

**THIS TECHNICAL MANUAL HAS BEEN DEVELOPED FOR AND
INTENDED TO BE USED BY A QUALIFIED TECHNICIAN
WORKING FOR AN AUTHORIZED KI MOBILITY DEALER.**

ETHOS

TECHNICAL
MANUAL



WARNING

WARNING: Repairs and adjustments not made by a qualified technician working for an authorized Ki Mobility Dealer can result in poor performance or failure of the device which may cause serious injury or death.

This technical manual is designed to aid in the different procedures that may be needed for the Ethos wheelchair. This technical manual does not replace, but aids the user instruction manual, adjustment guides and instructions. The procedures shown in this technical manual should only be performed by an Assistive Technology Practitioner (ATP) or clinical professional trained to do wheelchair repairs, adjustments and retrofits.

Additional information can be found in the Ethos User Instruction Manual. The user instruction manual can be found on the Ki Mobility website.

If you have any questions or concerns about any aspect of this wheelchair, this manual, or the service provided by us or your retail supplier, please do not hesitate to contact us by telephone at:

715-254-0991

In writing at:

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5201 Woodward Drive
Stevens Point, WI 54481
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Or via our Authorized EU Representative:

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Långatan 12
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Sweden

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Tools

See the list below to identify the tools needed throughout this tech manual. Always check tools to ensure the ends are not stripped and that the tool can perform it's function properly without damaging any parts or hardware on the chair.

Tools Needed		
• 2.5mm Allen Wrench	• Two 8mm Wrenches	• 6mm Allen Wrench
• 3mm Allen Wrench	• Two 10mm Wrenches	• Utility blade
• 4mm Allen Wrench	• 13mm Wrench	• 24mm Wrench
• 5mm Allen Wrench	• 17mm Wrench	• Phillips Screwdriver
• 5.5mm Allen Wrench	• 19mm Wrench	

Frame Tube Size Guide

Tubing sizes subject to change without notice

This information is a reference for situations where the tube sizes are needed for certain attachments.

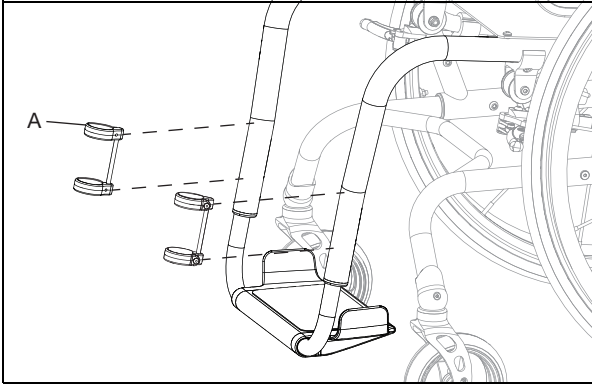
Frame Tube
Rear Base Frame Tube: 1 1/4"
Front Base Frame Tube: 1"
Seat Frame Tube: 1 1/8"
Camber Tube: 1 1/8"
Base Frame Cross Tube: 3/4"
Seat Frame Cross Tube: 1"
Back Canes
Fixed Height Back Canes: 1"
Rigidizer Bar: 7/8"
Lower Height Adjustable Back Tube: 1"
Upper Adjustable Upper Back Tube: 3/4"
Arms
Swing Away: 1"
Upper T-Arm: 7/8"
Transfer Tube T-Arm: 3/4"
Angle Adjustable Flip Up: 1"
Footrests
Footrest Tubes: 3/4"

Spoke Tension Values

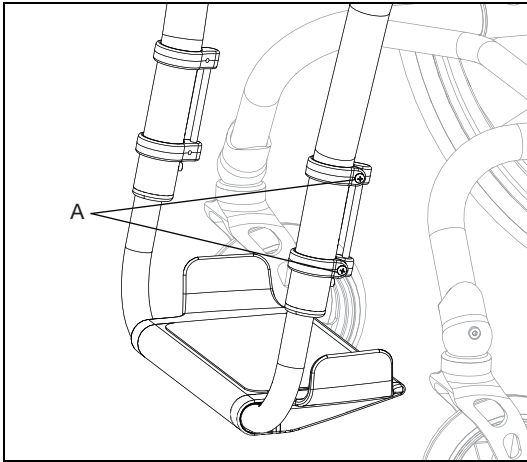
OAD Spoke	60-100 kgf
Drum brake Spoke	90-120 kgf radial side / 60-90 kgf crossed side
Maxx Spoke	60-100 kgf
Low Cost Spoke	60-100 kgf
Spinergy	Contact Spinergy for more information

Calf Strap Mount Installation and Adjustment

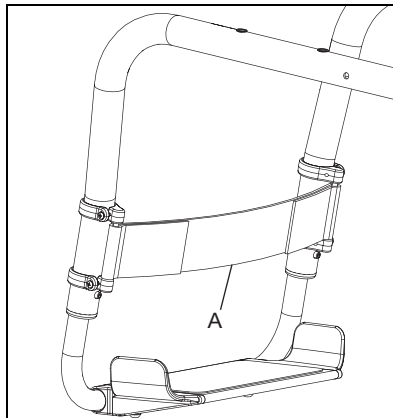
1. Install the calf strap mount clamps (A) onto the seat frame. With the screws removed, the clamps will open far enough to slide over the frame tube.



2. Secure the calf strap mount clamps in place by retightening the screws with a #2 Phillips screwdriver. Set to the height configuration needed for the chair user.

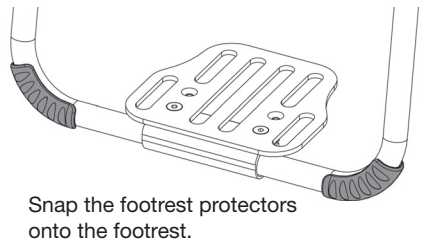
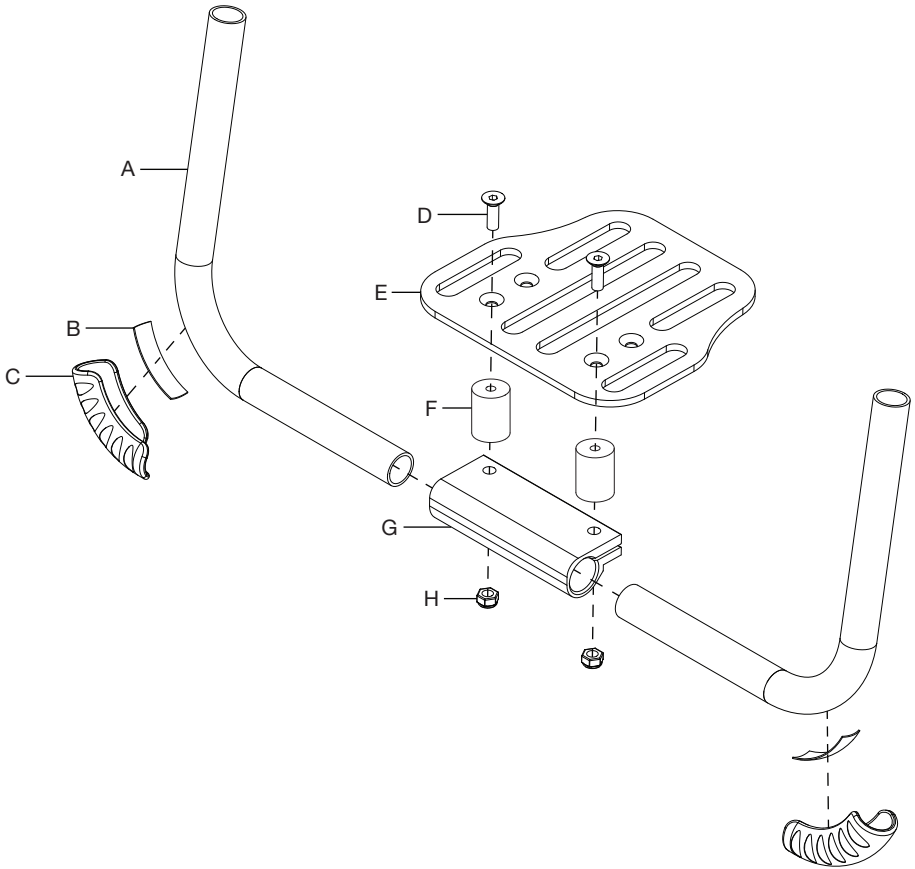


3. Install the calf strap with velcro (A) onto the clamps.



Angle Adjustable Footrest

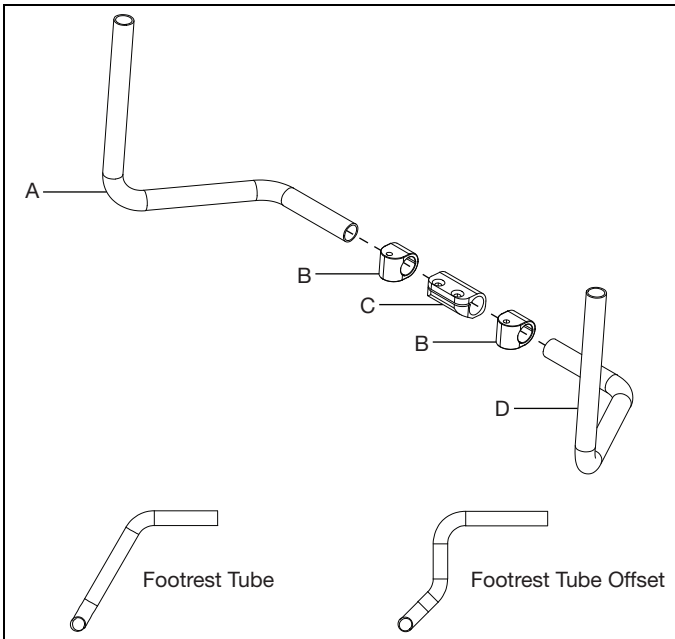
1. Install the footrest extension tubes (A) into the footrest adjustable clamp (G).
2. Install the footplate (E) onto the clamp and secure with two screws (D) and two nuts (H) using a 5mm Allen wrench and a 10mm wrench. If a riser (F) is being used to elevate the footrest platform, install between the footrest platform and the footrest adjustable clamp.
3. Install the footrest protectors (C) by peeling the backing off of the tape (B) and sticking the tape inside the footrest protector. Peel the remaining backing off of the tape and snap footrest protectors onto the footrest as seen below.



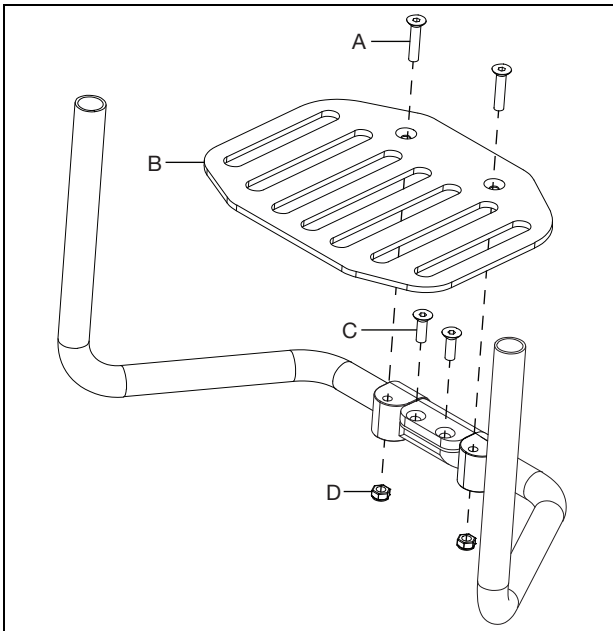
Angle Adjustable Flip Under Footrest

1. Install the footrest tubes (A & D) through the pivots (B) into the footrest flip stop clamp (C).

NOTE: The footrest tube and the footrest tube offset are shown below. The installation process is the same for both footrest tubes.



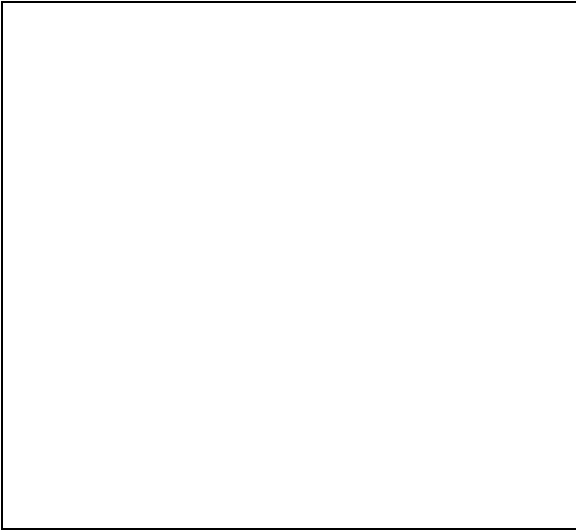
2. Install two screws (C) into the footrest flip stop clamp to secure the footrest tubes using a 5mm Allen wrench. Install the footrest platform (B) onto the footrest flip stop clamp with two screws (A) and two nuts (D) using a 5mm Allen wrench.



Hybrid Angle Adjustable Footrest

Angle Adjustment of Your Footrest

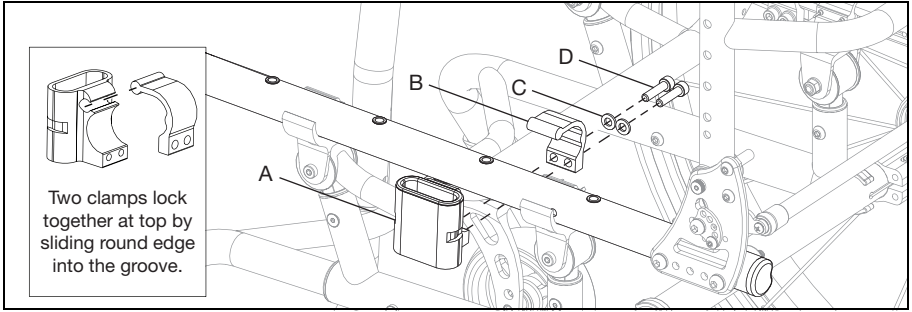
1. Loosen the two screws (A) on the bottom of the footrest using a 4mm Allen wrench.
2. Rotate footrest to desired angle and secure in place by retightening the two screws.



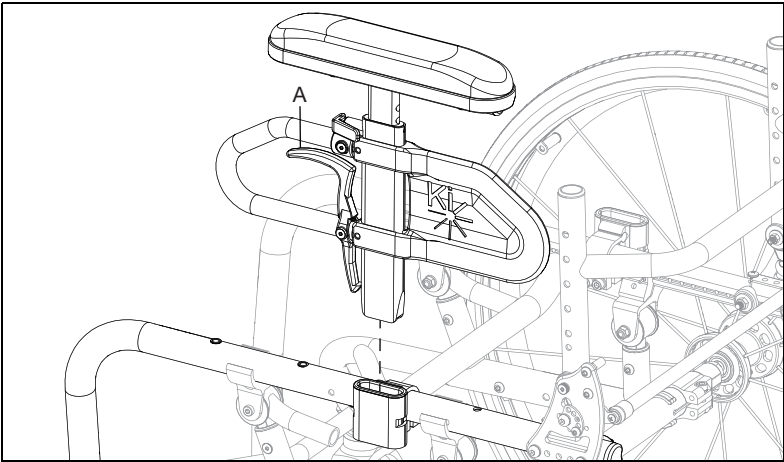
T-Arm Installation and Adjustment

NOTE: Remove any seat upholstery and/or cushions before beginning.

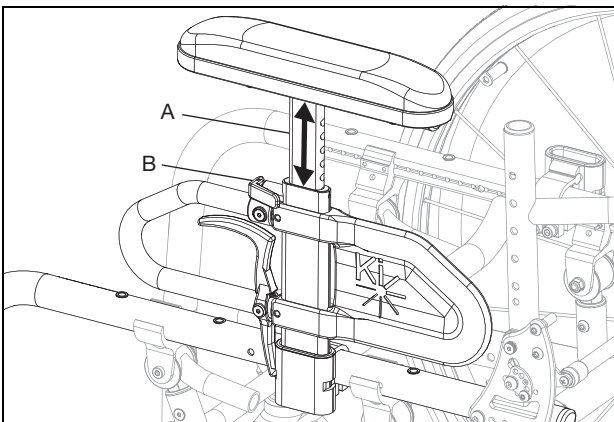
1. Install the T-Arm receiver (A) and clamp (B) onto the seat frame with two washers (C) and two bolts (D) using a 5mm Allen wrench. Ensure the detents on the clamp (B) align with the indents on the frame as you tighten.



2. Install the T-Arm into the bracket until the lever (A) latches and locks into place. Repeat on opposite side.

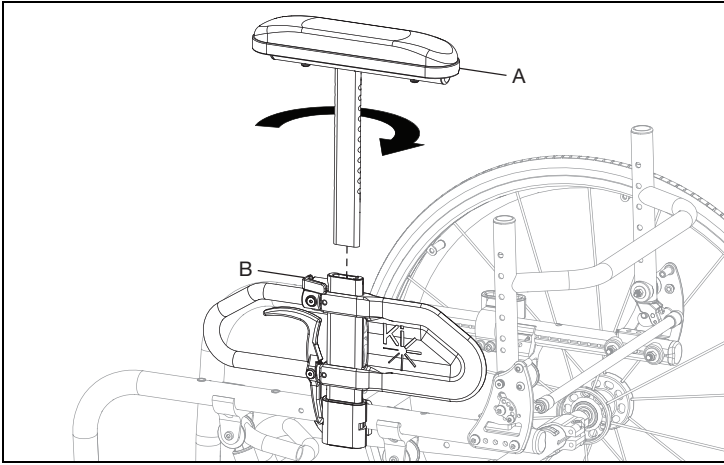


3. Adjust the height of the T-Arm post (A), if needed, by releasing the latch (B) and then sliding the post to desired height. Secure in place by reengaging the latch.

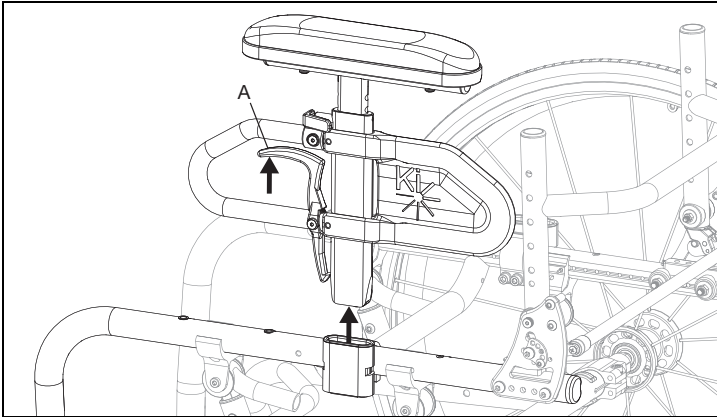


T-Arm Installation and Adjustment

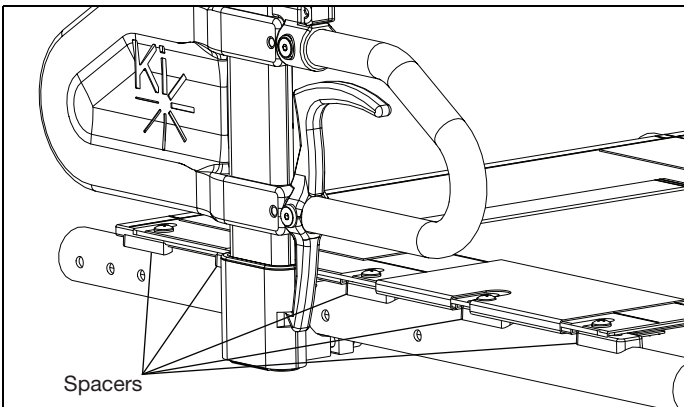
4. To rotate the arm pad (A), release the T-Arm post latch (B) and lift the post out. Rotate the post and reinstall. Secure in place by reengaging the latch.



5. To remove the T-Arm assembly, pull the lever (A) up and lift the T-Arm assembly up and out of bracket.

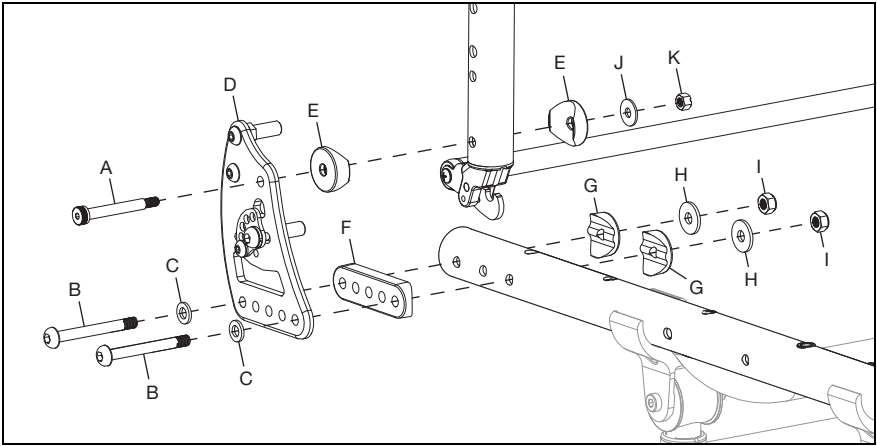


NOTE: When your seat upholstery is reinstalled, spacers are used with each screw to allow clearance for the T-Arm Bracket. See image below.

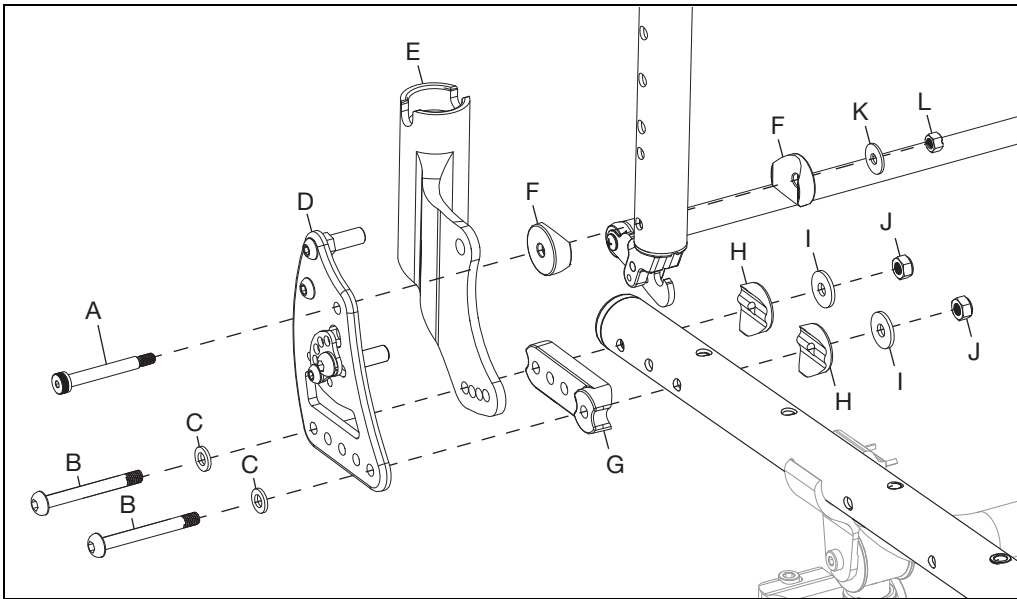


Swing Away Arm Installation and Adjustment

1. Remove the backrest plate (D) from the frame by removing two bolts (B), two washers (C), saddle back (F), two saddles (G), two washers (H) and two nuts (I) using a 4mm Allen wrench and a 10mm wrench. Remove backrest plate from back cane by removing shoulder bolt (A), two saddles (E), washer (J) and nut (K) using a 5mm Allen wrench and a 10mm wrench. Repeat on opposite side.

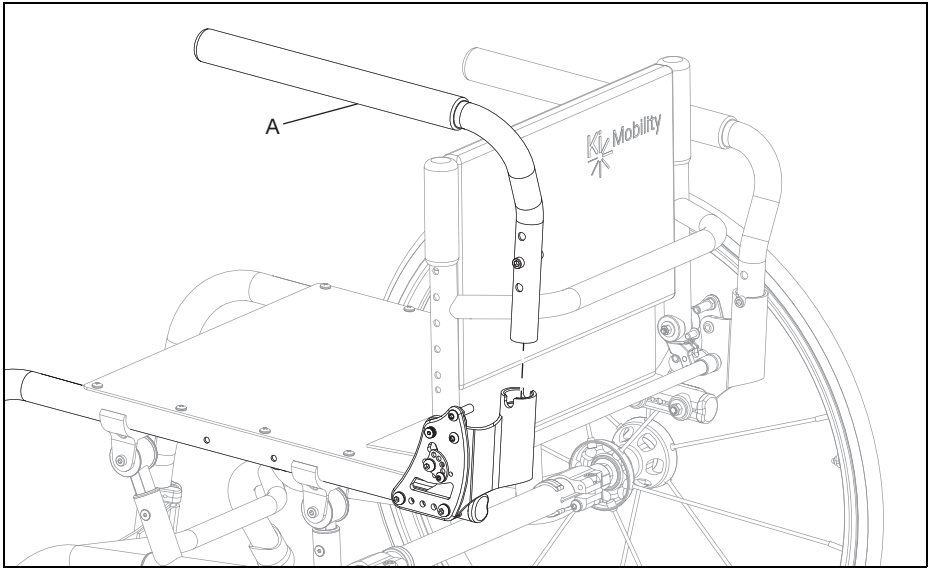


2. Install the swing away bracket (E) in between the backrest plate (D) and frame with two bolts (B), two washers (C), new saddle back (G), two saddles (H), two washers (I) and two nuts (J) using a 4mm Allen wrench and a 10mm wrench. Secure backrest plate to back cane with shoulder bolt (A), two saddles (F), washer (K), nut (L) using a 5mm Allen wrench and a 10mm wrench. Repeat on opposite side.

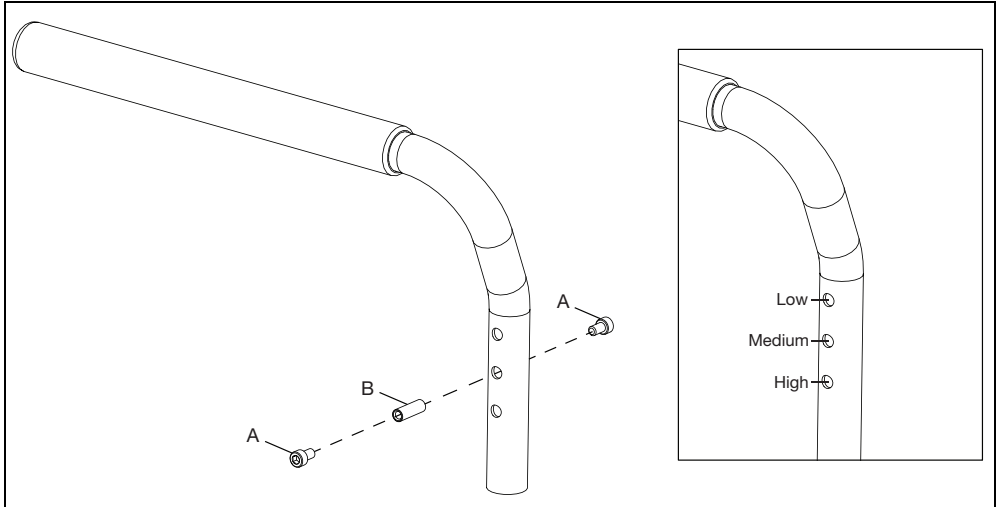


Swing Away Arm Installation and Adjustment

3. Install each swing away armrest into the mount plate opening.



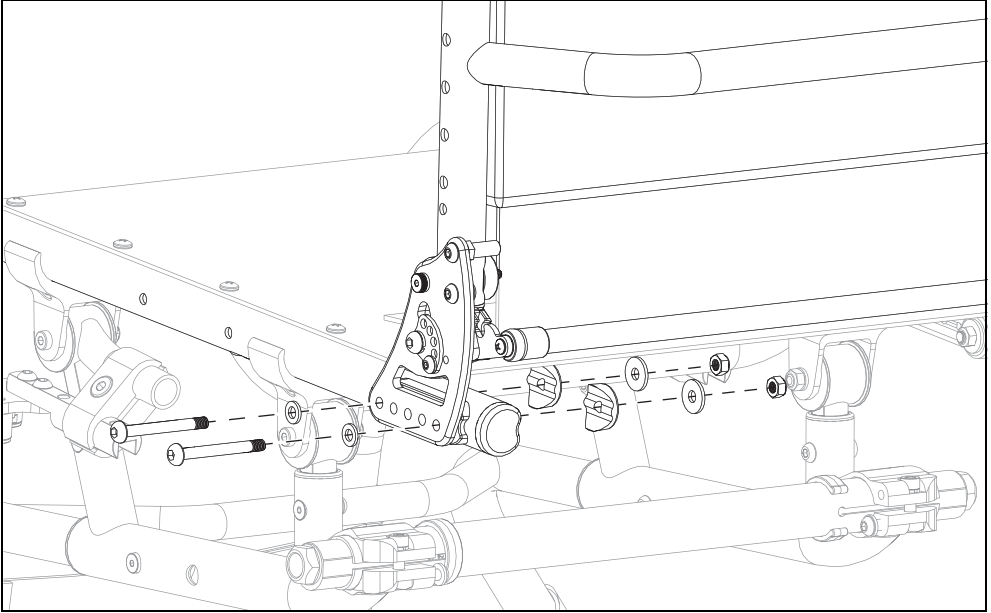
4. To adjust the height of the swing away arm, remove two screws (A) and insert (B) using two 4mm Allen wrenches. There are two available swing away arm heights available - short (can be adjusted 8.5" to 10.5") and tall (can be adjusted 10.5" to 12.5"). Reinstall hardware into correct hole for your desired height.



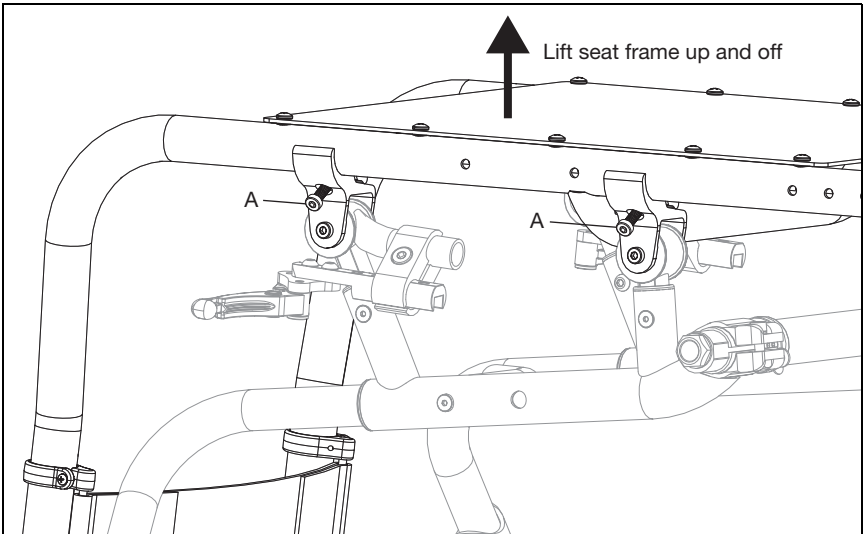
Seat Frame Replacement

NOTE: This section will go from complete chair to replacing the whole seat frame. Some sections can be skipped depending on how many assemblies you are replacing during the process.

1. Remove hardware that attaches backrest to seat frame. Repeat on opposite side and remove backrest assembly.

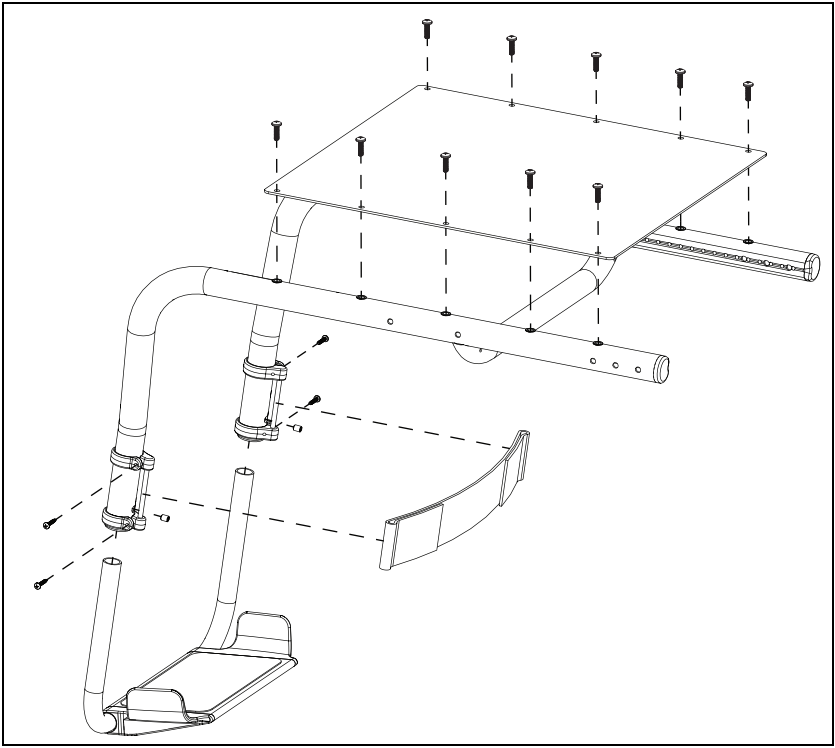


2. Loosen, but do not remove, the seat frame clamp bolts, four in total on the chair, using a 4mm Allen wrench. Lift seat frame up and off.



Seat Frame Replacement

3. Remove any remaining parts or accessories (such as underseat pouch, wheel locks, armrest clamps, etc.) from the seat frame that you will be transferring to the new seat frame.



4. Transfer parts and/or accessories that were removed in step 3 to the new seat frame.

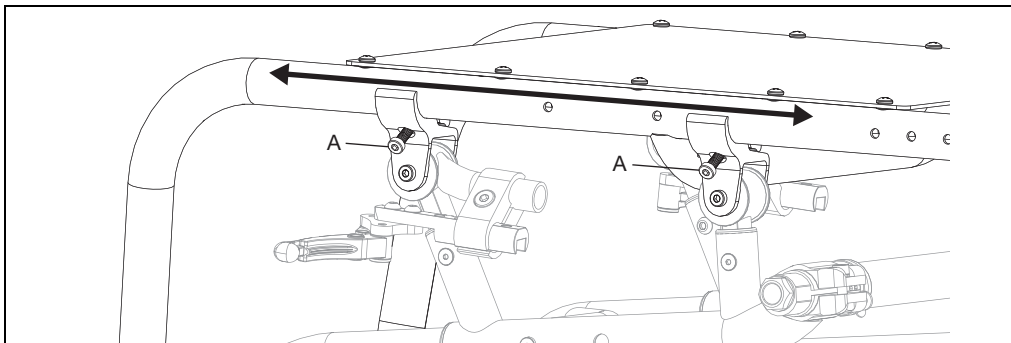
Seat Frame Replacement

5. Set seat frame onto seat frame clamps. Slide seat frame along clamps to the position of desired seat depth. Secure in place by tightening the four seat frame clamp bolts (A) using a 4mm Allen wrench.



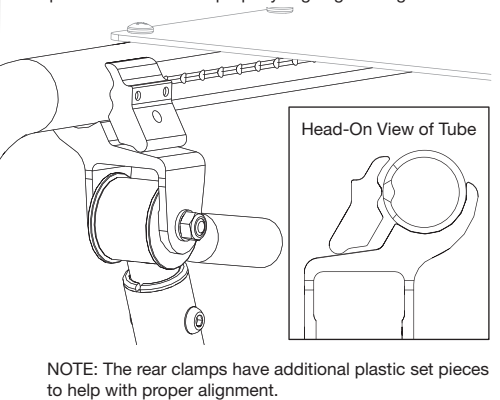
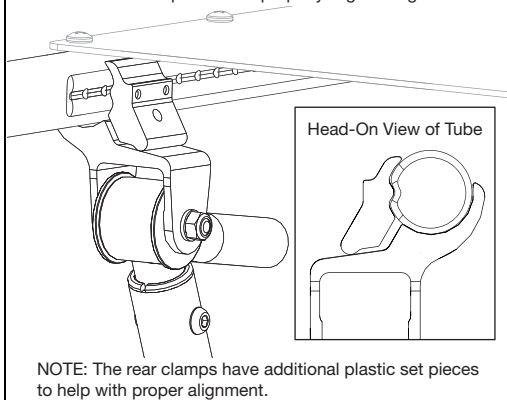
WARNING

WARNING: Incorrect mounting can cause seat frame to disengage from clamp which could result in a fall. A fall could result in damage to the chair or in serious injury or death.



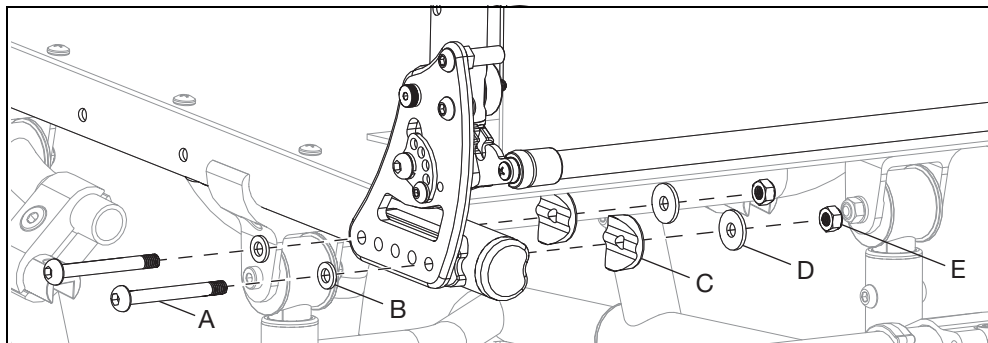
Correct Mounting - Clamps are mounted correctly in the grooved track. Mounting the clamp directly in the grooved track allows the clamp detent to properly align with groove.

Incorrect Mounting - Clamps are mounted past the edge of the grooved track. Mounting the clamp directly on the round tube prevents detent from properly aligning in the groove.



6. Reinstall the backrest assembly in the same position as before or a new position if desired. Reinstall with two bolts, two small washers, two saddles, two large washers and two nuts per bracket using a 5mm Allen wrench and a 10mm wrench. Repeat on opposite side.

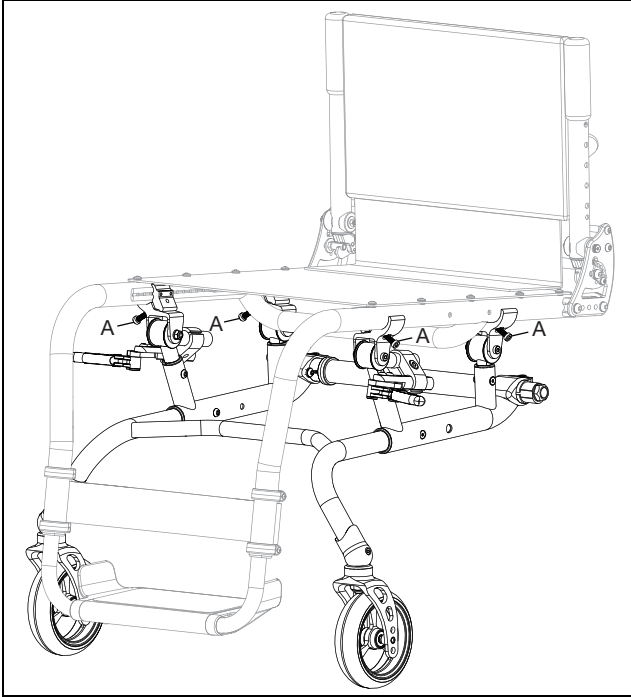
NOTE: Refer to the **Swing Away Armrest** section if you are reinstalling a backrest assembly that has swing away arms present.



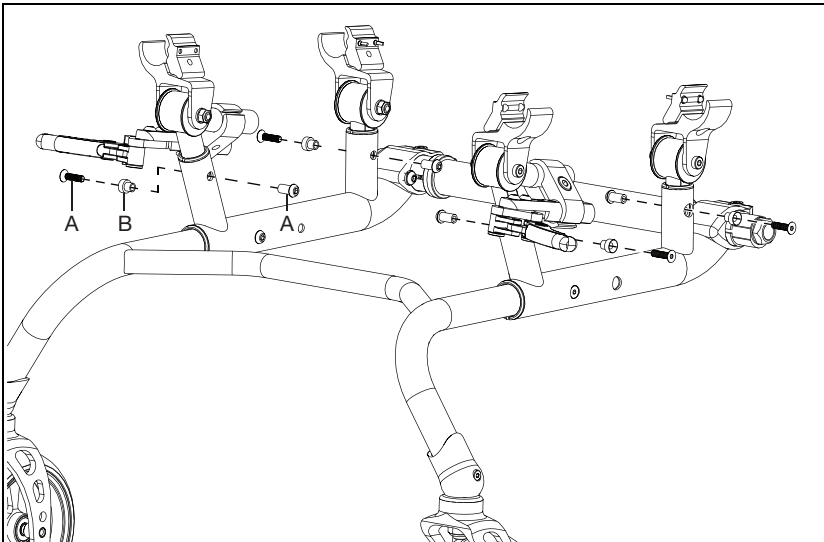
Base Frame Replacement

NOTE: This section will go from complete chair to replacing the base frame. Some sections can be skipped depending on how many assemblies you are replacing during the process.

1. Remove wheels.
2. Loosen the four seat frame clamp bolts (A) with a 4mm Allen wrench until the seat frame can be removed from the base frame.

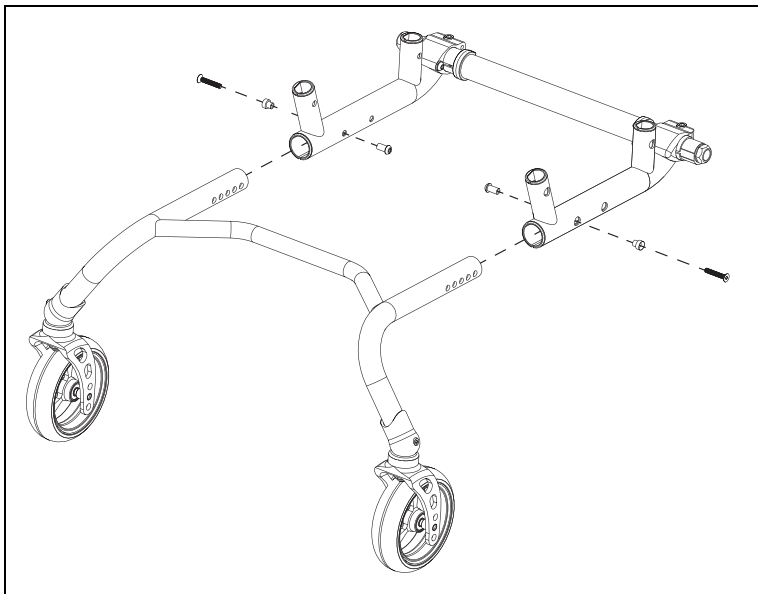


3. Remove the iso vertical tube assemblies from the base frame by removing two screws (A) and a barrel nut (B) per assembly using two 3mm Allen wrenches.

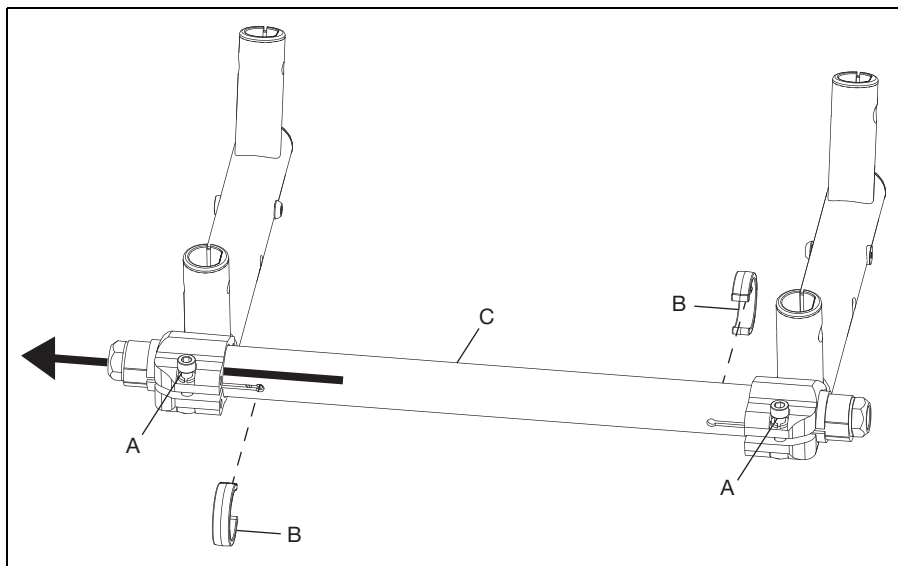


Base Frame Replacement

4. Remove front lower base frame assembly by removing two screws and a barrel nut per side using two 3mm Allen wrenches.



5. If needed, remove the camber tube (C) by removing two camber clips (B) first. Next, loosen the camber tube clamp screws (A) using a 5mm Allen wrench and slide the camber tube out one side.

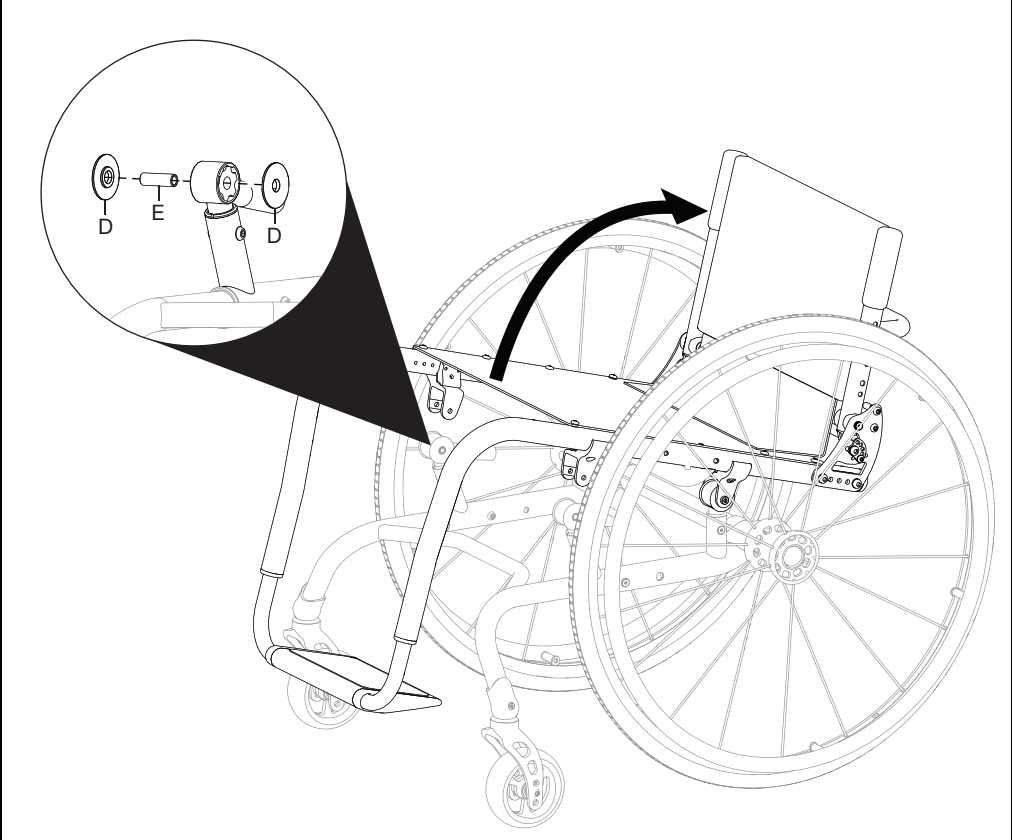
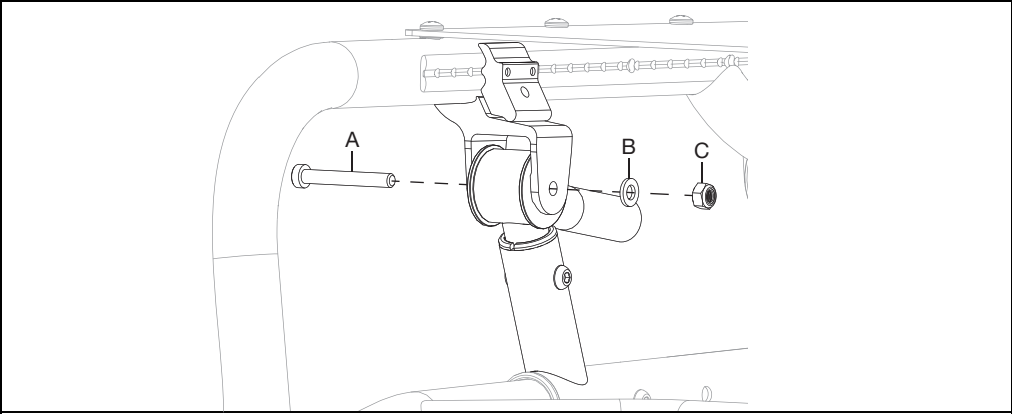


6. Reverse steps 1 - 5 to reinstall new base frame with saved parts from earlier.

NOTE: Ensure lower rear base frame is parallel with the ground during reinstallation. Adjust the front and rear seat heights through the tower system.

ISO Tech Polymer Replacement

1. Remove bolt (A), washer (B) and nut (C) from the front ISO Tech Tower using a 4mm Allen wrench and a 10mm wrench. Repeat on opposite front ISO Tech Tower. Once the bolt is removed from both front ISO Tech Towers the seat can hinge backwards on the rear ISO Tech Towers. The seat frame can now be lifted upwards enough to make room for removal of the iso strut washers (D) and the iso barrel (E)

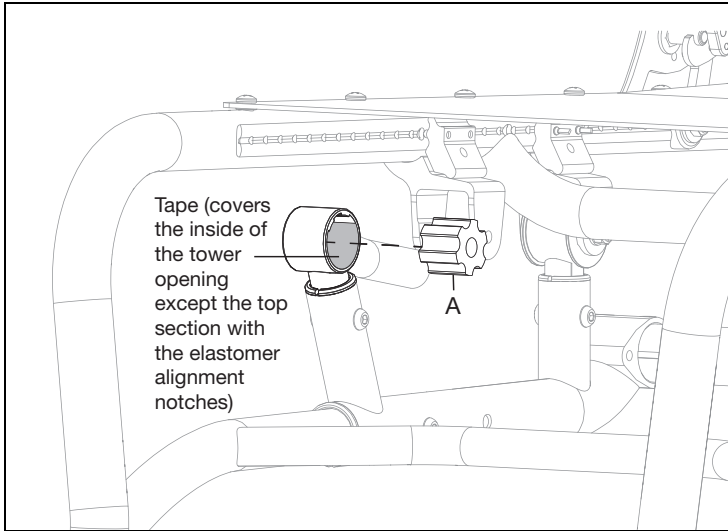


ISO Tech Polymer Replacement

- Push the elastomers (A) that you are replacing, out of the tower and push in new elastomers. Ensure edges of elastomer line up with the groove inside the tower. See the chart below to help determine which elastomers suit the type of ride you desire, soft or firm, based on the user weight and the chair center of gravity. The elastomer part number and color are called out in the chart. See image below chart for illustration.

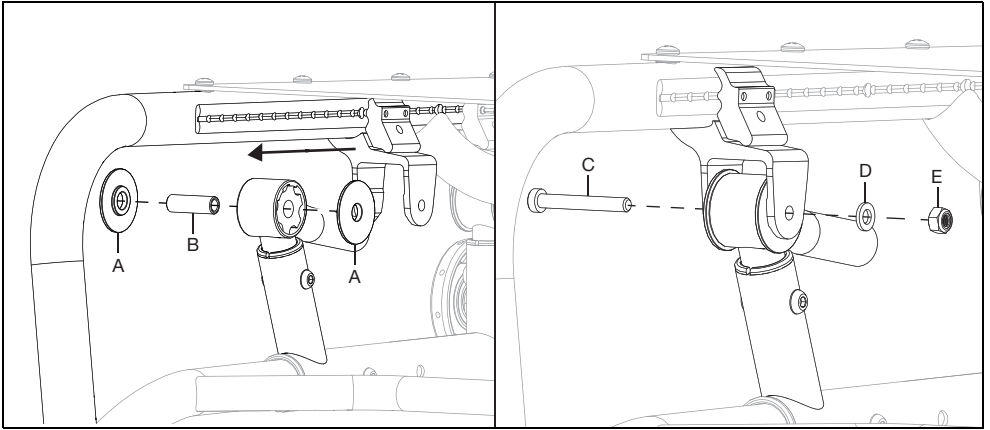
NOTE: There is tape inside of the tower. Ensure the tape is still in place while installing the new elastomer.

Soft Setup				
User Weight	Center of Gravity			
	-1.5 to 1	1.25 to 2	2.25 to 3	3.25 to 4.25
100-120 lb (45-54 kg)	003860 (BLUE)	003859 (RED)	003859 (RED)	003859 (RED)
121-165 lb (55-75 kg)	004544 (BLACK)	003860 (BLUE)	003860 (BLUE)	003860 (BLUE)
166-209 lb (75-95 kg)	004544 (BLACK)	004544 (BLACK)	004544 (BLACK)	004544 (BLACK)
210-275 lb (95-125 kg)	004545 (GREEN)	004544 (BLACK)	004544 (BLACK)	004544 (BLACK)
Firm Setup				
User Weight	Center of Gravity			
	-1.5 to 1	1.25 to 2	2.25 to 3	3.25 to 4.25
100-120 lb (45-54 kg)	004544 (BLACK)	003860 (BLUE)	003860 (BLUE)	003860 (BLUE)
121-165 lb (55-75 kg)	004545 (GREEN)	004544 (BLACK)	004544 (BLACK)	004544 (BLACK)
166-209 lb (75-95 kg)	004545 (GREEN)	004545 (GREEN)	004545 (GREEN)	004545 (GREEN)
210-275 lb (95-125 kg)	004545 (GREEN)	004545 (GREEN)	004545 (GREEN)	004545 (GREEN)



ISO Tech Polymer Replacement

3. Reinstall the two washers (A) and insert (B) and slide the ISO Tech Tower back over to keep hardware in place. Reinstall bolt (C), washer (D) and nut (E) using a 4mm Allen wrench and a 10mm wrench to secure ISO Tech Tower in place. Repeat on opposite ISO Tech Tower.



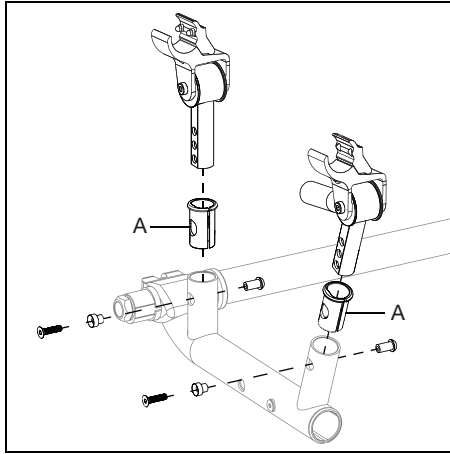
4. Repeat the steps, if needed, on the rear ISO Tech Towers.

Highlight Kit

This section will show to replace/switch the bushings that are a part of the highlight kits.

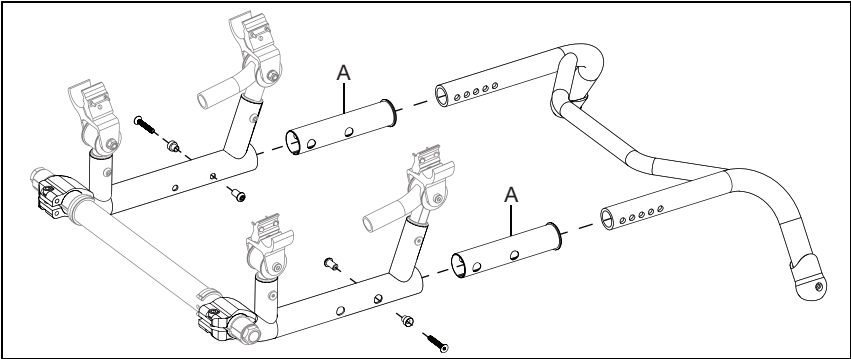
Vertical Bushings

1. The four vertical bushings (A) are accessed by removing two screws and a barrel nut on the ISO tech towers using two 3mm Allen wrenches.



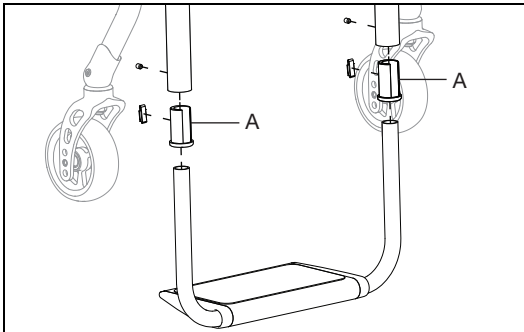
Base Frame Bushings

1. The base frame bushings (A) are accessed by removing the two screws and a barrel nut on the base frame using two 3mm Allen wrenches.



Footrest Bushings

1. The footrest bushings (A) are accessed by removing the two set screws and the two screw plates using a 4mm Allen wrench.



Center of Gravity (COG) and Caster Position

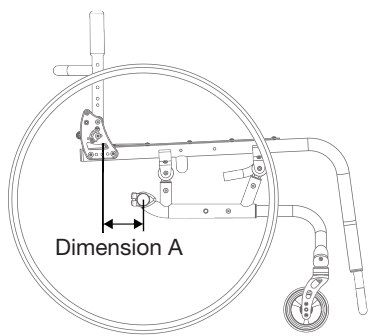
The Center of Gravity (COG) and Caster Position are related to each other. The process of making both adjustments is demonstrated below. See the diagrams and charts below to determine the holes used to reach desired configuration. See the diagrams on page 19 for the actual process of adjusting/switching the parts involved.

NOTE: There are 4" of possible adjustment on the front base frame in 1/4" increments (see image on next page). It can be adjusted to correspond with Center of Gravity (COG) or it can be done separately to control the size of the wheel base. There are 4" of possible adjustment on the caster position in 1/2 increments.

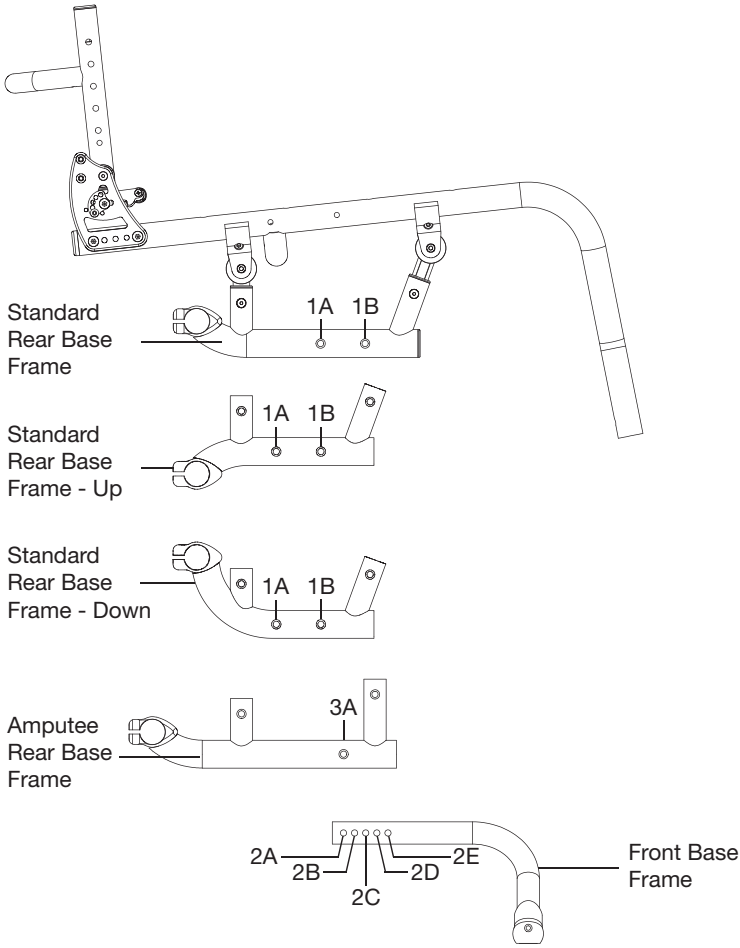
Default Center of Gravity Range	
CG Preset	Default Range
0" to 1.5"	+3" to -1"
1.75" to 3"	+2" to -2"
3.25" to 4.25"	+1" to -3"

Depth	Range	Center of Gravity Standard Position Setup																	
		0"	.25"	.5"	.75"	1"	1.25"	1.5"	1.75"	2"	2.25"	2.5"	2.75"	3"	3.25"	3.5"	3.75"	4"	4.25"
14"	+1 to -3																		
	+2 to -2																		
	+3 to -1																		
	+4 to 0																		
15"	+1 to -3																		
	+2 to -2																		
	+3 to -1																		
	+4 to 0																		
16" 17" 18"	+1 to -3																		
	+2 to -2																		
	+3 to -1																		
	+4 to 0																		
19" 20"	+1 to -3																		
	+2 to -2																		
	+3 to -1																		
	+4 to 0																		

Center of Gravity (COG) and Caster Position



Dimension A - Distance from front of back post to center of rear axle.



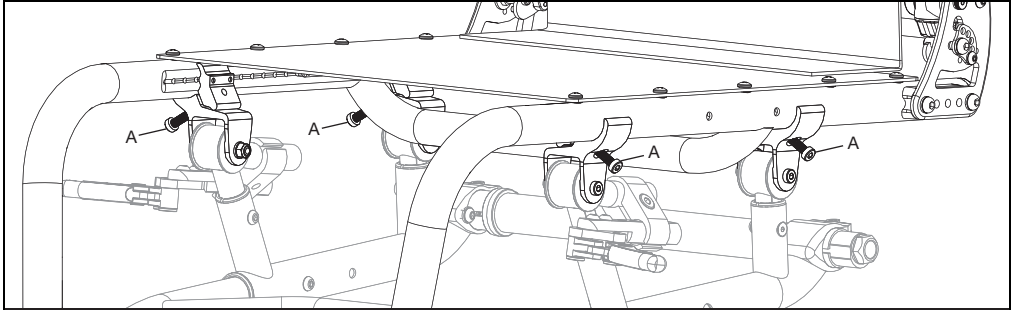
Center of Gravity (COG) and Caster Position

1. To change Dimension A for a Center of Gravity adjustment, loosen the four ISO clamp screws (A) using a 5mm Allen wrench. Slide the seat frame to desired position and retighten the four ISO clamp screws.



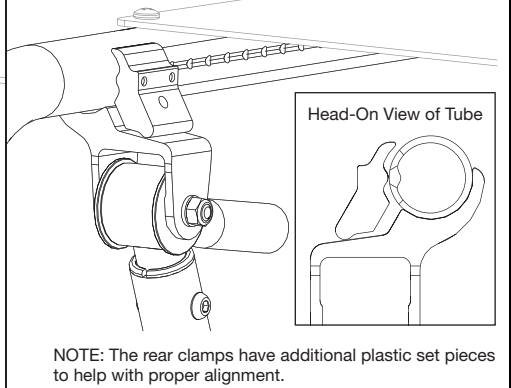
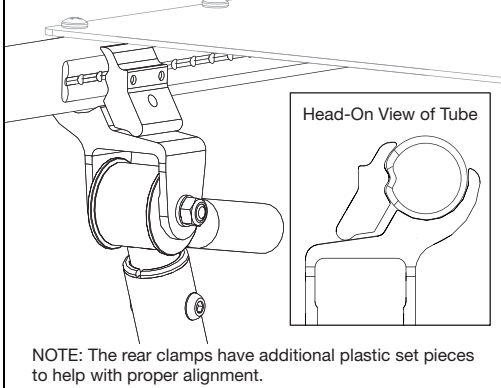
WARNING

WARNING: Incorrect mounting can cause seat frame to disengage from clamp which could result in a fall. A fall could result in damage to the chair or in serious injury or death.

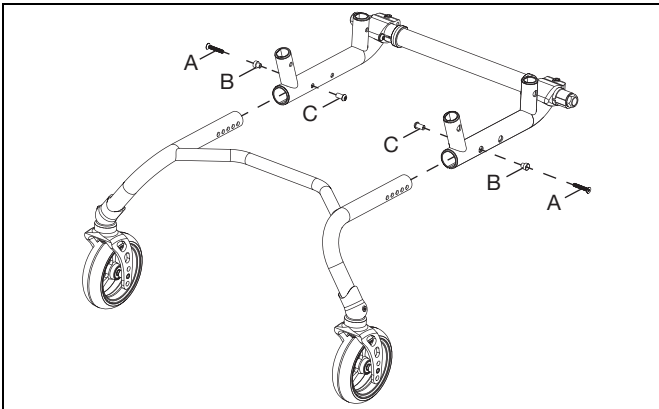


Correct Mounting - Clamps are mounted correctly in the grooved track. Mounting the clamp directly in the grooved track allows the clamp detent to properly align with groove.

Incorrect Mounting - Clamps are mounted past the edge of the grooved track. Mounting the clamp directly on the round tube prevents detent from properly aligning in the groove.



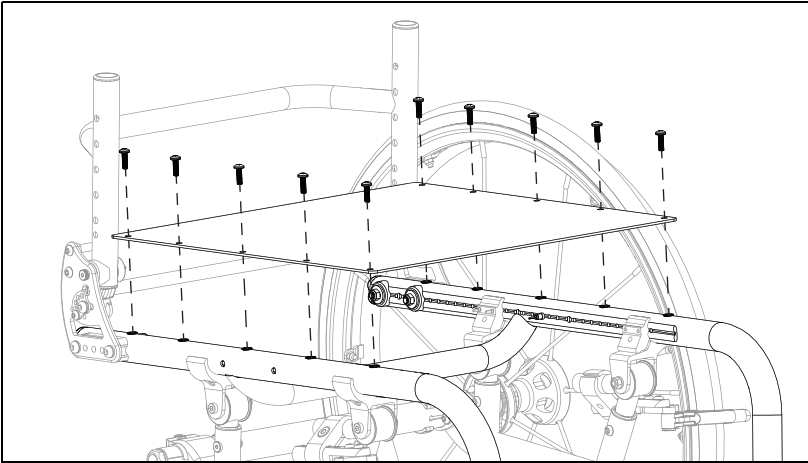
2. Change the caster position/front base frame by removing screw (A), barrel (B) and barrel nut (C) on both sides of the base frame using two 3mm Allen wrenches.



3. Slide the front base frame to the new desired configuration, based off the charts shown before, and reinstall hardware or install new front base frame into desired configuration and secure with hardware.

Changing Seat Pan

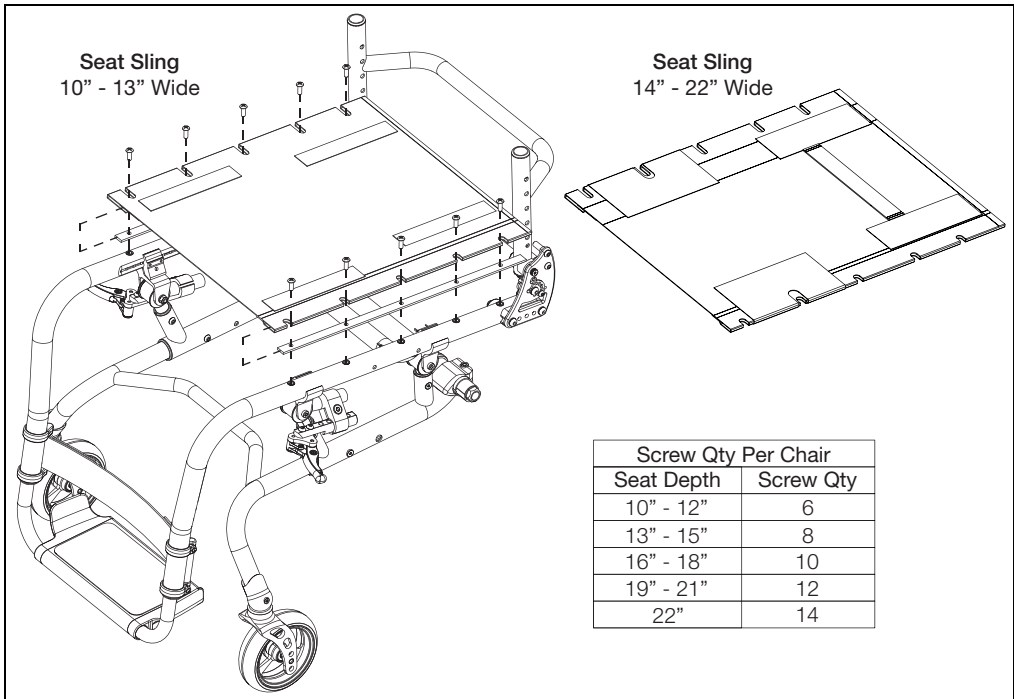
1. Remove seat pan by removing screws using a #2 Phillips screwdriver.
2. Install new seat pan with screws removed in step using a #2 Phillips screwdriver.



Changing Seat Sling

1. Remove seat sling by removing screws using a #2 Phillips screwdriver.
2. Install seat rails into pockets on both sides of new seat sling.
3. Install new seat sling and rails onto chair using a #2 Phillips screwdriver. See the diagram and chart below.

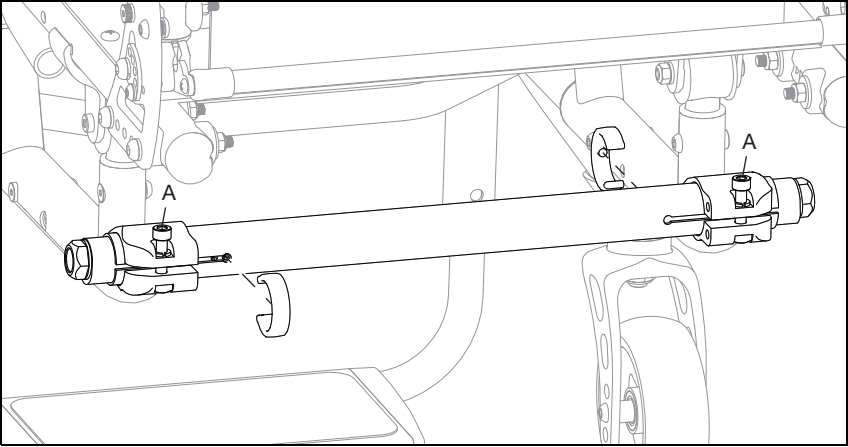
NOTE: Spacers are installed under seat rail when T-Arm is used. See T-Arm section for image.



Installing and Adjusting Anti-Tips

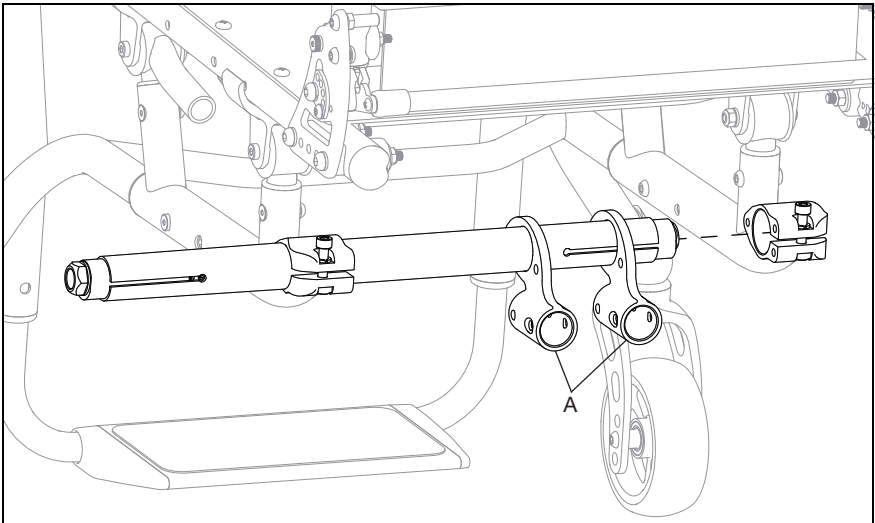
Rear Anti-Tips

1. Remove wheels.
2. Remove camber clips off of both sides of camber tube. Loosen the hardware on the camber tube clamps using a 5mm Allen wrench.



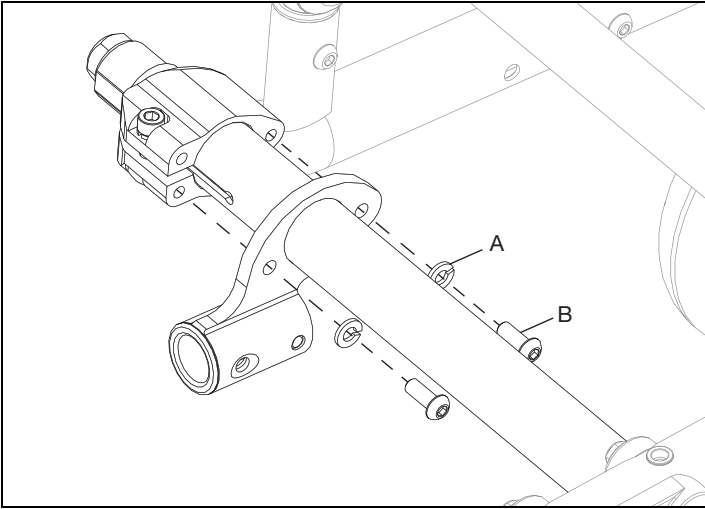
3. Slide the camber tube out of one side of the camber tube clamp. Slide the two anti-tip receivers (A) onto the camber tube and slide the camber tube back through the camber tube clamp.

NOTE: Keep camber plugs with camber tube. The camber plugs will be reinstalled in the proper place in a later step.



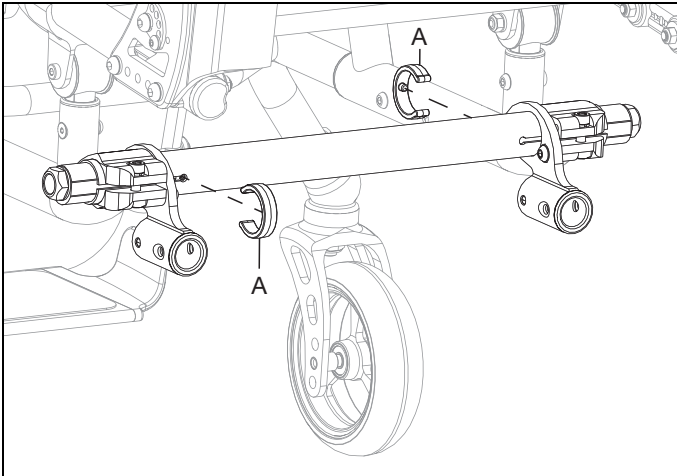
Installing and Adjusting Anti-Tips

4. Mount the anti-tip receivers flush against the camber tube clamps so the holes align and loosely secure in place with two bolts (B) and two lock washers (A) using a 4mm Allen wrench. Do not tighten hardware fully yet. Repeat on opposite side.



5. Reinstall camber tube clips (A). With clips in place, tighten hardware from step 4 fully.

NOTE: The camber tube clips are always orientated so the left clamp faces the front of the chair and the right clamp faces the rear of the chair.

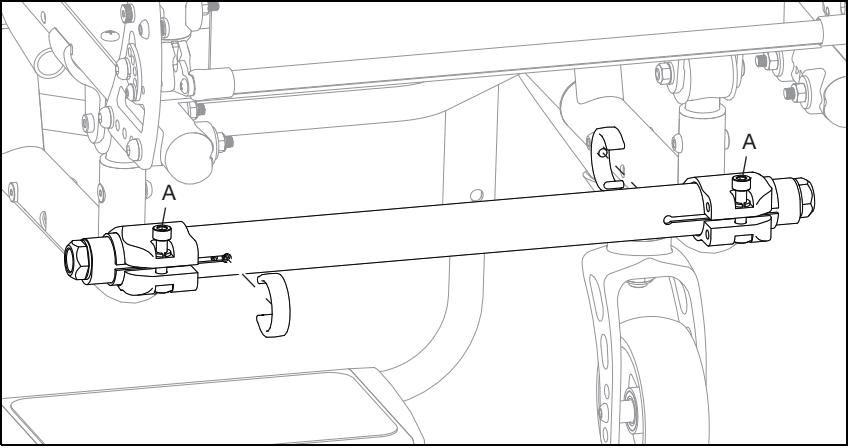


6. Install anti-tip assemblies into anti-tip receivers. The user can then use the owner manual to adjust the anti-tips as needed. The recommended clearance between ground and the anti-tip is 1.5" to 2".
7. Reinstall wheels.

Installing and Adjusting Anti-Tips

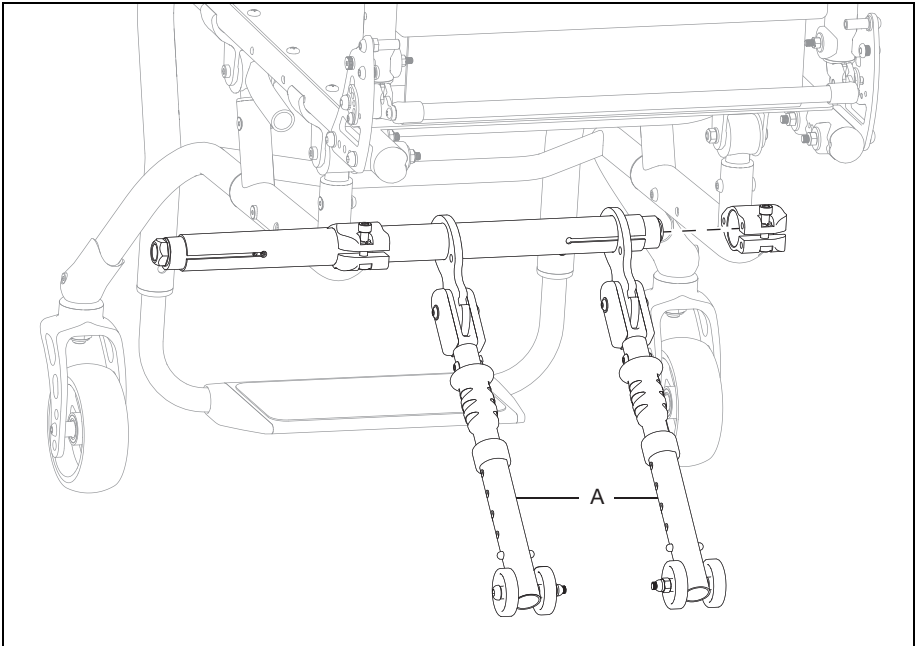
User Activated Anti-Tips

1. Remove wheels.
2. Remove camber clips off of both sides of camber tube. Loosen the hardware on the camber tube clamps using a 5mm Allen wrench.



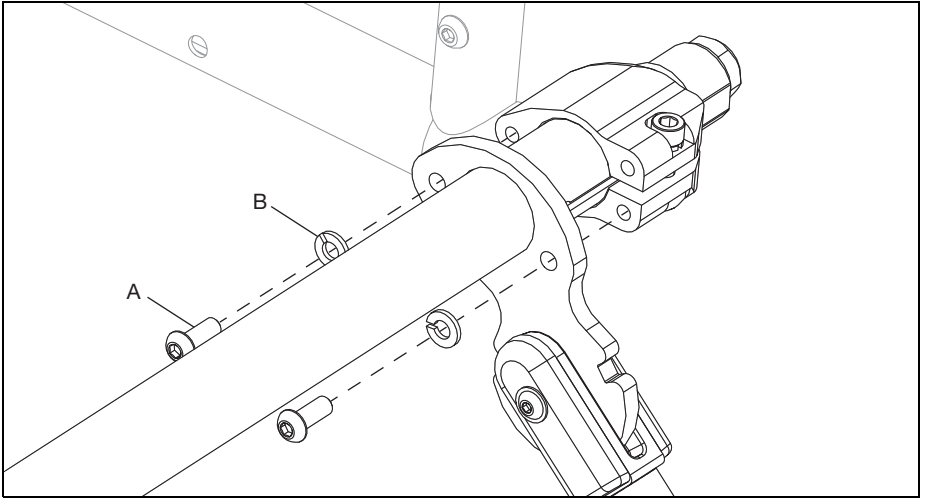
3. Slide the camber tube out of one side of the camber tube clamp. Slide the two user activated anti-tips (A) onto the camber tube and slide the camber tube back through the camber tube clamp.

NOTE: Keep camber plugs with camber tube. The camber plugs will be reinstalled in the proper place in a later step.



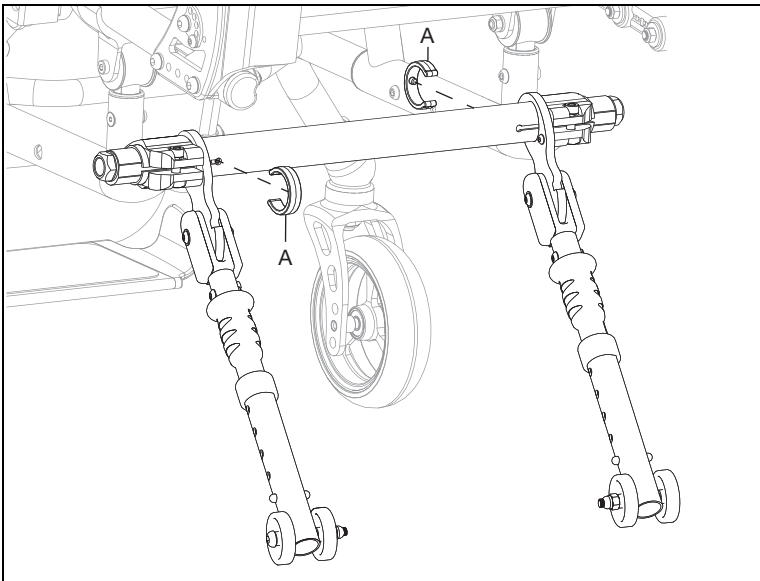
Installing and Adjusting Anti-Tips

4. Mount the User Activated anti-tip receivers flush against the camber mounts so the holes align and loosely secure in place with two bolts (A) and two lock washers (B) using a 4mm Allen wrench. Do not tighten hardware fully yet. Repeat on opposite side.



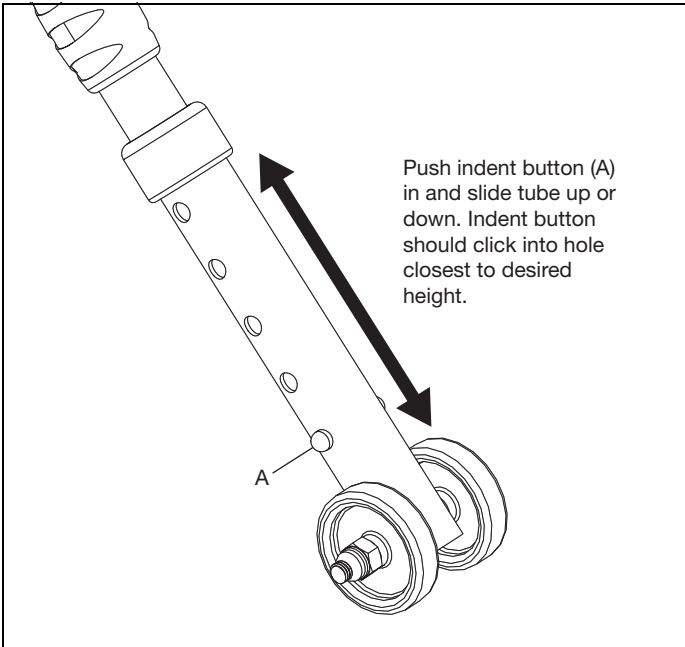
5. Reinstall camber tube clips (A). With clips in place, tighten hardware from step 4 fully.

NOTE: The camber tube clips are always orientated so the left clamp faces the front of the chair and the right clamp faces the rear of the chair.



Installing and Adjusting Anti-Tips

6. User Activated anti-tip height can be adjusted by extending the tube by pushing the indent button (A) and sliding tube up or down until indent button clicks into one of the holes.

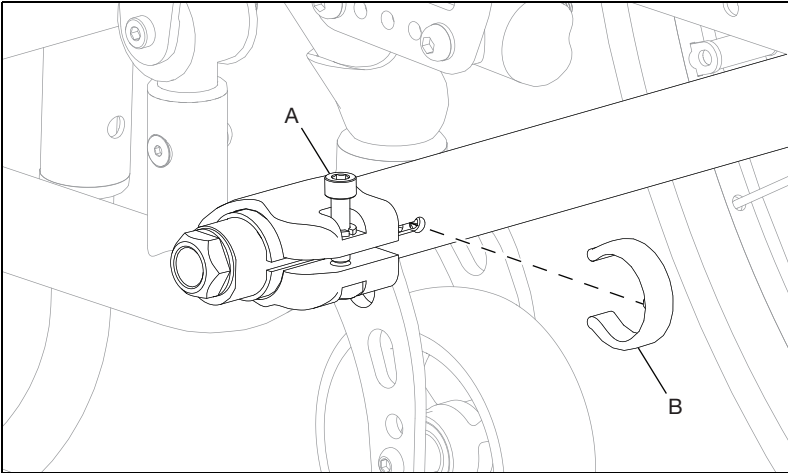


7. The user can use the owner manual to adjust the anti-tips and see the procedure for flipping up and down as needed. The recommended clearance between ground and the anti-tip is 1.5" to 2".

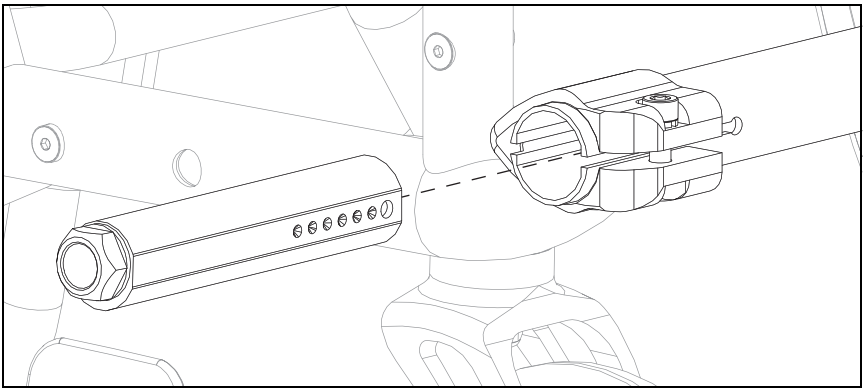
Camber and Camber Tube

Changing Wheel Camber

1. Remove wheels.
2. Remove camber tube clips (B) and loosen camber tube clamp screws (A) using a 5mm Allen wrench.

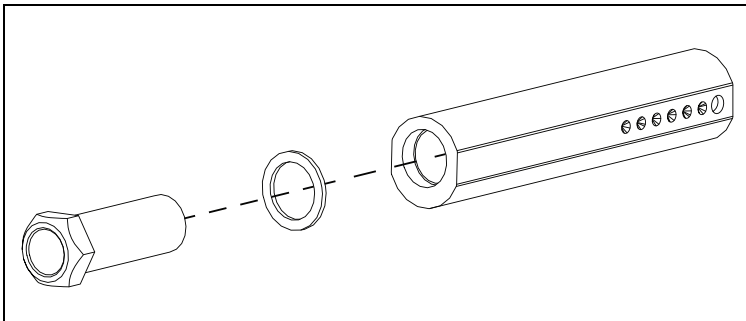


3. Remove camber plug assembly from camber tube.



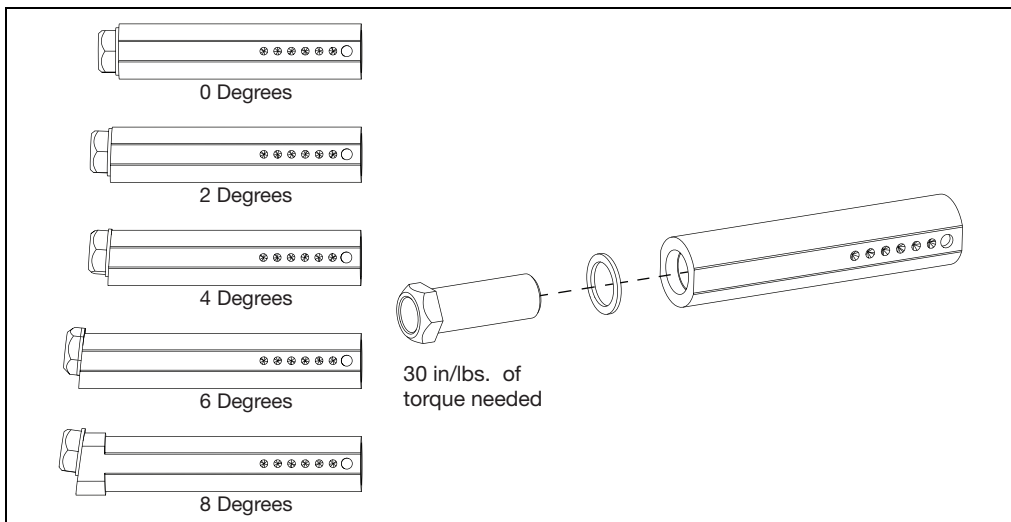
4. Remove axle sleeve and washer from camber plug using an adjustable wrench.

NOTE: Camber plug may be ordered in a complete assembly. If so, skip this step and continue to next.



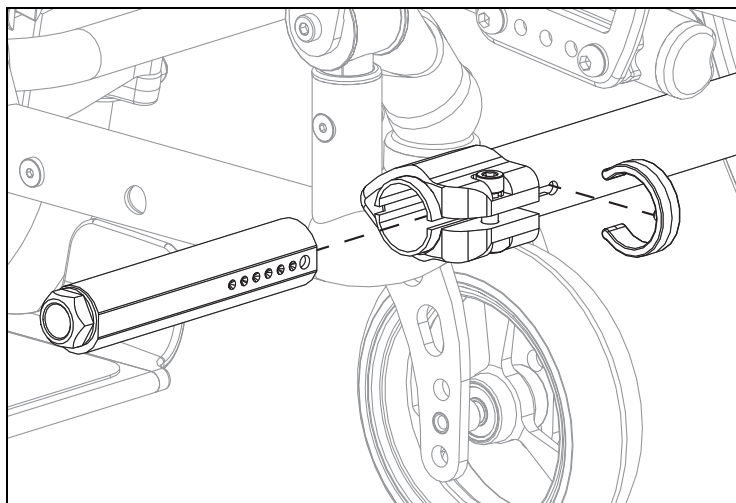
Camber and Camber Tube

5. Install the axle sleeve and washer into the new camber plug using an adjustable wrench. Camber plugs come in five different degree variants from 0 to 8 degrees in two degree increments.



6. Reinstall camber plug assembly into camber tube to desired rear wheel spacing and secure by reinstalling camber clip.

NOTE: The dimples on the camber plug face out toward the camber clip, so the left camber plug dimples face the rear of the chair and the right camber plug dimples face the front of the chair. See the Setting Toe to Zero section for more information if needed. See image on Page 29 at the bottom of the page for an image referring to the camber plug dimples and spacing if needed.



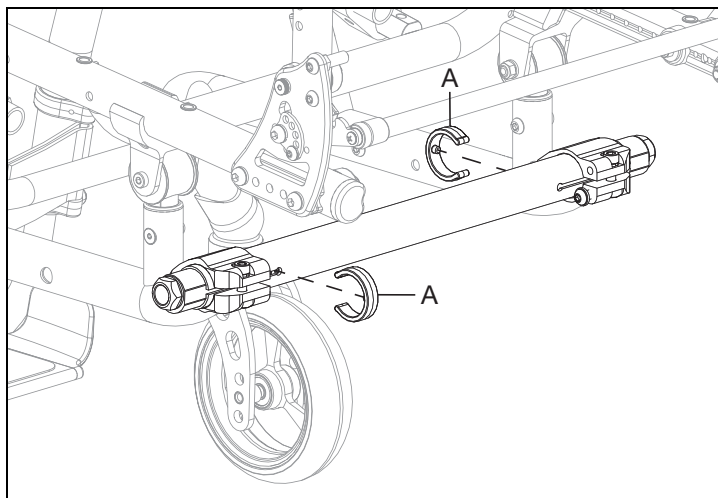
7. Repeat steps on opposite side and reinstall wheels.

NOTE: Each camber plug provides rear wheel spacing adjustment from .75" to 1.75" in quarter inch increments. In extreme rear wheel spacing requirements, an additional 1/2" spacer can be used to reach a maximum spacing of 2.25".

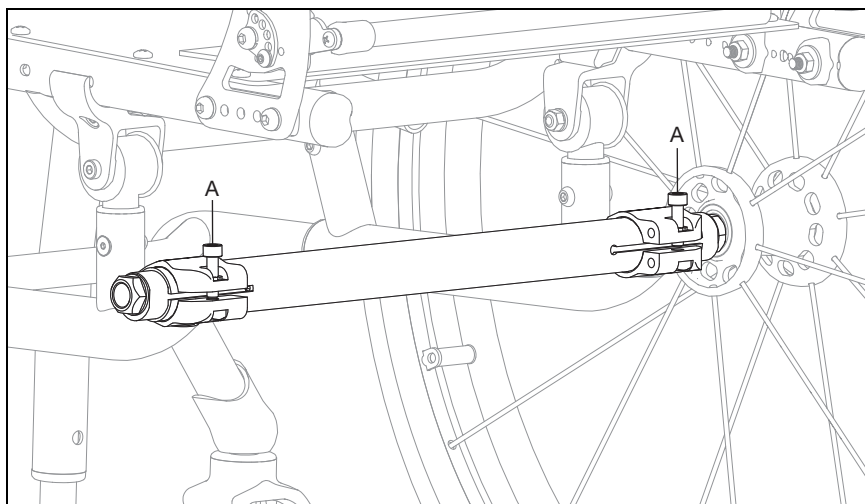
Camber and Camber Tube

Changing Camber Tube

1. Remove camber clips (A).

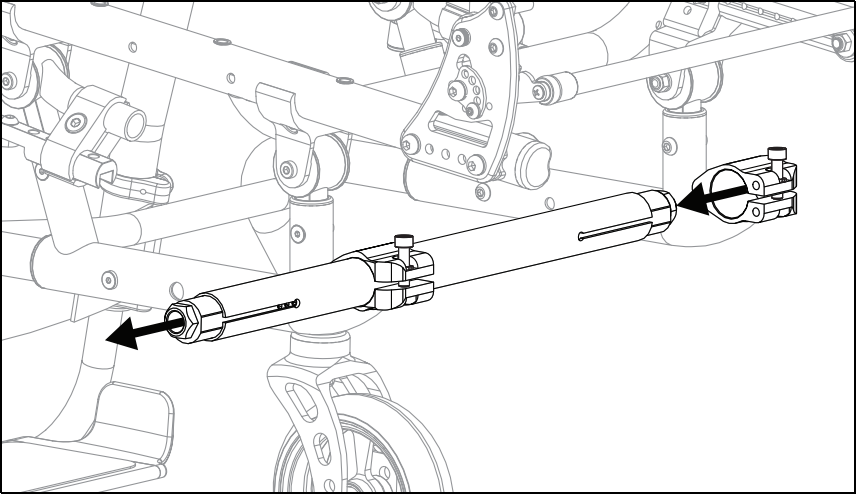


2. Loosen two bolts (A) on the camber clamps using a 5mm Allen wrench. If loosened too much, be sure to watch for the square nut in case it drops out.

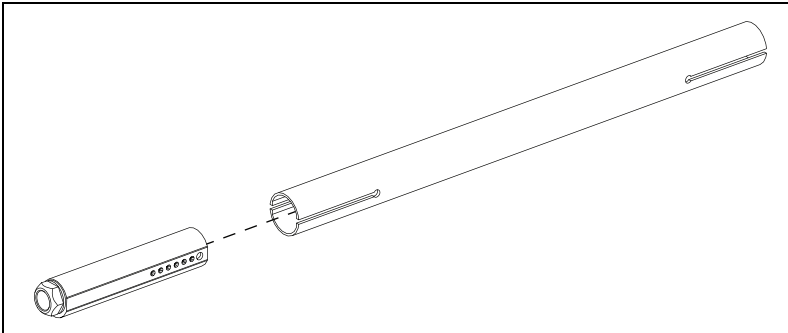


Camber and Camber Tube

3. Slide the camber tube assembly out of the camber clamps.

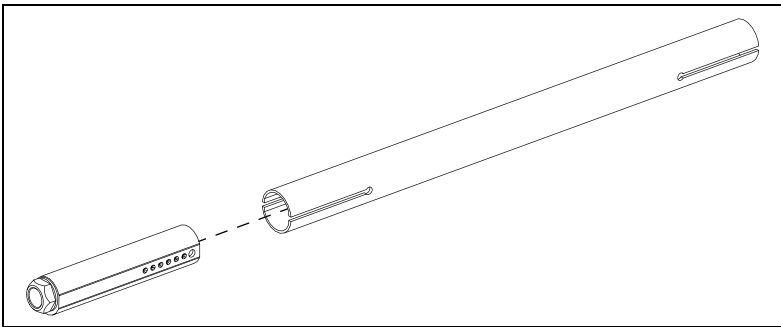


4. Slide the camber plug assembly out of the camber tube.



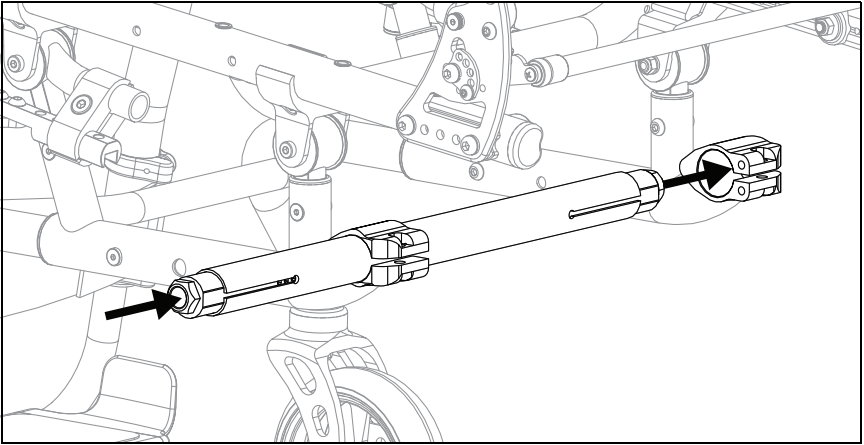
5. Reinstall camber plug assembly into the new camber tube.

NOTE: Camber tubes are available in 12", 13", 14", 15", 16", 17", 18", 19" and 20" sizes which correspond with the chair width.



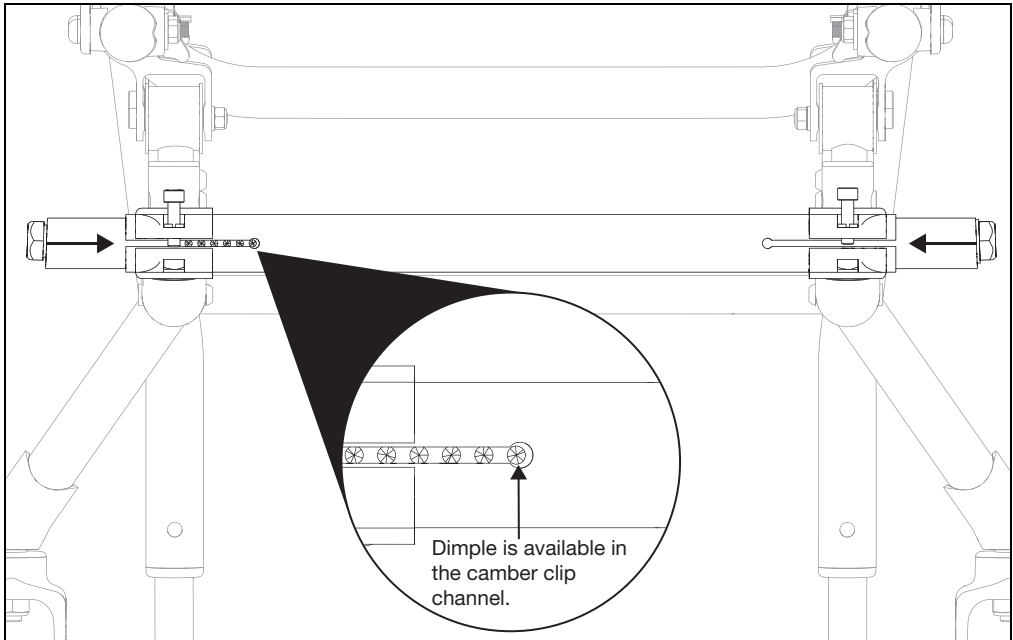
Camber and Camber Tube

- Slide the camber tube assembly into the camber clamps and center the camber tube.



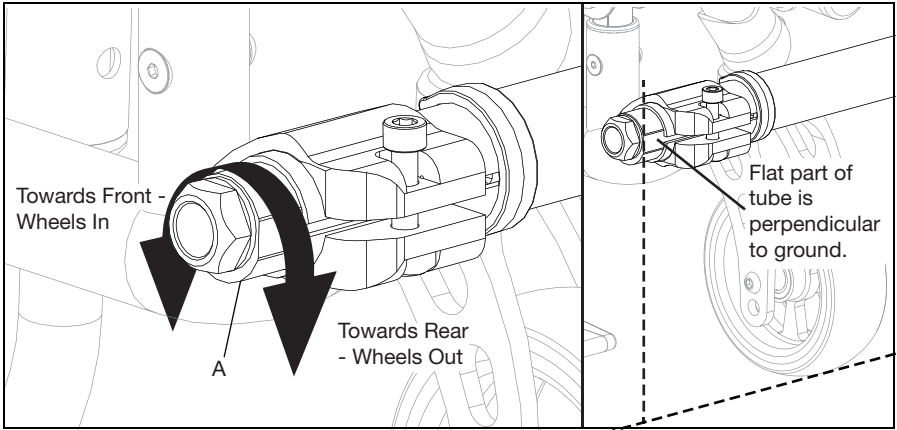
- Slide the camber plugs to the desired rear wheel spacing. Repeat on opposite side and ensure the spacing is the same on both sides.

NOTE: The dimples on the camber plugs demonstrate the amount of spacing available on the camber plug in 1/4" increments. The camber plug can be adjusted as long as a dimple is still available for the camber clips to align with.

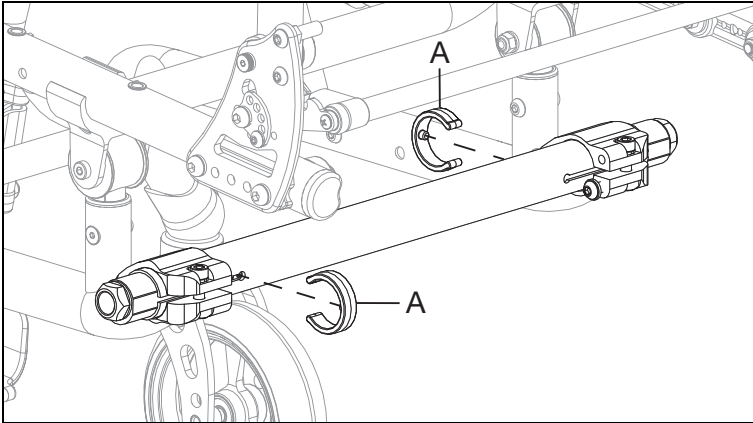


Camber and Camber Tube

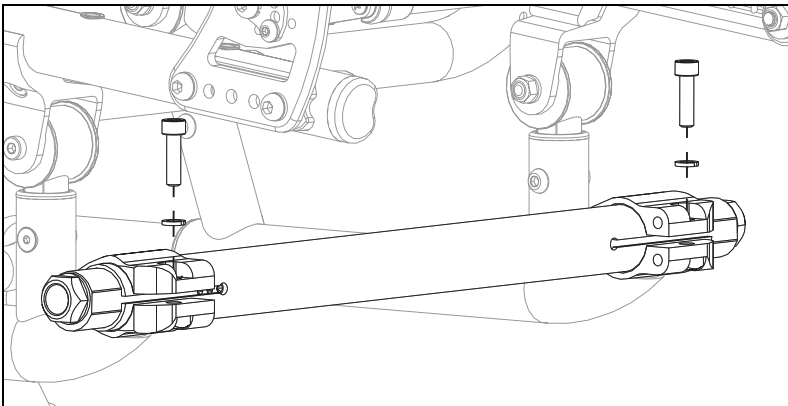
8. Ensure the flat sides of the camber tube are perpendicular to the ground. See the Setting Toe to Zero section if needed. See image below.



9. Reinstall camber clips onto camber tube.



10. Secure camber tube assembly in place by reinstalling two bolts and two washers into the camber clamps using a 5mm Allen wrench.



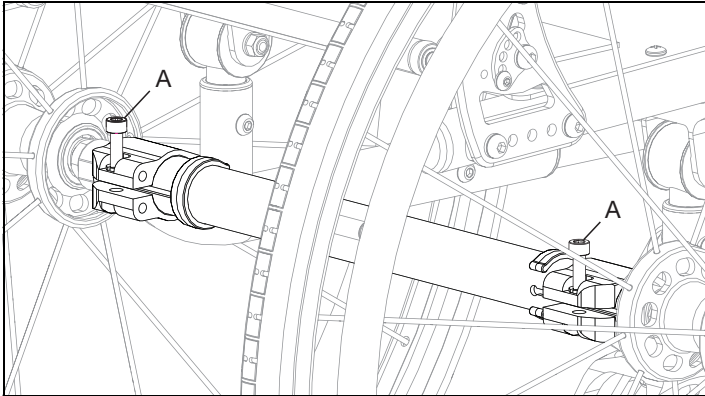
Setting Toe to Zero

NOTE: A wheelchair equipped with 0° camber plugs cannot have a toe-in toe-out condition. This adjustment is only required when using 2°, 4°, 6° and 8° camber adapters.

Toe refers to how well the rear wheels of the chair are aligned relative to the ground. It affects how well the chair will roll. Drag or rolling resistance is optimally minimized when the wheel toe is set to zero.

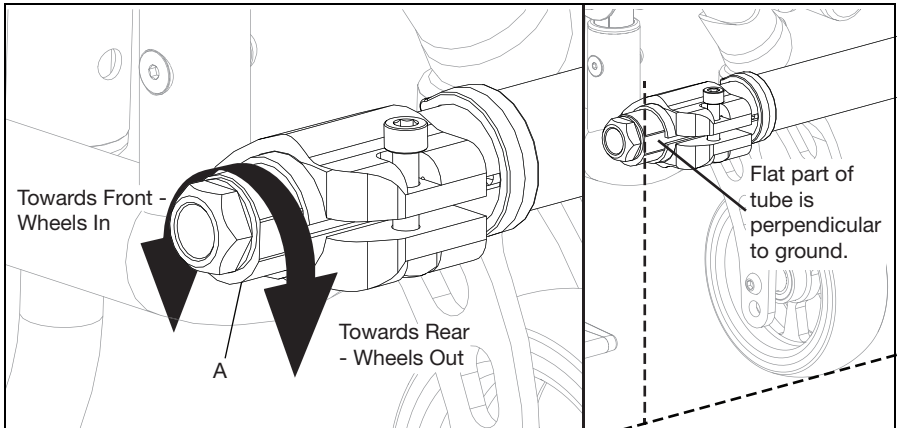
To Set Toe to Zero:

1. Remove wheels and camber tube clips.
2. Loosen the two bolts (A) on the camber clamp using a 5mm Allen wrench. If loosened too much, be sure to watch for the square nut in case it drops out.



3. Rotate the camber tube (A). Rotating towards the front of the chair changes the angle of the wheels in and rotating towards the rear of the chair changes the angle of the wheels out.

NOTE: The flat sides of the camber tube should be perpendicular to the ground. See image below.



4. Reinstall wheels. Ensure camber tube is still set in the same position on the left and right side and retighten the two bolts on the camber clamp.

Caster Adjustment

Caster angle adjustment is only required for a change to rear wheel size, 6° of change in camber, change of caster size and/or change to caster position in fork. See the two tables below for information on going from your existing option to the new option.

NOTE: Ethos chairs ship with a zero degree insert.

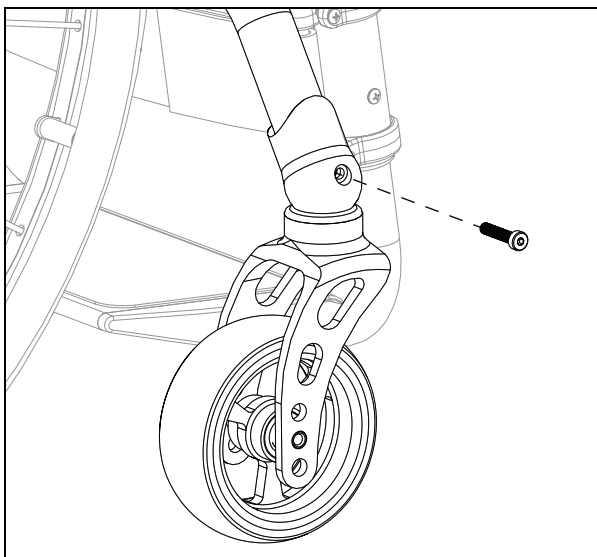
NOTE: Changes that are equal or less than a ½" of vertical change should not require an angle sleeve change.

		New Option								
Existing Option	Fork	Caster Diameter	Standard	Standard	Standard	Standard	Single Sided	Single Sided	Single Sided	Single Sided
			3	4	5	6	3	4	5	6
	Standard	3	0°	1°	1°	0°	1°	0°	0°	1°
	Standard	4	1°	0°	0°	1°	2°	1°	1°	2°
	Standard	5	1°	0°	0°	1°	2°	1°	1°	2°
	Standard	6	0°	1°	1°	0°	1°	0°	0°	1°
	Single Sided	3	1°	2°	2°	1°	0°	1°	1°	0°
	Single Sided	4	0°	1°	1°	0°	1°	0°	0°	1°
	Single Sided	5	0°	1°	1°	0°	1°	0°	0°	1°
	Single Sided	6	1°	2°	2°	1°	0°	1°	1°	0°
	Frog Leg	3	2°	N/A	N/A	2°	1°	2°	2°	1°
	Frog Leg	4	1°	2°	2°	1°	0°	1°	1°	0°
	Frog Leg	5	1°	2°	2°	1°	0°	1°	1°	0°
	Frog Leg	6	2°	N/A	N/A	2°	1°	2°	2°	1°
	Frog Phase 2	3	2°	N/A	N/A	2°	1°	2°	2°	1°
	Frog Phase 2	4	1°	2°	2°	1°	0°	1°	1°	0°
	Frog Phase 2	5	1°	2°	2°	1°	0°	1°	1°	0°
Frog Phase 2	6	2°	N/A	N/A	2°	1°	2°	2°	1°	

		New Option								
Existing Option	Fork	Caster Diameter	Frog Leg	Frog Leg	Frog Leg	Frog Leg	Frog Phase 2	Frog Phase 2	Frog Phase 2	Frog Phase 2
			3	4	5	6	3	4	5	6
	Standard	3	2°	1°	1°	2°	2°	1°	1°	2°
	Standard	4	N/A	2°	2°	N/A	N/A	2°	2°	N/A
	Standard	5	N/A	2°	2°	N/A	N/A	2°	2°	N/A
	Standard	6	2°	1°	1°	2°	2°	1°	1°	2°
	Single Sided	3	1°	0°	0°	1°	1°	0°	0°	1°
	Single Sided	4	2°	1°	1°	2°	2°	1°	1°	2°
	Single Sided	5	2°	1°	1°	2°	2°	1°	1°	2°
	Single Sided	6	1°	0°	0°	1°	1°	0°	0°	1°
	Frog Leg	3	0°	1°	1°	0°	0°	1°	1°	0°
	Frog Leg	4	1°	0°	0°	1°	1°	0°	0°	1°
	Frog Leg	5	1°	0°	0°	1°	1°	0°	0°	1°
	Frog Leg	6	0°	1°	1°	0°	0°	1°	1°	0°
	Frog Phase 2	3	0°	1°	1°	0°	0°	1°	1°	0°
	Frog Phase 2	4	1°	0°	0°	1°	1°	0°	0°	1°
	Frog Phase 2	5	1°	0°	0°	1°	1°	0°	0°	1°
Frog Phase 2	6	0°	1°	1°	0°	0°	1°	1°	0°	

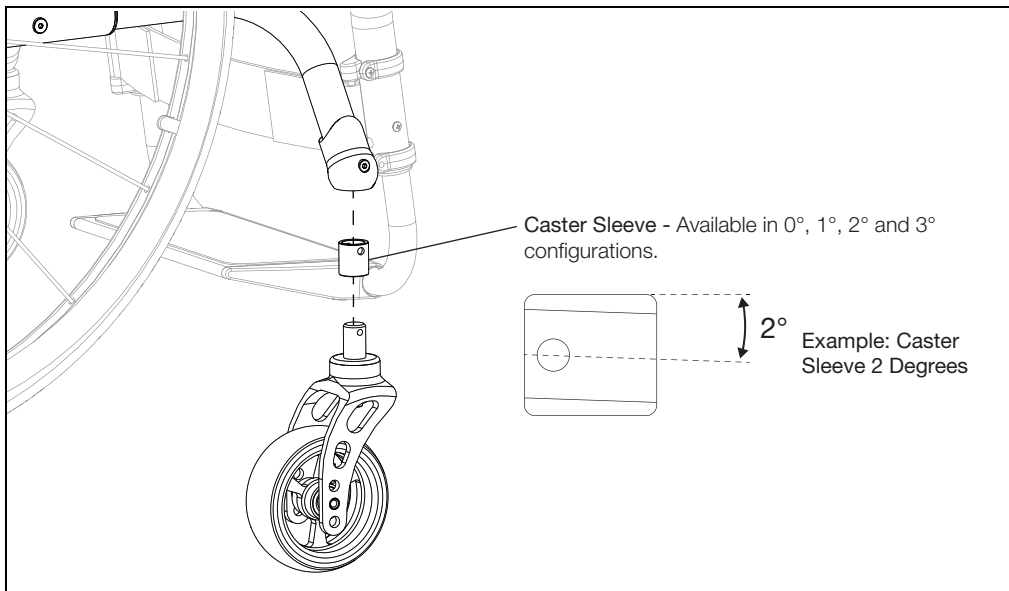
Caster Adjustment

1. Remove screw on caster mount with a 3mm Allen wrench.



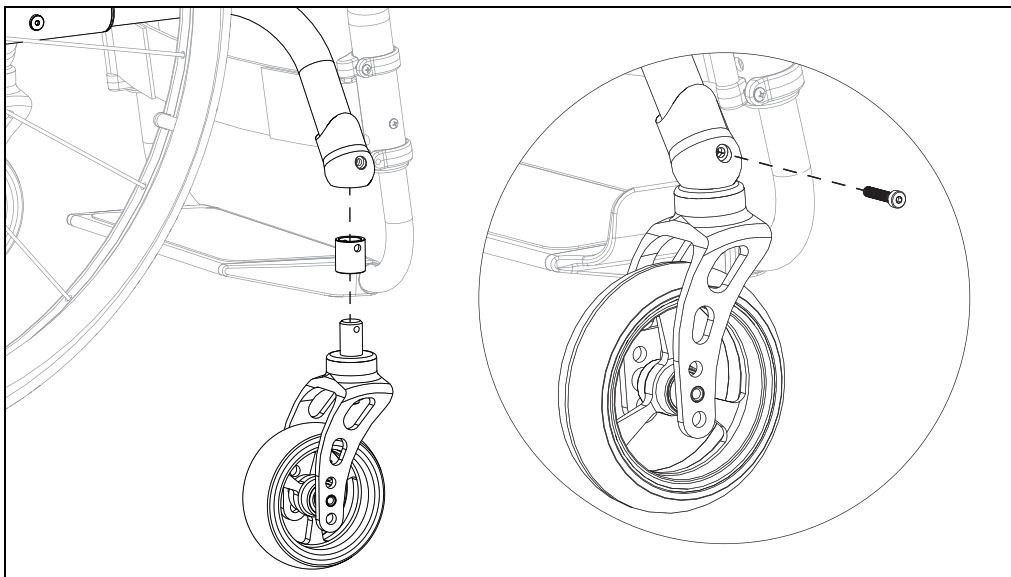
2. Replace the caster sleeve with the new caster sleeve based on the angle adjustment desired. See image below for more details.

NOTE: As a result of changes to chair setup and to resquare casters, a change to the caster sleeve may be required. Every 1/4" change in rear seat height will require a 1 degree change in caster sleeve.



Caster Adjustment

3. Reinstall caster sleeve onto caster wheel assembly and install into the caster mount and caster arm. Secure with screw using a 4mm Allen wrench.

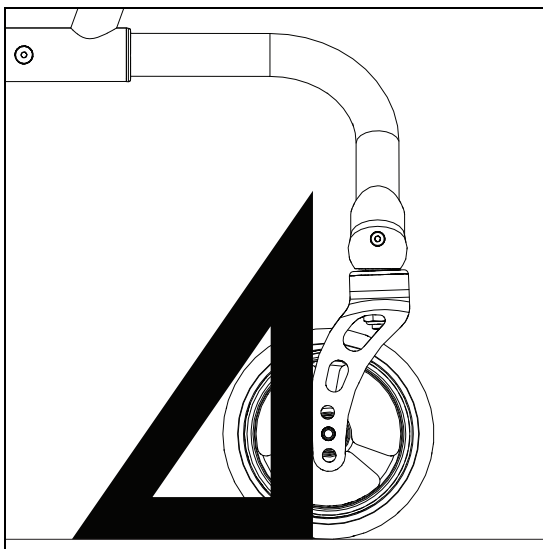


4. Repeat steps on opposite side.
5. Verify correct angle has been achieved.

NOTE: The caster housing is recommended to be at a 90° angle to the floor (perpendicular to the ground) for optimum performance.

NOTE: Ensure base frame is parallel to the ground. Front and rear seat heights are adjusted through the ISO Tech Towers.

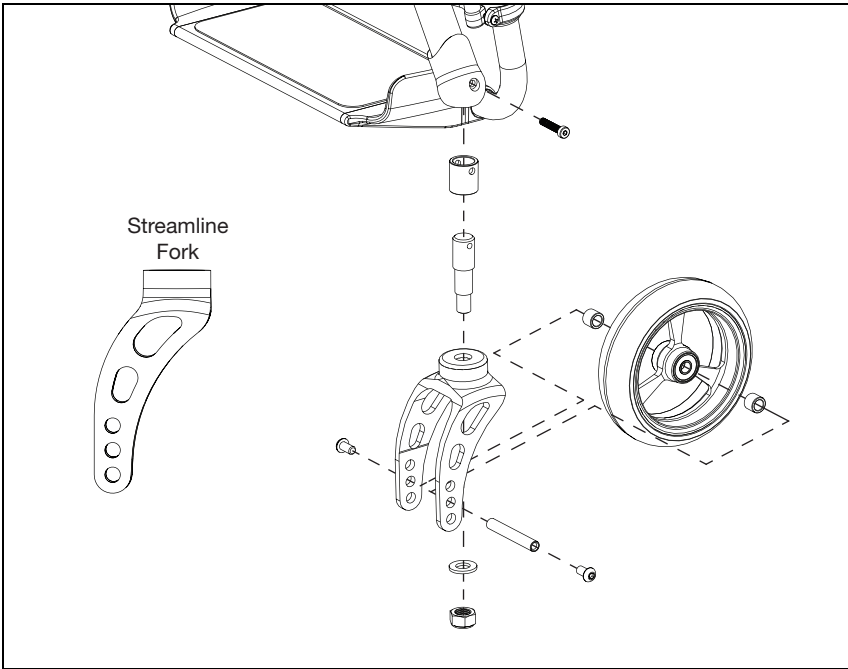
NOTE: The different holes in the forks can be used, when needed (Example: changes to wheel size, tire profile, fork style, etc), to help maintain the parallel relationship between the rear frame and the ground.



Caster Forks and Stems

Standard Forks

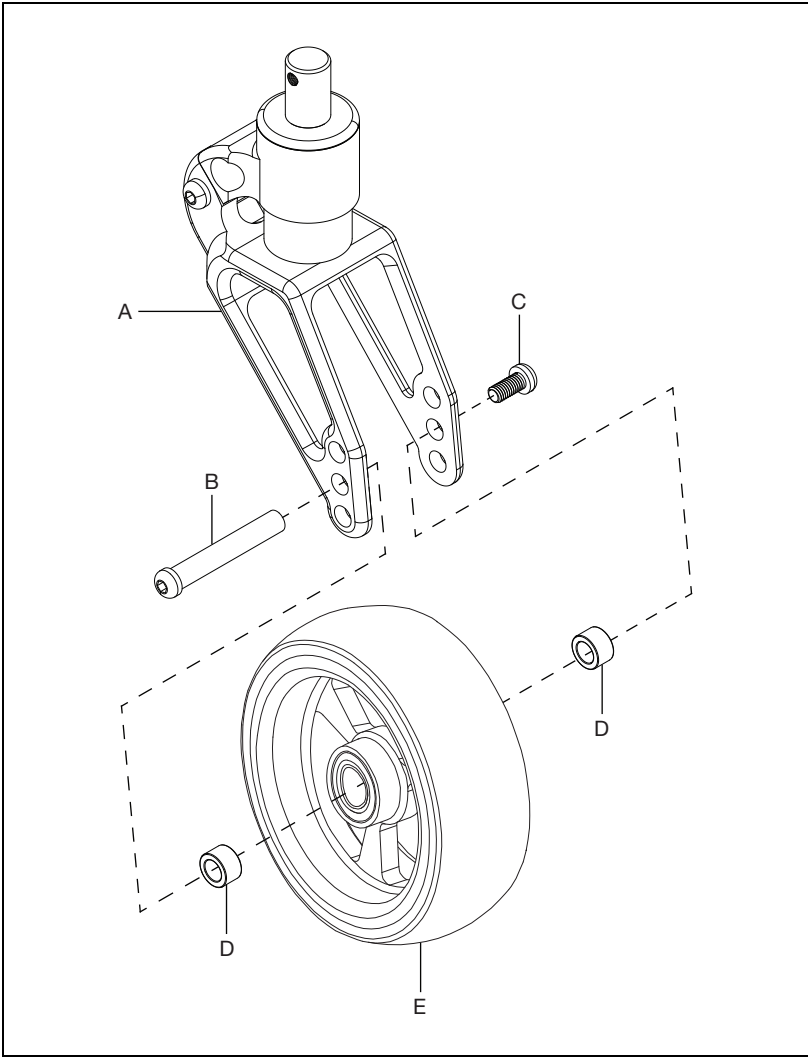
1. See the image below for an exploded diagram of an assembled caster wheel. Two 4mm Allen wrenches are needed to remove the two bolts that secure the caster wheel.



Caster Forks and Stems

Frog Legs Ultra Sport Fork Assembly

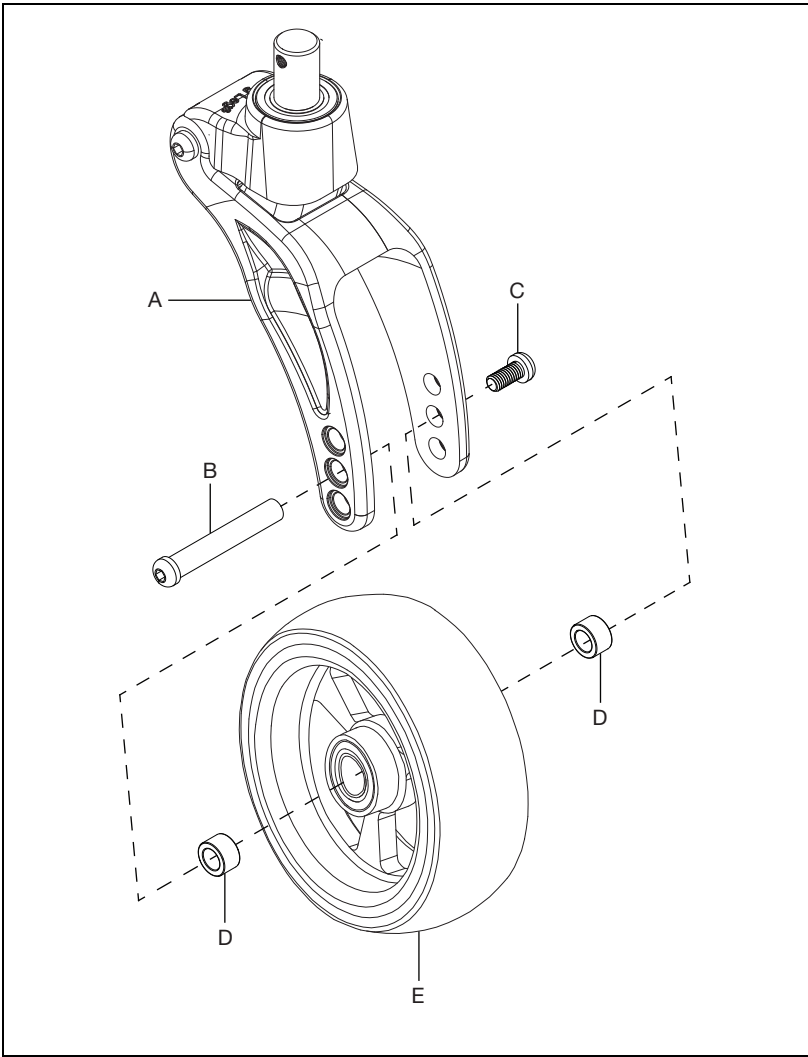
1. Install Frog Leg Ultra Sport Fork (A) onto caster wheel (E) with axle (B), screw (C) and two spacers (D) using two 4mm Allen wrenches.



Caster Forks and Stems

Frog Legs Phase 2 Carbon Fork Assembly

1. Install Frog Leg Phase 2 Carbon Fork (A) onto caster wheel (E) with axle (B), screw (C) and two spacers (D) using two 4mm Allen wrenches.

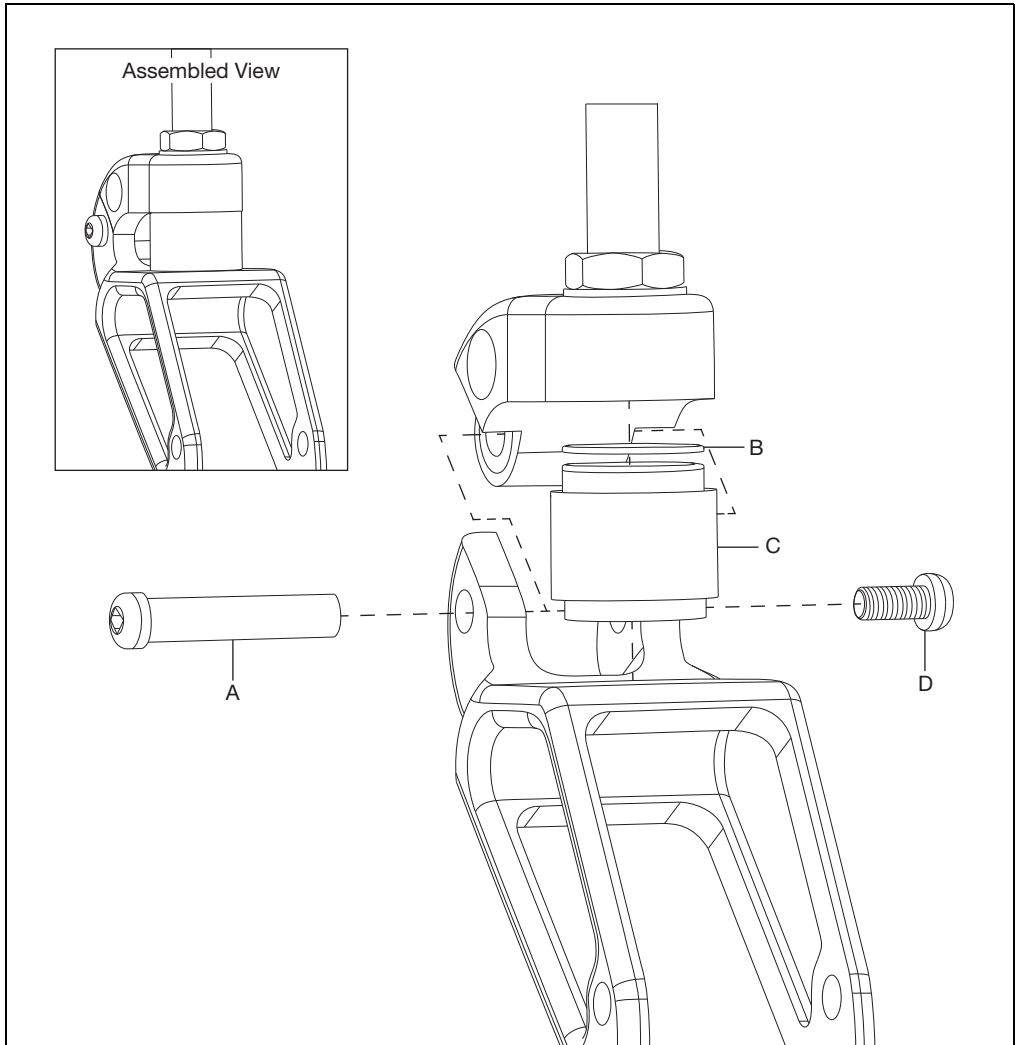


Caster Forks and Stems

Frog Legs Ultra Sport Fork Polymer Replacement

NOTE: The Ultra Sport fork has different polymers that can be used based on the chair user's weight and preferred ride. The Phase 2 fork has one polymer that works for any configuration. If ever needed, the replacement procedure is the same for a Phase 2, but no coin is needed.

1. Remove the pivot pin screw (D) using a 4mm Allen wrench.
2. Use a punch or small screwdriver and a rubber mallet to push the pivot pin (A) out.
3. Open the fork assembly and remove the polymer (C) and coin (B).
4. Install the new polymer (C) and coin (B).
5. Insert the pivot pin (A) back into the fork assembly. A punch or small screwdriver can be used to help align holes if needed.
6. Secure the assembly by reinstalling the pivot pin screw (D) using a 4mm Allen wrench.
7. Repeat steps on opposite side.



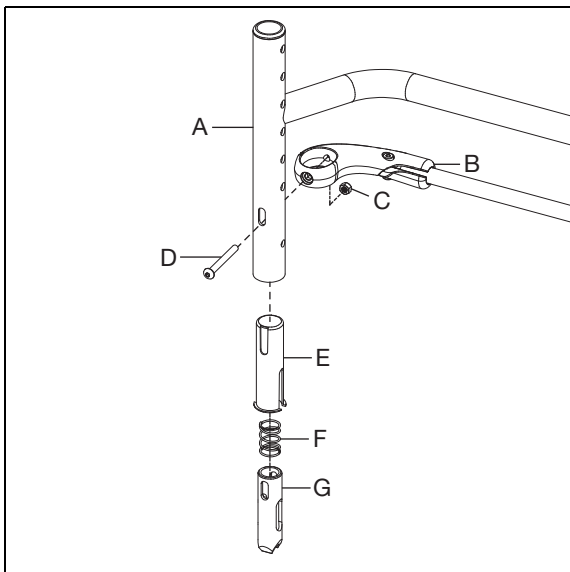
Backrest Assembly

Backrest Installation

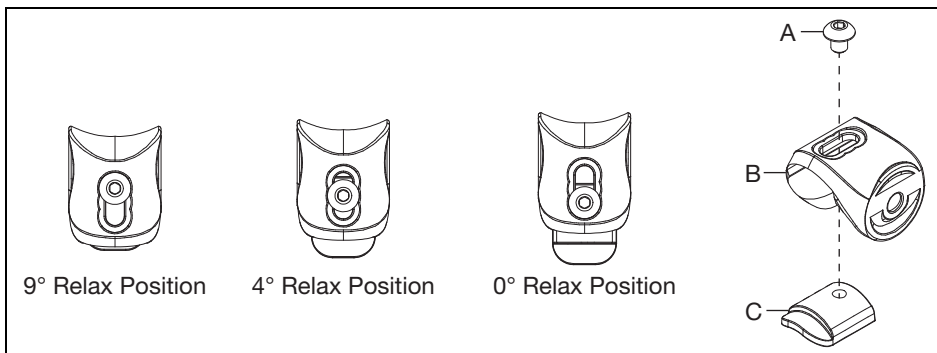
NOTE: Remove existing backrest before beginning the installation process.

NOTE: If replacing the whole backrest, the backrest will come as an assembly and the first two steps can be skipped.

1. Install the release lever assembly (B) onto the back post (A) with a screw (D) and nut (C) using a 3mm Allen wrench. The screw will pass through the tube sleeve (E) and release pin (G) which are installed up through the bottom of the back post. The compression spring (F) is installed up through the bottom of the back post also, but the bolt doesn't pass through it. Repeat steps on opposite side of back post.

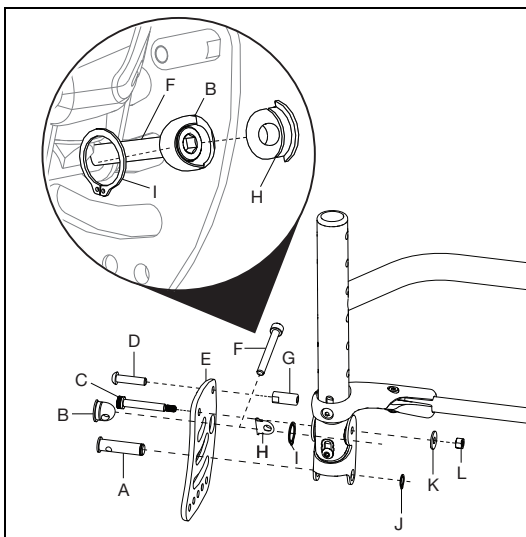


2. Secure the relax bumper (C) to the relax saddle (B) with the screw (A) using a 3mm Allen wrench. There are three index slots that the screw can be installed in - the top (9°), middle (4.5°) and bottom (0°). Install the screw in the desired position and repeat steps on the second set of saddles and bumpers. Ensure both sides are set in the same position.



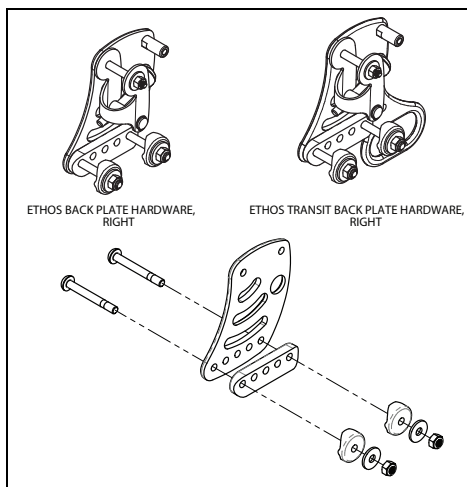
Backrest Assembly

3. Secure the new backrest plate (E) to the backrest post with the barrel nut (A) and 3/8" external retaining ring (J) using a pliers.
4. Secure the top of the backrest plate (E) to the backrest post with the shoulder bolt (C), fender washer (K) and nut (L) using a 3mm Allen wrench and an 8mm wrench.
5. Install the adjustment screw plug cap (B) through the backrest plate. Install the bolt (F) in through adjustment screw plug cap (B) and secure by installing the plug cap adjustment screw (H) over the top and the 5/8" retaining ring (I) over the top of both plug cap pieces. See the zoomed in image below for details of this procedure.
6. Install the bolt (D) through the backrest plate into the strike (G).
7. Repeat steps on opposite side of the backpost.



8. Install the backrest assembly onto the chair with the hardware shown below. A 10mm wrench and a 4mm Allen wrench are needed.

NOTE: The holes that the backrest assembly is installed with on the seat frame depend on the desired seat depth desired. Set as needed for desired configuration.

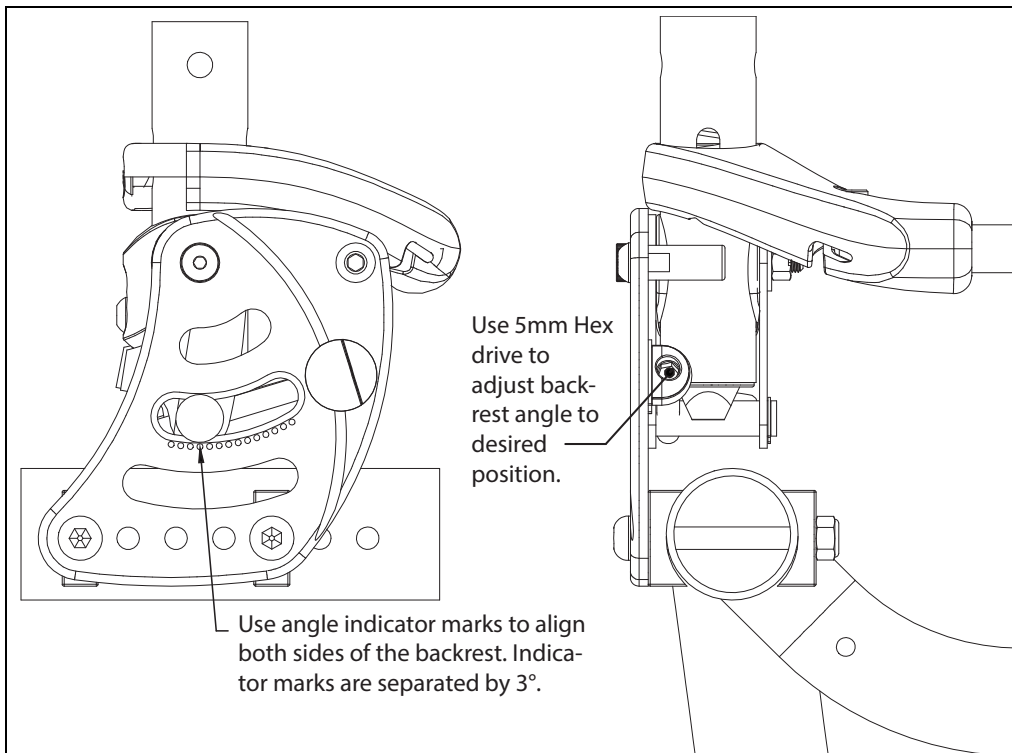


Backrest Assembly

Adjusting Backrest Angle

1. The backrest angle can be adjusted by using a 5mm Hex drive, as shown below. Turning the hex drive clockwise decreases the backrest angle and turning it counterclockwise increases the angle. Each angle indicator mark on the back plate is 3° and 3° of angle change takes roughly 2.5 turns.

NOTE: Ensure both sides of the backrest are set in the same position. Use the angle indicator marks as a guide.

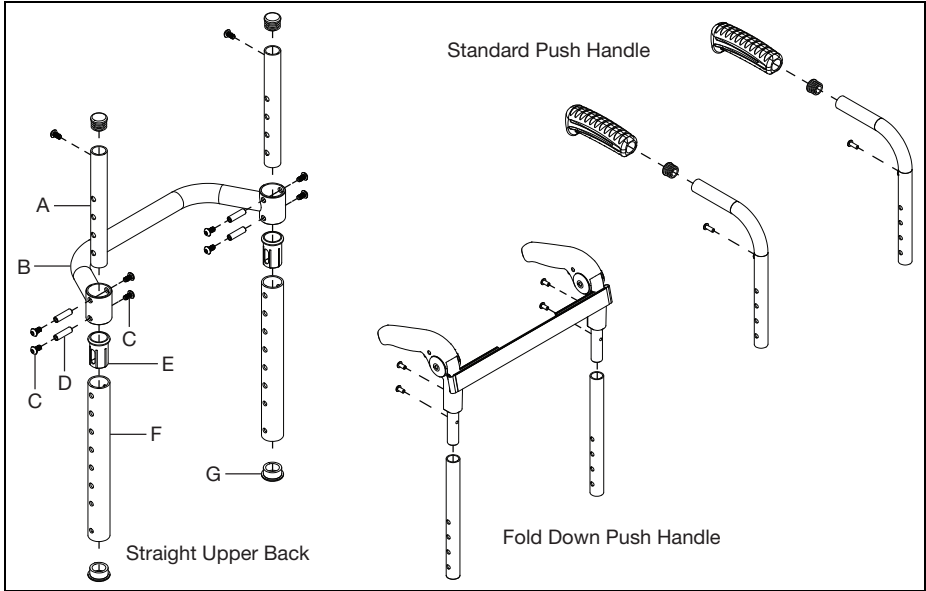


Height Adjustable Back Post

1. Install the height adjustable back post (F), plugs (G), sleeve (E), screws (C), threaded barrels (D) and the upper back tube assembly (A) using two 3mm Allen wrenches.

NOTE: The straight upper back, standard push handle and fold down push handle upper backs are shown in the image below.

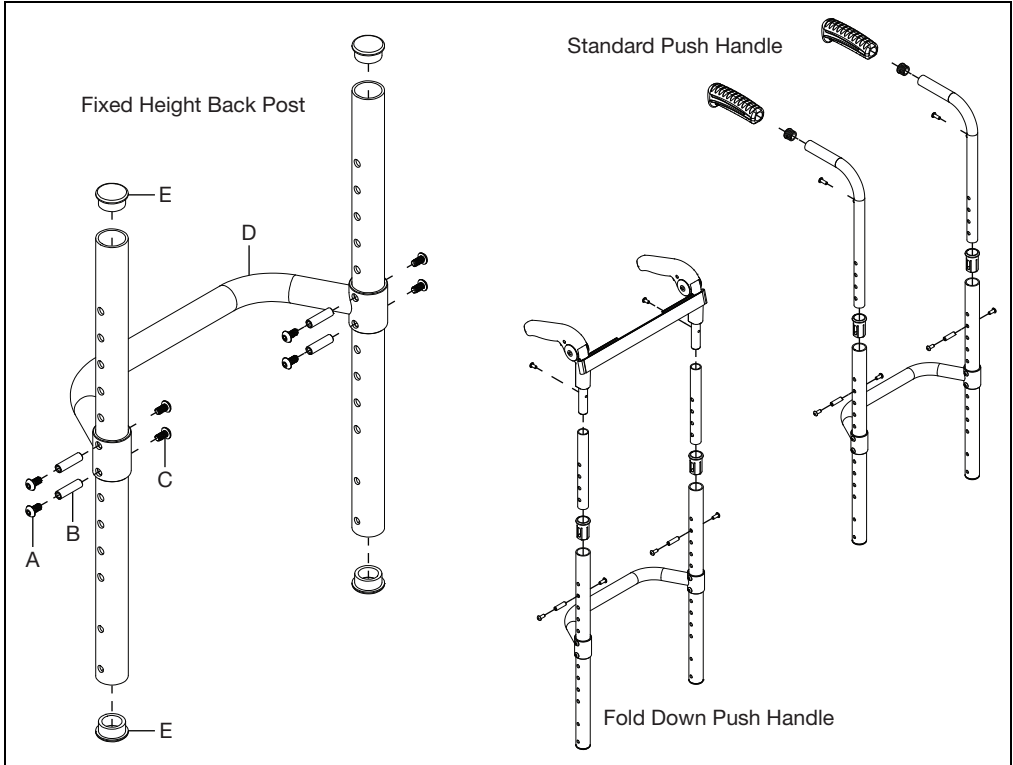
NOTE: The hole patterns on the lower section of the tubes differ between designs, but the process of installation and adjustment is the same.



Fixed Height Back Post

1. For the fixed height back post, install the rigidizer bar (D), screws (A & C), threaded barrels (B) and plugs (E) using two 3mm Allen wrenches.

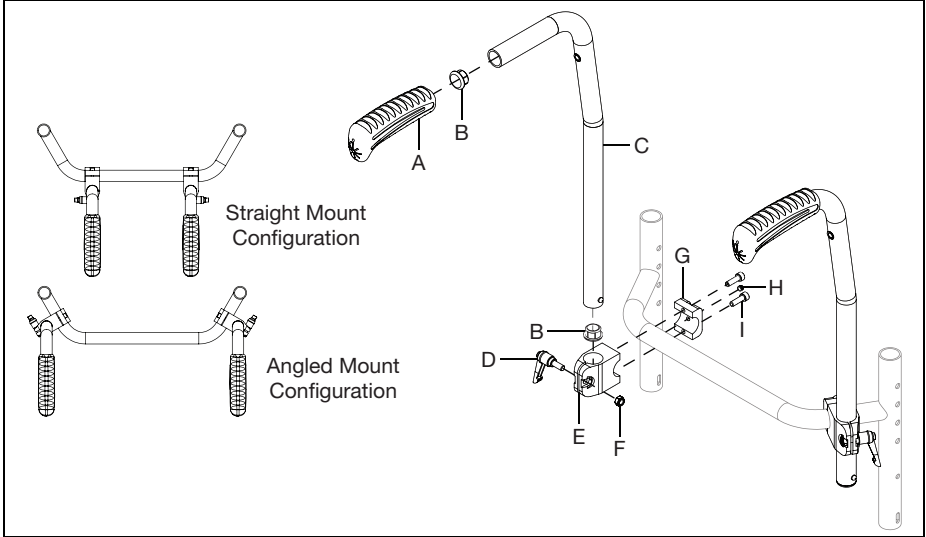
NOTE: The fixed height back post, standard push handle and fold down push handle upper backs are shown in the image below. The standard push handle and fold down push handle upper backs also require sleeves, upper post assemblies and the handle hardware. See image below for details.



Rigid Stroller Handle

1. Install the stroller handle clamp (E & G) onto the rigidizer bar and secure with two screws (I) and a set screw (H) using a 5mm Allen wrench. The clamps can be installed in the straight mount configuration or the angled mount configuration. See image below.
2. Install the backpost (C), with the handles (A) and plugs (B) installed, into the clamp and secure by installing the clamp handle (D) and nut (F) using a 10mm wrench.

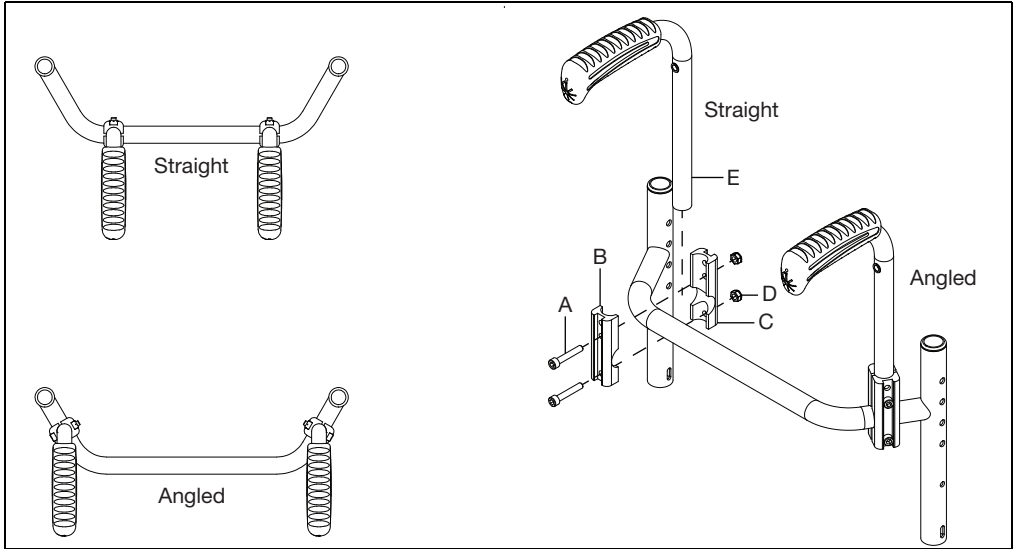
NOTE: The detent button on the bottom of the back post will click into place when properly installed.



Bolt-On Push Handle

1. Install the clamps (B & C) and bolt-on push handle tube (E) onto the rigidizer bar and secure with two screws (A) and two nuts (D) using a 5mm Allen wrench.

NOTE: The clamps can be installed onto the rigidizer bar in the straight or angled orientation. See image below for details.



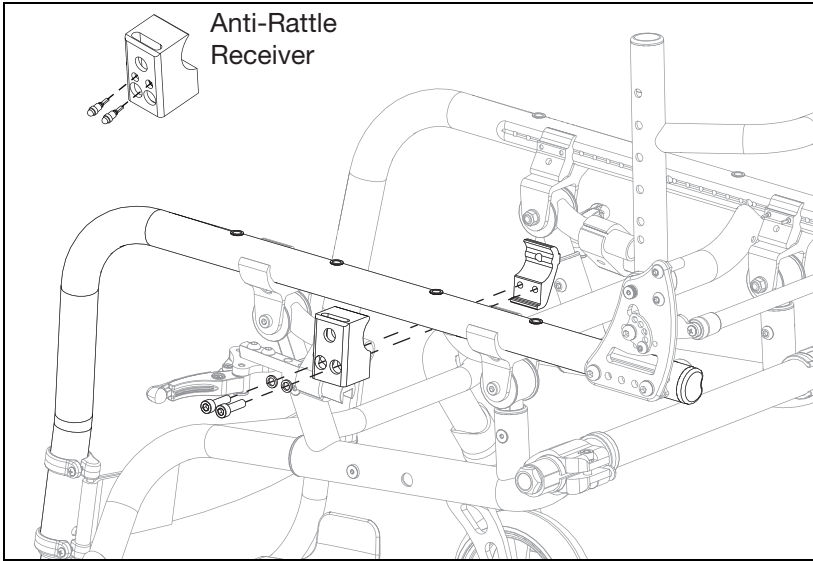
2. Repeat installation step with the second bolt-on push handle.

Side Guard

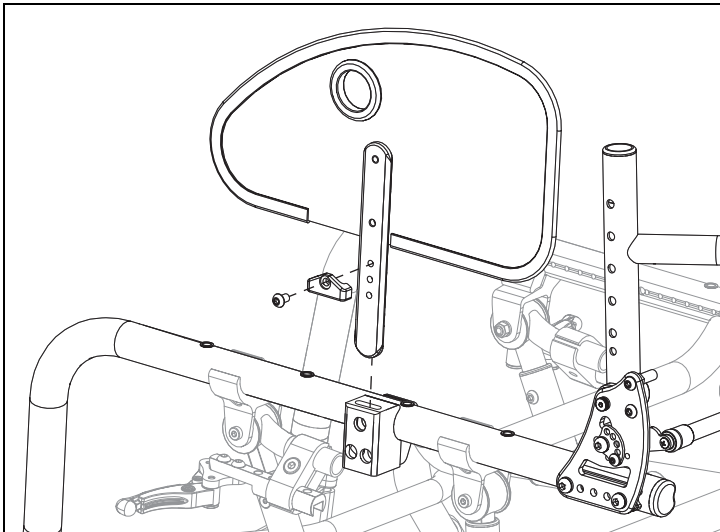
Installing Side Guard

1. Install receiver side guard clamps on the seat frame with two bolts and two washers using a 5mm Allen wrench. Repeat on opposite side. Ensure detents on clamps align with the indents on the frame as you tighten. Slide clamps along seat frame indents to desired location before tightening fully.

NOTE: Anti-rattle side guard receivers are also available. They are installed the same way, but they have two rubber buttons installed into the receiver. They are shown in the top left corner of the image below for reference.



2. Install side guard assembly into the receiver. Set the post stop in correct hole based on the side guard height desired. Install the post stop by installing onto side guard with bolt using a 4mm Allen wrench.

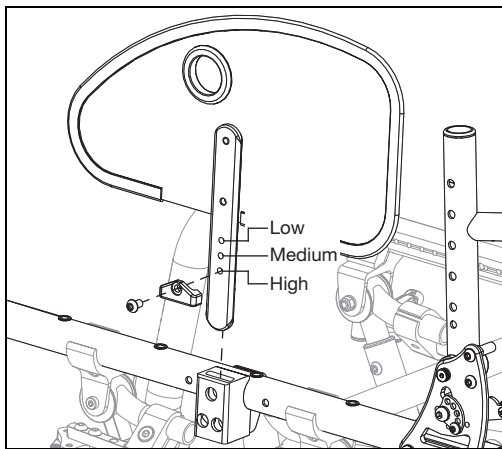


Side Guard

Adjusting Side Guard

1. Remove bolt and post stop and slide to new hole based on desired side guard height, The post stop and bolt are reinstalled onto the side guard using a 4mm Allen wrench.

NOTE: There are three holes to choose from when adjusting height.



Adjustable Fender Size Guard

Fender size guard panel size needed to fit an Ethos is driven by the height of the tire over the seat. To calculate this, use the formula listed below. Once you have the output of the formula, use the reference matrix to find the appropriate panel and post sizes. For information on Wheel Outside Diameter reference the Wheel Outside Diameter chart in the parts manual.

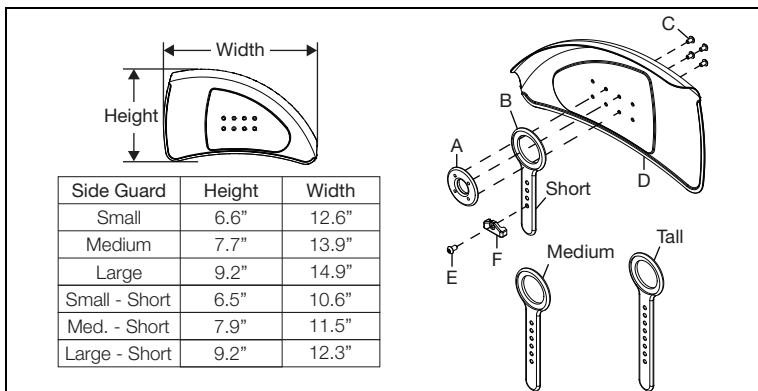
Formula: Wheel Outside Diameter (OD) - Rear Seat Height = Tire Height over seat

Reference Matrix:

Tire Height	Panel and Post Size
Tire Height = Less than 6"	Small Fender/Short Post
Tire Height = 6 - 8"	Medium Fender/Medium Post
Tire Height = Greater than 8"	Large Fender/Tall Post

1. Install fender post mount plate (A) and fender post (B) onto the inside of the fender (D) with four screws (C) using a 3mm Allen wrench. Install the fender post mount stop (F) onto post with screw (E) using a 4mm Allen wrench. Install into receiver.

NOTE: There are different sets of holes that can be used to mount the fender post more forward or back on the chair. The height is also controlled by the hole that is used to mount the fender post mount stop.



Handrim Configurations

NOTE: Not all wheels listed below are available for specific models. See an order form or the online parts manual for more information on your specific chair model.

Handrim Hardware Chart														
Wheel		Handrim Connection				Handrim								
Wheel	Wheel Part No.	Connection Points	Rivet/Tab	Spacer*	Screw*	Aluminum Anodized	Superlight	Plastic Coated	Projection	Ergonomic Standard	Ergonomic LT	Natural Fit Standard	Natural Fit LT	Flex Rim
22" Spoke	18730	5 or 6	18732 (Used with 5 Rivet) 100698 (Used with 6 Rivet)	100653 (Not used w/ Superlight Handrim)	Aluminum, Plastic Ctd, Projection Ergonomic: 100654 Natural Fit: 100835 Superlight: Screw: 100669 Nut: 100657	10898 (5 Rivet)		10964 (5 Rivet)	12824 (6 Rivet)	10082 (6 Rivet)	10805 (6 Rivet)	200538 (6 Rivet)	200201 (6 Rivet)	
24" Spoke	18728	5 or 6	Not used w/ Superlight Handrims			100975 (5 Rivet)	10181 (6 Tab)	100976 (5 Rivet)	12825 (6 Rivet)	10083 (6 Rivet)	10806 (6 Rivet)	100793 (6 Rivet)	200202 (6 Rivet)	
18" MAXX Spoke	109285	3				100206								
20" MAXX Spoke	108244	6	100698 (Not used w/ Superlight Handrim)	100653 (Not used w/ Superlight Handrim)	Aluminum, Plastic Ctd, Projection, Ergonomic: 100654 Natural Fit: 100835 Superlight: Screw: 100669 Nut: 100657	200536		12819						
22" MAXX Spoke	10505					100560		12820	12824	10082	10805	200538	200201	
24" MAXX Spoke	10506					200349	10181	12821	12825	10083	10806	100793	200202	
25" MAXX Spoke	107436					200350		12822	200548	10084	10807	200539	200540	
26" MAXX Spoke	107437					200351		12823	200549			10907	10454	
20" MAXX Mag	11853	6		Aluminum, Plastic Coated, Projection: 100629 Natural Fit & Ergonomic: 10756	Aluminum, Plastic Coated, Projection, Ergonomic: 100654 Natural Fit: 103545	200536		12819						
22" MAXX Mag	11854					100560		12820	12824	10082	10805	200538	200201	
24" MAXX Mag	11855						10507		12821	12825	10083	10806	100793	200202
24" Superlight	10189	6			100636	100754	10181	100836		10080	10801	100830	100828	
25" Superlight	10180							10180	10191			10164	10160	
20" Spinergy Spox		6			Screw: 100669 Nut: 100657	10325		10379						
22" Spinergy Spox	See Spinergy Spox Page							100827		100808			100889	100888
24" Spinergy Spox								100766	10181	10065			100830	100828
25" Spinergy Spox								100767	10180	100765			10164	10160
26" Spinergy Spox								10477		10148			200200	100950
22" Spinergy LX									100827		100808			100889
24" Spinergy LX		See Spinergy LX Page	6			Screw: 100669 Nut: 100657	100766	10181	10065		10080	10801	100830	100828
25" Spinergy LX							100767	10180	100765			10164	10160	
26" Spinergy LX								10477		10148			200200	100950

* Spacer and screw part numbers listed in the chart are for standard handrim mounting. If using close mount handrim mounting on aluminum anodized, plastic coated or projection handrims, use part number

100792 for the spacer, part number 102616 for the screw on Ki Spoke and MAXX Spoke wheels, part number 100666 for the screw on 5-Spoke X Core wheels, or part number 100654 for the screw on MAXX Mag wheels.

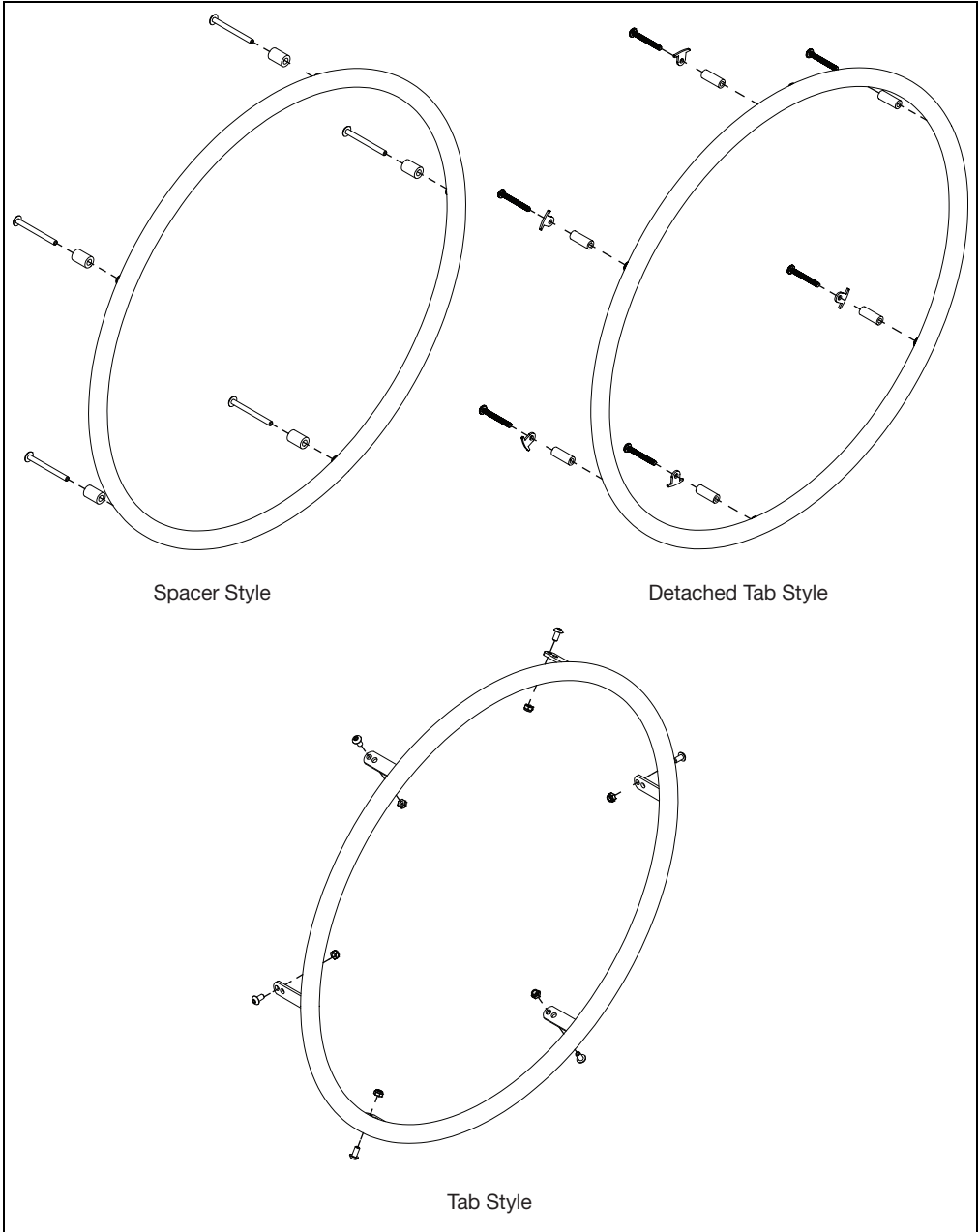
Handrim Hardware Chart (Discontinued Wheels)													
Wheel		Handrim Connection				Handrim							
Wheel	Wheel Part No.	Connection Points	Rivet/Tab	Spacer*	Screw*	Aluminum Anodized	Superlight	Plastic Coated	Projection	Natural Fit Standard	Natural Fit LT	Flex Rim	
18" Ki Spoke	200529	3	100698	100653	Aluminum, Plastic Ctd, Projection: 100654 Natural Fit: 100835	100206		10106					
20" Ki Spoke	200530					200536		200542					
22" Ki Spoke	200531					100560		100576	100569	200538	200201		
24" Ki Spoke	200532					200349	100577	200547	100793	200202			
25" Ki Spoke	200533					200350	10180	200548	200539	200540			
26" Ki Spoke	200534					200351	100578	200549	100907	10454			
20" 5-Spoke X Core	10961	5		Aluminum, Projection, Natural Fit: 100629	100724	10897		10963					
22" 5-Spoke X Core	10962					10898		10964					
24" 5-Spoke X Core	100960					100975		100976	200546				
24" 5-Spoke X Core	100960									100768	100769		

* Spacer and screw part numbers listed in the chart are for standard handrim mounting. If using close mount handrim mounting on aluminum anodized, plastic coated or projection handrims, use part number

100792 for the spacer, part number 102616 for the screw on Ki Spoke and MAXX Spoke wheels, part number 100666 for the screw on 5-Spoke X Core wheels, or part number 100654 for the screw on MAXX Mag wheels.

Handrim Construction

The sequencing of hardware for the three styles of handrims is shown below. The specific hardware used is determined in the chart on the previous page, based on the tire and handrim being used.

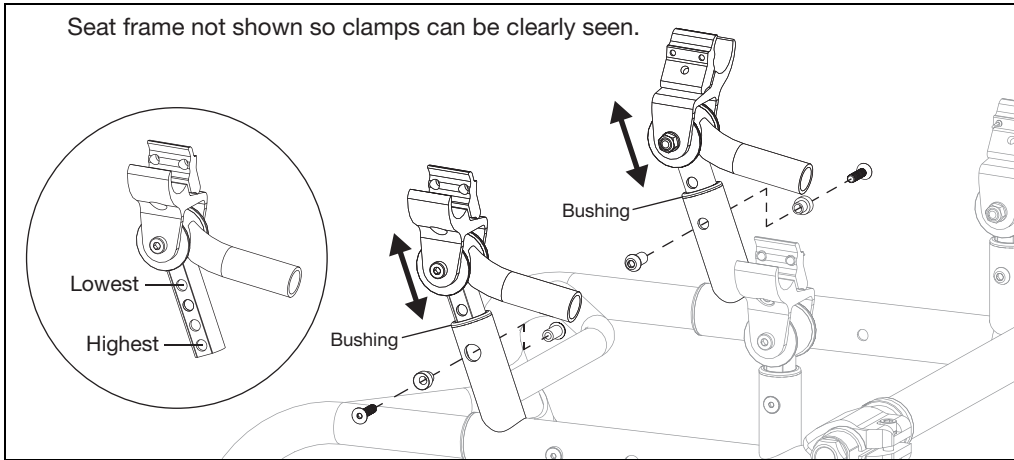


Front and Rear Seat Height

1. Slide the ISO Tube assemblies up or down to achieve desired front seat height by removing two screws and a barrel nut per assembly using two 3mm Allen wrenches. Reinstall the hardware in the correct corresponding holes for desired height to secure in place and ensure bushings (plastic inserts) are pushed all the way down. There is a total of 1.5" of adjustability in 1/2" increments. Continue to next step if you are also adjusting the rear seat height otherwise the adjustment is complete.

NOTE: Both front iso vertical tube assemblies should be set in the same configuration.

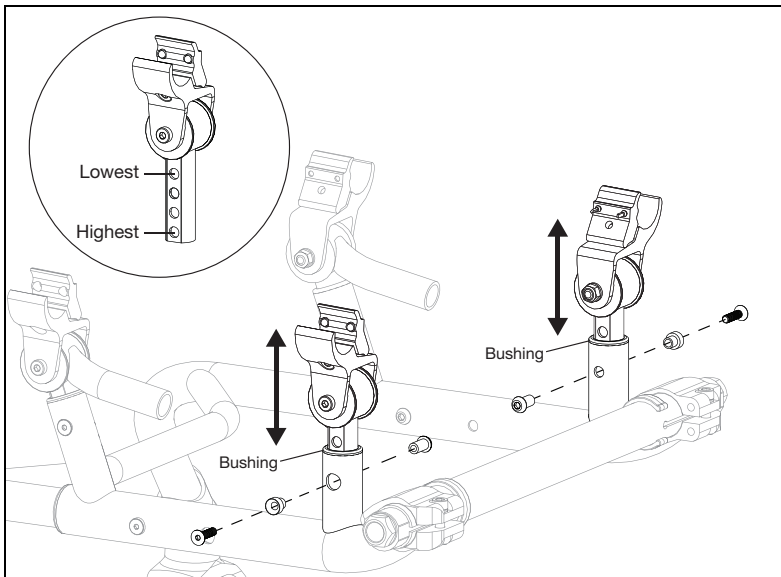
NOTE: The barrel nut may be difficult to remove in the front and rear ISO Tube assemblies. Use something, such as a small pen or screwdriver, to help push the barrel nut out if needed.



2. Slide the rear ISO Tube assemblies up or down to achieve desired rear seat height by removing two screws and a barrel nut per assembly using two 3mm Allen wrenches. Reinstall the hardware in the correct corresponding holes for desired height to secure in place and ensure bushings (plastic inserts) are pushed all the way down.

NOTE: Towers will have three or four holes depending on chair configuration.

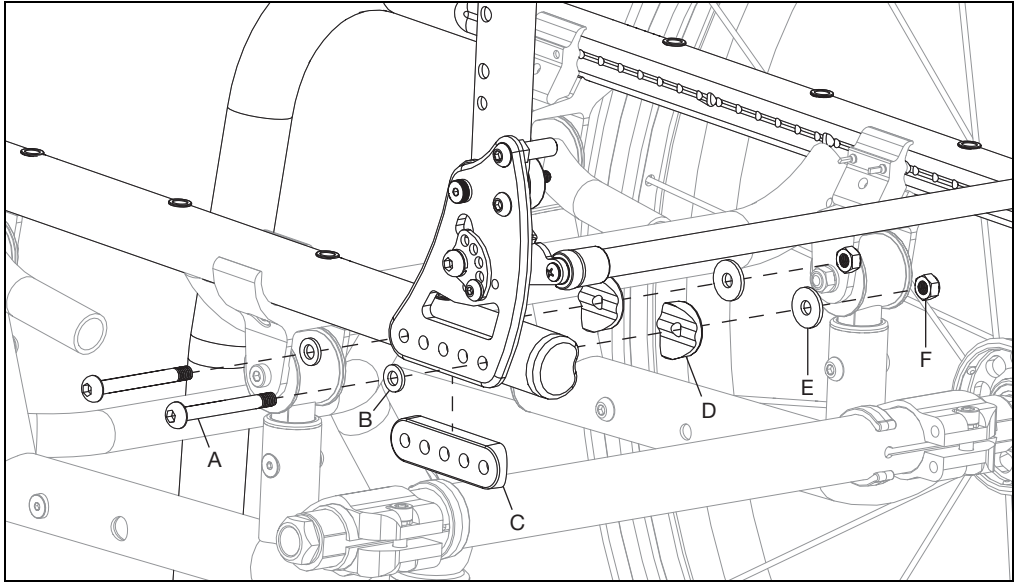
NOTE: Both rear iso vertical tube assemblies should be set in the same configuration.



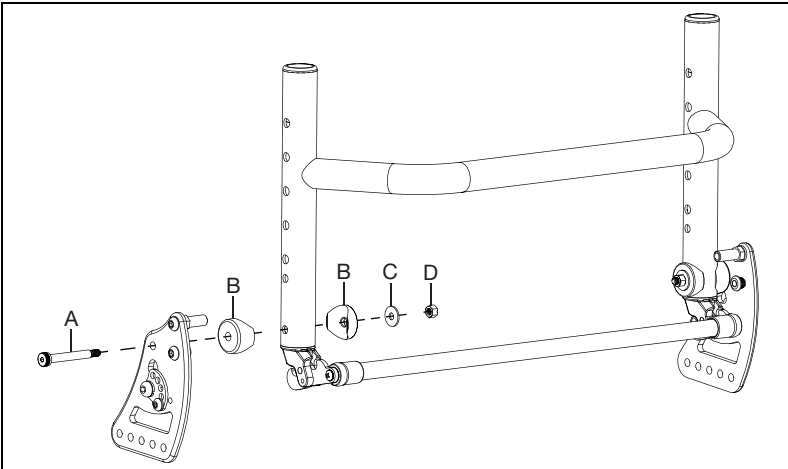
Installing Transit

Remove Backrest

1. Remove the two bolts (A), two small washers (B), two saddles (D), two large washers (E), two nuts (F) and the saddle arm (C) from the lower half of the backrest plate using a 5mm Allen wrench. Repeat on opposite side.



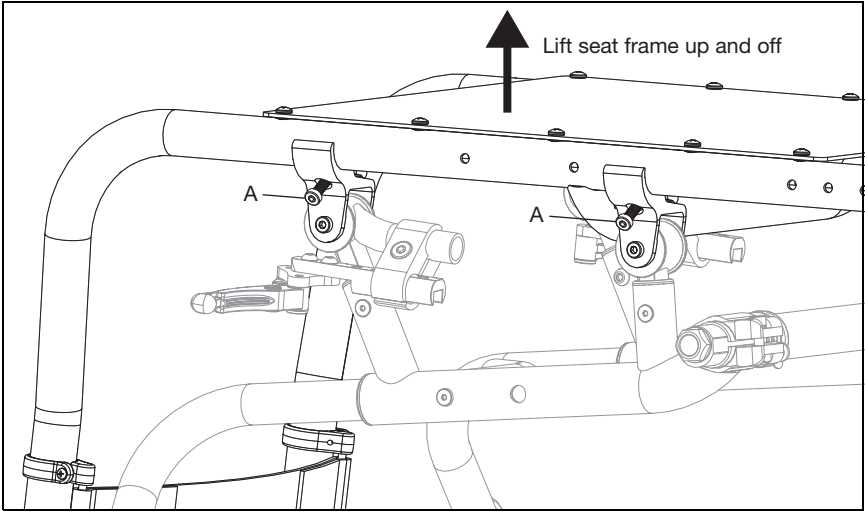
2. Detach back posts from backrest plate by removing bolt (A), two saddles (B), washers (C) and nuts (D) using a 3mm Allen wrench and an 8mm wrench. Repeat on opposite side.



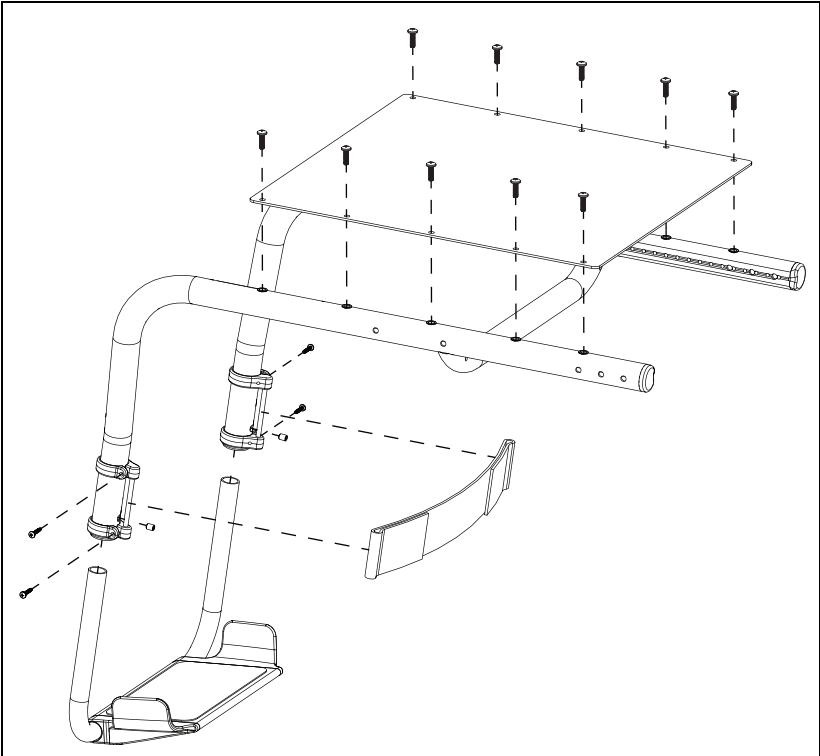
Installing Transit

Remove Seat Frame

1. Loosen, but do not remove, the seat frame clamp bolts (A), four in total on the chair, using a 4mm Allen wrench. Lift seat frame up and off.



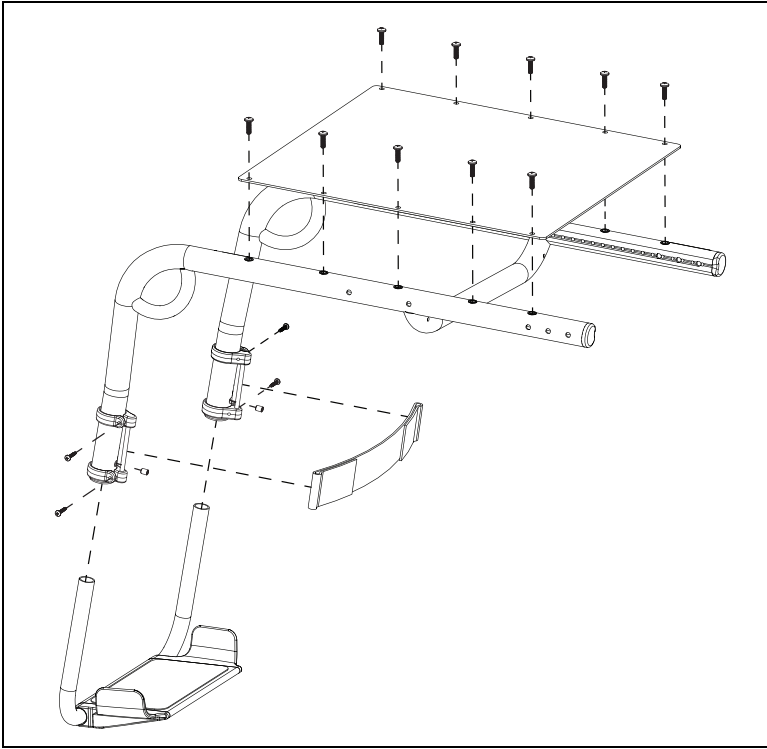
2. Remove any parts or accessories (such as underseat pouch, wheel locks, armrest clamps, etc.) from the seat frame that you will be transferring to the new seat frame. See image below for some examples.



Installing Transit

Installing Transit Seat Frame

1. Install any parts or accessories (such as underseat pouch, wheel locks, armrest clamps, etc.) that you removed from the previous seat frame onto the new seat frame. See image below for some examples.

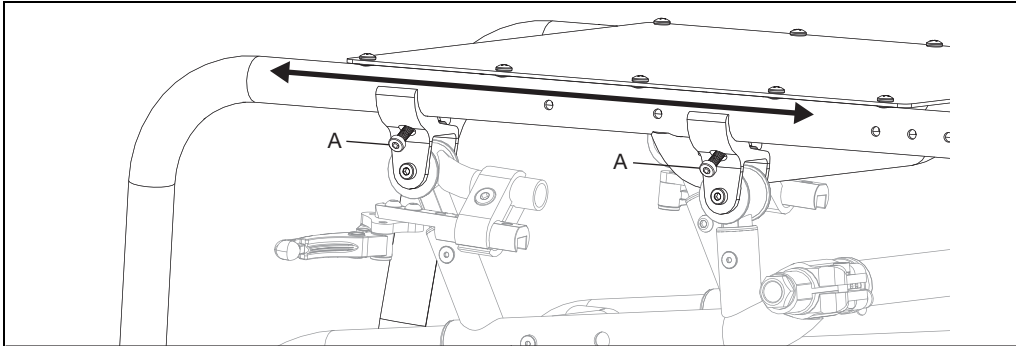


Installing Transit

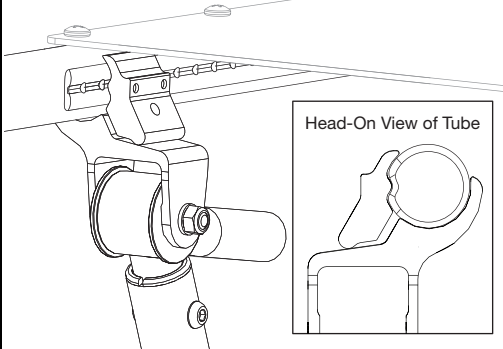
2. Set seat frame onto seat frame clamps. Slide seat frame along clamps to the position of desired seat depth. Secure in place by tightening the four seat frame clamp bolts (A) using a 4mm Allen wrench.

⚠ WARNING ⚠

WARNING: Incorrect mounting can cause seat frame to disengage from clamp which could result in a fall. A fall could result in damage to the chair or in serious injury or death.

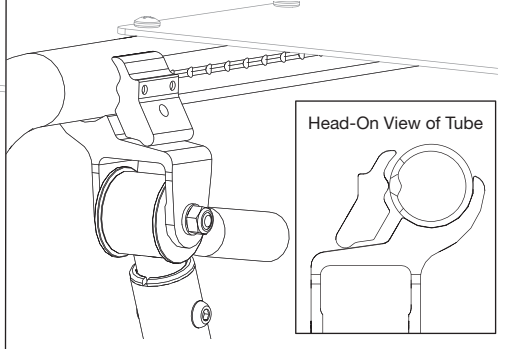


Correct Mounting - Clamps are mounted correctly in the grooved track. Mounting the clamp directly in the grooved track allows the clamp detent to properly align with groove.



NOTE: The rear clamps have additional plastic set pieces to help with proper alignment.

Incorrect Mounting - Clamps are mounted past the edge of the grooved track. Mounting the clamp directly on the round tube prevents detent from properly aligning in the groove.



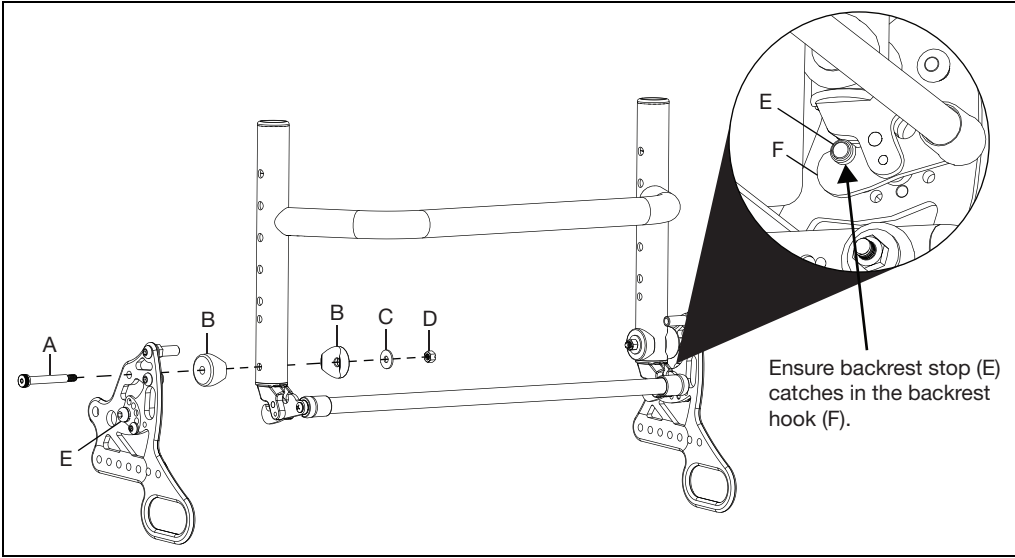
NOTE: The rear clamps have additional plastic set pieces to help with proper alignment.

Installing Transit

Installing Transit Backrest Plate

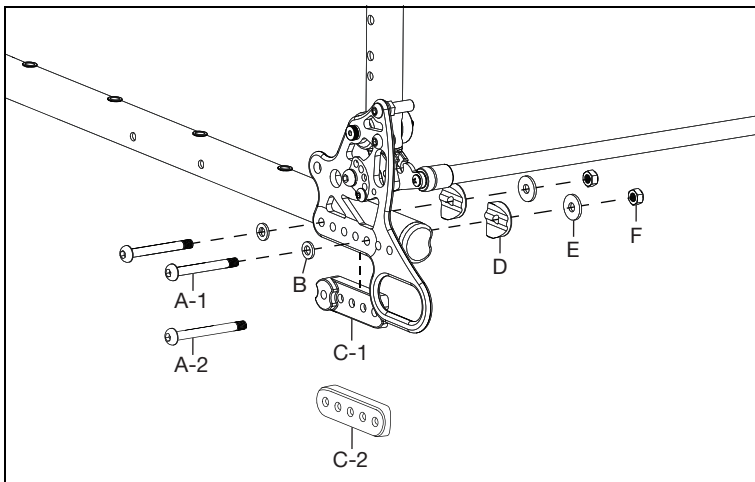
1. Install new transit backrest plate onto back posts with two bolts (A), four saddles (B), two washers (C) and two nuts (D) using a 3mm Allen wrench and an 8mm wrench. Ensure backrest stop (E) catches backrest hook (F) as shown below. Both sides of the backrest stop (E) are shown for reference.

NOTE: The standard transit backrest plate is shown below. The installation process is the same for the transit backrest plate with seat belt mount.



2. Install backrest plate assembly onto seat frame with two bolts (A), two small washers (B), two saddles (D), two large washers (E), two nuts (F) and the saddle arm (C) using a 5mm Allen wrench. Repeat on opposite side.

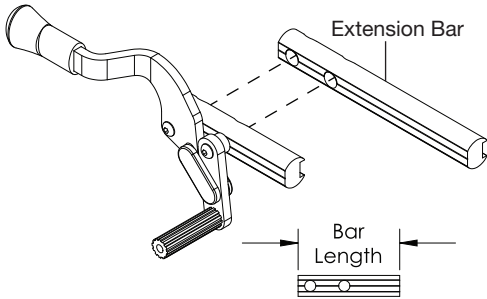
NOTE: There are two saddle arms that are used. C-1 is only used when the swing away arm is being used. The 55mm bolt (A-2) is also used instead of the 50mm bolt (A-1) when the swing away arm is being used.



Wheel Locks

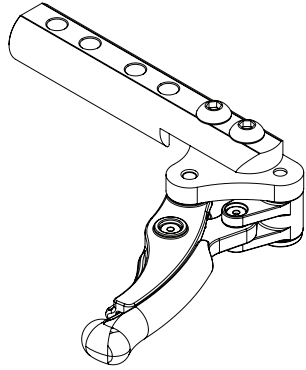
See image below for information on the types of wheel locks available. Installation of the wheel lock clamps is on the next page. The Under Seat Scissor Lock always comes assembled so it is not shown below.

Push to Lock Flush Mount

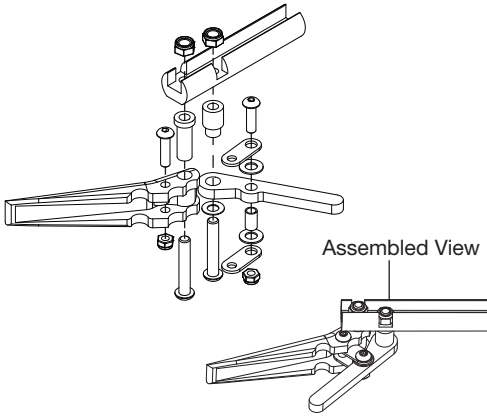


Part #	Bar	Length
N/A	Standard	3.5"
000904	Extended	6.0"

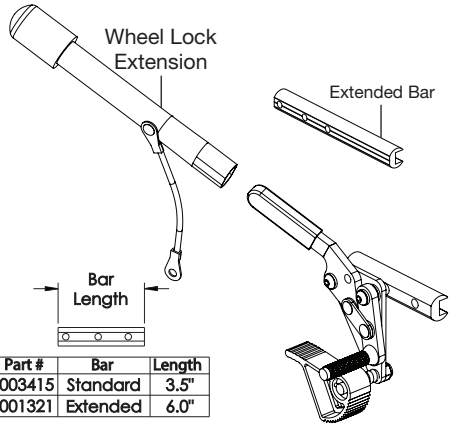
Low Profile Scissor Lock



Short Thru Scissor Locks

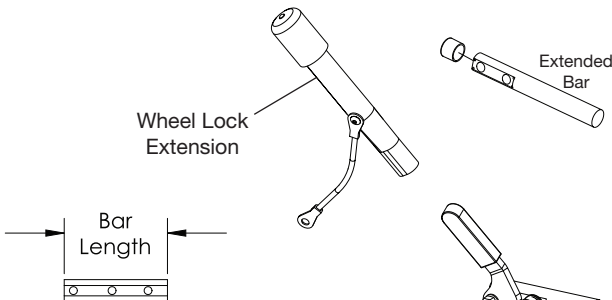


Grade Aids



Part #	Bar	Length
003415	Standard	3.5"
001321	Extended	6.0"

Push and Pull to Lock Wheel Locks



Part #	Bar	Length
112048	Standard	3.5"
112049	Extended	6.0"

Push

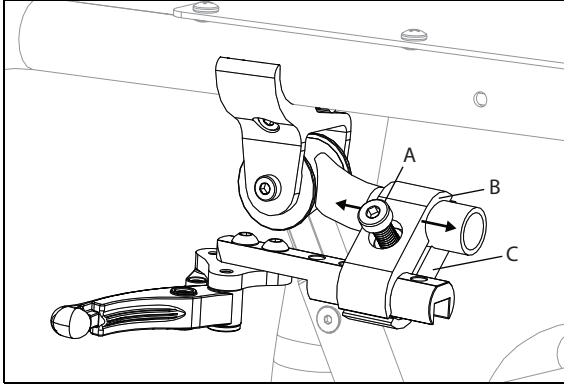
Pull

Wheel Locks

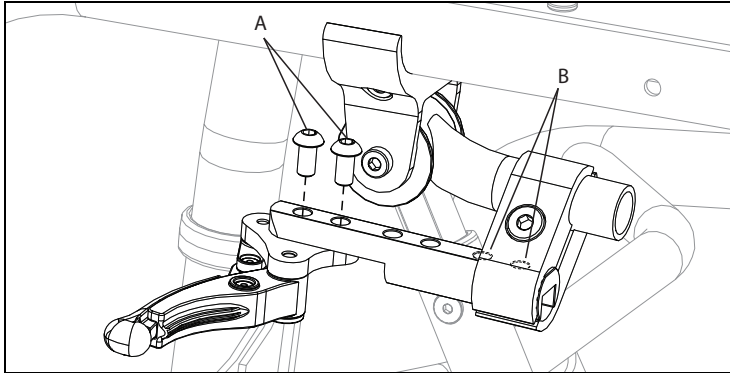
Installing Wheel Lock Clamps

1. The wheel lock assemblies with the wheel lock bars are mounted onto the chair using the wheel lock clamps (C & D). Install hardware (A) with the wheel lock bar and chair frame in position using a 6mm Allen wrench. Once installed, test the wheel lock positioning on a flat level surface. Once the wheel locks are engaged, the wheels should not slip or move. If the wheel locks are not fitted properly continue to the next step.

NOTE: Always tighten wheel lock hardware by alternating between hardware while tightening a little at a time. This prevents overclamping on one set of hardware which can lead to binding of the fasteners and increased difficulty in removal.



2. The wheel lock arm can be moved along the different sets of holes on the wheel lock bar for additional adjustability. Use a 4mm Allen wrench to remove the two bolts (A), then move the bar to the new position and reinstall the bolts. Two of the holes (B) are shown as dotted lines because their view is obstructed by the clamp.





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