The following steps outline installation of the SSVPP on an Extra 260 airframe that has already been assembled. However, many of the steps can also be completed for an airframe that is not yet assembled.

### Model Preparation and Motor Mounting

#### Servo and Servo Arm Setup and Mounting

For the best possible performance, we recommend that you use a servo that has at least 17 ounce inches (oz/in) of torque, like the E-flite S75 Sub-Micro Servo (EFLS75). You must also keep the servo mounting location, mark the outline of the servo on the foam. In the case of the Extra 260, carefully cut the first/bottom layer of foam around the outline that you made, making sure not to cut in the second/top layer. Removing this section of the foam double will allow the servo to be positioned so that the pushrod is very close to centered in the motor shaft.

#### Radio Requirements and Initial Setup

Before beginning assembly and installation of the SSVPP, it will be necessary for you to take a few minutes to complete the initial setup and programming of your transmitter.

### Servo Bridge Bearings

Slide the pushrod through the securing collar and motor shaft, then past the servo arm and pump linkage as necessary until it can.

### Servo Bridge Mounting

With the servo arm installed on the servo, it will now be necessary to choose where to install the servo on the model. In the case of the Extra 260, the front edge of the servo should be approximately 33mm back from the firewall, with the cutout of the servo on the firewall. To check this, temporarily install the pushrod through the motor shaft and into the pushrod linkage on the servo arm (do not worry about cutting the pushrod to proper length at this time). If the servo cannot be positioned so that the pushrod is perpendicular to the pushrod, remove foam and/or add shims as necessary until it can.

#### Pushrod Installation

Once you have determined the correct length required for the pushrod linkage, the arm will be mounted by using the supplied socket head shoulder screw and hex nut. You will likely have to enlarge the hole in the arm to fit the screw. Then, be sure to use blue threadlock to secure the nut on the screw; making sure that the pushrod linkage is able to move side to side on the slot and rotate around the screw freely.

#### After installing the pushrod linkage on the servo arm, power your radio system on and center the pitch servo at what should be the “zero pitch” setting. This is usually easy to accomplish by using the default pitch curve programming of the transmitter with the throttle/collective stick set to exactly the mid-stick position. If your transmitter features a graphic display of pitch curves, it may also be helpful to select this menu to better determine the exact mid-stick position.

With the pitch servo centered, we suggest installing the servo arm on the servo so that it will be as close to perpendicular (90 degrees) to the pitch control pushrod as possible.

#### Servo Arm Mounting

After installing the pushrod linkage on the servo arm, power your radio system on and center the pitch servo at what should be the “zero pitch” setting. This is usually easy to accomplish by using the default pitch curve programming of the transmitter with the throttle/collective stick set to exactly the mid-stick position. If your transmitter features a graphic display of pitch curves, it may also be helpful to select this menu to better determine the exact mid-stick position.

With the pitch servo centered, we suggest installing the servo arm on the servo so that it will be as close to perpendicular (90 degrees) to the pitch control pushrod as possible.

### Approximate 33mm

#### Center Hub, Pitch Bridge and Pitch Control Pushrod Installation

Note: All parts MUST be assembled with blue threadlock for maximum security and reliability.

- Position the center hub and blade grip assembly on the motor shaft, making sure that the blade grips are positioned so that the recess for the nut is facing toward the motor and the rear of the model. The rounded side of the center hub goes toward the motor, and the flat side should be positioned flush with the end of the motor shaft. Use the included setscrews (and threadlock) to mount the hub on the shaft, making sure that at least one of the setscrews engages the flat spot on the end of the E-flite Park 370 (EFLM1210HS) motor’s shaft.

- Next, install the pitch bridge assembly by snapping the ball links in place on the ball ends of the blade grips. Then, slide the pitch control pushrod through the bearings in the pitch bridge until the end of the pushrod just exits past the rear bearing.

- Before sliding the pushrod into the motor shaft, it will be necessary to slide the pitch bridge securing collar onto the end of the pushrod that extends past the rear bearing of the pitch bridge. This collar must be installed with the “cone” side toward the bearing in the pitch bridge, and by using the included setscrews (and threadlock). However, do not tighten the setscrews all the way down at this time.

- Slide the pushrod through the securing collar and motor shaft, then past the servo arm and pump linkage as necessary until it can.

- Once you have determined the correct length required for the pushrod, the pushrod control pushrod will need to be approximately centered in the hollow motor shaft when the servo arm is perpendicular to the pushrod. To check this, temporarily install the pushrod through the motor shaft and into the pushrod linkage on the servo arm (do not worry about cutting the pushrod to proper length at this time). If the servo cannot be positioned so that the pushrod is perpendicular to the pushrod, remove foam and/or add shims as necessary until it can.

- Once you have determined the correct length required for the pushrod, the pushrod control pushrod will need to be approximately centered in the hollow motor shaft when the servo arm is perpendicular to the pushrod. To check this, temporarily install the pushrod through the motor shaft and into the pushrod linkage on the servo arm (do not worry about cutting the pushrod to proper length at this time). If the servo cannot be positioned so that the pushrod is perpendicular to the pushrod, remove foam and/or add shims as necessary until it can.

- With the radio system powered on and the Pitch servo centered (at what should be the “zero pitch” setting), slide the U-shaped “zero pitch” tool into the blade grips. This tool will set the blade grips to exactly zero pitch, and with the servo set to the zero pitch setting, you will now be able to determine the correct length required for the pushrod.

### Pushrod Linkage

Remove section of first layer of foam doubler

Approximately 33mm
After ensuring that the servo arm and blade grips are in the zero pitch positions, secure the pushrod in the pushrod linkage by using the included self-tapping screw. However, be sure that you do not use too much force to tighten the screw as it could strip the plastic.

Install the included rubber spinner over the front “lip” of the pitch bridge to complete installation.

Main Blade Installation and Initial Pitch Curve/Travel Settings

Now that you have completed installation of the SSVPP system, you will need to install the main blades and complete initial setup and adjustment of the pitch curves and pitch servo travel value in the various flight modes that will be used.

Install one main blade in each blade grip using the included socket head shoulder screws and nylon insert locknuts. Be sure that the blades are installed so that the leading edges will rotate counterclockwise.

Tighten the main blade mounting screws until some moderate force is required to rotate the main blades in the blade grips. Be sure that you do not leave the blades loose in the grips.

Note: It may be necessary for you to further tighten the main blade mounting screws after the first few flights to prevent the blades from moving too freely in the grips.

Before proceeding, be sure that your transmitter and onboard electronics are powered on. Also, be sure that the motor is left unplugged from the ESC for safety.

Set the Travel Adjustment/End Point Adjustment values for the “Pitch” channel to approximately 50% each way. This is generally a good starting point for adjusting the overall pitch range/travel of your system.

Next, program the following pitch curves for the “Normal” and “Idle Up” flight modes.

Note: The values shown are approximate and may need to be adjusted depending on your particular setup and/or preferred performance. However, these values are similar to those used during most of our testing.

Throttle Curve Settings

With the pitch curves programmed, use the corresponding switch on your transmitter to enter the “Idle Up” flight mode. In this mode you will be able to check the maximum travel/pitch range of the blades. You will also be able to confirm proper operating direction of the pitch servo.

When in the “Idle Up” flight mode, and with the motor still disconected from the ESC, advance the throttle/pitch stick to the full position. With the blades extended outward, the leading edge of the blades should now be positioned away from the model and motor, indicating that they are providing “positive” pitch for forward thrust.

With the throttle/pitch stick in the lowest position, the leading edge of the blades should now be positioned toward the model and motor, indicating that they are providing “negative” pitch for reverse thrust.

If you find that the pitch response is opposite to the stick movements indicated, simply use the servo reversing function of your transmitter to reverse the operating direction of the pitch servo.

After confirming proper control response of main blade pitch, you can now make initial adjustments to the overall travel/pitch range. In the case of the Extra 260, when using the recommended setup, we find that there should be approximately 55mm between the ends of the blades when they are folded parallel (when viewed from the front) to one another and viewed from the side (when in the Idle Up flight mode, with the throttle/pitch stick in the highest and lowest positions).

Take your time when learning to fly the model in the Idle Up flight mode, and be sure to remember that at any time you lower the stick below approximately the middle position, the power system will offer reverse thrust. For this reason, most of the flight will be spent with the stick in the 3/4 to 2/3 position (for typical forward flight), with lower stick positions typically reserved for reverse thrust maneuvers.

After you have gained some flight experience and confidence using the SSVPP system, you may choose to adjust the pitch and throttle curves (especially in the Idle Up flight mode) to better suit your preferred performance and flying style. You can also visit www.E-fliteRC.com for more pitch and throttle curve setups, including those used by Quince Somenzini for his competition Byp Yak 3D model.

Precautions, Warnings and Support

Please read these safety precautions and warnings before use. Failure to comply with these warnings and/or improper use of the Showstopper Variable Pitch Prop System may result in serious injury.

Please make sure the Showstopper Variable Pitch Prop System is properly balanced before use for proper performance. You must also make sure that the blades and all other components are secure before use. Keep fingers and hands, hair, face, body parts, or clothing away from the moving propeller or risk serious injury. Keep all spectators twenty feet from the path of this propeller. Do not start the motor/propeller near any loose gravel or dirt to prevent particles from flying and injuring individuals. Do not throw anything into the moving propeller to stop it from running. Please discard and replace any blades that appear damaged, showing signs of wear, nicks or cracks. Please do not attempt to repair parts of the SSVPP system or modify it from its intended use.

For additional information concerning the Showstopper Variable Pitch Prop System, please refer to our web page for this item or contact your E-flite distributor. You can also direct emails to productsupport@horizonhobby.com, or in the U.S. call 877.504.0233 toll-free to speak to a support technician.

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