

## VPAK

# ASEPTIC SAMPLING VALVE model VPAK

## Operating and Maintenance instruction manual

### LEGEND

- 1.0 General description
- 1.1 Technical data
- 1.2 Available configuration
- 1.3 Ordering information
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- 3.1 Safety information
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- 3.4 Welding Guidelines
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- 4.1 Diaphragm replacement for Manual actuator
- 4.2 Diaphragm replacement for Pneumatic actuator
- 5.0 VPAK-PTFE Diaphragm
- 5.1 VPAK-Silicone Diaphragm
- 6.0 CE declaration of conformity
- 6.1 ATEX declaration of conformity

### **Please read all of this information.**

If you are unsure about any aspect of this information please ask





## 1.0 VPAK Sampling Valve

Developed for taking samples in a sterile way; manufactured from AISI 316L stainless steel bar. Special configuration assures effective cleaning (CIP) and sterilization (with saturated steam) of product contact surfaces of valve and seating plug with the valve in closed position. Once installed, the sealing plug shuts off flush with the inlet port connection with a zero dead leg.

### Applications

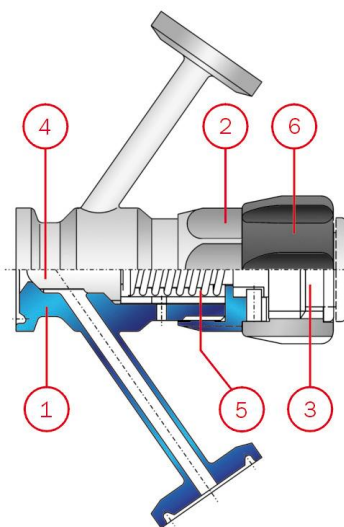
The VPAK sampling valve range has been designed for sterile sampling application in Chemical and Pharmaceutical Industries. It's compact design allows easy installation on small vessels or process lines where is necessary FDA compliance.

### 1.1 Technical data

|   |                          |
|---|--------------------------|
| Size                                    | 3/4"                     |
| Diaphragm                               | Silicone – TFM           |
| Connection                              | Clamp, butt weld BS/OD @ |
| Material                                | AISI 316L (EN 1.4404)    |
| Handle                                  | Termoplastic material    |
| Maximum working pressure                | 10 barg                  |
| Working temperature                     | da -10°C a 150°C         |
| Option                                  | pneumatic actuator       |
| @ other connection available on request |                          |

### Specials Execution

On request, we can realize drawing of specials execution: butt weld, thread, rubberhose...



### Materials

|                       |                                 |
|-----------------------|---------------------------------|
| 1 valve body          | AISI 316L stainless steel       |
| 2 header              | AISI 316L stainless steel       |
| 3 spindle             | AISI 316L stainless steel       |
| 4 Diaphragm           | Silopren LSR2670 / TFM1600 PTFE |
| 5 Spring              | AISI 304 stainless steel        |
| 6 autoclavable handle | Delrin                          |

### Standard Surface Finis

|                                      |                 |
|--------------------------------------|-----------------|
| Surfaces in contact with the product | 0,4 @ 0,6 µm Ra |
| External surface                     | mirror polish   |

### Marking

To guarantee full traceability, following information will permanently be marked on the valve body:

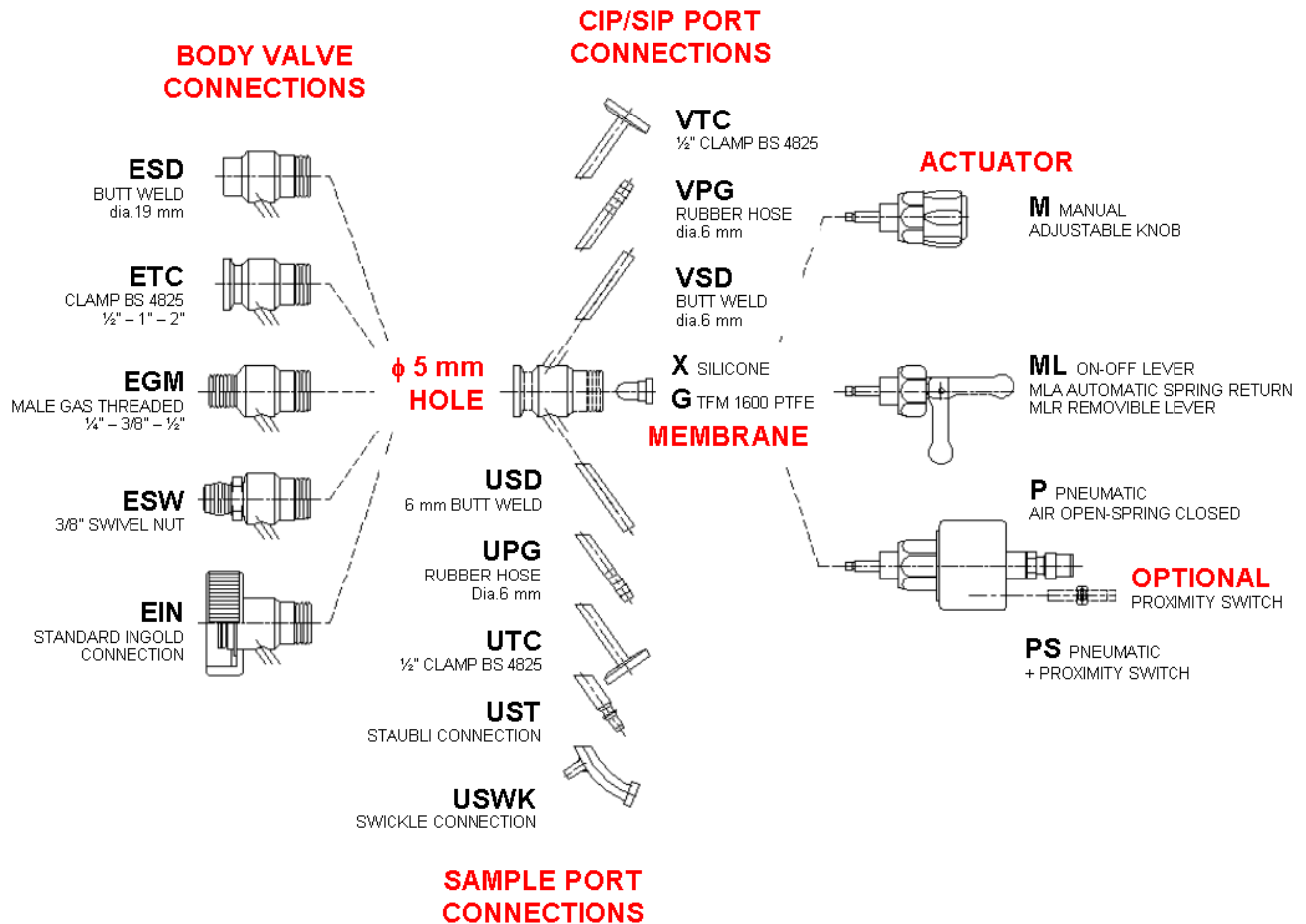
- logo AR (manufacturer identification);
  - size and code valve;
  - material grade;
  - max. working pressure (10 barg);
- our internal code es. 03101623 where 0310 denote year and month manufacture, and other 1623 denote a number of internal work order.

### Documentation and certificates

On request, Aerreinox can supply the following validation document:

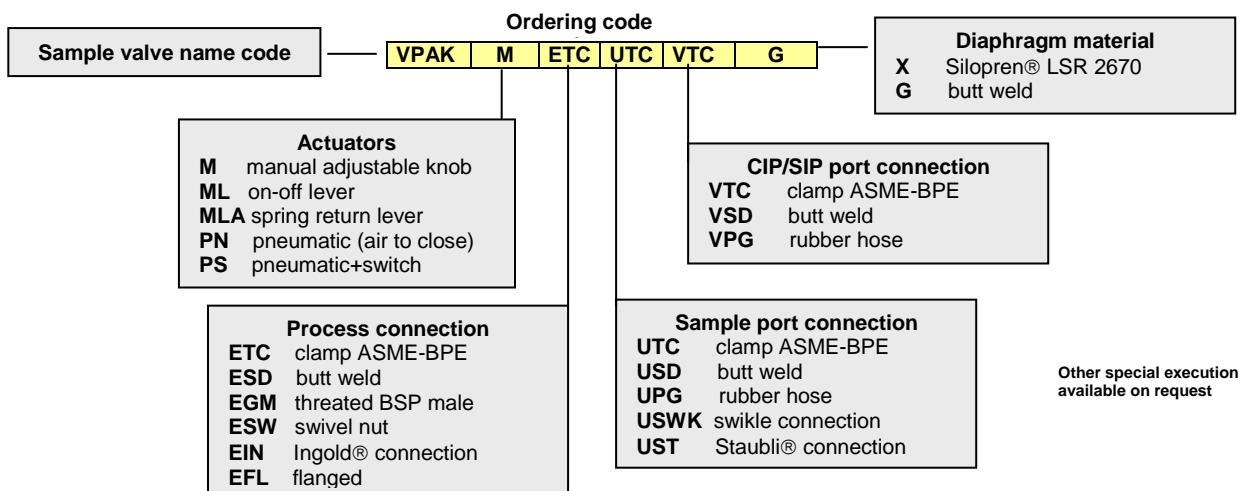
- EN 10204 3.1 material certificate
- Inside surfaces Ra Roughness certificates
- FDA certificate of conformity – CFR under title 21, paragraph 177.2600 for Silicone and paragraph 177.1550 for TFM 1600 PTFE
- PED 97/23/EC certificate of conformity
- ATEX 94/9/CE certificate **CE Ex II 2 GD T3**

## 1.2 Available Configuration



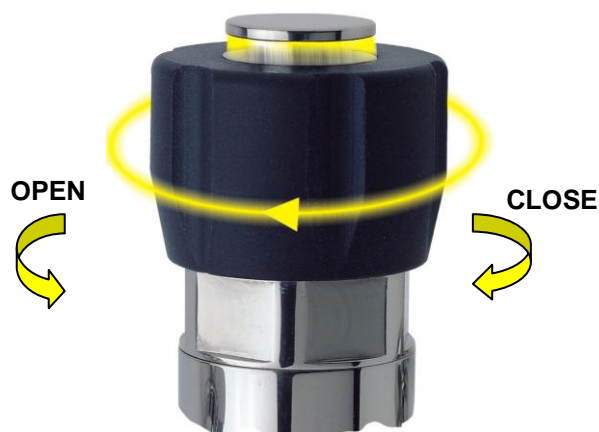
## 1.3 Ordering Information

To specify the part completely, start with the product description and select the additional options as shown below:



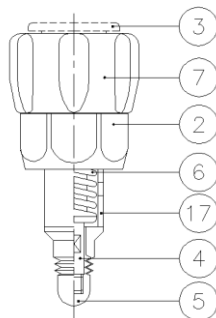


## 2.1 Manual Actuator



**ATTENTION:  
VALVE WITH SPRING  
SHUTTING !**

ONCE CLOSE VALVE (CAN BE FELT BY CLICK ON HANDWHEEL) DON'T FORCE ON HANDWHEEL AGAIN, OTHERWISE YOU DAMAGE INTERNAL PARTS.



### GENERAL INSTRUCTION

Manual actuator have a little wheel used to open and close the valve

- OPEN : turn anticlockwise direction
- CLOSE : turn clockwise direction

Manual actuator is equipped by stainless steel indicator.

### POSITION INDICATOR

The stainless steel position indicator shows the valve position: when the indicator is out of handle the valve is open.

### MATERIAL

The handwheel is realized by PTFE with 25% fibre-carbon

### AUTOCLAVABLE

cup/sip autoclavable (max. period recommended 1h 30 min at 121°C)

### LEGEND:

|    |                     |                |
|----|---------------------|----------------|
| 02 | HEADER              | AISI 316L      |
| 03 | SPINDLE (indicator) | AISI 316L      |
| 04 | PLUG                | AISI 316L      |
| 05 | DIAPHRAGM           | SILICONE-TFM   |
| 06 | SPRING              | AISI 301       |
| 07 | HANDWHEEL           | PTFE +25% CARB |
| 17 | TUBE                | AISI 316L      |

## 2.2 Pneumatic Actuator

Pneumatic actuator simple effect (NORMALLY COLSE) use strength spring to colse the valve and air pressure to open; than, if air break off the valve automatically close. Pneumatic actuator supplied lubricated, don't need futher greasing for a long time, but it's a good practice do periodically check to ensure it's working correctly because some parts are wear subject (displayed in legend).

### MATERIAL

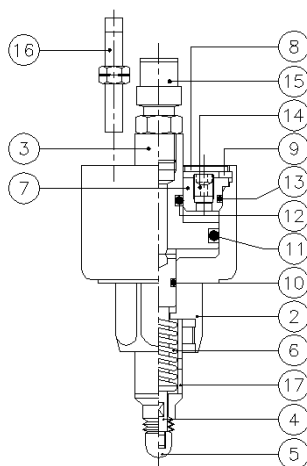
Actuator is completely realized in AISI 316L but you can't put it in a autoclave.

### TECHNICAL DATA

Dry compressed air, without oil, from 4 to 6 bar.  
Air connection Ø1/8" gas for "rilsan" tube Ø6 mm.

### OPTIONAL

Actuator can be supplied with proximity endstop PNP12/24V dc



### LEGEND:

|    |                |              |
|----|----------------|--------------|
| 02 | BODY ACTUATOR  | AISI 316L    |
| 03 | PLUNGER        | AISI 316L    |
| 04 | PLUG           | AISI 316L    |
| 05 | DIAPHRAGM      | SILICONE-TFM |
| 06 | SPRING         | AISI 301     |
| 07 | SEALING DISC   | AISI 316L    |
| 08 | SHUTTER WASHER | AISI 316L    |
| 09 | SEEGER         | AISI 302     |
| 10 | O-RING         | SILICONE     |
| 11 | O-RING         | SILICONE     |
| 12 | O-RING         | SILICONE     |
| 13 | O-RING         | SILICONE     |
| 14 | GRAIN          | A2           |
| 15 | AIR CONNECTION | OT58 Ni      |
| 16 | PROXIMITY      | OPTIONAL     |
| 17 | TUBE           | AISI 316L    |



## 3.0 Operating Condition

The VPAK valve isn't a safety valve and you can't use it like that.  
The VPAK valve should only be used within its design specifications, especially regards with temperature and pressure.  
Incorrect use of VPAK valve may result in personal injury or damage to valuable equipment.

**MAX OPERATING PRESSURE: 10 bar (marked on body valve)**  
**OPERATING TEMPERATURE: -10°C / + 150°C**

The valve can't intercept unstable fluids.

## 3.1 Safety Information

Before installing VPAK valve, read these instructions carefully, emerged from the risk analysis.  
VPAK valve properly work at the condition described in 2.0 section.  
Operator must know instruction in this guide, and during the installation, if it's necessary, wear protective equipment and take appropriate precautions to safeguard against injury caused by discharge of trapped fluids. Restrict the valve access (only if it's absolutely necessary) when line is pressurized. When operating  $T_{max} > 100^{\circ}\text{C}$ , put this symbol nearby the valve:

**CEI 3-27:1995 REGULATION**  
**"ATTENTION HOT SURFACE"**



**5041**  
to indicate that surface could be hot.

## 3.2 Installation

Every install operation must be done from suitable skilled personnel, in extreme cleanness surroundings.

Before installing a Sampling valve, clean and then drain the process lines, and if hot, allow the pipes and equipment to cool to room temperature. During sterilization with steam the valve will become hot, and care should thus be taken when handling the valve.  
Ensure that all liquids that will contact the valve are compatible with the Construction Materials  
The valve should always be located with its center line in a horizontal position, and with the two hose pieces in a vertical position. The leak hole close to sample port must be always located on the bottom directed on the floor. The valve will then be self-draining.

### Restriction

the diaphragms are available in two different qualities : Silicone and TFM 1600 PTFE  
the valve cannot be used for vacuum application with the silicone diaphragm that will be sucked into the seat

- 1) For clamp connection valve use pipe-line and fittings with operating features not less than the valve.
- 2) For butt weld connection valve, like described in par.3.4 and 3.5

## 3.3 Use and Maintenance



**! ATTENTION ! VALVE WITH SPRING SHUTTING !**  
**ONCE CLOSE VALVE DON'T FORCE ON HANDWHEEL AGAIN.**  
**DON'T USE PLIERS OR OTHERS DEVICES.**

VPAK valve works only in "open" or "close" position. To open or close valve use only handwheel (lever) or pneumatic (electric) actuator, supplied and applied from AerreInox. AerreInox don't accept liability for any changes on valve made from third parties.

## 3.4 Welding Guidelines

**Please read all of this information.**

If you are unsure about any aspect of this information please ask  
**Warning ! Before to weld, remember to disassemble the valve body and head.**

The valve body and head must be separated during welding. Silicone safety plugs and diaphragm must be removed from the valve body, as otherwise heat the welding process will damage them.  
Ensure that no other equipment will interfere with the outgoing piping. Also make sure that there is enough space to attach/remove for maintenance the connected piece.



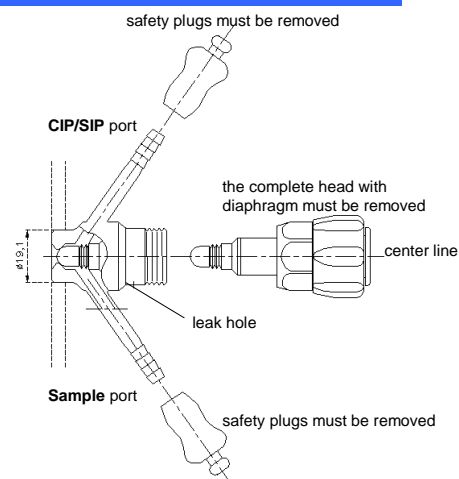
## 3.5 Welding

- First of all, it is necessary to drill a hole of 19,1 mm and then fit the valve body into this hole flush with the inside of the tank / pipe
- Welding should be carried out as a penetration welding, but we suggest to weld from both outside and inside. The valve body will not be damaged by penetration welding. However, the use of purge Argon gas is recommended in order to give the best result.
- When the welding is finished, leave the shell and sample valve body to self cool. The only allowable cooling media is air.
- After cooling, the welds are ground and polished to the finish required by the applicable specifications. Important : when grinding/polishing the internal weld, the valve seat must not be touched

In addition to the welding procedure described above, we would like to stress a few other points:

- 1) The welder must be familiar with this type of welding operation.
- 2) Much care should be taken when the dimensions of the filler material and the electrical current is selected.
- 3) It is most important that the applied heat is well balanced and as evenly spread along the weld seam as possible.
- 4) Welding can take place with the purge gas continually flowing in the system
- 5) The gas remains in the system until the item is hand warm, after which the set-up can be dismantled.

The final step in the welding operation should be to check the sample valve body for deformation. This check can be done by accurate measure

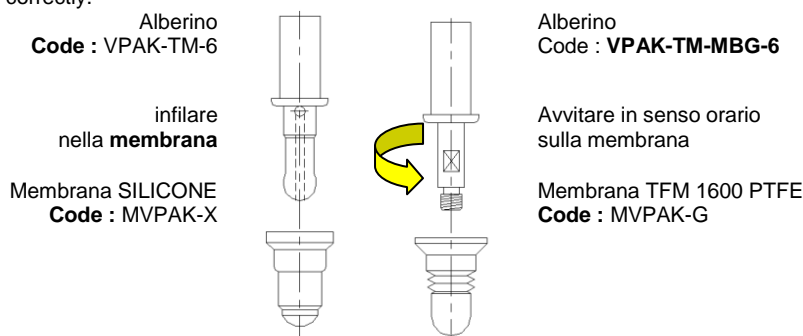


## 4.1 Diaphragm replacing on Manual Actuator

- 1) Turn handwheel in anticlockwise to open valve.
- 2) With hexagonal spanner (CH23) twist off manual actuator, turn on anticlockwise, and extract it from body.
- 3) Only with hands remove old diaphragm and replace it with a new (silicone diaphragm is plugged on stem, TFM 1600 PTFE diaphragm is thread on stem see .dwg).
- 4) Before reassembling, be sure that all sealing areas are perfectly clean to avoid damage at new diaphragm. Pay careful attention during maintenance.
- 5) Put the manual actuator in open position to avoid damage during re-assembling.
- 6) With hexagonal spanner (CH23) turn on clockwise manual actuator until tighten.
- 7) Restore service flow and check the valve.
- 8) The valve can work correctly.

## 4.2 Diaphragm replacing on Pneumatic Actuator

- 1) put on air inside pneumatic actuator to open the valve.
- 2) With hexagonal spanner (CH23) twist off pneumatic actuator, turn on anticlockwise, and extract it from body.
- 3) Only with hands remove old diaphragm and replace it with a new (silicone diaphragm is plugged on stem, TFM 1600 PTFE diaphragm is thread on stem see .dwg).
- 4) Before reassembling, be sure that all sealing areas are perfectly clean to avoid damage at new diaphragm. Pay careful attention during maintenance.
- 5) Put on air to set pneumatic actuator in open position to avoid damage during re-assembling.
- 6) With hexagonal spanner (CH23) turn on clockwise pneumatic actuator until tighten.
- 7) Restore service flow and check the valve.
- 8) The valve can work correctly.





## 5.0 VPAK - PTFE Diaphragm

### Technical specification

TFM 1600 PTFE diaphragm are obtained, by means of machining on CCN, from **TFM™ 1600 PTFE** bar, Poly-Tetra-Fluor-Ethylene from Dyneon™- 3M compound are manufactured conforming to the following norms :

- FDA Code of Federal Regulation
- CFR under title 21, paragraph 177.1550
- U.S.Pharmacopoeia Class VI

### Maintenance :

TFM 1600 PTFE diaphragm must be replaced once every year, but in the event of intensive use, sterilisation and cleaning it may be necessary to replace it more frequently.

**AR-Inox guaranties one year of lasting by normal use means** (silicone has to be changed approx every 4-5 months)

Temperature.....121°C (150°C for short period only)

Steam pressure.....1,5 up to 2 bar max.

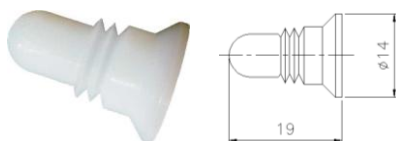
At higher pressures the membrane can be damaged

Remember ! use saturated steam without condensation only

Process pressure.....6 bar max.

Sample.....1-5 a day

Chemical resistance : Is not attacked by common chemicals



| TFM 1600 PTFE                                  |               |      |                 |
|--|---------------|------|-----------------|
| Ordering code                                  | MVPAK-G       |      |                 |
| Material                                       | TFM 1600 PTFE |      |                 |
| Colour   | White         |      |                 |
| Powder compound properties                     |               |      |                 |
| Property                                       | Value         | Unit | Test Method     |
| Bulk density                                   | 830           | g/l  | ASTM D 4894-98a |
| Average particle size                          | 450           | μ    | ASTM D 4894-98a |
| Mechanical properties, measured at 23°C (73°F) |               |      |                 |
| Tensile Strength                               | 4600          | psi  | ASTM D 4894-98a |
| Elongation at break                            | 450           | %    | ASTM D 4894-98a |
| Specific gravity                               | 2.16          | g/cc | ASTM D 4894-98a |
| Shrinkage                                      | 3.5           | %    | ASTM D 4894-98a |
| Tensile Modulus                                | 94,250        | psi  | ASTM D 638      |
| Deformation under Load                         |               | %    | ASTM D 621      |
| 2175 psi – 24 hrs                              | 8             |      |                 |
| 2175 psi – 100 hrs                             | 9             |      |                 |
| 2175 psi – permanent                           | 4             |      |                 |
| Tensile Strength                               | 4600          | psi  | ASTM D 4894-98a |
| Elongation at break                            | 450           | %    | ASTM D 4894-98a |
| Specific gravity                               | 2.16          | g/cc | ASTM D 4894-98a |
| Thermal properties                             |               |      |                 |
| Flammability                                   | V-0           |      | UL94            |
| Melt point (initial)                           | 342 ±10       | °C   | ASTM D 4894-98a |

## 5.1 VPAK - SILICONE Diaphragm

### Technical specification

Build by **Silopren® LSR 2670** a silicone elastomer composed from two components, it is supplied by GE Bayer Silicones and it is obtained with a modern system of injection molding.

After molding, they under go a heat treatment (post-cured) of 4 hours at 200°C inside a furnace with forced ventilation.

All diaphragms are manufactured in 100% silicone of medical grade conforming to the following norms:

- FDA Code of Federal Regulation
- CFR 177.2600
- U.S. Pharmacopoeia Class VI

### Maintenance :

**Average live of a silicone diaphragm is 4-5 months of lasting by normal use means**

Temperature max.....121°C

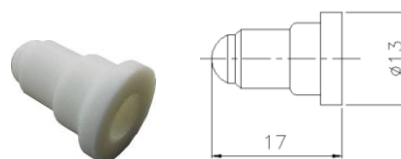
Steam pressure.....1,5 up to 2 bar max.

Process pressure.....6 bar max.

Sample.....1-5 a day

not recommended for use with alcohol, solvent, glicerina

| Silopren LSR 2670                          |                    |
|--|--------------------|
| Ordering code                              | MVPAK-X            |
| Material                                   | Silopren® LSR 2670 |
| Colour                                     | White              |
| Hardness                                   | 60 Shore           |
| Tensile strength                           | 10,5 MPa           |
| Wear resistance                            | Less suitable      |
| Tear resistance                            | Very good          |
| Resistance to Weather and Ozone            | Excellent          |
| Resistance to Hydrolysis (water and steam) | Good               |
| Resistance to Chemicals (acids / bases)    | Suitable           |
| Resistance to mineral oil and gas          | Less suitable      |
| Air and Gas density                        | Not suitable       |



### ! WARNING !

THE INSPECTION CHECK AND MAINTENANCE INTERVALS CAN DEPENDS FROM OPERATING CONDITIONS AS TEMPERATURE, PRESSURE AND FLUID TYPE HOWEVER, ALWAYS REMAIN TO THE USER, THE RESPONSABILITY TO FIX A SUITABLE PROCEDURE WITH THE INTERVALS AND FORMALITY IN ORDER TO REPLACE THE DIAPHRAGM BASED ON OWN EXPERIENCE.



## 6.0 EC Declaration of Conformity

### Pressure Equipment Directive 97/23/EC

## Sound Engineering Practice

*This Statement of SEP Compliance is expressly reserved for product that by definition of the Pressure Equipment Directive (Directive 97/23/EC) may not be CE Marked*

*Product supplied with this certificate has been manufactured to "Sound Engineering practice" (Article 3 – Paragraph 3)*

*the type designation(s)*  
**Aseptic Sample Valves**

*code* **VPA - VPAK**

*this two size are covered by the above statement*

*manufactured by*

**Aerre Inox s.r.l.**

26010 Fiesco (CR) Italy

*is found to comply with the relevant provisions of the Pressure Equipment Directive (Directive 97/23/EC) and the National Laws and Regulations adopting this directive.*

Conformity assessment procedure(s) used : **Module A**

#### Applications Restrictions

Equipment category : **Article 3 - Paragraph 3**

Design Pressure min/max : **0 @ + 10 bar (g)**

Design Temperature range : **-10° / +150°C**

Medium : **Fluids group 1**

*Further details of the product and conditions for the certifications are given in enclosure*

**AERRE INOX SRL**

Via Gerola 4

26010 FIESCO (CR)

Tel. 0374 370828 - Fax 0374 370833

C.F. e P. IVA: 00962930194





## 6.1 ATEX Declaration of Conformity

  
**BUREAU VERITAS**

**B.V. Italia**  
Divisione Industria



To: **AERRE INOX Srl**  
c.c. Bureau Veritas Milano – Ing. Raggi

Milano, 5 Febbraio 2004

Oggetto / Subject:

**Avviso di Ricezione vs file tecnico / Notification of Receipt of your technical file**  
**DIRETTIVA 94/9/EC (ATEX)**

RICEVUTA NUMERO / RECEIPT NUMBER : **ATEX/ITA/04/009**

Con la presente si dichiara che in data 5 Febbraio 2004 Bureau Veritas Italia ha ricevuto una copia del seguente file tecnico in forma sigillata:  
Herewith, Bureau Veritas Italia declare that on 5<sup>th</sup> February 2004 has received a copy of the following sealed technical files:

| Numero fascicolo / File number  |
|---|
| VPA-VPAK-001-04   |
| Descrizione Prodotto / Product description                              |
| Valvola di presa campione aseptica                                      |
| Nome e indirizzo del fabbricante / Name and address of the manufacturer |
| Aerre Innox Srl<br>Via delle Arti, 26<br>26010 Fiesco (CR)              |


**BUREAU VERITAS ITALIA s.r.l.**  
Viale Monza 261  
20126 Milano (Italia)

per nome e conto di  
on behalf of

**ATEX notified body n. 0081**  
**LCIE (Laboratoire Central des Industries Electriques)**  
33, av du Général Leclerc  
92266 Fontenay-aux-Roses cedex (France)

custodirà il file per il periodo imposto dalla direttiva.  
will store the technical file for the period imposed by the directive.

Unità Coordinamento ATEX



Il presente documento non può essere parzialmente riprodotto senza autorizzazione scritta di BVI.

Pagina 1 di 1  
PO/ATEX 001 "Archiviazione Fascicoli Tecnici"  
Appendice 4 rev.0 del 7/1/2004

Dtd 15/12/03  
chrono N2068 /04/PC/er

**Get the information you need and more at : [info@aerreinox.it](mailto:info@aerreinox.it)**

In the interests of development and improvement of the product, we reserve the right to change the specifications without prior notice.

**Aerre Innox s.r.l.**

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