Warning Chime:

Analog Cluster

1. BK/PK	Key In Warning
2. BK	Ground
3. DK GN/LT GN	Seat Belt Warning
4. R/Y	Hot in Run
5. BR/LT BL	Left Front Seat Belt
6. R/PK	Door Jamb Switch
7. W/R	Headlamp On Input

Digital Cluster

1. DK GN/LT GN	Seat Belt Warning
2. R/Y	Hot In Run
3. W/P	Hot in Acc/Run
4. R/PK	Door Jamb Switch
5. W/R	Headlamp On Warning
6. BK/PK	Key In Warning
7. T/Y	Tone Generator
8. ----	Not Used
9. BR/LT BL	Left Front Seat Belt
10. BK	Ground

Instrument Cluster

Analog Cluster

Connector 1 (18 Pin)

1. LT BL/R	Instrument Panel Lamp Feed
2. -----	Not Used
3. -----	Not Used
4. PK/Y	Low Washer Fluid
5. -----	Not Used
6. BK/W	Ground to PCM Ground
7. DK GN/Y or T/Y	Tachometer Input
8. W/R	Low Oil Pressure Indicator
9. W/LT BL	Antilock Indicator to module
10. R/Y	Hot In Run and Start
11. O/Y	Ground Reference
12. R/W	Temperature Gauge Indicator
13. P/W	Brake Warning Switch
14. LT GN/R	Alternator Warning Indicator
15. R/LT GN	Ign. Switch (Hot In Run)
16. LT BL/R	Instrument Panel Lamps Feed
17. LT GN/W	Left Turn Signals
18. GY/W or LT GN/BK	High Beam Indicator

Connector 2 (14 pin)

1. GY	Low Oil Level Indicator
2. BK/O	Door/Lift gate Ajar to Chime
3. R/LT GN	Lamp Out Indicator
4. BK	Ground
5. BK/LT BL & R/W	Low Coolant/Bulb Proving *See Note*
6. ----	*See Note*
7. ----	Not Used
8. W/LT BL	Right Turn Signal
9. DK GN/LT GN	Seat Belt Warning
10. T/R	Check Engine Light
11. BK/Y	Air Bag Indicator Light
12. R/Y	Hot In Run or Start
13. O/Y	Reference Ground
14. Y/W	Fuel Sending Unit

Note Low Coolant Light on a 90-91 and Bulb Proving runs off Of same pin (pin 5, Black/Lt. Blue and Red/White), on 1992, the Low Coolant light is on Pin 5 (Black/Pink) while the Bulb Proving Runs off of pin 6 (Black/Lt. Blue)

Digital Cluster

Connector 1 (18 Pin)

1. W/R	Low Oil Pressure Indicator
2. R/Y	Hot In Run and Start
3. P/W	Brake Warning Switch
4. GY/W	High Beam Indicator
5. LT GN/W	Left Turn Signals
6. O/BK or LT BL/BK	PRNDL Light Feed
7. BK	Ground
8. W/LT BL	Right Turn Signal Lamps
9. DK GN/LT GN	Seat Belt Warning Indicator Lamp
10. T/R	Check Engine Light
11. W/LT BL	Anti-lock Indicator to module
12. BK/Y	Air Bag Indicator
13. BK/W or O/Y	Sensor Signal Return Ground
14. P/O	Hot In Run
15. PK/Y	Washer Fluid Level
16. ----	Not Used
17. R/LT GN	Hot In Run (Ign. Switch)
18. LT GN/R	Alternator Warning Indicator

Connector 2 (20 Pin)

1. ----	Not Used
2. BK	Ground
3. R/LT GN	Head Lamp Outage Indicator
4. R/W	Temperature Gauge Indicator
5. Y/R	Stop and Turn Bulb Outage
6. Y/W	Fuel Sending Unit
7. LT GN/P	Battery Power
8. O/Y	Reference Ground
9. P/O	Hot In Run
10. ----	Not Used
11. LT BL/BK or LT BL/PK	Fuel Flow Data Line
12. DK GN/W	Vehicle Speed Sensor (+)
13. LT BL/R	Instrument Panel Lamp Feed
14. W/PK	Oil Level Sending Unit
15. O/BK	EEC Module Positive Data
16. BK/O	EEC Module Negative Data
17. BK/O	Open Door Ajar Warning
18. R	English/Metric Output
19. T/Y	Tone Generator
20. DK GN/Y or T/Y	Tachometer Input

X2J/L0S/B9B1/B9B EEC Connector

Pin 3	Vehicle Speed Sensor (+)	DK GN/W
Pin 8	EEC Module Negative Data	BK/O
Pin 34	Fuel Flow Data Line	LT BL/BK
Pin 44	EEC Module Positive Data	O/BK
Pin 46	Sensor Signal Return Ground	BK/W

Common Wires between the 2 Clusters		Analog	Digital
Lt. Blue/Red	Instrument Illumination	Con 1 Pin 1 Con 1 Pin 16	Con 2 Pin 13
Dk. Green/ Lt. Green	Seat Belt Warning Lamp	Con 2 Pin 9	Con 1 Pin 9
Yellow/White	Fuel Sending Unit	Con 2 Pin 14	Con 2 Pin 6
Red/Yellow	Hot In Run and Start	Con 1 Pin 10 Con 2 Pin 12	Con 1 Pin 2
Pink/Yellow	Washer Fluid Level	Con 1 Pin 4	Con 1 Pin 15
Dk. Green/Yellow	Tachometer Input	Con 1 Pin 7	Con 2 Pin 20
White/Red	Low Oil Pressure Indicator	Con 1 Pin 8	Con 1 Pin 1
White/Lt. Blue	Anti-Lock Brake Indicator	Con 1 Pin 9	Con 1 Pin 11
Orange/Yellow	Signal Reference Ground	Con 1 Pin 11 Con 2 Pin 13	Con 2 Pin 8
Red/White	Temperature Sensor Gauge	Con 1 Pin 12	Con 2 Pin 4
Purple/White	Brake Warning Light	Con 1 Pin 13	Con 1 Pin 3
Lt. Green/Red	Alternator Warning Indicator	Con 1 Pin 14	Con 1 Pin 18
Red/Lt. Green	Hot In Run (Ign. Switch)	Con 1 Pin 15	Con 1 Pin 17
Lt Green/White	Left Turn Signals	Con 1 Pin 16	Con 1 Pin 5
Grey/White	High Beam Indicator	Con 1 Pin 18	Con 1 Pin 4
Black/Orange	Door Ajar Indicator	Con 2 Pin 2	Con 2 Pin 17
Red/Lt Green	lamp Out Indicator/Headlamp Out	Con 2 Pin 3	Con 2 Pin 3 (with Modification)
Black	Ground	Con 2 Pin 4	Con 1 Pin 7 Con 2 Pin 2
White/Lt. Blue	Right Turn Signal	Con 2 Pin 8	Con 1 Pin 8
Tan/Red	Check Engine Light	Con 2 Pin 9	Con 1 Pin 10
Black/Yellow	Air Bag Indicator Light	Con 2 Pin 10	Con 1 Pin 12

Modifications required to correct circuits (with modification tag)

To properly ensure that the headlamp out warning and the tail lamp out warning works separately, at the diagnostic warning module, there is a Yellow/Red wire looping around to the Red/Light Green (pin 3) wire, cut the yellow/red (pin 6) wire. This will allow the headlight warning to work separate of the tail light warning; the cut Yellow/Red wire gets run to the Yellow/Red wire of connector 2 pin 5.

Wires Not Common between the 2 Clusters and Need to be run/connected

Pin 6 of Connector 1 (Orange/Black or Lt. Blue/Black) gets connected to Black/Lt. Blue and Red/White wires (Low Coolant Light)
Pin 13 of Connector 1 (Black/White) gets run to Pin 46 (Black/White) of EEC Connector (Sensors Signal Common Ground)
Pin 14 of Connector 1 (Purple/Orange) gets connected to Purple/Orange coming off of EATC Head Unit (C274 Pin 11) (Power in Run)
Pin 5 of Connector 2 (Yellow/Red) gets run to Diag. Warn. Module and attached to cut Yellow/Red wire (Pin 6, Grey Connector) (Tail Light out)
Pin 7 of Connector 2 (Lt. Green/Purple) gets run to Lt Green/Purple wire coming off of EATC Head Unit (C274 Pin 12) (V+ switched)
Pin 9 of Connector 2 (Purple/Orange) gets connected to Purple/Orange coming off of EATC Head Unit (C274 Pin 11) (Power in Run)
Pin 11 of Connector 2 (Lt. Blue/Black or Lt. Blue/Pink) gets run to Pin 34 of EEC Connector (Fuel Flow Data Line)
Pin 12 of Connector 2 (Dk. Green/White) gets Run to Pin 3 (Dk. Green/White) of EEC Connector (Vehicle Speed Sensor (+))
Pin 15 of Connector 2 (Orange/Black) gets run to pin 44 of EEC Connector (EEC Module Positive Data)
Pin 16 of Connector 2 (Black/Orange) gets run to pin 8 of EEC Connector (EEC Module Negative Data)
Pin 18 of Connector 2 (Red) gets run to red wire coming off of EATC Head Unit (C275 Pin 20) (English/Metric Output)
Pin 19 of Connector 2 (Tan/Yellow) gets run down to pin 7 of Chime Module (Tone Generator)

Wires Not Run Down to Chime Module from Factory

Pin 3 (White/Pink) gets run over to diagnostic warning module above glove box opening (Pin 2, Grey Connector) (Power in Run and Acc)
Pin 7 (Tan/Yellow) gets run up to instrument cluster pin 19 of Connector 2 (Tone Generator)

How to work the Low Oil Level Indicator

Alright, you need to modify the low oil level wiring coming from the sensor, Quoted from the Ford Service Manual "Determines if the engine oil level is slow (Aprox 1.4 litres [1.5 quarts] or less) the relay will send a signal to light the indicator light. The light remains on until the Ignition switch is turned to the off position. After the ignition switch is turned off, 5 minutes will pass before the relay will take a new reading. This delay will allow time for engine oil drain back to prevent false readings. If the engine is restarted within this 5 minute period, the last reading will be indicated." This is for the Analog cluster, the low oil level relay has a timer circuit built in to turn on the light for oil level and keep it on. Now the digital cluster just needs the signal wire right from the sensor, because the timer circuit is built into the cluster itself. SO to make it work properly, down at the right side of the drivers side kick panel, there is a bracket that has a couple relays and modules bolted to it, it is the bottom relay on the right of the bracket. Find the White/Pink wire and the Grey wire, cut the 2 of them and splice them together, so it sends the signal right from the oil level sending unit, right to the instrument cluster, bypassing the low oil level relay.

How to work the Low Coolant Light

Alright, this one will be a bit of a fun one as well; there are 2 ways you can do this, the first one is to remove the low coolant light and wiring from the old cluster, you will need to file down the connector to fit into the hole, cut the connector off of the end of the wire, and connect the black lead to Pin 7 of Connector 1 and the red lead to Pin 2 of Connector 1, the second way to do this, and the way that I did mine (so that there is no extra wires to disconnect from the cluster if it needs to be removed) is to take the bayonet bulb base from the PRNDL/Low Coolant Light and solder 2 leads onto the protruding brass tabs coming off of the base, ensure that they do not stick up too much or you will have problems reinserting the base. On the cluster itself, find the plastic PCB where it dips down to where the Low Coolant light mounts into the cluster, and remove the 2 tabs holding the PCB in place, flip the PCB up and insert in the modified Low Coolant Light bulb base, then run the wires through the PCB and up to where the large connector plugs in, find the trace that is 2nd from the right on the lower side, and solder one lead to that trace (be careful as that is plastic and it can melt, but the solder will attach to the copper trace) and find the trace that is the 3rd trace from the left side on the lower and solder that wire to it. This will properly orientate the polarity for the Low Coolant light as it requires a constant 12 volts and it uses a ground side switch to turn the light on and off. If you just connected the Low Coolant wiring to the lead without performing this modification, your low coolant light would not work.

How to Power Up Cluster to check all Segments

Alright, you have gotten a hold of a digital cluster out of either an 90-1 (Green color) or 92-95 (aqua) and before you go through all the hassle of wiring in the cluster, you want to check it to make sure that it powers up and all the segments work. This list will run you through all the wiring connections that need to be made to power up the cluster properly.

Connect to Battery (V+)

Connector 1 Pin 2	Red/Yellow	Hot In Run and Start
Connector 1 Pin 14	Purple/Orange	Hot In Run
Connector 1 Pin 17	Red/Light Green	Hot In Run
Connector 2 Pin 7	Light Green/Purple	Battery Power (Constant 12v)
Connector 2 Pin 9	Purple/Orange	Hot In Run

Connect to Ground

Connector 1 Pin 7	Black	Ground
Connector 1 Pin 13	Black/White	Sensor Signal Ground Return
Connector 2 Pin 2	Black	Ground
Connector 2 Pin 8	Orange/Yellow	Reference Ground

Note: Con 1 Pin 13 and Con 2 Pin 8 will test to make sure that the fuel gauge is working, and also will make sure that the coolant temperature sensor gauge is working as well. With the fuel gauge wire open, it should show the top 2 and bottom 2 bars and display CO and if you install a 10Ω resistor and ground that resistor, the fuel gauge will show an empty tank. The coolant temperature should show that the vehicle is full cold.

Connect the switch module to the cluster and cycle through all the different settings, making sure that the switches all work and that all the functions cycle through properly. Your fuel remaining, instant economy average economy and distance to empty will probably not work, but you can at least make sure that it will select it and display it.

To test your low washer fluid indicator, you will need to apply battery voltage to the PK/Y wire, to test the door ajar indicator, you will need to ground out the BK/O wire, to test the headlight and tail light out warning, you will need to ground out the R/LT GN wire to test the headlight portion and will need to ground out the Y/R to test the tail light portion. To test the low oil level portion, you will need to ground out the W/PK wire.

Doing all this should confirm that your cluster is working and will display all segments.

Connections at the PCM

Unhook the PCM connector from the PCM. Remove the black cover off the rear of the connector by releasing the 4 tabs. You should see a light brown plate where the wires exit the plug. Find where pins 8, 34 and 44 should be (it will be a blank spot in between 2 wires) and drill a 1/8" hole until you expose the open hole. Flip the connector over and pry out the red pin locking plate (be VERY carful not to pull on the wires too much as they can now pop out of the connector). Take a pin from the JBL harness or a spare PCM harness (if you have one lying around) and remove 3 pins with the wire attached (they come out the same way). Snap the new pins into place at pins 8, 34, and 44. Re-insert the pin lock and snap the rear black cover back together. Reconnect the PCM connection and attach Pin 8 to Pin 16 of Connector 2, Pin 34 to Pin 11 on Connector 2, and Pin 44 to Pin 15 of Connector 2, of the digital cluster wiring. This will enable your Fuel Flow Data Output Line for the cluster, allowing your instant and average economy to work. The positive and Negative Data lines are a backup for the cluster, Jelloslug never had his hooked up, if you only want to add in one extra wire, the Fuel flow wire is the only one that needs to be hooked up, but I figured that if Ford put the positive and negative data lines in there, there had to be a reason.

How to Work Coolant Temperature Sensor

You will need a coolant temperature sensor and wiring pigtail off of the donor car, or if you have a spare engine laying around, and or access to the junkyard, grab the 2 pin Engine Coolant Temperature sensor that goes to the PCM, and wiring pigtail, this will work the same as the Sensor from the donor car.

First, drain the coolant down so that when you remove the old sensor, and install the new sensor, you will not lose any coolant.

Second, remove the old 1 pin sensor that ran your gauge, and thread in the new 2 pin ECT sensor, using some Teflon tape or a type of thread sealant.

Third, if you are hardwiring in the cluster, cut the single connector off of the Red/White wire, and then connect one of the 2 wires from the new sensor. If you want to ever take it back to stock, you can also use scotch locks to attach the new wire to the Red/White wire and tuck the old wire up out of the way.

Fourth, take the other wire of the 2 wire pigtail, and attach it to the Black/White wire coming from the Throttle Position Sensor, this Black/White wire also runs to the Cluster via Pin 46 at the PCM and Pin 13 at the cluster. This will provide the proper ground for the sensor.

Refill your cooling system and bleed out any air trapped in the system when refilling.

Check to see that the temperature gauge sits in the middle (6 bars from the bottom showing) when the car is at operating temperature.

Instrument Cluster Bezel Options

I am doing this write up following along Jelloslug's write up as well, so I will include information that he provided as well.

First, I am using this option, so what I am doing is using the Instrument Cluster Bezel from the donor car (it was a 91 Taurus LX), it has the hole already for the buttons, now I will not be using the ugly wood grain trim in my car at all, so I have removed the thin metal wood grain skin from the donor cluster, and have carefully (I stress this) removed the thin metal skin from the SHO bezel, I installed the SHO metal skin on the donor bezel plastic, it will have to be modified a bit around the switch panel as the hole for the digital cluster is smaller than the analog cluster. You will see a little bit of bare plastic above and below the buttons, but to the untrained eye, it's not that easily noticed.

Second, if you got your bezel from a Sable (Jelloslug used this option)(which the bezels are different between an Taurus and a Sable), you can modify your existing SHO bezel to work, take the tin face off of the Sable bezel and cut the section where the buttons mount, then carefully remove the tin face from the SHO bezel and cut out the necessary section of the bezel. Put the metal face back on and glue the button bracket in place. If you do this, you will notice that the "walls" are different depths. You will have to get inventive on how to resolve this. The easy way is to trim the new section down to the same height, fill the seam with some JB weld, sand smooth, and use black texture paint. Next get the black stick on weather-stripping and use that to fill the ½" gap between the bezel and the cluster. Other ways are to extend the walls to fill the gap (I would use fibreglass), Make Spacers to bring the cluster out to the bezel, or make a cover kinda like the one over the old gauges to fill the space.

Third, Remote mounting the buttons, Maybe your buttons are damaged, or you don't want to cut your bezel, you can always make a custom button panel to mount the function buttons else ware. Then there are only 2 things to deal with: the ½" gap (see above) and the fact that the right side is now ¾" of an inch too far to the right and it does not cover the connector for the buttons up. Easiest way is to just use the weather-stripping and "fudge it" around the connector (you might even want to pull the connector out of the cluster to make it a smoother connection). Another way is to move the connector, fill in the white exposed area, then make spacers to move the cluster out to the bezel.

Wires that need to be either run from the Left connector to the right or from the right connector to the center

Wires to be lengthened and moved to the right hole

Pin 1 of Connector 1 needs to be run to the right hole to pin 13 of connector 2
Pin 7 of Connector 1 needs to be run to the right hole to pin 20 of connector 2
Pin 12 of Connector 1 needs to be run to the right hole to pin 4 of connector 2

Wires to be lengthened and moved to the center hole

Pin 5 of Connector 2 needs to be run to the center hole to Pin 6 of connector 1
Pin 8 of Connector 2 needs to be run to the center hole to Pin 8 of connector 1
Pin 9 of Connector 2 needs to be run to the center hole to Pin 9 of connector 1
Pin 10 of Connector 2 needs to be run to the center hole to Pin 10 of connector 1
Pin 11 of Connector 2 needs to be run to the center hole to Pin 12 of connector 1

Starting the Whole Issue of Swapping Clusters

Alright, so you want to install a digital cluster into your 90-95 SHO MTX, now how do you go about doing such a thing? Well, we (Jelloslug and I) will start you on your way to installing the cluster and making it look like it came from the factory that way.

Who should try this install? If you can *properly* install an aftermarket car stereo, you can install a digital dash. You must be able to disassemble the dashboard, make proper electrical connections and be able to identify wires in a harness (its not really that hard).

The items that you will need are as follows:

1. Digital cluster out of either a 90-1 Taurus or Sable (Green) or a 92-5 Taurus or Sable (Aqua)
2. Instrument cluster bezel w/ switch panel (out of donor car).
3. Both wiring connectors from digital cluster with a good 6-8" of wiring (out of donor car)
4. Chime Module (out of donor car)
5. Wiring connector for chime module (out of donor car)
6. 2 pin connector for Engine Coolant Temperature Sensor (out of donor car)
7. Engine Coolant Sensor (out of donor car)
8. JBL connector from trunk of donor car along with 6" of wire or if you are like me a spare PCM harness to cut up
9. A round 6 or 8 pin male and female connector to allow the harness to disconnect to allow removal of the engine harness or the dash
10. A few good lengths of wire to run from the PCM to the Dash (at least 7' of length per wire)
11. 70 butt splices or wire taps (depending if you cut off the old wiring or just tap into the old wiring and you don't want to solder the connections)
12. Roll of Solder
13. Roll of Electrical Tape
14. Zip Ties

The tools that will be required on this job:

1. Knife (to cut wire wrapping and electrical tape)
2. Wire strippers (I prefer and use the type that will strip back down to the wire after a connector to allow to tap into the wire)
3. Pair of Pliers (to remove hose clamps and to crimp cluster bezel skin back on)
4. Soldering Iron
5. 10mm 3/8" socket
6. 10mm deep 3/8" socket
7. 13mm deep 3/8" socket
8. 19mm deep 3/8" socket
9. 5mm ¼" socket
10. 7mm ¼" socket
11. 8mm ¼" socket
12. T-30 torx bit
13. 3/8" Ratchet
14. 6" long 3/8" extension
15. ¼" ratchet
16. 6" long ¼" extension
17. small flat head screwdriver
18. 11/16" deep 3/8" socket (to remove analog temperature sensor)
19. ½" Ratchet
20. 6" long ½" extension
21. 1" deep ½" socket (to install digital temperature sensor)
22. Multimeter (a cheap $10 meter will work)
23. Small Ball Peen hammer

Where to start:

1. Remove lower steering column shield by loosening off and removing the 4 T30 torx bolts

2. Remove lower brace by loosening off and removing the 2 8mm bolts

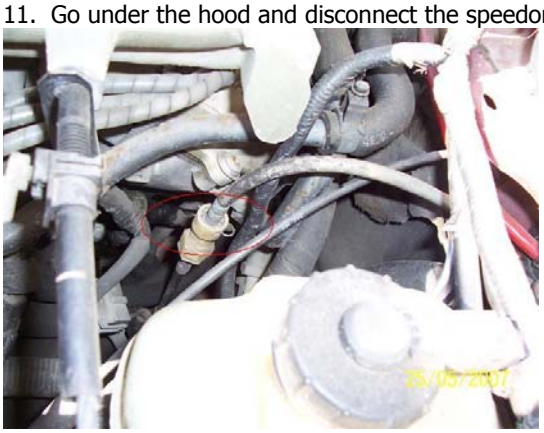
3. Remove submarine brace under steering column by removing the 4 13mm nuts

4. Remove and lower steering column down by removing the 4 13mm nuts (see above picture)
5. Remove the 4 bolts holding the instrument cluster bezel in using a 7mm socket
6. Remove the large nut holding the bezel to the headlight switch using the 19mm socket

7. Pull the instrument cluster bezel back and unplug the 4 connectors (fog light, de-frost, antenna, and clock)
8. Twist off light above headlight switch

9. Set instrument cluster bezel off to the side for now as it will be needed later
10. Remove the 4 bolts holding in the instrument cluster using a 7mm socket

11. Go under the hood and disconnect the speedometer cable at the junction

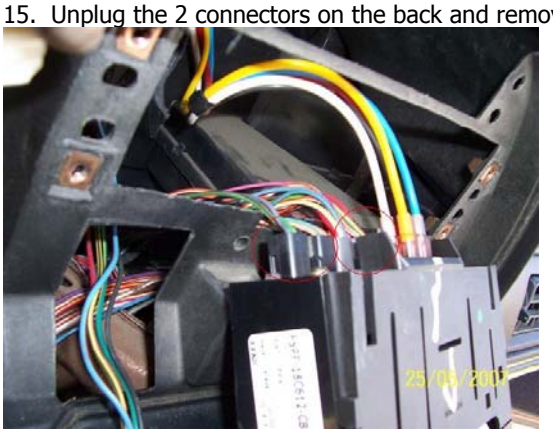


12. Go back in the car and pull the instrument cluster forwards and disconnect the 2 connectors and the speedometer cable

13. Remove the instrument cluster and set off to the side.

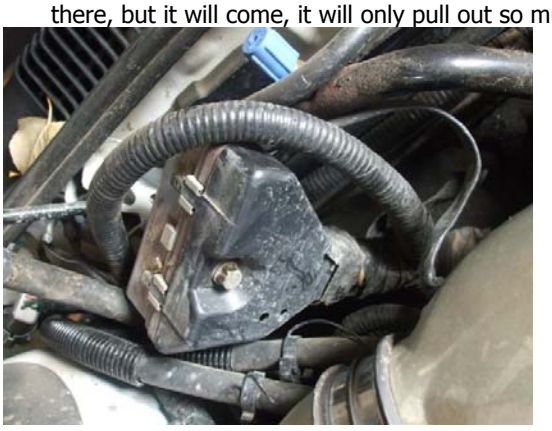
14. Remove the EATC using the 7mm socket to remove the 4 screws

15. Unplug the 2 connectors on the back and remove the vacuum connector by removing the 2 nuts using the 10mm deep socket

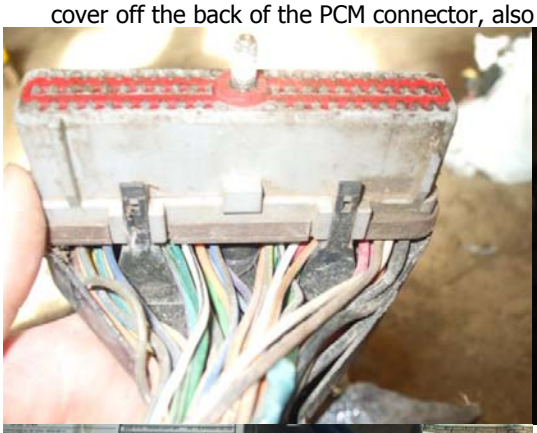


16. Time to go under the hood now and disconnect the needed components, find the PCM connector

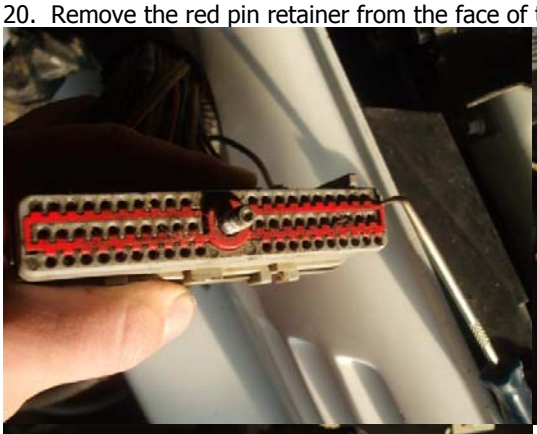
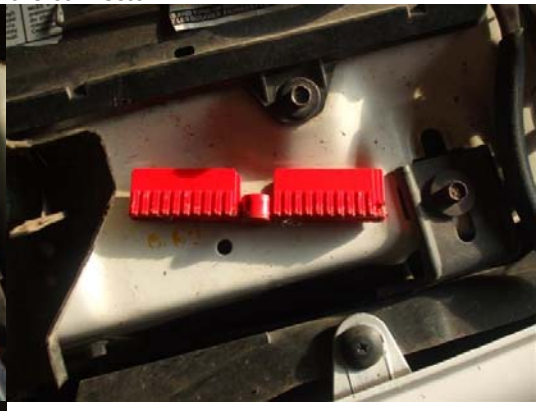
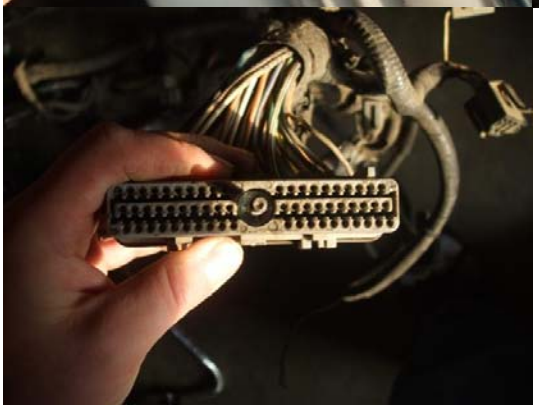
17. Using a pair of pliers, remove the clamp holding the large vacuum line onto the intake
18. Take your 10mm socket, and loosen off the bolt holding the PCM connector to the PCM, it will take a little bit of wiggling out of the area there, but it will come, it will only pull out so much tho.



19. Grab a flat head screwdriver or a pick, find the 2 black tabs on the top and the 2 on the bottom, release the tabs to remove the black cover off the back of the PCM connector, also remember to unwrap the tape off the bottom of the connector

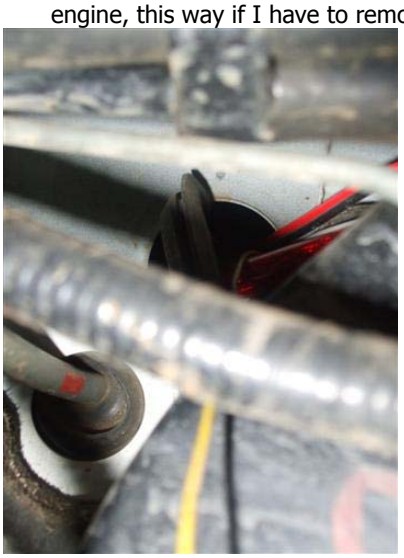


20. Remove the red pin retainer from the face of the connector

21. Locate on the back of the PCM connector, the blank spots where pins 8,34, and 44 will go

22. Take a 1/8" drill bit and drill out those 3 pins, there will be little nubs that stick in the connector after drilling that will have to be pushed out the back before inserting the wires.
23. Take 3 wires out of the JBL connector (or PCM connector like I did, if you have one) and push them into the vacant holes (remember what color went where)
24. With 2 lengths of wire, strip a section of insulation off of pins 3 and 46, and solder those 2 wires to the respective wires. (again remember what colors went where)
25. Solder 3 more wires onto the ends that you pushed into the PCM connector
26. Reinstall the black cover on the back of the PCM connector
27. Reconnect the PCM connector to the PCM using the 10mm socket
28. Route the 5 wires that you just connected to the PCM through the firewall through a hole to the left of the brake booster (I ran my 5 wires through a connector that I grabbed off of the spare PCM harness and placed it down with the other 3 connectors to the left of the engine, this way if I have to remove either the engine or the dash, I can easily disconnect the wires)



29. Drain your cooling system down so that you can remove the coolant temp gauge sensor
30. Remove the cover over your coil
31. Take the 11/16 deep socket and unscrew the old gauge sending unit from the engine

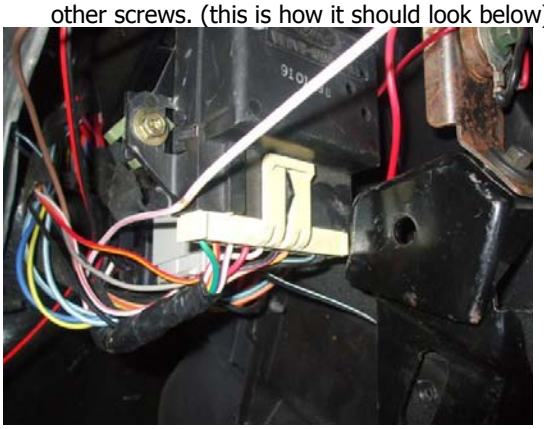
32. Take the coolant temperature sensor that you yanked from the donor dash, put some Teflon tape on the threads and thread it into the hole where the old gauge sender came from

33. Take the 2 pin connector that you got with the coolant temp sensor, connect one end to the red/white wire and connect the other end to the black/white wire off of the throttle position sensor (this will provide the cluster with sensor ground for the temp sensor), connect the new connector onto the sensor
34. Refill the cooling system and bleed all the air out of the system.
35. Time to move to under the dash now.
36. Find, to the right of the steering column, the chime module and the low oil level relay

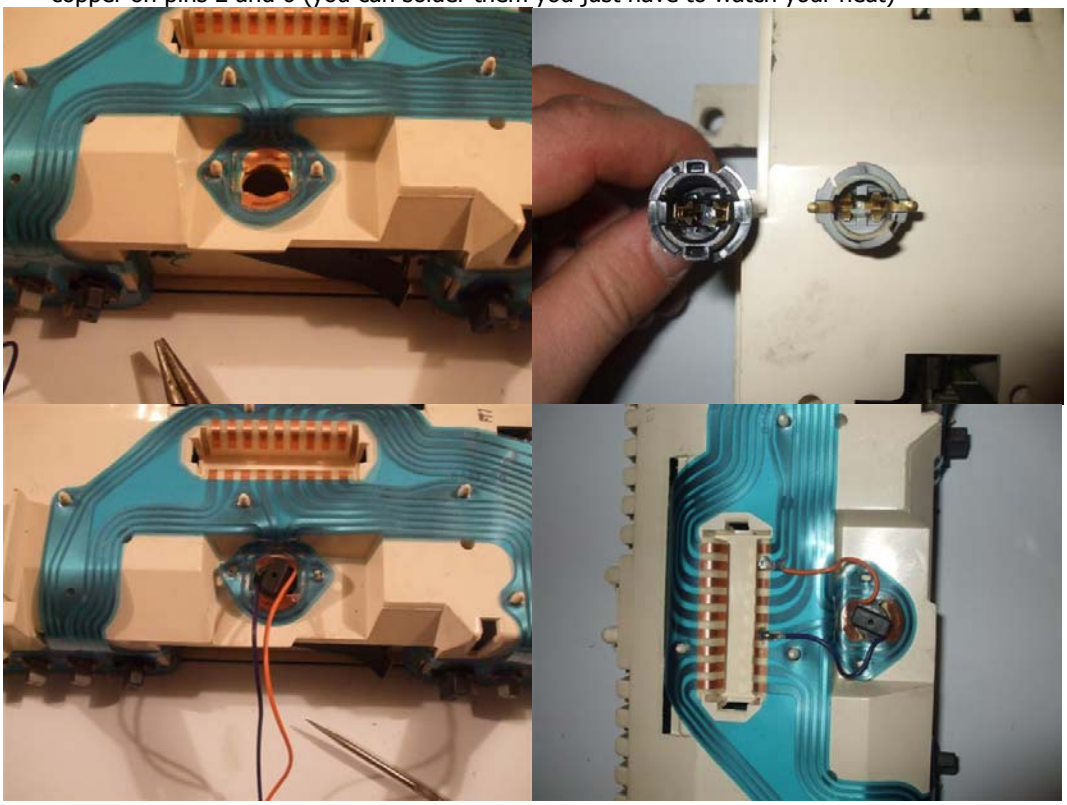
37. Remove the 2 7mm screws holding the plastic bracket to the dash, then remove the 2 screws holding the chime module to the plastic bracket
38. Remove the old chime module (old module is on top, new is on bottom)

39. Either cut the old connector off and solder the new connector on, following the existing wires, or use the wire taps to connect the new connector to the existing harness, remember you will still have 2 wires left over, we will deal with those soon enough.

40. Install the new chime module onto the bracket using 2 of the 4 screws that you removed, and install the bracket to the dash with the other screws. (this is how it should look below)

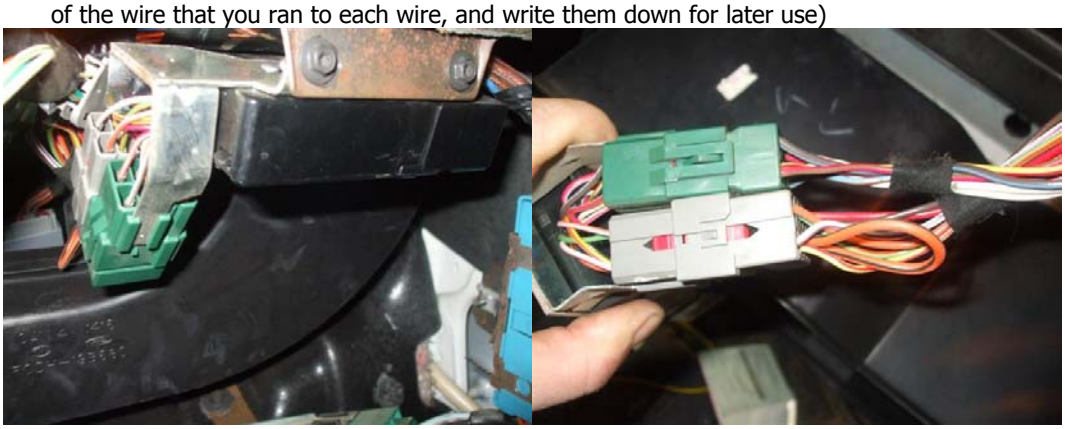


41. Find the low oil level relay above the chime module (follow the white/pink and grey wires) cut the white/pink and grey wires from the low oil level relay and solder the 2 together, this will properly operate your low oil level switch in your cluster
42. Lets go up to the cluster now, we need to make a modification to your low oil coolant level light on the new cluster, I will try to explain this the best way, but the way that the low coolant light on the analog cluster works is off of a ground side switch (which means that it has constant power going to it when the key is on, but uses a switched ground source to turn the light on and off), where as the digital cluster uses a positive side switch (which means that it has constant ground, but uses a switched power source to turn the light on and off). So we have 2 ways of doing this, the first way, is to take the low coolant light and wiring harness off of the analog cluster and file the socket down, because the sockets are different sizes. Then insert it into the lower center hole in the dash. The second way of modifying the low coolant light which will make it easier when it comes to removing the dash at a later time, is to take the socket that was in that center hole, take a short length of 2 wires, and solder them to the 2 tabs coming out of each side, take the cluster and break off the 2 white nubs holding the plastic circuit board around that light, pry up the PCB and insert the socket into the hole (you want to make sure that the PCB is above the socket, else you will blow fuses) run the wires through the PCB and solder them to the exposed copper on pins 2 and 6 (you can solder them you just have to watch your heat)

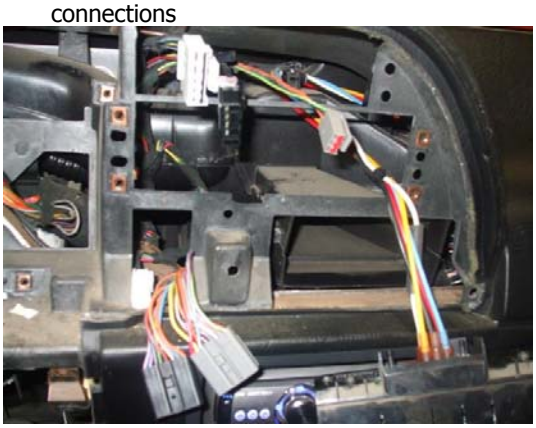


43. Take and undo the 2 5mm screws holding the PRNDL plate to the cluster, remove all the existing guts, even the spring, remove the low coolant light plate from the analog cluster, carefully take the low coolant light face off of the analog plate (it is held on by some sticky tape) and stick it to the center of the old PRNDL plate, reinstall the new low coolant light plate into the cluster with the 2 screws.

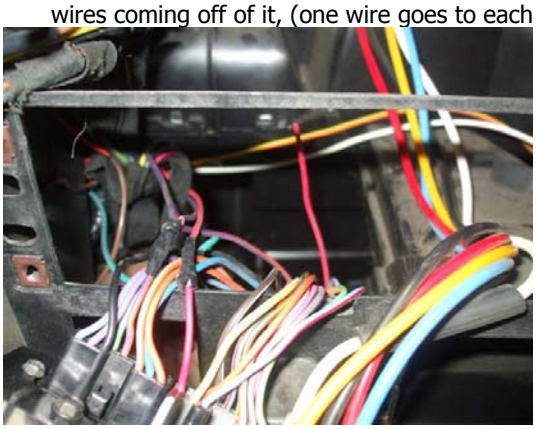
44. Pull the speedometer cable right out of the dash, and go back into the engine compartment, and remove the stub cable from the transmission giving it a firm tug
45. Run 2 wires in behind the EATC and over to the glove box, lower the glove box and look up inside, you will find a module with 2 connectors, an green and a grey one, remove the 2 7mm screws holding the module to the dash and snake the module down, this is the lamp out warning module, find the green connector and look for the yellow/red wire coming out of the connector along with the red/green wire, cut the yellow/red wire right at that connector, connect one of the 2 wires that you ran over to that wire, next find the grey connector, find the white/purple wire, strip back a bit of insulation and solder the other wire to that, this wire also you will connect to the white/purple wire coming out of the chime module, Reinstall the chime module back to the dash (note** remember the wire colors of the wire that you ran to each wire, and write them down for later use)



46. Now we should have most of our wires up at the dash, although we are still missing a few power wires, pull both EATC connectors down through the hole where the power antenna wire resides, this will give us enough room to work with the wires, making the proper connections



47. We need to find 3 wires, 2 coming off the black connector (Purple/Orange and Green/Purple) and 1 coming off of the grey connector (Red), we need to strip back a little insulation and solder some wires to each of these 3 wires, now the Purple/Orange wire will need 2 wires coming off of it, (one wire goes to each connector on the cluster)



48. Now comes the cutting and sorting of the 2 connectors, there are about 60 or more wires to work with so do one connector at a time, you want the larger of the 2 connectors to come out the center hole and the smaller to come out of the right, or else the dash will not seat properly, there are some wires on the left connector that will need to be lengthened and attached to the right connector, and there are some on the right connector that will need to come out of the center hole. Make the necessary modifications to the wires and start connecting up the new connectors, either by cutting the old connectors off and soldering the new ones on or using the wire taps and keeping the old connectors. (note** either the 2 orange/yellow or orange/yellow and black/white wires on the left analog connector, solder those 2 wires together, this will ensure a proper ground for the fuel gauge assy) (Do not tape the wires like I did in this picture, as it made it impossible to install the cluster, I had to undo all the tape that I put on, just put 2 wraps around the center portion of the wire to keep everything intact).

49. Plug the cluster in and power it up, if everything went properly, you should see all segments light up, and then the coolant temperature and the fuel gauges should show (coolant should show 1 bar as the engine is cold, and fuel should be approximately at the same level it was on the analog cluster). Turn the key to the start position without pushing in the clutch, does the Air Bag, ABS, Check Engine Light, Battery Light, Oil Pressure Light and Brake light all light up? Fire up the engine, does the tachometer work? Let the engine warm up, does the temperature gauge go up to 6 bars?

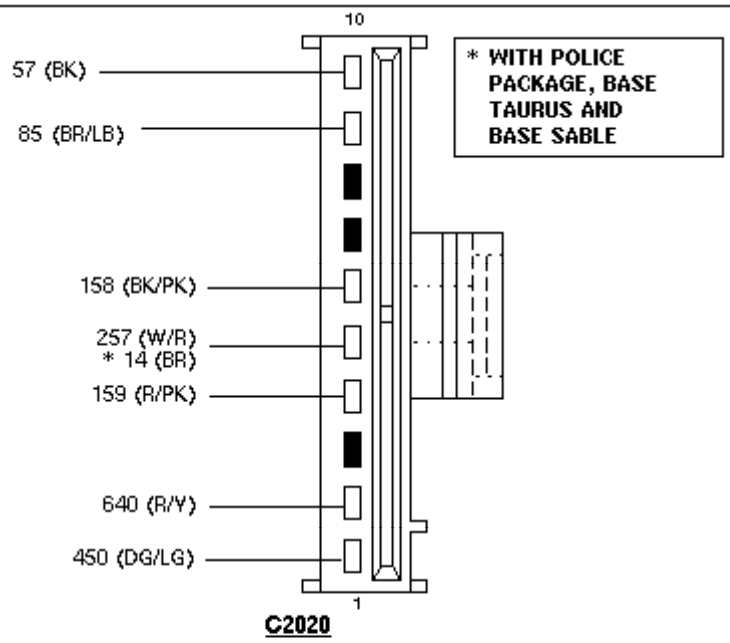

50. Temporarily install the cluster surround and connect the button connector to the dash, press the buttons, does the chime module beep when the buttons are pressed? Does the EATC switch between Fahrenheit and Celsius when the E/M button is pressed?
51. Now that we have gotten this far, we have ran all the necessary wiring, installed the coolant temp sensor, and installed the dash, now it is time to swap over the tin shield from the analog cluster bezel to the digital one. This task is a bit daunting, you will need to take your time while doing this, it is not easy, and you can easily damage the tin if you make a wrong move, but since you have gotten this far, lets carry on.
52. Grab the digital cluster bezel and remove the tin shield, use this one as a practice piece as this tin is not needed, it can be tossed in the garbage after you are done with it, to start, find all the holes for the switches and pry the 2 tabs straight from each hole, same with the clock hole, go down around the steering column hole and find the 2 tabs bent in around the semi circle, bend those out slightly, go up to the top of the EATC hole, bend the top flap down carefully (it runs along the length of the EATC hole), there are 2 tabs on the bottom of the bezel, they also need to be bent down. That takes care of most of the inner tabs that secure the bezel tin, the major one runs the whole outside of the bezel, this needs to be slowly bent up around most of the bezel to allow the tin to release (I used a smaller flat head screwdriver to slowly work my way around the edge). There are also spots of glue that hold the tin to the bezel, remember to use a heat gun if you have one to soften the glue, else use the knife carefully to cut the glue away from the tin.



53. Once the tin is off the digital cluster, you can carefully start to remove the tin from the Analog cluster bezel (remember **BE CAREFUL**), it will get caught at the top of the bezel, just pull carefully and it will release, now that the tin is off, there is some slight adjustments that need to be made, and that is right around the hole for the buttons, grab the digital cluster bezel and remove the buttons by removing the 2 4mm screws, lightly overlay the tin onto the digital bezel, note where the tin comes to the edge of the button hole, but not over the top and bottom, mark where the top and bottom of the button hole is and gently massage the tin flat above and below the mark. Install the tin onto the digital bezel and with a cloth and a pair of pliers, start bending the flaps back down around the bezel. Take your time and it will turn out right, make sure that you get all the flaps bent down. Reinstall the buttons with the 2 screws.

54. Install the new instrument cluster bezel and connect all the wiring that was previously removed to allow removal of the old cluster bezel, plug in the buttons, install the 4 7mm screws and the large 19mm nut around the light switch, and re secure the column back up with the 4 13mm nuts, install the anti submarine brace back in place with the 4 13mm nuts, the lower bar with the 2 8mm bolts, and install the lower column cover with the 4 T30 torx bolts.

55. Sit back and enjoy a job well done, take the car out for a test-drive, ensure that the speedometer works and cycle through the different fuel computer modes, make sure that the DTE, the instant Economy, the Average Economy and the Liters/Gallons left work fine.

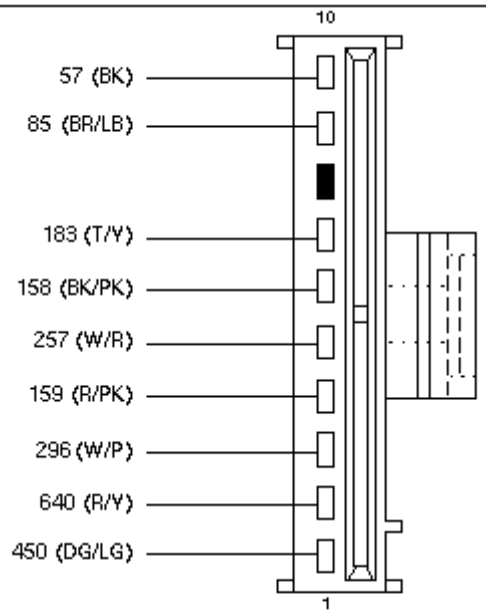


C2020

WARNING CHIME MODULE (ANALOG CLUSTER)

PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	450 (DG/LG)	Seat Belt Lamp Output
2	640 (R/Y)	Start/Ignition Input
3	—	NOT USED
4	159 (R/PK)	Driver's Door Open Input
5	257 (W/R) *14 (BR)	Headlamp On Input
6	158 (BK/PK)	Ignition Key Input
7	—	NOT USED
8	—	NOT USED
9	85 (BR/LB)	Seat Belt Buckled Input
10	57 (BK)	Ground

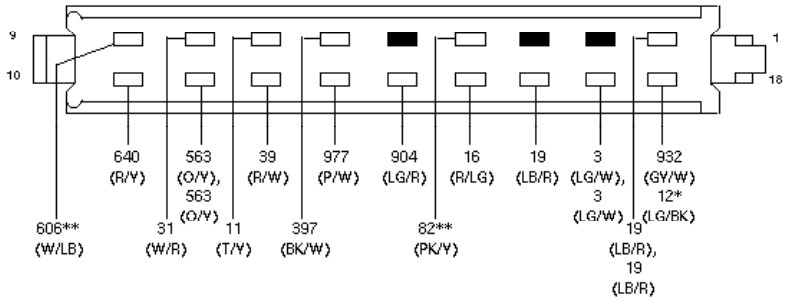
C2020, Warning Chime Module, Digital



C2020

WARNING CHIME MODULE (DIGITAL CLUSTER)

PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	450 (DG/LG)	Seat Belt Warning Lamp Feed
2	640 (R/Y)	Start/Ignition Input
3	296 (W/P)	Hot in ACC or RUN
4	159 (R/PK)	Door Jamb Switch
5	257 (W/R)	Headlamp On Input
6	158 (BK/PK)	Key Warning Switch
7	183 (T/Y)	Tone Generator
8	—	NOT USED
9	85 (BR/LB)	Left Front Seat Belt Warning
10	57 (BK)	Ground

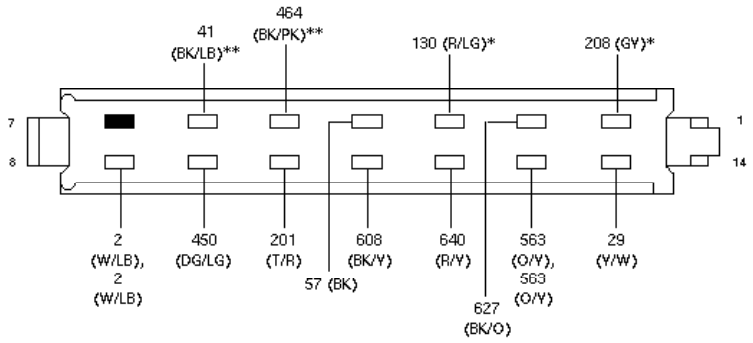


** WITH DIAGNOSTIC WARNING INDICATORS

C250

INSTRUMENT CLUSTER (ANALOG AND SHO)

PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	19 (LB/R)	Instrument Panel Lamp Feed
2	—	NOT USED
3	—	NOT USED
4	82 (PK/Y)**	Low Washer Fluid Indicator
5	—	NOT USED
6	397 (BK/W)	
7	11 (T/Y)	Ignition Coil Neg. Terminal
8	31 (W/R)	Low Oil Pressure Indicator
9	606 (W/LB)**	Temperature Gauge to Temperature Sending Unit
10	640(R/Y)	Hot in RUN or START
11	563 (O/Y)	Ground Reference
12	39 (R/W)	Temperature Gauge to Coolant Temperature Sensor
13	977 (P/W)	Brake Warning Switch to Brake Warning Indicator
14	904 (LG/R)	Coil Terminal of Ignition Switch to Alternator/Regulator
15	16 (R/LG)	Ignition Switch to Ignition Coil “Battery” Terminal
16	19 (LB/R)	Instrument Panel Lamp Feed
17	3 (LG/W)	Left Turn Signals
18	932 (GY/W)	Hi Beam Indicator to Daytime Running Lamps (DRL) Module
	12 (LG/BK)*	Hi Beam of Headlamps

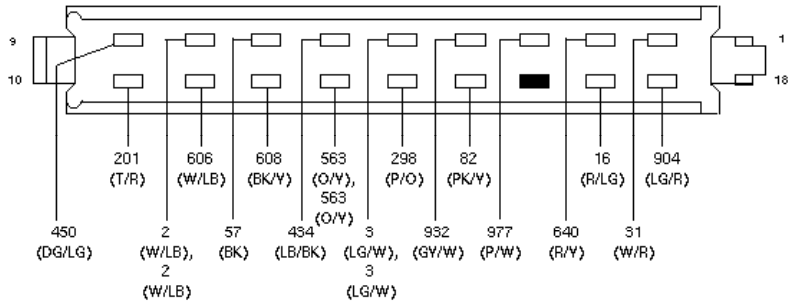


* WITH DIAGNOSTIC

** SHO ONLY

C251
INSTRUMENT CLUSTER (ANALOG AND SHO)

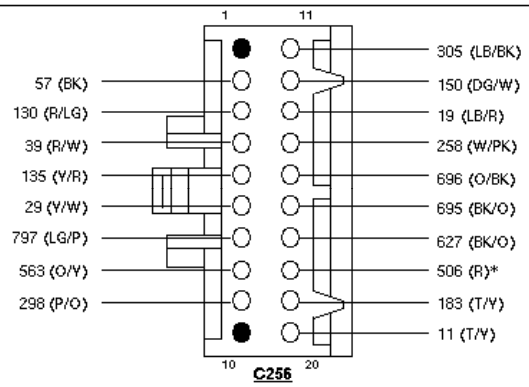
PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	208 (GY)*	Low Oil Level Indicator Input
2	627 (BK/O)	Door/Liftgate Ajar Indicator to Warning Chime
3	130 (R/LG)*	Lamp Out Indicator Input
4	57 (BK)	Ground
5	464 (BK/PK)*	
6	41 (BK/LB)**	
7	—	NOT USED
8	2 (W/LB)	Right Turn Signal Indicator Input
9	450 (DG/LG)	Fasten Belts Indicator Input
10	201 (T/R)	Check Engine Indicator Input
11	608 (BK/Y)	Air Bag Indicator Input
12	640 (R/Y)	Hot in RUN or START
13	563 (O/Y)	Reference Ground
14	29 (Y/W)	Fuel Level Input



C255

INSTRUMENT CLUSTER (DIGITAL)

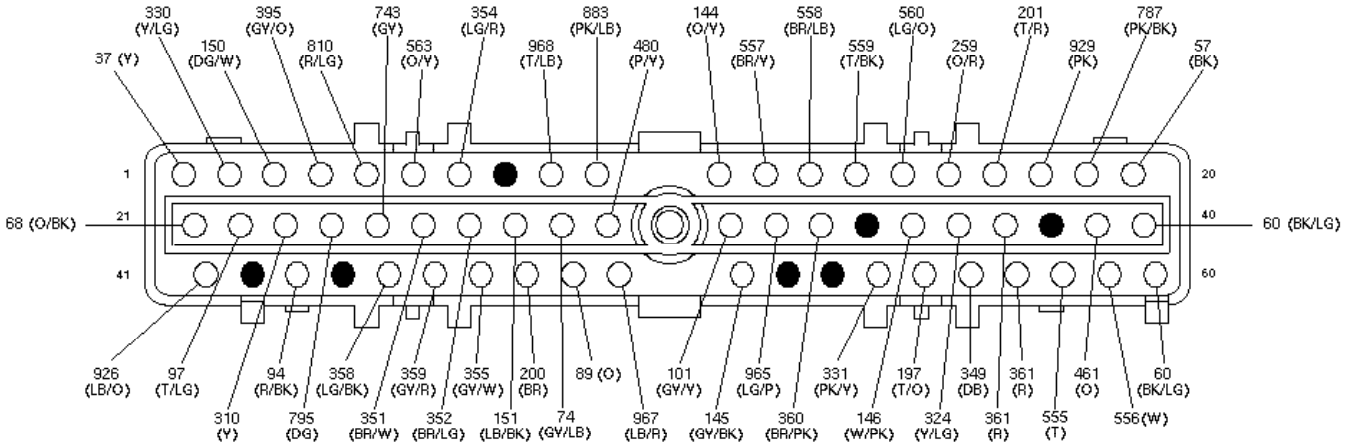
PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	31 (W/R)	Oil Pressure Indicator to Oil Pressure Sending Unit
2	640 (R/Y)	Warning Lamps Feed-Hot in RUN or START
3	977 (P/W)	Brake Warning Switch to Indicator Lamp
4	932 (GY/W)	Hi Beam Indicator
5	3 (LG/W)	Left Turn Signal Lamps
6	434 (LB/BK)	Instrument Panel Lamp Feed
7	57(BK)	Ground
8	2 (W/LB)	Right Turn Signal Lamps
9	450 (DG/LG)	Seat Belt Warning Indicator Lamp Feed
10	201 (T/R)	EEC Module to Check Engine Lamp
11	606 (W/LB)	Anti-lock Brake Indicator for Anti-lock Brake Control Module
12	608 (BK/Y)	Air Bag Indicator to Air Bag Diagnostic Module
13	563 (O/Y)	Ground
14	298 (P/O)	Hot in RUN
15	82 (PK/Y)	Washer Fluid Level Indicator
16	—	NOT USED
17	16 (R/LG)	Ignition Switch to Ignition Coil “Battery” Terminal
18	904 (LG/R)	Coil Terminate or Ignition Switch to Alt/Regulator



* WITH EATC

INSTRUMENT CLUSTER (DIGITAL)

PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	—	NOT USED
2	57 (BK)	Ground
3	130 (R/LG)	Headlamp Bulb Outage
4	39 (R/W)	Temperature Gauge to Coolant Temperature Sensor
5	135 (Y/R)	Rear Lamp Outage
6	29 (Y/W)	Fuel Gauge and Fuel Gauge Sender
7	797 (LG/P)	BatteryPower
8	563 (O/Y)	Reference Ground
9	298 (P/O)	Hot in RUN
10	—	NOT USED
11	305 (LB/BK)	EEC Module to Time Meter
12	150 (DG/W)	Vehicle Speed Sensor
13	19 (LB/R)	Instrument Panel Lamp Feed
14	258 (W/PK)	Oil Level Sensor
15	696 (O/BK)	EEC Module Positive Data
16	695 (BK/O)	EEC Module Negative Data
17	627 (BK/O)	Open Door Warning Lamp to Open Door Switch
18	506 (R)*	English/Metric Output
19	183 (T/Y)	Tone Generator
20	11 (T/Y)	Electronic Switch to Ignition Coil Negative Coil

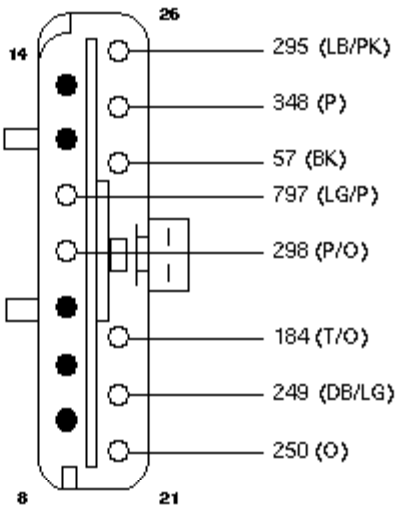


C191

ELECTRONIC ENGINE CONTROL (EEC) MODULE (SHO)

C191 , Electronic Engine Control (EEC) Module, SHO

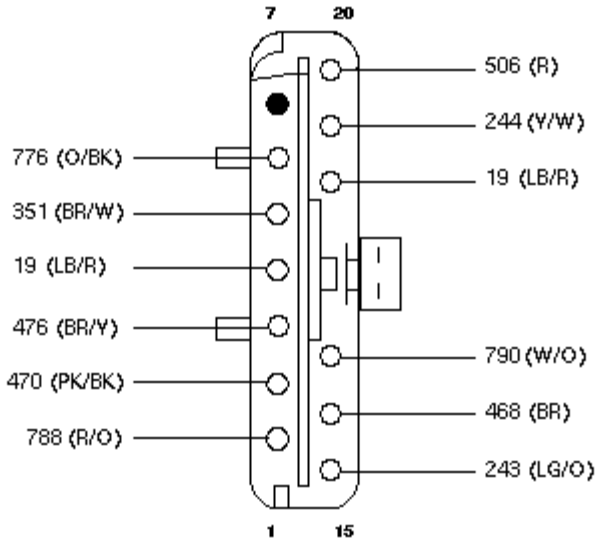
PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION	PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	37 (Y)	12 Volt Battery Power	31	101 (GY/Y)	Canister Purge Solenoid
2	330 (Y/LG)	Power Steering Pressure Switch	32	965 (LG/P)	Idle Air Control
3	150 (DG/W)	Vehicle Speed Sensor (+)	33	360 (BR/PK)	EGR Valve Regulator Solenoid
4	395 (GY/O)	Ignition Diagnostic Monitor	34	—	NOT USED
5	810 (R/LG)	Brake On/Off	35	146 (W/PK)	Speed Control Vent Solenoid
6	563 (O/Y)	Vehicle Speed Sensor (-)	36	324 (Y/LG)	Spark Output
7	354 (LG/R)	Engine Coolant Temp. (ECT) Sensor	37	361 (R)	Vehicle Power
			38	—	NOT USED
8	—	NOT USED	39	461 (O)	Speed Control Command Switch Ground
9	968 (T/LB)	MAF Return			
10	883 (PK/LB)	Air Conditioner Clutch Signal	40	60 (BK/LG)	Power Ground
11	144 (O/Y)	Speed Control Solenoid	41	926 (LB/O)	EEC Module to Hi Speed Fuel Pump
12	557 (BR/Y)	Fuel Injector #3			
13	558 (BR/LB)	Fuel Injector #4	42	—	NOT USED
14	559 (T/BK)	Fuel Injector #5	43	90 (DB/LG)	HEGO Sensor #2
15	560 (LG/O)	Fuel Injector #6	44	—	NOT USED
16	259 (O/R)	Ignition Ground	45	358 (LG/BK)	Barometric Absolute Pressure (BAP) Sensor
17	201 (T/R)	VIP Functional Tester			
18	929 (PK)	Octane Adjust	46	359 (GY/R)	Signal Return
19	787 (PK/BK)	Fuel Pump Monitor	47	355 (GY/W)	Throttle Position Sensor
20	57 (BK)	Case Ground	48	200 (BR)	Self-test Input Connector
21	68 (O/BK)	Idle Speed Control-Bypass Air	49	89 (O)	HEGO Sensor Ground
22	97 (T/LG)	Low Speed Fuel Pump Relay	50	967 (LB/R)	MAF Sensor
23	310 (Y)	Knock Sensor	51	145 (GY/BK)	Speed Control Vacuum Solenoid
24	795 (DG)	CAM Sensor	52	—	NOT USED
25	743 (GY)	Air Charge Temp. Sensor	53	—	NOT USED
26	351 (BR/W)	Reference Voltage	54	331 (PK/Y)	WOT Cutout Relay
27	352 (BR/LG)	Pressure Feedback EGR Sensor	55	197 (T/O)	Electro-Drive Fan
28	151 (LB/BK)	Speed Control Command Switch	56	349 (DB)	Profile Ignition Pick-up (PIP)
29	94 (R/BK)	HEGO Sensor #1	57	361 (R)	Vehicle Power
30	480 (P/Y)	Clutch Engage Switch	58	555 (T)	Fuel Injector #1
			59	556 (W)	Fuel Injector #2
			60	60 (BK/LG)	Power Ground



C274

EATC CONTROL MODULE

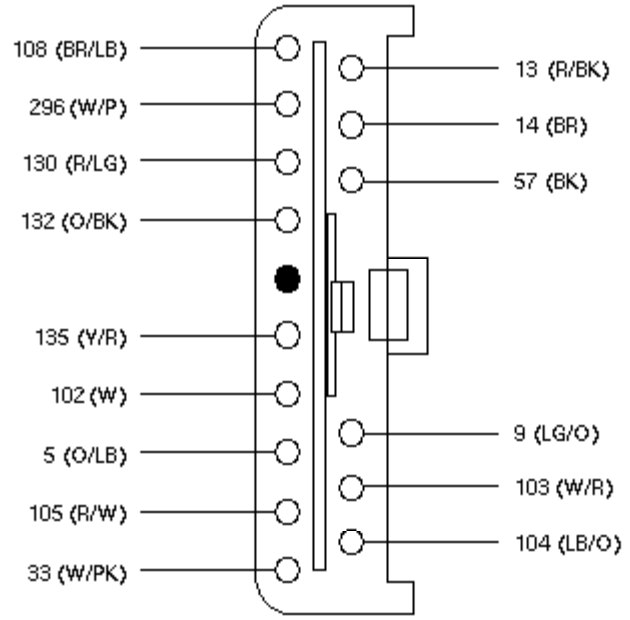
PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
8	—	NOT USED
9	—	NOT USED
10	—	NOT USED
11	298 (P/O)	Hot in RUN
12	797 (LG/P)	Battery Voltage
13	—	NOT USED
14	—	NOT USED
21	250 (O)	Bleed Door Drive-2
22	249 (DB/LG)	Bleed Door Drive-1
23	184 (T/O)	Variable Blower Speed
24	57 (BK)	Ground
25	348 (P)	A/C Clutch-Negative
26	295 (LB/PK)	Hot in ACC or RUN



C275

EATC CONTROL MODULE

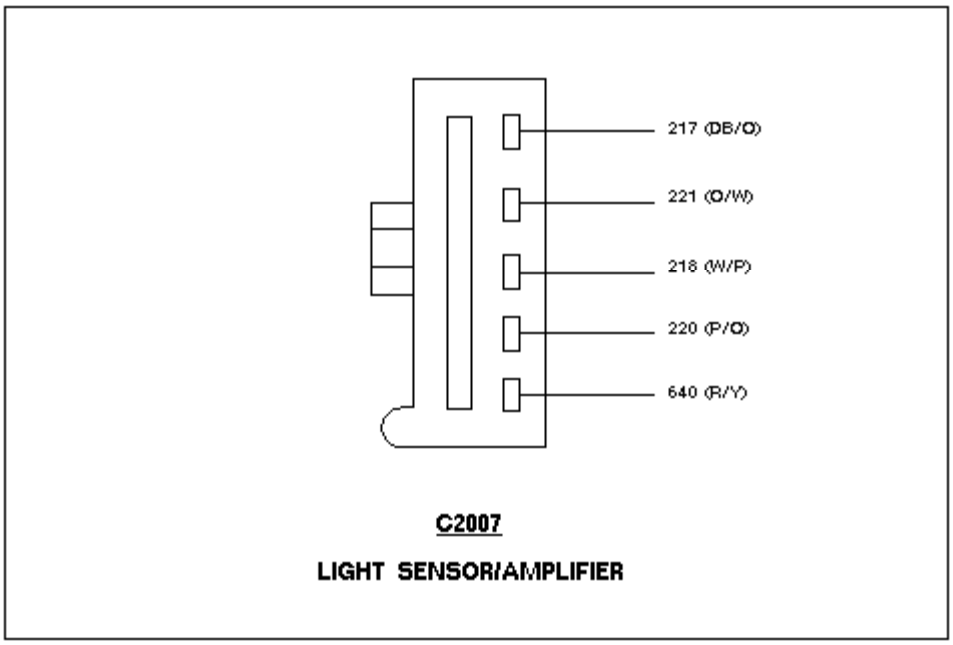
PIN NUMBER	CIRCUIT	CIRCUIT FUNCTION
1	788 (R/O)	Ambient Temperature Sensor
2	470 (PK/BK)	Temperature Sensor Ground
3	476 (BR/Y)	Sun Load Sensor Ground
4	19 (LB/R)	Instrument Illumination
5	351 (BR/W)	Bleed Door Position-W/P
6	776 (O/BK)	Bleed Door Position-Negative
7	—	NOT USED
15	243 (LG/O)	Bleed Door Position-Positive
16	486 (BR)	Sun Load Sensor
17	790 (W/O)	In-Car Temperature Sensor
18	19 (LB/R)	Instrument Illumination
19	244 (Y/W)	Cold Engine Lock Out (CELO) Switch
20	506 (R)	English/Metric



C270

LAMP OUT WARNING MODULE

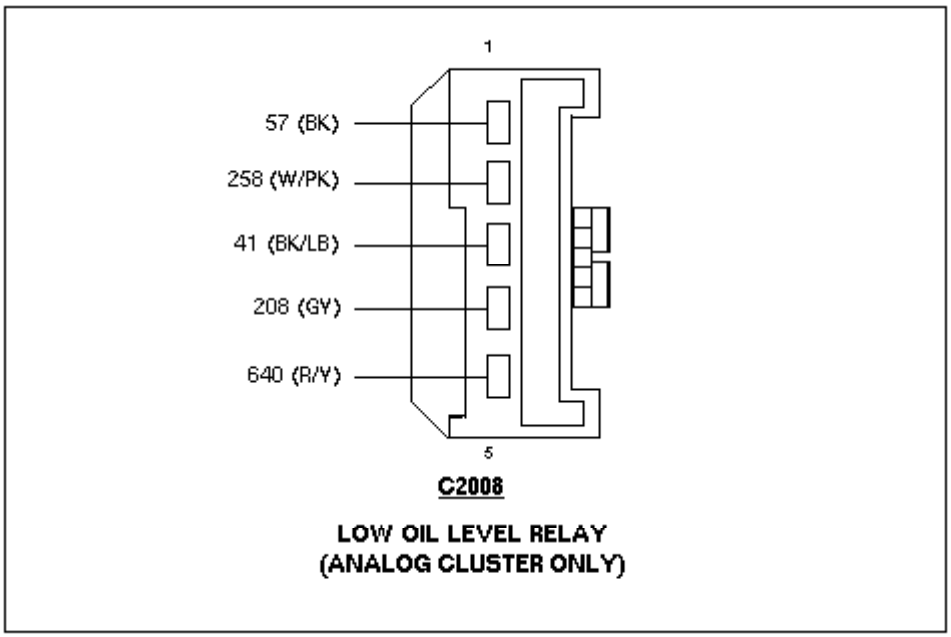
CIRCUIT	CIRCUIT FUNCTION
108 (BR/LB)	Headlamp Sense
296 (W/P)	Power
130 (R/LG)	Headlamp Out Output
132 (O/BK)	Rear Park Lamp Out Output
135 (Y/R)	Brake Lamp Out Output
102 (W)	Right Park Lamp Sense
5 (O/LB)	Right Brake Lamp Reference
105 (R/W)	Right Brake Lamp Sense
33 (W/PK)	Bulb Proveout Input
13 (R/BK)	Headlamp Reference
14 (BR)	Rear Park Lamp Reference
57 (BK)	Ground
9 (LG/O)	Left Brake Lamp Reference
103 (W/R)	Left Rear Park Lamp Sense
104 (LB/O)	Left Brake Lamp Sense



C2007

LIGHT SENSOR/AMPLIFIER

C2008, Low Oil Level Relay



C2008

LOW OIL LEVEL RELAY
(ANALOG CLUSTER ONLY)