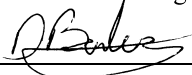


**AAR Manual of Standards and Recommended Practices
Specifications for Tank Cars**

**APPLICATION FOR RENEWAL OF APPROVAL FOR PRESSURE RELIEF
DEVICES, VALVES, CLOSURES, AND FITTINGS**

1. AAR APPROVAL No. PRD232127
 2. Date of Application Sept-09-2023
 3. Previous AAR Approval PRD139512
 4. Applicant: Fort Vale Engineering Ltd
 5. Address: Calder Vale Business Park, Simonstone Lane Simonstone Lanashire UK BB12 7ND
 6. Drawing No. OR4/XXXXXXXX130A, OR4/XXXXXXXX130B 7. Latest rev. 23, 18 8. Date of latest rev. Oct-04-2021
 9. Description of device: 5" External Relief Valve (Supaflo) 10. Device ID No. OR4/X07500130A, OR4/X07500130B

CERTIFICATION: The subject device is **unchanged** from the previous approval, and conforms with the latest revision of AAR Specifications for Tank Cars, Appendix A. The device conforms with drawing listed above.

11. By:  Title: Design and Development Director

If device is **changed** since latest approval, fill in the following blanks

12. Reference Previous Drawing	New Drawing	If on Service Trial
No. _____ Rev. ____ Date _____	No. _____ Rev. ____ Date _____	S.T. No. _____
No. _____ Rev. ____ Date _____	No. _____ Rev. ____ Date _____	S.T. No. _____
No. _____ Rev. ____ Date _____	No. _____ Rev. ____ Date _____	S.T. No. _____

13. New drawing supersedes previous one or does not obsolete it

CHANGES

REASONS FOR CHANGES

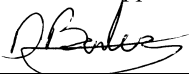
14. a. <u>OR4/XXXXXXXX00130A issue 7 to 23</u>	a. <u>Various updates that do not change design fit-form-function</u>
b. <u>OR4/XXXXXXXX00130B issue 1 to 18</u>	b. <u>Various updates that do not change design fit-form-function</u>
c. _____	c. <u>See supplemental sheet "OR4 Reasons for change"</u>
d. _____	d. _____

(if needed use supplemental sheet)

15. Normal operational effect of changes of device: None

16. Drawing submitted with this application: OR4/XXXXXXXX130A, OR4/XXXXXXXX130B

CERTIFICATION: The above data is correct and conforms with AAR Specifications for Tank Cars, Appendix A. The device conforms with drawing listed above.

17. By:  Title: Design and Development Director

APPROVAL AAR Tank Car Committee:


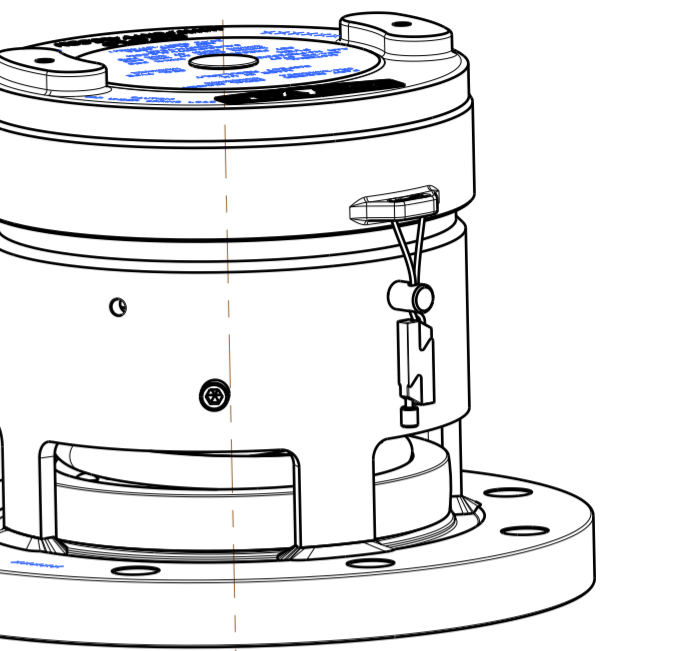
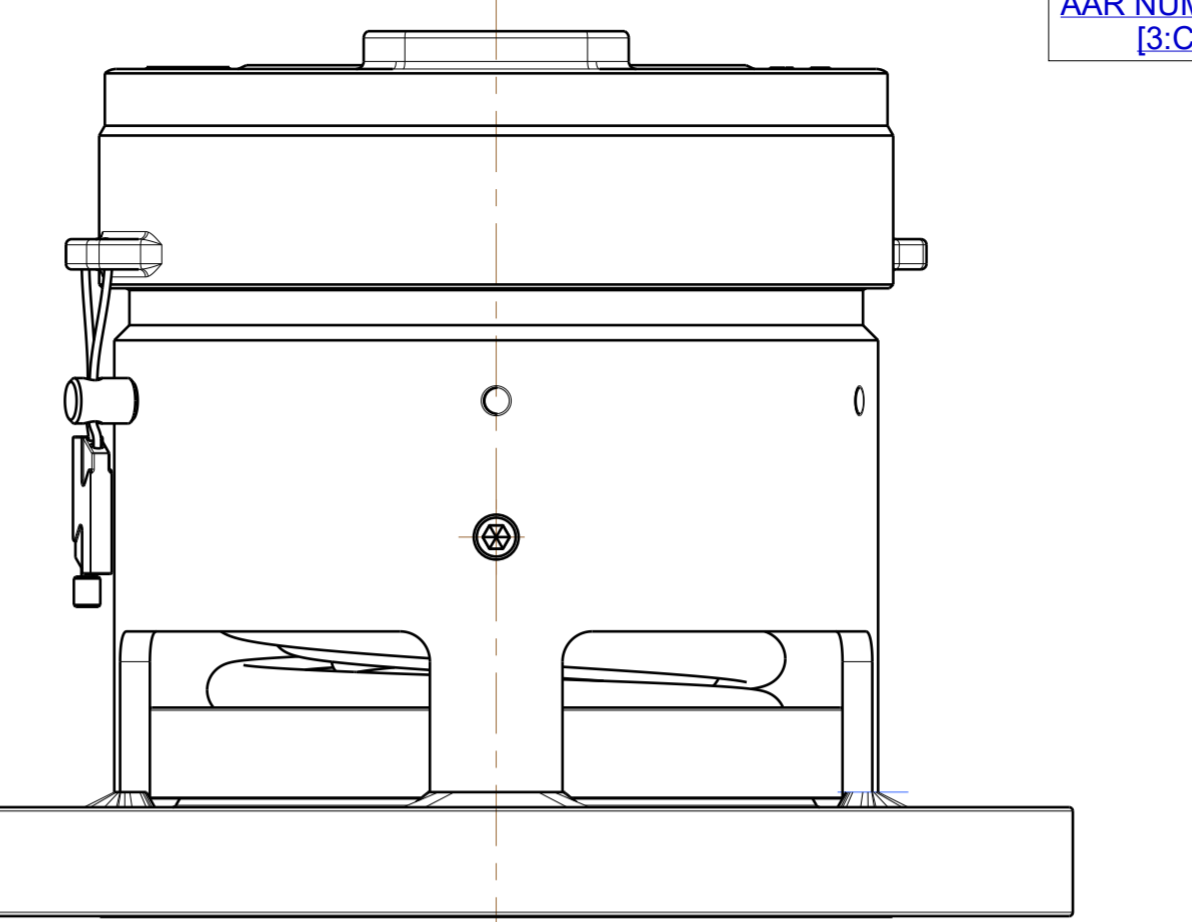
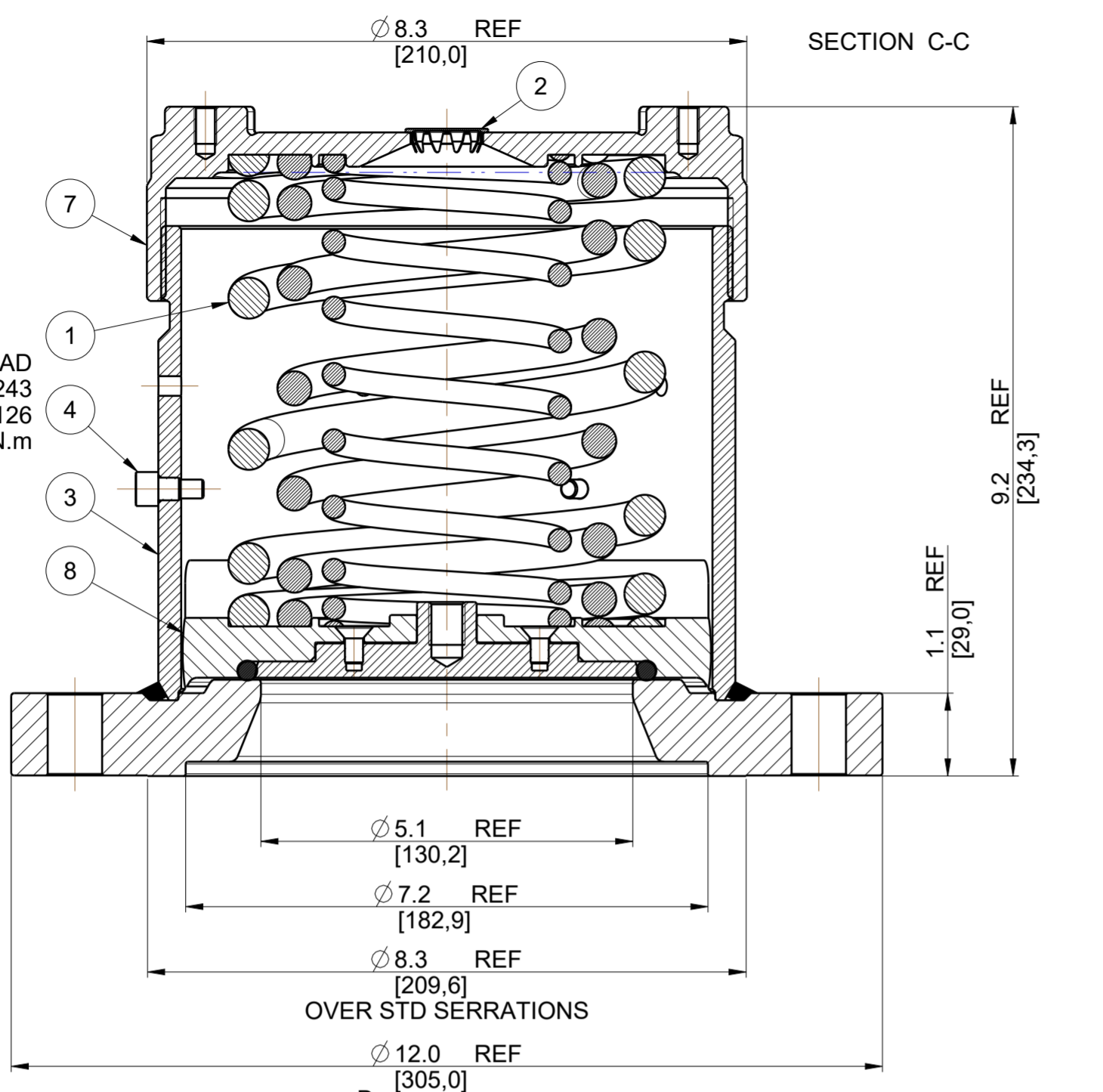
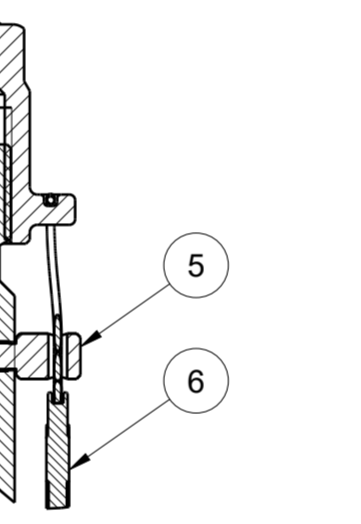
Date Approved: 12/8/2023 
 (Signature) on behalf of Committee

Fig. 1.5 Form AAR 4-7 Application for Renewal of Approval for Pressure Relief Devices, Valves, Closures, and Fittings

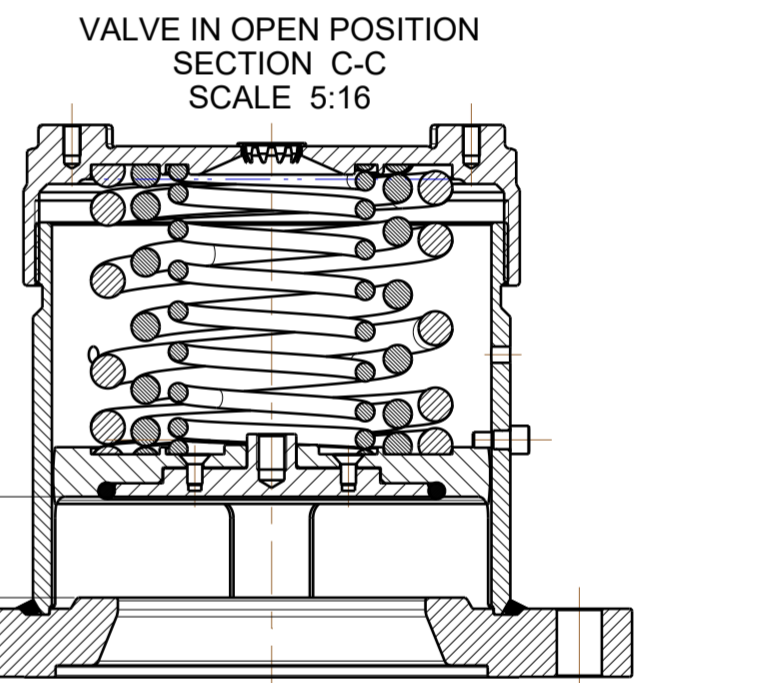
DRAWING STATUS		Production	
REVISION	23	SIG P JOLLY	13-Nov-23
AAR NUMBER UPDATED [9:B]. LASER MARK AAR NUMBER UPDATED [3:C]. VARIOUS TEMPERATURE CORRECTIONS IN TABLE 2.			



SECTION D-D



CUT WIRE SHORT AFTER LOCKING CABLE



VALVE IN OPEN POSITION SECTION C-C SCALE 5:16

SECURE CAP HEAD SCREWS USING LOCTITE 243 FV PART No S126 TORQUE TO 18 N.m

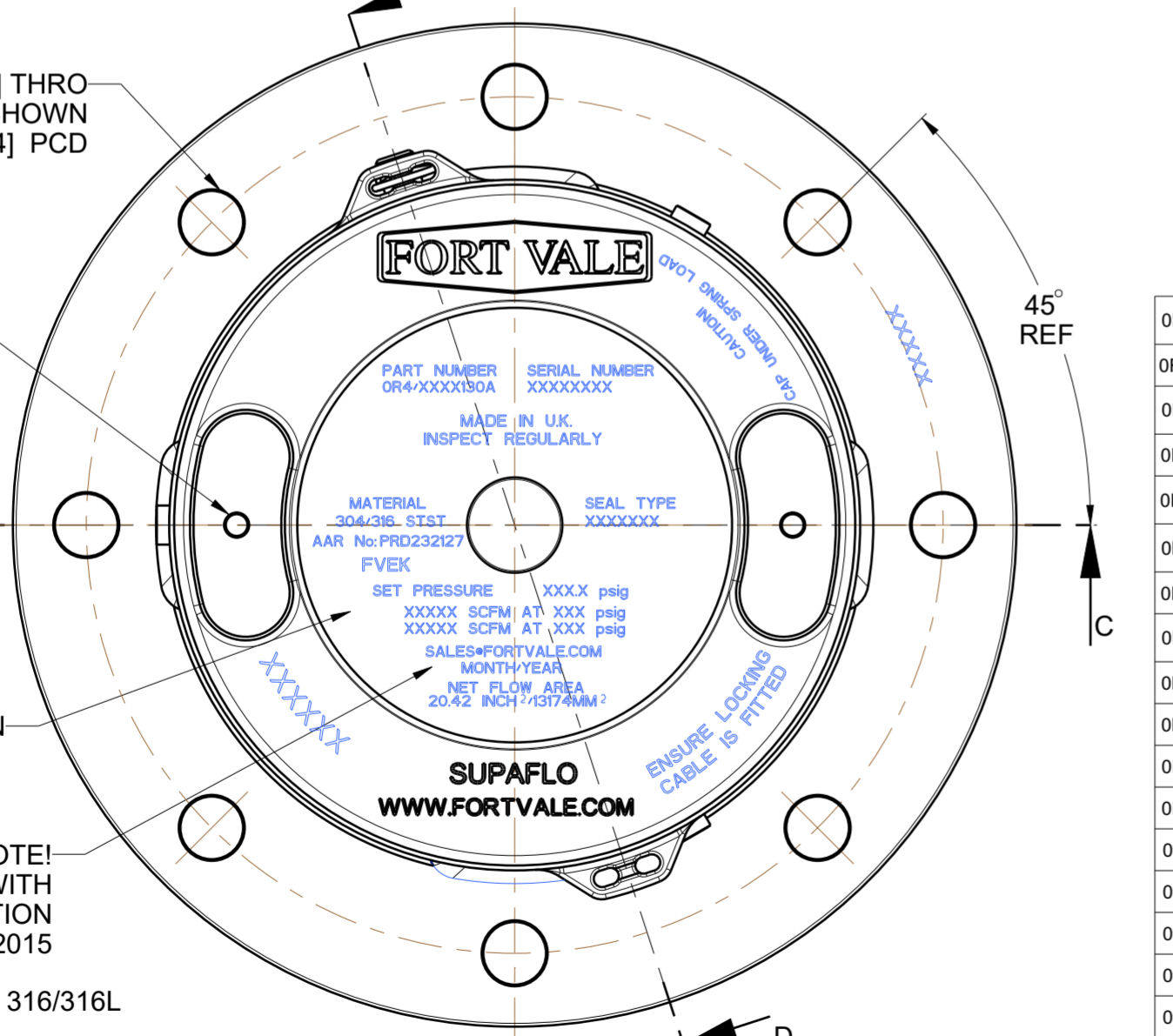
8 HOLES Ø0.8 [19,05] THRO EQUISPACED AS SHOWN ON A 10 [260,4] PCD

LIFTING POINTS TO BE USED WITH 5/16 UNC X 1/2" EYEBOLT

LASER MARK AS SHOWN

NOTE! REPLACE MONTH/YEAR WITH CURRENT DATE INFORMATION E.G. NOVEMBER/2015

NOTE! ALL CONTACT PARTS 316/316L



PART NUMBER	PRESSURE PLATE	'O' RING MATERIAL	MIN TEMP	MAX TEMP
0R4/YXXX00130A	1960/Y188	WHITE NEOPRENE (FOOD GRADE)	-30° C (-22° F)	100° C (212° F)
0R4/WXXX00130A	1960/W188	WHITE BUNA N (FOOD GRADE)	-30° C (-22° F)	100° C (212° F)
0R4/SXXX00130A	1960/S188	VITON GF-S (PEROXIDE CURED)	-20° C (-4° F)	150° C (302° F)
0R4/QXXX00130A	1960/Q188	BLACK NEOPRENE	-45° C (-49° F)	100° C (212° F)
0R4/MXXX00130A	1960/M188	VITON A (FOOD GRADE, TRELLEBORG 4560)	-23° C (-9° F)	150° C (302° F)
0R4/HXXX00130A	1960/H188	BLACK EPDM (PEROXIDE CURED)	-45° C (-49° F)	120° C (248° F)
0R4/GXXX00130A	1960/G188	VITON GFLT	-25° C (-13° F)	150° C (302° F)
0R4/EXXX00130A	1960/P188	VITON GF-S (TRELLEBORG CS5350)	-20° C (-4° F)	150° C (302° F)
0R4/DXXX00130A	1960/D188	WHITE EPDM (FOOD GRADE)	-50° C (-58° F)	150° C (302° F)
0R4/CXXX00130A	1960/C188	CHEMRAZ 505	-30° C (-22° F)	150° C (302° F)
0R4/BXXX00130A	1960/B188	VITON B	-20° C (-4° F)	150° C (302° F)
0R4/AXXX00130A	1960/A188	AFLAS	-30° C (-22° F)	150° C (302° F)
0R4/9XXX00130A	1960/E188	EPDM	-50° C (-58° F)	150° C (302° F)
0R4/7XXX00130A	1960/K188	PERFLUOROELASTOMER	-15° C (5° F)	150° C (302° F)
0R4/4XXX00130A	1960/N188	BLACK BUNA N NITRILE	-30° C (-22° F)	100° C (212° F)
0R4/3XXX00130A	1960/3188	KALREZ 6375	-15° C (5° F)	150° C (302° F)
0R4/1XXX00130A	1960/F188	FORTYT (FEP)	-55° C (-67° F)	150° C (302° F)
0R4/0XXX00130A	1960/V188	VITON A	-20° C (-4° F)	150° C (302° F)

PART NUMBER	SET PRESSURE [PSI]	113% OVER PRESSURE [PSI]	113% SET PRESSURE FULL FLOW RATE [SCFM]	130% OVER PRESSURE [PSI]	130% SET PRESSURE FULL FLOW RATE [SCFM]	SPRING SET
0R4/X07500130A	75.0	85.0	31,676.4	97.5	35,627.5	6107-8273 (TRIPLE)

TABLE 2 - SEAL MATERIAL

DESIGN CODE: ASME VIII DIV1
 DESIGN PRESSURE (MAWP) : 6,72 BAR (97,5 PSI)
 SERVICE TEST PRESSURE : 12,80 BAR (185,6 PSI)
 MAX DESIGN TEMPERATURE : 150° C (302° F)
 MIN DESIGN TEMPERATURE : -55° C (-67° F) } FOR METAL PARTS
 REFER TO TABLE 2 FOR SEAL TEMPERATURE LIMITATIONS

PLEASE NOTE!
 OPTIONAL FLUE ASSEMBLY PART NUMBER 1860/0773
 WHEN INSTALLED WILL REDUCE FLOWRATE BY 3%

AAR NUMBER: PRD232127

FORT VALE SALES@FORTVALE.COM WWW.FORTVALE.COM
 ENGLAND, USA, CHINA
 NETHERLANDS, SINGAPORE

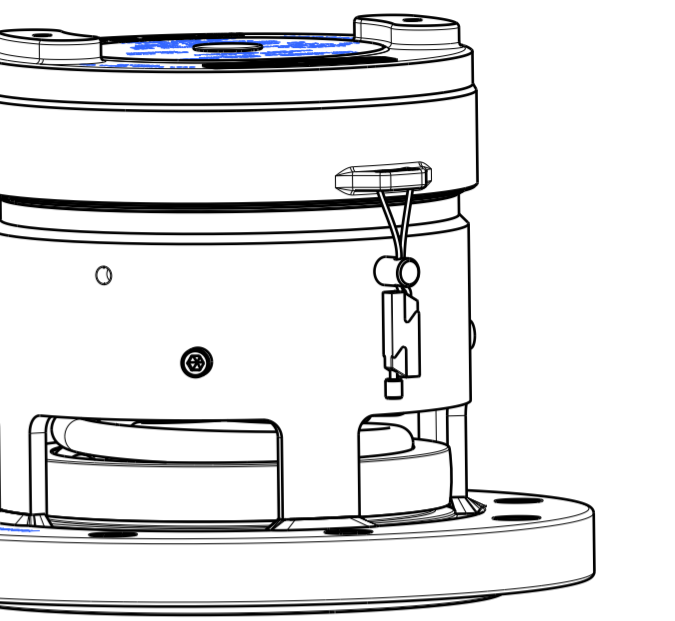
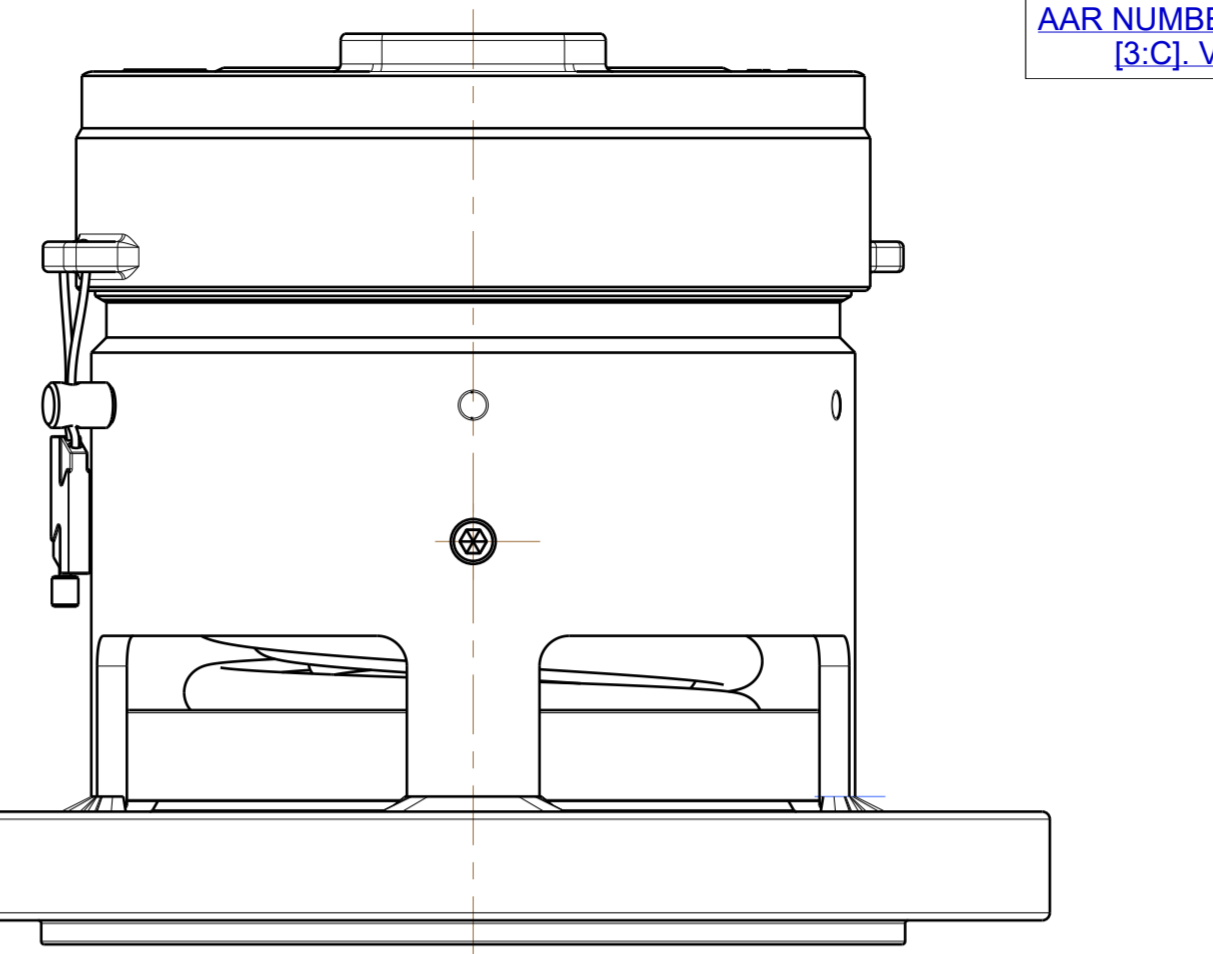
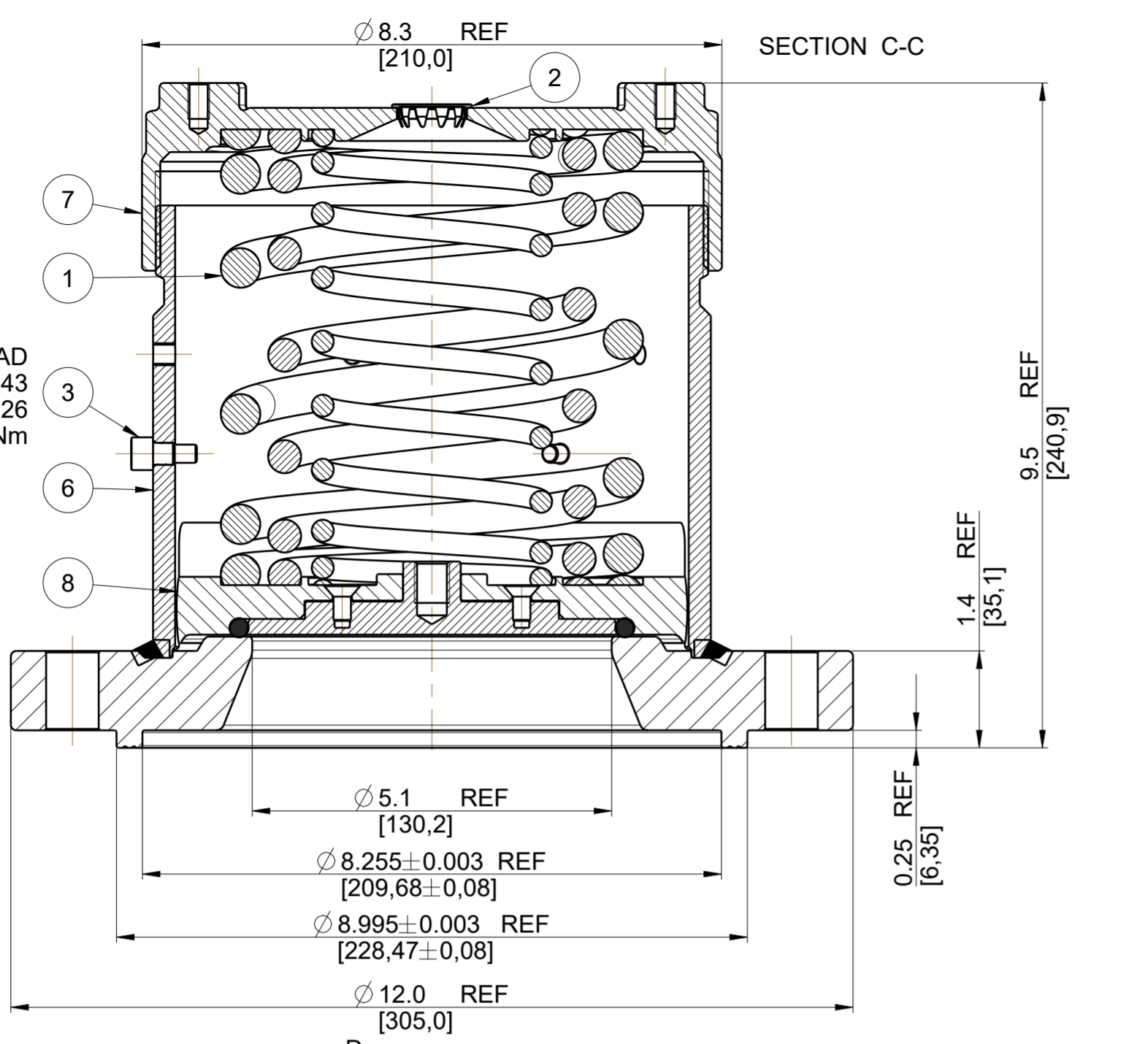
© FORT VALE ENGINEERING LTD 2023.		DO NOT SCALE - IF IN DOUBT ASK	
UNLESS OTHERWISE STATED		MATERIAL: 304/316 STST	
X.X ±0.5	SURFACE FINISH 3.2um MAX	SCALE: NTS MASS: 31,59 kg	
X.XX ±0.25	CORNER RADII 0.8	CHECKED DVN: 38716	
X.XXX ±0.125	CORNER CHAMFER 1.0 X 45°	SHEET 1 OF 1	
ANGLES ±0.5°	REMOVE ALL BURRS AND SHARP EDGES	DRAWN BY: P BOULT DATE: 25-Jun-12	

DESCRIPTION: **SUPAFLO RELIEF VALVE**
 TYPE: **AAR RAIL TANKS**
 DRG.NO. **0R4/XXXX00130A**

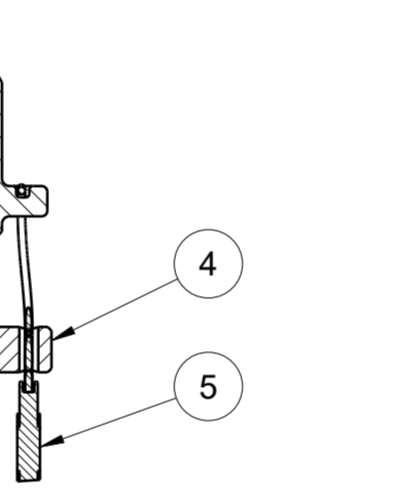
Index	Part Number	Description	Material	Qty
8	1960/X188XX	COMPOSITE PRESSURE PLATE (SEE TABLE 2)	METAL PARTS 304&316/ O RING SEE TABLE 2	1
7	1865/0048	TOP CAP	304 STST	1
6	1860/0777	No 2 STAINLESS STEEL GRIPPLE LOCK	316 STST	1
5	1860/0776	CABLE NIPPLE	304 STST	1
4	1860/0759	LIFT STOP	304 STST	3
3	1860/0750	BODY WELD ASSEMBLY	304/316L STST	1
2	10978/1	STAINLESS PLUG	304L STST	1
1	6107-XXXX	PRESSURE SPRING (S) (SEE TABLE 1)	STAINLESS STEEL	1

Assembly BOM

DRAWING STATUS		Production	
REVISION	18	SIG P JOLLY	13-Nov-23
AAR NUMBER UPDATED [9:B]. LASER MARK AAR NUMBER UPDATED [3:C]. VARIOUS TEMPERATURE CORRECTIONS IN TABLE 2.			

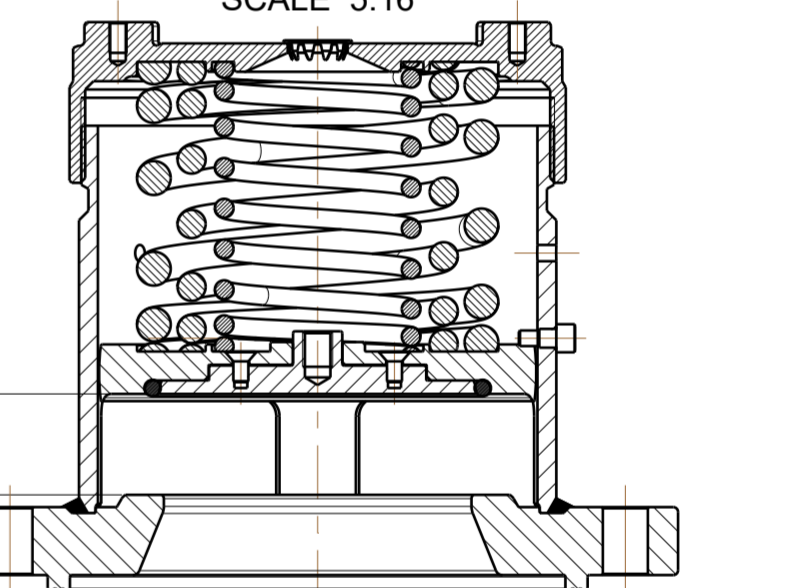


SECTION D-D



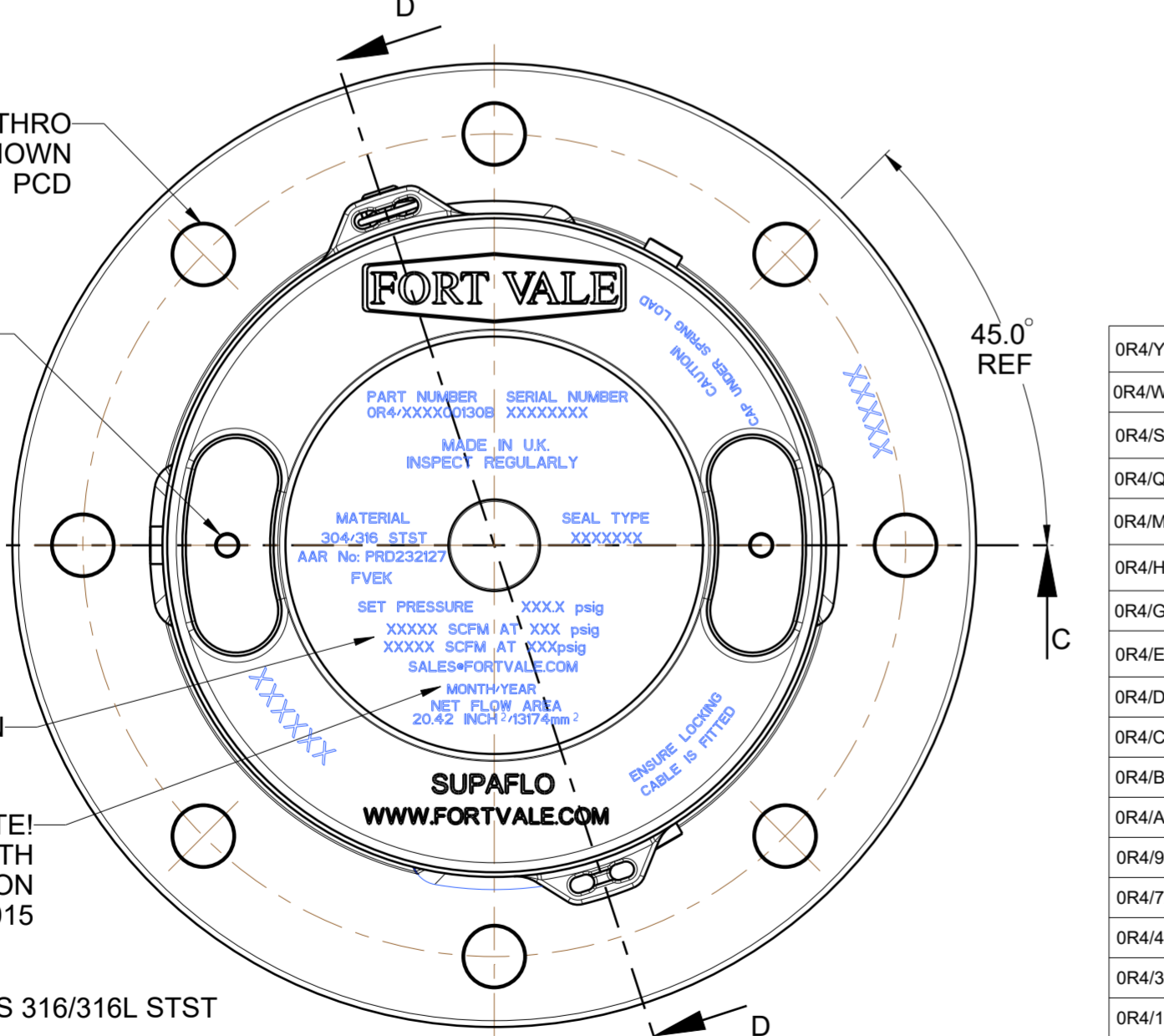
CUT WIRE SHORT AFTER LOCKING CABLE

VALVE IN OPEN POSITION SECTION C-C SCALE 5:16



8 HOLES Ø0.75 [19,05] THRO EQUISPACED AS SHOWN ON A 10.3 [260,4] PCD

LIFTING POINTS TO BE USED WITH 5/16 UNC X 1/2" EYEBOLT



LASER MARK AS SHOWN

NOTE! REPLACE MONTH/YEAR WITH CURRENT DATE INFORMATION E.G. NOVEMBER/2015

NOTE! ALL CONTACT PARTS 316/316L STST

Index	Part Number	Description	Material	Qty
8	1960/X188XX	COMPOSITE PRESSURE PLATE (SEE TABLE 2)	METAL PARTS 304 & 316/ O RING SEE TABLE 2	1
7	1865/0048	TOP CAP	304 STST	1
6	1860/0790	BODY WELD ASSEMBLY	304L/316L STST	1
5	1860/0777	No 2 STAINLESS STEEL GRIPPLE LOCK	316 STST	1
4	1860/0776	CABLE NIPPLE	304 STST	1
3	1860/0759	LIFT STOP	304 STST	3
2	10978/1	STAINLESS PLUG	304L STST	1
1	6107-XXXX	PRESSURE SPRING (S) (SEE TABLE 1)	STAINLESS STEEL	1

PART NUMBER	PRESSURE PLATE	'O' RING MATERIAL	MIN TEMP	MAX TEMP
0R4/YXXX00130B	1960/Y188	WHITE NEOPRENE (FOOD GRADE)	-30° C (-22° F)	100° C (212° F)
0R4/WXXX00130B	1960/W188	WHITE BUNA N (FOOD GRADE)	-30° C (-22° F)	100° C (212° F)
0R4/SXXX00130B	1960/S188	VITON GF-S (PEROXIDE CURED)	-20° C (-4° F)	150° C (302° F)
0R4/QXXX00130B	1960/Q188	BLACK NEOPRENE	-45° C (-49° F)	100° C (212° F)
0R4/MXXX00130B	1960/M188	VITON A (FOOD GRADE, TRELLEBORG 4560)	-23° C (-9° F)	150° C (302° F)
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0R4/BXXX00130B	1960/B188	VITON B	-20° C (-4° F)	150° C (302° F)
0R4/AXXX00130B	1960/A188	AFLAS	-30° C (-22° F)	150° C (302° F)
0R4/9XXX00130B	1960/E188	EPDM	-50° C (-58° F)	150° C (302° F)
0R4/7XXX00130B	1960/K188	PERFLUOROELASTOMER	-15° C (5° F)	150° C (302° F)
0R4/4XXX00130B	1960/N188	BLACK BUNA A NITRILE	-30° C (-22° F)	100° C (212° F)
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0R4/1XXX00130B	1960/F188	FORTYT (FEP)	-55° C (-67° F)	150° C (302° F)
0R4/0XXX00130B	1960/V188	VITON A	-20° C (-4° F)	150° C (302° F)

TABLE 2 - SEAL MATERIAL

PART NUMBER	SET PRESSURE [PSI]	113% OVER PRESSURE [PSI]	113% SET PRESSURE FULL FLOW RATE [SCFM]	130% OVER PRESSURE [PSI]	130% SET PRESSURE FULL FLOW RATE [SCFM]	SPRING SET
0R4/X07500130B	75.0	85.0	31,676.4	97.5	35,627.5	6107-8273 (TRIPLE)

TABLE 1

DESIGN CODE: ASME VIII DIV1
 DESIGN PRESSURE (MAWP) : 6.72 BAR (97.5 PSI)
 SERVICE TEST PRESSURE : 12.8 BAR (185 PSI)
 MAX DESIGN TEMPERATURE : 150° C (302° F)
 MIN DESIGN TEMPERATURE : -55° C (-67° F) } FOR METAL PARTS

REFER TO TABLE 2 FOR SEAL TEMPERATURE LIMITATIONS

PLEASE NOTE!
 OPTIONAL FLUE ASSEMBLY PART NUMBER 1860/0773
 WHEN INSTALLED WILL REDUCE FLOWRATE BY 3%

AAR NUMBER: PRD232127



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ENGLAND, USA, CHINA
NETHERLANDS, SINGAPORE

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DO NOT SCALE - IF IN DOUBT ASK

UNLESS OTHERWISE STATED

X.X ±0.5	SURFACE FINISH	3.2um MAX
X.XX ±0.25	CORNER RADII	0.8
X.XXX ±0.125	CORNER CHAMFER	1.0 X 45°
ANGLES ±0.5°	REMOVE ALL BURRS AND SHARP EDGES	

ISO9001:2015 REGISTERED FIRM: LKQ4007111

CHECKED DVN: 38716

SHEET 1 OF 1

DRAWN BY: P BOULT DATE: 28-Feb-13

DRG.NO. 0R4/XXXX00130B

SUPAFLO RELIEF VALVE

AAR RAIL TANKS