



Technical Service Information

NISSAN/INFINITI/MERCURY ALTIMA/MAXIMA/G20/I30/QUEST/VILLAGER HARSH SHIFTING CODE P0745

COMPLAINT: Before or after an overhaul a vehicle equipped with the RE4FO4A/V automatic transaxle exhibits a harsh shift condition. The complaint is generally described as a harsh 1-2 shift with other shifts feeling acceptable. This problem may or may not set code P0745.

CAUSE: Potential causes could be the EPC solenoid, shorted or open wire harness, corroded connectors, a faulty dropping resistor, or a bad computer.

CORRECTION: Use the following procedures to trouble-shoot and fix a problem in the line pressure control solenoid circuit.

Step 1: Check the resistance of the pressure control solenoid. Pressure control solenoid resistance should be approximately 3-5 ohms. Refer to **Figure 1** for connector configuration and resistance check. If the resistance is between 3-5 ohms, go to **Step 2**.

Step 2: Locate and check the resistance of the dropping resistor. Refer to **Figure 2** for the dropping resistor resistance check. The dropping resistor should measure between 11.2 and 12.7 ohms. If the dropping resistor resistance is not between 11.2 and 12.7 ohms, replace the Resistor. If the resistance check is between 11.2 and 12.7 ohms, proceed to **Step 3**. Refer to **Figure 5** for TCM and dropping resistor locations by model/year.

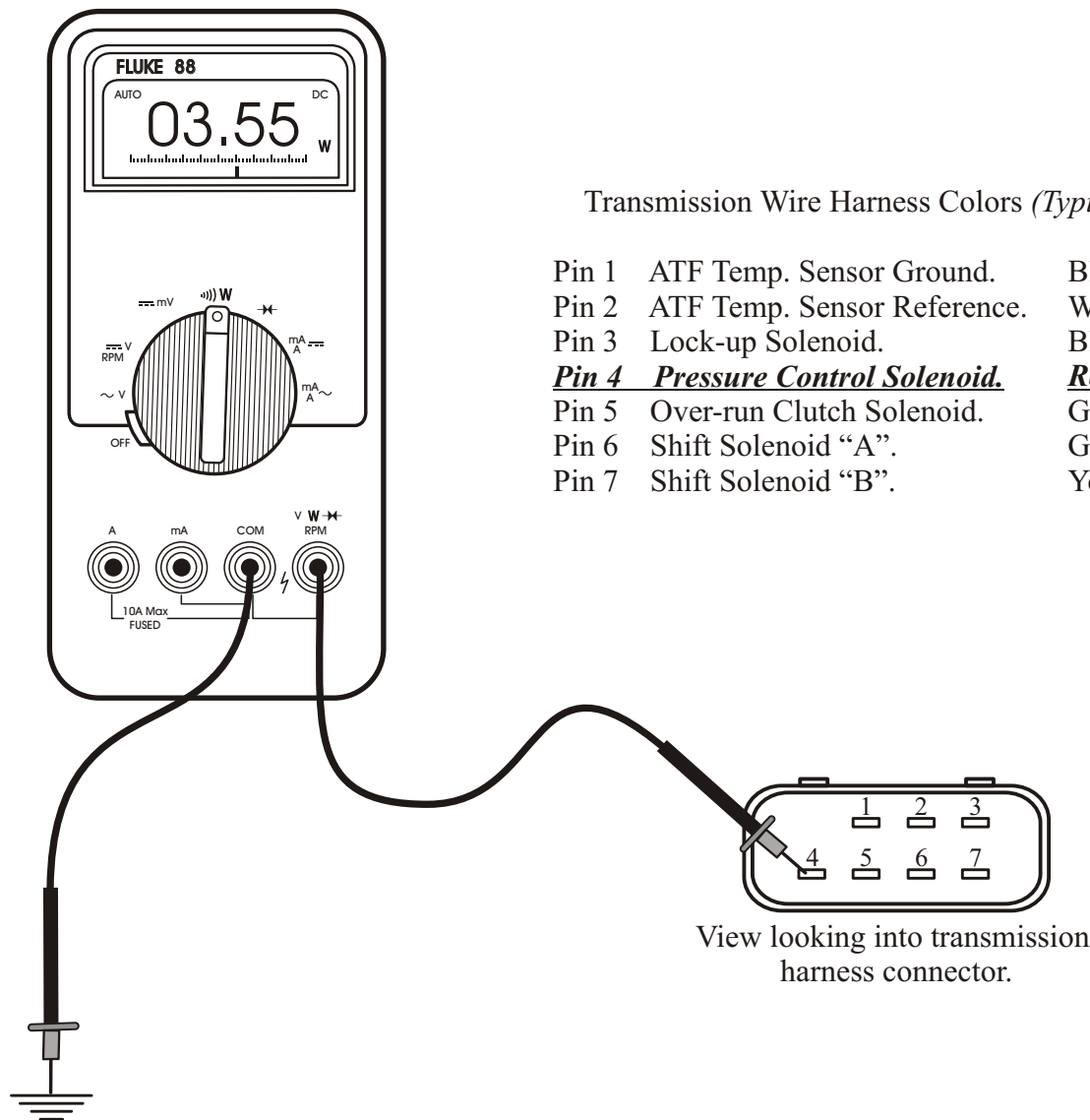
Step 3: Plug the dropping resistor connector back in and turn the ignition "ON". Back-probe terminal 1 of the dropping resistor. The voltage should be between 6 and 12 volts with the throttle closed. As the accelerator pedal is depressed the voltage will drop to approximately .45 volts. Next back-probe terminal 2 at the dropping resistor. The voltage should be between 2.5 and 3.5 volts. As the accelerator pedal is depressed the voltage will drop to approximately .45 volts. Refer to **Figure 3** for connector view and voltage check at the wire from the computer to the dropping resistor. Refer to **Figure 4** for connector view and voltage check on the wire that goes to the pressure control solenoid.

If there is no voltage reading on the wire that comes from the computer to the dropping resistor at pin 1, go to **Step 4**. If the voltage reading on the wire that comes from the computer to the dropping resistor at pin 1 is correct at closed throttle, but then drops to approximately 5 volts and remains, or is constantly 5 volts, proceed to **Step 5**. If the voltage is over 5 volts and does not decrease at all with throttle opening, proceed to **Step 6**.

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- Step 4:** If no voltage is indicated on the meter at pin 1 of the dropping resistor, either the wire coming from the computer to the dropping resistor is shorted to ground, or the wire is open. Refer to **Figure 5** for TCM and dropping resistor locations. Refer to **Figure 6** for pressure control solenoid circuit diagram and wire colors for various years and models. Refer to **Figure 7** for TCM connector pin layout and wire integrity checks for 1995 through 1998 model vehicles. Refer to **Figure 8** for TCM connector pin layout and wire integrity checks for 1999 through 2003 models. After locating the computer for the vehicle you are working on, turn the ignition "ON". Use your voltmeter and back-probe terminal 2 at the wire side of the computer harness connector. Measure the voltage at the wire. If no voltage is present, it will be an indication that the wire is shorted to ground, or the computer is faulty. Turn the ignition "OFF". Disconnect the TCM connector and the connector at the dropping resistor. Set your meter to read Ohms and probe terminal 2 at the computer connector again. If resistance is indicated on the meter, the wire is shorted to ground. Locate and repair the short or cut the wire at the TCM and dropping resistor and run a new wire from end to end. If the meter indicates an open circuit, the wire is not shorted. Plug the connector back in at the TCM and dropping resistor. Again turn the ignition "ON" and recheck for voltage. If there is still no voltage present, replace the computer.
- Step 5:** If the voltage at pin 1 of the dropping resistor is correct at closed throttle then drops to 5 volts and remains, or is constantly at 5 volts, this is an indication of too much resistance or an open in the circuit. The open is either because of a faulty dropping resistor (*even though resistance indicates between 11.2 and 12.7 ohms*), or a problem with the wire from the dropping resistor to the pressure control solenoid. For circuit diagram, refer to **Figure 6**. Turn the ignition "ON" Using the D.V.O.M. back-probe terminal 1 of the transmission computer harness connector. Check to see if voltage is present. If no voltage is indicated on the meter, the open in the wire is between the dropping resistor and pressure control solenoid. If voltage is seen on the meter, there could be a problem with the transmission case connector, the connector inside the trans at the pressure control solenoid, or a faulty dropping resistor.
- Step 6:** If the voltage is over 5 volts on both terminals 1 and 2 at the dropping resistor, and the voltage doesn't decrease with throttle opening, the problem could be the wire going to the pressure control solenoid is shorted to power, or the TCM is no good. To determine if the wire is shorted to voltage, locate the TCM (refer to **Figure 5**). Disconnect the controller connector, (referring to **Figure 7 and 8** for the correct model year), and the connector for the dropping resistor. Using a D.V.O.M. Connect the red lead of the meter to terminal 2 and place the black lead to ground. If voltage is present, there is a short to power from the TCM to the dropping resistor. If no voltage is present, check for voltage at terminal 1. If voltage is present the wire from the dropping resistor to the pressure control solenoid is shorted to power. If no voltage is present at both terminals the problem is a faulty TCM.

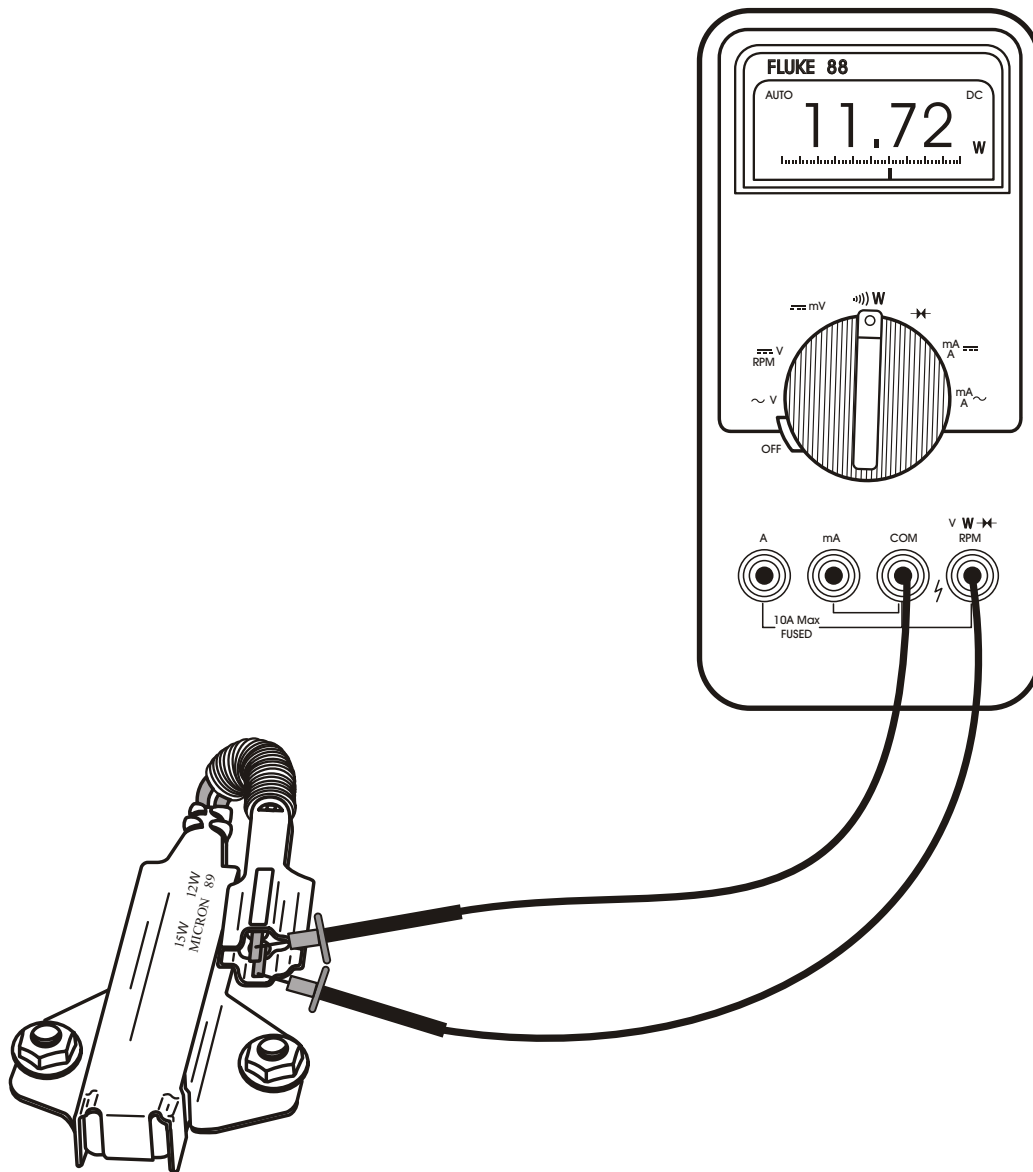
The pressure control solenoid resistance should measure between 3-5 ohms. Disconnect the transmission solenoid harness connector. Place the red lead of your D.V.O.M. to terminal 4 in the harness connector. Place the black lead of your D.V.O.M. to a good ground. If resistance is between 3-5 ohms, proceed to Step 2. If resistance is below 3 ohms, check the wire in the internal harness for a short to ground. If the wire does not indicate a shorted circuit, replace the pressure control solenoid. If the resistance is over 5 ohms check the wire in the internal harness for an open circuit. Check the connector at the pressure control solenoid for a poor connection. If the connector is good and solidly connected and the wire does not indicate an open circuit, replace the pressure control solenoid.



Transmission Wire Harness Colors (Typical).

Pin 1	ATF Temp. Sensor Ground.	Black wire.
Pin 2	ATF Temp. Sensor Reference.	White wire.
Pin 3	Lock-up Solenoid.	Blue wire.
<u>Pin 4</u>	<u>Pressure Control Solenoid.</u>	<u>Red wire.</u>
Pin 5	Over-run Clutch Solenoid.	Grey wire.
Pin 6	Shift Solenoid "A".	Green wire.
Pin 7	Shift Solenoid "B".	Yellow wire.

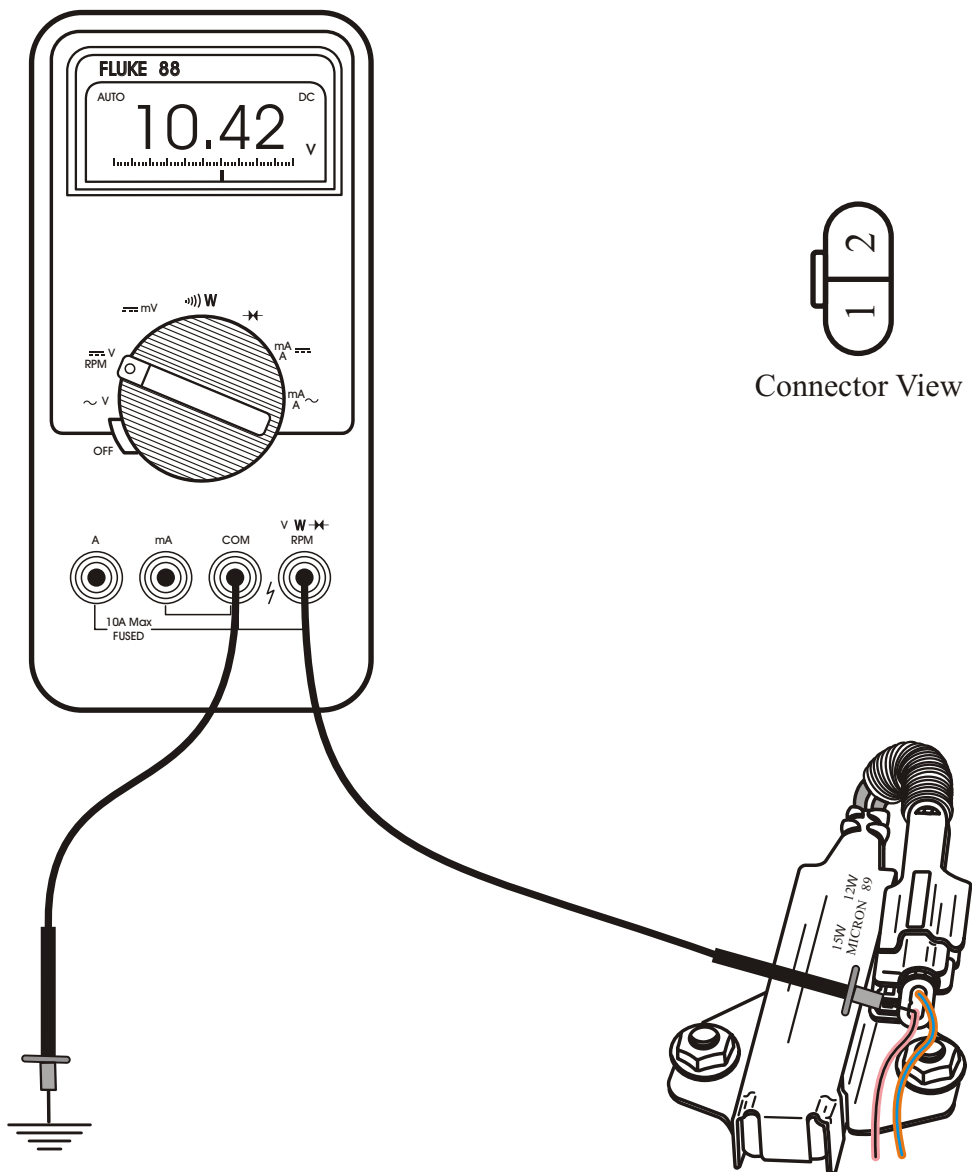
The dropping resistor should measure between 11.2 and 12.7 ohms. Make certain either the ignition is in the "OFF" position, or remove the negative battery cable. Disconnect the two terminal dropping resistor connector. Place the red lead of the D.V.O.M. to one terminal on the dropping resistor, place the black lead of the D.V.O.M. to the other terminal. If the meter does not indicate a resistance between 11.2 and 12.7 ohms, replace the dropping resistor. If the meter does indicate a resistance between 11.2 and 12.7 ohms, proceed to **Step 3**.



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Figure 2

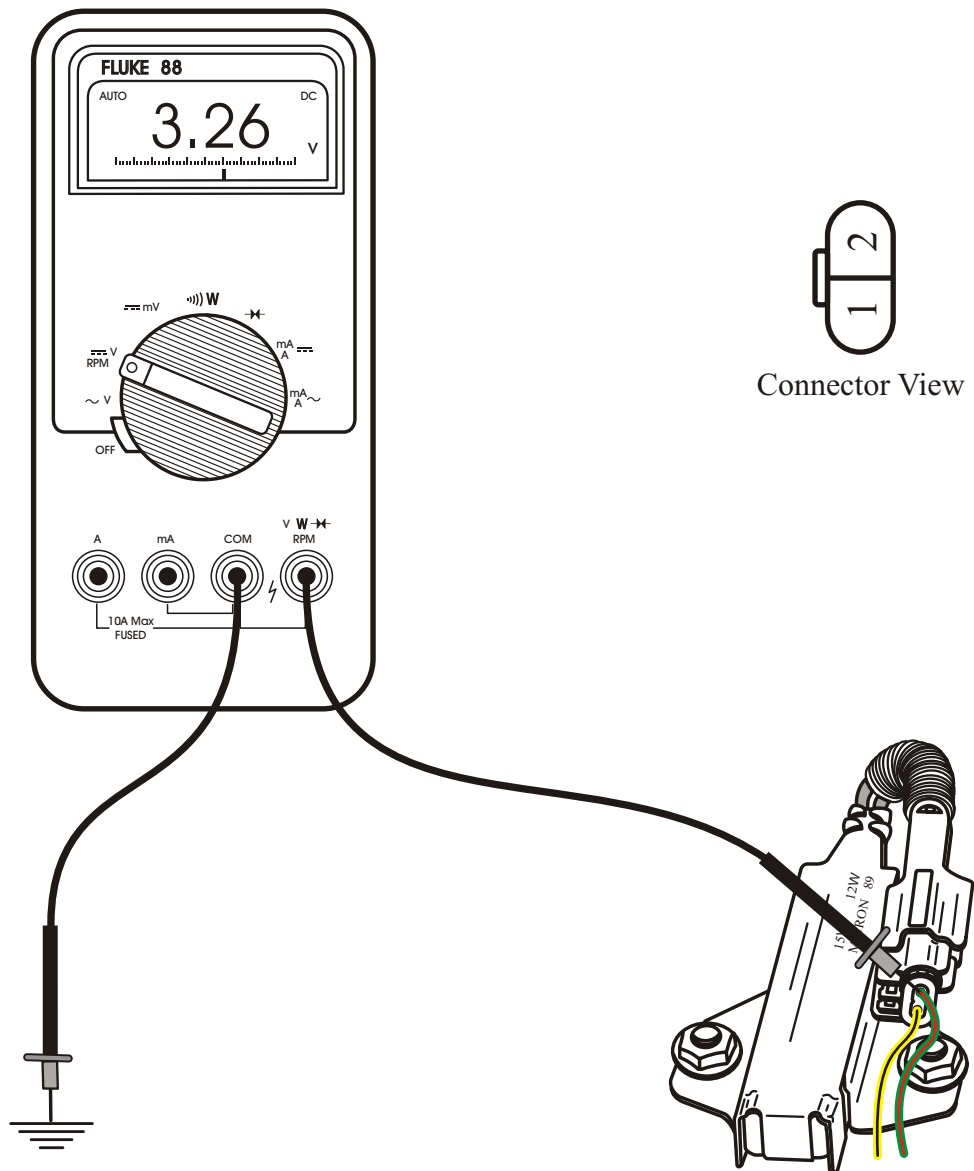
To check the voltage that comes from the computer to the dropping resistor, make sure the dropping resistor harness is properly connected. Using the red lead of a D.V.O.M. Back-probe the wire at pin 1 of the dropping resistor. Place the black lead of the D.V.O.M. to a good ground, and set the meter to read D.C. volts . Have an assistant get into the car and turn the ignition to the “ON” position. Check the voltage reading. The meter should indicate between approximately 6 and 12 volts. Have your assistant begin depressing the accelerator pedal. The voltage reading on the meter should decrease all the way to full throttle. Once full throttle has been reached, the voltage reading should be approximately .45 volts. If there is no voltage reading on the wire at pin 1, go to **Step 4**. If the voltage reading at pin 1 is correct at closed throttle, but then drops to approximately 5 volts and remains, or is constantly 5 volts, proceed to **Step 5**.



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Figure 3

To check the voltage that goes from the dropping resistor to the pressure control solenoid, make sure the dropping resistor harness is properly connected. Using the red lead of a D.V.O.M. back-probe the wire at pin 2 of the dropping resistor. Place the black lead of the D.V.O.M. to a good ground, and set the meter to read D.C. volts. Have an assistant get into the car and turn the ignition to the "ON" position. Check the voltage reading. The meter should indicate between approximately 2.5 and 3.5 volts. Have your assistant begin depressing the accelerator pedal. The voltage reading on the meter should decrease all the way to full throttle. Once full throttle has been reached, the voltage reading should be approximately .45 volts.



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Figure 4

NISSAN/INFINITI TCM AND DROPPING RESISTOR LOCATIONS

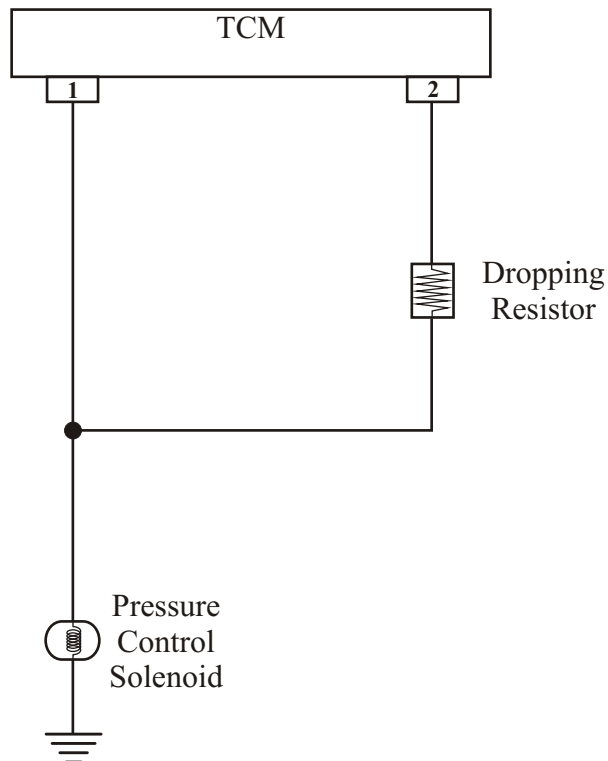
MODEL/YEAR	TCM LOCATION	DROPPING RESISTOR LOCATION
1995-97 ALTIMA	Behind passenger kick panel	Driver side shock tower
1998-01 ALTIMA	Under front of center console	Driver side shock tower
2001-2003 ALTIMA	Behind right side of glove box to right of ECM	Driver side shock tower near brake reservoir
1995-03 MAXIMA	Center of dash under console	Driver side fender well below air cleaner
1996-02 QUEST/VILLAGER	Right side of instrument panel behind glove box	Driver side fender well behind plastic wheel liner <i>wheel liner removal required</i>
1995-96 G20	Behind driver side kick panel	Below air cleaner
1999-02 G20	Behind lower center of dash, forward of selector lever	Behind driver side shock tower
1995-96 I30	Behind driver side kick panel	Driver side fender well below air cleaner
1997-01 I30	Below center of dash, under Body Control Module or ASCD Module	Driver side fender well below air cleaner
2001-03 I35	Below center of dash, under Body Control Module or ASCD Module	Driver side fender well below air cleaner
2000-04 XTERRA	Left of the brake pedal	Left of the battery

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Figure 5

NISSAN/INFINITI WIRE COLORS BY MODEL

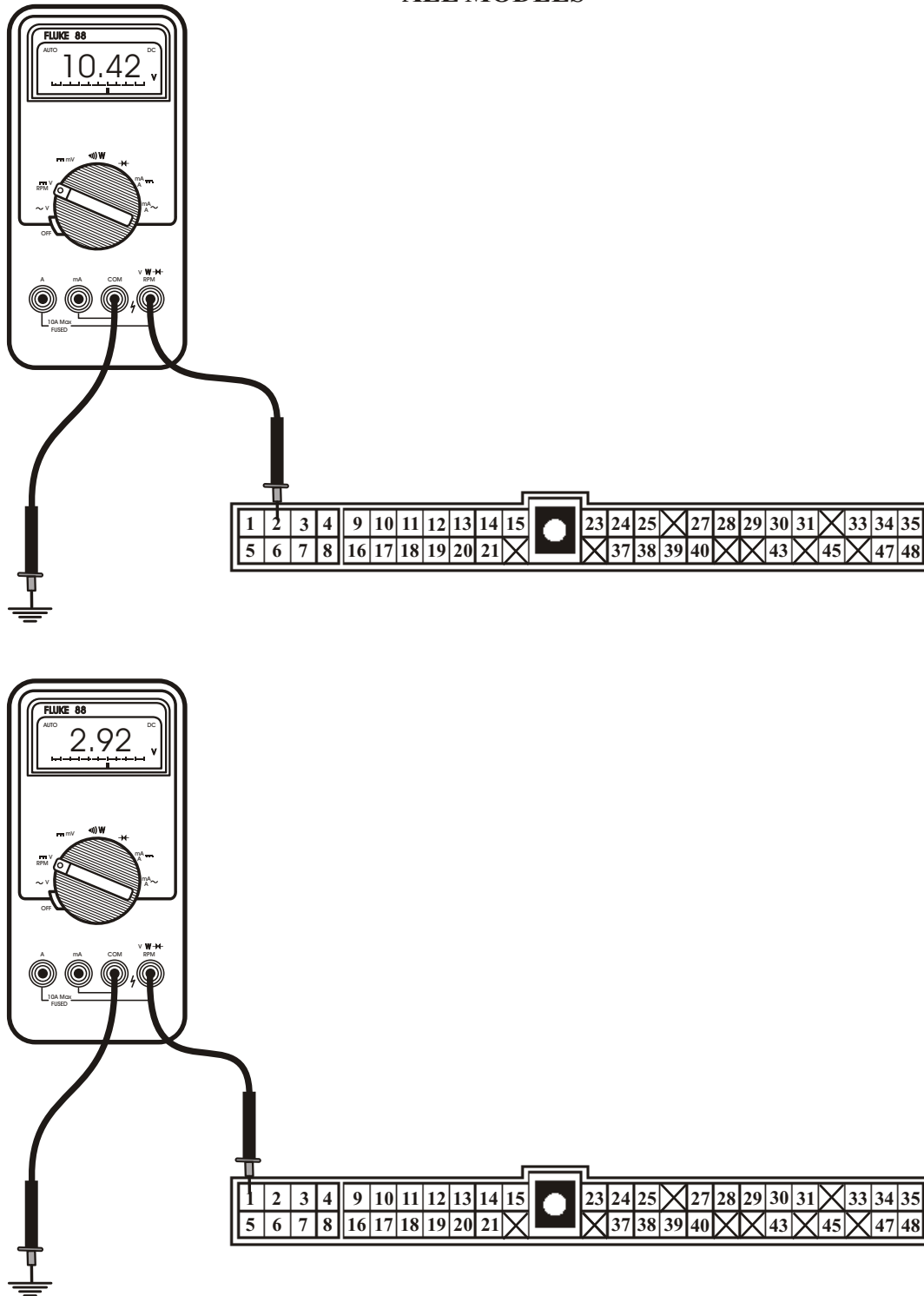
MODEL/YEAR	TCM TO RESISTOR	RESISTOR TO PRESSURE SOLENOID
1995-97 ALTIMA	Pink/Black	Orange/Blue
1998-01 ALTIMA	Pink/Black	Red/White
2001-2003 ALTIMA	White/Black	Green/Red
1995-03 MAXIMA	White/Black	Green/Red
1996-02 QUEST/VILLAGER	Yellow/Black	Green/Red
1995-96 G20	White	Blue
1999-02 G20	Pink/Black	Red/White
I30/I35 All Models	White/Black	Green/Red



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Figure 6

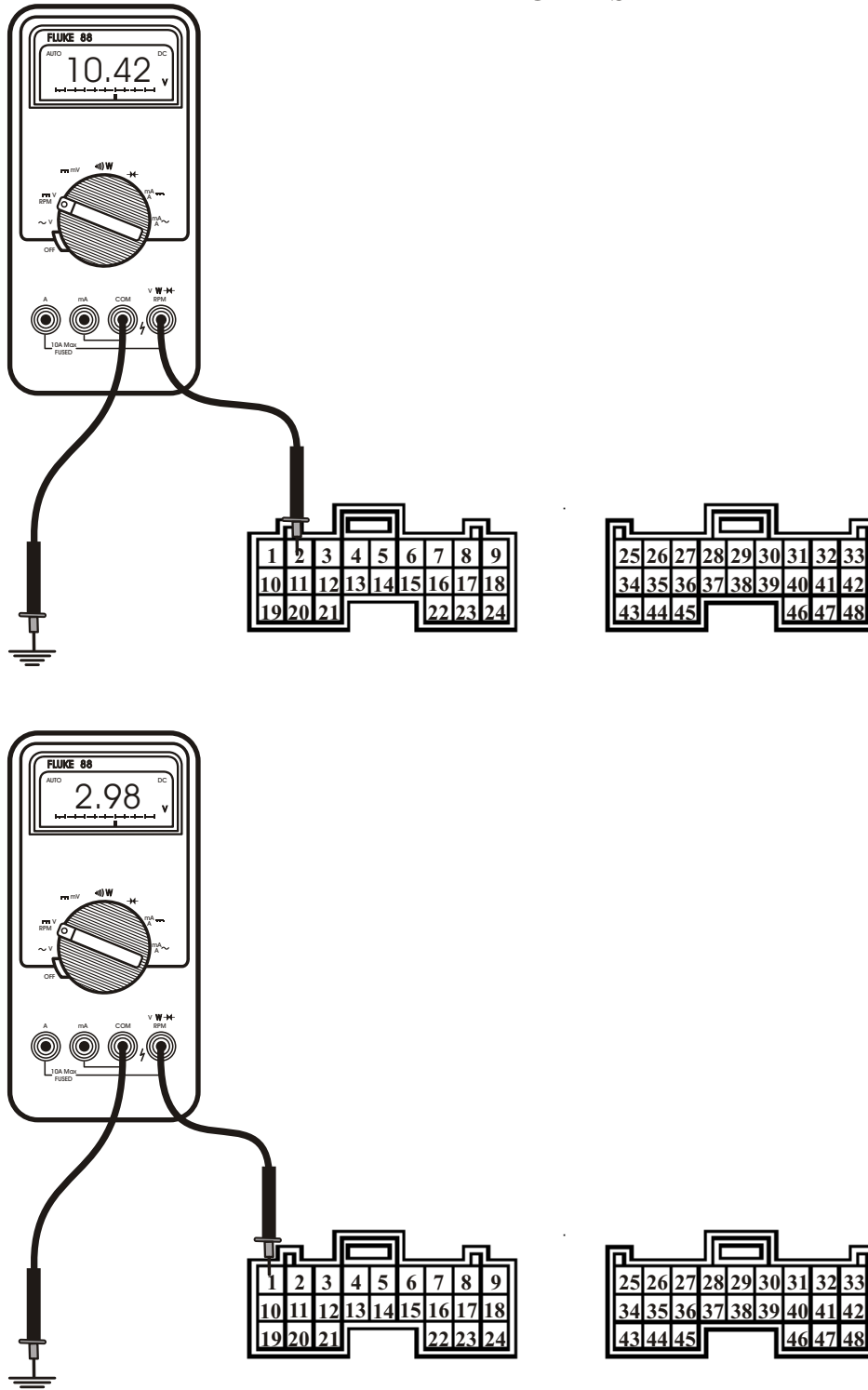
1995 - 1998 TCM CONNECTOR VIEW ALL MODELS



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Figure 7

1999 - 2003 TCM CONNECTOR VIEW ALL MODELS



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Figure 8