



Technical Service Information

MAZDA MPV R4A-EL NO 3-4 UPSHIFT

COMPLAINT: Mazda MPV vehicles, equipped with R4A-EL transmissions, may exhibit normal upshifts from 1-2 and 2-3 with a NO 4th gear upshift condition before or after overhaul.

CAUSE: The cause may be, a faulty or mis-adjusted inhibitor switch, a faulty Theft Deterrent System or a grounded wire harness leading to the Inhibitor Signal fuse. Mazda shift strategy requires a signal from the inhibitor switch which tells the control unit "Load / No Load input or Park / Neutral position signal. This 12 volt signal is from the ECU and is shared with the TCM, Cruise Control Unit and Instrument Cluster. This voltage is grounded or "0" volts when the vehicle is in the Park or Neutral positions and 12 volts in Reverse, Drive, Manual 2nd and Manual 1st. If the TCM does not see 12 volts when in the Drive position, the TCM will think it is still in Park/Neutral and may not attempt an upshift into 4th gear even though there is a 12 volt input from the inhibitor switch telling the TCM that we have selected Drive.

CORRECTION: Follow the steps listed below and repair or replace as needed.

- STEP 1:** Probe the positive lead of the voltmeter to either terminal in the back of the inhibitor signal fuse and the negative lead to a known good ground, as shown in Figure 1, and turn the ignition switch *on*.
- The voltmeter should indicate less than 1 volt in the Park and Neutral positions and 12 volts in the Reverse, Drive, Manual 2nd and Manual 1st position. If the volt meter indicates less than 1 volt in all shifter positions go to **STEP 2**.
- STEP 2:** Remove the Inhibitor Signal fuse, as shown in Figure 2, and probe the positive lead into terminal "B," with ignition switch *on*.
The voltmeter should indicate 12 volts in all shifter positions. If the voltmeter indicates 12 volts in all ranges go to **STEP 3**.
- If the voltmeter does not indicate 12 volts, turn ignition switch *off* and set meter to ohms. Probe terminal "B." If there is continuity to ground, repair the grounded wire or wires leading to the TCM, ECU, Instrument Cluster or Cruise Control unit.
 - If there is no continuity to ground, repair the open wire from the ECU to terminal "B" at the interior fuse panel. **NOTE:** The ECU, TCM, Instrument Cluster and Cruise Control wires are spliced together before they reach the Interior Fuse Panel.
- STEP 3:** Probe the positive lead of the voltmeter, now set to ohms, to terminal "A" in the Interior Fuse Panel with ignition switch off as shown in Figure 3. The ohm meter should indicate continuity in the Park and Neutral positions only and open or "O.L." in all other ranges.
- If it reads continuity in all ranges, disconnect the 3 terminal connector at the inhibitor switch. If it reads "O.L." or open when the connector is disconnected go to **STEP 4**.
 - If the meter still indicates continuity, locate the Theft Deterrent System and disconnect the wire leading to the "A" terminal. If there is no Theft Deterrent System, repair the grounded wire from the inhibitor switch to terminal "A."

Continued on Page 2.

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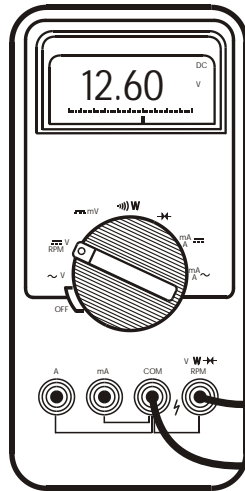


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STEP 4: Place ohm meter across terminals 1 and 2 as shown in Figure 4. The ohm meter should indicate continuity in the Park and Neutral positions and "O.L." or open in Reverse, Drive, Manual 2nd and Manual 1 positions. If it indicates continuity in all ranges replace the inhibitor switch. If it indicates continuity in only some of the other ranges check the adjustment as shown in Figure 4.

STEP 1

INTERIOR FUSE PANEL



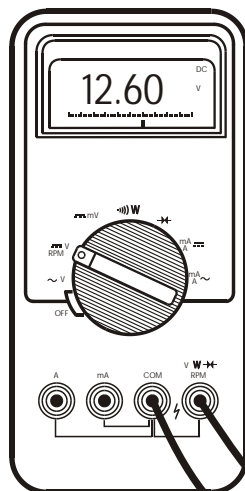
**VOLT METER SHOULD INDICATE 12 VOLTS
IN REVERSE, DRIVE, MANUAL 2nd AND MANUAL 1st**

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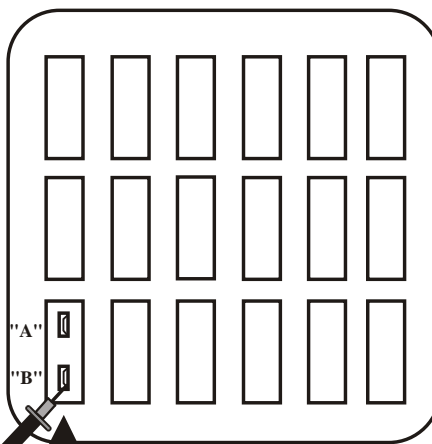
Figure 1

STEP 2

INTERIOR FUSE PANEL



**INHIBITOR SIGNAL
FUSE REMOVED**

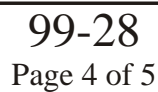


GREEN/YELLOW

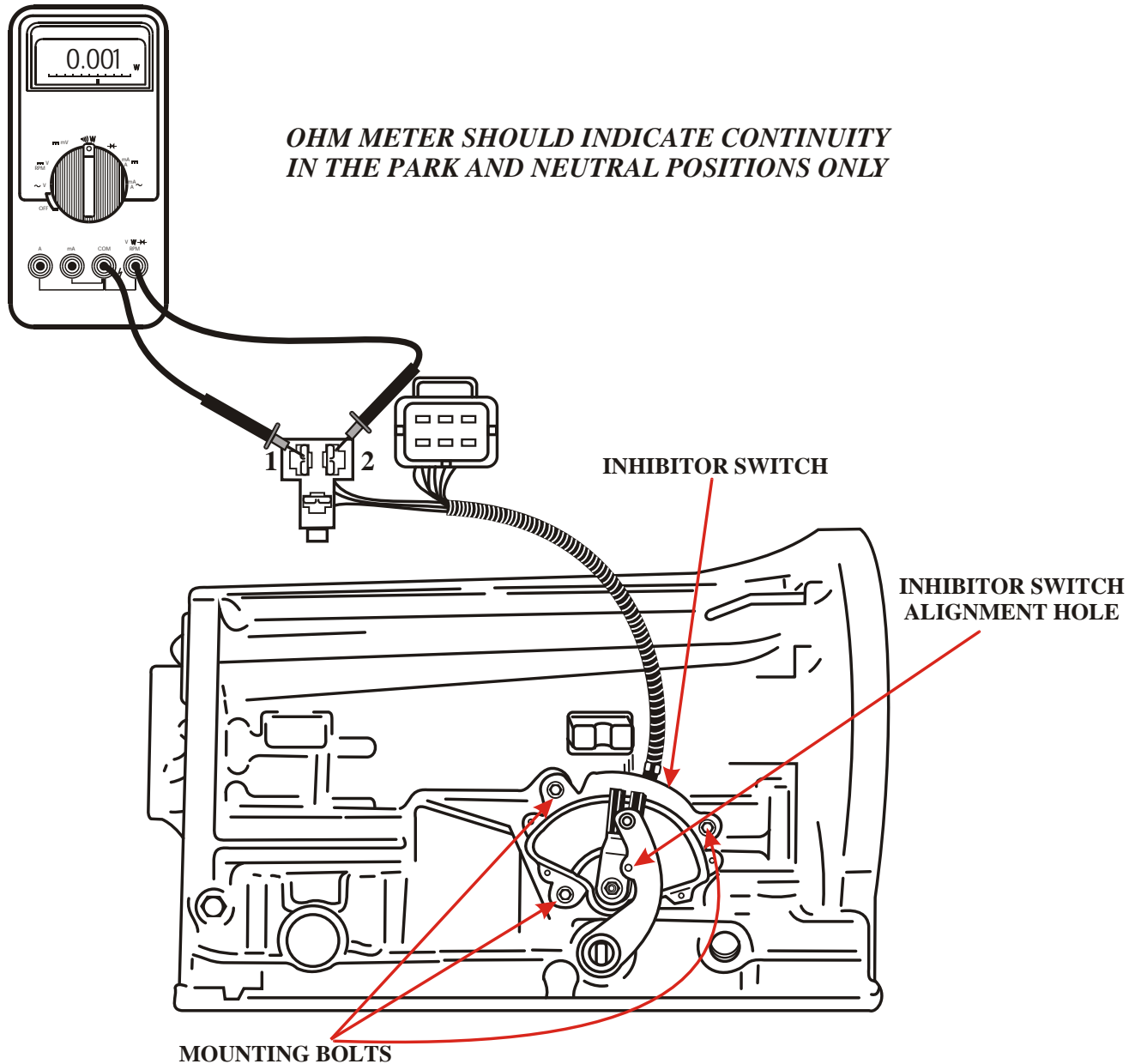
ECU
CRUISE CONTROL UNIT
INSTRUMENT CLUSTER
TCM

VOLT METER SHOULD INDICATE 12 VOLTS IN ALL RANGES Copyright © 1998 ATSG

Figure 2



STEP 4



INHIBITOR SWITCH ADJUSTMENT

Place the selector lever in Neutral. Loosen the 3 mounting bolts that attach the inhibitor switch to the case and adjust the inhibitor switch until a 5/32 drill bit will pass through the selector lever, inhibitor switch lever into the inhibitor switch guide hole.

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Figure 4