

ETHOS

TECHNICAL MANUAL

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 owner 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 Owner Manual. The owner manuals and adjustment guides 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, do not hesitate to contact us by telephone at:

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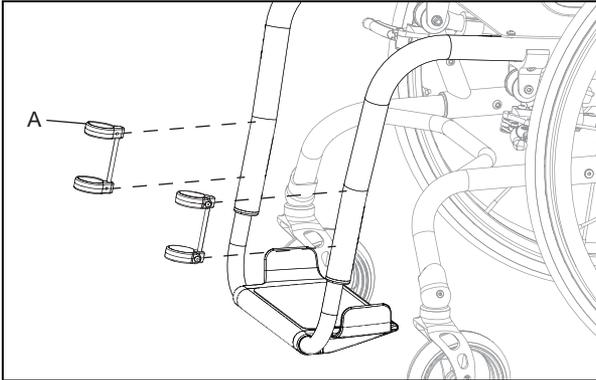
Tools

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.

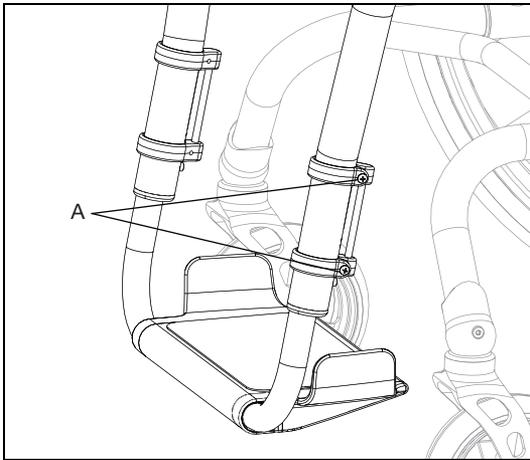
Tools Needed	
<ul style="list-style-type: none">• 2.5mm Allen Wrench	<ul style="list-style-type: none">• Two 8mm Wrenches
<ul style="list-style-type: none">• 3mm Allen Wrench	<ul style="list-style-type: none">• Two 10mm Wrenches
<ul style="list-style-type: none">• 4mm Allen Wrench	<ul style="list-style-type: none">• 13mm Wrench
<ul style="list-style-type: none">• 5mm Allen Wrench	<ul style="list-style-type: none">• 17mm Wrench
<ul style="list-style-type: none">• 5.5mm Allen Wrench	<ul style="list-style-type: none">• 19mm Wrench
<ul style="list-style-type: none">• 6mm Allen Wrench	<ul style="list-style-type: none">• 24mm Wrench
<ul style="list-style-type: none">• Utility blade	<ul style="list-style-type: none">• Phillips Screwdriver

Calf Strap Mount Installation and Adjustment

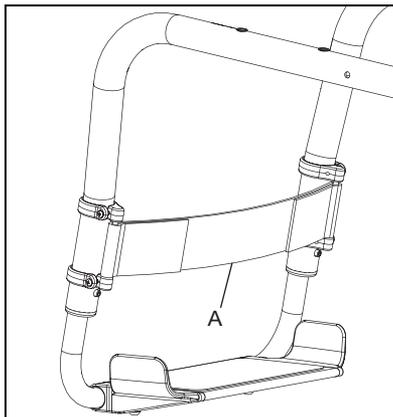
1. Install the calf strap mount clamps (A) onto the seat frame. With the screws removed, the clamps will open far enough to slide over the frame tube.



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.



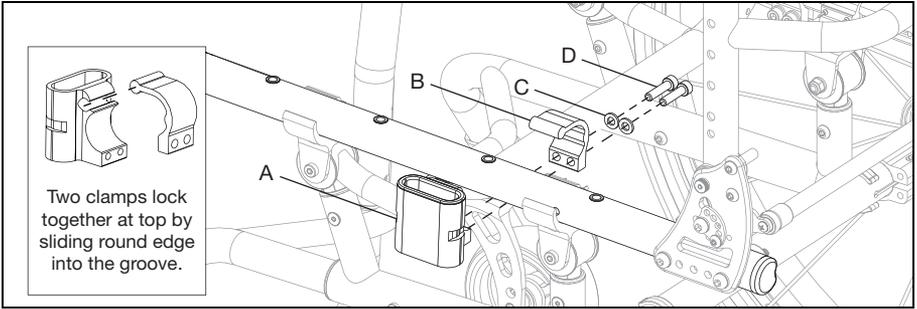
3. Install the calf strap with velcro (A) onto the clamps.



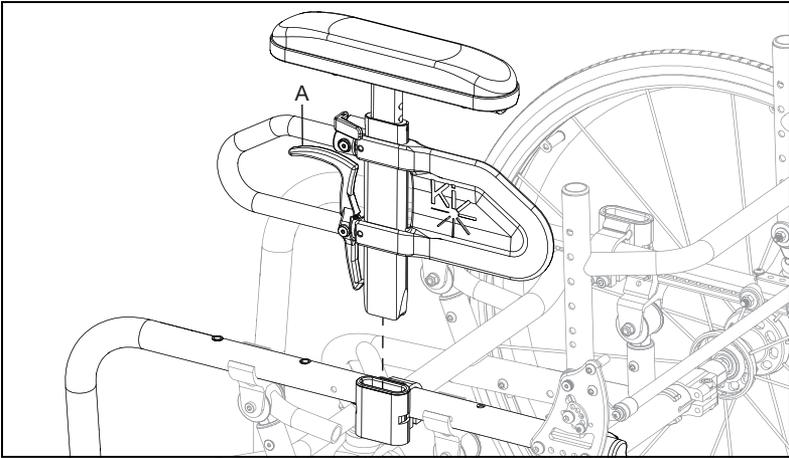
T-Arm Installation and Adjustment

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

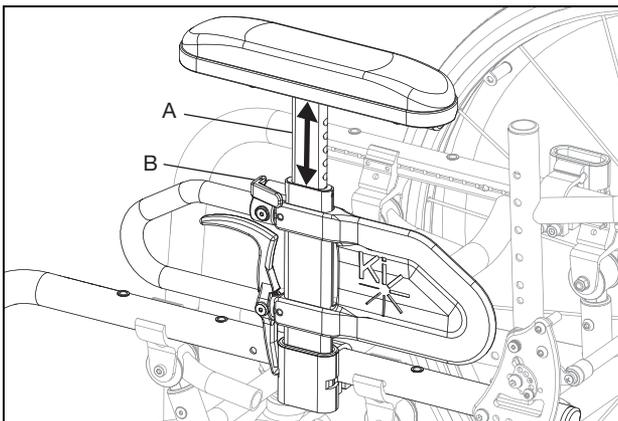
1. Install the T-Arm receiver (A) and clamp (B) onto the seat frame with two washers (C) and two bolts (D) using a 5mm Allen wrench. Ensure the detents on the clamp (B) align with the indents on the frame as you tighten.



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

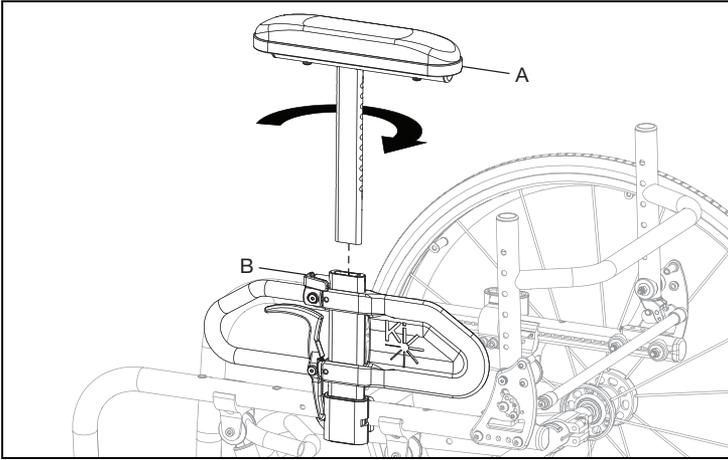


3. Adjust the height of the T-Arm post (A), if needed, by releasing the latch (B) and then sliding the post to desired height. Secure in place by reengaging the latch.

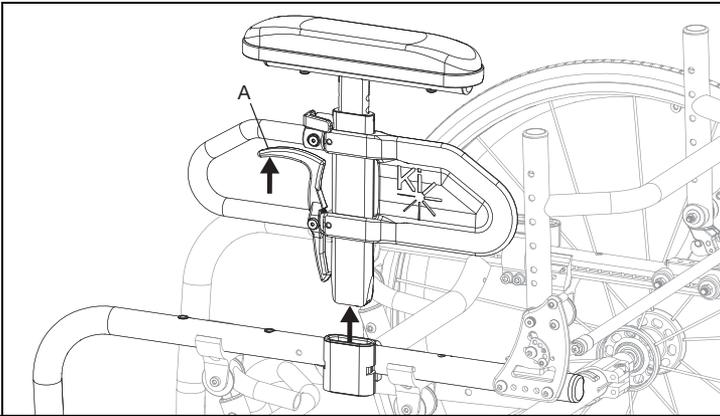


T-Arm Installation and Adjustment

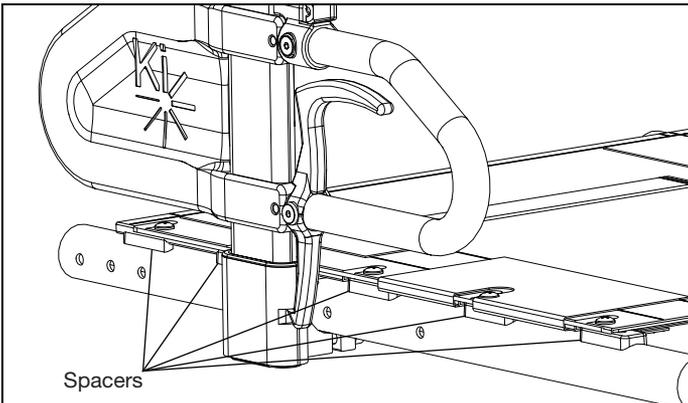
4. To rotate the arm pad (A), release the T-Arm post latch (B) and lift the post out. Rotate the post and reinstall. Secure in place by reengaging the latch.



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

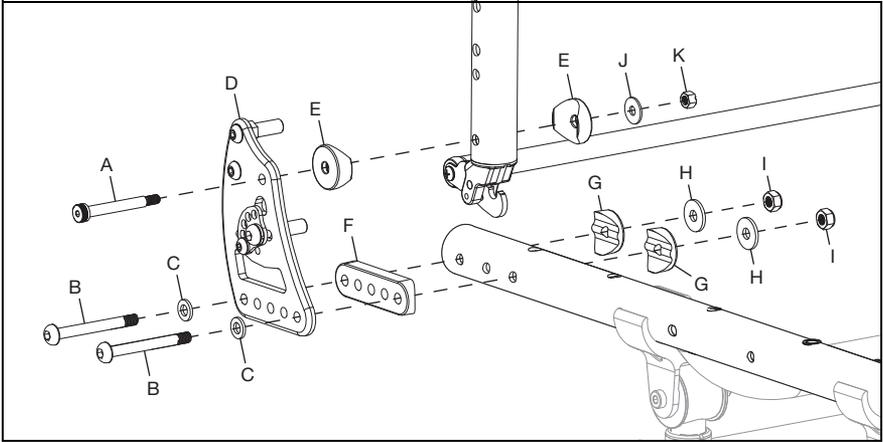


NOTE: When your seat upholstery is reinstalled, spacers are used with each screw to allow clearance for the T-Arm Bracket. See image below.

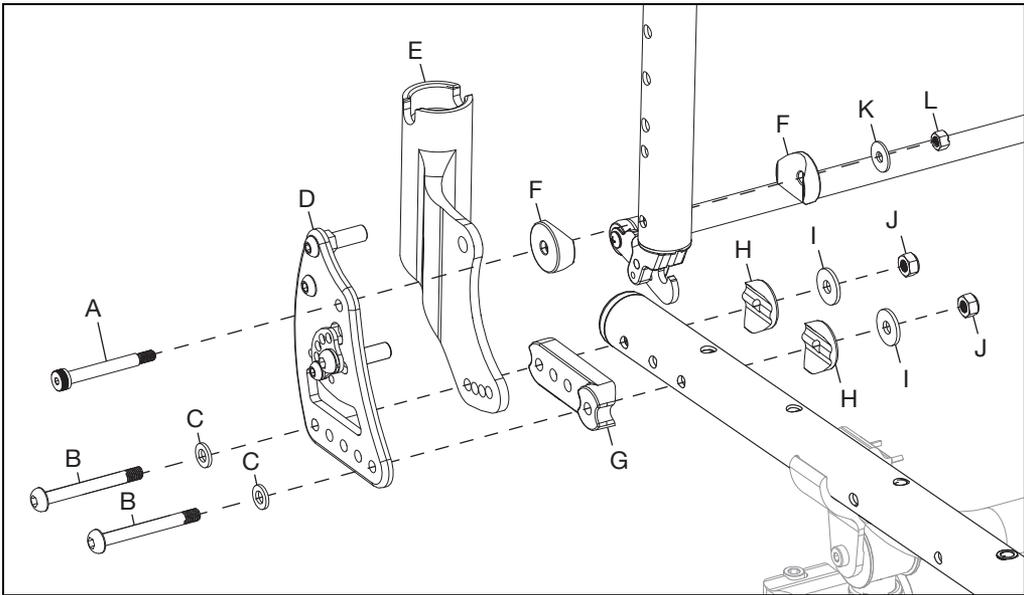


Swing Away Arm Installation and Adjustment

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.

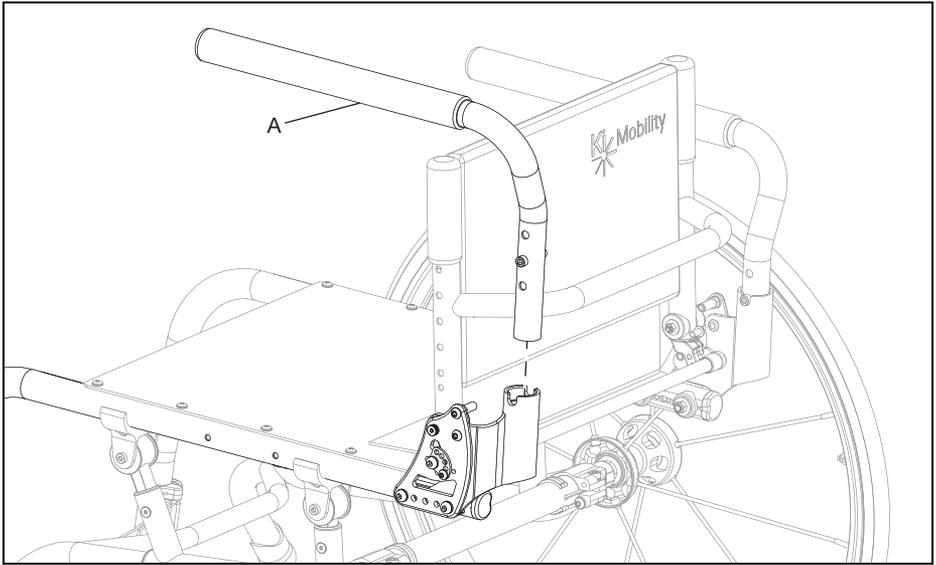


2. Install the swing away bracket (E) in between the backrest plate (D) with two bolts (B), two washers (C), new saddle back (G), two saddles (H), two washers (I) and two nuts (J) using a 4mm Allen wrench and a 10mm wrench. Secure backrest plate to back cane with shoulder bolt (A), two saddles (F), washer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

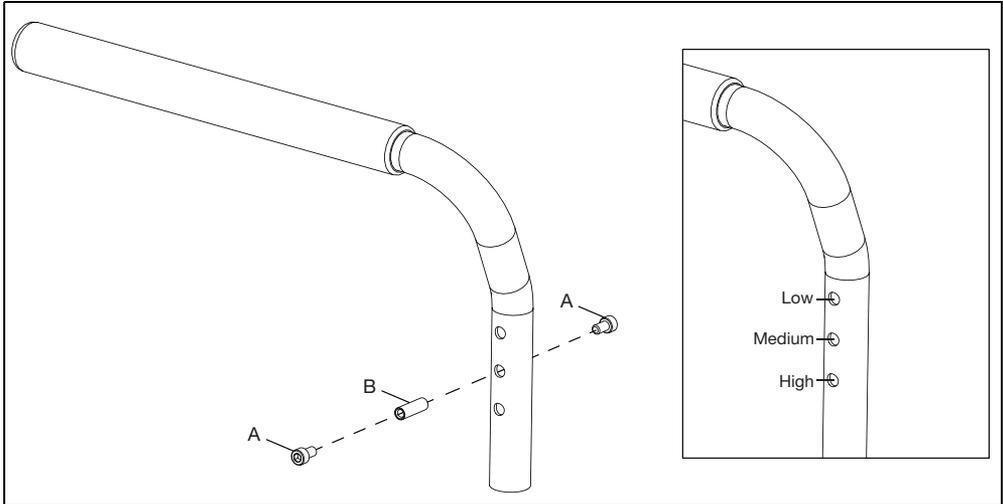


Swing Away Arm Installation and Adjustment

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



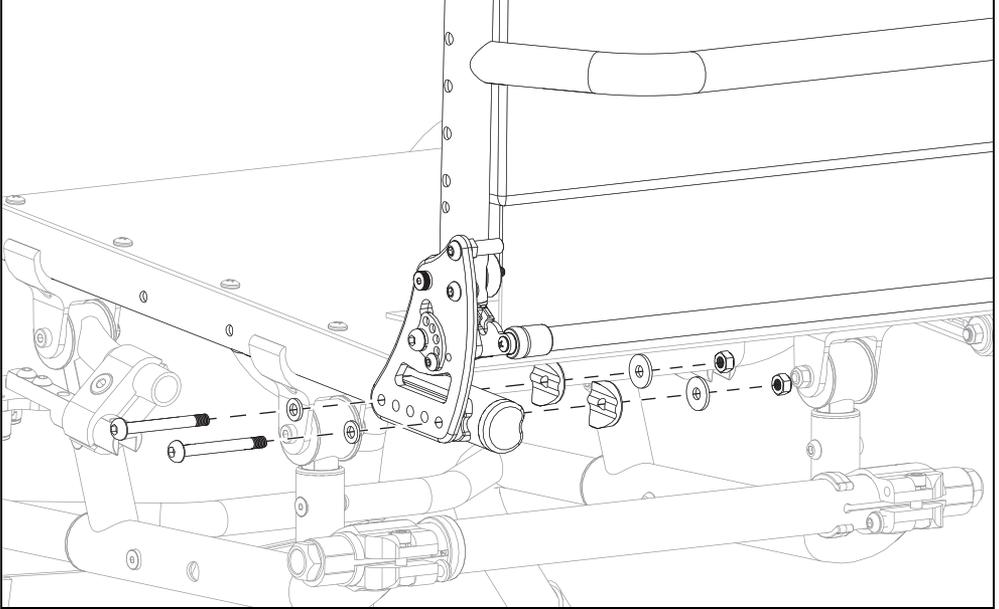
4. To adjust the height of the swing away arm, remove two screws (A) and insert (B) using two 4mm Allen wrenches. There are two available swing away arm heights available - short (can be adjusted 8.5" to 10.5") and tall (can be adjusted 10.5" to 12.5"). Reinstall hardware into correct hole for your desired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



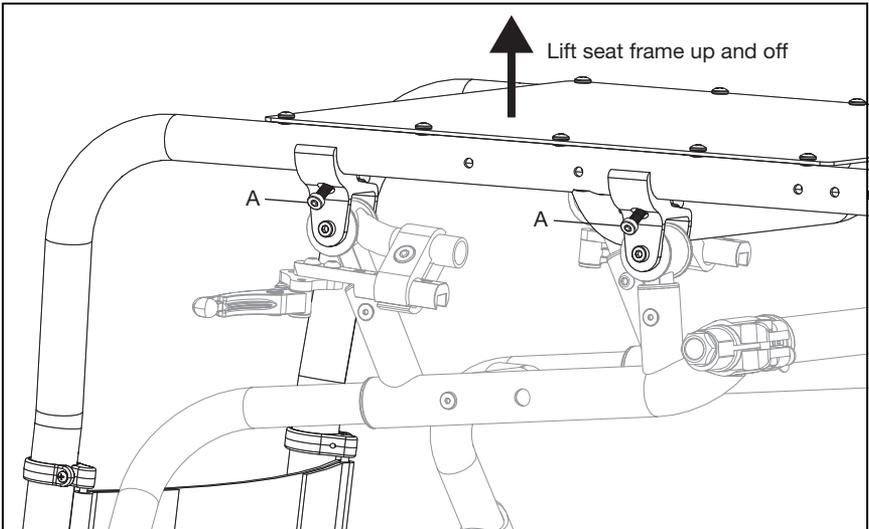
Seat Frame Replacement

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.

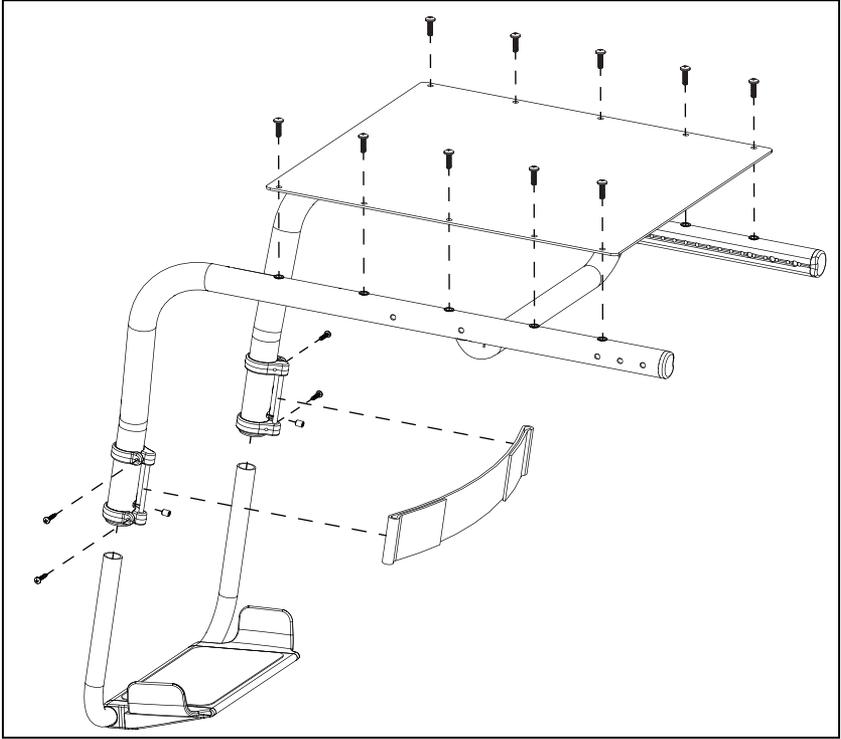


2. Loosen, but do not remove, the seat frame clamp bolts, four in total on the chair, using a 4mm Allen wrench. Lift seat frame up and off.

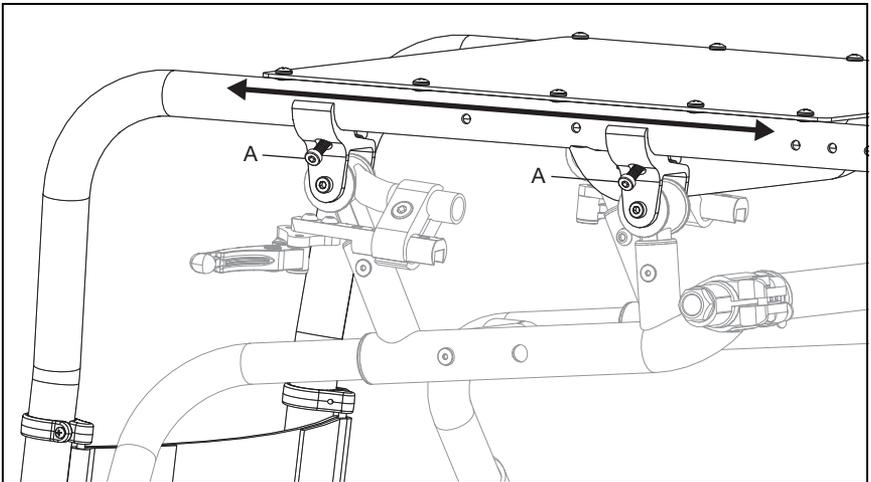


Seat Frame Replacement

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.

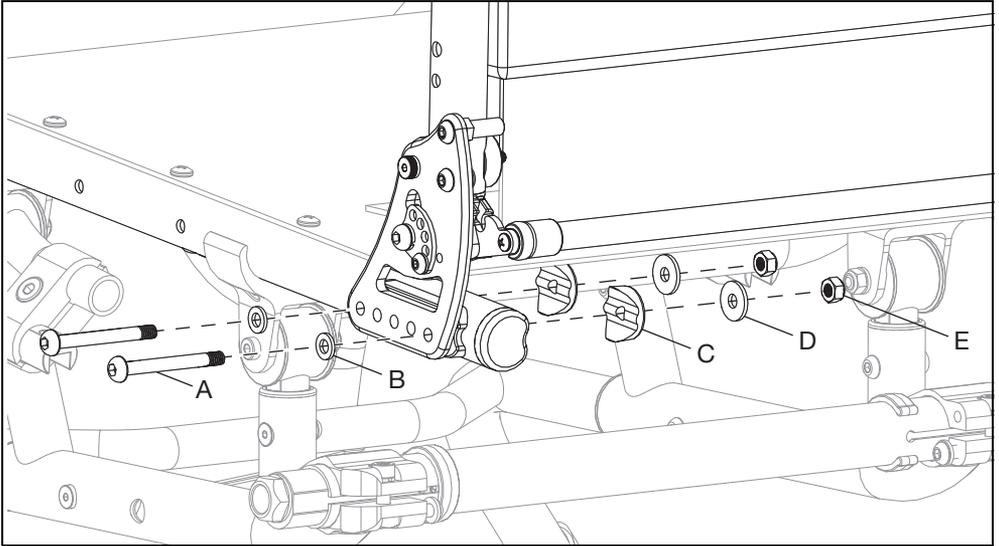


4. Transfer parts and/or accessories that were removed in step 3 to the new seat frame.
5. Set seat frame onto seat frame clamps. Slide seat frame along clamps to the position of desired seat depth. Secure in place by tightening the four seat frame clamp bolts (A) using a 4mm Allen wrench. Ensure detents on clamps align with the indents on the frame as you move the seat frame and tighten.



Seat Frame Replacement

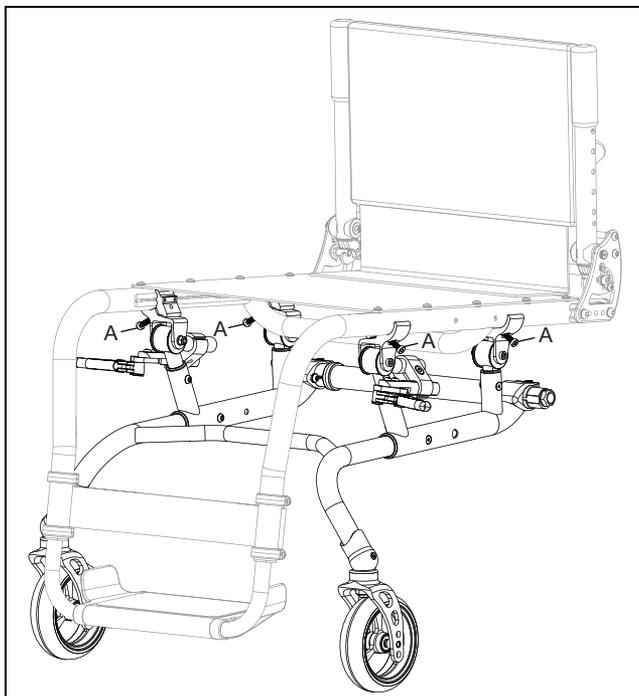
6. Reinstall the backrest assembly in the same position as before or a new position if desired. Reinstall with two bolts, two small washers, two saddles, two large washers and two nuts per bracket using a 5mm Allen wrench and a 10mm wrench. Repeat on opposite side.



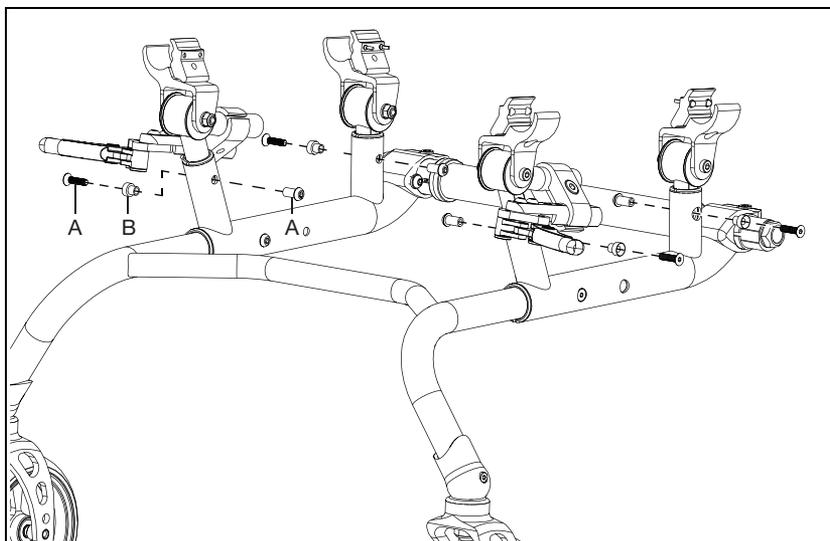
Base Frame Replacement

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.

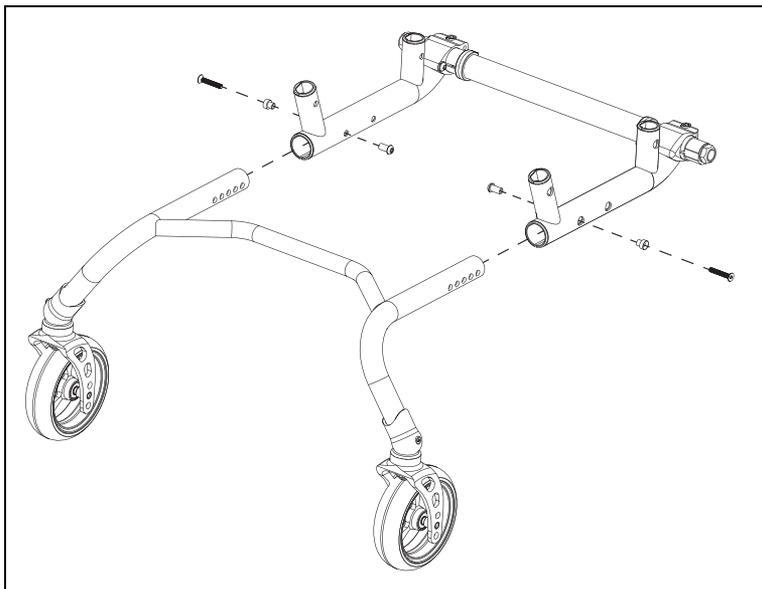


3. Remove the iso vertical tube assemblies from the base frame by removing two screws (A) and a barrel nut (B) per assembly using two 3mm Allen wrenches.

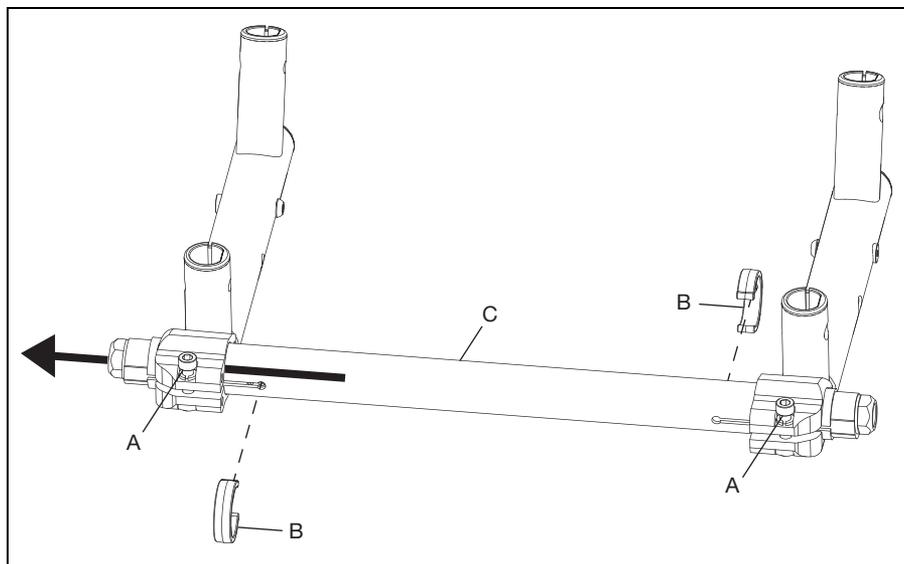


Base Frame Replacement

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.

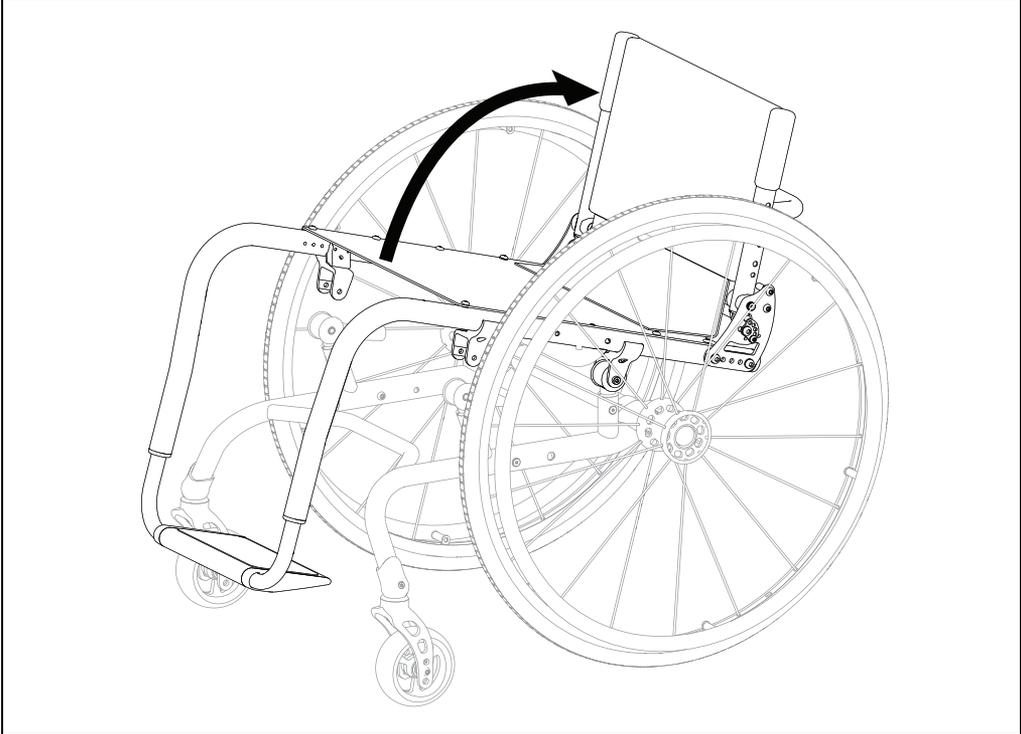
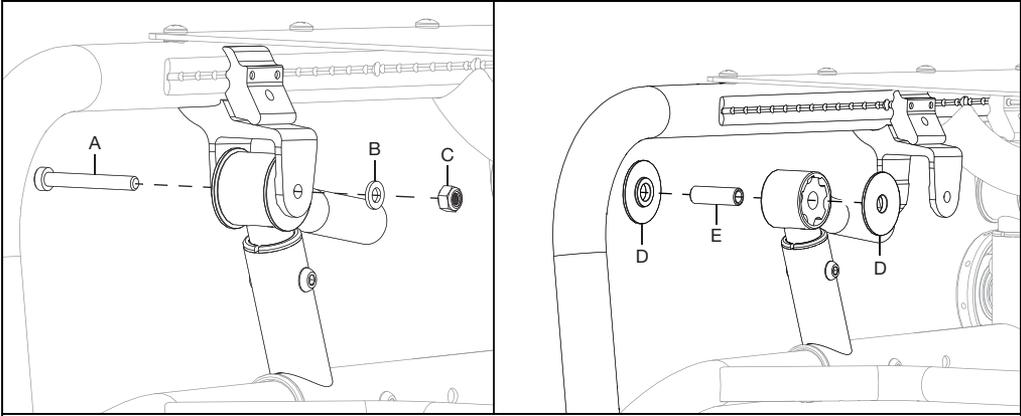


6. Reverse steps 1 - 5 to reinstall new base frame with saved parts from earlier.

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

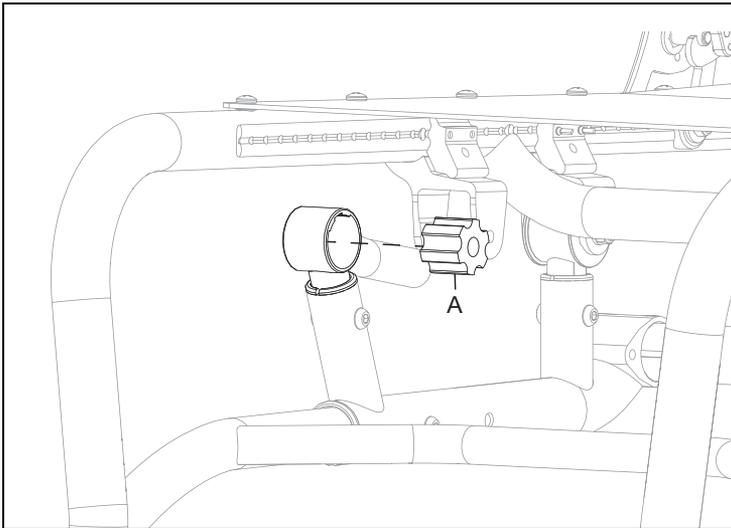
1. Remove bolt (A), washer (B) and nut (C) from the front ISO Tech Tower using a 4mm Allen wrench and a 10mm wrench. Repeat on opposite front ISO Tech Tower. Once the bolt is removed from both front ISO Tech Towers the seat can hinge backwards on the rear ISO Tech Towers. The seat frame can now be lifted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



ISO Tech Polymer Replacement

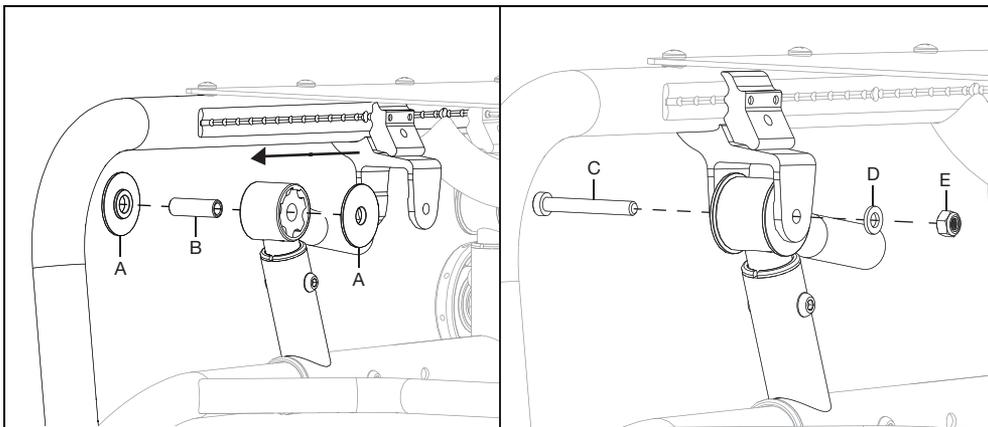
2. Push the elastomers (A) that you are replacing, out of the tower and push in new elastomers. Ensure edges of elastomer line up with the groove inside the tower. See the chart below to help determine which elastomers suit the type of ride you desire, soft or firm, based on the user weight and the chair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

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.



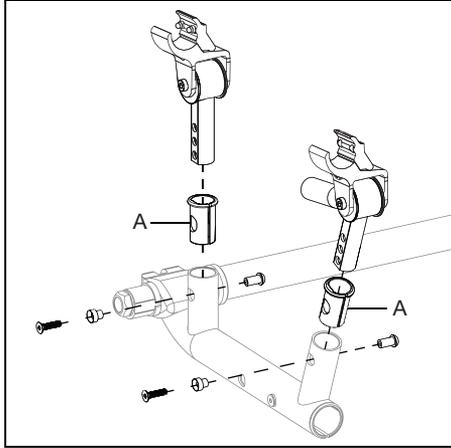
4. Repeat the steps, if needed, on the rear ISO Tech Towers.

Highlight Kit

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

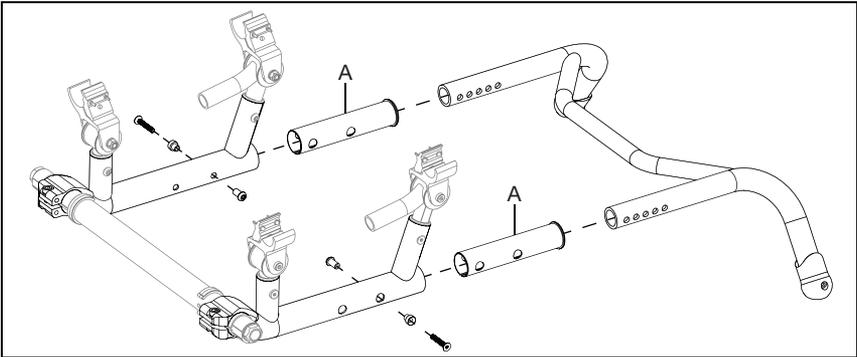
Vertical Bushings

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.



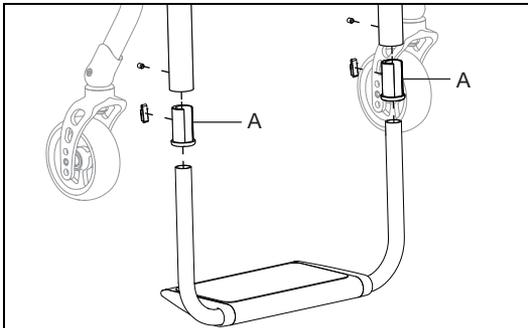
Base Frame Bushings

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

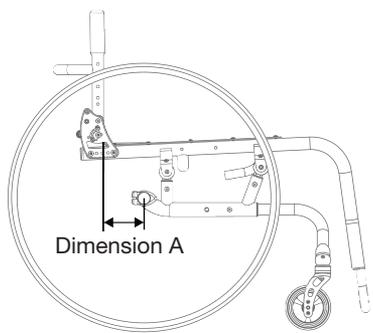
The Center of Gravity (COG) and Caster Position are related to each other. The process of making both adjustments is demonstrated below. See the diagrams and charts below to determine the holes used to reach desired configuration. See the diagrams on page 19 for the actual process of adjusting/switching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

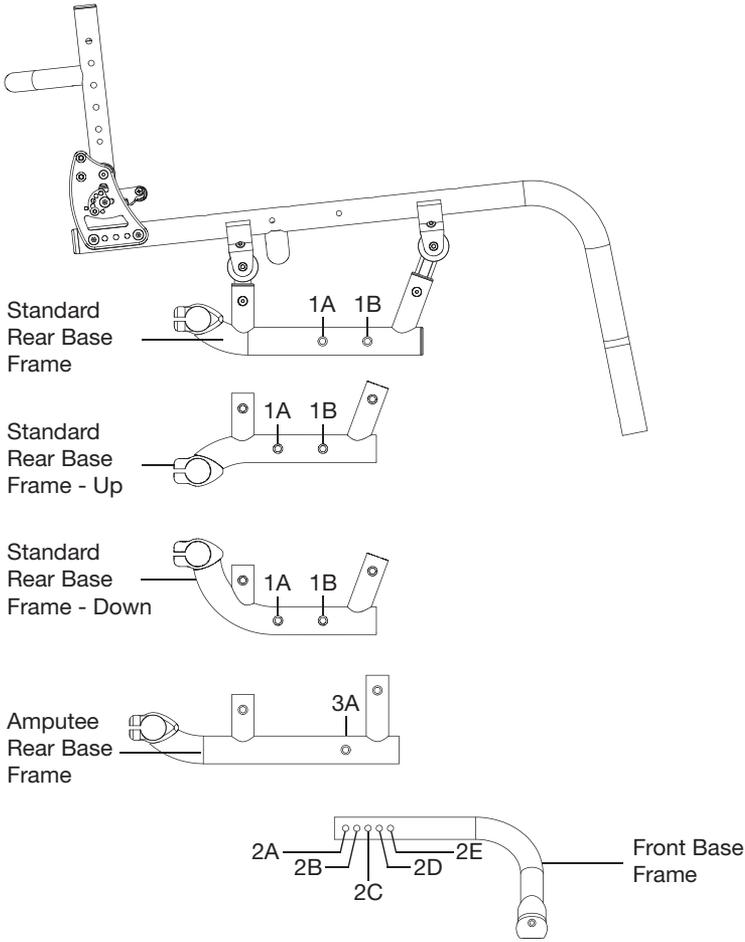
Default Center of Gravity Range	
CG Preset	Default Range
0" to 1.5"	+3" to -1"
1.75" to 3"	+2" to -2"
3.25" to 4.25"	+1" to -3"

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

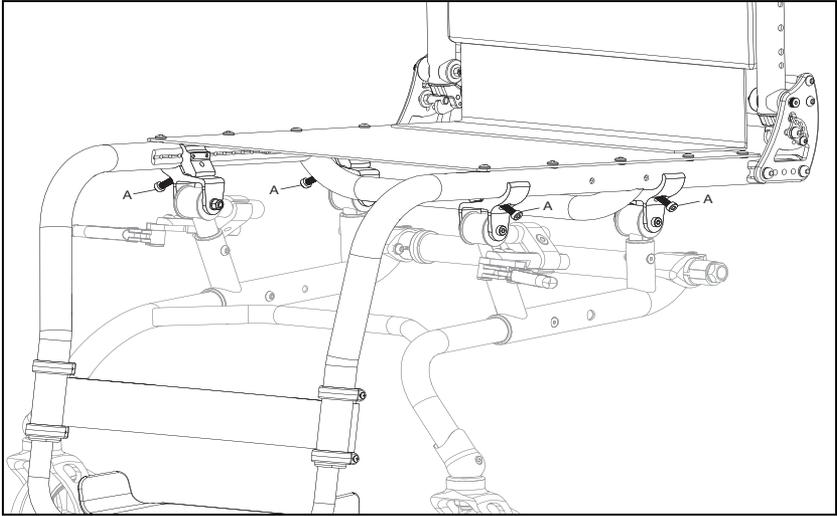


Dimension A - Distance from front of back post to center of rear axle.

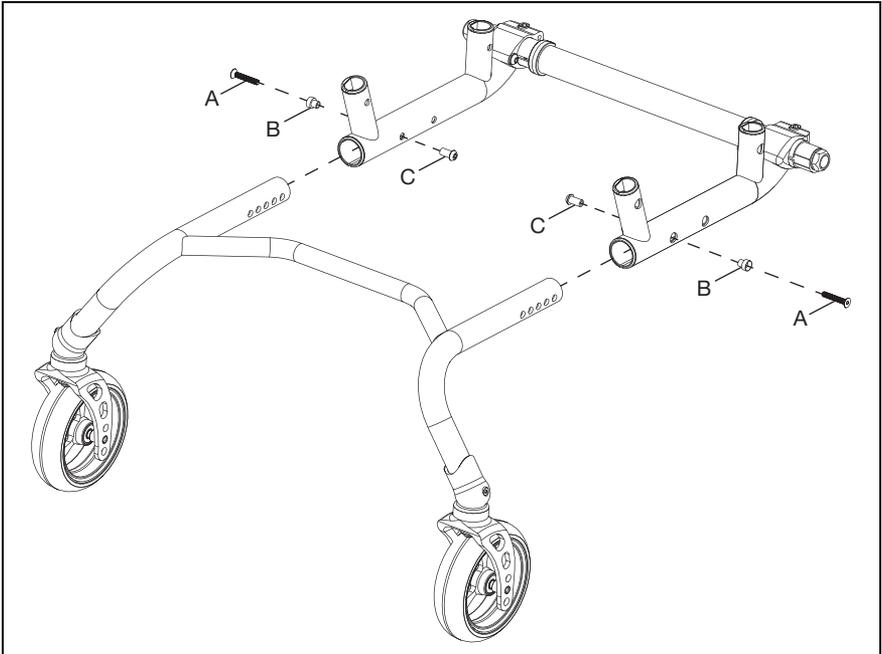


Center of Gravity (COG) and Caster Position

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. Ensure detents on clamps align with the indents on the frame as you move the seat frame and tighten.



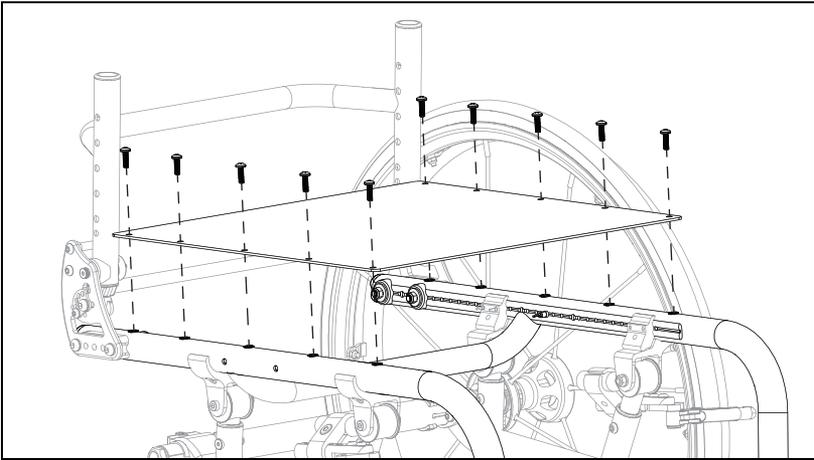
2. Change the caster position/front base frame by removing screw (A), barrel (B) and barrel nut (C) on both sides of the base frame using two 3mm Allen wrenches.



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

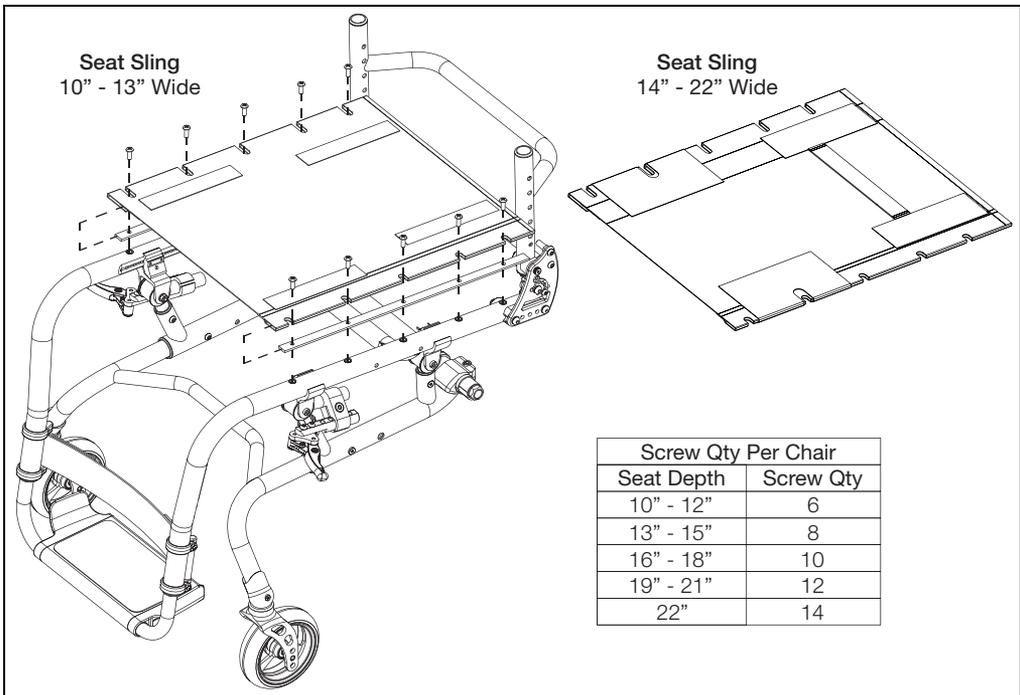
1. Remove seat pan by removing screws using a #2 Phillips screwdriver.
2. Install new seat pan with screws removed in step using a #2 Phillips screwdriver.



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.

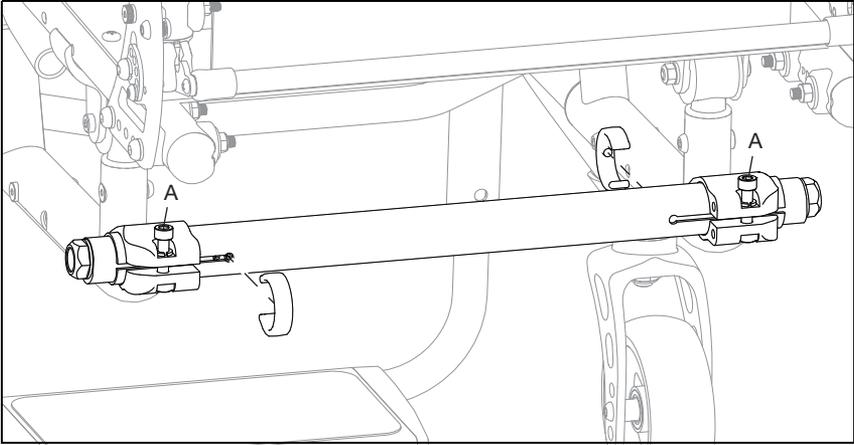
NOTE: Spacers are installed under seat rail when T-Arm is used. See T-Arm section for image.



Installing and Adjusting Anti-Tips

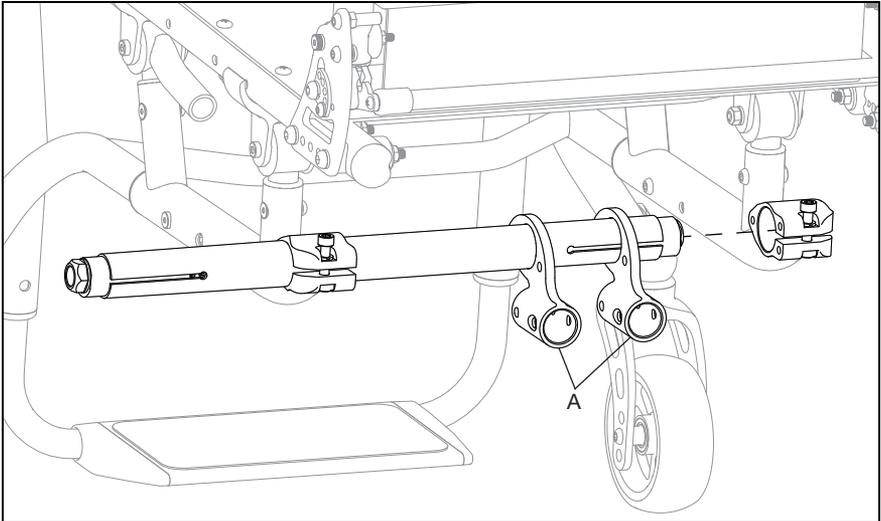
Rear Anti-Tips

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.



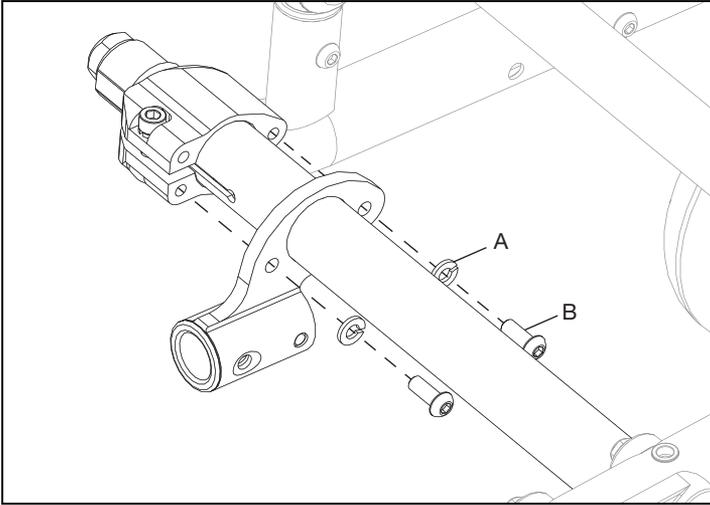
3. Slide the camber tube out of one side of the camber tube clamp. Slide the two anti-tip receivers (A) onto the camber tube and slide the camber tube back through the camber tube clamp.

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



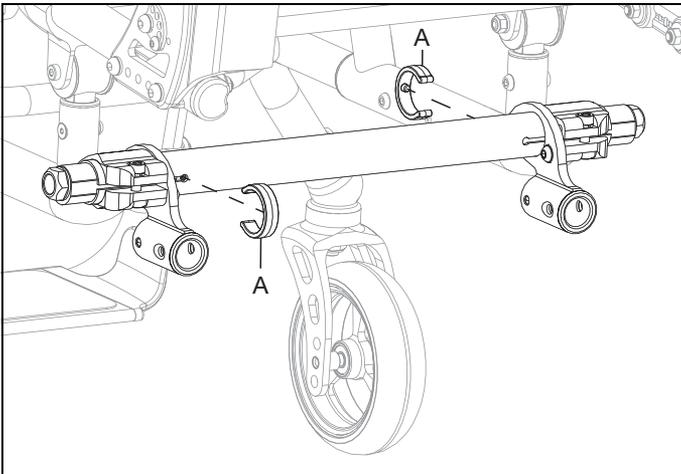
Installing and Adjusting Anti-Tips

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.

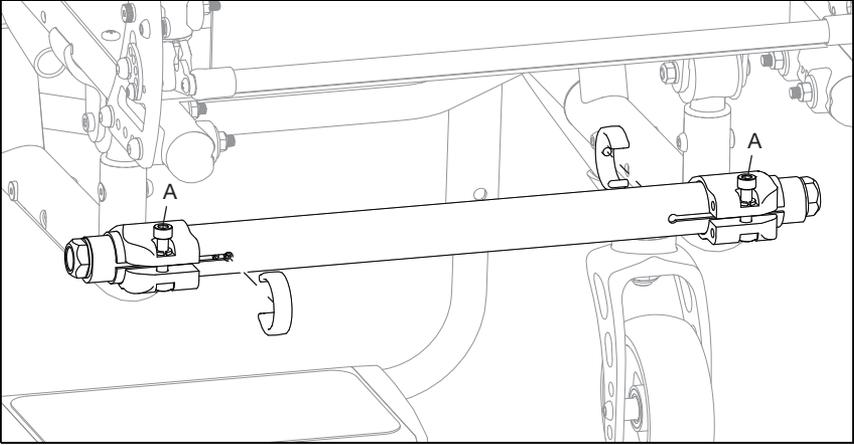


6. Install anti-tip assemblies into anti-tip receivers. The user can then use the owner manual to adjust the anti-tips as needed. The recommended clearance between ground and the anti-tip is 1.5" to 2".
7. Reinstall wheels.

Installing and Adjusting Anti-Tips

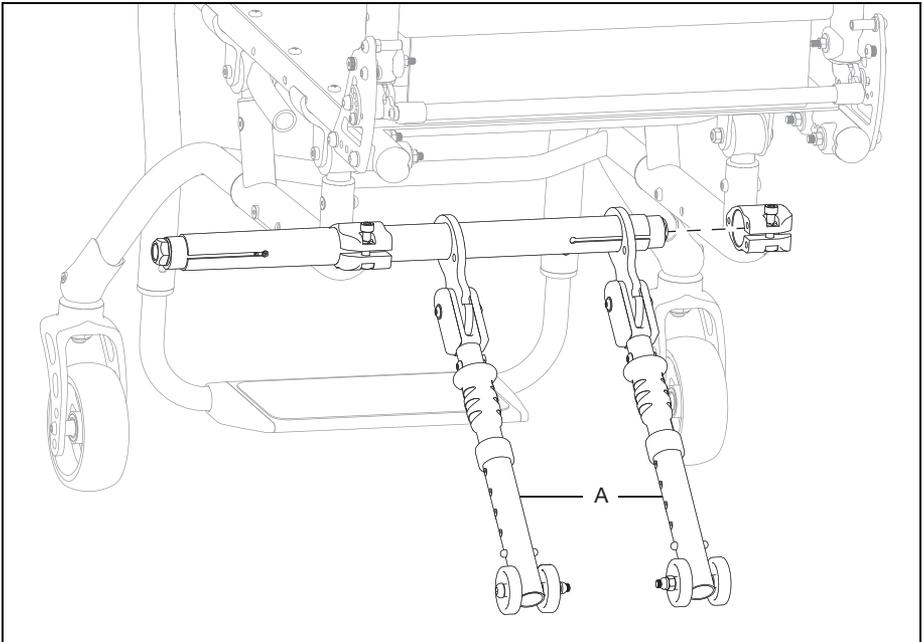
User Activated Anti-Tips

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.



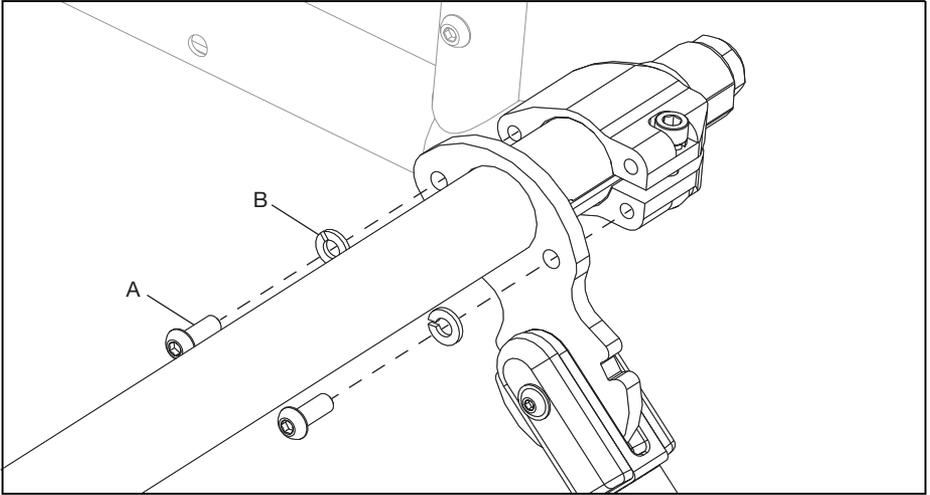
3. Slide the camber tube out of one side of the camber tube clamp. Slide the two user activated anti-tips (A) onto the camber tube and slide the camber tube back through the camber tube clamp.

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



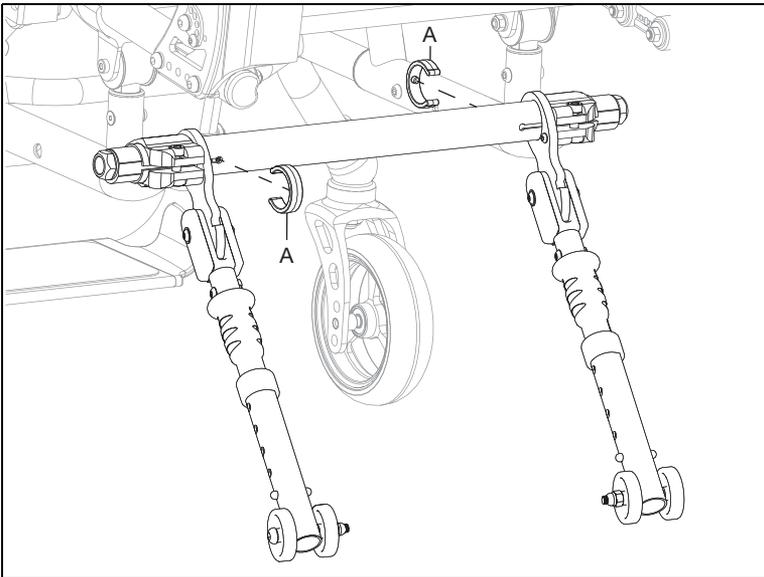
Installing and Adjusting Anti-Tips

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.



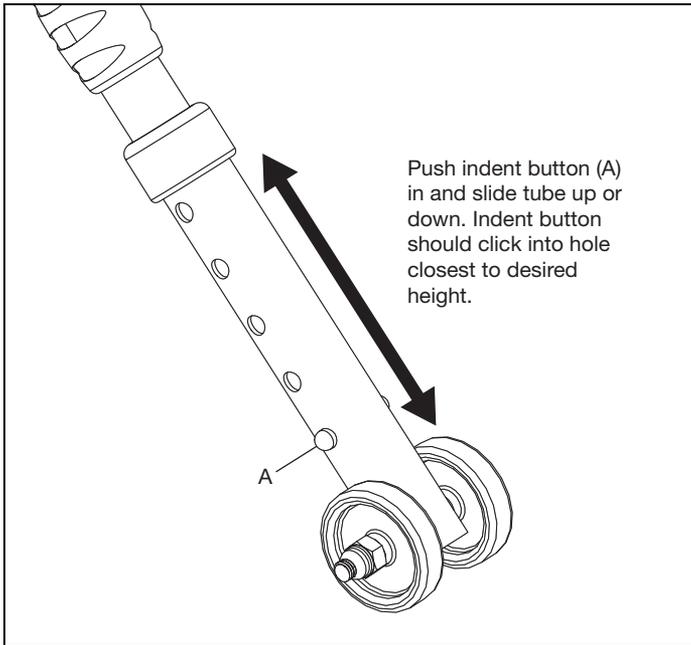
5. Reinstall camber tube clips (A). With clips in place, tighten hardware from step 4 fully.

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.

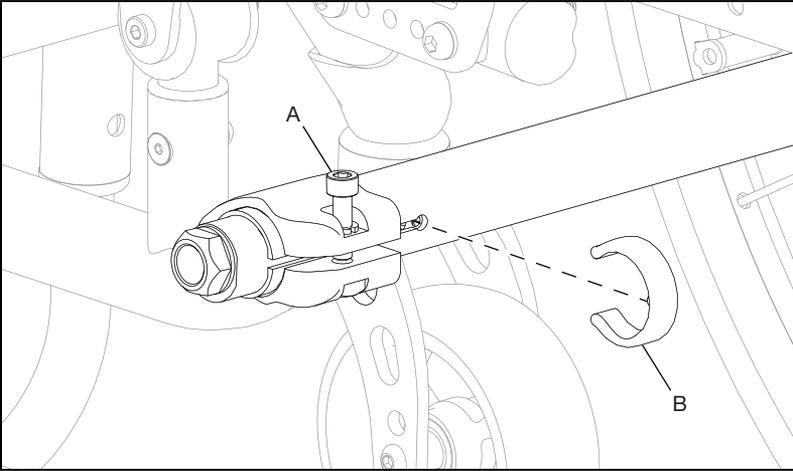


7. The user can use the owner manual to adjust the anti-tips and see the procedure for flipping up and down as needed. The recommended clearance between ground and the anti-tip is 1.5" to 2".

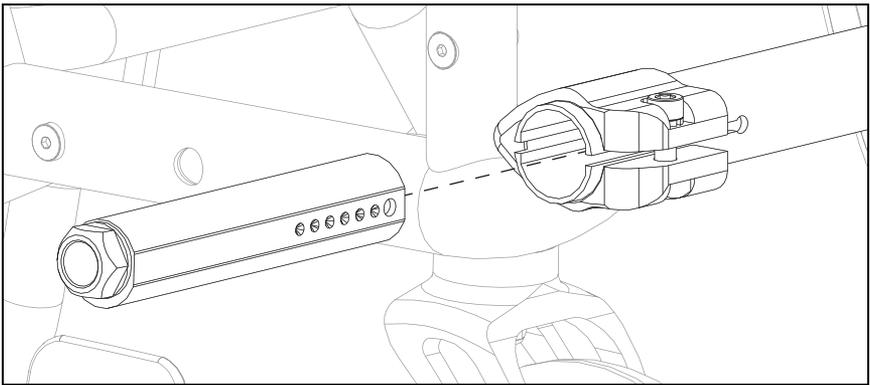
Camber and Camber Tube

Changing Wheel Camber

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

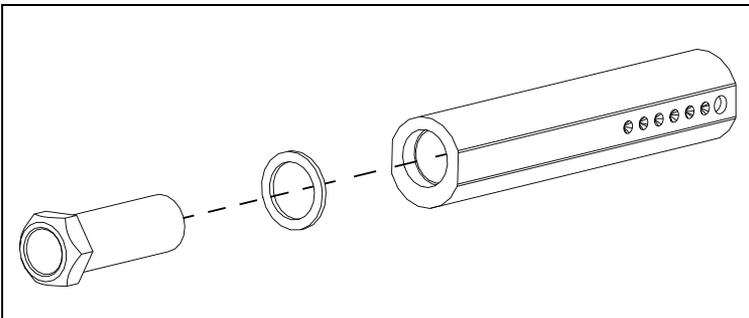


3. Remove camber plug assembly from camber tube.



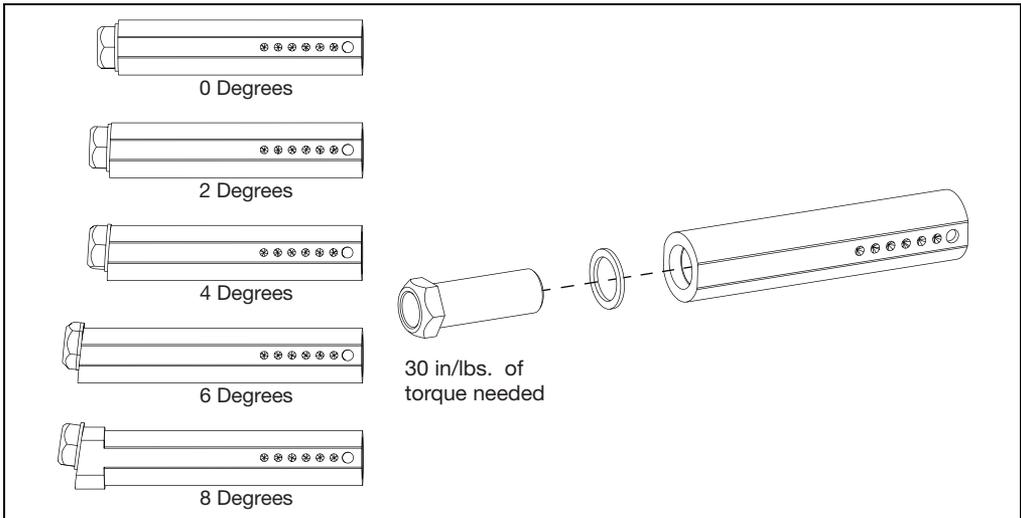
4. Remove axle sleeve and washer from camber plug using an adjustable wrench.

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



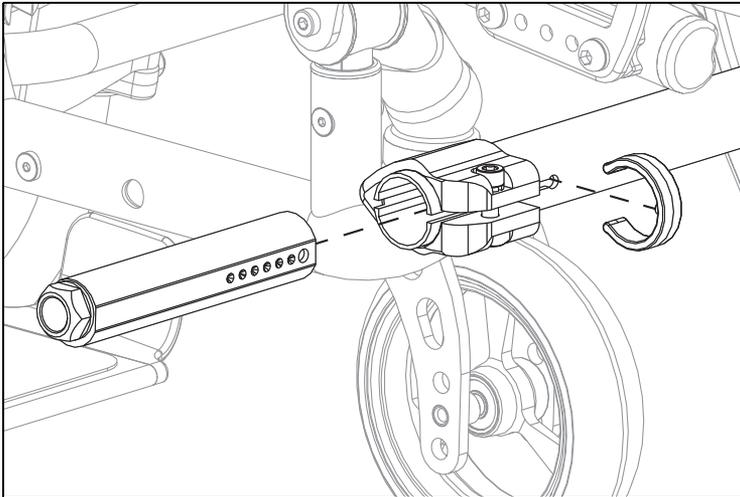
Camber and Camber Tube

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.



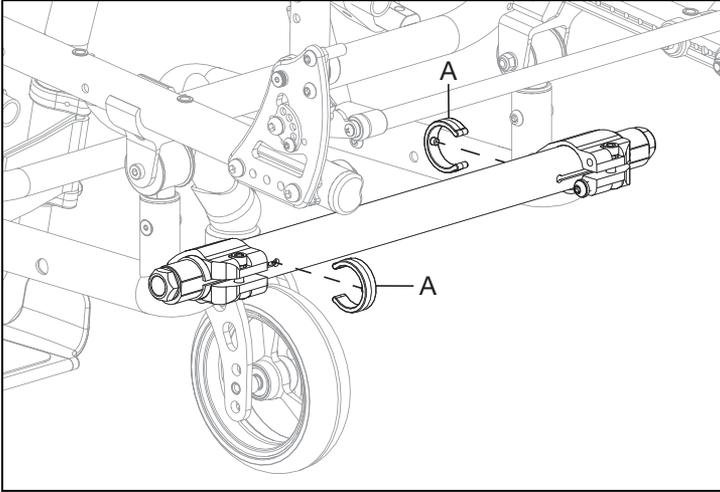
7. Repeat steps on opposite side and reinstall wheels.

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".

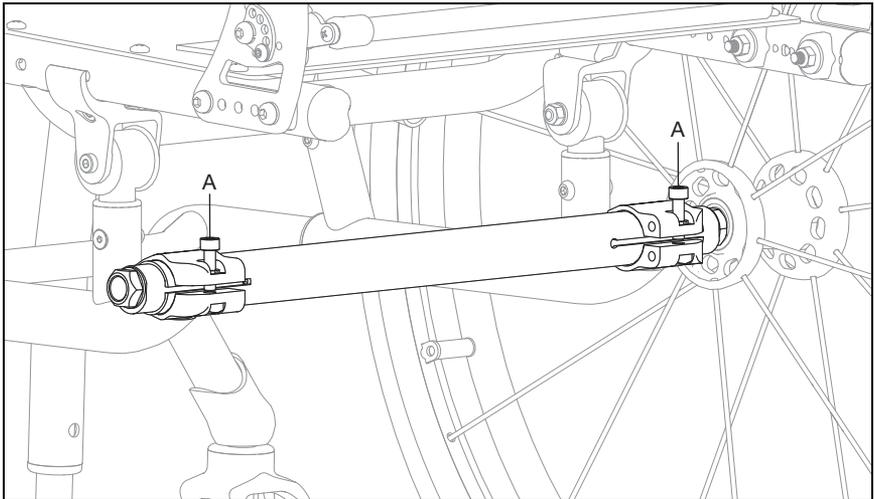
Camber and Camber Tube

Changing Camber Tube

1. Remove camber clips (A).

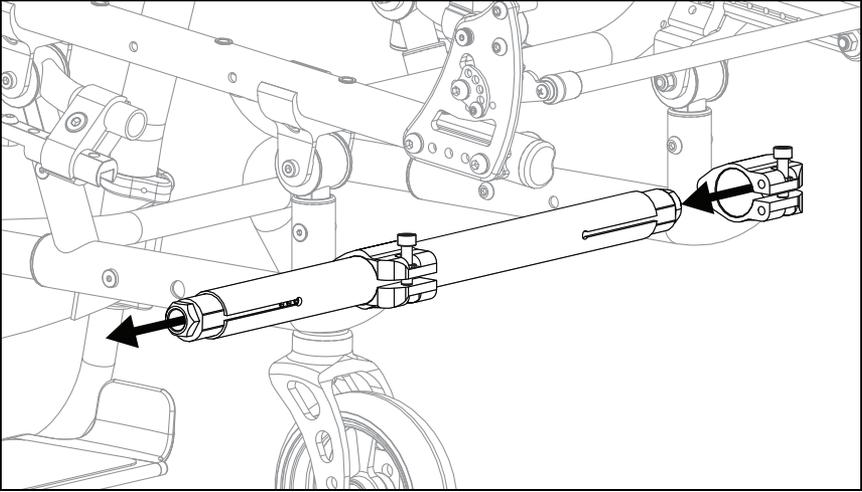


2. Loosen two bolts (A) on the camber clamps using a 5mm Allen wrench. If loosened too much, be sure to watch for the square nut in case it drops out.

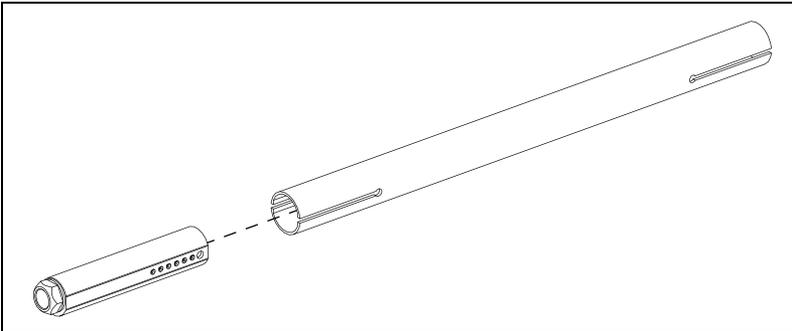


Camber and Camber Tube

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

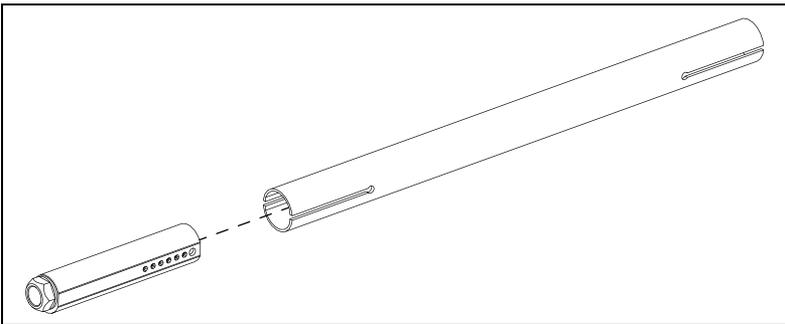


4. Slide the camber plug assembly out of the camber tube.



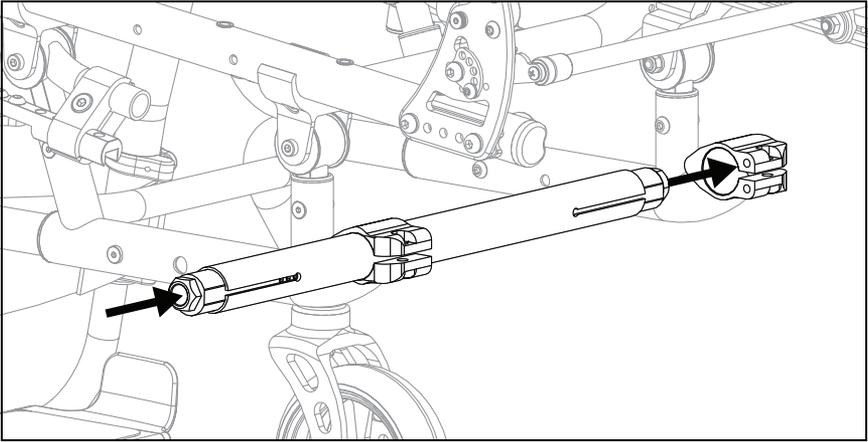
5. Reinstall camber plug assembly into the new camber tube.

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



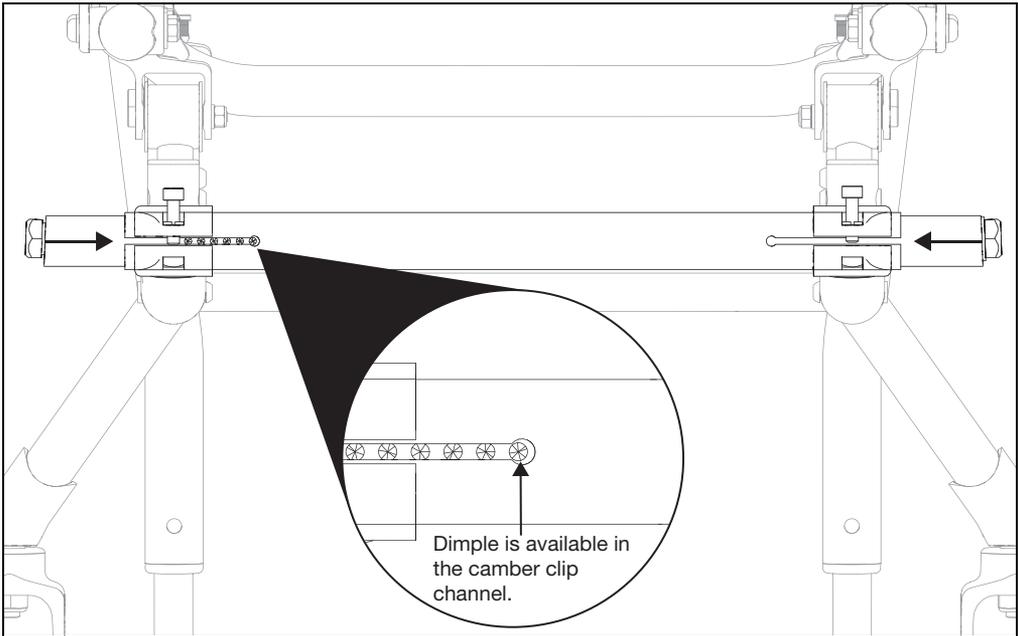
Camber and Camber Tube

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



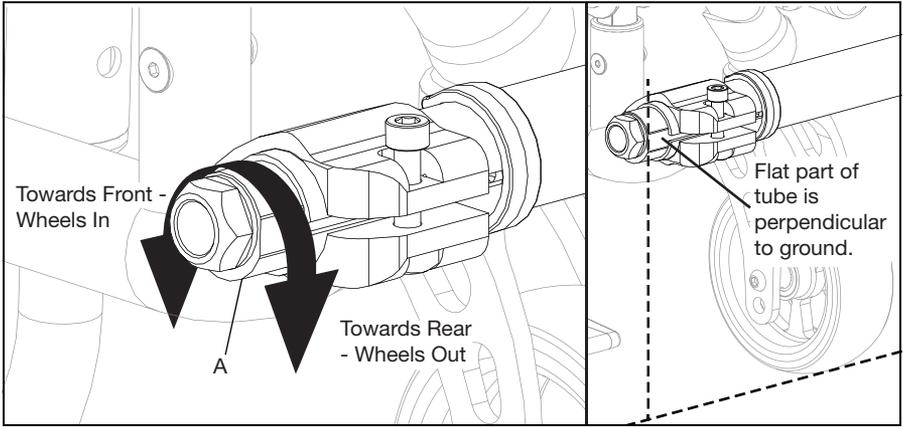
- Slide the camber plugs to the desired rear wheel spacing. Repeat on opposite side and ensure the spacing is the same on both sides.

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.

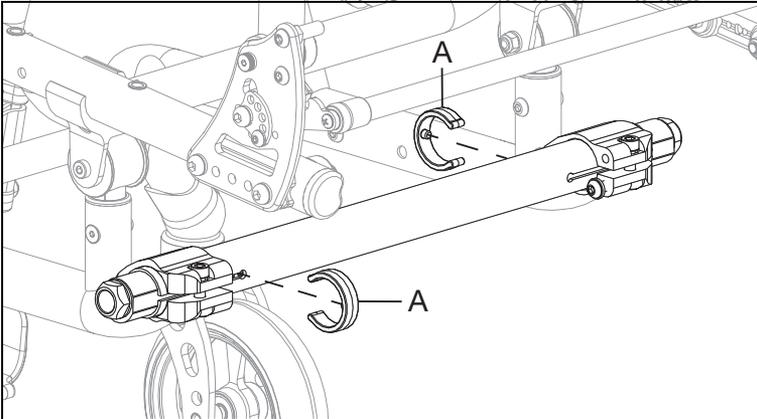


Camber and Camber Tube

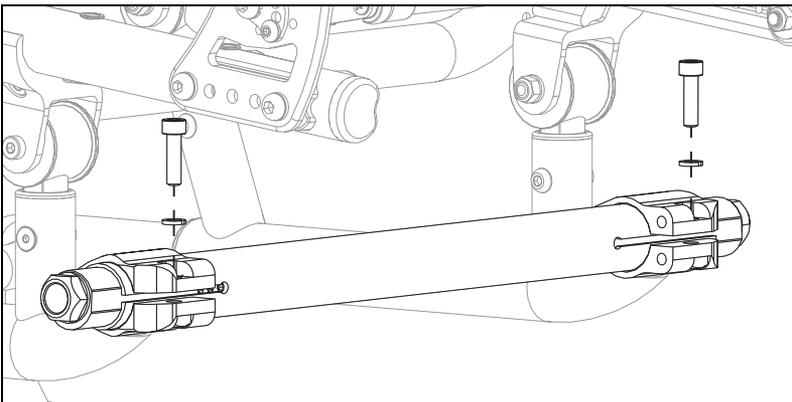
8. Ensure the flat sides of the camber tube are perpendicular to the ground. See the Setting Toe to Zero section if needed. See image below.



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.



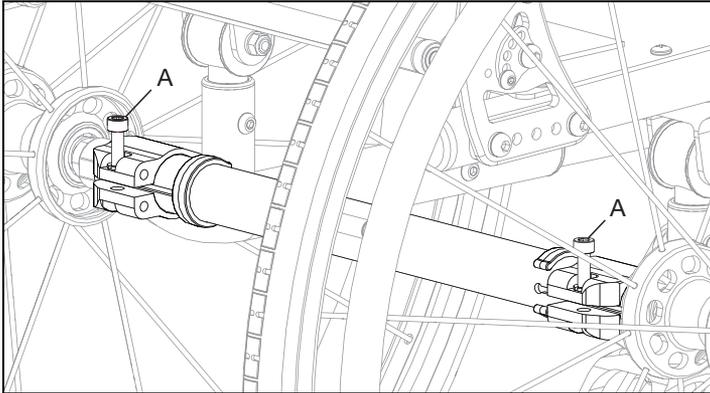
Setting Toe to Zero

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.

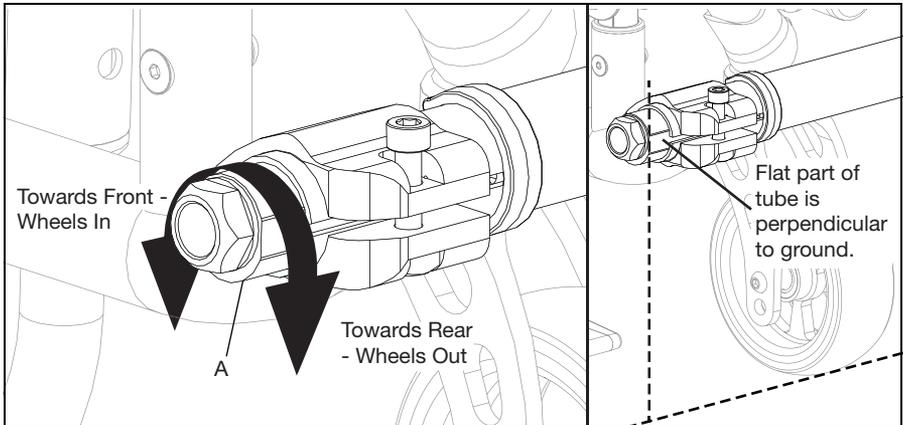
To Set Toe to Zero:

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.

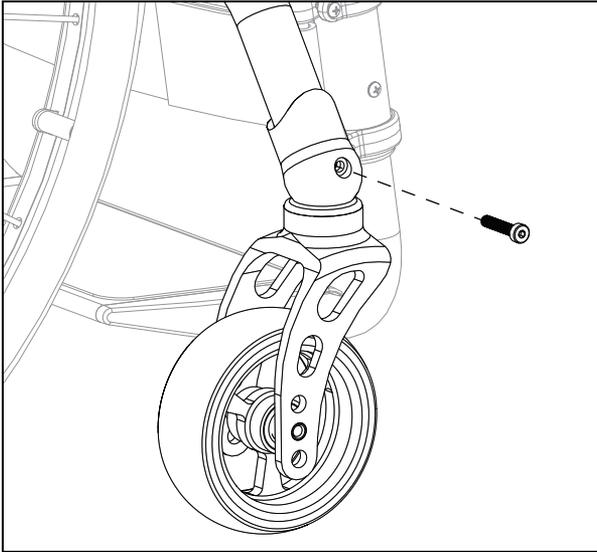
NOTE: Changes that are equal or less than a ½" of vertical change should not require an angle sleeve change.

		New Option								
Existing Option	Fork	Caster Diameter	Streamline	Streamline	Streamline	Streamline	Single Sided	Single Sided	Single Sided	Single Sided
			3	4	5	6	3	4	5	6
	Streamline	3	0°	1°	1°	0°	1°	0°	0°	1°
	Streamline	4	1°	0°	0°	1°	2°	1°	1°	2°
	Streamline	5	1°	0°	0°	1°	2°	1°	1°	2°
	Streamline	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
	Streamline	3	2°	1°	1°	2°	2°	1°	1°	2°
	Streamline	4	N/A	2°	2°	N/A	N/A	2°	2°	N/A
	Streamline	5	N/A	2°	2°	N/A	N/A	2°	2°	N/A
	Streamline	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°	

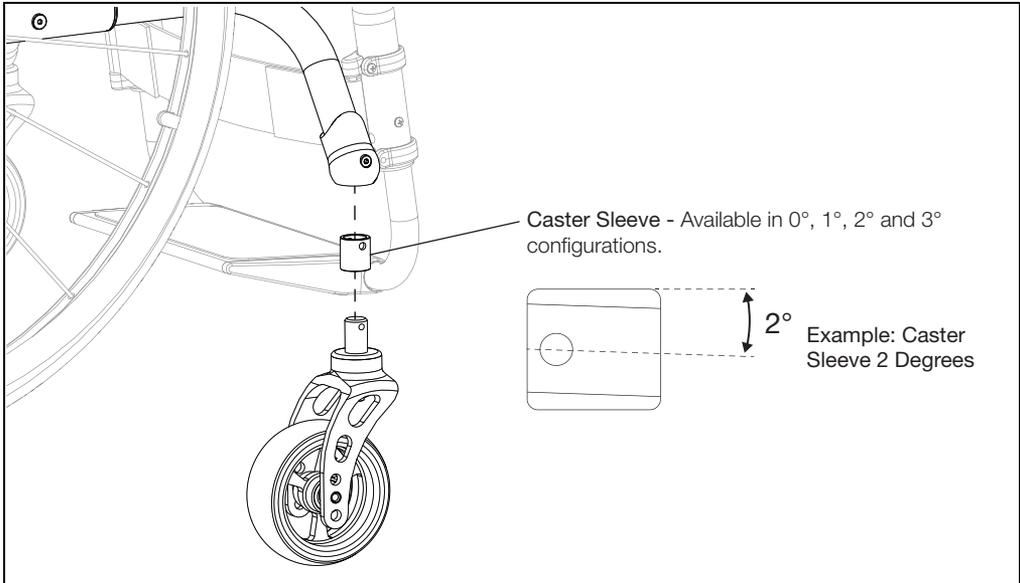
Caster Adjustment

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



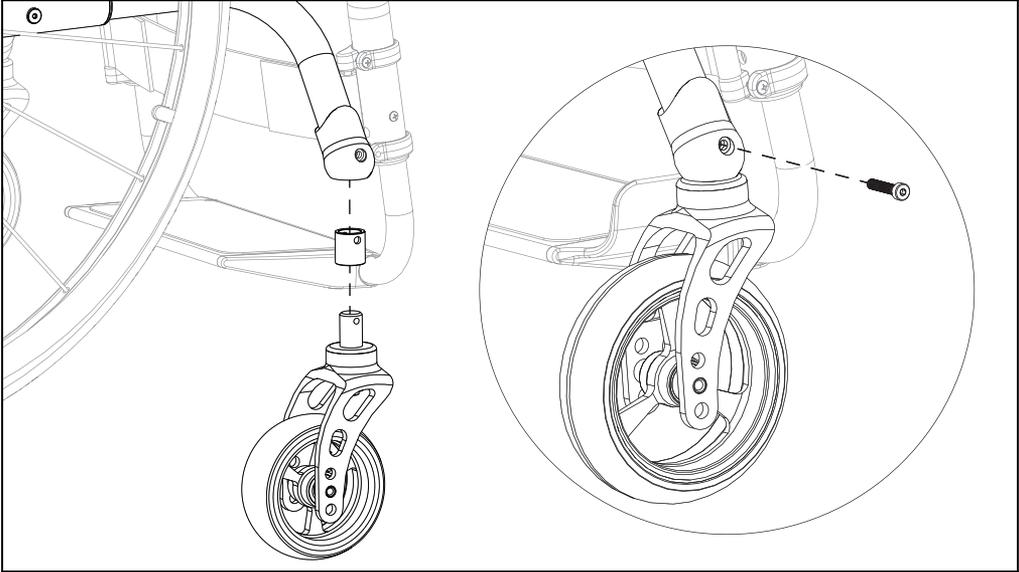
2. Replace the caster sleeve with the new caster sleeve based on the angle adjustment desired. See image below for more details.

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.

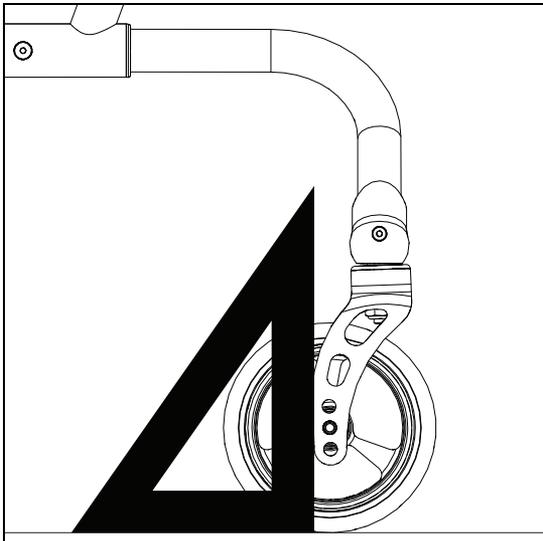


4. Repeat steps on opposite side.
5. Verify correct angle has been achieved.

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.

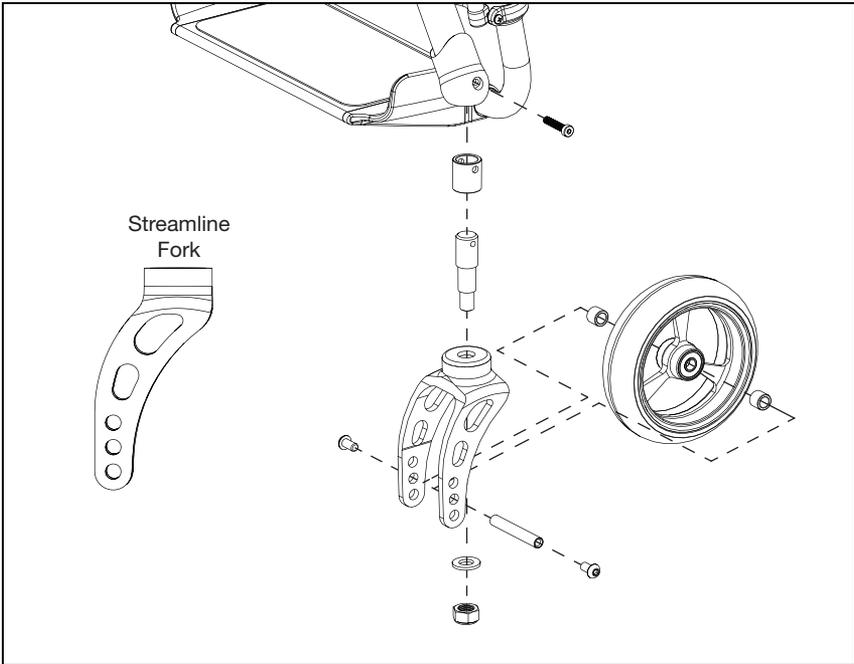
NOTE: The different holes in the forks can be used, when needed (Example: changes to wheel size, tire profile, fork style, etc), to help maintain the parallel relationship between the rear frame and the ground.



Caster Wheels and Forks

Streamline Forks

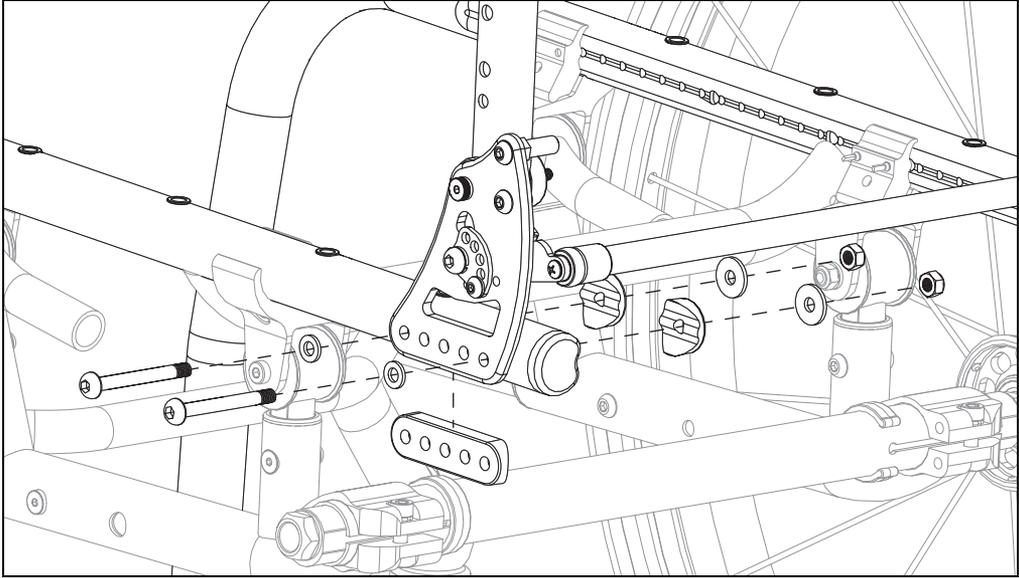
1. See the image below for an exploded diagram of an assembled caster wheel. Two 4mm Allen wrenches are needed to remove the two bolts that secure the caster wheel.



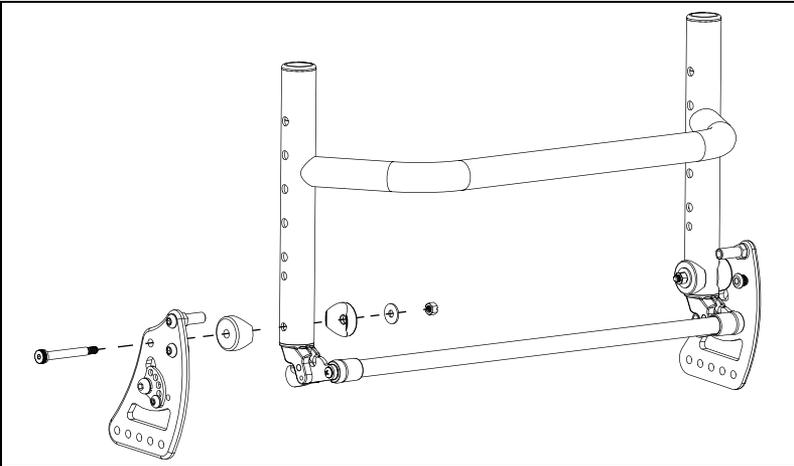
Backrest

Replacing Backrest Plate

1. Remove the two bolts, two small washers, two saddles, two large washers, two nuts and the saddle arm from the lower half of the backrest plate using a 5mm Allen wrench. Repeat on opposite side.



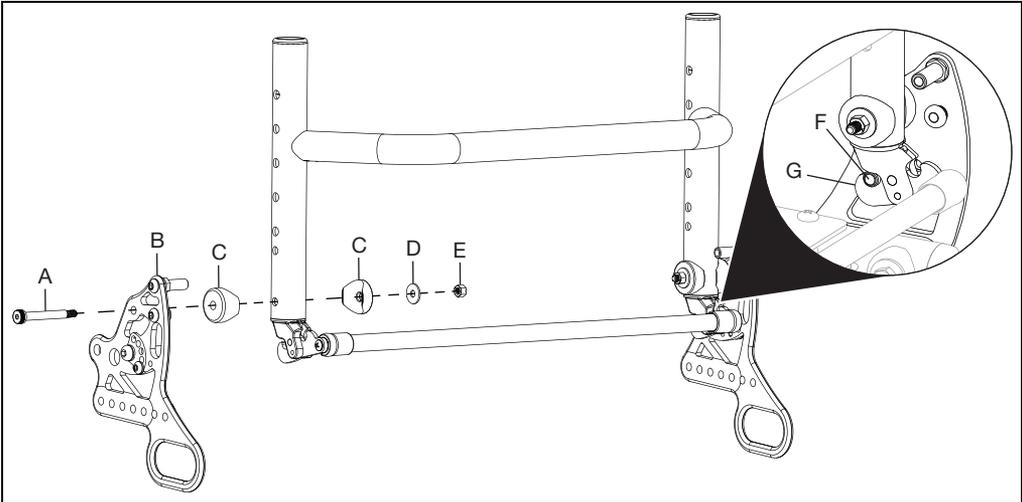
2. Detach back posts from backrest plate by removing bolt, two saddles, washers and nuts using a 3mm Allen wrench and an 8mm wrench. Repeat on opposite side.



Backrest

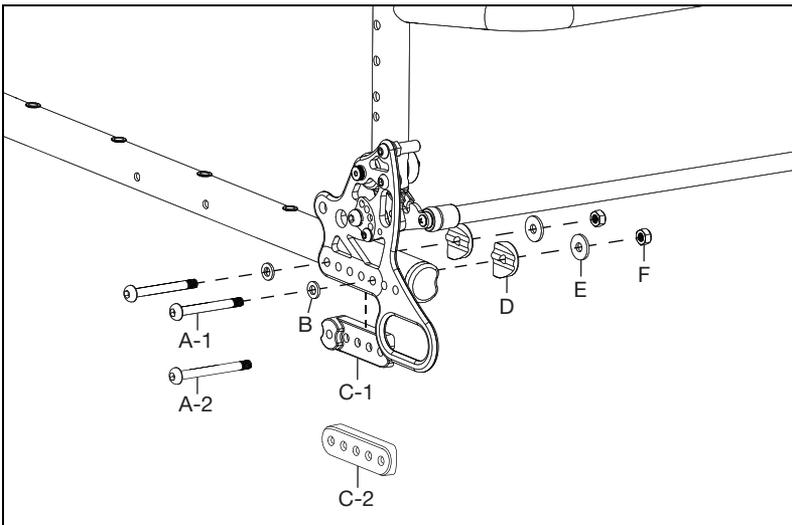
3. Install new backrest plate (B) onto back post with bolt (A), two saddles (C), washer (D) and nut (E) using a 3mm Allen wrench and an 8mm wrench. Ensure backrest stop (F) catches backrest hook (G) as shown below. Repeat on opposite side.

NOTE: A transit backrest plate is shown in the steps below. The procedure is the same for a standard backrest plate and a transit backrest plate with seat belt mount.



4. 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.

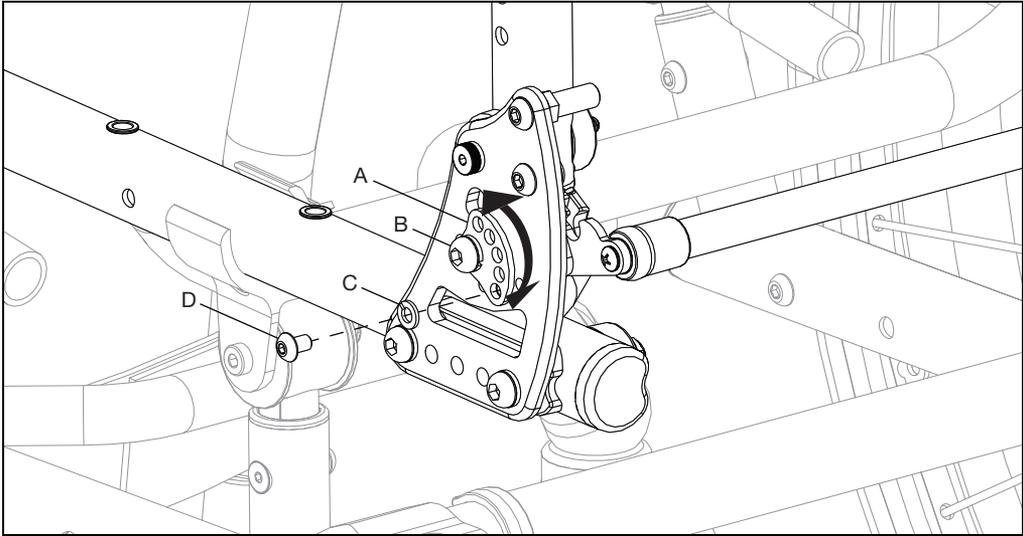


Backrest

Adjusting Backrest Angle

1. To adjust the backrest angle, remove screw (D) and lock washer (C) shown below with a 3mm Allen wrench. Loosen the arc adjustment cam screw (B) just enough so that the arc adjustment cam (A) can be rotated. The arc adjustment cam (A) can be rotated to change the angle as long as the bolt holes can still be aligned.

NOTE: There are five holes to change the angle from +2° to -10° in 3° increments.

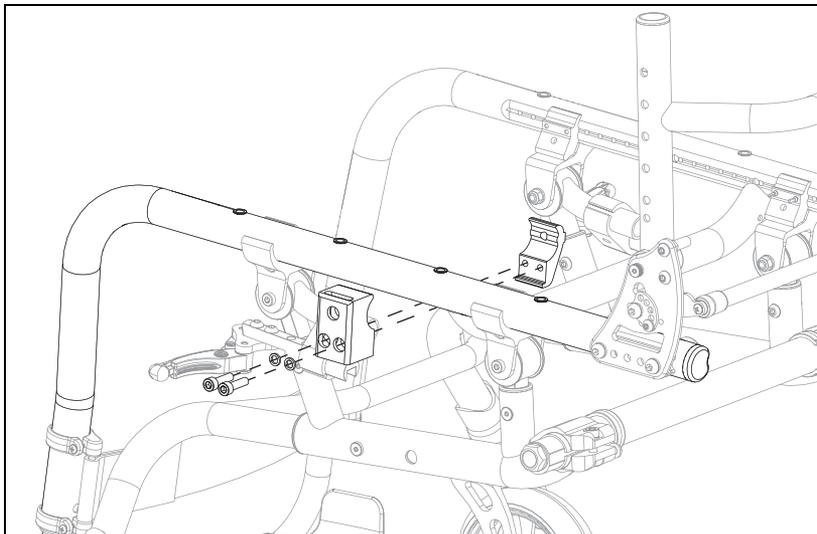


2. Reinstall hardware in new hole configurations. Repeat on opposite side. Ensure both sides are set in the same configuration.

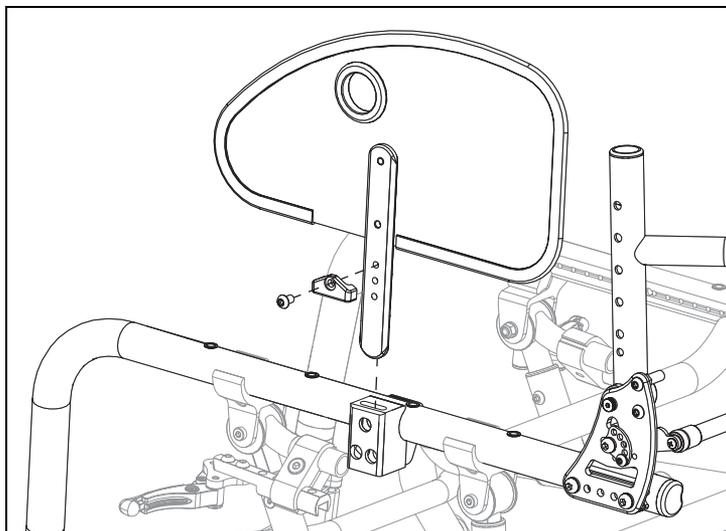
Side Guard

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.



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.

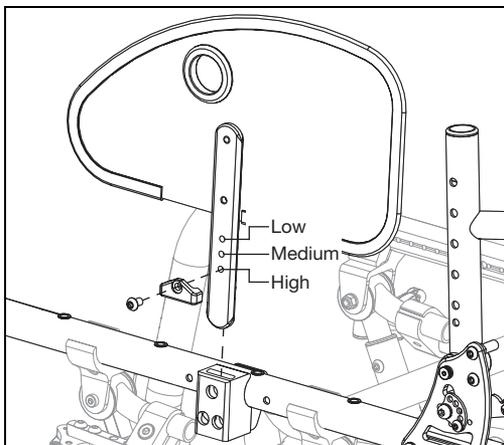


Side Guard

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.

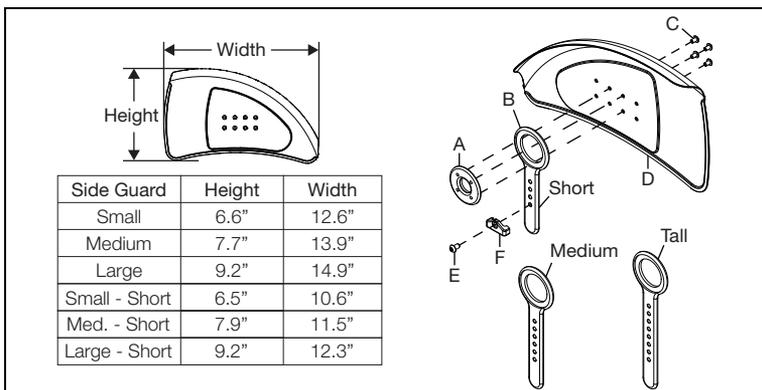
Formula: Wheel Outside Diameter (OD) - Rear Seat Height = Tire Height over seat

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.



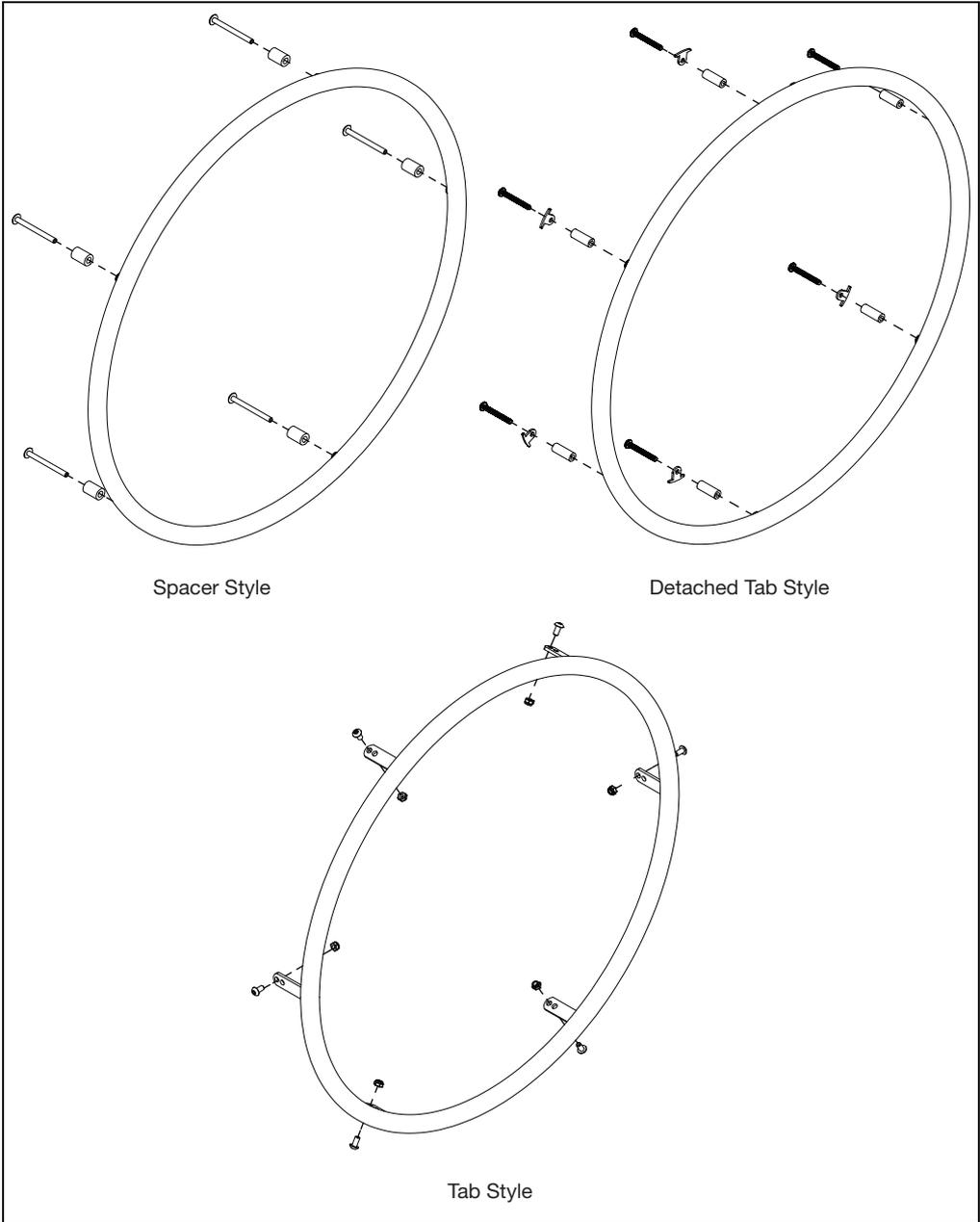
Handrim Configurations

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 Number	Connection Points	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 Coated, Projection: 100654 Natural Fit: 100835	100206		101106				
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		101870	200548	200539	200540	
26" Ki Spoke	200534					200351		100578	200549	100907	101454	
24" Superlight	101159	6			100536	100754	101161	100836		100830	100828	
25" Superlight	101160					101197	101160	101091		101464	101460	
20" 5-Spoke X Core	101961	5		Aluminum, Projection, Natural Fit: 100629	100724	101897		101963				
22" 5-Spoke X Core	101962						101898		101964			
24" 5-Spoke X Core	100960			Plastic Coated: 101756		100975		100976	200546			
25" 5-Spoke X Core	100960				101893					100768	100769	
20" Spinery Spox	See Spinery Spox Page	6			Screw: 100669 Nut: 100657	103125		103179				
22" Spinery Spox						100827		100808		100889	100888	
24" Spinery Spox						100766	101161	100615		100830	100828	
25" Spinery Spox						100767	101160	100765		101464	101460	
26" Spinery Spox						101477		101148		200200	100950	
22" Spinery LX	See Spinery LX Page	6			Screw: 100669 Nut: 100657	100827		100808		100889	100888	
24" Spinery LX						100766	101161	100615		100830	100828	200213
25" Spinery LX						100767	101160	100765		101464	101460	200208
26" Spinery LX						101477		101148		200200	100950	
22" Maxx Performance Spoke	105135	6	100698	100653	Superlight Screw: 100669	100560	101161	100576	100569	200538	200201	
24" Maxx Performance Spoke	105136				Superlight Nut: 100657 Screw (Excluding Superlight): 100654	200349		100577	200547	100793	200202	

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.

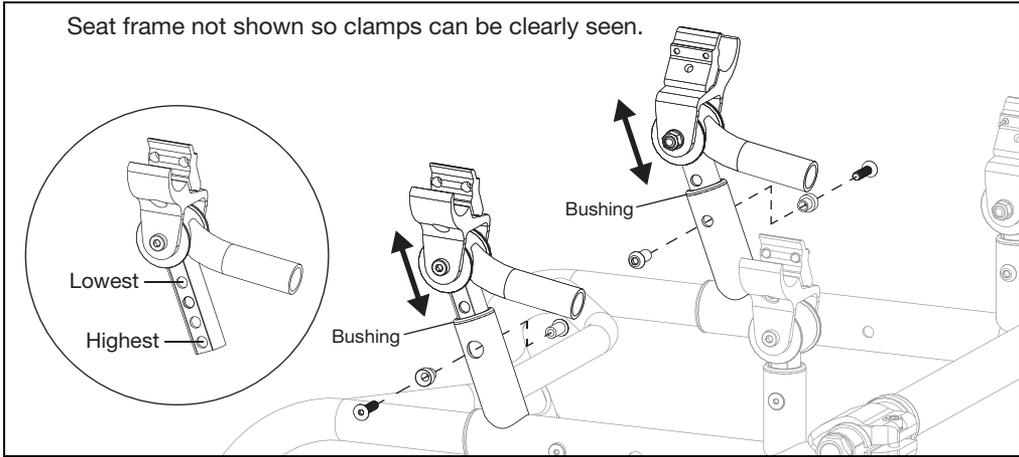


Front and Rear Seat Height

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.

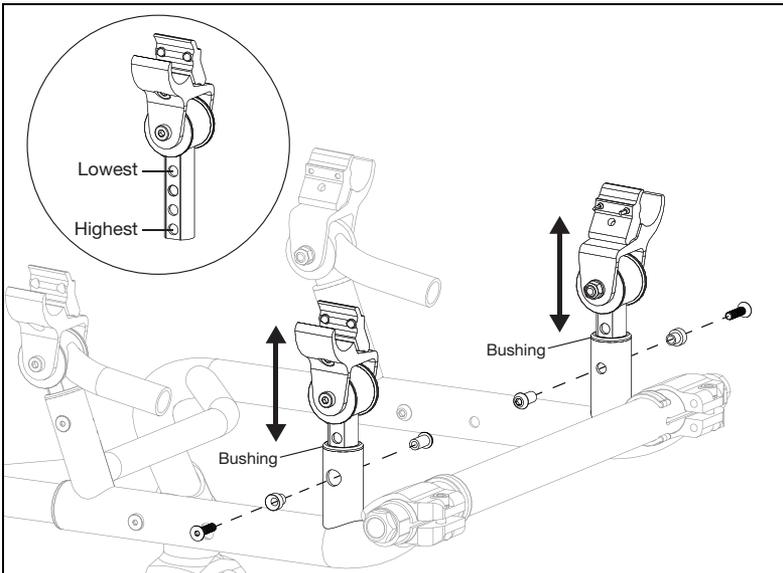
NOTE: The barrel nut may be difficult to remove in the front and rear ISO Tube assemblies. Use something, such as a small pen or screwdriver, to help push the barrel nut out if needed.



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.

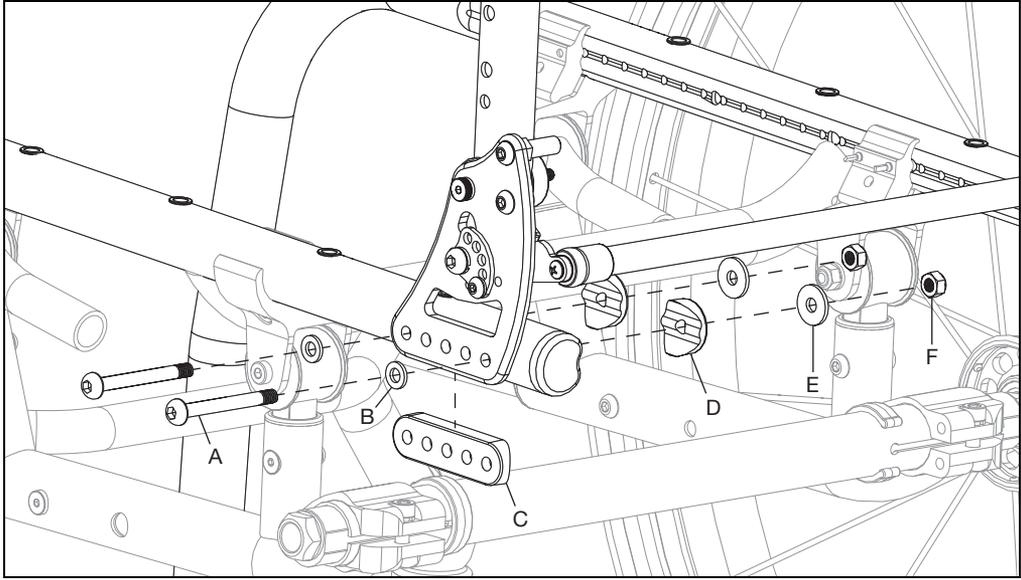
NOTE: Both rear iso vertical tube assemblies should be set in the same configuration.



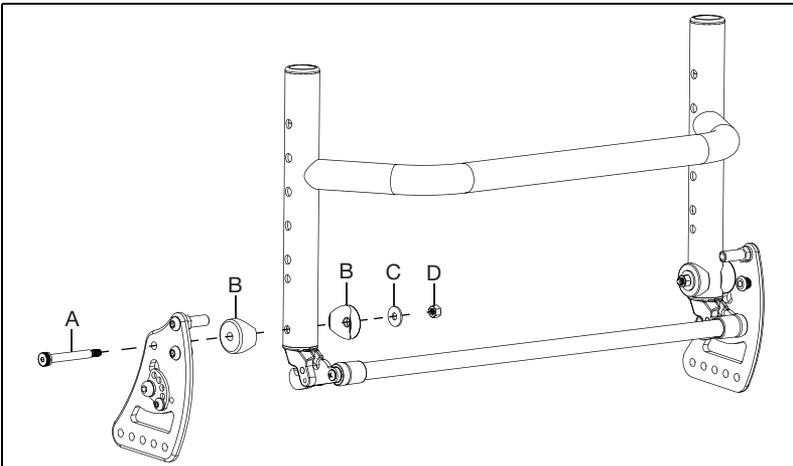
Installing Transit

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.



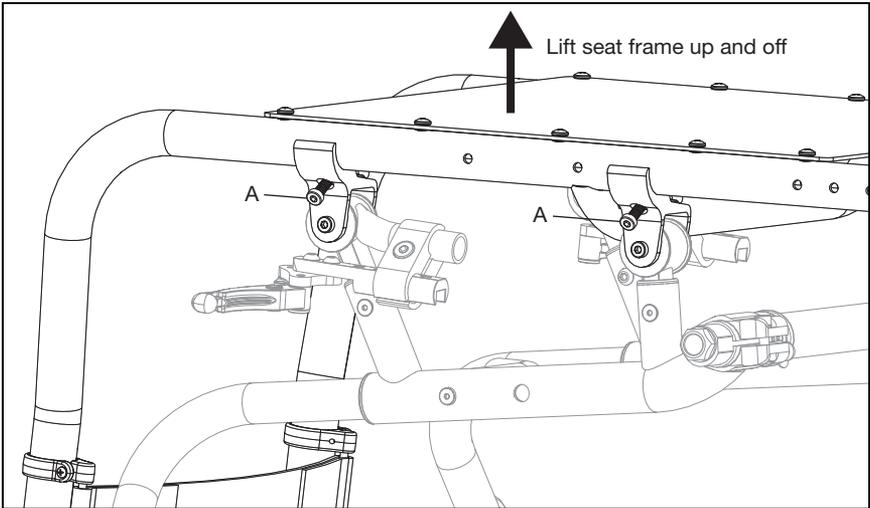
2. Detach back posts from backrest plate by removing bolt (A), two saddles (B), washers (C) and nuts (D) using a 3mm Allen wrench and an 8mm wrench. Repeat on opposite side.



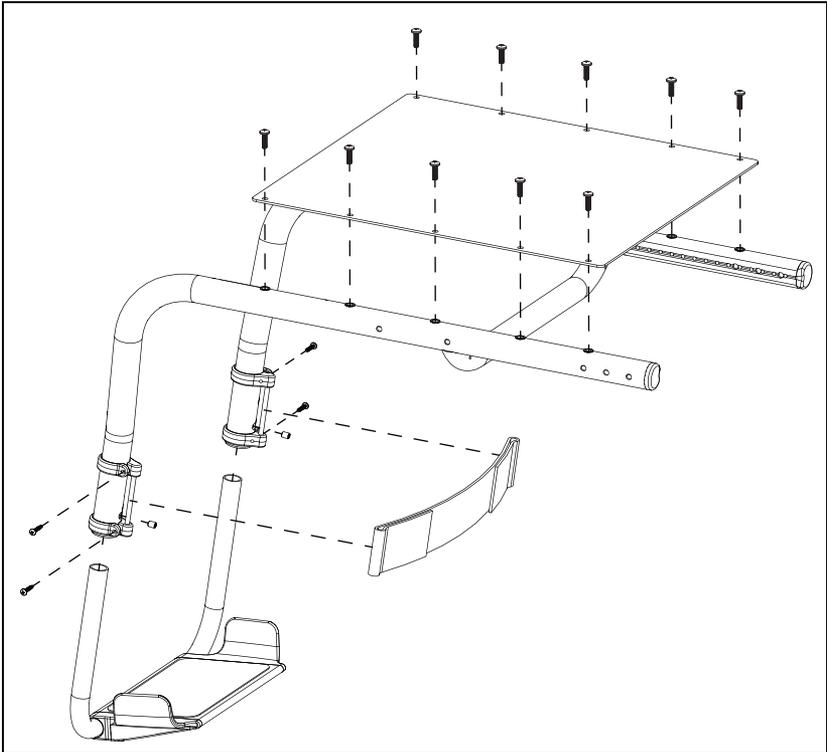
Installing Transit

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.



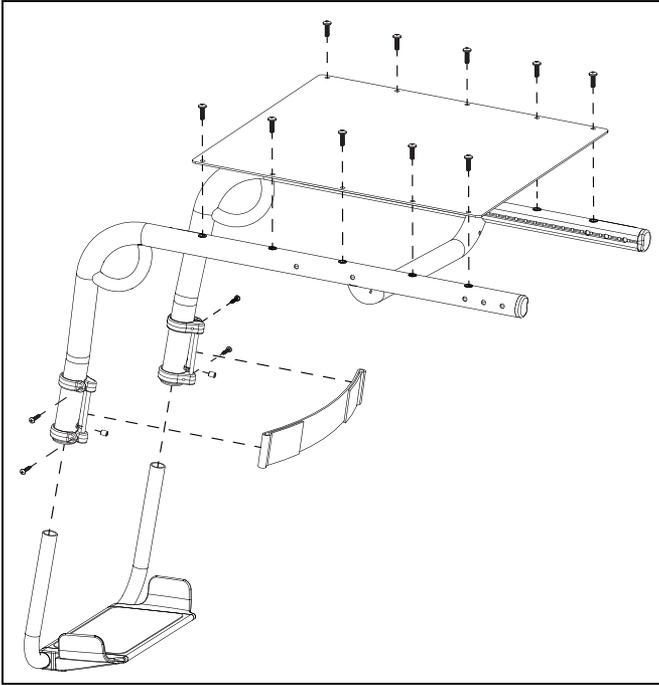
2. Remove any parts or accessories (such as underseat pouch, wheel locks, armrest clamps, etc.) from the seat frame that you will be transferring to the new seat frame. See image below for some examples.



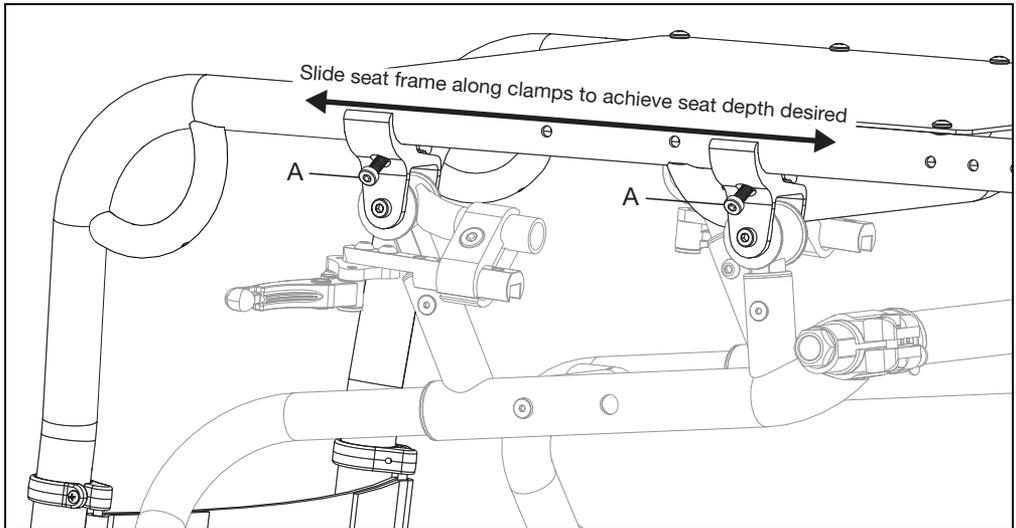
Installing Transit

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.



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. Ensure detents on clamps align with the indents on the frame as you move the seat frame and tighten.

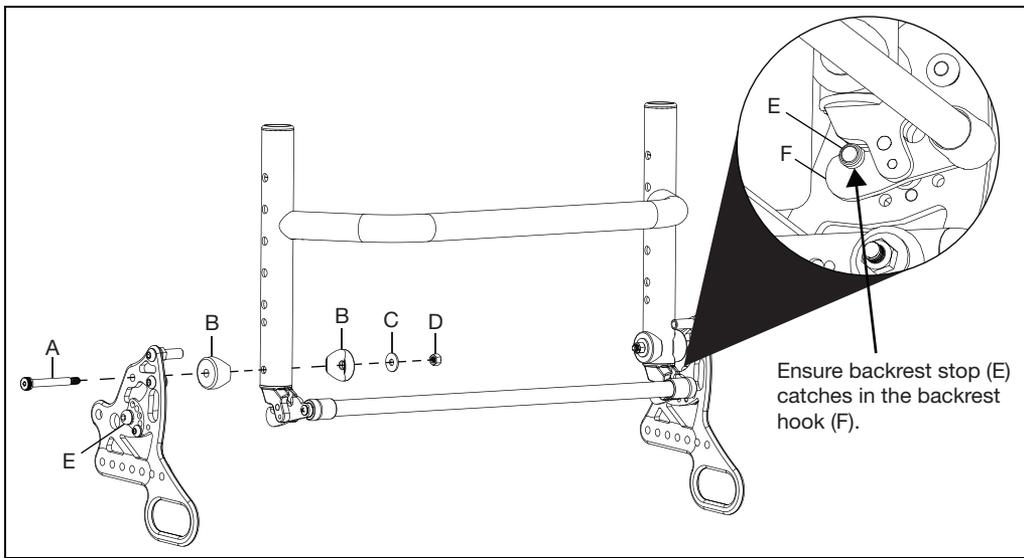


Installing Transit

Installing Transit Backrest Plate

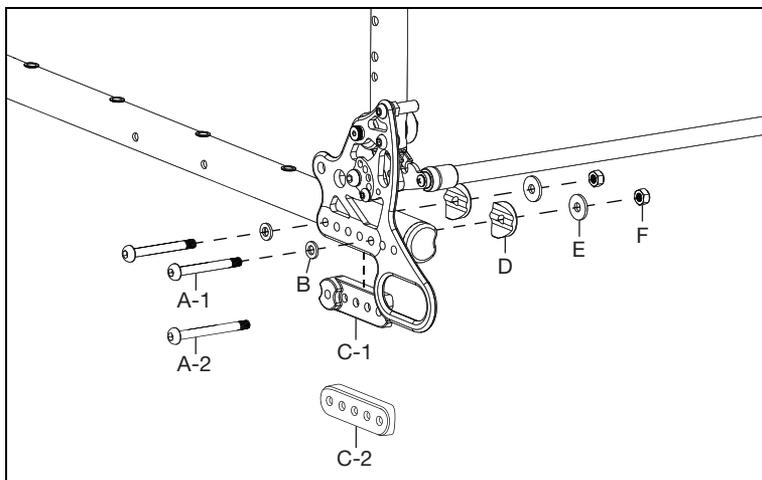
1. Install new transit backrest plate onto back posts with two bolts (A), four saddles (B), two washers (C) and two nuts (D) using a 3mm Allen wrench and an 8mm wrench. Ensure backrest stop (E) catches backrest hook (F) as shown below. Both sides of the backrest stop (E) are shown for reference.

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.





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DCN0407.0