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

LIBERTY

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 Liberty 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 Liberty 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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Tools

Please 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	• Torque Wrench
• 5mm Allen Wrench	• 17mm Wrench	• 24mm Wrench
• 5.5mm Allen Wrench	• 19mm Wrench	• Phillips Screwdriver

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
Seat Frame: 1" (flat sided)
Back Canes
Fixed Height Back Canes: 1"
Lower Height Adjustable Back Tube: 1"
Upper Height Adjustable Back Tube: 7/8"
Stroller Handle Back Post: 7/8"
Arms
Swing Away: 1"
Upper T-Arm: 7/8"
Transfer Tube: 3/4"
Angle Adjustable Flip Up: 1"
Footrests
S/A Hanger: 1"
S/A Extension Tube: 3/4"
Pediatric Pro and Pro ELR Hanger: 1"

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
Superlight Spoke	92-112 kgf

Seat Height - Rear Wheels

Determine your wheel and caster selection based upon your desired seat height. Once determined, be sure to check Caster and Footrest Compatibility charts before ordering or making any physical changes to the chair. Also, be aware that a specific rear seat height may be accomplished with more than one type of axle plate. See axle plate positioning matrix to determine if your current axle plate may be utilized for your desired rear seat height.

Rear Wheel Size	Caster Size					
	4"	5"	6"	6" X 2"	8"	8" X 2"
	Seat Height					
12"	13	14	15	15	17	17
	13.5	14.5	15.5	15.5	17.5	17.5
	14	15	16	16	18	18
	14.5	15.5	16.5	16.5	18.5	18.5
	15	16	17	17	19	19
	15.5	16.5	17.5	17.5	19.5	19.5
	16	17	18	18	20	20
		17.5	18.5	18.5		
		18	19	19		
		18.5				
16"	14.5	14.5	15	15	17	17
	15	15	15.5	15.5	17.5	17.5
	15.5	15.5	16	16	18	18
	16	16	16.5	16.5	18.5	18.5
		16.5	17	17	19	19
		17	17.5	17.5	19.5	19.5
		17.5	18	18	20	20
		18	18.5	18.5		
		18.5	19	19		
16" with Low Poly Tire	13.5	14	15	15	17	17
	14	14.5	15.5	15.5	17.5	17.5
	14.5	15	16	16	18	18
	15	15.5	16.5	16.5	18.5	18.5
	15.5	16	17	17	19	19
	16	16.5	17.5	17.5	19.5	19.5
		17	18	18	20	20
		17.5	18.5	18.5		
		18	19	19		
		18.5				

Seat Height - Rear Wheels

Rear Wheel Size	Caster Size					
	4"	5"	6"	6" X 2"	8"	8" X 2"
	Seat Height					
20"	13	14	15	15	17	17
	13.5	14.5	15.5	15.5	17.5	17.5
	14	15	16	16	18	18
	14.5	15.5	16.5	16.5	18.5	18.5
	15	16	17	17	19	19
	15.5	16.5	17.5	17.5	19.5	19.5
	16	17	18	18	20	20
		17.5	18.5	18.5		
		18	19	19		
		18.5				
22"	14	14	15	15	17	17
	14.5	14.5	15.5	15.5	17.5	17.5
	15	15	16	16	18	18
	15.5	15.5	16.5	16.5	18.5	18.5
	16	16	17	17	19	19
		16.5	17.5	17.5	19.5	19.5
		17	18	18	20	20
		17.5	18.5	18.5		
		18	19	19		
		18.5				
24"	15	15	15	15	17	17
	15.5	15.5	15.5	15.5	17.5	17.5
	16	16	16	16	18	18
		16.5	16.5	16.5	18.5	18.5
		17	17	17	19	19
		17.5	17.5	17.5	19.5	19.5
		18	18	18	20	20
		18.5	18.5	18.5		
			19	19		
24" with Low Poly Tire	14.5	14.5	15	15	17	17
	15	15	15.5	15.5	17.5	17.5
	15.5	15.5	16	16	18	18
	16	16	16.5	16.5	18.5	18.5
		16.5	17	17	19	19
		17	17.5	17.5	19.5	19.5
		17.5	18	18	20	20
		18	18.5	18.5		
		18.5	19	19		

Seat Height - Casters

Seat Height - Caster Compatibility charts are utilized to prevent interference between the caster and side frame or caster and hanger/footrest. Higher degree hangers and larger casters are more likely to create interference. Use the charts below to determine if your wheel, caster, caster stem and seat height configuration will work with your desired hanger angle selection.

Caster Footrest Compatibility Matrix														
60° and 70° Extension Mount Hangers														
Caster Housing			Forward Caster Housing						Reversed Caster Housing					
Caster Size			4	5	6	6X2	8	8X2	4	5	6	6X2	8	8X2
Composite Footrest	Front Seat to Floor Height	13												
		13½												
		14												
		14½												
		15												
		15½												
		16												
		16½												
		17												
		17½												
		18												
		18½												
		19												
		19½												
		20												
Angle Adjustable Footrest		13												
		13½												
		14												
		14½												
		15												
		15½												
		16												
		16½												
		17												
		17½												
		18												
		18½												
		19												
		19½												
		20												

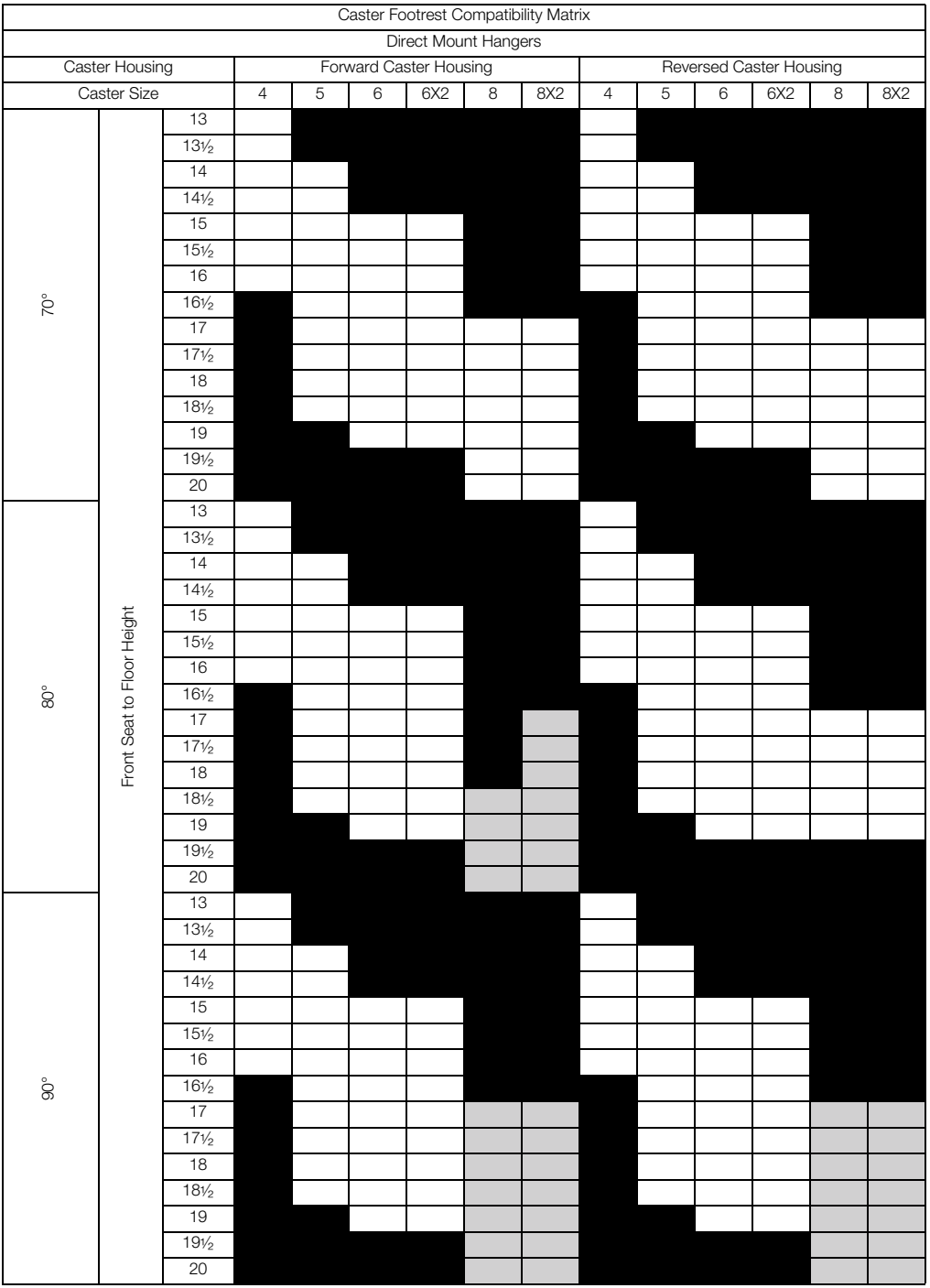
	Seat height not available		No go with short stem		Available with short and long stem

Seat Height - Casters

Caster Footrest Compatibility Matrix														
80° Extension Mount Hangers														
Caster Housing			Forward Caster Housing						Reversed Caster Housing					
Caster Size			4	5	6	6X2	8	8X2	4	5	6	6X2	8	8X2
Composite Footrest	Front Seat to Floor Height	13												
		13½												
		14												
		14½												
		15												
		15½												
		16												
		16½												
		17												
		17½												
		18												
		18½												
		19												
		19½												
		20												
Angle Adjustable Footrest		13												
		13½												
		14												
		14½												
		15												
		15½												
		16												
		16½												
		17												
		17½												
		18												
		18½												
		19												
		19½												
		20												

	Seat height not available		No go with short stem		Available with short and long stem

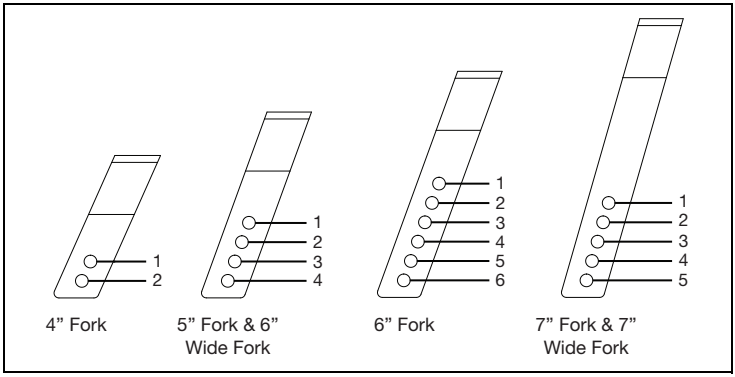
Seat Height - Casters



	Seat height not available		No go with short stem		Available with short and long stem

Seat Height - Caster Positioning within Caster Fork

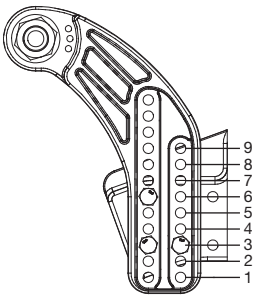
To adjust the caster within the caster fork, use two 13mm wrenches to remove the bolt, two spacers (used on all except 8x2) and nut. Move everything to the correct hole and reinstall hardware to secure.



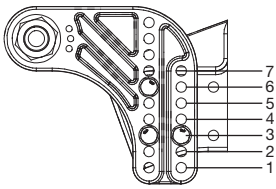
Front Seat Height Matrix - Casters and Forks								
Fork Hole (Reference diagram above)			1	2	3	4	5	6
Caster	Fork	Stem	Seat Height					
4"	4"	Short	13	13.5				
		Tall	14.5	15				
	5"	Short		14	14.5	15		
		Tall		15	15.5	16		
5"	4"	Short		14				
		Tall		15.5				
	5"	Short		14.5	14.5	15		
		Tall		15.5	16	16.5		
	6"	Short			15	15.5	16	16.5
		Tall			16	16.5	17	17.5
	7"	Short		16	16.5	17	17.5	
		Tall		17.5	18	18.5	19	
6"	5"	Short			15	15.5		
		Tall			16.5	17		
	6"	Short			15.5	15.5	16	16.5
		Tall			16.5	17	17.5	18
	7"	Short	16	16.5	17	17.5	18	
		Tall	17.5	18	18.5	18.5	19	
6X2	6W	Short	15	15.5	16	16.5		
		Tall	16.5	17	17.5	18		
	7W	Short	16	16.5	17	17.5	18	
		Tall	17.5	18	18	18.5	19	
8"	7"	Short	17	17.5	18	18.5	19	
		Tall	18.5	19	19.5	20	20.5	
8X2	7W	Short	17	17.5	18	18.5	19	
		Tall	18	18.5	19	19.5	20	

Seat Height - Axle Position

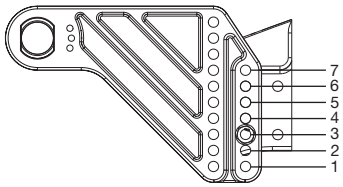
Based on your axle plate selection or type - use the following drawings and chart below to determine the vertical position of the axle plates to achieve desired rear seat height. A 13mm wrench is needed for the axle plate bolts.



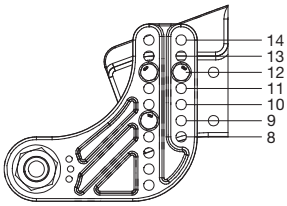
Standard Axle Plate



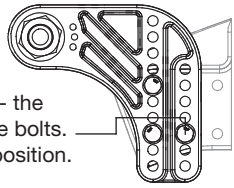
High Axle Plate



Extended Axle Plate



High Axle Plate (Flipped)

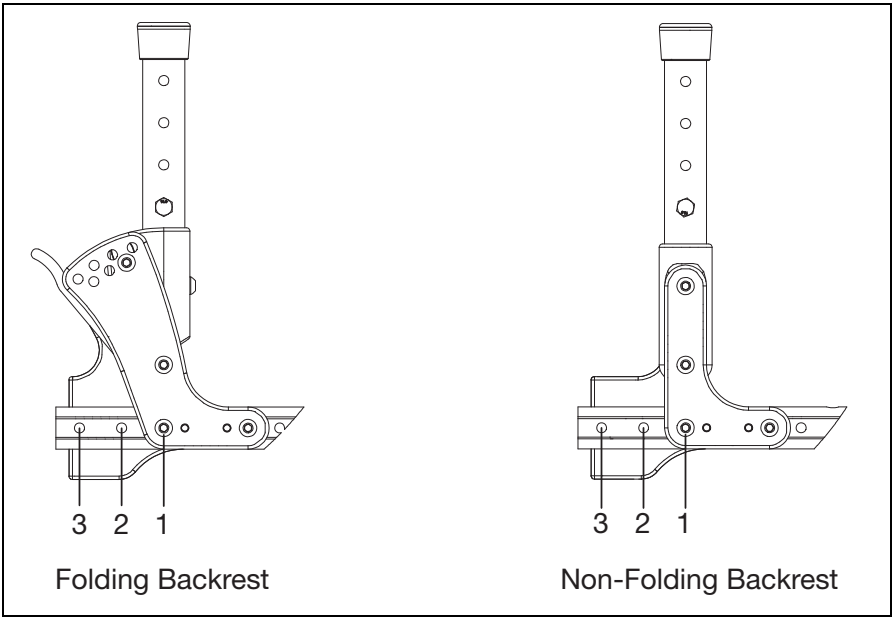


Primary Frame Index Bolt - the frontmost bolt of the double bolts. Determines the axle plate position.

Rear Seat Height Matrix - Axle Positioning

Wheel Size	High/Extended Axle Plate														Standard Axle Plate								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8	9
12 Poly			13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5									
12		13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19									
16 Low Poly	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5	20									
16	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21									
20 Low Poly	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21					13	13.5	14	14.5	15	15.5	16	16.5
20	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21					13	13.5	14	14.5	15	15.5	16	16.5	17
22 Low Poly	17	17.5	18	18.5	19	19.5	20	20.5	21						13.5	14	14.5	15	15.5	16	16.5	17	17.5
22	17.5	18	18.5	19	19.5	20	20.5	21							14	14.5	15	15.5	16	16.5	17	17.5	18
24 Low Poly	17.5	18	18.5	19	19.5	20	20.5	21							14.5	15	15.5	16	16.5	17	17.5	18	18.5
24	18.5	19	19.5	20	20.5	21									15	15.5	16	16.5	17	17.5	18	18.5	19

Seat Depth - Backrest



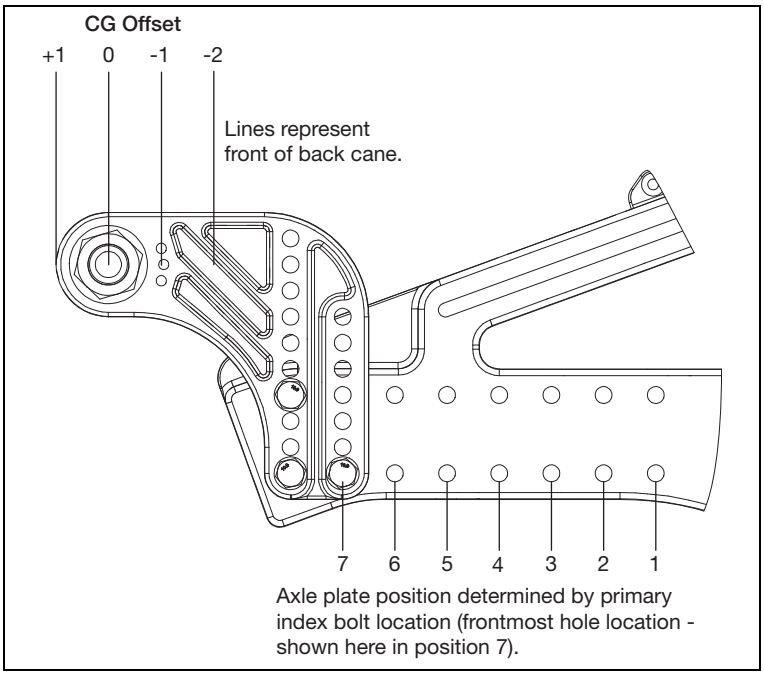
Folding Backrest

Non-Folding Backrest

Seat Tube Length	Backrest Position	Seat Depth
Short	1	14
	2	15
	3	16
Medium	1	16
	2	17
	3	18
Long	1	18
	2	19
	3	20

Seat Depth - Axle Plate

Seat depth can be changed by repositioning the axle plate horizontally. Determine the horizontal positioning of the axle by using the desired seat depth, axle plate type and Center of Gravity offset within the drawing and matrix below.



Axle Plate Style		Standard/High				Extended			
CG Offset		+1	0	-1	-2	+1	0	-1	-2
Seat Depth	14		1	2	3				1
	15	1	2	3	4			1	2
	16	2	3	4	5		1	2	3
	17	3	4	5	6	1	2	3	4
	18	4	5	6	7	2	3	4	5
	19	5	6	7		3	4	5	6
	20	6	7			4	5	6	7

Backrest - Back Height

Determine back post type and height and place on seat frame accordingly.

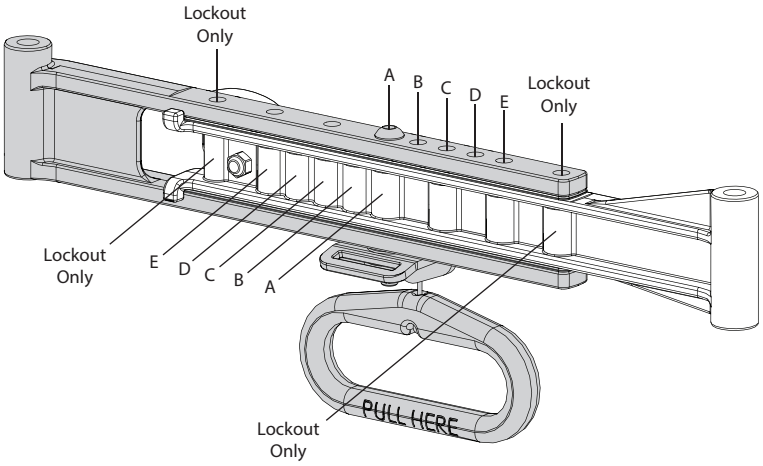
Back Post	Height Range	Back Height				
Stroller Handle Back Post	Short	20				
	Tall	24				
Height Adjustable Straight with Push Handle	Short	14	15	16	17	18
	Medium	16	17	18	19	20
	Tall	18	19	20	21	22
Height Adjustable 8° Bend with Push Handle	Short	14	15	16	17	18
	Medium	16	17	18	19	20
	Tall	18	19	20	21	22

Seat Width

Seat width is controlled by shortening or extending the length of the cross brace assemblies. Assemblies come in three sizes resulting in limited range per assembly. Determine the width required, confirm that the width is within the range of the assembly and relocate cross brace bolts to achieve the width desired.

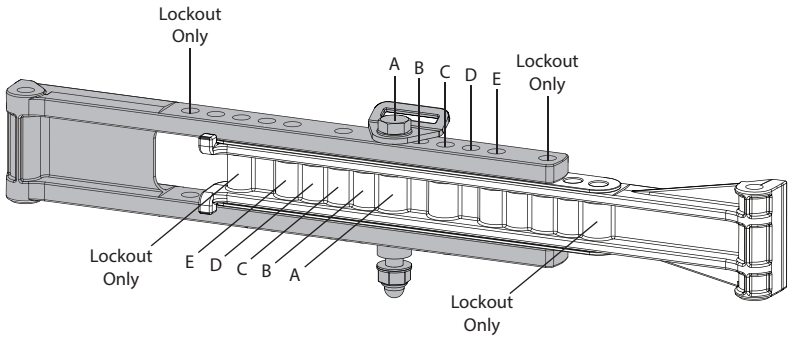
Back Frame Cross Brace

The holes in each brace are called out for easy adjustment. The same width holes must align (Ex. Holes A on each brace must be used together).



Base Frame Cross Braces

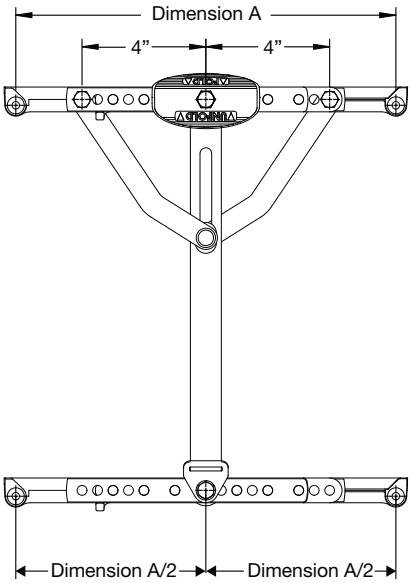
The holes in each brace are called out for easy adjustment. The same width holes must align (Ex. Holes A on each brace must be used together).



*An image showing how to adjust the cross braces by measuring can be found on the next page.

Width	A	B	C	D	E
Small	14"	15"	16"	17"	18"
Medium	16"	17"	18"	19"	20"
Large	18"	19"	20"	21"	22"

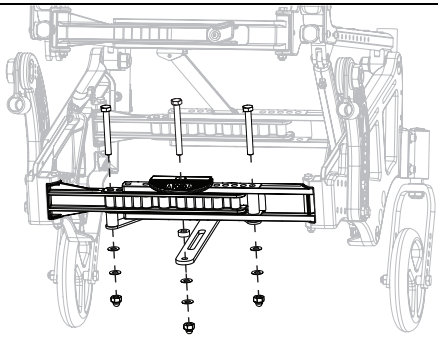
Seat Width



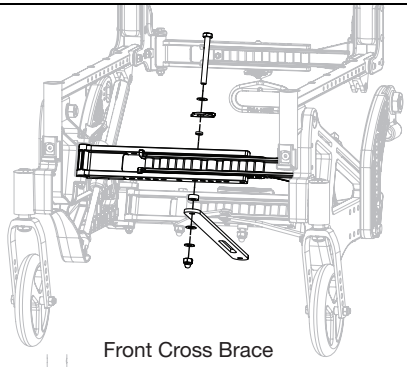
Upper and Lower Crossbrace Assembly	
Size	**Adjustment Range**
Small	14" - 18"
Medium	16" - 20"
Large	18" - 22"

Chair Width	Dimension A	Dimension A/2
14	12.28	6.14
15	13.28	6.64
16	14.28	7.14
17	15.28	7.64
18	16.28	8.14
19	17.28	8.64
20	18.28	9.14
21	19.28	9.64
22	20.28	10.64

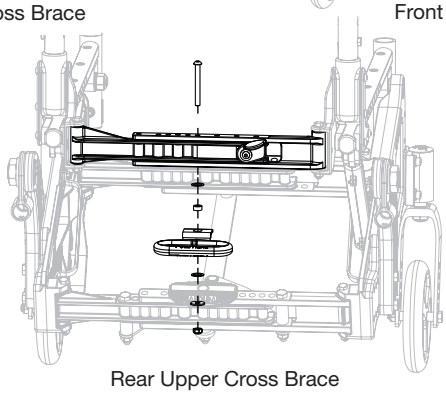
The hardware that needs to be removed to change the width are shown below. Use two 13mm wrenches on the front and rear lower braces. The rear upper cross brace hardware is removed using a 4mm Allen wrench and a 10mm wrench. Ensure each cross brace is set up with the same width configurations.



Rear Lower Cross Brace



Front Cross Brace



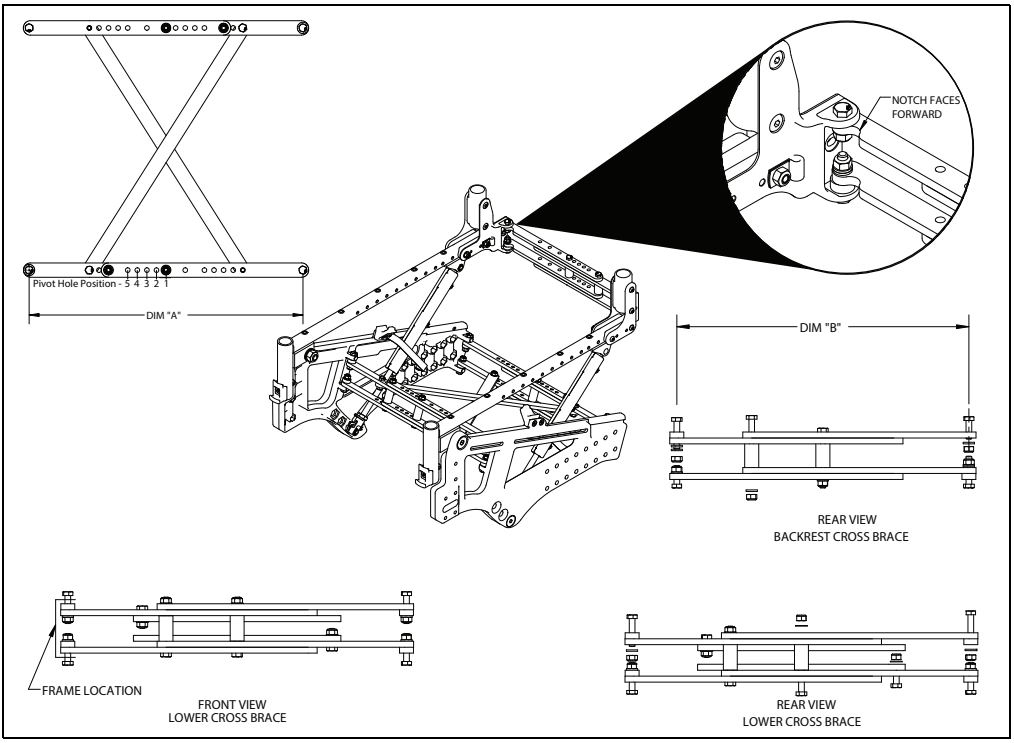
Rear Upper Cross Brace

Rigid Frame

See the chart and images below for setting up a rigid frame Liberty.

Cross Brace Width Settings				
Width Chair	**Chair Width**	**Pivot Hole Position**	**Dimension A**	**Dimension B**
Small	14	1	12.28	10.31
	15	2	13.28	11.31
	16	3	14.28	12.31
	17	4	15.28	13.31
	18	5	16.28	14.31
Medium	16	1	14.28	12.31
	17	2	15.28	13.31
	18	3	16.28	14.31
	19	4	17.28	15.31
	20	5	18.28	16.31
Large	18	1	16.28	14.31
	19	2	17.28	15.31
	20	3	18.28	16.31
	21	4	19.28	17.31
	22	5	20.28	18.31

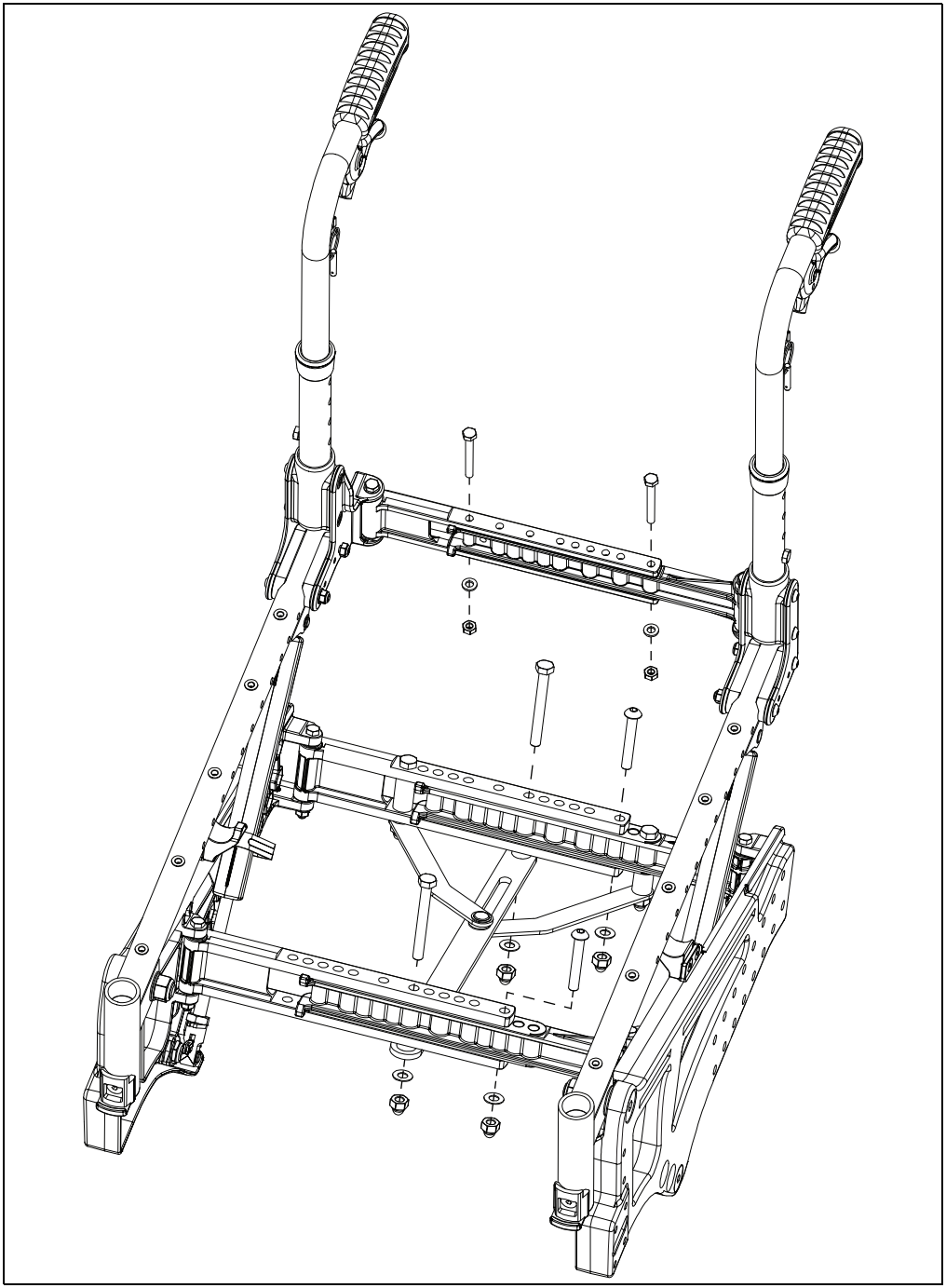
The hardware that needs to be removed to change the width are shown below. Use two 13mm wrenches on the front and rear lower braces. The rear upper cross brace hardware is removed using a 4mm Allen wrench and a 10mm wrench. Ensure each cross brace is set up with the same width configurations.



Non-Folding Frame

The hardware and hole locations are different for a non-folding frame. See the image below for details. Two 10mm wrenches, two 13mm wrenches and a 5mm Allen wrench are needed.

NOTE: A non-folding frame does not have the locking tab, pull handle, foot pad or fold strap brackets.

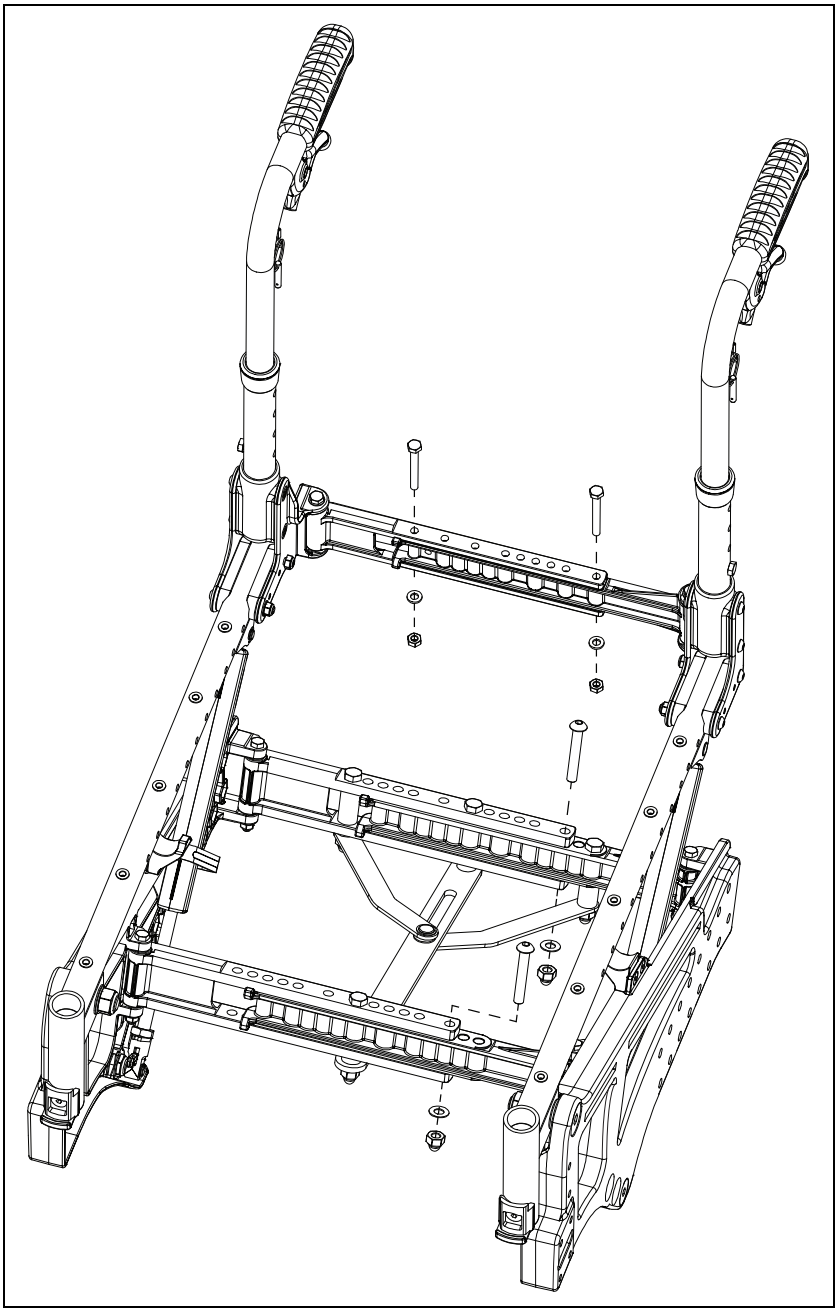


Converting to Folding Frame

This section provides instructions to go from a non-folding frame to a folding frame.

NOTE: Ensure all seating components are removed and no user sits in the chair while the non-folding frame converts to a folding frame.

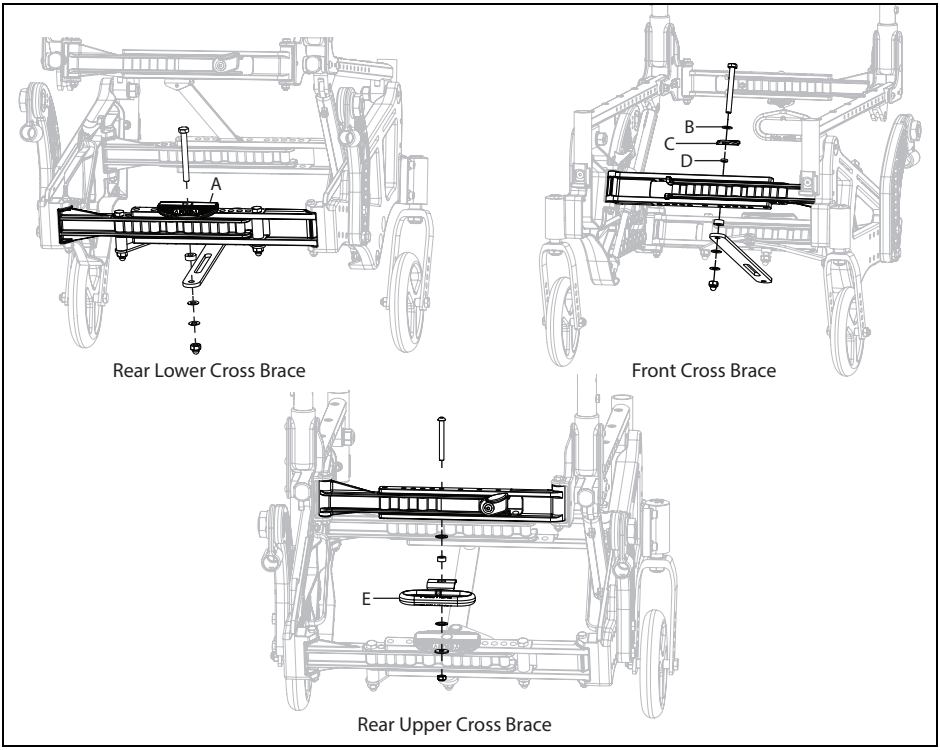
1. Remove the non-folding frame bolts as shown below using two 10mm wrenches, two 13mm wrenches and a 5mm Allen wrench.



Converting to Folding Frame

2. Install folding hardware with folding strap bracket (C), pull handle (E) and foot pad (A). Two 10mm wrenches, two 13mm wrenches and a 5mm Allen wrench are needed.

NOTE: The rear lower brace hardware already exists from the non-folding frame configuration. The bolt needs to be removed so the foot pad (A) can be installed and then reinstall the hardware. The front cross hardware already exists from the non-folding frame configuration also. The bolt needs to be removed so a spacer (D), folding strap bracket (C) and a washer (B) can be installed. Reinstall the hardware once those pieces are added.

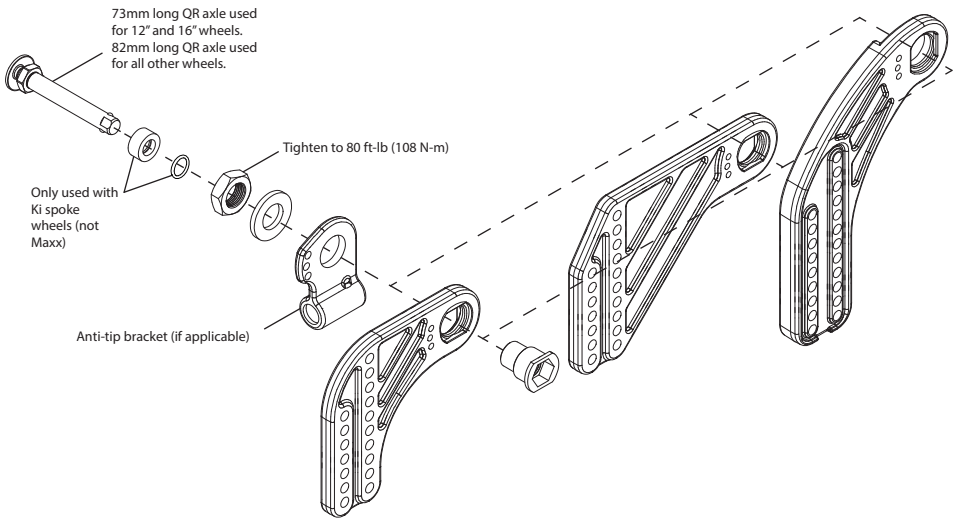


3. The folding lever must also be installed to convert to a folding frame. See the Fold Lever Replacement section for instructions.
4. The last step is to install the folding strap. See the Adjusting/Installing Strap section for instructions.

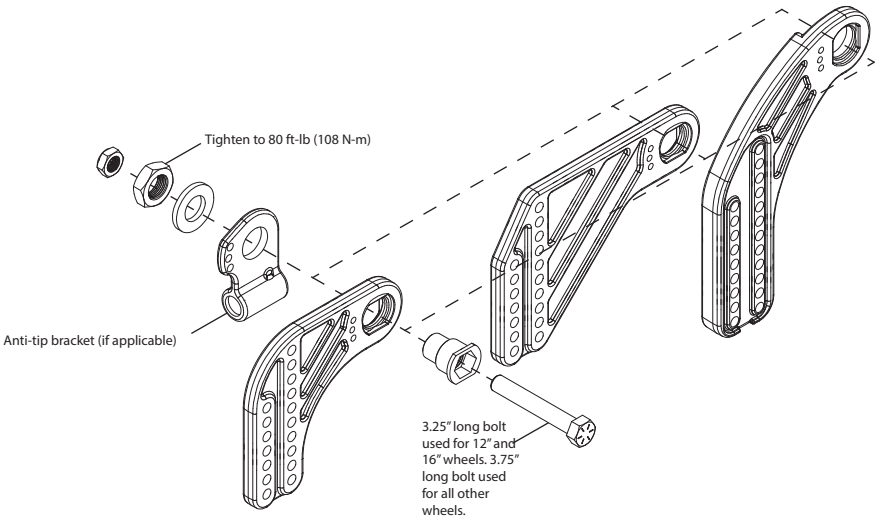
Axle Plate Construction

Use the diagrams below to assemble a Quick Release Axle or a Threaded Axle. Standard, extended and low axle plates are shown.

Quick Release Axle



Threaded Axle

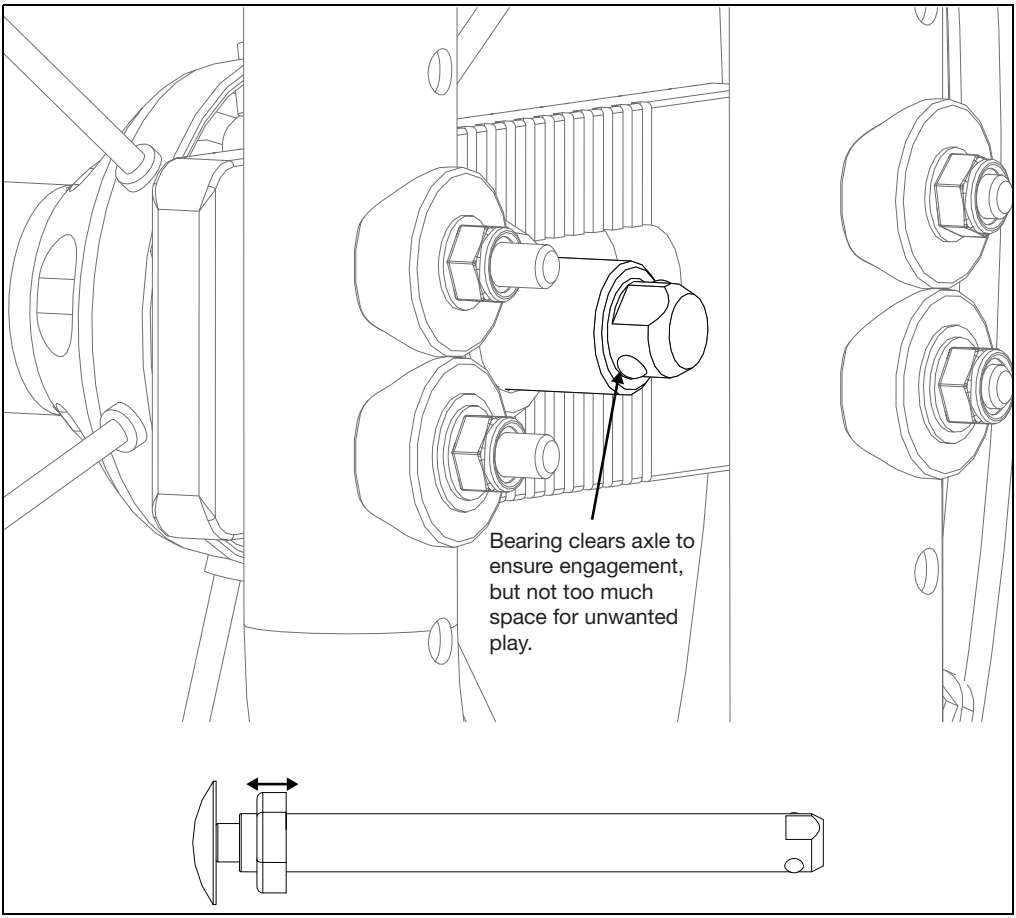


Quick Release Axle Adjustment

If the quick release axle bearing is set too long, there may be play in the wheel. If the quick release axle bearing is set too short, the bearing won't release and secure the wheel to the chair.

1. Hold the end of the quick release axle with an 11mm wrench and use a 19mm wrench to adjust the nut on the quick release axle. Rotating the nut towards the push button will increase the length and rotating the nut towards the bearing end will shorten the length.
2. Always test the quick release axle with no user in the chair first, to ensure the bearing clears and locks the axle receiver to the frame with little play.

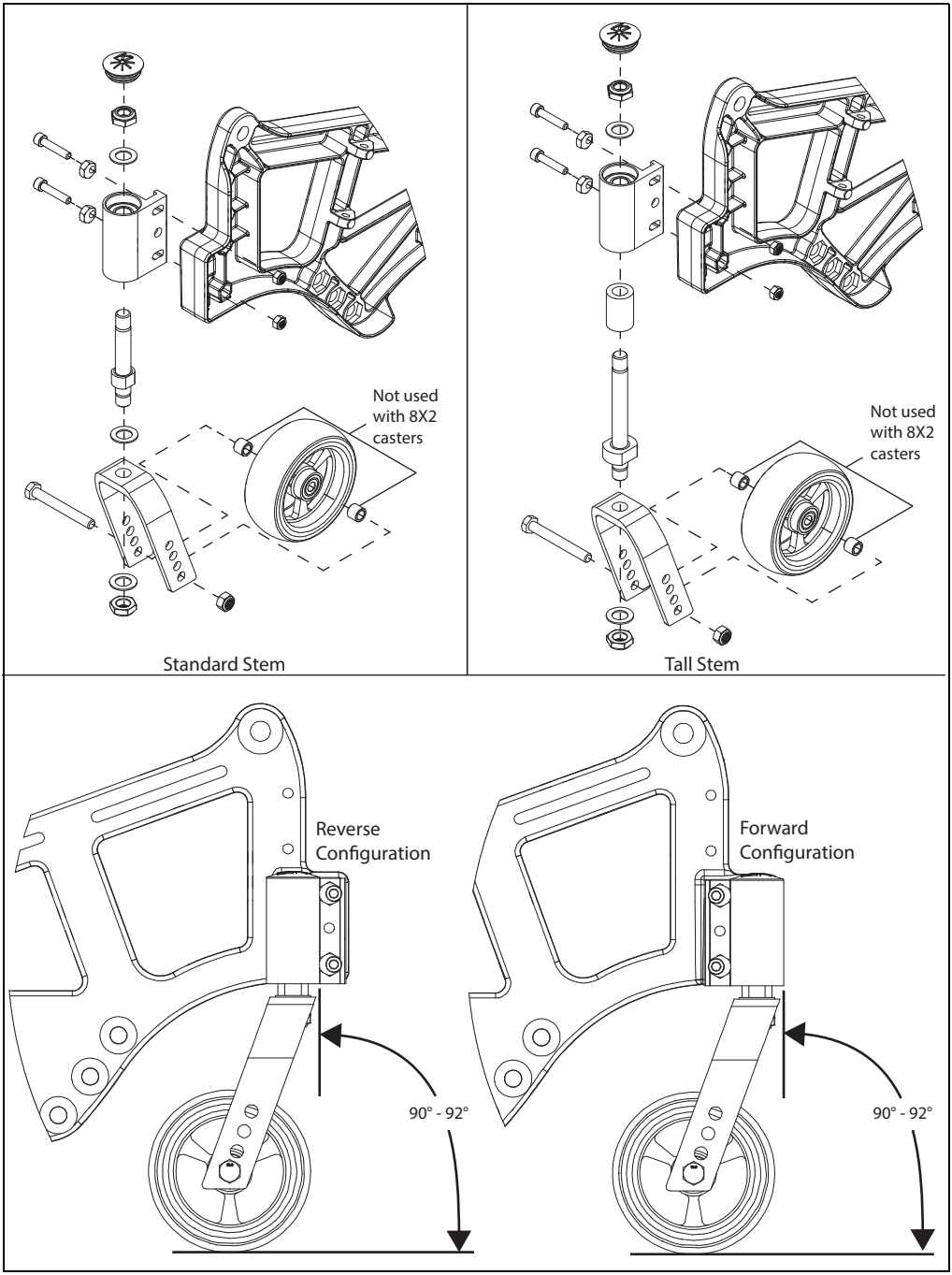
NOTE: The image below might show a different model of chair, but the image is to show the bearing clearing the axle receiver.



Caster Construction

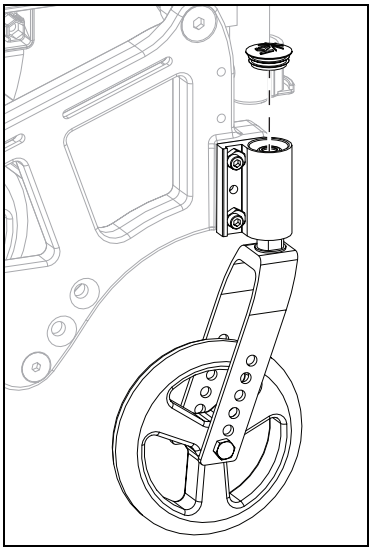
Use the diagrams below to assemble a standard or a tall stem caster assembly. The caster assembly can be assembled in the forward or reversed configurations. Adjust the eccentric washers as needed to achieve the 90° to 92°angle dimension.

NOTE: Only the two holes shown in the image below are used with the Liberty casters.

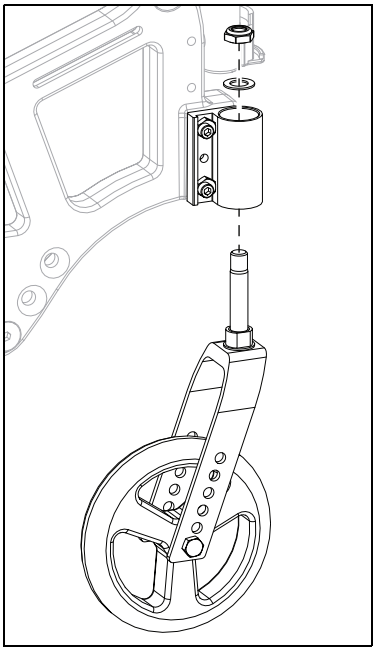


Remove Fork and Stem

3. Use a flat head screwdriver to remove the cap off of the caster barrel. Be careful not to scratch paint.



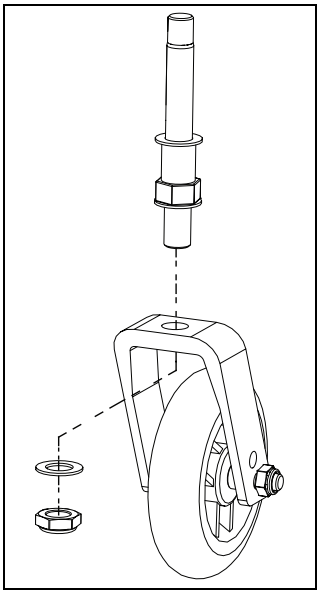
4. Use a 19mm socket wrench to remove the nut and washer from inside caster housing. Hold the caster while removing the nut and washer.



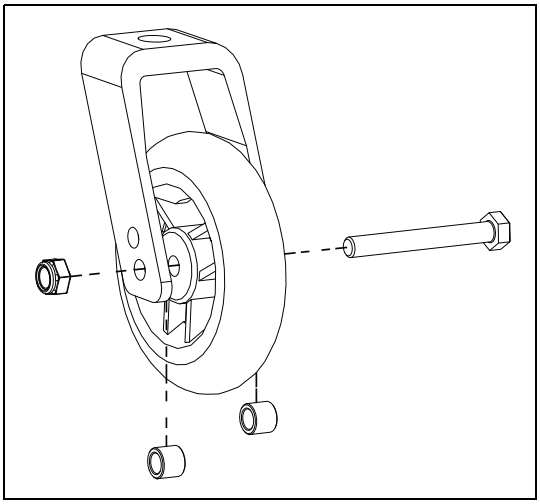
Fork and Stem Replacement

5. Remove the caster stem using a 19mm socket wrench on the bottom nut. Save all hardware and stem if you are not replacing the stem.

NOTE: The hardware on the stem of your chair may look different than what is shown below depending on the size of your fork and stem. The method of removing the stem is the same for all sizes.



6. If you are replacing your forks, remove the bolt, nut and two spacers, per caster, using two 13mm wrenches.

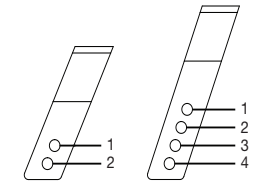


Fork and Stem Replacement

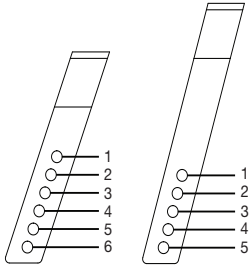
Install Fork and Stem

1. Install new fork onto caster with one bolt (A), one nut (B) and two spacers (C) per side using two 13mm wrenches. Standard forks use spacer 100792 (C) and wide forks use spacer 001246 (C). Also, a standard fork uses 101829 - M8 x 65 bolt (A) while a wide fork uses the longer 101709 - M8 x 80 bolt (A).

NOTE: Reference the Front Seat height Matrix for reference on which forks and fork holes to use to achieve desired height.

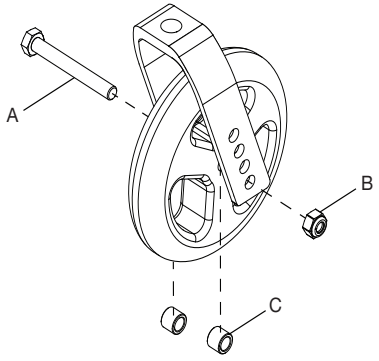


4" Fork 5" Fork & 6" Wide Fork

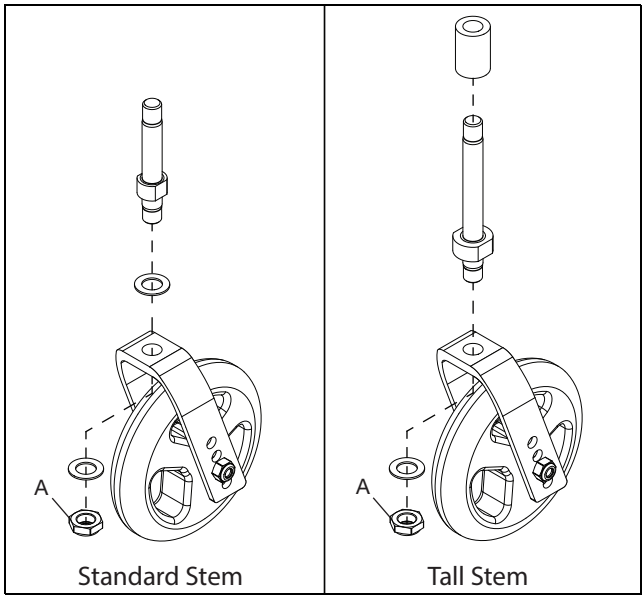


6" Fork 7" Fork & 7" Wide Fork

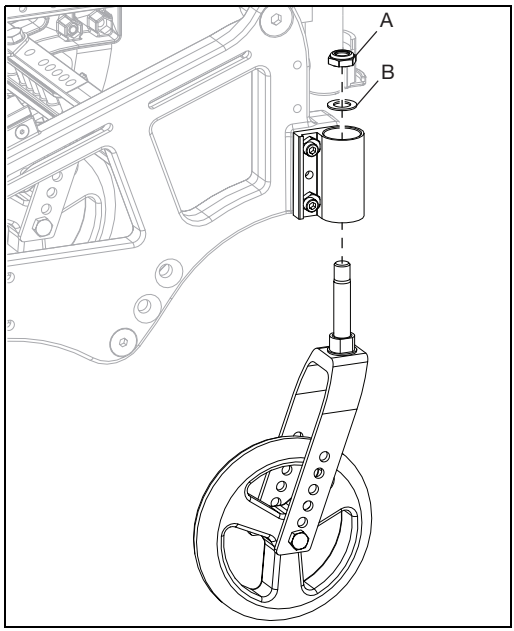
Front Seat Height Matrix - Casters and Forks								
Fork Hole (Reference diagram above)			1	2	3	4	5	6
Caster	Fork	Stem	Seat Height					
4"	4"	Short	13	13.5				
		Tall	14.5	15				
	5"	Short		14	14.5	15		
		Tall		15	15.5	16		
5"	4"	Short		14				
		Tall		15.5				
	5"	Short		14.5	14.5	15		
		Tall		15.5	16	16.5		
	6"	Short			15	15.5	16	16.5
		Tall			16	16.5	17	17.5
	7"	Short		16	16.5	17	17.5	
		Tall		17.5	18	18.5	19	
6"	5"	Short			15	15.5		
		Tall			16.5	17		
	6"	Short			15.5	15.5	16	16.5
		Tall			16.5	17	17.5	18
	7"	Short	16	16.5	17	17.5	18	
		Tall	17.5	18	18.5	18.5	19	
6X2	6W	Short	15	15.5	16	16.5		
		Tall	16.5	17	17.5	18		
	7W	Short	16	16.5	17	17.5	18	
		Tall	17.5	18	18	18.5	19	
8"	7"	Short	17	17.5	18	18.5	19	
		Tall	18.5	19	19.5	20	20.5	
8X2	7W	Short	17	17.5	18	18.5	19	
		Tall	18	18.5	19	19.5	20	



2. Install new stem or reinstall stem saved from Remove Fork and Stem, step 3. Install hardware based on the size stem you are using. Tighten the bottom nut (A) to 55 ft.- lbs. using the torque wrench.



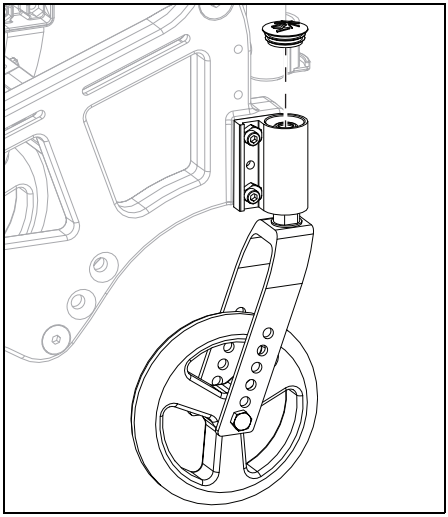
3. Secure stem and caster assembly in the caster housing using a washer (B) and nut (A). Tighten the top nut all the way and then back it off one quarter of a turn. Reinstall caster housing cover. Verify that the stem rotates freely and there is no vertical play. Last, reinstall cap on caster barrel.



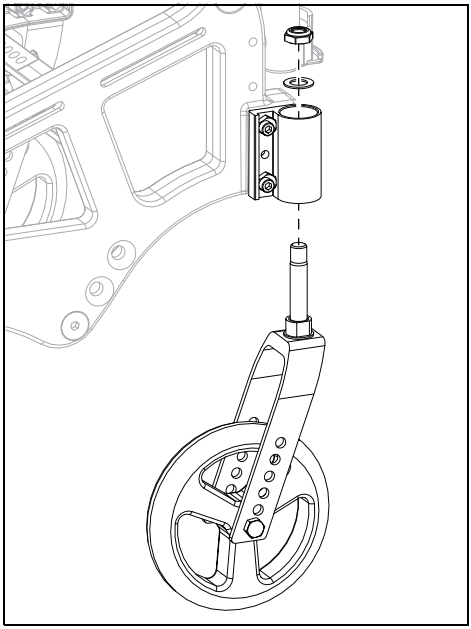
Wheel Pull Correction

NOTE: The direction of the pull determines which wheel will be adjusted to fix any wheel pull. If chair pulls left, fix the left caster wheel.

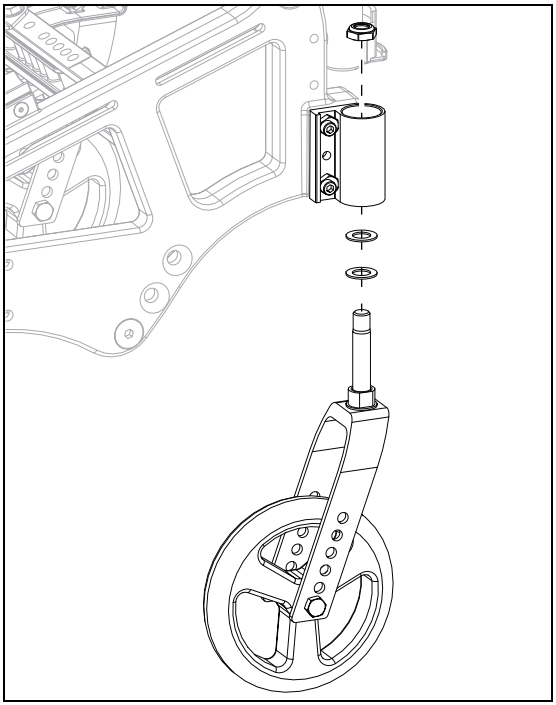
1. Remove cap on caster barrel.



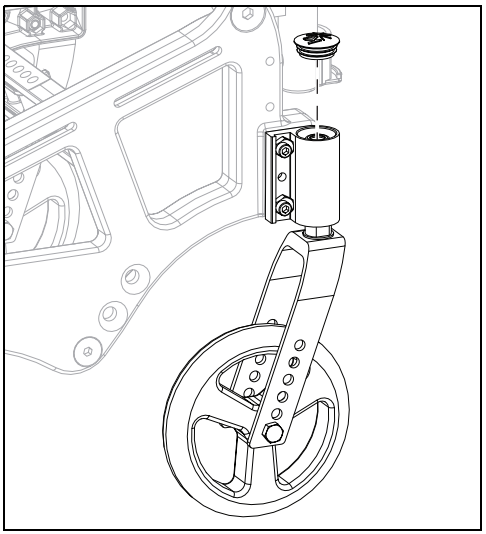
2. Use a 19mm socket wrench to remove the nut and washer from inside caster housing. Hold the caster while removing the nut and washer.



3. Move the washer removed in step 2 to the bottom side of the caster barrel. Add another of the same washer to the bottom side of the caster barrel (washer is part #100682 - washer ½" .518 x .875 x 0.47 F/W Black Zinc). Install new caster assembly back together. Tighten the top nut all the way and then back it off one quarter of a turn. Reinstall caster housing cover. Verify that the stem rotates freely and there is no vertical play.



4. Reinstall cap on caster barrel.

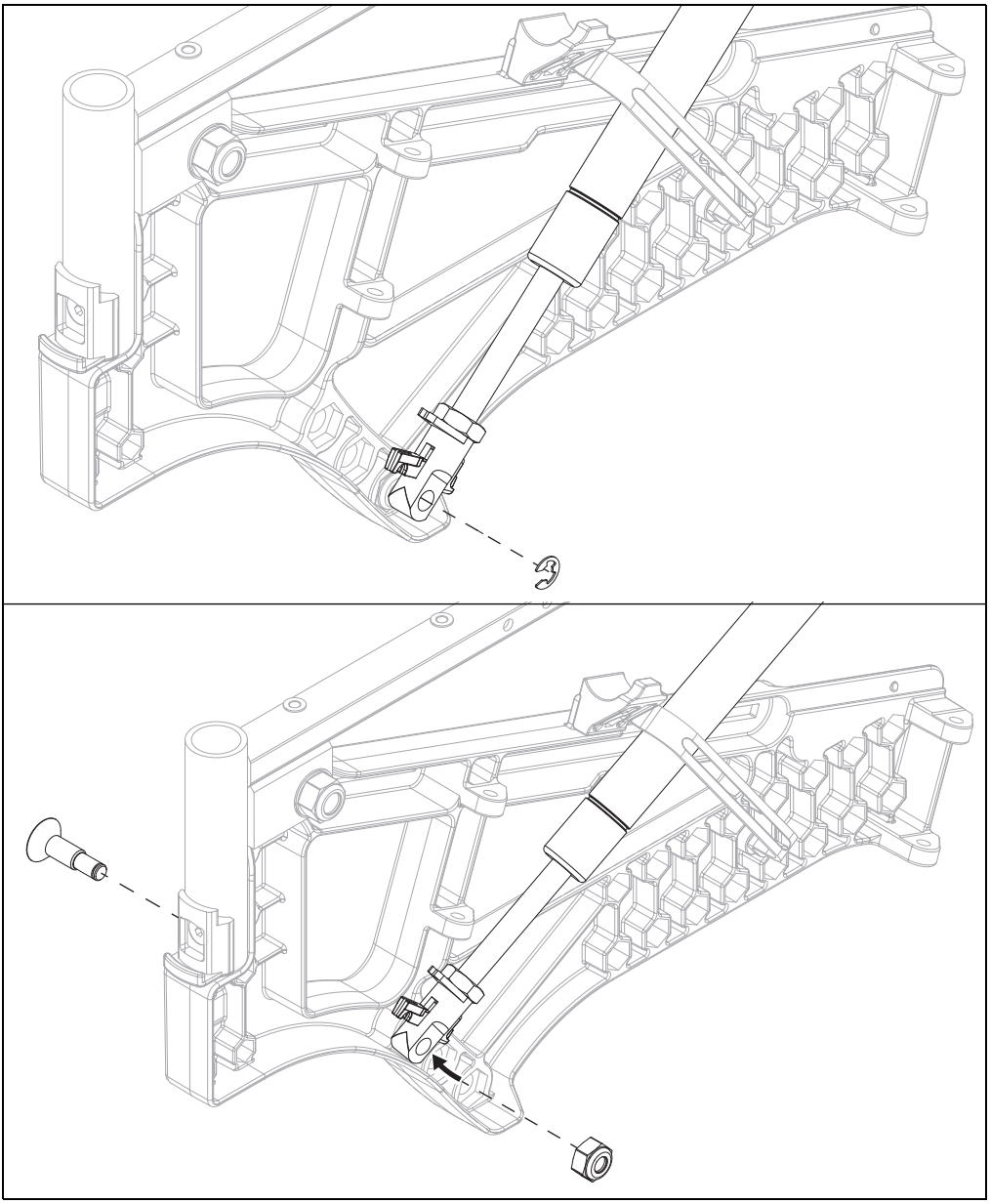


Adjusting Gas Springs

NOTE: Chair capacity is always 250 lbs. Adjustments may be made to change resistance/assistance of the tilt mechanism for the attendant.

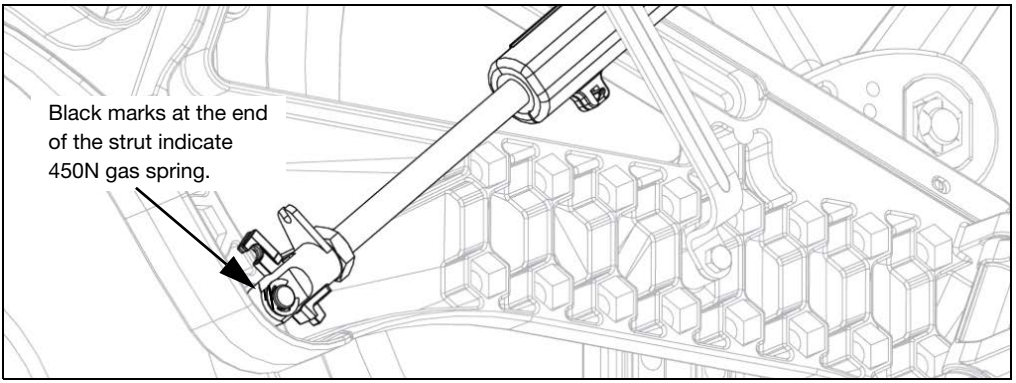
NOTE: A gas spring location chart is located on the next page for reference if needed.

1. Remove E-Clip from lower end of the gas spring.
2. Remove cylinder mount screw with a 6mm Allen wrench.
3. Rotate gas spring, remove nut and place nut into the new desired location.
4. Reinstall cylinder mount screw through frame, gas spring and nut.
5. Reinstall E-Clip.



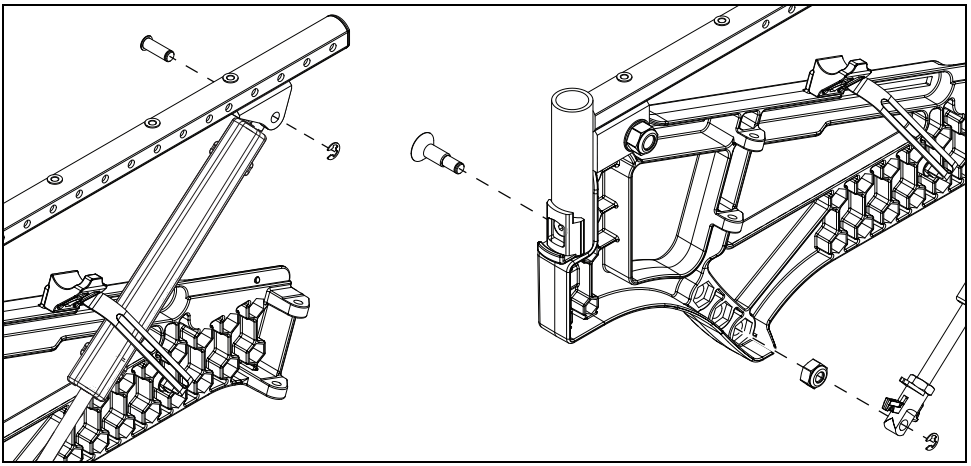
Replacing Gas Springs

Identify your current gas spring force (300N or 450N).

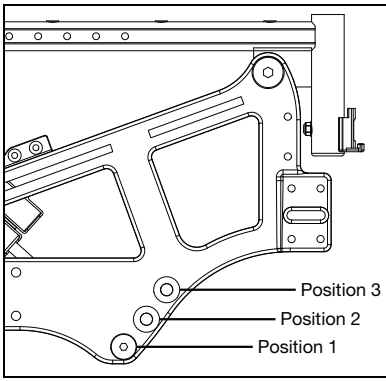


1. Remove current gas spring by removing a clevis pin, cylinder mount screw, nut and two E-Clips. Use a 6mm Allen wrench to remove the cylinder mount screw. Slide the gas spring out of the bracket.

NOTE: Bracket can be removed for easier access to gas spring if needed.



2. Ki Mobility recommends the following gas strut set-up for strut needed and configuration.



Gas Spring Locations

Assistive Gas Strut Set-Up		
Client Weight	**Setting**	**Spring Type (Newtons)**
> 200 lbs	1	450N
176 - 200 lbs	2	450N
151 - 175 lbs[1]	3	450N
151 - 175 lbs[2]	1	300N
125 - 150 lbs	2	300N
< 125 lbs	3	300N
[1]Standard on chairs less than 16" deep		
[2]Standard on chairs 16" deep or larger		

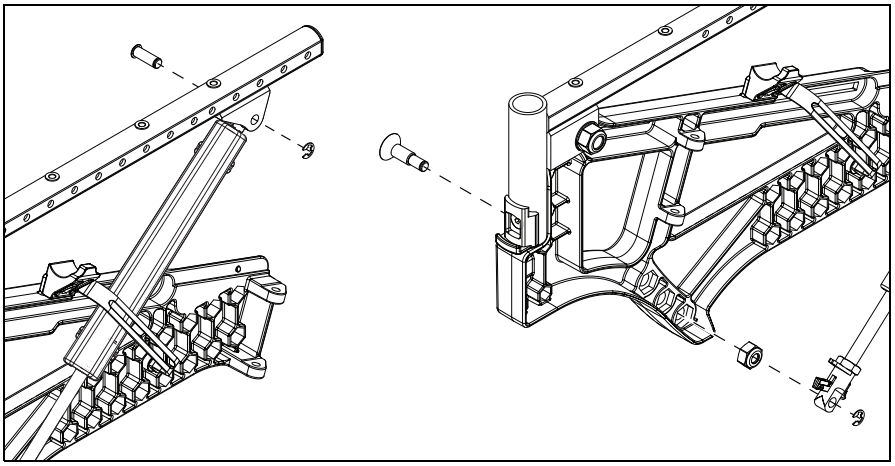
3. Reinstall hardware.

NOTE: If an end fitting on the gas spring is bent, never attempt to bend it back. Replace spring end.

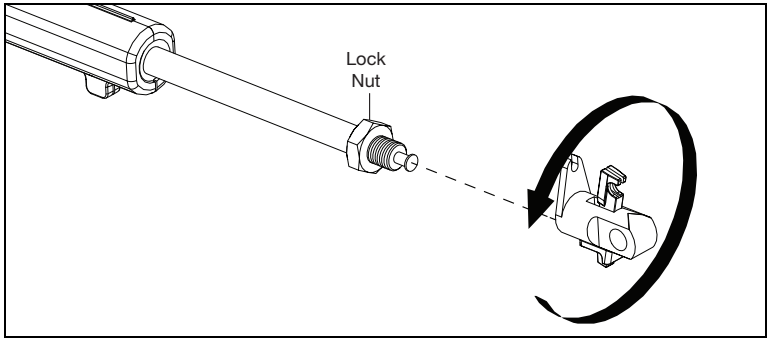
Replacing Gas Spring Trigger Assembly

1. Remove current gas spring by removing a clevis pin, cylinder mount screw, nut and two E-Clips. Use a 6mm Allen wrench to remove the cylinder mount screw. Slide the gas spring out of the bracket.

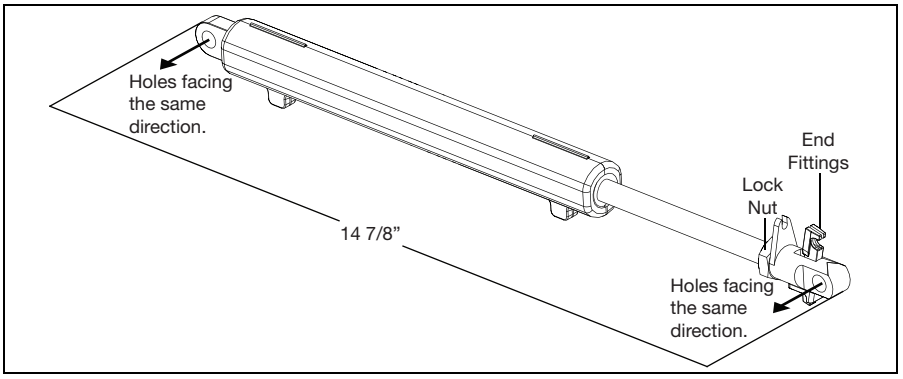
NOTE: Bracket can be removed for easier access to gas spring if needed.



2. Twist the gas spring trigger assembly off (Maintaining the position of the lock nut will be helpful during installation of the new gas spring trigger assembly).

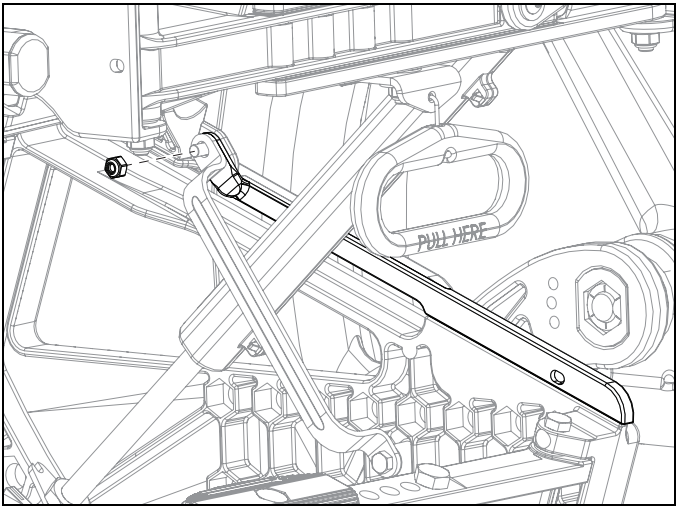


3. Twist new gas spring trigger assembly on until resistance is felt or it comes in contact with the lock nut. Ensure the attachment holes on each end of the gas spring face the same direction. Measure the gas spring end to end and ensure the completed length is 14 7/8". Twist the lock nut until it is tight up against the gas spring trigger assembly. If an end fitting is bent, never attempt to bend it back. Reinstall gas strut.

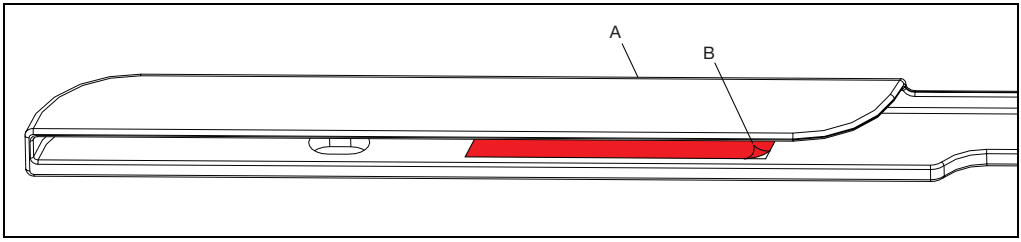


Replacing Frame Cover

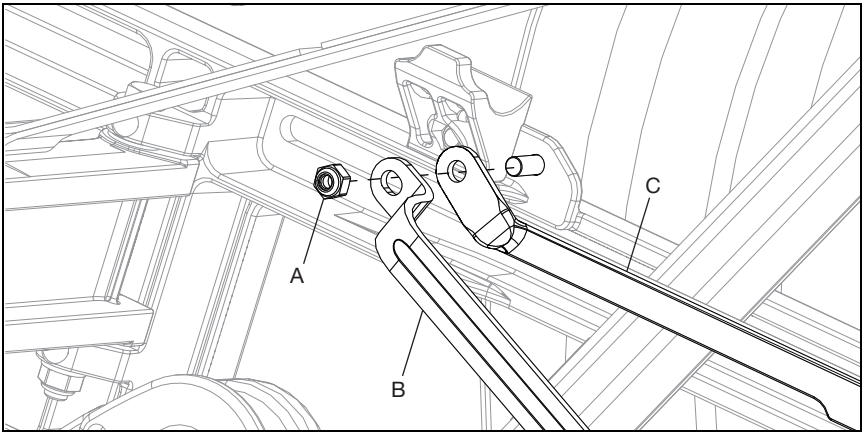
1. Remove current frame cover by removing nut using an 8mm wrench and a 3mm Allen wrench.



2. Separate and roll back tape backing (red) (B) from adhesive with blade on the inside of the new cover (A).



3. Discard red tape backing.
4. Install new frame cover (C) with nut (A) using an 8mm wrench and a 3mm Allen wrench. Ensure the higher end goes underneath the gas spring guard (B) attachment point.

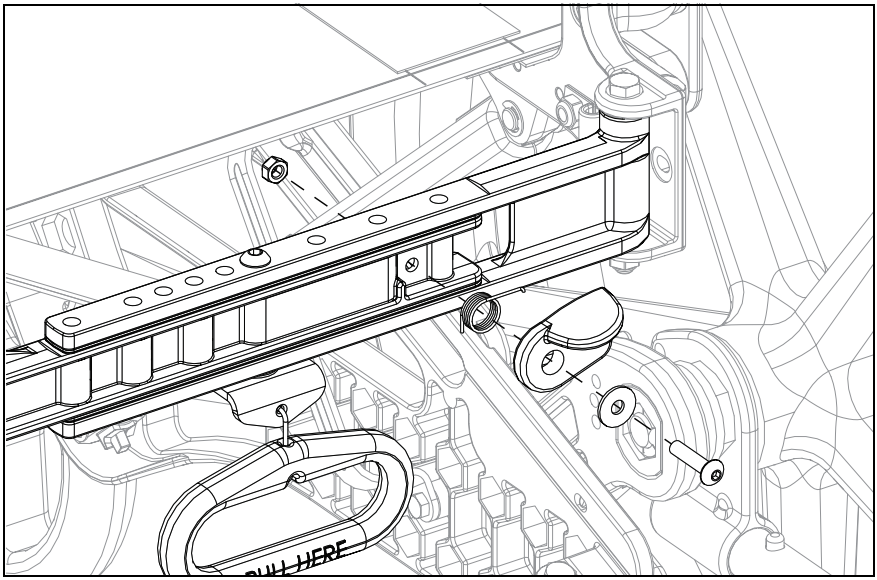


5. Repeat steps on opposite side.

Fold Lever Replacement

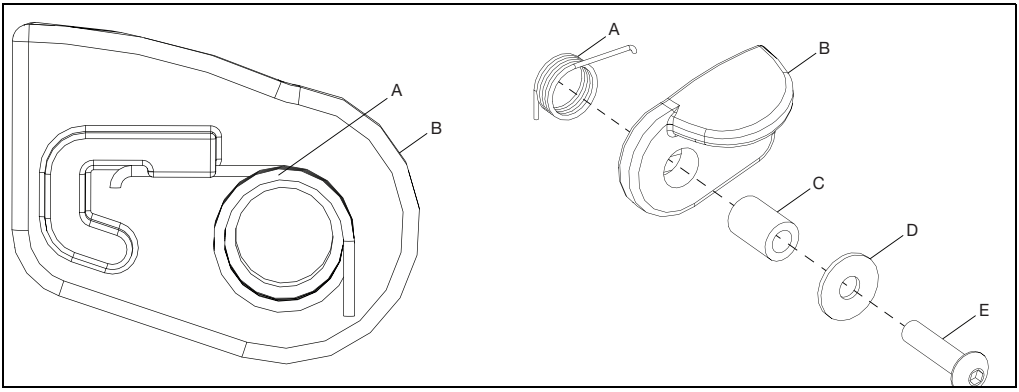
NOTE: For easier access to parts involved in this instruction, remove any backrest and/or seat upholstery before beginning.

1. Remove the existing fold lever assembly by removing hardware and fold lever using a 3mm Allen wrench and an 8mm wrench.



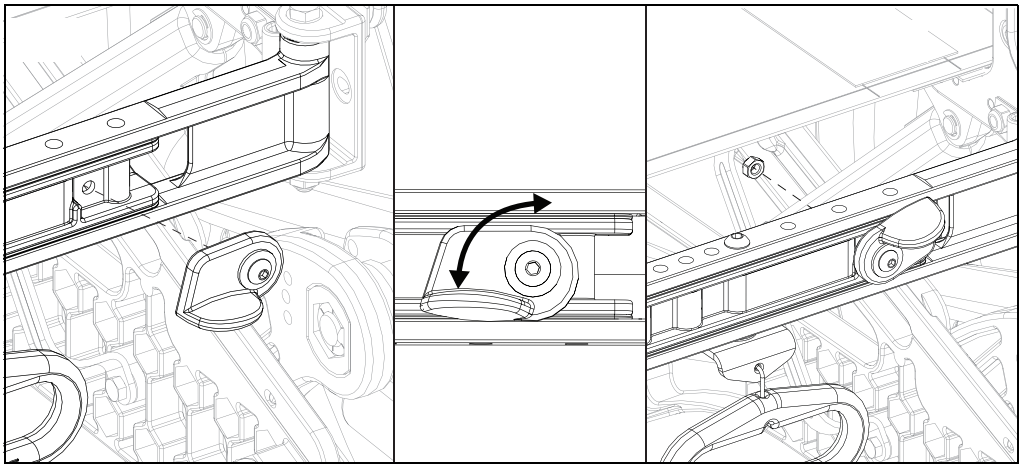
2. Put washer (C), fold lever (B), and spring (A) onto screw (D) in the sequence shown below.

NOTE: Spring is orientated in the back of the fold lever so the long arm tucks into the molded guard on the lever.



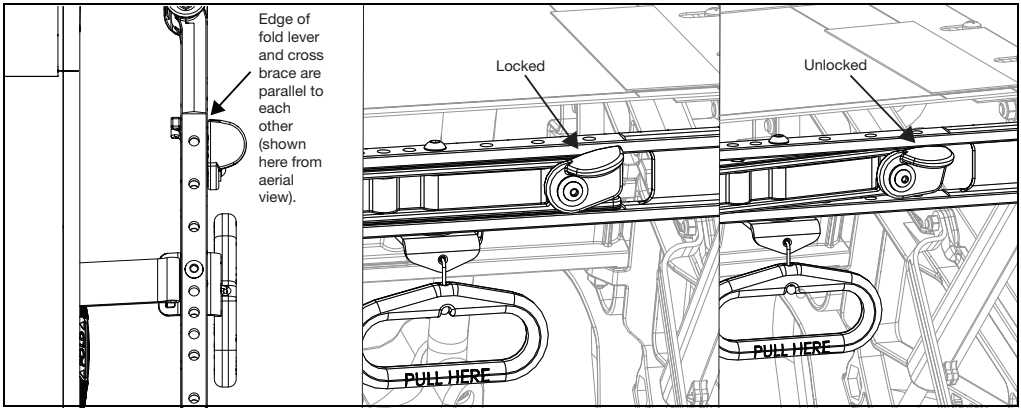
Fold Lever Replacement

3. Install the lever upside down with pressure. Maintain the pressure as you rotate the lever 180° and secure the nut using a 3mm Allen wrench and an 8mm wrench.



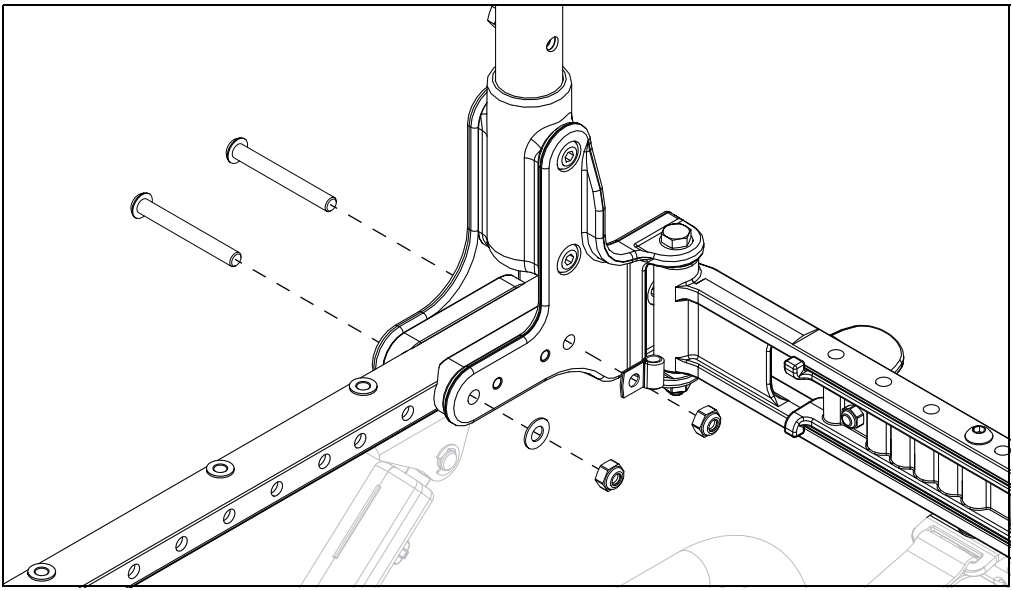
4. Test the fold lever assembly by two ways. First, look at the fold lever compared to the cross brace. The fold lever should be parallel to the cross brace. If incorrect, one end of the fold lever will be either closer or further away from the cross brace than the other end. Second, fold and unfold chair ensuring that fold lever releases and then locks back into place when cross braces are aligned.

NOTE: If the strap needs to be tightened, ensure chair is in open and locked position before tightening.

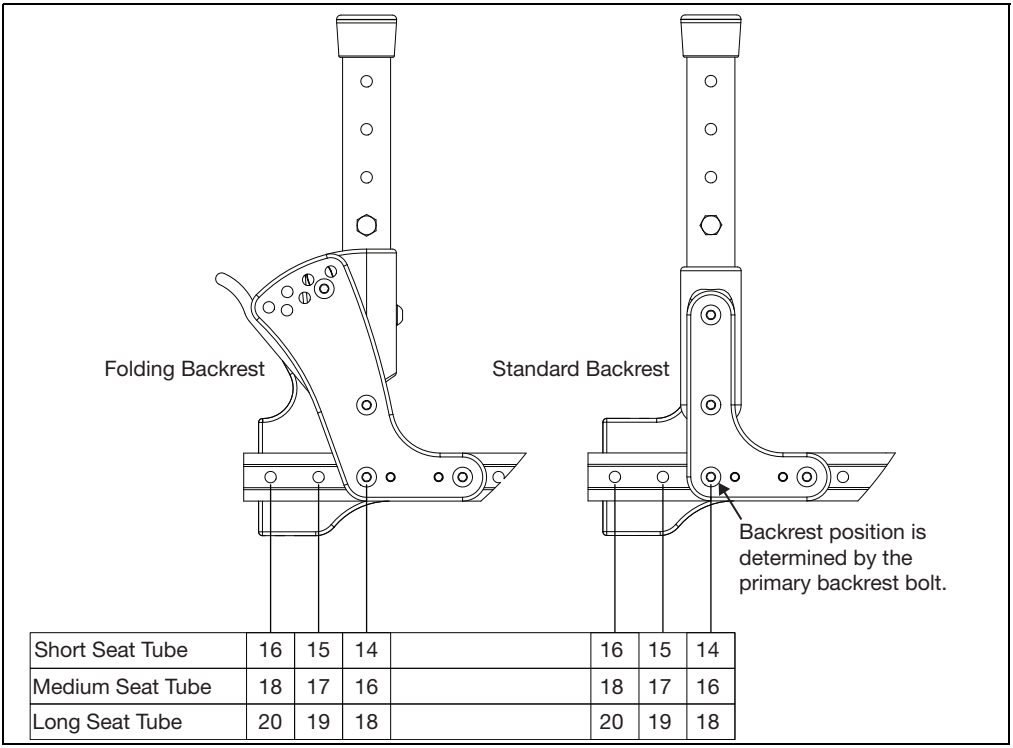


Adjusting Depth

1. If the seat depth adjustment is needed, remove bolts, washer, P-Clip and nuts using a 4mm Allen wrench and a 10mm wrench.



2. Use the chart and diagram below to find correct primary backrest bolt position.

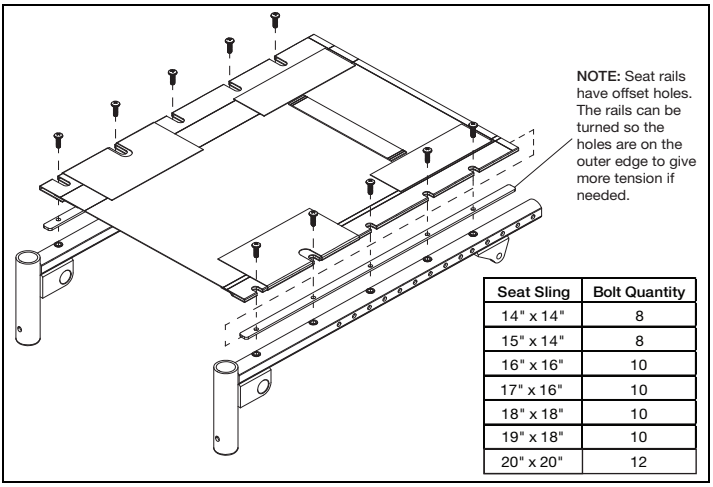


Short Seat Tube	16	15	14		16	15	14
Medium Seat Tube	18	17	16		18	17	16
Long Seat Tube	20	19	18		20	19	18

3. Secure backrests in desired depth location by reinstalling hardware.

Changing Seat Sling

1. Remove seat sling by removing screws using a Phillips screwdriver.
2. Install seat rails into pockets on both sides of new seat sling.
3. Fold chair in part way. Install new seat sling and rails onto chair using a Phillips screwdriver. Do not tighten hardware. See the diagram and chart below.
4. Expand chair fully. Tighten all seat sling hardware and return chair to level position.



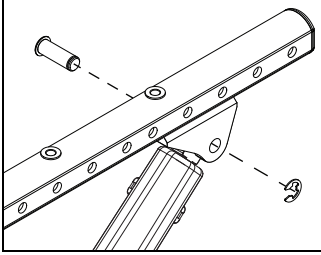
NOTE: Seat rails have offset holes. The rails can be turned so the holes are on the outer edge to give more tension if needed.

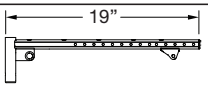
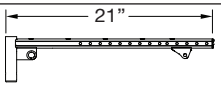
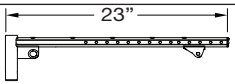
Seat Sling	Bolt Quantity
14" x 14"	8
15" x 14"	8
16" x 16"	10
17" x 16"	10
18" x 18"	10
19" x 18"	10
20" x 20"	12

Changing Seat Rail

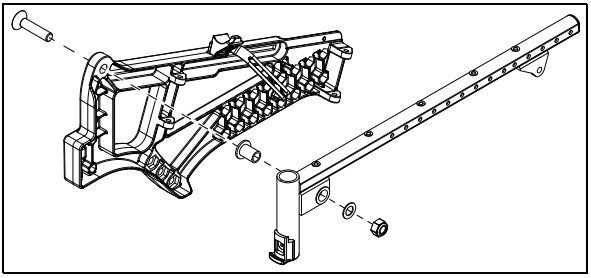
NOTE: See table in the first image for seat rail sizing information.

1. Remove any upholstery and backrest.
2. Detach gas spring from seat rail by removing clevis pin and E-Clip.



Size	Length	Image	Range
Short	19”		14” - 16”
Medium	21”		16” - 18”
Long	23”		18” - 20”

3. Remove seat rail from frame by removing bolt, pivot bushing, washer, and nut using a M8 Allen wrench and a 19mm wrench.

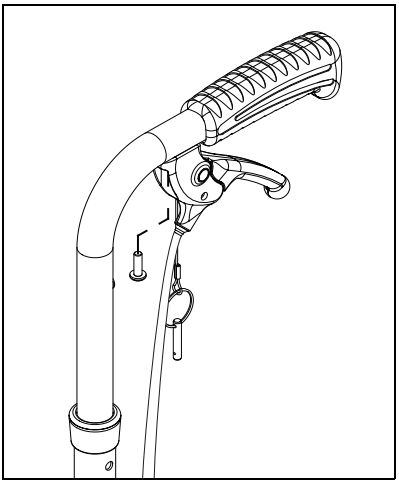


4. Install new seat rail using the hardware from step 3.

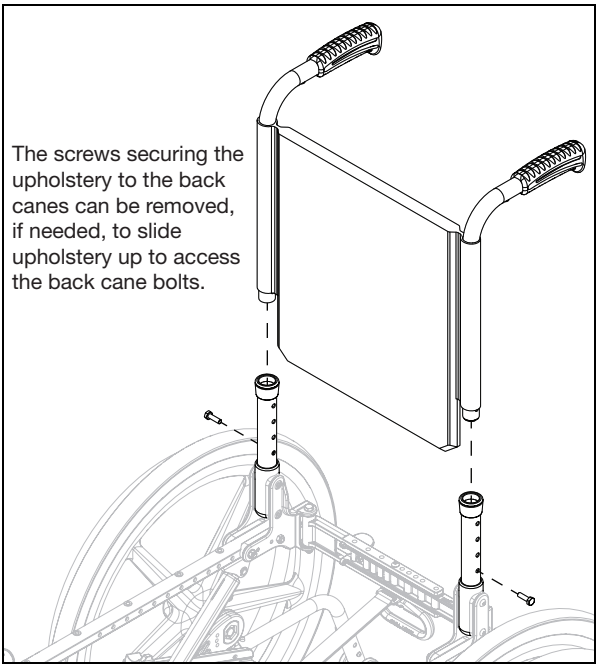
Changing to a Short Back

NOTE: Have chair in level position, not in any degree of tilt, while changing to a short back. This will help when working with the tilt cable in later steps.

1. Remove levers from back canes using a Phillips screwdriver. Save hardware.



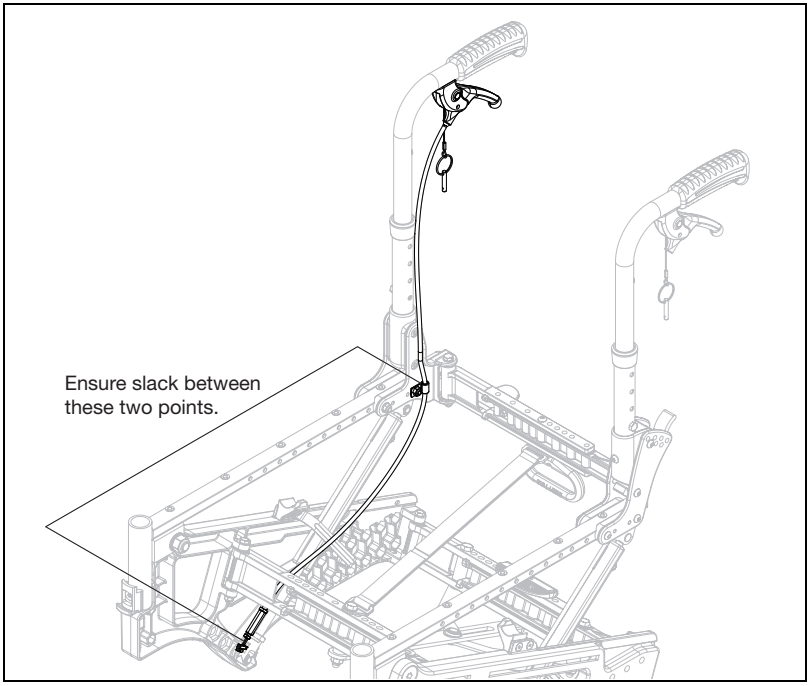
2. Remove both upper back cane tubes, at the same time, by removing the bolts using a 10mm wrench.



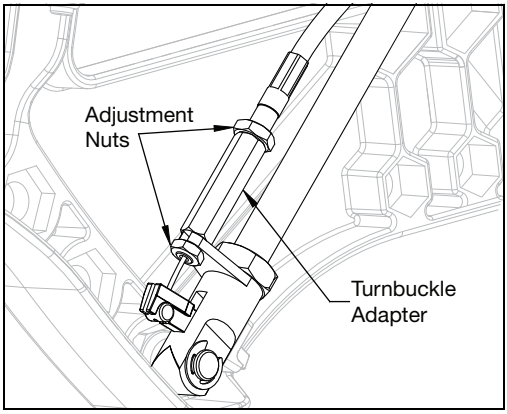
3. Install upholstery onto new back canes.
4. Install new short back cane tubes, in the height configuration desired, and secure with the bolts from step 2 using a 10mm wrench.
5. Install tilt lever onto back cane with hardware from step 1 using a Phillips screwdriver.

6. Ensure cable is routed correctly while chair is in a level position. See image below for correct routing.

NOTE: Ensure that cable is not pulled tight into the P-Clip on the back plate. Slack is needed between the cable connection point at the gas spring and the P-Clip to prevent damage during tilting. Also, verify there are no kinks or sharp turns in the cable.



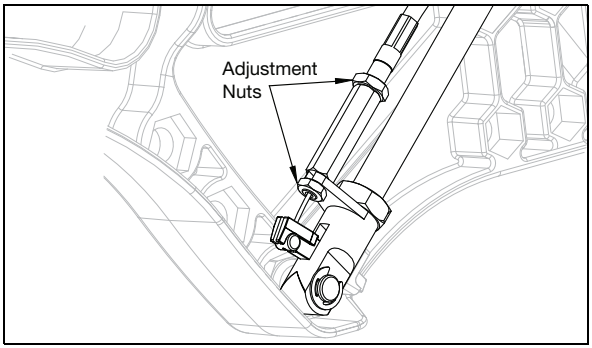
7. Ensure tilt function works correctly, if not, an adjustment is needed. Continue to next step for adjustment instructions.
8. Remove slack from tilt lever cable by adjusting the turnbuckle adapter. Verify the lever engages and tilts properly. After adjusting cables, tighten both adjustment nuts to secure.



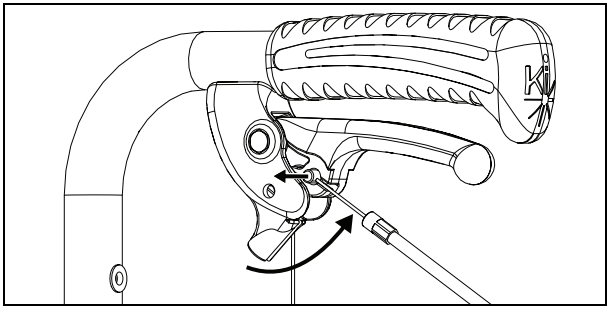
Replacing Tilt Cables

NOTE: Have chair in level position, not in any degree of tilt, while replacing cables.

1. Loosen adjustment nuts and remove cable from chair up to the trigger handles.



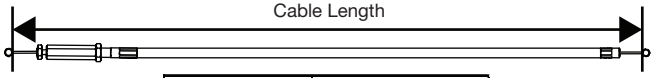
2. Pull cable out of lever channel, squeeze trigger and slide cable barrel out of trigger to remove cable.



3. See chart and diagram below for information about tilt cable selection.

Cable Identification

Cable Length



Cable Name	Length (inches)
Short	34.25"
Medium	36.25"
Long	38.25"
XL	40.25"
XXL	42.25"
XXXL	44.25"

Cable Lengths

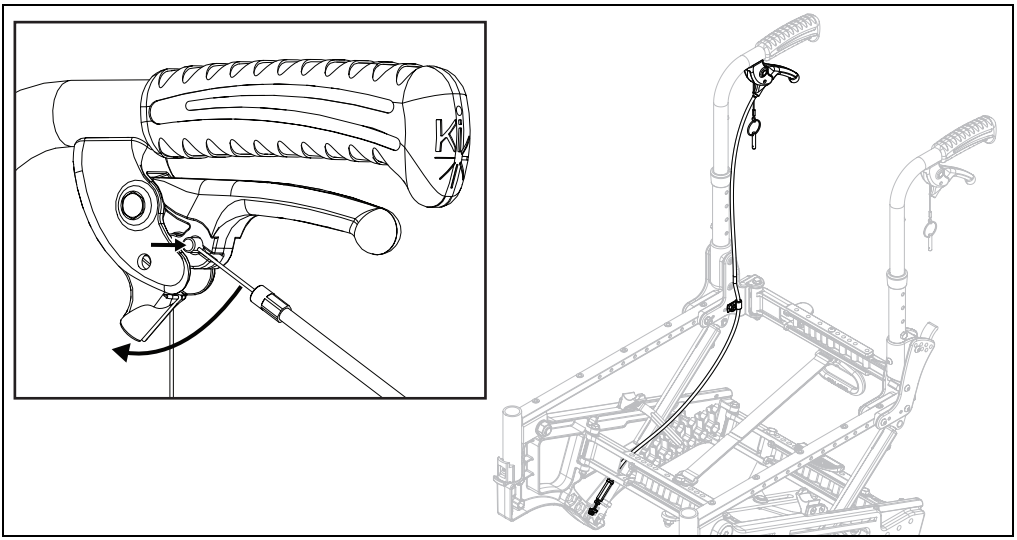
Backrest Type	Seat Rail Size		
	Short (14 - 16)	Medium (16 - 28)	Long (18 - 20)
Height Adjustable - Short	003288 Short	003289 Medium	003290 Long
Height Adjustable - Medium	003289 Medium	003290 Long	003291 XL
Height Adjustable - Tall	003290 Long	003291 XL	003292 XXL
Fixed Height - Standard	003289 Medium	003290 Long	003291 XL
Fixed Height - Tall	003291 XL	003292 XXL	003293 XXXL

4. With chair level, install cable onto chair and leave adjustment nuts loose.

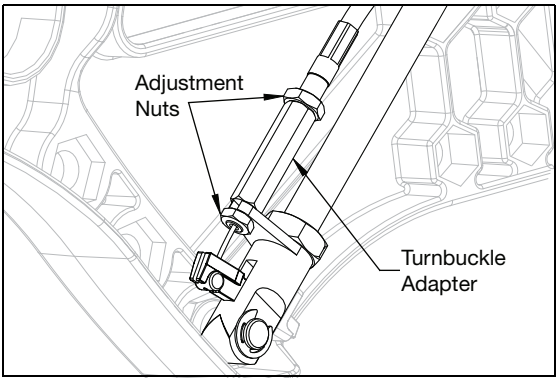
Replacing Tilt Cables

5. Install cable into lever. Ensure cable is routed correctly. See correct routing below.

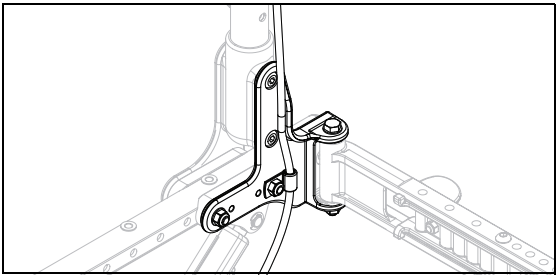
NOTE: Verify there are no kinks or sharp turns in the cable. P-Clip is installed after adjustments.



6. Remove slack from tilt lever cable by adjusting the turnbuckle adapter. Verify the lever engages and tilts properly. After adjusting cables, tighten both adjustment nuts to secure.



7. Secure cable to back plate with P-Clip using a 10mm wrench. Ensure that cable is not pulled tight into the P-Clip on the back plate. Slack is needed between the cable connection point at the gas spring and the P-Clip to prevent damage during tilting.

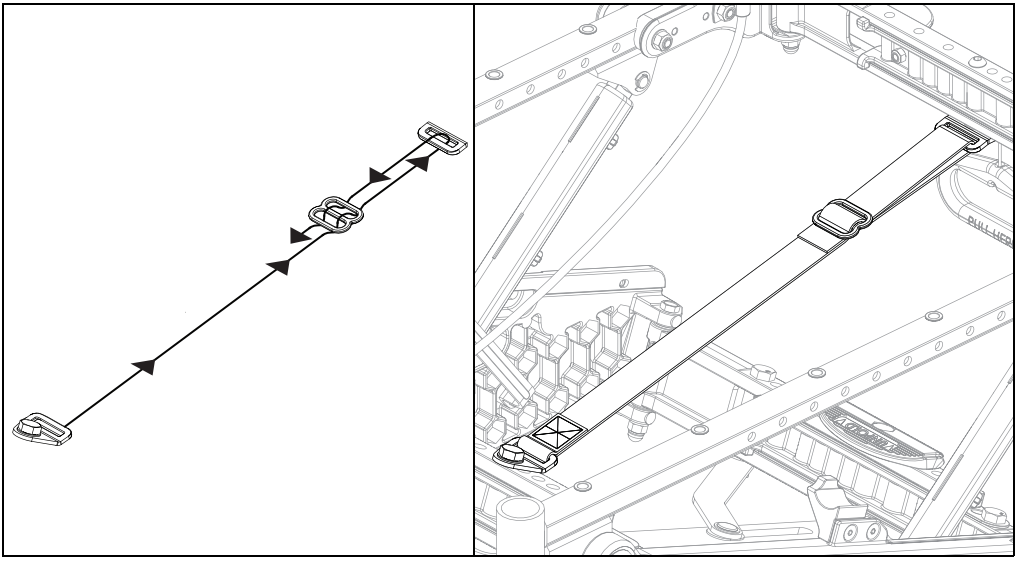


8. Repeat on opposite side.

Adjusting/Installing Strap

Strap Routing

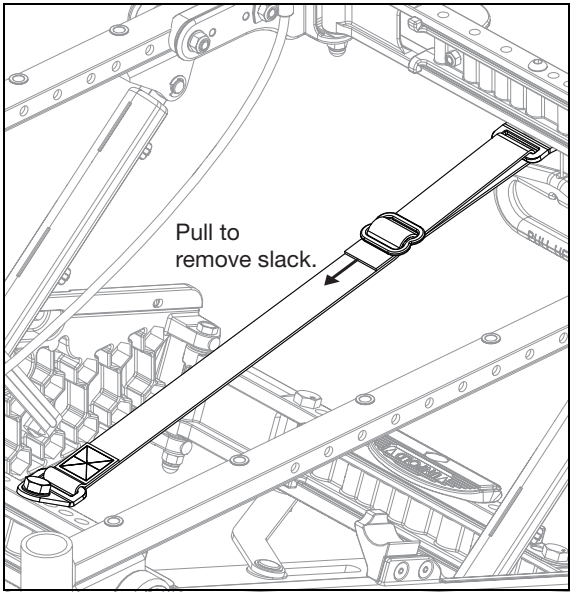
1. Strap is attached to one bracket. Take the opposite end of the strap and go under, over and under the middle clip. Take the end of the strap up through the end bracket and out. Route the strap back to the middle clip and go under, over and under again. See image below for help with strap routing.



Strap Adjustment

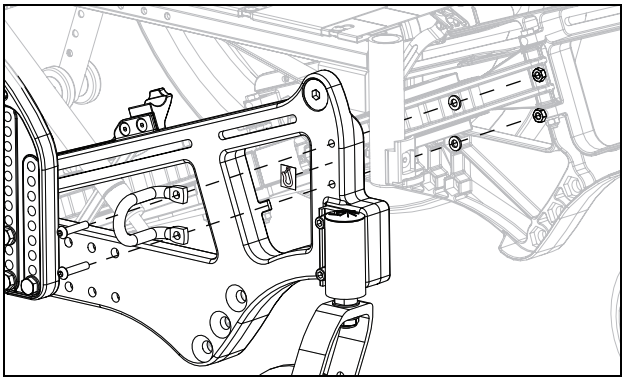
1. Remove all slack in strap by pulling the end of the strap. You may need to help push slack through the middle clip and then pull the end of the strap to remove the slack in some cases.
2. Verify that chair folds and unfolds properly.

NOTE: All three cross struts should go over center during folding when adjustments are correct.

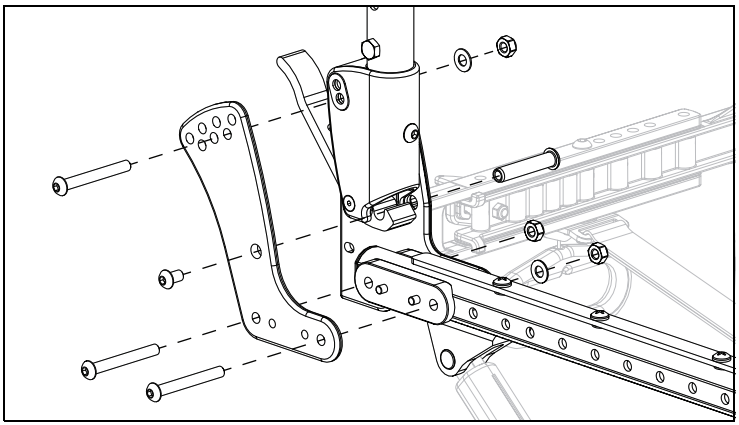


Installing Transit

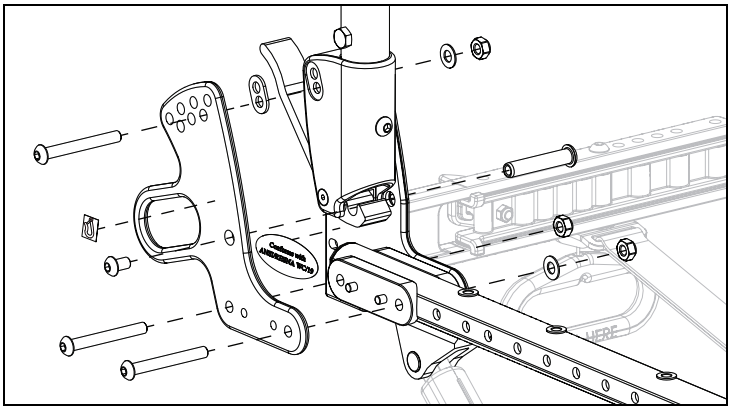
1. Install front transit bracket with two screws, two washers and two nuts using a 4mm Allen wrench and a 10mm wrench.
2. Install front transit hook label in the space between the two ends of the front transit bracket.



3. Remove outer back plate from both sides of chair using using two 4mm Allen wrenches for the top two screws and a 4mm Allen wrench and 10mm wrench for the lower two bolts.



4. Install transit outer back plates and secure with hardware.
5. Install WC/19 transit labels on the inner back plates. The WC/19 transit label should be seen from the outside of the chair. Also, install the transit hook labels on the back plate near the transit loop.



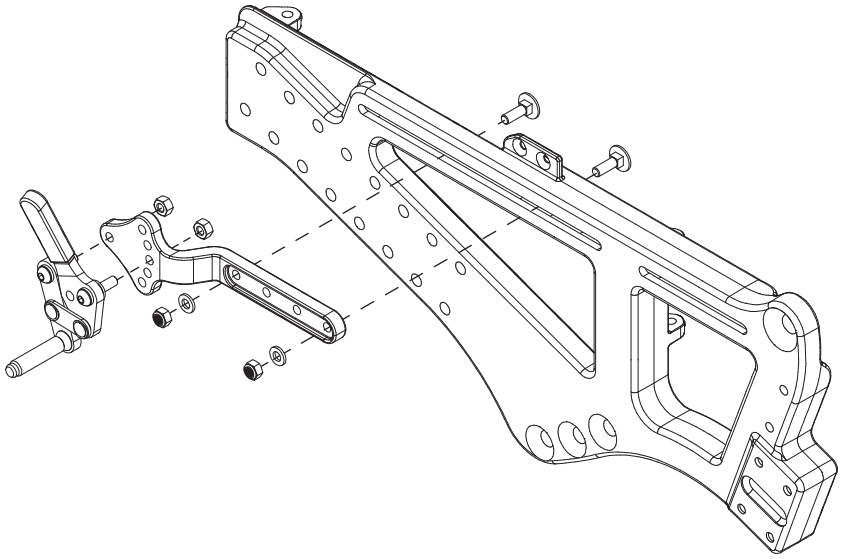
Wheel Lock Configurations

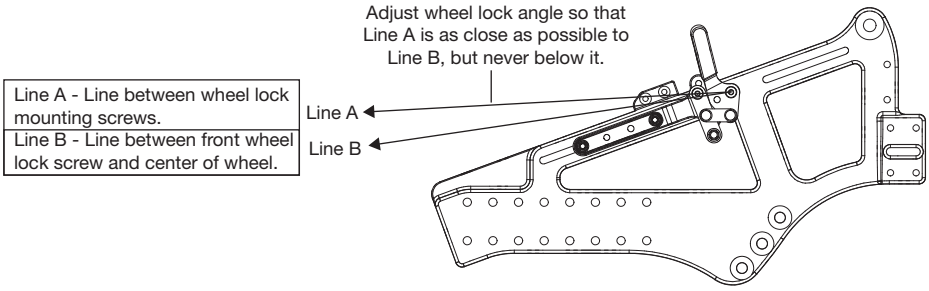
1. Use diagrams and charts to determine the needed wheel lock configuration for your chair.
2. Install wheel lock according to the configuration desired, determined from diagrams and chart below, using a 10mm wrench.

NOTE: Always mount carriage bolts as far apart as possible to maximize rigidity.

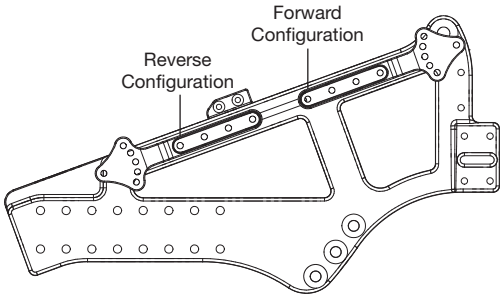
NOTE: Always loosen and tighten wheel lock hardware by alternating between the two bolts while loosening/tightening a little at a time. This prevents overclamping on one set of hardware which can lead to binding of the fasteners and increased difficulty in removal.

3. Test the wheel locks. Ensure wheel locks lock into place and tires do not move or slide when both wheel lock are engaged.





Wheel Lock Mount Configuration		
Wheel Size	**STD/High Axle Plate**	**Extended Axle Plate**
12	Reverse	Reverse
16	Reverse	Reverse
20	Forward	Reverse
22	Forward	Reverse
24	Forward	Forward



Wheel Lock Configurations

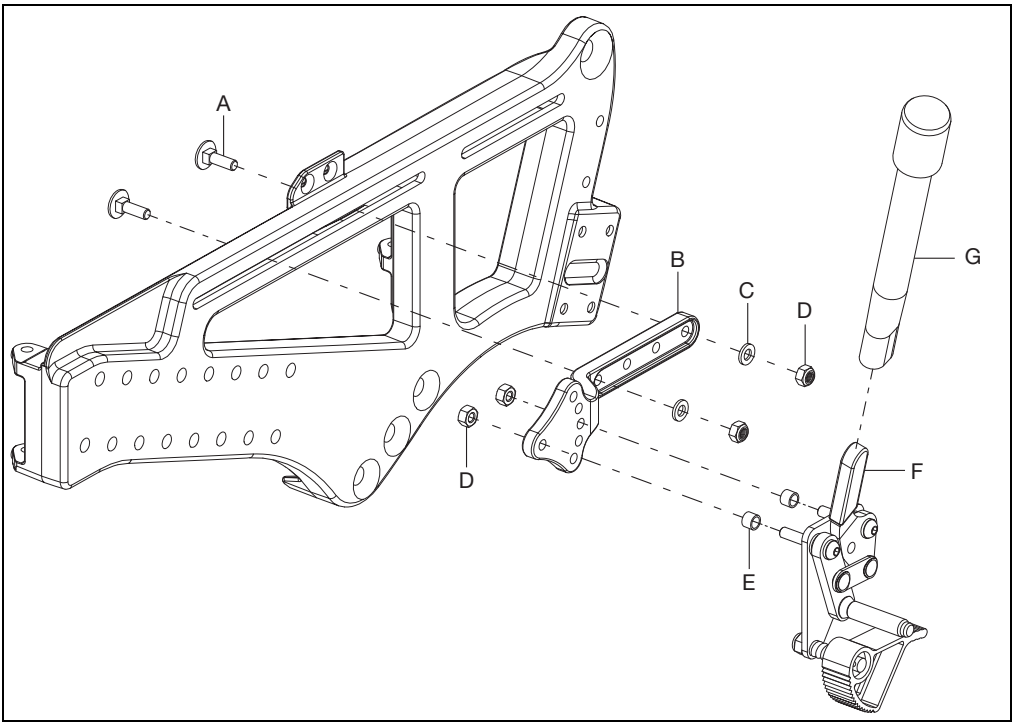
Grade Aid

1. Install the Grade Aid wheel lock (F) to the bracket (B) with two spacers (E) and two nuts (D) using a 10mm wrench.
2. Install the wheel lock assembly to the outside of the chair frame with two bolts (A), two washers (C) and two nuts (D) using a 10mm wrench. The wheel lock assembly can be adjusted along with the channel so the wheel lock engages the tire when activated. Handle extension (G) is an option if needed.

NOTE: Always mount carriage bolts as far apart as possible to maximize rigidity.

NOTE: Always loosen and tighten wheel lock hardware by alternating between the two bolts while loosening/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.

3. Test the wheel locks. Ensure wheel locks lock into place and tires do not move or slide when both wheel lock are engaged.

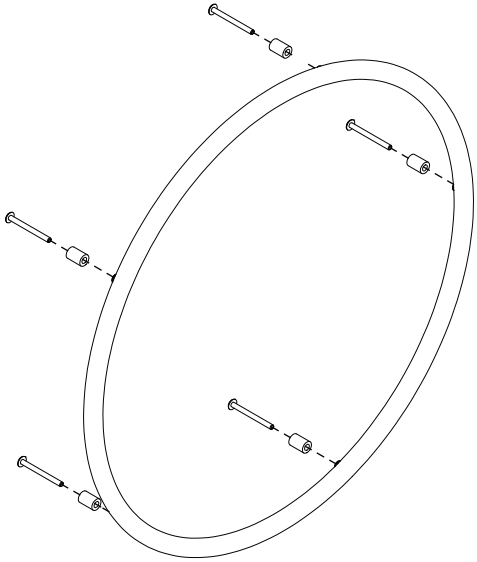


Handrim Configurations

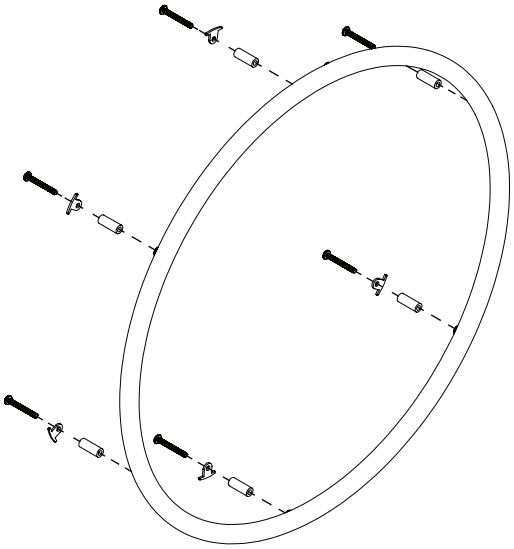
For handrim sizing, hardware and more information please visit our parts manual or click the link HERE to jump to the Handrim Chart.

Handrim Construction

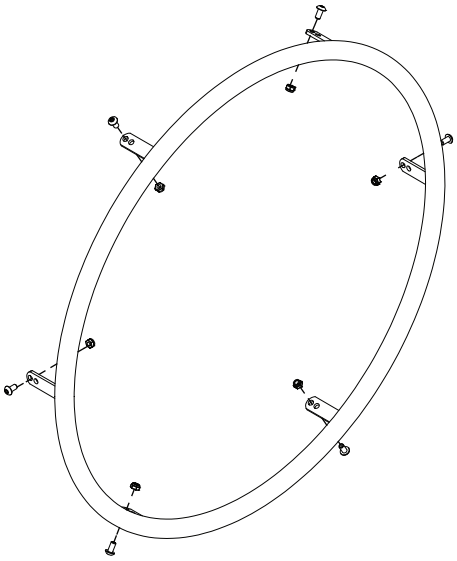
The sequencing of hardware for the three styles of handrims is shown below. The specific hardware used is determined in the chart on the previous page, based on the tire and handrim being used.



Spacer Style



Detached Tab Style



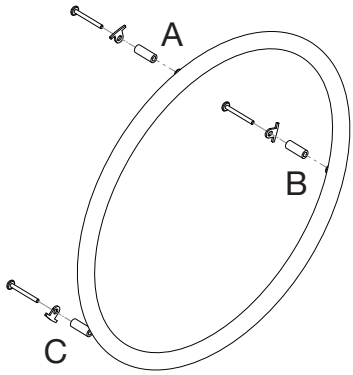
Tab Style

Handrim Tightening

The correct tightening patterns are shown below.

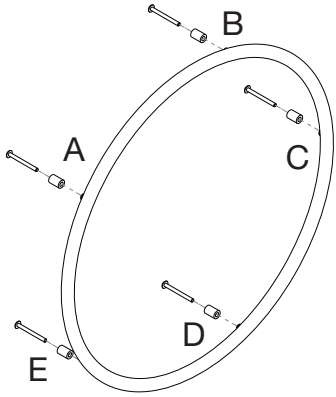
3-Hole Pattern

Use A, B, C pattern leaving A loose until C is tightened completely.



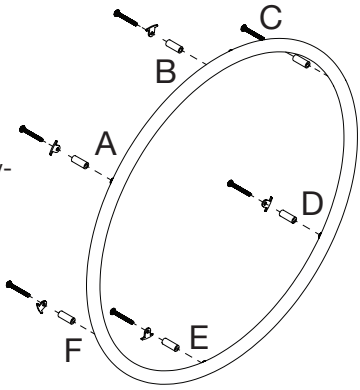
5-Hole Pattern

Use A, C, E, B, D (STAR) pattern leaving A loose until D is tightened completely.



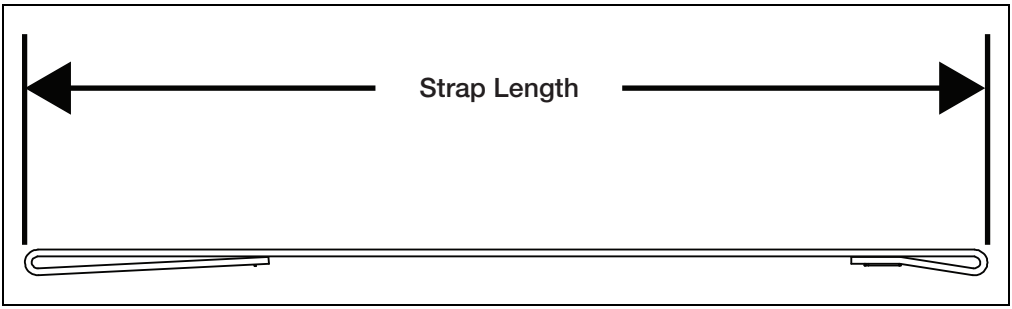
6-Hole Pattern

Use A, D, B, E, C, F pattern leaving A loose until F is tightened completely.



Footplate and Heel Loops

For additional footplate information, see pages 3 - 5 for the Caster - Footplate Compatibility Charts.



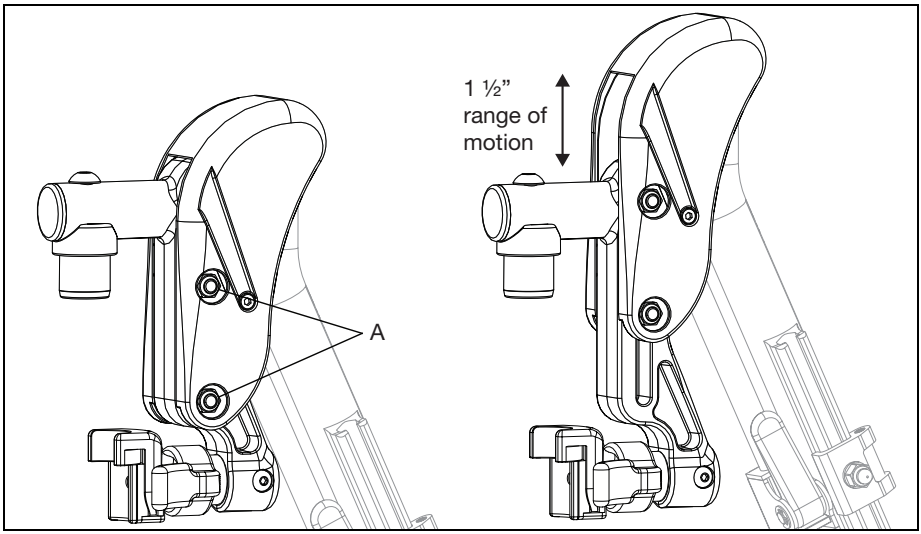
Heel Loop								
Size	Part Number	Standard Hanger			Offset Hanger			Strap Length
		Angle Adjustable	Composite	Composite Angle Adjustable	Angle Adjustable	Composite	Composite Angle Adjustable	
Short	100591	N/A	14" - 15"	N/A	N/A	N/A	N/A	9.4"
Medium	100592	14" - 15"	16" - 17"	15" - 16"	N/A	14" - 15"	15" - 16"	10.4"
Long	100593	16" - 22"	18" - 22"	17" - 22"	16" - 22"	16" - 22"	17" - 22"	11.4"

Pro ELR Adjustment

NOTE: Instructions for adjusting the height of the calf pad, the depth of the calf pad and the length of the footrest can be found in the owner manual in the Pro Elevated Leg Rest section.

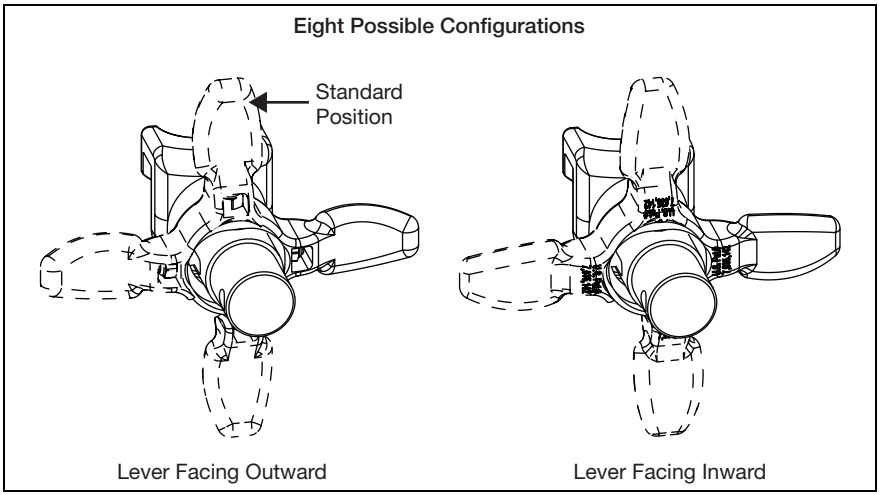
Adjusting Knee Height

1. Using two 10mm socket wrenches, loosen the two nuts (A) on the cover.
2. Adjust knee height to desired setting.
3. Retighten the two nuts (A) after desired height is attained.



Rotating 4-Way Latch

The 4-Way latch has eight possible configurations, four with the curve of the lever facing outward and four with the curve of the lever facing inward. See diagram below.

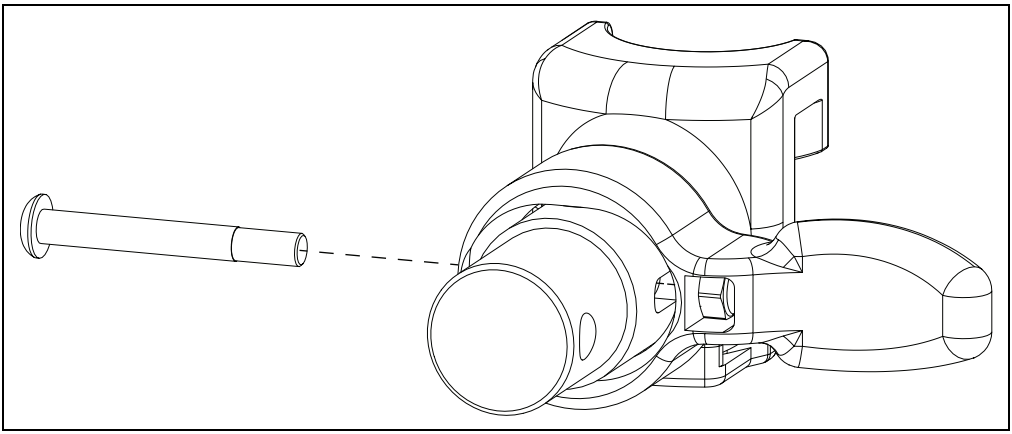


Rotating

1. To rotate the 4-Way Latch, remove the screw using a 3mm Allen wrench while the hanger is still on the chair (spring must be engaged to remove and reinsert screw and keeping the hanger on the chair keeps the spring engaged.) Ensure the nut does not fall out.
2. Rotate the 4-Way Latch to desired orientation and reinsert screw with 3mm Allen wrench. Ensure that the nut stays in position while tightening the screw. Do not overtighten screw or mechanism will bind.

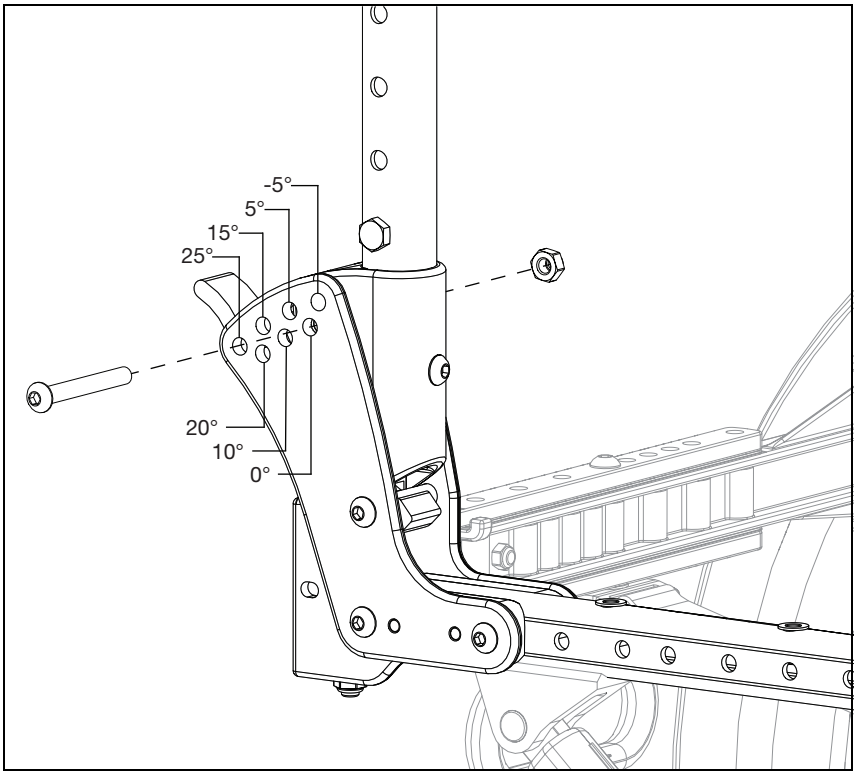
NOTE: To reverse the 4-way latch, the same screw is removed, but the hanger has to be removed from the latch block. Once removed, slide the latch off, flip over and reinstall. Ensure spring is engaged, by pushing and holding the latch button in, and nut stays in position while reinstalling the screw.

NOTE: In-line position is not achievable with the Pro ELR Footrest option.



Backrest Angle Adjustment

1. Use a 4mm Allen wrench and a 10mm wrench to remove the button head screw and nut on the backrest.
2. Rotate backrest to desired angle. Each hole represents 5° of rotation. See diagram below for the angle for each hole.
3. Replace screw and nut in desired hole location.
4. Repeat for opposite side. Ensure both sides use the same configuration settings.

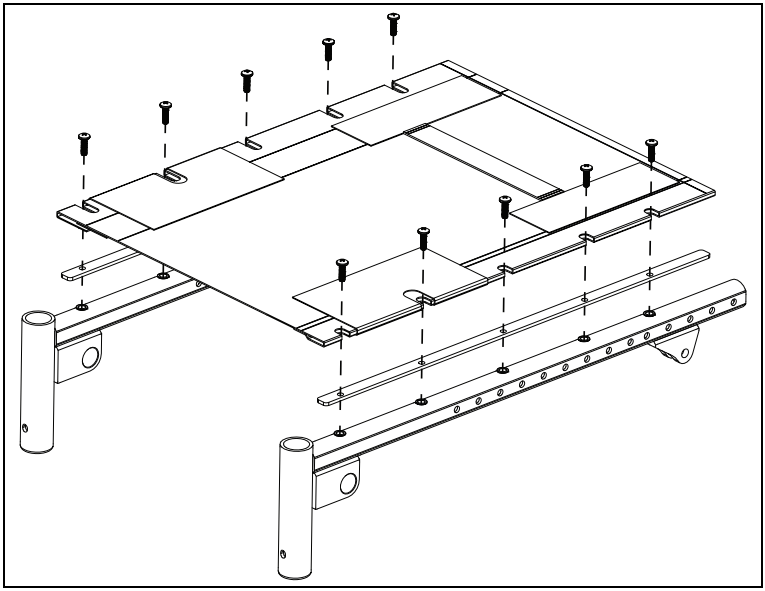


Seat Upholstery

1. Install seat rail and upholstery with screws using a Phillips screwdriver.

NOTE: Reference the chart below to determine the number of screws needed for the upholstery based on the seat depth.

NOTE: Ensure the right size seat rail is used (14", 16", 18" or 20").

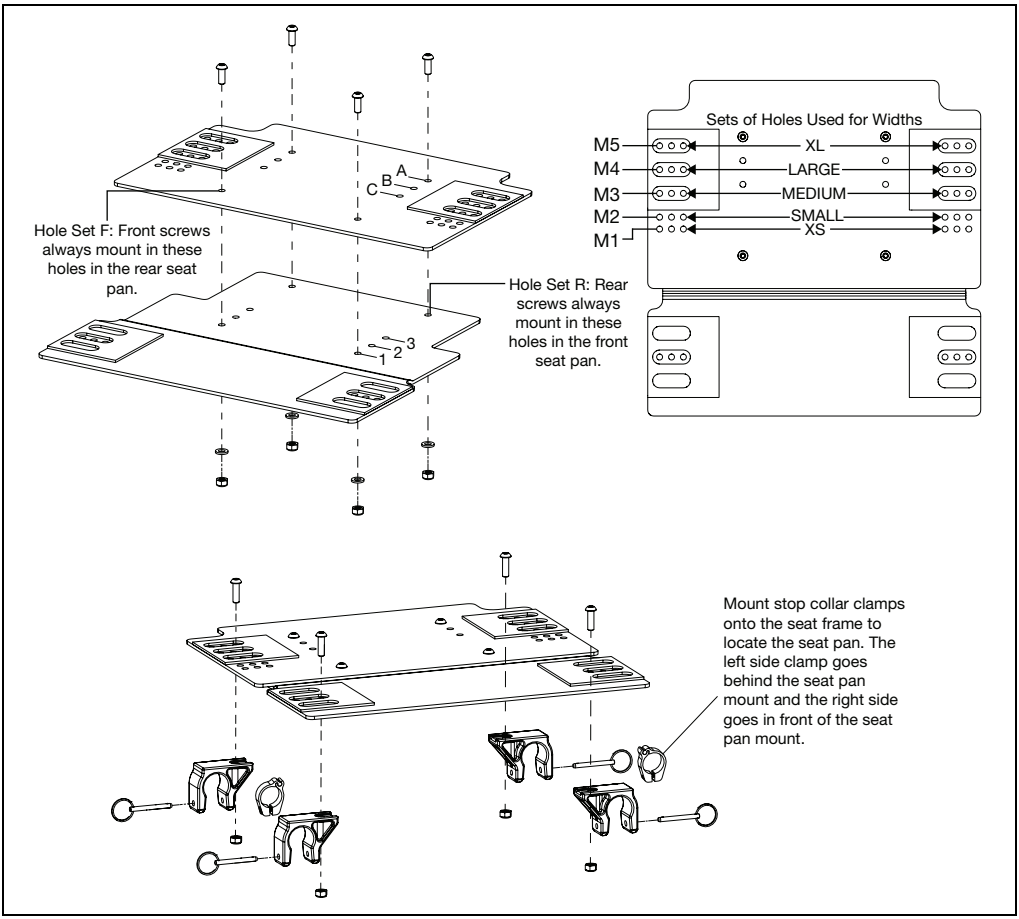


Screw Quantity per Chair		
Seat Depth	Seat Sling Depth	Screw Quantity
14	14	8
15	14	8
16	16	10
17	16	10
18	18	10
19	18	10
20	20	12

Removable Seat Pan

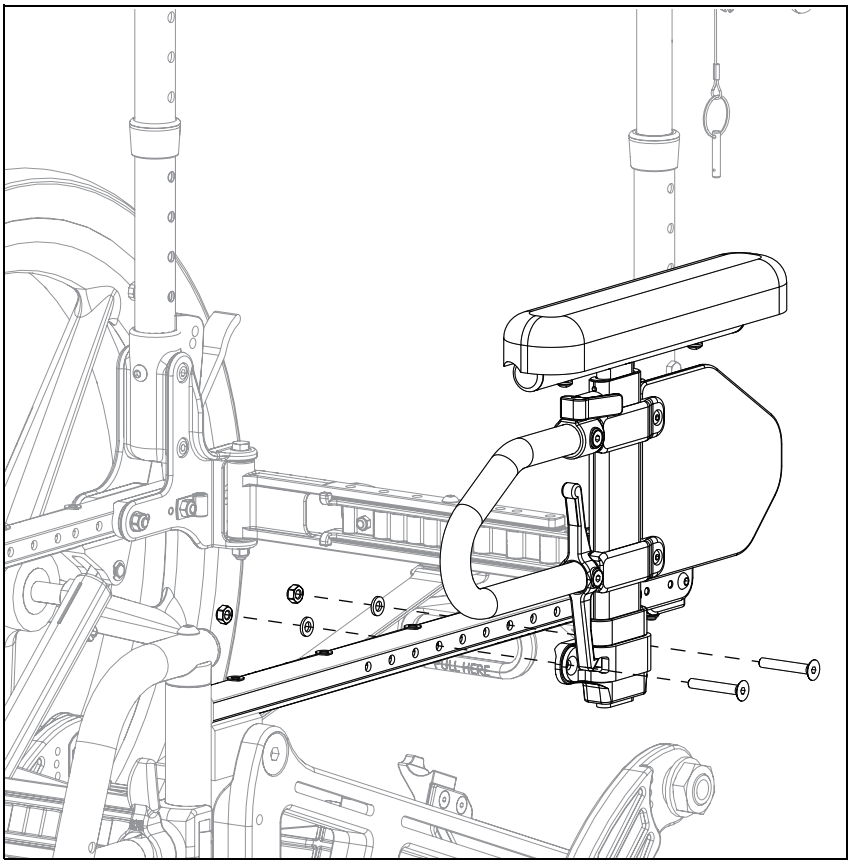
1. Assemble the seat pan as shown below according to the frame width and depth of the chair using a 4mm Allen wrench and a 10mm wrench.
2. Install the seat mount clamps onto the seat pan as shown below using a 4mm Allen wrench and a 10mm wrench.
3. Install the seat pan assembly onto the chair by pushing the assembly with clamps onto the seat frame. Secure in place by inserting all four pins until the bearing clears the other side of the clamp.

Frame Size	Seat Depth	Align Hole Set "F" in Rear Seat Pan with Hole Set in Front Seat Pan:	Align Hole Set "R" in Front Seat Pan with Hole Set in Rear Seat Pan:	Rear Seat Pan Mount Hole Set:
Short	14D	1	A	M5
	15D	2	B	M4
	16D	3	C	M5
Medium	16D	1	A	M5
	17D	2	B	M5
	18D	3	C	M3
Long	18D	1	A	M3
	19D	2	B	M2
	20D	3	C	M1



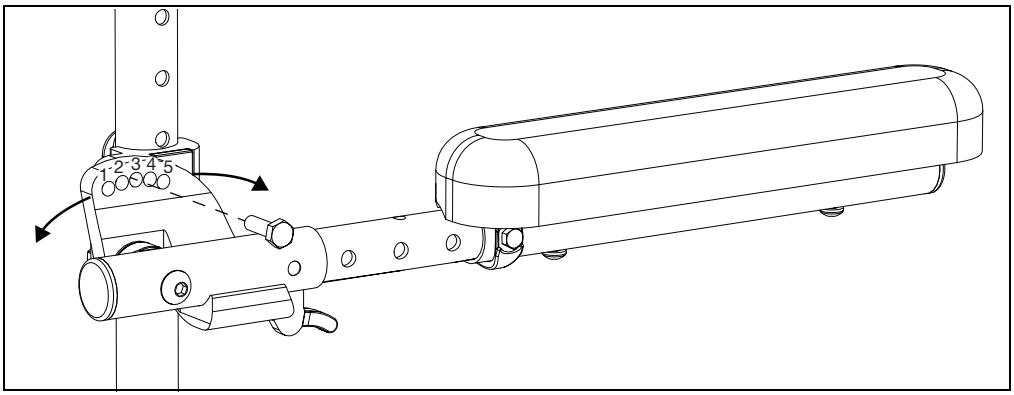
Adjusting Height Adjustable T-Arm Position

1. Remove two screws, two washers and two nuts from armrest receiver.
2. Move receiver to desired location on seat frame and reinstall screws, washers and nuts.

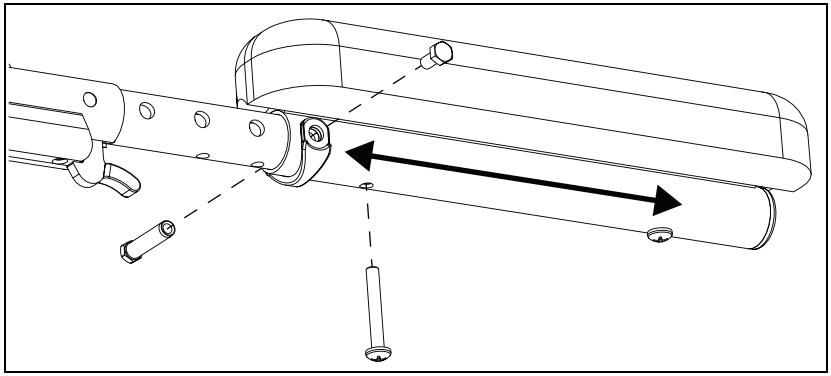


Angle Adjustable Locking Flip Up Extendable Armrest

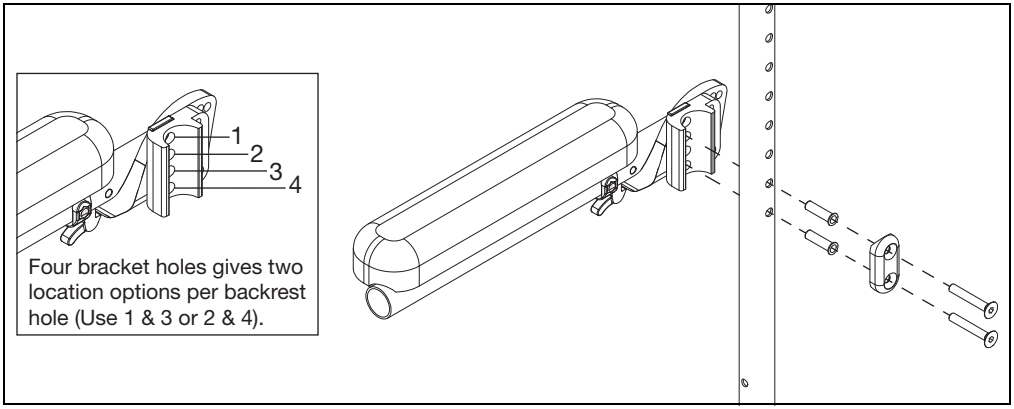
1. Set the angle of the armrest. There are five holes that can be used to set the angle. Tighten the bolt once angle is set.



2. Set the length of the armrest. To adjust the length, remove the bolts and spacer on the tube and the screw closest to the back of the chair. Slide the armrest to desired length available by the predrilled holes and reinstall the screw and bolts.



3. Set the height of the armrest. There are four holes on the armrest that allow for two different height settings for each set of holes on the back tube. Use the holes that provide the correct height setting for the user. The two bolts pass through the spacer, sleeves, back posts and into the armrest.

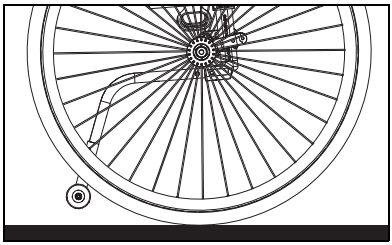


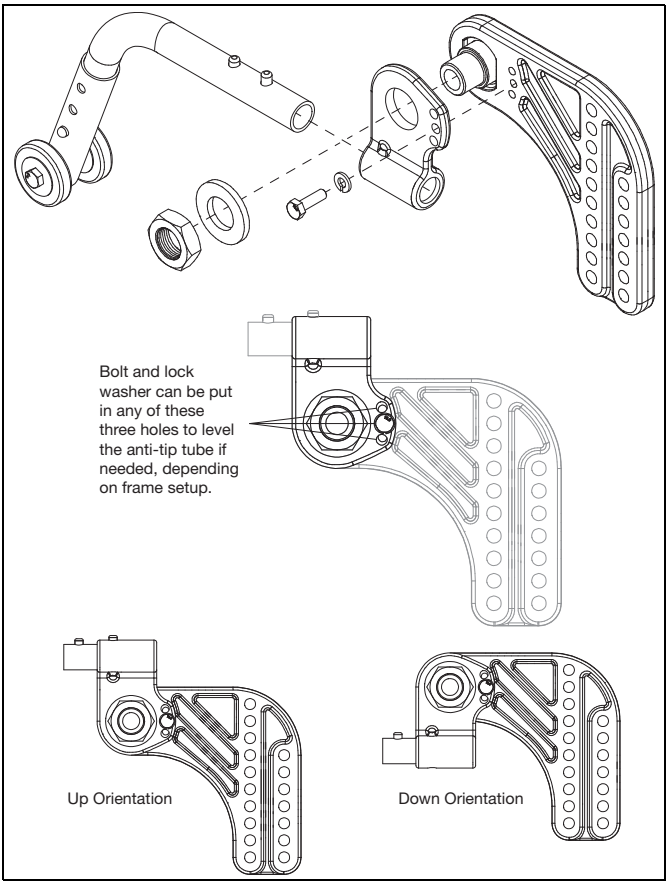
Anti-Tips

1. To adjust height, press in lower detent buttons.
2. Slide anti-tip up or down to desired height and allow detent buttons to click into new holes.
3. Repeat process on the opposite side. Ensure both sides are set in the same configuration.

See diagrams and charts below for additional anti-tip information.

NOTE: After any adjustment, ensure anti-tips clear the wheels as shown below.





Rear Wheel Size	Receiver Orientation	Anti-Tip Tube Length	Anti-Tip Extension
12	Up	12"	Short
16	Up	16"	Long
20	Down	20"	Short
22	Down	22 - 24"	Long
24	Down	22 - 24"	Long

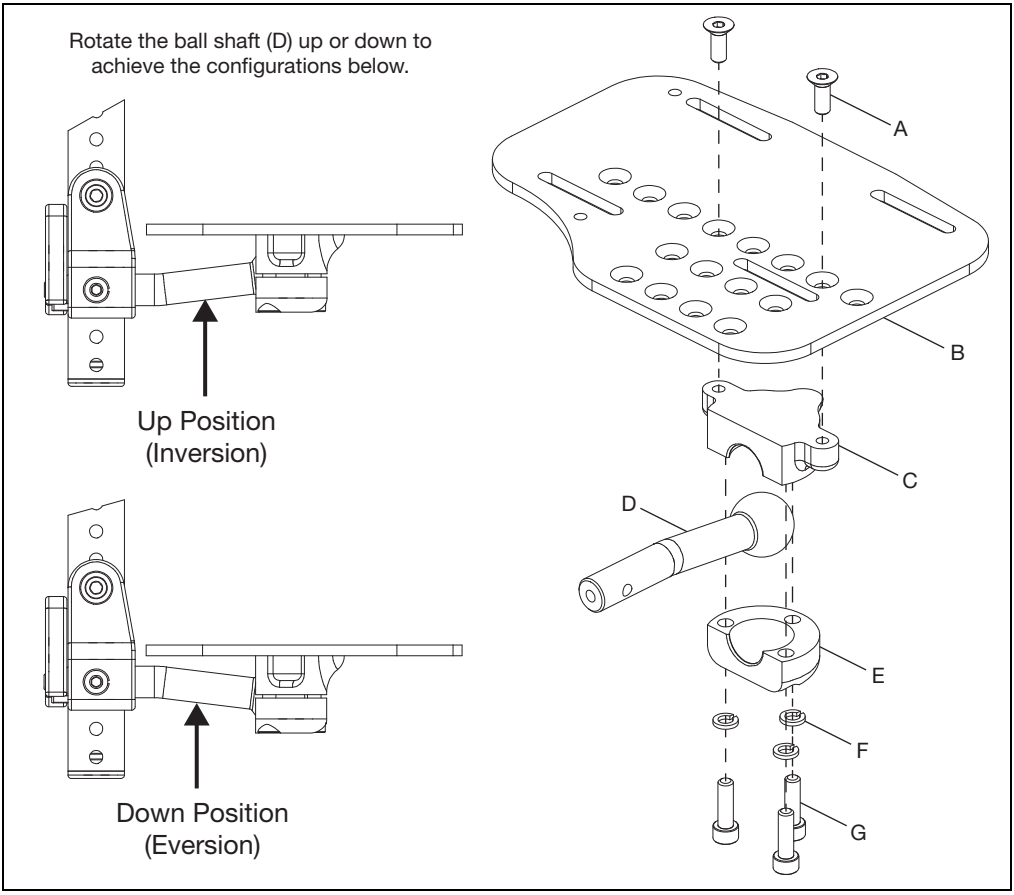
Multi-Angle Footrest

Installation

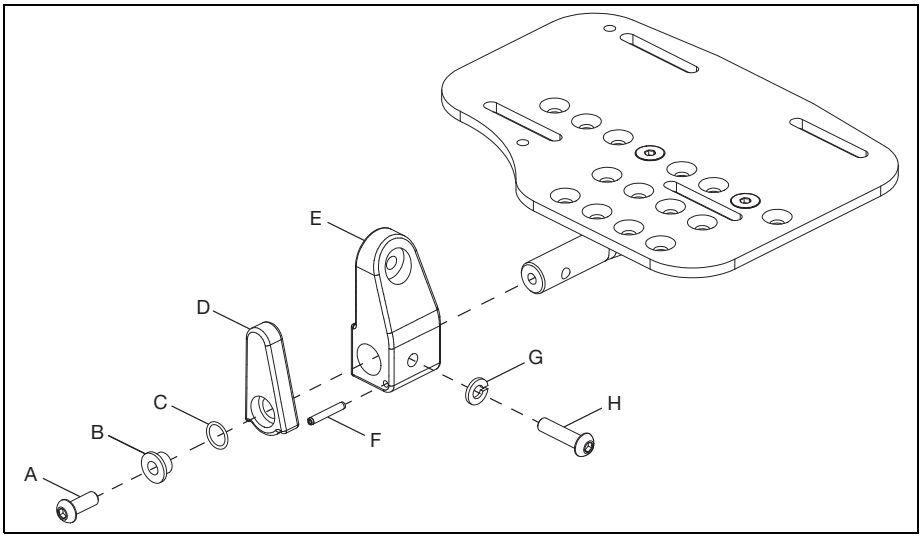
1. Determine which configuration the ball shaft (D) will need to be in - down (eversion) or up (inversion). See figure below for example. Install footplate (B) onto upper footrest clamp (C) with two screws (A) using a 4mm Allen wrench. Install ball shaft (D) into lower footrest clamp (E) and secure to the upper footrest clamp using three screws (G) and three lock washers (F) using a 5mm Allen wrench.

NOTE: Install the footplate to the upper footrest clamp using the set of holes needed for the desired configuration. The holes allow the footplate to be moved further inward or outward depending on preference.

NOTE: Torque the three screws (G) to 144 in/lbs.

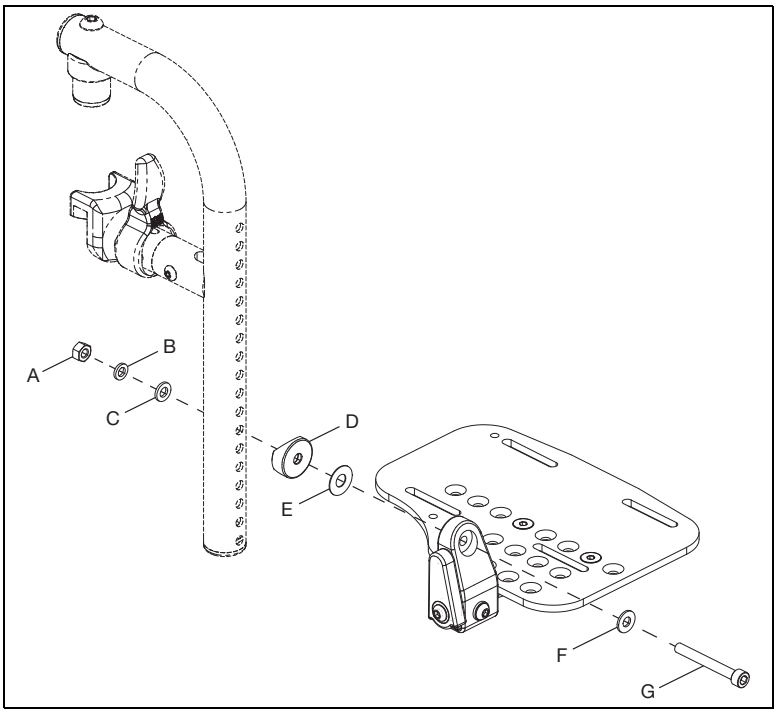


2. Install footrest mount (E) onto the end of the ball shaft and secure with screw (H) and lock washer (G) using a 4mm Allen wrench. Install the flip-up latch (D) onto the footrest mount and secure with latch spring (C), bushing (B) and screw (A) using a 4mm Allen wrench. Push spring pin (F) into the footrest mount to limit the movement of the flip-up latch.



3. Install footplate assembly to hanger with screw (G), washer (Fig. 3:F), washer (E), saddle spacer (D), washer (C), washer (B) and nut (A) using a 5mm Allen wrench and a 10mm wrench.

NOTE: Install footplate assembly to hanger using the correct holes for the desired footrest height.

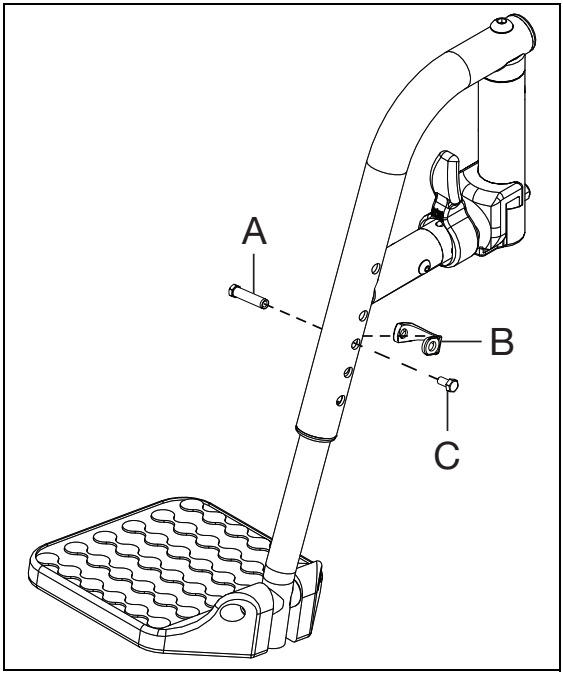


Footrest Length Adjustment

1. Remove the bolt (C) and threaded insert (A) from the footrest with a 8m wrench.
2. Slide the adjustment collar (B) to the desired hole and move the extension to the desired length.

NOTE: The adjustment collar doesn't need to come all the way off, it is shown off to clearly show the part being called out.

3. Reinstall the bolt and threaded insert through the adjustment collar and footrest tubes to secure.
4. Repeat steps 1 - 3 on opposite side.
5. To ensure safe use, verify that the distance between the footplate and the ground is greater than or equal to 2.5" and always look ahead for potential obstructions or surface transitions.

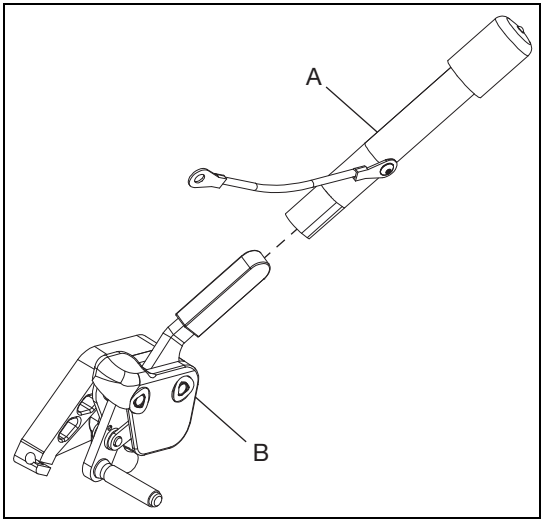


Hemi Wheel Lock

NOTE: These directions show the installation of the Hemi Wheel Lock with the master (drive) side on the right. The directions are the same, but the sides are flipped if the master (drive) side is wanted on the left.

Installation

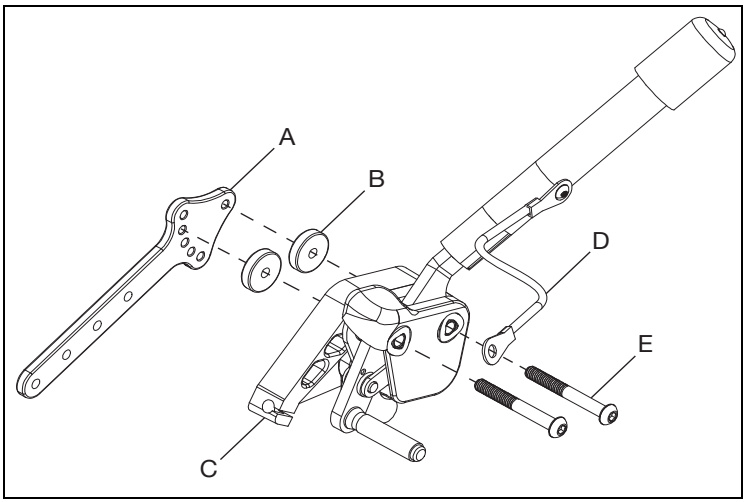
1. Install the wheel lock extension (A) onto the master lock assembly (B) by sliding the extension as shown. The wheel lock extension is not required, but based on preference of the user.



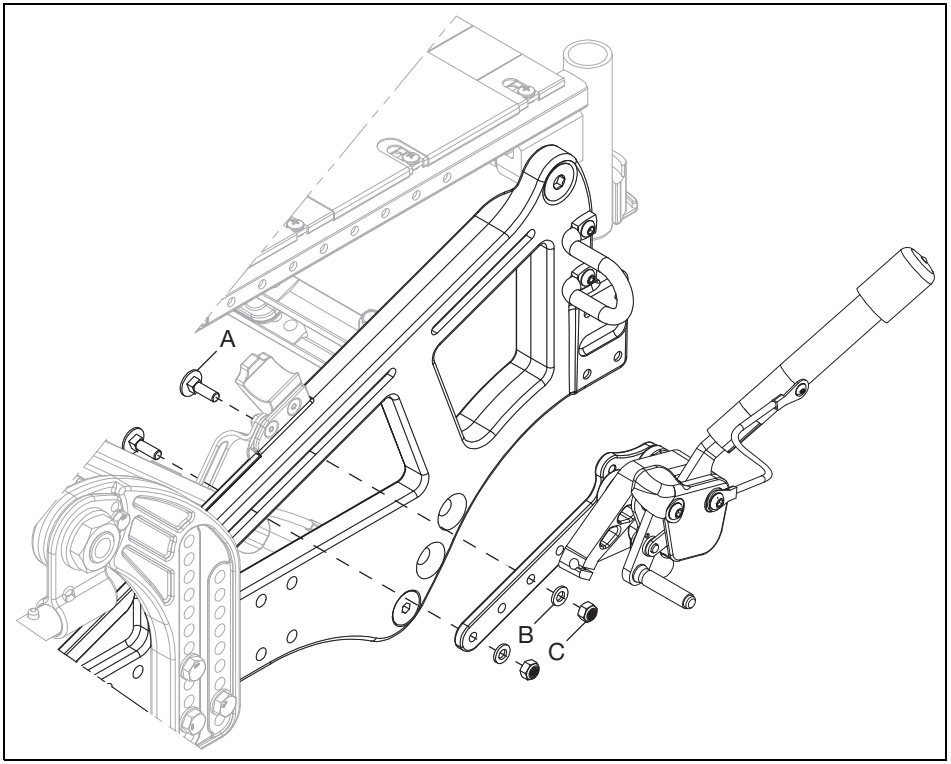
2. Install the master lock assembly (C) onto the wheel lock mount (A) with two bolts (E) using a 4mm Allen wrench.

NOTE: The spacers (B) are used with X-Core Mag wheels and require the longer bolts (E) that were provided. The longer bolts are 50mm long.

NOTE: If the wheel lock extension is present, the lanyard (D) is connected between the master lock assembly (C) and the bolts (E).

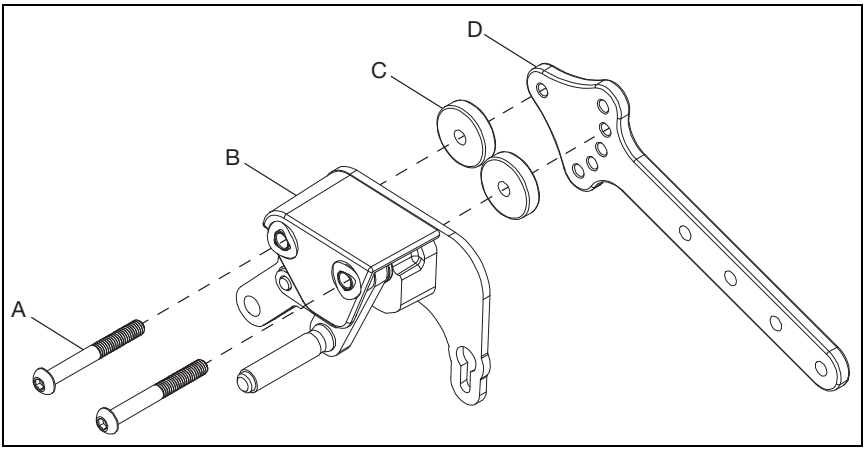


3. Install the master lock and mount assembly onto the chair frame with two carriage bolts (A), two washers (B) and two nuts (C) using a 10mm wrench. The knurled bar should be approximately ½" from the tire. The placement of the assembly can be adjusted later so the wheel lock properly engages with the tire.

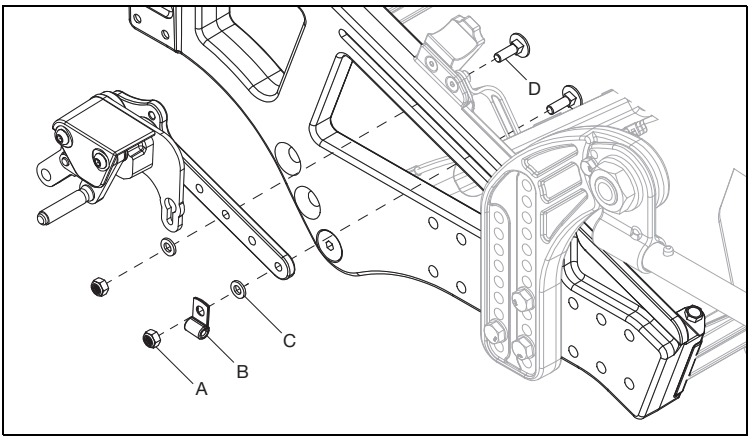


4. Install the follower lock assembly (B) onto the wheel lock mount (D) with two bolts (A) using a 4mm Allen wrench.

NOTE: The spacers (B) are used with X-Core Mag wheels and require the longer bolts (E) that were provided. The longer bolts are 50mm long.



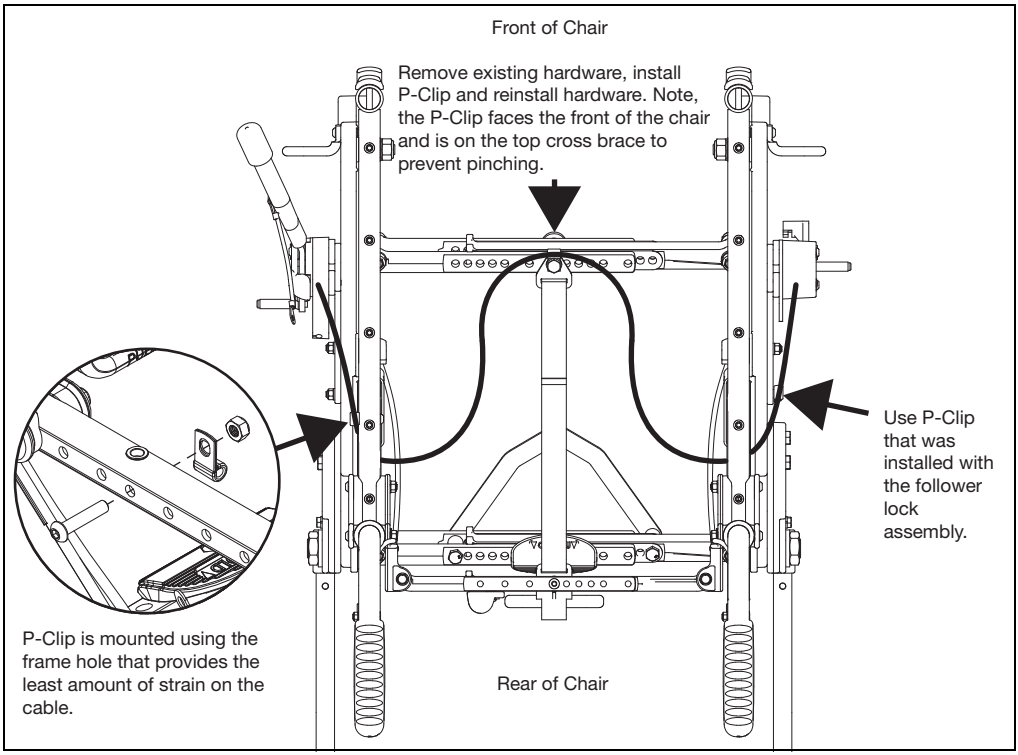
5. Install the follower lock and mount assembly onto the chair frame with two carriage bolts (D), two washers (C), a P-Clip (B) and two nuts (A) using a 10mm wrench. The knurled bar should be approximately ½" from the tire. The placement of the assembly can be adjusted later so the wheel lock properly engages with the tire.



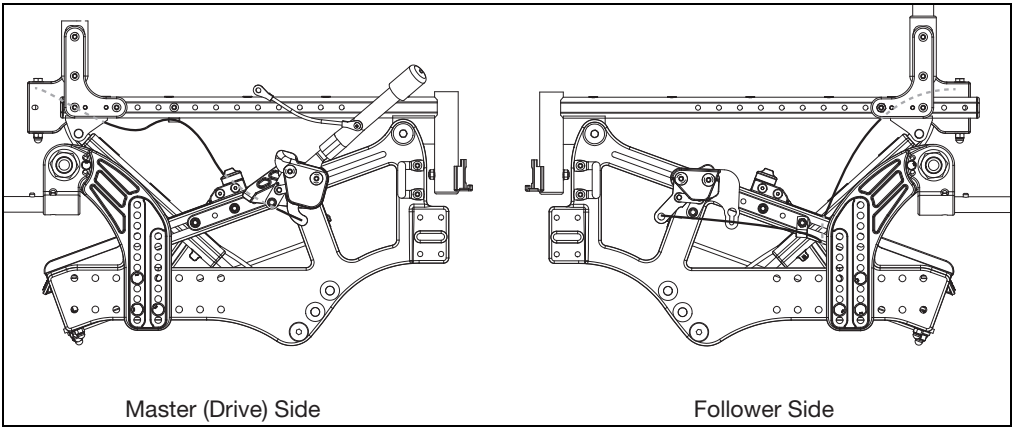
6. Install P-Clips and route cable as shown in image below using a 4mm Allen wrench and a 10mm wrench. The image is shown from the bottom of the chair to better show the routing.

NOTE: The cables must pass through the side frame opening and ABOVE the gas struts, on both sides of the chair, to avoid any tilt interference.

NOTE: There are two cable sizes that are determined by the seat width: medium cable (Seat width 14" - 17") and large cable (Seat width 18 - 22").



7. Attach the cable ends to the master lock assembly arm and the follower lock assembly arm. See image on the bottom of this page for a close up image if needed.



Master (Drive) Side

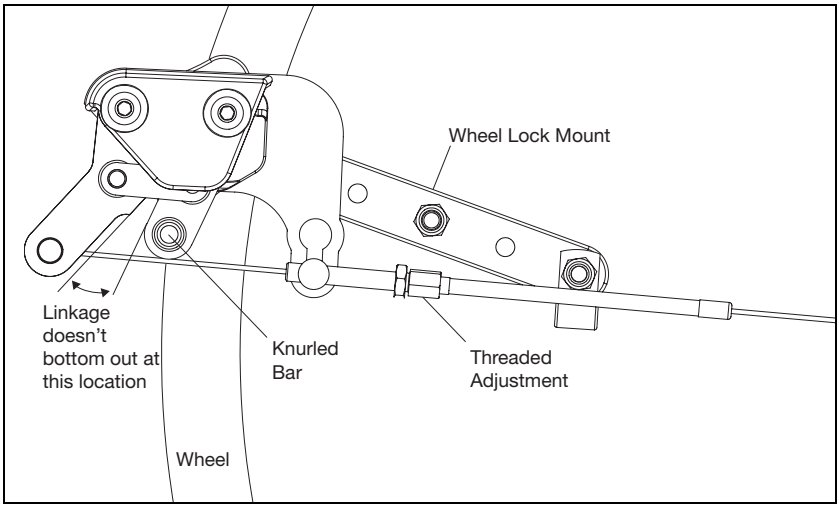
Follower Side

Adjusting the Locks (See image below)

1. Ensure the wheel lock mount is loose enough to move freely.
2. Set the wheel lock assemblies into the locked position with the knurled bar barely contacting the tire.
3. With the bolts loosened, slide the assemblies toward the tires in 1/4" increments until the chair can be lifted by the wheels with locked tires without the wheels rotating.
4. Verify the master lock assembly wheel lock can enter the over-center position when in the locked position and the follower lock assembly wheel lock can return to the unlocked position.

NOTE: Some configurations such as spoke wheels with pneumatic tires may show initial interference with the follower assembly. To fix, move the threaded adjustment on the cable rearward which allows you to shift the wheel lock forward while retaining the same locking force.

5. Tighten the bolts that connect the master and follower lock assemblies to the wheel lock mounts to 50 in/lbs using a 4mm Allen wrench.
6. Fully tighten the bolts connecting the wheel lock assemblies to the chair frame.
7. The threaded adjustment on the follower side should be set so the follower side linkage does not bottom out.



Hemi Wheel Lock Restrainer Clip

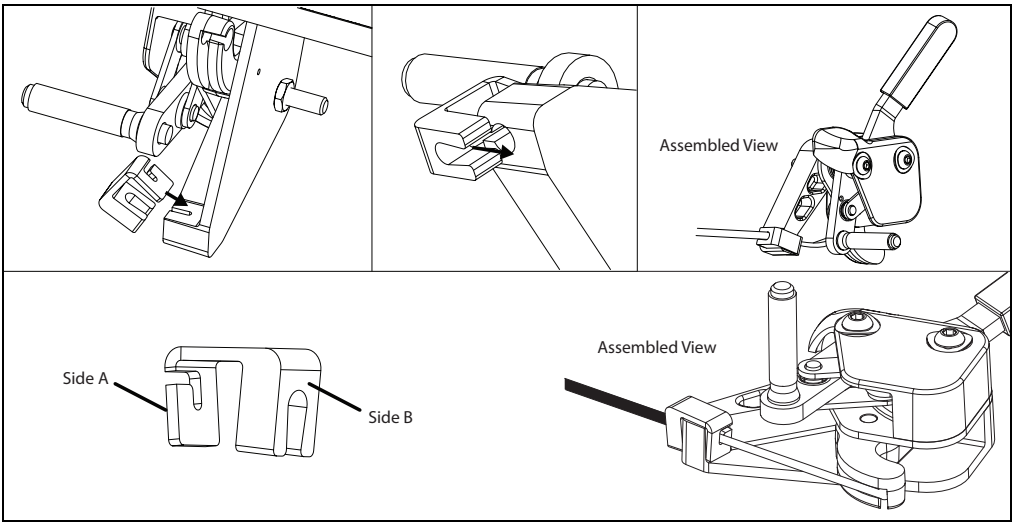
Installing Hemi Wheel Lock Restrainer Clip

1. Push "A" side of the restrainer clip over the slotted end of the hemi wheel lock bracket and the cable.
2. Pull the "B" side down and over the other side of hemi wheel lock bracket and the cable.

NOTE: The restrainer clip should be oriented so the restrainer clip actually covers the cable slot on the bracket.

Removing Hemi Wheel Lock Restrainer Clip

1. Hold the bracket and cable in place while pulling one end of the restrainer clip off.
2. Hold the bracket and cable in place while removing the opposite end of the restrainer clip.

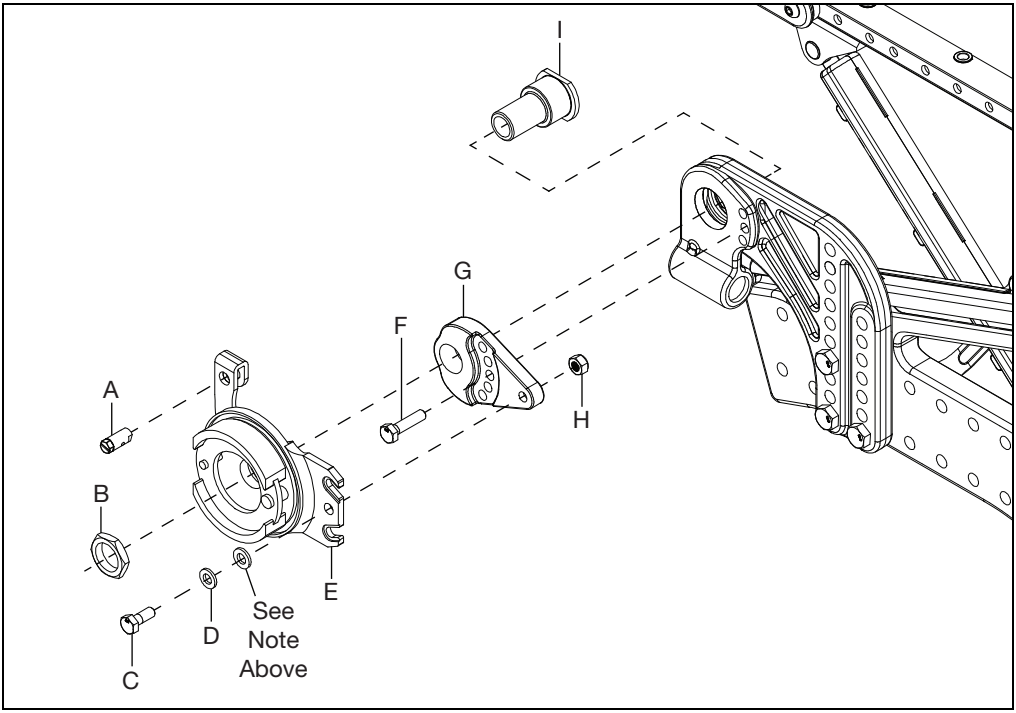


Drum Brake

NOTE: Remove wheels and axle sleeves before beginning the drum brake instructions.

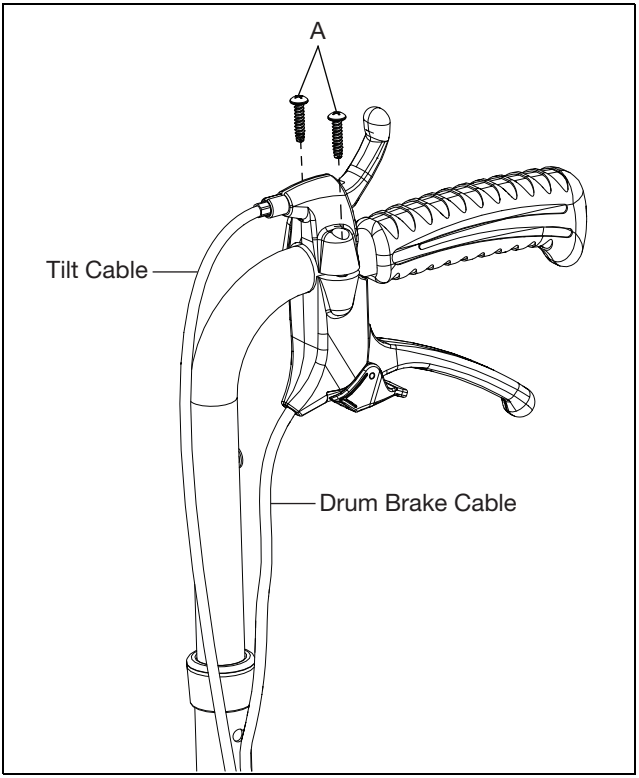
1. Install the drum brake adapter (G) to the axle plate (through the anti-tip receiver if present) with bolt (F) using a 10mm wrench.
2. Install the drum brake adapter (G) to the drum brake rotor (E) with bolt (C), washer (D) and nut (H) using two 10mm wrenches. Thread the pinch bolt (A) into the drum brake arm.
3. Install the drum brake rotor assembly to the axle plate with axle receiver nut (B) and axle sleeve (I) using two adjustable wrenches and two 5mm Allen wrenches.

NOTE: A second flat washer (102803) is used when standard axle plate is present for needed thread clearance. See image below.



4. Detach tilt cable from lever and remove lever.
5. Install new dual lever cable end adapter with two screws (A) and reinstall tilt cable to the top lever.
6. For the drum brake cable, remove bottom lever from mount. Remove the cable core from the cable jacket and route through the rearmost hole in the lever, then through the hole in the mount. Replace lever and thread core back through the cable jacket.

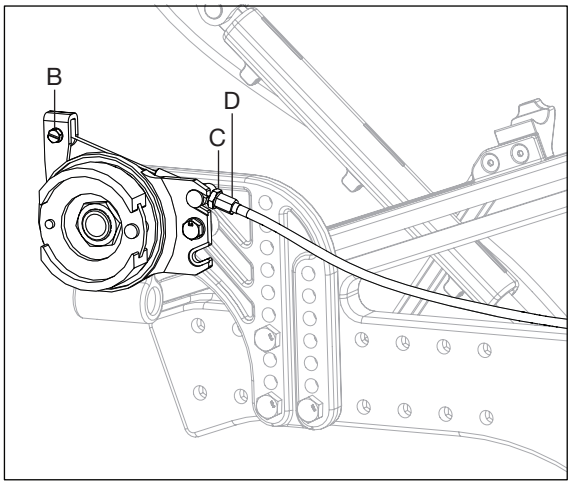
NOTE: Cable usage based on the configuration is shown in the tables below the image.



Cable Size for Backrest Type							
Cable Selection Chart	**Seat Depth**						
Backrest Type & Height Range	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Short Height Adjustable Short Height Adjustable 8° Bend	XL	XL	2XL	2XL	3XL	3XL	4XL
Medium Height Adjustable Medium Height Adjustable 8° Bend Short Stroller Handle	XL	2XL	2XL	3XL	3XL	4XL	4XL
Tall Height Adjustable Tall Height Adjustable 8° Bend	2XL	2XL	3XL	3XL	4XL	4XL	5XL
Tall Stroller Handle	2XL	3XL	3XL	4XL	4XL	5XL	5XL

Drum Brake

7. Route the cable down the backrest cane to the drum brake.
8. Thread the end of the the cable through the hole in the pinch bolt (B) and tighten after removing all play from the cable.
9. Adjust cable with cable adjuster (D) until no wheel drag is present and positive lock is achieved with levers.Tighten lock nut (C) to secure position.
10. Secure cable to frame with three P-Clips (A) as shown.



Transit Wheels

⚠WARNING⚠

WARNING: Do not use transit wheels with long seat tubes (range 18" - 20"). The long seat tube may cause the transit wheel to unlock from it's deployed position. This may cause a fall or tip-over resulting in serious injury or death.

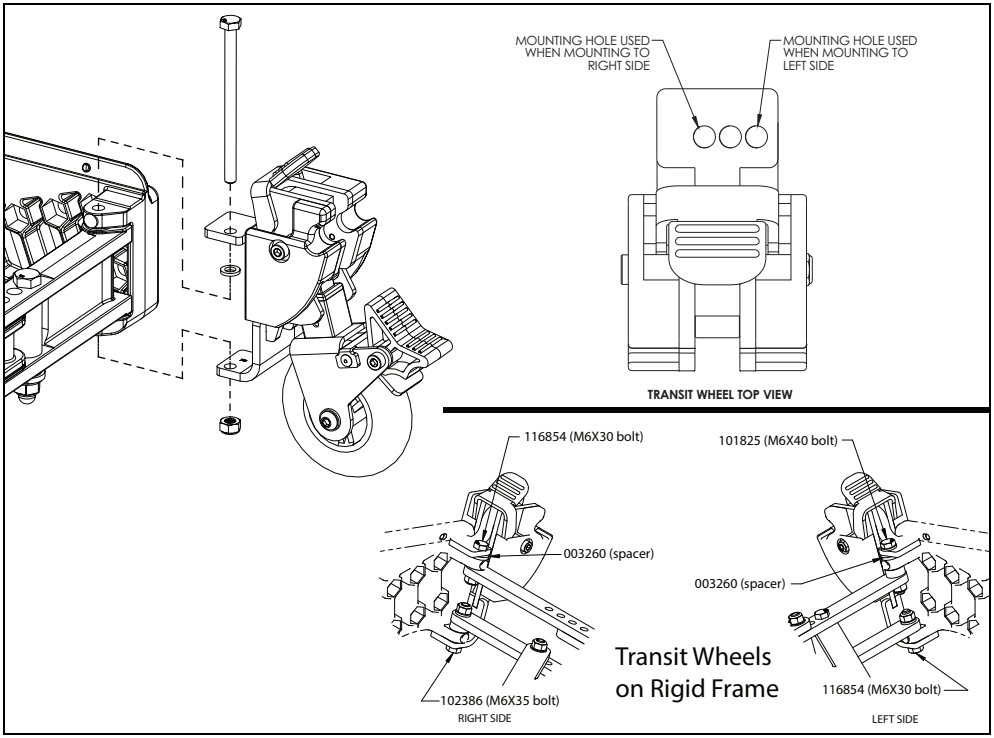
Installation

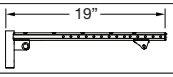
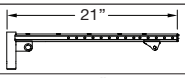
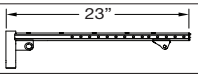
1. Remove the bolt, washer and dome nut on the end of the cross brace. Repeat on opposite side.
2. Install the transit wheel assembly over the cross brace mounting hole.

NOTE: See the image below for determining which mounting hole to use.

3. Secure, with washer between the upper cross brace and top bracket mount, with bolt and nut using two 10mm wrenches.
4. Repeat on opposite side.

NOTE: Transit wheel hardware is different when installed on a rigid frame. See images below for difference.



Size	Length	Image	Range
Short	19”		14” - 16”
Medium	21”		16” - 18”
Long*	23”		18” - 20”

*Not to be used with transit wheels.

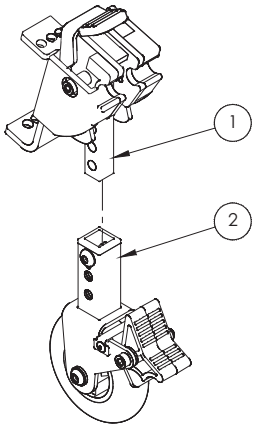
Transit Wheels

Adjusting for Rear Seat Height

The height of the transit wheels can be adjusted to accomodate the rear seat height. See the images and chart below for proper configurations with rear seat heights.

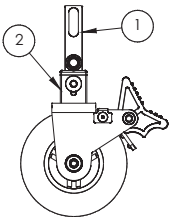
NOTE: For 14" rear seat height, binding barrels is removed and replaced in the topmost hole.

NOTE: For 15.5" - 18" rear seat heights, use the 100780 screw and the 100658 nylok nut, where the "X" is shown.

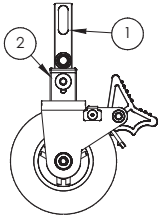


16" RSH - EXPLODED VIEW

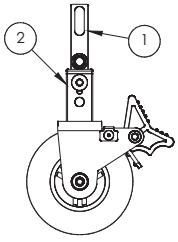
CONFIGURATION VARIABLES		
REAR SEAT HEIGHT	ITEM #1	ITEM#2
14	111794	111298
14.5	111794	111298
15	111794	111299
15.5	111796	111300
16	111796	111300
16.5	111798	111300
17	111798	111300
17.5	111798	111301
18	111798	111301



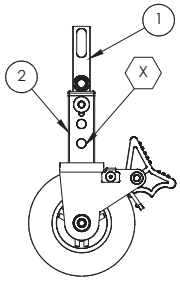
14" RSH



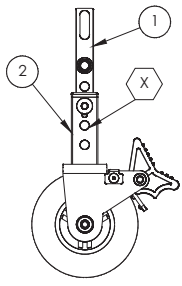
14.5" RSH



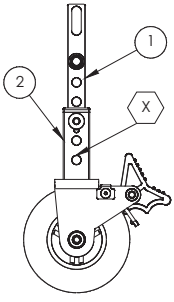
15" RSH



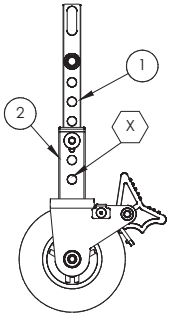
15.5" RSH



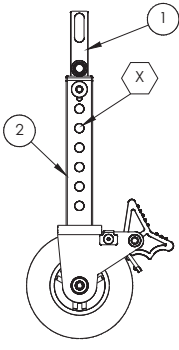
16" RSH



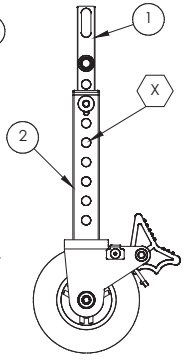
16.5" RSH



17" RSH



17.5" RSH

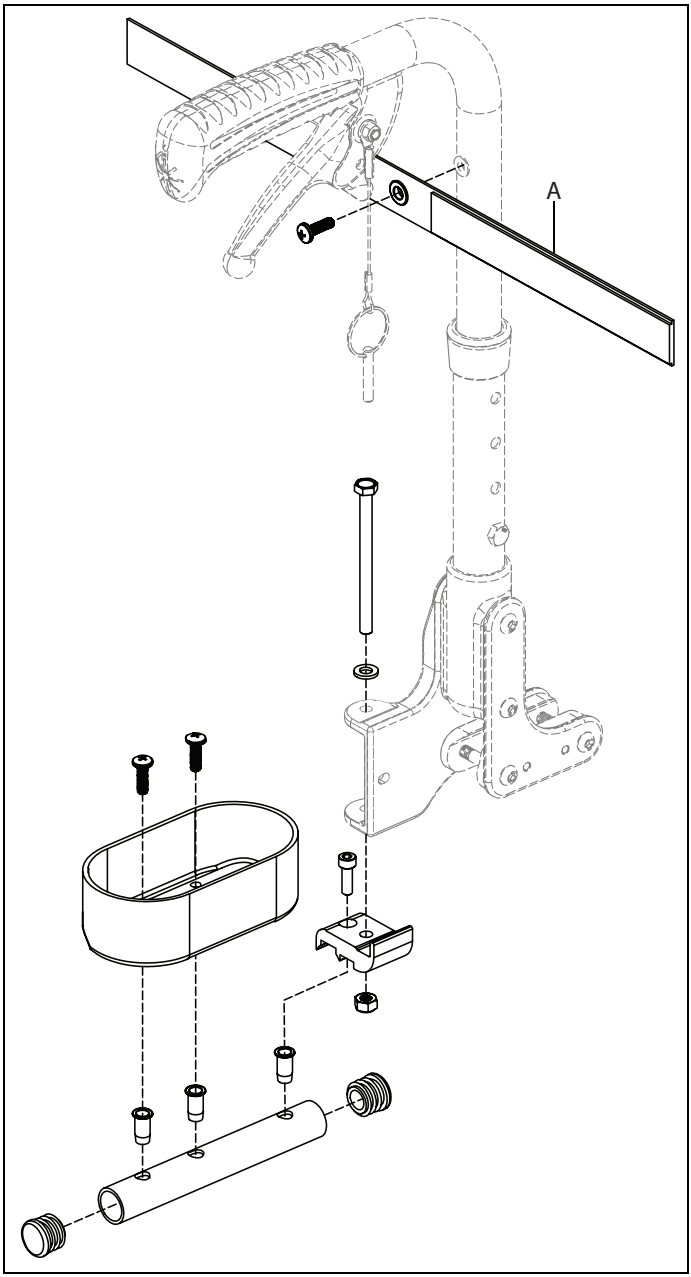


18" RSH

Cane and Crutch Holder

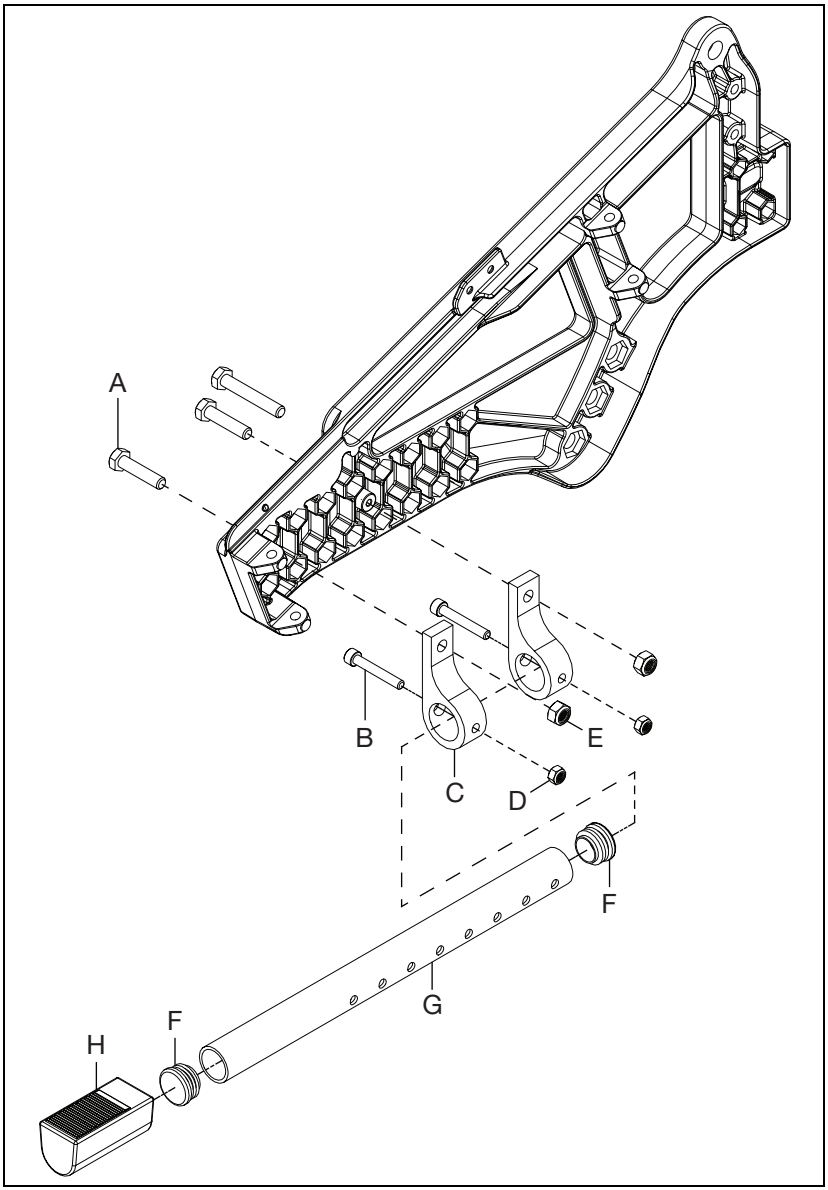
The image below shows the assembly of the cane and crutch holder. A Phillips screwdriver, two 10mm wrenches and a 4mm Allen wrench are needed for this.

NOTE: The crutch holder strap (A) has velcro and closes to form a circle.



Tipping Lever

1. Install the mount brackets (C) to the inside of the frame with two bolts (A) and two nuts (E) using two 13mm wrenches. Use the longer bolt if the axle plate coincides with the tipping lever mount location.
2. Push the tube end plugs (F) into the tipping lever (G) and then push the tipping lever grip (H) onto the end of the tipping lever. The tipping lever grip should be installed on the end of the tube away from the predrilled holes as shown in the image below.
3. Insert the tipping lever assembly into the mount brackets. Tube location can be moved forward or backward to accomodate different wheel locations. Once position is determined, secure in place with two bolts (B) and two nuts (D) using a 5mm Allen wrench and a 10mm wrench.

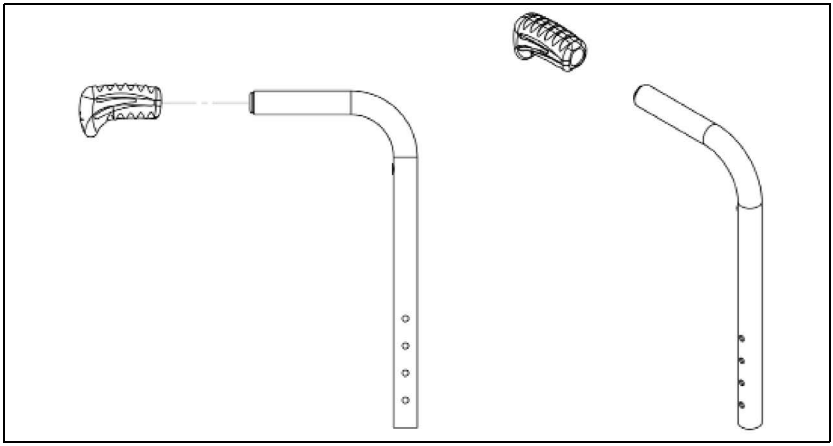


Ergo Grip

Installation

NOTE: The Ergo Grips must be at room temperature prior to installation.

1. Ensure that the old grip has been completely removed and the push handle tube is clean and dry.
2. Apply isopropyl alcohol wipes (70%), P/N 102932, to push handle tube and inside of Ergo Grip.
3. Immediately after applying the isopropyl alcohol wipes, push grip over end cap until cap bottoms out in grip.
4. Align grip to the centerline plane of the backtube.
5. Allow to dry for 30 minutes prior to use.





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