

INSTALLING A 1992 EXPLORER INSTRUMENT CLUSTER INTO A 1993 RANGER



I bought my 1993 Ranger new in September of that year, picking one from the dealers' inventory. The truck I selected had everything I wanted on it except for a tachometer, but I could live without that. Thirteen years and 146000 miles later I was investigating the oil pressure "idiot gauge" mod when I had the thought of replacing the instrument cluster with a tach model. I was able to find one at a local junkyard. The counter guy there assured me that it was from a 93 Explorer. It looked ok, and at ten bucks, the price was right.

When I got it home I checked it over carefully. I found a tiny stamp that read "Date of Manufacture February 11 1992". That seemed a little early for the 93 model year, so I traced out all of the connections on the cluster's flex circuit. To my momentary dismay, practically none of the connections were in the same place as on my existing cluster. I surmised that the one I bought was from a 92 Explorer, and that Ford had done a wiring change between the 92 and 93 model years.

I am an electronics engineer with over thirty years experience in avionics, communications, automation, and robotics. I've dealt with problems more complex than this! Physically, both clusters were the same. Same form, same connectors, same bolt patterns. After analyzing the situation it was clear that to make this work, it would be a simple matter of moving some of the wires in the two cluster connectors. What follows is a record of what I had to modify.

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***** ORIGINAL CLUSTER - NO TACHOMETER *****
 1993 Ranger Instrument Cluster
 C250 - Vertical connector, left side of cluster facing the back side

PIN	FUNCTION	COLOR
1	RIGHT TURN SIGNAL	WHT/LT BLU
2	GROUND	BLK/WHT
3	ILLUMINATION	LT BLU/RED
4	HIGH BEAM INDICATOR	GRY/WHT
5	SEAT BELT LIGHT	DK GRN/LT GRN
6	NO CONNECTION	
7	NO CONNECTION	
8	NOT USED (TACH SIGNAL WIRE PRESENT)	TAN/YEL
9	NOT USED (TACH SELECT WIRE PRESENT)	BLK/YEL
10	* BRAKE LIGHT SIGNAL	PINK/WHT
11	4WD HIGH INDICATOR (NOT USED ON 2WD)	LT BLU
12	4WD LOW INDICATOR (NOT USED ON 2WD)	BRN/WHT
13	ABS LIGHT	DK GRN
14	12V WITH IGNITION ON	RED/YEL

C251 - Horizontal connector, right side of cluster facing the back side

PIN	FUNCTION	COLOR
1	GROUND	BLK
2	OIL PRESSURE SIGNAL	WHT/RED
3	12V WITH IGNITION ON	RED/YEL
4	GROUND	BLK/WHT
5	* FUEL SIGNAL BOARD PIN 1	YEL/WHT
6	LEFT TURN SIGNAL	LT GRN/WHT
7	NO CONNECTION	
8	CHECK ENGINE LIGHT	PINK/LT GRN
9	LOW OIL LIGHT	GRY
10	TEMP GAUGE GROUND	BLK/WHT
11	TEMP GAUGE SIGNAL	BLK/LT BLU
12	12V WITH IGNITION ON	RED/YEL
13	BATTERY LIGHT	LT GRN/RED
14	BATTERY LIGHT	GRY/YEL

***** REPLACEMENT CLUSTER - WITH TACHOMETER *****
 1992 Explorer Instrument Cluster

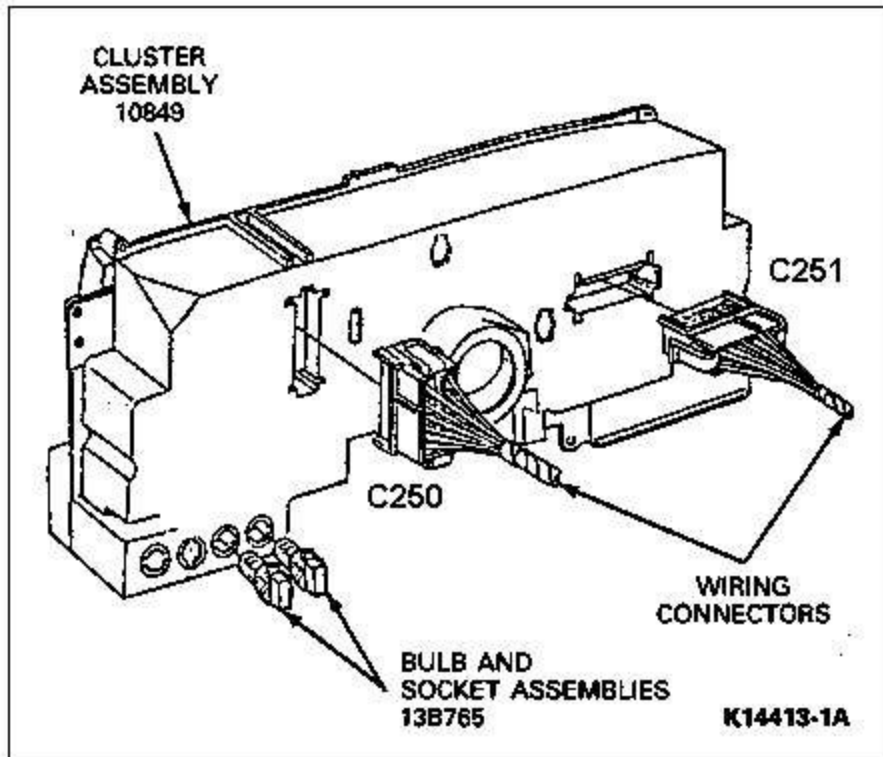
C250- Vertical connector, left side of cluster facing the back side

PIN	FUNCTION	COLOR
1	NO CONNECTION	
2	SEAT BELT LIGHT	DK GRN/LT GRN
3	HIGH BEAM INDICATOR	GRY/WHT
4	GROUND	BLK/WHT
5	ILLUMINATION	LT BLU/RED
6	TACH SIGNAL	TAN/YEL
7	TACH SELECT	BLK/YEL
8	RIGHT TURN SIGNAL	WHT/LT BLU
9	4WD HIGH INDICATOR (NOT USED ON 2WD)	LT BLU
10	4WD LOW INDICATOR (NOT USED ON 2WD)	BRN/WHT
11	ABS LIGHT	DK GRN
12	* FUEL SIGNAL BOARD PIN 1	YEL/WHT (C251)
13	12V WITH IGNITION ON	RED/YEL
14	NO CONNECTION	

C251- Horizontal connector, right side of cluster facing the back side

PIN	FUNCTION	COLOR
1	OIL PRESSURE SIGNAL	WHT/RED
2	OIL PRESSURE SIGNAL GROUND	BLK
3	LEFT TURN SIGNAL	LT GRN/WHT
4	12V WITH IGNITION ON	RED/YEL
5	12V WITH IGNITION ON	RED/WHT
6	GROUND	BLK/WHT
7	NO CONNECTION	
8	* BRAKE LIGHT SIGNAL	YEL/WHT (C250)
9	CHECK ENGINE LIGHT	PINK/LT GRN
10	TEMP GAUGE GROUND	BLK/WHT
11	TEMP GAUGE SIGNAL	BLK/LT BLU
12	LOW OIL LIGHT	GRY
13	BATTERY LIGHT	LT GRN/RED
14	BATTERY LIGHT	GRY/YEL

* = SIGNAL ORIGINALLY ON OPPOSITE CONNECTOR

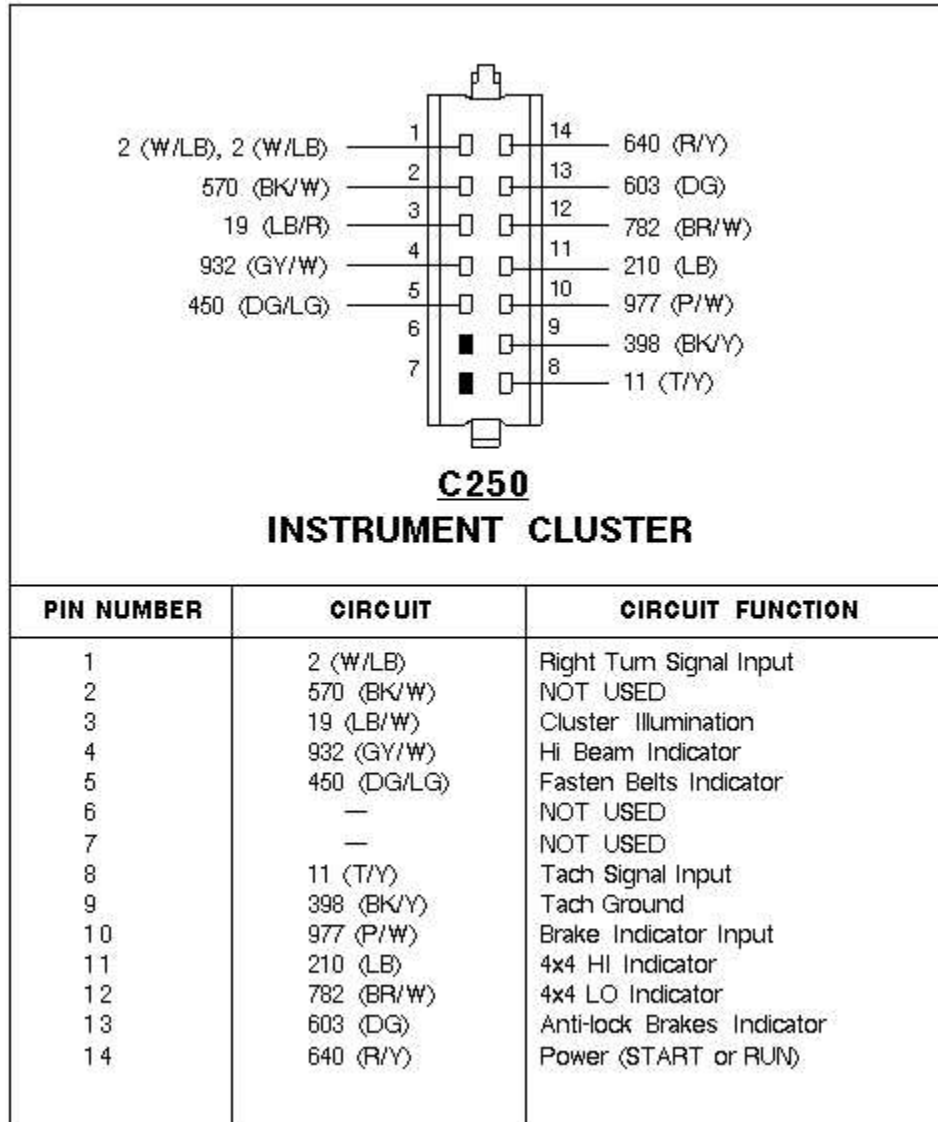


Location of connectors on reverse side of the instrument cluster.

The data in this document can also be used to modify a 1993 cluster for use in a 1992 truck. Use the above lists to determine the proper rewiring procedure.

In either case, if you have no training or experience in electricity or electrical components, do not attempt to make these modifications. You should have a volt/ohm meter of some sort to test the connections before plugging in the instrument cluster. One should never plug something in just to see if it's going to work without prior testing. Doing so can damage your instrument cluster and other, more costly components on your truck. If you don't know what you're doing, then don't do it.

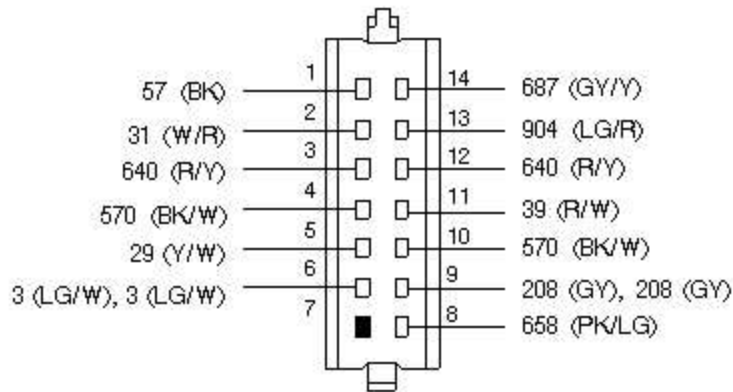
1993 C250 pinout (before re-wiring)



For 4 cylinder operation, remove pin 9, BLK/YEL. Insulate the pin and secure in a safe place.

Note that there are some variations in wire colors. Use these lists as a guide and verify functions with your own testing.

1993 C251 pinout (before re-wiring)



**C251
INSTRUMENT CLUSTER**

PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	57 (BK)	Ground
2	31 (W/R)	Oil Pressure Input
3	640 (R/Y)	Power (START or RUN)
4	570 (BK/W)	Ground
5	29 (Y/W)	Fuel Level Input
6	3 (LG/W)	Left Turn Signal Input
7	—	NOT USED
8	658 (PK/LG)	Malfunction Indicator Lamp Input
9	208 (GY)	Low Oil Level Input
10	570 (BK/W)	Ground
11	39 (R/W)	Coolant Temperature Input
12	640 (R/Y)	Power (START or RUN)
13	904 (LG/R)	Charge Indicator Input (-)
14	687 (GY/Y)	Charge Indicator Input (+)

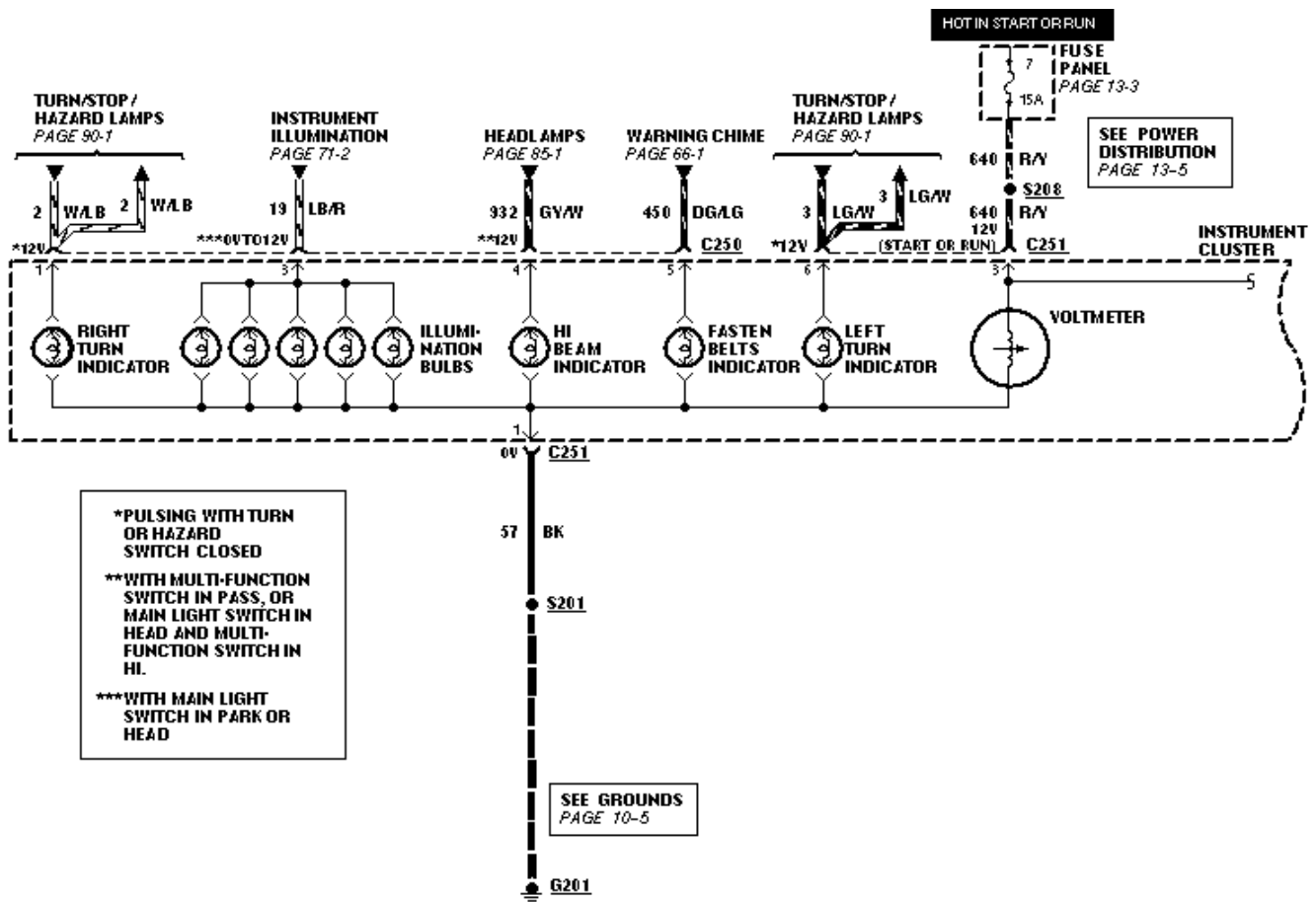
WIRES TO BE MOVED

C250			C251		
MOVE PIN		TO PIN	MOVE PIN		TO PIN
1	WHT/LT BLU	8	1	BLK	2
2	BLK/WHT	4	2	WHT/RED	1
3	LT BLU/RED	5	3	RED/YEL	4
4	GRY/WHT	3	4	BLK/WHT	6
5	DK GRN/LT GRN	2	5	YEL/WHT	C250/12
6	NC	1	6	LT GRN/WHT	3
7	NC	14	7	NC	7
8	TAN/YEL	6	8	PINK/LT GRN	9
9	BLK/YEL	7	9	GRY	12
10	PINK/WHT	C251/8	10	BLK/WHT	10
11	LT BLU	9	11	BLK/LT BLU	11
12	BRN/WHT	10	12	RED/YEL	5
13	DK GRN	11	13	LT GRN/RED	13
14	RED/YEL	13	14	GRY/YEL	14

NC= NO CONNECTION



My original cluster had blue highlights, not gold as on the replacement. I wanted to preserve my odometer reading, yet keep everything the same color, so I swapped the speedometers mechanical guts to the new faceplate. First, let the speedometer needle settle on the stop pin. Then tape the speedometer flywheel in that position to the frame of its housing. Next, carefully remove the needle without moving the flywheel. Remove the trip odometer knob. Remove the two screws that hold the mechanism in place, then attach it to the new faceplate. Re-install the needle, in the same position against the stop, and remove the tape. Install the speedometer in the cluster housing and re-attach the trip odometer knob.



1993 Ranger Instrument Cluster Schematic
(1 of 5)

Pin numbers in these schematics reflect the original wiring scheme. The replacement cluster will have the post modification pin numbers from the chart on page 6.

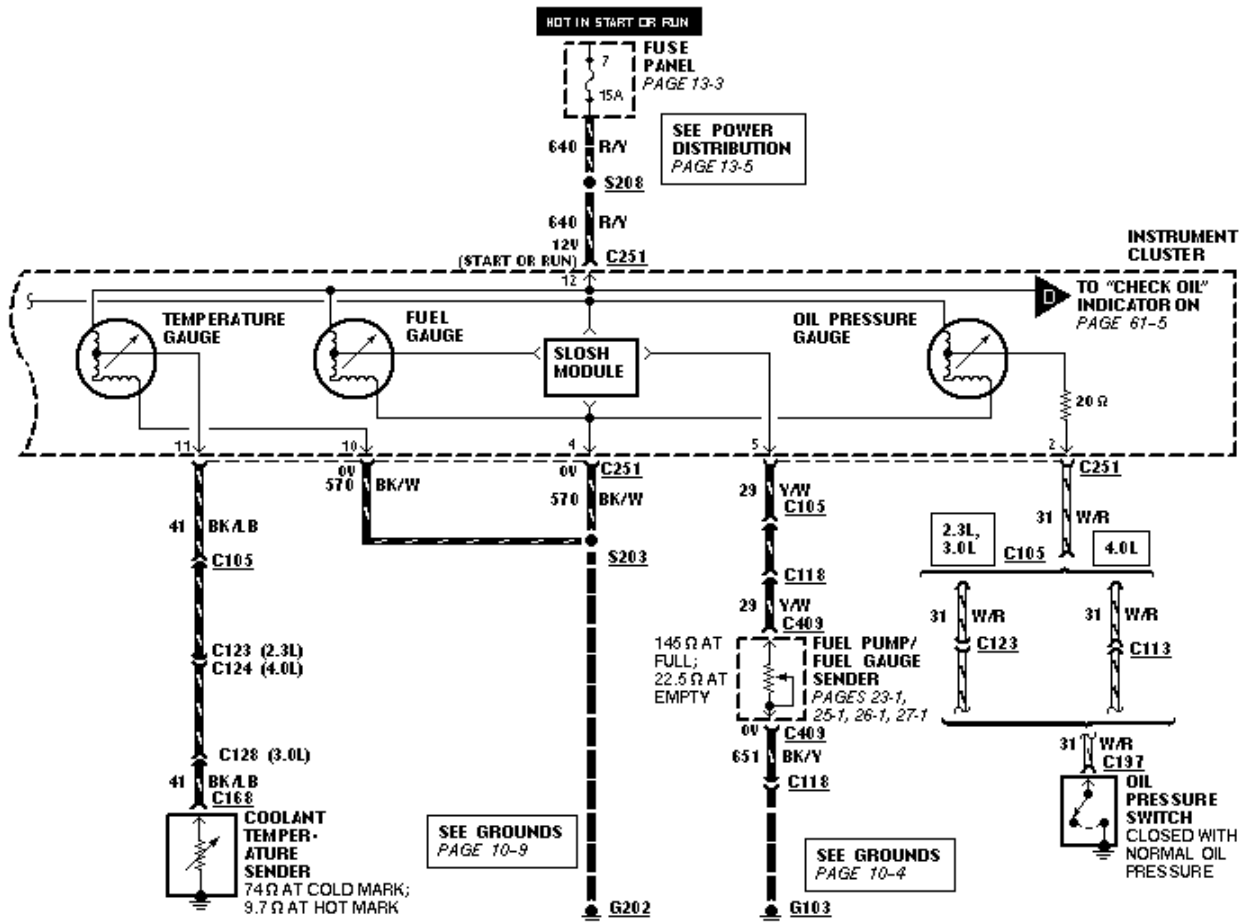
Prior to moving any wires it is a good idea to mark each wire. Use tape or labels and employ different colors or symbols to indicate the original and destination wire positions.

All of the wires move on the same connector with the exception of one wire from each that moves to the opposite connector. It may be necessary to cut and splice one or both of these wires to allow them to reach to the appropriate connector.

Each connector has a removable retainer that allows the pins to be easily withdrawn from the connector body. Insure that this retainer is securely snapped back in place prior to reinstallation into the cluster socket.

Each connector should be electrically tested prior to connecting to the cluster. Pay particular attention the grounds and 12 volt lines. The 12 volt lines must be tested with ignition on/engine off.

It would be good practice to replace all the light bulbs in the cluster with all new ones.



**1993 Ranger Instrument Cluster Schematic
(2 of 5)**

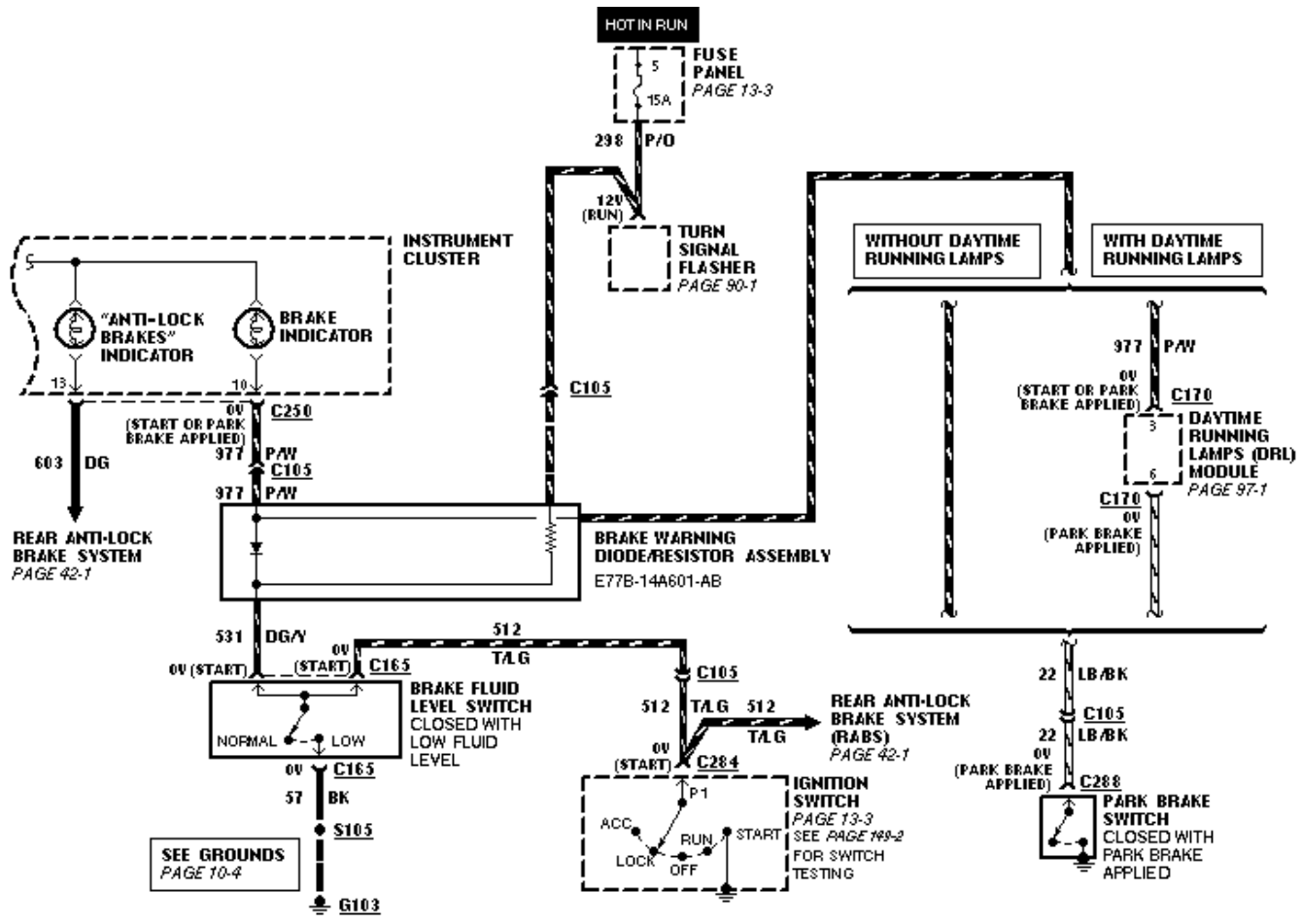
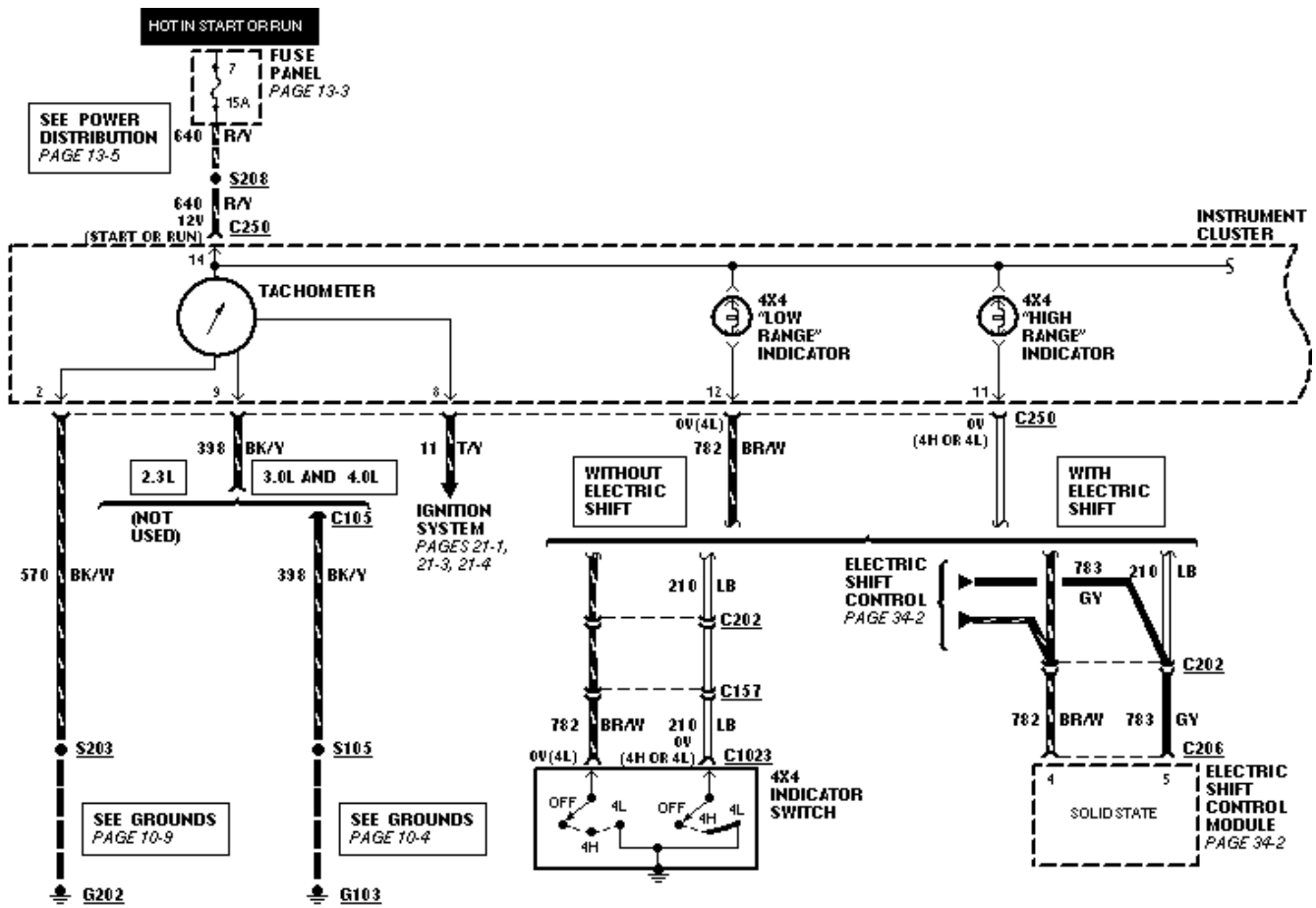
While the cluster is out of the truck, it is a good time to do the "idiot gauge" oil pressure modification. In the above drawing you can see that the stock oil pressure sender is merely a switch that closes at about 5 to 8 PSI. This grounds the 20 ohm resistor in series with the oil pressure gauge and causes the gauge to read approximately half scale.

To have a "real" oil pressure gauge, you first need to replace the oil pressure sender. The one I used is a NAPA part number MPEOP6091SB. Cost is around ten dollars. The sender is somewhat difficult to get to on the 3.0L engine. It is on the block, passenger side, at the back end of and slightly below the valve cover. It cannot easily be seen from the engine compartment. You may have to get to it from below the truck or through the wheel well. Remove the old sender, wrap Teflon tape on the threads of the new sender, screw it in, and attach the wire.

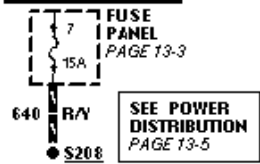
On the instrument cluster, find the 20 ohm resistor. This has a color code of red-black-black. Solder a short piece of insulated wire across this resistor to short it out. 22 AWG wire will work just fine.

You should notice the different behavior of the oil pressure gauge. When the engine is cold the pressure will be high. With a warm engine, the pressure will be high at cruising speed, but will drop to less than half scale at idle.

Be sure to check your sender for oil leaks after installation, with the engine running, of course.



HOT IN START OR RUN



*FOR DIAGNOSTIC INFORMATION, REFER TO THE POWERTRAIN CONTROL/EMISSIONS DIAGNOSIS MANUAL.

HOT AT ALL TIMES

