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## 1) Manufacturer's Declaration

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



## 2) Safety Guidelines

### Designated Use

Venturi Valves are designed for use in powder mixers for dosing of powders and liquids in the beverage and food industry, as well as, in the pharmaceutical and chemical industry.



### General Safety Guidelines

- Working on the Venturi Valve is principally allowed only in depressurized and cooled condition
- When dismantling the Venturi Valve escaping liquid or gas may cause injury
- **Do not** operate the valve under dry conditions

## 3) Functional Description

Venturi Valves are used as dosing and control valves in powder mixers and allow, by means of the radial-turning shutter, a precisely adjustable dosing of powder. The operation of the shutter can be done by means of a manual handle or an electro-pneumatic actuator with positioner (1-20mA).

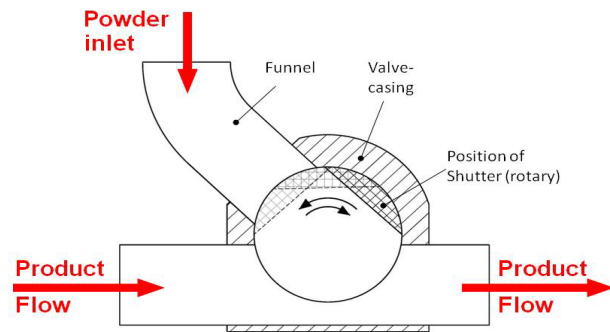


Fig. 1

## 4) Technical Data

Nominal sizes: DIN DN40 - DN80 / SMS DN38 - DN76 / Inch 1.5" - 3"

### Versions:

- 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)
- Other inox parts: AISI304 (1.4301)
- O-ring seals:

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

- Shutter:

	Temperature	Pressure max.	
		Pressure behind arc	Pressure against arc
Dyneon™ TFM1600 (Standard)	-60°C to +110°C -76°F to +230°F	10bar 145psi	3bar 43.5psi
PTFE +15% Peek (optional)	-60°C to +160°C -76°F to +320°F	16bar 232psi	3bar 43.5psi
Tecapeek (optional)	-60°C to +200°C -76°F to +392°F	20bar 290psi	3bar 43.5psi

- Bearing bush:

	Temperature	Temp. short-term
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 ≤ 0,8µm (Ra ≤ 32µin)

### Valve connections:

- Welded ends: DIN, SMS, Inch
- Male ends: DIN11851, SMS1145
- Clamp connection: Tri-Clamp
- Others: upon request

## 5) Parts and Spare Parts List

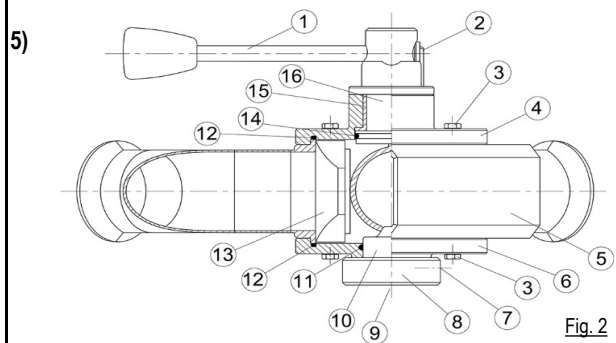


Fig. 2

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

Item	Designation	Qty.
1	Handle or pneumatic actuator	1
2	Fixing screws for the handle (actuator)	2 (4)
3	Fixing screws for bearing and bottom cap	8
4	Bearing cap	1
5	Valve casing	1
6	Bottom cap	1
7	Allen screw	1
8	Pinch nut	1
9	Snap ring	1
10	Cone	1
11	<b>O-ring to the cone</b>	<b>1</b>
12	<b>O-ring to the bottom and bearing cap</b>	<b>2</b>
13	<b>Shutter</b>	<b>1</b>
14	<b>O-ring to the pivoted axle</b>	<b>1</b>
15	<b>Bearing bushing</b>	<b>1</b>
16	Pivoted axle with arc	1

## 6) Installation Instructions

- Build in position according to Figure 3
- **In order to avoid damage to the wearing parts, the Venturi Valve has to be dismantled before being welded in place in a piping system**

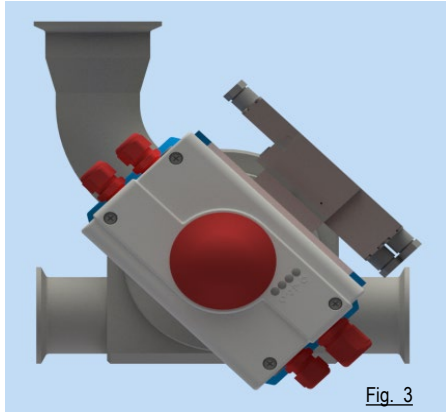


Fig. 3

## 7) Dismantling

1. **Never dismantle a pressurized Venturi Valve.**
2. Loosen the fixing screws (2) on the handle to remove the handle (1).
3. Loosen the allen screw (7) on the pinch nut (8) which is connected to the cone (10) by a snap ring (9).
4. Use a face pin spanner wrench to loosen the pinch nut (8).
5. Loosen the fixing screws (3) to remove the bearing cap (4) incl. pivoted axle (16) and bearing bushing (15).
6. Remove the shutter (13) from the valve casing (5).
7. Pull out the pivoted axle (16) from the bearing cap (4).
8. Take out all O-rings.



## 8) Maintenance

1. Check functional surfaces in the valve casing (5) for their condition and clean them accurate.
2. Replace all O-rings: O-ring to the pivoted axle (14), O-ring to the cone (11), O-rings to the bearing and bottom cap (12).
3. Prior to assembly, lubricate O-rings with food-safe grease "Klüber Paraliq GTE 703".
4. Check proper working order of the bearing bushing (15) and replace as necessary.
5. Clean shutter (13) and check for proper working and wear; replace as necessary.



### Lubricants:

- For Venturi 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 Venturi Valve while flushing (CIP).

## 9) Assembly

1. Check all components for cleanliness and proper condition prior to Venturi Valve assembly.
2. Insert bearing bushing (15) into bearing cap (4).
3. Insert O-rings (11), (12) and (14).
4. Fix valve bottom cap (6) on the valve body (5) and tight the fixing screws (3).

5. Assemble pivoted axle with arc (16) and bearing cap (4). Pay attention to the marking (0) on the square pin of the pivoted axle (16) → indicates the shutter position (13) (see Figure 4).
  6. Insert shutter (13) into valve casing (5).
  7. Fit the pivoted axle with the arc (16) together with bearing cap (4) to the valve casing (5) as follows:
    - a) The pivoted axle with arc (16) is designed that it exerts a defined pressure on the shutter (13) during assembly. On account of the preload characteristics, the bearing cap (4) declines approx. 4-5mm off the valve casing (5) on the opposite side of the shutter (see Figure 4).
    - b) **The shutter should be positioned to the inner casing wall to prevent damages on the plastic surface.**
    - c) Fasten the handle (1) in the desired position.
- Note:**  
For Venturi Valves with pneumatic actuator, proceed as follows: before assembly of the actuator, turn the square pin of the pivoted axle (16) into the desired shutter position by means of a jaw spanner and the marking (0).
8. Put in place and tighten the bearing cap fixing screws (3).
  9. Assemble the pinch nut (8) to the valve casing (5) by using a face pin spanner and a torque wrench: Torque 4Nm  
**Alternative:** Screw pinch nut (8) by hand (without a tool) into the valve casing (5), just past the o-ring (11). Switch valve several times (~5x), then slightly tighten the pinch nut 90° more by hand or with face spanner.
  10. Secure pinch nut (8) with allen screw (7).

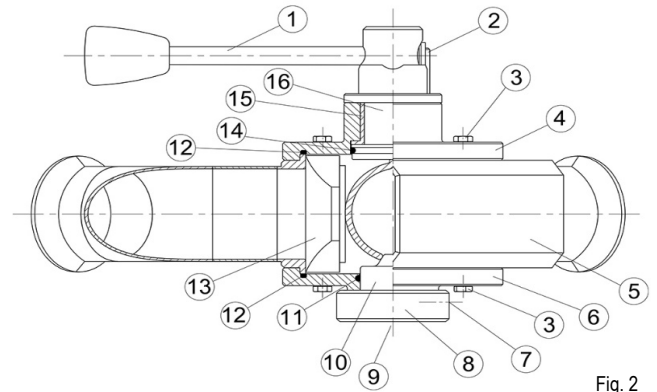


Fig. 2

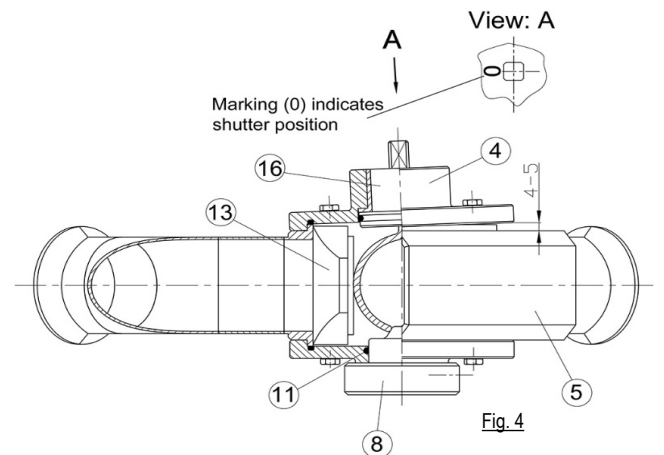


Fig. 4