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1) Manufacturer's Declaration

We hereby declare that arc- and pigging valves are 'partly completed machines' according of Article 2g of the EC Machinery Directive 2006/42.

2) General Safety Guidelines

- Working on the valve is principally allowed only in depressurized and cooled condition
- Observe the following when demounting the valve from the piping system:
 - Potential risk of injury from escaping liquid or gas
 - Remove the control line prior to any assembly activity on pneumatic valves
 - Do not put your hand/fingers into the valve casing; hazard of crush or severance of limbs



3) Technical Data

Nominal sizes:

- Arc valves: DIN DN25 – DN150 / SMS DN25 – DN102 / inch 1"–6"
- Pigging valves: DIN DN40 - DN100 / SMS DN38 - DN102 / inch 1.5" - 4"

Versions:

- Arc valves: 2- / 3- / 4-way (upon request):
- Pigging valves: 3-way (3 x 120°)
- Manual
- Pneumatic or electric actuation with interface per Namur NE14 and DIN EN ISO5211 (F05 / F07)

Materials:

- Inox parts in contact with product: AISI316L (1.4404 / 1.4435)
- Other inox parts: AISI304 (1.4301)
- O-ring seals:

| | Temperature | Short-term temp. |
|-------------------------|------------------------------------|------------------|
| EPDM (Standard) | -40°C to +110°C -40°F to +230°F | +140°C +284°F |
| FPM (Viton®) (optional) | -20°C to +160°C -4°F to +320°F | +180°C +356°F |
| FEP (optional) | -60°C to +200°C -76°F to +392°F | +230°C +446°F |

Shutter:

| | Temperature | Pressure max (see Figure 8). | |
|-------------------------------|------------------------------------|---------------------------------|--------------------|
| | | Prod. flow direction | Against shutter |
| Dyneon™ TFM1600 (Standard) | -60°C to +110°C -76°F to +230°F | 10 bar 145 psi | 3 bar 43.5 psi |
| PTFE GL25 (optional) | -60°C to +130°C -76°F to +266°F | 15 bar 217,5 psi | 3 bar 43.5 psi |
| Techtron (optional) | -60°C to +100°C -76°F to +212°F | 20 bar 290 psi | 3 bar 43.5 psi |
| Tecapeek (optional) | -60°C to +200°C -76°F to +392°F | 20 bar 290 psi | 3 bar 43.5 psi |

Bearing bush:

| | Temperature | Short-term temp. |
|-------------------------------|------------------------------------|------------------|
| POM (Standard) | -50°C to +110°C -58°F to +230°F | +140°C +284°F |
| Dyneon™ TFM1600 (optional) | -60°C to +200°C -76°F to +392°F | +230°C +446°F |

Surfaces:

In contact with product: $Ra \leq 0,8\mu m$ ($Ra \leq 32\mu in$)

Valve connections:

Welded ends: DIN, SMS, inch
Male ends: DIN11851, SMS1145
Clamp connection: Tri-Clamp

Functional Description

A radially rotatable shutter permits various positions of arc- and pigging valves. Integrated in a piping system, the 2-way arc valve acts as a stop valve and the 3-way arc valve as a manifold valve.

The outlets of a pigging valve are positioned in a 120° angle, which allows the pig to pass the valves in all directions.

Optical position indication of the shutter:

- With a manual 2-way arc valve, the parallel position of the handle to the valve ports indicates that the valve is open for product flow; the marking (S) on the handle base indicates the shutter position (see Figure 1)
- With a manual 3-way arc / pigging valve, the handle direction indicates the shutter position (see Figure 3 and Figure 5)
- With a pneumatic arc / pigging valve, an optical position indication in the form of a red arrow on the axle between arc / pigging valve and actuator, indicates the current shutter position (see Figures 2 / 4 and 6)

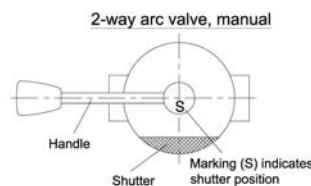


Fig. 1



Fig. 2

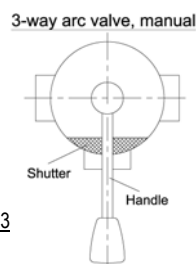


Fig. 3

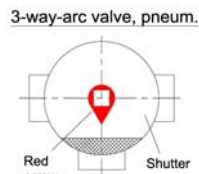


Fig. 4

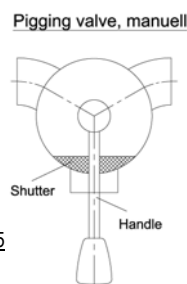


Fig. 5

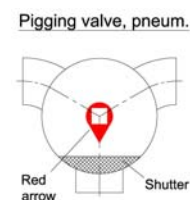


Fig. 6



4) Parts and Spare Parts List

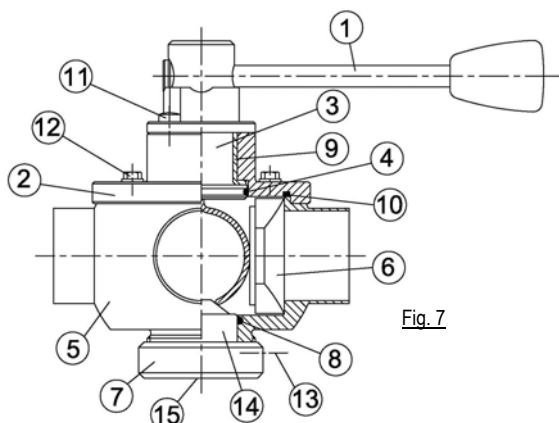


Fig. 7

Parts and Spare Parts List (spares in bold and italic type):

| Item | Designation | Qty. |
|------|------------------------------------|------|
| 1 | Handle or pneumatic actuator | 1 |
| 2 | Bearing cap | 1 |
| 3 | Pivoted axle with arc | 1 |
| 4 | <i>O-ring to the pivoted axle</i> | 1 |
| 5 | Valve casing | 1 |
| 6 | <i>Shutter</i> | 1 |
| 7 | Pinching nut | 1 |
| 8 | <i>O-ring to the cone</i> | 1 |
| 9 | <i>Bearing bush</i> | 1 |
| 10 | <i>O-ring to the cap</i> | 1 |
| 11 | Fixing screw for handle (actuator) | 2 |
| 12 | Fixing screws for bearing cap | 4 |
| 13 | Threaded pin | 1 |
| 14 | Cone | 1 |
| 15 | Snap ring | 1 |

5) Installation Instructions

- The arc valve is suitable for any installation position
- For self drainage the valve outlet has to point downward
- In order to avoid damage, the arc valve has to be dismantled before being welded in place in a piping system
- Select the shutter position in the arc valve so that the product flow direction always presses the shutter against the valve outlet (see Figure 8)

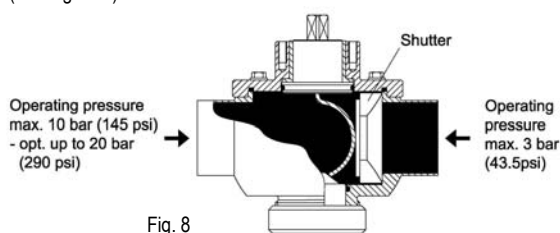


Fig. 8

6) Demounting

- Never demount a pressurized arc valve.
- Loosen the fixing screws (11) on the handle to remove the handle (1).
- Loosen the lateral threaded pin (13) on the pinching nut (7) which is connected to the cone (14) by a snap ring (15).
- Use a face pin spanner wrench to loosen the pinching nut (7).
- Loosen the fixing screws (12) to remove the bearing cap (2) incl. pivoted axle (3) and bearing bush (9).
- Remove the shutter (6) from the valve casing (5).
- Pull out the pivoted axle (3) from the bearing cap (2).
- Take out all O-rings.



7) Maintenance



- Check functional surfaces in the valve casing (5) for their condition and clean them thoroughly.
- Replace all O-rings & Shutter: pivoted axle O-ring (4), cone O-ring (8), bearing cap O-ring (10) and Shutter (6).
- Prior to assembly, lubricate O-rings with food-safe grease "Klüber Paraliq GTE 703".
- Check proper working order of the bearing bush (9) and replace as necessary.
- In the factory the pinching nut (7) has been tightly mounted with the cone. Please do not demount !!

Lubricants

- For arc valve O-ring seals in contact with product (EPDM / FPM / FEP):
 - Klüber Paraliq GTE 703 NFS H1
- For inox screws DIN912 and DIN933:
 - Klüber lubricating paste UH1 84-201

Recommendation for cleaning (CIP)

Optimal cleaning results will be accomplished with switching of the arc valve while flushing (CIP).

8) Assembly

- Check all components for cleanliness and proper condition prior to arc valve assembly.
- Insert bearing bush (9) into bearing cap (2).
- Insert O-rings (4), (8) and (10).
- Assemble pivoted axle with arc (3) and bearing cap (2). Pay attention to the marking (0) on the square pin of the pivoted axle (3) → indicates the shutter position (6) (see Figure 9).
- Insert shutter (6) into valve casing (5).
- Fit the pivoted axle with the arc (3) together with bearing cap (2) to the valve casing (5) as follows:
 - The pivoted axle arc (3) is designed so that it exerts a defined pressure on the shutter (6) during assembly. On account of the preload characteristics, the bearing cap (2) projects approx. 4-5mm off the valve casing (5) on the opposite side of the shutter (see Figure 9).
 - In order to prevent damage to the shutter (6) it must not be positioned against a valve outlet when installing it in the valve casing (5), but must point to the rear wall.
 - Fasten the handle (1) in the desired position.

Note:

For arc valves with pneumatic actuator proceed as follows: before actuator assembly, turn the square pin of the pivoted axle into the desired shutter position (3) by means of a jaw spanner and the marking (0).

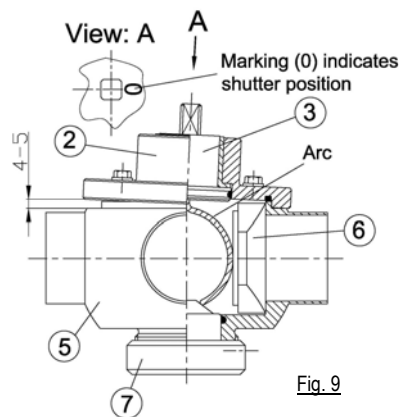


Fig. 9

- Put in place and tighten the bearing cap fixing screws (12).
- Assemble the pinching nut (7) to the valve casing (5) by using a face pin spanner wrench and a torque wrench: Torque 4Nm
Alternative: Screw pinching nut with cone (7) by hand as far as possible (without using a tool) to the valve casing (5). Switch valve several times (approx. 5 x) and then slightly retighten pinching nut with cone (7) by hand and/or with face spanner (approx. 90°).
- Then secure pinching nut with cone (7) with lateral threaded pin (13) against turning out of position.