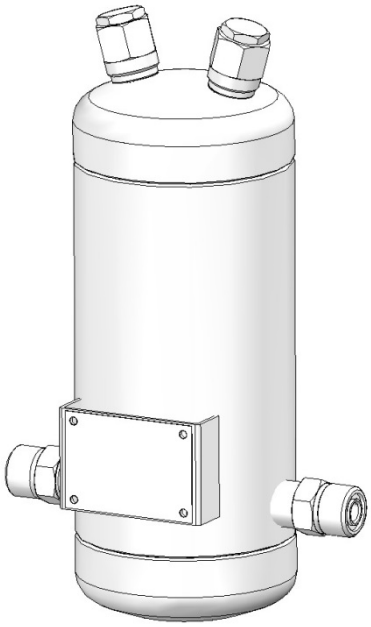
# Pulsation damper without separation diaphragm

**Operting Instructions**

**Product:** **Pulsation damper**

**Type:**
**702.1**
**703.1**
**706.1**
**802.1**
**803.1**
**804.1**
**805.1**
**806.1**

| Please state here the exact type and serial number of your pulsation damper.<br>(can be read off the type plate on the pulsation damper) |
|---|
| **Type:** |
| **Serial No.:** |
| These data are important in case of queries or for ordering spare and wearing parts and must absolutely be stated. |



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**Translation of the original operating instructions!**

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# 1 General

Before commissioning and during operation of the pulsation damper the respective regulations valid at the place of installation are to be observed.

**sera** pulsation dampers are required if for procedural reasons, a pulsation-poor delivery rate is desired or, depending on the pipe geometry, unacceptable high pressure peaks are to be reduced when operating oscillating displacement pumps. This can require the installation of pulsation dampers on the suction- and pressure side.

# 2 Types

## 2.1 Type plate

Each **sera** pulsation damper is factory provided with a type plate. The following information can be found on this type plate.

**Type plate for pulsation dampers 802.1 – 806.1**

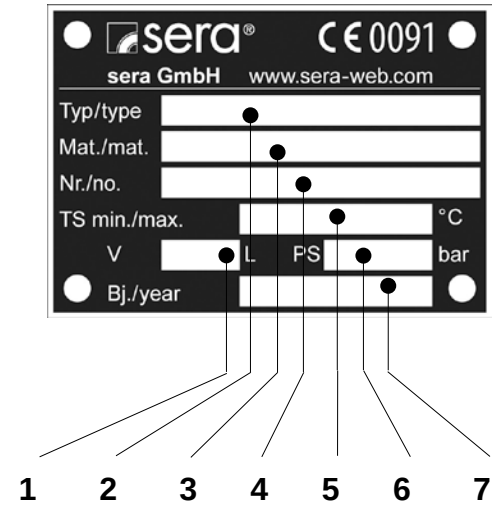



Fig. 01 Type plate

| Explanation of the indications on the type plate | | |
|---|---|---|
| **1** | V | **Volume** |
| **2** | Type | **Pulsation damper type** |
| **3** | Mat. | **Material of the pulsation damper** |
| **4** | No. | **Serial number of the pulsation damper** |
| **5** | TS min./max. | **Allowable minimum / maximum temperature** |
| **6** | PS | **Maximum allowable pressure** |
| **7** | Bj. | **Year of construction of the pulsation damper** |

Table 01 Explanation of type plate

**Type plate for pulsation dampers 702.1, 703.1 and 706.1**

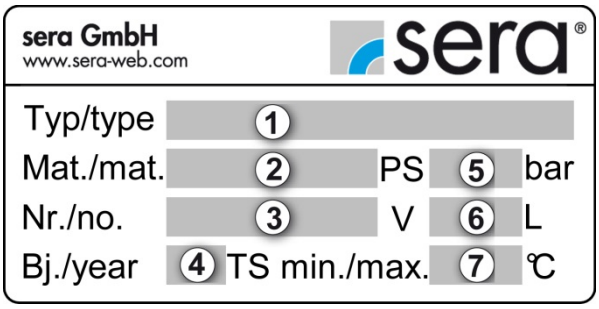



Fig. 02 Type plate

| Explanation of the indications on the type plate | | |
|---|---|---|
| **1** | Type | **Pulsation damper type** |
| **2** | Mat. | **Material of the pulsation damper** |
| **3** | No. | **Serial number of the pulsation damper** |
| **4** | Bj. | **Year of construction of the pulsation damper** |
| **5** | PS | **Maximum allowable pressure** |
| **6** | V | **Volume** |
| **7** | TS min./max. | **Allowable minimum / maximum temperature** |

Table 02 Explanation of type plate

## 2.2 Materials

The materials used are stated in the order confirmation.

# 3 Safety instructions

## 3.1 Quality instructions / purpose

Please read these operating instructions carefully before the pulsation damper is started or serviced. Observance of these operating instructions and, in particular, the safety instructions, helps to

- avoid dangers to persons, machines, and environment
- increase reliability and service life of the pulsation damper and the complete system
- reduce repair cost and downtime.

The **sera** quality management and quality assurance system for pumps, systems, and fittings is certified according to ISO 9001:2008.
**sera** products comply with the valid safety requiremens and accident prevention regulations.

**CAUTION !**

**Always keep these operating instructions within reach at the place of installation.**

**CAUTION !**

**Pay attention to the safety data sheet of the pumped medium! The owner must take corresponding accident prevention measures to protect operating personnel from danger through the pumped media used!**

## 3.2 Marking of notes

### 3.2.1 Marking of notes in these operating instructions

Special notes in these operating instructions are marked with the general danger symbol

(safety symbol in compliance with DIN 4844 – W9)

### 3.2.2 Marking of notes on the product

Symbols which are directly attached to the pulsation damper, e.g. symbols for fluid connections are to be observed and kept in legible condition.

## 3.3 Dangers in case of inobservance of the safety instructions

Inobservance of these safety instructions can result in danger to persons, hazards to the environment and damage to the pulsation damper.

Inobservance can result in:

- Failure of important functions of the pulsation damper/system
- Inobservance of prescribed methods for maintenance and servicing
- Danger to persons through chemical influences
- Hazards to the environment through leaking dangerous media

## 3.4 Safety conscious working

The safety instructions specified in these operating instructions, the national regulations concerning accident prevention as well as internal working-, operating-, and
safety instructions of the owner are to be observed.

## 3.5 Design and service life

The following points are to be observed:

- In general, the pulsation damper is designed for fluid group I, if nothing to the contrary is specified in the order confirmation.
- The service life

  for PVC, PP is ca. 10 years if the regular checks and maintenance intervals are kept. The owner is responsible that the regular checks according to 2014/68/EU are carried out.

  The service life for special steel, steel rubber-coated is ca. 20 years if the regular checks and maintenance intervals are kept. The owner is responsible that the regular checks according to 2014/68/EU are carried out.

## 3.6 Intended use

**sera** pulsation dampers are only to be deployed according to the intended purpose stated in the order confirmation.
**sera** does not assume any responsibility for damage resulting from an operation which does not conform with the intended use.
If the pulsation damper is to be used for other applications, then the suitability of the pulsation damper for the new operating conditions must be discussed with **sera** beforehand!

Criteria for proper operation of the pulsation damper:

- Max. pressure of the pulsation damper
- Observe characteristics of the pumped medium – fluid group (please see safety- and product data sheet of the pumped medium – the safety data sheet is to be provided by the supplier of the chemical)
- Resistance of the materials which come into contact with the pumped medium
- Operating conditions at the place of installation
- Temperature of the pumped medium
- Sufficient volume when the pulsation damper is operated together with oscillating displacement pumps

**sera** does not assume any responsibility if these criteria are not or only partly observed by the owner / operator.

**CAUTION !**

**Secure pulsation dampers by a safety fitting which is set to the maximum permissible pressure according to the valid regulations and the directive for pressure equipment 97/23 EC.**

**CAUTION !**

**The national regulations for pressure vessels must be taken into account!**

**CAUTION !**

**The structural design of the pulsation dampers must not be changed!**

## 3.7 Approved installation-, maintenance and operating personnel

The system operator may only approve persons to operate or maintain the unit, who are at least eighteen years old and suitably qualified, and of a physical and mental state to perform the tasks entrusted to them. These persons must be properly instructed and act responsibly, properly and reliably. The operating personnel must be familiar with all applicable accident prevention and safety instructions and regulations.

## 3.8 Personal protection for maintenance and service

In order to avoid risks to health, the provisions of the German Ordinance on Hazardous Substances (GefStoffV) (§14 Safety Data Sheet) and relevant national safety regulations for the pumped medium and the operating conditions of the pulsation damper must strictly be adhered to.

**CAUTION !**

**Wear protective clothing, gloves, and a face protecting mask.**

**CAUTION !**

**Personal protective equipment must be provided by the owner!**

## 3.9 Operating conditions of the pulsation damper

The maximum allowable pressure depends on the operating temperature and the pumped medium. It must not be exceeded. This is applicable to normal operation as well as filling from the **sera** pressure measuring and filling equipment.

**CAUTION !**

**Do not exceed the maximum allowable operating pressure!**

**CAUTION !**

**The operating pressures according to the operating temperatures (please see chapter 7.1) are strictly to be observed for the pulsation dampers 702.1, 703.1 and 706.1.**

## 4 Areas of application and function

During operation of oscillating displacement pumps, pressure peaks occur. The magnitude of these peaks depends, among other things, on the pipe length and diameter as well as on the density of the pumped medium.
Depending on the installation configuration, these pressure peaks may lead to cavitation on the suction side.
On the pressure side, also either excess supply or inadmissibly high loads on the system may occur.
The pulsation damper reduces these pressure peaks and provides for a pulsation-poor flow after the pulsation damper.

**CAUTION !**

**The damper can only work properly if the gas cushion is large enough. For this reason, always ensure that this condition is met!**

## 5 Checking the packaging at the place of destination

On delivery, immediately check the packaging for damage. Report any external damage immediately to the transport company, and fill out a damage report. After the transport company has recorded the damage, open the package and check the contents for damage.

### 5.1 Storage

An undamaged packaging protects the unit during subsequent storage and should only be opened when the pulsation damper is installed.

Proper storage increases the service life of the pulsation damper and includes prevention of negative influences such as heat, humidity, dust, chemicals etc.

The following storage instructions are to be observed:

- Storage place: cool, dry, dust-free and slightly ventilated
- Storage temperatures between +2°C and +40°C
- Relative air humidity not more than 50%.

If these values are exceeded, metal products should be sealed in foil and protected from condensation water with a suitable desiccant.

Do not store solvents, fuels, lubricants, chemicals, acids, disinfectants and similar in the storage room

# 6 Technical specifications

## 6.1 Performance data

| Type | Max. allowable operating pressure PS max. | Volume V |
|---|---|---|
| | (bar) | (Liter) |
| **702.1** | 10 | 2 |
| **703.1** | 10 | 5 |
| **706.1** | 10 | 10 |
| **802.1** | 25 | 2 |
| **803.1** | 16 | 10 |
| **804.1** | 16 | 10 |
| **805.1** | 16 | 10 |
| **806.1** | 16 | 10 |

Table 03 Performance data

| Operating conditions | | | | | |
|---|---|---|---|---|---|
| Temperature [°C] * | | allowable operating pressure (PS) | | | |
| | | (bar) | | | |
| min. | max. | PP | PVC | PVDF/PVC | 1.4571 |
| +2 | +20 | 10 | 10 | 10 | 25 |
| +2 | +30 | 9 | 8 | 9 | 25 |
| +2 | +40 | 7 | 5 | 7 | 25 |

Table 04 Performance data

* (for water)

## 6.2 Dimensions of pulsation dampers 702.1, 703.1 and 706.1

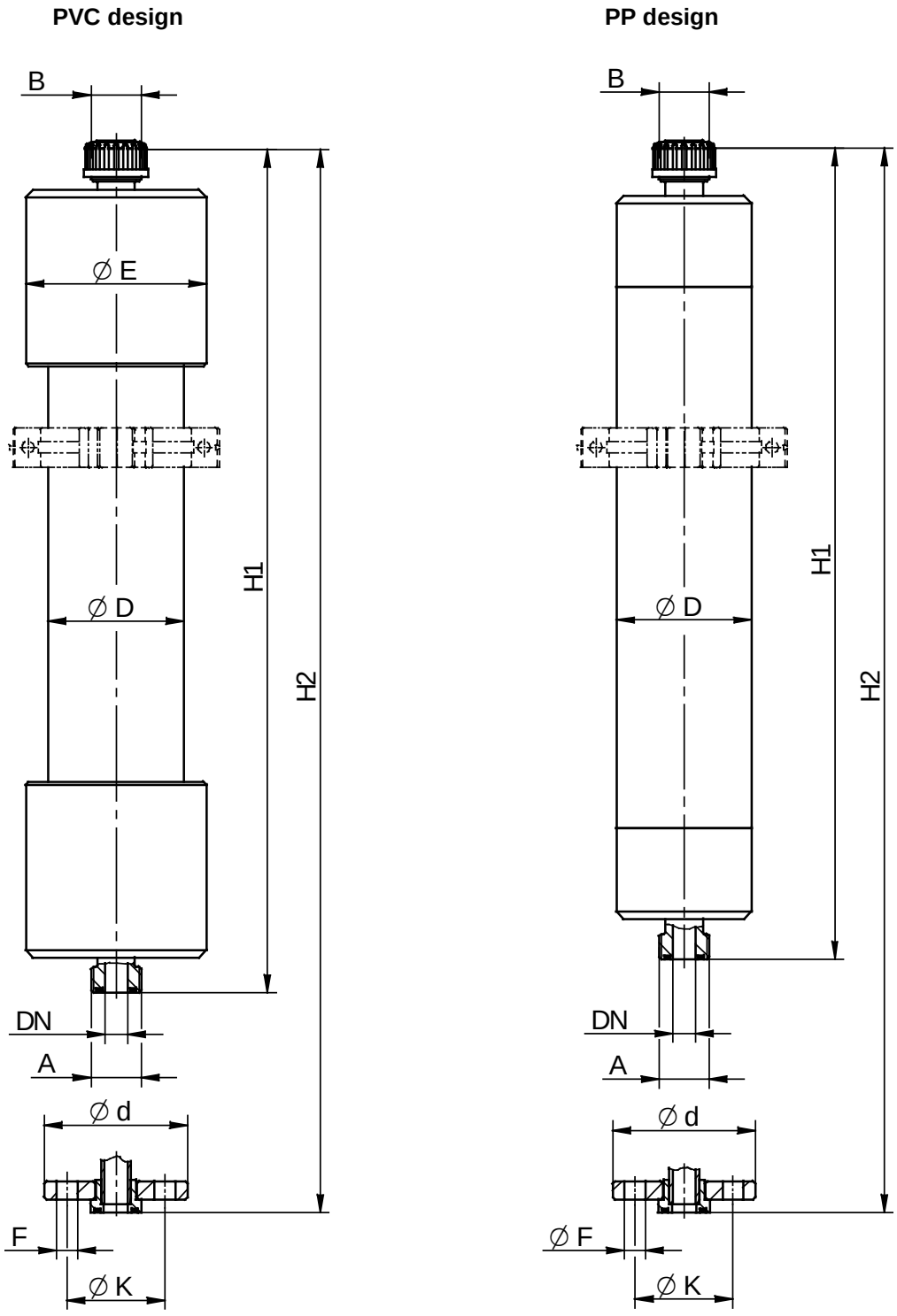



Fig. 03 Dimensions

### 6.2.1 Connection: Thread pipe connection

| Type | Article No. | Material | | DN | A | B | H1 | Ø D | Ø E | Dead weight |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Casing | Seals | | | | (mm) | | | (kg) |
| 702.1 | 30095010 | PP | EPDM | 15 | G1 | G1 | 534 | 90 | | 1,4 |
| | 30095007 | | FPM | | | | | | | |
| | 30095004 | PVC | EPDM | | | | 556 | | 120 | 3,2 |
| | 30095001 | | FPM | | | | | | | |
| 703.1 | 30095011 | PP | EPDM | 20 | G1 ¼ | G1 | 556 | 140 | | 3,2 |
| | 30095008 | | FPM | | | | | | | |
| | 30095005 | PVC | EPDM | | | | 582 | | 180 | 9,0 |
| | 30095002 | | FPM | | | | | | | |
| 706.1 | 30095012 | PP | EPDM | 40 | G2 ¼ | G1 | 847 | 160 | | 6,2 |
| | 30095009 | | FPM | | | | | | | |
| | 30095006 | PVC | EPDM | | | | 786 | | 220 | 13,4 |
| | 30095003 | | FPM | | | | | | | |

Table 05 Dimensions

### 6.2.2 Connection dimensions according to DIN 2501

| Type | Article No. | Material | | DN | G2 | H2 | Ø D | Ø E | Ø d | Ø K | Ø F | Dead weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Casing | Seals | | | (mm) | | | | | | (kg) |
| 702.1 | 30095022 | PP | EPDM | 15 | G1 | 570 | 90 | | 95 | 65 | 14 | 1,5 |
| | 30095019 | | FPM | | | | | | | | | |
| | 30095016 | PVC | EPDM | | | 592 | | 120 | | | | 3,4 |
| | 30095013 | | FPM | | | | | | | | | |
| 703.1 | 30095023 | PP | EPDM | 20 | G1 | 598 | 140 | | 105 | 75 | 14 | 3,4 |
| | 30095020 | | FPM | | | | | | | | | |
| | 30095017 | PVC | EPDM | | | 614 | | 180 | | | | 9,3 |
| | 30095014 | | FPM | | | | | | | | | |
| 706.1 | 30095024 | PP | EPDM | 40 | G1 | 870 | 160 | | 150 | 110 | 18 | 6,4 |
| | 30095021 | | FPM | | | | | | | | | |
| | 30095018 | PVC | EPDM | | | 801 | | 220 | | | | 13,6 |
| | 30095015 | | FPM | | | | | | | | | |

Table 06 Dimensions

## 6.3 Dimensions for pulsation dampers 802.1 – 806.1

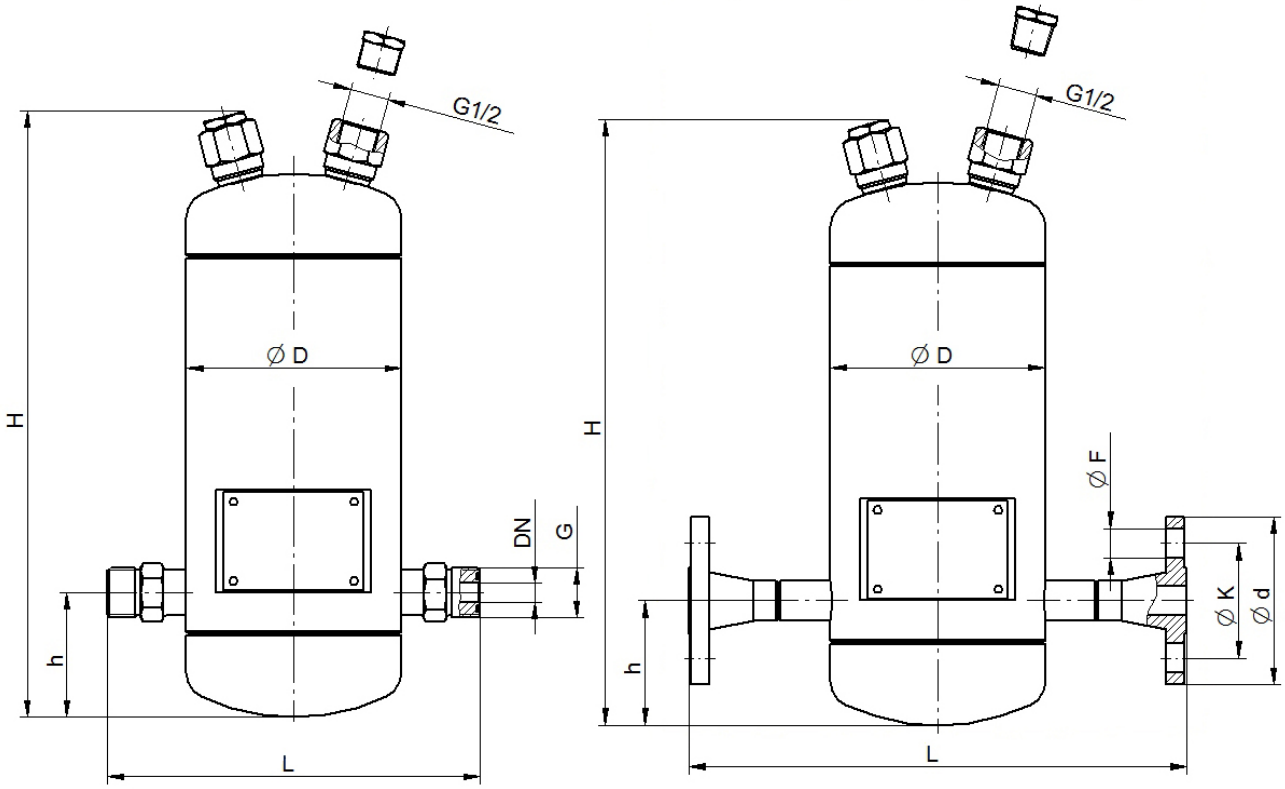



Fig. 04 Dimensions

### 6.3.1 Connection: Thread pipe connection

| Type | Article No. | Material | | DN | G | H | h | Ø D | L | Dead weight |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Casing | Seals | | | (mm) | | | | (kg) |
| **802.1** | 31101001 | 1.4571 | FEP-coated | 15 | G1 | 318 | 66 | 114,3 | 210 | 3,4 |
| **803.1** | 31102001 | 1.4571 | FEP-coated | 20 | G1 ¼ | 365 | 110 | 219,1 | 310 | |

Table 07 Dimensions

### 6.3.2 Dimension connections according to DIN EN 1092-1

| Type | Article No. | Material | DN | H | h | Ø D | L | Ø F | Ø K | Ød | Dead weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Casing | | (mm) | | | | | | | (kg) |
| **802.1** | 31101003 | 1.4571 | 15 | 318 | 66 | 114,3 | 250 | 14 | 65 | 95 | 4,6 |
| **803.1** | 31102003 | 1.4571 | 20 | 365 | 110 | 219,1 | 340 | 16 | 75 | 105 | 11,2 |
| **804.1** | 31103001 | 1.4571 | 25 | 365 | 110 | 219,1 | 400 | 14 | 85 | 115 | |
| **805.1** | 31104001 | 1.4571 | 32 | 365 | 110 | 219,1 | 400 | 18 | 100 | 140 | |
| **806.1** | 31105001 | 1.4571 | 40 | 365 | 110 | 219,1 | 400 | 18 | 110 | 150 | |

Table 08 Dimensions

## 6.4 Dimensions with mounted pressure measuring- and filling device (accessories/options)

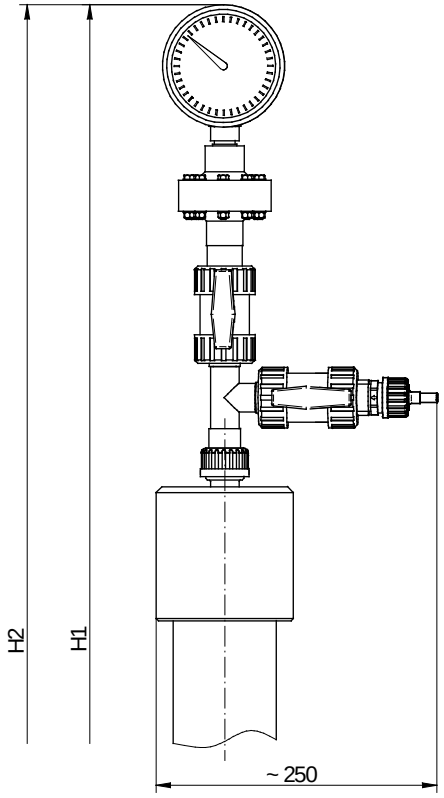



Fig. 05 Dimensions

Pulsation damper plastic execution

| Type | H1* | | H2* | |
|---|---|---|---|---|
| | PP | PVC | PP | PVC |
| **702.1** | 924 | 946 | 960 | 982 |
| **703.1** | 946 | 972 | 988 | 1004 |
| **706.1** | 1237 | 1176 | 1260 | 1191 |

* H1 = Execution with screw connection
H2 = Execution with flange connection

(see Chapter 6.2, Fig. 03)

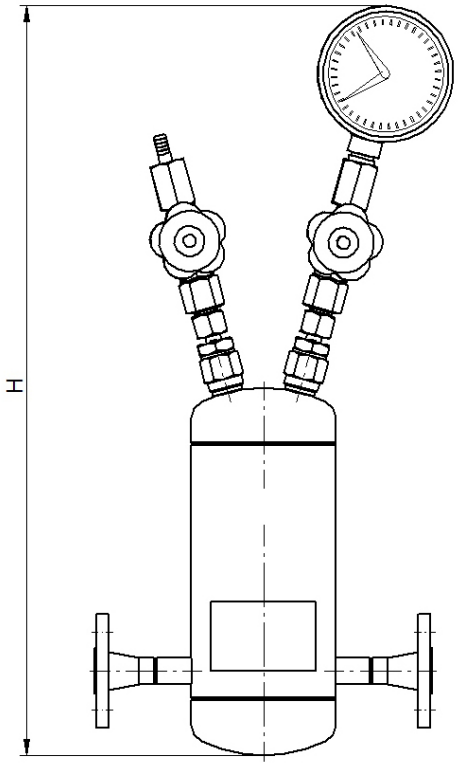



Fig. 06 Diemnsions

Pulsation damper metal design

| Type | approx. H |
|---|---|
| **802.1** | 590 |
| **803.1** | 635 |
| **804.1** | 635 |
| **805.1** | 635 |
| **806.1** | 635 |

(see Chapter.6.3, Fig. 04)

# 7 Accessories

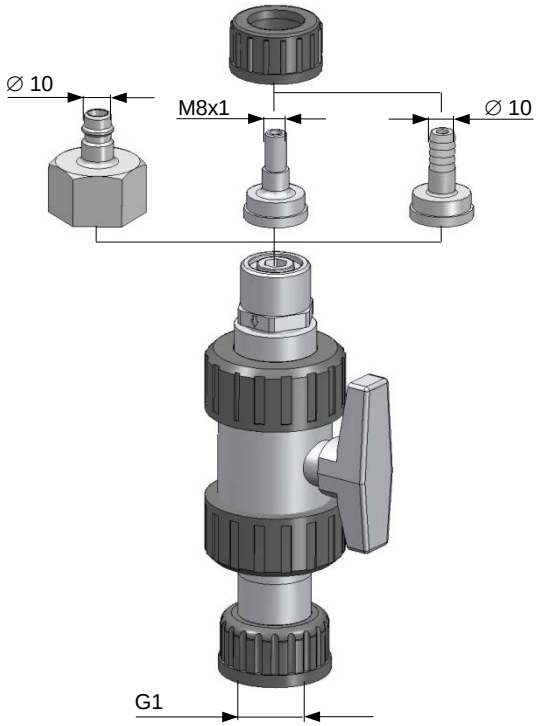
## 7.1 Accessories for pulsation dampers 702.1, 703.1 and 706.1

**Filling device consisting of:**

- Check valve: PVDF-GFK, automatic
  Seal: FPM or EPDM
  Valve ball: PTFE
  Spring: Hastelloy
- Ballcock

Filling connection:

- Hose nozzle d 10 or
- Plug nipple ∅ 10 for pneumatic coupling or
- Filling nozzle M8x1 for foot pump




| Material | Filling connection | Article No. |
|---|---|---|
| PVC/EPDM | Hose nozzle | 37600303 |
| | Plug nipple | |
| | Filling nozzle | |
| PVC/FPM | Hose nozzle | 37600304 |
| | Plug nipple | |
| | Filling nozzle | |
| PP/EPDM | Hose nozzle | 37600305 |
| | Plug nipple | |
| | Filling nozzle | |
| PP/FPM | Hose nozzle | 37600306 |
| | Plug nipple | |
| | Filling nozzle | |

Fig. 07 / Table 09

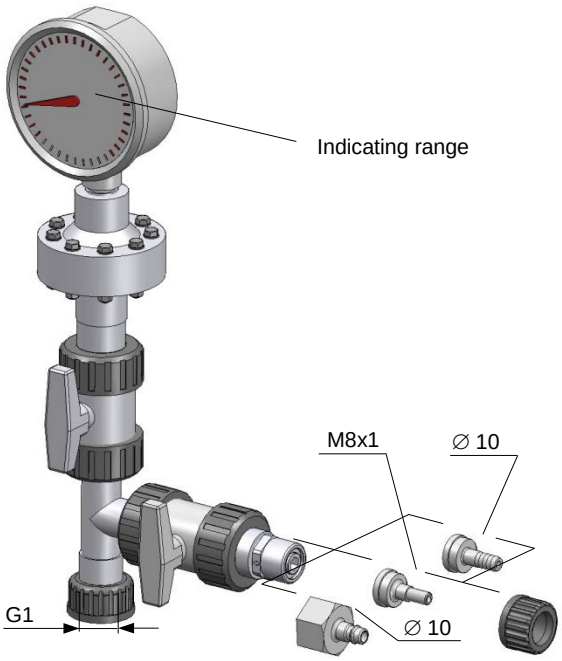
**Filling and pressure measuring device, consisting of:**

- Pressure gauge ∅ 63: glycerine-damped made of 1.4301
  Measuring system: with copper alloy
  Diaphragm pressure transmitter G1/4
  Diaphragm: PTFE-coated

- Check valve: PVDF-GFK, automatic
  Seal: FPM or EPDM
  Valve ball: PTFE
  Spring: Hastelloy
- Ballcock

Filling connection:

- Hose nozzle d 10 or
- Filling nozzle ∅ 10 for pneumatic coupling or
- Filling nozzle M8x1 for foot pump




| Material | Filling connection | Article No. |
|---|---|---|
| PVC/EPDM | Hose nozzle | 37600307 |
| | Plug nipple | |
| | Filling nozzle | |
| PVC/FPM | Hose nozzle | 37600308 |
| | Plug nipple | |
| | Filling nozzle | |
| PP/EPDM | Hose nozzle | 37600309 |
| | Plug nipple | |
| | Filling nozzle | |
| PP/FPM | Hose nozzle | 37600310 |
| | Plug nipple | |
| | Filling nozzle | |

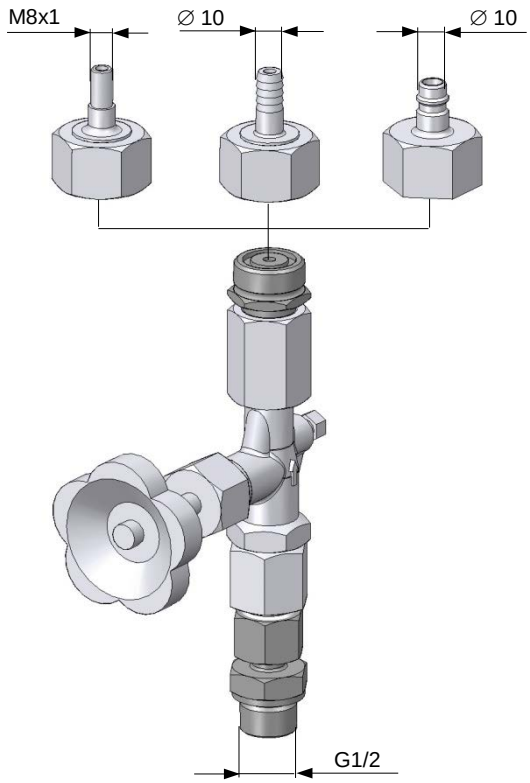
Fig. 08 / Table 10

## 7.2 Accessories for pulsation dampers 802.1 – 806.1

**Filling device consisting of:**

- Shut-off valve
- Check valve, automatic
  Seal: PTFE / FEP-coated
  Valve ball: PTFE
  Spring: Hastelloy

Filling connection:
- Hose nozzle d 10 or
- Plug nipple ∅ 10 for pneumatic coupling or
- Filling nozzle M8x1 for foot pump

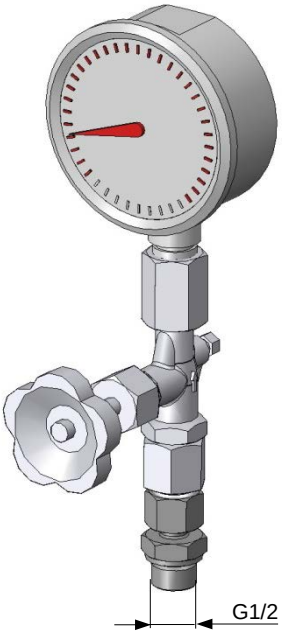



| Material | Filling connection | Article No. |
|---|---|---|
| 1.4571 | Hose nozzle | 37600311 |
| | Plug nipple | |
| | Filling nozzle | |

Fig. 09 / Table 11

**Pressure measuring device consisting of:**

- Seal: PTFE / EPDM
- Shut-off valve
- Pressure gauge ∅ 100, glycerine-damped made of 1.4571

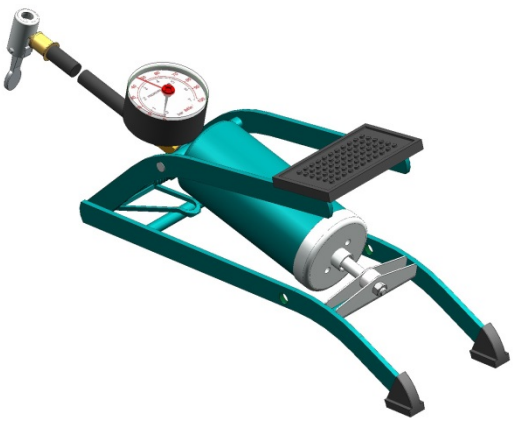



| Material | Measuring range (bar) | Article No. |
|---|---|---|
| 1.4571 | 0 – 25 | 37600312 |
| | 0 – 40 | 37601211 |

Fig. 10 / Table 12

## 7.3 Filling pump FLP2 for filling equipment

- Filling pressure up to 7 bar
- with pressure gauge
- 2 m hose
- Coupling piece for air filler valve



| Article No. |
|---|
| 90009396 |

Fig. 11 / Table 13

## 8 Installation

The device can be installed - depending on the application - on the pressure side or the suction side of the pump (see Fig. 12). The following is to be observed:

- Pulsation dampers are only suitable for inside use, unless otherwise specified in the order confirmation.
- Protect the dampers from direct sunlight.
- Install the pulsation dampers near the pump.
- Mount the pulsation dampers in such a way that the connections for the pressure measuring and filling equipment are at the top (see Fig. 12).

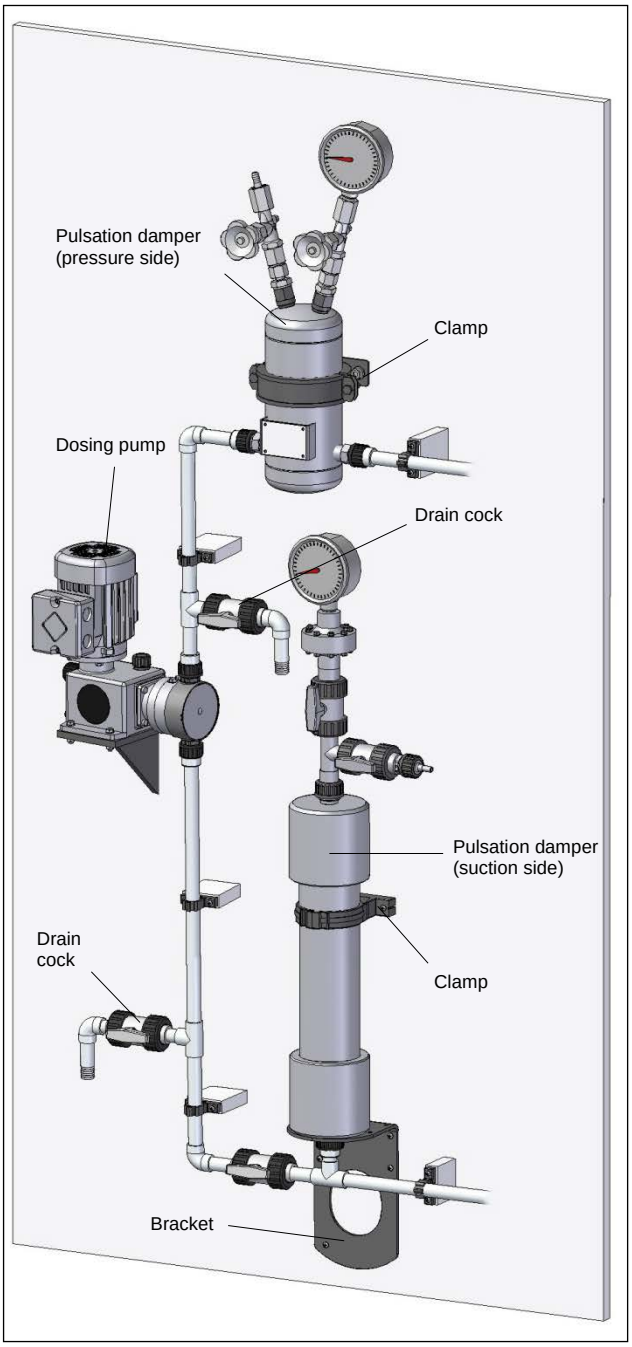



Fig. 12 Installation

- Filling device or pressure measuring/filling device must point upwards (see Fig. 13).

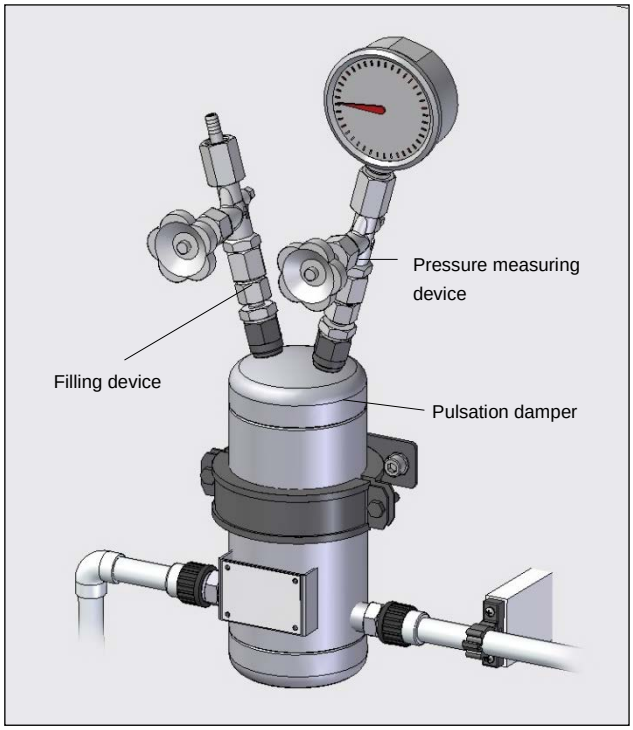



Fig. 13 Pressure measuring and filling device

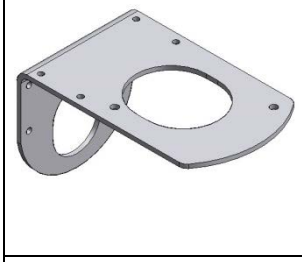
- Install the pulsation damper in the equipment in such a way that it is easy to access and free from vibrations.
- The attached pipes must not transmit any mechanical tensions to the pulsation damper.
- The weight of the pulsation damper must not be applied to the pipes (see Fig. 12).
- Drain cocks are to be provided.

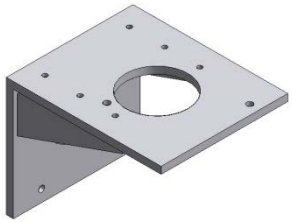
Clamps are not included in the supply and are to be ordered separately (details please see Chapter 9).

# 9 Fastening

## 9.1 Fastening for pulsation dampers 702.1, 703.1 and 706.1

### 9.1.1 Brackets for wall mounting





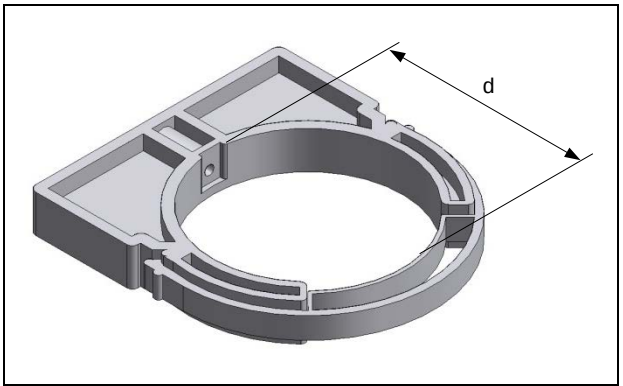
| Type A | | Type B | |
|---|---|---|---|
| Material | Article No. | Material | Article No. |
| Special steel (1.4301) | 90010911 | PP | 90010913 |
| Color treated steel | 90010912 | | |

Fig. 14 / Table 14

| Assignment of brackets and clamps | | |
|---|---|---|
| **Pulsation damper** Type | **Bracket** Type | **Clamp** d (mm) |
| 702.1 | A | 90 |
| 702.1 | B | 90 |
| 703.1 | A | 140 |
| 703.1 | B | 140 |
| 706.1 | A | 160 |
| 706.1 | B | 160 |

Table 16

### 9.1.2 Clamp




| ∅ d (mm) | Article No. |
|---|---|
| 90 | 90010657 |
| 140 | 90010660 |
| 160 | 90010661 |

Fig. 15 / Table 15

**Pulsation damper 702.1** **Pulsation damper 703.1**

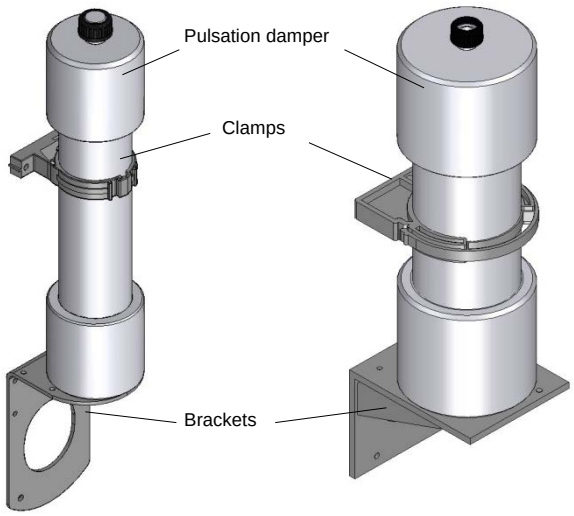


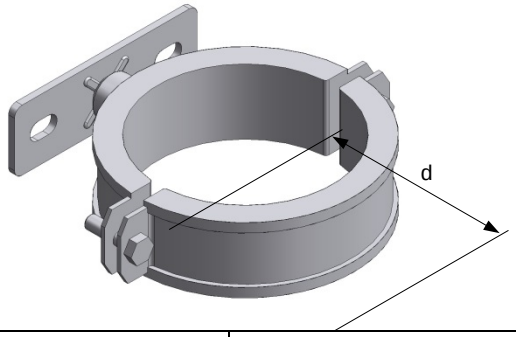

Fig. 16 Examples of an application

**CAUTION !**

**Plastic pulsation dampers are to be attached with a clamp and bracket.**

## 9.2 Fastening for pulsation dampers 802.1 to 806.1

### 9.2.1 Clamp




| ∅ d (mm) | Article No. |
|---|---|
| 114,3 | 30085004 |
| 219,1 | 30085005 |

Fig. 17 / Table 17

| Assignment of clamps | |
|---|---|
| **Pulsation damper** Type | **Clamp** d (mm) |
| 802.1 | 114,3 |
| 803.1 | 219,1 |
| 804.1 | 219,1 |
| 805.1 | 219,1 |
| 806.1 | 219,1 |

Table 18

**Pulsation damper 802.1**

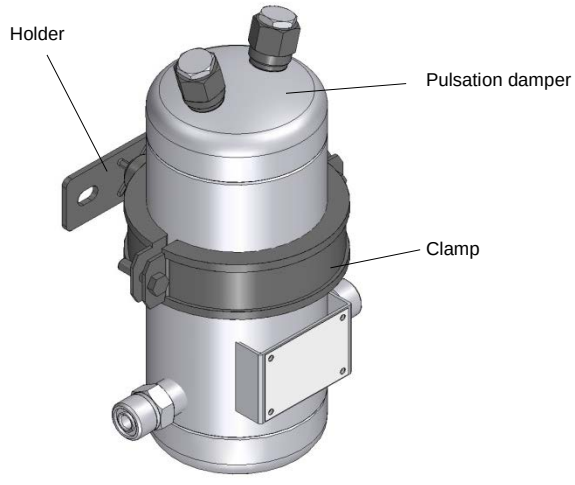



Fig. 18 Example of an application

## 10 Start-up

The **sera** pulsation damper is mounted on the suction- and/or pressure side of the pump. Filling and pressure measuring equipment which is installed on the pulsation dampers is required for start-up and operation.

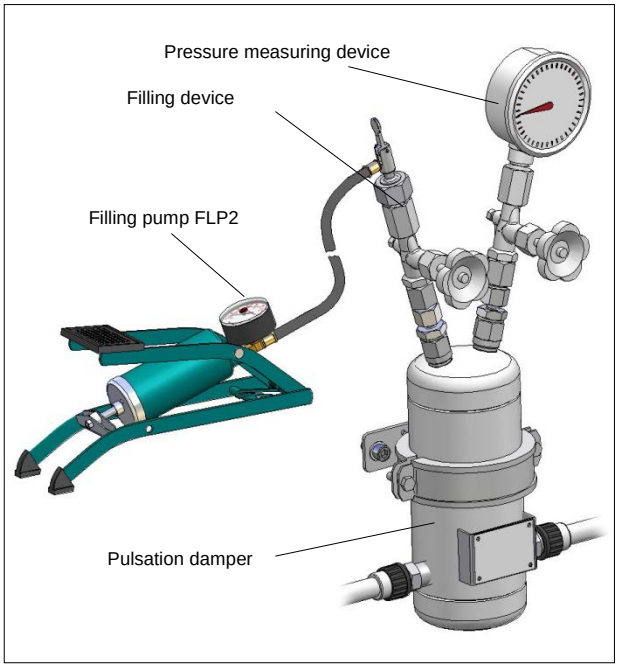



Fig. 19 Connection of the filling pump FLP2

**CAUTION !**

**The maximum allowable operating pressure depends on the maximum allowable pressure of the pulsation damper and the filling device. The smaller value is always decisive.**

As a gas cushion (atmosphere) is already present when the pulsation damper is installed, the pulsation damper can immediately be started.

Proceed as follows:

- Start pump / system.
- Increase delivery rate of the pump slowly by adjusting the stroke frequency and/or the stroke length up to the maximum value (see Fig. 20).

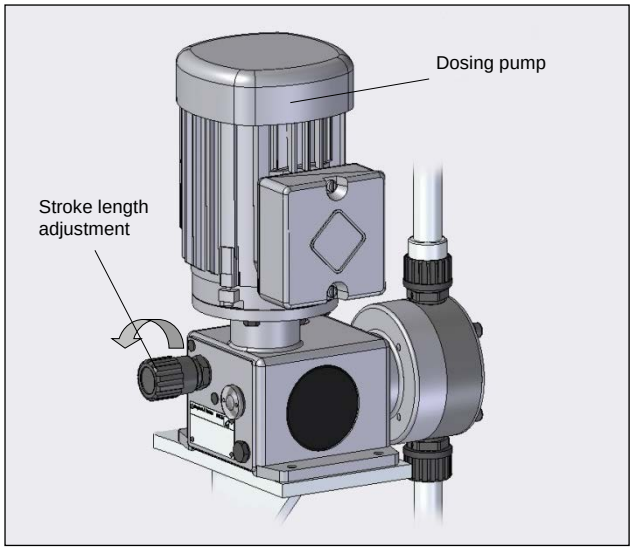



Fig. 20

- Check the pressure gauge deflection. In case of a perfect operation a pointer deflection can always be observed with oscillating displacement pumps which may differ by ca. +/- 10% from the mean value (standard value) depending on the pulsation damper volume and the stroke volume of the pump.

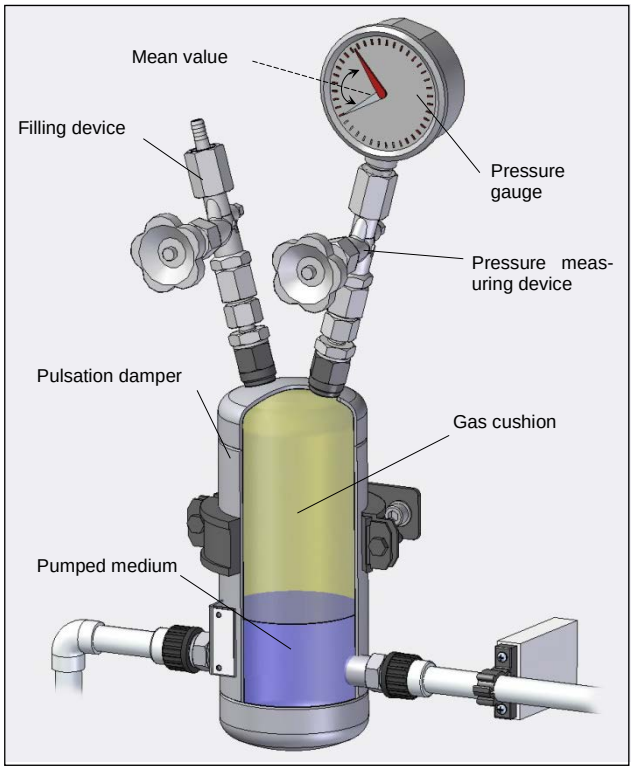



Fig. 21 (relatively large gas cushion – small pointer deflection)

Carry out the following steps when this mean value is reached or exceeded (see Fig. 22):

- Supply carefully air / gas while the pump is running until the pointer deflection reaches the minimum value (see Fig. 21).

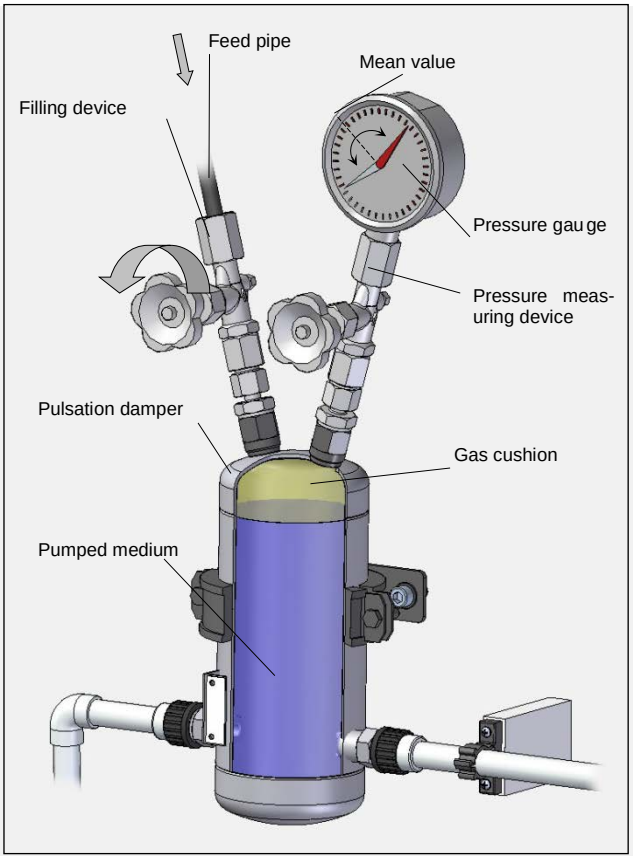



Fig. 22 (relatively small gas cushion – great pointer deflection)

**CAUTION !**

**Keep shut-off valves of the filling device always shut during operation. Open only for gas- and air supply.**

**CAUTION !**

**Open shut-off valves of the pressure measuring device temporarily during operation to judge the operating pressure and the air-/gas level of the pulsation damper.**

**CAUTION !**

**Use only gases that do not react chemically on the pumped medium or are inert.**

**CAUTION !**

**If the device is used as suction-pulsation damper, the pressure gauge must be suitable for negative pressures.**

## 11 Maintenance

During operation of the pulsation damper, the gas cushion is partially removed by the medium. To ensure perfect functioning, it is recommended to regularly check the gas precharge pressure and/or to control the pointer deflection daily.

**Maintenance intervals:**

- The gas precharge pressure must be checked and re-adjusted after each re-installation, and repairs. See Chapter 10 for the precise procedure.
- Generally, it is required to check the gas precharge pressure after each modification of the system parameters (e. g. if the operating pressure changes).
- Filling device, pressure measuring device and pulsation damper are to be checked for tightness at regular intervals.
- Regular checks:

  **Yearly visual check**

  **Every 2 years – a pressure check using water with the 1.43-fold of the nominal pressure. For this purpose, disassemble the pulsation damper and test under pressure in a place which corresponds to the regulations for prevention of accidents.**

**CAUTION !**

**The operator is obliged to document these checks.**

## 12 Shut-down

- Shut-down the pump/system and secure it against restarting!
- Make sure that all pipes with pulsation dampers are pressureless!
- Drain the pulsation dampers and the connected pipes via drain cocks!
- Remove residues of the pumped medium from the pulsation damper by rinsing it with a compatible rinsing agent!
- The pulsation damper can then be removed from the pipe.

## 13 Disposal

Shut-down system. Please see “Shut-down”.

### 13.1 Dismantling and transport

- Remove all fluid residues, clean thoroughly, neutralize and decontaminate.
- Package unit and ship.

### 13.2 Complete disposal

- Remove all fluid residues from unit.
- Drain off lubricants and dispose of according to regulations!
- Dismount materials and send them to a suitable waste disposal company!

**CAUTION !**

**The consignor is responsible for leaking lubricants and fluids!**

## 14 Clearance Certificate

**NOTE!**

**Inspection / repair of machines and machine parts is only carried out after the opposite clearance certificate was filled in correctly and completely by authorized and qualified personnel.**

**NOTE!**

**Acceptance will be refused if parts are returned to the manufacturer without a proper clearance certificate.**

All industrial companies are obligated by the legal provisions for occupational health, e.g. the workplaces ordinances, the Ordinance on Hazardous Substances, the regulations for prevention of accidents and the environmental protection regulations such as the Waste Management Act and the German Household Water Act to protect their employees or man and the environment from detrimental effects when handling hazardous substances.

Should special safety precautions be necessary despite careful draining and cleaning of the product the necessary information are to be provided.

Machines which are operated with radioactive media shall only be inspected and/or repaired in the safety area of the owner by a **sera** specialized fitter.

The clearance certificate is part of the inspection-/repair order. **sera** reserves the right to refuse acceptance of the order for other reasons.

**NOTE!**

**Please make a copy and leave the original with the operating instructions!**
(can also be downloaded from: www.sera-web.com)

# Clearance Certificate

## Product

Type _____ Serial-No. _____

**the product was carefully emptied before shipping / delivery, and cleaned inside and outside.** ☐ **YES**

## Conveying medium

Designation _____ Concentration _____ %

### Properties

Please tick!

If either of the listed properties, then enclose the appropriate safety and handling instructions.

☐ Harmless

☐ Toxic ☐ Corrosive ☐ Flammable ☐ Oxidising ☐ Unhealthy

☐ Explosive ☐ Dangerous for the environment ☐ Irritant ☐ Bio-hazardous ☐ Radioactive

The product was used with health or water-polluting substances and came up with labeling requirements and pollution prone media in contact. ☐ **YES** ☐ **NO**

Special security arrangements with respect to health or water-hazardous media are in the further handling ☐ **not required** ☐ **required**

The following safety precautions regarding rinsing, residual liquids and waste disposal are required:

## Process data

The product was used with the following operating conditions described conveying medium:

Temperature _____ °C Pressure _____ bar

## Sender

Company: _____ Telephone: _____

Contact person: _____ FAX: _____

Address: _____ E-mail: _____

Zip code, City: _____ Your order No: _____

**We confirm that we have the information in this safety certificate (Clearance Certificate) have been correctly and completely and that the returned parts were carefully cleaned.**

**The parts are sent free of residues of dangerous amount.**

Place, Date _____ Department _____ Signature (and company stamp) _____

## Notes