General Guidelines

- Customer needs to establish internal SOP’s
- Periodically inspect conditions of external valve parts
- Replace all parts showing excessive wear or corrosion
- If body, around diaphragm area leaks, immediately tighten bolts holding bonnet or actuator, per instructions.
- If leakage continues, immediately remove pressure from valve body and repair or replace appropriate components.
- If leakage appears through bonnet (through weep hole), diaphragm is ruptured!!

The GEMÜ diaphragm valves can be operated and installed in any direction.

**Valves with manual actuators**
In order to operate valves with manual actuators, no air supply lines are needed. The valve can be opened by rotating the hand wheel counterclockwise and closed by rotating the hand wheel clockwise.

**Valves with pneumatic actuators**
In order to operate valves with pneumatic actuators, air supply lines need to be connected to the air inlet of the actuators. The location of the air inlet port is dependent upon the control function

Spring close / air open:
Connect to bottom port (1)

Spring open / close by air:
Connect to top port (2)

Air to air: Both ports (1 & 2)
Maintenance

Replacement of the Process Diaphragm

Plant operators should ensure that installation, operation, and maintenance work is only carried out by suitable qualified staff having carefully studied the technical contents of the mounting instructions for the diaphragms. If the mounting instructions for the specific diaphragm design (concave or convex) are not adhered to, this may cause damage to the diaphragm or leakage. GEMU points out that if the mounting instructions for the diaphragms are not adhered to and damage/failure is caused as a result of this, the manufacturer will not accept any liability.

Dismantling
Before dismantling the valve the piping system or cleaning system must pressure relieved and drained.
1. Move the valve to the open position
2. Remove the body bolts and move the valve to the closed position
3. Unscrew the diaphragm (anti-clockwise) or pull while turning for the push fit type diaphragms

Inspection
After removing the diaphragm make sure that all metal parts are checked for potential damage and exchanged, if necessary. Before screwing in the new diaphragm all metal parts (compressor, distance piece, base and spindle) must be clean (free from contamination or remains of the product).

Changing the diaphragm (Concave)
There are two different ways of installing diaphragms depending on the valve design.
1. Threaded types (see drawing 1)
   Screw the concave diaphragm clockwise tightly into the adaptor manually so that the diaphragm boss fits closely in the recess of the compressor. When resistance is felt turn back the diaphragm anticlockwise until the bolt holes are incorrect alignment with the bolt holes of the actuator.
2. Push-fit types (see drawing 2)
   Place the fastening spigot of the diaphragm in an inclined position at the hole of the compressor and push it into the hole of the compressor.

Changing the diaphragm (Convex)
Screw the concave diaphragm clockwise tightly into the adaptor manually so that the diaphragm boss fits closely in the recess of the compressor. (Please take care that the diaphragm does not foul the lip of the stainless distance piece) When resistance is felt turn back the diaphragm anticlockwise until the bolt holes are incorrect alignment with the bolt holes of the actuator. If the diaphragm is not screwed into the adaptor far enough (see drawing 2), the compressor will not transmit the closing force to the diaphragm but onto the diaphragm stud causing excess forces on the diaphragm sealing area. This is called point loading and will result in damage or failure.
Maintenance

Replacement of the Process Diaphragm

Installing the diaphragm

When assembling a valve with a pneumatic actuator, please proceed as follows:

1. Move the actuator to the open position
2. Position the actuator with the diaphragm on the valve (diaphragm weir and valve body weir must be aligned) tighten the bolts by hand
3. Move the pneumatic actuator to the closed position (not applicable for manual valves)
4. Fully tighten the bolts diagonally
5. As diaphragms may set in the course of time, the nuts and bolts on the body should be checked for tightness and re-tightened if necessary before commissioning the valve (and certainly after the first sterilization process cycle in aseptic installations) As rubber diaphragms are compressed no finite torque can be given for the stainless steel bolts. The diaphragm should be evenly compressed around its perimeter (optical control) and the correct method for tightening of the bolts should be followed.

Assembling Accessories

Removal of the actuator cap allows access to the required fastening threads inside the actuator housing. The first assembly point is between the indicating stem and the actuator stem. At this point the spindle from the accessory is fastened to the spindle from the actuator. The type of fastener is dependent upon the actuator type and or the accessory type. The second assembly point is between the stroke limiter and the actuator housing.