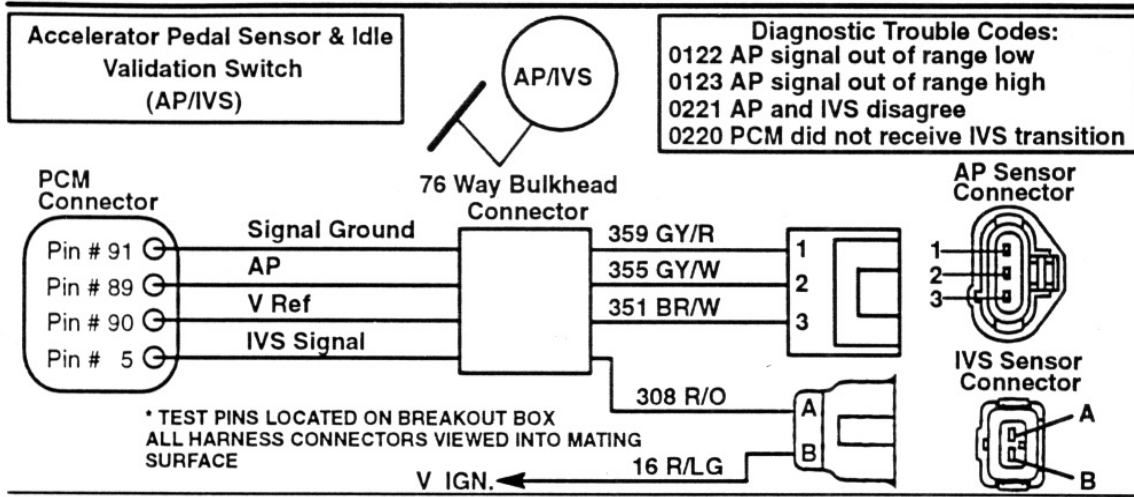


1. Lateral (right to left) weight distribution must be within \_\_\_\_\_ percentage.
  - A. 1
  - B. 5
  - C. 10
  - D. 15
  
2. The battery cables have been disconnected on a Ford ambulance. Technician A says: The PCM's (Power Control Module) memory will be temporarily lost. Technician B says: Abnormal transmission shifting may occur for several miles. Who is correct?
  - A. Technician A
  - B. Technician B
  - C. Both A and B
  - D. Neither A nor B
  
3. The main on-board oxygen system must be capable of delivering oxygen at 50 psi (+/-2) from the regulator mounted on the bottle connection at the minimum rate of \_\_\_\_\_ liters per minute.
  - A. 50
  - B. 75
  - C. 100
  - D. 125
  
4. A technician is installing a cot mount on an ambulance. Technician A says: The cot must be positioned at least 10 inches (25 cm) from the rear doors. Technician B says: The cot must be positioned at an equal distance from the attendant seat and the rear doors. Who is correct?
  - A. Technician A
  - B. Technician B
  - C. Both A and B
  - D. Neither A nor B
  
5. Using the Figure on next page, a diagnostic trouble code of 0122 is set. One of the tests that would be used to diagnose the problem would be:
  - A. voltage check between A (wire 308 R/O) and ground
  - B. voltage check between pin #5 (on PCM) and A (wire 308 R/O)
  - C. voltage check between 3 (wire 351 BR/W) and ground
  - D. voltage check between pin 5 (on PCM) and 3 (wire 351 BR/W)

# ELECTRONIC CONTROL SYSTEM DIAGNOSTICS



**Connector Checks to Ground (B-)**  
 (Check with Sensor Connector Disconnected and Ignition key off, all accessories off)

Test Points	Spec.	Comments
1 to Grd.	< 5 ohms	Resistance to grd. (B-) check w/key off, > than 5 ohms harness is open. -AP sig. Grd.
2 to Grd.	> 1000 ohms	Resistance less than 1000 ohms indicates a short to ground. -AP signal.
3 to Grd.	> 1000 ohms	Resistance less than 1000 ohms indicates a short to ground. - AP VRef
A to Grd.	> 1000 ohms	Resistance less than 1000 ohms indicates a short to ground. -IVS signal

**Connector Voltage Checks (Check with Sensor Connector Disconnected and Ignition Key On)**

Test Points	Spec.	Comments
1 to Grd.	0 - .25 volts	Signal ground no voltage expected.
2 to Grd.	0 - .25 volts	If greater than .25 volts signal circuit is shorted to V Ref or battery. -AP signal.
3 to Grd.	5 ± .5 volts	VRef check key on, if VRef not present check open/short to grd #91 to B, see VRef circuit.
A to Grd.	0 - .25 volts	If greater than .25 volts signal ground wire is shorted to V Ref or battery.
B to Grd.	12 ± 1.5 volts	< 10.5 v check for poor connection, 0 v check for open/short to grd circuit or blown fuse.

**Harness Resistance Checks (Check with breakout box installed on engine harness only)**

Test Points	Spec.	Comments
#91 to 1	< 5 ohms	Resistance from 104 pin connector to harness connector - Signal Ground
#89 to 2	< 5 ohms	Resistance from 104 pin connector to harness connector - AP Signal
#90 to 3	< 5 ohms	Resistance from 104 pin connector to harness connector - V Ref
#5 to A	< 5 ohms	Resistance from 104 pin connector to harness connector - IVS Signal
V IGN. to B	< 5 ohms	Resistance from V IGN. power to harness connector

Position	Operational Voltage Checks (Check with breakout box installed key "ON")		Comments
	AP Test Points (+) #89 to (-) #91 Voltage	IVS Test Points (+) #5 to (-) #91 Voltage	
Low Idle	.37 to 1.4 V	< .25 volts	Minimum IVS transition point .2 volts above base idle voltage.
High Idle	3 to 4.5 V	12 ± 1.5 volts	Maximum IVS transition point @ 1.6v of AP signal

**Diagnostic Trouble Code Descriptions**

0122 AP signal was less than 0.37 volts for more than 0.5 seconds \*  
 0123 AP signal was greater than 4.56 volts for more than 0.5 second \*  
 0221 AP and IVS disagree \*  
 0220 PCM did not receive IVS transition  
 \* - IF FAULT CODE IS SET, ENGINE OPERATION WILL DEFAULT TO RUN AT LOW IDLE SPEED ONLY.