

Lynx A-Gripper Assembly Instructions Rev. 6.

Updated 04/03/2007.

Safety first! Wear eye protection and never touch a powered robot!

Note: Do not use Loctite or thread locks on the assembly. They are not necessary and may cause damage to the Lexan.

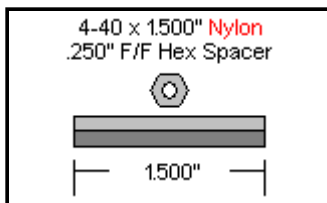


Image of the gripper.

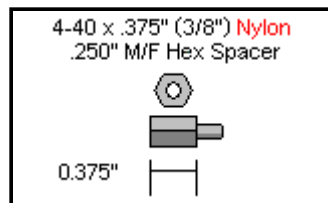
Step 1.

Make a 1.875" cross member using the 1.500" and the .375" nylon hex spacers. Then connect it to the wrist servo panel as illustrated in figure 1.

1 x



1 x



1 x

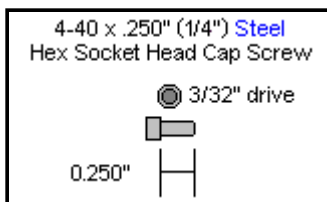


Figure 1.

Step 2.

Install the gripper servo plate and the servo hinge panel, using a .250" 4-40 screw.

1 x

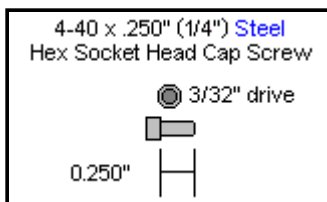
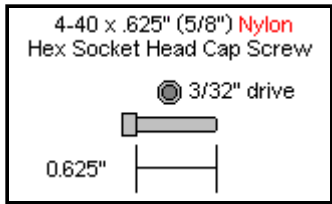


Figure 2.

Step 3.

Turn the assembly over and insert two .625" 4-40 nylon screws up from the bottom. Hold them in place with two 4-40 nylon nuts on each screw. Tighten these down snugly.

2 x



4 x

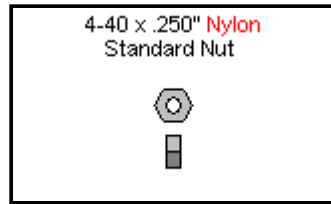


Figure 3.

Step 4.

Install two of the rubber bushings onto the mounting tabs of the HS-81 servo. These parts are located in the servo parts bag. These are the only components needed. These parts are polarized, meaning they can only be installed one way. If you have difficulty, try turning the part around.

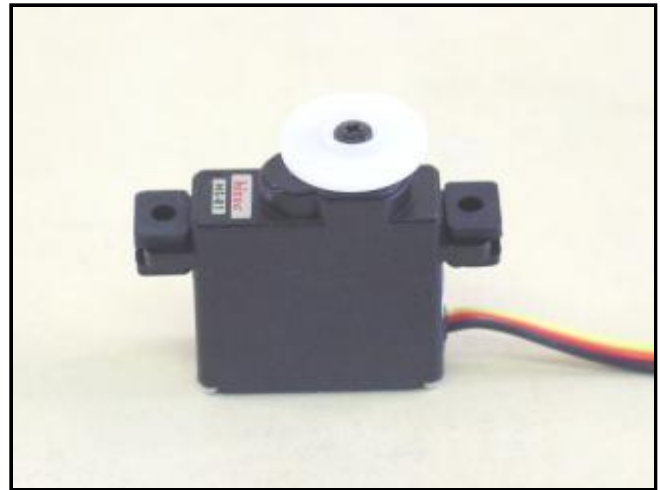


Figure 4.

Step 5.

Install the gripper servo into the assembly as shown. Use two of the 4-40 nylon acorn nuts for this step.

6 x



Figure 5.

Step 6.

Drill the servo horn with the 1/16" drill in the indicated positions. These holes are by the 2 and the 4 molded on the horn. Then install the driven gripper cross member to the servo using two of the .250" #2 tapping screws. Use care not to over tighten these.

2 x

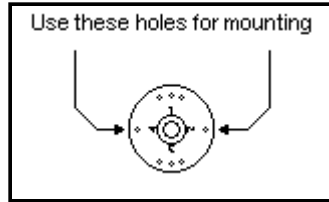
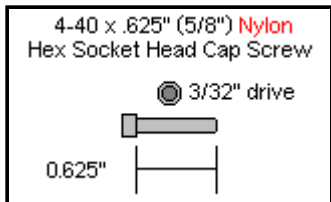


Figure 6.

Step 7.

Attach the passive gripper cross members as instructed. Insert a .625" 4-40 nylon screw into the geared passive cross member, install two 4-40 nylon washers, insert it into the gripper main plate, add a passive gripper cross member, and finish it off with a 4-40 nylon acorn nut. This should not be tightened down fully. It should be as friction free as possible.

1 x



2 x



Figure 7.

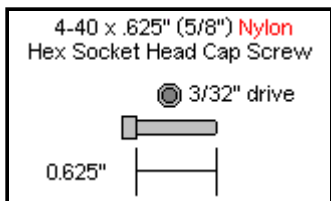
1 x



Step 8.

Install the four passive gripper cross members as shown. Use two .625" 4-40 nylon screws, four nylon washers, and two nylon acorn nuts for this step. Start with the .625" screw. Insert it into one of the passive cross members, add two nylon washers. Insert this into the gripper main plate, then add another cross member and the acorn nut. These should not be tightened down fully.

2 x



4 x



Figure 8.

2 x

4-40 x .250" Nylon Acorn Locking Nut



Step 9.

Install one of the gripper fingers as shown. Use a .625" 4-40 nylon screw inserted into the driven geared cross member, add a nylon washer, add the gripper finger, add two more washers, then finish it off with a nylon acorn nut. This should not be tightened down fully.

1 x

4-40 x .625" (5/8") Nylon Hex Socket Head Cap Screw



3 x

4-40 x .250" Nylon Washer

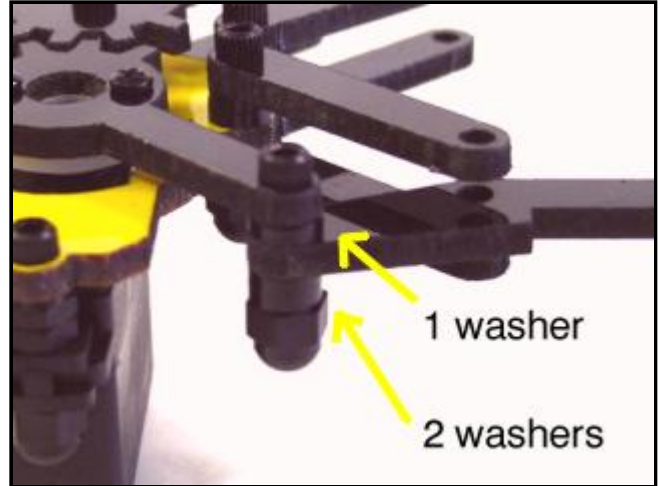


Figure 9.

1 x

4-40 x .250" Nylon Acorn Locking Nut



Step 10.

Attach the finger to the cross members at the front using a .625" 4-40 nylon screw, two nylon washers, and a nylon acorn nut. Start with a .625" nylon screw inserted into the top cross member, add a nylon washer, go through the gripper finger, add another nylon washer, go through the lower cross member, then finish it off with a nylon acorn nut. As before, not too tight.

1 x

4-40 x .625" (5/8") Nylon Hex Socket Head Cap Screw



2 x

4-40 x .250" Nylon Washer



Figure 10.

1 x

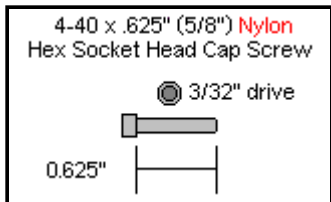
4-40 x .250" Nylon Acorn Locking Nut



Step 11.

Attach the other finger to the cross members as follows. Use two .625" 4-40 nylon screws, four nylon washers, and two nylon acorn nuts. For each position start with a .625" nylon screw inserted into the top cross member, add a nylon washer, go through the gripper finger, add another nylon washer, go through the lower cross member, then finish it off with a nylon acorn nut. As before, not too tight.

2 x



4 x



2 x

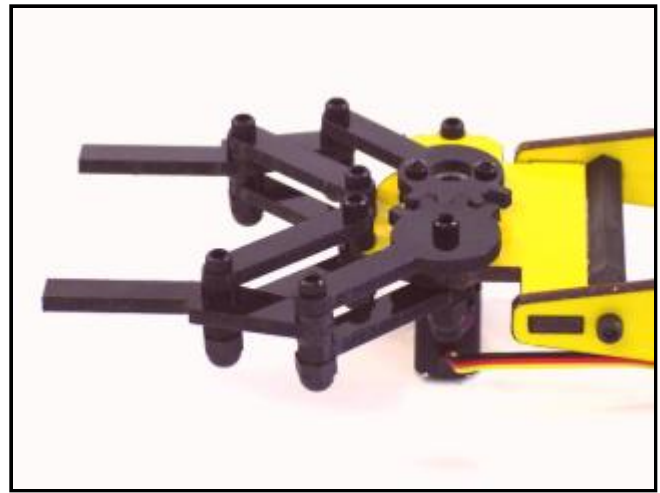


Figure 11.

Step 12.

Now for something easy. Press the rubber fingers onto the gripper fingers as shown.

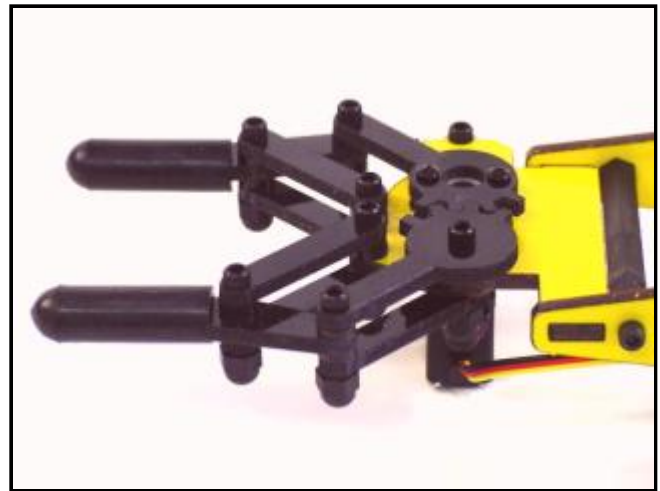


Figure 12.

Step 13.

This completes the mechanical assembly of the gripper. Move on to the arm assembly guide.

The original gripper design used a pushrod to actuate the opening and closing of the gripper from a servo mounted to the base of the arm. The pushrod assembly was difficult to adjust for reliable operation so users requested we mount the servo right on the gripper. To do this requires the use of micro servos to keep the weight to a minimum. These servos are light weight, but they can be damaged if not used with great care. Most problems result in breaking a gear inside the servo. Replacement gears are less than \$5.00. To keep your micro servos working well we recommend the following:

- Adjust the min and max positions to prevent the program from causing the servo to try to move to a position beyond it's mechanical capability. Adjust the position slowly, and when the servo stops moving the end point has been found. Do this for both directions.
- Do not move the final gear on the servo by hand. The servos are geared very aggressively and the gears can be broken if back driven.
- To prevent grabbing onto too large an object set the min and max positions so the gripper can't be closed too tightly onto the object the arm is going to be used to pick up.

- Use only 6vdc for micro servo power. 7.2vdc can generally be used for most standard size servos, but micro servos will twitch when used at this voltage.