

# Vac-U-Cam <sup>TM</sup>

## R/C Camera Boat Hull Kit



**Length: 22.5 in. Beam: 7 in. Draft: 2-3/8 in. Displacement: 4 lb.**

A stable camera platform for use with digital cameras, or waterproof cameras up to 16 ounces. A 3-channel radio is recommended to control the rudder, speed control, and camera shutter. With a 2-channel radio, you can "Y" connect the shutter servo to the rudder servo to take photos while sitting still in the water. It has the same hull and running gear as the Vac-U-Tug Jr. and includes a Camera Mounting Deck and Universal Shutter Linkage Hardware with all deck and running hardware made of brass, aluminum, or stainless steel. With this boat, you can take water-level photos of lakefront real estate, nature scenes, or your club's watercraft. Camera and Radio/Electronics are not included. Use the radio gear from your Vac-U-Tug, Jr. to operate this craft.

**HULL KIT CONTENTS:** A Camera Deck Hardware Package is substituted for the Pilot House, Pilot Roof, and Exhaust Stack on page 3 of the Vac-U-Tug Jr. instruction book. When properly ballasted, the wedge-shaped cabin forms a level platform for the Camera Deck.

**WARNING:** Any camera you mount on this boat can be dunked into the water in rough seas, high winds, interference by a swimming person, animal or bird, or during a collision with another boat. Use a waterproof camera or an inexpensive auto-advance camera that you are willing to risk being destroyed if it gets wet. Vac-U-Boat is not responsible for damage to your camera.

Understand that if the boat flips over, the camera will get wet and could be damaged. To best understand your boat's ability to stay upright with the camera installed, perform this test: Wrap the camera in a plastic zipper food storage bag and attach it to the completed boat. Tilt the boat right or left until the cabin almost touches the water. Don't let water enter the boat. Tape over the rear hatch opening. Release the boat and note how quickly it rights itself. It should snap upright quickly and be stable. Today, water-resistant digital cameras are widely available and recommended.

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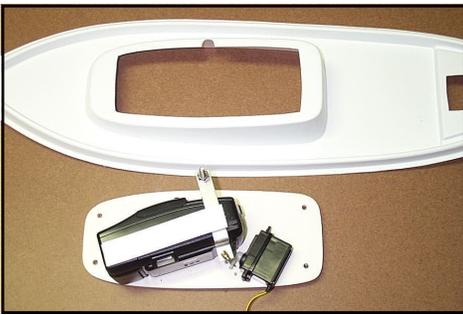
## The Vac-U-Tug Jr. instructions are on-line. With a few exceptions, the construction of the Vac-U-Cam is the same as the Vac-U-Tug Jr.

**CONSTRUCTION:** Follow the photographs and directions in the Vac-U-Tug Junior instructions with the following changes:

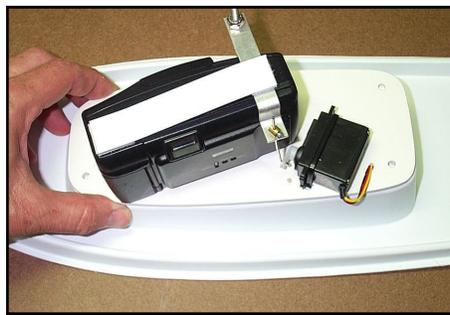
**Step 139:** Before adjusting and installing ballast weights, you need to assemble the Camera Deck and install the camera. Go to **“Construction of the Camera Deck”**. When completed, return to this page.

Move the location of the camera to avoid having to notch the side of the deck as shown below. The original deck didn't have the recessed center cut-out. (The instructions need to be updated.)

For trial & error, trace the camera platform onto a piece of cardboard, cut it out and use it to trial-fit the camera. Try orienting your camera at the angle you prefer to fit the bolt, camera, servo and mounting screws before drilling the camera platform. There is no longer a large motor tray as shown below. See the new tug instructions on-line for details.



Mark 4 places on the Camera Deck 1/4 inch in from each corner and drill 3/16th inch holes through



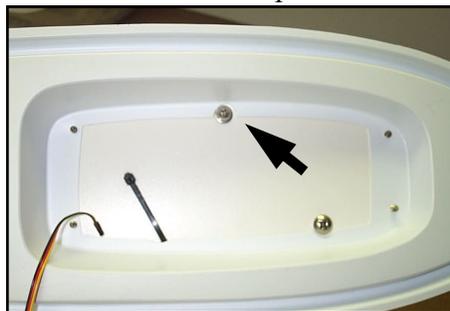
Set the Camera Deck on the Cabin. Mark the 4 holes on the Cabin with a pencil.



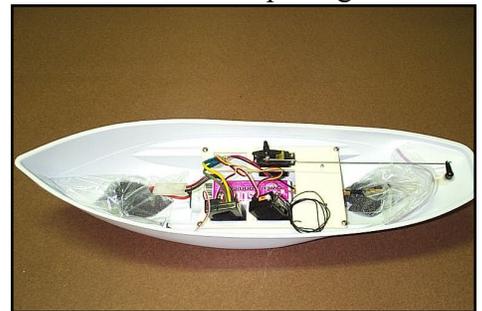
Drill 1/8th inch holes through the Cabin at the four marks. You may have to notch the opening as I did.



Attach the Camera Deck to the Cabin with 4 screws. Tighten gently until snug.



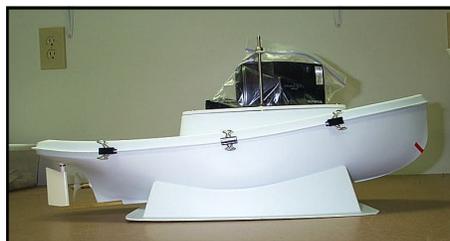
Underside of installed Cam Deck. I had to notch the opening to fit the Shutter Arm Mounting Bolt.



Put 8 ounces each of ballast weight into two plastic bags. Put them into bow and stern of the Hull.



Put the camera into a zipper bag. Temporarily clamp the Deck to the Hull with 6 clamps.



Mark the waterline on the hull. Bow: center of curve of bow. Stern: 1/8 inch below rudder top.



Set in water. Put two cups on deck as shown. Add weight to cups until you meet the waterline marks.



The stern waterline is 1/8th inch below the top of the fin of the rudder as shown.



The bow waterline mark is in the center of the curve of the bow as shown by the red piece of tape.



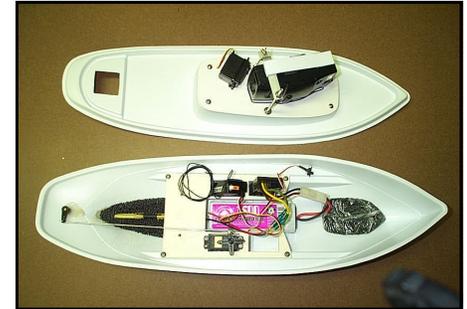
Combine the bow cup and bag ballast, mix with epoxy (in the bag), and press into the bow as shown.



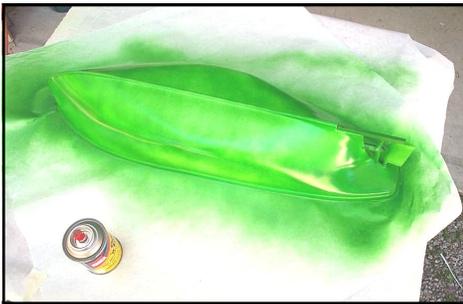
Follow the ballasting steps in the Vac-U-Tug instructions. When cured, remove the bag and glue to the hull.



The stern ballast looks like this installed. Keep it away from the Motor-Shaft Coupling.



Continue with the remainder of the assembly steps.



Paint the boat. Details in the "Painting" section of vac-u-boat.com. Let the paint fully cure.



Port & Starboard decals are included. Remove the backing paper and press in place with the mounting tissue.



Carefully peel away the mounting tissue and you are finished!

### PHOTOGRAPHY TIPS:

Avoid mounting the camera pointing straight ahead. This puts your Vac-U-Cam on a collision course with your subject. The bow of the boat may appear in the bottom of your photograph.

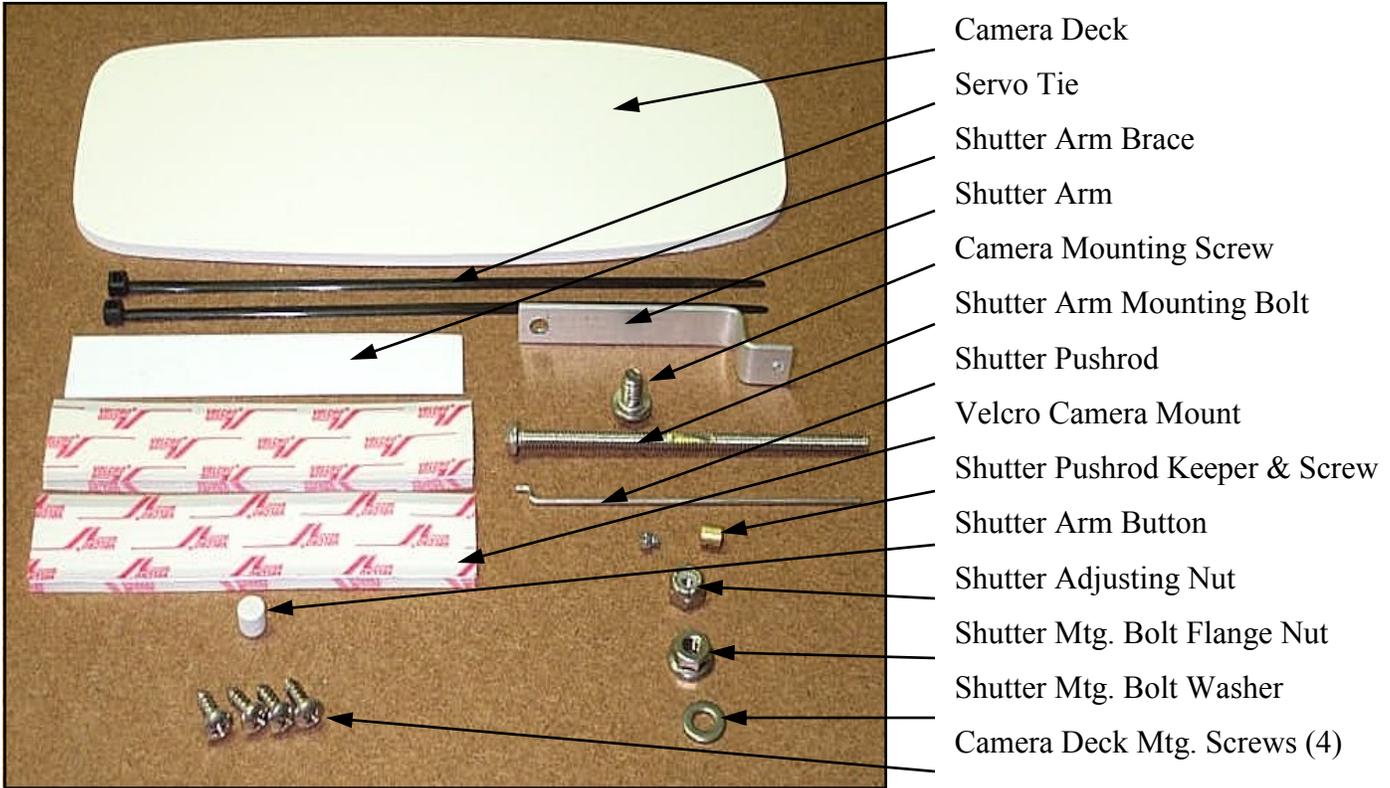
Avoid cameras that weigh more than 16 ounces. (one pound)

If shooting into the sun, tape a shade on top of the camera, above the lens, to prevent glare from the sun striking the lens.

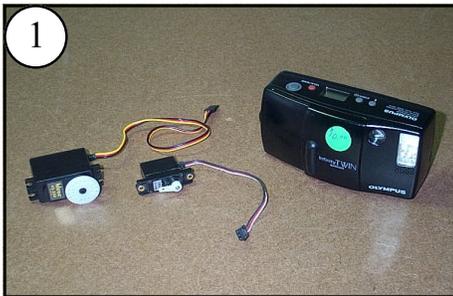
If aiming is difficult, tape a pointer behind the camera pointing behind, but inline with the lens. A drinking straw works great! At a distance it will show you where the lens is pointed.

Adjust the up or down angle of the camera by placing temporary ballast on top of the deck on the right or left of the cabin to tilt the boat & camera up or down.

# Camera Deck Hardware Package



## Construction of the Camera Deck



1  
A standard or micro servo is necessary to complete the Camera Deck. Shown is a good used "yard sale" camera that cost \$15.



2  
This camera has a tripod mounting hole in its base. If your camera doesn't have one, put pads of Velcro at the 4 corners of its base to attach it to the Camera Deck.



3  
Orient the camera on the Camera Deck as you plan to mount it. This would be good for shooting to the right side of the boat.



4  
This is a good right-front angle direction.



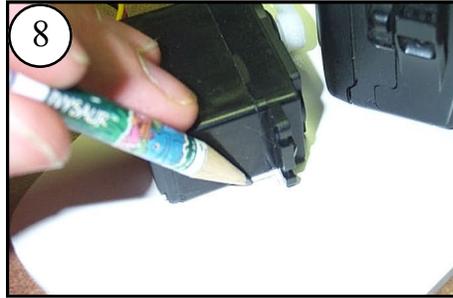
5  
Trim the servo arm to just one arm like this.



6  
Tape the Shutter Arm to the camera, centered over the camera's shutter button.



7 Orient the Servo to a position that allows it to pull the Pushrod straight down.



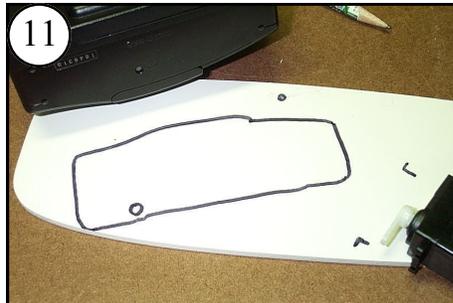
8 Mark the underside of the servo mounting flange on the deck.



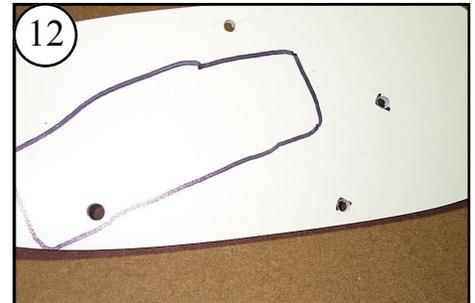
9 Drop the Shutter Arm Mounting Bolt straight through the Shutter Arm and mark the deck.



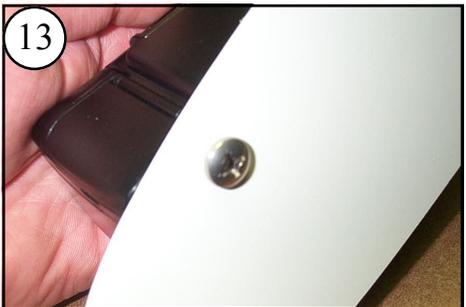
10 This camera has a sliding lens cover. I had to allow space for it to slide behind the Bolt.



11 Outline the camera and add a mark for the tripod mounting hole of the camera on the Deck.



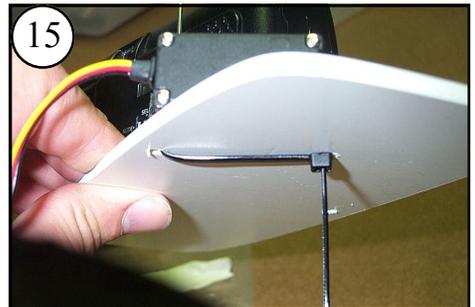
12 Drill a 1/4 inch hole for Camera Mounting Screw, 3/16 inch holes for the servo & Shutter Mtg. Bolt.



13 Attach the camera to the Camera Deck with the Camera Mounting Screw or with Velcro.



14 Attach the Z-bend end of the Shutter Pushrod to the servo as shown. Use the middle hole for a stronger pull.



15 Attach the servo to the Camera Deck with one nylon Servo Tie. Make sure it is tight!



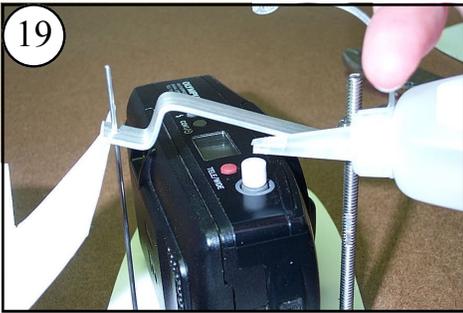
16 The attached servo will look like this from the top. The servo is in its "take photo" position. Set this by connecting the servo to the receiver & battery. Throw the transmitter stick to "take photo" position. Turn off the receiver.



17 Attach the Shutter Arm Mounting Bolt as shown. The washer is under the Deck. The Shutter Mounting Bolt Flange Nut is on top.



18 Grasp the Shutter Arm Mtg. Bolt with pliers at the center flat of the bolt. Tighten the Adjusting Nut with a 3/8 inch or 10 mm wrench until the Shutter Arm is level as shown.



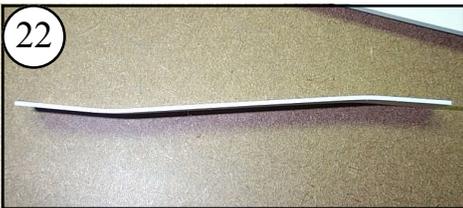
19 Put a droplet of CA glue on the top of the Shutter Button to glue it to the Shutter Arm. Don't glue the Button to the camera!



20 Center the Arm over the button. Press & hold for 15 seconds to bond the Button to the Arm.



21 With the servo in the "take photo" position, push down on the Arm until the camera's shutter clicks. Tighten the Pushrod Keeper.



22 Bend the ends of the Shutter Arm Brace slightly as shown.



23 Lay the Brace on the camera. Trim one end if it overhangs the camera or the Shutter Arm.



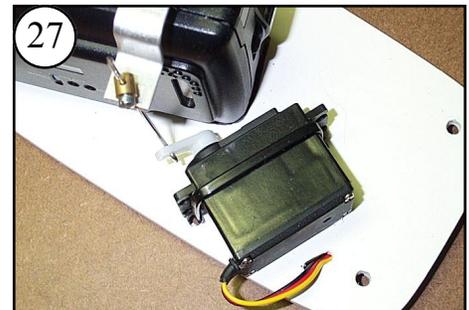
24 Attach Velcro to the camera and to the top of the Shutter Arm.



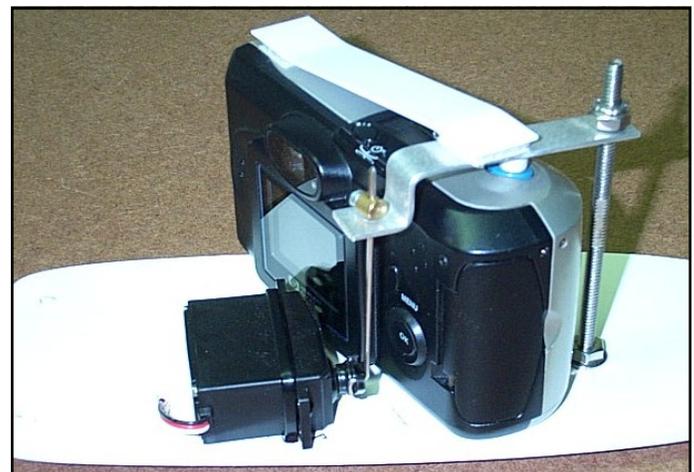
25 Place the Shutter Arm Brace as shown. This will keep the Shutter Arm centered in place.



26 The servo arm should not strike the Deck when taking a photo. Adjust the Keeper so the servo travels just enough to click the shutter.



27 To insert the servo wire through the deck, drill two 1/8 inch holes 1/2 inch apart. Connect the holes with a hobby knife to make a slot.



You are finished! Here are two examples of completed Camera Decks with standard servos. On the left is a 35mm camera shooting to a shallow right-front. On the right is a digital camera aiming left-front. To remove the camera, detach the Shutter Arm Brace, Raise the shutter servo to its highest position. Remove the Mounting Screw. Slide the camera out.