ZR | ZRA SERIES 2

OWNERS MANUAL SUPPLEMENT

DEALER/SUPPLIER:
THIS MANUAL MUST BE GIVEN TO THE USER OF THIS WHEELCHAIR.

USER:
BEFORE USING THIS WHEELCHAIR, YOU MUST READ THIS MANUAL IN ITS ENTIRETY AND SAVE IT FOR FUTURE REFERENCE.

ATTENDANTS/ASSISTANTS:
BEFORE ASSISTING THE USER OF THIS WHEELCHAIR, YOU MUST READ THIS MANUAL IN ITS ENTIRETY AND SAVE IT FOR FUTURE REFERENCE.

SERIAL NUMBER _____

Z2SUPP_0310Rev A

⚠ WARNING - READ THIS MANUAL

DO NOT OPERATE THIS WHEELCHAIR WITHOUT FIRST READING AND UNDERSTANDING THIS TiLITE ZR AND ZRA (SERIES 2) OWNERS MANUAL SUPPLEMENT. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS AND INSTRUCTIONS, CONTACT YOUR TiLITE DEALER OR TiLITE CUSTOMER SUPPORT AT (800) 545-2266 BEFORE ATTEMPTING TO USE THIS WHEELCHAIR. *IF YOU IGNORE THIS WARNING, YOU MAY FALL, TIP OVER OR LOSE CONTROL OF THE WHEELCHAIR AND SERIOUSLY INJURE YOURSELF OR OTHERS OR DAMAGE THE WHEELCHAIR.*

⚠ WARNING - READ TiLITE AERO Z, ZR AND ZRA OWNERS MANUAL

THIS TiLITE ZR AND ZRA (SERIES 2) OWNERS MANUAL SUPPLEMENT IS INTENDED TO SUPPLEMENT THE TiLITE AERO Z, ZR AND ZRA OWNERS MANUAL. PLEASE READ ALL WARNINGS CONTAINED IN THE AERO Z, ZR AND ZRA OWNERS MANUAL BEFORE USING THE TiLITE ZR AND ZRA (SERIES 2). *IF YOU IGNORE THIS WARNING, YOU MAY FALL, TIP OVER OR LOSE CONTROL OF THE WHEELCHAIR AND SERIOUSLY INJURE YOURSELF OR OTHERS AND DAMAGE THE WHEELCHAIR.*

CONTENTS

FOLDING ADJUSTABLE HEIGHT AND ANGLE BACKREST (Titanium or Aluminum)

⚠WARNING
Before using your wheelchair, make sure the Folding Adjustable Height & Angle Backrest is locked securely in place in the upright position and all mounting hardware is securely tightened. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Folding the Backrest

1. Grasp the TiShaft Release Bar and pull up. See Figure 1-1.
2. Push the backrest forward toward the front of the chair.

Note: If you have a Lock-Down Backrest, make sure the backrest is locked securely in the folded position.

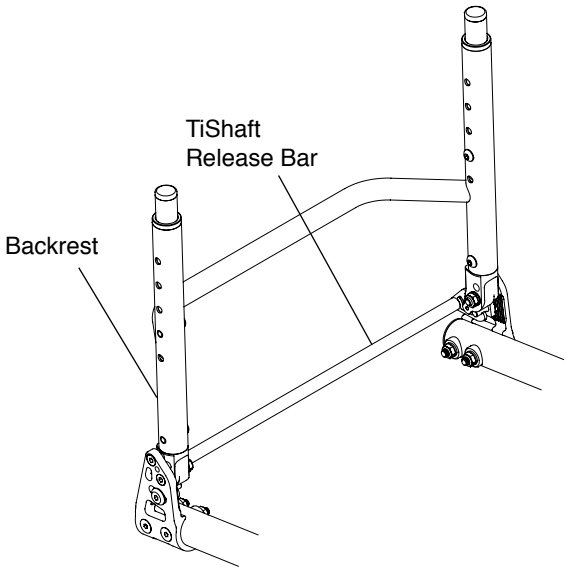
Unfolding the Backrest

1. Lift up on the backrest and pull towards the rear of the chair.
2. Make sure backrest locks securely into place.

Unfolding the Lock-Down Backrest

1. Push down on the TiShaft Release Bar and pull the backrest towards the rear of the chair.
2. Make sure backrest locks securely into place

Figure 1-1
Folding Adjustable Backrest with TiShaft Release Bar



Adjusting the Backrest Mount

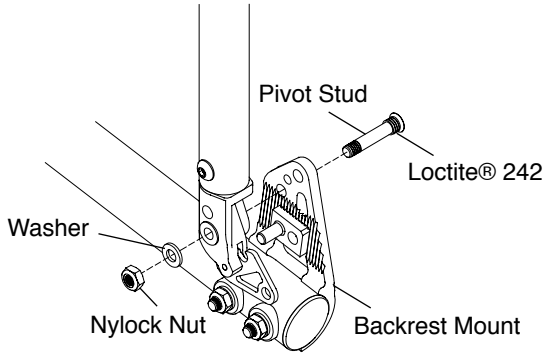
Tools Needed:
- 7/16” Open End Wrench
- 5/32” Allen Wrench

If the backrest will not lock in the unfolded (upright) position, follow these procedures:
1. Fold the backrest down over the seat.
2. Using the Allen Wrench, hold the pivot stud in place and slightly loosen the nylock nut with the Open End Wrench on one side of the chair. See Figure 1-2.
3. If the backrest still will not lock securely in the unfolded (upright) position, repeat the procedure on the opposite side of the chair.

CHAPTER 1: BACKRESTS

⚠WARNING
The threads on the pivot stud that secure the pivot stud to the backrest mount are treated with Loctite® 242, a medium-strength thread lock. If you loosen the pivot stud within the backrest mount, you MUST remove all residue of such thread lock and reapply Loctite® 242 or an equivalent medium-strength thread lock. To avoid this, make sure that you use an Allen wrench to prevent the pivot stud from rotating when you perform the previously-described adjustments. *If you ignore this Warning, the pivot studs could become loose causing the backrest to become loose or disconnected from the wheelchair, and you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 1-2
Adjusting the Backrest Mount



Adjusting if there is "Play" in the Backrest

Tools Needed:
- 7/16" Open End Wrench
- 5/32" Allen Wrench

If the backrest becomes loose or there is "play" in the folding backrest assembly, follow these procedures:

1. Using the Allen Wrench, hold the pivot stud in place and slightly tighten the nylock nut with the Open End Wrench on each side of the chair. See Figure 1-2.
2. Repeat this procedure until there is no "play" in the folding backrest assembly.
3. Do not over tighten the nylock nut or the backrest will not fold/unfold.

⚠WARNING
The threads on the pivot stud that secure the pivot stud to the backrest mount are treated with Loctite® 242, a medium-strength thread lock. If you loosen the pivot stud within the backrest mount, you MUST remove all residue of such thread lock and reapply Loctite® 242 or an equivalent medium-strength thread lock. To avoid this, make sure that you use an Allen wrench to prevent the pivot stud from rotating when you perform the previously-described adjustments. *If you ignore this Warning, the pivot studs could become loose causing the backrest to become loose or disconnected from the wheelchair, and you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Changing the Backrest Angle

Tools Needed:
- 5/32" Allen Wrench

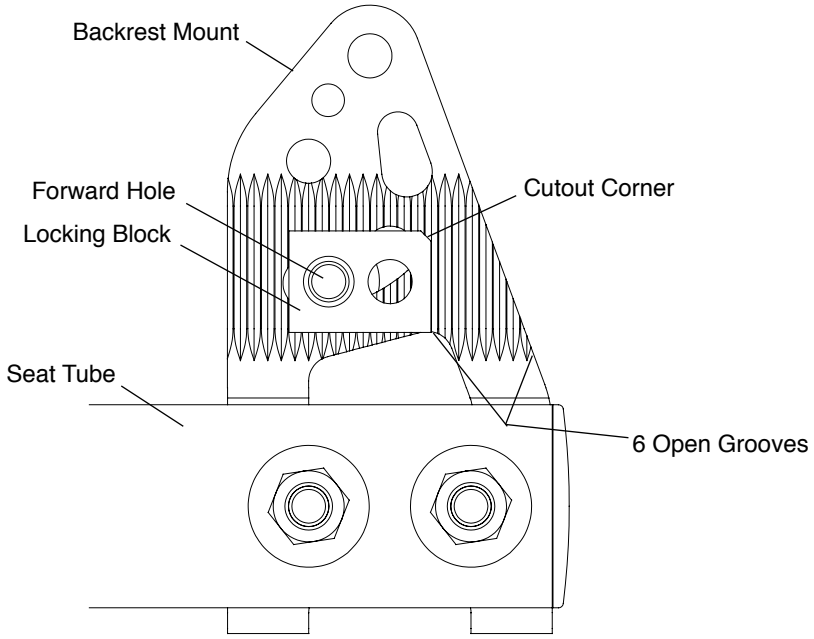
The position of the locking stud relative to the backrest mount determines the angle of the backrest. See Figures 1-3 and 1-4. The position of the locking block relative to the backrest mount determines the position of the locking stud. Therefore, to adjust the position of the locking stud, adjust the position of the locking block using the procedure below.

Note: The locking stud must always be positioned in the forward-most hole in the locking block.

1. Before adjusting the angle, carefully note two aspects of the position of the locking block relative to the backrest mount: first, note the orientation of the locking block- is the cutout corner rearward, as in Figure 1-3, or forward, as in Figure 1-4; and second, count the number of open grooves at the bottom of the backrest mount rearward of the locking block.

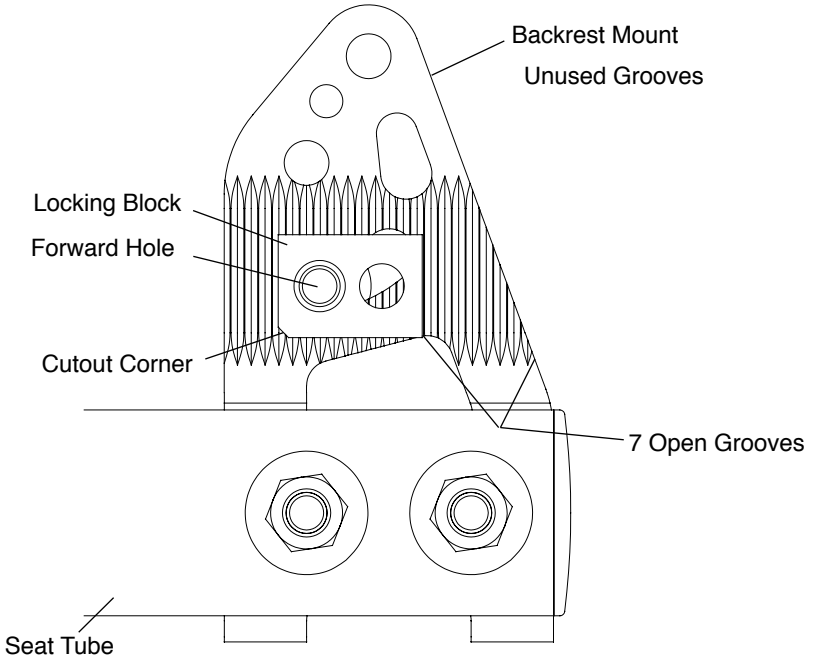
   Example 1: When the locking block is positioned as shown in Figure 1-3, the backrest will be set to 90° relative to the seat tube (not to the floor). In this case, the locking block is oriented with the cutout corner rearward and there are 6 open grooves rearward of the locking block.

Figure 1-3
90° Seat-to-Back Angle



Example 2: When the locking block is positioned as shown in Figure 1-4, the backrest will be set to 93° relative to the seat tube (not to the floor). In this case, the locking block is oriented with the cutout corner forward and there are 7 open grooves rearward of the locking block.

Figure 1-4
93° Seat-to-Back Angle



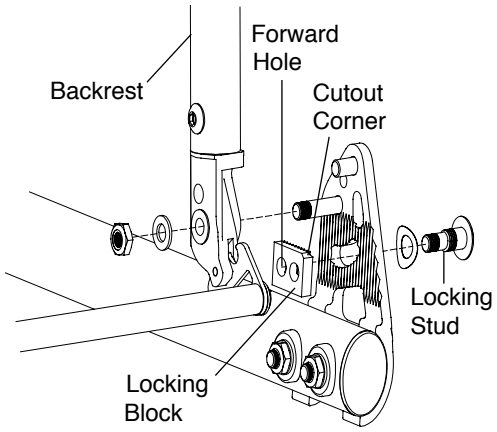
2. On one side of the chair, loosen but do not remove the locking stud using the Allen Wrench. See Figure 1-5. It is recommended that you hold the locking block in it's original position with your finger while loosening the locking stud.
3. Move the locking block relative to the backrest mount so that the desired backrest angle will be achieved.

Note: For each groove forward or rearward that you move the locking block, you change the backrest angle by 6°. Therefore, to increase the angle of the backrest relative to the seat by 6°, move the locking block forward by one groove. To decrease the angle of the backrest relative to the seat by 6°, move the locking block rearward by one groove. To change the backrest angle in increments of 3°, rotate the locking block 180° relative to the backrest mount as illustrated in Examples 1 and 2 above. Make sure to use the forward-most hole in the locking block.

4. Once the desired angle is set, securely tighten the locking stud using the Allen Wrench.
5. Repeat this procedure on the other side of the chair.

⚠**WARNING** The locking block must be in the identical position and the cutout corner in the same forward or rearward position on each side of the chair. *If you ignore this Warning, you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 1-5
Changing the Back Angle



Adjusting the Backrest Height

Tools Needed:

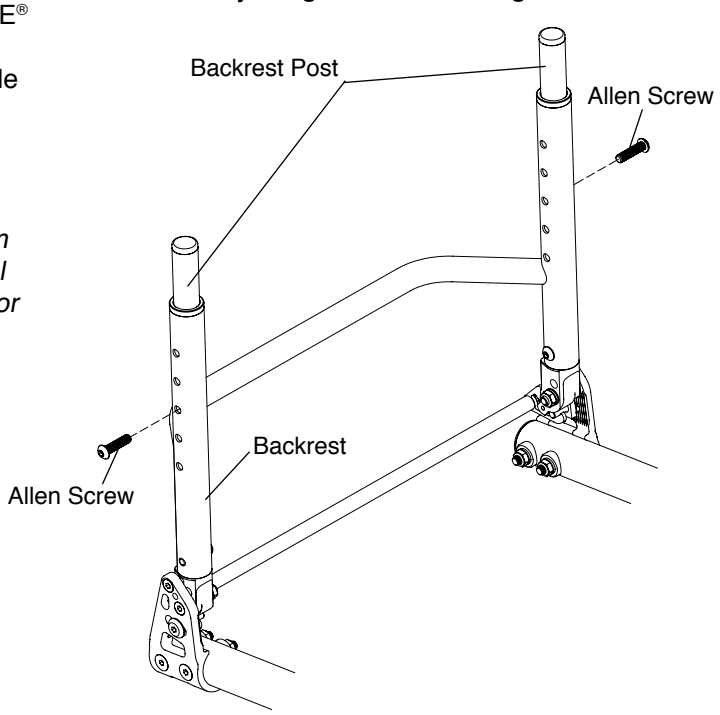
- 5/32" Allen Wrench

Note: In order to adjust the backrest height, it is helpful to remove the backrest upholstery. Therefore, make a note of the tautness of the backrest upholstery before removing it so you can reinstall it to approximately the same degree of tautness.

1. Remove the backrest pad. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.
2. On both sides of the chair, remove the Allen Screw that secures the backrest post inside the backrest. See Figure 1-6.
3. Reposition both backrest posts to the desired height inside the backrest, making sure to align the holes in the backrest posts with the holes in the backrest.
4. Make sure both backrest posts are at the same height in the backrest and reinsert and securely tighten the two Allen Screws.
5. Reinstall the backrest pad and adjust the upholstery to the desired tautness. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.

⚠WARNING
The threads on the Allen Screws that secure the backrest posts to the backrest have been treated with a Vibra-TITE® VC-3, a locking and sealing coating, to reduce the possibility that they will become loose. You should be able to adjust the backrest height approximately four times without reapplying thread lock to these screws. TiLite requires that you reapply Vibra-TITE® VC-3 after every fourth adjustment. *If you ignore this Warning, your backrest posts could become loose or disconnected from the wheelchair, and you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

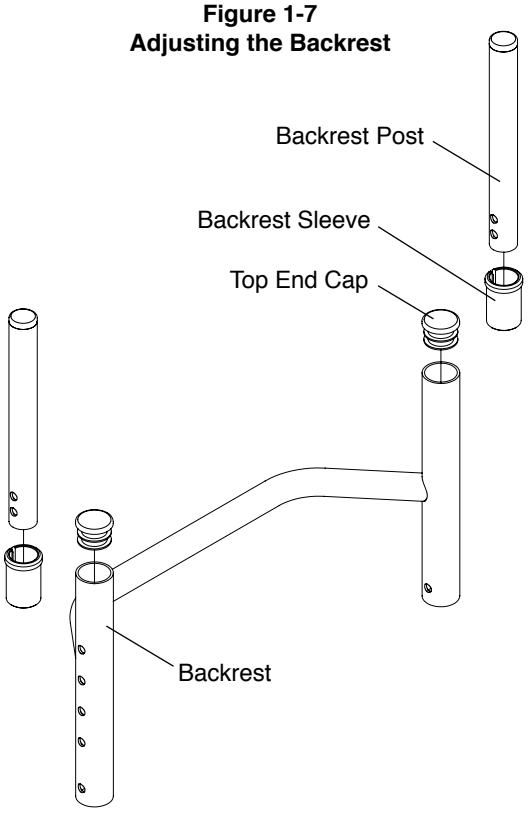
Figure 1-6
Adjusting the Backrest Height



Note: If your backrest is set to 8-½" and you need to adjust the backrest height, the following procedure applies:

1. Remove the backrest upholstery. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.
2. If you are setting the backrest at 9" to 11-½":
    a. Remove the top end caps. See Figure 1-7.
    b. Install the backrest sleeve in each backrest tube. See Figure 1-6.
    c. Align the backrest posts inside the backrest so that the desired hole in the backrest post aligns with one of the holes in the backrest.
    d. Secure the backrest posts inside the backrest using the Allen Screws. See Figure 1-6. Proceed to Step 3.
3. Reinstall the backrest upholstery and adjust the upholstery to the desired tautness. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.

Figure 1-7
Adjusting the Backrest



Note: If your backrest is set to 9" to 11-½" and you need to adjust the backrest height to be 8-½" , the following procedures apply:

1. Remove the backrest upholstery. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.
2. Remove the backrest posts from the backrest. See Figure 1-6

3. Remove the backrest sleeve from each backrest tube. See Figure 1-7.
4. Install the top end cap in each backrest tube. See Figure 1-7.
5. Reinstall the backrest upholstery and adjust the upholstery to the desired tautness. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR and ZRA Owners Manual.

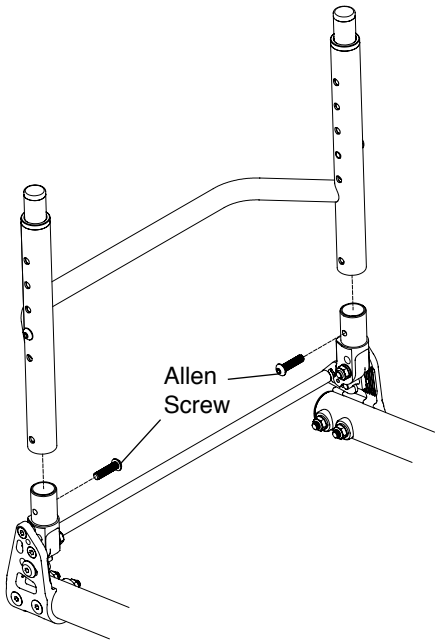
Replacing the Backrest

Tools Needed:

- 5/32" Allen Wrench

1. Remove the backrest upholstery. See "Velcro®-Style Adjustable Back Upholstery" or "Tension Adjustable by Straps Back Upholstery" on pages 7-1 to 7-3 in the Aero Z, ZR, ZRA Owners Manual.
2. Remove the backrest posts. See "Adjusting the Backrest Height" on page 1-4.
3. Remove the backrest sleeves. See Figure 4-6 in the Aero Z, ZR, ZRA Owners Manual.
4. Remove the two Allen Screws (one on each side of the chair) and remove the backrest. See Figure 1-4.
5. Install the new backrest and securely tighten the two Allen Screws removed in Step 4.
6. Install the backrest sleeves in the new backrest removed in Step 3.
7. Reinstall the backrest posts removed in Step 2.
8. Reinstall the backrest upholstery removed in Step 1.

Figure 1-8
Replacing the Backrest



FOLDING ADJUSTABLE DEPTH, HEIGHT & ANGLE BACKREST (Titanium or Aluminum)

(ZRA Series 2)

⚠WARNING

Before using your wheelchair, make sure the Folding Adjustable Depth, Height and Angle Backrest is securely in place in the upright position and all mounting hardware is securely tightened. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

⚠WARNING
Before using your wheelchair, make sure the Folding Adjustable Depth, Height & Angle Backrest is securely in place in the upright position and all mounting hardware is securely tightened. *If you ignore this Warning, you may fall, tip over or lose control of the chair and seriously injure yourself or others or damage the wheelchair.*

Adjusting the Depth

Tools Needed:
- 7/16" Open End Wrench
- 5/32" Allen Wrench

1. Remove the four Allen Screws (two on each side) that secure the backrest mount to the seat tube. Note the order of the saddles, washers and nylock nuts. See Figure 1-9.
2. Reposition the backrest mounts to the desired depth.
3. Reinstall the four Allen Screws (two on each side) through the back mount, seat tube, saddles, washers and securely tighten the nylock nuts.

Note: If your chair has swing away armrests. See Figure 1-10. You may need to use a longer screw provided with your chair in order to secure both the backrest mount and the armrest receiver.

⚠WARNING
Any changes to the depth of the backrest will affect the stability (*i.e.* center of gravity) of the chair. Use extreme caution when using a new backrest depth as it may make the chair more prone to tip over. After adjusting the depth of the backrest, you must consider whether additional changes need to be made to compensate for the modified stability of the chair (*e.g.*, changing the rear axle position, backrest angle, rear seat height). *If you ignore this Warning, your chair may not perform properly, which in turn, may cause you to fall, tip over or lose control of the chair and seriously injure yourself or others or damage the chair.*

Figure 1-9
Adjusting the Depth

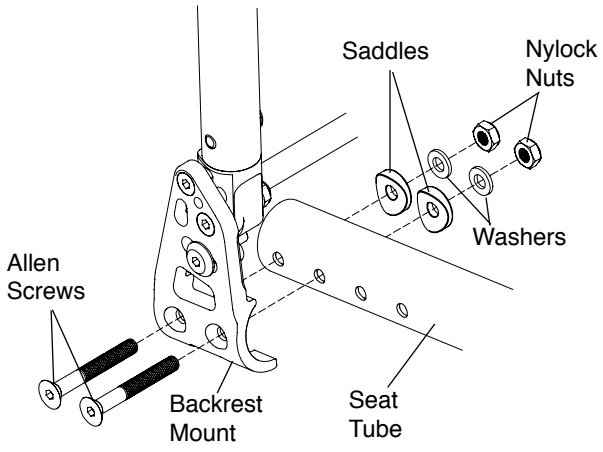
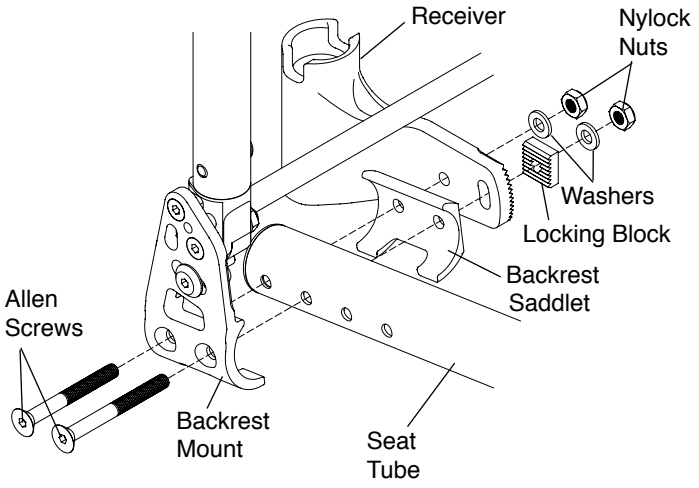


Figure 1-10
Adjusting the Depth with Swing Away Armrests



ANGLE ADJUSTABLE SWING AWAY AND SWING AWAY-FLIP BACK ARMREST

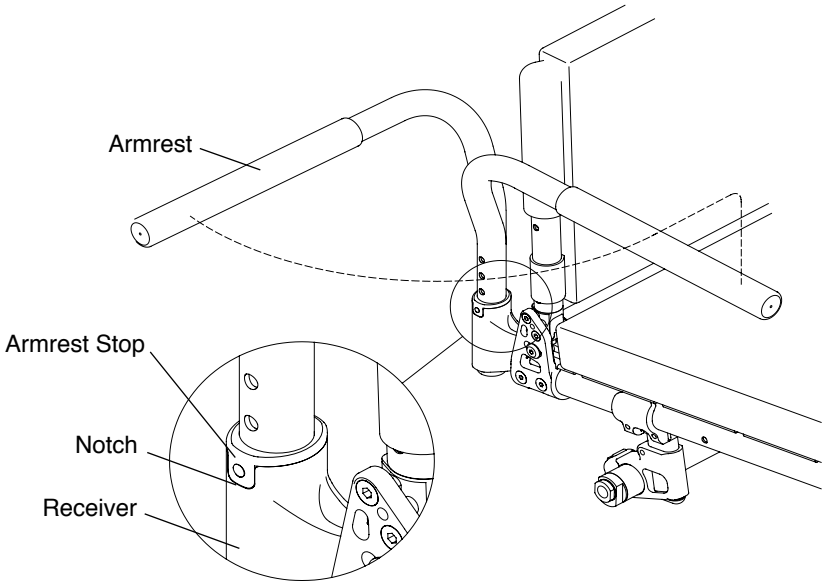
SWING AWAY ARMREST

To swing away the armrest, lift the armrest and rotate the armrest away from chair. See Figure 2-1. Make sure to lift the armrest until the armrest stop is above the notch on the receiver. See Figure 2-1.

To replace the armrest, rotate the armrest back towards the chair and gently push it down into place. See Figure 2-1. Make sure the armrest stop is in the notch on the receiver. See Figure 2-1.

Note: 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 nylon sleeves for wear.

Figure 2-1
Operating the Swing Away Armrest



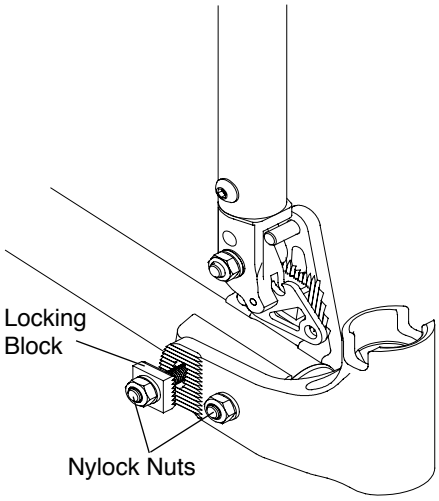
Adjusting the Angle

Tools Needed:

- 7/16” Open End Wrench
- 5/32” Allen Wrench

1. Remove the armrest from the receiver.
2. On one side of the chair, loosen, but do not remove, the nylock nuts while holding the locking block in position with your finger. See Figure 2-2.
3. To change the angle of the armrest, move the locking block one or more teeth up or down until the desired armrest angle is achieved.
4. Securely tighten the nylock nuts.
5. Repeat this procedure on the other side of the chair.

Figure 2-2
Adjusting the Angle



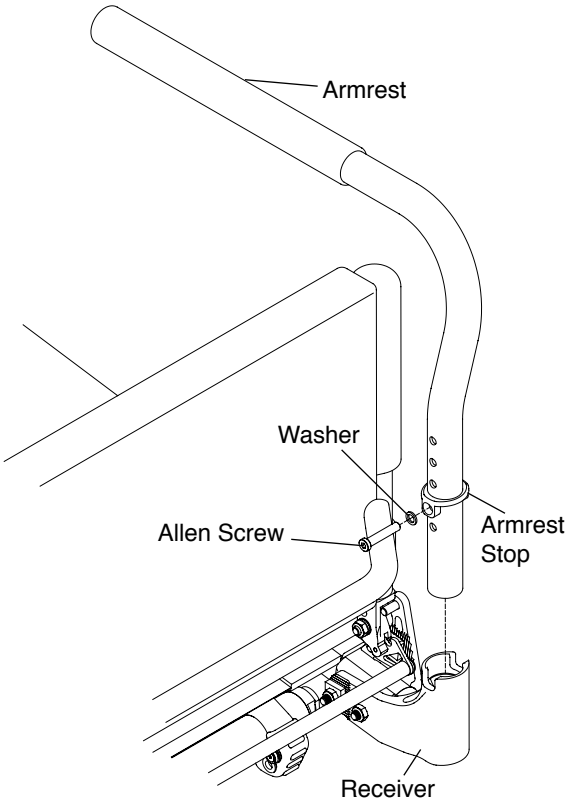
CHAPTER 2: ARMRESTS

Adjusting the Height of the Swing Away Armrest

Tools Needed:
- 5/32” Allen Wrench

1. Remove the armrest from the receiver.
2. Remove the Allen Screw and washer securing the armrest stop. See Figure 2-3.
3. Reassemble the armrest stop in the desired location on the armrest (in 3/4” increments).
4. Securely tighten the armrest stop in the new location.
5. Reinstall the armrest in the receiver.

Figure 2-3
Swing Away Armrest Adjustments



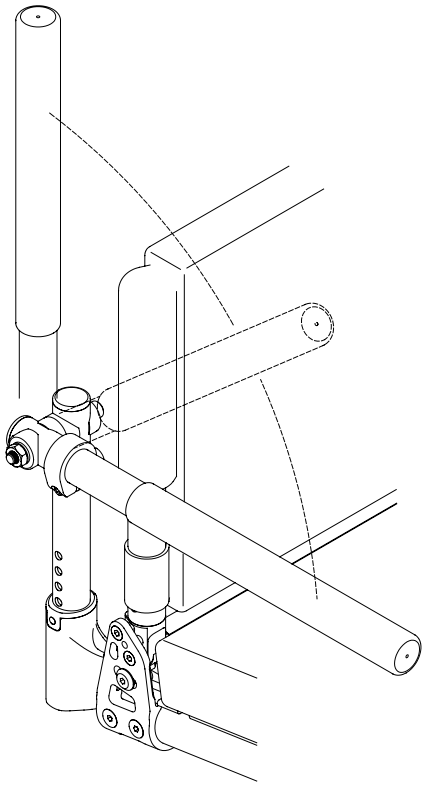
SWING AWAY - FLIP BACK ARMREST

To flip back the armrest, raise the front of the armrest and rotate it straight back as far as possible. Reverse this procedure to return the armrest to its original position. See Figure 2-4.

To swing away the armrest, lightly lift up on the armrest and rotate the armrest away from the chair. See Figure 2-4. To replace the armrest, swing it back towards the chair and gently push it back down into place.

Note: The swing away armrests pivot on nylon sleeves located inside the armrest receptacle. If the armrest does not rotate properly, check the sleeves for wear.

Figure 2-4
Swing Away Flip Back

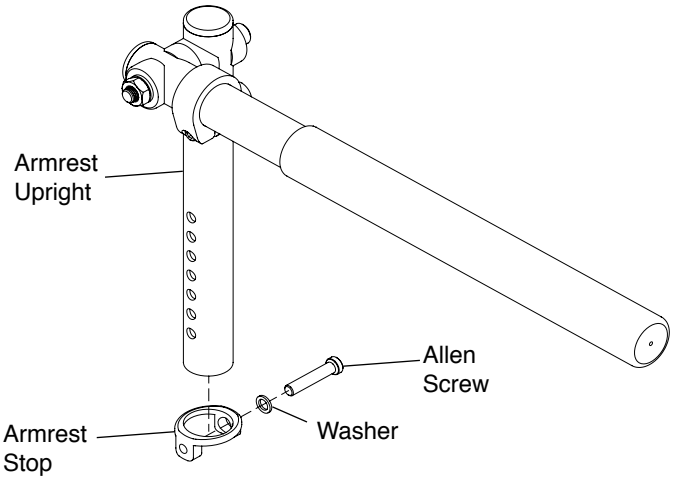


Adjusting the Armrest Height

Tools Needed:
• 5/32” Allen Wrench

1. Remove the armrest stop from the armrest upright. See Figure 2-5.
2. Reassemble the armrest pins in the desired location on the armrest upright (in 1/2” increments).
3. Securely tighten the armrest stop in the new location.

Figure 2-5
Adjusting the Armrest Height



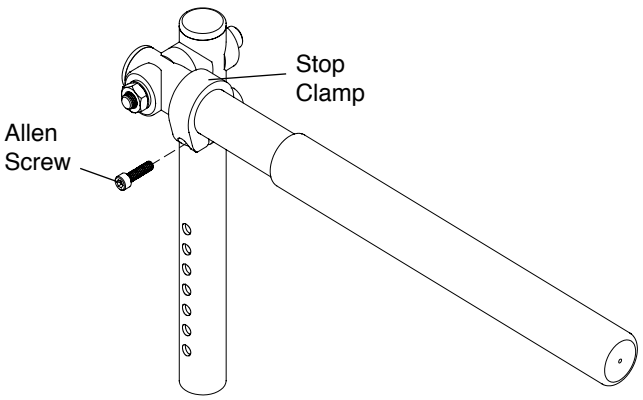
Adjusting the Armrest Angle

Tools Needed:
• 5/32” Allen Wrench

1. To adjust the angle at which the armrest sits when in the down position, loosen, but do not remove, the Allen Screw that secures the stop clamp. See Figure 2-6.
2. Slide the stop clamp forward on the armrest to lower the angle at which the armrest sits in the down position, or slide the stop clamp rearward on the armrest to raise the angle.
3. Securely tighten the Allen Screw to fix the stop clamp in place.

⚠WARNING
Make sure that the stop clamp is securely tightened before applying weight to the armrest. *If you ignore this Warning, you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 2-6
Adjusting the Armrest Angle



ADJUSTABLE FENDERED SIDE GUARD (Aluminum)

Mounting

Tools Needed:

- 7/16” Open End Wrench
- 5/64” Allen Wrench
- 5/32” Allen Wrench

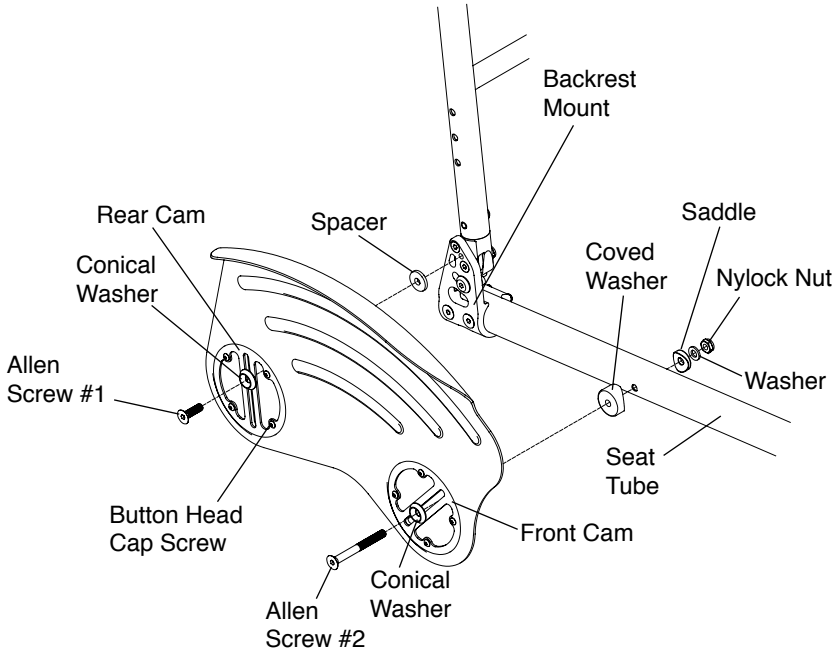
Note: You may need to adjust the tension adjustable seat sling to gain access to the seat tube hole to mount the Adjustable Fendered Side Guard. If this is necessary, see “Adjusting the Tension” on page 7-4 of the Aero Z, ZR and ZRA Owners Manual.

1. Insert Allen Screw #1 through the conical washer, the slot in the rear cam, the spacer and into the backrest mount. Do not tighten. See Figure 3-1.
2. Insert Allen Screw #2 through the conical washer, the slot in the front cam, coved washer, seat tube, saddle, washer and into the nylock nut. Do not tighten.
3. Loosen but do not remove the eight Button Head Cap Screws (four in each cam).
4. Adjust the side guard to the desired position, rotating the cams as needed and allowing the Allen Screws to slide within the cam slots.
5. Once the desired side guard position has been achieved, tighten the eight Button Head Cap Screws (four on each cam), using the 5/64” Allen Wrench**.**
6. Using the 5/32” Allen Wrench, securely tighten Allen Screw #1.
7. Keeping Allen Screw #2 in place using the 5/32” Allen Wrench, securely tighten the nylock nut using the 7/16” Open End Wrench.

⚠WARNING

The threads on the button head cap screws and Allen Screw #1 that secure the cams to the cam covers and the sideguard to the back mount have been treated with Vibra-TITE® VC-3, a locking and sealing coating, to reduce the possibility that they will become loose. You should be able to adjust the cams and/or sideguards approximately four times without reapplying the coating to these screws. If you repeatedly adjust the cams or remove the sideguard, TiLite requires that you reapply Vibra-TITE® VC-3 after every fourth adjustment. *If you ignore this Warning, you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 3-1
Mounting/ Adjusting/ Removing



CHAPTER 3: SIDE GUARDS

Adjusting

Tools Needed:

- 7/16” Open End Wrench
- 5/64” Allen Wrench
- 5/32” Allen Wrench

1. Using the 5/32” Allen Wrench, loosen but do not remove Allen Screw #1. See Figure 3-1.
2. Keeping Allen Screw #2 in place using the 5/32” Allen Wrench, loosen the nylock nut using the 7/16” Open End Wrench.
3. Adjust the side guard to the desired position.
4. Securely tighten the two Allen Screws.

Note: If you are unable to achieve the desired position, follow the instructions given under “Mounting” on page 3-1, Steps 3 through 7 .

⚠**WARNING**

The threads on the button head cap screws and Allen Screw #1 that secure the cams to the cam covers and the sideguard to the back mount have been treated with Vibra-TITE® VC-3, a locking and sealing coating, to reduce the possibility that they will become loose. You should be able to adjust the cams and/or sideguards approximately four times without reapplying the coating to these screws. If you repeatedly adjust the cams or remove the sideguard, TiLite requires that you reapply Vibra-TITE® VC-3 after every fourth adjustment. *If you ignore this Warning, you could fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

CHAPTER 4: AXLE PLATES AND CAMBER TUBES (CENTER OF GRAVITY; REAR SEAT HEIGHT)

⚠WARNING
Any changes to the position of the camber tube will affect the stability of the chair. Use extreme caution when using a new camber tube position as the new position may make the chair more prone to tip over. *If you ignore this Warning, your chair may not perform properly, which in turn, may cause you to fall, tip over or lose control of the chair and seriously injure yourself or others or damage the chair.*

⚠WARNING
Whenever you adjust the position of the camber tube (either to adjust the rear seat height or the center of gravity), it may be necessary to adjust the toe-in/toe out of the rear wheels. See "Adjusting Toe-In/Toe-Out" on page 8-4 in the Aero Z, ZR and ZRA Owners Manual. In addition, whenever you adjust the position of the camber tube or when you adjust the toe-in/toe-out, it may be necessary to square the casters to the floor. *If you ignore this Warning, your chair may not perform properly, which, in turn, may cause you to fall, tip over or lose control of the chair and seriously injure yourself or others or damage the chair.*

Note: It is recommended that you remove the rear wheels and turn the chair upside down before attempting to make any axle assembly adjustments described.

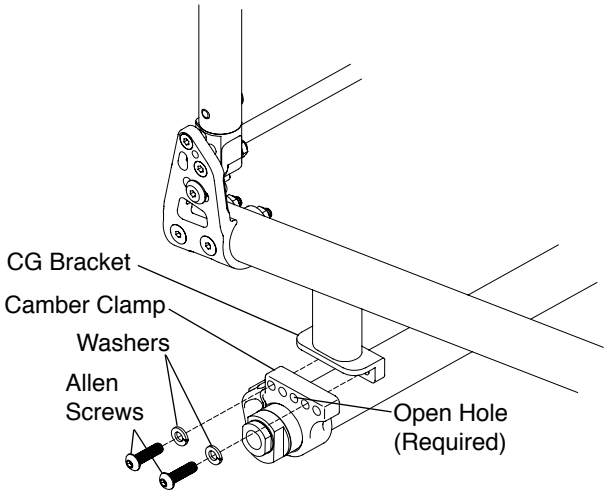
Adjusting the Center of Gravity
(ZR Series 2)

⚠WARNING
When repositioning the camber clamps on the CG Brackets, always leave as many open holes between the two Allen Screws as your desired placement will permit. NEVER use two adjacent holes to attach the camber clamps to the CG Brackets. *If you ignore this Warning, your camber clamp may fail, causing you to fall, tip over or lose control of the chair and seriously injure yourself or others or damage the chair.*

Tools Needed:
- 5/32" Allen Wrench
- Ruler

1. Remove the rear wheels.
2. Remove the four Allen Screws (two on each side) that secure the camber clamps to the CG brackets. See Figure 4-1.
3. Reposition the camber clamps to the desired position on the CG Brackets, making absolutely sure the positioning is the same on both sides of the chair. You MUST leave one open hole between the two Allen Screws.
4. Reinstall the Allen Screws and lock washers and securely tighten all four Allen Screws.
5. Reinstall the rear wheels.
6. Check the toe-in/toe-out and adjust as needed. See pages 8-4 to 8-5 in the Aero Z, ZR and ZRA Owners Manual.

Figure 4-1
Adjusting the Center of Gravity



CHAPTER 4: AXLE PLATES AND CAMBER TUBES (CENTER OF GRAVITY; REAR SEAR HEIGHT)

Replacing the Camber Tube

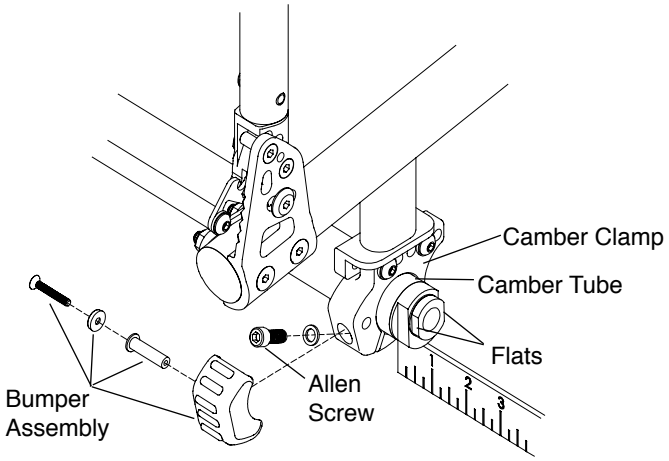
(ZR Series 2)

Tools Needed:

- 3/16” Allen Wrench
- 5/64” Allen Wrench
- Ruler

1. Remove the rear wheels.
2. Using the 5/64” Allen Wrench, remove the bumper assembly, making note of the order in which the parts are assembled.
3. Loosen, but do not remove, the Allen Screw that secures the camber tube to each camber clamp. See Figure 4-2.
4. Remove the camber tube.
5. Install the new camber tube, making sure the distance from the outside edge of the camber clamp to the end of the camber tube is identical on each side of the chair.
6. Make sure that the camber plug flats are perpendicular to the ground and that the camber is oriented properly.
7. Securely tighten both Allen Screws.
8. Install the bumper assembly disassembled in Step 2.
9. Reinstall the rear wheels.
10. Check the toe-in/toe-out and adjust as needed. See pages 8-4 to 8-5 in the Aero Z, ZR and ZRA Owners Manual.

Figure 4-2
Replacing the Camber Tube



Adjusting the Rear Seat Height

(ZRA Series 2)

Tools Needed:

- 3/16” Allen Wrench

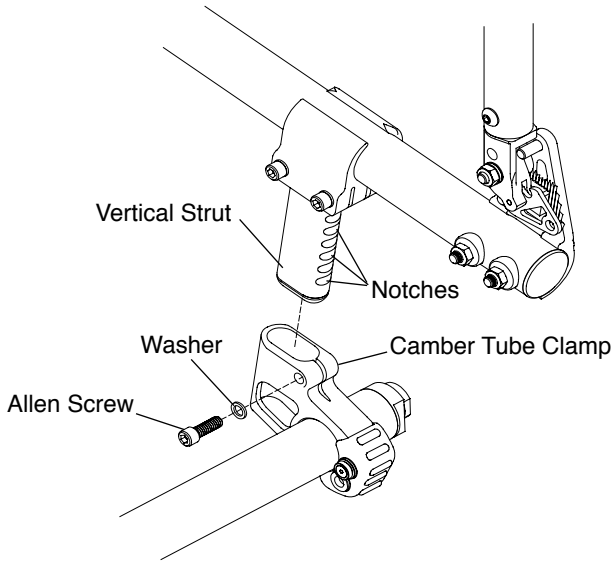
1. Note the notches used to secure the vertical strut to the camber tube clamp. See Figure 4-3.
2. Remove the two Allen Screws (one on each side) and washers that secure the camber tube clamps to the vertical struts.
3. Reposition the camber tube clamp to the desired height. Notches are 3/8” apart.

Note: Vertical struts come in three sizes, short, medium and long. If you are not able to achieve the desired seat height with your existing vertical strut, you may need to purchase longer or shorter struts.

4. Make sure the identical notches are used in each of the two vertical struts.

5. Reinstall the two Allen Screws (one on each side) and washers and securely tighten.
6. Check the toe-in/toe-out and adjust as needed, and square the casters as needed. See pages 8-4 to 8-5 in the Aero Z, ZR and ZRA Owners Manual.

Figure 4-3
Adjusting the Rear Seat Height



Adjusting the Center of Gravity

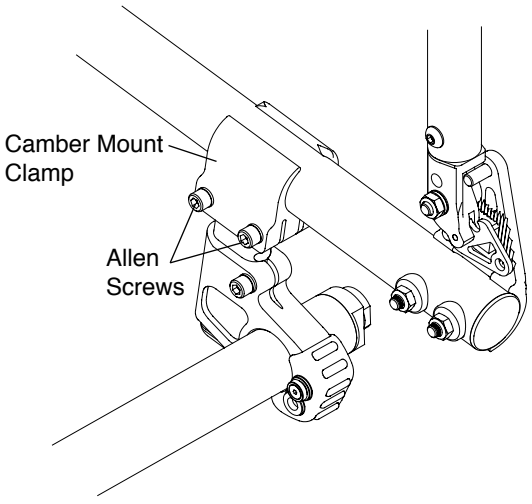
(ZRA Series 2)

Tools Needed:

- 3/16” Allen Wrench
- Ruler

1. Loosen, but do not remove, the four (two on each side) Allen Screws that secure the camber mount clamps to the frame. See Figure 4-4.
2. Slide the camber mount clamps forward or rearward along the frame until it is positioned in the desired location. Use a ruler to ensure the camber mount assemblies on both sides of the chair are the same distance from the ends of the frame tubes.
3. Securely tighten the four (two on each side) Allen Screws that secure the mount clamps to the frame.
4. Check the rear seat height and adjust as needed.
5. Check the toe-in/toe-out and adjust as needed and square the casters as needed. See pages 8-4 to 8-5 in the Aero Z, ZR and ZRA Owners Manual.

Figure 4-4
Adjusting the Center of Gravity



CHAPTER 4: AXLE PLATES AND CAMBER TUBES (CENTER OF GRAVITY; REAR SEAR HEIGHT)

Replacing the Camber Tube

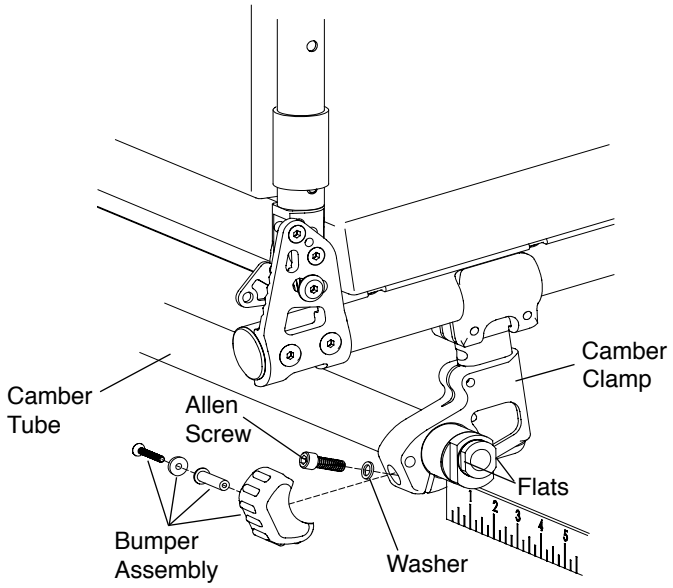
(ZRA Series 2)

Tools Needed:

- 3/16” Allen Wrench
- 5/64” Allen Wrench
- Ruler

1. Remove the rear wheels.
2. Using the 5/64” Allen Wrench, remove the camber mount bumper assembly, making note of the order in which the parts are assembled.
3. Loosen, but do not remove, the Allen Screw that secures the camber tube to each camber clamp. See Figure 4-5.
4. Remove the camber tube.
5. Install the new camber tube, making sure the distance from the outside edge of the camber clamp to the end of the camber tube is identical on each side of the chair.
6. Make sure that the camber plug flats are perpendicular to the ground and that the camber is oriented properly.
7. Securely tighten both Allen Screws.
8. Install the bumper assembly disassembled in Step 2.

Figure 4-5
Replacing the Camber Tube



CASTERS AND FORKS

⚠WARNING
Always mount identical size front casters and forks on both sides of your chair. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Replacing Casters

Tools Needed:
- Two #2 Phillips Head Screw Drivers

1. Remove the two Phillips head screws and axle that secure the caster to the fork. Use one Phillips head screw driver to hold one screw in place and a second Phillips head screw driver to loosen the other screw. See Figures 5-1 (showing the TiLite performance caster) and 5-2 (showing a standard caster).
2. Remove the caster and spacers from the fork.
3. Install the new caster and spacers onto the fork and securely tighten the two screws so there is no space between the caster, the spacers and the fork sides. Use one Phillips head screw driver to hold one screw in place and securely tighten the other screw with the second screw driver.

Note: If your chair has 4" or 5" TiLite performance casters (see Figure 5-1), 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.

Figure 5-1
ZR Series 2 Bearing Fork

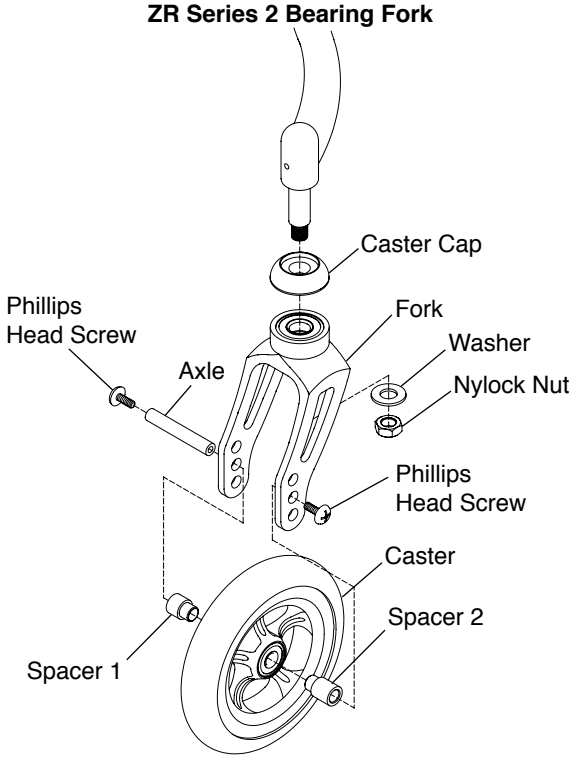
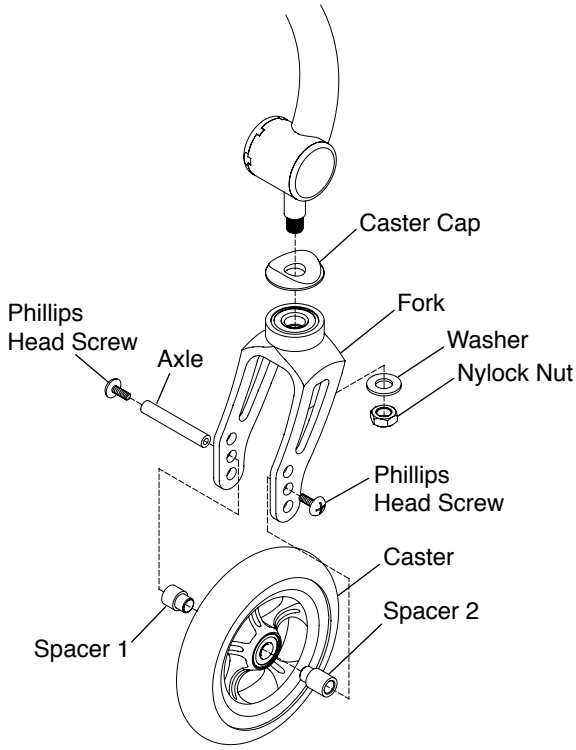


Figure 5-2
ZRA Series 2 Bearing Fork



⚠WARNING
The threads on the screws that secure the casters to the fork are treated with Vibra-TITE® VC-3, a locking and sealing coating, to reduce the possibility they will become loose. You should be able to remove and reinstall these screws approximately four times without reapplying the coating. If you repeatedly remove and reinstall these screws, TiLite requires that you reapply Vibra-TITE® VC-3 after every fourth adjustment. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Replacing Forks

⚠WARNING
On the ZR, the fork stem is permanently installed in the "Bullet" Caster Housing. Do not attempt to unscrew the fork

stem or the set screw. If it should become necessary to replace the fork stem on these chairs, this repair can only be performed by TiLite at our factory. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Tools Needed:
- 9/16” Socket Wrench

1. Remove the casters. See “Replacing Casters” on page 5-1.
2. Loosen and remove the nylock nut and washer that secure the fork to the fork stem. See Figure 5-1 or Figure 5-2.
3. Remove the old fork and caster cap and install the replacement fork and old caster cap on the fork stem.
4. Replace the nylock nut and washer and securely tighten.
5. Reinstall the casters. See “Replacing Casters” on page 5-1.

MONO FORK

Replacing Casters

Tools Needed:
- 1/8” Allen Wrench

1. Using the 1/8” Allen Wrench, remove the Allen Screw and single sided caster cap from the caster. See Figures 5-3 and 5-4.
2. Remove the caster from the mono fork.
3. Install the new caster onto the mono fork, replace the single sided caster cap and securely tighten the screw so there is no space between the caster and the mono fork side.

⚠WARNING

The threads on the screws that secure the casters to the fork are treated with Vibra-TITE® VC-3, a locking and sealing coating, to reduce the possibility they will become loose. You should be able to remove and reinstall these screws approximately four times without reapplying the coating. If you repeatedly remove and reinstall these screws, TiLite requires that you reapply Vibra-TITE® VC-3 after every fourth adjustment. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 5-3
ZR Series 2 Mono Fork

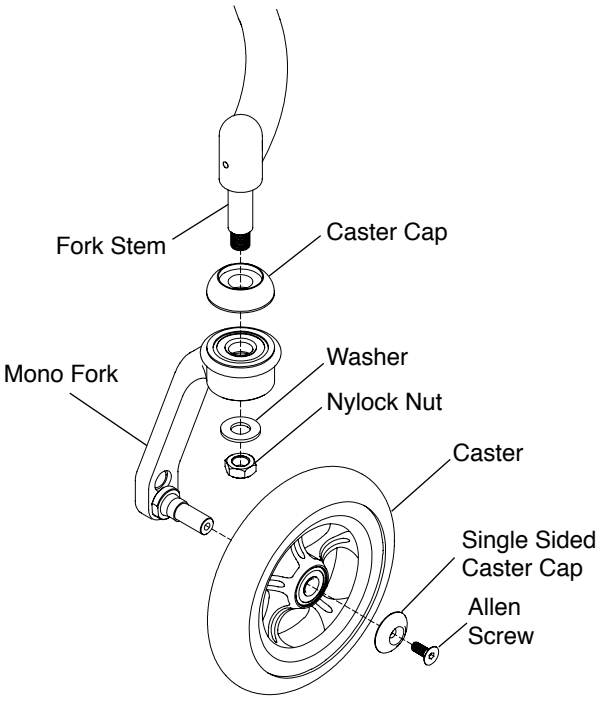
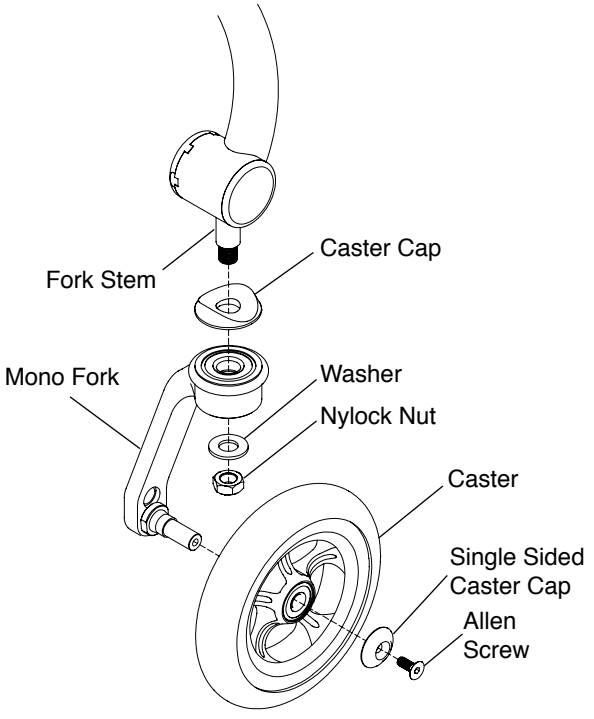


Figure 5-4
ZRA Series 2 Mono Fork



Replacing Forks

Tools Needed:
- 9/16” Wrench
- 1/8” Allen Wrench

1. Remove the casters. See “Replacing Casters” on page 5-2.
2. Using the 9/16” wrench, remove the nylock nut and washer that secure the fork to the fork stem. See Figure 5-3 and Figure 5-4.
3. Remove the old fork and install the replacement fork on the fork stem.
4. Replace the nylock nut and washer and securely tighten.
5. Reinstall the casters. See “Replacing Casters” on page 5-2.

⚠WARNING

On the ZR, the fork stem is permanently installed in the “Bullet” Caster Housing. Do not attempt to unscrew the fork stem or the set screw. If it should become necessary to replace the fork stem on these chairs, this repair can only be performed by TiLite at our factory. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

ANGLE ADJUSTABLE SPEEDLOADER CASTER MOUNT

(ZRA Series 2)

Adjusting the Angle

Tools Needed:
- 1/8” Allen Wrench
- 3/16” Allen Wrench
- Drafting Angle or
- Bubble Level Bracket

1. Place the chair on a level surface.
2. Using the 1/8” Allen Wrench, remove Allen Screw #1 (outer screw) and the washer. See Figure 5-5 to 5-7.
3. Using the 3/16” Allen Wrench, loosen but do not remove Allen Screw #2 (center screw) enough to allow the end cap tabs to slide out of the tab slots.
4. Using a drafting triangle or similar 90° angle tool as shown in Figure 5-8, rotate the fork until the flat edge of the fork is perpendicular to the level surface.

Note: If your chair is equipped with Frog Legs®, you must square the barrel of the Frog Legs® to the level surface using a Bubble Level Bracket because the flat edge of the Frog Legs® fork is not parallel to the caster mount assembly. See Figure 5-9 .

5. While holding the fork in place, and with the end cap tabs engaged in the tab slots, check to see if one of the six perimeter holes in the caster end cap aligns with one of the three threaded holes in the caster mount. If so, proceed to Step 7. If not, proceed to Step 6.
6. Pull the caster end cap away from the caster housing and rotate the caster end cap one-sixth turn and re-engage the caster end cap tabs in the tab slots. Again, check to see if one of the six perimeter holes in the caster end cap aligns with one of the three threaded holes in the caster mount. If so, proceed to Step 7. If not, repeat this Step 6 using the next combination of caster end cap tabs and tab slots.
7. Thread Allen Screw #1 through the two aligned parts and loosely tighten.

Note: There are six perimeter holes in the caster end cap and three threaded holes in the caster mount. These are designed to permit 17° of adjustment in precise 1° increments.

8. Securely tighten the center screw.
9. Securely tighten the outer screw.
10. Repeat Steps 2 through 9 for the opposite caster.

Note: The caster end caps on each side of the chair are mirror images. One is marked with an "R" and one with an "L". Once one side is squared, simply adjust the other side to be the mirror image, and it too will be square.

11. Recheck the forks to be certain they are still perpendicular to the level surface before riding.

Figure 5-5
Adjusting the Angle (Bearing Fork)

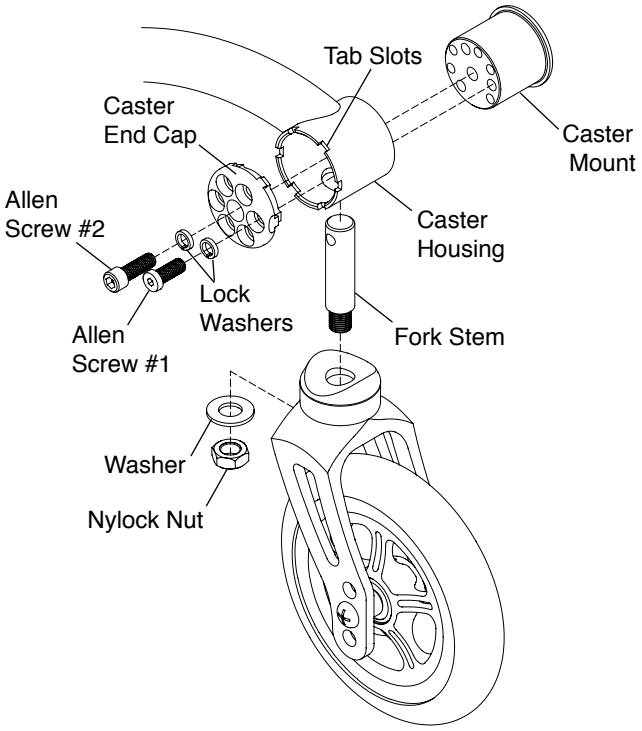


Figure 5-6
Adjusting the Angle (Mono Fork)

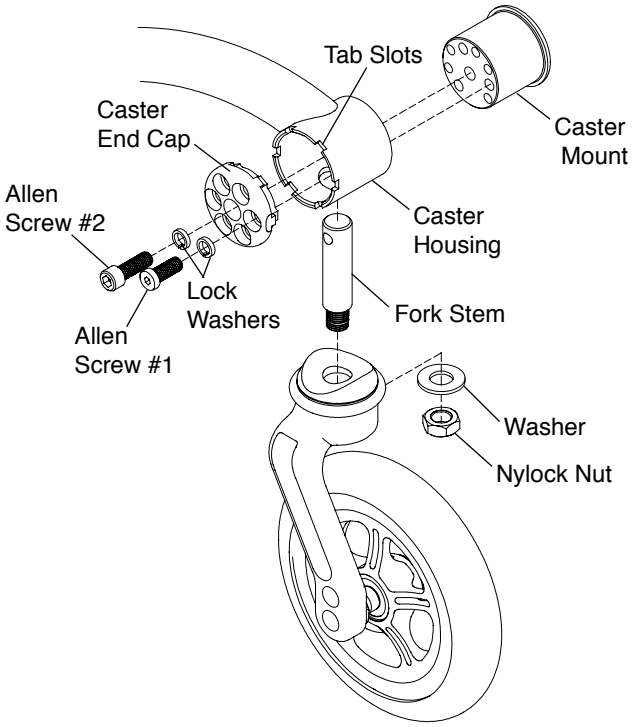


Figure 5-7
Adjusting the Angle (Frog Legs®)

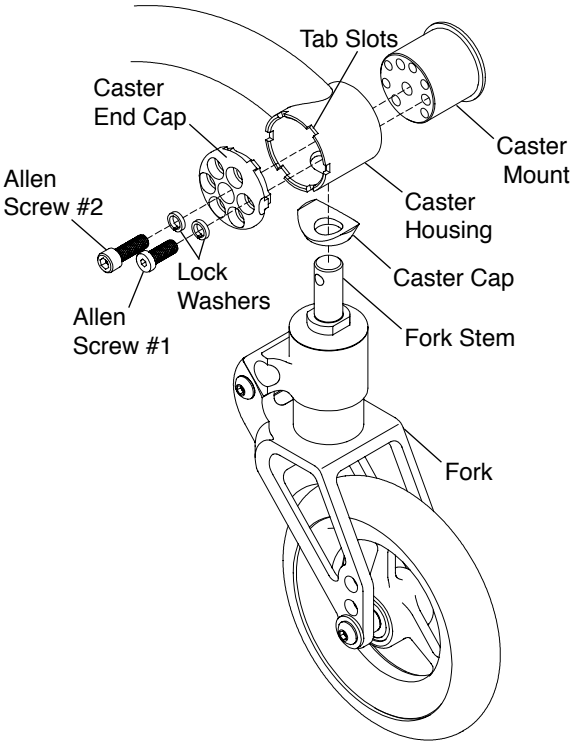


Figure 5-8
Bearing Fork/ Mono Fork

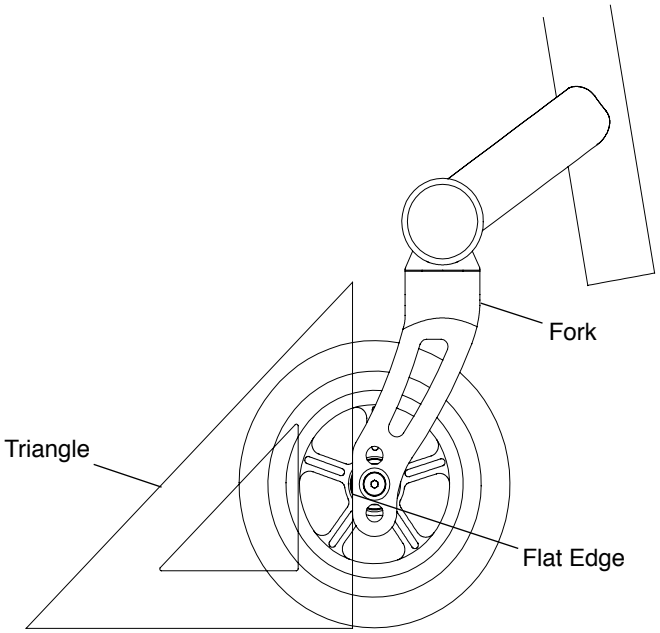
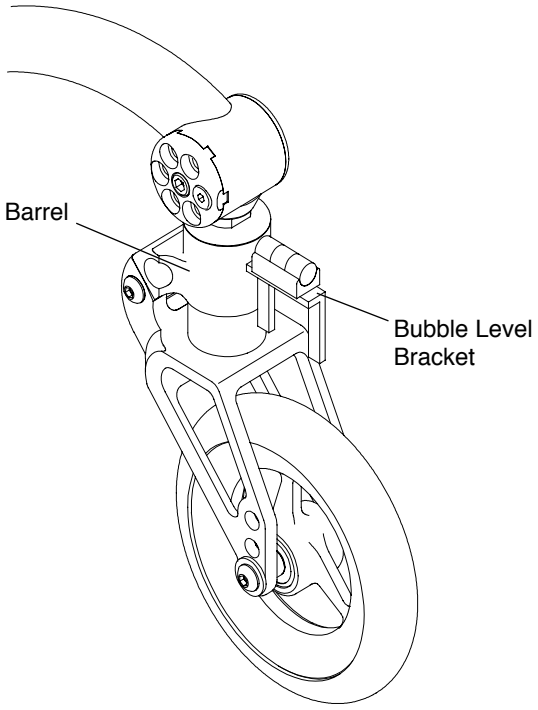


Figure 5-9
Frog Legs®

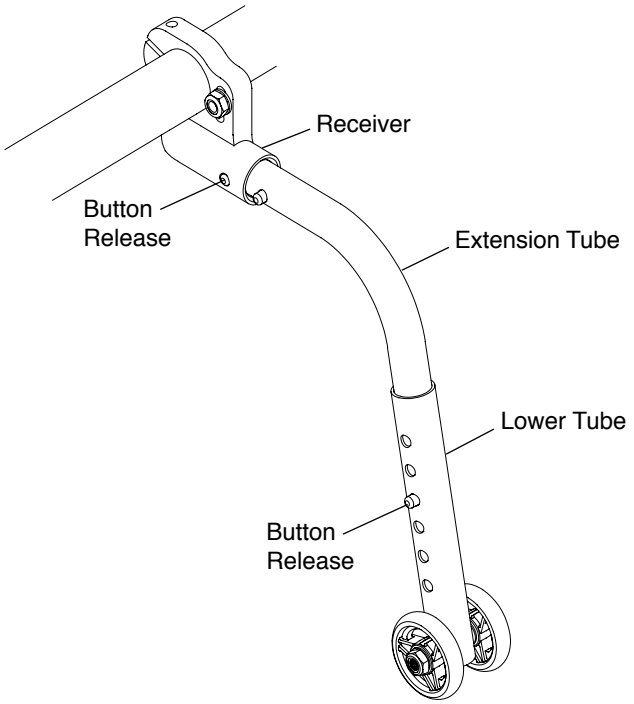


REAR ANTI-TIPS

Adjusting

1. The bottom of the anti-tip wheels should be between 1-1/2” and 2” 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. See Figure 6-1.
2. To rotate the anti-tips upward, press the release button 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 anti-tip receiver.
3. To remove the rear anti-tip, press the release button on the extension tube and pull the extension tube out of the anti-tip receiver.

Figure 6-1
Adjusting the Rear Anti-Tip



Mounting
(ZR Series 2)

⚠WARNING
Only an authorized TiLite dealer or qualified technician should install the rear anti-tip receiver. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

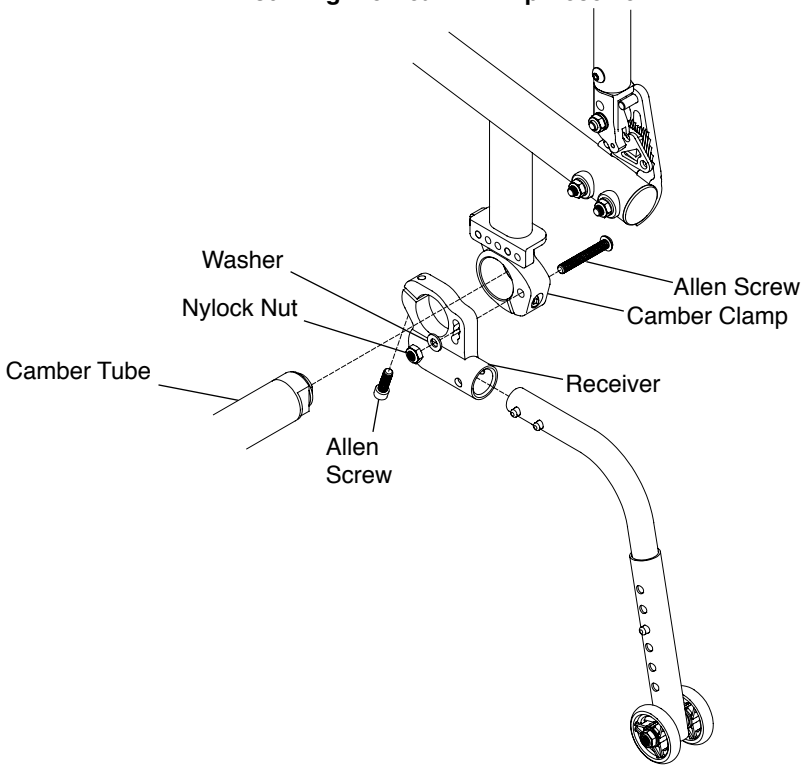
Tools Needed:
- 5/32” Allen Wrench
- 3/16” Allen Wrench
- 7/16” Open End Wrench

1. Remove the rear wheels and place the frame on a level surface.
2. Remove the camber tube. See “Replacing the Camber Tube (ZR Series 2)” on page 4-2.
3. Thread the Allen Screw through the right side camber clamp, right side anti-tip receiver and washer and secure the nylock nut. See Figure 6-2.

Note: Make sure that the anti-tip receiver is oriented to be parallel to the floor.

4. Repeat Step 3 on the left side camber clamp and left side anti-tip receiver.
5. Reinstall the camber tube. See “Replacing the Camber Tube (ZR Series 2)” on page 4-2.
6. Tighten the Allen Screw in each anti-tip receiver so that it securely clamps into the camber tube.
7. Reinstall the rear wheels.

Figure 6-2
Mounting the Rear Anti-Tip Receiver



Mounting

(ZRA Series 2)

⚠WARNING

Only an authorized TiLite dealer or qualified technician should install the rear anti-tip receiver. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Tools Needed:

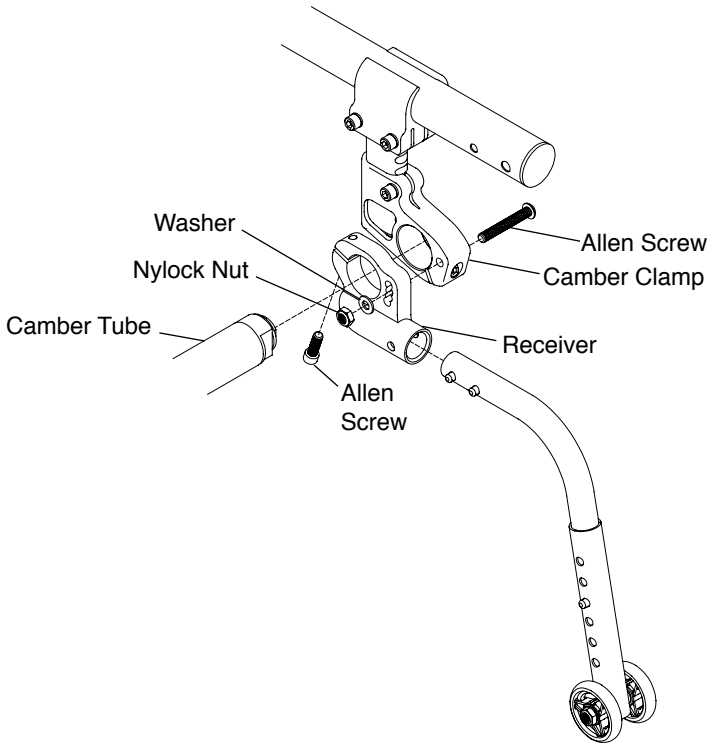
- 5/32” Allen Wrench
- 3/16” Allen Wrench
- 7/16” Open End Wrench

1. Remove the rear wheels and place the frame on a level surface.
2. Remove the camber tube. See “Replacing the Camber Tube (ZRA Series 2)” on page 4-4.
3. Thread the Allen Screw through the right side camber clamp, right side anti-tip receiver, washer and securely tighten the nylock nut.

Note: Make sure that the anti-tip receiver is oriented to be parallel to the floor.

4. Repeat Step 3 on the left side camber clamp and left side anti-tip receiver.
5. Reinstall the camber tube. See “Replacing the Camber Tube (ZRA Series 2)” on page 4-4.
6. Tighten the Allen Screw in each anti-tip receiver so that it securely clamps into the camber tube.
7. Reinstall the rear wheels.

Figure 6-3
Mounting the Rear Anti-Tip Receiver

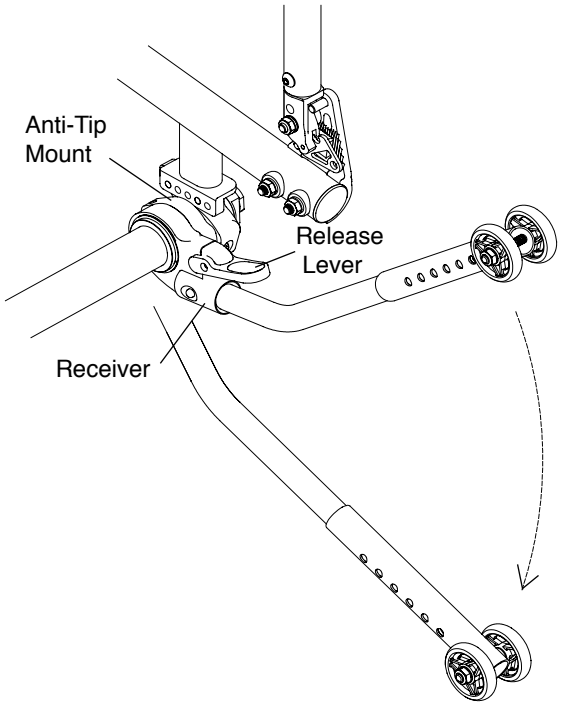


USER-FRIENDLY ANTI-TIPS

Engaging

To engage the user-friendly anti-tip, grip the anti-tip firmly, pressing down on the release lever, lower the anti-tip until the anti-tip receiver re-engages in the anti-tip mount in the “down” position shown in Figure 6-4.

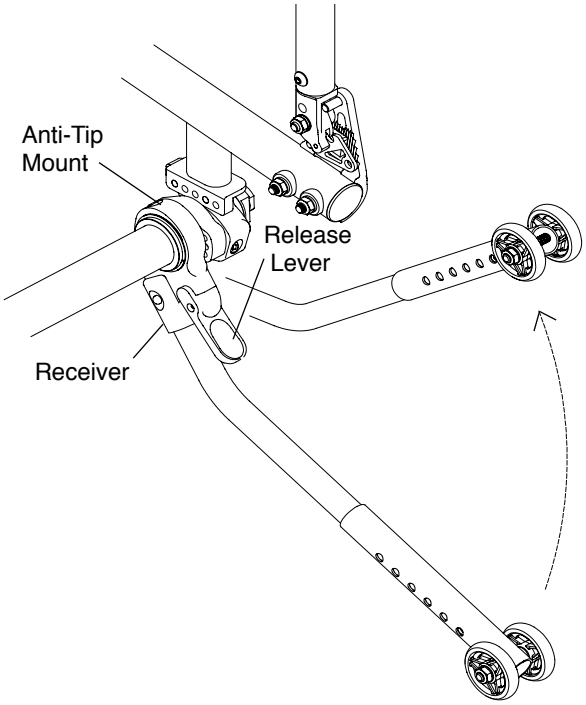
Figure 6-4
Engaging the Anti-Tip



Disengaging

To disengage the user-friendly anti-tip, grip the anti-tip firmly, pressing down on the release lever, raise the anti-tip until the anti-tip receiver re-engages in the anti-tip mount in the “up” position shown in Figure 6-5.

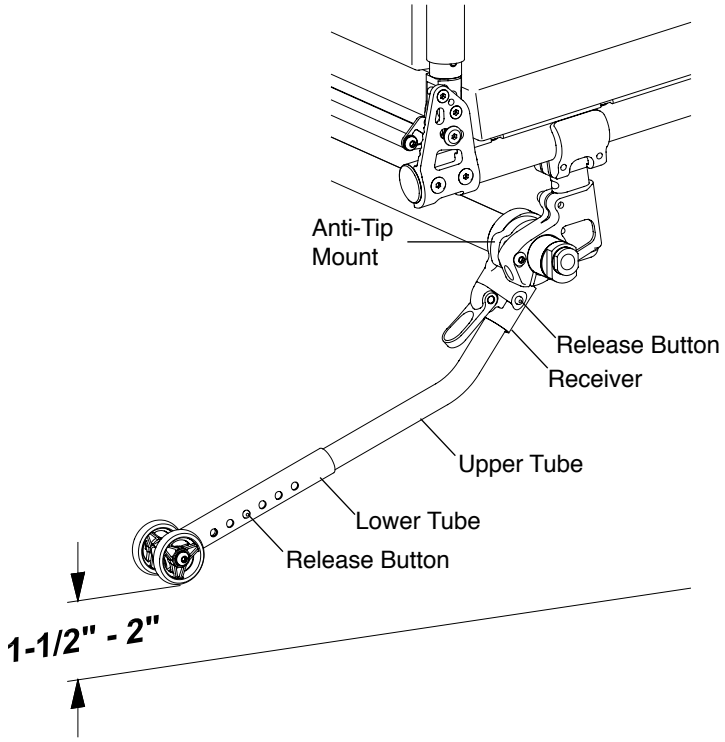
Figure 6-5
Disengaging the Anti-Tip



Adjusting

To adjust the height of the user-friendly anti-tip, press the two release buttons on the telescoping lower tube and adjust the height of the lower tube so that the wheel is within 1-1/2” to 2” off the ground. See Figure 6-6.

Figure 6-6
Adjusting the Anti-Tip



Removing

To remove the user-friendly anti-tip tube, press the two release buttons on the anti-tip receiver and pull the upper tube out of the anti-tip receiver. See Figure 6-6.

Mounting

(ZR and ZRA Series 2)

⚠WARNING
Only an authorized TiLite dealer or qualified technician should install the rear anti-tip receiver. *If you ignore this Warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

⚠WARNING
Do not disassemble the anti-tip mounting assembly. See Figure 6-7 and 6-8. *If you ignore this warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Tools Needed:
- 5/32” Allen Wrench
- 3/16” Allen Wrench

1. Remove the rear wheels and place the frame on a level surface.
2. Remove the camber tube. See “Replacing the Camber Tube (ZR Series 2)” on page 4-2 or “Replacing the Camber Tube (ZRA Series 2)” on page 4-4.
3. Thread the Allen Screw through the right side camber tube clamp and into the right side anti-tip mount using the center of the three threaded holes and loosely tighten.
4. Repeat Step 3 with the left side camber tube clamp and the left side anti-tip mount.
5. Reinstall the camber tube. See “Replacing the Camber Tube (ZR Series 2)” on page 4-2 or “Replacing the Camber Tube (ZRA Series 2)” on page 4-4. The bumper cannot be reinstalled.
6. With the wheelchair standing upright on a level surface, engage the anti-tip as described under “Engaging the Anti-Tip” on page 6-3.
7. Adjust both lower tubes so that the wheels are within 1-1/2” to 2” off the ground. See Figure 6-6. If this is not possible, proceed to Step 8. If you can achieve the proper ground clearance, proceed to Step 9.
8. If you cannot achieve the proper ground clearance in Step 7, then remove the Allen Screw installed in Step 3 and reinstall it in either the upper or lower holes in the anti-tip mounts. Then repeat Steps 6 and 7.
9. Securely tighten the Allen Screws that secure the camber tube clamps to the anti-tip mounts.
10. Securely tighten the Allen Screw in each anti-tip mount to secure the anti-tip mount to the camber tube.

⚠WARNING
Both anti-tips MUST be mounted using the identical threaded hole in each of the anti-tip mounts. *If you ignore this warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

⚠WARNING
Before sitting in the chair, make sure that the anti-tips are operating properly. To do this, place the unoccupied chair on a level surface, engage the anti-tips, and tip the chair backward until the anti-tips are supporting the weight of the chair. Apply sufficient pressure to ensure that the anti-tips are operating properly. *If you ignore this warning, you may fall, tip over or lose control of the wheelchair and seriously injure yourself or others or damage the wheelchair.*

Figure 6-7
ZR- Series 2 Mounting the Anti-Tip

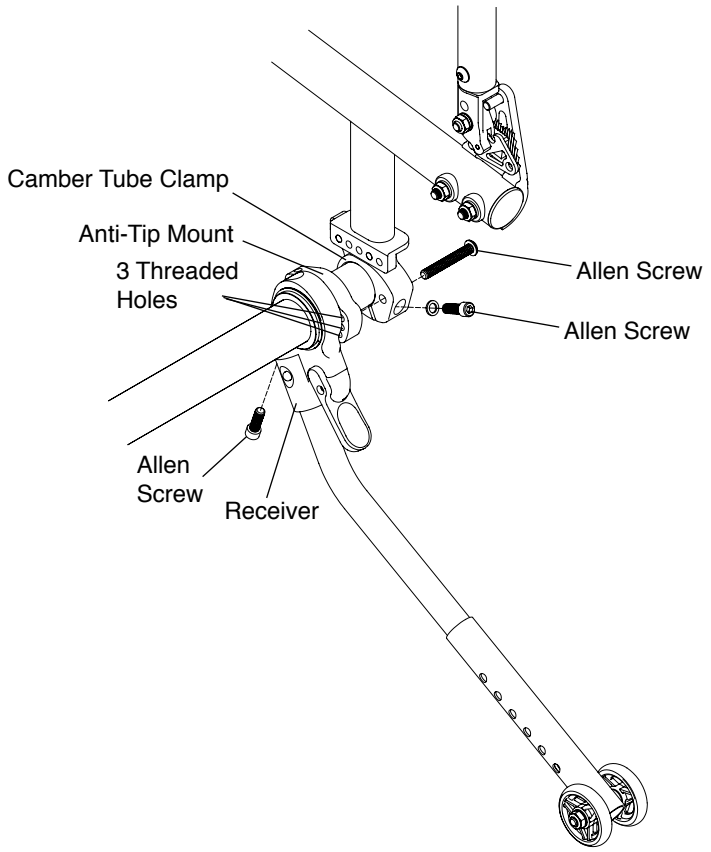
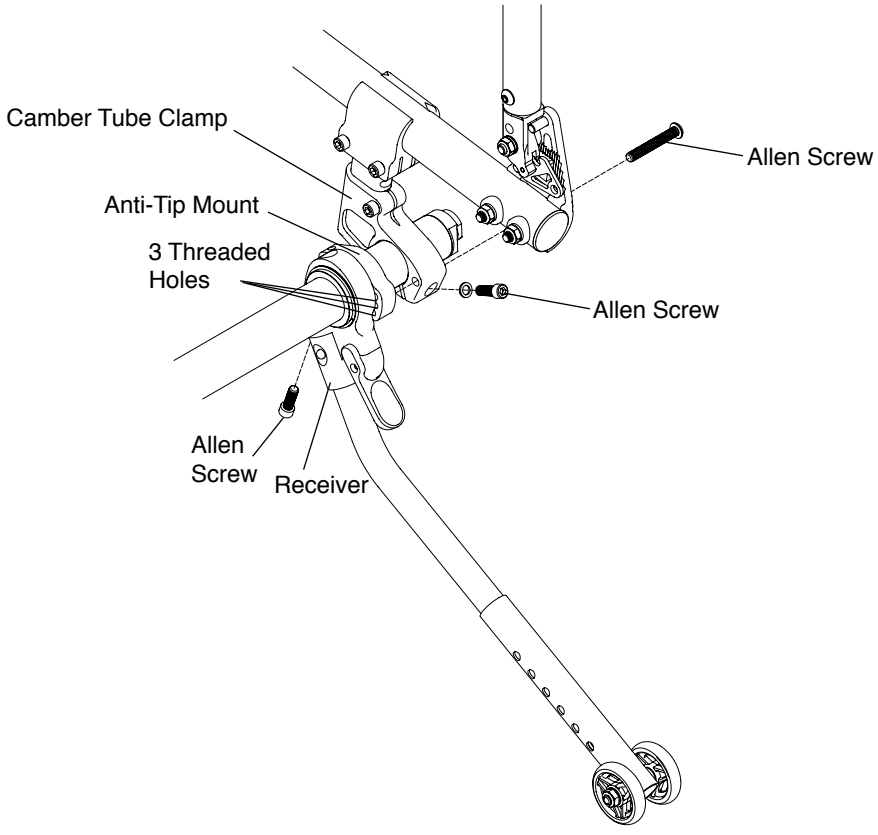


Figure 6-8
ZRA- Series 2 Mounting the Anti-Tip



Velcro®-Style Adjustable Seat Belt

⚠WARNING
Installation of the Velcro®-Style Seat Belt must be performed by an authorized TiLite dealer or qualified technician. *If you ignore this Warning, serious injury may result.*

⚠WARNING
The Velcro®-Style Seat 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. Have your seating specialist demonstrate its proper adjustment and use. See Figures 6-9 and 6-10. Accidental release of the Velcro®-Style Seat 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. Ensure that all caregivers know how to unfasten the product. Failure to do so may delay release in an emergency. As with any new seating support, the Velcro®-Style Seat 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 your physician or seating specialist. Failure to do so may result in serious injury, such as pressure ulcers. *If you ignore any of these Warnings, you may incur serious or life-threatening injuries.*

Installation

The seat belt will be installed as shown in Figure 6-9.

Figure 6-9
Velcro®-Style Seat Belt with D-Ring

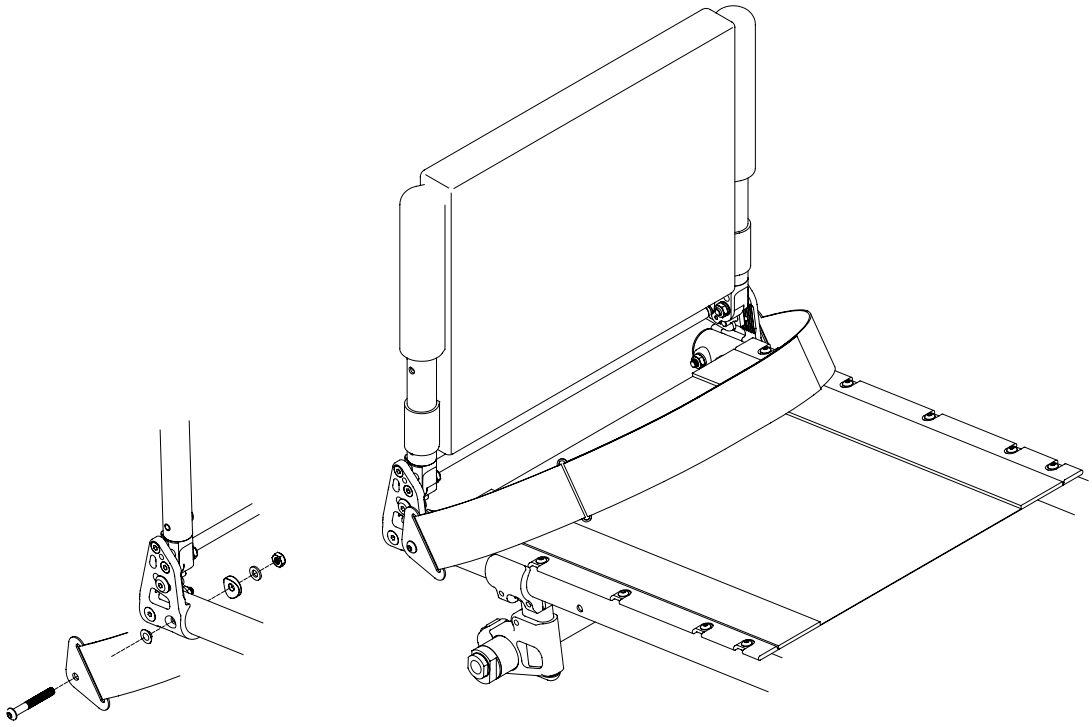
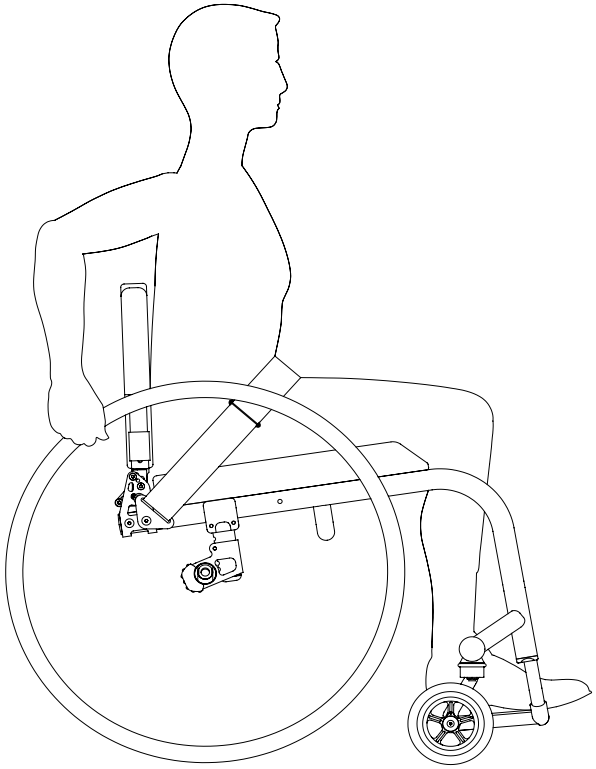


Figure 6-10
Proper Belt Position for Belt with D-Ring



Adjustment

When the belt is properly adjusted and tightened, it should fit snug so that the user's pelvis is secure. See Figure 6-10. 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 chair through full range of motion, including folding, and rolling. Check for any interference.

Maintenance

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

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P 800.545.2266 **I** 509.586.6117
F 866.586.2413 **I** 509.585.8703

2701 West Court Street, Pasco, Washington 99301

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