

## Raptor 30/50 eCCPM Conversion Kit Installation Instructions

### Parts List

- 1 – Swashplate Conversion Ring
- 2 – M2x8 Socket Head Screws
- 2 – M2x10 Socket Head Screws
- 1 – M2x12 Socket Head Screw
- 1 – Anti-Rotation Guide
- 1 – Elevator Servo Mount
- 1 – Left Cyclic Servo Plate
- 1 – Left Cyclic Servo Post
- 1 – Right Cyclic Servo Plate
- 1 – Right Cyclic Servo Post
- 6 – M3x6 Button Head Screws
- 4 – M3x16 Button Head Screws
- 2 – M3x10 Button Head Screws
- 2 – M3 Self-Locking Nuts



### Swashplate Preparation

To use the 120-degree Swashplate Conversion Ring you first need to remove the four link balls and screws from the stock 90-degree swashplate. *These screws were originally installed using red Loctite, so it is very important to use a heat gun to loosen these up first, or the screw heads will shear off.* Once all four screws and balls have been removed, place the ring over the four arms. Use the two M2x8 screws to secure the ring to the two “side” arms, using a small amount of blue or green Loctite. Two of the removed balls are attached to the ring at the 120 degree points using two M2x10 screws and nuts, again using a sparing amount of Loctite. The longer M2x12 screw (with Loctite...) is used to attach a 3<sup>rd</sup> ball into the swashplate arm opposite the two other balls. Finally, attach the anti-rotation pin to the remaining arm, again using a small amount of Loctite.



### Kit Installation

Attach the Anti-Rotation Guide to the two Cyclic Servo Posts using two M3x6.button-head screws. The “sloped” faces of the posts face outward.

Attach the assembly to the frames using the four M3x16 screws provided. Use a small amount of Loctite, if using the aluminum frame posts, or CA glue if the stock plastic posts are used.

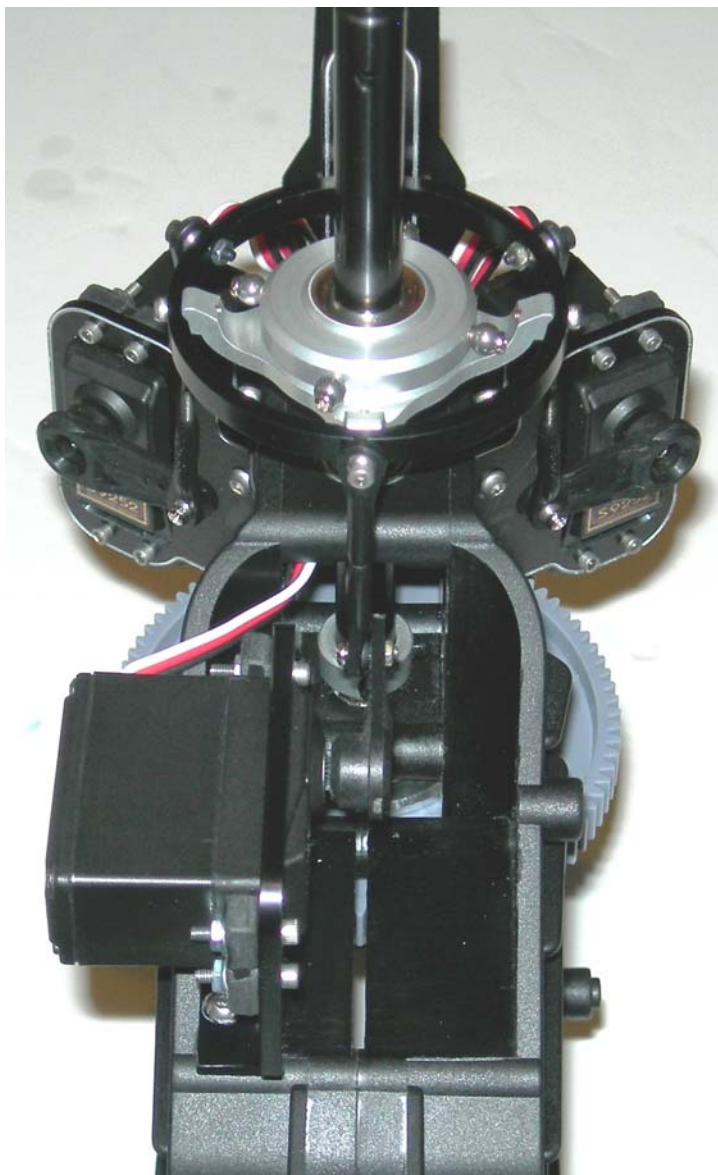
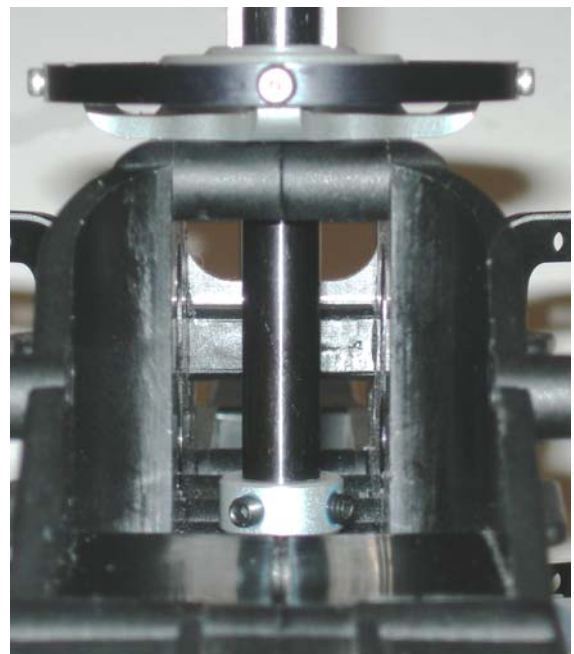
The assembly mounts with the angled portions of the posts facing backwards, relative to the frames.



Attach the left and right Cyclic Servo Plates to each post, as shown, using two M3x6 button head socket screws. The angled edge of the plate should be flush with the frame.



Install the front servos, as shown. For maximum performance longer servo arms should be used. Shown are the long Dubro arms with the balls installed at the 25mm hole position. In order to get +/-12 degrees of maximum pitch, the main shaft locking collar can be moved to the lower bearing block. A small spacer is required. The inner race from a used Raptor main bearing works perfect for this function. This will allow the swashplate to travel farther down the shaft. Once the main shaft is locked in place, slide the converted swashplate onto the main shaft., inserting the AR pin into the slot in the guide.



Each of the two front cyclic servo links should be exactly 57mm from center-to-center. Install the links. With the servo arms horizontal, at a 90-degree angle, the swashplate AR pin should be in the middle of the slot in the guide, with the swashplate level.

The Elevator Servo Mount fits flush to the left side of the frames, with the back edge of the mount centered above the upper rear frame mounting screw. Mark the hole positions and drill two holes for the mounting screw into the left frame. Mount the frame using the provided M3x10 button head screws and M3 self-locking nuts, using long needle nose pliers.

Install the servo, as shown, and use an identical length servo arm as was used for the cyclic servos. The elevator servo link should be 41mm, center-to-center.

### Final Setup

Mechanically, this completes the installation. The final assembly should look like that shown below:



Using the 25mm servo arm ball positions, the arms should hang straight below the swashplate balls, so that the links are vertical when the servos are centered. The radio can now be programmed for 120-degree CCPM. For a Futaba radio, the swashplate AFRs should be initially set to something like: **35 AIL, 35 ELV & 30 PIT**. The ball links, and/or the servo end points, might have to be adjusted in order to remove/reduce any interaction, and to get the pitch range correctly set. It should be quite easy to get +/- 12 degrees of pitch range. Check for any mechanical binding, which needs to be removed.

That completes installation and setup. Fly safe!