

Objective

- Using a chart of ETM icons, name each image.
- Using an ETM without labels, write in the illustration names.
- Using an ETM identify connectors, connector views and cavity locations.

Why This Module is Important

The ETM identifies and explains all the electrical systems on Honda and Acura automobiles. Without a clear understanding of ETM symbols and design, technicians cannot efficiently repair the vehicle.

Module Overview

In this module you will identify the location of electrical components on five ETM schematics. You will also answer questions specific to ETM design and content.

What You Will Need

- Job Aid A.
- Job Aid B.
- Instructor assigned 2012 Accord or 2012 TSX.



Decision Point

If you feel you can demonstrate the skills as outlined in the Module Objectives, see your instructor for on-the-job skills validation. This may require hands-on demonstrations for your instructor.

Otherwise, proceed with the module.

Getting Started

1. See your instructor for your assigned vehicle.
2. Throughout the module, a box designates the required activities.
3. Gather all of the items listed in the **What You Will Need** section.
4. Work on one Skill Objective at a time.
5. Fill in ALL blanks as you complete each Skill Objective.
6. Move to the next Skill Objective after you have completed the current Objective.



How to Read a Schematic

Job Aid A

How to read ETM Symbols

Do not proceed until you read this material.

Symbols

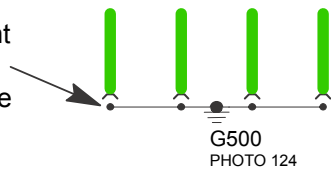
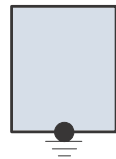
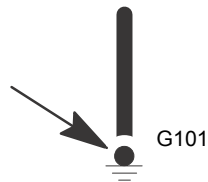
Ground - "G"

This symbol means the end of the wire is attached (grounded) to the car frame or to a metal part connected to the frame.

Each wire ground (G) is numbered for reference.

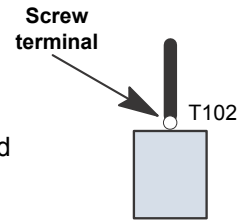
This ground symbol (dot and 3 lines) overlapping the component means the housing of the component is grounded to the car frame or to a metal part connected to the frame.

This symbol represents the bus bar inside a ground connector. The dots represent tabs on the bus bar that the wire terminals connect to. The ground symbol (large dot) is the connection between the bus bar and metal (grounded) part of the car.



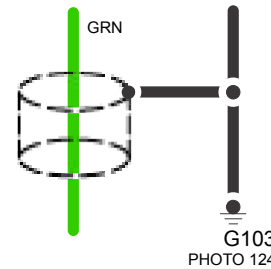
Terminals- "T"

Each 'T' terminal (ring type) is numbered for reference and location. A "T" terminal is secured with a screw or bolt.



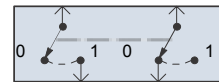
Shielding

This represents RFI (Radio Frequency Interference) shielding around a wire.

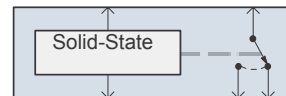


Relay & Switch

These switches move together; the broken straight line between them means they are mechanically connected.

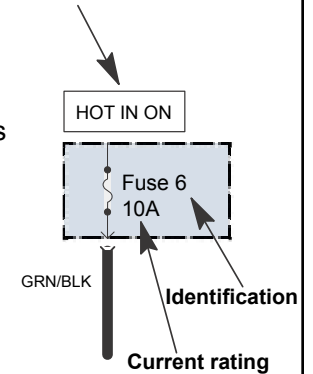


Other types of switches are controlled by a coil or a solid state circuit. Unless otherwise noted, all switches are shown in their normal (rest) position, with power off.



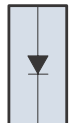
Fuses

This means power is supplied when the ignition switch is in ON (II).

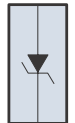


Diodes

A rectifier diode works like a one way valve. It allows current to flow only in the direction of the arrow.



A Zener diode blocks reverse current at normal voltages just like a rectifier diode. At high voltages, however, a Zener diode allows current to flow in reverse.



How to Read a Schematic

Job Aid A

Symbols

Light Emitting Diode (LED)

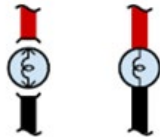
LED's are special diodes that emit light when connected in a circuit. LED's work the same as a rectifier diode by allowing current to flow only in one direction.



Light

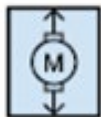
Light Sockets have two methods of wiring:

1. They can be wired to a connector, which then hooks up to the socket.
2. They can be hardwired directly to the socket.



Motor

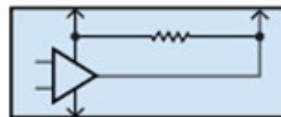
This symbol represents a DC voltage electrical motor. Motors can reverse direction by changing the polarity of the voltage.



Pressure Sensor

A variable resistor used to monitor the difference in pressure between the intake manifold and outside atmosphere (Map Sensor). This information is used by the engine computer to monitor engine load (vacuum drops when the engine is under load or at wide open throttle). When the engine is under load, the computer alters spark timing and the fuel mixture to control performance and emissions.

NOTE: There is also a FTP (Fuel Tank Pressure) Sensor used to monitor EVAP System testing.



Resistor

This symbol represents a component in electrical circuits that resists the flow of electrical current. Resistance is measured in Ohms. Higher resistance results in less current flow. This type of resistor has a fixed resistance value.



Variable Resistor

This symbol represents a component in electrical circuits that resists the flow of electrical current. Resistance is measured in Ohms. Higher resistance results in less current flow. This type of resistor (thermistor) has a variable resistance value that changes with temperature. The resistance of a thermistor decreases as temperature increases.



Solenoid

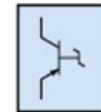
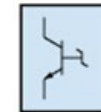
This symbol represents a solenoid that creates movement using electromagnetic force. The electromagnet uses windings around an iron core to move a component or close a switch contact.



Transistors

Transistors are electrical devices that have two key properties:

1. they can amplify an electrical signal.
2. they can switch ON and OFF, letting current through or blocking it as necessary.



How to Read a Schematic

Job Aid A

Symbols

Wire Color Abbreviations

The following abbreviations are used to identify wire colors in the circuit schematics:

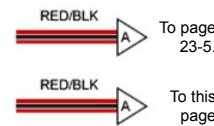
BLK	black
BLU	blue
BRN	brown
GRN	green
GRY	gray
LT BLU	light blue
LT GRN	light green
NAT	natural
ORN	orange
PNK	pink
PUR	purple
RED	red
WHT	white
YEL	yellow

Wires

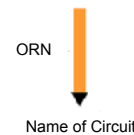
Wire insulation can be one color, or one color with another color stripe. (The second color is the color of the stripe)



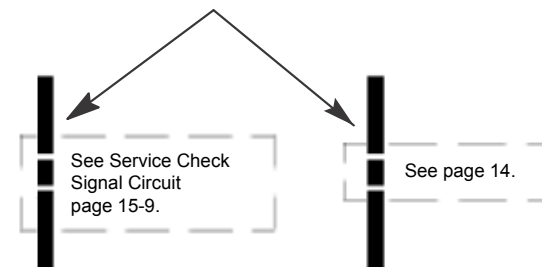
This circuit continues on another page or at a different location on the same page. The arrow shows direction of current flow. To follow the RED/BLK wire in these examples, you would look for the "A" arrow on page 23-5 or on the same page.



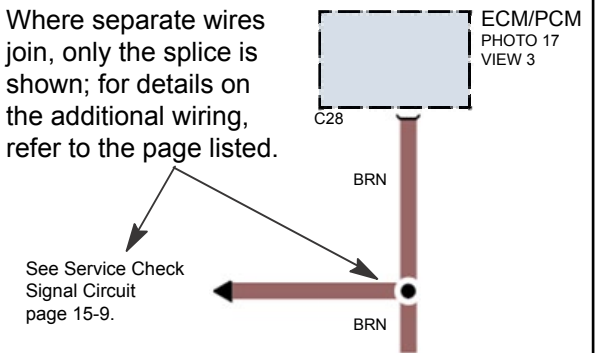
This means the branch of the wire connects to another circuit. The arrow points to the name of the circuit branch where the wire continues.



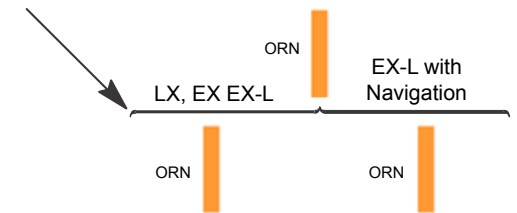
A broken line means this part of the circuit is not shown; refer to the page listed for the complete schematic.



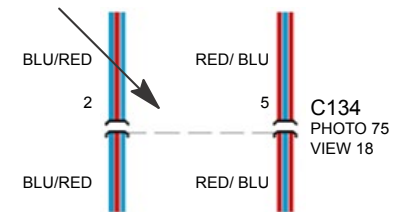
Where separate wires join, only the splice is shown; for details on the additional wiring, refer to the page listed.



Wire choices for options or different models are labeled and shown with a "choice" bracket like this.



This broken line means that both terminals are in connector C134.

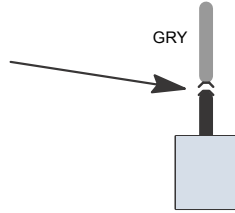


How to Read a Schematic

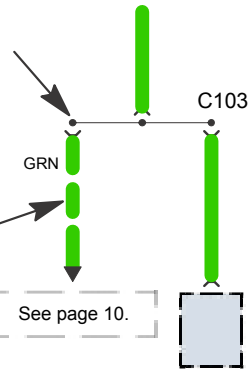
Job Aid A

Symbols

This means the connector connects to a lead (pigtail) wired directly to the component.



This symbol represents one bus bar inside the cap of a junction connector. A junction connector cap may contain several bus bars, but only the one affecting that circuit will be shown. The dots represent tabs on the bar that the wire terminals connect to.

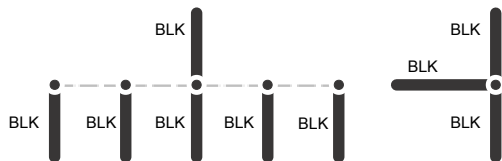


Remaining wires to the same bus bar are represented by a broken line.

See page 10.

Splices

Splices are shown as a dot. Their location and the number of wires may vary depending on the harness manufacturer.



Components

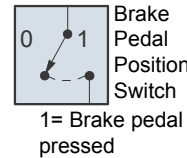
A solid border line means the entire component is shown.



A broken border line indicates that only part of the component is shown.



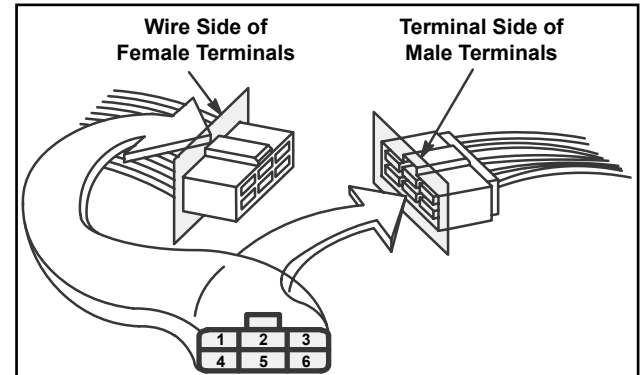
The name of the component appears next to it followed by notes about its function along with any photo and connector view references.



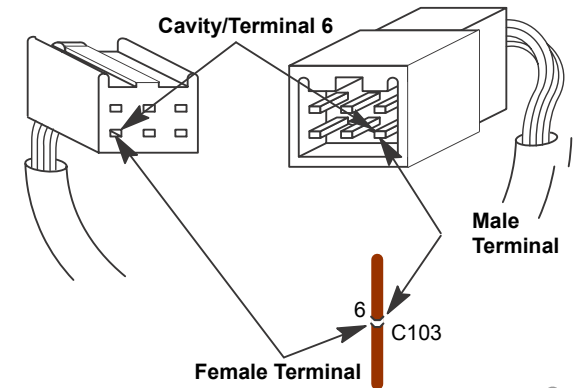
Connectors - "C"

The cavities and wire terminals in each connector are numbered starting from the upper left (locking tab up), looking at the male terminals from the terminal side or looking at the female terminals from the wire side. Both views are in the same direction so the numbers are the same. The gender of the connector is determined by the pins within the connector. All cavities are numbered, even if they have no wire terminals in them.

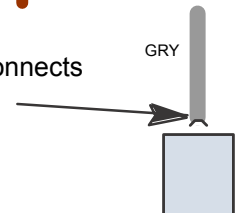
NOTE: DLC terminals are numbered according to SAE standard J1962, not the Honda standard. The numbers of the four end terminals are molded into the corners of the connector face.



The connector cavity number is listed next to each terminal on the circuit schematic. The cavity/terminal shown below is #6.



This means the connector connects directly to the component.



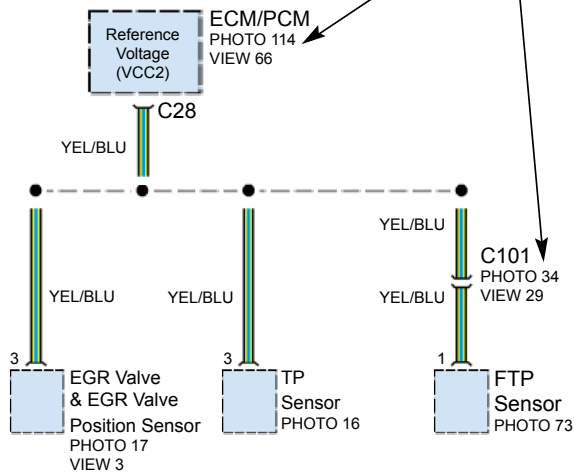
How to Read a Schematic

Job Aid A

Connector Locations

To see where a component or connector is located on the vehicle, look up its photo number in the Component Location section that begins on page 201. The photo also will tell you the color of the connector, and how many cavities it has.

To see where connectors and parts are located, look up their photos in the Component Location section that begins on page 201.



If there is no photo number below or beside a component name or a connector, ground, or terminal number, look up that name or number in the appropriate Connector to Harness Index chart, beginning on page 203.

The chart lists how many cavities a connector has, where it is located, and what it connects to. The related illustration shows the connector's location on the harness, and the harness routing.

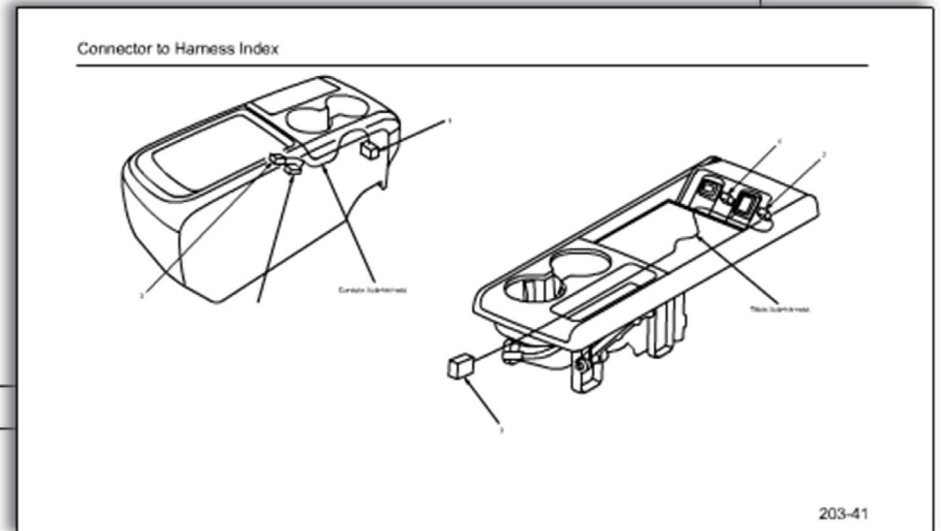
Connector to Harness Index

Console Sub-harness

Ref	Connector or Terminal	Color/Color	Location	Connects to	Notes
1	Auxiliary Jack Assembly	5-GRN	Under center console		
2	Console Accessory Power Socket	3-BLK	Under center console		
3	CS&S Brake	25-WHT	Front of center console	Floor wire harness (see page 203-22)	

Table Sub-harness

Ref	Connector or Terminal	Color/Color	Location	Connects to	Notes
1	Auxiliary Jack Assembly	5-GRN	Under table		
2	Console Accessory Power Socket	3-BLK	Under table		
3	CS&S Brake	8-WHT	Under front passenger's seat	Floor wire harness (see page 203-22)	



How to Read a Schematic

Job Aid A

Circuit Schematics

Each schematic represents one circuit. A circuit's wires and components are arranged to show current flow, from power at the top of the page, to ground at the bottom.

Shared Circuits

Other circuits may share power or ground terminals or wiring with the circuit shown. A wire that connects one circuit to another, for example, is cut short and has an arrowhead at the end of it pointing in the direction of current flow. Next to the arrowhead is the name of the circuit or component which shares that wiring. To quickly check shared wiring, check the operation of a component it serves. If that component works, you know the shared wiring is OK.

Connectors

All in-line and junction connectors are numbered (C725, C416, etc.). Component connectors are not numbered but are identified either by the name of the component if the component only has one connector, or by a capital letter (A, B, C, etc.) if the component has more than one connector.

Below most connector numbers and component names are PHOTO and VIEW numbers. The PHOTO number refers to a photograph in section 201 of this book that shows the connector's location on the vehicle. The VIEW number refers to an illustration in section 202 of this book that shows the connector terminals, wire colors, connector cavity numbers, and other details.

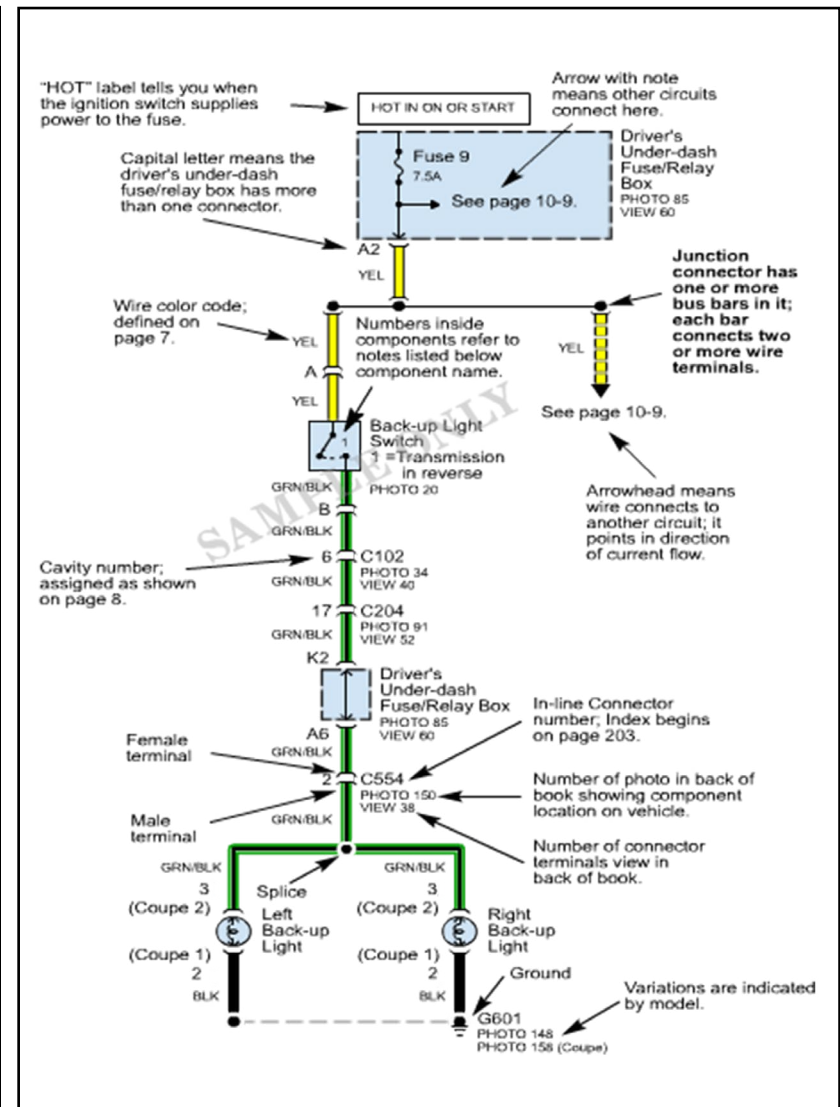
The connector cavity numbering sequence begins at the top left corner of the connector as seen from either of the viewpoints shown on page 8. Except for the DLC (data link connector), disregard any numbers molded into the connector housing.

Wires

Wires are identified by the abbreviated names of their colors; the second color is the color of the stripe. Wires also are identified by their location in a connector. The number "2" next to the male and female wire terminals at C554, for example, means those terminals join in cavity 2 of connector C554.

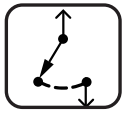
Symbols

A complete description of schematic symbols begins on page 7.

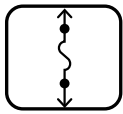


ETM Images

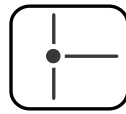
Job Aid A



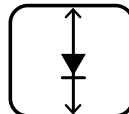
Switch



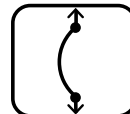
Fuse



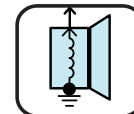
(Wire) Splice



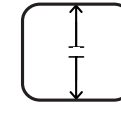
Diode



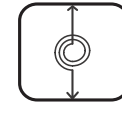
Circuit Breaker



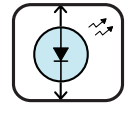
Horn



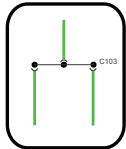
Capacitor



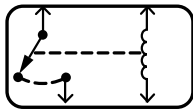
Cable Reel
(Clockspring)



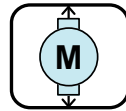
Light Emitting
Diode



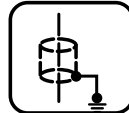
Junction
Connector



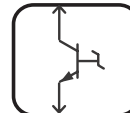
Relay



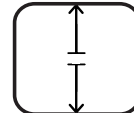
Motor



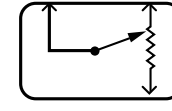
RFI Shield



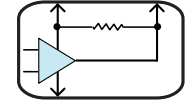
Transistor



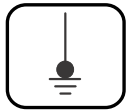
Capacitor



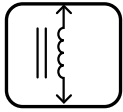
Variable Resistor



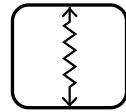
Pressure Sensor



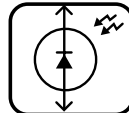
Ground



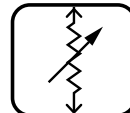
Solenoid



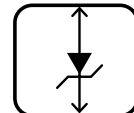
Resistor



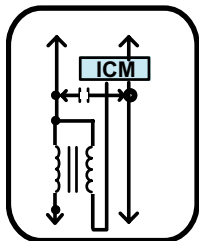
Light Sensing
Diode



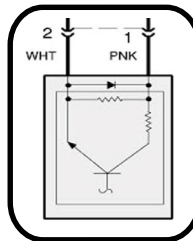
Thermistor/
Temp Sensor



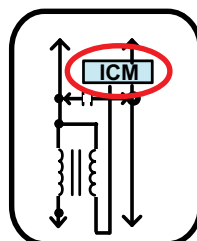
Zener Diode



Ignition Coil



Wheel
Speed
Sensor

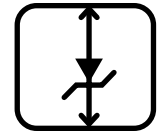
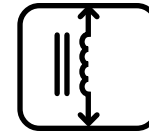
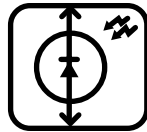
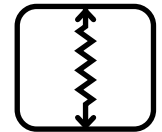
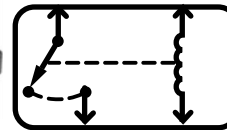
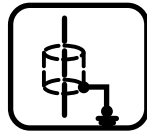
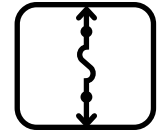
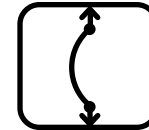
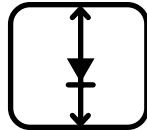


Integrated
Chip

Knowledge Check

Write the name of each ETM image in the space provided.

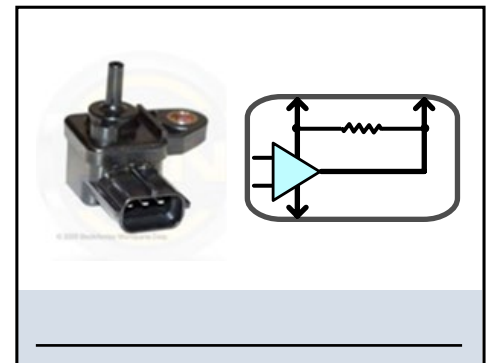
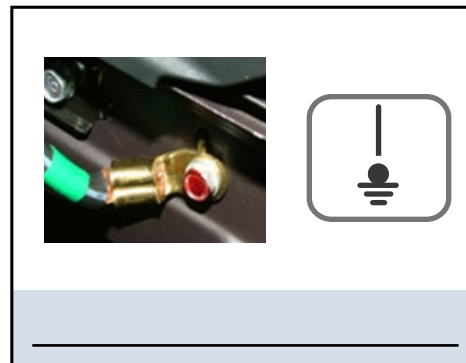
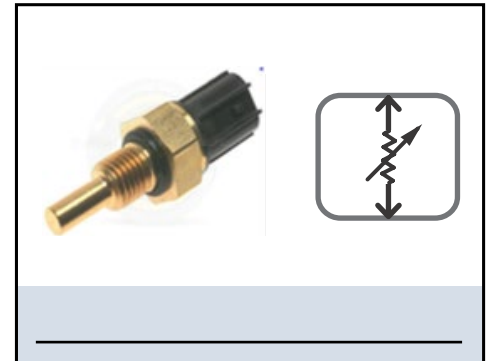
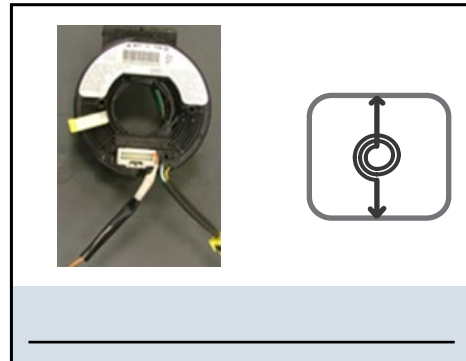
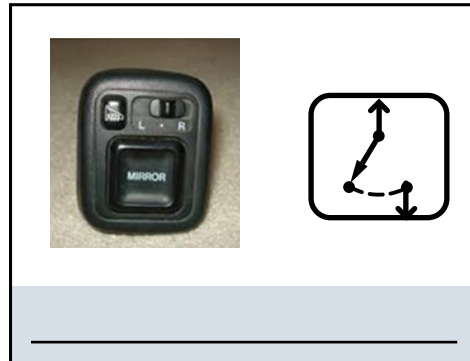
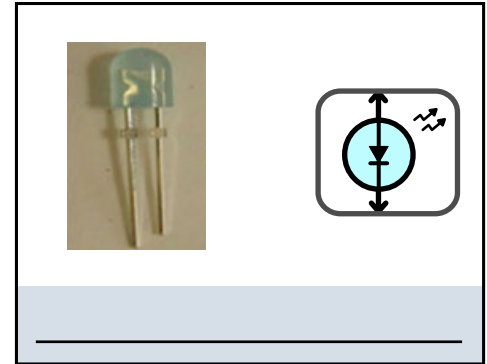
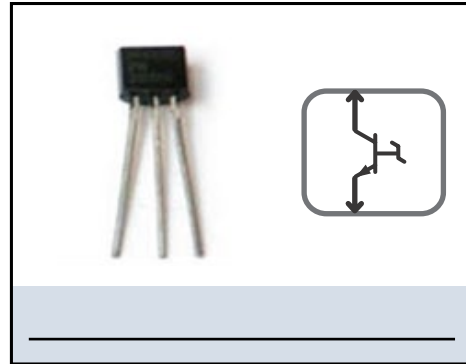
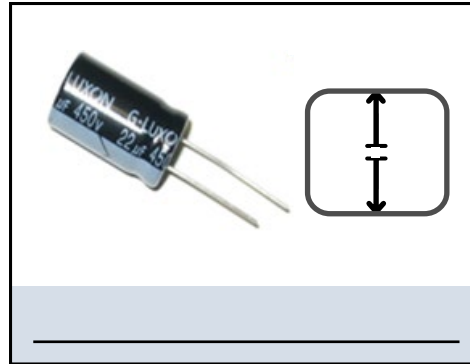
If needed, consult the ETM symbol poster in your Training Center and "Job Aid A."



Knowledge Check

Write the name of each ETM image in the space provided.

If needed, consult the ETM symbol poster in your Training Center and "Job Aid A."

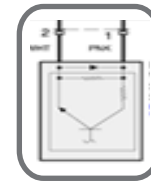


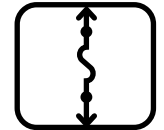
Knowledge Check

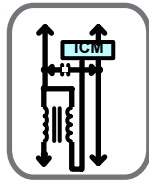
Write the name of each ETM image in the space provided.

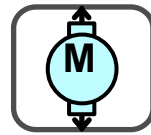
If needed, consult the ETM symbol poster in your Training Center and "Job Aid A."

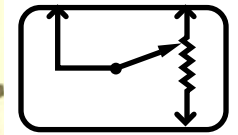


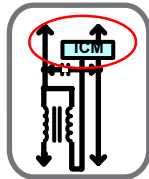




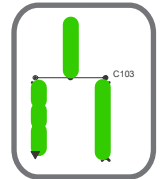












Knowledge Check

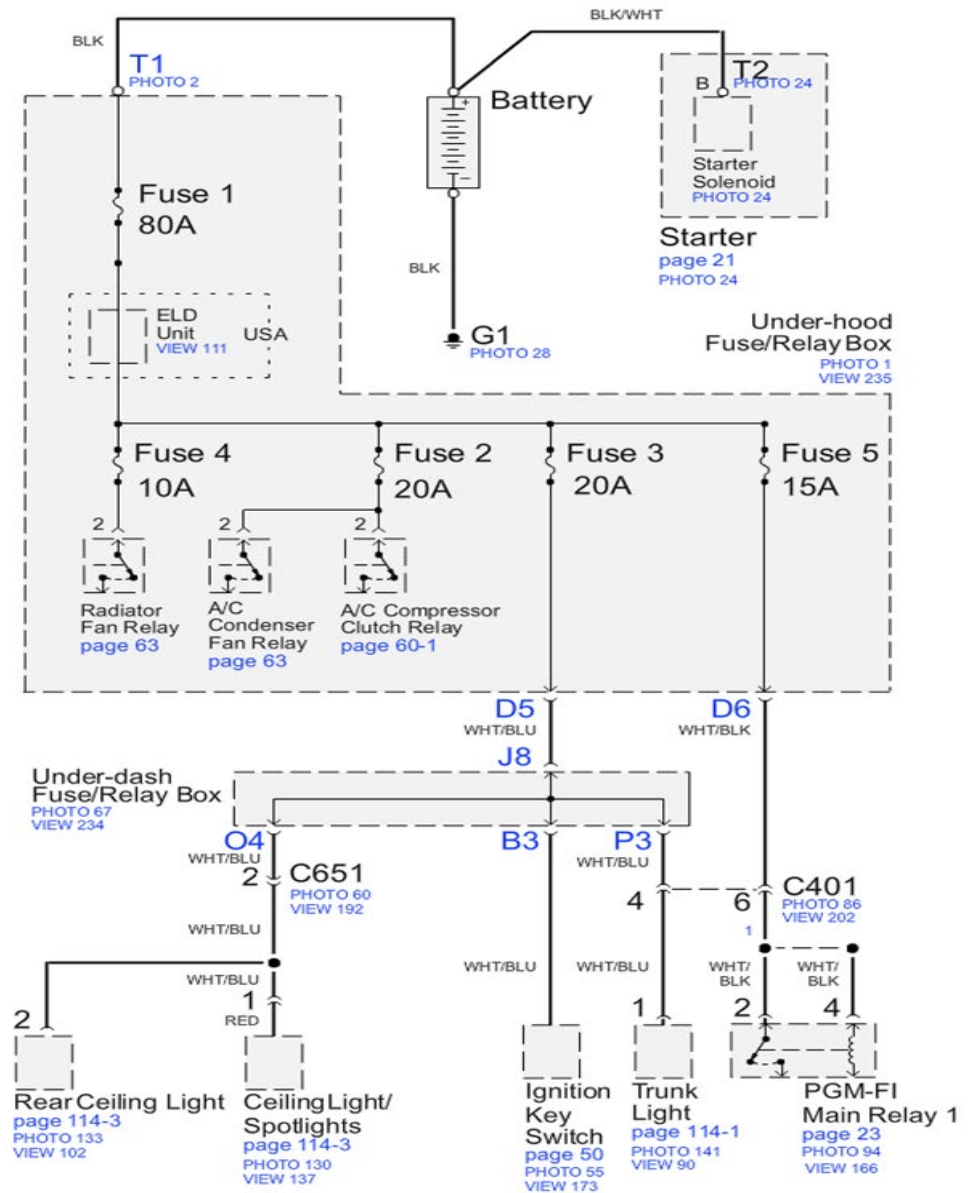
Use the schematic to answer the following knowledge check questions.

1. Locate Terminal T1.
What type of terminal is T1?

2. Locate connector D.
What component includes connector D?

3. Locate connector J.
What component includes connector J?

4. Locate connector P.
What component includes connector P?

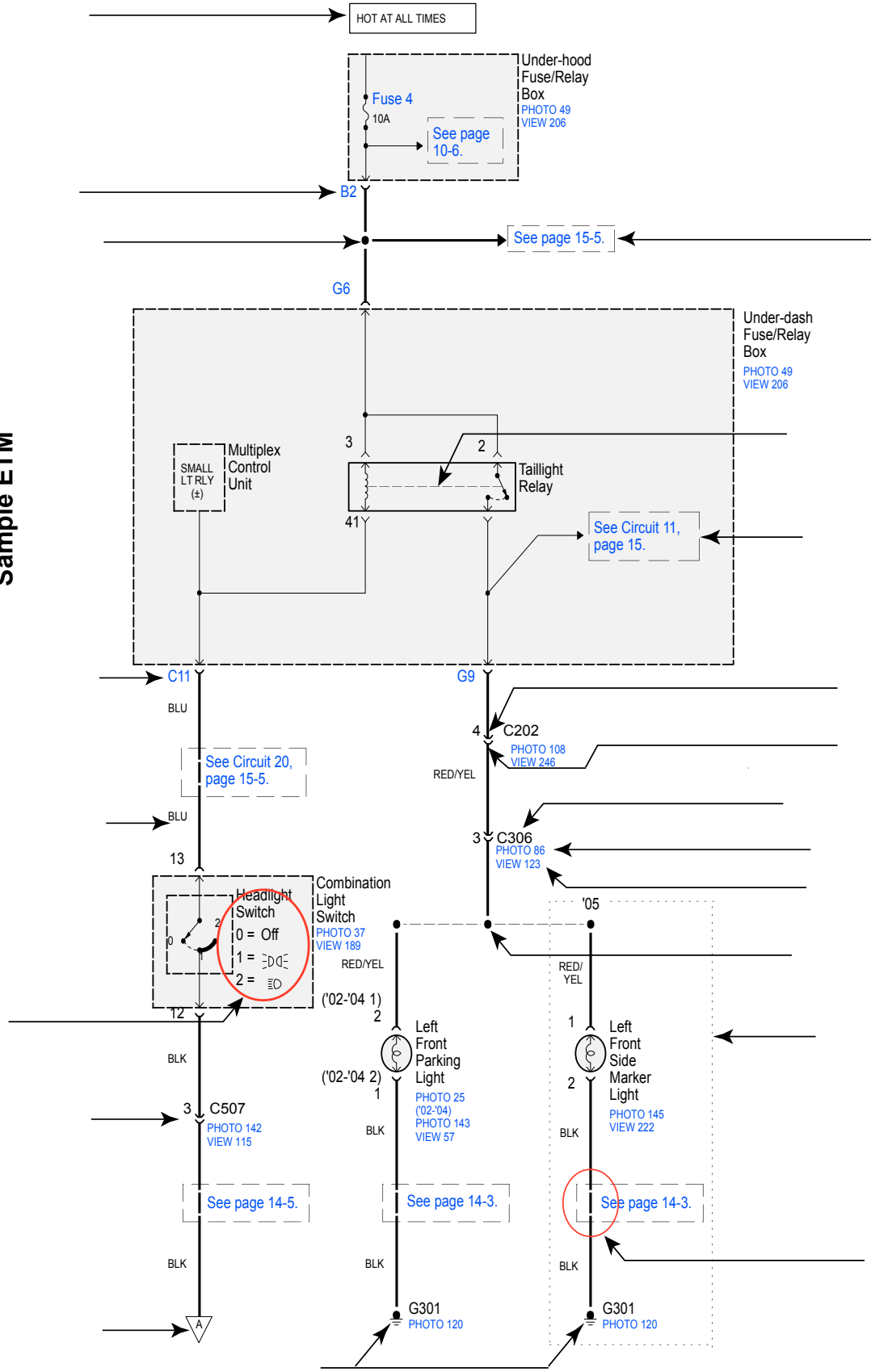


Knowledge Check

Using the Sample ETM, write in the name of each part in the space provided.

Refer to Job Aid A and the self study modules ELC23 "Using the ETM" and ELC27 "Reading a Circuit Schematic".

Sample ETM



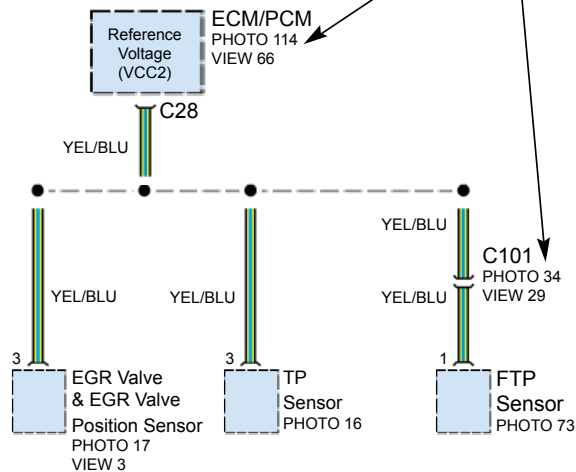
How to Read Connector Views

Job Aid B

Connector Locations

To see where a component or connector is located on the vehicle, look up its photo number in the Component Location section that begins on page 201. The photo also will tell you the color of the connector, and how many cavities it has.

To see where connectors and parts are located, look up their photos in the Component Location section that begins on page 201.



If there is no photo number below or beside a component name or a connector, ground, or terminal number, look up that name or number in the appropriate Connector to Harness Index chart, beginning on page 203.

The chart lists how many cavities a connector has, where it is located, and what it connects to. The related illustration shows the connector's location on the harness, and the harness routing.

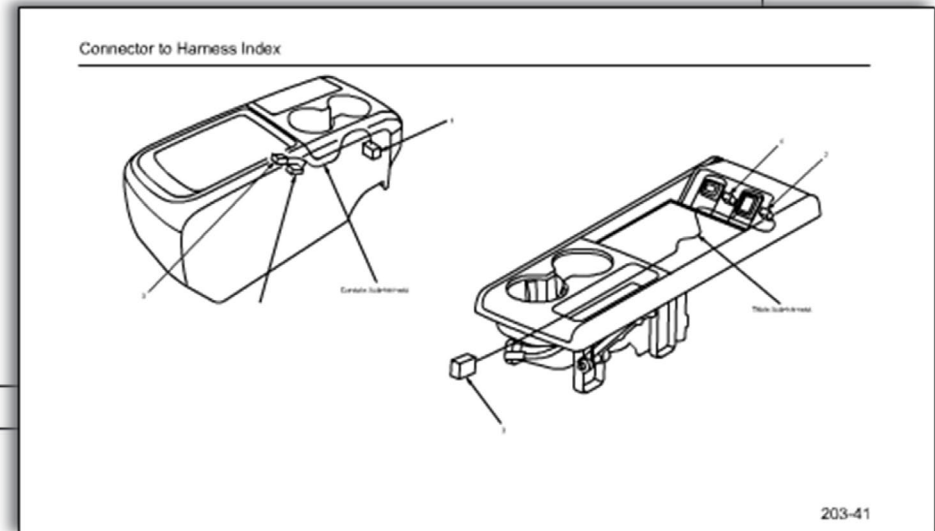
Connector to Harness Index

Console Sub-harness

Ref	Connector or Terminal	Color/Color	Location	Connects to	Notes
1	Auxiliary Jack Assembly	5-GRN	Under center console		
2	Console Accessory Power Socket	3-BLK	Under center console		
3	CS&S Brake	25-WHT	Front of center console	Floor wire harness (see page 203-22)	

Table Sub-harness

Ref	Connector or Terminal	Color/Color	Location	Connects to	Notes
1	Auxiliary Jack Assembly	5-GRN	Under table		
2	Console Accessory Power Socket	3-BLK	Under table		
3	CS&S Brake	8-WHT	Under front passenger's seat	Floor wire harness (see page 203-22)	



How to Read Connector Views

Job Aid B

Connector Terminal Views

To see the configuration of a connector's cavities, look up its view number in the Connector Terminal Views section that begins on page 202. Each view includes the color of the connector, where it is located, and what it connects to.

Use the connector views to help locate the proper cavity when you need to test a connector. It can be especially helpful if the connector has more than one wire of the same color. A dash symbol (-) indicates that the cavity is empty. The connector views can also be used to help diagnose multiple symptoms in separate circuits that could be caused by a single problem in a connector shared by those circuits.

Here is how:

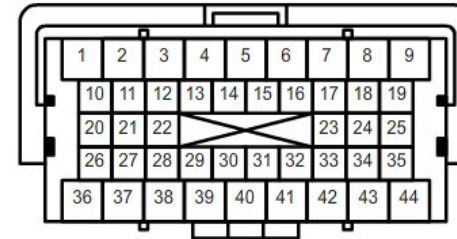
1. Pick one of the multiple symptoms and look up the schematic for that circuit.
2. Make a list of all of the in-line and fuse box connectors in that schematic (include page numbers).
3. Then, in the Connector Terminal Views section, look up each connector on your list to see if circuits related to the other symptoms run through one of them. If they do, inspect that connector for the problem.

Example: The blower, rear window defogger, and the windshield wiper do not work. List all in-line and fuse box connectors in the blower controls circuit, and then check the Connector View section (sample at right). You find that C324 is common to the rear window defogger circuit and wiper/washer circuit, so you inspect C324 and find the problem, damaged terminals.

Connector Terminal Views

25. ECM/PCM Power and Ground

- BLK
- Right side of engine compartment



Connector A

- On right engine compartment wire harness

1. RED {CANL}	12. BLU/BLK {ATPP}	26. 2WD: YEL/BLK (CKPOUT)	39. --
2. WHT/RED {SLS}	13. --	27. 2WD: PUR (CMP OUT)	40. --
3. 2WD: PNK {CSSAM}	14. RED	28. BLU (NEP)	41. BLU/RED {ACS}
4. BLU {FANL}	15. --	29. BLU/WHT {VSSOUT}	42. RED/WHT
5. GRN {FANH}	16. --	30. --	2WD: (WEN)
6. BLK/WHT	17. ORN/BLK {APSA}	31. BRN (SCS)	4WD: (WEN)
2WD: (MRLY)	18. YEL {APSB}	32. --	43. GRY (K-LINE)
4WD: (MRLY)	19. YEL/BLU	33. LTGRN	44. RED/GRN (IM OCD)
7. GRY {BKSWNC}	20. BRN/RED {ETCSRLY}	2WD: (FTP)	
8. WHT/BLK {BKSW}	21. ORN {AFSHTCR}	4WD: (FTP)	
9. GRN/YEL	22. BRN/YEL	34. BLK (SG3)	
2WD: {ACC}	23. GRN/RED (ELD)	35. RED/YEL (SG4)	
4WD: (ACC)	24. GRN (VCC3)	36. WHT (CANH)	
10. LTGRN/WHT	25. WHT (VCC4)	37. --	
2WD: (VSV)		38. GRN/WHT	
4WD: (VSV)		2WD: (PSPSW)	
11. GRN/YEL		4WD: (PSPSW)	
2WD: (IMOFPR)			
4WD: {IMOFPR}			

How to Read Connector Views

Job Aid B



ServiceNews Article

Helping you fix it right the first time - every time

March 2009

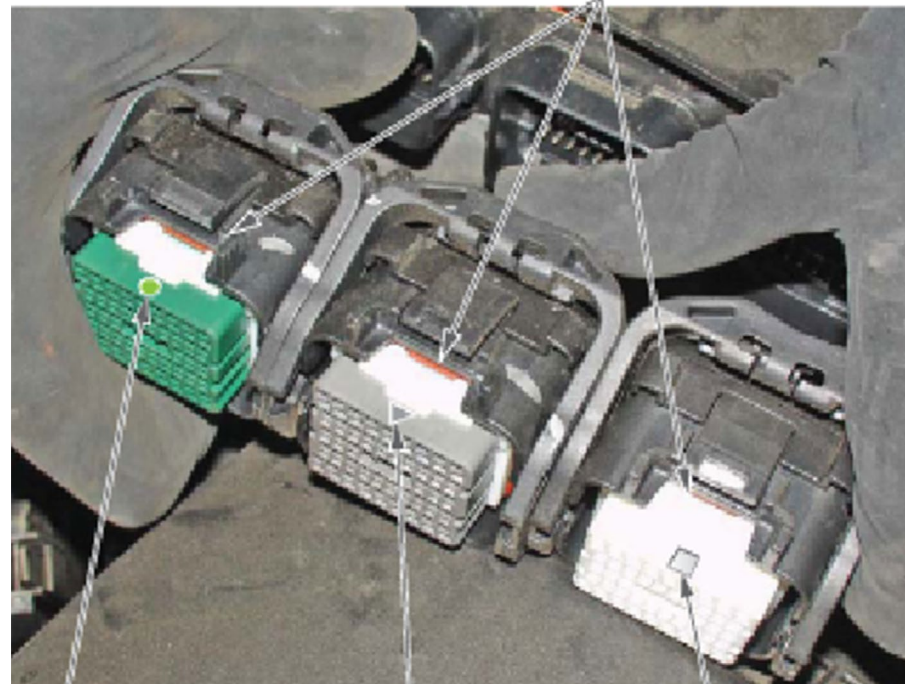
Embossed Shapes Make Identifying ECM/PCM Connectors Easy

Currently Applies To: '08 and later Accord, '06 and later Civic, '09 and later Fit, '05 and later Odyssey, '05 and later Pilot, and '06 and later Ridgeline.

ECM/PCM connectors are now embossed with geometric shapes so you can easily tell them apart when you're troubleshooting or replacing the ECM/PCM. Connector A gets a square, connector B gets a triangle, and connector C gets a circle.

These shapes are on both the ECM/PCM side and the electrical harness side of the connectors. Here's what they look like on the harness side:

HARNESS SIDE OF CONNECTORS



Connector C is embossed with a circle.

Connector B is embossed with a triangle.

Connector A is embossed with a square.

Skill Objective 1

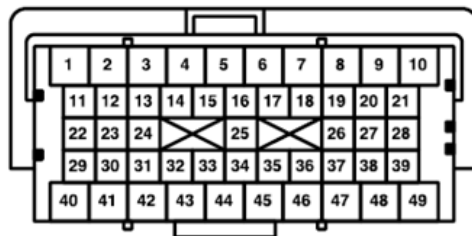
Using an assigned 2012 Accord (4 cylinder) or 2012 TSX complete the following skills.

1. Using Service Information, identify the harness connector located between the Brake Pedal Position Switch and the brake lights.
2. Print the connector location photo, and be prepared to show your instructor the connector on the vehicle.
3. Be prepared to show your instructor the location of cavity 6 in this connector.
4. Using the information from the Service News article (previous page) and Service Information, locate the following wire cavities in the ECM/PCM connector.

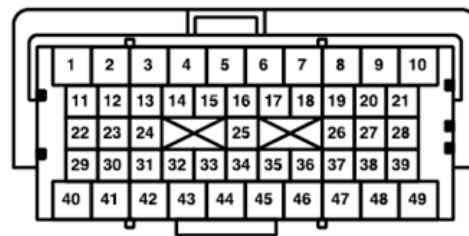
Intake Air Temperature (IAT)

Place an "X" in the appropriate PCM connector and cavity location below.

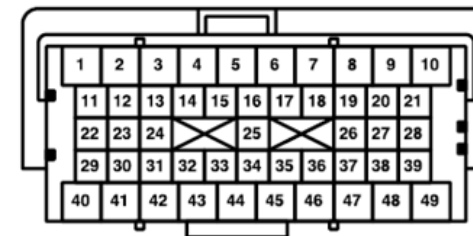
- _____ Connector Letter
- _____ Embossed Geometric Shape
- _____ Connector Color
- _____ Cavity Number



Connector A



Connector B



Connector C

Tech Note: Sealed PCM connectors are shown from the Terminal side of the female terminals.

