

**Pressure Equipment Directive/Pressure Equipment
Safety Regulation:
Safety Instructions**

UK CA CE



GB Safety Information: Vertical Chambers manufactured from carbon steel:

Pressure Equipment Directive (2014/68/EU) / Pressure Equipment (Safety) Regulation 2016 (Incl. Brexit amendments 2021)

These safety instructions are to be used in conjunction with the Vertical Controls product manual. Definitions: -

P_s max = Maximum allowable chamber pressure at the stated temperature - bar

T_s max = Maximum allowable chamber temperature - °C

T_s min = Minimum allowable chamber temperature - °C

P_t = Chamber Test pressure – bar

This product is designed and manufactured to comply with Module H of the Pressure Equipment Directive 2014/68/EU; the Pressure Equipment (safety) Regulation (Inc. Brexit amendments 2021) Module H. It carries a CE and/or UKCA mark and has a Declaration of Conformity to show compliance with the relevant Directive/Regulation.

Under the Pressure Equipment Directive/Pressure equipment Regulation (Incl. Brexit amendments 2021) this product is classified as Piping.

This product is designed for use with gases and liquids within Groups 1 and 2.

It is the responsibility of the installer/user of this equipment to ensure: -

1. The product is installed and used by suitably trained personnel in accordance with all relevant Local and National regulations and codes.
2. Safe working practices for the media and process concerned are followed during installation and maintenance.
3. The materials of construction are suitable for the application. See also Table 1.
4. The pressure and temperature limits for this equipment are not exceeded, if necessary by the use of suitable safety accessories. See also Table 3.
5. All Delta Mobrey supplied installation fixing bolts are used where applicable, and are only replaced by exact equivalents. On all other flanges, the correct quantity, size and strength of bolts (clamp type) are used. All fasteners are evenly tightened to the correct torque. See also Table 2.
6. Correct gaskets/seals are fitted and are compatible with the media and process.
7. The product is protected from fire.
8. The product is protected from impact.
9. This product is not used as a support for other equipment or personnel.
10. Regular inspection for corrosion and wear are carried out, both internal and external.

Table 1 - Vessel Pressure Materials

Component	Material Specification
Switch Mounting Flange	ASTM A105 / ASTM A350 LF2
Chamber Body Tube	ASTM A106 Grade B
Chamber Top Casting	ASTM A216
Chamber End Cap	ASTM A105
Process Flange / Fitting	ASTM A105
Process Piping	ASTM A106 Grade B
Studs (where supplied)	ASTM A193 B7
Nuts (where supplied)	ASTM A194 2H

Table 2 - Bolt Torques (Flanges)

Flange Type	Bolting	Torque (Nm)
Class 150 – 3"	5/8 UNC	230
Class 150 – 4"	5/8 UNC	190
Class 300 – 3"	3/4 UNC	125
Class 300 – 4"	3/4 UNC	220
Class 600 – 4"	7/8 UNC	325
For use with high tensile bolts only. For further bolting torque details see L1880 & L1882		

TABLE 3

Vertical Chambers manufactured from Carbon Steel (Flanged)

Process Rating Code	Type Code	
	X3C/	X4C/
101-150	19.6	19.6
201-150	6.5	6.5
Screwed	30	30
101-300	51	51
201-300	34.5	34.5
Screwed	78	78
101-600	102	102
201-600	69	69
Screwed	154	154
111, 121, 131	19.6	19.6
211, 221, 231	6.5	6.5
Class 150	30	30
112, 122, 132	51	51
212, 222, 232	34.5	34.5
Class 300	78	78
113, 123, 133	102	102
213, 223, 233	69	69
Class 600	154	154
115, 125	16	16
215, 225	10.8	10.8
PN16	24	24
116, 136	25	25
216, 236	16.9	16.9
PN25	37.5	37.5
117, 137	40	40
217, 237	27	27
PN40	60	60
118	64	64
218	36	36
PN64	96	96
119	100	100
219	67.5	67.5
PN100	150	150

Nameplate Stamping Explanation

e.g. X4C/201-300

Ps max 20C	Ts min
Ps max	at Ts max
Pt	

51	-10
34.5	400
78	

Ts min for carbon steel is always minus 10C = -10

Ts max for carbon steel is always 400C = 400

Vertical Chambers manufactured from Carbon Steel (Bottle)

Process Rating Code	Type Code				
	B3C1F/	B4C2F/	B4C3F/	B4C4F/	B4C7D/
101	30.1	88.8	44.6	17.1	88.8
201	20	59.2	29.6	11.3	59.2
Screwed	43.1	127	63.9	24.5	127
111, 121	19.6	19.6	19.6	17.1	19.6
211, 221	6.5	6.5	6.5	6.5	6.5
Class 150	30	30	30	24.5	30
112, 122	30.1	51	44.6	17.1	51
212, 222	20	34.5	29.6	11.3	34.5
Class 300	43.1	78	63.9	24.5	78
113, 123, 133	30.1	88.8	44.6	17.1	88.8
213, 223, 233	20	59.2	29.6	11.3	59.2
Class 600	43.1	127	63.9	24.5	127
115, 125	16	16	16	16	16
215, 225	10.8	10.8	10.8	10.8	10.8
PN16	24	24	24	24	24
116, 136	25	25	25	17.1	25
216, 236	16.9	16.9	16.9	11.3	16.9
PN25	37.5	37.5	37.5	24.5	37.5
117, 137	30.1	40	40	17.1	40
217, 237	20	27	27	11.3	27
PN40	43.1	60	60	24.5	60
118	30.1	64	44.6	17.1	64
218	20	36	29.6	11.3	36
PN64	43.1	96	63.9	24.5	96
119	30.1	88.8	44.6	17.1	88.8
219	20	59.2	29.6	11.3	59.2
PN100	43.1	127	63.9	24.5	127

Nameplate Stamping Explanation

e.g. B4C3F/233

Ps max 20	Ts min
Ps max	at Ts max
Pt	

44.6	-10
29.6	400
63.9	

Ts min for carbon steel is always minus 10C = -10

Ts max for carbon steel is always 400C = 400

GB Safety Information: Vertical Chambers manufactured from 316L stainless steel

Pressure Equipment Directive (2014/68/EU) / Pressure Equipment (Safety) Regulation 2016 (Incl. Brexit amendments 2021)

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- P_s max** = Maximum allowable chamber pressure at the stated temperature - bar
- T_s max** = Maximum allowable chamber temperature - °C
- T_s min** = Minimum allowable chamber temperature - °C
- P_t** = Chamber Test pressure - bar

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3. The materials of construction are suitable for the application. See also Table 1.
4. The pressure and temperature limits for this equipment are not exceeded, if necessary by the use of suitable safety accessories. See also Table 3.
5. All Delta Mobrey supplied installation fixing bolts are used where applicable, and are only replaced by exact equivalents. On all other flanges, the correct quantity, size and strength of bolts (clamp type) are used. All fasteners are evenly tightened to the correct torque. See also Table 2.
6. Correct gaskets/seals are fitted and are compatible with the media and process.
7. The product is protected from fire.
8. The product is protected from impact.
9. This product is not used as a support for other equipment or personnel.
10. Regular inspection for corrosion and wear are carried out, both internal and external.

Table 1 – Vessel Pressure Materials

Component	Material Specification
Switch Mounting Flange	ASTM A182 F316L
Chamber Body Tube	ASTM A312 TP316L
Chamber End Cap (flat)	ASTM A182 F316L
Chamber End Cap (dished)	ASTM A403 WP316L
Process Flange / Fitting	ASTM A182 F316L
Process Piping	ASTM A312 TP316L
Studs (where supplied)	ASTM A320 L7
Nuts (where supplied)	ASTM A194 Grade7 + S3

Table 2 – Bolt Torques (Switch Mounting Flange)

Flange Type	Bolting	Torque (Nm)
Class 150	⁵ / ₈ UNC	190
Class 300	³ / ₄ UNC	220
Class 600	⁷ / ₈ UNC	325
For use with high tensile bolts only. For further bolting torque details see L1880 & L1882		

TABLE 3

Vertical Chambers manufactured from 316L Stainless Steel (Flanged)

Process Rating Code	Type Code X4S/	Nameplate Stamping Explanation
101-150	15.8	
201-150	6.5	
Screwed	24	
101-300	41.3	
201-300	23	
Screwed	63	
101-600	82.7	
201-600	46.1	
Screwed	125	
111, 121, 131	15.8	
211, 221, 231	6.5	
Class 150	24	
112, 122, 132	41.3	
212, 222, 232	23	
Class 300	63	
113, 123, 133	82.7	
213, 223, 233	46.1	
Class 600	125	
115, 125	12.3	
215, 225	6.8	
PN16	19	
116, 136	19.2	
216, 236	10.7	
PN25	29	
117, 137	30.6	
217, 237	17.1	
PN40	46	
118	48.3	
218	27	
PN64	73	
119	76.6	
219	42.9	
PN100	115	

Nameplate Stamping Explanation

e.g. X4S/201-300

Ps max 20C	Ts min
Ps max	at Ts max
Pt	
41.3	-101
23	400
63	

Ts min for 316L stainless steel is always minus
101C = -101 Ts max for 316L stainless steels always 400C = 400

Vertical Chambers manufactured from 316L Stainless Steel (Bottle)

Process Rating Code	Type Code				Nameplate Stamping Explanation
	B4S2F/	B4S3F/	B4S4F/	B4S7D/	
101	88.8	44.6	17.1	88.8	
201	59.2	29.6	11.3	59.2	
Screwed	127	63.9	24.5	127	
111, 121	15.8	15.8	15.8	15.8	
211, 221	6.5	6.5	6.5	6.5	
Class 150	24	24	24	24	
112, 122	41.3	41.3	17.1	41.3	
212, 222	23	23	11.3	23	
Class 300	62	62	24.5	62	
113, 123, 133	82.7	44.6	17.1	82.7	
213, 223, 233	46.1	29.6	11.3	46.1	
Class 600	125	63.9	24.5	125	
115, 125	12.3	12.3	12.3	12.3	
215, 225	6.8	6.8	6.8	6.8	
PN16	19	19	19	19	
116, 136	19.2	19.2	17.1	19.2	
216, 236	10.7	10.7	10.7	10.7	
PN25	29	29	24.5	29	
117, 137	30.6	30.6	17.1	30.6	
217, 237	17.1	17.1	11.3	17.1	
PN40	46	46	24.5	46	
118	48.3	44.6	17.1	48.3	
218	27	27	11.3	27	
PN64	73	63.9	24.5	73	
119	76.6	44.6	17.1	76.6	
219	42.9	29.6	11.3	42.9	
PN100	115	63.9	24.5	115	

Nameplate Stamping Explanation

e.g. B4S3F/233

Ps max 20C	Ts min
Ps max	at Ts max
Pt	
44.6	-101
29.6	400
63.9	

Ts min for 316L stainless steels always minus 101C = -101
Ts max for 316L stainless steels always 400C = 400

Vertical Boiler Chamber

Safety Instructions Booklet


BP104/SI, Rev. B


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