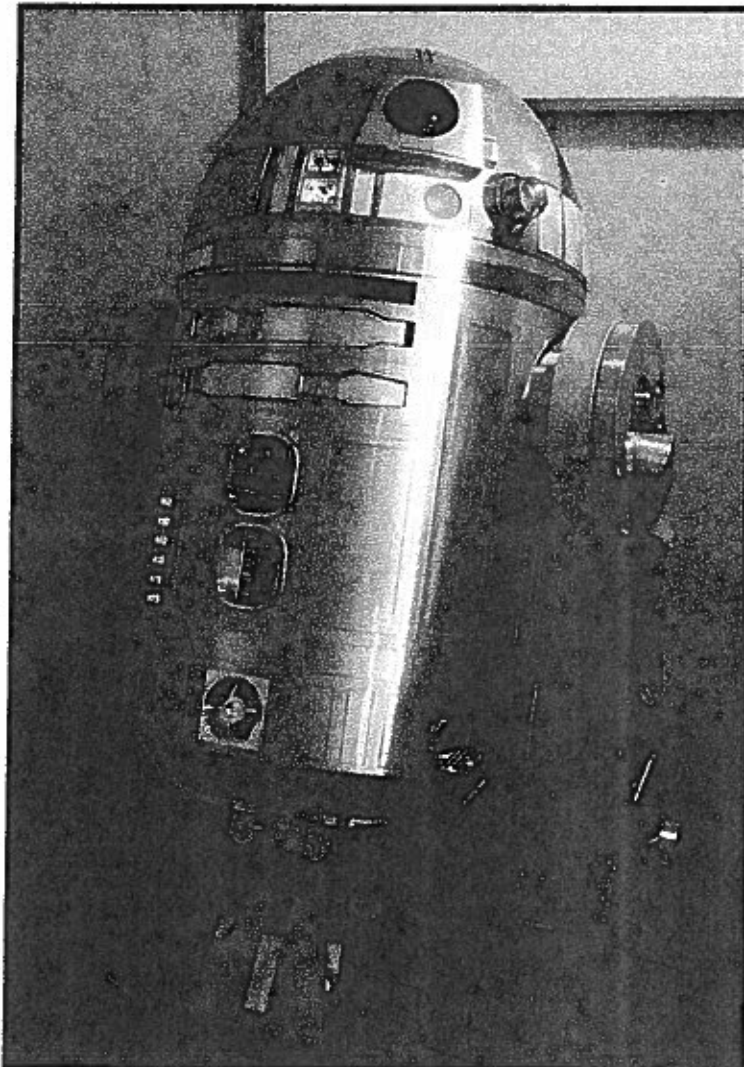

COM-8B

BUDGET DROÏD FRAME

INSTRUCTIONS



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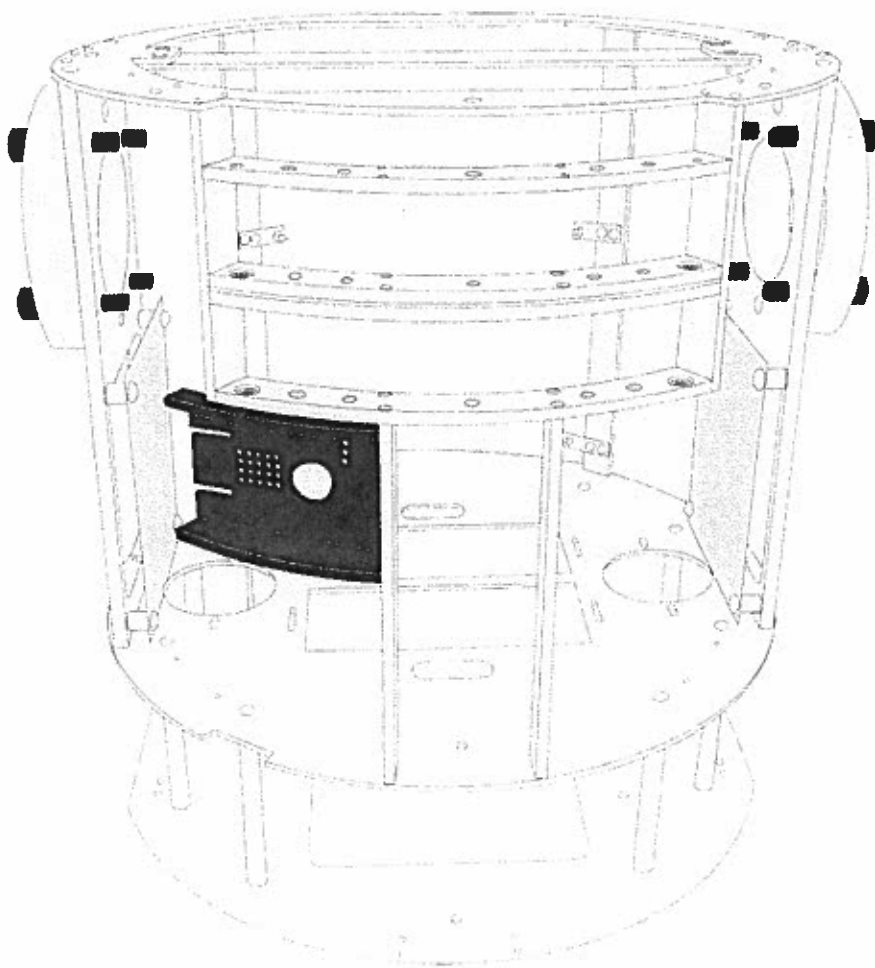
Version	1.2
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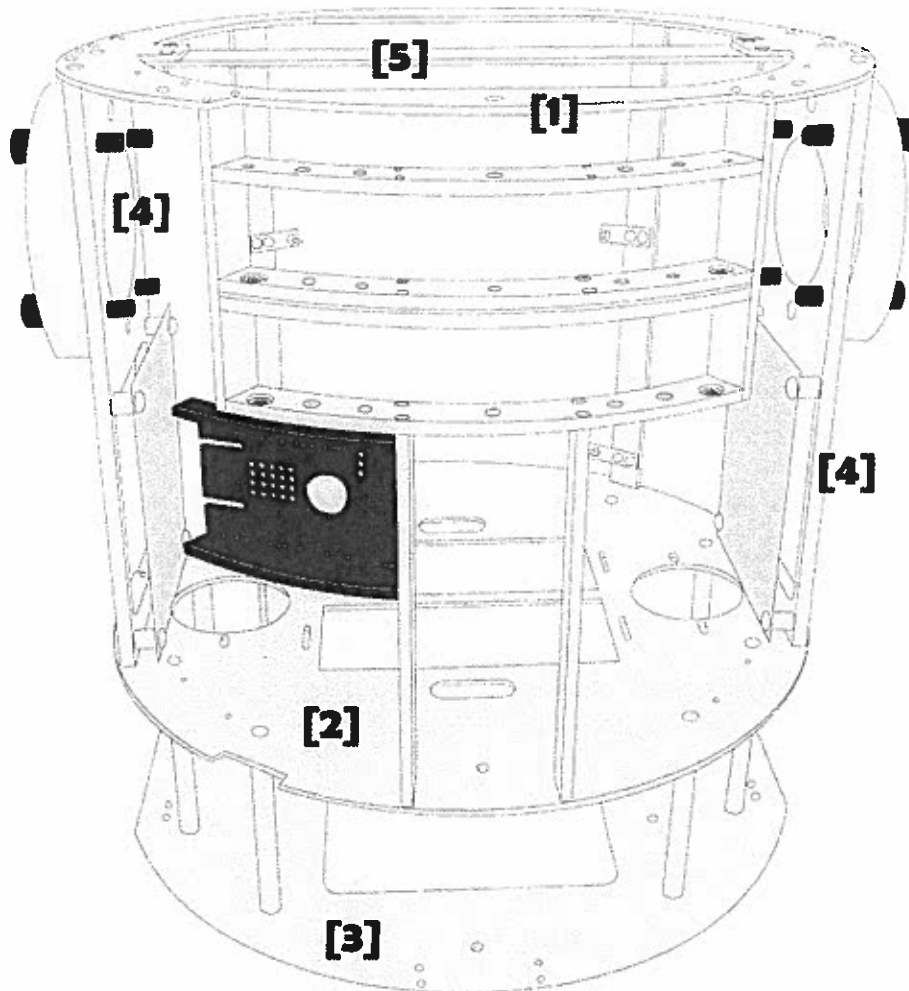
ASSEMBLY OF THE BUDGET FRAME COM-8

The COM-8B frame has been designed to be easy to assemble, and be a sturdy platform to build your Astromech Droid on. It is made from aircraft grade Aluminum, and comes with all hardware needed for assembly. I recommend using no locktight to hold screws in place. These countersunk screws have a larger surface area than standard screws and hold very well on they own. Locktight may force you to have to drill them out later! To start, I recommend sanding and washing all the parts prior to assembly. You can use any vibrating sander with 150 grit sandpaper, or a sanding block. If you have neither, you can use comet scrub and a scrubbing sponge. Give them a even finish. Do a circle eight pattern as you sand. The parts are covered with oil and dirt, so I recommend washing all parts with soap and water. You can even put all the parts in the dish washer! It won't hurt anything. Let parts dry before assembly.



COM-8 Budget frame

- **Step One: Main Rings and Side Plate Assembly**



Locate the top [1] and middle rings [2], and the two side plates 14.0" tall and 6.0" wide [4]. The top ring has the LDP cutout in it which faces front. Have someone hold the two side uprights apart and parallel by about 16.0" on a table.

The big circles are near the top, and the sides that have an "r" stamped on them face the rear of the droid. Top plate [1] should have all countersunk screw holes facing up. Add six countersunk screws, 10-24 x 5/8" long, but not very tight, down into the top of each side plate.

Carefully turn this assembly over, and lay the middle ring [2] down on top of the two side plates [4]. Add six more countersink screws, 10-24 x 5/8" long, into the same hole locations as on top.

The middle ring [2] has one notch in it that faces forward, where the coin slots fit, and two small notches that face the rear, where the two rear frame support bars attach. Now tighten these screws tightly.

Now flip it over so the top is back up and tighten those screws on top. You can now add the center strap [5] across the top ring.

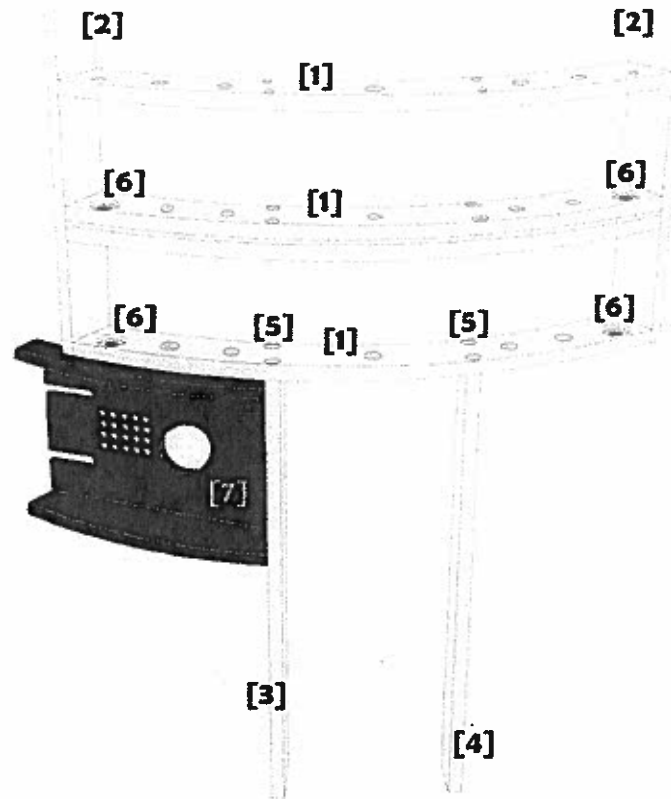
This strap [5] has the COM-8 engraved into it. Use four 10-24 screws to hold it on.

The Dome Motor Bracket (not included) mounts to these same screws holes, to the droid's right side.

The center hole is for the Slip ring, (not included), which allows the dome wiring to spin as the dome spins without tangling.

You can remove this bar [5] as need later to work on the inside of your droid. Those are also 10-24 tapped holes.

- **Step Two: Utility Arm Carrier Assembly**



Utility Arm Carrier ready to install in Frame

Locate the four Utility Arm brackets [1], they are 1/4" thick and 1 inch wide, and are an arc shape. The cross holes on each end have a counter-bore on them. These shallow pockets [6] are for the standoffs to sit in when they are on each end of the Utility arms (not included). These parts are all identical, but two will face up and two will face down when finished.

If you have the Utility arms ready to install, you can do it now. Put the 1/4" dowel pin thru each utility arm, and put an aluminum standoff on each side of your utility arms. These standoffs are 1/2" round with a 1/4" hole in it. Set aside.

Each end of the Utility Arm Carrier has a 1/4 x 1.0 x 5.700" long side bar [2] that has four sets of small countersunk screw holes in them. Take one of these and attach it to the bottom one of the arc pieces [1] with two 4-40 screws. Make sure the bottom arc has the counter-bore pockets up. Add two more 4-40 screws and attach the other side bar. Tighten loosely. You should have a "u" shaped assembly so far.

Now you will attach the two lower vertical uprights [3] [4] 1/4 x 1.0, x 8.300" long, to the middle four counter-sunk screws [5] that aim downwards toward the middle of this arc. These are called the center vent uprights, as they flank both sides of your center vents.

These uprights have a single dot drilled in them which indicates which end is up. Use four more 4-40 screws [5] and tighten these tight to that bottom arc [1]. You need to do this in this order, as you will not get a screwdriver in there afterwards.

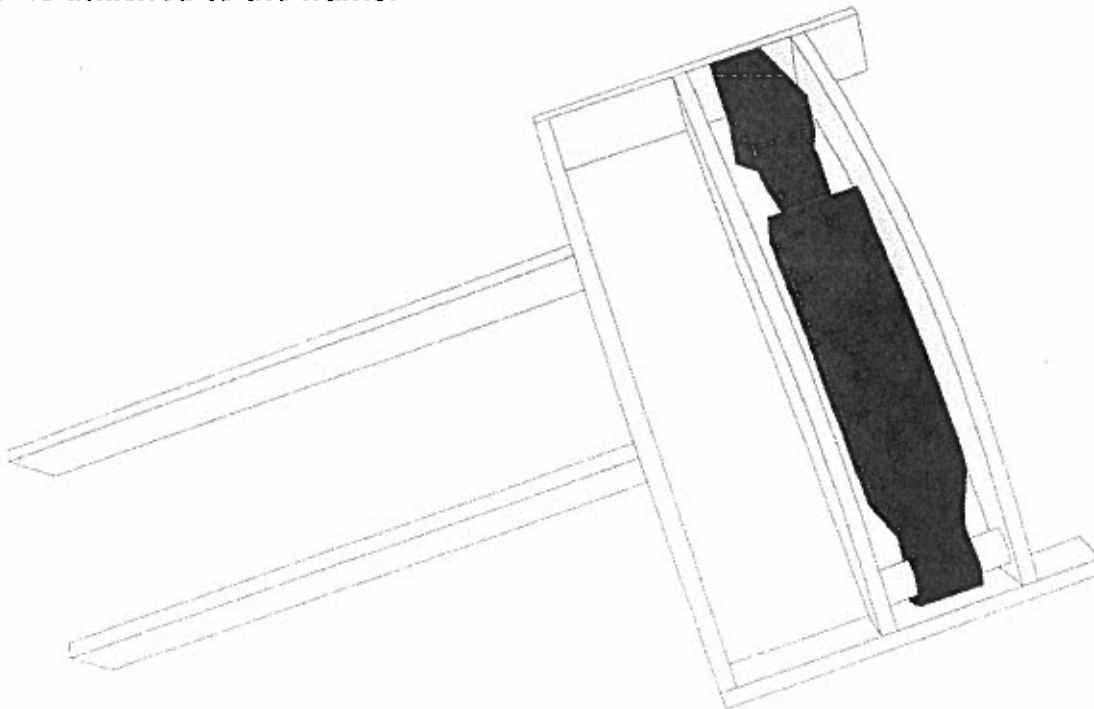
Note: The upright with additional holes must be placed on the right side of the droid [3] (on your left). These holes will be used to secure the charging bay [7].

Now if you have a utility arm ready, place its dowel pin and standoff into the counter-bored pocket [6] to the left as it faces you (the droids right hand side). Now add the next arc [1], making sure its counter-bored pocket [6] is aiming down and captures the standoff at the top. Add four more 4-40 screws to each end, thru the Side bar, and into the end of the arc. Tighten loosely. Now do the same for the last two arcs [1], which capture the upper Utility arm. The upper Utility arm mounts to the right as it faces you (the droids left hand side).

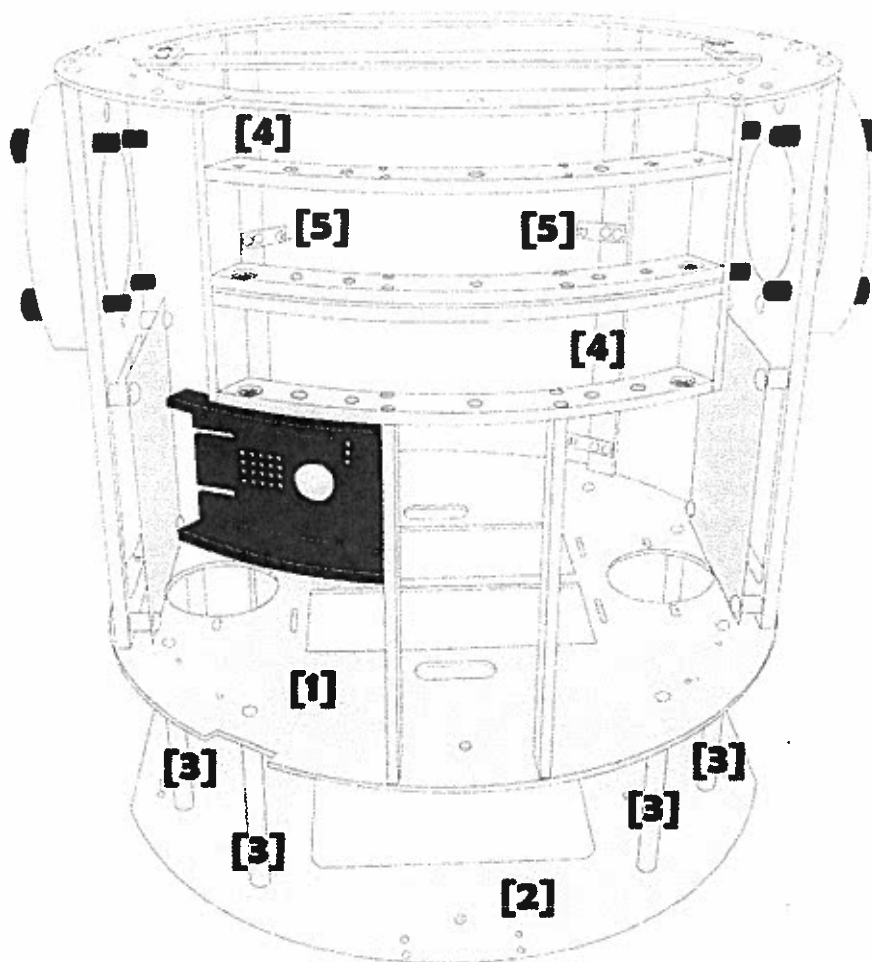
Now lay this assembly on its back, on a flat surface such as a glass table or granite counter top. Loosen all these eight small screw on each end. Now while pushing down firmly on the assembly against this flat surface, tighten all the screws tight. This will insure the assembly is true and square.

If the Utility Arms are too loose, you can add thin brass shims between the utility arm and its standoffs to tighten them up.

Now you can slide this assembly into the front of the frame. If a tight fit, you can pull up on the top ring and slide the Utility Arm Carrier in. Add four more 4-40 screws down thru the top ring, on each side of the LDP cut out. Flip the frame over and add four more screws thru the bottom into the Center Vent Uprights. Now the Utility Arm Carrier is attached to the frame.



- **Step three: Bottom Ring Attachment**



Now locate the eight 1/2" rods [3] that are 5.0" long. Screw these with eight 10-24 countersunk screws to the middle Ring [1] loosely. There are 8 countersunk holes aiming down on the middle ring [1].

Turn frame over once again and lay the bottom ring [2] down on top of these same rods. Make sure the countersunk holes are now aiming up.

Loosely add 8 more screws. Now locate the two long rear frame support bars [4]. They are 1/4 " x 1.0 wide x 19.125 inches long. The dot drilled near one end of the bar should face outwards and to the top of the frame. Since the frame is upside down these dots will go down.

These bars [4] will also hold the magnets [5] in place if you got the rear hatch option. Screw these bars to the top and bottom ring with four 4-40 screws on each bar. Carefully get these bars [4] to fit into the notches in the middle ring. Now you can tighten all the 10-24 screws into each end of the rods [3]. It's okay if the rod [3] spins. Just tighten its screw on the other end as tight as you can, and come back to finish tighten the other end. Now all screws should be tight all across the frame.

If you have a Rockier bearing, you should prep it in the following way. They can be purchased for about \$70.00 from McMaster Carr, P/N 18635A54 .Take a pair of pliers and pull out the white plastic plugs. Add blue painters tape and seal off the middle

open area to keep chips from falling inside the unit. Drill thru these previous holes filled by those plugs with a 1/4 inch drill.

Now flip it over so the middle race is higher in the middle. Get a 5/8 size, 82 degree countersink and countersink these holes so a 1/4-20 flat head screw about 1 inch long sits almost flush. There are five holes already threaded 1/4 -20 around the top ring, two on each side and one in the back. After screwing the Rockier bearing in place, add some 1/4-20 nuts to these screws on the inside of the top ring to prevent these screws falling out.

Now you can add the two center ankle bars to the bottom ring. These blocks are 3/4" x 3/4" x 2.500" blocks. Note that the mounting holes are countersunk to the side which faces up when assembled. These use four 1/4-20 screws down through the bottom ring.

HINT:

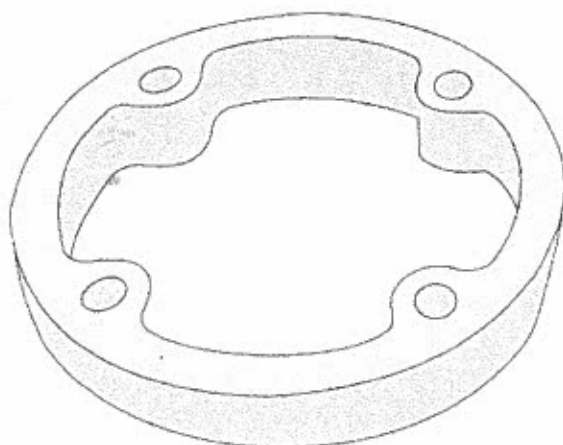
I would leave these off until you are putting on the center ankle. Your frame will sit flat and sturdy on the bottom plate. These would cause the frame to be prone to tipping.

- **Step Four: Optional Parts**



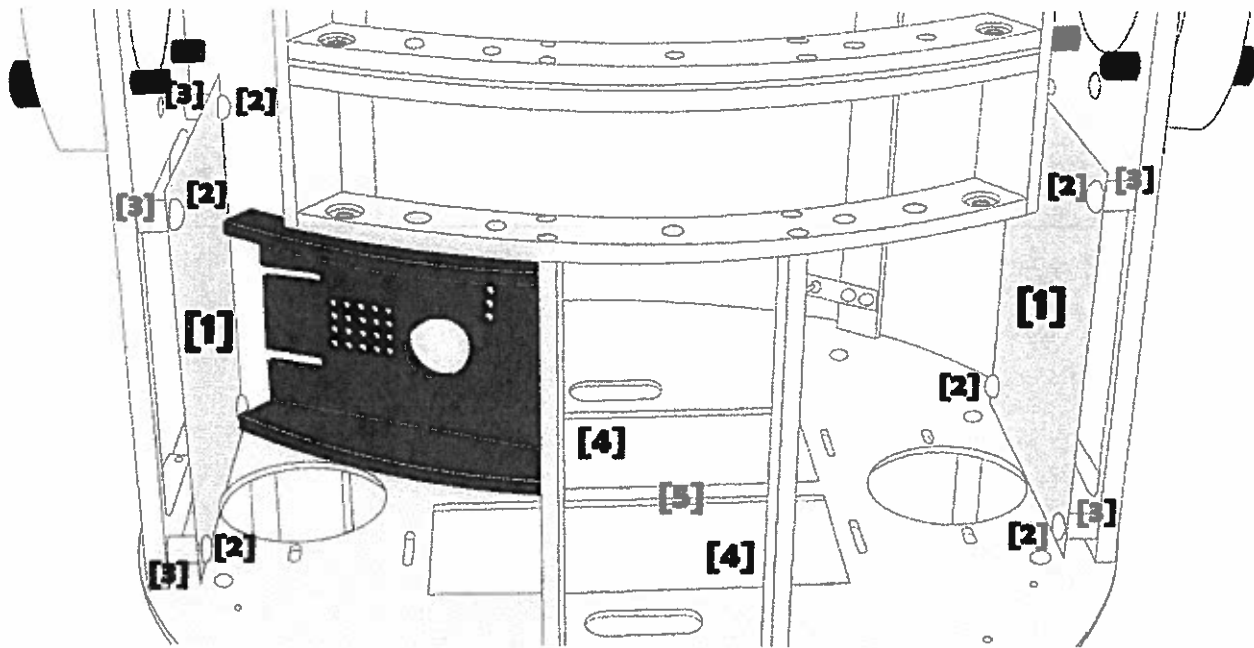
If you got the optional skin mounting block set, you can attach them now. The two thin [1] [3] ones attach below the top ring and the middle ring on each side around the legs. Notice on these blocks that one side has a bigger countersink than the other. These aim up, and the 10-32 flat head screws go down thru the main rings and tighten up. They will not tighten up if they are upside down.

The two other thick skin mounting blocks [2] go into the side plates under the leg hub. These use 10-24 screws x 1/2" long. I recommend using transfer set screws, 4-40 size, to help mark your skins for these mounting blocks to secure to.



If you got the optional leg to body hubs, you can attach your legs now. Use four 1/2-13" bolts x 2.0" long, passing them thru your legs, thru the 6.375" hubs, and screw them to your side uprights. Make sure you see the letter "r" stamped to the rear of the droid.

There are also two extra threaded holes, straight up and down from the centerline of the leg to body hub. These are if you want to set your droid into two legged mode.



If you got the optional extra side electronics plates [1], they are green G-10 material, which does not conduct electricity. These are perfect for some of your electronics. They have four 1/2" long stand offs [3] and four 1/4" x 1.0 long screws [2] to mount them inside the main cavity under the area the leg to body hubs mount.

You can drill as needed to mount your electronics. Frame is designed for automotive 3.5 inch speakers. Aim up or down, it's your preference. The frame is designed for two different battery options [4]. You can choose one battery or two. For one Battery, you will need to hacksaw out the 1/2" wide strip between the battery holders.

One battery:

Werker 12V 26AH AGM Battery - Nut and Bolt Terminal Part# 0-WKA12-26NB

Link: <http://www.robotcombat.com/products/0-WKA12-26NB.html>

Two batteries 18 ah each

Link: <http://www.ragebattery.com/batterystore/SLA-17-12.html>

By placing a homemade foam pad under the batteries, and on tip of the center ankle mount, you can quiet the ride over bumps. Make it 1" to 2" thick to raise the battery so that it is captured by the pocket in the middle ring. You can strap or zip-tie the batteries in place..

- **Step Five: Rear Hatch**



If you got the optional rear hatch assembly, you can mount it now. You must assemble all six magnet attachment bars the same.

Take a countersunk magnet, and pass thru a 4-40 screw thru it. Add a 4-40 nut to it and tighten. Don't over tighten or let magnets snap to steel parts, they are cast steel and break easily. Screw -each of these magnets with screws into the 1/8" x 1/2" long straps. After it passes thru the strap, you will add another nut to act like a jam nut and lock the magnet in place.

After you have all assembled, you can glue the thinner magnets to your door skin. It is hard to get each magnet strap to angle the magnet so that it hits flat against the thin magnet. I recommend putting a thin piece of wax paper between the thick and thin magnets. Add J B Weld then to the outboard side of the thin magnet, and clamp your entire door to the frame in the proper place, with even spacing. That way the magnets always fit together perfectly, which increases the holding power.

You can also glue a 1 x 1 piece of aluminum angle to the removable rear door. This will sit on top of the middle ring. This way the door won't slip down when a bump is hit. It will act as a guide when you re-attach the door.

- **Autres Options:**

You can use all four COM-8 Long door enclosures (breadpans) if you want to open all the long doors on the skins, and prevent people from seeing your internal works. They come black anodized, and the holes are predrilled into the frame.

You can also use the COM-8 Charging bay assembly if you want to open the charging bay door and charge your droid just like on Degobah!

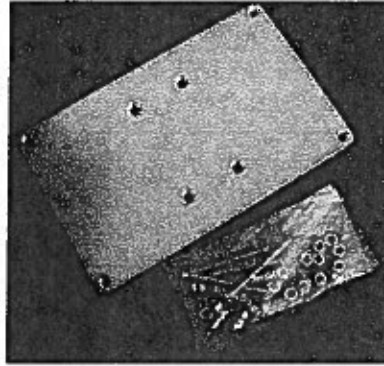
The Utility Arm Carrier is drilled to match the David Shaw LDP's. It mounts with three screws thru the upper most Utility Arm arc. Also the Bottom ring is predrilled to accept the newer style David Shaw Power couplers. Both the parts need M5 threaded screws.

There are four holes in the bottom ring that match up with JAG Skirts. Also, there are two 1/4" holes thru the front and rear of all three main rings. They are about two inches back from the edge. I use these to hold frame down when machining.

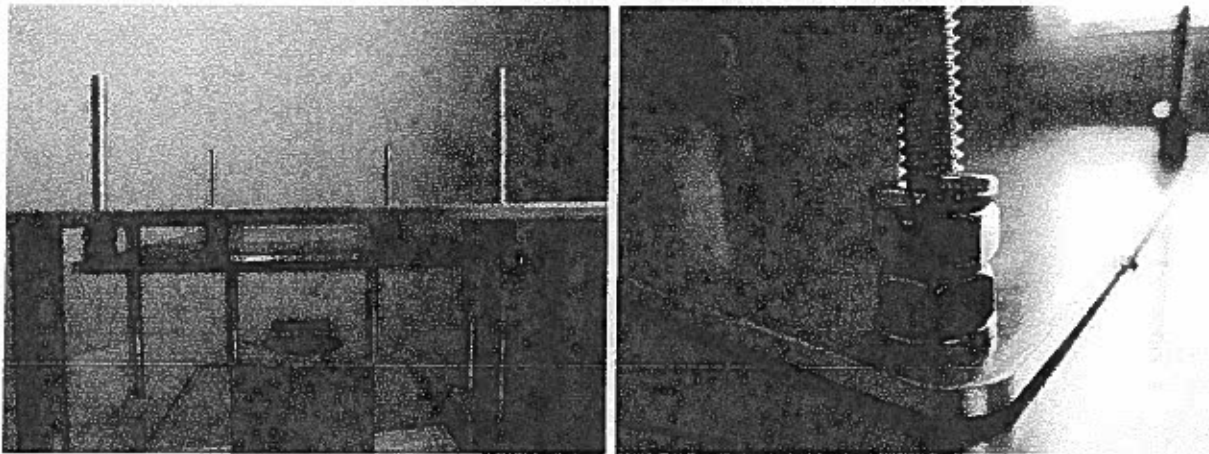
If you want your frame even sturdier, you can buy two pieces of 1/4" x 20 all thread from Lowe's or Home depot, and using these holes, add nuts above and below each main ring and jam together to make even more sturdy. Trim off any extra.

Also remember that the Rockier Bearing will sturdy up the frame a bunch more when tightened. This frame was meant to last.

- **Center Ankle Assy**

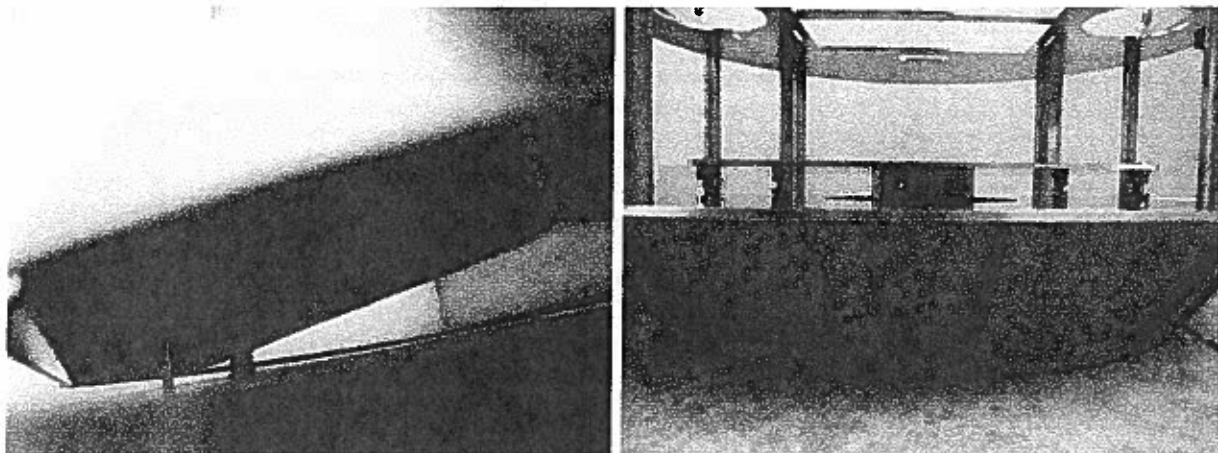


Here is the assembly layout of the new Center Ankle Assy. It adjusts up or down to set your droid level on all wheels. Don't overthink this right off the bat, you must have all drive assemblies and front wheels on to really adjust properly.



Just aim for about one inch up from the bottom ring. Tighten the bottom ring between the two nuts near the top. Screw standoffs to the length desired for the skirt to mount tight against the bottom ring. Then lock it in place with the remaining nuts. These are all 1/4-20" American hardware from Home depot.

The black blocks in the picture are to mount jag center ankle in place. They also use 1/4-20 bolts not included to mount ankle.



Photos from [Darren Lindsay's blog](#), "designhero" on [astromech.net](#).

CONTACT

Also remember that the Rockier Bearing will sturdy up the frame a bunch more when tightened. This frame was meant to last.

Please keep me in mind when you want to upgrade to the Premier COM-8A with swing out door and anodized colors. You are now part of the COM-8 frame family, and I have special sales available to my frame buyers. My goal is to help you get your Astromech build finished as soon as possible.

Email me with any questions

James in texas maxxius8@aol.com

Website <http://www.commando8.com>