

## SPT200 Pan and Tilt System

Make sure your kit includes the following

- (7) ABS Plates
- (23) 6-32 x 3/8" Pan Head Phillips Screws
- (4) .625" Length Aluminum Standoffs
- (1) Servo Shaft Hub (525122 or 525123)
- (1) 1/2" Bore Flat Bearing Mount
- (1) 1/4" bore flanged bearing
- (2) #4 x 1/2" Pan Head Phillips Screws
- (4) #4 x 3/8" Truss Head Phillips Screws
- (1) 1.25" Length Aluminum Standoff
- (1) Aluminum Servo Horn
- (1) .5" Length Aluminum Standoff
- (1) 1/4" Thick ABS Spacer
- (1) 1/8" Thick Nylon Spacer
- (2) #4 x 1/2" Flat Head Phillips Screws

**Tools needed:**

- #2 Phillips Head Screwdriver
- #1 Phillips Head Screwdriver
- Hammer



## Standard Servo Direct Drive Pan & Tilt Mount Assembly Instructions

This kit will work with standard size Hitec (or Futaba) servos. We will be using the Hitec HS-5485HB in the instructions.



1. Attach the 1/2" Bore Flat Bearing Mount to the rough side of the ABS plate with (4) 6-32 x 3/8" Pan Head Phillips Screws.



2. Attach the (4) .625" Length Aluminum Standoffs to the smooth side of the ABS plate using (4) 6-32 x 3/8" Pan Head Phillips Screws.



3. Slide the Servo Shaft Hub through the 1/2" Bore Flat Bearing Mount.



4. Put the servo onto the Servo Shaft Hub. If your servo has Karbonite gears the fitment may be very tight. Once you get it started, you can pull the horn onto the servo by installing and tightening down the stock servo screw in step 5.



5. Attach the servo to the .625" Standoffs using (4) 6-32 x 3/8" Pan Head Phillips Screws. Make sure to install all 4 screws prior to tightening down for proper alignment. Next, install the stock servo screw into the servo to hold the Servo Shaft Hub on.



6. Plug the pan servo into your servo controller and set the controller to the neutral position. Connect the tilt base plate to the top of the Servo Shaft Hub using (4) 6-32 x 3/8" Pan Head Phillips screws. Rotate with controller to confirm the proper position of the tilt base plate at this time as it is difficult to re-index after this step.



7. Install the 1/4" bore flanged bearing on the textured side of the part in the picture above. The bearing may need to be lightly tapped in place with a hammer.



8. Press the the side plate onto the tilt base plate as shown and screw together with (1) black #4 x 1/2" Pan Head Phillips Screw.



**9.** Install your tilt servo on the smooth side of the servo plate using (4) black #4x3/8" Truss screws. **Do not fully tighten!**



**10.** Press the servo plate onto the tilt base plate and screw together with (1) black #4x1/2" Pan Head



**11.** Install the 1.25" length aluminum standoff as shown above using (2) 6-32x3/8" Pan Head Phillips Screws.



**12.** Install (4) 6-32 x 3/8" Pan Head Phillips Screws through the holes on the textured side of the part in the picture above.



**13.** Screw the aluminum servo horn onto ABS part with the spline of the horn facing outward.



**14.** Plug the tilt servo into your servo controller and install the plate onto the servo using the factory servo screw. Operate the servo to view tilt range and adjust as needed.



**15.** Using a 6-32x3/8" Pan Head Phillips Screw, attach the .5" length aluminum standoff to the smooth side of the part above.



**16.** Spacers are included to help keep the ball bearing in place. (1) ABS and (1) Nylon. You may only need one depending on the servo you use.



**17.** With the spacer(s) installed insert the standoff into the 1/4" flanged bearing as shown above.



**18.** Slide the top plate in place. If the side plates are too far apart, remove spacers as necessary. Install (2) #4 x 1/2" Flat Head Phillips Screws to hold top plate on.



**19.** Raise or lower the servo to make the top plate level. Once level, tighten the bottom servo mounting screws.



**20.** Next, tighten the top servo mounting screws.



**21.** Your unit is now complete and ready for use.

*You'll notice the ABS pan plate has several unused holes. These holes align with the repeated 1.5" pattern found on the Actobotics Channel. To attach the SPT200 to channel, you can use 6-32 aluminum threaded standoffs and 6-32 screws.*

*To attach the SPT200 to a tripod or a flat surface, the DDP-BM base mounting kit can be used. It comes with a flat plate and the necessary hardware to create a base for the SPT200 to rest on. The hub pattern in the center of the DDP-BM can be used to attach a 1/4-20 or 3/8-16 screw plate if you intend to install the pan system onto a tripod.*