

Plumbing Systems Maintenance

Course 367: Plumbing Systems Maintenance

Covers maintaining plumbing systems in a factory, plant, or other industrial or commercial site. Describes the structure and function of on-site plumbing systems (water supply, sanitary waste, and storm water), and explains how the major fixtures in these systems work. Tells how to take care of common plumbing problems.

TPC Training is accredited by IACET to offer **1.0 CEU** for this program.



Lesson 1: Introduction to Plumbing

Topics

Codes and Standards; Basic Plumbing System; Sanitary Drainage, Waste, and Vent System (DWV); Drainage Line Flow; Stacks; Traps and Connection Methods; Combined Sewer System; Venting System; Plumbing Fixtures; Storm Water Drainage System; Cold Water Supply and Distribution; Water Flow; Installation and Maintenance; Hot Water Supply and Distribution; Pressure-Boosting Systems

Objectives

- Describe a basic plumbing system.
- Name the parts of a DWV system and explain their functions.
- Explain the purpose of the different elements in an industrial cold water supply and distribution system.
- Describe a basic system for industrial hot water supply and distribution.
- Describe three basic systems for boosting in coming water pressure.

Lesson 2: Plumbing Fixtures

Topics

Water Closets; Flush Valve (Flushometer); Flush Tank; Water Closet Chair Carrier; Leaks and Stoppages; Urinals; Lavatories; Trim and Faucets; Two-Handle Washer Faucets; Two-Handle Washerless Faucets; Single-Handle Faucets; Sinks; Showers; Drinking Fountains

Objectives

- Describe six lavatory categories and compare the different flushing systems used in water closets and urinals.
- Explain the operation of different types of faucets.
- Give examples of industrial showers, sinks, and drinking fountains.

Lesson 3: Sanitary Drainage Systems

Topics

Function; Materials; Fittings and Joints; Piping; Subdrains; Floor Drains; Leaks; Stoppages; Indirect Wastes; Cleanouts

Objectives

- State the function of sanitary drainage systems and describe the materials, fittings, and joints used in them.
- Discuss the installation and connection of the piping components of a sanitary drainage system.
- Explain the purpose of floor drains and cleanouts, and where they are needed.
- Tell how to repair leaks and clear stoppages in sanitary piping.

Lesson 4: Vent Systems

Topics

Function of Vent Systems; Materials for Pipes, Fittings, and Joints; Piping; Fixture Trap Vents; Types of Vents; Vent Terminals

Objectives

- List the components of a vent system and explain their functions.
- Discuss the materials used for vent pipes, fittings, and joints.
- Explain the importance of air pressure and water flow in DWV systems.
- Discuss the requirements for the installation of piping in a vent system.
- Describe several types of vent system and their applications.

Lesson 5: Storm Water Drainage

Topics

Storm Water Drainage Systems; Materials; Fittings and Joints; Piping; Subdrain System; Site Drainage System; Roof Drains; Expansion and Contraction; Subsoil Drainage

Objectives

- Explain the function and installation of the elements in storm water and site drainage systems.
- Name the materials, fittings, and joints used in storm water and site drainage systems.
- Describe how the piping components of storm water and site drainage systems should be installed.
- Compare six different roof drains and give details of their installation.

Lesson 6: Potable Water Distribution

Topics

Function; Materials; Fittings and Joints; Pressure and Velocity; Hydraulic Shock; Limiting Flow and Pressure; Pressure-Boosting Systems; Piping; Valves; Cross-Connections and Contamination

Objectives

- Tell how the separate components of a potable water distribution system work together in its operation.
- List the materials suitable for use in a potable water system, the fittings used with them, and the factors to be considered in selecting them.
- Discuss the effects of water pressure and flow in a potable system.
- Give installation details for piping and valves in a potable water system.
- Explain how a potable water system can be contaminated and how contamination can be prevented.

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Lesson 7: Hot Water Distribution

Topics

Function; Materials, Fittings, and Joints; Water Heaters; Indirect Water Heaters; Safety Requirements; Circulation; Temperature; Expansion and Contraction

Objectives

- Explain the selection of materials and the installation of components for a hot water system.
- Describe the operation and application of different water heaters.
- Explain the safety requirements for hot water tanks and heaters.
- Describe a hot water circulation system, tell when it must be installed, and explain the advantages of strip heaters.
- Tell how water temperature affects the equipment and layout of a hot water distribution system.

Lesson 8: Valves

Topics

Function; Types and Construction; Gate Valves; Globe Valves; Check Valves; Quarter-Turn Valves; Plug Valves; Ball Valves; Butterfly Valves; Materials; Applications

Objectives

- Compare the function and applications of plumbing system valves.
- Tell how the main types of valves end connections.
- Compare the different types of valve end connections.
- Name the factors to be considered in the selection of materials for valves.

Lesson 9: Piping Assembly Procedures

Topics

Cast Iron Soil Piping; Brass and Steel Piping; Wrenches; Copper Tubing; Plastic Piping

Objectives

- List three joints used in iron piping and tell how to make them.
- Explain how to assemble screwed and flanged joints in brass and steel piping.
- Give example of the proper use of different pipe wrenches and vises.
- Tell how to assemble copper tubing with soldered, compression, and flared joints.
- Review the procedures for making joints in PVC and CPVC piping.

Lesson 10: Maintaining Plumbing Systems

Topics

Care of Hand Tools; Maintaining Plumbing Fixtures; Maintaining Water Heaters; Maintaining Waste Systems; Opening Clogs; Other Types of Clogs; Maintaining Valves; Preventive Maintenance of Valves; Maintaining Plumbing Insulation; Maintaining Pumps; Repairing Leaks

Objectives

- Name the chief points involved in the care and correct use of hand tools.
- Describe how to open the clogs and repair leaks in plumbing fixtures.
- Compare maintenance procedures for different types of valves.
- Tell how to clear stoppages and repair leaks in the drainage system.
- Explain the maintenance of water heaters, pumps, and pipe installation.