

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

# **CATALYST** & Spark

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## 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 Catalyst and Spark wheelchairs. 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 Catalyst and Spark User Instruction Manuals. The user instruction manuals 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:

Ki Mobility  
5201 Woodward Drive  
Stevens Point, WI 54481  
U.S.A

Via email at:

[sales@kimobility.com](mailto:sales@kimobility.com)

# Table of Contents

Tools .....	3
Frame Tube Size Guide .....	3
Spoke Tension Values .....	4
Front Seat Height .....	5
Spark and Catalyst 5 Depth/Width Tables .....	10
Spark Frame Width Adjustment .....	11
Depth Adjustment .....	13
Fork and Stem .....	14
Caster Squaring .....	18
Rotating 4-Way Latch .....	19
Pro ELR Adjustment.....	20
Height Adjustable T-Arm.....	20
Angle Adj. Locking Flip Up Extendable Armrest.....	21
Height Adjustable Flip Back T-Arm.....	22
Swing Away Armrest.....	24
Tubular Flip Up Armrest - Available on Spark .....	26
Canopy.....	27
Multi-Angle Footrest .....	28
Pediatric Pro ELR.....	30
Footrest Hanger Adjustment.....	36
Footrest Length Adjustment .....	36
Transit .....	37
Anti-Tips.....	40
Transit Wheels - Available on Catalyst 5VX.....	47
Side Guards .....	48
Half-Folding Backrest .....	54
Angle Adjustable Backrest.....	56
Reclining Backrest - Available on Catalyst 5 .....	61
Standard Depth Adj. Backrest .....	67
Dynamic Back.....	70
Height Adj. Depth Adj. Backrest .....	71
Removable Stroller Handle Extension .....	72
Ergo Grip Assembly .....	72
Universal Axle Plate .....	73
Amputee Axle Plate - Available on Catalyst 5.....	75
Vertical Axle Plate .....	76
Quick Release Axle Adjustment.....	77
Cane and Crutch Holder .....	78
IV Holder .....	79
Luggage Carrier .....	80
O2 Holder.....	81
Handrim Configurations.....	82
Handrim Construction.....	83
Handrim Tightening.....	84
Footplate and Heel Loops .....	85
Catalyst Seat Upholstery .....	86
Seat Pan.....	87
Catalyst and Spark One Arm Drive (OAD) .....	88
Chair Tracking/Pulling Correction.....	94
Wheel Locks .....	95
Attendant Wheel Locks - Available on Catalyst 4E/E .....	101
Drum Brake.....	102
HD (Heavy Duty) Configuration.....	105
Caregiver Height Adj. Stroller Handle .....	107
Catalyst 4E, E - Width Change .....	108
Catalyst 4E, E - Depth Change.....	109
Velcro Closing Strap - Available on Catalyst 4E/E.....	110
Folding Handle.....	111
Hemi Wheel Lock.....	112
Tipping Lever .....	117
Replacing Catalyst Cross Tubes.....	119

# Tools

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

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

## Frame Tube Size Guide

\*Tubing sizes subject to change without notice\*

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

<b>Spark</b>	<b>Catalyst 4 / Catalyst E</b>
Frame Tube	Frame Tube
Upper Front and Rear Frame Tube: 1"	Upper Front and Rear Frame Tube: 1"
Lower Front and Rear Frame Tube: 1 1/8"	Lower Front and Rear Frame Tube: 1 1/8"
Front Frame Vertical Tube: 1 1/8"	Front Frame Vertical Tube: 1 1/8"
Fixed Frame Hanger Tubing: 1"	Fixed Frame Hanger Tubing: 1"
DA Rear Frame Vertical Tubes: 1"	Rear Frame Vertical Tubes: 1 1/4"
Cross Brace Seat Tube: 7/8"	Cross Brace Seat Tube: 7/8"
<b>Back Canes</b>	<b>Back Canes</b>
DA Folding Back Canes: 1"	Standard Back Canes: 7/8"
Lower Height Adjustable DA: 1"	Angle Adjustable Lower: 7/8"
Upper Height Adjustable DA: 3/4"	Angle Adjustable Upper: 7/8" (1" for Catalyst E)
Removable Stroller Handle: 3/4"	
<b>Arms</b>	<b>Arms</b>
Upper T-Arm: 7/8"	Swing Away: 1"
Transfer Tube T-Arm: 3/4"	Upper T-Arm: 7/8"
Tubular Flip Up: 7/8"	Transfer Tube T-Arm: 3/4"
Angle Adjustable Flip Up: 1"	Upper Height Adjustable Flipback Upper: 7/8"
	Lower Height Adjustable Flipback Lower: 7/8"
	Flipback: 7/8"
<b>Footrests</b>	<b>Footrests</b>
S/A Hanger: 1"	S/A Hanger: 1"
S/A Extension Tube: 3/4"	S/A Extension Tube: 3/4"
ELR Upper Hanger: 1"	ELR Upper Hanger: 1"
Pediatric Pro and Pro ELR Hanger: 1"	Pediatric Pro and Pro ELR Hanger: 1"

# 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.

<b>Catalyst 5</b>	<b>Catalyst 5VX</b>
Frame Tube	Frame Tube
Upper Front and Rear Frame Tube: 1"	Upper Front and Rear Frame Tube: 1"
Lower Front and Rear Frame Tube: 1 1/8"	Lower Front and Rear Frame Tube: 1 1/8"
Front Frame Vertical Tube: 1 1/8"	Front Frame Vertical Tube: 1 1/8"
Fixed Frame Hanger Tubing: 1"	Fixed Frame Hanger Tubing: 1"
Curved Rear Frame Vertical Tubes: 1 1/8"	Rear Frame Vertical Tube: 1 1/8"
DA Rear Frame Vertical Tubes: 1"	Cross Brace Seat Tube: 7/8"
Cross Brace Seat Tube: 7/8"	
<b>Back Canes</b>	<b>Back Canes</b>
Standard Back Canes: 7/8"	Standard Back Canes: 7/8"
Angle Adjustable Lower: 7/8"	Angle Adjustable Lower: 7/8"
Angle Adjustable Upper: 7/8"	Angle Adjustable Upper: 7/8"
DA Folding Back Canes: 1"	Half Folding Back: 7/8"
Lower Height Adjustable DA: 1"	
Upper Height Adjustable DA: 3/4"	
Removable Stroller Handle: 3/4"	
Reclining Back: 1"	
Half Folding Back: 7/8"	
<b>Arms</b>	<b>Arms</b>
Swing Away: 1"	Swing Away: 1"
Upper T-Arm: 7/8"	Upper T-Arm: 7/8"
Transfer Tube T-Arm: 3/4"	Transfer Tube T-Arm: 3/4"
Upper Height Adjustable Flipback Upper: 7/8"	Upper Height Adjustable Flipback Upper: 7/8"
Lower Height Adjustable Flipback Lower: 7/8"	Lower Height Adjustable Flipback Lower: 7/8"
Flipback: 7/8"	Flipback: 7/8"
Angle Adjustable Flip Up: 1"	
<b>Footrests</b>	<b>Footrests</b>
S/A Hanger: 1"	S/A Hanger: 1"
S/A Extension Tube: 3/4"	S/A Extension Tube: 3/4"
ELR Upper Hanger: 1"	ELR Upper Hanger: 1"
Pediatric Pro and Pro ELR Hanger: 1"	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

# Front Seat Height

The front seat height matrix (shown below) shows the settings available with the forks and stems for the desired front seat height. The steps to achieve the settings, determined after reading the matrices, can be found in the corresponding section in this manual. Achievable Front Seat Heights may vary by chair setup and configuration.

**NOTE: If front seat height and rear seat height are the same, do not use fork hole 1.**

**NOTE: Catalyst E has a different Front Seat Height Matrix that is found after the charts below.**

**NOTE: Hole 1 of caster fork is the bottom hole.**

<b>Catalyst Front Seat Height Matrix</b>																		
<i>STD FSH - Standard Front Frame Front Seat Height</i>					<i>SL FSH - Super Low Front Frame Front Seat Height</i>					<i>H - Fork Hole Used to Achieve Seat Height</i>								
3" Caster					4" Caster					5" Caster								
STD FSH	SL FSH	H	Stem	Fork	STD FSH	SL FSH	H	Stem	Fork	STD FSH	SL FSH	H	Stem	Fork				
14.5	13.5	2	Std	4"	15 <sup>1</sup>	13.5 <sup>1</sup>	2	Std	4"	16	14.5	1	Std	4"				
15	14	1			15.5	14	1			16.5	15.5	1			¾			
15.5	14	2	¾		16 <sup>2</sup>	14.5 <sup>2</sup>	2	¾		17.5	16	1	1 ½					
16	14.5	1	1 ½		5"	16.5	15	1		1 ½	5"	16	15	3	Std	5"		
16	15	2				16.5 <sup>2</sup>	15 <sup>2</sup>	2				17	15.5	1			17.5	15.5
16.5	15.5	1	Std			6"	15.5	14.5		3		Std	6"	17	15.5		3	¾
15.5	14.5	2		16			15	2	17.5	16.5				3	1 ½			
16	15	1	¾	16.5			15	3	¾	18		17		2	1 ½			
16.5	15	2	1 ½	7"			17	15.5	2	1 ½		7"		16.5		15.5	4	Std
17	16	2			17		16	3	17		16			3	17.5	16.5	2	
17.5	16.5	1	Std		8"		17.5	16.5	2	Std	8"			17.5	16.5	2	¾	6"
16.5	15.5	2				17	15.5	3	17.5				16	4	18	16.5		
17	16	1	¾			17.5	16.5	3	¾	18.5			17	2	1 ½			
17.5	16	2	1 ½			9"	18	17	2	1 ½			9"	18		17	4	Std
18	16.5	1		18.5			17	3	18.5			17.5		3	18.5	17.5	3	
18	17	2	19	17.5			2	19	18	2		19.5		18.5	2	¾		
18.5	17.5	1	Std	10"	18		17	3	Std	10"	18	16.5		4	1 ½		7"	
18.5	17.5	2			18.5		17.5	2			19	17.5		3		18.5		17
19	17.5	3	¾		19		17.5	3	¾		19	17.5		2	¾			
19.5	18	2	1 ½		11"	19.5	18	2	1 ½		11"	18.5	17.5	4		Std	8"	
19.5	18.5	3				19.5	18.5	3				19	18	3	19			18
20	19	2	Std			12"	20	19	2			Std	12"	19.5	18.5	2		1 ½
19.5	18	4		19.5			18	4	20	18.5				3	20.5	19	2	
20	18.5	3	1 ½	13"			20	19	2	1 ½		13"		20	18.5	3	1 ½	9"
20.5	19	2					20.5	19	2					20.5	19	2		

<sup>1</sup> Not available with 4 x 1" Poly Caster

<sup>2</sup> Not available with 4 x 1" Poly, 4 x 1.5" Poly or 4 x 1.5" Soft Roll Aluminum

# Front Seat Height

**NOTE:** If front seat height and rear seat height are the same, do not use fork hole 1.

## Catalyst Front Seat Height Matrix

STD FSH - Standard Front Frame Front Seat Height					SL FSH - Super Low Front Frame Front Seat Height					H - Fork Hole Used to Achieve Seat Height										
6" Caster					7" Caster					8" Caster										
STD FSH	SL FSH	H	Stem	Fork	STD FSH	SL FSH	H	Stem	Fork	STD FSH	SL FSH	H	Stem	Fork						
17	15.5	2	Std	5"	18	17	3	Std	6"	19	18	2	Std	6"						
18	16.5	2	¾		18.5	17.5	2			¾	20	18.5	2		¾					
18.5	17	2	1 ½		19	17.5	3	¾		20.5	N/A	2	1 ½							
17	16 <sup>3</sup>	4	Std	6"	19.5	18	2	1 ½		7"	19	17.5	5	Std	7"					
17.5	16.5	3			19.5	18.5	3				20	18.5	3			19.5	18	4		
18	17	2			18.5	17.5	5	19			18	4	20			18.5	3			
18	16.5	4	¾		6"	19.5	18.5	3	Std		7"	20.5	19	2		¾	7"			
18.5	17	3				19	18	4				19.5	18.5	5				20	19	4
19	17.5	2				19.5	18.5	3				20	19	2				20.5	N/A	3
18.5	17.5	4	1 ½	6"		19	18	5	¾	7"		21	N/A	2	1 ½	7"				
19	18	3				19.5	18.5	4				20.5	19	5				21	N/A	4
19.5	18.5	2				20	19	3				8" X 2" Caster Not Available With 6" Fork								
18	16.5	5	Std		7"	20.5	N/A	2	1 ½		7"									
18.5	17	4				20	18.5	5												
19	17.5	3				20.5	19	4												
19.5	18.5	2	¾	7"		21	N/A	3	1 ½	7"										
18.5	17.5	5				19	18	5												
19	18	4				19.5	18.5	3												
19.5	18.5	3	1 ½		7"	20	19	2	1 ½		7"									
20	19	2				19.5	18	5												
19.5	18	5				20	18.5	4												
20	18.5	4	1 ½	7"		20.5	19	3	1 ½	7"										
20.5	19	3				21	N/A	2												
21	N/A	2																		
6" x 2" Caster Not Available with 5" Fork																				

<sup>3</sup> Measures 15.5" with 6 x 2" Poly Caster

# Front Seat Height

Catalyst E Front Seat Height Matrix - Standard

Caster	Fork	Stem	Fork						
			1	2	3	4	5	6	
4"	4"	STD	13.6	14.1					
		+3/4	14.3	14.8					
		+1 ½	15.1	15.6					
	5"	STD		14.2	14.7	15.2			
		+3/4		14.9	15.4	15.9			
		+1 ½		15.7	16.1	16.7			
	6"	STD				15.2	15.7	16.2	
		+3/4				16	16.5	16.9	
		+1 ½				16.7	17.2	17.7	
	7"	STD			16.6	17	17.5		
		+3/4			17.3	17.8	18.3		
		+1 ½			18.1	18.5	19		
5"	4"	STD		14.6					
		+3/4		15.3					
		+1 ½		16.1					
	5"	STD		14.7	15.2	15.7			
		+3/4		15.4	15.9	16.4			
		+1 ½		16.2	16.7	17.2			
	6"	STD			15.2	15.7	16.2	16.7	
		+3/4			16	16.5	17	17.4	
		+1 ½			16.7	17.2	17.7	18.2	
	7"	STD		16.6	17	17.5	18		
		+3/4		17.3	17.8	18.3	18.8		
		+1 ½		18.1	18.5	19	19.5		
6"	5"	STD			15.7	16.2			
		+3/4			16.4	16.9			
		+1 ½			17.2	17.7			
	6"	STD			15.7	16.2	16.7	17.2	
		+3/4			16.5	17	17.5	17.9	
		+1 ½			17.2	17.7	18.2	18.7	
	7"	STD	16.6	17.1	17.5	18	18.5		
		+3/4	17.3	17.8	18.3	18.8	19.3		
		+1 ½	18.1	18.6	19	19.5	20		
7"	6"	STD				16.7	17.2	17.7	
		+3/4				17.5	18	18.5	
		+1 ½				18.2	18.7	19.2	
	7"	STD	17.1	17.6	18	18.5	19		
		+3/4	17.8	18.3	18.8	19.3	19.8		
		+1 ½	18.6	19.1	19.5	20	20.5		
8"	6"	STD					17.7	18.2	
		+3/4					18.5	18.9	
		+1 ½					19.2	19.7	
	7"	STD	17.6	18	18.5	19	19.5		
		+3/4	18.3	18.8	19.3	19.8	20.3		
		+1 ½	19.1	19.6	20	20.5	21		
6X2"	6" Wide	STD	15.7	16.2	16.7	17.2			
		+3/4	16.5	17	17.5	17.9			
		+1 ½	17.2	17.7	18.2	18.7			
	7" Wide	STD	16.6	17.1	17.5	18	18.5		
		+3/4	17.3	17.8	18.3	18.8	19.3		
		+1 ½	18.1	18.6	19	19.5	20		
8X2"	6" Wide	STD			17.7	18.2			
		+3/4			18.5	18.9			
		+1 ½			19.2	19.7			
	7" Wide	STD	17.6	18.1	18.5	19	19.5		
		+3/4	18.3	18.8	19.3	19.8	20.3		
		+1 ½	19.1	19.6	20	20.5	21		



# Front Seat Height

**Catalyst E Front Seat Height Matrix - Heavy Duty**

Caster	Fork	Stem	Fork					
			1	2	3	4	5	6
4"	4"	HD Std	13.6	14.1				
		HD Tall	14.8	15.3				
	5"	HD Std		14.2	14.7	15.2		
		HD Tall		15.4	15.9	16.4		
	6"	HD Std				15.2	15.7	16.2
		HD Tall				16.4	16.9	17.4
	7"	HD Std			16.6	17	17.5	
		HD Tall			17.8	18.3	18.8	
5"	4"	HD Std		14.6				
		HD Tall		15.8				
	5"	HD Std		14.7	15.2	15.7		
		HD Tall		15.9	16.4	16.9		
	6"	HD Std			15.2	15.7	16.2	16.7
		HD Tall			16.5	16.9	17.4	17.9
	7"	HD Std		16.6	17	17.5	18	
		HD Tall		17.8	18.3	18.8	19.3	
6"	5"	HD Std			15.7	16.2		
		HD Tall			16.9	17.4		
	6"	HD Std			15.7	16.2	16.7	17.2
		HD Tall			17	17.4	17.9	18.4
	7"	HD Std	16.6	17.1	17.5	18	18.5	
		HD Tall	17.8	18.3	18.8	19.3	19.8	
7"	6"	HD Std				16.7	17.2	17.7
		HD Tall				17.9	18.4	18.9
	7"	HD Std	17.1	17.6	18	18.5	19	
		HD Tall	18.3	18.8	19.3	19.8	20.3	
8"	6"	HD Std					17.7	18.2
		HD Tall					18.9	19.4
	7"	HD Std	17.6	18.1	18.5	19	19.5	
		HD Tall	18.8	19.3	19.8	20.3	20.8	
6X2"	6" Wide	HD Std	15.7	16.2	16.7	17.2		
		HD Tall	17	17.4	17.9	18.4		
	7" Wide	HD Std	16.6	17.1	17.5	18	18.5	
		HD Tall	17.8	18.3	18.8	19.3	20	
8X2"	6" Wide	HD Std			17.7	18.2		
		HD Tall			18.9	19.4		
	7" Wide	HD Std	17.6	18.1	18.5	19	19.5	
		HD Tall	18.8	19.3	19.8	20.3	20.8	

# Front Seat Height

Catalyst E Front Seat Height Matrix - Hemi Caster Housing

Caster	Fork	Stem	Fork					
			1	2	3	4	5	6
4"	4"	Hemi	12.7	13.2				
	5"	Hemi		13.3	13.8	14.3		
	6"	Hemi				14.3	14.8	15.3
	7"	Hemi			15.7	16.2	16.6	
5"	4"	Hemi		13.7				
	5"	Hemi		13.8	14.3	14.8		
	6"	Hemi			14.3	14.8	15.3	15.8
	7"	Hemi		15.7	16.2	16.7	17.1	
6"	5"	Hemi			14.8	15.3		
	6"	Hemi			14.8	15.3	15.8	16.3
	7"	Hemi	15.7	16.2	16.7	17.2	17.6	
7"	6"	Hemi				15.8	16.3	16.8
	7"	Hemi	16.2	16.7	17.2	17.7	18.1	
8"	6"	Hemi					16.8	17.3
	7"	Hemi	16.7	17.2	17.7	18.2	18.6	

# Spark and Catalyst 5 Depth/Width Tables

The tables below show the growth potential in a Spark and Catalyst 5 chair. The steps to achieve the changes in width and depth can be found in the corresponding sections in this manual.

Spark Depth Growth		
Depth Ordered	Forward Adjustment	Rearward Adjustment
12"	0"	4"
13"	1"	3"
14"	1"	3"
15"	1"	3"
16"	1"	3"
17"	2"	2"
18"	3"	1"

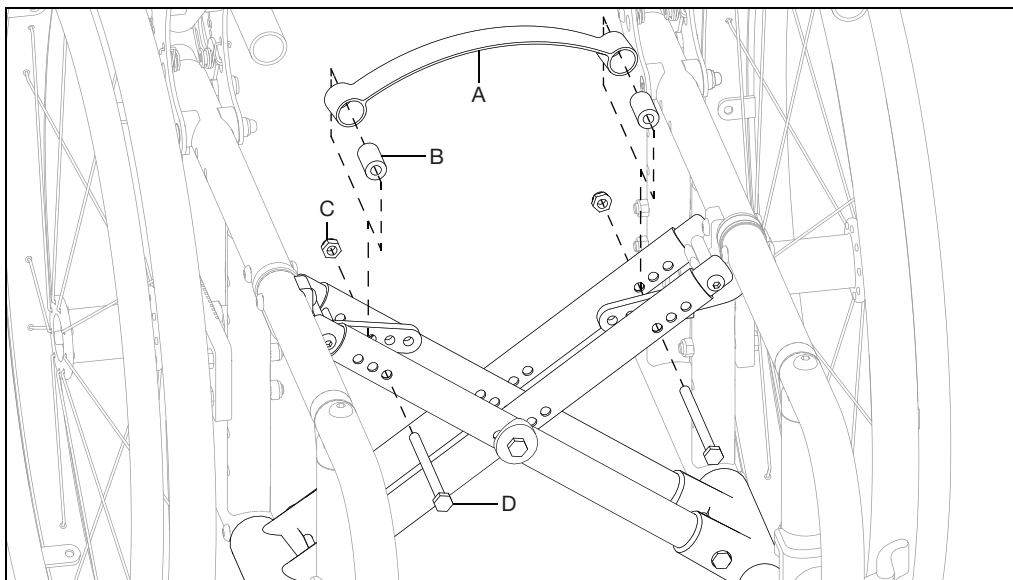
Spark Width Growth	
<i>Growth built into chair (different footplates/seat pan may be needed)</i>	
Width	Grows To
10"	11"
11"	13"
12"	14"
13"	15"
14"	16"
15"	16"
16"	16"

Catalyst 5 Depth Adjustable Growth		
Depth	Forward Adjustment	Rearward Adjustment
14"	0"	4"
15"	1"	3"
16"	2"	2"
17"	2"	2"
18"	2"	2"
19"	2"	2"
20"	2"	2"

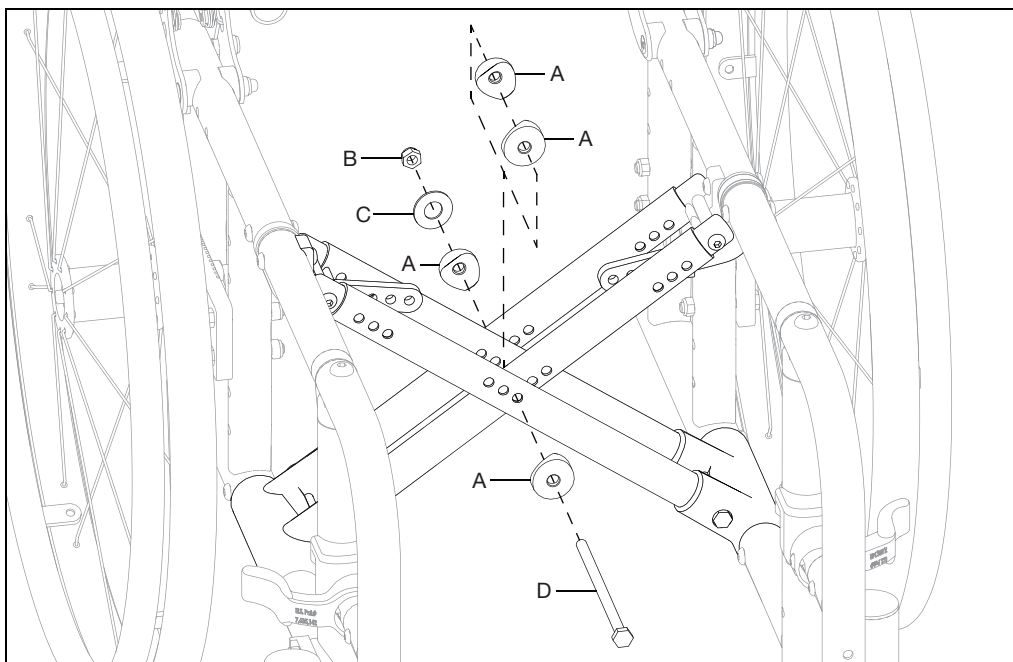
# Spark Frame Width Adjustment

**NOTE: Remove any seating/cushions that may be on the chair and would prevent access to the cross braces and/or prevent the chair from changing width.**

1. To adjust the chair width, remove the bolt (D), cross tube lift strap (A), spacer (B), and nut (C) using two 10mm wrenches at the top of the cross braces. Repeat on opposite side.



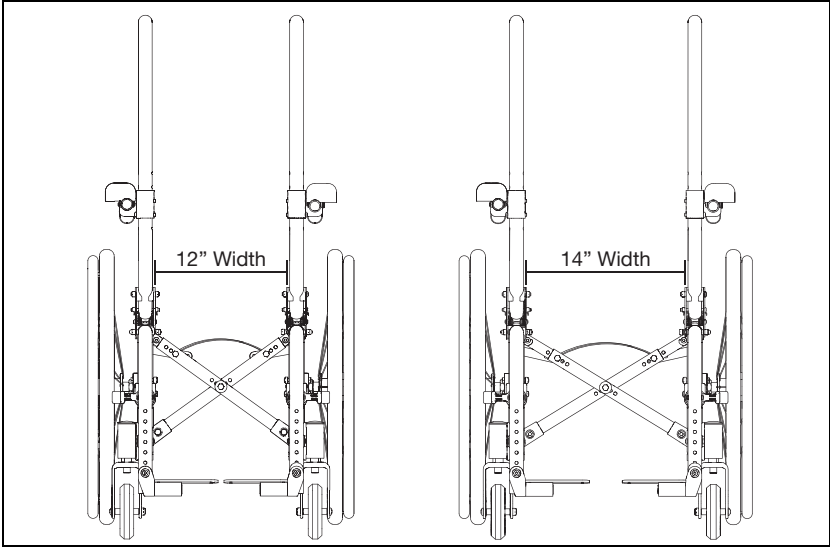
2. Remove the bolt (D), four saddles (A), washer (C), and nut (B) from the center point of the cross braces using two 10mm wrenches.



# Spark Frame Width Adjustment

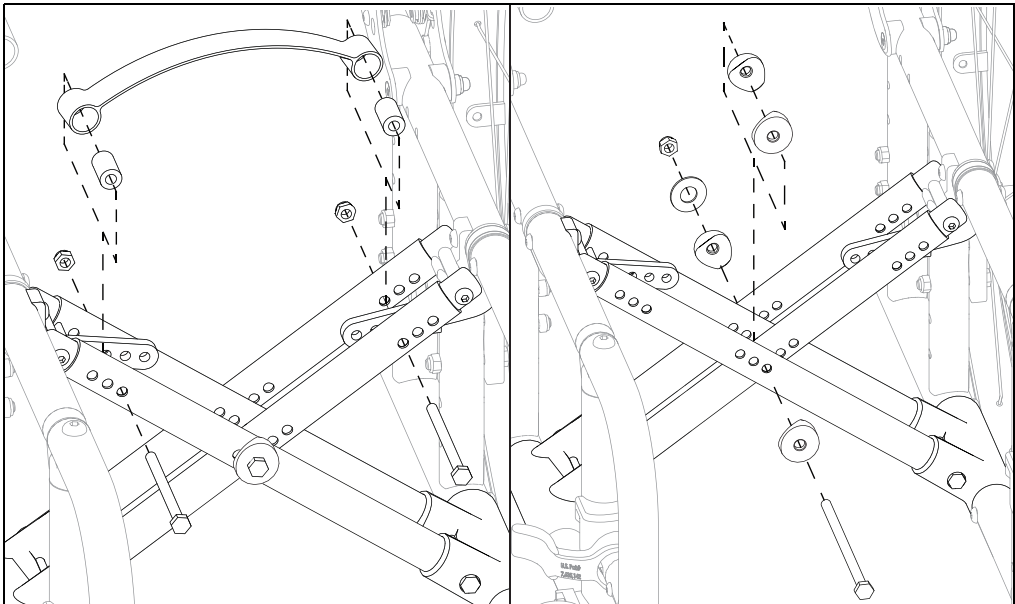
- Adjust the cross braces to the desired width. The example below shows a chair that went from 12" width to a 14" width.

**NOTE: The center point of the cross braces changes as the width changes to keep the seat height the same.**



- Secure the cross braces in the new desired width by reinstalling the hardware from steps 1 and 2 into the new configuration holes using two 10mm wrenches. Ensure the chair folds and unfolds when complete. Do not overtighten assembly. Overtightening will cause the chair to be difficult to fold and unfold.

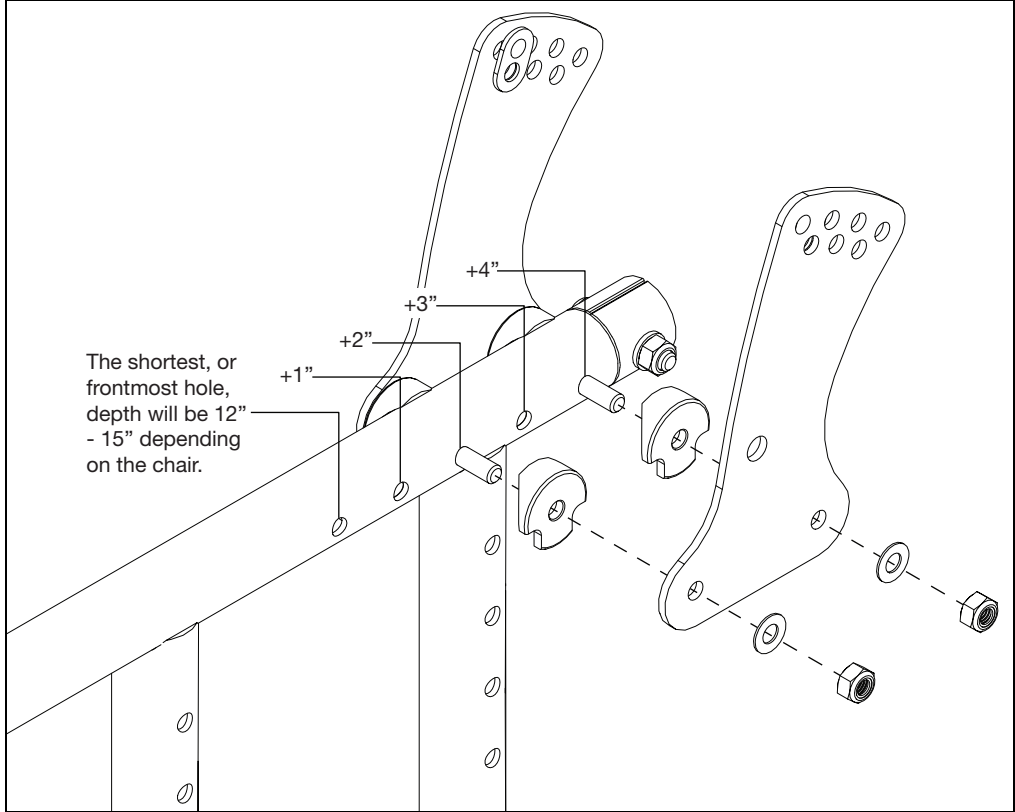
**NOTE: The holes shown below are to show the hardware installation. Install the hardware in the same manner in the holes necessary for your desired chair width.**



# Depth Adjustment

See the Standard Depth Adjustable Backrest section for information on how to install the depth adjustable frame and backrest.

**NOTE: The Spark allows a 4" increase in frame depth from initial frame depth in 1" increments. 19" is the maximum frame depth. See example below.**



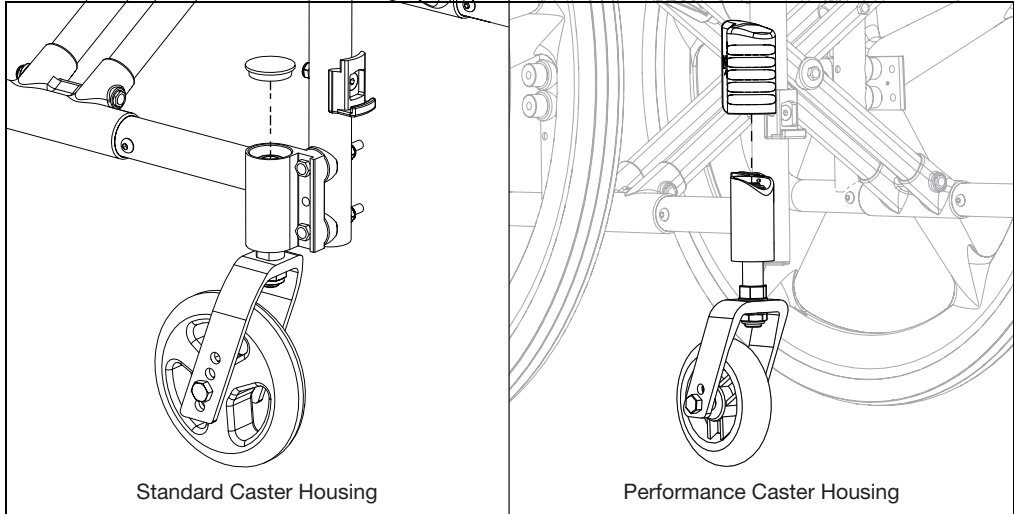
# Fork and Stem

## Remove Current Fork and Stem

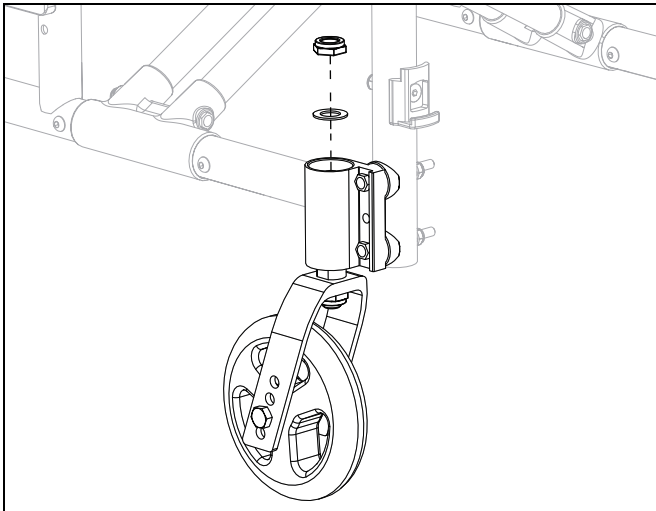
**NOTE:** If you are using an HD configuration, a different caster housing is used. See the HD section in this technical manual for specific instructions.

**NOTE:** The Super Low Caster option with the Catalyst E looks slightly different, but the process in this section remains the same.

1. For a standard caster, remove the cap off the top of the caster housing. For a performance caster, slide the housing up and off.

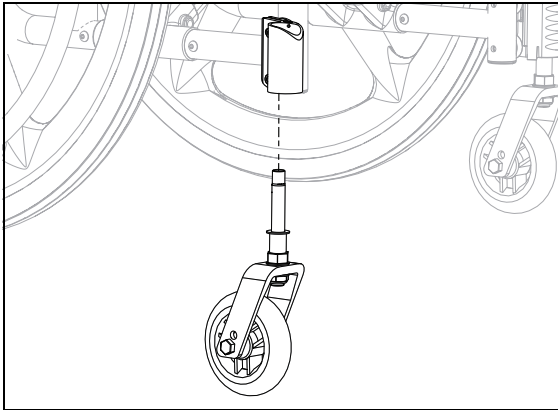


2. Use a 19mm or 3/4" socket wrench to remove nut inside caster. Hold the caster while removing the nut.



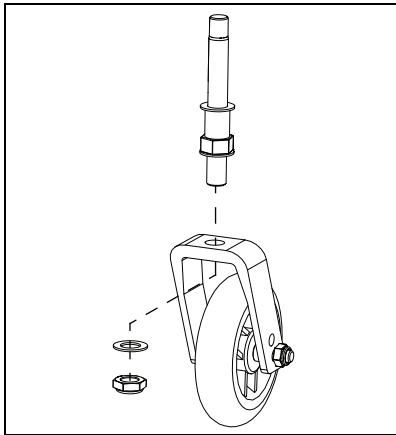
# Fork and Stem

- Slide the caster assembly out of the caster housing.

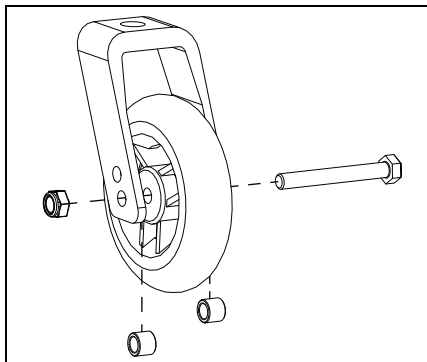


- Remove the caster stem using a 19mm ( $\frac{3}{4}$ " ) socket wrench on the bottom nut. Save all hardware and stem if you are not replacing the stem.

**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.**



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





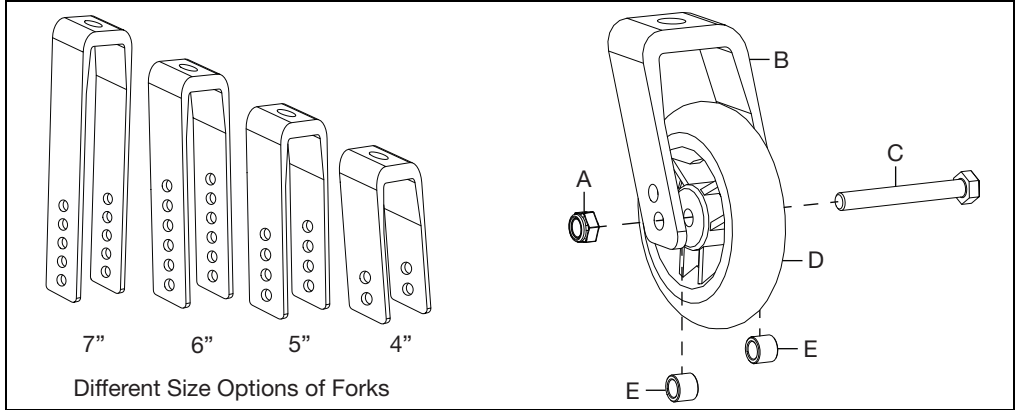
# Fork and Stem

## Install Fork and Stem

6. Install new fork (B) onto caster (D) with one bolt (C), one nut (A) and two spacers (E) per side using two 13mm wrenches.

**NOTE: Wide forks use a different bolt (80mm long instead of the 65mm long) and spacers (wide forks use the black spacers) than the standard forks.**

**NOTE: There are different size options of forks and different height options with the holes in the forks.**



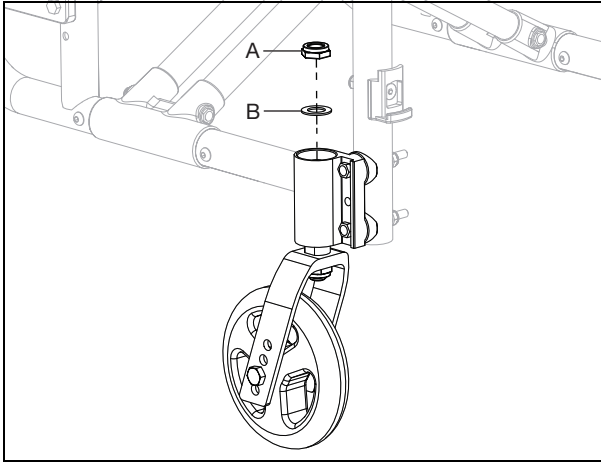
7. Install new stem or reinstall stem saved from step 4. Install hardware based on the size stem you are using. Use a torque wrench to tighten the bottom nut (100529 or 101459) to 55 ft.-lbs. See image below.

**NOTE: Some wide casters have preinstalled spacers. Reference the online parts manual for more information.**

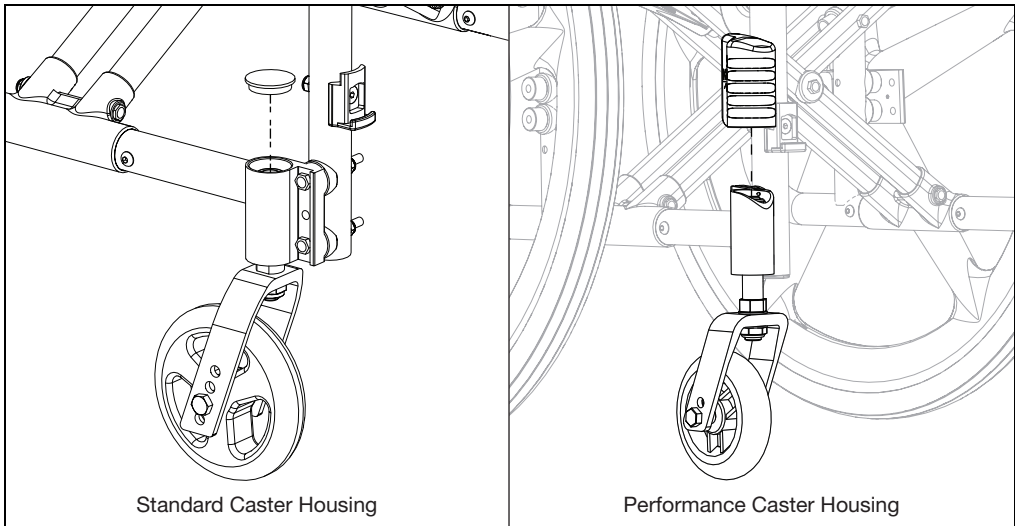
Hardware Identifier	
100682	Washer 1/2" (.518 x .875 x .047 F/W Zc)
100529	M12 x 1.25mm Lock Nut Black - Caster
000115	Fork Stem Spacer 3/4" CAT
000114	Fork Stem Spacer 1 1/2" CAT
101869	1/2-20 G5 Hex Nut Hxfree Zc
101459	1/2-20 Nte Jam Nyl Ins L/N Zc
002593	Washer, Caster Stem, HD
002476	Spacer, Caster Stem, 1.23

# Fork and Stem

8. Secure stem and caster assembly in the caster housing using a washer (B) and nut (A) using a 19mm or  $\frac{3}{4}$ " wrench. Tighten the top nut all the way and then back it off one quarter of a turn.



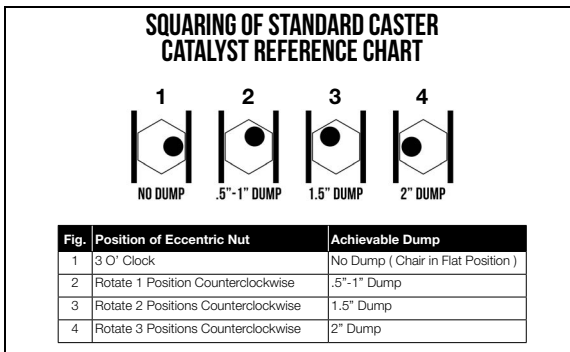
9. For a performance caster, slide the housing back over the caster and for a standard caster, pop the cover back onto the caster.



# Caster Squaring

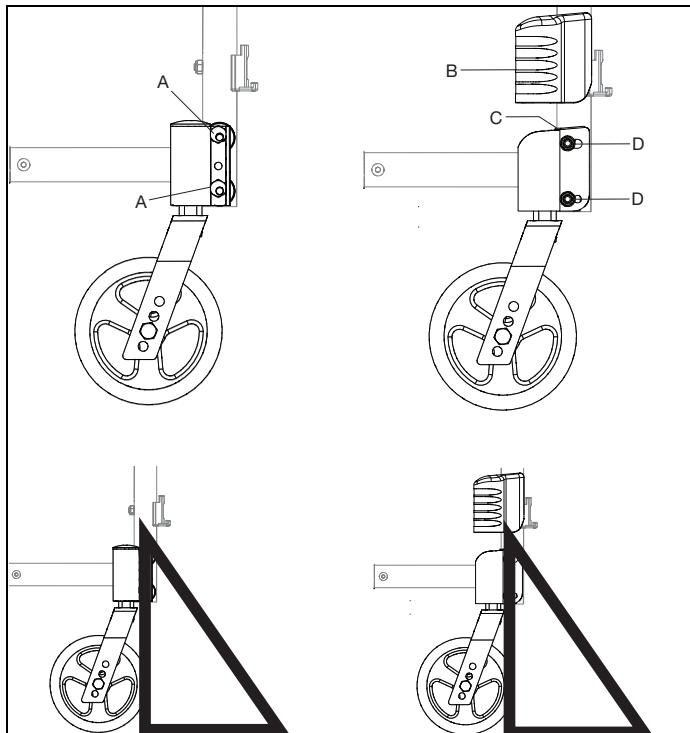
## Standard Caster Housing

1. Use a 5mm Allen wrench to loosen both screws (A) on the caster.
2. Remove the eccentric nuts and use the chart below to orient the eccentric nuts in the position required for your chair configuration.
3. Check the squareness and retighten hardware.



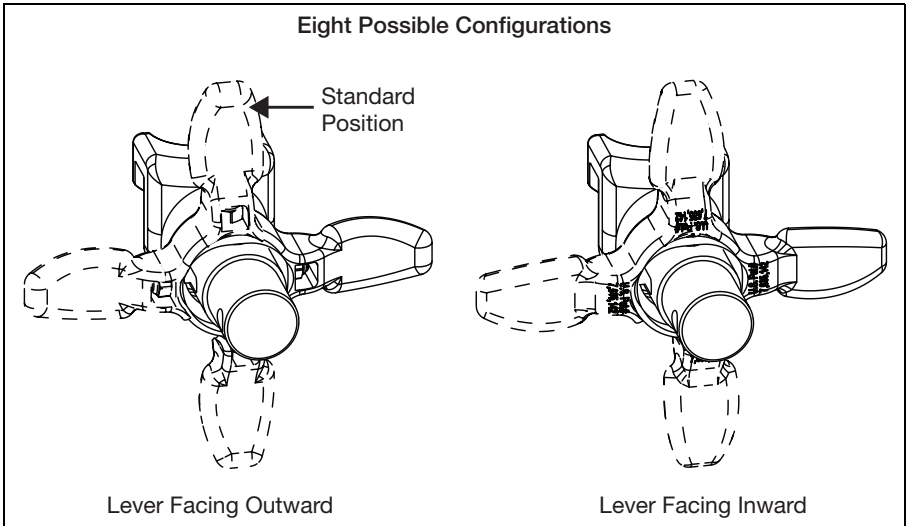
## Performance Caster Housing

1. Remove the performance caster housing cover (B).
2. Use a 5mm Allen wrench to loosen both screws (D) on the caster.
3. Turn the adjustment screw (C), located on the top of the caster bracket. Turning it clockwise will move the caster forward and turning it counterclockwise will move the caster rearward.
4. Check the squareness and retighten hardware.
5. Install the performance caster housing cover (B) back over the assembly.



# 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.

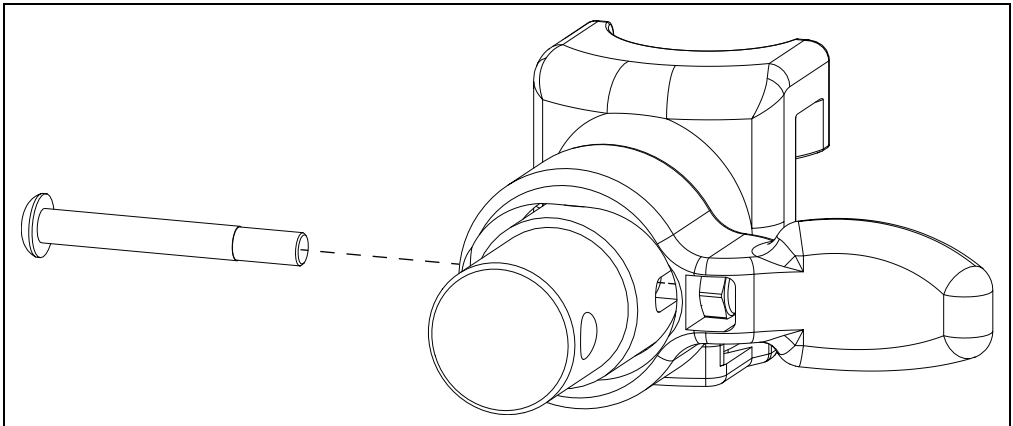


## Rotating

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 the desired orientation and reinsert the screw with a 3mm Allen wrench. Ensure the nut stays in position while tightening the screw. Do not overtighten the screw or the 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. To ensure the spring is engaged, push and hold the latch button in so the nut stays in a position while reinstalling the screw.**

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

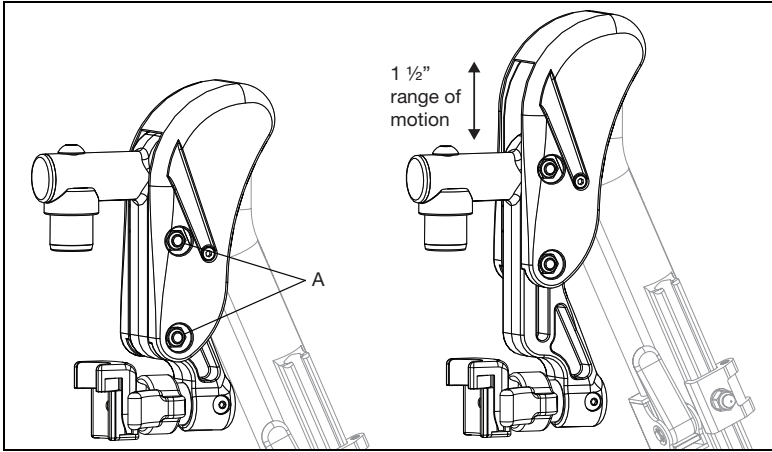


# Pro ELR Adjustment

**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 the knee height to the desired setting.
3. Retighten the two nuts (A) after the desired height is attained.

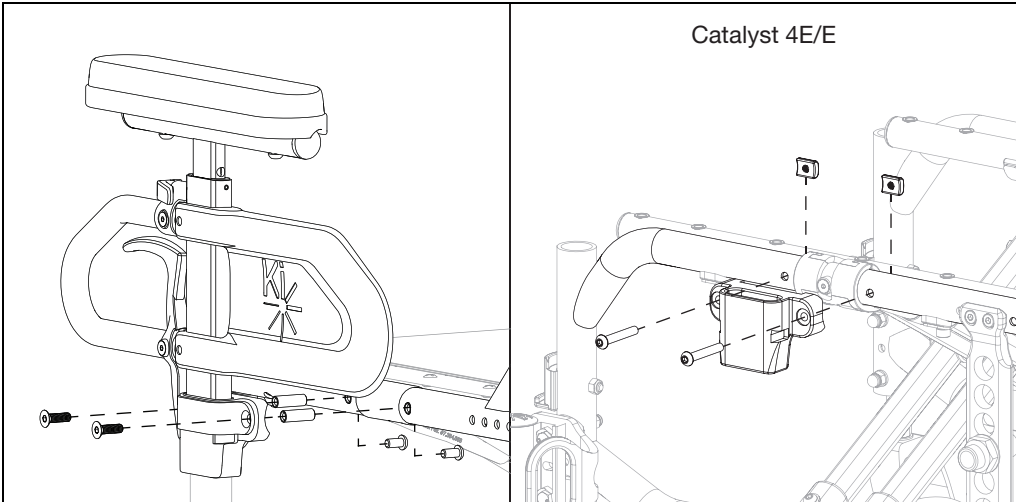


## Height Adjustable T-Arm

1. Install the T-Arm onto the chair with the four screws and the two threaded barrels using two 4mm Allen wrenches. The two outside screws go through the armrest receiver holes.

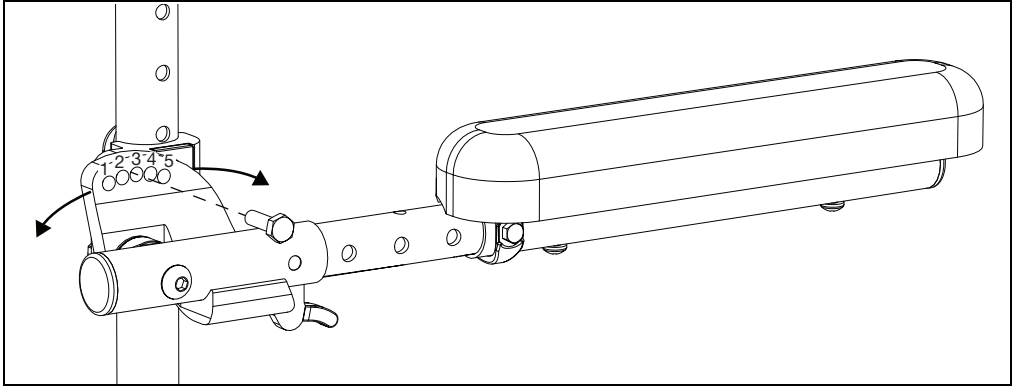
**NOTE:** If the screws for the armrest receiver coincide with the seat frame screws, remove the seat frame screws and replace with the armrest receiver screws.

**NOTE:** A Catalyst 4E or E installs the Height Adjustable T-Arm differently. Install the receiver with two screws and two threaded half nut plates using a 4mm Allen wrench. See image below.

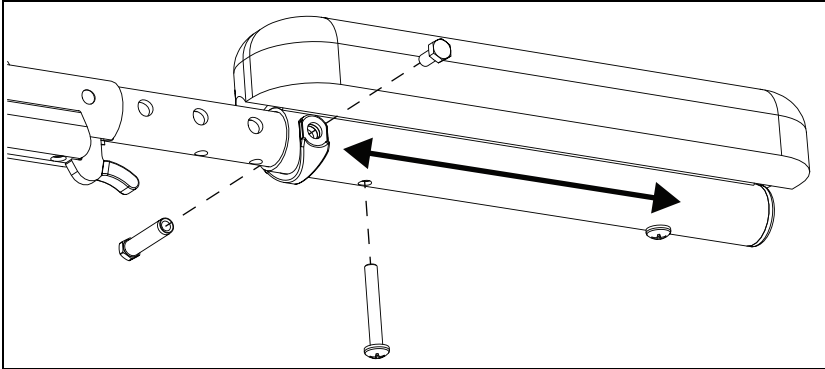


# Angle Adj. Locking Flip Up Extendable Armrest

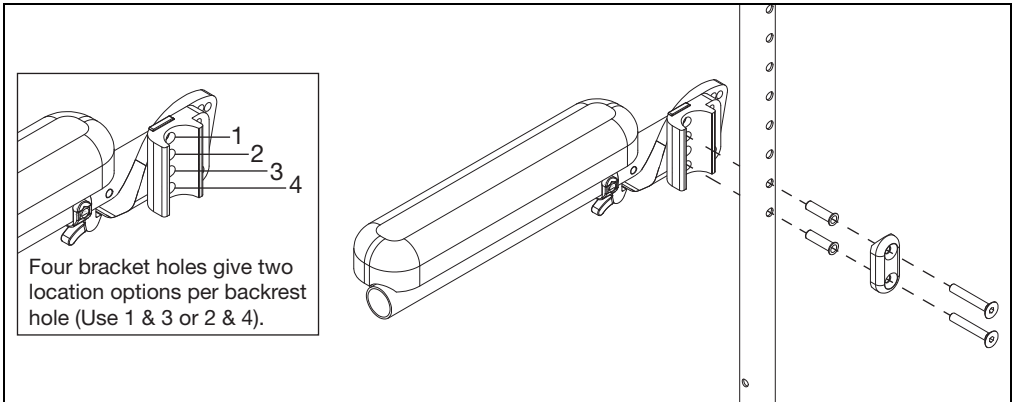
1. Set the angle of the armrest. There are five holes that can be used to set the angle. Tighten the bolt once angle is set.



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 using 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.



# Height Adjustable Flip Back T-Arm

## Installing Height Adjustable Flip Back Armrest

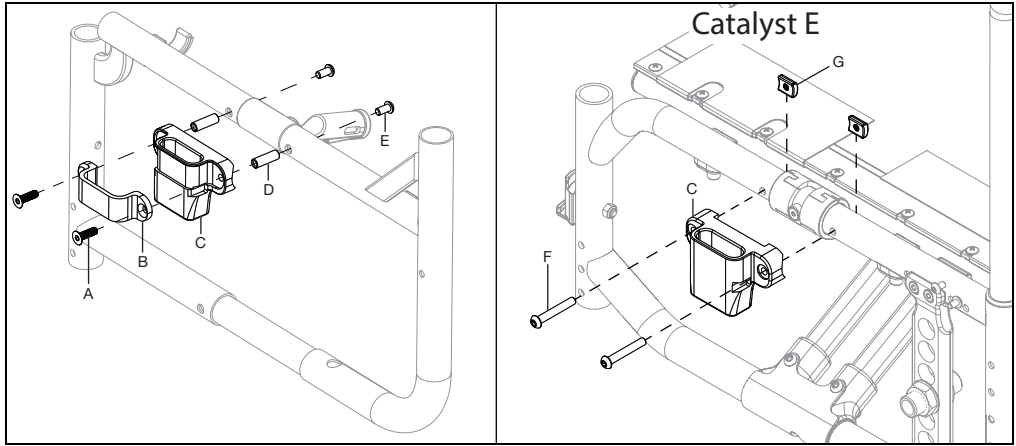
**NOTE:** There are two lengths of the arm pads, full and desk, and also two lengths of the side shields, short and long. These are installed in the same manner, no matter the size.

1. Remove the current armrest if present.

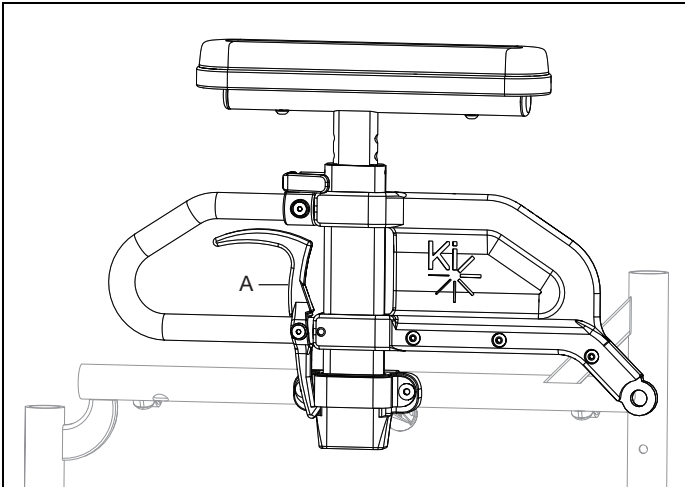
**NOTE:** If you have a non-pediatric T-Arm on your chair, the T-Arm receiver will remain on the chair and the next step, for installing the T-Arm receiver, can be skipped.

2. Install the T-Arm receiver (C) and the bracket (B) onto the frame with two flat head cap screws (A), two button head cap screws (E) and two barrel nuts (D) using two 4mm Allen wrenches.

**NOTE:** On a Catalyst E, two button head cap screws (F) and two threaded axle nuts (G) are used to install the T-Arm receiver (C) using a 4mm Allen wrench.



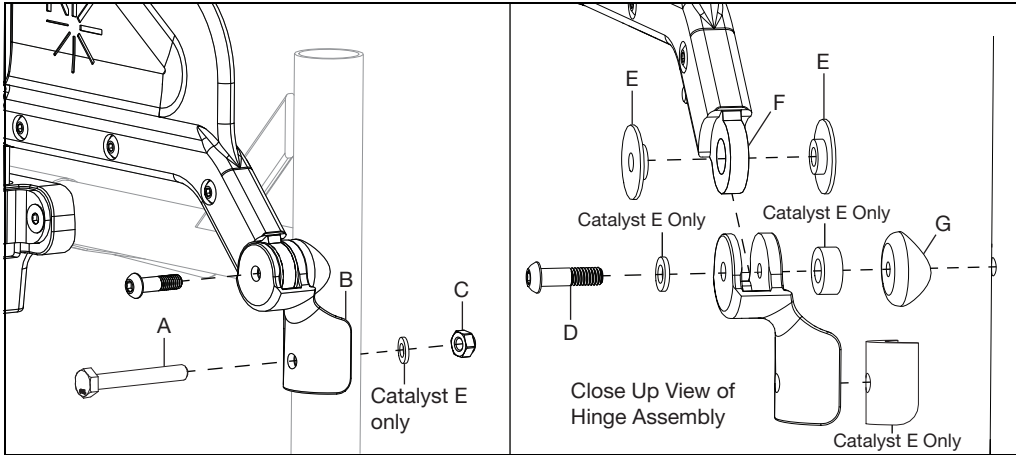
3. Install the Height Adjustable Flip Back Armrest assembly into the receiver until the release trigger (A) locks into place.



# Height Adjustable Flip Back T-Arm

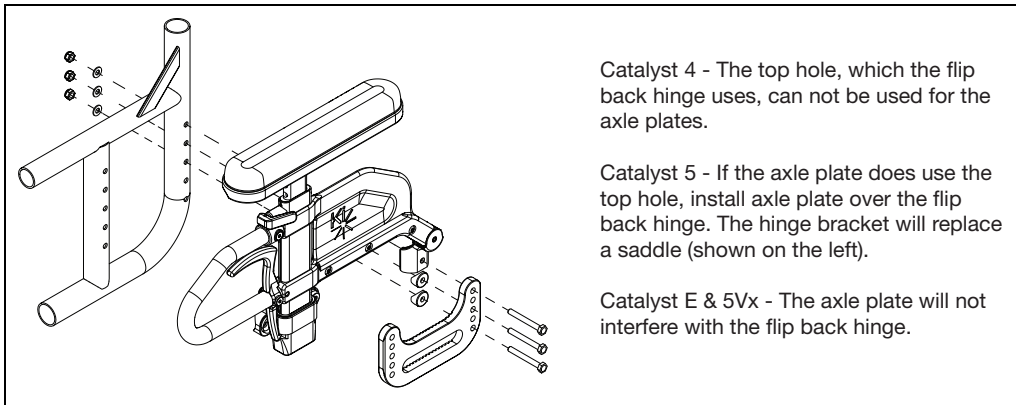
4. Install the flip back hinge (B) onto the rear frame tube with bolt (A) and nut (C) using two 10mm wrenches. Install the metal insert (F) from the armrest assembly into the flip back hinge (B). Secure with button head cap screw (D) which goes through the hinge, bushing (E), metal insert (F), bushing (E) and the spacer (G). Use a 4mm Allen wrench to tighten snug. Do not overtighten.

**NOTE: The button head cap screw (D) securing the armrest assembly to the flip back hinge controls the tension of the swing. Loosening the screw will cause the armrest assembly to swing more freely while tightening the screw will increase the tension and prevent the armrest from dropping down quickly.**



**NOTE: Different lengths of the screws have been provided in the kit because of the different configurations that are possible with the flip back hinge. Use the length that fits your configurations. Also, see image below for axle plate configuration information. The order of parts when stacking different options are as follows: the axle plates go to the outside of the frame (standard), transit brackets are mounted on the inside of the chair, right up against the frame (standard), anti-tips can be mounted on top of the transit brackets, not touching the frame.**

**NOTE: When the rear seat height is set in the lowest position, additional hardware is required for mounting axle plate to the frame in order to avoid interference with the flipback hinge and universal axle plate. Refer to the Universal Axle Plate section for additional assembly information.**



Catalyst 4 - The top hole, which the flip back hinge uses, can not be used for the axle plates.

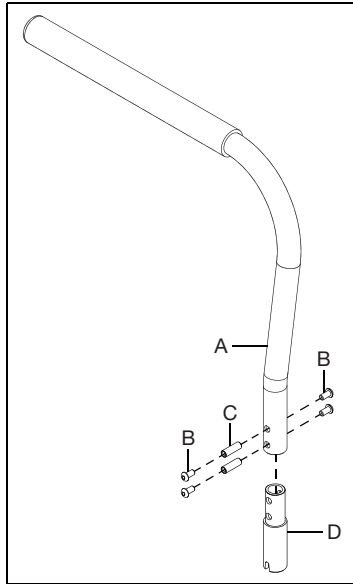
Catalyst 5 - If the axle plate does use the top hole, install axle plate over the flip back hinge. The hinge bracket will replace a saddle (shown on the left).

Catalyst E & 5Vx - The axle plate will not interfere with the flip back hinge.



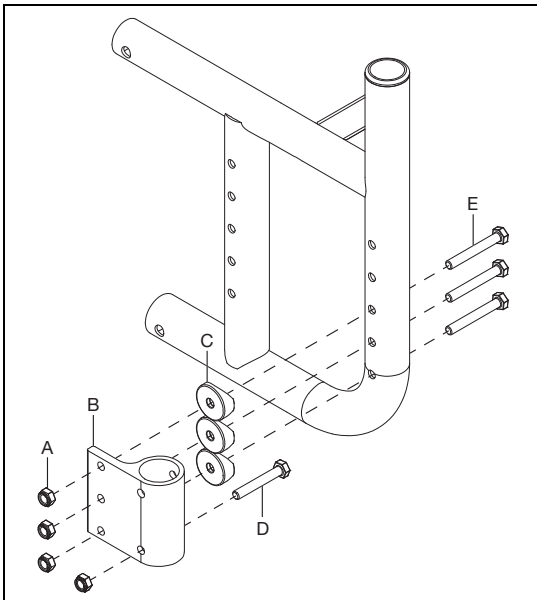
# Swing Away Armrest

1. Install the swing away armrest cane (A) onto the swing away armrest lower (D) with four bolts (B) and two threaded barrels (C) using two 4mm Allen wrenches. Repeat with second armrest cane set.



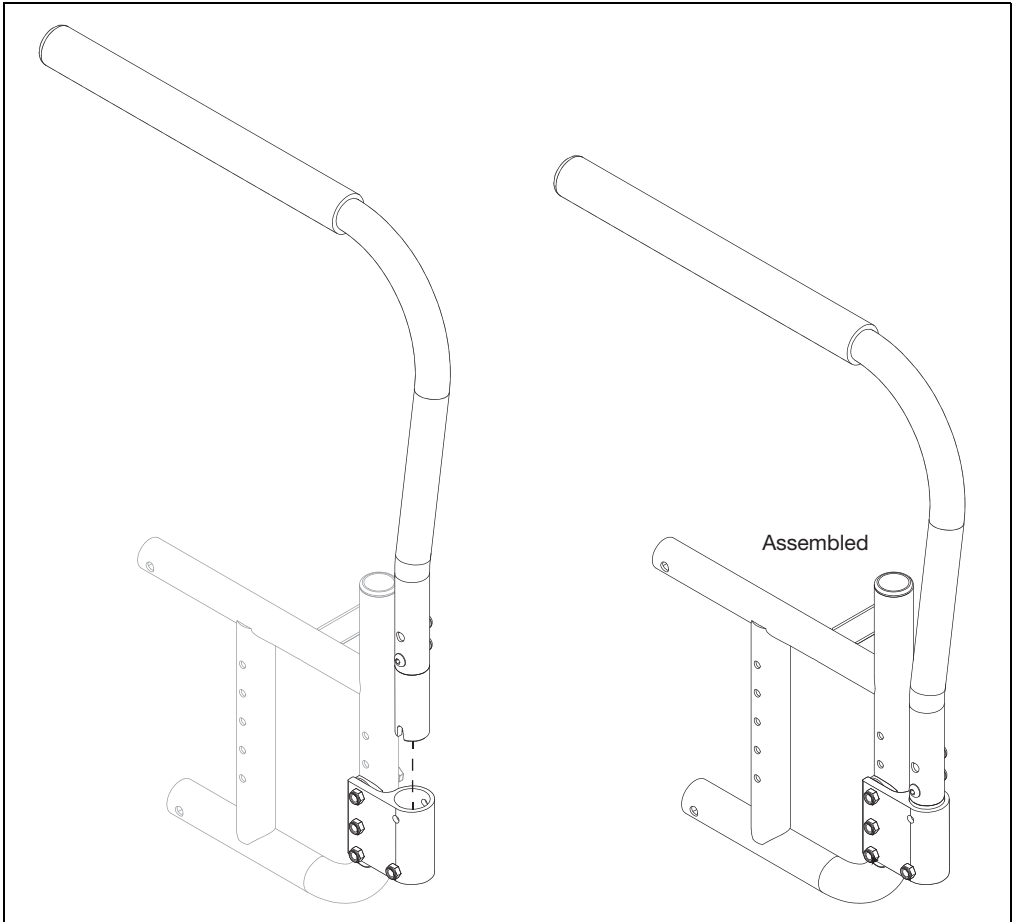
2. Install the swing away receiver (B) on the inside of rear frame with three bolts (E), three saddles (C) and three nuts (A) using two 10mm wrenches. Install the stop bolt (D) into the bottom of the receiver with nut (A) using two 10mm wrenches. Repeat on opposite side.

**NOTE: Different lengths of the screws have been provided in the kit because of the different configurations that are possible with the swing away armrest. The order of parts when stacking different options are as follows: the axle plates go to the outside of the frame (standard), transit brackets are mounted on the inside of the chair, right up against the frame (standard), anti-tips can be mounted on top of the transit brackets, not touching the frame.**



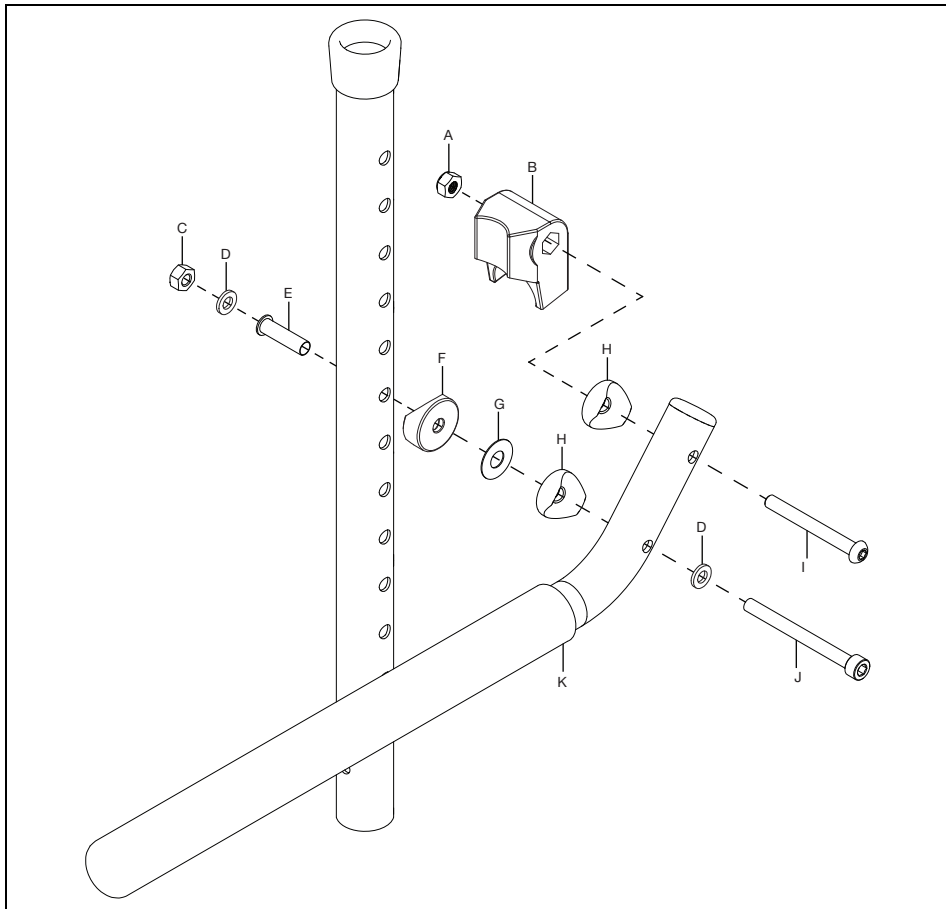
## Swing Away Armrest

3. Install the swing away armrest assembly into the receiver. The notch in the bottom of the tube will rest on the stop bolt inside the receiver. Repeat on opposite side. To swing the armrest, lift the armrest so the notch clears the stop bolt and turn.



# Tubular Flip Up Armrest - Available on Spark

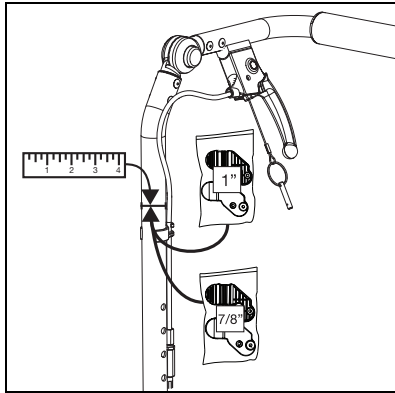
1. Install the stop block (B) onto the tubular flip up armrest tube (K) and secure with bolt (I), saddle (H) and nut (A) using a 4mm Allen wrench and a 10mm wrench. Secure the armrest tube to the backrest tube (armrest mounts on the outside of chair) with bolt (J), washer (C), two saddles (F & H), washer (G), sleeve (E), washer (C) and nut (D) using a 4mm Allen wrench and a 10mm wrench. Repeat on opposite side.



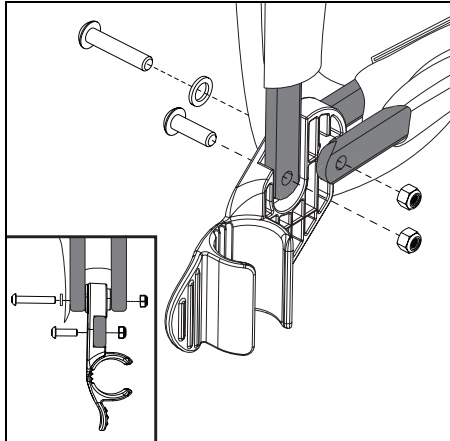
# Canopy

## Installation

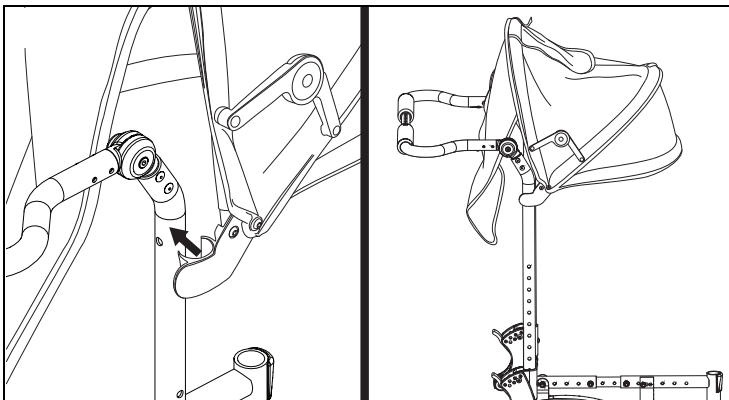
1. Measure your back canes to determine if the width is 1" or 7/8". Hardware is provided for both sizes, so back cane size is needed before continuing.



2. Install the canopy to the clamp, size determined in previous step, using two bolts, one washer and two nuts using a 3mm Allen wrench and a 4mm Allen wrench.



3. Push the clamps onto the backrest canes, ensuring the canopy opens toward the front of the chair and the flap is on the back side of the chair.



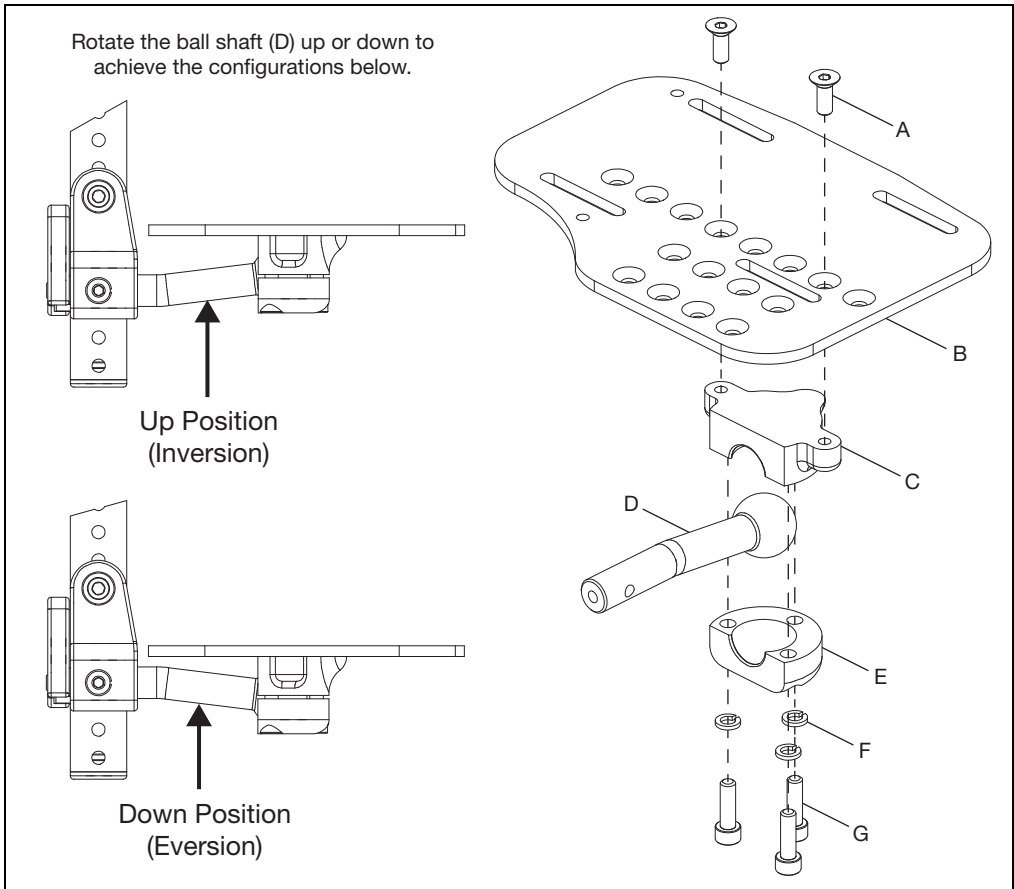
# Multi-Angle Footrest

## 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.

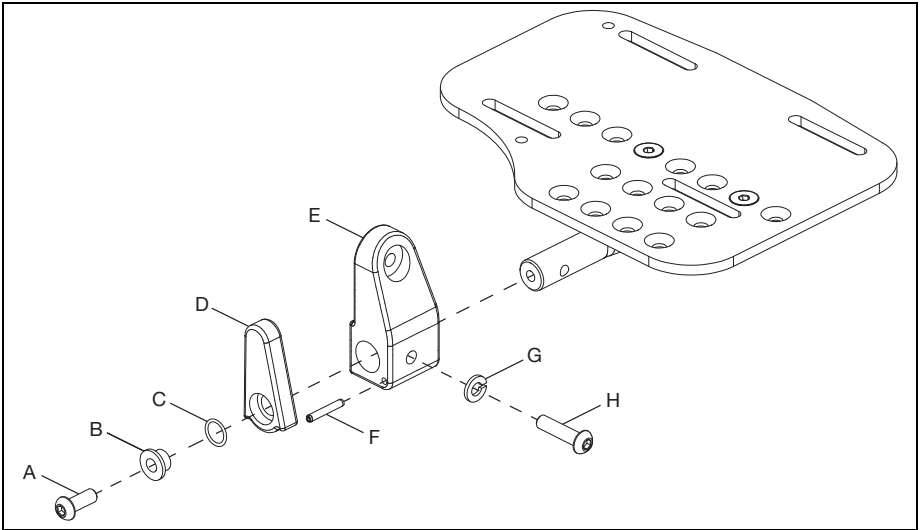
**NOTE:** Install the footplate to the upper footrest clamp using the set of holes needed for the desired configuration. The holes allow the footplate to be moved further inward or outward depending on preference.

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



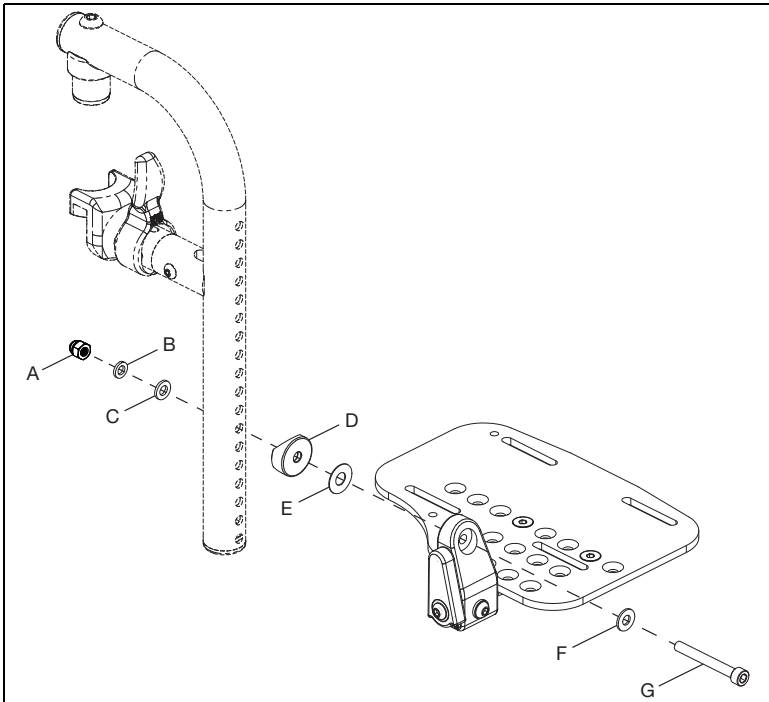
# Multi-Angle Footrest

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.

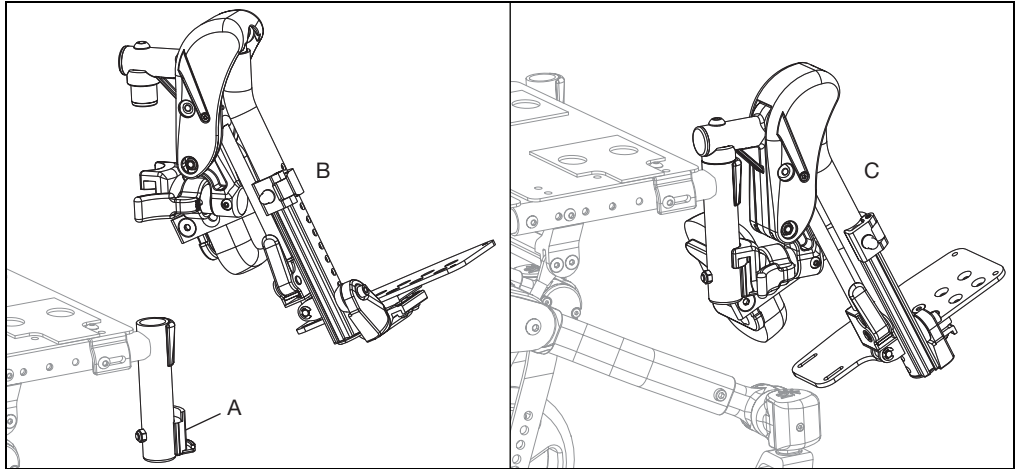
**NOTE: Install footplate assembly to hanger using the correct holes for the desired footrest height.**



# Pediatric Pro ELR

## Installing Pediatric Pro Elevated Leg Rest Assembly

1. Remove current hangers from chair if applicable. Install latch blocks (A) if not present.
2. Install the Pediatric Pro ELR the same way as a swing away hanger. Place the swing away pivot saddle into the receiver on the front frame tube with the leg rest facing either inward or outward from the frame (B).
3. Rotate the leg rest so it aligns with the frame until it locks into place in the latch block (C).

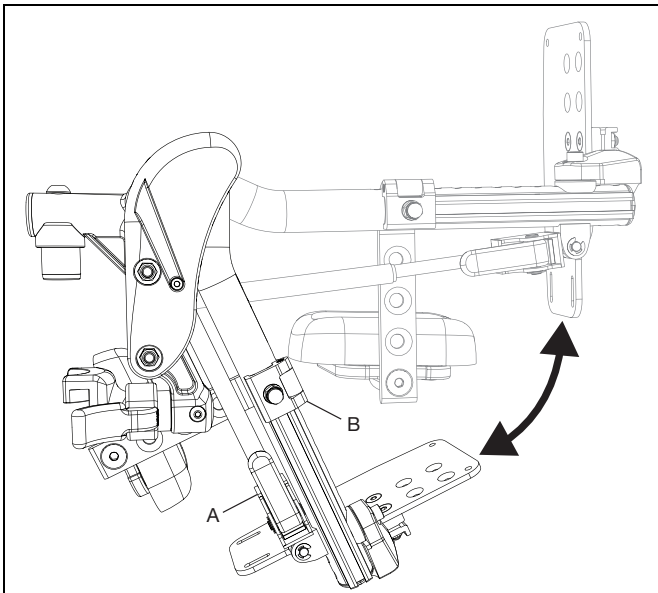


## Use

1. To raise the Pediatric Pro ELR, lift the leg rest tube (B) to desired angle of elevation.
2. To lower the Pediatric Pro ELR, press and hold the lever lock (A) while pushing the leg rest tube (A) down.

**NOTE: Support or remove weight from the Pediatric Pro ELR while lowering to avoid a sudden drop when the lever lock is pushed.**

**NOTE: The calf pad can swing outward to clear the front of the chair for transfers.**



# Pediatric Pro ELR

## Removal (Refer to first image in Pediatric Pro ELR Section)

1. To remove leg rest, push or pull release latch.
2. Lift the leg rest straight upward to remove. You may also swing the leg rest inward or outward before lifting it off.

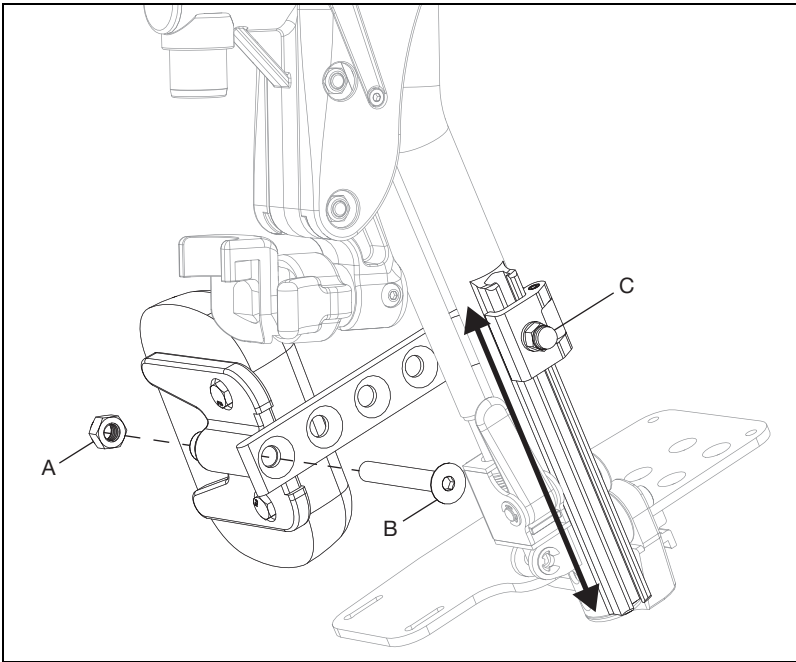
## Adjusting Calf Pad

### Adjusting Height of Calf Pad

1. Loosen nut (C) using a 10mm wrench.
2. Slide calf pad arm up or down to desired location. Retighten nut.

### Adjusting Depth of Calf Pad

1. Remove screw (B) and nut (A) on calf pad arm using a 5mm Allen wrench and a 13mm wrench.
2. Pick the desired location based on the four predrilled holes and reinstall screw and nut.



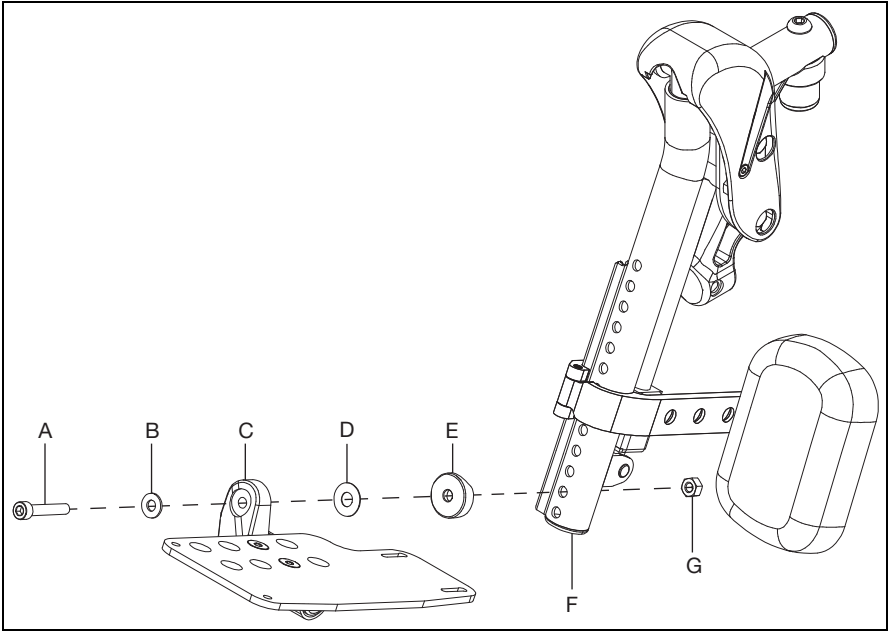


# Pediatric Pro ELR

## Adjusting Length of Footrest

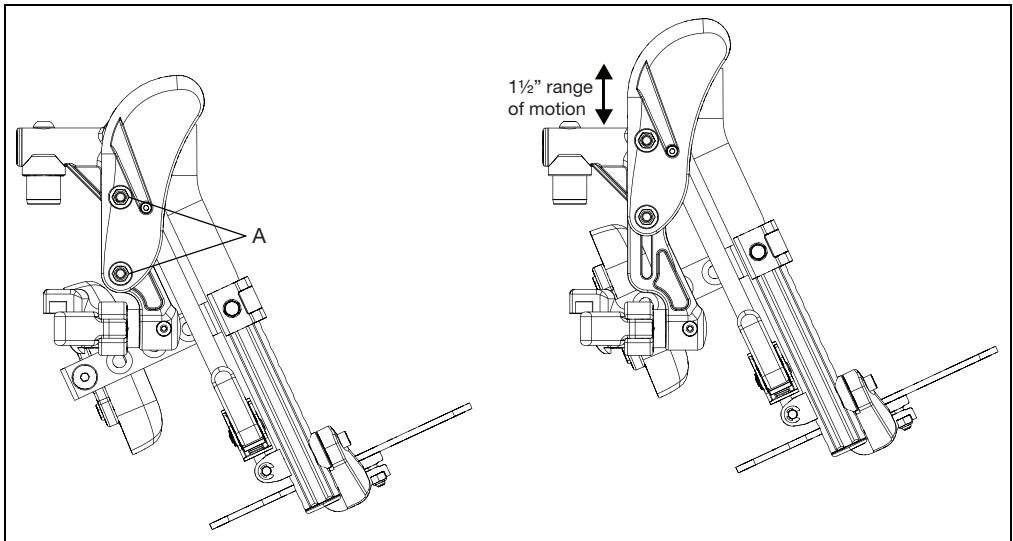
1. Remove bolt (A), washer (B), footplate assembly (C), washer (D), saddle (E), nut (G) and ensure footrest tube insert (F) stays in tube using a 5mm Allen wrench and a 10mm wrench.
2. Move footplate to desired height and reinstall hardware to secure in the hole closest to desired height.

**NOTE:** Move the calf pad as needed when adjusting the length of the footrest.



## 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).

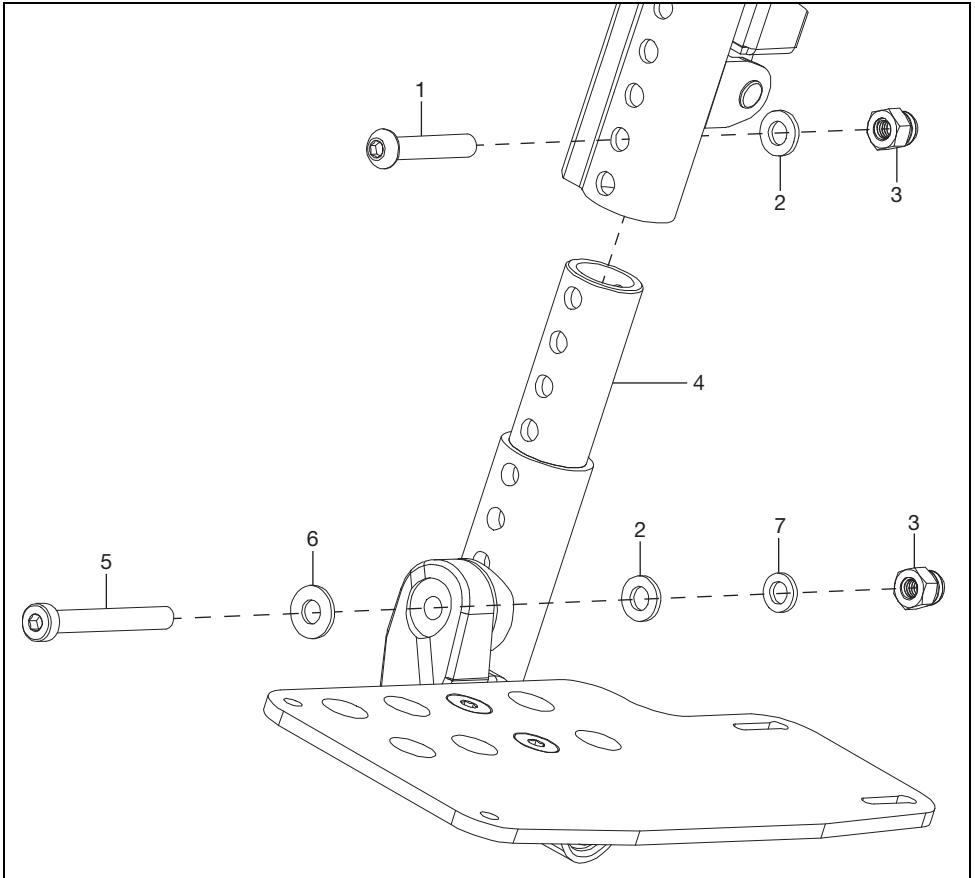


# Pediatric Pro ELR

## Extension Mount Configuration

Some configurations may require an extension mount to avoid interference with the footplate. Use a 5mm Allen wrench, a 4mm Allen wrench and a 10mm wrench to attach your footplate to the extension mount and the extension mount to the hanger assembly. Extension mount hardware is included in a separate bag.

**NOTE: The footrest tube insert is not used when the extension mount is used and the hardware for attaching is different. See figure below for parts diagram (not all parts are sold individually, refer to parts manual for additional information at [www.kimobility.com](http://www.kimobility.com)) and the part description chart below (the rest of the assembly is shown on the next pages).**



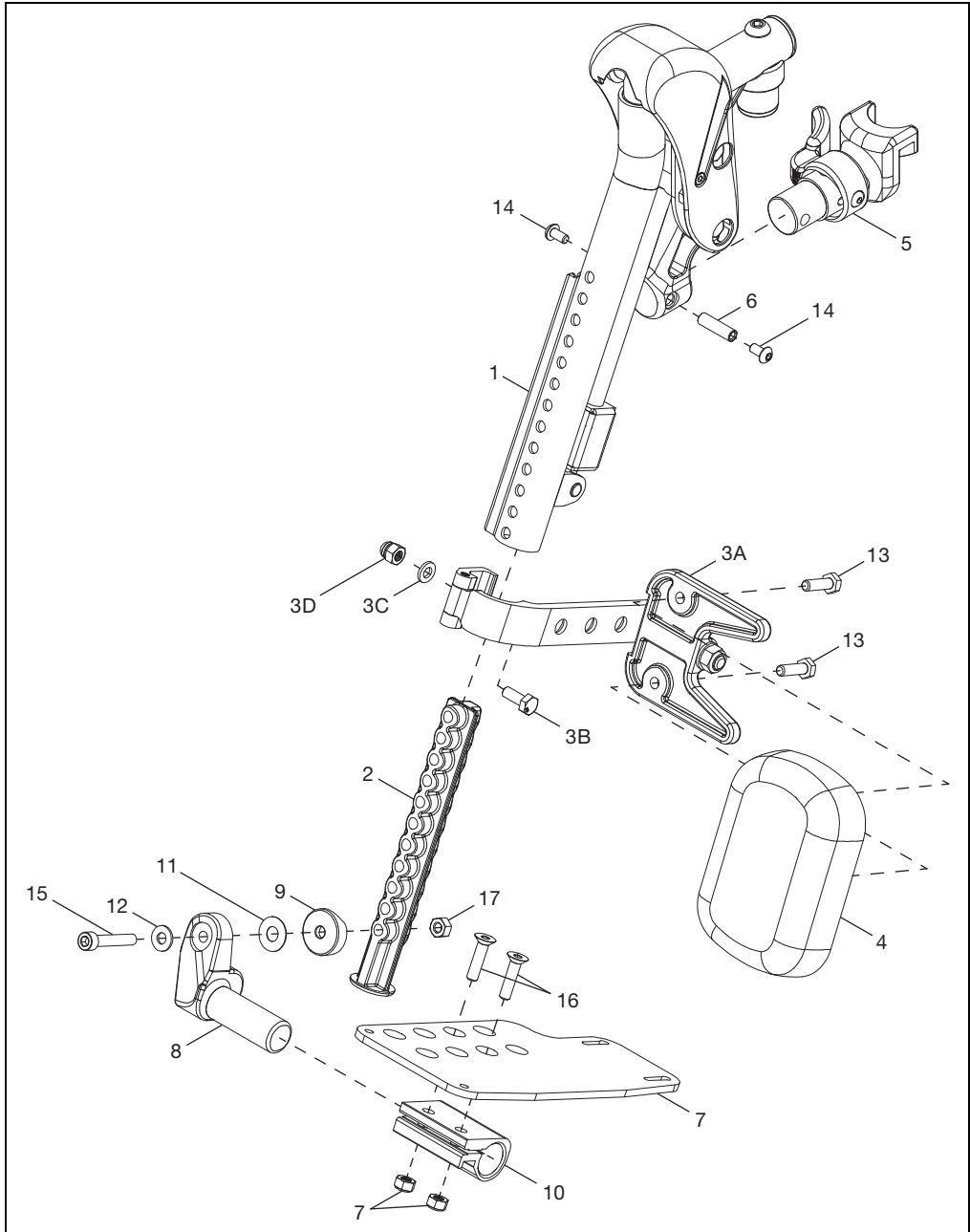
Item Number	Part Number	Description	Quantity
1	101811	BHCS, M6x1.0x35, CL10.9, BLZ, DIN7380	1
2	100746	WASHER, FLAT, M6, BLZ, DIN125A	2
3	100558	NUT, HEX, M6x1.0, DOME, CLS6, BLZ, DIN986	2
4	000164	Hanger Extension - 3"	1
5	101124	SHCS, LOW, M6x1.0x50, CL8.8, BLZ, DIN7984	1
6	101455	M6 BELLEVILLE WASHER	1
7	102072	WASHER NYLON .234IDx.406ODx.062 THICK	1

# Pediatric Pro ELR

## Replacing Pediatric Pro Elevated Leg Rest Parts

1. See figure below for a parts diagram of the Pediatric Pro ELR (not all parts are sold individually, refer to parts manual for additional information at [www.kimobility.com](http://www.kimobility.com)).

**NOTE: Parts chart located on next page.**



# Pediatric Pro ELR

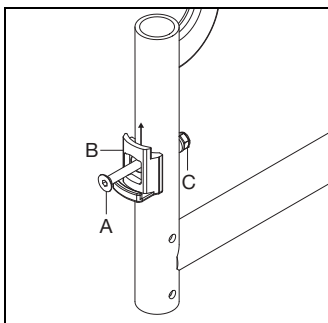
Item Number	Part Number	Description	Quantity
1	003853	Hanger Assy, Pro ELR, FM, R	1
	003854	Hanger Assy, Pro ELR, FM, L	1
2	003843	Insert, Footrest Tube	1
3	003344	Calf Pad Bracket Assembly	1
4	101585	Calf Pad - Large	1
	101470	Calf Pad Pediatric - Medium	1
	003844	Calf Pad, 84mm X 120mm - Small	1
5	003643	Hanger Latch Assy, 4-Way, L	1
	003642	Hanger Latch Assy, 4-Way, R	1
	003416	Hanger Latch Assy, R	1
	003416	Hanger Latch Assy, L	1
6	000073	M5 Threaded Barrel	1
7	001304 - 001307, 000105 - 000110	Footplate, Aluminum Angle Adj, 10-11W - 18-20W, L/R	1
8	000048	Footplate Angle Adj Casting, 1", R	1
	000050	Footplate Angle Adj Casting, 1", L	1
9	003845	Saddle, 1", Rounded	1
10	100502	Angle Adj Footrest Clamp, 2"	1
11	000428	Wear Washer	1
12	101455	M6 Belleville Washer	1
13	101823	HHCS, M6X1.0X20, CLS10.9, NYL, BLZ, DIN933	2
14	100669	BHCS, M5X0.8X10, CLS10.9, BLZ, NYL, ISO7380	2
15	101810	SHCS, M6X1.0X35, CLS12.9, BLZ, DIN912	1
16	100662	FHCS, M6X1.0X25, CLS10.9, BLZ, DIN799 1	2
17	101456	M6 DIN980 CLS8 OVL TOP L/N ZC	1
18	100658	M6 Nylock Nut, BLK ZN	2

# Footrest Hanger Adjustment

## Latch Block Adjustment

**NOTE: The latch block adjustment optimizes the fit of any footrest hanger system (ELR, Residual Limb Support, Swing Away Hanger, etc.).**

1. Loosen, do not remove, the latch block screw (A) and nut(B) with a 5mm Allen wrench and a 10mm wrench.
2. Adjust the the latch block (B) up as much as possible and hold in that position.
3. Tighten the latch block screw and nut with the 5mm Allen wrench and 10mm wrench to secure in that position.



## Footrest Length Adjustment

### Catalyst 4E, E

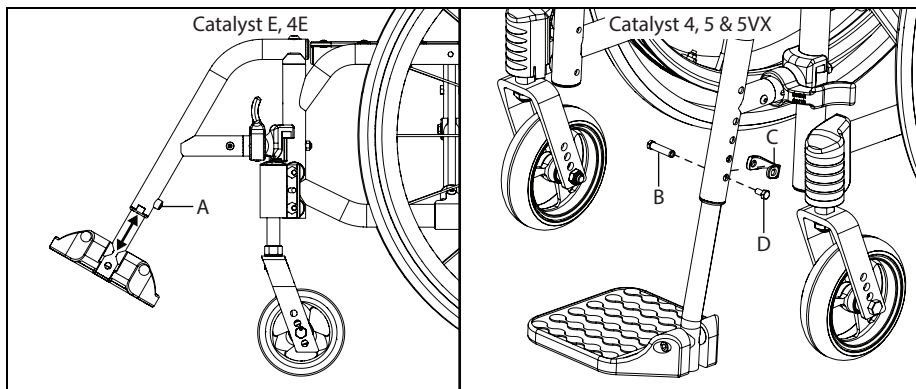
1. Loosen the set screw (A) with a 4mm Allen wrench.
2. Slide the footrest extension tube to the desired height.
3. Secure the footrest in the new desired position by tightening the set screw until there is no movement.
4. Repeat steps 1 - 3 on opposite side.
5. To ensure safe use, verify that the distance between the footplate and the ground is greater than or equal to 2.5" and always look ahead for potential obstructions or surface transitions.

### Catalyst 4, 5, 5VX & Spark

1. Remove the bolt (D) and threaded insert (B) from the footrest with a 8m wrench.
2. Slide the adjustment collar (C) 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.



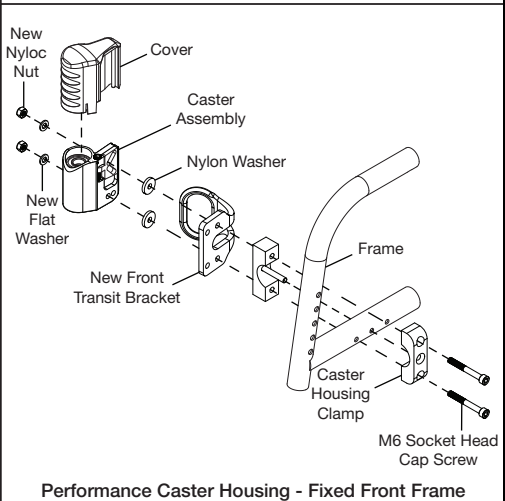
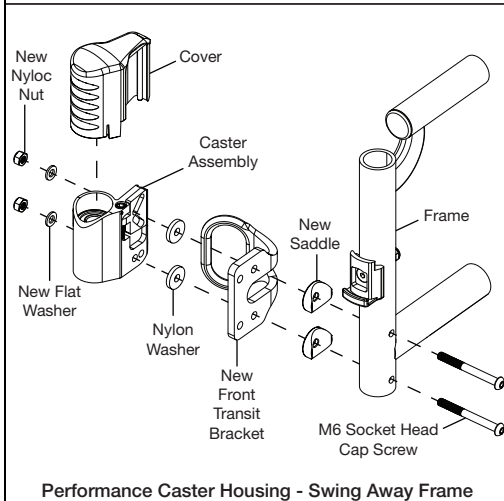
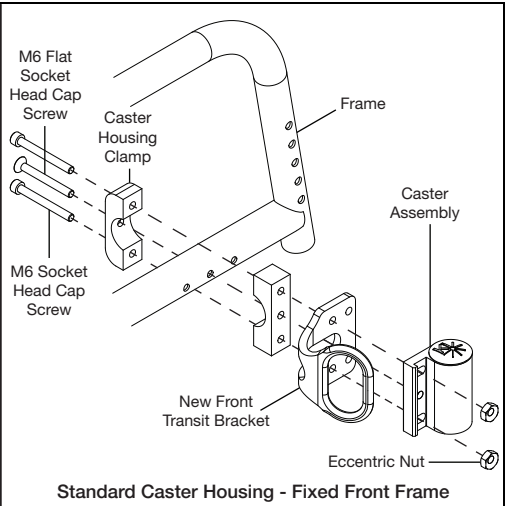
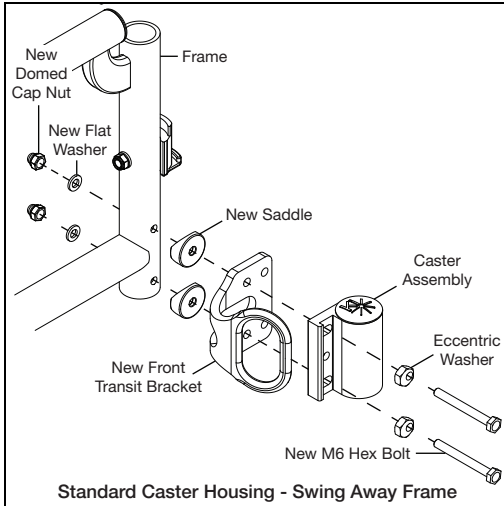
# Transit

## Install the Front Transit Bracket

**NOTE: Observe the orientation of the caster barrel and eccentric nuts before removing hardware to ensure proper installation in later steps.**

1. Depending on your chair set-up, use a 10mm socket wrench and a 10mm wrench or a 5mm Allen wrench to remove the caster assembly. For performance caster housing, remove the housing first and save for reinstall later. Save all parts for later use except the bolts which will be replaced.
2. Reinstall caster assembly according to the figure below that corresponds with your chair. Tighten nut using a 10mm wrench. See image below.

**NOTE: The caster assemblies are not shown in the images below for clarity reasons. The caster assembly is not taken apart during this process, only removed from the frame.**



# Transit

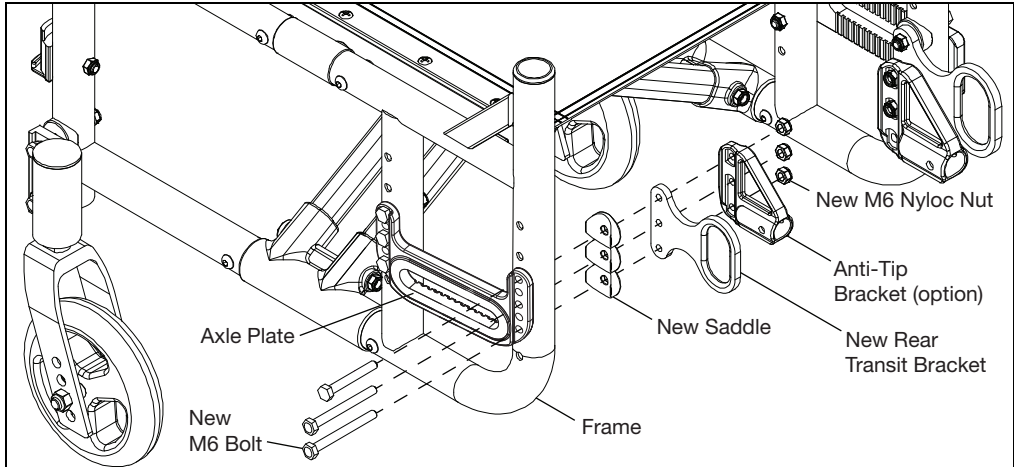
## Install the Rear Transit Bracket

**NOTE:** See image at the bottom of this page for Catalyst 5Vx vertical axle plate configuration.

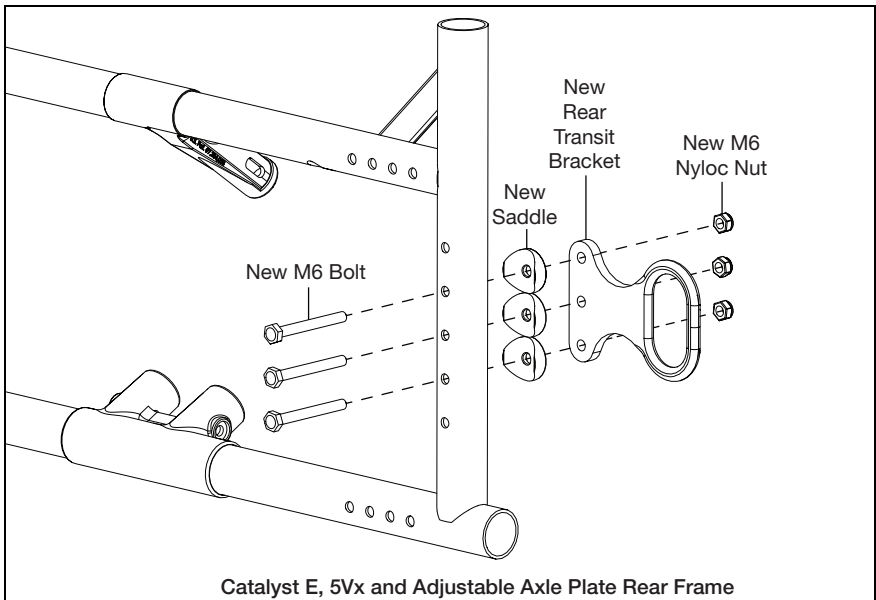
1. Using a 10mm socket wrench and a 10mm wrench, loosen the bolts holding the axle plate and anti-tip mount (if required). Remove the bolts, washers and nuts. All bolts are located at the rear of the axle plate.
2. Install new M6 bolt through the top hole in the axle plate, frame, saddle, new rear transit bracket and the anti-tip mount (if required). Cap bolt end with new M6 nylock nut. See image below for this configuration.

**NOTE:** Maintain original axle plate position when reassembling.

3. Tighten bolt to 8 ft-lbs of torque with torque wrench and 10mm socket wrench.
4. Repeat steps on remaining bolts and then repeat steps on opposite side axle plate.



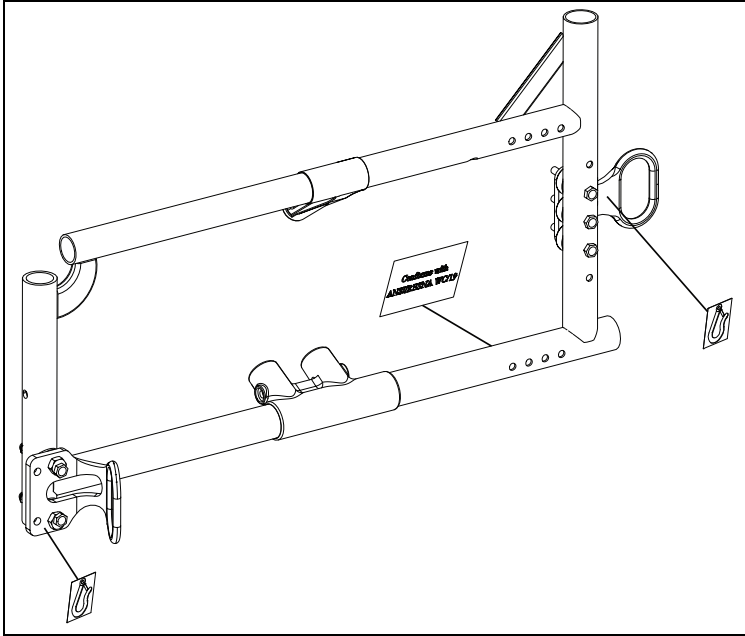
**NOTE:** The universal axle plate is shown for reference (Curved and amputee axle plates are also available).



# Transit

## Transit Labels

1. Install the labels provided in the kit. Ensure the surface is clean and dry before applying labels. The transit hook labels are placed on the front and rear transit brackets. The WC-19 transit labels are placed on the lower inside frame. All transit labels need to be placed correctly so they are visible and comply with WC-19 standards and requirements.

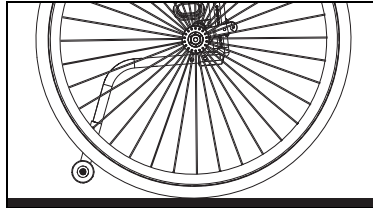




# Anti-Tips

**NOTE:** 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.

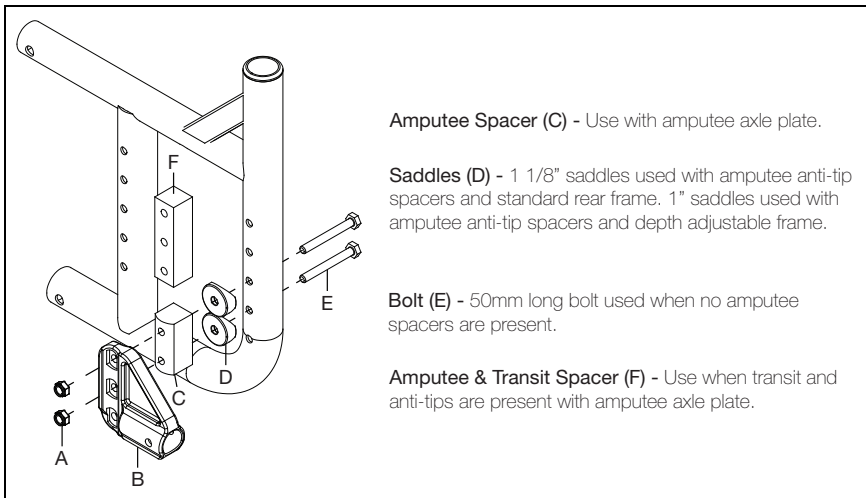
**NOTE:** After any adjustment, ensure anti-tips clear the wheels as shown below.



## Rear Anti-Tip Receiver - Catalyst 4/5 & Spark

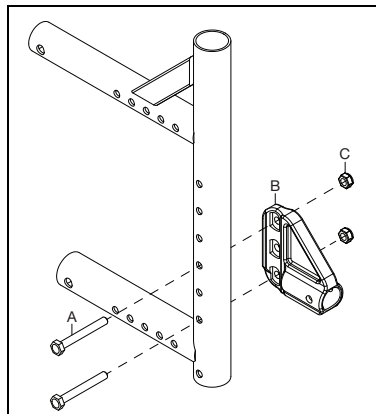
1. Install the rear anti-tip receiver (B) on the inside of the rear frame with hardware using two 10mm wrenches. Repeat on opposite side.

**NOTE:** The diagram below notes the different hardware setups needed for the anti-tip receiver depending on your type of frame and axle plate.



## Rear Anti-Tip Receiver - Catalyst 5VX

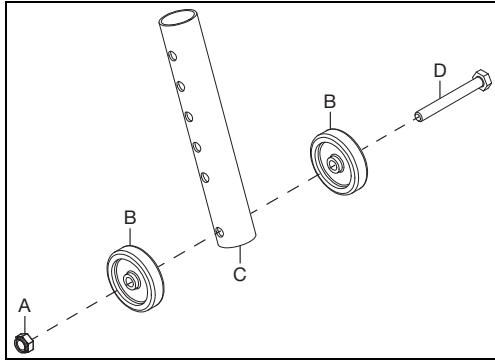
1. Install the rear anti-tip receiver (B) on the inside of the rear frame with two bolts (A) and two nuts (C) using two 10mm wrenches. Repeat on opposite side.



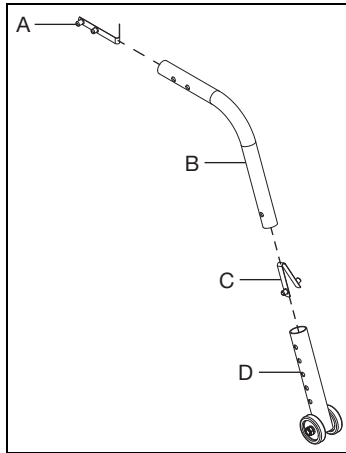
# Anti-Tips

## Rear Anti-Tip

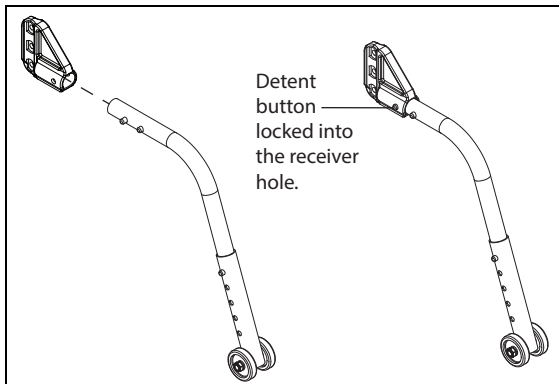
1. Install the two wheels (B) onto the end of the anti-tip (C) with a bolt (D) and nut (A) using two 10mm wrenches.



2. Install the lower anti-tip assembly (D) to the upper anti-tip tube (B) using the detent button (C). There are different holes that can be used in the lower anti-tip assembly to achieve different anti-tip heights. Ensure the height is set the same on both sides. Install upper detent button (A) into the two holes on the upper anti-tip tube. Repeat on opposite side.



3. Install the anti-tip assembly into the receiver and ensure the detent buttons "click" and lock into place.

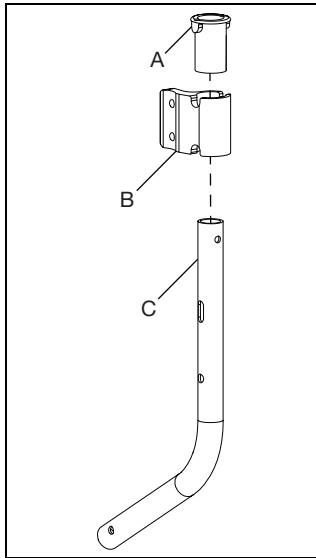


# Anti-Tips

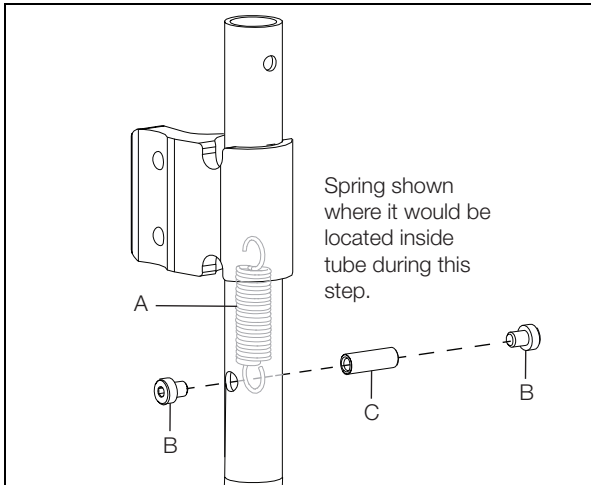
## Swing-In Anti-Tip - Catalyst 5 & 5VX

**NOTE: For installing a whole assembly, skip to step 8.**

1. Slide receiver bracket (B) and sleeve (A) onto anti-tip tube (C).

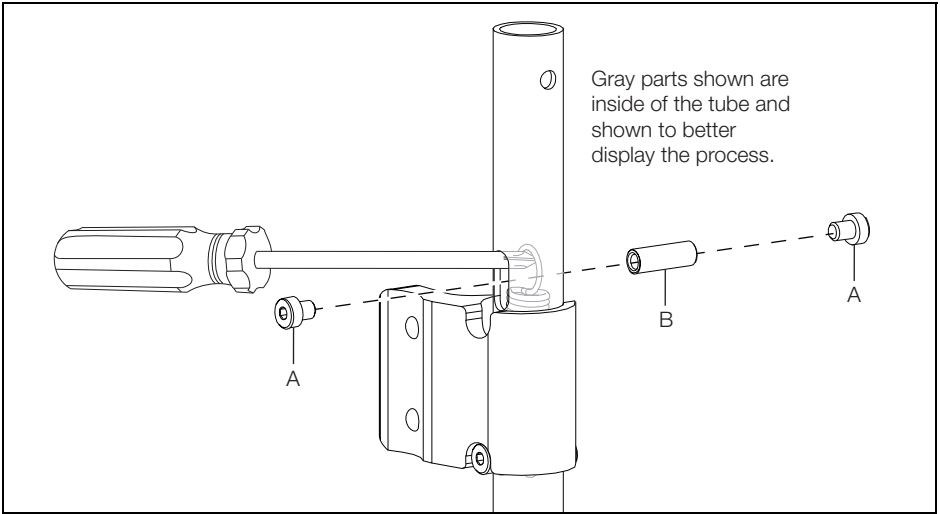


2. Lower spring (A) into tube and angle tube until you can see one hook end of the spring in the lower tube hole. Install two screws (B) and threaded insert (C) using two 3mm wrenches. Ensure threaded barrel goes through the spring hook and bracket is above the screws.

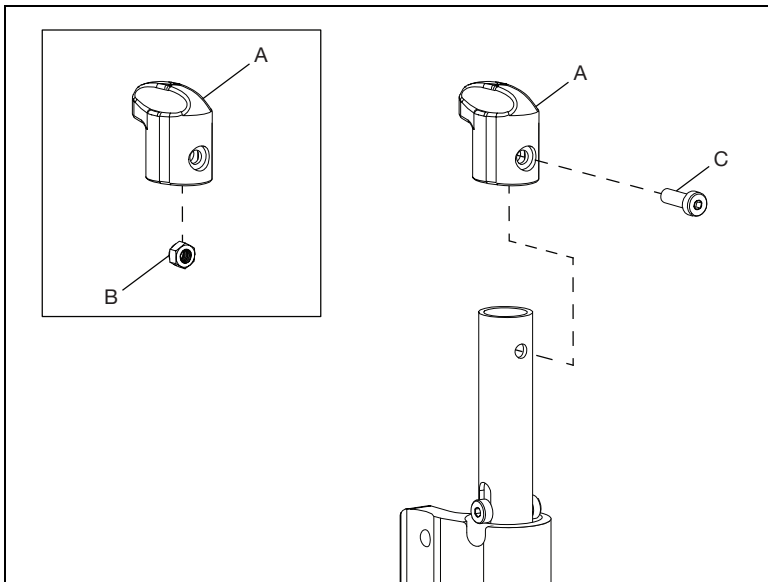


# Anti-Tips

3. Use a screwdriver to hook the opposite spring hook and pull up so hook can be seen through upper tube hole. Install two screws (A) and threaded insert (B) using two 3mm wrenches. Ensure threaded barrel goes through the spring hook. Bracket must be below the new screws so there is a hardware set below and above the bracket when complete.

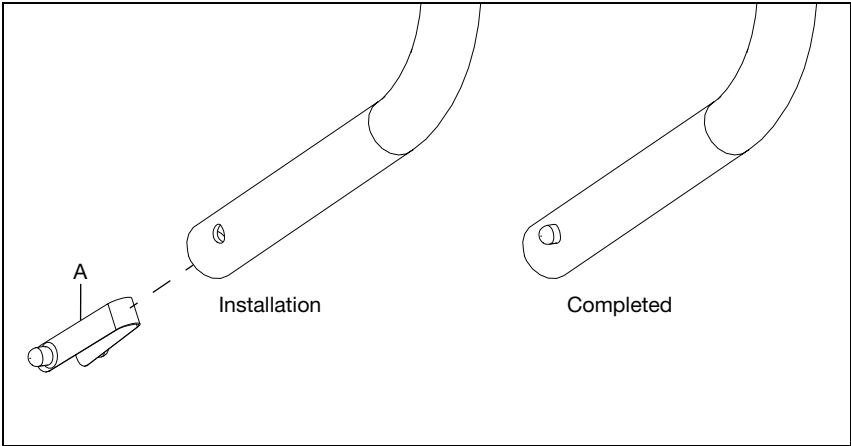


4. Install anti-tip knob (A) by placing nut (B) into recessed nut hole and securing with screw (C) through anti-tip knob and uppermost tube hole using a 4mm Allen wrench.

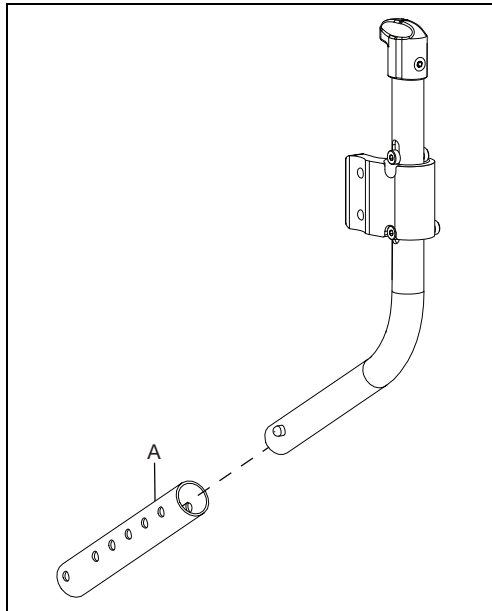


# Anti-Tips

5. Install lower detent button (A) into lower section of tube, ensuring buttons come through the tube holes on both sides.

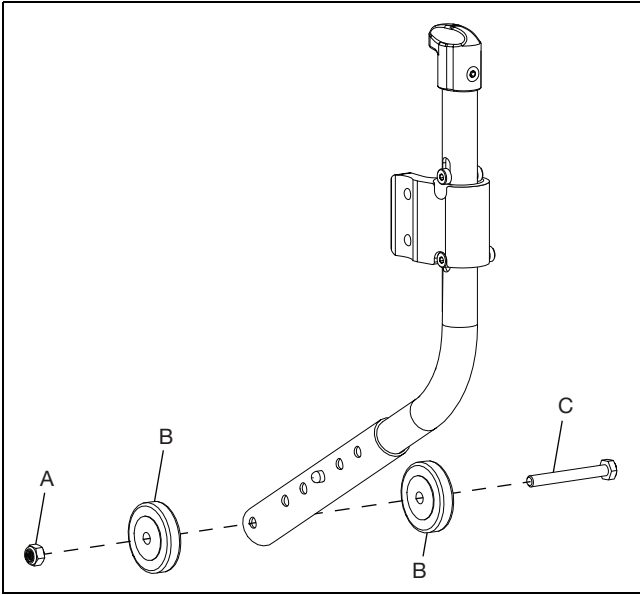


6. Install lower anti-tip tube (A) to desired height by squeezing detent buttons and sliding tube to desired holes.



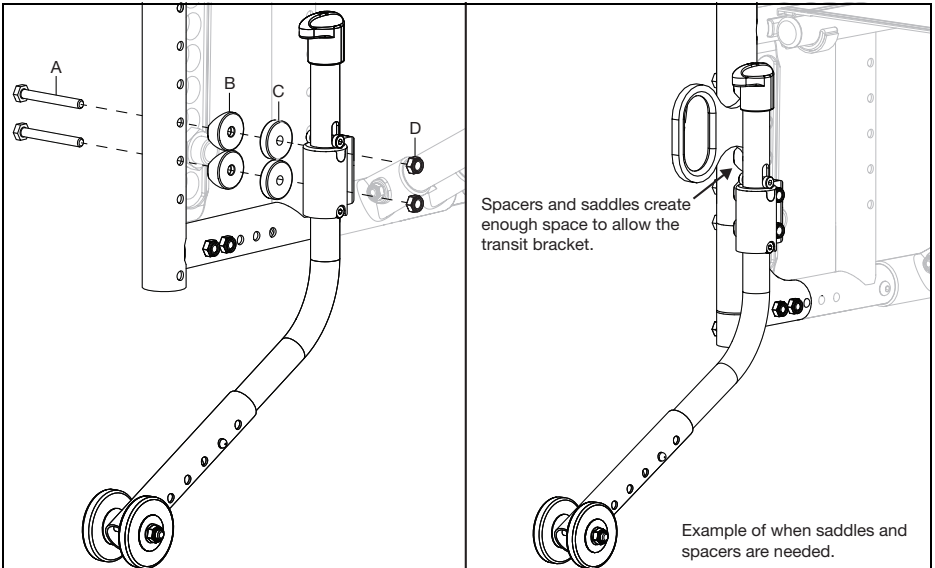
# Anti-Tips

7. Finish the assembly of the anti-tip with bolt (C), two wheels (B) and nut (A) using two 10mm wrenches.



8. Install anti-tip assembly onto inner rear frame with bolts (A), saddles (B), spacers (C) and nuts (D) using two 10mm wrenches. Saddles (B) and spacers (B) are only used when clearance is needed such as when a swing-in anti-tip and either a swing away armrest or transit are used. If clearance is not an issue, install the anti-tip assembly using just the bolts (A) and the nuts (D).

**NOTE: There are different holes that can be used on the rear frame to achieve the desired height. Ki Mobility recommends a minimum of 1" of clearance between the anti-tip wheel and the floor.**



9. Repeat on opposite side if using two anti-tips.

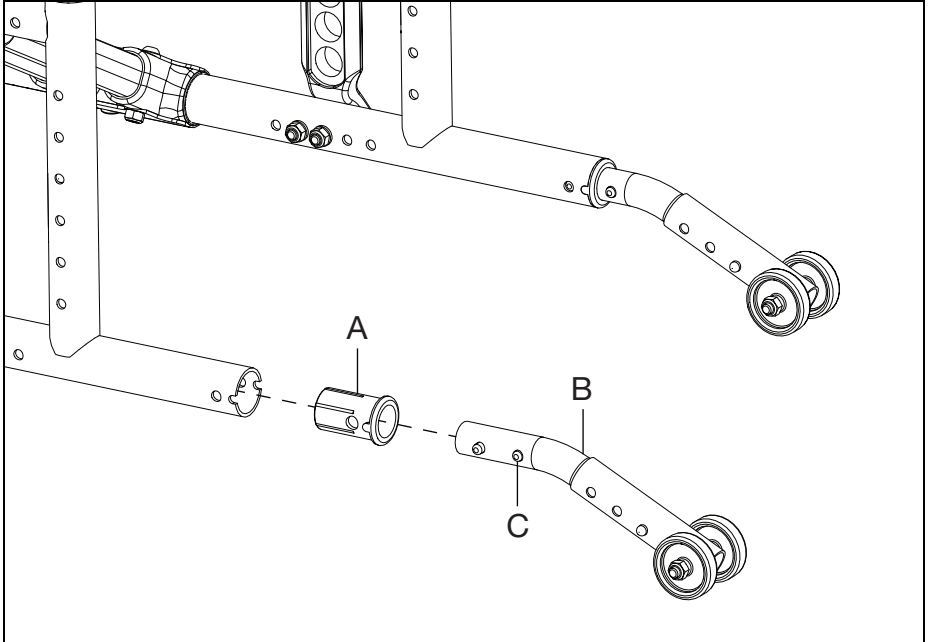
# Anti-Tips

## Catalyst E Anti-Tips

1. Install anti-tip sleeve (A) into frame.
2. Depress detent button (C) and insert into anti-tip (B).
3. Install anti-tip assembly into the anti-tip sleeve and align detent button with hole in the frame.

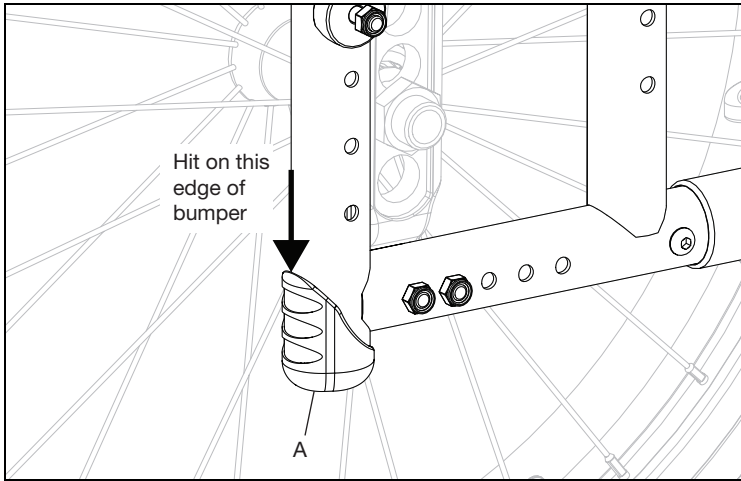
**NOTE:** Both anti-tips should be set to the same height.

**NOTE:** Catalyst E, in the lowest rear seat height or when the axle is configured in the top most hole of the axle plate, will not have upper adjustment of anti-tips. Upper adjustment is achieved by rotating the anti-tips to the upward angle, increasing the distance between the anti-tips and the floor.



## Remove Bumpers

1. Use a rubber mallet to hit the edge of the bumper (A) on the rear frame. Be careful to avoid damaging paint.

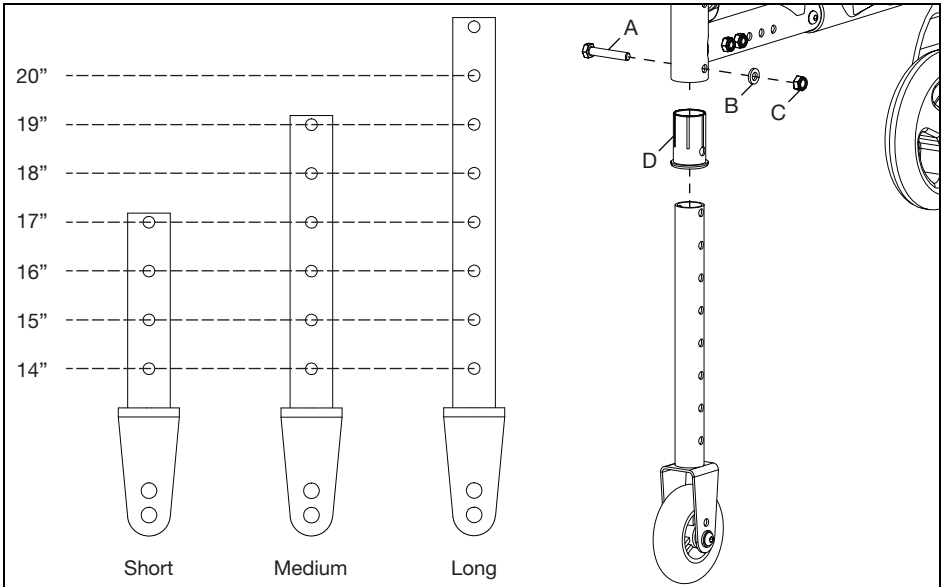


2. Remove bumper and plastic spring detent. Repeat process on opposite side.

**NOTE: The bumper and plastic spring detent cannot be used again after removal.**

## Install Transit Wheels

1. Insert sleeve (D) and transit wheel assembly into rear frame opening.
2. Adjust transit wheel to desired height and secure with bolt (A), washer (B) and nut (C) using two 10mm wrenches.



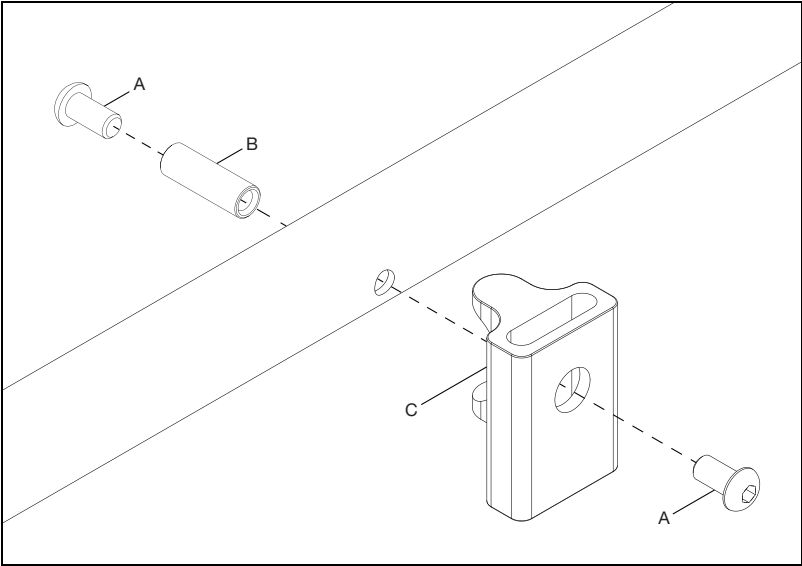
3. Repeat on opposite side and ensure that transit wheels are between .75" and 1.25" off the ground.



# Side Guards

## Side Guard Receiver

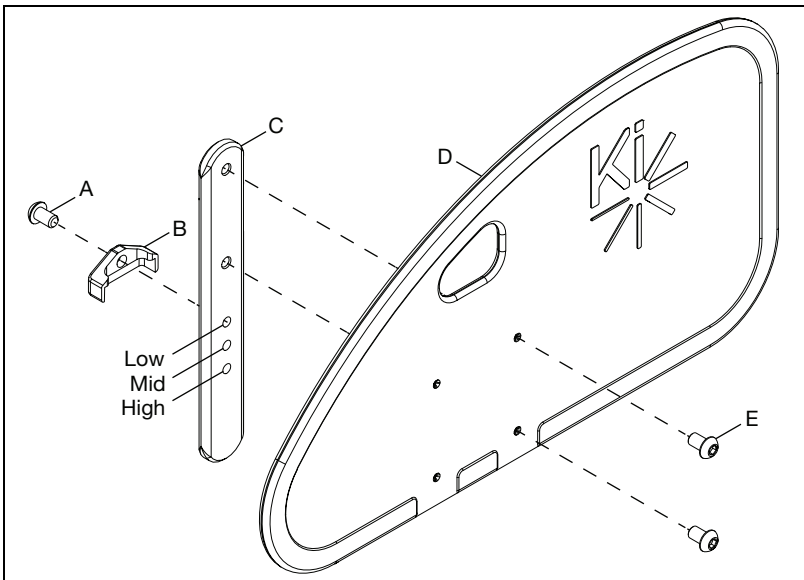
1. Install side guard receiver (C) onto the outside of the chair frame with two screws (A) and a barrel nut (B) using a 4mm Allen wrench.



## Removable Adult Side Guard

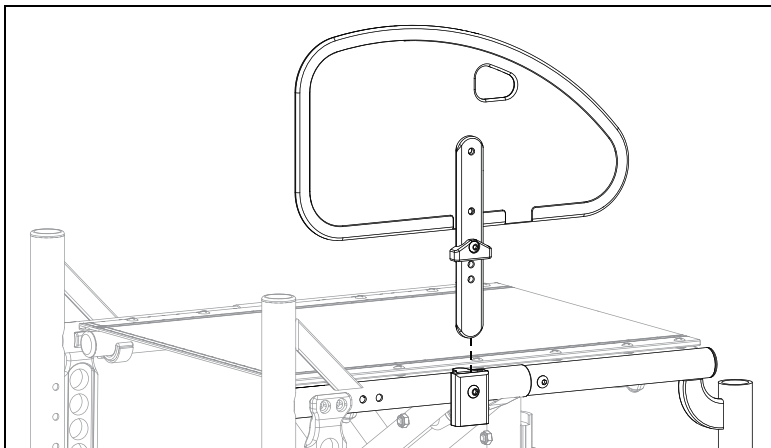
1. Install the adult side guard (D) onto the side guard post (C) with two screws (A) using a 4mm Allen wrench. On the opposite side, install the side guard post stop (B) with a screw (A) using a 4mm Allen wrench.

**NOTE:** There are two sets of holes that the side guard post (C) can be installed onto the side guard with. Choose the holes that place the side guard in the desired position. The height is also adjusted with the hole that the side guard post stop (B) is installed in.



## Side Guards

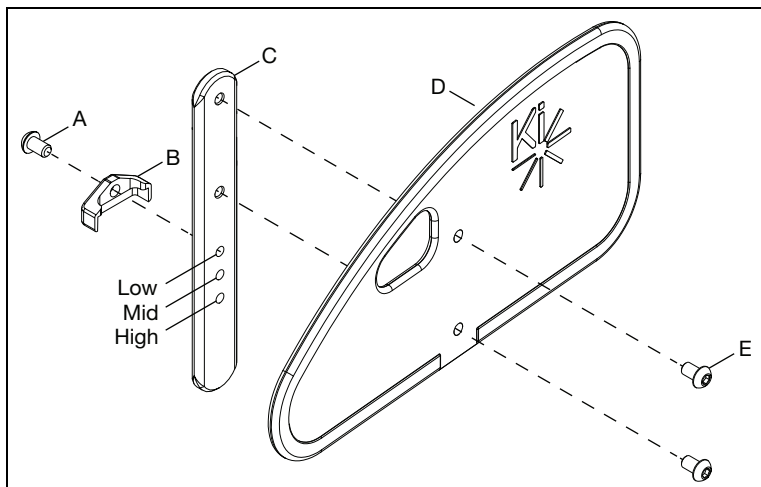
2. Install the side guard assembly into the receiver so the side guard post stop faces the outside of the chair.



### Removable Pediatric Side Guard - Catalyst 5VX & Spark

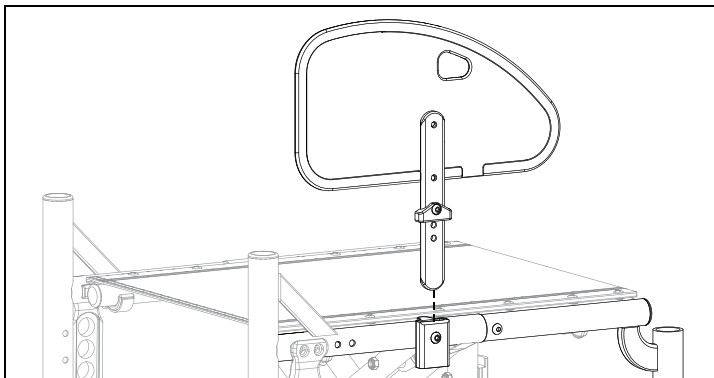
1. Install the adult side guard (D) onto the side guard post (C) with two screws (A) using a 4mm Allen wrench. On the opposite side, install the side guard post stop (B) with a screw (A) using a 4mm Allen wrench.

**NOTICE:** The height of the pediatric side guard can be adjusted with the three holes on the side guard post (C).



# Side Guards

- Install the side guard assembly into the receiver so the side guard post stop faces the outside of the chair.



## Adjustable Fender Size Guard - Catalyst 5 & Catalyst 5VX

Fender size guard panel size needed to fit a Catalyst 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.

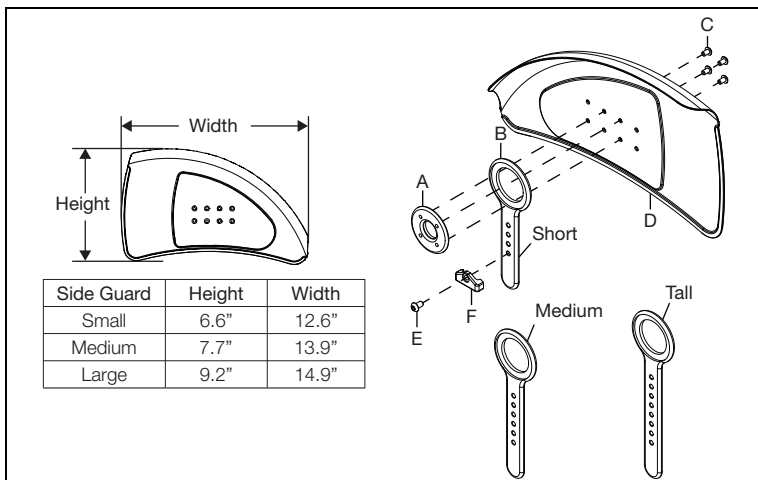
**Formula: Wheel Outside Diameter (OD) - Rear Seat Height = Tire Height over seat**

### 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

- 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.

**NOTICE:** 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 used to mount the fender post mount stop.



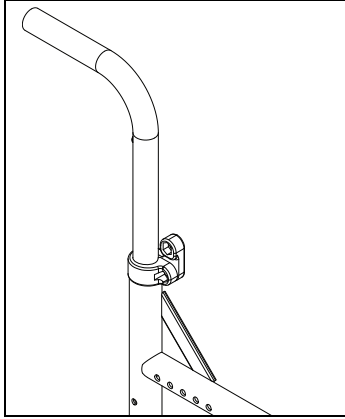
# Side Guards

## Fixed Mount Fender Side Guard - Catalyst 5VX

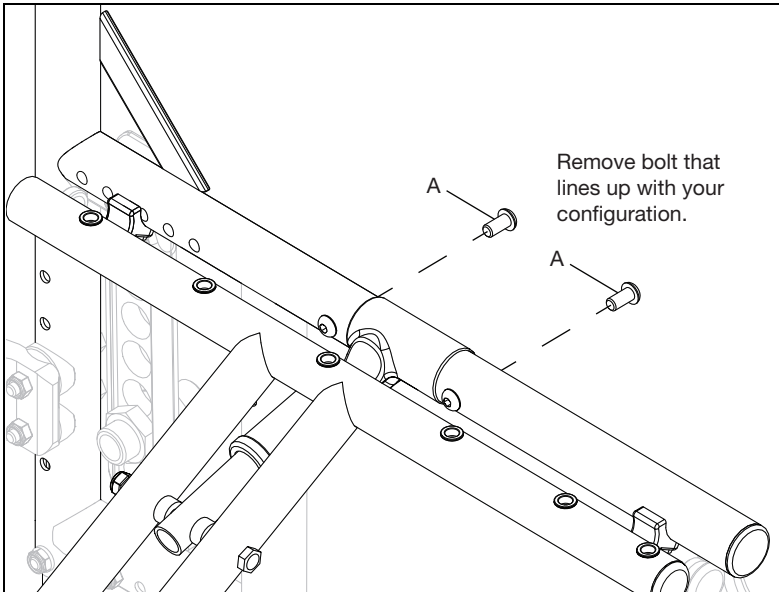
**NOTE:** In some configurations, a wheel lock (if present) may need to be reversed or the extended wheel lock mount bar may be needed.

**NOTE:** If a new rear frame is being installed, replace frame prior to the fender installation.

1. Install clamp onto the back cane as shown below.



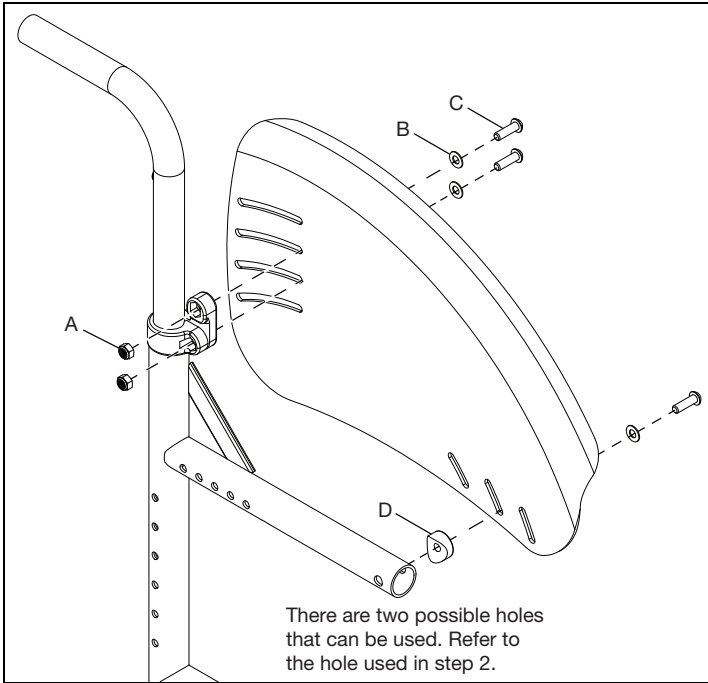
2. Remove bolt (A) from frame using a 4mm Allen wrench. Save bolt. Either hole shown in image below may be used depending on your configuration.



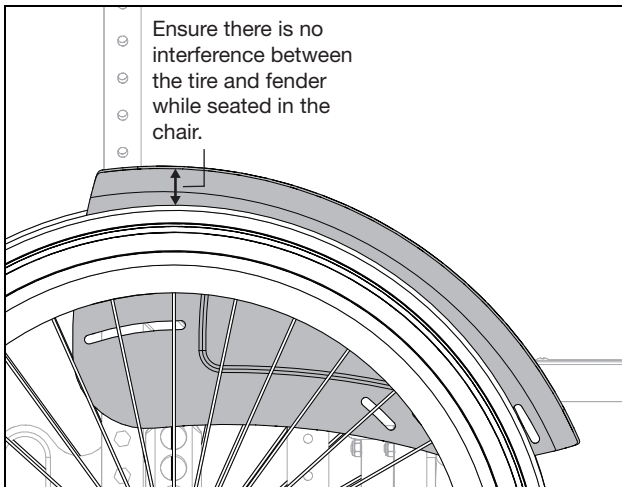
## Side Guards

3. Install fender with three bolts (C), three washers (B), two nuts (A) and a saddle (D) using a 4mm Allen wrench. While installing, position fender, adjust clamps as needed and use openings that give coverage to the wheel. Leave hardware loose.

**NOTE: The bolt, washer and saddle on the front side of the fender go into the hole that the bolt was removed from in step 2. The threaded barrel and bolt on the other side are still in the hole to allow the new bolt to thread into.**



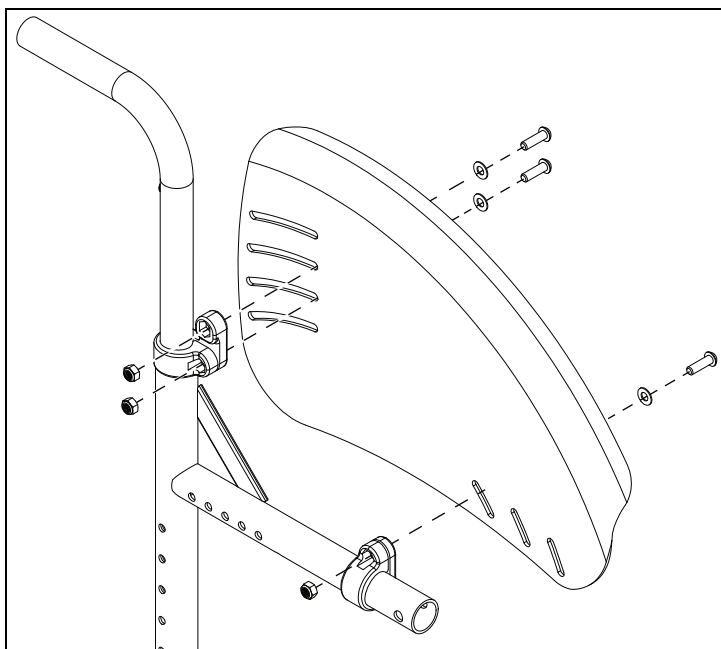
4. Ensure the fender follows the shape of the wheel and there is no interference between the tire and fender while seated in the chair. Tighten hardware to secure fender in correct configuration. Repeat on opposite side. If the correct configuration cannot be obtained, continue to Additional Adjustment Configurations.



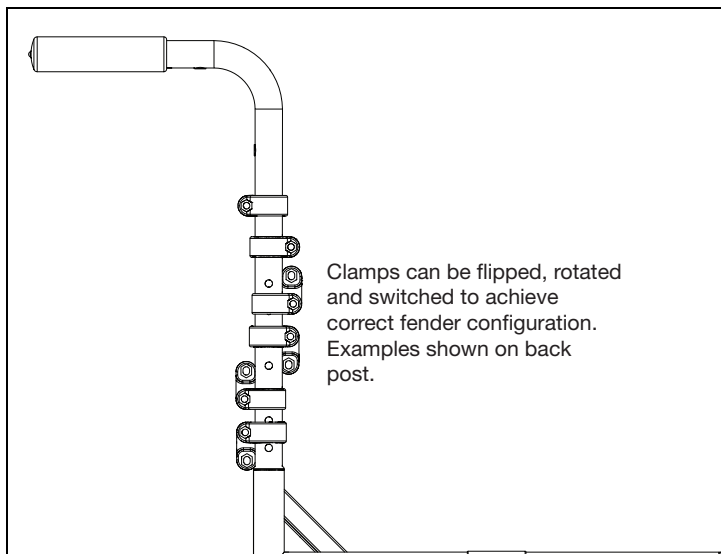
# Side Guards

## Additional Adjustment Configurations

1. For more adjustment options, another clamp can be used in place of the saddle. See image below for installation of the clamp and then follow same adjustment procedures found in steps 3 and 4.



2. The clamps can also be flipped and rotated for more adjustment options.



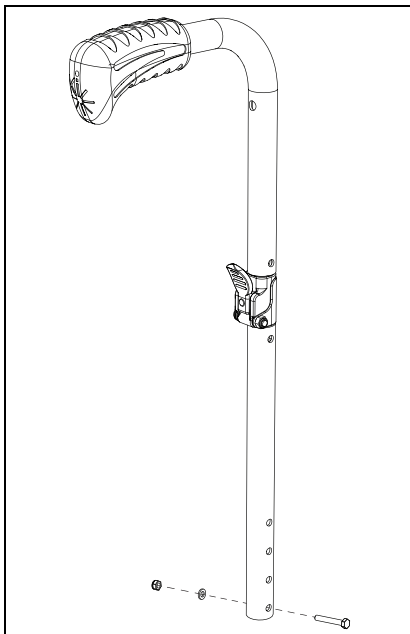
# Half-Folding Backrest

## Installing Whole Backrest

1. Remove current back canes and retain hardware.
2. Install tension adjustable back upholstery on the new back canes.
3. Install new rearward folding backrest canes with retained hardware from step 1. See image below.

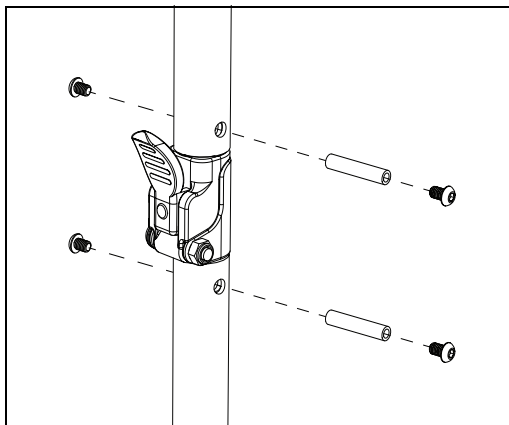
**NOTE: Install back canes at desired backrest height.**

**NOTE: If removal of grips from back canes is required for installing upholstery or after market seating, reference separate installation instruction that has been provided with the parts.**



## Replace Lever Assembly

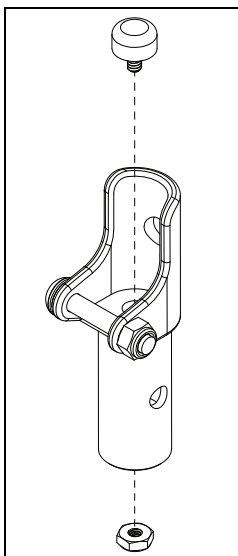
1. Remove existing lever assembly by removing two sets of hardware with two 4mm Allen wrenches. Retain hardware. See image below.
2. Remove upper section of backrest cane along with the lever assembly.
3. Install new lever assembly and upper section of backrest cane and secure with two sets of hardware saved from step 2 using two 4mm Allen wrenches. See image below.



# Half-Folding Backrest

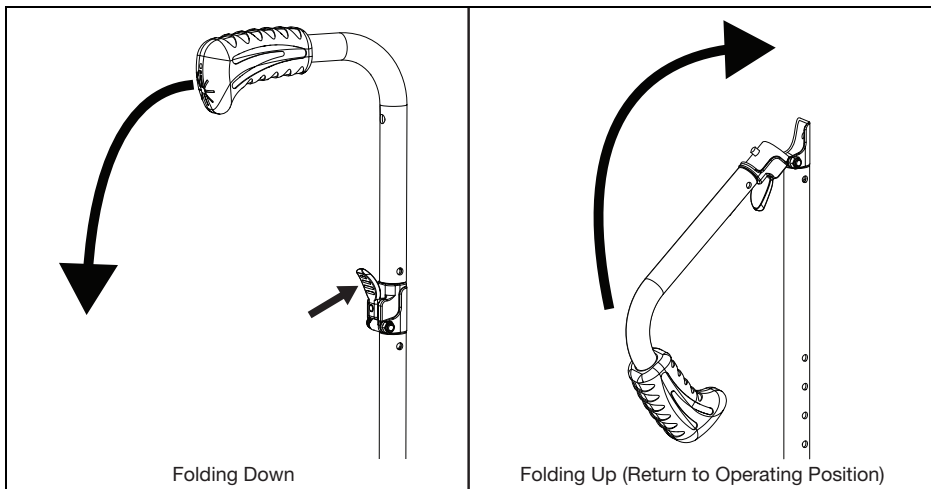
## Replace Lever Assembly Hardware

1. Remove existing lever assembly by removing two sets of hardware with two 4mm Allen wrenches. Retain hardware. See image on previous page in Replace Lever Assembly section.
2. Remove upper section of backrest cane along with the lever assembly.
3. Remove the 5/16" nut and threaded bumper. The nut and threaded bumper are removed easier with a magnetic nut driver or 5/16" socket wrench that can reach into the tube. Keep the lever closed while removing nut so the threaded bumper doesn't turn. See image below.
4. Install new threaded bumper and nut. Drop the threaded bumper into place and close the lever assembly. Use the magnetic driver to install the nut on the bottom side. See image below.
5. Reinstall lever assembly and upper section of backrest with the two sets of hardware saved from step 1 using two 4mm Allen wrenches.



## Use

1. To fold, push in lever and bring backrest canes back and down.
2. To return to operating position, lift the backrest canes up until they "click" and lock into position.



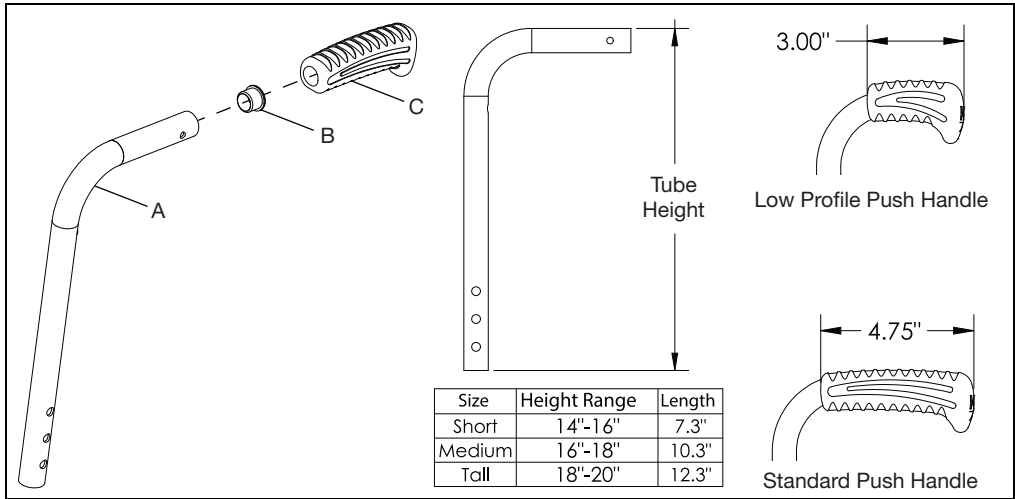


# Angle Adjustable Backrest

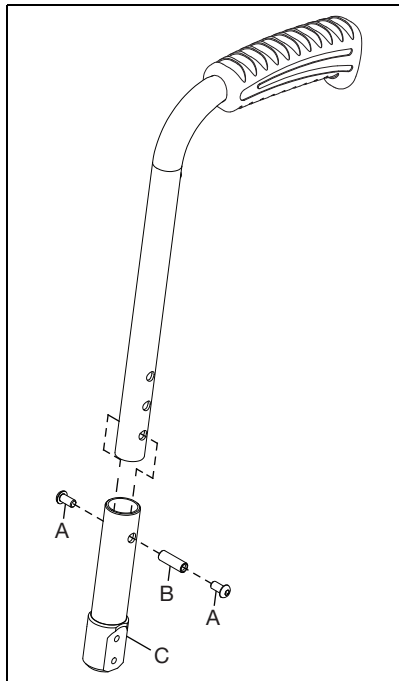
**NOTE:** The Catalyst E Angle Adjustable Backrest is different. The steps for that style are shown in this section after the first set of instructions.

1. Install push handle (C) and plug (B) onto backrest tube (A).

**NOTE:** There are three tube heights and two push handle sizes. See image and chart below for information on the different options.



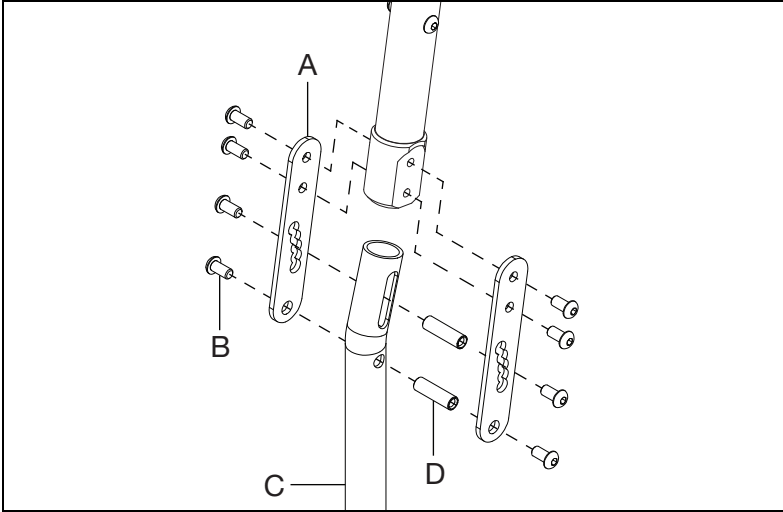
2. Install backrest housing (C) to backrest tube assembly with two screws (A) and a threaded barrel (B) using two 4mm Allen wrenches.



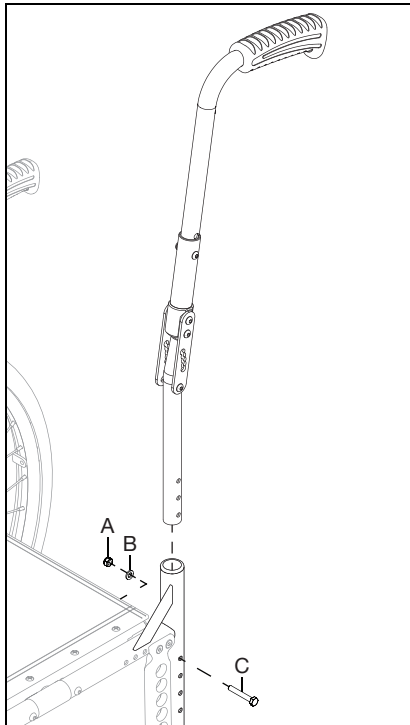
## Angle Adjustable Backrest

3. Connect the backrest tube assembly to the lower backrest tube (C) with the two mounting plates (A), eight screws (B) and two threaded barrels (D) using two 4mm Allen wrenches.

**NOTE: The angle of the backrest is determined by the hole chosen in the mounting plate. Choose the hole needed for desired configuration and secure with those two screws and threaded barrel. Ensure both sides are set in the same angle.**



4. Install angle adjustable backrest assembly onto chair with bolt (C), washer (B) and nut (A) using two 10mm wrenches. Use the hole that achieves the desired backrest height when installing. Repeat on opposite side.



# Angle Adjustable Backrest

## Catalyst E Style Angle Adjustable Backrest

See the image below on how to assemble the Catalyst E style angle adjustable backrest.

**NOTE: There are guides and a chart in the image below to help determine which holes to use for desired angle settings and proper orientation of the brackets.**

**NOTE: There is no height adjustment available unless you switch to a different upper tube (short - 16" and tall - 20"). If you are just removing the upper tube to switch size, only the upper two bolts need to be removed and reinstalled.**

Position	Angle	Angle Relative to Frame
1	0	90
2	3.33	93.33
3	6.67	96.67
4	10	100
5	13.33	103.33
6	16.67	106.67
7	20	110

Orient toward front of chair

Orient toward front of chair

Orient toward back of chair

Orient toward back of chair

Position 1      Position 2      Position 3      Position 4

Position 5      Position 6      Position 7

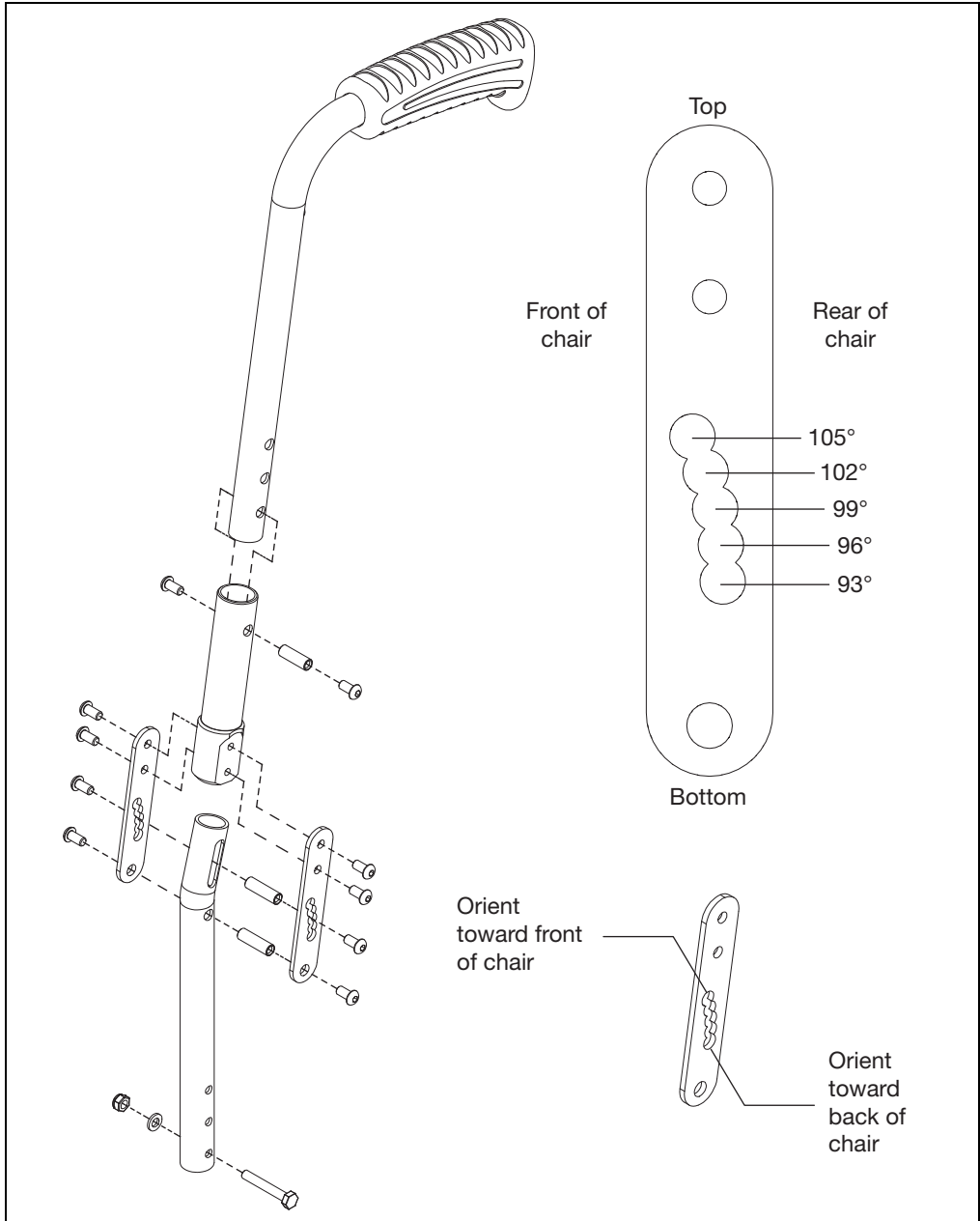
# Angle Adjustable Backrest

## Catalyst Style Angle Adjustable Backrest

See the image below on how to assemble the Catalyst style angle adjustable backrest.

**NOTE:** There is a chart in the image below to help determine which holes to use for desired angle settings and proper orientation of the brackets.

**NOTE:** There are three holes in the upper backrest tube for height adjustment. The range for a short tube is 14" - 16", medium 16" - 18" and tall 18" - 20".

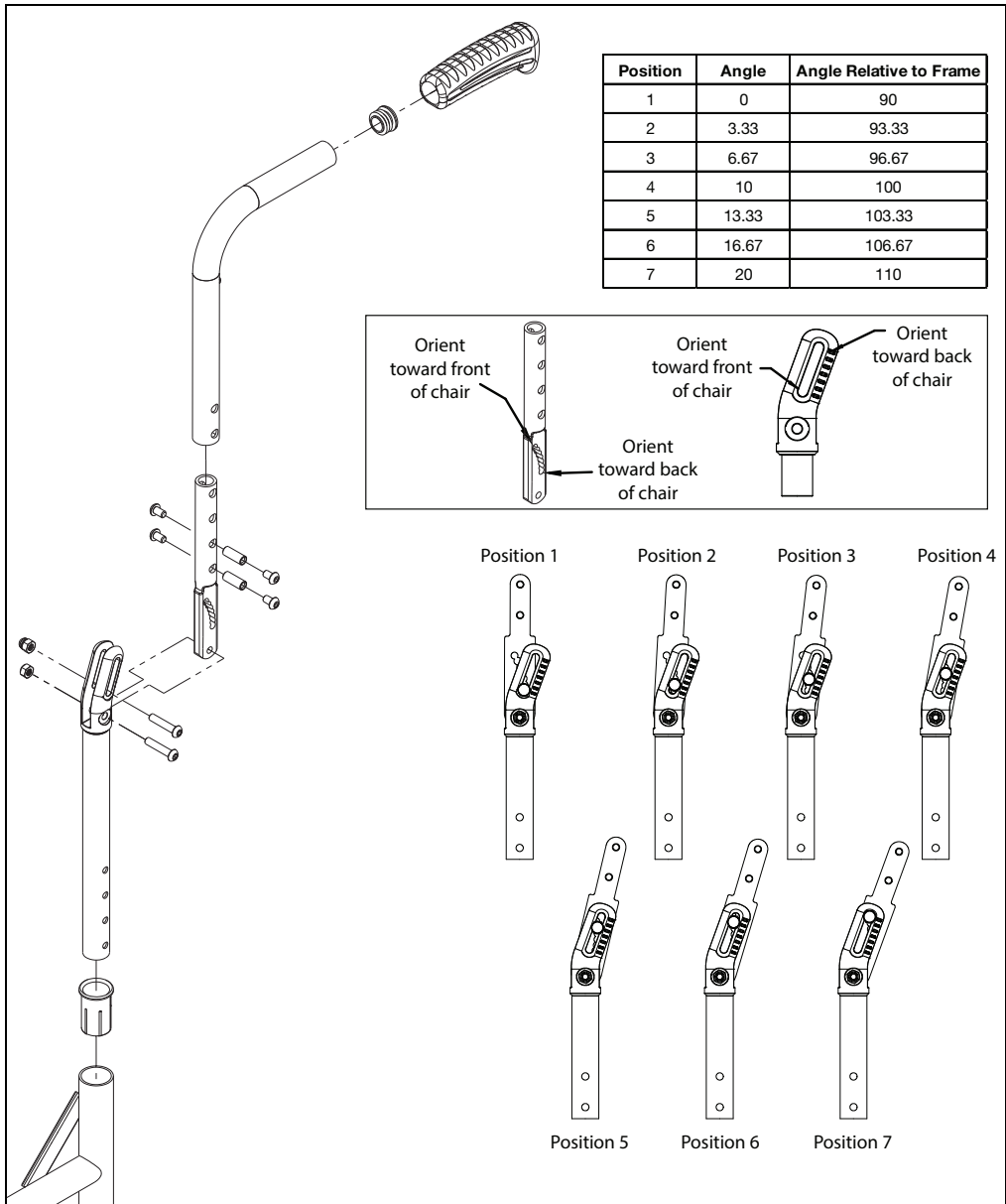


# Angle Adjustable Backrest

## NAV Angle Adjustable Back

See the image below on how to assemble the NAV Angle Adjustable Backrest. Two 5mm Allen wrenches and a 10mm wrench are needed for assembly and adjustment.

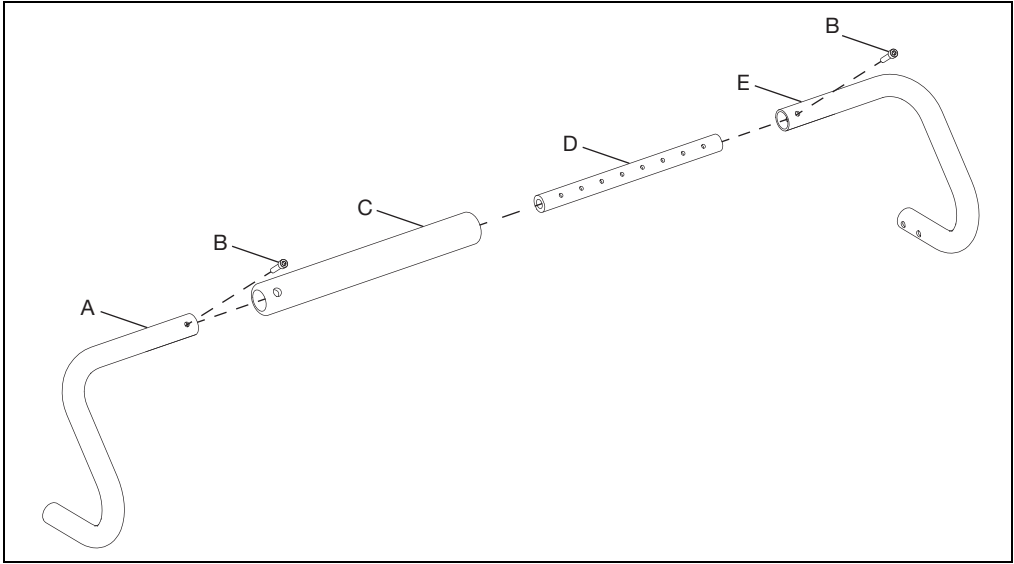
**NOTE:** There are guides and a chart in the image below to help determine which holes to use for desired angle settings and proper orientation of the brackets.



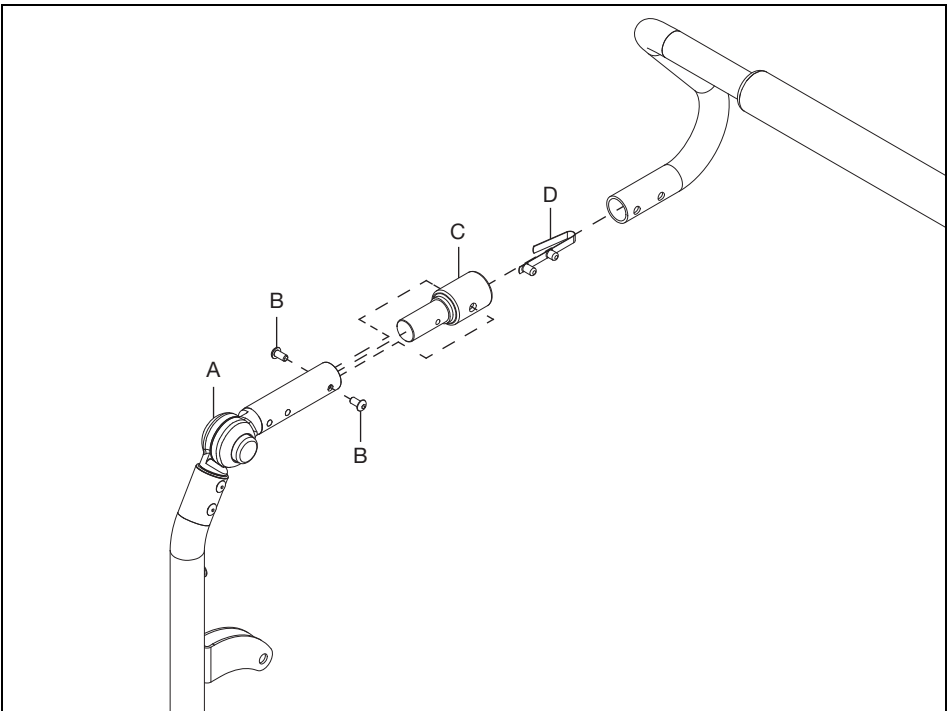
# Reclining Backrest - Available on Catalyst 5

**NOTE: Remove existing backrest with the backplates prior to beginning this procedure.**

1. Connect the left and right stroller handles (A & E) together with growth strut (D), foam (C) and two screws (B) using a 4mm Allen wrench.

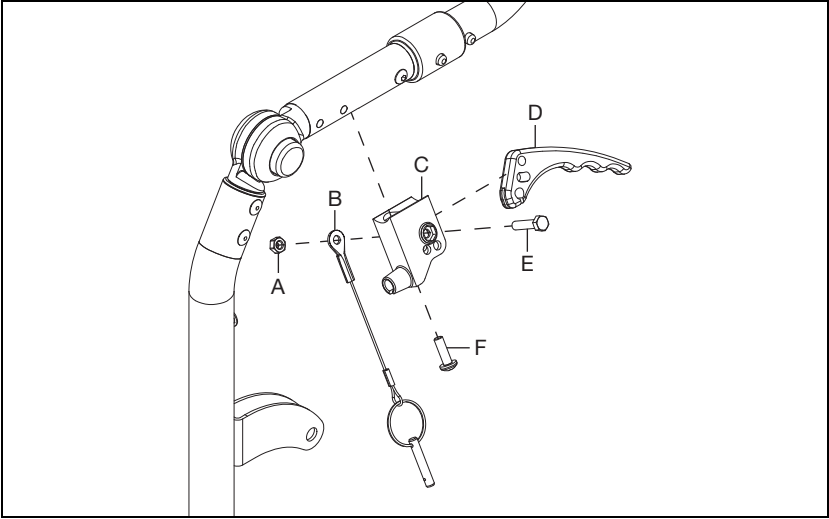


2. Install recline stroller handle adaptor (C) to stroller handle assembly with detent button (D). Ensure buttons "click" and lock into place. Install the end of the adaptor (C) into the recline back tube subassembly (A) and secure with two screws (B) using two 3mm Allen wrenches.

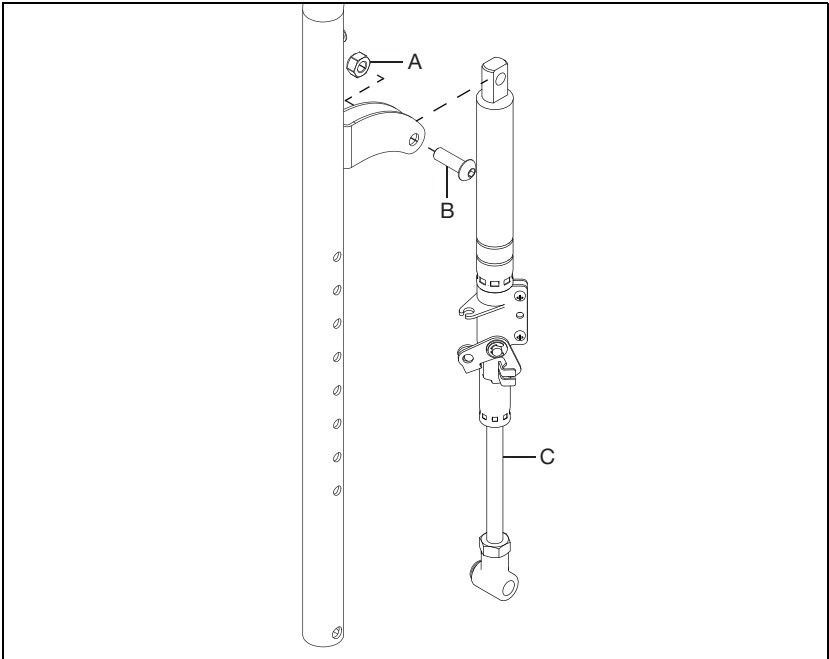


## Reclining Backrest - Available on Catalyst 5

3. Install trigger (D) into the trigger mount (C) and secure with bolt (E), pin with lanyard (B) and nut (A) using an 8mm wrench. Install trigger assembly onto back tube subassembly with screw (F) using a Phillips screwdriver.

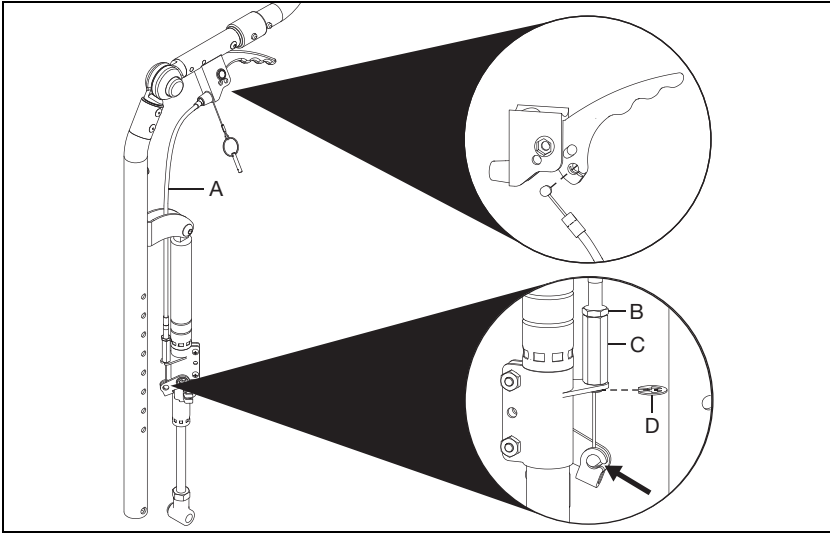


4. Install the gas spring (C) onto the tube assembly with bolt (B) and nut (A) using a 5mm Allen wrench and a 13mm wrench.

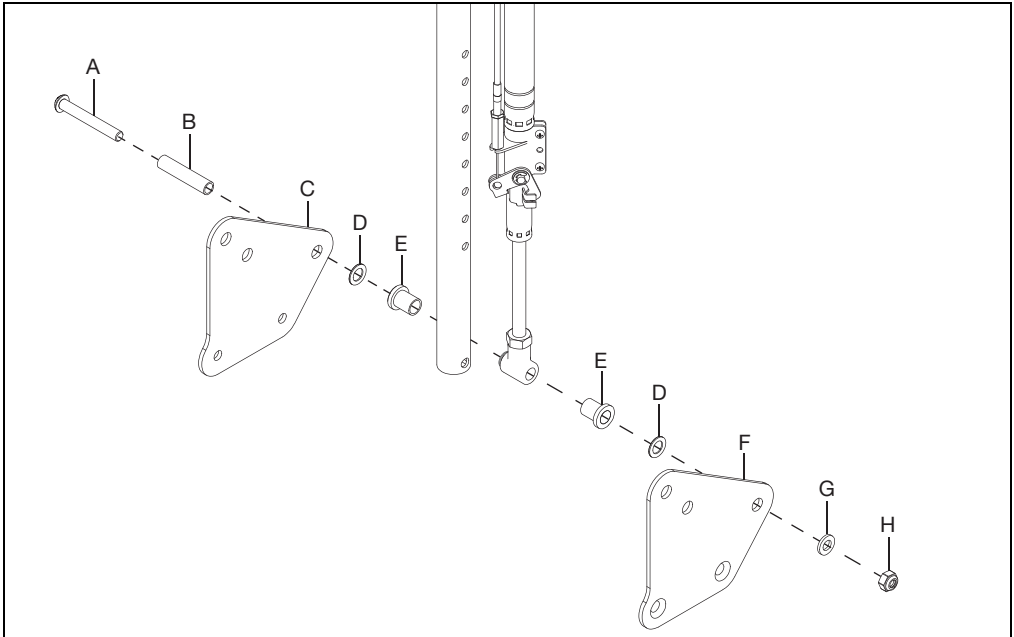


## Reclining Backrest - Available on Catalyst 5

5. Install cable (A) onto backrest. The barrel on the bottom of the cable gets routed into the barrel bracket so the cable adjuster (C) is on the top half of the adjustment bracket. Route the cable through the weldments and up to the trigger. Open the trigger and install barrel into opening so cable follows the slot out of the trigger and through the end of the trigger mount. Turn the cable adjuster to loosen or tighten as needed. Secure the cable adjuster by tightening the lock nut (B). Install the E-Ring (D) on the underside of the adjustment bracket.



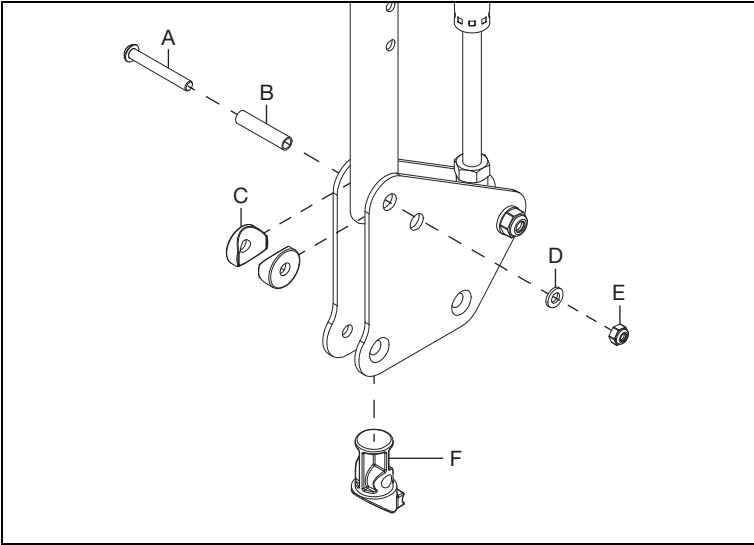
6. Attach the backrest assembly to the back plates (C & F) by installing bolt (A), stop pin (B), two bushing flanges (E), nylon washer (D), washer (G) and nut (H) using a 4mm Allen wrench and a 10mm wrench.





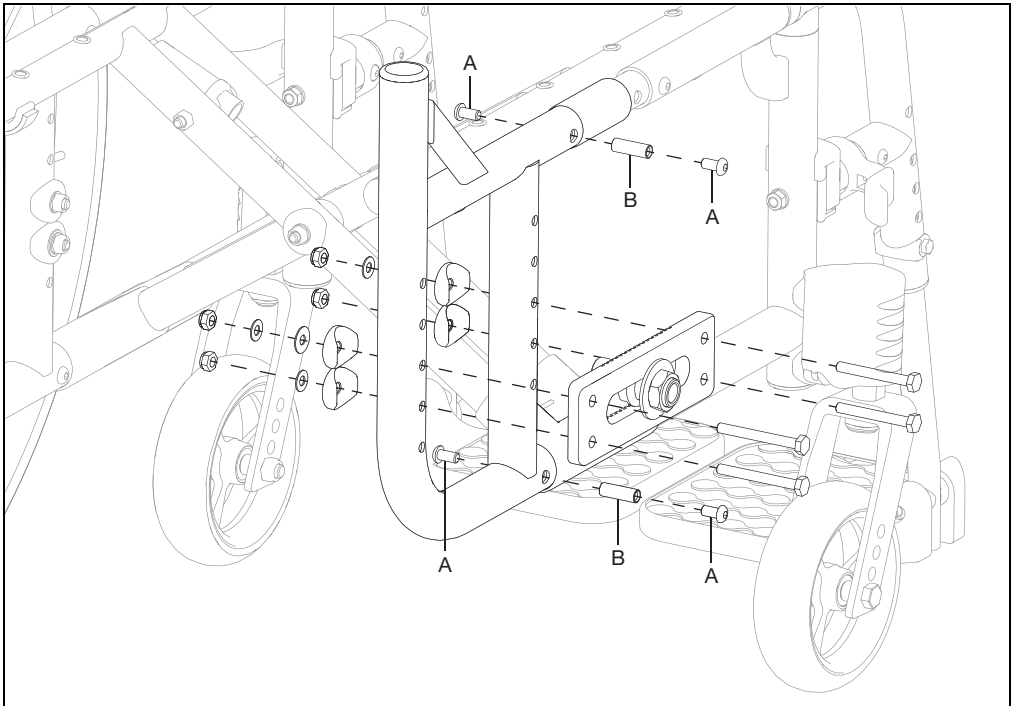
## Reclining Backrest - Available on Catalyst 5

7. Install back tube plug (F), bolt (A), stop pin (B), two saddles (C), washer (D) and nut (E) using a 4mm Allen wrench and a 10mm wrench.



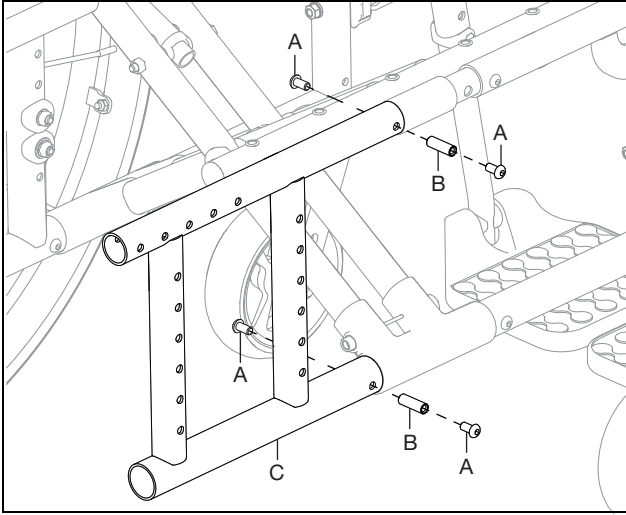
8. Remove axle plate assembly so it can be installed on the new rear frame. Remove the existing rear frame by removing four bolts (A) and two threaded barrels (B) using two 3mm Allen wrenches. Save hardware. Repeat on opposite side.

**NOTE:** There are different types of axle plates that may be on the chair. For specific removal instructions for each type, reference the Axle Plate section of this technical manual.



# Reclining Backrest - Available on Catalyst 5

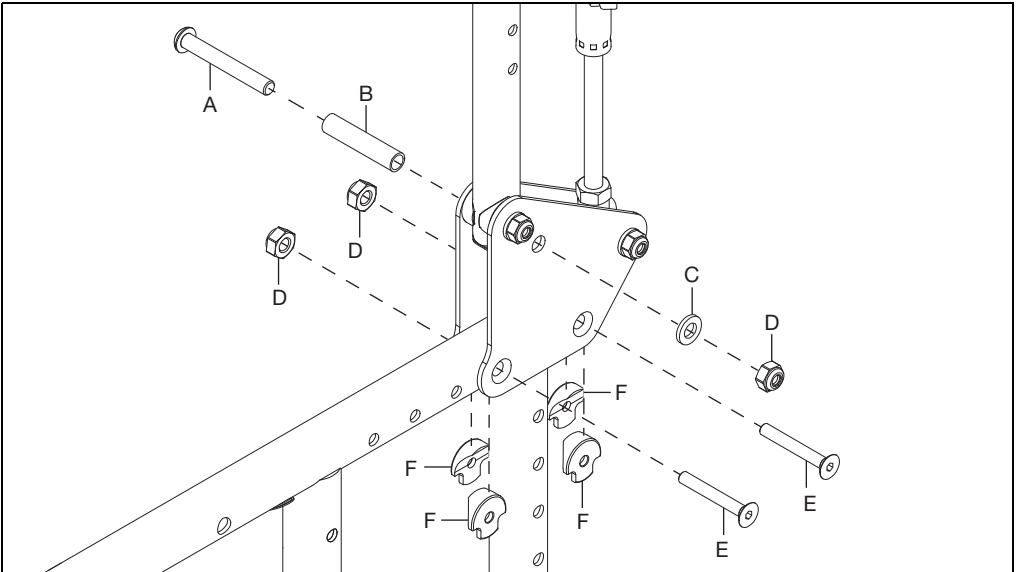
9. Install reclining backrest rear frame (C) onto chair with the retained four bolts (A) and two threaded barrels (B), retained from step 8, using two 3mm Allen wrenches. Repeat on opposite side.



10. Mount the reclining backrest assembly onto the rear frame and secure in place with two bolts (E), four saddles (F) and two nuts (D) using a 4mm Allen wrench and a 10mm wrench. Install bolt (A), threaded barrel (B), washer (C) and nut (D) using 4mm Allen wrench and a 10mm wrench. Repeat steps to install the opposite side.

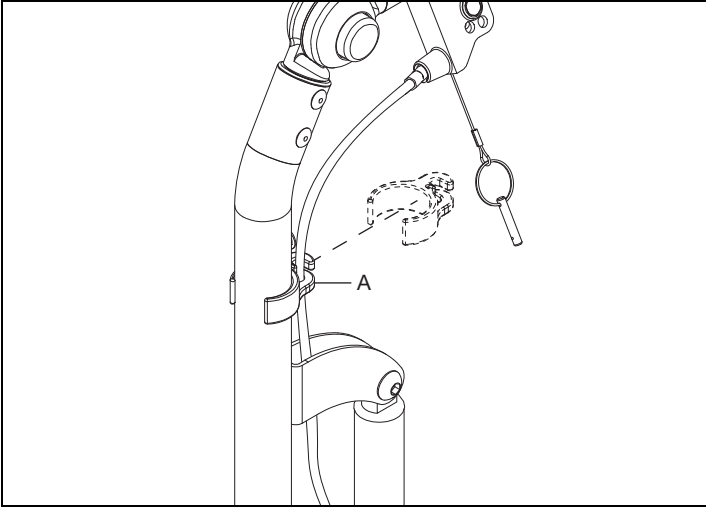
**NOTE: The seat depth is determined by the rear seat frame holes used to mount backrest assembly. Choose the holes that provide the determined configuration.**

**NOTE: When the second backrest assembly is installed, adjust the growth strut to the correct width for the chair if not already set in correct configuration.**

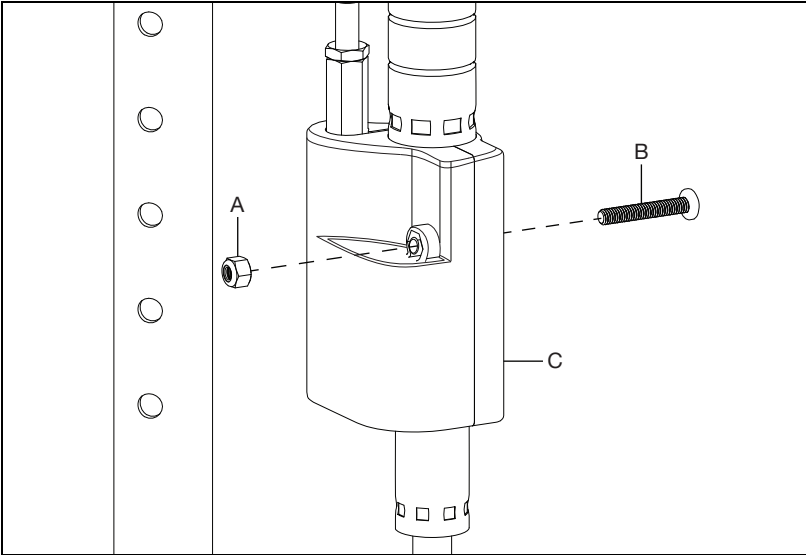


## Reclining Backrest - Available on Catalyst 5

11. Install cable clip onto back tube ensuring there are no kinks, sharp bends or twist in cable. Repeat on opposite side.



12. Test the reclining backrest. Ensure chair reclines fully and returns to upright position. Adjust the slack of the cables if needed. Once complete, install gas spring cover (C) on both gas springs with bolt (B) and nut (A) using a 2.5mm Allen wrench.

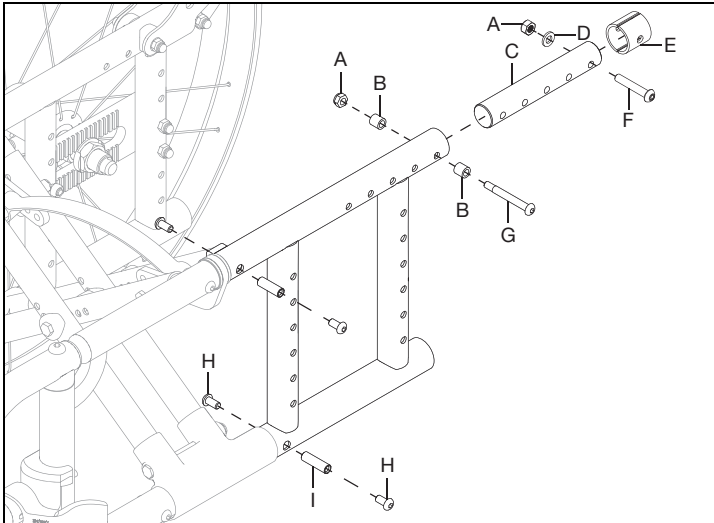


# Standard Depth Adj. Backrest

**NOTE:** If you already have a depth adjustable rear frame, skip ahead to step 2. If you do not have a depth adjustable rear frame, remove current backrest, wheel, axle plate and current rear frame. See the section for each removable item for hardware images if needed during removal process.

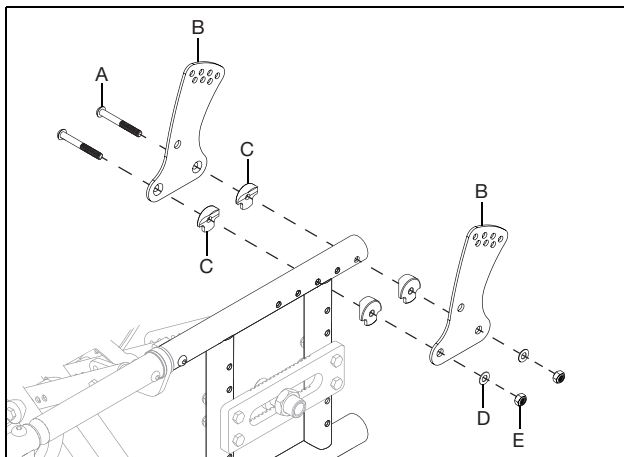
**NOTE:** Determine what the desired seat depth is prior to step 1. The back cane will be approximately centered on the back plates, so that can be used as a reference point. In most cases, the extension tube (C) will not be needed unless a growth adjustment is being made.

1. Install depth adjustable frame to chair frame and secure with two bolts (H) and a threaded barrel (I) using two 4mm Allen wrenches. The top set of hardware will also go through the cross brace clamp. If needed, install the depth adjustable extension tube (C) onto the upper back side of frame with bolt (G), two bushings (B) and nut (A) using a 5mm Allen wrench and a 10mm wrench. Install tube spacer in the last hole of the extension tube (C) with bolt (F), washer (D) and nut (A) using a 4mm Allen wrench and a 10mm wrench. Reinstall axle plate onto frame. Repeat on opposite side.



2. Install depth adjustable backrest plates (B) onto frame with two bolts (A), four saddles (C), two washers (D) and two nuts (E) using a 4mm Allen wrench and a 10mm wrench. Repeat on opposite side.

**NOTE:** For a chair with the standard seating cross braces option, the inner back plate will have countersunk holes which go against the inner seat frame.

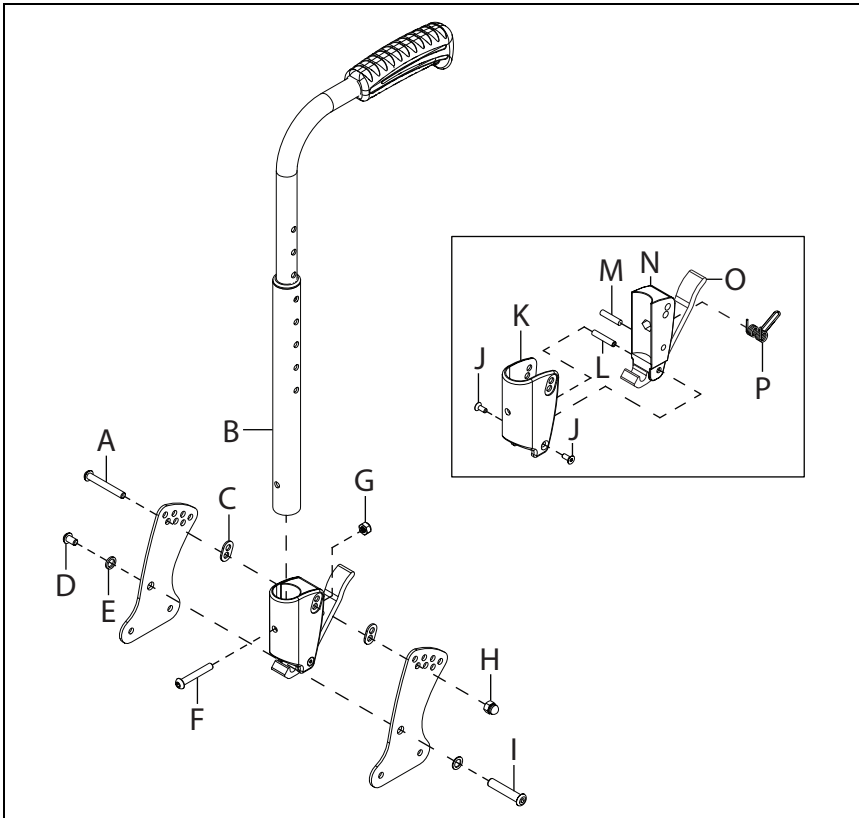


## Standard Depth Adj. Backrest

3. Assemble the latch block (N) to the backrest cover (K) with the latch lever (O) using two screws (J), spring (P) and two barrels (L & M) using two 2.5mm Allen wrenches.
4. Install the latch block assembly to the back plates with three screws (A, D & I), two dual washers (C), two washers (E) and a nut (H). The angle of the the back post is set by installing the top back plate screw (A) and nut (H) into the hols that gives desired angle configuration using a 5mm Allen wrench and a 10mm wrench.
5. Install the back post assembly (B) into the latch block assembly and secure with bolt (F) and nut (G).
6. Repeat steps on opposite side, ensuring the backrest angle is set in the same configuration.

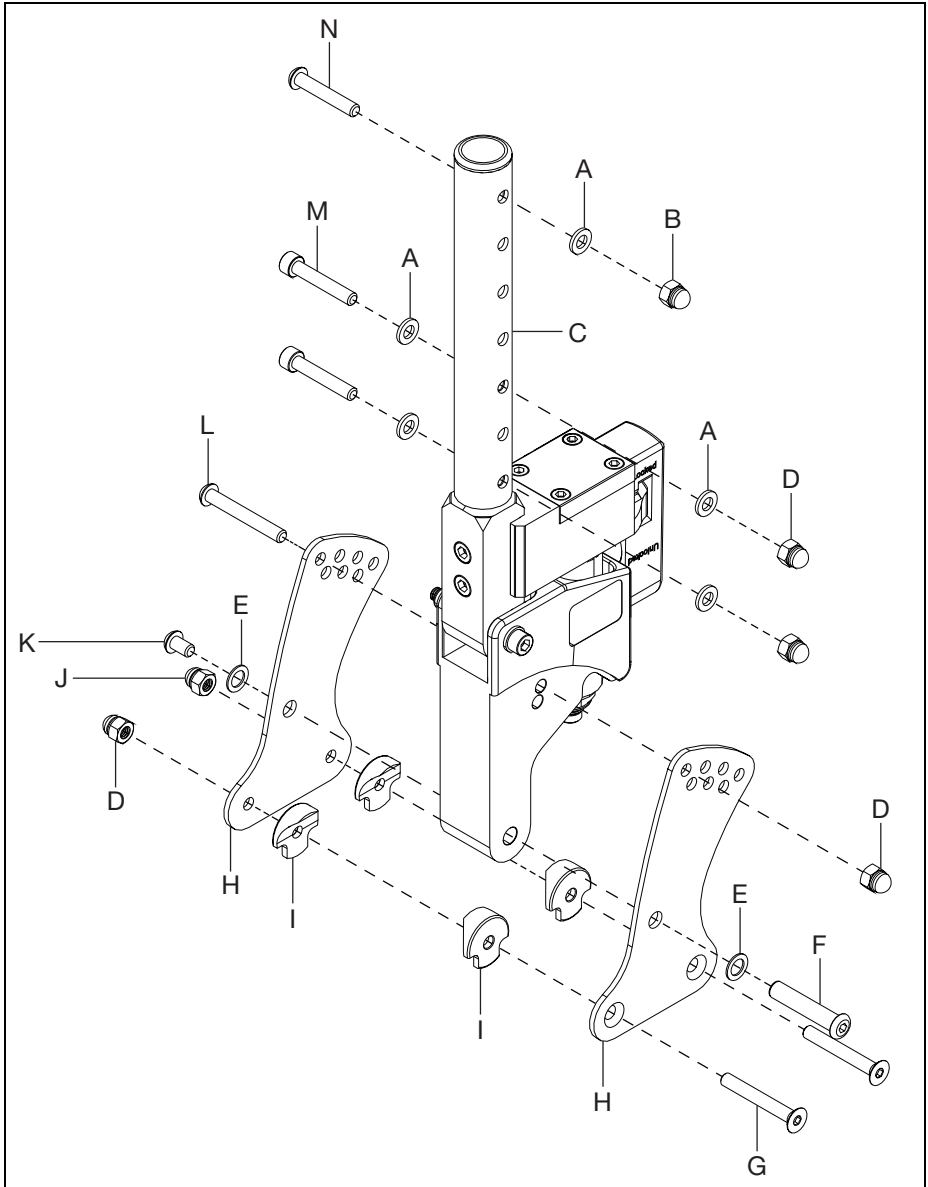
**NOTE: The stroller handle back posts are available in short (20") and tall (24"). The height adjustable straight with push handle back posts are available in short (13"-17"), medium (16"-20") and tall (20"-24").**

**NOTE: The back plates are shown separated and off the chair to more clearly show the details of the rest of the assembly in these steps.**



# Dynamic Back

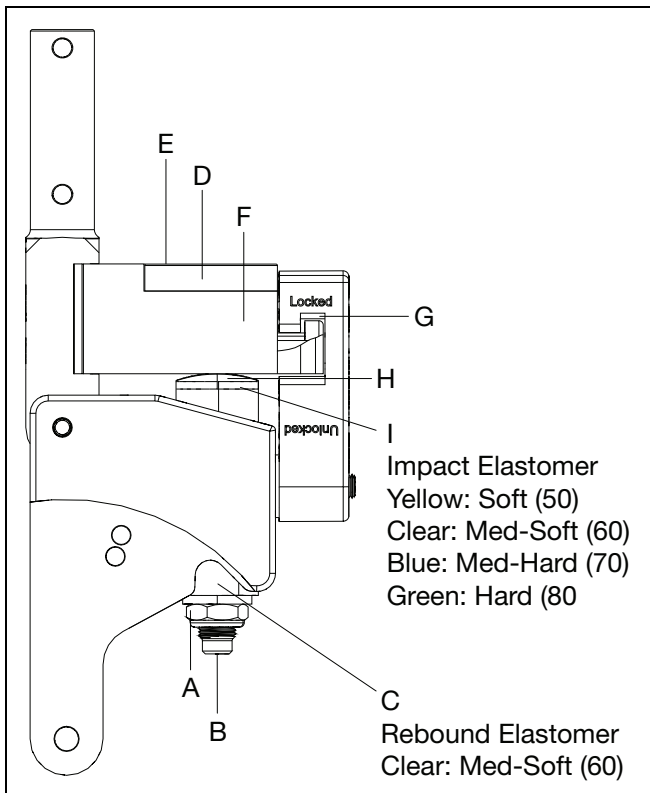
1. Install the back plates (H) onto the dynamic back using three bolts (F, K & L), two washers (E) and one nut (D) using a 5mm Allen wrench and a 10mm wrench.
2. Install the back plates onto the frame using two bolts (G), four saddles (I) and two nuts (D) using a 5mm Allen wrench and a 10mm wrench. The depth of the backrest is determined when determining the holes that will be used to install the dynamic back assembly to the frame.
3. Install the dynamic back tube (C) onto the top of the dynamic back assembly with two bolts (M), four washers (A) and two nuts (D) using a 5mm Allen wrench and a 10mm wrench.
4. The backrest is attached onto the top of the rocker back tube with a sleeve (N) and then secure with bolt (N), washer (A) and nut (B) using a 5mm Allen wrench and a 10mm wrench.
5. Repeat on opposite side.



# Dynamic Back

## Elastomer Replacement

1. Remove the lock nut (A) from the actuator rod (B). The rebound elastomer (C) may fall out of the pocket.
2. Remove the cover plate (D) by removing the four M5x12 socket head screws (E) securing the cover plate of the actuator arm (F). After removing the cover plate, remove the actuator rod from the actuator arm. Open the latch (G) by rotating the arm downward. The back is now free to fold forward, exposing the impact cap (H) and impact elastomer (I).
3. Remove the impact elastomer, remove the impact cap from the top of the impact elastomer and place the impact cap onto the new impact elastomer.
4. Place the new impact elastomer into the pocket, return the back to an upright position, place the actuator rod through the actuator arm, impact elastomer and housing. Place the rebound elastomer into its pocket and over the actuator rod. Replace the flat washer and lock nut onto the actuator rod. Return the latch to the closed and latched position. Tighten the lock nut until it compresses the rebound elastomer, pulling the actuator arm downward so that: (1) the latch operates freely and clicks into the indent, and, (2) the space between the housing, the actuator arm, and the latch plate to the rear of the actuator arm, is uniform top to bottom.
5. Reinstall the cover onto the actuator arm with the four screws. Tighten the screws and check to make sure the latch operates freely. If it does not, adjust the lock nuts as required, when properly adjusted you should be able to see a small and uniform amount of daylight between the interlocking surfaces of the latch and both the housing and actuator arm.

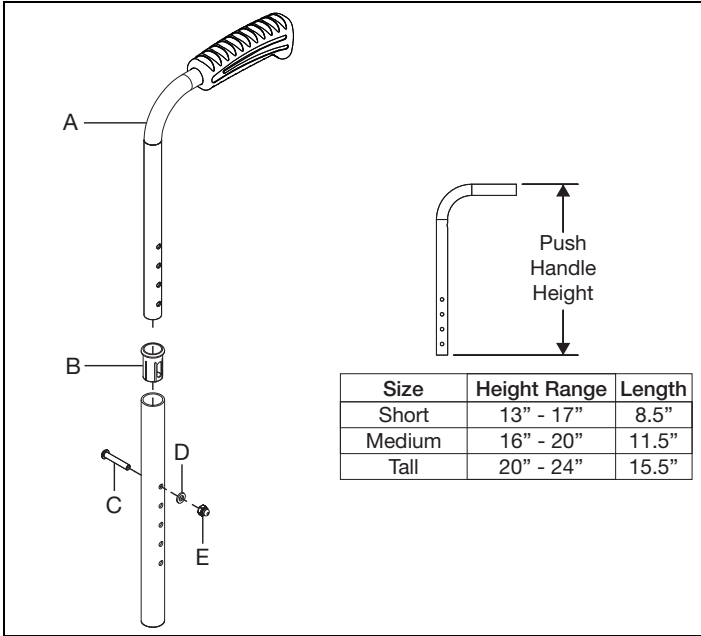


# Height Adj. Depth Adj. Backrest

**NOTE: Remove existing backrest with the backplates prior to beginning this procedure.**

1. Install upper depth adjustable height adjustable back to the lower depth adjustable back tube with sleeve, bolt, washer and nut using a 4mm Allen wrench and a 10mm wrench. The back height is determined by the holes that are chosen during installation. Repeat installation with second set.

**NOTE: In addition to the different back posts and push handles that are available, there are also two push handle grips that are available in low profile (3" long) and standard (4.75" long).**



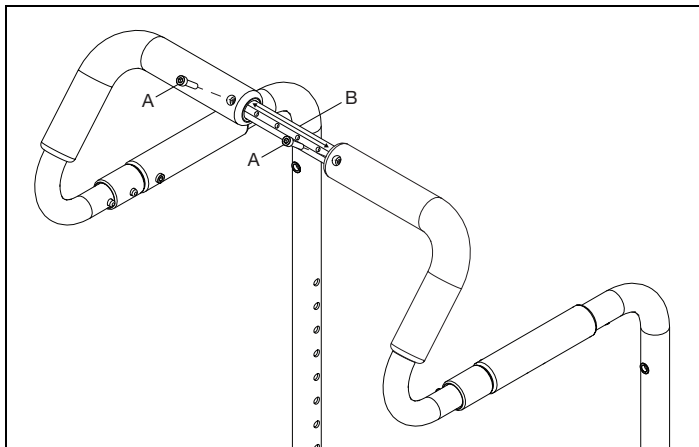
2. See the Standard Depth Adjustable Backrest section for instructions on how to install the rest of the Height Adjustable Depth Adjustable Backrest.



# Removable Stroller Handle Extension

**NOTE:** When the width of a chair is changed, the removable stroller handle extension (B) can be adjusted to work with the new width. In addition to adjusting the extension, there are two extension sizes available - 8.8" (used on chair widths 14" - 17") and 10.8" (used on chair widths 18" - 22").

1. Remove the two screws (A) that secure the removable stroller handle extension using a 4mm Allen wrench.
2. Adjust the extension to the desired width and reinstall the two screws in the new aligned holes to secure.

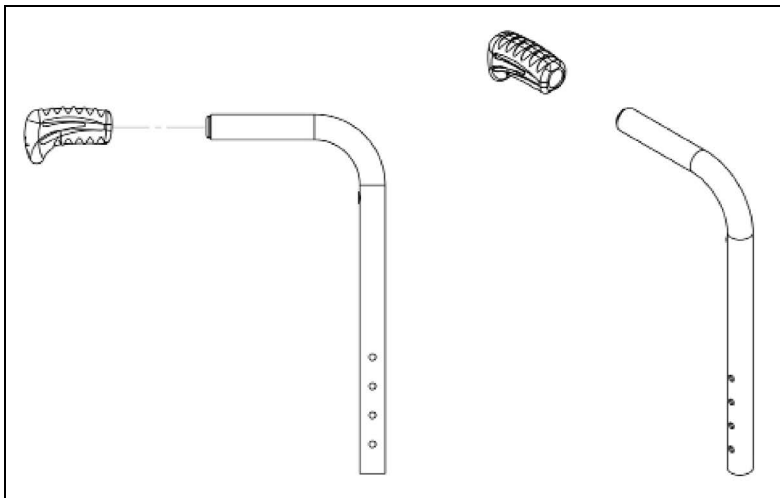


## Ergo Grip Assembly

### 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 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.



# Universal Axle Plate

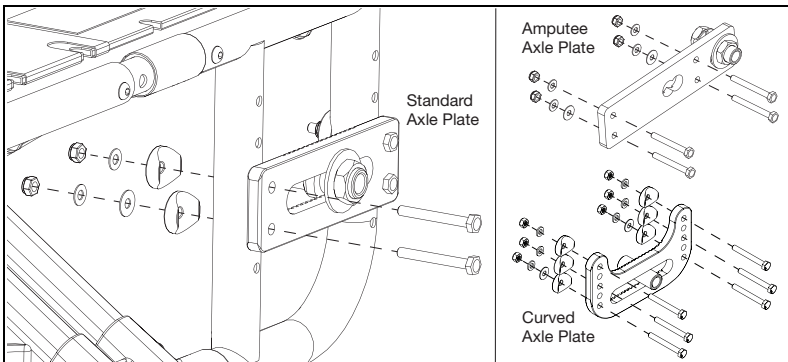
## Removing Current Axle Plate

**NOTE:** Before removing the current axle plate, note which holes the current axle plate use and the current location of the axle receiver as these will be where the new axle is located and determines where the rear seat height position. If making an adjustment to rear seat height, reposition the axle plate on the frame to position the location of the axle receiver at the desired height. Rear seat heights are achievable in 1/2" increments by using both the "four screw" and "six screw" configurations as shown below.

**NOTE:** For HD configurations, reference the HD section of this technical manual.

1. Remove wheel.
2. Using two 10mm wrenches, remove the four sets of hardware securing the axle plate to the chair frame. Standard, curved and amputee axle plates have different sets of hardware (shown in image below), but all three use two 10mm wrenches to remove the hardware.

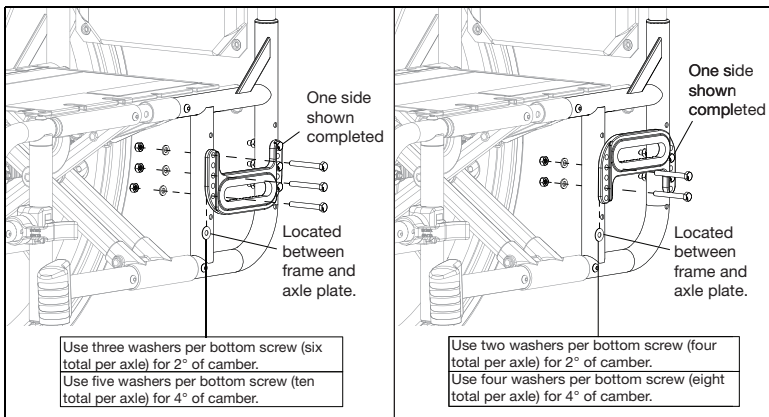
**NOTE:** Two sets of hardware are shown in the image below to show the parts involved. All four sets are removed in this step.



## Installing Catalyst 5 Universal Axle Plate

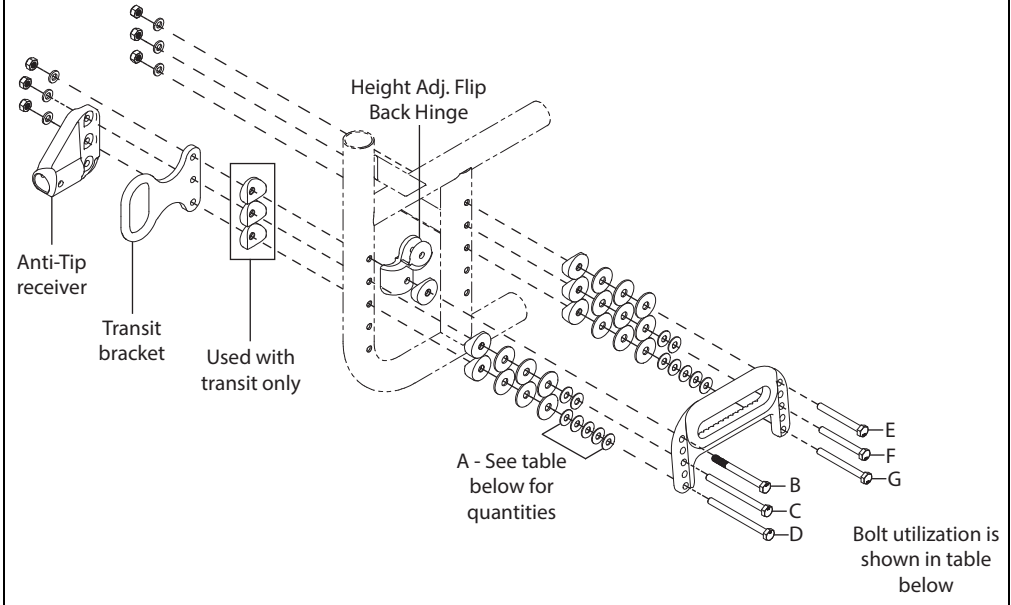
1. Install the new axle plate in the same location as the previous axle plate using a 10mm wrench (The recessed edge on the axle plate holds the bolt head, so only one wrench is used to tighten on the nuts.) Depending on the number of holes that line up between rear frame and axle plate you will use either four bolts or six bolts to reattach. There is a separate image showing configuration and hardware utilization for an axle plate with height adjustable flip back T-Arm in axle plate position 2 on the next page.

**NOTE:** With this axle plate, camber is achieved with the lowest located washers that are between the axle plate and the frame. See image below for the number of washers that corresponds with the different camber angles that can be achieved.



# Universal Axle Plate

## HA Flip Back Armrest in Axle Plate Position 2



### Camber Washer Quantity

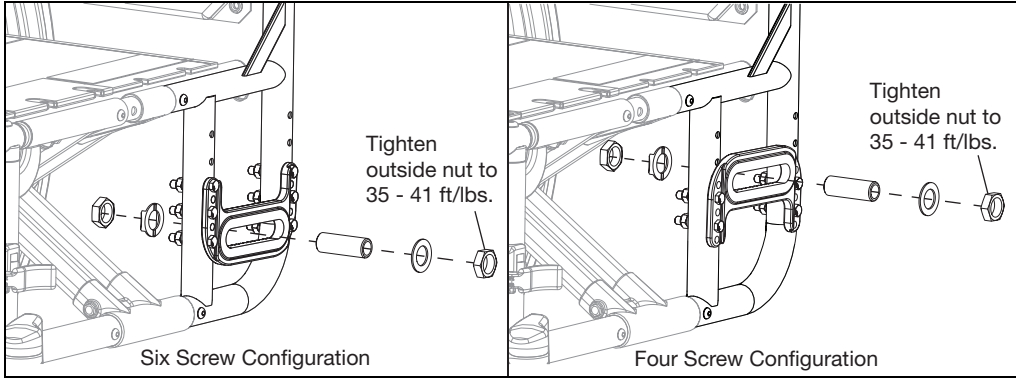
	2 Degree Camber	4 Degree Camber
Top Bolt	0	0
Middle Bolt	1	2
Bottom Bolt	3	5

### Bolt Utilization (Right Side Shown, Left Side is Opposite)

Camber	Transit or Anti-Tips		Transit & Anti-Tips		No Transit or Anti-Tips	
0	B (100679)	E (100676)	B (100679)	E (100676)	B (100676)	E (100676)
	C (100679)	F (100676)	C (100680)	F (100676)	C (100676)	F (100676)
	D (100679)	G (100676)	D (100680)	G (100676)	D (100676)	G (100676)
2	B (100679)	E (100676)	B (100679)	E (100676)	B (100676)	E (100676)
	C (100679)	F (100676)	C (100544)	F (100676)	C (100676)	F (100676)
	D (100680)	G (100677)	D (100544)	G (100677)	D (100677)	G (100677)
4	B (100679)	E (100676)	B (100679)	E (100676)	B (100676)	E (100676)
	C (100679)	F (100676)	C (100544)	F (100676)	C (100676)	F (100676)
	D (100680)	G (100677)	D (100544)	G (100677)	D (100677)	G (100677)

## Universal Axle Plate

2. Install axle receiver in the same location as the previous axle receiver with two axle receiver nuts, an axle plate flat washers and an axle plate index washer using two adjustable wrenches. Tighten outside nut to 35 - 41 ft/lbs. See image below.



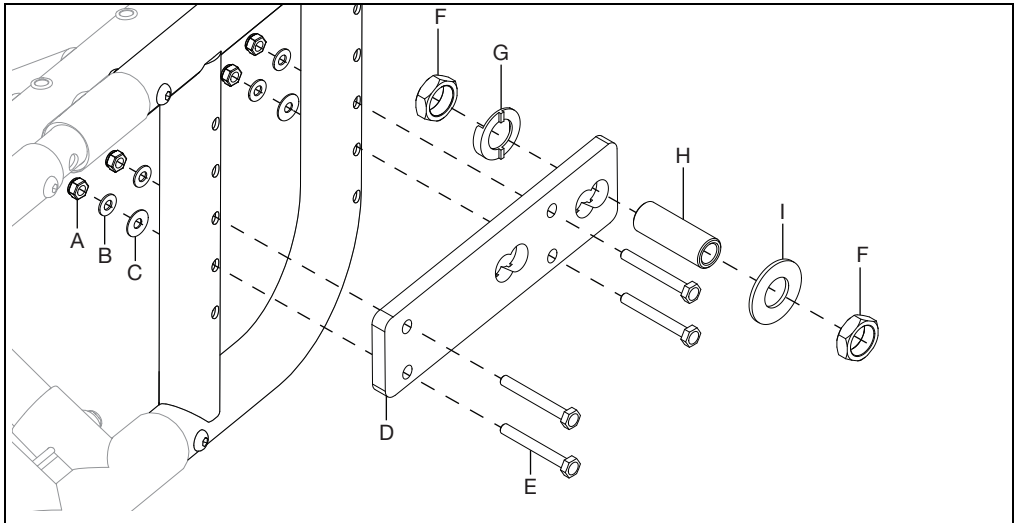
3. Reinstall wheels.

## Amputee Axle Plate - Available on Catalyst 5

1. The amputee axle plate (D) is installed with four bolts (E), four washers (B), two thin washers (C) and four nuts (A) using two 10mm wrenches. The thin washers (C) also control the camber. Use two per screw to achieve 2° of camber and use three per screw to achieve 4° of camber.

**NOTE: The rear two bolts come in different sizes depending on the current configurations. Use the 50mm long bolt when attaching only the axle plate. Use the 60mm long bolt when attaching the axle plate and anti-tip receiver or transit bracket. Use the 65mm long bolt when attaching an axle plate, anti-tip receiver and transit bracket.**

2. Install the two receiver nuts (F), axle plate flat washer (I), axle receiver (H) and axle plate index washer (G) using an adjustable wrench in the desired location for the rear wheels. Repeat steps 1 and 2 on opposite side.



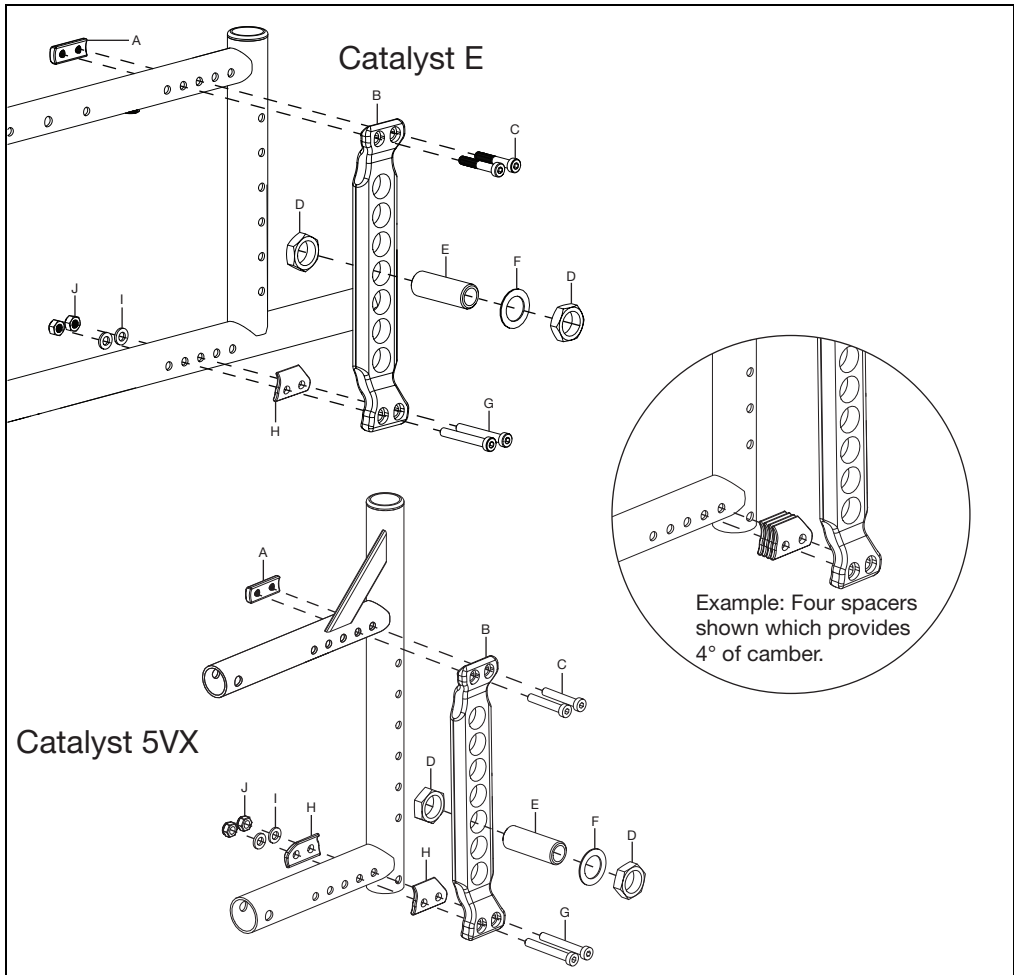
# Vertical Axle Plate

**NOTE:** Before removing the current axle plate, note which holes the current axle plate use and the current location of the axle receiver as these will be where the new axle is located and determines where the rear seat height position. If making an adjustment to rear seat height, reposition the axle plate on the frame to position the location of the axle receiver at the desired height. Rear seat heights are achievable in  $\frac{1}{2}$ " increments by using both the "four screw" and "six screw" configurations as shown below.

1. Install the vertical axle plate (B) onto the outside of chair frame with four bolts (C & G), threaded axle nut plate (A), two spacers (H), two washers (I) and two nuts (J) using a 5mm Allen wrench and a 10mm wrench. There are different holes that can be used to install the vertical axle plate. Choose the holes that provide the desired rear wheel placement.

**NOTE:** The camber is controlled by the spacer (H) that is between the frame and axle plate. Add one spacer for every one degree of camber that is desired. Do not add more than four spacers to a bolt. Ensure the correct bolt lengths are used when adding camber. The 45mm long bolt is used with  $0^\circ$  camber. The 50mm long bolt is used with  $1^\circ$  or  $2^\circ$  camber. The 60mm long bolt is used with  $3^\circ$  or  $4^\circ$  camber. Ensure camber is set the same on both sides of chair.

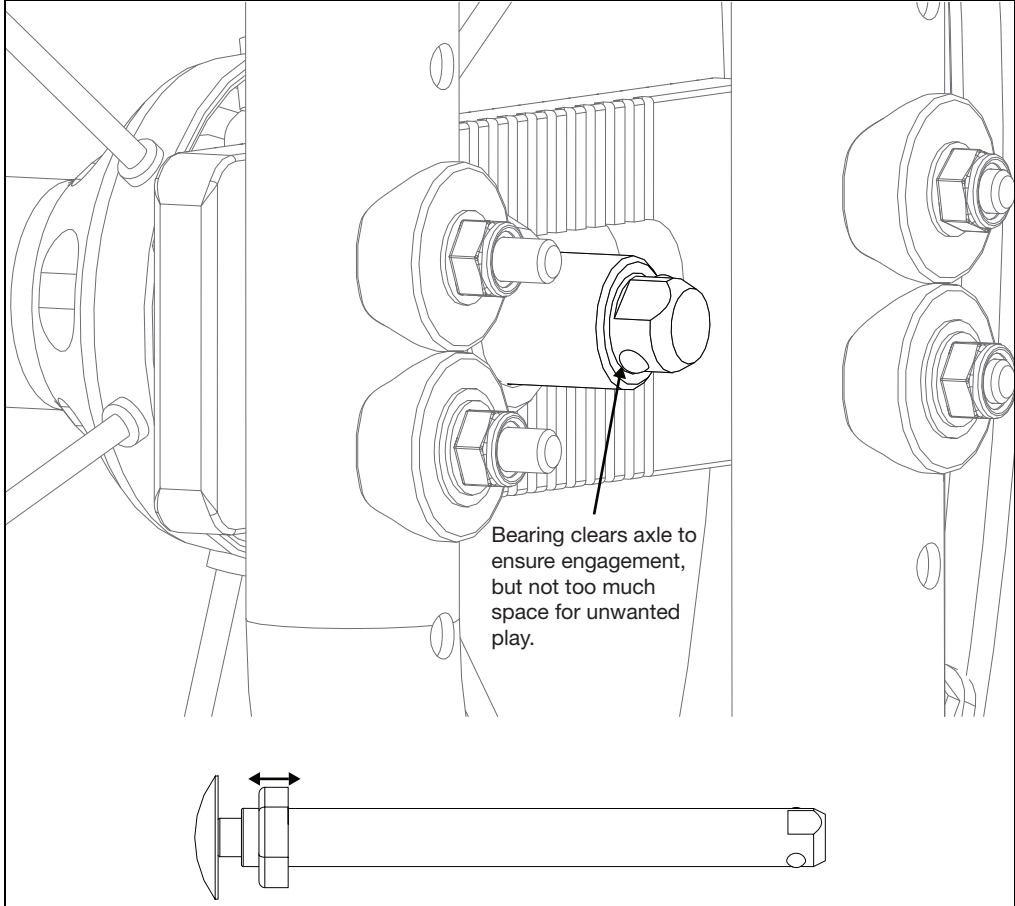
2. Install the two axle receiver nuts (D), axle plate washer (F) and axle plate receiver (E) using an adjustable wrench. Install the axle receiver in the hole that provides the desired rear seat height. Repeat steps 1 and 2 on opposite side. Ensure both sides are set in the same configuration.



## Quick Release Axle Adjustment

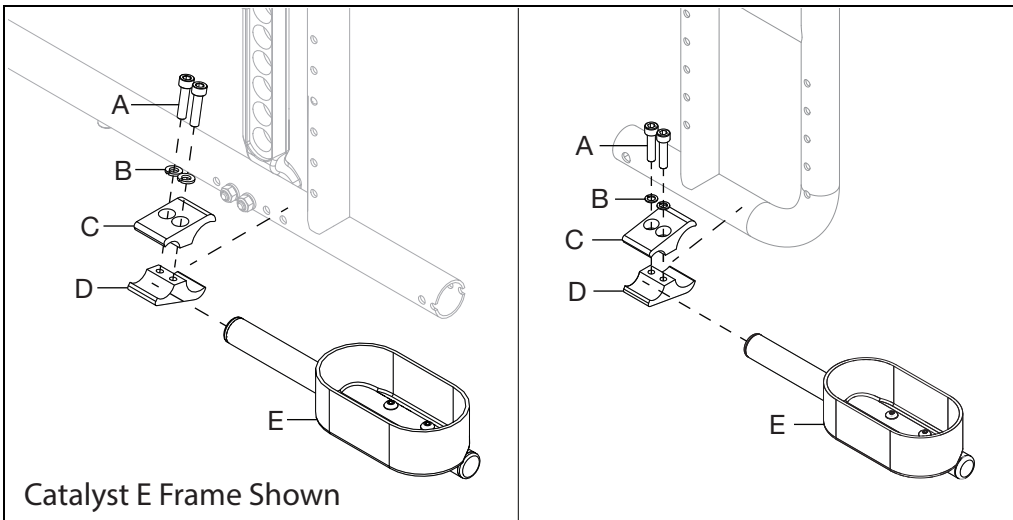
If the quick release axle bearing is set too long, there may be play in the wheel. If the quick release axle bearing is set too short, the bearing won't release and secure the wheel to the chair.

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.

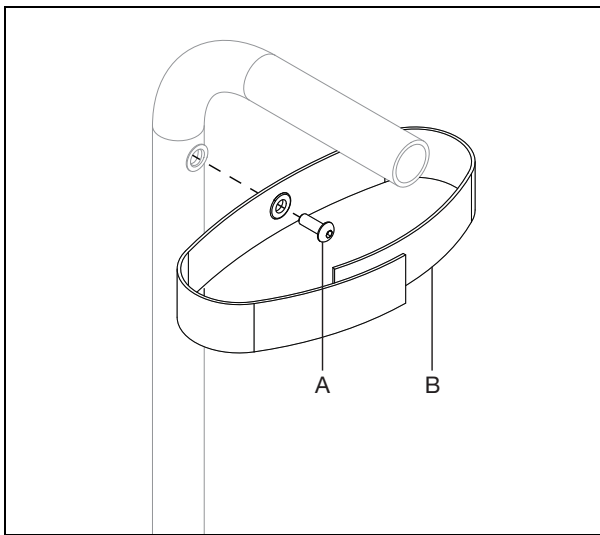


# Cane and Crutch Holder

1. Install crutch holder cup (E) onto the inside of rear chair frame by securing two clamps (C & D) with two bolts (A) and two lock washers (B) using a 5mm Allen wrench.

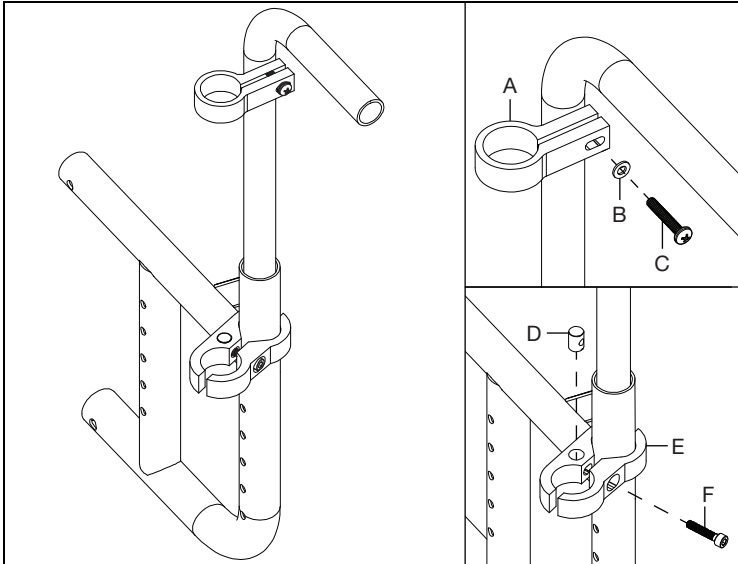


2. Install velcro strap (B) at top of back cane with bolt (A) using a 3mm Allen wrench.

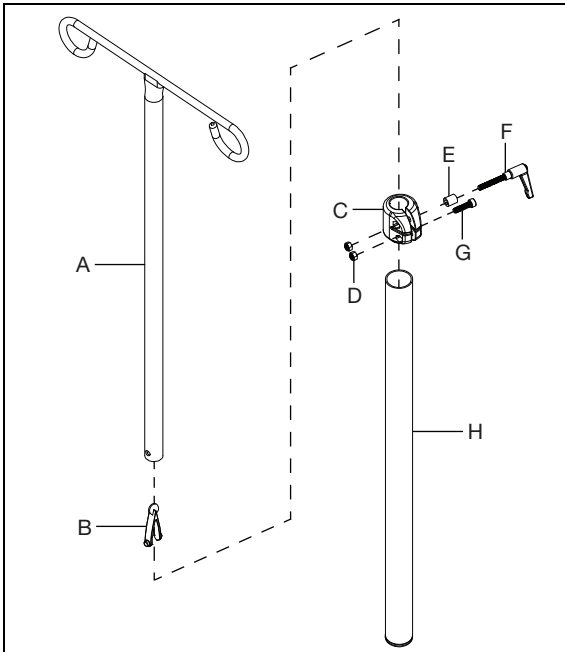


# IV Holder

1. Install the two IV holder clamps on the back cane. The lower clamp (E) is installed with bolt (F) and barrel nut (D) using a 5mm Allen wrench. The upper clamp (A) is installed with screw (C) and lock washer (B) using a Phillips screw driver.



2. Install snap button (B) into the bottom of the IV pole upper (A). Install clamp (C) onto the IV pole outer (H) with handle (F), spacer (E) and nut (D). The clamp also has a bolt (G) and nut (D) installed on the lower half using a 4mm Allen wrench. Install the IV pole upper into the IV pole outer and adjust to desired height. Secure in place by tightening the handle. The IV pole assembly can now be installed into the two clamps on the seat frame from step 1.





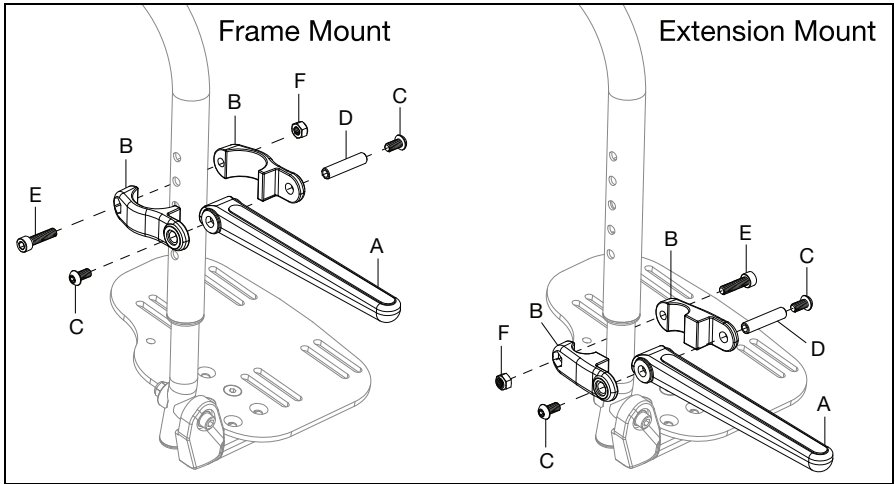
# Luggage Carrier

**NOTE:** There are different sizes of clamps to fit all types of chairs and configurations. The carrier is mounted to the frame or footrest tube on rigid chairs and mounted on the footrest hangers or extension tubes on Catalysts and tilt chairs. If hangers have been omitted the carrier is mounted to the vertical front frame tube. The image below shows a luggage carrier being installed on a chair with a footrest extension. The installation is the same whether it is being installed on the frame or footrest tubes.

1. Install luggage carrier fork (A) and clamp (B) by installing two screws (C) and barrel nut (D) through the clamp and fork using two 4mm Allen wrenches.
2. Secure the clamp in the desired location by installing and tightening the screw (E) and nut (F) on the backside of the clamp using a 5mm Allen wrench.

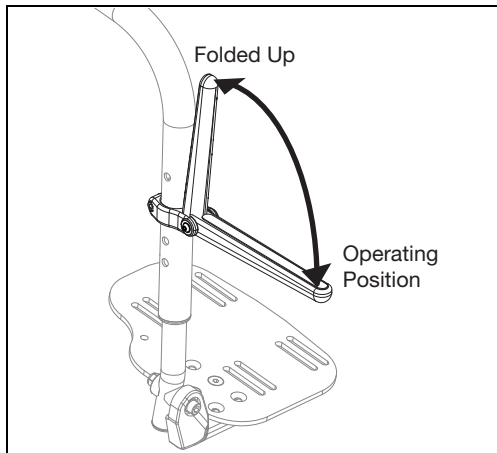
**NOTE:** The nut for the backside screw goes into a recess in the clamp. Ensure that nut stays in place.

3. Repeat on opposite side.



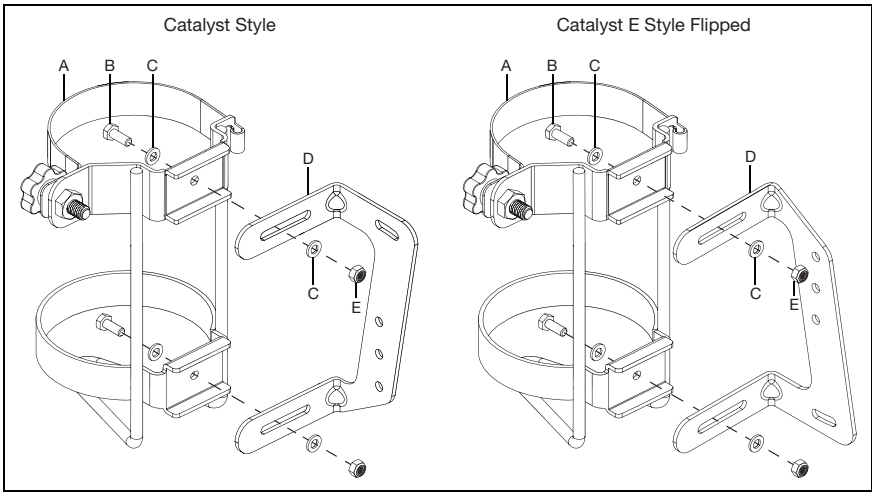
## Using the Luggage Carrier

1. Operating position for the luggage carrier is when the forks are folded down (See image below). The max weight capacity is 55lbs.
2. When not in use, fold the luggage carrier up.

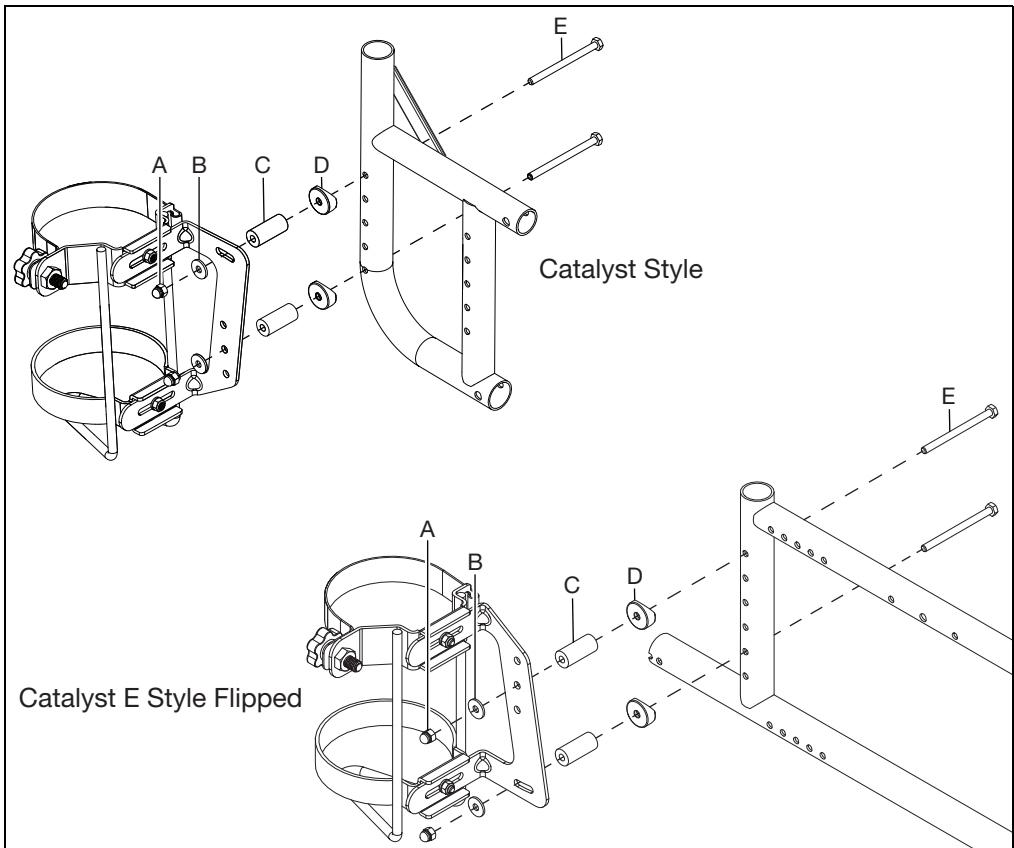


# O2 Holder

1. Install O2 holder assembly (A) onto O2 bracket (D) with two bolts (B), four washers (C) and two nuts (E) using two 10mm wrenches.



2. Install the O2 holder assembly onto chair frame with two bolts (E), two saddles (D), two spacers (C), two washers (B) and two nuts (A) using two 10mm wrenches.



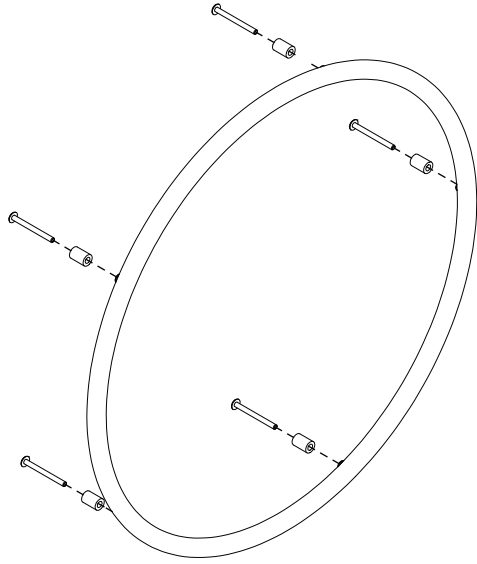
# Handrim Configurations

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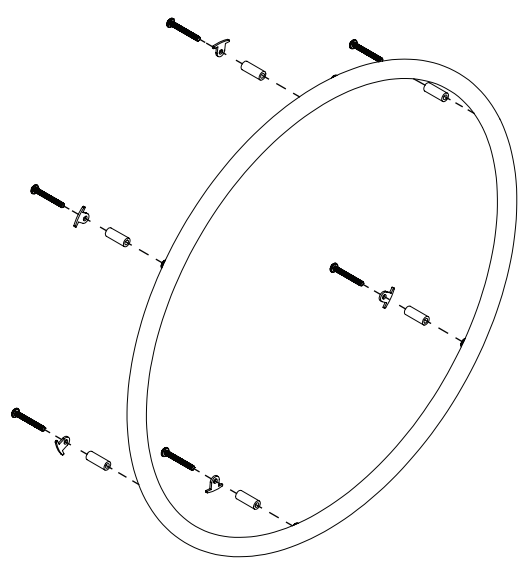
For handrim sizing, hardware and more information please visit our parts manual or click the link [HERE](#) to jump to the Handrim Chart.

# Handrim Construction

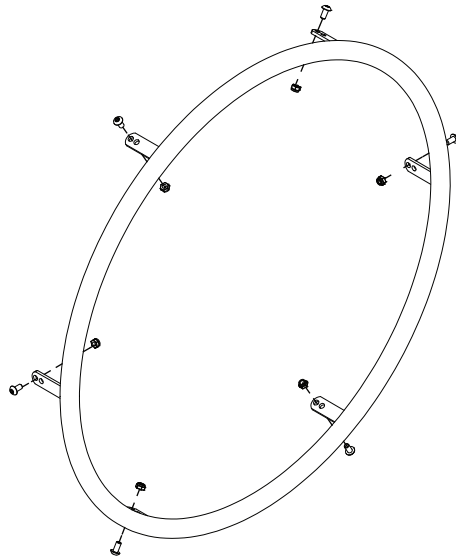
The sequencing of hardware for the three styles of handrims is shown below. The specific hardware used is determined in the chart on the previous page, based on the tire and handrim being used.



Spacer Style



Detached Tab Style



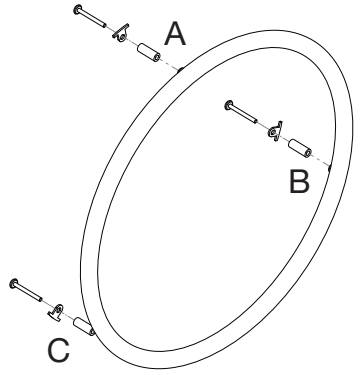
Tab Style

# Handrim Tightening

The correct tightening patterns are shown below.

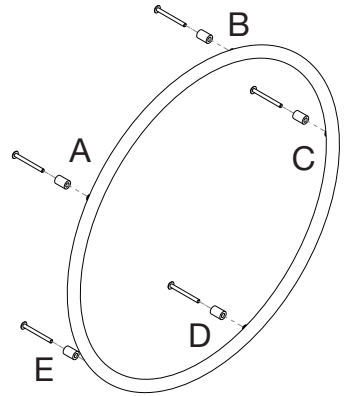
## 3-Hole Pattern

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



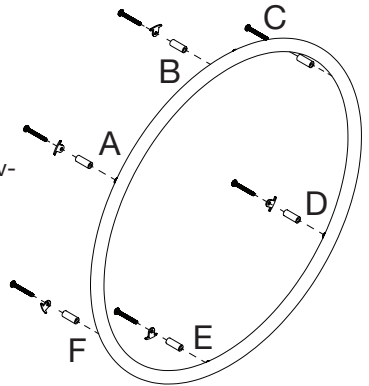
## 5-Hole Pattern

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

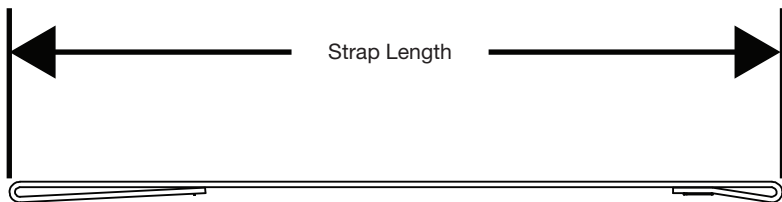
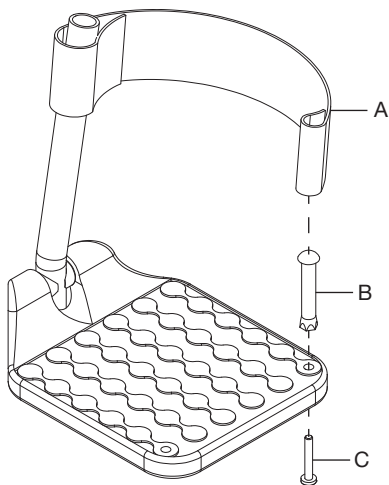


## 6-Hole Pattern

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



# Footplate and Heel Loops



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

Size	Part Number	Adjustable Heel Loop			Strap Length
		Angle Adjustable / Multi-Angle	Composite	Composite Angle Adjustable	
Short	103364	14" - 17"	14" - 18"	14" - 17"	19"
Medium	103365	18" - 20"	19" - 22"	18" - 20"	21"
Long	103366	21" - 22"	N/A	21" - 22"	25"

# Catalyst Seat Upholstery

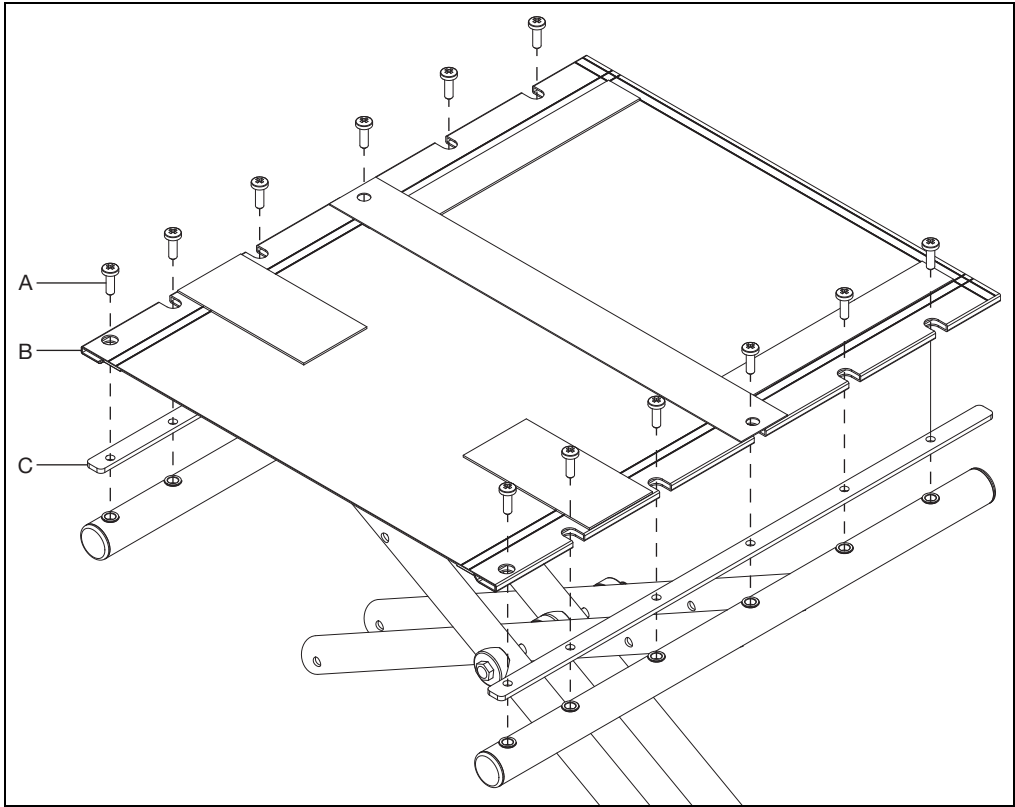
**NOTE: Ensure any current seating is removed.**

1. Install seat rail and upholstery onto chair tubes and secure with screws using a Phillips screwdriver.

**NOTE: The number of screws used on the upholstery corresponds with the seat depth. See chart below for screw quantity for your configuration.**

**Screw Quantity Per Chair**

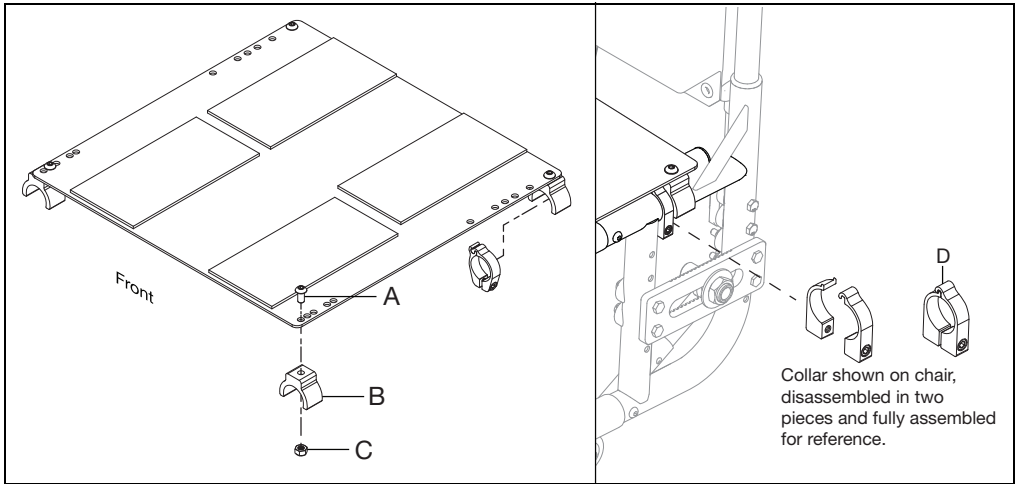
Seat Depth	Screw Quantity
14" - 15"	10
16" - 17"	12
18" - 19"	14
20"	16



# Seat Pan

## Standard Aluminum Seat Pan - Catalyst and Spark

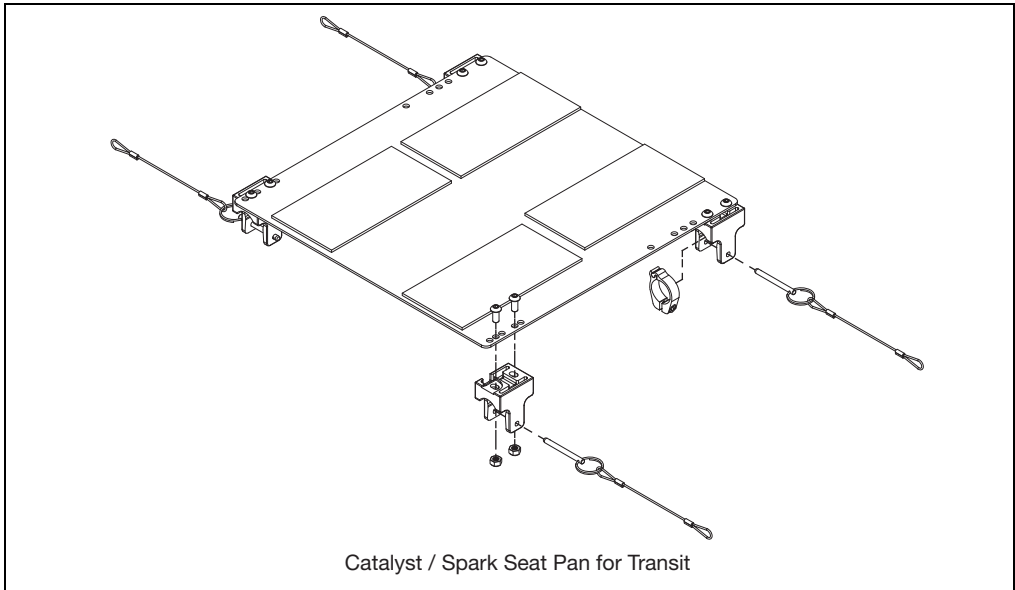
1. Install the four clamps (B) onto the seat pan with screw (A) and nut (C) using a 4mm Allen wrench.
2. Install the seat pan onto the chair by pressing the clamps down onto the frame tubes.
3. Install the two stop collars (D) on the front side of the two rear clamps on the frame tubes, no more than ½" from the rear clamps. The seat pan will need to be lifted slightly to fit the stop collars under.



## Transit Aluminum Seat Pan - Catalyst and Spark

1. The transit seat pan is installed by securing the seat pan and clamp to the frame with two bolts and two nuts per clamp using a 5mm Allen wrench.

**NOTE: The transit seat pan clamp also has a pin that is secured after the clamp and seat pan are installed on the chair.**





# Catalyst and Spark One Arm Drive (OAD)

**NOTE: A Catalyst 5 is shown in the drawings. The mounting is the same on a Spark.**

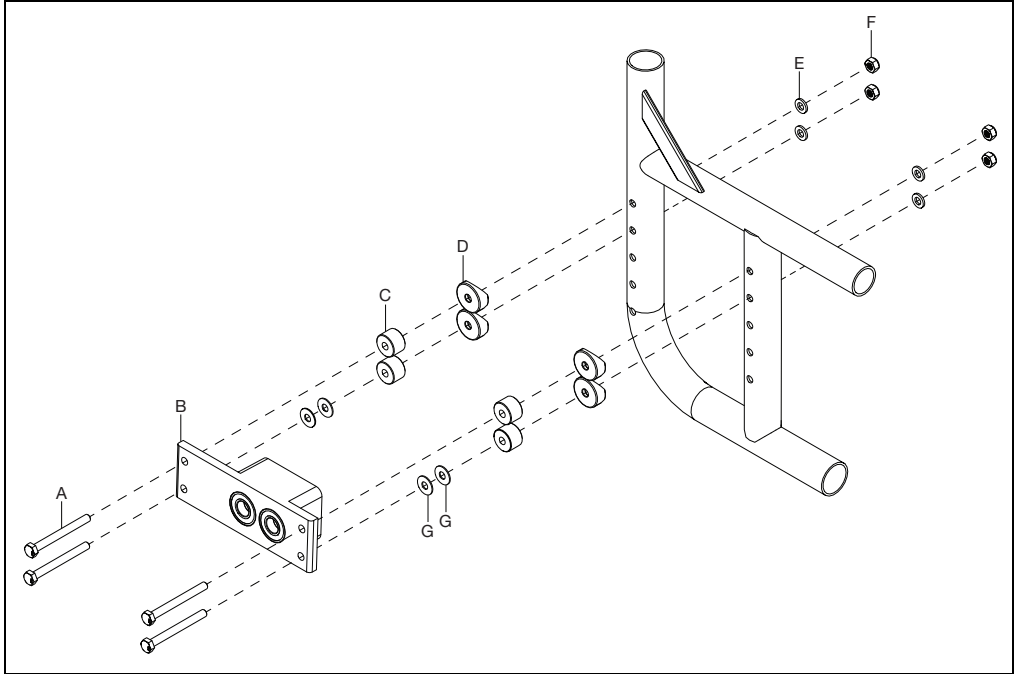
**NOTE: 2° camber is not available on HD configurations.**

## Installation

1. Remove wheels and existing axle plate.
2. Install OAD axle plate (B) onto the outside of the chair frame with four bolts (A), four spacers (C), four saddles (D), four washers (E) and four nuts (F) using two 10mm wrenches. Install the OAD axle plates using the frame holes for desired seat height.

**NOTE: The hardware used for installation varies. See the tables at the end of these instructions for additional information.**

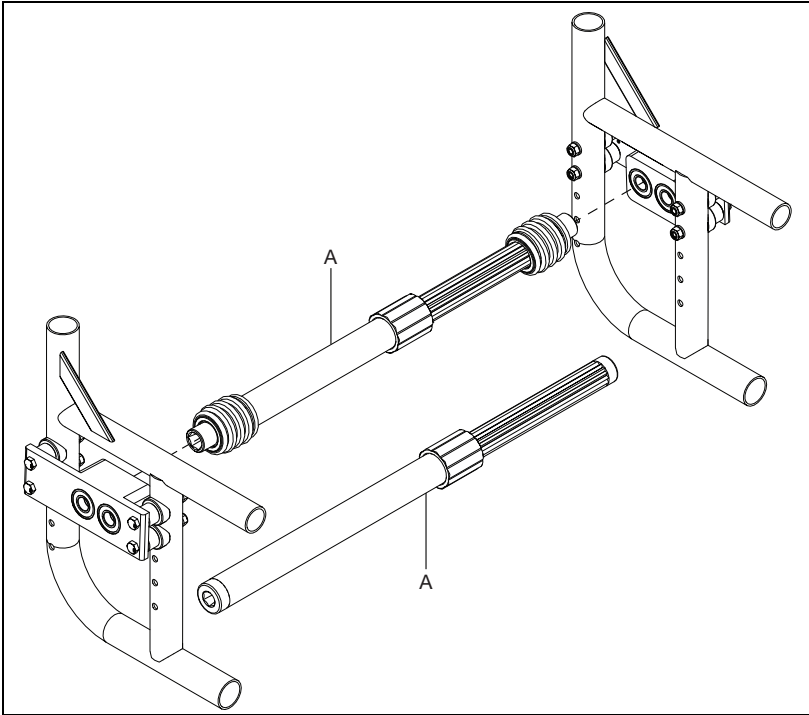
**NOTE: The thin washers (G) are only used in 2° camber configurations.**



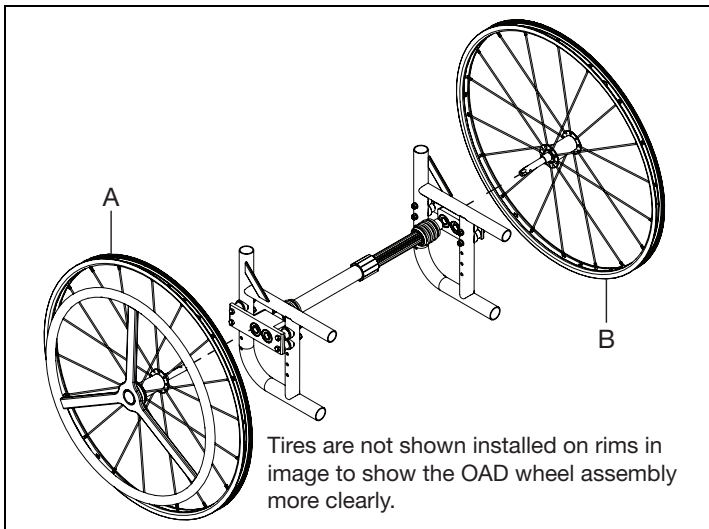
## Catalyst and Spark One Arm Drive (OAD)

3. Install the OAD axle plate on the opposite side the same way as step 1. Before fully tightening, install the OAD drive shaft (A) in the two OAD axle plates as shown below.

**NOTE: See tables at the end of these instructions for the drive shaft lengths used in different configurations.**



4. Install the OAD wheels on both sides of chair. Install the OAD wheel with the handrim (A) on the desired drive side. The OAD wheel with no handrim (B) is the following side and is installed opposite the drive wheel.



DRIVE SHAFT LENGTH BY CONFIGURATION				
CATALYST SEAT WIDTH	ARMRESTS	CAMBER	PART NUMBER	DESCRIPTION
11"	NO ARMS, FLIP-UP & SWING AWAY	0"	111503	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 177-255mm
11"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111503	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 177-255mm
11"	NO ARMS, FLIP-UP & SWING AWAY	2"	111627	QUICK RELEASE OAD CAMBER DRIVE SHAFT 160-210mm
11"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111628	QUICK RELEASE OAD CAMBER DRIVE SHAFT 195-235mm
12"	NO ARMS, FLIP-UP & SWING AWAY	0"	111503	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 177-255mm
12"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111503	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 177-255mm
12"	NO ARMS, FLIP-UP & SWING AWAY	2"	111628	QUICK RELEASE OAD CAMBER DRIVE SHAFT 195-235mm
12"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111498	QUICK RELEASE OAD CAMBER DRIVE SHAFT 220-280mm
13"	NO ARMS, FLIP-UP & SWING AWAY	0"	111504	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 225-295mm
13"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111504	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 225-295mm
13"	NO ARMS, FLIP-UP & SWING AWAY	2"	111498	QUICK RELEASE OAD CAMBER DRIVE SHAFT 220-280mm
13"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111498	QUICK RELEASE OAD CAMBER DRIVE SHAFT 220-280mm
14"	NO ARMS, FLIP-UP & SWING AWAY	0"	111504	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 225-295mm
14"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111504	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 225-295mm
14"	NO ARMS, FLIP-UP & SWING AWAY	2"	#111499	QUICK RELEASE OAD CAMBER DRIVE SHAFT 270-330mm
14"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111499	QUICK RELEASE OAD CAMBER DRIVE SHAFT 270-330mm
15"	NO ARMS, FLIP-UP & SWING AWAY	0"	111505	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 260-370mm
15"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111505	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 260-370mm
15"	NO ARMS, FLIP-UP & SWING AWAY	2"	111499	QUICK RELEASE OAD CAMBER DRIVE SHAFT 270-330mm
15"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111500	QUICK RELEASE OAD CAMBER DRIVE SHAFT 295-370mm
16"	NO ARMS, FLIP-UP & SWING AWAY	0"	111505	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 260-370mm
16"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	0"	111505	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 260-370mm
16"	NO ARMS, FLIP-UP & SWING AWAY	2"	111500	QUICK RELEASE OAD CAMBER DRIVE SHAFT 295-370mm
16"	FLIP BACK & HA T-ARMS (SADDLES + SPACERS REQUIRED)	2"	111500	QUICK RELEASE OAD CAMBER DRIVE SHAFT 295-370mm

#FOR THIS CONFIGURATION, ONE WHEEL MUST BE REMOVED BEFORE THE DRIVE SHAFT CAN BE INSTALLED. THE SECOND WHEEL CAN BE INSTALLED ONCE THE DRIVE SHAFT IS IN POSITION.

DRIVE SHAFT LENGTH BY CONFIGURATION				DESCRIPTION
CATALYST SEAT WIDTH	ARMRESTS	CAMBER PART NUMBER	CAMBER	DESCRIPTION
17"	NO ARMS, FLIP-UP & SWING AWAY	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
17"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
17"	NO ARMS, FLIP-UP & SWING AWAY	2"	111500	QUICK RELEASE OAD CAMBER DRIVE SHAFT 295-370mm
17"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 295-370mm
18"	NO ARMS, FLIP-UP & SWING AWAY	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
18"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
18"	NO ARMS, FLIP-UP & SWING AWAY	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 350-460mm
18"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 350-460mm
19"	NO ARMS, FLIP-UP & SWING AWAY	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
19"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
19"	NO ARMS, FLIP-UP & SWING AWAY	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 350-460mm
19"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 350-460mm
20"	NO ARMS, FLIP-UP & SWING AWAY	0"	111506	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 330-440mm
20"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	111507	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 421-491mm
20"	NO ARMS, FLIP-UP & SWING AWAY	2"	111501	QUICK RELEASE OAD CAMBER DRIVE SHAFT 350-460mm
20"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111502	QUICK RELEASE OAD CAMBER DRIVE SHAFT 420-530mm
21"	NO ARMS, FLIP-UP & SWING AWAY	0"	111507	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 421-491mm
21"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	111507	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 421-491mm
21"	NO ARMS, FLIP-UP & SWING AWAY	2"	111502	QUICK RELEASE OAD CAMBER DRIVE SHAFT 420-530mm
21"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111502	QUICK RELEASE OAD CAMBER DRIVE SHAFT 420-530mm
22"	NO ARMS, FLIP-UP & SWING AWAY	0"	111507	QUICK RELEASE OAD ZERO CAMBER DRIVE SHAFT 421-491mm
22"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	0"	#111860	QUICK RELEASE OAD CAMBER DRIVE SHAFT 485-595mm
22"	NO ARMS, FLIP-UP & SWING AWAY	2"	111502	QUICK RELEASE OAD CAMBER DRIVE SHAFT 420-530mm
22"	FLIP BACK & HAT-ARMS (SADDLES + SPACERS REQUIRED)	2"	111502	QUICK RELEASE OAD CAMBER DRIVE SHAFT 420-530mm

#FOR THIS CONFIGURATION, ONE WHEEL MUST BE REMOVED BEFORE THE DRIVE SHAFT CAN BE INSTALLED. THE SECOND WHEEL CAN BE INSTALLED ONCE THE DRIVE SHAFT IS IN POSITION.

## HARDWARE GUIDE

		CURVED REAR FRAME																						
		NO ARMS				FLIP BACK AND T-ARMS				SWING AWAY ARMS														
		0" CAMBER		2" CAMBER		0" OR 2" CAMBER		0" CAMBER		0" CAMBER		2" CAMBER												
NO OPTIONS	100676	M6 X 55 HHCS BLACK ZN	4	100679	M6 X 65 HHCS ZN	4	100679	M6 X 65 HHCS ZN	4	100676	M6 X 55 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100679	M6 X 75 HHCS ZN	2			
	100746	M6 FLAT WASHER BLK ZN	4	100746	M6 FLAT WASHER BLK ZN	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	101826	M6 X 50 HHCS BLACK ZN	1	101826	M6 X 50 HHCS BLACK ZN	1	101826	M6 X 50 HHCS BLACK ZN	1
				000056	SADDLE	4	003172	SPACER	4	003172	SPACER	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	003172	SPACER	4
ANTI-TIPS	100676	M6 X 55 HHCS BLACK ZN	2	100679	M6 X 65 HHCS ZN	2	100680	M6 X 70 HHCS ZN	2	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2
	100677	M6 X 60 HHCS ZN	2	100680	M6 X 70 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2	102996	M6 X 85 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	102996	M6 X 85 HHCS BLACK ZN	2	100677	M6 X 85 HHCS BLACK ZN	2
				000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	003172	SPACER	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4
				003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4
TRANSIT	100676	M6 X 55 HHCS BLACK ZN	2	100679	M6 X 65 HHCS ZN	2	102996	M6 X 85 HHCS BLACK ZN	2	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2
	100679	M6 X 65 HHCS ZN	2	100644	M6 X 75 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100680	M6 X 65 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100680	M6 X 65 HHCS ZN	2	100680	M6 X 65 HHCS ZN	2
	101826	M6 X 50 HHCS BLACK ZN	1	101826	M6 X 50 HHCS BLACK ZN	1	100676	M6 X 55 HHCS BLACK ZN	1	100676	M6 X 55 HHCS BLACK ZN	1	100676	M6 X 55 HHCS ZN	1	100676	M6 X 55 HHCS ZN	1	100676	M6 X 55 HHCS ZN	1	100676	M6 X 55 HHCS ZN	1
				000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4
				003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4
ANTI-TIPS &	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	100680	M6 X 60 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100704	M6 X 90 HHCS ZN	2	100676	M6 X 90 HHCS ZN	2
	100679	M6 X 65 HHCS ZN	2	102996	M6 X 85 HHCS BLACK ZN	2	100679	O6 X 65 HHCS ZN	2	100679	O6 X 65 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2
				101826	M6 X 50 HHCS BLACK ZN	1	100676	M6 X 55 HHCS BLACK ZN	1	100676	M6 X 55 HHCS BLACK ZN	1	100676	M6 X 55 HHCS BLACK ZN	1	100676	M6 X 55 HHCS ZN	1	100676	M6 X 55 HHCS ZN	1	100676	M6 X 55 HHCS ZN	1
				000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4	000056	SADDLE	4
				003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4	003172	SPACER	4

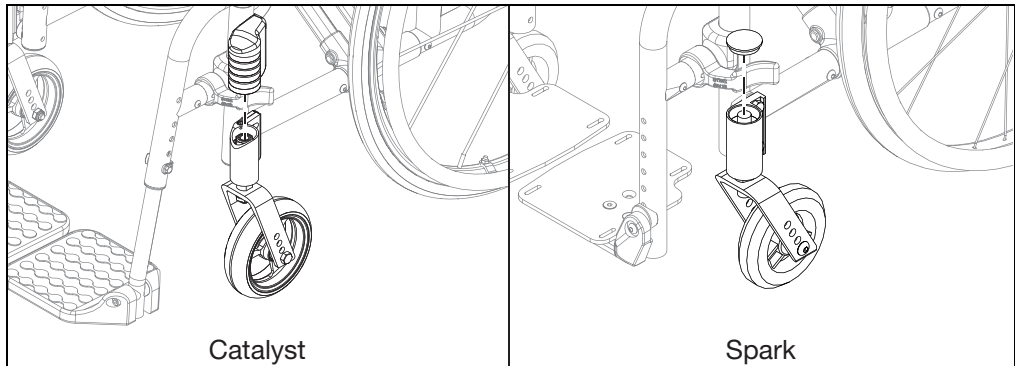
## HARDWARE GUIDE

DEPTH ADJUSTABLE/SPARK REAR FRAME									
ANGLE ADJ. LOCKING FLIP UP, TUBULAR FLIP UP, PEDIATRIC T-ARM OR NO ARMS					FLIP BACK AND T-ARMS				
0° CAMBER		2° CAMBER			0° OR 2° CAMBER				
NO OPTIONS	101826	M6 X 50 HHCS BLACK ZN	4	100677	M6 X 60 HHCS ZN	4	100677	M6 X 60 HHCS ZN	4
	100746	M6 FLAT WASHER BLK ZN	4	100746	M6 FLAT WASHER BLK ZN	4	100746	M6 FLAT WASHER BLK ZN	4
				000055	SADDLE	4	000055	SADDLE	4
							003172	SPACER	4
ANTI-TIPS	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2
	100676	M6 X 55 HHCS ZN	2	100679	M6 X 65 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2
				000055	SADDLE	4	000055	SADDLE	4
				003172	SPACER	4	003172	SPACER	4
TRANSIT	101826	M6 X 50 HHCS BLACK ZN	2	100677	M6 X 60 HHCS ZN	2	100660	M6 X 80 HHCS ZN	2
	100677	M6 X 60 HHCS ZN	2	100680	M6 X 70 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2
	100674	M6 X 45 HHCS ZN	1	100674	M6 X 45 HHCS ZN	1	101826	M6 X 50 HHCS BLACK ZN	1
				000055	SADDLE	4	000055	SADDLE	4
				003172	SPACER	4	003172	SPACER	4
ANTI-TIPS & TRANSIT	100674	M6 X 45 HHCS ZN	2	100676	M6 X 55 HHCS ZN	2	100544	M6 X 75 HHCS ZN	2
	100677	M6 X 60 HHCS ZN	2	100660	M6 X 80 HHCS ZN	2	100677	M6 X 60 HHCS ZN	2
				100674	M6 X 45 HHCS ZN	1	101826	M6 X 50 HHCS BLACK ZN	1
				000055	SADDLE	4	000055	SADDLE	4
				003172	SPACER	4	003172	SPACER	4

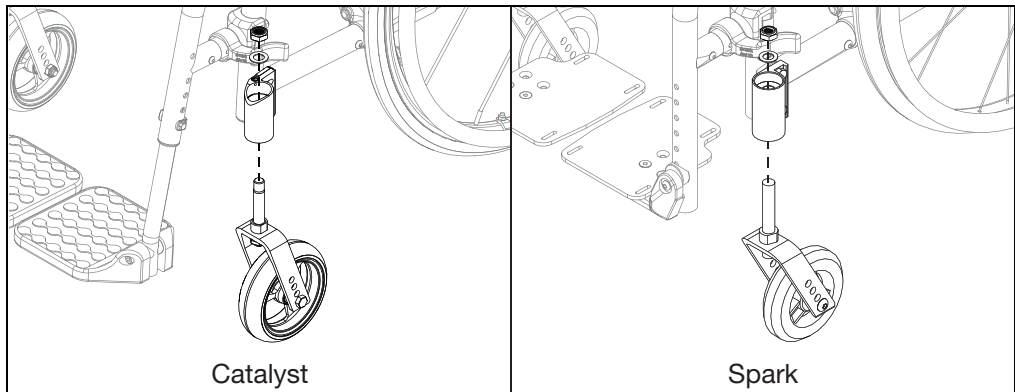
# Chair Tracking/Pulling Correction

**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.

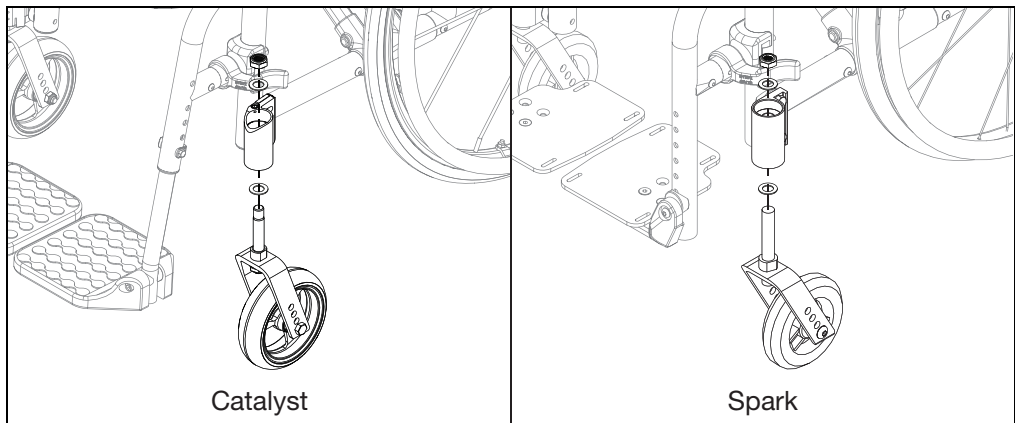
1. Remove cap on caster barrel.



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



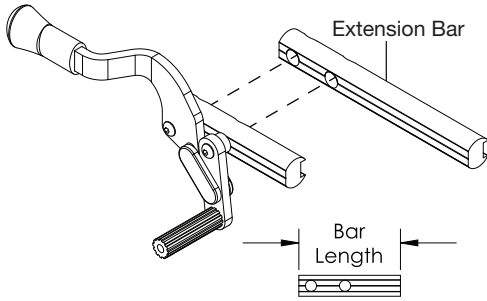
3. Add a new washer to the bottom side of the caster barrel (washer is part #100682 - washer 1/2" .518 x .875 x 0.47 F/W Black Zinc). Install new caster assembly back together. Tighten the top nut all the way and then back it off one quarter of a turn. Reinstall caster housing cover. Verify the stem rotates freely and there is no vertical play.



# Wheel Locks

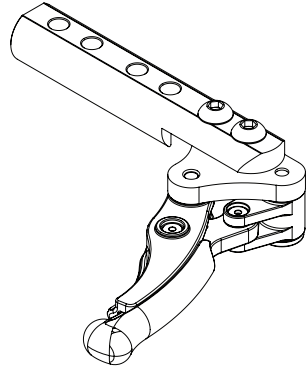
See image below for information on the types of wheel locks available. Installation of the wheel lock clamps is on the next page.

## Push to Lock Flush Mount

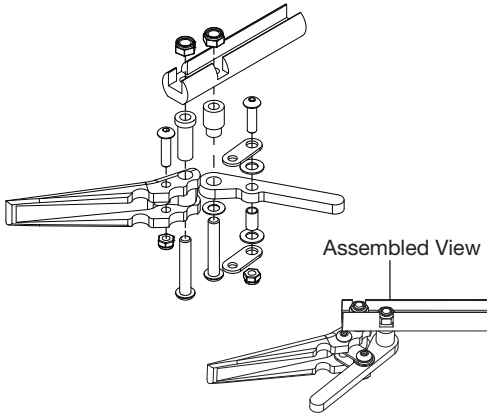


Part #	Bar	Length
N/A	Standard	3.5"
000904	Extended	6.0"

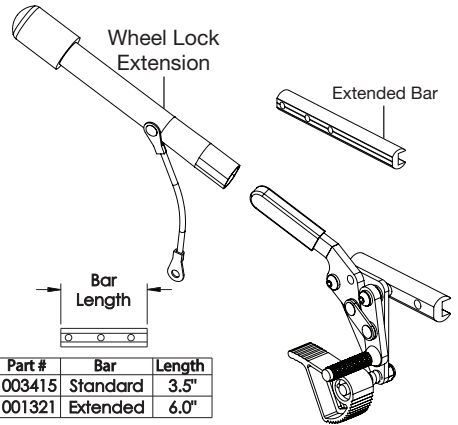
## Low Profile Scissor Lock



## Short Thru Scissor Locks

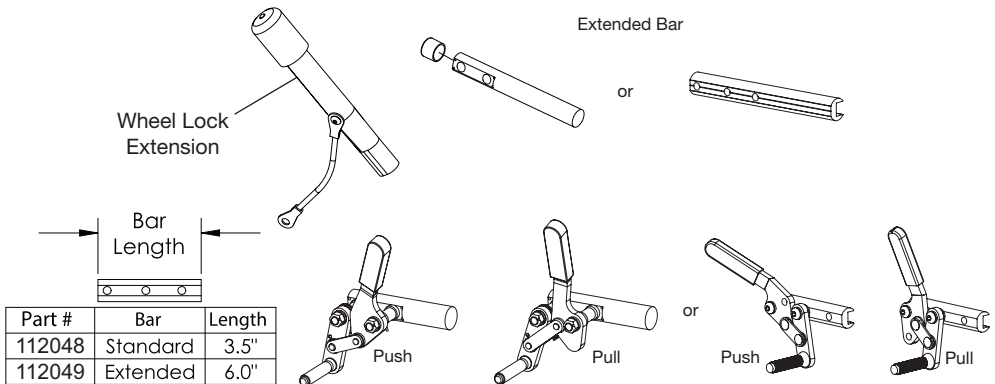


## Grade Aids



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

## Push and Pull to Lock Wheel Locks



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

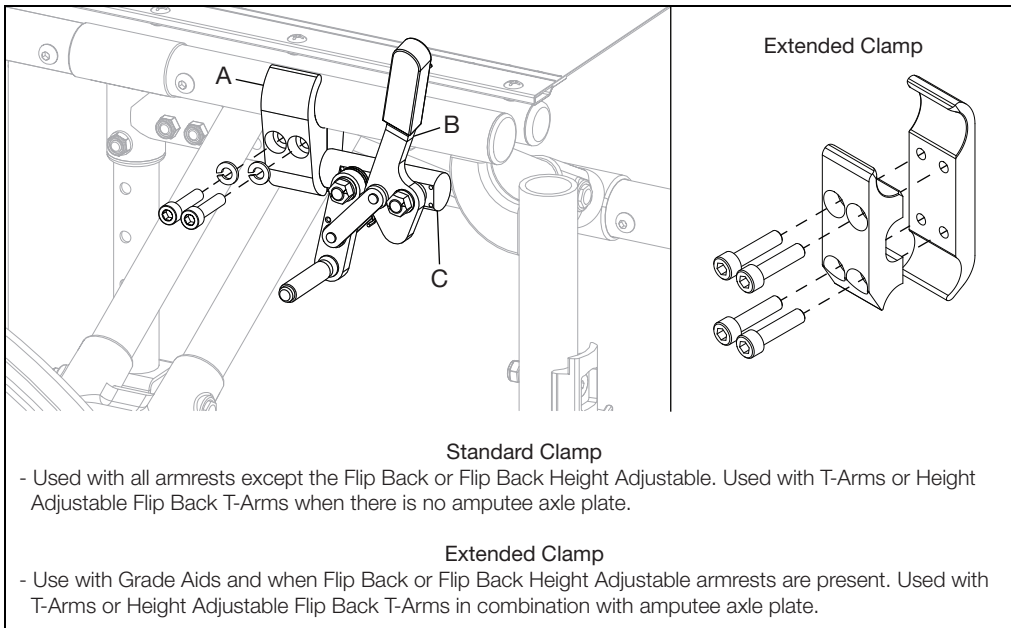


# Wheel Locks

## Installing Wheel Lock Clamps

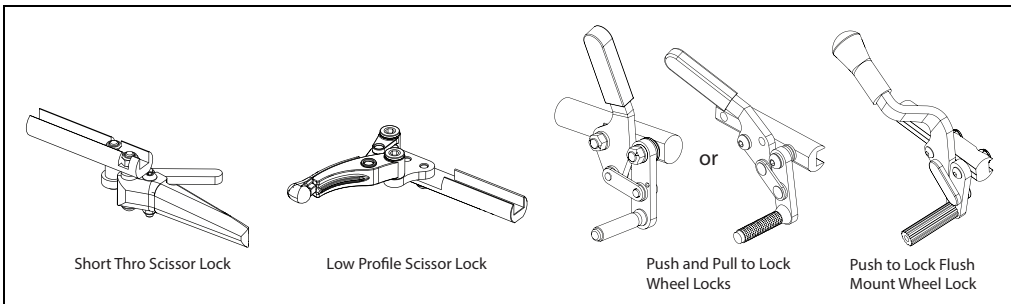
1. The wheel lock assemblies (B) with the wheel lock bars (C) are mounted onto the chair using the wheel lock clamps (A). There are two types of wheel lock clamps that are shown below. Install hardware with the wheel lock bar and chair frame in position. Once installed, ensure wheel lock engages at least 1/8" into tire and locks properly prevent the chair from moving when engaged.

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



## Reversing Wheel Locks

1. Identify the type of wheel lock on the chair. See image below.

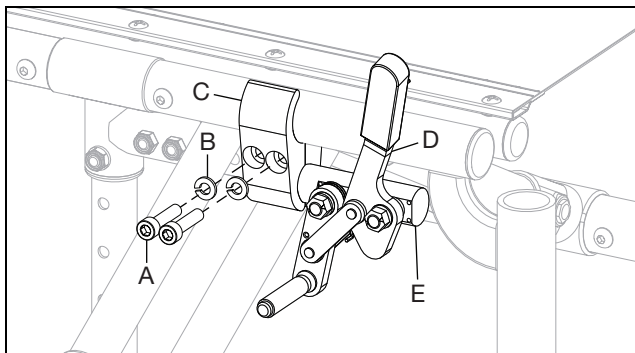


# Wheel Locks

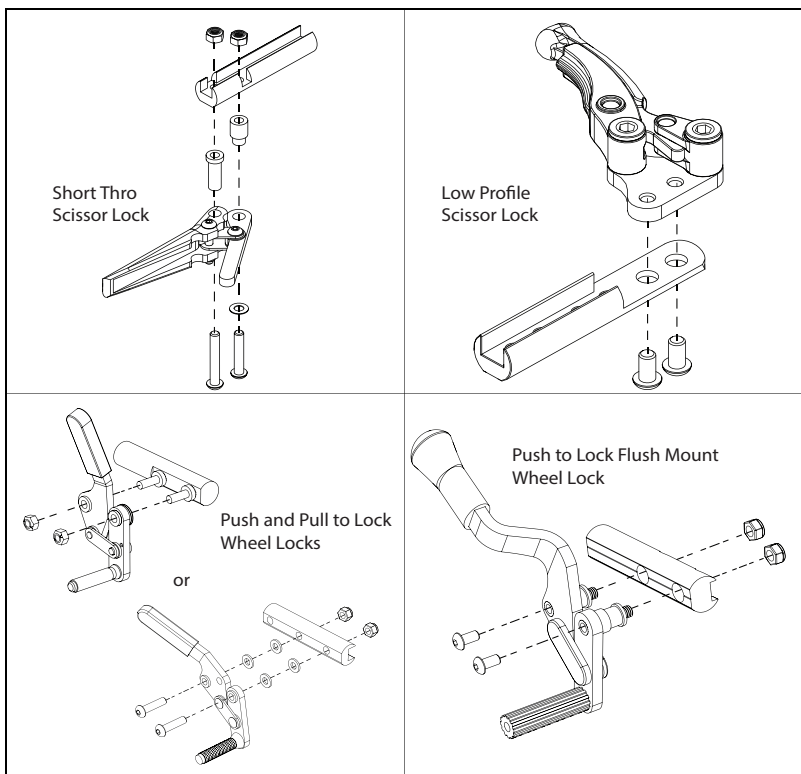
- Remove wheel lock (D) and wheel lock bar (E) from clamp (C) by removing the two bolts (A) and two lock washers (B) with a 5mm Allen wrench. See image below.

**NOTE: The push to lock flush mount wheel lock is shown in image below. The process of removing the clamp is the same for all of the wheel locks.**

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

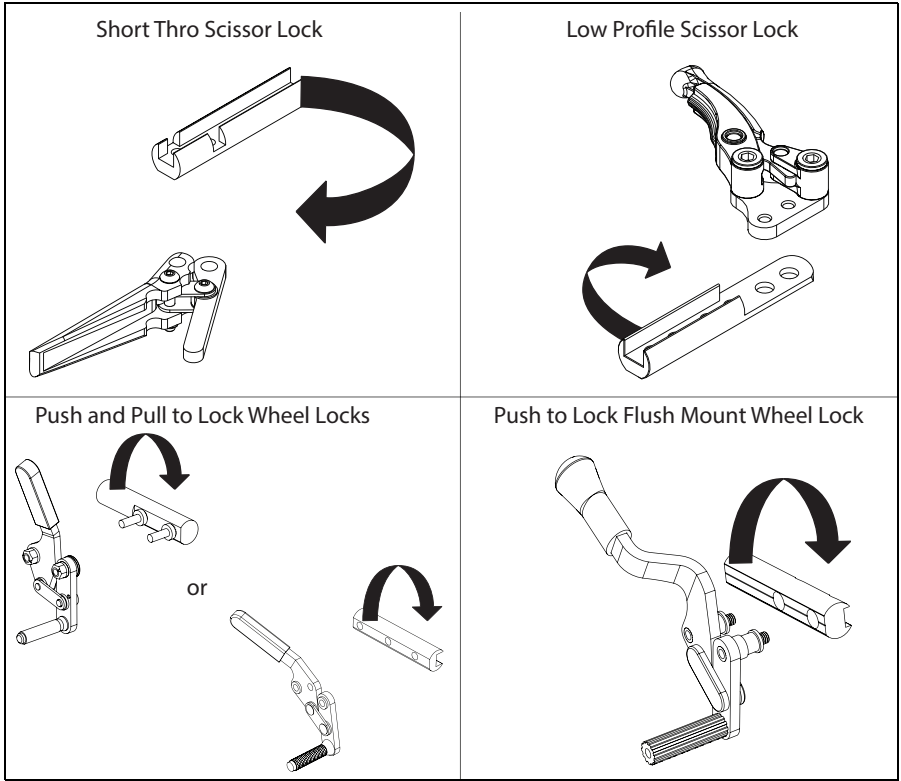


- Remove the wheel lock assembly from the wheel lock bar. For a low profile scissor lock, use a 5mm Allen wrench to remove the two bolts. For the short throw and push to lock flush mount, remove hardware using a 4mm Allen wrench and a 10mm wrench. For the push and pull to lock, loosen and remove the top lock nuts and then grasp the assembly so the spring does not come out of the linkage hole when sliding off the arbors.



# Wheel Locks

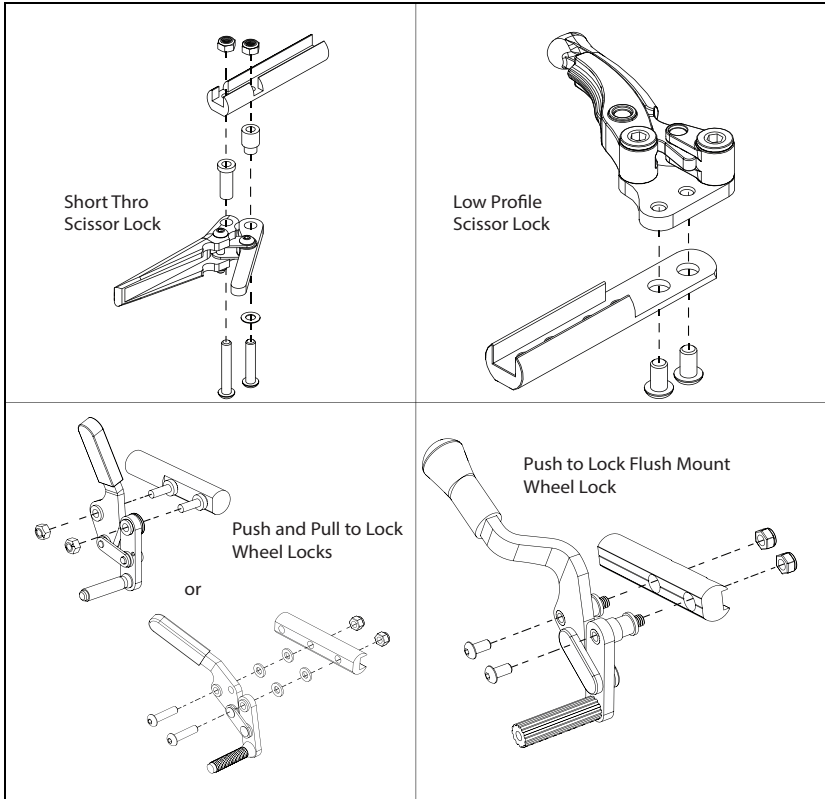
4. Rotate the wheel lock bar 180°. See image below.



# Wheel Locks

5. Reinstall the wheel lock assembly onto the wheel lock bar. For a low profile scissor lock, use a 5mm Allen wrench to install the two bolts. For the short throw and push to lock flush mount wheel locks, install hardware using a 4mm Allen wrench and a 10mm wrench. For the push and pull to lock, slide the assembly back onto the arbors. To install the spring on a push to lock, pull the curved spring arm over the arbor shoulder. To install the spring on a pull to lock, pull the spring arm end into the wheel lock bar hole (thin screwdriver will help with this). Place and tighten the top lock nuts to secure. See image below.

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



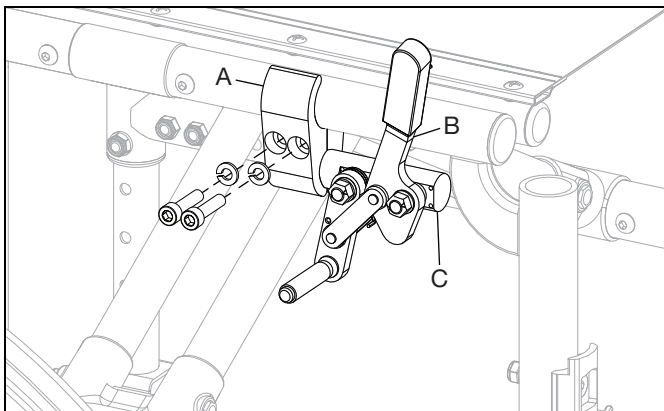
6. Test the wheel locks. Ensure wheel lock arms embed in tires at least 1/8 inch when locked. If they do not embed at least 1/8 inch, readjust wheel lock and test again.

# Wheel Locks

## Installing Wheel Lock Clamps

1. The wheel lock assemblies (B) with the wheel lock bars (C) are mounted onto the chair using the wheel lock clamps (A). There are two types of wheel lock clamps that are shown below. Install hardware with the wheel lock bar and chair frame in position. Once installed, ensure wheel lock engages at least 1/8" into tire and locks properly prevent the chair from moving when engaged.

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

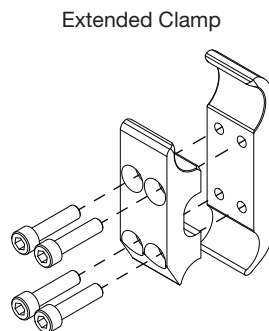


### Standard Clamp

- Used with all armrests except the Flip Back or Flip Back Height Adjustable. Used with T-Arms or Height Adjustable Flip Back T-Arms when there is no amputee axle plate.

### Extended Clamp

- Use with Grade Aids and when Flip Back or Flip Back Height Adjustable armrests are present. Used with T-Arms or Height Adjustable Flip Back T-Arms in combination with amputee axle plate.

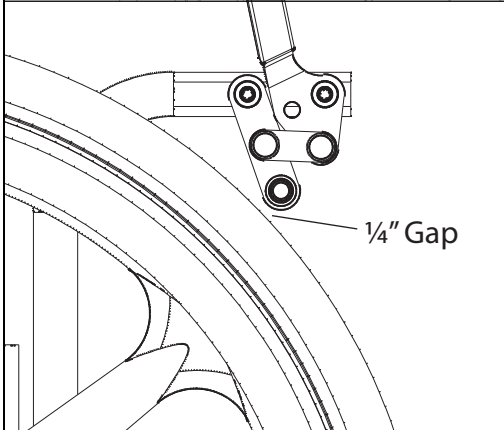
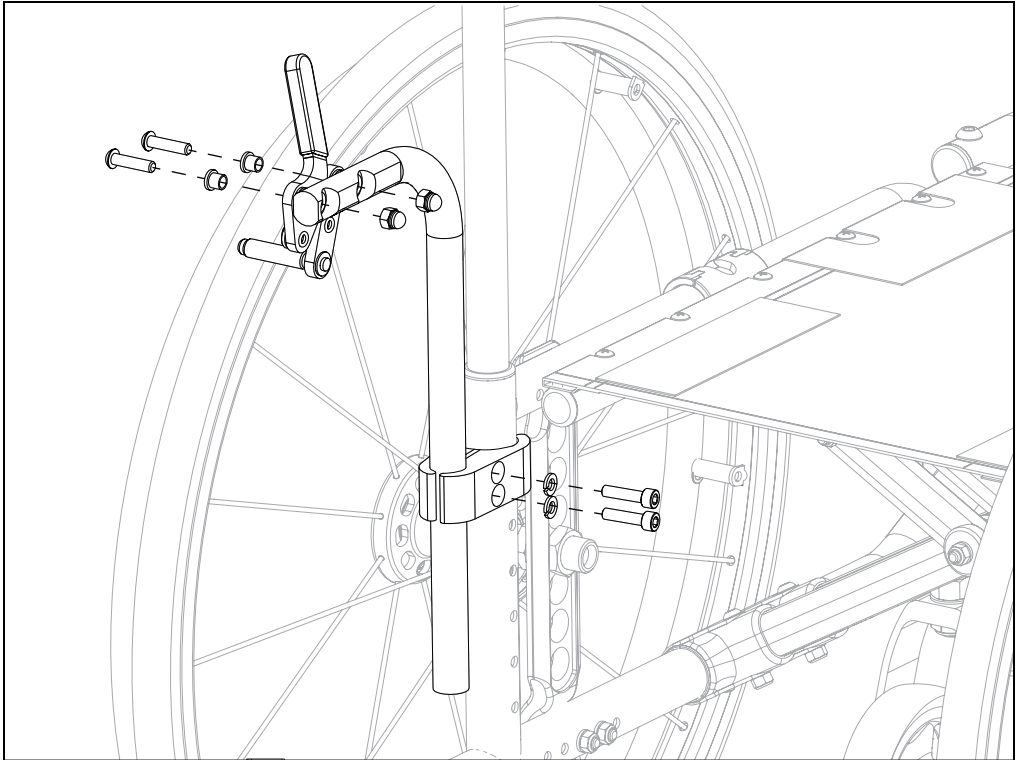


# Attendant Wheel Locks - Available on Catalyst 4E/E

See the image below for assembly of the attendant wheel locks. Ensure the wheel lock cleat is  $\frac{1}{4}$ " off of surface of the wheel when the lock is not engaged. BEFORE use, test the wheel locks. Ensure wheel lock arms embed in tires at least  $\frac{1}{8}$  inch when locked. If they do not embed at least  $\frac{1}{8}$  inch, readjust wheel lock and test again.

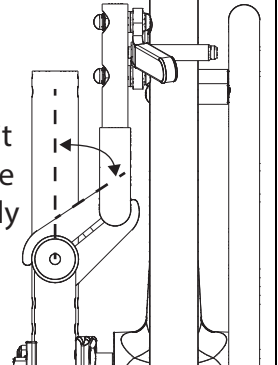
**NOTE:** The clamp should be rotated to a  $45^\circ$  angle relative to the top/bottom frame tube to ensure the wheel lock cleat is properly aligned with the wheel.

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



Top View (looking down at chair)

Orient the clamp  $45^\circ$  so it aligns with the wheel properly



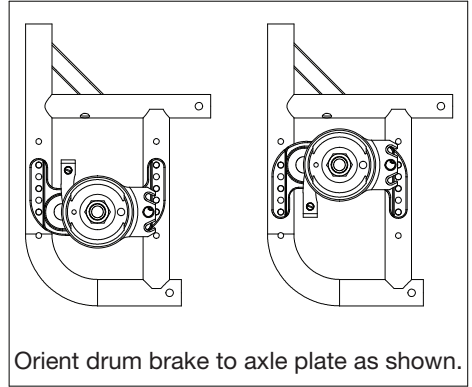
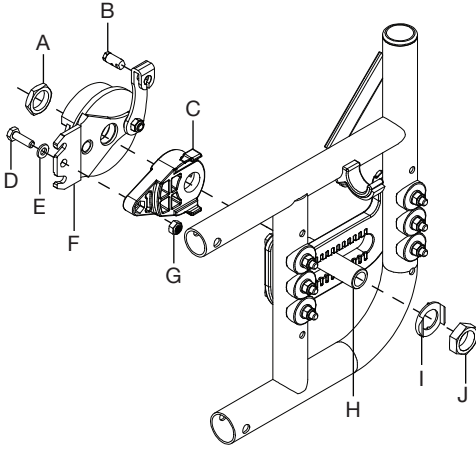
# Drum Brake

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

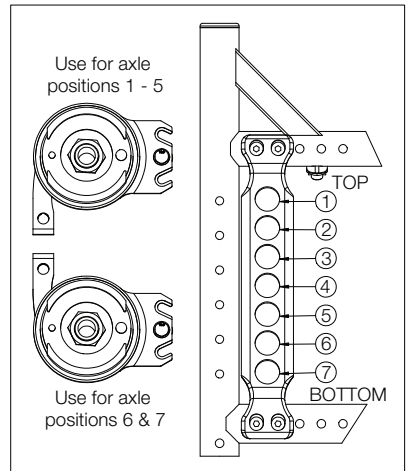
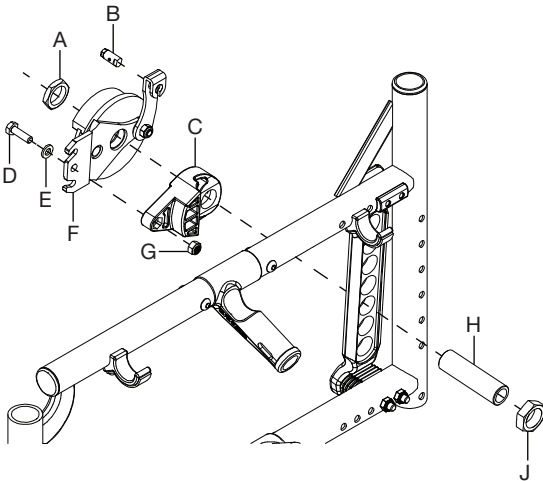
1. Install the drum brake adapter (C) to the drum brake rotor (F) with bolt (D), washer (E) and nut (G) using two 10mm wrenches. Thread the pinch bolt (B) into the drum brake arm.
2. Install the drum brake rotor assembly to the axle plate with two axle receiver nuts (A & J), axle sleeve (H) and axle plate index washer (I) using two adjustable wrenches. For the Catalyst 5VX, only two axle receiver nuts (A & J) and the axle sleeve (H) are needed for this assembly.

**NOTE: The drum brake orientation varies depending on the axle plate position. See the diagrams below for additional information.**

## CATALYST 5



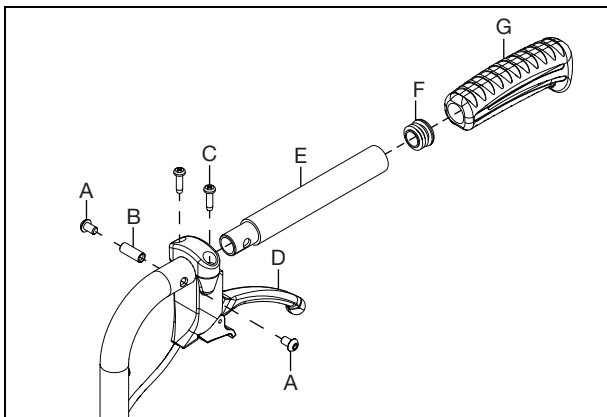
## CATALYST 5VX



# Drum Brake

3. Install the cable to the trigger lever (D) by removing the lever from the mount and removing the cable core from the cable jacket and routing it through the rearmost hole in the lever. Replace the lever and thread the core back through the cable jacket.
4. Install trigger lever (D) and extension adapter (E) to the back post handle with four screws (A & C) and threaded barrel (B).
5. Install the tube end plug (F) on the back of the extension adapter.
6. Install the push handle grip (G) onto the extension adapter.

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



## CATALYST 5 - Cable for Backrest Type

Backrest Height	Stroller Handle	Angle Adjustable	Height Adjustable Depth Adjustable		
			Short	Medium	Tall
8.5	3XS				
9.5	3XS				
10.5	3XS				
11.5	3XS				
12.5	2XS				
13			SHT		
13.5	2XS				
14		XS			
14.5	2XS				
15		XS			
15.5	2XS				
16		XS			
16.5	XS				
17		XS			
17.5	XS				
18		SHT		SHT	
18.5	XS				
19		SHT			
19.5	XS				
20		SHT			
21					MED
22					
23					
24					

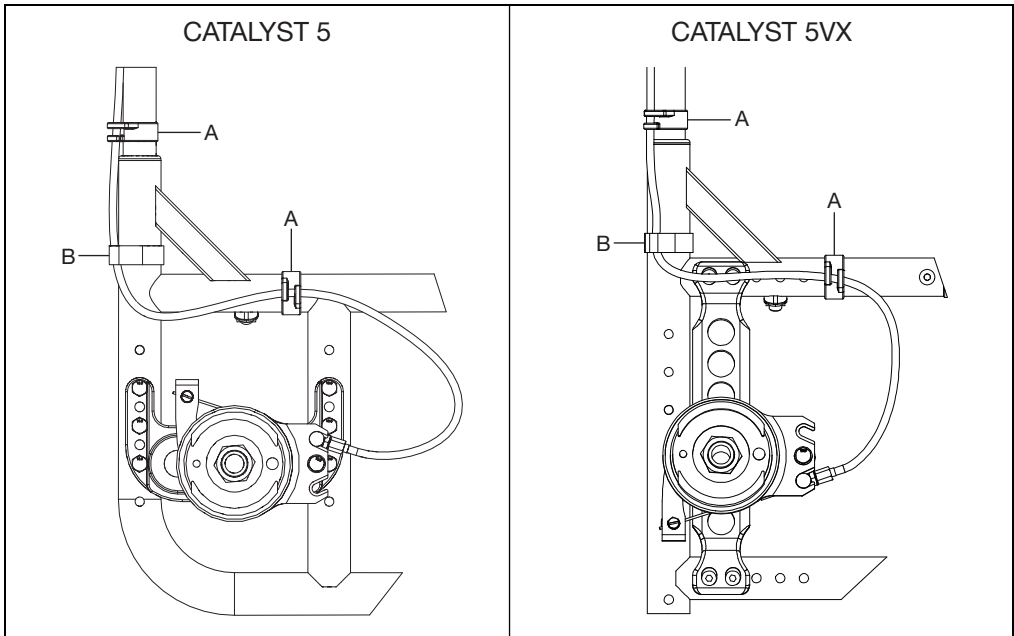


# Drum Brake

## CATALYST 5VX - Cable for Backrest Type

Backrest Height	Standard	Angle Adjustable
8.5	3XS	
9.5	3XS	
10.5	2XS	
11.5	2XS	
12.5	2XS	
13		
13.5	2XS	
14		XS
14.5	XS	
15		XS
15.5	XS	
16		SHT
16.5	XS	
17		SHT
17.5	XS	
18		SHT
18.5	SHT	
19		SHT
19.5	SHT	
20		MED

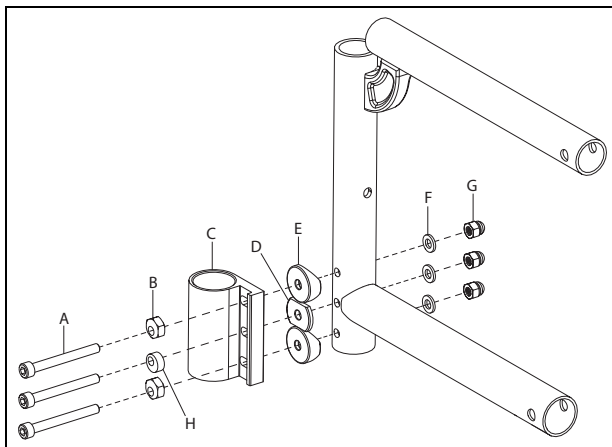
- Route the cable down the backrest cane to the drum brake.
- Thread the end of the cable through the hole in the pinch bolt and tighten after removing all play from the cable.
- Adjust cable until no wheel drag is present and positive lock is achieved with levers.
- Secure cable to back cane and frame with two P-Clips (A) and velcro strap (B) as shown.



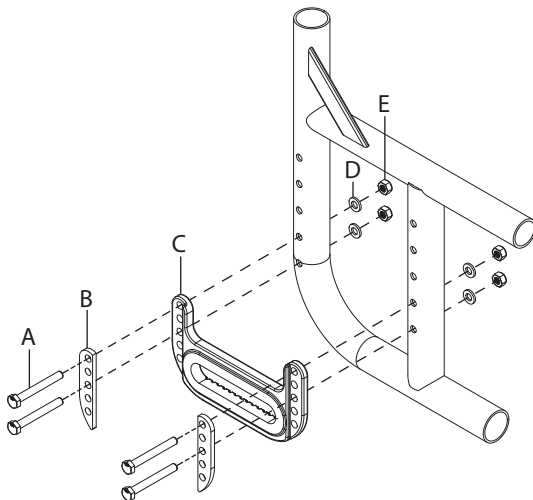
# HD (Heavy Duty) Configuration

- The HD caster housing (C) is installed with three bolts (A), three caster index washers (B & H), two saddles (E), one half saddle (D), three flat washers (F) and three dome nuts (G) using a M5 Allen wrench and a 10mm wrench.

**NOTE: The top and bottom caster index washers are aligned to achieve the desired caster housing angle in this step. The middle caster index washer is installed once the desired angle is achieved.**



- The HD axle plate is installed in the desired location using bolts (A), two reinforcement plates (B), axle plate (C), four washers (D) and four nuts (E) using two 10mm wrenches. See the Axle Plate Bolt Selection Table in the image below for correct bolt usage in different configurations.

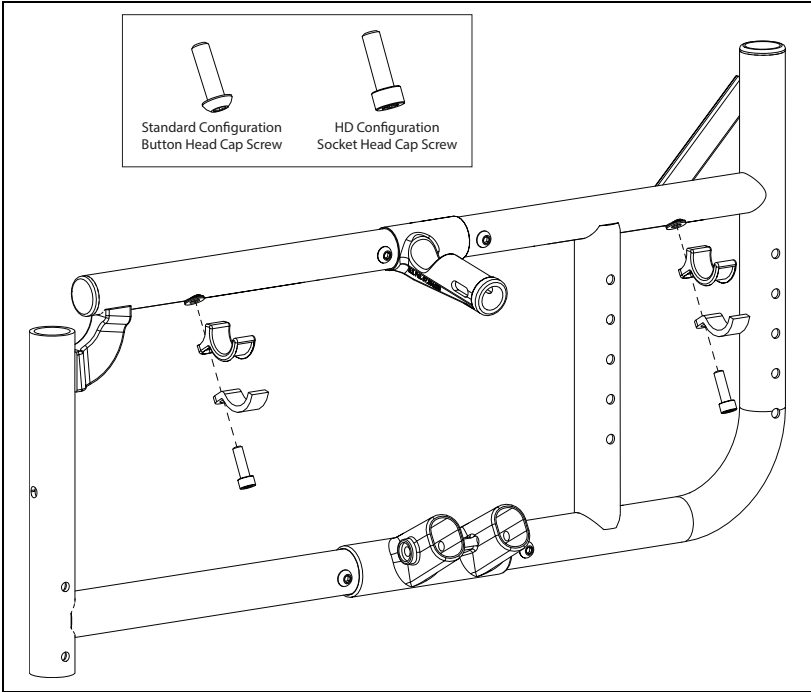


AXLE PLATE BOLT SELECTION GUIDE (HEAVY DUTY)

CATALYST 5 CURVED REAR FRAME / TITANIUM FRAME		DEPTH ADJUSTABLE REAR FRAME	
AXLE PLATE, FRAME	101826	AXLE PLATE, FRAME	100674
AXLE PLATE, FRAME, ANTI-TIP	100676	AXLE PLATE, FRAME, ANTI-TIP	101826
AXLE PLATE, FRAME, TRANSIT	100676	AXLE PLATE, FRAME, TRANSIT	100676
AXLE PLATE, FRAME, SWING AWAY ARMS	100676	AXLE PLATE, FRAME, SWING AWAY ARMS	100676
AXLE PLATE, FRAME, ANTI-TIP, TRANSIT	100679	AXLE PLATE, FRAME, ANTI-TIP, TRANSIT	100676
AXLE PLATE, FRAME, SWING AWAY ARMS, TRANSIT	100679	AXLE PLATE, FRAME, SWING AWAY ARMS, TRANSIT	100677
AXLE PLATE, FRAME, SWING AWAY ARMS, ANTI-TIP	100679	AXLE PLATE, FRAME, SWING AWAY ARMS, ANTI-TIP	100677
AXLE PLATE, FRAME, SWING AWAY ARMS, TRANSIT, AND ANTI-TIP	100680	AXLE PLATE, FRAME, SWING AWAY ARMS, TRANSIT, AND ANTI-TIP	100680

## HD (Heavy Duty) Configuration

3. The HD configuration requires different hardware on the seat hooks. A 4mm Allen wrench is needed to remove the standard button head cap screw and a 5mm Allen wrench is needed to reinstall the seat hooks with the HD socket head cap screw. Replace hardware on all four seat hooks (two on each side of the chair).



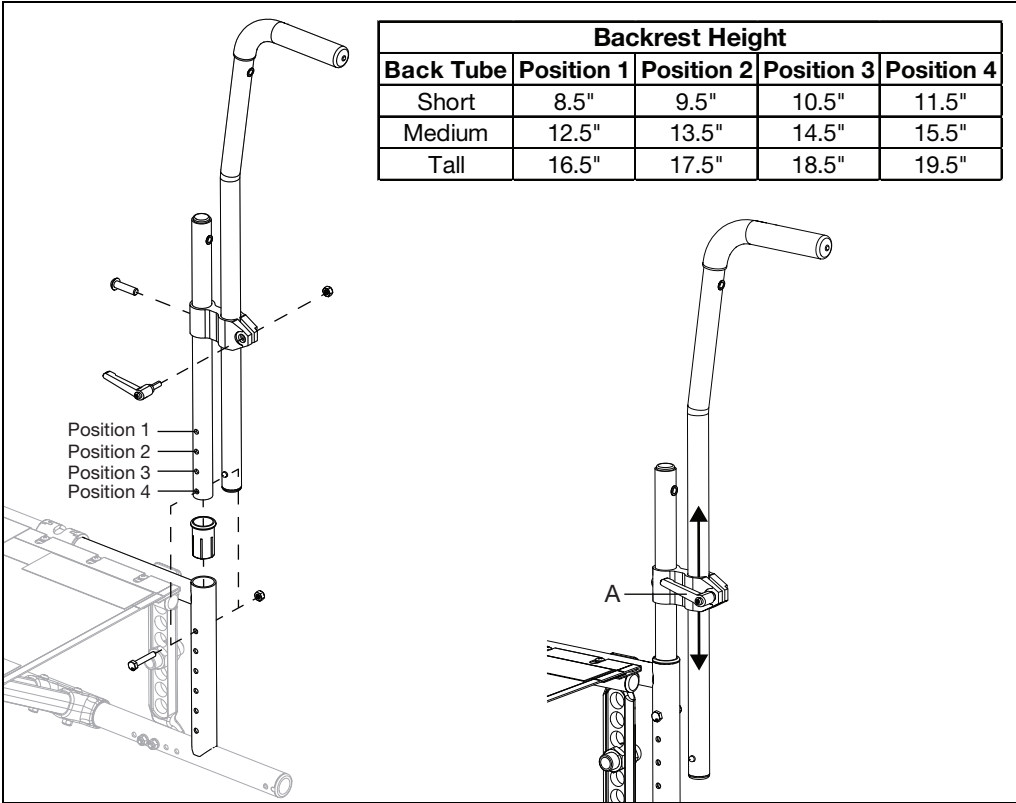
# Caregiver Height Adj. Stroller Handle

See the image and charts below to assemble the caregiver height adjustable stroller handle in the desired height.

**NOTE:** Both sides should be set in the same height.

## Adjusting Height with Hand Lever (See image below)

1. Loosen the hand lever.
2. Adjust the upper stroller handle up or down to desired height.
3. Tighten the hand lever to secure the upper stroller handle in place.

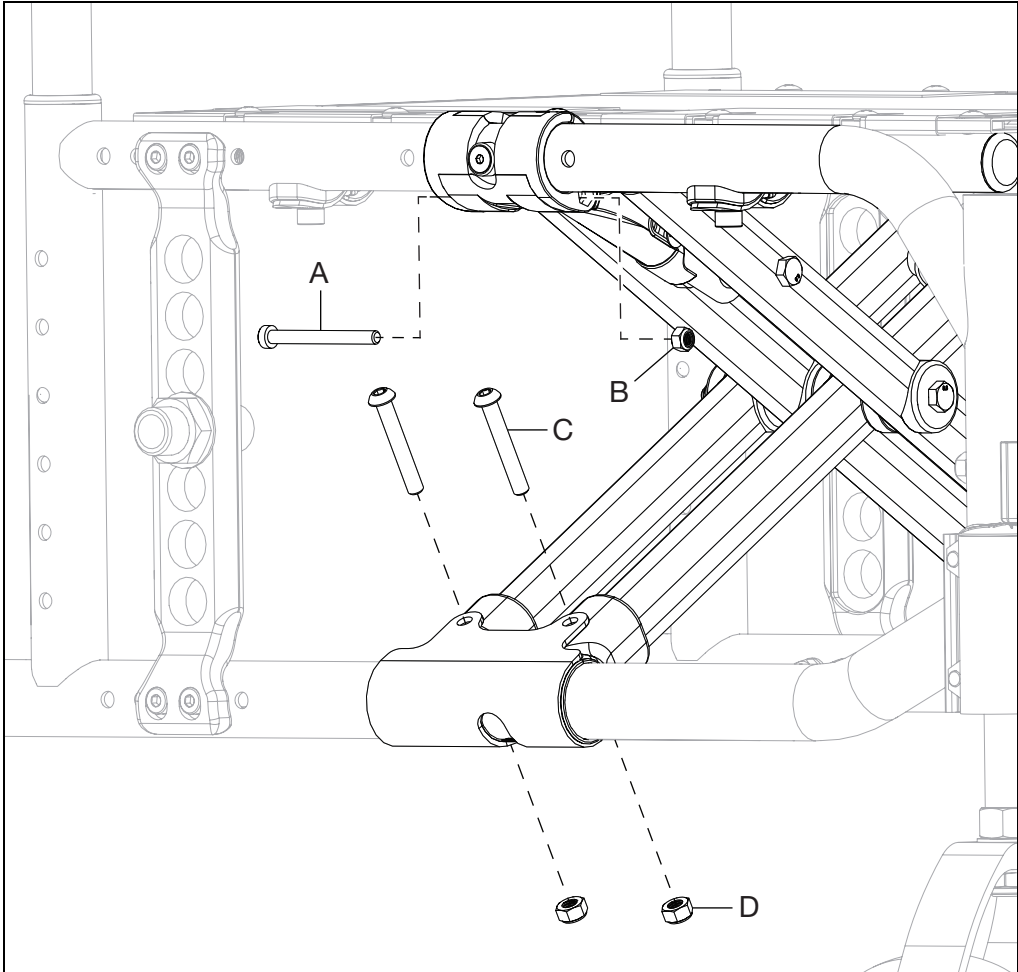


## Catalyst 4E, E - Width Change

**NOTE:** Remove any seating, cushion or seat upholstery if present prior to beginning the width change. Also, if present, remove T-Arms and the T-Arm bracket prior to the width change. Save all parts and reinstall when done switching the cross brace assembly out.

**NOTE:** The new cross brace assembly will be ordered in the desired width and depth desired.

1. Use a 4mm Allen wrench to remove the upper bolt (A) and nut (B).
2. Use a 4mm Allen wrench and a 10mm wrench to remove the two lower bolts (C) and nuts (D).
3. Repeat steps on opposite side of cross brace.
4. Install the new width cross braces and install by doing steps 1 - 3 in reverse order.



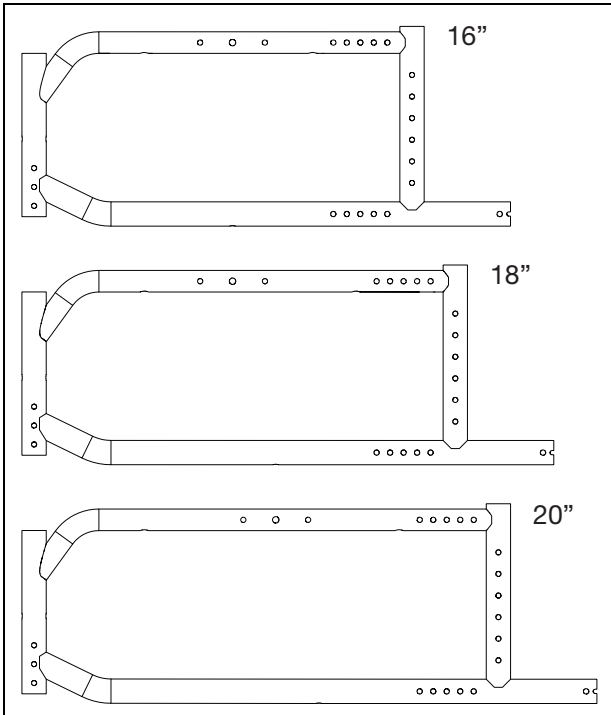
# Catalyst 4E, E - Depth Change

**NOTE:** The depth on a Catalyst E and 4E is changed by switching out the frame. Frames are available in 16", 18" and 20" depth configurations.

The following items need to be removed and reinstalled if present on the chair:

**NOTE:** See the sections in this technical manual for removal reinstallation steps for each item listed below.

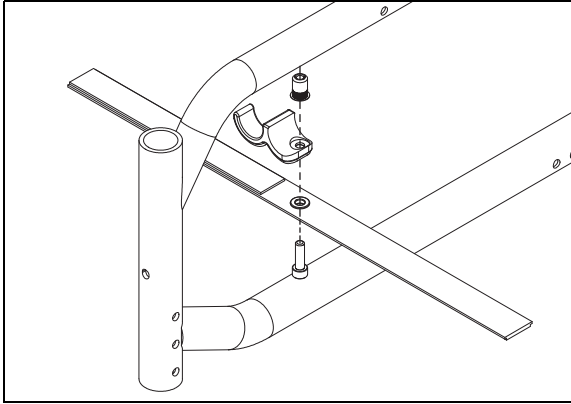
- Cross Brace Assembly
- Wheel Locks (if present)
- Wheels
- Axle Plate
- Casters
- Footrests
- Armrests
- Seat Upholstery
- Back Upholstery
- Anti-tips (if present)
- Any other accessories that may be attached to the frame such as step tubes, O2 holder, etc (if present)



# Velcro Closing Strap - Available on Catalyst 4E/E

## Installing Velcro Closing Strap

1. Remove the bolt installed with the seat hook using a 5mm Allen wrench.
2. Install the velcro closing strap and reinstall the bolt through the strap, seat hook and the riv nut to secure.

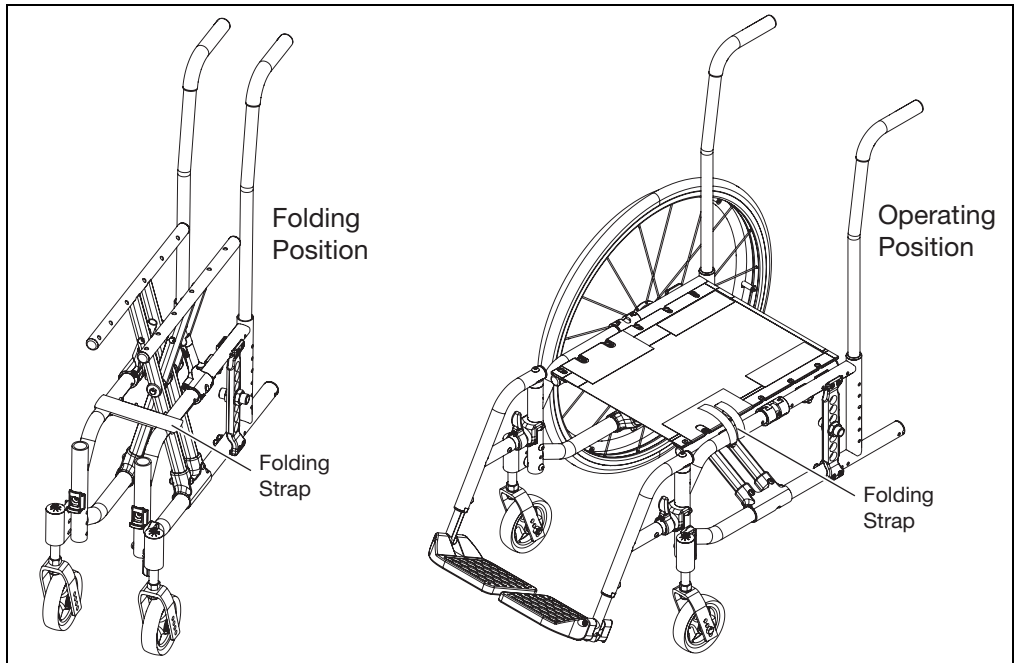


## Folding Position

1. Folding the chair completely.
2. Wrap the strap around either side of frame and secure by attaching the hook side of the strap to the loop side of the strap.

## Operating Position

1. Twist strap so the hook and loop sides are facing down.
2. Wrap the strap to the top of the chair and attach to the hook and loop surface on the seat upholstery.
3. Place cushion over the top of the strap (if applicable).



# Folding Handle

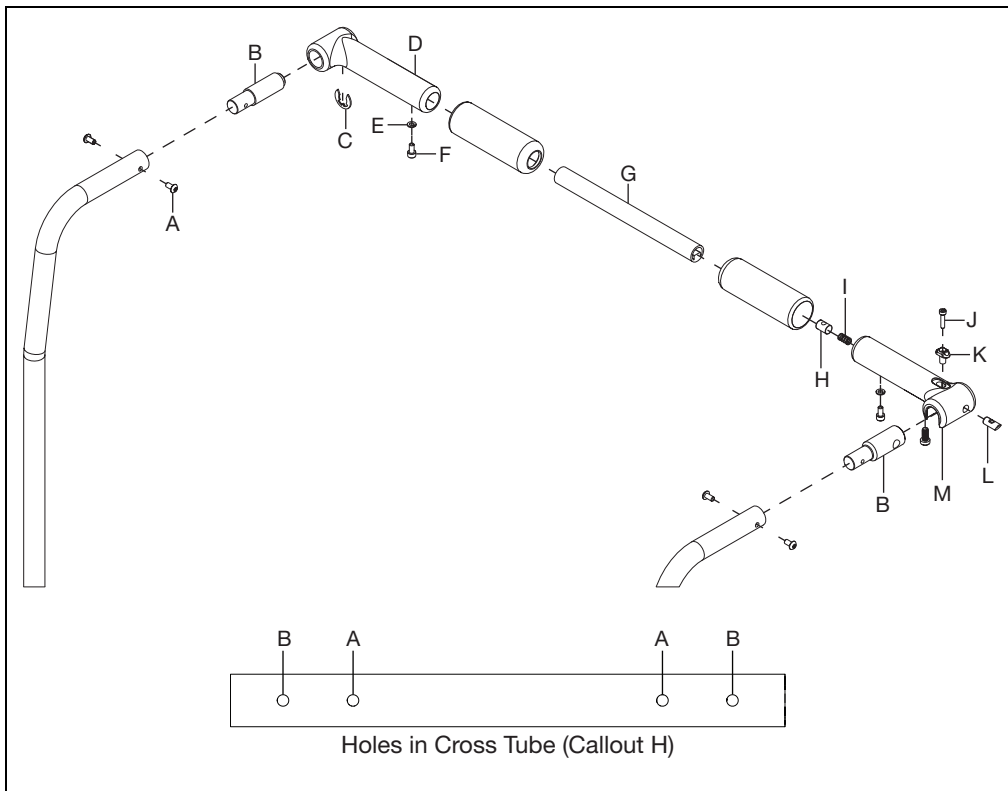
1. Install the spring (I) into the latch (M).
2. Insert the barrel nut (H) into the latch (M) and align the threaded hole in the barrel nut with the hole in the latch.
3. Insert the latch pin (L) through the hole in the latch (M) which will compress the spring (I).
4. Align the hole in the latch pin (M) with the slot in the latch. Fasten pin in place with screw (J) and button latch (K) using a 3mm Allen wrench. Do not overtighten which would cause binding.
5. Insert the pivot adapter (B) into the pivot (D). Secure in place with E-Clip (C).
6. Insert the cross tube (G) into the latch and pivot and secure with screws (F) and lock washers (E) using a 4mm Allen wrench.

**NOTE: See the table below to determine the holes used when installing the cross tube.**

7. Insert the pivot into the right push handle of the backrest and secure with screw (A).
8. Insert the latch adapter into the left push handle of the backrest and secure with screw (A).
9. Verify the function of the latch before use.

**Hole Configuration for Chair Width**

Chair Width	Cross Tube (H)	Hole A + Hole A	Hole A + Hole B	Hole B + Hole B
14 - 16W	110264	14W	15W	16W
16 - 18W	110265	16W	17W	18W
18 - 20W	110266	18W	19W	20W
20 - 22W	110267	20W	21W	22W



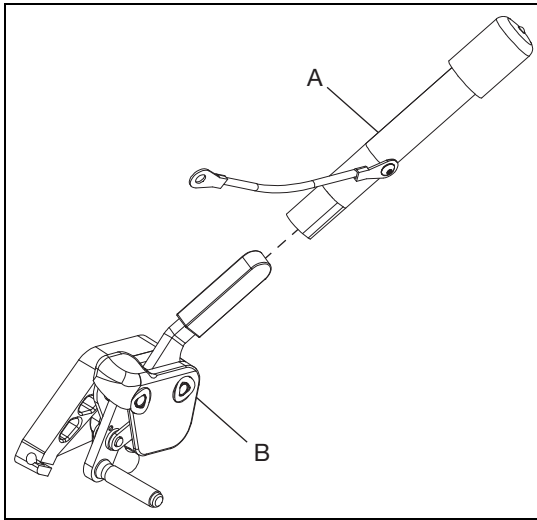


# Hemi Wheel Lock

**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.

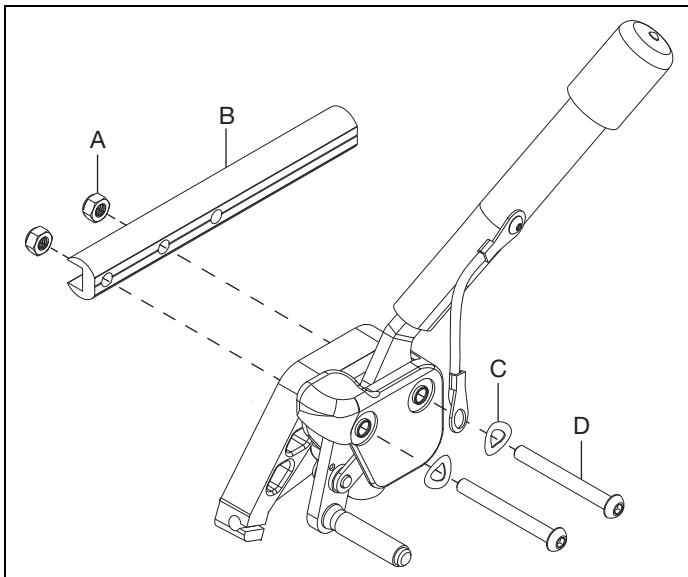
## Installation

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.

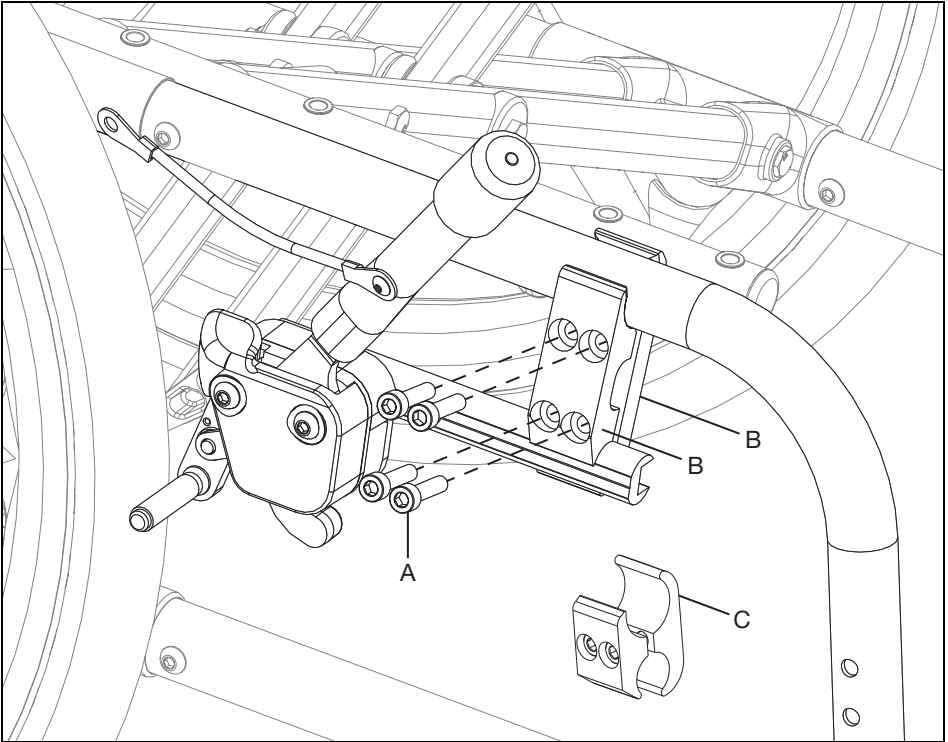
**NOTE:** If the wheel lock extension is present, the lanyard (D) is connected between the master lock assembly and the bolt as shown below.



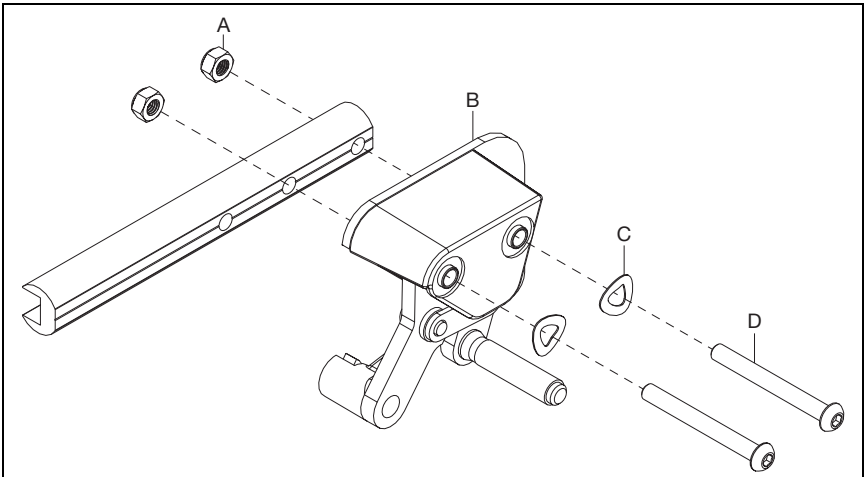
# Hemi Wheel Lock

3. Install the master lock and mount assembly onto the chair frame using the clamps (B) and securing with four bolts (A) using a 5mm Allen wrench. The knurled bar should be approximately  $\frac{1}{2}$ " from the tire. The placement of the assembly can be adjusted later so the wheel lock properly engages with the tire.

**NOTE: The shorter clamps (C) may need to be used instead of the longer clamps (B) for chairs with low seat heights.**



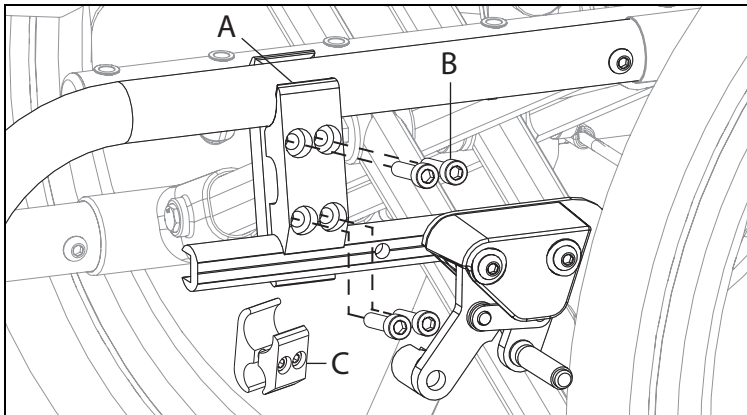
4. Install the follower lock assembly (B) onto the wheel lock mount bar with two bolts (D), two washers (C) and two nuts (A) using a 4mm Allen wrench.



# Hemi Wheel Lock

5. Install the follower lock and mount assembly onto the chair frame using the clamps (A) and securing with four bolts (B) using a 5mm Allen wrench. The knurled bar should be approximately  $\frac{1}{2}$ " from the tire. The placement of the assembly can be adjusted later so the wheel lock properly engages with the tire.

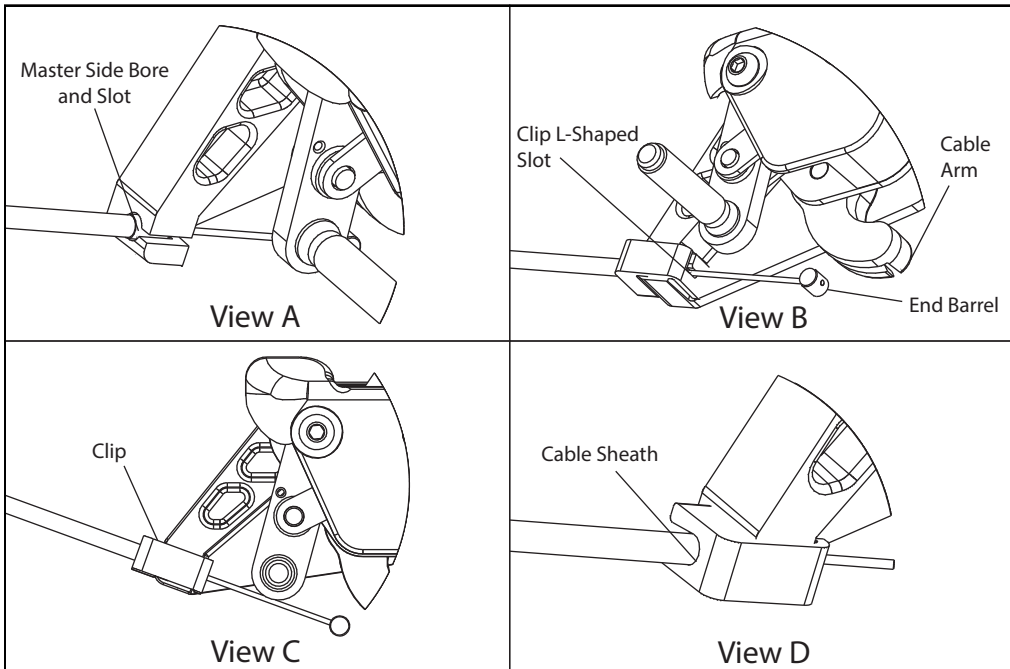
**NOTE: The shorter clamps (C) may need to be used instead of the longer clamps (B) for chairs with low seat heights.**



6. Attach the master (drive) side cable by installing the cable into the master side bore and slot (View A).

**NOTE: A cable sizing chart is available at the end of this section for reference if needed.**

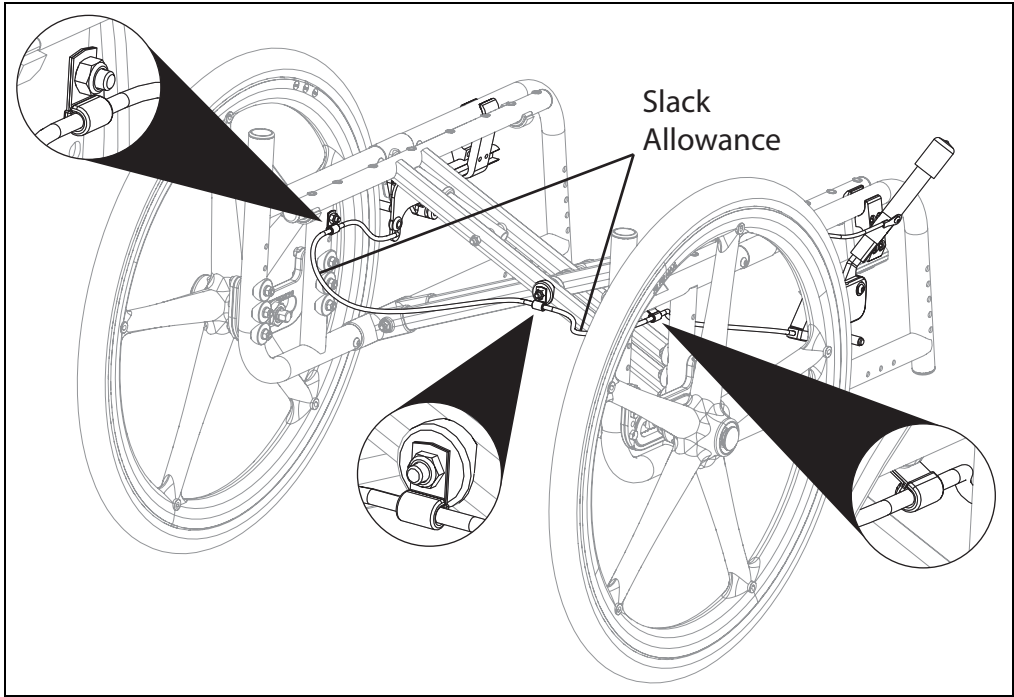
7. Place the end of the barrel into the cable arm (View B).
8. Insert the cable into the L-Shaped slot of the clip (View B).
9. Pull the clip over the master side boss (View C).
10. Snap the clip onto the cable sheath (View D).



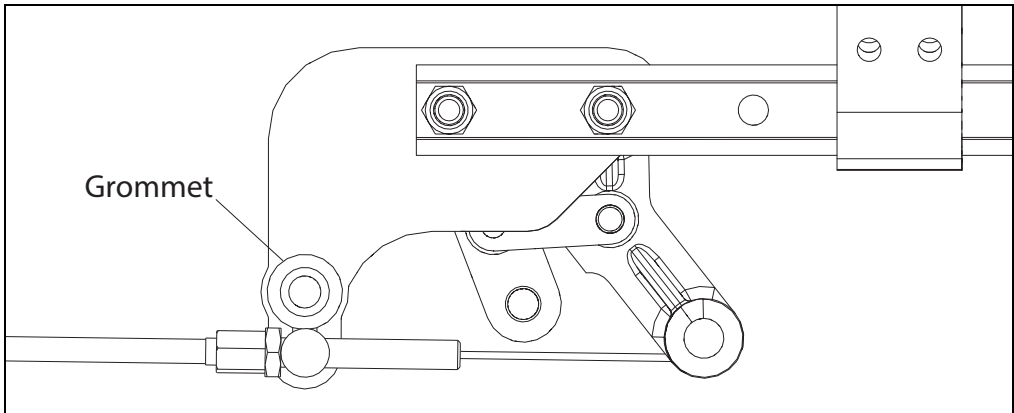
# Hemi Wheel Lock

11. Route the cable as shown below to the follower side for install.

**NOTE:** There are three P-Clips that are used in the routing. One that is installed under the seat hook, one that is installed under the crossbrace bolt and one that is installed through any rear frame hole on the front-most vertical strut with a bolt and a nut using two 10mm wrenches.



12. Install the follower cable as shown below. Install the grommet after to prevent cable from coming out of the slot.



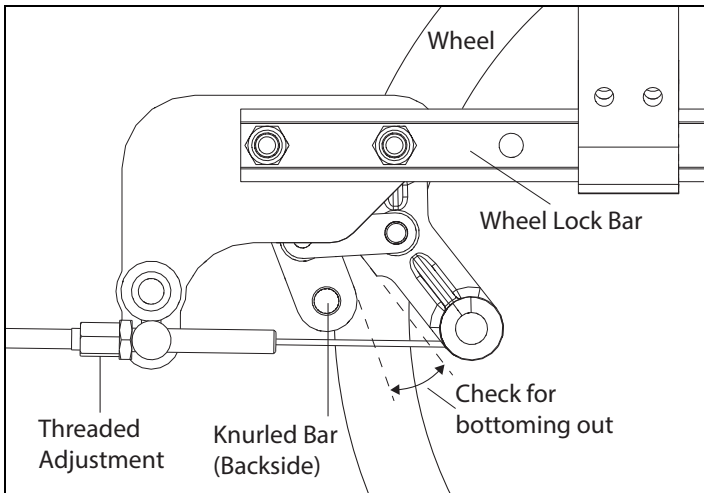
# Hemi Wheel Lock

## Adjusting the Locks (See image below)

1. Ensure the wheel lock bar 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 bars 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 Cable Size

Chair Width	Part Number	Description
10	002468	Drum Brake Cable - Short
11	002468	Drum Brake Cable - Short
12	002468	Drum Brake Cable - Short
13	002471	Drum Brake Cable - XL
14	002471	Drum Brake Cable - XL
15	002471	Drum Brake Cable - XL
16	111313	Hemi Wheel Lock Cable - Short
17	111313	Hemi Wheel Lock Cable - Short
18	111314	Hemi Wheel Lock Cable - Medium
19	111314	Hemi Wheel Lock Cable - Medium
20	111315	Hemi Wheel Lock Cable - Long
21	111315	Hemi Wheel Lock Cable - Long
22	111315	Hemi Wheel Lock Cable - Long

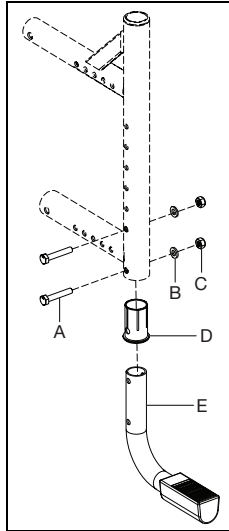
# Tipping Lever

**NOTE:** New rear frames are required with serial numbers prior to C5053765, C5HD003546 or CVX0091137.

**NOTE:** Not available with Heavy Duty Option.

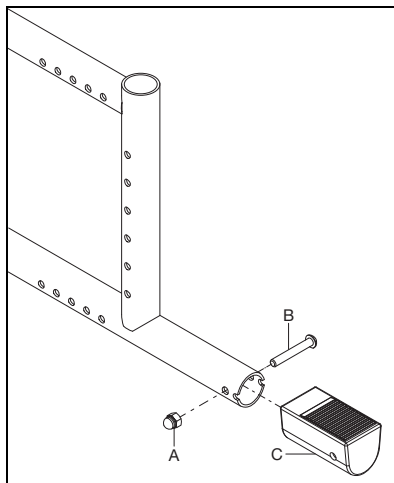
## Catalyst 5Vx Tipping Lever

1. Insert the sleeve (D) into the frame tube making sure the holes are aligned with the frame holes.
2. Insert the tipping lever assembly (E) into the sleeve and frame and secure with two bolts (A), two washers (B) and two nuts (C) using two 10mm wrenches.
3. Repeat on opposite side.



## Catalyst E Tipping Lever

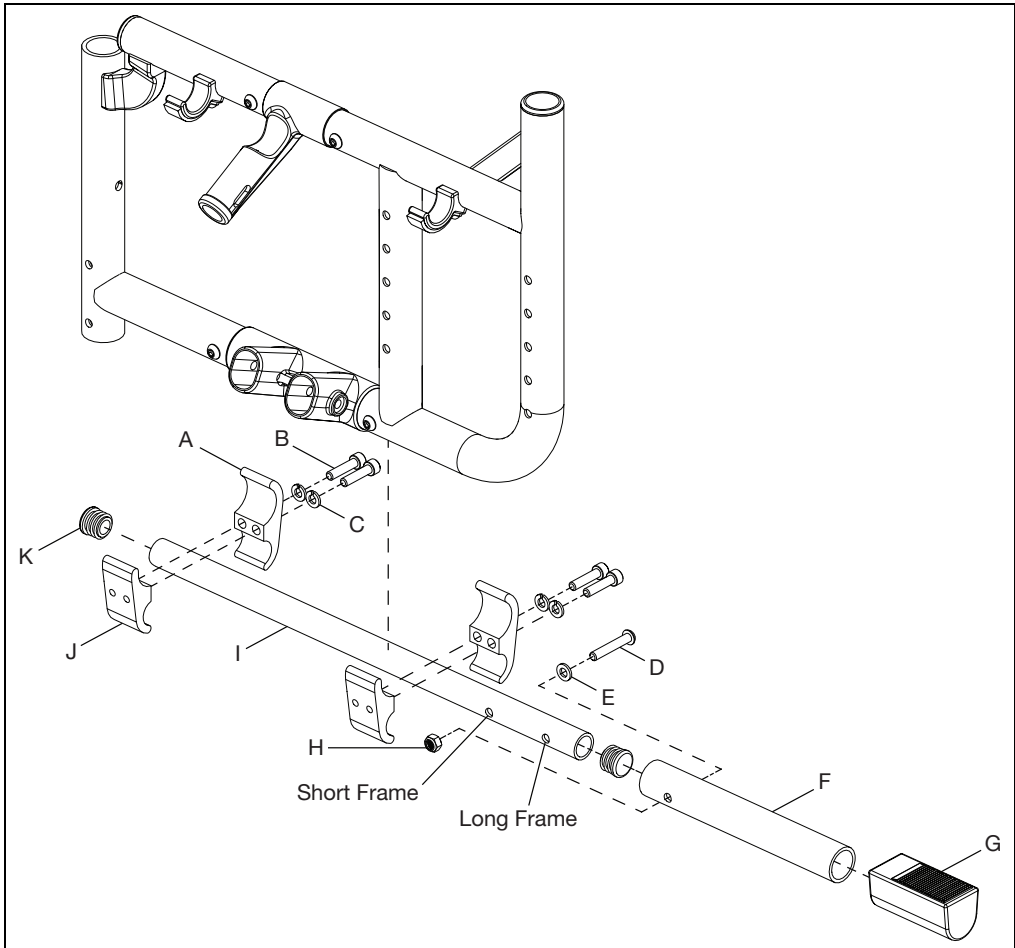
1. Insert the tipping lever grip (C) onto the rear frame tube.
2. Secure with bolt (B) and nut (A) using a 5mm Allen wrench and a 10mm wrench.
3. Repeat on opposite side.



# Tipping Lever

## Catalyst 5 Tipping Lever

1. Insert the tube end plugs (K) into both ends of the tipping lever tube .75" (I).
2. Insert the tipping lever tube 1" (F) onto the tipping lever tube .75" (I) and secure with bolt (D), washer (E) and nut (H) using a 5mm Allen wrench and a 10mm wrench. Note, the holes are labeled as short frame or long frame. Use the hole based on the frame type you have.
3. Install the tipping lever grip (G) onto the tipping lever tube (F).
4. Install the two sets of frame clamps (A & J) loosely onto the tipping lever tube .75" (I) with two bolts (B) and two lock washers (C) per clamp set using a 5mm Allen wrench.
5. Install the top end of the clamps onto the bottom frame tube of the chair. The front set of clamps should be on the front side of the cross tube braces and the other behind them. Once in place, tighten clamps fully with the 5mm Allen wrench.



# Replacing Catalyst Cross Tubes

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**NOTE: Reference the image on the next page for part locations and item callouts.**

1. Remove the rear wheels and removable accessories from the wheelchair (armrests, sideguards, etc.).
2. Remove the seat sling (B), or seat pan depending on which one your chair uses, from the cross tubes by removing the mounting screws (A). Set the seat sling and mounting screws aside.
3. Separate the front frame assembly (S) from the rear frame assembly (J) by removing the screws (Q) from the barrels (R) and removing the barrels from the frame that secure the front frame assembly to the lower and upper frame connectors (L & I). Slide the front frame assembly clear, repeat for the opposite side.
4. Slide the cross tube assembly clear of the rear frame assembly.
5. Remove the upper pivot (K) from the cross tube assembly by removing the bolt, spacers and nut (T, F, G & D). Repeat for the opposite side.
6. Remove the lower pivot (O) from the cross tube assembly by removing the bolt, washer and nut (P, N & M). Discard the lower pivot (O). Repeat for the opposite side.

**NOTE: The old lower pivot openings for the cross braces are in the shape of a perfect circle and the new lower pivots are oval shaped. If you already have the new lower pivot, save and reuse for later use - do not discard.**

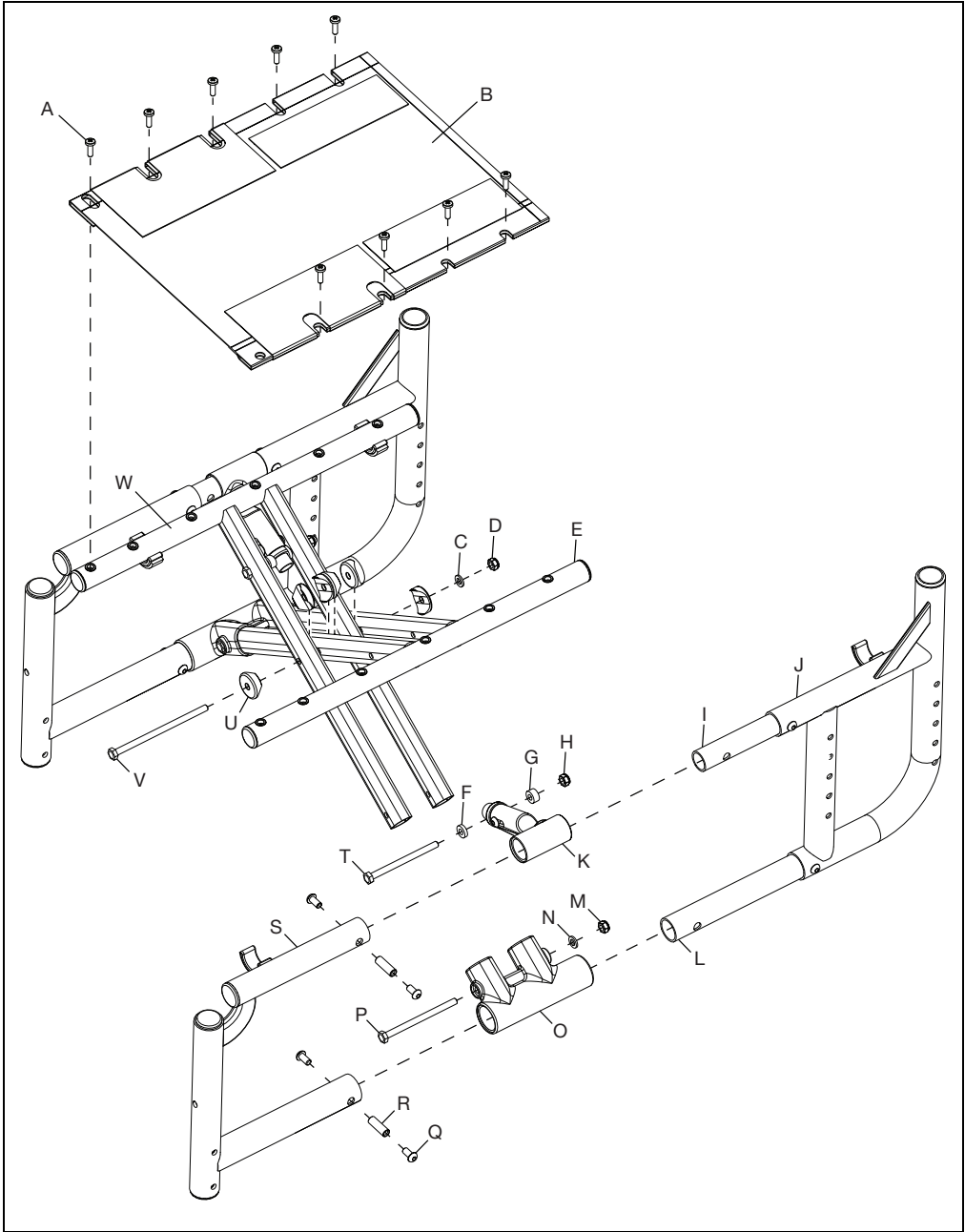
7. Remove the center pivot bolt, saddle washers, washer and nut (V, U, C & D) from the cross tube assembly. Discard left cross tube, right cross tube and saddle washers (E, W & C).
8. Assemble the cross tube assembly with new left and right cross tubes, new saddle washers, new center pivot bolt, washer and nut.
9. Install the new (or retained from earlier if you already had the new style) lower pivot using the bolt, washer and nut (P, N & M). Repeat for the opposite side.
10. Reinstall the upper pivot assembly (K) using the bolt, spacers and nut (T, F, G & H). Repeat for the opposite side.
11. Slide the cross tube assembly onto the lower and upper frame connectors (L & I).

**NOTE: The cross tubes with the holes closest to the end go on the front end of the chair.**

12. Reinstall the front frame assembly (S) onto the lower and upper frame connectors (L & I) of the rear frame assembly (J). Reinstall the barrels (R) and screws (Q) in the upper and lower frame. Repeat for the opposite side.
13. Reinstall the seat sling (B), or seat pan depending on which one your chair uses, onto the new cross tube assembly using the mounting screws (A). Reinstall lifting strap retained from step 2.
14. Ensure cross tubes fold and unfold properly.
15. Reinstall the rear wheels and removable accessories onto the wheelchair.



# Replacing Catalyst Cross Tubes





Ki Mobility  
5201 Woodward Drive  
Stevens Point, Wisconsin 54481  
715-254-0991  
[www.kimobility.com](http://www.kimobility.com)