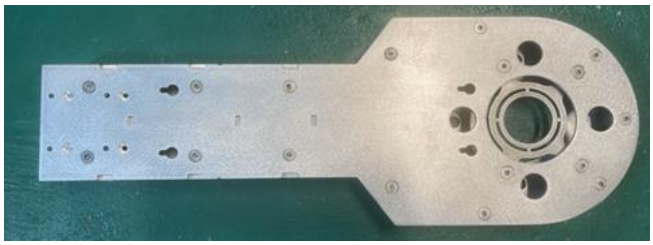
Scavenger Leg Version 1 Assembly Guide

Part: Leg 1.0
Rev 2025 June 28

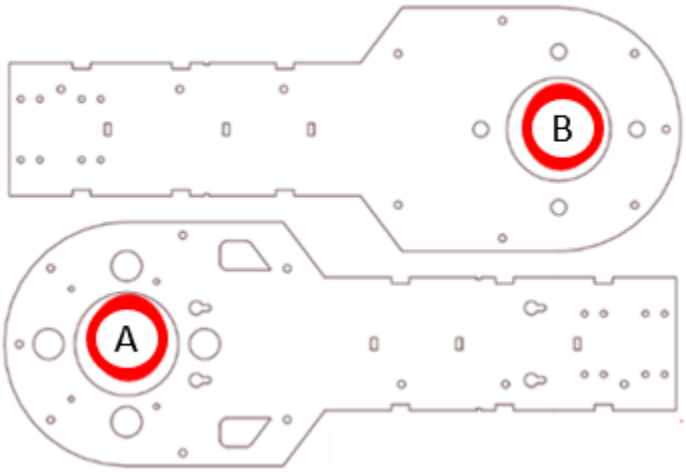


Finished Scavenger Leg

There are currently two versions of the Scavenger Leg. This guide contains information on how to assemble Scavenger version1 with the addition of a screw lock to support leg to ankle connections. Without this modification, the screw holding the ankle to the leg could spin inside the leg making it hard to separate the two pieces.

Video Assembly Guide

The youtube video was created before the addition of the screw lock. The video described the start of the installation with Leg Part B. In this guide, we will start with Leg Part A and finish with screwing down Leg Part B at the very end.

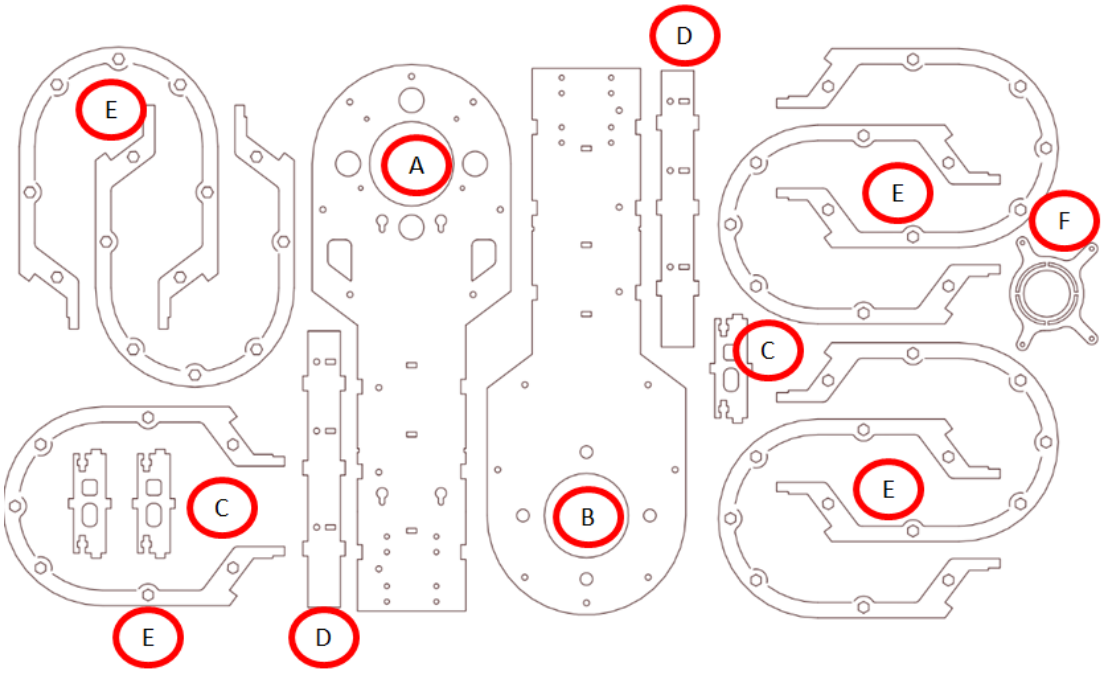


https://www.youtube.com/watch?v=Ct6M10LLMKE

Tools & Additional Parts

1. JB Weld High Heat Epoxy (Metal Glue): Amazon, Home Depot
2. Loctite Red
3. Rubber Mallet or Soft Face Hammer:
4. Metal file
5. Crescent wrench
6. 90 degree countersink bit set: Amazon – ½" (12mm) diameter countersink bit for #10-24 screws and 5/8in (16mm) diameter countersink bit for M6 screw
7. Electric Drill
8. M6 Allen Wrenches or Screwdriver (depending on head of screw)
9. 80 grit sandpaper (electric sander is recommended)
10. File or Angle Grinder (Leg Groove)
11. Heavy Gloves prevent metal shaving cuts

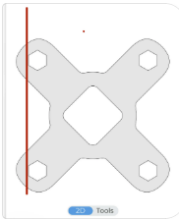
Aluminum Part List: One leg shown



Additionally:

Part G (3_16_scavlegs_lock.dxf) is a separate part that needs to be cut to secure (4) coupler nuts in each leg to secure one ankle.

The red vertical line denotes an area that will need to be trimmed before installation. You can determine this red line when you dry fit the different parts.



What you should have on hand to complete one set of legs:

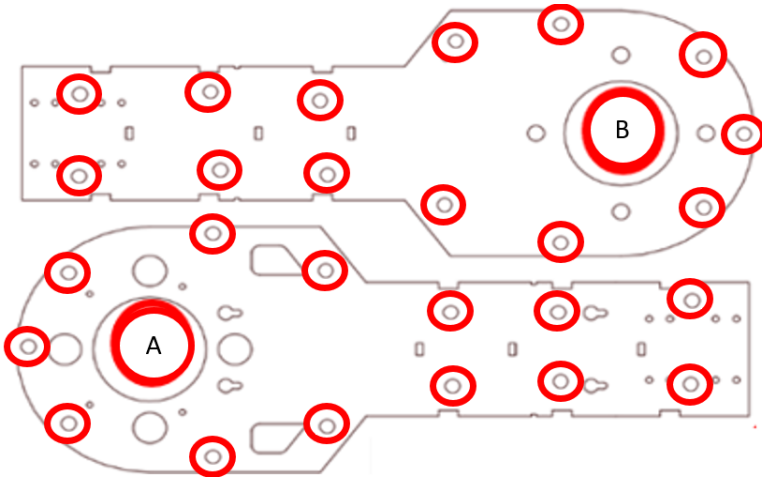
Part	Qty	Name
A	2	Outer Leg piece
B	2	Inner Leg piece
C	6	Ladder cross channel piece
D	4	Long Ladder piece
E	14	Horse Shoe piece
F	2	Hub Plate
G	2	Leg to Ankle lock piece

1. Sand/File All Parts, Counter Sink Leg Plates

With work gloves, file all the edges of the aluminum parts to remove the burrs and sharp edges. Sand everything with 80 grit sandpaper. This is easier with a random orbital or mouse sander, but can be done by hand.

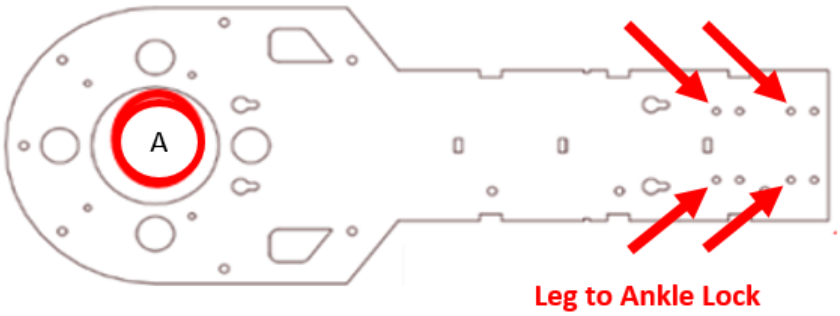
2. Leg Screws

Using the 90 degree **5/8in (16mm) diameter countersink bit**, make countersinks for (13) M6 screws on each leg piece (**Part A & Part B**). The screws should rest just below the surface of the leg.

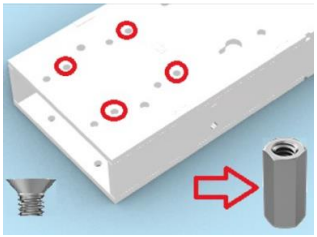


2a. Leg Screw to Ankle lock

Using the 90 degree **½" (12mm) diameter countersink bit for #10-24 screws**, countersinks for (4) #10-24 screws on leg piece **Part A only!** These countersinks are made on the same side of the leg. Again, countersinks are just below the surface of the leg.

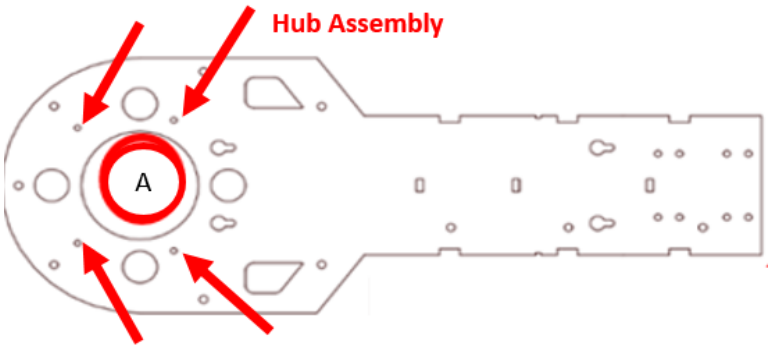


These countersink holes will be used to anchor #**10-24 coupler nuts** inside the leg.



2b. Hub Assembly holes

Using the 90 degree **½" (12mm) diameter countersink bit for #10-24 screws**, countersinks for (4) #10-24 screws on leg piece **Part A only!** These countersinks are made on the same side of the leg. Again, countersinks are just below the surface of the leg.



3. Build the Ladder

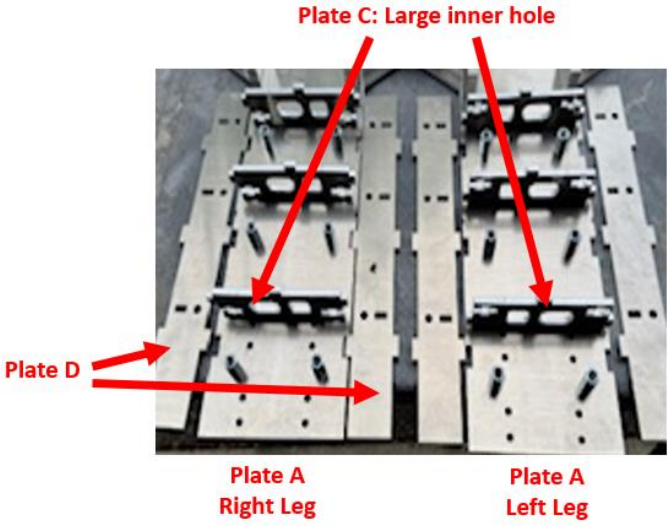
For each leg, you will need:

- (6) M6 x 18 mm flathead screws
- (6) M6 hex nut

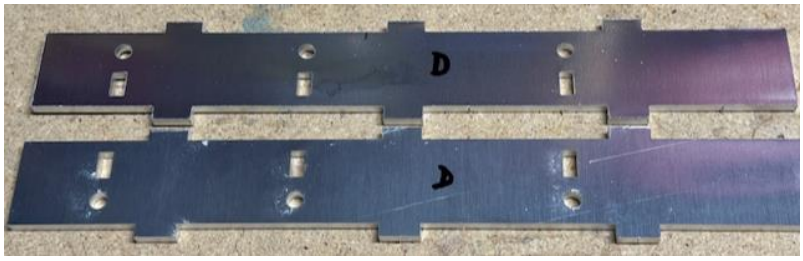
The following picture shows dry fitting the ladders to the leg.

Take care to really work on the inner holes of the ladder pieces (**Part C**) and the large hole on the inner plate (**Part A**).

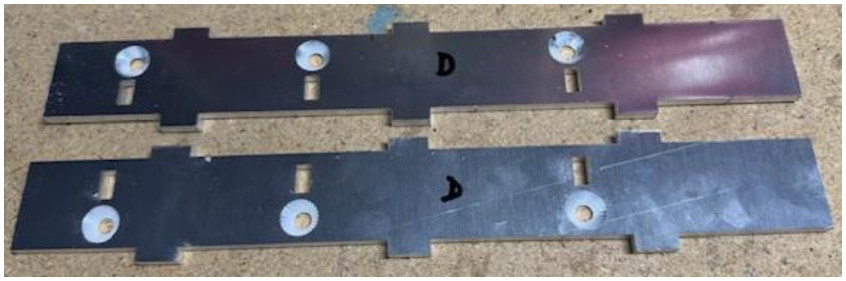
This is where your wires will run for the drive electronics, and you want to ensure the cables are protected from sharp edges.



Match up the two long ladder (**Part D**) pieces face to face. The squares should be pointing toward each other so they're aligned when you countersink the screws. Mark these with a sharpie to help you keep track of the outsides.



Use the 90 degree 5/8in (16mm) diameter countersink bit to drill each of the 6 holes in the long ladder piece (**Parts D**) until the screw fits flush with the plate.



Flip the long ladder pieces over, and start placing the 3 cross channels ladder pieces (**Parts C**). Make sure all three are facing the same way. Using the mallet, gently tap them into place. File down the tabs a bit, but they should fit pretty snug.

Place the second longer piece onto the assembly and again using the mallet, gently tap into place until all three tabs are lined up nicely. Take care not to bend this piece too much and ensure that the tabs are aligned before hammering them in with more force.

Once all aligned, hammer them in until the tabs are flush. Hammer both sides until everything is flush, taking care to strike straight so you don't bend the piece. An anvil or flat concrete surface is helpful here.

Locate the slotted hole inside the cross channel ladder piece. Push a M6 nut into place. Apply Red Loctite to a M6 x 18mm screw and screw it in from the outside of the long ladder piece. This will lock the cross channel pieces to the long ladder piece. Repeat for the other 5 holes.

Finished ladder assembly

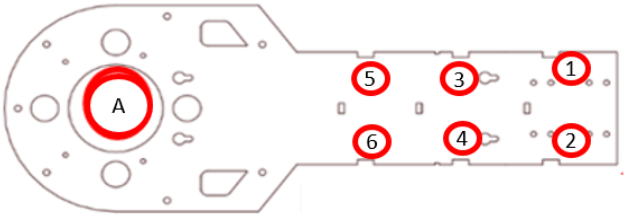
4. Assembly of Lower Plate

For each leg, you will need:

- (13) M6 x 12 mm flathead screws
- (7) M6 x 30mm steel coupling nut
- (6) M6 x 18mm steel coupling nut

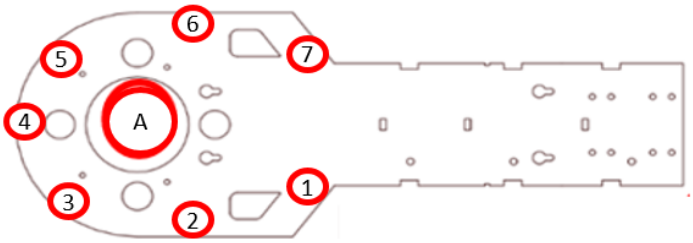
Use (6) **M6 x 18mm coupler nuts** on the bottom of the leg. Screw in with M6 x 12mm screw into **Plate A** leg. These screws should fit into the countersink holes you created in Step 2.

Use Red Loctite and tighten thread into the M6 coupling nuts

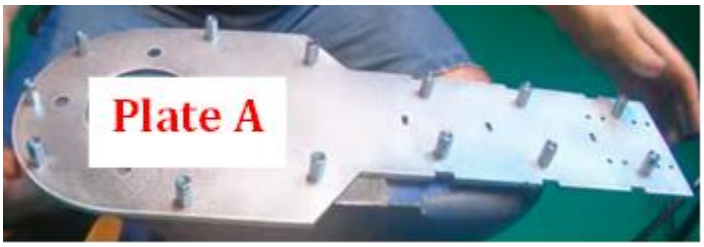


Use (7) **M6 x 30mm coupler nuts** on the rounded top of the leg. Screw in with M6 x 12mm screw.

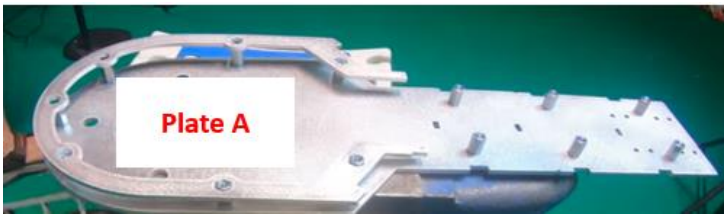
Use Red Loctite and “loosely” thread into M6 coupling nuts. The 30mm couplers must be able to spin slightly to fit the next piece.



Should look like this:



Grab a couple of horseshoes (**Part E**) and align it with the 30mm coupling nuts. Make sure each horseshoe can slide in and out of the couplers. Adjust as necessary to get a tight fit.

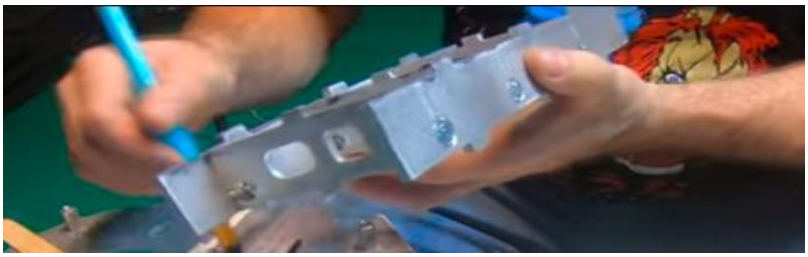


Tighten all 13 screws into the outer leg. Use a crescent wrench to adjust the 7 couplers so the horseshoe can slide in and out of the outer leg. Slide the horseshoe plate back off to prep for glue.

5. Attaching ladder to outer leg

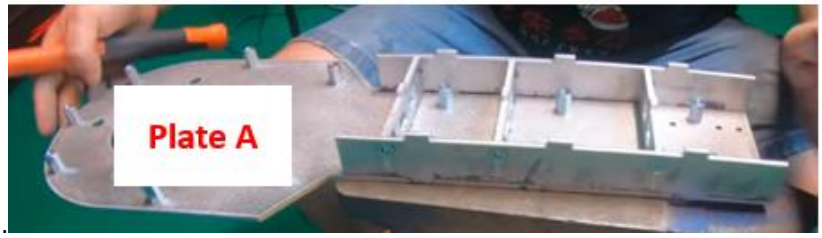
Mix up some JB Weld high temperature adhesive. Paint a “light” coat to one side of the ladder with this adhesive mixture. This adhesive is not used for structural strength, only to keep the aluminum plates from shifting and causing future line shift or cracks from appearing from Bondo or other cosmetic paint.

Make note of the location of the large hole inside the ladder as mentioned in Step 3. This will determine left or right leg.



Place ladder adhesive-side down to the outer leg **Part A**. Align tabs to holes and tap with hammer the ladder into leg.

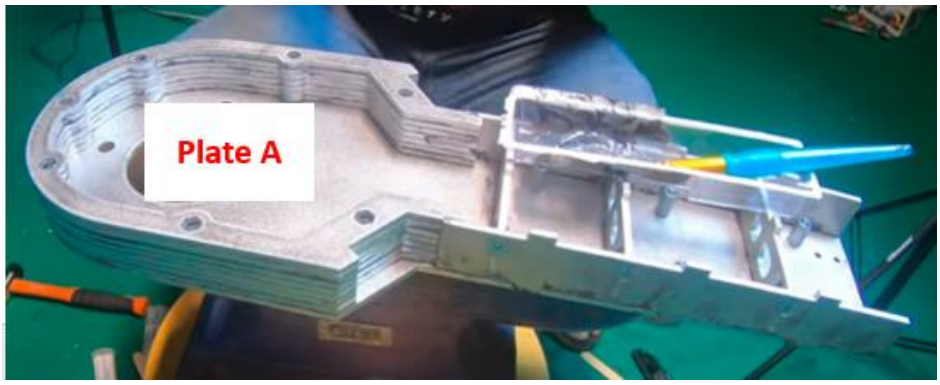
One side done. Look on all sides to make sure there are no gaps.



6. Assemble Inner Horseshoe C Shape Plates

Mix up some JB Weld Epoxy (metal glue). Using the mixed epoxy, paint a horseshoe C shape plates (**Part E**) and place on the couplers. You'll repeat the paint and stack for a total of 7 plates. The last few will be above the coupler and will slide around on the adhesive. You have a good bit of "open time" with this adhesive, as it does not dry for about 4 hours and takes 24 hours to fully cure. Take your time and ensure alignment. This epoxy washes off your hands easily with soap and water.

Tip: Apply the glue more towards the center so when you tighten everything down there is minimal squeeze-out on the outer edge (less to clean up). Thin coats are all that's necessary.



7. Hub Plate Assembly

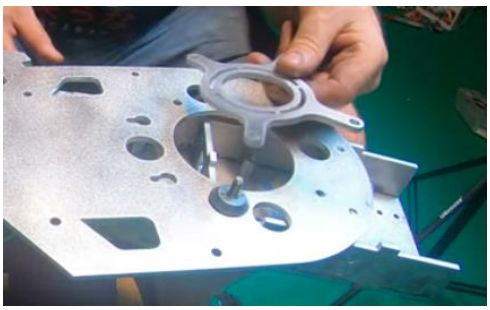
The hub plate is originally designed to fit aluminum and resin hubs that are available on Astromech runs.

You may need to adjust the height of the hub assembly if you intend on using a 3D printed hub.

You will need:

- (4) M6 1/4" spanner nut (or other spacer)
- (4) #10-24 flat head machine screws 1.5”
- (4) #10-24 nuts (come with pack above)

Screw #10-24 flathead screw through outer leg Plate A. Place spanner nut, hub plate and then #10-24 nut to secure in place.



to

NOTE for 3D Printed Hub:

The hub plate has an inner ring that can be cut away to fit 3D printed hubs. Simply use a dremel to cut the four tabs, then sand and file down the remnants. The Baddely/Solaris remixed hubs will fit perfectly in the cut plate.

8. Leg to Ankle Screw

Secure Leg to Ankle lock into position. Dry fit all the pieces to ensure the 4 coupling nut are secured to ankle lock (**Part G**) before any gluing. End result are the coupler nuts should not be able to twist or move around.

For each leg, you will need:

- (4) #10-24 x ½" flathead screws
- (4) #10-24 x coupling nut

Now that the ladder is in position, you will need to trim (**Part G)** Leg to Ankle lock piece so it fits within the ladder.

Note the diamond shape orientation of the ankle lock.

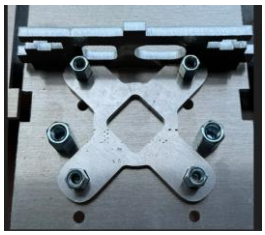
Before ==➔

After

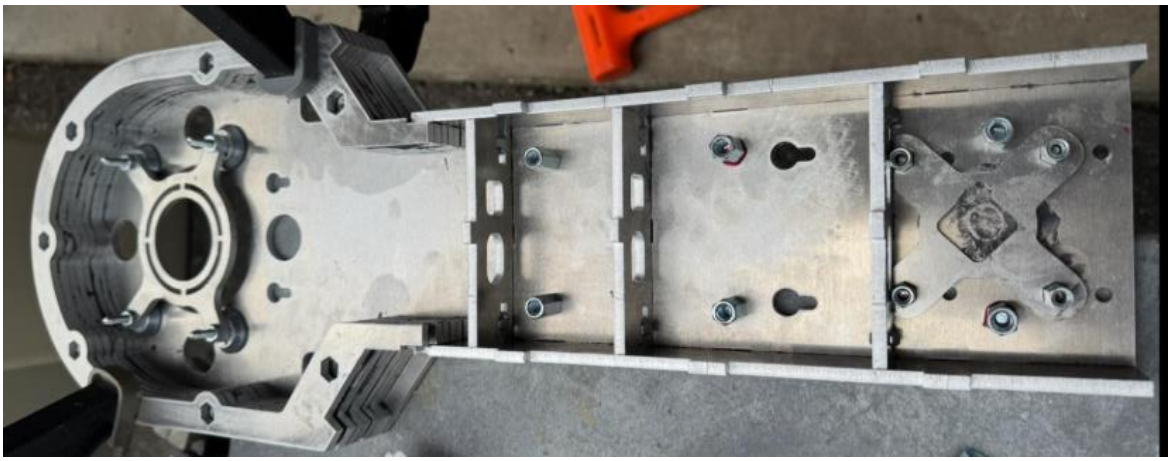
Mix up some JB Weld high temperature adhesive. Paint a "light" coat to one side of the ankle lock (part G).

Screw #10-24 x ½" long flathead screw through Outer leg (**Part A)** then Ankle lock (**Part G**) into a #10-24 coupling nut.

Use Red Loctite and tighten" thread into #10-24 coupling nuts.



When done, it should look like this:



9. Attaching Aluminum Horseshoe to leg (optional).

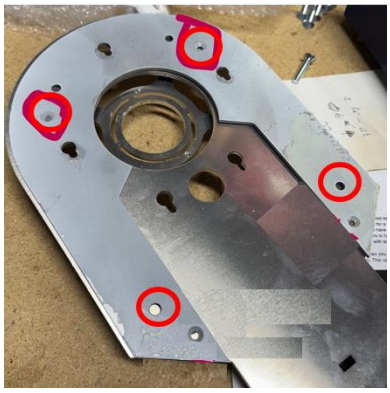
This section describes one way to secure a metal horseshoe purchased through Astromech.net onto Scavenger leg.

Not included in the Build of Material, you will need a tap and 4 flat head screws for each leg. I used M4 x 16mm long flat head screws for my build. But you can use any size and length flat head screw you wish.

The metal horse shoe usually comes in two pieces. A mounting bracket (left) and the horseshoe (right) itself.

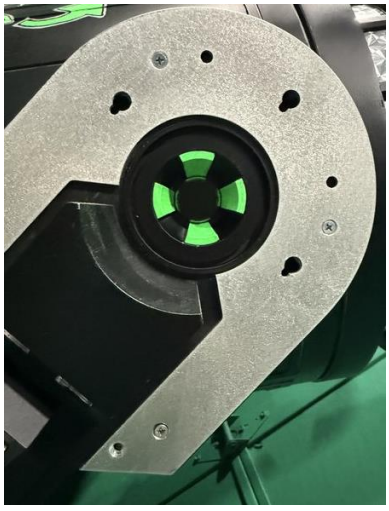
Place the horse shoe mounting bracket and place it over outer leg (Part A). Using a marker, identify 4 holes that need to be drilled and tapped onto outer leg to secure mounting bracket to scavenger leg.

You may have to countersink the 4 holes on the mounting bracket so screw are flush.



Place 4 screws of your choice so mounting bracket is secure to leg.

You should now be able to slide the horse shoe onto the mounting place.

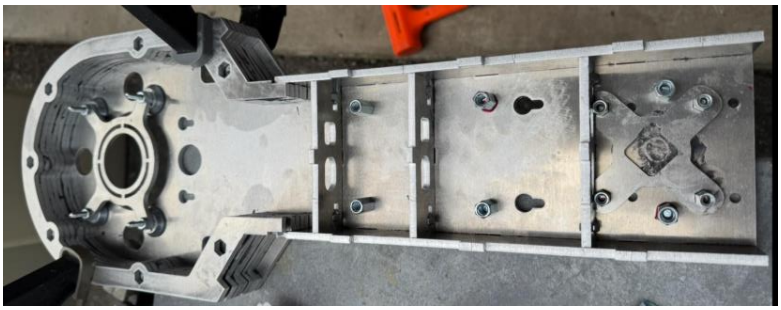


8. Attaching inner leg piece

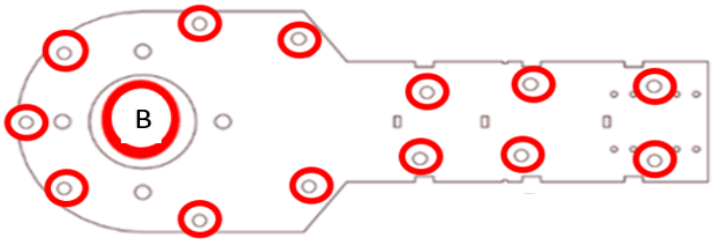
For each leg, you will need:

- (13) M6 x 30mm flathead screws

Mix up some JB Weld high temperature adhesive. Apply good amount of adhesive to all the edges of the outer leg (**Part A**), tops of C-shape parts and ladder assembly.



Place inner leg assembly (**Part B**) on top of outer inner leg assembly (**Part A**). Make sure alignment tabs are in place.



Secure leg assembly with (13) M6 x 30mm screws. Align to holes and LOOSELY screw in place
Use the rubber mallet to tap all sides to make sure nothing is out of place and aligned.

Tighten screws securely. You can use additional C-clamps at this point to get everything tight and let the JB Weld cure for a full 24 hours.

9. Cutting Leg Groove

Video Tutorial: https://www.youtube.com/watch?v=ETFQoLy5UGc
(Note: please wear eye protection and shoes, Mark leaves his dogs out with reckless abandon)

Cutting Tool Examples:

- Listed in video is a Ridgid Subcompact multi-Tool - link here
- ENVENTOR Mini Circular Saw - link here
- WEN Plunge Cut Compact Circular Saw - link here

There are “key marks” on the legs that determine the location and width of the groove. The cut wraps around the entire leg. This groove will be approximately 1/8" wide all the way around (3mm).

Key Mark Notch

You can manually use a metal file to cut the groove. Ensure you measure the thickness of the file.

Alternatively, use a portable saw with a guide attachment and a cut off wheel blade. Ensure the width of the blade is about 1/8" or 3mm. Aluminum cutting disks are excellent as they don't clog up as much.

Start at about 1mm depth for the first run then deeper second. Total depth of the groove should be about 3mm.

CHANGE LOG

2025-06-28
Modify assembly guide to install ankle locks to leg. This deviates from the video. The video shows most of the installation using the inner leg (**Part B**). But to install the ankle lock, it is much easier to start with the outer leg (**Part A**). Optional Horse shoe installation is now provided.

2024-08-07
Matched assembly to video steps. Added notes for filing the channels. Added notes about hub plate and 3D prints.

2024-08-01
Changed verbs so all the same tense, Added page numbers and questions in red. Standard metric notation.

2024-07-31
Added tool list and glue type