Sampling valve

PEMS

User guide

Reference: PEMS_NOT_FR

Version I

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1 GENERAL PRESENTATION

1.1. The manufacturer

SERVINOX is a specialist in processing equipment for the brewing, food, cosmetics and chemical industries.

Expertise in process equipment:
In areas such as tank protection, sampling, injecting gas into liquids, pipe pigging and cleaning using patented products.

SERVINOX is ***ISO 9001***-certified and offers products that comply with the following applicable standards and directives:

- Pressure Equipment Directive ***(PED) 2014/68/EU***
- European Directive for Equipment in an Explosive Atmosphere **(ATEX)** ***2014/34/EU***
- US 3A manufacturers sanitary standard

We are an active member of the ***EHEDG France*** association (hygienic standard for European manufacturers).

1.2. User guide

In order to guarantee the integrity of the equipment and the safety of personnel, you must read and understand the information contained in this guide before installing and using the equipment.

Depending on the equipment and the fluid, specific guidelines and regulations apply. These must be respected.

In addition to the instructions stated in this user guide, the general safety instructions must be applied. Regulations concerning the protection of the environment must also be respected.

1.3. Presentation of the equipment

The PEMS–type sampling valve is particularly suitable for taking samples of your sticky fluids and/or fluids with a low manometric load

This valve must be used on a circuit carrying clear or viscous group 2 liquid products (in compliance with paragraph 4.3 of European Directive 2014/68/EU).

Description of operation

These valves are designed to take samples of fluids from the equipment in order to perform quality and/or bacteriological controls.

The valve is sealed with a diaphragm.

Valve open

Valve closed

2 SAFETY INSTRUCTIONS

The technical guide contains fundamental instructions which must be respected. It must therefore be read before the equipment is installed and commissioned.

2.1. Directions and symbols

The following symbols are intended to highlight important points concerning the safety of persons and the integrity of the equipment:

SYMBOL	DEFINITION
	Direct hazard for persons.
	Possible damage to the product or its environment
	Useful information or instructions for use
	Minimum number of people required for certain operations. (The number of people shown in the symbol indicates the minimum number required).
	Minimum level of technical ability. (the figure in red indicates the minimum level required).

Some work requires specific technical skills and qualifications, such as curative maintenance work or work on electrical equipment.

3 levels are used to indicate the technical ability required (knowledge of the equipment in question, experience, training, etc.).

	WORKER PROFILE	SPECIFIC POINTS
Level 1	**End user** with no technical knowledge.	**Default level** if the skill symbol is not present. Only **routine use and maintenance operations** are authorized.
Level 2	Experienced **professional.**	Trained and **experienced**. **Knows the equipment and technologies** used
Level 3	The product **expert / manufacturer's personnel**	**Work reserved for the manufacturer of** the documented equipment.

2.2. Worker safety

Installation, inspection, adjustment, servicing and replacement operations must be performed:

- By qualified personnel,
- In accordance with the recommendations and instructions provided in this guide,
- Taking into account provisions concerning safety in the workplace, the installer's procedures and means, and legal requirements with respect to accident prevention, especially with regard to electrical installations.

Non-compliance with the safety instructions may result in the loss of all right to compensation.

2.3. Intended use

Compliant use

Check that the equipment has been selected for its intended use by consulting the accompanying documents.

Description of operation

These valves are designed to take samples of fluids from the equipment in order to perform quality and/or bacteriological controls.

The valve is sealed with a diaphragm.

Non-intended use

The equipment must only be used for the intended use. The manufacturer cannot be held liable if it is used for anything other than its intended purpose.

The equipment must not be used beyond the following operating limits:

PARAMETERS	LIMITS
MAXIMUM allowable pressure (Standard version)	6 bar
MAXIMUM allowable pressure (High-pressure version)	10 bar
Tolerated fluid temperature	+1°C / +120°C

2.4. Generic risk analysis

DANGER / RISK			
	Hot fluid	Very hot surface	Aggressive fluid
DAMAGE	Burns	Burns	Burns
PREVENTION			
	Appropriate clothing, glasses, gloves	Appropriate gloves	Appropriate gloves, glasses, gloves

3 TECHNICAL SPECIFICATIONS

3.1. Standard and high-pressure version

Characteristics

CHARACTERISTICS	SERVINOX OFFER
Sizes	DN06 / MAX viscosity: 200 cP DN10 / MAX viscosity: 2000 cP
Operating temperature	MIN: +1°C MAX: +120°C
Operating pressure	MIN: 0.1 bar MAX: 6 bar (10bar high-pressure version)
Materials	*PARTS IN CONTACT WITH THE PRODUCT:* 1.4404 stainless steel (316L) *OTHER PARTS:* 1.4307 stainless steel (304L) *DIAPHRAGM:* Silicone, VITON, EPDM, Kalrez

In the standard version, the sampling units have an angled outlet.

3.2. Options

- Different body; SERVINOX can supply many body versions on request (gas threaded, clamp, etc.)
- 1 liquid outlet + 1 CIP or sterilizing liquid inlet.
- Silicone plug on smooth or threaded outlet.
- Stainless-steel plug on threaded outlet.
- “High-pressure" screwing head sealed at 10 bar.

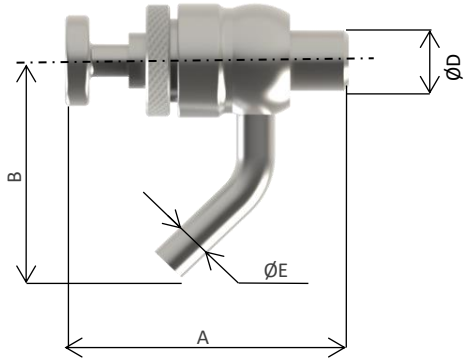
Comparison of high-pressure head and standard head

	type de tête	
propriétés	tête de PEMS standard	tête de PEMS haute pression
Membrane attelée	NON	OUI
Anti-desserrage	NON	OUI
Anti-poinçonnage	NON	OUI
PS 10 bars / PE 20 bars	NON	OUI
réglage du débit	OUI	OUI
"Easy Maintenance"	OUI	OUI

Dimensions

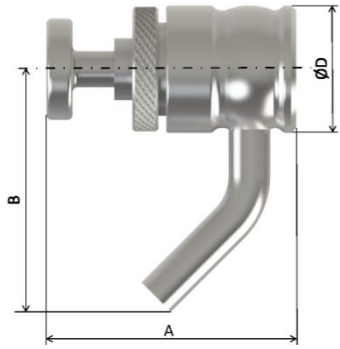
PEMS valve, type PEMS060000 or PEMS100000

SIZES	DN6	DN10
A	57	86.5
B	47	56
ØD	Ø13	Ø18
ØE	8 x 1	12 x 1



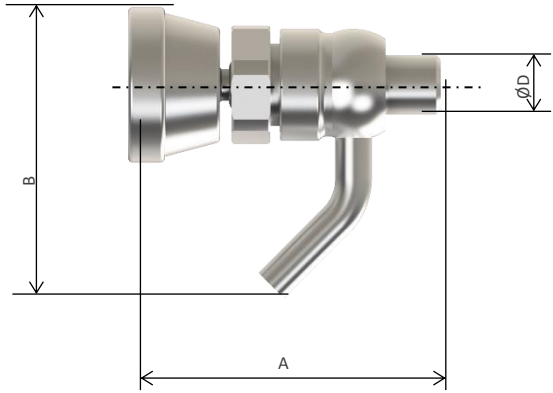
PEMS valve, type PEMS060001 or PEMS10001

SIZES	DN6	DN10
A	48	70
B	47	71
ØD	Ø24.5	Ø34.5



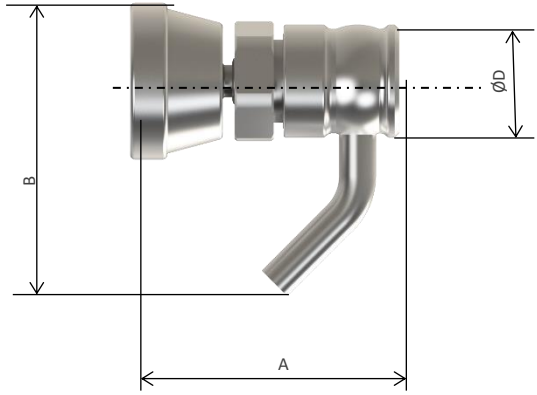
PEMS valve, type PEMS06H0000

SIZES	DN6
A	67.5
B	47
ØD	Ø13



PEMS valve, type PEMS06H0001

SIZES	DN6
A	58
B	47
ØD	Ø24.5



View of the equipment

PEMS valve, type PEMS060000 or PEMS100000

PEMS valve, type PEMS060001 or PEMS10001

PEMS valve, *type PEMS06H0000*

PEMS valve, *type PEMS06H0001*

4 COMMISSIONING

4.1. Transport/Reception/Handling

On reception, check:

- that ***the packaging is in good condition***,
- that the delivered equipment ***conforms to the order***,
- that the equipment ***has not been damaged.***

If the equipment is damaged, it must not be installed. Contact the manufacturer, or if necessary, the distributor.

4.2. Storage

If the equipment is not installed immediately upon delivery, it should be ***stored in accordance with best practice.***

It should be stored in its original packaging, in a covered place, protected from dirt, rain, snow, insects, and shaking.

Safe storage temperature is between 5°C and 40°C, with relative air humidity < 50%.

If the equipment is stored at sub-zero temperatures, the resistance of the materials to cold (e.g. seals) must be taken into account.

If the equipment is to be stored for more than one year, the seals must be replaced before commissioning

4.3. Installation

General points

Before any use of the equipment, the user must visually inspect the equipment to ensure that it seems to be in good condition: absence of corrosion, packaging residue.

If the fluid is harmful, flammable, toxic, etc., equip the assembly with discharge piping, leading to a safe place.

However, we recommend that you check the compatibility of these products with the seals and materials before use.

Workers

The work described hereafter must be performed by qualified and experienced personnel.

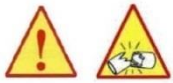
Personnel must be equipped with gloves, a helmet, and safety shoes or boots.

Welded connection
(standard version)

The equipment must be welded by qualified personnel during installation in accordance with the regulations applicable in the country of installation. The welding must be free of impurities and must be carried out hygienically.

After any welding and/or polishing work, the equipment must be cleaned of all residues, dust, etc.

Before welding

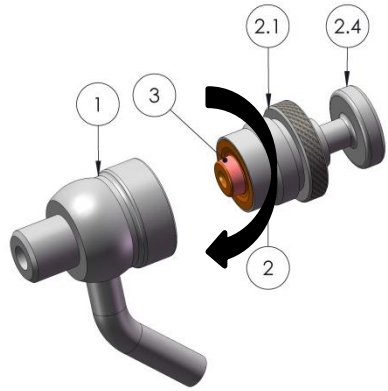


You must disassemble the sampling valve control head before welding the body to its mount in order to avoid damaging the diaphragm.

To remove the head (Dia. 2):

1) Completely unscrew the control screw (Dia. 2.4),

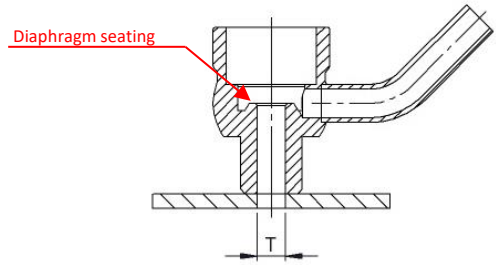
2) Unscrew the knurled head (Dia. 2.1); the control head is now separated from the housing.



NEVER USE TOOLS TO REMOVE THE VALVE

After welding the PEMS valve, type PEMS060000 or PEMS100000

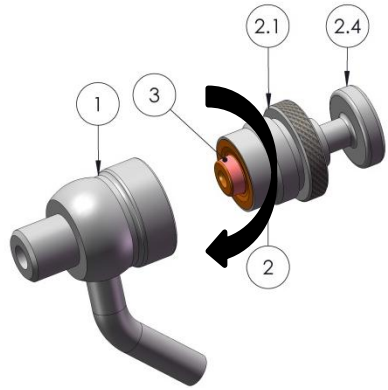
Once the foot is welded on, you must be careful when counter-boring (T) the bracket to ensure that you do not damage the diaphragm seating. ***Damaging the seating will cause the diaphragm to cut out or wear prematurely.***



Failure to follow this procedure may result in cutting or premature wear of the diaphragm.

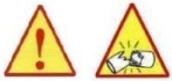
To re-install the head (Dia. 2):

1) Check that the PEMS body is clean,
2) Make sure that the diaphragm (Dia. 3) is present on the head (Dia. 2),
3) Make sure that the control screw (Dia. 2.4) is completely unscrewed,
4) Screw the knurled head (Dia. 2.1) onto the body (Dia. 1),
5) Screw on the control head (Dia. 2.4); the valve is closed.



Welded connection (high-pressure version)

Before welding

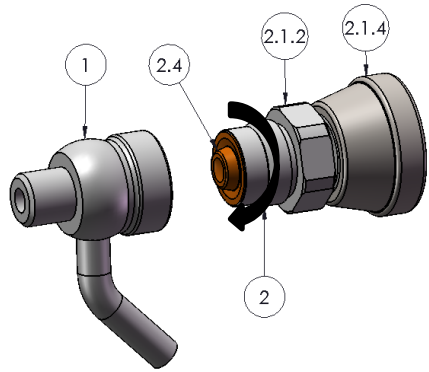


You must disassemble the sampling valve control head before welding the body to its mount in order to avoid damaging the diaphragm.

To remove the head (Dia. 2):

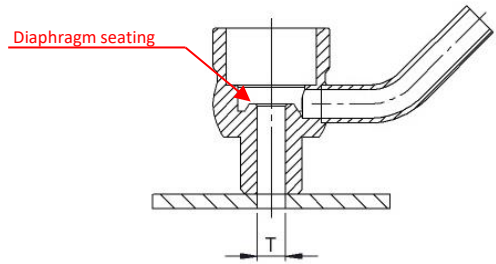
1) Fully unscrew the operating knob (Dia. 2.1.4),

2) Unscrew the nut (Dia. 2.1.2) using a 22mm open-end wrench; the control head is then separated from the body.



After welding the PEMS valve, type PEMS06H0000 or PEMS100000

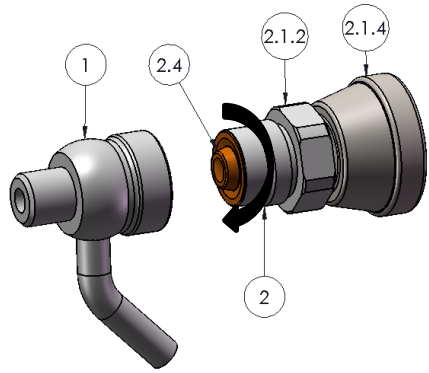
Once the foot is welded on, you must be careful when counter-boring (T) the bracket to ensure that you do not damage the diaphragm seating. ***Damaging the seating will cause the diaphragm to cut out or wear prematurely.***



Failure to follow this procedure may result in cutting or premature wear of the diaphragm.

To re-install the head (Dia. 2):

1) Check that the PEMS body is clean (Dia.1),
2) Make sure that the diaphragm (Dia. 2.4) is present on the head (Dia. 2),
3) Make sure that the operating knob (Dia. 2.1.4) is completely unscrewed,
4) Use the nut (Dia. 2.1.2) to screw the PEMS head onto the body (Dia.1) using a 22mm open-end wrench,
5) Screw in the operating knob (Dia. 2.1.4); the valve is closed.



5 OPERATION

5.1. Checking operation

- Check for leaks
- Check that the equipment has been correctly installed
- Check the tightness of the control head

5.2. Adjustments

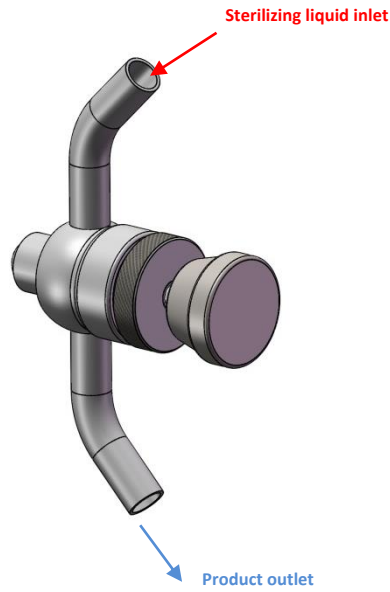
Adjustments must be made by the manufacturer of the documented equipment.

Contact Servinox, or if necessary, your distributor.

5.3. Sterile use

For valves with 1 outlet ***before sampling***, it is recommended that you flame sterilize the outlet tube (butane lamp type) for 1 minute.

For 2-outlet valves with silicone plugs: fill the outlets with sterilizing liquid outside the sampling port.



6 SERVICING AND MAINTENANCE

6.1. General points

The equipment requires maintenance in order to operate properly.

It must be inspected at regular intervals. It must be inspected 6 months after commissioning.

Certain fluid properties (corrosive, aggressive, abrasive, residues, viscosity, etc.) and environmental conditions (climate, pollution, etc.) may require more frequent inspections.

SERVINOX supplies spare parts to ensure proper equipment maintenance and to maintain the warranty.

We keep pouches of wearing parts (diaphragms, etc.) available and we recommend that you keep some in stock for quick replacement.

Please contact SERVINOX for advice on equipment maintenance.

Maintenance precautions

<u>Please make sure of the following before any maintenance work:</u>

- Lock out the equipment
- Depressurize the system
- Empty the assembly
- The fluid must be cooled to room temperature
- Ventilate the pipe system if the medium is corrosive and aggressive

Workers

The work described hereafter must be performed by qualified and experienced personnel.

Personnel must be equipped with gloves, a helmet, and safety shoes or boots.

6.2. Inspections and servicing

Mandatory periodic servicing:

Every 2 months for 6 months after commissioning

- Check for traces of corrosion,
- Check that there is no leakage of CIP liquid/product or compressed air
- Check that the joints are tightened
- Check that the valve is working properly.

Every six months:

- Internally inspect and clean the valve

Every year:

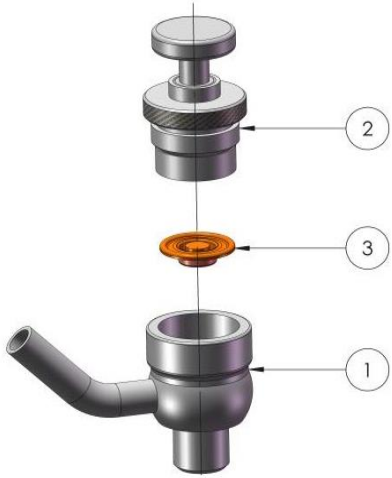
- Replace the diaphragm

It is recommended that you check the diaphragm material before replacement to avoid chemical compatibility problems.

We recommend recording all maintenance and inspection operations performed on the system in a table of this type:

Date	Company	Worker name	Signature
PREVENTATIVE MAINTENANCE			
Operations		**Other, Remarks**	
OPERATION AND CONDITION CHECKS			
Operations		**Other, Remarks**	

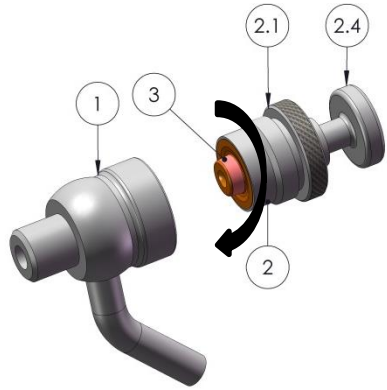
Exploded view of the equipment (standard version)



Nomenclature

MARKER	ITEM	QUANTITY
1	Body	1
2	Head	1
3	Diaphragm	1

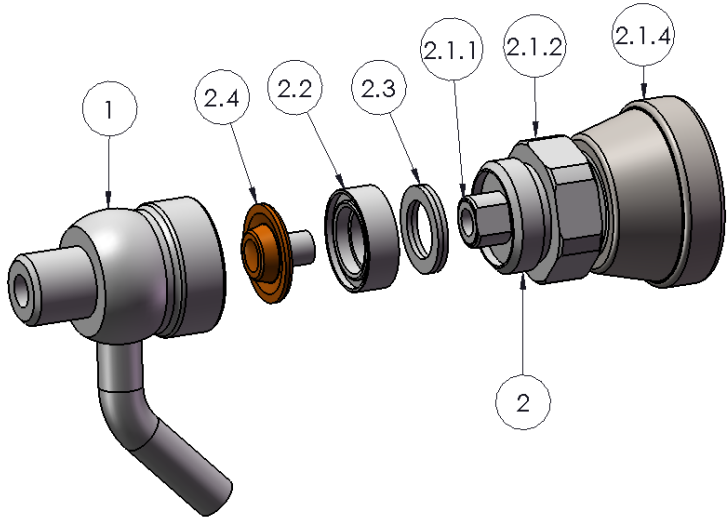
Replacing the diaphragm (standard version)



NEVER USE TOOLS FOR THE MAINTENANCE WORK

1) Completely unscrew the control screw (Dia. 2.4),
2) Unscrew the knurled head (Dia. 2.1) from the body,
3) Remove the diaphragm (Dia. 3),
4) Replace the diaphragm (Dia. 3) on the control head piston (Dia. 2),
5) Check that the control screw (Dia. 2.4) is still fully unscrewed,
6) Screw the knurled head (Dia. 2.1) into the body (Dia. 1); the control head (Dia. 2) is replaced,
7) Close the valve by tightening the control screw (Dia.2.4) to seal the valve.

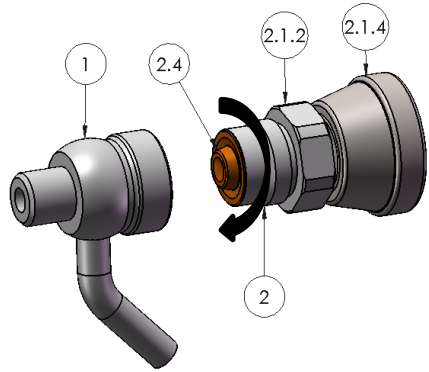
Exploded view of the equipment (high-pressure version)



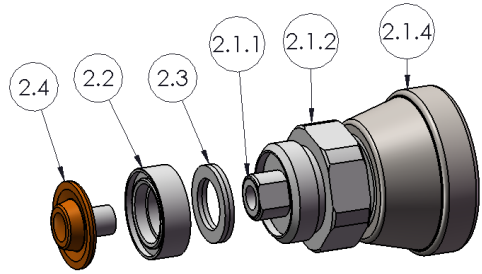
Nomenclature

MARKER	ITEM	QUANTITY
1	Body	1
2	Head	2
2.2	Diaphragm compressor	1
2.3	Nord-lock washers	2
2.4	Mounted diaphragm	1
2.1.1	Diaphragm mount	1
2.1.2	Nut	1
2.1.4	Operating knob	1

Replacing the diaphragm and/or Nord-Lock washers (high-pressure version)



1) Fully unscrew the operating knob (Dia. 2.1.4),
2) Unscrew the body nut using a 22mm open-end wrench (Dia. 2.1.2),



3) Unscrew the mounted diaphragm (Dia. 2.4) from the diaphragm mount (Dia. 2.1.1),
4) Remove the diaphragm compressor (Dia. 2.2) from the head (Dia. 2),
5) Remove the two Nord-Lock washers (Dia. 2.3) from the head,
6) Place the two new washers on the head,
7) Position the diaphragm compressor on top (Dia. 2.2),
8) Add a drop of thread lock (medium) to the diaphragm threads,
9) Screw the new diaphragm (Dia. 2.4) onto the diaphragm mount (Dia. 2.1.1),
10) Screw the PEMS head (Dia. 2) into the body (Dia. 1), using a 22mm open-end spanner,
11) Close the valve by tightening the operating knob (Dia.2.1.4) to seal the valve.

7 DIAGNOSTIC AID

The following table is intended to help you perform a diagnostic of the assembly and to resolve any simple operating problems.

INCIDENT	POSSIBLE CAUSE	SOLUTION
Fluid leakage	- Pierced connection weld (faulty assembly weld, corrosion, etc.)	> Have the weld repaired by qualified personnel
	- Worn diaphragm	> Replace the worn diaphragm > Adapt the diaphragm material to the fluid
	- Improperly tightened knurled head	> Tighten the head without using tools
	- Leaky diaphragm	> Check the diaphragm assembly

8 WARRANTY

Unless stated otherwise in the contract, ***the equipment is guaranteed for 12 months starting from the date of delivery.***

Parts acknowledged as defective by expert analysis in our plant will be replaced at our expense.

All equipment components (wear parts, diaphragm, etc.) must be replaced by original SERVINOX parts

The warranty does not cover damage resulting from:

Improper assembly, inappropriate use or abuse,

Accident or non-conform installation,

Modification of the equipment,

Leakage due to the flow of impurities will not be taken into account,

Failure to perform mandatory servicing and/or maintenance.

The warranty provided for our products covers free repair of returned parts when it can be proven that they became prematurely unusable as a result of a manufacturing or material defect.

We cannot be held liable for any damages or any compensation in such a case.

The equipment is inspected before delivery.

It is hereby certified that this equipment has been inspected and is authorized for sale.

Notes

solutions
engineered for you
dprozesse: Proces
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