Lesson Objectives:

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Definition:

What are fittings used for?
What is buttwelded?
General Types Of BW Fittings:

- Elbows
- Tees
- Reducers
- Weld Cap

90 Degree Buttwelded Elbow

D = Diameter Of Pipe
(Use Nominal Pipe Size)

Example:
12” 90 Degree Elbow:
D = 12”
1 ½ D = Radius
(or Center To End)
1 ½ X 12” = 18”

Long Radius 90 Degree Elbow

D = Diameter Of Pipe
(Use Nominal Pipe Size)

Example:
12” 90 Degree Elbow:
D = 12”
1 ½ D = Radius
(or Center To End)
1 ½ X 12” = 18”
Long Radius 90 Degree Elbow (BW)

D = Diameter Of Pipe
(Use Nominal Pipe Size)

Example:
12" 90 Degree Elbow:
D = 12"
1 D = Radius
(or Center To End)
1 X 12" = 12"

Reference: Practice 000.250.9818 Pg. 3

Short Radius 90 Degree ELBOW

D = Diameter Of Pipe
(Use Nominal Pipe Size)

Example:
12" 90 Degree Elbow:
D = 12"
1 D = Radius
(or Center To End)
1 X 12" = 12"

Reference: Practice 000.250.9818 Pg. 3
90 Degree REDUCING ELBOW

D = Diameter Of Pipe
(Use Nominal Pipe Size)
Example:
12" 90 Degree ELBOW:
D = 12"
1 ½ D = Radius
(or Center To End)
1 ½ X 12" = 18"

Note: Reducing elbow is only made in long radius.

Exercise PI-E3A
45 Degree Buttwelded Elbow

* For dimension see Dimensional Chart or Catalog.

45 Degree Elbow (BW)

Piping Plan

Call Out 45° Offset On Iso

Reference: Practice 000.250.9818 Pg. 3
45 Degree Welds & Cuts

*Count the welds

Single Line

Double Line

Fitting Make-Up

Fitting Make-up Examples:

Single Line

Double Line
Exercise PI-E3B

Buttwelded Tees

Straight Tee

All Three Openings Are The Same Size
Exercise PI-E3C
Buttwelded Reducer

Concentric Reducer

Common centerline

Eccentric Reducer

Use when a common bop (Bottom Of Pipe) is required
Eccentric Reducer (Calculating The Offset Dimension)

Offset Dimension:
Half the difference of the outside diameters (Actual pipe size)

Example: 12” X 6” ECC RED
Nominal OD Actual OD
12” = 12 3/4”
6” = 6 5/8”
6 1/8”

\[ \frac{1}{2} (6 \frac{1}{8}”) = 3 \frac{1}{16}” \]

Offset dimension

Reference:
Practice 000.250.9818 Pg. 7

Exercise PI-E3D
90 Degree Miter

Note: Use three weld miter when required by space limitations or when required by process engineering for flow conditions.

Reference: Practice 000.250.9818 Pg. 6
45 Degree Miter
Exercise PI-E3F

Exercise PI-E3G
Questions??

Open Book Test PI-T3