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1. Generalities

The following operation instructions are valid for KLAUS UNION - strainers of the series 1891, which serve to filter defined grain in the flow of liquids, gases and steams in pipe lines.

KLAUS UNION - valves are subjected in their development, construction and testing to the corresponding DIN- and EN-standards as well as technical rules like AD and PED 97/23/EC.

By a correct assembling, maintenance or repair we guarantee an activity free of troubles.

The manufacturer carries no responsibility for efficiency and safety of the valves, whenever these operating instructions are not observed and followed accurately.

The valves are marked, according to DIN/EN 19 (ISO 5209) as follows: nominal diameter (DN), nominal pressure (PN), body material, heat-no or specimen-no, manufacturer brand and factory number, flow direction arrow and if necessary, admissible operating temperature (°C) and admissible operating pressure (bar). By adding the CE-marking at the valve, we confirm the conformity acc. to PED 97/23/EC at the same time.

ATTENTION! The valves must not be activated beyond the limits and rules indicated in the different documents (such as operation rules, contract documents, data sheet). Operations beyond the indicated limits lead to overstrain which cannot be sustained by the valves.



A non-observance of this warning can cause injuries to persons and defects of the machines, such as:

- Injuries caused by escaped medium (cold/hot, toxic, under pressure),
- Affect in activity or damage of the valve.

The descriptions and rules included in this operation instruction refer to standard types but are also valid for alternatives.

These operation instructions do not take into consideration:

- Any accident and incident which can arise by assembling, operation or commissioning of the valves.
- Any safety rule in relation with the place where the valve is installed. The operator is responsible for the observation of the safety rules, - also by the assembling staff.

ATTENTION! It is essential that the valves are handled by skilled staff that must be aware of the interactions between the valves and the system in which they are installed.

An incorrect use of a valve may cause strong consequences to the complete system, such as:

- Escape of medium
- Stop of the unit
- Affects, decreases or increases of operation or work of a system or unit.

For any further inquiries or in case of damage, please contact KLAUS UNION GmbH & Co. KG, Bochum.

In case of local inquiries or orders, especially for spare parts, please indicate the production or factory serial number, the type, the model version and possibly also the year of construction.

The technical data referring to the valves can be found in their technical documentations (paragraph 4).

In case of a return transport it has to be proceeded as explained in paragraph 3 <Transport>.

2. Safety

These operation instructions contain essential information that has to be observed by assembling, operation and commissioning of the valves.

For this reason they have to be read by the assembling staff, by the skilled staff and by the operator before the valve is assembled and put into operation and they should always be kept in the proximity of the valve.

Not only the general safety rules indicated in this main paragraph have to be observed, but also the other ones indicated in other paragraphs.

2.1 Indication of notes in the operation instructions

The safety warnings contained in this operation instruction, which have to be observed in order to avoid injuries to persons, are indicated by the following general and particular pictographs:

Warning!



Security signal acc. to DIN 4844 W 9

Beware of the electrical tension!



Security signal acc. to DIN 4844 - W 8

In order to avoid defects of valve efficiency and of its accessories the following warning mark has to be observed:

ACHTUNG

The signs marked directly on the valve (such as DN) have absolutely to be considered and kept in a readable condition.

2.2 Dangers that can result if safety instructions are not observed.

If the safety instructions are not observed injuries to persons, environment and valve, or system can arise and the indemnity rights get lost.

In particular the non-observance of the safety notes can cause dangers such as:

- Break down of important functions of the valve or unit.
- Failure of prescribed methods of commissioning and handling.
- Danger to persons caused by electrical, mechanical and chemical impacts.
- Environmental injuries caused by a leakage of dangerous materials.

2.3 Working with safety consciousness

The safety instructions included in this paper, the national regulations for prevention of accidents, as well as the internal regulations referring to work, operation and safety have to be observed by the operator.

2.4 Safety instructions for the operator/user

- Whenever some hot or cold valve parts may cause any danger, the operator has to protect these parts from contacts.
- Leakages (e.g. gaskets) of dangerous conveyed mediums (explosive, toxic, hot) have to be removed in a way that no danger to persons or environment can arise. Legal determinations must be respected.
- Injuries by electrical energy have to be excluded (please find details to this point in the VDE and local power supply enterprise regulations).

2.5 Safety instructions for commissioning, inspection and assembly works.

It must be provided that all commissioning, inspection and assembly works are executed by skilled staff, who must have previously studied these operation instructions.

Basically when any kind of work on a valve is executed, the valve has to be cooled down and free of pressure and the evaporation temperature of the medium must be lower than the temperature of all parts it gets in contact with.

Valves which get in touch with health injuring media have to be decontaminated.

Immediately after the work is done, all safety and protection devices have to be put into position or operation again. Before putting the valve into operation again, the points referring to paragraph 6 <putting into operation> have to be observed.

2.6 Arbitrary reconstruction and manufacture of spare parts

Reconstructions or modifications of the valve are only acceptable under agreement with the manufacturer. The use of original spare parts and by the manufacturer authorized accessories promotes safety. If any damage is caused by using other parts the liability for the consequences can be cancelled.

2.7 Inadmissible operation modes

Die Betriebssicherheit der gelieferten Armaturen ist nur bei bestimmungsgemäßer Verwendung entsprechend Abschnitt 1 <Allgemeines> der Betriebsanleitung gewährleistet. Die in der technischen Dokumentation angegebenen Grenzwerte dürfen nicht überschritten werden.

3. Corrosion protection, transport and storage

3.1 Corrosion protection

3.1.1 Carbon steel valves

Valves made out of unalloyed or low alloyed cast steel are painted with a hard sticking primer made of a 2-components colour based on epoxy resin paint. The minimum film thickness is 70 µm. The inner surfaces are free of paint and only coated with a temporary corrosion protection (e.g. oil). Machined flange facings are protected against outside influences with a peelable vanish.

3.1.2 Stainless steel valves

Valves made out of stainless steel will be delivered without coating.

3.2 Transport

The valves are delivered in a closed condition and its connecting holes are shut up by cover caps. See that valves are not thrown or exposed to hard crushes.

Valves will be supplied as ready for operation.

ATTENTION! During transportation and storage valves have to be closed. Connecting holes have to be shut up by suitable means (cover caps, foils) in order to avoid any damage to the sealing surfaces.

Consider the lifting instructions on page 5!

The weights of the valves can be learned from the corresponding manufacturer's documents (Data sheet, chapter 4.1 <Overview: corresponding documents>, Order acknowledgment).

After delivery, respectively before assembly the valves have to be inspected in order to exclude any transportation damage.

3.3 Storage

The storage has to be effected in a way that it can work perfectly even after a longer storage period.

For this purpose it is necessary

- To keep the valve closed (in order to protect the sealing surfaces)
- To take measures against soiling (dust, sand, mortar, respectively building materials), frost and corrosion (e.g. using plastic foils).

When storing valves with soft gaskets (of elastomer) the storage regulations for elastomer (DIN 7716) have to be observed:

- The store must be dry, free of dust and moderately ventilated. Store temperature should not go over 25°C.
- Stocks on hand have to be used up in order to avoid long storage periods.

4. Description / documents

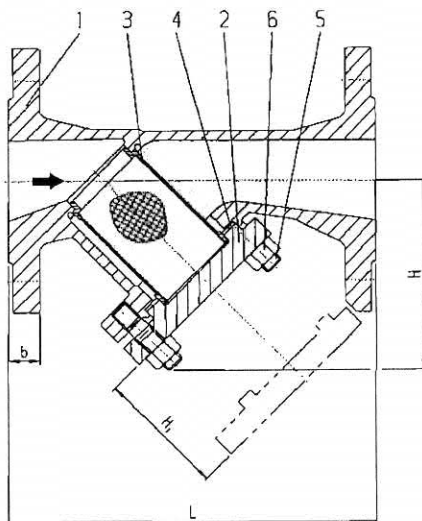
The following pictures represent some examples for the principle valve construction. Pictures and information referring to particular construction series can be found in the corresponding type sheets.

4.1 Overview: corresponding documents

4.1.1 Strainer, Y-type

Bolted cover, removable basket,
connecting flanges acc. to EN 1092-1 (DIN 2501)
flange facing acc. to EN 1092-1 (DIN 2526)
face-to-face acc. to EN 558 (DIN 3202)

Type	PN	Material	Data sheet No.
1891	10-40	1.4308	1891.100-400.202
1891	10-40	1.4408	1891.100-400.205



The project-specific data sheets for the series 1891 are still valid.

4.2 Parts index

Pos.	Denomination
1	Body
2	Cover
3	Basket
4	Gasket
5	Stud bolts
6	Hex. nuts

4.3 Function mode

Strainer consists of the pressure-bearing body (1) and cover (2), as well as the functional unit.

Body (1) and cover (2) are connected by the stud bolts (5) and hex. nuts (6) and are sealed up outside by the gasket (4).

The functional unit is the basket (3).

4.4 Application limits

ATTENTION! Depending on the materials the pressure temperature graduations (rating tables) of the respective materials are to be taken in consideration. Moreover, application is limited depending on the choice of the seal materials and it is influenced by the material combination of the connecting elements (bolts and nuts).

5. Installation

5.1 Generalities

ATTENTION! The pipeline has to be installed in a way that injurious shearing and bending forces during installation and activity are kept away from the valve bodies (1). This is to avoid leakiness and destruction of the body.

ATTENTION! Before installation the cover caps have to be removed from the connecting holes.

The flange facings must be clean and undamaged. Before installation the strippable varnishes have to be removed.



The flange gaskets must be well centralized.

Only bolts and gaskets of admissible materials may be used. For the flange connection all flange drill holes have to be used.



When varnishing the pipelines, no bolts nuts and accessories must be painted (function affects). During any construction work the valves have to be protected from dust, sand and any other construction material. (Please cover with suitable means).

Valves and pipe lines working in high temperatures ($>50^{\circ}\text{C}$) or low ($<0^{\circ}\text{C}$) must be protect from touch by insulating. Alternatively the danger must be indicated by warning boards on the valve side.

5.2 Installation position

The strainer has to be installed in such a way that the basket can be removed downwards. For the removal of the basket, it is necessary to keep enough installation space, which relate to dimension „H₁“ (see data sheet) in minimum.

The flow direction of strainers is basically so that the medium pass through the basket from inside to outside.

5.3 Prevention of unallowable overpressures

Basically KLAUS-UNION valves are suitable for working conditions, which relate to the relevant pressure temperature tables (P/T-Ratings). It must be assured by corresponding arrangements that at the valves no incorrect burden accrue from the configuration in the pipelines or the operating conditions.

5.3 Welding instructions / pipe line assembly

For welding works on the valves the pipe line manufacturer is responsible.

ATTENTION! Whenever the valves are welded with butt welding ends or socket weld ends and the pipe line is welded with valves that are already installed (pipe line assembly), it has to be taken care that no impurity get inside of the body or even stay there, otherwise the built-in parts can be damaged.

ATTENTION! The welding cable (opposite pole) must be attached by no means to any functioning parts of the valve, otherwise scorching can be caused.

The insert depth of valves with socket weld ends has to be observed accordingly to the referring standard. A gap between pipe end and sleeve ground serve as prevention from inadmissible welding seam strain.

6. Operation / putting into and out of operation

(See also indications in paragraph 5 <installation>)

6.1 Operation / putting into operation

6.1.1 Generalities

Before putting the valve into operation its material, pressure and temperature data have to be compared with the operation terms of the pipe line.



Eventually appearing shock pressures (water hammer) should not exceed the maximal admissible pressure. Protective measures have to be provided.

The line system of new plants and especially after repair works has to be flushed in order to remove harmful solid matters, respectively bead of weld.

6.1.2 Function check up

The following functions have to be checked up:

The sealing efficiency of the bolted cover connections with gasket must be examined after the first loading/warming up of the valve. If necessary the bolts connections have to be gently, crosswise and evenly tightened.

(See also indications in paragraph 5.1 <Generalities>)

6.2 Putting out of operation

During longer standstill periods liquids whose form can change in concentration due to polymerization, crystallization, solidification or the like, have to be let out of the line system. If necessary the line system has to be rinsed.

7. Commissioning / maintenance

7.1 Safety notes

During all commissioning and maintenance works on the valves the following safety notes as well as the general indications under paragraph 2 <safety> must be observed.

ATTENTION! In any case, also in emergency, only suitable spare parts and tools have to be used, otherwise a perfect function is not guaranteed.

7.1.1 Valve disassembly

Before dismantling from the pipe line or before commissioning and repair works are made directly on the valve, more precisely:

- before loosening the bolted cover
- before loosening shutting, opening and pressure release threaded plugs

the valve has to be completely discharged from pressure and has to be cooled up until the evaporation temperature of the medium is lower than all the chambers getting in contact with it. Then any scald can be excluded.



Opening a valve under pressure is a lethal danger!

In case those toxic or easily inflammable mediums are conveyed, or mediums the residues of which in contact with humidity of the air can lead to corrosion damages, the valve has to be drained and flushed, respectively ventilated.

If it is necessary protecting clothes and protective masks have to be worn.

Due to the installation position the residual liquid possibly remained in the valve has to be drained off and correctly disposed.

Before a possible transportation, the valves have to be carefully emptied and flushed.

For any further information please contact KLAUS UNION GmbH & Co. KG.

7.2 Maintenance

The valves are constructed in almost all of their parts maintenance-free. In order to improve operation safety and to minimize repair costs, all valves, especially those ones which are seldom put into operation or are hard to get to, should be regularly tested.

The operator is responsible to determine the convenient test and maintenance intervals depending on the application of the valve.

The durability of can be extended by:

- clean and undamaged baskets
- the gasket is punctually renewed;

The safety warnings in par. 2, 7.1 and in par. 8 must be observed.

7.3 Valve mounting

When using a replacement basket, the fitting length must be checked and if necessary it must be fitted to the seat depth of the body. This is to avoid damages at the basket.

After reassembling and before putting into operation the valves have to be subjected to a strength- and tightness-test acc. to EN 12266 (DIN 3230 part 3).

8. Troubles and their elimination

8.1 Generalities

All repair and maintenance works have to be done with suitable tools and original spare parts.

The safety notes in par. 2 and 7 have to be observed.

8.2 ♦ Troubles / ✎ Elimination

♦ No or less flow

- ✎ Clean or replace the basket.

ATTENTION! Draggled strainer in the suction line of pumps causes cavitations which will damage the pumps.

♦ Leakage of gasket

- ✎ Tighten up the cover bolts
- ✎ Renew the gasket after the bolts have been dismantled.

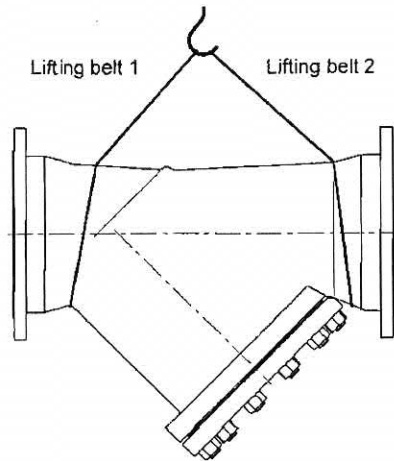
Before inserting a new gasket the sealing faces of body and cover must be carefully flushed.

ATTENTION! No additional auxiliary sealing means have to be used for sealing rings free of asbestos. For non-sticking coating only means explicitly recommended by the seal manufacturer have to be used.

For any further information please contact KLAUS UNION GmbH & Co. KG.

Lifting a valve for installation in

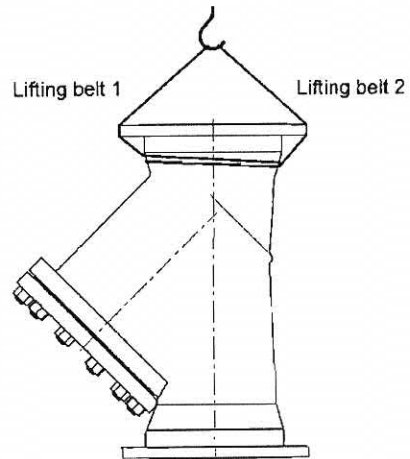
- horizontal pipe lines (examples)



Pic. 1

Lifting belts 1 and 2 have to be twisted around the body.

- vertical pipe lines (examples)



Pic. 2