

0.1.1 Motor Assembly

The motor is assembled from a frameless Rotor and Stator into a Motor Assembly that slides into the aft end of the Motor Tube.

0.1.1.1 Glue Rotor Hub to Rotor

Reference Drawing A-200508-08 Sheet 2.

Place the Rotor Hub lip side down on a smooth, clean surface. (*Wax paper or some other easily released material?*)

Place the Rotor adjacent to it with the lip side up. See Figure 1.



Figure 1 Rotor Hub (lip down) and Rotor (lip up) with forward face up

Mix a small amount of the two part Scotch Weld DP420 epoxy and butter the circumference of the Rotor Hub taking special care to fill the concentric grooves on the outside face of the Rotor Hub.

Place the Rotor Hub lip down on the clean, flat surface.

With the lip of the Rotor up, slide the Rotor over the top of the Rotor Hub and press down onto the flat surface. Take care to keep epoxy out of the threads and the top surface of the Rotor Hub.

At final assembly the bottom (aft) faces of the Rotor and Rotor Hub should be flush and there should be no epoxy on the top (forward) face of the Rotor Hub.



Figure 2 Assembled Rotor and Rotor Hub

Allow epoxy to dry 24 hours in a room temperature environment.

0.1.1.2 Insert Deep Groove Ball into Thruster Motor End Cap

Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.

Reference: Drawing P-20046208 Thruster Motor Rear End Cap.

Place the Thruster Motor Rear End Cap on a clean flat surface with the forward face up. Press item #9, Deep Groove Ball Bearing into the center of the Thruster Motor Rear End Cap from the forward face. Pressure should only be exerted on the outer ring of the bearing to prevent damage to the bearing race. The bearing needs to be pressed in past the retainer ring groove identified in Detail View C on drawing P-20046208.

This is a close fit and a little sanding with fine grit may be necessary to clean up the bore surface of uneven anodize material.

Install the retaining C'clip.

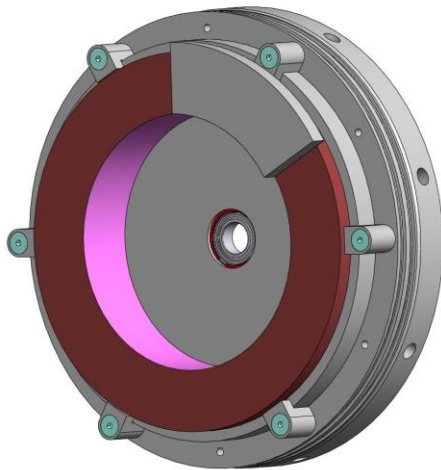
0.1.1.3 Attach Stator to Thruster Motor Rear End Cap

Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.

Reference: Drawing P-20046208 Thruster Motor Rear End Cap.

Reference Drawing p-20055108 Stator Retainer Clip

The Stator is attached to the Thruster Motor Rear End Cap with six Stator Retainer Clips.

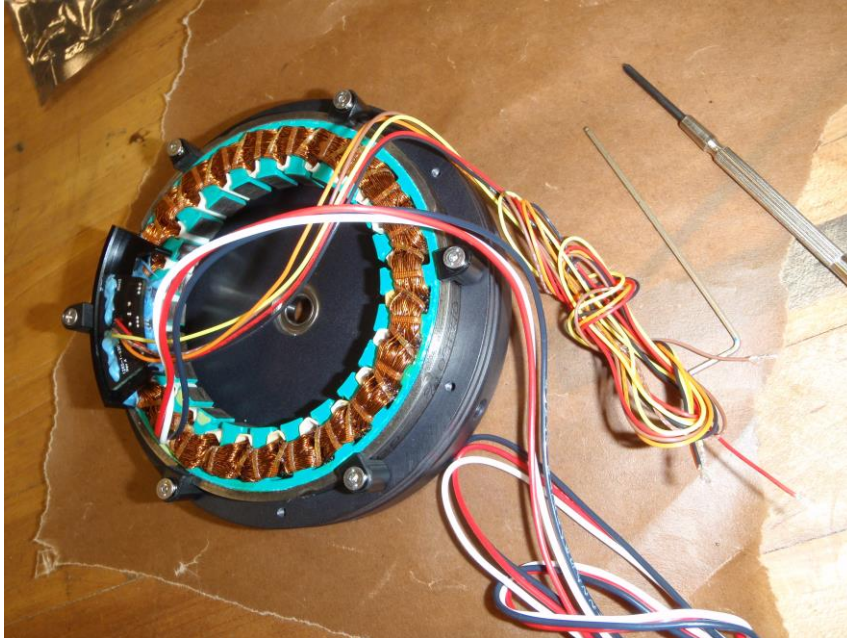


Place the Thruster Motor Rear End Cap on a clean flat surface with the forward face up. Do a dry fit of the Motor Stator Retainer paying attention to wire routing.

With the electrical connections up, center the Stator on the Thruster Motor Rear End Cap.

Use the six Stator Retainer Clips, five #4-40 x 5/8" flat head screws and Locktite 242 Blue to attach the Stator to the Thruster Motor Rear End Cap. Use a small wrench to maintain alignment of the clips as they are tightened. One clip required a 1" long screw.

Maximum torque for dry 316 SS 4-40 threads is 5.5 inch pounds.

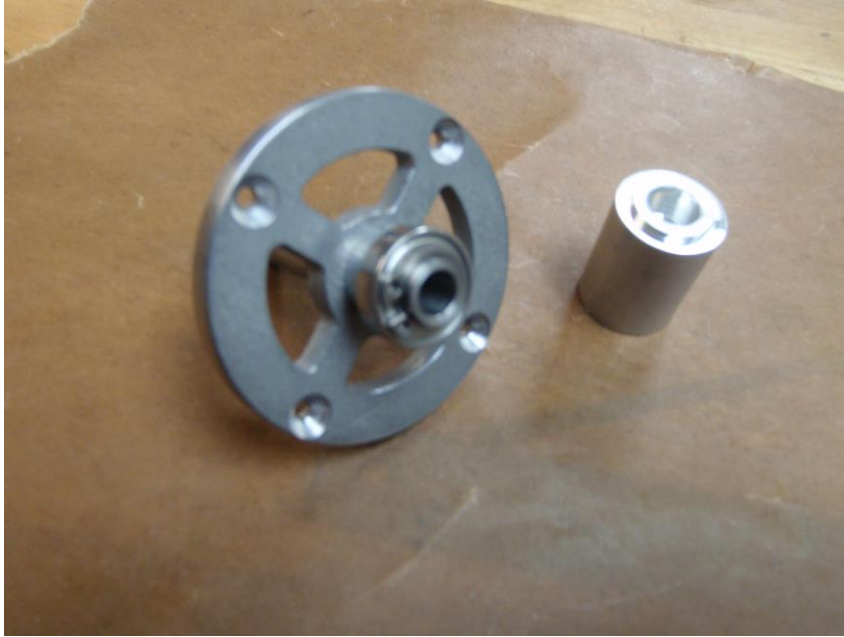


0.1.1.4 O'ring Bearing Retainer

Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.
Fit 2-017-90 O'ring into recess in Motor Stator Retainer. (This o'ring allows a floating capture of the Motor Rotor Assembly.)

0.1.1.5 Motor Rotor Front Bearing and Retainer

Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.



Press fit a MMC#784K118 Bearing onto the forward Motor rotor Shaft past the retaining ring groove. Use a tool which only exerts pressure on the inner race to prevent damage to the bearing races. Note: the other bearing already installed in the Rear End Cap should be a sliding fit (floating) on the rear (longer) Motor Rotor shaft.

Modify the External Retaining Ring removing $\sim .005$ material from the outermost edges of the ears. This is to improve clearance. Install the retainer clip checking for proper groove engagement.



0.1.1.6 Rotor Complete Assembly

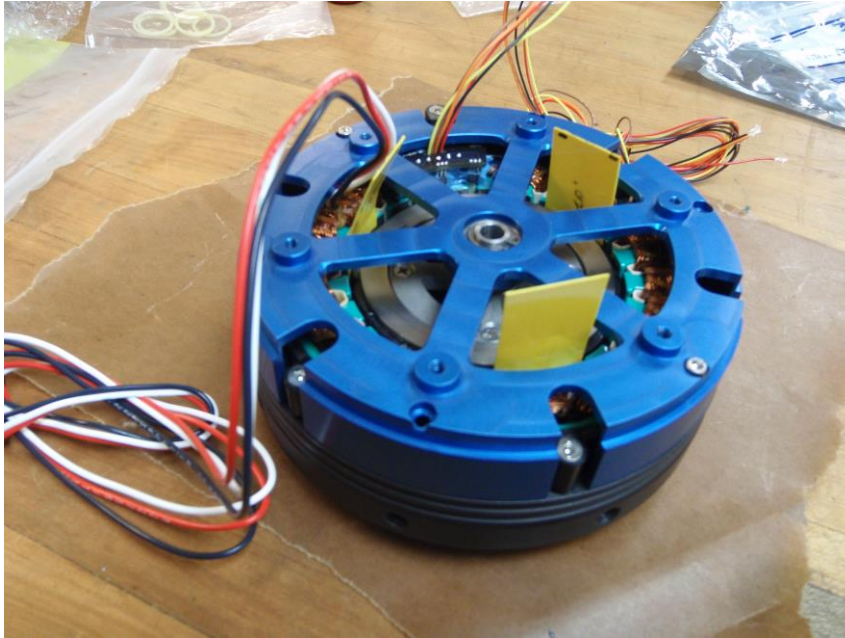
Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.

Install the Rotor Hub Assembly onto the Motor Rotor Shaft. 4 x 4-40 x 3/8 Flat head screws.
Use Loctite 242 or equiv.

0.1.1.7 Final Assembly

Reference Drawing A-200508-08 Sheet 1 Applimotion Motor Assembly.

Use 3 x 0.02" plastic shim stock to help guide and isolate the rotor assembly as it is fitted into the bearing of the Stator Ass'y. This might take two people. Adjust the shims so they clear the openings in the Motor Stator Retainer.



Pull wires thru appropriate openings to avoid straining connections. Forward bearing of stator will not immediately seat into the o'ring support. A slight bump to the opposite (protruding) end of the shaft will let the bearing properly engage the o'ring. Note the floating support allows the magnetic couple of the rotor/stator to self-align.

Secure with 6 x 4-40 x 1" SHCS with lock washer.

Remove shims.

Ready for bench test.



0.1.1.8 New Bushing Fabrication

Fabricate a 6061 Al bushing slotted lengthwise.

0.394 O.D. x 0.316 I.D. x 0.5 long. This is for use when mounting the Magnetic Couple Inner Plug.