

ATPF-2520: VALVE REPAIR

Cuyahoga Community College

Viewing: ATPF-2520 : Valve Repair

Board of Trustees:

2013-05-23

Academic Term:

Spring 2019

Subject Code

ATPF - Applied Ind Tech - Pipefitters

Course Number:

2520

Title:

Valve Repair

Catalog Description:

Course describing the proper installation, service and repair of valves in various commercial, industrial and residential situations. Also included proper selection of valves for each situation.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Pipefitter's apprenticeship program.

Outcomes

Course Outcome(s):

I. Explain the purpose for valves in various piping configurations.

Objective(s):

1. A. Install and use of the gate valves.
2. B. Install and use of the globe valves.
3. C. Install and use of the diaphragm valves.
4. D. Install and use of the butterfly, ball and plug valves.
5. E. Install and use of the control valves.
6. F. Install and use of the check valves.
7. G. Install and use of the safety relief valves.

Course Outcome(s):

II. Recognize the Identification and Service markings on various valves.

Objective(s):

1. C. Identify bridge wall and flow markings.
2. D. Determine the safe operating pressure of each valve.
3. E. Describe safe working practices of valve repair.
4. A. Locate valve manufacturers name or trademark.
5. B. Describe what styles of end connections are required.

Course Outcome(s):

III. Demonstrate the ability to use precision measuring instruments.

Objective(s):

1. A. Use sliding calipers and steel rule when measuring valve parts.
 2. B. Show the ability to use micrometers and dial indicators.
 3. C. Retrieve pertinent information regarding valve part dimensions from blue prints.
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Course Outcome(s):

- IV. Demonstrate the ability to maintain and repair valves.

Objective(s):

1. A. Explain and demonstrate the purpose of cleaning and lubricating valve stems.
 2. B. Show the ability to disassemble, inspect and repair valves.
 3. C. Describe the use of a valve reseating tool.
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Methods of Evaluation:

1. Quizzes
2. Tests
3. Class participation

Course Content Outline:

1. Function of Valves
 - a. Start and stop flow
 - b. Regulate flow
 - c. Prevent reversal of flow
 - d. Relieve in-line pressure
2. Locate and interpret technical data
 - a. Markings on valve body
 - b. Valve tags and nameplates
 - c. Valve trim identification
 - i. Stem
 - ii. Disc
 - iii. Seat
 - d. Valve prints
3. Measuring tools
 - a. Steel rule
 - b. Sliding caliper
 - i. Vernier caliper
 - ii. Dial Caliper
 - c. Micrometers
 - i. Inside and outside
 - ii. Depth gage
 - d. Torque wrench
4. Valve Packing and Maintenance
 - a. Inspection
 - i. Disassembly
 - ii. Repair
 - b. Re-seating
 - c. Re-Packing
 - i. Material
 1. Fibers
 2. Carbon and Graphite
 3. Teflon
 4. Metals
 - ii. Tools
 - d. Packing methods
 - i. Standard bulk packing
 - ii. Combination sets
 - iii. Graphite ribbon packing
5. Safe working practices

- a. Job safety analysis
 - i. Pre-task review
 - ii. Special conditions
- b. Lock-out/Tag-out
- c. Coordination with all trades
- d. Follow written procedures

Resources

Althouse, Turnquist and Bracciano. *Modern Refrigeration and Air Conditioning*. current. The Goodheart-Willcox Co., South Holland, Illinois), 1979.

International Pipe Trades Training Committee. *United Association Training Department, HVAC/R Training*. {ts '2006-01-16 00:00:00'}.

International Pipe Trades Training Committee. United Association Training Department, HVAC/R Training (01-16-2006). International Pipe Trades Training Committee, Inc., Washington, D.C.). *HVAC/R Training*. {ts '2010-03-08 00:00:00'}.

Althouse, Turnquist and Bracciano,. *Modern Refrigeration and Air Conditioning*. {ts '1979-02-01 00:00:00'}.

Resources Other

<http://www.free-ed.net/sweethaven/MechTech/Refrigeration/coursemain.asp?lesNum=4&modNum=1> (<http://www.free-ed.net/sweethaven/MechTech/Refrigeration/coursemain.asp?lesNum=4&modNum=1>)

<http://physics.about.com/od/glossary/g/heat.htm>

<http://www.refrigerationbasics.com/1024x768/definitions1.htm>

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