P96

"SERVOMORPH"

Servo Control Unit

ACTion R/C ELECTRONICS

P96 is a microprocessor-based device which can be used to change both the speed and the end points of travel when connected to a standard RC servo. In Stretch Mode the unit is connected between the receiver and the servo, and the end-points are adjusted by turning either or both of two small preset potentiometers with a small screwdriver. The speed is adjusted with a third preset. The servo is then controlled by the signal from the transmitter.

In Switcher Mode the unit can be made to run a servo from one end to the other when triggered by a simple switch (the end-points and speed of the servo having first been set in a similar way to Stretch Mode). In addition, two or more P96 units, along with their associated servos, can be connected in series. Having adjusted the travel and speed of the servos as required, the "chain" can then be used to operate a complex sequence of operations, with each servo along the chain moving in turn. This is ideal for such applications as rotating and elevating guns in a turret, operating a crane, lowering boats from moveable davits etc. We have provided for the first P96 in a network to be connected using two small adaptor boards (P96Y). One of these transfers the power from the receiver to the servo chain and the other conducts the signal from the receiver to a single-relay switch (e.g. ACTion P43) to activate the chain by radio control. Note that one of the P96Y units has its signal wire link cut while the other remains intact. Incidentally, if you use our Twin Switch P44 which has two independent relays then you can operate two completely separate chains of servos from one proportional channel. Alternatively you may operate the chain via a micro-switch or single-pole toggle switch See "Non-RC Operation" diagram.

The unit is supplied ready-built and tested, enclosed in a custom 3D printed box, so there are no holes to make as with earlier versions of the P96. The connections on the P96 are numbered on the case which correspond to the diagrams on Pages 1 and 2. Make sure that you fit the plugs the right way round!

In Servo Stretcher mode the position of the servo is controlled by a channel from the receiver. The start and finish points can be set anywhere on the available travel of the servo the P96 will provide up to around 180 degrees of travel with the controls at maximum. The speed of the servo can be adjusted down to a time of 40 seconds end-to-end. The P96 is supplied as default set up in Servo Stretcher mode. This is achieved by placing a jumper link* on J2* pins 1 & 2 as shown. In this mode J3* and Header Block J4* are not used. The receiver is connected to J1* using the male to male servo lead that came with the P96 (or any other male - male servo extension lead) the servo plugs into J5*. J1* has 2 sets of contacts that are connected in parallel, so you can use either set, while the other can be used to pass the same signal through to other equipment if required.
**Notes: J1 - J5 refers to the sockets on the P96 labelled 1 - 5.*
If you need to remove the jumper link we suggest that you use long-nosed pliers, alternatively the case is simply clipped together, so the cover will unclip with a little force.

To set up the P96, you will need to adjust the pre-set potentiometers **A** & **B** to give suitable positions for the servo, using the procedure described in this paragraph. Note that the direction of rotation of the servo depends on the relative positions of **A** and **B**. If **A** is more clockwise than **B** the operation will be in one direction; if it is more clockwise then operation will be in the other direction. For initial setup, connect the servo directly to the receiver and use the transmitter to set the servo to the central position (Step 1). If the servo arm or disc is not at its central position when the servo is at neutral, adjust it accordingly. Disconnect the servo from the receiver. Connect the P96 to the receiver and connect the servo to P96, maintaining the neutral position. Set **A** and **B** to the middle positions, which corresponds to zero movement, and the pre-set potentiometer **S** to maximum speed (fully clockwise).

Power up the receiver and transmitter. Move the control on the transmitter fully in one direction and adjust **A** until the servo is the required position (Step 2). Move the control fully in the opposite direction and adjust **B** to move the servo to the other required position (Step 3). Once you are happy with the end-points adjust **S** to set the desired travel speed. To get the smoothest movement, set the speed to minimum and increase it progressively until the servo is just fast enough.

In Switcher mode, the position of the servo is controlled by a switched contact input. Switcher mode is selected by moving the jumper link to pins 2 & 3 on J2. Shorting pins 1 and 2 on either of the J1 connectors moves the servo from the start position to the end, and shorting pins 2 and 3 runs it back again. If a change-over contact is used, the Common connects to pin 1 via the white, orange or yellow wire of a conventional 3-wire servo ribbon cable. The Normally Closed connects to pin 3 (black or brown wire) and Normally Open to pin 2 (red wire). Multiple units can be connected in series to give sequenced operation See the diagram on Page 2 "Chain of three x P96 & servos". When the contact is closed, unit one will move first followed by unit two then unit three and so on. When the contact is opened, the sequence is reversed and the last unit will move first with unit one moving last.

To set up each unit first set **S** fully clockwise. With the power off, close the control contact and turn **A** to its centre position. Keep the contact closed, power up the unit and adjust **A** to get the correct position for the servo end-point. Adjust **B** initially to its centre position then open the contact. Re-adjust **B** to get the correct position for the opposite end-point. Once you are happy with these positions adjust **S** to set the travel speed. To get the unit to move in the smoothest fashion set the speed to minimum and increase the speed progressively using **S** until the unit is just fast enough.

When setting up multiple units that will be sequenced, set up each P96 individually before connecting them together. Make sure that there is sufficient space between the servos to allow each to move through its entire travel without the linkage fouling the adjacent servo this is important where you have two or more servos mounted in close proximity.

RECOVERY SERVICE

A recovery or repairs service ensures that you will not be left with a dead unit for any reason. The Service Charge for this kit is £9.00 including parts (including return shipping cost IN UK, contact us for international options). Please contact us for details - either by e-mail to info@component-shop.co.uk or by phone to 01248 719353.

Always check your wiring carefully BEFORE applying power. 99%+ of the units we are sent for repair were either damaged by incorrect wiring, or there is nothing at all wrong with them, they were just connected wrong which is why they didn't work.

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P96
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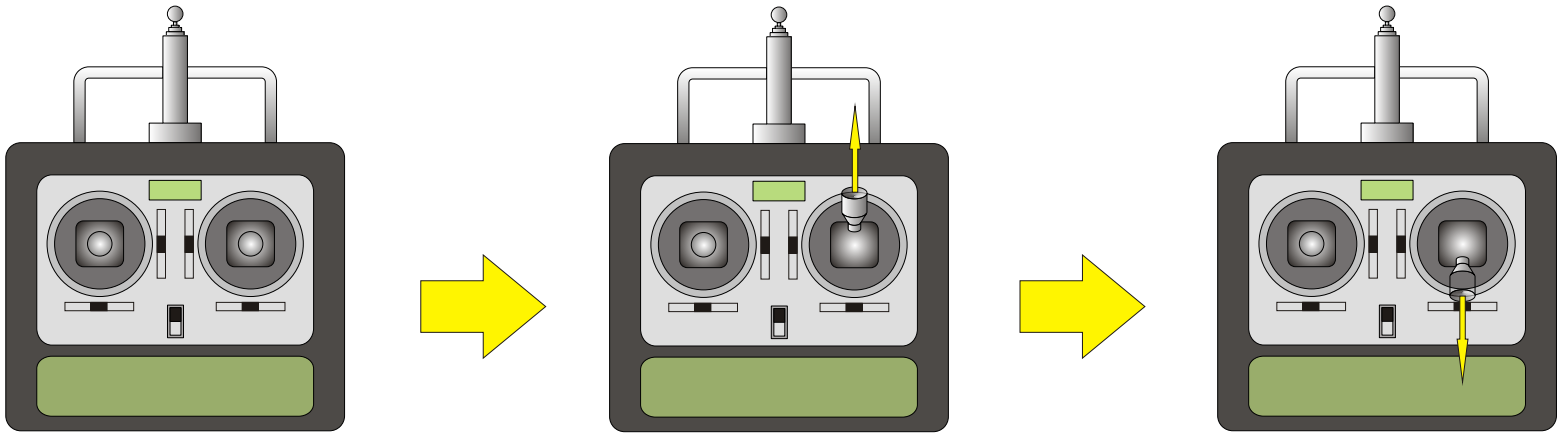
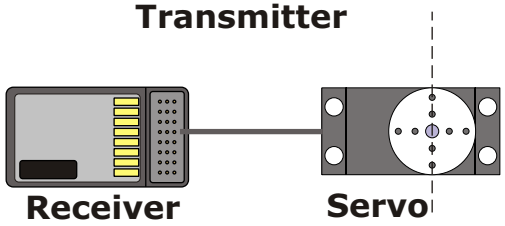
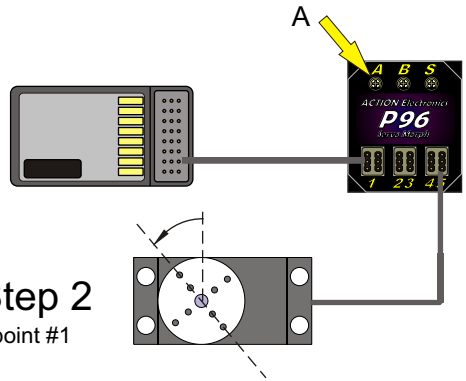
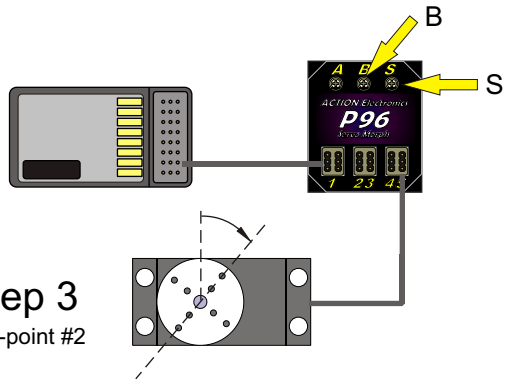




Step 1
Set servo neutral

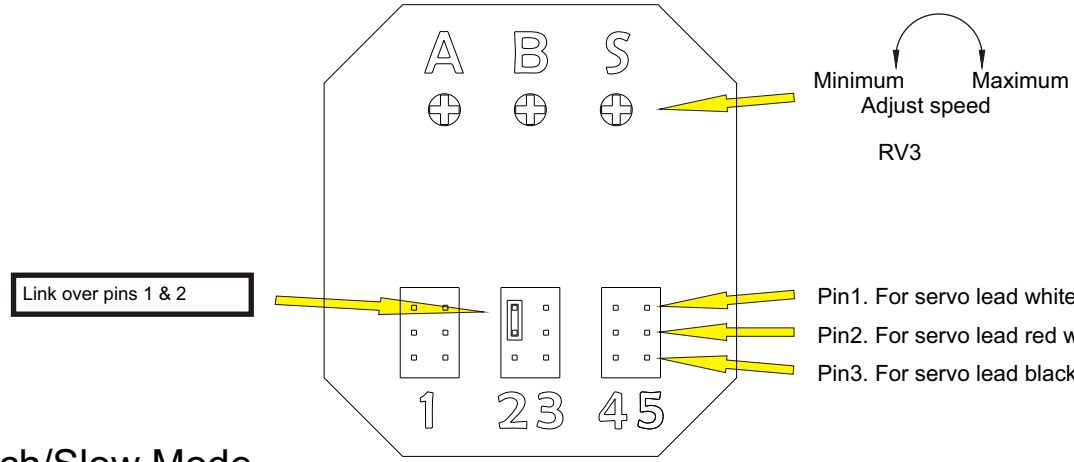


Step 2
Set end-point #1

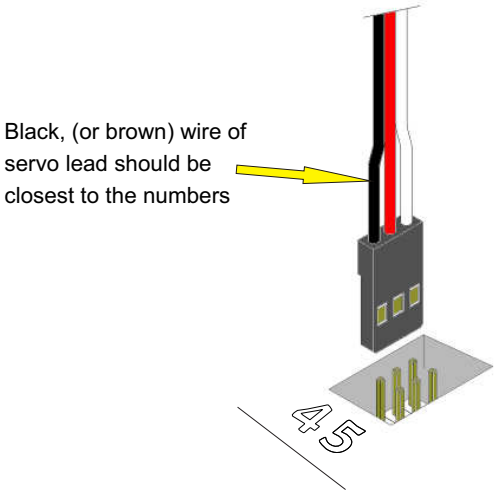


Step 3
Set end-point #2

Set speed
Step 4



Stretch/Slow Mode



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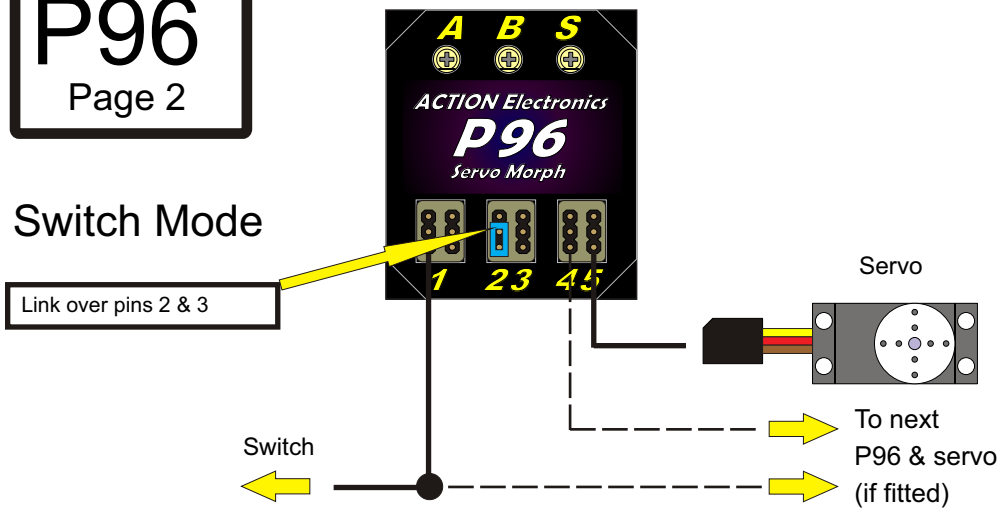
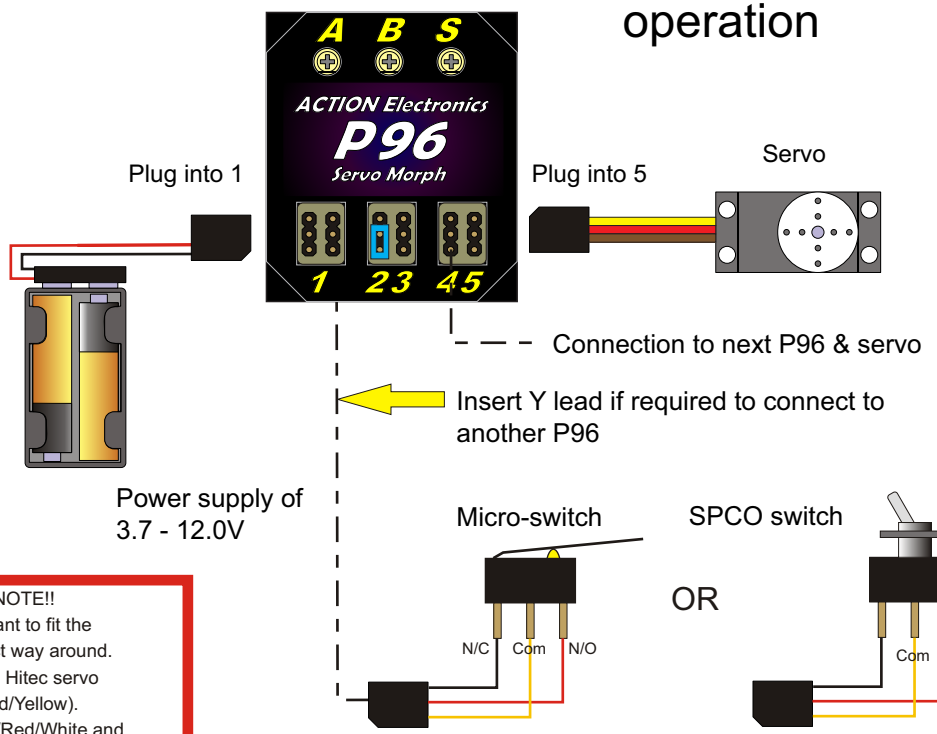
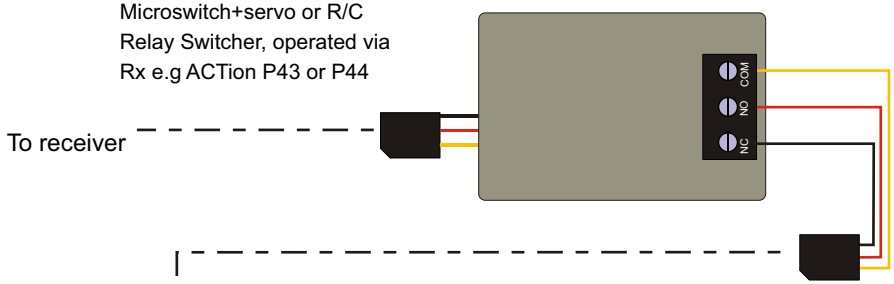
Page 2

Switch Mode



Non-R/C operation





NOTE!!
It is very important to fit the plugs the correct way around. We have shown Hitec servo cable (Black/Red/Yellow). Futaba is Black/Red/White and JR is Brown/Red/Orange.

Chain of three P96 & servos in Switch mode