



FERNO

Users' Manual



Model 50-E Easy Load Stretcher

AUSTRALIAN
DESIGN AWARD



**50-E Ambulance
Stretcher**

Licence No. 0403019

Standards Australia

December 2004 INT

Pub. No. 234-3257-01

Disclaimer

This manual contains general instructions for the use, operation and care of this product. The instructions are not all-inclusive. Safe and proper use of this product is solely at the discretion of the user. Safety information is included as a service to the user. All other safety measures taken by the user should be within and under consideration of applicable regulations. It is recommended that training on the proper use of this product be provided before using this product in an actual situation.

Retain this manual for future reference. Include it with the product in the event of transfer to new users. Additional free copies are available upon request from Customer Relations.

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1 - SAFETY INFORMATION

1.1 Warning

Warning notices indicate a potentially hazardous situation which, if not avoided, could result in injury. The following warnings appear in this manual.

! WARNING

Untrained operators can cause injury or be injured. Permit only trained personnel to operate the stretcher.

Improper use of the stretcher can cause injury. Use the stretcher only for the purpose described in this manual.

Modifying the stretcher can cause unpredictable operation and injury. Do not alter or modify the stretcher to fit the ambulance.

Releasing the swivel locks increases the possibility for the stretcher to tip. Maintain control of the stretcher at all times.

Worn or damaged restraints can fail and cause injury. Inspect restraints regularly. Dispose of restraints that are worn, damaged, or have been involved in a vehicular accident.

Improper operation can cause injury. Operate the stretcher only as described in this manual.

An unattended patient can be injured. Stay with the patient at all times.

An unrestrained patient can fall off the stretcher and be injured. Use restraints to secure the patient on the stretcher.

An improperly attached stretcher top can separate from the undercarriage and cause injury. Attach the stretcher top only with the head end facing the undercarriage loading end.

An unlocked undercarriage can cause injury. Verify that each set of legs locks when unloading the stretcher.

Helpers can cause injury. Maintain control of the stretcher, operate the controls, and direct all helpers.

Helpers can be injured. Show helpers where to grasp the stretcher to avoid pinch points.

Improper maintenance can cause injury. Maintain the stretcher only as described in this manual.

Attaching improper items to the stretcher can cause injury. Use only Ferno-approved items on the stretcher.

! WARNING

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the stretcher.

Modifying the stretcher can cause injury and damage. Use the stretcher only as designed by Ferno.

1.2 Important

Important notices emphasize important usage or maintenance information.

Important

The stretcher top Safe Working Load (S.W.L.) is less than the S.W.L. for the system of stretcher top and undercarriage. Do not exceed the S.W.L. limits shown in this manual.

1.3 Bloodborne Disease Notice

To reduce the risk of exposure to bloodborne diseases such as HIV-1 and hepatitis when using the stretcher, follow the disinfecting and cleaning instructions in this manual.

1.4 Stretcher-Fastener Compatibility

For the purpose of the following notice, the 50-E and all Ferno stretchers are included under the generic term, cot:

Combining different manufacturer's products into a "mixed-component" cot/cot fastener system can increase the users' risk of injury and damage. Ferno-Washington, Inc. strongly recommends that only Ferno-manufactured cots be used in Ferno-manufactured cot fasteners, and that only Ferno-manufactured cot fasteners be used for securing Ferno-manufactured cots in ambulances.

ANY COMBINATION OF A FERNO COT OR COT FASTENER WITH A NON-FERNO COT OR COT FASTENER IS MISUSE OF THE FERNO PRODUCT. Responsibility for the outcome of known, intentional misuse rests squarely on the misuser.

1.5 Safety and Instruction Labels

Safety and instruction labels place important information from the users' manual on the stretcher. Read and follow label instructions. Replace worn or damaged labels immediately. New labels are available from your Ferno distributor (page 39). The following labels are affixed to the stretcher.

MODEL 50-E UNDERCARRIAGE LABELS



Pinch Point Label (2)



Head-End Control Label (1)



Foot-End Control Label (1)

MODEL 155-E STRETCHER TOP LABELS



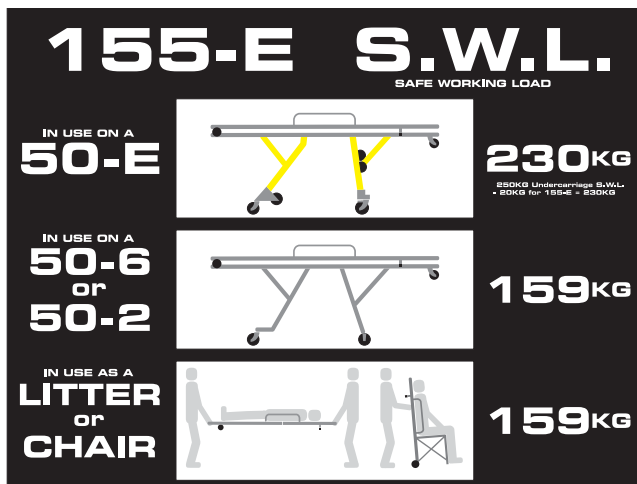
Identification Label - Head End (2)



Identification Label - Foot End (2)



Quick Fix Lock Label (2)



Safe Working Load Information Label (1)



Shock Position Release Lever Label (2)



Backrest Control Label (1)

2 - OPERATOR SKILLS AND TRAINING

2.1 Skills

Operators using the stretcher need:

- a working knowledge of emergency patient-handling procedures.
- the ability to assist the patient.
- a complete understanding of the procedures described in this manual.

2.2 Training

Trainees need to:

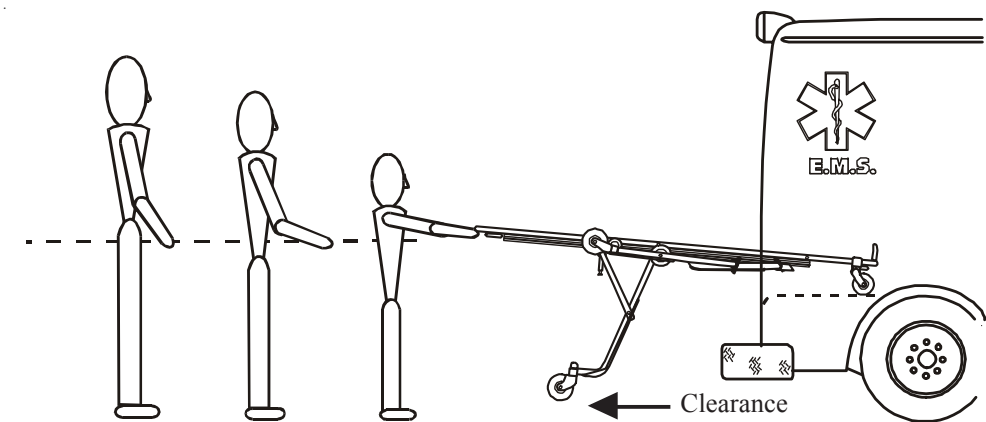
- follow a training program designed by their training officer.
- read this manual. For additional free users' manuals, contact your Ferno distributor (page 39).

⚠ WARNING

Untrained operators can cause injury or be injured. Permit only trained personnel to operate the stretcher.

- practice with the stretcher before using it in regular service.
- be tested on their understanding of the stretcher.
- record their training information. A form is provided on page 40.

2.3 Clearance, Height, and Strength Considerations



The Model 50-E is designed so that under normal conditions, the operator lifts only until the rear set of legs unfolds and locks.

However, if the ambulance is parked in a low area or on an incline, the operator (and any helpers) may need to lift the stretcher foot end off the ground to provide clearance for the foot-end legs to unfold completely and lock (see illustration above). When the legs have locked, set the stretcher on the ground.

After the head-end legs have unfolded, test that they have locked by pushing them gently against the ambulance

bumper. The legs should not fold. If they do, again lift the stretcher off the ground to allow clearance for the head-end legs to unfold completely and lock.

Be aware that supporting the weight of the stretcher, patient and equipment requires greater strength from a short operator than from a tall operator because a short operator must raise his or her arms higher in relation to the shoulders.

Note: Use additional help as needed when lifting the weight of the stretcher, patient, and equipment (see Using Additional Help, page 33).

3 - ABOUT THE STRETCHER

3.1 Description

The Model 50-E Series Easy Load Stretcher is an emergency patient-handling device. Its components are a Model 155-E removable stretcher top and a Model 50-E undercarriage. In this manual, the system of stretcher top plus undercarriage will be referred to as the “stretcher.”

The stretcher is for use by trained operators. Ferno strongly recommends using two operators, even though the stretcher can be operated by one trained operator. The stretcher is designed for roll-in loading to help reduce the risk of back injury to medical service personnel.

STRETCHER TOP FEATURES

- Side rails
- Carrying handles
- 4 Positions (recumbent, 2 shock, and chair)
- Infinitely-adjustable gas-assist backrest
- Quick Fix lock

UNDERCARRIAGE FEATURES

- 5 Level positions with multi-level positioning (can be locked into a different level at each end)
- Automatic head-end-leg safety lock touch bar
- Automatic foot-end-leg release touch bar
- 150 mm casters with swivel locks (head end)
- 125 mm casters with wheel locks (foot end)
- Loading wheels and intermediate loading wheels

WARNING

Improper use of the stretcher can cause injury. Use the stretcher only for the purpose described in this manual.

3.2 Vehicle Considerations

The ambulance patient compartment must have:

- A smooth, level floor large enough for the stretcher.
- An approved, installed Ferno stretcher fastener configured for use with the Model 50-E.
- Floor height at the specified dimension (see the Loading Height on page 9).

If needed, modify the ambulance to fit the stretcher by adding ramps, a folding rear step, etc. Do not alter the stretcher or the stretcher operating procedures.

WARNING

Modifying the stretcher can cause unpredictable operation and injury. Do not alter or modify the stretcher to fit the ambulance.

3.3 General Specifications

General specifications are rounded to the nearest whole number.

- Stretcher-top heights are measured from the ground with the stretcher top removed from the undercarriage.
- Stretcher heights are measured from the ground to the top of the stretcher top main frame.
- Weights do not include the mattress, restraints, equipment brackets, or accessories.
- Loading height is measured from the ground to the bottom of the front loading wheels.

Ferno reserves the right to change specifications without notice.

3.4 Component Specifications

155-E STRETCHER TOP (RECUMBENT POSITION)

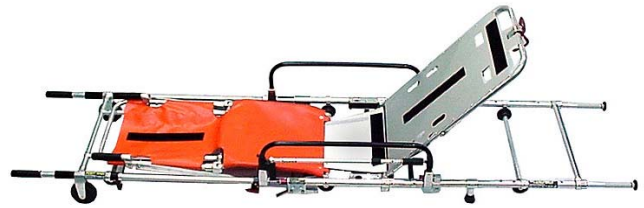
Length (handles extended)	2360 mm
Length (handles retracted)	1960 mm
Width	560 mm
Height (top of side rail)	330 mm
Height (top of mattress)	230 mm

155-E STRETCHER TOP (SEATED POSITION)

Height (seat)	580 mm
Height (back)	1470 mm
Depth (at seat)	710 mm
Weight	17 kg
Safe Working Load (S.W.L.)	159 kg

50-E UNDERCARRIAGE

Length	1980 mm
Width	560 mm
Weight	32 kg



LOAD LIMIT

**STRETCHER TOP
SAFE WORKING LOAD**

Important

The stretcher top Safe Working Load (S.W.L.) is less than the S.W.L. for the system of stretcher top and undercarriage. Do not exceed the S.W.L. limits shown in this manual.

3.5 Combined Stretcher Specifications (Stretcher Top & Undercarriage)

Length	1980 mm
Width	560 mm
Loading height	710 mm
Height	
Position A	855 mm
Position B	762 mm
Position C	645 mm
Position D	427 mm
Folded	175 mm
Combined Weight	49 kg
Safe Working Load (S.W.L.)	250 kg



LOAD LIMIT

**SYSTEM
SAFE WORKING LOAD**
(System = Undercarriage
plus Stretcher Top)

3.6 Stretcher Positions



175 mm

FOLDED



855 mm

POSITION A:
ROLLING/LOADING



762 mm

POSITION B:
TRANSFER



645 mm

POSITION C:
TRANSFER

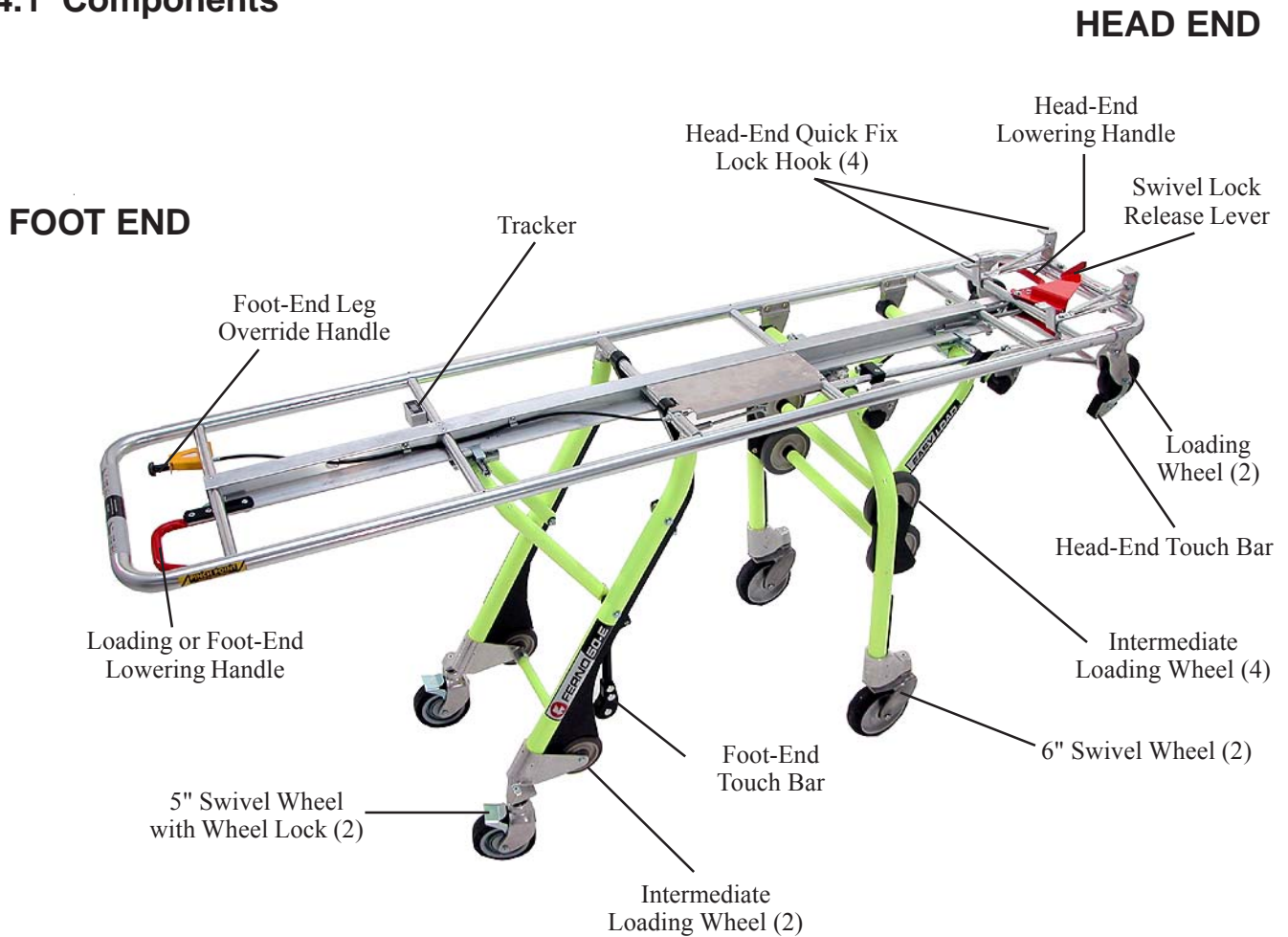


427 mm

POSITION D:
TRANSFER

4 - MODEL 50-E UNDERCARRIAGE

4.1 Components



4.2 Touch Bars

The undercarriage has two touch-bar mechanisms (Figure 1) that automatically function as the stretcher is being loaded into an ambulance.

When the operator activates the foot-end control handle (page 13) to load the stretcher into the ambulance, the following events occur:

- The head-end touch bar is activated when it contacts the ambulance floor. It releases a secondary lock and allows the head-end legs to fold.
- The foot-end touch bar is activated when it contacts the ambulance bumper. It unlocks the foot-end legs.

For complete loading instructions, see page 31.

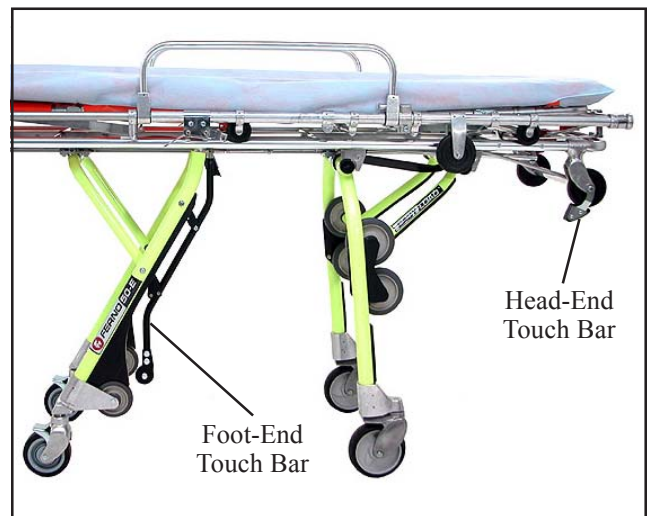


Figure 1 - Touch Bars

4.3 Quick Fix Lock

The Quick Fix lock is a system of hooks that secures the stretcher top to the undercarriage. It is composed of:

- Undercarriage: 4 stationary hooks at the head end (Figure 2)
- Stretcher top: 2 stationary foot-end hooks and a lock bar with 2 hooks (Figure 3)

The six stationary hooks help hold the stretcher top on the undercarriage. The lock bar secures the two components together. Leave the lock bar disengaged when the stretcher top is not on the undercarriage.

USING THE LOCK BAR

The lock bar is located under the stretcher top and has two hooks that grasp the undercarriage main frame. It is engaged by moving it across the undercarriage from the patient left to the patient right.

OPERATOR STANDING ON PATIENT LEFT

To engage the lock bar (Figure 4):

1. Lift the lock lever (the hooks will drop down).
2. Push the lock bar hook across the stretcher.
3. Release the lock lever.

To disengage the lock bar:

1. Lift the lock lever.
2. Pull the lock bar hook toward yourself.
3. Release the lock lever (the hooks will swing up).

OPERATOR STANDING ON PATIENT RIGHT

To engage the lock bar:

1. Lift the lock lever (the hooks will drop down).
2. Pull the lock bar tab toward yourself.
3. Release the lock lever.

To disengage the lock bar:

1. Lift the lock lever.
2. Push the lock bar tab toward the stretcher center.
3. Release the lock lever (the hooks will swing up).

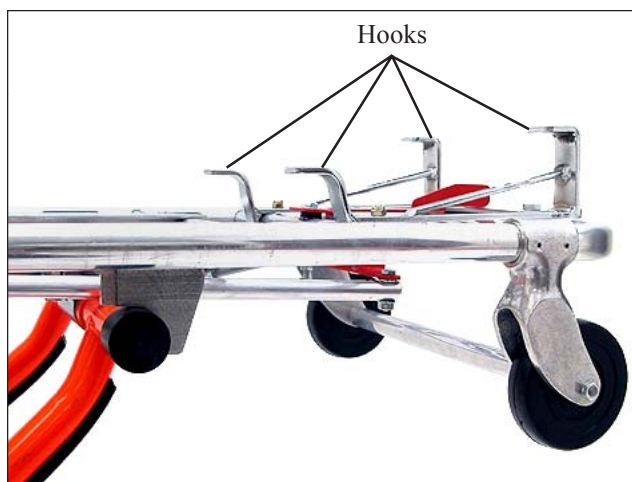


Figure 2 - Undercarriage Head-End Hooks

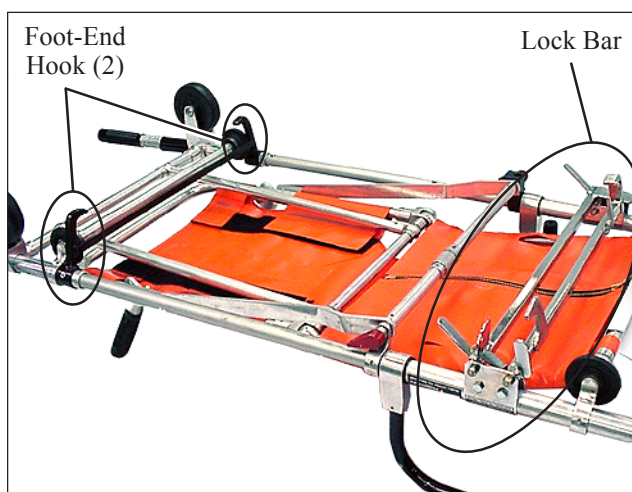


Figure 3 - Lock Bar (Bottom of Stretcher Top)

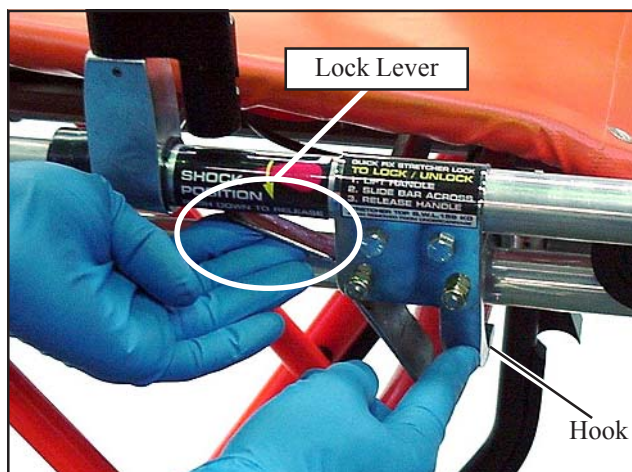


Figure 4 - Engaging the Quick Fix Lock

4.4 Position Control Handles

There are three control handles for lowering the stretcher or loading it into an ambulance. Do not use the control handles when raising the stretcher.

- To lower the stretcher head end, use the head-end red control handle (Figure 5).
- To load the stretcher into an ambulance, use the foot-end red control handle.

Note: *The foot-end red control handle must be activated throughout the process of loading the stretcher into an ambulance. For complete instructions, see Loading the Stretcher Into an Ambulance, page 31.*

- To lower the stretcher foot end, use both the yellow/black override handle and the foot-end control handle (Figure 6). The override handle bypasses the rear touch bar mechanism. Pull it and then pull the red control handle to lower the foot end. See *Raising/Lowering the Stretcher With Two Operators*, page 27 for complete instructions.



Figure 5 - Head-End Control Handle (Red)

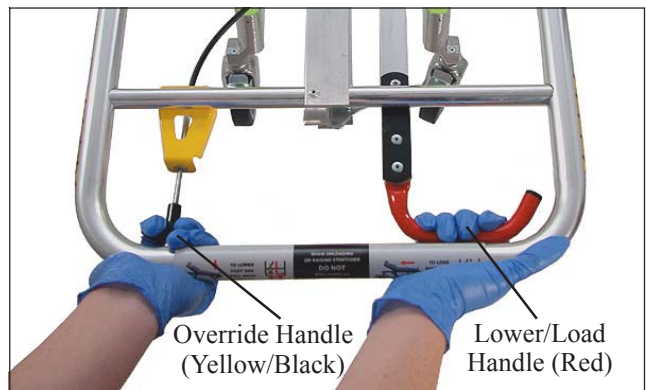


Figure 6 - Foot-End Control Handles

4.5 Foot-End Caster Wheel Locks

The foot end casters are fitted with wheel locks designed to help keep the stretcher from rolling during patient transfer and certain medical procedures.

Stay with the stretcher and maintain control of it at all times. Do not use the wheel locks as a substitute for operator control.

To engage a wheel lock, press the lock lever down with your toe (Figure 7). To disengage, slide your toe under the lever and lift it up.



Figure 7 - Engaging a Wheel Lock

4.6 Head-End Caster Swivel Locks

The stretcher's head-end casters are locked by default. In this condition, the wheels can roll (but not swivel) giving the stretcher greater stability for rolling.

The operator unlocks the casters to allow the wheels to swivel. This makes the stretcher more maneuverable.

Note: *The risk of the stretcher tipping is greater when the swivel casters are unlocked.*

To unlock the casters: At the head end, swing the release lever to the left and hold it in place (Figure 8). This unlocks the casters and allows the wheels to swivel freely. Hold the lever in this position as long as additional maneuverability is needed.

To lock the casters: Release the release lever and roll the stretcher toward the head end until the wheels rotate and lock (Figure 9).

GUIDELINES FOR USE:

The swivel lock release lever is for use only when the stretcher is in the rolling position (see Position A, page 10). Remember to:

- Lock the casters before loading the stretcher into an ambulance so the wheels will not swivel and interfere with loading/unloading.
- Lock the casters before lowering the stretcher. At a lower position, shifting weight on the stretcher can cause an unlocked front wheel to swivel suddenly.



Figure 8 - Caster Lock Release Lever

Important

The head-end casters lock only when the release handle is released **and** the trailing part of each caster orients with the lock pin.

! WARNING

Releasing the swivel locks increases the possibility for the stretcher to tip. Maintain control of the stretcher at all times.

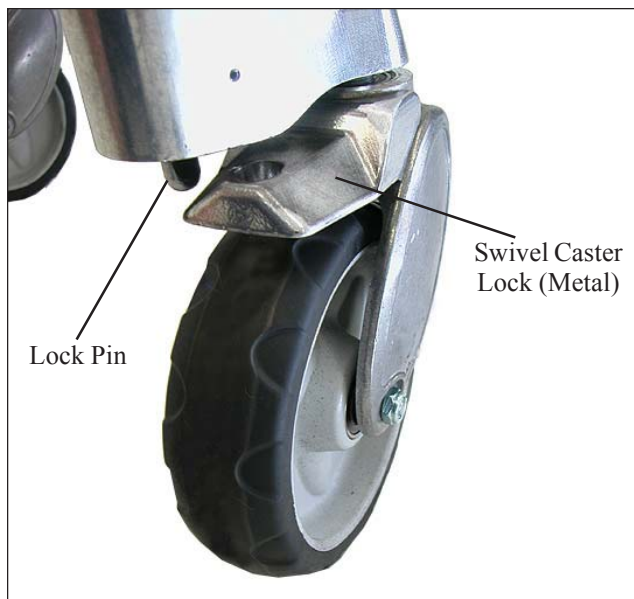
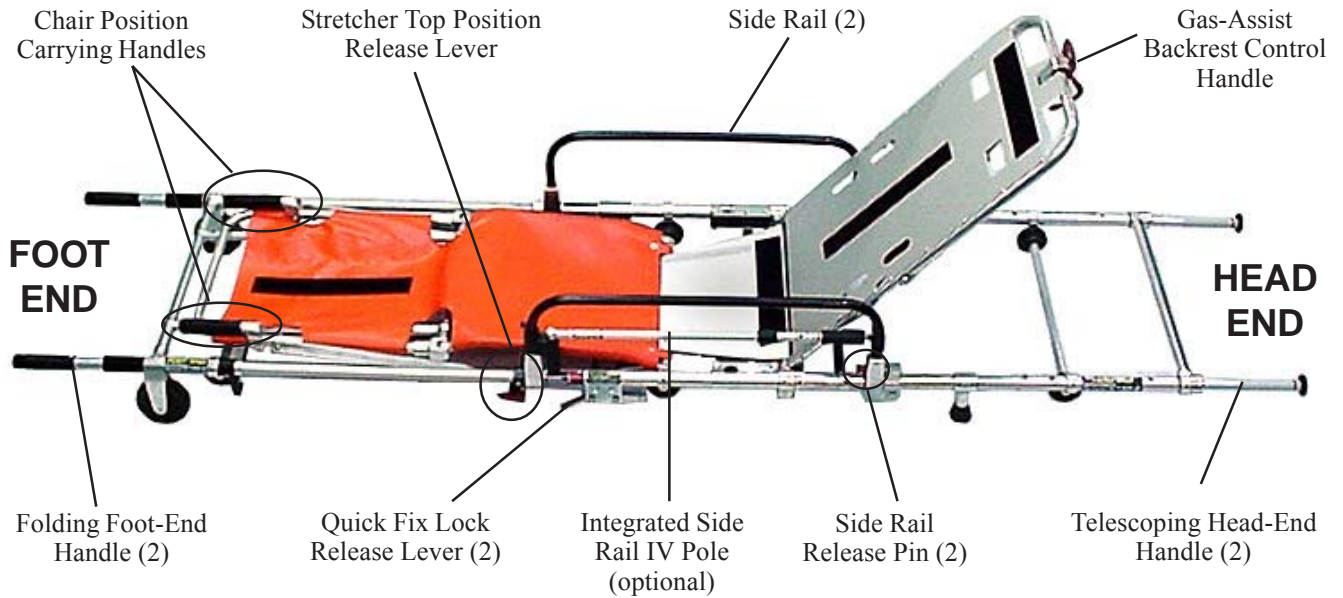


Figure 9 - Locking the Swivel Caster

5 - MODEL 155-E STRETCHER TOP

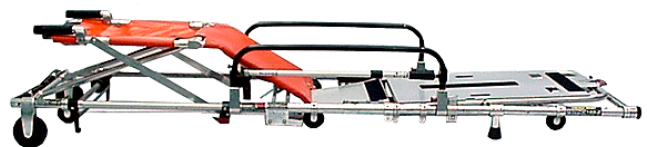
5.1 Components



5.2 Stretcher Top Positions



1 - Recumbent Position



2 - Shock Position - Low



3 - Shock Position - High



4 - Seated Position

5.3 Changing Stretcher-Top Positions

The stretcher-top leg section has four locking positions: recumbent, seated, and two shock positions (see illustrations on page 15). Position changes can be made with the stretcher top on or off the undercarriage.

To change the stretcher-top position:

1. Standing at either side of the stretcher, push the red release lever down and lift or lower the leg section using the lifting strap (Figure 10).
2. When the desired position is reached, release the release lever.
3. Raise or lower the leg section until the lock engages.

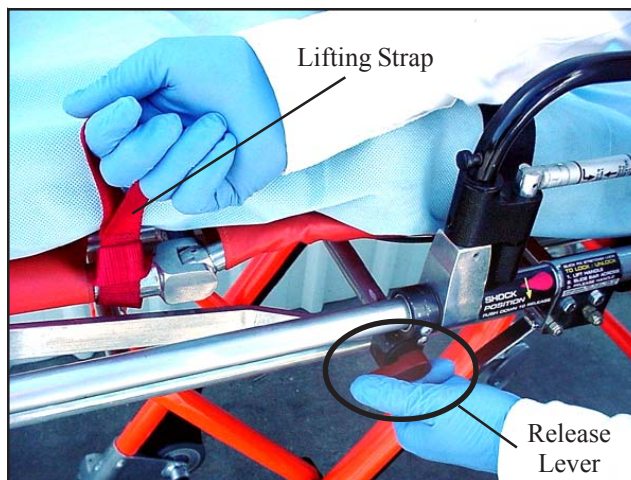


Figure 10 - Changing Stretcher-Top Positions

5.4 Gas-Assist Backrest

The gas-assist backrest can be elevated to any angle between 0° and 90°. To adjust the backrest:

1. Support the weight of the backrest and patient.
2. Lift the red control handle toward the backrest frame and raise or lower the backrest (Figures 11 and 12).
3. Release the handle to lock the backrest.

Note: *The backrest gas spring is under pressure. Control the upward movement of the backrest so it does not move too quickly.*



Figure 11 - Backrest Release Handle



Figure 12 - Using the Gas-Assist Backrest

5.5 Side Rails

The side rails provide patient security and comfort. Keep the side rails raised except during patient transfer. To lower, pull the lock pin (Figure 13) and swing the side rail down. To raise, swing the side rail up until it locks.

Important

Do not lift the stretcher by the side rails. The side rails are not designed for lifting. Lift the stretcher by grasping the main frame of the stretcher or stretcher top, following the instructions in this manual.



Figure 13 - Using Stretcher-Top Side Rail

5.6 Carrying Handles - Recumbent Position

Extend and use the carrying handles to lift and carry the stretcher top when it is in the recumbent position.

TELESCOPING HEAD-END HANDLES

To extend: Press the detent button (Figure 14) and pull the handle out until it locks.

To retract: Press the detent button and push the handle in until it locks.



Figure 14 - Telescoping Head-End Handles

FOLDING FOOT-END HANDLES

To extend: Swing the handle out until the lock sleeve snaps over the hinge.

To fold: Slide the lock sleeve toward the handle grip and fold the handle (Figure 15).



Figure 15 - Folding Foot-End Handles

5.7 Carrying Handles - Chair Position

To lift and carry the stretcher top in the chair position:

- The foot-end operator raises and grasps the handles on the chair legs.
- The head-end operator grasps the crosstube, (Figure 16), the stretcher-top main frame, or the leg posts.

An optional stair chair handle kit (not supplied) is available. See *Accessories and Related Products*, page 37.



Figure 16 - Chair Carrying Points

6 - STRETCHER SETUP

6.1 Preparing the Stretcher for Use

- ❑ Attach Australian Standards-approved restraints as shown in this section.
- ❑ Put the mattress in place.

- ❑ Attach any accessories that will be used with the stretcher. Follow the instructions included with accessories. Keep accessory instruction manuals with this manual.
- ❑ Conduct a preliminary inspection of the stretcher (See *Inspecting the Stretcher*, page 35).

6.2 Guidelines for Using Restraints

- Three restraints must be used to properly secure a patient: one harness restraint (torso and pelvis straps) and two one-piece restraints. See *Accessories and Related Products*, page 37 to order restraints.
- To meet Australian crash standards, all three restraints must be used and attached as shown in this manual.
- Dispose of and replace restraints that are worn, damaged, or have been involved in a vehicular accident. Restraints that have been involved in a vehicular accident could have hidden damage.

- Unbuckle the restraints and lay the straps out of the way before transferring the patient (Figure 17).
- Adjust restraints to safely secure the patient without causing discomfort or impairing circulation (Figure 18).
- Keep restraints fastened when not in use to prevent them from interfering with stretcher operation.

! WARNING

Worn or damaged restraints can fail and cause injury. Inspect restraints regularly. Dispose of restraints that are worn, damaged, or have been involved in a vehicular accident.

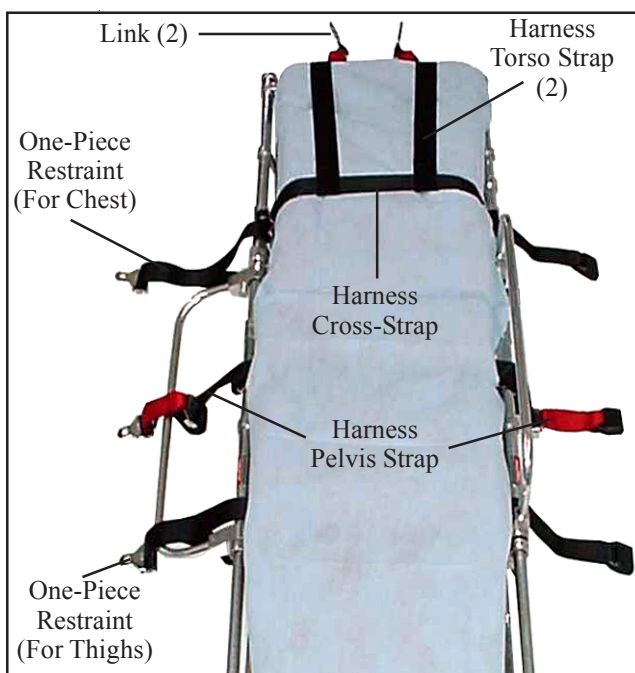


Figure 17 - Restraints Prepared for Use



Figure 18 - Patient Secured

6.3 Attaching One-Piece Restraints

Weave the one-piece restraints through the backrest and leg section as follows:

1. Unbuckle the restraints, raise the backrest and place the leg section in the highest shock position.
2. Pass a buckle through one backrest slot from back to front, pull it across the backrest panel and pass it through the other slot (Figure 19).
3. Partially unzip the fabric cover on the leg section.
4. Thread a buckle through a slot in the cover, pass it inside the cover and through the slot on the other side (Figure 20).
5. Zip the cover closed.



Figure 19 - Attaching a One-Piece Restraint Through the Backrest



Figure 20 - Threading a One-Piece Restraint Through the Seat Panel

6.4 Attaching Harness Components

The harness has two components: a shoulder harness and a pelvis strap.

ATTACH THE PELVIS STRAP

1. Position the pelvis strap on the seat panel and make sure the straps are not twisted.
2. Hook the metal bracket to the mounting post on the main frame. Pull the bracket to seat the post in the bracket (Figures 21 and 22).
3. Repeat Step 2 to attach the other half of the restraint to the post on the opposite side of the stretcher top.



Figure 21 - Positioning the Pelvis Strap

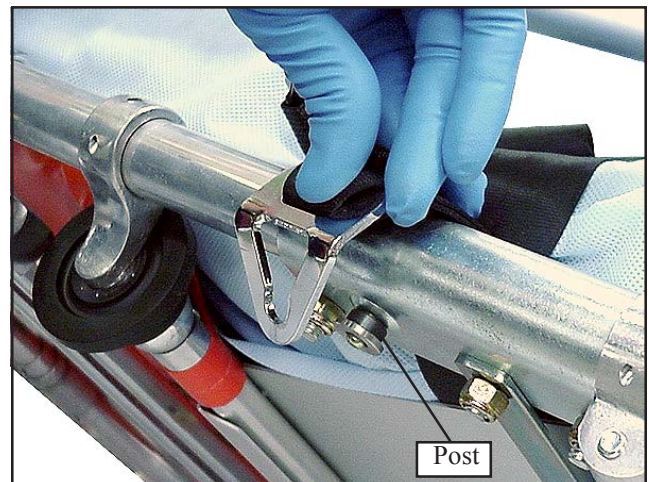


Figure 22 - Attaching the Pelvis Strap Bracket

ATTACH THE MATTRESS

1. Make sure the one-piece restraints and the pelvis strap are unbuckled and the ends of the straps positioned out of the way.
2. Fit the mattress and linen to the stretcher top.

ATTACH THE HARNESS

1. Position the harness as shown in Figure 17 on page 19 with:
 - the torso straps and links facing the head end.
 - the cross-strap brackets near the posts on the backrest.
2. Hook the cross strap-brackets to the posts on each side of the backrest frame. Pull the brackets to seat the posts in the brackets (Figure 23).
3. Push the black retaining plugs into the metal brackets to secure the brackets to the stretcher top frame (Figure 24).



Figure 23 - Attaching a Backrest Strap Bracket to a Mounting Post

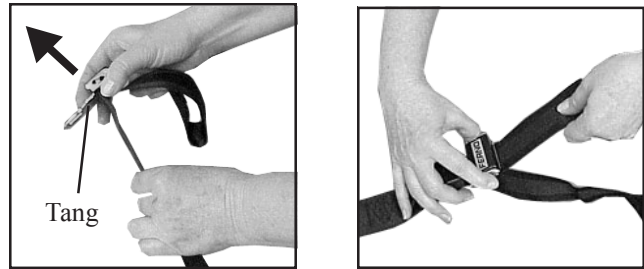


Figure 24 - Fitting the Retaining Plug

6.5 Adjusting Restraint Length

To lengthen a restraint, unbuckle it and turn the tang perpendicular to the restraint webbing (Figure 25-A). Pull the tang away from the restraint anchorage until the restraint is the desired length.

To shorten a restraint, grasp the hemmed tab of the loose end of the restraint (Figure 25-B) and pull the webbing through the tang until the restraint is the desired length.



25-A - Lengthening

25-B - Shortening

Figure 25 - Adjusting Restraint Length

6.6 Securing the Patient

1. Transfer the patient following Steps 1-4 of *Transferring the Patient*, page 29.
2. Lengthen the shoulder and pelvis straps as needed.
3. Pull the harness straps over the patient's head. Position the two shoulder strap links on top of one another (Figure 26).
4. Buckle the restraint by sliding the tang through both links and into the receiver slot until it locks into place (Figure 26).
5. Adjust the shoulder straps so they are snug against the patient's shoulders (Figure 27).

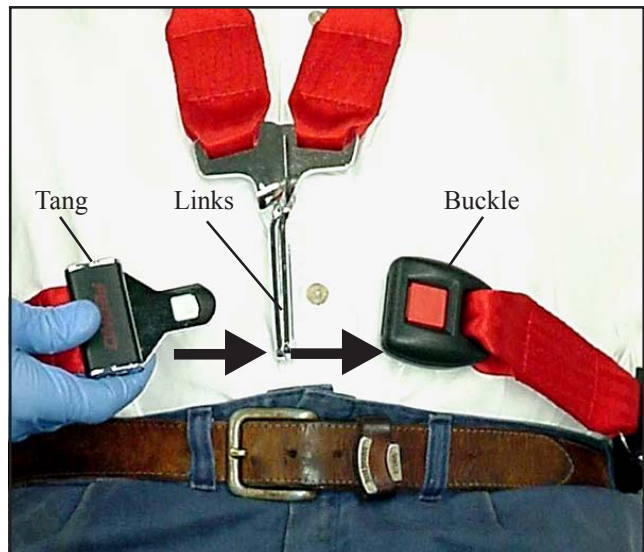


Figure 26 - Fitting the Harness

Important

Position the buckle and tangs centrally on the patient's torso for adults 14 years and older or 46 kg or over.

Position the buckle and tangs centrally on the bony area of the pelvis for children ages 3-14 years and 14-46 kg.



Figure 27 - Adjusting the Shoulder Straps

6. Fasten the two one-piece restraints across the patient's chest (but under the arms) and thighs (Figure 28).
7. Make sure the buckles are securely fastened and make further adjustments to the three restraints to assure they safely secure the patient without causing discomfort or impairing circulation.

6.7 Unfastening the Harness

The harness is designed for quick removal to make patient transfers easier. If the bedding will be used to transfer the patient, remove the shoulder harness but leave the other straps attached to the stretcher top.

To remove the shoulder harness with the patient on the stretcher top:

1. Unfasten all three restraints and place the ends out of the way.
2. Pull the shoulder straps over the patient's head and place them clear of the patient.
3. Remove the retaining plug from the harness by pulling on the tag attached to the plug. Unhook the bracket from the post and remove.
4. Pull the harness straps toward the head end and carefully slide the straps from under the patient. Follow your local protocols (Figure 29).
5. Transfer the patient following approved EMS procedures and your local protocols.

6.8 Removing the Restraints

To remove the harness completely for cleaning:

1. Follow the instructions in *Unfastening the Harness* above.
2. Unhook the pelvis strap brackets from the posts.
3. Remove the one-piece restraints by unthreading the restraints from the backrest and leg section.



Figure 28 - Patient Secured



Figure 29 - Removing the Harness

7 - USING THE STRETCHER

7.1 Before Placing the Stretcher in Service

- ❑ Personnel who will work with the stretcher must be trained. See *Operator Skills and Training*, page 7.
- ❑ Set up and inspect the stretcher. Follow the instructions in *Stretcher Setup*, pages 19-23.

7.2 General Guidelines for Use

- Using the stretcher requires a minimum of one trained operator. Additional operators and helpers may be needed in some circumstances. **Ferno strongly recommends that two operators control the stretcher when a patient is on it.**
- Operators may need help when working with heavy loads (patient and equipment). See *Using Additional Help*, page 33.
- Follow standard emergency patient-handling procedures when operating the stretcher.
- Stay with the patient at all times.
- Always use patient restraints.
- When changing the stretcher's position or when unloading it from an ambulance, make sure each set of legs locks before you release your grasp on the main frame.
- Read the stretcher fastener users' manual for instructions on using the fastener. See also *Stretcher-Fastener Compatibility*, page 5.

WARNING

Improper operation can cause injury. Operate the stretcher only as described in this manual.

WARNING

An unattended patient can be injured. Stay with the patient at all times.

WARNING

An unrestrained patient can fall off the stretcher and be injured. Use restraints to secure the patient on the stretcher.

7.3 Attaching the Stretcher Top To the Undercarriage

The stretcher top attaches to the undercarriage with its head end at the undercarriage loading end. It cannot be attached properly in reverse. Attach the stretcher top only as described in this manual.

Attaching the stretcher top to the undercarriage requires a minimum of two operators working together.

1. Place the stretcher top in the recumbent position. The stretcher top cannot be secured to the undercarriage when it is in the seated position.
2. Make sure the Quick Fix lock is unlocked.
3. Place the stretcher top on the undercarriage:
 - with the foot end extending past the undercarriage foot end (Figure 30).
 - with the stretcher top clear of the undercarriage head-end hooks (Figure 30).
 - with the rollers resting on the undercarriage frame (Figure 31).
4. *Foot-End Operator:* Push the stretcher top toward the head end of the undercarriage until the four hooks on the undercarriage engage the head-end of the stretcher top (Figure 31) and the two hooks hanging from the foot end of the stretcher top engage the undercarriage main frame.

Head-End Operator: Assist the Foot-End Operator by holding the undercarriage steady or pushing the undercarriage slightly toward the Foot-End Operator.

5. *Either Operator:* Move to the side of the stretcher and engage the Quick Fix lock to secure the stretcher top to the undercarriage (Figure 32). See *Quick Fix Lock*, page 12.
6. *Both Operators:* Verify that the stretcher top is secure on the undercarriage.

! WARNING

An improperly attached stretcher top can separate from the undercarriage and cause injury. Attach the stretcher top only with the head end facing the undercarriage loading end.

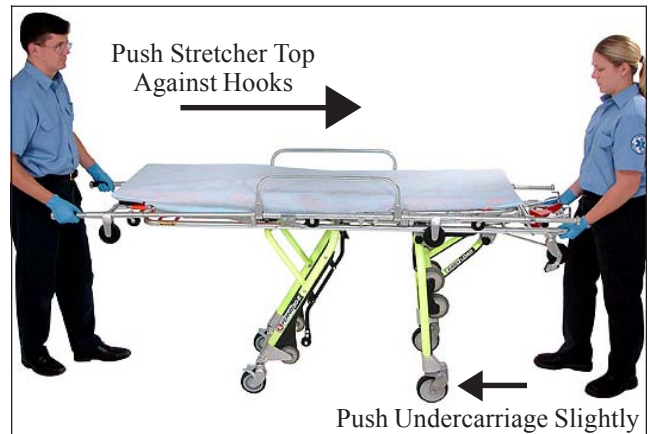


Figure 30 - Attaching the Stretcher Top

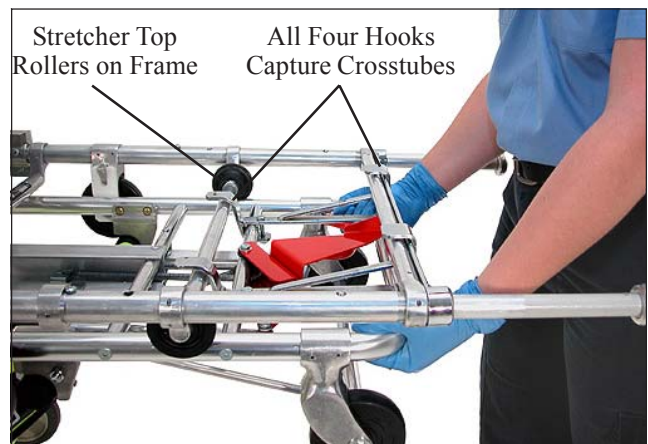


Figure 31 - Stretcher Top Rollers and Undercarriage Hooks



Figure 32 - Engaging the Quick Fix Lock

7.4 Removing the Stretcher Top From the Undercarriage

Removing the stretcher top from the undercarriage requires a minimum of two operators working together.

1. Disengage the Quick Fix lock (Figure 33). See *Quick Fix Lock*, page 12 for complete instructions.
2. *Both Operators*: Extend the stretcher-top carrying handles.
3. *Foot-End Operator*: Pull the stretcher top toward yourself until the hooks on the stretcher top and undercarriage are disengaged.

Head-End Operator: Hold the undercarriage steady or pull it slightly away from the Foot-End Operator, as needed.

4. *Both Operators*: Lift the stretcher top off the undercarriage (Figure 34). Use additional help as needed (see *Using Additional Help*, page 33).
5. Leave the Quick Fix lock unlocked so the undercarriage is ready when you wish to reattach the stretcher top.



Figure 33 - Disengaging the Quick Fix Lock

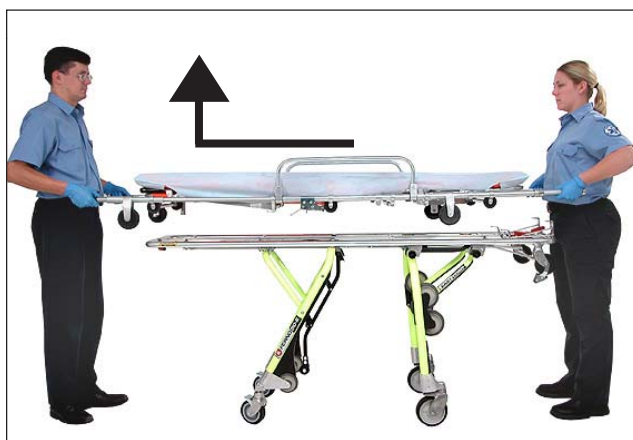


Figure 34 - Removing the Stretcher Top

7.5 Raising and Lowering the Stretcher With Two Operators

GENERAL RAISING/LOWERING GUIDELINES

- Engage the front swivel locks so the wheels will not swivel. See *Head-End Caster Swivel Locks*, page 14.
- Stand at opposite ends of the stretcher. Always use an underhand (palms up) grip and grasp the stretcher main frame.
- Use a second operator whenever possible. Use additional operators and helpers when necessary. See *Using Additional Help*, page 33.
- Communicate with one another and raise or lower the stretcher together.

RAISING THE STRETCHER

Do not use control handles when raising the stretcher.

1. *Both Operators:* Grasp the stretcher main frame with an underhand grasp, or extend and use the stretcher top handles (Figure 35).
2. *Both Operators:* Raise the stretcher until the legs lock at the desired position. Maintain your grasp until you verify that both sets of legs have locked.

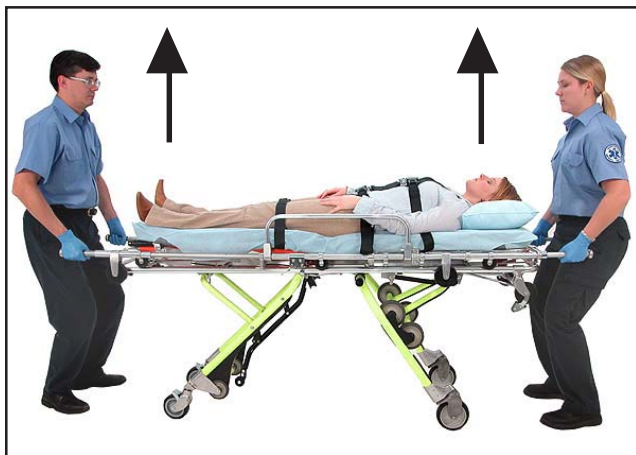


Figure 35 - Raising the Stretcher

LOWERING THE STRETCHER

1. *Both Operators:* Grasp the stretcher main frame with your hands positioned to use the control handles (Figure 36).
2. Lift the weight of the stretcher off the wheels while allowing the wheels to remain on the ground. This ensures you are supporting the weight of the stretcher, patient and equipment before you use the control handles.

Important

Expect, and be prepared to control, the normal downward movement of the stretcher that occurs when the control handles are used.

3. *Head-End Operator:* Squeeze the red control handle and begin lowering the stretcher.
4. *Foot-End Operator:* Pull the yellow override handle and then squeeze the red control handle and begin lowering the stretcher.
5. *Both Operators:* Release the control handles when the stretcher is near its desired position. Continue lowering the stretcher until it locks into position.

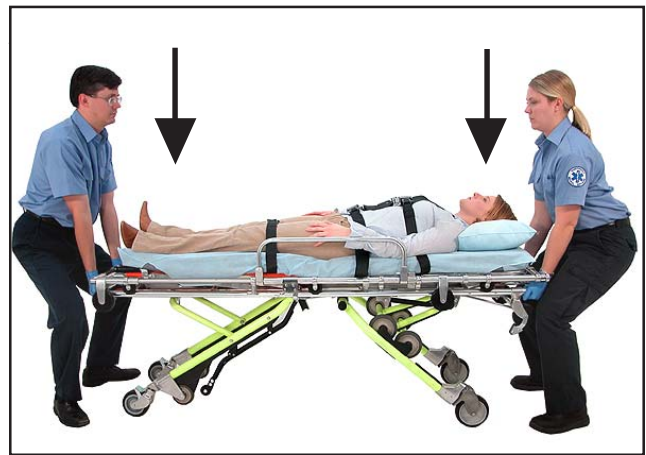


Figure 36 - Lowering the Stretcher

7.6 Raising and Lowering the Stretcher With One Operator

Ferno recommends two trained operators raise and lower the stretcher unless local protocols permit one operator to change stretcher levels.

The proper procedure for a single operator to change levels when a patient is on the stretcher is to raise or lower the stretcher one level at one end, then raise or lower the other end an equal amount. Repeat until the stretcher is level and at the desired height.

Raising or lowering by more than one level can compromise the patient's safety and comfort.

LOWERING

1. Stand at one end of the stretcher and grasp the main frame with an underhand grip.
2. Lower the end of the stretcher one level (Figure 37).
 - If at the head end, squeeze the control handle.
 - If at the foot end, squeeze the yellow/black override handle and the red control handle
3. Release the control handle(s) and verify that the stretcher has locked into position.
4. Move to the opposite end of the stretcher and repeat Steps 1-3 until the stretcher is level and at the desired height.

RAISING

Do not use the control handles to raise the stretcher.

1. Stand at one end of the stretcher and grasp the main frame with an underhand grip, or extend and use the stretcher top handles.
2. Lift the end of the stretcher one level (Figure 38).
3. Verify that the stretcher has locked into position.
4. Move to the opposite end of the stretcher and repeat Steps 1-3 until the stretcher is level and at the desired height.



Figure 37 - Lowering by One Level



Figure 38 - Raising by One Level

7.7 Transferring the Patient

In general, place the stretcher top or stretcher as close to the patient as possible to minimize lifting and moving. Follow your local protocols and the instructions below.

Note: When using the stretcher top detached from the undercarriage, remember that the Safe Working Load of the stretcher top is less than that of the system of stretcher top and undercarriage. Do not exceed the S.W.L.

1. Place the stretcher top near the patient (Figure 39) or roll the stretcher to the patient and adjust it to the patient's level (Figure 40).
2. Unfasten the restraints, lower the side rails, and position the restraint straps so they will not interfere with transferring the patient.
3. Transfer the patient onto the stretcher top using approved EMS procedures and your local protocols.
4. Raise the side rails, adjust the backrest and/or leg section as needed and fasten and adjust the restraints.
5. If you removed the stretcher top, both operators and any helpers lift and carry the stretcher top and attach it to the undercarriage (see *Attaching the Stretcher Top to the Undercarriage*, page 25).



Figure 39 - Placing the Stretcher Top Near the Patient

Important

The stretcher top Safe Working Load (S.W.L.) is less than the S.W.L. for the system of stretcher top and undercarriage. Do not exceed the S.W.L. limits shown in this manual.



Figure 40 - Placing the Stretcher Near the Patient

7.8 Rolling the Stretcher

GENERAL GUIDELINES

- Rolling the stretcher with a patient on it requires a minimum of two trained operators unless local protocols permit one operator to roll the stretcher.
- Use help as needed to safely control the weight of the patient, stretcher, and accessories or equipment. See *Using Additional Help*, page 33.
- Roll the stretcher on smooth, unobstructed surfaces whenever possible.
- To cross low obstacles such as door sills, lift the weight slightly off the wheels to allow them to roll smoothly over the obstacle.
- Lift and carry the stretcher over high obstacles.

ROLLING THE STRETCHER

1. Make sure the restraints are securely fastened around the patient.
2. *Both Operators:* Raise the stretcher to the rolling position. See *Stretcher Positions*, page 10.
3. *Foot-End Operator:* Grasp the main frame and pull the stretcher (Figure 41).
4. *Head-End Operator:* Position yourself at the side of the stretcher near the patient's head, or at the head end of the stretcher and grasp the main frame. Attend the patient and assist in rolling and steering the stretcher (Figure 41).

7.9 Increasing the Loading Height

The preferred way to load the stretcher into an ambulance is with the stretcher in the highest position.

In some cases such as uneven ground or when the ambulance is parked on an incline, loading in this position is difficult.

If the loading wheels do not easily roll onto the ambulance floor, increase the loading height by lowering the foot end one position (Figure 42). Then, load the stretcher following the instructions on page 31.



Figure 41 - Rolling the Stretcher

Important

Roll the stretcher downhill foot-end first.

If it is not medically appropriate to do this, roll the stretcher head-end first, but have the Head-End Operator exert upward force on the main frame to help maintain stretcher balance.



Figure 42 - Increasing the Loading Height

7.10 Loading the Stretcher Into an Ambulance

Ferno strongly recommends using two operators to load the stretcher into an ambulance. The stretcher can be loaded by one trained operator if local protocols permit. Use additional help as needed (see *Using Additional Help*, page 33).

1. Raise the stretcher to its highest position and make sure the front casters are locked so they will not swivel as the stretcher is loaded.
2. If the ambulance has a folding bumper, raise it.
3. Roll the stretcher into the open ambulance doorway until both loading wheels are on the patient compartment floor **and** the head-end legs contact the bumper (Figure 43). If the floor is too high, see *Increasing the Loading Height*, page 30.
4. *Foot-End Operator*: Grasp the main frame using an underhand (palms up) grip, and support the stretcher but do not lift it.
5. *Foot-End Operator*: Squeeze and hold the red control handle and begin pushing the stretcher into the ambulance. The head-end legs will fold.
6. *Foot-End Operator*: Continue pushing the stretcher into the ambulance. Be prepared to assume the remaining weight of the stretcher when the foot-end touch bar contacts the ambulance bumper (Figure 44) and unlocks the foot-end legs.

Note: *If you let go of the lowering handle, the foot-end legs will not fold when the touch-bar contacts the ambulance bumper. Squeeze and hold the lowering handle throughout the loading process.*

7. *Foot-End Operator*: Finish pushing the stretcher into the ambulance. Release the control handle.
8. Secure the stretcher in the vehicle using an approved Ferno fastener.



Figure 43 - Preparing to Load the Stretcher

Important

Check the position of the casters when loading.

Front casters must be locked (no swivel).

Rear caster locks should face the ground as the stretcher is loaded. If not, they can contact the operator's hand during loading.



Figure 44 - Head-End Legs Folded, Foot-End Touch Bar in Contact with Bumper

7.11 Unloading the Stretcher From an Ambulance

Ferno strongly recommends using two operators to unload the stretcher from an ambulance. The stretcher can be unloaded by one trained operator if local protocols permit. Use additional help as needed (see *Using Additional Help*, page 33).

Do not use the control handles while unloading the stretcher.

1. If the ambulance has a folding bumper, raise it.
2. Release the stretcher from the stretcher fastener.
3. *Foot-End Operator*: Grasp the stretcher main frame and support the stretcher as you begin pulling it from the ambulance.
4. *Foot-End Operator*: Allow the foot-end legs to unfold completely and lock into place (Figure 45). If the ambulance is parked in a low area or on an incline, you may need to lift the stretcher off the ground to allow clearance for the legs to unfold completely and lock.
5. *Foot-End Operator*: With the rear wheels on the ground, continue pulling the stretcher from the ambulance until the head-end legs unfold completely and lock (Figure 46). Keep the loading wheels on the ambulance floor until you complete Step 6.
6. Verify that the head-end legs have locked by lightly pushing the stretcher against the ambulance bumper without using any control handles. If the legs do not fold, they are locked and you can continue to Step 7.

If the head-end legs fold, lift the stretcher off the ground. Lifting allows clearance for the head-end legs to unfold completely and lock.

7. Finish pulling the stretcher out of the ambulance.

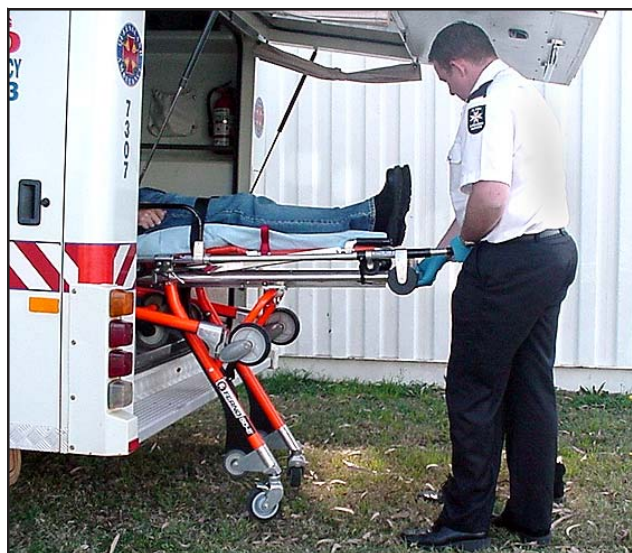


Figure 45 - Check That Foot-End Legs Lock

⚠ WARNING

An unlocked undercarriage can cause injury. Verify that each set of legs locks when unloading the stretcher.

Important

If the ambulance is in a low area or on an incline, the operators (and any helpers) may need to lift the stretcher off the ground to allow clearance for the legs to unfold completely and lock.



Figure 46 - Check That Head-End Legs Lock

7.12 Using Additional Help

Operating the stretcher requires a minimum of one trained operator, but Ferno strongly recommends that the stretcher be operated by two trained operators. Additional help may be needed when working with heavy loads (patient, accessories and equipment). Operators should maintain control of the stretcher, operate the controls, and direct helpers. The chart below shows suggested placement for operators and helpers.

Inspect the stretcher if the load limit has been exceeded (See *Inspecting the Stretcher*, page 35).

Helpers	Changing Levels	Rolling	Loading/Unloading
Two Operators + Two Helpers			
Two Operators + Four Helpers			

Key: O = Operator H = Helper P = Patient

! WARNING

Helpers can cause injury. Maintain control of the stretcher, operate the controls, and direct all helpers.

! WARNING

Helpers can be injured. Show helpers where to grasp the stretcher to avoid pinch points.

STRETCHER TOP SAFE WORKING LOAD	SYSTEM SAFE WORKING LOAD

Important

The stretcher top Safe Working Load (S.W.L.) is less than the S.W.L. for the system of stretcher top and undercarriage. Do not exceed the S.W.L. limits shown in this manual.

8 - MAINTENANCE

8.1 Maintenance Schedule

The stretcher requires regular maintenance. Set up and follow a maintenance schedule. A sample form is provided on page 41. The table at right represents minimum intervals for maintenance.

When using maintenance products, follow the manufacturers' directions and read the manufacturers' material safety data sheets. Contact your Ferno distributor to order Ferno-recommended disinfectant (page 39).

Minimum Maintenance Intervals	Each Use	As Needed	Each Month
Disinfecting (pages 34-35)	•		
Cleaning (pages 34-35)		•	
Waxing (page 35)		•	
Inspecting (page 35)		•	•
Lubricating (page 36)		•	

8.2 Disinfecting and Cleaning the Restraints

1. Remove restraints from stretcher.
2. Spray metal components with disinfectant cleaner and wipe with clean cloth, following disinfectant manufacturer's instructions. Do **not** immerse buckles in liquid.
3. Add a disinfectant cleaner to warm water, following instructions on container.
4. Immerse restraint webbing in disinfectant solution for the time directed in the disinfectant manufacturer's instructions. Do **not** immerse the buckles.
5. Repeatedly dip restraint webbing in clear water to rinse. Do **not** immerse buckles.
6. Hang restraints to dry.
7. Attach clean, dry restraints to stretcher as described in *Stretcher Setup*, pages 19-23.

8.3 Disinfecting and Cleaning the Mattress

1. Remove the mattress from the stretcher.
2. Wipe all surfaces of the mattress with disinfectant, following the disinfectant manufacturer's instructions.
3. Wash the mattress with warm, soapy water and a soft cloth.
4. Rinse the mattress with clear water.
5. Dry the mattress with a towel.

WARNING

Improper maintenance can cause injury. Maintain the stretcher only as described in this manual.

Important

Disinfectants and cleaners containing bleach, phenolics, or iodines can cause damage. Disinfect and clean only with products that do not contain these chemicals.

Important

Metal buckles on restraints can be damaged by immersion in liquids or by washing machine action. Disinfect and clean restraints only as directed in this manual.

8.4 Disinfecting and Cleaning the Stretcher

To disinfect: Wipe all surfaces with disinfectant, following the disinfectant manufacturer's directions. Ferno recommends that you inspect the stretcher for obvious damage as you disinfect it.

To clean: Hand wash all parts of the stretcher with warm water and a mild detergent. Use a stiff brush (but not a metal wire brush) to remove stains.

8.5 Waxing the Stretcher

Disinfect and clean the stretcher before applying wax. Use an automotive wax as directed by the wax manufacturer.

8.6 Tracker™

The Tracker™ is attached to the undercarriage and counts stretcher cycles. A cycle equals raising the stretcher from the folded position to a raised position and back. The total number of cycles is displayed on an LCD readout (Figure 47).

Use the Tracker as an aid to schedule and record stretcher maintenance.

Note: *The Tracker is designed to maintain a count of the total number of stretcher cycles. It is not designed to be reset to zero.*

8.7 Inspecting the Stretcher

Have your service's equipment maintenance personnel inspect the stretcher by following the checklist at right and working the stretcher through all its functions as described in the following sections:

- *Model 50-E Undercarriage*, pages 11-14.
- *Model 155-E Stretcher Top*, pages 15-18.
- *Using the Stretcher*, pages 24-33.

If inspection shows damage or excessive wear, remove the stretcher from service until repair is made (see *Repair Parts and Service*, page 38).

Important

Water under high pressure penetrates joints, flushes away lubricant, and causes corrosion. Do not use a high-pressure washer, or steam, to clean the stretcher.

Important

Using abrasive cleaning compounds or applicators on the stretcher frame can cause damage. Do not use abrasive materials to clean the stretcher.




Figure 47 - Tracker™

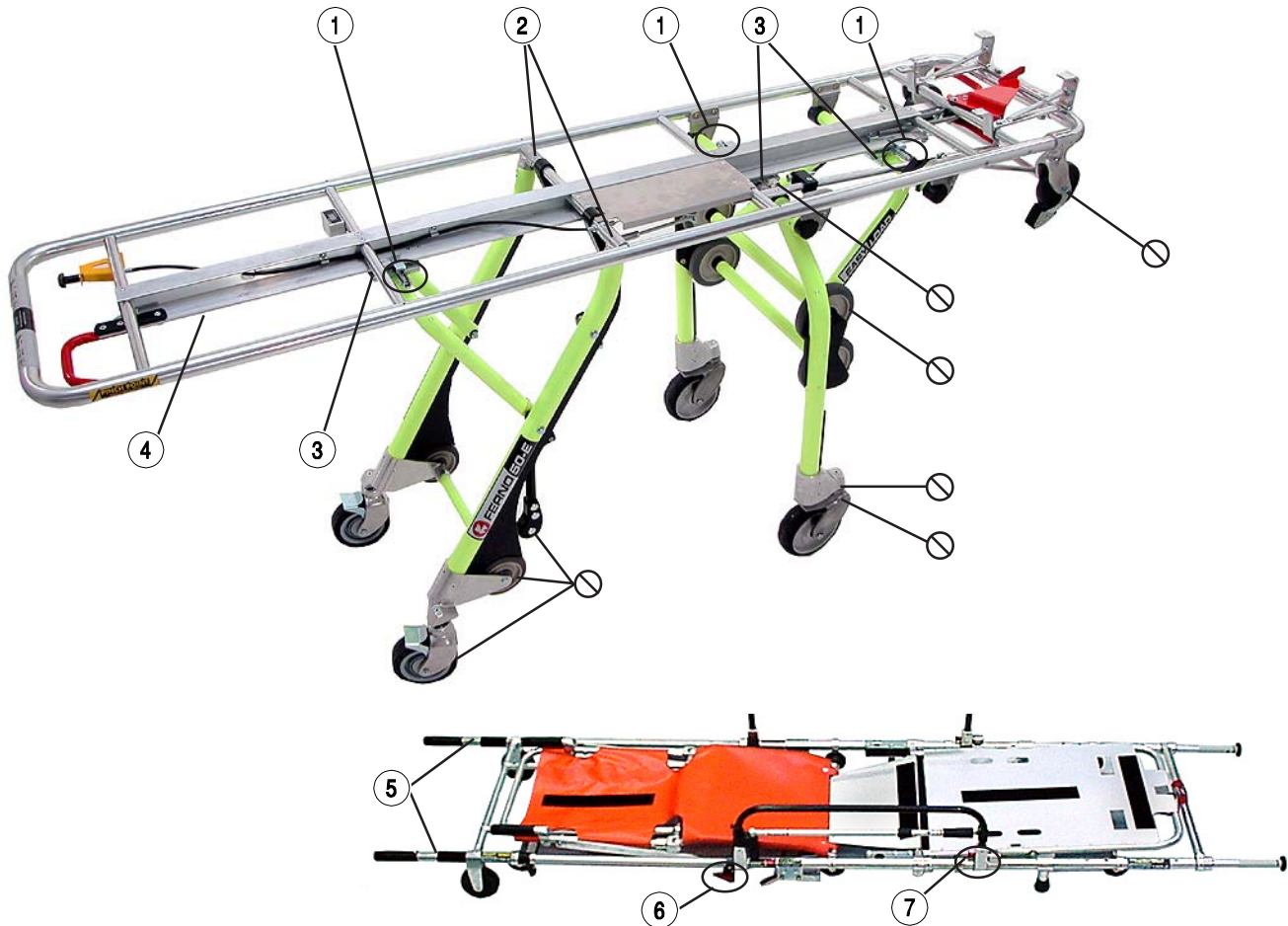
INSPECTION CHECKLIST

- Are all components present?
- Are all screws, nuts, bolts, rivets, and roll pins securely in place?
- Do all moving parts operate smoothly and properly?
- Is the stretcher free of excessive wear?
- Does the stretcher roll smoothly?
- Do the wheels have some tread?
- Does the stretcher top attach securely to the undercarriage?
- Do installed accessories operate properly without interfering with stretcher operation?
- Is the ambulance properly prepared for the stretcher (approved Ferno fastener installed)?
- Is restraint webbing in good condition with no cuts or frayed edges?
- Are restraint buckles free of visible damage and do they operate properly?




8.8 Lubricating the Stretcher

Use the lubricants designated below to lubricate the stretcher and stretcher top. Do not lubricate points marked with the  symbol.

Important
Lubricating parts that should not be lubricated allows dirt and foreign particles to collect on those parts, resulting in damage. Lubricate **only** the points numbered below.



LUBRICATION POINTS
(Use a small amount of lubricant)

Reference	# Points	Component	Lubricate With
①	3	Lock pin spring	WRL-191-S or 10W-30 synthetic oil
②	2	Metal 'T' castings	WRL-191-S or 10W-30 synthetic oil
③	3	Metal saddle (top of leg)	WRL-191-S or 10W-30 synthetic oil
④	2	Bottom of I-beam channel (each side)	WRL-191-S or 10W-30 synthetic oil
⑤	2	Stretcher top folding handles	ZEP 45 Teflon-based spray
⑥	1	Stretcher top position lock	ZEP 45 Teflon-based spray or 10W-30 synthetic oil
⑦	2	Side rail release pins	ZEP 45 Teflon-based spray or 10W-30 synthetic oil
	0	Swivel release casting/cables	Do not lubricate
	0	Wheels (sealed bearings)	Do not lubricate
	0	Swivel caster lock pins	Do not lubricate (use soap and water only)

9 - ACCESSORIES AND RELATED PRODUCTS

Ferno offers a full line of emergency medical service accessories (fasteners, IV poles, immobilizers, blankets, etc.). Selected items approved for use with the stretcher are listed at the right.

Always follow the instructions packed with accessories. Keep the instructions with this manual. Be aware of any special considerations (loading heights, door heights, etc.) when using accessories.

For product information, please contact your Ferno distributor (page 39).

WARNING

Attaching improper items to the stretcher can cause injury. Use only Ferno-approved items on the stretcher.

Description	Part #
Side rail IV pole	LAIV-2030
Model 374 arm board	081-9726
Contoured mattress	MCM-50
Patient harness	BRH-417/50
Restraint	BRR-43017
Stair chair handle kit	LA50-EHK
Pivoting load wheel kit	LA50-PLW
Baby Capsule restraint kit	BRH-419/50
Blanket (various colors, sizes)	Call

10 - REPAIR PARTS AND SERVICE

10.1 Parts and Service - Australia

To order Ferno parts and for professional stretcher repair, contact Ferno Australia, the only agent authorized by Ferno to manage, service, and repair Ferno products.

Ferno Australia
11 Johnstone Road
Brendale, Queensland 4500

Internet www.ferno.com.au
E-mail info.ferno.com.au
Phone (07) 3205.5055
Fax (07) 3881.1125

WARNING

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the stretcher.

WARNING

Modifying the stretcher can cause injury and damage. Use the stretcher only as designed by Ferno.

10.2 Parts and Service - Worldwide

To order Ferno parts and for professional stretcher repair, contact your Ferno distributor. Your distributor is the only agent authorized by Ferno to manage, service, and repair Ferno products.

11 - LIMITED WARRANTY

Limited Warranty Summary

Ferno-Washington, Inc. (Ferno), warrants the products we manufacture to be free from defects in material and workmanship for one year except as follows:

- (A) External finishes (gelcoat, decals, paint, etc.) are warranted for 90 days.
- (B) Soft goods (webbing, vinyl, fabric, foam, etc.) are warranted for 90 days.
- (C) Repairs and services are warranted for 90 days or until the end of the time period(s) above, whichever comes last.

This limited warranty applies when you use and care for the product properly. If the product is not used and cared for properly, the warranty is void. The warranty period begins the day the product is shipped from Ferno or the day you receive it if you have proof of the delivery date. Shipping charges are not covered by the limited warranty. We are not liable for shipping damages or damages sustained through using the product.

Limited Warranty Obligation

If a product or part is proven to be defective, Ferno will repair or replace it. At our option, we will refund the product's purchase price. The purchaser accepts these terms in lieu of all damages.

This is a summary of the limited warranty. The actual terms and conditions of the limited warranty, and the limitations of liability and disclaimers, are available upon request by calling 800.733.3766 or 937.382.1451.

12 - FERNO CUSTOMER RELATIONS

Customer relations and product support are important aspects of each Ferno product. Please have the serial number of your stretcher and stretcher top available when calling your distributor and include it in all written communications.

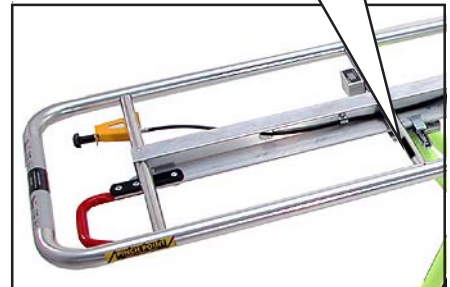
In Australia, for assistance with the stretcher contact Ferno Customer Relations below:

Ferno Australia
 11 Johnstone Road
 Brendale, Queensland 4500
 Internet www.ferno.com.au
 E-mail info.ferno.com.au
 Phone (07) 3205.5055
 Fax (07) 3881.1125

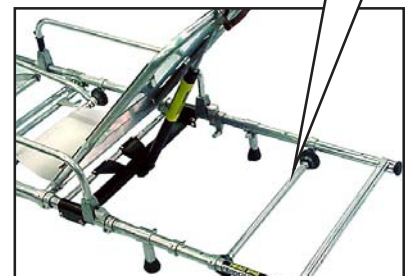
Outside Australia, for assistance with the stretcher please contact your Ferno distributor, or Ferno Customer Relations below:

Telephone (Worldwide) +1.937.382.1451
 Fax (Outside U.S.A.) +1.937.382.6569
 Internet www.ferno.com

Serial Number _____



Serial Number _____



TRAINING RECORD		
Date	Name	Training Method

MAINTENANCE RECORD		
Date	Maintenance Performed	By

NOTES

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