfield.com). Specific directions will be provided by the Customer Service Representative. Failure to abide by the specific directions will result in denial of the warranty claim.

**Obtaining Warranty Service Outside the U.S.:** The Purchaser must contact the Distributor from whom the product was purchased, commensurate with the guidelines set forth by that Distributor. Failure to abide by the specific directions will result in denial of the warranty claim.

## EXCLUSIONS

The warranty does not cover and GF shall not be liable for the following:

- 1) Defects, damage, or other conditions caused, in whole or in part, by misuse, abuse, negligence, alteration, accident, freight damage, tampering or failure to seek and obtain repair or replacement in a timely manner;
- 2) Products which are not installed, used, or properly cleaned and maintained as required in the official manual for the applicable product;
- 3) Products considered to be of a consumable nature including, but not limited to: filters, fuses, gaskets and lubricants;
- 4) Accessories or parts not provided by GF;
- 5) Charges by anyone for adjustments, repairs, replacement parts, installation or other work performed upon or in connection with such products which are not expressly authorized in writing, in advance, by GF;
- 6) Any shipping charges incurred in the replacement part installation or repair;
- 7) Costs and expenses of regular maintenance and cleaning; and
- 8) Representations and warranties made by any person or entity other than GF.

## ENTIRE WARRANTY, EXCLUSIVE REMEDY AND CONSEQUENTIAL DAMAGES DISCLAIMER

THIS WARRANTY IS GF'S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. GF MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IF ANY MODEL OR SAMPLE WAS SHOWN TO THE CUSTOMER, SUCH MODEL OR SAMPLE WAS USED MERELY TO ILLUSTRATE THE GENERAL TYPE AND QUALITY OF THE PRODUCT AND NOT TO REPRESENT THAT THE PRODUCT WOULD NECESSARILY CONFORM TO THE MODEL OR SAMPLE IN ALL RESPECTS.

THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PARTS. GF SHALL NOT BE LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, SPECIAL, INDIRECT, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO: DAMAGES FOR LOSS OF PROFITS OR INCOME, LOSS OF USE, DOWNTIME, COVER, OR EMPLOYEE OR INDEPENDENT CONTRACTOR WAGES, PAYMENTS AND BENEFITS.

CERTAIN STATES MAY CONFER ADDITIONAL RIGHTS REGARDING WARRANTIES AND IN THOSE STATES GF'S LIABILITY AND THE LIABILITY OF GF'S SUPPLIERS, SHALL BE LIMITED TO THE FULLEST EXTENT PERMITTED BY LAW.

The warranties contained herein, together with GF's Terms and Conditions, found on GF's website and which may be updated from time to time, contain all the representations and warranties with respect to the subject matter of this document, and supersede all prior negotiations, agreements and understandings with respect thereto. The recipient of this document hereby acknowledges and represents that it has not relied on any representation, assertion, guarantee, warranty, collateral contract or other assurance, except those set out in this document.

For additional information on this Hausted product or this warranty, please contact a GF Customer Service Representative.

## NOTES:

- 1) Additional terms and conditions may apply.
- 2) Outward freight damage must be notated on the appropriate shipping documents.
- 3) Claims for any short shipment or concealed damage must be made within three (3) days of the invoice date.
- 4) Additional international, federal and state regulations govern specific requirements for freight claims. Failure to abide by those regulations may result in a denial of the freight claim. GF will assist you in filing the freight claim.

## 8 DISPOSAL AND KEY TO SYMBOLS

### DISPOSAL

Hausted equipment and accessories can be disposed of.

We recommend disassembling and dividing the equipment and components into different waste groups such as: metal, cable, electronic, recoverable resource and plastic for recycling or combustion.

















Most plastic components are provided with a plastic types code and fiber content to aid sorting of plastic parts.

Product	Metal Scrap	Cable Scrap	Electronic Scrap	Plastic Recycling or Combustion
578	X	X	X	X
5E8	X	X	X	X
5D8	X	X	X	X

*Info: Lead-acid batteries contained in the controller are recoverable resources and should be recycled.*

### KEY TO SYMBOLS

The following symbols are used on Hausted product labels.

	Protective Earth		Manufacturer
	Earth Ground		Keep Dry
	General Warning Sign		Fragile, Handle with Care
	CE Mark		Electrical and Electronic Equipment
	ETL		Consult Instructions for Use
	European Authorized Representative		Caution
	Disconnect before Service		Pinch Point
	Medical Device		Unique Device Identifier

www.hausted.com  
www.grahamfield.com



## 9 APPENDIX

### 9.1 GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS

The Hausted Stretchers are intended for use in the electromagnetic environment specified below. The customer or the user of the Hausted Stretchers should assure that they are used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment – Guidance
RF emissions CISPR 11	Group 1	The Hausted Stretchers use RF energy only for their internal function. Therefore, their RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.  The Hausted Stretchers are suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class A	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

### 9.2 ENCLOSURE PORT <sup>1</sup>

Phenomenon	Basic EMC standard or test method	IMMUNITY TEST LEVELS
		Professional healthcare facility environment
ELECTROSTATIC DISCHARGE	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Radiated RF EM fields <sup>a)</sup>	IEC 61000-4-3	3 V/m <sup>f)</sup> 80 MHz – 2,7 GHz <sup>b)</sup> 80 % AM at 1 kHz <sup>c)</sup>
Proximity fields from RF wireless communications equipment	IEC 61000-4-3	See Table 9.3.
RATED power frequency magnetic fields <sup>d) e)</sup>	IEC 61000-4-8	30 A/m <sup>g)</sup> 50 Hz or 60 Hz
<p><sup>a)</sup> The interface between the PATIENT physiological signal simulation, if used, and the ME EQUIPMENT or ME SYSTEM shall be located within 0,1 m of the vertical plane of the uniform field area in one orientation of the ME EQUIPMENT or ME SYSTEM.</p> <p><sup>b)</sup> ME EQUIPMENT and ME SYSTEMS that intentionally receive RF electromagnetic energy for the purpose of their operation shall be tested at the frequency of reception. Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS. This test assesses the BASIC SAFETY and ESSENTIAL PERFORMANCE of an intentional receiver when an ambient signal is in the passband. It is understood that the receiver might not achieve normal reception during the test.</p> <p><sup>c)</sup> Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS.</p> <p><sup>d)</sup> Applies only to ME EQUIPMENT and ME SYSTEMS with magnetically sensitive components or circuitry.</p> <p><sup>e)</sup> During the test, the ME EQUIPMENT or ME SYSTEM may be powered at any NOMINAL input voltage, but with the same frequency as the test signal (see Table 1).</p> <p><sup>f)</sup> Before modulation is applied.</p> <p><sup>g)</sup> This test level assumes a minimum distance between the ME EQUIPMENT or ME SYSTEM and sources of power frequency magnetic field of at least 15 cm. If the RISK ANALYSIS shows that the ME EQUIPMENT or ME SYSTEM will be used closer than 15 cm to sources of power frequency magnetic field, the IMMUNITY TEST LEVEL shall be adjusted as appropriate for the minimum expected distance.</p>		

### 9.3 ENCLOSURE PORT IMMUNITY TO RF WIRELESS COMMUNICATIONS EQUIPMENT <sup>1</sup>

Test frequency (MHz)	Band <sup>a)</sup> (MHz)	Service <sup>a)</sup>	Modulation <sup>b)</sup>	Maximum power (W)	Distance (m)	IMMUNITY TEST LEVEL (V/m)
385	380 – 390	TETRA 400	Pulse modulation <sup>b)</sup> 18 Hz	1,8	0,3	27
450	430 – 470	GMRS 460, FRS 460	FM <sup>c)</sup> ± 5 kHz deviation 1 kHz sine	2	0,3	28
710	704 – 787	LTE Band 13, 17	Pulse modulation <sup>b)</sup> 217 Hz	0,2	0,3	9
745						
780						
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation <sup>b)</sup> 18 Hz	2	0,3	28
870						
930						
1 720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation <sup>b)</sup> 217 Hz	2	0,3	28
1 845						
1 970						
2 450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation <sup>b)</sup> 217 Hz	2	0,3	28
5 240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation <sup>b)</sup> 217 Hz	0,2	0,3	9
5 500						
5 785						

## 9.4 INPUT AC POWER PORT<sup>1</sup>

Phenomenon	Basic EMC standard	IMMUNITY TEST LEVELS
		Professional healthcare facility environment
Electrical fast transients / bursts <sup>a) l) o)</sup>	IEC 61000-4-4	± 2 kV 100 kHz repetition frequency
Surges <sup>a) b) j) o)</sup> Line-to-line	IEC 61000-4-5	± 0,5 kV, ± 1 kV
Surges <sup>a) b) j) k) o)</sup> Line-to-ground	IEC 61000-4-5	± 0,5 kV, ± 1 kV, ± 2 kV
Conducted disturbances induced by RF fields <sup>c) d) o)</sup>	IEC 61000-4-6	3 V <sup>m)</sup> 0,15 MHz – 80 MHz 6 V <sup>m)</sup> in ISM bands between 0,15 MHz and 80 MHz <sup>n)</sup> 80 % AM at 1 kHz <sup>e)</sup>
Voltage dips <sup>f) p) r)</sup>	IEC 61000-4-11	0 % $U_T$ ; 0,5 cycle <sup>g)</sup> At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° <sup>q)</sup>
		0 % $U_T$ ; 1 cycle and 70 % $U_T$ ; 25/30 cycles <sup>h)</sup> Single phase: at 0°
Voltage interruptions <sup>f) i) o) r)</sup>	IEC 61000-4-11	0 % $U_T$ ; 250/300 cycle <sup>h)</sup>

a) The test may be performed at any one power input voltage within the ME EQUIPMENT or ME SYSTEM RATED voltage range. If the ME EQUIPMENT or ME SYSTEM is tested at one power input voltage, it is not necessary to re-test at additional voltages.

b) All ME EQUIPMENT and ME SYSTEM cables are attached during the test.

c) Calibration for current injection clamps shall be performed in a 150 Ω system.

d) If the frequency stepping skips over an ISM or amateur band, as applicable, an additional test frequency shall be used in the ISM or amateur radio band. This applies to each ISM and amateur radio band within the specified frequency range.

e) Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS.

f) ME EQUIPMENT and ME SYSTEMS with a d.c. power input intended for use with a.c.-to-d.c. converters shall be tested using a converter that meets the specifications of the MANUFACTURER of the ME EQUIPMENT or ME SYSTEM. The IMMUNITY TEST LEVELS are applied to the a.c. power input of the converter.

g) Applicable only to ME EQUIPMENT and ME SYSTEMS connected to single-phase a.c. mains.

h) E.g. 10/12 means 10 periods at 50 Hz or 12 periods at 60 Hz.

i) ME EQUIPMENT and ME SYSTEMS with RATED input current greater than 16 A / phase shall be interrupted once for 250/300 cycles at any angle and at all phases at the same time (if applicable). ME EQUIPMENT and ME SYSTEMS with battery backup shall resume line power operation after the test. For ME EQUIPMENT and ME SYSTEMS with RATED input current not exceeding 16 A, all phases shall be interrupted simultaneously.

## 9.4 CONTINUED

- j) ME EQUIPMENT and ME SYSTEMS that do not have a surge protection device in the primary power circuit may be tested only at  $\pm 2$  kV line(s) to earth and  $\pm 1$  kV line(s) to line(s).
- k) Not applicable to CLASS II ME EQUIPMENT and ME SYSTEMS.
- l) Direct coupling shall be used.
- m) r.m.s., before modulation is applied.
- n) The ISM (industrial, scientific and medical) bands between 0,15 MHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.
- o) Applicable to ME EQUIPMENT and ME SYSTEMS with RATED input current less than or equal to 16 A / phase and ME EQUIPMENT and ME SYSTEMS with RATED input current greater than 16 A / phase.
- p) Applicable to ME EQUIPMENT and ME SYSTEMS with RATED input current less than or equal to 16 A / phase.
- q) At some phase angles, applying this test to ME EQUIPMENT with transformer mains power input might cause an overcurrent protection device to open. This can occur due to magnetic flux saturation of the transformer core after the voltage dip. If this occurs, the ME EQUIPMENT or ME SYSTEM shall provide BASIC SAFETY during and after the test.
- r) For ME EQUIPMENT and ME SYSTEMS that have multiple voltage settings or auto ranging voltage capability, the test shall be performed at the minimum and maximum RATED input voltage. ME EQUIPMENT and ME SYSTEMS with a RATED input voltage range of less than 25 % of the highest RATED input voltage shall be tested at one RATED input voltage within the range. See Table 1 Note c) for examples calculations.

## 9.5 PATIENT COUPLING PORT<sup>1</sup>

Phenomenon	Basic EMC standard	IMMUNITY TEST LEVELS
		Professional healthcare facility environment
ELECTROSTATIC DISCHARGE <sup>c)</sup>	IEC 61000-4-2	$\pm 8$ kV contact $\pm 2$ kV, $\pm 4$ kV, $\pm 8$ kV, $\pm 15$ kV air
Conducted disturbances induced by RF fields <sup>a)</sup>	IEC 61000-4-6	3 V <sup>b)</sup> 0,15 MHz – 80 MHz 6 V <sup>b)</sup> in ISM bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz
<p>a) The following apply:</p> <ul style="list-style-type: none"> <li>– All PATIENT-COUPLED cables shall be tested, either individually or bundled</li> <li>– PATIENT-COUPLED cables shall be tested using a current clamp unless a current clamp is not suitable. In cases where a current clamp is not suitable, an EM clamp shall be used.</li> <li>– No intentional decoupling device shall be used between the injection point and the PATIENT COUPLING POINT in any case.</li> <li>– Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS.</li> <li>– Tubes that are intentionally filled with conductive liquids and intended to be connected to a PATIENT shall be considered to be PATIENT-COUPLED cables.</li> <li>– If the frequency stepping skips over an ISM or amateur radio band, as applicable, an additional test frequency shall be used in the ISM or amateur radio band. This applies to each ISM and amateur radio band within the specified frequency range.</li> <li>– The ISM (industrial, scientific and medical) bands between 0,15 MHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.</li> </ul> <p>b) r.m.s., before modulation is applied</p> <p>c) Discharges shall be applied with no connection to an artificial hand and no connection to PATIENT simulation. PATIENT simulation may be connected after the test as needed in order to verify BASIC SAFETY and ESSENTIAL PERFORMANCE.</p>		

## 9.6 SIGNAL INPUT/OUTPUT PARTS PORT <sup>1</sup>

Phenomenon	Basic EMC standard	IMMUNITY TEST LEVELS
		Professional healthcare facility environment
ELECTROSTATIC DISCHARGE <sup>e)</sup>	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Electrical fast transients / bursts <sup>b) f)</sup>	IEC 61000-4-4	± 1 kV 100 kHz repetition frequency
Surges Line-to-ground <sup>a)</sup>	IEC 61000-4-5	± 2 kV
Conducted disturbances induced by RF fields <sup>b) d) g)</sup>	IEC 61000-4-6	3 V <sup>h)</sup> 0,15 MHz – 80 MHz 6 V <sup>h)</sup> in ISM bands between 0,15 MHz and 80 MHz <sup>i)</sup> 80 % AM at 1 kHz <sup>c)</sup>

<sup>a)</sup> This test applies only to output lines intended to connect directly to outdoor cables.

<sup>b)</sup> SIP/SOPS whose maximum cable length is less than 3 m in length are excluded.

<sup>c)</sup> Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS.

<sup>d)</sup> Calibration for current injection clamps shall be performed in a 150 Ω system.

<sup>e)</sup> Connectors shall be tested per 8.3.2 and Table 4 of IEC 61000-4-2:2008. For insulated connector shells, perform air discharge testing to the connector shell and the pins using the rounded tip finger of the ESD generator, with the exception that the only connector pins that are tested are those that can be contacted or touched, under conditions of INTENDED USE, by the standard test finger shown in Figure 6 of the general standard, applied in a bent or straight position.

<sup>f)</sup> Capacitive coupling shall be used.

<sup>g)</sup> If the frequency stepping skips over an ISM or amateur radio band, as applicable, an additional test frequency shall be used in the ISM or amateur radio band. This applies to each ISM and amateur radio band within the specified frequency range.

<sup>h)</sup> r.m.s., before modulation is applied.

<sup>i)</sup> The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.

## 9.7 RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND HAUSTED STRETCHERS

The Hausted Stretchers are intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Hausted Stretchers can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Hausted Stretchers as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.7 GHz $d = 2.3\sqrt{P}$
0,01	0.12	0.12	0.23
0,1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where  $P$  is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

## 9.8 NOTES TO SECTION 9

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