

***Formula™***  
***Powered Seating***  
***Tilt***  
***Recline***  
***Elevate***  
***Tilt/Recline***  
***Tilt/Elevate***  
***Tilt/Recline/Elevate***

**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.

For more information regarding  
Invacare products, parts, and services,  
please visit [www.invacare.com](http://www.invacare.com)



***Yes, you can.®***

**⚠ WARNING**

**A QUALIFIED TECHNICIAN MUST PERFORM THE INITIAL SET UP OF THIS WHEELCHAIR. ALSO, A QUALIFIED TECHNICIAN MUST PERFORM ALL PROCEDURES IN THE SERVICE MANUAL.**

**WHEELCHAIR USERS: DO NOT SERVICE OR OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING (1) THE OWNER’S OPERATOR AND MAINTENANCE MANUAL AND (2) THE SEATING SYSTEM’S MANUAL (IF APPLICABLE). IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS, AND INSTRUCTIONS, CONTACT INVACARE TECHNICAL SUPPORT BEFORE ATTEMPTING TO SERVICE OR OPERATE THIS EQUIPMENT - OTHERWISE INJURY OR DAMAGE MAY RESULT.**

**DEALERS AND QUALIFIED TECHNICIANS: DO NOT SERVICE OR OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING (1) THE OWNER’S OPERATOR AND MAINTENANCE MANUAL, (2) THE SERVICE MANUAL (IF APPLICABLE) AND (3) THE SEATING SYSTEM’S MANUAL (IF APPLICABLE). IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS AND INSTRUCTIONS, CONTACT INVACARE TECHNICAL SUPPORT BEFORE ATTEMPTING TO SERVICE OR OPERATE THIS EQUIPMENT - OTHERWISE, INJURY OR DAMAGE MAY RESULT.**

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**REFERENCE DOCUMENTS**

DOCUMENT	PART NUMBER
MK6i™ Electronics Field Service Guide	1141471
MK6i Electronics Service Manual	1143203
Formula TRE Service Manual	1123820

**⚠ WARNING**

**Refer to wheelchair base owner’s manual for additional safety and operation information.**

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*NOTE: Updated versions of this manual are available on [www.invacare.com](http://www.invacare.com).*

# TABLE OF CONTENTS

<b>REFERENCE DOCUMENTS .....</b>	<b>2</b>
<b>REGISTER YOUR PRODUCT .....</b>	<b>4</b>
<b>SPECIAL NOTES .....</b>	<b>5</b>
<b>LABEL LOCATIONS .....</b>	<b>7</b>
All Wheelchairs.....	7
Wheelchairs with Elevate .....	8
Wheelchairs with Ventilator Trays .....	8
<b>TYPICAL PRODUCT PARAMETERS .....</b>	<b>9</b>
Formula Powered Seating Systems.....	9
<b>SECTION 1—GENERAL GUIDELINES .....</b>	<b>11</b>
Repair or Service Information .....	11
Operation Information.....	11
Weight Training .....	14
Weight Limitation.....	14
<b>SECTION 2—EMI INFORMATION .....</b>	<b>15</b>
<b>SECTION 3—SAFETY/HANDLING OF WHEELCHAIRS .....</b>	<b>17</b>
Pinch Points.....	17
<b>SECTION 4—SAFETY INSPECTION/TROUBLESHOOTING .....</b>	<b>18</b>
Safety Inspection Checklists.....	18
Troubleshooting.....	20
<b>SECTION 5—WHEELCHAIR OPERATION .....</b>	<b>23</b>
A Note About Drive Lock-Out .....	23
Operating Powered Seating Systems .....	24
MPJ+ Joystick Switches and Indicators .....	28
Preparing the Joystick for Use.....	33
Repositioning the Joystick.....	34
<b>SECTION 6—FRONT RIGGINGS .....</b>	<b>35</b>
Installing/Removing Footrests.....	35
Footrest Height Adjustment.....	36
Raising/Lowering Elevating Front Riggings .....	38
Adjusting/Replacing Telescoping Front Rigging Support .....	38
Installing Adjustable Angle Flip-up Footplate Hinge .....	40
Installing Adjustable Angle Flip-up Footplates.....	40
Adjusting Adjustable Angle Flip-Up Footplates .....	41
Composite/Articulating Footplate Heel Loop Replacement .....	42
Installing/Removing Elevating Legrests.....	43
Raising/Lowering Elevating Legrests and/or Adjusting Calfpads .....	44
Removing/Installing the Center Mount Footrest .....	45
Adjusting the Height of the Center Mount Footrest.....	47
Adjusting the Angle of the Manual Center Mount Footrest .....	48

# TABLE OF CONTENTS

Adjusting the Footplate Angle .....	48
Adjusting the Tension of the Flip Up Footplate .....	49
Calf Pad Adjustment for Power Center Mount Footrests .....	50
Installing/Removing the Power Elevating Legrests .....	51
<b>SECTION 7—ARMS .....</b>	<b>53</b>
Installing/Removing Flip Back Armrests .....	53
Adjusting Flip Back Armrests.....	54
Removing/Installing Reclining Armrests .....	55
Adjusting Reclining Armrest Height.....	56
<b>SECTION 8—SEAT .....</b>	<b>58</b>
Adjusting the Back Angle .....	58
Replacing Seat Positioning Strap .....	59
<b>SECTION 9—HEADREST .....</b>	<b>60</b>
Removing/Installing/Adjusting Headrest.....	60
Replacing Headrest .....	61
<b>SECTION 10—ELEVATE BATTERIES .....</b>	<b>62</b>
Warnings for Handling and Replacing Batteries .....	62
Using the Proper Batteries.....	63
Replacing Batteries.....	63
Cleaning Battery Terminals .....	66
Removing/Installing the Batteries From/Into the Wheelchair.....	66
When to Charge Batteries.....	70
Charging Batteries.....	70
<b>SECTION 11—VENTILATOR TRAY .....</b>	<b>73</b>
Preparing the Ventilator Tray for Use.....	73
<b>GLOBAL LIMITED WARRANTY (EXCLUDING CANADA) .....</b>	<b>75</b>
<b>CANADA LIMITED WARRANTY .....</b>	<b>76</b>

## REGISTER YOUR PRODUCT

The benefits of registering include:

1. Safeguarding your investment.
2. Ensuring long-term maintenance and servicing of your product.
3. Receiving updates with product information, maintenance tips and industry news.

**Register ONLINE at [warranty.invacare.com](http://warranty.invacare.com)**

Please have your model number and purchase date available to complete your registration.

Any registration information you submit will only be used by Invacare Corporation and protected as required by applicable laws and regulations.

# SPECIAL NOTES

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

SIGNAL WORD	MEANING
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.

## NOTICE

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

### WHEELCHAIR USER

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection. Invacare highly recommends working with a certified rehab technology supplier and/or a member of NRRTS or RESNA.

### WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT RESTRAINTS (TRBKTS)

TRBKTS includes four factory-installed wheelchair transport brackets. TRBKTS has not been crash-tested in accordance with WC 19. Use these transport brackets only to secure an unoccupied wheelchair during transport.

As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type. It is Invacare's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry. Invacare cannot and does not recommend any wheelchair transportation systems.

### TRBKTS WARNINGS

Only use the transport brackets included with TRBKTS for the purposes described in this manual.

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## **⚠ 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.

The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

To determine and establish your particular safety limits, practice use of this product on various sloping surfaces in the presence of a qualified healthcare provider before attempting active use of this wheelchair. Other general warnings listed within this document also apply.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced **IMMEDIATELY**.

Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

Refer to wheelchair base owner's manual for additional safety and operation information.

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## **⚠ POWERED SEATING SYSTEM WARNINGS**

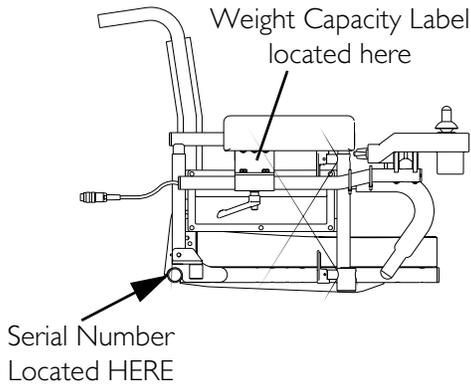
This seating system has been custom designed and will be assembled to the wheelchair base before delivery to the user. The information contained in this manual is for maintaining and adjusting the seating system. There are very few adjustments that can safely be made by the user. If there is a procedure or adjustment that needs to be performed on the seating system that is not in this manual, **DO NOT** perform that procedure. Have the seating system serviced by a qualified technician.

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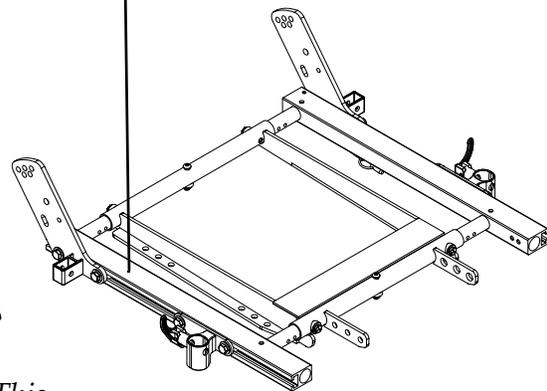
# LABEL LOCATIONS

NOTE: Refer to Owner's Manual shipped with wheelchair base for additional labels located on wheelchair base.

## All Wheelchairs



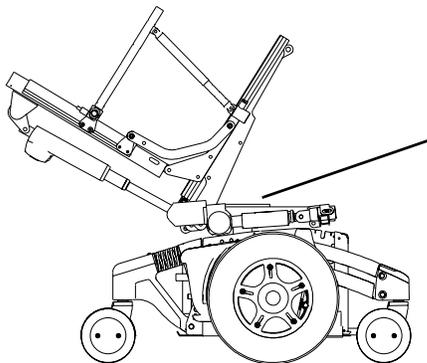
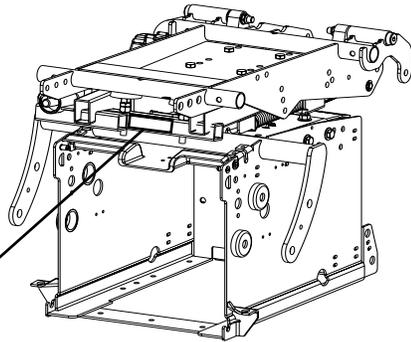
**⚠ WARNING** Refer to Service Manual to reposition the seat - otherwise serious personal injury and damage will result. P/N 1114823 Rev B - 5/10/06



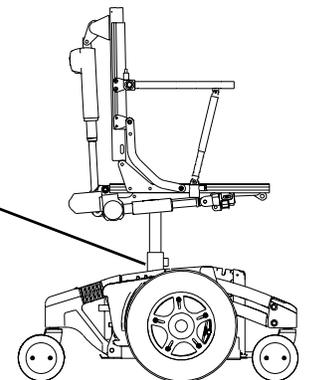
**⚠ WARNING**  
This seat/chest positioning strap is NOT intended for occupant restraint in a moving motor vehicle, and DOES NOT conform with ANSI/RESNA WC/19. If signs of wear appear, positioning strap MUST be replaced IMMEDIATELY.

NOTE: Auto style seat positioning strap shown. This label is also on the airline style seat positioning strap.

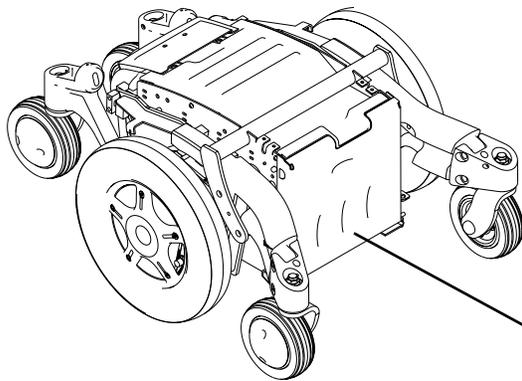
**⚠ WARNING**  
DO NOT remove the hardware attaching the actuator or spring assist to the wheelchair frame, unless the seat has been tilted to an angle greater than 20°. Otherwise, injury or damage may occur. Refer to the seating system service manual for complete instructions. 1122598 Rev B - 02/05



**⚠ WARNING**  
  
Pinch Point.  
1079203



# Wheelchairs with Elevate



**⚠ WARNING**

**Wiring Diagram and Battery Remove/Install for 22NF Batteries on Elevate Systems  
DO NOT REMOVE THIS LABEL**

The POSITIVE (+) RED Battery Cable MUST connect to the POSITIVE (+) Battery Terminal(s)/ Post(s). The NEGATIVE (-) BLACK Battery Cable MUST connect to the NEGATIVE (-) Battery Terminal(s)/Post(s). DO NOT allow Battery Cable(s) to contact the opposite Battery Terminal(s)/Post(s). Install protective caps on positive and negative battery terminals. Replace cable(s) immediately if cable(s) insulation becomes damaged. DO NOT remove fuse or mounting hardware from POSITIVE (+) RED battery cable mounting screw. Failure to observe these warnings may result in an electrical short with serious personal injury and/or damage to the electrical system. See Owner's Manual.

Disconnect/Connect from/to Controller Wiring

BLACK Battery Cable Negative (-) Battery Terminal

Front RED Battery Cable Positive (+) Battery Terminal

Rear Battery

Positive (+) Battery Terminal

Negative (-) Battery Terminal

BLACK Battery Cable

Battery Tray

Positive (+) Battery Terminal

Insulator Nut DO NOT REMOVE

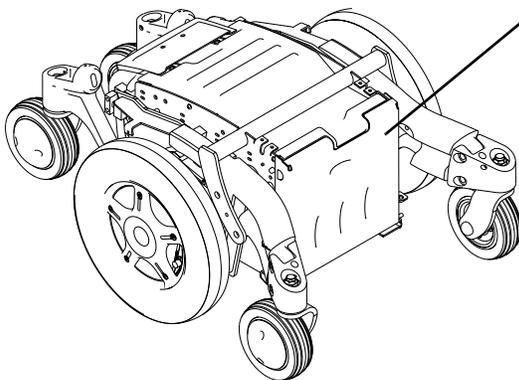
Locknut DO NOT REMOVE

Washer 125 AMP FS-HVBF Fuse

RED Battery Cable

P/N 1125045 Rev A - 5/03

# Wheelchairs with Ventilator Trays



**⚠ WARNING**

The POSITIVE (+) RED Battery Cable MUST connect to the POSITIVE (+) Battery Terminal(s)/ Post(s). The NEGATIVE (-) BLACK Battery Cable MUST connect to the NEGATIVE (-) Battery Terminal(s)/Post(s). DO NOT allow Battery Cable(s) to contact the opposite Battery Terminal(s)/Post(s). Install protective caps on positive and negative battery terminals. Replace cable(s) immediately if cable(s) insulation becomes damaged. Failure to observe these warnings may result in an electrical short with serious personal injury and/or damage to the electrical system. See Owner's Manual.

DO NOT remove fuse or mounting hardware from POSITIVE (+) RED battery cable mounting screw.

**DO NOT REMOVE THIS LABEL**

Disconnect/Connect from/to Controller Wiring Harness

Positive (+) Battery Terminal

Negative (-) Battery Terminal

BLACK Battery Cable

Negative (-) Battery Terminal

BLACK Battery Cable

Negative (-) Battery Terminal

BLACK Battery Cable

Front 22NF

Rear 22NF Battery

Positive (+) Battery Terminal

Washer 125 AMP FS-HVBF Fuse

RED Battery Cable

Insulator Nut

Positive (+) Battery Terminal

Locknut

Mounting Bracket

Mounting Screw

DO NOT REMOVE

Ventilator 22NF

P/N 1114849 Rev A - 4/03

30 AMP TYP MIDI FUSE

# TYPICAL PRODUCT PARAMETERS

## Formula Powered Seating Systems

	CONTOURA BACKS	CONVENTIONAL BACKS
<b>SEAT WIDTH RANGE:</b>	16 - 24 inches in 2-inch increments	16 - 24 inches in 1-inch increments
<b>SEAT DEPTH RANGE</b> SMALL FRAME: LARGE FRAME: EXTRA LARGE FRAME:	Adjustable in 1-inch increments 16 - 18 inches 19 - 21 inches 22 inches	Adjustable in 1-inch increments 16 - 19 inches 20 - 22 inches N/A
<b>BACK HEIGHT RANGE</b>  ALL SYSTEMS EXCEPT ELEVATE ONLY: ELEVATE ONLY:	Not Adjustable  25 inches and 29.5 inches N/A	Not Adjustable  20 - 26 inches 16 - 24 inches
<b>BACK ANGLE RANGE</b> TILT ONLY, TILT/ELEVATE AND ELEVATE ONLY:	85° - 105° in 5° increments	
<b>TILT RANGE</b> TILT, TILT/RECLINE OR TILT/RECLINE/ELEVATE 0° Seat Angle: 5° Seat Angle:	0° - 55° ± 3° 5° - 60° ± 3°	
<b>RECLINE RANGE (MEASURED RELATIVE TO THE GROUND)</b> RECLINE ONLY, TILT/RECLINE AND TILT/RECLINE/ELEVATE 0° Seat Angle: 5° Seat Angle:	90° - 170° ± 3° 95° - 170° ± 3°	
<b>SEAT-TO-FLOOR</b> 0° SEAT ANGLE: 5° SEAT ANGLE:	18 inches ± .25 inches 19.8 inches ± .25 inches	
<b>ELEVATE RANGE:</b>	7.0 inches	
<b>*OVERALL WIDTH WITH MODEL RA19 ARMS</b> WITH 4-WAY SWITCH: OVER ARMPADS:	30.70 inches 28.75 inches	
<b>*OVERALL HEIGHT (CONVENTIONAL BACK WITHOUT HEADREST):</b>	41.5 inches	
<i>NOTE: All dimensions are ± .50 inches unless otherwise indicated.</i>		
<i>*NOTE: 20-inch deep x 20-inch wide with 24-inch high back.</i>		
<i>**NOTE: Weight limitation is total weight (user weight plus any additional items that the user may require [back pack, etc.]). Example: If weight limitation of the wheelchair is 300 lbs and additional items equal 25 lbs, subtract 25 lbs from 300 lbs. This means the maximum weight limitation of the user is 275 lbs.</i>		

TYPICAL PRODUCT PARAMETERS

	CONTOURA BACKS	CONVENTIONAL BACKS
<b>*OVERALL LENGTH</b> WITH MANUAL CENTER MOUNT FOOTREST AT 90°: WITHOUT FRONT RIGGINGS, FULL LENGTH ARM, MPJ™ JOYSTICK:	41.5 inches 37.38 inches	
<b>ARMRESTS</b> TILT ONLY, TILT/ELEVATE AND ELEVATE ONLY:  RECLINE ONLY, TILT/RECLINE AND TILT/RECLINE/ELEVATE:	Flip Back, Adjustable Height (9 - 13 inches) - Desk or Full Length  Adjustable Height (11 - 16 inches) - Desk or Full Length	
<b>LEGRESTS:</b>	Swingaway Footrests, Power or Manual Center Mount Footrests, Manual or Power Elevating Legrests	
<b>HEADRESTS:</b>	Curved, Contoured, Small or Large	
<b>WEIGHT LIMITATION:</b> ALL SEATING SYSTEMS WITH ELEVATE: ALL SEATING SYSTEMS WITHOUT HEAVY DUTY OPTION: TILT ONLY, RECLINE ONLY OR TILT/RECLINE SYSTEMS WITH HEAVY DUTY OPTION: ALL SEATING SYSTEMS WITH VENT TRAY:	300 lbs 300 lbs 400 lbs Subtract 50 lbs from the seating system weight limitations (250 and 350 lbs respectively)	
<p><i>NOTE: All dimensions are ± .50 inches unless otherwise indicated.</i></p> <p><i>*NOTE: 20-inch deep x 20-inch wide with 24-inch high back.</i></p> <p><i>**NOTE: Weight limitation is total weight (user weight plus any additional items that the user may require [back pack, etc.]). Example: If weight limitation of the wheelchair is 300 lbs and additional items equal 25 lbs, subtract 25 lbs from 300 lbs. This means the maximum weight limitation of the user is 275 lbs.</i></p>		

**⚠ WARNING**

**If the seating system is mounted onto a power wheelchair that has a weight limitation greater than that of the seating system, the weight limitation is maintained at the seating system’s limitation. Example: If a seating system with a weight limitation of 300 lbs is mounted onto a power wheelchair with a weight limitation of 400 lbs, then the power wheelchair is restricted to a 300 lb weight limitation.**

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# SECTION I—GENERAL GUIDELINES

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## **⚠ WARNING**

**SECTION I - GENERAL GUIDELINES** contains important information for the safe operation and use of this product. **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.

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## **Repair or Service Information**

Except for programming, **DO NOT** service or adjust the wheelchair while occupied, unless otherwise noted.

A pinch point exists between walking beam/head tube cap and telescoping tube when at the lowest seat to floor height.

Pinch point may occur when returning the tilted seat to the full upright position or when lowering the elevating seat. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before returning the tilted seat to the full upright position or lowering the elevating seat.

Before adjusting, repairing or servicing the wheelchair, **ALWAYS** turn the wheelchair power Off, otherwise, injury or damage may occur.

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.

Transport ready packages are not retrofittable to existing models and are not field serviceable.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced **IMMEDIATELY**.

Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

## **Operation Information**

Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities. Incorrect settings could cause injury to the driver, bystanders, damage to the wheelchair and to surrounding property.

After the wheelchair has been set-up/adjusted, check to make sure that the wheelchair performs to the specifications entered during the set-up procedure. If the wheelchair does NOT perform to specifications, turn the wheelchair Off immediately and reenter set-up specifications. Repeat this section until the wheelchair performs to specifications.

DO NOT leave the power button On when entering or exiting your wheelchair.

DO NOT operate on roads, streets or highways.

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

DO NOT attempt to move up or down an incline with water, ice or oil film.

DO NOT stand on the frame of the wheelchair.

DO determine and establish your particular safety limits by practicing bending, reaching and transferring activities in the presence of a qualified healthcare professional before attempting active use of the wheelchair.

DO NOT attempt to reach objects if you have to move forward in your seat.

DO NOT attempt to reach objects if you have to pick them up from the floor by reaching between your knees.

DO NOT lean over the top of the back upholstery to reach objects behind you, as this may cause the wheelchair to tip over.

ALWAYS shift your weight in the direction you are turning. DO NOT shift your weight in the opposite direction of the turn. Shifting your weight in the opposite direction of the turn may cause the inside drive wheel to lose traction and the wheelchair to tip over.

DO NOT shift your weight or sitting position toward the direction you are reaching as the wheelchair and/or seating system (if any) may tip over.

DO NOT use an escalator to move a wheelchair between floors. Serious bodily injury may occur.

DO NOT use the footplates as a platform. When getting in or out of the wheelchair, make sure that the footplates are in the upward position or swing footrests towards the outside of the wheelchair.

NEVER leave an unoccupied wheelchair unattended on an incline.

DO NOT attempt to lift the wheelchair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of the wheelchair may result in injury to the user or damage to the wheelchair.

DO NOT overtighten hardware attaching to the frame. This could cause damage to the frame tubing.

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

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt ONLY. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt MUST be replaced immediately.

ALWAYS turn the wheelchair power Off and engage the motor locks/clutches to prevent the wheels from moving before attempting to transfer in or out of the wheelchair. Also make sure every precaution is taken to reduce the gap distance. Align both casters parallel with the object you are transferring onto.

DO NOT use with a broken or missing joystick knob.

DO NOT use if joystick does not spring back to the neutral position or becomes sticky or sluggish.

DO NOT use if joystick boot is torn or damaged.

ALWAYS check foam grips for looseness before using the wheelchair. If loose, contact a qualified technician for instructions.

ALWAYS engage both wheel locks and reduce the gap distance before transferring to and from the wheelchair. Turn all casters parallel to the object you are transferring onto.

Avoid storing or using the wheelchair near open flame or combustible products. Serious injury or damage to property may result.

Use caution when driving in a tilted, elevated or reclined position.

DO NOT operate the seating system while on an incline.

DO NOT operate the seating system while the wheelchair is moving.

NEVER operate the wheelchair or elevate/lower the seat while in any tilted/reclined/back angle position over 20° relative to the vertical position. If the drive lock-out does not stop the wheelchair from operating or the seat from elevating/lowering in a tilt position over 20° relative to vertical, DO NOT operate the wheelchair or elevate/lower the seat. DO NOT attempt to adjust the drive lock-out. Have the wheelchair serviced by a qualified technician.

Use only the controls listed in Operating Powered Seating Systems on page 24 to activate the powered seating functions\*. DO NOT USE any other actuator controls. Such devices may result in excess heating and cause damage to the actuator and associated wiring and could cause a fire, death, physical injury or property damage. If such devices are used, Invacare shall not be liable and the limited warranty is void.

*\*NOTE: Specific actuator controls are noted for each function or combination throughout this manual.*

DO NOT operate tilt seat around children.

ALWAYS keep hands and feet out from underneath tilt seat - otherwise serious injury may result.

DO NOT tip the seating system/wheelchair without assistance.

DO NOT store items under seat.

Cables must be routed and secured properly to ensure that cables DO NOT become entangled and damaged during normal operation of seating system.

Systems equipped with power legrests only - NEVER allow items to become trapped between the legrest assemblies. Otherwise, damage to the power legrest could occur.

## **Weight Training**

Invacare DOES NOT recommend the use of its wheelchairs as a weight training apparatus. Invacare wheelchairs have NOT been designed or tested as a seat for any kind of weight training. If occupant uses said wheelchair as a weight training apparatus, Invacare shall not be liable for bodily injury and the warranty is void.

## **Weight Limitation**

Refer to Typical Product Parameters in this manual and the Typical Product Parameters in the owner's manual shipped with the wheelchair base to determine the weight limit (total combined weight of user and any attachments) of your wheelchair model. DO NOT exceed the limit - otherwise, injury or damage may result.

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# SECTION 2—EMI INFORMATION

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## **⚠ WARNING**

**CAUTION: IT IS VERY IMPORTANT THAT YOU READ THIS INFORMATION REGARDING THE POSSIBLE EFFECTS OF ELECTROMAGNETIC INTERFERENCE ON YOUR POWERED WHEELCHAIR.**

### **Electromagnetic Interference (EMI) From Radio Wave Sources**

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per metre (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level." The higher the immunity level, the greater the protection. At this time, current technology is capable of achieving at least a 20 V/m immunity level, which would provide useful protection from the more common sources of radiated EMI.

There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed below, your risk to EMI will be minimized.

The sources of radiated EMI can be broadly classified into three types:

- 1) Hand-held Portable transceivers (transmitters-receivers with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkie", security, fire and police transceivers, cellular telephones, and other personal communication devices).

*NOTE: Some cellular telephones and similar devices transmit signals while they are ON, even when not being used.*

- 2) Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle; and
- 3) Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.

*NOTE: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.*

---

**⚠ WARNING**

**Powered Wheelchair Electromagnetic Interference (EMI)**

Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from hand-held radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed below are recommended to prevent possible interference with the control system of the powered wheelchair.

Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters. Also, the electronics used in our powered wheelchair can generate a low level of electromagnetic interference, which however will remain within the tolerances permitted by law.

**FOLLOWING THE WARNINGS LISTED BELOW SHOULD REDUCE THE CHANCE OF UNINTENDED BRAKE RELEASE OR POWERED WHEELCHAIR MOVEMENT WHICH COULD RESULT IN SERIOUS INJURY.**

- 1) Do not operate hand-held transceivers (transmitters receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair is turned ON;
- 2) Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- 3) If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;
- 4) Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI (NOTE: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and
- 5) Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a source of EMI nearby.

**Important Information**

- 1) 20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);
- 2) This device has been tested to a radiated immunity level of 20 volts per meter.
- 3) The immunity level of the product is unknown.

Modification of any kind to the electronics of this wheelchair as manufactured by Invacare may adversely affect the EMI immunity levels.

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# SECTION 3—SAFETY/HANDLING OF WHEELCHAIRS

*NOTE: For more information about safety/handling of the wheelchair, refer to the owner's manual that shipped with the wheelchair base.*

## Pinch Points

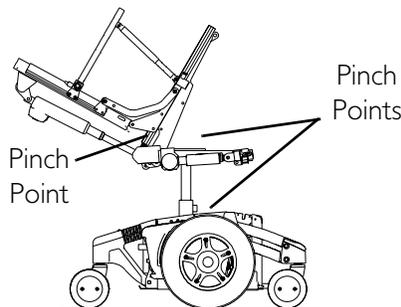
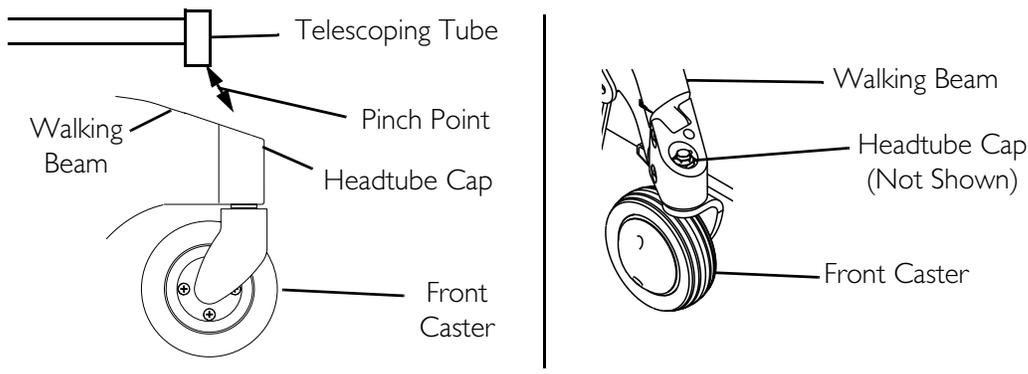
### ⚠ WARNING

**A pinch point exists between head tube cap and walking beam.**

**A pinch point exists between walking beam/head tube cap and telescoping tube when the seat is in the lowest seat to floor height.**

**Pinch point may occur when returning the tilted seat to the full upright position or lowering the elevated seat. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before lowering seat or returning the tilted seat to the full upright position.**

*NOTE: For this procedure, refer to FIGURE 3.1.*



**FIGURE 3.1** Pinch Points

# SECTION 4—SAFETY INSPECTION/ TROUBLESHOOTING

*NOTE: Every six months take your wheelchair to a qualified technician for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.*

*NOTE: Refer to wheelchair base owner's manual for additional safety inspection and troubleshooting information.*

**Initial adjustments should be made to suit your personal body structure needs and preference. Thereafter follow these maintenance procedures and those in the owner's manual shipped with the wheelchair base:**

## Safety Inspection Checklists

### Inspect/Adjust Initially

---

#### **CAUTION**

**As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.**

---

- Inspect all fasteners.
- Inspect TRBKTS fasteners and hardware.
- Ensure clothing guards are secure.
- Arms are secure but easy to release and adjustment levers engage properly.
- Adjustable height arms operate and lock securely.
- Upholstery has no rips.
- Armrest pad sits flush against arm tube.
- Check that all labels are present and legible. Replace if necessary.
- Make sure all electrical connections are secure.
- Check that cables are routed and secured properly to ensure that cables DO NOT become entangled and damaged during normal operation of seating system.
- Check limit switch position for recline.
- Make sure drive lock-out operates properly.
- Make sure tilt operates smoothly and properly.
- Make sure recline operates smoothly and properly.
- Make sure elevate operates smoothly and properly.

- Make sure seating systems with the recline function have the retaining pin in place at the top of each back cane.
- Make sure all systems, except Elevate Only, have the retaining pin in place at the back of each seat rail.
- Make sure elevate systems drive with reduced speed when seat is in elevated position.
- Check that spreader bar mounting fasteners are tight.
- Check that back cane mounting fasteners and back mounting fasteners are tight.

### **Inspect/Adjust Weekly**

- Inspect all fasteners.
- Inspect TRBKTS fasteners and hardware.
- Make sure all electrical connections are secure.
- Check that cables are routed and secured properly to ensure that cables DO NOT become entangled and damaged during normal operation of seating system.

### **Inspect/Adjust Monthly**

- Clean upholstery and armrests.
- Clean dirt and lint from axles.
- Clean dirt and lint from bearings.
- Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- Make sure drive lock-out operates properly.
- Make sure tilt operates smoothly and properly.
- Make sure recline operates smoothly and properly.
- Make sure elevate operates smoothly and properly.
- Make sure elevate systems drive with reduced speed when seat is in elevated position.
- Check that spreader bar mounting fasteners are tight.
- Check that back cane mounting fasteners and back mounting fasteners are tight.

### **Inspect/Adjust Periodically**

- Inspect all fasteners.
- Inspect TRBKTS fasteners and hardware.
- Ensure clothing guards are secure.
- Arms are secure but easy to release and adjustment levers engage properly.
- Adjustable height arms operate and lock securely.

- Upholstery has no rips.
- Armrest pad sits flush against arm tube.
- Inspect foam handgrips for damage. If damaged, have them replaced by a qualified technician.
- Check that all labels are present and legible. Replace if necessary.
- Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- Check limit switch position for recline.
- Make sure seating systems with the recline function have the retaining pin in place at the top of each back cane.
- Make sure all systems, except Elevate Only, have the retaining pin in place at the back of each seat rail.
- Check that spreader bar mounting fasteners are tight.
- Check that back cane mounting fasteners and back mounting fasteners are tight.

## Troubleshooting

*NOTE: For additional troubleshooting information and explanation of error codes, refer to the wheelchair base owner's manual and the individual Electronics Manual supplied with each wheelchair.*

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Wheelchair Power On but does not drive.	System tilted or reclined beyond drive lock-out angle (20°).  Motor lock levers are disengaged.	Return to neutral position (upright and completely lowered). <b>Refer to <u>Operating Powered Seating Systems on page 24.</u></b> Contact Invacare/Dealer for service if this does not solve the problem.  Engage motor lock levers. See wheelchair base owner's manual.
Seating system not functioning or working intermittently.	Low batteries.  Faulty electrical connection.  Seat has been driven under a heavy load for an extended period of time.	Charge batteries.  Check all connections.  Allow time for the electronics to cool down (Light Duty Use).
 SPM L Park Brake Fault or  SPM R Park Brake Fault displays and wheelchair does not drive.	Motor lock levers disengaged (Error code E9 or E10).	Engage motor lock levers.
CHARGER PLUGGED IN displays.	Battery charger connected (Error code E28).	Unplug battery charger from the wheelchair.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
 SPM Battery Fault displays and the wheelchair does not drive.	Batteries need to be charged (Error code E14).	Charge batteries. If batteries fail to charge properly, check battery charger or replace batteries. Refer to <a href="#">Replacing Batteries</a> on page 63.
 JOYSTICK TIMEOUT displays and the wheelchair does not drive.	Joystick or input device is disconnected (Error code 32).	Turn off power, reconnect the joystick of input device and turn power on.
 JS REV TOO LARGE  JS FWD TOO LARGE  JS LFT TOO LARGE or  JS RGT TOO LARGE displays and the wheelchair does not drive.	The joystick or input device is sending a value outside of the reverse, forward, left or right limits (Error codes E01, E02, E03 or E04).	Replace joystick or input device.
NEUTRAL TESTING displays.	The joystick neutral test has failed (Error code E18).	Release the joystick and try to get the joystick back into the center-most position.
 BAD JOYSTICK CAL VALUES displays and the wheelchair does not drive.	The joystick calibration values are outside of the expected range (Error code E19).	Contact Dealer/Invacare for recalibration of the joystick (joystick throw procedure).
 SPM NOT CONNECTED	The MPJ or Display module is not communicating with the control module (Error code E200).	Check the connections between the joystick or display and the controller. Turn the power off and then back on. Replace the controller if necessary.
 SPM Communications Fault displays and the wheelchair drives slowly.	The controller has determined a fault during a previous turn-off process (Error code E41).	Turn the wheelchair off and back on.
ATTENDANT ACTIVE and  displays.	The Proportional or Digital Attendant control is active and can be used to drive the chair (Error code W05).	This is normal behavior.
Batteries draw excessive current when charging.	Battery failure.  Electrical malfunction.	Have batteries checked for shorted cell. Replace if necessary.  Contact Dealer/Invacare for service.
Battery indicator flashes the charge level is low - immediately after recharge.	Battery failure.  Malfunctioning battery charger.  Electrical malfunction.	Check batteries for shorted cell. Replace if necessary.  Contact Dealer/Invacare for Service.  Contact Dealer/Invacare for Service.
Battery indicator flashes the charge level is low - too soon after being recharged.	Batteries not charged.  Weak batteries.	Have charger checked.  Replace batteries if necessary. Refer to <a href="#">Replacing Batteries</a> on page 63.
Motor “chatters” or runs irregular.	Electrical malfunction.	Contact Dealer/Invacare for Service.

## SECTION 4—SAFETY INSPECTION/TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Joystick erratic or does not respond as desired.	Damaged motor coupling. Electrical malfunction. Controller programmed improperly.	Contact Dealer/Invacare for Service. Contact Dealer/Invacare for Service. Contact Dealer/Invacare to have controller reprogrammed.
Wheelchair does not respond to commands.	Poor battery terminal connection.	Have terminals cleaned.
Power indicator off - even after recharging.	Electrical malfunction.	Contact Dealer/Invacare for Service.
 TILT WARNING displays and the wheelchair will not drive.	The system is tilted or reclined beyond drive lock-out angle of 20° (Error code W01).	Return the system to upright position.
 MAX BACK ANGLE displays.	The wheelchair back has reached the maximum programmed back angle on a wheelchair with a TIAM, RIAM or TRAM (Error code W02).	The wheelchair back will not go past the programmed maximum back angle. This is normal behavior.
 SPM Inhibited displays and the wheelchair does not drive.	The system is tilted or reclined beyond the drive lock-out angle of 20° (Error code W03).	Return the system to the upright position.
 SPM Slow Down is displayed and the wheelchair drives slowly.	The elevating seat is elevated (Error code W04).	Return elevating seat to the lowest position to drive at full speed.

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# SECTION 5—WHEELCHAIR OPERATION

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## **⚠ WARNING**

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result. Set-up of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances.

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## A Note About Drive Lock-Out

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### **⚠ WARNING**

**NEVER** operate the wheelchair or elevate/lower the seat while the back is in any tilted/reclined/back angle position over 20° relative to the vertical position. If the drive lock-out does not stop the wheelchair from operating or the seat from elevating/lowering in a tilt/recline/back angle position over 20° relative to the vertical position, **DO NOT** operate the wheelchair or elevate/lower the seat. **DO NOT** attempt to adjust the drive lock-out. Have the wheelchair serviced by a qualified technician.

The wheelchair user **MUST** have a clear line of sight to drive safely. On initial chair delivery and after adjusting the back angle, drive lock-out switch, tilt system or recline system, tilt and recline the seat back to the farthest driving position immediately before drive lock-out engages and ensure there is a clear line of sight present in which to drive the wheelchair. If a clear line of sight is not present, have the back angle repositioned or readjust the lockout angle such that safe driving with a clear line of sight is achieved. **Otherwise injury or damage may occur.**

---

⚠ TILT WARNING or ⚠ SPM Inhibited displays on the joystick or display unit when the drive lock-out feature has been activated.

Drive lock-out is a feature designed to prevent the wheelchair from being driven after the seating system has been tilted or reclined beyond 20°\* relative to the vertical position. The back can be positioned at a 10° relative offset to the seat base, thereby resulting in a back angle potential of 30° before which the drive lock-out is activated. This may affect the wheelchair user's line of sight while driving. Make sure the wheelchair user can see properly to ensure safe driving.

\*NOTE: 20° back angle can be any combination of recline, tilt, back angle and/or surface angle.

NOTE: Refer to Typical Product Parameters on page 9 for tilt and recline angle ranges.

## Operating Powered Seating Systems

### **⚠ GENERAL WARNINGS**

Refer to **A Note About Drive Lock-Out** on page 23 **BEFORE** performing this procedure.

Pinch points may occur when returning the seat from any tilted position to the full upright position or when lowering the elevating seat. Make sure the hands and body of both the occupant and attendants/bystanders are clear of all pinch points before returning the seat to the full upright position or lowering the elevating seat.

**NEVER** operate the wheelchair or elevate/lower the seat while the back is in any tilted/reclined/back angle position over 20° relative to the vertical position. If the drive lock-out does not stop the wheelchair from operating or the seat from elevating/lowering in a tilt/recline/back angle position over 20° relative to the vertical position, **DO NOT** operate the wheelchair or elevate/lower the seat. **DO NOT** attempt to adjust the drive lock-out. Have the wheelchair serviced by a qualified technician.

Use caution when driving in a tilted, reclined or elevated position.

**DO NOT** operate the seating system while on an incline.

**DO NOT** operate seating system while the wheelchair is moving.

**DO NOT** operate the tilt or elevate function near or under a fixed object such as a table or desk.

The elevating seat option is equipped with a speed reduction safety mechanism. While the seat is in an elevated position, the safety feature slows the speed of the wheelchair to 20% of its maximum speed (not to exceed the programmed speed). If the wheelchair operates at maximum speed while in an elevated position, **DO NOT** operate the wheelchair. Have the wheelchair serviced immediately by a qualified technician.

### **⚠ ACTUATOR CONTROL WARNING**

Use only the actuator controls listed in the following chart to activate the tilt/recline/elevate functions. **DO NOT USE** any other actuator controls. Such devices may result in excess heating and cause damage to the actuator and associated wiring and could cause a fire, death, physical injury or property damage. If such devices are used, Invacare shall not be liable and the limited warranty is void.

SYSTEM TYPE	JOYSTICK	POWERED SEATING CONTROL	
		4 POLE MOTOR	
		SWITCH OPTION	THROUGH THE JOYSTICK (TTJ)
Single Actuator (Tilt Only, Recline Only or Elevate Only)	MPJ+	Powered Seating Switch	Yes with SANODE
Multiple Actuator (Tilt/Recline, Tilt/Elevate or Tilt/Recline Elevate or Single Actuator System with Power Legs)		4 Way Switch	Yes with Multiple Actuator Interface Box

## Using the Powered Seating Switch

*NOTE: The powered seating switch will alternate functions (increase tilt angle, decrease tilt angle) after it has been released for a minimum of three seconds.*

1. Make sure the wheelchair is on a level surface.
2. Press the powered seating switch once to activate the actuator.
3. Press the powered seating switch again (after at least 3 seconds) to activate the actuator in the opposite direction.

## Using the Four Way Switch

*NOTE: For this procedure, refer to FIGURE 5.1 on page 26.*

1. Make sure the wheelchair is on a level surface.
2. Refer to the chart for the operation of the seating system using a four way switch.

*NOTE: The chart shows the factory programmed settings only. Switch assignments can be reprogrammed.*

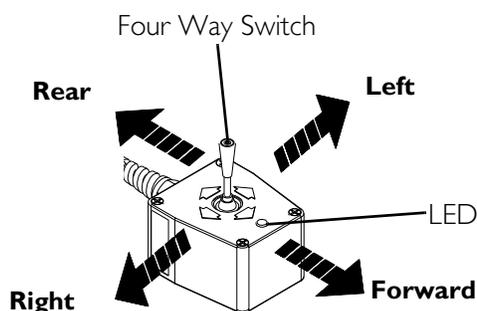
SEATING SYSTEM	FOUR WAY SWITCH			
	FORWARD	REAR	LEFT	RIGHT
Formula TRE - Tilt Only	Decrease the Tilt Angle	Increase the Tilt Angle	N/A	N/A
Formula TRE - Recline Only	Decrease the Recline Angle	Increase the Recline Angle	Power Legrest Up/Down*	Power Legrest Up/Down*
Formula TRE - Tilt/Recline	Decrease the Recline Angle	Increase the Recline Angle	Decrease the Tilt Angle	Increase the Tilt Angle
Formula TRE - Elevate Only**	N/A	N/A	Elevate/Lower the Seat*	N/A
Formula TRE - Tilt/Elevate	Increase/Decrease the Tilt Angle*	N/A	Elevate/Lower the Seat*	N/A
Formula TRE - Tilt/Recline/Elevate	Increase/Decrease the Tilt Angle*	Increase/Decrease the Recline Angle*	Elevate/Lower the Seat*	Power Legrest Up/Down*

*\*NOTE: The four-way switch will alternate functions (increase tilt angle, decrease tilt angle) after it has been released to the neutral position for a minimum of three seconds.*

*\*\*NOTE: The seat MUST be tilted/reclined so the back angle is less than 20° relative to the vertical position before elevating/lowering the seat.*

*NOTE: If the wheelchair is equipped with switch options, scan to the correct ECU or Auxiliary Mode and activate the control device in the corresponding "forward" direction to operate the tilt function. Refer to the electronics manual for complete switch option operating instructions.*

3. Release four way switch to neutral position.



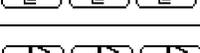
**FIGURE 5.1** Using the Four Way Switch

### Using the MPJ+ joystick

*NOTE: For this procedure, refer to FIGURE 5.2 on page 27.*

1. Make sure the wheelchair is on a level surface.
2. Select a drive that has the Actuator Control Switch Mode icon  displayed.
3. Select the Actuator Control Switch Mode icon (Detail “A”).

*NOTE: When Actuator Control Switch Mode is selected, four of the following icons display. The icons indicate the available powered seating operation choices. The location of the icons on the screen indicates the joystick direction or quadrant (Detail “B”) for activation of that operation.*

ICON	DESCRIPTION
	Smart Tilt Operations
	Smart Recline Operations
	Smart Center Mount Leg Operations
	Combined Power Leg Operations
	Elevate Operations
	Combined Power Leg Operations
	Right Leg Operations
	Left Leg Operations
	No powered seating operation has been programmed for this quadrant.

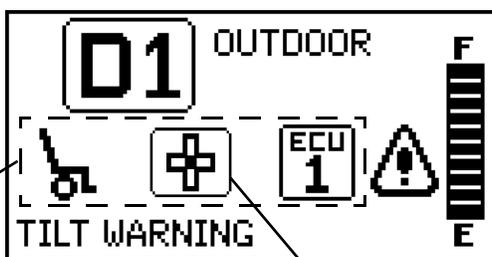
*NOTE: The three icons indicate up/down, up or down, respectively.*

4. Select the desired operation using the joystick or an equivalent switch.

*NOTE: While operating the powered seating system, the icon for the selected operation will display on the screen along with text describing the current operation (Detail “C”).*

**DETAIL "A" -  
SELECTING THE  
ACTUATOR  
CONTROL SWITCH  
MODE**

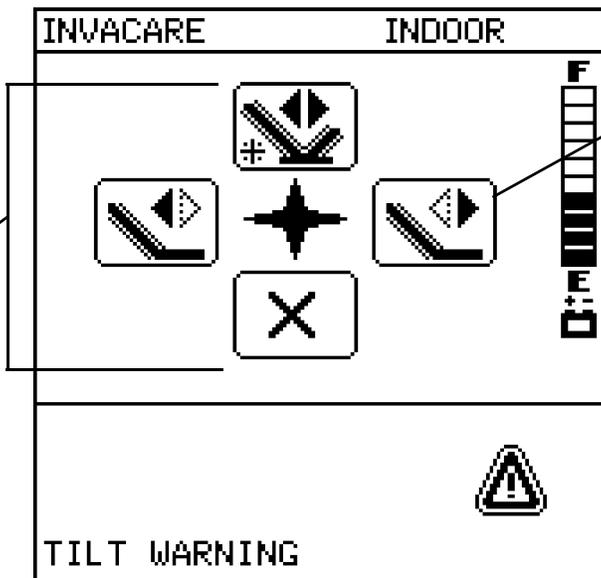
Mode Icons



Actuator Control Switch Mode Icon

**DETAIL "B" -  
ACTUATOR  
CONTROL SWITCH  
MODE EXAMPLE  
SCREEN**

Operation  
Icons

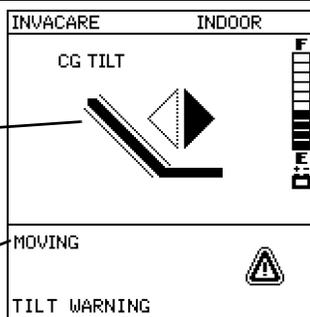


Tilt Down Icon  
(Move the joystick  
right to use this  
function)

**DETAIL "C" -  
EXAMPLE SCREEN  
DURING POWERED  
SEATING  
OPERATION**

Icon

Text



**FIGURE 5.2** Using the MPJ+ joystick

## MPJ+ Joystick Switches and Indicators

*NOTE: For this procedure, refer to FIGURE 5.3.*

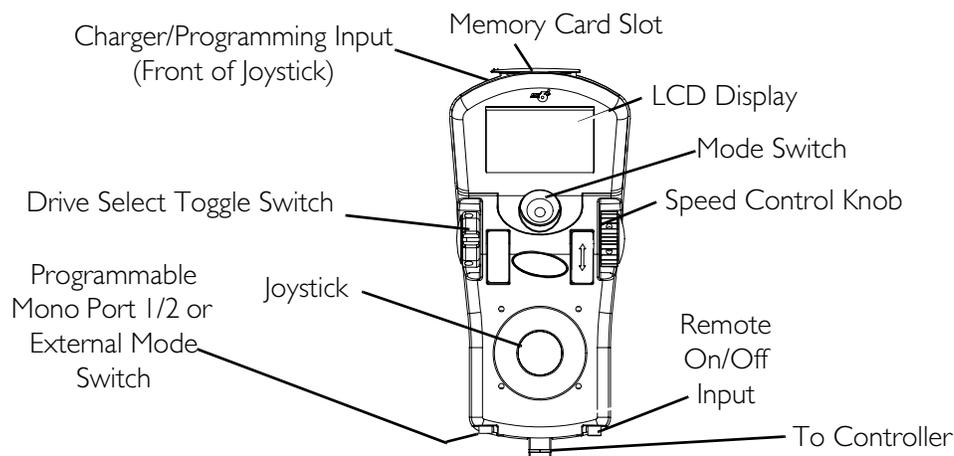
### Drive Select Toggle Switch

The drive select toggle switch is located on the left side, below the LCD. The drive select position is momentary, meaning that it will return to the neutral position after a selection is made.

This switch allows the operator to select the type of operation or performance which best suits a particular control need or situation. The DRIVE 1 program uses performance values which are independent of those used for the DRIVE 2 or 3 or 4 program. As an example, an operator may have a control need for spasticity in the morning and a very different need in the afternoon. DRIVE 1 can be programmed for higher speeds and quicker response while DRIVE 2 can be programmed for slower speeds and less responsiveness or vice versa. The other two drive programs could be indoor and outdoor versions of DRIVE 1 and DRIVE 2.

### Selecting the Drive Mode

1. Move the toggle up and release. DRIVE 1 (**01**) will appear on LCD.
2. Move the toggle up and release again. DRIVE 2 (**02**) will appear on LCD.
3. Move the toggle up and release again. DRIVE 3 (**03**) will appear on LCD.
4. Move the toggle up and release again. DRIVE 4 (**04**) will appear on LCD.
5. Move the toggle up and release one more time to select DRIVE 1 (**01**).



**FIGURE 5.3** MPJ+ Joystick Switches and Indicators

### Speed Control

The speed control knob is located on the side of the joystick housing.

1. Rotate the knob clockwise (forward) to increase the speed of the wheelchair to the programmed max speed.

2. Rotate the knob counterclockwise (backward) to decrease the speed of the wheelchair to the programmed max speed.

## Joystick

The joystick has proportional drive control, meaning that the further the joystick is pushed from the upright (neutral) position, the faster the wheelchair or seat moves. Your top speed, however, is limited by the programmed settings.

To slow the wheelchair to a stop, simply release the joystick. The wheelchair has automatic speed and direction compensation to minimize corrections.

## Charger/Programming Input

The charger/programming input is located at the front of the joystick housing. This provides easy access for charging the wheelchair batteries. This port also serves as the Remote Programmer Communication connection. Driving is prevented while the system is charging.

## LCD Display Screens

The LCD Display is located in front of the joystick and provides information on the status of the wheelchair through a backlit display. The LCD display is readable in both bright sunlight and complete darkness.

### Splash Screen

*NOTE: For this procedure, refer to FIGURE 5.4.*

This screen is displayed at startup of the joystick for about 2 seconds. This screen displays the software version and date information.

After this screen, the joystick displays the Main Screen.



**FIGURE 5.4** LCD Display Screens - Splash Screen

### Main Screen

*NOTE: For this information, refer to FIGURE 5.5 on page 31.*

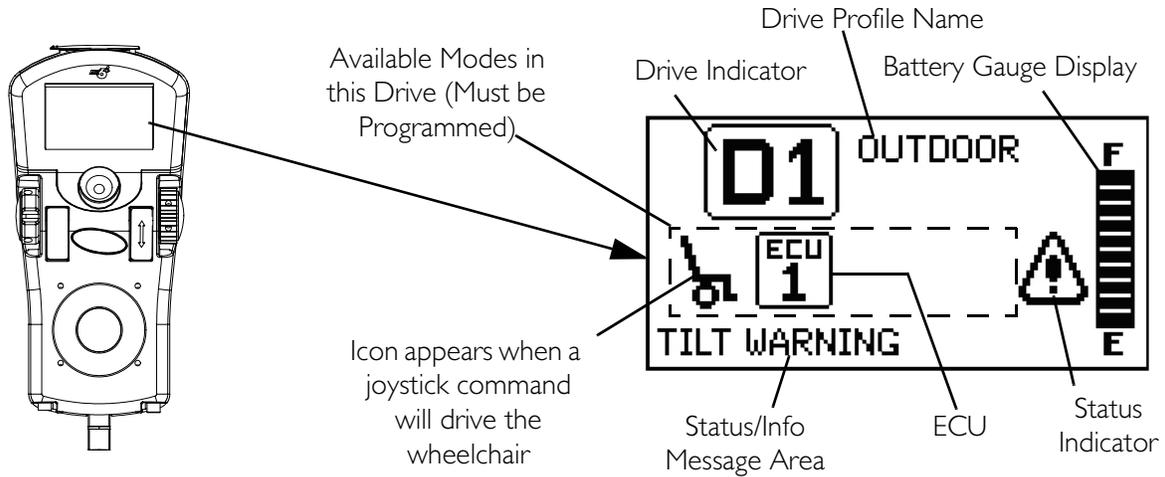
During normal operation, the active drive is displayed in the upper half of the LCD display. Battery charge level is shown in the Battery Gauge Display (BGD) located on the right side of the LCD display. At full charge, solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the top most segments will progressively disappear until no segments appear between E and F. At this level, the user should charge the batteries as soon as possible.

The lower half of the LCD display is the Information Center. The Information Center displays current data on the wheelchair.

Refer to LCD Display table on page 30 for descriptions of information shown.

**LCD DISPLAY**

ITEM	DESCRIPTION
<b>DRIVE NAME</b>	<p>This field shows the currently selected Drive's Name. Available choices are as follows:</p> <p> Drive 1*</p> <p> Drive 2*</p> <p> Drive 3*</p> <p> Drive 4*</p> <p> "No Drive" selected via the programmer.</p> <p><i>*NOTE: Drive names can be customized. Actual drive names may display differently.</i></p>
<b>BATTERY LEVEL INDICATOR</b>	<p>This symbol shows the Battery Level and will change depending on the available battery power. This indicator is shown on every screen.</p>
<b>STATUS MESSAGE</b>	<p>This area displays status or instructions.</p>
<b>STATUS INDICATOR</b>	<p>The status indicator will show a "Warning" (exclamation point inside a triangle) indicator when the chair has a condition that requires attention. The status indicator will show a "STOP" sign when a serious condition exists. The chair will not be allowed to operate. The status indicator shows an Attendant Icon if the attendant's override switch is active.</p>
<b>MODES</b>	<p>The dotted-box shows the area that contains the available "modes" in the currently selected drive. The modes are programmed for each drive and are based upon the configuration of the chair. These modes are highlighted when the Mode is active. The operator changes modes by pressing the Mode Select Switch. The available modes are as follows:</p> <p> Drive Mode (1 through 4)</p> <p> Automatic Positioning</p> <p> Actuator Control Switch Mode (4-switch, 4-switch 2 levels, etc.)</p> <p> ECU Output Activated (1 through 4)</p> <p> RIM Mode Activated</p> <p> Drive Select Mode Activated</p> <p> No Driving</p>



**FIGURE 5.5** LCD Display Screens - Main Screen

### Driving Screen

*NOTE: For this procedure, refer to FIGURE 5.6.*

This screen is shown when the operator issues a drive command and the Drive Icon on the main screen was highlighted.

*NOTE: The Drive's name, warning/info message, status icon and battery indicator are displayed on this screen.*

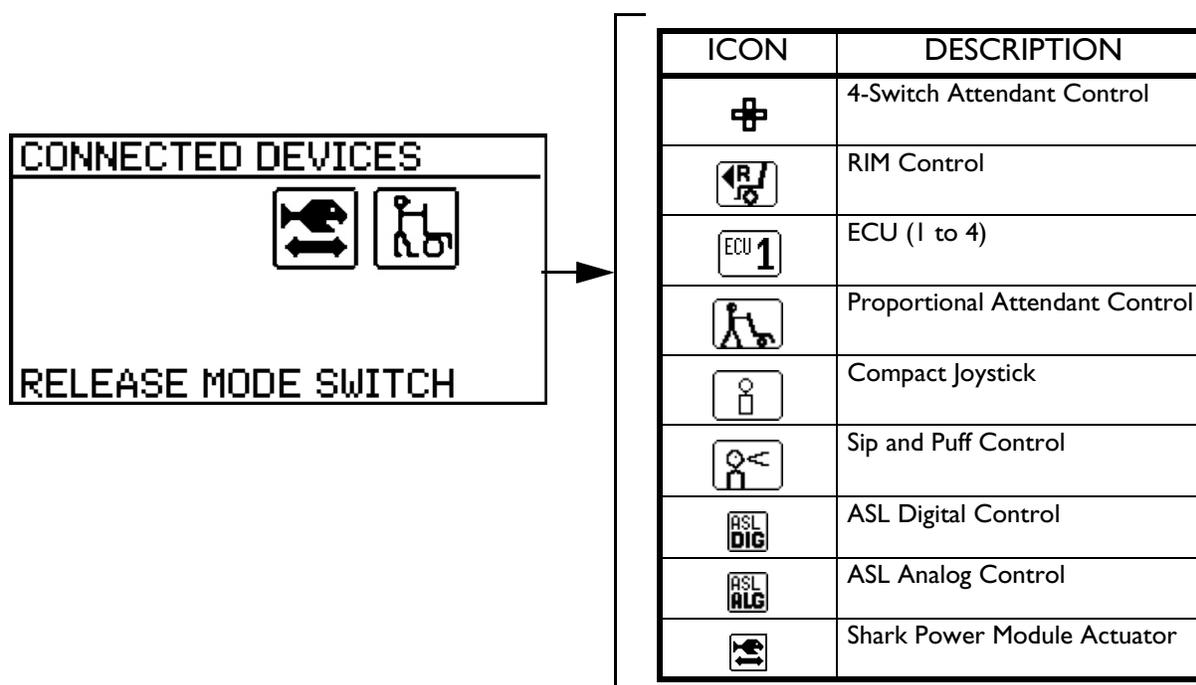


**FIGURE 5.6** LCD Display Screens - Driving Screen

### Connected Devices Screen

*NOTE: For this procedure, refer to FIGURE 5.7.*

This screen is displayed if the Mode Select switch is held active for about 10 seconds. This screen shows an icon that represents any additional devices that are connected to the chair.



**FIGURE 5.7** LCD Display Screens - Connected Devices Screen

### Programmable Mono Port 1/2 or External Mode Switch

The programmable mono port or external mode switch input is located at the rear of the joystick on the left side. The programmable mono port input offers the choice of three options:

- Remote drive select
- Remote stop/mode (reset) input
- Single actuator input

The single switch functions operate through mono port 1. An optional y-cable allows a second programmable function through mono port 2.

#### Remote Stop Switch

The remote stop switch is used to stop the wheelchair.

#### Remote Mode (Reset) Switch

The remote mode reset switch functions the same way as the mode switch. Refer to [Mode Switch](#) on page 33.

#### Remote On/Off Switch

The remote On/Off switch input is located at the rear of the joystick on the right side and allows the power switch to be operated by an ability switch (normally open momentary switch with mono plug). To use the remote On/Off feature, the Drive Select/On/Off switch must be in the On position. Each activation of the ability switch will alternately turn the joystick On or Off.

## Mode Switch

The mode switch is used to select the operating mode for the wheelchair. The mode switch is located on the joystick. A mode switch is needed whenever any of the following operating modes are programmed:

- Environmental Controls (ECU 1, ECU 2, ECU 3, ECU 4)\*
- 3 Speed Mode in Digital 3 Speed (Slow, Medium, Full)
- Latched Modes
- Sleep Mode
- RIM Mode\*
- Remote Drive Selection Mode\*
- Tilt/Recline Mode\*
- Information Center Display Selection (does not require Reset activation at power up)

If any of the above modes are selected, the control will require activation of the switch immediately after the power switch is turned On in order to enter the drive mode. The second line of the LCD will display - PRESS RESET.

\*NOTE: In these modes, Standby Select allows the reset switch to be bypassed for users unable to activate the switch.

## Memory Card Slot

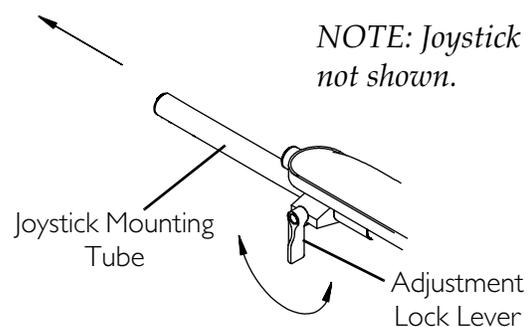
The memory card slot is used with the basic or professional memory card for saving or reading wheelchair parameters.

## Preparing the Joystick for Use

NOTE: For this procedure, refer to FIGURE 5.8.

NOTE: The joystick is factory installed on the right side of the wheelchair. To reposition the joystick onto the left side of the wheelchair, refer to [Repositioning the Joystick](#) on page 34.

1. Turn the adjustment lock lever to release the adjustment lock from joystick mounting tube.
2. Slide joystick mounting tube to the desired position.
3. Turn the adjustment lock lever to secure the adjustment lock to the joystick mounting tube.

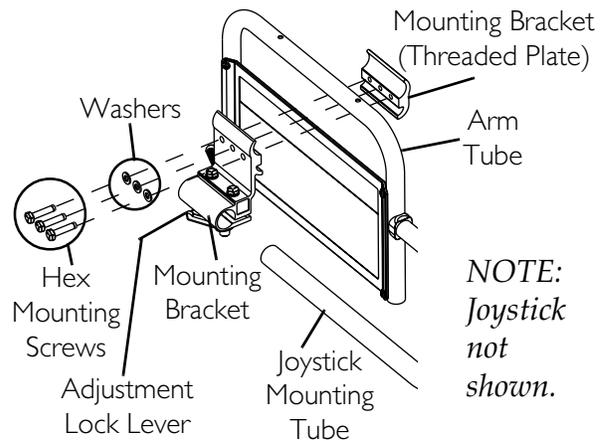


**FIGURE 5.8** Preparing the Joystick for Use

## Repositioning the Joystick

*NOTE: For this procedure, refer to FIGURE 5.9.*

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws that secure both halves of the mounting bracket to the arm tube.
4. Reposition mounting bracket on opposite arm tube ensuring the threaded plate of the mounting bracket is on the inside of the arm tube as shown in FIGURE 5.9.



**FIGURE 5.9** Repositioning the Joystick

5. Using the three hex mounting screws and washers, secure both halves of the mounting bracket to the arm tube.
6. Slide the joystick mounting tube through the mounting bracket to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube into the mounting bracket.

# SECTION 6—FRONT RIGGINGS

## ⚠ WARNING

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

For the following procedures, make sure the **On/Off** switch on the joystick is in the **OFF** position.

**DO NOT** stand on the flip-up footboard. When getting in or out of the wheelchair, make sure that the flip-up footboard is in the upward position.

**PINCH POINT EXISTS BETWEEN CENTER MOUNT FOOTREST AND CASTERS** - There is limited clearance between center mount footrest and casters. The user's feet **MUST** remain on the center mount footrest while operating the wheelchair. If the user's feet are allowed to rest off the side of the center mount footrest they may come in contact with the caster possibly resulting in injury.

While the wheelchair is moving, minimum ground clearance for the front rigging is three inches. If the wheelchair is not moving, the front rigging **MUST** maintain a minimum of one inch ground clearance - otherwise personal injury and damage may result.

## Installing/Removing Footrests

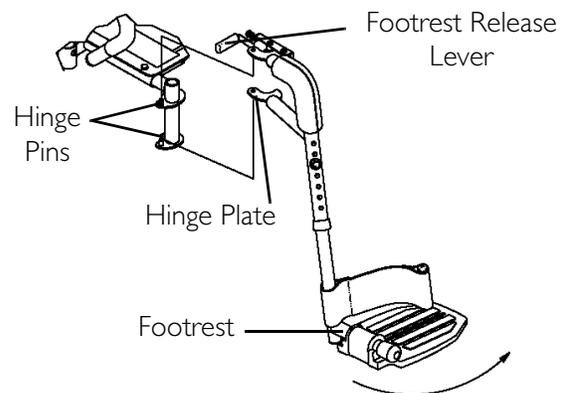
### PHAL4A, 70° and PW93

*NOTE: For this procedure, refer to FIGURE 6.1.*

1. Turn the footrest to the side (open footplate is perpendicular to wheelchair).
2. Install the hinge plates on the footrest onto the hinge pins on the wheelchair frame.
3. Push the footrest towards the inside of the wheelchair until it locks into place.

*NOTE: The footplate will be on the inside of the wheelchair when locked in place.*

4. Repeat STEPS 1-3 for other footrest assembly.
5. To remove the footrest, push the footrest release lever inward, rotate footrest outward.
6. Adjust footrest height, if desired. Refer to [Footrest Height Adjustment](#) on page 36.



**FIGURE 6.1** Installing/Removing Footrests - Phal4A, 70° and pw93

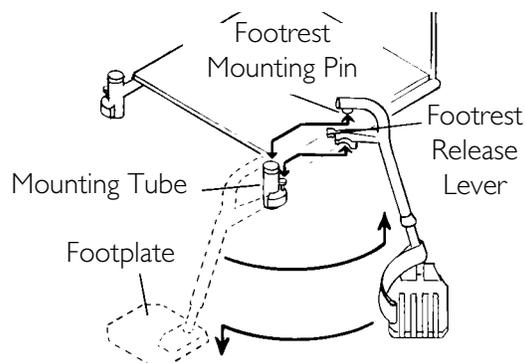
## 70° Taper

*NOTE: For this procedure, refer to FIGURE 6.2*

1. Turn the footrest to the side (open footplate is perpendicular to wheelchair).
2. Insert footrest mounting pin into mounting tube.
3. Push the footrest towards the inside of the wheelchair until it locks into place.

*NOTE: The footplate will be on the inside of the wheelchair when locked in place.*

4. Repeat STEPS 1- 3 for the other footrest assembly.
5. To remove the footrest, push the footrest release lever inward, rotate footrest outward.
6. Adjust footrest height, if desired. Refer to [Footrest Height Adjustment](#) on page 36.



**FIGURE 6.2** Installing/Removing Footrests - 70° Taper

## Footrest Height Adjustment

### **⚠ WARNING**

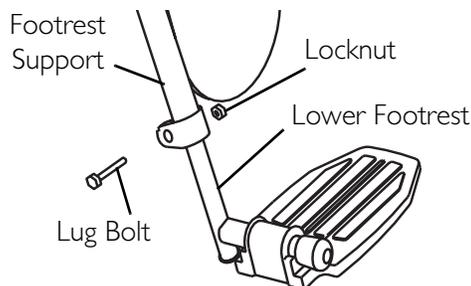
**Minimum ground clearance for the footrest is 3 inches - otherwise personal injury or damage may result.**

### PHAL4A Front Riggings

*NOTE: For this procedure, refer to FIGURE 6.3.*

1. Loosen, but DO NOT remove, the lug bolt and locknut that secure the lower footrest to the footrest support.
2. Reposition the lower footrest to the desired height.
3. Securely tighten the lug bolt and locknut that secure the lower footrest to the footrest support.
4. Repeat STEPS 1-3 for the opposite side of the wheelchair footrest, if necessary.

*NOTE: PH904A style front rigging shown. PHAL4A front rigging adjust the same way.*



**FIGURE 6.3** Footrest Height Adjustment

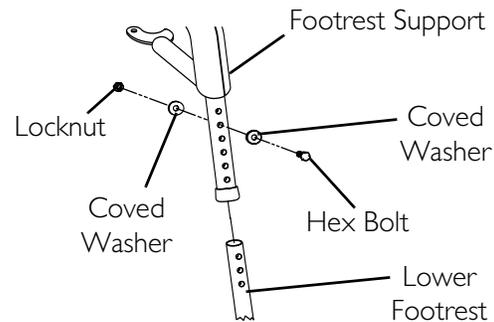
## 70° and PW93

*NOTE: For this procedure, refer to FIGURE 6.4.*

1. Remove any accessory from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to [Installing/Removing Footrests](#) on page 35.

*NOTE: Lay the footrest on a flat surface to simplify this procedure.*

3. Remove the mounting screw, washers and locknut that secure the lower footrest assembly to the upper footrest support (FIGURE 6.4).
4. Reposition the lower footrest to the desired height.
5. Reinstall the mounting screw, washers and locknut that secure the lower footrest to the footrest support and tighten securely.
6. Repeat STEPS 1-5 for the opposite wheelchair footrest, if necessary.
7. Reinstall the footrest(s) onto the wheelchair. Refer to [Installing/Removing Footrests](#) on page 35.
8. Reinstall any accessory onto the footrest(s).



**FIGURE 6.4** Footrest Height Adjustment - 70° and PW93

## 70° Taper

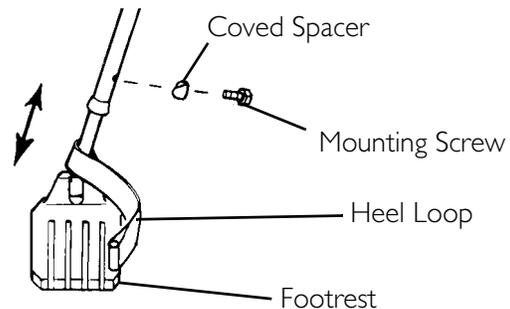
*NOTE: For this procedure, refer to FIGURE 6.5.*

1. Remove any accessory from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to [Installing/Removing Footrests](#) on page 35.

*NOTE: Lay the assembly on a flat surface to improve access to the hardware.*

*NOTE: Note the position of the spacers before disassembly.*

3. Remove the mounting screw and coved spacer that secures the lower footrest assembly.
4. Position the footrest assembly to the desired height.
5. Secure lower footrest assembly with existing mounting screw and coved spacer. Securely tighten.



**FIGURE 6.5** Footrest Height Adjustment - 70° Taper

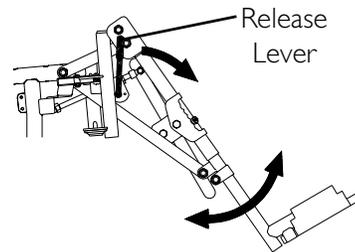
*NOTE: Make sure spacers are positioned properly when reassembling to prevent damage to the frame mounting tubes.*

6. Reinstall the footrest(s) onto the wheelchair. Refer to Installing/Removing Footrests on page 35.
7. Reinstall any accessory onto the footrest(s).

### Raising/Lowering Elevating Front Riggings

*NOTE: For this procedure, refer to FIGURE 6.6.*

1. Perform one of the following:
  - Raising - Pull back on the release lever and raise front rigging to the desired height.
  - Lowering - Support front rigging with one hand away from the release lever. Push release lever downward with other hand.



**FIGURE 6.6** Raising/Lowering Elevating Front Riggings

### Adjusting/Replacing Telescoping Front Rigging Support

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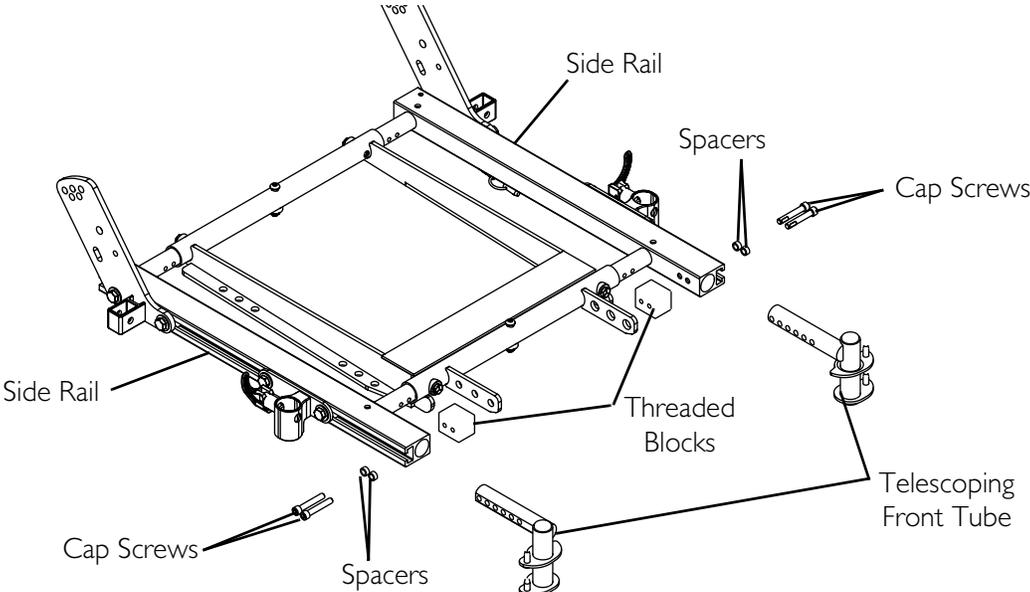
#### **⚠ WARNING**

**If the telescoping tubes need to be extended greater than two inches, then the seat must be repositioned rearward to ensure stability - otherwise personal injury and/or damage to the wheelchair and surrounding property may result.**

---

*NOTE: For this procedure, refer to FIGURE 6.7 on page 39.*

1. Remove the two cap screws, spacers and threaded blocks securing the telescoping front tube to the side rail.
2. Perform one of the following:
  - Slide existing telescoping front rigging support to one of six depth positions.
  - Remove existing telescoping front rigging.
3. Secure the telescoping front tube to the side rail at the desired depth with the existing two cap screws, spacers and threaded blocks.
4. Repeat STEPS 1 to 3 on the opposite side, if desired.



**FIGURE 6.7** Adjusting/Replacing Telescoping Front Rigging Support

## Installing Adjustable Angle Flip-up Footplate Hinge

*NOTE: For this procedure, refer to FIGURE 6.8.*

1. Position footplate hinge on the footrest support tube at the desired height.
2. Position mounting screw, washers, spacer, and locknut on the footrest support as shown.
3. Flip the footplate hinge to the up position.

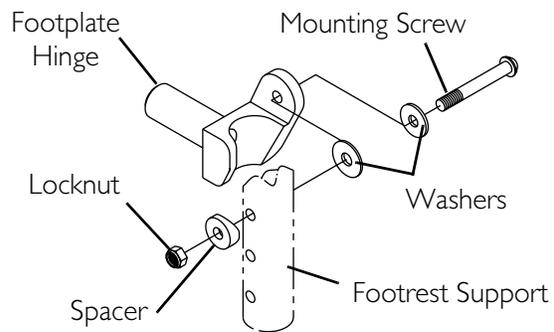
*NOTE: The footplate hinge will fall to the down position.*

4. Tighten the mounting screw, washer, and locknut that secure the footplate hinge to the footrest support until the footplate hinge remains in the up position.
5. Check the up and down motion of the footplate hinge to make sure the user of the wheelchair can operate the footplates easily.

*NOTE: If footplate's motion is too tight, loosen the mounting screw and locknut approximately ¼-turn counterclockwise.*

*NOTE: If the footplate's motion is too loose, tighten mounting screw and locknut approximately ¼-turn clockwise.*

6. Adjust footplate. Refer to [Installing Adjustable Angle Flip-up Footplates](#) on page 40.

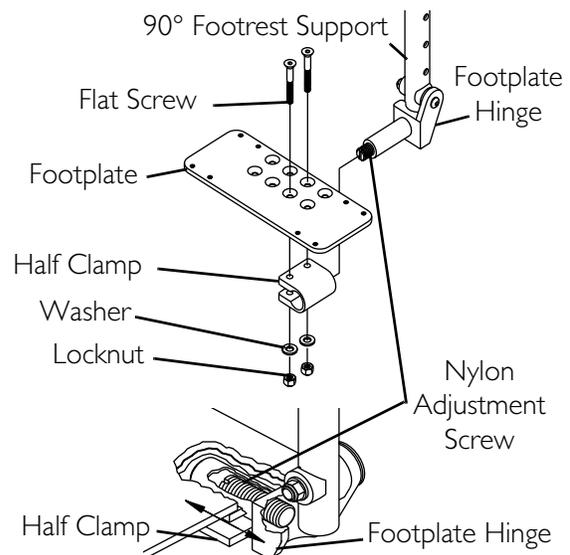


**FIGURE 6.8** Installing Adjustable Angle Flip-up Footplate Hinge

## Installing Adjustable Angle Flip-up Footplates

*NOTE: For this procedure, refer to FIGURE 6.9.*

1. Slide the half clamp over the footplate hinge.
2. Hand tighten the two flat screws that secure the footplate to the half clamp.
3. Adjust the footplates to the necessary angle and depth for the user. Refer to [Adjusting Adjustable Angle Flip-Up Footplates](#) on page 41.



**FIGURE 6.9** Installing Adjustable Angle Flip-up Footplates

## Adjusting Adjustable Angle Flip-Up Footplates

### Depth Adjustment

*NOTE: For this procedure, refer to FIGURE 6.9 on page 40.*

1. Remove the two flat screws, washers and locknuts that secure footplate to the half clamp.

*NOTE: Observe the angle of the footplate for reinstallation.*

2. Move footplate to one of four mounting positions.

*NOTE: If desired depth is still not obtained, rotate the half clamp on the footplate hinge 180°.*

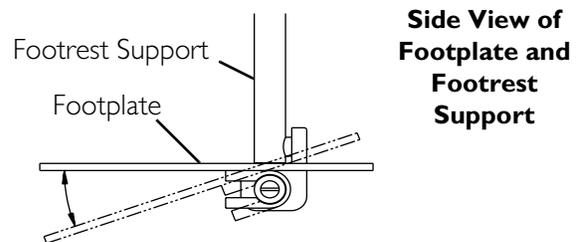
3. Retighten the two flat screws, washers and locknuts.

*NOTE: The settings for positioning the footplates on the half-clamps may vary for each footplate.*

### Angle Adjustment

*NOTE: For this procedure, refer to FIGURE 6.9 on page 40 and FIGURE 6.10.*

1. Loosen, but DO NOT remove, the two flat screws, washer and locknuts that secure the footplate to the footplate hinge (FIGURE 6.9).
2. Position the footplate to the necessary angle to accommodate the user (FIGURE 6.10).
3. Retighten the two flat screws, washers and locknuts.



**FIGURE 6.10** Angle Adjustment

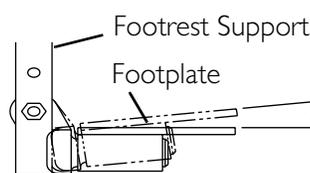
### Perpendicular and/or Inversion/Eversion Adjustment

*NOTE: For this procedure, refer to FIGURE 6.9 on page 40 and FIGURE 6.11.*

*NOTE: It is not necessary to remove the footplate to perform this adjustment.*

1. Insert a flathead screwdriver through the half clamp on the footplate (FIGURE 6.9).
2. Slowly turn nylon adjustment screw in or out until footplate is perpendicular to the footrest assembly or the desired inversion or eversion is obtained (FIGURE 6.11).

**Front View of Footplate and Footrest Support**



**FIGURE 6.11** Perpendicular and/or Inversion/Eversion Adjustment

## Composite/Articulating Footplate Heel Loop Replacement

*NOTE: For this procedure, refer to FIGURE 6.12.*

### Disassembly

#### Composite

1. Remove the mounting screw and coved washer that secures the lower half of the footrest to the swingaway footrest assembly.
2. Remove the lower footrest assembly.
3. Remove the mounting screw and locknut that secure the heel loop to the footrest.
4. Slide heel strap over cane of footrest assembly.

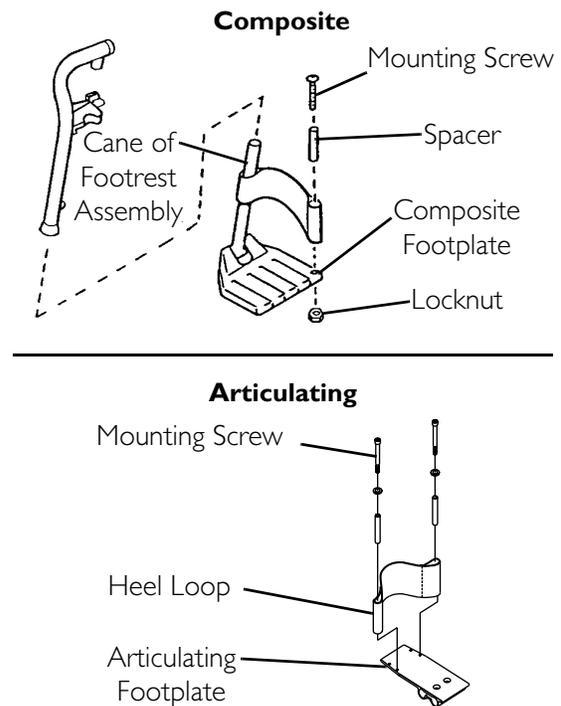
#### Articulating

1. Remove the two mounting screws that secure the heel loop to the articulating footplate.

### Assembly

1. Replace heel strap/loop.
2. Reverse steps in Disassembly to assemble.

*NOTE: When securing heel loop to the footrest assembly, tighten mounting screw until the spacer is secure.*



**FIGURE 6.12** Composite/Articulating Footplate Heel Loop Replacement

## Installing/Removing Elevating Legrests

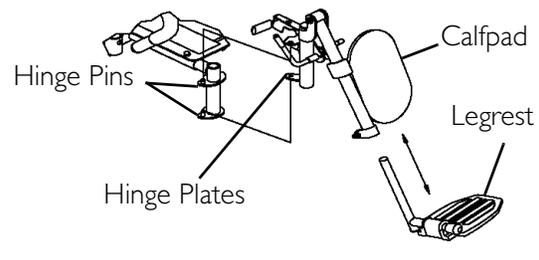
*NOTE: For this procedure, refer to FIGURE 6.13.*

### Installing

1. Turn legrest to side (open footplate is perpendicular to wheelchair).
2. Install the legrest hinge plates onto the hinge pins on the wheelchair frame.
3. Rotate legrest toward the inside of the wheelchair until it locks in place.

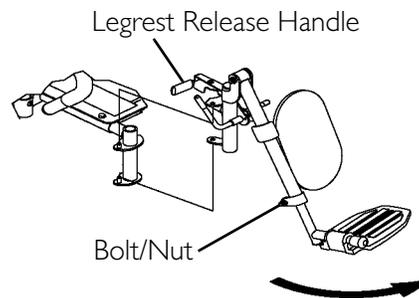
*NOTE: The footplate will be on the inside of the wheelchair when locked in place.*

4. Repeat STEPS 1-3 for the opposite legrest.
5. After the user is seated in wheelchair, adjust footplate to correct height by loosening nut and sliding the lower footrest assembly UP or down until desired height is achieved.



### Removing

1. Push the legrest release handle toward the inside of the wheelchair (facing the front of the wheelchair) and swing the legrest to the outside of the wheelchair.
2. Lift UP on the legrest and remove from the wheelchair.
3. Repeat STEPS 1- 2 for opposite side of wheelchair.



**FIGURE 6.13** Installing/Removing Elevating Legrests

## Raising/Lowering Elevating Legrests and/or Adjusting Calfpads

*NOTE: For this procedure, refer to FIGURE 6.14.*

### Raising/Lowering Elevating Legrests

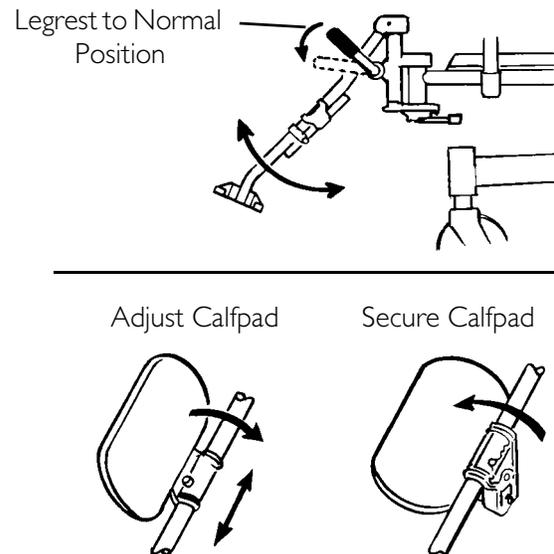
1. Perform one of the following:
  - Raising - Pull back on the release lever until the leg is at the desired height.
  - Lowering - Support leg with one hand and push release lever downward with other hand.

### Adjusting Calfpads

1. Turn the calfpad towards the outside of the wheelchair.
2. Slide the calfpad UP or down until the desired position is obtained.

*NOTE: If one of the top two calfpad adjustment positions is being used, the legrest will need to be raised to avoid interference with the front stabilizers while going over obstacles or going UP and down ramps. Refer to [Raising/Lowering Elevating Legrests](#) on page 44.*

3. Turn the calfpad towards the inside of the wheelchair.



**FIGURE 6.14** Raising/Lowering Elevating Legrests and/or Adjusting Calfpads

## Removing/Installing the Center Mount Footrest

*NOTE: For this procedure, refer to FIGURE 6.15 on page 46.*

### Removing

#### Power Center Mount Footrests

1. Remove the short quick-release pin that secures the center mount rigging to the link plate (Detail "A").
2. Remove the rigging pivot pin that secures the center mount rigging to the top of the support (Detail "B").
3. Remove the long quick-release pin that secures the center mount rigging to the center support (Detail "C").

*NOTE: The link drive tube will fall out when the long quick-release pin is removed. Retain for proper reinstallation.*

#### Manual Center Mount Footrests

1. Remove the rigging pivot pin that secures the footrest to the mounting bracket of the seat frame.
2. Hold the footrest with one hand and engage the release lever with the other while simultaneously pulling the center mount footrest out of the mounting bracket of the seat frame.

### Installing

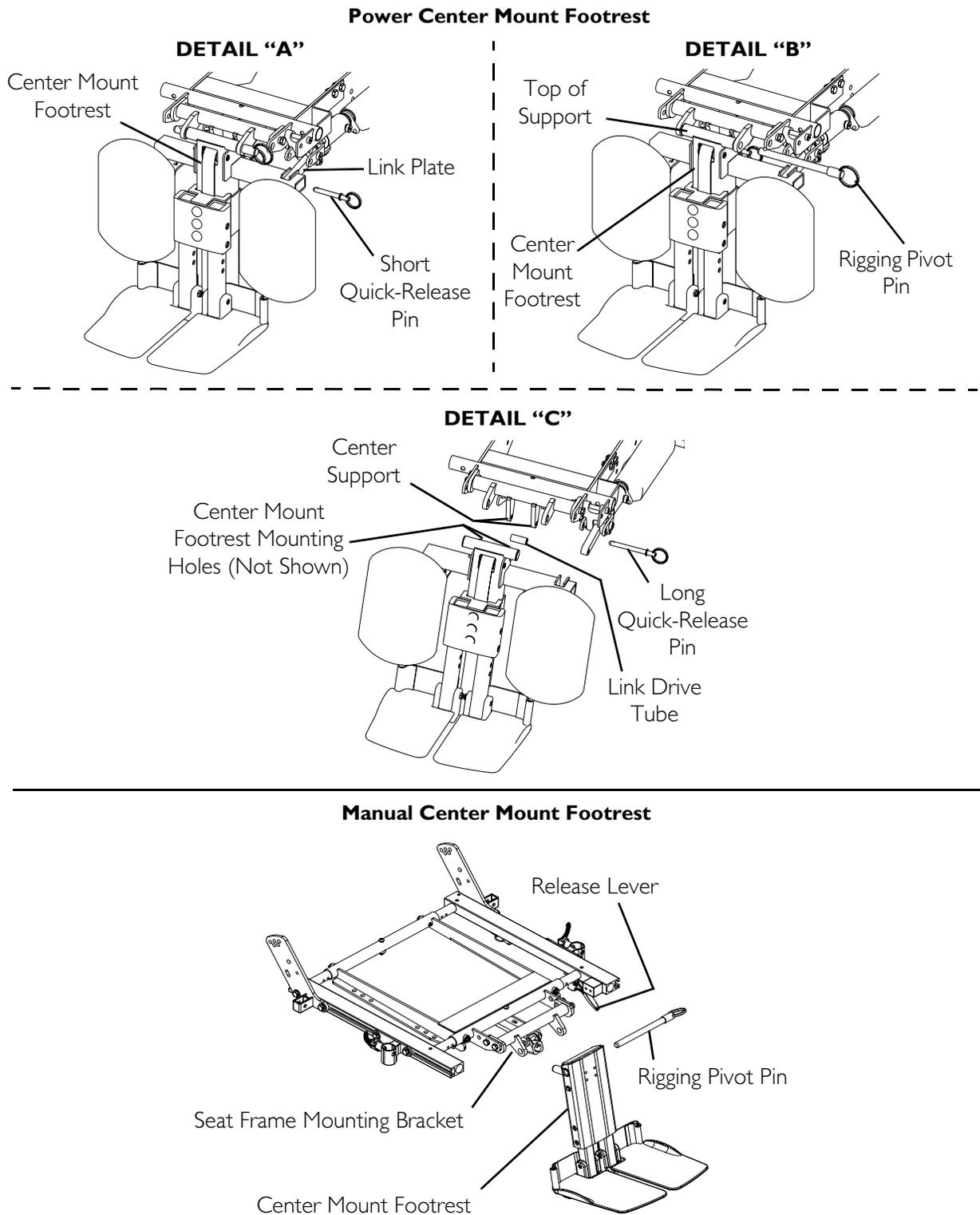
#### Power Center Mount Footrests

1. Position the link drive tube between the mounting holes of the center support (Detail "C").
2. Install the long quick-release pin through the mounting holes of the center support, the mounting holes of the center mount footrest and the link drive tube (Detail "C").
3. Install the rigging pivot pin through the upper mounting holes of the support bracket and the upper mounting tube of the center mount rigging (Detail "B").
4. Install the short quick-release pin through the link plate and into the center mount footrest (Detail "A").
5. Ensure all quick-release pins and the rigging pivot pin secure the center mount footrest to the mounting bracket.

#### Manual Center Mount Footrests

1. Engage the release lever with one hand, hold the center mount footrest with the other, and insert the center mount footrest into the mounting bracket of the seat frame.

2. Reinstall the rigging pivot pin to secure the center mount footrest to the mounting bracket of the seat frame.



**FIGURE 6.15** Removing/Installing the Center Mount Footrest

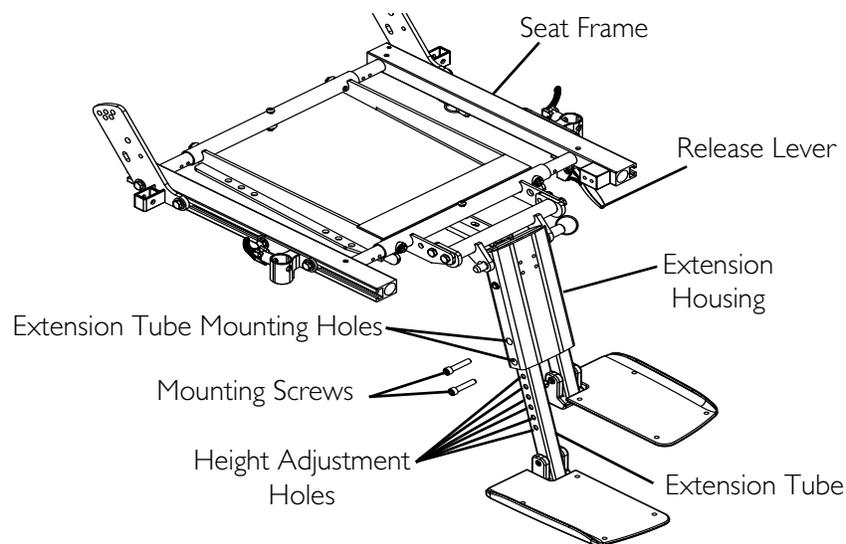
## Adjusting the Height of the Center Mount Footrest

### **⚠ WARNING**

**While the wheelchair is moving, minimum ground clearance for the front rigging is three inches. If the wheelchair is not moving, the front rigging **MUST** maintain a minimum of one inch ground clearance - otherwise personal injury and damage may result.**

*NOTE: For this procedure, refer to FIGURE 6.16.*

1. Remove the two mounting screws that secure the footrest extension tube to the extension tube housing.
2. Adjust the footrest extension tube to the desired height and align the corresponding holes to the mounting holes on the extension tube housing.
3. Reinstall the two mounting screws to secure the footrest extension tube to the extension tube housing. Securely tighten.
4. Repeat STEPS 1-3 for the other extension tube.



**FIGURE 6.16** Adjusting the Height of the Center Mount Footrest

## Adjusting the Angle of the Manual Center Mount Footrest

### ⚠ WARNING

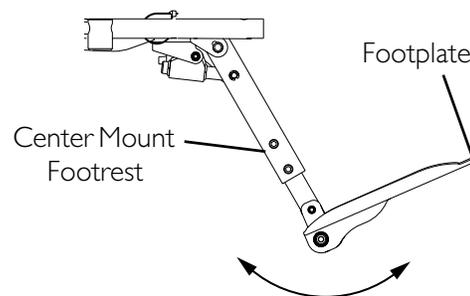
**While the wheelchair is moving, minimum ground clearance for the front rigging is three inches. If the wheelchair is not moving, the front rigging **MUST** maintain a minimum of one inch ground clearance - otherwise personal injury and damage may result.**

*NOTE: For this procedure, refer to FIGURE 6.16 and FIGURE 6.17.*

1. Engage the release lever with one hand (not shown) and move the center mount footrest to the desired angle with the other hand.

*NOTE: Refer to FIGURE 6.16 for the location of the release lever.*

2. Disengage the release lever (not shown) to lock the center mount footrest in the new position.



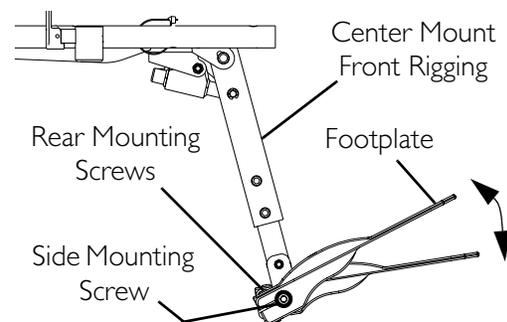
**FIGURE 6.17** Adjusting the Angle of the Manual Center Mount Footrest

## Adjusting the Footplate Angle

### After 2/14/07

*NOTE: For this procedure, refer to FIGURE 6.18.*

1. Loosen, but **DO NOT** remove, the two rear mounting screws and side mounting screw.
2. Move the footplate to the desired angle.
3. Tighten the two rear mounting screws and side mounting screw to secure the footplate in the desired position.
4. Repeat STEPS 1 and 2 for the other footplate.



**FIGURE 6.18** Adjusting the Footplate Angle - After 2/14/07

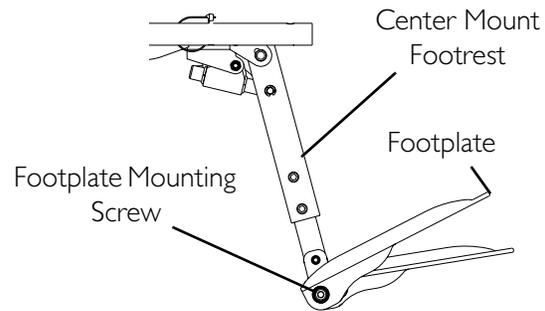
**Before 2/15/07**

*NOTE: For this procedure, refer to FIGURE 6.19.*

1. Loosen the footplate mounting screw and move the footplate to the desired angle.

*NOTE: DO NOT remove the footplate mounting screw.*

2. Tighten the footplate mounting screw to secure the footplate in the desired position.
3. Repeat STEPS 1 and 2 for the other footplate.



**FIGURE 6.19** Adjusting the Footplate Angle - Before 2/15/07

**Adjusting the Tension of the Flip Up Footplate**

*NOTE: For this procedure, refer to FIGURE 6.20.*

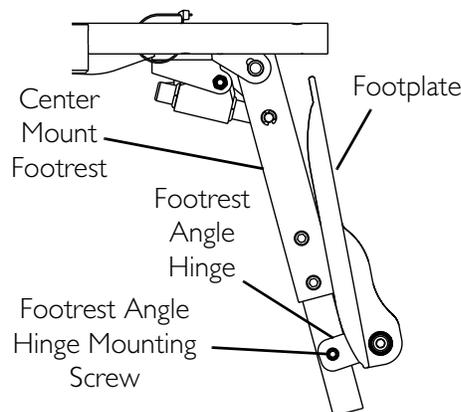
*NOTE: This procedure applies to both power and manual center mount footrests.*

*NOTE: The tension can be adjusted to increase or decrease the rotation effort of the flip up footplates.*

1. Loosen the mounting screw on the footrest angle hinge to decrease the rotation effort.

*NOTE: DO NOT remove the footplate mounting screw.*

2. Tighten the footrest angle hinge mounting screw to increase the rotation effort.
3. Repeat STEPS 1 and 2 for the other footplate.



**FIGURE 6.20** Adjusting the Tension of the Flip Up Footplate

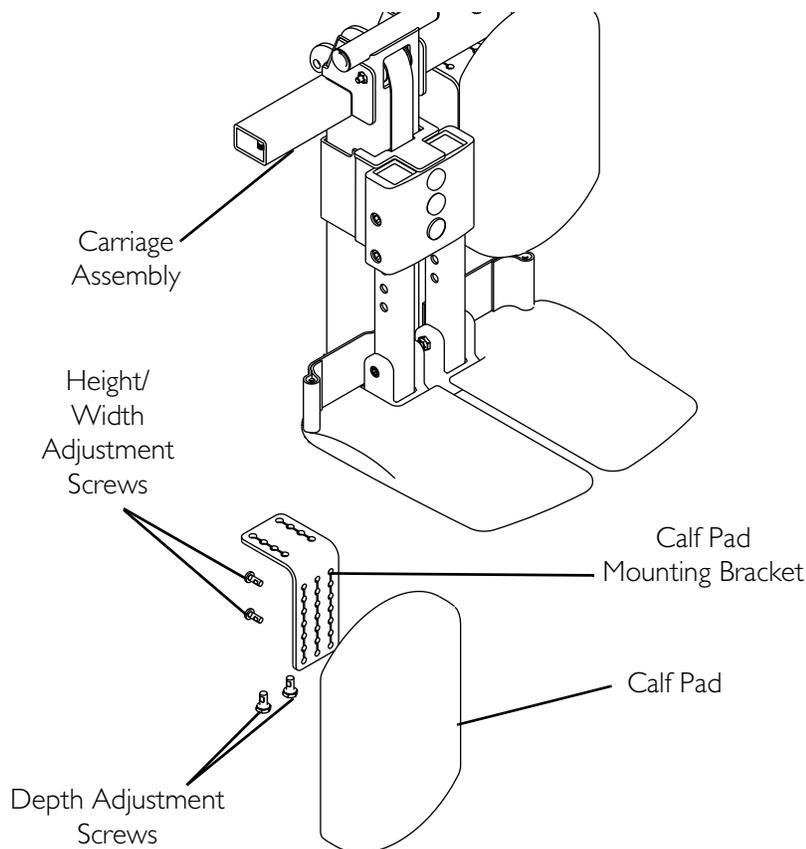
## Calf Pad Adjustment for Power Center Mount Footrests

*NOTE: For this procedure, refer to FIGURE 6.21 on page 50.*

*NOTE: Ensure footrest height has been adjusted before performing this procedure. Refer to Adjusting the Height of the Center Mount Footrest on page 47.*

### Depth Adjustment

1. Remove the two depth adjustment screws securing the calf pad mounting bracket to the carriage assembly.
2. Move the calf pad mounting bracket to the desired position.
3. Install the two depth adjustment screws to secure the calf pad mounting bracket to the carriage assembly.
4. Check operation of the calf pads to ensure there is no interference with the seat pan or the carriage assembly. If there is interference, readjust calf pad.
5. Repeat STEPS 1 to 4 for the opposite side, if desired.



**FIGURE 6.21** Calf Pad Adjustment for Power Center Mount Footrests

## Height and Width Adjustment

1. Remove the two height/width adjustment screws securing the calf pad to the calf pad mounting bracket.
2. Move the calf pad to the desired position.
3. Install the two height/width adjustment screws to secure the calf pad to the calf pad mounting bracket.
4. Check operation of the calf pads to ensure there is no interference with the seat pan or the carriage assembly. If there is interference, readjust calf pad.
5. Repeat STEPS 1 to 4 for the opposite side, if desired.

## Installing/Removing the Power Elevating Legrests

### **⚠ WARNING**

**To prevent personal injury, always verify proper positioning of legs and feet prior to use. Individual user weight may impact the rate of travel for each legrest assembly. If simultaneous operation is desired, select a speed which allows for the most uniform travel.**

**DO NOT insert fingers between legrest components, otherwise personal injury may occur.**

### **CAUTION**

**Never allow items to become trapped between the legrest assemblies, otherwise damage to the power legrests may occur.**

**Ensure that all parts of both power legrests are clear of any obstructions before raising and lowering, otherwise damage to the power legrests may occur.**

*NOTE: For this procedure, refer to FIGURE 6.22 on page 52.*

*NOTE: Power legrests are linked to the recline function of the powered seating system. Operating the recline function automatically operates power legs. Power legrests can also be operated independently of the recline function.*

### Installing the Power Elevating Legrests

1. Turn power legrest to side (open footplate is perpendicular to wheelchair) (Detail “A” of FIGURE 6.22).
2. Insert the mounting pin of power legrest into the mounting hole of the seat frame (Detail “A” of FIGURE 6.22).

*NOTE: Make sure the legrest sits flush on the seat frame.*

3. Rotate the power legs toward the INSIDE of the wheelchair until it locks in place.

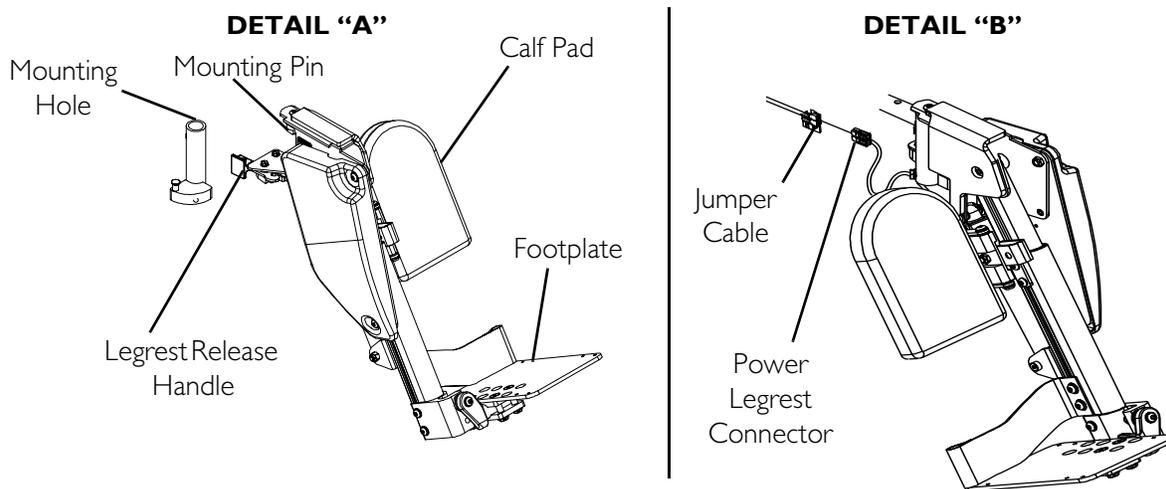
*NOTE: The footplate will be on the INSIDE of the wheelchair when locked in place.*

4. Repeat STEPS 1-3 for the opposite legrest.

5. Connect power legrest connector to jumper cable (Detail “B” of FIGURE 6.22).

### Removing the Power Elevating Legrests

1. Disconnect power legrest connector from jumper cable.
2. Push legrest release handle and swing legrest to the outside of the wheelchair.
3. Lift up on powered legrest and remove from wheelchair.
4. Repeat STEPS 1-3 for opposite power legrest.



**FIGURE 6.22** Installing/Removing the Power Elevating Legrests

# SECTION 7—ARMS

## ⚠ WARNING

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

## Installing/Removing Flip Back Armrests

## ⚠ WARNING

Make sure the flip back armrest release and height adjustment levers are in the locked position before using the wheelchair.

NOTE: For this procedure, refer to FIGURE 7.1.

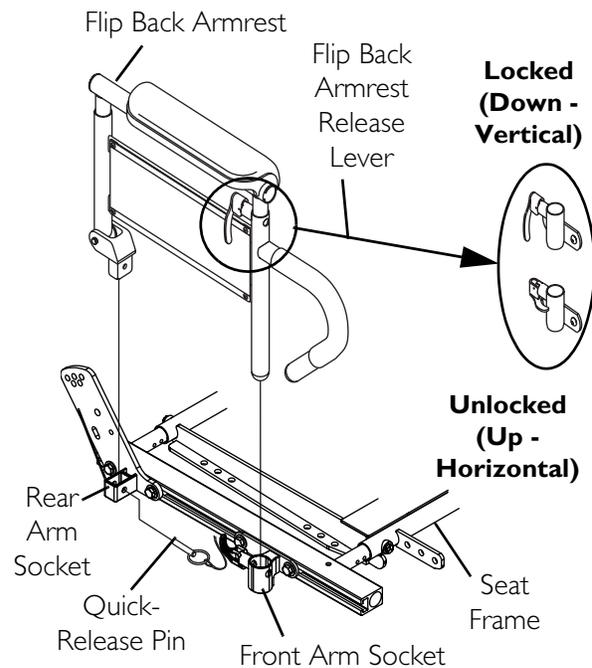
NOTE: Flip back armrest release lever must be in the unlocked (up-horizontal) position when placing the armrest into the arm sockets.

### Installing

1. Visually inspect to ensure flip back armrest release lever is in the unlocked (up-horizontal) position.
2. Slide the flip back armrest into the arm sockets on the seat frame.
3. Install the quick-release pin through the rear arm socket and flip back armrest.
4. Lock the flip back armrest by pressing the flip back armrest release lever into the down (vertical) position.
5. Repeat STEPS 1-4 for the opposite flip back armrest.

### Removing

1. Unlock the flip back armrest by positioning the flip back armrest release lever into the up (horizontal) position.
2. Remove the quick-release pin that secures the flip back armrest to the rear arm socket.
3. Pull UP on the flip back armrest and remove the armrest from the arm sockets.
4. Repeat STEPS 1-3 for the opposite flip back armrest, if necessary.



**FIGURE 7.1** Installing/Removing Flip Back Armrests

## Adjusting Flip Back Armrests

### ⚠ WARNING

Make sure the flip back armrest release and height adjustment levers are in the locked position before using the wheelchair.

NOTE: For this procedure, refer to FIGURE 7.2.

### Positioning Flip Back Armrests for User Transfer

1. Unlock the flip back armrest by pulling the armrest release lever into the up (horizontal) position.

### ⚠ WARNING

Armrest release lever **MUST** remain in the horizontal position during transfer, otherwise injury may result.

2. Pull up on the flip back armrest and remove the armrest from the front arm socket.
3. Continue to pull up on the flip back armrest until the armrest is out of the way.
4. Repeat STEPS 1-3 for opposite flip back armrest, if necessary

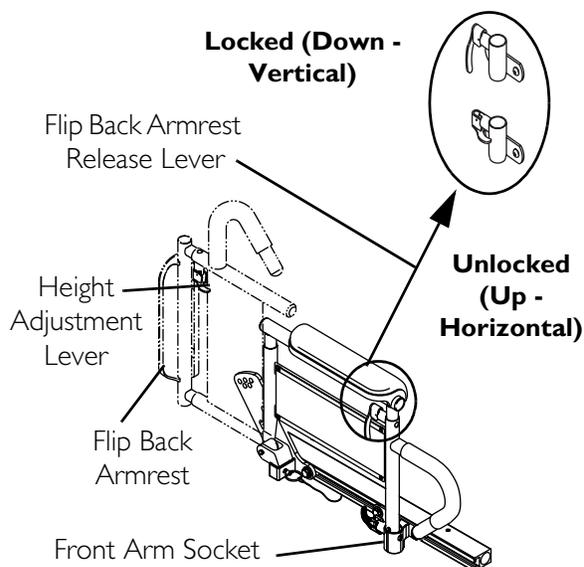


FIGURE 7.2 Adjusting Flip Back Armrests

### Positioning Flip Back Armrests for Use

1. Make sure the flip back armrest release lever is in the up (horizontal) position.
2. Install the flip back armrest into the front arm socket.
3. Lock flip back armrest by pressing flip back armrest release lever into the down (vertical) position.
4. Lift up on flip back armrest to make sure the armrest is locked in place.
5. Repeat STEPS 1-4 for opposite flip back armrest, if necessary.

### Adjusting

1. Unlock flip back armrest by pulling height adjustment lever into the up (horizontal) position.
2. Adjust the flip back armrest to the desired height.
3. Lock flip back armrest by pushing height adjustment lever into the down (vertical) position.

## Removing/Installing Reclining Armrests

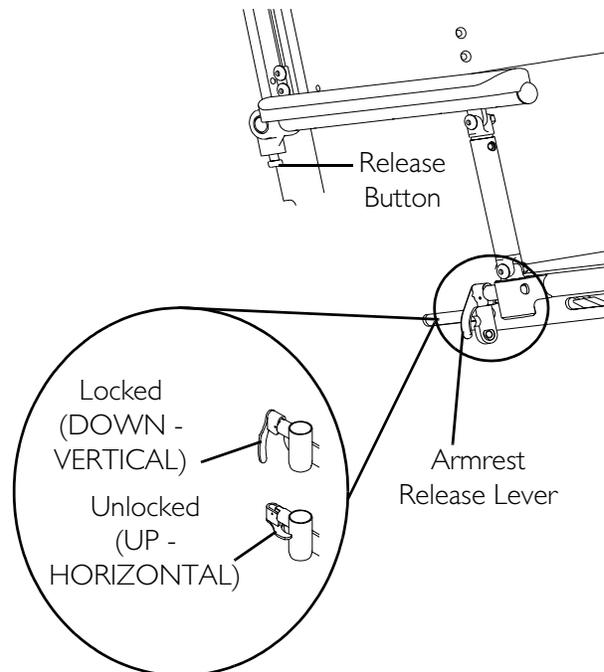
*NOTE: For this procedure, refer to FIGURE 7.3.*

### Removing Armrests

1. Lift the armrest release lever at the front of the wheelchair to the unlocked (horizontal) position.
2. Lift up on the armrest and remove from the front arm socket.
3. Press the release button at the rear of the armrest in.
4. While holding the release button in, remove the armrest from the seat frame.

### Installing Armrests

1. Position the armrest on the seat frame as shown in FIGURE 7.3.
2. Press the release button at the rear of the armrest in.
3. While holding the release button in, slide the armrest onto the seat frame.
4. Make sure the armrest release lever is in the unlocked (horizontal) position.
5. Install the armrest into the front socket.
6. Push the armrest release lever down into the locked (vertical) position.



**FIGURE 7.3** Removing/Installing Reclining Armrests

## Adjusting Reclining Armrest Height

*NOTE: For this procedure, refer to FIGURE 7.4 on page 57.*

1. Make sure the seating system is in the full upright position. Refer to Operating Powered Seating Systems on page 58.
2. Remove the socket bolt and locknut that secure the front of the upper armrest to the lower armrest (Detail “A”).
3. Perform one of the following:
  - Formula TRE with Conventional Back - Loosen, but DO NOT remove, the two socket screws securing the arm adapter plate to the back cane (Detail “B”).
  - Formula TRE with Contoura Back - Loosen, but DO NOT remove, the two cap screws and the locknut securing the arm adapter plate to the back cane (Detail “C”).

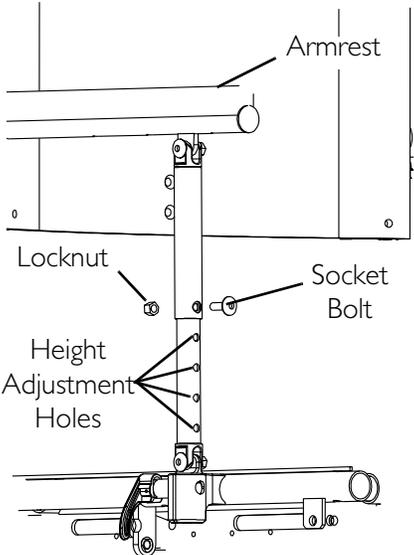
4. Adjust the armrest to the desired height for the user.

*NOTE: The armrests can be at different heights to accommodate the user.*

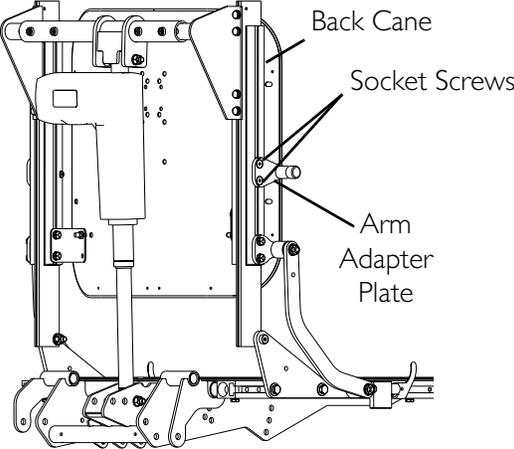
*NOTE: The armrest adjusts from 11 to 16 inches in 1-inch increments.*

5. Reinstall the socket bolt through the mounting hole determined in STEP 4 (Detail “A”).
6. Reinstall the locknut and tighten securely.
7. While holding the armrest level, perform one of the following:
  - Formula TRE with Conventional Back - Tighten the two socket screws to secure the arm adapter plate to the back cane (Detail “B”).
  - Formula TRE with Contoura Back - Tighten the two cap screws and the locknut to secure the arm adapter plate to the back cane (Detail “C”).
8. Repeat STEPS 2-7 for the opposite side if necessary.

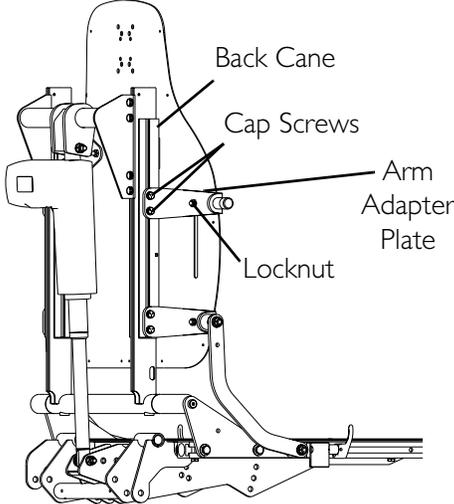
**DETAIL "A" - FRONT OF ARMREST**



**DETAIL "B" - FORMULA TRE SEATING SYSTEM WITH CONVENTIONAL BACK**



**DETAIL "C" - FORMULA TRE SEATING SYSTEM WITH CONTOURA BACK**



**FIGURE 7.4** Adjusting Reclining Armrest Height

# SECTION 8—SEAT

## ⚠ WARNING

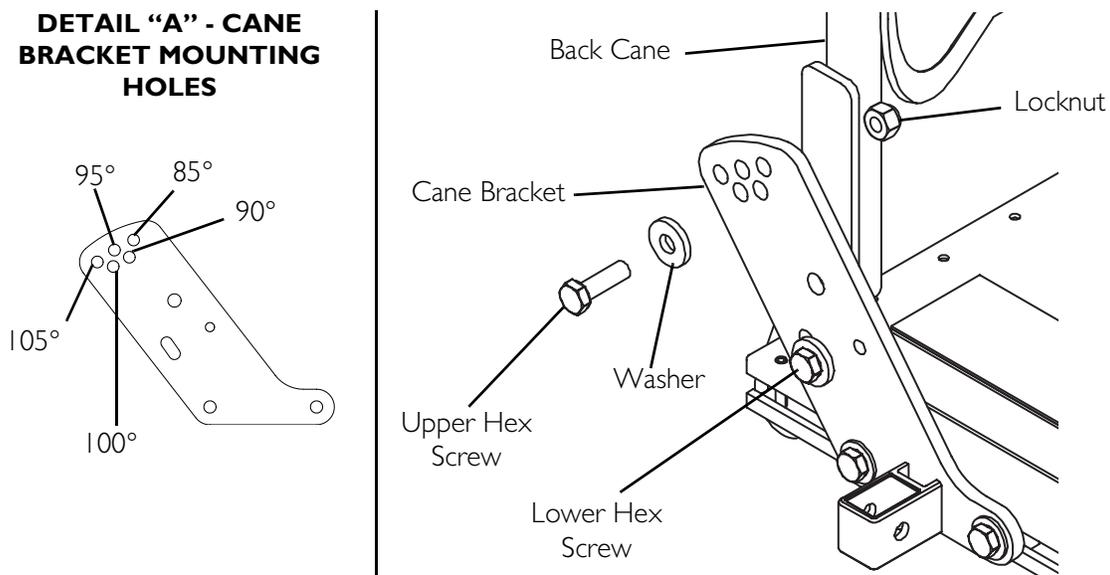
After ANY adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

**ALWAYS** wear your seat positioning strap. The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

## Adjusting the Back Angle

NOTE: For this procedure, refer to FIGURE 8.1.

1. Loosen, but DO NOT remove, the two lower hex screws securing the cane brackets to the back canes.
2. Remove the two upper hex screws, washers and locknuts securing the cane brackets to the back canes.
3. Align the upper mounting holes in the back canes with the desired mounting holes in the cane brackets (Detail "A").
4. Install the two upper hex screws, washers and locknuts to secure the cane brackets to the back canes.
5. Torque the locknuts to 13 ft-lbs.

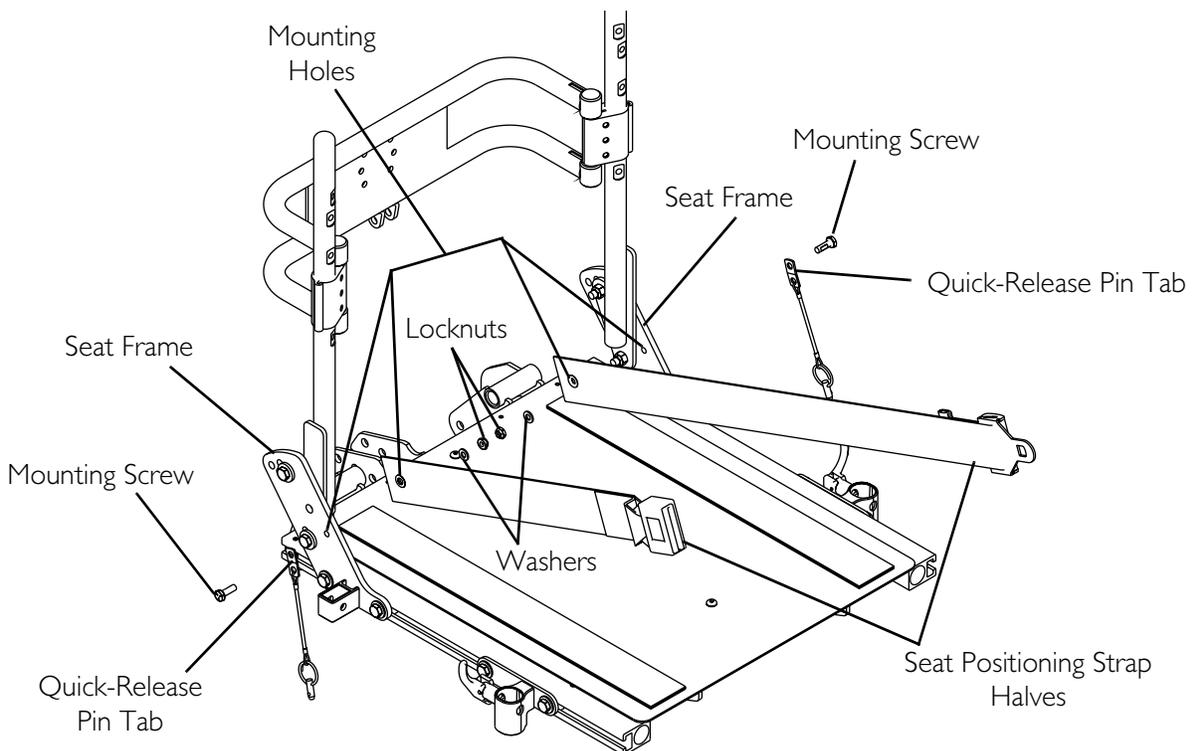


**FIGURE 8.1** Adjusting the Back Angle

## Replacing Seat Positioning Strap

*NOTE: For this procedure, refer to FIGURE 8.2.*

1. Remove the seat cushion from the seat pan.
2. Move the flip back armrests out of the way. Refer to [Adjusting Flip Back Armrests](#) on page 54.
3. Remove the two mounting screws, locknuts, washers and quick-release pin tabs that secure the seat positioning straps to the seat frame.
4. Remove the two halves of the seat positioning strap from the rear seat frame.
5. Reposition the two new seat positioning strap inside of the seat frame as shown.
6. Reinstall the two mounting screws and quick-release pin tabs that secure the seat positioning straps to the seat frame and torque to 75 in-lbs.
7. Reinstall the seat cushion onto the seat pan.



**FIGURE 8.2** Replacing Seat Positioning Strap

# SECTION 9—HEADREST

## ⚠ WARNING

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

## CAUTION

If using a ventilator, verify headrest support does not interfere at ALL angles. Otherwise, injury or damage may occur.

## Removing/Installing/Adjusting Headrest

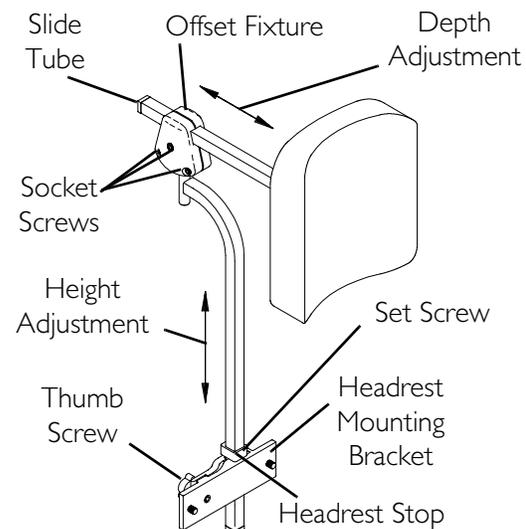
NOTE: For this procedure, refer to FIGURE 9.1.

### Removing

1. Loosen, but DO NOT remove, the thumb screw that secures the headrest to the headrest mounting bracket.
2. Remove the headrest from the headrest mounting bracket.

### Installing

1. Make sure thumb screw is loose.
2. Install the headrest until the headrest stop sits on the headrest mounting bracket.
3. If necessary, adjust the height, depth or direction of the headrest. Refer to [Adjusting Headrest Height](#) on page 61 or [Adjusting Headrest Depth/Direction](#) on page 61.



**FIGURE 9.1** Removing/Installing/Adjusting Headrest

## Adjusting Headrest Height

1. Loosen the set screw on the headrest stop.
2. Loosen, but DO NOT remove, the thumb screw that secures the headrest to the headrest mounting bracket.
3. Position the headrest to the desired height.
4. Tighten the thumb screw that secures the headrest to the headrest mounting bracket.
5. Tighten the set screw on the headrest stop.
6. If necessary, adjust the depth or direction of the headrest. Refer to [Adjusting Headrest Depth/Direction](#) on page 61.

## Adjusting Headrest Depth/Direction

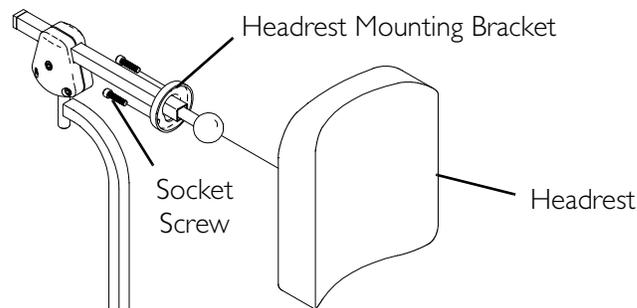
1. Loosen, but DO NOT remove, the three socket screws that secure the offset fixture to the slide tube.
2. If necessary, reposition the headrest to the desired depth by sliding the headrest towards the front of the wheelchair or towards the rear of the wheelchair.
3. If necessary, reposition the headrest to the desired position (headrest will move in any direction).
4. While holding the headrest in the desired position, securely tighten the three socket screws.
5. If necessary, adjust the height of the headrest. Refer to [Adjusting Headrest Height](#) on page 61.

## Replacing Headrest

*NOTE: For this procedure, refer to FIGURE 9.2.*

1. Remove the three socket screws that secure the headrest to the headrest mounting bracket.
2. Position the new headrest on the headrest mounting bracket and secure with the existing three socket screws.
3. If necessary, adjust the height, depth or direction of the headrest. Refer to [Adjusting Headrest Height](#) or [Adjusting Headrest Depth/Direction](#) on page 61.

*NOTE: One style of headrest shown for clarity. Both styles of headrest attach the same way.*



**FIGURE 9.2** Replacing Headrest

# SECTION 10—ELEVATE BATTERIES

*NOTE: This section contains information about batteries in seating systems with elevate. Refer to the owner's manual supplied with the wheelchair base for other battery information.*

## Warnings for Handling and Replacing Batteries

---

### **WARNING**

**Make sure power to the wheelchair is OFF before performing these procedures.**

**The use of rubber gloves is recommended when working with batteries.**

**Invacare strongly recommends that battery installation and battery replacement always be done by a qualified technician.**

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

**22NF batteries weigh 37 pounds each. GP24 batteries weigh 51 pounds each. Use proper lifting techniques (lift with your legs) to avoid injury.**

**Use p/n M22NFSLDG batteries only. Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.**

**ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.**

**DO NOT tip the batteries. Keep the batteries in an upright position.**

**NEVER allow any of your tools and/or battery cable(s) to contact BOTH battery post(s) at the same time. An electrical short may occur and serious personal injury or damage may occur.**

**When tightening the clamps, always use a box wrench. Pliers will “round off” the nuts. NEVER wiggle the battery terminal(s)/post(s) when tightening. The battery may become damaged.**

**The POSITIVE (+) RED battery cable MUST connect to the POSITIVE (+) battery terminal(s)/post(s), otherwise serious damage will occur to the electrical system.**

**Install protective caps on POSITIVE (+) and NEGATIVE (-) battery terminals.**

**DO NOT remove fuse or mounting hardware from POSITIVE (+) RED battery cable mounting screw.**

---

*NOTE: If there is battery acid in the bottom of the battery tray or on the sides of the battery(ies), apply baking soda to these areas to neutralize the battery acid. Before reinstalling the existing or new battery(ies), clean the baking soda from the battery tray or battery(ies) being sure to avoid contact with skin and eyes. Determine source of contamination. Never install/reinstall a battery with a cracked or otherwise damaged case.*

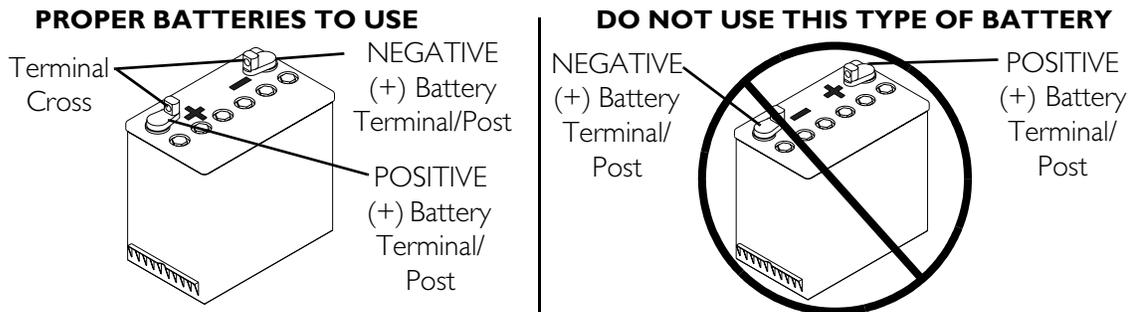
## Using the Proper Batteries

1. Position battery on ground/flat surface as shown below.
2. Visually inspect the battery to ensure proper polarity:

### **⚠ WARNING**

**22NF Batteries with terminal configuration (POSITIVE on the left and NEGATIVE on the right) as shown below MUST be used. Batteries that have the reverse terminal configuration MUST not be used - otherwise injury and damage may occur.**

**Terminals MUST have a cross hole in them as shown below.**



## Replacing Batteries

*NOTE: For this procedure, refer to FIGURE 10.1 on page 65.*

*NOTE: The following tools are required to perform this procedure.*

- Wire Cutter
1. Remove the batteries from the wheelchair. Refer to [Removing/Installing the Batteries From/Into the Wheelchair](#) on page 66.
  2. Cut the tie-wraps that secure the battery terminal covers to the battery terminals.
  3. Slide the RED battery terminal cover back on the RED battery cable to expose the POSITIVE battery terminal.
  4. Slide the BLACK battery terminal cover back on the BLACK battery cable to expose battery terminal.

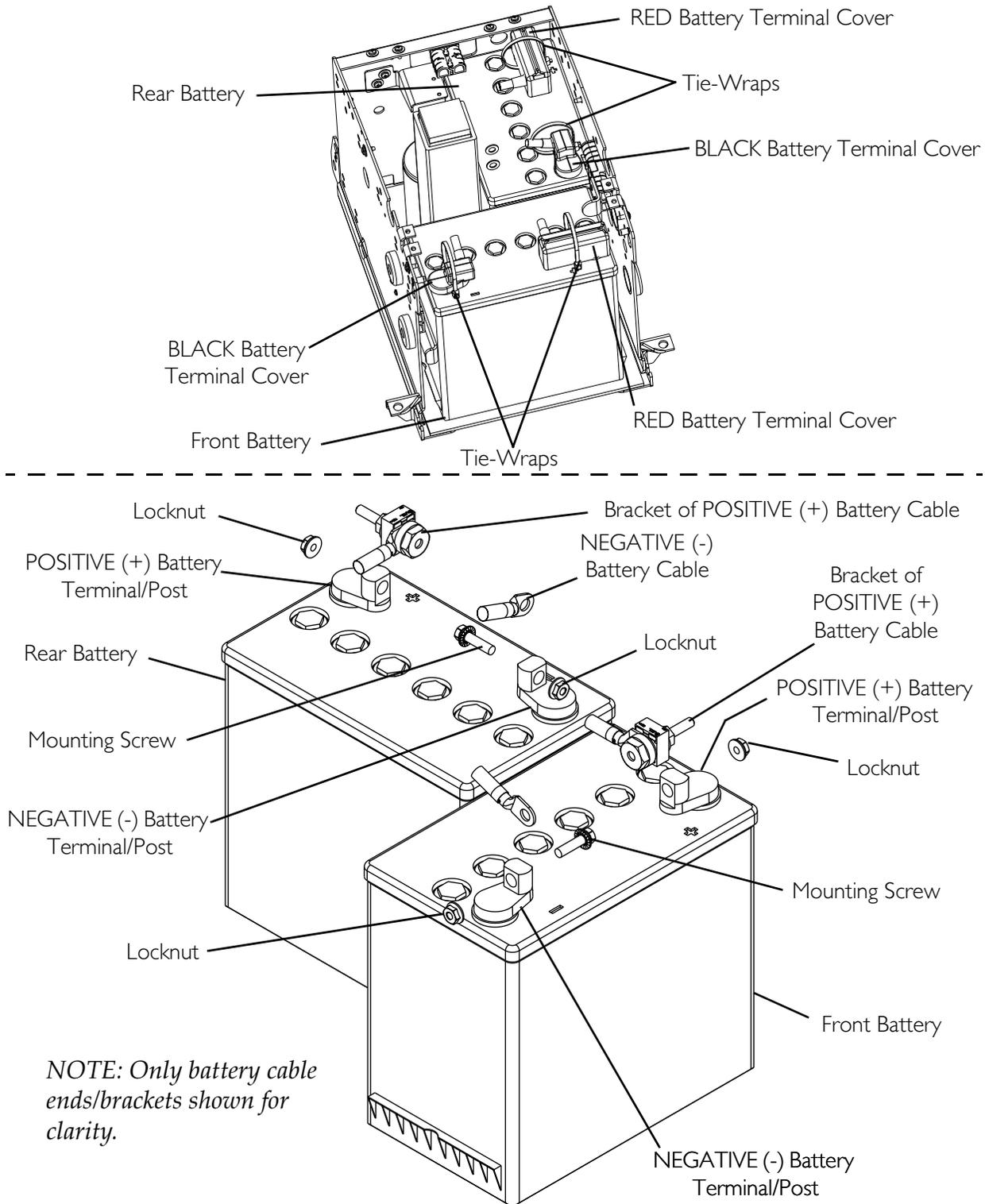
### **⚠ WARNING**

**NEVER allow any of your tools and/or battery cable(s) to contact BOTH battery post(s) at the same time. An electrical short may occur and serious personal injury or damage may occur.**

5. Remove the locknut that secures the bracket of the POSITIVE battery cable to the POSITIVE (+) battery post of the battery.

6. Remove the locknut that secures the NEGATIVE battery cable to the NEGATIVE(-) battery post of the battery
7. Discard the existing battery.
8. Position battery connector bracket or wiring harness onto the new 22NF or GP24 battery as shown.
9. Secure the NEGATIVE battery cable to the NEGATIVE (-) battery post with existing mounting screw and locknut.
10. Secure the bracket of the POSITIVE battery cable to the POSITIVE (+) battery post with existing mounting screw and locknut.
11. Position each battery terminal cover over top of each battery terminal.
12. Secure battery terminal covers in place with one tie-wrap.
13. Install batteries into wheelchair. Refer to Removing/Installing the Batteries From/Into the Wheelchair on page 66.

**Seating System with Elevate  
22NF Batteries  
BATTERY COVER AND TIE-WRAP DETAIL**



**FIGURE 10.1** Replacing Batteries

## Cleaning Battery Terminals

---

### **⚠ WARNING**

**Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully.**

**DO NOT allow the liquid in the battery to come in contact with skin, clothes or other possessions. It is a form of acid and harmful or damaging burns may result. Should the liquid touch your skin, wash the area IMMEDIATELY and thoroughly with cool water. In serious cases or if eye contact is made, seek medical attention IMMEDIATELY.**

---

1. Examine battery terminals for corrosion.
2. Verify the plastic caps are in place over battery cell holes.
3. Clean terminals by using a battery cleaning tool, wire brush, or medium grade sand paper.

*NOTE: Upon completion, areas should be shiny, not dull.*

4. Carefully dust off all metal particles.

## Removing/Installing the Batteries From/Into the Wheelchair

### Removing the Battery Door and Rear Shrouds

---

#### **CAUTION**

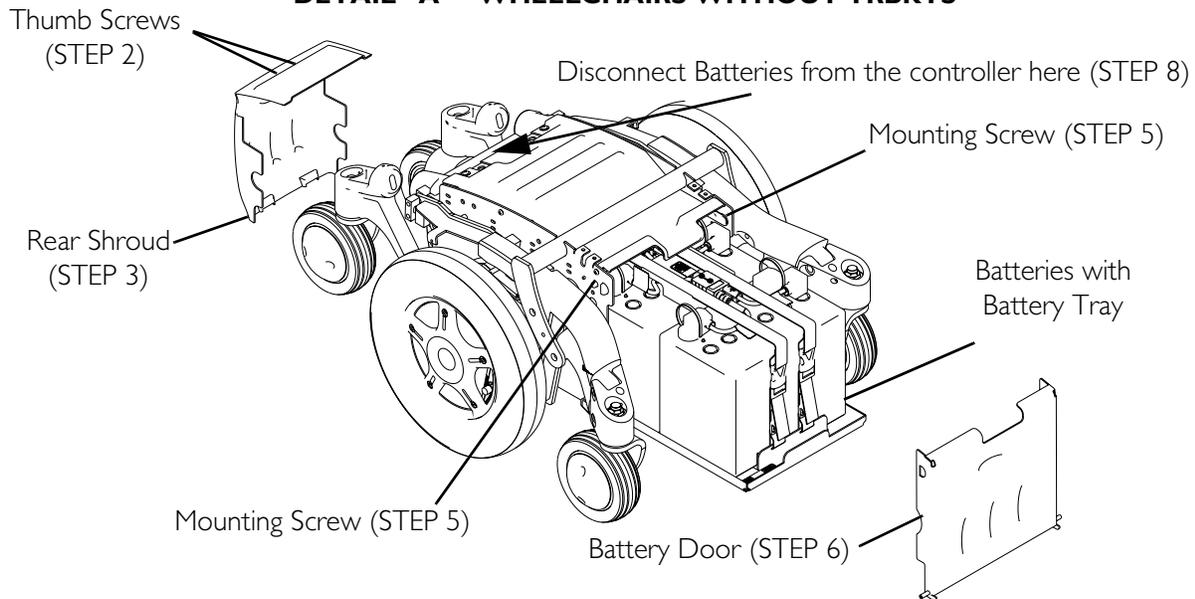
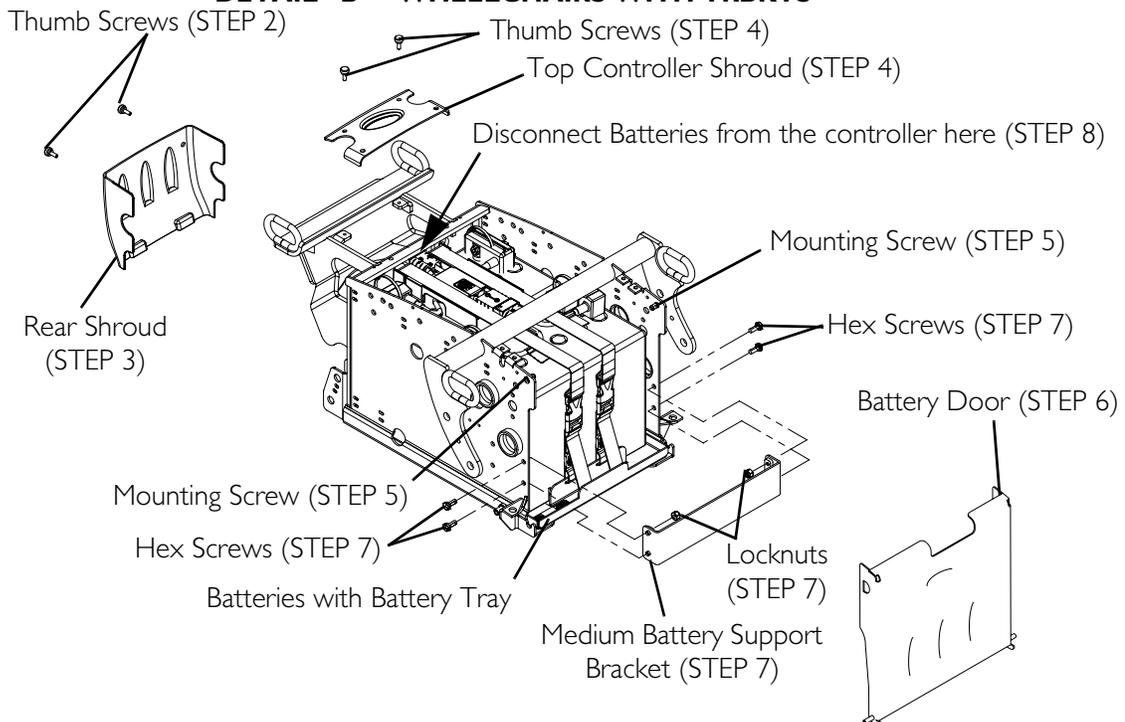
**Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.**

---

*NOTE: For this procedure, refer to FIGURE 10.2 on page 67.*

1. Verify the joystick ON/OFF switch is in the OFF position.
2. Remove the two thumb screws that secure the rear shroud to the wheelchair.
3. Remove the rear shroud from the wheelchair.
4. TRBKTS Options Only - Perform the following steps:
  - A. Remove two thumb screws that secure the top controller shroud (Detail “B”) to the battery box.
  - B. Remove the top controller shroud from the battery box.
5. Remove both mounting screws from side of battery door.
6. Remove the battery door from the front of wheelchair.

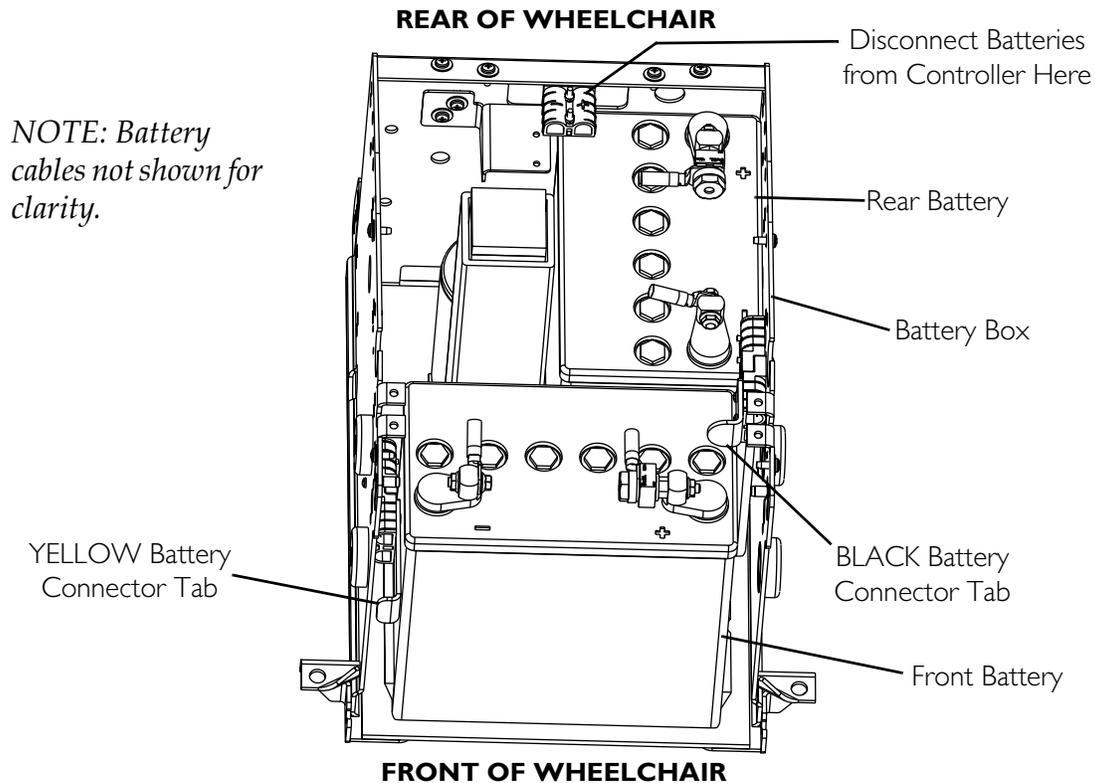
7. TRBKTS Options Only - Perform the following steps (Detail “B”):
  - A. Remove the four screws and four locknuts (if applicable) that secure the battery support bracket to the battery box.
  - B. Remove the battery support bracket.
8. Disconnect the controller from the batteries at the rear of the wheelchair.
9. Remove the batteries. Refer to Removing the Batteries on page 68.

**DETAIL “A” - WHEELCHAIRS WITHOUT TRBKTS****DETAIL “B” - WHEELCHAIRS WITH TRBKTS****FIGURE 10.2** Removing the Battery Door and Rear Shrouds

## Removing the Batteries

*NOTE: For this procedure, refer to FIGURE 10.3.*

1. Grasp and pull the **YELLOW** battery connector tab to unplug the front battery.
2. Slide the front battery **FORWARD** and remove it from the battery box.
3. Grasp and pull the **BLACK** battery connector tab to unplug the rear battery.
4. Slide the rear battery **FORWARD** and remove it from the battery box.

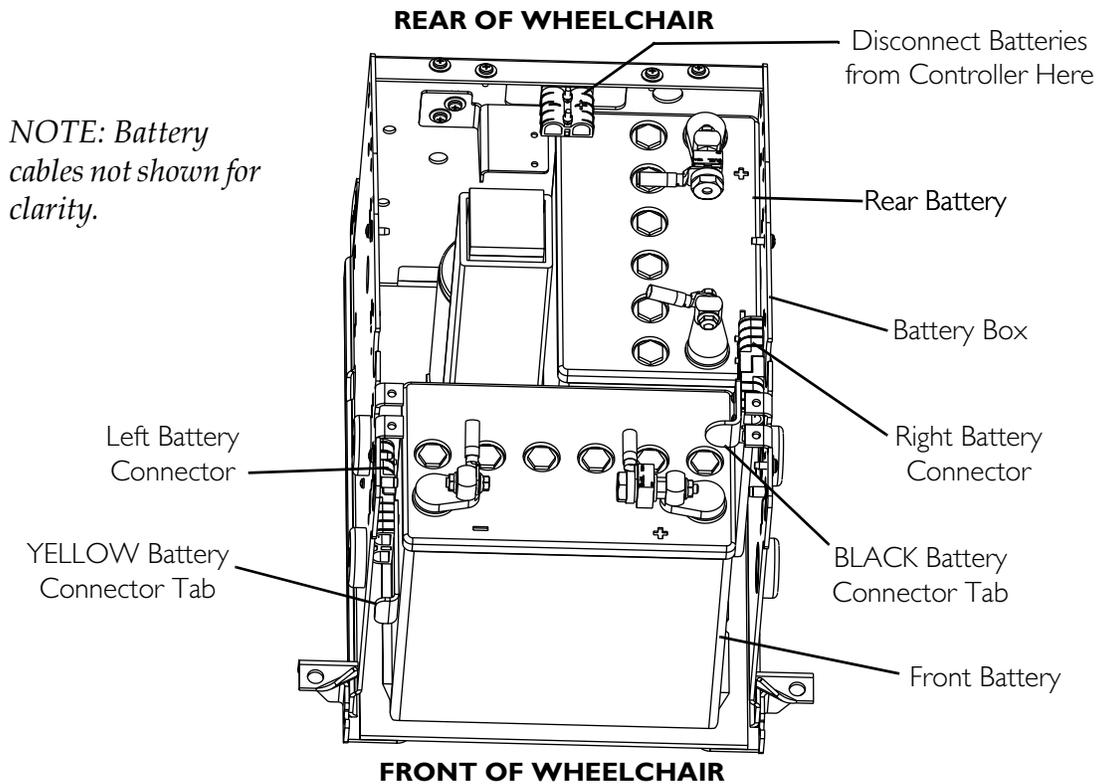


**FIGURE 10.3** Removing the Batteries

## Installing Batteries

*NOTE: For this procedure, refer to FIGURE 10.4 on page 69.*

1. Position the battery with the **BLACK** battery connector tab into the **REAR** of the battery box as shown.
2. Plug the **BLACK** battery connector tab into the **RIGHT** battery connector.
3. Position the battery with the **YELLOW** battery connector tab into the **FRONT** of the battery box as shown.
4. Plug the **YELLOW** battery connector tab into the **LEFT** battery connector.
5. Install the battery door and rear shroud. Refer to [Installing the Battery Door and Rear Shroud](#) on page 69.



**FIGURE 10.4** Installing Batteries

## Installing the Battery Door and Rear Shroud

### **⚠ WARNING**

**Wheelchairs with TRRO or TRBKTS Only - Battery support brackets **MUST** be installed at all times. Otherwise, the wheelchair will not be WC/19 compliant.**

**After installing battery door, ensure that the mounting screws on the side of the battery door are fully engaged into the side of the battery box.**

NOTE: For this procedure, refer to FIGURE 10.2 on page 67.

1. Wheelchairs with TRBKTS Only - Install the battery support bracket onto the battery box (Detail "B" of FIGURE 10.2 on page 67) using the four hex screws and four locknuts (if applicable). Torque to 75 in-lbs.
2. Reinstall battery door onto front of wheelchair.
3. Install both mounting screws on the side of the battery door.

NOTE: Ensure that the mounting screws on the side of the battery door are fully engaged into the side of the battery box.

### **⚠ WARNING**

**When installing batteries, ensure battery connector is securely engaged to the controller connector - otherwise serious personal injury may result.**

4. Connect the controller to the batteries at the rear of the wheelchair.
5. Wheelchairs with TRBKTS Only - Reinstall the top controller shroud using the two thumb screws (Detail “B” of FIGURE 10.2 on page 67).
6. Reinstall the rear shroud and secure in place with the existing two thumb screws.

*NOTE: New Battery(ies) MUST be fully charged BEFORE using, otherwise the life of the battery(ies) will be reduced.*

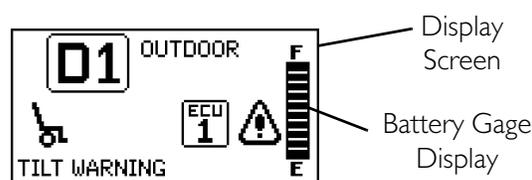
7. If necessary, charge the batteries.

## When to Charge Batteries

*NOTE: For this procedure, refer to FIGURE 10.5.*

The far right side of the display screen is the Battery Gauge Display (BGD). It provides information on the remaining charge in the batteries.

At full charge, solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the segments will progressively disappear a bar at a time until no segments appear between E and F. At this level the user should charge the batteries as soon as possible.



**FIGURE 10.5** When to Charge Batteries

## Charging Batteries

### **⚠ WARNING**

**NEVER** attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. **ALWAYS** use the recharging plug located on the back of the joystick.

**DO NOT** attempt to recharge the batteries and operate the power wheelchair at the same time.

**During use and charging, unsealed batteries will vent hydrogen gas which is explosive in the right concentration with air.**

### **CAUTION**

**ALWAYS** charge new batteries before initial use or battery life will be reduced.

*NOTE: For this procedure, refer to FIGURE 10.6 on page 72.*

*NOTE: New batteries MUST be fully charged prior to initial use of the wheelchair.*

*NOTE: As a general rule, batteries should be recharged daily to assure the longest possible life and minimize the required charging time. Plan to recharge the batteries when it is anticipated the wheelchair will not be used for a long period of time.*

The range per battery charge using recommended batteries should be approximately 5 to 9 hours of typical operation. Extensive use on inclines may substantially reduce per charge mileage.

## Description and Use of Battery Chargers

The charger automatically reduces the charge from an initially high rate to a zero reading at a fully charged condition. If left unattended, the charger should automatically shut-off when full charge is obtained.

**There are some basic concepts which will help you understand this automatic process. They are:**

The amount of electrical current drawn within a given time to charge a battery is called the “charge rate”. If, due to usage, the charge stored in the battery is low, the charge rate is high, as indicated by the GREEN light on the charger. Initially, the GREEN light will stay illuminated for a short period of time followed by a longer period of off time. As a charge builds up, the charge rate is reduced, and the GREEN light will stay illuminated for a longer period of time followed by a shorter off time.

### **⚠ WARNING**

**NEVER leave the charger unattended when the breaker has tripped. A fault condition exists. Unplug and discontinue using immediately. Contact an Invacare dealer.**

*NOTE: If performing the charging procedures independently, READ and CAREFULLY follow the individual instructions for each charger (supplied or purchased).*

*NOTE: If charging instructions are not supplied, consult a qualified service technician for proper procedures.*

### Required Items:

TOOL	QUANTITY	COMMENTS
Battery Charger	1	Supplied
Extension Cord	1	Not Supplied

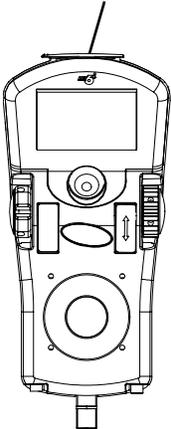
1. Attach the battery charger connector to the charger port on the joystick.
2. Plug the charger’s AC power cord, or extension, into the grounded 120 VAC wall outlet.
3. Wait until charging is complete.

*NOTE: Allow eight hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen hours to be properly charged and equalized.*

*NOTE: It is advantageous to recharge frequently rather than only when necessary. In fact, a battery’s life is extended if the charge level is maintained well above a low condition.*

*NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact an Invacare dealer for service.*

**MPJ+ Joystick**  
Charger/Programming Port (On  
Front of Joystick)



**FIGURE 10.6** Charging Batteries

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# SECTION 11—VENTILATOR TRAY

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## **⚠ WARNING**

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

Before adjusting, repairing or servicing the seating system, **ALWAYS** turn the wheelchair power **OFF**, otherwise, injury or damage may result.

Pinch points exist between seat and base frames. Use caution, otherwise injury may occur.

---

## Preparing the Ventilator Tray for Use

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### **⚠ WARNING**

Maximum weight capacity for the vent tray is 40 lbs  $\pm$  20%. **DO NOT** exceed weight capacity for vent tray - otherwise, injury or damage may occur.

---

### **CAUTION**

**ALWAYS** disconnect the ventilator battery harness from the ventilator battery harness extension **before** connecting the ventilator battery harness to the ventilator. Otherwise damage to the product may occur.

This ventilator tray was designed to hold a ventilator that is approximately 13 inches long, 14½ inches wide, and 14 inches high. Use of ventilators larger than the above specifications may result in damage to the ventilator or stability issues.

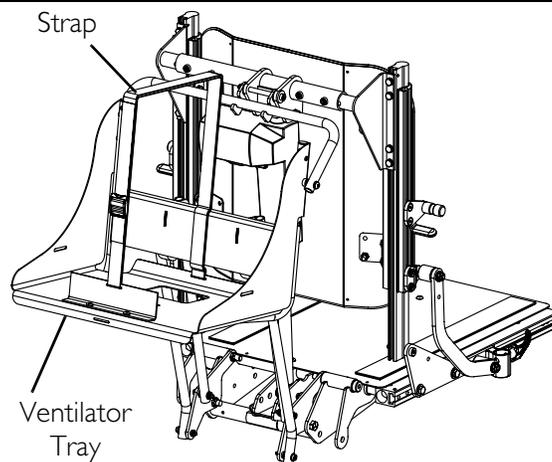
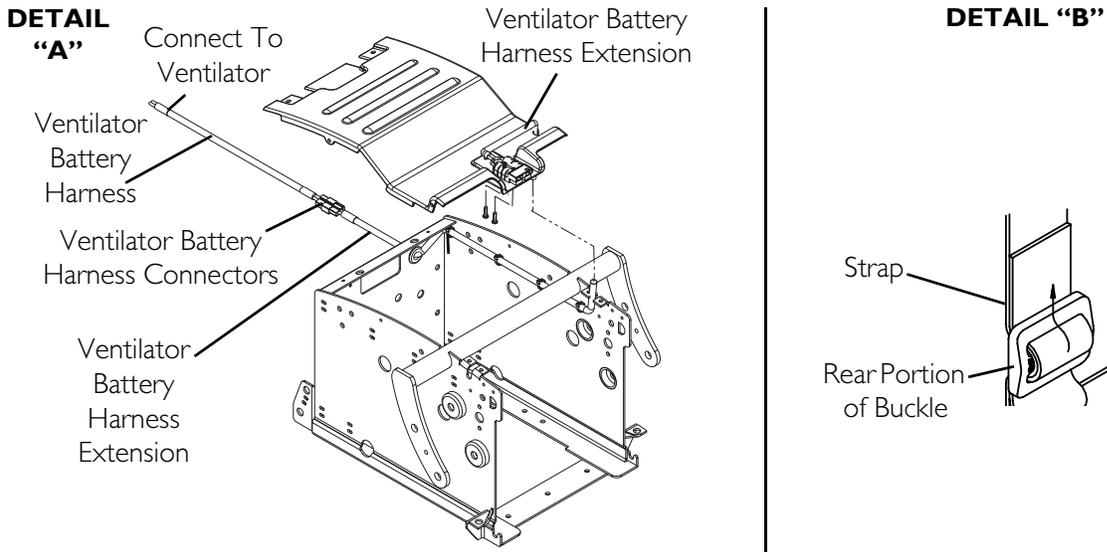
**Wheelchairs with Recline System Only - Any ventilator installation MUST provide adequate clearances to allow unobstructed mechanical operation of the seating system. In addition, some ventilators may have additional clearance requirements. ALWAYS refer to the ventilator's instructions prior to installation for any additional requirements.**

---

*NOTE: For this procedure, refer to FIGURE 1 on page 74.*

1. Position straps to the outside of the ventilator tray.
2. Position the ventilator (not shown) on the ventilator tray.
3. Disconnect the ventilator battery harness connector from the ventilator battery harness extension (Detail "A").
4. Connect the ventilator battery harness to the ventilator. Refer to the ventilator manufacturer's installation instruction.
5. Secure strap around the ventilator and clip together.
6. Securely tighten the straps around the ventilator by pulling the ends of the strap through the rear portion of each buckle (Detail "B").

7. Connect the ventilator battery harness connector to the ventilator battery harness extension (Detail "A").
8. Wheelchairs with recline systems only - Perform the following steps:
  - A. Test the recline function of the seating system to ensure that no part of the back assembly interferes with the ventilator tray.
  - B. If necessary, contact a qualified technician to adjust the recline down limit to avoid interference with the ventilator tray.



**FIGURE I** Preparing the Ventilator Tray for Use

# **GLOBAL LIMITED WARRANTY (EXCLUDING CANADA)**

**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 who purchases this product within any country excluding CANADA when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner.

Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person. For product purchased in Canada, please refer to the Canada Limited Warranty.

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

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of three (3) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries) and powered seating actuators to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials and padded materials) to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component 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 bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

**LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, COMMERCIAL OR INSTITUTIONAL USE, 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 AND TEAR OR FAILURE TO ADHERE TO THE PRODUCT INSTRUCTIONS. A CHANGE IN OPERATING NOISE, PARTICULARLY RELATIVE TO MOTORS AND GEARBOXES DOES NOT CONSTITUTE A FAILURE OR DEFECT AND WILL NOT BE REPAIRED; ALL DEVICES WILL EXHIBIT CHANGES IN OPERATING NOISE DUE TO AGING.**

**THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN AND INVACARE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE. THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.**

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# CANADA 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 who purchases this product within Canada when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

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

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of three (3) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries) and powered seating actuators to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials and padded materials) to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component 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 bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

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**THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.**

Invacare Corporation [www.invacare.com](http://www.invacare.com)



**Yes, you can.**

**USA**  
One Invacare Way  
Elyria, Ohio USA  
44036-2125  
800-333-6900

**Canada**  
570 Matheson Blvd E Unit 8  
Mississauga Ontario  
L4Z 4G4 Canada  
800-668-5324

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