Flyer Gearbox

Assembly Guide

am-4194, am-4226, am-4227

Revision 1

Step 1a: Section “a” covers preparing a CIM style motor to use with your gearbox, if using a 1/2 in. hex shaft as an input such as a Sport gearbox see section “b” If you are using a Falcon 500 See Section “c”.
Place 4 of the 8mm brown washers on the CIM shaft and then install the key in the keyway. Note: 4 washers are required for full dimeter CIM Motors such as the CIM and the Mini CIM. If using a smaller diameter CIM style input such as the DeCIMate or NEO only 2 washers are required,

Step 2a: Place the 8mm key to 1/2 in. hex adapter over the shaft and place the spacer plate on the face of the motor with the holes aligned. Note: This spacer is only needed if all 4 washers were used in step 1a. It is needed to let the CIM clear the bearing in the next step.

Step 3a: Install the 3/8 in. ID bearing in the bearing hole in the plate furthest from the bent tab. The flange of the bearing should be on the same side as the tab. Place this assembly on top of the CIM as shown.

Step 4a: Install the 5/8 in. long thread patch button head screws into the two tapped holes of the CIM motor, then slip your pinion gear over the hex adapter. If you want the gearbox to spin faster than the CIM motor put the larger of the two gears here. If you want it to spin slower, but with more torque put the smaller gear here.

Step 5a: Install the 1/4 in. thick hex spacer over the gear. Then press on the 8mm retaining clip to keep all the items on the shaft. The teeth of the clip should point “up” as shown. A socket, or box end wrench is a good tool to use for this step.

This is the last CIM specific step, please skip ahead to Step 1d to finish assembly.

Step 1b: Section “b” covers preparing a 57 Sport, or similar, gearbox with a 1/2 in. hex output shaft to be the input to the Flyer. If using a Falcon 500 Please skip ahead, if using a CIM style motor go back to section “a”.
Remove the two shorter screws from the face of the gearbox (we will not be using them later) and place the face mount spacer over the top with the holes aligning to the holes the screws just came out of.

Step 2b: Install the 3/8 in. ID bearing in the bearing hole in the plate furthest from the bent tab. The flange of the bearing should be on the same side as the tab. Place this assembly on top of the Sport gearbox as shown.

Step 3b: Install the two 3/4 in. long button head cap screws to hold the Sport in place, then place a 1/4 in. thick hex spacer on the output shaft. If your input is different from a sport, use your own spacers to get to 1/8 in. above the sheet metal.
Note: if you are using a two-motor input, or planning on using the Sport side mounting holes to mount the entire assembly, make sure the Sport is oriented the way that you want before screwing it in.

Step 4b: Place the pinion gear onto the 1/2 in. hex shaft then place the other 1/4 in. spacer over the gear to bring the stack flush with the top of the shaft. Again, if your shaft is different, you may need to supply your own spacers.
If you want the Flyer Gearbox to spin faster than the Sport, put the larger of the two gears here. If you want it to spin slower, but with more torque put the smaller gear here.

Step 5b: Place two #10 fender washers on the top of the shaft and secure the stack in place with a 3/8 in. long #10-32 thread patch button head cap screw.
This is the last Sport specific step, please skip ahead to Step 1d to finish assembly.

Step 1c: Section “c” covers Installing a Falcon 500 motor.
Install the 3/8 in. ID bearing in the bearing hole in the plate furthest from the bent tab. The flange of the bearing should be on the same side as the tab. Place this assembly on top of the Falcon 500 as shown and secure with two 3/8 in. long thread patch button head cap screws as shown.

Step 2c: Place the fender washer onto the shaft then install the spline to 1/2 in. hex adapter.

Step 3c: Slip your pinion gear over the hex adapter. If you want the gearbox to spin faster than the Falcon 500 motor put the larger of the two gears here. If you want it to spin slower, but with more torque put the smaller gear here.

Step 4c: Slip the 1/2: in. hex gear (am-xxxx) over the hex shaft.

Step 5c: Place one 1/16 in. thick and two 1/4 in. thick Falcon 500 shaft spacers over the shaft to bring it flush to the top. These spacers were included with your Falcon 500.

Step 6c: Secure the stack in place with a 1/2 in. long #8-32 thread patch button head cap screw. This is the last Falcon 500 specific step, please continue to Step 1d to finish assembly.

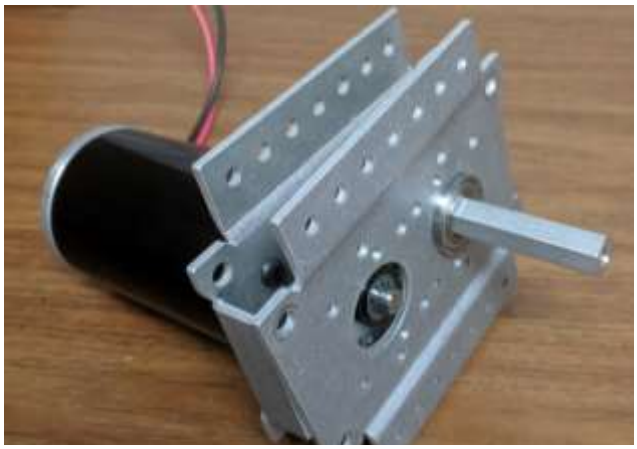
Step 1d: Section “d” covers the rest of the assembly after input insulation.
Install the 1/2 in. hex bearing in the bearing hole in the other plate closest to the bent tab. The flange of the bearing should be on the same side as the tab.

Step 2d: Take the warped snap ring and install it into the Toughbox output shaft snap ring grove as shown, it should flex “away” from the magnet end of the shaft.
Note: Any Toughbox output shaft is compatible with the Flyer Gearbox.

Step 3d: Slip the output gear onto the end of the shaft up to the snap ring. Then slip the 1/16 in. thick spacer over the 3/8 in. round portion of the shaft. Note, this spacer has a hex bore, but is being used as a round spacer in this application.

Step 4d: Take the output shaft assembly and insert the 3/8 in. round end of the shaft into 3/8 in. round bearing that is installed on the motor plate assembly from the previous section.

Step 5d: Install the 1/2 in. hex bearing with gearbox plate over the output shaft so that the tabs on both plates point at each other enclosing the gears like shown.
Note, if you wish for the output shaft to point out the same side as the motor simply switch the locations of the hex and round bearings and reverse the shaft.



Step 6d: Place the extrusion spacer in the gap on one side of the gearbox. Feed 1/4-20 button head cap screws through the corner holes in the gearbox plate, the holes in the spacer and out the holes in the opposite gearbox plate. Secure in with locknuts. Note, do not tighten down the nuts all the way yet.

Step 7d: Flip the gearbox over and before installing the second spacer apply a liberal amount of grease to both gears, spin the shaft by hand to mix the grease around and into all the valleys of the gear teeth. Once greasing is complete repeat step 6d for the other spacer. Now tighten all bolts while ensuring that the output shaft still spins and that the corners of the spacers line up with the gearbox plates.

Step 8d: If you wish to put an encoder on the output shaft install the encoder mount pad using the two 3/8 in. long #10-32 thread patch button head cap screws. The screws thread into the gearbox plate for easy installation and removal without disassembly of the gearbox