VORTEX
SUBSEA SOLUTIONS

GAS / LIQUID MULTIPLE SAMPLING TOOL

HIGH PRESSURE, MANUALLY OPERATED

OPERATIONS MANUAL

VERSION 2.0 NOV 2025

VERSION	SECTION	ISSUE DATE	AUTHOR	DESCRIPTION OF UPDATE
1.0		26 Jan 2023	JG	Revised Funnel
2.0		6 Nov 2025	JG	Bottle Connection Fittings / Supplier Specs

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vortexdredge.com

Contents

1.0 Introduction

The vortex High pressure Gas Sampling tool is designed to capture gas and liquid samples in a subsea environment and recover said samples to the surface in a high pressure state of no more than 1800psi (124bar) by means of an electro mechanical operated syringe to ingest sample then purge sample into a sample bottle after recovery to surface.

This tool is designed to be deployed from the surface with the bottle bled of air and a vacuum entrained in the system. Sample filling relies on the entrained vacuum and ambient water pressure filling the bottle when the main isolation valve is operated.

1.1 REFERENCE DOCUMENTS

See Appendix and references section at the end of this document for certificates and manufacturers data.

1.2 ABBREVIATIONS

PSI: Pounds per Square Inch
PPE: Personnel protective equipment
JHA: Job Hazard Analysis
VST: Vortex Sample Tool
HP: High Pressure

1.3 CONTACTS

For technical queries, comments and feedback contact Vortex Dredge: goodinjoe@gmail.com

2.0 Safety

2.1 OVERVIEW

All local HSE procedures must be followed. Use of PPE should follow guidelines outlined with handling of potential sample. For example hazardous gas samples should have PPE appropriate to mitigate dangers associated with that gas. Safety glasses should be considered minimum requirement irrespective of potential sample. Your safety is your responsibility. Think and plan ahead accordingly.

2.2 RISK ASSESSMENT

Consult with local HSE and installation operators to identify best practice steps needed for safe operations. Identify if the task been done and implement lessons learned. JHA, permitting and toolbox talks should preclude all operations.

2.3 MECHANICAL

Ensure all fittings and fasteners are secure. Check general condition of tool against images in manual for anything which may indicate potential operational issues.

REMEMBER, YOUR SAFETY IS YOUR RESPONSIBILITY. THINK AND PLAN AHEAD ACCORDINGLY. IF IN DOUBT, PLEASE ASK.

3.0 Technical Specifications

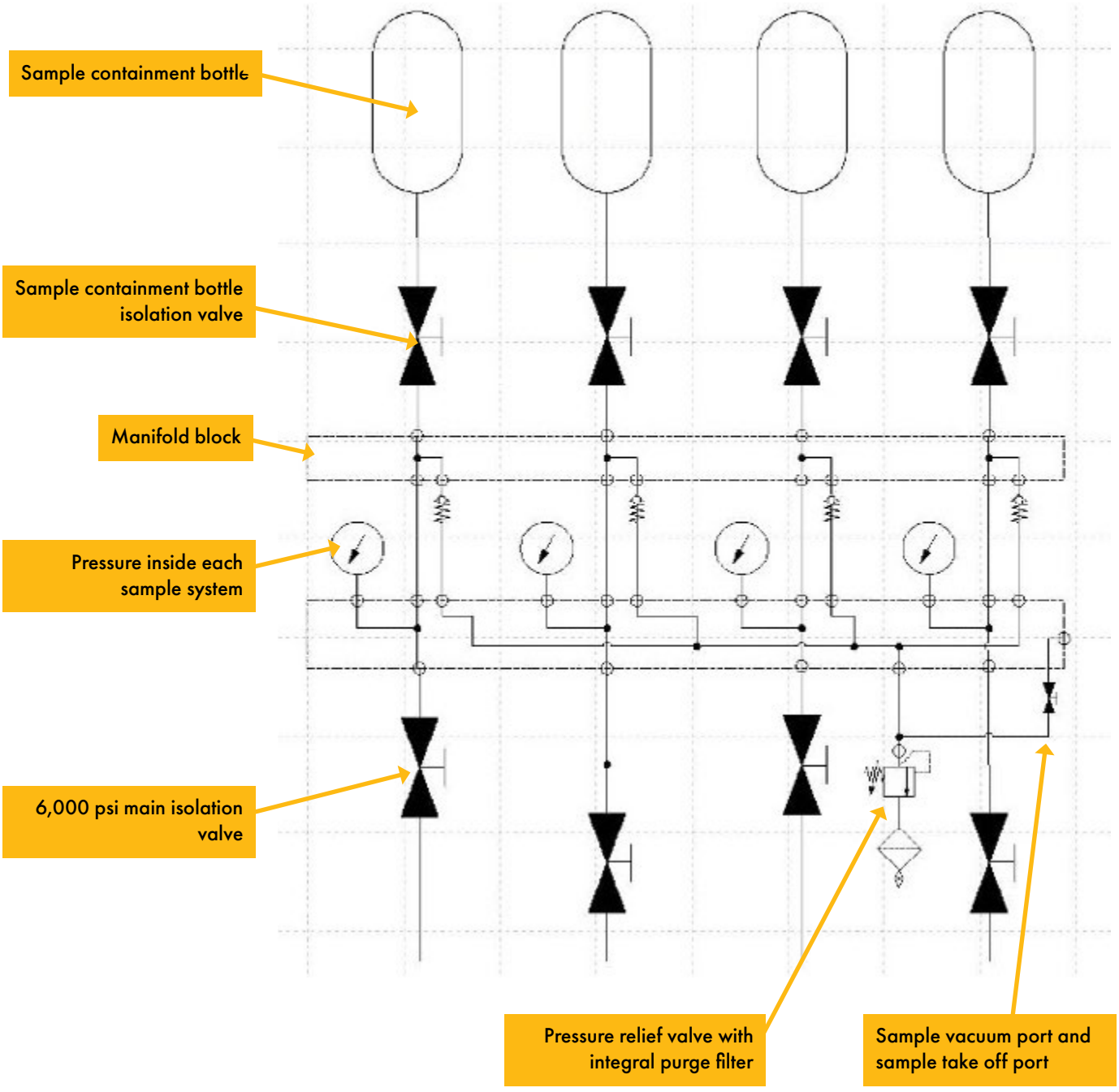
3.1 DESCRIPTION

To "Suck" the sample into the syringe the operator will function the main isolation valve to open the circuit to ambient pressure and "draw" the sample into the bottle.

To entrap the sample in the sample bottle the operator will function the main isolation valve closed to seal the circuit and entrap the sample in the sample bottle.

Technical Specifications

3.2 DESCRIPTION SCHEMATICS



Technical Specifications

3.3 COMPONENT PARTICULARS

- Complete tool Weight empty in air = 138 lb (63kg)
- Complete tool Weight empty in fresh water = 112 lb (51 kg)
- Containment bottle volume EACH = 0.030 Cubic inch (0.5 litre)
- Main relief valve setting = 1800psi (124 bar)
- Main relief valve working range = 0 to 6000 psi (413 bar)
- Main isolation valve rated to 6,000 psi (413 bar)
- Sample bleed off valve rated to 6000 psi (413 bar)
- Pressure gauge = 0 to 5000 psi (344 bar)
- Standard funnel diameter =- 12.5 inch (318mm) Capacity = 5 liter (5.28 quart).
- Depth rating = 3000 mtr. 9842 foot seawater with standard 5000psi (344 bar) rated bottles
- Complete tool dimensions = 58 inch (1482 mm) long x 12.5 inch (344 mm) diameter

4.0 Operation Procedures

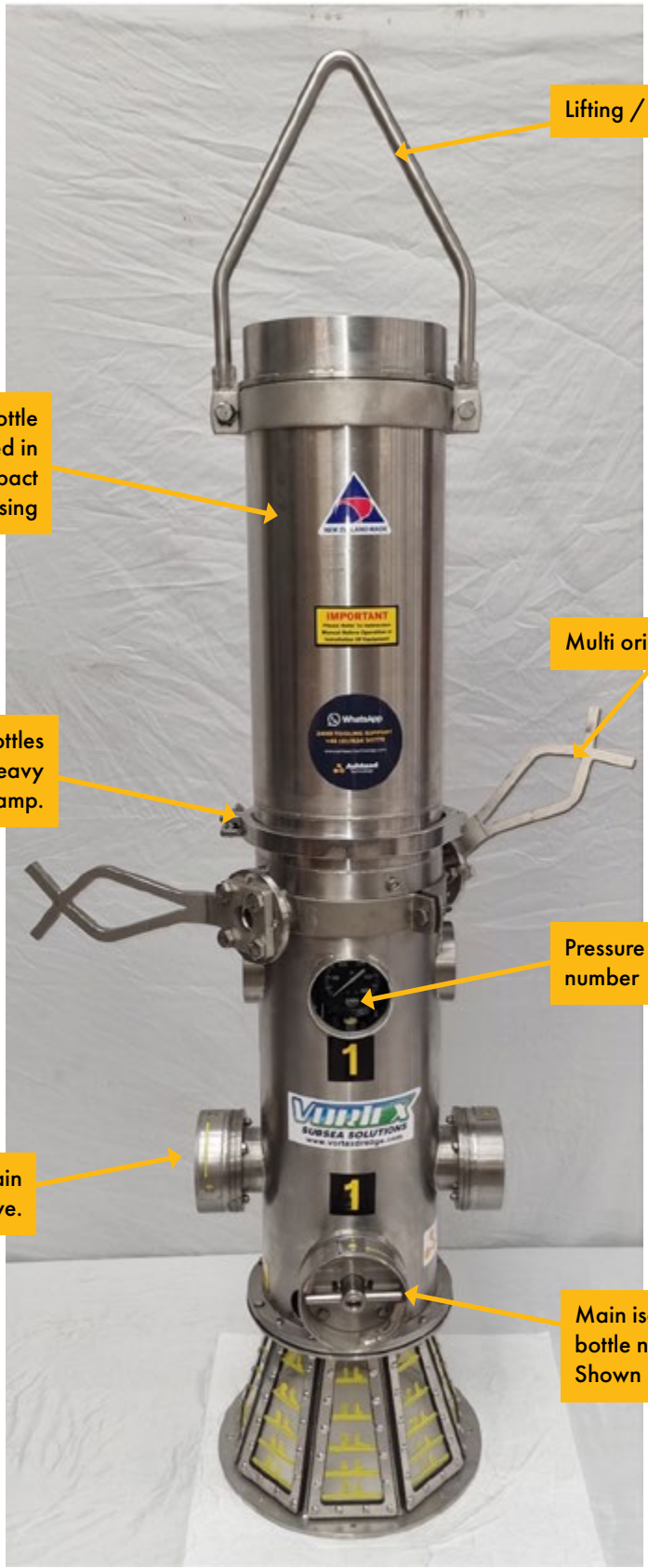
4.1 PRE DIVE CHECKS - VISUAL TOOL CHECK

Tool as deployed

Tool ready to change sample bottles

Operation Procedures

4.1 PRE DIVE CHECKS - VISUAL TOOL CHECK



Operation Procedures

4.1 PRE DIVE CHECKS - VISUAL TOOL CHECK

Bleed off all pressure from this sample bleed off valve before servicing.

Remove clamp to split casing and change bottle.

REMOVE ALL PRESSURE FROM TOOL BEFORE SERVICING

Operation Procedures

4.1 PRE DIVE CHECKS - VISUAL TOOL CHECK

This tool has sample bottles supplied in qty as per requested by the client. Surface with full bottle, change out bottle for dispatch to laboratory, fit new bottle, continue sample programme.

Remove this bottle containment ring before changing bottles

Close this isolation valve before transporting sample bottle

Fit blank to stem before transporting sample bottle

Operation Procedures

4.1 PRE DIVE CHECKS - VISUAL TOOL CHECK

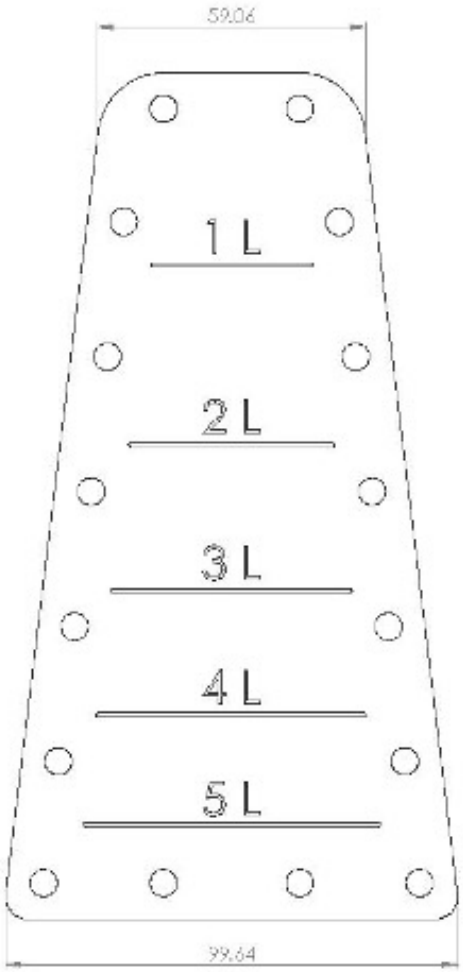
6,000 psi rated, ROV specific, main isolation valve and orientation when closed.

6,000 psi rated, ROV specific, main isolation valve and orientation when open

Main relief valve. Vortex relief setting is **1800psi (124 bar)** **It is not uncommon to see around 200 psi drop in pressure after closing main isolating valve during ascent to surface whilst main relief valve 'resets'**

Operation Procedures

4.2 FUNNEL AND FLOW MEASUREMENT

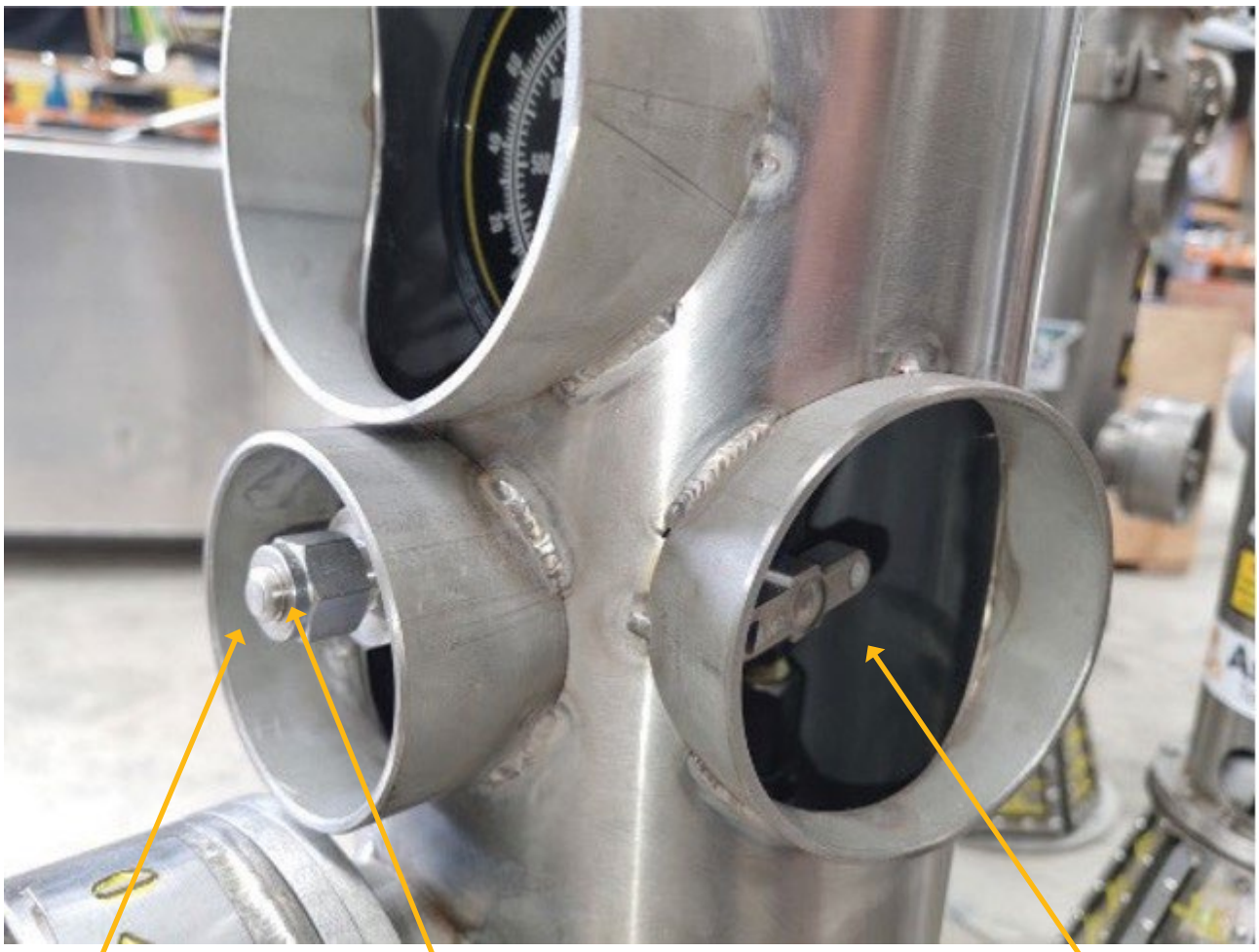


FLOW RATE CALCULATION FORMULA: Q = V / T

WHERE: Q = VOLUME FLOW RATE (L/S OR L/MIN) V = VOLUME (L)T = TIME TAKEN (S OR MIN)

Operation Procedures

4.3 PRE DIVE CHECKS - PULLING A VACUUM



Sample bleed off vacuum pull port.

Sample bleed off valve.
Connect here to draw off sample or to pull a vacuum up to a minimum of 20 in/hg or more to store in sample bottle when working in very shallow water.

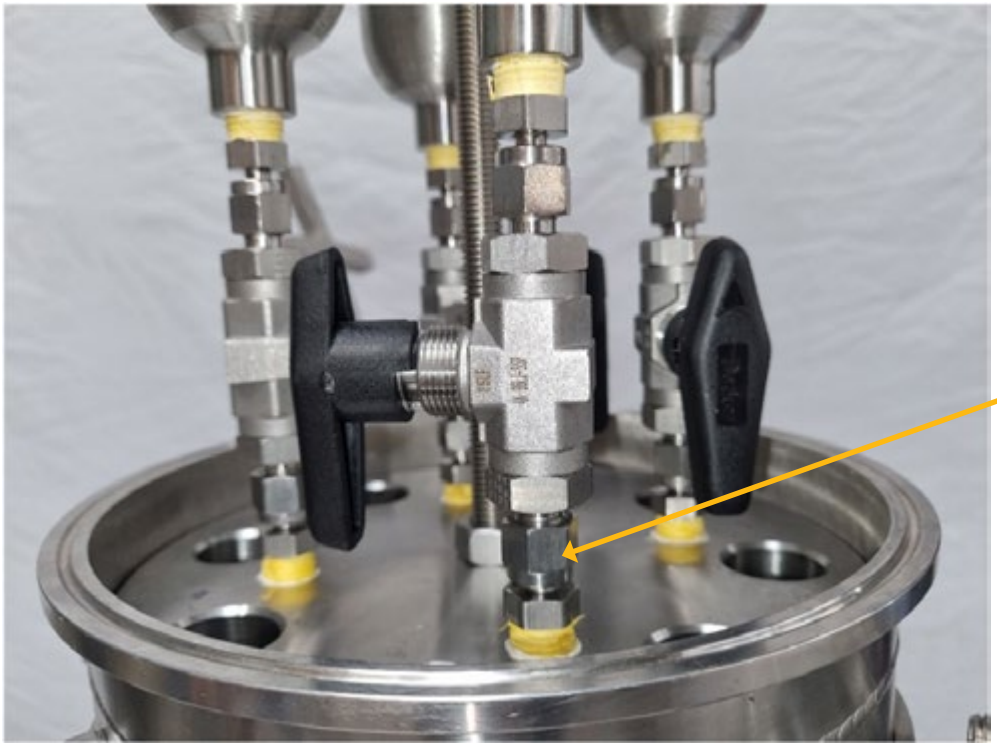
Valve for sample bleed off port

Operation Procedures

4.4 PRE DIVE CHECKS - CHANGING BOTTLES

Tool has two spare bottles as standard kit to enable multiple samples whilst on location.

ALWAYS
Fit blank to fitting at end of isolation valve prior to shipping pressurized bottle to laboratory.



Simply fit spare bottle to continue sample programme.

NO DOWNTIME SENDING TOOL AWAY TO LAB.

Operation Procedures

4.5 PRE DIVE CHECKS, IN WATER OPERATION

STEP	PROCEDURE DESCRIPTION	CHECK
1	Remove top section of tool to expose sample bottle location. Fit clean containment bottle. Replace top section of tool over sample bottle.	
2	Ensure main isolation valve is **CLOSED**	
3	Open all sample bottle isolation valves. Connect vacuum pump to sample bleed valve / vacuum pull port, open this valve and draw full vacuum, note vacuum reading in dive logs then close this valve to isolate vacuum inside the circuit.	
4	Ensure sample bleed valve is closed and capped off.	
5	Containment bottles will now be isolated at sea level pressure with a vacuum until one of the four main isolation valves are opened and pressure differential equalizes between bottle and sea water ambient pressure.	
6	Check 0 to 3000 psi gauge is reading 0 and full of appropriate gauge liquid.	
7	With tool on location, invert tool to remove any residual air bubbles in the funnel, place tool with funnel facing down and place funnel over the sample location. Hold tool vertically over product until product rises and displaces water in funnel. Hold tool vertically over product until product rises and displaces water in funnel.	
8	Open Main isolation valve to 'suck' product sample into tool.	
9	Close main isolator valve. Note number on tool to denote sample taken	
10	Invert tool in clean water to disperse any residual sample in the funnel	

... CONTINUED OVER PAGE ...

REMEMBER, YOUR SAFETY IS YOUR RESPONSIBILITY.
THINK & PLAN AHEAD ACCORDINGLY. IF IN DOUBT, PLEASE ASK.

Operation Procedures

4.5 PRE DIVE CHECKS, IN WATER OPERATION

STEP	PROCEDURE DESCRIPTION	CHECK
11	As water depth decreases during ascent, the main relief valve will limit the pressure stored in the containment bottle to a pre-set figure.	
12	Repeat sequence as sample operations as required to utilize the remaining three sample bottles.	
13	Remove top section of tool to expose sample bottle location. Close bottle isolation valves. Remove, cap bottle end and manifold end and label sample bottle.	
14	Depending on client requirements, the tool may need internally cleaning before next sample run. Invert tool, fill funnel with hot soapy water, open all valves and flush out circuit then flush circuit with fresh water then blow dry with air and close all valves..	
15	Fit clean containment bottles, pull and isolate vacuum in circuit, replace top section of tool over sample bottles.	
16	Continue sample program as required	

Please return tool to supplier for post job maintenance.

REMEMBER, YOUR SAFETY IS YOUR RESPONSIBILITY.
THINK & PLAN AHEAD ACCORDINGLY. IF IN DOUBT, PLEASE ASK.

Operation Procedures

4.6 POST DIVE CHECKS

STEP	PROCEDURE DESCRIPTION	CHECK
1	Visual check all over tool looking for any damage or anything unusual.	
2	Invert tool, fill funnel with hot soapy water, open all valves and flush out circuit then flush circuit with fresh water. Connect steam cleaner to manifold block and sample bleed off valve and thoroughly clean circuit with all valves open.	
3	Blow dry with air and close all valves.	
4	Check mechanical connections on the tool are secure.	
5	Check inventory of tool.	

Please return tool to supplier for post job maintenance.

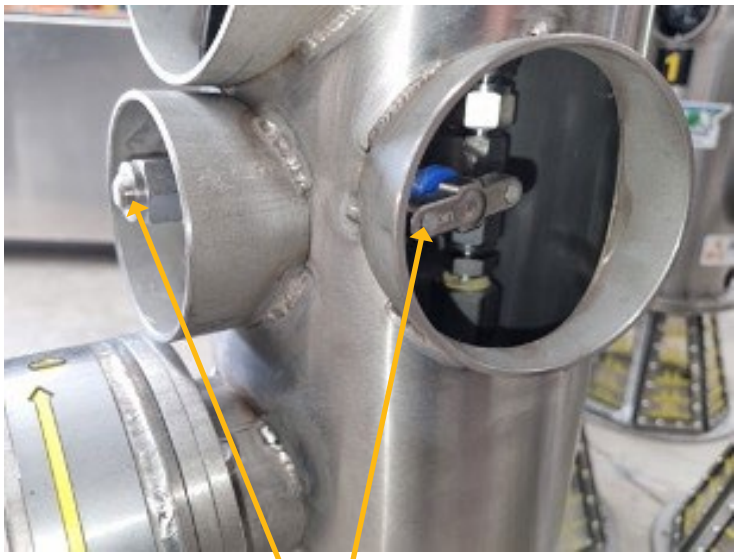
Operation Procedures

4.6 POST – DIVE CHECKS

POST DIVE COMMENTS		
Name:	Signature:	Date:

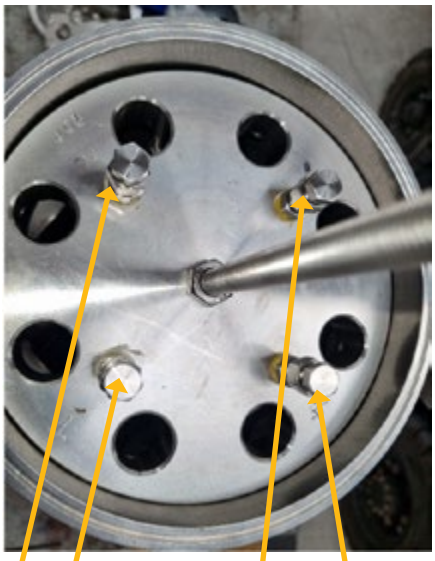
Operation Procedures

4.7 CLEANING TOOL AND BOTTLE

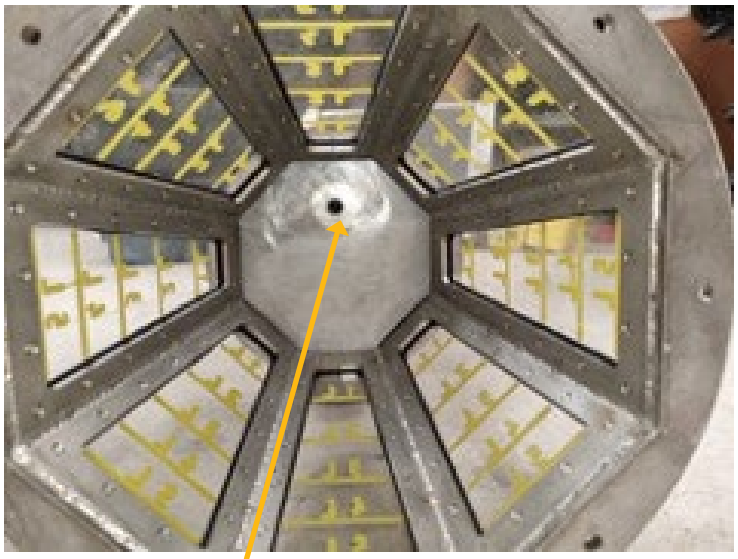


SAMPLE BLEED OFF VALVE
Connect here to flush manifold block through with de-greaser and steam cleaner.

MANIFOLD BLOCK



BOTTLE CONNECTION FITTING
Connect here to flush manifold block through with de-greaser and steam cleaner.



FUNNEL INLET
Open main isolation valve and enter here to flush through valve and plumbing with de-greaser and steam cleaner.

TO CLEAN TOOL

remove sample bottle, open main isolator valve, flush through these ports with hot soapy water to remove all hydrocarbons.

Roll tool full 360 degrees to flush manifold block drillings.

Flush with clean water, blow dry with air.

REMOVE ALL PRESSURE FROM TOOL BEFORE SERVICING

5.0 Maintenance & Storage

5.1 STANDARD PROCEDURES

- Tool should be flushed with hot soapy water as per post dive checks.
- Allow to dry fully.
- Check operational condition of valves.
- Visual check of tool for anything which could prohibit future operation of the tool.

5.2 REPLACEMENT PROCEDURES

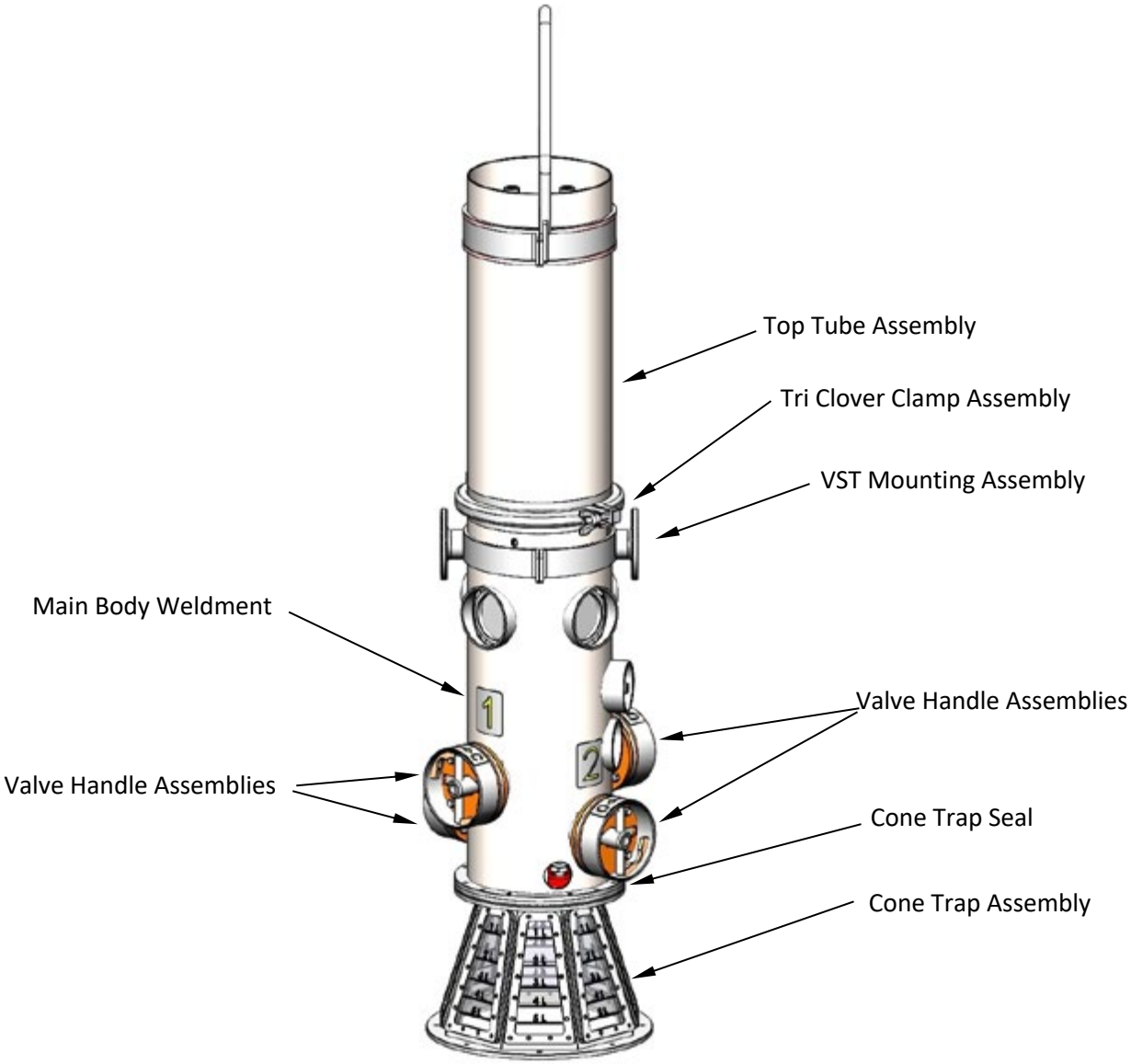
- Contact Ashtead Technology representatives with reports of any damaged or unserviceable items.
- **Sample bottles must be fully cleaned with records of being decontaminated and returned with records of pressure test post cleaning.**

Maintenance & Storage

Gas Sampler- 4 Bottle
Vortex
32933
21-10-25

Maintenance Instructions

Gas Sampler Description



Remove Top Tube Assembly.

Step 1.1: Remove Tri Clover Clamp

Step 1.2: Slide Top Tube Assembly vertically to remove.

Step 1.3: Remove Tri Clover Seal

Step 1.4: Close the four isolation valves to the bottles.

Step 1.5: Check pressure gauge. There should be pressure in the system from the gas capture.

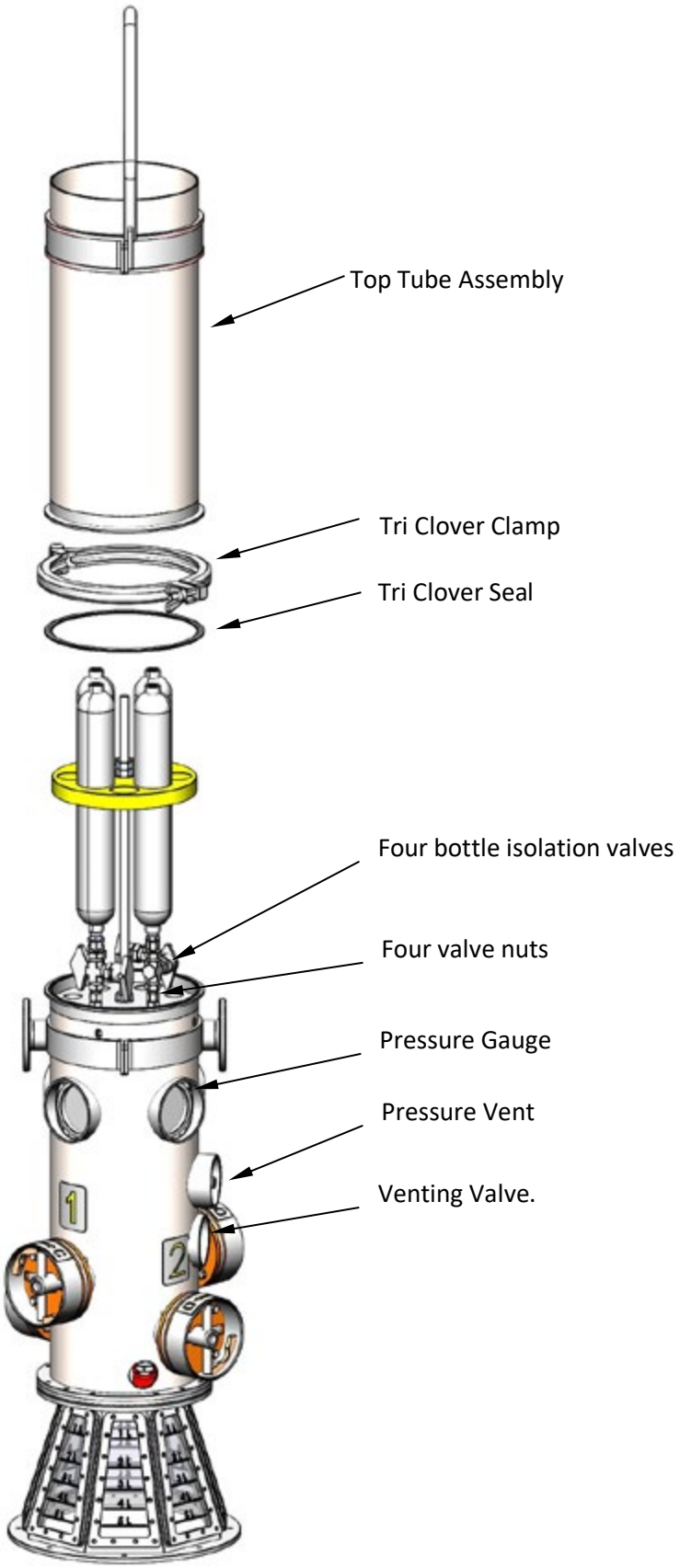
Step 1.6: Open the Venting Valve slowly to vent the system pressure through the Pressure Vent.

⚠ Be careful of the exhaust of gas from the vent.

Step 1.7: Check pressure gauge to ensure no residue pressure exists in the system.

Step 1.8: Unfasten the four valve nuts below the Valve.

⚠ The bottle isolation valve contains the gas pressure in the bottle. Unfastening the valve nut above the valve would release the pressure contained within the bottles

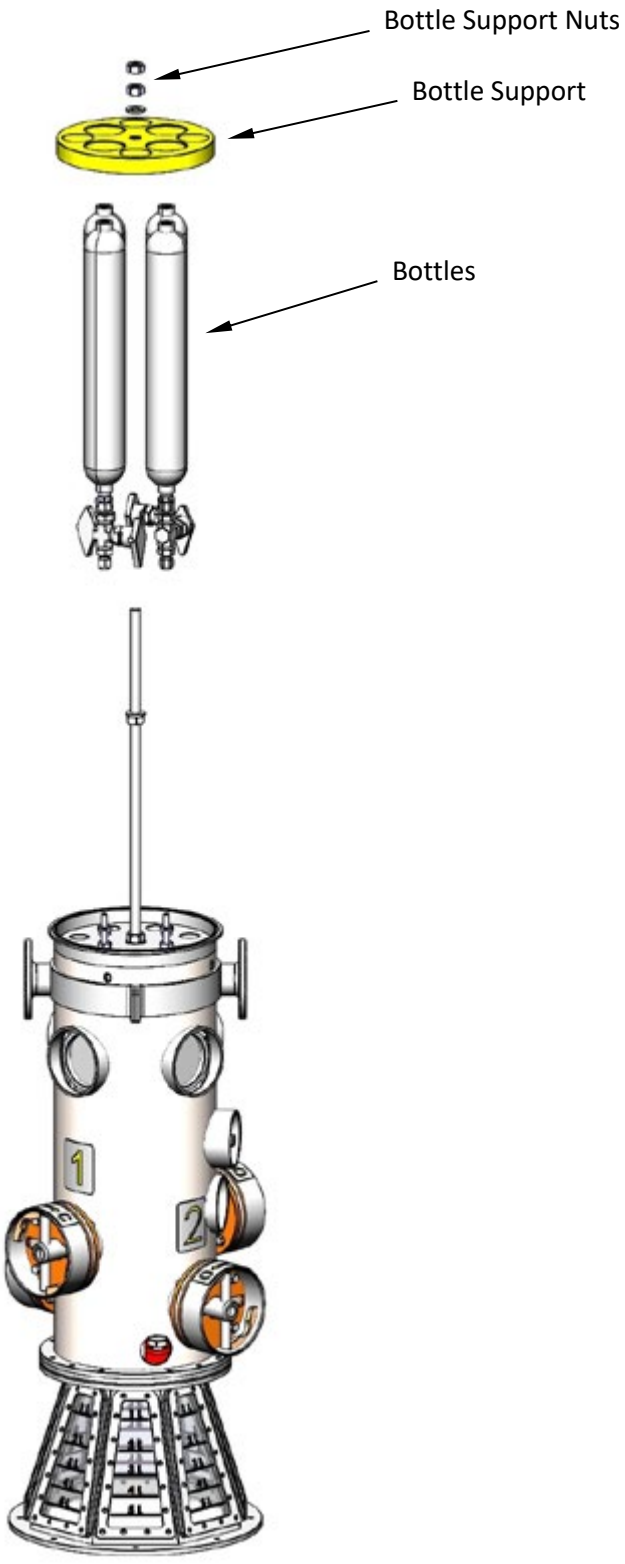


Remove Bottles.

Step 2.1: Unfasten nuts for bottle support.

Step 2.2: Remove bottle support.

Step 2.3: Remove bottles

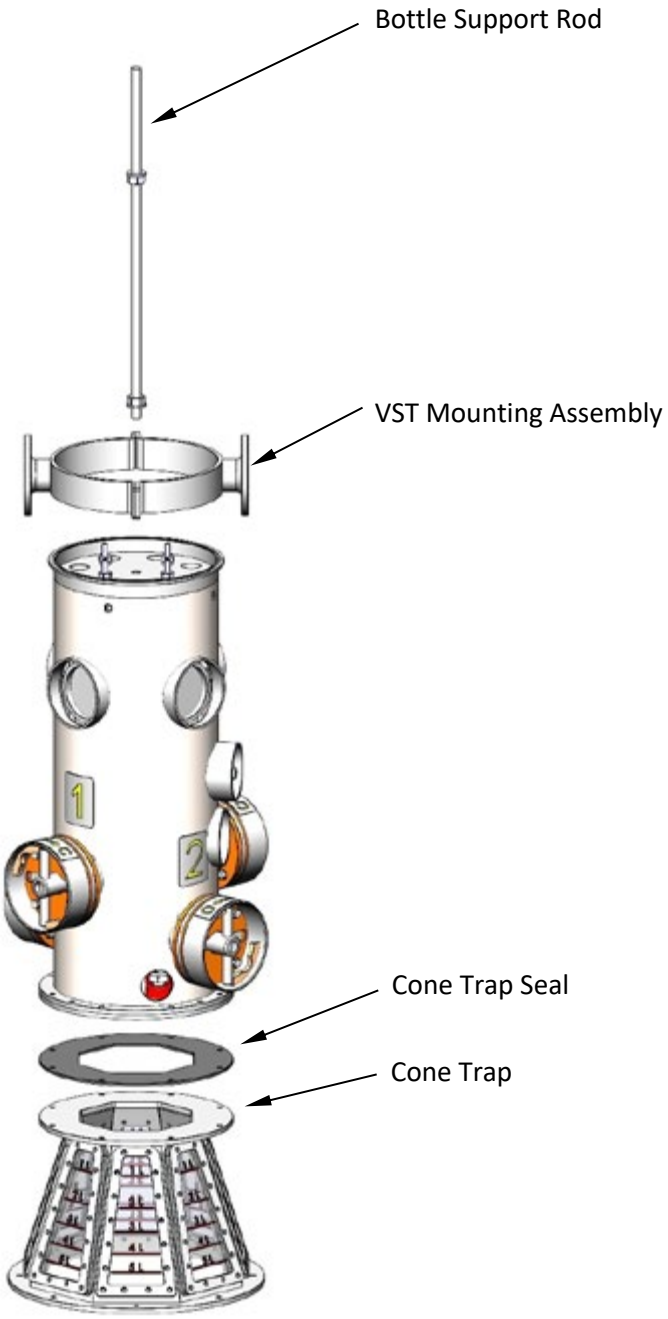


Remove Auxiliary Components.

Step 3.1: Remove bottle support rod.

Step 3.2: Remove VST Mounting Assembly.

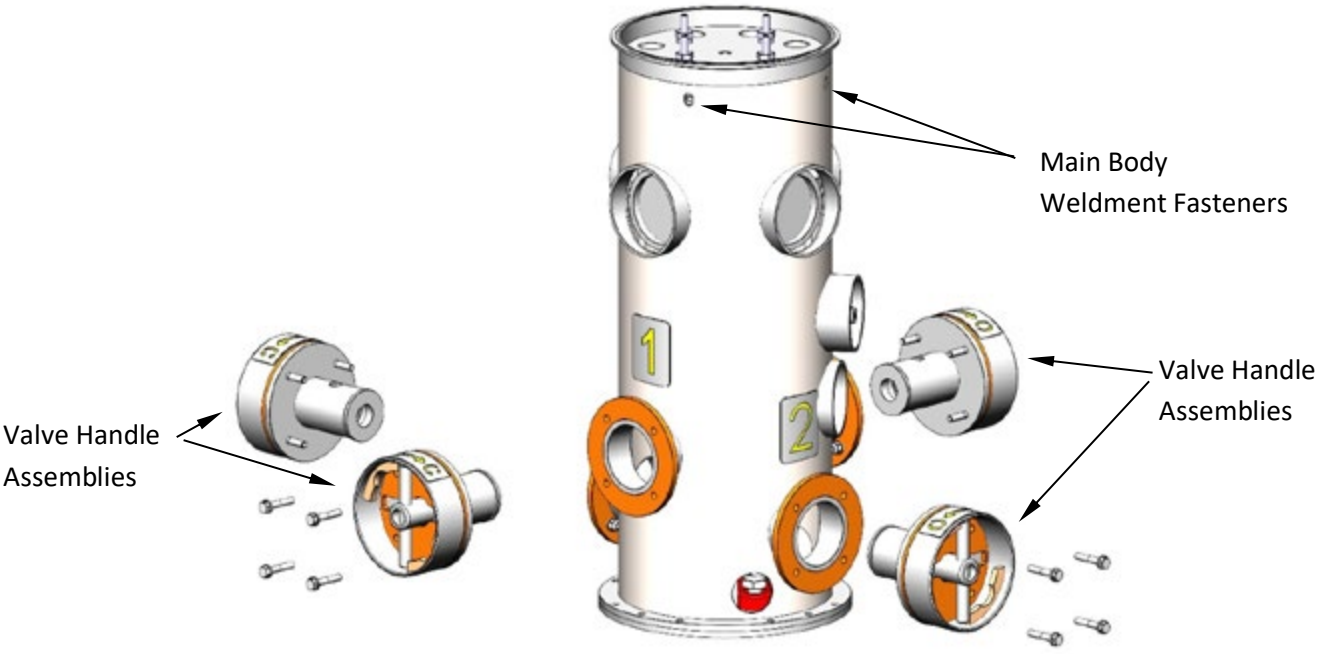
Step 2.3: Remove Cone Trap and Cone Trap Seal



Remove Disassemble Main Manifold.

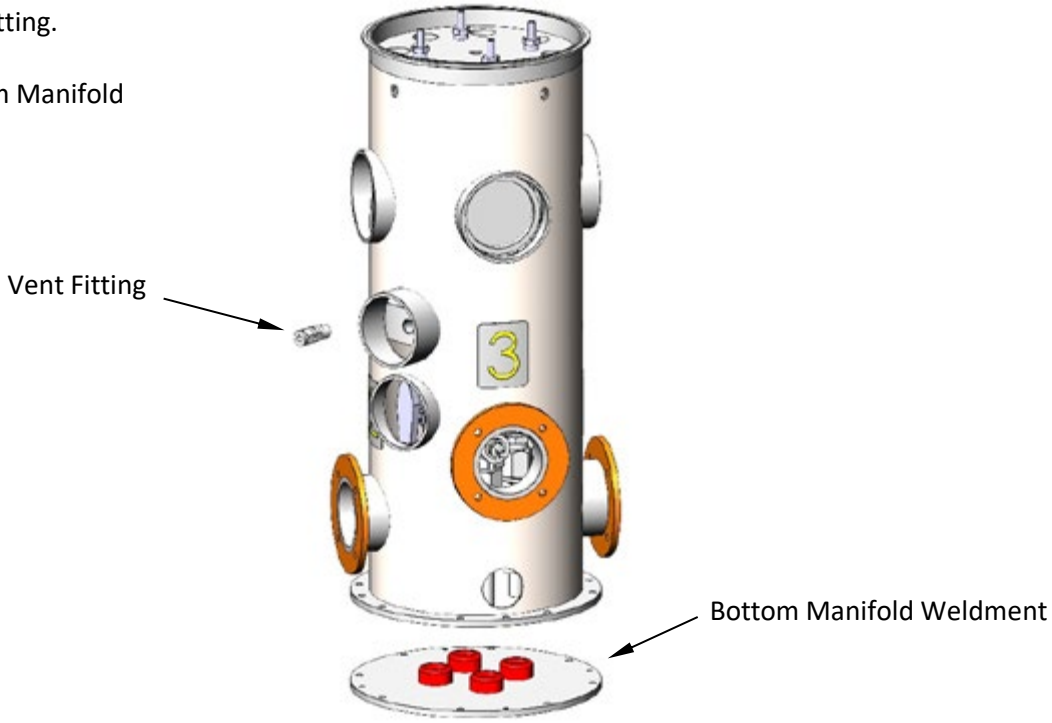
Step 4.1: Remove Main Body Weldment Fasteners.

Step 4.2: Remove Valve Handle Assemblies.



Step 4.3: Remove vent fitting.

Step 4.4: Remove Bottom Manifold Weldment.



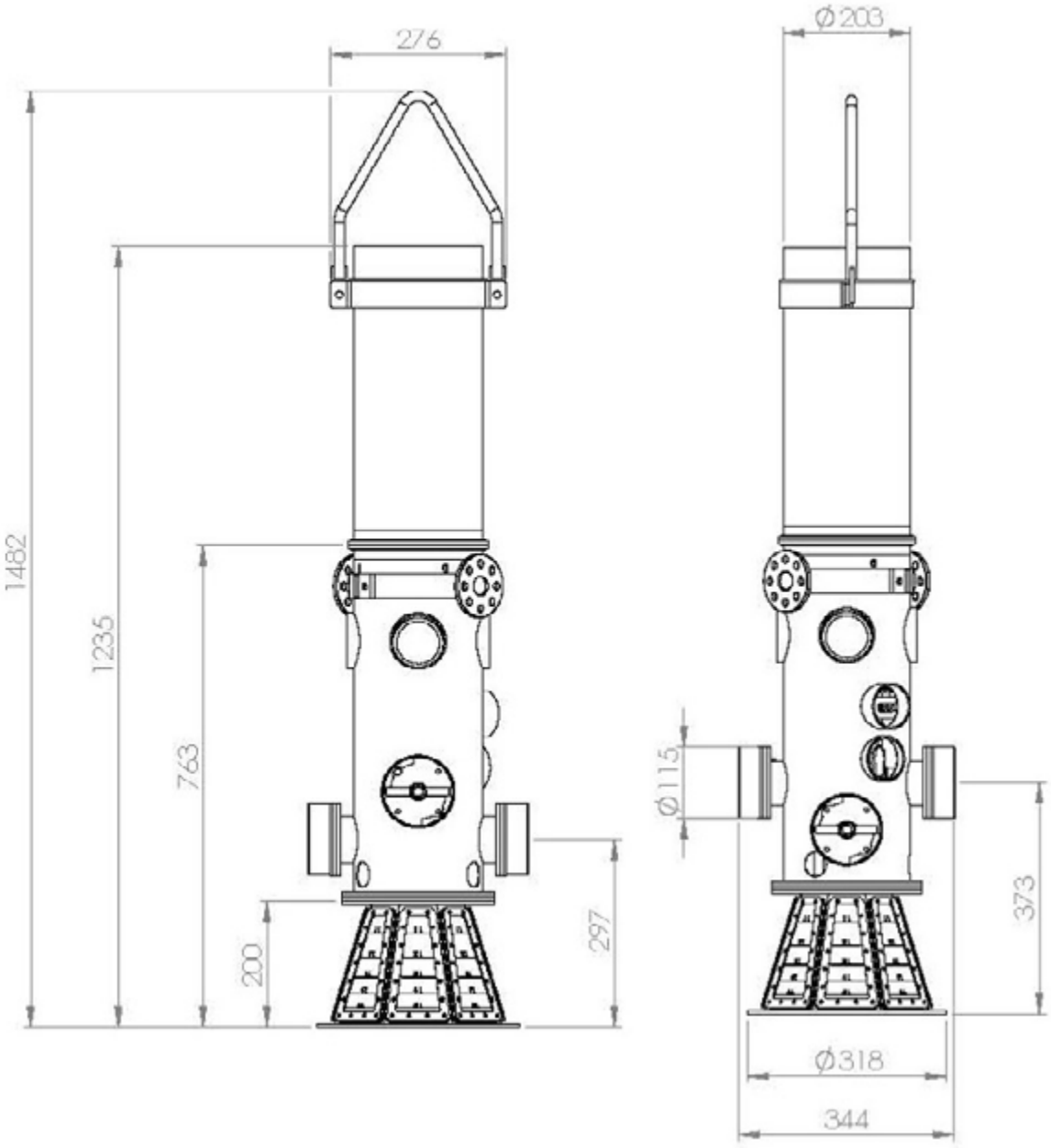
Remove Main Body Weldment

Step 5.1: Slide off Main Body Weldment.

Step 5.2: There is now access to the manifold components. Maintain or replace components as required.

6.0 Appendix & References

6.1 TOOL DIMENSIONS AND WEIGHTS



- Complete tool Weight empty in air = 112 lb (63kg)
- Complete tool Weight empty in fresh water = 138 lb (51 kg)
- Containment bottle volume = 0.030 cubic inch (0.51.0 litre)
- Complete tool dimensions = 58 inch (1482 mm) long x 13.5 inch (344 mm) diameter
- Funnel diameter =- 12.5 inch (318mm) Capacity = 5 litre (5.3 quart).

Appendix & References

6.2 INVENTORY

- 1 X sample tool complete.
- 1 X multi fit ROV handle.

Consumables to be replaced at clients cost:

1000cc containment bottle replacement part number: VST-HS8HDY1000

Servicing:

Please return to supplier for servicing.

If in doubt, please ask.

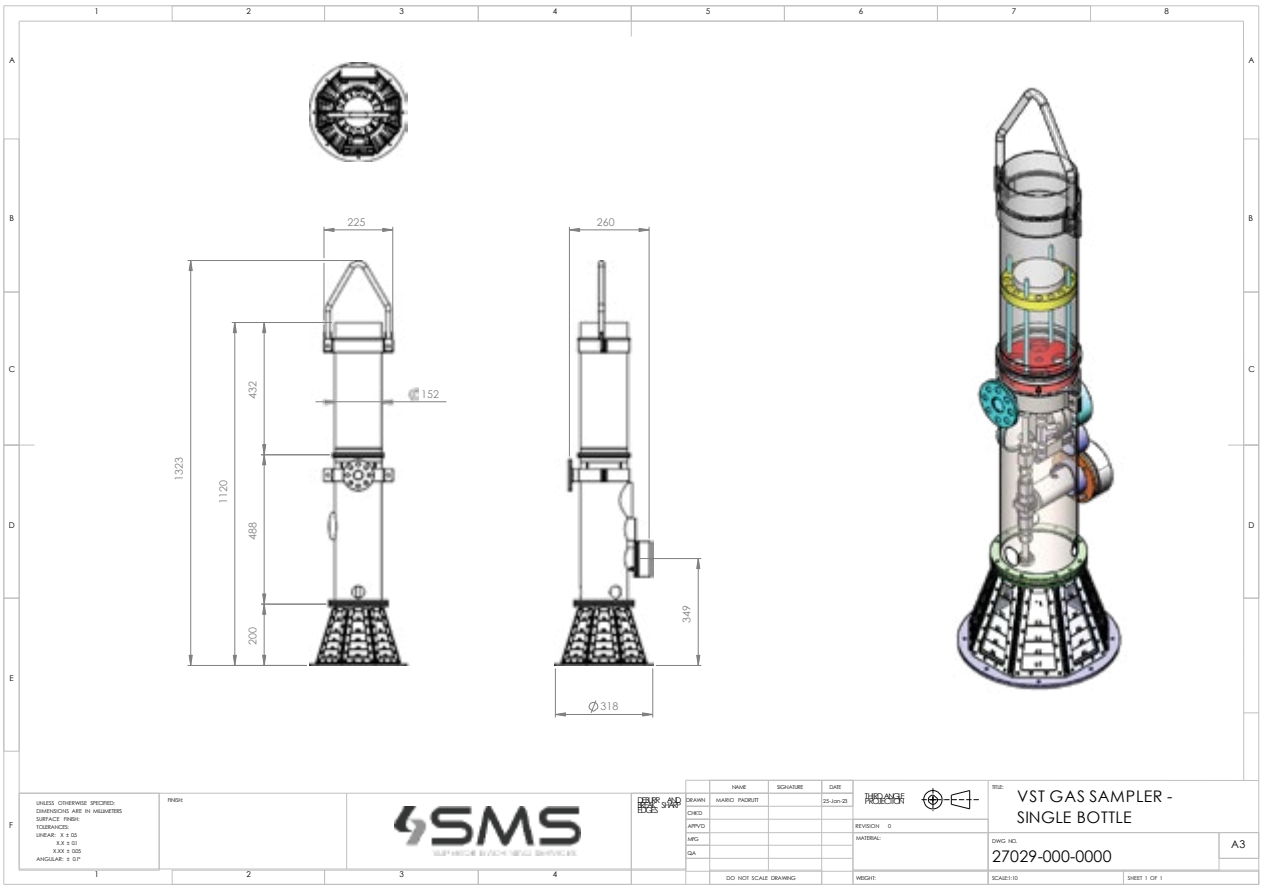
Appendix & References

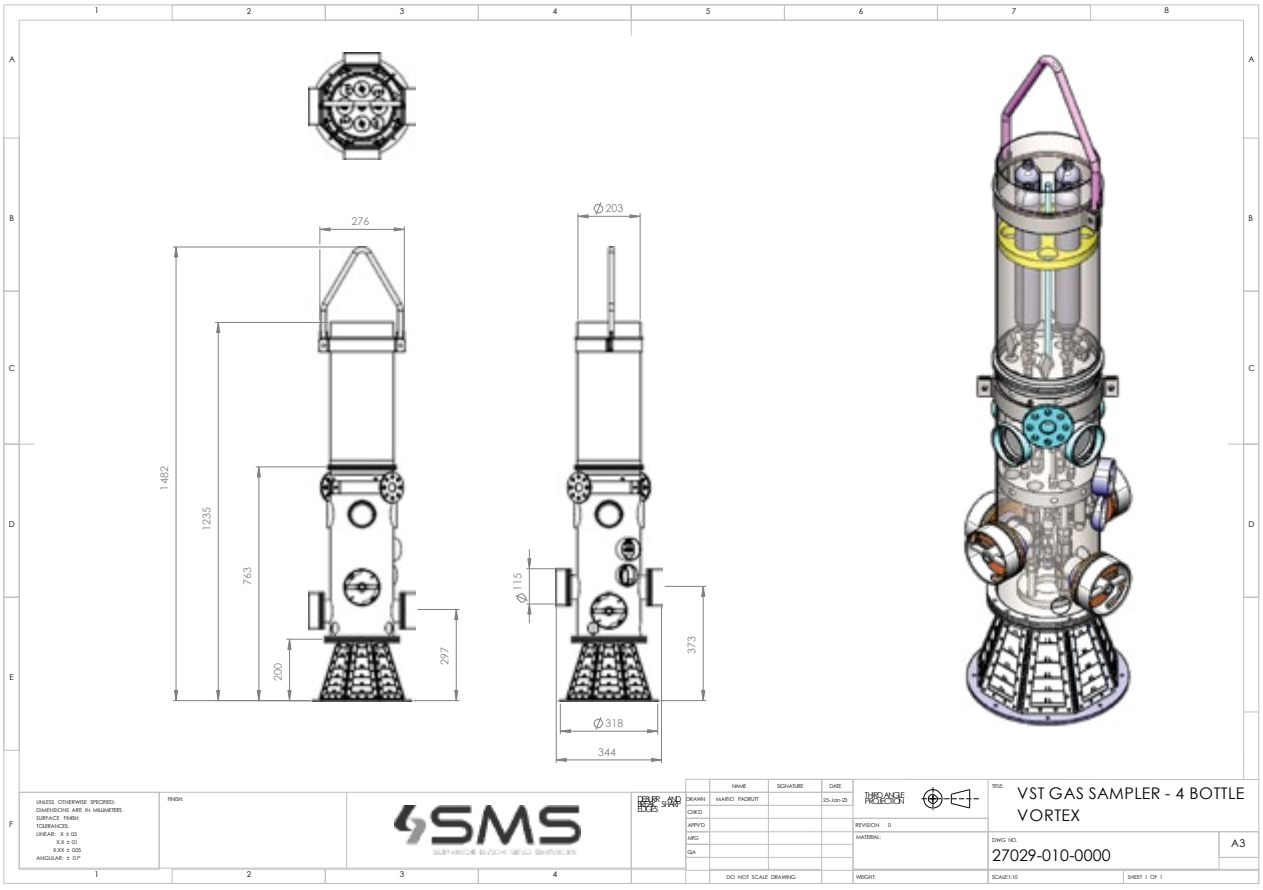
6.3 BOTTLE PART NUMBERS

MULTIPLE BOTTLE, HIGH PRESSURE GAS SAMPLE TOOL BOTTLE AS USED.

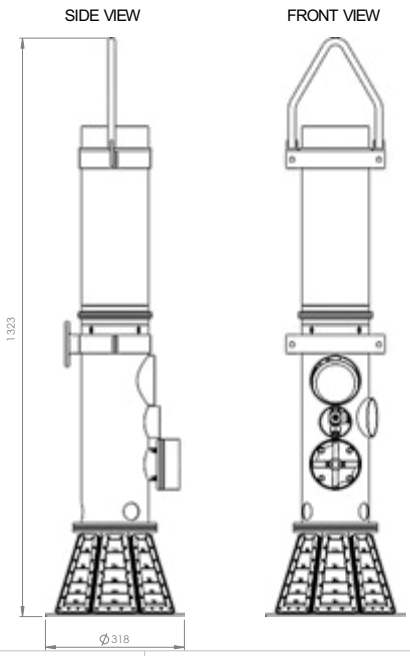
Appendix & References

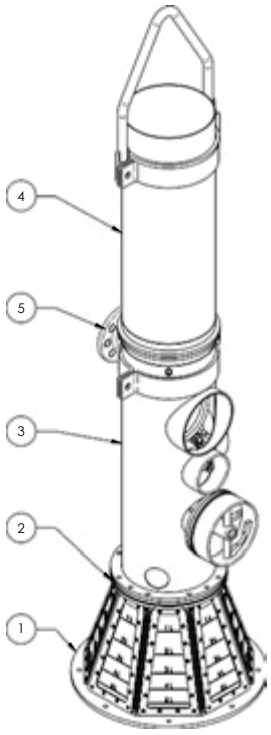
APPENDIX III - SUPPLIER SPECIFICATION SHEETS





ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	QTY.
1	27029-001-0000	CONE TRAP ASSEMBLY		1
2	27029-000-1000	SEAL - CONE	Rubber	1
3	27029-002-0000	MAIN BODY ASSEMBLY		1
4	27029-003-0000	TOP TUBE WELDMENT		1
5	27029-000-0020	VST MOUNTING ASSEMBLY		1





UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 05
X.X ± 01
X.XX ± 005
ANGULAR: ± 01°

FINISH

SMS

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADRUT		25/01/2023
CHKD			
APPVD			
MFG			
QA			

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

REVISION 0

MATERIAL:

WEIGHT:

TITLE: VST GAS SAMPLER - SINGLE BOTTLE
VORTEX

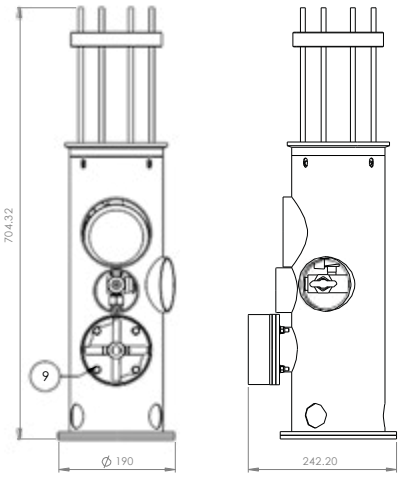
DWG NO. 27029-000-0000

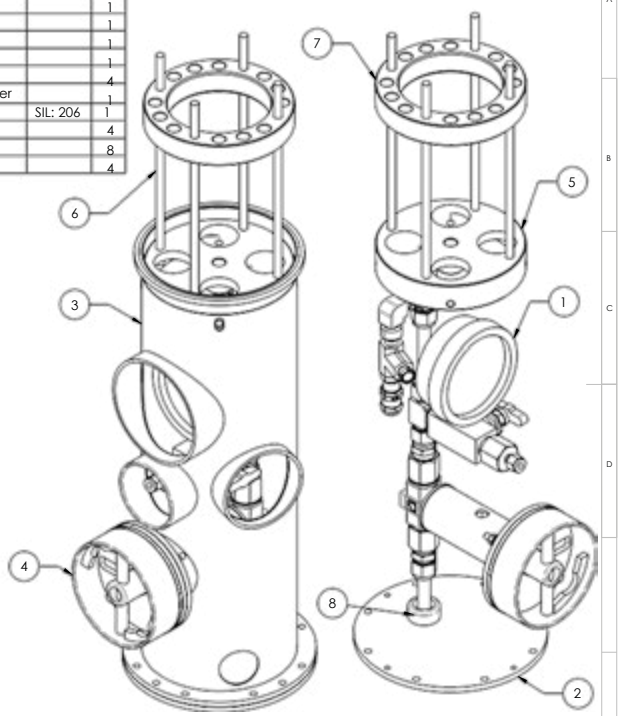
A3

SCALE:1:7

SHEET 1 OF 1

ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	PART No.	QTY.
1	27029-000-0010	VALVE GAUGE ASSEMBLY			1
2	27029-002-0020	MANIFOLD WELDMENT			1
3	27029-002-0010	MAIN BODY WELDMENT			1
4	27029-004-0000	VALVE HANDLE ASSEMBLY			1
5	27029-002-1000	BOTTLE MANIFOLD	30mm 316 STAINLESS STEEL		1
6	27029-002-1080	THREADED ROD	Ø8mm AISI 304		4
7	27029-002-1010	BOTTLE SUPPORT	24mm POM Acetal Copolymer		1
8		O - RING Ø12.29 x 3.53	NITRILE (SHORE A 70)	SIL: 206	1
9		BOLT M6 x 35 316	316 STAINLESS STEEL		4
10		WASHER M6 x Ø12.5 x 1.6 FLAT 316	316 STAINLESS STEEL		8
11		NUT M6 x 1 NYLOC 316	316 STAINLESS STEEL		4





UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 05
X.X ± 01
X.XX ± 005
ANGULAR: ± 01°

FINISH

SMS

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADRUT		25/01/2023
CHKD			
APPVD			
MFG			
QA			

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

REVISION 0

MATERIAL:

WEIGHT:

TITLE: MAIN BODY ASSEMBLY
VORTEX

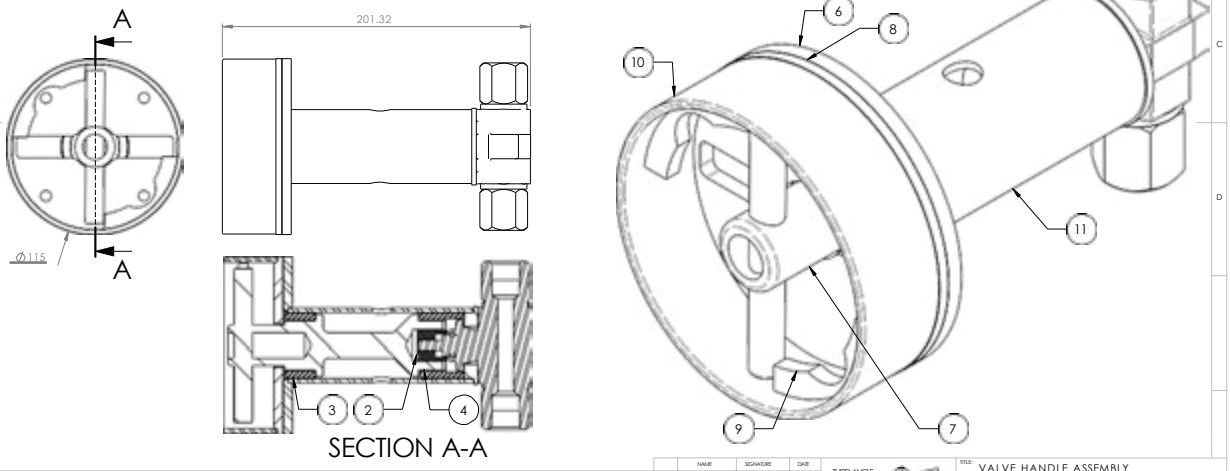
DWG NO. 27029-002-0000

A3

SCALE:1:4

SHEET 1 OF 1

ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	LENGTH	PART No.	QTY.
1		VALVE - BALL FEMALE 1/2" NPT	316 STAINLESS STEEL		PARKER: 8F-B8LJ2-SSP	1
2		VALVE - BALL FEMALE 1/2" NPT	316 STAINLESS STEEL		PARKER: 8F-B8LJ2-SSP	1
3	27029-004-1000	BUSH	ACETAL			1
4	27029-004-1010	THRUST WASHER	ACETAL			1
5	27029-004-1020	PLATE - HOUSING BACK	9mm 316 STAINLESS STEEL			1
6	27029-004-1040	PLATE - HOUSING FRONT	6mm 316 STAINLESS STEEL			1
7	27029-004-1090	BAR - DRIVE	Ø40mm 316 STAINLESS STEEL			1
8	27029-004-1100	PLATE - GUARD BASE PLATE	6mm 316 STAINLESS STEEL			1
9	27029-004-1120	PLATE - HANDLE STOP	6.000mm 316 STAINLESS STEEL			2
10	27029-005-1110	PIPE - VALVE GUARD	316 STAINLESS STEEL	35		1
11	27029-500-1000	HOUSING	316 STAINLESS STEEL			1



SECTION A-A

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 05
X.X ± 01
X.XX ± 005
ANGULAR: ± 0.1°

FINISH:

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADILLET		25/01/2023
CHKD			
APPVD			
MFG			
QA			

THIRD ANGLE PROJECTION

REVISION: 0

MATERIAL:

DO NOT SCALE DRAWING

WEIGHT:

TITLE: VALVE HANDLE ASSEMBLY
VORTEX

DWG NO. 27029-004-0000

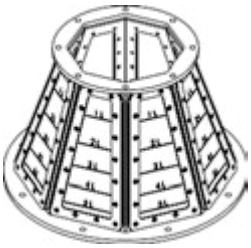
A3

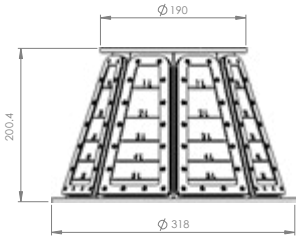
SCALE:1:4

SHEET 1 OF 1

ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	QTY.
1	27029-001-1000	PLATE - CONE BASE	316 STAINLESS STEEL	1
2	27029-001-1020	PLATE - SIDEWALL	316 STAINLESS STEEL	8
3	27029-001-1010	PLATE - CONE TOP	316 STAINLESS STEEL	1
4	27029-001-1030	WINDOW SEAL	EPDM 60 Durometer	16
5	27029-001-1040	WINDOW	ABS PC	8
6	27029-001-1050	PLATE - SIDEWALL OUTER	316 STAINLESS STEEL	8

FULLY ASSEMBLED VIEW





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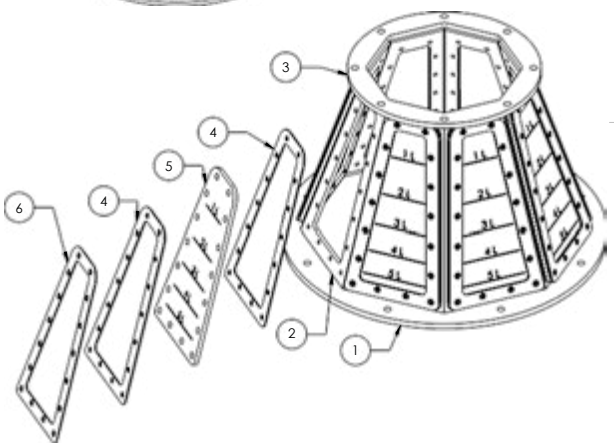


UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 05
X.X ± 01
X.XX ± 005
ANGULAR: ± 0.1°

FINISH:

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADILLET		25/01/2023
CHKD			
APPVD			
MFG			
QA			

THIRD ANGLE PROJECTION

REVISION: 0

MATERIAL:

DO NOT SCALE DRAWING

WEIGHT:

TITLE: CONE TRAP ASSEMBLY
VORTEX

DWG NO. 27029-001-0000

A3

SCALE:1:4

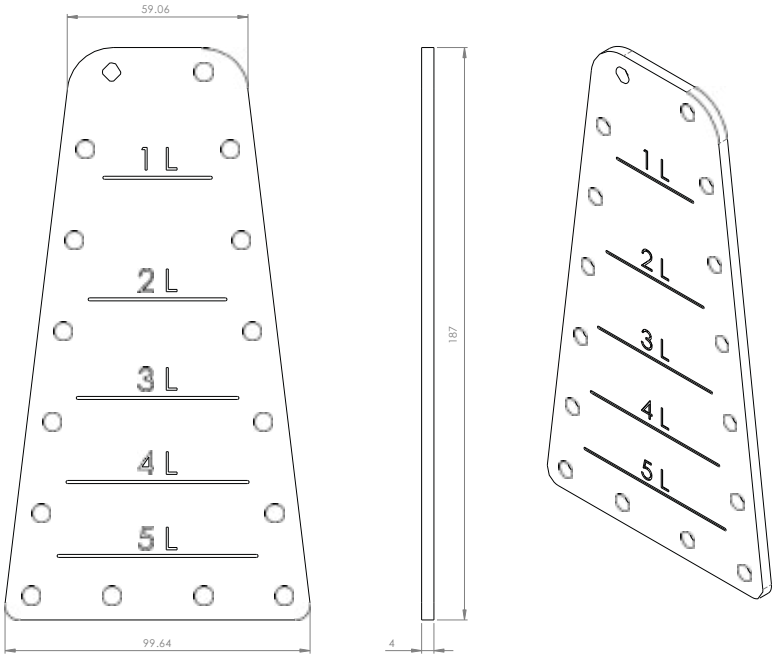
SHEET 1 OF 1

FLOW RATE CALCULATION

FORMULA:

Q = V / t

WHERE:
*Q = VOLUME FLOW RATE (L/s **OR** L/min)*
V = VOLUME (L)
*t = TIME TAKEN (s **OR** min)*



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DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 0.5
X.X ± 0.1
X.XX ± 0.05
ANGULAR: ± 0.1°

FINISH:

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADRUT		25/01/2023
CHKD			
APPVD			
MFG			
QA			

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

REVISION: 0

MATERIAL: ABS PC

WEIGHT:

TITLE: WINDOW
VORTEX

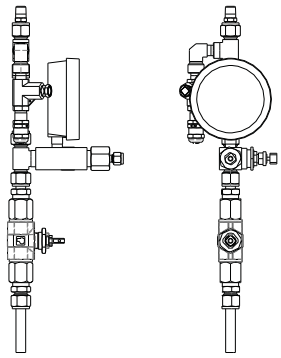
DWG NO. 27029-001-1040

A3

SCALE:1:4

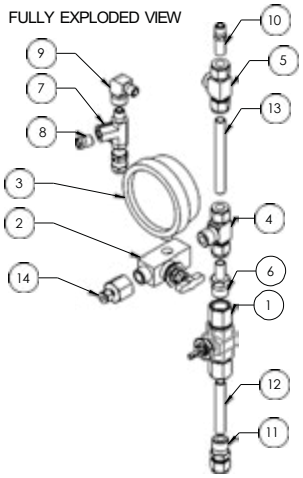
SHEET 1 OF 1

ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	PART No.	QTY.
1		VALVE - BALL FEMALE 1/2" NPT	316 STAINLESS STEEL	PARKER: 8F-B8LJ2-SSP	1
2		VALVE - NEEDLE 6000psi	STAINLESS STEEL	PARKER: HNVS8M8FVBV4	1
3		SPAN PRESSURE GAUGE Ø4 INCH	NYLON 6	SPAN:	1
4		FITTING - BRANCH TEE MALE 1/2" NPT x Ø1/2" x Ø12"	316 STAINLESS STEEL	SWAGELOK: SS-810-3-8TTM	1
5		FITTING: BRANCH TEE FEMALE 1/4" NPT x Ø1/2" TUBE x Ø1/2" TUBE	316 STAINLESS STEEL	SWAGELOK: SS-810-3-4TTF	1
6		TUBE ADAPTOR 1-2" TUBE - 1-2" NPT	316 STAINLESS STEEL	SWAGELOK: SS-8-TA-1-8	1
7		RELIEF VALVE MALE 1/4" NPT x FEMALE 1/4" NPT	316 STAINLESS STEEL	SWAGE: SS-4R3A5	1
8		MUD DAUBER - 1/4"NPT	316 STAINLESS STEEL	SWAGELOK: SS-MD-4	1
9		FITTING ELBOW MALE 1/4" NPT x FEMALE 1/4" NPT	316 STAINLESS STEEL	SWAGELOK: SS-4-SE	1
10		FITTING - TUBE ADAPTER MALE 1/4" NPT x Ø1/2"	316 STAINLESS STEEL	SWAGELOK: SS-8-TA-1-4	1
11		FITTING - MALE 1/2" NPT x Ø1/2" TUBE	316 STAINLESS STEEL	SWAGELOK: SS-810-1-8	1
12	27029-002-1110	TUBE - MANIFOLD	Ø12.700 x 1.600mm 316 STAINLESS STEEL		1
13	27029-002-1120	TUBE - MANIFOLD 2	Ø12.700 x 1.600mm 316 STAINLESS STEEL		1
14		FITTING - FEMALE 1/2 NPT x Ø1/4" TUBE	316 STAINLESS STEEL	SWAGELOK: SS-400-7-8	1



FULLY ASSEMBLED VIEW

FULLY EXPLODED VIEW



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 0.5
X.X ± 0.1
X.XX ± 0.05
ANGULAR: ± 0.1°

FINISH:

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADRUT		25/01/2023
CHKD			
APPVD			
MFG			
QA			

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

REVISION: 0

MATERIAL:

WEIGHT:

TITLE: VALVE GAUGE ASSEMBLY
VORTEX

DWG NO. 27029-000-0010

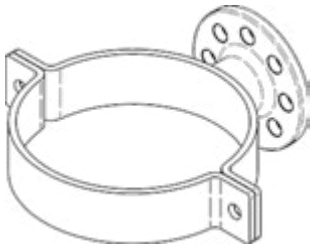
A3

SCALE:1:4

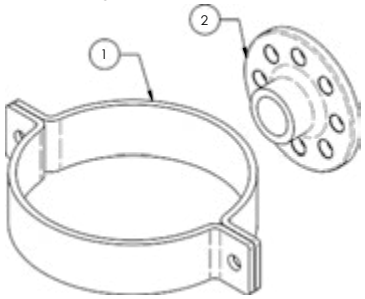
SHEET 1 OF 1

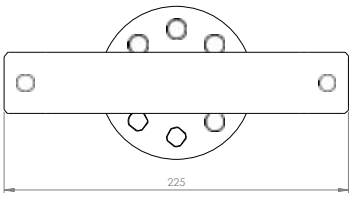
ITEM NO.	DRAWING No.	DESCRIPTION	MATERIAL	QTY.
1		CLAMP - 6" TUBE	316 STAINLESS STEEL	1
2	27029-000-1010	VST MOUNTING PLATE	316 STAINLESS STEEL	1

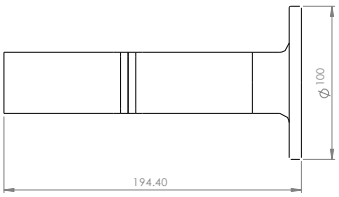
FULLY WELDED VIEW



EXPLODED VIEW







UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR: X ± 05
X.X ± 01
X.XX ± 005
ANGULAR: ± 07°

FINISH:

DEBUR AND BREAK SHARP EDGES

	NAME	SIGNATURE	DATE
DRAWN	MARIO PADRUT		25/01/2023
CHKD			
APPVD			
MFG			
QA			

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

REVISION: 0

MATERIAL:

WEIGHT:

TITLE: VST MOUNTING ASSEMBLY
VORTEX

DWG NO. 27029-000-0020

A3

SCALE:1:3

SHEET 1 OF 1

Appendix And References

APPENDIX III

SAMPLE BOTTLE DETAILS

Swagelok

7/11/2022 10:25:23 PM

www.swagelok.com

Double-Ended Cylinders

Part No.

316L-50DF4-500

Part Description

316L Stainless Steel Double Ended DOT-Compliant Sample Cylinder, 1/4 in. FNPT, 500 cm3, 5000 psig (344 bar)

Specifications

General	
Body Material	316L Stainless Steel
Connection 1 Size	1/4 in.
Connection 1 Type	Female NPT
Connection 2 Size	1/4 in.
Connection 2 Type	Female NPT
Cylinder volume/info	500 cm3
eClass (4.1)	36030101
eClass (5.1.4)	36030101
eClass (6.0)	36030104
eClass (6.1)	36030104
UNSPSC (10.0)	24111802
UNSPSC (11.0501)	24111802
UNSPSC (13.0601)	41111636
UNSPSC (15.1)	41111636
UNSPSC (17.1001)	24111800
UNSPSC (4.03)	24111800
UNSPSC (AirLiquide)	C1509-99
UNSPSC (PGE)	241118
UNSPSC (SEQIRUS)	M4170
UNSPSC (SWG01)	24111800

The complete catalog contents must be reviewed to ensure that the system designer and user make a safe product selection. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

 Warning: Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.

7.0 Contacts

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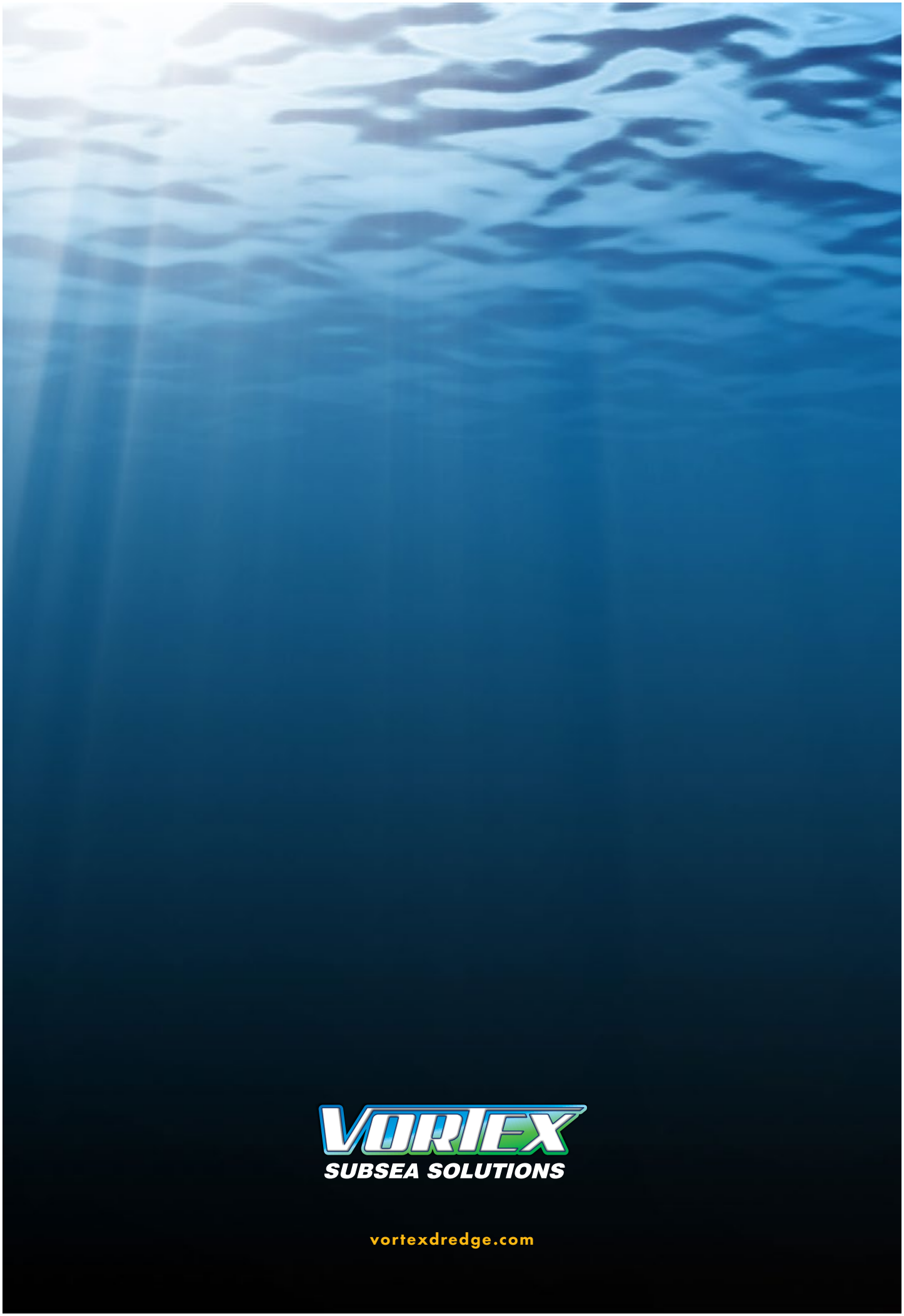
Email: info@tesme.com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