

Name: _____ Date: _____

Instructor: _____ Period: _____

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Cooling System Testing, Maintenance, & Repair



Objective: After studying this chapter, you will be able to explain common tasks performed on engine cooling systems.

Cooling System Problem Diagnosis

1. The sensors built into a modern OBD II system will set a **trouble** _____ if temperatures seem out of range.
2. List four (4) cooling system functions often monitored by the **OBD system**:
 - A. _____
 - B. _____
 - C. _____
 - D. _____
3. A cooling system _____ should be consulted when problems are difficult to locate and correct.
4. What potential problems should be checked in a **visual cooling system inspection**? _____

Cooling System Problems

5. How can a coolant leak problem be recognized? _____

6. Why is it unsafe to remove a radiator cap when the engine is **hot**? _____

7. How does a **cooling system pressure test** work? _____

8. A _____ is one of the most commonly used and important cooling system testing devices.
9. What could happen if **too much pressure** is pumped into the cooling system during testing? _____
10. A _____ leak test should be performed when indications of a blown head gasket, cracked head, or cracked block are suspected.
11. What is a likely explanation for a milky white substance found in the valve covers?

12. Loose water pump belt, collapsed lower hose, rust or scale in coolant, or ice in the coolant are four causes of _____.

13. What would be an indication of **overcooling**? _____

Water Pump Service

14. Indications of a bad water pump may include: _____

- A. failure to circulate coolant.
- B. produce a **grinding** sound.
- C. leakage of coolant.
- D. all the above.

15. List two (2) common reasons for water pump failure: A. _____

B. _____

16. How would you check for worn water pump bearings? _____

17. A _____ can be used to pinpoint failing water pump bearings.

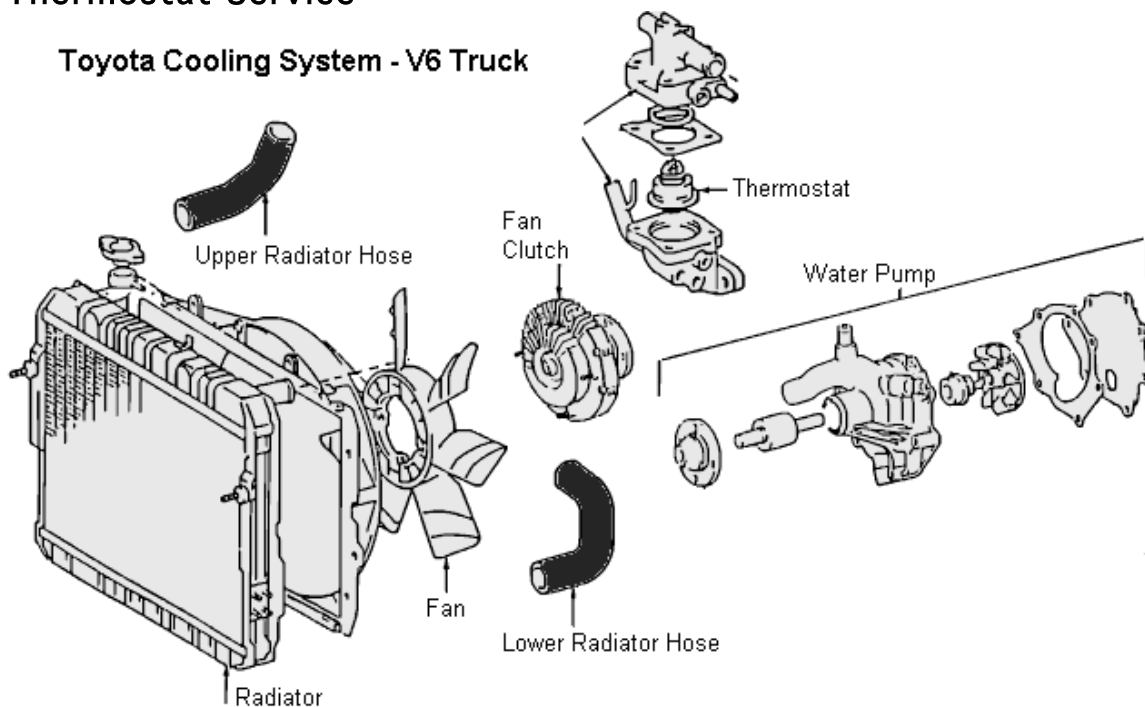
18. You should **never** use excessive force when separating a water pump from an engine because _____

19. Why are few water pumps rebuilt? _____

20. When replacing or installing a water pump, use the correct _____ to adhere the water pump gasket to the water pump.

Thermostat Service

Toyota Cooling System - V6 Truck



21. A stuck or malfunctioning thermostat can cause an engine to:_____
- A. Overcool
 - B. Overheat
 - C. Both A & B
 - D. Neither A or B
22. How can a **digital thermometer** be used to check component temperatures and cooling system efficiency? _____
23. How is it to damage the thermostat housing? _____
24. Some automobile companies use a rubber _____ seal instead of a paper gasket between the housing and engine.
25. An air pocket in an engine can cause a buildup of heat called a _____
26. A _____ is often provided to help eliminate trapped air in cooling system.
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Cooling System Hose Service

27. An old radiator hose may _____ .
- A. become soft and mushy.
 - B. cause cooling system problems.
 - C. become hard and brittle.
 - D. All the above.
28. What steps are involved in removing a radiator hose?
- A. _____
 - B. _____
 - C. _____
 - D. _____
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Radiator & Pressure Cap Service

29. What conditions can often limit airflow through a radiator? _____
30. A radiator _____ will measure a cap's opening pressure and sealing ability of the sealing washer.
31. List the steps in removing a radiator from a vehicle:
- A. _____
 - B. _____
 - C. _____
 - D. _____
 - E. _____
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Fan Belt Service

32. What conditions can an **over tightened** fan belt cause: _____
33. What conditions can a **loose** belt cause? _____

Engine Fan Service

34. What conditions can a defective cooling fan cause? _____

35. How is a **thermostatic fan** tested? _____

36. Most electric cooling fans are activated by a sensor placed in: _____

37. How is an electric cooling fan tested? _____

38. Check the operation of an electric cooling fan using a high impedance test light or a _____.

Freeze Plug Service

39. Engine freeze plugs (core plugs) are made _____ than the metal in the engine block and will fail much sooner than other parts of the engine.
40. What are the steps in replacing a freeze plug?
A. _____
B. _____
C. _____
D. _____
E. _____

Coolant Service

42. What tool is used to measure the acidity of a coolant solution? _____
43. How often should coolant be changed? _____
44. A cooling system _____ is used to test the boiling & freezing point?
45. What is one of the most common causes of cracked blocks and cylinder heads?

Flushing a Cooling System

46. What is the purpose of flushing a cooling system? _____

47. What effect does rust (iron oxide) have on a cooling system? _____

48. Describe the process of **reverse flushing**: _____

Temperature Gauge Service

49. What indicates a defective temperature gauge? _____

50. What should happen when the gauge sending unit wire is grounded? _____

51. A gauge tester is a special device with _____ .

52. What is the procedure in testing a temperature indicator light:

