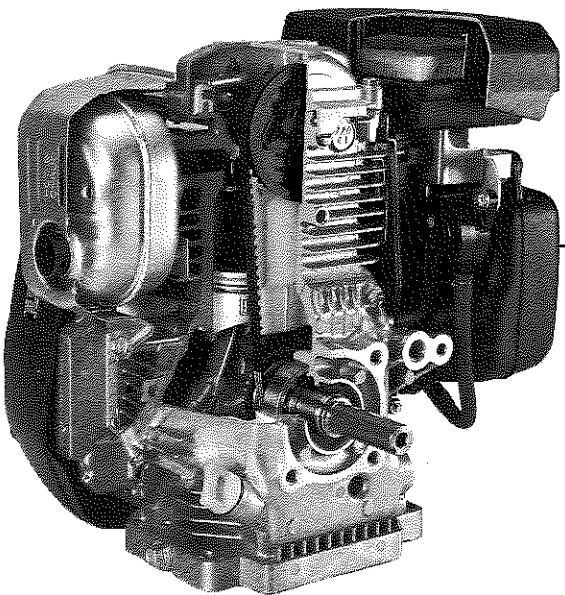




CHAPTER

7

Fuel and Emission Control Systems

Name _____
Date _____ Period _____
Instructor _____

After studying this chapter, you will be able to:

- ▼ Name various types of fuel that can be used in a small engine and list practical applications for each.
- ▼ Explain the importance of proper fuel-oil mixture in a two-cycle engine.
- ▼ Describe the purpose of fuel filters.
- ▼ Explain fuel pump operation.
- ▼ Describe the operation of a pressurized fuel system.
- ▼ Explain the importance of emission control.

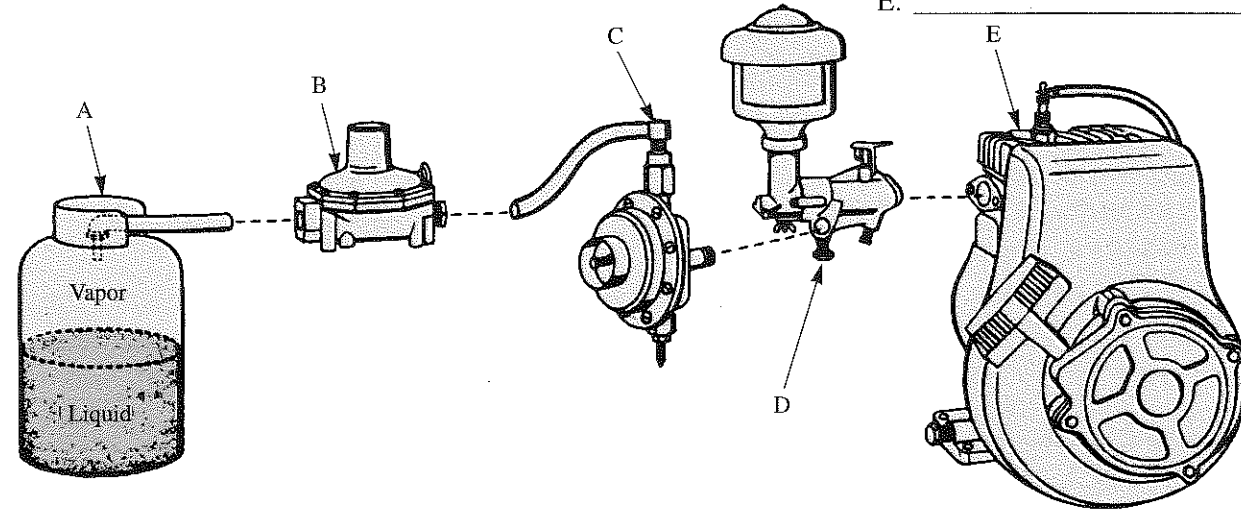
Instructions: After studying Chapter 7 of the text, complete the following questions and problems.

1. _____ is the most popular of all small gas engine fuels.
 - a. Gasoline
 - b. Liquefied petroleum gas
 - c. Natural gas
 - d. Kerosene
 - e. Diesel fuel
 2. Most small gasoline engines run on _____ grade gasoline with an octane rating around _____.
 3. Explain why gasoline should *not* be stored for long periods of time. _____

 4. Because of less noxious fumes, _____ engines are often used in places such as warehouses and factories.
1. _____
 2. _____

 4. _____

5. LPG burns _____ (faster, slower) than gasoline and has higher ignition temperatures.
6. Due to higher ignition temperatures of LPG, _____ (hotter, colder) spark plugs may be needed.
7. Name the parts of the LP-Gas fuel system shown below.



8. List five advantages of an LPG fuel system.

9. List three disadvantages of an LPG fuel system.

10. Some non-diesel small engines can be converted to operate on kerosene or fuel oil through the installation of a _____ (low, high) compression cylinder head and a special carburetor.
11. True diesel engines may have compression ratios as high as _____ to 1.
12. Most small two-cycle engines are lubricated by a mixture of oil and gasoline. The correct quantity and quality of oil is specified by the _____ specifications.

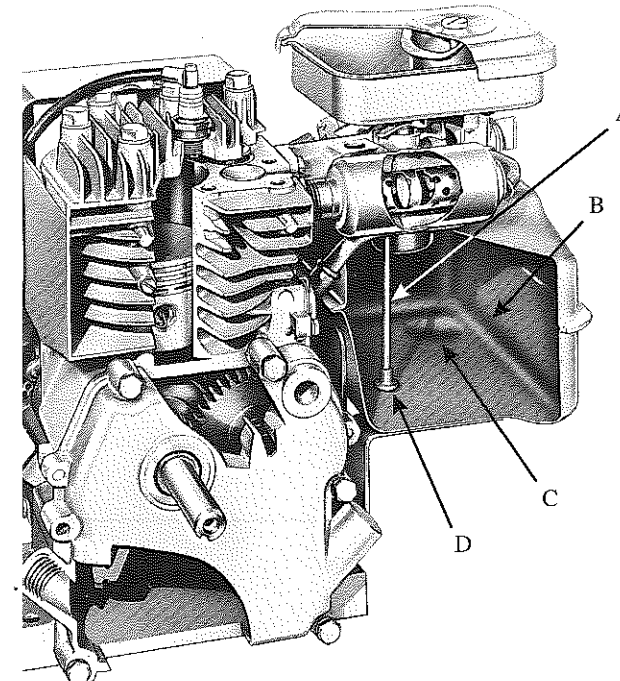
5. _____
6. _____
7. A. _____
- B. _____
- C. _____
- D. _____
- E. _____

10. _____
11. _____
12. _____

Name _____

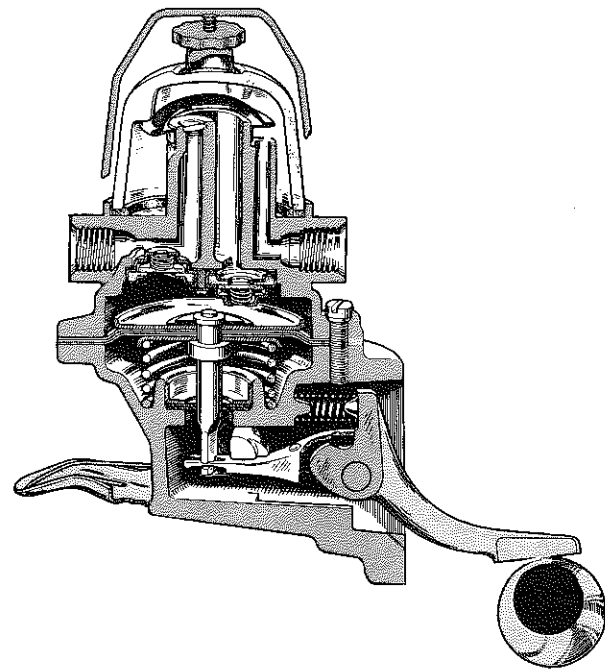
13. Excessive oil in a two-cycle engine fuel mixture can result in _____.
- a. the rapid buildup of carbon
- b. incomplete combustion
- c. fouling of the spark plugs
- d. All of the above.
14. Fuel tanks must be vented to _____ in the tank.
- a. increase the vacuum
- b. prevent a vacuum
- c. maintain a vacuum
- d. None of the above.
15. A filler cap with a screw vent should be closed _____.
- a. at all times
- b. when the engine is under a heavy load
- c. when the engine is not in use
- d. None of the above.
16. Flexible fuel lines in fuel tanks are used on such vehicles as _____ or _____ so that the line will always be where the fuel is deepest in the tank when the vehicle is at a steep angle.
17. Identify the parts indicated on the fuel tank illustrated below.

13. _____
14. _____
15. _____
16. _____
17. A. _____
- B. _____
- C. _____
- D. _____



18. When is a fuel pump most likely to be used on an engine? _____
19. Fuel pumps are designed to provide fuel to the carburetor at a(n) _____ pressure.

20. Using arrows, show the flow of fuel through the fuel pump illustrated below.



21. A fuel pump hand primer is for use _____.
 a. with pumps that do not have a filter system
 b. when the carburetor float bowl or pump bowl has become empty
 c. with mechanical fuel pumps only
 d. None of the above.
22. One type of diaphragm fuel pump sometimes used on small gas engines is activated by the pulsing _____ in the intake manifold or crankcase.
23. A(n) _____ fuel system is used when fuel tanks are located at a considerable distance below the carburetor.
24. If the temperature of the air around or inside a carburetor becomes high enough to vaporize the gasoline, pockets of vapor will stop all flow of fuel. This is known as _____.
25. In a(n) _____ fuel system, any vapor that forms is directed back into the fuel tank, where the pressure is vented into the atmosphere.
26. The _____ amendment to the Clean Air Act initiated legal authority to regulate small engine emissions.
27. The new regulations took effect in California and were to be met by manufacturers by _____.
28. In addition to exhaust emissions from small engines, fuel _____ also contributes to the environmental and health problem.

21. _____

22. _____

23. _____

24. _____

25. _____

26. _____

27. _____

28. _____

Name _____

- Research and write complete answers to the following questions.

29. How can the residential consumer help to keep evaporative and exhaust emissions minimal? _____

30. What has the small engine and implement industry done to control emissions? What more can they do?
