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Robot Base Kit (#28976 and #28977)

The Robot Base Kit is available in either White (#28976) or Black (#28977) high-density polyethylene (HDPE). Ideal for medium-sized autonomous robotics system development, this sturdy platform can handle indoor and outdoor environments.

This kit includes the Base plate, Acrylic Battery Shelf, and a set of mounting hardware for attaching the 12 V Motor Mount and Wheel Kit (#27971), and two Caster Wheel Kits (#28971); kits sold separately.

Features

- Precision machined HDPE Base plate with pre-drilled mounting holes
- Laser cut ¼" thick Acrylic Battery Shelf
- Mounting hardware 7/64" Hex Key included for quick assembly
- Designed and pre-drilled for use with the 12 V Motor Mount and Wheel Kit (#27971), and two Caster Wheel Kits (#28971), sold separately
- Pre-drilled for use with up to ten PING))) Ultrasonic Distance Sensors and Protector Stands; Ping))) sensor (#28015) and Protector Stand (#725-28015) sold separately
- HDPE Base plate is virtually indestructible, yet easily drilled, cut, or modified to suit your design preferences and application needs
- 0.375" (0.95 cm) thick x 17.75" (45.09 cm) diameter HDPE Base plate
- 0.250" (0.64 cm) thick x 4.5" x 13.25" (11.43 x 33.66 cm) Acrylic Battery Shelf
- Sturdy but not heavy; 3.15 lbs (1.43 kg)

Bill of Materials

Part #	Quantity	Description
765-28977	1	Robot Base Top – Black (or White #765-28976)
765-00002	1	Transparent black ¼" Acrylic Battery Shelf
710-00024	4	¼" x 20, ½" long stainless steel socket button head screws
710-00025	4	1/4 x 20, 3/4" long stainless steel socket button head screws
712-00005	8	¼" stainless steel washers
710-00032	6	#6-32 x 3/8" stainless steel socket head cap screw
710-00006	6	#4-40 x ½" Pan Head Screw
713-00001	6	#4-40 x 5/8" Standoff
725-00021	1	7/64" Ball End Hex "L" Key

Additional Items Required

- Safety glasses
- Drive motors and casters. The 12 V Motor Mount and Wheel Kit (#27971) and two Caster Wheel Kits (#28971) work well, and are used in the assembly instructions below.

  Alternatively, you may provide your own drive system, in which case the HDPE Robot Base Milling / Modifying Tips on page 4 may be of help.

Assembly Instructions

Step 1: Attach the two 12 V Motor Mount and Wheel Kit Bearing blocks to the bottom of the Robot Base using (4) ¼-20 x ¾" long stainless steel button head screws and washers.

(The "bottom" of the Robot Base is the side that has the two sets of (3) caster mount holes showing. These are 'blind' holes, because they do not go all the way through the material. This results in a cleaner look, and eliminates the need for washers and nuts on the top side of the Base plate).

Step 2: Attach the Battery Shelf to the bottom of the bearing block using (4) ¼-20 x ½" long stainless steel button heard screws and washers. Be sure that the Parallax logo is facing away from the bottom of the Base.

Step 3: Attach the front and rear Caster Wheel kits to each of the two sets of blind holes, using (6) 6-32 x 3/8" socket head cap screws. There is no need for nuts or washers. Use the (included) ball end hex wrench for this operation. Retain the hex wrench for future use—it works well if you decide to install Ping))) Ultrasonic Distance Sensor Protector Stands around the perimeter of the Base using the pre-drilled holes.

Step 4: Your battery should be well secured to the battery Shelf. Several methods can be used, including zip-ties or double-sided sticky foam tape. If you're using a standard 12 V, 7.5 Ah sealed lead acid (SLA) Battery, then refer to Figure 1. The (included) 5/8" F/F standoffs and #4-40 x ½" long pan head screws can hold your battery securely as shown. The staggered hole patterns accommodate slight dimensional variances between different brands of batteries.

Step 5: The additional holes in the Battery Shelf can be used at your discretion, or as mounting locations for additional computer/control boards, or future hardware enhancements. See Figure 2 and Figure 3.

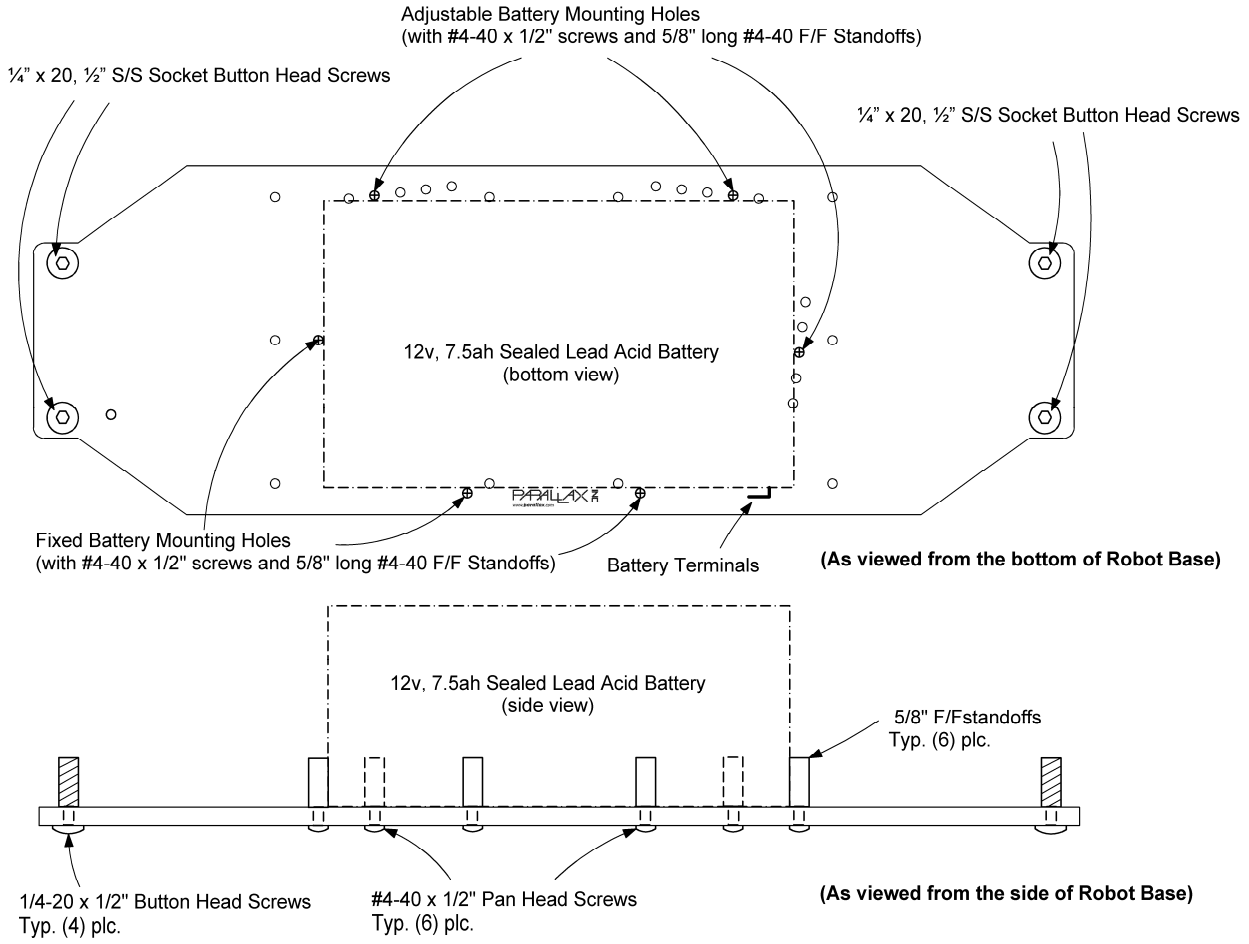


Figure 1

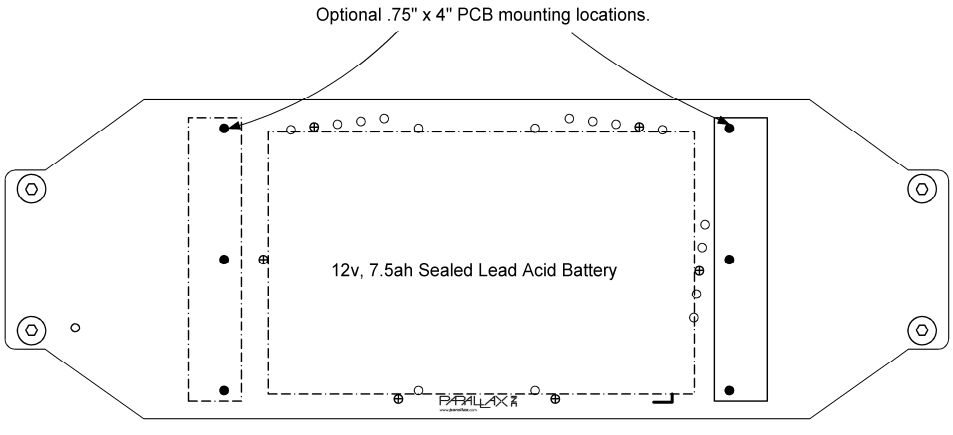
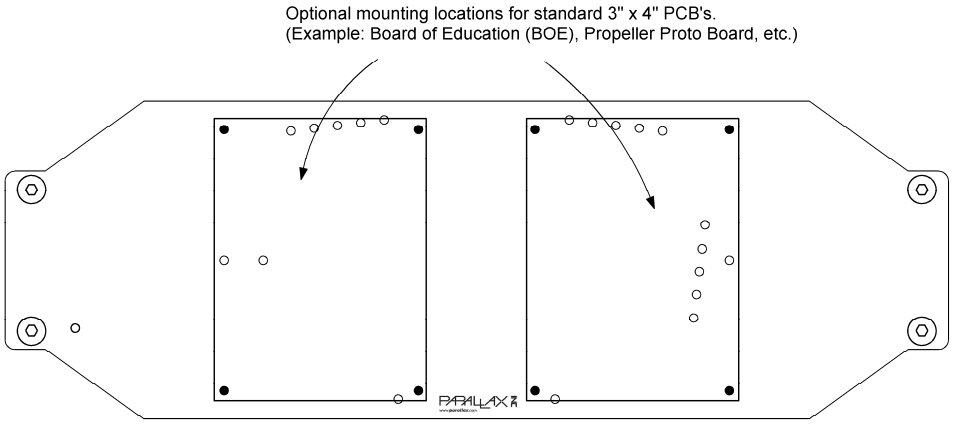


Figure 2



(As viewed from the bottom of Robot Base)

Figure 3

Step 6: You can drill additional mounting holes in the Battery Shelf as required. Begin by drilling a small pilot hole, and then use ever-increasing bit sizes until the desired diameter is reached. Acrylic is much more brittle than HDPE, so use caution when drilling or cutting the Shelf.

HDPE Robot Base Milling / Modifying Tips

- HDPE is a non-brittle form of plastic. The White version (#28976) is FDA approved for direct food contact (not that it matters unless you're going to place raw food on your robot). Although Black (#28977) is not FDA approved, it can be machined in the same manner as the White version.
- Most common woodworking tools can be used to drill, cut, carve, and tap (cut screw threads in) HDPE. Jigsaws, circular saws, standard drill bits, routers and router bits, all provide various ways to customize your Robot Base.
- Although you can tap HDPE, in most cases this is not necessary. Simply drill a thru-hole that is slightly under-sized compared to the screw itself. As you insert the screw into the hole and twist it in, the screw will cut its own threads. Go slow so that you don't strip out the threads.
- You'll notice that the HDPE will act as a lock-nut. That is, when you stop turning the screw, the HDPE will tend to bind and hold the screw tight.
- If you do over-tighten and strip out the threads, remove the screw. Then, using a small straight-blade screwdriver and hammer, simply tap around the perimeter of the hole to "cave in" the material a bit. Now re-insert the screw, and it will tighten right up as it cuts a new set of threads.

Resources and Downloads

Check for the latest version of this document and additional resources on the Robot Base product page. Go to www.parallax.com and search "28976".

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