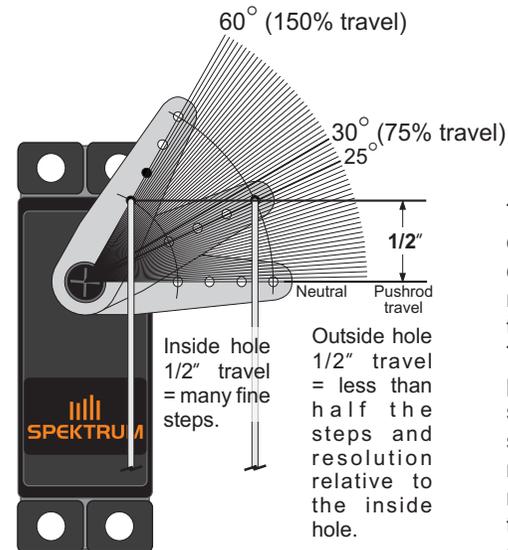


## Maximum Control Surface Resolution for Precision Flying

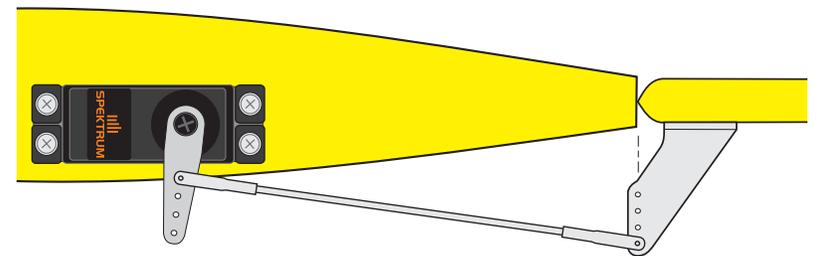
When possible, the ideal control hookup for smooth precision flying is to attach the pushrod to the hole closest to the center of the servo and the furthest out hole on the control horn to achieve maximum resolution and mechanical advantage (torque). Then, increase/decrease the radio percentages to achieve the recommended travel and ultimately the desired handling. If more travel is needed even after maxing the percentage in the radio, you'll have to sacrifice some resolution and mechanical advantage by moving out on the servo arm and/or closer to the control surface.

Explained: Servos are designed to move a certain number of incremental "steps" at 100% travel. Increasing and decreasing the travel percentage in the radio increases or decreases travel by adding or removing steps, yet the size of the steps remain the same. Connecting the pushrod closer to the center of the servo means that a higher travel percentage will have to be programmed into the radio due to the very small (fine) amount that each step is actually moving the pushrod, thus increasing the "resolution" of a given control surface travel.

On the other hand, achieving the same travel with the pushrod connected near the end of the servo arm will require a lower travel percentage in the radio, thus reducing resolution and causing a more coarse (abrupt) control surface movement for each incremental step that the servo arm moves. Of course, 3D pilots must sacrifice resolution in order to achieve the large travels necessary to perform extreme 3D stunts. Therefore, before attaching the pushrods, you'll have to decide whether the plane will be used primarily for 3D stunt flying or precision aerobatics. Once again, there's no in-the-middle and those who try to set up an airplane for both will end up with a plane that does neither as well as it could. While it's true that some exceptionally skilled pilots are able to fly precision with a 3D setup, it takes immense amounts of concentration and practice, with the slightest lapse in concentration immediately resulting in jerky flying.



The servo arm resolution is extremely fine close to the center of the servo, and more coarse (chunky) near the end of the servo arm. Thus, connecting the pushrod at the end of the servo arm results in a more sensitive/touchy control response, whereas connecting the pushrod closer to the center of the servo produces a smoother more precise control response and feel.



Maximum resolution and mechanical advantage is achieved with the pushrod attached to the hole closest to the servo and furthest out on the control horn. Just make sure that there isn't any binding near the travel limits with this arrangement.

KPTR: When set up for maximum resolution, the control response is much smoother and more closely matches the precise inputs and intentions of the pilot!