

SERVICE & OPERATING MANUAL

ORIGINAL INSTRUCTIONS

Surge Suppressor- Models

VDC10

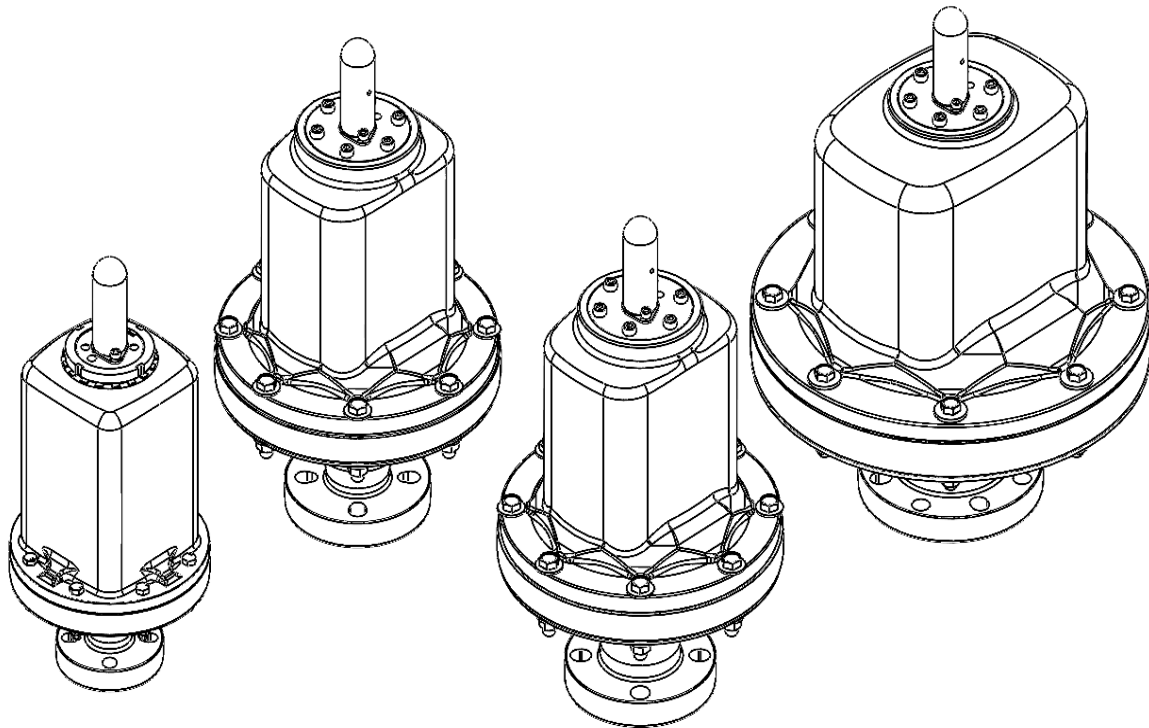
VDC15

VDC20

VDC30



Poly/Alum Construction



1: PUMP SPECS

2: INSTAL & OP

3: EXP VIEW

4: WARRANTY



VERSAMATIC
ACCESSORIES

Safety Information

! IMPORTANT



Read the safety warnings and instructions in this manual before surge suppressor installation and start-up. Failure to comply with the recommendations stated in this manual could damage the pump and void factory warranty.



When the surge suppressor is used for materials that tend to settle out or solidify, the pump should be flushed after each use to prevent damage. In freezing temperatures the pump should be completely drained between uses.

! CAUTION



Before surge suppressor operation, inspect all fasteners for loosening caused by gasket creep. Retighten loose fasteners to prevent leakage. Follow recommended torques stated in this manual.



Nonmetallic surge suppressors and plastic components are not UV stabilized. Ultraviolet radiation can damage these parts and negatively affect material properties. Do not expose to UV light for extended periods of time.



WARNING
Surge suppressor not designed, tested or certified to be powered by compressed natural gas. Powering the surge suppressor with natural gas will void the warranty.



WARNING
The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

! WARNING



When used for toxic or aggressive fluids, the surge suppressor should always be flushed clean prior to disassembly.



Before maintenance or repair, shut off the compressed air line, bleed the pressure, and disconnect the air line from the surge suppressor. Be certain that approved eye protection and protective clothing are worn at all times. Failure to follow these recommendations may result in serious injury or death.



Airborne particles and loud noise hazards. Wear eye and ear protection.



In the event of diaphragm rupture, pumped material may enter the air end of the surge suppressor, and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe containment.



Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The surge suppressor, piping, valves, containers and other miscellaneous equipment must be properly grounded.



This surge suppressor is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.



Use safe practices when lifting

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 - Composite Repair Parts List

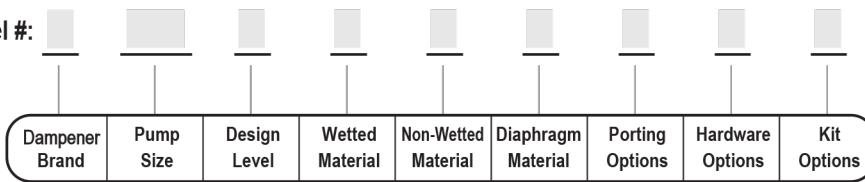
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- Warranty

Explanation of Dampener Nomenclature

Your Model #:

(fill in from nameplate)



Model #: **VDC** **XX** **X** **X** **X** **X** **X** **X** **XX**

Pump Brand

VDC VERSAMATIC®

Pump Size

10 1"

15 1-1/2"

20 2"

30 3"

Diaphragm Materials

T Virgin PTFE

S Santoprene

B Buna (Nitrile)

N Neoprene

Design Level

1 Design Level

Porting Option

U Universal ANSI / DIN Flange

Wetted Material

P Polypropylene

Hardware

Z Zinc Plated Steel

Your Serial #: (fill in from pump nameplate) _____

Materials

Material Profile:	Operating Temperatures:	
	Max.	Min.
CAUTION! Operating temperature limitations are as follows:		
Conductive Acetal: Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F) will attack FKM.	350°F 177°C	-40°F -40°C
Hytrel®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C

Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists strong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C
<i>Maximum and Minimum Temperatures are the limits for which these materials can be operated. Temperatures coupled with pressure affect the longevity of diaphragm pump components. Maximum life should not be expected at the extreme limits of the temperature ranges.</i>		
Metals:		
Alloy C: Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy.		
Stainless Steel: Equal to or exceeding ASTM specification A743 CF-8M for corrosion resistant iron chromium, iron chromium nickel and nickel based alloy castings for general applications. Commonly referred to as 316 Stainless Steel in the pump industry.		

For specific applications, always consult the Chemical Resistance Chart.

Note: This document is a high level guide. Please be aware that not all model and or material combinations are possible for all sizes. Please consult factory or your distributor for specific details.

SERVICE AND OPERATING INSTRUCTIONS

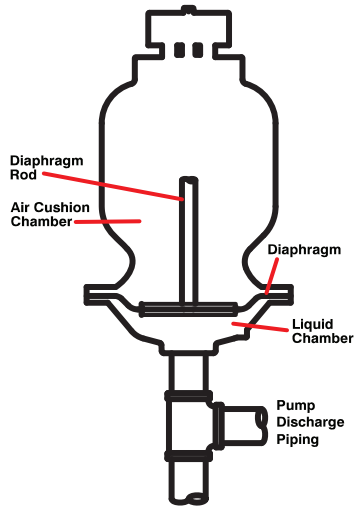
This Versamatic Surge Suppressor is a completely automatic diaphragm fitted surge suppressor to reduce the flow and pressure pulsations in a pumping system characteristic of reciprocating type pumps.

Principle of Operation: The Surge Suppressor uses a flexible diaphragm to separate a liquid chamber from compressed air chambers. A rod connected to the center of one diaphragm activates the air inlet and exhaust valves, which automatically admit or exhaust air in the air chambers. This maintains the diaphragms in mid-range of stroke for maximum surge suppression.

Installation: Locate the Surge Suppressor in discharge piping as close as possible to the pump. The unit will operate in any position. However, when used with liquids that tend to settle out, the unit should be installed at the top side of the piping to provide easy discharge of foreign solids by gravity. Connect air inlet connection to full plant air supply line before the air regulator to pump. Not to exceed 116PSI.

Service Instructions: When service is required, it is important to MAKE CERTAIN THAT INLET AIR PRESSURE IS DISCONNECTED. The diaphragms are serviced by simply removing the hex nuts, and removing the center spool casting. When Virgin PTFE diaphragms are used in conjunction with the elastomeric diaphragms they are placed over the "wetted" sides of each elastomeric diaphragm.

Warranty: This unit is guaranteed for a period of five years against defective material and workmanship.



IMPORTANT

Read these safety warnings and instructions in this manual completely, before installation and start-up of the pulsation dampener. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual will damage the pulsation dampener, and void factory warranty.



CAUTION

Before surge suppressor operation, inspect all gasketed fasteners for looseness caused by gasket creep. Re-torque loose fasteners to prevent leakage. Follow recommended torques stated in this manual.



WARNING

Before doing any maintenance on the pulsation dampener, be certain all pressure is completely vented from the pump, suction, discharge, piping, and all other openings and connections. Be certain the air supply is locked out or made non-operational, so that it cannot be started while work is being done on the pump. Be certain that approved eye protection and protective clothing are worn all times in the vicinity of the pump. Failure to follow these recommendations may result in serious injury or death.



WARNING

Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers or other miscellaneous equipment must be grounded. See page 8.

HAZARD WARNING

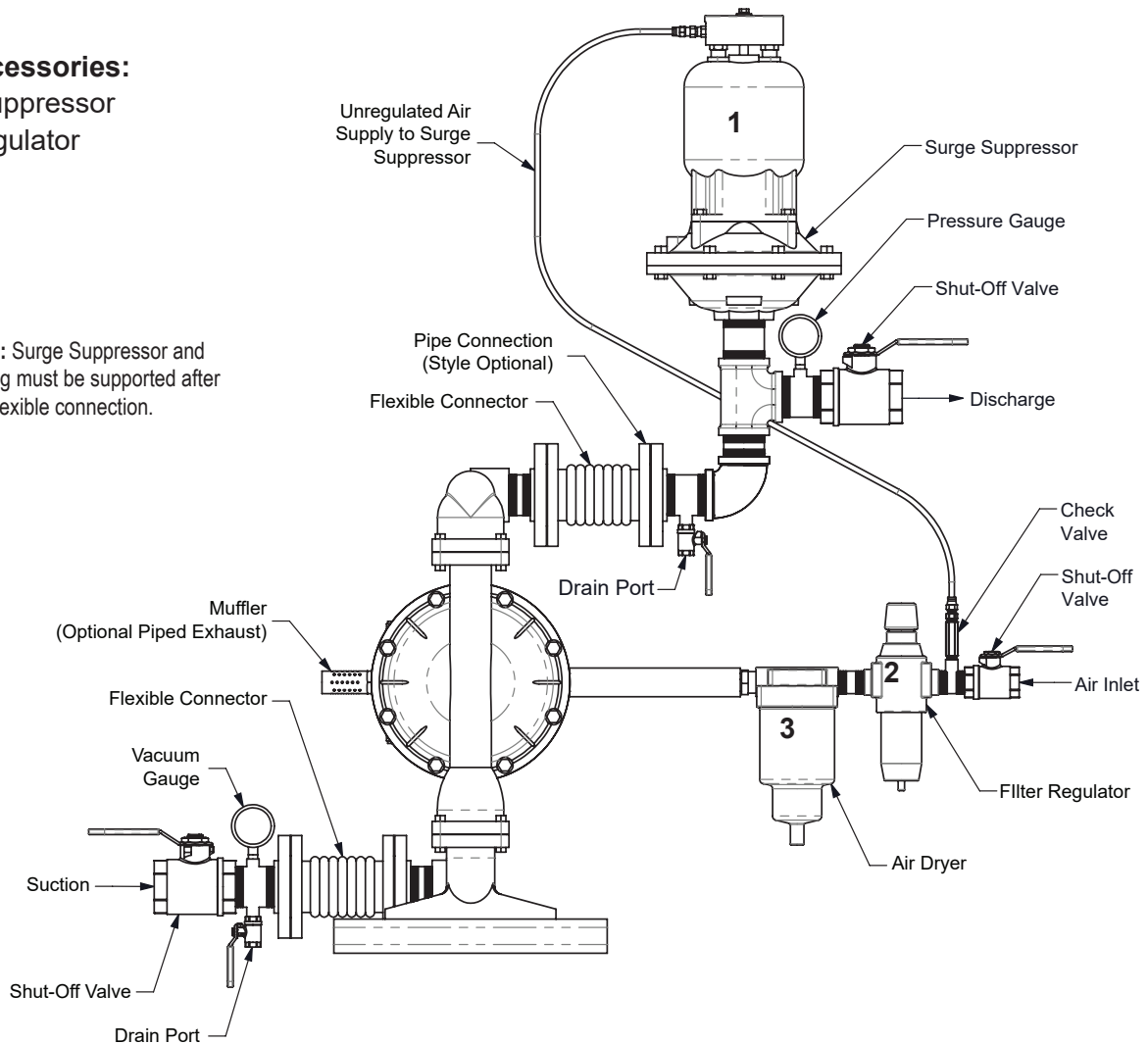
POSSIBLE EXPLOSION HAZARD can result if 1, 1, 1, -Trichloroethane, Methylene Chloride or other Halogenated Hydrocarbon solvents are used in pressurized fluid systems having Aluminum or Galvanized wetted parts. Death, serious bodily injury and/or property damage could result. Consult with the factory if you have questions concerning Halogenated Hydrocarbon solvents.

Recommended Installation Guide

Available Accessories:

1. Surge Suppressor
2. Filter/Regulator
3. Air Dryer

Note: Surge Suppressor and Piping must be supported after the flexible connection.



Installation And Start-Up

Locate the pump as close to the product being pumped as possible. Keep the suction line length and number of fittings to a minimum. Do not reduce the suction line diameter.

Air Supply

Connect the pump air inlet to an air supply with sufficient capacity and pressure to achieve desired performance. A pressure regulating valve should be installed to insure air supply pressure does not exceed recommended limits.

Air Valve Lubrication

The air distribution system is designed to operate WITHOUT lubrication. This is the standard mode of operation. If lubrication is desired, install an air line lubricator set to deliver one drop of SAE 10 non-detergent oil for every 20 SCFM (9.4 liters/sec.) of air the pump consumes. Consult the Performance Curve to determine air consumption.

Air Line Moisture

Water in the compressed air supply may cause icing or freezing of the exhaust air, causing the pump to cycle erratically or stop operating. Water in the air supply can be reduced by using a point-of-use air dryer.

Air Inlet And Priming

To start the pump, slightly open the air shut-off valve. After the pump primes, the air valve can be opened to increase air flow as desired. If opening the valve increases cycling rate, but does not increase the rate of flow, cavitation has occurred. The valve should be closed slightly to obtain the most efficient air flow to pump flow ratio.



VERSAMATIC

WWW.VERSAMATIC.COM

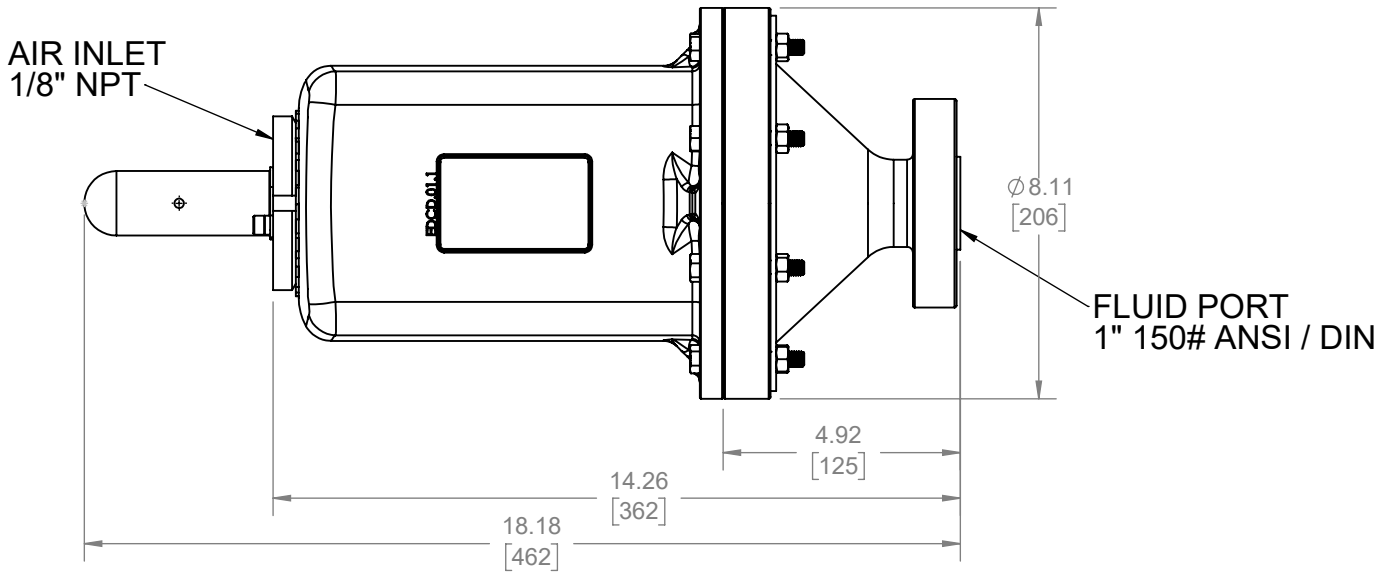
VDC10152030DL1SM-REV0525

Models VDC10, VDC15, VDC20, VDC30 • 6

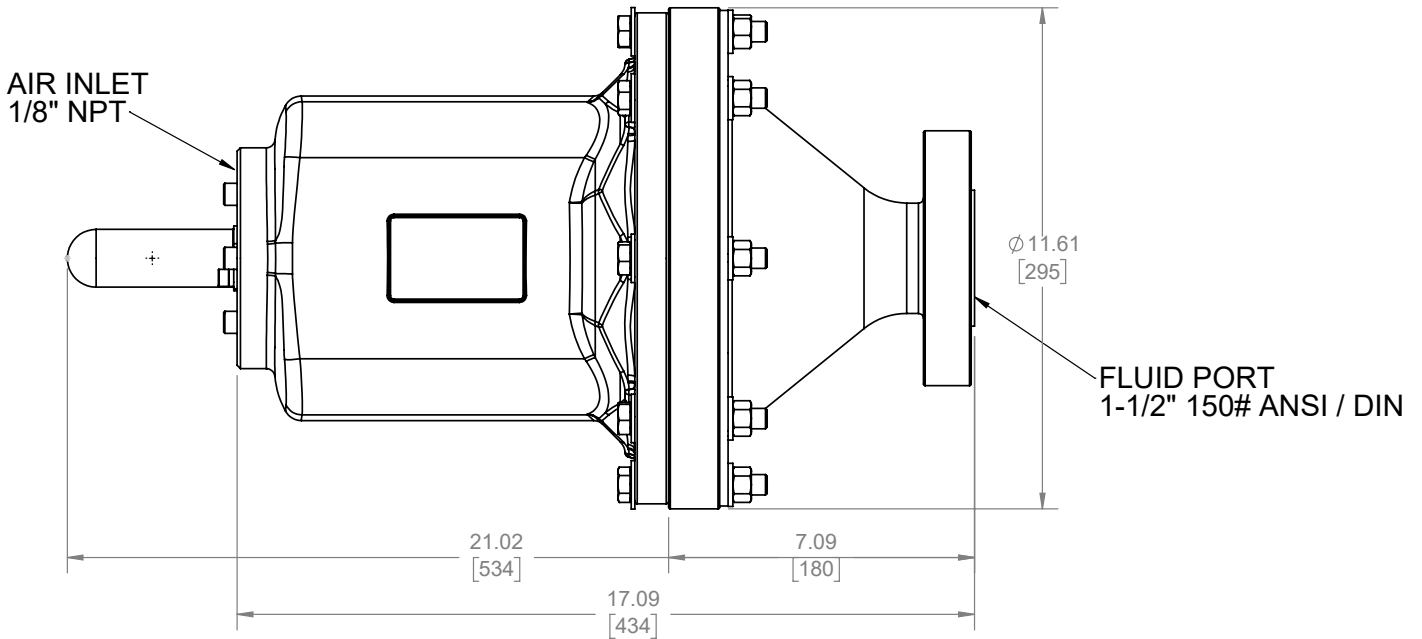
Dimensional Drawings

Dimensions are $\pm 1/8"$ ($\pm 3\text{mm}$). Figures in parenthesis = millimeters

Model VDC10



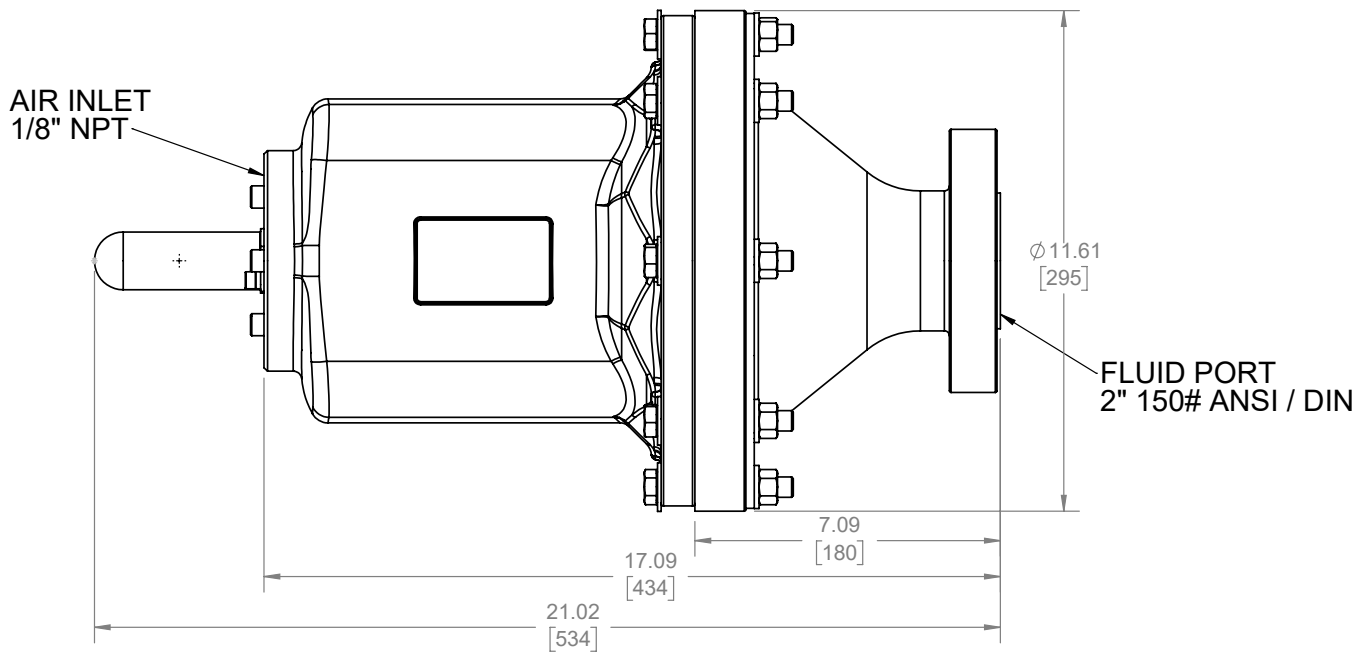
Model VDC15



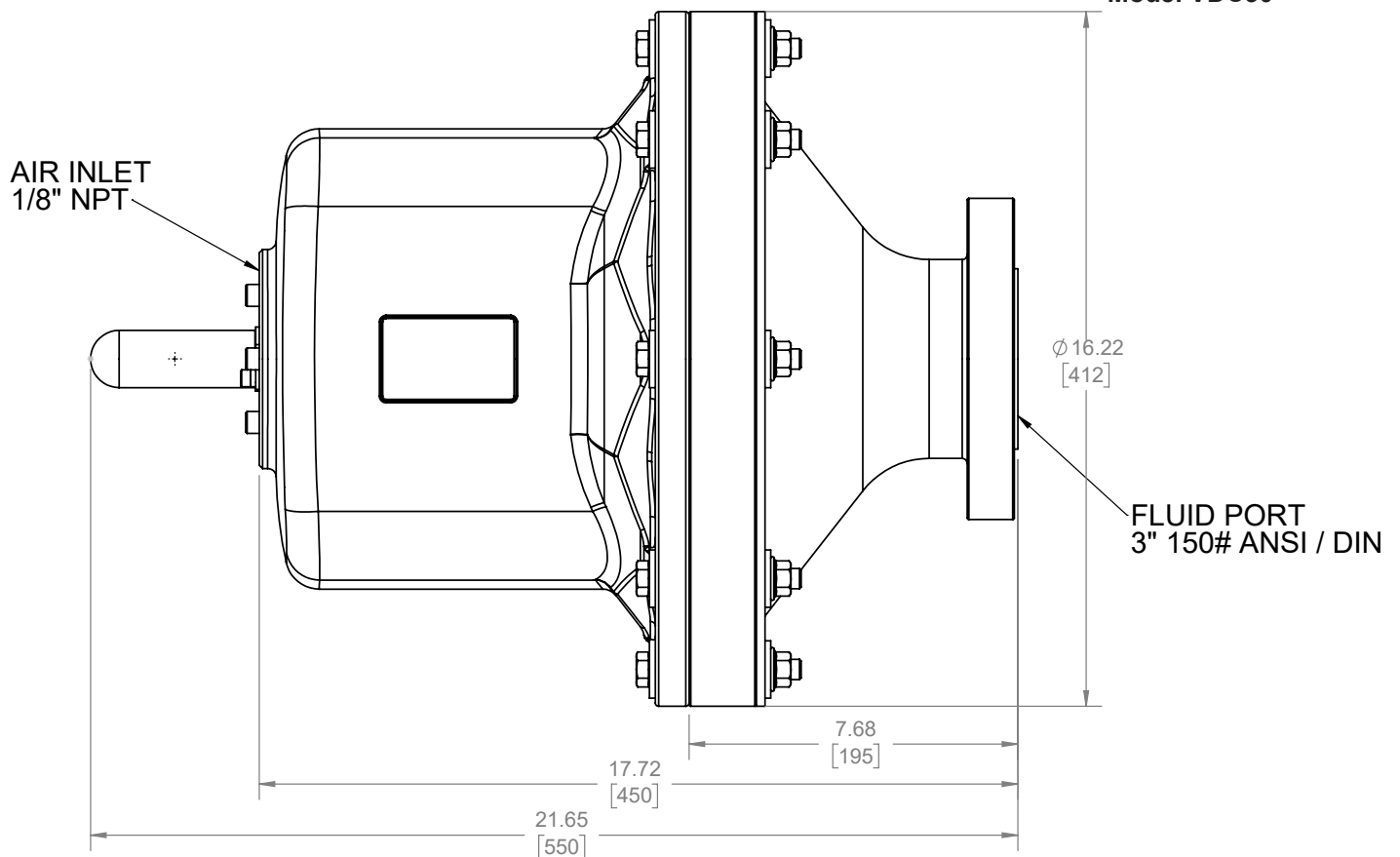
Dimensional Drawings

Dimensions are $\pm 1/8"$ ($\pm 3\text{mm}$). Figures in parenthesis = millimeters

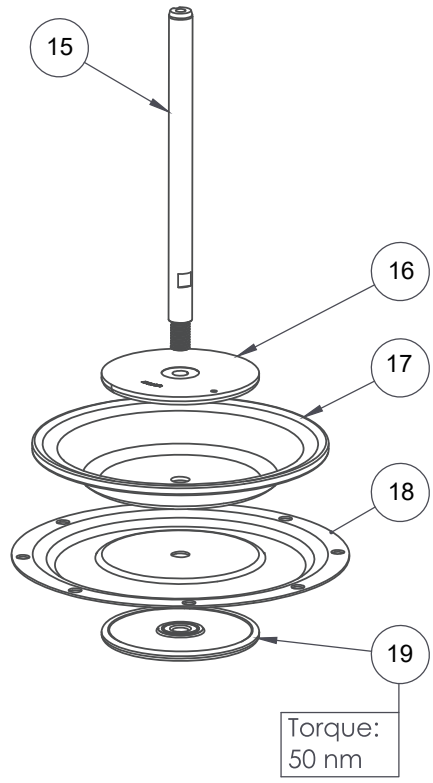
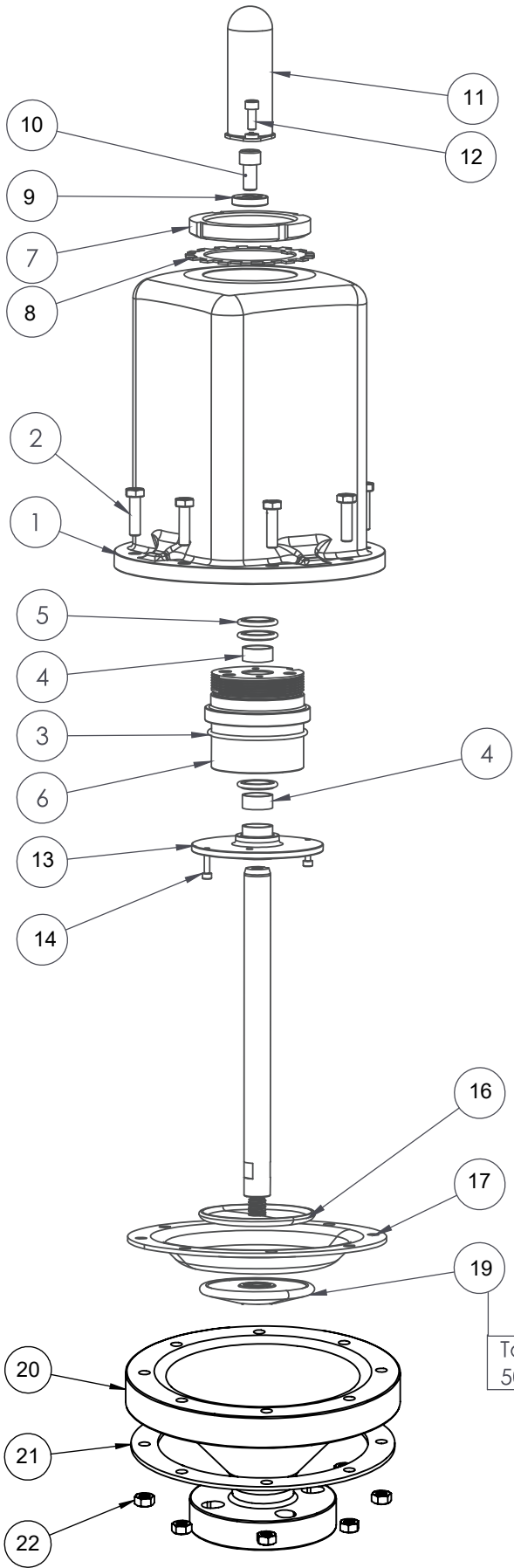
Model VDC20



Model VDC30



VDC10 - Composite Repair Parts Drawing



Service & Repair Kits

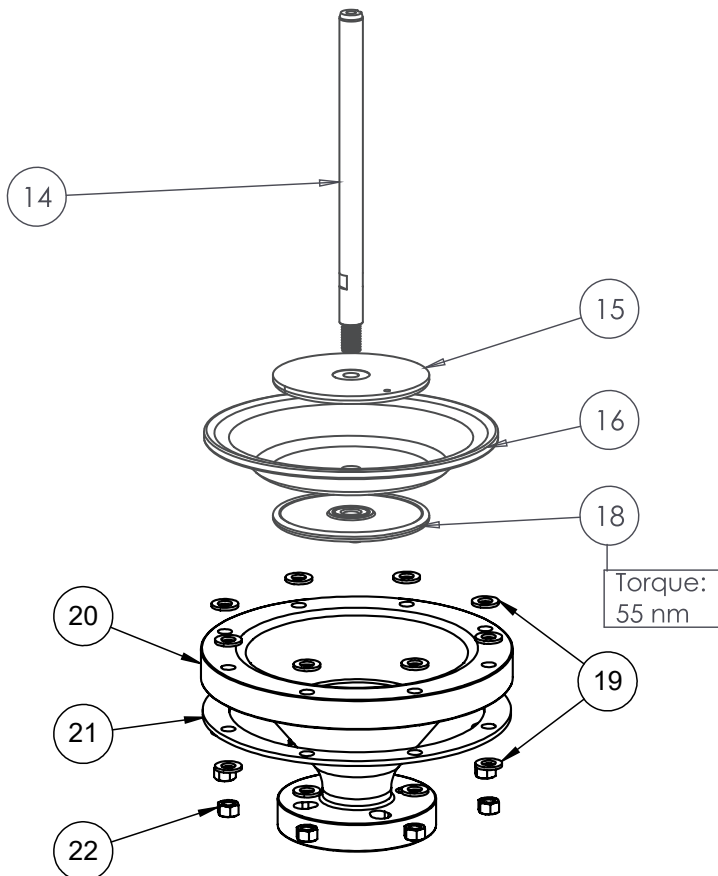
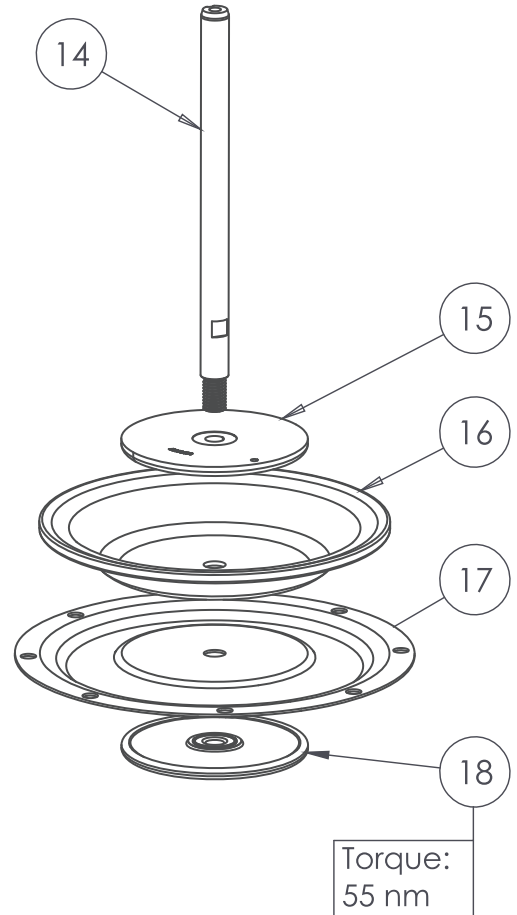
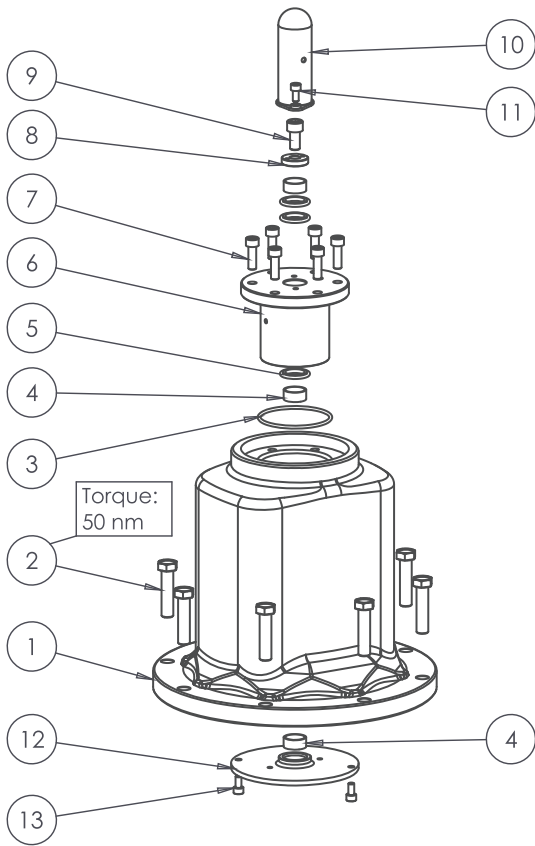
476.V416.000 Air End Kit
Seals, O-Ring, Bushings, Retainer

476.V418.654 Wet End Kit
Santoprene Diaphragm & PTFE Overlay

VDC10 - Composite Repair Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	88950016	Top Chamber 1", Aluminum	1
2	26650007	M8X55 Bolt, Zinc	8
3	26630001	O-Ring, Buna	1
4	26610001	Bearing, Sleeve	3
5	26610002	Seal, Rod	3
6	88950004	Dampener Sleeve, SS	1
7	26650002	Nut, Lock	1
8	26600091	Washer, Lock	1
9	88930006	Stopper	1
10	26650011	M10X20 SHCS, Zinc	1
11	88930008	Dust Cap, Black	1
12	26650009	M6X16 SHCS, Zinc	2
13	88950003	Plate, Sleeve	1
14	26650010	M4X16 SHCS, Zinc	2
15	88950005	Rod, Diaphragm	1
16	612.022.330	Plate, Diaphragm Inner	1
17	286.008.354	Diaphragm, Santoprene	1
17	286.008.360	Diaphragm, Buna	1
17	286.008.365	Diaphragm, Neoprene	1
18	286.015.604	Diaphragm, PTFE Overlay	1
19	88950015	Plate, Outer Diaphragm, Poly	1
20	88950019	Bottom Chamber 1", Poly	1
21	88950014	Support Ring 1"	1
22	26650008	M8 Flange Nut, Zinc	8

VDC15 - Composite Repair Parts Drawing



Service & Repair Kits

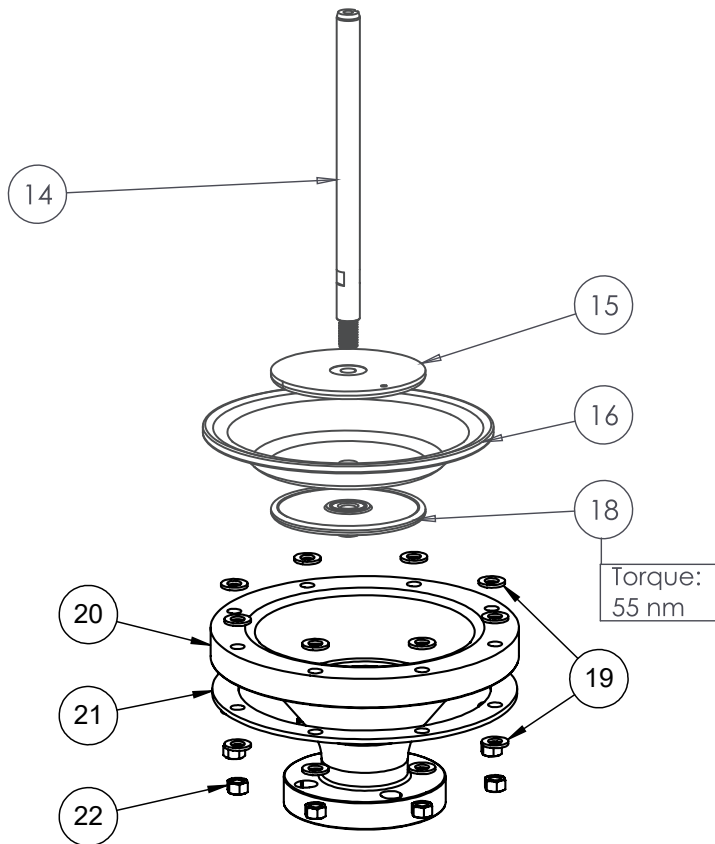
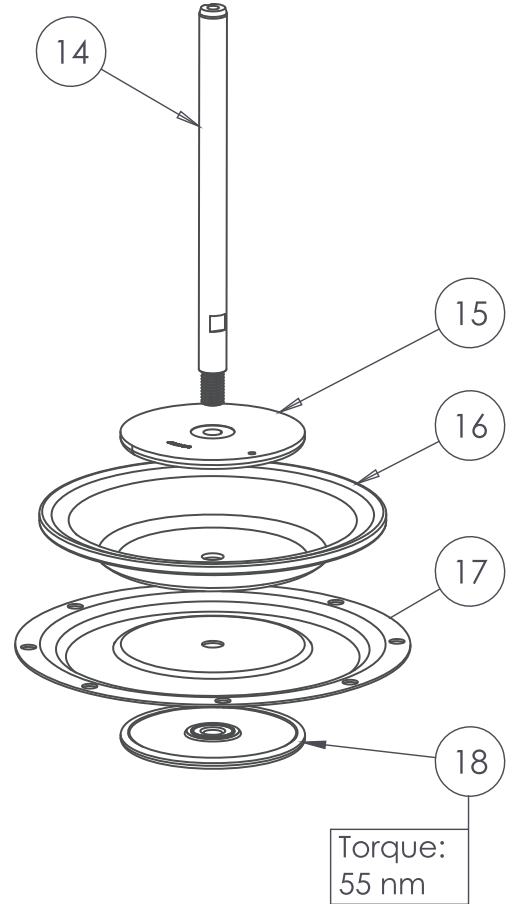
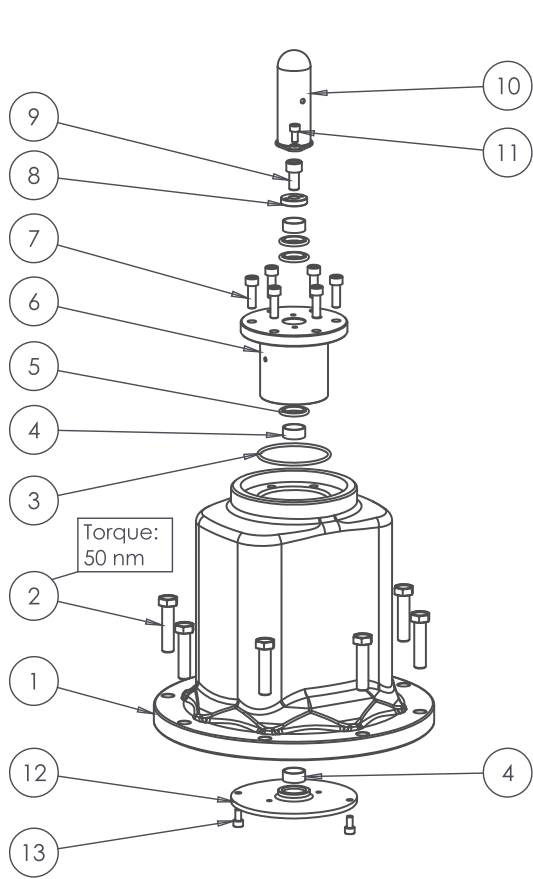
476.V417.000 Air End Kit
Seals, O-Ring, Bushings, Retainer

476.V419.654 Wet End Kit
Santoprene Diaphragm & PTFE Overlay

VDC15 - Composite Repair Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	88930020	Top Chamber 2", Aluminum	1
2	26600095	M12X1.75X85 Bolt, Zinc	8
3	26630001	O-Ring, Buna	1
4	26610001	Bearing, Sleeve	3
5	26610002	Seal, Rod	3
6	88930004	Dampener Sleeve, SS	1
7	26600094	M8X25 SHCS, Zinc	6
8	88930006	Stopper	1
9	26650011	M10X20 SHCS, Zinc	1
10	88930008	Dust Cap, Black	1
11	26650009	M6X16 SHCS, Zinc	2
12	88930003	Plate, Sleeve	1
13	26600088	M6X16 SHCS, Zinc	2
14	88930005	Rod, Diaphragm	1
15	88930007	Plate, Diaphragm Inner	1
16	286.005.354	Diaphragm, Santoprene	1
16	286.005.360	Diaphragm, Buna	1
16	286.005.365	Diaphragm, Neoprene	1
17	286.020.604	Diaphragm, PTFE Overlay	1
18	612.180.552	Plate, Outer Diaphragm, Poly	1
19	26600093	Washer, Zinc	16
20	CED196.187.552	Bottom Chamber 1-1/2", Poly	1
21	EDPD.03.2.V1	Support Ring 2"	1
22	26600089	M12X1.75 Nut, Zinc	8

VDC20 - Composite Repair Parts Drawing



Service & Repair Kits

476.V417.000 Air End Kit
Seals, O-Ring, Bushings, Retainer

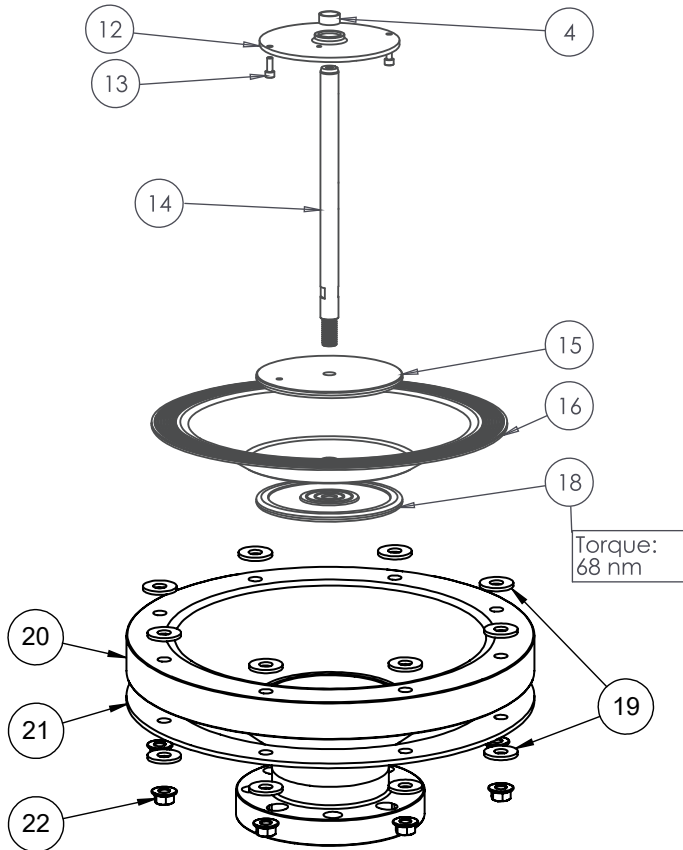
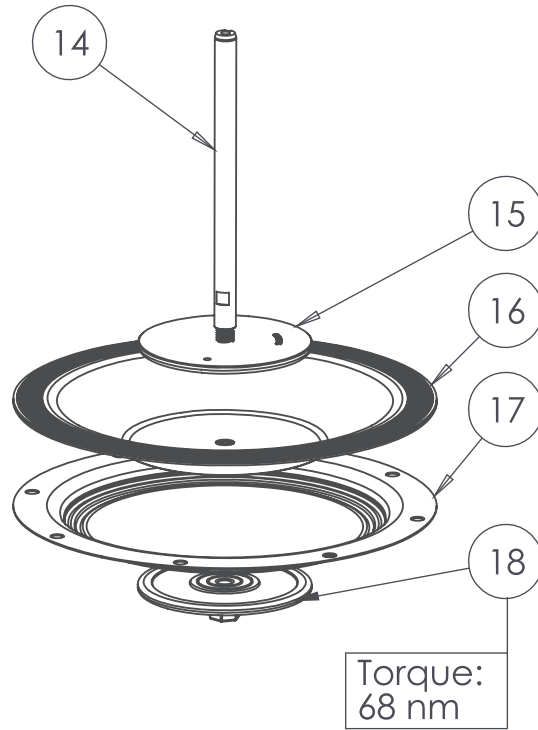
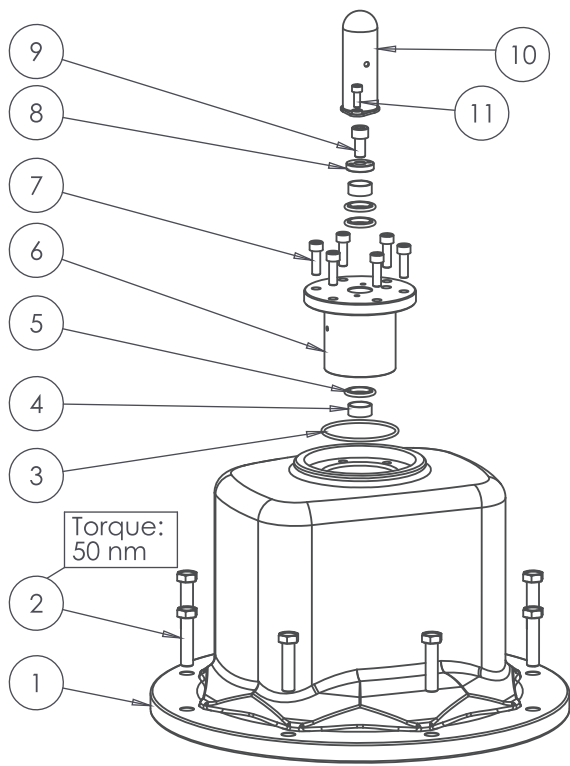
476.V419.654 Wet End Kit
Santoprene Diaphragm & PTFE Overlay

VDC20 - Composite Repair Parts List

ITEM

NO.	PART NUMBER	DESCRIPTION	QTY.
1	88930020	Top Chamber 2", Aluminum	1
2	26600095	M12X1.75X85 Bolt, Zinc	8
3	26630001	O-Ring, Buna	1
4	26610001	Bearing, Sleeve	3
5	26610002	Seal, Rod	3
6	88930004	Dampener Sleeve, SS	1
7	26600094	M8X25 SHCS, Zinc	6
8	88930006	Stopper	1
9	26650011	M10X20 SHCS, Zinc	1
10	88930008	Dust Cap, Black	1
11	26650009	M6X16 SHCS, Zinc	2
12	88930003	Plate, Sleeve	1
13	26600088	M6X16 SHCS, Zinc	2
14	88930005	Rod, Diaphragm	1
15	88930007	Plate, Diaphragm Inner	1
16	286.005.354	Diaphragm, Santoprene	1
16	286.005.360	Diaphragm, Buna	1
16	286.005.365	Diaphragm, Neoprene	1
17	286.020.604	Diaphragm, PTFE Overlay	1
18	612.180.552	Plate, Outer Diaphragm, Poly	1
19	26600093	Washer, Zinc	16
20	CED196.191.552	Bottom Chamber 2", Poly	1
21	EDPD.03.2.V1	Support Ring 2"	1
22	26600089	M12X1.75 Nut, Zinc	8

VDC30 - Composite Repair Parts Drawing



Service & Repair Kits

476.V417.000 Air End Kit
Seals, O-Ring, Bushings, Retainer

476.V420.654 Wet End Kit
Santoprene Diaphragm & PTFE Overlay

VDC30 - Composite Repair Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	88910064	Top Chamber 3", Aluminum	1
2	26610009	M12X1.75X95 Bolt, Zinc	8
3	26630001	O-Ring, Buna	1
4	26610001	Bearing, Sleeve	3
5	26610002	Seal, Rod	3
6	88930004	Dampener Sleeve, SS	1
7	26600094	M8X25 SHCS, Zinc	6
8	88930006	Stopper	1
9	26650011	M10X20 SHCS, Zinc	1
10	88930008	Dust Cap, Black	1
11	26650009	M6X16 SHCS, Zinc	2
12	88910014	Plate, Sleeve	1
13	26600088	M6X16 SHCS, Zinc	2
14	88910015	Rod, Diaphragm	1
15	88910016	Plate, Diaphragm Inner	1
16	286.098.354	Diaphragm, Santoprene	1
16	286.098.360	Diaphragm, Buna	1
16	286.098.365	Diaphragm, Neoprene	1
17	286.098.604	Diaphragm, PTFE Overlay	1
18	612.251.552	Plate, Outer Diaphragm, Poly	1
19	26600093	Washer, Zinc	16
20	CED196.141.552	Bottom Chamber 3", Poly	1
21	EDPD.03.3.V1	Support Ring 3"	1
22	26600089	M12X1.75 Nut, Zinc	8

5 - YEAR Limited Product Warranty

Quality System ISO9001 Certified • Environmental Management Systems ISO14001 Certified

Versamatic warrants to the original end-use purchaser that no product sold by Versamatic that bears a Versamatic brand shall fail under normal use and service due to a defect in material or workmanship within five years from the date of shipment from Versamatic's factory.

The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

~ See complete warranty at http://vm.salesmrc.com/pdfs/VM_Product_Warranty.pdf

