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## V8 Automatic Multi-Function Switch

My 1990 V8 was converted to a 5-speed manual by Andrew Schlueter. Among the challenges he faced was getting the ECU to think the car was in park so the starter would work. From what the previous owner (Dana Curtis, who bought it from Andrew) told me, the kludge was to take the "widget" (my term) that the automatic used to determine the shifter position, and hard wire it (solder the connections) to fool the ECU to think it is always in neutral, thereby letting the starter work. A search of ETKA for the part number says it is the "multifunction switch for automatic transmission" (hereafter MFS).

### MFS Exposed

This page exposes the MFS. It is my understanding that the MFS also determines when the automatic is in reverse, thereby enabling the back-up light relay to shine the back-up (reverse) lights. Since the back-up lights on my car do not currently work, I put together this Wiki page to get help and to offer insight to others doing similar conversions.

The following images show the MFS. The first image (courtesy of Scott Phillips, used with permission; the remaining images by Kent McLean.) is the MFS as installed on the automatic transmission. (Click on the image for a larger view.)



The Multi-Function Switch.

## Automatic\_Multi-Function\_Switch

On my 1990 V8 converted to a 5-speed, it is wire-tied to the engine bay, up on the driver's (left) side.



My Multi-Function Switch.

The next image is another view of the MFS, without the wire that secures it in the engine bay. Look closely and you can make out the part number: 441 919 823D.



My MFS, view 2.

The next image shows the MFS opened, and the connections/traces that were soldered to signal (the ECU?) that the transmission is in neutral and the starter can be activated.



The inside of my MFS.

There is a ~3/8-inch rubber-coated harness that exits the MFS and leads down behind the engine, towards the transmission.

### **MFS Goals**

I post this in the hope that I can do the following:

1. Cut the MFS off to expose the wires in the harness.
2. Determine which wires signal "Neutral" and connect them in a cleaner manner.
3. Determine which wire enables the back-up light relay.

The plan is to connect the back-up relay wire to the switch on the 5-speed, to enable back-up lights.

MFS Exposed

## The Back-up Lights Blue Wire

Thanks to Tony for studying the wiring diagram and pointing me to the blue wire. When given 12V, the blue wire should energize the backup light relay and cause the back-up lights to turn on. I opened up the harness leading from the MFS to find the blue wire. (All the wires were coated with a white film. I had to clean off the film to see colors.)



The MFS Blue Wire.

As a test, I pierced the wire with a safety pin and used jumper wires to provide 12V to the wire.



MFS Blue Wire test.

The backup lights remained out. When I started the car, a second look at the lights showed the backup lights were lit. Success!



Back-up Light!

## Automatic\_Multi-Function\_Switch

### 12V from Gray Wire

Tony suggested getting switched 12V from the MFS gray wire, since that is where the MFS gets its power from. The MFS does not have two gray wires; one of the is a dingy white.



MFS has 2 gray wires! (One gray, one a dirty white.)

No problem. Stick a pin in the first and check for voltage with the key on -- 0V. Try the other one and I see 12.37V (the 12. is washed out in the glare). The one with 12V is the gray wire.



12.37V on the 2nd one!

New problem: I was hoping that the mechanic that did the conversion attached the back-up light connector from the automatic transmission back-up light switch to the 5-speed back-up light switch. If so, I could just cut the blue and gray wires, connect them, and I should have functional back-up lights.

So I cut the blue and gray wires and jumped them. Still no back-up lights. I got out my meter and was surprised to see my gray wire no longer had 12V. WTF? I slept on it, and in the morning tried again.

This time I tested the other side of the gray wire -- the one coming out of the MFS. Bingo! It has 12V. So another wire must be bringing power TO the MFS, and the gray one is getting power from the soldered traces inside the MFS. Next step is to cut all the leads, and see which one has switched power.



12V on the lead coming out of the MFS.

## Voltages

I bypassed the Starter Relay, so I had no fear of cutting the MFS widget (the plastic business end) from its wiring harness. I cut through the whole harness. Ignition off, there were no sparks. (There's a reason I'm not an electrician.)

I then checked the harness for voltage. No wire showed any voltage when the car (ignition) was off. Starting and running the car, I saw 10.4V on the green wire, and 13.7 on the black wire and the black<http://www.audifans.com/white> wire. (For the record, the other wires are blue, brown<http://www.audifans.com/white>, gray, green<http://www.audifans.com/white>, and white.) So if needed, I can get switched power from there.

I next checked to see if any of the other wires showed 12V if the shifter was in reverse and the ignition on. My hope was that one of them would be connected to the reverse switch on the transmission, and all I would have to do to get my back-up lights working would be to connect that wire to the blue wire. No such luck.

## Summary

I still have to run wires from the back-up light switch on the 5-speed manual transmission, one side going to one of the switched 12V in the MFS harness, and the other going to the MFS blue wire. I should then have working backup lights.

Thanks to all the V8 Listers who provided insight and guidance.

KentMcLean 23:46, 26 April 2009 (UTC)