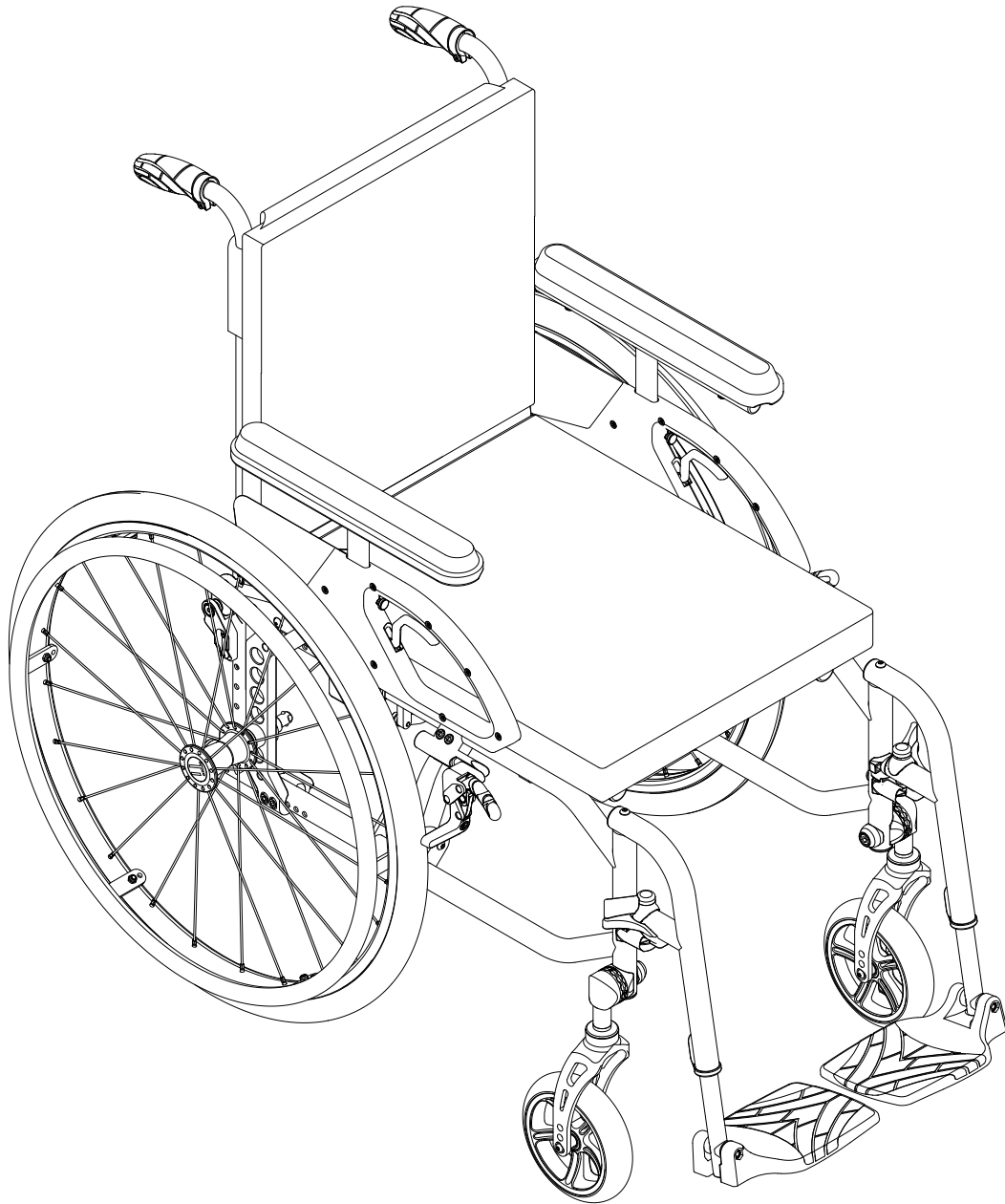


Service Manual

TiLite® X













permobil

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Symbols Glossary

	Warning: Indicates that not following the specified procedure could lead to potentially hazardous conditions resulting in serious injury.	 Manufacturer	 Date of manufacture	 Unique Device Identifier
	Caution: Indicates that not following the specified procedure could lead to potentially hazardous conditions resulting in minor to moderate injury or damage to the equipment or other property.	 Medical Device	 Serial number	 Weight limit
	Consult instructions for use		Add Loctite to threads	

Contact Information

 TiSport, LLC
 2701 W. Court St.
 Pasco, WA 99301 USA
 Customer Support:
 U.S.A.:
 800-736-0925
 Fax: 866-586-2416
 customerservice.tilite@permobil.com
 permobil.com

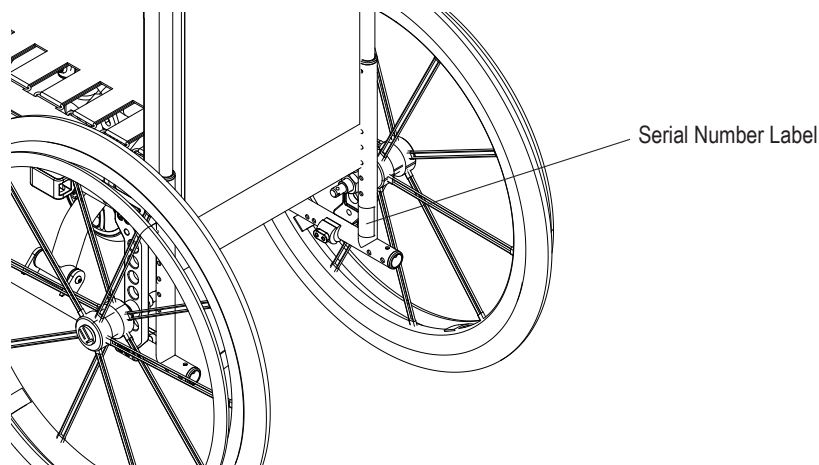
Please Note

The information detailed within this service manual applies to the Permobil TiLite X.
 Products may be covered by one or more U.S. and foreign patents and trademarks, including TiLite®. Loctite® is a registered trademark of Henkel AG & Company KGaA.
 Product information is changed as needed; current product information is available at permobil.com.
 TiLite is part of Permobil.
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General Information

Product Labeling

The serial number and other important information can be found on the label applied to the bottom of the frame.



Medical Device Combinations

It may be possible to configure this Permobil wheelchair with one or more other Medical Devices, accessories, or products. In the event that a provider wishes to do so, a risk assessment should be performed by competent equipment providers to ensure the safety and efficacy of the combination. Any installation of aftermarket equipment that requires permanent modifications to the wheelchair will void the manufacturer's warranty.

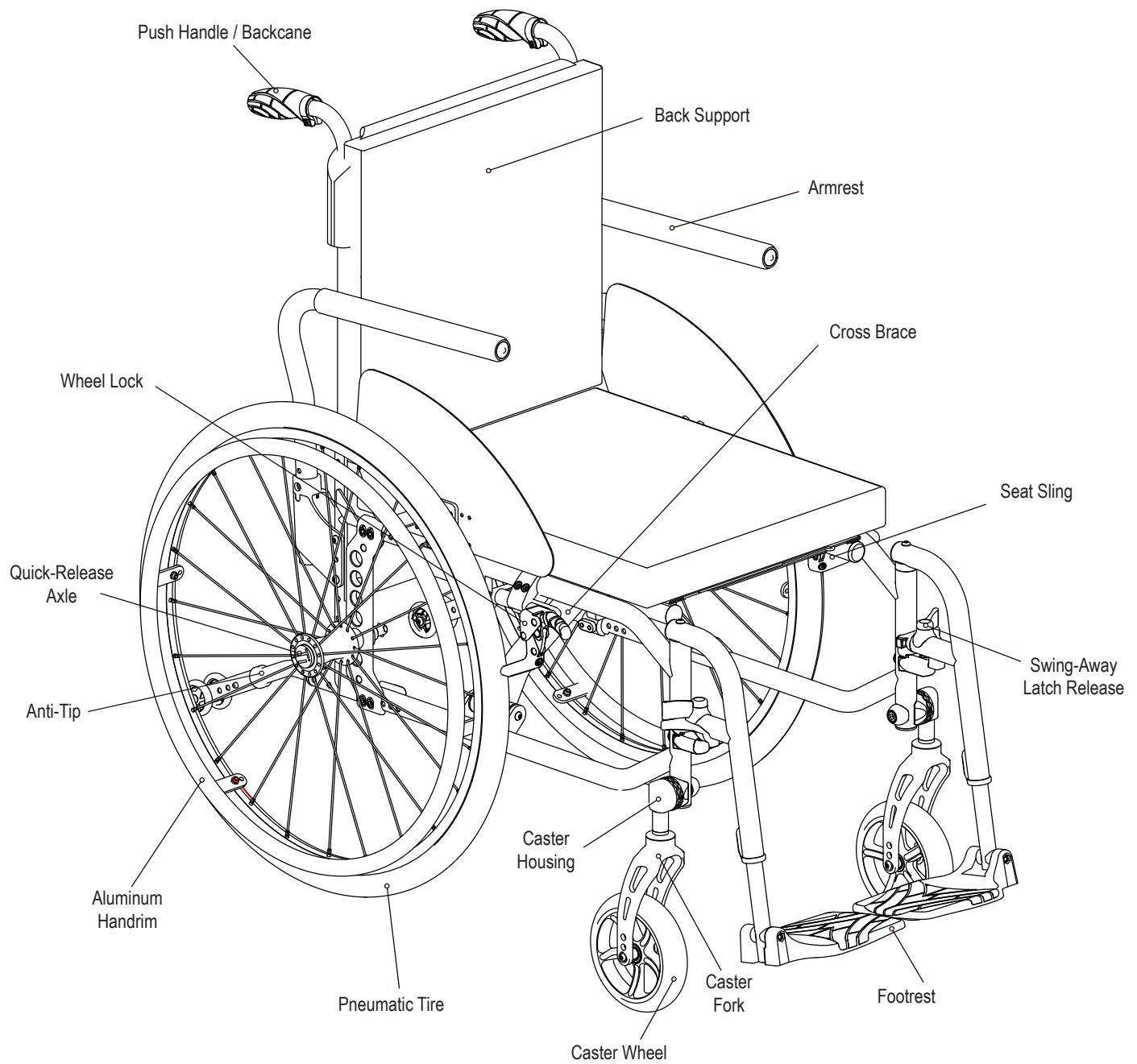
For information on proper mounting and configuration of a Permobil SmartDrive on the Permobil TiLite wheelchair, please refer to the Permobil SmartDrive product documentation. If the wheelchair came configured with a SmartDrive, make sure to read the user manual for the SmartDrive prior to operating the wheelchair.

Important Safety Information

Warnings and Cautions

- DO NOT perform any adjustment, removal or installation without first carefully and thoroughly reading and understanding all of the instructions provided in this service manual. If unable to perform any tasks in the service manual, seek assistance by contacting a clinician, equipment provider, or contact TiLite Customer Support.
- Ignoring any warnings listed in this service manual may cause the wheelchair to not perform properly, which in turn, may cause falling, tipping over or losing control of the wheelchair and cause serious injury to the user or others or damage to the wheelchair.
- DO NOT use water-based lubricants on or around the front caster and fork or rear wheel axle as they can cause damage to the bearings.
- Make sure side to side symmetry is maintained when adjusting components of the wheelchair.
- Fasteners with thread patches can be removed and re-installed a maximum of two times before they need to be replaced. If in doubt, use Loctite 242 or equivalent on the last three threads to replicate thread patch functionality.
- Make sure that all detachable or small parts are handled with care. Keep small hardware components out of the reach of children and any individuals who have a tendency to place inedible objects in their mouth. Swallowing or inhalation may lead to serious injury or death. IMMEDIATELY seek emergency medical assistance.
- Seating Restraints - It is the obligation of the dealer and the health care professional to determine if the user requires a seating restraint or positioning system in order to ensure that the user can safely operate the wheelchair. Serious injury can occur in the event of a fall from a wheelchair.
- Installing non-Permobil replacement parts may result in incompatibility issues, leading to reduced performance and potential safety risks. Always use approved Permobil parts to ensure optimal functionality and safety.
- Refer to third-party manuals for correct installation instructions when installing equipment such as seating, positioning accessories, or power assist devices. Incorrect installation may affect the chair's performance and safety.

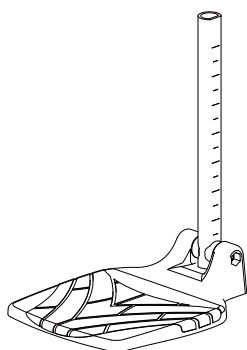
Getting to Know the TiLite X



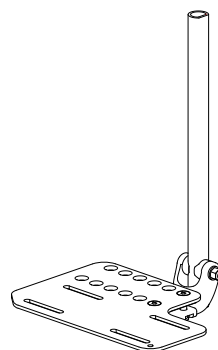
Footrests

Flip-Up Footrest and Depth and Angle Adjustable Flip-Up Footrest

WARNING: Make sure footplates are adjusted to the proper height and angle while the user is wearing their shoes to prevent discomfort or injury. Incorrect adjustment can lead to instability and accidents.



Composite Flip-Up
Footrest



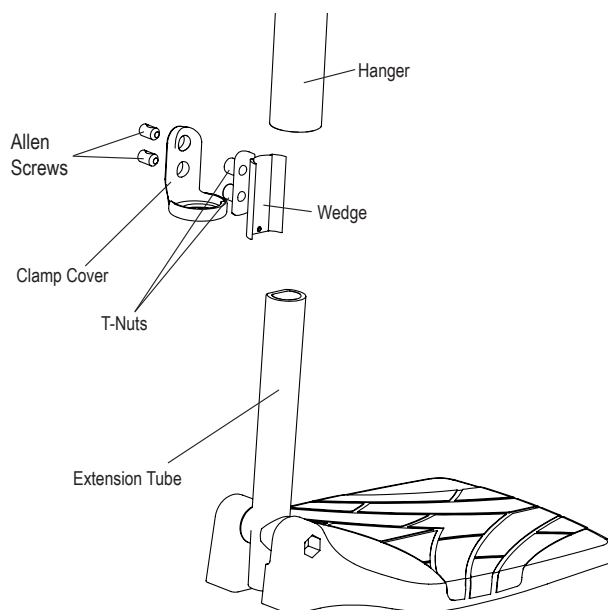
Depth and Angle Adjustable
Flip-Up Footrest

Adjusting the Height / Replacing

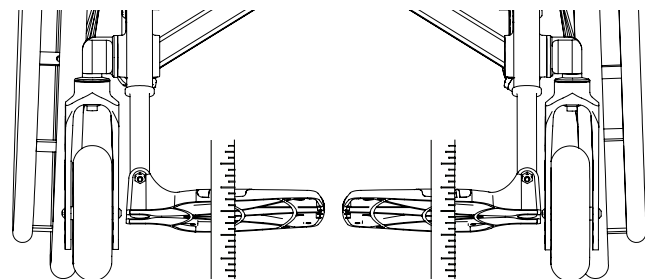
Tools:

- 3mm Allen Wrench
- Ruler

1. Loosen but do not remove the two Allen Screws that engage the T-Nuts to the clamps that secure the footrest to the Hanger. Loosen the Allen Screws just enough to permit the Extension Tube to slide up and down within the hanger.
2. If replacing the footrest, remove the old footrest and insert the new Extension Tube through the cover and into the Hanger.
3. Place the end of a ruler on the floor and hold it vertically against the corner of the footrest. Adjust the footrest to the desired height (not less than 5 cm of ground clearance) and tighten the Allen Screws in the clamp so the footrest height cannot change.
4. Repeat Step 2 on the opposite side of the footrest.
5. When both sides are set at an equal distance from the floor, securely tighten the two Allen Screws into the two T-Nuts securing the footrest to the inside of the Hanger, making sure the Clamp Covers remain securely butted up against the end of the Hanger.



Footrest Height Adjustment



Footrests, continued

Adjusting the Angle (Dorsi / Planar):

Tools:

- 4mm Allen Wrench
1. Loosen the two Allen Screws that attach the Footplate to the Flip-Up Footrest Pivot.
 2. Rotate the Footplate to the desired angle.
 3. Securely tighten the two Allen Screws to set the footrest angle.

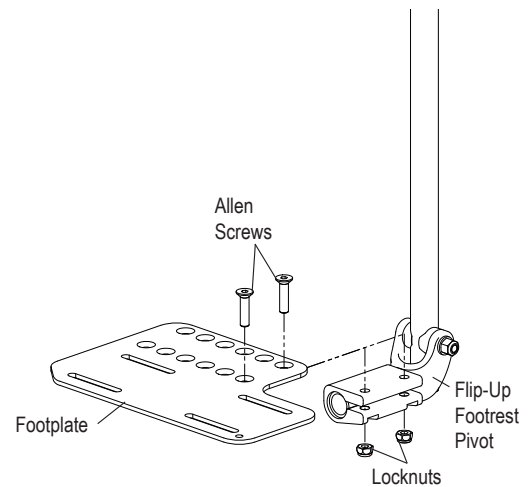
Adjusting the Depth:

Tools:

- 4mm Allen Wrench

If the flip-up footrest is depth adjustable, adjust the depth as follows:

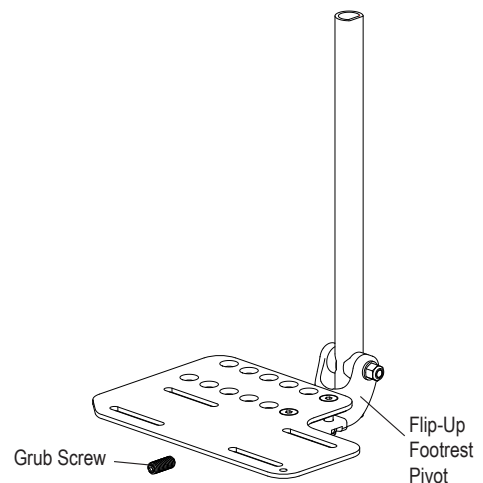
1. Remove the Allen Screws and Locknuts that attach the Footplate to the Flip-Up Footrest Pivot.
2. Move the Footplate forward or backward to the desired depth setting.
3. Reinstall and securely tighten the Allen Screws and Locknuts.



Adjusting the Angle (Eversion / Inversion):

Tools:

- 4mm Allen Wrench
1. Insert the allen wrench into the Flip-Up Footrest Pivot and locate the Grub Screw.
 2. Rotate the Grub Screw until desired position is achieved.



Swing Away Hangers

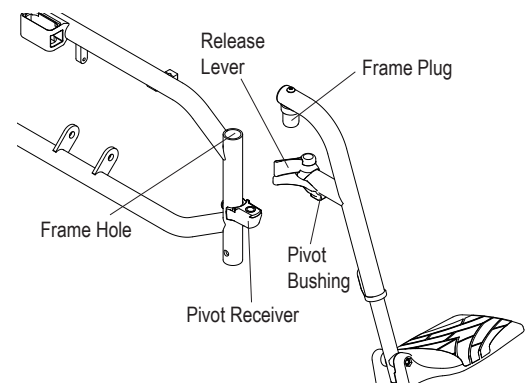
The swing away hangers can be rotated inward or outward to be removed or positioned out of the way.

To swing the hanger inward or outward: Push the Release Lever and push the hanger inward or outward.

To remove the hanger from the wheelchair: Swing it outward and pull it upward.

To replace the hanger on the frame:

1. Align the Frame Plug with the Frame Hole and insert the hanger into the frame.
1. Holding the hanger, not the Release Lever, swing the hanger until the Pivot Bushing locks into place in the Pivot Receiver.



Footrests, continued

Elevating Legrest (ELR)

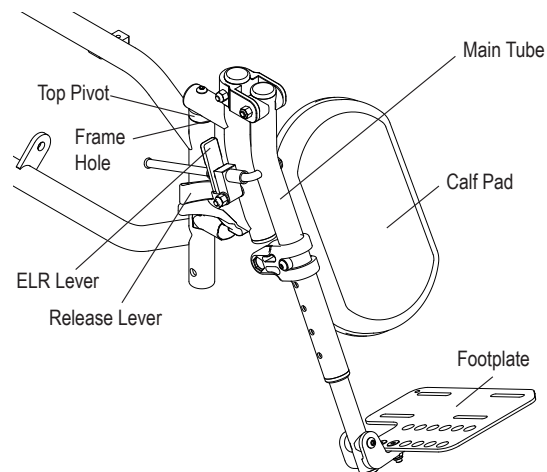
Installing:

1. Align the Top Pivot with the Frame Hole.
2. Holding the ELR, not the Release Lever, swing the ELR until the release pin locks into place in the hanger lock.
3. Fold down the Footplate.
4. Rotate the Calf Pad until it comes to a stop for placement under the calf.
5. Raise the Main Tube gradually until the desired leg height is reached.
6. If a lower ELR angle is desired, push the ELR Lever gradually, holding on to the Main Tube while lowering the ELR into position.

The ELR can only be rotated outward to be removed or positioned out of the way.

To swing the ELR outward: Push the release lever and rotate the ELR outward.

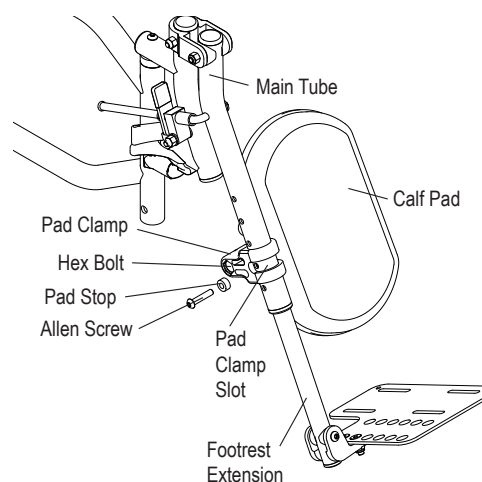
To remove the ELR from the wheelchair: Push the release lever, swing the ELR outward and remove the top pivot from the frame hole, lifting the ELR.



Adjusting the ELR Length:

Tools:

- 4mm Allen Wrench
1. Remove the Allen Screw and Pad Stop which secure the Pad Stop and Footrest Extension in place.
 2. Slide the Footrest Extension to the desired length.
 3. Align the hole in the Main Tube with the hole in the Footrest Extension and the Pad Clamp Slot.
 4. Reinstall the Allen Screw and Pad Stop. Securely tighten.
 5. If the desired ELR length has not been achieved, repeat Steps 1-4.



Adjusting the Footrest:

To adjust the position of the Depth Adjustable footrest on the ELR, see the "Adjusting the Depth" and/or "Adjusting the Angle" section.

Back Supports and Push Handles

WARNING: Improper adjustment of back support angle, height, and depth can lead to poor posture and pressure injuries. Always adjust according to the user's specific needs for comfort and support.

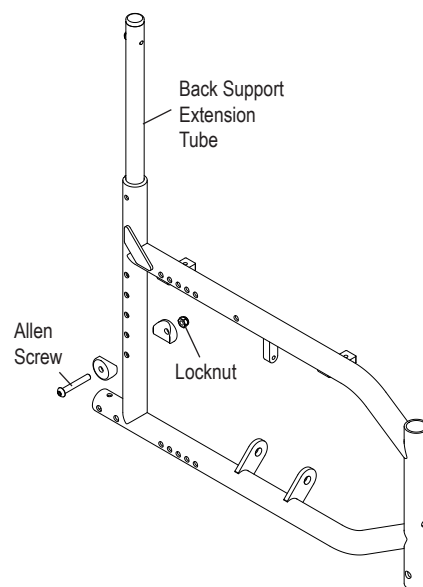
Adjustable Height Back Support

Adjusting the Back Support Height:

Tools:

- 4mm Allen Wrench
- 10mm Open End Wrench

1. Remove the Allen screws that secure the back support extension tubes inside the frame. If the wheelchair is equipped with swing away armrests or anti-tips, the receiver will be attached to the frame with screws which may also secure the back support extension in either side of the frame. Carefully note the order in which the various washers and nuts (and any other parts, such as armrest or anti-tip receivers) were originally installed on the wheelchair as they will need to be reinstalled in the exact same order in Step 3 below.
2. Adjust the back support extension tubes to the desired height.
3. Reinstall the armrest or anti-tip receivers if removed in Step 1 above.



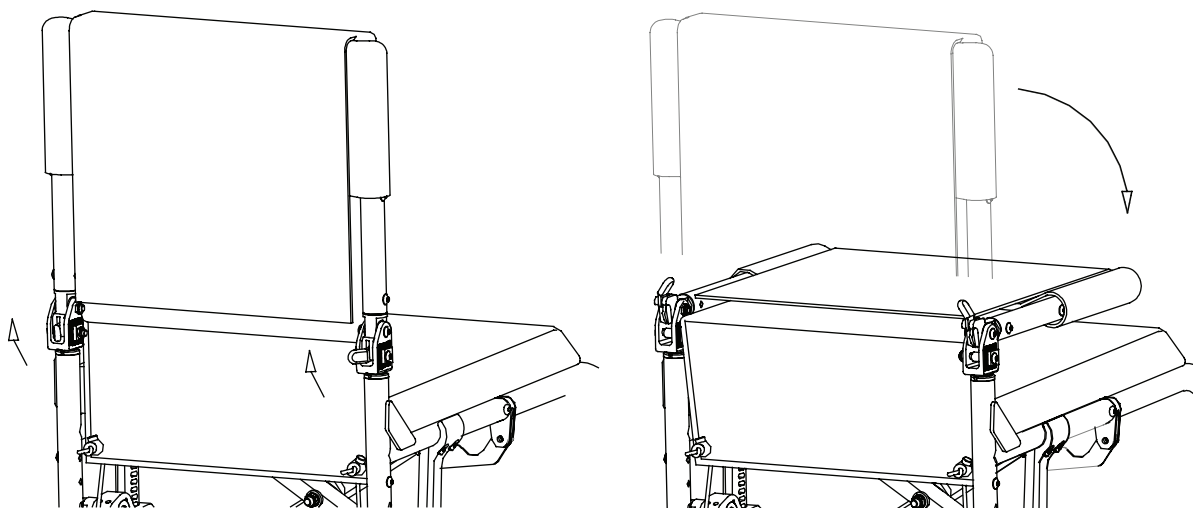
Angle Adjustable Fold Down Back Support

Folding the Back Support:

1. Lift the back support latches on each side of the wheelchair simultaneously.
2. Push the back canes forward toward the seat rails.

Unfolding the Back Support:

1. Lift up and pull the back canes toward the rear of the chair.
2. Make sure that the back support latch on each side of the chair engages in the locked upright position.



Back Supports and Push Handles, continued

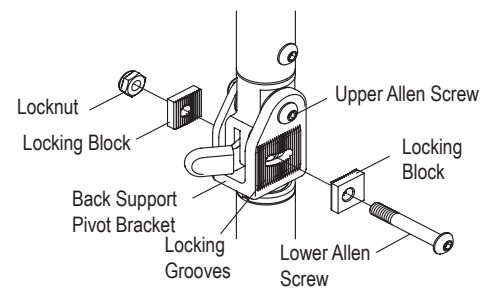
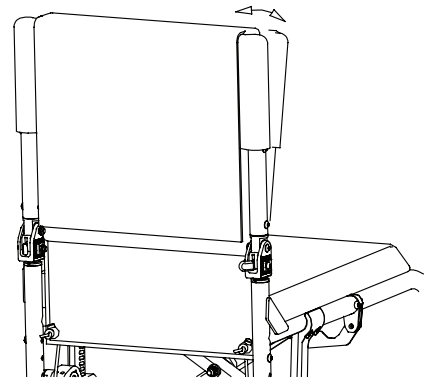
Changing the Back Support Angle:

- ! WARNINGS:**
- Always make sure that the grooves in the locking blocks are aligned with the grooves in the back support pivot bracket. If the grooves are not aligned, the back support could become loose and the back support angle could change unexpectedly. If the grooves are not aligned, the grooves may become worn, causing the back support angle to change unexpectedly.
 - Before using the wheelchair, make sure the Angle Adjustable Fold Down Back Support is locked securely in place in the upright position and all mounting hardware is securely tightened.

Tools:

- 4mm Allen Wrench
- 10mm Open End Wrench

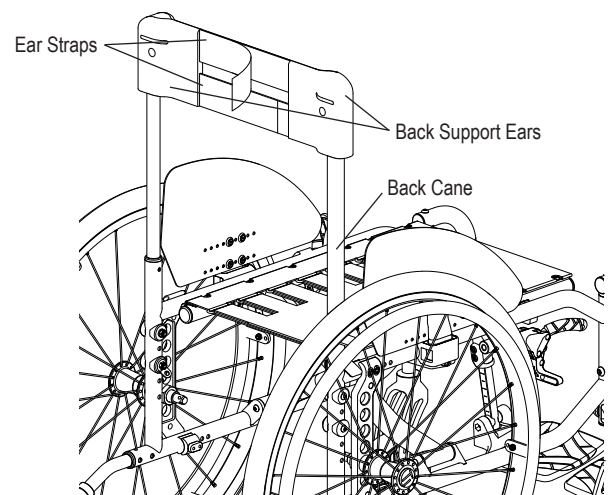
1. Lock the back support in the unfolded, upright position.
2. Loosen, but do not remove the lower Allen screw. This Allen screw must be sufficiently loose so that both locking blocks can disengage from the locking grooves on the back support pivot bracket.
3. Adjust the angle of the back support to the desired angle.
4. Carefully re-engage both locking blocks, being extremely careful to ensure that ALL of the grooves in the locking blocks are engaged in grooves on the back support pivot bracket. Make sure that no part of either locking block overhangs past the front or rear of the back support pivot bracket.
5. Securely tighten the lower Allen screw.
6. Disengage the back support latches and fold down the back support. If the back support does not fold easily, you may need to loosen the upper Allen Screw (but not the lower Allen screw).
7. Verify that at least one thread of the Upper and Lower Screws protrudes out of the Locknut.
8. Repeat Steps 1 through 6 with the back support cane on the opposite side of the wheelchair.



Adjusting the Back Support Height:

Tools:

- 4mm Allen Wrench
1. Remove the back support upholstery, but leave the Back Support Ears and Ear Straps attached to the Back Support Canes. See the "Tension Adjustable by Strap Back Upholstery" section under Back Upholstery, Seat Upholstery and Seat Cushions.
 2. Remove the Allen Screws that secure the extension tubes to the Back Support Canes.
 3. Raise or lower the Back Support Cane extension tubes to the desired height.
 4. Align the holes in the extension tubes with the holes in the Back Support Canes and reinstall the Allen Screws removed in Step 2.
 5. Reinstall the back support upholstery. See the "Tension Adjustable by Strap Back Upholstery" section under Back Upholstery, Seat Upholstery and Seat Cushions.



Fold Down Push Handles

To adjust the height of the Fold Down Push Handle please follow the instructions in the "Adjusting the Back Support Height" section.

Armrests



WARNING: Make sure that armrests are properly adjusted fore-aft before use. Incorrect adjustment can lead to discomfort or injury during operation.

Swing Away Armrest

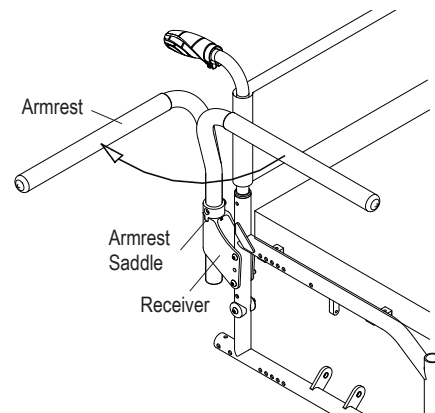
IMPORTANT! The Swing Away Armrests pivot on nylon sleeves, located inside the receiver. If the armrest does not rotate properly, remove the armrest, clean the armrest and inside the receiver thoroughly. If this does not solve the problem, check the armrest nylon sleeves for wear. Replace as needed.

To Swing Away the Armrest:

1. Lift the Armrest and rotate the Armrest away from the wheelchair.
2. Make sure to lift the Armrest until the Armrest Saddle is above the notch on the Receiver.

To Replace the Armrest:

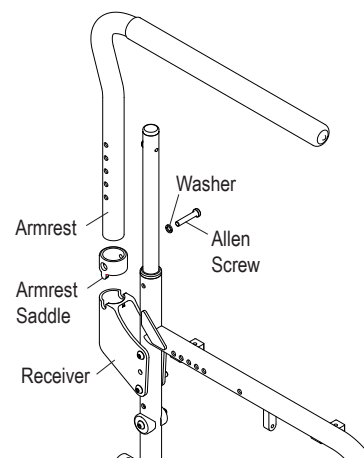
1. Rotate the Armrest back towards the wheelchair and gently push it down into place.
2. Make sure the Armrest Saddle is in the notch on the Receiver.



Adjusting the Height:

Tools:

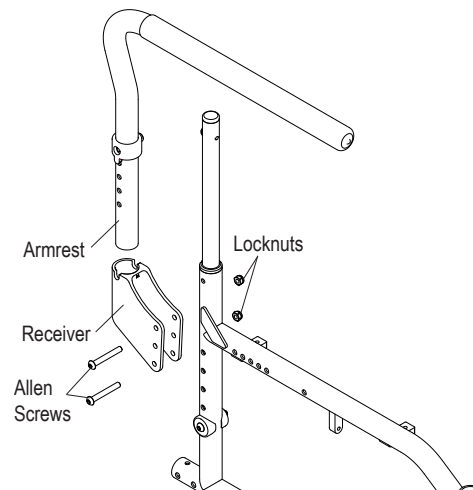
- 4mm Allen Wrench
1. Remove the Armrest from the Receiver.
 2. Remove the Allen Screw and Washer securing the Armrest Saddle.
 3. Slide the armrest saddle to the desired position. Reassemble the Allen Screw and Washer in the desired location on the armrest (in 2cm increments).
 4. Securely tighten the Allen screw in the new location.
 5. Reinstall the armrest in the armrest receiver.



Adjusting the Height of the Receiver:



WARNING: If the wheelchair has anti-tips, when reassembling, make sure that the Allen screws secure the anti-tips to the frame. This may limit options for adjusting the height of the receiver.



Armrests, continued



WARNINGS:

- Make sure the armrest height adjustment pin is securely engaged before applying weight to the armrest.
- Make sure the release lever has securely clicked into place in the armrest receiver before applying weight to the armrest.

IMPORTANT! Never lift the wheelchair using the T-Armrest.

Removable Height Adjustable T-Armrest

Adjusting the Armrest Height:

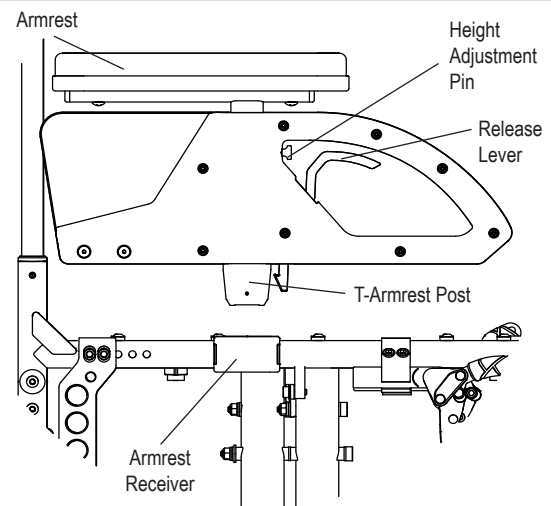
1. Pull Height Adjustment Pin to allow the Armrest to be raised or lowered to the desired height.
2. After repositioning the Armrest to the desired height, release the Height Adjustment Pin. The positioning holes are in half inch increments.

Removing:

1. To remove the T-Armrest, pull and hold the Release Lever.
2. While holding the Release Lever, lift the T-Armrest to remove it from the Armrest Receiver.

Mounting:

1. Insert T-Armrest Post into the Armrest Receiver until the Release Lever clicks into place.



2-Point Flip Back Height Adjustable T-Armrest

To Flip Back the Armrest:

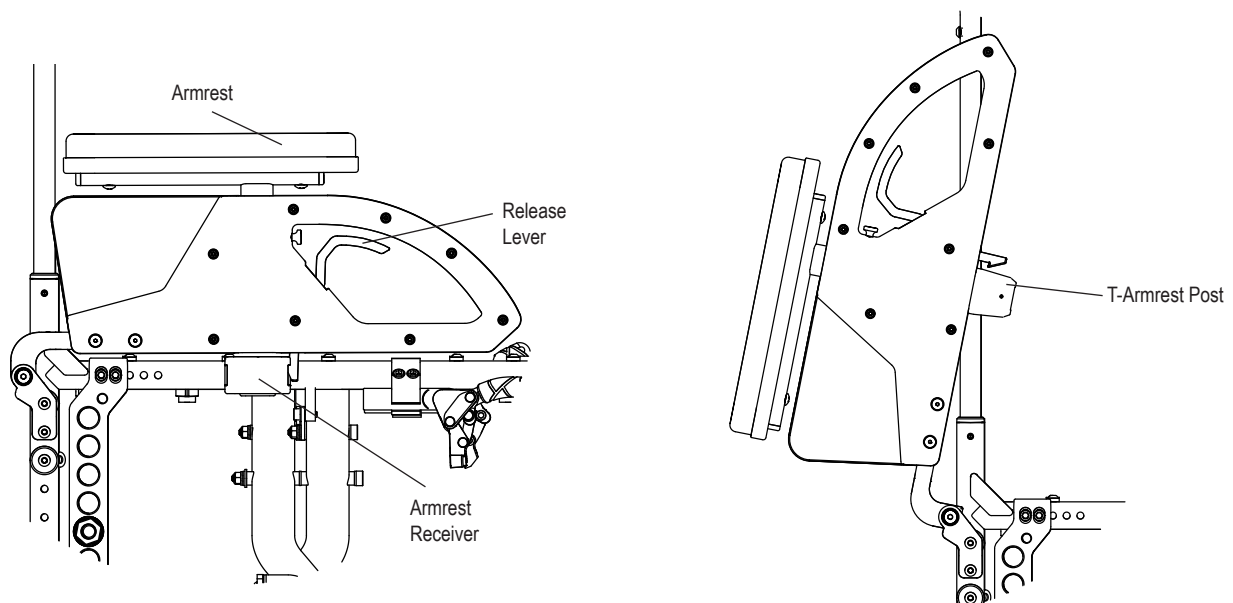
1. Pull and hold the Release Lever.
2. While holding the Release Lever, lift the T-Armrest assembly to remove it from the Armrest Receiver and flip it back as far as possible.

To Replace the Armrest:

1. Swing the T-Armrest back down so that the T-Armrest Post is inserted into the Armrest Receiver.
2. Make sure the Release Lever clicks into place; push down on armrest if necessary

Adjusting the Armrest Height:

1. See the above instructions for "Adjusting the Armrest Height".



Armrests, continued

Converting Armrest Type between 2-Point Flip Back and Removable

Tools:

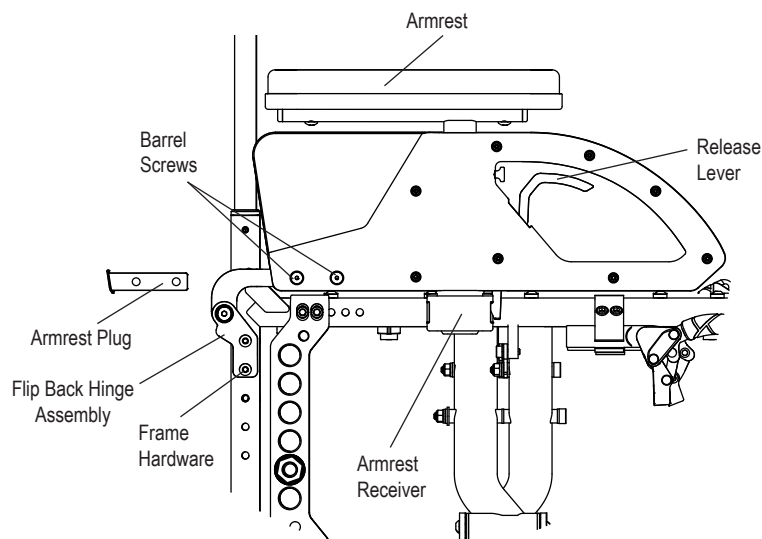
- 10mm wrench or socket
- 2 x 2.5mm hex key
- 4mm hex key

Removable to Flip Back:

1. Remove the two Barrel Screws.
2. Remove Armrest Plug.
3. Insert Flip Back Hinge Assembly into back of Armrest (sold separately as spare part unless flip back armrests were originally ordered).
4. Insert armrest post into Armrest Receiver and make sure Release Lever clicks into place.
5. Attach flip back hinge to frame using provided hardware (Torque bolt to 5 Nm).
6. Insert new Barrel Screws into armrest assembly and tighten. Note: It is important to perform step 6 after steps 4 and 5 have been completed.

Flip Back to Removable:

1. Remove the two barrel screws.
2. Remove all hardware fixing flip back hinge to the frame and remove Flip Back Hinge Assembly.
3. Replace the hardware in the frame to ensure the back cane of the wheelchair is held in place (Torque bolts to 5 Nm).
4. Insert Armrest Plug into back of Armrest (sold separately as a spare part unless removable T-armrest was originally ordered).
5. Insert new Barrel Screws into armrest assembly and tighten.



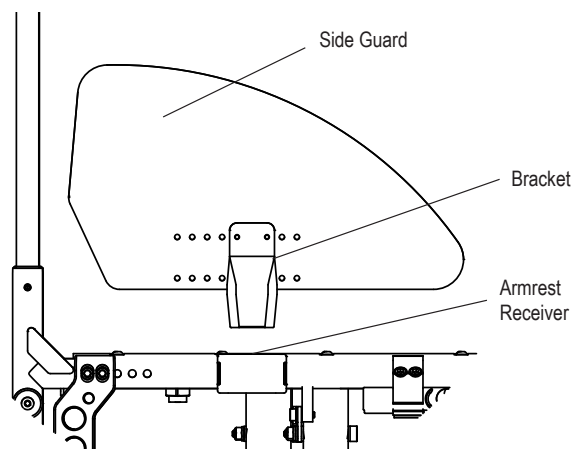
Side Guards

Rigid Removable Side Guards

Using Rigid Side Guards:

To remove the Rigid Side Guard, lift the side guard out of the armrest receiver by grasping it at the top and pull it upwards.

To replace, place the bracket into the armrest receiver and push down.



Adjusting (only applicable for wheelchairs with the pin style clamp):

Tools:

- 3mm Allen Wrench

Adjust the "snugness" of the fit of the bracket in the Side Guard Mount by loosening or tightening the two Allen Screws in the Side Guard Mount.

Note: Either type of Rigid Side Guard can be made "non-removable" by firmly tightening the two Allen Screws in the Side Guard Mount while the side guard is installed.

Removing (only applicable for wheelchairs with the pin style clamp):

Tools:

- 5mm Allen Wrench

To remove the entire side guard assembly, including the clamp:

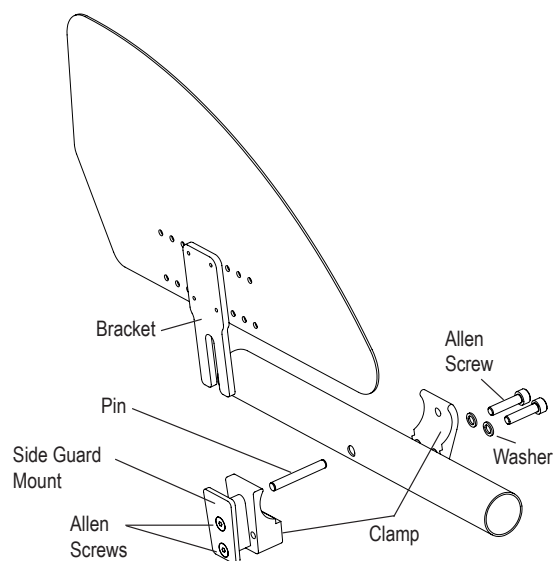
1. Remove the side guard from the side guard mount.
2. Remove the Allen Screw that secures the two halves of the clamp to the frame.

Reinstalling (only applicable for wheelchairs with the pin style clamp):

Tools:

- 5mm Allen Wrench

1. Align the two halves of the Clamp around the seat tube of the wheelchair frame.
2. Insert the Allen Screw through the washer and the two halves of the Clamp and securely tighten.
3. Insert the bracket into the Side Guard Mount and adjust the two Allen Screws as described in the "Adjusting" section.



Back Upholstery and Seat Upholstery

Tension Adjustable by Straps Back Upholstery

Adjusting the Tension:

IMPORTANT! When adjusting the tension of the back upholstery, DO NOT apply so much tension that the crosstubes are pulled out of the saddles. If this occurs, it may cause the wheelchair "track" improperly or develop a "floater".

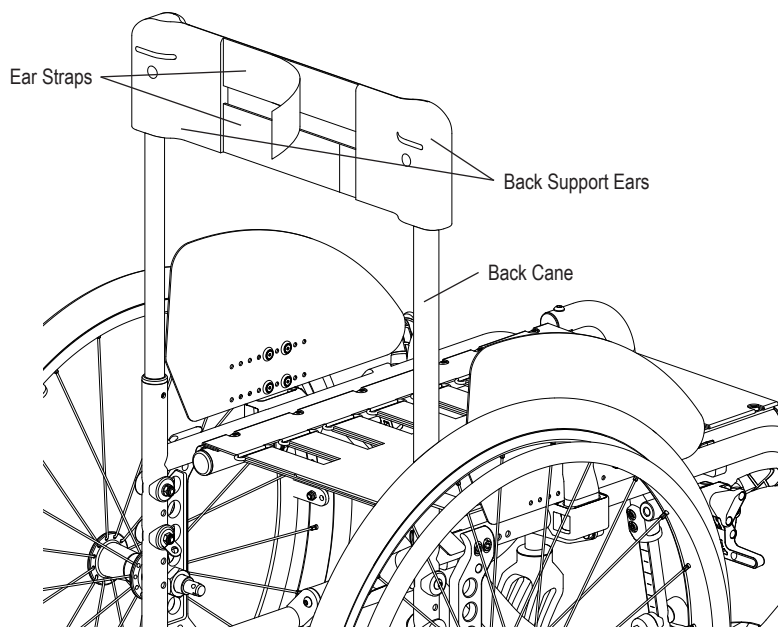
1. Lift the back flap to expose the Back Support Ears.
2. Completely detach the padded back from the Back Support Ears. Do not remove the Back Support Ears from the back canes.
3. Adjust to the desired tautness by loosening the Ear Straps and then pulling on the loose end to pull the Back Support Ears closer together. Tighter back upholstery will increase the stability and maintain normal maneuverability of the wheelchair because the user is pushed forward slightly. It may also make unfolding and folding the wheelchair more difficult. Looser back upholstery will increase maneuverability, but will make the wheelchair more prone to tip over backward because additional weight is being distributed onto the rear wheels.
4. Align the top of the padded back with the two Back Support Ears.
5. If desired, adjust the tension on the Strap(s).
6. Securely attach the padded back to the Back Support Ears and lower the back flap back into position.

Replacing:

Tools:

- 3mm Allen Wrench
- Scissors

1. Remove the seat cushion.
2. Cut the plastic ties that secure the bottom of the back upholstery to the frame. If the wheelchair has a folding back, the wheelchair will have an elastic cord and ball instead of plastic ties. Untie the cord and slide the ball down to remove the cord and proceed to the next step.
3. Remove the Allen screw that secures the upholstery to each back cane.
4. Slide the upholstery off the Back Canes.
5. Slide new upholstery onto the Back Canes.
6. Secure the upholstery to the Back Canes with the Allen screws removed in Step 3.
7. Secure the bottom of the back upholstery to the seat frame with new plastic ties or the elastic cord and ball removed in Step 2.
8. Replace the seat cushion.



Back Upholstery and Seat Upholstery, continued

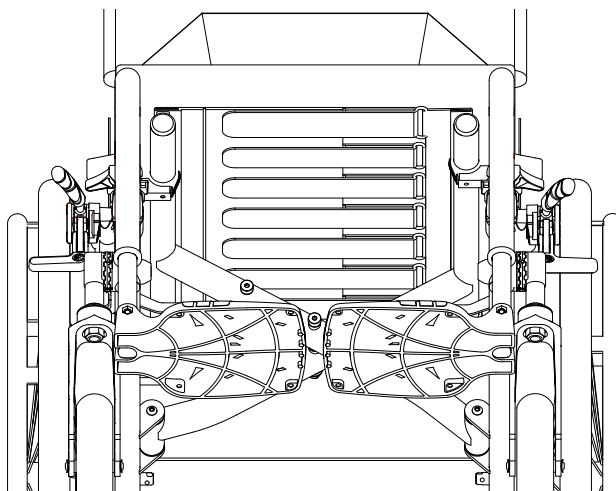
Tension Adjustable Seat Sling

Adjusting the Tension:

⚠ WARNING: DO NOT make the tension of the seat sling so loose that it does not properly support the user's weight. Never let the sling become so loose that the user's weight is borne by the frame below the seat sling.

IMPORTANT! When adjusting the tension of the seat upholstery, DO NOT apply so much tension that the seat tubes are pulled out of the saddles. If this occurs, it may cause the wheelchair "track" improperly or develop a "floater".

1. The upholstery is tension adjustable by hook and loop fastener straps. To adjust the tension on the seat upholstery, access the straps underneath the seat and adjust to preference. For optimal wheelchair performance and responsiveness, it is recommended to keep the seat sling tightly fastened to the wheelchair frame.
2. To tighten the sling, begin by transferring out of the wheelchair. Start with a strap towards the middle of the seat sling. Undo the hook and loop fastener strap, pull tightly around the attachment ring and re-secure on the exposed hook and loop fastener of the same strap.
3. Continue this same process with the strap behind the first strap. It is best to alternate with consecutive straps in front and back until there are no more straps in the back and then finish the remaining straps, working towards the front.



Back Upholstery and Seat Upholstery, continued

Velcro®-Style Adjustable Positioning Belt



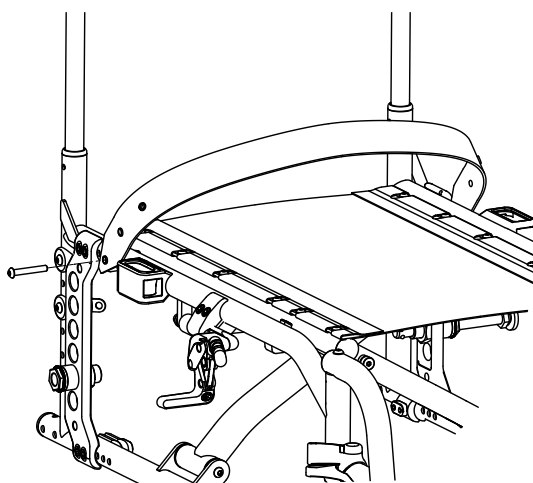
WARNINGS:

- Installation of the Velcro®-Style Positioning Belt must be performed by an authorized Permobil dealer or qualified technician.
- A wheelchair user must never use the wheelchair which has seat belts installed without proper securement of the positioning belt around the user. If the positioning belt is not properly secured, the belt may become entangled in the wheels or an external obstacle which may lead to the wheelchair coming to a sudden stop causing the user to fall out of the wheelchair.
- The Velcro®-Style Positioning Belt must be worn tightly fitted across the lower pelvis or thighs at all times. A loose belt can allow the user to slip down and create a risk of strangulation. A seating specialist should demonstrate its proper adjustment and use. Accidental release of the Velcro®-Style Positioning Belt can allow the user to slip down or fall from the wheelchair. If the user's movements or cognitive abilities could lead to accidental release, a caregiver must be present at all times during its use. Make sure that all caregivers know how to properly use the product. Failure to do so may delay release in an emergency. As with any new seating support, the Velcro®-Style Positioning Belt may change the way a person sits. Users must continue to practice regular pressure relief activities and skin integrity checks, not only where this product contacts the user, but also in primary pressure-bearing areas such as the sacrum, legs, and buttocks. If increased skin redness or irritation occurs, discontinue use and consult a physician or seating specialist.

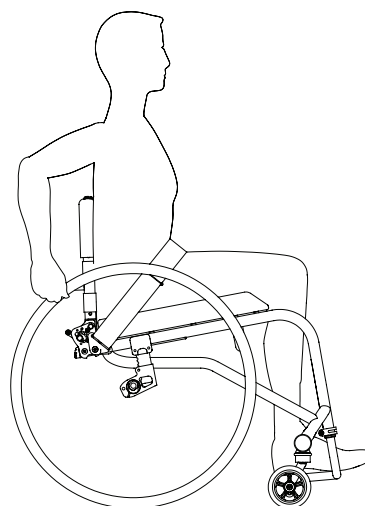
Installation:

The positioning belt should be installed as shown in the images below.

Velcro®-Style Positioning Belt with D-Ring



Proper Belt Position for Belt with D-Ring



Adjustment:

When the belt is properly adjusted and tightened, it should fit snug so that the user's pelvis is secure. If length adjustment is necessary to achieve a good fit or to remove the belt for cleaning, this can be done using the belt end fittings.

Safety Check:

When properly positioned in wheelchair, the wheelchair user should lean forward and side to side to check the fit. Check for:

1. Normal operation of adjustment straps.
2. Comfort: look for areas of irritation.
3. Position: if too high or too low, adjust anchor points.
4. Interference with other devices: relocate anchor points as necessary.
5. Move the wheelchair through full range of motion, including folding, and rolling. Check for any interference.
6. Verify that at least one thread of the mounting bolt protrudes out of the provided nylock nut.

Maintenance:

Check periodically for signs of wear in the stitching and webbing. If significant wear is found, contact a supplier for qualified repair or replacement by Permobil.

Axle Plates & Axle Sleeves (Center of Gravity; Rear Seat Height; Rear Wheel Spacing; Camber)

All TiLite folding wheelchairs are equipped with standard Axle Sleeves. By adjusting the position of the Axle Sleeves, the center of gravity of the wheelchair can be adjusted. In some cases, the rear seat height can be adjusted. The information in Axle Plates and Axle Sleeves explains the various adjustments that are possible. The same adjustment will apply regardless of the degree of the camber.



WARNINGS:

- Any changes to the position of the axle sleeves will affect the stability of the wheelchair. Use extreme caution when using a new axle sleeve position as the new position may make the wheelchair more prone to tip over.
- When adjusting the position of the axle sleeve, it may be necessary to square the caster to the floor.
- COG brackets must be adjusted equally with respect to the back support for stability. Unequal adjustments can lead to an unstable chair configuration increasing risk of tipping over.

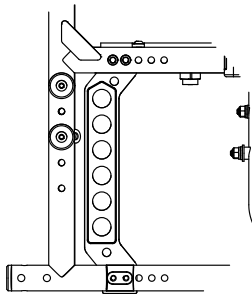
IMPORTANT! It is recommended to remove the rear wheels and turn the wheelchair upside down before attempting to make any adjustments described in the following instructions.

Standard Axle Sleeve

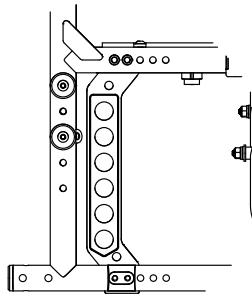
Adjusting the Center of Gravity:

IMPORTANT!:

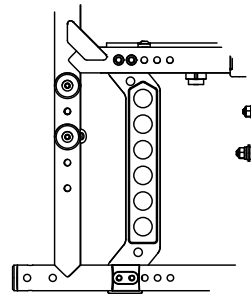
- The axle plates on either side of the wheelchair can be reversed or exchanged so as to achieve any of the four configurations shown below. Depending on the desired location of the center of gravity, it may be necessary to change the configuration of the axle plates to one of the other configurations shown.
- If the following steps do not permit the desired center of gravity, consider utilizing one of the other configurations shown. For example, if the wheelchair was delivered in the configuration shown in Configuration A, but center of gravity is wanted more forward while maintaining the same rear seat height, then switch and flip the left and right axle plates so as to achieve the configuration shown in Configuration C.



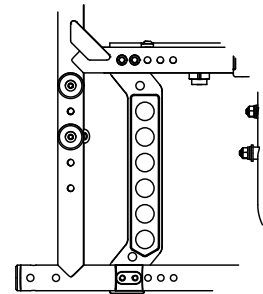
Configuration A



Configuration B



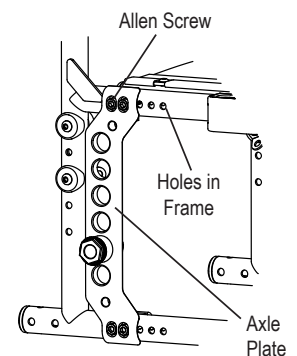
Configuration C



Configuration D

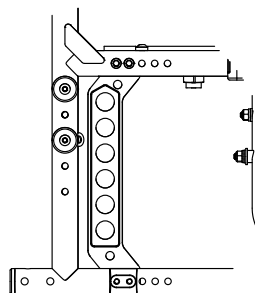
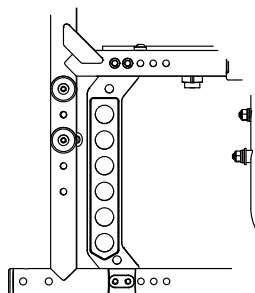
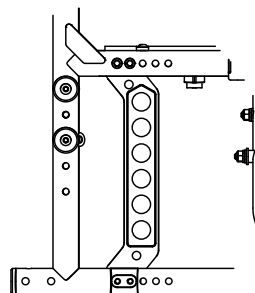
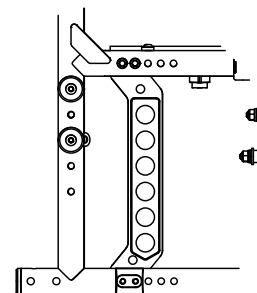
Tools:

- 5mm Allen Wrench
1. Partially fold the wheelchair and remove the rear wheels.
 2. Remove the eight Allen Screws (four on each side of the wheelchair) that secure the plates to the frame.
 3. Reposition the Axle Plate assemblies to the desired location on both sides of the frame and align slots in Axle Plates with Holes in Frame. Holes are in half inch increments
 4. Insert and securely tighten all eight Allen Screws.
 5. Reinstall the rear wheels and unfold the wheelchair.
 6. Square the casters as needed.
 7. Adjust the wheel locks.



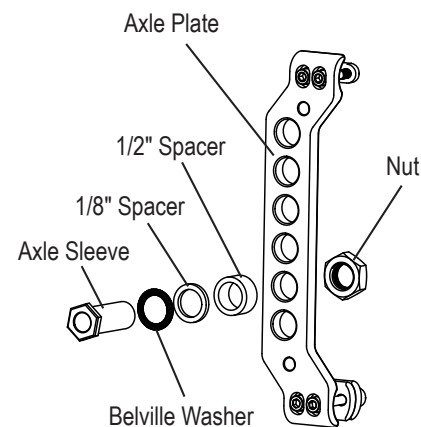
Axle Plates & Axle Sleeves (Center of Gravity; Rear Seat Height; Rear Wheel Spacing; Camber), continued**Adjusting the Rear Seat Height:****IMPORTANT!:**

- The axle plates on either side of the wheelchair can be reversed or exchanged so as to achieve any of the four configurations shown below. Depending on the desired location of the rear seat height, it may be necessary to change the configuration of the axle plates to one of the other configurations shown.
- If the following steps do not permit the desired rear seat height, consider utilizing one of the other configurations shown. The holes in the axle plates are in 1 inch increments. If a rear seat height adjustment of a half inch is desired, consider utilizing one of the other configurations shown. For example, if the wheelchair was delivered in the configuration shown in Configuration A and a rear seat height adjustment of a half inch is desired, switch and flip the left and right axle plates so as to achieve the configuration shown in Configuration B.
- Install camber plugs symmetrically on both sides of the chair for stability. Asymmetrical installations may result in an unstable chair configuration.

**Configuration A****Configuration B****Configuration C****Configuration D****Tools:**

- 22mm Torque Wrench

1. Remove the rear wheels.
2. Remove the Axle Sleeve on each side of the wheelchair with the 22mm wrench.
3. Move the Axle Sleeve to a new hole in the Axle Plate to achieve desired rear seat height.
Make sure the Belleville Washer and Spacers are in the same order as when originally installed.
Note: The holes are in one inch increments. If a half inch increment is desired, the left and right Axle Plate will need to be switched and flipped (See Configuration A and Configuration B).
4. Tighten the Axle Sleeve to 26 Nm. Use the slot in the back of the Axle Plate to hold the sides of the Nut while tightening.
5. Reinstall the rear wheels.
6. Square the casters as needed.
7. Adjust the wheel locks.

**Adjusting the Rear Wheel Spacing:****Tools:**

- 22mm Torque Wrench

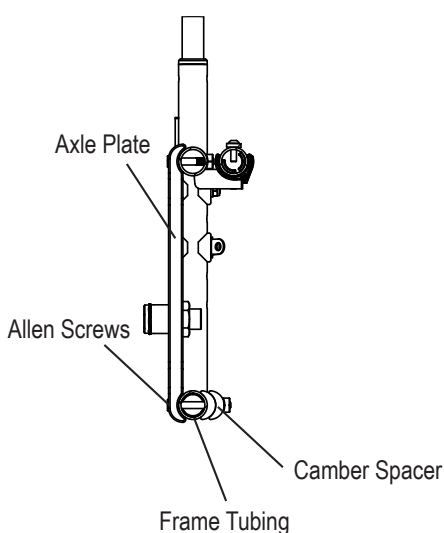
1. Remove the rear wheels.
2. Remove the Axle Sleeve on each side of the wheelchair with the 22mm wrench.
3. Add or remove spacers to increase or decrease rear wheel spacing. Spacers come in a half inch thickness or a one eighth inch thickness. Spacers can be stacked up to a maximum of 1" of spacing. If additional spacers are needed, a spacer package can be purchased.
4. Reposition the axle sleeve in the axle plate. Make sure the Belleville Washer and Spacers are in the same order as when originally installed.
5. Tighten the axle sleeve to 26 Nm. Use the slot in the back of the axle plate to hold the sides of the nut while tightening.
6. Reinstall the rear wheels.
7. Adjust the wheel locks.

Axle Plates & Axle Sleeves (Center of Gravity; Rear Seat Height; Rear Wheel Spacing; Camber), continued

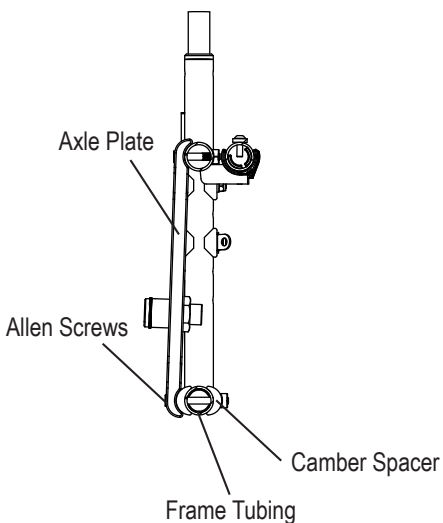
Adjusting the Camber:

1. Remove the rear wheels.
2. Remove the two Allen Screws on the bottom of the Axle Plate on each side of the wheelchair.
3. Loosen the two Allen Screws on the top of the Axle Plate on each side of the wheelchair to allow the angle of the Axle Plate to be adjusted.
4. Stack Camber Spacers inside and / or outside of the Frame Tubing to achieve the desired camber. See images for the three camber configurations. Each Camber Spacer between the Axle Plate and the outside of the Frame Tubing creates 2 degrees of camber.
5. Insert the two bottom Allen Screws back through the Axle Plate, Camber Spacers, and frame and tighten.
6. Tighten the top Allen Screws.
7. Reinstall the rear wheels.
8. Adjust the wheel locks.

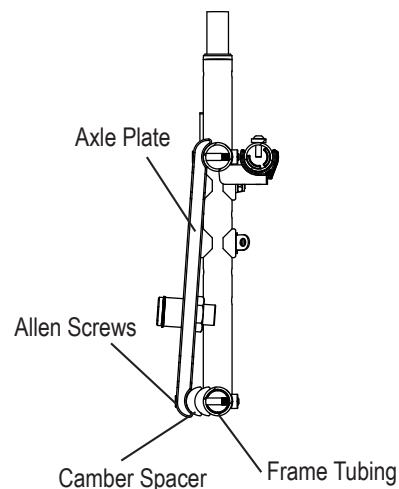
0° Camber Configuration



2° Camber Configuration



4° Camber Configuration



Axles



WARNINGS:

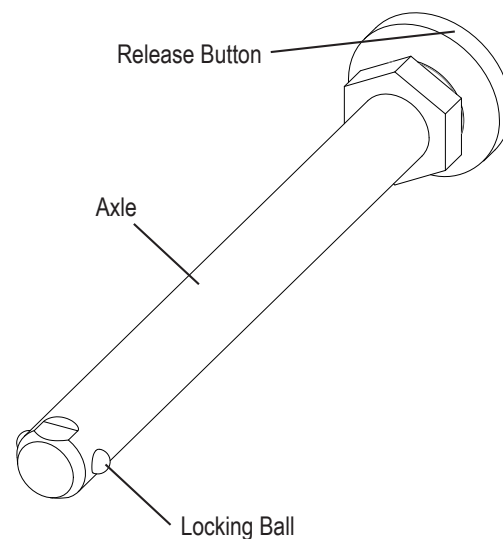
- DO NOT attempt any adjustments when the wheelchair is occupied.
- Quick-Release Axles are pre-adjusted to permit minimal "play" in the axle. Permobil recommends not adjusting the axle. Improperly adjusting the axle could cause it to malfunction—too much "play" can cause the axle to bend and become stuck in the axle sleeve; too little "play" can prevent the locking balls from engaging fully, causing the wheel to disengage from the wheelchair without warning. Permobil recommends that an authorized dealer make any adjustments.

Stainless Quick-Release Axles

Adjusting:

Tools:

- 19mm End Wrench
 - 11mm End Wrench
1. Press down on the Release Button and remove the rear wheel and Quick-Release Axle.
 2. Remove the Axle from the wheel by pressing down the Release Button and sliding the Axle through the rear wheel hub.
 3. Once removed from the hub, release the Release Button (the Locking Balls should be fully extended).
 4. Increase or decrease axle "play" by adjusting the Locknut in small increments while securing the opposite end of the Axle using the smaller wrench at the Flats at the end of the Axle.
 5. Press down on the Release Button on the Quick-Release Axle and slide the Axle through the rear wheel hub.
 6. Press down on the release button and reinstall the rear wheel into the Axle Sleeve.
 7. Before riding in the wheelchair, make sure the Locking Balls have fully secured the wheel in the Axle Sleeve by pulling on the hub without pressing down the Release Button on the Quick-Release Axle. If the Locking Balls do not fully engage, repeat these steps and increase the "play" (i.e. increase the distance between the Locknut and the Locking Balls) to permit the Locking Balls to fully engage properly. Also, check to make sure there is not too much "play" in the Axle.



Quad Quick-Release Axle

Removing:

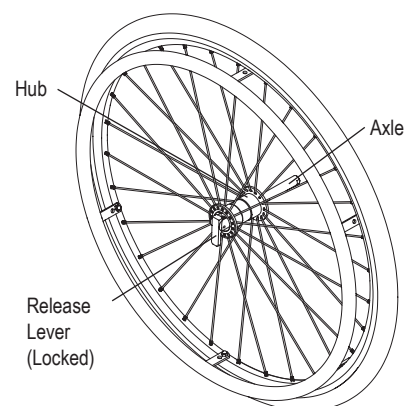
1. Unlock the Release Lever on the Quad Quick-Release Axle.
2. Slide the wheel and Axle out of the axle sleeve.

Replacing:



WARNING: Make sure the locking balls fully secure the Quad Quick-Release Axle inside the axle sleeve before operating the wheelchair.

1. Hold the wheel securely at the hub.
2. Unlock the lever on the Quad Quick-Release Axle, making sure the locking balls recess into the axle.
3. Insert the axle all the way into axle sleeve.
4. Lock the lever on the Quad Quick-Release Axle.
5. Pull firmly on the wheel (without unlocking the lever) to make sure the wheel is locked securely in place.



Wheel Locks



WARNINGS:

- Permobil recommends removing the wheel locks from the wheelchair frame prior to engaging in any sport.
- The wheel stop must embed in the tire at least 5mm or the wheelchair may roll unexpectedly. Therefore, before adjusting the lock, inflate the tires to the recommended tire pressure (see sidewall of the tire). If the locks are adjusted when the tires are under-inflated, the lock will not operate properly when the tire is fully inflated.
- After adjusting the wheel locks, engage the wheel locks and push against the tires to verify that the wheel locks prevent the wheels from moving. If not, readjust the wheel locks until the wheel locks securely prevent the wheelchair from rolling.

Compact Push to Lock

Adjusting:

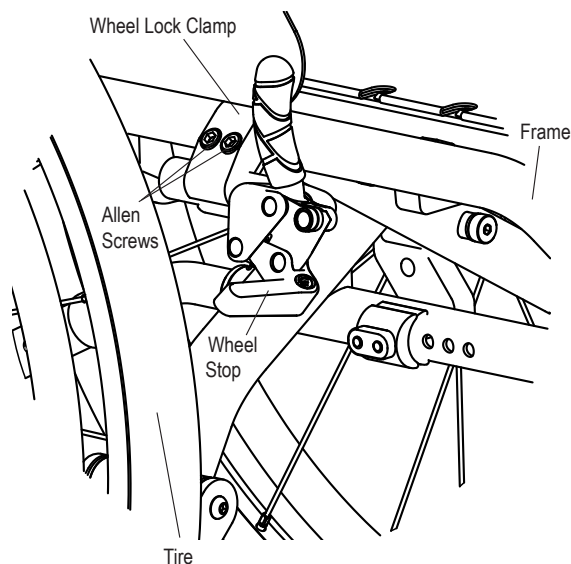
Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the Allen Screws in the Wheel Lock Clamp.
 2. Adjust the position of the Wheel Lock Clamp on the Frame so the Wheel Stop embeds at least 5mm into the Tire when engaged in the locked position.
 3. Securely tighten the two Allen Screws that secure the Wheel Lock Clamp to the Frame.

Replacing:

Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the two Allen Screws that secure the Wheel Lock Clamp to the Frame.
 2. Slide the wheel lock out of the clamp.
 3. Slide the new wheel lock into the Wheel Lock Clamp, but do not tighten the Allen Screws.
 4. Follow the instructions in the "Compact Push to Lock - Adjusting" section to position and secure the new wheel lock.



Compact Pull to Lock

Adjusting:

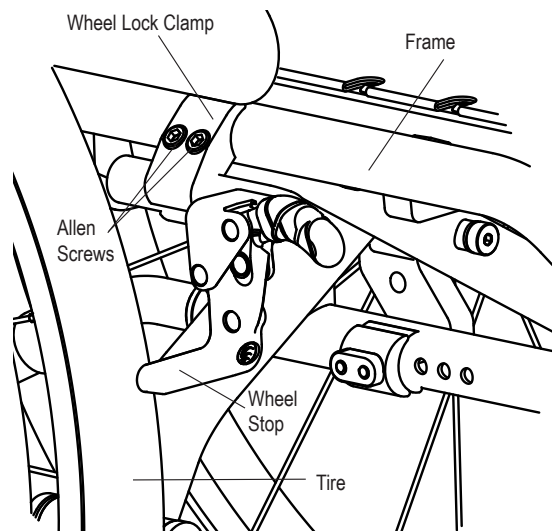
Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the Allen Screws in the Wheel Lock Clamp.
 2. Adjust the position of the Wheel Lock Clamp on the Frame so the Wheel Stop embeds at least 5 mm into the Tire when engaged in the locked position.
 3. Securely tighten the two Allen Screws that secure the Wheel Lock Clamp to the Frame.

Replacing:

Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the two Allen Screws that secure the Wheel Lock Clamp to the Frame.
 2. Slide the wheel lock out of the clamp.
 3. Slide the new wheel lock into the Wheel Lock Clamp, but do not tighten the Allen Screws.
 4. Follow the instructions under "Compact Pull to Lock - Adjusting" section to position and secure the new wheel lock.



Compact Push to Lock and Compact Pull to Lock Wheel Locks with Extension Handles

All of the adjustments steps in the "Compact Push to Lock" and "Compact Pull to Lock" sections apply to the Compact Push to Lock and Compact Pull to Lock Wheel Locks with Extension Handles, Hemi locks, and the Aluminum Push to Lock and Aluminum Pull to Lock options..

Wheel Locks, continued

Composite Scissor Lock

Adjusting:

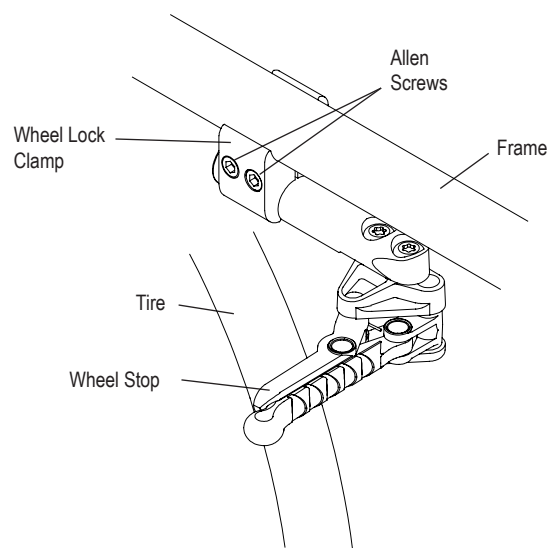
Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the Allen Screws in the Wheel Lock Clamp.
 2. Adjust the position of the Wheel Lock Clamp on the Frame so the Wheel Stop embeds at least 5mm into the Tire when engaged in the locked position.
 3. Securely tighten the two Allen Screws that secure the Wheel Lock Clamp to the Frame.

Replacing:

Tools:

- 5mm Allen Wrench
1. Loosen, but do not remove, the two Allen Screws that secure the Wheel Lock Clamp to the Frame.
 2. Slide the wheel lock out of the clamp.
 3. Slide the new wheel lock into the Wheel Lock Clamp, but do not tighten the two Allen Screws.
 4. Follow the instructions in the "Composite Scissor Lock - Adjusting" section to position and secure the new wheel lock.



Grade Aids

Permobil provides Newton Grade Aid Wheel Locks. For information on how to adjust the Grade Aid Wheel Locks, please refer to the product documentation available from Newton.

Casters and Forks

WARNING: Always mount identical size Casters and Forks on both sides of the wheelchair.

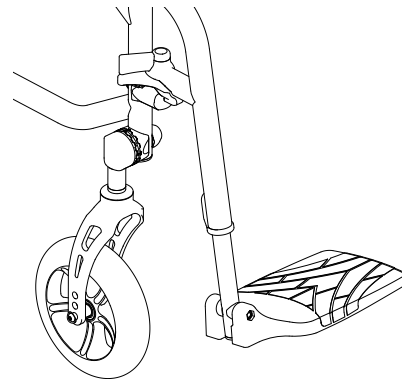
Standard Forks

Replacing Casters:

IMPORTANT! If your wheelchair has 4", 5", or 6" LiteSpeed Casters, make sure that Spacer 2 (which is wider than Spacer 1) is positioned on the recessed side of the Caster, which should be oriented outwards when the Casters are in the trailing position.

Tools:

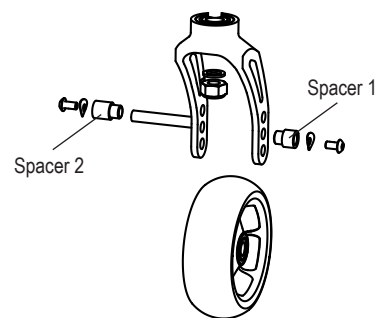
- 3mm Allen Wrench (2)
1. Remove one screw, C Spring Washer, and Axle. To do this, use one Allen Wrench to hold one screw in place and a second Allen Wrench to loosen the other screw.
 2. Remove the Axle, Caster, and Spacers.
 3. Install the new Caster, Spacers, Axle, and C Spring Washers onto the Fork. Securely tighten the two screws so there is no space between the Caster, the Spacers, and the Fork sides by using one Allen Wrench to hold one screw in place and another to tighten the other screw.



Replacing Forks:

Tools:

- 3mm Allen Wrench (2)
1. Remove the Casters. See the "Standard Forks – Replacing Casters" section.
 2. Using the 17mm Wrench, loosen and remove the Nylock Nut and Washer from the Fork Stem.
 3. Remove the Fork and Caster Cap, then install the Caster Cap and replacement Fork on the Fork Stem.
 4. Replace the Nylock Nut and Washer and securely tighten using the 17mm Wrench. Nylock Nut should be tight enough to provide a slight amount of swivel on the Fork.
 5. Reinstall the Casters. See the "Standard Forks – Replacing Casters" section.



Adjusting the Front Seat Height with Standard Forks:

IMPORTANT! If using 3" or 4" Casters, the front seat height of the wheelchair can be adjusted up or down without changing the casters to a larger or smaller size. The full range of adjustability is not available with 5" or 6" Casters.

Tools:

- 3mm Allen Wrench (2)
1. Remove the Casters. See the "Standard Forks – Replacing Casters" section.
 2. With the Axle removed, line up the Spacers, Caster, and desired alternative Axle hole.
 3. Insert Axle into lined up holes and secure together with screws using the Allen Wrenches. See the "Standard Forks – Replacing Casters" section.
 4. Repeat steps 1 through 3 for opposite Fork.

Casters and Forks, continued

Adjusting the Angle of the Fork in the Caster Mount:



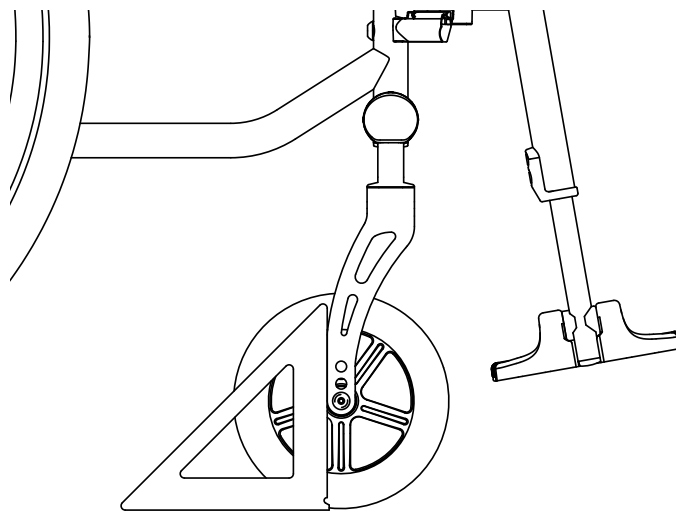
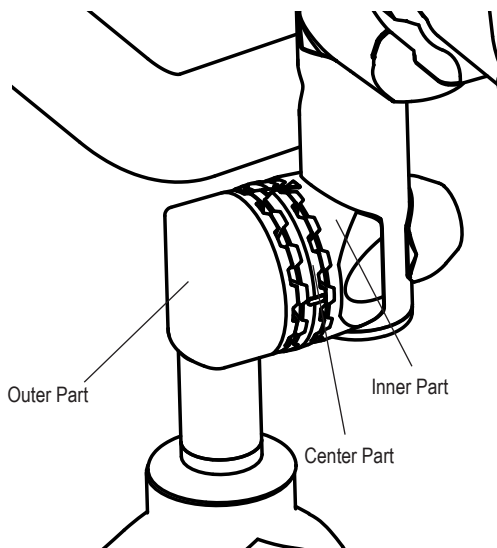
WARNINGS:

- Be sure that the Allen Screw is sufficiently tightened to 15Nm. DO NOT exceed the 15Nm torque value as the assembly may become damaged.

Tools:

- 6mm Allen Wrench
- Torque Wrench
- Drafting Triangle

1. Place the wheelchair on a smooth, level surface with the casters trailing rearward.
2. Using a 6mm bit, loosen the M8 Allen screw four revolutions. This will allow the Center Part of the gear lock to spin freely. If the M8 bolt is completely removed, the nut on the caster stem will need to be loosened to allow the M8 bolt to thread back into the caster stem.
3. Using a Drafting Triangle or similar 90° angle tool, rotate the fork until the flat edge of the fork is perpendicular to the level surface.
4. Index the Center Part of the gear lock until both faces mate with the corresponding faces of the Inner and Outer Parts.
5. Snug the M8 Allen screw and check the squareness of the fork.
6. Using a torque wrench, tighten the M8 Allen screw to 15Nm.
7. Repeat steps 2 through 6 on the opposite caster.



Rear Wheels

WARNING: DO NOT attempt any adjustments when the wheelchair is occupied.

Rear Wheel with Quick-Release Axle

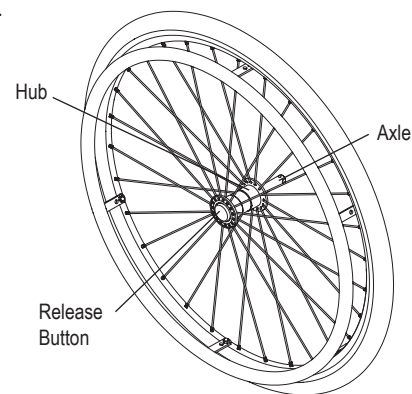
Removing:

1. Hold the wheel securely at the Hub.
2. Press down the Release Button on the quick-release axle and slide the wheel and Axle out of the axle sleeve.
3. Release the Release Button.

Replacing:

WARNING: Make sure the locking balls fully secure the quick-release axle inside the axle sleeve before operating the wheelchair.

1. Hold wheel securely at the hub.
2. Press down the release button on the quick-release axle, making sure the locking balls recess into the axle.
3. Insert the Axle all the way into the axle sleeve.
4. Release the Release Button.
5. Pull firmly on the wheel (without pressing down the release button) to make sure the wheel is locked securely in place.



Handrims

WARNING: Handrims must be replaced by an authorized Permobil dealer or qualified technician.

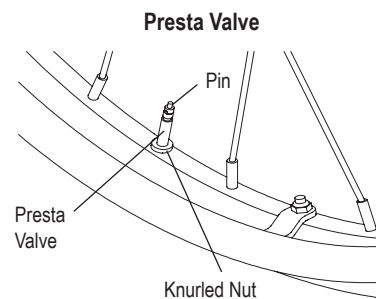
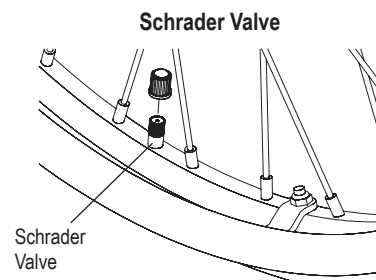
Pneumatic Tires and Tubes

WARNING: Fully deflate the tire before performing any disassembly procedures. Do not re-inflate the tire until all re-assembly is completed.

Tools:

- Tire Lever

1. Remove the rear wheel from the wheelchair.
2. Remove all air from the inner tube. For a Schrader valve, remove the valve stem cap and release all of the air from the tube, by pressing down on the pin in the center of the valve stem. For a Presta valve, remove the valve stem cap, unscrew, counterclockwise, the knurled nut on the valve stem and release all of the air from the tube by pressing down on the pin in the center of the valve stem.
3. Remove the tire and inner tube.
4. Make sure the rim strip is properly in place.
5. Install the new inner tube and wheel tire onto the wheel.
6. Make sure the tire is properly seated in the wheel rim, and inflate the tire to the correct PSI rating on the sidewall of the tire.
7. Reinstall the rear wheel on the wheelchair.



Solid Tires

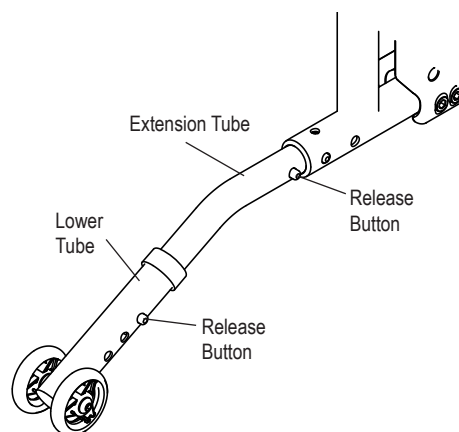
WARNING: Replacement of solid tires requires specialized equipment. If the solid tires need replacement, this must be done by an authorized Permobil dealer or qualified technician.

Anti-Tips

Standard Anti-Tips

Adjusting:

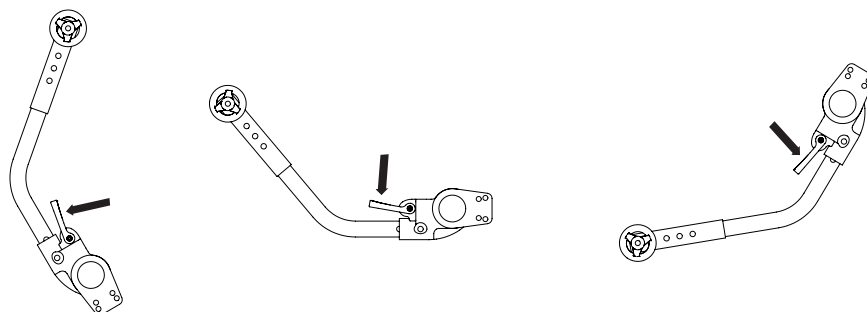
1. The bottom of the anti-tip wheels should be between 4cm and 5cm above the floor to ensure proper functionality. To adjust the height, press the two Release Buttons on the telescoping Lower Tube, then adjust the height of the Lower Tube.
2. To rotate the anti-tips upward, press the two Release Buttons on the Extension Tube to release the Extension Tube and rotate upward until the Release Button locks in place on the opposite side of the frame.
3. To remove the anti-tip, press the Release Button on the Extension Tube and pull the Extension Tube out of the frame.



User-Friendly Anti-Tips

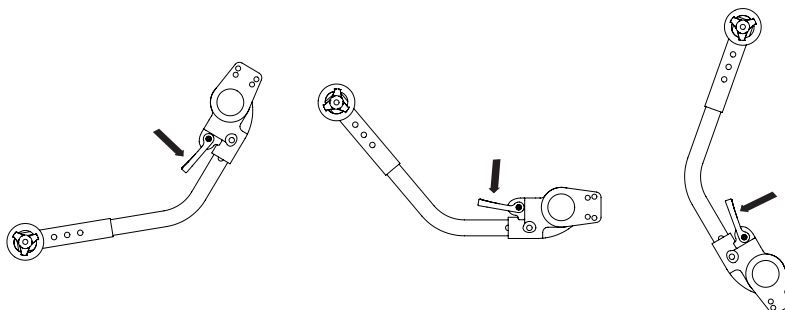
Engaging:

To engage the User-Friendly Anti-Tips, grip the anti-tip Receiver firmly and pull it rearward, away from the anti-tip mounting plate and lower it until it re-engages in the mounting plate.



Disengaging:

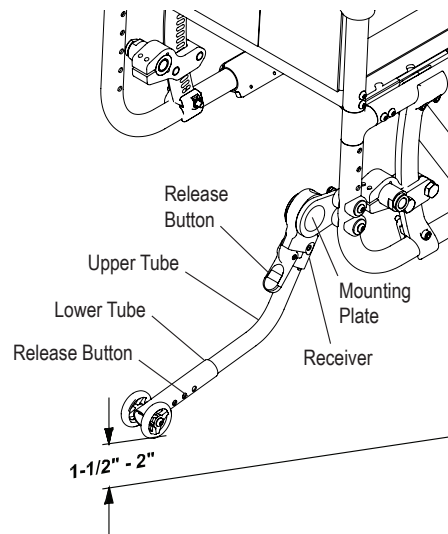
To disengage the User-Friendly Anti-Tips, grip the anti-tip receiver firmly and pull it downward, away from the anti-tip mounting plate and raise it until it re-engages in the mounting plate.



Anti-Tips, continued

Adjusting:

To adjust the height of the User-Friendly Anti-Tips, press the two Release Buttons on the telescoping Lower Tube and adjust the height of the Lower Tube until the wheels are within 4 to 5 cm off the ground.



Removing:

To remove the User-Friendly Anti-Tips, press the Release Buttons on the anti-tips Receiver and pull the Upper Extension Tube out of the anti-tip Receiver.

Mounting:



WARNINGS:

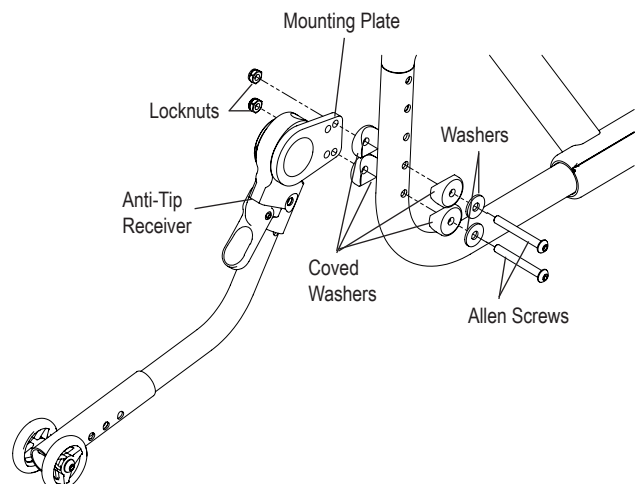
- Only an authorized Permobil dealer or qualified technician should install the anti-tip receiver.
- DO NOT disassemble the anti-tip mounting assembly.
- Before sitting in the wheelchair, make sure the anti-tips are operating properly. To do this, place the unoccupied wheelchair on a level surface, engage the anti-tips and tip the wheelchair backward until the anti-tips are supporting the weight of the chair. Apply sufficient pressure to ensure that the anti-tips are operating properly.

IMPORTANT!: Unless User-Friendly anti-tips were ordered when the Permobil wheelchair was originally ordered, replacement Allen screws will need to be ordered when ordering the User-Friendly anti-tips.

Tools:

- 4mm Allen Wrench
- 10mm Open End Wrench

1. Remove the rear wheels and place the frame on a level surface.
2. Do not disassemble the mounting plate from the anti-tip receiver. Align the mounting plate with two holes in the rear of the frame and install the new Allen screws through the various washers, frame and plate as shown.
3. Securely tighten all Allen screws and locknuts. The back support extension may also be secured in place by these Allen screws.
4. Reinstall the rear wheels.
5. With the wheelchair standing upright on a level surface, engage the anti-tip as described in the "Engaging" section
6. Adjust the height of the anti-tip as described under the "Adjusting" section.



Transportation

Occupied Use in a Motor Vehicle

Please read and understand all warnings before using the wheelchair. Safety is our top priority.



Warnings:

- This wheelchair conforms with the requirements of ISO 7176-19:2022 and has been designed and tested for use only as a forward-facing seat in a motor vehicle.¹
- The wheelchair has been dynamically tested in a forward-facing orientation with the ATD restrained by a three-point belt restraint.
- Only the designated securement points should be used to secure the wheelchair to the vehicle.
- This wheelchair has been tested with the Q-STRAINT Standard Lap Belt restraint.
- Both pelvic- and shoulder-belt restraints should be used to reduce the possibility of head and chest impacts with vehicle components.
- Pelvic- and shoulder-belt restraints should be used together as designed for (DO NOT connect a latch plate to a pin-bushing anchorage unless the system is designed to interface this way).
- In order to reduce potential of injury to vehicle occupants, wheelchair-mounted trays not specifically designed for crash safety should be removed and secured separately in the vehicle. If the tray cannot be removed, it should be secured to the wheelchair but positioned away from the occupant with energy-absorbing padding placed between the tray and the occupant.
- When possible, other auxiliary wheelchair equipment should be secured to the wheelchair or removed from the wheelchair and secured in the vehicle during travel so that it does not break free and cause injury to vehicle occupants in the event of a collision.
- Postural supports should not be relied on for occupant restraint in a moving vehicle.
- The wheelchair should be evaluated by a manufacturer's representative for determination whether the wheelchair is suitable for reuse after involvement in any type of vehicle collision.
- Alterations or substitutions should not be made to the wheelchair securement points or to structural and frame parts or components since this can affect the crashworthiness of the wheelchair, and it can also change the performance of the wheelchair in normal use. If it is considered necessary to make these kinds of alterations, the wheelchair manufacturer shall be consulted.
- Care should be taken when applying the occupant restraint to position the seatbelt buckle so that the release button will not be contacted by wheelchair components during a crash.

¹ Crash testing is a simulation of a frontal impact only. It does not simulate any other type of impact. Furthermore, TiLite wheelchairs are highly customized and can be ordered in millions of combinations and it is impossible to test every conceivable combination. Therefore, TiLite recommends that wheelchair users transfer to the vehicle seat when being transported in a vehicle. The vehicle seat offers the greatest degree of safety because it is secured to the chassis of the vehicle and is designed with the primary purpose of protecting the occupant in a crash. By contrast, the primary purpose of any wheelchair is to maximize mobility, which in turn requires that the product be as light as possible. As of this date, the U.S. Department of Transportation has not approved any tie-down system for transportation of a user while in a wheelchair in a moving vehicle of any type.

Transportation, continued

Transit Tie Downs

Wheelchair users should transfer to the vehicle seat and use the vehicle-manufacturer-installed restraint systems whenever it is feasible, and the unoccupied wheelchair should be stored in a cargo area or secured in the vehicle during travel. If the wheelchair must be occupied during vehicle travel, please ensure the following information is taken into account:

- The minimum recommended occupant mass for use in a transit equipped chair is 50 lbs (23 Kg).
- The maximum recommended occupant mass for use in a transit equipped chair is 300 lbs (136 Kg).
- The TiLite X with Transit Tie-Down Option has been found to meet or exceed the performance requirements of ISO 7176-19:2022. This standard requires that transit equipped wheelchairs are tested by subjecting the wheelchair to a frontal impact at 30 mph (48 km/h). A wheelchair is loaded with a suitable crash test dummy, accelerated to 30 mph and brought to a controlled stop, simulating a frontal impact generating 20 g of force on the crash test dummy. Permobil has crash tested the TiLite X with Transit Tie-Down Option in one configuration and the wheelchair tested was compliant with ISO 7176-19:2022. The wheelchair was tested utilizing a 170 lb (77 kg) crash test dummy, which corresponds to an occupant weight of 165 to 300 lbs (75 to 136 kg), and used a vehicle-anchored shoulder belt and a wheelchair-anchored pelvic belt. To minimize risk when travelling in motor vehicles, make sure that any adjustable accessories are configured as close as possible to the crash tested chair configuration. The wheelchair tested had a total mass of 26 lbs (12 kgs) was configured as follows:

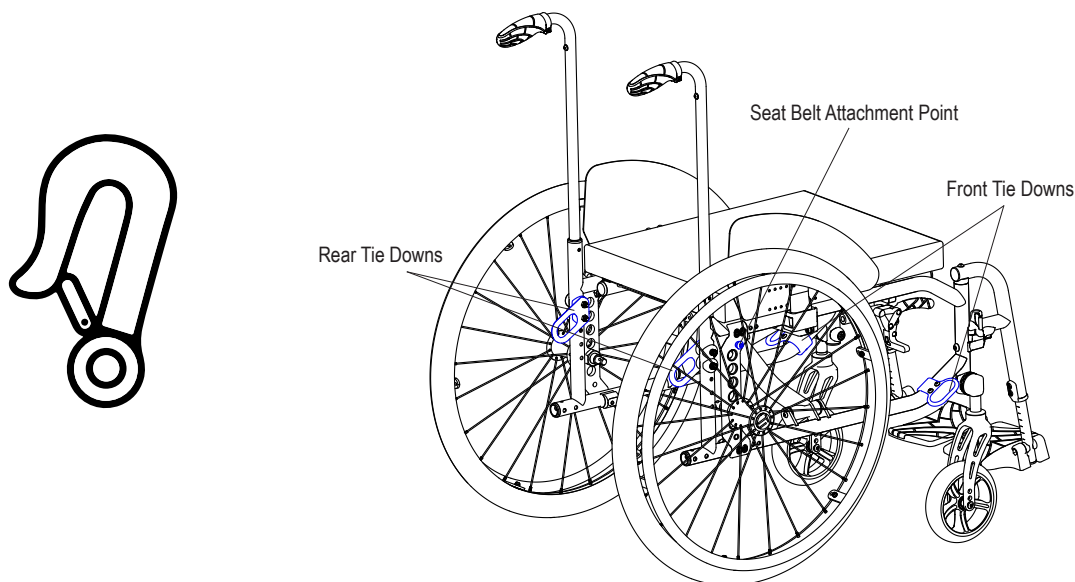
Seat Width	16.0 in. (40 cm)	Front Angle	70°	Push Handles	None	Rear Wheels	24" (540) Wheel
Seat Depth	16.0 in. (40 cm)	Seat to Footrest	15 in. (38 cm)	Center of Gravity	2.0 in. (5 cm)	Tires	Pneumatic
Front Seat Height	17.5 in. (44.5 cm)	Foot Plates	Composite Flip Up	Camber	0°	Anti-Tips	Standard
Rear Seat Height	15.5 in. (39.5 cm)	Back Height	20 in. (51 cm)	Caster Wheels	5" Soft Roll		

- This option is labeled "Transit Tie-Down Option" on the TiLite X order form. When ordered, product ships with four factory-installed, transit tie-down brackets and two factory-installed, wheelchair-anchored, pelvic belt brackets. The four tie-down brackets are used to secure the wheelchair within the vehicle using a four-point, strap-type wheelchair tie-down system. The two pelvic belt brackets provide anchorage points to secure a crashworthy wheelchair-anchored pelvic belt that conforms to the requirements of ISO 7176-19:2022 and that can be used in conjunction with a vehicle-anchored shoulder belt with a standard lower-anchorage connector for effective crashworthy three-point belt restraint in a motor vehicle. The occupant is to be secured within the wheelchair using a three-point restraint system consisting of a wheelchair-anchored pelvic belt and a vehicle-anchored shoulder belt. The TiLite X with Transit Tie-Down Option was tested using a Q'STRAIT Wheelchair-Anchored Pelvic Belt. However, the TiLite X with Transit Tie-Down Option does not ship with such a pelvic belt as standard equipment. The Q'STRAIT Wheelchair-Anchored Pelvic Belt may be ordered from TiLite as an optional accessory at the time of purchase or after. TiLite recommends that the TiLite X be used only with a vehicle-anchored shoulder belt and a wheelchair-anchored pelvic belt. While the Transit Tie-Down Option is compatible with, and can be purchased with, additional seat sizes, optional components and varied configurations, TiLite makes no claim that any other components or configurations have been tested beyond the above-described ISO 7176-19:2022 conforming configuration. TiLite does not claim that its Transit Tie-Down Option will prevent injury or death in the event of a motor vehicle accident.
- Annex D of ISO 7176-19:2022 provides a method of testing a wheelchair for its ability to accommodate vehicle-anchored pelvic and shoulder belts. When tested in accordance with Annex D of ISO 7176-19:2022, the TiLite X had a score of "Excellent" for ease of proper belt positioning and an overall score of "Excellent" (16 of 16 points). The ease of access to, and maneuverability in, motor vehicles can be significantly affected by wheelchair size and turning radius. Smaller wheelchairs and/or wheelchairs with a shorter turning radius will generally provide greater ease of vehicle access and maneuverability to a forward-facing position.

Transportation, continued

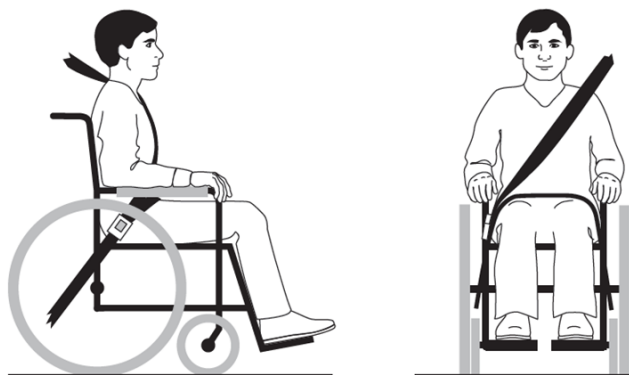
Securement in a Motor Vehicle

Make sure that the wheelchair is secured in a forward-facing orientation using all four attachment points prior to travelling in the motor vehicle. To secure the wheelchair, locate the four tiedown points, marked with the hook symbol shown below:

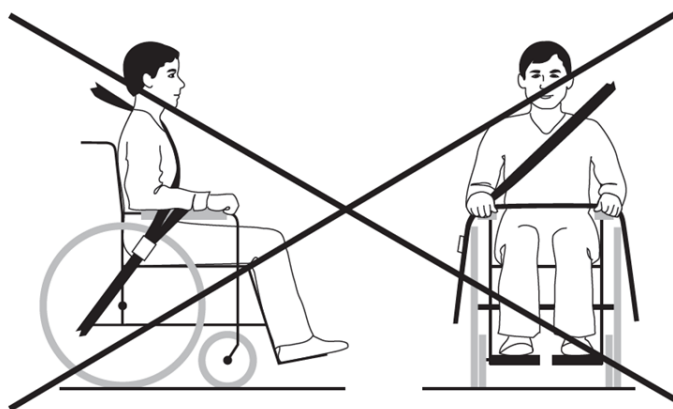


The tie downs on this wheelchair are compatible with four-point strap-type securement point end fittings.

Once the wheelchair has been secured, the occupant shall be secured with the vehicle mounted belt restraints. Ensure that the pelvic belt is worn low across the front of the pelvis, so that the angle of the pelvic-belt restraint is within the zone of 30° to 75° to the horizontal. If feasible, a steeper (greater) pelvic belt angle between 45° to 75° to the horizontal is preferred. Shoulder-belt restraints should fit over the middle of the shoulders and belt restraints should be adjusted as snugly as possible, consistent with occupant comfort. Belt webbing should not be twisted when in use.



The belt restraints shall not be held away from the body by wheelchair components or parts, such as the wheelchair arm supports or wheels.



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TiSport, LLC
2701 W. Court St.
Pasco, WA 99301

permobil.com