American Welding Society

AWS Errata Sheet

The following Errata have been identified and will be incorporated into the next reprinting of AWS D1.1/D1.1M:2020, *Structural Welding Code-Steel*

Page 9, term ***dihedral angle:** a return is missing between "See local dihedral angle" and "discontinuity"

***dihedral angle.** See **local dihedral angle.**

discontinuity. An interruption of the typical structure of a material, such as a lack of homogeneity in its mechanical or metallurgical, or physical characteristics. A discontinuity is not necessarily a defect.

Page 11, the symbol should be **ϕ** not **θ**.

*groove angle, **ϕ** (tubular structures). **The angle between opposing faces of the groove to be filled with weld metals, determined after the joint is fit-up.**

Page 11, the term **interpass temperature** is missing the asterisk.

***interpass temperature.** In a multipass weld, the temperature of the weld area between weld passes.

Page 12, the symbol should be **Ψ** not **θ**.

***local dihedral angle, Ψ (tubular structures).** The angle, measured in a plane perpendicular to the line of the weld, between tangents to the outside surfaces of the tubes being joined at the weld. The exterior dihedral angle, where one looks at a localized section of the connection, such that the intersecting surfaces may be treated as planes.

Page 13, the term **preheat temperature, *welding*** is missing the asterisk.

***preheat temperature, *welding*.** The temperature of the base metal in the volume surrounding the point of welding immediately before welding is started. In a multiple-pass weld, it is also the temperature immediately before the second and subsequent passes are started.

Page 14, top of page *single electrode ,*parallel electrode, * multiple electrode moved to below the definition of SAW.

Submerged arc welding (SAW). An arc welding process that uses an arc or arcs between a bare metal electrode or electrodes and the weld pool. The arc and molten metal are shielded by a blanket of granular flux on the workpieces. The process is used without pressure and with filler metal from the electrode and sometimes from a supplemental source
(welding rod, flux, or metal granules).

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***single electrode.** One electrode connected exclusively to one power source which may consist of one or more power units.

***parallel electrode.** Two electrodes connected electrically in parallel and exclusively to the same power source. Both electrodes are usually fed by means of a single electrode feeder. Welding current, when specified, is the total for the two.

***multiple electrodes.** The combination of two or more single or parallel electrode systems. Each of the component systems has its own independent

Page 42, Table 4.5 entitled “Fatigue Stress Design Parameters (see 4.14.1)”

-Description 5.6 replace “Formula 4” with “Formula 5”.
-Description 5.7 replace “Formula 4” with “Formula 5”.
-Description 8.2 replace “Formula 3” with “Formula 4”.
-Description 8.4 replace “Formula 3” with “Formula 4”.

Page 63, Clause 5.4.1

-Replace the reference “5.4.1.1” with “5.4.1.1 through 5.4.1.9.”

Page 69, Table 5.2 entitled “Essential Variables for Prequalified WPSs (see 5.2.1)”

-item (4) Base Metal Preheat Category(s) replace “(See Table 5.4)” with “(See Table 5.8)”.

Page 71, Table 5.3 entitle “Approved Base Metals for Prequalified WPSs (see 5.3)”

-Remove the underlines from steel specification requirements shown for ASTM A847

Page 71, Table 5.3 entitled “Approved Base Metals for Prequalified WPSs (see 5.3)”

-Group II, ASTM A633 replace “≥ 2-1/2 in [65 mm]” with “≤ 2-1/2 in [65 mm]”

Page 72, Table 5.3 entitled “Approved Base Metals for Prequalified WPSs (see 5.3)”

-Replace “Group III, ASTM A710, Grade A, Class 2 ≤ in [20 mm]” with “Group III, ASTM A710, Grade A, Class 2 ≤ in [25 mm]”

Page 76, Table 5.4 entitled “ Filler Metals for Matching Strength for Table 5.3, Group III and Group IV Metals—FCAW and GMAW Metal Cored (see 5.6)”

-Replace “Group IV A5.29[a] Low-Alloy Steel electrode E8XTX-XM” with “Group IV A5.29[a] Low-Alloy Steel electrode “E9XTX-XM”

Page 76, Note 8

-Replace “Annex U” with “Annex M”.

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Page 79, Table 5.8 entitled “Prequalified Minimum Preheat and Interpass Temperature (see 5.7)”

-Category B on page 79 lists the Category C Minimum Preheat and Interpass Temperatures instead of the Category B Minimum Preheat and Interpass Temperatures. See corrected Table.

Table 5.8 (Continued)
Prequalified Minimum Preheat and Interpass Temperature (see 5.7)

CATEGORY	Steel Specification		Welding Process	Thickness of Thickest Part at Point of Welding		Minimum Preheat and Interpass Temperature	
				in	mm	°F	°C
B (cont'd)	ASTM A710	Grade A, Class 2 >2 in [50 mm]	SMAW with low-hydrogen electrodes, SAW, GMAW, FCAW	1/8 to 3/4 incl.	3 to 20 incl.	32[a]	0[a]
	ASTM A847			Over 3/4 thru 1-1/2 incl.	Over 20 thru 38 incl.	50	10
	ASTM A913	Grade 50		Over 1-1/2 thru 2-1/2 incl.	Over 38 thru 65 incl.	150	65
	ASTM A992			Over 2-1/2	Over 65	225	110
	ASTM A1008 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1008 HSLAS-F	Grade 50					
	ASTM A1011 SS	Grades 50, 55					
	ASTM A1011 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1011 HSLAS-F	Grade 50					
	ASTM A1018 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1018 HSLAS-F	Grade 50					
	ASTM A1018 SS	Grades 30, 33, 36, 40					
	ASTM A1066	Grade 50					
	ASTM A1085						
	API 5L	Grades B, X42					
	API Spec. 2H	Grades 42, 50					
	API 2MT1	Grade 50					
	API 2W	Grades 42, 50, 50T					
	API 2Y	Grades 42, 50, 50T					
	ABS	Grades A, B, D, E AH 32, 36 DH 32, 36 EH 32, 36					

(Continued)

Page 81, Notes for Figures 5.1 and 5.2; Footnote g

-Footnote g should read: "[g] If fillet welds are used in statically loaded structures to reinforce groove welds in corner and T-joints, these shall be equal to T1/4, but need not exceed 3/8 in [10 mm]. Groove welds in corner and T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to T1/4, but need not exceed 3/8 in [10 mm]."

Page 88, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Inches), Joint Detail Single-bevel-groove weld (4), T-joint (T), Corner joint (C)

-delete "ALL DIMENSIONS IN mm"

Page 96, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Millimeters)

-Replace Spacer = 1/8 x R with 3 x R
-Replace Spacer = 1/4 x R with 6 x R

Page 99, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Millimeters)

-Replace Spacer = 1/8 x R with 3 x R
-Replace Spacer = 1/4 x R with 6 x R

Page 104, Figure 5.2— Prequalified PJP Groove Weld Joint Details (see 5.4.2) (Dimensions in Inches)

-Replace the title of the Figure with "Prequalified PJP Groove Welded Joint Details (see 5.4.2) (Dimensions in Inches)"

Page 122, Figure 5.4—Prequalified Skewed T-Joint Joint Details (Nontubular) (See 5.4.3.2)
Note 1. (S_n), (S'_n) = Weld size dependent on magnitude of root opening (Rn) (see 7.21.1). (n) represents 1 through 5.

-replace "(n) represents 1 through 5" with "(n) represents 1 through 6."

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Page 140, Table 6.2 entitled “WPS Qualification—CJP Groove Welds: Number and Type of Test Specimens and Range of Thickness Qualified (see 6.5)”

-The metric dimensions were added to the Nominal Base Metal Thickness Column. See corrected Table.

Table 6.2
WPS Qualification—CJP Groove Welds: Number and Type of Test Specimens and Range of Thickness Qualified (see 6.5)

1. Tests on Plate[a]

Nominal Plate Thickness (T) Tested, in [mm]	Number of Specimens				Nominal Base Metal Thickness Qualified, in [mm]	
	Reduced Section Tension (see Fig. 6.10)	Root Bend (see Fig. 6.8)	Face Bend (see Fig. 6.8)	Side Bend (see Fig. 6.9)	Min.	Max.[b]
1/8 ≤ T ≤ 3/8 [3 ≤ T ≤ 10]	2	2	2	(Footnote d)	1/8 [3]	2T
3/8 < T < 1 [10 < T < 25]	2	—	—	4	1/8 [3]	2T
1 and over [25 and over]	2	—	—	4	1/8 [3]	Unlimited

2. Tests on ESW and EGW[c]

Nominal Plate Thickness Tested	Number of Specimens			Nominal Base Metal Thickness Qualified	
	Reduced Section Tension (see Fig. 6.10)	All-Weld-Metal Tension (see Fig. 6.14)	Side Bend (see Fig. 6.9)	Min.	Max.
T	2	1	4	0.5T	1.1T

[a] See Figures 6.6 and 6.7 for test plate requirements.
[b] For square groove welds that are qualified without backgouging, the maximum thickness qualified is limited to the test thickness.
[c] See Figure 6.5 for test plate requirements.
[d] For 3/8 in [10 mm] plate thickness, a side-bend test may be substituted for each of the required face- and root-bend tests.

(Errata Notice: 06/28/2023)

Pages 142 and 143, Table 6.5 entitled “PQR Essential Variable Changes Requiring WPS Requalification for SMAW, SAW, GMAW, FCAW, and GTAW (see 6.8.1)”

-Several of the columns had no X and no shading. Shading has been added. See the portion of the Table that has been corrected.

Essential Variable Changes to PQR Requiring Requalification	Process				
	SMAW	SAW	GMAW	FCAW	GTAW
Process Parameters					
(12) A change in the amperage for each diameter used by:	To a value not recommended by manufacturer	> 10% increase or decrease	> 10% increase or decrease	> 10% increase or decrease	> 25% increase or decrease
(13) A change in type of current (ac or dc) or polarity (electrode positive or negative for dc current)	X	X	X	X	X
(14) A change in the mode of transfer			X		
(15) A change from CV to CC output			X	X	
(16) A change in the voltage for each diameter used by:		> 7% increase or decrease	> 7% increase or decrease	> 7% increase or decrease	
(17) An increase or decrease in the wire feed speed for each electrode diameter (if not amperage controlled) by:		> 10%	> 10%	> 10%	

-Several of the columns had an X and shading. Shading has been removed. See the portion of the Table that has been corrected.

Essential Variable Changes to PQR Requiring Requalification	Process				
	SMAW	SAW	GMAW	FCAW	GTAW
SAW Parameters					
(22) A change of > 10%, or 1/8 in [3 mm], whichever is greater, in the longitudinal spacing of the arcs		X			
(23) A change of > 10%, or 1/8 in [3 mm], whichever is greater, in the lateral spacing of the arcs		X			
(24) An increase or decrease of more than 10° in the angular orientation of any parallel electrode		X			
(25) For mechanized or automatic SAW; an increase or decrease of more than 3° in the angle of the electrode		X			
(26) For mechanized or automatic SAW, an increase or decrease of more than 5° normal to the direction of travel		X			

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Page 144, Table 6.5 item (27)

-Replace “6.10” with “10.8”

Page 144, Table 6.5 item (33)

-Replace “7.22.4.1” with “7.21.4.1”

Page 147, Table 6.7 entitled “PQR Supplementary Essential Variable Changes for CVN Testing Applications Requiring WPS Requalification for SMAW, SAW, GMAW, FCAW, GTAW (see 6.8.1), and ESW/EGW (see 6.8.2)”

-Several of the columns had no X and no shading. Shading has been added.

-Item (9)-replaced “signal” with “single” See the portion of the Table that has been corrected.

Table 6.7
PQR Supplementary Essential Variable Changes for CVN Testing Applications Requiring WPS Requalification for SMAW, SAW, GMAW, FCAW, GTAW (see 6.8.1), and ESW/EGW (see 6.8.2)

Variable	SMAW	SAW	GMAW	FCAW	GTAW	ESW/EGW
Filler Metal						
(3) A change in the AWS A5.X Classification, or to a weld metal or filler metal classification not covered by A5.X specifications. Carbon and low-alloy steel FCAW and GMAW-Metal Cored electrodes previously classified under A5.18, A5.20, A5.28, or A5.29 and reclassified under A5.36 without change of manufacturer or brand name, and meeting all of the previous classification requirements used in PQR/WPS CVN qualification shall be acceptable without requalification.	X	X	X	X	X	X
(4) A change in the Flux/Wire classification		X				X[b]
(5) A change in either the electrode or flux trade name when not classified by an AWS specification		X				X
(6) A change from virgin flux to crushed slag flux		X				X[b]
(7) A change in the manufacturer or the manufacturer’s brand name or type of electrode			X[a]	X		
Preheat/Interpass Temperature						
(8) An increase of more than 100°F [56°C] in the maximum preheat or interpass temperature qualified	X	X	X	X	X	X
Postweld Heat Treatment						
(9) A change in the PWHT temperature and/or time ranges. The PQR test shall be subject to 80% of the aggregate times at temperature(s). Total time(s) may be applied in single or multiple heating cycle(s).	X	X	X	X	X	X

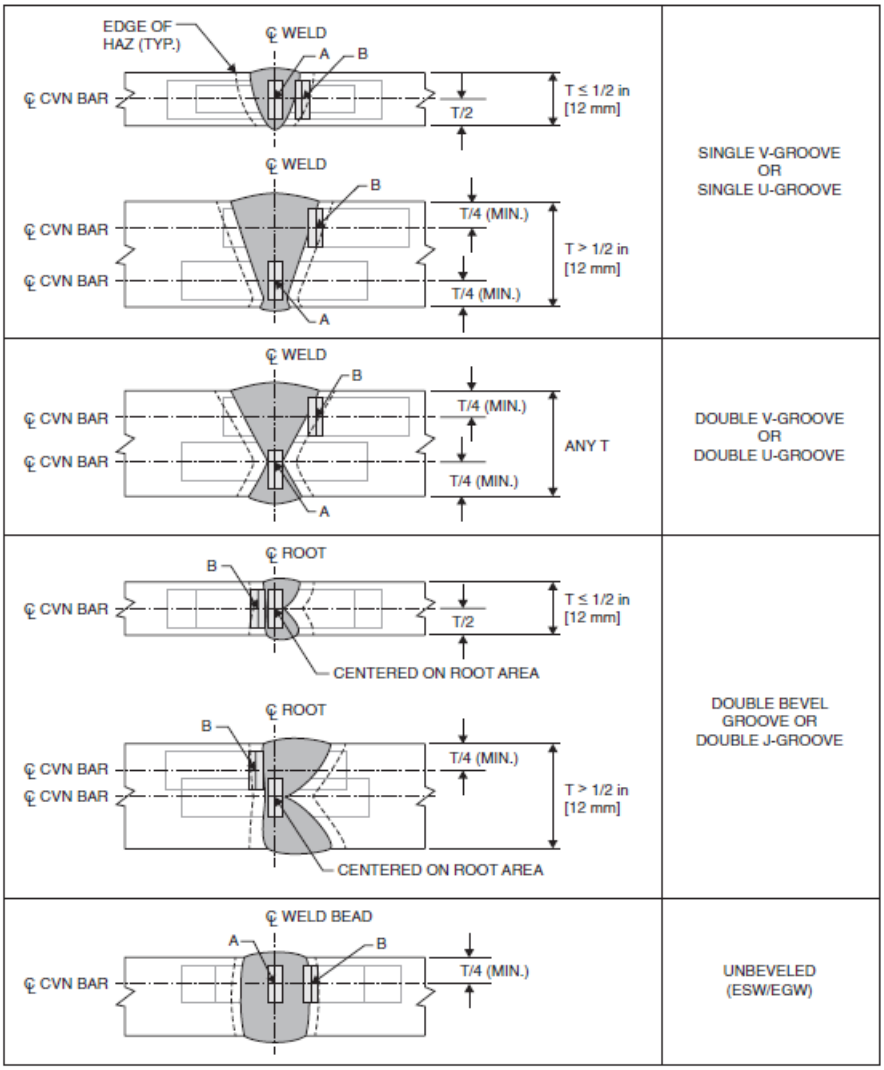
Page 182, Figure 6.26-Second figure

-Replace “3/4 in [75 mm]” with “3/4 in [20 mm]”

(Errata Notice: 06/28/2023)

Page 184, Figure 6.28—CVN Test Specimen Locations (see 6.27.1).

-For Single V-Groove or Single U-Groove, the second Figure had a dimension of T ≤ ½ in [12 mm] instead of T > ½ in [12 mm]. See corrected Figure.



Notes:
1. A = Locate notch on weld centerline for V-, U- and square grooves. Locate notch on root centerline for bevel and J-grooves.
2. B = Locate notch in HAZ when CVNs in the HAZ are specified.
3. The Engineer may specify a notch location a specific distance from the fusion line in lieu of location B.

Figure 6.28—CVN Test Specimen Locations (see 6.27.1)

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Page 222, Clause 8.13.2.2 Scanning.

-Replace the ‘S’ in the second sentence with ‘E’.

Page 224, Clause 8.17.5.1.1

-Replace “Ug Maximum, in [mm]” with “U_g Maximum, in [mm]”

Page 233, 8.28.1(4)

-delete 8.28.2

Page 234, 8.28.2.2

-Replace “As related to Annex P, From P-8” with “As related to Annex P, Form P-8”.

Page 236, 8.32

-Replace “This part contains NDT methods not addressed in Parts D, E, or Part F of Clause 8, or Clause 10, Part F” with “This part contains NDT methods not addressed in Parts D, E, or F of Clause 8 or Part F of Clause 10.”

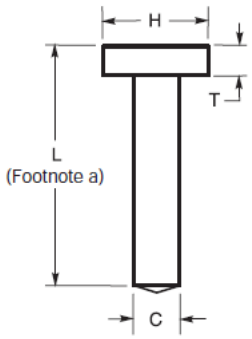
Page 277, Table 9.1, Type B^b Column for Tensile Strength

-Change “420 MPa min.” to “450 MPa min.”

(Errata Notice: 06/28/2023)

Page 278, Figure 9.1

-The headings were off. See corrected Figure 9.1



[a] Manufactured length before welding.

Standard Dimensions, in				
	Shank Diameter (C)	Length Tolerances (L)	Head Diameter (H)	Minimum Head Height (T)
3/8	+0.010 –0.010	±1/16	3/4 ± 1/64	9/32
1/2	+0.010 –0.010	± 1/16	1 ± 1/64	9/32
5/8	+0.010 –0.010	± 1/16	1-1/4 ± 1/64	9/32
3/4	+0.015 –0.015	± 1/16	1-1/4 ± 1/64	3/8
7/8	+0.015 –0.015	± 1/16	1-3/8 ± 1/64	3/8
1	+0.020 –0.020	± 1/16	1-5/8 ± 1/64	1/2
Standard Dimensions, mm				
	Shank Diameter (C)	Length Tolerances (L)	Head Diameter (H)	Minimum Head Height (T)
10	+0.25 –0.25	± 1.6	19 ± 0.40	7.1
13	+0.25 –0.25	± 1.6	25 ± 0.40	7.1
16	+0.25 –0.25	± 1.6	32 ± 0.40	7.1
19	+0.40 –0.40	± 1.6	32 ± 0.40	9.5
22	+0.40 –0.40	± 1.6	35 ± 0.40	9.5
25	+0.40 –0.40	± 1.6	41 ± 0.40	12.7

Figure 9.1—Dimension and Tolerances of Standard-Type Headed Studs (see 9.2.1)

Page 286, Clause 10.5.5

-First paragraph after the equations, replace Q2 with Θ2.

-Replace “Electrode minimum specified tensile strength = 60-70 ksi” with

Electrode minimum specified tensile strength = 60 – 70 ksi	ASD	LRFD
E60XX and E70XX—	1.35	1.5
Higher strengths—	1.60	1.8

Page 287, Clause 10.9.1

-Replace the reference to “Figure 5.1” with “Figure 5.2”.

(Errata Notice: 06/28/2023)

Page 290, Clause 10.16.1, second paragraph, second sentence.

-Replace the reference “6.17.1.2” with “6.17”.

Page 291, Clause 10.16.2

-Replace the first sentence with “Tack welder qualification shall qualify for tubular thickness greater than or equal to 1/8 in [3 mm] and all diameters, but does not include CJP butt joints and T-, Y-, and K-connections welded from one side.”

Page, 292, Clause 10.21.1.1(1)(f)

-Replace “1/4 in [4 mm]” with “1/4 in [6 mm]”

Page 305, Table 10.8 entitled “WPS Qualification—Production Welding Positions Qualified by Plate, Pipe, and Box Tube Tests”

-In the column “Weld Type” insert a horizontal line between “CJP Groove” and “Fillet”

Page 305, Table 10.8 entitled “WPS Qualification—Production Welding Positions Qualified by Plate, Pipe, and Box Tube Tests” footnote c is missing the word “Figure” and footnote g has the wrong references.

-Footnote c should read “For production joints of CJP T-, Y-, and K-connections that conform to either Figure 10.9, 10.10, or 10.11 and Table 10.7, use Figure 10.20 detail for testing. For other production joints, see 10.14.4.1.”

-Footnote g should read “Limited to prequalification joint details (see 5.4.1 and 5.4).”

Page 309, Table 10.12 entitled “Welder and Welding Operator Qualification— Production Welding Positions Qualified by Pipe and Box Tube Tests (see 10.16.1)

-A missing return for “Test Positions” has 2Gf and 5Gf incorrectly on the same line.

-Footnote f references the incorrect Figures. The referenced Figures should be Figure 10.17(A), Figure 10.17(A), Figure 10.17(B), respectively. See corrected Table and Footnote f.

(Errata Notice: 06/28/2023)

Page 309, Table 10.12 entitled “Welder and Welding Operator Qualification— Production Welding Positions Qualified by Pipe and Box Tube Tests (see 10.16.1)

-A missing return for “Test Positions” has 2G[f] and 5G[f] incorrectly on the same line.

-Footnote f references the incorrect Figures. The referenced Figures should be Figure 10.17(A), Figure 10.17(A), Figure 10.17(B), respectively. See corrected Table and Footnote f.

Table 10.12
Welder and Welding Operator Qualification—Production Welding Positions Qualified by Pipe and Box Tube Tests (see 10.16.1)

Qualification Test			Production Plate Welding Qualified			Production Pipe Welding Qualified					Production Box Tube Welding Qualified				
						Butt Joint		T-, Y-, K-Connections			Butt Joint		T-, Y-, K-Connections		
	Weld Type	Test Positions[a]	Groove CJP	Groove PJP	Fillet[b]	CJP[c]	PJP[c]	CJP[c,d]	PJP[c,d]	Fillet[b]	CJP	PJP	CJP	PJP[d]	Fillet[b]
TUBULAR	Groove[e] (Pipe or Box)	1G Rotated[f]	F	F	F, H	F	F		F	F, H	F	F		F	F, H
		2G[f]	F, H	F, H	F, H	F, H	F, H		F, H	F, H	F, H	F, H		F, H	F, H
		5G[f]	F, V, OH	F, V, OH	F, V, OH	F, V, OH	F, V, OH		F, V, OH	F, V, OH	F, V, OH	F, V, OH		F, V, OH	F, V, H
		6G[f]	All	All	All	All	All		All	All	All	All		All	All
		(2G + 5G)[f]	All	All	All	All	All		All	All	All	All		All	All
		6GR (Fig. 10.20)	All	All	All	All[g]	All	All	All	All	All[g]	All		All	All
		6GR (Figs. 10.20 & 10.22)	All	All	All	All[g]	All	All	All	All	All[g]	All	All[d,h]	All	All
	Pipe Fillet	1F Rotated			F					F					F
		2F			F, H					F, H					F, H
		2F Rotated			F, H					F, H					F, H
		4F			F, H, OH					F, H, OH					F, H, OH
		5F			All					All					All

CJP—Complete Joint Penetration
PJP—Partial Joint Penetration
[a] See Figures 10.12 and 10.13.
[b] See 10.14 for dihedral angle restrictions for tubular T-, Y-, K-connections.
[c] Qualification using box tubing (Figure 10.20) also qualifies welding pipe equal to or greater than 24 in [600 mm] in diameter.
[d] Not qualified for welds having groove angles less than 30° (see 10.14.4.2).
[e] Groove weld qualification shall also qualify plug and slot welds for the test positions indicated.
[f] Qualification for welding production joints without backing or backgouging shall require using the Figure 10.17(A) joint detail. For welding production joints with backing or backgouging, either Figure 10.17(A) or Figure 10.17(B) joint detail may be used for qualification.
[g] Not qualified for joints welded from one side without backing, or welded from two sides without backgouging.
[h] Pipe or box tubing is required for the 6GR qualification (Figure 10.20). If box tubing is used per Figure 10.20, the macroetch test may be performed on the corners of the test specimen (similar to Figure 10.22).

(Errata Notice: 06/28/2023)

Page 310, Table 10.13 (millimeters) for Production T-,Y-,K-Connection Fillet Welds, Type of Test Weld:

-Replace "Option 1-Fillet (Figure 10.21) [i]" with "Option 1-Fillet (Figure 6.25)[i]"

-Replace Option 1-Fillet (Figure 10.18)[i]" with "Option 1-Fillet (Figure 6.22)[i]"

Table 10.13 (Continued)
Welder and Welding Operator Qualification-Number and Type of Specimens and Range of Thickness and Diameter Qualified (Dimensions in Millimeters) (see 10.16)

Tests on Pipe or Tubing[a]

Production CJP Groove Butt Joints			Number of Specimens[b]						Qualified Dimensions			
			1G and 2G Positions Only			5G, 6G, and 6GR Positions Only			Nominal Pipe or Tube Size Qualified, mm		Nominal Plate, Pipe or Tube Wall Thickness[c] Qualified, mm	
Type of Test Weld	Nominal Size of Test Pipe, mm	Nominal Test Thickness, mm	Face Bend[d]	Root Bend[d]	Side Bend[d]	Face Bend[d]	Root Bend[d]	Side Bend[d]	Min.	Max.	Min.	Max.
Groove	≤ 100	Unlimited	1	1	Footnote e	2	2	Footnote e	20	100	3	20
Groove	> 100	≤ 10	1	1	Footnote e	2	2	Footnote e	Footnote f	Unlimited	3	20
Groove	> 100	> 10			2			4	Footnote f	Unlimited	5	Unlimited

Production T-, Y-, or K-Connection CJP Groove Welds			Number of Specimens[b]		Qualified Dimensions					
					Nominal Pipe or Tube Size Qualified, mm		Nominal Wall or Plate Thickness[c] Qualified, mm		Dihedral Angles Qualified[g]	
Type of Test Weld	Nominal Size of Test Pipe, mm	Nominal Test Thickness, mm	Side Bend[d]	Macroetch	Min.	Max.	Min.	Max.	Min.	Max.
Pipe Groove (Fig. 10.20)	≥ 150 O.D.	≥ 12	4		100	Unlimited	5	Unlimited	30°	Unlimited
Pipe Groove (Fig. 10.21)	< 100 O.D.	≥ 5	Footnote h		20	< 100	3	Unlimited	30°	Unlimited
Box Groove (Fig. 10.22)	Unlimited	≥ 12	4	4	Unlimited (Box only)	Unlimited (Box only)	5	Unlimited	30°	Unlimited

Production T-, Y-, or K-Connection Fillet Welds			Number of Specimens[b]				Qualified Dimensions					
							Nominal Pipe or Tube Size Qualified, mm		Nominal Wall or Plate Thickness Qualified, mm		Dihedral Angles Qualified[g]	
Type of Test Weld	Nominal Size of Test Pipe, D	Nominal Test Thickness, mm	Fillet Weld Break	Macroetch	Root Bend[d]	Face Bend[d]	Min.	Max.	Min.	Max.	Min.	Max.
5G position (Groove)	Unlimited	≥ 3			2[e]	2[e]	Footnote f	Unlimited	3[c]	Unlimited[c]	30°	Unlimited
Option 1—Fillet (Fig. 6.25)[i]		≥ 12	1	1			600	Unlimited	3	Unlimited	60°	Unlimited
Option 2—Fillet (Fig. 6.22)[i]		10			2		600	Unlimited	3	Unlimited	60°	Unlimited
Option 3—Fillet (Fig. 10.16)	Unlimited	≥ 3		1			D	Unlimited	3	Unlimited	30°	Unlimited

[a] See Table 10.12 for appropriate groove details.

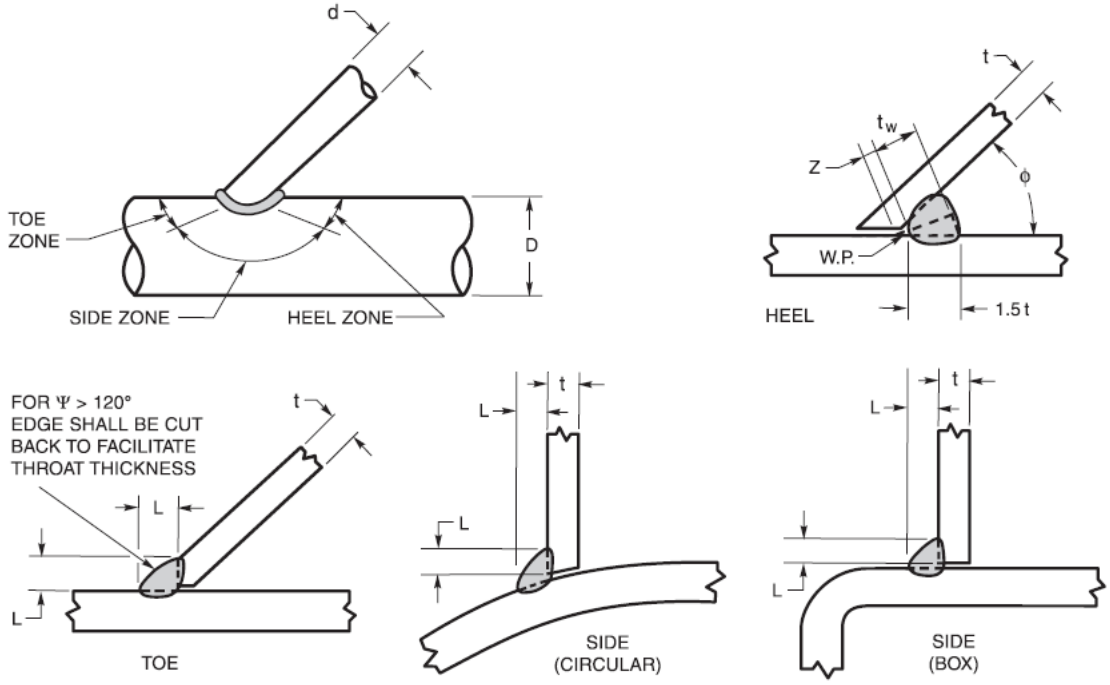
The purpose of an errata sheet is to notify the public that a published standard has a typographical error. Errata sheets provide a list of errors and their corrections on an AWS standard introduced during the publication stages.

(Errata Notice: 06/28/2023)

[b] All welds shall be visually inspected (see 6.23.1).
[c] Also qualifies for welding any fillet or PJP weld size on any thickness of plate, pipe or tubing.
[d] Radiographic examination of the test pipe or tubing may be made in lieu of the bend tests (see 6.17.1.1).
[e] For 10 mm wall thickness, a side-bend test may be substituted for each of the required face- and root-bend tests.
[f] The minimum pipe size qualified shall be 1/2 the test diameter or 100 mm, whichever is greater.
[g] For dihedral angles < 30°, see 10.18.1; except 6GR test not required.
[h] Two root and two face bends.
[i] Two plates required, each subject to the test specimen requirements described. One plate shall be welded in the 3F position and the other in the 4F position.

Page 321, Figure 10.5

-Replace the "E" in the Table with "S" (three places)
-Replace "E = 1.07 t" with "S = 1.07t" (eliminated the space between the 1.07 and t)
See corrected Figure.



	MIN L FOR		
	S = 0.7t	S = t	S = 1.07t
HEEL < 60°	1.5t	1.5t	LARGER OF 1.5t OR 1.4t + Z
SIDE ≤ 100°	t	1.4t	1.5t
SIDE 100-100°	1.1t	1.6t	1.75t
SIDE 110-120°	1.2t	1.8t	2.0t
TOE > 120°	t BEVEL	1.4t BEVEL	FULL BEVEL 60-90° GROOVE

Notes:
1. t = thickness of thinner part.
2. L = minimum size (see 10.2.1 which may require increased weld size for combinations other than 36 ksi [250 MPa] base metal and 70 ksi [485 MPa] electrodes).
3. Root opening 0 in to 3/16 in [5 mm] (see 7.21).
4. Not prequalified for $\phi < 30°$. For $\phi < 60°$, the Z loss dimensions in Table 10.5 apply. See Table 10.12 for welder qualification position requirements.
5. See 10.5.2.2 for limitations on $\beta = d/D$.
6. Ψ = dihedral angle.

Figure 10.5—Fillet Welded Prequalified Tubular Joints Made by SMAW, GMAW, and FCAW (see 10.8.1)

(Errata Notice: 06/28/2023)

Page 337, Figure 10.20 —Test Joint for T-, Y-, and K-Connections without Backing on Pipe or Box Tubing (≥ 6 in [150 mm] O.D.) —Welder and WPS Qualification (see 10.14.4.1 and 10.18)

-In the Title replace the "(≥ 6 in [150 mm] O.D.)" with "(≥ 4 in [150 mm] O.D.)"

Page 357, Table B.1

-Replace "Carbon Equivalent = P^{c}_{cm}" with "Carbon Equivalent = $P_{cm}{}^{c}$"

Page 388, Clause H9.2

-Replace the reference "8.24.4" with "8.25.5".

Page 389, Clause H9.2.1

-Replace the reference "8.24.4" with "8.25.5".

Page 408, Blank Form J-1 (Back) entitled "Blank Sample PQR Form (Test Results – page 2) PROCEDURE QUALIFICATION RECORD (PQR) TEST RESULTS"

-Removed the checkmarks under "Tests"
-Removed the information contained in "Result" and "Remarks"
See the corrected portion of the Blank Sample Form.

TESTS

✓	Type of Tests	Clause/Figure(s) Reference	Acceptance Criteria	Result	Remarks
	Visual Inspection	6.10.1	6.10.1		
	Radiographic Examination	6.10.2.1	6.10.2.2		
	Ultrasonic Testing	6.10.2.1	6.10.2.2		
	2 Transverse Root Bends	6.10.3.1/Fig. 6.8	6.10.3.3		
	2 Transverse Face Bends	6.10.3.1/Fig. 6.8	6.10.3.3		
	2 Longitudinal Root Bends	6.10.3.1/Fig. 6.8	6.10.3.3		
	2 Longitudinal Face Bends	6.10.3.1/Fig. 6.8	6.10.3.3		
	2 Side Bends	6.10.3.1/Fig. 6.9	6.10.3.3		
	4 Side Bends	6.10.3.1/Fig. 6.9	6.10.3.3		
	2 Tensile Tests	6.10.3.1/Fig. 6.10	6.10.3.5		
	All-Weld-Metal Tensions	6.10.3.1/Figs. 6.14 and 6.18	6.15.1.3(2)		
	3 Macroetch	6.10.4	6.10.4.1		
	4 Macroetch	6.10.4	6.10.4.1		
	CVN Tests	6 Part D/Fig. 6.28	6.30 and Table 6.15		

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Pages 457 and 456, O3. UT Procedure

-Item (12) replace “rough- ness” with “roughness”

-The paragraph after Item (15) should be moved to the far left of the page (See corrected paragraph)

O3. UT Procedure

All UT shall be performed in conformance with a written procedure which shall contain a minimum of the following information regarding the UT method and examination techniques:

(1) The types of weld joint configurations to be examined
(2) Acceptance criteria for the types of weld joints to be examined (additional criteria when the acceptance criteria of Clause 8, Part C are not invoked by the Engineer)
(3) Type of UT equipment (manufacturer, model number, serial number)
(4) Type of transducer, including frequency, size, shape, angle and type of wedge if it is different than that in 8.21.6 or 8.21.7
(5) Scanning surface preparation and couplant requirements
(6) Type of calibration test block(s) with the appropriate reference reflectors
(7) Method of calibration and calibration interval
(8) Method for examining for laminations prior to weld evaluation if the method is different from 8.25.5
(9) Weld root index marking and other preliminary weld marking methods
(10) Scanning pattern and sensitivity requirements
(11) Methods for determining discontinuity location height, length and amplitude level
(12) Transfer correction methods for surface roughness, surface coatings and part curvature, if applicable
(13) Method of verifying the accuracy of the completed examination. This verification may be by re-UT by others (audits), other NDE methods, macroetch specimen, gouging or other visual techniques as may be approved by the Engineer
(14) Documentation requirements for examinations, including any verifications performed
(15) Documentation retention requirements.

The written procedure shall be qualified by testing mock-up welds which represent the production welds to be examined. The mock-up welds shall be sectioned, properly examined, and documented to prove satisfactory performance of the procedure. The procedure and all qualifying data shall be approved by an individual who has been certified Level III in UT by testing in conformance with ASNT SNT-TC–1A and who is further qualified by experience in examination of the specific types of weld joints to be examined.

Pages 476 and 477 bottom right side of the page,

-Replace reference “L-9” with “P-9”

Page 481, Form P-10 Note 3:

-Replace “e3qual” with “equal”

(Errata Notice: 06/28/2023)

Page 497, reference

-Replace the AWS B4.0 reference listed with “AWS B4.0, Standard Methods for Mechanical Testing of Welds (Metric customary units)”

Page 527, C-Table 5.2 Prequalified WPS Variables, (5) Changes that require a new or modified prequalified WPS.

-Replace “Table 5.2, item 9” with “Table 5.2, item 22”.

Page 537, C-6.8 Essential Variables.

-Replace the second sentence with “However, departure from variables which affect the mechanical or chemical composition of material properties, or soundness of the weldment shall not be allowed without requalification.”

Page 586, C-10.7.2 Tubular Base Metal Notch Toughness, Item (1)

-Replace (defined in Annex H, H6.1.1) with (defined in Annex B, B6.1.1)

Page 621, Index, term “allowable stresses, ranges”

-Replace “C-11.4.2” with “C-11.5.2”

Page 621, Index, term “ASTM A6”

-Replace “C-11.1” with “C-11.2”

Page 622, Index, term “base metal, insufficient thickness”

-Replace “11.5.4, C-11.5.4” with “11.6.4, C-11.6.4”

Page 622, Index, term “base metal, repair and strengthening”

-Replace “11.2, C-11.2” with “11.3, C-11.3”

Page 622, Index, term “base metal, workmanship”

-Replace “11.5.1” with “11.6.1”

Page 622, Index, term “bearing, stiffeners”

-Remove “C-11.3”

Page 623, Index, term “cyclically loaded structures, allowable stresses and stress ranges”

-Replace “C-11.4.2” with “C-11.4.3”

Page 623, Index, term “design requirements, strengthening and repair”

-Replace “11.3, C-11.3” with “11.4, C-11.4”

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Page 624, Index, term “digital image sensitivity range”
-Remove C-11.2

Page 624, Index, term “discontinuities, members”
-Replace “11.5.2, C-11.5.2” with “11.6.2, C-11.6.2”

Page 624, Index, term “existing structures, base metal repair”
-Replace “11.2, C-11.2” with “11.3, C-11.3”

Page 624, Index, term “existing structures, design for strengthening and repair”
-Replace “11.3, C-11.3” with “11.4, C-11.4”

Page 624, Index, term “existing structures, fatigue life enhancement”
-Replace “11.4, C-11.4” with “11.5, C-11.5”

Page 624, Index, term “existing structures, quality controls”
-Replace “11.6, C-11.6” with “11.7, C-11.7”

Page 624, Index, term “existing structures, strengthening and repair requirements”
-Replace “11.1, C-11.1” with “11.2, C-11.2”

Page 624, Index, term “existing structures, workmanship and techniques”
-Replace “11.5, C-11.5” with “11.6, C-11.6”

Page 625, Index term “fatigue, analysis, for strengthening and repair”
-Replace “11.3.3, C-11.3.3” with “11.4.3, C-11.4.3”

Page 625, Index term “fatigue, analysis, life enhancement methods”
-Replace “11.4.1, C-11.4.1” with “11.5.1, C-11.5.1”

Page 625, Index term “fillet welds, allowable stress ranges”
-Replace “C-11.4.2” with “C-11.5.2”

Page 626, Index term “heat treatment, repair and strengthening”
-Replace “11.5.5, C-11.5.5” with “11.6.5, C-11.6.5”

Page 627, Index term “inspection, visual weld inspection”
-Replace “11.6.1” with “11.7.1”

Page 627, Index term “loading points, strengthening and repair”
-Replace “11.3.5, 11.3.5” with “11.4.5, C-11.4.5”

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Page 628, Index term “nondestructive testing, quality control”
-Replace “11.6.2” with “11.7.2”

Page 628, Index term “Partial Joint Penetration (PJP) groove welds, allowable stress ranges”
-Replace “C-11.4.2” with “C-11.5.2”

Page 628, Index term “peening”
-Replace “C-11.4.1” with “C-11.5.1”

Page 629, Index term “quality control tests”
-Replace “11.6, C-11.6” with “11.7, C-11.7”

Page 630, Index term “repairs, base metal”
-Replace “11.2, C-11.2” with “11.3, C-11.3”

Page 630, Index term “repairs, design for”
-Replace “11.3, C-11.3” with “11.4, C-11.4”

Page 630, Index term “repairs, existing structures”
-Replace “11.6, C-11.6” with “11.7, C-11.7”

Page 630, Index term “replacement, for strengthening and repair”
-Replace “11.3.4” with “11.4.4”

Page 630, Index, term “restoration, for strengthening and repair”
-Replace reference “11.3.4” with “11.4.4”

Page 630, Index term “sequencing of welds”
-Replace “11.5.6, C-11.5.6” with “11.6.6, C-11.6.6”

Page 631, Index term “strengthening procedures, existing structures”
-Replace “11.6, C-11.6” with “11.7, C-11.7”

Page 631, Index term “stresses, analysis, for strengthening and repair”
-Replace “11.3.2” with “11.4.2”

Page 632, Index term “temperature requirements, minimum ambient temperature”
-Replace “C-11.3” with “C-11.6.5”

Page 632, Index term “TIG dressing”
-Replace “Fig. C-11.3 to Fig. C-11.6” with “Fig. C-11.8”

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