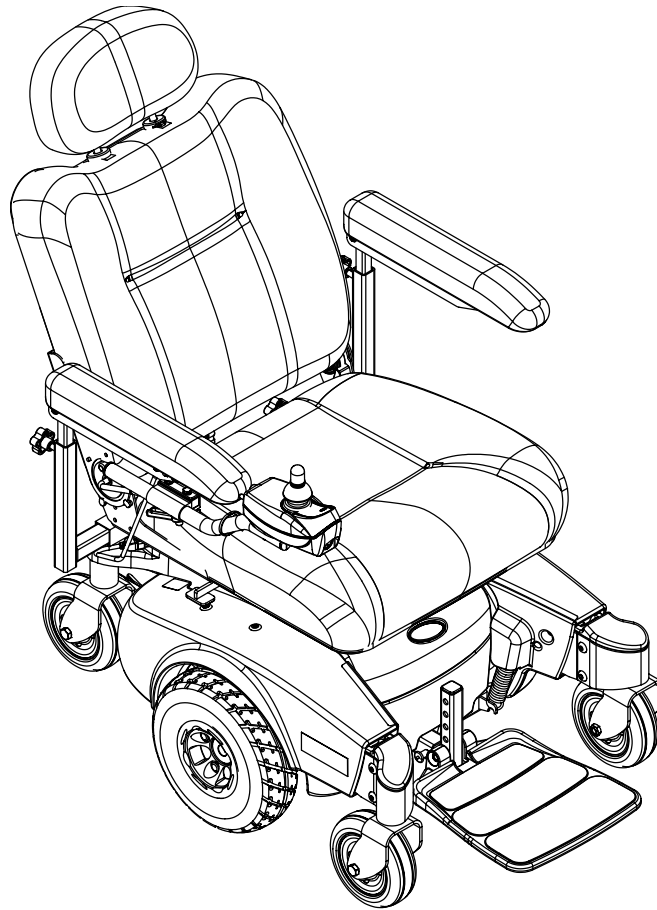


Pronto[®] M50[™], M51[™] and M61[™] with SureStep[™]



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.

For more information regarding
Invacare products, parts, and services,
please visit www.invacare.com



Yes, you can.™

⚠ WARNING

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

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

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

NOTE: Updated versions of this manual are available on www.invacare.com.

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REGISTER YOUR PRODUCT

The benefits of registering:

1. Safeguard your investment.
2. Ensure long term maintenance and servicing of your purchase.
3. Receive updates with product information, maintenance tips, and industry news.
4. Invacare can contact you or your provider, if servicing is needed on your product.
5. It will enable Invacare to improve product designs based on your input and needs.

Register ONLINE at www.invacare.com

- or -

Complete and mail the form on the next page

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



PRODUCT REGISTRATION FORM

Register **ONLINE** at www.invacare.com - or -
Complete and mail this form

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____

Email _____ Phone No. _____

Fold
here

Invacare Model No. _____ Serial No. _____

Purchased From _____ Date of Purchase: _____

1. Method of purchase: (check all that apply)

Medicare Insurance Medicaid Other _____

2. This product was purchased for use by: (check one)

Self Parent Spouse Other

3. Product was purchased for use at:

Home Facility Other

4. I purchased an Invacare product because:

Price Features (list features) _____

5. Who referred you to Invacare products? (check all that apply)

Doctor Therapist Friend Relative Dealer/Provider Other _____

Advertisement (circle one): TV, Radio, Magazine, Newspaper No Referral _____

6. What additional features, if any, would you like to see on this product?

_____ Fold
here

7. Would you like information sent to you about Invacare products that may be available for a particular medical condition? Yes No

If yes, please list any condition(s) here and we will send you information by email and/or mail about any available Invacare products that may help treat, care for or manage such condition(s):

8. Would you like to receive updated information via email or regular mail about the Invacare home medical products sold by Invacare's dealers? Yes No

9. What would you like to see on the Invacare website?

10. Would you like to be part of future online surveys for Invacare products? Yes No

11. User's Year of birth: _____

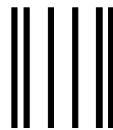
If at any time you wish not to receive future mailings from us, please contact us at Invacare Corporation, CRM Department, 39400 Taylor Parkway, Elyria, OH 44035, or fax to 877-619-7996 and we will remove you from our mailing list.

To find more information about our products, visit www.invacare.com.

Cut Along Line



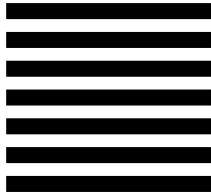
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ELYRIA OH 44035-9836



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Invacare Product Registration Form

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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.

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 2-inches.

⚠ WARNING CONTINUED

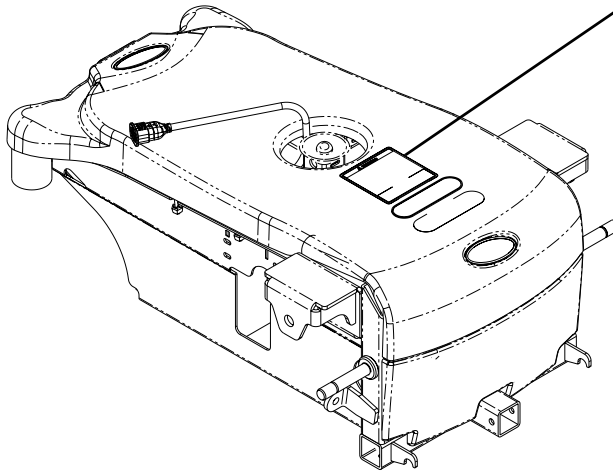
The following warnings apply specifically to the SureStep Feature.

- **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.

LABEL LOCATION

M50/M51 Wheelchairs



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

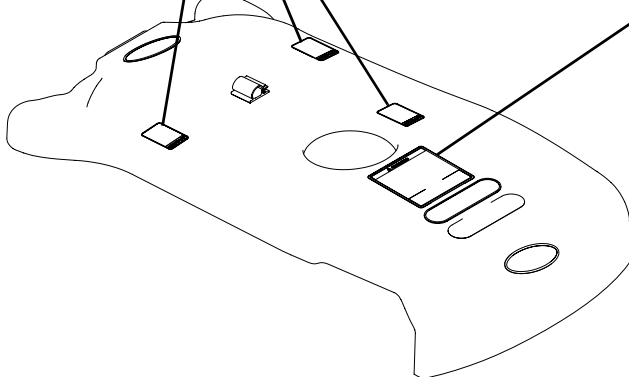
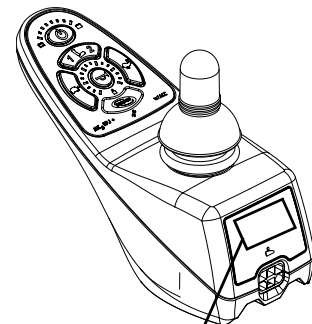
P/N 1122126

M61 Wheelchairs



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

P/N 1122126



⚠ 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.
1130210 Rev. A - 01/05

TYPICAL PRODUCT PARAMETERS

	MEDIUM BACK	SEMI-RECLINE BACK			OFFICE STYLE, SEMI-RECLINE BACK	ASBA
SEAT WIDTH RANGE:	18 inches	16 inches	18 inches	20 inches	18 inches	16 - 20 inches
SEAT DEPTH:	16 - 18 inches	16 - 18 inches		18 - 20 inches	16 - 18 inches	16 - 20 inches
BACK HEIGHT:	16½ inches	19 inches			23½ inches (w/ headrest) 18¾ inches (w/o headrest)	16 - 20 inches
BACK ANGLE RANGE (IN 5° INCREMENTS):	Standard - 95° to 100°	N/A	N/A	N/A	N/A	Standard - 80° to 100°
UPHOLSTERY:	Light Grey Vinyl	Light Grey Vinyl, Grey Cloth, Tan Vinyl			Charcoal Grey Vinyl	Black Nylon Back with Seat Pan
SEAT-TO-FLOOR WITH FOOTBOARD:	20 to 24 inches				19 to 23 inches	17-21 inches
WITH FRONT RIGGINGS:	22 to 24 inches				19-23 inches	19-21 inches
WITH ELEVATING SEAT:	21-23 inches + up to 5 inches of Elevate				19 to 21 inches + up to 5 inches of Elevate	17 to 19 inches + up to 5 inches of Elevate
OVERALL WIDTH:	24 inches (Without Joystick)					
OVERALL HEIGHT:	35 to 43¾ inches				41½ inches	
OVERALL LENGTH:	34 inches (With Footboard Folded) 39½ inches (With Footboard Extended)					
DRIVE WHEELS/ TIRES:	10 x 3-inch (Flat Free inserts)					
CASTER:	6 x 2-inch Front/Rear w/Precision Sealed Bearings					
FOOTRESTS/ LEGRESTS:	Flip Up, Depth and Height Adjustable, Footboard, Swingaway Front Rigging, Elevating Legrest					
*WEIGHT W/O BATTERIES: W/BATTERIES (UI):					145 to 170 lbs 192 to 217 lbs	
SHIPPING BASE W/O BATTERIES: BASE WITH BATTERIES: MEDIUM BACK: SEMI-RECLINE: OFFICE STYLE: ASBA (20 X 20 X 20):					107 lbs 154 lbs 40 lbs 64 lbs 44 lbs 48 lbs	
ARMRESTS:	Adjustable Width, Angle, Heights and Depth					
BATTERIES:	UI - Quantity 2					

	MEDIUM BACK	SEMI-RECLINE BACK	OFFICE STYLE, SEMI-RECLINE BACK	ASBA
WEIGHT LIMITATION:	300 lbs			
PERFORMANCE SPEED: TURNING RADIUS: **RANGE (VARIABLE):	0 to 4.3 m.p.h. 19½ inches up to 12 miles			

*NOTE: Includes seating systems and accessories.

**NOTE: Values for range are calculated for maximum chair weight rating using largest batteries applicable (U1), per test procedures described in ANSI/RESNA WC/VOL2-1998 Section 4 and meet federal reimbursement requirements for this product. 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 83 for more information about the battery discharge indicator.

SECTION I—GENERAL GUIDELINES

⚠ WARNING

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

Controller Settings/Repair or Service

Set-up of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Reprogramming the controller reduces the stability/control of the wheelchair. Other program settings could cause the wheelchair to tip over resulting in serious injury to the user and/or damage to the surrounding property. If any individual other than a qualified technician performs any work on these units, the warranty is void.

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 flip-up footboard, otherwise damage may occur. When getting in or out of the wheelchair, make sure that the flip-up footboard is in the upward position.

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.

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 storage or use near external flame or combustible products.

M6I Wheelchairs Only

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

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

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.

When using an extension cord, use only a three (3) wire extension cord having at least 16 AWG (American Wire Gauge) wire and 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.

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 round grounding plug from the charger AC cable plug or the extension cord plug.

Three (3) prong to two (2) prong adapters should not be used. Use of three (3) prong adapters can result in improper grounding and present a shock hazard to the user.

Grounding Instructions

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

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.

Weight Training

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

Weight Limitation

The M50, M51 and M61 wheelchairs with SureStep have a weight limitation of 300 lbs.

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.

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 2-inch 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.

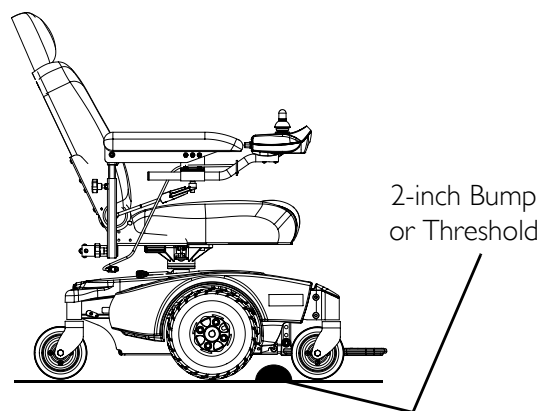


FIGURE 3.1 Coping With Everyday Obstacles

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

M6I WHEELCHAIRS ONLY - Pinch point may occur when lowering the elevating seat. Make sure the hands and body of both the occupant and attendants/bystanders are clear of all pinch points before lowering seat.

DO NOT store or place items under the seat.

NOTE: For this procedure, refer to FIGURE 3.2.

Fully Elevated Seat

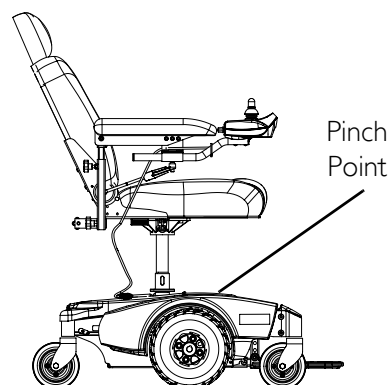


FIGURE 3.2 Pinch Points

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 (2) 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 212 lbs. Use proper lifting techniques (lift with your legs) to avoid injury.

NOTE: For this procedure, refer to FIGURE 3.3.

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 50.
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 3.3.
6. Using the rear and front forks as hand hold supports, transfer the wheelchair base to desired location. Refer to FIGURE 3.3.
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 50.

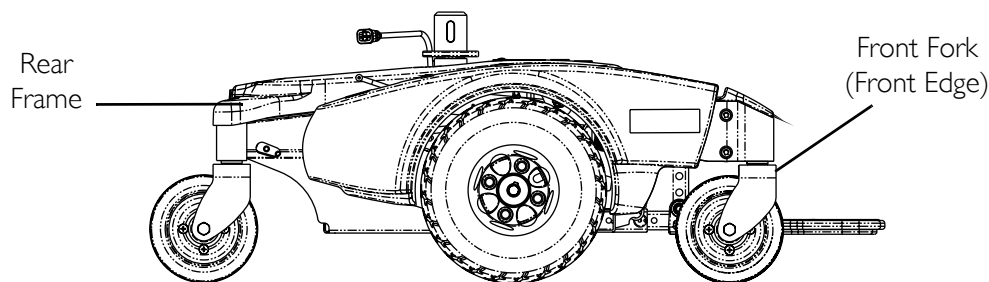


FIGURE 3.3 Lifting/Stairways

⚠ 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 3.4.

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 73.

Minimum Gap Distance

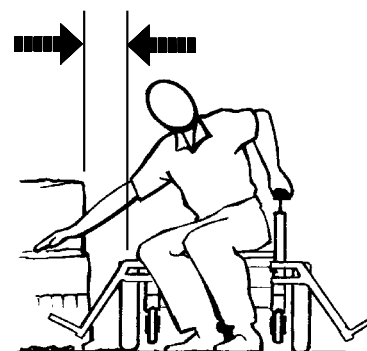


FIGURE 3.4 Transferring To and From Other Seats

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 3.5.

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.

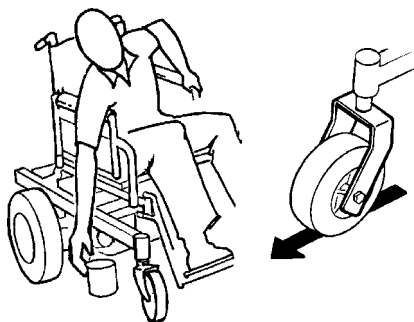


FIGURE 3.5 Reaching, Leaning and Bending - Forward

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 For this procedure, refer to FIGURE 3.6.

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 3.6 Reaching and Bending - Backward

SECTION 4—SAFETY INSPECTION/ TROUBLESHOOTING

NOTE: Every six (6) 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:

All Wheelchairs

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.

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.
- 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.

Inspect/Adjust Periodically

- Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- 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.

Additional Requirements for M6I Wheelchairs**Inspect/Adjust Initially**

- Make sure elevate operates smoothly and properly.

- Make sure elevate systems drive with reduced speed when seat is in elevated position.

Inspect/Adjust Monthly

- Make sure elevate operates smoothly and properly.
- Make sure elevate systems drive with reduced speed when seat is in elevated position.

Troubleshooting Guide

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

All Wheelchairs

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Limited driving distance.	Batteries not charged long enough. Batteries weak; wont 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, wont 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 (1) drive wheel turns.	Electrical malfunction. One (1) motor lock is disengaged.	Contact Dealer/Invacare for service. Engage motor lock.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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).
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.

Additional Troubleshooting Information for M6I Wheelchairs

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Wheelchair slows or stops while driving and the Seat Function I indicator is lit.	Elevating seat is elevated.	Return seat to its lowest position. Refer to <u>Elevating the Seat</u> on page 34.

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.

Set-up/programming of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances. If unqualified individuals perform any work on these units, the warranty is void.

Turning the Power On/Off

M50 and M51 Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.1.

1. Turn the power On by moving the On/Off switch UP or DOWN. The switch automatically retracts back to center position.

NOTE: After turning power on, all indicators will light briefly and the display gauge will indicate one of the following:

- A. *The Current Battery Charge - Information gauge shows all LEDs lit or partial LEDs lit. Refer to table in Information Gauge Display on page 37.*
 - B. *Out Of Neutral At Power Up - Information Gauge shows all LEDs flashing slowly. This occurs when the power is turned on when the joystick is out of neutral. This feature prevents sudden and unexpected movements of the power chair.*
2. Turning the power Off can be achieved by moving the On/Off switch up or down. The switch automatically retracts back to center position.

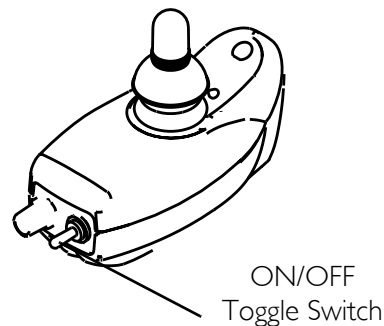
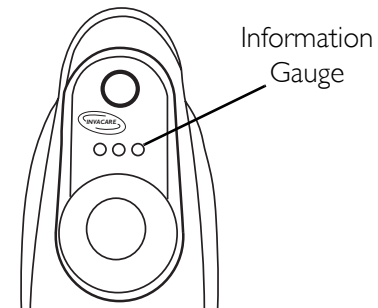


FIGURE 5.1 Turning the Power On/Off - M50 and M51 Wheelchairs

M6I Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.2.

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 (1) 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 (2) times within ten (10) seconds to unlock the joystick.

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 (4) seconds will lock the joystick. The LEDs will flash briefly and the horn will sound a short beep.

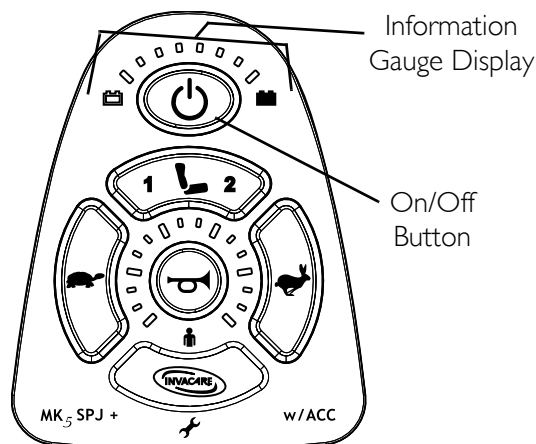


FIGURE 5.2 Turning the Power On/Off - M6I Wheelchairs

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 5.3.

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 30.
2. Adjust speed. Refer to Adjusting the Speed on page 32.
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.

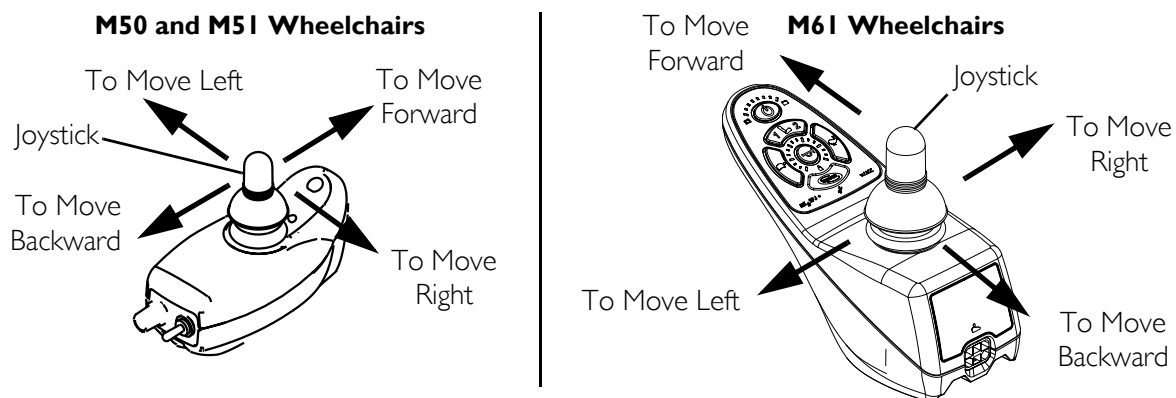


FIGURE 5.3 Using the Joystick to Drive the Wheelchair

Adjusting the Speed

M50 and M51 Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.4.

1. Turn the speed control knob to adjust the speed:
 - Clockwise - Increase speed.
 - Counterclockwise - Decrease speed.

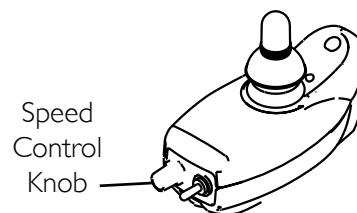


FIGURE 5.4 M50 and M51 Wheelchairs - M50 and M51 Wheelchairs

M6I Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.5.

1. Perform one (1) 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 (1) 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.

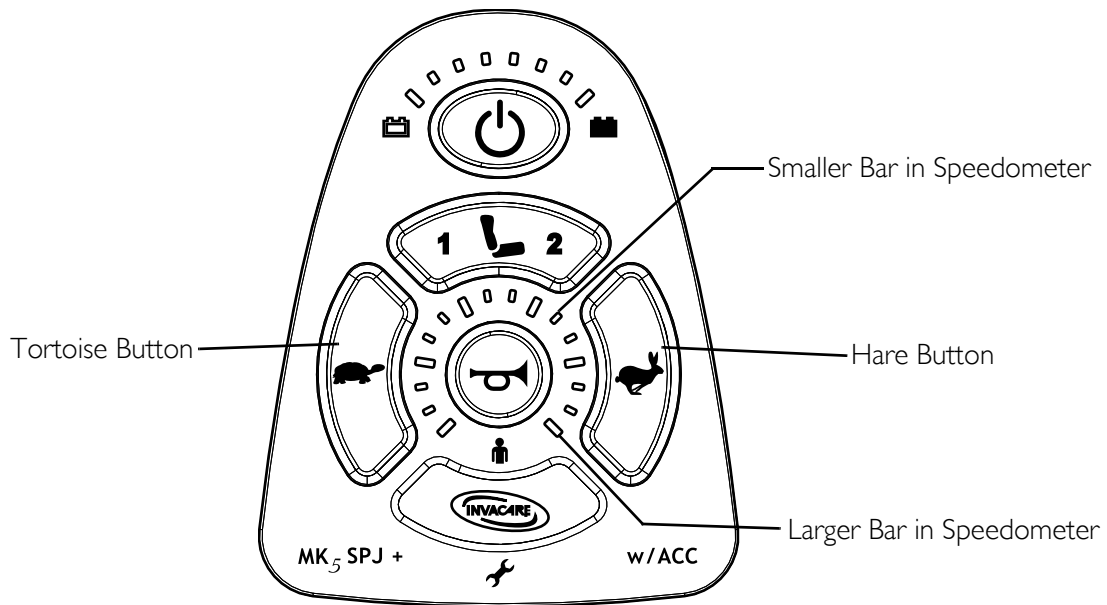


FIGURE 5.5 Adjusting the Speed - M6I Wheelchairs

Using the Horn

M50 and M51 Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.6.

1. Press the horn button located above the information gauge on the joystick housing.

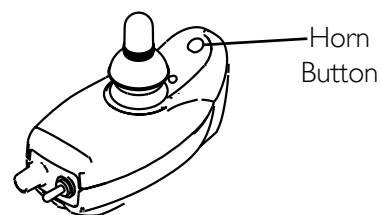


FIGURE 5.6 Using the Horn - M50 and M51 Wheelchairs

M61 Wheelchairs

NOTE: For this procedure, refer to FIGURE 5.7.

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.

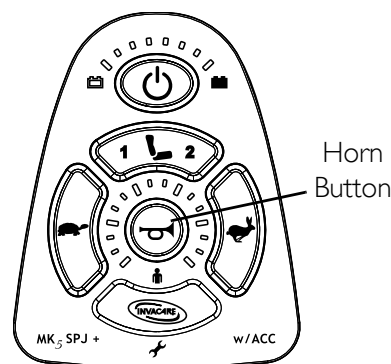


FIGURE 5.7 Using the Horn - M61 Wheelchairs

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.

Use only the **MK5™ NX w/ACC** controller 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 5.8.

NOTE: This procedure applies to M61 wheelchairs only.

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.

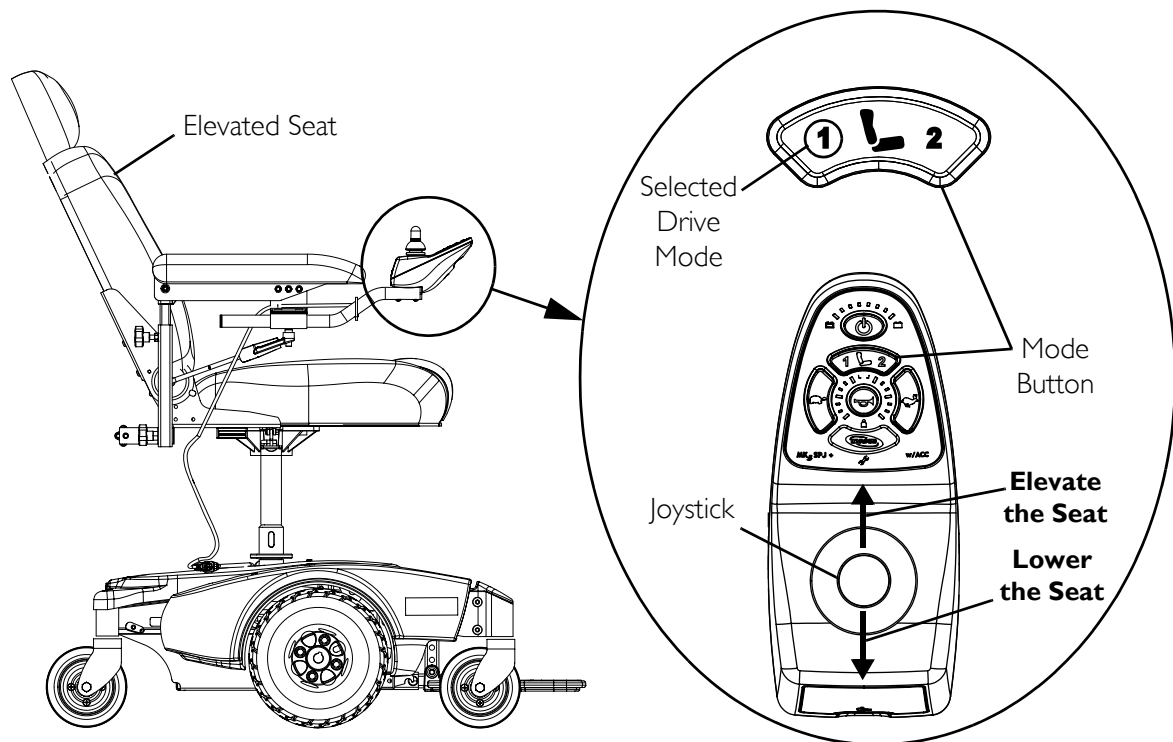


FIGURE 5.8 Elevating the Seat

SPJ™ Joystick Switches and Indicators

NOTE: For the following information, refer to FIGURE 5.9.

NOTE: The SPJ joystick is used on M50 and M51 wheelchairs only.

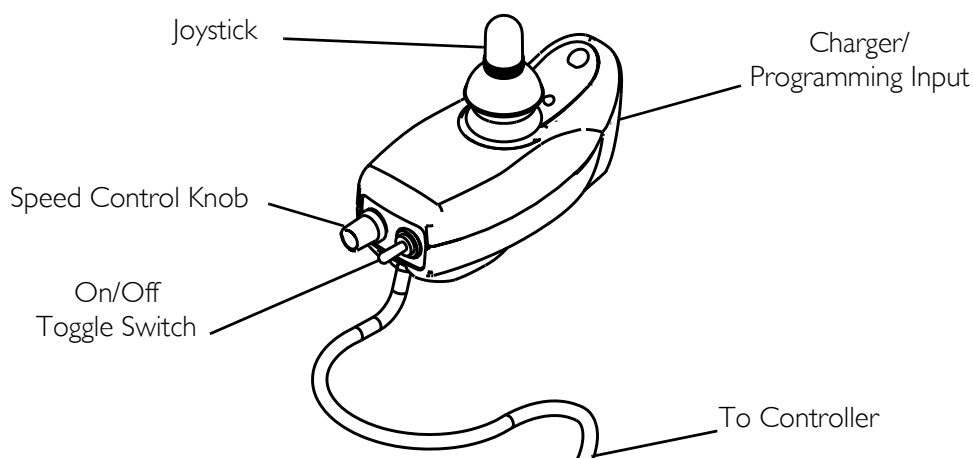


FIGURE 5.9 SPJ™ Joystick Switches and Indicators

On/Off Toggle Switch

This toggle switch is located at the back of the joystick housing.

Speed Control Knob

The speed control knob is located on the back of the joystick housing. This rotary switch is used for controlling the speed and acceleration of the wheelchair.

1. Turn the switch Clockwise to increase the speed of the wheelchair.
2. Turn the switch Counterclockwise to decrease the speed of the wheelchair.

Joystick

The joystick has proportional drive control, meaning that further the wheelchair is pushed from the upright (neutral) position, the faster it moves. Your top speed, however, is limited by the setting of the speed-control knob and 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

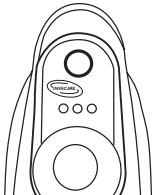
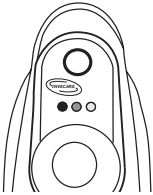
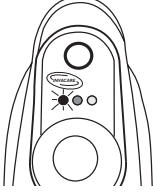
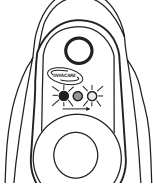
Located at the front of the joystick housing. This provides easy access for charging the wheelchair batteries. This port also serves as the Remote Programmer Communication connection.

Information Gauge Display

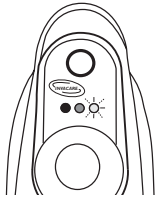
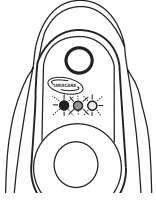
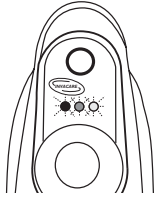
Located on the front of the joystick housing, it provides the following information to the user on the status of the wheelchair -

1. Power is On.
2. True state-of-battery-charge, including notification of when the battery requires charging:
 - A. GREEN LED is lit, indicating well charged batteries.
 - B. Only AMBER LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
 - C. Only RED LED is 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 following table of the diagnostic indications of the wheelchair status.

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
	All three (3) LEDs are off.	Power is Off.	
	All three (3) LEDs are on.	Power is On.	Fewer than three (3) LEDs on implies reduced battery charge.
	RED LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	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.

SECTION 5—WHEELCHAIR OPERATION

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
	GREEN LED is flashing.	Joystick is in Speed Limit mode.	The current state of battery charge will be displayed at the same time.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.
	All LEDs are flashing quickly.	Joystick has detected a fault.	Joystick uses Flash codes to indicate faults.

SPJ+ and SPJ+ w/ACC Joystick Switches and Indicators

NOTE: For the following information, refer to FIGURE 5.10.

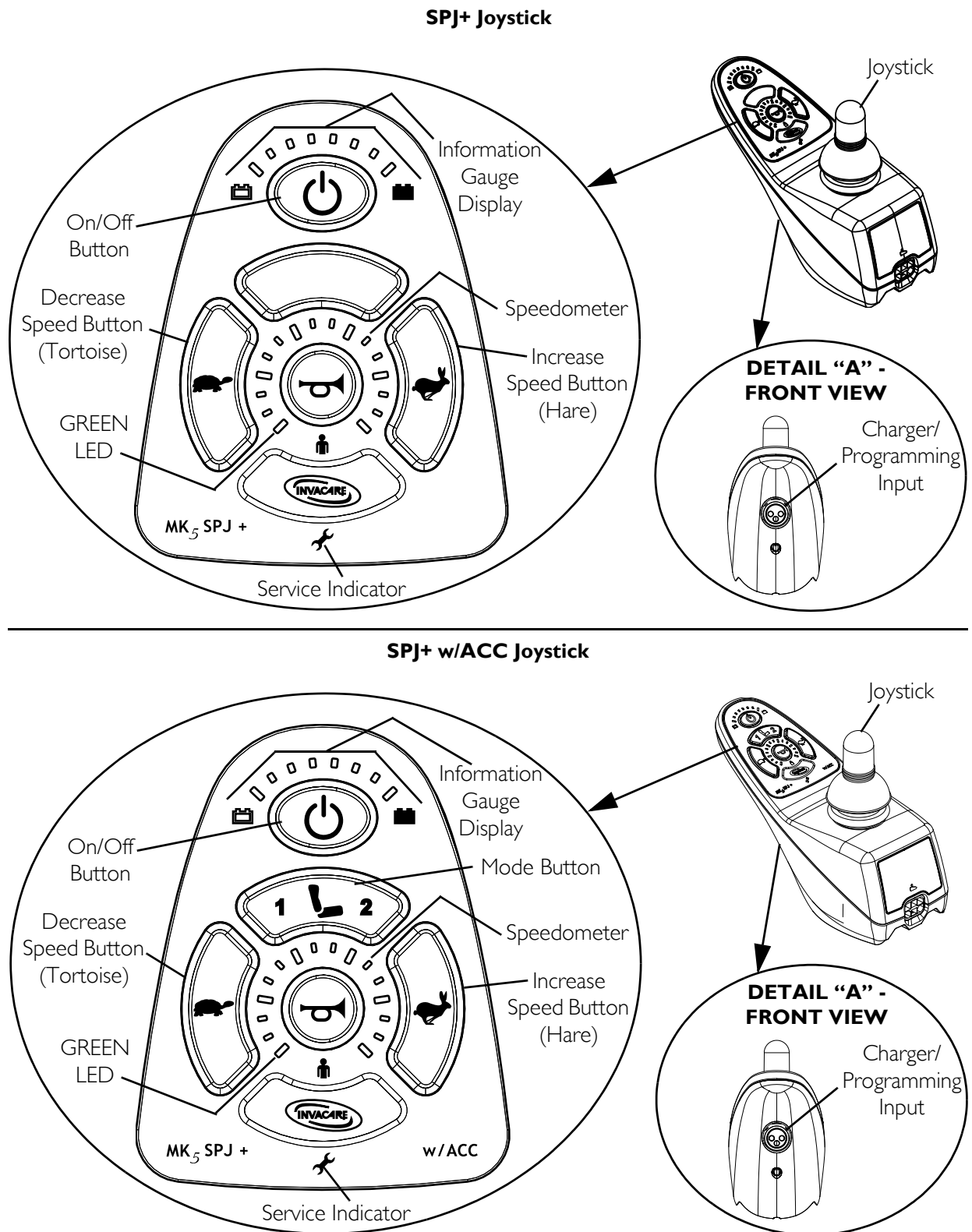


FIGURE 5.10 SPJ+ and SPJ+ w/ACC Joystick Switches and Indicators



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 (1) 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 (1) 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

NOTE: The mode button is present on the SPJ+ w/ACC joystick only.

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

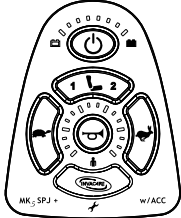
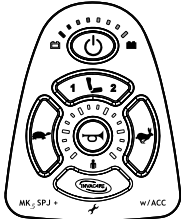
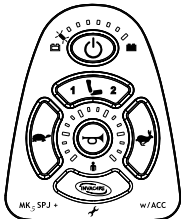
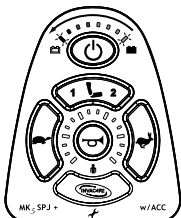
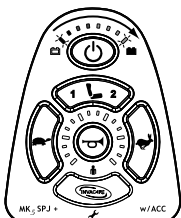
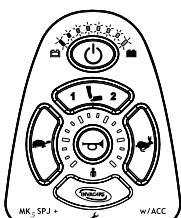
The AMBER service indicator will light when an error or fault occurs. Refer to [Diagnostic Codes](#) on page 33 for a listing of the flash codes and what they indicate.

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 (3) 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 (2) 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.

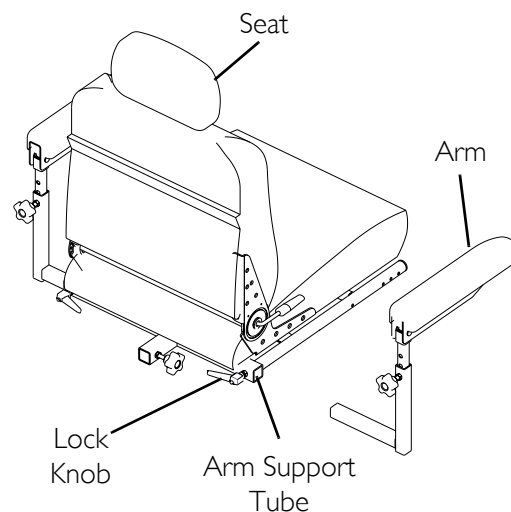


FIGURE 6.1 Removing/Installing the Arms

Adjusting the Arms

Adjusting Width

NOTE: For this procedure, refer to FIGURE 6.2.

1. Loosen the two (2) 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 (2) lock knobs that secure the arms to the arm support tube.

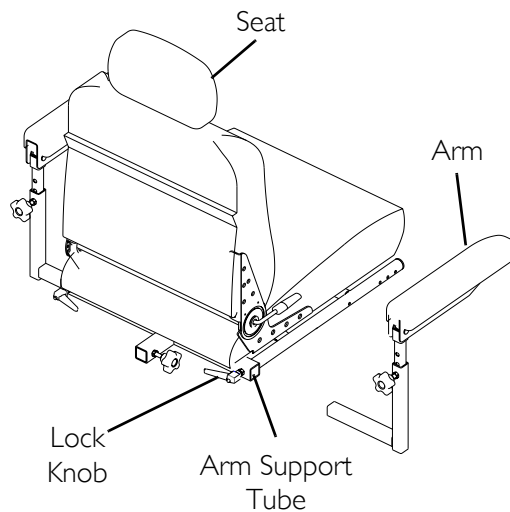


FIGURE 6.2 Adjusting Width

Adjusting Angle

NOTE: For this procedure, refer to FIGURE 6.3.

1. Lift up the armrest.
2. Loosen the jam nut.
3. Adjust the socket screw up or down to the desired arm angle position.
4. Tighten the jam nut.
5. To determine the same angle for the opposite armrest, count the exposed threads after the jam nut has been tightened.
6. Repeat STEPS 1-5 for opposite armrest, if necessary.

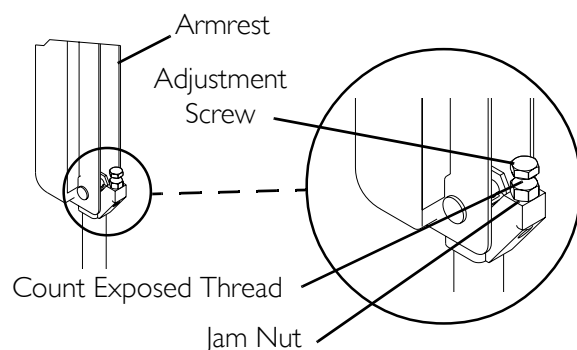


FIGURE 6.3 Adjusting Angle

Adjusting Height

NOTE: For this procedure, refer to FIGURE 6.4.

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

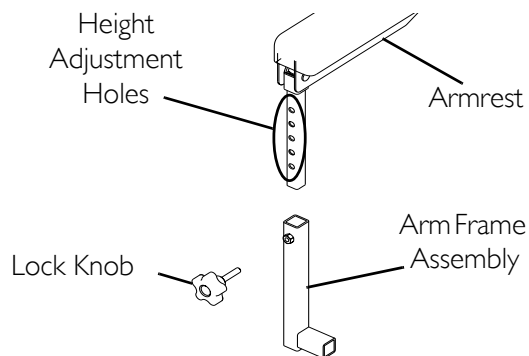


FIGURE 6.4 Adjusting Height

Installing/Removing Flip Back Armrests

⚠ WARNING

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

NOTE: For this procedure, refer to FIGURE 6.5.

NOTE: Flip back armrest release lever must be in unlocked position when placing armrest into the arm sockets.

Installing

1. Slide the flip back armrest into the arm sockets on the wheelchair frame.
2. Install the quick release pin through the rear arm socket and flip back armrest.
3. Lock flip back armrest by pressing flip back armrest release lever into the locked (vertical) position.
4. Lift up on flip back armrest to make sure the armrest is locked in place.
5. Repeat STEPS 1-4 for opposite flip back armrest.

Removing

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

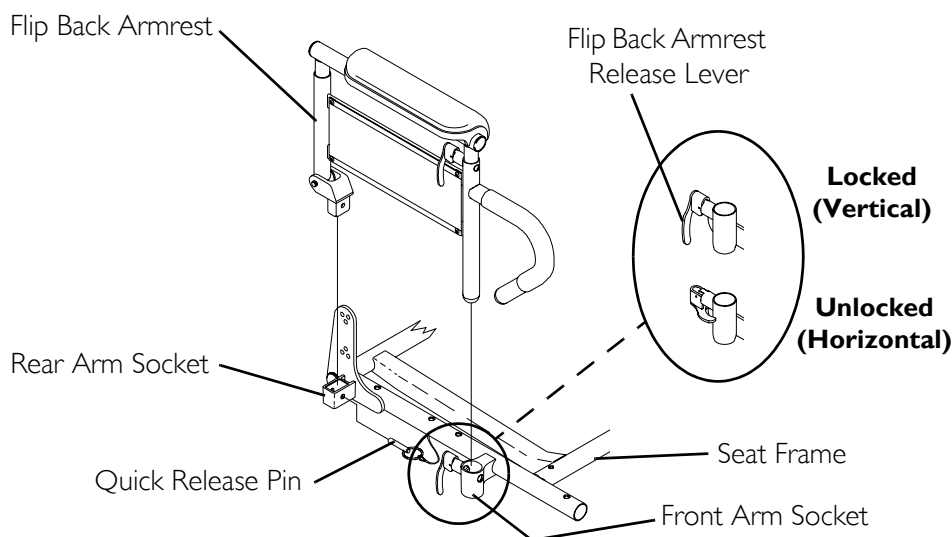


FIGURE 6.5 Installing/Removing Flip Back Armrests

Positioning/Adjusting Flip Back Armrests

NOTE: For this procedure, refer to FIGURE 6.6.

Positioning Flip Back Armrests for User Transfer

1. Unlock the flip back armrest by pulling the armrest release lever into the up (horizontal) position.
2. Pull up on the flip back armrest and remove the armrest from the front arm socket.
3. Continue to pull up on the flip back armrest until the armrest is out of the way.
4. Repeat STEPS 1-3 for opposite flip back armrest, if necessary.

Positioning Flip Back Armrests for Use

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

Adjusting Height

1. Unlock top of flip back armrest by pulling height adjustment lever into the up (horizontal) position.
2. Adjust top of the flip back armrest to the desired height.
3. Lock top of flip back armrest by pushing height adjustment lever into the down (vertical) position.
4. Lift up on flip back armrest to make sure the armrest is locked in place.
5. Repeat STEPS 1-4 for opposite flip back armrest, if necessary.

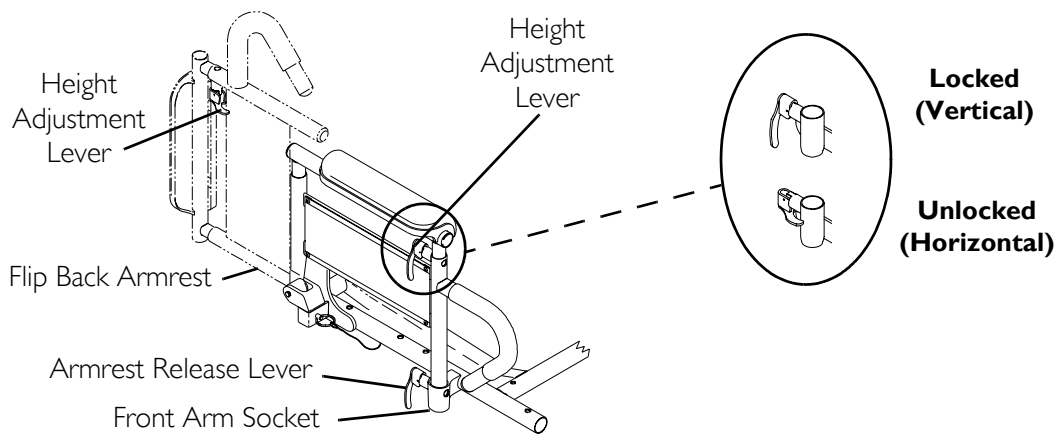


FIGURE 6.6 Positioning/Adjusting Flip Back Armrests

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

Semi-Recline 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.

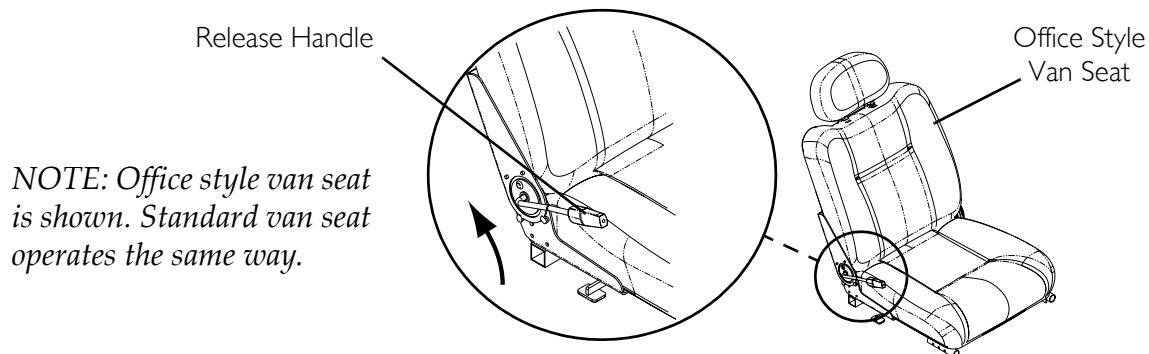


FIGURE 7.1 Adjusting the Back Angle - Semi-Recline Back Angle

Fold Down Back Angle

NOTE: For this procedure, refer to FIGURE 7.2.

1. Remove the two (2) shoulder bolts and locknuts from the seat hinges on either side of the seat.
2. Select one (1) of the four (4) back angle positions as shown in Detail "A" of FIGURE 7.2.
3. Reinstall and tighten the two (2) shoulder bolts and locknuts through the desired back angle setting on each seat hinge.

NOTE: Both seat hinges should be set to the same back angle setting.

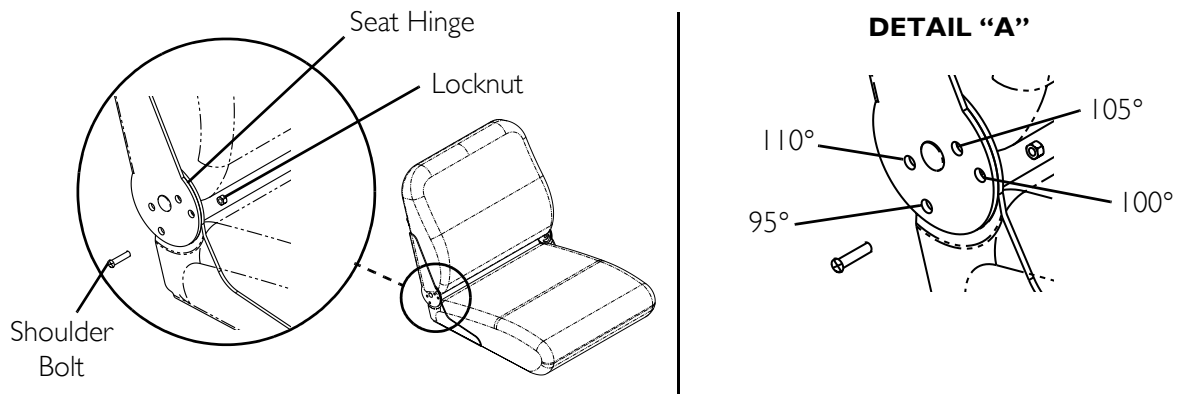


FIGURE 7.2 Adjusting the Back Angle - Fold Down Back Angle

Adjusting the Headrest (Semi-Recline Only)

NOTE: For this procedure, refer to FIGURE 7.3.

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.

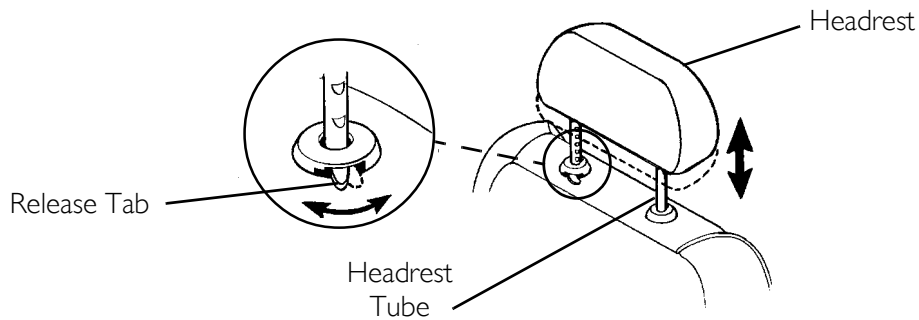


FIGURE 7.3 Adjusting the Headrest (Semi-Recline Only)

Removing/Installing the Seat Assembly

NOTE: For this procedure, refer to FIGURE 7.4.

Removing

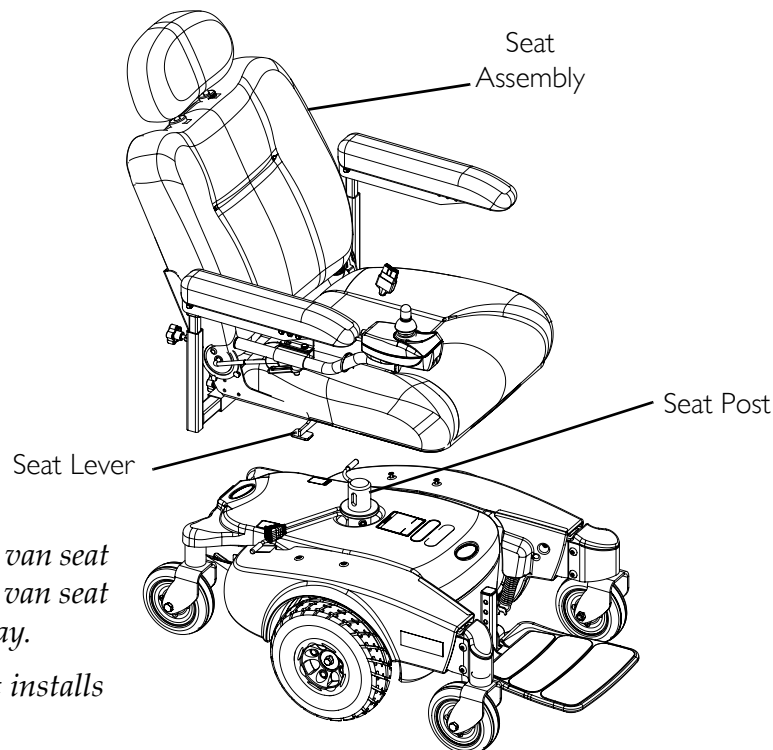
1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 90.
2. Fold down the seat back.
3. Pull the seat lever up and lift the seat assembly up and away from the seat post.

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 90.



NOTE: Office style van seat is shown. Standard van seat installs the same way.

NOTE: ASBA Seat installs the same way.

FIGURE 7.4 Removing/Installing the Seat Assembly

Adjusting Seat Depth

ASBA Seat

⚠ WARNING

DO NOT attempt to adjust the seat position of the ASBA seat on the seat base. This procedure MUST be performed by a qualified technician.

Van Seat

NOTE: For this procedure, refer to FIGURE 7.5.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
2. Perform one (1) of the following:
 - For Standard Van Seat -
 - i. Remove the seat base from the seat assembly. Refer to Adjusting Seat Position on Seat Base on page 57.
 - ii. Go to STEP 3.
 - For Office Style Seat - Go to STEP 3.
3. Remove the six (6) mounting screws located under the seat that secure the seat back assembly in place.
4. Adjust seat back assembly to desired position and reinstall the six (6) mounting screws. Securely tighten.

NOTE: Refer to Detail "A" of FIGURE 7.5 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.

5. Perform one (1) of the following:
 - For Standard Van Seat -
 - i. Install the seat base onto the seat assembly. Refer to Adjusting Seat Position on Seat Base on page 57.
 - ii. Go to STEP 6.
 - For Office Style Seat - Go to STEP 6.
6. Reinstall the seat base onto the seat assembly. Refer to Adjusting Seat Position on Seat Base on page 57.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 50.

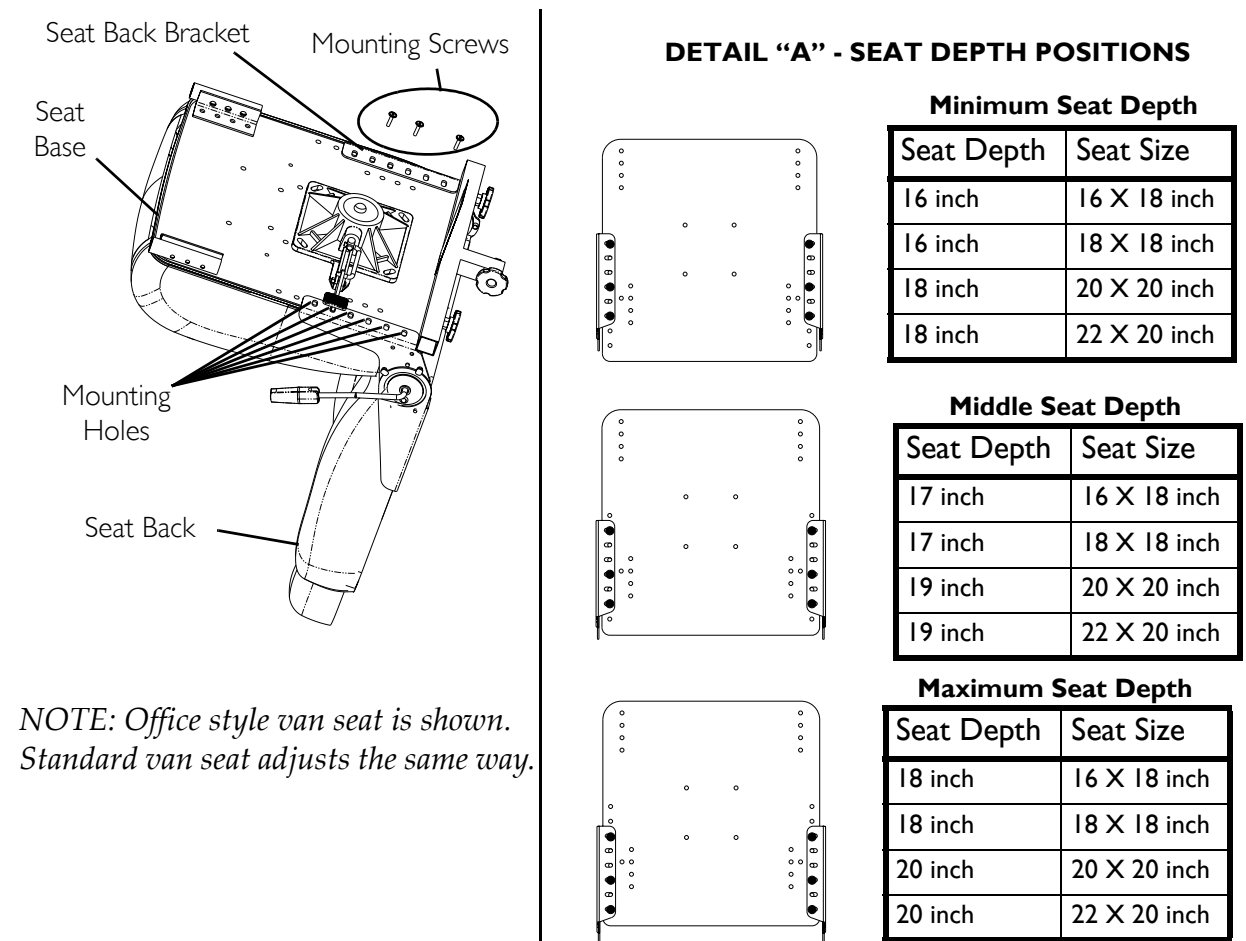


FIGURE 7.5 Adjusting Seat Depth

Adjusting the Seat Height

M50/51 Wheelchairs Only

NOTE: For this procedure, refer to FIGURE 7.6.

NOTE: The seat can be adjusted to five (5) height positions in 1-inch increments.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
2. Remove the mounting screw that secures the seat post to the support tube.

⚠ WARNING

Refer to the table in FIGURE 7.9 on page 58 for proper seat post mounting positions. For users over 220 lbs - Mounting holes 3, 4 and 5 (in FIGURE 7.6) **MUST** be used with the seat in the 1-inch back position (FIGURE 7.9). Refer to Adjusting Seat Position on Seat Base on page 57.

3. Adjust the seat post to desired mounting position.

4. Reinstall mounting screw. Securely tighten.
5. Reinstall the seat. Refer to [Removing/Installing the Seat Assembly](#) on page 50.

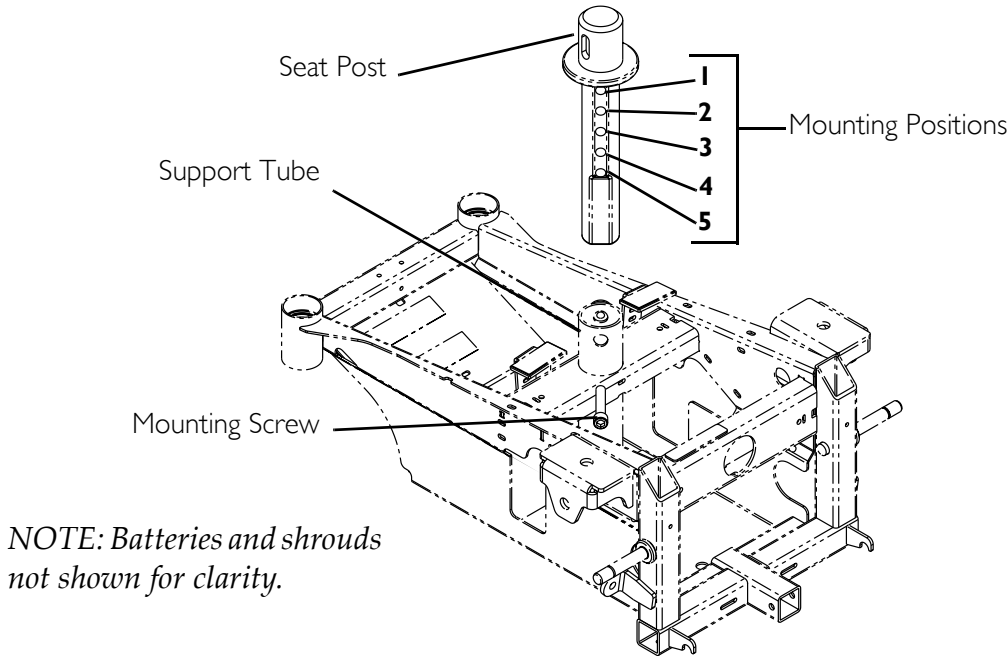


FIGURE 7.6 Adjusting the Seat Height - M50/51 Wheelchairs Only

M6I Wheelchair Only

Van Seat

NOTE: For this procedure, refer to FIGURE 7.7.

NOTE: Seat height can be increased by one (1) or two (2) inches. Use the chart to determine the desired height of the seat.

Increase in Seat Height	Sets of Seat Spacers	Total Number of Spacers	Length of Mounting Screws
1"	1	2	2½-inches (Office Style Van Seat) 2-inches (Standard Van and ASBA Seat)
2"	2	4	3½-inches (Office Style Van Seat) 3-inches (Standard Van and ASBA Seat)

NOTE: A maximum of two (2) sets of spacers can be installed.

1. Remove the seat. Refer to [Removing/Installing the Seat Assembly](#) on page 50.
2. Perform one (1) of the following:
 - For Standard Van Seats - Remove the four (4) mounting screws, washers, and locknuts securing the seat adapter plate and four (4) 1-inch adjustment spacers to the seat mounting bracket.
 - For Office Style Van Seats - Remove the four (4) mounting screws and washers securing the seat adapter plate and four (4) 1-inch adjustment spacers to the seat base.

3. Perform one (1) of the following:

- To Reduce Seat Height by One (1) Inch - Remove one (1) set of 1-inch adjustment spacers to achieve desired height.
- To Reduce Seat Height by Two (2) Inches - Remove both sets of 1-inch adjustment spacers to achieve desired height.

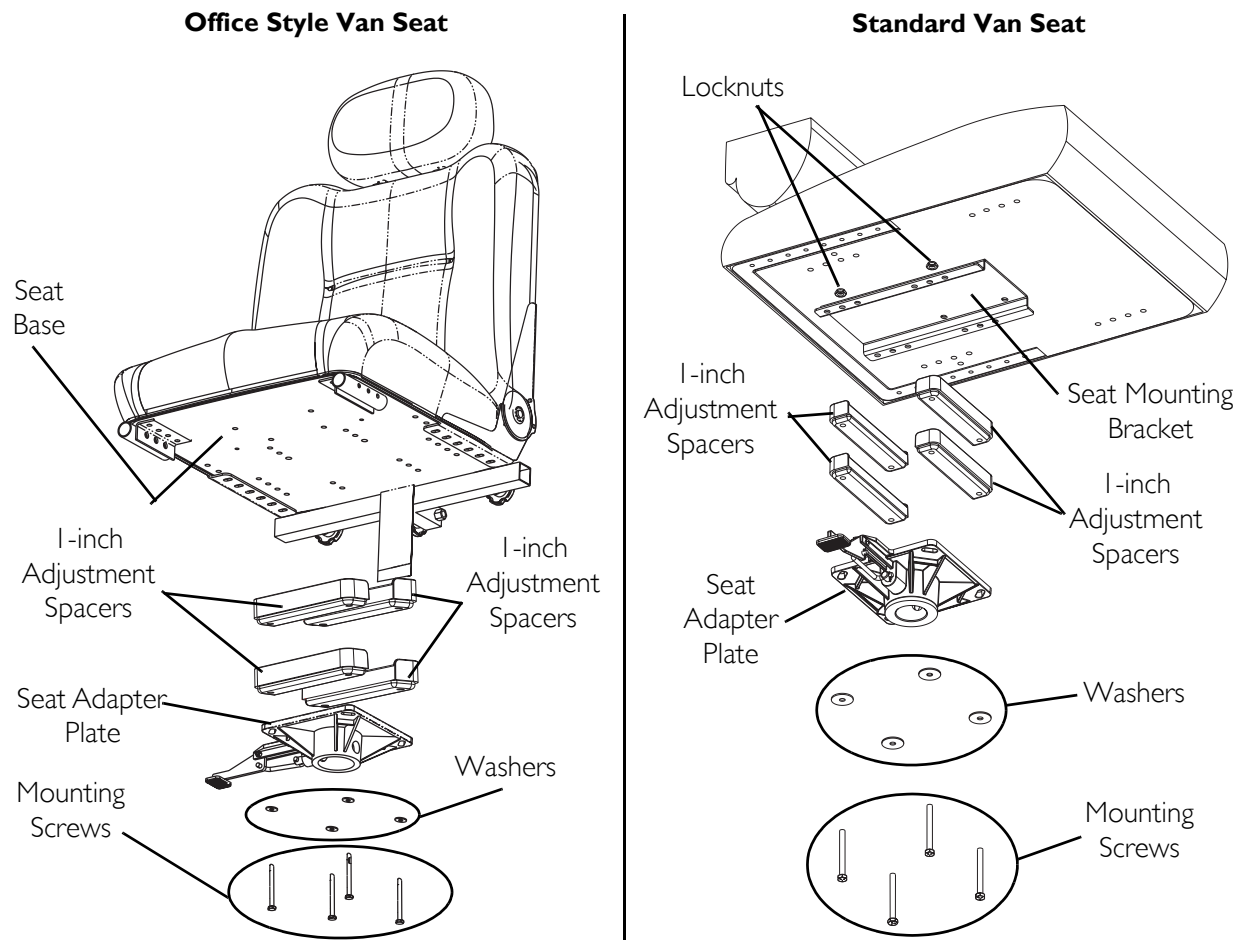
4. Perform one (1) of the following:

NOTE: The seat comes installed with four (4) 1-inch spacers secured by either 3-inch or 3½-inch mounting screws. 1-inch, 2-inch, and 2½-inch mounting screws are supplied with the seat.

- For Seat Height Reduced by One (1) Inch -
 - i. Align the mounting holes on the seat adapter plate with the mounting holes on the adjustment spacers and either the seat mounting bracket on standard van seats or the seat base on office style van seats.
 - ii. Install the seat adapter to seat base using the 2-inch mounting screws and existing washers and locknuts (if required). Securely tighten.
 - For Seat Height Reduced by Two (2) Inches -
 - i. Align the mounting holes on the seat adapter plate with the mounting holes on the adjustment spacers and either the seat mounting bracket on standard van seats or the seat base on office style van seats.
 - ii. Install the seat adapter to seat base using the 1-inch mounting screws and existing washers and locknuts (if required). Securely tighten.
5. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 50.

CAUTION

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



*NOTE: Three-inch and three-and-a-half mounting screws shown.
One-inch and two-inch mounting screws are supplied with the seat.*

FIGURE 7.7 Adjusting the Seat Height - M6I Wheelchair Only - Van Seat

ASBA Seat

NOTE: For this procedure, refer to FIGURE 7.8.

NOTE: The seat comes installed with two (2) sets of two (2) 1-inch spacers. To reduce the seat height by one (1) inch, one (1) set of the 1-inch spacers must be removed. To reduce the seat height by two (2) inches, both sets of the 1-inch spacers must be removed.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
2. Remove the four (4) mounting screws, washers, and locknuts securing the seat adapter plate and four (4) 1-inch adjustment spacers to the seat base.

3. Perform one (1) of the following:

- To Reduce Seat Height by One (1) Inch - Remove one (1) set of 1-inch adjustment spacers to achieve desired height.
- To Reduce Seat Height by Two (2) Inches - Remove both sets of 1-inch adjustment spacers to achieve desired height.

4. Perform one (1) of the following:

NOTE: The seat comes installed with four (4) spacers secured by 3-inch mounting screws. 1-inch and 2-inch mounting screws are supplied with the seat.

- For Seat Height Reduced by One (1) Inch -
 - 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 2-inch mounting screws and the existing washers and locknuts. Securely tighten.
 - For Seat Height Reduced by Two (2) Inches -
 - 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 1-inch mounting screws and the existing washers and locknuts. Securely tighten.
5. Reinstall the seat. Refer to [Removing/Installing the Seat Assembly](#) on page 50.

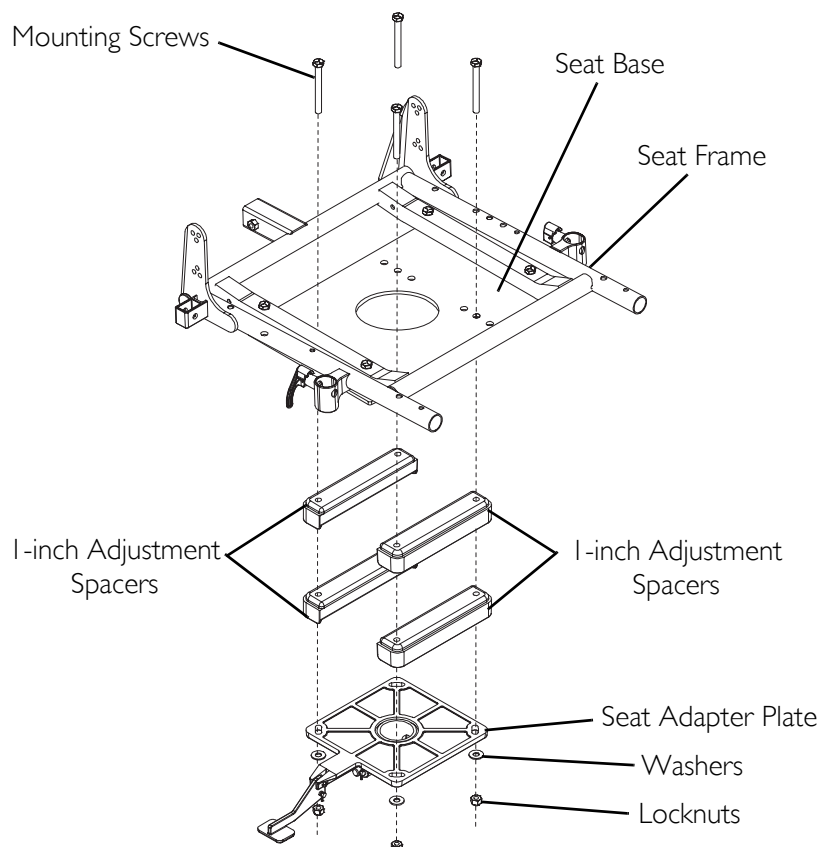


FIGURE 7.8 Adjusting the Seat Height - M6I Wheelchair Only - ASBA Seat

Adjusting Seat Position on Seat Base

ASBA Seat

⚠ WARNING

DO NOT attempt to adjust the seat position of the **ASBA** seat on the seat base. This procedure **MUST** be performed by a qualified technician.

Van Seat

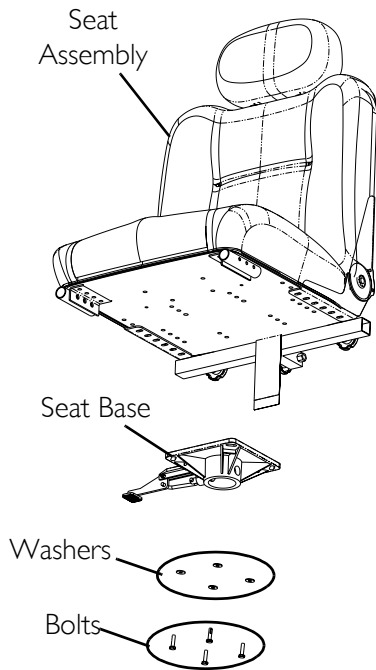
⚠ WARNING

Refer to the table in **FIGURE 7.9** for proper seat post mounting positions. For users over 220 lbs - seat **MUST** be in the 1-inch back position (**FIGURE 7.9**) when using seat post mounting holes 3, 4 and 5 (**FIGURE 7.6**). Refer to **Adjusting the Seat Height** on page 52.

NOTE: For this procedure, refer to FIGURE 7.9.

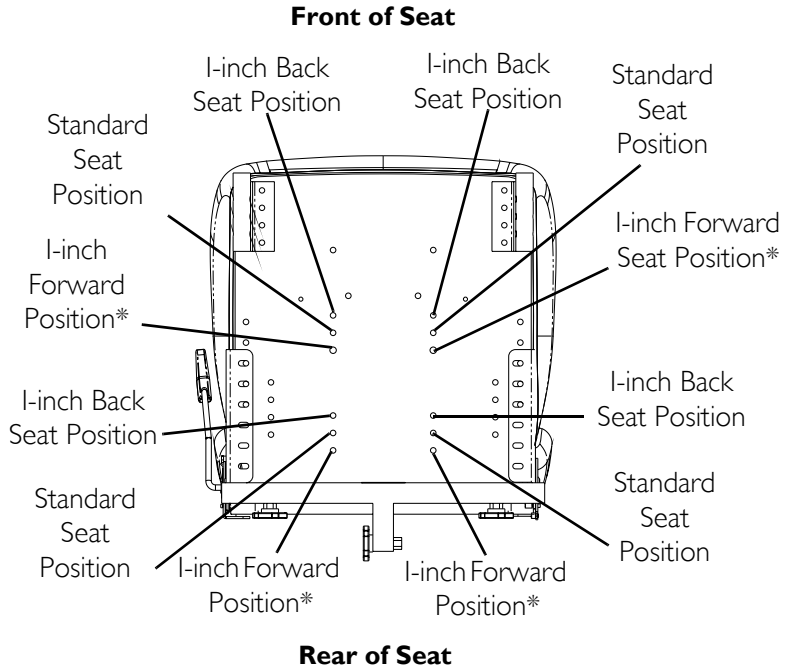
NOTE: This procedure is for Van Seat Models only.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
2. Remove the four (4) mounting screws and washers securing the seat adapter plate to the seat base (**FIGURE 7.9**).
3. Separate the seat adapter plate from the seat base.
4. Refer to **FIGURE 7.9** 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 (4) mounting screws and washers, secure the seat base to the seat assembly. Securely tighten.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 50.



NOTE: Office style van seat is shown. Standard van seat adjusts the same way.

DETAIL "A" - SEAT POSITION



*NOTE: For users over 220 lbs - DO NOT use 1-inch forward position.

DETAIL "B" - PROPER SEAT POSITIONS FOR 18-INCH DEEP BACK SETTING

Y - Use N/A - DO NOT Use

WEIGHT LIMITATION	SEAT POST MOUNTING HOLE	1-INCH BACK	STANDARD	1-INCH FORWARD
300 LBS	1	Y	Y	N/A
	2	Y	Y	N/A
	3	Y	N/A	N/A
	4	Y	N/A	N/A
	5	Y	N/A	N/A
220 LBS	1	Y	Y	Y
	2	Y	Y	N/A
	3	Y	N/A	N/A
	4	Y	N/A	N/A
	5	Y	N/A	N/A
150 LBS	1	Y	Y	Y
	2	Y	Y	Y
	3	Y	Y	Y
	4	Y	Y	Y
	5	Y	Y	Y

FIGURE 7.9 Adjusting Seat Position on Seat Base

Replacing the Seat Positioning Strap

⚠ WARNING

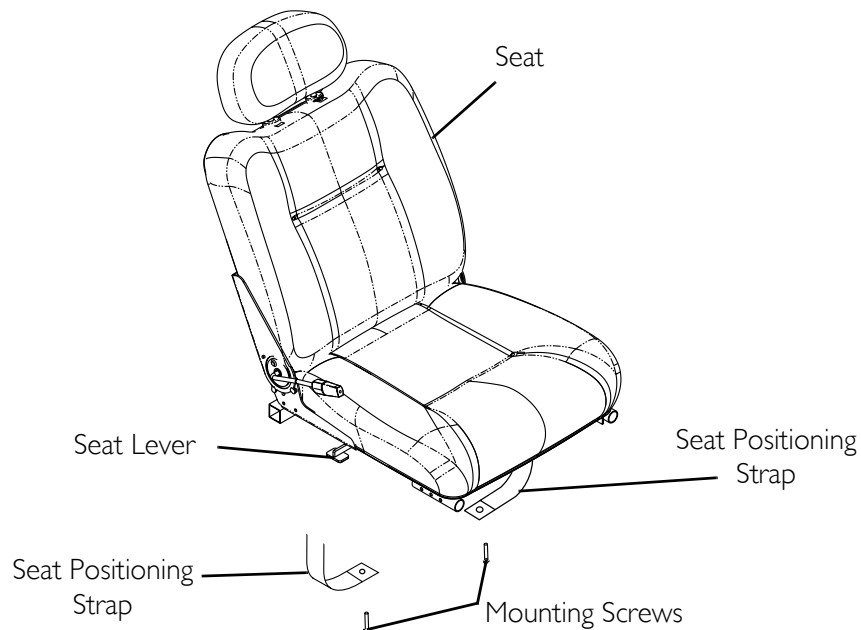
ALWAYS wear your seat positioning strap.

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.

Van Seat

NOTE: For this procedure, refer to FIGURE 7.10.

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



NOTE: Office style van seat is shown. Standard van seat adjusts the same way.

FIGURE 7.10 Replacing the Seat Positioning Strap - Van Seat

ASBA Seat

NOTE: For this procedure, refer to FIGURE 7.11.

NOTE: This procedure is for Adjustable Seat Back Angle (ASBA) seats only.

1. Remove the seat cushion from the seat pan.
2. Move the flip back armrests out of the way. Refer to [Positioning/Adjusting Flip Back Armrests](#) on page 50.
3. Remove the two (2) mounting screws, quick release pin tabs, spacers, and locknuts that secure the seat pan and seat positioning straps to the seat frame.
4. Remove the two (2) halves of the seat positioning strap from the rear seat frame.
5. Reposition the two (2) new seat positioning strap halves underneath seat rails.
6. Reinstall the two (2) mounting screws, quick release pin tabs, spacers, and locknuts that secure the seat pan and seat positioning straps to the seat frame and torque to 75 inch-pounds.
7. Reinstall the seat cushion onto the seat pan.

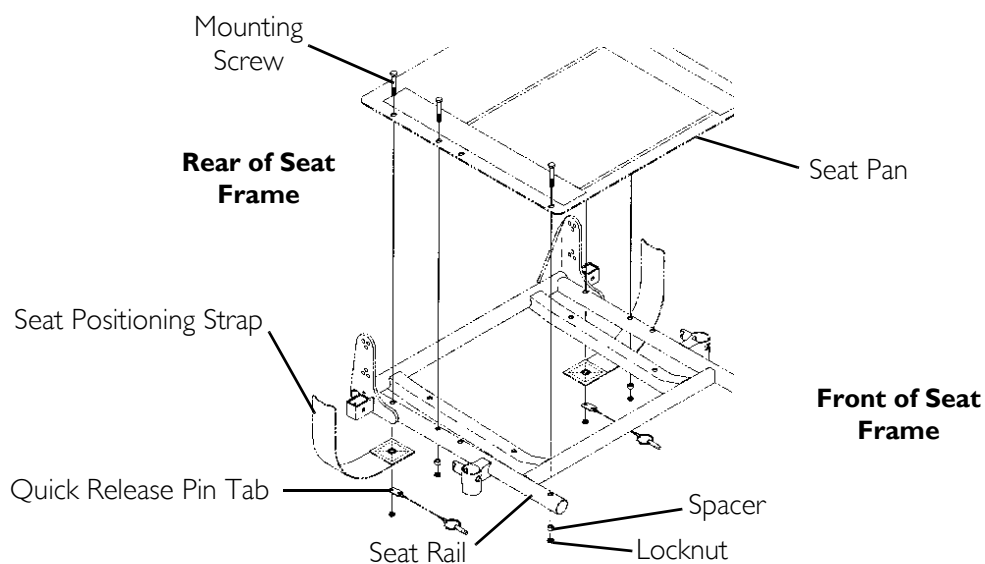


FIGURE 7.11 Replacing the Seat Positioning Strap - ASBA Seat

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

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 are engaged with the outer edge of the tube - otherwise, injury and/or damage may result.

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 are engaged with the outer edge of the tube (Detail "A" of FIGURE 8.1).

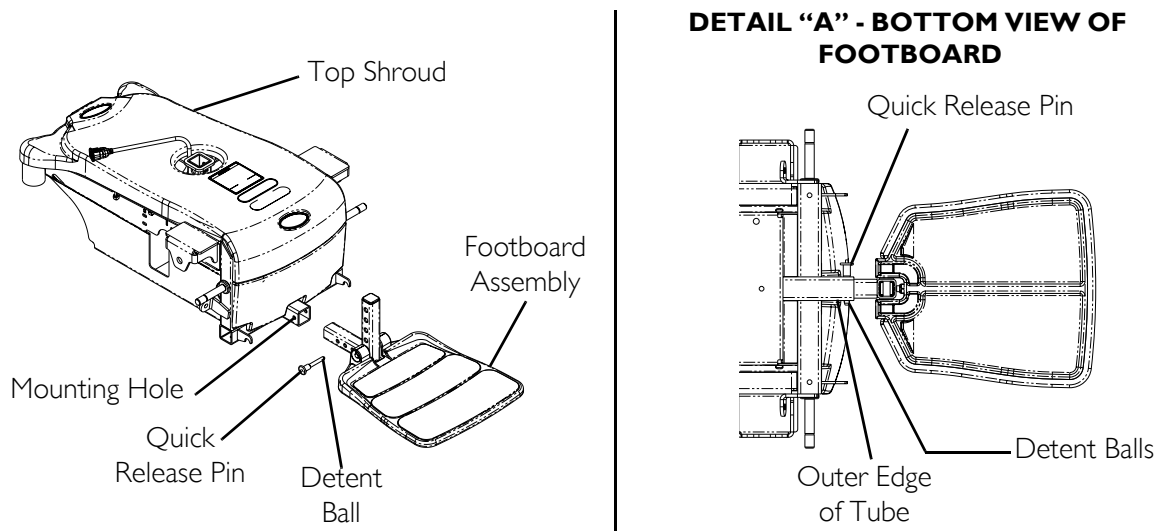


FIGURE 8.1 Removing/Installing the Footboard Assembly

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.

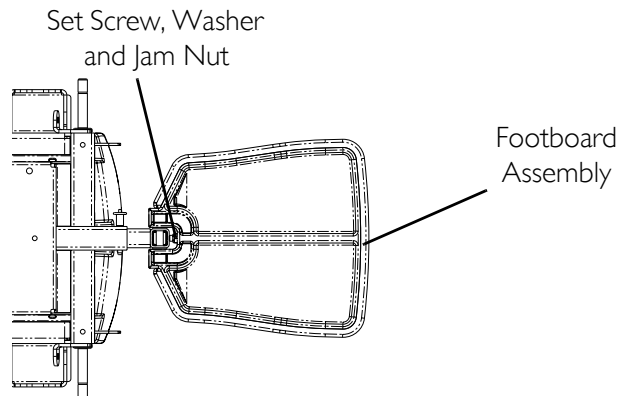


FIGURE 8.2 Adjusting the Footboard Assembly - Angle

Depth

NOTE: For this procedure, refer to FIGURE 8.1.

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

⚠ WARNING

Make sure the detent balls are engaged with the outer edge of the tube - otherwise, injury and/or damage may result.

2. Adjust footboard to one (1) of three (3) mounting positions.
3. Install the quick release pin. Make sure the detent balls are engaged with the outer edge of the tube (Detail "A" of FIGURE 8.1).

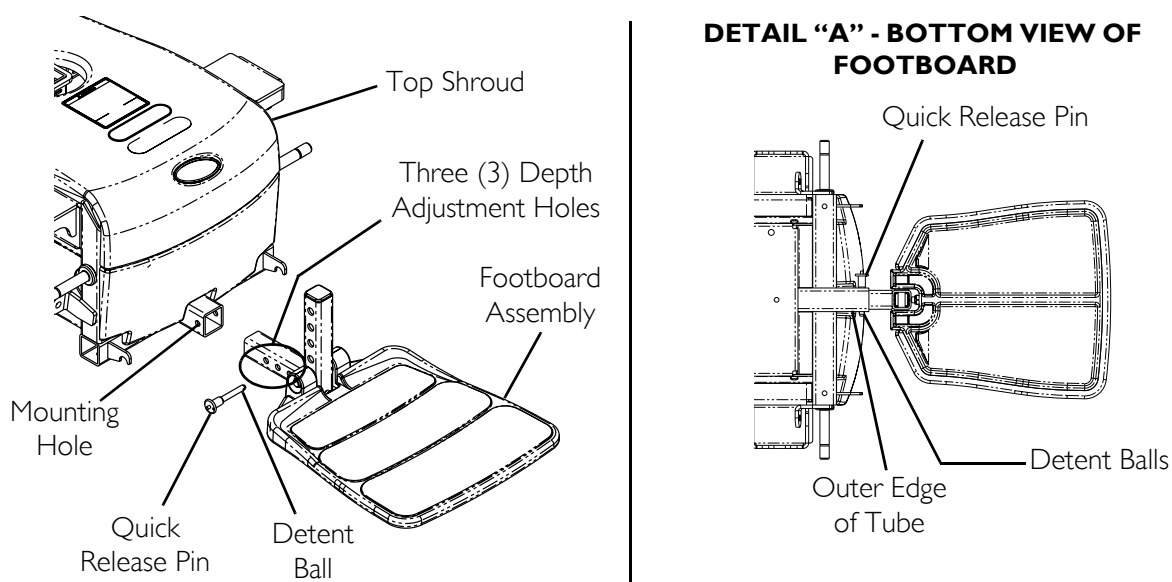


FIGURE 8.1 Adjusting the Footboard Assembly - Depth

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/Removing Front Riggings

CAUTION

If front riggings are used, then the seat **MUST** be adjusted to the highest mounting position - otherwise damage may occur.

NOTE: For this procedure, refer to FIGURE 9.1.

Installing

1. If necessary, remove the footboard. Refer to [Removing/Installing the Footboard Assembly](#) on page 61.
2. Turn front rigging to the side (open footplate is perpendicular to wheelchair) and position mounting holes in the front rigging hinge plates with hinge pins on the wheelchair frame.
3. Install the front rigging hinge plates onto the hinge pins on the wheelchair frame.
4. Push the front rigging towards the inside of the wheelchair until it locks into place.

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

5. Repeat STEPS 1-4 for opposite side of wheelchair.

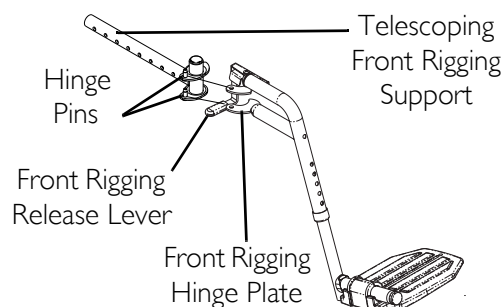


FIGURE 9.1 Installing/Removing Front Riggings

Removing

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

Adjusting Footrest Height

Model PHWH93

NOTE: For this procedure, refer to FIGURE 9.2.

1. Remove any accessories from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to Installing/Removing Front Riggings on page 64.

NOTE: Lay footrest on a flat surface to simplify section.

3. Remove the hex bolt, coved washers and locknut that secure the lower footrest to the footrest support.
4. Reposition the lower footrest to the desired height.
5. Reinstall hex bolt, coved washers and locknut that secure lower footrest to footrest support. Tighten securely.
6. Repeat STEPS 1-5 for the opposite side of the wheelchair footrest, if necessary.
7. Reinstall the footrest(s) onto the wheelchair. Refer to Installing/Removing Front Riggings on page 64.
8. Reinstall any accessories onto the footrest(s).

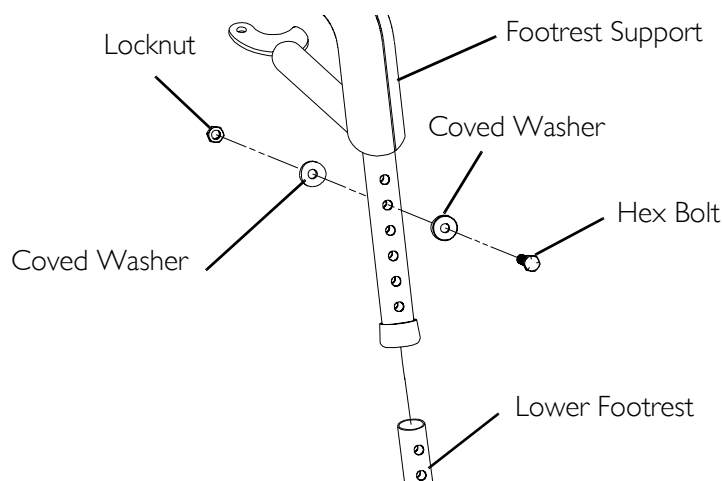


FIGURE 9.2 Adjusting Footrest Height - Model PHWH93

Model PH904A and PHAL4A

NOTE: For this procedure, refer to FIGURE 9.3.

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

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

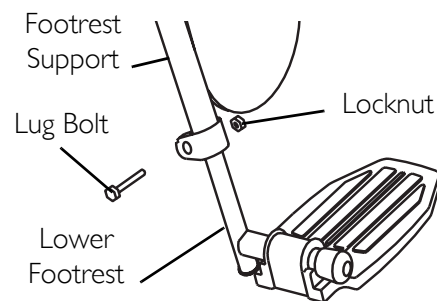


FIGURE 9.3 Adjusting Footrest Height - Model PH904A and PHAL4A

Replacing Heel Loops

NOTE: For this procedure, refer to FIGURE 9.4.

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

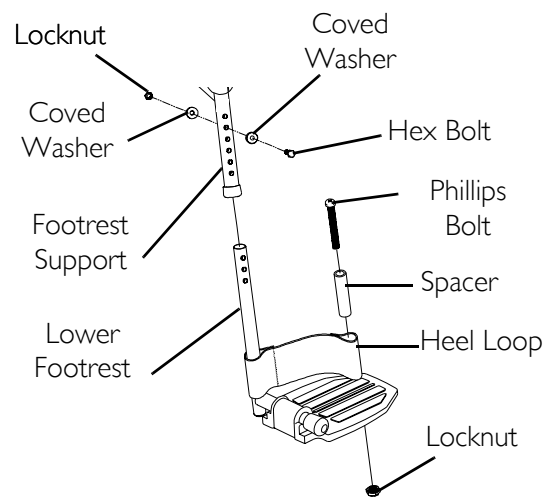


FIGURE 9.4 Replacing Heel Loops

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

Raising/Lowering Elevating Front Riggings

NOTE: For this procedure, refer to FIGURE 9.5.

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

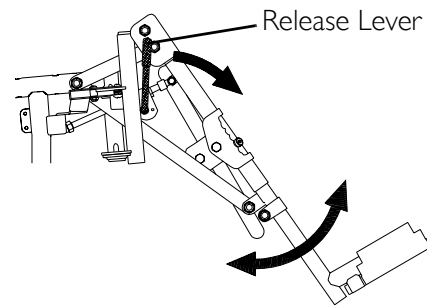


FIGURE 9.5 Raising/Lowering Elevating Front Riggings

Adjusting/Replacing Telescoping Front Rigging Supports

Office Style Seat

NOTE: For this procedure, refer to FIGURE 9.6.

NOTE: When adjusting the telescoping front rigging support depth, ensure the footplate does not interfere with the caster wheel rotation.

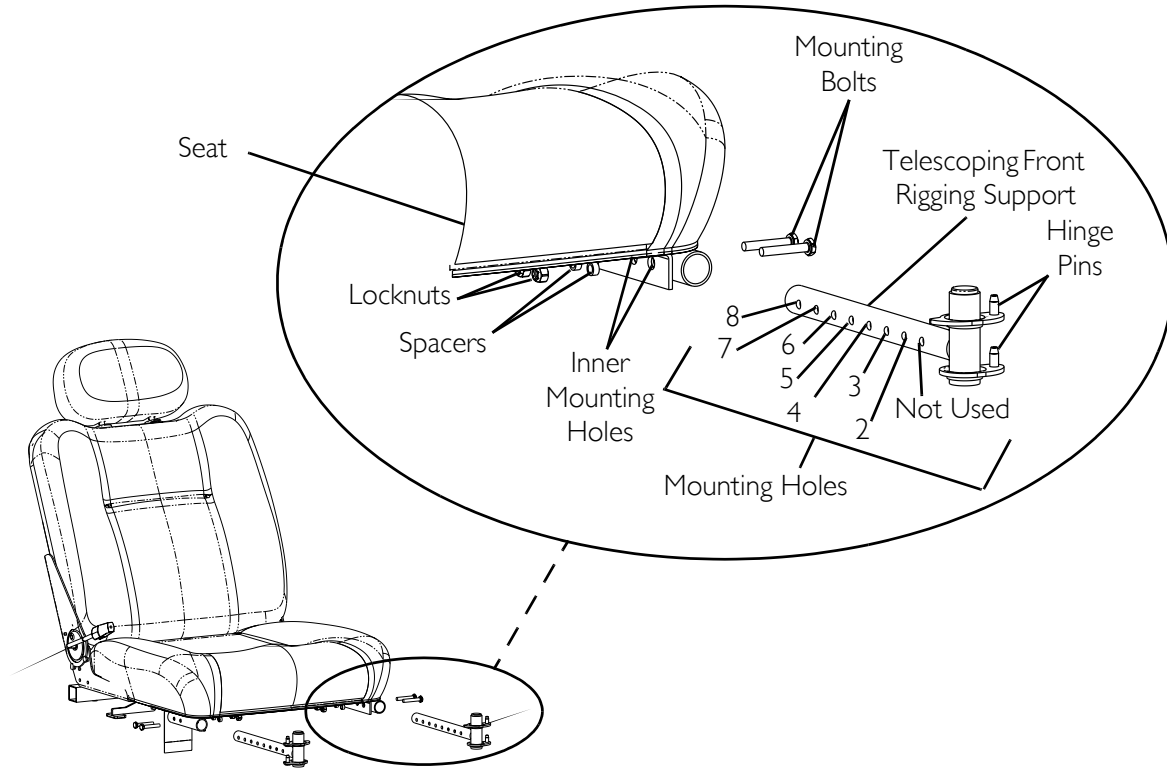
NOTE: Telescoping front rigging supports may be extended up to 2 inches from the wheelchair frame in 1-inch increments. This adjustment does not affect seat depth.

NOTE: When installing the front riggings support tubes, ensure that the hinge pins are on the outside of the chair facing away from the seat frame.

1. Remove the seat. Refer to [Removing/Installing the Seat Assembly](#) on page 50.
2. Remove the two (2) socket bolts and locknuts that secure telescoping front rigging support to the seat frame.
3. Perform one (1) of the following:
 - Adjusting - Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 9.6.
 - Replacing -
 - i. Remove the existing telescoping front rigging support from the wheelchair frame.
 - ii. Insert the new telescoping front rigging support into the seat frame.
 - iii. Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 9.6.

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

4. Using the two (2) socket bolts and locknuts, secure the telescoping front rigging support to the seat frame as shown in FIGURE 9.6.
5. If necessary, repeat STEPS 2-4 on remaining telescoping front rigging support.
6. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 50.



FRONT RIGGING MODEL	STANDARD POSITION		1 INCH OUT		2 INCHES OUT	
	18 inches wide	20 inches wide	18 inches wide	20 inches wide	18 inches wide	20 inches wide
PHW93	Holes 4 and 5	Holes 4 and 5	Holes 5 and 6	Holes 5 and 6	Holes 6 and 7	Holes 6 and 7
PH904A and PHAL4A	Holes 3 and 4	Holes 3 and 4	Holes 4 and 5	Holes 4 and 5	Holes 5 and 6	Holes 5 and 6

FIGURE 9.6 Adjusting/Replacing Telescoping Front Rigging Supports - Office Style Seat

Standard Seat

NOTE: For this procedure, refer to FIGURE 9.7.

NOTE: When adjusting the telescoping front rigging support depth, ensure the footplate does not interfere with the caster wheel rotation.

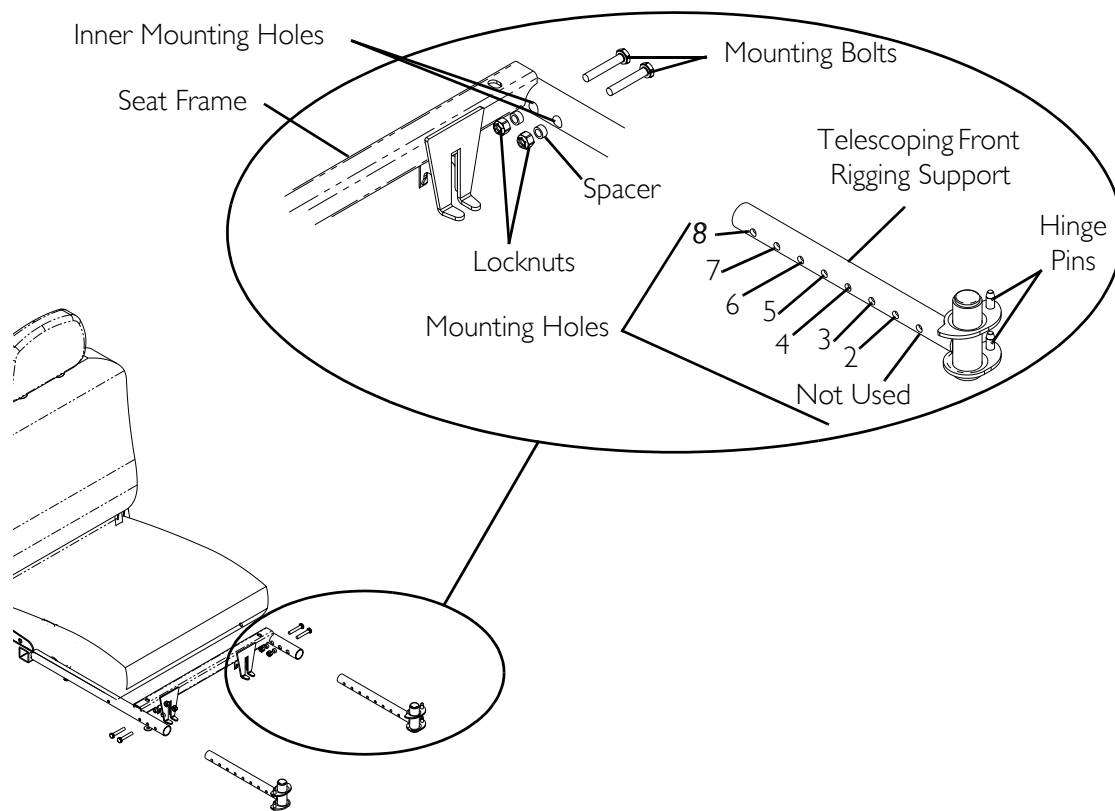
NOTE: Telescoping front rigging supports may be extended up to 2-inches from the wheelchair frame in 1-inch increments. This adjustment does not affect seat depth.

NOTE: When installing the front riggings support tubes, ensure that the hinge pins are on the outside of the chair facing away from the seat frame.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 35.
2. Remove the two (2) socket bolts and locknuts that secure telescoping front rigging support to the seat frame.
3. Perform one (1) of the following:
 - Adjusting - Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 9.7.
 - Replacing -
 - i. Remove the existing telescoping front rigging support from the wheelchair frame.
 - ii. Insert the new telescoping front rigging support into the seat frame.
 - iii. Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 9.7.

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

4. Using the two (2) socket bolts and locknuts, secure the telescoping front rigging support to the seat frame as shown in FIGURE 9.7.
5. If necessary, repeat STEPS 2-4 on remaining telescoping front rigging support.
6. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 35.



FRONT RIGGING MODEL	STANDARD POSITION		1 INCH OUT		2 INCHES OUT	
	18 inches wide	20 inches wide	18 inches wide	20 inches wide	18 inches wide	20 inches wide
PHW93	Holes 4 and 5	Holes 4 and 5	Holes 5 and 6	Holes 5 and 6	Holes 6 and 7	Holes 6 and 7
PH904A and PHAL4A	Holes 3 and 4	Holes 3 and 4	Holes 4 and 5	Holes 4 and 5	Holes 5 and 6	Holes 5 and 6

FIGURE 9.7 Adjusting/Replacing Telescoping Front Rigging Supports - Standard Seat

ASBA Seat

NOTE: For this procedure, refer to FIGURE 9.8.

1. Remove the two (2) mounting screws, spacers and locknuts that secure the telescoping front rigging support to the seat frame.
2. Perform one (1) of the following:
 - Slide existing telescoping front rigging support to one (1) of three (3) depth positions.
 - Remove existing telescoping front rigging.
3. Secure telescoping front rigging at desired depth with existing two (2) mounting screws, spacers, and locknuts. Securely tighten.

NOTE: The two (2) telescoping front rigging supports can be positioned at different depths depending on the need of the user.

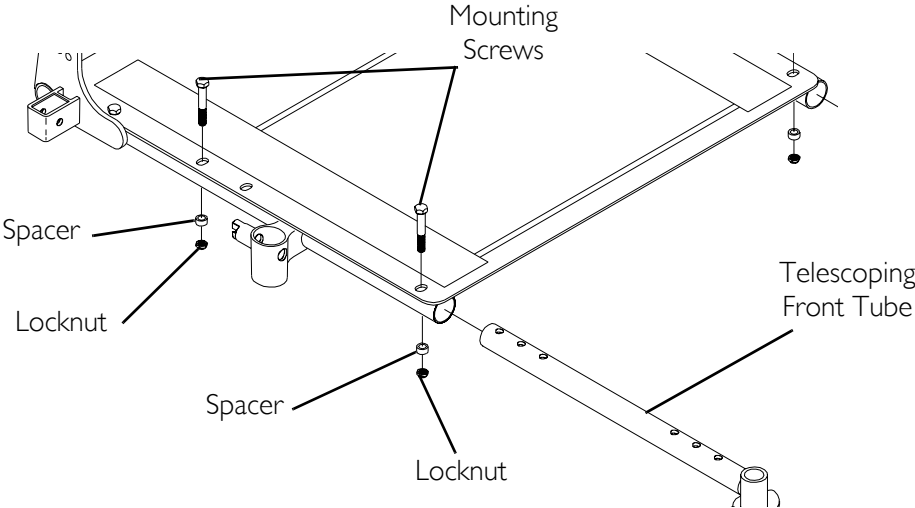


FIGURE 9.8 Adjusting/Replacing Telescoping Front Rigging Supports - ASBA Seat

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.

Replacing the Flat Free Tires on the Wheel Rim

⚠ WARNING

DO NOT attempt to replace flat free tires. This procedure **MUST** be performed by a qualified technician.

NOTE: During initial use of the wheelchair, the user may experience flat spots on the wheels. Flat spots will vanish with continued use of the wheelchair.

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 90.
2. M61 Wheelchairs Only - Remove the joystick cable from the clip on the top shroud.
3. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
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. M61 Wheelchairs Only - 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 50.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 90.

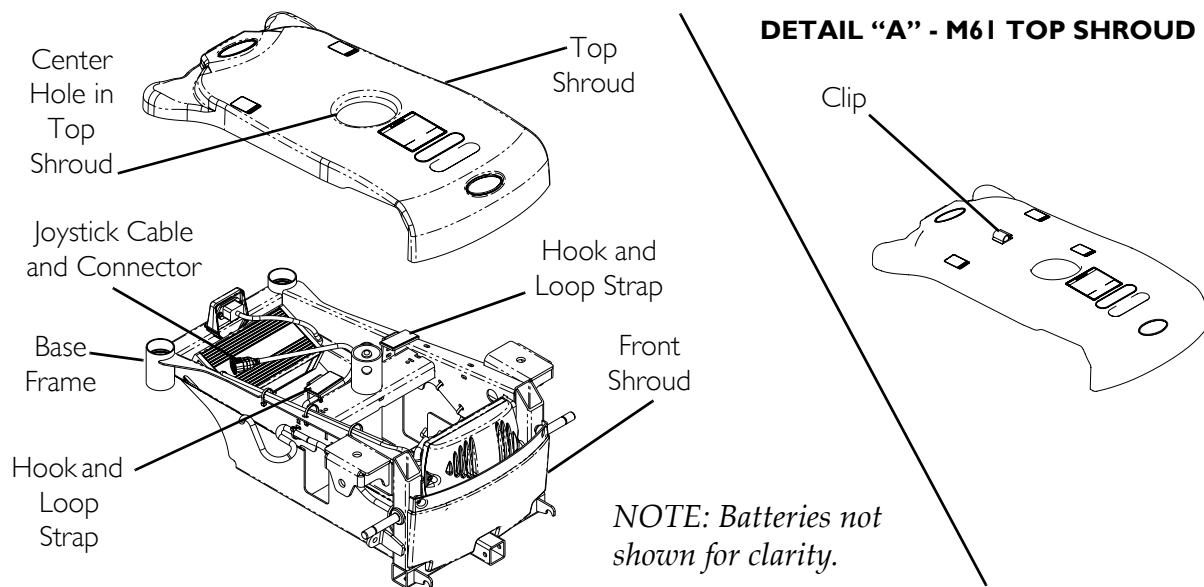


FIGURE 10.1 Removing/Installing the Top Shroud

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 (1) 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.

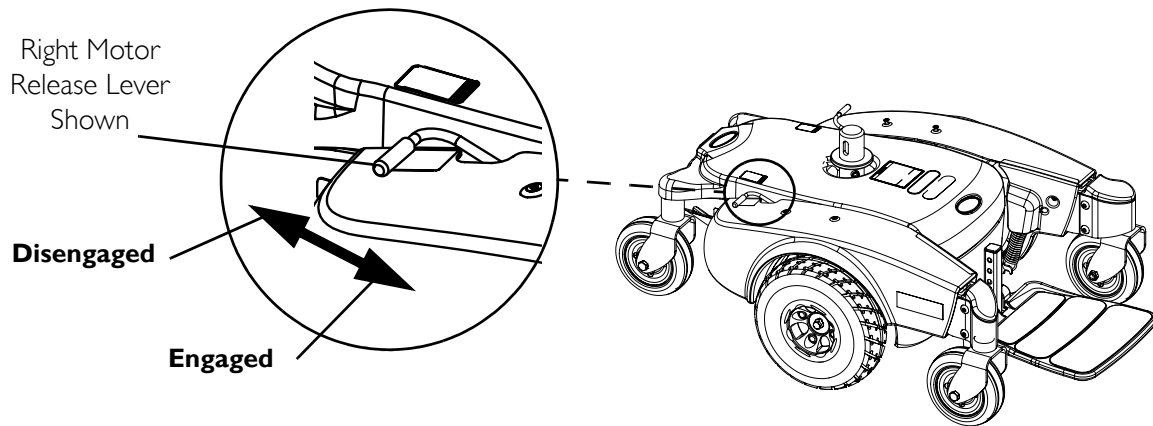


FIGURE 10.2 Engaging/Disengaging Motor Release Lever

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 (2) 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 (2) washers and locknut (FIGURE 10.3). Securely tighten.

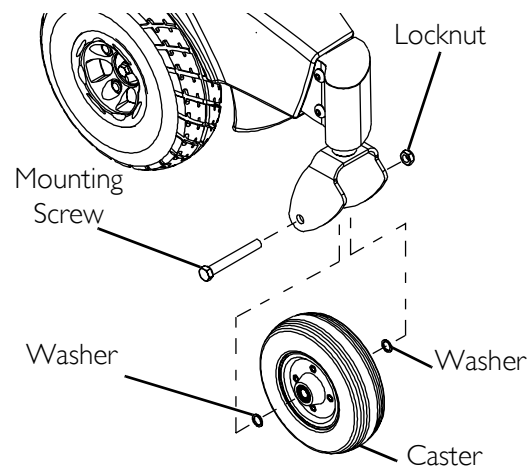


FIGURE 10.3 Replacing Front/Rear Caster Assemblies

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.

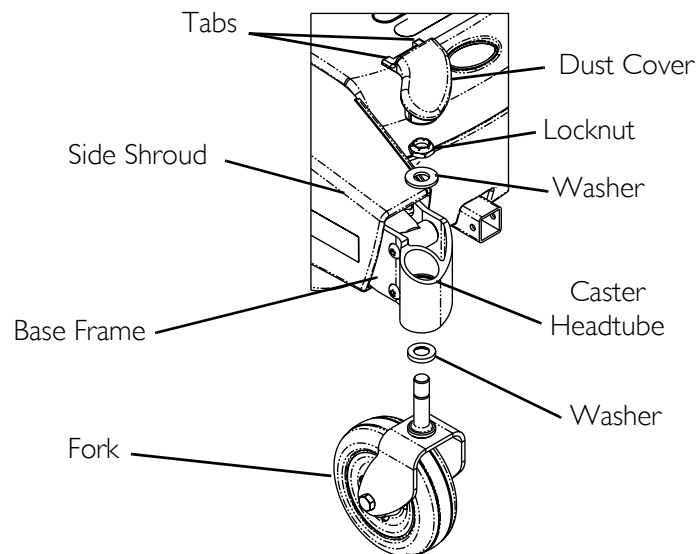


FIGURE 10.4 Adjusting Forks

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 and chemical goggles or face shields is recommended when working with batteries.

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

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

Use UI 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 cable(s) to contact both battery posts at the same time. An electrical short may occur and serious personal injury or damage may occur.

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

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

Using the Proper Batteries

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.

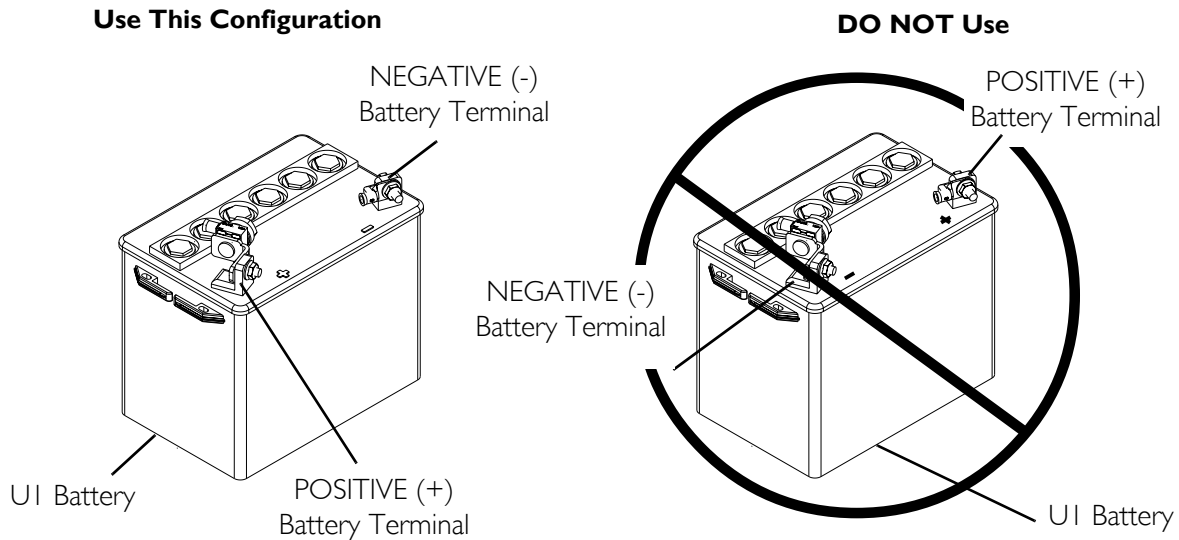


FIGURE 11.1 Using the Proper Batteries

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

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 90.
3. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
4. Remove the top shroud. Refer to Removing/Installing the Top Shroud on page 72.
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 90.
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 72.
7. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 50.
8. Connect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 90.

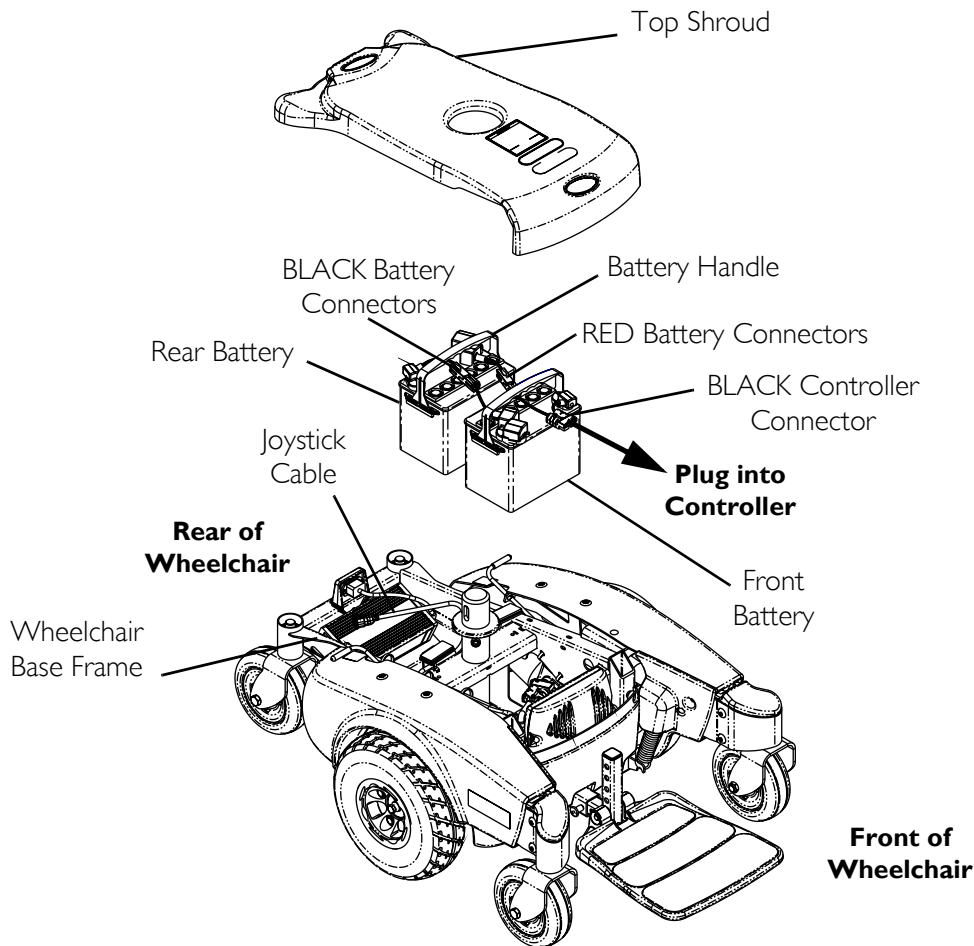


FIGURE 11.2 Removing/Installing Batteries from/into Battery Tray

Connecting/Disconnecting Battery Cables

Connecting Battery Cables

⚠ WARNING

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

The use of rubber gloves and chemical goggles and face shield is recommended when working with batteries.

⚠ WARNING

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

Battery terminal configuration as shown in Detail “A” of FIGURE 11.4 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 [2] on the front battery and two [2] on the rear battery) MUST be installed prior to use.

NOTE: For this procedure, refer to FIGURE 11.3 and FIGURE 11.4.

1. Install RED battery terminal cap onto RED battery cable (FIGURE 11.3).
2. Install GREY battery terminal cap onto BLACK battery cable (FIGURE 11.3).

CAUTION

When connecting the battery cables to the battery(ies), the battery cable(s) MUST be connected to the battery terminal(s)/post(s), as shown in Detail “A” of FIGURE 11.4 (depending on battery type), otherwise damage to the battery cable may result when installing battery terminal caps.

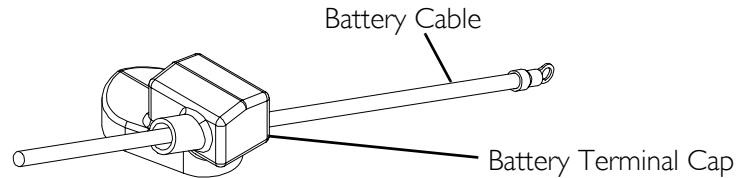


FIGURE 11.3 Connecting Battery Cables

3. Connect battery cable(s) to battery(ies) terminal(s)/post(s) (FIGURE 11.4):
 - A. **NEGATIVE (-) BLACK** battery cable to **NEGATIVE (-)** battery terminal/post.
 - B. **POSITIVE (+) RED** battery cable to **POSITIVE (+)** battery terminal/post.
4. Secure the battery cable(s)/ring terminal(s) to the battery terminal(s)/post(s), **BLACK** to **NEGATIVE (-)** and **RED** to **POSITIVE (+)**, with the provided 1/4-20 x 5/8-inch hex flange screw and hex flange locknut. Securely tighten. Refer to Detail “A” of FIGURE 11.4.
5. Verify all battery cable(s)/ring terminal(s) are correctly installed and securely tightened.
6. Slide terminal cap(s) down battery cable(s) and onto battery clamps (FIGURE 11.3).
7. Secure each terminal cap in place with a tie-wrap [use tie-wraps 11-1/2-inches long] (Detail “B” of FIGURE 11.4).

8. Position the batteries into the wheelchair. Refer to Removing/Installing Batteries from/into Battery Tray on page 77.

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

9. If necessary, charge the battery(ies). Refer to Charging Batteries on page 82.

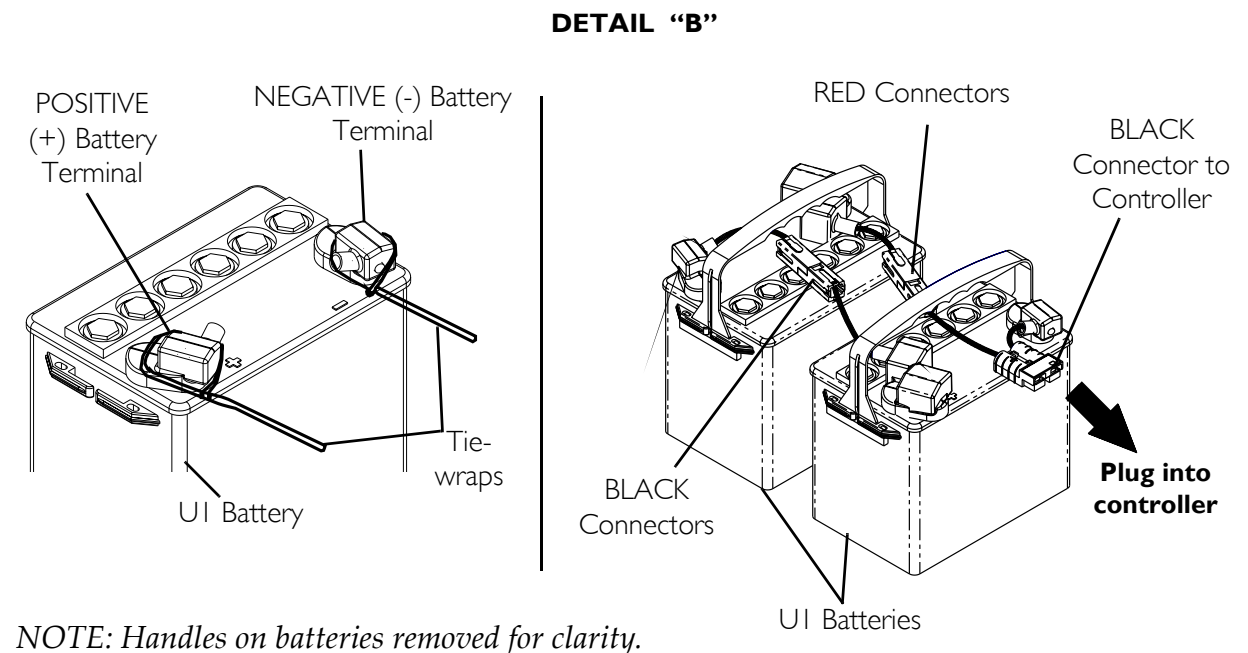
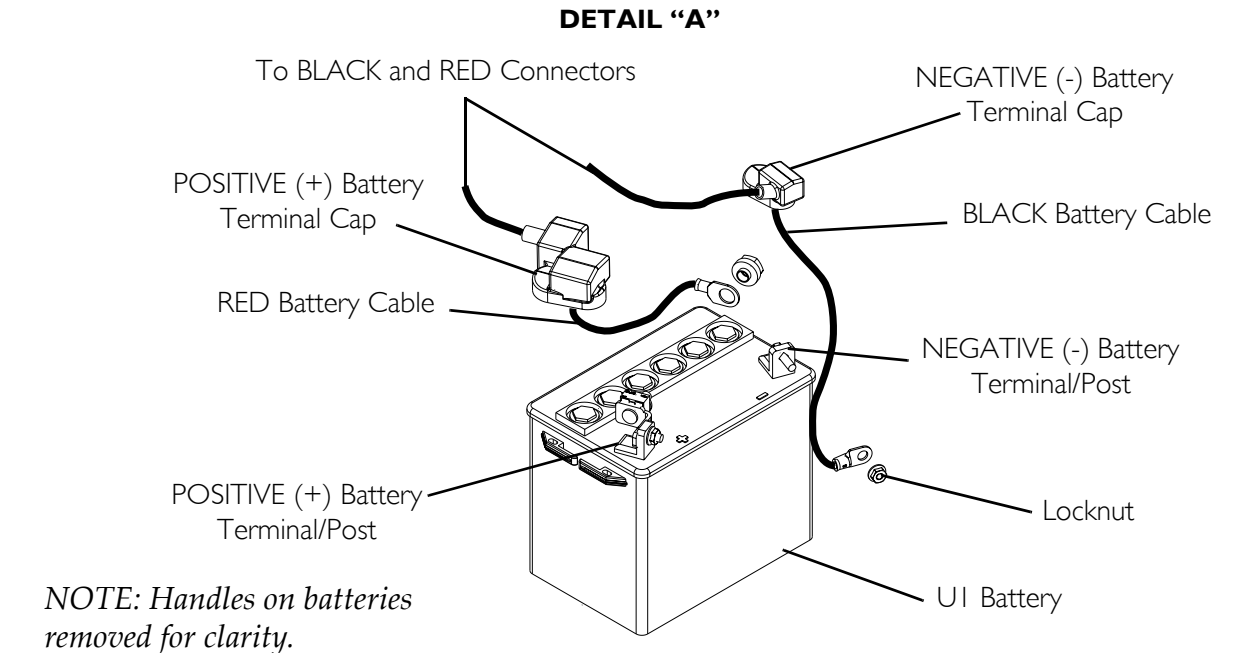


FIGURE 11.4 Connecting/Disconnecting Battery Cables

Disconnecting Battery Cables

⚠ WARNING

The use of rubber gloves and chemical goggles and face shield is recommended when working with batteries.

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

NOTE: For this procedure, refer to FIGURE 11.3 and FIGURE 11.4.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 50.
2. Remove the batteries. Refer to Removing/Installing Batteries from/into Battery Tray on page 77.
3. Cut the tie-wrap that secures the battery terminal cap in place (Detail “B” of FIGURE 11.4).
4. Slide terminal cap(s) UP on the battery cable(s) (FIGURE 11.3).
5. Disconnect POSITIVE (+) RED battery cable from the POSITIVE (+) battery terminal/post (FIGURE 11.4).
6. Disconnect NEGATIVE (-) BLACK battery cable from NEGATIVE (-) battery terminal/post (FIGURE 11.4).

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.

On-Board Battery Charger

WARNING

When using an extension cord, use only a three (3) wire extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected.

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 round grounding plug from the charger AC cable plug or the extension cord plug.

Three (3) prong to two (2) prong adapters should not be used. Use of three (3) prong adapters can result in improper grounding and present a shock hazard to the user.

NOTE: For this procedure, refer to FIGURE 11.5.

NOTE: The On/Off LED indicator light and the charger LED indicator light are located on the top of the charger on the rear of the wheelchair. Open rear shroud to view indicator lights.

1. Plug the female connector of the AC power cord (supplied) to the AC receptacle on the charger and plug in the male connector on the AC power cord into the wall outlet.
2. The On/Off LED indicator is blinking RED, this is abnormal. Unplug AC power cord from the on-board battery charger and wall outlet. Contact Invacare at the number listed on the back page of this manual.
3. When the On/Off LED indicator light is Off, charger is off.
4. When the Charge LED indicator light is YELLOW, the batteries are charging.
5. When the Charge LED indicator light is solid GREEN, the batteries are fully charged (as their condition will allow). At this point, the charger automatically stops charging.
6. When charging is complete, unplug the male connector of the AC power cord from the wall outlet and then unplug the female connector of the AC power cord from the AC receptacle on the charger.

⚠ WARNING

DO NOT operate wheelchair with AC power cord attached to the wheelchair.

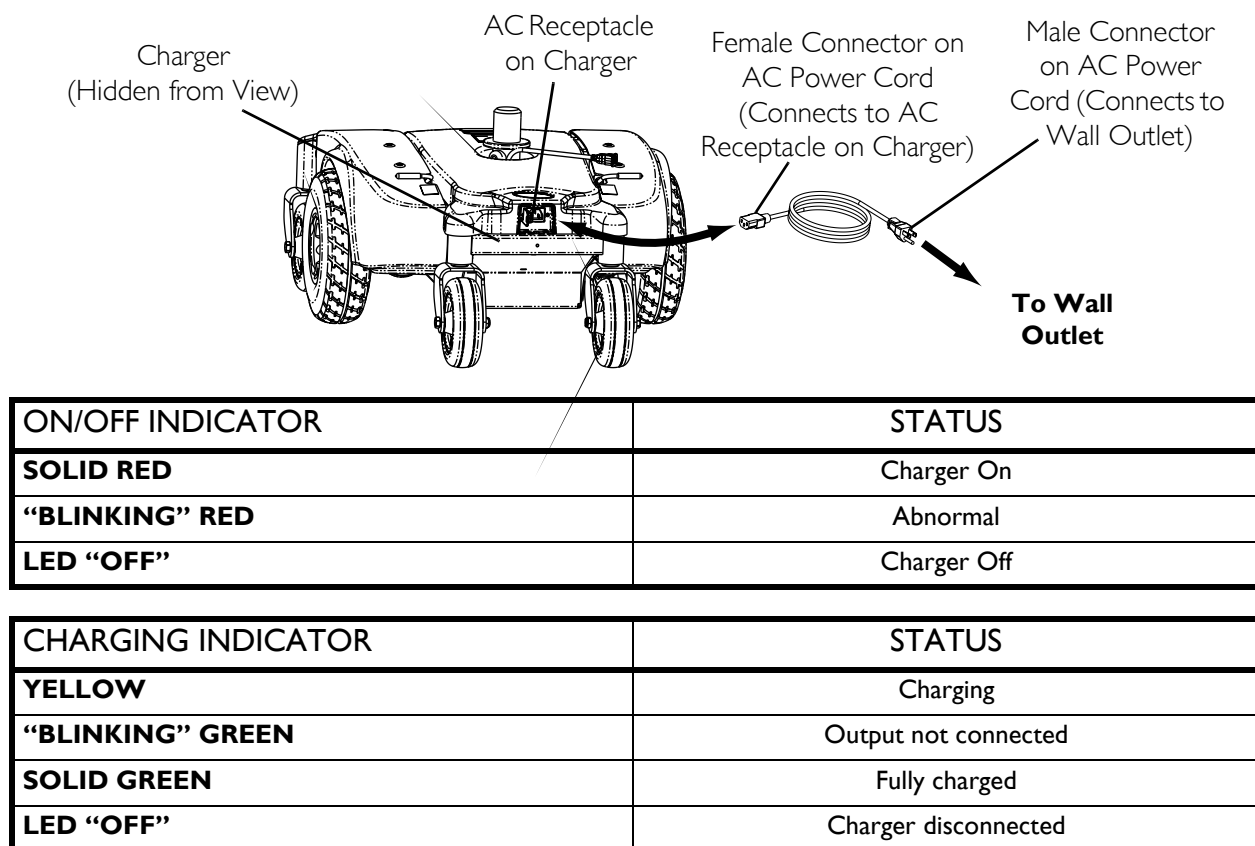


FIGURE 11.5 On-Board Battery Charger

Charging Using An Independent Charger Plugged Into The Joystick

⚠ WARNING

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.

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.

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 11.6.

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 110-volt wall outlet.
3. When charging is complete, turn charger off.
4. Disconnect output cable from joystick charger port.

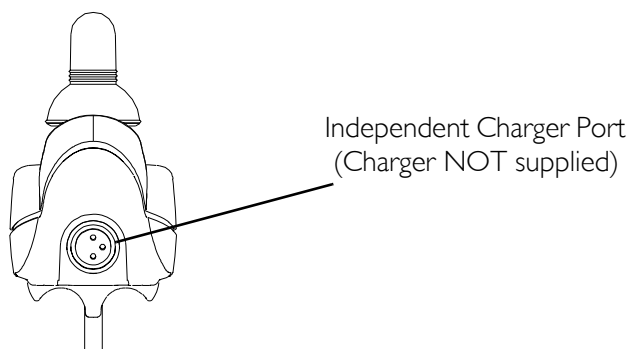


FIGURE 11.6 Charging Using An Independent Charger Plugged Into The Joystick

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

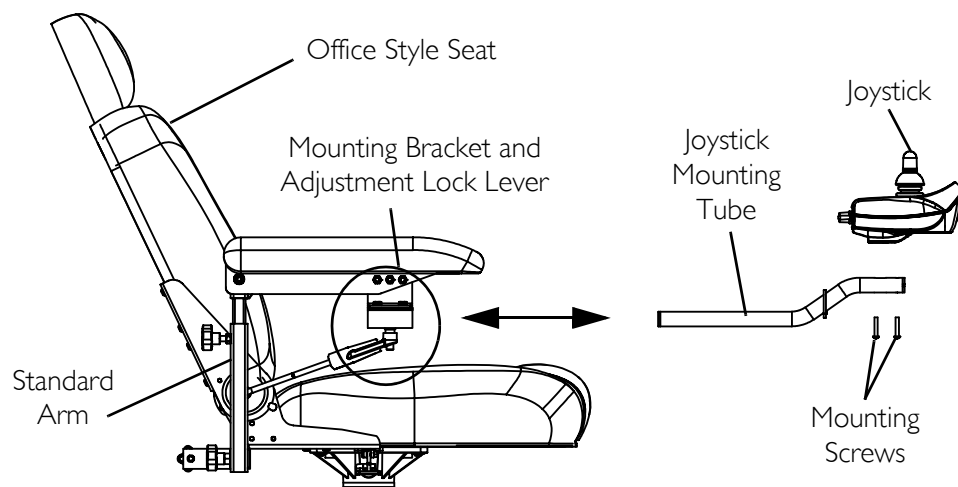
NOTE: For this procedure, refer to FIGURE 12.1.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 90.
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 90.



DETAIL "A" - TIE-WRAP LOCATIONS

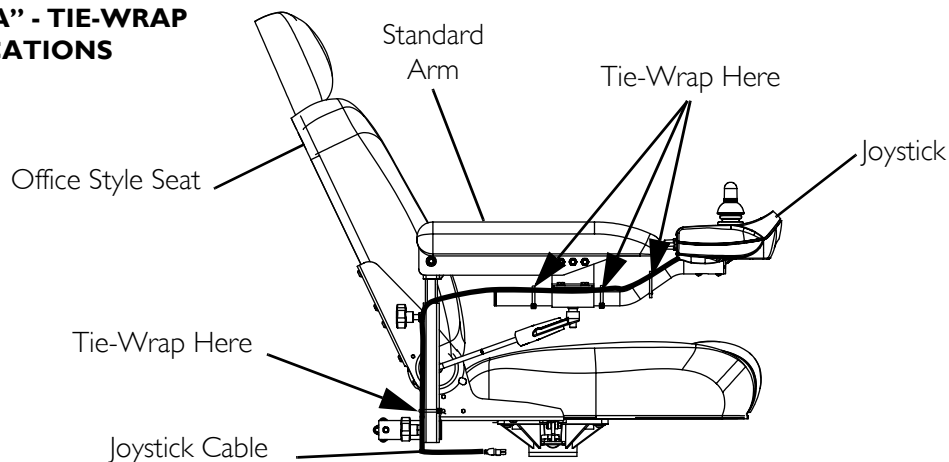


FIGURE 12.1 Removing/Installing the Joystick

Repositioning the Joystick

Van Seat

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 (3) hex mounting screws, spacers and locknuts that secure the mounting bracket to the three (3) 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 (3) hex mounting screws, spacers and locknuts secure the mounting bracket to the three (3) 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.

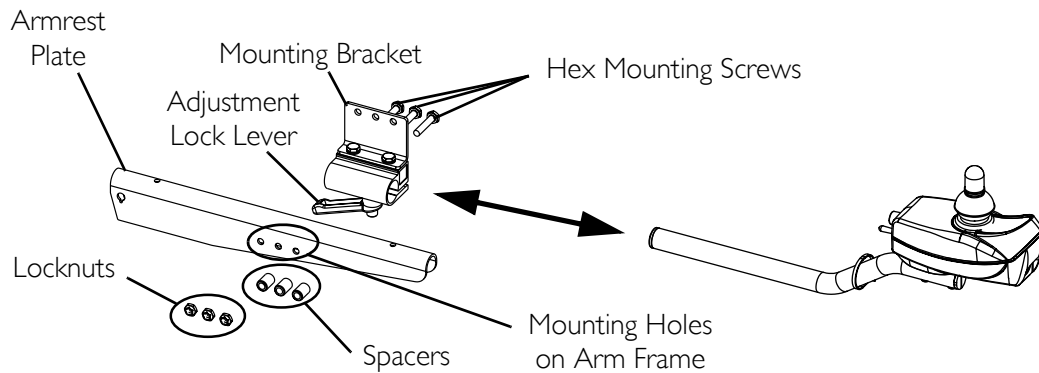


FIGURE 12.2 Repositioning the Joystick

ASBA Seat

NOTE: For this procedure, refer to FIGURE 12.3.

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

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

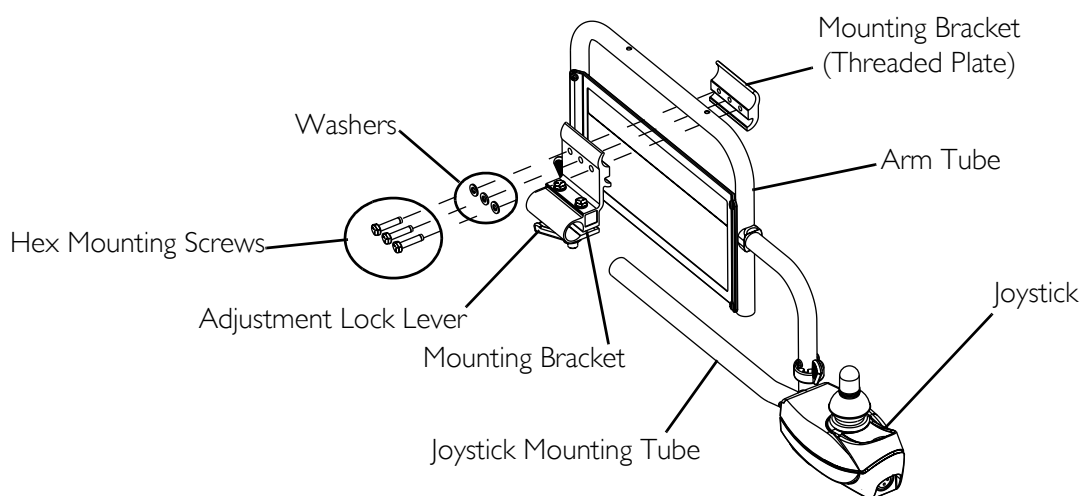


FIGURE 12.3 Repositioning the Joystick - ASBA Seat

Disconnecting/Connecting the Joystick

NOTE: For this procedure, refer to FIGURE 12.4.

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.

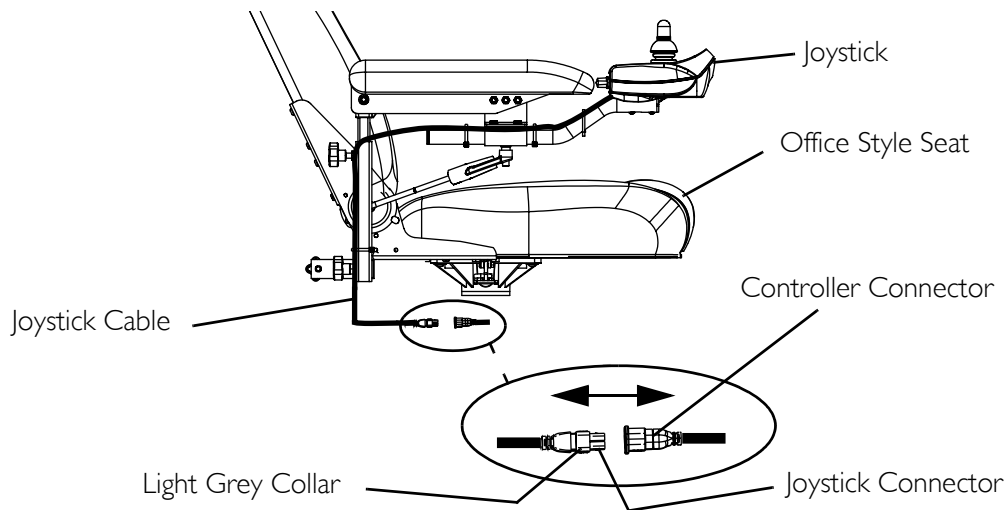


FIGURE 12.4 Disconnecting/Connecting the Joystick

Adjusting/Operating the Quad-Link Retractable Mount

Adjusting Lock/Release Tension

NOTE: For this procedure, refer to FIGURE 12.5.

NOTE: The amount of force required to lock and release the Quad-link can be adjusted by changing the position of the spring loaded ball plungers located on the underside of each Swivel Block.

1. Loosen the ¼-inch locknut.
2. With a slotted screwdriver, turn the ball plunger clockwise to increase tension and counterclockwise to decrease tension.

CAUTION

DO NOT adjust the ball plungers too deep into the swivel blocks or damage to the ball plunger and swivel links will occur. The ball plungers should be adjusted so that a “click” can always be heard when the swivel links are extended and retracted.

3. Once the desired tension is achieved, hold the position of the ball plunger with a slotted screwdriver and tighten the lock nut.
4. Repeat STEPS 1-3 for the other ball plunger.

CAUTION

DO NOT over-tighten the locknut, otherwise damage to the ball plunger will occur.

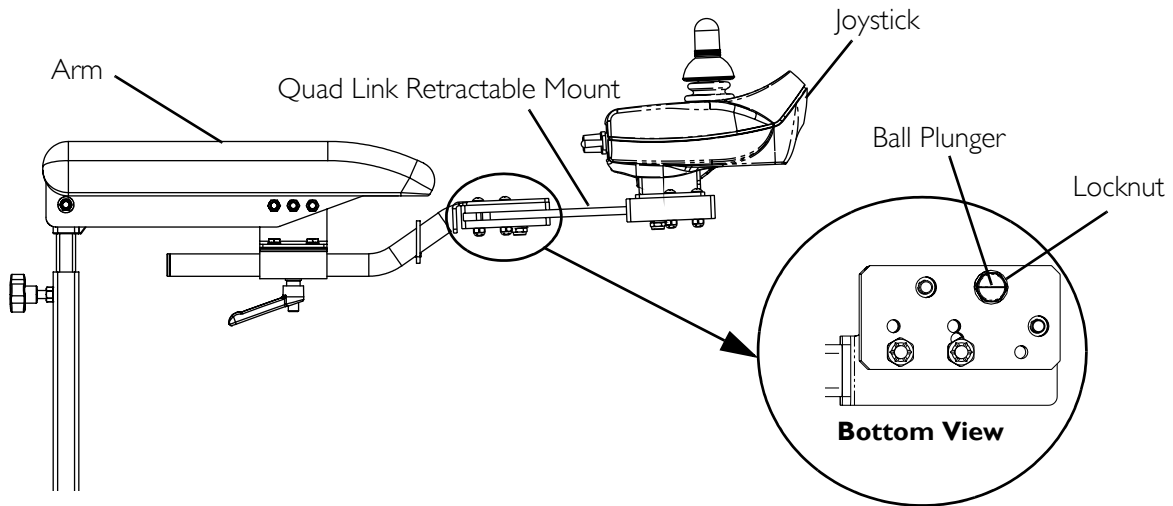


FIGURE 12.5 Adjusting Lock/Release Tension

Operating the Quad-Link Retractable Mount

NOTE: For this procedure, refer to FIGURE 12.6.

1. To retract the joystick from the normal extended position, push outward on the inside surface of the joystick until the quad-link is free.

NOTE: Quad-links work the best when the joystick is pushed outward on the inside (medial) surface of the joystick, near the armrest pad.

2. Push the joystick outward and rearward until the quad-link moves through its complete range and clicks into its fully retracted position.
3. To return the joystick to the normal extended position, push outward on the inside surface of the joystick until the quad-link clicks free.
4. Push the joystick forward and inward until the quad-link moves through its complete range and clicks into its fully extended position.

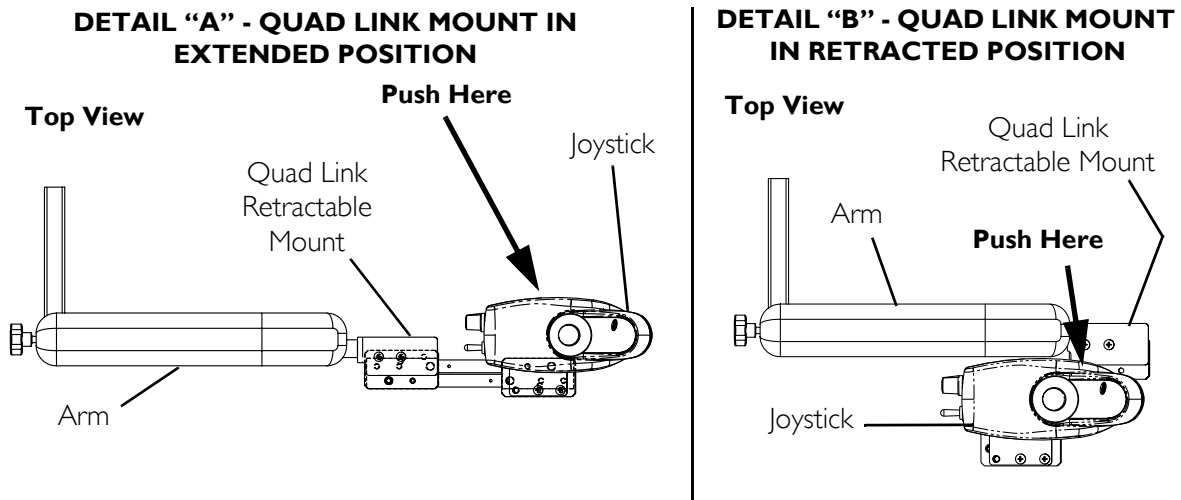


FIGURE 12.6 Operating the Quad-Link Retractable Mount

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 (1) 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.

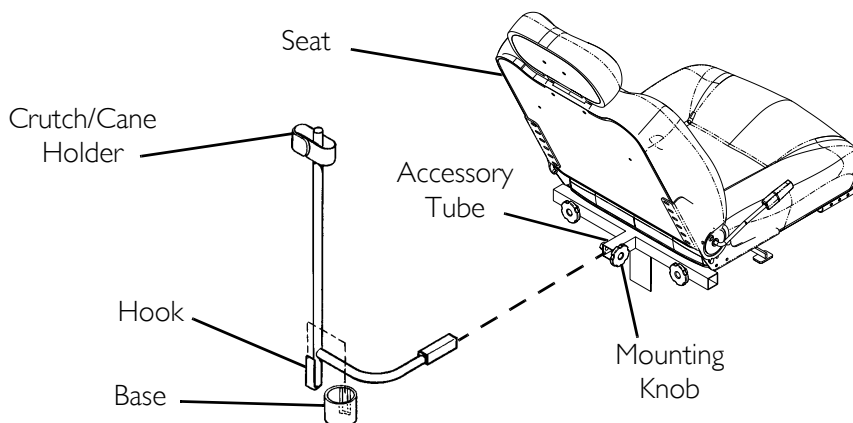


FIGURE 13.1 Installing/Removing the Crutch/Cane Holder

Installing/Removing the Oxygen Holder

⚠ WARNING

Contact your oxygen supplier for instructions in the use of oxygen. Extreme care **MUST** be exercised when using oxygen in close proximity to electric circuits.

The Invacare oxygen holder is designed to be used in conjunction with oxygen cylinder models MD15 and ME24 only.

To maintain safety, use only Invacare oxygen cylinder accessories (i.e. regulator, oxygen demand devices).

DO NOT use the oxygen holder for anything other than its intended purpose of supporting an oxygen cylinder - otherwise, injury or damage may occur.

DO NOT attempt to modify the oxygen holder to fit any other type of wheelchair. The oxygen holder was designed specifically for Invacare wheelchairs only.

The installation of the oxygen holder onto the back of the wheelchair seat significantly increases the length of the wheelchair. When turning the wheelchair it is important to take note of this increased length - otherwise, injury or damage may occur.

When using nasal or masked type administering equipment, oxygen or air tubing **MUST** be routed and secured properly to ensure that the tubing does not become entangled, kinked or severed. If necessary, loosen but **DO NOT** remove the mounting knob.

NOTE: For this procedure, refer to FIGURE 13.2.

NOTE: Reverse the following procedure to remove the oxygen holder.

NOTE: The O₂ holder assembly can be mounted on the RIGHT or LEFT side of the seat back. Determine the appropriate side prior to installation.

1. Remove the top and bottom mounting screws and washers securing the upper hinge to the seat. Retain screws to install the O₂ holder.
2. Align the O₂ holder mounting holes with the mounting holes in the upper hinge and seat back as shown in FIGURE 13.2.
3. Using the two (2) mounting screws and washers removed in STEP 1, secure the O₂ holder to the upper hinge and seat back. Securely tighten.

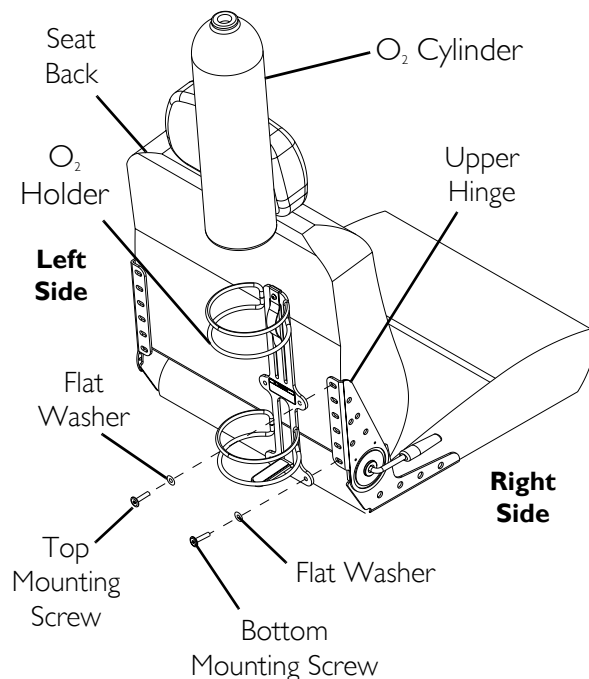


FIGURE 13.2 Installing/Removing the Oxygen Holder

Installing/Removing/Using the Walker Holder

⚠ INSTALLATION WARNINGS

After any adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely.

The installation of the walker holder onto the back of the wheelchair seat increases the length of the wheelchair up to nine (9) inches. When turning the wheelchair it is important to take note of this increased length - otherwise, injury and/or damage to surrounding property may result.

NOTE: For this procedure, refer to FIGURE 13.3.

Installing/Removing the Walker Holder

NOTE: Reverse this procedure to remove the walker holder.

1. If necessary, loosen but do not remove the mounting knob.
2. Install the walker holder into the accessory tube.
3. Thread the mounting knob into the welded nut on the accessory tube. Securely tighten.

Using the Walker Holder

1. Fold walker. Refer to instructions provided with the walker.

NOTE: Walker MUST be folded before using walker holder.

2. Hang folded walker on walker holder hooks.
3. Secure walker with hook and loop straps.

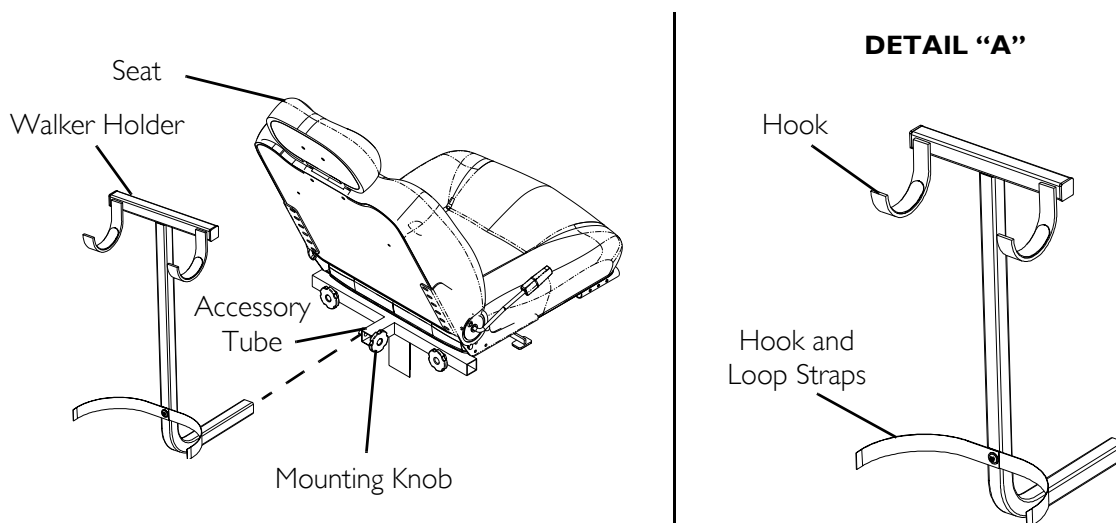


FIGURE 13.3 Installing/Removing/Using the Walker Holder

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

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the 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.

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