

# Owner's Operator And Maintenance Manual

## ***EXCEL*** ***and*** ***POWER 9000***

DEALER: THIS MANUAL MUST BE GIVEN TO THE USER OF THE WHEELCHAIR.

USER: BEFORE USING THIS WHEELCHAIR, READ THIS MANUAL AND SAVE FOR FUTURE REFERENCE.



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**WARNING**

**DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS, AND INSTRUCTIONS, CONTACT A HEALTHCARE PROFESSIONAL, DEALER OR TECHNICAL PERSONNEL IF APPLICABLE BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE INJURY OR DAMAGE MAY RESULT.**

**THE INITIAL SET UP OF THIS WHEELCHAIR MUST BE PERFORMED BY AN INVACARE DEALER OR QUALIFIED TECHNICIAN.**

**PROCEDURES OTHER THAN THOSE DESCRIBED IN THIS MANUAL MUST BE PERFORMED BY AN INVACARE DEALER OR QUALIFIED TECHNICIAN.**

**SPECIAL NOTES**

WARNING/CAUTION notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or 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.

**WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT POSITIONING STRAPS**

Invacare recommends that wheelchair users NOT be transported in vehicles of any kind while in wheelchairs. 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.

**AS REGARDS RESTRAINTS - SEAT POSITIONING STRAPS - IT IS THE OBLIGATION OF THE DME DEALER, THERAPISTS AND OTHER HEALTHCARE PROFESSIONALS TO DETERMINE IF A SEATING POSITIONING STRAP IS REQUIRED TO ENSURE THE SAFE OPERATION OF THIS EQUIPMENT BY THE USER. SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM A WHEELCHAIR.**

**SAVE THESE INSTRUCTIONS**

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**SPECIFICATIONS**

NOTE: All specifications are approximate.

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	<b>EXCEL</b>			
	<b>INTEGRATED SLING SEAT</b>	<b>CAPTAIN'S SEAT</b>		
		<b>LOW (LOB)</b>	<b>BACK TYPE LOW SOLID SEAT (LOBSS)</b>	<b>HIGH (HIB)</b>
<b>Seat Width Range:</b>	16, 18 or 20-in.	19-in.	19-in.	19-in.
<b>Seat Depth Range:</b>	16, 17 or 18-in. - In 1-in. increments (17 and 18-in. by extension)	17-in.	17-in.	17-in.
<b>Back Height Range Std.:</b>	16, 17, 18, 19 or 20-in. - In 1-in. increments	16-in.	18-in.	22-in.
<b>Opt. Headrest:</b>	N/A	N/A	N/A	28-in.
<b>Opt. Backrest Ext.:</b>	N/A	23-in.	N/A	N/A
<b>Back Angle Range:</b>	N/A	†55° - 114°	†98°	†35° - 170°
<b>Seat-to-Floor:</b>	18-1/2-in.	22-in.	19-1/2-in.	22-in.
<b>Overall Width (No joystick):</b>	24-5/8-in.	24-3/4-in.	24-3/4-in.	24-3/4-in.
<b>Overall Height:</b>	34-3/8-in. - 16-in. Back Height	35-in.	35-in.	39-in.
<b>⊗Weight W/O Batteries:</b>	90 to 100 lbs.	122 to 127 lbs.		
<b>W/Batteries (Gel Cell):</b>	170 to 180 lbs.	203 to 207 lbs.		
<b>Shipping:</b>	105 to 115 lbs.	153 to 157 lbs.		
<b>Armrests:</b>	Removable, Flip Back, Fixed or Adjustable Height - Desk and Full Length	Flip Back - Adjustable Height - Full Length (Std.)		
<b>Upholstery:</b>	Black Nylon	Vinyl or Cloth with Vinyl		

⊗NOTE: 18-in. wide x 16-in. deep wheelchair with MKIV RII electronics.

†NOTE: Low and High Back Types have an Infinite adjustment. Low Backs with Solid Seat have no adjustment.

	<b>INTEGRATED SLING SEAT AND CAPTAIN'S SEAT</b>		
	<b>REAR POSITION</b>	<b>⊕DRIVE WHEEL POSITION</b>	
		<b>MIDDLE POSITION</b>	<b>FORWARD POSITION</b>
<b>Overall Length</b>			
<b>With 8-in. rear casters and 93 front riggings:</b>	47-1/2-in.	47-1/2-in.	N/A
<b>With 8-in. rear casters and no front riggings:</b>	32-1/2-in.	33-1/2-in.	N/A
	⊕ NOTE: Refer to <b>PERCENTAGE OF WEIGHT DISTRIBUTION</b> in <b>PROCEDURE 1</b> of this manual.		
<b>Drive Wheels/Tires:</b>	12-1/2 x 2-1/4-in. (Flat Free or Pneumatic)		
<b>Casters w/Precision Sealed Bearings:</b>	8 x 1-3/4-in. Semi Pneumatic (Std.), 8 x 2-in. Pneumatic (Opt.) 6 x 2-in. Semi Pneumatic (Opt.)		
<b>Footrest/Legrest:</b>	Swingaway, Removable Adjustable Flip Up Removable Footboard		
<b>Battery/Size (Not Supplied):</b>	22NF Gel Cell (Two (2) Required)		

**PERFORMANCE**

<b>Speed (M.P.H.):</b>	0 to 3.8
<b>Turning Radius:</b>	≥ 26-in.
<b>* Range (variable):</b>	17-22 miles
<b>** ⊕ Weight Limitation:</b>	250 lbs.

\*NOTE: Range will vary with battery conditions, surface, terrain and operators weight.

\*\*NOTE: Includes seating systems and accessories.

⊕ NOTE: Refer to **PERCENTAGE OF WEIGHT DISTRIBUTION** in **PROCEDURE 1** of this manual.

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NOTE: All specifications are approximate.

POWER 9000	
<b>Seat Width Range:</b>	14, 16, 18 or 20-in. - ADULT FRAME 16, 18 or 20-in. - LOW SEAT FRAME
<b>Seat Depth Range:</b>	16, 17 or 18-in. (17 and 18-in. by extension)
<b>Back Height Range Standard:</b>	16, 17, 18, 19 or 20-in.
<b>Seat-to-Floor:</b>	18-1/2-in.- LOW SEAT 20-1/4-in.- ADULT
<b>Overall Width:</b>	21-3/4 to 27-3/4-in. (With MKIV Joystick)
<b>Overall Height:</b>	33-1/4 to 37-1/4-in.- LOW SEAT 35-1/4 to 39-1/4-in.- ADULT
<b>Overall Length</b>	
<b>RWD Wheelchairs:</b>	36-1/2 to 47-1/4-in.
<b>FWD with 93 front riggings:</b>	N/A
<b>FWD with no front riggings:</b>	N/A
<b>Weight</b>	
<b>W/O Batteries:</b>	82 lbs.
<b>W/ Batteries and PW93 front riggings</b>	
<b>U1 Gel Cell (14-inch chairs):</b>	145 lbs.
<b>22NF Gel Cell (16, 18 or 20-inch chairs):</b>	157 lbs.
<b>Shipping:</b>	110 lbs.
<b>Drive Wheels/Tires</b>	
<b>(Flat Free or Pneumatic):</b>	12-1/2 x 2-1/4-in.
<b>Casters w/Precision Sealed Bearings:</b>	8x 1-3/4-in. Semi Pneumatic (Standard) 8x 2-in. Pneumatic (Optional)
<b>Anti-Tippers:</b>	Rotating, Removable (Standard)
<b>Footrest/Legrest:</b>	Swingaway, Removable
<b>Armrests:</b>	Fixed Height - Desk and Full Length (Standard) Adjustable Height - Desk and Full Length (Optional)
<b>Upholstery:</b>	Black Nylon
<b>Battery/Size (Not Supplied)</b>	
<b>Two (2) Required:</b>	U1 Gel Cell (14-in. chairs), 22NF Gel Cell (16, 18 or 20-in. chairs)

★ NOTE: 18-inch wide x 16-inch deep wheelchair with MKIV RII electronics.

## PERFORMANCE

<b>Speed (M.P.H.):</b>	0 to 4
<b>Turning Radius:</b>	35-inches
<b>* Range (variable):</b>	12-14 miles with U1 batteries 18-22 miles with 22NF batteries
<b>** Weight Limitation:</b>	250 lbs.

\*NOTE: Range will vary with battery conditions, surface, terrain and operators weight.

\*\*NOTE: Includes seating systems and accessories.

<i><b>This Procedure Includes the Following:</b></i>
<i><b>Repair or Service Information</b></i>
<i><b>Operating Information</b></i>
<i><b>Safety/Handling of Wheelchairs</b></i>

**REPAIR OR SERVICE INFORMATION**

Set-up of the Electronic Control Unit is to be performed **ONLY** by individuals certified by Invacare. The final tuning adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances. If non-certified individuals perform any work on these units, the warranty is voided.

**OPERATING INFORMATION**

**GENERAL WARNINGS**

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 chair and to surrounding property.

After the wheelchair has been set-up, 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 procedure until the wheelchair performs to specifications.

**DO NOT** shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over.

**DO NOT** engage or disengage the motor locks/clutches until the power is in the **OFF** position.

**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 a water, ice or oil film.

**DO NOT** attempt to drive over curbs or obstacles. Doing so may cause your wheelchair to turn over and cause bodily harm or damage to the chair.

**DO NOT** use unauthorized parts, accessories, or adapters other than those authorized by Invacare.

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

**DO NOT** stand on the frame of the wheelchair.

**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 chair.

**ALWAYS** wear your seat positioning strap.

**TIRE PRESSURE**

**DO NOT** use your wheelchair unless it has the proper tire pressure (P.S.I.). **DO NOT** overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm. The recommended tire pressure is listed on the side wall of the tire.

**GENERAL WARNINGS (CONTINUED)****ELECTRICAL**

EXTREME care should be exercised when using oxygen in close proximity to electric circuits. Contact your oxygen supplier for instruction in the use of oxygen.

**Grounding Instructions:**

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

**BATTERIES**

Only deep cycle, sealed case construction batteries should be used in this device.

**RAIN TEST**

INVACARE has tested its power wheelchairs in accordance with ISO 7176 Part 9 "Rain Test". This provides the end user or his/her attendant sufficient time to remove his/her power wheelchair from a rain storm and retain wheelchair operation.

DO NOT leave power wheelchair in a rain storm of any kind.

DO NOT use power wheelchair in a shower or leave it in a damp bathroom while taking a shower.

DO NOT leave power wheelchair in a damp area for any length of time.

Direct exposure to rain or dampness will cause the chair to malfunction electrically and mechanically; may cause the chair to prematurely rust.

Check to ensure that the battery covers are secured in place, joystick boot is NOT torn or cracked where water can enter and that all electrical connections are secure at all times.

DO NOT use the joystick if the boot is torn or cracked. If the joystick boot becomes torn or cracked, replace IMMEDIATELY.

**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**

The EXCEL has a weight limitation of 250 lbs. Refer to PERCENTAGE OF WEIGHT DISTRIBUTION in PROCEDURE 1 of this manual.

The Power 9000 has a weight limitation of 250 lbs.

Invacare recommends that only heavy-duty constructed wheelchairs should be used for individuals weighing more than 250 lbs. Further, the activity level of the individual wheelchair user is important. For instance, a 170 lbs. active wheelchair user could subject the wheelchair to more stress than a 250 lbs. user. Invacare recommends that very active users consider the use of heavy-duty constructed wheelchairs.

## SAFETY/HANDLING OF WHEELCHAIRS

“Safety and Handling” of the wheelchair requires the close attention of the wheelchair user as well as the assistant. This manual points out the most common procedures and techniques involved in the safe operation and maintenance of the wheelchair. It is important to practice and master these safe techniques until you are comfortable in maneuvering around the frequently encountered architectural barriers.

Use this information only as a “basic” guide. The techniques that are discussed on the following pages have been used successfully by many.

Individual wheelchair users often develop skills to deal with daily living activities that may differ from those described in this manual. Invacare recognizes and encourages each individual to try what works best for him/her in overcoming architectural obstacles that they may encounter, however, ALL WARNINGS and CAUTIONS given in this manual MUST be followed. Techniques in this manual are a starting point for the new wheelchair user and assistant with “safety” as the most important consideration for all.

### Stability and Balance

**WARNING**

**ALWAYS wear your seat positioning strap.**

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity. DO NOT lean forward out of the wheelchair any further than the length of the armrests.

### Coping With Everyday Obstacles

Coping with the irritation of everyday obstacles can be alleviated somewhat by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability and balance.

### A Note to Wheelchair Assistants

When assistance to the wheelchair user is required, remember to use good body mechanics. Keep your back straight and bend your knees whenever tilting wheelchair or traversing curbs, or other impediments.

**WARNING**

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

Also, be aware of detachable parts such as arms or leg-rests. These must NEVER be used for hand-hold or lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

When learning a new assistance technique, have an experienced assistant help you before attempting it alone.

### Tilting - RWD Wheelchairs Only

**WARNING**

**DO NOT tilt the wheelchair without assistance.**

When tilting the wheelchair, an assistant should grasp the back of the wheelchair on a non-removable (non-detachable) part. Inform the wheelchair occupant before tilting the wheelchair and remind him/her to lean back. Be sure the occupant’s feet and hands are clear of all wheels.

### TILTING - CURBS.

After mastering the techniques of tilting the wheelchair, use this procedure to tackle curbs, short stairs, etc.

This procedure requires two (2) assistants. The second assistant should be positioned at the front of the wheelchair lifting upward on a non-removable (non-detachable) part of the wheelchair frame when lifting the wheelchair and stabilizing the wheelchair when the wheelchair is being lowered to the ground.

The first assistant should turn the anti-tippers so the wheels are pointing up, apply a continuous downward motion until the balance point is achieved and the front casters clear the curb. At this point, the assistants will feel a difference in the weight distribution.

**WARNING**

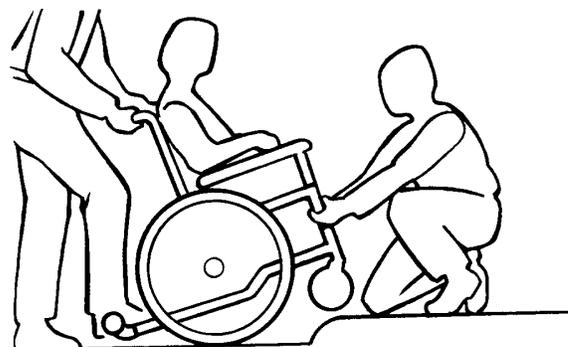
**Do not let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant.**

Roll the wheelchair forward and SLOWLY lower the wheelchair in one continuous movement. Push the wheelchair forward until the rear wheels roll up and over the curb.

**WARNING**

**Make sure anti-tipper wheels are pointing down towards the ground/floor BEFORE using the wheelchair.**

Turn the anti-tipper wheels down towards the ground/floor.



TILTING: CURBS

Stairways

**WARNING**

DO NOT attempt to move an occupied power wheelchair between floors using a stairway. Use an elevator to move an occupied power wheelchair between floors. If moving a power wheelchair between floors by means of a stairway, the occupant MUST be removed and transported independently of the power wheelchair.

Extreme caution is advised when it is necessary to move an UNOCCUPIED power wheelchair up or down the stairs. Invacare recommends using two (2) assistants and making thorough preparations. Make sure to use ONLY secure, non-detachable parts for hand-hold supports.

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

Follow this procedure for moving the wheelchair between floors when an elevator is NOT available:

**WARNING**

The weight of the wheelchair without the user and batteries is still between 82 and 127lbs. Use proper lifting techniques (lift with your legs) to avoid injury.

1. Remove the occupant from the wheelchair.
2. Remove the battery boxes from the wheelchair. Refer to one (1) of the following:
  - FWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 10 of this manual.
  - RWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 11 of this manual.
3. Bend your knees and keep your back straight.
4. Using non-removable (non-detachable) parts of the wheelchair, lift the wheelchair off of the ground and transfer the wheelchair up or down the stairs.
5. The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been carried away from the stairway.



**ESCALATORS? SORRY!**

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

**Transferring to and From Other Seats**

**WARNING**

ALWAYS turn the wheelchair power OFF and engage the 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 by turning both casters away from the object you are transferring onto.

**CAUTION**

When transferring, position yourself as far back as possible in the seat. This will prevent broken screws, damaged upholstery and the possibility of the wheelchair tipping forward.

*NOTE: This activity may be performed independently provided you have adequate mobility and upper body strength.*

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the casters pointing away from it.
2. Engage clutches. Refer to one (1) of the following:
  - FWD WHEELCHAIRS - ENGAGING/DISENGAGING CLUTCHES** in PROCEDURE 10 of this manual.
  - RWD WHEELCHAIRS - ENGAGING/DISENGAGING CLUTCHES** in PROCEDURE 11 of this manual.
3. Shift body weight into seat with transfer.

During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.



**Percentage of Weight Distribution**

**WARNING**

DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.

**WARNING**

Many activities require the wheelchair user to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to normal balance, center of gravity, and weight distribution of the wheelchair. To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified healthcare professional BEFORE attempting active use of the wheelchair.

Proper positioning is essential for your safety. When reaching, leaning, bending or bending forward, it is important to use the casters as a tool to maintain stability and balance.

**FWD WHEELCHAIRS ONLY (FIGURE 1).**

**WARNING**

The overall performance of the wheelchair WILL be affected by the front wheel mounting position. The following charts show the mounting position of the motors for each seat width and depth depending on the factory setting or user's weight. If the mounting position that corresponds to the user's weight is different than the factory setting, the motors MUST BE repositioned to maintain proper stability BEFORE using the wheelchair. Otherwise injury or damage can occur.

Periodically review the following charts to make sure the motor mounting position still corresponds to the user's weight to maintain the proper stability.

Repositioning the motors MUST be performed by an Invacare Dealer.

*NOTE: If motors are repositioned, the front riggings may need to be repositioned. Refer to **ADJUSTING/REPLACING TELESCOPING FRONT RIGGING SUPPORT** in **PROCEDURE 9** of this manual.*

**EXCEL FACTORY SETTINGS  
MOTOR MOUNTING POSITIONS**

SEAT WIDTH	SEAT DEPTH		
	16	17	18
16	MIDDLE	MIDDLE	MIDDLE
18	MIDDLE	MIDDLE	MIDDLE
20	MIDDLE	MIDDLE	MIDDLE

**USERS' WEIGHT 200 LBS AND UNDER -  
MOTOR MOUNTING POSITIONS**

SEAT WIDTH	SEAT DEPTH		
	16	17	18
16	REAR	REAR	REAR
18	REAR	REAR	REAR
20	REAR	REAR	REAR

**USERS' WEIGHT 201 TO 250 LBS -  
MOTOR MOUNTING POSITIONS**

SEAT WIDTH	SEAT DEPTH		
	16	17	18
16	MIDDLE	MIDDLE	MIDDLE
18	MIDDLE	MIDDLE	MIDDLE
20	MIDDLE	MIDDLE	MIDDLE

FIGURE 1 shows the motor mounting positions.

*NOTE: The front motor mounting holes are reserved for future applications.*

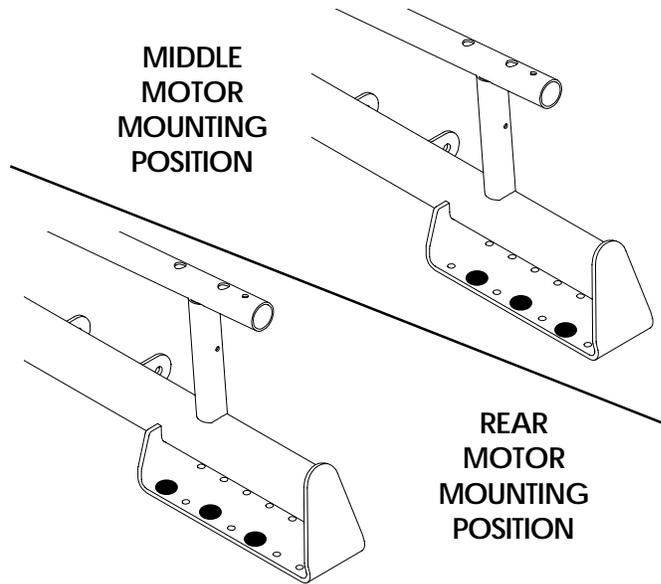
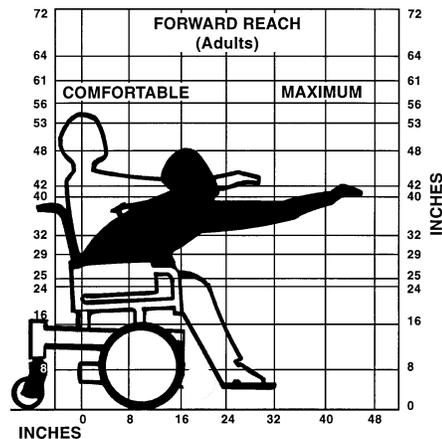


FIGURE 1 - PERCENTAGE OF WEIGHT DISTRIBUTION - FWD WHEELCHAIRS ONLY

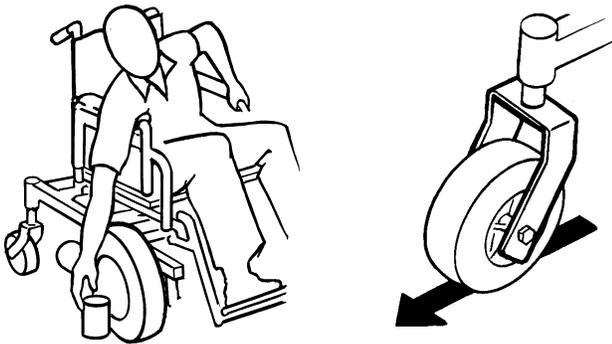
**Functional Reach From a Wheelchair**

The approximate reach-limit values shown in the accompanying graphs were derived on the basis of a sample of 91 male and 36 female wheelchair users. Note the difference between the maximum and the comfortable reach limits, a subjective but important consideration in design.



**Reaching, Leaning, Bending and Bending - Forward**

1. Perform one (1) of the following:
  - A. **Front Wheel Drive Wheelchairs** - Position the rear casters so that they are extended as rearward as possible.
  - B. **Rear Wheel Drive Wheelchairs** - Position front casters as far forward as possible.
2. Engage clutches and, if applicable, wheel locks\*. **DO NOT ATTEMPT TO REACH OBJECTS IF YOU HAVE TO PICK THEM UP FROM THE FLOOR BY REACHING DOWN BETWEEN YOUR KNEES.**



**WARNING**

\*Wheel locks are an **OPTION** on RWD wheelchairs, (you may order with or without wheel locks). Transfer to and from the wheelchair in the presence of a qualified healthcare professional to determine individual safety limits. Invacare strongly recommends ordering the wheel locks as an additional safeguard for the wheelchair user.

**Reaching, Bending - Backward**

**WARNING**

**DO NOT** lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.



1. Position wheelchair as close as possible to the desired object.
2. Perform one (1) of the following:
  - A. **Front Wheel Drive Wheelchairs** - Point rear casters rearward to create the longest possible wheelbase.
  - B. **Rear Wheel Drive Wheelchairs** - Point front casters as far forward as possible to create the longest possible wheelbase.
3. Reach back only as far as your arm will extend without changing your sitting position.

**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 meter (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. This powered wheelchair model as shipped, has an unknown immunity level.

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.

**WARNING**

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.

#### 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. 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) The MCC MKIV controller for this application has an unknown immunity level.

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

**S A F E T Y I N S P E C T I O N**

<b><i>This Procedure Includes the Following:</i></b>	
<b><i>Safety Inspection Checklist</i></b> <b><i>Troubleshooting - Mechanical</i></b> <b><i>Troubleshooting - Electrical</i></b>	<b><i>Checking Battery Charge Level</i></b>

**SAFETY INSPECTION CHECKLIST**

Initial adjustments should be made to suit personal body structure and preference. Thereafter follow these maintenance procedures:

ITEM	INITIALLY	INSPECT/ ADJUST WEEKLY	INSPECT/ ADJUST MONTHLY	INSPECT/ ADJUST PERIODICALLY
<b>GENERAL (MECHANICAL TROUBLESHOOTING)</b> ● Wheelchair rolls straight (no excessive drag or pull to one side).	X			X
<b>CLOTHING GUARDS</b> ● Ensure all fasteners are secure.	X			X
<b>ARMS - (PROCEDURE 4)</b> ● Secure but easy to release; adjustment levers engage properly. ● Adjustable height arms operate and lock securely.	X X			X X
<b>* WHEEL LOCKS (RWD WHEELCHAIRS ONLY) - (PROCEDURE 11)</b> ● Do not interfere with tires when rolling. ● Pivot points free of wear and looseness. ● Wheel locks easy to engage.	X X X		X X	X
<b>SEAT AND BACK UPHOLSTERY</b> ● Inspect for rips or sagging.	X			X
<b>DRIVE WHEELS</b> ● Axle bolts and locking tab washers are secure. ● No excessive side movement or binding when lifted and spun when disengaged (free-wheeling).	X X			
<b>CASTERS - (PROCEDURE 8)</b> ● Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop. ● Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop. <b>CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.</b>	X X X		X X	
<b>CASTER/WHEEL/FORK/HEAD TUBE - (PROCEDURE 8)</b> ● Ensure all fasteners are secure.	X	X		
<b>TIRES</b> ● Inspect for flat spots and wear. ● If pneumatic tires check for proper inflation. <b>CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.</b>	X X	X X		
<b>CLEANING</b> ● Clean upholstery and armrests.	X			X

*NOTE: Every six (6) months take your wheelchair to a qualified dealer 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.*

**T R O U B L E S H O O T I N G**

**WARNING**

\*Wheel locks are an OPTION on RWD wheelchairs, (you may order with or without wheel locks). Transfer to and from the wheelchair in the presence of a qualified healthcare professional to determine individual safety limits. Invacare strongly recommends ordering the wheel locks as an additional safeguard for the wheelchair user.

**TROUBLESHOOTING - MECHANICAL**

CHAIR VEERS LEFT/RIGHT	SLUGGISH TURN/ PERFORMANCE	CASTERS FLUTTER	SQUEAKS AND RATTLES	LOOSENESS IN CHAIR	CHAIR 3 WHEELS	SOLUTIONS
X	X	X			X	If pneumatic, check tires for correct and equal pressure.
X	X	X	X	X		Check for loose stem nuts/bolts.
X		X				Check that both casters contact ground at the same time.

**TROUBLESHOOTING - ELECTRICAL**

SAFETY INSPECTION

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Batteries draw excessive current when charging.	Battery failure.  Electrical malfunction.	Check batteries for shorted cell. Replace if necessary (FWD - PROCEDURE 10, RWD - PROCEDURE 11).  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 (FWD - PROCEDURE 10, RWD - PROCEDURE 11).  Contact Dealer/Invacare for Service.  Poor connections between charger and wheelchair. Contact Dealer/Invacare for Service.
Battery indicator flashes the charge level is low—too soon after being recharged.	Batteries not charged.  Weak batteries.  Electrical malfunction.	Have charger checked.  Replace batteries if necessary (FWD - PROCEDURE 10, RWD - PROCEDURE 11).  Contact Dealer/Invacare for Service.
Motor “chatters” or runs irregular.	Electrical malfunction.	Contact Dealer/Invacare for Service.
Wheelchair does not respond to commands. Power "ON", battery indicator flashes.	One (1) or both clutches disengaged.	Engage motor locks/clutches (FWD - PROCEDURE 10, RWD - PROCEDURE 11).
Only one (1) drive wheel turns.	Electrical malfunction.  One (1) clutch is disengaged.	Contact Dealer/Invacare for Service.  Engage clutch (FWD - PROCEDURE 10, RWD - PROCEDURE 11).
Joystick erratic or does not respond as desired.	Electrical malfunction.  Controller Programed improperly (Power 9000 Only).	Contact Dealer/Invacare for Service.  Reprogram controller (Refer to MCC-MKIV controller manual supplied with wheelchair).
Wheelchair does not respond to commands. Power indicator OFF—even after recharging.	Poor battery terminal connection.  Electrical malfunction.	Clean terminals (FWD - PROCEDURE 10, RWD - PROCEDURE 11).  Contact Dealer/Invacare for Service.

NOTE: For additional troubleshooting information and explanation of error codes, refer to the individual CONTROLLER MANUAL supplied with each wheelchair.

**CHECKING BATTERY CHARGE LEVEL**

The following “Do’s” and “Don’ts” are provided for your convenience and safety.

TROUBLESHOOTING

DON'T	DO
Don't perform any installation or maintenance without first reading this manual.	Read and understand this manual and any service information that accompanies a battery and charger before operating the wheelchair.
Don't perform installation or maintenance of batteries in an area that could be damaged by battery spills.	Move the wheelchair to a work area before checking the fluid level, adding distilled water, cleaning terminals, or opening battery box.
Don't make it a habit to discharge batteries to the lowest level.	Recharge as frequently as possible to maintain a high charge level and extend battery life.
Don't use randomly chosen batteries/chargers.	Follow recommendations in this manual when selecting a battery or charger.
Don't put new batteries into service before charging.	Fully charge a new battery before using.
Don't tip or tilt batteries.	Use a carrying strap to remove, move or install a battery.
Don't use ordinary tap water.	ONLY use distilled water to refill.
Don't overfill cells.	Keep the liquid level in the cells at the “split ring” level.
Don't use uneven levels of distilled water in cells.	Maintain the liquid in all cells at the “split ring” level.
Don't tap on clamps or terminals with tools.	Push battery clamps onto terminals. Spread clamps wider if necessary.
Don't mismatch your battery and chargers.	Use ONLY a GEL charger for a GEL or sealed battery and a regular charger for regular batteries.

### Using Hydrometer to Check Battery Cells (Lead Acid) (FIGURE 1)

*NOTE: Perform this procedure when a digital voltmeter is not available.*

#### WARNING

NEVER smoke or strike a match near the batteries. If the caps of battery cells are removed, NEVER look directly into them when charging battery.

The use of rubber gloves and safety glasses is recommended when testing the battery cells.

When reading a hydrometer, DO NOT allow any liquid to come in contact with your eyes or skin. It is a form of acid and can cause serious burns, and in some cases, blindness. If you do get battery acid on you, flush the exposed areas with cool water IMMEDIATELY. If the acid comes into contact with eyes or causes serious burns, get medical help IMMEDIATELY.

The battery acid can damage your wheelchair, clothing, and household items. Therefore, take readings cautiously and only in designated areas.

ONLY use distilled water when topping off the battery cells.

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

1. Remove the battery boxes from the wheelchair. Refer to one (1) of the following:

**FWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 10 of this manual.

**RWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 11 of this manual.

2. Remove the battery caps from the battery.
3. Squeeze the air from the hydrometer.
4. Place the hydrometer into a battery cell.

*NOTE: DO NOT fill hydrometer more than 3/4 full.*

5. Draw up sufficient acid to cover float balls.
6. Tap lightly to remove air bubbles.
7. Number of floating balls indicates charge.

#### NUMBER OF FLOATING BALLS

0	Discharged
1	25% Charged
2	50% Charged
3	75% Charged
4	100% Charged
* 5	Overcharged

\* Check charging system.

8. Flush the liquid back into the same cell after reading the float. Repeat this step until all cells have been properly read. A shorted or dead cell can be detected when it is the only cell that doesn't charge.
9. Flush hydrometer in cold running water by allowing the water to rise into the hydrometer as far as possible. Do this several times to guard against burn damage.
10. Replace the battery caps.
11. Reinstall the battery boxes. Refer to one (1) of the following:

**FWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 10 of this manual.

**RWD WHEELCHAIRS - INSTALLING/REMOVING BATTERY BOXES** in PROCEDURE 11 of this manual.

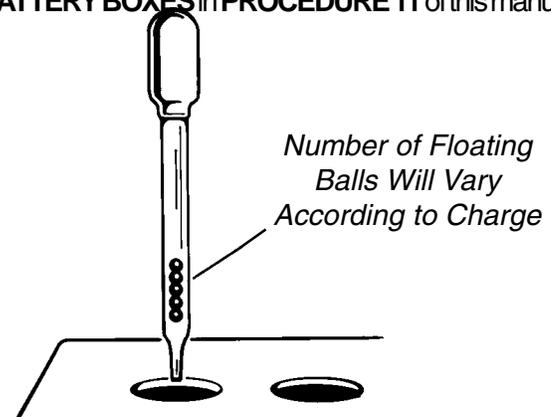


FIGURE 1 - USING A HYDROMETER TO CHECK BATTERY CELLS (LEAD ACID)

**This Procedure Includes the Following:**  
**Installing/Removing Footrests**  
**Adjusting Footrest Height**  
**Replacing the Heel Loops**  
**Installing/Removing Elevating Legrests**  
**Raising/Lowering Elevating Legrests and/or Adjusting Calfpads**

**WARNING**

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

**INSTALLING/REMOVING FOOTRESTS (FIGURE 1)**

**Installing**

1. Turn footrest to the side (open footplate is perpendicular to wheelchair) and position mounting holes in the footrest hinge plates with hinge pins on the wheelchair frame.
2. Install the footrest hinge plates 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 opposite side of wheelchair.

**Removing**

1. Push the footrest release lever inward and rotate the footrest outward.
2. Lift up on footrest and remove from the wheelchair.
3. Repeat **STEPS 1-2** for opposite side of wheelchair.

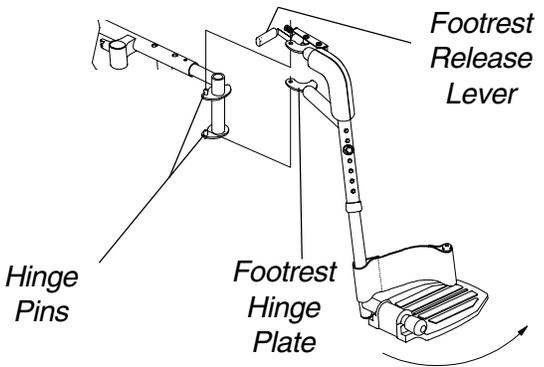


FIGURE 1 - INSTALLING/REMOVING FOOTRESTS

**ADJUSTING FOOTREST HEIGHT**

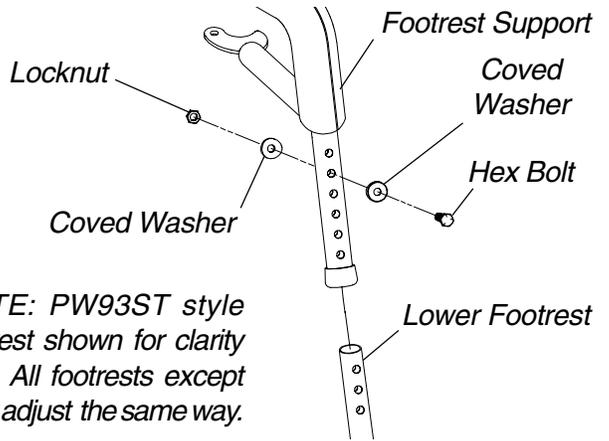
**All Footrests Except Model 93M Footrests (FIGURE 2)**

1. Remove any accessory from the footrest(s).

2. Remove the footrest from the wheelchair. Refer to **INSTALLING/REMOVING FOOTRESTS** in this procedure of the manual.

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

3. Remove the hex bolt, covered washers and locknut that secure the lower footrest to the footrest support.
4. Reposition the lower footrest to the desired height.
5. Reinstall hex bolt, covered washers and locknut that secure lower footrest to footrest support. Tighten securely.
6. Repeat **STEPS 1-5** for the opposite side of the wheelchair footrest, if necessary.
7. Reinstall the footrest(s) onto the wheelchair. Refer to **INSTALLING/REMOVING FOOTRESTS** in this procedure of the manual.
8. Reinstall any accessory onto the footrest(s).



*NOTE: PW93ST style footrest shown for clarity only. All footrests except 93M adjust the same way.*

FIGURE 2 - ADJUSTING FOOTREST HEIGHT - ALL FOOTRESTS EXCEPT MODEL 93M FOOTRESTS

**93M Model Footrests (FIGURE 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.

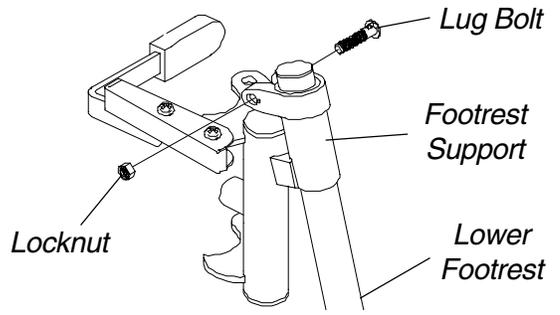


FIGURE 3 - ADJUSTING FOOTREST HEIGHT - 93M MODEL FOOTRESTS

**REPLACING HEEL LOOPS (FIGURE 4)**

1. Note the position the hex bolt, covered washers and locknut for reinstallation.
2. Remove the hex bolt, covered washers and locknut that secure the lower footrest to the footrest support.
3. Remove the lower footrest.
4. Remove the phillips bolt, spacer and locknut that secure the existing heel loop to the lower footrest.
5. Slide the existing heel loop off the lower footrest.
6. Replace heel loop.
7. Reverse **STEPS 1-6** to reassemble.

*NOTE: When securing heel loop to lower footrest, tighten the phillips screw and locknut until the spacer is secure.*

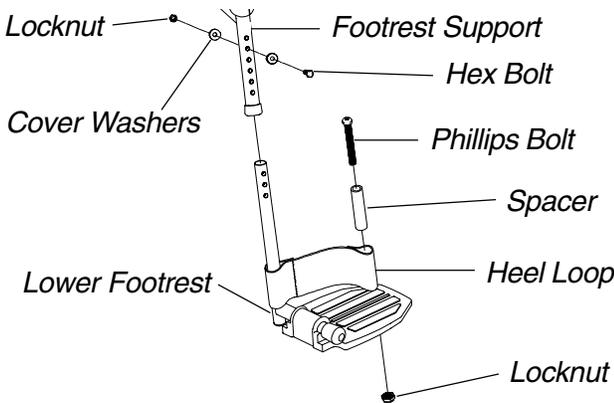


FIGURE 4 - REPLACING HEEL LOOPS

**INSTALLING/REMOVING ELEVATING LEGRESTS (FIGURE 5)**

**Installing**

1. Turn legrest to side (open footplate is perpendicular to wheelchair) and position mounting holes in the legrest hinge plates with hinge pins on the wheelchair frame.
2. Install the legrest hinge plates onto the hinge pins on the wheelchair frame.

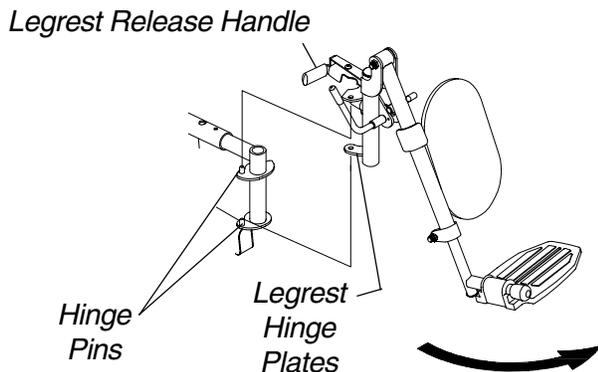


FIGURE 5- INSTALLING/REMOVING ELEVATING LEGRESTS

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 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.

**RAISING/LOWERING ELEVATING LEGRESTS AND/OR ADJUSTING CALFPADS (FIGURE 6)**

**Raising/Lowering Elevating Legrests**

1. Perform one (1) of the following:
  - RAISING - Pull back on the release lever until the leg is at the desired height.
  - LOWERING - Support leg with one (1) hand. Push release lever downward with other hand.

**Adjusting Calfpads**

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

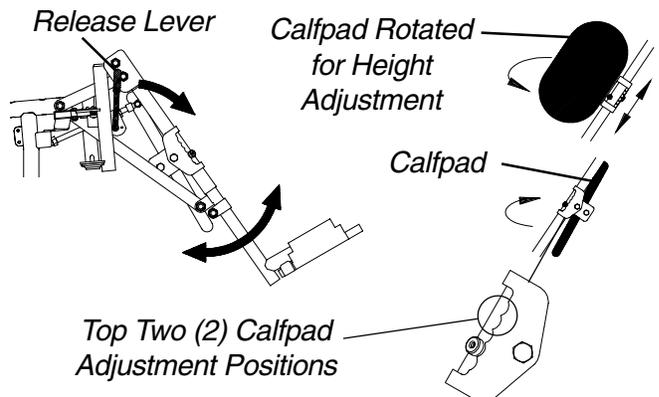


FIGURE 6- RAISING/LOWERING ELEVATING LEGRESTS AND/OR ADJUSTING CALFPADS

**This Procedure Includes the Following:**  
**Adjusting Armrest Height, Removing or Replacing Armrests**  
**Adjusting Captain's Seat Armrests**

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

**ADJUSTING ARMREST HEIGHT, REMOVING OR REPLACING ARMRESTS (FIGURE 1)**

**WARNING**  
 Make sure the height adjustment lever and armrest release lever are secured before using the wheelchair.

**Adjusting Armrest Height**

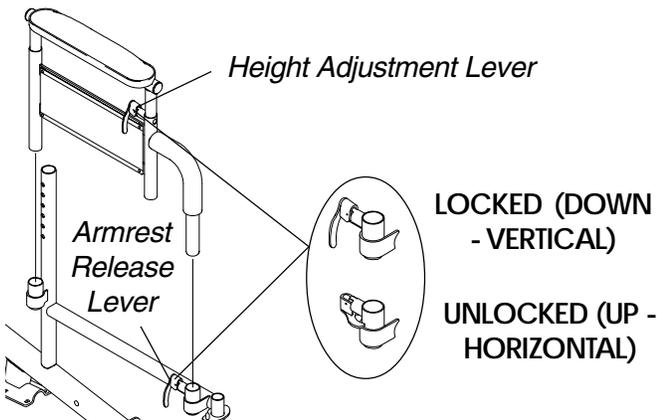
1. Unlock the armrest by flipping the height adjustment lever on the top front of the arm to the UP (HORIZONTAL) position.
2. Adjust armrest to desired height.

*NOTE: Height adjustment lever MUST be in the unlocked position when placing armrest into the arm assembly.*

3. Lock the armrest by pressing the height adjustment lever into the DOWN (VERTICAL) position when the desired height is achieved.
4. Lift up on armrest to make sure the armrest is locked in place.
5. Repeat **STEPS 1-4** for opposite armrest, if necessary.

**Removing Armrests**

1. Unlock the armrest by flipping the armrest release lever located on the side rail to the UP (HORIZONTAL) position.
2. Remove the armrest from the wheelchair.



**FIGURE 1 - ADJUSTING ARMREST HEIGHT, REMOVING OR REPLACING ARMRESTS**

**Replacing Armrests**

*NOTE: Armrest release lever MUST be in the unlocked position when placing armrest into the arm sockets.*

1. Lock the armrest by pressing the armrest release lever into the DOWN (VERTICAL) position.
2. Lift up on the armrest to make sure armrest is locked in place.
3. Repeat **STEPS 1-2** for opposite armrest.

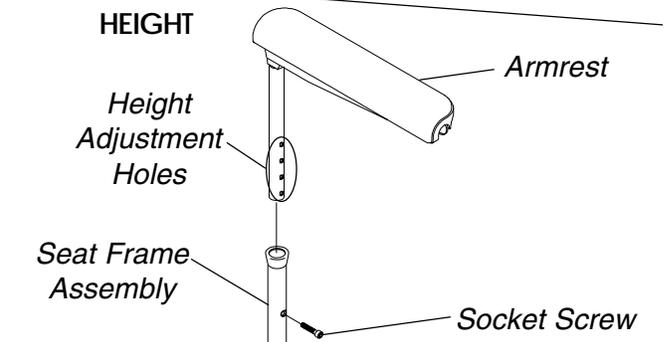
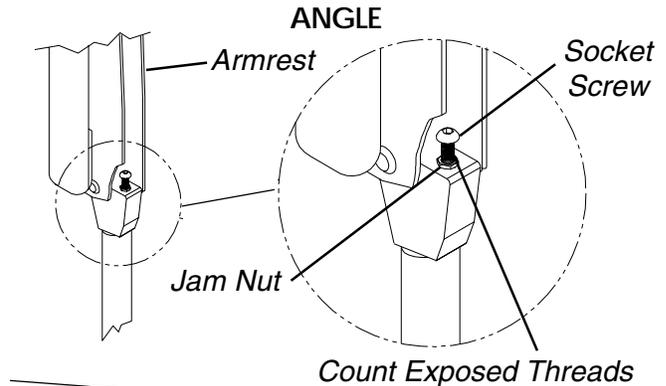
**ADJUSTING CAPTAIN'S SEAT ARMRESTS (FIGURE 2)**

**Angle**

1. Lift-up the armrest and loosen the jam nut.
2. Adjust the socket screw up or down to the desired arm angle position. and tighten the jam nut securely.
3. To determine the same angle for the opposite armrest, count the exposed threads after the jam nut has been tightened.
4. Repeat **STEPS 1-3** for opposite armrest, if necessary.

**Height**

1. Remove the socket screw that secures the armrest to the seat frame assembly.
2. Adjust the armrest to one (1) of four (4) positions.
3. Reinstall the socket screw that secures the armrest to the seat frame assembly and tighten securely.



**FIGURE 2 - ADJUSTING CAPTAIN'S SEAT ARMRESTS**

*This Procedure Includes the Following:*

*Replacing Seat Upholstery*

*Replacing Seat Positioning Strap*

**WARNING**

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

**REPLACING SEAT UPHOLSTERY (FIGURE 1)**

1. Remove the eight (8) phillips screws and washers that secure the existing seat upholstery to the crossbraces.
2. Remove existing seat upholstery from the crossbraces.
3. Line up mounting holes in new seat upholstery with mounting holes in the crossbraces.
4. Securely tighten with existing phillips screws and washers.

*NOTE: Clean upholstery with warm DAMP cloth and mild detergent to remove superficial soil.*

**WARNING**

Laundrying or moisture will reduce flame retardation of the upholstery.

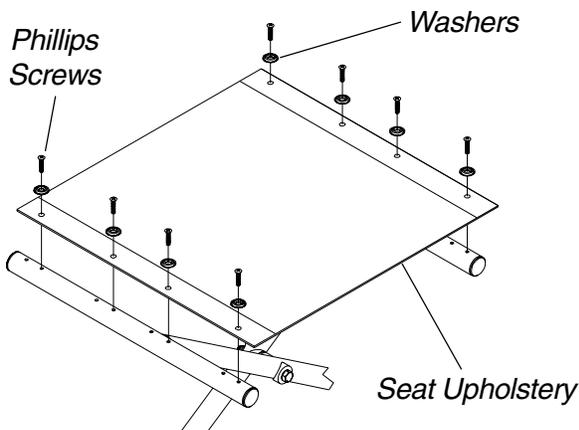


FIGURE 1 - REPLACING SEAT UPHOLSTERY

**REPLACING SEAT POSITIONING STRAP (FIGURE 2)**

1. If necessary, remove the seat cushion from the seat upholstery.
2. Remove the two (2) rear phillips screws and washers that secure the seat upholstery and seat positioning strap to the crossbraces.
3. Remove the two (2) halves of the seat positioning strap from the crossbraces.
4. Position the two (2) new seat positioning strap halves between the seat upholstery and the crossbraces.
5. Reinstall the rear phillips screws and washers that secure the seat upholstery and seat positioning strap to the crossbraces.

*NOTE: Washer is positioned on top of seat upholstery.*

6. If necessary, reinstall the seat cushion onto the seat upholstery.

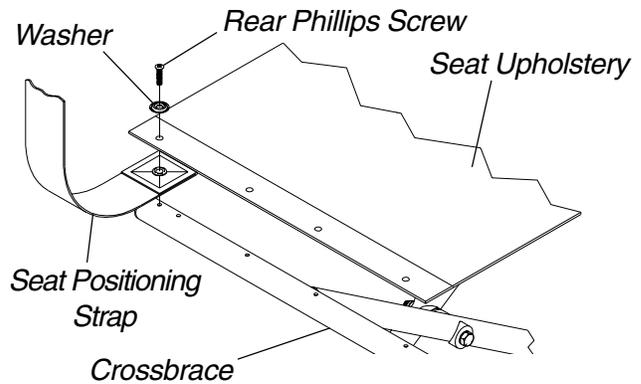


FIGURE 2 - REPLACING SEAT POSITIONING STRAP

ELECTRONICS

*This Procedure Includes the Following:*  
**Preparing MKIV Joystick for Use**  
**Repositioning MKIV Joystick**

**WARNING**

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

**PREPARING MKIV JOYSTICK FOR USE (FIGURE 1)**

*NOTE: The MKIV joystick is factory installed on the right side of the wheelchair. To reposition the MKIV joystick onto the left side of the wheelchair, perform one (1) of the following: **INTEGRATED SLING SEAT WHEELCHAIRS - REPOSITIONING MKIV JOYSTICK** in this procedure of the manual or **CAPTAIN'S SEAT MODEL WHEELCHAIRS -** have the joystick repositioned by an authorized Invacare dealer or qualified technician.*

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

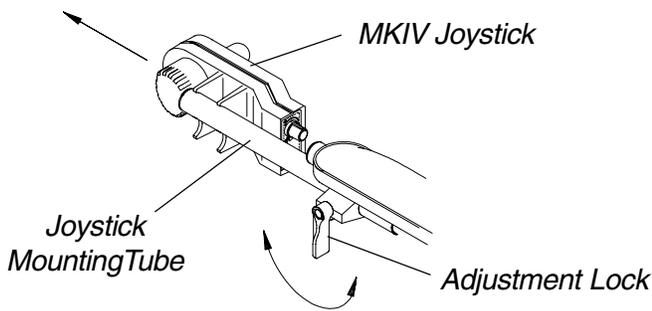


FIGURE 1 - PREPARING MKIV JOYSTICK FOR USE

**REPOSITIONING MKIV JOYSTICK (FIGURE 2)**

**Integrated Sling seats**

1. Turn the lever on the adjustment lock to release the adjustment lock from joystick mounting tube (**tube**).
2. Remove the joystick from the wheelchair.
3. Remove the three (3) hex screws that secure joystick mounting bracket (**bracket**), the threaded hole half clamp and the opened hole half clamp to the arm tube.
4. Reposition the threaded hole half clamp and opened hole half clamp on the opposite arm tube. Make sure threaded hole half clamp is on the inside of arm tube.
5. While holding the two (2) half clamps, install the front hex screw into the two (2) half clamps. Securely tighten.
6. Line up mounting holes of the joystick mounting bracket with the mounting holes in the two (2) half clamps.
7. Secure the joystick mounting bracket to the two (2) half clamps with the remaining two (2) hex screws.
8. Slide tube through the bracket to the desired position.
9. Slide adjustment lock over end of tube and secure adjustment lock to tube by turning lever on adjustment lock.

*NOTE: If adjustment lock does not fit over tube, rotate 180°.*

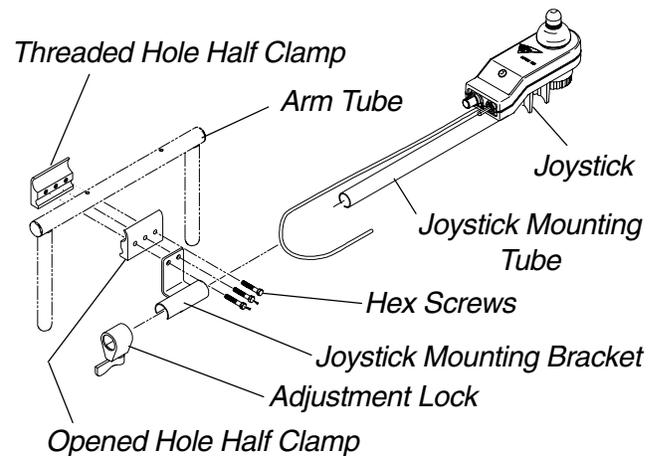


FIGURE 2 - REPOSITIONING MKIV JOYSTICK

***This Procedure Includes the Following:***  
***Replacing Battery Box Retaining Strap***

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

**REPLACING BATTERY BOX RETAINING STRAP**

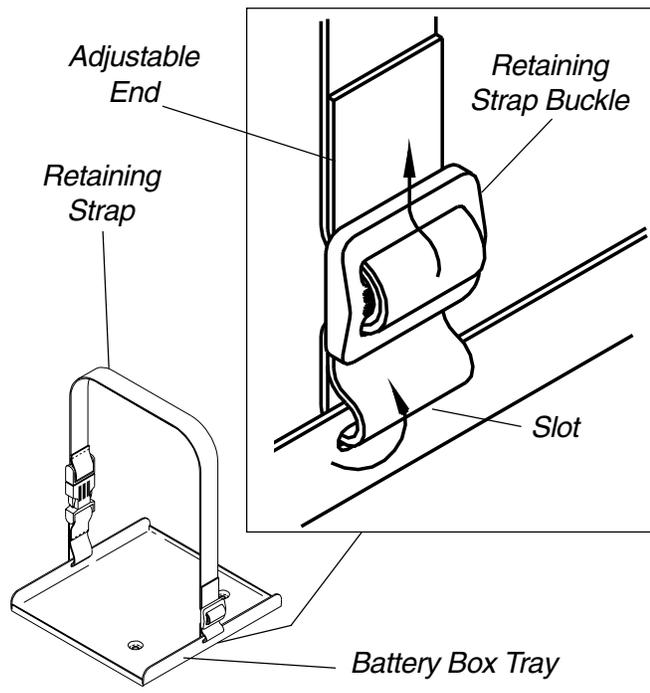
**WARNING**  
 The Battery Box Retaining Strap MUST be fastened securely and adjusted properly to hold battery boxes in place before using the wheelchair.

**RWD Wheelchairs (FIGURE 1)**

1. Remove the battery boxes from the wheelchair. Refer to **INSTALLING/REMOVING BATTERY BOXES** in **PROCEDURE 11** of this manual.

**WARNING**  
 The retaining strap MUST be fed through the adjustable end of the battery box retaining strap buckle as shown in **FIGURE 1**.

2. Feed the existing battery box retaining strap through the adjustable end of the battery box retaining strap buckle.



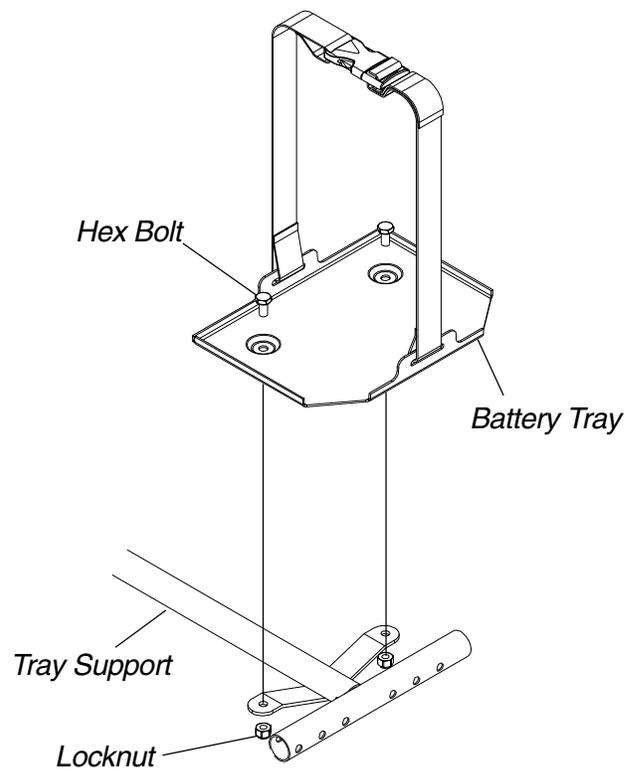
*NOTE: Tray shown by itself for clarity. There is no need to remove the tray from the wheelchair if the retaining strap is being replaced.*

**FIGURE 1 - REPLACING BATTERY BOX RETAINING STRAP - RWD WHEELCHAIRS**

3. Feed the existing battery box retaining strap through the slot in the battery box tray.
4. Feed the new battery box retaining strap through the inside of the slot in the battery box tray.
5. Feed the new battery box retaining strap through the adjustable end of the battery box retaining strap buckle.
6. Reinstall the battery box. Refer to **INSTALLING/REMOVING BATTERY BOXES** in **PROCEDURE 11** of this manual.

**FWD Wheelchairs (FIGURE 2)**

1. Remove the battery boxes from the wheelchair. Refer to **INSTALLING/REMOVING BATTERY BOXES** in **PROCEDURE 10** of this manual.
2. Remove the two (2) hex bolts and locknut that secure the existing battery tray to the tray support.
3. Remove the existing battery tray from the wheelchair.
4. Position the new battery tray on the tray support as shown in **FIGURE 2**.
5. Secure the new battery tray to the tray support with the two (2) hex bolts and locknuts. Tighten securely.
6. Reinstall the battery box. Refer to **INSTALLING/REMOVING BATTERY BOXES** in **PROCEDURE 10** of this manual.



**FIGURE 2 - REPLACING BATTERY BOX RETAINING STRAP - FWD WHEELCHAIRS**

*This Procedure Includes the Following:*  
**Adjusting Forks**

**WARNING**

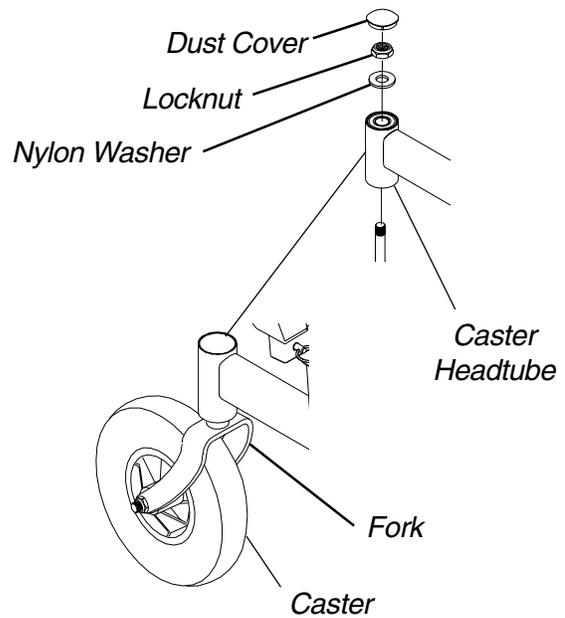
After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

**CAUTION**

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

**ADJUSTING FORKS (FIGURE 1)**

1. Remove the dust cover from the caster headtube.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
  - a. Tip back the wheelchair to floor.
  - b. Pivot both forks and casters to top of their arc simultaneously.
  - c. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
  - d. Adjust locknuts according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat **STEPS 1-3** until correct.
5. Snap dust cover into the caster headtube.



**FIGURE 1 - ADJUSTING FORKS**

**This Procedure includes the following:**  
**Installing/Removing Batteries into/From Battery Boxes**  
**Connecting Battery Cables**

**WARNING**

Make sure power to the wheelchair is OFF before performing this procedure.

The use of rubber gloves and safety glasses 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.

*NOTE: For CHANGING or REMOVING/INSTALLING THE BATTERY BOXES, refer to PROCEDURE 10 - FWD wheelchairs or PROCEDURE 11 - RWD wheelchairs.*

**INSTALLING/REMOVING BATTERIES INTO/FROM BATTERY BOXES (FIGURE 1)**

*NOTE: To remove the battery(ies) from the battery box(es), reverse the following procedure.*

*NOTE: Have the following tools available:*

TOOL	QTY	COMMENTS
Battery Lifting Strap	1	See Note
1/2-inch (6 pt) Box Wrench	1	Not Supplied
7/16-inch (6pt) Box Wrench	1	Not Supplied
3/8-inch (6pt) Box Wrench	1	Not Supplied
Diagonal Cutters	1	Not Supplied

*\*NOTE: The Battery Lifting strap supplied is for Group 22 Batteries ONLY. Refer to the battery manufacturer for the proper lifting strap and/or battery tools for U1 battery removal/installation.*

**WARNING**

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.

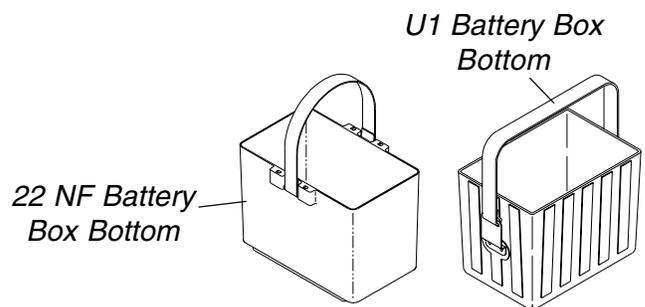
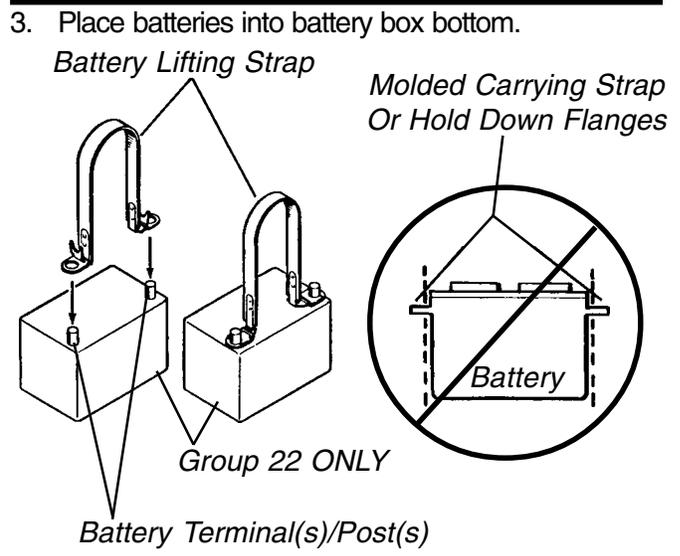
*NOTE: If there is battery acid in the bottom or on the sides of the battery box(es) or battery(ies), apply baking soda to these areas to neutralize the battery acid. Before reinstalling the NEW or existing battery(ies), clean the baking soda from the battery box(es) or battery(ies).*

*NOTE: When securing battery lifting strap to battery, observe polarity markings located on the ends of the battery lifting strap, (+) side to POSITIVE (+) battery terminal/post and (-) side to NEGATIVE (-) battery terminal/post.*

1. If necessary, remove the battery boxes from the wheelchair. Refer to INSTALLING/REMOVING BATTERY BOXES in PROCEDURE 10 - FWD or PROCEDURE 11 - RWD of this manual.
2. Secure the battery lifting strap to battery terminal(s)/post(s) (FIGURE 1).

**CAUTION**

Some battery manufacturers mold a carrying strap and/or hold down flanges directly into the battery case. Batteries which interfere with the battery box cannot be used for these applications. Attempting to "wedge" a battery into a battery box may damage the box and/or the battery.



**FIGURE 1 - INSTALLING/REMOVING BATTERIES INTO/ FROM BATTERY BOXES**

**CONNECTING BATTERY CABLES**

BATTERIES

**WARNING**

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

The use of rubber gloves and safety glasses is recommended when working with batteries.

**Dual U1 or Dual Group 22 Battery Boxes**

Perform one (1) of the following methods for connecting the battery cable(s):

- A. **FOR DUAL U1 BATTERIES** - Use direct mount method. Refer to FIGURES 2, and 3.
- B. **FOR DUAL GROUP 22 NF BATTERIES THAT HAVE MOUNTING HOLES IN THE BATTERY TERMINAL(S)/POST(S)** - Use direct mount method. Refer to FIGURES 2 AND 3.
- C. **FOR DUAL GROUP 22 NF BATTERIES THAT DO NOT HAVE MOUNTING HOLES IN THE BATTERY TERMINAL(S)/POST(S)** - Use battery clamp method. Refer to FIGURES 4, 5 AND 6.

**DIRECT MOUNT METHOD (FIGURE 2 AND 3).**

1. Install battery terminal cap(s) onto battery cable(s) as follows (FIGURE 2):

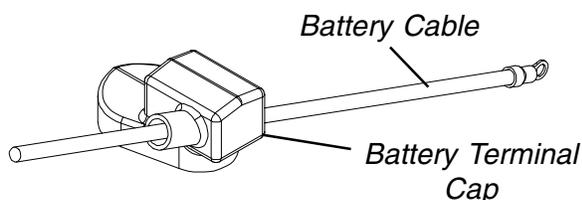
**DUAL U1 BATTERIES:**

- A. ORANGE battery terminal cap onto RED battery cable.
- B. GRAY battery terminal cap onto BLACK battery cable.

**DUAL GROUP 22 NF BATTERIES:**

- A. RED battery terminal cap onto RED battery cable.
- B. BLACK battery terminal cap onto BLACK battery cable.

**INSTALLING BATTERY TERMINAL CAPS**



*NOTE: Only one (1) battery cable and terminal cap shown for clarity. Both caps install in the same manner.*

**FIGURE 2 - CONNECTING BATTERY CABLES - DIRECT MOUNT METHOD**

**CAUTION**

When connecting the battery cables to the battery(ies), the battery cable(s) MUST be connected to the battery terminal(s)/post(s) as shown in DETAIL "A" or DETAIL "B" of FIGURE 3 (depending on battery type), otherwise damage to the battery cable may result when installing battery terminal caps.

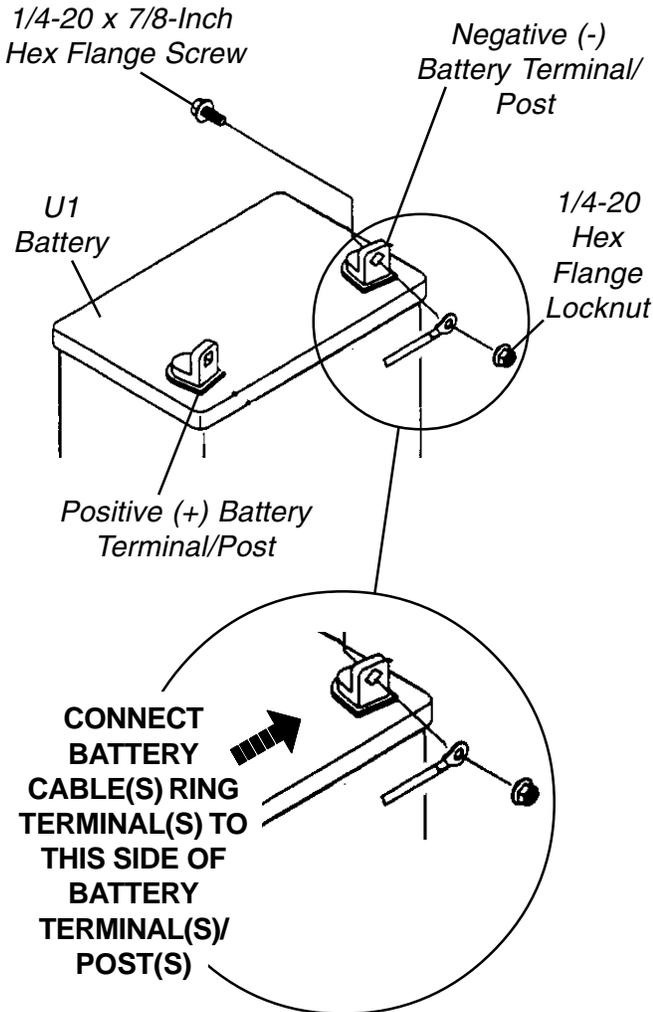
2. Connect battery cable(s) to battery(ies) terminal(s)/post(s) as follows (DETAIL "A" or DETAIL "B" of FIGURE 3, depending on battery type):
  - A. NEGATIVE (-) BLACK battery cable to NEGATIVE (-) battery terminal/post.
  - B. POSITIVE (+) RED battery cable to POSITIVE (+) battery terminal/post.
3. Secure the battery cable(s)/ring terminal(s) to the battery terminal(s)/post(s), BLACK to NEGATIVE (-) and RED to POSITIVE (+), with the provided 1/4-20 x 7/8-inch hex flange screw and hex flange locknut. Securely tighten. (DETAIL "A" or DETAIL "B" of FIGURE 3, depending on battery type).
4. Verify all battery cable(s)/ring terminal(s) are correctly installed and securely tightened.
5. Slide terminal cap(s) down battery cable(s) and onto battery clamps (FIGURE 3).
6. Secure each terminal cap in place with a tie-wrap (Use tie-wraps 11-1/2-inches long) (FIGURE 3).
 

*NOTE: It will be necessary to trim excess tie-wrap in order to install the battery box top(s).*
7. Install the battery box top(s).
8. Install the battery box(es) into the wheelchair. Refer to **INSTALLING/REMOVING BATTERY BOX(ES)** in the PROCEDURE 10 - FWD MODELS or PROCEDURE 11 - RWD MODELS of this manual.
 

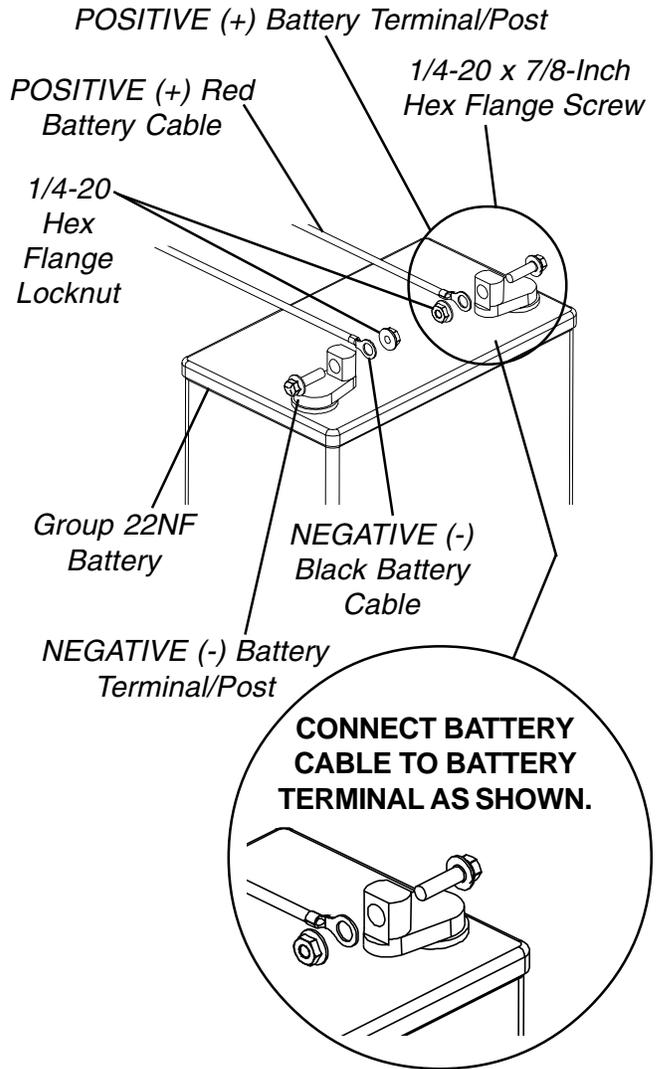
*NOTE: New Battery(ies) MUST be fully charged BEFORE using, otherwise the life of the battery(ies) will be reduced.*
9. If necessary, charge the battery(ies). Refer to **CHARGING BATTERIES** in the PROCEDURE 10 - FWD MODELS or PROCEDURE 11 - RWD MODELS of this manual.

BATTERIES

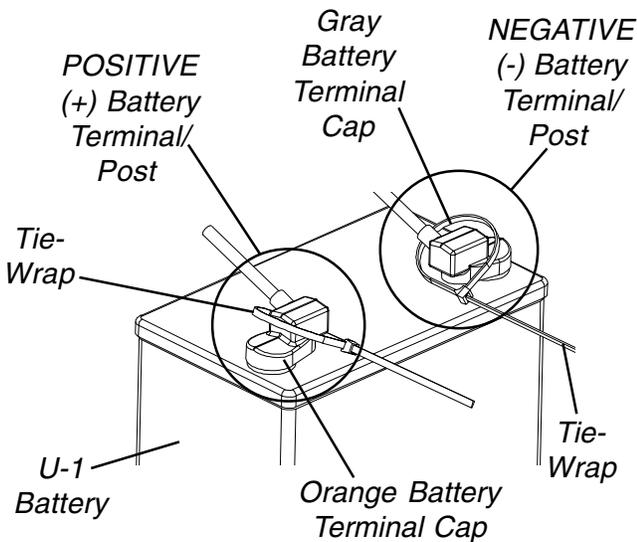
DETAIL "A"  
DUAL U1 BATTERIES



DETAIL "B"  
DUAL GROUP 22 NF BATTERIES



DUAL U1 BATTERIES



DUAL GROUP 22 NF BATTERIES

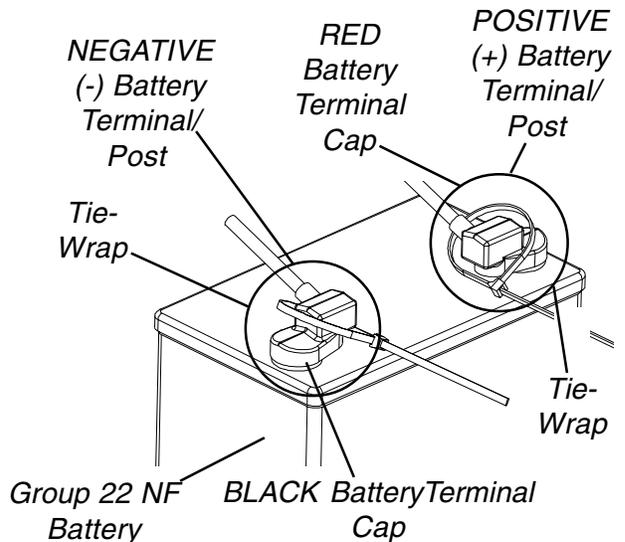


FIGURE 3 - CONNECTING BATTERY CABLES - DIRECT MOUNT METHOD

**BATTERY CLAMP METHOD (FIGURES 4, 5 AND 6).**

**WARNING**

The battery clamp of the POSITIVE (+) battery terminal/post MUST be mounted in the position shown in FIGURE 5, otherwise the battery box top cannot be installed properly.

1. Perform one (1) of the following:
  - A. If the battery clamp of the POSITIVE (+) battery terminal/post is **NOT** mounted in the orientation shown in FIGURE 5, perform the following:
    - Loosen the hex nut that secures the battery clamp to the POSITIVE (+) battery terminal/post.
  - B. If the battery clamp on the POSITIVE (+) battery terminal/post is positioned as shown in FIGURE 4, proceed to STEP 2.

**CORRECT ORIENTATION OF THE POSITIVE (+) BATTERY TERMINAL/POST BATTERY CLAMP**

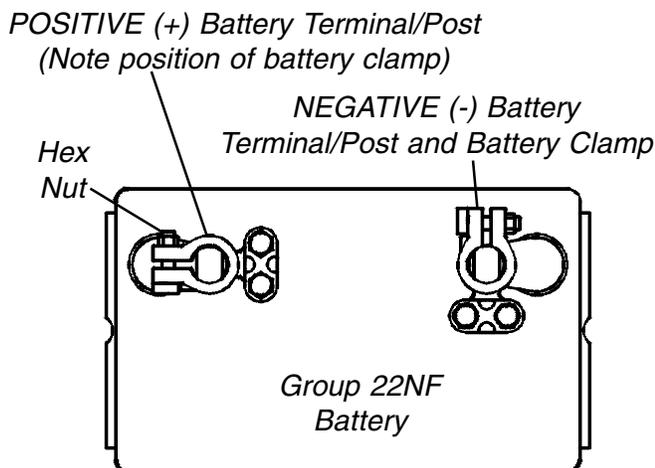


FIGURE 4 - CONNECTING BATTERY CABLES - BATTERY CLAMP METHOD

2. Install battery clamp covers onto battery cables as follows (FIGURE 5):
  - A. RED battery clamp cover onto RED battery cable.
  - B. BLACK battery clamp cover onto BLACK battery cable.

*NOTE: Only one (1) battery cable and battery clamp cover are shown for clarity. Both battery clamp covers install in the same manner.*

**INSTALLING BATTERY CLAMP COVERS**

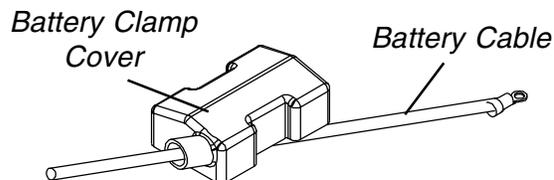


FIGURE 5 - CONNECTING BATTERY CABLES - BATTERY CLAMP METHOD

**CAUTION**

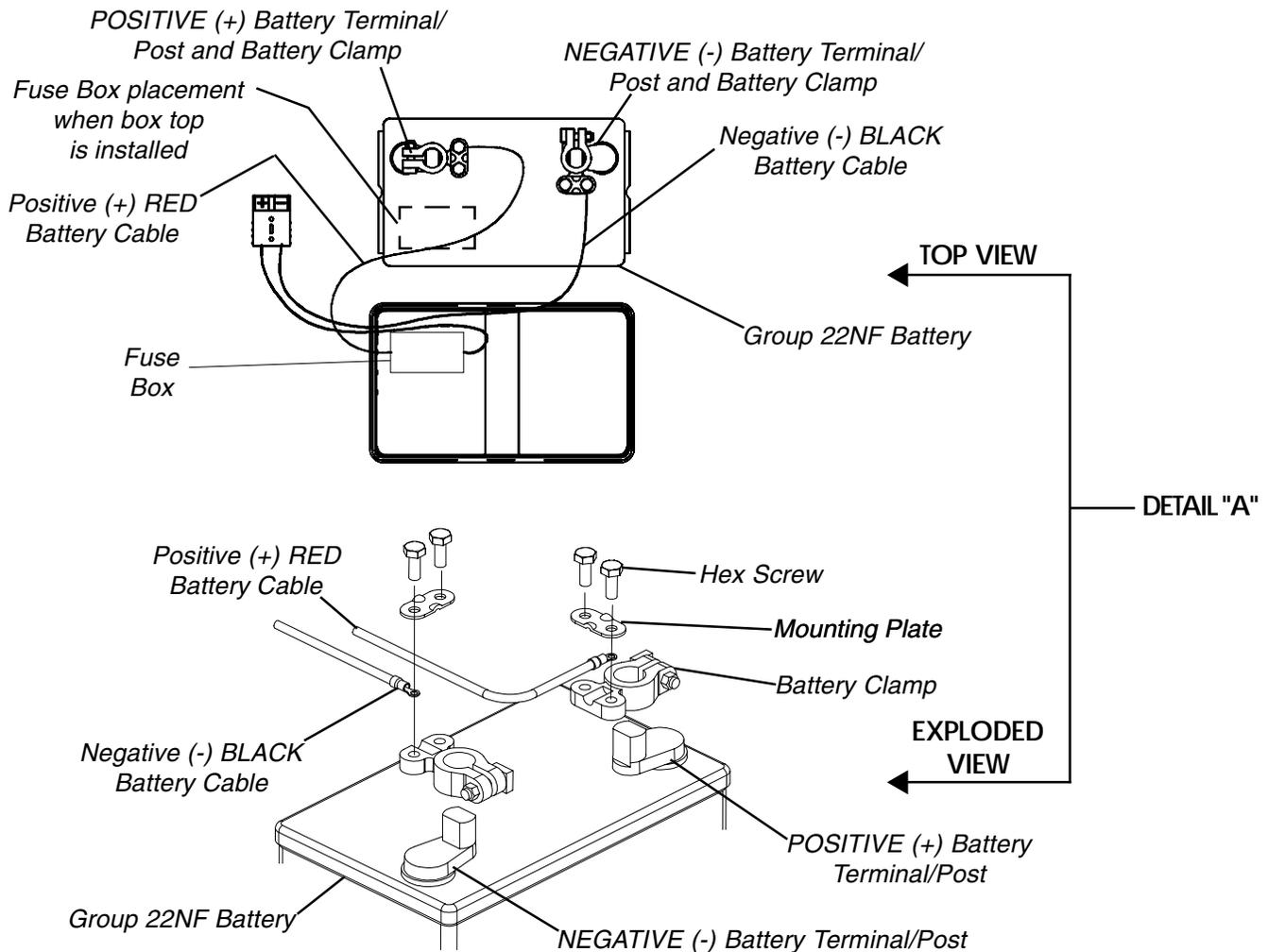
When connecting the battery cable/ring terminal(s) to the battery(ies) clamp(s), the battery cable(s) MUST be connected in the position shown in DETAIL "A", otherwise damage may occur to the battery cable and/or battery clamp covers.

3. Connect battery cable(s) to battery(ies) terminal(s)/post(s) as follows (DETAIL "A"):
    - A. NEGATIVE (-) BLACK battery cable/ring terminal between the mounting plate and battery clamp of NEGATIVE (-) battery terminal/post.
    - B. POSITIVE (+) RED battery cable/ring terminal between the mounting plate and battery clamp of POSITIVE (+) battery terminal/post.
  4. Secure the battery cable(s)/ring terminal(s) to the battery clamp(s), BLACK to NEGATIVE (-) and RED to POSITIVE (+), with existing hex screws. Securely Tighten. (DETAIL "A")
  5. Verify battery cable ring terminal(s) are correctly installed and securely tightened.
  6. Slide battery clamp covers down battery cables and onto battery terminals. (DETAIL "B")
  7. Secure each terminal cap in place with a tie-wrap (Use tie-wraps 11-1/2-inches long). (DETAIL "B")
- NOTE: It will be necessary to trim excess tie-wrap in order to install the battery box top(s).*
8. Install the battery box top(s).

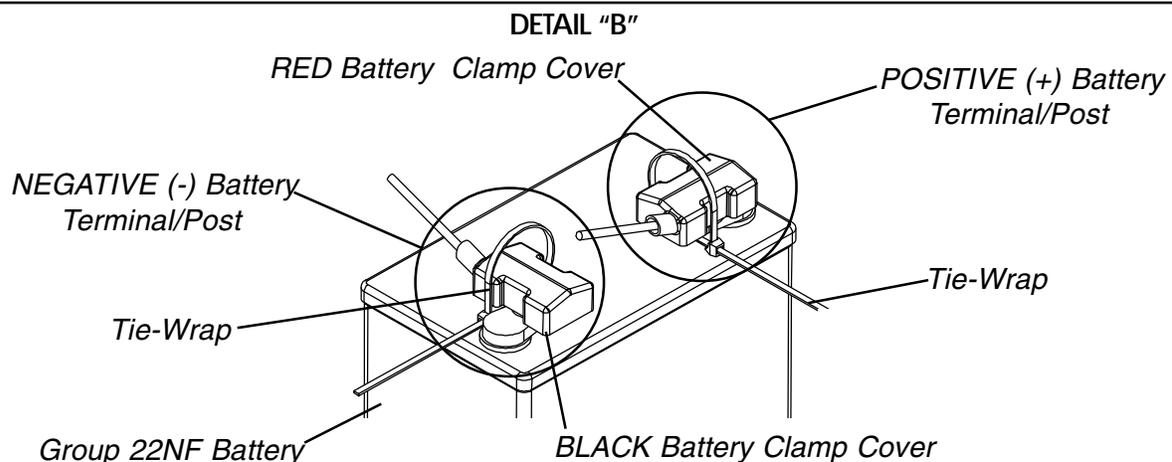
9. Install the battery box(es) into the wheelchair. Refer to INSTALLING/REMOVING BATTERY BOX(ES) in the PROCEDURE 10 - FWD MODELS or PROCEDURE 11 - RWD MODELS of this manual.
10. If necessary, charge the battery(ies). Refer to CHARGING BATTERIES in the PROCEDURE 10 - FWD MODELS or PROCEDURE 11 - RWD MODELS of this manual.

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

**CONNECTING BATTERY CABLE(S) TO BATTERY(IES) TERMINAL(S)/POST(S)**



*NOTE: Battery clamps exploded away for clarification purposes only.*



**FIGURE 6 - CONNECTING BATTERY CABLES - BATTERY CLAMP METHOD**

**BATTERIES**

**This Procedure Includes the Following:**

- Transporting Excel*
- Adjusting/Replacing Telescoping Front Rigging Support*
- Adjusting Flip-up Removable Footboard*
- Adjusting Captain's Seat*
- Removing/Installing Captain's Seat*
- Disconnecting/Connecting Limit Switch*
- Removing/Installing Shrouds*
- Repositioning Battery Charger Connector*
- When to Charge Batteries*
- Charging Batteries*
- Replacing Batteries*
- Installing/Removing Battery Boxes*
- Battery Tray*
- Engaging/Disengaging Clutches*

**WARNING**

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

**TRANSPORTING EXCEL**

**WARNING**

The weight of the wheelchair without the user and batteries is still between 90 and 127 lbs. Use proper lifting techniques (lift with your legs) to avoid injury. Extreme caution is advised when it is necessary to move an UNOCCUPIED power wheelchair. Invacare recommends using two (2) assistants and making thorough preparations. Make sure to use ONLY secure, non-detachable parts for hand-hold supports.

Keep hands and fingers clear of moving parts to avoid injury.

**Unfolding/Folding - Integrated Sling Seats (FIGURE 1)**

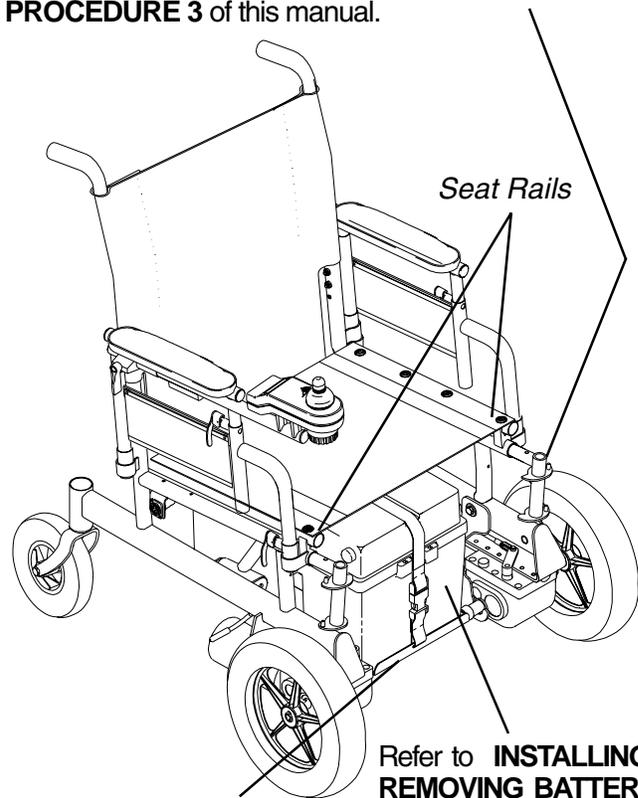
**UNFOLDING.**

1. Push down on the seat rails until the seat rails are positioned in the seat guides.
2. Assemble the wheelchair. Refer to **FIGURE 1**.
3. If necessary, install the shrouds. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.

**FOLDING.**

1. If necessary, remove the shrouds. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.
2. Remove the batteries and footrests/legrests from the wheelchair. Refer to **FIGURE 1**.
3. Lift the battery tray UP and out of the way. Refer to **BATTERY TRAY** in this procedure of the manual.
4. Lift up on the seat rails of the wheelchair.

Refer to **INSTALLING/REMOVING FOOTRESTS** or **INSTALLING/REMOVING ELEVATING LEGRESTS** in **PROCEDURE 3** of this manual.



Refer to **BATTERY TRAYS** in this procedure of the manual.

Refer to **INSTALLING/REMOVING BATTERY BOXES** in this procedure of the manual.

**FIGURE 1 - TRANSPORTING EXCEL**

**Unfolding/Folding - Captain's Seat (FIGURE 2)**

**UNFOLDING.**

1. Push down on the push brackets until they are flush with the pivot links on the crossbraces.
2. Assemble the wheelchair. Refer to **FIGURE 2**.
3. Install the shrouds. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.
4. Install the Captain's Seat. Refer to **REMOVING/INSTALLING CAPTAIN'S SEAT** in this procedure of the manual.

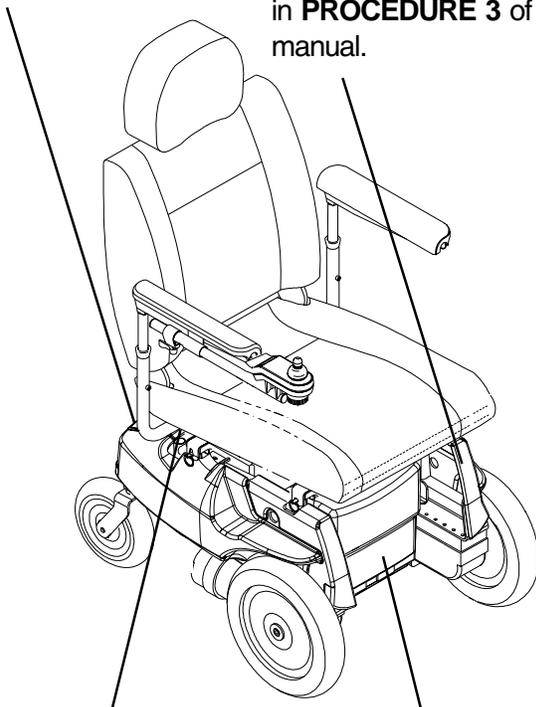
5. **HIGH BACK CAPTAIN'S SEATS ONLY** - Connect the limit switch. Refer to **DISCONNECTING/CONNECTING LIMIT SWITCH** in this procedure of the manual.

**FOLDING.**

1. **HIGH BACK CAPTAIN'S SEATS ONLY** - Disconnect the limit switch. Refer to **DISCONNECTING/CONNECTING LIMIT SWITCH** in this procedure of the manual.

Refer to **INSTALLING/REMOVING BATTERY BOXES** in this procedure of the manual.

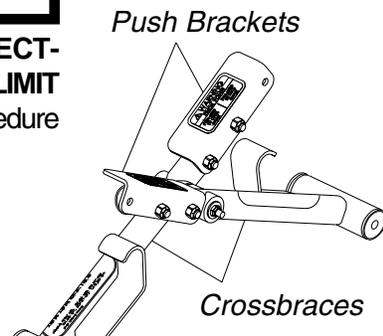
Refer to **INSTALLING/REMOVING FOOTRESTS** or **INSTALLING/REMOVING ELEVATING LEGRESTS** in **PROCEDURE 3** of this manual.



**CAUTION**  
**HIGHBACK CAPTAIN'S SEATS ONLY** - Disconnect limit switch **BEFORE** removing seat - damage to seat can occur.

Refer to **BATTERY TRAY** in this procedure of the manual.

Refer to **DISCONNECTING/CONNECTING LIMIT SWITCH** in this procedure of the manual.



**FIGURE 2 - TRANSPORTING EXCEL - CAPTAIN'S SEATS**

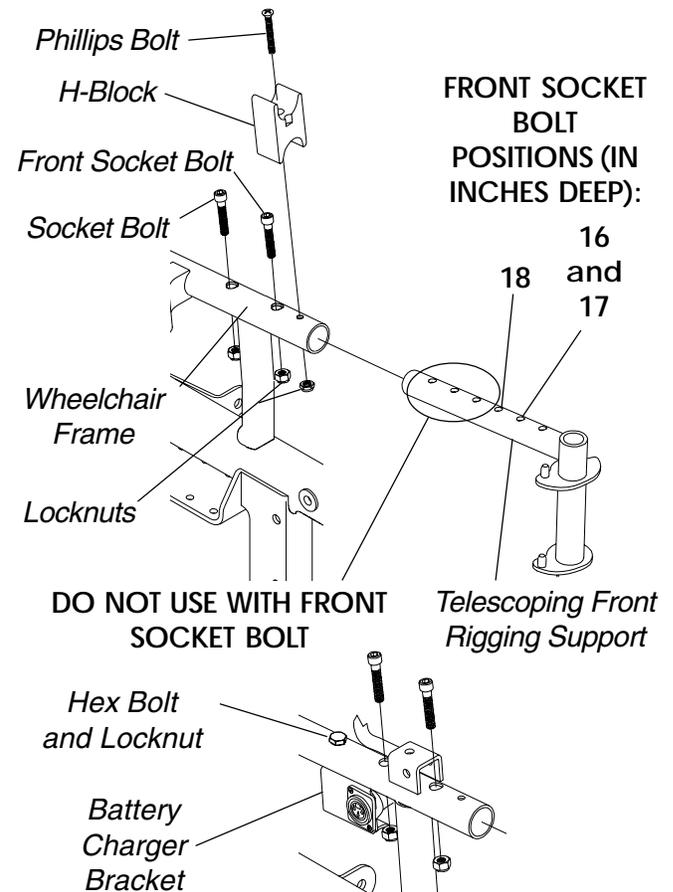
2. Remove the Captain's Seat. Refer to **REMOVING/INSTALLING CAPTAIN'S SEAT** in this procedure of the manual.
3. Remove the shrouds. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.
4. Remove the batteries and footrests/legrests from the wheelchair. Refer to **FIGURE 2**.

**ADJUSTING/REPLACING TELESCOPING FRONT RIGGING SUPPORT (FIGURE 3)**

1. Lift up on the crossbraces until they release from the H-blocks on the wheelchair frame.
2. Remove the phillips bolt and locknut that secure the front H-block to the wheelchair frame.
3. Remove the two (2) locknuts and socket bolts that secure telescoping front rigging support to wheelchair.
4. If necessary, remove the hex bolt and locknut that secures the battery charger connector bracket to the wheelchair.

**Adjusting**

1. Position the telescoping front rigging support to the desired depth.



**FIGURE 3 - ADJUSTING/REPLACING TELESCOPING FRONT RIGGING SUPPORT**

*NOTE: The two (2) support assemblies may be positioned at different depths depending on the need of the user.*

2. Insert front socket bolt into wheelchair frame and mounting hole in the telescoping front rigging support determined in **STEP 1** and securely tighten with the locknut.
3. Insert the rear socket bolt through the wheelchair frame and the telescoping front rigging support and securely tighten with the locknut.
4. Resecure the front H-block to the wheelchair with the phillips bolt and locknut.
5. If necessary, resecure the battery charger connector bracket to the wheelchair with the two (2) hex bolts and locknuts.
6. Snap crossbraces into H-blocks. Wiggle crossbraces to make sure they are secured in the H-blocks.

**Replacing**

*NOTE: Observe the position of the current telescoping front rigging support before removal to ensure correct position of new support assembly.*

1. Remove the existing telescoping front rigging support from the wheelchair.
2. Install the new telescoping front rigging support into the wheelchair.
3. Adjust the telescoping front rigging support. Refer to **ADJUSTING TELESCOPING FRONT RIGGING SUPPORT** in this procedure of the manual.

**ADJUSTING FLIP-UP REMOVABLE FOOTBOARD (FIGURE 4)**

**Depth**

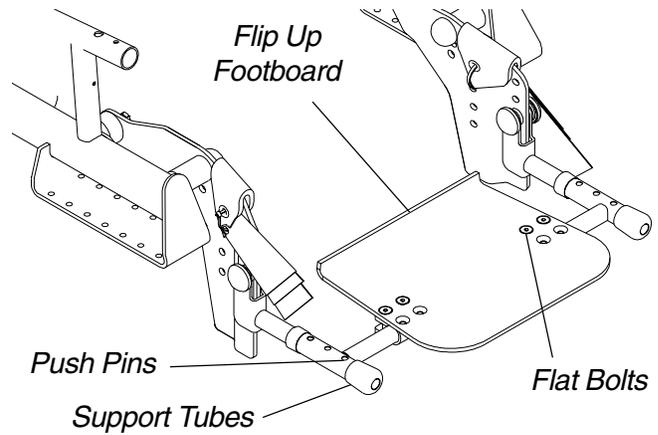
1. Press in on the push pins on the two (2) footboard pivot assemblies.
2. Move flip-up footboard to one (1) of three (3) positions.

**WARNING**  
 Make sure push pins are fully protruding through the adjustment holes **BEFORE** using the wheelchair, otherwise injury or damage can occur.

3. Make sure the push pins are completely released.

**Angle**

1. If necessary, loosen but do not remove the four (4) flat bolts that secure flip-up footboard to the two (2) support tubes.
2. Adjust flip-up footboard to desired angle for the user.
3. While holding the flip-up footboard in place, tighten the four (4) flat bolts securely.



**FIGURE 4 - ADJUSTING FLIP-UP REMOVABLE FOOTBOARD**

**ADJUSTING CAPTAIN'S SEAT (FIGURE 5)**

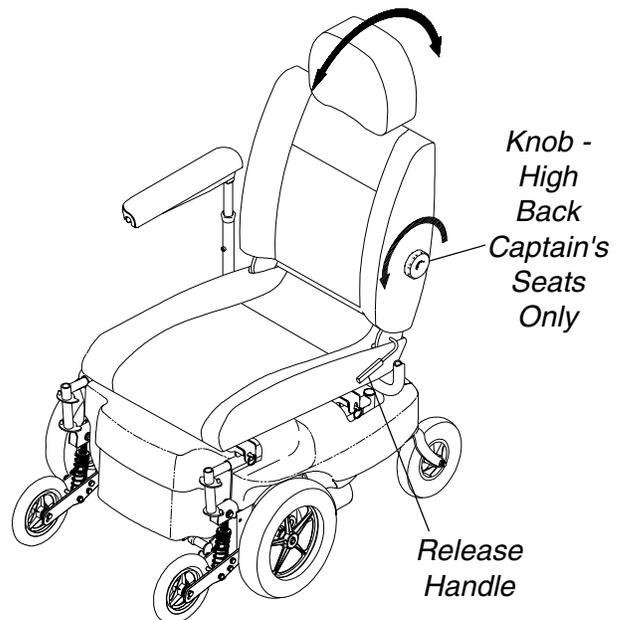
**Low Back Captain's Seats**

1. Lift up on the release handle and move the back to the desired position.

**High Back Captain's Seats**

**ANGLE.**

**WARNING**  
**HIGH BACK CAPTAIN'S SEATS ONLY - NEVER** operate the wheelchair while in any recline position over 114° **RELATIVE TO THE SEAT FRAME**. If the limit switch does not stop the wheelchair from operating in a recline position greater than 114° **RELATIVE TO THE SEAT FRAME**, **DO NOT** operate the wheelchair. Have the wheelchair serviced by an authorized Invacare dealer or qualified technician.



**FIGURE 5 - ADJUSTING CAPTAIN'S SEAT**

1. Lift up on the release handle and move the back to the desired position.
2. Check the angle of the back **RELATIVE TO THE SEAT FRAME**.
3. If necessary, have the limit switch adjusted. Contact an authorized Invacare dealer or qualified technician.

**LUMBAR.**

1. Rotate the knob on the side of the high back Captain's Seat **COUNTERCLOCKWISE** until the desired support is obtained.

*NOTE: The knob only rotates COUNTERCLOCKWISE.*

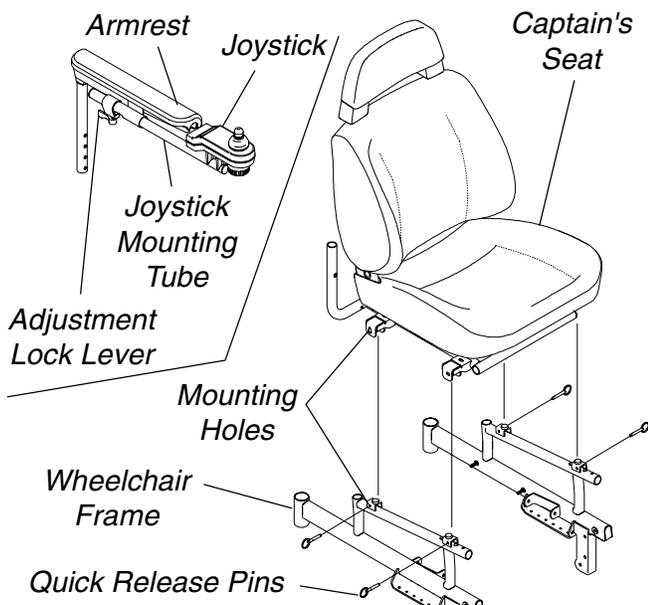
**REMOVING/INSTALLING CAPTAIN'S SEAT (FIGURE 6)**

**Removing**

1. Turn the adjustment lock lever to release the joystick mounting tube from the armrest.
2. Remove the joystick from the wheelchair.
3. **HIGH BACK CAPTAIN'S SEATS ONLY** - Disconnect the limit switch. Refer to **DISCONNECTING/CONNECTING LIMIT SWITCH** in this procedure of the manual.
4. Remove the four (4) quick release pins that secure the Captain's Seat to the wheelchair frame.
5. Remove the Captain's Seat from the wheelchair.

**Installing**

1. Push the Captain's Seat down on the wheelchair frame at the position shown in **FIGURE 6**.
2. Line up the mounting holes in the Captain's Seat and the wheelchair frame.



**FIGURE 6- REMOVING/INSTALLING CAPTAIN'S SEAT**

**WARNING**

**Make sure the Captain's Seat is secured to the wheelchair frame with the four (4) quick release pins BEFORE using the wheelchair, otherwise injury or damage can occur.**

3. Insert the four (4) quick release pins through the mounting holes in the Captain's Seat and the wheelchair frame until the rings on the quick release pins are against the mounting holes.
4. Lift up on the Captain's Seat to make sure it is secured to the wheelchair frame.
5. **HIGH BACK CAPTAIN'S SEATS ONLY** - Connect the limit switch. Refer to **DISCONNECTING/CONNECTING LIMIT SWITCH** in this procedure of the manual.
6. Slide the joystick into the adjustment lock lever to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube to the armrest.

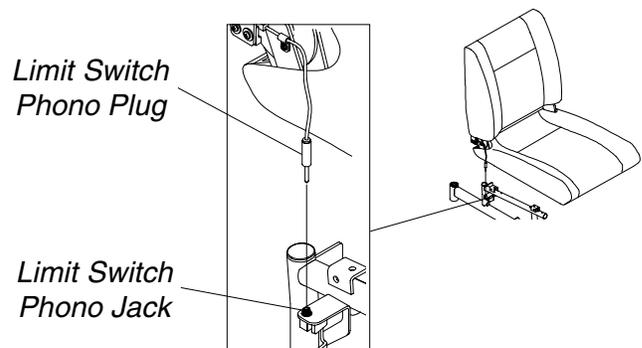
**DISCONNECTING/CONNECTING LIMIT SWITCH (FIGURE 7)**

*NOTE: The following procedure is for High Back Captain's Seat model wheelchairs only.*

**CAUTION**

**Disconnect limit switch BEFORE removing seat or damage to switch can occur.**

1. Perform one (1) of the following:
  - DISCONNECTING -** While holding body of limit switch phono plug, lift up gently.
  - NOTE: When the limit switch is unplugged the wheelchair will NOT operate.*
  - CONNECTING -** Plug limit switch plug into the limit switch phono jack.



*NOTE: Shroud not shown for clarity.*

**FIGURE 7 - DISCONNECTING/CONNECTING LIMIT SWITCH**

**REMOVING/INSTALLING SHROUDS (FIGURE 8)**

**Removing Front Shroud**

1. Unclip the retaining strap securing the front shroud and battery box to the wheelchair.
2. Feed the retaining strap through the front shroud.
3. Remove the front shroud from the wheelchair.

**Installing Front Shroud**

1. Feed the retaining strap through the front shroud as shown in **FIGURE 8**.
2. Position the bottom of the front shroud between the battery box and the battery tray.
3. Clip the retaining strap together.

**Removing Rear Shroud**

1. Unclip the retaining strap securing the rear shroud and battery box to the wheelchair.
2. Feed the retaining strap through the rear shroud.
3. Remove the rear shroud from the wheelchair.

**Installing Rear Shroud**

1. Feed the retaining strap through the front shroud as shown in **FIGURE 8**.
2. Clip the retaining strap together.

3. Press down on the rear shroud until the two (2) clips secure the rear shroud to the two (2) side shrouds.

**Removing Side Shrouds and Fillers**

1. Remove the front shroud from the wheelchair. Refer to **REMOVING/INSTALLING FRONT SHROUD** in this procedure of the manual.
2. Remove the rear shroud from the wheelchair. Refer to **REMOVING/INSTALLING REAR SHROUD** in this procedure of the manual.
3. Perform one (1) of the following:
  - A. **INTEGRATED SLING SEAT MODELS** - Fold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.
  - B. **CAPTAIN'S SEAT MODELS** - Remove the Captain's Seat from the wheelchair. Refer to **REMOVING/INSTALLING CAPTAIN'S SEAT** in this procedure of the manual.
4. Remove the phillips screws, bolts, washers and lock-nuts that secure side shroud and filler to the wheelchair frame. Refer to **FIGURE 8** for phillips screw and washer locations.
5. Remove the side shroud and filler from the wheelchair.
6. Repeat **STEPS 4-5** for the opposite side of the wheelchair, if necessary.

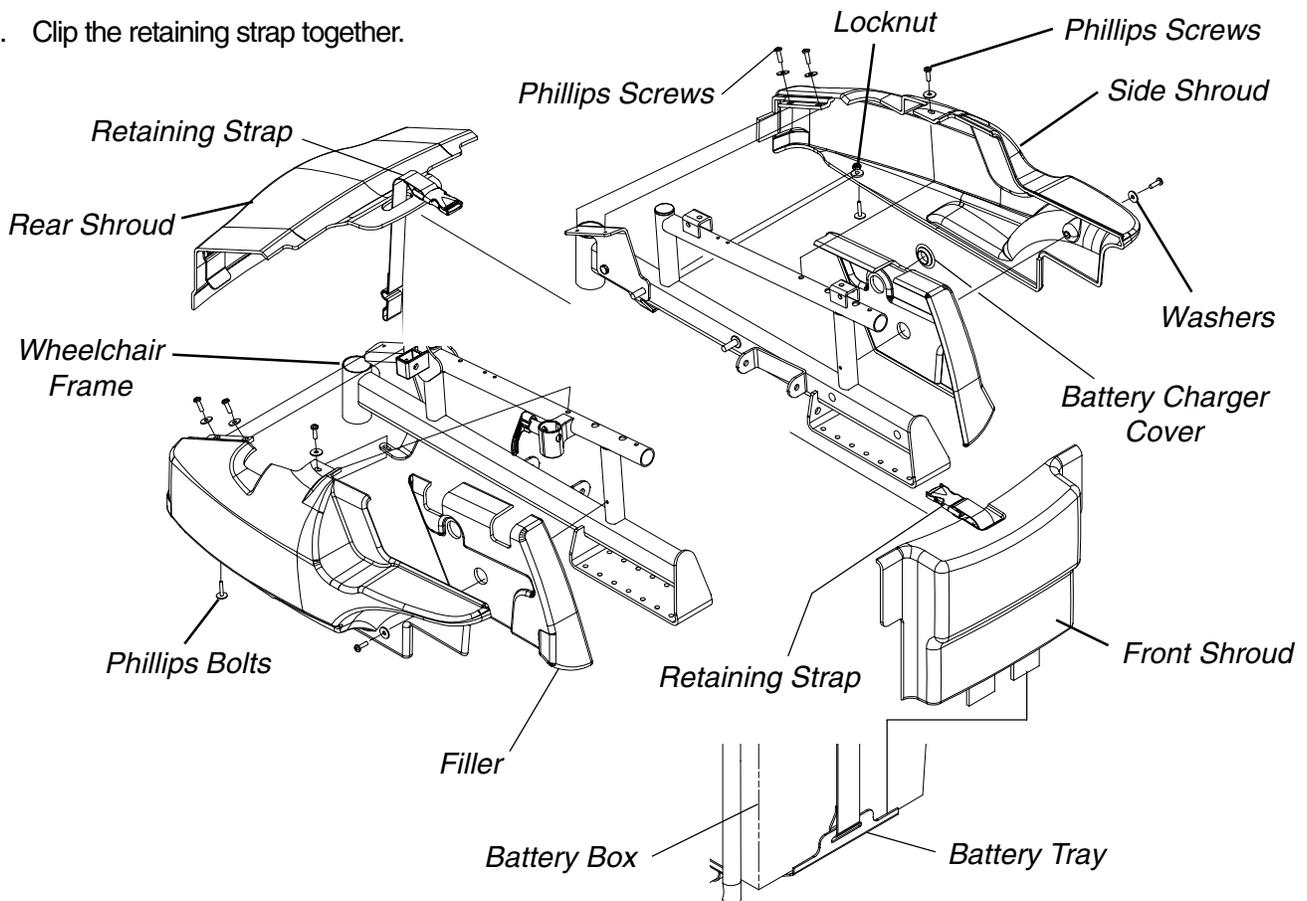


FIGURE 8 - REMOVING/INSTALLING SHROUDS - FWD WHEELCHAIRS

**Installing Side Shrouds and Fillers**

1. Position the side shroud and filler on the wheelchair frame.
2. Line up the mounting holes in the side shroud and filler with the mounting holes in the wheelchair frame.

**CAUTION**

**DO NOT overtighten the phillips screws and phillips bolt that secure the side shroud to the wheelchair frame - otherwise damage to the side shroud can occur.**

3. Install the phillips screws, bolts, washers and locknuts that secure the side shroud and filler to the wheelchair frame and tighten securely. **DO NOT OVERTIGHTEN.** Refer to **FIGURE 8** for phillips screw, bolt, washer and locknut locations.
4. Repeat **STEPS 1-3** for the opposite side of the wheelchair, if necessary.
5. Perform one (1) of the following:
  - A. **INTEGRATED SLING SEAT MODELS** - Unfold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.
  - B. **CAPTAIN'S SEAT MODELS** - Reinstall the Captain's Seat onto the wheelchair. Refer to **REMOVING/INSTALLING CAPTAIN'S SEAT** in this procedure of the manual.
6. Reinstall the rear shroud onto the wheelchair. Refer to **REMOVING/INSTALLING REAR SHROUD** in this procedure of the manual.
7. Reinstall the front shroud onto the wheelchair. Refer to **REMOVING/INSTALLING FRONT SHROUD** in this procedure of the manual.

**REPOSITIONING BATTERY CHARGER CONNECTOR (FIGURE 9)**

1. Fold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.
2. If necessary, remove the battery charger cover from the filler shroud.
3. Remove the hex bolt and locknut that secures the battery charger connector bracket to the wheelchair.
4. Perform one (1) of the following:
 

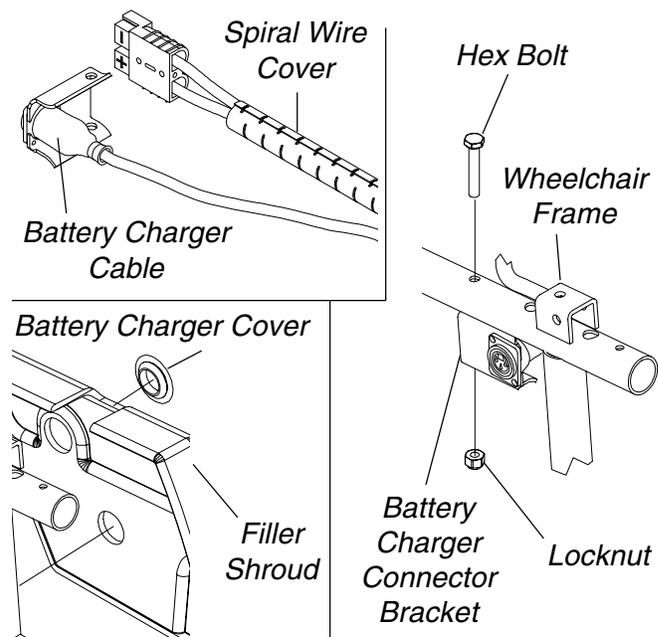
**Battery Charger Connector Cable too Long -**

  - A. Reposition the battery charger connector bracket on the opposite side of the wheelchair frame.
  - B. Line up the mounting holes in the battery charger connector bracket and the wheelchair frame.
  - C. Install the hex bolt through the wheelchair frame and battery charger bracket.
  - D. Install locknut onto hex bolt and tighten securely.

- E. Tuck the excess battery charger cable into the spiral wire cover on the wiring harness.

**Battery Charger Connector Cable too Short -**

- A. Pull the battery charger cable out of the spiral wire cover on the wiring harness.
  - B. Reposition the battery charger connector bracket on the opposite side of the wheelchair frame.
  - C. Line up the mounting holes in the battery charger connector bracket and the wheelchair frame.
  - D. Install the hex bolt through the wheelchair frame and battery charger bracket.
  - E. Install the locknut onto the hex bolt and tighten securely.
5. If necessary, install the battery charger cover on the opposite filler shroud.
  6. Unfold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.



**FIGURE 9 - REPOSITIONING BATTERY CHARGER CONNECTOR**

**WHEN TO CHARGE BATTERIES (FIGURE 10)**

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.

**BATTERY DISCHARGE INDICATOR (BDI)** is located at the front of the joystick housing and provides information on the remaining charge in the batteries. At FULL charge the BDI will be GREEN. As the battery becomes discharged, the BDI indicator will turn AMBER (YELLOW), then RED and finally FLASHING RED. If the BDI is FLASHING RED, the user should charge the batteries as soon as possible.

*NOTE: Accurate readings are displayed when in neutral.*

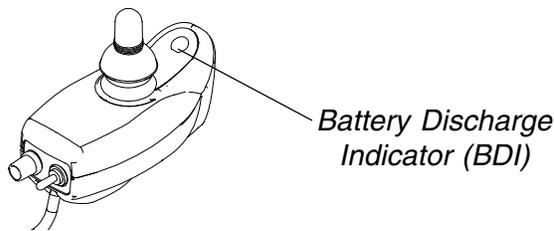


FIGURE 10- WHEN TO CHARGE BATTERIES

**CHARGING BATTERIES (FIGURE 11)**

**WARNING**

Never attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. Use the recharging plug located on either the side of the wheelchair frame or on the front 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 fully BEFORE initial use or battery life will be reduced.

*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:**

The amount of electrical current drawn within a given time to charge a battery is called "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.

*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

⊕ 3-prong plug, 15 ampere current rating; industrial type

**Wheelchairs Equipped With MCC-Mark IV Joystick (Detail "A" of FIGURE 11)**

1. If necessary, remove the rear shroud. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.
2. Attach the battery charger connector to the charger cable/battery harness.
3. Plug the charger's AC power cord, or extension, into the grounded 120 VAC wall outlet.
4. Wait until charging is complete.

*NOTE: Allow eight (8) hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen (16) hours to be properly charged and equalized. If the charger operates for sixteen (16) hours and is unable to fully charge the batteries, an internal timer turns the charger off and begins to fast blink the green light.*

*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.*

5. If necessary, install the rear shroud. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.

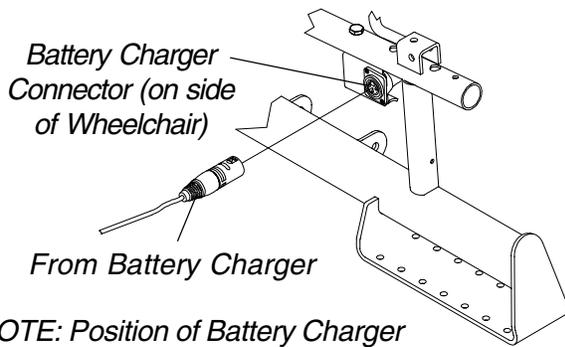
**Wheelchairs Equipped With Mark IV RII Joystick (Detail "B" of FIGURE 11)**

1. Attach the battery charger connector to the charger port on the FRONT of 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 (8) hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen (16) hours to be properly charged and equalized. If the charger operates for sixteen (16) hours and is unable to fully charge the batteries, an internal timer turns the charger off and begins to fast blink the green light.*

*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.*

**DETAIL "A"**



NOTE: Position of Battery Charger Connector may vary depending on wheelchair options.

**DETAIL "B"**

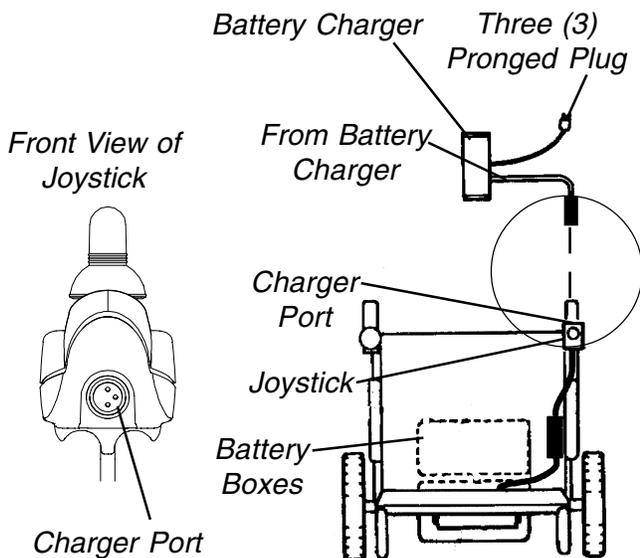


FIGURE 11- CHARGING BATTERIES

**REPLACING BATTERIES**

**WARNING**

Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully, otherwise injury or damage can occur.

NOTE: Invacare recommends that both batteries be replaced if one (1) battery is defective.

**Recommended Battery Types**

**WARNING**

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell or sealed lead acid batteries. Invacare strongly recommends their use as the power source for this unit.

**CAUTION**

Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

CHAIR SEAT WIDTH	QTY	VOLTS	BATTERY SIZE	REMARKS
16,18, 20-inches	2	12	22NF	Deep Cycle

1. Remove the battery boxes from the wheelchair. Refer to **REMOVING/INSTALLING BATTERY BOXES** in this procedure of the manual.
2. Remove the existing batteries from the battery boxes. Refer to **INSTALLING/REMOVING BATTERIES TO/FROM BATTERY BOXES** in **PROCEDURE 9** of this manual.
3. Clean the new battery terminals.
4. Install the new batteries into the battery boxes. Refer to **INSTALLING/REMOVING BATTERIES TO/FROM BATTERY BOXES** in **PROCEDURE 9** of this manual.
5. Install the battery boxes onto the wheelchair. Refer to **REMOVING/INSTALLING BATTERY BOXES** in this procedure of the manual.

**Cleaning Battery Terminals**

**WARNING**

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.

NEVER smoke or strike a match near batteries. If the caps of the battery cells are removed, NEVER look directly into them while charging batteries.

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

NOTE: When done, these areas should be shiny, not dull.

4. Carefully dust off all metal particles.

## INSTALLING/REMOVING BATTERY BOXES (FIGURE 12)

### WARNING

**NEVER** unplug the battery cables by pulling on the wires. Unplug the battery cables by pulling on the connector **ONLY**. Otherwise injury or damage may result.

*NOTE: To remove the battery boxes from the wheelchair, reverse the following procedure.*

1. Verify that the ON/OFF switch on the joystick is in the OFF position.
2. If necessary, remove the Captain's Seat. Refer to **REMOVING/INSTALLING CAPTAIN'S SEAT** in this procedure of the manual.
3. If necessary, remove the front and rear shrouds. Refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual.
4. Position the battery boxes onto the battery tray.

*NOTE: Make sure the battery cables on the battery boxes are on the same side as the battery connectors on the wheelchair frame.*

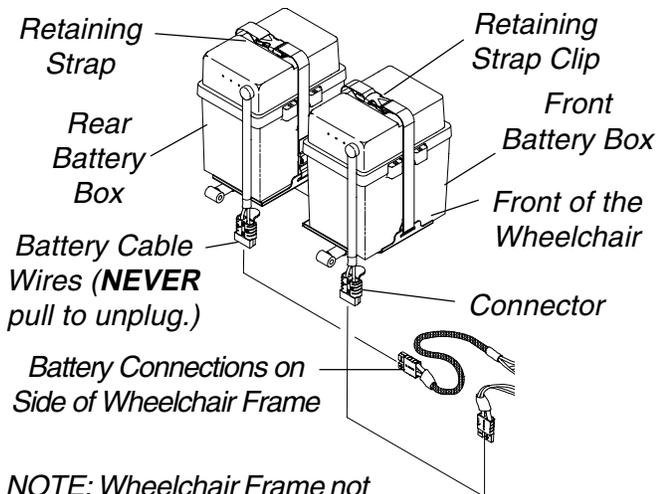
5. Connect the battery cables from the battery boxes to the battery connectors on the wheelchair frame.

### WARNING

The Battery Box Retaining Strap **MUST** be fastened securely and adjusted properly to hold battery boxes in place before using the wheelchair.

6. Position retaining straps around each battery box as shown in **FIGURE 12**, clip retaining strap together and adjust if necessary.

*NOTE: If wheelchair is equipped with shrouds, refer to **REMOVING/INSTALLING SHROUDS** in this procedure of the manual before connecting retaining strap together.*



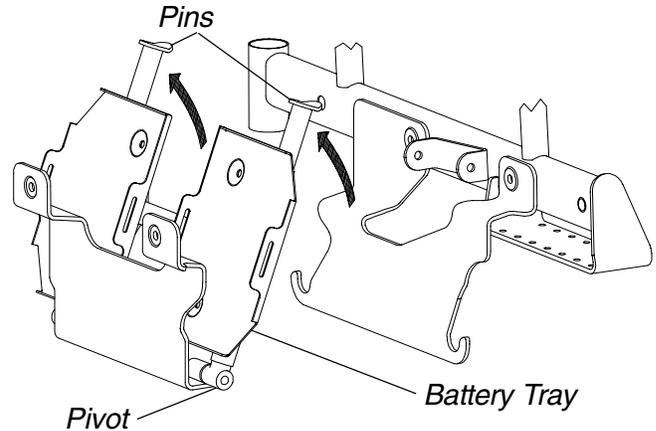
*NOTE: Wheelchair Frame not shown for clarity.*

**FIGURE 12 - INSTALLING/REMOVING BATTERY BOXES**

## BATTERY TRAY

### Folding Battery Tray for Transport (FIGURE 13)

1. Remove the battery boxes from the wheelchair. Refer to **INSTALLING/REMOVING BATTERY BOXES** in this procedure of the manual.
2. Lift up on the pin side of the battery tray and rotate UP towards the battery tray pivot.
3. Fold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.



**FIGURE 13 - FOLDING BATTERY TRAY FOR TRANSPORT**

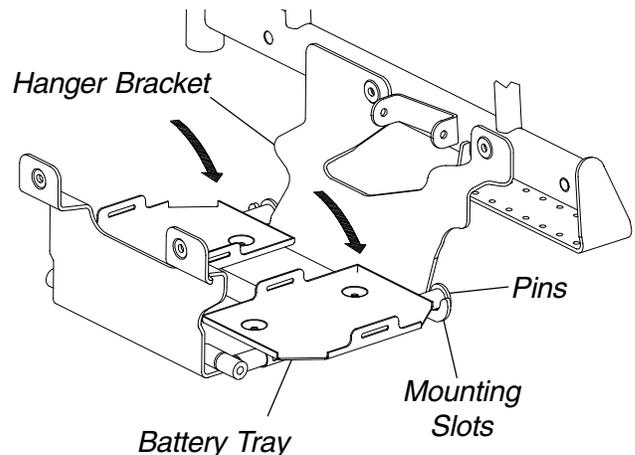
### Unfolding Battery Tray for Use (FIGURE 14)

1. Unfold the wheelchair. Refer to **TRANSPORTING EXCEL** in this procedure of the manual.
2. Rotate the pin side of the battery tray DOWN towards the mounting slots on the hanger bracket.

### WARNING

Make sure pins of battery tray are secure in the mounting slots of the hanger bracket, otherwise injury or damage may result.

3. Install the battery boxes. Refer to **INSTALLING/REMOVING BATTERY BOXES** in this procedure of the manual.



**FIGURE 14 - UNFOLDING BATTERY TRAY FOR USE**

## ENGAGING/DISENGAGING CLUTCHES (FIGURES 15 AND 16)

**WARNING**

DO NOT engage or disengage the clutches until the power is in the OFF position.

**CAUTION**

Ensure both clutches are fully engaged BEFORE driving the wheelchair.

1. Locate the clutch handles on motors.
2. Perform one (1) of the following:
  - A. **ENGAGE (FIGURE 15)**-
    1. Push the clutch handle IN.
    2. Push the clutch handle towards the front of the wheelchair.

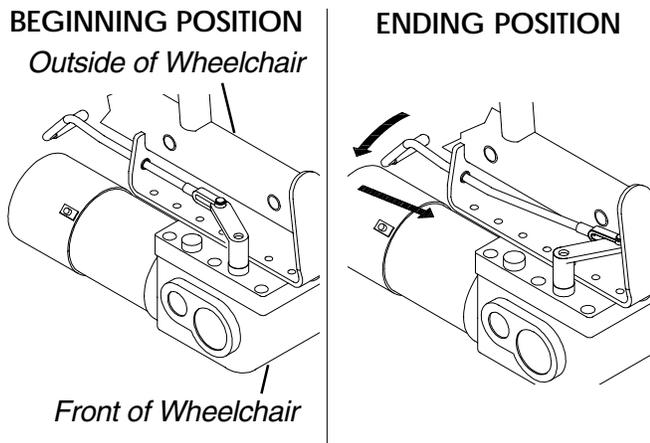


FIGURE 15 - ENGAGING CLUTCHES

**B. DISENGAGE (FIGURE 16)**-

1. Pull the clutch handle towards the rear of the wheelchair.
2. Pull the clutch handle OUT.

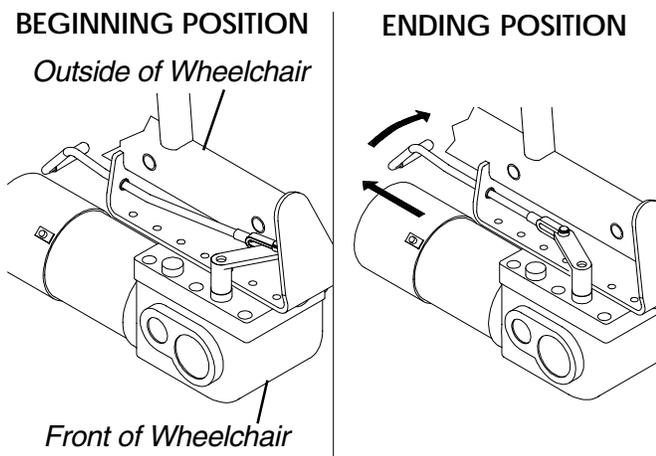


FIGURE 16 - DISENGAGING CLUTCHES

*This Procedure Includes the Following:*

- Transporting Power 9000*
- When to Charge Batteries*
- Charging Batteries*
- Replacing Batteries*
- Installing/Removing Battery Boxes*
- Battery Tray*
- Engaging/Disengaging Clutches*
- Using/Installing/Adjusting Wheel Locks*
- Installing/Removing Anti-Tippers*
- Installing Optional Clutch Extension Handles*

**TRANSPORTING POWER 9000 (FIGURE 1)**

**WARNING**  
 The weight of the wheelchair without the user and batteries is approximately 82 lbs. Use proper lifting techniques (lift with your legs) to avoid injury. Extreme caution is advised when it is necessary to move an UNOCCUPIED power wheelchair. Invacare recommends using two (2) assistants and making thorough preparations. Make sure to use ONLY secure, non-detachable parts for hand-hold supports.

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

**Unfolding/Folding the Wheelchair**

**WARNING**  
 Keep hands and fingers clear of moving parts to avoid injury.

**UNFOLDING.**

1. Push down on the seat rails until the seat rails are positioned in the seat guides.
2. Assemble the wheelchair. Refer to **FIGURE 1**.

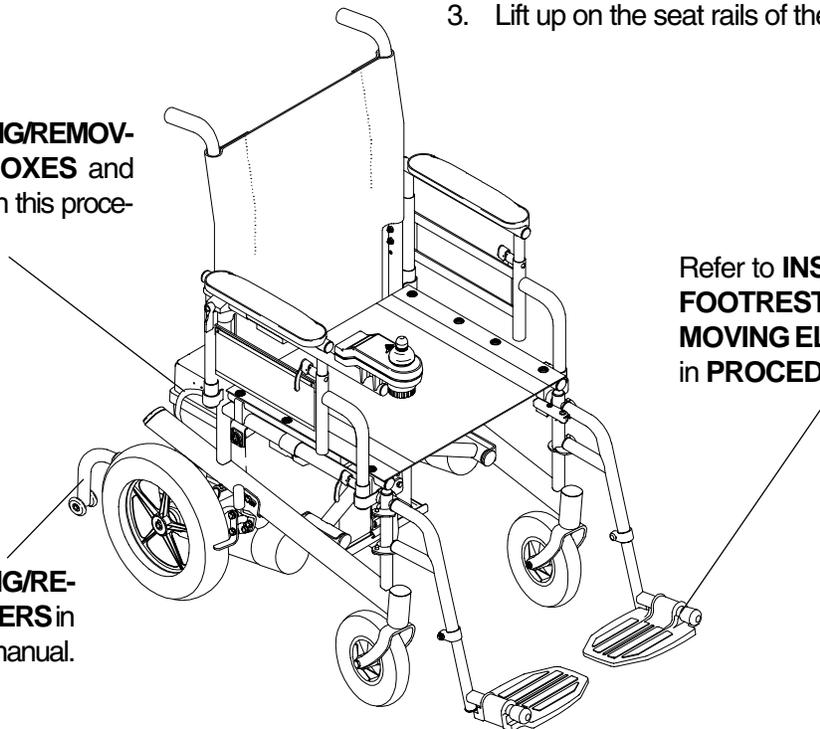
**FOLDING.**

1. Remove the batteries and footrests/legrests from the wheelchair. Refer to **FIGURE 1**.
2. Remove the battery tray from the wheelchair. Refer to **FIGURE 1**.
3. Lift up on the seat rails of the wheelchair.

Refer to **INSTALLING/REMOVING BATTERY BOXES** and **BATTERY TRAY** in this procedure of the manual.

Refer to **INSTALLING/REMOVING ANTI-TIPPERS** in this procedure of the manual.

Refer to **INSTALLING/REMOVING FOOTRESTS** or **INSTALLING/REMOVING ELEVATING LEGRESTS** in **PROCEDURE 3** of this manual.



**FIGURE 1 - TRANSPORTING POWER 9000**

## WHEN TO CHARGE BATTERIES (FIGURE 2)

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.

**BATTERY DISCHARGE INDICATOR (BDI)** is located at the front of the joystick housing and provides information on the remaining charge in the batteries. At FULL charge the BDI will be GREEN. As the battery becomes discharged, the BDI indicator will turn AMBER (YELLOW), then RED and finally FLASHING RED. If the BDI is FLASHING RED, the user should charge the batteries as soon as possible.

*NOTE: Accurate readings are displayed when in neutral.*

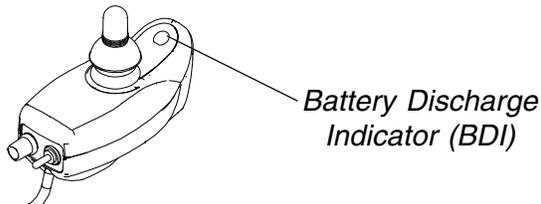


FIGURE 2 - WHEN TO CHARGE BATTERIES

## CHARGING BATTERIES (FIGURE 3)

### WARNING

Never attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. Use the recharging plug located on either the side of the wheelchair frame or on the front 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: 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:

The amount of electrical current drawn within a given time to charge a battery is called "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.

*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

⊕ 3-prong plug, 15 ampere current rating; industrial type

### Wheelchairs Equipped With MCC-Mark IV Joystick (Detail "A" of FIGURE 3)

1. Attach the battery charger connector to the charger cable/battery harness.
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 (8) hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen (16) hours to be properly charged and equalized. If the charger operates for sixteen (16) hours and is unable to fully charge the batteries, an internal timer turns the charger off and begins to fast blink the green light.*

*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.*

### Wheelchairs Equipped With Mark IV RII Joystick (Detail "B" of FIGURE 3)

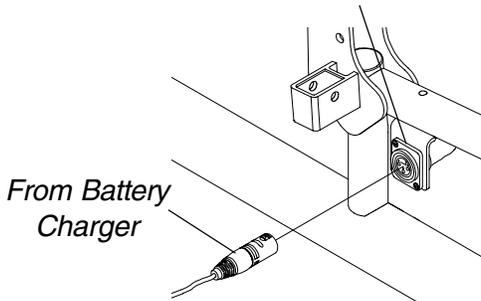
1. Attach the battery charger connector to the charger port on the FRONT of the joystick.
2. Plug the charger's AC power cord, or extension, into the grounded 120 VAC wall outlet.
3. Wait until charging is complete.

*NOTE: Allow eight (8) hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen (16) hours to be properly charged and equalized. If the charger operates for sixteen (16) hours and is unable to fully charge the batteries, an internal timer turns the charger off and begins to fast blink the green light.*

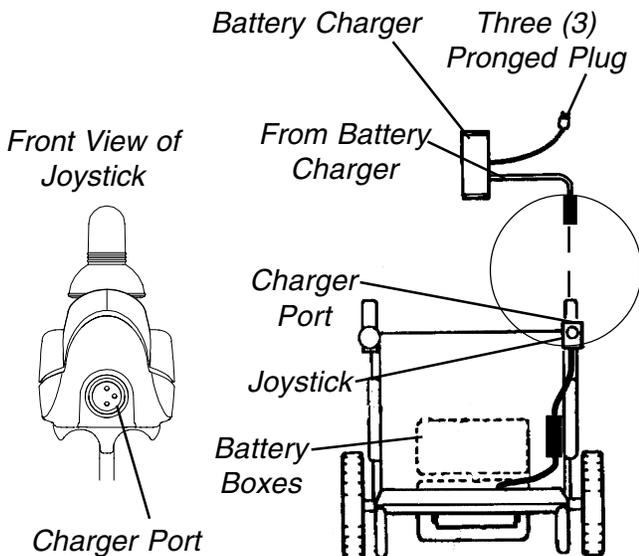
*NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact an Invacare dealer for service.*

**DETAIL "A"**

Battery Charger Connector (on Side of Wheelchair)



**DETAIL "B"**



**FIGURE 3 - CHARGING BATTERIES**

**REPLACING BATTERIES**

**WARNING**

Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully, otherwise injury or damage can occur.

*NOTE: Invacare recommends that both batteries be replaced if one (1) battery is defective.*

**Recommended Battery Types**

**WARNING**

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell or sealed lead acid batteries. Invacare strongly recommends their use as the power source for this unit.

**CAUTION**

Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

CHAIR SEAT WIDTH	QTY	VOLTS	BATTERY SIZE	REMARKS
14-inches	2	12	U1	Deep Cycle
16,18, 20-inches	2	12	22NF	Deep Cycle

1. Remove the battery boxes from the wheelchair. Refer to **REMOVING/INSTALLING BATTERY BOXES** in this procedure of the manual.
2. Remove the existing batteries from the battery boxes. Refer to **INSTALLING/REMOVING BATTERIES INTO/FROM BATTERY BOXES** in **PROCEDURE 9** of this manual.
3. Clean the new battery terminals.
4. Install the new batteries into the battery boxes. Refer to **INSTALLING/REMOVING BATTERIES INTO/FROM BATTERY BOXES** in **PROCEDURE 9** of this manual.
5. Install the battery boxes onto the wheelchair. Refer to **REMOVING/INSTALLING BATTERY BOXES** in this procedure of the manual.

**Cleaning Battery Terminals**

**WARNING**

**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**.

**NEVER** smoke or strike a match near batteries. If the caps of the battery cells are removed, **NEVER** look directly into them while charging batteries.

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

*NOTE: When done, these areas should be shiny, not dull.*

4. Carefully dust off all metal particles.

### INSTALLING/REMOVING BATTERY BOXES (FIGURE 4)

**WARNING**

**NEVER** unplug the battery cables by pulling on the wires. Unplug the battery cables by pulling on the connector **ONLY**. Otherwise injury or damage may result.

*NOTE: To remove the battery boxes from the wheelchair, reverse the following procedure.*

1. Verify that the ON/OFF switch on the joystick is in the OFF position.
2. Position battery boxes onto battery tray. Make sure battery cables on battery boxes are on the same side as the battery connectors on the wheelchair frame.
3. Connect the battery cables from the battery boxes to the battery connectors on the wheelchair frame.
4. Connect the battery box retaining strap clip together.

**WARNING**

The Battery Box Retaining Strap **MUST** be fastened securely and adjusted properly to hold battery boxes in place before using the wheelchair.

5. Connect the battery box retaining strap clip together and adjust if necessary.

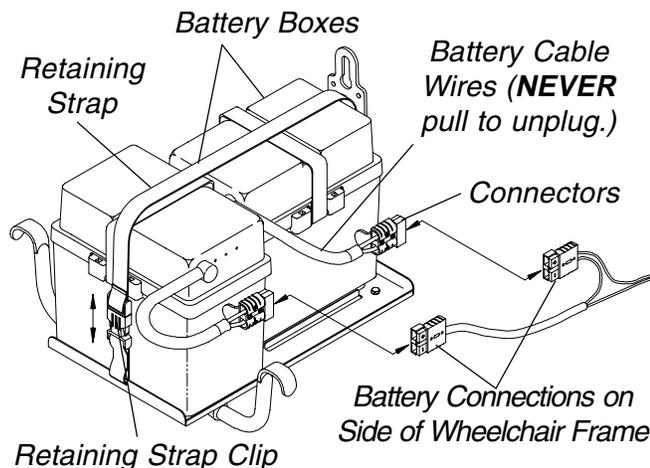


FIGURE 4 - INSTALLING/REMOVING BATTERY BOXES

### BATTERY TRAY (FIGURE 5)

*NOTE: To remove the battery tray from the wheelchair, reverse the following procedure.*

1. Attach the key slot bracket located at the front of the battery tray over the crossbrace bolt bushing under the seat upholstery of the wheelchair.

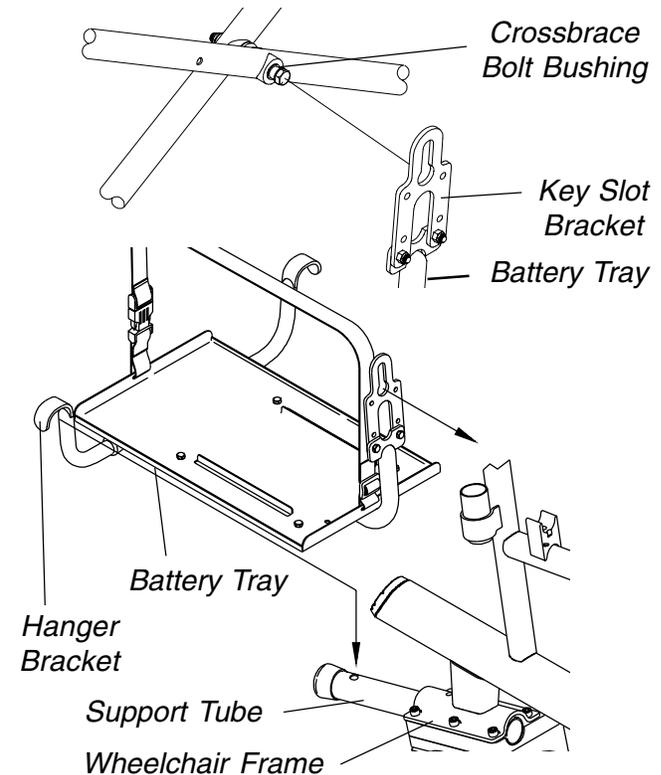


FIGURE 5 - BATTERY TRAY

*NOTE: If wheelchair is 14-inch wide and equipped with MKIV RII electronics, it may be necessary to turn battery tray slightly away from controller to install the battery tray.*

2. Attach the hanger brackets to the support tubes on the wheelchair frame.

### ENGAGING/DISENGAGING CLUTCHES (FIGURES 6 AND 7)

**WARNING**

**DO NOT** engage or disengage the clutches until the power is in the OFF position.

The clutch engagement/disengagement allows free-wheeling or joystick controlled operation. Free-wheeling allows an attendant to maneuver the wheelchair without power. To engage/disengage the clutches:

BATTERY BOX - 14-INCH WIDE WHEELCHAIRS      BATTERY BOX - 16-20-INCH WIDE WHEELCHAIRS

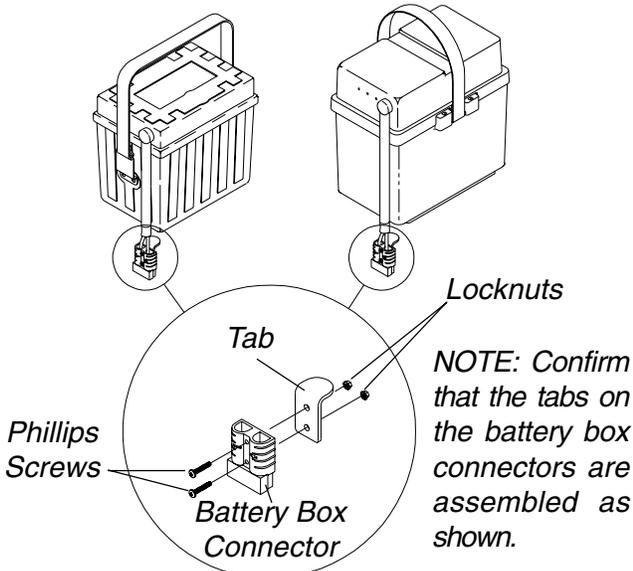


FIGURE 6 - BATTERY BOX CONNECTOR TABS

*NOTE: If the wheelchair is equipped with clutch extension handles, refer to **STEP 1** below. If wheelchair is not equipped with clutch extension handles, proceed to **STEP 2**.*

**WARNING**

The tabs on the battery box connectors **MUST** be assembled as shown in **FIGURE 6**. Otherwise the connectors will not engage completely and clutch handles could disengage connectors.

1. Confirm that the tabs on the battery box connectors are assembled as shown in **FIGURE 6**.

*NOTE: If the tab on the battery box connectors is not assembled as shown in **FIGURE 6**, remove the phillips screws and locknuts to assemble tab onto the connector correctly.*

2. Locate the clutch handles on motors (**FIGURE 7**).

**CAUTION**

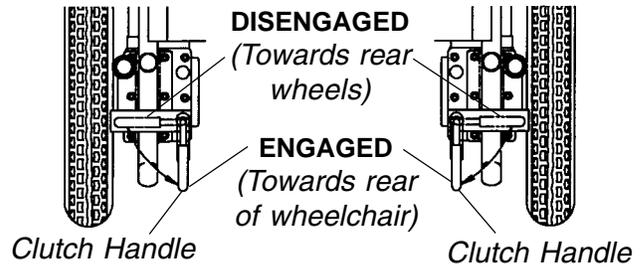
If clutch handles are forced to engage in the wrong direction (**FIGURE 9**), the motors will be damaged and will need to be replaced.

3. Perform one of the following (**FIGURE 7**):

**TO ENGAGE:** turn the clutch handles until they are pointing towards the rear of the wheelchair. **NEVER** try to turn the clutch handles towards the **FRONT** of the wheelchair.

**TO DISENGAGE:** turn the clutch handles until they are pointing towards the rear wheels. **NEVER** try to turn the clutch handles towards the **INSIDE** of the wheelchair.

TOP VIEW OF WHEELCHAIR



**NEVER** Force clutch handles in these directions

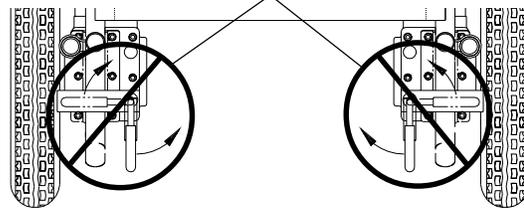


FIGURE 7 - ENGAGING/DISENGAGING CLUTCHES USING/INSTALLING/ADJUSTING WHEEL LOCKS\*

**WARNING**

\*Wheel locks are an **OPTION** on RWD wheelchairs, (you may order with or without wheel locks). Transfer to and from the wheelchair in the presence of a qualified healthcare professional to determine individual safety limits. Invacare strongly recommends ordering the wheel locks as an additional safeguard for the wheelchair user.

**Using Wheel Locks (FIGURE 8)**

The wheelchair is equipped with a pair of independently operated wheel locks located just in front of the rear wheels.

1. To engage the wheel locks, grip the handle and push forward to the lock position.
2. To release, reverse **STEP 1**.

*IMPORTANT NOTE: DO NOT use the wheel locks when the wheelchair power is ON and the clutches are engaged.*

*NOTE: Use the wheel locks whenever the clutches are disengaged and the wheelchair is being pushed.*

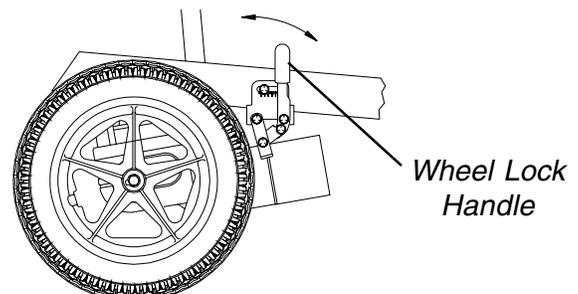
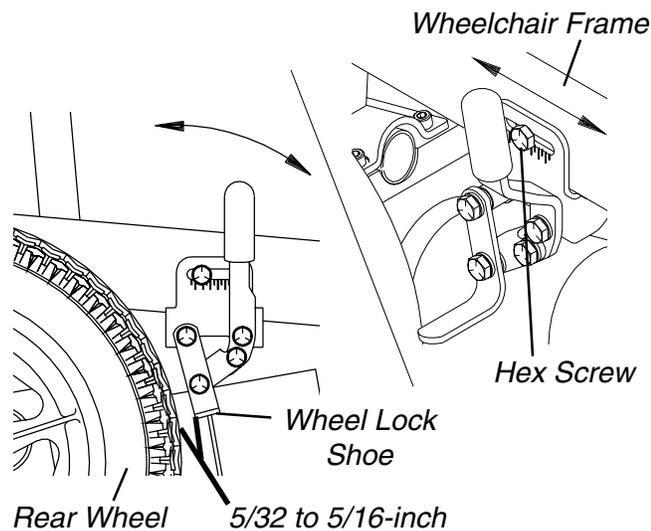


FIGURE 8 - USING WHEEL LOCKS

**Installing/Adjusting Wheel Locks (FIGURE 9)**

*NOTE: Before adjusting or replacing the wheel lock assemblies, ensure that the tires are inflated to the recommended psi on the side wall of tire.*

1. Position the wheel lock on the wheelchair frame.
2. Loosely install the hex screw that secures the wheel lock to the wheelchair frame.
3. Make sure wheel lock is disengaged from rear wheel.
4. Measure the distance between the **WHEEL LOCK SHOE** and the **REAR WHEEL**.
5. Slide the wheel lock along the wheelchair until the measurement is between 5/32 and 5/16-inches.
6. Tighten the wheel lock to the wheelchair frame.
7. Repeat this procedure for the opposite wheel lock.
8. Disengage the clutches. Refer to **ENGAGING/DISENGAGING CLUTCHES** in this procedure of the manual.
9. Engage the wheel locks and push against the wheelchair to determine if the wheel locks engage the rear wheels enough to hold the wheelchair.
10. Repeat **STEPS 3-9** until the wheel locks engage the rear wheels enough to hold the wheelchair.
11. Engage clutches. Refer to **ENGAGING/DISENGAGING CLUTCHES** in this procedure of the manual.



**FIGURE 9 - INSTALLING/ADJUSTING WHEEL LOCKS**

**INSTALLING/REMOVING ANTI-TIPPERS (FIGURE 10)**

**Installing**

**WARNING**  
 Anti-tippers **MUST** be fully engaged and spring buttons fully protruding out of adjustment holes **BEFORE** using the wheelchair.

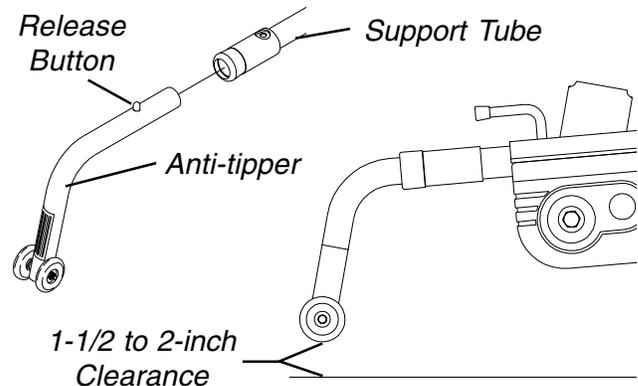
1. Press release buttons IN and insert the anti-tippers with anti-tipper wheels pointing toward the ground/floor into the support tubes until the release buttons lock in place.
2. Measure the distance between the bottom of the anti-tipper wheels and the ground/floor.

*NOTE: A 1-1/2 to 2-inch clearance between the bottom of the anti-tipper wheels and the ground/floor **MUST** be maintained at all times.*

3. If the distance between the bottom of the anti-tipper wheels and the ground/floor is not 1-1/2 to 2-inches, do not use the anti-tippers. Replace anti-tippers and repeat **STEPS 1** and **2**.

**Removing**

1. Press release buttons IN and remove the anti-tippers from the support tubes.



**FIGURE 10 - INSTALLING/REMOVING ANTI-TIPPERS**

**INSTALLING OPTIONAL CLUTCH EXTENSION HANDLES (FIGURE 11)**

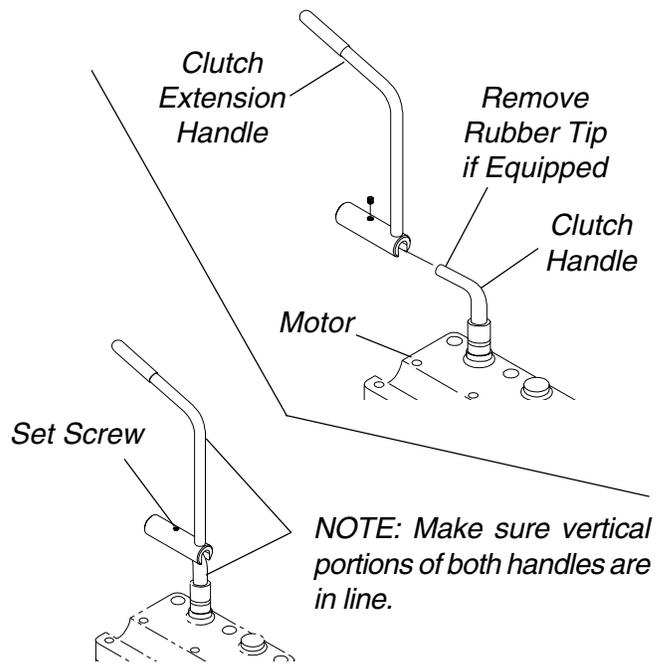
1. Turn the power to the wheelchair to the OFF position.
2. Position the clutch extension handle by the clutch handle on the motor as shown in **FIGURE 11**.

*NOTE: If the clutch handle on the motor is equipped with a rubber tip, remove the rubber tip before installing the clutch extension handle.*

3. Slide clutch extension handle onto motor clutch handle.

*NOTE: If necessary, lightly tap the clutch extension handle onto the clutch handle with a plastic mallet. Make sure the vertical portions of both handles are in line.*

4. Securely tighten set screw on clutch extension handle.
5. Repeat **STEPS 2-4** for opposite side of wheelchair.



**FIGURE 11 - INSTALLING OPTIONAL CLUTCH EXTENSION HANDLES**

**NOTES**

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## LIMITED WARRANTY

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

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

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

Invacare warrants the side frames and crossbraces to be free from defects in materials and workmanship for a period of five (5) years from date of purchase; electronics for a period of one (1) year from the date of purchase; motors and gearboxes for a period of twelve (12) months from the date of purchase; all remaining components (including gas cylinders for recliners) for one (1) year from the date of purchase except upholstered materials, padded materials and tires/wheels. If within such warranty period any product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect 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 OR FAILURE TO ADHERE TO THESE INSTRUCTIONS. A CHANGE IN OPERATING NOISE, PARTICULARLY RELATIVE TO MOTORS AND GEARBOXES DOES NOT CONSTITUTE A FAILURE. ALL SUCH DEVICES WILL EXHIBIT A CHANGE IN OPERATING NOISE DUE TO AGING.

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

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



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