Millipore®

User Guide

NovAseptic® Valves

MK_UG1250EN00 Rev 3 06/2025

Contents

Introduction

NovAseptic® Valves are specifically designed to be incorporated into processing systems, tanks and installations where **cleanability** and **sterilizability** are required.

This manual describes the **features**, **operation,** and **maintenance** for NovAseptic® valves.

This manual describes the NovAseptic® valves of standard types and customized types where applicable.

Operator and Equipment Safety

Anyone operating or near the NovAseptic® Valves must comply with the following:

- **Read** and **understand** this operator manual and **all components** operator manuals before using the valve. Failure to follow instructions could result in user injury or valve damage.
- **Read** and **understand** all **maintenance** instructions in this operator manual before performing maintenance on the valve. Failure to follow instructions could result in user injury or valve.
- Only **trained**, **authorized** staff should carry out installation and maintenance of the valve assembly.
- Any alteration of the valve from factory specification may cause unsafe conditions and void the product warranty.
- The valve should only be **used within** its specifications including temperature and pressure.
- If the valve shows signs of malfunction or leaks, stop the process immediately and replace or repair the valve.
- **Drain** all fluids from process piping systems, vessels, instruments, etc., when servicing, installing, or disassembling any valve or valve assembly.
- All system components must be completely cooled to ambient temperature (20°C/70°F) and all pressures must be opened to atmosphere before initiation of the maintenance.
- If the process fluid has a high temperature or is hazardous, ensure that the **tell-tale** hole is positioned so that users or equipment are not at risk if the diaphragm breaks. If it cannot be positioned in that way, a pipe should be connected from the tell-tale hole to a safe area (closed container, drain etc.).
- The pneumatic actuator is not a serviceable item. It is sealed and permanently lubricated.
- It is the customer's responsibility to check the safety of the NovAseptic® valve each time it is used in a new application.
- Ensure the following do not affect the safety of the valves:
  - External loads due to traffic, wind, seismic activity.
  - Reaction forces and moments that result from any supports, attachments, piping, etc.
  - Corrosion and erosion, fatigue.
  - Decomposition of unstable fluids.
- It is customer's responsibility to clean the valve prior to process start and after any valve maintenance.
- Additional welding and connections to the valve body are soley user's decision.

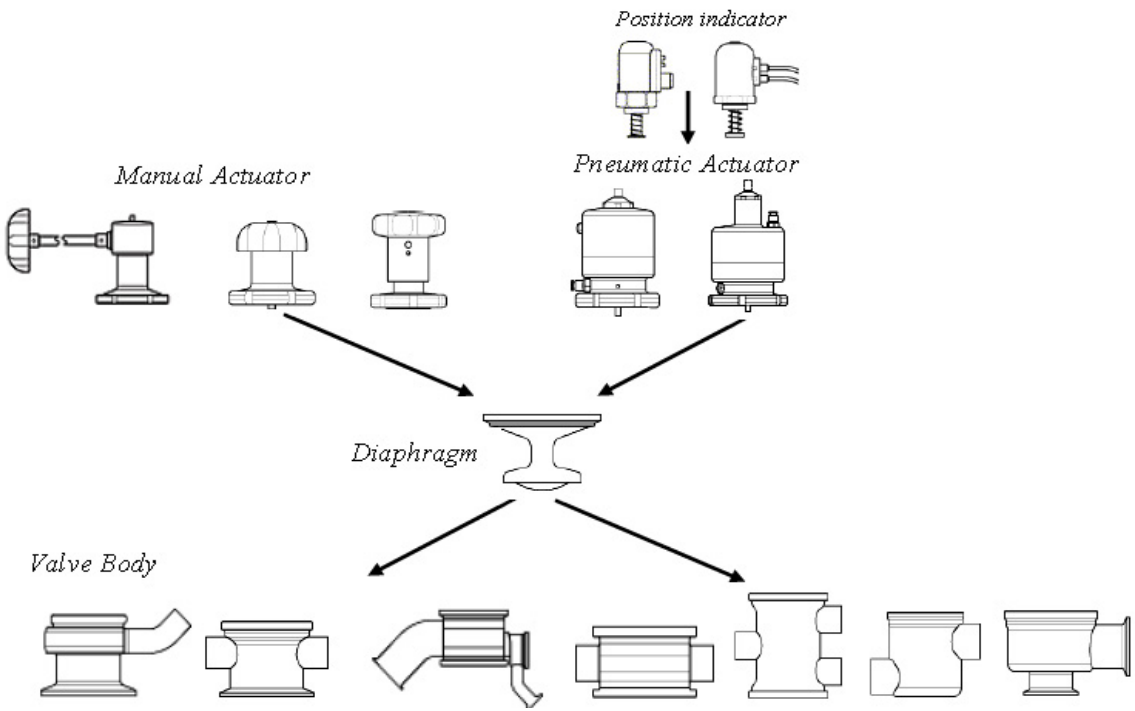
Product Description

The NovAseptic® Valve is specifically designed for aseptic applications.

Valves described in this manual are intended to be used in vessels and process systems in which pressure, high temperature and toxic substances might be used.

The NovAseptic® valves is composed of:

- An actuator: pneumatic or manual
- An optional position indicator only for pneumatic actuator
- A diaphragm (EPDM, PTFE, or Silicon)
- A valve body



Each of these bodies can occur in various shapes, functions, or materials etc.

The assembly system is designed so that each type of the valve bodies can be fitted with either of the actuator types of the same size. The valve actuators and bodies are assembled by a locking ring and using the tightening tool NA##/90 according to NovAseptic® Valve Actuator/Diaphragm Installation Guide (document number: UG7103EN).

Electropolish

Electropolished NovAseptic® valves are passivated after electropolishing. If the valve was electropolished, do not passivate the valve body as this may affect the smoothness of the surface.

Passivation

The manually polished NovAseptic® valves are not passivated upon delivery. If the process system where the valves are to be used is to be passivated, please check the diaphragm material for its chemical resistance against passivation agents.

It is recommended that one representative diaphragm be checked after passivation is completed. If the diaphragm shows signs of colour change, swelling, change in hardness, or change in elasticity etc. they should all be replaced immediately.

Generally, diaphragms that have been exposed to passivation fluids will have a shorter lifetime, and if used, should be frequently checked.

Operational Conditions

The valve body can only be used with NovAseptic® diaphragm, actuator, and positioning indicator (optional). The applied diaphragm and actuator have different design temperature and/or pressure limits. The weakest component in the assembled product determines the maximum operating temperature and pressure limits.

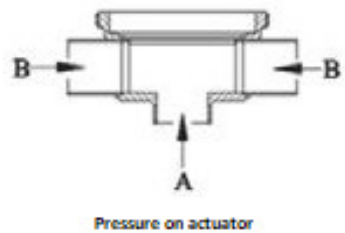
- Process medium: Liquid or gas (group 2 from Pressure Equipment Directive purpose)

Specifications

Valve Body

Minimum/Maximum Design		Surface (µm)	Standard Material	
Temperature (°C)	Pressure (bar)		ASTM	EN
-80 / +200	-1 / 10	Ra < 0.38	316L	1.4404
			316L	1.4435

Actuator Pressure Limits in Valve Body

Valve Body	Catalog Number	Pressure on Actuator (bar)		
		Maximum		Minimum
		A	B	
 Pressure on actuator	NA12 or NU050 type	6	6	-1
	NA18 or NU075 type	6	6	-1
	NA25 or NU100 type	6	6	-1
	NA38 or NU150 type	6	6	-1
	NA51 or NU200 type	6	6	-1
	NA76 or NU300 type	3	3	-1

Diaphragm Technical Data

Material	Catalog Number	Temperature (°C)	
		Minimum	Maximum
EPDM	NA##/22TR*	-30	135
	NA##/22	-30	140
	NA76/22	-30	128
PTFE	NA##/25	-40	150
Silicon	NA##/26	-50	130

##: size of the diaphragm. If no specified size 12; 18; 25; 38; 51 and 76 (except NA##/22TR and NA##/26 that are not available in size 76)

For chemical resistance and time limits, see appropriate guidelines and/or actual media characteristics.

*: only to be used with pneumatic actuator. The NA##/22TR diaphragm (E75F1 and E75F2) raw material is in compositional compliance with Title 21 Code of Federal Regulations, Section 177.2600 Rubber articles intended for repeated use. The material grade E75F2 is not approved for contact with infant formula and breast milk.

Manual Actuator

To open and close the manual actuator valve:

- Turn hand wheel *clockwise* to *close* the valve.
- Turn hand wheel *counterclockwise* to *open* the valve.

All of the manual actuators are fitted with an SST mechanical position indicator. The indicator is physically joined to the head of the valve diaphragm and moves simultaneously with the actuation shaft internal to the actuator.

The manual actuator has a limited movement from the open to the closed position.

The end position **Open** has a mechanical stop on the diaphragm shaft. This end stop is easily identified when reached.

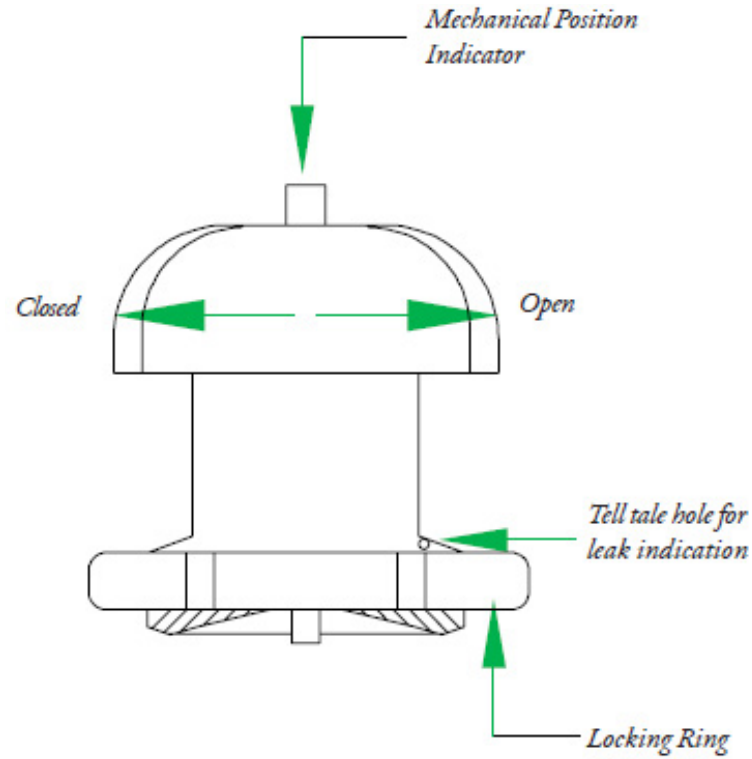
Do not attempt to over-open or stress the mechanism, as this might lead to internal damage making it impossible to close the valve.

The end position **Closed** has no mechanical stop. The end position is easily identified as it is throttled and reaches the end position. After reaching the end position the final tightening of the valve is done by an additional ¼ turn of the hand wheel.

Do not attempt to over-tighten or stress the mechanism. This might lead to internal damage making it impossible to re-open the valve.

The manual actuator can be used both as an on/off valve and for flow reduction.

Note NA##/22TR shall not be used with manual actuator.



Pneumatic Actuator

General Description

The intended use of the actuators is to actuate valves by translation movements of a diaphragm to open and close the valve.

There are three types of pneumatic actuators. Common to all of them is that they are driven by compressed air. A white mechanical position indicator (at the top of the actuator) indicates whether the valve is open or closed.

Technical Data

Maximum ambient temperature: 70°C

Minimum ambient temperature: 0°C

Not autoclavable

Indicator plastic material: POM C

Air Supply

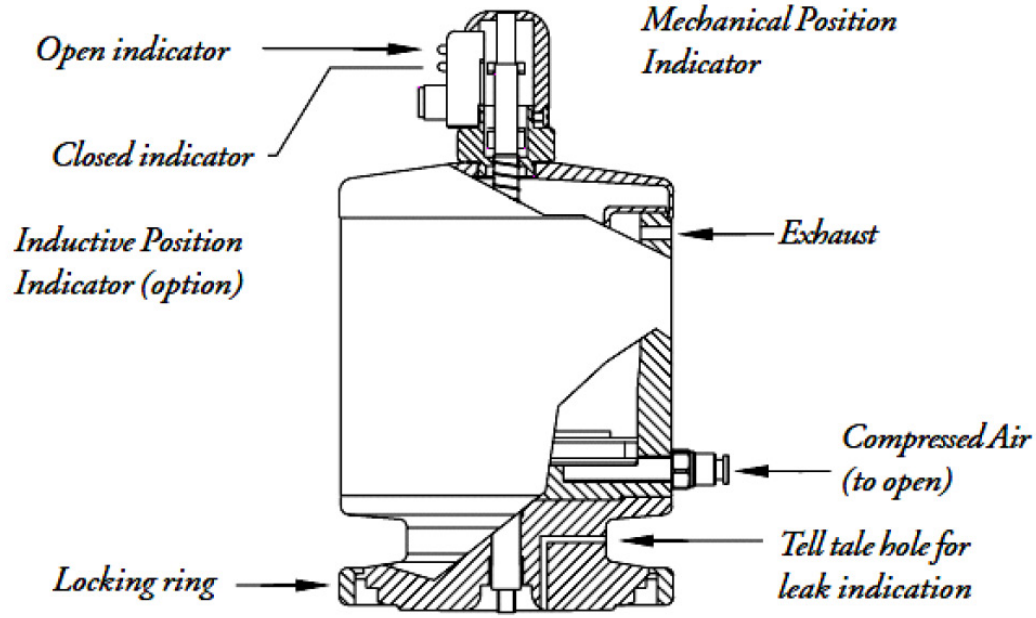
Dry air: The air shall be dried to a dew point that prevents water to precipitating at the environmental conditions in which the valves are used.

Particle-free: The air shall be filtrated through a 10-micron filter.

Oil-free: The actuators are factory lubricated and require no extra lubrication.

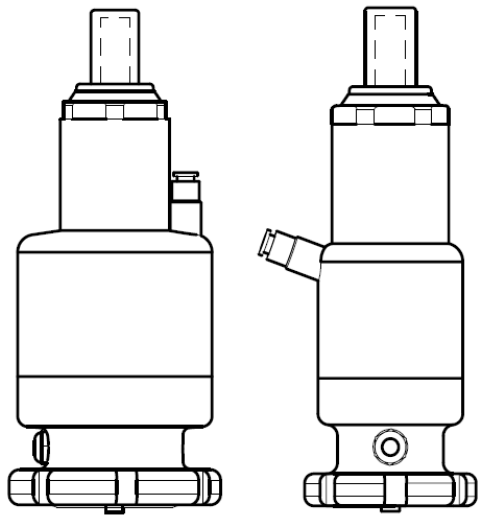
Note The pneumatic actuator is not a serviceable item. It is sealed and permanently lubricated.

The normally closed (NC) actuator uses spring force to close and air pressure to open. The NC actuator valve will always be closed by the spring when the pressure is turned off.



Actuator Type	Design Pressure (bar)		Air Feed: Working Pressure (bar)		Tube Diameter mm (O.D)
	Minimum	Maximum	Minimum	Maximum	
PA12/110	-1	6	5.5	7	4
PA12/111					
PA18/110	-1	6	5.5	7	4
PA18/111					
PA25/110	-1	6	5.5	7	6
PA25/111					
PA38/110	-1	6	5.5	7	6
PA38/111					
PA51/110	-1	6	5.5	7	6
PA51/111					
PA76/110	-1	3	7	8	6

The normally Open (NO) actuator uses spring force to open and air pressure to close. The NO actuator valve will always be opened by the spring when the pressure is turned off.



PA12/110 type

Actuator Type	Design Pressure (bar)		Air Feed: Working Pressure (bar)		Tube Diameter mm (O.D)
	Minimum	Maximum	Minimum	Maximum	
PA12/100	-1	6	5.5	7	4
PA18/100	-1	6	5.5	7	4
PA25/100	-1	6	5.5	7	6
PA38/100	-1	6	5.5	7	6
PA51/100	-1	6	5.5	7	6
PA76/100	-1	3	7	8	6

Optional Inductive Position Indicator Unit

Inductive position indicators can only be used on pneumatic actuators.

The intended use of the unit is to observe the open, and closed position. Two types of position indicators are available:

- The NovAseptic® Valve Inductive Position Indicator Unit (PA1251/SP with 1 detector and PA76/P1 with 2 detectors)
- The NovAseptic® Valve, Inductive Position Indicator Unit, NAMUR (PA##/P11-PTFE and PA##/P11-SEV)

For NovAseptic® Valve Inductive Position Indicator Unit PA1251/SP, refer to to the user guide (document number: 00113557PU) supplied with the unit and specification sheet (document number: SP1202EN00).

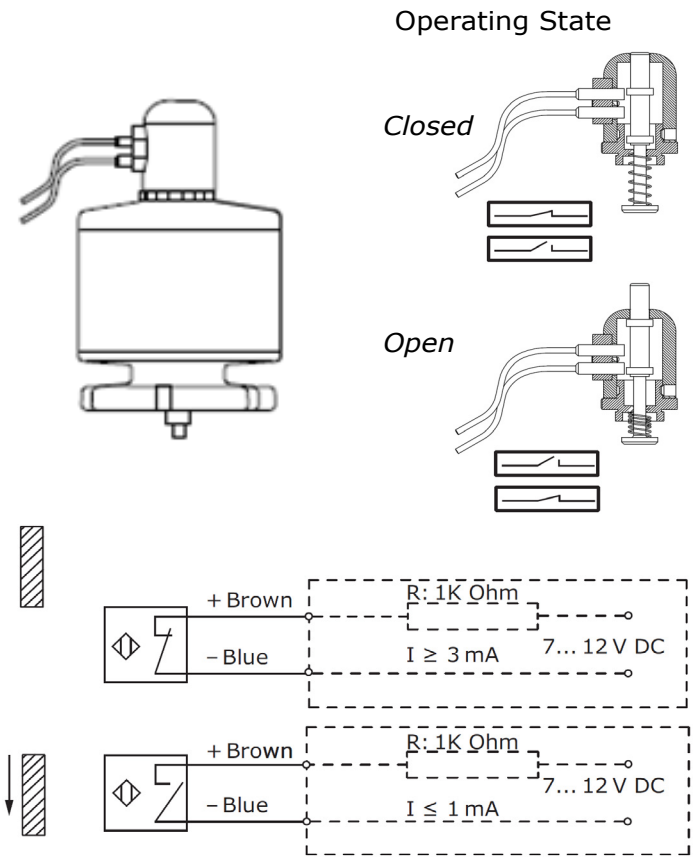
For NovAseptic® Valve Inductive Position Indicator Unit PA76/P1, refer to specification sheet (document number: SP1124EN00).

For NovAseptic® Valve, Inductive Position Indicator Unit, NAMUR (PA##/P11-PTFE and PA##/P11-SEV), refer to specification sheet (document number: SP1125EN00) or the information in the next column.

NovAseptic® Valve Inductive Position Indicator NAMUR Type

PA##/P11-PTFE for size 12, 18, 25, 51 and 76.

PA##/P11-SEV for size 12, 18, 25 and 51.



Technical Data

Measurement	Value
Ambient temperature (°C)	0-70
Supply voltage	DC7-12V
Type of exit	Namur 2 wire
Output function	N/C
Frequency of switching	1,000 Hz protection class IP67

Valve Assembly Instructions

General

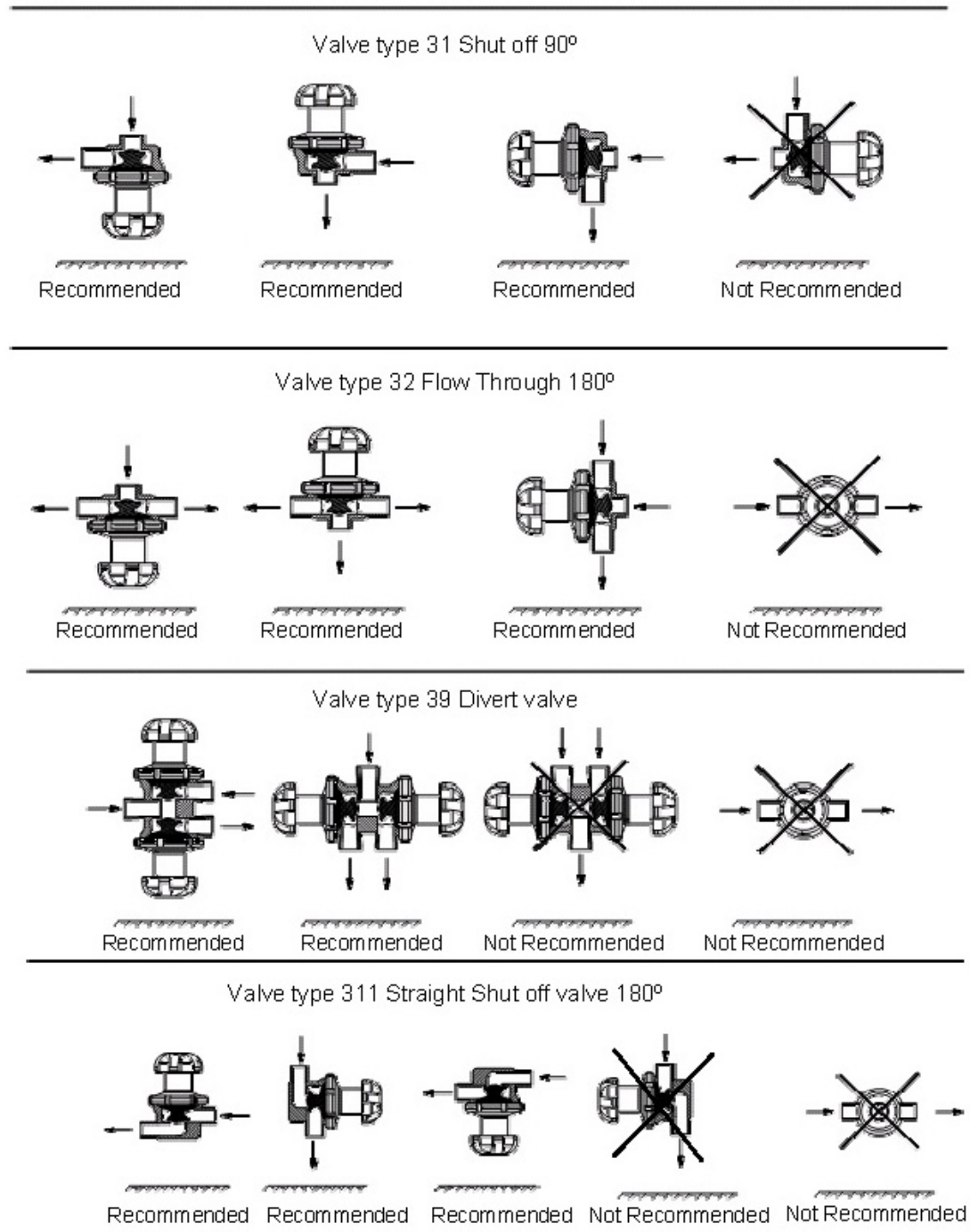
NovAseptic® valves are supplied unassembled. Refer to NovAseptic® Valve Actuator/Diaphragm Installation Guide (document number: UG7103EN) supplied to properly assemble the components.

For the best functional results, it is important that the valve is positioned in such way that CIP and SIP, etc. are possible.

If the process product/medium has an increased temperature or is hazardous, ensure that the tell tale hole is positioned so that people or equipment are not at risk if the diaphragm breaks. If it cannot be positioned in that way, we recommend that a pipe is connected to the tell tale hole, leading to a safe area (closed container, drain etc.).

Recommended orientation for full drain ability of NovAseptic® Diaphragm Valves.

If any doubt on valve assembly orientation, contact your local technical services.



Cleaning Information

Actuator and diaphragm can easily dismantle to facilitate the components cleaning.

Ensure that your CIP/SIP cleaning process does not compromise the diaphragm due to chemical incompatibility or excessive exposure to high temperatures.

Valve assembly can be cleaned-in-place. Customer is responsible to validate its own cleaning procedure. Refer to Specifications regarding temperature and pressure.

Valve assembly can be steamed-in-place. Customer is responsible to validate its own sterilization procedure. Refer to Specifications regarding temperature and pressure.

Chemical compatibility can be provided upon request.

Maintenance and Service

When servicing, installing or disassembling any valve or valve assembly:

- Drain all fluids from process piping systems, vessels, instruments, etc.
- Cool all system components to ambient temperature (20°C/70°F).
- Reduce system pressure to atmosphere.

Failure to perform any of points above could result in damage to process equipment and/or result in potential operator injury.

Manual Actuator

The manual actuator does not require routine maintenance or replacement of parts.

Pneumatic Actuator

These are cylinder actuators where the design endures trouble-free operation.

To ensure trouble-free operation, inspect the pneumatic actuator for air leakage or physical damage. An inspection **after every 12 months** is recommended. If leakage or any other visible damage is found, replace the actuator with a new one.

Contact Technical Service for more information.

Diaphragm

The purpose of the inspection is to ensure there are no visible signs of wear, cracks, or discoloration on or in the diaphragm. The diaphragm must be replaced immediately if there are any signs of leakage.

It is the customer’s responsibility to implement a diaphragm replacement schedule, based on their process/product knowledge and previous experience of replacing diaphragms.

Valve Welding Guide

Refer to the NovAseptic® Valves Welding Guidelines (document number: 00114116PU).

Technical Assistance and Warranty

Technical Assistance

For more information, contact the office nearest you or visit the Technical Service page at www.emdmillipore.com/techservice. Worldwide contact information is available at www.emdmillipore.com/offices.

Product Warranty

The applicable warranty for the products listed in this publication may be found at www.emdmillipore.com/terms (within the "Terms and Conditions of Sale" applicable to your purchase transaction).

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