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# Dual Wiper Motor Setup with Intermittent Delay

My Bronco has a fiberglass body and windshield frame, and a Centech wiring harness. So, I'm basically working from scratch when it comes to wipers... I sold my stock electric unit with all the bits and pieces two years ago, because I didn't like the way it looked. The Centech harness comes with an aftermarket wiper switch I didn't much care for, so I trashed it and bought an intermittent switch and delay box from Todd Zuercher. Todd's write up on this conversion can be found here. You can also find the required parts at Jeff's Bronco Graveyard, new or used. Look for a switch and delay box for 76-79 full-size pickups and Broncos.

I picked up the motors from Overton's. Part Number 202347DS, 12v, 2 1/2" shaft length, for $74.99 each. They are Onagaro Marine part number 30991. They are 12v, two speed, and self parking. They are similar, if not identical, to the units sold by Tom's Bronco Parts and Wild Horses.

I used the Cherokee rear wiper arm setup I found at BroncOhio. I got the wiper arms at the parts store, MotorMite p/n 42873, for about $20 each, and picked up a set of 14" blades for them. The 14" blades are just about the biggest you can fit, and you have to be careful with trimming the arm so they don't hit the edge of the windshield.

# Configure the Motors

The wiper motors come from the factory configured for Left parking. You need to follow the directions in the box to convert them over to Right parking. The procedure is fairly straight forward, and only takes a few minutes.

The second modification that has to be done involves the self-parking feature. These motors have a switch built-in to them that is open with the wiper is parked, and closed when it is not. Inside the motor, this switch connects PARK to LOW to park the blade. The stock Bronco unit, however, has two both sides of the park switch going all the way back to the dash switch, and the dash switch makes the connection to the low speed circuit to park the blade. This wouldn't normally be a problem; it doesn't matter if the connection from the park switch to the low speed circuit is made at the motor or at the switch. HOWEVER, the Ford delay box needs this signal when in intermittent mode to know when the wiper has left the park position, so it can reset for the next cycle.

For reasons that I'll describe in the next section, this modification is only done to the DRIVERS side motor. Open up the motor, and take a look at the wires. you'll see two wires running into the actual motor section; one from the HIGH post, and one from the LOW post. Clip the SECOND wire connected to the LOW post; this is the wire coming back from the park switch. Drill a small hole next to the other posts, and run a wire through the hole. Solder this wire to the wire leading to the park switch, and MAKE SURE nothing interferes with the mechanism in the motor. You may want to leave the cover off until the installation is done, so you can watch the cam rotating around to ensure it doesn't TOUCH the wires. Even if it only touches a little, a few thousand rubs will wear that insulation right off, and short out your wire. You can see on the schematic below where this wire is in the circuit. "A" is where you cut the wire, and "B" is where you make the connection to go back to the dash switch.




## Wiring

One thing you'll have to accept having two wiper motors: THEY WILL NEVER BE SYNCHRONIZED. This isn't too difficult to get used to, but it creates a small problem for installation. This is difficult to explain, and just as difficult to understand... Since both motors are wired to the same switch, the LOW circuit of both motors are connected. When the Park switch connects the PARK wire to the LOW circuit to park the motor, it also causes the OTHER motor to move. Since the motors will be out of synch, when you turn off the switch, they will continue to run, each park switch causing the other motor to move out of park, until they both eventually hit Park at the same time.

The easy way to fix this problem is to use a double pole switch, with separate wires running to each motor; this way, when the switch is off, the motors are not electrically connected. I wanted to use the intermittent switch, however, which is single pole, so I needed to figure out some other way to solve the problem.


I figured I needed a "check-valve," or diode, on the passenger side motor so that power couldn't flow back out to the driver's side motor. I picked up a box of rectifier diodes, rated at 6 amps, at RadioShack. Part Number 276-1661, about $2.50. Now you also need to understand how the LOW and HIGH function of the motor works; the high speed wire hooks directly to the motor, and the low speed wire hooks to the motor through a resistor, to lower the voltage, and thus lower the speed of the motor. Therefore, when the motor is running on low speed, you will see voltage on the HIGH speed side as well. So, we need to make sure no current flows out of EITHER the HIGH or LOW wire of the passenger motor. I installed one of the rectifier diodes on each wire going to the passenger side motor, with the cathode end (the end with the line) towards the passenger side. You can see the diodes in the picture above (they're the small cylindrical black things) This successfully kept the passenger side motor from "parking" the drivers side motor.

Here are a few shots of the completed installation:







Since the Centech harness I have doesn't include wiring from the wiper switch up to the wiper motors, I ran new wiring.  The stock Bronco wiring, however, is as follows:

Black=Parking, White=Low, Blue=High, Park=Red

Feel free to email me with any questions at mhyland79@hotmail.com.

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