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ABSTRACT

This book of posttests is designed to accompany the Engine Tune-Up Service Student Guide for Unit 6, Emission Control Systems, available separately as CE 031 220. Focus of the posttests is inspecting, testing, and servicing emission control systems. One multiple choice posttest is provided that covers the seven performance objectives contained in the unit. (No answer keys are provided.) (YLB)

Written by David T. Morse and Theodore R. May

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POSTTEST
UNIT 6

Directions: Read the first question carefully. After selecting your answer, record the answer on your answer sheet in the space provided.

Next, turn to the question listed in parentheses at the end of your answer. For example, if your choice says (go to #14), you would answer question 14 next.

Each time you answer a question, be sure to write down on your answer sheet BOTH the question number and your answer. Continue working through the test until you reach the end.

You will be jumping from question to question, and will not have to answer all the questions.

DO NOT MARK ON THIS TEST.

1. **Situation:** You work as a tune-up specialist at a large dealership. For your first job of the day, the service manager has assigned you to work on a 1975 Plymouth Valiant. The owner does not want a complete tune-up, since the secondary wiring, distributor cap, and rotor have recently been replaced. However, the owner has complained of high fuel consumption, increased oil consumption, and generally poor performance. The engine is a 225 CID 6-cylinder with electronic ignition. The vehicle is equipped with an automatic transmission.

   You should first:

   a. Crank the engine to hear how it runs (go to #81)
   b. Hook up an engine analyzer (go to #52)
   c. Hook up an HC-CO tester (go to #35)
   d. Perform a spark intensity test at the coil (go to #70)
   e. Test the PCV valve (go to #133)
   f. Overhaul the carburetor (go to #62)
   g. Adjust the carburetor idle mixture and speed (go to #57)
   h. Replace the charcoal canister filter element (go to #235)
   i. Visually inspect the engine compartment (go to #47)

2. After the specified length of time, the battery voltage is 11.2 v. Now you should:

   a. Replace the battery (go to #178)
   b. Replace the ignition points and condenser (go to #209)
   c. Check the ignition bypass circuit (go to #161)
   d Charge the battery (go to #240)
   e. Check the engine timing (go to #5)

3. Next you should:

   a. Hook up an engine analyzer (go to #107)
   b. Hook up an HC-CO tester (go to #186)
   c Adjust the carburetor idle speed and mixture (go to #121)
   d. Replace the charcoal canister filter element (go to #157)

4. The federal automotive emissions standards are as follows:

Model years	Emission levels
1968-69	HC—275 ppm CO—1.5%
1970-71	HC—4.6 grams/vehicle mile CO—47 grams/vehicle mile
1972	HC—3.4 grams/vehicle mile CO—39 grams/vehicle mile
1973-74	HC—3.4 grams/vehicle mile CO—39 grams/vehicle mile NO_x—3.0 grams/vehicle mile
1975	HC—0.46 grams/vehicle mile CO—4.7 grams/vehicle mile NO_x—3.0 grams/vehicle mile

You should now:

a. Use the specifications HC: 275 ppm; CO: 1.5% (go to #181)
b. Use the specifications HC: 275 ppm; CO: 0.3% (go to #181)
c Use the specifications HC. .46 grams/vehicle mile, CO. 4.7 grams/vehicle mile (go to #189)
d. Check the vehicle emission control decal in the engine compartment (go to #71)
e. Check a technical service manual (go to #150)
f. Check the HC-CO tester manual (go to #84)

5. Here are the directions for timing this engine.

Ignition timing must be checked with the engine at specified hot (slow) idle speed with the transmission in neutral and the distributor vacuum advance hose disconnected and plugged at the distributor.

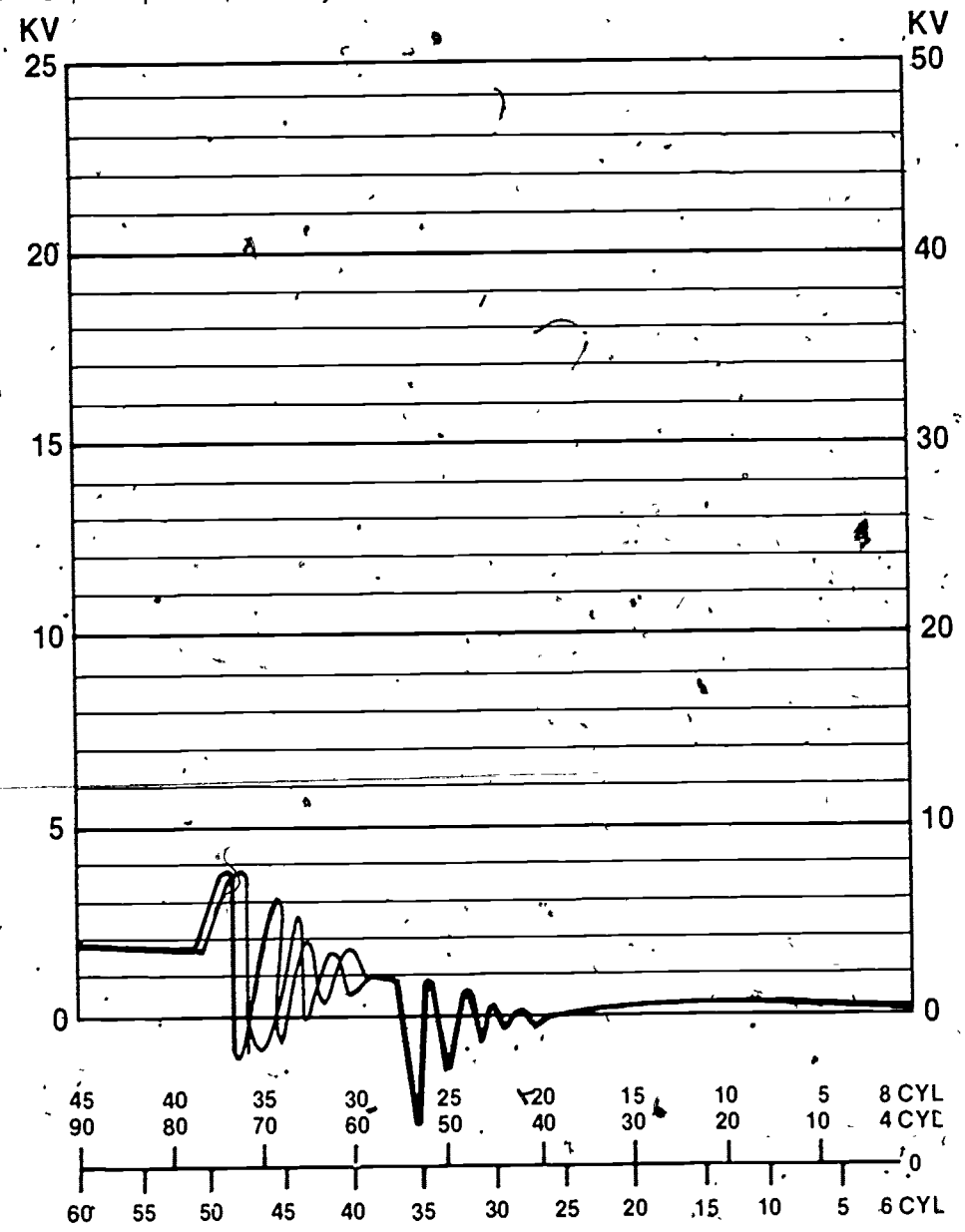
If you forgot to remove and plug the distributor vacuum advance hose, your timing readings would be:

a. More advanced than the proper reading (go to #82)
b. More retarded than the proper reading (go to #82)
c. Not different from the proper reading (go to #82)

6. After removing the carburetor from the engine and placing it on a stand, you should.

a. Remove the throttle body (go to #167)
b. Remove the choke linkage (go to #213)
c. Remove the main body (go to #152)
d. Remove the float bowl cover (go to #31)

7. Here is the superimposed pattern you obtain:



You should now.

a. Check the contact points for alignment (go to #209)
b. Check the PCV system (go to #133)
c. Check the exhaust emissions level (go to #35)
d Adjust the carburetor idle speed and mixture (go to #57)
e Check the spark plugs (go to #243)
f Check the secondary ignition circuit (go to #70)
g Overhaul the carburetor (go to #62)

8. What range on the HC-CO tester would you select?

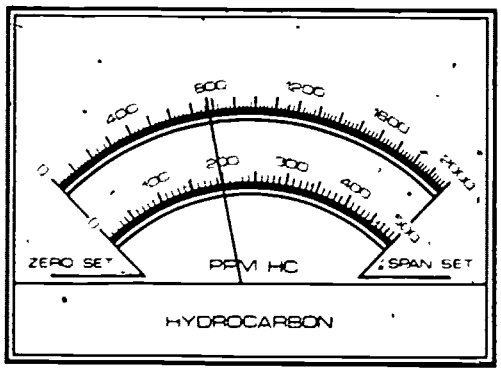
a. Low range (go to #206)
b High range (go to #95)

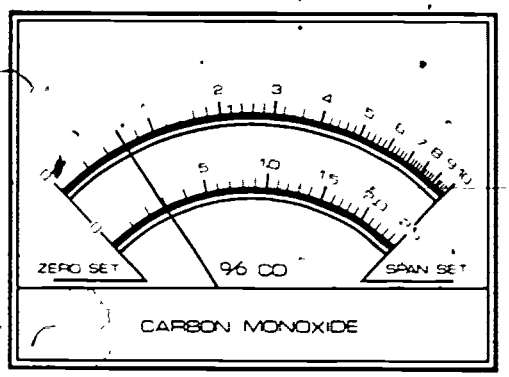
9. The proper adjustment of the distributor body to change the ignition timing from 0° to TDC is to turn the distributor body.
   a. In the same direction as the rotor rotation (go to #222)
   b. In the opposite direction of the rotor rotation (go to #26)

10. The technical service manual shows a specification of 0.3% CO No HC specification is given. Now you should
   a. Check the HC-CO tester operating manual (go to #226)
   b Check the emissions control decal in the engine compartment (go to #173)
   c. Ignore the HC reading and use the specification CO. 0 3% (go to #257)

11. No "higher" and "lower" speeds are listed in the technical service manual You should now
   a Use a speed drop of 80 RPM for adjusting the idle mixture (go to #222)
   b. Adjust the idle mixture for maximum RPM (go to #19)
   c Hook up an engine analyzer (go to #52)
   d. Hook up an exhaust gas analyzer (go to #35)
   e. Simply adjust idle speed and ignore the idle mixture (go to #26)

12. The HC-CO reading you obtain is (high scale selected)



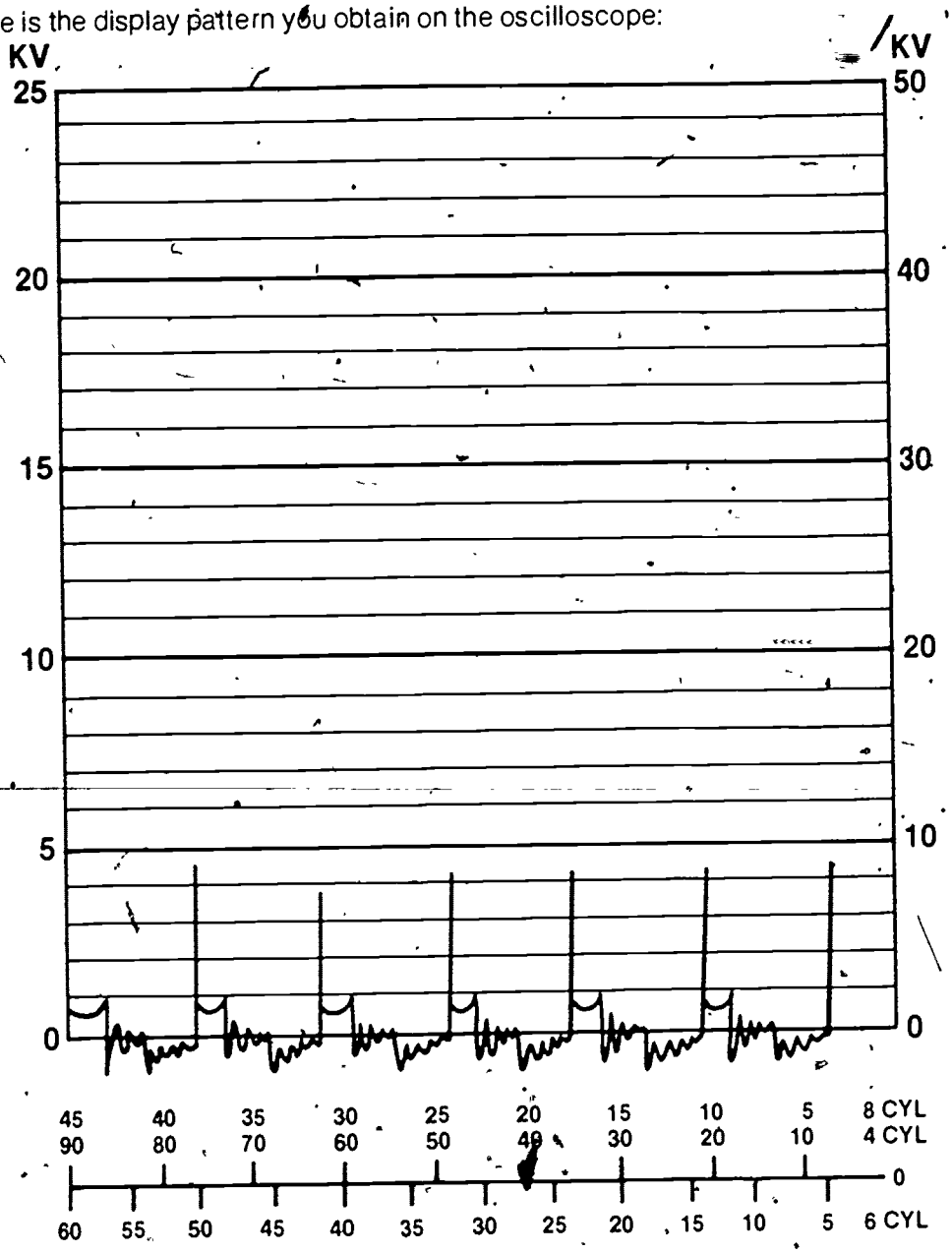


Now you should.
   a. Tell the service manager that you have finished the job (go to #279)
   b. Check the spark plugs (go to #149)
   c. Check the carburetor idle mixture (go to #211)
   d. Check the air cleaner (go to #261)

13. What other part of the automobile would you check?
   a. The ignition timing (go to #198)
   b. The carburetor (go to #62)
   c. The evaporative emissions control system (go to #180)
   d. The exhaust gas with an HC-CO tester (go to #35)
   e The engine performance with an engine analyzer (go to #73)

14. The tester operating manual refers you to the vehicle emission control decal for exact placement of the tester probe. You should now
   a Check the vehicle emission control decal (go to #205)
   b Insert the tester probe into the vehicle tail pipe (go to #222)
   c Insert the tester probe into the access plug in the exhaust pipe (go to #189)
   d. Insert the tester probe into the snorkel of the air cleaner assembly (go to #26)

15. Here is the display pattern you obtain on the oscilloscope:



You should now:

a. Check the engine compression (go to #64)
b. Check the PCV system (go to #188)
c. Check the air cleaner (go to #214)
d. Tell your service manager that you have finished the job (go to #279)

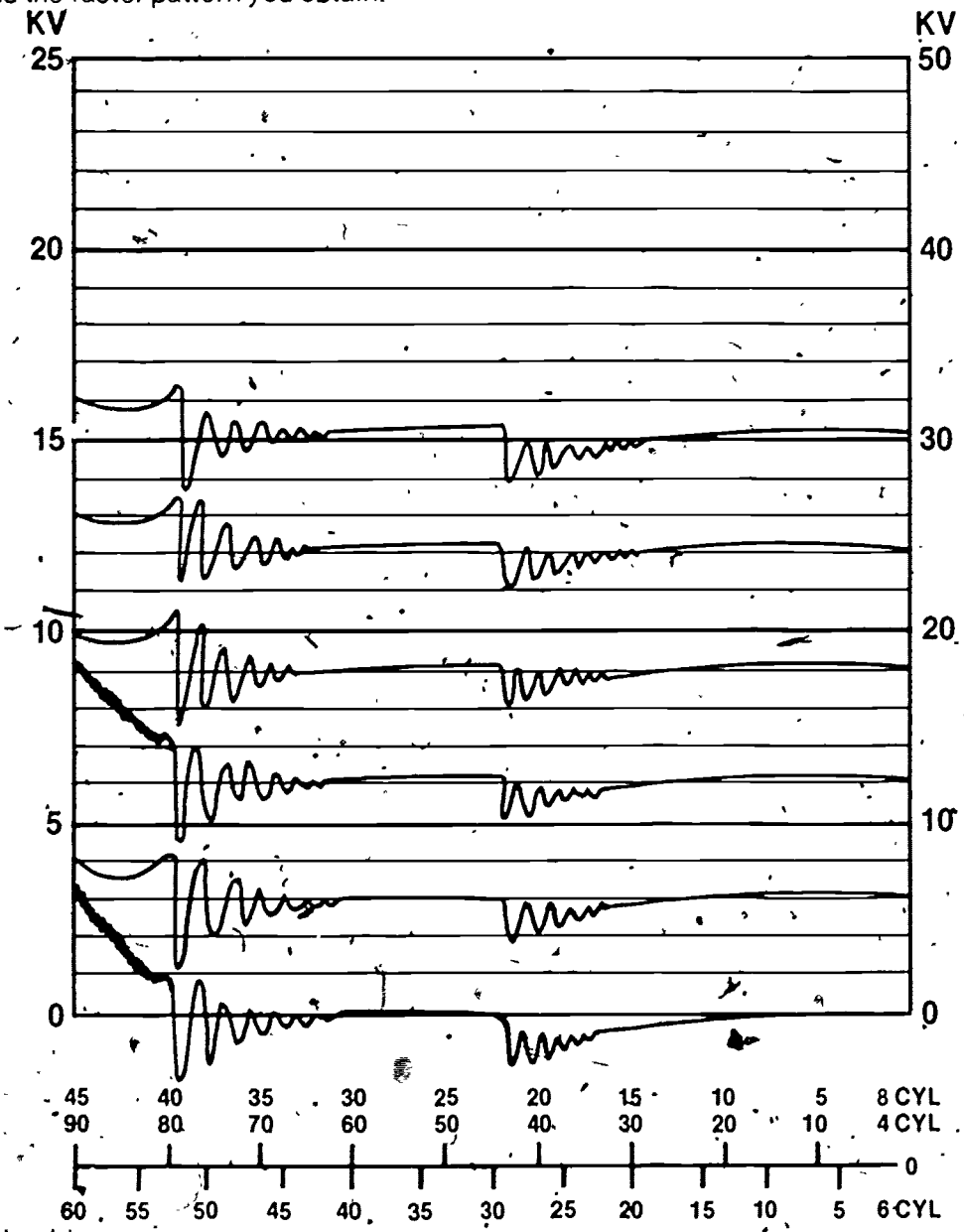
16. The engine idle RPM does not change after the hose is clamped off. You should now:

a. Clean the crankcase inlet air cleaner (go to #175)
b Replace the crankcase inlet air cleaner (go to #218)
c. Clean the PCV valve (go to #66)
d. Replace the PCV valve (go to #183)
e. Check another part of the automobile (go to #13)

17. The air pump is part of what emissions control system?

a. TIC (go to #222)
b. OSAC (go to #189)
c. PCV (go to #26)
d. AIR (go to #112)

18. Here is the raster pattern you obtain:



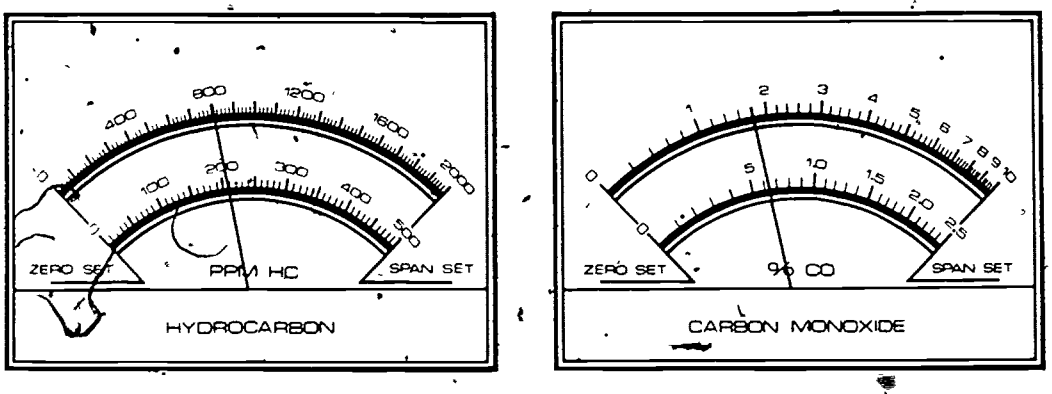
You should now:

a. Check the PCV system (go to #133)
b. Adjust the carburetor idle speed and mixture (go to #57)
c. Check the spark plugs (go to #243)
d. Check the exhaust emissions level (go to #35)
e. Overhaul the carburetor (go to #62)

19. Turning the idle mixture screw *in* will:

a. Lean the mixture (go to #251)
b. Richen the mixture (go to #251)

20. Here is the HC-CO readings you obtain (high scale selected):



You should:

a. Replace the PCV valve (go to #45)
b. Continue to check the PCV system (go to #277)
c. Clean the PCV valve (go to #66)
d. Check some other part of the automobile (go to #109)

21. There is no spark when you crank the engine. You should next:

a. Replace the coil (go to #60)
b. Replace the ignition points and condenser (go to #209)
c. Check the timing (go to #5)
d. Check the battery (go to #136)
e. Replace the spark plugs (go to #243)
f. Check the ignition bypass circuit (go to #161)

22. The results of the wet compression test are:

CYL NO.	1	2	3	4	5	6
COMPRESSION	125	125	130	130	125	120

You should:

a. Install the spark plugs and torque to specifications (go to #88)
b. Note that the piston rings need replacement (go to #222)
c. Note that the intake valves need replacement (go to #189)
d. Note that the exhaust valves need replacement (go to #26)

23. The carburetor air cleaner is in very good condition, it looks almost new. Now you should check.

a. The PCV system (go to #238)
b. The engine compression (go to #64)

24. Here is one portion of the technical service manual description of servicing the crankcase ventilation system:

SYSTEM CHECKING

With the engine at idle RPM, remove the ventilator valve from the rocker cover. If the valve is not plugged, a hissing noise will be heard as air passes through the valve, and a strong vacuum should be evident when a finger is placed over the valve inlet.

You should check the PCV system by using:

a. A tachometer (go to #166)
b. A PCV tester (go to #160)
c An HC-CO tester (go to #273)
d. The hand method (go to #120)

25. The idle specifications are:

	Idle speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #228)
b. 800 RPM (go to #228)
c. The slowest speed at which the engine will idle (go to #189)
d. The fastest speed at which the engine will idle (go to #26)

26. Which of the following conditions might be responsible for the poor performance described in question number 1?

a. A defective air pump (go to #279)
b. A defective catalytic converter (go to #279)
c. A thermostatic air cleaner always open to unheated air (go to #279)
d. A clogged PCV valve (go to #279)
e. A defective evaporative emissions control system (go to #279)

27. After you have overhauled the carburetor, you should check:

a. The engine performance with an engine analyzer (go to #107)
b. The exhaust emissions with a HC-CO tester (go to #35)
c. The carburetor idle mixture and speed (go to #197)
d. The charcoal canister filter element (go to #132)

28. The manufacturer's specifications state that the ignition timing and idle RPM should be properly set prior to taking any HC-CO readings. You should now.

a. Check the idle RPM (go to #83)
b Check the ignition timing (go to #59)
c. Take an HC-CO reading (go to #92)

29. Spark plug specifications are as follows:

Gap	.035 inches
Torque	10 ft-lbs.
Type	Champion BL 13Y

What type of spark plug should you install?

a. B 11Y (go to #94)
b. BL 13Y (go to #94)
c. RBL 15Y (go to #94)
d. RBL 17Y (go to #222)

30. At idle speed, what should be present at this fitting?

a. A weak vacuum (go to #99)
b. A strong vacuum (go to #99)
c. A weak flow of air (go to #224)
d. A strong flow of air (go to #224)

31. After removing and disassembling the float bowl cover, you should:

a. Remove the choke linkage (go to #87)
b. Remove the throttle body (go to #87)
c. Remove the main body (go to #87)
d. Place the carburetor in a suitable cleaning solvent (go to #245)

32. After replacing the PCV valve, you should:

a. Check the PCV valve operation (go to #236)
b. Check another part of the automobile (go to #254)

33. The engine is hard to start, and once started, the engine is rough. Quick acceleration of the throttle results in some hesitation, but it is fairly smooth. Now you should:

a. Hook up an engine analyzer (go to #52)
b. Hook up an HC-CO tester (go to #35)
c. Perform a spark intensity test at the coil (go to #70)
d. Test the PCV valve (go to #133)
e. Overhaul the carburetor (go to #62)
f. Adjust the carburetor idle speed and mixture (go to #57)

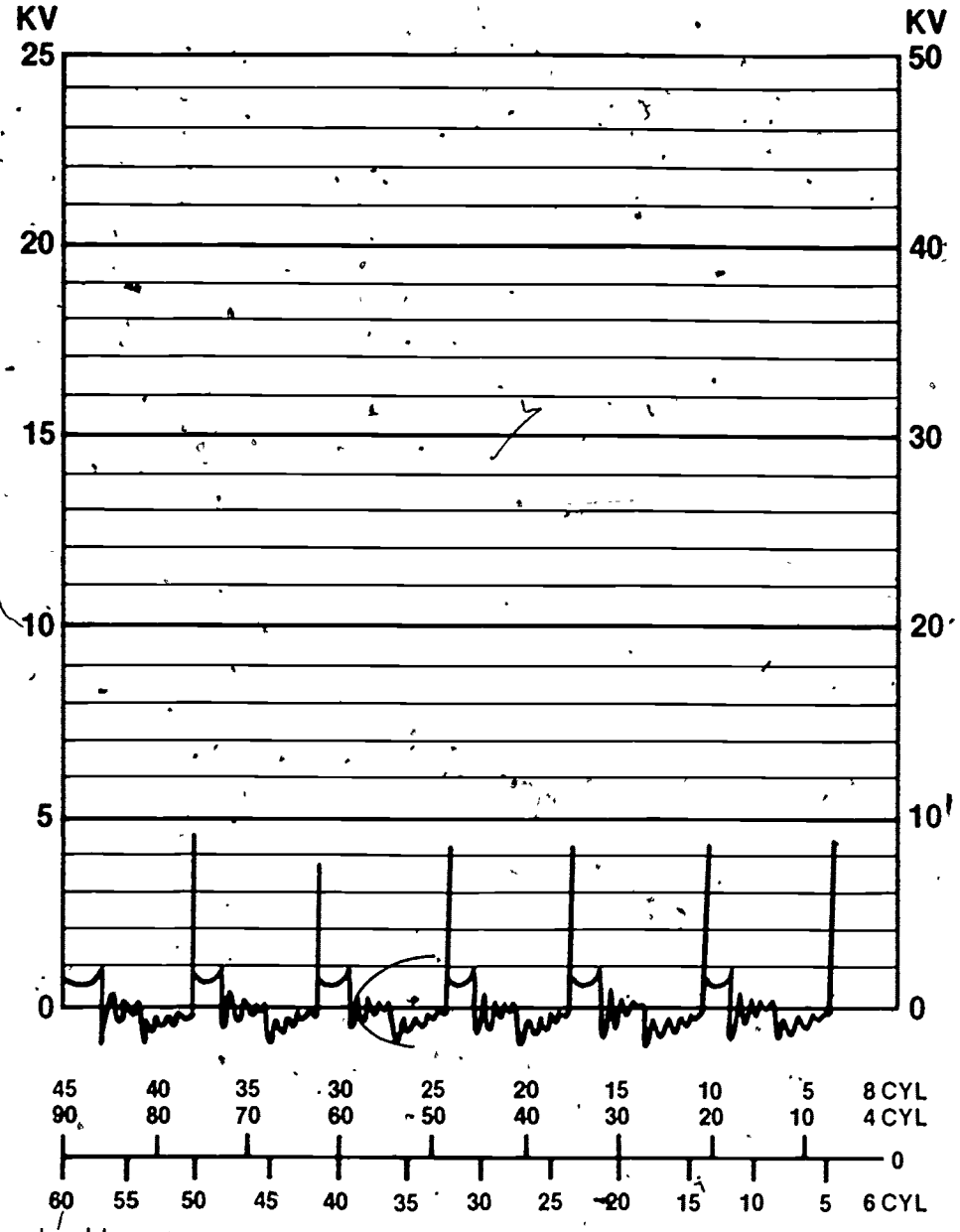
34 What tool(s) should be used to remove and replace the charcoal canister filter element?

a. Needle-nose pliers (go to #68)
b. A screwdriver (go to #68)
c. Vise-grip pliers (go to #68)
d. A screwdriver and needle-nose pliers (go to #68)
e. No tools are necessary (go to #68)

35. What source could you consult for recommended HC-CO specifications for this vehicle?

a. The manufacturer's shop manual (go to #93)
b. A technical service manual (go to #54)
c. The HC-CO tester operating manual (go to #84)
d. The federal guidelines for vehicle emissions (go to #4)
e. The emissions control decal in the vehicle engine compartment (go to #74)

36. You obtain the following display pattern on the oscilloscope:



Now you should:

a. Hook up an HC-CO tester (go to #190)
b. Check the engine timing (go to #5)
c. Adjust the carburetor idle speed and mixture (go to #65)
d. Tell the service manager you have finished the job (go to #279)

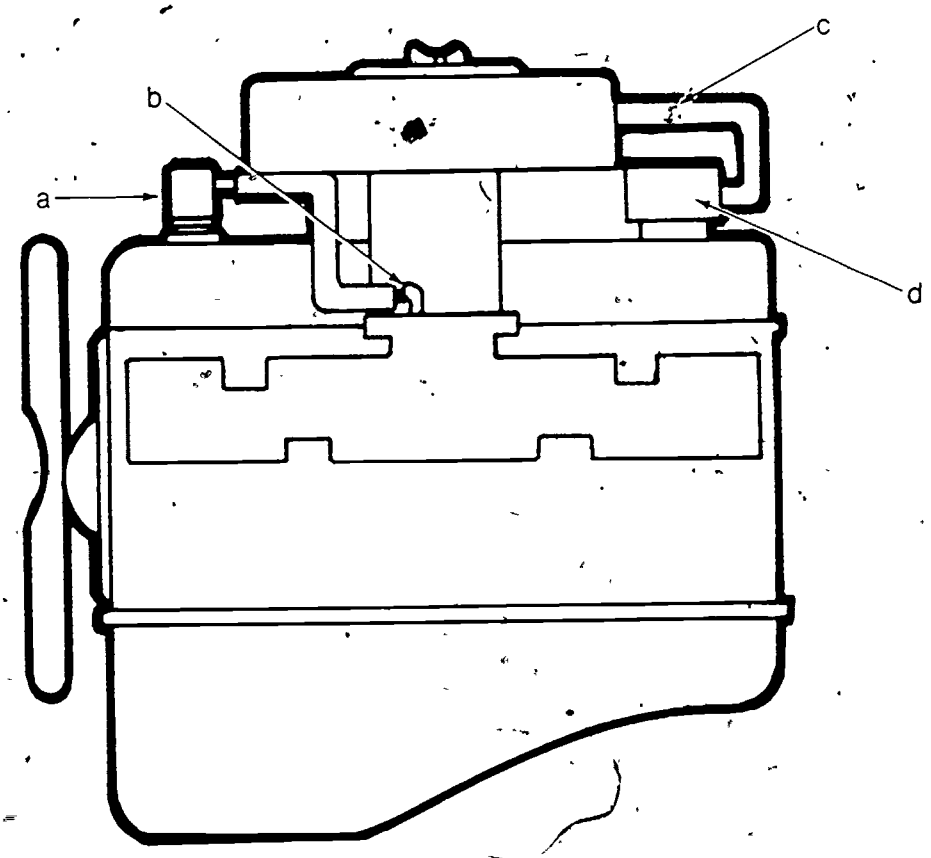
37. After the HC-CO tester probe is inserted, warm up the machine. Next you should:

a. Pull a spark plug wire (go to #189)
b. Note the present HC and CO levels (go to #58)
c. Remove the PCV valve and plug it (go to #201)
d. Remove the crankcase inlet air cleaner and plug it (go to #20)

38. There is no spark when you crank the engine. Next you should:

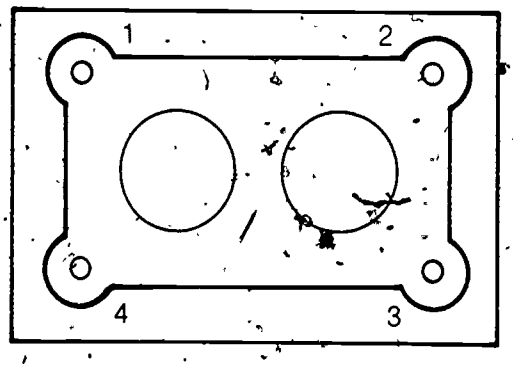
a. Check the ignition bypass circuit (go to #161)
b. Replace the ignition points and condenser (go to #209)
c. Replace the spark plugs (go to #243)
d. Check the battery (go to #136)
e. Replace the coil (go to #60)
f. Check the timing (go to #5)

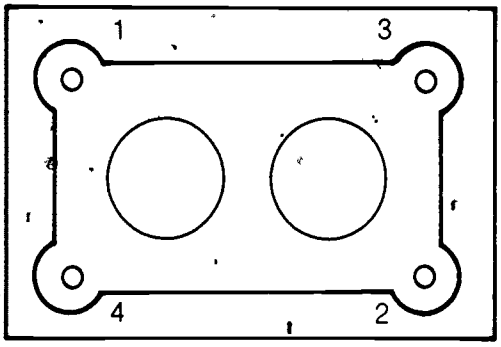
39. In order to quickly check the performance of the PCV valve, you would remove the hose or fitting at:



a. Point a (go to #118)
b. Point b (go to #126)
c. Point c (go to #278)
d. Point d (go to #278)

40. After removing the carburetor, you notice no clogs in the PCV passages. When installing the carburetor, you would tighten the carburetor hold-down nuts in:





a. Sequence a (go to #227)
b. Sequence b (go to #227)

41. The emissions control decal in the engine compartment lists idle CO as 0.3%. No HC specification is given. You should next:

a. Use the specifications HC: 275 ppm; CO: 0.3% (go to #181)
b. Use the specifications HC: 500 ppm; CO: 0.3% (go to #181)
c. Use the specifications HC: 200 ppm, CO: 0.3% (go to #181)
d. Ignore the HC reading and use the CO specification of 0.3% (go to #181)

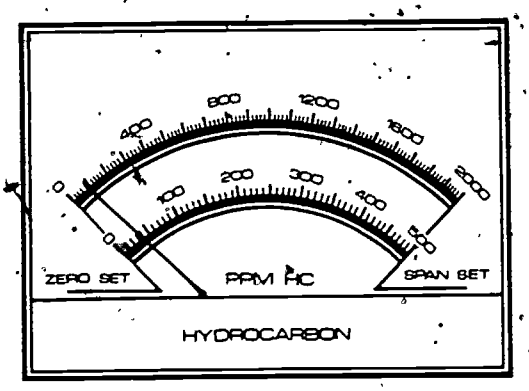
42. When the engine is cranked, there is a full, blue spark from the end of the wire to the engine block. You should:

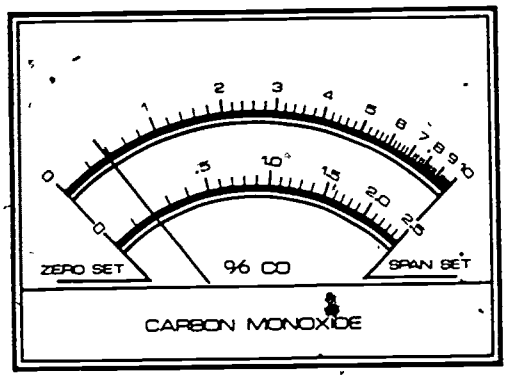
a. Hook up an engine analyzer (go to #52)
b. Replace the contact points and condenser (go to #209)
c. Check the spark plugs (go to #243)
d. Overhaul the carburetor (go to #62)
e. Hook up an HC-CO tester (go to #35)
f. Test the PCV valve (go to #133)

43. After charging and installing the battery, you should:

a. Check the engine timing (go to #5)
b. Check the ignition bypass circuit (go to #48)
c. Hook up an engine analyzer (go to #52)
d. Hook up an HC-CO tester (go to #35)
e. Check the PCV valve (go to #133)
f. Adjust the carburetor (go to #57)
g. Replace the spark plugs (go to #243)

44. After adjusting the carburetor idle mixture for lowest emissions, the HC-CO reading is (high scale selected):





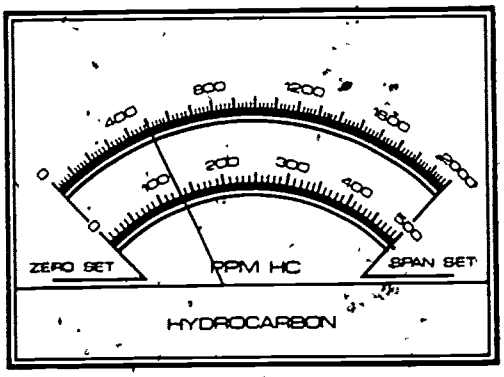
Now you should:

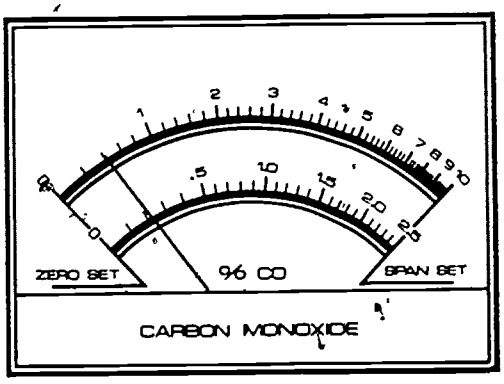
a. Check the ignition system (go to #139)
b. Road test the vehicle (go to #279)
c. Correct the high HC reading (go to #279)
d. Correct the low HC reading (go to #279)
e. Tell the service manager that you have finished the job (go to #279)

45. After replacing the PCV valve, you should:

a. Check another part of the automobile (go to #220)
b. Check the PCV valve operation (go to #121)

46. Here is the reading you obtain:





This reading means:

a. The engine is in need of an overhaul (go to #222)
b. The engine needs no further repair (go to #189)
c. The HC level is too high (go to #92)
d. The CO level is too high (go to #92)
e. Both the HC and CO levels are too high (go to #92)

47. The engine compartment is dirty. All hoses appear to be sound and the belts are fairly tight. The battery cable clamps are firmly attached. You should next:

a. Replace the charcoal canister filter element (go to #235)
b. Adjust the carburetor idle mixture and speed (go to #57)
c. Overhaul the carburetor (go to #62)
d. Test the PCV valve (go to #133)
e. Perform a spark intensity test at the coil (go to #70)
f. Hook up an HC-CO tester (go to #35)
g. Hook up an engine analyzer (go to #52)
h. Crank the engine to hear how it runs (go to #81)

48. Once you have verified that the ignition bypass circuit is good, you would

a. Check the engine timing (go to #5)
b. Hook up an engine analyzer (go to #52)
c Adjust the carburetor (go to #57)
d. Hook up an HC-CO tester (go to #35)
e. Tell the service manager that you have finished the job (go to #222)
f. Replace the spark plugs (go to #243)
g. Check the PCV valve (go to #133)

49. There is almost no vacuum present, and no noise can be heard at this fitting. You should now

a. Continue to check the PCV system (go to #192)
b. Replace the PCV valve (go to #231)
c. Clean the PCV valve (go to #66)
d. Check another part of the automobile (go to #222)

50. The technical service manual refers you to the vehicle emission control decal for exact placement of the tester probe. You should now:

a. Insert the probe into the vehicle tail pipe (go to #222)
b. Insert the probe into the access plug in the exhaust pipe (go to #189)
c. Insert the probe into the snorkel of the air cleaner assembly (go to #26)
d. Consult the vehicle emission control decal (go to #104)

51. The HC level remains unchanged, and the CO level drops slightly. Now you should

a. Replace the PCV valve (go to #45)
b. Continue to check the PCV system (go to #277)
c. Replace the carburetor air cleaner (go to #222)
d. Replace the PCV inlet filter (go to #189)
e. Replace the crankcase inlet air filter (go to #26)

52. After properly hooking up the engine analyzer, you should select a.

a. Raster pattern (go to #18)
b. Display pattern (go to #169)
c. Superimposed pattern (go to #7)

53. The specific gravity readings are 1.260, 1.260, 1.270, 1.260, 1.260, and 1.260. Now you should

a. Replace the battery (go to #178)
b. Charge the battery (go to #240)
c. Check the ignition timing (go to #5)
d. Replace the spark plugs (go to #243)
e. Replace the ignition points and condenser (go to #209)
f. Check the ignition bypass circuit (go to #161)
g. Replace the coil (go to #60)

54. The technical service manual shows a specification of 0 3% CO No HC specification is given You should now

a. Check the emissions control decal in the engine compartment (go to #71)
b. Check the HC-CO tester operating manual (go to #84)
c Check the federal guidelines for vehicle emissions (go to #4)
d Hook up the HC-CO tester (go to #181)

55. After carefully pouring water around likely leaks and listening, you cannot detect any vacuum leaks. Next you should.

a Check the engine compartment (go to #64)
b Check the air cleaner (go to #23)
c. Check the PCV valve (go to #238)
d Adjust the carburetor mixture (go to #125)

56. In order to remove the spark plug wires from the spark plugs, you should

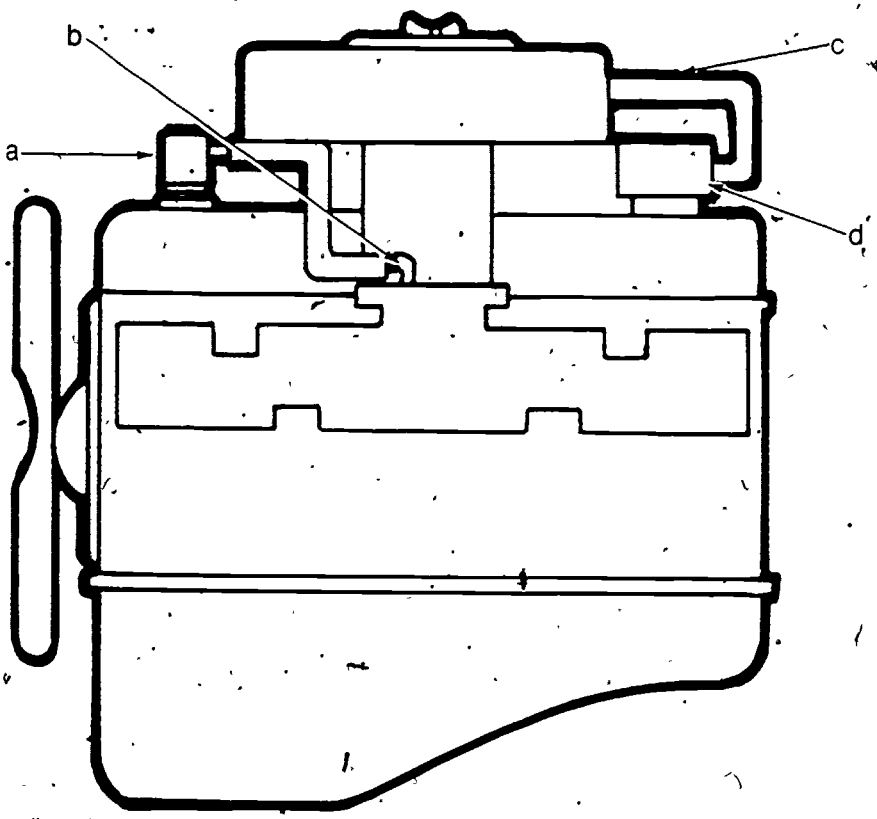
a. Remove each wire by pulling in a straight direction (go to #129)
b. Grab each wire and yank hard (go to #129)
c. Twist the wire boot and then pull the wire off (go to #129)

57. Specifications are given for engine idle speed, but the manufacturer specifies that engine idle mixture should be adjusted with the aid of an infrared tester. You should now

a. Adjust the idle mixture using the "lean drop" method (go to #11)
b. Adjust the idle mixture for maximum engine RPM (go to #19)
c. Hook up an exhaust gas analyzer (go to #35)
d. Hook up an engine analyzer (go to #52)
e. Simply adjust the idle RPM and ignore the idle mixture (go to #251)

13

58. You made a note of the present HC and CO levels. Now you should remove and plug the PCV line or port at:



a. Point a (go to #234)
b. Point b (go to #187)
c. Point c (go to #239)
d. Point d (go to #51)

59. The manufacturer lists the timing specifications as TDC. After checking with a timing light, you note that the engine is set at 0°. You should next:

a. Check the idle RPM (go to #203)
b. Adjust the timing to specifications (go to #9)
c. Take an HC-CO reading (go to #92)
d. Set the contact point dwell (go to #26)

60. To double-check your diagnosis of a defective coil, you would check the.

a. Primary resistance (go to #108)
b. Secondary resistance (go to #108)
c. Current (coil) draw (go to #108)
d. Ballast resistance (go to #108)

61. The PCV tester will not fit into the opening. Now you should:

a. Check the PCV system by the HC-CO tester method (go to #273)
b. Check the PCV system by the tachometer method (go to #166)
c. Check some other part of the automobile (go to #13)
d. Replace the defective tester with a new one (go to #189)
e. Consult the PCV tester instruction manual (go to #148)

62. The carburetor serial numbers are listed in the technical service manual as:

CHRYSLER CORP.

(225").

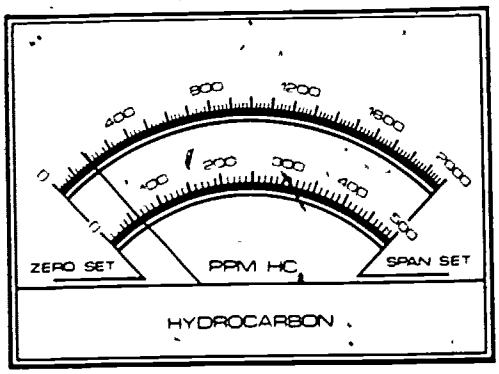
Holley Carburetor No.

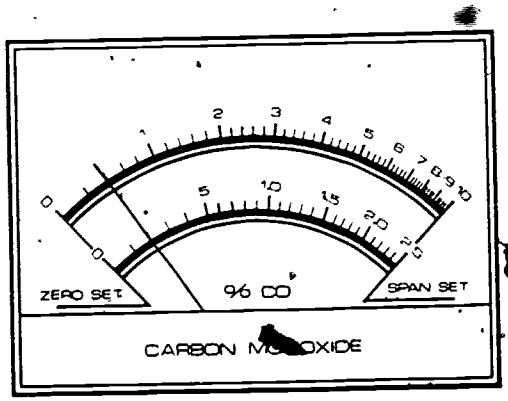
Application	Man. Transmission	Auto. Transmission
Federal	R-7017a, R-7379A	R-7018A
California	R-7019A	R-7020A

The vehicle is a non-California automobile. The carburetor serial number for this particular automobile is:

a R-7017A or R-7379A (go to #262)
b. R-7018A (go to #262)
c. R-7019A (go to #262)
d R-7020A (go to #262)

63. Here is the reading you obtain:



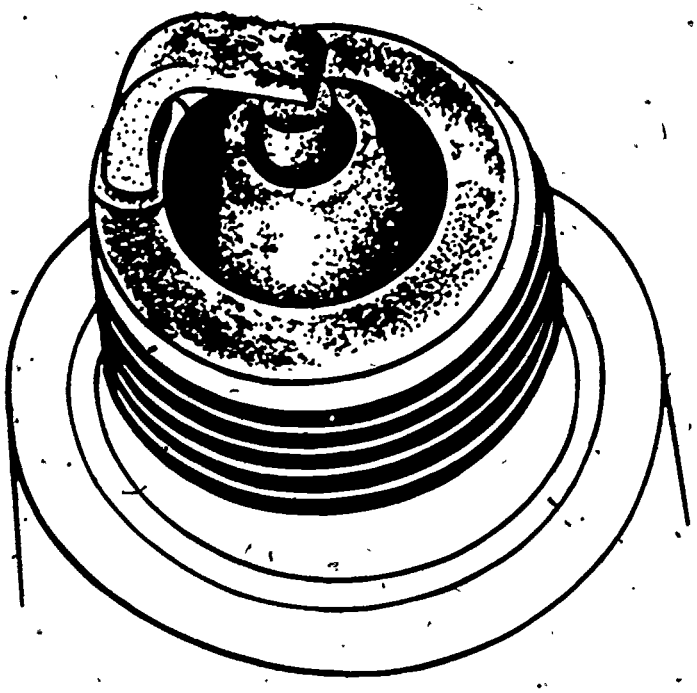


This reading means.

a. The engine is in need of an overhaul (go to #222)
b. The engine needs no further repair (go to #189)
c. The HC level is too high (go to #92)
d. The CO level is too high (go to #92)
e. Both the HC and CO levels are too high (go to #92)

21

64. When you remove the spark plugs, you notice that they look like this:



You should:

a. Obtain new spark plugs before checking the compression (go to #96)
b. Clean the spark plugs before checking the compression (go to #96)
c. Proceed with checking the compression (go to #96)

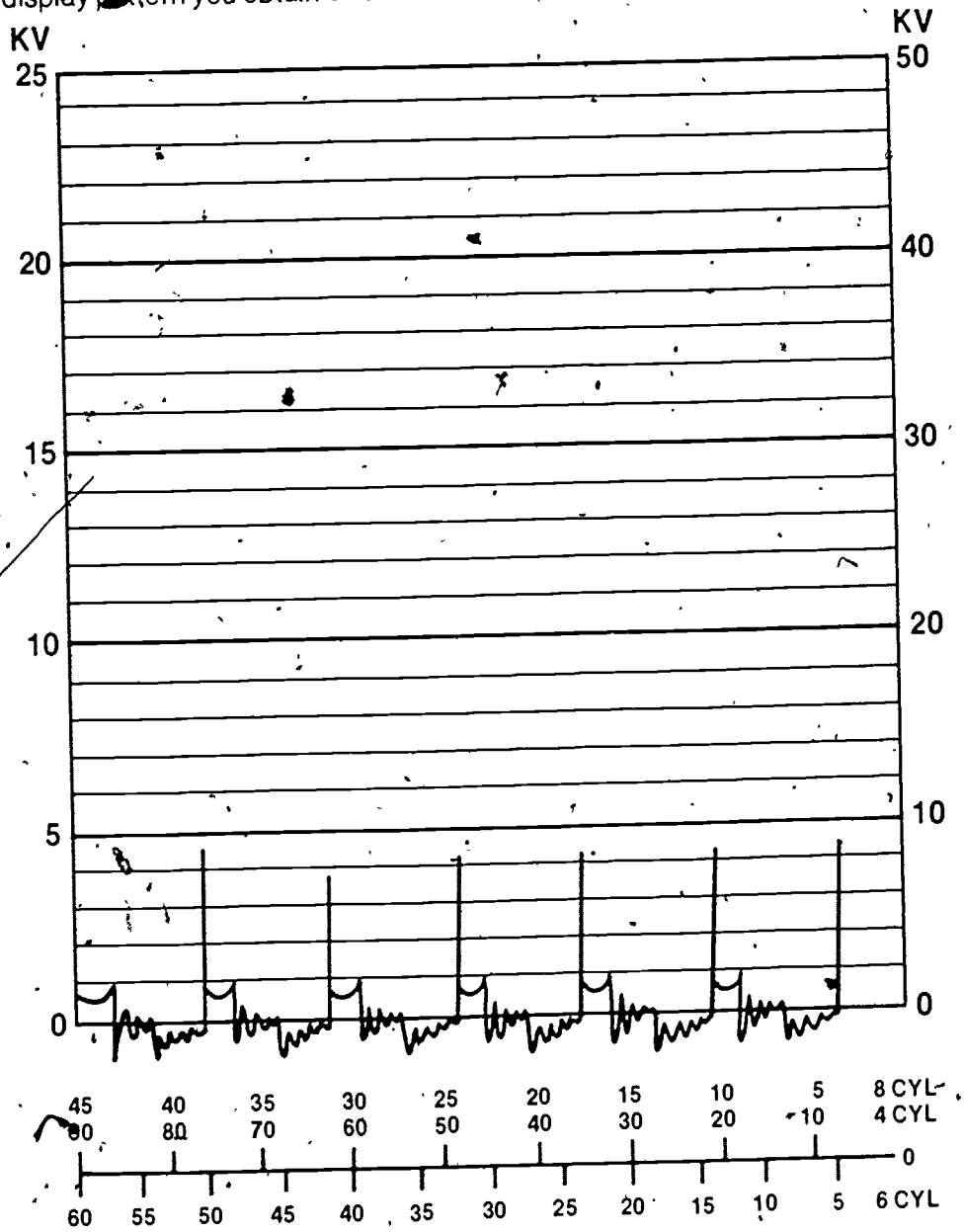
65. The vehicle manufacturer specifies that idle mixture adjustments should be made with the aid of an infrared tester. You should next:

a. Hook up an HC-CO tester (go to #190)
b. Adjust the idle mixture by the "lean drop" method (go to #222)
c. Adjust the idle mixture for maximum engine RPM (go to #189)

66. What material would you use to clean the PCV valve?

a. Carburetor cleaner solvent (go to #222)
b. Silicone spray (go to #222)
c. Cleaning solvent (go to #222)
d. Detergent and water (go to #222)
e. Manifold heat control spray (go to #222)

67. Here is the display pattern you obtain on the oscilloscope:



You should now:

a. Adjust the contact point dwell (go to #209)
b. Check the carburetor idle mixture (go to #44)
c. Tell the service manager that you have finished the job (go to #279)
d. Road test the vehicle (go to #279)

68. Normally, how often should you change the charcoal canister filter element?

a. Every 6 months or 6,000 miles (go to #114)
b. Every 12 months or 12,000 miles (go to #114)
c. Every 24 months or 24,000 miles (go to #114)
d. Each time the oil is changed (go to #114)

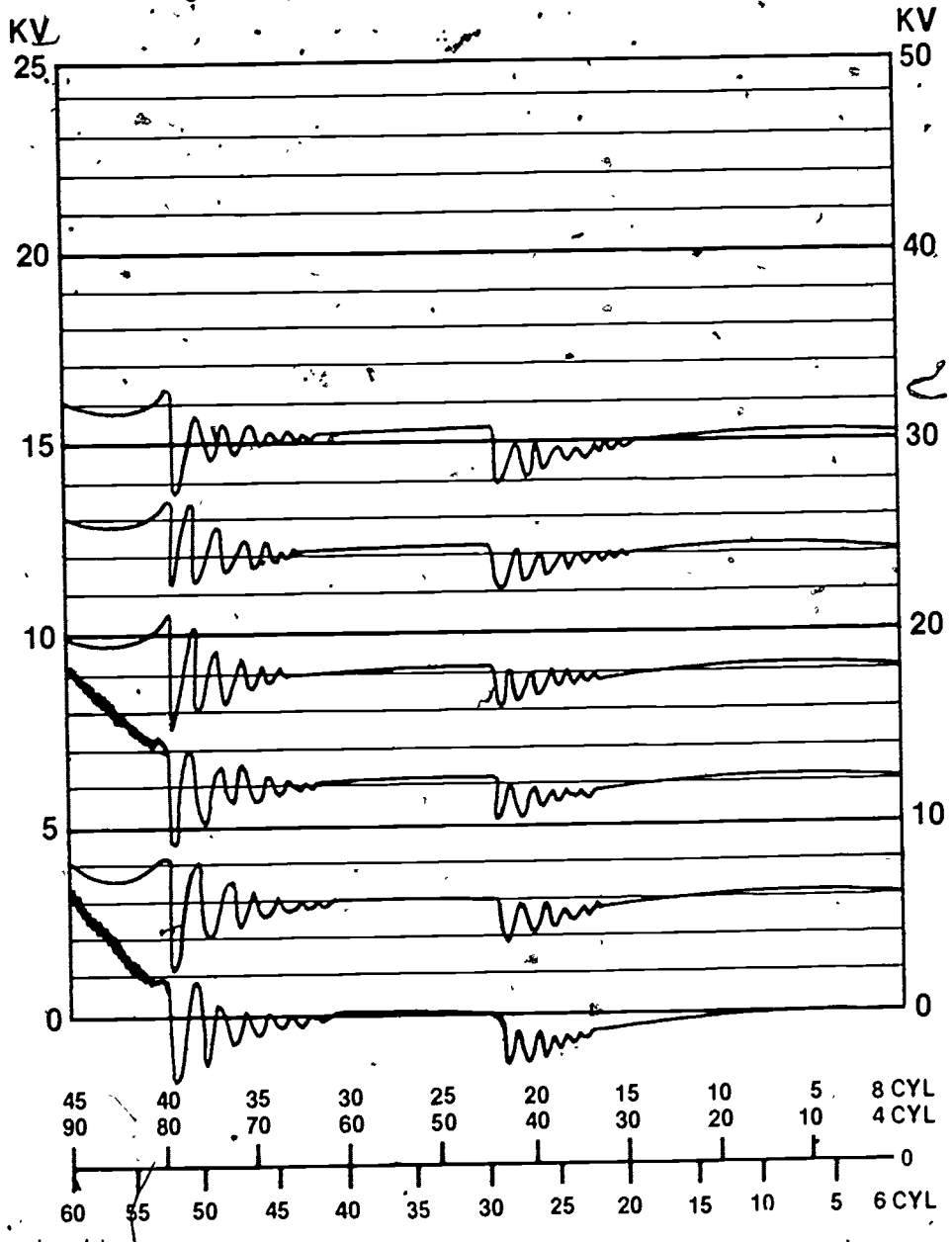
69. When the hose is removed, there is an increase in idle RPM. Now you should.
    a. Replace the PCV valve (go to #183)
    b. Clean the PCV valve (go to #66)
    c. Continue to check the PCV system (go to #156)
    d. Check another part of the automobile (go to #13)

70. In order to perform a spark intensity test at the coil, you would need to:
    a. Remove and ground the center wire from the distributor cap (go to #155)
    b. Remove and ground the primary battery lead to the coil (go to #223)
    c. Remove the center wire from the distributor cap and hold it about 1/4 inch away from the engine block (go to #42)
    d. Remove the center wire from the coil and hold it about 1/4 inch away from the engine block (go to #21)

71. The emissions control decal in the engine compartment lists idle CO as 0.3%. No HC specification is given. You should now:
    a. Check the HC-CO tester manual (go to #97)
    b. Check a technical service manual (go to #143)
    c. Use the specifications HC: 500 ppm; CO: 0.3% (go to #181)
    d. Use the specifications HC: 275 ppm; CO: 0.3% (go to #181)
    e. Use the specifications HC: 200 ppm; CO: 0.3% (go to #181)
    f. Ignore the HC reading and use the CO specification of 0.3% (go to #181)

72. The carburetor air cleaner looks almost new. Now you should check the:
    a. PCV system (go to #39)
    b. HC-CO reading (go to #98)
    c. Ignition system (go to #200)

73. You obtain the following raster pattern on the oscilloscope:



Now you should:

a. Check the condition of the spark plugs (go to #243)
b. Check the carburetor idle mixture (go to #121)
c. Replace the ignition coil (go to #189)
d. Check the engine timing (go to #198)
e. Check the exhaust gas with an HC-CO tester (go to #35)
f. Tell the service manager that you have finished the job (go to #279)

74. These are the specifications given for the carburetor adjustments:

Accelerator Pump Setting	Float Setting	Fast Idle Cam Setting	Vacuum Setting	Choke Unloader Setting
2 7/32"	5/64" ± 1/32	.080"	.090"	.250"

In order to check the fast idle cam setting, you should use:

a. A steel rule (go to #230)
b. A drill bit (go to #230)
c. Calipers (go to #230)
d. A wire gauge (go to #230).

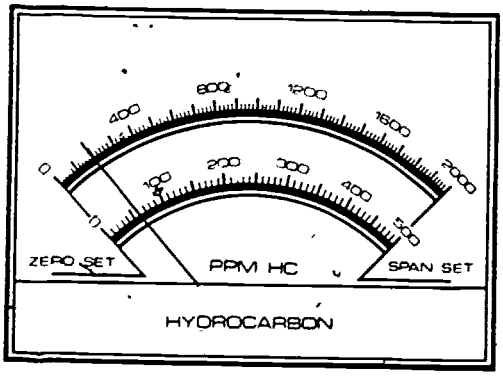
75. The HC-CO tester manual gives the following information:

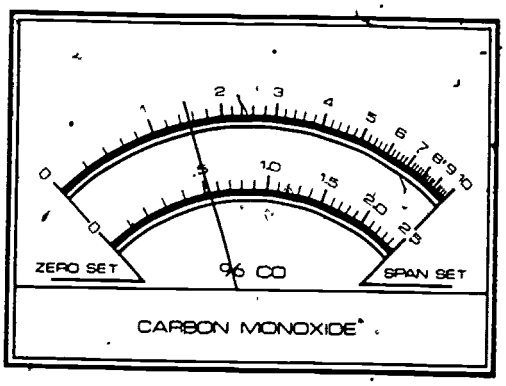
When properly tuned, vehicles made since 1971 can have CO levels below 1% and HC levels below 200 ppm. Refer to the manufacturer's specifications, which are usually found on a sticker under the hood.

Now you should:

a. Use the specifications HC: 300 ppm; CO: 1% (go to #165)
b. Check the emissions control decal in the engine compartment (go to #250)
c. Use the specifications HC: 200 ppm, CO: 0.5% (go to #165)

76. After adjusting the carburetor idle mixture for the lowest emission, your HC-CO reading is (high scale selected):





You should now:

a. Check the PCV system (go to #153)
b. Check for vacuum leaks (go to #222)
c. Tell the service manager that you have finished the job (go to #279)
d. Road test the vehicle (go to #279)

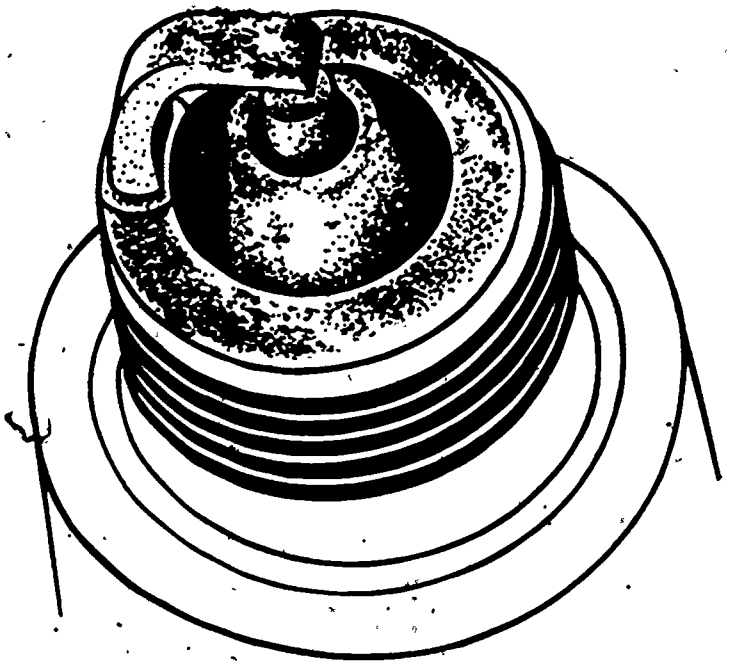
77. When the hose is clamped off, with the engine at idle speed, there is no change in RPM. You should next:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #183)
c. Continue to check the PCV system (go to #156)
d. Check another part of the automobile (go to #13)

78. The battery has an ampere-hour rating of 70 and a cold-cranking rating of 440 amps. Next you would perform the high discharge test, using a load of:

a. 70 amps (go to #2)
b. 120 amps (go to #195)
c. 210 amps (go to #276)
d. 440 amps (go to #124).

79. Most of the spark plugs look like this:



You should now:

a. Install new spark plugs (go to #264)
b. Clean and install the spark plugs (go to #264)

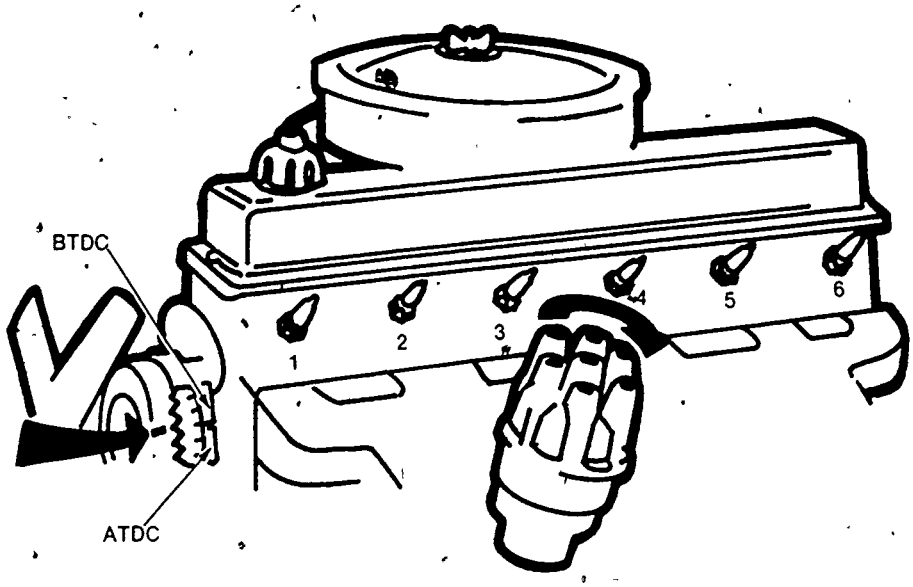
80. At idle speed, what should be present at this fitting?

a. A strong flow of air (go to #258)
b. A strong vacuum (go to #49)
c. A weak flow of air (go to #258)
d. A weak vacuum (go to #49)

81. The engine is hard to start, and once started, the engine idle is rough. Quick acceleration of the throttle results in some hesitation, but the acceleration is fairly smooth. Now you should:

a. Hook up an engine analyzer (go to #52)
b. Hook up an HC-CO tester (go to #35)
c. Perform a spark intensity test at the coil (go to #70)
d. Test the PCV valve (go to #133)
e. Overhaul the carburetor (go to #62)
f. Adjust the carburetor idle speed and mixture (go to #57)
g. Replace the charcoal canister filter element (go to #235)

82. The timing specifications for this engine are TDC. Here is the timing you observe.



You should now:

a. Adjust the distributor body in the direction of the rotor rotation (go to #233)
b. Adjust the distributor body in the opposite direction of the rotor rotation (go to #249)
c. Leave the distributor body as it is (go to #111)
d. Adjust the ignition contact points (go to #209)

83. The idle speed specifications are:

	Idle speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #270)
b. 800 RPM (go to #270)
c. The slowest speed at which the engine will idle (go to #26)
d. The fastest speed at which the engine will idle (go to #222)

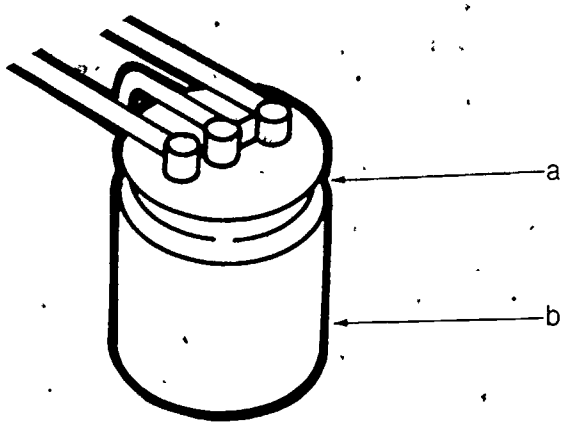
84. The HC-CO tester manual gives two sets of specifications:

- Suggested GO/NO-GO Specifications (Measure HC and CO at idle RPM and at 2,500 RPM.)
  Emission controlled vehicles:
  HC less than 400 ppm, CO less than 3%
  Noncontrolled vehicles:
  HC less than 900 ppm, CO less than 6%
- 1971 and newer vehicles, when properly tuned, can have CO levels below 1%, and HC levels below 200 ppm. Refer to manufacturer's specifications, which are usually found on a sticker under the hood.

Now you should:

a. Use the specifications HC: 400 ppm; CO: 3% (go to #181)
b. Use the specifications HC: 900 ppm; CO: 6% (go to #222)
c. Use the specifications HC: 200 ppm; CO: 1% (go to #181)
d. Use the specifications HC: 200 ppm; CO: 0.3% (go to #181)
e. Check the emissions control decal in the engine compartment (go to #71)

85. To remove the old filter element, you should work at:



a. End a (go to #105)
b End b (go to #105)

86. The CO percentage is listed as 0.3% for this vehicle on the emissions control decal. You should next:

a. Ignore the HC reading and use the specification CO: 0.3% (go to #165)
b Check the HC-CO tester operating manual (go to #170)
c. Use the specifications HC: 1,000 ppm; CO: 0.3% (go to #165)

87. After the carburetor is completely disassembled, you should:

a. Immerse the parts in a suitable cleaning solvent (go to #127)
b. Inspect parts for wear and damage (go to #127)

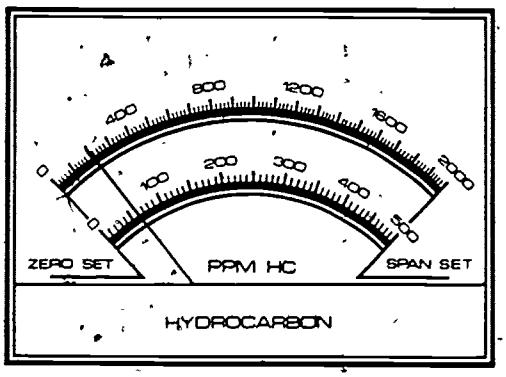
88. Next you should:

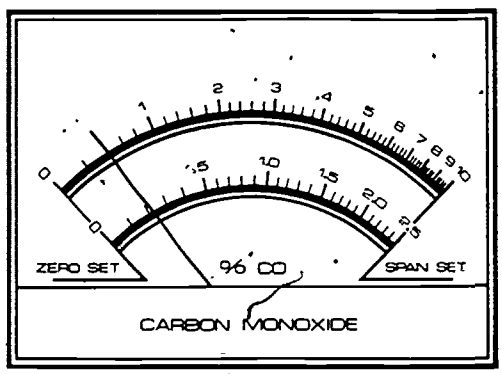
a. Recheck the HC-CO reading (go to #106)
b. Road test the vehicle (go to #279)
c. Check the ignition system (go to #139)
d. Tell the service manager that you have finished the job (go to #278)

89. The manufacturer's specifications state that ignition timing and idle RPM should be properly set prior to taking any HC-CO readings. Now you should:

a. Check the ignition timing (go to #101)
b. Check the idle RPM (go to #116)
c. Take an HC-CO reading (go to #92)

90. Your HC-CO reading is (high scale selected):

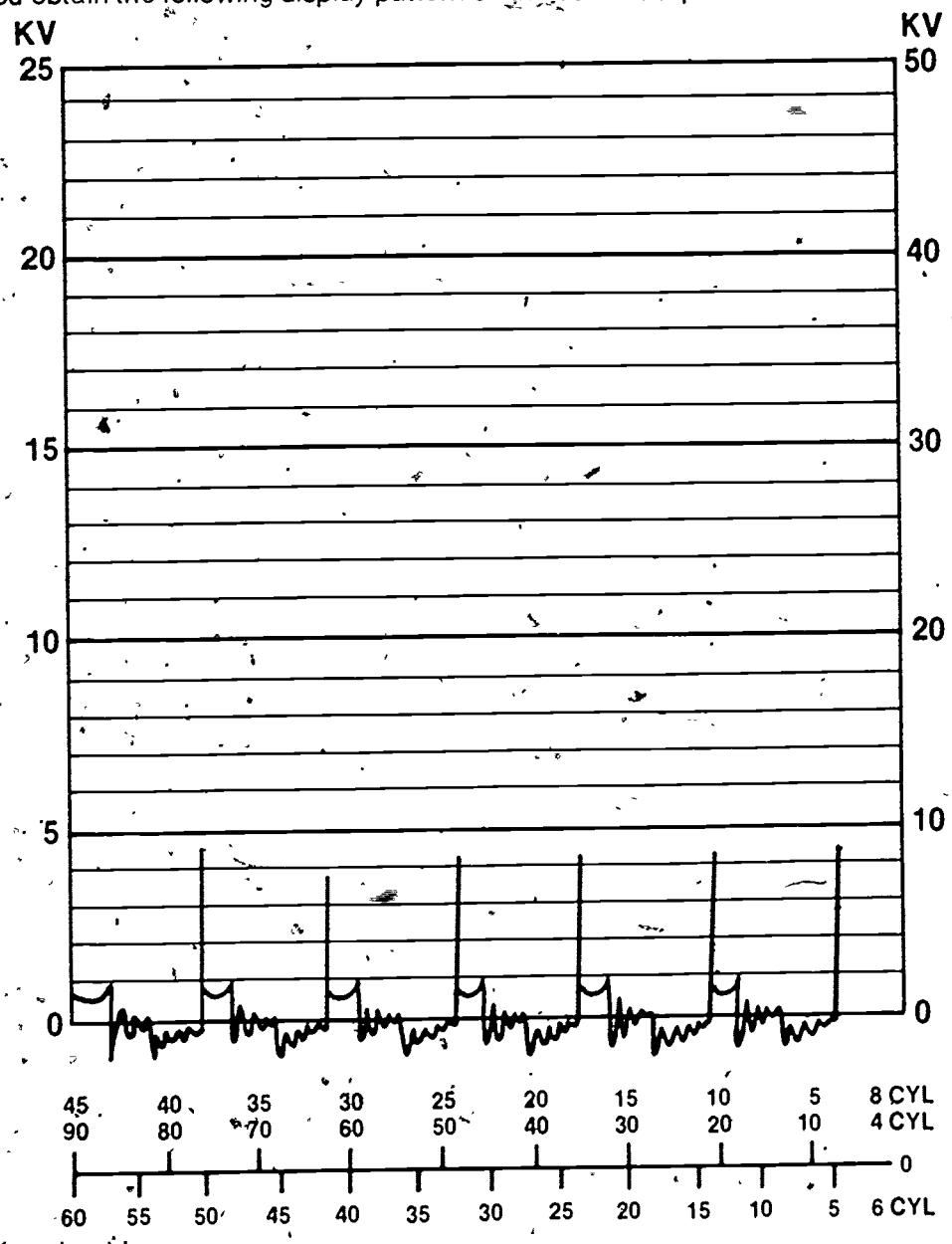




You should now:

a. Tell the service manager that you have finished the job (go to #279)
b. Check the carburetor idle mixture (go to #130)
c. Replace the catalytic converter (go to #222)
d. Check the OSAC system (go to #189)

91. You obtain the following display pattern on the oscilloscope:



You should now:

a. Check the exhaust with an HC-CO tester (go to #12)
b. Adjust the carburetor idle speed and mixture (go to #231)
c. Check the condition of the spark plugs (go to #149)
d. Replace the charcoal canister filter element (go to #222)

92. High CO readings along with normal HC readings indicate:

a. A vacuum leak (go to #189)
b. Low compression (go to #189)
c. A rich idle mixture (go to #189)
d. A lean idle mixture (go to #189)
e. Poor ignition performance (go to #189)

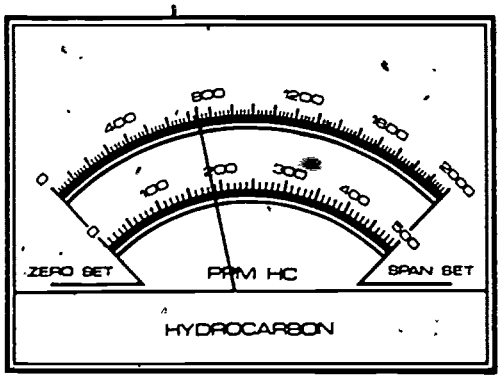
93. The manufacturer specifies idle CO as 0.3% for this vehicle. No HC specification is given. Now you should:

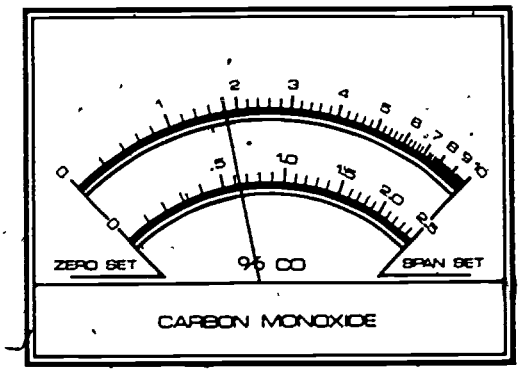
a. Check a technical service manual (go to #54)
b. Check the HC-CO tester operating manual (go to #84)
c. Check the emissions control decal in the engine compartment (go to #71)
d. Check the federal guidelines for vehicle emissions (go to #4)
e. Hook up the HC-CO tester (go to #181)

94. After you have installed and properly torqued the spark plugs, you should:

a. Hook up an engine analyzer (go to #36)
b. Hook up an HC-CO tester (go to #190)
c. Check the engine timing (go to #5)
d. Adjust the carburetor idle speed and mixture (go to #65)
e. Tell the service manager that you have finished the job (go to #279)

95. Here is the reading you obtain:





This reading means:

a. The engine is in need of an overhaul (go to #26)
b. The engine needs no further repair (go to #189)
c. The HC level is too high (go to #162)
d. The CO level is too high (go to #225)
e. Both the HC and CO levels are too high (go to #252)

96. The manufacturer specifies a minimum reading of 100 psi with a maximum variation of 25 psi between cylinders. The dry compression readings are:

CYL NO.	1	2	3	4	5	6
COMPRESSION	125	120	130	130	125	120

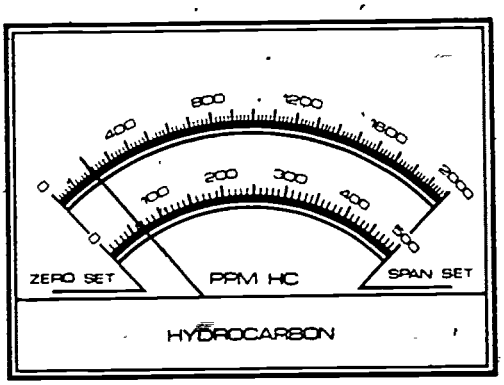
You should next:

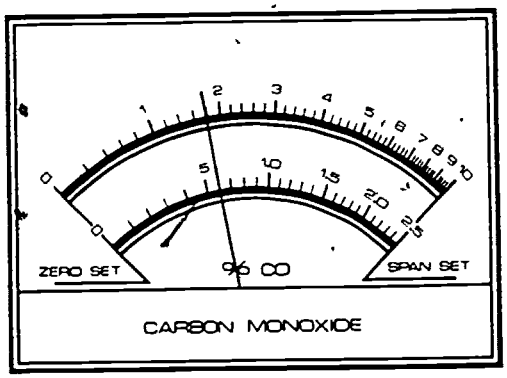
a. Perform the wet compression test (go to #131)
b. Install the spark plugs and torque to specifications (go to #263)

97. The HC-CO tester manual states that vehicles equipped with emission control equipment made since 1971 can be tuned to have HC levels of less than 200 ppm and CO levels of less than 1% Now you should:

a. Ignore the HC reading and use the CO specification of 0.3% (go to #181)
b. Use the specifications HC: 200 ppm; CO: 1% (go to #181)
c. Use the specifications HC: 200 ppm; CO: 0 3% (go to #181)

98. Here is the HC-CO reading you obtain (high scale selected):





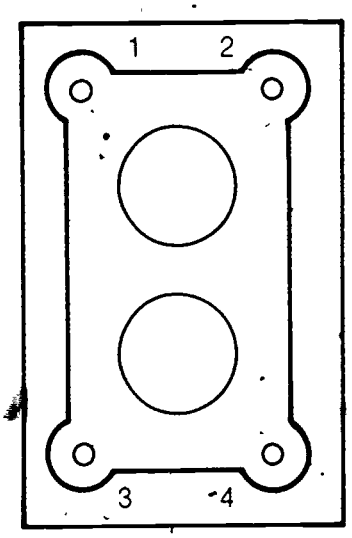
You should now:

a. Adjust the idle mixture (go to #76)
b. Check the PCV system (go to #39)
c. Check the ignition system (go to #200)
d. Check for vacuum leaks (go to #222)

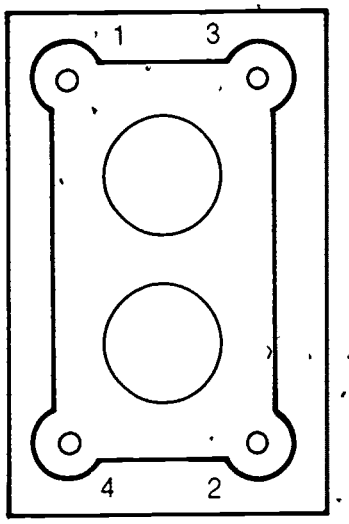
99. There is almost no vacuum present, and no noise can be heard at this fitting. You should next:

a. Check another part of the automobile (go to #13)
b. Clean the PCV valve (go to #66)
c. Replace the PCV valve (go to #183)
d. Continue to check the PCV system (go to #210)

100. When installing the carburetor, in what order should you tighten the carburetor hold-down nuts?



a



b

a. Order a (go to #27)
b. Order b (go to #27)

101. The manufacturer lists the engine timing specifications as TDC. After using a timing light to check the engine, you note that the engine is set at 0. You should next:

a. Check the idle RPM (go to #122)
b. Adjust the timing to specifications (go to #9)
c. Take an HC-CO reading (go to #92)
d. Set the contact point dwell (go to #189)

102. The HC-CO tester manual gives the following information:

1971 and newer vehicles, when properly tuned, can have CO levels below 1%, and HC levels below 200 ppm. Refer to manufacturer's specifications usually found on a sticker under the hood.

You should now:

a. Use the specifications HC: 200 ppm; CO: 1% (go to #257)
b. Use the specifications HC: 200 ppm; CO: 0.3% (go to #257)

103. The battery drain measures 0.2 v, and the battery leakage measures 0.2 v You should now.

a. Replace the battery (go to #178)
b. Charge the battery (go to #240)
c. Remove and clean the battery (go to #174)
d. Replace the electric clock (go to #66)

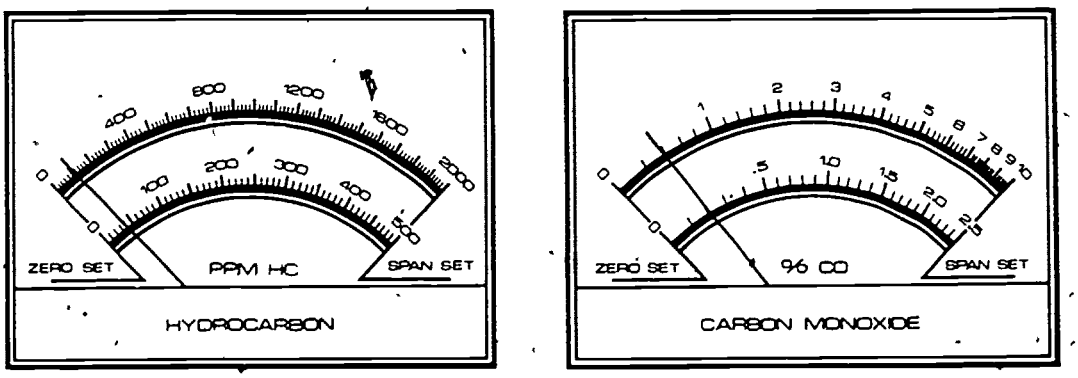
104. The vehicle emission control decal states that infrared measurements are to be made at the access plug in the exhaust pipe. Next you should insert the tester probe in the:

a. Vehicle tail pipe (go to #89)
b. Access plug of the exhaust pipe (go to #28)
c. Snorkel of the air cleaner assembly (go to #110)

105. What tool(s) would you select to remove and replace the charcoal canister filter element from the canister assembly?

a. Screwdriver (go to #275)
b. A screwdriver and needle-nose pliers (go to #275)
c. Vise-grip pliers (go to #275)
d. Needle-nose pliers (go to #275)
e. No tools are necessary (go to #275)

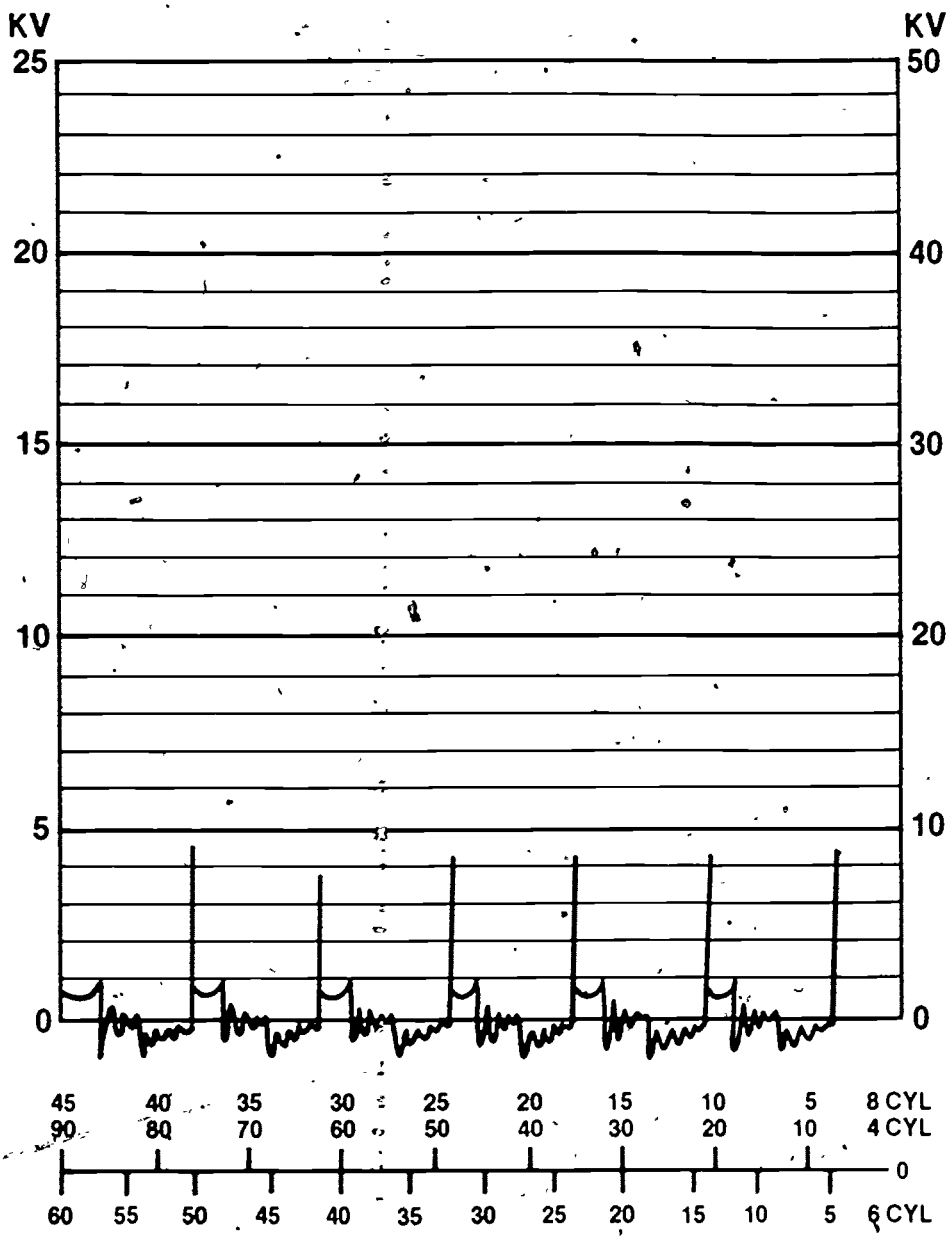
106. Here is the HC-CO reading you obtain (high scale selected):



Next you should:

a. Check the ignition system (go to #279)
b. Road test the vehicle (go to #279)
c. Tell the service manager that you have finished the job (go to #279)
d. Correct the high HC reading (go to #279)
e. Correct the high CO reading (go to #279)

107. Here is the display pattern you obtain:



You should now:

a. Check the spark plugs (go to #243)
b. Adjust the carburetor idle speed and mixture (go to #197)
c. Check the secondary ignition circuit (go to #70)
d. Check the exhaust emissions level (go to #35)

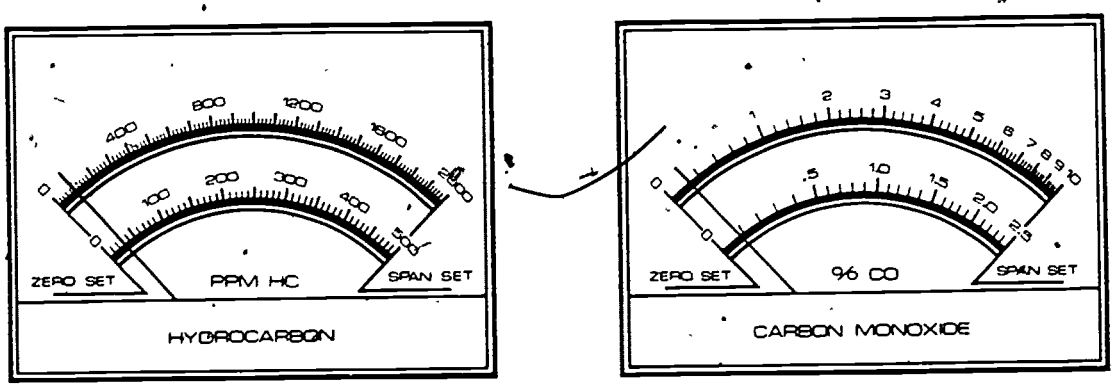
108. After replacing the coil, you should:

a. Adjust the carburetor (go to #57)
b. Check the engine timing (go to #5)
c. Hook up an HC-CO tester (go to #35)
d. Hook up an engine analyzer (go to #52)
e. Check the PCV valve (go to #133)

109. What other part of the automobile would you check?

a. The carburetor (go to #62)
b. The evaporative emission control system (go to #180)
c. The engine performance using an engine analyzer (go to #73)
d. The exhaust gas with an HC-CO tester (go to #95)

110. Here is the HC-CO reading you obtain (high range selected):



This reading means:

a. The engine is in need of an overhaul (go to #222)
b. The engine needs no further repair (go to #222)
c. The HC-CO tester is in need of repair (go to #189)
d. The HC level is too high (go to #222)
e. The CO level is too high (go to #26)
f. Both the HC and CO levels are too high (go to #222)

111. Next you should:

a. Check the PCV valve (go to #133)
b. Adjust the carburetor (go to #57)
c. Hook up an engine analyzer (go to #52)
d. Hook up an HC-CO tester (go to #35)

112. The vehicle is not equipped with an air pump. What might you check or adjust?

a. The engine compression (go to #64)
b. The air cleaner (go to #23)
c. The carburetor idle mixture (go to #125)
d. The PCV system (go to #238)

113. After replacing the PCV valve, you should:

a. Tell the service manager that you have finished the job (go to #279)
b. Check the HC-CO levels again (go to #106)
c. Road test the vehicle (go to #279)

114. After replacing the charcoal canister filter element, you should:

a. Overhaul the carburetor (go to #62)
b. Hook up an engine analyzer (go to #52)
c. Crank the engine to hear how it runs (go to #33)
d. Test the PCV valve (go to #133)
e. Hook up an HC-CO tester (go to #35)
f. Perform a spark intensity test at the coil (go to #70)

115. There is no spark when you crank the engine. Now you should:

a. Replace the spark plugs (go to #243)
b. Check the timing (go to #5)
c. Replace the coil (go to #60)
d. Check the ignition bypass circuit (go to #161)
e. Check the battery (go to #136)
f. Replace the ignition points and condenser (go to #209)

116. The idle specifications are:

	Idle speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #217)
b. 800 RPM (go to #217)
c. The slowest speed at which the engine will idle (go to #189)
d. The fastest speed at which the vehicle will idle (go to #26)

117. The tester operating manual refers you to the vehicle emission control decal for exact placement of the tester probe. You should now:

a. Consult the vehicle emission control decal (go to #104)
b. Insert the probe into the vehicle tail pipe (go to #222)
c. Insert the probe into the access plug in the exhaust pipe (go to #189)
d. Insert the probe into the snorkel of the air cleaner assembly (go to #26)

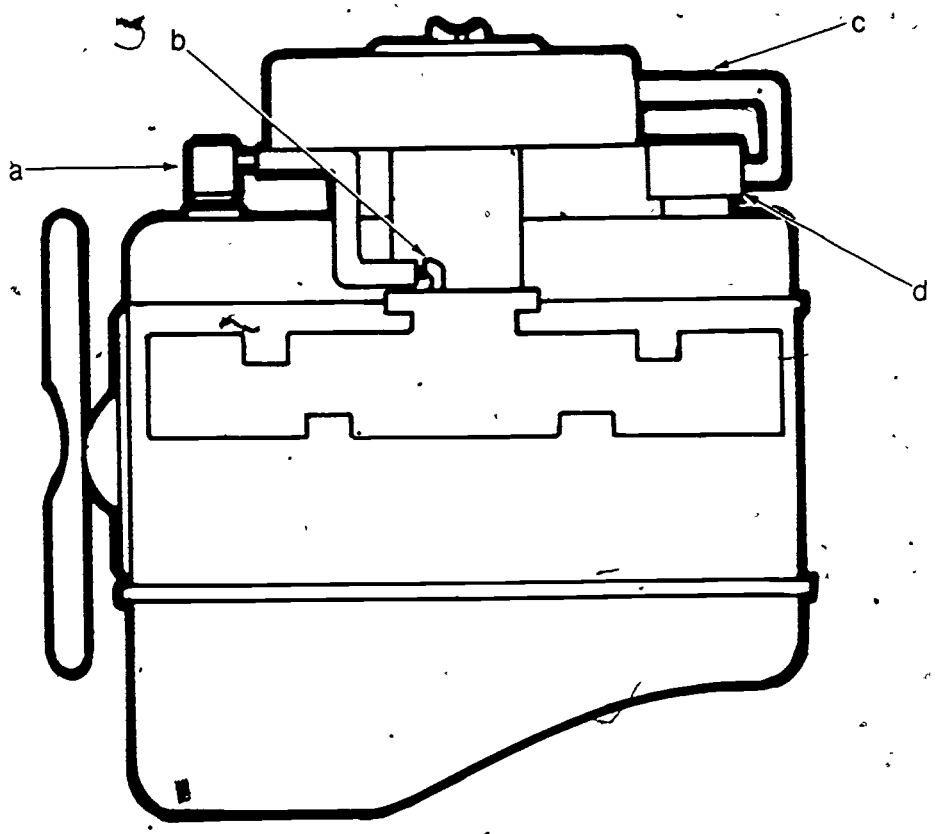
118. At idle speed, what should be present at this fitting?

a. A weak vacuum (go to #241)
b. A strong vacuum (go to #241)
c. A weak flow of air (go to #134)
d. A strong flow of air (go to #134)

119. You pour liquid around obvious spots with the engine at idle, but you notice no leaks. Now you should:

a. Check the ignition system (go to #185)
b. Check the engine compression (go to #135)
c. Install a new PCV valve (go to #189)

120. To test the PCV valve by hand, you should remove the hose or fitting at:



a. Point a (go to #30)
b. Point b (go to #145)
c. Point c (go to #269)
d. Point d (go to #191)

121. The technical service manual states that all idle mixture adjustments should be made with the aid of an infrared tester. You should now:

a. Hook up an HC-CO tester (go to #186)
b. Adjust the idle mixture by the "lean drop" method (go to #26)
c. Adjust the idle mixture for best engine RPM (go to #189)

122. The idle specifications are:

	Idle Speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #144)
b. 800 RPM (go to #144)
c. The slowest speed at which the engine will idle (go to #222)
d. The fastest speed at which the engine will idle (go to #189)

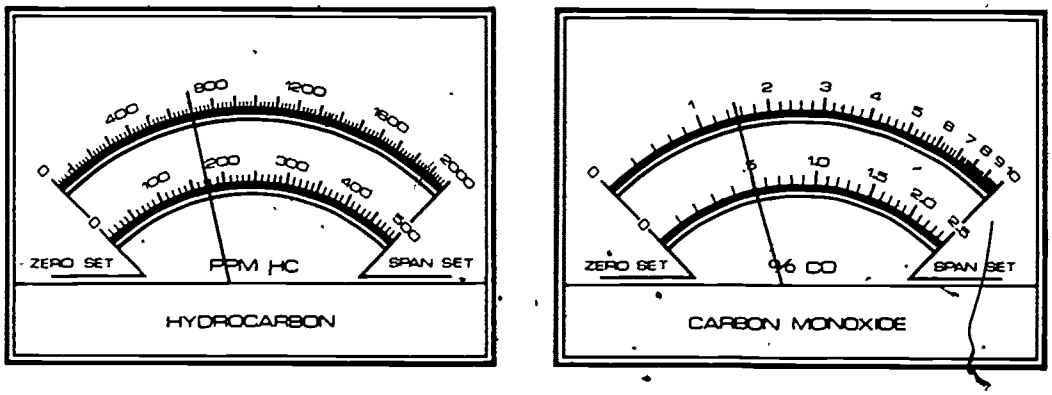
123. What materials should be used for cleaning the hoses?

a. Detergent and water (go to #189)
b. Gasoline (go to #222)
c. Cleaning solvent (go to #259)
d. Combustion chamber conditioner (go to #259)
e. Carburetor cleaner solvent (go to #259)

124. The measured battery voltage is 7.4 v. You should now:

a. Replace the ignition points and condenser (go to #209)
b. Check the ignition bypass circuit (go to #161)
c. Check the engine timing (go to #5)
d. Replace the battery (go to #178)
e. Charge the battery (go to #240)

125. After adjusting the carburetor idle mixture for the lowest emissions, your HC-CO reading is (high scale selected):



This reading means that:

a. The engine is now operating within specifications (go to #222)
b. The HC reading is too high (go to #267)
c. The CO reading is too high (go to #267)
d. Both the HC and CO readings are too high (go to #267)

126. The engine speed increases considerably after you remove the hose. You should next.

a. Replace the PCV valve (go to #158)
b. Continue to check the PCV system (go to #271)
c. Check another part of the automobile (go to #189)
d. Clean the PCV valve (go to #66)

127. After cleaning, drying, and properly reassembling all carburetor parts, using new parts as required, you should:

a. Make final adjustments to the carburetor (go to #74)
b. Install the carburetor (go to #100)

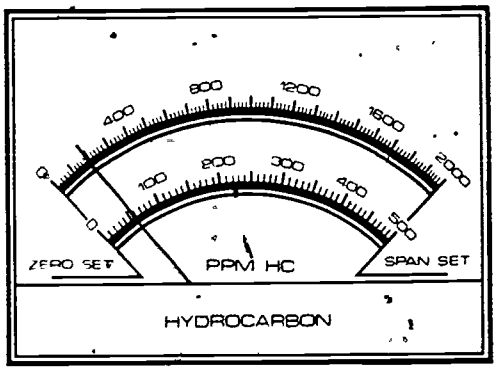
128. The PCV tester will not fit into the opening. You should now:

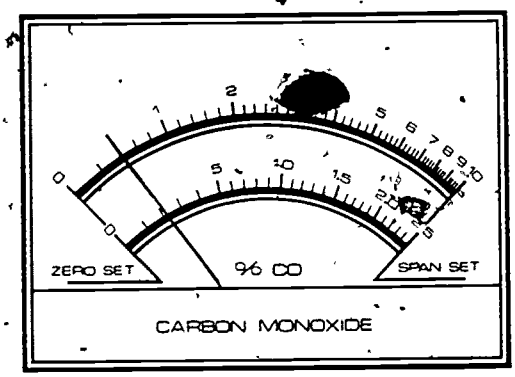
a. Consult the PCV tester instruction manual (go to #148)
b. Replace the defective tester with a new one (go to #189)
c. Check some other part of the automobile (go to #13)
d. Check the PCV system using a tachometer (go to #166)
e. Check the PCV system by the HC-CO tester method (go to #273)

129. After removing the spark plug wires, you should:

a. Crank the engine and watch for the spark (go to #268)
b. Hold the center wire from the coil about 1/4 inch away from the engine block (go to #21)
c. Hold the spark plug wire from the number 1 cylinder about 1/4 inch away from the engine block (go to #115)

130. After adjusting the carburetor idle mixture for lowest emissions, your HC-CO reading is (high scale selected):





You should next:

a. Correct the high HC level (go to #279)
b. Correct the high CO level (go to #279)
c. Road test the vehicle (go to #279)
d. Check the ignition (go to #279)
e. Tell the service manager that you have finished the job (go to #279)

131. The results of the wet compression test are:

CYL NO.	1	2	3	4	5	6
COMPRESSION	125	125	130	130	125	120

You should now:

a. Note that the exhaust valves need replacement (go to #26)
b. Note that the intake valves need replacement (go to #189)
c. Note that the piston rings need replacement (go to #222)
d. Install the spark plugs and torque to specifications (go to #263)

132. To replace the charcoal canister filter element, you must:

a. Disassemble the charcoal canister (go to #193)
b. Remove the charcoal canister from its mounting bracket (go to #193)
c. Remove the canister purge line (go to #193)
d. Remove the carburetor air cleaner assembly (go to #193)

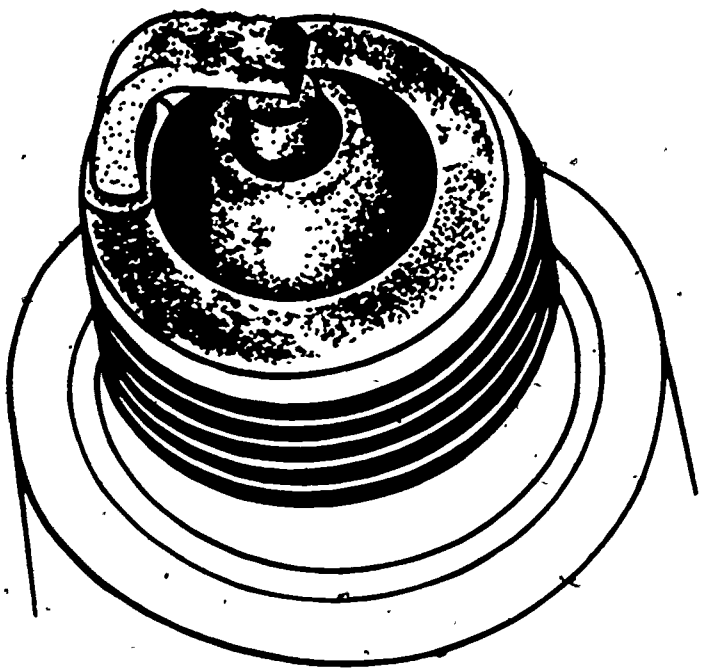
133. How should you test the PCV valve?

a. By hand (go to #120)
b. Use a tachometer (go to #166)
c. Use a PCV tester (go to #160)
d. Use an HC-CO tester (go to #273)
e. Consult a technical service manual for directions (go to #24)

134. There is a very weak flow of air at this fitting. You should next:

a. Clean the PCV valve (go to #66)
b. Check some other part of the automobile (go to #189)
c. Continue to check the PCV system (go to #271)
d. Replace the PCV valve (go to #158)

135. While you are removing the spark plugs, you notice that they look like this:



You should now:

a. Clean the spark plugs before checking the compression (go to #171)
b. Obtain new spark plugs before checking the compression (go to #171)
c. Proceed with checking the compression (go to #171)

136. In order to check the battery, you would:

a. Check the specific gravity (go to #53)
b. Check the battery capacity (go to #78)
c. Turn on the vehicle headlights and crank the engine (go to #202)
d. Measure the amount of battery leakage and battery drain (go to #103)

137. The HC and CO levels remain unchanged. You should now:

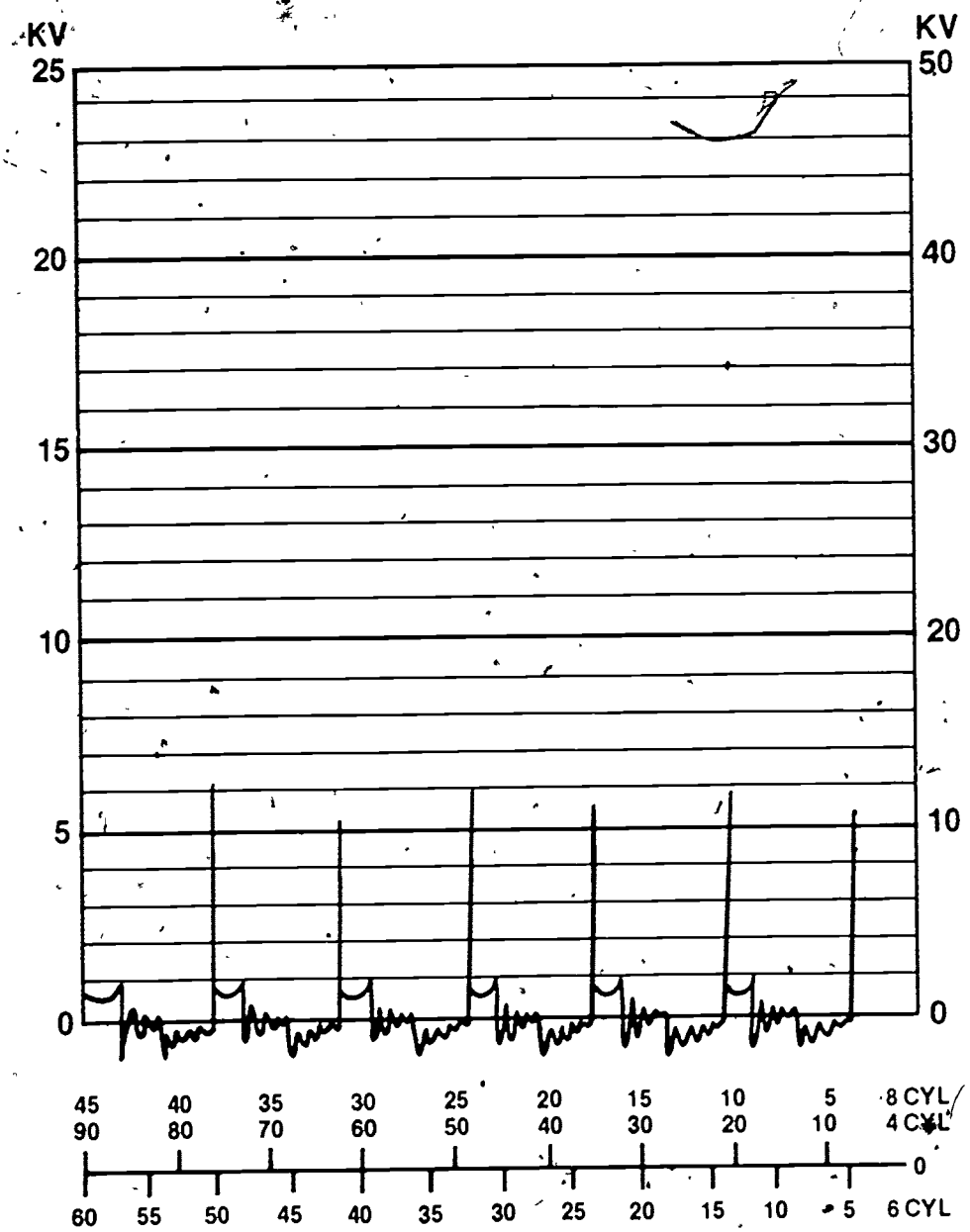
a. Clean the PCV valve (go to #66)
b. Continue to check the PCV system (go to #244)
c. Replace the PCV valve (go to #32)
d. Check some other part of the automobile (go to #254)

138. With the engine at idle, the PCV tester reading looks like this:

You would now:

a. Replace the PCV hoses (go to #189)
b. Replace the crankcase inlet air cleaner (go to #229)
c. Replace the PCV valve (go to #183)
d. Continue to check the PCV system (go to #210)

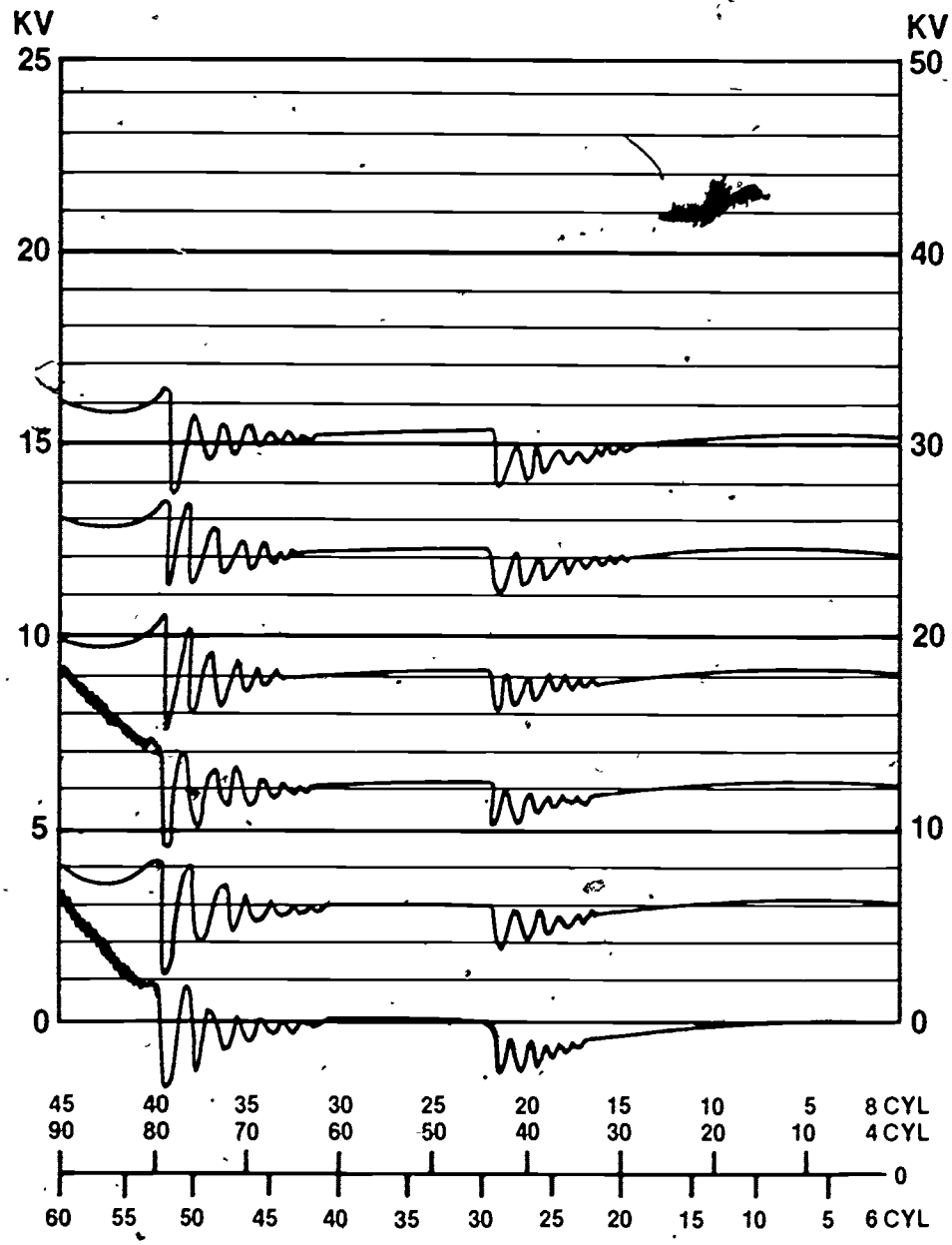
139. Here is the display pattern you obtain on the oscilloscope:



Now you should:

a. Tell the service manager that you have finished the job (go to #279)
b. Road test the vehicle (go to #279)
c. Recheck the HC-CO reading (go to #106)
d. Check the resistance in the secondary ignition wiring (go to #279)

140. You obtain the following raster pattern on the oscilloscope:



You should now:

a. Adjust the timing (go to #26)
b. Check the carburetor (go to #62)
c. Check the exhaust gas with an HC-CO tester (go to #35)
d. Replace the charcoal canister in the evaporative emissions control system (go to #222)

141. After installing the spark plugs, you should:

a. Check the carburetor idle mixture (go to #130)
b. Check the HC-CO readings (go to #90)
c. Tell the service manager that you have finished the job (go to #279)

142. The manufacturer lists the engine timing specifications as TDC. After checking with a timing light, you notice that the engine timing is set at 0°. You should now:

a. Adjust the timing to specifications (go to #9)
b. Adjust the contact point dwell (go to #209)
c. Take an HC-CO reading (go to #98)
d. Adjust the engine idle speed (go to #179)

143. The technical service manual shows a specification of 0.3% CO. No HC specification is given Now you should:

a. Use the specifications HC: 500 ppm; CO: 0.3% (go to #181)
b. Use the specifications HC: 275 ppm; CO: 0.3% (go to #181)
c. Ignore the HC reading and use the specification CO: 0.3% (go to #181)
d. Consult the HC-CO tester manual (go to #97)

144. What range on the HC-CO tester would you select?

a. High range (go to #63)
b. Low range (go to #46)

145. After you remove the hose, the engine speed increases noticeably. You should

a. Replace the hose (go to #164)
b. Replace the PCV valve (go to #183)
c. Continue checking the PCV system (go to #210)
d. Check some other part of the automobile (go to #13)

146. The amount of voltage appearing at the coil primary terminal can easily exceed:

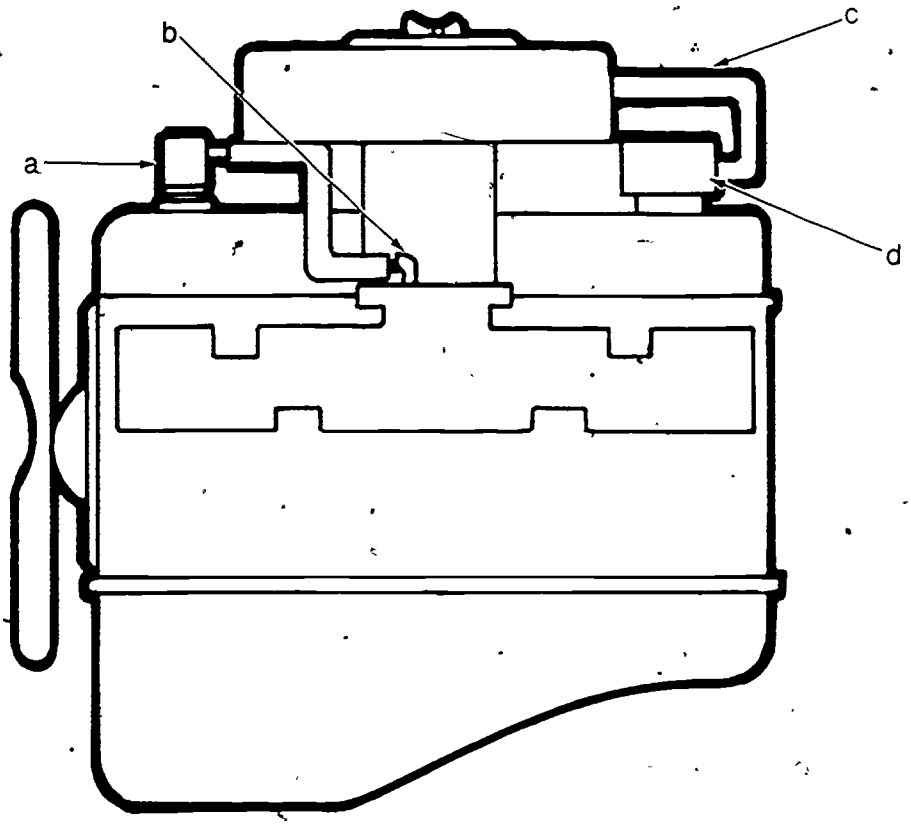
a. 10 v (go to #189)
b. 100 v (go to #189)
c. 10,000 v (go to #189)
d. 25,000 v (go to #189)

147. After adjusting the engine idle speed, you should:

a. Overhaul the carburetor (go to #62)
b. Hook up an exhaust gas analyzer (go to #35)
c. Hook up an engine analyzer (go to #52)
d. Replace the charcoal canister filter element (go to #235)

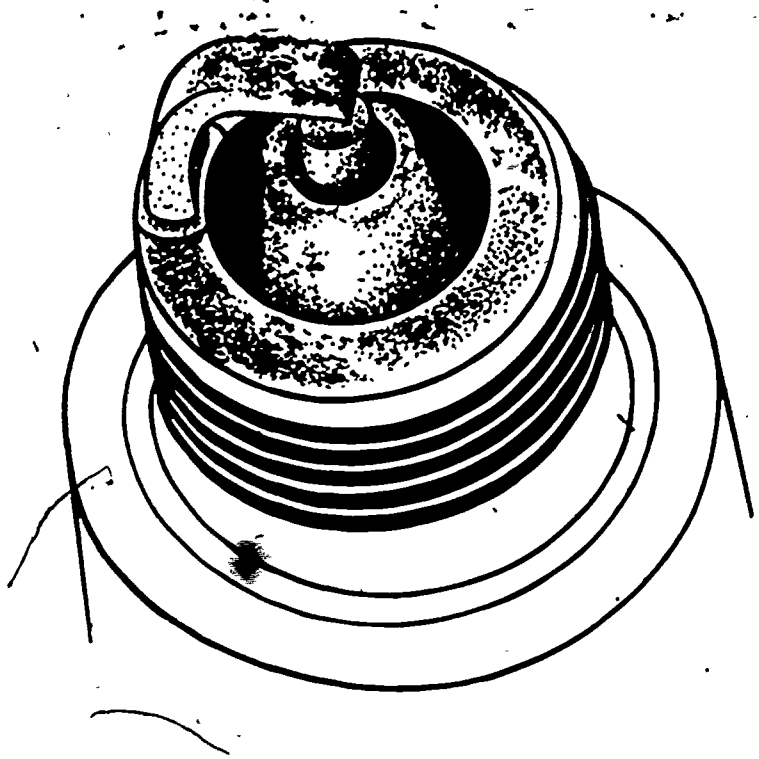
148. The PCV tester instruction manual specifies that the tester should be inserted in the rocker cover at the crankcase inlet air filter hole.

You should attach the tester at:



a. Point a (go to #26)
b. Point b (go to #189)
c. Point c (go to #222)
d. Point d (go to #138)

149. Most of the spark plugs look like this:



You should now.

a. Glean and install the spark plugs (go to #141)
b. Install new spark plugs (go to #141)

150. The technical service manual gives a specification of 0.3% CO. No HC specification is given You should now:

a. Use the specifications HC: 275 ppm; CO: 0.3% (go to #181)
b. Use the specifications HC: 400 ppm; CO: 0.3% (go to #181)
c. Use the specifications HC: 275 ppm; CO: 1.5% (go to #92)
d. Check the HC-CO tester manual (go to #84)
e. Check the emissions control decal in the engine compartment (go to #41)

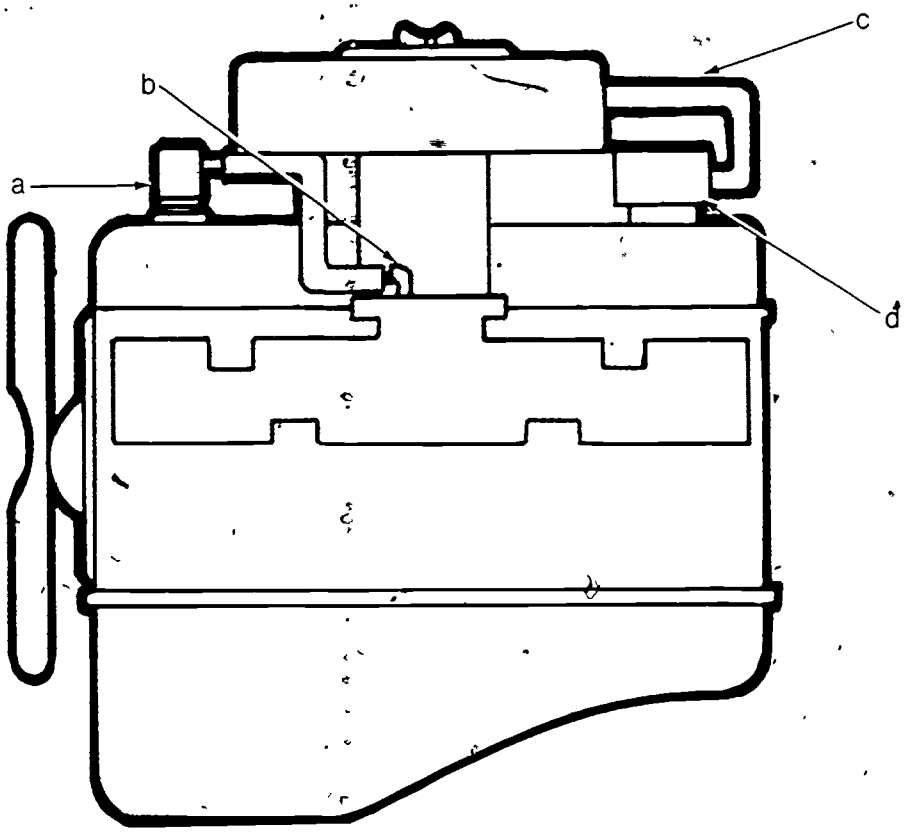
151. The hoses are in fairly good shape, and do not appear to be clogged. Now you would

a. Check another part of the automobile (go to #13)
b. Check the carburetor passages (go to #194)
c. Replace the PCV valve (go to #183)
d. Clean and reinstall the hoses (go to #123)

152. After removing the main body, you should:

a. Remove the throttle body (go to #87)
b. Remove the float bowl cover (go to #87)
c. Remove the choke linkage (go to #87)
d. Place the carburetor in a suitable cleaning solvent (go to #245)

153. You note the present HC and CO levels.



With an engine at idle, you would remove and plug the PCV line at:

a. Point a (go to #256)
b. Point b (go to #256)
c. Point c (go to #222)
d. Point d (go to #189)

154. Once the HC-CO tester probe is inserted, you warm up the machine. Now you should.

a. Pull a spark plug wire (go to #189) .
b. Adjust the engine idle speed to specifications (go to #207)
c. Remove the carburetor air cleaner assembly (go to #207)

155. After you have disabled the ignition by grounding the center wire from the distributor cap, you should:

a. Remove the center wire from the coil and hold it about 1/4 inch away from the engine block (go to #21)
b. Remove all the spark plug wires from the spark plugs (go to #56)
c. Remove the spark plug wire from the number 1 cylinder and hold it about 1/4 inch away from the engine block (go to #115)
d. Crank the engine and watch for the spark (go to #268)

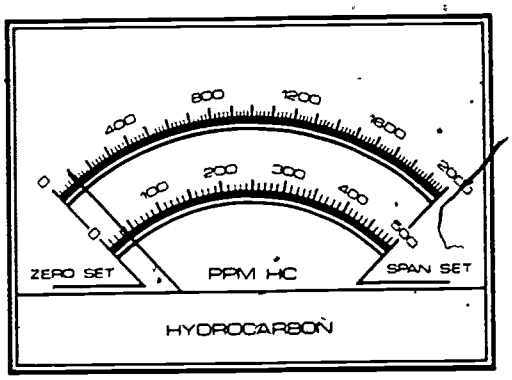
156. What other part of the PCV system should you check?

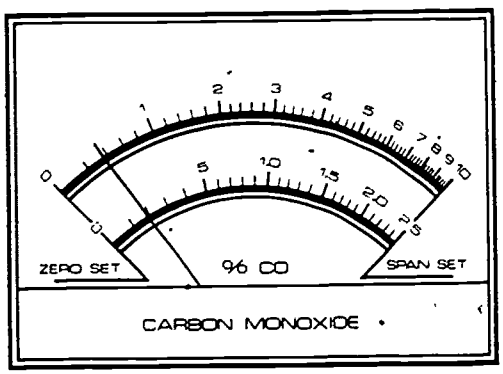
a. The hoses (go to #151)
b. The crankcase inlet air cleaner (go to #182)
c. The carburetor (go to #208)

157. In order to replace the charcoal canister filter element, you must:

a. Remove the canister purge line (go to #85)
b. Remove the carburetor air cleaner assembly (go to #85)
c. Disassemble the charcoal canister (go to #85)
d. Remove the charcoal canister from its mounting bracket (go to #85)

158. After replacing the PCV valve, the HC-CO reading is (high scale selected):





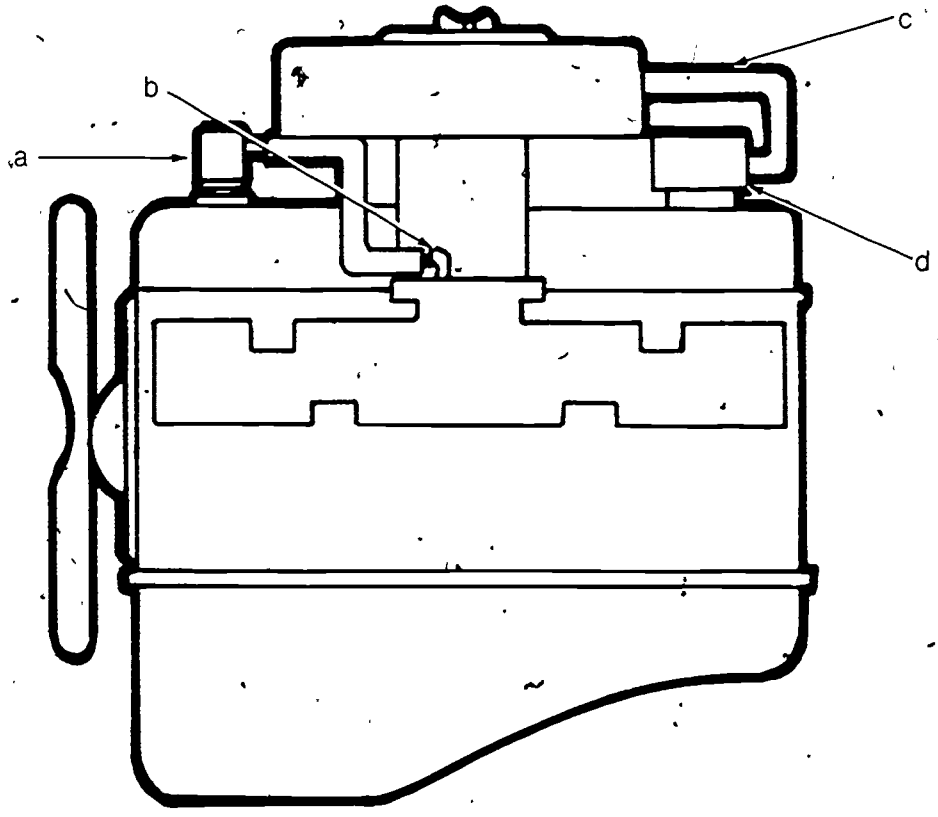
Next you should:

a. Adjust the idle mixture (go to #44)
b. Check the ignition system (go to #67)
c. Tell the service manager that you have finished the job (go to #278)

159. Next you should:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #183)
c. Check another part of the automobile (go to #13)

160. Where would you attach the PCV tester?



a. At point a (go to #128)
b. At point b (go to #61)
c. At point c (go to #61)
d. At point d (go to #138)

161. The ignition ballast resistor specifications are:

Ballast resistor—

Coil side (at 70-80° F)	0.5-0.6 ohms
Control unit side (at 70-80° F)	4.75-5.75 ohms

The proper amount of resistance for the bypass circuit should be:

a. O ohms (go to #48)
b. About 0.5 ohms (go to #26)
c. About 5 ohms (go to #189)
d. More than 20,000 ohms (go to #222)

162. To correct the high HC level, you should:

a. Adjust the carburetor mixture (go to #125)
b. Check the PCV valve (go to #238)
c. Check the air cleaner (go to #23)
d. Check for vacuum leaks (go to #55)
e. Check the engine compression (go to #64)

163. At idle speed, what should be present at this fitting?

a. A weak vacuum (go to #49)
b. A strong vacuum (go to #49)
c. A weak flow of air (go to #258)
d. A strong flow of air (go to #258)

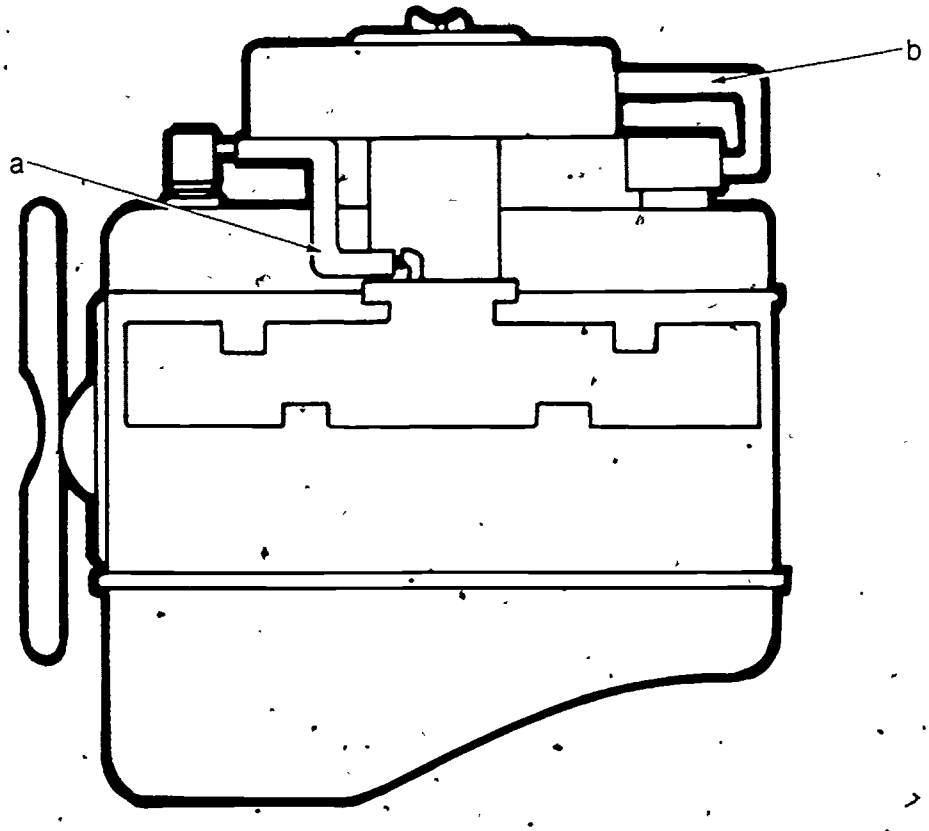
164. After replacing the vacuum hose, you should:

a. Replace the PCV valve (go to #183)
b. Check some other part of the automobile (go to #13)
c. Continue to check the PCV system (go to #210)

165. To hook up the HC-CO tester on this vehicle, you must:

a. Insert the tester probe into the vehicle tail pipe (go to #89)
b. Insert the tester probe into the access plug in the exhaust pipe (go to #272)
c. Insert the tester probe into the snorkel of the air cleaner (go to #110)
d. Consult the technical service manual for probe placement (go to #212)
e. Consult the HC-CO tester manual for probe placement (go to #14)

166. To test the PCV valve with a tachometer, you must:



a. Clamp off the hose at point a (go to #77)
b. Clamp off the hose at point b (go to #265)
c. Remove the hose at point a (go to #69)
d. Remove the hose at point b (go to #246)

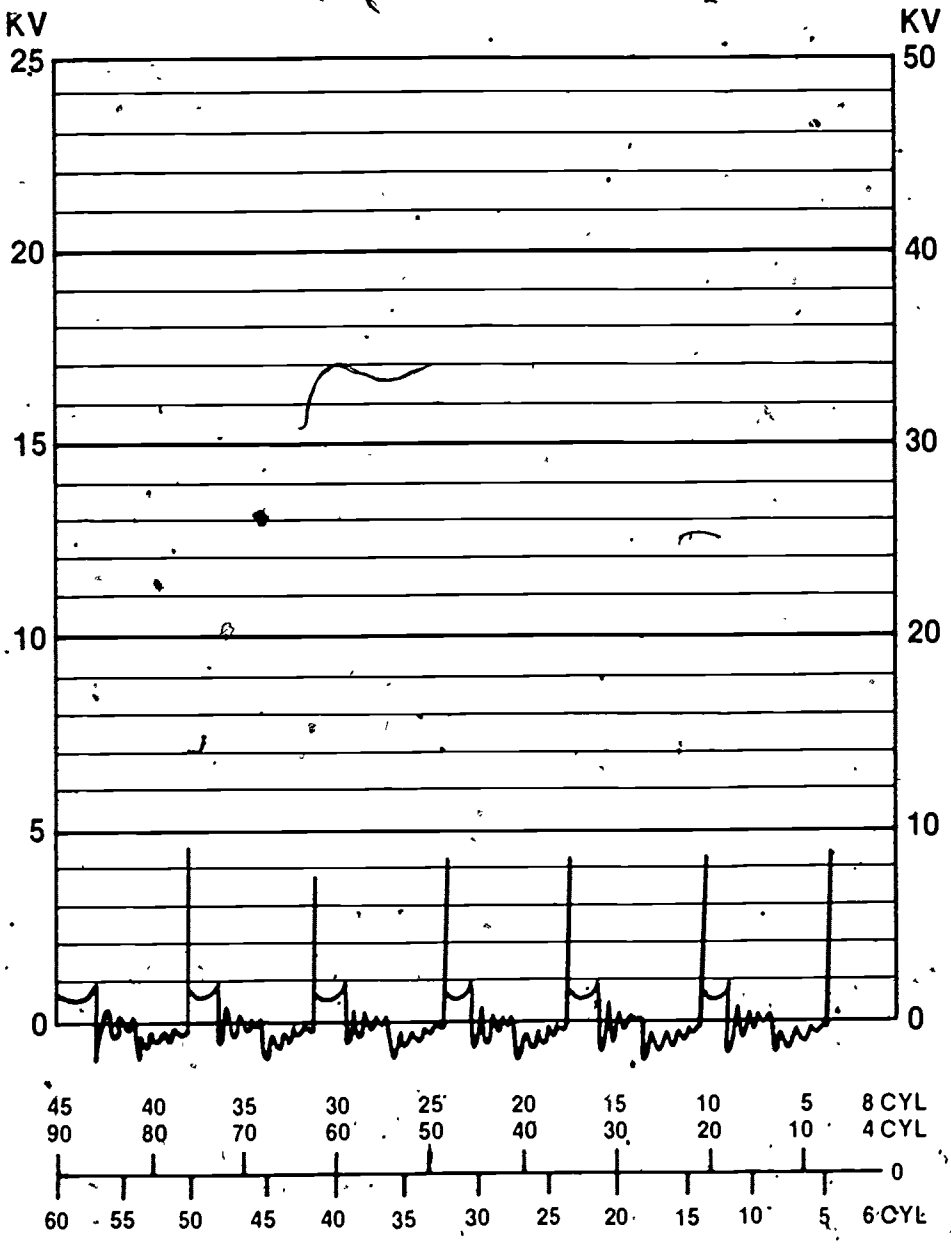
167. After removing the throttle body, you should:

a. Remove the float bowl cover (go to #87)
b. Remove the choke linkage (go to #87)
c. Remove the main body (go to #87)
d. Place the carburetor into a suitable cleaning solvent (go to #245)

168. The manufacturer lists the engine timing specification as TDC. After using a timing light to check the engine, you note that the engine timing is set at 0°. You should now:

a. Adjust the timing to specifications (go to #9)
b. Take an HC-CO reading (go to #144)
c. Set the contact point dwell (go to #189)

169. Here is the display pattern you obtain (25 KV scale selected):



Now you should:

a. Overhaul the carburetor (go to #62)
b. Check the exhaust emissions level (go to #35)
c. Check the secondary ignition circuit (go to #70)
d. Check the PCV system (go to #133)
e. Check the spark plugs (go to #243)
f. Adjust the carburetor idle speed and mixture (go to #57)

170. The HC-CO tester manual states that correctly tuned vehicles made since 1971 can have CO levels below 1% and HC levels below 200 ppm. You should now:

a. Use the specifications HC: 200 ppm; CO: 1% (go to #165)
b. Use the specifications HC: 200 ppm; CO: 0.3% (go to #165)
c. Ignore the HC reading and use the specification CO: 1% (go to #165)
d. Ignore the HC reading and use the specification CO: 0.3% (go to #165)

171. The dry compression readings are:

CYL NO.	1	2	3	4	5	6
COMPRESSION	125	120	130	130	125	120

The manufacturer specifies a minimum reading of 100 psi with a maximum variation of 25 psi between cylinders.

You should now:

a. Perform the wet compression test (go to #22)
b. Install the spark plugs and torque to specifications (go to #88)

172. A strong, hissing noise can be heard at the PCV valve (removed from the rocker cover) with engine at idle. A strong vacuum is also present. You should now:

a. Insert the PCV fitting into the rocker cover and check another system on the vehicle (go to #3)
b. Replace the PCV valve with another one (go to #3)

173. The emissions control decal in the engine compartment lists idle CO as 0.3%. No HC specification is given. You should now:

a. Use the specifications HC: 500 ppm; CO: 0.3% (go to #257)
b. Use the specifications HC: 200 ppm; CO: 0.3% (go to #257)
c. Ignore the HC reading and use the specification CO: 0.3% (go to #257)
d. Check the HC-CO tester manual (go to #102)

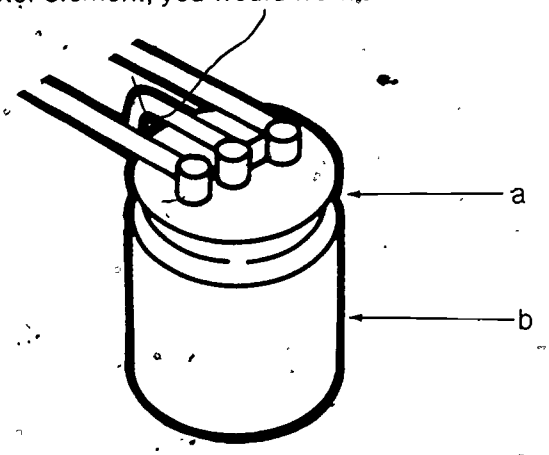
174. After removing, cleaning, checking, and replacing the battery, you would:

a. Check the engine timing (go to #5)
b. Check the PCV valve (go to #133)
c. Replace the spark plugs (go to #243)
d. Adjust the carburetor (go to #57)
e. Hook up an HC-CO tester (go to #35)
f. Hook up an engine analyzer (go to #52)

175. What should you use to clean the crankcase inlet air cleaner?

a. Carburetor cleaner solvent (go to #196)
b. Combustion chamber conditioner (go to #26)
c. Detergent and water (go to #189)
d. Cleaning solvent (go to #204)
e. Silicone spray (go to #222)

176. To remove the old filter element, you would work at:



a. End a (go to #34)
b. End b (go to #34)

177. After removing the PCV valve, you shake it back and forth. No noises can be heard. This means:

a. The PCV valve is defective (go to #113)
b. The PCV valve is good (go to #26)
c. You should check another part of the automobile (go to #222)

178. A new, fully charged battery should have specific gravity readings of about:

a. 1.280 (go to #26)
b. 1.300 (go to #26)
c. 1.350 (go to #26)
d. 2.000 (go to #26)

179. The idle specifications are:

	Idle Speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 800 RPM (go to #98)
b. 750 RPM (go to #98)
c. The fastest speed at which the engine will idle (go to #189)
d. The slowest speed at which the engine will idle (go to #26)

53

180. The hoses in the evaporative emission control system are in good condition. Now you should.

a. Replace the charcoal canister filter element (go to #235)
b. Check the exhaust gas with an HC-CO tester (go to #35)
c. Check the engine performance with an engine analyzer (go to #73)
d. Tell the service manager that you have finished the job (go to #279)

181. In order to hook up the HC-CO tester to this vehicle, you would:

a. Insert the tester probe into the vehicle's tail pipe (go to #89)
b. Insert the tester probe into the access plug in the exhaust pipe (go to #28)
c. Insert the tester probe into the snorkel of the air cleaner assembly (go to #110)
d. Consult a technical service manual for proper placement of the tester probe (go to #50)
e. Consult the HC-CO tester manual for proper placement of the tester probe (go to #117)

182. To check the crankcase inlet air cleaner, you should:

a Remove it and hold a piece of paper against it (go to #247)
b. Remove it and hold a piece of paper against the crankcase hole (go to #255)
c. Clamp off the hose connected to it (go to #16)
d. Simply clean the crankcase inlet air cleaner (go to #175)

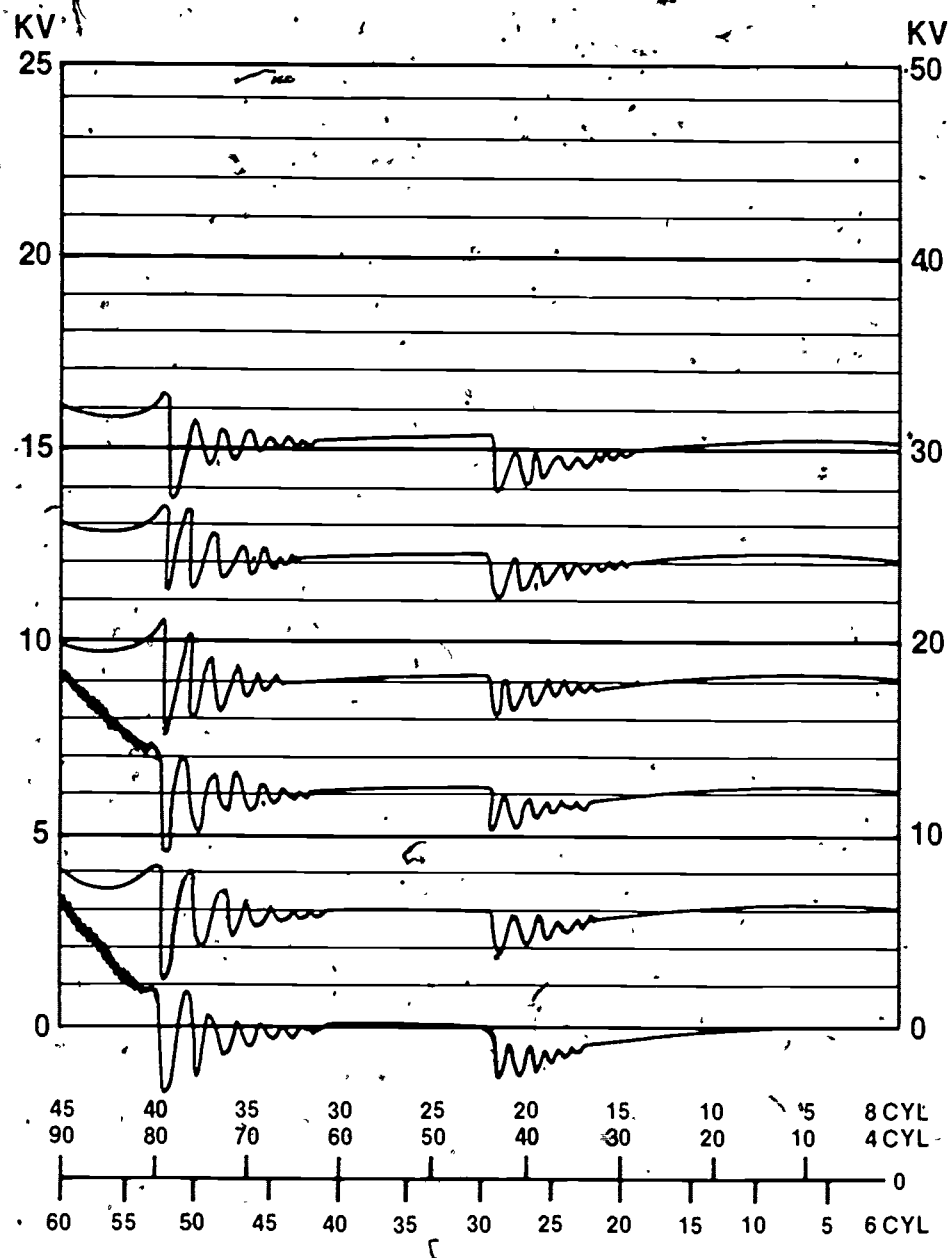
183. After replacing the PCV valve, you should:

a. Check another part of the automobile (go to #3)
b. Check the PCV valve operation (go to #172)

184. The technical service manual refers you to the vehicle emission control label in the engine compartment. The emission control decal specifies that all infrared samples are to be taken in front of the catalytic converter. You should insert the HC-CO tester probe in.

a The tail pipe (go to #222)
b. The exhaust pipe (go to #37)

185. The engine analyzer shows the following raster pattern:



You should next:

a. Check the spark plugs (go to #149)
b. Check the carburetor idle mixture (go to #211)
c. Road test the vehicle (go to #279)
d Tell the service manager that you have finished the job (go to #279)

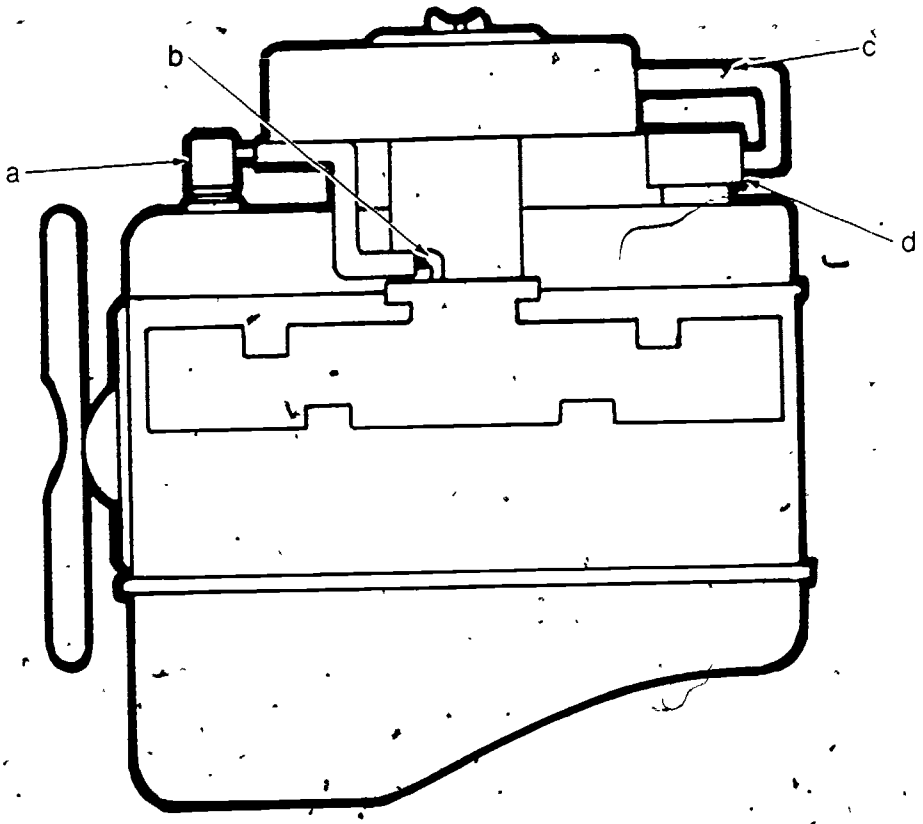
186. Where would you insert the HC-CO tester probe on the vehicle?

a. In the exhaust pipe (go to #154)
b. In the tail pipe (go to #222)
c. You cannot say without checking a technical service manual (go to #215)

187. The HC and CO levels remain unchanged. Now you should:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #45)
c. Continue to check the PCV system (go to #277)
d Check some other part of the automobile (go to #109)

188. To test the PCV system with the HC-CO tester, you must remove and plug the PCV line at:



a. Point a (go to #137)
b. Point b (go to #137)
c. Point c (go to #222)
d. Point d (go to #26)

189. Which of the following conditions might be responsible for the high fuel consumption described in question number 1?

a. Ignition dwell incorrectly set (go to #279)
b. A defective air pump pressure-relief valve (go to #279)
c. A thermostatic air cleaner always open to unheated air (go to #279)
d. A defective catalytic converter (go to #279)
e. A malfunctioning automatic choke electric assist (go to #279)

190. What source should you check for the HC-CO specifications for this vehicle?

a. A technical service manual (go to #260)
b. The HC-CO tester operating manual (go to #75)
c. The emissions control decal in the engine compartment (go to #219)
d. The manufacturer's shop manual (go to #266)

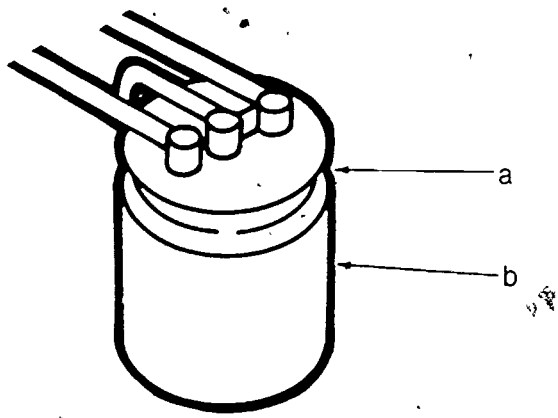
191. After removing the fitting, you should check for a:

a. Weak flow of air (go to #224)
b. Strong flow of air (go to #224)
c Weak vacuum (go to #99)
d. Strong vacuum (go to #99)

192. After removing the PCV valve, you shake it back and forth. No noises can be heard. Now you should:

a. Clean the PCV valve (go to #66)
b Replace the PCV valve (go to #231)
c. Check another part of the automobile (go to #189)

193. To remove the old filter element, you should work at:



a End a (go to #242)
b End b (go to #242)

194. You would check the PCV passages for clogs by

a. Overhauling the carburetor (go to #62)
b. Inserting a drill bit into the carburetor PCV passages (go to #208)
c Removing the carburetor (go to #40)
d. Looking into the carburetor PCV passages (go to #227)

195. The measured battery voltage is 10.7 v You should now

a. Check the ignition bypass circuit (go to #161)
b. Replace the ignition points and condenser (go to #209)
c Replace the battery (go to #178)
d. Charge the battery (go to #240)
e. Check the engine timing (go to #5)

196. Next you should:

a. Clean the PCV valve (go to #189)
b. Replace the PCV valve (go to #189)
c. Check another part of the automobile (go to #189)

197. The manufacturer lists specifications for engine idle speed, but states that the idle mixture should be adjusted with the aid of an infrared tester. You should now:

a. Hook up an engine analyzer (go to #52)
b. Hook up an exhaust gas analyzer (go to #35)
c. Change the charcoal canister filter element (go to #132)
d. Simply adjust idle speed and ignore idle mixture (go to #26)

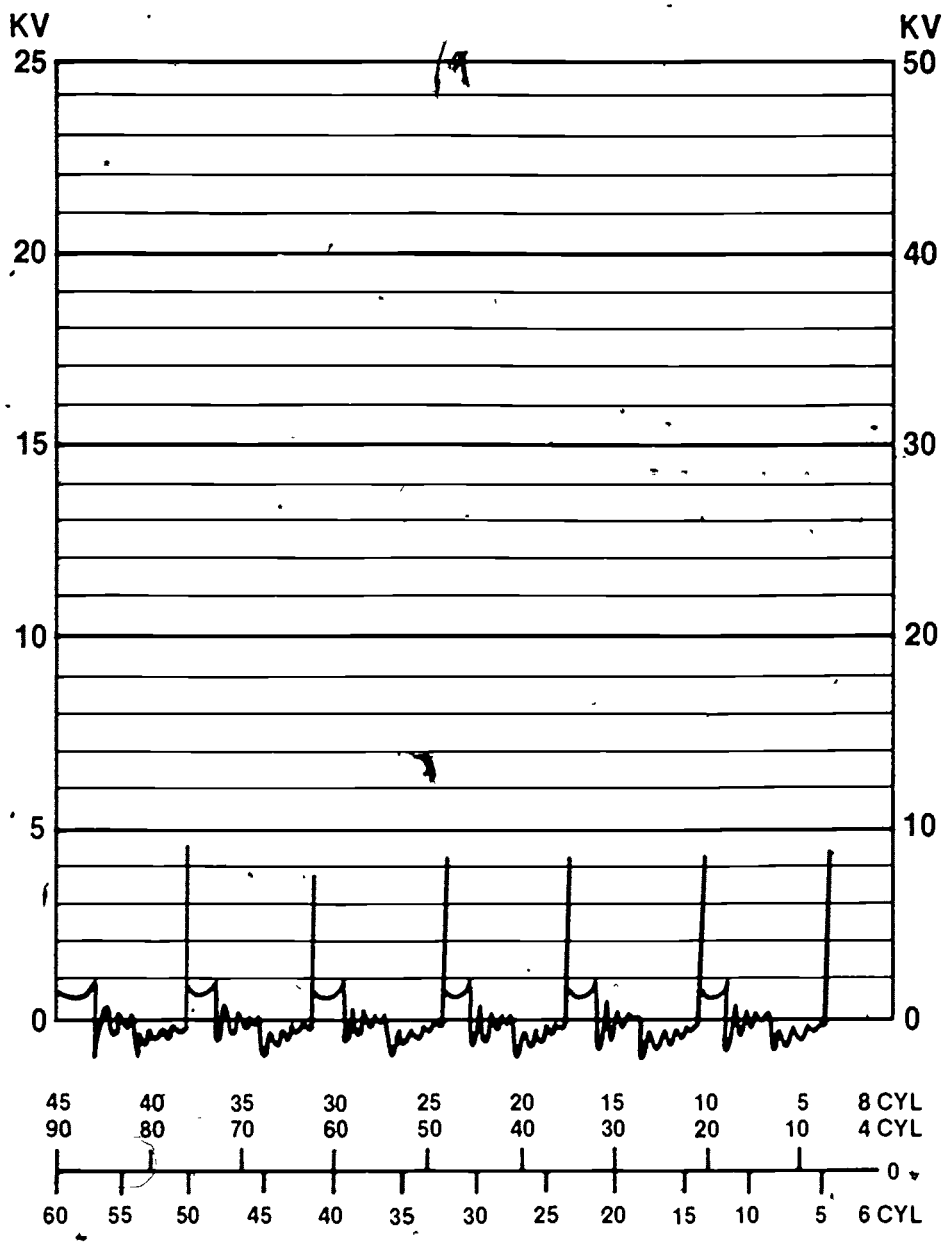
198. Timing specifications are given as TDC. The timing is presently set at 0°. You should now

a. Advance the timing to specifications (go to #189)
b. Retard the timing to specifications (go to #26)
c. Check the carburetor (go to #62)
d. Check the exhaust gas with an HC-CO tester (go to #35)
e. Check the engine performance with an engine analyzer (go to #140)

199. After you remove the hose, the engine speed increases. You should next:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #231)
c. Continue to check the PCV system (go to #192)
d. Check another part of the automobile (go to #26)

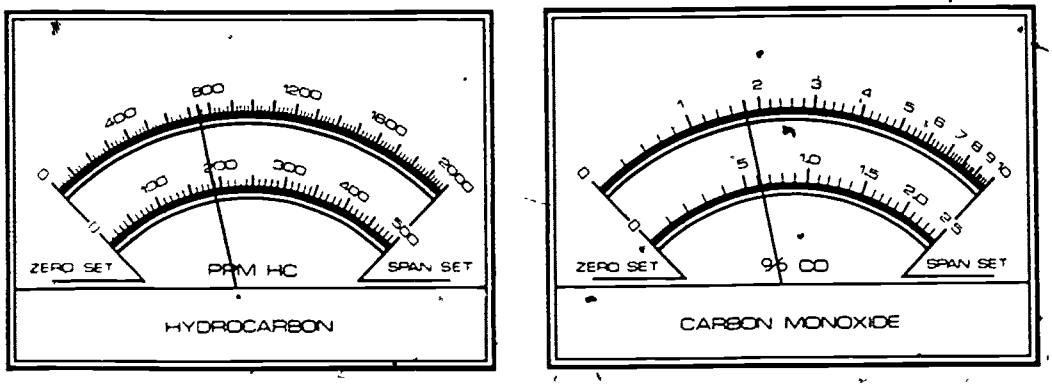
200. Here is the display pattern you obtain on the oscilloscope:



Now you should:

a. Tell the service manager that you have finished the job (go to #279)
b. Adjust the idle mixture (go to #76)
c. Check the PCV system (go to #39)
d. Check for vacuum leaks (go to #189)

201. Here is the HC-CO reading you obtain (high-scale selected):



You should now:

a. Clean the PCV valve (go to #66)
b. Continue to check the PCV system (go to #277)
c. Replace the PCV valve (go to #45)
d. Check some other part of the automobile (go to #109)

202. The headlights dim slightly as the engine is cranked. The cranking motor speed is good. Now you should:

a. Replace the battery (go to #178)
b. Charge the battery (go to #240)
c. Replace the coil (go to #60)
d. Replace the ignition points and condenser (go to #209)
e. Check the timing (go to #5)
f. Check the ignition bypass circuit (go to #161)
g. Replace the spark plugs (go to #243)

203. The idle specifications are:

	Idle speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #8)
b. 800 RPM (go to #8)
c. The fastest speed at which the engine will idle (go to #222)
d. The slowest speed at which the engine will idle (go to #189)

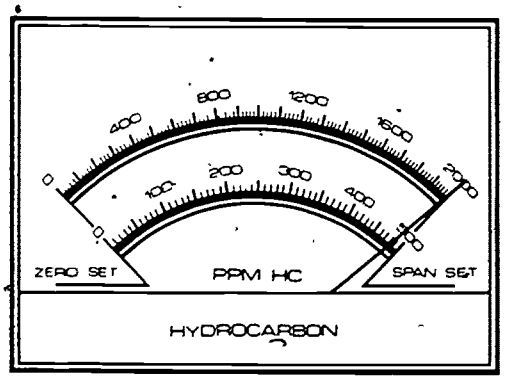
204. After cleaning the crankcase inlet air filter, you should:

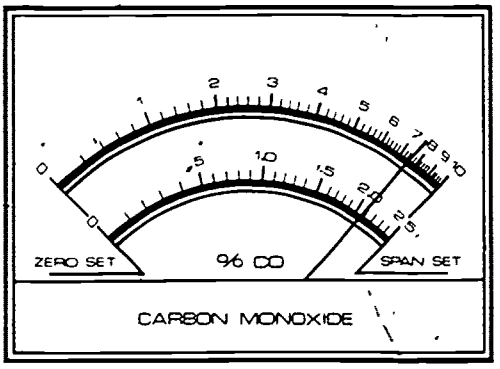
a. Install it (go to #159)
b. Wet it in motor oil and install it (go to #159)

205. The vehicle emission control decal states that infrared measurements are to be made at the access plug in the exhaust pipe. Now you should:

a. Insert the tester probe into the vehicle tail pipe (go to #89)
b. Insert the tester probe into the access plug of the exhaust pipe (go to #272)
c. Insert the tester probe into the snorkel of the air cleaner assembly (go to #110)

206. Here is the reading you obtain:





This reading means:

a. You need to check the reading on the high-range scale again (go to #95)
b. The HC level is too high (go to #162)
c. The CO level is too high (go to #225)
d. Both the HC and CO levels are too high (go to #252)

207. What source could you consult for recommended HC-CO specifications for this vehicle?

a. The emissions control decal in the engine compartment (go to #173)
b. The HC-CO tester operating manual (go to #226)
c. A technical service manual (go to #10)
d. The manufacturer's shop manual (go to #237)

208. No clogs are found when the carburetor PCV passages are checked with a drill bit. Now you should check:

a. The hoses (go to #151)
b. The crankcase inlet air cleaner (go to #182)
c. Another part of the automobile (go to #13)

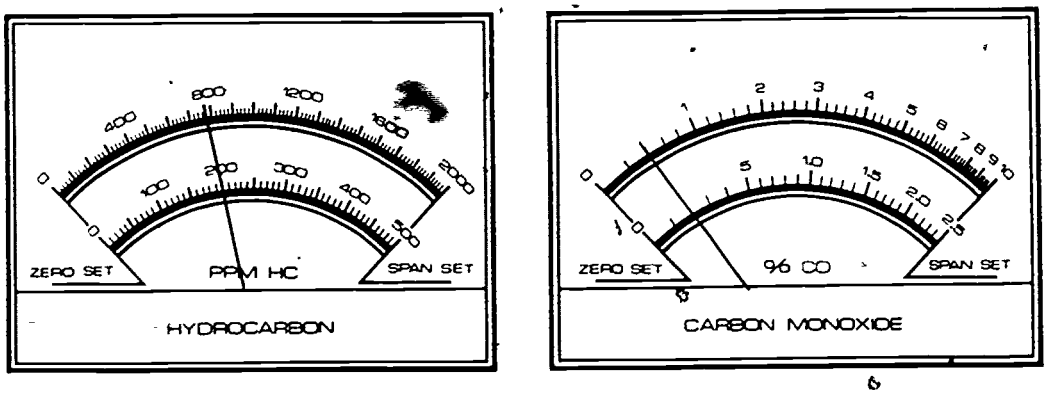
209. Oops! There are no points or condenser inside the distributor. Instead, there is a reluctor and pickup coil. Next you should:

a. Replace the reluctor and pickup coil (go to #222)
b. Adjust the air gap between the reluctor and pickup coil (go to #222)
c. Measure the ignition dwell (go to #222)
d. Replace the distributor cap and check something else (go to #222)

210. After removing the PCV valve, you shake it back and forth. No noises can be heard. Now you should:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #183)
c. Continue to check the PCV system (go to #151)
d. Check another part of the automobile (go to #13)

211. After adjusting the carburetor idle mixture for the lowest emissions, your HC-CO reading is (high scale selected):



You should now:

a. Tell the service manager that you have finished the job (go to #279)
b. Check the spark plugs (go to #79)
c. Check the ignition system (go to #221)

212. The technical service manual refers you to the vehicle emission control decal for exact placement of the tester probe. You should now:

a. Insert the tester probe into the snorkel of the air cleaner assembly (go to #222)
b. Insert the tester probe into the access plug on the exhaust pipe (go to #189)
c. Insert the tester probe into the vehicle tail pipe (go to #26)
d. Consult the vehicle emission control decal (go to #205)

213. After removing the choke linkage, you should:

a. Remove the main body (go to #87)
b. Remove the throttle body (go to #87)
c. Remove the float bowl cover (go to #87)
d. Place the carburetor in a suitable cleaning solvent (go to #245)

214. The PCV filter and the carburetor air cleaner are both in very good condition Next you should

a. Check the PCV system (go to #188)
b. Check the engine compression (go to #64)
c. Check another part of the automobile (go to #254)
d. Tell the service manager that you have finished the job (go to #279)

215. The technical service manual refers you to the vehicle emission control decal in the engine compartment. The emission control decal specifies that all infrared samples are to be taken in front of the catalytic converter. You should insert the HC-CO tester probe in the:

a. Exhaust pipe (go to #154)
b. Tail pipe (go to #189)

216. After replacing the charcoal canister filter element, you should:

a. Hook up an engine analyzer (go to #107)
b. Hook up an HC-CO tester (go to #35)
c. Tell the service manager that you have finished the job (go to #279)

217. After setting the engine idle speed, you should check the:

a. Engine timing (go to #168)
b. HC-CO reading (go to #144)
c. Contact point dwell (go to #209)

218. After replacing the crankcase inlet air cleaner, you should:

a. Check the hoses (go to #151)
b. Check the carburetor passages (go to #194)
c. Check another part of the automobile (go to #13)
d. Replace the PCV valve (go to #183)

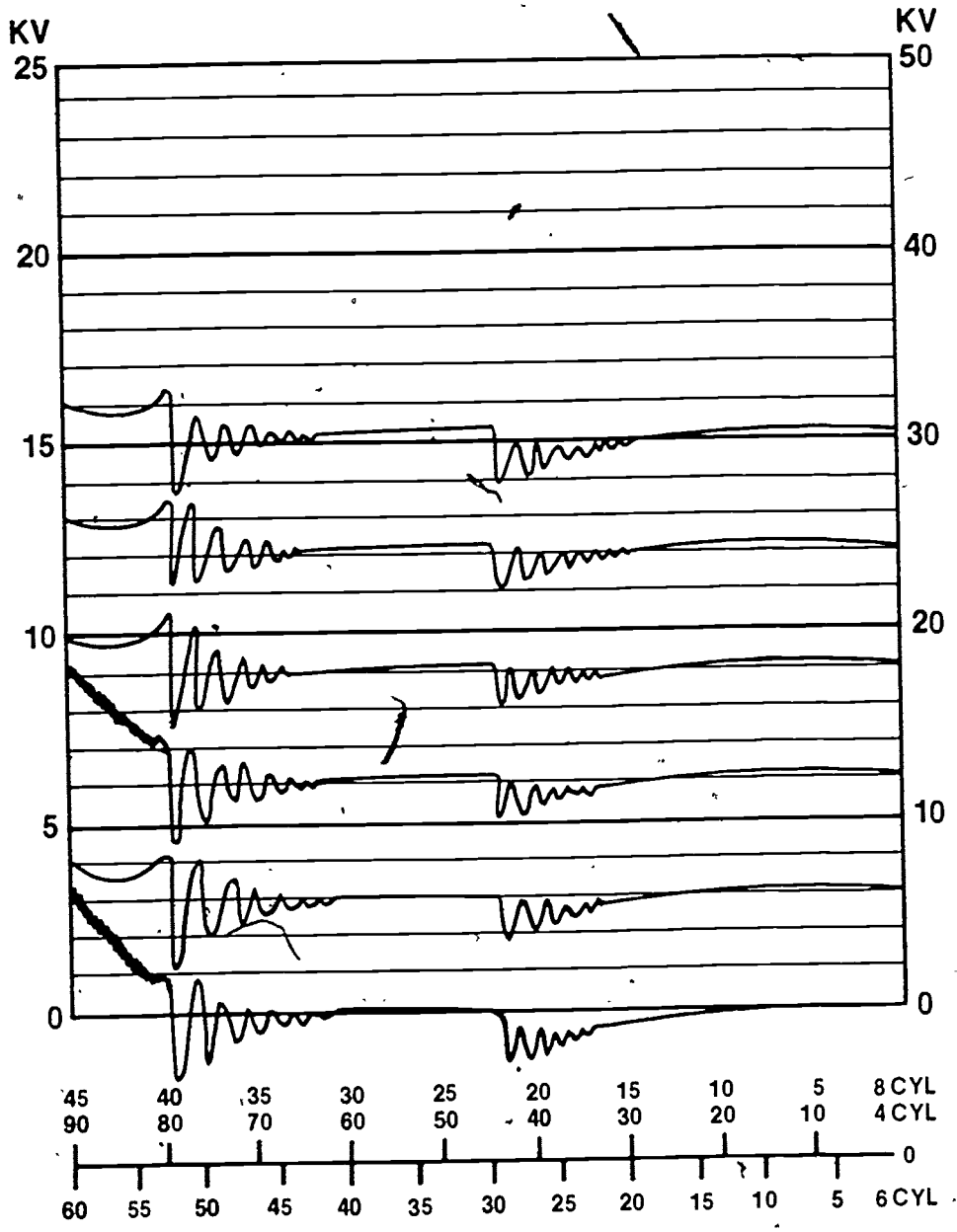
219. The emissions control decal in the engine compartment lists idle CO as 0.3%. No HC specification is given. Next you should:

a. Check the HC-CO tester manual (go to #170)
b. Use the specifications HC: 500 ppm; CO: 0.3% (go to #165)
c. Use the specifications HC: 275 ppm; CO: 0.3% (go to #165)
d. Use the specifications HC: 200 ppm; CO: 0.3% (go to #165)
e. Ignore the HC reading and use the CO specification of 0.3% (go to #165)

220. Next you should:

a. Hook up an engine analyzer (go to #91)
b. Check the HC-CO levels (go to #12)
c. Adjust the carburetor idle speed and mixture (go to #231)
d. Replace the charcoal canister filter element (go to #26)

221. The engine analyzer shows this raster pattern:



You should now:

a. Check the spark plugs (go to #79)
b. Tell the service manager that you have finished the job (go to #279)
c. Road test the vehicle (go to #279)

222. Which of the following conditions might be responsible for the increased oil consumption described in question number 1?

a. Defective spark plugs (go to #279)
b. Incorrect ignition timing (go to #279)
c. Defective PCV valve (go to #279)
d. Carburetor mixture incorrectly set (go to #279)
e. Defective evaporative emissions control system (go to #279)

223. After you have grounded the primary battery lead to the coil, you should.

a. Crank the engine and watch for the spark (go to #268)
b. Remove all the spark plug wires from the spark plugs (go to #56)
c. Remove the center wire from the distributor cap and hold it about 1/4 inch away from the engine block (go to #115)
d. Remove the center wire from the coil and hold it about 1/4 inch away from the engine block (go to #21)

224. There is a very weak flow of air at this fitting. You should next:

a. Replace the PCV valve (go to #183)
b. Continue to check the PCV system (go to #210)
c. Check some other part of the automobile (go to #13)
d. Clean the PCV valve (go to #66)

225. To correct the high CO level, you should:

a. Check the engine compression (go to #64)
b. Check for vacuum leaks (go to #55)
c. Check the air cleaner (go to #23)
d. Check the PCV valve (go to #238)
e. Adjust the carburetor idle mixture (go to #125)

226. The HC-CO tester manual gives the following information:

When properly tuned, 1971 and newer vehicles can have CO levels below 1%, and HC levels below 200 ppm. Refer to manufacturer's specifications usually found on a sticker under the hood.

You should now:

a. Use the specifications HC: 200 ppm; CO: 1% (go to #257)
b. Use the specifications HC: 200 ppm; CO: 0.3% (go to #257)
c. Check the emissions control decal in the vehicle engine compartment (go to #173)

227. Since you noted no clogs in the passages, you should now:

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #183)
c. Clean the PCV hoses (go to #123)
d. Check some other part of the automobile (go to #13)

228. After setting the idle speed, you should check the:

a. HC-CO reading (go to #98)
b. Engine timing (go to #253)
c. Contact point dwell (go to #209)

229. After cleaning the crankcase inlet air filter, you should:

a. Wet it with kerosene and install it (go to #218)
b. Wet it with gasoline and install it (go to #92)
c. Wet it with motor oil and install it (go to #218)
d. Install it without wetting it (go to #218)

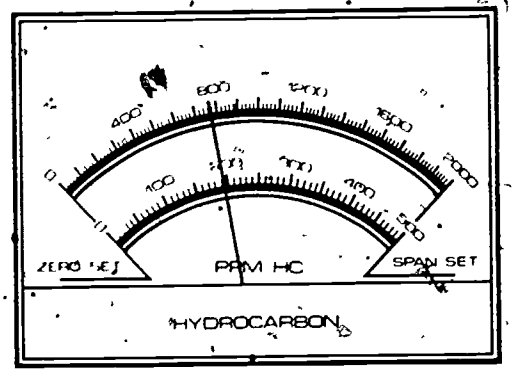
230. The instructions for adjusting the carburetor pump setting are:

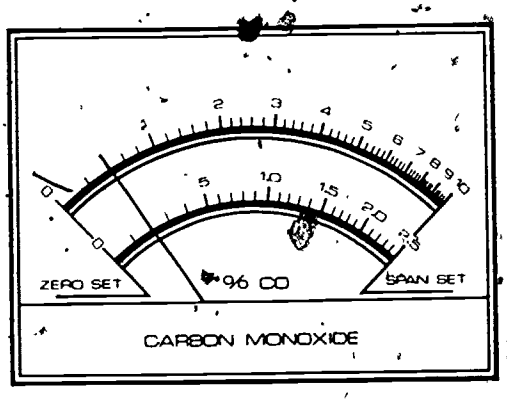
With throttle in curb idle position, pump stroke should meet specifications. Measure distance from vacuum passage casting to outer edge of hole in pump rod. If necessary to adjust, open or close "U" bend in rod.

To make this adjustment, you would use a:

a. Carburetor linkage bending tool (go to #100)
b. Pair of pliers (go to #100)
c. Carburetor power valve tool (go to #100)
d. Drill bit (go to #189)
e. Set of calipers (go to #100)

231. After replacing the PCV valve, the HC-CO reading is (high scale selected):





Next you would check the:

a. Ignition system (go to #185)
b. Engine compression (go to #135)
c. Engine for vacuum leaks (go to #119)

232. The manufacturer lists the engine timing specifications as TDC. After using a timing light to check the engine, you note that the engine is set at 0°. You would then:

a. Adjust the contact point dwell (go to #189)
b. Adjust the timing to specifications (go to #9)
c. Take an HC-CO reading (go to #8)

233. After finishing with the engine timing, you should:

a. Adjust the carburetor (go to #222)
b. Check the PCV valve (go to #222)
c. Hook up an HC-CO tester (go to #222)
d. Hook up an engine analyzer (go to #222)
e. Write up the ticket for your work and tell the service manager that you have finished (go to #279)

234. The HC and CO levels remain unchanged. You should now:

a. Check some other part of the automobile (go to #109)
b. Replace the PCV valve (go to #45)
c. Continue to check the PCV system (go to #277)
d. Clean the PCV valve (go to #66)

235. In order to replace the charcoal canister filter element, you must:

a. Disassemble the charcoal canister (go to #176)
b. Remove the carburetor air cleaner assembly (go to #176)
c. Replace the canister purge line (go to #176)
d. Remove the charcoal canister from its mounting bracket (go to #176)

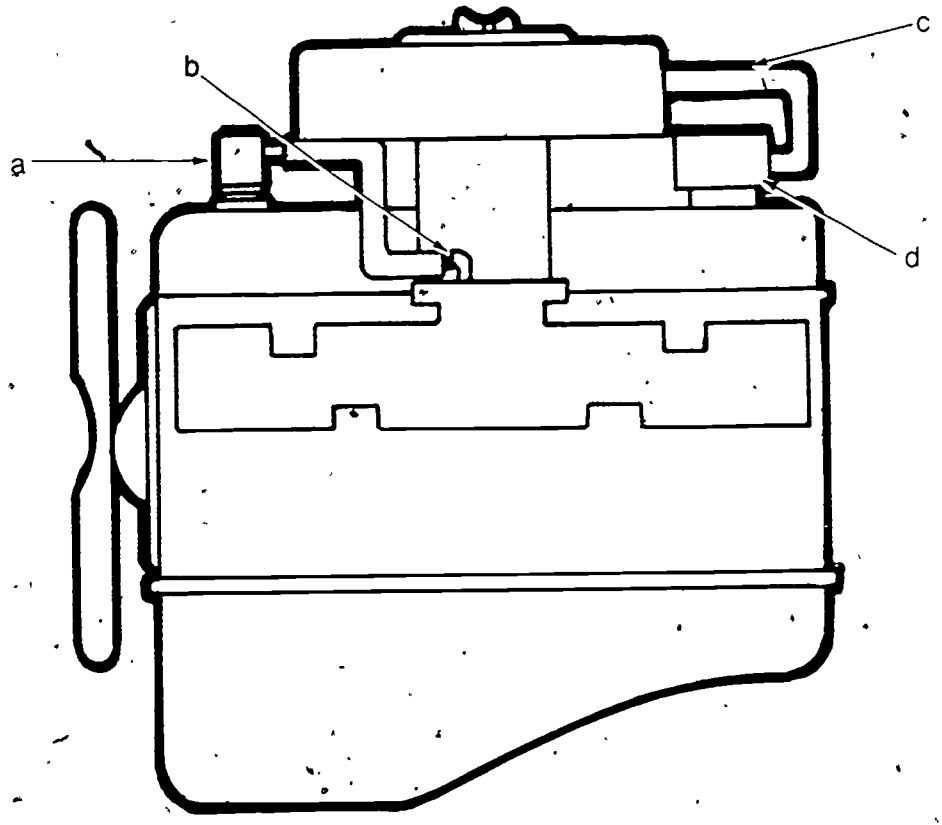
236. A strong, hissing noise can be heard at the PCV valve (removed from the rocker cover) with the engine at idle. A strong vacuum is present. You would next:

a. Insert the PCV valve into the rocker and check the HC-CO level (go to #12)
b. Replace the PCV valve with another one and check the HC-CO level (go to #12)

237. The manufacturer specifies CO at idle of 0.3% for this vehicle. No HC specification is given. Now you should:

a. Use the specifications HC: 500 ppm; CO: 0.3% (go to #257)
b. Use the specifications HC: 275 ppm; CO: 0.3% (go to #257)
c. Use the specifications HC: 200 ppm; CO: 0.3% (go to #257)
d. Ignore the HC reading and use the specification CO: 0.3% (go to #257)
e. Check the HC-CO tester manual (go to #226)
f. Check the emissions control decal in the engine compartment (go to #173)

238. To quickly check the performance of the PCV valve, you should remove the hose or fitting at:



a. Point a (go to #163)
b. Point b (go to #199)
c. Point c (go to #248)
d. Point d (go to #80)

239. The HC level remains unchanged. The CO level drops slightly. You should now:

a. Replace the carburetor air cleaner (go to #222)
b. Replace the PCV inlet filter (go to #189)
c. Replace the crankcase inlet air cleaner (go to #26)
d. Continue to check the PCV system (go to #277)
e. Replace the PCV valve (go to #45)
f. Clean the PCV valve (go to #66)

240. The ampere-hour rating is 70. The cold-cranking rating is 440 amps. What slow-charging rate would you select?

a. 5 amps (go to #43)
b. 31 amps (go to #222)
c. 50 amps (go to #189)
d. 70 amps (go to #26)

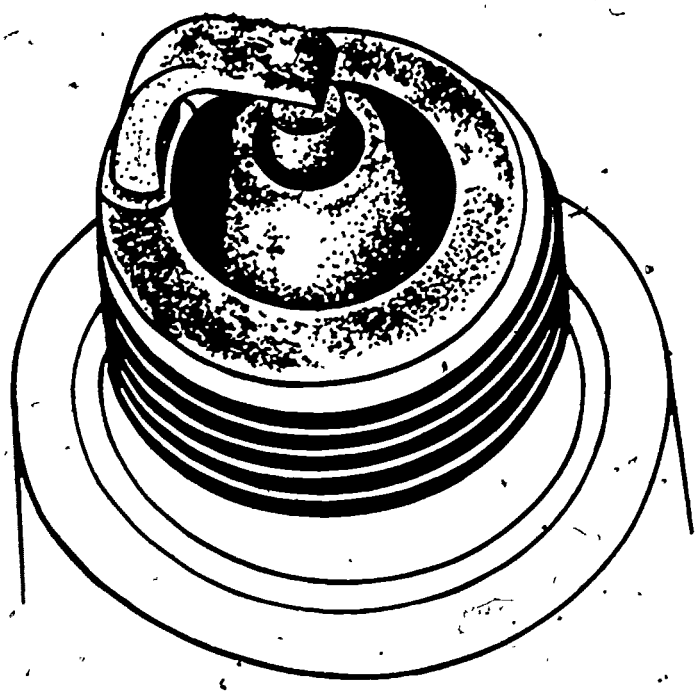
241. There is almost no vacuum present, and no noise can be heard at this fitting. You should now.

a. Continue to check the PCV system (go to #271)
b. Replace the PCV valve (go to #158)
c. Clean the PCV valve (go to #66)
d. Check another part of the automobile (go to #189)

242. What tool(s) would you select to remove and replace the charcoal canister filter element from the canister assembly?

a. Vise-grip pliers (go to #216)
b. A screwdriver (go to #216)
c. Needle-nose pliers (go to #216)
d. A screwdriver and needle-nose pliers (go to #216)
e No tools are necessary (go to #216)

243. After removing the spark plugs, you notice that they all look like this:



You would now

a Clean all the spark plugs and install them (go to #94)
b Replace all the spark plugs (go to #29)

244. After removing the PCV valve, you shake it back and forth. No rattling can be heard. Now you should:

a Check some other part of the automobile (go to #254)
b Replace the PCV valve (go to #32)
c Clean the PCV valve (go to #66)

245. The proper way to dry a carburetor that has been soaking in solvent is to dip it in:

a. Gasoline and allow it to air-dry (go to #189)
b. Water and blow-dry with an air gun (go to #189)
c. Kerosene and blow-dry with an air gun (go to #189)

246. When the hose is removed, there is no change in idle RPM. You would next:

a. Check another part of the automobile (go to #13)
b. Continue to check the PCV system (go to #156)
c. Clean the PCV valve (go to #66)
d Replace the PCV valve (go to #183)

247. After the engine has idled for about one minute, there is no vacuum at the crankcase inlet air cleaner. Next you should:

a Replace the PCV valve (go to #183)
b Clean the PCV valve (go to #66)
c Clean the crankcase inlet air cleaner (go to #175)
d. Replace the crankcase inlet air cleaner (go to #218)
e. Check another part of the automobile (go to #13)

248. At the idle speed, what should be present at this fitting?

a. A weak flow of air (go to #258)
b A strong flow of air (go to #258)
c A weak vacuum (go to #49)
d. A strong vacuum (go to #49)

249. After completing all timing adjustments, you should:

a. Hook up an HC-CO tester (go to #26)
b. Hook up an engine analyzer (go to #26)
c. Adjust the carburetor (go to #26)
d. Check the PCV valve (go to #26)
e. Road test the vehicle (go to #26)

250. The emissions control decal in the engine compartment gives a CO specification of 0.3% No HC specification is given. You should now:

a. Use the specifications HC: 200 ppm; CO: 1% (go to #165)
b Use the specifications HC: 200 ppm; CO: 0.3% (go to #165)
c. Ignore the HC reading and use the specification CO: 0.3% (go to #165)

251. The idle specifications are:

	Idle Speed (RPM)	
Models	**Man. Trans.**	**Auto. Trans.**
All 6-cyl	800	750

You should set the idle speed at:

a. 750 RPM (go to #147)
b. 800 RPM (go to #147)
c. The slowest speed at which the engine will idle (go to #189)
d. The fastest speed at which the engine will idle (go to #26)

252. What would you check or adjust to correct the high HC and CO levels?

a. The PCV system (go to #238)
b. The carburetor mixture (go to #125)
c. The air cleaner (go to #23)
d. The engine compression (go to #64)
e. The air pump (go to #17)

253. The manufacturer lists the engine timing specifications as TDC. After using a timing light to check the engine, you notice that the engine timing is set at 0°. Now you would:

a. Take an HC-CO reading (go to #98)
b. Adjust the contact point dwell (go to #209)
c. Adjust the engine timing to specifications (go to #9)

254. What other part of the automobile would you check?

a. The catalytic converter (go to #222)
b. The evaporative emissions control system (go to #222)
c. The contact points and condenser (go to #222)
d. The OSAC system (go to #222)
e. The TIC valve (go to #222)
f. The choke unloader mechanism (go to #222)

255. After about one minute with the engine at idle, there is no flow of air or vacuum at the crankcase hole. Now you should:

a. Clean the crankcase inlet air cleaner (go to #175)
b. Replace the crankcase inlet air cleaner (go to #218)
c. Replace the PCV valve (go to #183)
d. Check another part of the automobile (go to #13)

256. The HC and CO levels remain unchanged. This means that:

a. The PCV valve is defective (go to #113)
b. The PCV valve is good (go to #26)
c. You should continue to check the PCV system (go to #177)

257. Prior to taking any HC-CO measures, you decide to check the ignition timing. Specified timing is TDC. You note that the actual timing is set at 0°. You should next:

a. Adjust the timing to specifications (go to #9)
b. Take an HC-CO reading (go to #12)
c. Set the contact point dwell (go to #209)

258. There is only the slightest flow of air, and no noise can be heard at this fitting. You should.

a. Continue to check the PCV system (go to #192)
b. Replace the PCV valve (go to #231)
c. Clean the PCV valve (go to #66)
d. Check another part of the automobile (go to #222)

259. After cleaning the PCV hoses, you should:

a. Replace the PCV valve (go to #183)
b. Clean the PCV valve (go to #222)
c. Check some other part of the automobile (go to #13)

260. The technical service manual shows a specification of 0.3% CO. No HC specification is given You should now:

a. Check the emissions control decal in the engine compartment (go to #86)
b. Check the HC-CO tester operating manual (go to #170)
c. Ignore the HC specification and use CO: 0.3% (go to #165)
d. Use the specifications HC: 500 ppm; CO: 0.3% (go to #165)

261. The carburetor air cleaner and the PCV filter are in very good condition Next you should

a. Check the carburetor idle mixture (go to #211)
b. Check the spark plugs (go to #149)
c Tell the service manager that you have finished the job (go to #279)

262. Before removing the carburetor from the engine for overhaul, it is a good idea to

a Disable the ignition (go to #6)
b. Remove the battery ground cable clamp (go to #6)
c Remove the throttle linkage and vacuum hoses (go to #6)
d. Remove the PCV valve (go to #6)

263. Next you should check the:

a HC-CO reading (go to #98)
b Ignition system (go to #200)
c PCV system (go to #39)
d Carburetor air cleaner (go to #72)

264. After installing the spark plugs, you should.

a Check the HC-CO reading (go to #130)
b Tell the service manager that you have finished the job (go to #279)
c. Road test the vehicle (go to #279)

265. When the hose is clamped off, with the engine at idle speed, there is no change in RPM You should now:

a. Clean the PCV valve (go to #66)
b. Check another part of the automobile (go to #13)
c. Replace the PCV valve (go to #183)
d. Continue to check the PCV system (go to #156)

266. The manufacturer specifies an idle CO of 0.3% for this vehicle No HC specifications are given Now you should:

a. Check the emissions control decal in the engine compartment (go to #86)
b. Hook up the HC-CO tester (go to #165)
c. Check the HC-CO tester operating manual (go to #170)

267. What would you check or adjust to correct the high reading?

a. The PCV system (go to #188)
b. The air cleaner (go to #274)
c. The engine compression (go to #64)
d. The ignition system (go to #15)

268. Where should the spark appear if you have correctly prepared for the spark intensity test at the coil?

a. At the distributor end of the coil-to-distributor high-tension lead (go to #38)
b. At the number one spark plug (go to #38)
c. At the coil primary terminal (go to #146)
d. At the coil high-tension terminal (go to #38)

269. After you have removed the hose, you should check for a:

a Weak vacuum (go to #99)
b. Strong vacuum (go to #99)
c Weak flow of air (go to #224)
d Strong flow of air (go to #224)

270. After setting the idle speed, you should check the

a Contact point dwell (go to #209)
b HC-CO reading (go to #8)
c Engine timing (go to #232)

271. After removing the PCV valve, you shake it back and forth. No noises can be heard. Now you should

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #158)
c Check another part of the automobile (go to #26)

272. The manufacturer's specifications state that ignition timing and idle RPM should be properly set prior to taking any HC-CO readings. Now you would

a. Check the idle RPM (go to #25)
b. Check the ignition timing (go to #142)
c. Take an HC-CO reading (go to #92)

273. Where would you insert the HC-CO tester probe on the automobile?

a. In the tail pipe (go to #37)
b. In the exhaust pipe (go to #37)
c You cannot say without checking a technical service manual (go to #18)

274. The carburetor air cleaner is in very good condition. The PCV filter is also in good condition. Now you should check

a The ignition system (go to #15)
b. The PCV system (go to #188)
c The engine compression (go to #64)
d Another part of the automobile (go to #254)

275. After replacing the charcoal canister filter element, you should:

a Hook up an engine analyzer (go to #91)
b Hook up an HC-CO tester (go to #186)
c Tell the service manager that you have finished the job (go to #279)

276. After the specified length of time, the battery voltage is 10.0 v. Next you should:

a. Charge the battery (go to #240)
b. Replace the battery (go to #178)
c. Check the engine timing (go to #5)
d. Check the ignition bypass circuit (go to #161)
e. Replace the ignition points and condenser (go to #209)

277. You remove the PCV valve and shake it back and forth. No noises can be heard. Now you would

a. Clean the PCV valve (go to #66)
b. Replace the PCV valve (go to #45)
c. Check some other part of the automobile (go to #109)

278. At idle speed, what should be present at this fitting?

a. A weak vacuum (go to #241)
b. A strong vacuum (go to #241)
c. A weak flow of air (go to #134)
d. A strong flow of air (go to #134)

279. **STOP.** You have completed this activity. Give this test and your answer sheet to your instructor