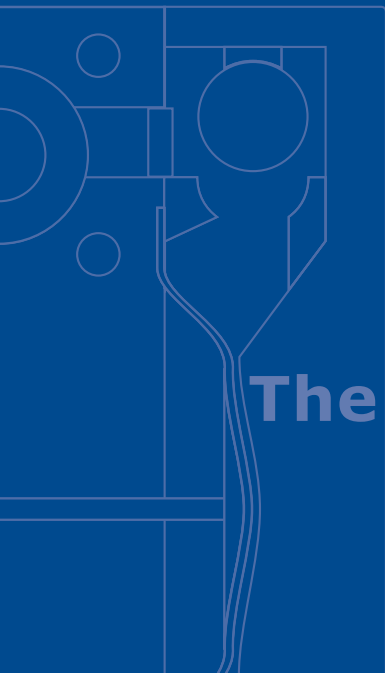




VERDERAIR

Air Operated Double Diaphragm Pumps

Increase productivity
Reduce operational cost
Improve working environment



Verderair
The most efficient
diaphragm pump



We put our heart into pumps

A well-functioning pump helps you succeed. That applies certainly to the most important pump in life, the human heart, but the same goes for pumps in business. In our transparent Verder organization all energy and attention is focused on improving the quality and performance of our pumps and our service. We do so with energy, dedication and - most importantly - with our heart.

VERDER – PASSION FOR PUMPS

Verderair

The most efficient double diaphragm pumps

Verderair double diaphragm pumps have quick-acting air valves. Verderair diaphragm pumps therefore increase productivity, reduce operational cost and improve working environment.



Increase productivity

Higher flow rate, less maintenance

Low 'pressure drop' when the liquid passes the pump chamber. Smoother flow, increased efficiency pumping the liquid. The diaphragms have a special profile which is designed for an extremely long working life.

Reduce operational cost

Lower air consumption

The quick-acting air valves are very fast in changing direction. No compressed air enters the air chamber when the stroke has completed. The used compressed air is removed with almost no restrictions. The compressed air is only used to move the liquid.

Improve working environment

Less noise

By using all of the compressed air the pump makes less noise and the risk of freezing the exhaust is reduced.

55 years of experience more than 650,000 diaphragm

With more than 55 years of experience in double diaphragm pump technology, Verder continuously improves its technology to increase the efficiency of the Verderair pumps without using ancillary equipment. This has allowed us to sell over 650,000 diaphragm pumps all over the world.



Verderair's key features

- Quick-acting air valve
- Non-stalling air valves
- No dynamic or pressure-loaded seals
- Dry self priming
- Free of air lubrication
- Can run dry without damage (no dry-run protection needed)
- Can run against closed valves
- Easy to install
- Easy to operate
- Easy to maintain
- Portable for multi-location use

Special features Verderair VA

- Bolted chambers for safe operation and easy maintenance
- Rugged, cast feed mounting holes for limited vibrations
- Plastic versions with inserts in pump chambers for holding optimum pressure

pumps sold



Special features of Verderair PURE

- Solid design for perfect pressure holding & limited vibrations
- No metal wetted or external parts
- Possible to build pulsation dampener on top of the pump
- Access to valve seat and balls without disassembling



Special features Verderair HI-CLEAN

- DIN 11851 or Tri-Clamp
- According to EC 1935/2004 & FDA
- CIP/SIP
(Clean In Place/ Sterilization In Place)
- Strip Cleaning: Fast disassemble



Materials to choose from to meet your most severe process

To meet your most severe process conditions, yet still having a trouble-free operation, Verderair pumps have nine different material options for the valve seat, diaphragm & balls.

The combination of these high quality materials together with the choice of different pump materials give the optimum pump selection.

Acetal Wide range of solvent resistant and withstands extreme fatigue. Good level of abrasion resistance. Electrically conductive (ATEX).

Santoprene Good resistance to abrasive and chemical fluids. Santoprene is compatible with some solvents (e.g. Acetone, MEK), caustic solutions, dilute acids and alcohols.

Teflon (PTFE) Most compatible material for chemical applications, extremely resistant to corrosion and high temperatures, very low friction coefficient, non-adhesive.

Thermoplastic polyester (Hytrel) Good performance properties at lower temperatures and good resistance to abrasive fluids. Thermoplastic polyester is often a substitute for Buna-N.

Fluorelastomers (Viton) High heat resistance. Good resistance to aggressive chemicals including acids and some solvents. (e.g. xylene and mineral spirits). Good resistance to steam as well as animal, vegetable and petroleum oils. Resists unleaded fuels.

Geolast Abrasion resistance. Approximately same chemical compatibility as Buna-N.

Polychloroprene (Neoprene) Good chemical resistance, good performance with oils and many chemicals, good temperature resistance, outstanding physical toughness, outstanding resistance to damage caused by flexing and twisting. Resistance to abrasion is approximately 30% higher than Buna.

EPDM Good water and chemical resistance. Not for use with oils, greases and most solvents.

BUNA Good for petroleum-based fluids, water, oils, hydrocarbons and mild chemicals (e.g. mineral spirits).



Acetal

Santoprene

PTFE

Hytrel

Viton

Geolast

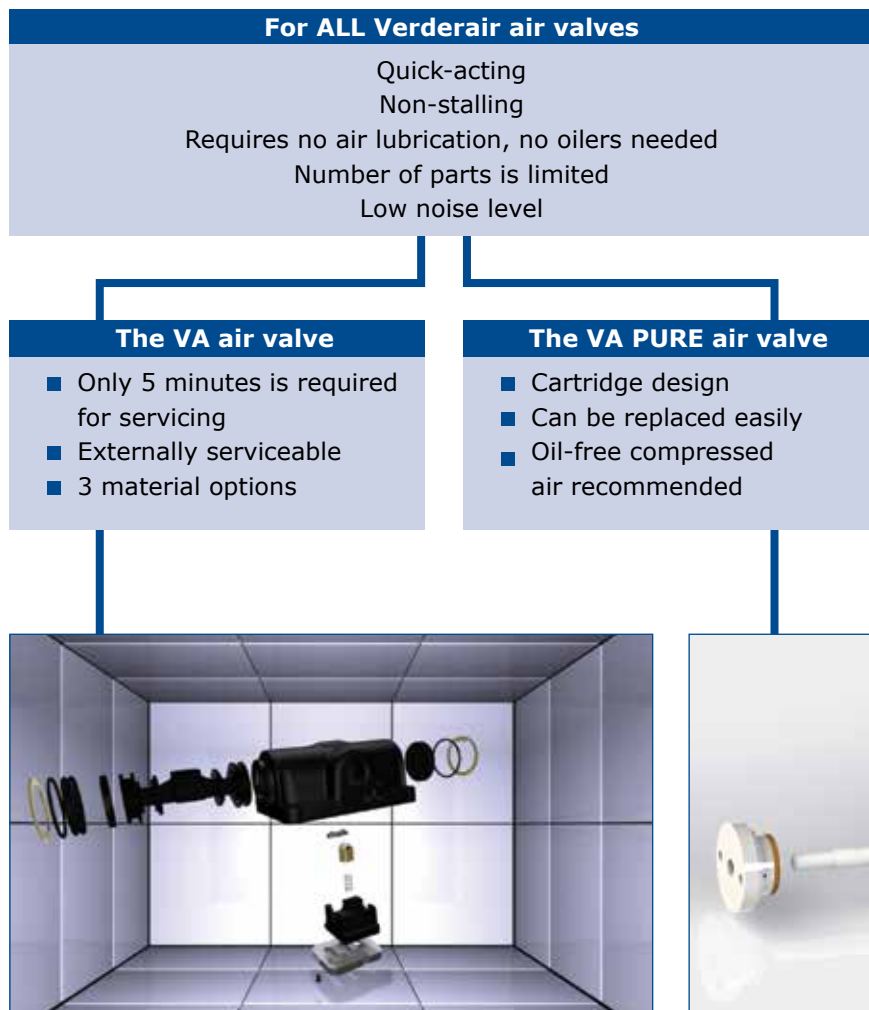
Neoprene

EPDM

BUNA

The heart of your pump: the air valve

Verderair has proven to be the most efficient double diaphragm pump, mainly because of the air valves, the increased pumping efficiency of the fluid stream and the reduced risk of freezing the exhaust. There are two different series of air valves.



The Verderair VA series is equipped with an air valve that has a modular cup and plate design. This air valve design is based upon the existing model used in Verderair pumps for many years, but is now re-engineered to be the most efficient one.

The Verderair PURE pump is especially designed for working in severe environments. The air valve of the PURE series is mounted inside, integrated in the pump body. Therefore the pump efficiency is not influenced by atmospheric circumstances.



Verderair VA metallic series

The Verderair VA metallic series of diaphragm pumps are used throughout industry for various media such as paints and solvents, waste water (or mixtures of water & chemicals), oil and lubricants. In applications such as oil transfer, oil skimming and chemical plating a Verderair metallic diaphragm pump is an excellent choice; as well as for filter press application, transfer drum, tank stripping and unloading fluids, and many more.

Applications

- ➔ Slaughterhouse waste
- ➔ Waste water
- ➔ Chemicals transfer
- ➔ Ceramic slurry
- ➔ Solvent based paints

MATERIALS

Aluminium

General purpose. Good for solvent based coatings and inks. Resistant to mild chemicals.

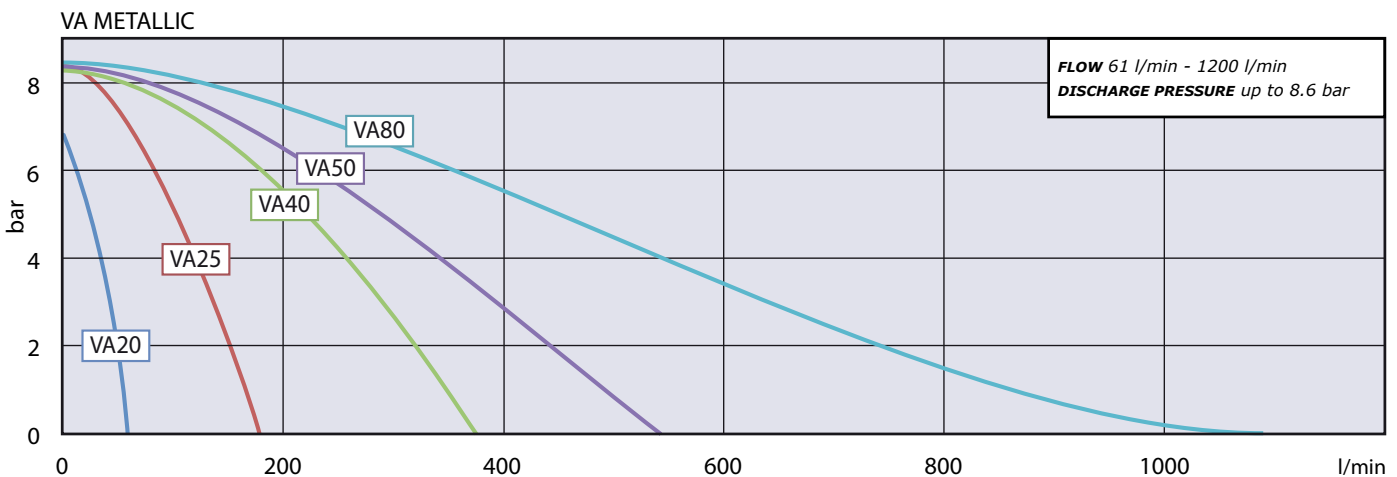
Cast Iron

Highly abrasion resistant. Often used in paper, waste water industry and mining.

Stainless Steel 316

Resistant to most acids, bases and solvents. Can handle halogenated hydrocarbons. Good resistance to abrasive media.

mm	VA-20	VA-25	VA-40	VA-50	VA-80
Connections	20	25	40	50	80





Verderair VA non-metallic series

Verderair non-metallic double diaphragm pumps are excellent pumps for use in a wide range of applications across many industries. Depending on your medium or chemicals, fluid and process specifications, the best solution is selected.

Verderair VA offers four non-metallic materials to choose from. Conductive Polypropylene and Acetal can be used in ATEX rated zones. PVDF is the best choice for even the most chemically aggressive media.

Applications

- Ink & paper
- Preparation of CIP solutions
- Surface finishing
- Car wash chemicals
- Water based paints

MATERIALS

Polypropylene

Wide chemical compatibility. General Purpose. Limited temperature resistant.

Conductive polypropylene

Similar to standard Polypropylene but electrically conductive (ATEX).

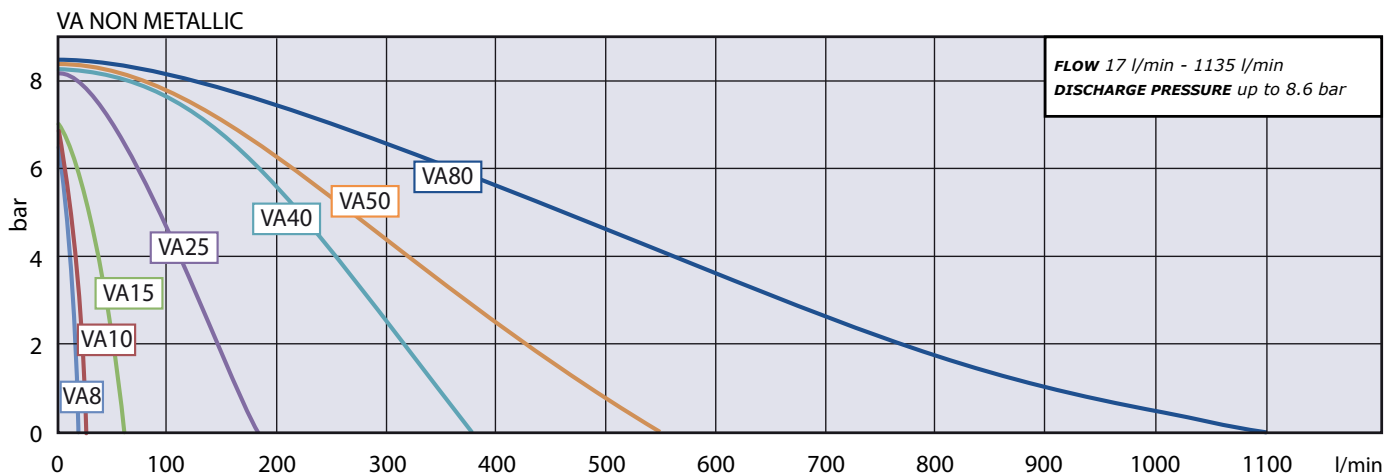
PVDF (Kynar)

PVDF is the best choice for even the most chemically aggressive media.

Acetal

Compatible with many solvent applications and can withstand extreme fatigue. Good resistance to abrasive media and is conductive for ATEX applications.

mm	VA-08	VA-10	VA-15	VA-25	VA-40	VA-50	VA-80
Connections	8	10	15	25	40	50	80





Verderair PURE series

The Verderair PURE double diaphragm pump is a robust series of double diaphragm pumps, produced from one-piece solid material. The Verderair PURE is designed for heavy-duty operation, also for harsh liquids and severe process conditions, such as operating in power plants and refineries.

The Verderair PURE has all the benefits of a Verderair VA double diaphragm pump such as increased productivity through a higher flow rate and reduced operational cost because of lower air consumption. On top of that the PURE series has an extended program of accessories. Thanks to the efficient operation there is less maintenance. Improved working environment is created because the pump makes less noise. The Verderair PURE is available in 4 wetted part materials; each pump being made from one solid piece of the purest and finest PTFE or PE.

Applications

- Chemical industry
- Pharmaceutical industry
- Solar power industry
- Electronics-plating (Galvanics)
- Refineries

MATERIALS

Polyethylene (PE)

Extremely abrasion resistant. Upto 7 times better than Polypropylene. Chemical resistance is comparable to Polypropylene.

Conductive polyethylene

Similar properties to polypropylene but conductive for ATEX applications.

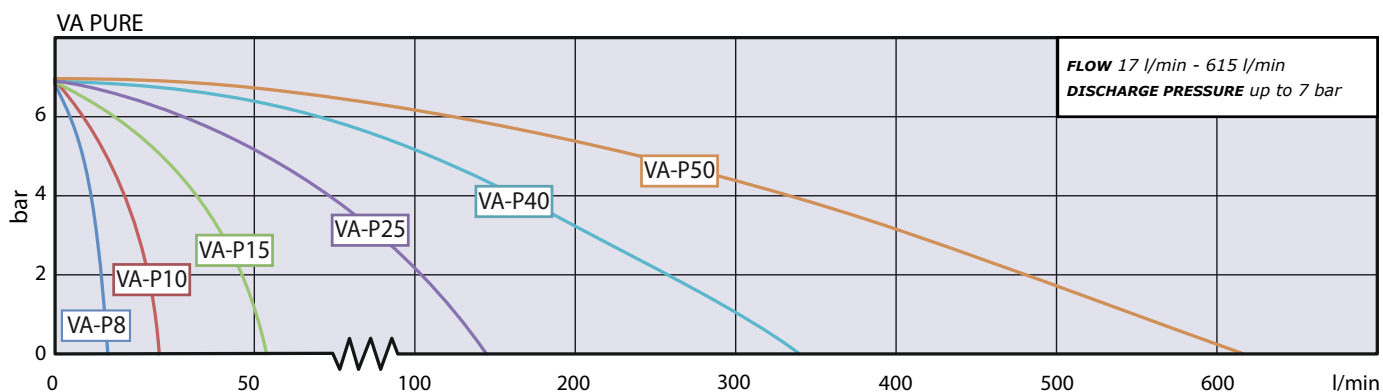
Teflon (PTFE)

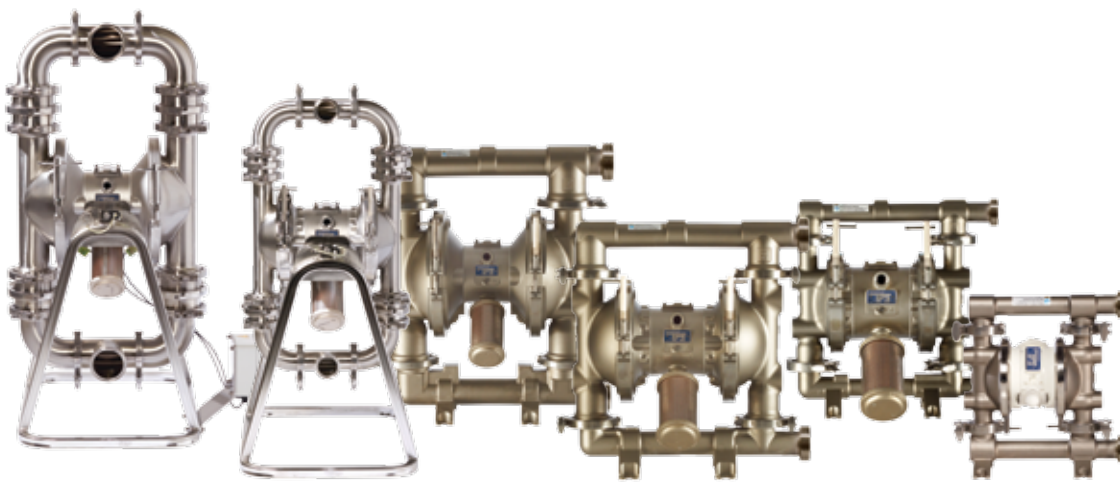
Widest chemical compatibility, extreme corrosion resistance, very low frictional coefficient, non-adhesive, high heat resistance.

Conductive teflon

Similar properties to PTFE, but electrically conductive for ATEX applications.

mm	VA-P08	VA-P10	VA-P15	VA-P25	VA-P40	VA-P50
Connections	8	10	15	25	40	50





Verderair HI-CLEAN series

The Verderair HI-CLEAN pumps are designed for operation in hygienic, cosmetic and food processing applications, such as fruit syrups and concentrates, sauces and cosmetic creams. They are available with DIN 11851 or Tri-Clamp connections and are easy to clean manually (Strip Cleaning).

The Verderair HI-CLEAN is consisting of the FD range, with surface finish $Ra < 3.2 \mu m$ for handling liquids in the beginning of the process, and of the 3A, SB and SF range with surface finish of $Ra < 0.8 \mu m$ for handling liquids in their final production stage. Further there is a 2.5 : 1 piston pump (SP range) for pumping viscous media from standard drums of 200 litre, or cube containers from 1000 litre, to the production process. The 3A, SB and SF are not only easy to strip clean but are also CIP and SIP cleanable.

Applications

- Cosmetic creams
- Shampoos
- Yoghurt with fruit chunks
- Tomato paste
- Spaghetti sauces

3A, SB & SF series

MATERIALS

Stainless Steel 316, 3,2 μm surface finish

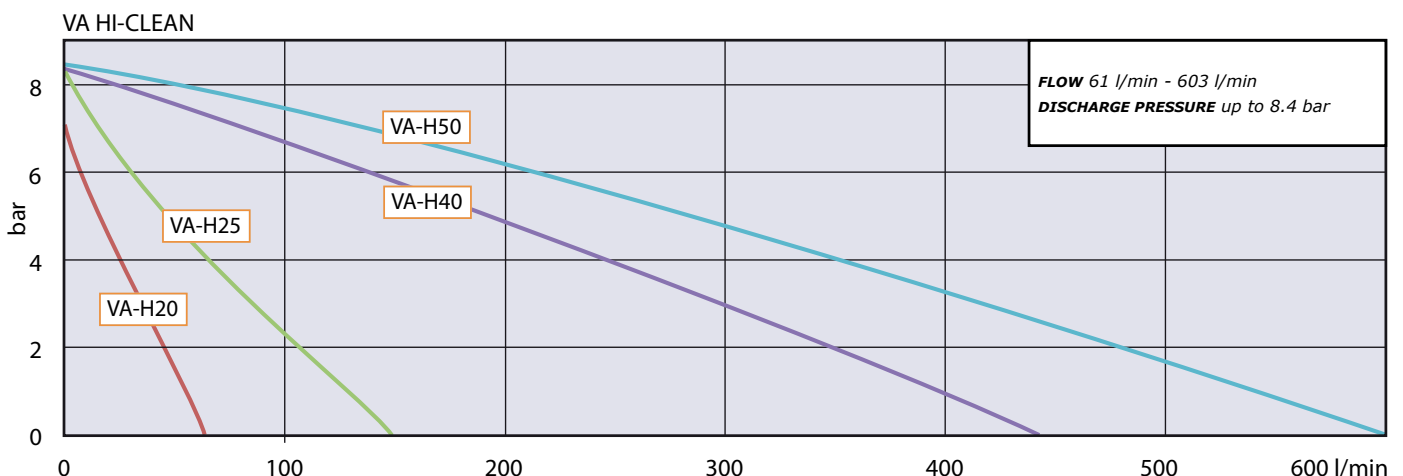
For use in food-grade applications (used in the FD series).

Stainless Steel 316, 0,8 μm surface finish

For use in high grade hygienic applications (used in SB, SF and 3A series).

mm	VA-H20	VA-H25	VA-H40	VA-H50
Connections (DIN11851 or Tri-clamp)	25	40	50	65*

* only for FD series.
For SB, SF and 3A series
40, 50 or 80 mm are
available



Verderair HI-CLEAN series

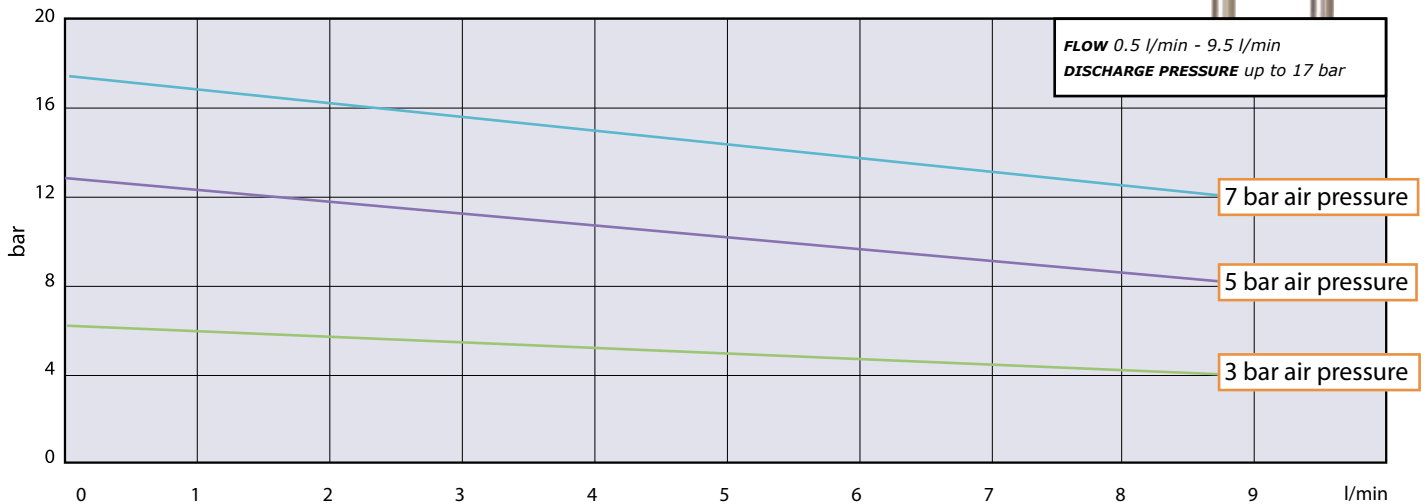
SP series

MATERIALS

Stainless Steel 316, 0,8 µm surface finish

For use in high grade hygienic applications

mm	VA-H25	* DN25 DIN 11851 adaptor available
Discharge connection Tri-clamp *	25	



Verderair pulsation dampeners



Due to the function principle, air operated double diaphragm pumps are generating a pulsating flow. By using a Verderair pulsation dampener in combination with the pump, the flow pulses will be reduced to the minimum.

The Verderair pulsation dampeners are active dampeners and achieve the best possible dampening effect to create an almost flat flow. The technology is based on the VA PURE technology.

MATERIALS

Polyethylene (PE)

Extremely abrasion resistant. Upto 7 times better than Polypropylene. Chemical resistance is compatible to Polypropylene.

Conductive Polyethylene

Similar properties to Polypropylene but conductive for ATEX applications.

Teflon (PTFE)

Widest chemical compatibility, extreme corrosion resistance, very low frictional coefficient, non adhesive, high heat resistance.

Conductive teflon

Similar properties to PTFE, but electrically conductive for ATEX applications.

mm	PD-P10*	PD-P15	PD-P25	PD-P40	PD-P50
Connections NPT male thread or combi flanged	10	15	25	40	50

* not available with flanged connection



Verderair Special diaphragm pumps

Besides our 4 standard series of double diaphragm pumps the Verderair range includes 3 special pump models for specific applications relevant in many industries and applications areas.

Verderair VA high pressure diaphragm pumps

Double diaphragm pumps have a maximum air pressure rating of 8.4 bar. Verderair offer a series of high pressure pumps (up to 16 bar liquid pressure) with the same benefits and features as the reliable VA series of pumps.



Flow max. 530 l/min
Pressure up to 16 bar

Verderair VA drum pumps

For the emptying of chemicals from small barrels, containers, canisters and drums (approx. 200 l), (acid or lye) a double diaphragm drum pump is a very good alternative for a conventional rod drum pump. Pumps are delivered with standard suction tube.



Flow max. 61 l/min
Pressure up to 7 bar

Verderair diaphragm pump with split manifold

For the pumping of two liquids with one pump or for mixing two liquids with a 50-50 ratio.

Flow max. 2 x 30 l/min
Pressure up to 7 bar

Verderair spare part kits

The Verderair pump structure design is engineered to create long working life. However, as with all industrial process equipment working, these parts in contact with the fluid will sooner or later need to be replaced. Verder can advise on the spare part kits to keep on stock for the number of pumps you have purchased.



Verderair offers spare part kits for wetted parts exposed to natural wear. Our fast delivery ensures your production process will be operational. To order spare parts immediately send an email to info@verderair.com





Verderair accessories

To assist you to optimize your production process as broadly as possible, Verder offers an extended line of accessories for double diaphragm pumps.

Stroke Sensor (VA and PURE)

To measure the number of strokes a pump is making, you can use a stroke sensor. An inductive proximity switch is mounted in the centre part of the pump. This switch generates a pulse with every stroke of the diaphragms. The switch can be connected to a controller. This controller can show you the number of strokes the pump has made or can stop the pump after a preset number of strokes.

example: sensor in PURE pump



Remote Operated pump (VA and PURE)

If you want to control the stroke frequency of your Verderair VA or Verderair PURE, you can use this special option on your pump together with a 5/2 electro-pneumatical valve.

example: remotely operated PURE pump



Manual draining (PURE only)

Because the valve balls or the cylinder valves are working as non return valves, liquid will be kept in the pump when the pump is stopped. To be able to evacuate the remaining liquid on top of the valves you can use the manual draining system on a Verderair PURE. Both side housings are equipped with a bypass system and a manual operated valve.

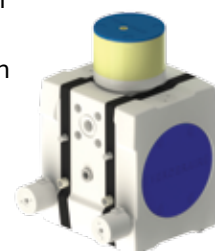
example: PURE pump with manual drain, barrier system and pulsation dampener



Pneumatical draining (PURE only)

Instead of using the manual draining system, pumps with option code DP are equipped with side housing bypass system and pneumatically operated valves. By using a 4/2 electro-pneumatical valve, the draining system can be activated by an electrical signal.

example: PURE pump with pneumatical drain, barrier system and pulsation dampener





Barrier system (PURE only)

Verderair PURE pumps with a barrier system are equipped with double liquid chambers and double diaphragms at each side. A neutral liquid is placed in the diaphragm chambers between the diaphragms. In each double chamber this neutral liquid is monitored by a conductive sensor and a capacitive sensor. When a diaphragm fails, one of the sensors will detect this and will generate a signal. The sensors can be connected to a controller.

example: PURE pump with barrier system



Leak detection (VA and PURE)

The diaphragms can be monitored by the assembly of a capacity sensor in the muffler of the pump. When a diaphragm fails, the liquid will enter the air side of the pump and will be blown into the muffler. The sensor will detect the presence of the liquid and generate a signal. The sensor can be connected to a controller.

example: PURE pump with leak detection



Important note

The standard leak detection of monitoring the diaphragms cannot prevent liquid being pushed out of the pump via the muffler. To prevent this, the barrier system needs to be used.

We always have a solution! for your application

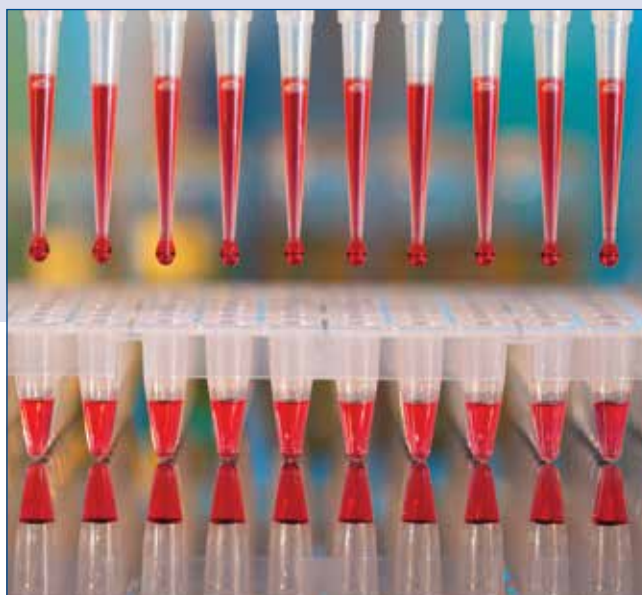
Verder has a broad pumping program and will always find a solution for your pumping problem. With our skilled engineers, our well trained technicians and our (after) sales support you will have the best pump for your process.

To mention only a few of our application areas we have taken 6 industries to highlight but there are applications in many industries.



Beverage industry

Yeast, diatomaceous earth, slurry, dregs, liquid hops, sugar, wine, fruit, corn syrup.



Pharmaceutical industry

Vegetable extracts, tablet pastes, alcohols, filtering aids, ultra filtration, blood plasma.



Electroplating industry (Galvanics)

Solvents, electroplating baths, carrier fluids for ultra-sonic washing, sulfuric nitric and acid washes, etching acids, acetone, polishing compound.



Paint and coatings industry

Resins, solvents, wood preservative stain, concrete paints, titanium dioxide slurry, dispersions, varnish cleaning baths.



Food industry

Brine, chocolate, vinegar, molasses, dog & cat food, vegetable oil, honey, animal blood, CIP liquid reparation.



Solar power industry

Silicon dioxide slurry, HF, filter press applications, crystalline silicon, solar cells and panels, polishing, anti-reflective coating, electrical contacts and encapsulation.



Verderair certifications

The Verderair air operated diaphragm pumps are certified. We are continuously active improving and extending our certifications.

VERDER

DECLARATION OF COMPLIANCE
Statement of compliance with European Union regulation (EC) no 1935/2004 on materials and articles intended to come into contact with food
Requirement per Article 16 of EC 1935/2004

Verder NV declares that the equipment listed below contains materials that have been demonstrated to meet the requirements of Regulation (EC) No 1935/2004 of 23 October 2004 and EC 2002/726 of 23 December 2002

Model VA-H90 and VA-H90-H CLEAN AODD Pumps

Part No 810.0832, 810.0833, 810.0834, 810.0835, 810.0836, 810.0839, 810.0842, 810.0843, 810.0848, 810.0849

Materials used in this equipment that are intended to contact food belong to the group of materials listed in Annex 1 (2), 1935/2004 (List of group of materials and articles which may be covered by specific measures)


Material

<input checked="" type="checkbox"/> Polymers (2)	<input checked="" type="checkbox"/> Plastics (2)
<input checked="" type="checkbox"/> Ceramics (3)	<input checked="" type="checkbox"/> Printing (4)
<input checked="" type="checkbox"/> Coatings (3)	<input checked="" type="checkbox"/> Composites (5)
<input checked="" type="checkbox"/> Metals and Alloys (8)	<input checked="" type="checkbox"/> Fibres and Coatings (15)

Materials used in this equipment that are intended to contact food were assessed using one or more of the regulations and/or been referenced in Annex 2 of this Declaration. Compliance is subject to material and equipment design, handling and usage recommended by the equipment instruction manual, and to applicable technical publications published by Verder.

The establishment of this declaration is based on the following:
 Compliance of the material supplier
 Review of global migration
 Review of materials in respect to investigations listed in Annex 2
 Other (listed in Annex 2)

Verder NV will make available to the competent authorities appropriate documentation to demonstrate this compliance.

APPROVED BY:  Date: **16 DEC 2013**

Part Number: **819.0658**

VERDER NV
Nieuwlandweg 17
8240 Kattwijck
Belgium

Page 1 of 2

ANNEX 1 TO DECLARATION OF COMPLIANCE
References and Regulations Used

(1) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials intended to come into contact with food and repealing Directives 85/322/EEC and 90/269/EEC

(2) No 2002/726 of 23 December 2002 on good manufacturing practices for materials and articles intended to come into contact with food

(3) No 1935/2004 on plastic materials and articles intended to come into contact with food

(4) No 1935/2004 on ceramic materials and articles intended to come into contact with food

(5) No 1935/2004 on composite materials and articles intended to come into contact with food

(6) No 1935/2004 on printing materials and articles intended to come into contact with food

(7) No 1935/2004 on fibres and coatings materials and articles intended to come into contact with food

(8) No 1935/2004 on metals and alloys materials and articles intended to come into contact with food

(9) No 1935/2004 on composites materials and articles intended to come into contact with food

(10) No 1935/2004 on printing materials and articles intended to come into contact with food

(11) No 1935/2004 on fibres and coatings materials and articles intended to come into contact with food

(12) No 1935/2004 on metals and alloys materials and articles intended to come into contact with food

(13) No 1935/2004 on composites materials and articles intended to come into contact with food

(14) No 1935/2004 on printing materials and articles intended to come into contact with food

(15) No 1935/2004 on fibres and coatings materials and articles intended to come into contact with food

Other specific conditions and/or limitations subject to the following limitations:
 (1) Migration: 10 mg/kg per year per substance
 (2) Migration: 10 mg/kg per year per substance
 (3) Migration: 10 mg/kg per year per substance
 (4) Migration: 10 mg/kg per year per substance
 (5) Migration: 10 mg/kg per year per substance
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 (12) Migration: 10 mg/kg per year per substance
 (13) Migration: 10 mg/kg per year per substance
 (14) Migration: 10 mg/kg per year per substance
 (15) Migration: 10 mg/kg per year per substance

ANNEX 2 TO DECLARATION OF COMPLIANCE
Analysis of Materials Subject to Limitations

These specific conditions and/or limitations subject to the following limitations:
 (1) Migration: 10 mg/kg per year per substance
 (2) Migration: 10 mg/kg per year per substance
 (3) Migration: 10 mg/kg per year per substance
 (4) Migration: 10 mg/kg per year per substance
 (5) Migration: 10 mg/kg per year per substance
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 (13) Migration: 10 mg/kg per year per substance
 (14) Migration: 10 mg/kg per year per substance
 (15) Migration: 10 mg/kg per year per substance

ANNEX 3 TO DECLARATION OF COMPLIANCE
Used to Establish this Declaration

Date: **16 DEC 2013**

Part Number: **819.0658**

Page 2 of 2

HYDROSTATIC TEST CERTIFICATE

DATE: JULY 15, 2011

VERDER
HYDROSTATIC TESTING

FRANK HEESMAN
Managing Director
Verder NV

Verder NV, Aartselaar, Belgium who are established as sole manufacturers of pumps & systems, do hereby certify pumps of the Verderair range VA2.5 to VA80 have been tested 1.5 times the maximum working pressure as indicated in the manual.

Page 1 of 2

CERTIFICATE OF CONFORMITY

DATE: JULY 15, 2011

VERDER
CERTIFICATE OF CONFORMITY

DESCRIPTION: VA6, VA40, VA15, VA20, VA25, VA40, VA50, VA80

Verder NV declares that the above products to be manufactured and tested according to applicable Verder engineering / manufacturing / quality management specifications. The products are tested and verified to meet the following requirements before shipment:

- Pressure requirements at start-up.
- Leakage requirements at high pressure and inspect for air or fluid leakage.
- High pressure inlet air consumption requirements

FRANK HEESMAN
Managing Director
Verder NV

Page 1 of 2

MATERIAL CERTIFICATE

Reference: VA-PxxEE EE TF-xx-xx-xx

ISSUE DATE: JANUARY 18, 2013

All fluid contact materials in the above mentioned AODD pumps series are FDA-Compliant and meet the United States Code of Federal Regulations Title 21 CFR §177.1520 "Safe polymers" and 21 CFR §178.2010 "Antioxidants and/or stabilizers for polymers" for diaphragms CFR § 177.2600 and 177.1550. This includes the below product groups:

- VA-P0EE EE TF-xx-xx-xx
- VA-P10EE EE TF-xx-xx-xx
- VA-P15EE EE TF-xx-xx-xx
- VA-P25EE EE TF-xx-xx-xx
- VA-P40EE EE TF-xx-xx-xx
- VA-P50EE EE TF-xx-xx-xx

FRANK HEESMAN
Managing Director
Verder NV

Page 1 of 2





Any questions? For more information, please visit our website www.verderair.com or call on tel.: +32 (0)3 877 1112.

VERDERAIR

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AT Wien **BE** Aartselaar **BG** Sofia **CH** Basel **CN** Shanghai **CZ** Praha
DE Haan **DK** Rødovre **FR** Eragny s/Oise **GB** Castleford **HU** Budapest
IN Pune **NL** Groningen/Vleuten **PL** Katowice **RO** Bucuresti/Sibiu
SK Bratislava **TH** Bangkok **US** Macon (GA) **ZA** Northriding

