

Maintenance Pipefitting

Course 345: Maintenance Pipefitting

Covers components and terminology used in piping systems. Also covers terminology, measurement, and maintenance of threaded, welded, and plastic piping systems. Explains the use of pipefitting accessories—supports, traps, filters and strainers, and expansion joints.

TPC Training is accredited by IACET to offer **0.5 CEU** for this program.



Lesson 1: Piping Dimensions and Terminology

Topics

Piping Standards; Basic Pipe Dimensions; Piping System Symbols; Pipe Fittings; Flanges; Flange Facings and Finishes; Using Dimensional Tables; Calculating Lengths from Existing Pipes; Straight Offsets; Rolling Offsets

Objectives

- State whether ID or OD identifies a given nominal pipe size.
- Given a nominal pipe size and a copy of the American Standard Code for Pressure Piping, find the wall thickness of a pipe of a given schedule number.
- Name at least four kinds of pipe fittings.
- Given a schematic drawing of a piping system, identify all fittings used in the system.
- Given a drawing showing three lengths of pipe with and without fittings installed, correctly name the application dimension for measuring the pipe length.
- Given a schematic drawing showing two parallel horizontal pipe runs with a 45° run connection, identify the travel, set, and face-to-face length.

Lesson 2: Threaded Piping Systems

Topics

Threads; Thread Terminology; Measuring Pipe Threads; Threaded Pipe Fittings; Measuring Pipe for Installation; Cutting Pipe; Threader and Dies; Threading Pipe; Finishing the Pipe; Inspecting Old Threads; Applying Sealants; Assembly of Components; Testing the System; Troubleshooting/ Emergency Repairs; Replacement

Objectives

- Given a descriptive number, identify the pipe size, thread type, and number of threads per inch on a threaded pipe.
- Given a length of unthreaded pipe and required thread specifications, thread one end of the pipe to meet the specifications.
- Given a length of threaded pipe and two threaded fittings, prepare the parts, apply the proper compound, and assemble the components.
- State the important parts of a pipe thread.
- Given actual dimensions for travel and set of a threaded pipe and fitting assembly, use established dimensional tables to compute the total length of replacement pipe needed.

Lesson 3: Welded Piping Systems

Topics

Welds Based on Type of Connection; Fittings for Welded Pipe Systems; Welding Rings; System Alignment; Squareness; Aligning Fittings; Hole Positioning; Measurements; Preparing the Work; Squaring the Flange; Weld Cracks; Inspection; Repairs

Objectives

- Explain what steps to take to prepare lengths of pipe for butt and fillet welding.
- Name the welding ring material used with stainless steel or nickel alloy piping.
- Explain squareness and its importance in a welded piping system.
- Name the major assembly considerations when fabricating flanged connections for a rolling offset installation.
- Given a schematic drawing of this installation, compute the hole compensation angle to be used when positioning the flange for welding.
- Name at least one accessory used to help align two sections of pipe for welding.
- Given a length of pipe and a slip-on flange with a raised face, align and weld the pipe and flange.

Lesson 4: Plastic Piping Systems

Topics

Thermoplastic Pipe Materials; Advantages of Thermoplastic Materials; Disadvantages of Thermoplastic Materials; Standards for Thermoplastic Pipe; Thermosetting Pipe Materials; Fluids Carried by Thermosetting Pipe; Advantages of Thermosetting Materials; Disadvantages of Thermosetting Materials; Standards for Thermosetting Pipe; Installing Thermoplastic Pipe; Installing Thermosetting Pipe; Troubleshooting Plastic Piping Systems

Objectives

- Name the materials used for plastic pipes and fittings.
- Name at least one advantage of plastic piping.
- Name the two most common materials used to make thermosetting plastic pipe.
- Given two lengths of thermosetting plastic pipe, demonstrate how to join them with a bell and spigot joint.
- Name at least one limitation of plastic piping.
- Demonstrate how to align and install fittings on a length of plastic pipe.

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Lesson 5: Pipefitting Accessories

Topics

Hangers and Supports; Special Mountings; Steam Traps; Types of Traps; Steam Trap Installation; Trap Cleaning; Filters, Strainers, and Separators; Installation; Cleaning; Expansion Joints and Fittings; Expansion Joint Applications; Expansion Joint Selection and Installation; Maintenance

Objectives

- Name the three classes of piping supports and hangers.
- Explain which two types of pipe hangers are most often used to reduce line vibration and shock.
- Explain the factors to be considered when installing pipe hangers for different applications.
- Name the piping system components used to compensate for pipe length changes due to temperature changes.
- Explain the factors to be considered when locating (spacing) pipe hangers in a system.
- Name two types of steam traps and identify the major consideration in locating them.
- Explain the purpose of a line filter.