ATPF-1230: PLATE FILLET WELD

Cuyahoga Community College

Viewing: ATPF-1230 : Plate Fillet Weld

Board of Trustees:
November 2020

Academic Term:
Fall 2021

Subject Code
ATPF - Applied Ind Tech - Pipefitters

Course Number:
1230

Title:
Plate Fillet Weld

Catalog Description:
Basic pipefitter welding course covering the practicalities of fillet welded joints including types, features and weld size specification. Also included are shop techniques and set up procedures for proper welds.

Credit Hour(s):
1

Lecture Hour(s):
1

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Pipefitter's apprenticeship program.

Outcomes

Course Outcome(s):
Discuss the different types of fillet welds and identify and explain the features and specifications required for proper welds.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):
1. Identify the different types of fillet weld joints used by pipefitters.
2. Identify and define the terms related to fillet weld joints.
3. Discuss the features of fillet welds and explain the reasons for each.
4. List the various applications of fillet welds.
5. Discuss the specifications required for fillet welds.
6. Identify the potential problems related to overlap and excessive convex weld face and explain the adverse influence of fatigue life of the welded joint.

Course Outcome(s):
Demonstrate the ability to properly join metal using fillet welds.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Discuss the safety precautions to be followed while welding.
2. List the tools and equipment required for fillet welds.
3. Properly adjust the welding machine controls for polarity and amperage.
4. Position and secure components to be joined maintaining alignment and positioning.
5. Refer to job specifications for proper weld size and locations.
6. Maintain proper rod travel and angle throughout the welding operations.

Methods of Evaluation:

1. Quizzes
2. Tests
3. Class participation
4. Student must demonstrate the ability to perform plate fillet weld operations with respect to standards set forth by the American Welding Society aws

Course Content Outline:

1. Fillet welds
    a. Joint types
        i. T Joint
        ii. Lap
        iii. Corner
    b. Terminology
        i. Fillet
        ii. T Joint
        iii. L Joint
        iv. Corner
        v. Throat thickness
        vi. Leg length
        vii. Intermittent fillet
        viii. Design throat
        ix. Actual throat
        x. Penetration
    c. Fillet features
        i. Throat thickness
        ii. Leg length
        iii. Penetration
        iv. Intermittent fillet length
    d. Applications
        i. Hanger attachments
        ii. Pipe supports
        iii. Material positioning
    e. Weld specifications
        i. Size
            1. Leg length
            2. Throat
        ii. Location
            1. Near side
            2. Far side
            3. Top
            4. Bottom
    f. Problems
        i. Overlap at weld toe
        ii. Improper penetration
        iii. Excessive convex weld face
        iv. Alignment
        v. Improper heat
        vi. Machine set up

2. Application
    a. Safety
        i. Personal Protective Equipment
            1. Lens
            2. Gloves
            3. Hearing protection
            4. Respirator
        ii. Equipment
            1. Electrical
            2. Pinch points
    b. Hand tools
        i. Chipping hammer
        ii. Files
        iii. Wire brush
        iv. Layout tools
    c. Equipment
        i. Welder
        ii. Cable
        iii. Grounding clamp
        iv. Electrode holder
    d. Alignment and positioning
    e. Job specifications
        i. Clamp locations
        ii. Weld size
        iii. Rod
    f. Rod travel and angle

Resources

United Association Training Department, International Pipe Trades Training Committee, Inc. *Welding Skills* . Fifth Edition. American Technical Publishers, Washington, D.C.), 2015.

Thomas W. Frankland. *Pipe Trades*. current. Glencoe/McGraw-Hill, New York, New York), 2015. 2015.

Glencoe/McGraw-Hill, . *Welding Skills* . current. American Technical Publishers New York, New York), 2016.

Resources Other

1. **http://www.weldersuniverse.com/weld_types.html**
2. **http://www.twi-global.com/technical-knowledge/job-knowledge/fillet-welded-joints-a-review-of-the-practicalities-066/**
3. **http://www.lincolnelectric.com/en-us/support/process-and-theory/Pages/weld-fusion-weld-penetration.aspx**

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