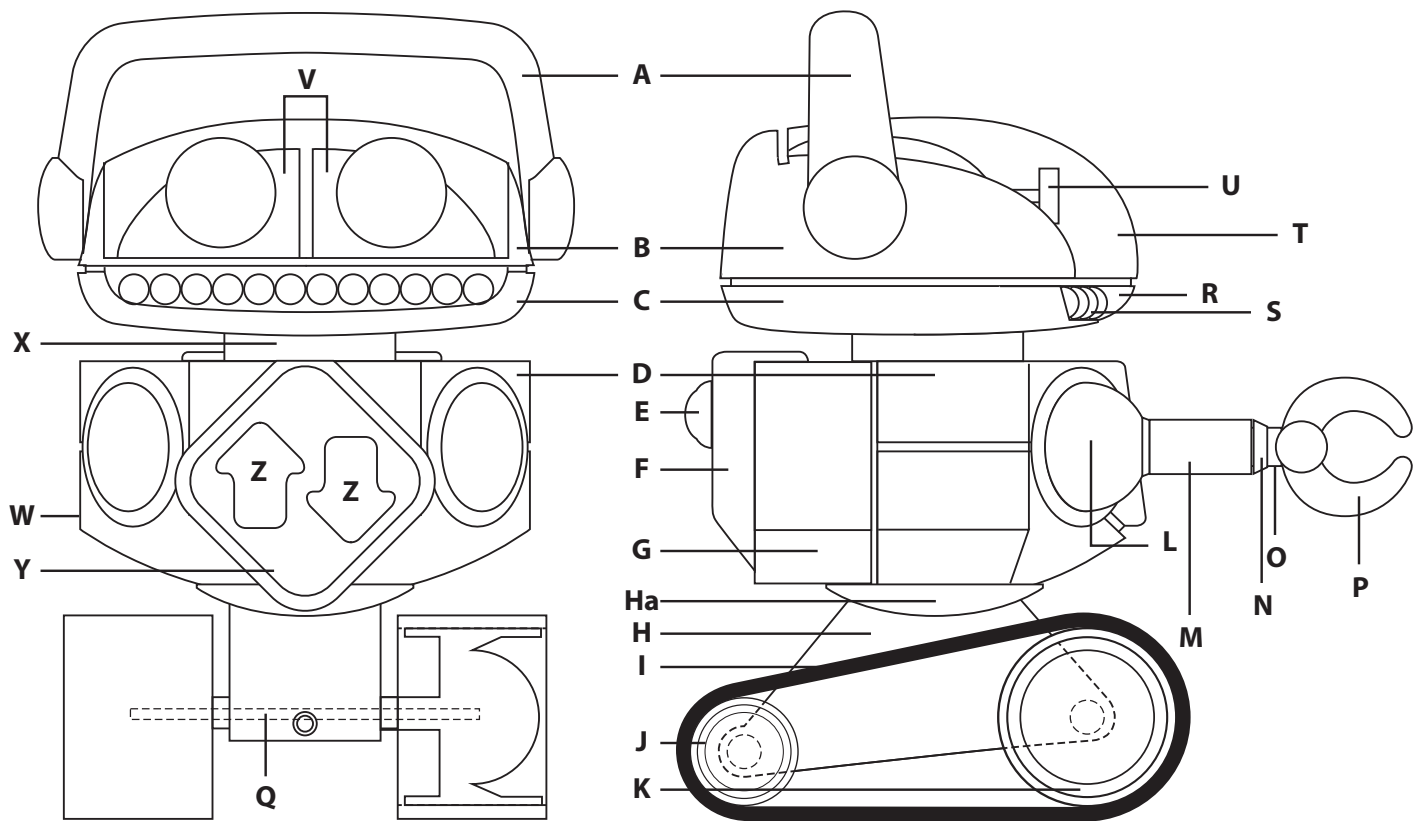


Toy Story Robot Kit Instructions v.2



SUPPLIES SUGGESTED

Rustoleum 7724 Sail Blue	Spray White	2-Part epoxy
Rustoleum 7765 Regal Red	Hob-E-Lube Dry White Lubricant with	CA Glue ("Super glue")
Rustoleum 214084 Orange	Teflon (or comparable white lube)	etching primer
Rustoleum 7747 Sunburst Yellow	Sandpaper	
Rustoleum 249100 Meadow Green	Spot filler putty	

IF PRINTING, parts are labels in the color they should be printed (R-red, W-white, etc.). Parts marked X can be printed in any color. Tread should be printed in TPU using a direct drive extruder.

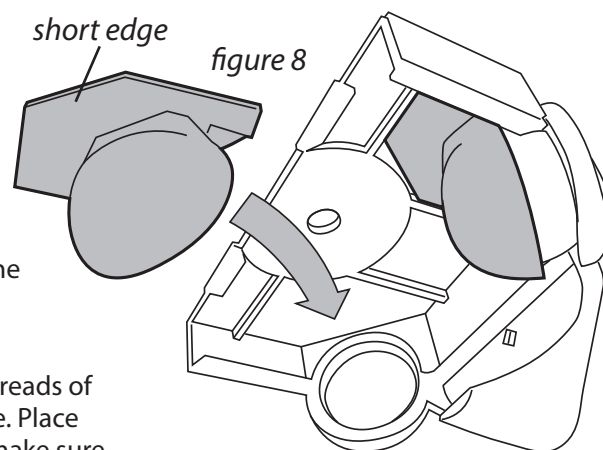
OPTIONAL PARTS SET AVAILABLE: Two Axles (Q) (3/16" steel rod x 95mm), Two forearms (M) 1/2" copper pipe cut to 41mm long, Two Urethane rubber treads, Connective hardware, Visor and mouth (untrimmed), Two resin printed eyes, Two translucent white brains, 12 acrylic mouth gems

ASSEMBLY

- 3D printed parts will need some surface preparation if you want a flawless surface. Apply a few even coats of Filler Primer, let dry and sand. If necessary, use spot filler putty to remove surface imperfections.
- Glue Base top (Ha) to HPaint base (H) Blue. Insert threaded nipple in top hole. Test fit torso base (W) and make sure enough thread pokes through the torso hole so that you can add the nut. Once you've successfully tested the fit, remove the torso and glue nipple (brass threaded tube) into base hole, making sure the tube sits at 90°.
- Test fit axles (Q) in base holes. Enlarge with a 3/16" drill bit until axle spins freely. Lubricate if needed.
- Glue wheel halves together. Remove seam with putty and sanding if desired. Paint the wheels (J, K) Orange. They should press on and stay without glue. Be careful to press perpendicular to the axle. any sideways movement could snap off the wheel stem.
- Mask off the neck area and inside arm holes of the torso (D) so that paint doesn't constrict the joint. Paint the top (D) Blue and the bottom (W) Red. Paint the chest shield (Y) Yellow and the arrows (Z) Green.

7. I recommend NOT painting the shoulder (L) as it will be rubbing with the torso joint. Any paint will eventually scratch off leaving a rough finish.

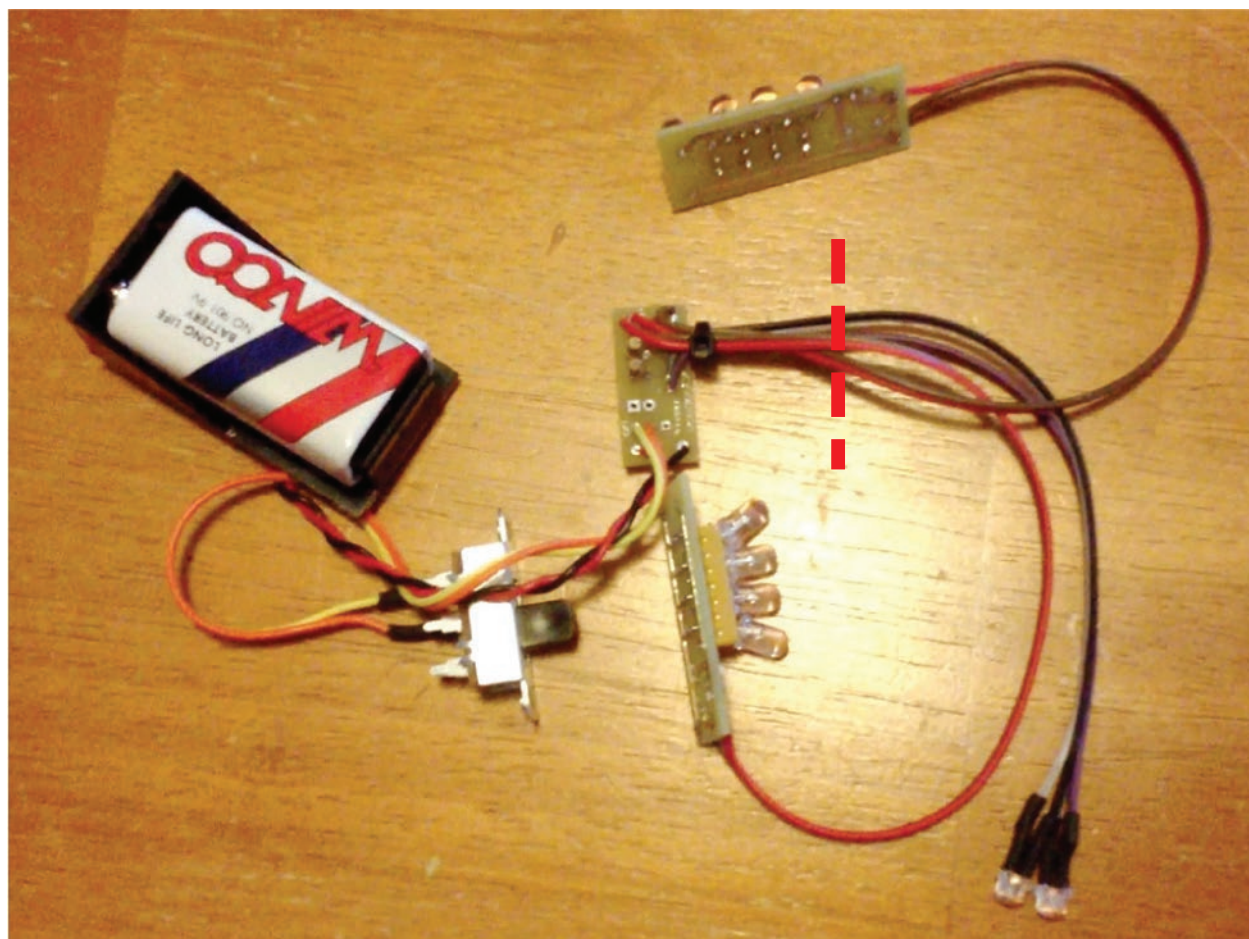
8. Insert shoulder (L) and insert shoulder socket (cups with base, not shown) to inside of arm hole of chest. Note that the sockets have a "L" or "R" noting which arm they belong to. The flat base of the socket will lock into the roof of the chest (see figure 8). Insert shoulder into chest, then tip in socket, seating the short edge first. You can now glue on the red Lower Chest (W). Position the part around one arm first, then snap in place.



9. Paint jaw (C) Red. Insert threaded nipple into center hole. The threads of the nipple should not be visible in the center hole when in place. Place black neck disk (X) on exposed nipple and test fit on torso and make sure enough thread pokes through the torso hole so that you can add the nut. Make sure jaw rotates freely on torso. Add white lube if necessary.

10. Paint head (B) Blue.

11. IF YOU DO NOT PLAN ON ADDING ELECTRONICS, SKIP TO STEP 23



12. You'll need to cut the wires leading to the LEDs far enough away from the lights but leaving enough room to easily solder them back together. BE VERY CAREFUL TO MARK WIRES SO YOU RE-CONNECT THEM PROPERLY! (Obviously, don't have a battery in there when you're doing all this!)

13. Thread LED wires through holes in the head (Brain bank of lights and eye LED (set of) wires in each hole. You can tape the LEDs down to the head to keep them from flopping around while you work.

14. Thread all LED wires through nipple in jaw. Epoxy head to jaw.

15. Thread wires down into torso and connect jaw to torso with nut. Tighten until seated but still moving freely. Secure nut with drop of glue.

16. Solder wires back together with rest of kit.
17. Glue white back plate (G) to torso.
18. Glue switch to battery hatch (F), with "OFF" setting to the left.
19. Test fit switch plate (E) to see how it fits on switch lever. The lever may need to be cut down so that the switch sits 1-2mm over the battery hatch. You may also have to open the hole in the switch plate to fit better on the switch lever. Apparently, the design of readily available switch changes all the time...it may fit perfectly or you may need to make adjustments.
20. Glue Switch plate on switch.
21. Hot glue the light banks close to the center and back. Leave enough room in back for the brains.

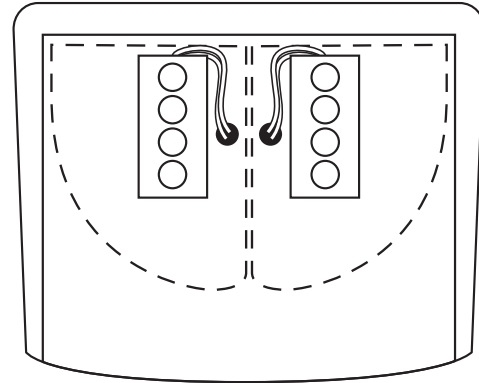


figure 21

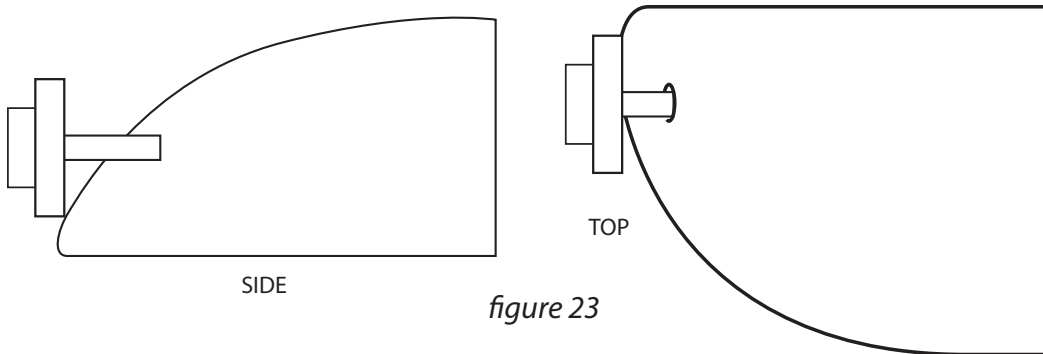


figure 23

23. Trim each eye (U) stem to 13 mm. Feed the stem of each eye through the brain (V) hole. Experiment with how far you insert the eye stem. It should rest against the slope of the brain while the stem is level from the side and top.
25. Print brains with 100% infill. Glue brains into head. I recommend epoxy as it will give you time to position them.
26. Put in the battery and see glowing eyes and brain!
27. Place 12 teeth (S) into mouth at the top of the cavity. The end teeth will need to be cut for all the teeth to fit and the mouth shield (R) to slide under them. See fig. 27



figure 27

28. If you plan to vacuform your mouth, use .03 PETG clear plastic (available at most hobby stores). If you want to print it, use clear PLA with 100% infill. Trim mouth shield and test fit.
29. Glue mouth shield in place with Elmer's white glue or Testors Clear Parts Cement. Superglue and some epoxies will haze the plastic.
30. If you plan to vacuform your mouth, use .06 PETG clear plastic (available at most hobby stores). To trim, I started by cutting the back and the left side. From there you can see how much needs to be cut off the right side. Once that fits in place, mark the overlap along the front edge and carefully trim until it fits. This side is the most critical so I recommend trimming outside your mark, test fitting and then trimming a little more. If you have to do that a half dozen times, you're doing it right! Watch the tutorial video at http://youtu.be/buFCK_76um0 to see me doing it. It's not hard, you just need to be careful as you trim.
31. Glue the head visor in place with the clear parts cement.
32. Forearms: (1/2" copper pipe cut to 41mm long). Spray etching primer on copper bicep pipes (M). Glue "elbow" flange (N) into ends of each pipe. Putty up the seams and paint white.
33. Sand flash off wide end of forearm (O) until it fits nicely in biceps. DO NOT paint the forearms! Insert forearm in bicep.

34. Paint claws (P) Orange. Glue claw to forearm.
35. Test fit bicep into shoulder joint. If it doesn't fit easily, Dremel out material until it slides in. Add epoxy inside shoulder and slide bicep in all the way. Extend claw while epoxy sets.
36. Paint the handle (A) Yellow. Paint the ear caps on the end orange.
37. Glue the handle in place with the slanted side facing forward. The back of the handle should sit vertically.
38. Stretch treads (I) over wheels. While facing the Robot, The letters will be on the right (Robot's left) and the numbers on the left. All characters should be right-reading as they roll over the front wheel (not upside down.)
39. That's it, Andy! Your Robot is ready to join his friends on your shelf!

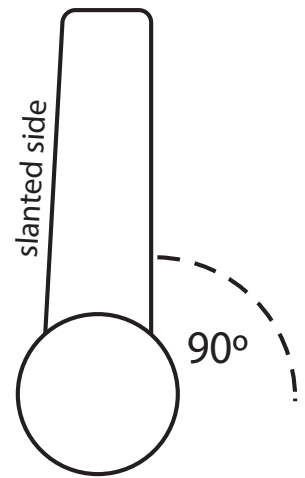


figure 37