

<b>BPS1</b>	<b>ENGINEERING LIMITED</b>	<b>FSLZ</b>
<b>Rev. 2.1</b>	<b>Piping Classification</b>	<b>CSA PN420</b>

Service: <b>Low Temperature Sour Gas and Hydrocarbons, Produced Water, Low Vapour Pressure Fluids (Surface Piping), (Note 101)</b> <b>Class Location 1 per CSA Z662 Table 4.2, Category I Service per Z662 Table 5.1 and 5.2</b>		C.A. = 3.0 mm
Code: CSA Z662-19	Design Pressure: 42550 kPa(g) @ 38°C (Note 110)	Temperature Range: -45°C to 120°C
PWHT: Note 1	F=0.8 L=0.625 J=1 T=1	VT: 100% (Clause 7.10.1.2)
		X-Ray: 100%
		MP/LP: 15% SW

Pressure-Size Rating (Note 115)								
	Size	1/2 to 3/4	1	1 1/2	2	3	4	6
Location Factor = 0.9	Pressure (kPag) @ 38°C	42550	42550	38750	42550	42550	42550	39080
Location Factor = 0.75	Pressure (kPag) @ 38°C	36490	37430	32290	38700	39820	35730	32560
Location Factor = 0.625	Pressure (kPag) @ 38°C	30410	31190	26910	32250	33180	29770	27140

ITEM	SIZE/NPS	RATING	MATERIAL	ENDS	REF	NOTES	
PIPE	0.5 TO 1.5	Sch XXS	ASTM A106-B, NACE	PE	B36.10	19	
	1 TO 3	Sch XXS	ASTM A106-B, NACE	BE			
	4 TO 6	Sch XXS	ASTM A333-6, NACE	BE			
NIPPLES	0.5 TO 1.5	SCH XXS	ASTM A106-B, NACE	SW	B36.10	19	
FITTINGS	Tees, Ells, ETC	0.5 TO 0.75	Class 9000	ASTM A105-N, NACE	SW	B16.11	9,43
		1 TO 3	Match Pipe	ASTM A234-WPB, NACE	BW	B16.9	
		4 TO 6	Match Pipe	ASTM A420-WPL6, NACE	BW	B16.9	
	Swages	0.5 TO 1.5	Match Pipe	ASTM A234-WPB, NACE	SW, BW	MSS SP-95	
		Olets	0.5 TO 0.75	Class 9000	ASTM A105-N, NACE	SW	MSS SP-97
	1 TO 3		Match Pipe	ASTM A105-N, NACE	BW		104
	4 TO 6		Match Pipe	ASTM A350-LF2-CL1, NACE	BW		104
	Unions	0.5 TO 0.75	Class 9000	ASTM A105-N, NACE	SW	MSS SP-83	
	FLANGES	0.5 TO 0.75	Class 2500	ASTM A105-N, NACE	SWRTJ	B16.5	105
		1 TO 3	Class 2500	ASTM A105-N, NACE	WNRTJ		
4 TO 6		Class 2500	ASTM A350-LF2-CL1, NACE	WNRTJ			
Blind Flanges		0.5 TO 3	Class 2500	ASTM A105-N, NACE	RTJ	B16.5	
		4 TO 6	Class 2500	ASTM A350-LF2-CL1, NACE	RTJ		
Orifice Flanges		2 TO 3	Class 2500	ASTM A105-N-3/4" SW Taps, NACE	WNRTJ	B16.36	105
	4 TO 6	Class 2500	ASTM A350-LF2-CL1 -3/4" SW Taps, NACE	WNRTJ			
SPECTACLE BLINDS	2 TO 4	Class 2500	ASTM A516-70N, NACE		B16.48		
SPADE/SPACERS	6 TO 6	Class 2500	ASTM A516-70N, NACE		B16.48		
GASKETS	ALL	Class 2500	Type "R", Oval or Octagonal Ring, 316 SS or approved equal		B16.20		
FLANGE ISOLATION KITS	ALL	Class 2500	Pikotek VCS, Type E, G-10 gasket with Teflon seal, G-10 sleeves and washers			108	
BOLTS	ALL		ASTM A193-B7M		B16.5	102	
NUTS	ALL		ASTM A194-2HM		B16.5	103	
PLUGS	0.5 TO 1.5		ASTM A105-N, NACE	NPT, Hex Head	B16.11		
CAPS	0.5 TO 1.5		ASTM A105-N, NACE	NPT	B16.11		
QUICK OPENING CLOSURE	2 TO 3	Class 2500	Yale Figure 515 Closure or Equivalent, ASTM A350-LF2 CL1 Hub and Cap, Nitrile (NBR) Seals C/W ASTM A105-N Flange RTJ, NACE		ASME Sec VIII Div 1	108	
	4 TO 6	Class 2500	Yale Figure 515 Closure or Equivalent, ASTM A350-LF2 CL1 Hub and Cap, Nitrile (NBR) Seals C/W ASTM A350-LF2 CL1 Flange RTJ, NACE				

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Size	Tag #	Rating	Needle Valves (MSS-SP99)	Notes
¼M x ½F	NE99P4A	10000 PSI	26.7 MSW x 21.3 FNPT, 316L SS, hard seat, Multiport, NACE	25,31,33, 112
¼M x ½F	NE99M4A	10000 PSI	26.7 MNPT x 21.3 FNPT, 316 SS, hard seat, Multiport, NACE	
¼M x ½F	NE99M4B	10000 PSI	26.7 MNPT x 21.3 FNPT, 316 SS, hard seat, Ext. body, Multiport, NACE	
½M x ½F	NE99M4C	10000 PSI	21.3 MNPT x 21.3 FNPT, 316 SS, hard seat, NACE	
Size	Tag #	Rating	Ball Valves (ASME B16.34, API 608 as applicable)	Notes
½ to ¾	BA60S2	6000 PSI	Socketweld, A105N, RP, 316 SS trim, PEEK seats, 3 piece 4 bolt design, Lever Op., NACE	26,31
1 to 2	BA25J2	Class 2500	RTJ, A216-WCB, RP, A105N ENC trim, PEEK seats, TM, Lever Op., NACE	
3 to 3	BA25J2	Class 2500	RTJ, A216-WCB, RP, A105N ENC trim, PEEK seats, TM, Gear Op., NACE	
4 to 6	BA25J4	Class 2500	RTJ, A352-LCC, RP, A350-LF2-CL1 ENC trim, PEEK seats, TM, Gear Op, NACE	
1 to 2	BA25J2-FP	Class 2500	RTJ, A216-WCB, FP, A105N ENC trim, PEEK seats, TM, Lever Op., NACE	
3 to 3	BA25J2-FP	Class 2500	RTJ, A216-WCB, FP, A105N ENC trim, PEEK seats, TM, Gear Op., NACE	
4 to 6	BA25J4-FP	Class 2500	RTJ, A352-LCC, FP, A350-LF2-CL1 ENC trim, PEEK seats, TM, Gear Op, NACE	
Size	Tag #	Rating	Gate Valves (API 600 or API 602 as applicable)	Notes
½ to ¾	GA25S2	Class 2500	Socketweld, A105N, Trim #12, OS&Y, BB, NACE	29,31,33
½ to ¾	GA25X2	Class 2500	Socketweld x Screwed (female), A105N, Trim #12, OS&Y, BB, NACE	
1 to 2	GA25J2	Class 2500	RTJ, A216-WCB, Trim #12, OS&Y, BB, Handwheel, NACE	
3 to 3	GA25J2	Class 2500	RTJ, A216-WCB, Trim #12, OS&Y, BB, Gear Op., NACE	
4 to 6	GA25J4	Class 2500	RTJ, A352-LCC, Trim #12, OS&Y, BB, Gear Op, NACE	
Size	Tag #	Rating	Check Valves (ASME B16.34, API 600 or 602 as applicable)	Notes
½ to ¾	CH25S2	Class 2500	Socketweld, A105N, Horizontal Lift, Trim #12, BC, NACE	27,29,31, 33
1 to 3	CS25J2	Class 2500	RTJ, A216-WCB, Swing Type, Trim #12, BC, NACE	
4 to 6	CS25J4	Class 2500	RTJ, A352-LCC, Swing Type, Trim #12, BC, NACE	
1 to 3	CD25J2	Class 2500	RTJ, A216-WCB, Dual Plate Type, Trim #12, X750 Spring, Retainerless, NACE	
4 to 6	CD25J4	Class 2500	RTJ, A352-LCC, Dual Plate Type, Trim #12, X750 Spring, Retainerless, NACE	
2 to 3	CP25J2	Class 2500	RTJ, A216-WCB, Piston Type, Trim #12, X750 Spring, BC, NACE	
4 to 6	CP25J4	Class 2500	RTJ, A352-LCC, Piston Type, Trim #12, X750 Spring, BC, NACE	
2 to 3	CS25J2-FP	Class 2500	RTJ, A216-WCB, Swing, <u>Piggable</u> , SS trim, Viton seats, BC, NACE	
4 to 6	CS25J4-FP	Class 2500	RTJ, A352-LCC, Swing, <u>Piggable</u> , SS trim, Viton seats, BC, NACE	
Size	Tag #	Rating	Globe Valves (ASME B16.34, API 623 or 602 as applicable)	
½ to ¾	GL25S2	Class 2500	Socketweld, A105N, Trim #12, OS&Y, BB, NACE	29,33
1 to 2	GL25J2	Class 2500	RTJ, A216-WCB, Trim #12, OS&Y, BB, Handwheel, NACE	
3 to 3	GL25J2	Class 2500	RTJ, A216-WCB, Trim #12, OS&Y, BB, Gear Op., NACE	
4 to 6	GL25J4	Class 2500	RTJ, A352-LCC, Trim #12, OS&Y, BB Gear Op, NACE	