What is Continuous Rotation Servo (CR Servo)?

A standard RC servo is designed for 180 degree swing of the shaft, (90 degrees to left of neutral position, and 90 degrees to right), with ability to position and stop the shaft precisely at any angle in this range.

Continuous Rotation servos are a modified version of the RC Servo where the shaft can rotate continuously. On such RC Servos, you can not stop the shaft at precise position.

Why Calibrate a CR Servo

A standard RC servo is designed for neutral position at 1500 μS. i.e. when a pulse of 1500 μS width is given, the servo shaft holds position at 0 degrees without moving.

A CR servo in a neutral position will hold shaft stationary. When the pulse width is reduced from the neutral position, (say 1400 μS) the shaft starts to rotate in anti-clockwise direction. Whereas when the pulse width is increased (say 1600 μS) the shaft starts to rotate in clockwise direction. The CR Servo neutral position needs to be calibrated for each servo for the operating voltage.

Chart below illustrates a neutral position change for change in operating voltage:
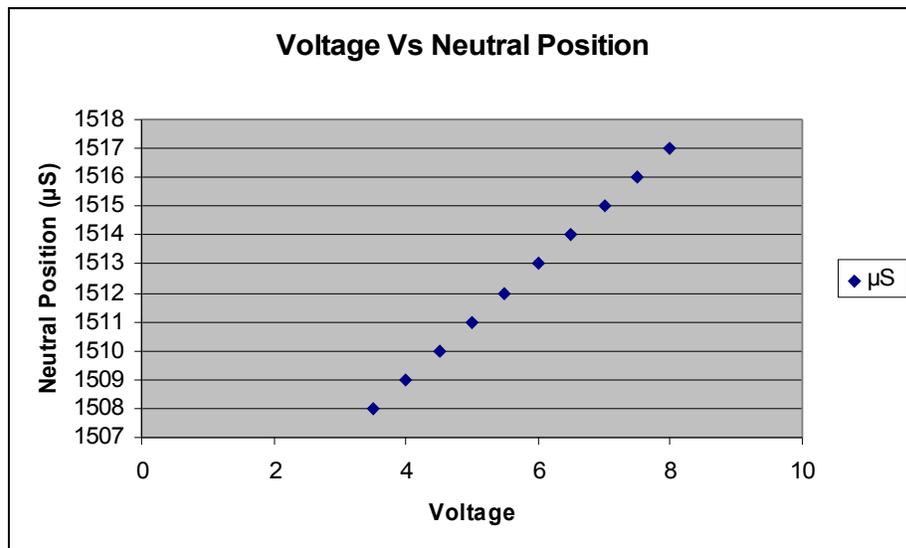
How to find neutral position of CR Servo using NXTServo-v2

Download the programs from following location:

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http://www.mindsensors.com/index.php?
module=documents&JAS_DocumentManager_op=viewDocument&JAS_Docum
ent_id=113

and download them on your NXT using following instructions:

http://www.mindsensors.com/index.php?
module=pagemaster&PAGE_user_op=view_page&PAGE_id=105

Attach NXTServo to your NXT on port 1, attach power to NXTServo, and power on NXT.

Run program "find-neutral".

Attach a CR Servo to NXTServo on SV1 port.

This program initially sets your RC Servo to 1500 μS position. If your servo remains steady at this position, that's your neutral position.

If your servo creeps (turns slowly), note the direction in which it's creeping, and using arrow keys on your NXT change the position value such that it stops creeping (say it stops at 1510 μS).

Continue to change the position value even after it stops creeping, and note the range of values in which it does not creep (say it starts creeping again at 1514 μS, so your neutral range is 1510 to 1514 μS).

Use the average of these values as your neutral position (in our example 1512 μS).

How to change default neutral position stored in NXTServo-v2

When the NXTServo is powered on, it sets the servos to their neutral positions stored in NXTServo's memory. The factory default value of neutral position is 1500 μS. It is possible to change these values so that when powered on, your servos will be set to your desired values.

Attach NXTServo to your NXT on port 1, attach power to NXTServo, and power on NXT.

Run program "init-neutral".

Attach a CR Servo to NXTServo on SV1 port. On NXT LCD screen select servo number '1', and press Orange button to continue.

On LCD screen scroll to desired neutral position using arrow keys, (also look at your servo to ensure that it's not creeping) and press Orange button to store that value to NXTServo memory.

Follow the same procedure for as many servos as you need, connecting them to their respective ports on NXTServo.

Changing speeds of CR Servos

Speed of a CR Servo can not be controlled precisely, however, upto 20 μS from neutral position, the speed is proportional to the deviation from neutral position, and you can use this fact to control the speed of your CR servo.

i.e. If your CR servo has neutral position of 5010 μS, you can control it's speed upto 5030 μS (clockwise) and 4090 μS (anti-clockwise). Beyond this zone, the speed is constant.