Top End® Terminator™ Series

Terminator Titanium, Terminator with Heavy Duty Option, Terminator Everyday

EN **Wheelchairs**
User Manual

CE

This manual MUST be given to the user of the product.
BEFORE using this product, read this manual and save for future reference.

TOP END®

INVACARE®

Yes, you can.®

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Please record your serial number SN#_____.
The SN is required for any warranty claims and placing aftermarket parts orders.

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1 General

1.1 Symbols

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage.

See the information below for definitions of the signal words.

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 or minor injury or both.

! – Indicates a hazardous situation that could result in damage to property if it is not avoided.

Gives useful tips, recommendations and information for efficient, trouble-free use.

CE This product complies with Directive 93/42/EEC concerning medical devices.

The launch date of this product is stated in the EC declaration of conformity.

1.2 Intended Use

The intended use for the manual (mechanical) wheelchair it to provide mobility and transportation of physically impaired persons. The manual wheelchair is intended for ongoing daily use. The models offer a wide range of customization which allows for a better fit for the end user resulting in comfort, lightweight, easier propelling, transferring, and smooth ride. The manual wheelchair is intended for indoor and outdoor use on firm surfaces free of climbing obstacles. All other uses are prohibited.

1.3 Service Life

The expected service life of this product is five years when used daily and in accordance with the safety instructions, maintenance intervals and correct use, stated in this manual. The effective service life can vary according to frequency and intensity of use.

1.4 Dealer/Technician Information

The term “qualified technician” in this manual refers to an Invacare qualified technician.

2 Safety

2.1 General Guidelines

The safety section contains important information for the safe operation and use of this product.

WARNING!

– Do not use this product 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. 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.

– 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.

WARNING!
ACCESSORIES

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

– Check all parts for shipping damage and test before using. In case of damage, do NOT use. Contact Top End/Carrier for further instruction.

2.2 Stability Warning

WARNING!
– The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five conditions may cause the wheelchair to decrease in stability.
– Use extreme caution when using a new seating position. The addition of anti-tippers may be required.

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.

Checked = ✓

	FOOTREST POSITION	CAMBER TUBE	BACK ANGLE	BACK UPHOLSTERY	USER CONDITION
FOOTREST POSITION	✓		✓		✓
CAMBER TUBE		✓	✓		✓
BACK ANGLE	✓		✓	✓	✓
BACK UPHOLSTERY			✓	✓	✓
USER CONDITION	✓	✓	✓	✓	✓

2.3 Operating Information

WARNING!

– 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.
– 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 from behind as this may cause 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 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. Also be certain the wheel locks are engaged to prevent the wheels from moving.
– 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.

WARNING!

– DO NOT attempt to ride over curbs or obstacles. Doing so may cause your wheelchair to turn over and cause bodily harm or damage to the wheelchair.
– 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.
– DO NOT stand on the frame of the wheelchair.
– Check all allen screws that secure the footrest/raised footrest system to the chair frame before using the wheelchair, especially if engaging in any contact sport.
– 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 an additional safeguard for the wheelchair user.
– Anti-tippers MUST be used at all times. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution MUST be observed when traversing such surfaces.
– Unless otherwise noted, all service and adjustments should be performed while the wheelchair is unoccupied.
– 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), Top End strongly recommends ordering the seat positioning strap as an additional safeguard for the wheelchair user.

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, belt MUST be replaced IMMEDIATELY. SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM THE PRODUCT.
– Because Top End wheelchairs are made to the specification of the original owner, it is unlikely that refurbished product would be suitable to another user's needs.
– 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.
– DO NOT use the footplate as a platform when getting in or out of the wheelchair.
– Ensure the occupant's legs and feet are properly secured during use. When transferring the occupant, ensure the feet do not slip between the tubes on the footrest.

Tire Pressure and Information

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

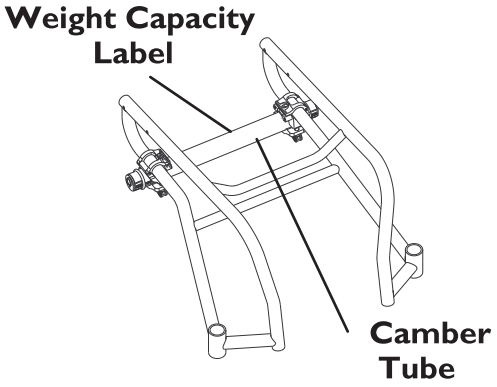
WARNING!

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.

2.4 Weight Capacity

WARNING!
Weight Capacity
– Invacare's Terminator Titanium wheelchairs have a weight capacity of 250 lbs (113.4 kg).
– Terminator Titanium wheelchairs with the heavy duty option have a weight capacity of 400 lbs (181.4 kg).



2.5 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.

2.6 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 the wheelchair or traversing curbs, or other impediments.

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

Also, be aware of detachable parts. These must NEVER be used for lifting supports or to move the wheelchair, as they may be inadvertently released, resulting in possible injury to the user and/or assistant.

When learning assistance techniques for the wheelchair, have an experienced assistant help you before attempting it alone.

2.7 Weight Distribution

WARNING!

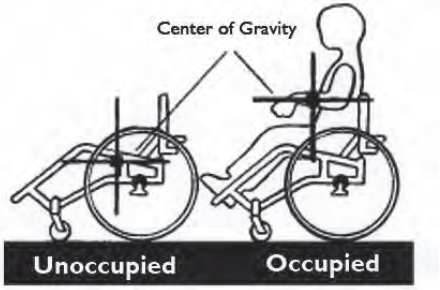
– The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchair's stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use EXTREME caution when using a new seating position. The addition of anti-tippers may be required.

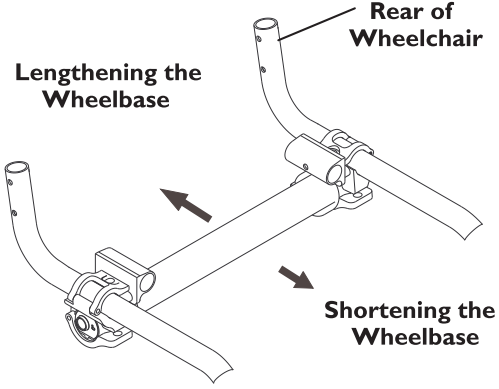
Many activities require the wheelchair owner to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to the normal balance, the center of gravity, and the weight distribution of the wheelchair.

To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified health-care professional before attempting active use of wheelchair.

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

- Lengthening the wheelbase will increase the stability and maintain standard maneuverability of wheelchair.
- Shortening the wheelbase will decrease the stability, increase the maneuverability and distribute additional weight onto the rear wheels.





2.8 Reaching, Leaning and Bending

Forward or Sideways

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

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.

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.

Forward or Sideways

Backwards

2.9 Tipping

WARNING!
– DO NOT tip the wheelchair without assistance.
– DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant.

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 tilting 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. Apply a continuous motion until the balance point is achieved. At this point, the assistant will feel a difference in the weight distribution. Turn the wheelchair in the desired direction if necessary. Slowly lower the wheelchair in one continuous movement.

Curbs

WARNING!
– Invacare does not recommend that sport wheelchairs be used where traversing curbs present an obstacle. Possible injury to occupant and/or assistant(s) can occur. Transfer to an everyday use wheelchair is recommended if any such obstacles may be encountered.

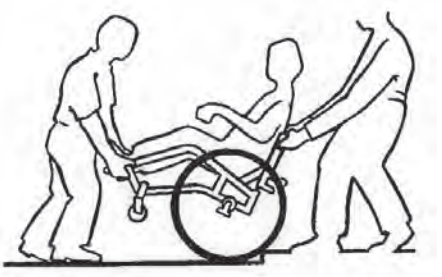
After mastering the techniques of tipping the wheelchair, use the following method to tackle curbs, short stairs, etc.

Turn the anti-tippers so the wheels are facing up. Unless the first assistant has exceptional upper body strength, it is recommended that two assistants perform this operation. The second assistant should be positioned at the front of the wheelchair lifting upward on a non-removable (non-detachable) part of the wheelchair frame when lifting the wheelchair and stabilizing the wheelchair when the wheelchair is being lowered to the ground.

The first assistant should stand on the sidewalk and turn the wheelchair so that the rear wheels are against the curb. 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. Do not let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant. Turn the anti-tippers so the wheels are facing down.



2.10 Stairways

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

1. If equipped, turn the anti-tippers up. Refer to 4.17 Adjusting/Replacing Footrest, page 46 .
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 it as the first assistant places one foot on the next stair and repeats procedure.
4. The wheelchair should not be lowered until the last stair has been negotiated and it has been rolled away from the stairway.
5. If equipped turn the anti-tippers down. Refer to 4.17 Adjusting/Replacing Footrest, page 46.

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

2.11 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.
– When transferring, position yourself as far back as possible in the seat. This will prevent damaged upholstery and the possibility of the wheelchair tipping forward.

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

Position the wheelchair as close as possible along side the seat to which you are transferring, with the front casters parallel to it. Remove the armrest, if installed. Engage wheel locks. 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.

2.12 Safety Inspection Checklist

Every six months or as necessary, take your Top End 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. Clean upholstery with mild soap and water or spray disinfectant using a sponge. DO NOT use bleach or wash in a washing machine.

WARNING!
– In cases of inactivity longer than six months, a comprehensive initial inspection MUST be performed.

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

Inspect/Adjust Initially

- ❑ Ensure wheelchair rolls straight (no excessive drag/pull to one side).
- ❑ Ensure wheel locks Do not interfere with tires when rolling.
- ❑ Ensure pivot points are free of wear and looseness.
- ❑ Ensure wheel locks are easy to engage.
- ❑ Inspect seat and back upholstery for rips or sagging.
- ❑ Inspect upholstery fastening flaps to ensure they securely latch.
- ❑ 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.
- ❑ Ensure hand grips (if equipped) are not loose.
- ❑ Ensure quick release axles and camber inserts are clean.
- ❑ Ensure adjustable axle position camber bar is securely tightened.
- ❑ Ensure quick/quad release axles lock properly.
- ❑ Ensure no excessive side movement or binding when lifted and spun.
- ❑ Inspect handrims for signs of rough edges or peeling.
- ❑ Inspect spokes for bent or broken spokes.
- ❑ Ensure all spokes are uniformly tight.
- ❑ Clean upholstery and armrests.

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

- ❑ Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.
- ❑ Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Ensure wheel bearings are clean and free of moisture.
- ❑ Inspect tires for flat spots and wear.

- ❑ If pneumatic tires check for proper inflation.
- ❑ Ensure casters are free of debris.
- ❑ Check that all labels are present and legible. Replace if necessary.

Inspect/Adjust Weekly

- ❑ Ensure hand grips (if equipped) are not loose.
- ❑ Ensure quick release axles and camber inserts are clean.
- ❑ Ensure quick/quad release axles lock properly.
- ❑ Inspect handrims for signs of rough edges or peeling.
- ❑ Inspect spokes for bent or broken spokes.
- ❑ Ensure all spokes uniformly tight.

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

- ❑ Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.
- ❑ Inspect tires for flat spots and wear.
- ❑ If pneumatic tires check for proper inflation.
- ❑ Ensure casters are free of debris.

Inspect/Adjust Monthly

- ❑ Ensure wheel locks Do not interfere with tires when rolling.
- ❑ Ensure pivot points are free of wear and looseness.
- ❑ Inspect upholstery fastening flaps to ensure they securely latch.
- ❑ 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.
- ❑ Ensure adjustable axle position camber bar is securely tightened.

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

- ❑ Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Ensure wheel bearings are clean and free of moisture.
- ❑ Ensure casters are free of debris.

Inspect/Adjust Periodically

- ❑ Ensure wheelchair rolls straight (no excessive drag/pull to one side).
- ❑ Ensure wheel locks are easy to engage.
- ❑ Inspect seat and back upholstery for rips or sagging.
- ❑ Ensure adjustable axle position camber bar is securely tightened.
- ❑ Ensure no excessive side movement or binding when lifted and spun.
- ❑ Inspect handrims for signs of rough edges or peeling.
- ❑ Clean upholstery and armrests.

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

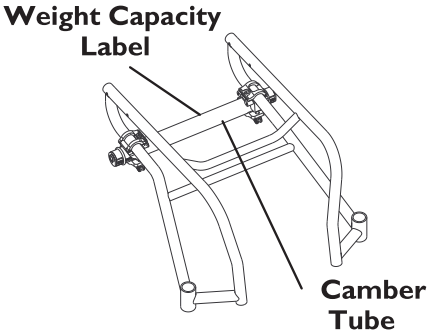
- ❑ Ensure wheel bearings are clean and free of moisture.
- ❑ Ensure casters are free of debris.
- ❑ Check that all labels are present and legible. Replace if necessary.

3 Overview

3.1 Label Locations and Component Identification

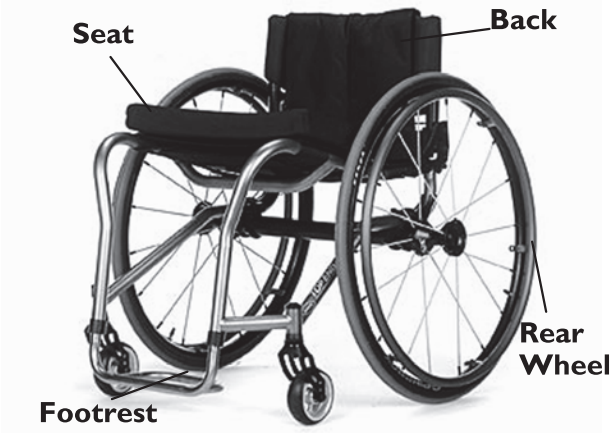
Serial number label is located underneath the seat.

The weight capacity label is on the camber tube.



Component Identification

Terminator Titanium



3.2 Typical Product Parameters

Top End Terminator Titanium	
FRAME:	Grade 9 Titanium .035, heavy duty Grade 9 Titanium .051 wall thickness
SEAT WIDTH:	12-18 inches (30.48 - 45.72 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.54 cm) increments
SEAT DEPTH:	14 to 18 (35.56 - 45.72 cm) inches
SEAT-TO-FLOOR:	**Front** - 17 to 21-inch (43.18 - 53.34 cm), **Rear** -14 to 21-inch (35.56 - 53.34 cm)
BACK STYLE:	Fixed (Standard), Fold Down
BACK HEIGHT FIXED:	8 -16 inches (20.32 - 40.64 cm)
BACK HEIGHT ADJUSTABLE:	9 to 11, 10 to 14, 12 to 16, 14 to 18 and 16 to 20 inches in 1-inch increments. (20.32 - 27.94, 25.4 - 35.56, 30.48 - 40.64, 35.56 - 45.72, and 40.64 - 50.8 cm in 2.54 cm increments)
BACK ANGLE FOLDING:	90° straight, 4° backward, 4° forward or 8° forward
BACK ANGLE FIXED:	0°, 3°, 6° or 9°
REAR-FRONT CASTER DISTANCE:	17 to 2 inches (43.18 - 53.34 cm) (From outside of back of frame to center of front caster housing)
FRONT CASTER TO FOOTPLATE DISTANCE:	3 to 5 inches (7.62 - 12.7 cm)
FOOT WIDTH:	9 to 12 inches (22.86 - 30.48 cm) (Average is 10-inches (25.4 cm) between front of footrest bars)
FOOTREST:	Tubular: 4-inch (10.16 cm) Height Adjustable (Standard)
SIDE-WHEEL CLEARANCE:	Adjustable 1/2 to 1-1/2-inches (1.27 - 3.81 cm)

Top End Terminator Titanium	
REAR AXLE:	Adjustable Axle Position, Quick (Standard) or Quad-Release
REAR WHEEL CAMBER — CAMBER TUBE 2000:	0°, 3°, 6°, 9°
REAR WHEEL CAMBER — ADJUSTABLE CAMBER SYSTEM:	0°, 3°, 6°, 9°, 12°
REAR WHEELS 22–INCH (21.22 ZOLL) 24–INCH (23.14 ZOLL) (STANDARD) 25–INCH (24.1 ZOLL) 26–INCH (25.1 ZOLL)	Sun High performance (Standard), Spinergy SPOX, Spinergy LX
TIRES* 22–INCH (21.22 ZOLL) 24–INCH (23.14 ZOLL) (STANDARD) 25–INCH (24.1 ZOLL) 26–INCH (25.1 ZOLL)	1inch (2.54cm) Primo High pressure clincher (standard), 1–inch (2.54cm) Kenda, 1inch (2.54cm) Schwallbe flat resistant, 1 3/8–inch (3.49cm) w/flat free inserts, 1–inch (2.54cm) solid, 2–inch (5.08cm) knobby
HANDRIMS:	Aluminum Welded Tab (Standard) Plastic Coated, Natural Fit®, Titanium
WHEEL LOCKS:	High Mount (Standard), Undermount (Optional)
FRONT FORKS:	Non-Suspension (Standard), Suspension
CASTER SIZE:	3, 4, 5 and 6-inch (7.62, 10.16, 12.7 and 15.24 cm)
BACK UPHOLSTERY:	U240 Black - Adjustable Tension or Breathable Mesh-Adjustable tension
WEIGHT:	17 lbs (7.71 kg)

SHIPPING WEIGHT:	30 lbs (13.6 kg)
WEIGHT CAPACITY:	250 lbs (113.4 kg)/400 lbs (181.44 kg) with Heavy Duty Option

Top End Terminator Everyday	
FRAME:	6061 T6 Aluminum .083, Heavy Duty Option 4031 Chrome-moly steel.
SEAT WIDTH:	12-18 inches (30.48 - 45.72 cm) - Outside to Outside of SEAT FRAME in 1-inch (2.54 cm) increments
SEAT DEPTH:	14 to 18inches (35.56 - 45.72 cm)
SEAT-TO-FLOOR:	**Front** - 17 to 21-inch (43.18 - 53.34 cm), **Rear** -14 to 21-inch (35.56 - 53.34 cm)
BACK STYLE:	Fixed (Standard), Fold Down
BACK HEIGHT FIXED:	8 -16 inches (20.32 - 40.64 cm)
BACK HEIGHT ADJUSTABLE:	9 to 11, 10 to 14, 12 to 16, 14 to 18 and 16 to 20 inches in 1-inch increments. (20.32 - 27.94, 25.4 - 35.56, 30.48 - 40.64, 35.56 - 45.72, and 40.64 - 50.8 cm in 2.54 cm increments)
BACK ANGLE FOLDING:	90° straight, 4° backward, 4° forward or 8° forward
BACK ANGLE FIXED:	0°, 3°, 6° or 9°
REAR-FRONT CASTER DISTANCE:	17 to 2 inches (43.18 - 53.34 cm) (From outside of back of frame to center of front caster housing)
FRONT CASTER TO FOOTPLATE DISTANCE:	3 to 5 inches (7.62 - 12.7 cm)
FOOT WIDTH:	9 to 12 inches (22.86 - 30.48 cm) (Average is 10-inches (25.4 cm) between front of footrest bars)
FOOTREST:	Tubular: 4-inch (10.16 cm) Height Adjustable (Standard)

Top End Terminator Everyday	
SIDE-WHEEL CLEARANCE:	Adjustable 1/2 to 1-1/2-inches (1.27 - 3.81 cm)
REAR AXLE:	Adjustable Axle Position, Quick (Standard) or Quad-Release
REAR WHEEL CAMBER — CAMBER TUBE:	0°, 3°, 6°, 9°
REAR WHEEL CAMBER — ADJUSTABLE CAMBER SYSTEM:	0°, 3°, 6°, 9°, 12°
REAR WHEELS 22–INCH (21.22 ZOLL) 24–INCH (23.14 ZOLL) (STANDARD) 25–INCH (24.1 ZOLL) 26–INCH (25.1 ZOLL)	Sun High performance (Standard), Spinergy SPOX, Spinergy LX
TIRES* 22–INCH (21.22 ZOLL) 24–INCH (23.14 ZOLL) (STANDARD) 25–INCH (24.1 ZOLL) 26–INCH (25.1 ZOLL)	1inch Primo High pressure clincher (standard), 1–inch (2.54cm) Kenda, 1inch (2.54cm) Schwallbe flat resistant, 1 3/8–inch (3.49cm) w/flat free inserts, 1–inch (2.54cm) solid, 2–inch (5.08cm) knobby
HANDRIMS:	Aluminum Welded Tab (Standard) Plastic Coated, Natural Fit® , Titanium
WHEEL LOCKS:	High Mount (Standard), Undermount (Optional)
FRONT FORKS:	Non-Suspension (Standard), Suspension
CASTER SIZE:	3, 4, 5 and 6-inch (7.62, 10.16, 12.7 and 15.24 cm)
BACK UPHOLSTERY:	U240 Black - Adjustable Tension or Breathable Mesh-Adjustable tension
WEIGHT:	17 lbs (7.71 kg)

SHIPPING WEIGHT:	30 lbs (13.6 kg)
WEIGHT CAPACITY:	250 lbs (113.4 kg)/350 lbs (158.75 kg) with Heavy Duty Option

– 15 x 15-inch (38.1cm) seat, rear wheels and minimal options are included in the weight.
– *Refer to 3.3 Tire Pressure Conversion, page 23.
– All specifications are approximate.

3.3 Tire Pressure Conversion

If equipped with high pressure tires, a Presta valve adaptor will be needed to inflate the tires to the recommended pressures below.

PSI rating is printed on the side of the tire. Conversion formula: 1 psi = 6.895 kPa (approx. 7 kPa).

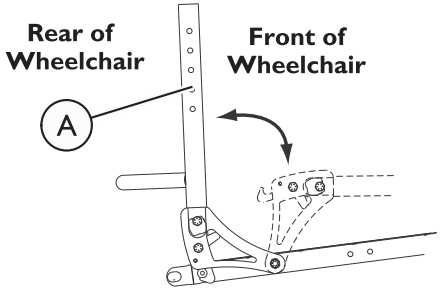
PSI	KILSOPASCALS	PSI	KILOPASCALS
50	345	90	621
55	379	95	655
60	414	100	690
65	448	105	724
70	483	110	758
75	517	115	793
80	552	120	827
85	586		

4 Operation

4.1 Unfolding/Folding the 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.
– ALWAYS perform these procedures in the presence of an assistant. The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use extreme caution when using a new seating position. The addition of anti-tippers may be required.
– The position of the footrest, seat angle, back angle, seating system/upholstery, caster size and position, rear wheel size and position, use of anti-tippers, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the ten may cause the wheelchair to decrease in stability. EXTREME care must be taken when changing the stability of the wheelchair.

WARNING!
– Back MUST be locked securely in place before using the wheelchair.



Back upholstery removed for clarity.

1. To unfold the back, lift up on the back posts Ⓐ and pull back towards the rear of the wheelchair until it locks into place.
2. To fold the back, pull up on the back release cord and push the back posts Ⓐ forward toward the front of the wheelchair.

4.2 Back Angle Adjustment

WARNING!

– If the adjustment square is installed into the back angle plate so that a number does not appear next to the indent, DO NOT use this position, otherwise injury will occur. This position of the adjustment square does not allow the locking pins to lock into position when the back is raised.

– After unfolding the back, ensure that the plunger pins are fully engaged in the mounting holes of the adjustment square in the back angle plates. Otherwise, serious injury could result.

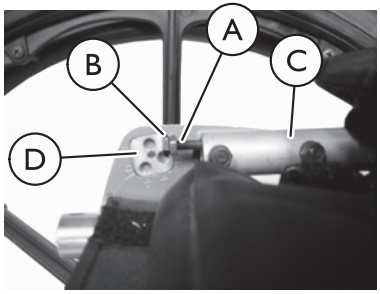
The numbers on the back angle plate are intended to define the resulting back angle of a chair that has 2 inch (5.08cm) seat drop [at 17 inch (43.18cm) depth] and that is measured relative to true vertical with the chair sitting on a level surface. The plus (+) sign increases the back angle and the minus (-) sign decreases the back angle. The resulting back angle will vary somewhat depending on your chair configuration. Refer to figure on page 25–26 to see these settings converted into back angle relative to the seat.

Perform this procedure on both sides of the wheelchair at the same time.

Note the indent on the adjustment square. When the adjustment square is positioned in the back angle plate, the number that is located directly next to the indent will be back angle relative to true vertical. One side of the adjustment square provides back angles of +8°, 0° and -4°. Flip the adjustment square over to obtain back angles of -8°, +4° and 0°.

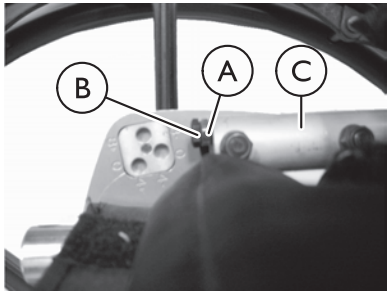
When adjusted properly, the back should have a small amount of movement when locked in the open position. Plunger pins should snap in and release easily without resistance.

DETAIL "A"



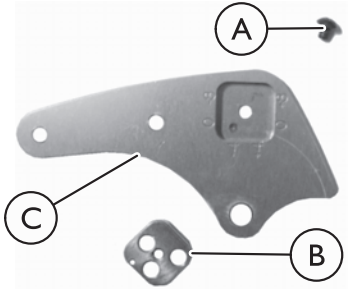
1. Fold down the back. Refer to 4.1 Unfolding/Folding the Back, page 24.
2. Loosen the jam nut Ⓐ on the placement screw Ⓑ located at the bottom of the back cane Ⓒ (Detail "A").

DETAIL "B"



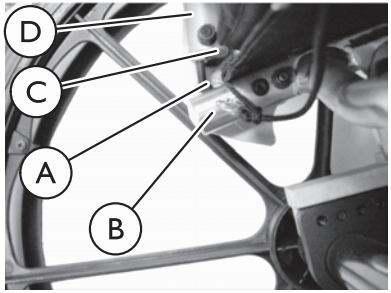
3. Tighten the placement screw Ⓑ so that the screw and jam nut Ⓐ are snug against the bottom of the back cane Ⓒ (Detail "B").

DETAIL "C"

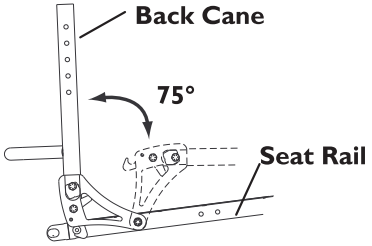
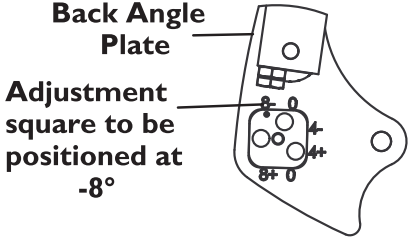
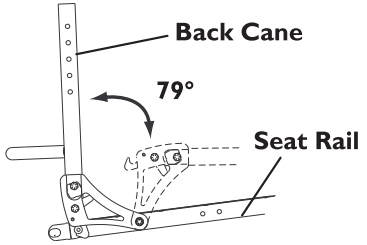
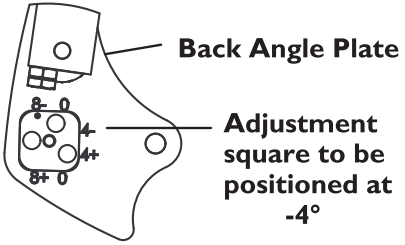
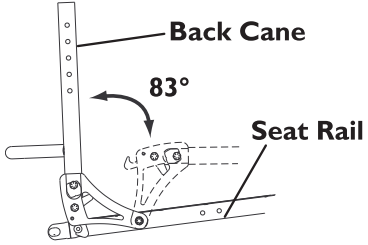
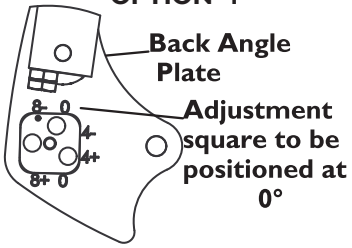
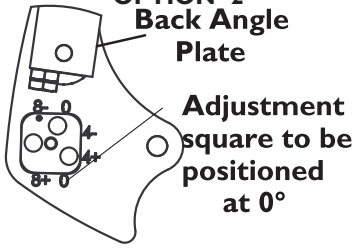


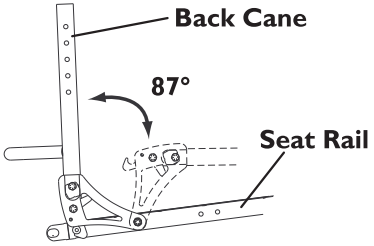
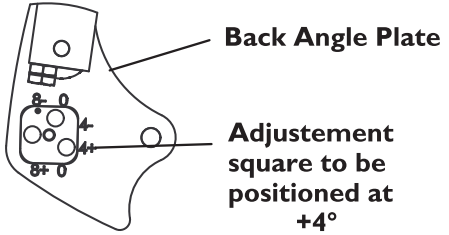
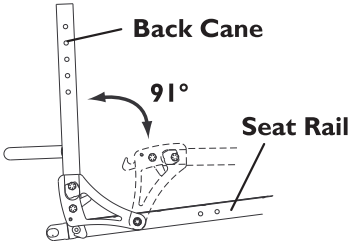
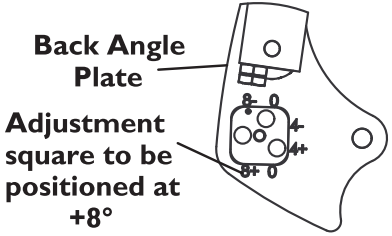
4. Remove the mounting screw Ⓐ that secures the adjustment square Ⓓ(in Detail "A") and Ⓑ (in Detail "C") to the back angle plate Ⓒ(Details "A" and "C").
5. Remove the adjustment square Ⓑ from the back angle plate Ⓒ (Detail "C").
6. Position the adjustment square Ⓑ in the back plate Ⓒ with the indent located underneath the desired back angle.
7. Secure the adjustment square Ⓑ to the back angle plate Ⓒ with the mounting screw Ⓐ. Tighten securely.
8. Repeat STEPS 2-6 for remaining back cane Ⓒ (Detail "A").
9. Unfold the back until the plunger pins lock into the mounting holes in the adjustment square Ⓑ.

DETAIL "D"



10. Unthread the mounting screw Ⓐ until head of screw rests on seat rail Ⓑ (Detail "D").
11. Completely tighten jam nut Ⓒ up against bottom of back cane Ⓓ (Detail "D").

DESIRED SEAT ANGLE	ADJUSTMENT SQUARE POSITION	
	NUMERICAL	GRAPHICAL
	-8°	
	-4°	
	0°	OPTION 1  OPTION 2 

DESIRED SEAT ANGLE	ADJUSTMENT SQUARE POSITION	
	NUMERICAL	GRAPHICAL
	+4°	
	+8°	

4.3 Adjustable Tension Back Upholstery

WARNING!

– The position of the footrest, seat angle, back angle, seating system/upholstery, caster size and position, rear wheel size and position, use of anti-tippers, as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the ten may cause the wheelchair to decrease in stability. EXTREME care MUST be taken when changing the stability of the wheelchair. Refer to the chart in 2.2 Stability Warning, page 7 .

The Adjustable Tension Straps

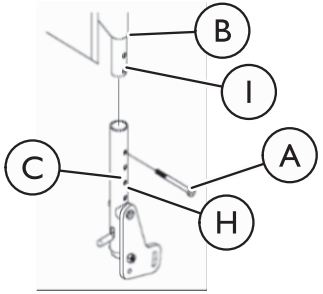
The straps can be adjusted at various levels of tension to accommodate individual end-users. The bottom two straps can be adjusted tightly to support and/or assist the extensor muscles.

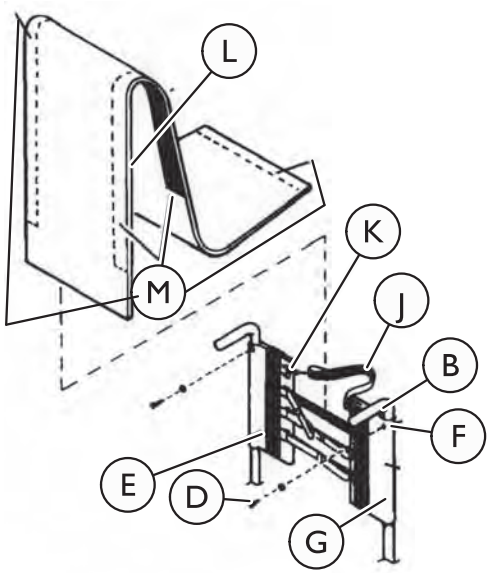
The Back Upholstery Cover

The back upholstery cover is designed for three reasons:

- The first is as a modesty cover.
- The second is to keep the cushion from sliding out of the back of the wheelchair.
- The third is a sacral support depending upon how far or tight the flap is pulled under the seat cushion.

Replacing Adjustable Tension Back Upholstery





1. Remove the back height adjustment screws Ⓐ that secure the back posts Ⓑ to the back uprights Ⓒ.
2. Slide the back posts Ⓑ out of the back uprights Ⓒ.
3. Remove the two screws and washers Ⓓ that secure the existing back upholstery to the back posts Ⓑ.
4. Slide the existing back upholstery down and off the back posts Ⓑ.
5. Stand behind the wheelchair and perform the following:
   a. Slide anchor loop section of adjustable tension back upholstery Ⓔ up onto the left back post Ⓑ with the upper grommet hole Ⓕ facing the rear of the wheelchair.
   b. Slide adjuster strap section of adjustable tension back upholstery Ⓖ up onto the right back post Ⓑ with the upper grommet hole Ⓕ facing the rear of the wheelchair.
6. Align the mounting hole in each back post Ⓑ with the desired mounting hole Ⓗ in each back upright Ⓒ.
7. Install the two back height adjustment screws Ⓐ through the back upright mounting holes Ⓗ determined in step 6 and the back post mounting holes Ⓘ.
8. Slip adjuster straps Ⓙ through corresponding anchor loops Ⓚ and adjust the back upholstery Ⓛ. Secure with the fastening straps Ⓜ.

Both back posts should be adjusted to the same height.

WARNING!
– After the adjustable tension back upholstery has been positioned to the end-users individual needs, the fastening straps MUST be securely fastened BEFORE applying the back upholstery cover. The adjustable back should be checked whenever entering the wheelchair to ensure that the fastening straps are securely fastened.

9. Secure the back upholstery cover (fastening strap) Ⓜ to the back of the adjustable back upholstery (fastening strap).
10. Flip the back upholstery cover Ⓛ over the adjustable back upholstery and secure the fastening straps Ⓜ to the front of the adjustable back upholstery.
11. Lay the front portion of the back upholstery cover Ⓛ on the seat pan.
12. Adjust the slack in the back upholstery cover Ⓛ and then secure to the seat pan fastening straps.

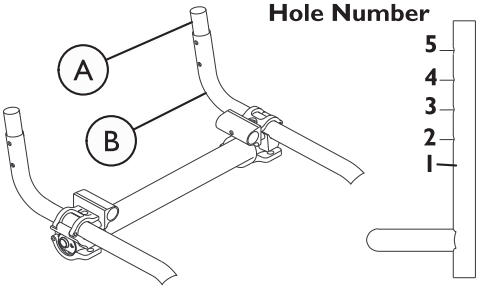
4.4 Back Height Adjustment (Adjustable Back Only)

Observe the tautness of the back upholstery for reinstallation.

1. Unlatch the two fastening flaps that secure the top of the back upholstery to the back posts and remove from the back posts.

WARNING!
– Push pin MUST be protruding through hole in back post Ⓑ.
– Ensure that both back post inserts Ⓐ are at the same height BEFORE reassembling the wheelchair.

2. Press the push pin on the back post insert tube Ⓐ in and adjust the back height to one of four heights depending on original back height:



* Holes numbered from bottom to top for reference only. (There are no numbers on the back posts.)

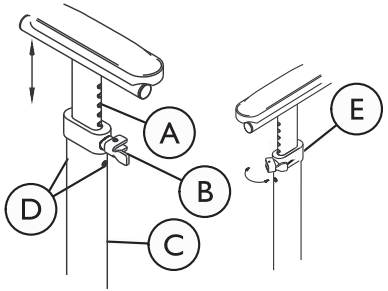
There is a 1-inch (2.54 cm) adjustment pin on the back post insert tube Ⓐ. To raise back to maximum height, first make adjustment to the back post inserts Ⓐ.
The fastening flap with logo is for the left back post Ⓑ.
Right and left is determined by sitting in the wheelchair.

3. Reinstall the fastening flaps onto the back posts Ⓑ.
4. Adjust the new back upholstery to the desired tautness.

Original Back Height	9–11 (22.86in – 27.94cm)	10–14 (25.40in – 35.56cm)	12–16 (30.48in – 40.64cm)	14–18 (35.56in – 45.72cm)	16–20 (40.64in – 50.8cm)
Hole* Number					
1	9in (22.86 cm)	10in (25.40 cm)	12in (30.48 cm)	14in (35.56 cm)	16in (40.64 cm)
2	10in (25.40 cm)	11in (27.94 cm)	13in (33.02 cm)	15in (38.10 cm)	17in (43.18 cm)
3	11in (27.94 cm)	12in (30.48 cm)	14in (35.56 cm)	16in (40.64 cm)	18in (45.72 cm)
4	N/A	13in (33.02 cm)	15in (38.10 cm)	17in (43.18 cm)	19in (48.25 cm)
5	N/A	14in (35.56 cm)	16in (40.64 cm)	18in (45.72 cm)	20in (50.8 cm)

4.5 Adjusting the T-Arms

Adjusting T-Arm Height



1. Unlock the T-arm Ⓔ by flipping the T-arm release lever towards the inside of the wheelchair.

   If necessary, pull out on the T-arm release lever and rotate 180° so it can be flipped towards the outside of the wheelchair.

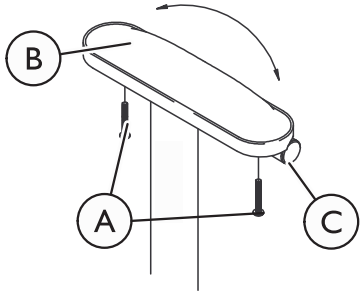
2. Slide the T-arm to one of:

   - Low Height T-Arms - Nine positions.
   - High Height T-Arms - Seven positions.

   If the inside T-arm post Ⓐ does not slide up and down in the outside T-arm post Ⓒ as desired, perform one of the following:

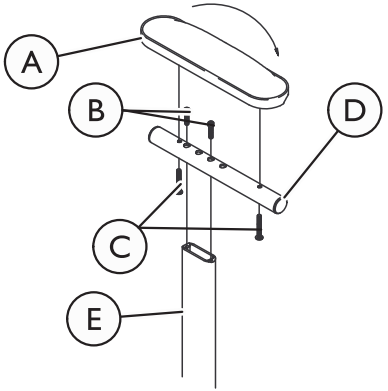
3. Tighten - Tightening the set screws Ⓓ on the outside T-arm post Ⓒ will make it more difficult to move the inside T-arm Ⓐ post up and down.
4. Loosen - Loosening the set screws Ⓓ on the outside T-arm post Ⓒ will make it easier to move the inside T-arm Ⓐ post up and down.
5. Lock the T-arm by flipping the T-arm release lever Ⓑ towards the front of the wheelchair.

Adjusting T-Arm Width



1. Remove the two mounting screws Ⓐ that secure the arm pad Ⓑ to the arm tube Ⓒ.
2. Turn the arm pad Ⓑ around and reposition the arm pad Ⓑ on the arm tube Ⓒ.
3. Re-secure the arm pad Ⓑ to the arm tube Ⓒ with the two mounting screws Ⓐ. Tighten securely.
4. Repeat for the opposite side, if necessary.

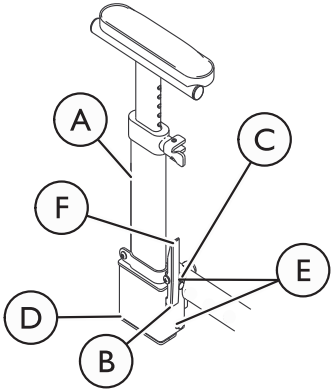
Adjusting T-Arm Depth



1. Remove the two mounting screws Ⓒ that secure the arm pad Ⓐ to the arm tube Ⓓ.
2. Remove the two socket screws Ⓑ that secure the arm tube Ⓓ to the T-arm post Ⓔ.
3. Reposition the arm tube Ⓓ on the T-arm post Ⓔ:
   - Desk Length Arms - to one of three positions depending on the desired arm pad Ⓐ depth.
   - Full Length Arms - to one of five positions depending on the desired arm pad Ⓐ depth.

     Additional positions are obtainable by turning the arm tube 180°.
4. Re-secure the arm tube Ⓓ to the T-arm post Ⓔ with the two socket screws Ⓑ. Torque to 60-70 in./lbs (152.4–177.8cm/kg).
5. Reattach the arm pad Ⓐ to the arm tube Ⓓ with the two mounting screws Ⓒ. Tighten securely.
6. Repeat for the opposite side, if necessary.

4.6 Adjusting T-Arm Sockets



Perform this procedure if the T-arm Ⓐ is too loose in the socket or does not easily slide up and down in the socket.

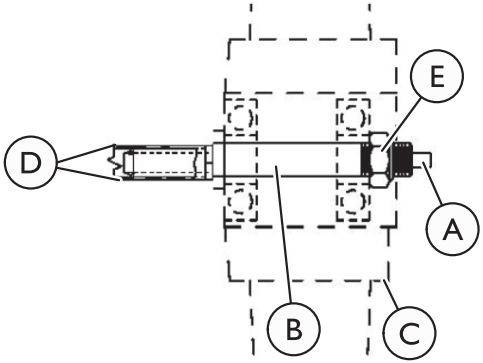
1. Remove the rear wheels from the wheelchair, if necessary. Refer to 5.7 Removing/Installing Rear Wheels, page 52.
2. Loosen, but do not remove the four socket screws and washers Ⓔ that secure outer T-arm bracket Ⓓ to the inner T- arm bracket Ⓒ.

   The T-arm socket will disassemble if the four socket screws and washers Ⓔ are removed.

3. Slide the T-arm Ⓐ into the T-arm socket until the locking lever Ⓕ is in the slot Ⓑ in the T-arm socket and an audible "click" is heard.
4. Squeeze the outer T-arm bracket Ⓓ and the inner T-arm bracket Ⓒ together until the socket is flush with the T-arm Ⓐ.
5. While holding the outer and the inner T-arm brackets together, tighten the four socket screws and washers Ⓔ. Tighten securely.
6. Press in on the locking lever Ⓕ and lift the T-arm straight up and out of the T-arm socket.
7. Repeat STEPS 3-6, if necessary until the T-arm Ⓐ slides in the T-arm socket as desired.
8. If necessary, install rear wheels. Refer to 5.7 Removing/Installing Rear Wheels, page 52.

4.7 Adjusting Quick-Release Axles

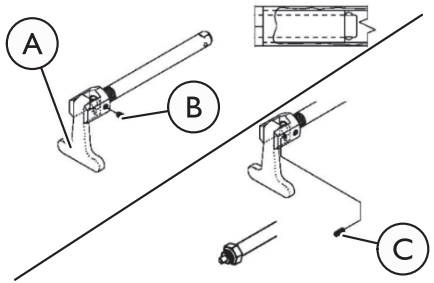
1. Remove rear wheel and quick-release axle Ⓑ from the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52 and to 5.10 Replacing Quad-Release Axles, page 54.



2. Depress detent pin Ⓐ in the quick-release axle Ⓑ and slide axle through the wheel hub Ⓒ.
3. Release detent pin Ⓐ ensuring that the locking pins Ⓓ are fully released.
4. Increase or decrease end play by adjusting the locknut Ⓔon the end of the quick-release axle Ⓑ.
5. Install rear wheel onto the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52 .

End of Quick Release axle is shown for reference only. It is not visible when inserted into camber bar.

4.8 Adjusting Quad-Release Handles



1. Remove rear wheel and the quad-release axle Ⓐ from the wheelchair. Refer to .
2. Loosen the locking screw Ⓑ.
3. Make one or both of the following adjustments:
   - If the quad release handle Ⓐ is not releasing the locking pins completely, rotate the quad-release handle Ⓐ approximately one-quarter turn clockwise.
   - If the quad-release handle Ⓐ hits the spokes of the rear wheel when assembled, rotate the quad-release handle Ⓐ approximately one-quarter turn counterclockwise.
4. Tighten the locking screw Ⓑ.
5. Install the rear wheel and quad-release axle Ⓐ onto the wheelchair. Refer to .
6. Flip the handle of the quad-release axle Ⓐ down to release the detent pin ensuring that the locking pins are fully released.
7. Repeat this procedure until the quad-release axle locks correctly.

4.9 Removing Play from Rear Wheels

With the rear wheel and quad-release axle Ⓐ still mounted on the wheelchair, tighten the length adjusting screw Ⓒ until there is no in and out movement of the quad-release axle Ⓐ and rear wheel.

Refer to diagram in 4.8 Adjusting Quad-Release Handles, page 35

4.10 Opening/Closing Camber Clamps

WARNING!
STANDARD AND SUSPENSION CAMBER CLAMPS
– Make sure the hex screws are securely tightened before using wheelchair, otherwise personal injury or damage to the wheelchair may occur.
QUICK RELEASE LEVERS
– Make sure the quick release levers are in the closed position before using the wheelchair, otherwise personal injury or damage to the wheelchair may occur.

CAUTION!
ADJUSTABLE CAMBER SYSTEM ONLY
– DO NOT close the quick-release levers or tighten the socket screws or hex screws without camber inserts in the axle tube. Damage to the axle tube will occur.

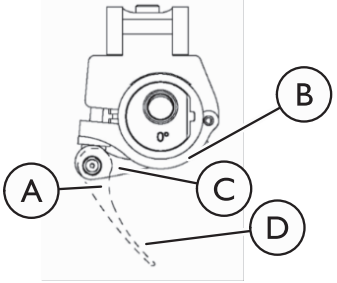
1. Perform one of the following to open a camber clamp:
   - Quick-Release Levers - Pull the quick release lever Ⓐ to the open position Ⓓ.
   - Standard Camber Clamps - Loosen, but do not remove the socket screw Ⓑ on the camber clamp Ⓐ.

- Suspension Camber Clamps - Loosen, but do not remove the hex screw Ⓓ on the bottom rear of the camber clamp Ⓐ.

2. Perform one of the following to close a camber clamp:

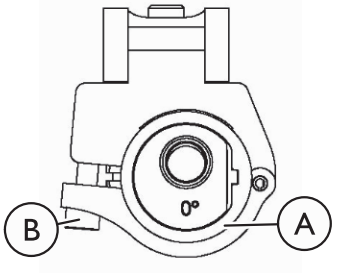
- Quick Release Levers - Secure the quick release lever Ⓐ to the camber clamp Ⓑ by threading it completely into the camber clamp Ⓑ. Push the quick release lever Ⓐ on the camber clamps Ⓑ to the closed position Ⓒ.

Side View of Quick Release Lever



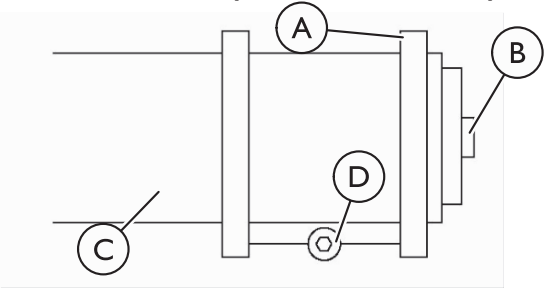
- Standard Camber Clamps - Securely tighten the socket screw Ⓑ to secure the axle tube.

Side View of Standard Camber Clamp



- Suspension Camber Clamp - Securely tighten the hex screw Ⓓ on the bottom rear of the camber clamp Ⓐ to secure the axle tube Ⓒ.

Rear View of Suspension Camber Clamp



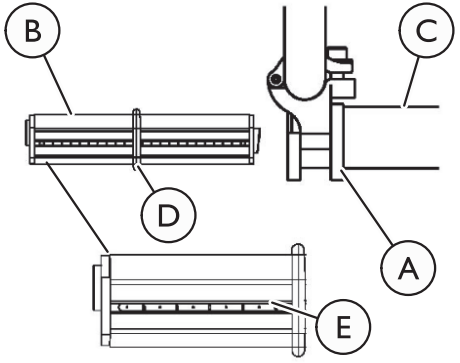
4.11 Adjusting Rear Wheel Camber

Camber Tube with Single Camber

The axle tube must be replaced to change the camber. Refer to 5.11 Replacing Axle Tube, page 55 .

Adjustable Camber System

– Perform this procedure to one side of the wheelchair at a time for ease of adjustment.
– Before using the wheelchair, make sure both camber inserts are set to the same indexing mark. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.



1. Open the camber clamp Ⓐ.
2. Pull one rear wheel with camber insert Ⓑ out of axle tube Ⓒ.
3. Remove the rear wheel from the camber insert Ⓑ.
4. Rotate the camber insert Ⓑ 180°.
5. Reinstall the rear wheel into the camber insert Ⓑ.

WARNING!
– NEVER position the camber inserts in the axle tube with more than 3-inches (7.62 cm) (12 indexing marks showing) of the camber insert outside of the axle tube.
– The camber inserts will not be securely tightened in the axle tube. Possible injury to the user and/or damage to the wheelchair may occur.

6. Position the camber insert Ⓑ to the desired position. Make sure there is no more than 3 inches (7.62 cm) (12 indexing marks Ⓔ) of the camber inserts Ⓑ outside of the axle tube Ⓒ.
7. Slide the indexing ring Ⓓ on the camber insert Ⓑ until it is flush with the camber clamp Ⓐ.
8. Close the camber clamp Ⓐ. Refer to 4.10 Opening/Closing Camber Clamps, page 35 .
9. Repeat STEPS 1-8 for opposite side of wheelchair.
10. Install rear wheel to the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52 .
11. Adjust toe in/toe out of wheelchair. Refer to 4.13 Adjusting Toe In/Toe Out, page 39.

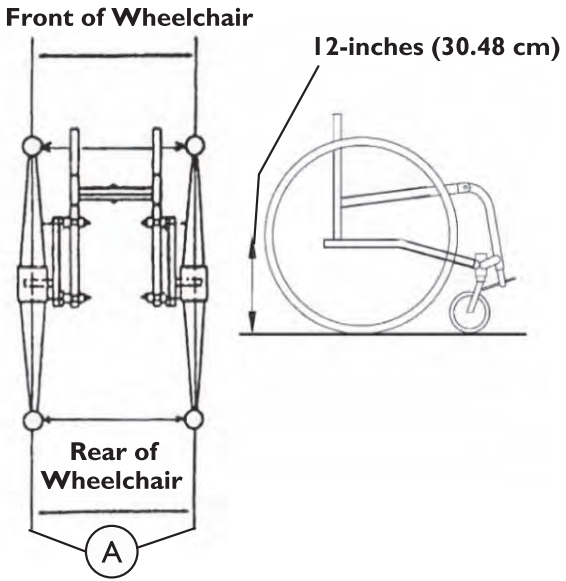
4.12 Determining Toe In/Toe Out

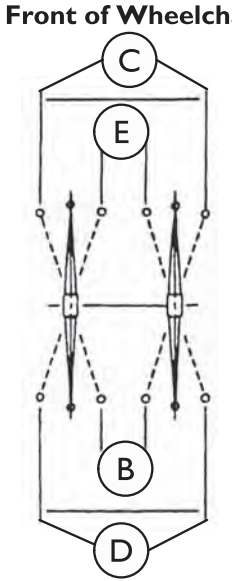
1. Inflate all pneumatic tyres to recommended tyre pressures (listed on the sidewall of the tire).
2. Measure the distance between the centerlines Ⓐ at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor.

– For optimum accuracy, perform STEP 2 with the wheelchair occupied.

3. Determine difference between two measurements. If difference between the two measurements is greater than 1/2-inch (1.27 cm) (0 + 1/4-inch (0.63 cm) for maximum rollability), one of two conditions exists:
   - If the back centerline measurement of the rear wheels is SMALLER Ⓑ than the front centerline measurement of the rear wheels, a TOE-OUT condition Ⓒ exists.
   - If the back centerline measurement of the rear wheels is LARGER Ⓓ than the front centerline measurement of the rear wheels, a TOE-IN condition Ⓔ exists.
4. If the difference between the measurements is greater than 1/2-inch (1.27 cm), correct the toe-in/toe-out condition.

Top View of Wheelchair





Top View of Wheelchair

4.13 Adjusting Toe In/Toe Out

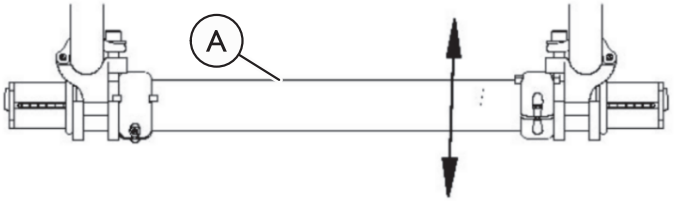
Camber Tube with Single Camber

1. Open the camber clamps.
2. Slowly rotate the camber tube in either direction until the rear wheels are approximately in a straight line.
3. Close the camber clamps.
4. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor.
5. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/2-inch (1.27 cm) (0 ± 1/4-inch (0.63 cm) for maximum rollability).

Adjustable Camber System

Course Adjustment

– This procedure is required any time the axle tube is moved from the factory set position or is replaced.
– Make the following adjustment for one camber at a time.
– Rear wheels are removed from the drawings for clarity. There is no need to remove rear wheels from the wheelchair during adjustment.
– The illustration shows two examples of how the adjustment rings can be positioned.

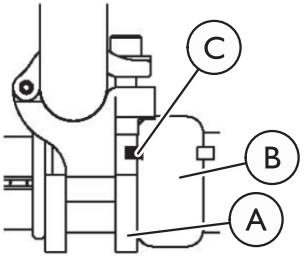


1. Open the camber clamps Ⓐ.
2. Loosen the Phillips™ screws that secure the adjustment rings Ⓑ to the axle tube.
3. Slowly rotate the axle tube Ⓐ until the rear wheels are approximately in a straight line.
4. Close the camber clamp Ⓐ.
5. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor.
6. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/2-inch (1.27 cm) (0 ± 1/4-inch (0.63 cm) for maximum rollability).
7. Rotate either the right or left adjustment ring Ⓑ until the stop Ⓒ on the ring is at the top of the slot in the camber clamp as shown and securely tighten the Phillips™ screw on the positioned adjustment ring Ⓑ.

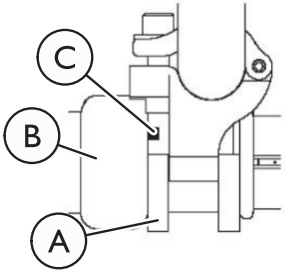
– DO NOT tighten the Phillips™ screw on the other adjustment ring Ⓑ at this time.
– Repeat STEPS 1-7 of this procedure for the other adjustment ring Ⓑ after repositioning the camber insert.

– When positioning the other adjustment ring Ⓑ, rotate the ring until the stop Ⓒ is at the bottom of the slot in the camber clamp Ⓐ. The right and left stops Ⓒ MUST be positioned opposite to each other or Fine Adjustment on page will not work correctly.
– When the left adjustment ring Ⓑ is adjusted to a camber, the right adjustment ring Ⓑ will not touch the camber clamp Ⓐ and when the right adjustment ring Ⓑ is adjusted to the other camber the left adjustment ring Ⓑ will not touch the camber clamp Ⓐ.

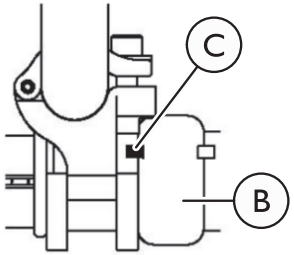
Stop-Not touching camber clamp



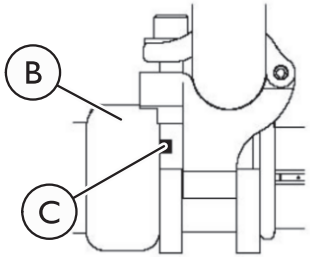
Stop-In position for one camber, touching camber clamp.



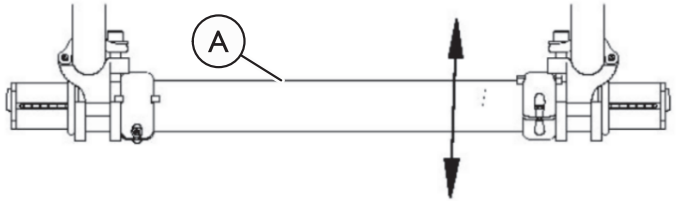
Stop-In position for one camber, touching camber clamp.



Stop-Not touching camber clamp.



Fine Adjustment



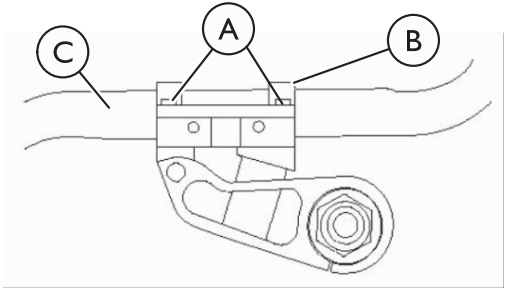
1. Open the camber clamp.
2. Slowly rotate the axle tube Ⓐ until the stop on the opposite adjustment ring is positioned at the opposite end of the camber clamp.
3. Close the camber clamp.

4.14 Adjusting Wheelbase Length (Center of Gravity)

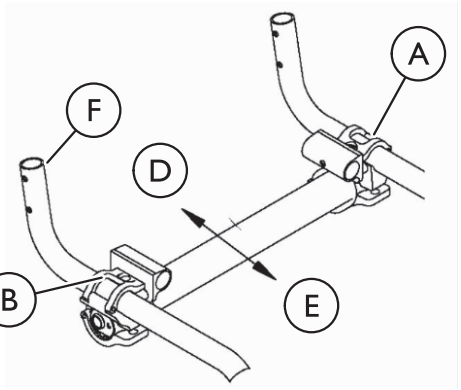
WARNING!

– ALWAYS perform this procedure in the presence of an assistant. The position of the footrest, camber tube, back angle, the tautness of the back upholstery as well as the user's condition are directly related to the wheelchairs stability. Any change to one or any combination of the five may cause the wheelchair to decrease in stability. Use EXTREME caution when using a new seating position. The anti-tippers are required.

– The camber bar is always mounted to the BOTTOM of the wheelchair frame.



1. Perform one of the following:
   - Non-Suspension - Loosen, but do not remove the hex screw Ⓐ that secures each of the top clamps Ⓑ to the wheelchair frame Ⓒ.
   - Suspension - Loosen, but do not remove the two hex screws Ⓐ that secure each of the top clamps Ⓑ to the wheelchair frame Ⓒ.



2. Position the camber clamps on the wheelchair frame at the desired position.
   - Lengthening the Wheelbase Ⓓ- Will increase the stability and maintain standard maneuverability of the wheelchair.
   - Shortening the Wheelbase Ⓔ- Will decrease the stability, increase the maneuverability and distribute additional weight onto the rear wheels.

     – Wheelchair performance will be affected if the camber clamps do not sit flush on the wheelchair frame Ⓒ.
3. Perform one of the following:
   - Non-Suspension - Securely tighten the hex screw Ⓐ that secures one of the top clamps Ⓑ to the wheelchair frame Ⓒ.

- Suspension - Securely tighten the two hex screws Ⓐ that secure one of the top clamps Ⓑ to the wheelchair frame Ⓒ.

  – Securely tightening one hex screw Ⓐ at a time ensures that the camber clamps will sit flush on the wheelchair frame Ⓒ.

4. Repeat STEP 3 for opposite side of the wheelchair.

   – The distance between the back post Ⓕ and the back of the top clamp Ⓑ on each side of the wheelchair can be measured as an additional check to make sure the camber clamps sit flush on the wheelchair frame Ⓒ (the measurements should be the same).

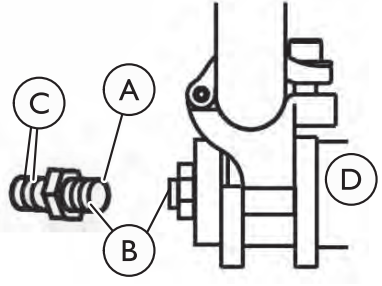
5. Roll the wheelchair before using to make sure there is no excessive drag to either side.

4.15 Adjusting Wheelbase Width

– Perform this procedure on one side of the wheelchair at a time for ease of adjustment.

Camber Tube with Single Camber

– The wheelbase width can be increased/decreased by 1-inch (2.54 cm).



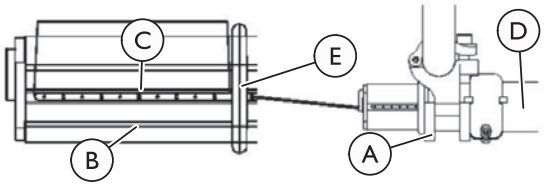
1. Remove the rear wheels.
2. Torque the axle nut Ⓐ to increase/decrease the wheelbase width.
3. Count the number of threads Ⓑ showing on the axle bolt Ⓒ.

   – The number of threads Ⓑ showing on the axle bolt Ⓒ should be equal on both sides of the wheelchair. Otherwise, wheelchair performance may be affected.

4. Repeat STEPS 2-3 for the opposite axle nut Ⓐ and axle bolt Ⓒ.

– Axle bolt Ⓒ removed from axle tube Ⓓ for clarity. It is not necessary to remove the axle bolt Ⓒ for this procedure.

Adjustable Camber System



1. Open the camber clamp Ⓐ.

WARNING!
– NEVER position the camber inserts Ⓑ in the axle tube with more than 3 inches (7.62 cm) (12 indexing marks showing) of the camber insert Ⓑ outside of the axle tube Ⓓ. The camber inserts Ⓑ will not be securely tightened in the axle tube Ⓓ. Possible injury to the user or damage to the wheelchair may occur.

2. Position camber insert Ⓑ to the desired position. Make sure there are no more than 3 inches (7.62 cm) (12 indexing marks Ⓒ showing) of the camber inserts Ⓑ outside of the axle tube Ⓓ.
3. Slide the indexing ring Ⓔon the camber insert Ⓑ until it is flush with the camber clamp Ⓐ.

– Before using the wheelchair, make sure both camber inserts Ⓑ are set at the same indexing mark Ⓒ. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.

4. Open the camber clamp Ⓐ.
5. Repeat STEPS 1–4 for opposite side of the wheelchair.

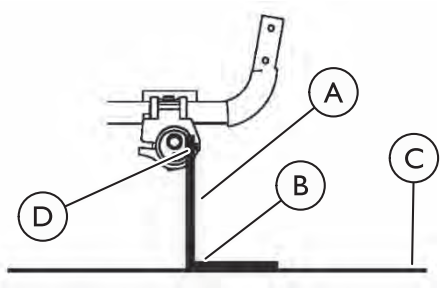
4.16 Adjusting the Axle Tube

WARNING!
– QUICK RELEASE LEVERS - Make sure the quick release levers are in the closed position before using the wheelchair, otherwise injury or damage to the wheelchair may occur.
– STANDARD and suspension camber clamps - Make sure the hex screws are securely tightened before using the wheelchair, otherwise injury or damage to the wheelchair may occur.

CAUTION!
– Adjustable Camber System ONLY - DO NOT close the quick-release levers or tighten the hex screws without camber inserts in the axle tube. Damage to the axle tube will occur.

– Stand behind the wheelchair to determine left or right.

Camber Tube with Single Camber

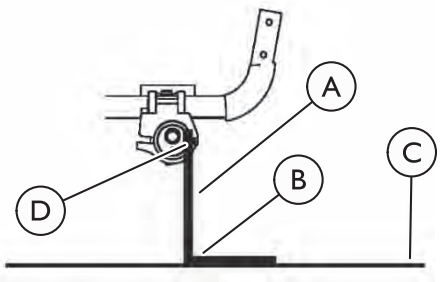


1. If necessary, open both camber clamps.
2. Using an "L" square Ⓐ, rotate the axle tube until the flat edge of the camber tube Ⓓ is at a 90° angle Ⓑ with the ground/floor Ⓒ as shown.
3. Close both camber clamps.
4. Determine the toe in/toe out of the wheelchair.

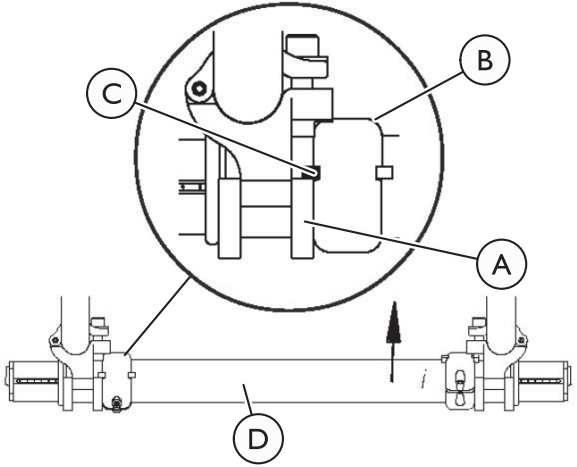
Adjustable Camber System

– Before performing this procedure, make sure the camber inserts are positioned to the lowest degree of camber.

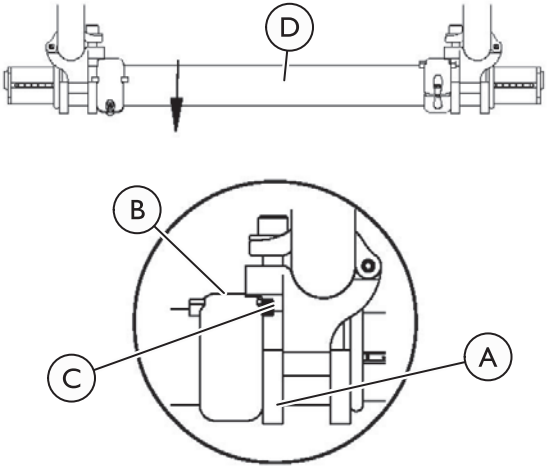
1. If necessary, open both camber clamps Ⓐ.
2. Loosen the set screw that secures each toe adjustment ring Ⓑ to the axle tube Ⓓ.
3. Using an "L" square, rotate the axle tube until the flat edge of the camber insert is at a 90° angle with the ground/floor as shown.
4. Close the right camber clamp.
5. Rotate the Left toe adjustment ring Ⓑ until the tab stops against the Lower metal tab on the camber clamp.
6. Securely tighten set screw on left toe adjustment ring Ⓑ.
7. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches (30.48 cm) from the ground/floor.
8. Perform one of the following:
   - Toe In/Toe Out Measurement is Within ±1/8-inch (0.32 cm) - Proceed to step 9.
   - Toe In/Toe Out Measurement is Not Within ±1/8-inch (0.32 cm) - Repeat steps 1-7 until toe in/toe out measurement is within ±1/8 inch (0.32 cm).
9. Open the right camber clamp Ⓐ.
10. Reposition the camber inserts to the highest degree of camber.
11. Repeat step 3.
12. Close the left camber clamp Ⓐ.
13. Rotate the right toe adjustment ring Ⓑ until the tab stops against the upper metal tab on the camber clamp Ⓐ.
14. Securely tighten set screw on right toe adjustment ring Ⓑ.
15. Repeat step 7.
16. Perform one of the following:
    - Toe In/Toe Out Measurement is Within ±1/8-inch (0.32 cm) - Proceed to step 17.
    - Toe In/Toe Out Measurement is Not Within ±1/8-inch (0.32 cm)
      a. Repeat step 1.
      b. Loosen the set screw on the right toe adjustment ring Ⓑ.
      c. Repeat step 3.
      d. Repeat steps 12-16 until toe in/toe out measurement is within ±1/8 (0.32 cm) inch.
17. If desired, reposition camber inserts to the desired degree of camber.



Lower Degree of Camber



Higher Degree of Camber

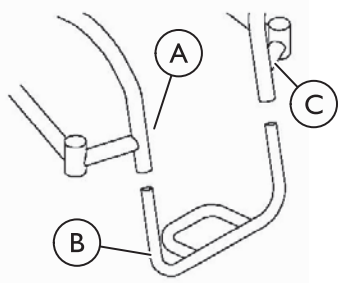


4.17 Adjusting/Replacing Footrest

1. Loosen the allen screw of the two clamps Ⓐ that secure the footrest Ⓑ to the wheelchair frame Ⓒ.

Replacing the Footrest

1. Remove the existing footrest.
2. Install new footrest Ⓑ.



WARNING!
– The standard footrest has an open hoop. A footplate cover is recommended for wheelchair users that have leg spasticity or whose feet have a possibility of falling through the footrest hoop. A calf strap is provided with each wheelchair to prevent the feet from slipping backwards off of the footrest. Be sure the calf strap is secure when using the wheelchair.

Adjusting the Footrest

1. Position new/existing footrest Ⓑ to desired height.
2. Tighten the allen screw of the two clamps Ⓐ that secure the footrest Ⓑ to the wheelchair frame Ⓒ.

4.18 Adjusting/Replacing Anti-Tipper

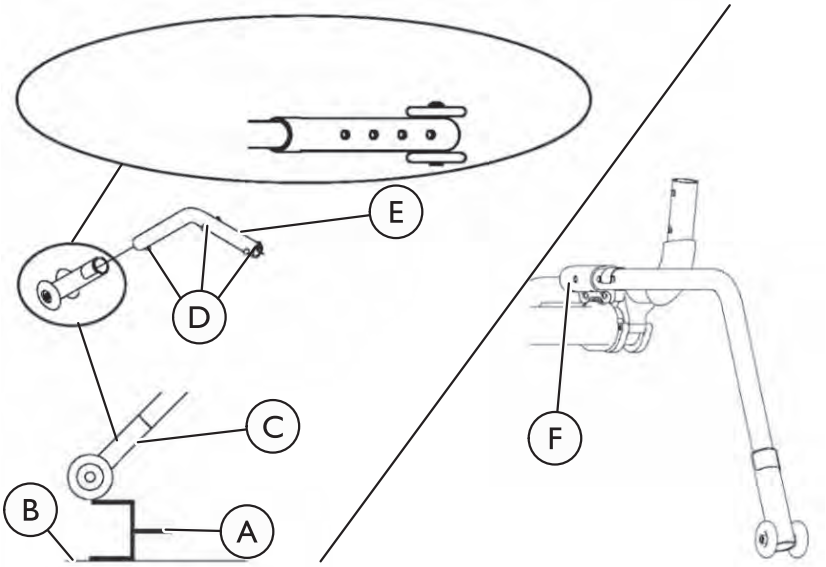
WARNING!
– After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.
– Anti-tippers must be attached at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order it with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as an additional safeguard for the wheelchair user.
– Anti-tippers must be fully engaged. Ensure the release button of the anti-tipper fully protrudes out of the hole in the anti-tipper socket.
– Ensure both anti-tippers are adjusted to the same height.
– When anti-tippers are used, anti-tippers MUST be adjusted to maintain a 1-1/2 to 2-inch (3.81 to 5.08 cm) clearance between the bottom of the anti-tipper wheels and the ground/ floor. This spacing should always be checked whenever adjustments/changes are made to the wheelchair. Failure to maintain proper spacing may result in the chair tipping over backward causing serious injury or property damage.

Adjusting Anti-Tipper

1. Press in the release button Ⓓ that secures the anti-tipper wheels to the anti-tipper bar Ⓔ.
2. Adjust the height of the anti-tipper wheels to between 1-1/2 and 2-inches (3.81 to 5.08 cm) Ⓐ of the ground/floor Ⓑ.
3. Repeat STEPS 1-2 for the opposite anti-tipper Ⓒ.

Replacing Anti-Tipper

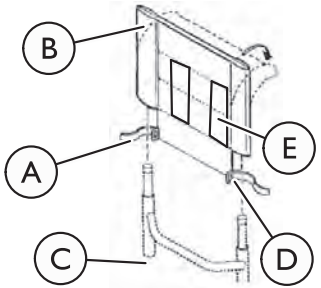
1. Press in the release button Ⓓ that secures the existing anti-tipper Ⓒ to the anti-tipper socket Ⓓ and remove the anti-tipper Ⓒ from the anti-tipper socket.
2. Insert the new anti-tipper Ⓒ into the anti-tipper socket Ⓓ until release button engages.
3. Press in the release button Ⓓ on the anti-tipper bar Ⓔ and install the anti-tipper wheels onto the new anti-tipper bar Ⓔ.
4. Repeat STEPS 1-3 for the opposite anti-tipper Ⓒ.
5. Measure the distance between the bottom of the anti-tipper wheels and the ground floor Ⓑ.
6. If necessary, adjust the height of the anti-tippers Ⓒ.



5 Service

5.1 Removing/Installing Foldover Back Upholstery

Removing



1. Unfasten the two fastening flaps Ⓐ that secure the bottom of the existing back upholstery Ⓑ to the back posts Ⓒ.
2. Unfold the top of the back upholstery Ⓑ.
3. Lift up on the existing back upholstery Ⓑ and remove from the wheelchair.

Installing

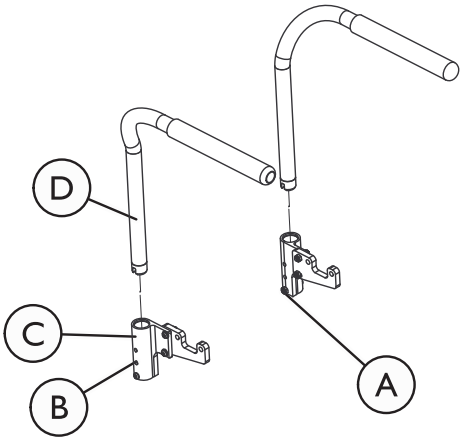
1. Install the new back upholstery Ⓑ onto the back posts Ⓒ.
2. Wrap the end of a fastening flap Ⓐ around the back post Ⓒ.
3. Insert the end of the fastening flap Ⓐ through the loop Ⓓ.
4. Wrap the fastening flap Ⓐ around the back post Ⓒ again and press firmly to secure.
5. Fold the top of the back upholstery Ⓑ down over the back posts Ⓒ towards the front of the wheelchair.
6. Press firmly to secure the fastening strips Ⓔ.

5.2 Installing the Swingaway Padded Armrest Socket

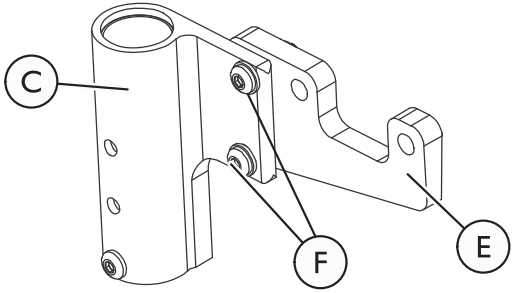
WARNING!

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

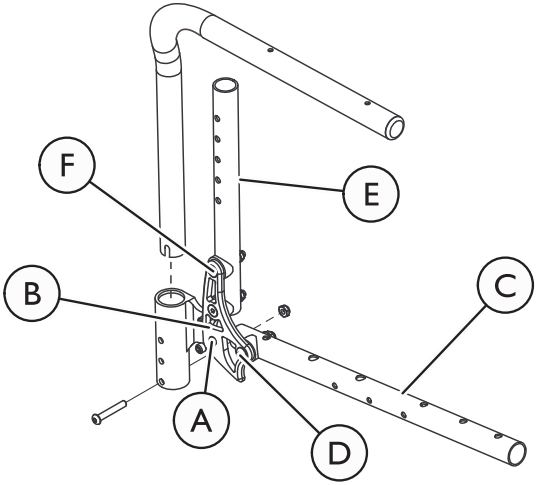
– Do not attempt to lift or tilt a wheelchair by using any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.



1. Remove or fold down the back. Refer to 4.1 Unfolding/Folding the Back, page 24.
2. Insert mounting bolt Ⓐ into the mounting hole Ⓑ at the desired height on the swingaway padded armrest socket Ⓒ and secure with the locknut.
3. Install the swingaway padded armrest Ⓓ. Refer to 5.3 Installing/Removing/Adjusting the Swingaway Padded Armrest, page 50



4. Attach the left and right swingaway arm mounting hardware Ⓔ to the swingaway padded armrest sockets Ⓒ using the four mounting screws and locknuts Ⓕ. Tighten securely.



5. Insert the mounting screw Ⓐ through the lock-down folding back latch Ⓑ and the swingaway arm mounting hardware (not shown). Tighten securely.
6. Attach the wheelchair frame Ⓒ to the lock-down folding back latch Ⓑ using the spring pin assembly Ⓓ.
7. Attach backframe Ⓔ to the lock-down folding back latch Ⓑ using the two mounting screws and locknuts Ⓕ.
8. Install or unfold the back. Refer to 4.1 Unfolding/Folding the Back, page 24.

5.3 Installing/Removing/Adjusting the Swingaway Padded Armrest

Installing the Swingaway Padded Armrest

1. Secure mounting bolt Ⓐ and locknut Ⓑ in desired mounting hole Ⓒ. Tighten securely.
2. Insert swing away padded armrest Ⓓ into armrest socket Ⓔ so that notch fits around mounting bolt Ⓐ.

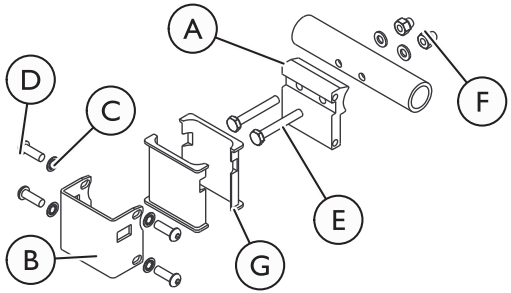
Removing the Swingaway Padded Armrest

1. Remove swing away padded armrest Ⓓ from armrest socket Ⓔ.

Adjusting Height of the Swingaway Padded Armrest

1. Remove the swing away padded armrest Ⓓ from the armrest socket Ⓔ.
2. Remove the mounting bolt Ⓐ and locknut Ⓑ mounted in the armrest socket.
3. Reposition mounting bolt Ⓐ to one of three positions Ⓒ in the armrest socket depending on the desired height.
4. Install locknut Ⓑ and securely tighten.
5. Reinstall the swing away padded armrest Ⓓ into the armrest socket Ⓔ.
6. Repeat STEPS 1-5 for the opposite side, if necessary.

5.4 Installing the T-Arm Sockets



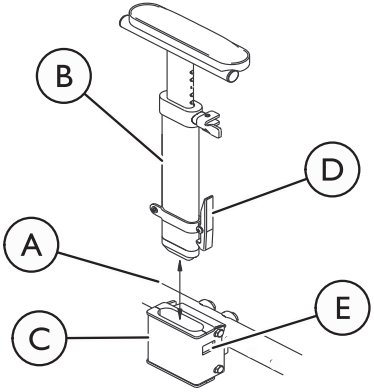
1. Remove the rear wheels. Refer to 5.7 Removing/Installing Rear Wheels, page 52.
2. Position the inner T-arm bracket Ⓐ on the wheelchair frame .

   The inner T-arm bracket Ⓐ MUST be positioned on the outside of the wheelchair frame .

3. Install the mounting screws Ⓔ and washers Ⓒ through the inner T-arm bracket Ⓐ and loosely tighten.
4. Tighten the mounting screws and washers Ⓒ that secure the inner T-arm bracket Ⓐ to the wheelchair frame .
5. Position T-arm bracket inserts Ⓖ between inner and outer T-arm brackets.
6. Secure the outer T-arm bracket Ⓑ to the inner T-arm bracket Ⓐ with the socket screws Ⓓ and washers Ⓒ.
7. Repeat STEPS 2-6 for the opposite side of the wheelchair.
8. Install the T-arms into the T-arm sockets. Refer to 5.5 Installing/Removing T-Arms, page 51.

5.5 Installing/Removing T-Arms

Installing T-Arms



1. Position the T-arm Ⓑ over the T-arm socket Ⓒ on the wheelchair frame Ⓐ.

   Make sure the locking lever Ⓓ is towards the front of the wheelchair.

2. Slide T-arm Ⓑ into T-arm socket Ⓒ until the locking lever is in the slot Ⓔ in the T-arm socket Ⓒ and an audible "click" is heard.
3. Pull up on T-arm Ⓑ to make sure T-arm Ⓑ is locked in place.

   If the T-arm Ⓑ does not slide in the T-arm socket Ⓒ as desired, adjust the T-arm socket Ⓒ. Refer to 4.5 Adjusting the T-Arms, page 32

4. Adjust the T-arm Ⓑ for desired height, width and depth, if necessary. Refer to 4.5 Adjusting the T-Arms, page 32
5. Repeat STEPS 1-4 for opposite side of wheelchair.

Removing T-Arms

1. Press in on the locking lever Ⓓ and lift the T-arm Ⓑ straight up and out of the T-arm socket Ⓒ.

   If the T-Arm Ⓑ does not slide in the T-Arm socket Ⓒ as desired, adjust the T-Arm socket. Refer to 4.5 Adjusting the T-Arms, page 32

2. Repeat for opposite side of the wheelchair.

5.6 Replacing T-Arm Locking Lever

1. Remove T-arms from wheelchair. Refer to 5.5 Installing/Removing T-Arms, page 51
2. Remove the mounting screw and locknut that secure the existing locking lever to the bottom bracket.

WARNING!
– The locking lever is spring loaded. Place your free hand over the locking lever to prevent the parts from springing off of the bottom bracket, otherwise parts may be lost or injury may occur.

3. Remove existing locking lever and spring from bottom bracket.

   Inspect the spring for damage and replace, if necessary.

4. Position spring on bottom bracket.
5. Position new locking lever onto spring and bottom bracket.

   Make sure the two extended ends of the spring are inside the notch in the locking lever.

6. Line up the mounting holes in the new locking lever, spring and bottom bracket.

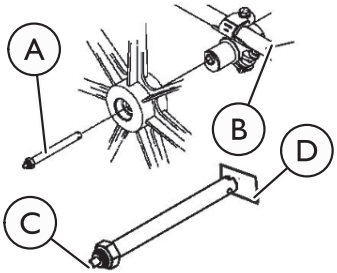
WARNING!
– DO NOT overtighten locknut that secures locking lever to bottom bracket. Overtightening this locknut will prevent locking lever from operating properly, possibly causing injury.

7. Install mounting screw and tighten securely with locknut.
8. Install the T-Arm onto the wheelchair. Refer to 5.5 Installing/Removing T-Arms, page 51

5.7 Removing/Installing 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.

CAUTION!
– Changing the size of the rear wheels can affect the performance of the wheelchair. Contact Top End at the telephone number on the back of this manual before changing rear wheel size.



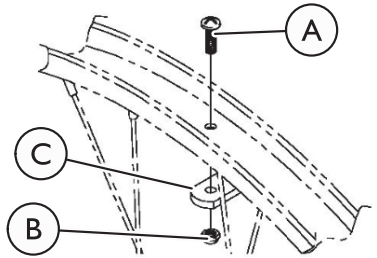
1. Perform one of the following:
   - Quick-Release - Push in the tip of the quick-release axle Ⓐ and pull axle and wheel away from the wheelchair Ⓑ.
   - Quad-Release - Lift up on the handle of the quad-release axle and pull axle and wheel away from the wheelchair Ⓑ.
2. Repeat STEP 1 for the opposite wheel.
3. Install both rear wheels by reversing STEPS 1-2.

WARNING!
– Pull on the rear wheel to make sure the detent pin Ⓒ and locking pins Ⓓ of the quick/quad-release axle Ⓐ are fully released before operating the wheelchair.
– Keep locking pins Ⓓ clean.

4. If there is too much movement of the rear wheel assembly in a back and forth motion, refer to 4.7 Adjusting Quick-Release Axles, page 34 or .

– Quad-Release Axle not shown. Locking pins on the Quad-Release Axle are the same as Quick-Release Axle.

5.8 Handrim Replacement



1. Remove the rear wheel from the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52.

> **WARNING!**
> – The tire must be fully deflated before any disassembly procedures can be performed - otherwise, injury or damage may occur.

2. Remove all air from the tube by pressing down on the pin in the center of the valve stem.
3. While carefully holding the tire, tube and rim strip to one side, hold the allen screws Ⓐ and remove the locknuts Ⓑ that secure the handrim Ⓒ to the rear wheel.
4. Remove the existing handrim Ⓒ.
5. Install new handrim by reversing STEPS 2-4.

> **WARNING!**
> – DO NOT inflate tire until it is completely assembled - otherwise, injury or damage may occur.
> – Recommended tire pressure is listed on the side wall of the tire. DO NOT overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.
> – DO NOT ride on flat or under-inflated tires. Riding on flat or under-inflated tires can cause injury, as well as, damage to the tire, tube and wheels.

6. Inflate the tire to the recommended psi.

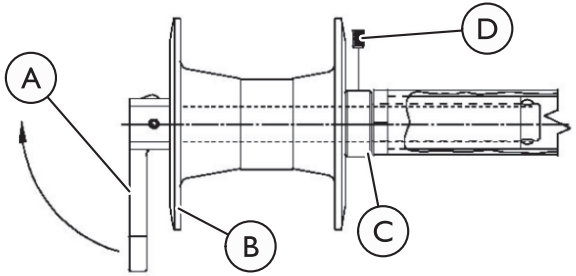
5.9 Repairing/Replacing Rear Wheel Tire/Tube

WARNING!
– The replacement of the tire or tube MUST be performed by a qualified technician.

CAUTION!
– Changing the size of the rear wheels can affect the performance of the wheelchair. Contact Top End at the number on the back cover before performing this procedure.

– If replacing rear wheels with a different size than what was originally on the wheelchair, the front caster height must also be changed to keep the wheelchair frame parallel to the floor. Refer to 5.12 Replacing/Adjusting Casters, page 57 ONLY after contacting Invacare. Anti-tipper height (if applicable) must also be adjusted to maintain 1-1/2 to 2-inch (3.81 to 5.08 cm) clearance between bottom of the anti-tipper wheels and the floor. Refer to 4.18 Adjusting/Replacing Anti-Tipper, page 46 .

5.10 Replacing Quad-Release Axles



1. Remove rear wheel and existing quick-release axle Ⓐ from the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52 .
2. Remove existing quick-release axle Ⓐ from rear wheel.
3. Insert new quad-release axle through rear wheel hub Ⓑ.
4. Slide locking collar Ⓒ onto quad-release axle until it is snug against rear wheel and tighten securely with allen screw Ⓓ.
5. Install the rear wheel and the quad-release axle onto the wheelchair. Refer to 5.7 Removing/Installing Rear Wheels, page 52 .
6. Flip the handle of the quad-release axle down to release the detent pin ensuring that the locking pins are fully released.
7. If detent pin does not fully release, proceed to 4.8 Adjusting Quad-Release Handles, page 35
8. Repeat STEPS 1-7 for the opposite wheel.

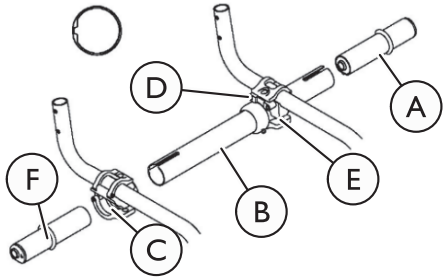
– End of Quick Release axle is shown for reference only. It is not visible when inserted into camber bar.

5.11 Replacing Axle Tube

– The camber bar is always mounted to the bottom of the wheelchair frame.
– There is no need to remove the two camber clamps Ⓒ when replacing the axle tube Ⓑ.

Adjustable Camber System

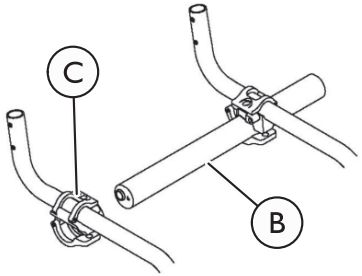
Rear of Wheelchair



Front of Wheelchair

Camber Tube with Single Camber

Rear of Wheelchair



Front of Wheelchair

1. Adjustable Camber System Only - Note the position of the camber inserts Ⓐ so they can be installed at the same position in the new axle tube Ⓑ.
2. Open the camber clamps Ⓒ.
3. Remove the two rear wheels.
4. Adjustable Camber System Only - Remove the camber inserts Ⓐ positioned in the axle tube Ⓑ.
5. Adjustable Camber System Only - Loosen, but do not remove the two Phillips screws Ⓓ that secure the toe adjustment rings Ⓔ to the axle tube Ⓑ.
6. Pull the existing axle tube Ⓑ through one of the camber clamps Ⓒ.
7. Adjustable Camber System Only - Remove toe adjustment rings Ⓔ from the existing axle tube Ⓑ.
8. Pull the existing axle tube Ⓑ through the other camber clamp Ⓒ and remove from the wheelchair.
9. Slide the new axle tube Ⓑ through one of the camber clamps Ⓒ.

– Adjustable Camber System Only - Make sure the notches in the axle tube Ⓑ are towards the rear of the wheelchair and the slots in the axle tube Ⓑ are facing up.

10. Adjustable Camber System Only - Install the adjustment rings Ⓔ onto the new axle tube Ⓑ. Make sure the stops on the adjustment rings Ⓔ are facing towards the outside of the wheelchair.

    – Do not tighten the Phillips screws Ⓓ that secure the adjustment rings Ⓔ to the axle tube Ⓑ at this time.

11. Slide the new axle tube Ⓑ through the other camber clamp Ⓒ until the axle tube Ⓑ is evenly spaced between the camber clamps Ⓒ.

    – Do not close the camber clamps Ⓒat this time.

WARNING!
– NEVER position the camber inserts Ⓐ in the axle tube Ⓑ with more than 3 inches (7.62 cm) (12 indexing marks showing) of the camber insert Ⓐ outside of the axle tube Ⓑ. The camber inserts Ⓐ will not be securely tightened in the axle tube Ⓑ. Possible injury to the user or damage to the wheelchair may occur.

12. Adjustable Camber System Only - Install camber inserts Ⓐ into the new axle tube Ⓑ and slide the camber inserts Ⓐ to the position noted in STEP 1. Make sure there are no more than 3 inches (12 indexing marks) of the camber inserts Ⓐ outside of the axle tube Ⓑ.
13. Adjustable Camber System Only - Slide the indexing ring Ⓕ on the camber insert Ⓐ until it is flush with the camber clamp Ⓒ.

    – To maximize rollability: Before using the wheelchair, make sure both camber inserts Ⓐ are set to the same indexing notch. This will make sure the distance between the rear wheel and the wheelchair is the same on both sides.

14. Install the rear wheels onto the wheelchair.
15. Adjust the axle tube Ⓑ.

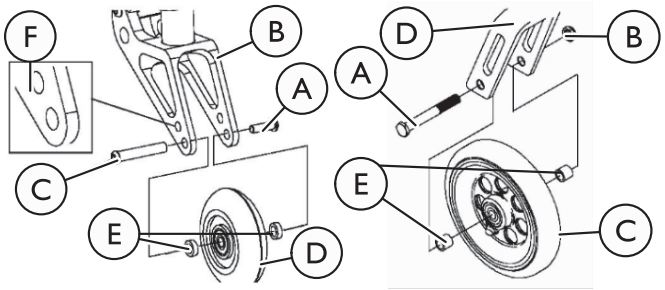
    – The performance of the wheelchair will be affected if the toe in/toe out of the wheelchair is not correct.
    – Suspension option not shown for clarity. Axle tube Ⓑ installs in the same manner as pictured above.

5.12 Replacing/Adjusting Casters

WARNING!
– Changing the size/type of and/or repositioning the front casters can affect the performance of the wheelchair.
– Contact Invacare at the telephone numbers on the back of this manual before performing this procedure.

– Non-suspension casters cannot be adjusted as they mount in one position.

Suspension Caster **Non-Suspension Caster**



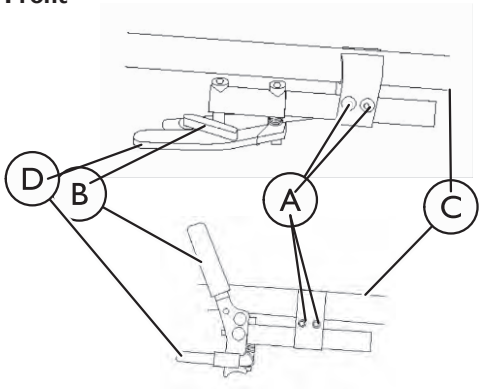
1. Perform one of the following:
   - Non-Suspension Fork - Remove the bolt Ⓐ and locknut Ⓑ that secure the front caster Ⓒ to the fork Ⓓ.
   - Suspension Fork - Perform the following steps:
     a. Using two allen wrenches, turn in opposite directions and remove one mounting screw Ⓐ from the fork Ⓑ.
     b. Remove the mounting screw/threaded sleeve Ⓒ assembly that secures the front caster Ⓓ and two spacers Ⓔ to the fork Ⓑ.
2. Remove front caster Ⓒ and axle spacers Ⓔ from fork Ⓓ.
3. Perform one of the following:
   - Non-Suspension Fork - Install the new caster Ⓒ, bolt Ⓐ, locknut Ⓑ and axle spacers Ⓔ onto the fork Ⓓ and securely tighten.
   - Suspension Fork - Perform the following steps:
     a. Determine the desired mounting hole Ⓕ for the caster installation.
     b. Line up the front caster Ⓒ and two spacers Ⓔ with the mounting hole Ⓕ in the fork Ⓓ.
     c. Reinstall the mounting screw/threaded sleeve Ⓒ assembly through the fork Ⓓ, front caster Ⓒ and two spacers Ⓔ.
4. Reinstall the mounting screw Ⓐ into the threaded sleeve and tighten securely.

– If replacing front casters with a different size than what was originally on the wheelchair, the front caster height MUST be adjusted to keep the wheelchair frame parallel to the floor. The size of the rear wheels may also need adjustment.

5.13 Wheel Lock Adjustment/Replacement

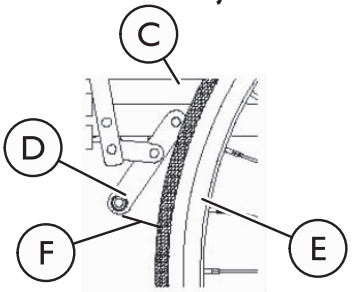
– Before adjusting or replacing the High/Low mount wheel locks, ensure that the tires are inflated to the recommended psi on the sidewall of the tire.

Front **Rear**



1. Loosen the locknuts and hex/allen screws Ⓐ that secure the High/Low mount wheel locks Ⓑ to side frame Ⓒ.
2. Perform one of the following:
   - Replacing the High/Low Mount Wheel Lock Ⓑ:
     a. Remove the locknuts and hex/allen screws Ⓐ and remove existing wheel lock Ⓑ from the wheelchair.
     b. Install the new wheel lock Ⓑ and adjust.
   - Adjusting the High/Low Mount Wheel Lock Ⓑ:

Wheel Lock Adjustment



   a. Measure the distance between the wheel lock shoe Ⓓ and the rear wheel Ⓔ.
   b. Slide the wheel lock Ⓑ along the wheelchair until the measurement is between 5/32 and 5/16-inches (0.4 and 0.8 cm) Ⓕ.
   c. Tighten the wheel lock Ⓑ to the wheelchair frame Ⓒ.
   d. Repeat this procedure for the opposite wheel lock Ⓑ.
   e. Engage the wheel locks Ⓑ and push against the wheelchair to determine if the wheel locks Ⓑ engage the rear wheels enough to hold the occupied wheelchair.
3. Repeat STEPS a-e until the wheel locks Ⓑ engage the rear wheels Ⓔ enough to hold the occupied wheelchair.

– Rear wheel not shown for clarity.

– High mount wheel lock shown for clarity.

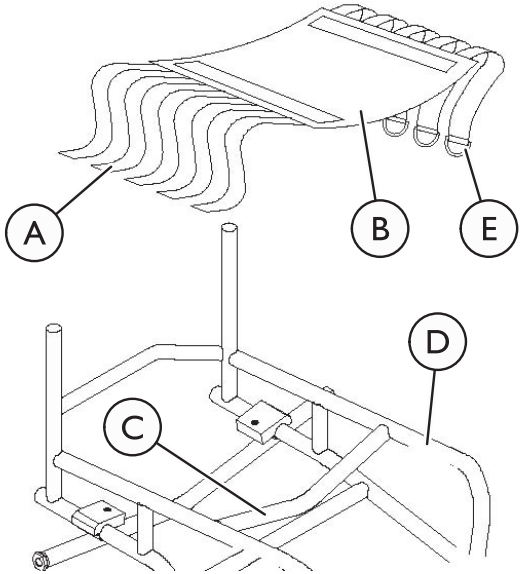
5.14 Replacing Adjustable Tension Seat Upholstery

WARNING!
- After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.
- The seat upholstery and/or cushion MUST be cleaned regularly and/or replaced if incontinence is frequent. The risk of pressure sores is significantly higher with seat upholstery that is wet and/or soiled.

1. Remove the seat cushion and back upholstery.
2. Place the wheelchair onto its two rear wheels and back posts.
3. Unlatch the five adjusting straps Ⓐ that secure the seat upholstery Ⓑ to the wheelchair frame Ⓒ.
4. Remove the existing seat upholstery Ⓑ.
5. Place the wheelchair back onto all four wheels.

- Right and left is determined by sitting in the wheelchair.
- The seat upholstery Ⓑ MUST be positioned with the rear adjusting straps Ⓐ towards the rear of the top crossbar Ⓓ for proper installation.
- Make sure the rear retaining flap is between the wheelchair frame Ⓒ and the back post support brackets (adjustable backs only).

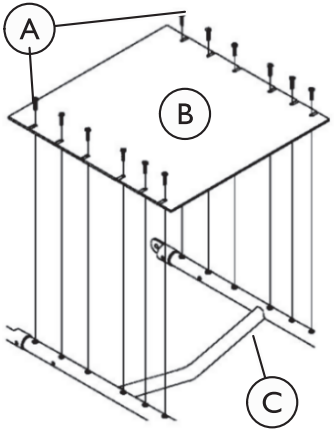
6. Position new seat upholstery onto the wheelchair frame Ⓒ, ensuring the five adjusting straps Ⓐ hang over the right and left sides of the wheelchair.
7. Pull the front adjuster straps Ⓐ around and under the wheelchair frame top bars Ⓒ.
8. Slip front adjuster strap Ⓐ through corresponding anchor loop Ⓔ and adjust the seat upholstery Ⓑ to desired tension. Secure the adjustment straps Ⓐ.
9. Place the wheelchair onto its two rear wheels and back post.
10. Securely latch the four remaining adjuster straps Ⓐ together.
11. Return wheelchair to the upright position.
12. Reinstall the seat cushion and back upholstery.



5.15 Replacing Screw-On Seat Upholstery

WARNING!
– After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.
– The seat upholstery and/or cushion MUST be cleaned regularly and/or replaced if incontinence is frequent. The risk of pressure sores is significantly higher with seat upholstery that is wet and/or soiled.

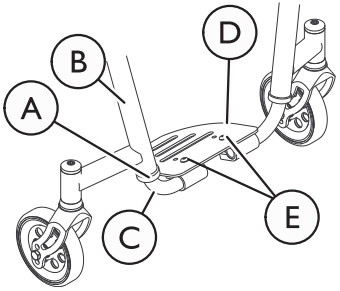
1. Remove the seat cushion from the wheelchair.
2. Remove the twelve mounting screws that secure the existing seat upholstery to the seat frame.
3. Remove the existing seat upholstery.



5.16 Replacing/Adjusting Optional Adjustable Angle Footrest

A footrest for short leg lengths is available as an option. It has an adjustable footplate with 2 inch spacers and longer mounting screws that attach the footrest to the footrest tube.

Replacing the Footrest



1. Loosen, but do not remove the allen screw of the two clamps Ⓐ that secure the footrest to the wheelchair frame.
2. Slide the existing footrest tubes Ⓑ out of the wheelchair frame Ⓑ and install new footrest by reversing this step.
3. Position the new footrest to a determined height.
4. Tighten the allen screw of the two clamps Ⓐ that secure the footrest to the wheelchair frame Ⓑ.
5. Adjust the footplate Ⓓ to the desired position.

Adjusting Footplate Angle

1. Loosen, but do not remove the two mounting screws Ⓔ and locknuts (not shown) that secure the footplate Ⓓ to the footrest tubes Ⓒ.
2. Position the footplate Ⓓ to the necessary angle to accommodate the user.
3. Tighten the two mounting screws Ⓔ and locknuts.

The locknuts should lie in the channel of the footplate clamp.

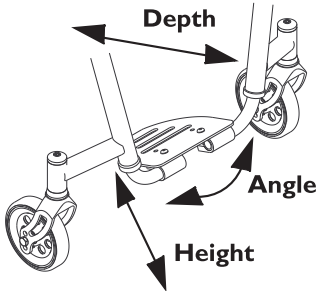
Adjusting Footplate Depth

1. Remove the two mounting screws Ⓔ and locknuts (not shown)that secure the footplate Ⓓ to the footrest tubes Ⓒ.

   Observe the angle of the footplate Ⓓ for reinstallation.

2. Move the footplate Ⓓ to one of two mounting positions Ⓕ to accommodate the user.
3. Using the two mounting screws Ⓔ and locknuts, secure the footplate Ⓓ to the footrest tubes Ⓒ.

   The locknuts should lie in the channel of the footplate half clamp.



5.17 Installing/Removing/Adjusting Swivel Anti-Tip

Removing

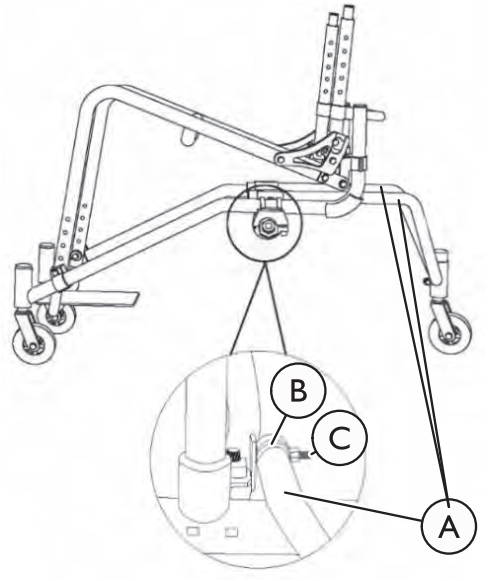
1. Loosen set screws Ⓒ on anti-tip receivers Ⓑ.
2. Slide the swivel anti-tip Ⓐ out of the receivers Ⓑ.

Installing/Depth Adjustment

1. Loosen set screws Ⓒ on anti-tip receivers Ⓑ.
2. Slide the swivel anti-tip Ⓐ into the anti-tip receivers Ⓑ. Position swivel anti-tip Ⓐ so it is even with wheels on chair or extends beyond them. Tighten set screws Ⓒ.

Adjusting Height

1. To adjust the height of the swivel anti-tip Ⓐ, remove dust cover and loosen set screw Ⓒ on swivel anti-tip caster assembly.
2. Set anti-tip caster wheel to desired height. Tighten set screw Ⓒ and reinstall dust cover.



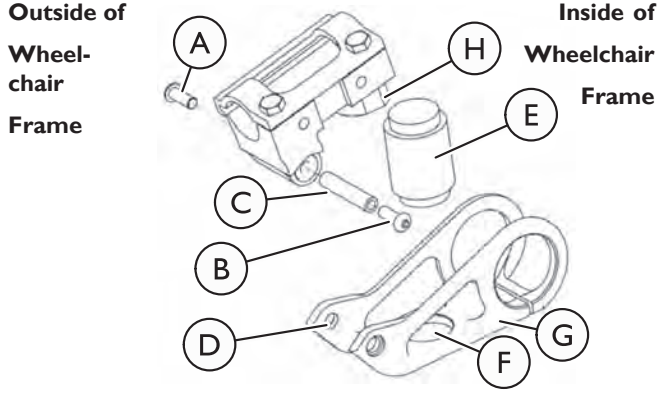
– Detail view from rear of wheelchair.

5.18 Elastomers and Suspension

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

– The performance of the wheelchair will be affected if elastomers are not the same on both sides of the wheelchair.

Replacing Rear Elastomers

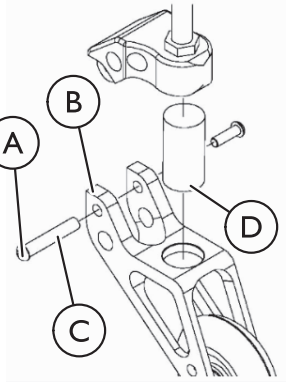


1. Use an allen wrench to hold the outer allen screw Ⓐ.
2. While holding the outer allen screw Ⓐ in position, remove the inner allen screw Ⓑ from the pivot pin Ⓒ.
3. Use the allen wrench to push the pivot pin Ⓒ with outer allen screw Ⓐ out of the mounting hole Ⓓ.
4. Remove the existing elastomer Ⓔ.

5. Position the new elastomer Ⓔ between the recess Ⓕ in the axle bracket Ⓖ and the recess Ⓕ in the suspension base Ⓗ.
6. Compress and hold the elastomer Ⓔ between the axle bracket Ⓖ and the suspension base Ⓗ.
7. Insert the pivot pin Ⓒ into the mounting hole Ⓓ.
8. Install the outer allen screw Ⓐ into the pivot pin Ⓒ.
9. Use an allen wrench to hold the outer allen screw in position.
10. While holding the outer allen screw Ⓐ, install the inner allen screw Ⓑ into the pivot pin Ⓒ. Tighten securely.
11. Release when desired speed is achieved.

Replacing Front Elastomers

CAUTION!
– DO NOT use excessive force when removing/installing the threaded sleeve from/onto the fork. Damage to the threaded sleeve may occur.



1. Using two allen wrenches, turn in opposite directions and remove one mounting screw Ⓐ from fork Ⓑ.

   – One mounting screw will not turn.

2. Remove the threaded sleeve Ⓒ and mounting screw assembly from the fork Ⓑ. DO NOT use excessive force.
3. Remove the existing elastomer Ⓓ from the fork Ⓑ.
4. Install new elastomer Ⓓ determined in STEP 1 into fork Ⓑ.
5. Align the mounting holes in the upper and lower portion of the fork Ⓑ.
6. Reinstall threaded sleeve Ⓒ and mounting screw assembly. DO NOT use excessive force.

CAUTION!
– Use Loctite 242™ when reinstalling the mounting screw Ⓐ into the threaded sleeve Ⓒ, otherwise the fork Ⓑ can become disassembled. Possible injury or damage could occur.

7. Apply Loctite 242 to the mounting screw Ⓐ.
8. Reinstall the mounting screw Ⓐ into the threaded sleeve Ⓒ and tighten securely.

6 Troubleshooting

6.1 Troubleshooting

Veers Right	Veers Left	Sluggish Turn or Performance	Casters Flutter	Squeaks and Rattles	Looseness in Chair	Solutions
X	X	X	X			Check tires for correct and equal pressure.
		X	X	X	X	Check for loose stem nuts.
				X	X	Check spokes and nipples.
X	X		X			Check that both casters contact the ground at the same time.
X	X	X				Check toe in/toe out.

7 Maintenance

7.1 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.
– DO NOT overtighten hardware attaching to the frame. This could cause damage to the frame tubing.

Some countries require product returned for service be cleaned and sanitized. Please consult your dealer prior to returning product.

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.
2. Keep quick/quad-release axles free of dirt and lint to ensure positive locking and proper operation. Refer to 4.7 Adjusting Quick-Release Axles, page 34 or 4.8 Adjusting Quad-Release Handles, page 35 .

WARNING!
– DO NOT use WD-40®, 3-in-1 oil, or other penetrating lubricants on quick-release axles or camber inserts. Otherwise, binding and/or damage to the wheelchair can occur.

3. Clean/oil quick-release axles and camber inserts once a week with a Teflon® lubricant.

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 suggestions may cause the tire to explode and cause bodily harm. The recommended tire pressure is on the sidewall of the tire.

4. Recommended tire pressure is listed on the side wall of the tire.

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

5. The wheels, casters and tires should be checked periodically for cracks and wear, and should be replaced if damaged. Contact a qualified technician or Invacare customer support at the telephone numbers on the back of this manual.
6. Regularly check for loose spokes in the front and rear wheels. If loose, have them adjusted. Contact a qualified technician or Invacare customer support at the telephone numbers on the back of this manual.
7. Periodically check handrims to ensure they are secured to the rear wheels. Refer to 5.8 Handrim Replacement, page 53.
8. Periodically adjust wheel locks as tires wear. Refer to 5.13 Wheel Lock Adjustment/Replacement, page 57.
9. Periodically check caster wheel bearings to make sure they are clean and free from moisture. Use a Teflon® lubricant if necessary.
10. Check upholstery for sagging, rips or tears.
11. Clean upholstery with mild soap and water.

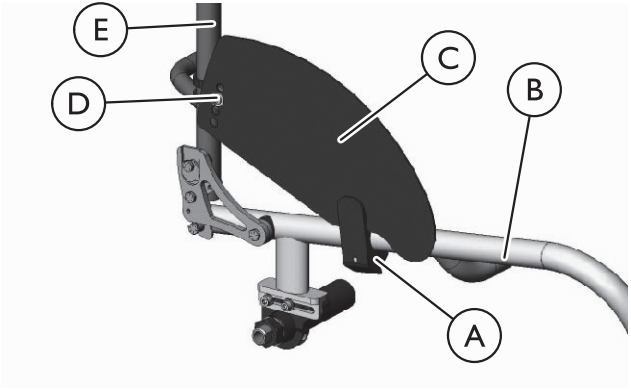
8 Options

8.1 Options

Installing/Adjusting the Fold-in Sideguards

Installing the Fold-in Sideguards

1. Place the clamp Ⓐ around the wheelchair frame Ⓑ.
2. Insert the bolt through the clamp Ⓐ and tighten to attach the clamp Ⓐ to the wheelchair frame Ⓑ.
3. Place the sideguard clamp Ⓓ around the back post Ⓔ by sliding the sideguard clamp Ⓓ onto the back post Ⓔ.
4. Insert the bolt through the sideguard clamp Ⓓ and sideguard Ⓒ and tighten securely.

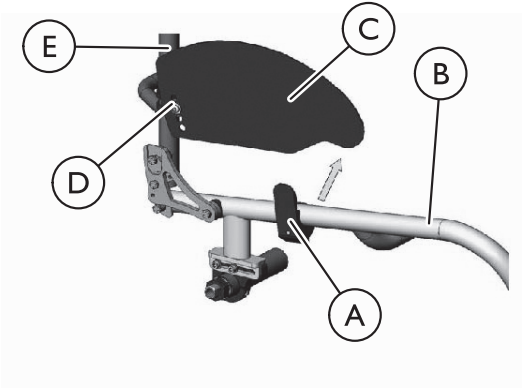


If sideguard will not pivot freely, bolt through sideguard clamp Ⓓ and sideguard Ⓒ is too tight. To correct, loosen bolt.

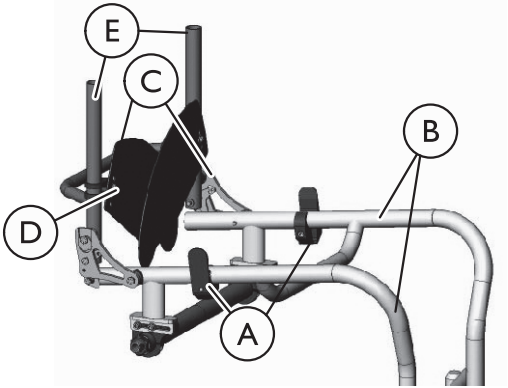
If sideguard rattles, bolt through sideguard clamp Ⓓ and sideguard Ⓒ is too loose. To correct, tighten bolt.

Fold-in sideguard should be able to be moved vertically (Detail “A”) and horizontally (Detail “B”).

DETAIL “A”



DETAIL "B"



Adjusting the Fold-In Sideguards Height

1. Lift sideguard to a level position (Detail "A").
2. Remove bolt from sideguard clamp Ⓓ and sideguard Ⓒ.
3. Adjust sideguard Ⓒ to desired height.
4. Insert bolt through sideguard clamp Ⓓ and sideguard Ⓒ.
5. Tighten securely.
6. Repeat for opposite side.

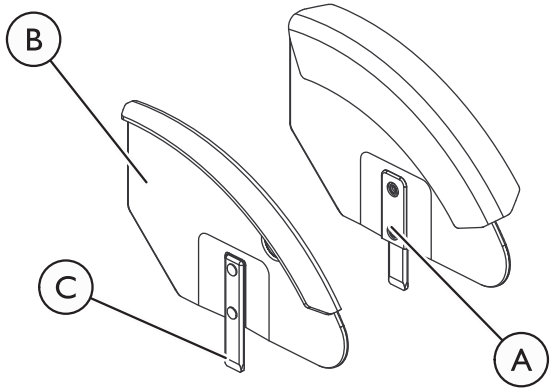
Installing/Removing the Removable Side Guards

Installing the Removable Side Guards

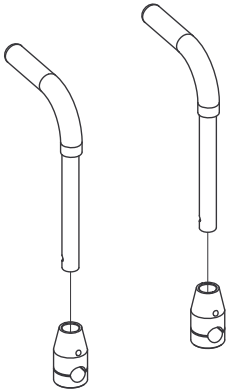
1. Loosen two mounting screws Ⓐ in side guard Ⓑ.
2. Attach side guard clamp Ⓒ to the back posts.
3. Tighten two mounting screws Ⓐ securely.

Removing the Removable Side Guards

1. Loosen two mounting screws Ⓐ in side guard Ⓑ.
2. Remove side guard clamp Ⓒ from back posts.

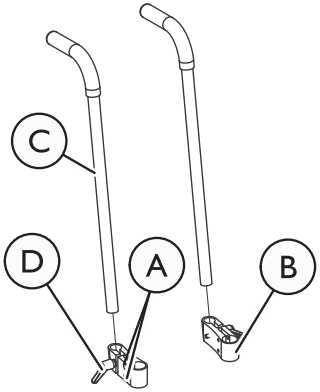


Installing the Bolt-on Push Handles



Using the mounting screw attach the bolt-on push handles to the back canes.

Installing/Adjusting the Adjustable Push Handles



To Install:

1. Loose the two mounting screws Ⓐ in the push handle clamp Ⓑ.
2. Attach adjustable push handle Ⓒ to back cane by inserting the back cane into the push handle clamp Ⓑ.
3. Tighten the two mounting screws Ⓐ in the push handle clamp Ⓑ.
4. Insert the adjustable push handle Ⓒ into the push handle clamp Ⓑ.
5. Repeat for opposite side.

To Adjust:

1. Insert adjustable push handle Ⓒ into the push handle clamp Ⓑ.
2. Adjust to desired height.
3. Flip lever Ⓓ to secure adjustable push handle Ⓒ.
4. Repeat for opposite side.

9 Warranty

9.1 Warranty Information

United State 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.

Invacare warrants the frames when purchased new and unused to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty.

Invacare warrants the upholstered materials (seat and back) and remaining components of this product when purchased new and unused to be free from defects in materials and workmanship for a period of sixty (60) months from date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product 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 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.

LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGE 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 NORMAL WEAR AND TEAR OR FAILURE TO ADHERE TO THE PRODUCT INSTRUCTIONS.

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

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE.

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

Invacare Corporation

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