



SERVOS

NEW! Servo Chart

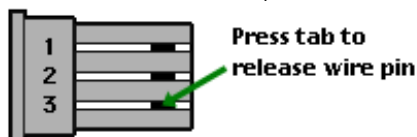
After 1991 or so (I can't remember), most of the major brands of servos became compatible with each other. You can use any of these brands of servos with any brand of receiver. Some brands of servos are really great for a particular use in a particular plane, and there are other companies that sell their servos with each different manufacturer's connector installed (you just have to ask for what you want).

You **can** mix Futaba servos with an Airtronics receiver, mix Hitec & JR servos with a Futaba receiver, etc. Somewhere along the line, the wiring didn't become compatible. For Futaba, Hitec, and JR Radio, the servo and battery connections have the right polarity and signal wires, although the connectors are physically different. You **can't** reverse the direction of a servo (reversed servo) by swapping (+) and (-). If you do, you'll burn out either the servo or the receiver or both. If you're **really** good at soldering very small wires, you can reverse the normal direction of servo by swapping the wires that connect directly to the servo motor inside the servo case as well as the little servo wiper that moves as the servo moves. However, it's a **lot** easier to buy any of the newer radios; even the cheaper, standard radios these days have servo reversing as a built-in feature of the transmitter.

As of December 1997, Airtronics is now shipping servos with an optional "Z" connector that matches the connector found on JR Radio or Hitec servos. This means that if you have a Airtronics servo with one of the "Z" connectors, you won't have to switch (+) and (-) wires to use that servo with Futaba, Hitec, or JR Radio receivers.

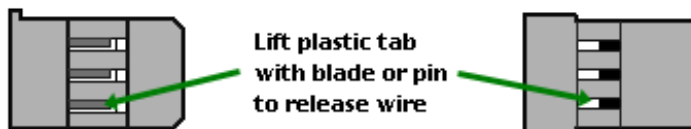
If you want to switch the wires around, almost all the connectors have little tabs or pins that you can push with a small pin to remove the wires and push them back into the connector in the right place.

For Airtronics servos (non-"Z" connector), follow the diagram:



If you have Airtronics radio equipment, or are considering purchase, you should read about the [Airtronics 'Z' connector](#).

For Futaba, JR, & Hitec servos (or Airtronics "Z" connector), use this diagram:



If you are creative, you can get all the brands of connectors to fit each other. I usually cut off the little flat tab on the Futaba connector to get it to fit in a Hitec or Airtronics receiver. You can also cut off the three little 'teeth' on the Airtronics connector to get it to fit in another brand's receiver.

Some of the Airtronics servos have white colored wires for the 'Signal' wire, so it's easier to determine which black wire is (+). **I can't emphasize this enough, just be sure that if you connect Airtronics to any other brand, that you reverse the (+) and (-) wires as you will burn out either the servo, receiver, or both.**

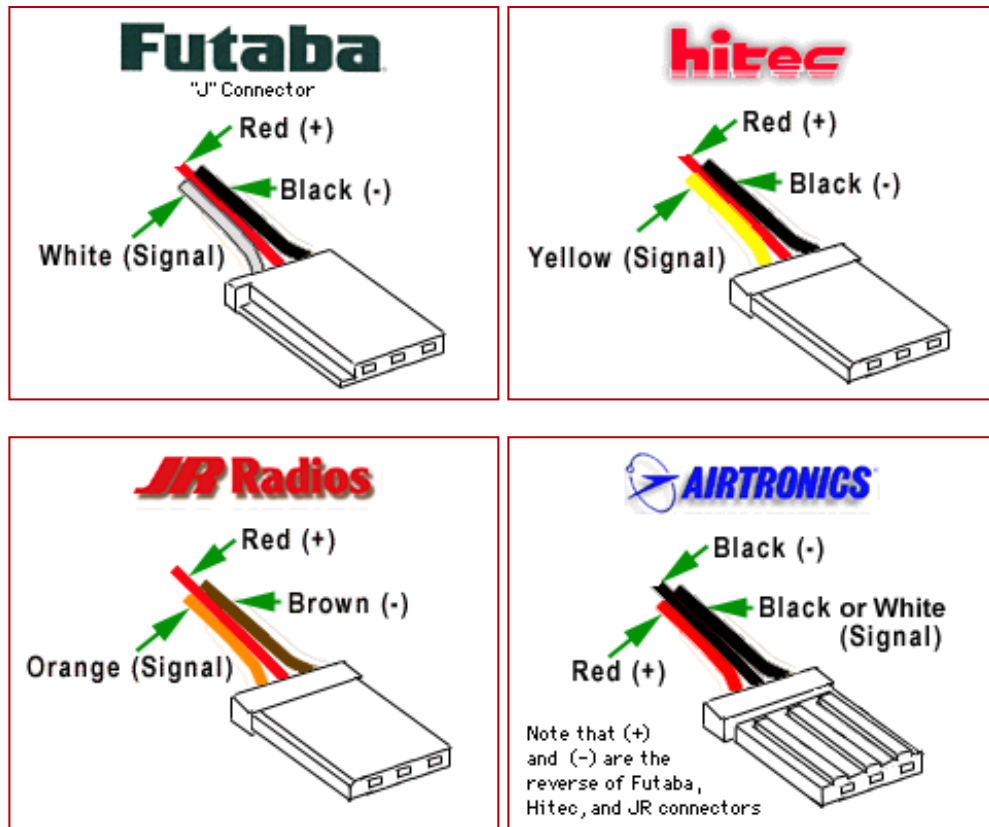
I usually wrap all my wiring that I've converted to Airtronics with a little 'band' of bright blue tape to remind myself that the servo is setup as an Airtronics servo.

Lots of people are now asking, "***What is the difference between analog and digital servos?***"

The motor of an analog servo receives a signal from the servo amplifier (inside the servo) at 30 times a second. This pulsing signal tells the servo motor when to start rotating and which way to rotate. Since it only happens 30 times a second, that's the minimum reaction time. Digital servos use a higher frequency amplifier that sends a signal to the servo motor 300 times a second. Since this signal is received by a digital servo motor more often, it is able to react much faster and hold its position better. This means better centering and considerably higher holding power. This power comes at a cost, however, as digital servos tend to draw a lot more power from the on-board battery which means your battery just won't last as long.

You can read definitions of [coreless](#) and [cored](#) servo motors in the [glossary](#).

Below are the four standard connectors that are used by the 'big' four radio manufacturers (other manufacturers or third-party servo makers, such as [FMA Direct](#) or [Cirrus](#), use the Hitec standard):



For a listing of all the servos that are generally in use today and their specifications, click [THE GIGANTIC SERVO CHART](#).

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