Owner's Operator and Maintenance Manual

Pronto® M61™ with SureStep®

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.

INVACARE®

Yes, you can.®

⚠ WARNING

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

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

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

REFERENCE DOCUMENTS

Contact Invacare for the electronics manual and information regarding service parts for this wheelchair.

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SPECIAL NOTES

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

SIGNAL WORD	MEANING
DANGER	Danger indicates a imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Tools and hardware referenced in this manual are Imperial type unless otherwise noted.

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 RESTRAINTS

Wheelchair users should 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.

⚠ WARNING

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

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

The drive behavior initially experienced by the user may be different from other chairs previously used. This power wheelchair has Invacare's SureStep technology, a feature that provides the chair with optimum traction and stability when driving forward over transitions and thresholds of up to 5 cm.

⚠ WARNING CONTINUED

The following warnings apply specifically to the SureStep Feature:

- **DO NOT use on inclines greater than 9°.**
- **DO NOT use on inclines with wet, slippery, icy or oily surfaces. This may include certain painted or otherwise treated wood surfaces.**
- **DO NOT traverse down ramps at high speed. Doing so will reduce traction and increase stopping distance.**
- **The end user's weight can materially affect traction on sloped surfaces. Great care should be taken when traversing such slopes.**

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

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

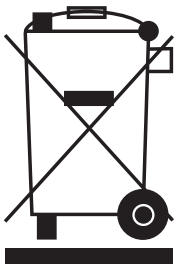
Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

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

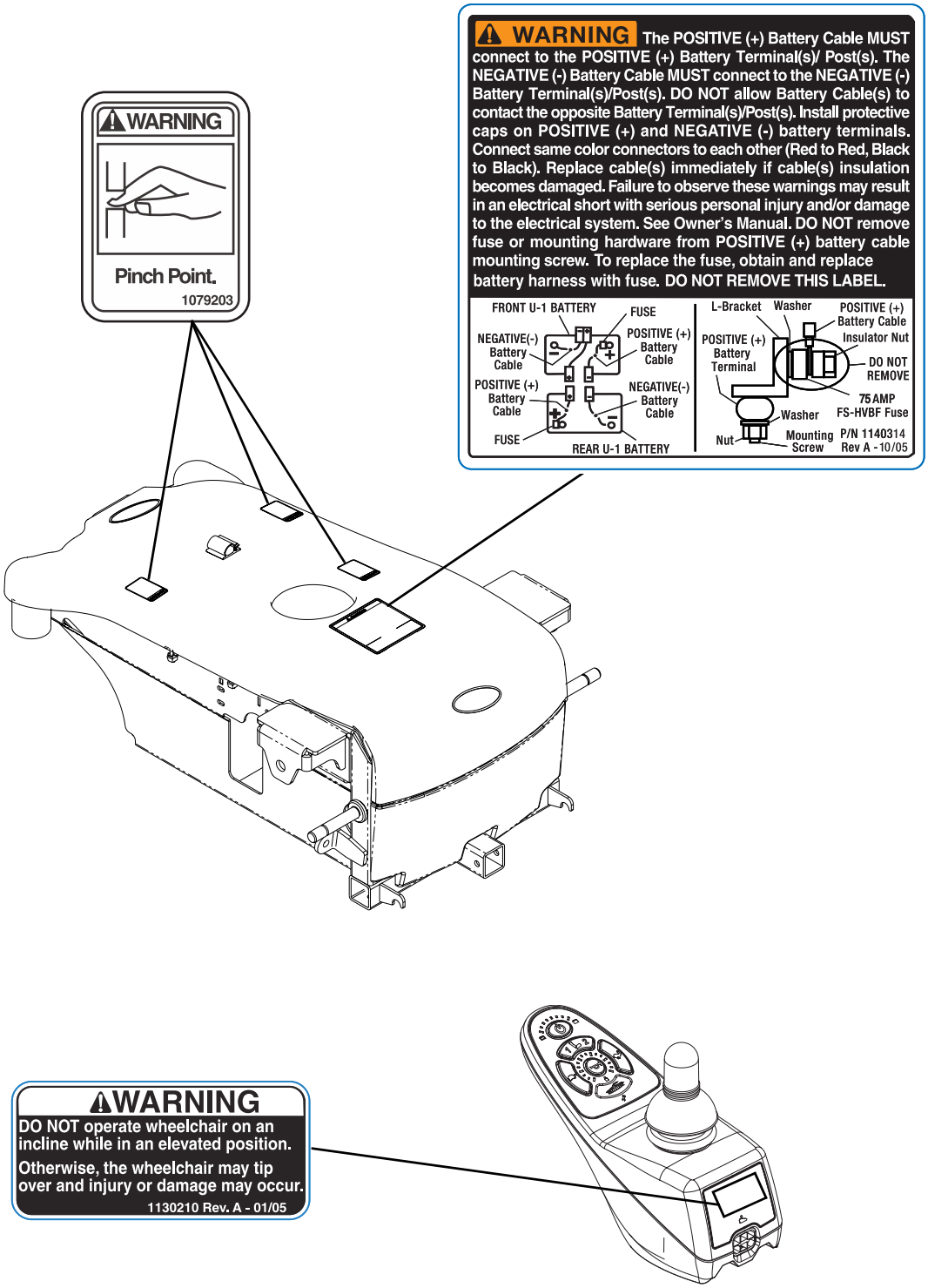
This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

The 'crossed out wheelie bin' symbol is placed on this product to encourage you to recycle wherever possible.

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



LABEL LOCATION



TYPICAL PRODUCT PARAMETERS

	OFFICE STYLE, SEMI-RECLINE BACK
WHEELCHAIR CLASSIFICATION:	A
SEAT WIDTH RANGE:	46 cm
SEAT DEPTH:	40 - 46 cm
BACK HEIGHT:	60 cm (w/ headrest), 48 cm (w/o headrest)
BACK ANGLE RANGE	90° to 115°
UPHOLSTERY:	Charcoal Grey Vinyl
SEAT-TO-FLOOR	
WITH FOOTBOARD:	48 to 58 cm
WITH FRONT RIGGINGS:	48 to 58 cm
WITH ELEVATING SEAT:	48 to 53 cm + up to 13 cm of Elevate
OVERALL WIDTH:	61 cm (Without Joystick)
OVERALL HEIGHT:	105 cm
OVERALL LENGTH:	86 cm (with Footboard Folded) 100 cm (with Footboard Extended)
DRIVE WHEELS/TIRES:	25 x 8 cm pneumatic tires
CASTER:	15 x 5 cm Front/Rear w/Precision Sealed Bearings
FOOTRESTS/LEGRESTS:	Flip Up, Depth and Height Adjustable, Footboard, Swingaway Front Rigging, Elevating Legrest
***WEIGHT**	
W/O BATTERIES:	68 kg
W/BATTERIES (U1):	90 kg
SHIPPING WEIGHT	
BASE W/O BATTERIES:	49 kg
BASE WITH BATTERIES:	70 kg
OFFICE STYLE SEAT:	20 kg
ARMRESTS:	Adjustable Width, Angle, Heights and Depth
BATTERY TYPE:	U1 - Quantity 2, Refer to Batteries on page 63 for connector configuration.
CHARGER SPECIFICATION	
MAIN:	1.3 Amp, 200-250 VAC, 50 Hz
SUPPLY TO CHAIR:	24 VDC, 8 Amp
OPERATING TEMPERATURE (ENVIRONMENT):	-25° to +50°C
STORAGE TEMPERATURE:	-40° to +65°C
WEIGHT LIMITATION:	136 kg
PERFORMANCE	
SPEED:	0 to 7 km/h
TURNING RADIUS:	50 cm
**RANGE (VARIABLE):	up to 19 km
MAXIMUM OBSTACLE CLIMBING ABILITY:	5 cm
MAXIMUM RAMP SLOPE CLIMBING ABILITY:	9°

**NOTE: Includes seating systems and accessories.*

***NOTE: Values for range are calculated for maximum chair weight rating using largest batteries applicable (U1). While considered typical, they are derived based on certain ideal conditions. Variances in battery condition, user weight, usage pattern or overall terrain conditions will result in actual values for range that differ from these stated values. Users should become accustomed to how their unique conditions impact their individual results. Users should become familiar with the battery discharge indicator on the joystick to determine the range of their wheelchair. Refer to Battery Charger Operation on page 70 for more information about the battery discharge indicator.*

SECTION 1—GENERAL GUIDELINES

⚠ WARNING

SECTION 1 - GENERAL GUIDELINES contains important information for the safe operation and use of this product. DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as Owner's Manuals, Service Manuals or Instruction Sheets supplied with this product or optional equipment. If you are unable to understand the Warnings, Cautions or Instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

Controller Settings/Repair or Service

The electronics control unit is programmed with standard values during manufacture. Set-up of the Electronics Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur if improperly set-up or adjusted.

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

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

Operation Information

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

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

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

DO NOT engage or disengage the motor release levers 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 leave the power button in the On position when entering or exiting your wheelchair.

DO NOT stand on the frame of the wheelchair.

DO NOT stand on the footplates. When getting in or out of the wheelchair, make sure that the footplates are in the upward position or swing the footrests towards the outside of the wheelchair.

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

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

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

DO NOT operate wheelchair on an incline while in an elevated position. Otherwise, the wheelchair may tip over and injury or damage may occur.

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

Pinch points may occur when lowering the elevating seat. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before lowering seat.

DO NOT store or place items under the seat.

NEVER leave an unoccupied wheelchair on an incline.

Cleaning and Disinfection

Only use a damp cloth and gentle detergent to clean this wheelchair.

Do not use any abrasive or scouring liquids.

Do not subject the electronic components to any direct contact with water.

Do not use high pressure cleaning devices.

Spray or wipe disinfection using a tested and recognized product is permitted. A list of the current permitted disinfectants is available from the Robert Koch Institute at http://www.rki.de/GESUND/DESINF/DESINFLI.htm.

Accessories

Extreme care should be exercised when using oxygen in close proximity to electric circuits and other combustible materials. Contact your oxygen supplier for instruction in the use of oxygen.

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

Batteries

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.

Carefully read battery/battery charger information prior to installing, servicing or operating your wheelchair.

Charging Batteries

⚠ DANGER

When using an extension cord, use one with the same or higher electrical rating as the device being connected. Use of improper extension cord could result in risk of fire and electric shock.

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.

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

DO NOT operate wheelchair with extension cord attached to the AC cable.

DO NOT attempt to recharge the batteries when the wheelchair has been exposed to any type of moisture.

DO NOT attempt to recharge the batteries when the wheelchair is outside.

DO NOT sit in the wheelchair while charging the batteries.

DO NOT attempt to recharge batteries using both the on-board battery charger and an independent battery charger (plugged into the joystick charger port) at the same time. Doing so will reduce the life of the batteries.

Read and carefully follow the manufacturer's instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

Ensure the pins of the extension cord plug are the same number, size, and shape as those on the charger.

DO NOT under any circumstances cut or remove the grounding prong from the charger AC cable or the extension cord.

Grounding Instructions

DO NOT, under any circumstances, cut or remove the grounding prong from any plug used with or for Invacare products. Some devices are equipped with grounding plugs for protection against possible shock hazards and fire. If you must use an extension cord, use one with 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.

Rain Test

Invacare has tested its power wheelchairs in accordance with ISO 7176 "Rain Test." This provides the end user or his/her assistant 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.

DO NOT store power wheelchair in a damp area for an extended period of time.

Direct exposure to excessive rain or dampness may cause the chair to malfunction electrically and mechanically, may cause the chair to prematurely rust or may damage the upholstery.

Check to ensure that the RED and GREY battery terminal caps 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 wheelchair if the joystick boot is torn or cracked. If the joystick boot becomes torn or cracked, replace immediately.

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.

Replacement of a tire or tube must be performed by a qualified technician.

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

M61 wheelchairs with SureStep have a weight limitation of 136 kg.

SECTION 2—EMI INFORMATION

⚠ 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.

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

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

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

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

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

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

⚠ WARNING

Powered Wheelchair Electromagnetic Interference (EMI)

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

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

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

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

Important Information

1) **20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);**
2) **The immunity level of the product is unknown.**

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

SECTION 3—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.

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

To 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

NOTE: For this information, refer to FIGURE 3.1.

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.

While the walking beam allows to traverse up to a 5 cm bump or threshold, stopping after the wheels cross the bump poses a problem. The chair cannot reverse over the bump at this point. Continue forward and then turn around.

While the wheelchair is designed for use primarily in and around the home, the provider should determine whether this chair is suitable for the actual environment the chair will be used in.

DO NOT go down ramp at full speed. Some seat/back positions will cause wheelchair to feel unstable.

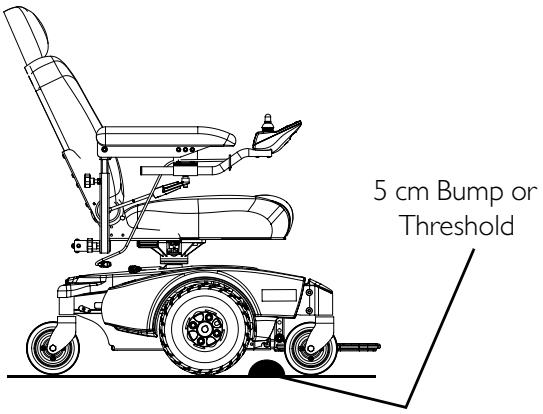


FIGURE 3.1 Coping With Everyday Obstacles

CAUTION

Be aware of condition of ramp. Traction will be diminished/nonexistent on a slippery surface. Proceed with caution.

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.

Also, be aware of detachable parts such as arms or legrests. These must NEVER be used to move the wheelchair or as 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.

Pinch Points

⚠ WARNING

Pinch point may occur when lowering the elevating seat. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before lowering seat (FIGURE 3.2).

DO NOT store or place items under the seat.

NOTE: For this procedure, refer to FIGURE 3.2 and FIGURE 3.3.

Fully Elevated Seat

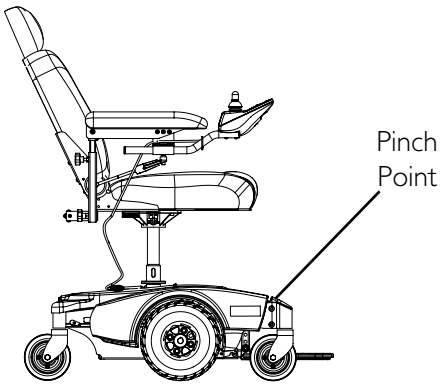


FIGURE 3.2 Pinch Points

⚠ WARNING

Pinch point may occur when adjusting the arm angle position (Detail "A").

Pinch point may occur when rotating the footboard assembly (Detail "B").

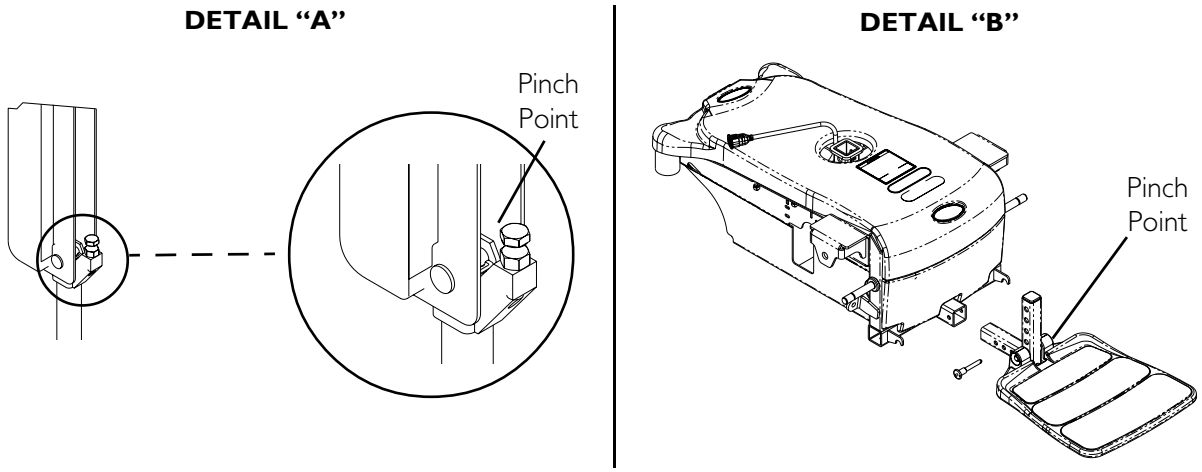


FIGURE 3.3 Pinch Points

Lifting/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 assistants and making thorough preparations.

Use only secure, nondetachable parts for hand-hold supports.

It is strongly recommended to lift the wheelchair only by the rear frame and the front forks - otherwise injury or damage may occur.

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.

The weight of the wheelchair with batteries and without the user is 90 kg. Use proper lifting techniques (lift with your legs) to avoid injury.

NOTE: For this procedure, refer to FIGURE 3.4.

Follow this procedure for moving the wheelchair between floors when an elevator is not available or lifting the wheelchair is necessary:

NOTE: When using a stairway to move the wheelchair, seat and any accessories, move all wheelchair components away from the stairway prior to reassembly.

NOTE: This procedure needs two assistants to lift the wheelchair to transport it.

1. Remove the occupant from the wheelchair.
2. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
3. Remove any accessories on the wheelchair.
4. Bend your knees and keep your back straight.
5. Ensure that the casters are oriented as shown in FIGURE 3.4.
6. Using the rear and front forks as hand hold supports, transfer the wheelchair base to desired location. Refer to FIGURE 3.4.
7. Using non-removable (nondetachable) parts, transfer the seat and any accessories to desired location.
8. Reinstall any accessories that were removed in STEP 3.
9. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.

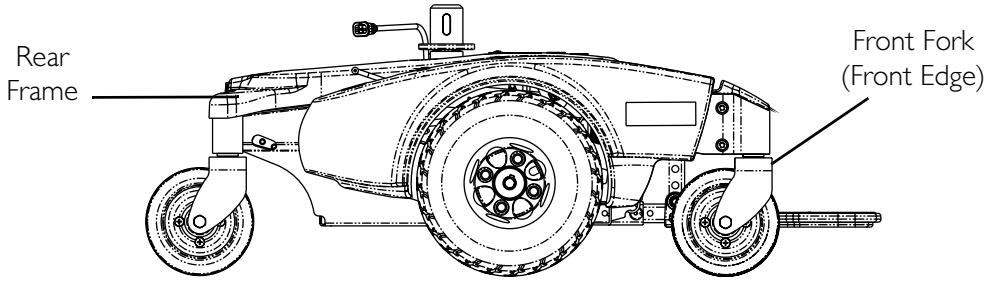


FIGURE 3.4 Lifting/Stairways

⚠ WARNING - ESCALATORS

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 Motor Release Levers 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 aligning both the front and rear casters parallel with 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.

NOTE: For this procedure, refer to FIGURE 3.5.

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the rear casters pointing away from it.
2. After the wheelchair is positioned properly for transfer, verify that the motor release levers are engaged. Refer to Engaging/Disengaging Motor Release Lever on page 59.

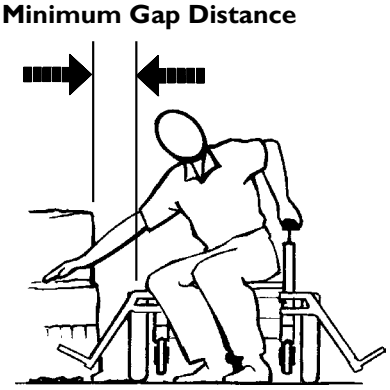


FIGURE 3.5 Transferring To and From Other Seats

3. Flip back or remove arm on side of wheelchair you are transferring from.
4. 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.

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.

Many activities require the wheelchair user to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to the 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.

Reaching, Leaning and Bending - Forward

NOTE: For this procedure, refer to FIGURE 3.6.

Position the front and rear casters so that they are extended as far forward as possible and engage motor release levers.

⚠ 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.

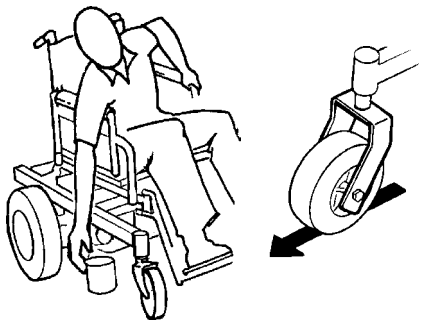


FIGURE 3.6 Reaching, Leaning and Bending - Forward

Reaching and 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.

NOTE: For this procedure, refer to FIGURE 3.7.

Position wheelchair as close as possible to the desired object. Point the front AND rear casters rearward to create the longest possible wheelbase. Reach back only as far as your arm will extend without changing your sitting position.

FIGURE 3.7 Reaching and Bending - Backward

SECTION 4—SAFETY INSPECTION/ TROUBLESHOOTING

NOTE: Every six months or as necessary 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.

Safety Inspection Checklists

CAUTION

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

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

Inspect/Adjust Initially

- ❑ Ensure that the wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Ensure that the arms are secure but easy to release and adjustment levers engage properly.
- ❑ Ensure that adjustable height arms operate and lock securely.
- ❑ Ensure armrest pads sit flush against arm.
- ❑ Ensure seat is secured to wheelchair frame.
- ❑ Ensure seat release latch is functional. Replace if necessary.
- ❑ Clean seat upholstery and armrests.
- ❑ Ensure wheel mounting nuts are secure on drive wheels.
- ❑ Ensure no excessive side movement or binding occurs when drive wheels are lifted and spun when disengaged (freewheeling).
- ❑ Inspect caster assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- ❑ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Ensure all caster/wheel/fork/headtube fasteners are secure.
- ❑ Inspect tires for flat spots and wear.
- ❑ Check pneumatic tires for proper inflation.
- ❑ Make sure elevate operates smoothly and properly.
- ❑ Make sure elevate systems drive with reduced speed when seat is in elevated position.

- ❑ Check that all labels are present and legible. Replace if necessary.

Inspect/Adjust Weekly

- ❑ Seat is secured to wheelchair frame.
- ❑ Seat and/or back upholstery have no rips and do not sag. Replace if necessary.
- ❑ Seat release latch is not worn and is functional. Replace if necessary.
- ❑ Inspect tires for flat spots and wear.
- ❑ Check pneumatic tires for proper inflation.
- ❑ Ensure arm pivot points are not worn and/or loose. Replace if necessary.

Inspect/Adjust Monthly

- ❑ Ensure wheel mounting nuts are secure on drive wheels.
- ❑ Ensure no excessive side movement or binding occurs when drive wheels are lifted and spun when disengaged (freewheeling).
- ❑ Inspect caster assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- ❑ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Ensure all caster/wheel/fork/headtube fasteners are secure.
- ❑ Inspect for any loose hardware on the wheelchair.
- ❑ Inspect the seat positioning strap for signs of wear. Replace if worn or damaged.
- ❑ Ensure that the buckle on the seat positioning strap latches. Replace if necessary.
- ❑ Verify that the hardware that attaches the seat positioning strap to the seat frame is secure and undamaged. Replace if necessary.
- ❑ Make sure elevate operates smoothly and properly.
- ❑ Make sure elevate systems drive with reduced speed when seat is in elevated position.

Inspect/Adjust Periodically

- ❑ Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- ❑ Ensure arms are secure but easy to release and adjustment levers engage properly.
- ❑ Ensure adjustable height arms operate and lock securely.
- ❑ Ensure arm pivot points are not worn and/or loose. Replace if necessary.
- ❑ Ensure armrest pads sit flush against arm.
- ❑ Ensure seat and/or back upholstery have no rips and do not sag. Replace if necessary.
- ❑ Ensure seat release latch is not worn. Replace if necessary.

- ❑ Clean upholstery and armrests.
- ❑ Inspect charger AC power cord for damage. Replace if necessary.
- ❑ Check that all labels are present and legible. Replace if necessary.

Troubleshooting Guide

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

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Limited driving distance.	Batteries not charged long enough. Batteries weak; will not hold charge.	Charge batteries overnight or ensure 8 hours of charge time between use. Ensure correct setting on charger. Replace Batteries.
Batteries not charging.	Charger not working. Battery connections loose. No current at wall outlet. Bad connection on charger, charger cable, plug or internal wiring problem.	Have charger replaced. Contact Dealer/Invacare. Check all connections. Secure connections. Switch to another wall outlet. Replace charger or internal repairs may be required. Contact Dealer/Invacare.
Batteries draw excessive current when charging.	Battery failure.	Have batteries checked for shorted cell. Replace if necessary.
Charger indicator shows low charge level immediately after charging.	Batteries weak, won't hold charge. Electrical malfunction. Charger malfunction.	Replace Batteries. Contact Dealer/Invacare. Replace charger. Contact Dealer/Invacare.
Battery indicator flashes the charge level is low immediately after recharging.	Weak Batteries. Charger malfunction. Electrical malfunction	Replace batteries. Replace charger. Contact Dealer/Invacare. Contact Dealer/Invacare.
Wheelchair will not drive.	Motor release levers are disengaged. Batteries require charging. Charger plugged in. Circuit breaker tripped.	Engage motor release levers. Charge batteries. Make sure the setting on the charger is correct. Unplug charger from wall outlet before operating the wheelchair. Reset circuit breaker. If breaker trips again, it may indicate need for internal repair. Contact Dealer/Invacare.
Motor "chatters" or runs irregularly.	Electrical malfunction.	Contact Dealer/Invacare.
Only one drive wheel turns.	Electrical malfunction. One motor lock is disengaged.	Contact Dealer/Invacare for service. Engage motor lock.
Joystick erratic or does not respond as desired.	Electrical malfunction. Controller programmed improperly.	Contact Dealer/Invacare for service. Reprogram controller (Refer to electronics manual supplied with wheelchair).

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Wheelchair does not respond to commands.	Poor battery terminal connection.	Have terminals cleaned.
Power indicator off - even after recharging.	Electrical malfunction.	Contact Dealer/Invacare for service.
Wheelchair slows or stops while driving and the Seat Function 1 indicator is lit.	Elevating seat is elevated.	Return seat to its lowest position. Refer to Elevating the Seat on page 31.

SECTION 5—WHEELCHAIR OPERATION

⚠ WARNING

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

The electronics control unit is programmed with standard values during manufacture. Set-up of the Electronics Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur if improperly set-up or adjusted.

Turning the Power On/Off

NOTE: For this procedure, refer to FIGURE 5.1.

1. To turn the power On by pressing the On/Off button.

NOTE: After turning power on, the battery gauge indicators will light briefly. One of the following will occur after that:

- *The current battery charge will be indicated on the information gauge display.*
- *Lock Mode will be indicated by all LEDs flashing briefly and the information gauge LEDs chasing slowly from right to left. If this occurs, press the horn button two times within ten (10) seconds to unlock the joystick.*

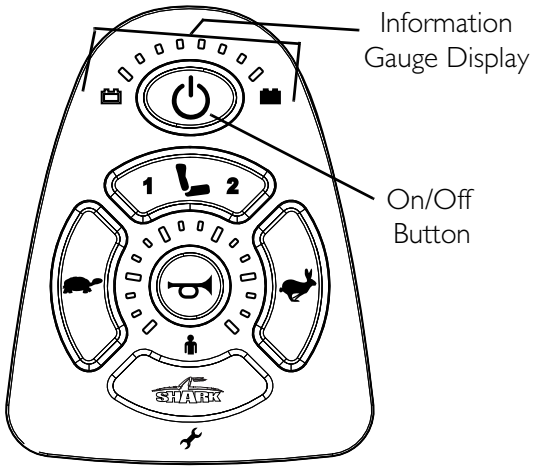


FIGURE 5.1 Turning the Power On/Off

2. Turning the power Off can be achieved by pressing the On/Off button.

NOTE: If the joystick has been programmed for lock mode, holding the On/Off button down for four seconds will lock the joystick. The LEDs will flash briefly and the horn will sound a short beep.

Using the Joystick to Drive the Wheelchair

⚠ WARNING

DO NOT operate wheelchair on an incline while in an elevated position. Otherwise, the wheelchair may tip over and injury or damage may occur.

NOTE: For this procedure, refer to FIGURE 5.2.

The joystick provides smooth control of speed and direction. It is equipped with 360 degrees of mobility for ease of operation. The joystick is spring-loaded, and automatically returns to the upright (neutral) position when released. Pushing the joystick in a given direction causes the chair to move in that direction.

The joystick has proportional control, meaning that the further it is pushed from the upright (neutral) position, the faster the wheelchair moves or the seat elevates/lowers. The maximum speed, however, is limited by the speed setting.

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

When first learning to drive, select a slow speed and try to drive the wheelchair as slowly as possible by pushing the joystick slightly forward. This exercise will help you learn to utilize the full potential of the proportional control and allow you to start and stop smoothly.

To drive the wheelchair, perform the following:

1. Turn the power on. Refer to Turning the Power On/Off on page 28.
2. Adjust speed. Refer to Adjusting the Speed on page 30.
3. Maneuver the joystick in the following manner:

MOVEMENT	ACTION
FORWARD	Push forward on the joystick.
REVERSE	Pull back on the joystick.
Turn RIGHT	Move the joystick RIGHT.
Turn LEFT	Move the joystick LEFT.
STOP	Release the joystick and the wheelchair will quickly slow down.

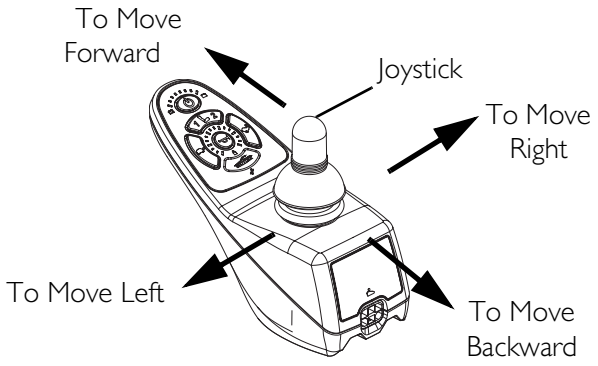


FIGURE 5.2 Using the Joystick to Drive the Wheelchair

Adjusting the Speed

NOTE: For this procedure, refer to FIGURE 5.3.

1. Perform one of the following:
   - Adjust Speed in 20% Increments (5 Speed Mode) - Press the tortoise button ( ) or hare button ( ) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
   - Adjust Speed in Smaller Increments (VSP Mode) - Perform the following steps:
     i. Press and hold both the tortoise button ( ) and hare button ( ) until the joystick beeps.
     ii. Perform one of the following:
     - Press the tortoise button ( ) or hare button ( ) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
     - Press and hold the tortoise button ( ) or hare button ( ) to decrease/increase the speed in smaller increments. The smaller bars in the speedometer will light.

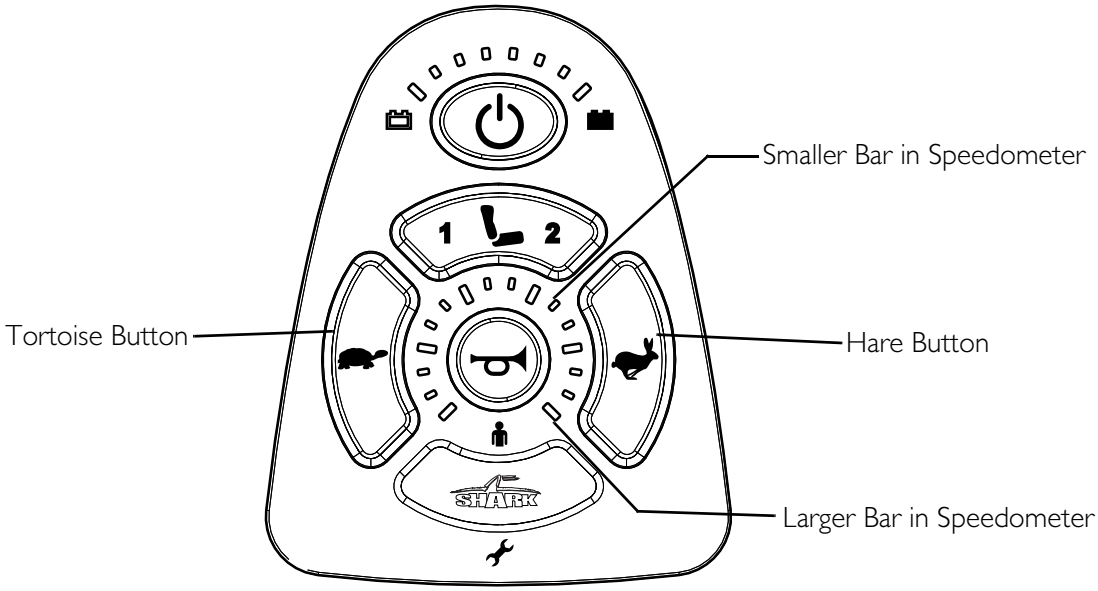


FIGURE 5.3 Adjusting the Speed

Using the Horn

NOTE: For this procedure, refer to FIGURE 5.4.

1. Press the horn button located in the center of the speed indicator. The horn will sound for as long as the button is pressed.

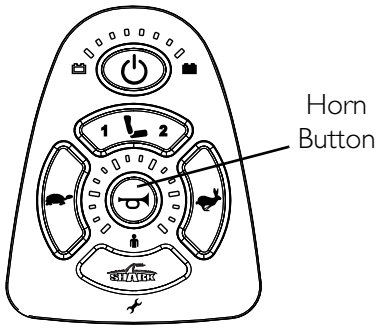


FIGURE 5.4 Using the Horn

Elevating the Seat

⚠ WARNING

DO NOT operate wheelchair on an incline while in an elevated position. Otherwise, the wheelchair may tip over and injury or damage may occur.

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

Pinch points may occur when lowering the elevating seat. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before lowering seat.

Use only the controller supplied with the wheelchair to activate the elevate function. DO NOT use any other actuator controls. Such devices may result in excess heating and cause damage to the actuator and associated wiring and could cause a fire, death, physical injury or property damage. If such devices are used, Invacare shall not be liable and the limited warranty is void.

The elevated seat option is equipped with a speed reduction safety mechanism. While the seat is in an elevated position, the safety feature slows the speed of the wheelchair by 80%. If the wheelchair operates at maximum speed while in an elevated position, DO NOT operate the wheelchair. Have the wheelchair serviced immediately by a qualified technician.

NOTE: For this procedure, refer to FIGURE 5.5.

1. Make sure the wheelchair is on a level surface.
2. Press the mode button to switch from driving mode to elevate mode.

NOTE: The LED will light up with a circle around it.

3. Move the joystick:
   - Forward - Elevates the seat.
   - Backward - Lowers the seat.

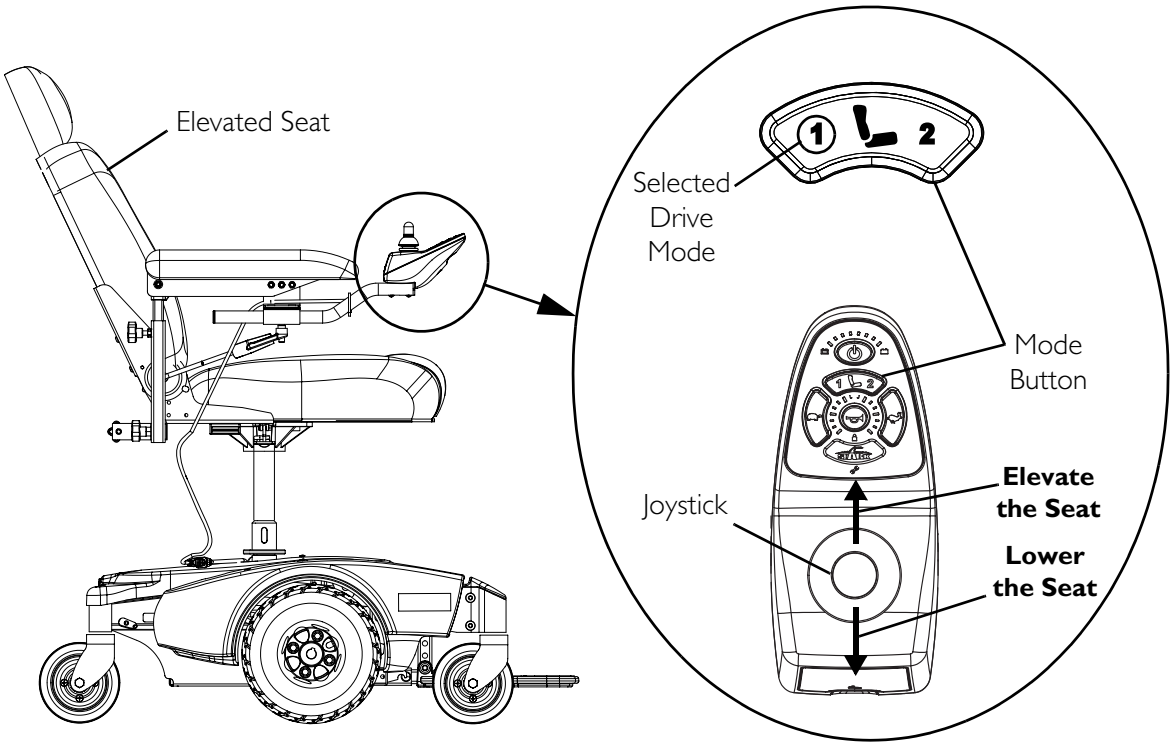


FIGURE 5.5 Elevating the Seat

Joystick Switches and Indicators

NOTE: For the following information, refer to FIGURE 5.6.

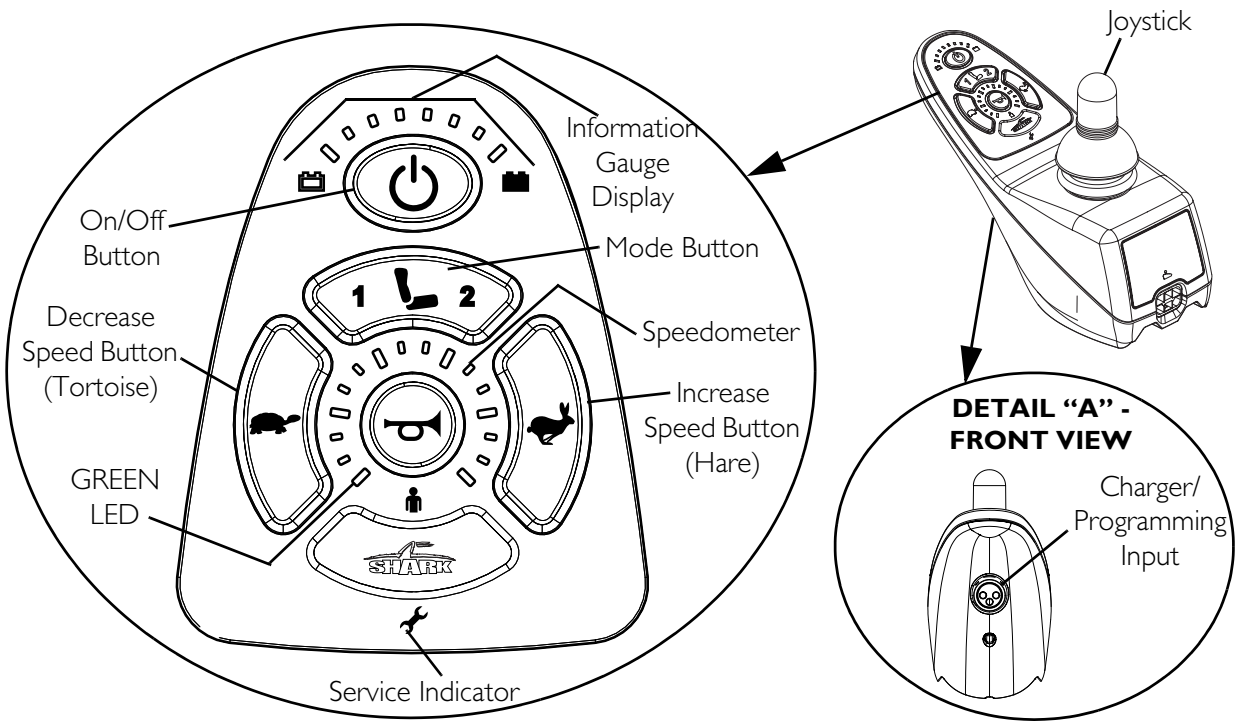


FIGURE 5.6 Joystick Switches and Indicators

On/Off Button

This button is located at the front of the joystick housing. It is used to turn the wheelchair on and off, to remove the joystick from sleep mode (if programmed) and to lock or unlock the joystick (if programmed).

Speedometer

The speedometer is used to show the maximum speed. The right-most LED indicates current maximum speed setting. The bottom left GREEN LED flashes to indicate that the joystick is in speed limit mode. Speed limit mode limits the drive speed to a pre-programmed value, typically when the seat has been elevated and the wheelchair is required to drive at 20% speed.

Speed Control Buttons

The speed control buttons (tortoise button ( ) and hare button ( )) are used to set and adjust the maximum speed.

1. To adjust the speed, perform one of the following:
   - Adjust Speed in 20% Increments (5 Speed Mode) - Press the tortoise button ( ) or hare button ( ) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
   - Adjust Speed in Smaller Increments (VSP Mode) - Perform the following steps:
     i. Press and hold both the tortoise button ( ) and hare button ( ) until the joystick beeps.
     ii. Perform one of the following:
       - Press the tortoise button ( ) or hare button ( ) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
       - Press and hold the tortoise button ( ) or hare button ( ) to decrease/increase the speed in smaller increments. The smaller bars in the speedometer will light.

Mode Button

Press the mode button to switch from driving mode to elevate mode. Refer to the wheelchair owner's manual for elevating seat operating instructions.

Joystick

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

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

Charger/Programming Input

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

Service Indicator

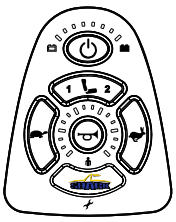
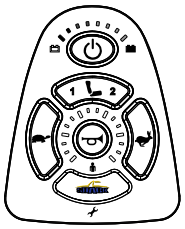
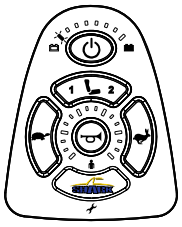
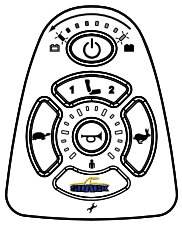
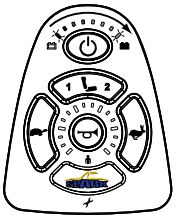
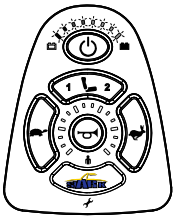
The AMBER service indicator will light when an error or fault occurs. Refer to Diagnostic Codes on page 33 for a listing of the flash codes and what they indicate.

Information Gauge Display

Located on the front of the joystick housing, it provides the following information to the user on the status of the wheelchair -

1. Power is on.
2. True state-of-battery-charge, including notification of when the battery requires charging:
   A. GREEN LEDs are lit, indicating well charged batteries.
   B. AMBER LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
   C. RED LEDs are lit, indicating batteries are running out of charge. Recharge batteries as soon as possible.

The Information Gauge display also serves as a system diagnostic device when a fault is detected by the control module. A specific number of flashes of the LEDs indicate the type of fault detected. Refer to the table for the diagnostic indications of the wheelchair status.

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
	All LEDs are off.	Power is off.	
	All LEDs are on.	Power is on.	Fewer than three LEDs on implies reduced battery charge.
	Left RED LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	Right to Left “chase”.	Joystick is being brought out of LOCK mode.	To UNLOCK the joystick, press the horn button two times within ten (10) seconds.
	Left to Right “chase” alternating with steady display.	Joystick is in programming, inhibit and/ or charging mode.	The steady LEDs indicate the current state of the battery charge.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.

SECTION 6—ARMS

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Removing/Installing the Arms

⚠ WARNING

Increasing the width of the arms may affect the overall width of the wheelchair. Ensure that there is enough clearance when attempting to pass through doorways or other tight spaces, otherwise serious injury or damage may result.

NOTE: For this procedure, refer to FIGURE 6.1.

NOTE: Reverse this procedure to install the arms.

1. Loosen lock knob that secures the arm to the arm support tube.
2. Remove the arm from the arm support tube.
3. If necessary, repeat STEPS 1-2 to remove the other arm.

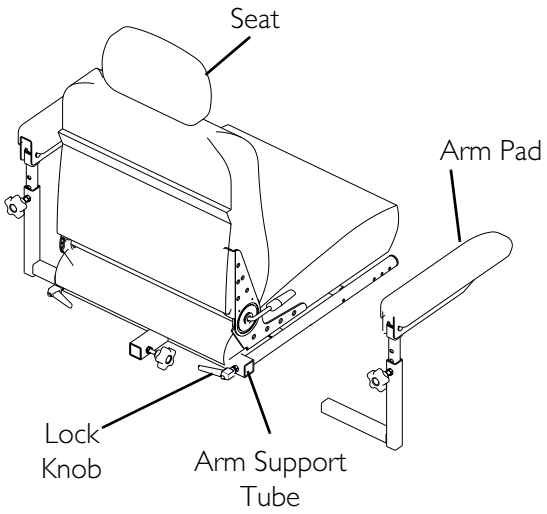


FIGURE 6.1 Removing/Installing the Arms

Adjusting the Arms

Adjusting Width

NOTE: For this procedure, refer to FIGURE 6.2.

1. Loosen the two lock knobs that secure the arms to the arm support tube.

NOTE: Both arms should be adjusted to the same distance away from the arm support tube.

NOTE: Changing the width of the arms may also affect the overall width of the wheelchair.

2. Reposition the arms until desired width is achieved.
3. Securely tighten the two lock knobs that secure the arms to the arm support tube.

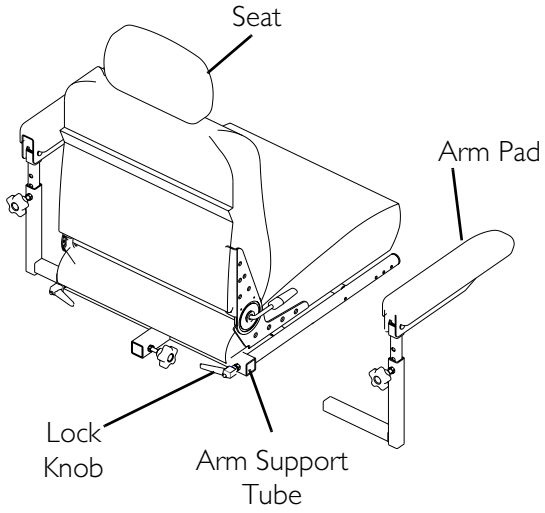


FIGURE 6.2 Adjusting Width

Adjusting Angle

⚠ WARNING

Pinch point may occur when adjusting the arm angle position.

NOTE: For this procedure, refer to FIGURE 6.3.

1. Lift up the arm pad.
2. Loosen the jam nut.
3. Adjust the socket screw up or down to the desired arm angle position.

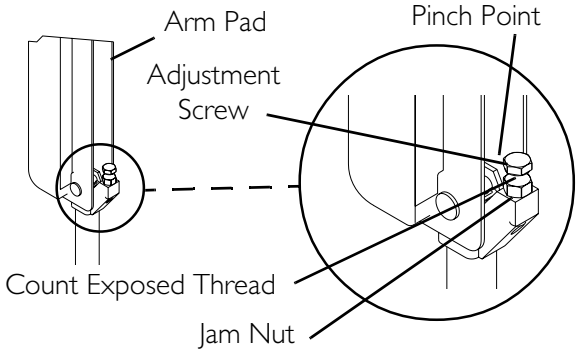


FIGURE 6.3 Adjusting Angle

4. Tighten the jam nut.
5. To determine the same angle for the opposite arm pad, count the exposed threads after the jam nut has been tightened.

6. Repeat STEPS 1-5 for opposite armrest, if necessary.

Adjusting Height

NOTE: For this procedure, refer to FIGURE 6.4.

1. Remove the adjustment knob that secures the arm pad to the arm tube.
2. Adjust the arm pad to one of five positions.
3. Reinstall the adjustment knob that secures the arm pad to the arm tube and tighten securely.

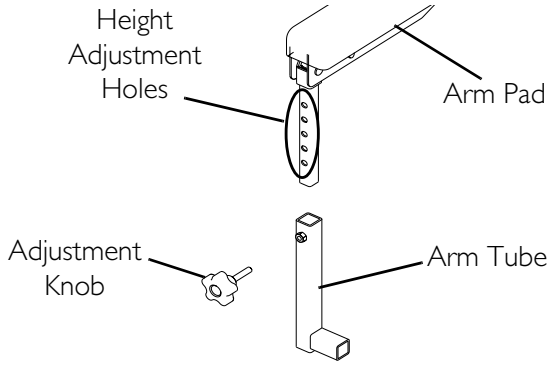


FIGURE 6.4 Adjusting Height

Adjusting Depth

NOTE: For this procedure, refer to FIGURE 6.5.

1. Remove the mounting screw and locknut that secure the arm adjusting bar to the arm pad.
2. Install the arm adjusting bar to the other depth adjustment hole on the arm pad with the mounting screw and locknut. Securely tighten.

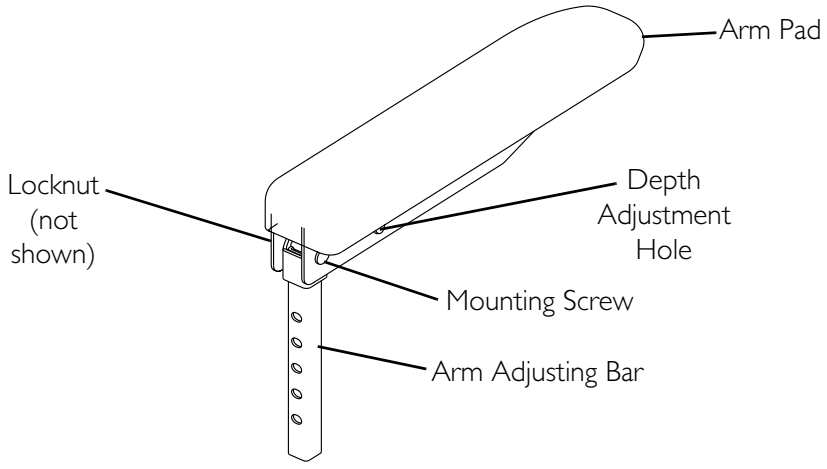


FIGURE 6.5 Adjusting Depth

SECTION 7—SEAT

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Adjusting the Back Angle

NOTE: For this procedure, refer to FIGURE 7.1.

1. Lift up on the release handle and adjust seat to desired angle.
2. Let go of the release handle to lock the back in position.

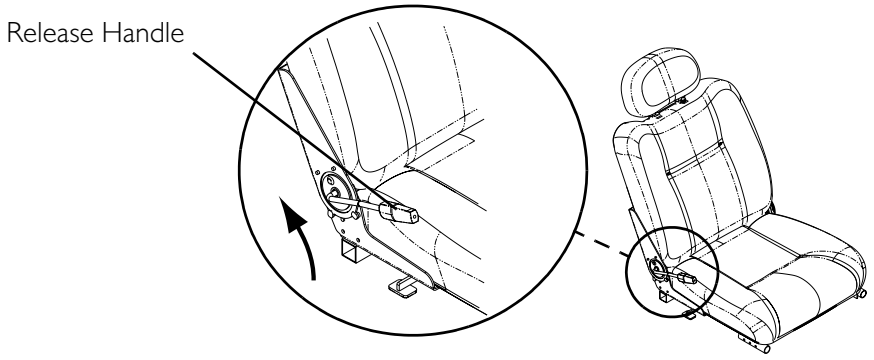


FIGURE 7.1 Adjusting the Back Angle

Adjusting the Headrest

NOTE: For this procedure, refer to FIGURE 7.2.

1. To raise the headrest, lift the headrest up to the desired position.
2. To lower the headrest, push the release tab towards the front of the wheelchair. Lower the headrest to the desired position.

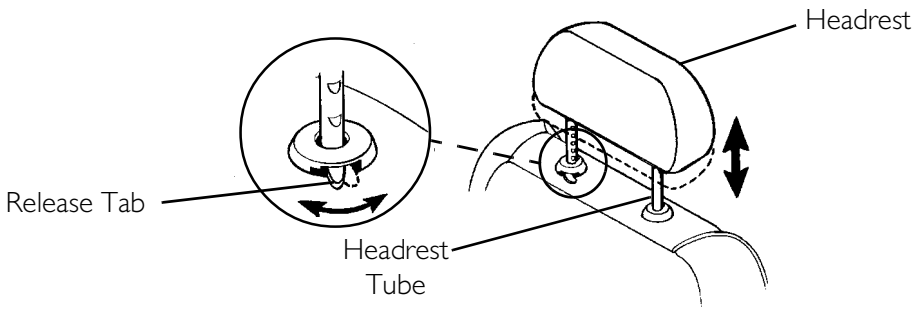


FIGURE 7.2 Adjusting the Headrest

Removing/Installing the Seat Assembly

NOTE: For this procedure, refer to FIGURE 7.3.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.
2. Fold down the seat back.
3. Pull the seat lever up and lift the seat assembly up and away from the seat post.

Installing

1. Align the seat pivot with the seat post
2. Pull the seat lever up and lower the seat assembly on the seat post.

NOTE: If necessary, slightly twist seat assembly back and forth to lock it in place.

3. Release the seat lever.
4. Pull the seat assembly up to ensure that it is locked in place.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.

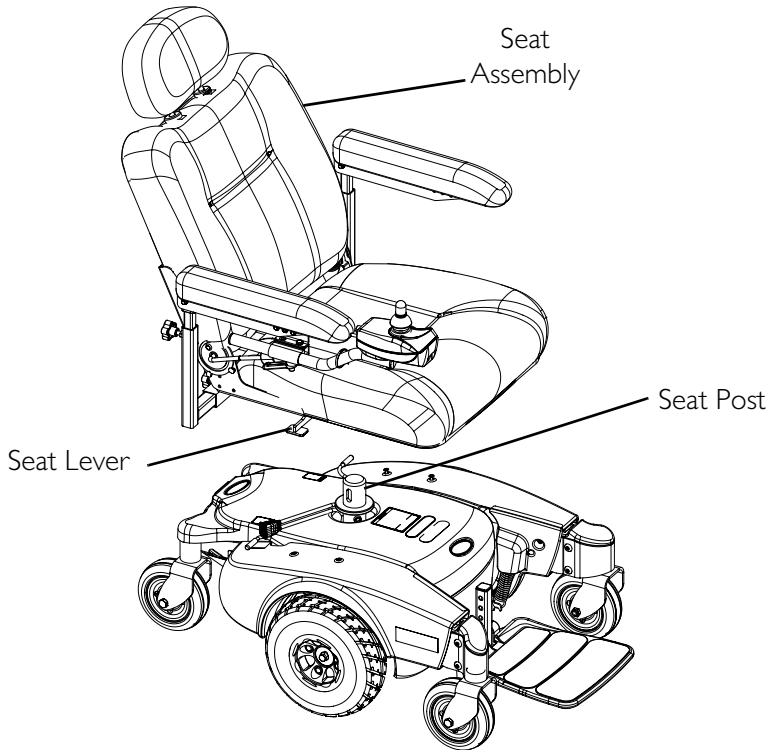


FIGURE 7.3 Removing/Installing the Seat Assembly

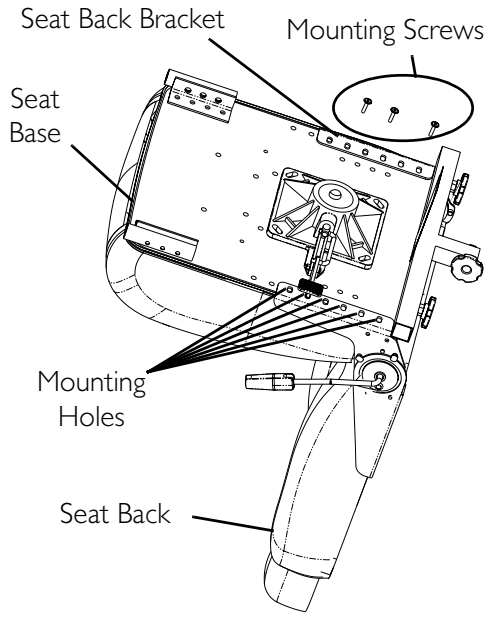
Adjusting Seat Depth

NOTE: For this procedure, refer to FIGURE 7.4.

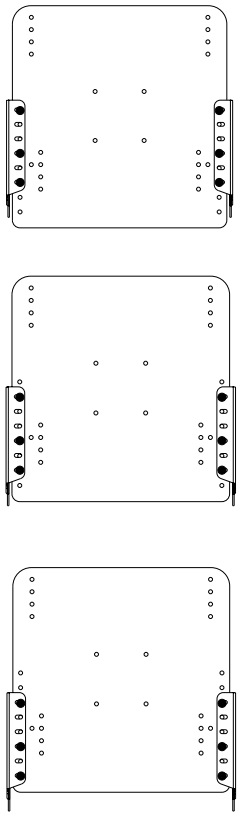
1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Remove the six mounting screws located under the seat that secure the seat back assembly in place.
3. Adjust seat back assembly to desired position and reinstall the six mounting screws. Securely tighten.

NOTE: Refer to Detail "A" of FIGURE 7.4 for proper seat depth positions. For example, to achieve maximum seat depth, the front mounting hole on the seat back bracket aligns with the third hole on the seat base.

4. Reinstall the seat base onto the seat assembly. Refer to Adjusting Seat Position on Seat Base on page 43.
5. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.



DETAIL "A" - SEAT DEPTH POSITIONS



Minimum Seat Depth

Seat Depth	Seat Size
40 cm	40 X 46 cm
40 cm	46 X 46 cm
46 cm	51 X 51 cm
46 cm	56 X 51 cm

Middle Seat Depth

Seat Depth	Seat Size
43 cm	40 X 46 cm
43 cm	46 X 46 cm
48 cm	51 X 51 cm
48 cm	56 X 51 cm

Maximum Seat Depth

Seat Depth	Seat Size
46 cm	40 X 46 cm
46 cm	46 X 46 cm
51 cm	51 X 51 cm
51 cm	56 X 51 cm

FIGURE 7.4 Adjusting Seat Depth

Adjusting the Seat Height

NOTE: For this procedure, refer to FIGURE 7.5.

NOTE: Use the chart to determine the desired height of the seat.

Seat Height	Sets of Seat Spacers	Total Number of Spacers	Length of Mounting Screws
Minimum	0	0	4 cm
Intermediate	1	2	6 cm
Maximum	2*	4	9 cm

NOTE: A maximum of two sets of spacers can be installed.

**NOTE: If the seat bracket kit for 5° tilt is installed, only one set of spacers or zero (0) spacers can be installed.*

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Remove the four mounting screws and washers securing the seat adapter plate and four 3 cm adjustment spacers to the seat base.
3. Perform one of the following:
   - To Reduce Seat Height by Three Centimeters - Remove one set of 3 cm adjustment spacers to achieve desired height.
   - To Reduce Seat Height by Five Centimeters - Remove both sets of 3 cm adjustment spacers to achieve desired height.
4. Perform one of the following:

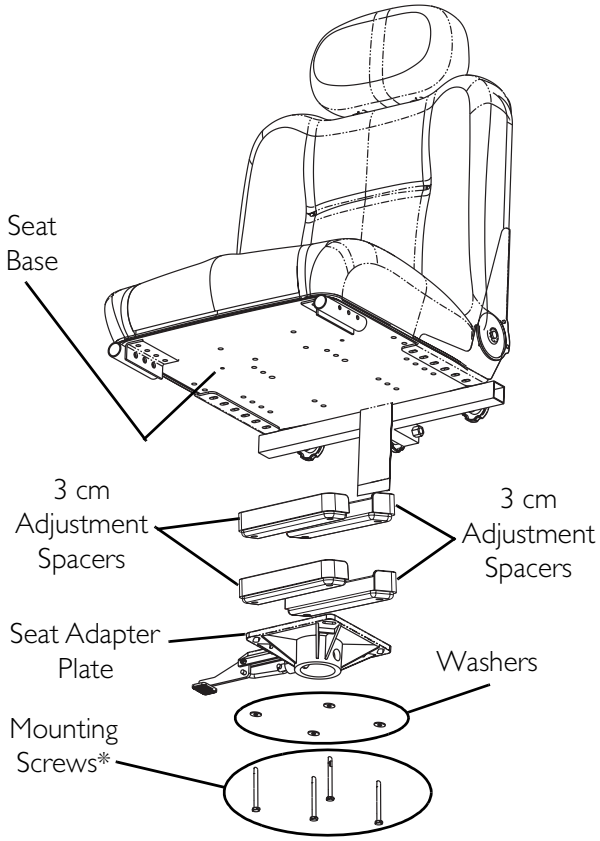
NOTE: The seat comes installed with four 3 cm spacers secured by 9 cm mounting screws. 4 cm and 6 cm mounting screws are supplied with the seat.

- For Seat Height Reduced by Three Centimeters -
  i. Align the mounting holes on the seat adapter plate with the mounting holes on the adjustment spacers and the seat base.
  ii. Install the seat adapter to seat base using the 5 cm mounting screws and existing washers and locknuts (if required). Securely tighten.
- For Seat Height Reduced by Five Centimeters -
  i. Align the mounting holes on the seat adapter plate with the mounting holes on the adjustment spacers and the seat base.
  ii. Install the seat adapter to seat base using the 3 cm mounting screws and existing washers and locknuts (if required). Securely tighten.

5. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.

CAUTION

Spacers should be placed in orientation shown, otherwise they will interfere with the seat lever.



**NOTE: 9 cm mounting screws shown. 4 cm and 6 cm mounting screws are supplied with the seat.*

FIGURE 7.5 Adjusting the Seat Height

Adjusting Seat Position on Seat Base

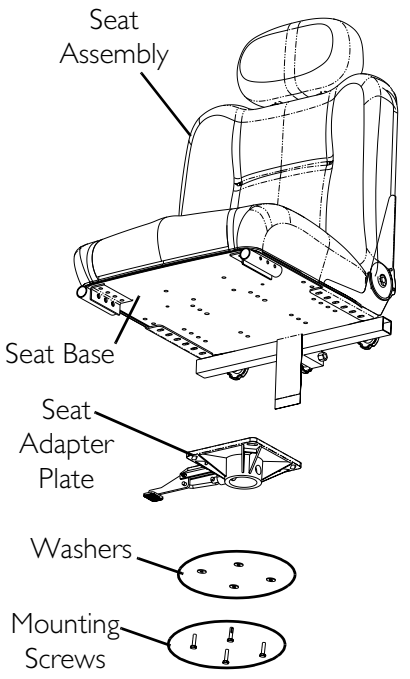
⚠ WARNING

Refer to the table in FIGURE 7.6 for proper seat post mounting positions. For users over 100 kg - seat MUST be in the 3 cm back position (FIGURE 7.6) when using seat post mounting holes 3, 4 and 5 (FIGURE 7.6). Refer to Adjusting the Seat Height on page 42.

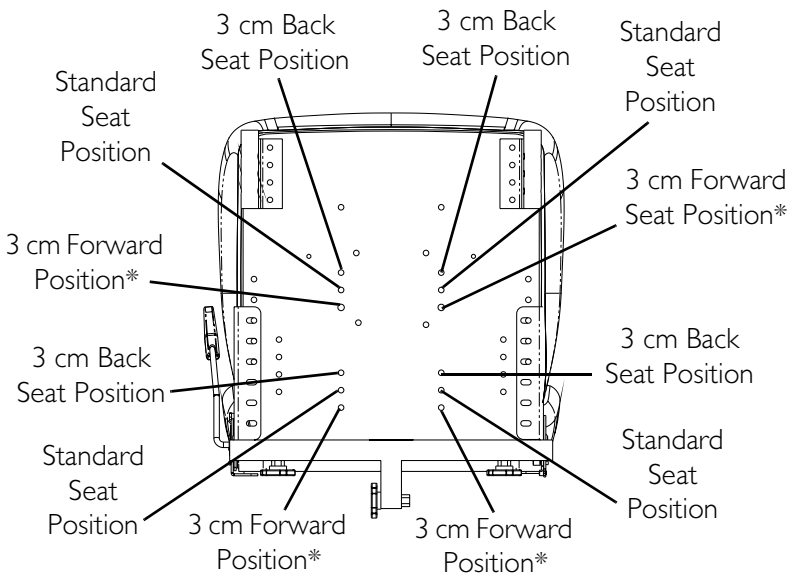
NOTE: For this procedure, refer to FIGURE 7.6.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Remove the four mounting screws and washers securing the seat adapter plate to the seat base (FIGURE 7.6).
3. Separate the seat adapter plate from the seat base.
4. Refer to FIGURE 7.6 to determine the correct mounting holes to achieve the desired seat position.
5. Align the mounting holes on the seat adapter plate (determined in STEP 4) with the mounting holes on the seat base.

6. Using the four mounting screws and washers, secure the seat adapter plate to the seat base. Securely tighten.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.



DETAIL "A" - SEAT POSITION



**NOTE: For users over 100 kg - DO NOT use 3 cm forward position.*

DETAIL "B" - PROPER SEAT POSITIONS FOR 46 CM DEEP BACK SETTING

Y - Use N/A - DO NOT Use

WEIGHT LIMITATION	3 CM BACK	STANDARD	3 CM FORWARD
136 KG	Y	Y	N/A
	Y	Y	N/A
	Y	N/A	N/A
	Y	N/A	N/A
	Y	N/A	N/A
100 KG	Y	Y	Y
	Y	Y	N/A
	Y	N/A	N/A
	Y	N/A	N/A
	Y	N/A	N/A
68 KG	Y	Y	Y
	Y	Y	Y
	Y	Y	Y
	Y	Y	Y
	Y	Y	Y

FIGURE 7.6 Adjusting Seat Position on Seat Base

Installing Seat Angle Bracket for 5° Tilt

NOTE: For this procedure, refer to FIGURE 7.6 and FIGURE 7.7.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Remove the four mounting screws and washers securing the seat adapter plate to the seat base.
3. Align the mounting holes on the seat angle bracket with the mounting holes on the seat base (Detail "A" of FIGURE 7.7).
4. Using the four 3 cm mounting screws and washers from the seat angle bracket kit, secure the seat angle bracket to the seat base (Detail "A" of FIGURE 7.7).
5. Determine the correct mounting holes on the flanges on the seat angle bracket to achieve the proper seat position (Detail "C" of FIGURE 7.7).

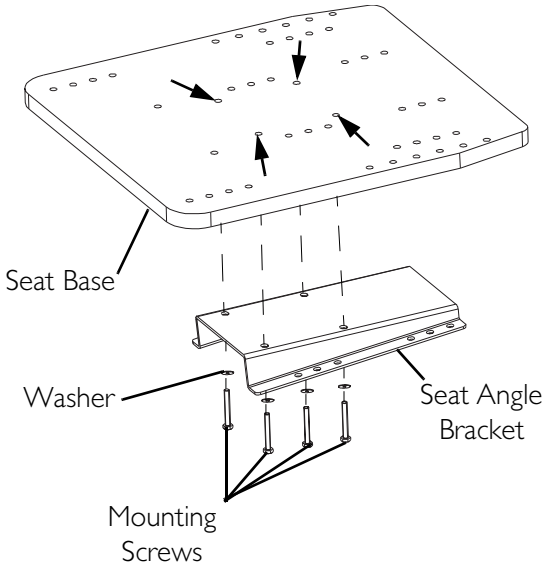
NOTE: The seat position mounting holes on the flanges on the seat angle bracket correspond to the seat position mounting holes on the seat base. Refer to FIGURE 7.6 for the proper seat positions.

6. Perform one of the following:
   A. Without Height Adjustment Spacers - If height adjustment spacers are not to be used, use the four 3 cm mounting screws, washers, and locknuts from the seat angle bracket kit to secure the seat adapter plate to the flanges on the seat angle bracket (Detail "B").
   B. With Height Adjustment Spacers - If height adjustment spacers are to be used, use the four 5 cm mounting screws, washers, and locknuts from the spacer hardware kit to secure the spacers and the seat adapter plate to the flanges on the seat angle bracket (Detail "B"). The spacers are installed between the seat angle bracket and the seat adapter plate.

   NOTE: Only one set of spacers (total of two spacers) can be installed when the seat angle bracket is installed.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.

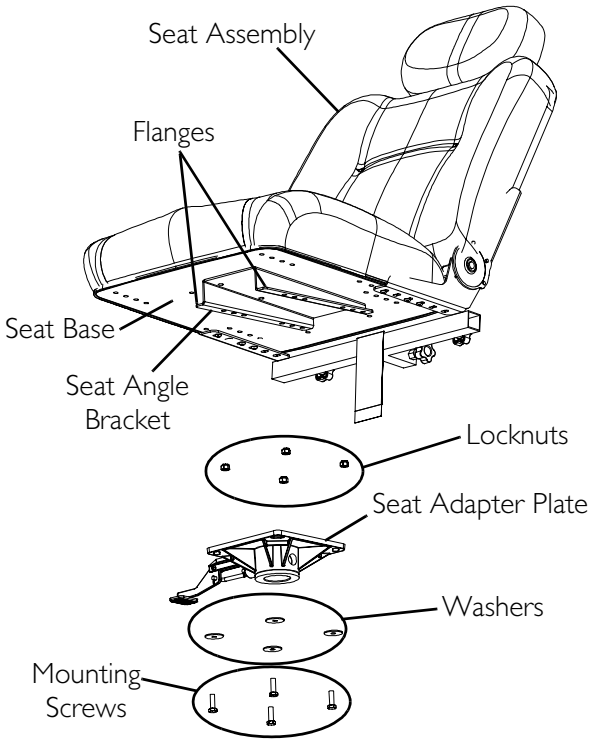
DETAIL "A"

NOTE: Arrows show mounting holes.



NOTE: Seat assembly not shown for clarity.

DETAIL "B"



NOTE: Optional height adjustment spacers not shown. Only one set of spacers can be installed when the seat angle bracket is installed.

DETAIL "C"

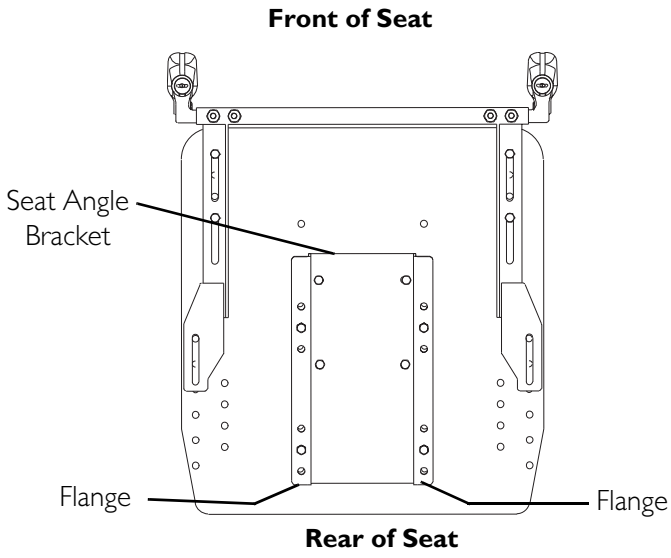


FIGURE 7.7 Installing Seat Angle Bracket for 5° Tilt

Replacing the Seat Positioning Strap

⚠ WARNING

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

NOTE: For this procedure, refer to FIGURE 7.8.

1. Remove the two mounting screws that secure the seat positioning straps to the seat frame.
2. Remove the two halves of the seat positioning strap from the rear seat frame.
3. Reposition the two new seat positioning strap halves underneath seat rails.
4. Reinstall the two mounting screws that secure the seat positioning straps to the seat frame. Securely tighten.

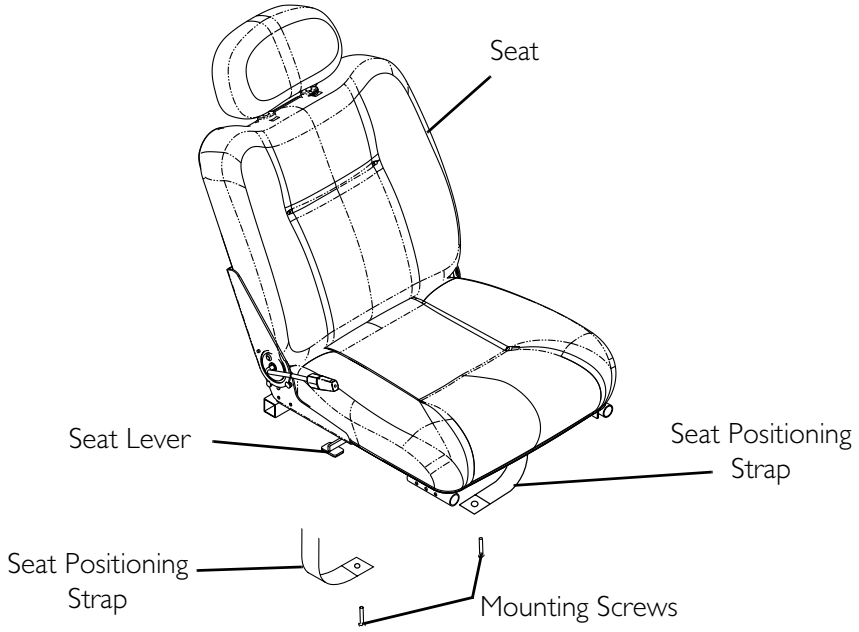


FIGURE 7.8 Replacing the Seat Positioning Strap

SECTION 8—FOOTBOARD ASSEMBLY

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

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

Limited Clearance Between Footboard and Caster - The user's feet MUST remain on the footboard while operating the chair. If the user's feet are allowed to rest off the side of the footboard they may come in contact with the caster possibly resulting in injury.

Removing/Installing the Footboard Assembly

⚠ WARNING

Pinch point may occur when rotating the footboard assembly.

NOTE: For this procedure, refer to FIGURE 8.1.

Removing

1. Remove the quick release pin that secures the footboard assembly to the wheelchair frame by depressing the button while sliding the pin out.
2. Remove the footboard assembly from the wheelchair frame.

Installing

⚠ WARNING

Make sure the detent balls of the quick-release pin are fully released beyond the outer edge of the tube before operating the wheelchair. Otherwise, injury and/or damage may result.

Keep detent balls clean.

1. Position the footboard assembly onto the wheelchair frame so that the mounting hole in the wheelchair frame aligns with the desired mounting hole in the footboard assembly.

2. Install the quick release pin by depressing the button while sliding the pin in. Ensure that the detent balls of the quick release pin are fully released beyond the outer edge of the tube (Detail "A" of FIGURE 8.1).

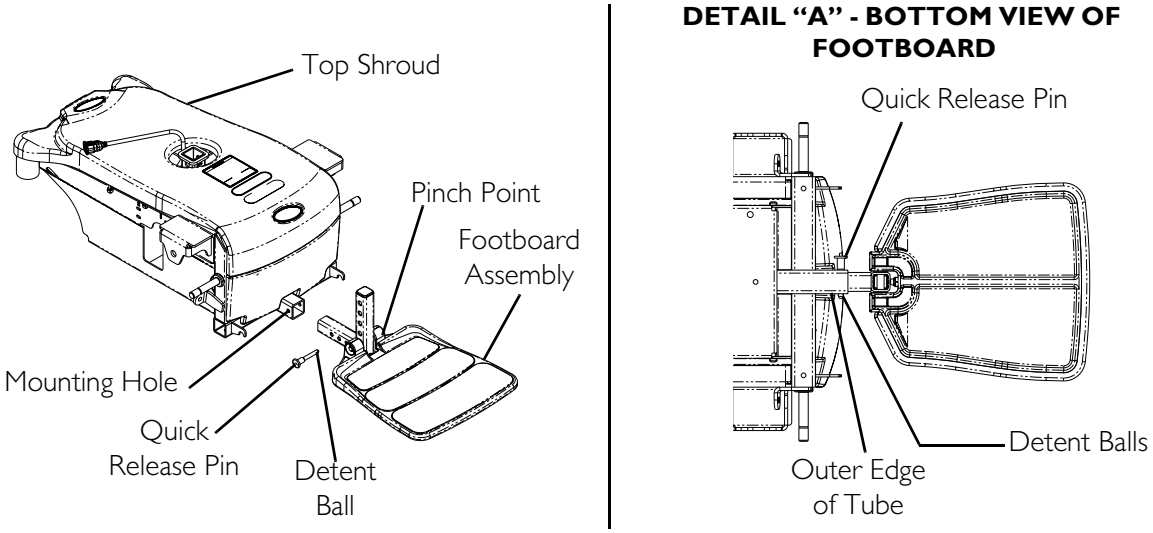


FIGURE 8.1 Removing/Installing the Footboard Assembly

Adjusting the Footboard Assembly

Angle

NOTE: For this procedure, refer to FIGURE 8.2.

1. Loosen the jam nut and set screw located underneath on the backside of the footplate.
2. Adjust the set screw in or out to obtain the desired footboard assembly angle.
3. Thread the jam nut and washer inward until it is flush with the footboard bracket.
4. Securely tighten the jam nut and washer to secure the mounting screw in place.

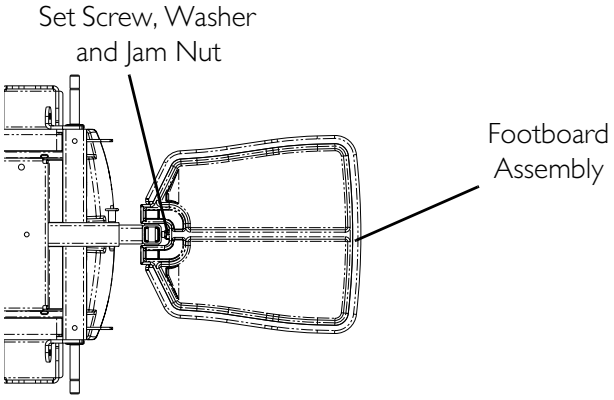


FIGURE 8.2 Adjusting the Footboard Assembly - Angle

Depth

NOTE: For this procedure, refer to FIGURE 8.3.

1. Remove the quick release pin that secures the footboard assembly to the wheelchair frame.

⚠ WARNING

Make sure the detent balls of the quick-release pin are fully released and beyond the outer edge of the tube before operating the wheelchair. Otherwise, injury and/or damage may result.

Keep detent balls clean.

2. Adjust footboard to one of three mounting positions.
3. Install the quick release pin. Make sure the detent balls of the quick-release pin are fully released and beyond the outer edge of the tube (Detail "A").

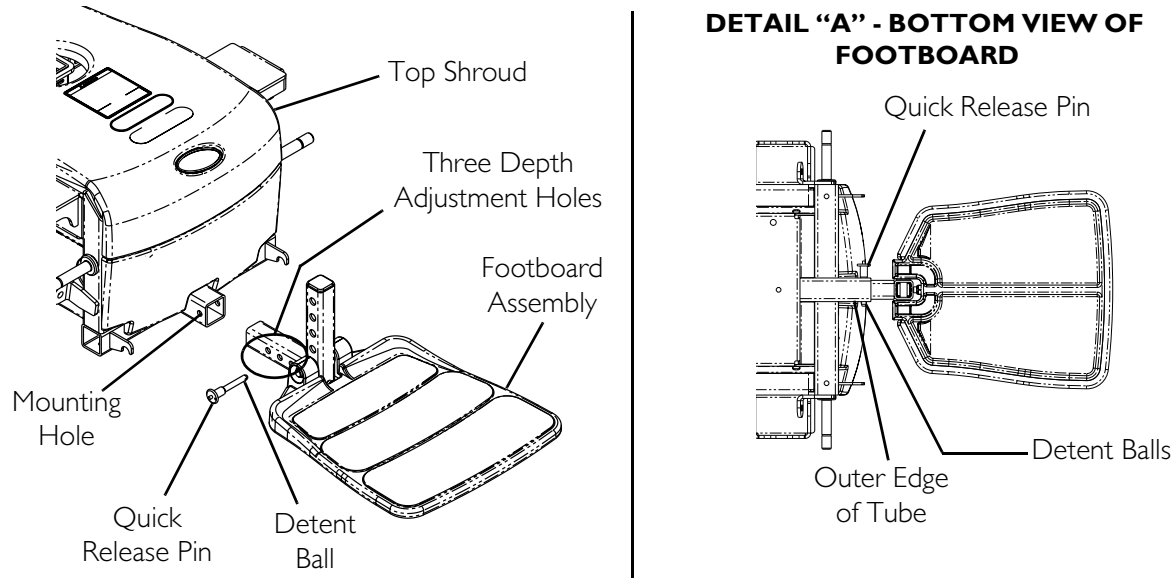


FIGURE 8.3 Adjusting the Footboard Assembly - Depth

SECTION 9—FRONT RIGGINGS

⚠ WARNING

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

DO NOT stand on the front riggings, otherwise damage may occur. When getting in or out of the wheelchair, make sure that the footplates on the front riggings are in the upward position or moved out of the way.

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Installing/Adjusting/Removing Front Rigging Bracket

NOTE: For this procedure, refer to FIGURE 9.1.

Installing Front Rigging Bracket

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Determine the correct mounting holes to achieve the desired front rigging bracket position (Detail "B").
3. If necessary, remove up to four mounting screws located under the seat that secure the seat back brackets in place (Detail "B").
4. Install the front rigging bracket to the seat base with the six mounting screws and the twelve (12) washers in the installation kit (Detail "A").

NOTE: Ensure that the washers are installed in the positions shown in Detail "A" and that the correct mounting holes are used.

5. Using the applicable mounting holes, secure the front rigging bracket to the seat back brackets with the mounting screws which were removed in STEP 3 (Detail "B").
6. Install the two hangers in the bracket tube and slide them to the desired positions.
7. Secure the hangers to the front rigging hanging bracket with the four hanger mounting screws. Securely tighten.
8. Install the seat. Refer to Removing/Installing the Seat Assembly on page 40.

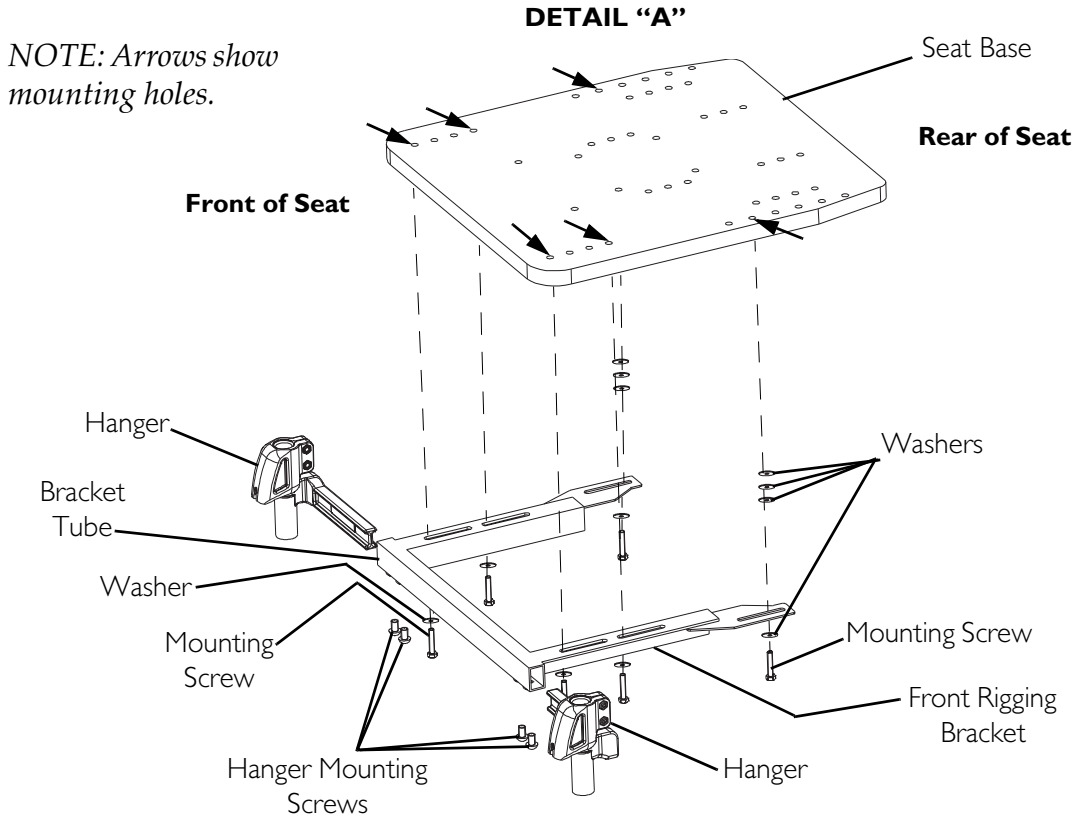
Adjusting Front Rigging Bracket Position

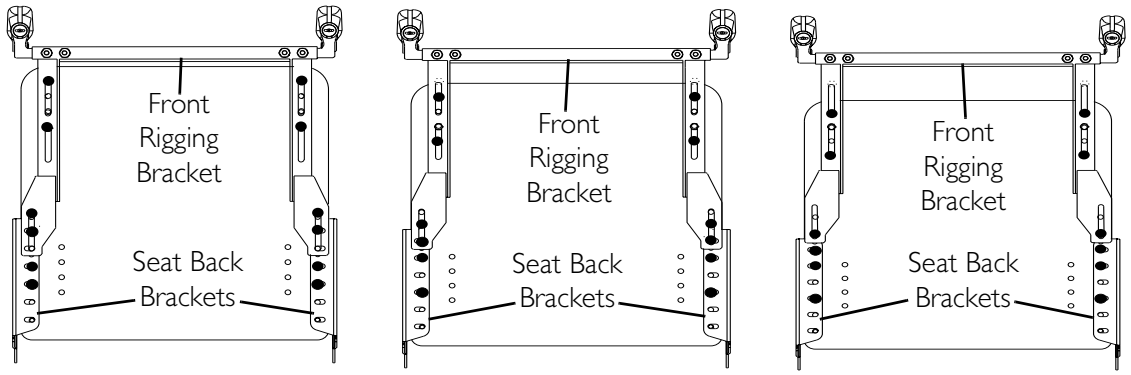
1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Loosen the four hanger mounting screws and remove the two hangers (Detail "A").
3. Loosen but DO NOT remove the three mounting screws on each side of the front rigging bracket which attach the bracket to the seat base (Detail "A").

4. Determine the correct mounting holes to achieve the desired front rigging bracket position (Detail "B").
5. If necessary, remove up to four mounting screws located under the seat that secure the seat back brackets in place (Detail "B").
6. Slide the front rigging bracket forward or backward to the desired position.
7. Tighten the three mounting screws on each side of the front rigging bracket that were loosened in STEP 3 (Detail "A").
8. Using the applicable mounting holes, secure the front rigging bracket to the seat back brackets with the mounting screws which were removed in STEP 5 (Detail "B").
9. Install the two hangers in the bracket tube and slide them to the desired positions.
10. Securely tighten the four hanger mounting screws that were loosened in STEP 2 (Detail "A").
11. Install the seat. Refer to Removing/Installing the Seat Assembly on page 40.

Removing Front Rigging Bracket

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Loosen the four hanger mounting screws and remove the two hangers (Detail "A").
3. If necessary, remove up to four mounting screws located under the seat that secure the front rigging bracket to the seat back brackets (Detail "B").
4. Remove the three mounting screws and six washers on each side of the front rigging bracket which attach the bracket to the seat base (Detail "A").
5. Remove the front rigging bracket.
6. Using the applicable mounting holes in the seat back brackets, install the mounting screws which were removed in STEP 3. Refer to Adjusting Seat Depth on page 41.
7. Install the seat. Refer to Removing/Installing the Seat Assembly on page 40.





Front Rigging Bracket Least Extended

Front Rigging Bracket Half Extended

Front Rigging Bracket Most Extended

NOTE: The front rigging bracket mounting holes would be the same for all seat depths. Refer to Adjusting Seat Depth on page 41 to change the seat depth.

FIGURE 9.1 Adjusting Front Rigging Bracket Position

Adjusting the Legrests

⚠ WARNING

Before and during use of the wheelchair, ensure that there is adequate distance between the legrests and the front casters or the ground. Incorrect adjustment of the legrests may cause bodily injury.

Swivelling/Removing/Installing Legrest

NOTE: For this procedure, refer to FIGURE 9.2.

When the legrest is unlocked, it can be swivelled to the right or to the left or removed completely.

1. Press the unlocking button and swivel the legrest to the right or to the left.
2. To remove the legrest, press and hold the unlocking button while lifting the legrest off the hanger.
3. To install the legrest, follow these procedures:
   A. Press and hold the unlocking button while installing the legrest onto the hanger.
   B. Release the unlocking button and ensure that the release button is installed firmly into the anchoring hole on the hanger.

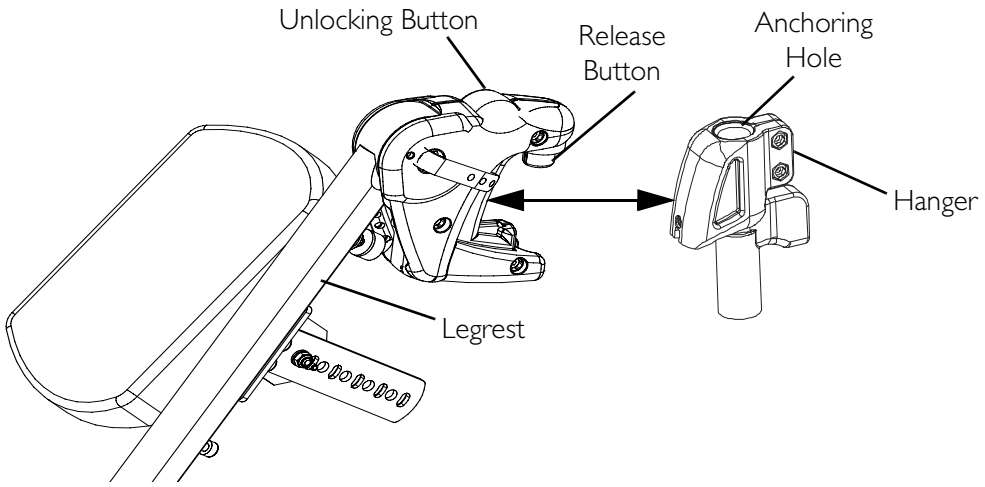


FIGURE 9.2 Swivelling/Removing/Installing Legrest

Adjusting Legrest Angle

⚠ WARNING

Before driving the wheelchair, ensure there is adequate clearance between the legrests and the front casters and/or the ground. Incorrect adjustment of the legrests may cause bodily injury.

NOTE: For this procedure, refer to FIGURE 9.3.

1. Pull up the release handle.
2. Adjust the legrest up or down to the desired angle.
3. Push down the release handle to secure the legrest into position.

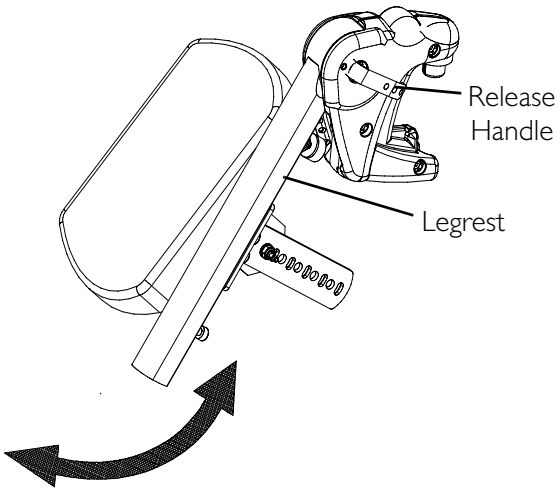


FIGURE 9.3 Adjusting Legrest Angle

Setting Legrest End Stop

NOTE: For this procedure, refer to FIGURE 9.4.

NOTE: This procedure requires a 1 x 10 mm open-ended wrench.

1. Refer to Adjusting Legrest Angle on page 55 to swivel the legrest upward in order to access the rubber stop.
2. Use the open-ended wrench to loosen the counternut.
3. The rubber stop can be screwed in or out or pushed up or down the legrest adjusting tube. Move the rubber stop to the desired position.
4. Re-tighten the counternut.
5. Refer to Adjusting Legrest Angle on page 55 to move the legrest to the desired position.

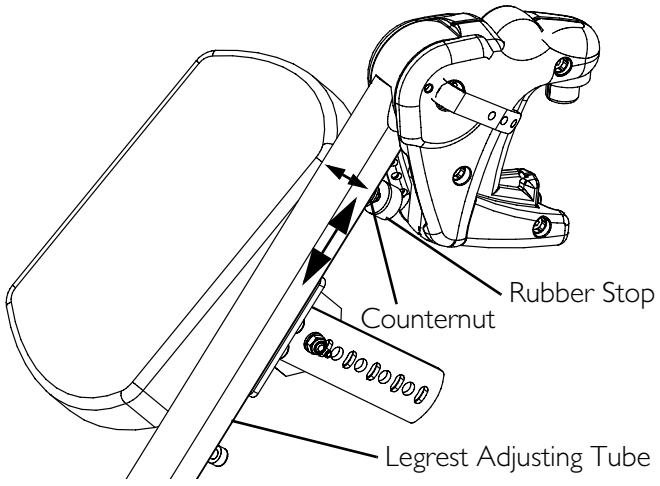


FIGURE 9.4 Setting Legrest End Stop

Adjusting Legrest Length

⚠ WARNING

Before and during use of the wheelchair, ensure that there is adequate distance between the legrests and the front casters or the ground. Incorrect adjustment of the legrests may cause bodily injury.

NOTE: For this procedure, refer to FIGURE 9.5.

NOTE: This procedure requires a 1 x 6 mm Allen wrench.

1. Use the Allen wrench to loosen the adjustment screw.
2. Adjust to the desired length.
3. Re-tighten the screw.

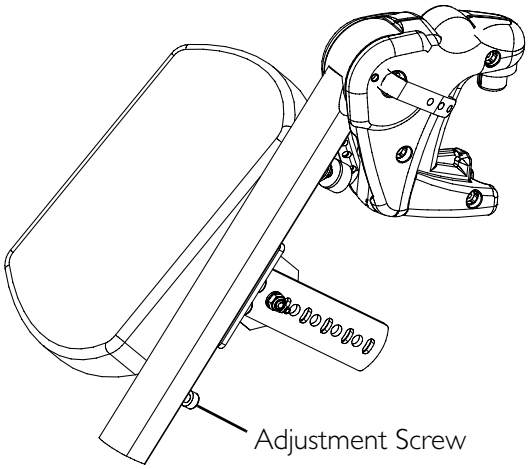


FIGURE 9.5 Adjusting Legrest Length

Adjusting Calf Plate Depth

NOTE: For this procedure, refer to FIGURE 9.6.

NOTE: This procedure requires a 1 x 10 mm open-ended wrench.

The depth of the calf plate can be adjusted via the holding plate. The holding plate hole combinations allow five different depth settings.

1. Use the open-ended wrench to loosen and remove the locknut.
2. Adjust to the desired depth.

NOTE: Only the round holes are used for adjusting the calf plate depth. Do not use the oblong holes to set the calf plate depth.

3. Install the locknut and securely tighten.

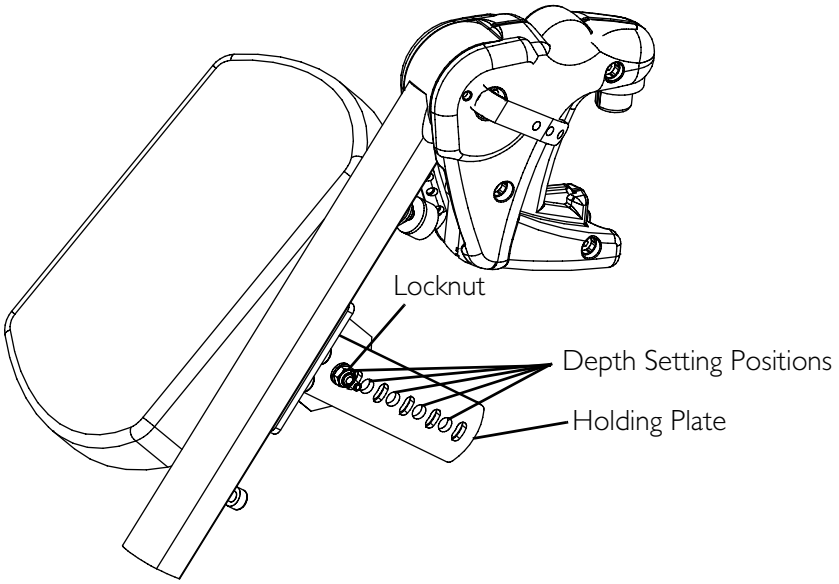


FIGURE 9.6 Adjusting Calf Plate Depth

Adjusting Calf Plate Height

NOTE: For this procedure, refer to FIGURE 9.7.

NOTE: This procedure requires a 1 x 4 mm Allen wrench.

1. Use the Allen wrench to loosen the two mounting screws.
2. Adjust to the desired position.
3. Re-tighten the mounting screws.

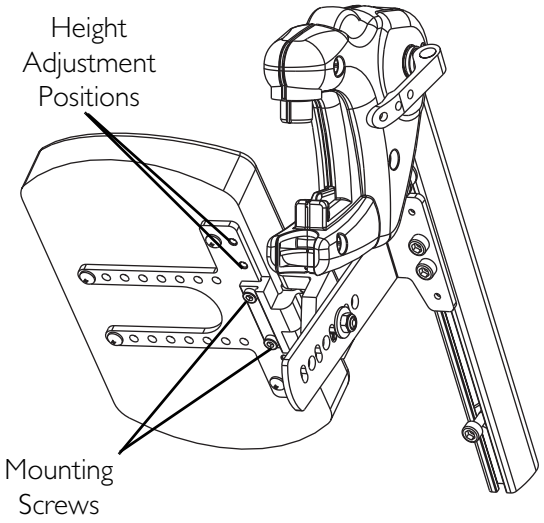


FIGURE 9.7 Adjusting Calf Plate Height

SECTION 10—TOP SHROUD AND WHEELS

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

CAUTION

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

Replacing Pneumatic Tires

⚠ WARNING

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.

If tires are pneumatic, replacement of tire or tube MUST be performed by a qualified technician.

NOTE: Under-inflation of the pneumatic drive wheels causes excessive wear which results in poor performance of the tires.

Removing/Installing the Top Shroud

NOTE: For this procedure, refer to FIGURE 10.1.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.
2. Remove the joystick cable from the clip on the top shroud.
3. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
4. Remove the top shroud by pulling it up off the base frame.

Installing

1. Pull joystick cable through the center hole in the top shroud.

2. Place the top shroud on the base frame and push downward to engage the hook and loop straps.
3. Secure the joystick cable using the clip on the top shroud.
4. Install the seat assembly. Refer to Removing/Installing the Seat Assembly on page 40.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.

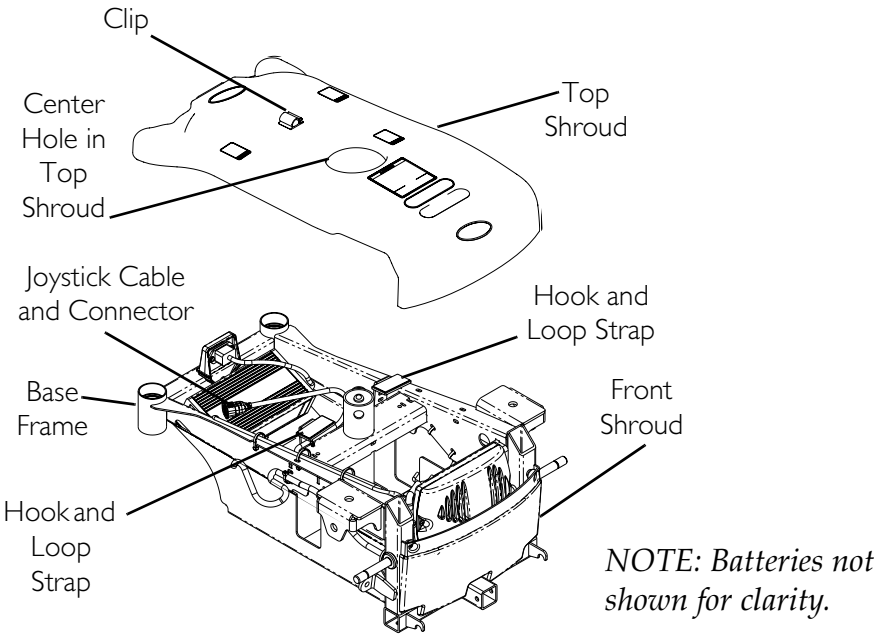


FIGURE 10.1 Removing/Installing the Top Shroud

Engaging/Disengaging Motor Release Lever

⚠ WARNING

DO NOT engage or disengage the motor release lever until the On/Off switch on the joystick is in the Off position.

CAUTION

Ensure both motor release levers are fully engaged before driving the wheelchair

NOTE: For this procedure, refer to FIGURE 10.2.

NOTE: The motor lock disengagement/engagement allows freewheeling or joystick controlled operation. Freewheeling allows an attendant to maneuver the wheelchair without power.

1. Locate the motor release handles on the motors protruding through the top shroud on the rear of the wheelchair.
2. Perform one of the following:
   - To Disengage the Motor Release Levers - Pull the motor lock lever towards the rear of the wheelchair (freewheel position).

NOTE: This allows the chair to freewheel for pushing, if necessary.

NOTE: It may be necessary to rock the wheels slightly until the motor release lever disengages.

- To Engage the Motor Release Levers - Push the motor lock handles towards the front of the wheelchair (drive position).

NOTE: This allows the motors to drive the wheels.

NOTE: It may be necessary to rock the wheels slightly until the motor release lever engages.

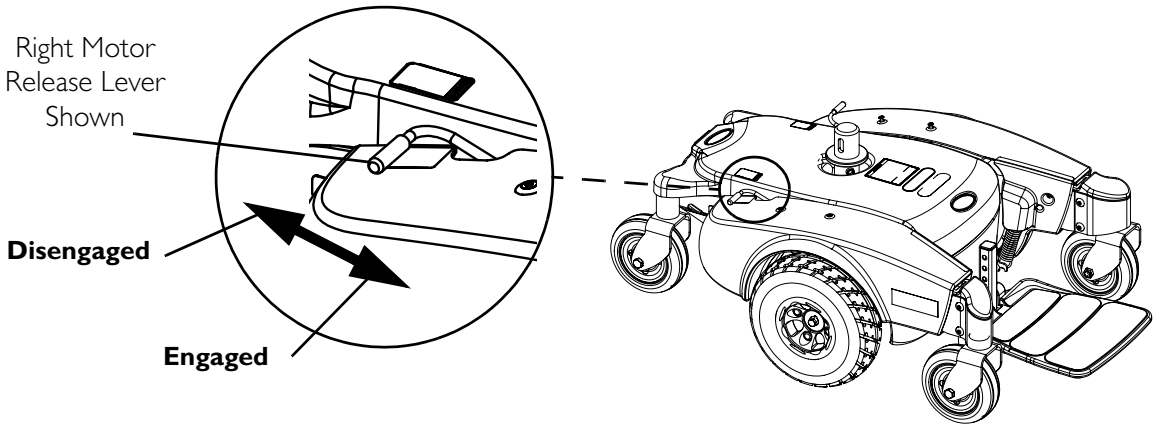


FIGURE 10.2 Engaging/Disengaging Motor Release Lever

Replacing Front/Rear Caster Assemblies

NOTE: For this procedure, refer to FIGURE 10.3.

NOTE: Front and rear caster assemblies are replaced in the same manner.

NOTE: When replacing the front/rear caster assemblies, it is necessary to brace the caster assemblies to prevent the wheel from spinning.

1. Remove the mounting screw, two washers, and locknut that secures the caster to the fork.
2. Remove the caster and discard.
3. Secure new caster to fork with existing mounting screw, two washers and locknut (FIGURE 10.3). Securely tighten.

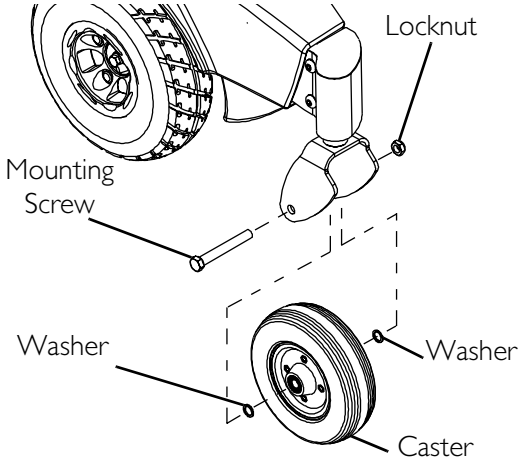


FIGURE 10.3 Replacing Front/Rear Caster Assemblies

Adjusting Forks

NOTE: For this procedure, refer to FIGURE 10.4.

1. Remove the dust cover.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
   A. Tip back the wheelchair.
   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 locknut according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknut if necessary, and repeat STEPS 2-3 until correct.
5. Snap dust cover into the caster headtube ensuring that the tabs are under the plastic side shrouds.

NOTE: Components exploded for clarity. There is no need to remove the fork from the base frame.

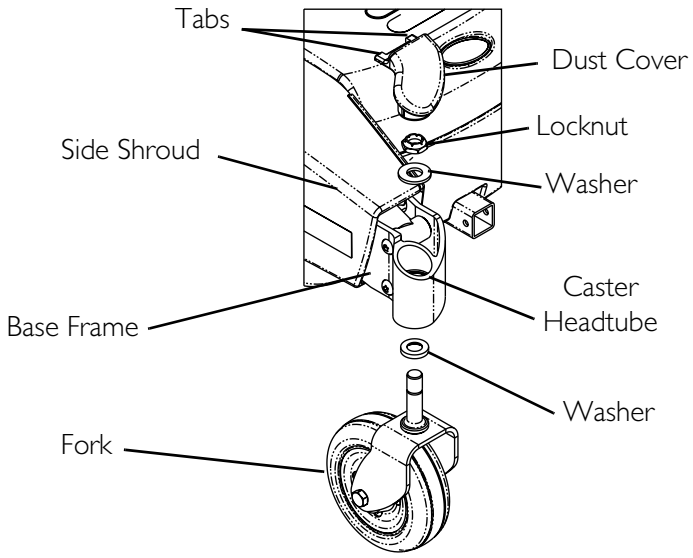


FIGURE 10.4 Adjusting Forks

SECTION 11—BATTERIES

Warnings For Handling and Replacing Batteries

⚠ WARNING

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

Make sure power to the wheelchair is Off before performing this section.

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

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

U1 batteries weigh 24 pounds each. Use proper lifting techniques (lift with your legs) to avoid injury.

Use U1 batteries only. Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

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

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

NEVER allow any of your tools and/or battery cables to contact both battery posts at the same time. An electrical short may occur and serious personal injury or damage may occur.

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

Connect same color connectors to each other (RED to RED, BLACK to BLACK).

DO NOT remove fuse or mounting hardware from POSITIVE (+) battery cable mounting screw. To replace the fuse, obtain and replace battery harness with fuse.

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

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

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

Using the Proper Batteries

NOTE: For this procedure, refer to FIGURE 11.1.

1. Place battery on ground/flat surface.
2. Visually draw a horizontal and vertical centerline through the middle of battery (FIGURE 11.1).
3. Position the battery so that the terminals are above the horizontal centerline.
4. Visually inspect the battery to ensure the correct position of the POSITIVE and NEGATIVE terminals (FIGURE 11.1).

⚠ WARNING

Batteries with terminal configuration as shown below MUST be used. Batteries that have the reverse terminal configuration MUST NOT be used - otherwise injury and damage may occur.

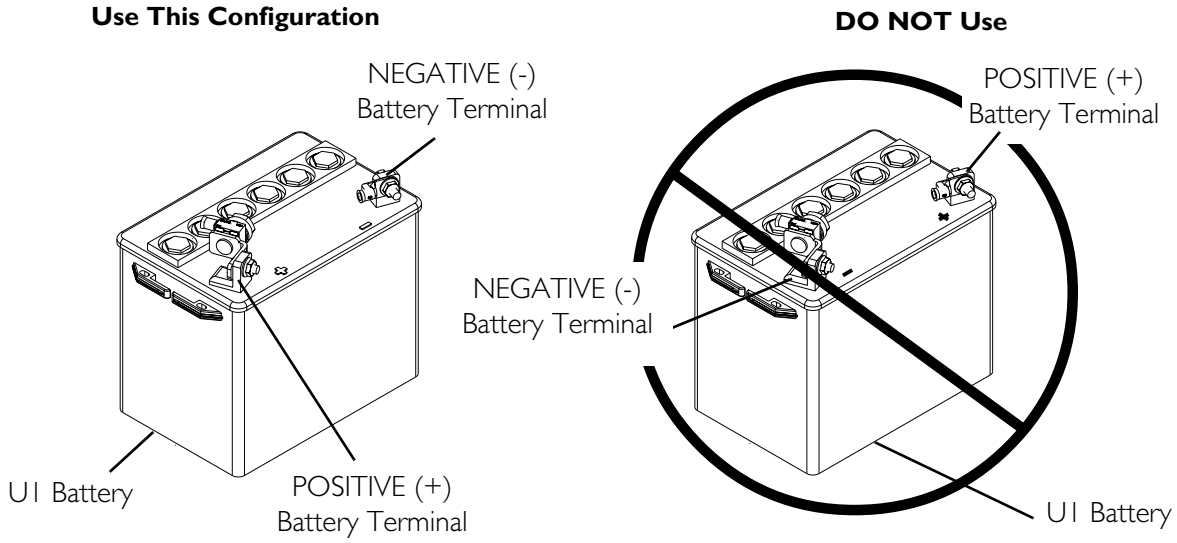


FIGURE 11.1 Using the Proper Batteries

Removing/Installing Batteries from/into Battery Tray

⚠ WARNING

Always use the battery handle when lifting the 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: For this procedure, refer to FIGURE 11.2.

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

NOTE: Have the following tools available:

TOOL	QTY	COMMENTS
7/16-INCH (6PT) BOX WRENCH	1	Not Supplied
DIAGONAL CUTTERS	1	Not Supplied

Removing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position and disconnect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 74.
3. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
4. Remove the top shroud. Refer to Removing/Installing the Top Shroud on page 58.
5. Disconnect the front battery from the controller (BLACK connector).
6. Disconnect the rear battery from the front battery (RED and BLACK connectors).
7. Lift rear and front battery out of the battery tray using the battery handles.

Installing

1. Verify the joystick On/Off switch is in the Off position and disconnect joystick cable. Refer to Disconnecting/Connecting the Joystick on page 74.
2. Position the front battery in the front of the battery tray.
3. Position rear battery in rear of battery tray.

NOTE: Ensure that both batteries are properly seated and resting on the battery tray.

4. Connect the rear battery to the front battery (RED and BLACK connectors).
5. Connect the front battery to the controller (BLACK connector).
6. Reinstall the top shroud. Refer to Removing/Installing the Top Shroud on page 58.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 40.
8. Connect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 74.

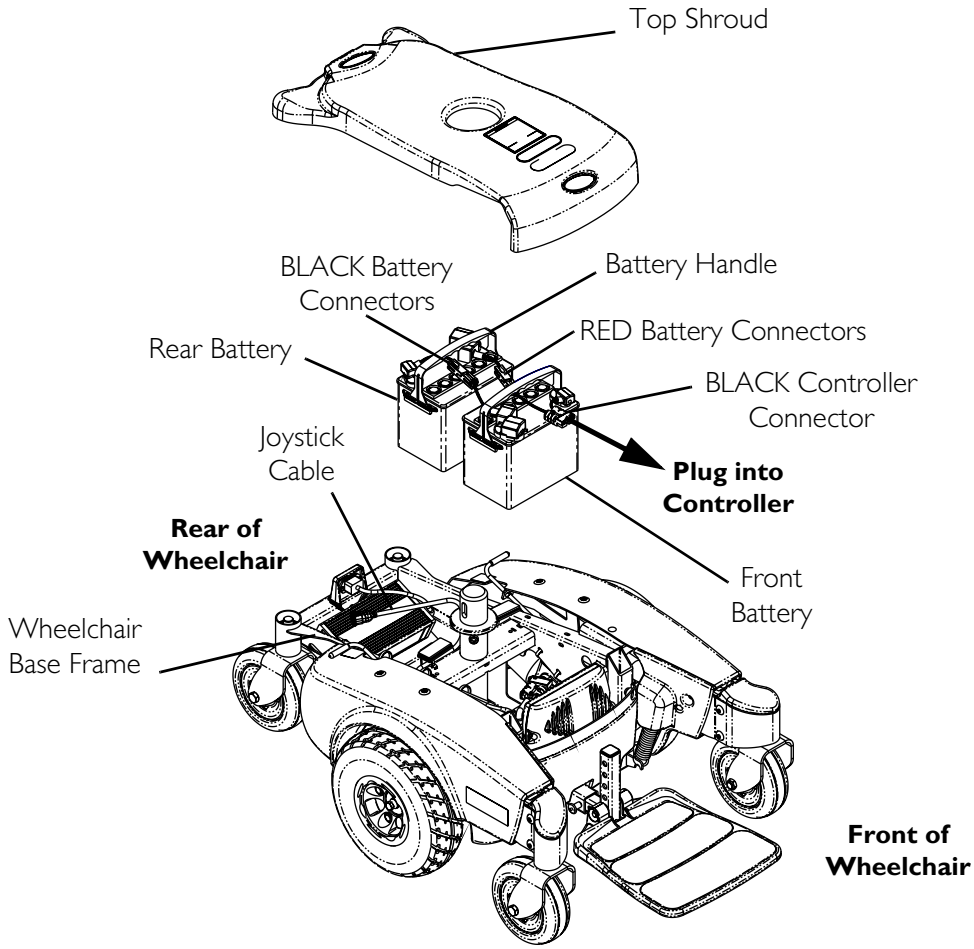


FIGURE 11.2 Removing/Installing Batteries from/into Battery Tray

Connecting/Disconnecting Battery Cables

Connecting Battery Cables

⚠ WARNING

NEVER allow any of your tools and/or battery cables to contact both battery terminals at the same time. An electrical short may occur and serious personal injury or damage may occur.

Connect same color connectors to each other (RED to RED, BLACK to BLACK).

DO NOT remove fuse or mounting hardware from POSITIVE (+) battery cable mounting screw. To replace the fuse, obtain and replace battery harness with fuse.

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

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

⚠ WARNING

Battery terminal configuration as shown in Detail "A" of FIGURE 11.3 MUST be used. Batteries that have the terminal configuration reversed MUST NOT be used - otherwise serious injury or damage may occur.

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

All battery terminal covers (two on the front battery and two on the rear battery) MUST be installed prior to use.

CAUTION

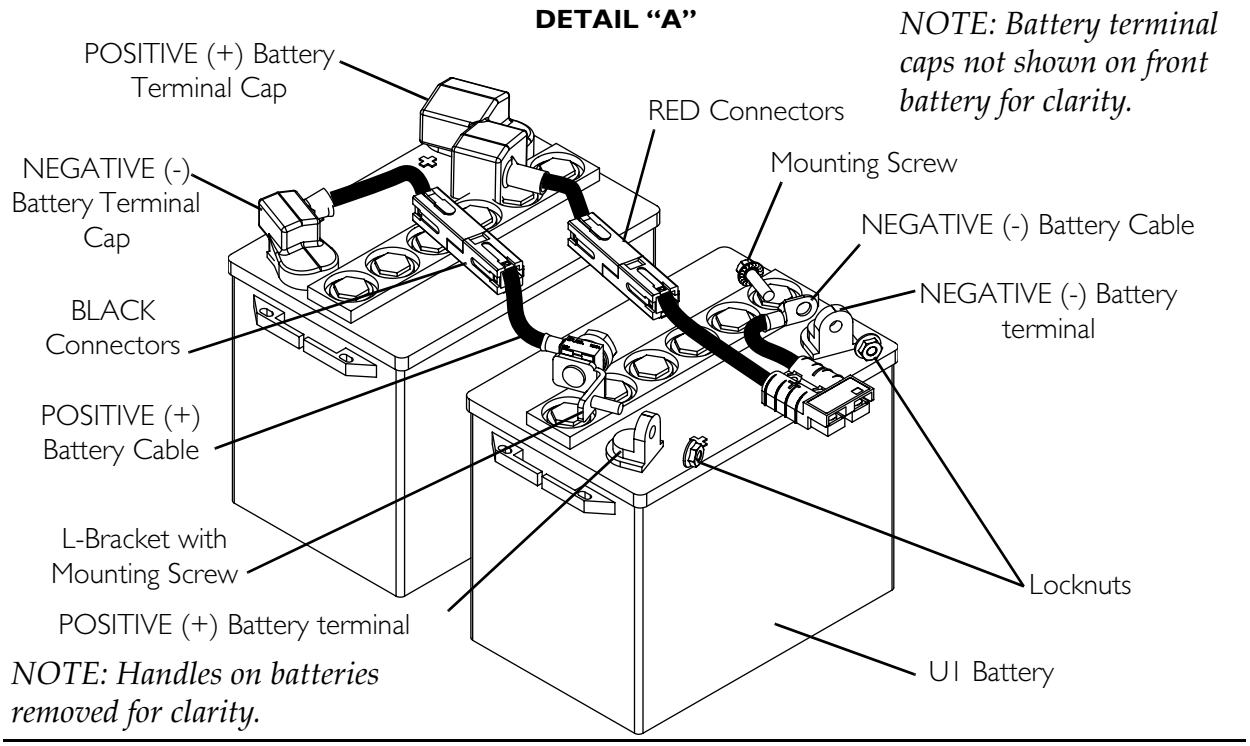
When connecting the battery cables to the battery, the battery cables MUST be connected to the battery terminals, as shown in Detail "A" of FIGURE 11.3 (depending on battery type), otherwise damage to the battery cable may result when installing battery terminal caps.

NOTE: For this procedure, refer to FIGURE 11.3.

1. Secure the battery cables to the battery terminals as described below. Securely tighten. Refer to Detail "A" of FIGURE 11.3:
   A. Secure NEGATIVE (-) battery cable to the NEGATIVE (-) battery terminal using the mounting screw and the locknut.
   B. Secure the POSITIVE (+) battery cable to the POSITIVE (+) battery terminal using the L-bracket with mounting screw and the locknut.
2. Verify all battery cables are correctly installed and securely tightened.
3. Slide terminal caps down battery cables and onto battery terminals.
4. Secure each terminal cap in place with a tie-wrap [use tie-wraps 11-1/2-inches long] (Detail "B" of FIGURE 11.3).
5. Position the batteries into the wheelchair. Refer to Removing/Installing Batteries from/into Battery Tray on page 64.

NOTE: New batteries MUST be fully charged before using, otherwise the life of the batteries will be reduced.

6. If necessary, charge the battery. Refer to Charging Batteries on page 69.



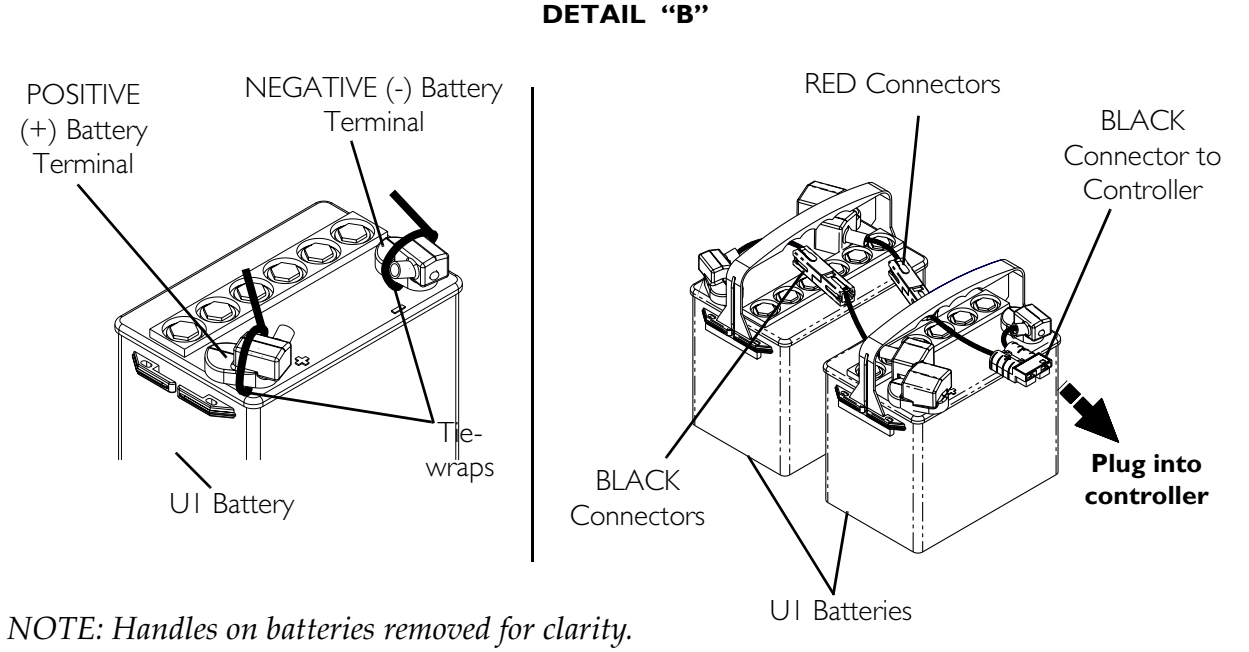


FIGURE 11.3 Connecting/Disconnecting Battery Cables

Disconnecting Battery Cables

⚠ WARNING

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

NEVER allow any of your tools and/or battery cables to contact both battery terminals at the same time. An electrical short may occur and serious personal injury or damage may occur.

NOTE: For this procedure, refer to FIGURE 11.3.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 40.
2. Remove the batteries. Refer to Removing/Installing Batteries from/into Battery Tray on page 64.
3. Cut the tie-wrap that secures the battery terminal cap in place (Detail "B" of FIGURE 11.3).
4. Slide terminal caps up onto the battery cables (FIGURE 11.3).
5. Disconnect POSITIVE (+) battery cable from the POSITIVE (+) battery terminal (FIGURE 11.3).
6. Disconnect NEGATIVE (-) battery cable from NEGATIVE (-) battery terminal (FIGURE 11.3).

Charging Batteries

⚠ WARNING

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.

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

DO NOT attempt to recharge the batteries when the wheelchair has been exposed to any type of moisture.

DO NOT attempt to recharge the batteries when the wheelchair is outside.

DO NOT sit in the wheelchair while recharging the batteries.

DO NOT attempt to recharge the batteries using both the on-board battery charger and an independent battery charger (plugged into the joystick charger port) at the same time. Doing so will reduce the life of the batteries.

Read and carefully follow the individual instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

CAUTION

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

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

As a general rule, you should recharge your batteries as frequently as possible to assure the longest possible life and to minimize required charging time. Plan to recharge them when you do not anticipate using the wheelchair.

Basic concepts which will help you understand this automatic process are:

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 a charge builds up, the charge rate is reduced, and the battery charger rate decreases to a "trickle charge".

NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact a qualified technician.

NOTE: The batteries can be charged using the on-board battery charger or by plugging an independent battery charger into the port located on the front of the joystick.

Battery Charger Operation

⚠ WARNING

Read and carefully follow the manufacturer's instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

NEVER leave the charger unattended when the charger circuit breaker is tripping.

Use of improper extension cord could result in risk of fire and electric shock.

Read and carefully follow the individual instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

CAUTION

Only use a charger approved by Invacare when charging through the joystick on this wheelchair model.

DO NOT use an independent charger with an output rating of over 8A (Amps). Otherwise, damage may occur.

NOTE: For this procedure, refer to FIGURE 11.4.

NOTE: The charger port located on the front of the joystick requires the use of an independent charger. The independent charger is NOT supplied with the wheelchair.

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 230-volt wall outlet.

3. When charging is complete, turn charger off.
4. Disconnect output cable from joystick charger port.

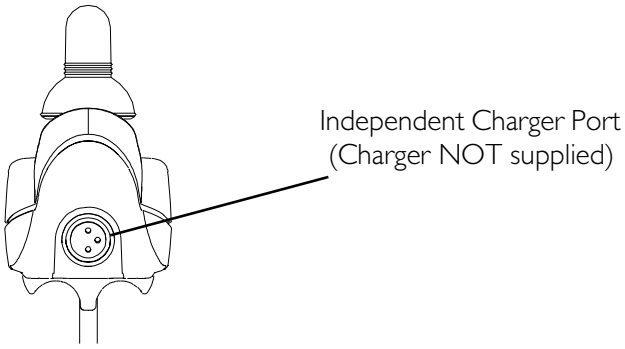


FIGURE 11.4 Battery Charger Operation

SECTION 12—ELECTRONICS

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Removing/Installing the Joystick

NOTE: For this procedure, refer to FIGURE 12.1.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.
2. Cut the tie-wraps that secure the joystick cable to the arm.
3. Loosen the adjustment lock lever to release the joystick mounting tube from the mounting bracket. Refer to FIGURE 12.1.
4. Remove the joystick and joystick mounting tube from the mounting bracket.

Installing

1. Slide joystick mounting tube through the mounting bracket to the desired position.
2. Tighten the adjustment lock lever to secure the joystick mounting tube to the mounting bracket on the other arm.
3. Tie-wrap the joystick cable to the arm as shown in FIGURE 12.1.
4. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 74.

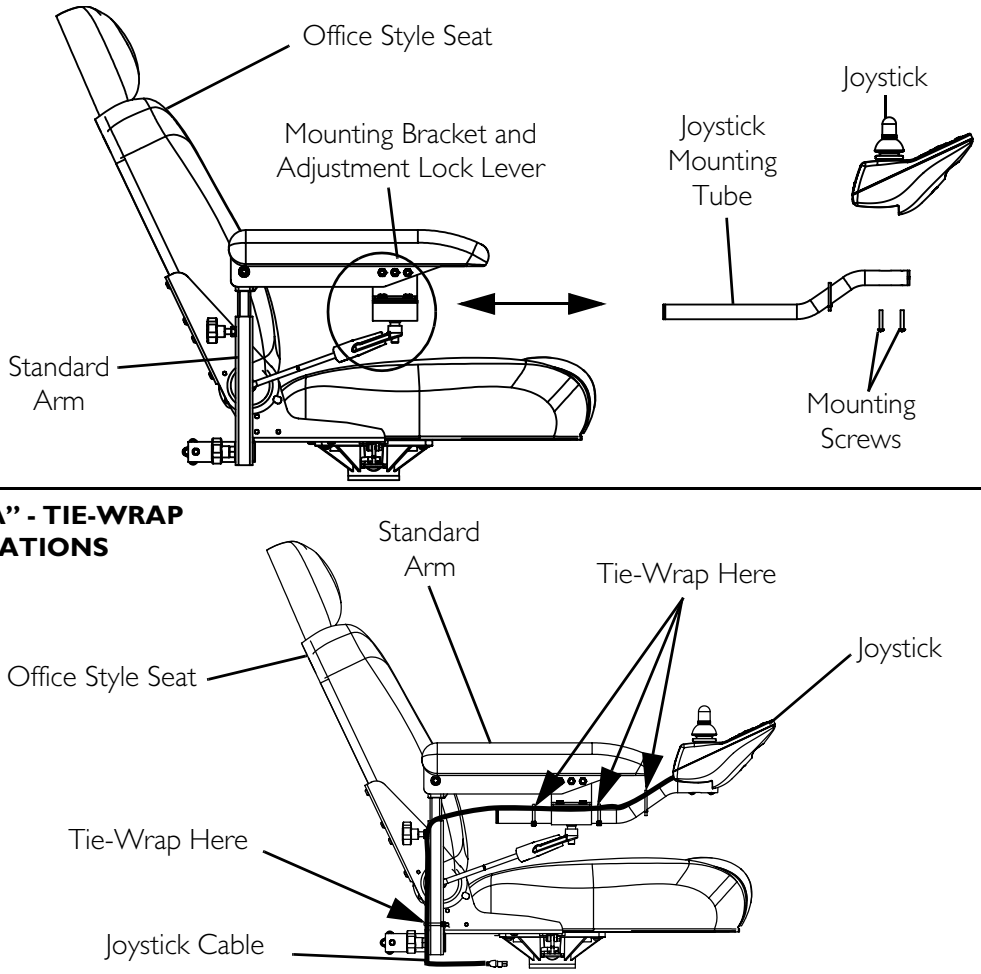


FIGURE 12.1 Removing/Installing the Joystick

Repositioning the Joystick

NOTE: For this procedure, refer to FIGURE 12.2.

NOTE: Take note of position and orientation of mounting hardware for reinstalling the joystick assembly.

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex mounting screws, spacers and locknuts that secure the mounting bracket to the three mounting holes on the arm frame.

NOTE: The mounting bracket is mounted to the inside of the arm frame.

4. Reposition the mounting bracket on the opposite arm frame.
5. Using the three hex mounting screws, spacers and locknuts secure the mounting bracket to the three mounting holes of the arm frame.

6. If necessary, perform the following to reposition the adjustment lock:
   A. Slide the adjustment lock from the mounting bracket.
   B. Rotate adjustment lock 180° and slide adjustment lock over the opposite end of the mounting bracket.
7. Slide joystick mounting tube through the mounting bracket to the desired position and secure adjustment lock to tube by turning lever on adjustment lock.

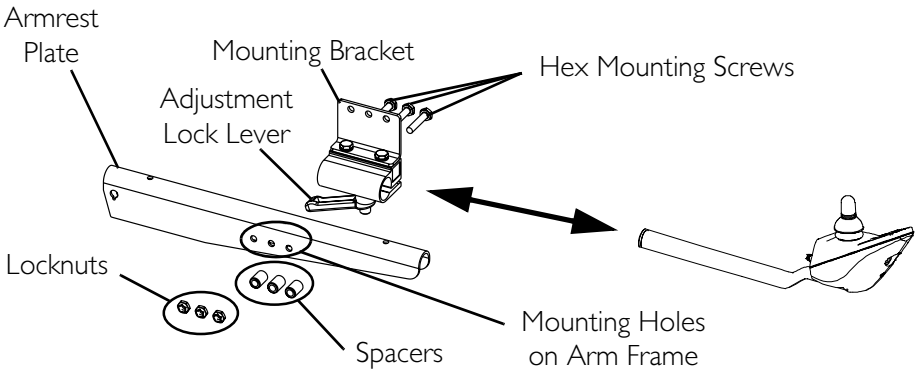


FIGURE 12.2 Repositioning the Joystick

Disconnecting/Connecting the Joystick

NOTE: For this procedure, refer to FIGURE 12.3.

Disconnecting

1. Hold the light GREY collar portion of the joystick connector with one hand and the controller connector on the wheelchair in the other and disconnect them by pulling them apart.

Connecting

⚠ WARNING

The joystick connector and controller connector fit together in one way only. DO NOT force them together.

1. Hold the light GREY collar portion of the joystick connector with one hand and the controller connector on the wheelchair in the other and align them.
2. Lightly push to engage the joystick connector and the controller connector.

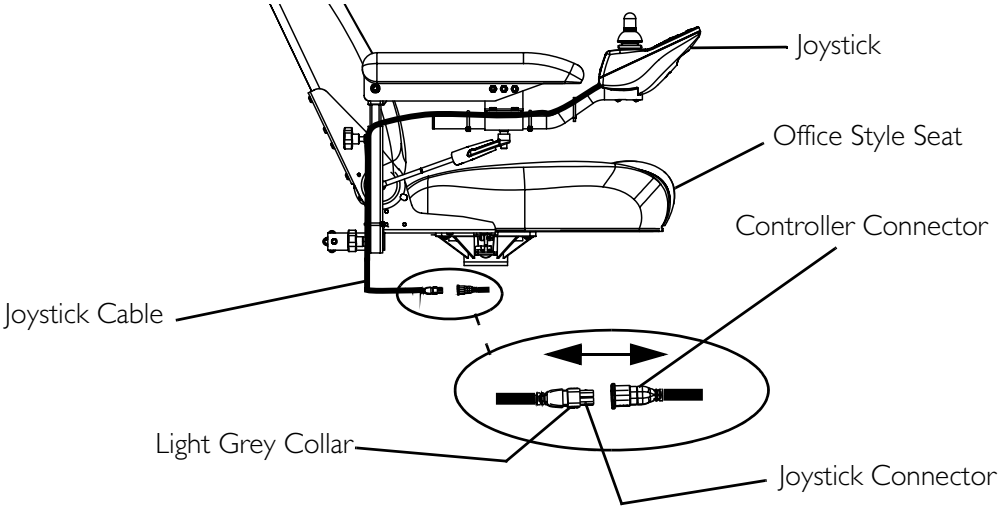


FIGURE 12.3 Disconnecting/Connecting the Joystick

SECTION 13—ACCESSORIES

⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Installing/Removing the Crutch/Cane Holder

⚠ WARNING

The installation of the crutch/cane holder onto the back of the seat significantly increases the length of the wheelchair. When turning the wheelchair or swiveling the wheelchair seat, it is important to take note of this increased length - otherwise, injury and/or damage to the surrounding property may result.

NOTE: For this procedure, refer to FIGURE 13.1.

NOTE: The Crutch/Cane Holder and Oxygen Holder all install into the accessory tube. Only one of these may be installed at a time.

NOTE: To remove, reverse the following procedure.

Installing

1. If necessary, loosen but do not remove the mounting knob.
2. Install the crutch/cane holder into the accessory tube located on the back of the seat.
3. Thread the mounting knob into the welded nut on the accessory tube. Securely tighten.
4. Align slot on base with hook on crutch/cane holder and slide base down into position.

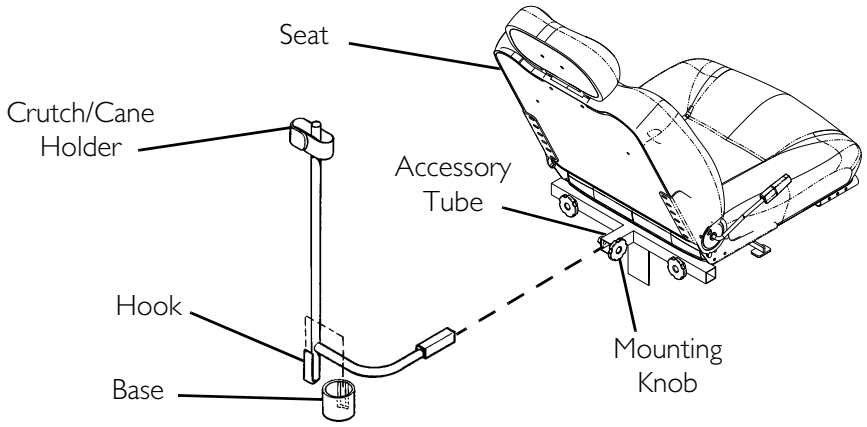


FIGURE 13.1 Installing/Removing the Crutch/Cane Holder

NOTES

NOTES

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.

With regards to the original purchaser/user only, Invacare warrants the front and rear frames to be free from defects in materials and workmanship for a period of five years from date of purchase; seat frame for a period of five years from the date of purchase; electronics, motors and gearboxes for a period of one year from the date of purchase; all remaining components for one 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 bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, COMMERCIAL OR INSTITUTIONAL USE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR 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 EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN, THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. 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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Yes, you can.

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