



Petroleum Pipeline Carbon Steel Pipe Fittings Cross with A234 WPB

Our Product Introduction

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Basic Information

- Place of Origin: CHINA
- Brand Name: DEYE
- Certification: ISO9001:2015 PED
- Model Number: PF-CRO-C05
- Minimum Order Quantity: 10PCS
- Price: USD0.58-USD100 for seamless fittings
- Packaging Details: Ply-wooden cases, pallets, cartons
- Delivery Time: 5-8 days for stock items
- Payment Terms: L/C, T/T, D/P



Product Specification

- Standard: ASME ANSI DIN GOST
- Material: A234WPB, WP11, WP22, WPC, P9, P11, A420WPL6
- Thickness: SGP, STD, SCH20, SCH30, SCH40, SCH60, SCH80, SCH160, XS, XXS
- Size: 1/2"-72"
- Connection: Butt Welded BW
- Surface: Black Finishing, Vanish Finishing, Anti-Rust Oil
- Highlight: Petroleum Pipeline Carbon Steel Pipe Fittings, Carbon Steel Pipe Fittings Cross, A234 carbon steel tee



More Images



Product Description

Petroleum Pipeline Carbon Steel Pipe Fittings Cross with A234 WPB

ASME B16.9 cross commonly known as a 4-way pipe fitting. Cross tee usually generates high stress on pipe as temperature changes, because they are at the center of four connection points. In comparison, a tee is steadier than a cross, as a tee behaves like a three-legged stool, while a cross behaves like a four-legged stool. Cross is used in many applications, as a junction for intersecting pipes, Cross can be used in various industries such as oil and gas, petrochemical, power generation, pharmaceuticals, paper manufacturing, natural gas industry and chemical plants.

Product Information/Product Description/Basis Information/Specification

Product Name	ANSI B16.9 Butt-Welding Carbon Steel Pipe Fitting cross /reducing cross
Types	LR 90deg Elbows, SR 90deg Elbow, 45deg LR elbow, 22.5LR Elbow, 80deg Returns, Bends, Reducing Elbow, straight Tee, Equal Tee, Con. Reducers, Ecc. reducers, Y tees, caps, Stub Ends, Long and short lap joint stub ends
Size	1/2"-48" DN15-DN1200
Production Way	seamless or welded Fabrication
Wall Thickness	SCH10,SCH20,SCH30,STD,SCH40,SCH60,XS,SCH80,SCH100,SCH120,SCH140,SCH160,XXS, DIN, SGP JIS thickness
Mat. Standard	ASTMA234,ASTM A420,ASTM A312, ANSI B16.9/B16.28/B16.25,ASME B16.9, JIS B2311-1997/2312, JIS B2311/B2312, DIN 2605-1/2617/2615, GB 12459-99,EN Standard etc.
Material Grade	Carbon Steel : A234 WPB, WP5, WP6, WP9,WP11,WP12, WP22, A420WPL6, WPL8, WP91 12CrMo, 15Cr5Mo, 1Cr5Mo, 12Cr1MoV , WPHY 42, WPHY 46, WPHY 52, WPH 60, WPHY 65 & WPHY 70 ST37.0,ST35.8,ST37.2,ST35.4/8,ST42,ST45,ST52,ST52.4 STP G38,STP G42,STPT42,STB42,STS42,STPT49,STS49 Stainless Steel304, 304L, 304H. 316, 316L, 316H, 321, 347, 347H, Duplex SS 2507, DSS2205, UNS31803 UNS32750 1.4301,1.4306, 1.4401, 1.4435, 1.4406, 1.4404, 1.4462, 1.4410, 1.4501
Surface	Black painting, varnish paint, anti rust oil, hot galvanized, cold galvanized, 3PE,etc.
Transport Package	Plastic film, wooden cases ,wooden pallet, or as per customers' requests

Technology/ Technical Data Sheet

Thickness List for pipefittings ANSI B16.9

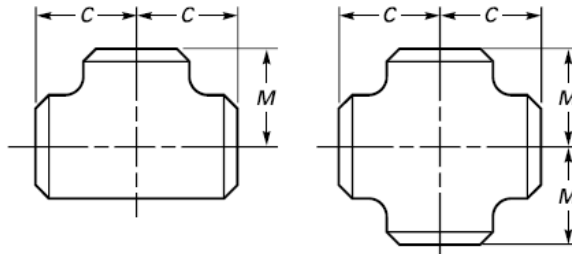
Unit: mm

NPS	Outside Diameter	Different thickness with tolerance of +-12.5%									
		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch120	Sch160	XXS
1/8	10.3	—	—	1.73	1.73	—	2.41	2.41	—	—	—
1/4	13.7	—	—	2.24	2.24	—	3.02	3.02	—	—	—
3/8	17.1	—	—	2.31	2.31	—	3.20	3.20	—	—	—
1/2	21.3	—	—	2.77	2.77	—	3.73	3.73	—	4.78	7.47
3/4	26.7	—	—	2.87	2.87	—	3.91	3.91	—	5.56	7.82
1	33.4	—	—	3.38	3.38	—	4.55	4.55	—	6.35	9.09
1 1/4	42.2	—	—	3.56	3.56	—	4.85	4.85	—	6.35	9.70
1 1/2	48.3	—	—	3.68	3.68	—	5.08	5.08	—	7.14	10.15
2	60.3	—	—	3.91	3.91	—	5.54	5.54	—	8.74	11.07
2 1/2	73.0	—	—	5.16	5.16	—	7.01	7.01	—	9.53	14.02
3	88.9	—	—	5.49	5.49	—	7.62	7.62	—	11.13	15.24
3 1/2	101.6	—	—	5.74	5.74	—	8.08	8.08	—	—	—
4	114.3	—	—	6.02	6.02	—	8.56	8.56	11.13	13.49	17.12
5	141.3	—	—	6.55	6.55	—	9.53	9.53	12.70	15.88	19.05
6	168.3	—	—	7.11	7.11	—	10.97	10.97	14.27	18.26	21.95
8	219.1	6.35	7.04	8.18	8.18	10.31	12.70	12.70	18.26	23.01	22.23
10	273.1	6.35	7.80	9.27	9.27	12.70	12.70	15.09	21.44	28.58	25.40
12	323.9	6.35	8.38	9.53	10.31	14.27	12.70	17.48	25.40	33.32	25.40
14	355.6	7.92	9.53	9.53	11.13	15.09	12.70	19.05	27.79	35.71	—
16	406.4	7.92	9.53	9.53	12.70	16.66	12.70	21.44	30.96	40.49	—
18	457.2	7.92	11.13	9.53	14.27	19.05	12.70	23.83	34.96	45.24	—
20	508.0	9.53	12.70	9.53	15.09	20.62	12.70	26.19	38.10	50.01	—
22	558.8	9.53	12.70	9.53	—	22.23	12.70	28.58	41.28	53.98	—
24	609.6	9.53	14.27	9.53	17.48	24.61	12.70	30.96	46.02	59.54	—
26	660.4	12.70	—	9.53	—	—	12.70	—	—	—	—
28	711.2	12.70	15.88	9.53	—	—	12.70	—	—	—	—
30	762.0	12.70	15.88	9.53	—	—	12.70	—	—	—	—

32	812.8	12.70	15.88	9.53	17.48	—	12.70	—	—	—	—
34	863.6	12.70	15.88	9.53	17.48	—	12.70	—	—	—	—
36	914.4	12.70	15.88	9.53	17.48	—	12.70	—	—	—	—
38	965.2	—	—	9.53	—	—	12.70	—	—	—	—
40	1016.0	—	—	9.53	—	—	12.70	—	—	—	—
42	1066.8	—	—	9.53	—	—	12.70	—	—	—	—
44	1117.6	—	—	9.53	—	—	12.70	—	—	—	—
46	1168.4	—	—	9.53	—	—	12.70	—	—	—	—
48	1219.2	—	—	9.53	—	—	12.70	—	—	—	—

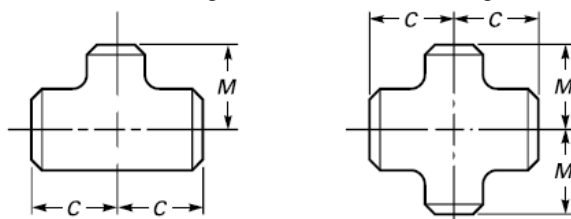
Dimension List

Dimensions of Straight Tees and Crosses



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End	
		Run, C	Outlet, M [Notes (1) and (2)]
72	21.3	25	25
80	26.7	29	29
90	33.4	38	38
100	42.2	48	48
110	48.3	57	57
120	60.3	64	64
140	73.0	76	76
160	88.9	86	86
180	101.6	95	95
200	114.3	105	105
220	141.3	124	124
240	168.3	143	143
260	219.1	178	178
280	273.0	216	216
300	323.8	254	254
320	355.6	279	279
340	406.4	305	305
360	457.0	343	343
380	508.0	381	381
400	559.0	419	419
420	610.0	432	432
440	660.0	495	495
460	711.0	521	521
480	762.0	559	559
500	813.0	597	597
520	864.0	635	635
540	914.0	673	673
560	965.0	711	711
580	1 016.0	749	749
600	1 067.0	762	711
620	1 118.0	813	762
640	1 168.0	851	800
660	1 219.0	889	838

Dimensions of Reducing Outlet Tees and Reducing Outlet Crosses



Outside	Center-to-End	Outside	Center-to-End
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Nominal Pipe Size (NPS)	Diameter at Bevel		Run, C		Outlet, M [Note (1)]	Nominal Pipe Size (NPS)	Diameter at Bevel		Run, C		Outlet, M [Note (1)]
	Run	Outlet					Run	Outlet			
1/2 x 1/2 x 3/8	21.3	17.3	25	25		4 x 4 x 3-1/2	114.3	101.6	105	102	
1/2 x 1/2 x 1/4	21.3	13.7	25	25		4x4x3	114.3	88.9	105	98	
3/4 x 3/4 x 1/2	26.7	21.3	29	29		4 X 4 X 2-1/2	114.3	73.0	105	95	
3/4 x 3/4 x 3/8	26.7	17.3	29	29		4x4x2	114.3	60.3	105	89	
1 X 1 X 3/4	33.4	26.7	38	38		4 x 4 x 1-1/2	114.3	48.3	105	86	
1 x 1 x 1/2	33.4	21.3	38	38							
						5X5X4	141.3	114.3	124	117	
1-1/4 x 1-1/4 x 1	42.2	33.4	48	48		5 X 5 X 3-1/2	141.3	101.6	124	114	
1-1/4 x 1-1/4 x 3/4	42.2	26.7	48	48		5X5X3	141.3	88.9	124	111	
1-1/4 x 1-1/4 x 1/2	42.2	21.3	48	48		5 X 5 X 2-1/2	141.3	73.0	124	108	
						5X5X2	141.3	60.3	124	105	
1-1/2 x 1-1/2 x 1-1/4	48.3	42.2	57	57		6X6X5	168.3	141.3	143	137	
1-1/2 x 1-1/2 x 1	48.3	33.4	57	57		6x6x4	168.3	114.3	143	130	
1-1/2 x 1-1/2 x 3/4	48.3	26.7	57	57		6 x 6 x 3-1/2	168.3	101.6	143	127	
1-1/2 x 1-1/2 x 1/2	48.3	21.3	57	57		6x6x3	168.3	88.9	143	124	
						6 x 6 x 2-1/2	168.3	73.0	143	121	
2 x 2 x 1-1/2	60.3	48.3	64	60							
2 x 2 x 1-1/4	60.3	42.2	64	57		8x8x6	219.1	168.3	178	168	
2 X 2 X 1	60.3	33.4	64	51		8x8x5	219.1	141.3	178	162	
2 x 2 x 3/4	60.3	26.7	64	44		8X8X4	219.1	114.3	178	156	
						8 x 8 x 3-1/2	219.1	101.6	178	152	
2-1/2 X 2-1/2 X 2	73.0	60.3	76	70							
2-1/2 X 2-1/2 X 1-1/2	73.0	48.3	76	67		10 x 10 x 8	273.0	219.1	216	203	
2-1/2 X 2-1/2 X 1-1/4	73.0	42.2	76	64		10 x 10 x 6	273.0	168.3	216	194	
2-1/2 X 2-1/2 X 1	73.0	33.4	76	57		10 x 10 x 5	273.0	141.3	216	191	
						10 x 10 x 4	273.0	114.3	216	184	
3 X 3 X 2-1/2	88.9	73.0	86	83		12 x 12 x 10	323.8	273.0	254	241	
3x3x2	88.9	60.3	86	76		12 x 12 x 8	323.8	219.1	254	229	
3 x 3 x 1-1/2	88.9	48.3	86	73		12 X 12 X 6	323.8	168.3	254	219	
3 x 3 x 1-1/4	88.9	42.2	86	70		12 x 12 x 5	323.8	141.3	254	216	
3-1/2 x 3-1/2 x 3	101.6	88.9	95	92		14 X 14 X 12	355.6	323.8	279	270	
3-1/2 x 3-1/2 x 2-1/2	101.6	73.0	95	89		14 X 14 X 10	355.6	273.0	279	257	
3-1/2 x 3-1/2 x 2	101.6	60.3	95	83		14 X 14 X 8	355.6	219.1	279	248	
3-1/2 x 3-1/2 x 1-1/2	101.6	48.3	95	79		14 x 14 x 6	355.6	168.3	279	238	

Size (NPS)	Outside Diameter at Bevel		Center to Ends		Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center to Ends	
	Run	Outlet	Run, C	Outlet, M [Note (1)]		Run	Outlet	Run, C	Outlet, M [Note (1)]
16 x 14	406.4	355.6	305	305	28 X 28 X 26	711	660.0	521	521
16 x 12	406.4	323.8	305	295	28 X 28 X 24	711	610.0	521	508
16 x 10	406.4	273.0	305	283	28 x 28 x 22	711	559.0	521	495
16 x 8	406.4	219.1	305	273	28 x 28 x 20	711	508.0	521	483
16 x 6	406.4	168.3	305	264					
					28 X 28 X 18	711	457.0	521	470
18 x 16	457.0	406.4	343	330	28 X 28 X 16	711	406.4	521	457
18 x 14	457.0	355.6	343	330	28 x 28 x 14	711	355.6	521	457
18 X 12	457.0	323.8	343	321	28 X 28 X 12	711	323.8	521	448
18 x 10	457.0	273.0	343	308					
18 X 8	457.0	219.1	343	298	30 X 30 X 28	762	711.0	559	546
					30 x 30 x 26	762	660.0	559	546
20 X 18	508.0	457.0	381	368	30 x 30 x 24	762	610.0	559	533

20 x 16	508.0	406.4	381	356	30 x 30 x 22	762	559.0	559	521
20 x 14	508.0	355.6	381	356	30 x 30 x 20	762	508.0	559	508
20 X 12	508.0	323.8	381	346					
20 X 10	508.0	273.0	381	333	30 x 30 x 18	762	457.0	559	495
20 X 8	508.0	219.1	381	324	30 x 30 x 16	762	406.4	559	483
					30 x 30 x 14	762	355.6	559	483
22 X 20	559.0	508.0	419	406	30 x 30 x 12	762	323.8	559	473
22 x 18	559.0	457.0	419	394	30 x 30 x 10	762	273.0	559	460
22 x 16	559.0	406.4	419	381					
22 X 14	559.0	355.6	419	381	32 x 32 x 30	813	762.0	597	584
22 X 12	559.0	323.8	419	371	32 X 32 X 28	813	711.0	597	572
22 X 10	559.0	273.0	419	359	32 X 32 X 26	813	660.0	597	572
					32 x 32 x 24	813	610.0	597	559
24 X 22	610.0	559.0	432	432					
24 X 20	610.0	508.0	432	432	32 X 32 X 22	813	559.0	597	546
24 X 18	610.0	457.0	432	419	32 X 32 X 20	813	508.0	597	533
					32 X 32 X 18	813	457.0	597	521
24 X 16	610.0	406.4	432	406	32 x 32 x 16	813	406.4	597	508
24 X 14	610.0	355.6	432	406	32 X 32 X 14	813	355.6	597	508
24 X 12	610.0	323.8	432	397					
24 x 10	610.0	273.0	432	384	34 x 34 x 32	864	813.0	635	622
					34 x 34 x 30	864	762.0	635	610
26 X 24	660.0	610.0	495	483	34 x 34 x 28	864	711.0	635	597
26 x 22	660.0	559.0	495	470	34 x 34 x 26	864	660.0	635	597
26 X 20	660.0	508.0	495	457					
					34 x 34 x 24	864	610.0	635	584
26 x 18	660.0	457.0	495	444	34 x 34 x 22	864	559.0	635	572
26 X 16	660.0	406.4	495	432	34 x 34 x 20	864	508.0	635	559
26 x 14	660.0	355.6	495	432	34 x 34 x 18	864	457.0	635	546
26 X 12	660.0	323.8	495	422	34 x 34 x 16	864	406.4	635	533

Application/Usage

Low and middle pressure fluid pipeline, boiler, petroleum and natural gas industry, drilling, chemical industry, electric industry, shipbuilding, fertilizer equipment and pipeline, structure, petrochemical, pharmaceutical industries, etc.

Material Specification

Designation: A 234/A 234M – 05 Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

This specification covers wrought carbon steel and alloy steel fittings of seamless and welded construction covered by the latest revision of ASME B16.9, B16.11, MSS SP-79, and MSS SP-95. These fittings are for use in pressure piping and in pressure vessel fabrication for service at moderate and elevated temperatures. Fittings differing from these ASME and MSS standards shall be furnished in accordance with Supplementary Requirement S58 of Specification A 960.

Chemical Requirements (Composition, %)

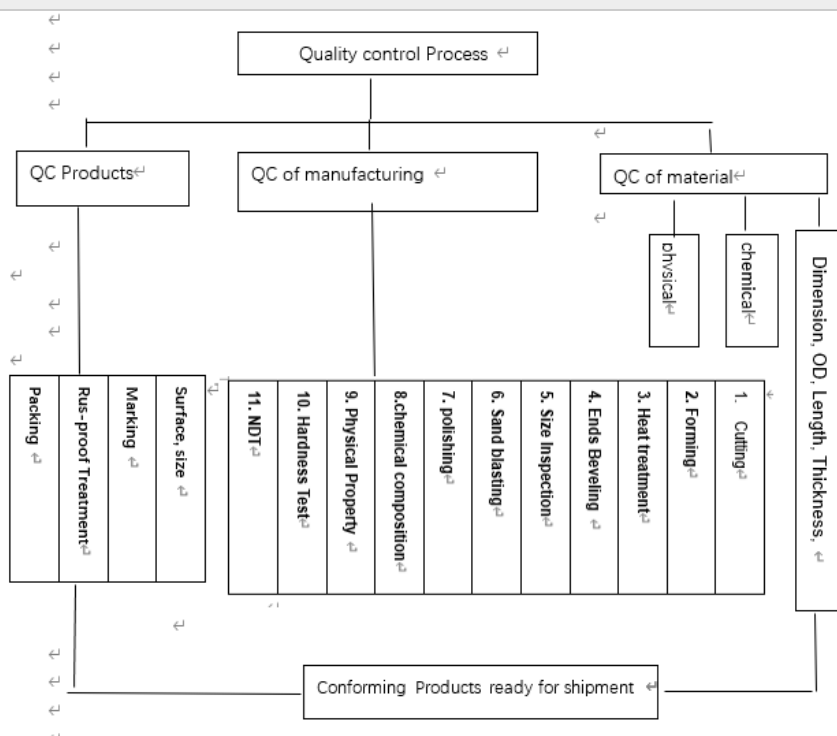
Grade and Material	C	Mn	P	S	Silicon	Chromium	Molybdenum	Nickel	Copper
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WPB ^{B,C,D,E,F}	0.30 max	0.29–1.06	0.05	0.058	0.10 min	0.40 max	0.15 max	0.40 max	0.40 max
WPC ^{C,D,E,F}	0.35 max	0.29–1.06	0.05	0.058	0.10 min	0.40 max	0.15 max	0.40 max	0.40 max
WP1	0.28 max	0.30–0.90	0.045	0.045	0.10–0.50	...	0.44–0.65	...	...
WP12 CL1,	0.05–0.20	0.30–0.80	0.045	0.045	0.60 max	0.80–1.25	0.44–0.65	...	...
WP12 CL2									
WP11 CL1	0.05–0.15	0.30–0.60	0.03	0.03	0.50–1.00	1.00–1.50	0.44–0.65	...	...
WP11 CL2,	0.05–0.20	0.30–0.80	0.04	0.04	0.50–1.00	1.00–1.50	0.44–0.65	...	...
WP11 CL3									
WP22 CL1,	0.05–0.15	0.30–0.60	0.04	0.04	0.50 max	1.90–2.60	0.87–1.13	...	...
WP22 CL3									
WP5 CL1,	0.15 max	0.30–0.60	0.04	0.03	0.50 max	4.0–6.0	0.44–0.65	...	...
WP5 CL3									
WP9 CL1,	0.15 max	0.30–0.60	0.03	0.03	1.00 max	8.0–10.0	0.90–1.10	...	...
WP9 CL3 WPR	0.20 max	0.40–1.06	0.045	0.05	...	...	...	1.60–2.24	0.75–1.25
WP91	0.08–0.12	0.30–0.60	0.02	0.01	0.20–0.50	8.0–9.5	0.85–1.05	0.40 max	...
WP911	0.09–0.13	0.30–0.60	0.02	0.01	0.10–0.50	8.5–9.5	0.90–1.10	0.40 max	...

Mechanical Performance Requirements

	WPC,		WP11 CL1,		WP11 CL3,				
Grade and Marking Symbol	WPB	WP11 CL2, WP12 CL2	WP1	WP22 CL1, WP5 CL1	WPR	WP22 CL3 WP5 CL3	WP91	WP911	WP12 CL1
				WP9 CL1		WP9 CL3			
Tensile strength, range ksi [MPa]	60–85	70–95	55–80	60–85	63–88	75–100	85–110	90–120	60–85
	[415–585]	[485–655]	[380–550]	[415–585]	[435–605]	[520–690]	[585–760]	[620–840]	[415–585]
Yield strength, min, ksi [MPa]	35 [240]	40 [275]	30 [205]	30 [205]	46 [315]	45 [310]	60 [415]	64 [440]	32 [220]
(0.2 % offset or 0.5 % extension-under-load)									

Production Process



Reference Standards

ASME B16.9 Specification for Butt Welded Fittings

ASME B16.9 specification is designed for butt welded fittings applied in industrial construction pipelines. Including elbow, tee, cross, cap, reducer, and etc.

Standard Scope

The standard includes specifications of NPS 1/2 to NPS 48 (DN15-DN1200) factory-made wrought butt-welded pipe fittings overall dimensions, tolerances ratings, test methods and markings.

Special Fittings

Special fittings here refer to special sizes, forms and tolerances that agreed between buyer and manufacturer.

Fabricated Fittings

Fabricated laterals and other fittings by circumferential or intersection welds are considered pipe fabrication could not apply this standard.

Units under ASME B16.9 shall be stated in both SI (Metric) and U.S. Customary units. Designation for size is NPS.

Reference Standards

It is not considered practical to identify the specific edition of each standard and specification in the individual references. A product made comply with a prior edition of referenced standards and in all other respects conforming to this standard will be considered complied.

ASME B16.5: Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch Standard

ASME B16.25: For Buttwelding Ends

ASME B31: Code for Pressure Piping

ASME B31.3: Process Piping

ASME B36.10M, Welded and Seamless Wrought Steel Pipe

ASME B36.19M, Stainless Steel Pipe

ASME Boiler and Pressure Vessel Code

ASTM A234/A234M-17, Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

ASTM A403/A403M-16, Specification for Wrought Austenitic Stainless Steel Piping Fittings

ASTM A420/A420M-16, Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low Temperature Service

ASTM A815/A815M-14e1, Specification for Wrought Ferritic, Ferritic/Austenitic and Martensitic Stainless Steel Piping Fittings

ASTM A960/A960M-16a, Specification for Common Requirements for Wrought Steel Piping Fittings

ASTM E29-13, Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications

ASTM B361-16, ASTM B363-14, ASTM B366/B366M-17: For other material metals. (Aluminum, Titanium, Nickel, and alloy).

FAQ/ Customer Question and Answers

Q: Customer asked for butt weld fittings in A105:

A: Most common carbon steel butt weld fitting material is A234WPB. It is equivalent to A105 flanges, however there is no such thing as an A105 or A106 butt weld fitting A106 Gr.B is for pipe grade. The A234WPB fittings are made from A106GR.B pipes. A105 is a material from Bar forged to be High pressure Fittings or Flange

Q: Customer requests "Normalized" butt weld fittings:

A: This is also a misconception since flanges are available in A105 and A105 N, where N stands for normalized. However, there is no such thing as A234WPBN. Manufactures normalize their butt weld fittings was considered that normalized heat treating process was done, Especially for the elbows and Tees Customer needing "normalized" butt weld fittings should request WPL6 fittings which are high yield and are normalized as a standard procedure.

Q: Customer forgets to mention pipe schedule:

A: Buttweld fittings are sold as per pipe size but pipe schedule must be specified to match the ID of the fitting to the ID of the pipe. If no schedule is mentioned, we will assume a standard wall is requested.

Q: Customer forgets to mention welded or seamless butt weld fitting:

A: Butt weld fittings are available in both welded and seamless configuration. A seamless butt weld carbon steel or stainless-steel fitting is made of seamless pipe and is generally more expensive. Seamless pipe fittings are NOT common in sizes bigger than 12". Welded pipe fittings are made of ERW welded carbon steel or stainless-steel pipe. They are available in sizes 1/2" to 72" and are more affordable than seamless fittings.

Q: What does Short Radius (SR) or Long Radius (LR) means?

A: You will often hear SR45 elbow or LR45 elbow. The 45 or 90 refers to the angle of the bend for buttweld fitting to change the direction of flow. A long radius elbow (LR 90 Elbow or LR 45 elbow) will have a pipe bend that will be 1.5 times the size of the pipe. So, a 6 inch LR 90 has bending radius that is 1.5 x nominal pipe size. A short radius elbow (SR45 or SR90) has a pipe bend that is equal to the size of the fitting, so a 6" SR 45 has a bending radius that is 6" nominal pipe size.

Q: What is a 3R or 3D elbow pipe fitting?

A: First, the terms 3R or 3D are used synonymously. A 3R butt weld elbow has a bending radius that is 3 times the nominal pipe size. A 3R elbow is equal to 3D Elbows

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