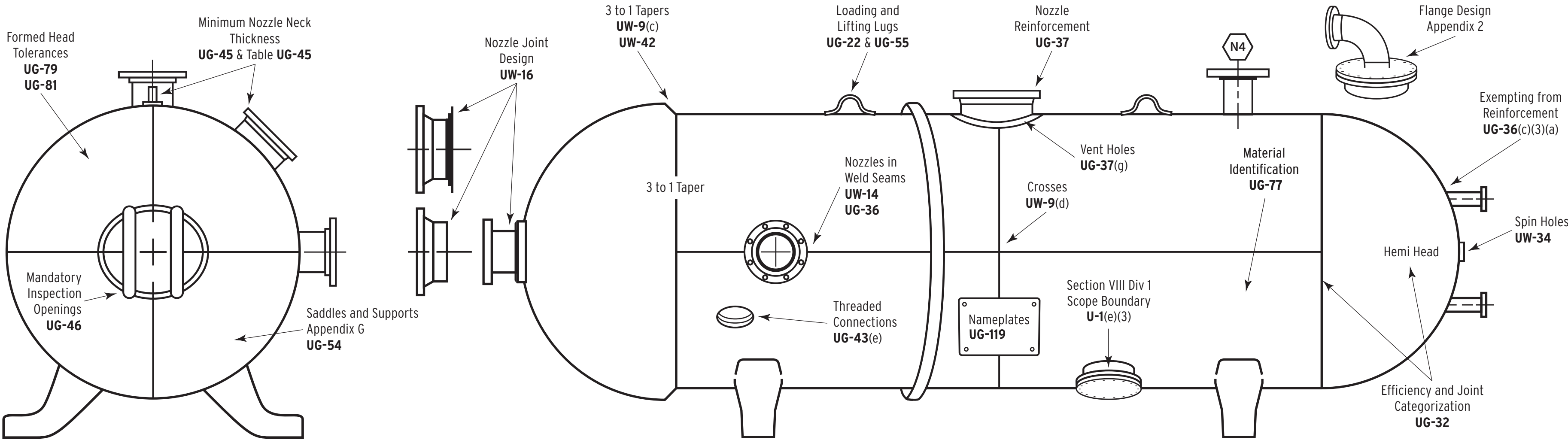


Quick Reference Guide to ASME Section VIII, Div. 1



UW-35 MAXIMUM WELD REINFORCEMENT		
Customary Units		
Material Nominal Thickness (in.)	Maximum Reinforcement (in.)	
	Categories B and C Butt Welds	Other Welds
Less than 3/32	3/32	1/32
3/32 to 3/16, incl.	1/8	1/16
Over 3/16 to 1/2, incl.	5/32	3/32
Over 1/2 to 1, incl.	3/16	3/32
Over 1 to 2, incl.	1/4	1/8
Over 2 to 3, incl.	1/4	5/32
Over 3 to 4, incl.	1/4	7/32
Over 4 to 5, incl.	1/4	1/4
Over 5	5/16	5/16
SI Units		
Material Nominal Thickness (mm)	Maximum Reinforcement (mm)	
	Categories B and C Butt Welds	Other Welds
Less than 2.4	2.5	0.8
2.4 to 4.8, incl.	3	1.5
Over 4.8 to 13, incl.	4	2.5
Over 13 to 25, incl.	5	2.5
Over 25 to 51, incl.	6	3
Over 51 to 76, incl.	6	4
Over 76 to 102, incl.	6	5.5
Over 102 to 127, incl.	6	6
Over 127	8	8

UW-33 ALIGNMENT TOLERANCE		
Customary Units		
Section Thickness (in.)	Joint Categories	
	A	B, C, & D
Up to 1/2, incl.	1/4t	1/4t
Over 1/2 to 3/4, incl.	1/8 in.	1/4t
Over 3/4 to 1-1/2, incl.	1/8 in.	3/16 in.
Over 1-1/2 to 2, incl.	1/8 in.	1/8t
Over 2	Lesser of 1/16t or 3/8 in.	Lesser of 1/8t or 3/4 in.
SI Units		
Section Thickness (mm)	Joint Categories	
	A	B, C, & D
Up to 13, incl.	1/4t	1/4t
Over 13 to 19, incl.	3 mm	1/4t
Over 19 to 38, incl.	3 mm	5 mm
Over 38 to 51, incl.	3 mm	1/8t
Over 51	Lesser of 1/16t or 10 mm	Lesser of 1/8t or 19 mm
QW-452.3 GROOVE-WELD DIAMETER LIMITS		
O.D. of Test Coupon, in. (mm)	O.D. Qualified, in. (mm)	
	Minimum	Maximum
Less than 1 (25)	Size Welded	Unlimited
1 (25) to 2-7/8 (73)	1 (25)	Unlimited
Over 2-7/8 (73)	2-7/8 (73)	Unlimited

UCS-57 THICKNESS ABOVE WHICH FULL RADIOGRAPHIC EXAMINATION OF BUTT-WELDED JOINTS IS MANDATORY	
P-No. & Group No. Classification of Material	Nominal Thickness Above Which Butt-Welded Joints Shall be Fully Radiographed in. (mm)
1 Gr. 1, 2, 3	1-1/4 (32)
3 Gr. 1, 2, 3	3/4 (19)
4 Gr. 1, 2	5/8 (16)
5A Gr. 1, 2	0 (0)
5B Gr. 1	0 (0)
5C Gr. 1	0 (0)
15E, Gr.1	0 (0)
9A Gr. 1	5/8 (16)
9B Gr. 1	5/8 (16)
10A Gr. 1	3/4 (19)
10B Gr. 1	5/8 (16)
10C Gr. 1	5/8 (16)

QW-452.4 SMALL DIAMETER FILLET-WELD TEST		
O.D. of Test Coupon, in. (mm)	Minimum O.D., Qualified, in. (mm)	Qualified Thickness
Less than 1 (25)	Size Welded	All
1 to 2-7/8 (73)	1 (25)	All
Over 2-7/8 (73)	2-7/8 (73)	All

QW-461.9 PERFORMANCE QUALIFICATION POSITION AND DIAMETER LIMITATIONS			
Qualification Test		Position & Type Weld Qualified	
(1) Plate		Plat and Pipe	
Weld	Position	Groove	Fillet or Tack
	1G	F*	F
	2G	F,H*	F,H
	3G	F,V*	F,H,V
	4G	F,O*	F,H,O
	3G & 4G	F,V,O*	ALL
(2) Pipe		Groove	Fillet
Groove Weld	1 G	F	F
	2G	F,H	F,H
	5G	F,V,O	ALL
	6G	ALL	ALL
	2G & 5G	ALL	ALL
NOTES:			
• (1) Plate - Qualification on plate qualified for pipe diameter down to 2-7/8"			
• (*) 1G,3G, & 4G - Qualification restricts pipe groove welds to flat only on pipe diameter of 24" & less (See QW-161.9)			
• (2) Pipe - Qualification on 2-7/8" and over qualifies 2-7/8" and over			

WALL THICKNESS CHART/PIPE SCHEDULE - IN. (MM)																
NOMINAL PIPE SIZE	PIPE O.D.	10	10S	20	30	STD	40	60	XH	80	100	120	140	160	XXH	
1/2 (15)	0.840 (21.3)	---		---	---	.109 (2.769)	.109 (2.769)	---	.147 (3.734)	.147 (.3734)	---	---	---	.188 (4.775)	.294 (7.467)	
3/4 (20)	1.050 (26.7)	.083 (2.108)	.083 (2.108)	---	---	.113 (2.870)	.113 (2.870)	---	.154 (3.912)	.154 (3.912)	---	---	---	.218 (5.537)	.308 (7.823)	
1 (25)	1.315 (33.4)	.109 (2.769)	.109 (2.769)	---	---	.133 (3.378)	.133 (3.378)	---	.179 (4.547)	.179 (4.547)	---	---	---	.250 (6.350)	.358 (9.093)	
1-1/4 (35)	1.660 (42.2)	.109 (2.769)	.109 (2.769)	---	---	.140 (3.556)	.140 (3.556)	---	.191 (4.851)	.191 (4.851)	---	---	---	.250 (6.350)	.382 (9.703)	
1-1/2 (40)	1.900 (48.3)	.109 (2.769)	.109 (2.769)	---	---	.145 (3.683)	.145 (3.683)	---	.200 (5.080)	.200 (5.080)	---	---	---	.281 (7.137)	.400 (10.160)	
2 (50)	2.375 (60.3)	.109 (2.769)	.109 (2.769)	---	---	.154 (3.912)	.154 (3.912)	---	.218 (5.537)	.218 (5.537)	---	---	---	.344 (8.738)	.436 (11.074)	
2-1/2 (65)	2.875 (73.0)	.120 (3.048)	.120 (3.048)	---	---	.203 (5.156)	.203 (5.156)	---	.276 (7.010)	.276 (7.010)	---	---	---	.375 (9.525)	.552 (14.021)	
3 (80)	3.500 (88.9)	.120 (3.048)	.120 (3.048)	---	---	.216 (5.486)	.216 (5.486)	---	.300 (7.620)	.300 (7.620)	---	---	---	.438 (11.125)	.600 (15.240)	
3-1/2 (90)	4.000 (101.6)	.120 (3.048)	.120 (3.048)	---	---	.226 (5.740)	.226 (5.740)	---	.318 (8.077)	.318 (8.077)	---	---	---	---	.646 (16.154)	
4 (100)	4.500 (114.3)	.120 (3.048)	.120 (3.048)	---	---	.237 (6.020)	.237 (6.020)	---	.337 (8.560)	.337 (8.560)	---	.438 (11.125)	---	.531 (13.487)	.674 (17.120)	
5 (125)	5.563 (141.3)	.134 (3.404)	.134 (3.404)	---	---	.258 (6.553)	.258 (6.553)	---	.375 (9.525)	.375 (9.525)	---	.500 (12.700)	---	.625 (15.875)	.750 (19.050)	
6 (150)	6.625 (168.3)	.134 (3.404)	.134 (3.404)	---	---	.280 (7.112)	.280 (7.112)	---	.432 (10.073)	.432 (10.073)	---	.562 (14.275)	---	.719 (18.263)	.864 (21.050)	
8 (200)	8.625 (219.1)	.148 (3.759)	.148 (3.759)	.250 (6.350)	.277 (7.036)	.322 (8.179)	.322 (8.179)	.406 (10.312)	.500 (12.700)	.500 (12.700)	.594 (15.088)	.719 (18.263)	.812 (20.625)	.906 (23.012)	.875 (22.275)	
10 (250)	10.750 (273.1)	.165 (4.191)	.165 (4.191)	.250 (6.350)	.307 (7.798)	.365 (9.271)	.365 (9.271)	.500 (12.700)	.500 (12.700)	.594 (15.090)	.719 (18.263)	.844 (21.438)	1.000 (25.400)	1.125 (28.575)	1.000 (25.400)	
12 (300)	12.750 (323.9)	.180 (4.572)	.180 (4.572)	.250 (6.350)	.330 (8.382)	.375 (9.525)	.406 (10.312)	.562 (14.275)	.500 (12.700)	.688 (17.475)	.844 (21.438)	1.000 (25.400)	1.125 (28.575)	1.312 (33.325)	1.000 (25.400)	
14 (350)	14.000 (355.6)	.210 (5.334)	.188 (4.775)	.312 (7.925)	.375 (9.525)	.375 (9.525)	.375 (9.525)	.594 (15.088)	.500 (12.700)	.750 (19.050)	.938 (23.825)	1.094 (27.788)	1.250 (31.750)	1.406 (35.712)	---	
16 (400)	16.000 (406.4)	.250 (6.350)	.188 (4.775)	.312 (7.925)	.375 (9.525)	.375 (9.525)	.500 (12.700)	.656 (16.662)	.500 (12.700)	.844 (21.438)	1.031 (26.187)	1.219 (30.963)	1.438 (36.525)	1.594 (40.488)	---	
18 (450)	18.000 (457.2)	.250 (6.350)	.188 (4.775)	.312 (7.925)	.438 (11.125)	.375 (9.525)	.562 (14.275)	.750 (19.050)	.500 (12.700)	.938 (23.825)	1.156 (29.362)	1.375 (34.930)	1.562 (39.675)	1.781 (45.237)	---	
20 (500)	20.000 (508.0)	.250 (6.350)	.218 (5.537)	.375 (9.525)	.500 (12.700)	.375 (9.525)	.594 (15.088)	.812 (20.625)	.500 (12.700)	1.031 (26.187)	1.281 (32.537)	1.500 (38.100)	1.750 (44.450)	1.969 (50.013)	---	
24 (600)	24.000 (609.6)	.250 (6.350)	.250 (6.350)	.375 (9.525)	.562 (14.275)	.375 (9.525)	.688 (17.475)	.969 (24.613)	.500 (12.700)	1.219 (30.963)	1.531 (38.887)	1.812 (46.025)	2.062 (52.375)	2.344 (59.538)	---	

NOTE: The above thicknesses are nominal and under tolerance as permitted in the material specifications to be considered for evaluation.

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