

Open Source Rover: Rocker-Bogie Assembly Instructions

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1 Machining/Fabrication Steps

Parts/Tools Necessary

Item	Ref	Qty	Image	Item	Ref	Qty	Image
3 Inch Channel	S2	4		Metal Hacksaw or Bandsaw	N/A	N/A	

1.1 Aluminum Channels Cutting

On piece **S2** measure the distance shown in 1 from the edge and mark a straight line from the corner to that point, and cut off the corner along that line ¹

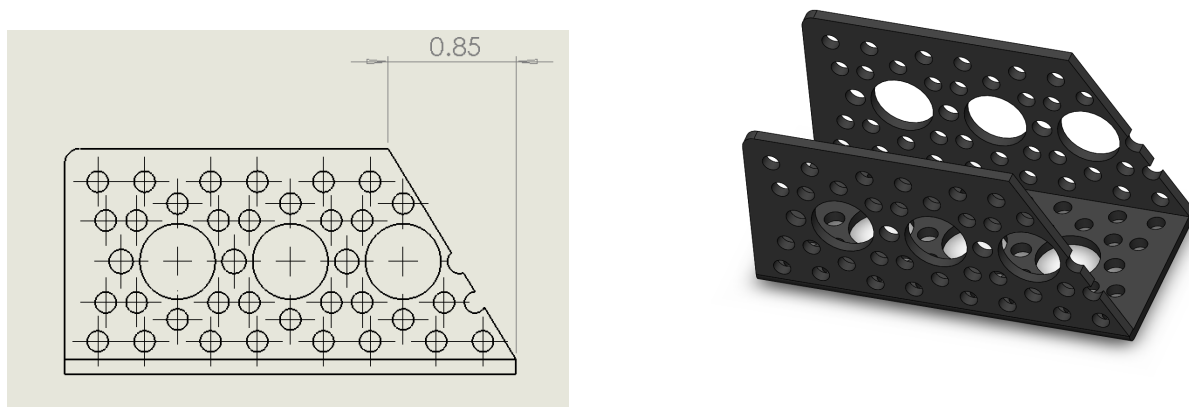


Figure 1: Channel Cutting Dimensions

1.2 Aluminum Rod Cutting

Take the 4 inch aluminum rod **S18** and cut it down to 3 inches long, indicated by Figure 2 ².

¹To make the geometry of the rocker-bogie and structurally more reinforced in it's bending moment we will add channels to the brackets, but they will need to have their corners cut out for clearance issues

²This cut is purely to keep the rod from sticking out too far either end of the rocker-bogie pivot joint

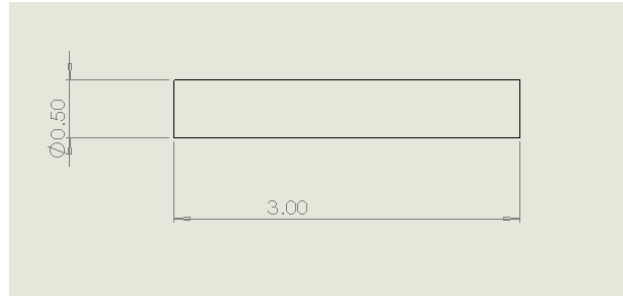


Figure 2: Aluminum Rod cutting dimensions

2 Mechanical/Structural Assembly

The Rocker-Bogie assembly is what attaches your wheels, and enables the geometry to climb.

Parts/Tools Necessary

Item	Ref	Qty	Image	Item	Ref	Qty	Image
3 Inch Channel (Modified)	S2A	4		#6 Washer	W1	28	
3.75 Inch Channel	S3	4		0.5 Inch Washer	W3	12	
9 Inch Channel	S5	2		#6 x 1/4 Standoff	T1	32	
Pattern F Bracket	S7	8		#6-32 x 3/8 Screw	B2	52	
0.5 Inch Pillow Bearing Block	S11	4		#6-32 x 1/2 Screw	B3	32	
0.5 Circular Clamping Hub	S13	2		#6-32 Locking Hex Nut	B11	60	
0.5 x 3 Inch Aluminum Rod	S18A	2		Allen Key Set	N/A	1	
Collar Clamp	S22	4		5/16 Wrench	N/A	1	

1. **Begin the Rocker Attachment:** Attach 9 inch channel **S5** and the a modified 3 inch channel **S2A** to pattern F bracket **S7** making sure to put a 6-32 washer **W1** in between them, and use screws **B2** and hex nuts **B11**. Make sure that the cut modification in **S2A** is angled towards the 9 inch channel, this can be seen better in Figure 4 clearer

if necessary.

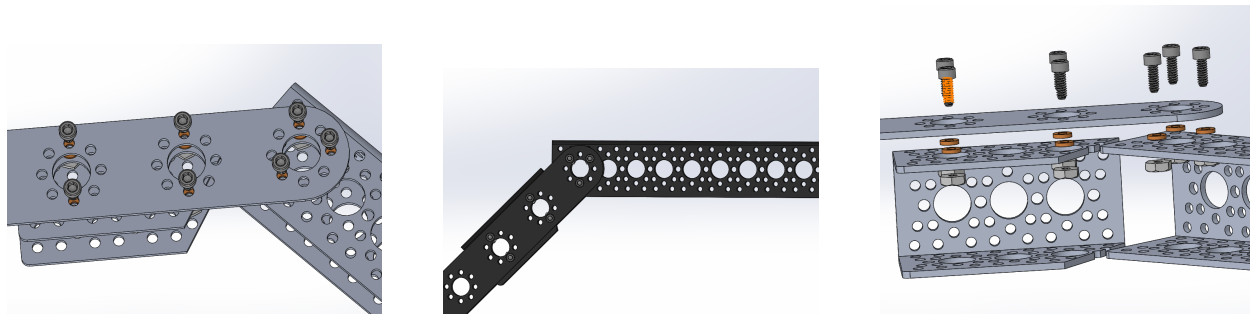


Figure 3: Begin the Rocker attachment

2. **Start the Bogie pivot joint:** Put rod **S18A** through the last hole in the current pattern F bracket, and then using washers **W3**, collar clamp **S22**, standoffs **T2**, screws **B4**, another modified 3 inch channel **S2A**, and another pattern F bracket assemble the pivot joint. Make sure to use the 2nd from the bottom hole on the 2nd pattern F bracket.

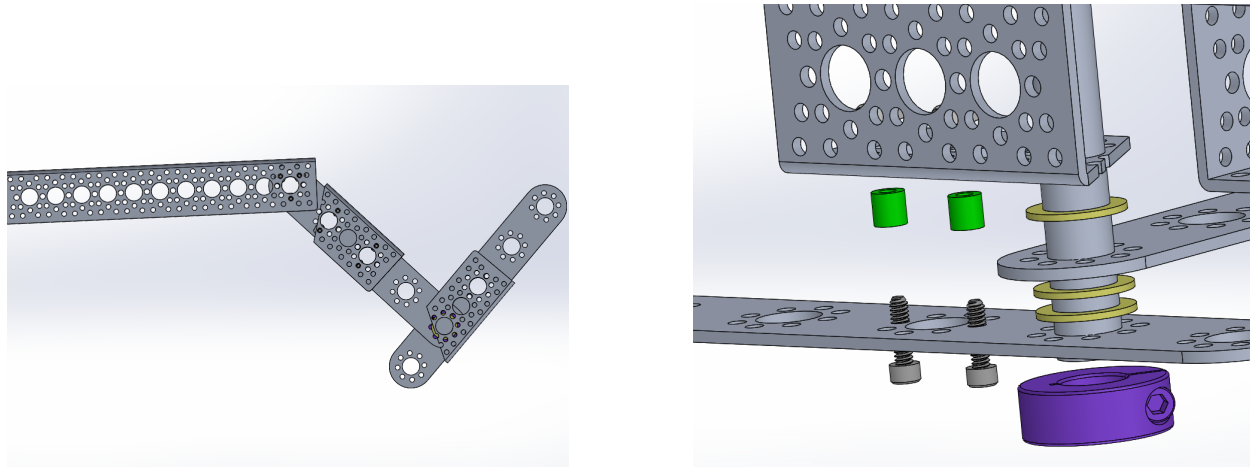


Figure 4: Start Rocker-Bogie pivot joint

3. **Attachment for Front Corner:** Attach 3.75 inch channel **S3** to the top hole of the pattern F bracket. Use spacers **T1**, screws **B4**, and hex nuts **B11**.

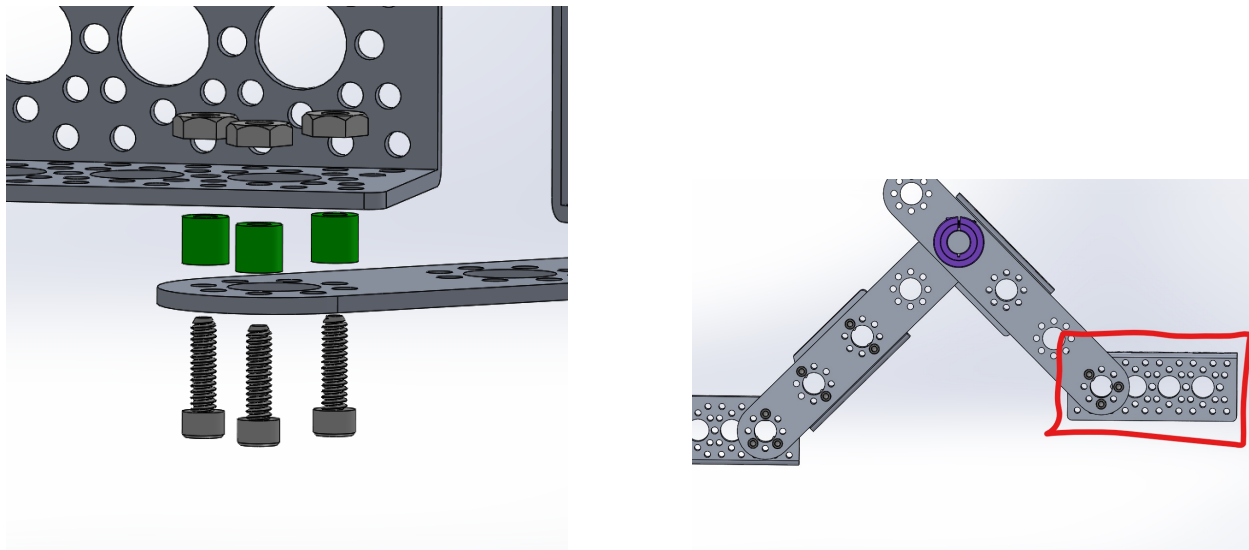


Figure 5: Attaching channel to corner steering

4. **Attachment for middle Wheel:** Attach 3.75 inch channel **S3** to the bottom hole of the pattern F bracket just attached. Use spacers **T1**, screws **B4**, and hex nuts **B11**.

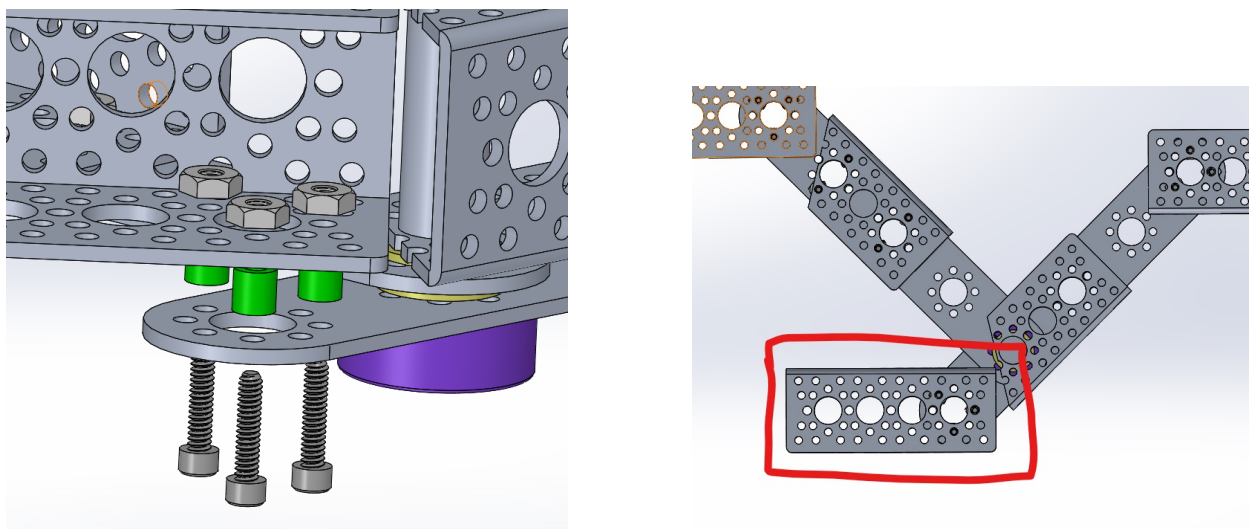


Figure 6: Attachment for middle wheel

5. **Other edge of Rocker-Bogie Joint:** Attach Pattern F bracket **S7** to the other side of the channels using washers **W1** and **W3**, screws **B4**, and hex nuts **B8**.

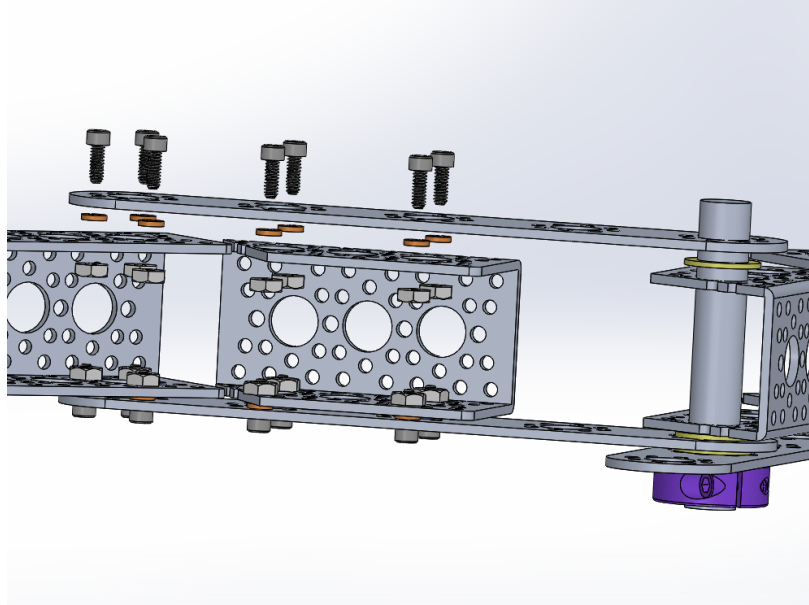


Figure 7: Start the other side of Rocker-Bogie joint

6. **Other edge of Rocker-Bogie Joint Cont:** Using washers **W1**, collar clamp **S22**, spacers **T1**, and screws **B10** attach pattern F bracket to the final connecting channels.

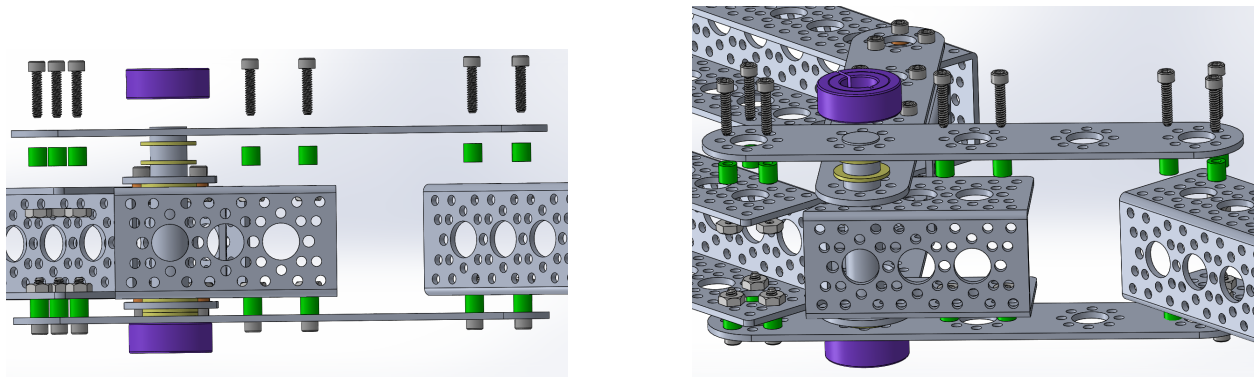


Figure 8: Other edge of Rocker-Bogie joint

7. **Checkpoint:** At this point your rocker bogie joint should look like the following.

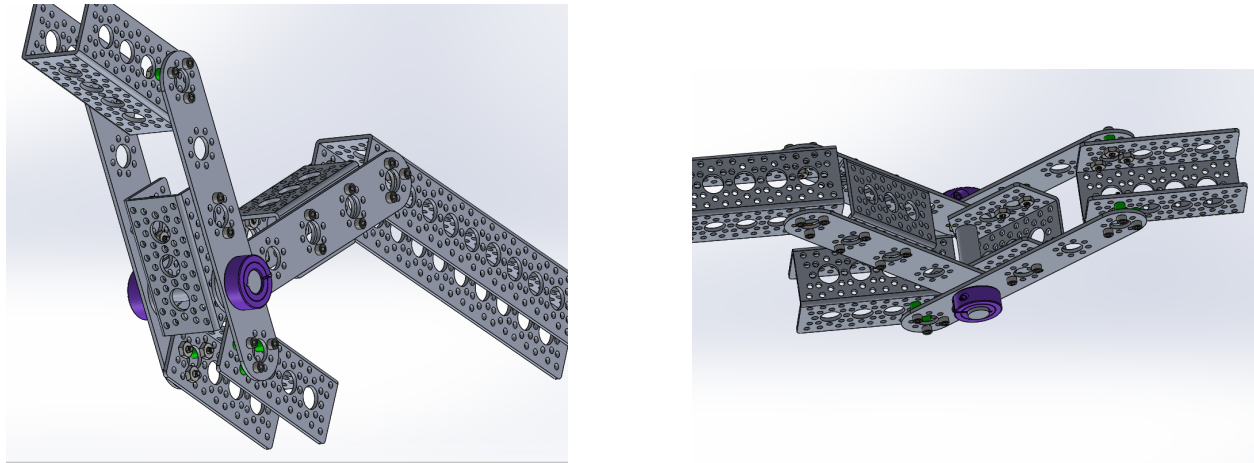


Figure 9: Checkpoint

8. **Bearing Block Attachment:** Using Pillow Bearing Block **S13** and screws **B2** attach the clamping hub, which should be centered directly above where the pillow blocks were just places.

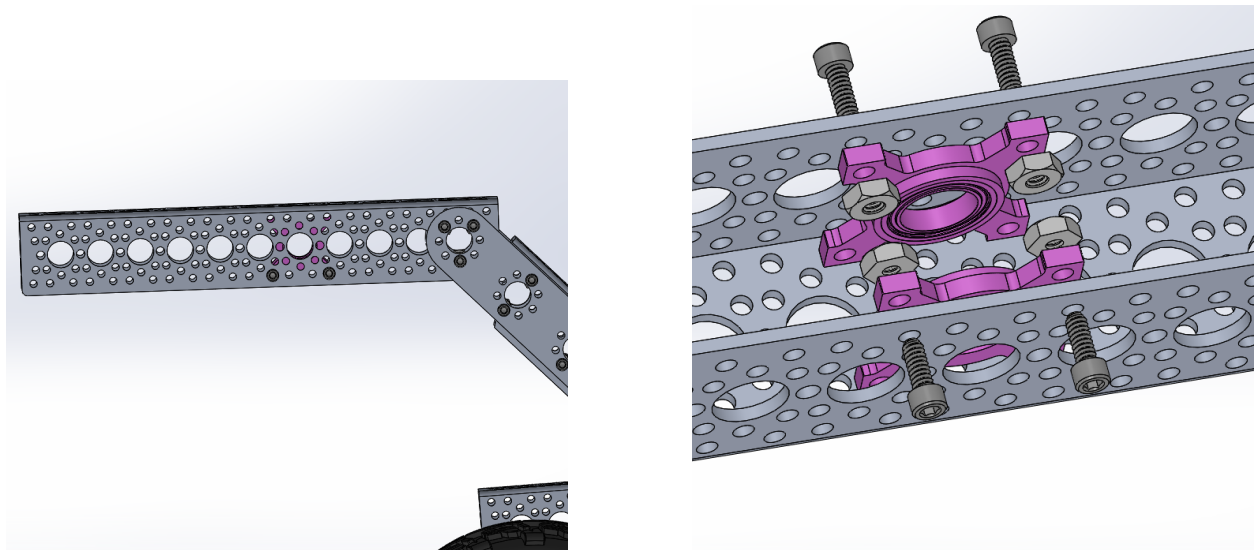


Figure 10: Pillow bearing block attachment

9. **Clamp Hub Attachment:** Using Clamping Hub **S11**, screws **B2**, and hex nut **B11** attach the pillow bearing blocks. The bearings should be centered about the 5th hole from the front of the rocker-bogie as shown below.

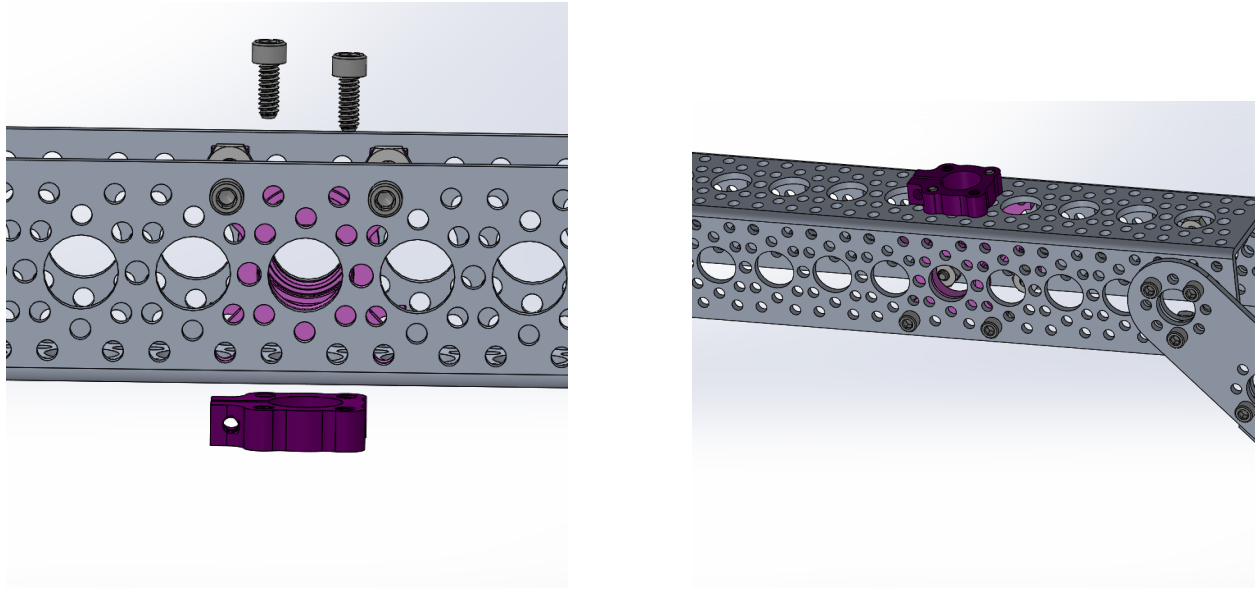


Figure 11: Clamping hub attachment