

Invacare<sup>®</sup> **Reliant™ 450 RHL450-I**

Invacare **Reliant 450 RPL450-I**

Invacare **Reliant 600 RPL600-I**

Manual/Electric Mobile Patient Lift

**User Manual**

**EN**

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

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



**Yes, you can.®**

# User Manual

## Manual/Electric Mobile Patient Lift

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

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

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## I General

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### I.1 Symbols

#### Warnings

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



#### **DANGER**

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



#### **WARNING**

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



#### **CAUTION**

Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury or both.



#### **IMPORTANT**

Indicates a hazardous situation that could result in damage to property if it is not avoided.



Gives useful tips, recommendations and information for efficient, trouble-free use.



ATTENTION, see instructions for use.

#### Other Symbols



Date of manufacture.

## I GENERAL

### I.2 Limited Warranty



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

This warranty is extended only to the original purchaser/user of our products.

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

Invacare warrants the products manufactured to be free from defects in materials and workmanship for a period of three years on the lift and one year on the slings, hydraulic pump / electric components from the date of purchase. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

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

Invacare Corporation will issue a serialized return authorization. The defective unit or parts **MUST** be returned for warranty inspection using the serial number, when applicable as identification within 30 days of return authorization date. Do not return products to our factory without our prior consent. C.O.D. shipments will be refused; please prepay shipping charges.

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

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

**SOME STATES DO NOT ALLOW EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSIONS AND LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE OR PROVINCIAL LAWS AND REQUIREMENTS.**

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## 2 Safety

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The Safety section contains important information for the safe operation and use of this product.

### 2.1 General Guidelines

**WARNING**

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

**ACCESSORIES WARNING**

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

**NOTICE**

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

Check all parts for shipping damage before using. In case of damage, DO NOT use the equipment. Contact the Dealer for further instructions.

### 2.2 Operating Information

#### General

**WARNING**

The Invacare patient lift is NOT a transport device. It is intended to transfer an individual from one resting surface to another (such as a bed to a wheelchair).

DO NOT attempt any transfer without approval of the patient's physician, nurse or medical assistant. Thoroughly read the instructions in this Owner's Manual, observe a trained team of experts perform the lifting procedures and then perform the entire lift procedure several times with proper supervision and a capable individual acting as a patient.

Use common sense in all lifts. Special care **MUST BE** taken with people with disabilities who cannot cooperate while being lifted.

Invacare slings and patient lift accessories are specifically designed to be used in conjunction with Invacare patient lifts. Slings and accessories designed by other manufacturers are not to be utilized as a component of Invacare's patient lift system.

If the patient lift is exposed to extreme temperature (above 100°F or below 32°F), high humidity and/or becomes wet, prior to use, ensure handgrips do not twist on patient lift handle - otherwise damage or injury may occur.

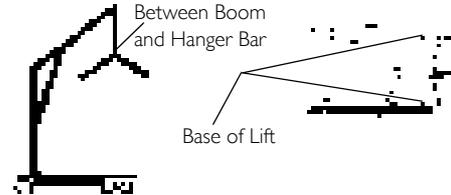
## 2 SAFETY

### Pinch Points and Positioning



#### **WARNING**

Pinch points, fingers could be pinched.  
When positioning lift, be aware of the position of the hanger bar and the patient. Injury could occur.



### Assembling the Lift



#### **WARNING**

DO NOT overtighten mounting hardware. This will damage mounting brackets.

### Operating the Lift



#### **WARNING**

Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

Make sure there is an audible click when mounting battery on the battery charger to confirm proper mounting. Otherwise, injury or damage may occur.

DO NOT exceed maximum weight limitation of the patient lift. The weight limitation for the RHL450-I and RPL450-I is 450 lbs. The weight limitation for the RPL600-I is 600 lbs.

ALWAYS keep hands and fingers clear of moving parts to avoid injury.

## Using the Sling



### WARNING

Use an Invacare approved sling that is recommended by the individual's doctor, nurse or medical assistant for the comfort and safety of the individual being lifted.

DO NOT use any kind of plastic back incontinence pad or seating cushion between patient and sling material that may cause the patient to slide out of the sling during transfer.

After each laundering (in accordance with instructions on the sling), inspect sling(s) for wear, tears, and loose stitching.

Bleached, torn, cut, frayed, or broken slings are unsafe and could result in injury. Discard immediately.

DO NOT alter slings.

Be sure to check the sling attachments each time the sling is removed and replaced, to ensure that it is properly attached before the patient is removed from a stationary object (bed, chair or commode).

If the patient is in a wheelchair, secure the wheel locks in place to prevent the chair from moving forwards or backwards.

When connecting slings equipped with color coded straps to the patient lift, the shortest of the straps MUST be at the back of patient for support. Using long section will leave little or no support for patient's back. The loops of the sling are color coded and can be used to place patient in various positions. The colors make it easy to connect both sides of the sling equally. Make sure that there is sufficient head support when lifting a patient.

## Lifting the Patient



### WARNING

When using an adjustable base lift, the legs MUST be in the maximum Opened/Locked position before lifting the patient.

When elevated a few inches off the surface of the stationary object (wheelchair, commode, or bed) and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are not properly in place, lower the patient back onto the stationary object (wheelchair, commode, or bed) and correct this problem.

Adjustments for safety and comfort should be made before moving the patient. Patient's arms should be inside of the straps.

Invacare slings are made specifically for use with Invacare Patient Lifts. For the safety of the patient, DO NOT intermix slings and patient lifts of different manufacturers. Warranty will be voided.

During transfer, with patient suspended in a sling attached to the lift, DO NOT roll caster base over uneven surfaces that could cause the patient lift to tip over. Use steering handle on the mast at all times to push or pull the patient lift.

Invacare does not recommend locking of the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare does recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

## 2 SAFETY

### Transferring the Patient



#### **WARNING**

When elevated a few inches off the surface of the stationary object (wheelchair, commode, or bed) and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are not properly in place, lower the patient back onto the stationary object (wheelchair, commode, or bed) and correct this problem.

Wheelchair wheel locks **MUST** be in a locked position before lowering the patient into the wheelchair for transport.

Before transferring, check that the wheelchair weight capacity can withstand the patient's weight.

Be sure to check the sling attachments each time the sling is removed and replaced, to ensure that it is properly attached before the patient is removed from the bed or chair.

Most pivot under the rubber boot must be tight to ensure safe use of the patient lift. Bolt must be checked at least every six months in conjunction with periodic maintenance.

### Performing Maintenance



#### **WARNING**

Maintenance **MUST** be performed **ONLY** by qualified personnel.

The pump is sealed at the factory. **DO NOT** attempt to open the pump or obtain local service as this will **VOID** the warranty and might result in damage. Consult your dealer or write Invacare for further information.

After the first year of use, the hooks of the hanger bar and the mounting brackets of the boom should be inspected every three months to determine the extent of wear. If these parts become worn, replacement must be made.

Casters and axle bolts require inspections every six months to check for tightness and wear.

After the first twelve months of operation, inspect the hanger bar and the eye of the boom (to which it attaches) for wear. If the metal is worn, the parts **MUST** be replaced. Make this inspection every six months thereafter.

Regular maintenance of patient lifts and accessories is necessary to assure proper operation.

**DO NOT** overtighten mounting hardware. This will damage mounting brackets.

## Electrical and Grounding



### **WARNING**

#### GROUNDING INSTRUCTIONS

DO NOT, under any circumstances, cut or remove the round grounding prong from any plug used with or for Invacare products. Some devices are equipped with three-prong (grounding) plugs for protection against possible shock hazards. Where a two-prong wall receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have the two-prong receptacle replaced with a properly grounded three-prong wall receptacle in accordance with the National Electrical Code. If you must use an extension cord, use ONLY a three-wire extension cord having the same or higher electrical rating as the device being connected. In addition, Invacare has placed RED/ORANGE warning tags on some equipment. DO NOT remove these tags. Carefully read battery/battery charger information prior to installing, servicing or operating your patient lift.

## Disposal



### **WARNING**

This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE.

Device contains lead acid batteries. DO NOT dispose of batteries in normal household waste. They MUST be taken to a proper disposal site. Contact your local waste management company for information.

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

## 2.3 Radio Frequency Interference



### **WARNING**

Most electronic equipment is influenced by Radio Frequency Interference (RFI). CAUTION should be exercised with regard to the use of portable communication equipment in the area around such equipment. If RFI causes erratic behavior, PUSH the Red Power Switch OFF IMMEDIATELY. DO NOT turn the Power Switch ON while transmission is in progress.

# 3 Product Labeling

**⚠ WARNING**



**BEFORE** using the Patient Lift, **READ** and **UNDERSTAND** the Owner's Manual for proper operation and safety procedures.

**⚠ WARNING**

**WEIGHT LIMITATION 450 lbs.**

The Invacare Patient lift is **NOT** a transport device.

**DO NOT** roll casters over uneven surfaces that may cause the Patient Lift to tip over.

**DO NOT** lock the casters of the Patient Lift when lifting an individual. Casters **MUST** be left unlocked to allow Patient Lift to stabilize during lifting procedures.

**USE ONLY** Invacare slings and lift accessories.

For maintenance and replacement, use only components designed for this patient lift model. See the product label for model information.

1073698 Rev C

**⚠ WARNING**



**BEFORE** using the Patient Lift, **READ** and **UNDERSTAND** the Owner's Manual for proper operation and safety procedures.

**⚠ WARNING**

**WEIGHT LIMITATION 600 lbs.**

The Invacare Patient lift is **NOT** a transport device.

**DO NOT** roll casters over uneven surfaces that may cause the Patient Lift to tip over.

**DO NOT** lock the casters of the Patient Lift when lifting an individual. Casters **MUST** be left unlocked to allow Patient Lift to stabilize during lifting procedures.

**USE ONLY** Invacare slings and lift accessories.

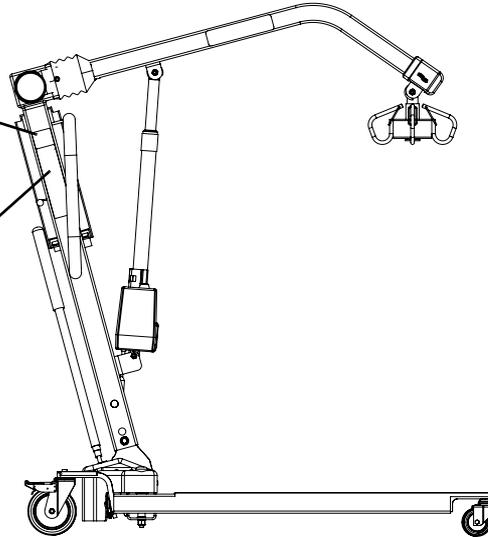
For maintenance and replacement, use only components designed for this patient lift model. See the product label for model information.

1070965 Rev B

**⚠ WARNING**

Most pivot **MUST** be tight to ensure safe use of your patient lift. Bolt **MUST** be checked at least every six (6) months in conjunction with periodic maintenance. See Owner's Manual.

P/N 1130200 Rev. B



Electric Lift shown. Locations are the same on the Hydraulic/Manual lift.

## 4 Technical Data

### 4.1 Patient Lift

	450 LB. HYDRAULIC	450 LB. ELECTRIC	600 LB. ELECTRIC
	LOW PROFILE RHL450-I	LOW PROFILE RPL450-I	LOW PROFILE RPL600-I
Height at Sling Hook-up - MAX.:	71 inches	74 inches	68 inches
Height at Sling Hook-up - MIN.:	25 inches	24 inches	28 inches
Base Width OPEN:	41.0 inches		
Base Width CLOSED:	26.5 inches		
Base Height (Clearance):	4.5 inches	4.5 inches	4.5 inches
Base Length:	48.0 inches		
Caster Size (FRONT/REAR):	3.0/5.0 inches	3.0/5.0 inches	3.0/5.0 inches
Sling Options:	3 Styles	3 Styles	1 Style
Weight Capacity:	450 lbs		600 lbs
Weight IN Carton:	112 lbs	133 lbs	138 lbs
Weight OUT of Carton:	93 lbs	106 lbs	112 lbs
Battery:	N/A	24V DC (RCHBL)	
Charger Input:	N/A	100-240V AC	
Charger Output/Charging Time:	N/A	29.5V DC Max 6 hrs	
Accessories:	Digital Scale		
Audio Low Battery Alarm:	N/A	Yes	
Motor Safety Devices:	N/A	Anti-Entrapment	
Approx. Lifts per Charge (Varies depending upon load and stroke):	N/A	100-200 Cycles per charge	
Warranty Pump/ Electronics:	1 Year		

## 4 TECHNICAL DATA

### 4.2 Full Body, Divided Leg and Toileting Slings

	FULL BODY			FULL BODY W/COMMODE			DIVIDED LEG				TOILETING	HEAVY DUTY W/O COMMODE	HEAVY DUTY W/ COMMODE
	R110 R112*	R111 R113*	R114	R115	R116	R117*	R100P	R100	R101	R102	R121	R140*	R141*
Size:	M	L	XL	M	L	XL	P	M	L	XL	L	N/A	N/A
Width:	41.5	45.5	45.5	41.5	45.4	45.5	33	37.5	41	44.5	36	45	45
Commode Opening:	N/A	N/A	N/A	8	8	9	N/A	N/A	N/A	N/A	N/A	N/A	7
Length:	54.7	60.5	65.3	54.7	60.5	65.3	59.8	62.8	67.8	72.3	37	55	55
Commode Opening:	N/A	N/A	N/A	11	11	13	N/A	N/A	N/A	N/A	N/A	N/A	13
Back:	N/A	N/A	N/A	N/A	N/A	N/A	29.2	35.7	41.7	43.2	N/A	N/A	N/A
Weight Capacity (lbs):	450	450	450	450	450	450	450	450	450	450	450	600	600
	*Slings made of a mesh material. All dimensions are in inches except where noted.												

### 4.3 Reliant Scale RLS6

Weight Range:	Up to 600 Lbs. (272.7 Kg)
Resolution:	+/- 0.2 Lbs (.1 Kg)
Display:	Liquid Crystal Digital
Automatic Power Down:	Two (2) minutes
Size:	5-3/4 L X 3-5/8 W X 4 H
Weight:	.55 Lbs
Power:	Nine (9) Volt Alkaline battery (included)
Battery Life:	Approximately 1500 readings
Temperature Range:	50° To 104°F (10° To 40°C)

## 5 Assembly

### 5.1 Assembling the Patient Lift



#### WARNING

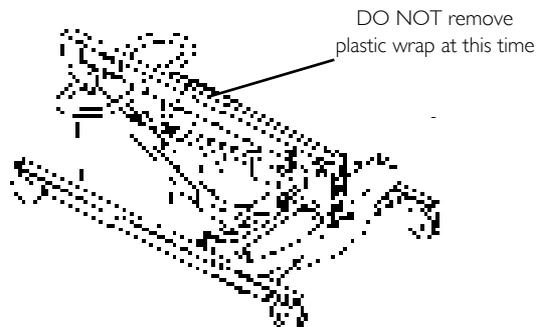
Use only Invacare parts in the assembly of this patient lift. The base legs, the mast, boom, pump assembly and the hanger bar are manufactured to specifications that assure correct alignment of all parts for safe functional operation.

### Unpacking the Patient Lift

1. Unpack the components from the shipping carton.



DO NOT remove the plastic wrap that secures the boom to the mast in place. The plastic wrap will be removed in [Assembling the Manual/Hydraulic Pump to the Boom](#) on page 17 or [Assembling the Electric Actuator to the Boom](#) on page 18.



## 5 ASSEMBLY

### Assembling the Mast to the Base

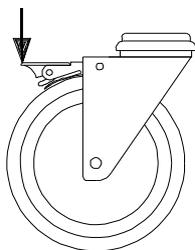
1. If locking-type casters are on the patient lift, lock them.
2. Remove the shoulder bolt, nut and washer, that secures the mast in the U-shape cut-out of the base.
3. Position the mast in an upright position and place the mast into the U-shaped cut-out of the base.
4. Insert shoulder bolt with washers through the base and mast.
5. Secure with nut.



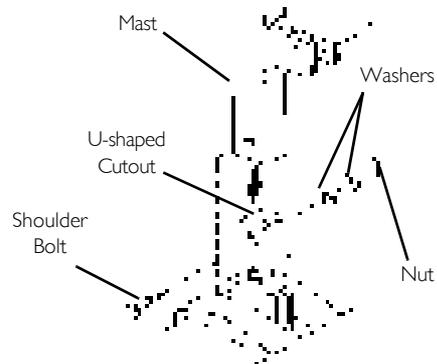
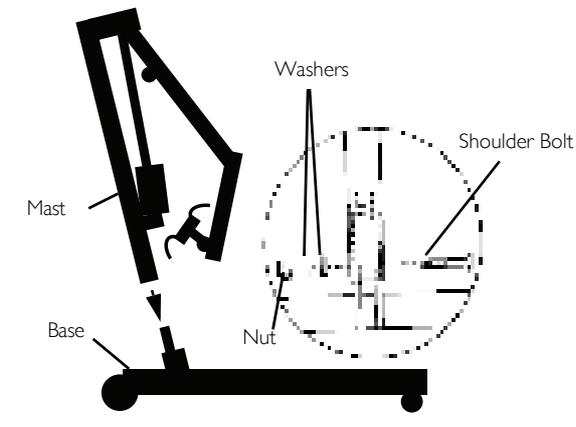
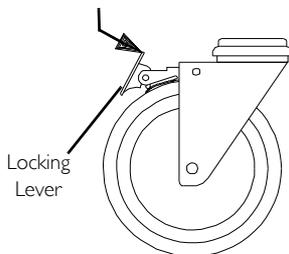
### WARNING

The mast may be removed from the base for storage or transporting. Each time the mast is removed and returned to the base, the mast **MUST** be properly secured to the base assembly.

Step here to  
LOCK.



Step here to UNLOCK.



## Assembling the Manual/Hydraulic Pump to the Boom



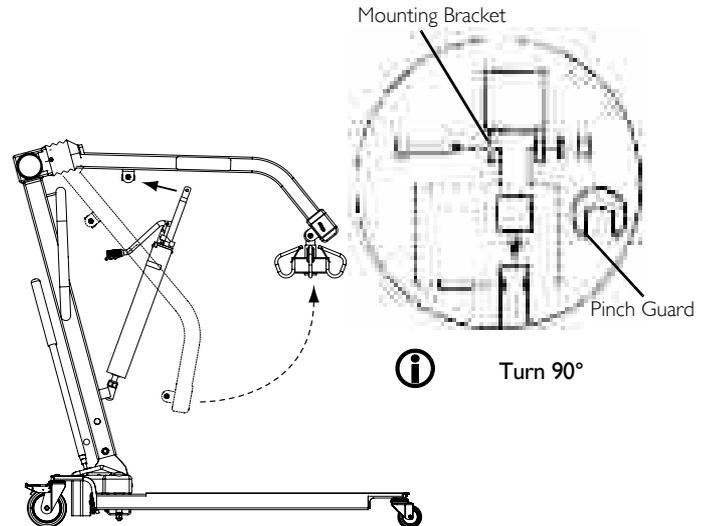
### CAUTION

DO NOT overtighten the nut and bolt. This damages the mounting bracket.

1. Remove the shoulder bolt, washer and nut from the mounting bracket on the boom assembly.
  2. Unpack the pinch guard from the patient lift carton.
- i** The bottom of the hydraulic pump assembly will already be assembled to the mast mounting bracket.
3. Cut the plastic-wrap that secures the boom and mast together.
  4. Lift-up on the boom and place it on your left shoulder.
  5. Let the hydraulic pump rest on the right-side of your chest and rotate the shaft extension of the hydraulic pump assembly until it lines-up with the mounting bracket holes in the boom assembly.
  6. Turn the pinch guard 90° and place over the shaft extension of the hydraulic pump.
  7. Align the holes of the boom assembly mounting bracket with those of the hydraulic pump and insert the bolt. Secure with washer and nut.



Be sure that the bolt is completely through the holes of the boom assembly mounting bracket and the manual/hydraulic pump assembly. The boom assembly will pivot easily if the mounting hardware is aligned properly when the boom assembly is secured to the mast.



## 5 ASSEMBLY

### Assembling the Electric Actuator to the Boom



#### CAUTION

DO NOT overtighten the nut and bolt. This damages the mounting bracket.

1. Remove the shoulder bolt, washer and nut from the mounting bracket on the boom assembly.
2. Unpack the pinch guard from the patient lift carton.



The bottom of the electric actuator assembly will already be assembled to the mast mounting bracket.

3. Cut the plastic-wrap that secures the boom and mast together.
4. Lift-up on the boom and place it on your left shoulder.
5. Let the actuator rest on your right-side of your chest and rotate the shaft extension of the actuator assembly until it lines-up with the mounting holes in the boom assembly.
6. Place the pinch guard over the shaft extension of the actuator.
7. Align the holes of the boom assembly mounting bracket with those of the actuator and insert the bolt. Secure with nut.

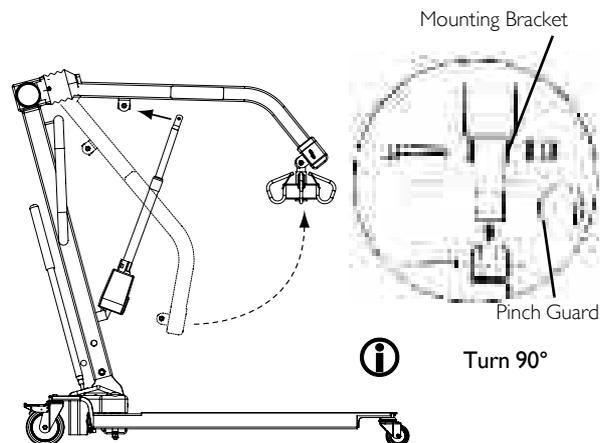


Be sure that the bolt is completely through the holes of the boom assembly mounting bracket and the actuator assembly. The boom assembly will pivot easily if the mounting hardware is aligned properly when the boom assembly is secured to the mast.

8. Plug in the electrical connectors from the electric actuator to the bottom of the battery assembly.
9. Plug the hand control control into the bottom of the battery assembly.

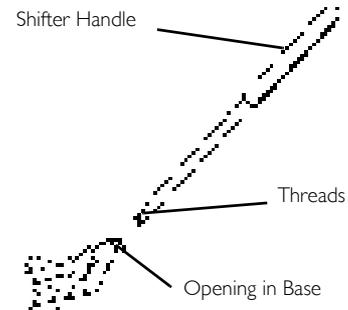


The bottom of the actuator assembly will already be assembled to the mast mounting bracket.



## 5.2 Installing the Shifter Handle

1. Remove the shifter handle from the packaging carton.
2. Line-up the shifter handle threads with threaded opening in the base.
3. Turn the shifter handle clockwise and securely tighten into the base.



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# 6 Operation

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### 6.1 Operating the Patient Lift



Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

### Closing/Opening the Legs of the Base Assembly

The shifter handle is used to open or close the legs of the base for stability when lifting a patient.



#### **WARNING**

The operation of the patient lift is an easy and safe procedure. **DO NOT** attempt any transfer without approval of the patient's physician, nurse or medical assistant. Thoroughly read the instructions in this Owner's Manual, observe a trained team of experts performing the lifting procedures and then perform the entire lift procedure several times with proper supervision and a capable individual acting as a patient.

The legs of the lift must be in the maximum open position and the shifter handle locked in place for optimum stability and safety. If it is necessary to close the legs of the lift to maneuver the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position and lock the shifter handle immediately.

### Closing the Legs

1. Stand at the rear of the patient lift and grasp the shifter handle with one hand and place the opposite hand on the steering handle of the mast for balance.



The shifter handle **MUST** lock into its mounting slot to lock the legs in the full closed position.



#### **WARNING**

If the shifter handle is **NOT** positioned completely into its mounting slot, **DO NOT** use the patient lift until the shifter handle is properly seated and the legs of the patient lift are locked in place. Otherwise, injury and/or damage may occur.

2. Pull the shifter handle away from the patient lift and then to your left until it locks in the notch of the bracket.

### Opening the Legs

1. Stand at the rear of the patient lift and grasp the shifter handle with one hand and place the opposite hand on the steering handle of the mast for balance.



The shifter handle **MUST** lock into its mounting slot to lock the legs in the full open position.



#### **WARNING**

If the shifter handle is not positioned completely into its mounting slot, **DO NOT** use the patient lift until shifter handle is properly seated and the legs of the patient lift are locked in place. Otherwise, injury and/or damage may occur.

2. Pull the shifter handle away from the patient lift and then to your right.

### Closing the Legs



### Opening the Legs



## 6 OPERATION

### Raising/Lowering a Manual/Hydraulic Lift



#### **WARNING**

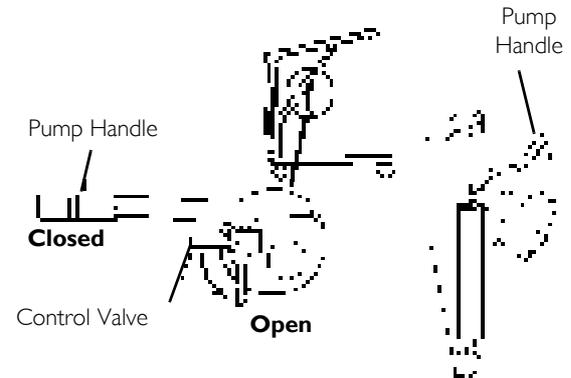
Invacare does not recommend locking of the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare does recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

There are two controls on the pump assembly:

- The control valve
- The pump handle

#### **Raising the Hydraulic Lift**

The control valve must be in the closed position (control valve positioned towards pump handle) to move the pump handle up and down to elevate the boom and the patient until the boom locks in the notch of the bracket.



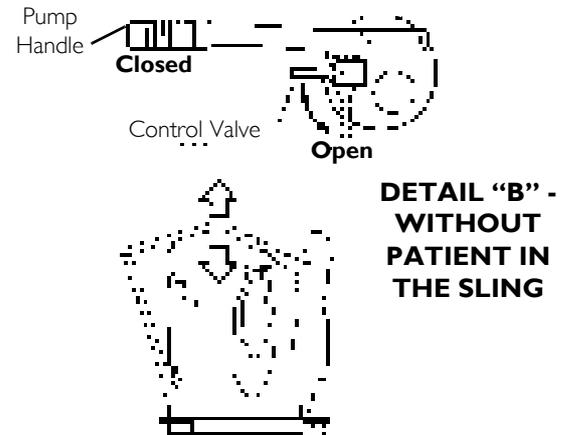
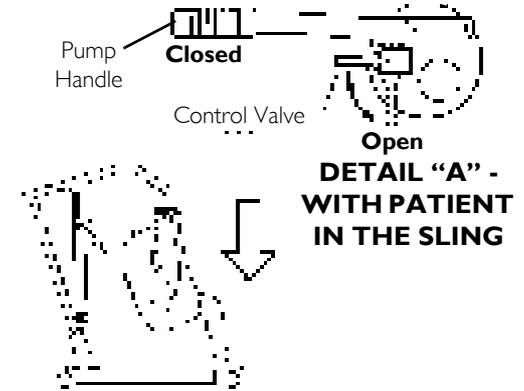
## Lowering the Hydraulic Lift

The control handle **MUST** be in the open position (control valve positioned away from pump handle) to lower the boom and the patient. The rate of descent can be controlled by varying the amount that the control valve is opened.



A safety gate is part of the hydraulic system that controls the maximum descent of the boom regardless of how far the control valve is opened.

- I. Perform one of the following:
  - **WITH** the patient in a sling - Gently open the control valve. See Detail "A".
  - **WITHOUT** the patient in a sling - Open the control valve and pull down on the boom. See Detail "B".



## 6 OPERATION

### Raising/Lowering an Electric Lift



#### **WARNING**

Invacare does not recommend locking of the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare does recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

#### Raising the Lift

Press the UP (↑) button to raise the boom and the patient.

#### Lowering the Lift

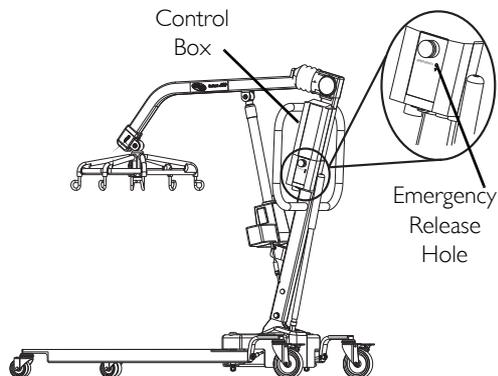
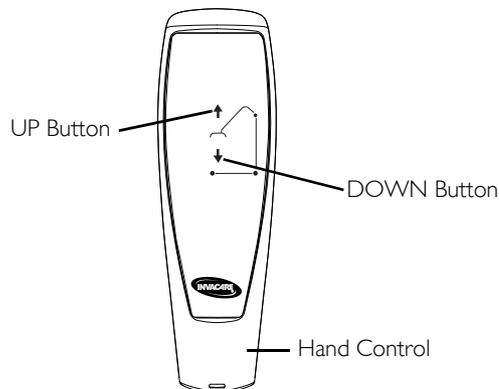
Press the DOWN (↓) button to lower the boom and the patient.

### Activating a Mechanical Emergency Release

#### Primary Emergency Release

To activate the primary emergency release, insert a pen into the hole labeled “emergency” on the control box of the lift and push down on the boom at the same time.

All lift actuators are equipped with a mechanical Emergency release. The mechanical release will enable the actuator to retract without power. The actuator will only retract while under load and the mechanical Emergency release is pulled. The release is colored reddish orange with the word Emergency spelled out in white.



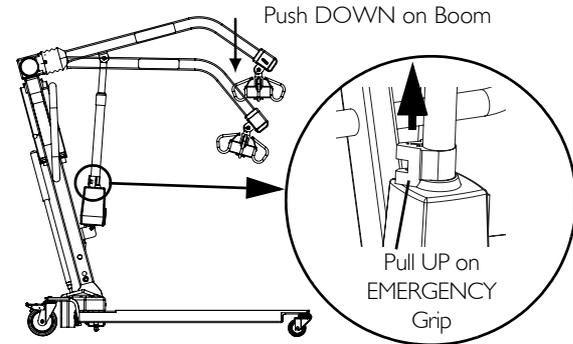
### Secondary Emergency Release



It is recommended that the primary emergency release be used. The secondary emergency release is only a back-up to the primary emergency release.

In cases where the primary release is either not functioning or unreachable, a secondary emergency release may be used.

To activate the secondary release, pull up on the EMERGENCY grip and push down on the boom at the same time.



### Performing an Emergency Stop

Press the RED button on the control box in to stop the lift arms and patient from raising or lowering.



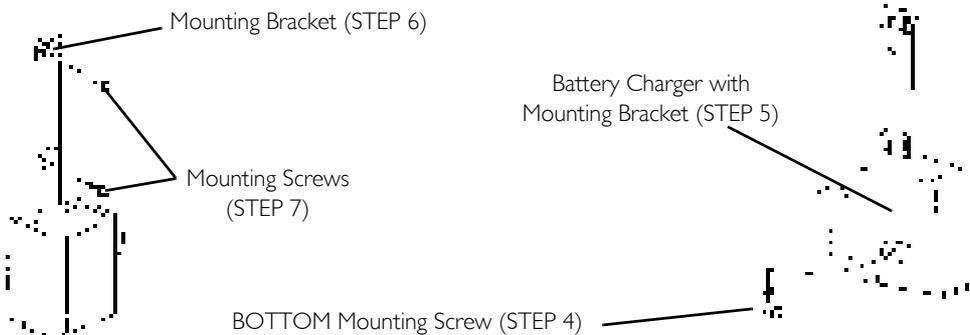
## 6 OPERATION

### 6.2 Mounting the Battery Charger

 Refer to your local regulations concerning proper mounting procedures.

1. Place the battery charger with mounting bracket on the wall at the desired position.
2. With a pencil, mark the middle hole position.
3. Measure down 6½ inches from the pencil mark and drill one mounting hole.
4. Install the bottom mounting screw until there is an approximate 1/8-inch gap between the screw head and the wall.
5. Install the battery charger with mounting bracket onto the bottom mounting screw.
6. Drill the remaining two mounting holes.
7. Install the two remaining mounting screws through the mounting bracket and into the wall. Tighten securely.
8. Plug the battery charger into the wall electrical outlet.

 ON LED should illuminate.



## Charging the Battery



Invacare recommends the battery be recharged daily to prolong battery life.  
An audible alarm will sound (horn will beep) when battery is low.

1. Lift up on the handle on the back of the battery.
2. Lift the battery up and out away from the control box.



### CAUTION

Make sure there is an audible click when mounting battery on the battery charger to confirm proper mounting. Otherwise, injury or damage may occur.

3. Place the battery on the battery charger as shown. Make sure there is an audible click.



The charge LED will illuminate. When charging is complete, charge LED will stop illuminating.  
A battery needing to be fully recharged will take approximately four hours.

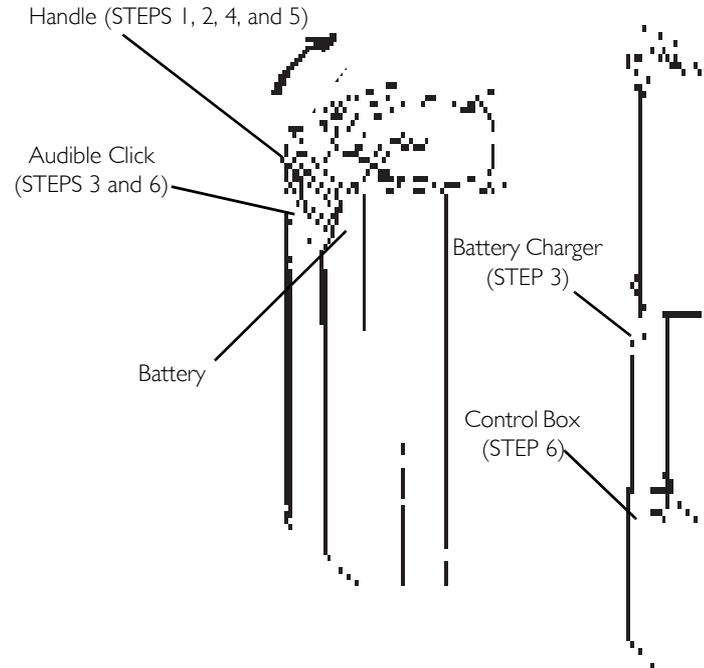
4. Lift up on the handle on the back of the battery.
5. Lift the battery up and out away from the battery charger.



### CAUTION

Make sure there is an audible click when mounting battery on the battery charger to confirm proper mounting. Otherwise, injury or damage may occur.

6. Reinstall the battery onto the control box as shown. Make sure there is an audible click.



The Battery mounts to the Control Box and Battery Charger as shown.

### 7 Lifting the Patient

#### 7.1 Preparing the Lift for Use

- ⓘ Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

#### Positioning the Lift for Use

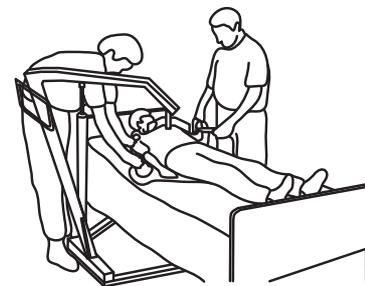
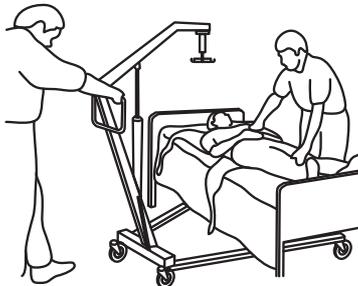
- ⓘ Refer to Safety on page 7 in this manual before proceeding further and observe all warnings indicated. Before positioning the legs of the patient lift under a bed, make sure that the area is clear of any obstructions.



#### **WARNING**

The legs of the lift must be in the maximum open position and the shifter handle locked in place for optimum stability and safety. If it is necessary to close the legs of the lift to maneuver the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position and lock the shifter handle immediately.

1. With the legs of the base open and locked, use the steering handle to push the patient lift into position.
2. Lower the patient lift for easy attachment of the sling.



## Attaching Slings to the Lift

### Attaching Slings Using Color Coded Straps

1. Place the straps of the sling over hooks of the hanger bar.
2. Match the corresponding colors on each side of the sling for an even lift of the patient.

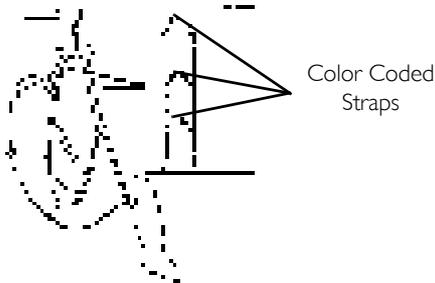


Model Nos. R110 - R117 Full Body Slings and Model Nos. R120 - R122 Toileting Slings have four sling straps. Model Nos. R100 - R102 Divided Leg Slings have six sling straps.

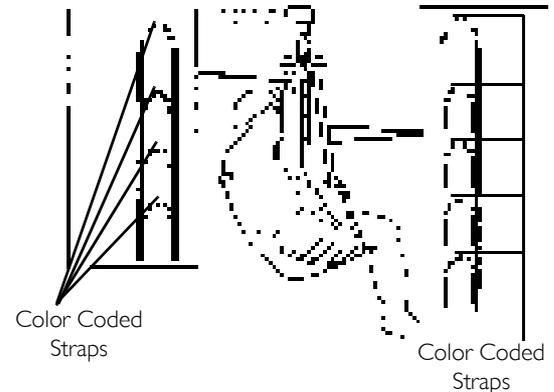
Invacare Lift Hanger Bars have three hookup points per side. The middle hookup is **ONLY** used for slings that have three sets of straps per side.

3. Use the lift. Refer to [Lifting/Moving the Patient](#) on page 30.

### DETAIL "A" - FULL BODY OR HEAVY DUTY SLING WITH OR WITHOUT COMMODE OPENING (FOUR STRAPS ONLY)



### DETAIL "B" - DIVIDED LEG SLING WITH COMMODE OPENING (SIX STRAPS)



## 7 LIFTING THE PATIENT

### 7.2 Lifting/Moving the Patient



For this procedure, refer to FIGURE 7.1 on page 31.

DO NOT engage the rear locking casters when patient is in the lift.

1. Pump the lift handle or press the UP (↑) button to raise the patient above the bed. The patient should be elevated high enough to clear the bed with their weight fully supported by the lift.



On manual/hydraulic lift, the boom will stay in position until the control valve is opened. On the electric lift, the boom will stay in position until the DOWN (↓) button is pressed.

2. When the patient is lifted from the bed (with the patient's head supported by the sling and/or an assistant), he/she will be raised to a sitting position (Detail "A").



#### **WARNING**

When the sling is elevated a few inches off the surface of the bed and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are NOT properly in place, lower the patient back onto the stationary surface and correct this problem - otherwise, injury or damage may occur.

Adjustments for safety and comfort should be made before moving the patient. Patient's arms should be inside of the straps.

Invacare slings are made specifically for use with Invacare Patient Lifts. For the safety of the patient, DO NOT use slings and patient lifts of different manufacturers.

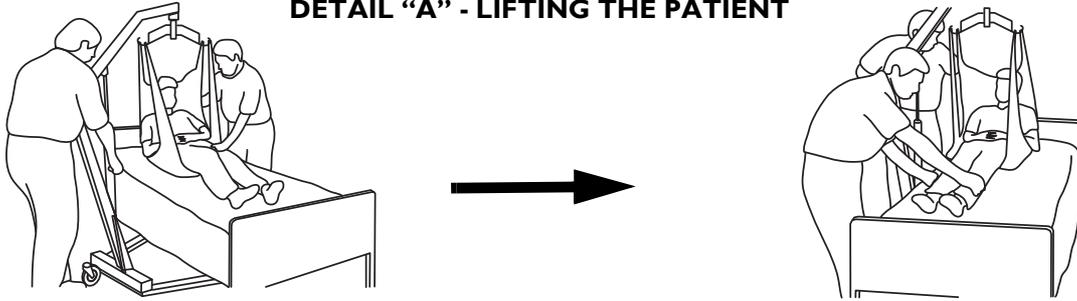
3. When the patient is clear of the bed surface, swing their feet off the bed (Detail "B").
4. Using the steering handle, move the lift away from the bed.
5. When moving the patient lift away from the bed, turn the patient so that he/she faces assistant operating the patient lift (Detail "C").
6. Press the DOWN (↓) button (electric) or open the control valve (manual/hydraulic) lowering patient so that his feet rest on the base of the lift, straddling the mast. Close the control valve.



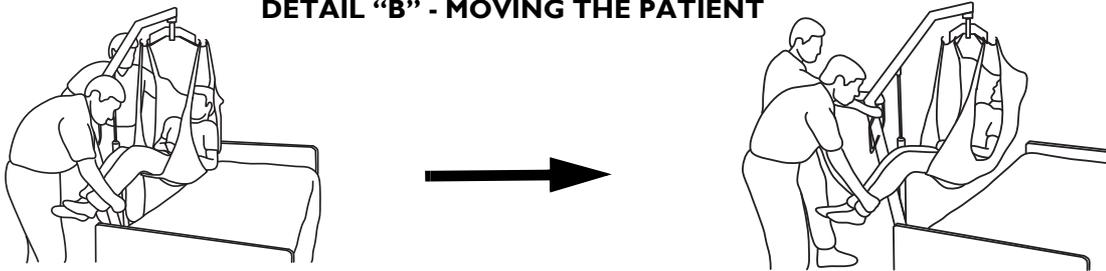
The lower center of gravity provides stability making the patient feel more secure and the lift easier to move.

7. Pull the patient lift away from the bed and then push it from behind with both hands firmly on the steering handle.

**DETAIL "A" - LIFTING THE PATIENT**



**DETAIL "B" - MOVING THE PATIENT**



**DETAIL "C" - MOVING THE PATIENT LIFT AWAY FROM THE BED**



**FIGURE 7.1** Lifting/Moving the Patient

# 8 Transferring the Patient

### 8.1 Transferring the Patient for Using a Commode Chair or Standard Commode



Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

The slings with commode openings are designed to be used with either a commode chair or standard commode.



Invacare recommends that the sling remain connected to the hanger bar hooks during the patient's use of either the commode chair or standard commode.

Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.



### **WARNING**

When the sling is a few inches off the surface of the bed and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are NOT properly in place, lower the patient back onto the stationary surface and correct this problem - otherwise, injury or damage may occur.

Adjustments for safety and comfort should be made before moving the patient. The patient's arms should be inside the straps.

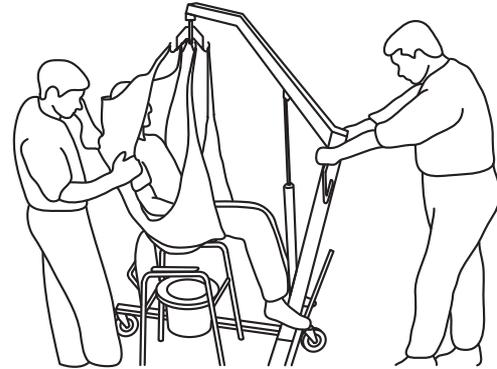
Invacare slings are made specifically for use with Invacare Patient Lifts. For the safety of the patient, DO NOT use slings and patient lifts of different manufacturers.

Invacare does NOT recommend locking the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare DOES recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

The legs of the lift must be in the maximum open position and the shifter handle locked in place for optimum stability and safety. If it is necessary to close the legs of the lift to maneuver the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position and lock the shifter handle immediately.

### Transferring to a Commode Chair

1. Before lifting the patient from the bed, refer to [Attaching Slings to the Lift](#) on page 29. For operation of the patient lift, refer to [Operation](#) on page 20.
2. The patient should be elevated high enough to clear the commode chair arms and have their weight supported by the patient lift.
3. With the help of both assistants, guide the patient onto the commode chair.
4. Lower the patient onto the commode chair leaving the sling attached to the hanger bar hooks.
5. When complete, recheck for correct attachment and then raise the patient off the commode chair.
6. When patient is clear of the commode surface (using the steering handles), move the lift away from the commode chair.
7. To return the patient to bed, reverse the procedures for lifting the patient, operation and sling attachment.
8. To return or place the patient in a wheelchair, refer to [Transferring to a Wheelchair](#) on page 36.



**FIGURE 8.1** Transferring to a Commode Chair

## 8 TRANSFERRING THE PATIENT

### Transferring to a Standard Commode



Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

The Invacare patient lift is NOT intended as a transport device. If the bathroom facilities are NOT near the bed or if the patient lift cannot be easily maneuvered towards the commode, then the patient MUST be transferred to a wheelchair and transported to the bathroom facilities before using the patient lift again to position the patient on a standard commode. Refer to [Transferring to a Wheelchair](#) on page 36.

Before transferring the patient, the patient lift should be guided to the bathroom facilities to check that it can be easily maneuvered towards the commode.

1. Before lifting the patient from the bed, refer to [Attaching Slings to the Lift](#) on page 29. For operation of the patient lift, refer to [Operation](#) on page 20.
2. Transport the patient to the bathroom facility.
3. The patient should be elevated high enough to clear the standard commode and have their weight supported by the patient lift.
4. With the help of both assistants, guide the patient onto the standard commode.
5. Lower the patient onto the standard commode leaving the sling attached to the hanger bar hooks.
6. When complete, recheck for correct attachment and then raise the patient off the standard commode.
7. When patient is clear of the standard commode surface (using the steering handle), move the lift away from the standard commode.
8. To return or place patient in a wheelchair, refer to [Transferring to a Wheelchair](#) on page 36.
9. To return the patient to bed, reverse the procedures for lifting the patient, operation and sling attachment.

## 8.2 Transferring to a Bathing Unit



Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.



### WARNING

When the sling is elevated a few inches off the surface of the bed and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are NOT properly in place, lower the patient back onto the stationary surface and correct this problem - otherwise, injury or damage may occur.

Adjustments for safety and comfort should be made before moving the patient. The patient's arms should be inside the straps.

Invacare slings are made specifically for use with Invacare Patient Lifts. For the safety of the patient, DO NOT use slings and patient lifts of different manufacturers.

Invacare does NOT recommend locking the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare DOES recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

The legs of the lift must be in the maximum open position and the shifter handle locked in place for optimum stability and safety. If it is necessary to close the legs of the lift to maneuver the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position and lock the shifter handle immediately.



There are many portable bathing apparatuses; this is an example of one. Refer to your particular portable bath instructions and use them in conjunction with this Owner's Manual.

1. Before lifting the patient from the bed, refer to Attaching Slings to the Lift on page 29. For operation of the patient lift, refer to Operation on page 20.
2. The patient should be elevated high enough to clear the bed and be able to slide the portable bath tub under the patient.
3. Lower the patient into the portable bath tub.
4. Detach the sling from the hanger bar hooks and attach the portable bath tub straps to the patient lift.
5. Using the lift, raise the sides of the portable bath tub.
6. Bathe the patient.
7. Reverse the procedures to return the patient to bed.

## 8 TRANSFERRING THE PATIENT

### 8.3 Transferring to a Wheelchair



#### **WARNING**

When the sling is elevated a few inches off the surface of the bed and before moving the patient, check again to make sure that the sling is properly connected to the hooks of the hanger bar. If any attachments are NOT properly in place, lower the patient back onto the stationary surface and correct this problem - otherwise, injury or damage may occur.

Adjustments for safety and comfort should be made before moving the patient. The patient's arms should be inside of the straps.

Invacare slings are made specifically for use with Invacare Patient Lifts. For the safety of the patient, DO NOT use slings and patient lifts of different manufacturers.

Invacare does NOT recommend locking the rear casters of the patient lift when lifting an individual. Doing so could cause the lift to tip and endanger the patient and assistants. Invacare DOES recommend that the rear casters be left unlocked during lifting procedures to allow the patient lift to stabilize itself when the patient is initially lifted from a chair, bed or any stationary object.

Before transferring, check that the wheelchair weight capacity can withstand the patient's weight.

The legs of the lift must be in the maximum open position and the shifter handle locked in place for optimum stability and safety. If it is necessary to close the legs of the lift to maneuver the lift under a bed, close the legs of the lift only as long as it takes to position the lift over the patient and lift the patient off the surface of the bed. When the legs of the lift are no longer under the bed, return the legs of the lift to the maximum open position and lock the shifter handle immediately.



For this procedure, refer to FIGURE 8.2 on page 37.

Before lifting the patient from the bed, refer to [Attaching Slings to the Lift](#) on page 29. For operation of the patient lift, refer the section [Operation](#) on page 20.

Although Invacare recommends that two assistants be used for all lifting preparation, transferring from and transferring to procedures, our equipment will permit proper operation by one assistant. The use of one assistant is based on the evaluation of the health care professional for each individual case.

1. Ensure the legs of the lift (with patient) are in the open position.
2. Move the wheelchair into position.
3. Engage the rear wheel locks of the wheelchair to prevent movement of the chair.



#### **WARNING**

The wheelchair wheel locks MUST be in a locked position before lowering the patient into the wheelchair for transport.



Use the straps or handles on the side and the back of the sling to guide the patient's hips as far back as possible into the seat for proper positioning.

4. Position the patient over the seat with their back against the back of the chair.
5. Begin to lower the patient either by opening the control valve or by pressing the DOWN (↓) button.
6. With one assistant behind the chair and the other operating the patient lift, the assistant behind the chair will pull back on the grab handle (on select models) or sides of the sling to seat the patient well into the back of the chair. This will maintain a good center of balance and prevent the chair from tipping forward.
7. Leave the sling in place.



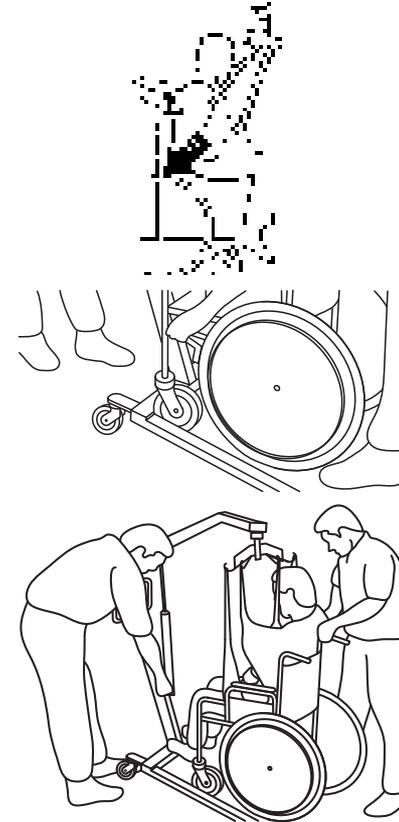
Remove only if a divided leg sling was used.

8. To return to the seating surface, reverse procedures for lifting the patient, operation and sling attachments.



### WARNING

Be sure to check the sling attachments each time the sling is removed and replaced to ensure that it is properly attached before the patient is removed from the bed or chair.



**FIGURE 8.2** Transferring to a Wheelchair

## 9 Troubleshooting

SYMPTOMS	FAULTS	SOLUTION
Patient lift feels loose.	Mast/Base joint loose. Tie - Rods are loose.	Refer to <u>Assembly</u> on page 15. Refer to <u>Maintaining the Base Adjustment</u> on page 48.
Casters/Brakes noisy or stiff.	Fluff or debris in bearings.	Refer to <u>Replacing Casters/Forks</u> on page 48.
Noisy or dry sound from pivots.	Needs lubrication.	Refer to <u>Lubricating the Lift</u> on page 43.
Oil leaking from hydraulics.	Hydraulic pump in need of replacement.	Refer to <u>Replacing a Manual/Hydraulic Pump</u> on page 44 and <u>Replacing the Electric Actuator</u> on page 45. Contact your Dealer.
Manual / Hydraulic pump fails to lift when pumped.	Control Valve not fully closed.  Manual / Hydraulic pump in need of replacement.	Close Control Valve.  Refer to <u>Replacing a Manual/Hydraulic Pump</u> on page 44 and <u>Replacing the Electric Actuator</u> on page 45. Contact your Dealer. Check connections.

SYMPTOMS	FAULTS	SOLUTION
Electric actuator fails to lift when button is pressed.	<p>Hand-control or actuator connector loose.</p> <p>Battery low.</p> <p>RED emergency stop button pressed IN.</p> <p>Battery not connected properly to control box.</p> <p>The connecting terminals are damaged.</p> <p>Electric actuator in need of service or load is too high.</p>	<p>Charge batteries. Refer to <u>Charging the Battery</u> on page 27.</p> <p>Rotate RED emergency stop button CLOCKWISE until it pops out.</p> <p>Reconnect the battery to the control box. Refer to <u>Charging the Battery</u> on page 27.</p> <p>Replace the battery pack. Refer to <u>Charging the Battery</u> on page 27.</p> <p>Refer to <u>Replacing a Manual/Hydraulic Pump</u> on page 44 and <u>Replacing the Electric Actuator</u> on page 45. Contact your Dealer.</p>
Unusual noise from actuator.	Actuator is worn or damaged or spindle is bent.	Refer to <u>Replacing a Manual/Hydraulic Pump</u> on page 44 and <u>Replacing the Electric Actuator</u> on page 45. Contact your Dealer.
Lift arms will not lower in uppermost position.	Lift arms require a minimum weight load to lower from the uppermost position.	Pull down slightly on the lift arms.
Lift arms will not lower during a power retraction.	Shoulder bolt at the junction of the boom and mast may not be properly installed.	Refer to <u>Checking and Tightening Mast Pivot Bolt</u> on page 46.



If problems are not remedied by the suggested means, please contact your dealer or Invacare.

## 10 Maintenance

### 10.1 Maintenance Safety Inspection Checklist

ITEM	INITIALLY	INSTITUTIONAL INSPECT/ADJUST MONTHLY	IN-HOME INSPECT EVERY SIX (6) MONTHS
<b>THE CASTER BASE</b> Inspect for missing hardware. Base opens/closes with ease. Inspect casters and axle bolts for tightness. Inspect casters for smooth swivel and roll. Inspect and clear wheels of debris.	X X X X X	X X X X X	X X X X X
<b>SHIFTER HANDLE</b> Operates smoothly. Locks adjustable base whenever engaged.	X X	X X	X X
<b>THE MAST</b> Mast <b>MUST</b> be securely assembled to boom. Inspect for bends or deflections.	X X	X X	X X

ITEM	INITIALLY	INSTITUTIONAL INSPECT/ADJUST MONTHLY	IN-HOME INSPECT EVERY SIX (6) MONTHS
<p>THE BOOM</p> <p>Check all hardware and hanger bar supports.</p> <p>Inspect for bends or deflections.</p> <p>Inspect bolted joints of boom for wear.</p> <p>Inspect to ensure that the boom is centered between the base legs.</p> <p>Check the mast pivot bolt under the rubber boot. Ensure that the bolt is tightly secured.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>
<p>THE HANGER bar</p> <p>Check the bolt / hooks for wear or damage.</p> <p>Check sling hooks for wear or deflection.</p>	<p>X</p> <p>X</p>	<p>X</p> <p>X</p>	<p>X</p> <p>X</p>
<p>THE MANUAL/HYDRAULIC PUMP/ELECTRIC ACTUATOR ASSEMBLY</p> <p>Check for leakage.</p> <p>Inspect hardware on mast and boom.</p> <p>Check for wear or deterioration.</p> <p>(IF DAMAGED, RETURN TO FACTORY).</p> <p>Cycle to ensure smooth quiet operation.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>
<p>THE PUMP HANDLE</p> <p>Check for smooth operation.</p>	<p>X</p>	<p>X</p>	<p>X</p>

## 10 MAINTENANCE

ITEM	INITIALLY	INSTITUTIONAL INSPECT/ADJUST MONTHLY	IN-HOME INSPECT EVERY SIX (6) MONTHS
THE CONTROL VALVE Opens and closes easily.	X	X	X
CLEANING Whenever necessary.	X	X	X
SLINGS AND HARDWARE CHECK ALL SLING ATTACHMENTS each time it is used to ensure proper connection and patient safety. Inspect sling material for wear. Inspect straps for wear.	X X X	X X X	X X X



For individual home use, a full inspection is required prior to each new user.

Regular cleaning will reveal loose or worn parts, enhance smooth operation and extend the life expectancy of the lift.

Follow the maintenance procedures described in this manual to keep your patient lift in continuous service.

The Invacare Patient Lift is designed to provide a maximum of safe, efficient and satisfactory service with minimum care and maintenance.

All parts of the Invacare Lift are made of the best grades of steel, but metal to metal contact will wear after considerable use.

There is no adjustment or maintenance of either the casters or brakes, other than cleaning, lubrication and checking axle and swivel bolts for tightness. Remove all debris, etc. from the wheel and swivel bearings. If any parts are worn, replace these parts immediately.

If you question the safety of any part of the lift, contact your Dealer immediately and advise him/her of your problem.

### 10.2 Lubricating the Lift

The Invacare lift is designed for minimum maintenance. However, a six month check and lubrication should ensure continued safety and reliability. Keep lift and slings clean and in good working order. Any defect should be noted and reported to your dealer as soon as possible.

The casters MUST swivel and roll smoothly. A light grease (waterproof auto lubricant) may be applied to the ball bearing swivel of the casters once a year. Apply more frequently if the casters are exposed to extreme moist conditions.

Refer to FIGURE 10.1 for lubrication points. Lubricate all pivot points. Wipe all excess lubricant from lift surface.

- 1. Hanger Bar
- 2. Boom Mounting Bracket
- 3. Boom/Mast Mount
- 4. Mast Mounting Bracket

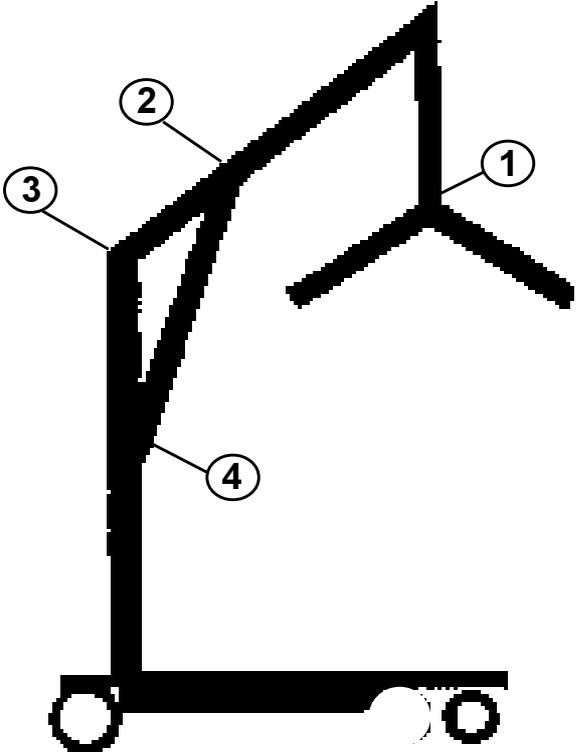


FIGURE 10.1 Lubricating the Lift

## 10 MAINTENANCE

### 10.3 Detecting Wear and Damage

It is important to inspect all stressed parts, such as slings, hanger bar and any pivot for slings for signs of cracking, fraying, deformation or deterioration. Replace any defective parts immediately and ensure that the lift is not used until repairs are made.

### 10.4 Cleaning the Sling and the Lift

The sling should be regularly washed in water, temperature not to exceed 180°F (82°C), and a biocidal (anti-biological) solution. A soft cloth, dampened with water and a small amount of mild detergent, is all that is needed to clean the patient lift. The lift can be cleaned with non-abrasive cleaners.

### 10.5 Maintaining the Manual/Hydraulic Pump



For this procedure, refer to FIGURE 10.2 on page 45.

All parts of the Manual/Hydraulic Pump are precision machined, then carefully assembled and tested to ensure reliable service. The pump assembly is completely enclosed and sealed with neoprene rings to prevent leakage of hydraulic oil. A small amount of oil (about a drop) will accumulate around the piston from time to time and should be removed with a facial tissue.



#### **WARNING**

The pump is sealed at the factory. **DO NOT** attempt to open the pump or obtain local service as this will void the warranty and might result in damage and costly repair. Consult your dealer or write Invacare for further information.

### Replacing a Manual/Hydraulic Pump

1. Loosen the nut that secures the ball of the pump into the mounting socket.
2. Rest the boom on your shoulder and remove the nut, bolt, plastic bushing and pinch guard from the boom mounting bracket.
3. Remove the pump assembly.
4. Reverse steps for installation.



#### **CAUTION**

**DO NOT** overtighten the nut and bolt. This damages the mounting bracket.

### Replacing the Electric Actuator

- 1. Remove the nut, washer and shoulder bolt that secure the electric actuator to the mast mounting bracket.
- 2. Rest the boom on your shoulder and remove the nut, bolt, plastic bushing and pinch guard from the boom mounting bracket.
- 3. Remove the electric actuator assembly.
- 4. Reverse steps for installation.



### CAUTION

DO NOT overtighten the nut and bolt. This damages the mounting bracket.

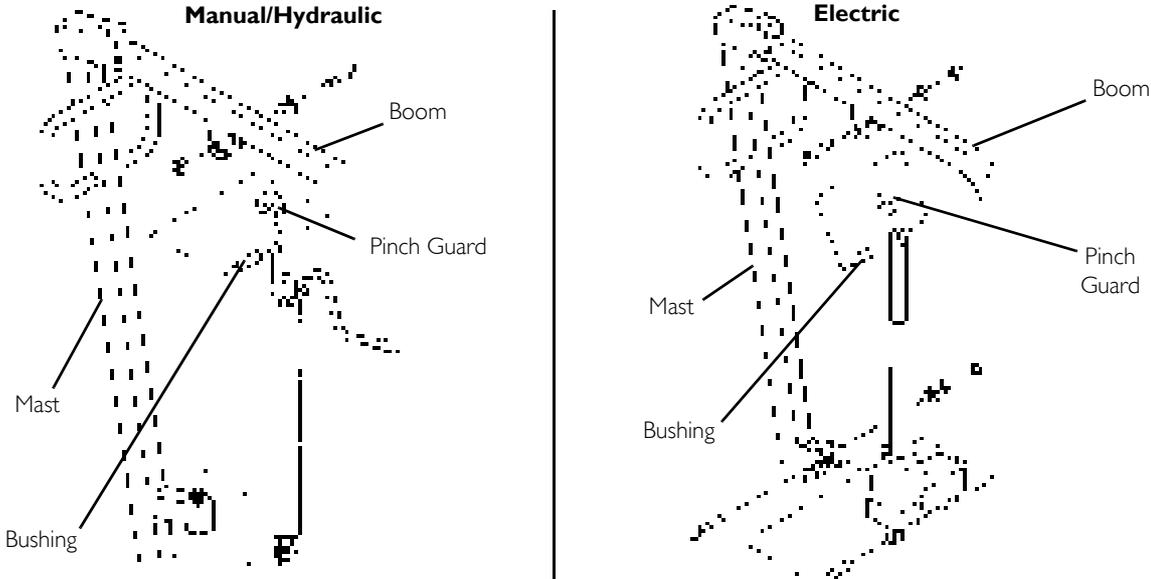
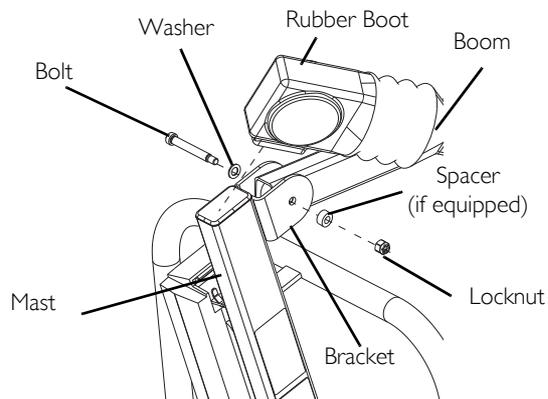


FIGURE 10.2 Maintaining the Manual/Hydraulic Pump - Replacing a Manual/Hydraulic Pump - Replacing the Electric Actuator

## 10 MAINTENANCE

### Checking and Tightening Mast Pivot Bolt

1. Lift up the back of the rubber boot and slide it off the mast along the boom.
2. Check that the bolt is through the bracket and the locknut is tight and secure.
3. If needed, do one or more of the following:
  - tighten locknut and back-off the locknut 1/8 of a turn.
  - replace the locknut.
4. Reposition the rubber boot.



## 10.6 Replacing the Hanger Bar



### WARNING

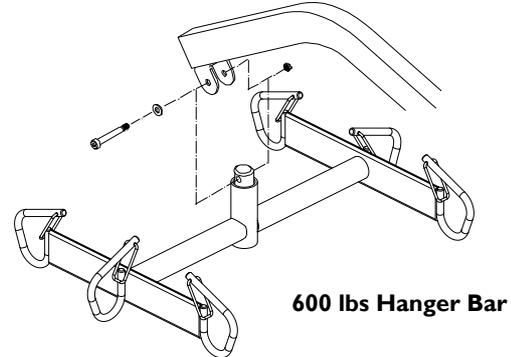
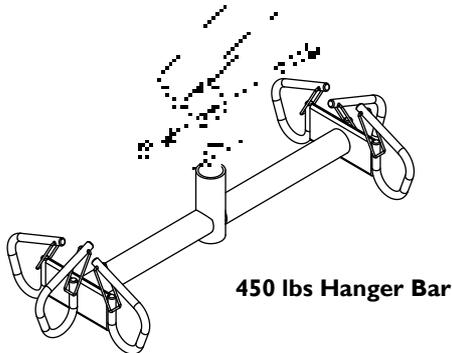
After the first year of use, the hooks of the hanger bar and mounting brackets of the boom should be inspected every six months to determine the extent of wear. If these parts become worn, replacement must be made.

1. The hanger bar comes attached to the boom with bolt, nut, washers, and pinch guard.
  -  Washers should be placed against both sides of the boom mounting bracket to eliminate damage. The hanger bar has three hooks on both ends to attach the sling that supports the patient during lift.
2. Remove existing hardware and replace the hanger bar.



### CAUTION

DO NOT overtighten the nut and bolt. This damages the mounting bracket.

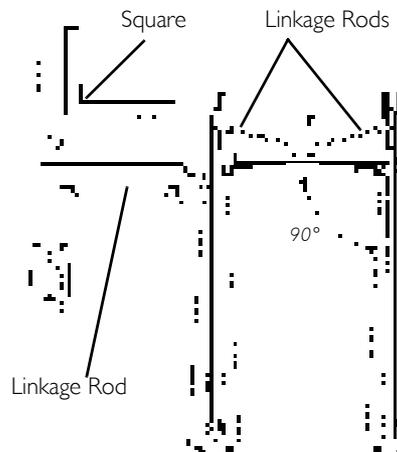


## 10 MAINTENANCE

### 10.7 Maintaining the Base Adjustment

The base adjustment should not require any attention other than:

1. Check the squareness of the legs when in the closed position.
2. Place a square on the inside of the legs and base to determine the 90° alignment.
3. Adjust the linkage rods until 90° alignment is achieved.



### 10.8 Replacing Casters/Forks

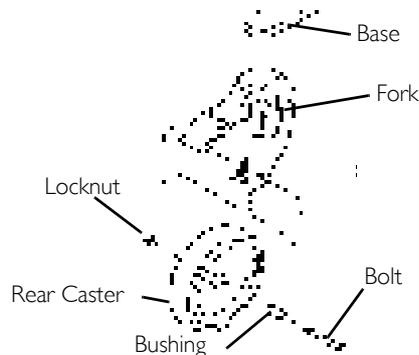
#### Replacing Rear Casters

1. Place the lift on its side.
2. Remove the bolt and locknut that secure the existing rear caster to the fork.



The bushing will be loose and may fall out of the caster. Existing bushing will be reused. Examine and replace if worn.

3. Install the new/existing bushing into the new rear caster.
4. Line up the mounting holes in the new rear caster and the fork.
5. Install the bolt through the fork and new rear caster and tighten securely with the locknut.



### Replacing Front Casters

1. Place the lift on its side.
2. Remove the bolt and locknut that secure the existing front caster assembly to the fork.

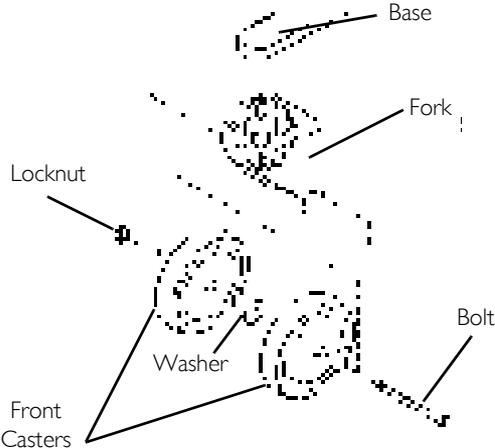


The front caster assembly consists of two casters and a washer in between.

The washer will fall out from between the two casters.

Washer will be reused. Examine and replace if worn.

3. Position the new/existing washer between the two new casters.
4. Line up the mounting holes in the new front caster assembly and the fork.
5. Install the bolt through the fork and the new front caster assembly and tighten securely with the locknut.



### Replacing Forks

1. Place the lift on its side.
2. Remove the front or rear caster from the lift. Refer to Replacing Casters/Forks on page 48.
3. Unscrew the existing fork from the base.
4. Install the new fork onto the base.
5. Install the front or rear caster onto the lift. Refer to Replacing Casters/Forks on page 48.

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# 11 Accessories

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### 11.1 Reliant Scale RLS6

The Reliant Scale is a compact precision scale system designed specifically for the Invacare Patient Lift System.



#### **WARNING**

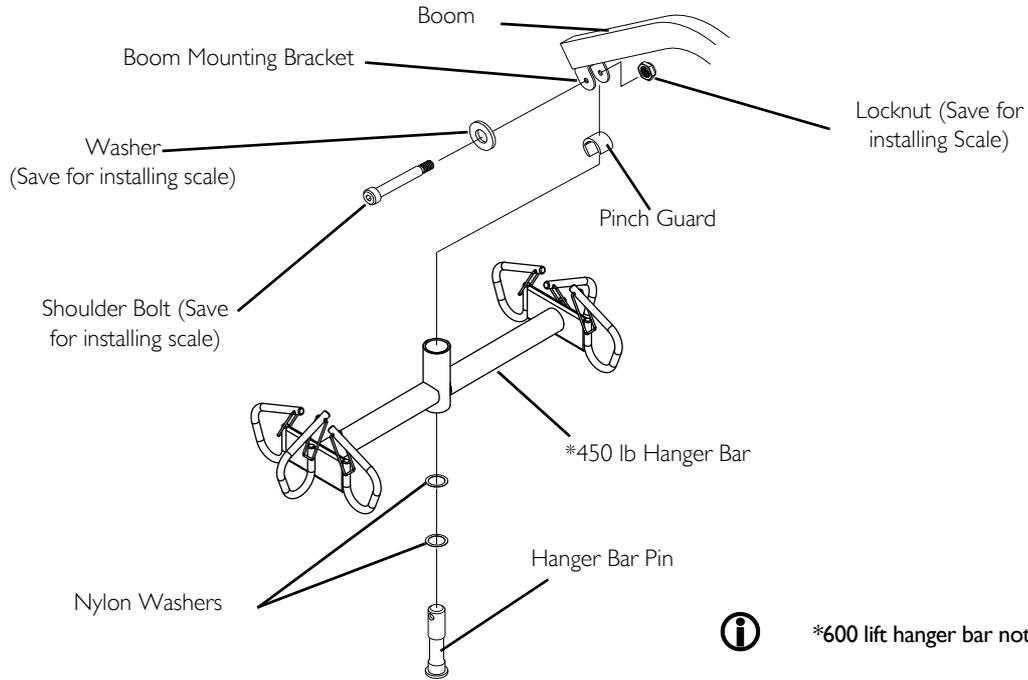
DO NOT install or use this equipment without first reading and understanding these instructions. If you are unable to understand the Warnings, Cautions or Instructions, contact a healthcare professional, dealer or technical personnel before attempting to install this equipment - otherwise, injury or damage may occur.

#### **Removing the Hanger Bar**



For this procedure, refer to FIGURE 11.1.

1. Remove the shoulder bolt, locknut, pinch guard and washer which secure the hanger bar to the boom mounting bracket.
-  Save the shoulder bolt and locknut to secure the Reliant Scale to the boom. The pinch guard will not be used when the scale is installed. Save the pinch guard for future use of the hanger bar without scale.  
Removing the hanger bar hardware will release the hanger bar, two nylon washers and the hanger bar pin. Save the hanger bar pin and the two nylon washers for future use of the hanger bar without the scale.



**FIGURE 11.1** Removing the Swivel Bar

## 11 ACCESSORIES

### Installing the Reliant Scale



For this procedure, refer to FIGURE 11.2.



#### **WARNING**

Patient and sling **MUST** be removed from the lift during ALL installation procedures.

1. Position the load cell assembly of the Reliant Scale into the boom mounting bracket. Refer to Detail “A” in FIGURE 11.2.



Use 1/4-inch nylon washer.

2. Secure the Reliant Scale to the boom mounting bracket with a shoulder bolt, two nylon washers and a locknut. Securely tighten. Refer to Detail “A” in FIGURE 11.2 for washer orientation.



Ensure the shaft of the shoulder bolt passes through both sides of the boom mounting bracket.

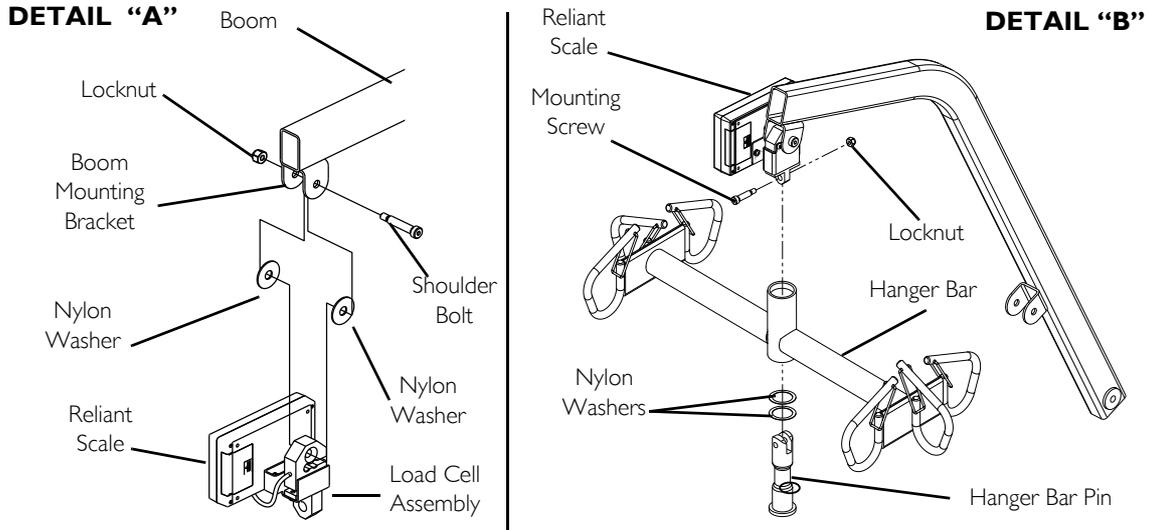
3. Insert hanger bar pin with two nylon washers through the hanger bar. Refer to Detail “B” in FIGURE 11.2.
4. Align the mounting holes in the hanger bar pin with the mounting holes in the load cell assembly. Refer to Detail “B” in FIGURE 11.2.
5. Secure hanger bar pin to the load cell assembly with the provided mounting screw and locknut. Securely tighten. Refer to Detail “B” in FIGURE 11.2.



#### **WARNING**

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

6. Weigh the patient. Refer to Operating the Scale on page 54 and Weighing the Patient on page 55.



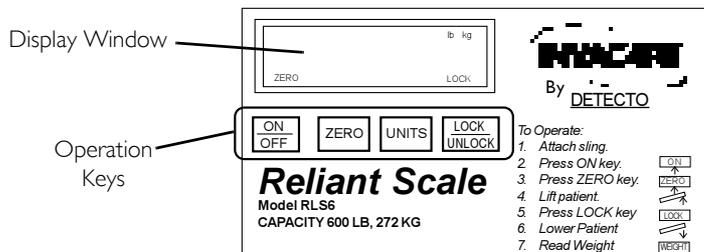
**FIGURE 11.2** Installing the Reliant Scale

## 11 ACCESSORIES

### 11.2 Operating the Scale

#### Keypad Functions

KEY	INDICATOR DISPLAYED	INDICATOR LOCATION	DEFINITION
ON OFF	OFF	Center of Display Window	Pressing this key will apply power to the scale and turn the unit on. When the scale is already on, pressing the button will turn the unit off.
ZERO	ZERO	Lower Left Corner of the Display Window	Pressing this key when the scale is on will reset the weight shown in the display window to zero.
UNITS	lb or kg	Upper Right Corner of the Display Window	The function of this key is to change the unit of measurement from pounds (lb) to kilograms (kg).
LOCK UNLOCK	LOCK	Lower Right Corner of the Display Window	This key is used to lock or unlock a weight value in the display window. NOTE: Weight displayed is a STORED weight and not the current weight when the key is used in the lock position.
N/A	LO BAT	Center of Display Window	Indicator is shown in the display window to notify when battery is low.



### 11.3 Weighing the Patient



#### **WARNING**

The weight capacity is limited to the lowest rated capacity of any one of the components in use (e.g. Patient Lift, Sling or Scale). The patient's weight **MUST** not exceed the lowest rated capacity of any component.

**DO NOT** operate key strokes with pointed objects (e.g. pencils, pens, fingernails, etc.) Otherwise damage to the key pad will result.

1. Attach sling straps to the hanger bar. For proper attachment instructions refer to [Attaching Slings to the Lift](#) on page 29.
  -  For improved accuracy on the 450 and 600 Reliant lifts, attach all sling straps to the center hooks on both sides of the hanger bar. However, patient comfort may require a different configuration of sling straps.
2. Press the ON/OFF key.
  -  The display will indicate the last weight that was measured. The word “LOCK” will be seen in the display box. The ZERO key is pressed in order to avoid capturing the weight of the sling and the hardware. If the ZERO key is not pressed the weight of the sling and the weight of the hardware will be included in the weight displayed. **NOT ZERO-ING OUT WILL GIVE A FALSE READING OF THE USER'S TRUE WEIGHT.**
3. Press the ZERO key. When the ZERO key is pushed the following will happen:
  - A. The scale will reset to zero and the word “ZERO” will appear in the display.
  - B. The lock function will then be turned off and the word “LOCK” will disappear from the display.
  -  The scale is now active and continually updating the weight display.
4. Place the patient in the sling. For patient placement instructions refer to [Operation](#) on page 20.
5. Activate the lift mechanism to raise the patient until they are completely supported by the lift. For patient lifting instructions, refer to [Lifting the Patient](#) on page 28.
6. Note the weight display.
7. When the weight display becomes stable press the LOCK button to lock the weight display. This will be indicated by the word “LOCK” appearing in the display window.

## 11 ACCESSORIES

**i** Should it be necessary to unlock the weight while the patient is still supported by the lift, the UNLOCK button may be pressed. The weight will unlock and the word “LOCK” will disappear from the display window. The weight value will then be updated. Once the weight becomes stable the weight can be locked again by pressing the LOCK button.

Stable being defined as the weight fluctuating two tenths of a pound. For example, a patient weighing one hundred pounds, the scale will fluctuate between 99.8 and 100.2 until the LOCK key is pressed. Fluctuation of the weight displayed is normal as noted above. Press the LOCK button to lock the weight.

The UNITS button can be pressed to toggle between units of pounds and kilograms. This is indicated by lb or kg appearing in the display window.

8. The lift may now be lowered and the sling removed from the patient.

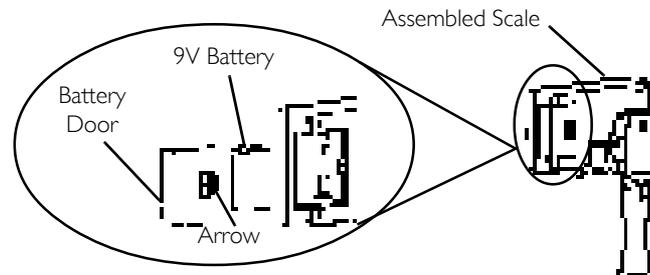
**i** The patient's weight will continue to be seen in the display window. The display will turn off automatically after a two minute period of non-use [no changes in weight exceeding five pounds (two kilograms)]. You can NOT adjust the time delay for automatic shut off. After the display has turned off, the weight may be recalled by pressing the ON/OFF button. The unit can be turned off by pressing the ON/OFF button a second time.

### 11.4 Replacing the Battery

**i** The scale is powered by a nine volt alkaline battery that should provide approximately 1500 readings before needing replacement.

When battery replacement is needed, LO BAT will appear on the display. Perform the following:

1. Slide the battery door open in the direction of the arrow.
2. Remove existing battery.
3. Install the new battery.
4. Reinstall the battery door.



## Calibrating the Reliant Scale



The Reliant Scale will be pre-calibrated at the factory with the load cell. Should it be necessary to re-calibrate the scale, follow the instructions outlined below.

1. The patient and the sling must be removed from the scale to properly calibrate the Reliant Scale. For removing the patient instructions refer to [Operation](#) on page 20. For sling detachment instructions refer to [Lifting the Patient](#) on page 28.
2. With the Reliant Scale on, remove the four screws on the back of the enclosure and remove the front cover to expose the PC board.
3. Press the CAL button located on the PC board. The CAL switch is not labeled but is the only button on the PC board located in the lower right corner. Once the CAL button is pushed "CAL1" will be seen in the display window.



CAL1 selects the calibration mode using 50 pounds of calibrated weight. CAL2 selects the calibration mode for use with 200 pounds of calibrated weight. Pressing the UNITS key toggles between CAL1 and CAL2.

4. When the desired calibration mode is displayed, press the LOCK/UNLOCK key.



The display window will now show UnLd.

5. Ensure that there is no load on the scale and press the ZERO key.
6. The display window will show a dashed line (-----) scrolling across and then the word LOAD will appear in the display window.
7. Perform one of the following:
  - A. FOR CAL1 OPTION - support 50 pounds of calibrated weight from the scale and press the ZERO key.
  - B. FOR CAL2 OPTION - support 200 pounds of calibrated weight from the scale and press the ZERO key.
8. The display window will show a dashed line (-----) scrolling across and then the word DONE will appear in the display window.
9. Remove the weight from the scale and press the LOCK/UNLOCK key.



The unit will now be in a temporary test mode and will not lock the weight display. This will allow weight to be loaded and unloaded to check the calibration.

10. Turn the unit off by pressing the ON/OFF key.
11. Turn the unit on by pressing the ON/OFF key.



Scale will now be in normal operation.

## II ACCESSORIES

### II.5 Troubleshooting

SYMPTON	PROBABLE CAUSE	SOLUTIONS
Unit does NOT work properly.	Battery failure.	Check battery. Replace if necessary.
Battery has been replaced and unit still does NOT work properly.		

#### Display Codes

CAL	CALIBRATION REQUIRED - Indicates improper stored calibration data, calibration is necessary.
OCAP	OVER CAPACITY - Indicates a weight exceeding the capacity has been loaded on the scale.