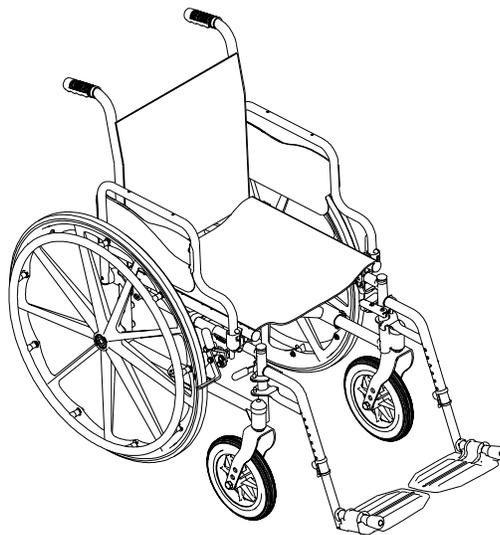


Lightweight, Standard and Heavy Duty Wheelchairs



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

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

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



Yes, you can.®

⚠ WARNING

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



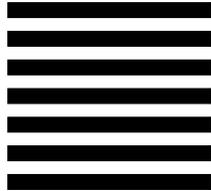
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SPECIAL NOTES

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 following table for definitions of the signal words.

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

NOTICE

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

WHEELCHAIR USER

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection.

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.

SEAT POSITIONING STRAP

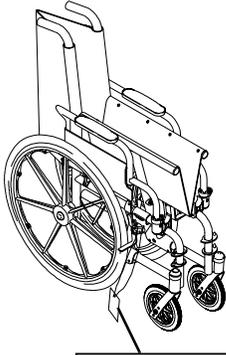
ALWAYS wear your seat positioning strap. Inasmuch as the seat positioning strap is an option on this wheelchair (you may order with or without the seat positioning strap), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user. The seat positioning 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.

As regards restraints - seat positioning straps - it is the obligation of the DME dealer, therapists and other healthcare professionals to determine if a seating restraint is required to ensure the safe operation of this equipment by the user. Serious injury can occur in the event of a fall from a wheelchair.

⚠ WARNING

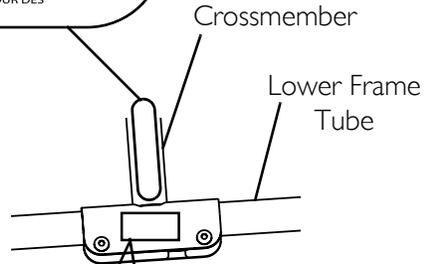
Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

LABEL LOCATION



NO WHEELCHAIR HAS BEEN APPROVED FOR USE AS A SEATING SURFACE WITHIN A MOTOR VEHICLE. THIS LABEL IS FOR INFORMATIONAL PURPOSES ONLY. LIABILITY ISSUES WERE NOT CONSIDERED IN THE ATTACHMENT OF THIS LABEL.

AUCUN FAUTEUIL ROULANT N'A ÉTÉ APPROUVÉ POUR ÊTRE UTILISÉ COMME SIÈGE À L'INTÉRIEUR D'UN VÉHICULE MOTORISÉ. CETTE ÉTIQUETTE NE PEUT ÊTRE UTILISÉE QU'À TITRE D'INFORMATION ET N'A PAS ÉTÉ AFFICHÉE ICI POUR DES RAISONS DE RESPONSABILITÉ LÉGALE.



IMPORTANT NOTICE

The wheel locks on this wheelchair have been pre-set at the factory to comply with the Veterans Administration functional Standard 8320.01 of the Federal Register, paragraph 3.2.4.5.3. If these wheel locks do not meet your needs, follow instructions below.

⚠ CAUTION

Any wheel lock adjustments should embed wheel lock shoe at least 1/8" into tire when locked (3/16" on pneumatic tires).

INSTRUCTIONS FOR WHEEL LOCK ADJUSTMENTS

1. Loosen wheel lock mounting fastener, which runs through mounting bracket and frame.
2. Slide clamp toward rear wheel until wheel lock shoe is embedded into tire material at least 1/8" when handle is engaged to the lock position (3/16" for pneumatic tires).
3. Tighten mounting fastener to secure mounting bracket in desired location and recheck lock shoe embedding.
4. Inspect for correct locking action BEFORE actual use.

00078X021-0394

Standard and Lightweight Wheelchairs Only

WEIGHT CAPACITY
250 LBS. (114 kgs.)
 REFER TO OWNER'S MANUAL
P/N 1111013

Heavy Duty Wheelchairs Only

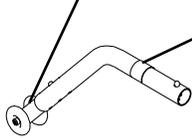
WEIGHT CAPACITY
350 LBS. (159 kgs.)
 REFER TO OWNER'S MANUAL
P/N 1111017

NOTE: On all adjustable anti-tippers

⚠ WARNING

Refer to Owner's Manual for proper anti-tipper setting.

1085379



⚠ WARNING

DO NOT OPERATE WITHOUT THE ANTI-TIP TUBES INSTALLED.

REV. 5/98 P/N 60106X144

TYPICAL PRODUCT PARAMETERS

LIGHTWEIGHT	
OVERALL WIDTH	24½, 26½, and 28½ inches
OVERALL DEPTH (WITHOUT FRONT RIGGINGS)	31-7/8-inches
SEAT WIDTH	16 or 18 inches and 20 inches
SEAT DEPTH	16 inches
SEAT-TO-FLOOR** (WITH 24-INCH WHEELS) ADULT: HEMI:	19½ inches 17½ inches
BACK STYLE	Sectional
BACK HEIGHT	16 or 18 inches
ARM STYLES	Fixed Height; Desk or Full Length; Flip Back
FRONT RIGGINGS	Swingaway Footrests, Elevating Legrests
REAR AXLE	Permanent
REAR WHEELS	24*-inch Composite* Urethane*, Pneumatic or Pneumatic Flat Free Insert
HANDRIMS	Composite*, Black Painted Aluminum
WHEEL LOCKS	Push to Lock (Adult), Pull to Lock (Hemi)
CASTER SIZE	8x1-inch Solid Rubber* and 8x1¼ inch Pneumatic or Pneumatic Flat Free Insert
UPHOLSTERY	Black Nylon
WEIGHT***	33¾ pounds
SHIPPING WEIGHT*** (APPROX.)	43½ pounds
WEIGHT LIMIT	250 lbs (114 kg)

*NOTE: These options are standard for this model.

**NOTE: The seat-to-floor heights are based on urethane tires. If wheelchair is equipped with pneumatic (properly inflated) or solid rubber tires, add ¼ inch to the measurements listed above. These heights can vary ±¼ inch due to tire wear and manufacturing tolerances.

***NOTE: Weights based on 18x16 inch wheelchair without front riggings. Weights will vary depending on how wheelchair is equipped.

	STANDARD	HEAVY DUTY
OVERALL WIDTH PERMANENT ARM: REMOVABLE ARM:	23¼, 25¼, 27¼ inches 24½, 26½, 28½ inches	N/A 28¼, 30¼, 32¼ inches
OVERALL DEPTH (WITHOUT FRONT RIGGINGS)	31-7/8-inches	33½ inches
SEAT WIDTH	16, 18 and 20 inches	20, 22 and 24 inches

TYPICAL PRODUCT PARAMETERS

	STANDARD	HEAVY DUTY
SEAT DEPTH SA FRAME: FF FRAME:	16 inches 16 inches	18 inches N/A
SEAT-TO-FLOOR** (WITH 24-INCH WHEELS) ADULT: HEMI:	19½ inches (SA Frame) 21 inches (FF Frame) 17½ inches (N/A on FF)	19½ inches (SA Frame) 17½ inches
BACK STYLE	Fixed	
BACK HEIGHT	16 inches	
ARM STYLES	Fixed Height; Desk or Full Length; Permanent or Removable	Fixed Height; Desk or Full Length; Removable
FRONT RIGGINGS	Swingaway Footrests, Elevating Legrests, (N/A on FF)	
REAR AXLE	Permanent	
REAR WHEELS	24*-inch Composite* Urethane*, Pneumatic or Pneumatic-Flat Free Insert	24 inch Composite Corded Urethane
HANDRIMS	Composite*, Chrome Plated Steel	Chrome Plated Steel
WHEEL LOCKS	Push to Lock* (Adult*), Pull to Lock (Hemi*)	
CASTER SIZE	8x1 inch Solid Rubber* 8x1¼ inch Pneumatic or Pneumatic Flat Free Insert	8x1¼ inch Urethane
UPHOLSTERY	Vinyl - Midnight Blue*, Ruby, or Black	
FRAME COLORS	Chrome* and colors	
WEIGHT*** (APPROX.) SA FRAME PERMANENT ARM: REMOVABLE ARM: FF FRAME	36 pounds 36 pounds 37 pounds	N/A 42 pounds N/A
SHIPPING WEIGHT*** (APPROX.) SA FRAME PERMANENT ARM: REMOVABLE ARM: FF FRAME	45½ pounds 45½ pounds 46½ pounds	N/A 52 pounds N/A
WEIGHT LIMIT	250 lbs (114 kg)	350 pounds (159 kg)

*NOTE: These options are standard for this model.

**NOTE: The seat-to-floor heights are based on urethane tires. If wheelchair is equipped with pneumatic (properly inflated) or solid rubber tires, add ¼ inch to the measurements listed above. These heights can vary ±¼ inch due to tire wear and manufacturing tolerances.

***NOTE: Weights based on 18 inch wide standard wheelchair and 20 inch wide Heavy Duty wheelchair without front riggings. Weights will vary depending on how wheelchair is equipped.

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.

Stability - All Models

The seat depth, size/position of the front casters, size/position of the rear wheels, anti-tipper model, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the seven may cause the wheelchair to decrease in stability. These adjustments **MUST** be performed by a qualified technician.

<i>NOTE: When changes to the left hand column occur, follow across the chart and refer to the procedure that is checked to maintain the proper stability, safety and handling of the wheelchair.</i>	SEAT DEPTH	CASTER SIZE	CASTER POSITION	WHEEL SIZE	WHEEL POSITION	ANTI-TIPPERS	USER CONDITION
SEAT DEPTH	•	X	X	X	X	N/A	X
CASTER SIZE	N/A	•	X	X	X	X	X
CASTER POSITION	N/A	X	•	X	X	X	X
WHEEL SIZE	N/A	X	X	•	X	X	X
WHEEL POSITION	N/A	X	X	X	•	X	X
USER CONDITION	X	X	X	X	X	X	•

The various seat-to-floor heights require specific settings depending on rear wheel size, rear wheel position, and front caster size/position. These adjustments **MUST** be performed by a qualified technician.

Anti-Tippers

Anti-tippers are specific to the different seat-to-floor heights. Refer to the charts in [Installing/Adjusting Anti-tippers](#) on page 52 for correct usage and adjustment. If these requirements cannot be achieved, **DO NOT** use the wheelchair. Contact a qualified technician.

If changing the seat-to-floor height, the correct anti-tippers **MUST** be used to maintain a 1½ to 2-inch ground clearance.

Anti-tippers **MUST** be attached at all times. Inasmuch as the anti-tippers are an option for this wheelchair (you may order with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as a safeguard for the wheelchair user.

Anti-tippers **MUST** be fully engaged. Ensure that the release button of the anti-tipper fully protrudes out of the hole on the bottom of the wheelchair frame. Ensure both anti-tippers are adjusted to the same height.

ALWAYS use anti-tippers. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tipover. Extra caution must be observed when traversing such surfaces.

Operating Information

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

Unless otherwise noted, all service and adjustment should be performed while the wheelchair is unoccupied.

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.

When cleaning rear cane or hand grip areas use only a clean towel lightly dampened with cool water. Verify that grips are dry prior to use. Use of soap or ammonia based cleaning solutions will result in the hand grips sliding off the cane assembly. Failure to observe this warning may result in injury to the user or bystanders.

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

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

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

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

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

NEVER leave an unoccupied wheelchair on an incline.

DO NOT operate on roads, streets or highways.

DO NOT attempt to ride over curbs or obstacles. Doing so may cause your wheelchair to tip over and cause bodily harm to you or damage to the wheelchair.

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

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

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

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

DO NOT attempt to stop a moving wheelchair with wheel locks. Wheel locks are not brakes.

DO NOT tip the wheelchair without assistance.

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

Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both casters parallel to the object you are transferring onto. When transferring to and from the wheelchair, ALWAYS engage both wheel locks.

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

DO NOT stand on the frame of the wheelchair.

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

ALWAYS wear your seat positioning strap. Inasmuch as the seat positioning strap is an option on this wheelchair (you may order with or without the seat positioning strap), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user. The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt MUST be replaced immediately.

ALWAYS use the handrims for self-propulsion. Inasmuch as the handrims are an option on this wheelchair (you may order with or without the handrims), Invacare strongly recommends ordering the handrims as an additional safeguard for the wheelchair user.

Tire Pressure

DO NOT use your wheelchair unless it has the proper tire pressure (p.s.i.). DO NOT overinflate the tires. Failure to follow these instructions may cause the tire to explode and cause bodily harm. The recommended tire pressure is listed on the side wall of the tire. Replacement of a pneumatic tire or tube MUST be performed by a qualified technician.

Weight Training

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

Weight Limitation

The Standard and Lightweight wheelchairs have a weight limitation of 250 lbs (114 kgs). The Heavy Duty wheelchair has a weight limitation of 350 lbs (159 kgs).

SECTION 2—SAFETY/HANDLING OF WHEELCHAIRS

Safety/Handling of Wheelchairs

Safety and handling of the wheelchair require 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 heeded. 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. Inasmuch as the seat positioning strap is an option on this wheelchair (you may order with or without the seat positioning strap), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user. 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** maintain proper balance at all times. 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.

Virtually all activities which involve movement in the wheelchair have an effect on the center of gravity. Invacare recommends using seat/chest positioning straps for additional safety while involved in activities that shift your weight.

DO NOT lean forward out of the wheelchair any further than the length of the armrests. Make sure the casters are pointing in the forward position whenever you lean forward. This can be achieved by advancing the wheelchair and then reversing it in a straight line.

Coping With Everyday Obstacles

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

A Note to Wheelchair Assistants

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

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

ALWAYS check hand grips for looseness before using the wheelchair. If loose and/or worn, replace immediately. If the wheelchair is exposed to extreme temperature (above 100°F or below 32°F), high humidity and/or becomes wet, prior to use, ensure handgrips do not twist on the wheelchair's handle - otherwise damage or injury may occur.

Also, be aware of detachable parts such as armrests 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.

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.

The seat depth, size/position of the front casters, size/position of the rear wheels, anti-tipper model, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the seven may cause the wheelchair to decrease in stability. These adjustments MUST be performed by a qualified technician.

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

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

Reaching, Leaning and Bending Forward

⚠ 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.

NOTE: For this procedure, refer to FIGURE 2.1.

Position the front casters so that they are extended as far forward as possible and engage wheel locks.

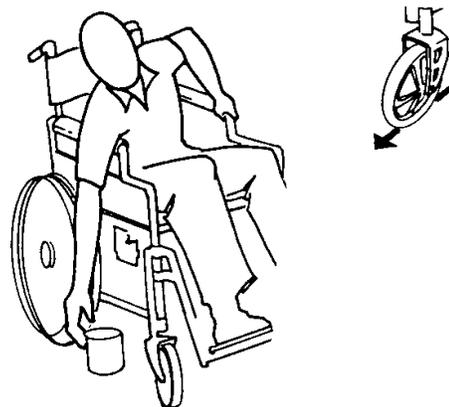


FIGURE 2.1 Reaching, Leaning and Bending Forward

Reaching and Leaning Backwards

⚠ WARNING

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

NOTE: For this procedure, refer to FIGURE 2.2.

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



FIGURE 2.2 Reaching and Leaning Backwards

Tipping

⚠ WARNING

DO NOT tip the wheelchair without assistance.

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

After mastering the techniques of tipping the wheelchair, use one of the following methods to tackle curbs, short stairs, etc.

Method 1 - Wheelchair With Step Tubes

NOTE: For this procedure, refer to FIGURE 2.3.

Place foot on the step tube and begin to tilt the wheelchair toward you. Apply a continuous downward motion until the balance point is achieved and the front casters clear the curb. At this point, the assistant will feel a difference in the weight distribution.

⚠ WARNING

When lowering the front casters of the wheelchair, DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant and/or damage to the wheelchair.

Roll the wheelchair forward and slowly lower the front of the wheelchair in one continuous movement onto the sidewalk. Push the wheelchair forward until the rear wheels roll up and over the curb.

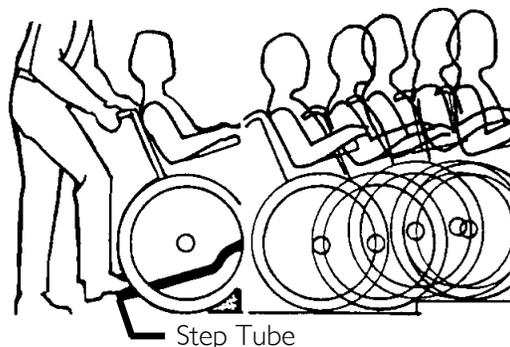


FIGURE 2.3 Method 1 - Wheelchair With Step Tubes

Method 2 - Wheelchair Without Step Tubes

⚠ WARNING

ALWAYS check hand grips for looseness before using the wheelchair. If loose and/or worn, replace immediately.

NOTE: For this procedure, refer to FIGURE 2.4.

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

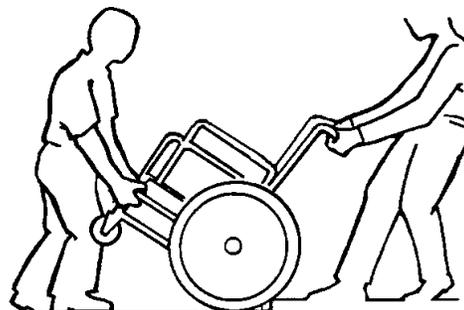


FIGURE 2.4 Method 2 - Wheelchair Without Step Tubes

The first assistant should stand on the sidewalk and turn the wheelchair so that the rear wheels are against the curb. Turn the anti-tippers so the anti-tip wheels are pointing up. The wheelchair should be tilted back to the balance point and, in one continuous upward movement, the rear wheels should be pulled up and over the curb. **DO NOT** return the front casters to the ground until the wheelchair has been pulled backward far enough for the front casters to clear the edge of the curb.

⚠ WARNING

When lowering the front casters of the wheelchair, DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant and/or damage to the wheelchair.

Roll the wheelchair backward and slowly lower the wheelchair in one continuous movement. Turn the anti-tippers so the anti-tip wheels are facing down.

Stairways

⚠ WARNING

ALWAYS wear your seat positioning strap. Inasmuch as the seat positioning strap is an option on this wheelchair (you may order with or without the seat positioning strap), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user. 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.

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

ALWAYS check hand grips for looseness before using the wheelchair. If loose and/or worn, replace immediately.

Extreme caution is advised when it is necessary to move an occupied wheelchair up or down the stairs. Invacare recommends that, if possible, the user be removed from the wheelchair prior to moving. Invacare recommends using two assistants and making thorough preparations. Make sure to use only secure, non-detachable parts for hand-held supports.

NOTE: For this procedure, refer to FIGURE 2.5 on page 23.

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

1. If necessary, rotate the anti-tippers so the wheels are facing up.
2. After the wheelchair has been tilted back to the balance point, one assistant (in the rear) backs the wheelchair up against the first step, while securely grasping a non-removable (non-detachable) part of the wheelchair for leverage.
3. The second assistant, with a firm hold on a non-detachable part of the framework, lifts the wheelchair up and over the stair and steadies the wheelchair as the first assistant places one foot on the next stair and repeats STEP 1.
4. The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been rolled away from the stairway.
5. If necessary, rotate the anti-tippers so the wheels are facing down.

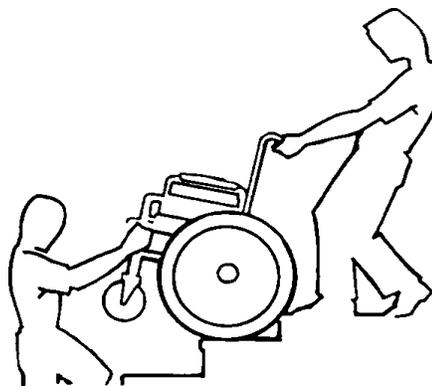


FIGURE 2.5 Stairways

Escalators

⚠ WARNING

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

Transferring To and From Other Seats

⚠ WARNING

Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both casters parallel to the object you are transferring onto. Also be certain the wheel locks are engaged to help prevent the wheels from moving.

CAUTION

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

NOTE: For this procedure, refer to FIGURE 2.6.

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

Position the wheelchair as close as possible alongside the seat to which you are transferring, with the front casters pointing parallel to it. Remove or flip up the armrest. Engage wheel locks. Swing away or remove front rigging. 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.



FIGURE 2.6 Transferring To and From Other Seats

Unfolding and Folding Wheelchair

⚠ WARNING

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

DO NOT place hand or fingers on the underside of the seat frame rail when opening or closing the wheelchair.

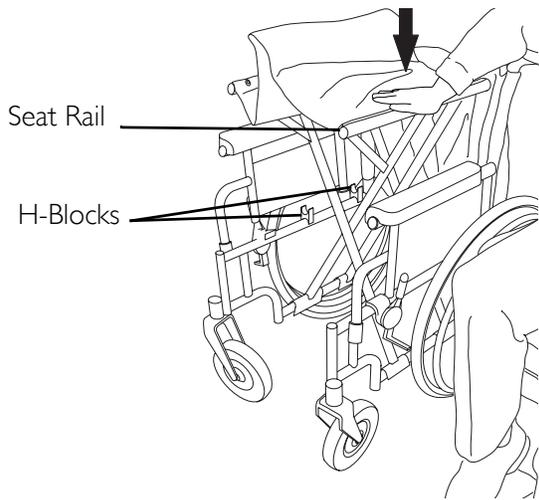
DO NOT sit or transfer into the wheelchair unless it is fully open and the seat frame rails are fully seated into the side frame H-blocks.

Invacare recommends that a non-folding device be installed to keep the wheelchair from being folded when left unoccupied in a public place.

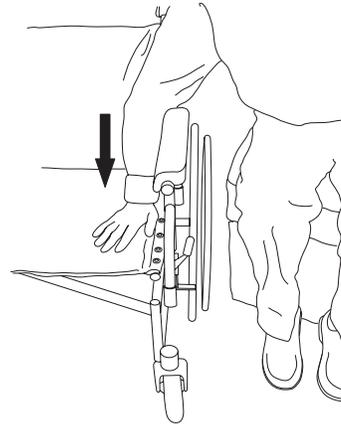
Unfolding

NOTE: For this procedure, refer to FIGURE 2.7 on page 25.

1. Tilt the wheelchair toward you (raising the opposite wheel and caster off the ground/floor).
2. Place your hand on the top of the seat rail closest to you where the seat upholstery is attached.
3. Point your fingers and thumb to the inside of the wheelchair.
4. Press downward on the top of the seat rail until the wheelchair is fully open and the seat rails are fully seated in the H-blocks.
5. Engage both wheel locks, open the footrest/legrest for clearance and transfer into the wheelchair. Refer to [Transferring To and From Other Seats](#) on page 23.



NOTE: DO NOT wrap thumb or fingers under the seat rail. Point fingers and thumb to the inside of the wheelchair.



NOTE: Press down on the seat rail and the seat upholstery with the entire hand. DO NOT place any part of the hand under the seat rail.

FIGURE 2.7 Unfolding

Folding Wheelchair

NOTE: For this procedure, refer to FIGURE 2.8.

1. Swing footrest/legrest in locked position to the front of the wheelchair.
2. Pivot footplates upward to vertical position.
3. With both hands, grasp the middle of the seat upholstery at the front and back edge and lift up.

CAUTION

DO NOT allow upholstery to hang between the cross braces.

4. Place excess seat upholstery over the armrest.

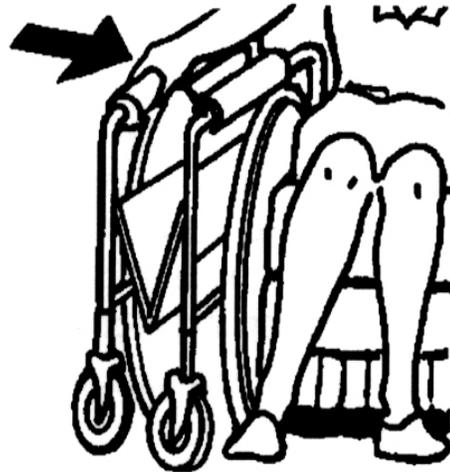


FIGURE 2.8 Folding Wheelchair

SECTION 3—SAFETY INSPECTION/TROUBLESHOOTING

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

Safety Inspection Checklist

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

Inspect/Adjust Initially

- Ensure that the wheelchair rolls straight (no excessive drag or pull to one side).
- Inspect for loose/missing/broken hardware in all locations.
- Inspect for bent frame or crossbraces.
- Check that the wheel locks do not interfere with tires when rolling.
- Check that the wheel lock pivot points are free of wear and looseness.
- Check that the wheel locks are easy to engage.
- Ensure that the wheel locks prevent the wheelchair from moving when engaged.
- Inspect the seat and back for rips and sagging.
- Inspect the seat and back for loose or broken hardware.
- Inspect the back cane hand grips for wear/looseness/deterioration.
- Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- Inspect tires for flat spots and wear.
- Check pneumatic tires for proper inflation.

CAUTION

As with any vehicle, check the wheels and tires periodically for cracks and wear. Replace if damaged.

- Check that there is no excessive side movement or binding in the rear wheels when lifted and spun.
- Inspect rear wheels for cracks and wear (hub and rim).
- Inspect rear wheels for cracked, bent or broken spokes.

- Ensure all spokes are uniformly tight.
- Inspect handrims for signs of rough edges or peeling.
- Inspect axle assembly for proper tension by spinning caster. Caster should come to a gradual stop.
- Adjust front casters/forks bearing system if wheel wobbles noticeably or binds to a stop.
- Ensure wheel bearings are clean and free of moisture.
- Check headtube locknuts for tightness.
- Inspect casters for cracks and wear (hub and rim).
- Inspect front casters for cracked, bent or broken spokes.
- Clean upholstery and armrests.
- Check front riggings for rough/sharp edges and wear.
- Check that all labels are present and legible. Replace if necessary.

Inspect/Adjust Weekly

- Ensure that the wheel locks prevent the wheelchair from moving when engaged.
- Inspect tires for flat spots and wear.
- Check pneumatic tires for proper inflation.
- Inspect rear wheels for cracked, bent or broken spokes.
- Ensure all spokes are uniformly tight.
- Inspect axle assembly for proper tension by spinning caster. Caster should come to a gradual stop.
- Inspect front caster for cracked, bent or broken spokes.

Inspect/Adjust Monthly

- Check that the wheel locks do not interfere with tires when rolling.
- Check that the wheel lock pivot points are free of wear and looseness.
- Inspect seat and back for loose or broken hardware.
- Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- Inspect back cane hand grips for wear/looseness/deterioration.
- Adjust front casters/forks bearing system if wheel wobbles noticeably or binds to a stop.
- Ensure wheel bearings are clean and free of moisture.
- Check headtube locknuts for tightness.

Inspect/Adjust Periodically

- Ensure that the wheelchair rolls straight (no excessive drag or pull to one side).
- Inspect for loose/missing/broken hardware in all locations.
- Inspect frame and crossbraces for loose or missing hardware.
- Inspect for bent frame or crossbraces.
- Check that wheel locks are easy to engage.
- Inspect seat and backs for rips and sagging.
- Check that there is no excessive side movement or binding in the rear wheels when lifted and spun.
- Inspect rear wheels for cracks and wear (hub and rim).
- Inspect rear wheels for cracked, bent or broken spokes.
- Inspect handrims for signs of rough edges or peeling.
- Adjust front casters/forks bearing system if wheel wobbles noticeably or binds to a stop.
- Ensure wheel bearings are clean and free of moisture.
- Inspect casters for cracks and wear (hub and rim).
- Ensure that casters are free of debris.
- Clean upholstery and armrests.
- Check front riggings for rough/sharp edges and wear.
- Check that all labels are present and legible. Replace if necessary.

Troubleshooting

Chair Veers Right/Left	Chair 3 Wheels	Sluggish Turn or Performance	Casters Flutter	Squeaks and Rattles	Looseness in Chair	Solutions
X	X	X	X			If pneumatic, check tires for correct and equal pressure
X		X	X	X	X	Check for loose stem nuts and bolts.

Maintenance

Maintenance Safety Precautions

⚠ WARNING

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

CAUTION

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

Suggested Maintenance Procedures

1. Before using your wheelchair, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
-

⚠ WARNING

DO NOT use the wheelchair unless it has the proper tire pressure (p.s.i.). **DO NOT** overinflate the tires. Failure to follow these instructions may cause the tire to explode and cause bodily harm.

2. If tires are pneumatic, recommended tire pressure is listed on the sidewall of the tire.
-

CAUTION

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

3. The rear wheels, casters and tires should be checked periodically for cracks and wear, and should be replaced by a qualified technician.
4. Periodically check handrims to ensure they are secured to the rear wheels. If loose, have them tightened by a qualified technician.
5. Periodically adjust wheel locks as tires wear. Refer to Using/Adjusting Disk Wheel Locks on page 54.
6. Periodically check caster and rear wheel bearings to make sure they are clean and free from moisture. Use a Teflon[®] lubricant if necessary.

⚠ WARNING

When cleaning rear cane or hand grip areas use only a clean towel lightly dampened with cool water. Verify that grips are dry prior to use. Use of soap or ammonia based cleaning solutions will result in the hand grips sliding off the cane assembly. Failure to observe this warning may result in injury to the user or bystanders.

7. Hand grips should be checked monthly for wear/looseness. Clean if desired.
8. Check upholstery for sagging, rips or tears.

SECTION 4—FRONT RIGGINGS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Installing/Removing Front Riggings

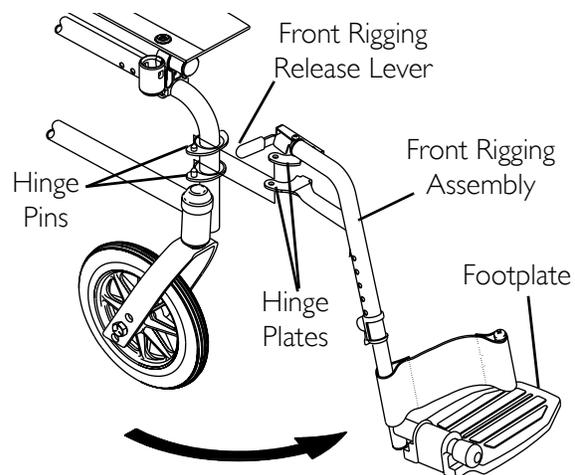
NOTE: For this procedure, refer to FIGURE 4.1.

Installing

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

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

4. Repeat this procedure for the other front rigging assembly.
5. To release the front rigging, push the front rigging release lever inward, rotate front rigging outward.



NOTE: Swingaway footrest shown.

FIGURE 4.1 Installing/Removing Front Riggings

Removing

1. Push the front rigging release lever inward
2. Rotate swingaway front rigging assembly outward.
3. Lift the swingaway front rigging assembly off the hinge pins.

Adjusting Footplate Height

Spring Button Height

NOTE: For this procedure, refer to FIGURE 4.2.

NOTE: This procedure applies to the swingaway front riggings and swingaway elevating legrest.

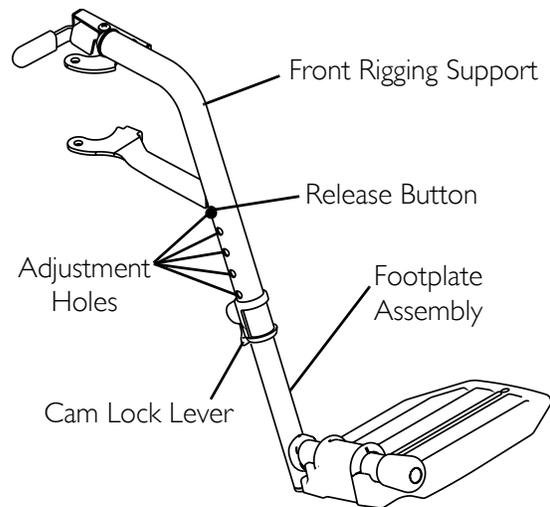
1. Remove the front rigging assembly. Refer to [Installing/Removing Front Riggings](#) on page 31.

NOTE: Lay the front rigging assembly on a flat surface to simplify this procedure.

2. Pull the cam lock lever up to unlocked position.

NOTE: The elevating legrest has two sets of release buttons, one set above the other. Each set will be visible one at a time allowing finer footplate height adjustment.

3. Push in the release buttons and reposition the footplate assembly to the desired height.
4. Ensure that the release buttons fully protrude from holes on both sides of the front rigging support.
5. Rotate cam lock lever down to locked position.
6. Repeat this procedure for the other footplate, if necessary.
7. Reinstall the swingaway front rigging assembly. Refer to [Installing/Removing Front Riggings](#) on page 31.



NOTE: Swingaway footrest shown.

FIGURE 4.2 Spring Button Height

Bolt-In-Place Height

NOTE: For this procedure, refer to FIGURE 4.3 on page 33.

NOTE: This procedure applies to the swingaway footrests and swingaway elevating legrest.

1. Remove the swingaway front rigging. Refer to [Installing/Removing Front Riggings](#) on page 31.

NOTE: Lay the front rigging assembly on a flat surface to simplify this procedure.

2. Pull the cam lock lever up to the unlocked position.
3. Using a screw driver to hold the threaded rivet in position, remove the button head screw from the threaded rivet.
4. Remove the threaded rivet and button head screw securing the footplate assembly to the front rigging support.

5. Adjust the footplate assembly height by aligning the desired adjustment holes in the upper front rigging support and lower footplate assembly.
6. From the outside of the swingaway front rigging, insert the threaded rivet through both the front rigging support and the footplate assembly.
7. From the inside of the swingaway front rigging, insert the button head screw through the appropriate adjustment hole and thread into the threaded rivet.
8. Using a screwdriver to hold the threaded rivet in position, securely tighten the button head screw. Torque to 32 in-lbs.
9. Rotate cam lock lever down to locked position.
10. Repeat STEPS 1-9 to adjust the remaining footrest.

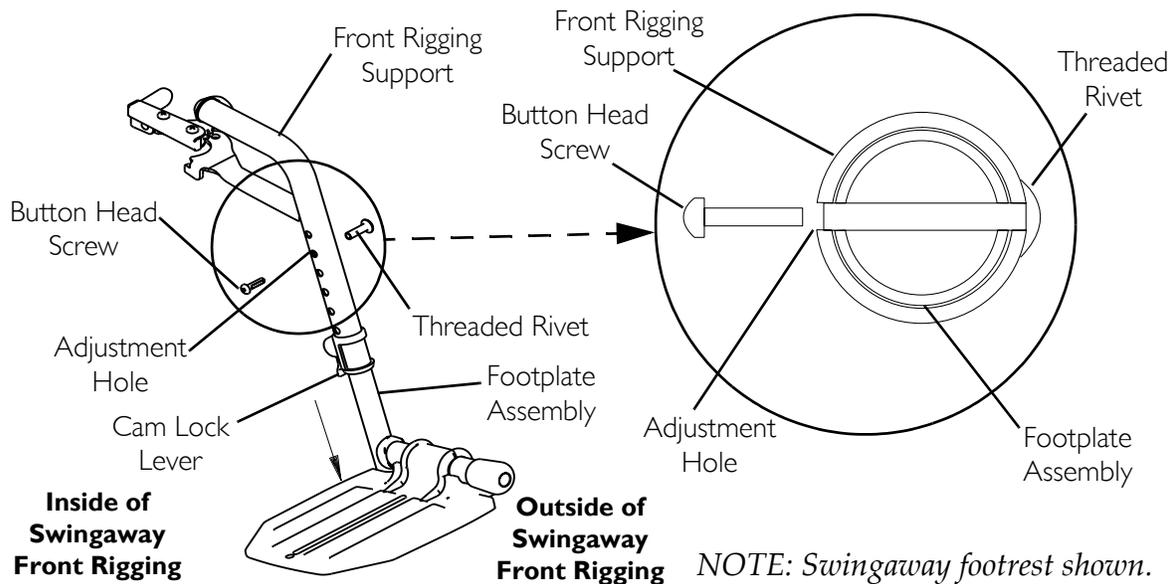


FIGURE 4.3 Bolt-In-Place Height

Fixed Frame

NOTE: For this procedure, refer to FIGURE 4.4

1. Remove impact guards and/or calf strap, if necessary.
2. Loosen, but do not remove the bolt and locknut that secure the lower footrest assembly to the upper footrest support.
3. Reposition the lower footrest assembly to the desired height.
4. Securely tighten the bolt and locknut.
5. Repeat this procedure for the other footrest, if necessary.
6. Replace impact guards and/or calf strap, if necessary.

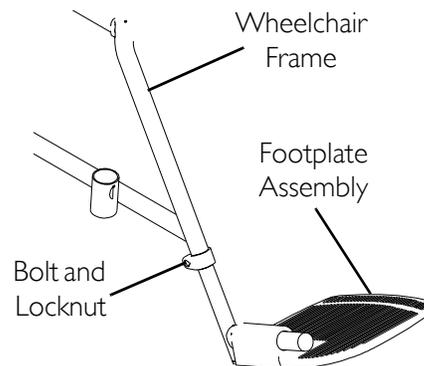


FIGURE 4.4 Fixed Frame

Raising/Lowering Elevating Legrest Assembly

⚠ WARNING

Ensure hands and fingers are clear of elevating legrest mechanism before pushing release lever to lower the elevating legrest. Otherwise injury may occur due to pinch points.

The wheelchair user's leg **MUST** be supported by an assistant before attempting to lower legrest.

NOTE: For this procedure, refer to FIGURE 4.5.

1. To raise the elevating legrest, the assistant should hold the support tube and raise the elevating legrest until the desired height is obtained.
2. To lower the elevating legrest, perform the following:
 - A. Support user leg with one hand.
 - B. Push release lever downward with other hand.
 - C. Gently, lower user leg down and rest against the legrest.

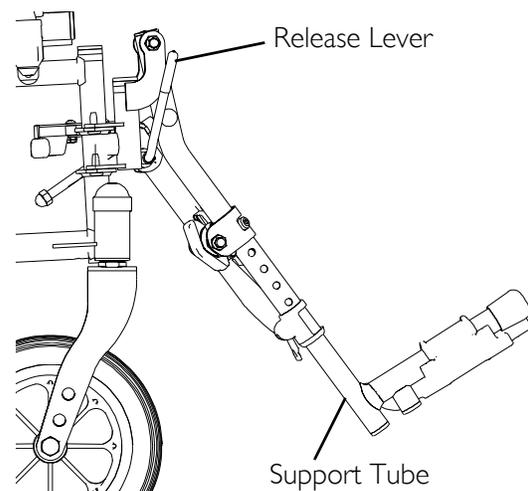


FIGURE 4.5 Raising/Lowering Elevating Legrest Assembly

Installing Impact Guards/Calf Strap

NOTE: For this procedure, refer to FIGURE 4.6.

1. Remove impact guard/calf strap from packaged container if not already secured to the footrest.
2. Secure one impact guard to each footrest.

NOTE: Ensure the upper portion of the impact guard is between the two horizontal supports of the footrest.

3. Secure one side of the calf strap around each footrest (with the impact guards attached, if present).

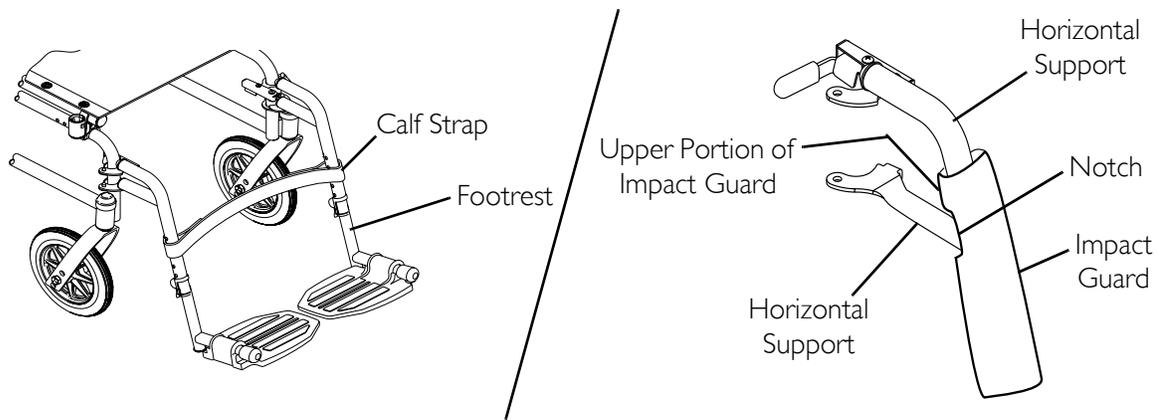


FIGURE 4.6 Installing Impact Guards/Calf Strap

Replacing Heel Loop

NOTE: For this procedure, refer to FIGURE 4.7 on page 36.

1. Pull the cam lock lever up to unlocked position.
2. Perform one of the following as shown in Detail "A".
 - Footplates with Spring Buttons: Push in the release buttons and remove the footplate assembly from the front rigging support.
 - Bolt-In-Place Footplates:
 - i. Using a screw driver to hold the threaded rivet in position, remove the button head screw from the threaded rivet.
 - ii. Remove the threaded rivet and button head screw securing the footplate assembly to the front rigging support.
3. Remove the mounting screw, spacer and locknut that secure the heel loop to the footplate.
4. Remove existing heel loop from slide tube.
5. Install new heel loop onto slide tube.
6. Install the mounting screw, spacer and locknut to secure the heel loop to the footplate. Tighten until the spacer is secure.
7. Insert the lower footrest assembly into the upper footrest assembly to desired height.
8. Perform one of the following as shown in Detail "A":
 - Footplates With Spring Buttons: Ensure that the release buttons fully protrude from holes on both sides of the upper footrest support.
 - Bolt-In-Place Footplates:
 - i. From the outside of the swingaway front rigging, insert the threaded rivet through both the front rigging support and the footplate assembly.
 - ii. From the inside of the swingaway front rigging, insert the button head screw through the appropriate adjustment hole and thread into the threaded rivet.
 - iii. Using a screwdriver to hold the threaded rivet in position, securely tighten the button head screw. Torque to 32 in-lbs.

9. Rotate cam lock lever down to locked position.

DETAIL "A"

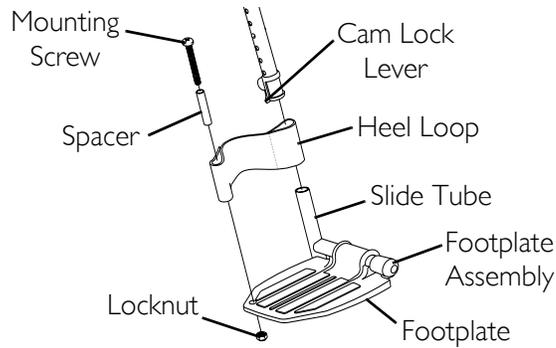
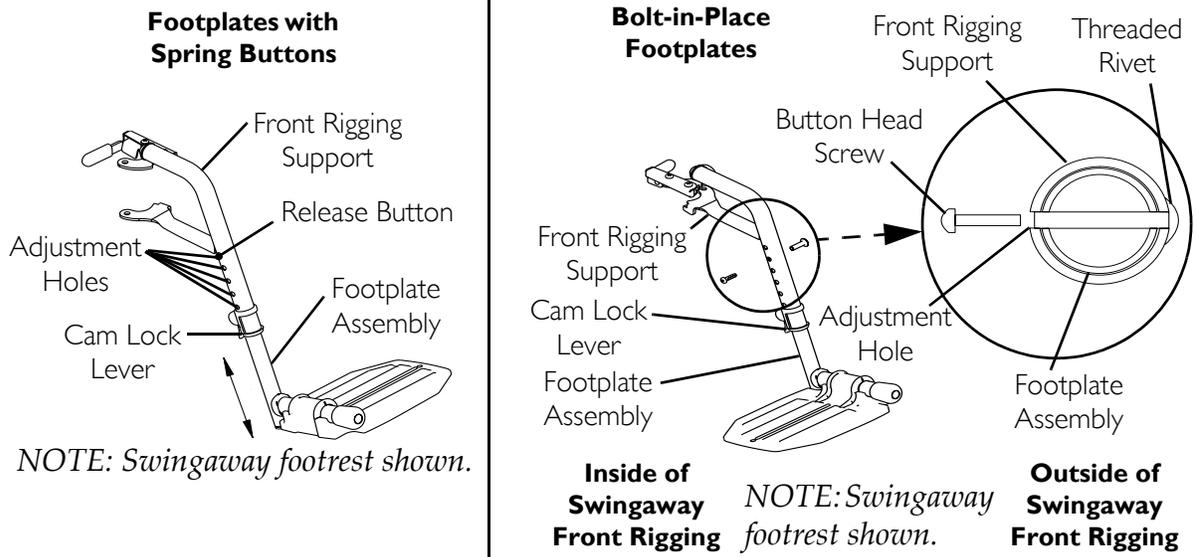


FIGURE 4.7 Replacing Heel Loop

SECTION 5—ARMS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Using or Replacing Flip-Back Armrest (Lightweight Wheelchairs Only)

⚠ WARNING

DO NOT operate or replace flip-back armrest when wheelchair is folded - otherwise injury or damage may result.

Ensure armrest is securely locked into arm socket and armrest release button locks into place before using.

NOTE: For this procedure, refer to FIGURE 5.1.

Using

1. Push down on front of armrest to ensure it is fully seated in front socket.

NOTE: STEP 1 is needed to prevent the release button from hanging up on the socket.

2. Press in armrest release button located on armrest front tube.
3. Rotate front of armrest up and out of arm socket.

NOTE: Armrest can rotate back approximately 90°.

4. To prepare armrest for use, rotate armrest downward, making sure front tube of armrest inserts into arm socket.
5. Push armrest down until release button snaps into arm socket.
6. Ensure armrest is securely locked into arm socket and armrest release button locks into place before using.

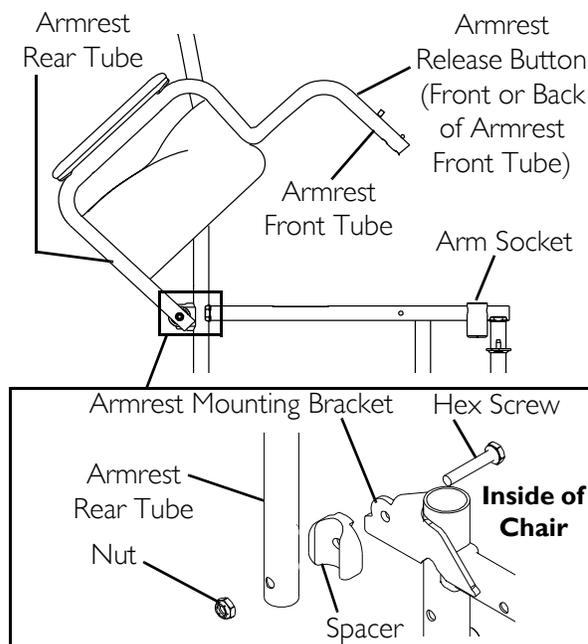


FIGURE 5.1 Using or Replacing Flip-Back Armrest (Lightweight Wheelchairs Only)

Replacing

1. Push down on front of armrest to ensure it is fully seated in front socket.
2. Press in armrest release button located on armrest front tube.
3. Remove hex screw, spacer and locknut securing the existing armrest and insert to the wheelchair frame.
4. Remove the existing armrest from frame.
5. Inspect rear tube of new armrest to ensure insert is properly installed with mounting holes aligned.
6. If not properly aligned, rotate the insert using a flat screwdriver to align the mounting holes.
7. Insert the hex screw through the armrest mounting bracket, spacer and armrest rear tube with insert.

NOTE: Ensure the spacer sits flush against the armrest.

8. Install nut onto hex head screw. Torque to 20-30 in./lbs.
9. Rotate armrest down and into the arm socket.
10. Ensure armrest is securely locked into arm socket and armrest release button locks into place before using.

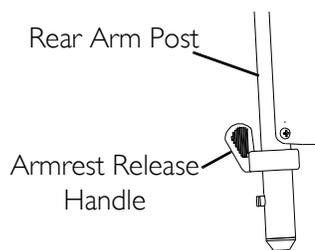
Removing/Installing Armrests

⚠ WARNING

Make sure the armrest release lever is in the locked position before using the wheelchair.

HEAVY DUTY WHEELCHAIR: ONLY use heavy duty, fixed height armrests on heavy duty wheelchairs - otherwise injury or damage may occur.

Heavy duty, fixed height armrests are identified by a circular mark on the rear arm post above or below the armrest release handle.



NOTE: Identifying circular mark located on rear arm post above or below armrest release lever.

NOTE: For this procedure, refer to FIGURE 5.2 on page 39.

Removing Armrest

1. Push down on armrest to ensure it is fully seated in front and rear sockets.

NOTE: STEP 1 prevents the release buttons from hanging up on the sockets during removal.

2. Unlock the rear armrest by rotating the armrest release lever towards the inside of the wheelchair.
3. Press in the armrest release button at the front of the armrest.
4. While pressing in the armrest release button, remove the armrest from the arm sockets by pulling straight up.

Installing Armrest

NOTE: Rear armrest release lever must be in the unlocked position when installing the armrest.

1. Position the armrest just above the front and rear arm sockets.
2. Push arm down evenly at the front and rear until the front armrest release button snaps into the front arm socket.
3. Lock rear armrest by turning the armrest release lever towards the outside of the wheelchair.
4. Ensure armrest is locked securely in the arm sockets by gently lifting up. If not locked, repeat STEPS 1-3.

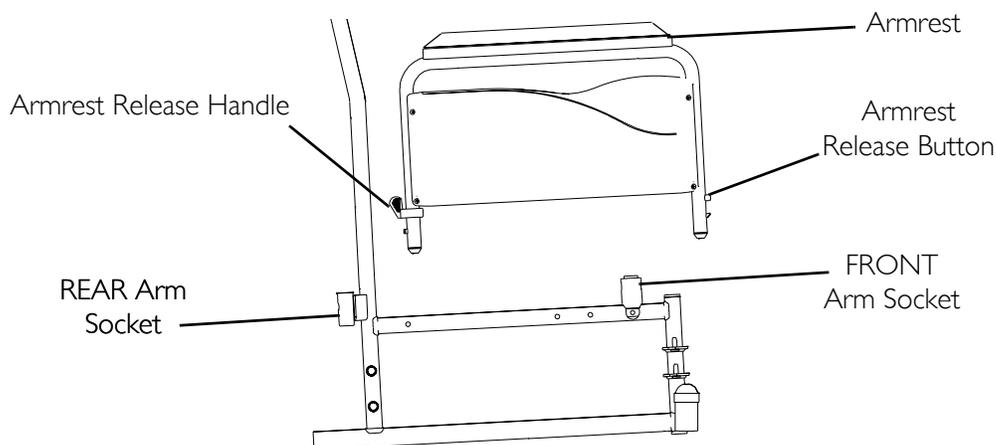


FIGURE 5.2 Removing/Installing Armrests

SECTION 6—SEAT AND BACK

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Installing Back Canes (Lightweight Wheelchair Only)

NOTE: For this procedure, refer to FIGURE 6.1.

1. Remove the hex screw and locknut from the bottom of one back cane.
2. Position threaded insert into the bottom of each back cane with nut facing the outside of the wheelchair and aligned with the mounting hole in the bottom of the back cane.
3. Insert the back cane into the a mounting hole in the wheelchair frame.
4. Position the hex screw through the wheelchair frame, back cane, and threaded insert.

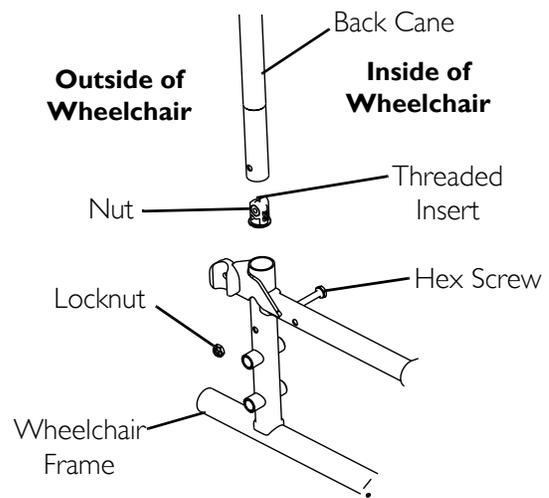


FIGURE 6.1 Installing Back Canes (Lightweight Wheelchair Only)

NOTE: The hex screw should be inserted from the inside of the wheelchair frame.

5. Torque the hex screw to 60-80-inch-pounds.
6. Install the locknut onto the hex screw.
7. Secure the hex screw to prevent it from backing out.
8. Torque the locknut to 60-80-inch-pounds.

Replacing Back Upholstery

NOTE: For this procedure, refer to FIGURE 6.2.

1. Remove the eight mounting screws and washers that secure the existing back upholstery to the back canes.
2. Remove existing back upholstery from the back canes.
3. Securely tighten the new back upholstery to the back canes with the phillips screws and washers.

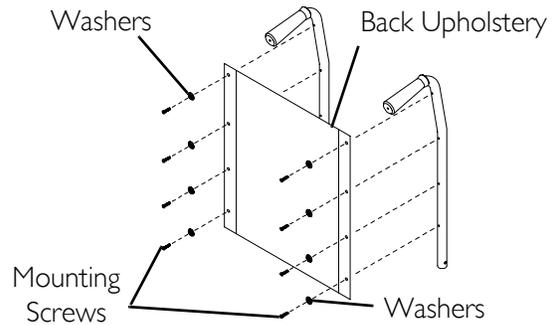
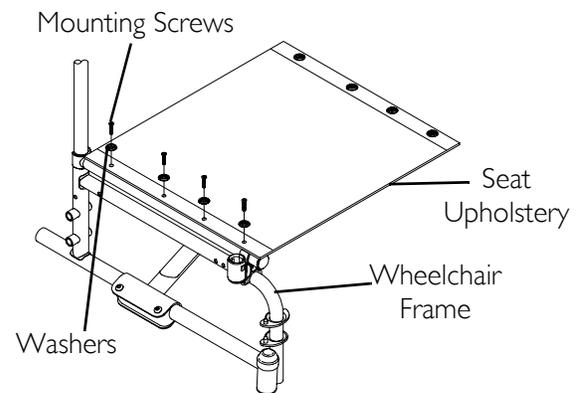


FIGURE 6.2 Replacing Back Upholstery

Replacing Seat Upholstery

NOTE: For this procedure, refer to FIGURE 6.3.

1. Perform one of the following:
 - Lightweight/Standard wheelchairs: Remove the eight mounting screws and washers that secure the existing seat upholstery to the crossbraces.
 - Heavy Duty Wheelchair: Remove the ten mounting screws and washers that secure the existing seat upholstery to the crossbraces.
2. Remove the existing seat upholstery from the crossbraces.
3. Ensure positioning of seat positioning strap (if used). Refer to [Installing the Seat Positioning Strap](#) on page 59.
4. Install new seat upholstery by reversing STEPS 1-2.



NOTE: Lightweight/Standard wheelchair shown.

FIGURE 6.3 Replacing Seat Upholstery

Adjusting Seat Width

Lightweight and Standard Wheelchairs with Swingaway Front Riggings

NOTE: For this procedure, refer to FIGURE 6.4 on page 42 and FIGURE 6.5 on page 43.

NOTE: When adjusting the seat width of the wheelchair, the back and seat upholstery MUST be changed. If applicable, the headrest pillow and headrest upholstery MUST be changed as well.

1. Remove the existing back and seat upholstery from the wheelchair. Refer to [Replacing Back Upholstery](#) on page 41 and [Replacing Seat Upholstery](#) on page 41.

2. Remove the four button screws and locknuts that secure the two pivot links to the wheelchair frame and crossbraces.
3. Remove the two button screws, locknuts and crossbrace saddle that secure the bottom of the crossbrace to the wheelchair frame. Repeat for other crossbrace.
4. Remove the hex screw, coved washers, washers and locknut that secure the two crossbraces together. Refer to Detail “B” of FIGURE 6.5.
5. Assemble the two new crossbraces together with the existing hex screw, coved washers, washers and locknut. Securely tighten. Refer to Detail “B” of FIGURE 6.5.
6. Determine the correct pivot link and mounting hole to use with the desired seat width. Refer to Detail “B” of FIGURE 6.4.
7. Secure the pivot links to the crossbraces and wheelchair frame with the four button screws and locknuts. Securely tighten.

NOTE: Position crossbrace saddle on wheelchair frame using the washer on the underside of the wheelchair frame as a reference. See Detail “A” of FIGURE 6.5 for proper positioning of the crossbrace saddle.

8. Reinstall the two button screws, locknuts and crossbrace saddle that secure the bottom of the new crossbrace to the wheelchair frame. Refer to Detail “B” of FIGURE 6.5 for hardware orientation. Repeat for opposite crossbrace. Securely tighten.
9. Install the new back and seat upholstery onto the wheelchair. Refer to Replacing Back Upholstery on page 41 and Replacing Seat Upholstery on page 41.

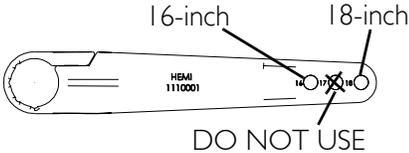
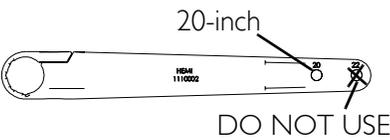
SEAT WIDTH	PIVOT LINK
<p>16 - INCH 18 - INCH</p>	
<p>20 - INCH</p>	

FIGURE 6.4 Lightweight and Standard Wheelchairs with Swingaway Front Riggings

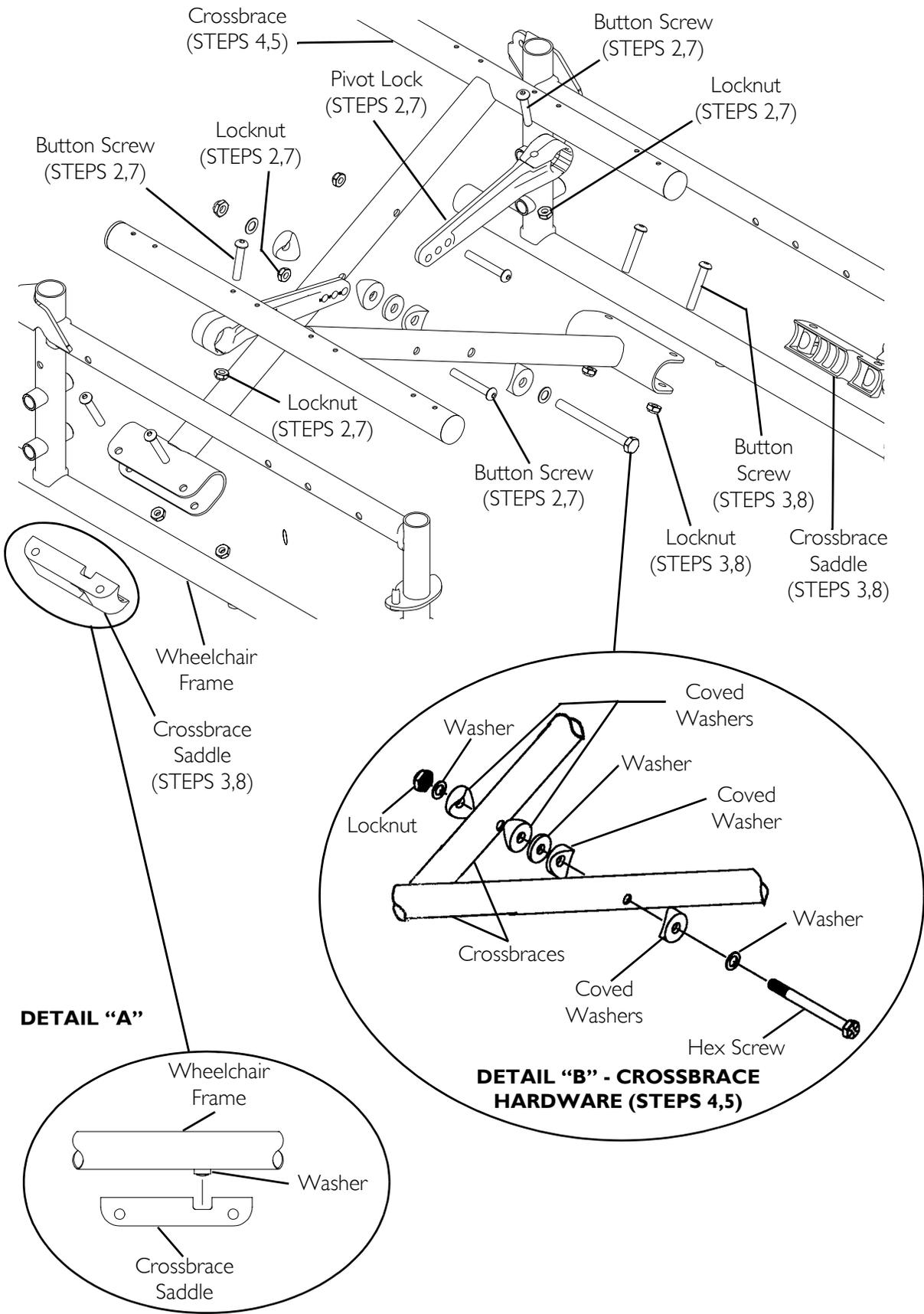


FIGURE 6.5 Lightweight and Standard Wheelchairs with Swingaway Front Riggings

Standard Wheelchair with Fixed Frame

NOTE: For this procedure, refer to FIGURE 6.6.

Removing Lower Mounting Hardware

1. Remove the existing back and seat upholstery from the wheelchair. Refer to Replacing Back Upholstery on page 41 and Replacing Seat Upholstery on page 41.

NOTE: If adjusting the seat width of the wheelchair, back and seat upholstery as well as the crossbraces **MUST** be replaced.

2. Remove the four screws and locknuts that secure the insert tube to the lower wheelchair frame (Detail "A").
3. Remove the inserts from the rear of the wheelchair.
4. Remove the hex screw and locknut that secure the two existing crossbraces together.

Removing Upper Mounting Hardware

1. While pushing down on the rear seat guide, pull up the front seat guide until the front seat guide releases from the wheelchair frame (Detail "B").
2. Pull the crossbrace away from the rear seat guide.
3. Repeat STEPS 1-2 for opposite crossbrace.
4. Reverse STEPS 1-3 to assemble the upper mounting hardware.
5. Reverse STEPS 1-4 in Removing Lower Mounting Hardware on page 44.

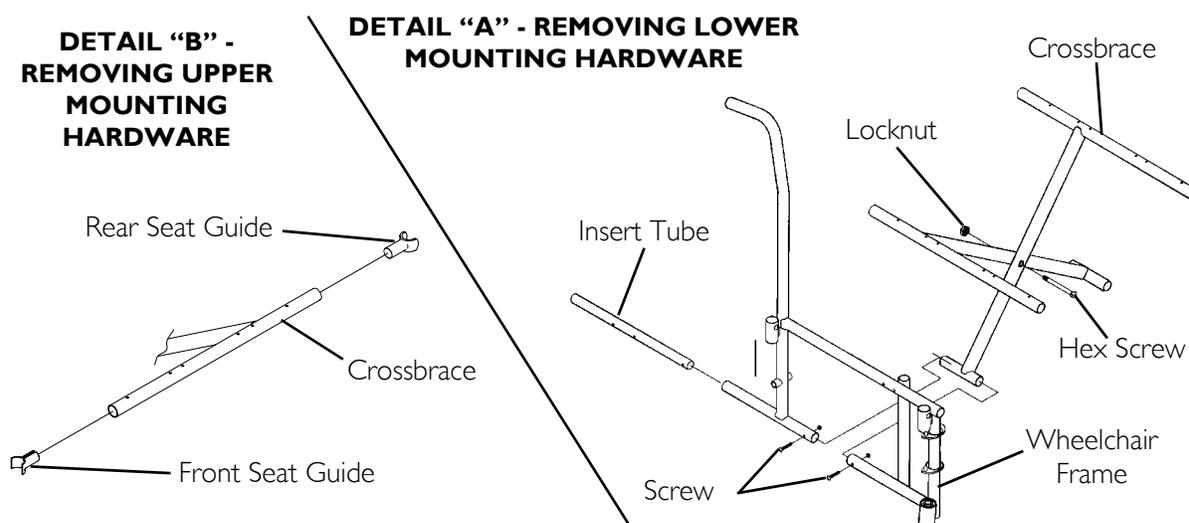


FIGURE 6.6 Standard Wheelchair with Fixed Frame

Heavy Duty Wheelchairs

NOTE: For this procedure, refer to FIGURE 6.7 and FIGURE 6.8 on page 46.

NOTE: When adjusting the seat width of the wheelchair, the back and seat upholstery **MUST** be changed. If applicable, the headrest pillow and headrest upholstery **MUST** be changed as well.

1. Remove the existing back and seat upholstery from the wheelchair. Refer to Replacing Back Upholstery on page 41 and Replacing Seat Upholstery on page 41.
2. Remove the two button screws and locknuts that secure the two pivot links to the crossbraces.
3. Remove the four button screws, locknuts and two crossbrace saddles that secure the bottom of the crossbrace to the wheelchair frame.
4. Repeat STEPS 2-3 for other crossbrace.
5. Remove the two hex screws and locknuts that secure the two crossbraces together.

NOTE: Note the orientation of the two hex screws and locknuts for assembling the new crossbraces.

6. Assemble the two new crossbraces together with the existing two hex screws and locknuts (FIGURE 6.8 on page 46). Securely tighten.
7. Determine the correct pivot link mounting hole to use with the desired seat width (FIGURE 6.7).

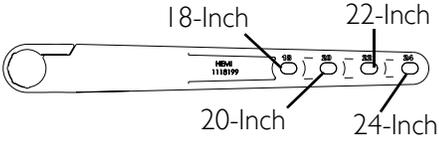
SEAT WIDTH	PIVOT LINK
18 - INCH 20 - INCH 22 - INCH 24 - INCH	

FIGURE 6.7 Heavy Duty Wheelchairs

8. Secure the pivot links to the crossbraces with the two button screws and locknuts. Securely tighten.

NOTE: Position the rear crossbrace saddles on wheelchair frame using the washer on the underside of the wheelchair frame as a reference. Refer to FIGURE 6.8 on page 46 for proper positioning of the crossbrace saddle.

9. Reinstall the four button screws, locknuts and two crossbrace saddles that secure the bottom of the new crossbrace to the wheelchair frame. Securely tighten.
10. Repeat STEP 9 for the opposite crossbrace.
11. Install the new back and seat upholstery onto the wheelchair. Refer to Replacing Back Upholstery on page 41 and Replacing Seat Upholstery on page 41.

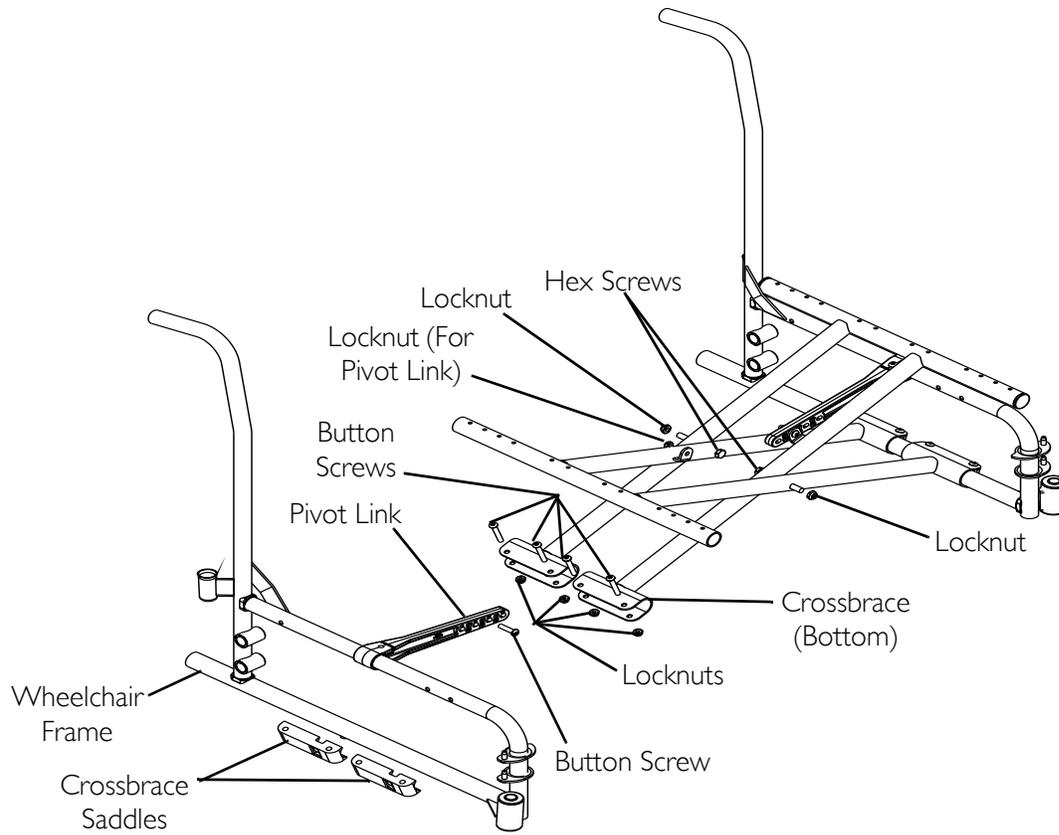


FIGURE 6.8 Heavy Duty Wheelchairs

SECTION 7—REAR WHEELS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Removing/Installing Rear Wheels

⚠ WARNING

Only a qualified technician may change the size of the rear wheel or the seat-to-floor height.

Make sure both rear wheels are the same size and are installed into the same respective mounting hole before using the wheelchair. Otherwise injury may occur.

NOTE: For this procedure, refer to FIGURE 7.1.

NOTE: If replacing the same size rear wheel, note the mounting position on the wheelchair frame for proper reinstallation of the new rear wheel.

1. Remove the dust cap (7/16 inch axles only), hex screw, washer (7/16 inch axles only), spacer (if installed) and locknut that secure the rear wheel to the wheelchair frame.

NOTE: The spacer is used on wheelchairs with removable arms only.

2. Repeat STEP 1 for the opposite rear wheel if desired.
3. To reinstall the rear wheel(s) onto the wheelchair, reverse STEPS 1-2 and torque locknut to 40 ft.-lbs.
4. Adjust wheel locks. Refer to [Using/Adjusting Disk Wheel Locks](#) on page 54.

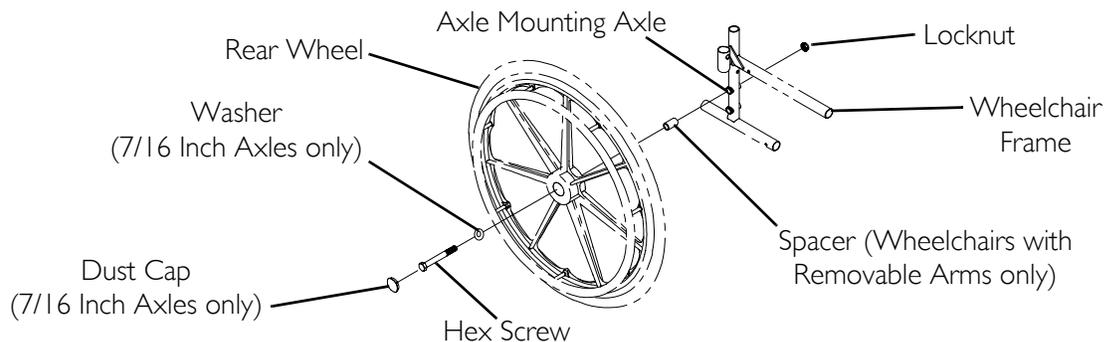


FIGURE 7.1 Removing/Installing Rear Wheels

Replacing Rear Wheel Handrim

⚠ WARNING

DO NOT use composite handrims on the Heavy Duty wheelchair. Otherwise, injury or damage may occur.

This procedure **MUST** be performed by a qualified technician.

NOTE: For this procedure, refer to FIGURE 7.2.

1. Remove the rear wheel from the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 47.
2. Remove the mounting screws that secure the handrim to the rear wheel.
3. Remove the existing handrim.
4. Install the new handrim by reversing STEPS 2-3.
5. Reinstall rear wheel to the wheelchair. Refer to [Removing/Installing Rear Wheels](#) on page 47.
6. Repeat STEPS 1-5 for the opposite rear wheel if necessary.

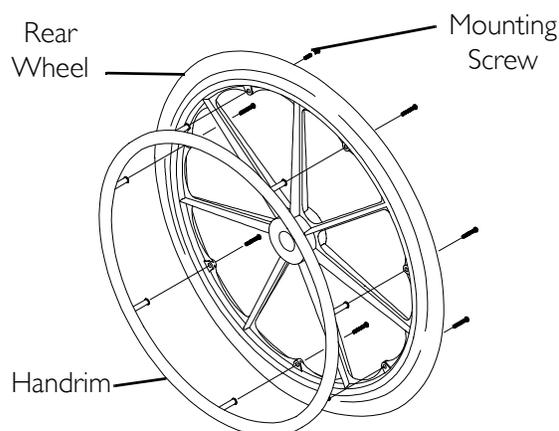


FIGURE 7.2 Replacing Rear Wheel Handrim

Replacing/Repairing Rear Wheel Tire

⚠ WARNING

Replacement of rear wheel tire **MUST** be performed by a qualified technician.

CAUTION

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

SECTION 8—FRONT CASTERS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Installing/Replacing/Adjusting Front Casters and Forks

⚠ WARNING

Make sure both fork/caster assemblies are the same size before using the wheelchair, otherwise injury may occur.

NOTE: For this procedure, refer to FIGURE 8.1.

Installing/Replacing Front Casters and Forks

1. Remove the dust cover.
2. Remove the locknut and nylon washer that secure the fork to the caster headtube.
3. Drop the fork assembly out of the caster headtube.
4. Heavy Duty Wheelchair only:
 - A. Remove the existing fork stem washer from the existing fork assembly.
 - B. Install the existing fork stem washer onto the new fork assembly.

NOTE: If caster replacement is desired, refer to [Replacing/Repairing Front Caster Tire/Tube](#) on page 51.

5. Slide the new fork assembly into the caster headtube.
6. Reassemble by reversing STEPS 1-2.
7. Repeat STEPS 1-6 for the opposite fork assembly.
8. Adjust the forks. Refer to [Adjusting Forks](#) on page 50.

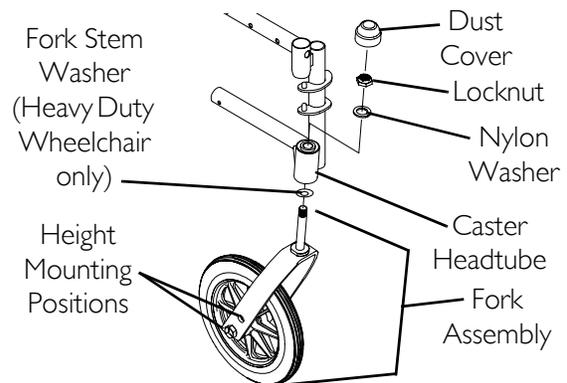


FIGURE 8.1 Installing/Replacing/Adjusting Front Casters and Forks

Adjusting Forks

1. To properly tighten caster journal system and guard against flutter, perform the following check:
 - A. Tip back of wheelchair to floor.
 - B. Simultaneously pivot both forks and casters to the top of their arc.
 - C. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
 - D. Adjust locknuts according to freedom of caster swing.
 - E. Repeat STEPS C-D until wheels swing once to one-side, then immediately rest in a downward position.
2. Test wheelchair for maneuverability.
3. Readjust locknuts if necessary, and repeat STEPS 1-2 until correct.
4. Snap dust cover over the locknut and stem.

Replacing Front Casters

NOTE: For this procedure, refer to FIGURE 8.2.

⚠ WARNING

If replacement casters are not installed in the original mounting position of the fork assembly, the seat-to-floor height and stability of the wheelchair will be affected. A qualified technician **MUST perform these adjustments.**

Make sure both front casters are the same size and are installed into the same respective mounting hole before using the wheelchair, otherwise injury may occur.

NOTE: Note the mounting position on the fork assembly for proper reinstallation of the new front caster.

1. Remove the hex screw, washers and locknut that secure the front caster to the fork.

NOTE: Washers are used only with 8-inch casters with precision bearings.

2. To reinstall the new front caster onto the fork, reverse STEP 1.

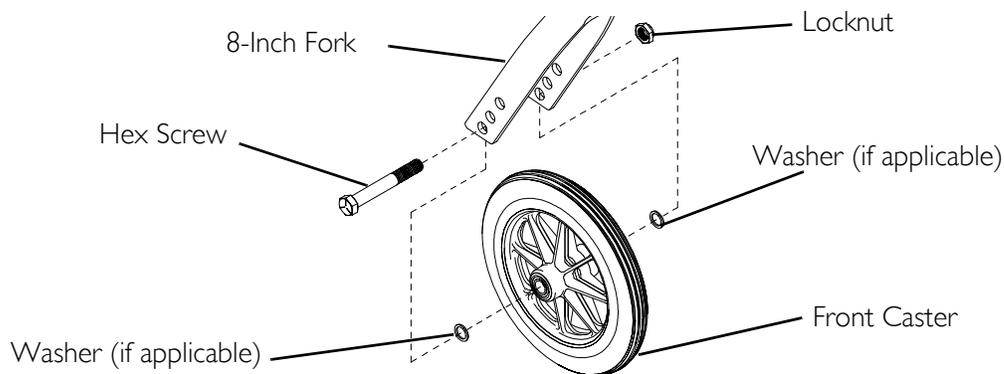


FIGURE 8.2 Replacing Front Casters

Replacing/Repairing Front Caster Tire/Tube

⚠ WARNING

Replacement of front caster tire or tube **MUST** be performed by a qualified technician.

CAUTION

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

SECTION 9—ANTI-TIPPERS/WHEEL LOCKS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Installing/Adjusting Anti-tippers

⚠ WARNING

Anti-tippers are specific to the different seat-to-floor angles and/or seat-to-floor heights. Refer to the chart in this section of the manual for correct usage and adjustment. If these requirements cannot be achieved, **DO NOT** use the wheelchair. Contact a qualified technician. If changing the seat-to-floor height with or without a change to seat-to-floor angle, the correct anti-tippers must be used to maintain a 1½ to 2-inch ground clearance.

If so equipped, anti-tippers **MUST** be attached at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as a safeguard for the wheelchair user.

Anti-tippers **MUST** be fully engaged and release buttons fully protruding out of adjustment holes.

ALWAYS use anti-tippers. When outdoors on wet, soft ground or on gravel surfaces, anti tippers may not provide the same level of protection against tipover. Extra caution must be observed when traversing such surfaces.

Ensure both anti-tippers are adjusted to the same mounting hole.

NOTE: For this procedure, refer to FIGURE 9.1 and FIGURE 9.2.

Installing Anti-Tippers

NOTE: To ensure the correct model anti-tipper is used refer to FIGURE 9.1. Measurements for anti-tippers are approximate and are taken with extension tube in bottom hole position.

WHEELCHAIR MODEL	SEAT-TO-FLOOR HEIGHT IN INCHES	ANTI-TIPPER (MEASUREMENTS IN INCHES)			
		LENGTH	HEIGHT	MODEL	PART NO.
SWINGAWAY	17-1/2 to 19-1/2	13-1/2	3-1/4	1360	1058836
FIXED	21	12	2-3/4	9758	1086190

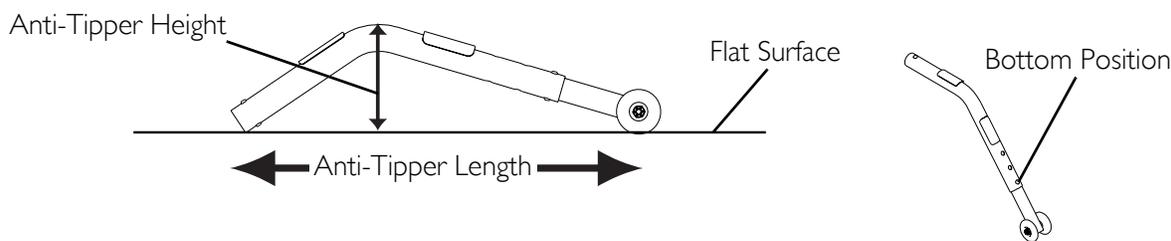


FIGURE 9.1 Installing/Adjusting Anti-tippers - Anti-Tipper Length

1. Press the release buttons and insert the anti-tippers with the anti-tipper wheels pointing toward the ground/floor into the wheelchair frame tubing as shown in FIGURE 9.2.
2. Ensure that the release button of the anti-tipper fully protrudes out of the hole in the bottom of the wheelchair frame tubing.
3. Place the wheelchair on a flat surface.
4. Measure the distance between the bottom of the anti-tipper wheels and the ground/floor.

NOTE: A 1½ to 2-inch clearance between the bottom of the anti-tipper wheels and the ground/floor MUST be maintained at all times.

5. If the distance between the bottom of anti-tipper wheels and the ground/floor is not 1½ to 2-inches, adjust anti-tippers. Refer to Adjusting the Anti-Tippers on page 53.

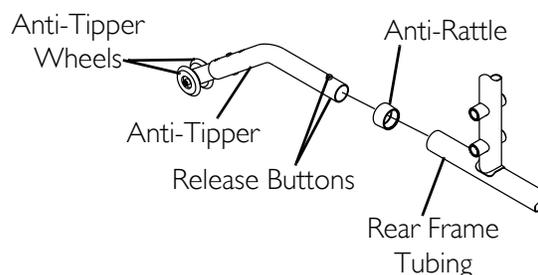


FIGURE 9.2 Installing Anti-Tippers

Adjusting the Anti-Tippers

NOTE: For this procedure, refer to FIGURE 9.3 on page 54.

NOTE: A 1½ to 2-inch clearance between the bottom of the anti-tipper wheels and the ground/floor MUST be maintained at all times.

1. Place the wheelchair on a flat surface.

NOTE: If adjusting anti-tippers on recliner models, ensure back canes are in the upright position before making adjustments.

2. Press the release buttons on the wheeled portion of the anti-tipper and slide it up or down to the desired adjustment hole.
3. Check to make sure that the release buttons are fully engaged in adjustment holes.
4. Ensure both anti-tippers are adjusted to the same height.
5. Measure the distance between the bottom of the anti-tipper wheels and the ground/floor.

6. If the distance between the bottom of anti-tipper wheels and the ground/floor is not 1½ to 2-inches, repeat STEPS 2-5 until the distance is 1½ to 2-inches.
7. If the 1½ to 2-inch distance cannot be achieved with the anti-tippers, a different model may be required. Contact an Invacare dealer or qualified technician.

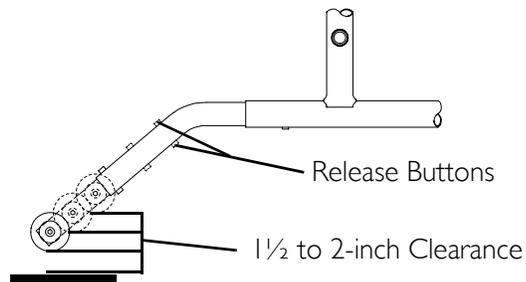


FIGURE 9.3 Adjusting the Anti-Tippers

Using/Adjusting Disk Wheel Locks

Using Patient Operated Disk Wheel Locks

⚠ WARNING

DO NOT attempt to stop a moving wheelchair with wheel locks. Wheel locks are not brakes.

NOTE: For this procedure, refer to FIGURE 9.4.

NOTE: Position wheelchair on a flat, level surface to perform this procedure.

1. Ensure the wheelchair is not moving before engaging the wheel locks.
2. Perform one of the following:
 - Push-to-Lock - To engage, push the wheel lock handle forward.
 - Pull-to-Lock - To engage, pull the wheel lock handle backward.
3. Disengage the wheel locks by reversing STEP 2.

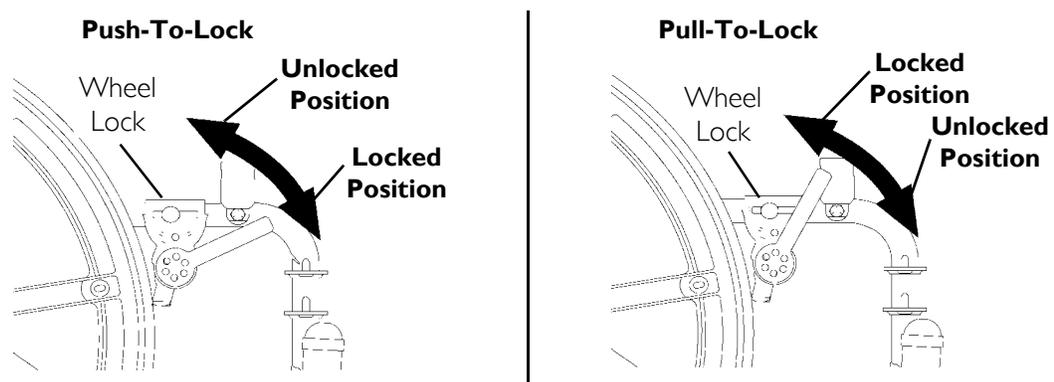


FIGURE 9.4 Using Patient Operated Disk Wheel Locks

Adjusting Patient-Operated Wheel Locks

⚠ WARNING

DO NOT attempt to stop a moving wheelchair with the wheel locks. Wheel locks are not brakes.

NOTE: For this procedure, refer to FIGURE 9.5.

NOTE: If wheels are pneumatic, before adjusting the wheel lock assemblies, ensure that the tires are inflated to the recommended psi on the side wall of tire.

1. Ensure the wheel lock is in the open (unlocked position).
2. Loosen the bolt and locknut that secure the wheel lock assembly to the wheelchair frame.
3. Reposition the wheel lock so that when engaged, the wheel lock shoe embeds the tire 1/8-inch (3/16-inch for pneumatic tires) and holds the wheelchair.
4. Securely tighten the bolt and locknut securing the wheel lock to the wheelchair frame.
5. Engage the wheel lock.
6. Measure the distance the wheel lock is embedded into the tire as shown in Detail "A" of FIGURE 9.5.

NOTE: Any wheel lock adjustment should embed the wheel lock shoe at least 1/8-inch (3/16-inch for pneumatic tires) into the tire when engaged.

7. Repeat STEPS 1-6 until the wheel lock shoe embeds the tire 1/8-inch (3/16-inch for pneumatic tires) and holds the wheelchair.
8. If the measurement of 1/8-inch (3/16-inch for pneumatic tires) cannot be achieved, remove the bolt and locknut that secure the wheel lock to the wheelchair frame and mount the wheel lock in the remaining mounting position.
9. Repeat STEPS 1-7.
10. If the wheel lock is unable to properly engage the wheel, it may be necessary to install wheel lock shoe extensions. Refer to [Installing Wheel Lock Shoe Extensions](#) on page 56.
11. Repeat STEPS 1-7.
12. Repeat STEPS 1-9 for the opposite wheel lock.
13. Engage both wheel locks and ensure the occupied wheelchair is held in place when pushed.

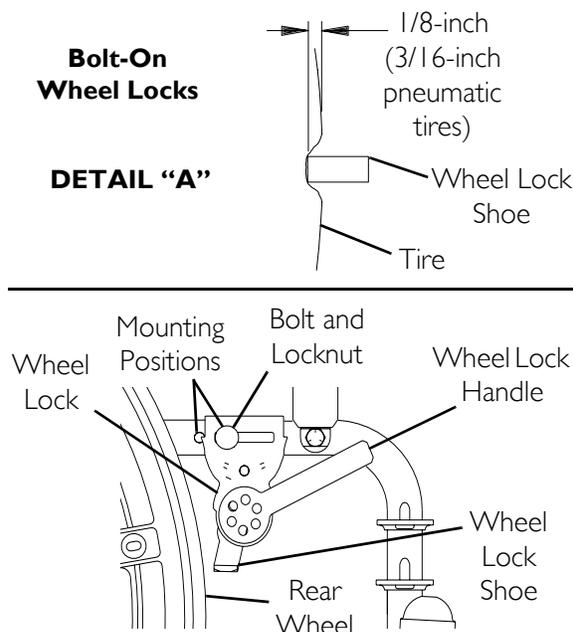


FIGURE 9.5 Adjusting Patient-Operated Wheel Locks

⚠ WARNING

If wheel locks do not hold the occupied wheelchair in place, contact a qualified technician; otherwise injury or damage may occur.

Installing Wheel Lock Shoe Extensions

NOTE: For this procedure, refer to FIGURE 9.6.

1. Loosen the two set screws on the wheel lock shoe extension until the set screws do not protrude into the slot.

2. Insert the disk wheel lock shoe into the slot in the shoe extension.

NOTE: Ensure the pointed end of the wheel lock shoe extension is facing toward the rear wheel.

3. Position the wheel lock shoe extension so the outside edge is flush with the end of the wheel lock shoe.

4. Securely tighten the two set screws to secure the wheel lock shoe extension to the wheel lock shoes.

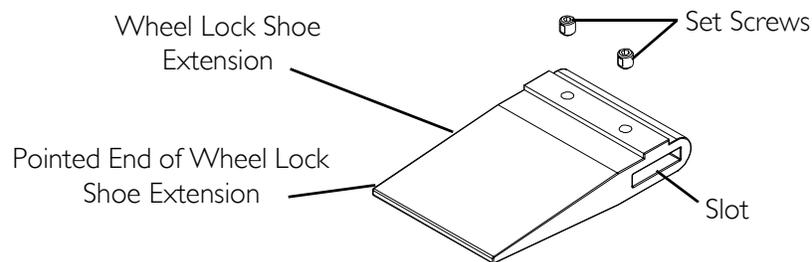


FIGURE 9.6 Installing Wheel Lock Shoe Extensions

SECTION 10—SEAT TO FLOOR

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

NOTE: Seat-to-floor height is not adjustable for wheelchairs with the fixed frame option (FF).

Changing Seat-to-Floor Height

⚠ WARNING

The size/position of the front casters, size/position of the rear wheels, use of anti-tipper model, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the six may cause the wheelchair to decrease in stability. These adjustments **MUST be performed by a qualified technician.**

Seat-to-floor heights have specific positions depending on rear wheel size, rear wheel position, front caster size and front caster position. These adjustments **MUST be performed by a qualified technician.**

If changing the seat-to-floor height the correct anti-tippers **MUST be ordered to maintain a 1½ to 2-inch ground clearance.**

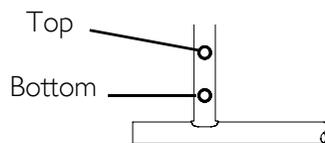
NOTE: For this procedure, refer to FIGURE 10.1.

1. Refer to the chart in FIGURE 10.1 to determine mounting positions for front casters/forks and rear wheels for the desired obtainable seat-to-floor height.
2. Remove the rear wheels from the wheelchair. Refer to Removing/Installing Rear Wheels on page 47.
3. If necessary, replace the front casters and forks with the casters and forks indicated in the chart. Refer to Replacing Front Casters on page 50 and Installing/Replacing/Adjusting Front Casters and Forks on page 49.
4. Reinstall the rear wheels onto the wheelchair in the mounting position indicated in the chart. Refer to Removing/Installing Rear Wheels on page 47.
5. Adjust anti-tippers according to new seat-to-floor height. Refer to Installing/Adjusting Anti-tippers on page 52.

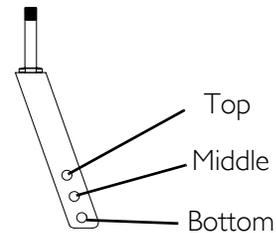
8-INCH FRONT CASTERS

SEAT-TO-FLOOR HEIGHT (IN INCHES)	FRONT CASTER MOUNTING POSITION	REAR WHEEL SIZE	REAR WHEEL MOUNTING POSITION
17½	Top	24-inch	Top
19½	Bottom	24-inch	Bottom

DETAIL "A" - REAR WHEEL MOUNTING POSITIONS-ADULT/HEMI FRAME STYLE



DETAIL "B" - 8-INCH FORK MOUNTING POSITIONS



NOTE: Seat-to-Floor Height is not Adjustable for Wheelchairs with Fixed Frame Option (FF).

FIGURE 10.1 Changing Seat-to-Floor Height

SECTION 11—OPTIONS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Installing the Seat Positioning Strap

⚠ WARNING

ALWAYS wear your positioning strap. Inasmuch as the seat positioning strap is an option on this wheelchair (you may order with or without the seat restraint), Invacare strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user. 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.

Standard and Heavy Duty/Extra Wide Wheelchairs

NOTE: For this procedure, refer to FIGURE 11.1.

1. Remove the bottom back upholstery screw from the wheelchair.
2. Position the seat positioning strap half between the back cane and back upholstery.
3. Secure the back upholstery and seat positioning strap half to the wheelchair with the existing back upholstery screw.
4. Repeat STEPS 1-3 for the opposite side of the wheelchair.

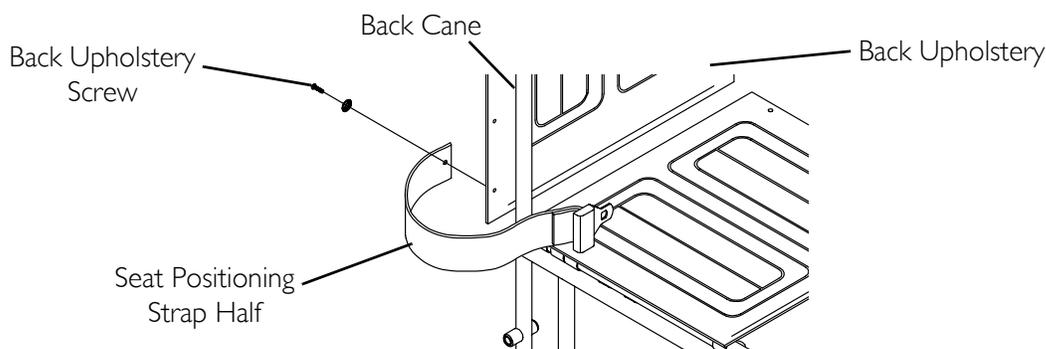


FIGURE 11.1 Installing the Seat Positioning Strap - Standard and Heavy Duty/Extra Wide Wheelchairs

Lightweight Wheelchairs

NOTE: For this procedure, refer to FIGURE 11.2.

1. Remove the rear seat upholstery screw from the wheelchair.
2. Position one seat positioning strap half between the seat rail and seat upholstery.
3. Secure the seat upholstery and seat positioning strap to the wheelchair with the existing seat upholstery screw.
4. Repeat STEPS 1-3 for the opposite side of the wheelchair.

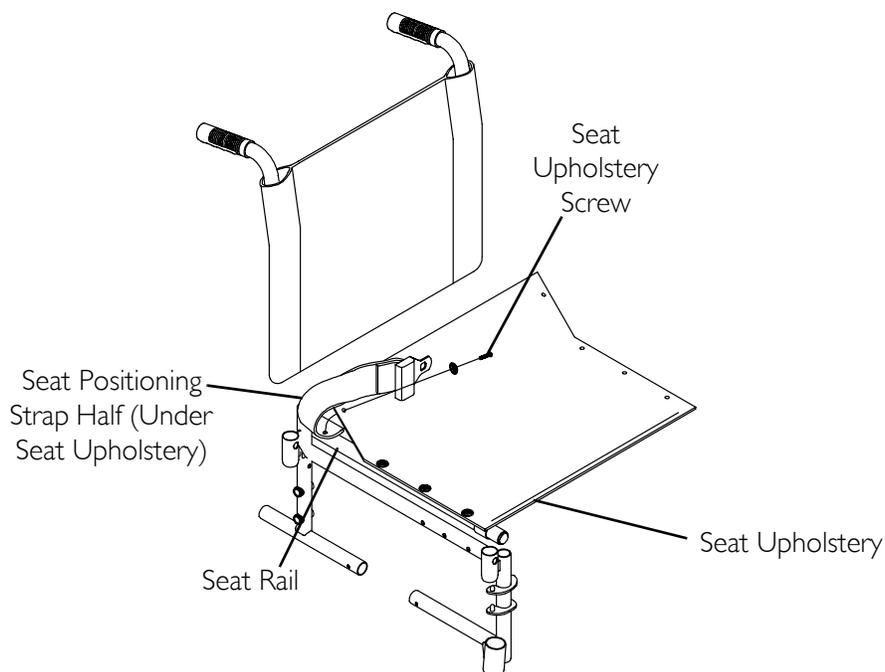


FIGURE 11.2 Installing the Seat Positioning Strap - Lightweight Wheelchairs

NOTES

NOTES

LIMITED WARRANTY

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

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

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

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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 at the bottom of this page. Provide dealer's name, address, the product model number, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

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



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