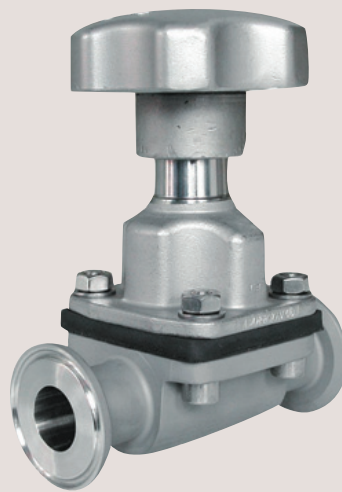




Instruction Manual

Unique DV-ST UltraPure - Manuel: for valve sizes DN8 to DN80



ESE01752-EN1 2011-04

Original manual

The information herein is correct at the time of issue but may be subject to change without prior notice

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1 EC Declaration of Conformity

The designating company

Alfa Laval Dortmund GmbH

Company Name

Hesslingsweg 71, DE-44309 Dortmund, Germany

Address

+49 23 19 25 60

Phone No.

hereby declares that

Diaphragm Valve

Denomination

Manual

Type

Year

conforms with the following directives:

- Machinery Directive 2006/42/EC

- Pressure Equipment Directive 97/23/EC category 1 and subjected to assessment procedure Module A.

According to the Pressure Equipment Directive PED 97/23/EG, complete valves DN 25 – DN 100 will be certified.

Attention: Single components, spare parts and complete valves from DN 8 – DN 20 may not be certified. Single components and spare parts have to be approved by the user after completion.

Manager, Product Centre, Fluid Handling

Title

Bjarne Søndergaard

Name

Alfa Laval

Company

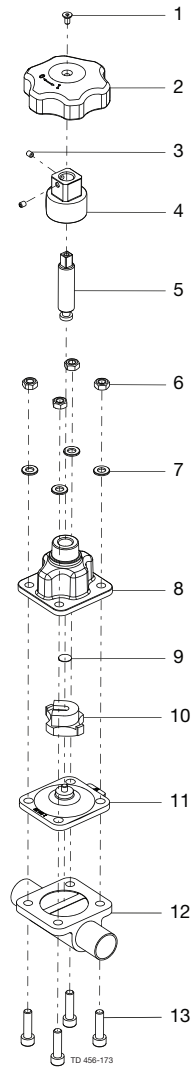
Signature



Designation



2.1 Valve design



- | | |
|----|---------------|
| 1 | Countersink |
| 2 | Handwheel |
| 3 | Set screw |
| 4 | Coupling |
| 5 | Stem |
| 6 | Nuts |
| 7 | Washer |
| 8 | Bonnet shell |
| 9 | Thrust washer |
| 10 | Compressor |
| 11 | Diaphragm |
| 12 | Body |
| 13 | Fasteners |

3 Safety

*Unsafe practices and other important information are indicated in this manual.
Warnings are emphasised by means of special signs.*

3.1 Important information

Always read this manual before using the valve!

WARNING

Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION

Indicates that special procedures must be followed to avoid damage to the valve.

NOTE

Indicates important information to simplify or clarify procedures.

3.2 Warning signs

General warning:



Caustic agents:



All warnings in this manual are summarised on this page.

Pay special attention to the instructions below so that serious personal injury and/or damage to the valve are avoided.

3.3 Safety precautions

Installation:



Never touch the valve or the pipelines when processing hot liquids or when sterilising

Never dismantle the valve with valve and pipelines under pressure

Never dismantle the valve when it is hot

Operation:



Never dismantle the valve with valve and pipelines under pressure

Never dismantle the valve when it is hot

Never touch the valve or the pipelines when processing hot liquids or when sterilising

Never touch moving parts if the actuator is supplied with compressed air

Always rinse well with clean water after cleaning

Always handle lye and acid with great care



Maintenance:



Never service the valve when it is hot

Never service the valve with the and pipelines under pressure

Never put your fingers through the valve ports if the actuator is supplied with compressed air

Never touch moving parts if the actuator is supplied with compressed air

Transportation:

Always check that all connections are disconnected before attempting to remove the valve from the installation

Always drain liquid from valves before transportation

Always used pre-defined lifting points if given

Always ensure that the valve is adequately secured during transportation - if specially designed packaging material is available, it must be used

4 Installation

The instruction manual is part of the delivery. Study the instructions carefully.

The items refer to the parts list and the service kits section.

The valve is supplied as separate parts as standard (for welding).

The valve is assembled before delivery, if it is supplied with fittings.

4.1 Unpacking/delivery

Step 1

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

1. Complete valve.
 2. Delivery note.
-

Step 2

1. Remove any packing materials from the valve/valve parts.
 2. Inspect the valve/valve parts for visible transportation damage.
 3. Avoid damaging the valve/valve parts.
-

4.2 General installation

Step 1



Always read the technical data thoroughly.

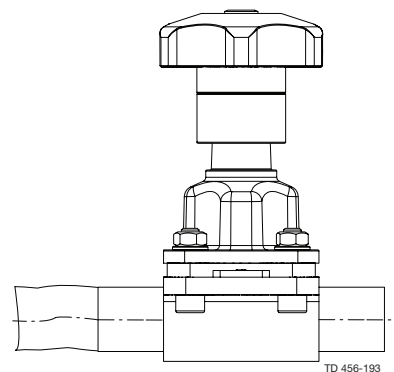
CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

Avoid stressing the valve.

Pay special attention to:

- Vibrations.
- Thermal expansion of the pipelines.
- Excessive welding.
- Overloading of the pipelines.



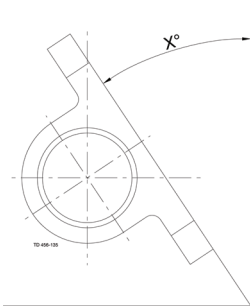
Risk of damage!

- For draining the diaphragm valve and pipeline, an appropriate installation position must be provided.
 - Variable installation position. For self-draining, see the data on the installation angle.
 - For diaphragm valves with weld ends, remove the bonnet and diaphragm from the valve body before welding.
-

Study the instructions carefully and pay special attention to the warnings!

4.3 Installation angle on self-draining position

Table 1. Drain angle x



Port size		ASME BPE	ISO 2037	Series A/ DIN11866	Series B/ ISO 1127	BS 4825
DN	Inch					
8	1/4"	37°	27°	27°	22°	37°
15	1/2"	32°	23°	23°	18°	33°
20	3/4"	26°	23°	23°	15°	27°
25	1"	21°	25°	21°	20°	25°
40	1 1/2"	24°	24°	22°	18°	24°
50	2"	24°	24°	23°	20°	24°
65	2 1/2"	20°	22°	19°	15°	22°
80	3"	21°	25°	22°	15°	25°

4.4 Drainability

Proper drainability in horizontally level installed pipes requires mounting of the valve at the correct angle. See table below.

To ensure proper drainability, the valve must be mounted at the correct angle. Proper installation is the responsibility of the system installer and/or user.

4.5 Welding

Step 1

All welding should be done by qualified personnel.

Disassemble the bonnet and the diaphragm from the valve body.
See Replacing the Diaphragm for details.

Step 2

Perform the welding procedure on the body according to standard industrial practices.

Step 3

Reassemble the bonnet and the diaphragm to the valve body.

Step 4

Test the valve for proper operation before installing.

4 Installation

Study the instructions carefully and pay special attention to the warnings!

4.6 Mounting of the bonnet

For T-valves, Tandem valves, Tank outlet valves and Block valves, please note that the bonnet is mounted using studs and nuts instead of bolts and nuts.

4.7 Recycling information

- **Unpacking**

- Packing material consists of wood, plastics, cardboard boxes and in some cases metal straps
- Wood and cardboard boxes can be re-used, recycled or used for energy recovery
- Plastics should be recycled or burnt at a licensed waste incineration plant
- Metal straps should be sent for material recycling

- **Maintenance**

- During maintenance, oil and wear parts in the machine are replaced
- All metal parts should be sent for material recycling
- Worn out or defective electronic parts should be sent to a licensed handler for material recycling
- Oil and all non-metal wear parts must be disposed of in agreement with local regulations

- **Scrapping**

- At end of use, the equipment must be recycled according to relevant, local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be taken into consideration and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company
-

Study the instructions carefully and pay special attention to the warnings!

5.1 Diaphragm maintenance

Generally, the only routine maintenance required is the replacement of the diaphragm.

Diaphragm replacement routine

Depending on the medium, the pressure, temperature and cycle (duration and temperature) of steam sterilisation between process runs, determines the optimum change cycle of the diaphragm.

5.2 Replacing the diaphragm

Before servicing any installed valve you must:

- depressurise the system
- open the valve
- purge the valve

Note: The diaphragm can be replaced without removing the valve body.

Step 1

Only use Alfa Laval diaphragms.

Step 2

Actuate the valve to the "open" position by rotating the handwheel counter-clockwise until the valve is fully opened.

Step 3

Remove the body fasteners by using a crosswise sequence.
Remove the bonnet.

Step 4

Actuate the valve to the "closed" position by rotating the handwheel clockwise.

Step 5

Remove the diaphragm from the bonnet

Button-style compressor:

- Remove the diaphragm by pulling it out slightly.

Threaded-style compressor:

- Unthread the diaphragm in a counter-clockwise direction.

Bayonet-style compressor:

- Rotate the diaphragm 90° and remove.

NOTE

see fig. 1-3, reverse action of step 9.

Step 6

Check and clean thread and bayonet of the compressor.

Step 7

Ensure, that the new diaphragm and the contact area on the valve body are clean and dry.

Step 8

Ensure that the bonnet compressor matches the connection of the diaphragm. Should this not be the case, replace the compressor.

5 Maintenance

Study the instructions carefully and pay special attention to the warnings!

Step 9

With the bonnet in the "closed" position, install the diaphragm as follows:

Button-style compressor:

- Insert diaphragm with a push and a slight rotation.
- Rotate the diaphragm until the holes match.

Threaded-style compressor:

- Thread the diaphragm into the compressor in a clockwise direction. Do not overtighten.
- Then, if necessary, turn the diaphragm in a counter-clockwise direction until the holes match.

Bayonet-style compressor:

- Insert diaphragm with bayonet into the compressor recess.
- Rotate diaphragm 90°. Holes must match.

Fig. 1

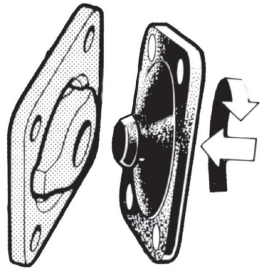


Fig. 2

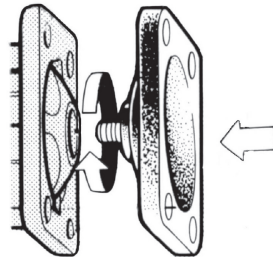
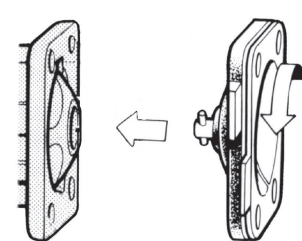


Fig. 3



Step 10

Actuate the valve to the "open" position, see step 2.

Step 11

Align the bonnet to the valve body using bonnet fasteners. Assemble the nuts and, if necessary, use washers. To secure the bonnet and body, tighten the fasteners by hand.

Study the instructions carefully and pay special attention to the warnings!

Step 12

Actuate the valve to an almost closed position. Fully closing the valve can damage the diaphragm position, so that the diaphragm does not properly fit to the weir, see step 4. Tighten the body fasteners cross-wise using a wrench.

NOTE! Proper assembly extends the life of the diaphragm.

Correctly assembled diaphragms have a Crescent-shaped bulge in the diaphragm edge which can be observed from the side (Fig. 6).

Fig. 4

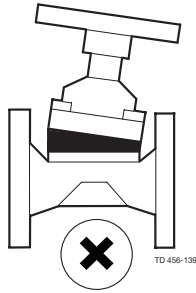


Fig. 5

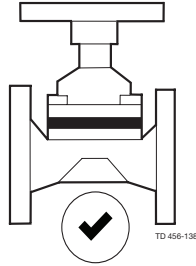
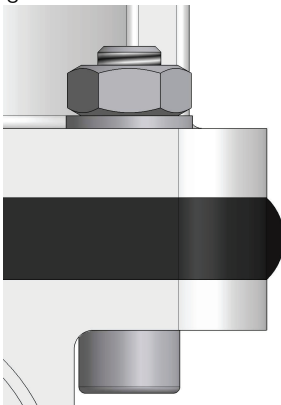


Fig. 6



Step 13

Actuate the valve to the "open" position, see step 2. Lightly re-tighten the body fasteners cross-wise using a wrench.



NOTE

Proper assembly extends the life of the diaphragm. Correctly assembled diaphragms have a crescent-shaped bulge in the diaphragm edge which can be observed from the side.

Step 14

Test the valve for proper function.

NOTE

Check the fasteners 24 hours after operation of the valves. In case of leakage at the body, depressurise the system and, if necessary, tighten the fasteners again as described. If leakage continues, replace the diaphragm. Check the travel stop and adjust, if necessary.

5 Maintenance

Study the instructions carefully and pay special attention to the warnings!

5.3 Travel stop adjustment

Please note:

Section 5.3 is **not** valid for size DN8

Step 1

CAUTION



Before servicing any installed valve, you must:

- depressurise the system
 - open the valve
 - purge the valve
-

Step 2

Make sure that the bonnet and diaphragm are properly installed.
See also **Replacing the diaphragm**.

Step 3

Rotate the handwheel in a clockwise position until the valve is fully closed.

Step 4

Using a flat-blade screw driver, remove the plug from the top of the handwheel, for composite version only.

Step 5

Using a hex wrench, remove the locking screw followed by the washer that attaches the handwheel and the stem.

Step 6

Remove the handwheel.

Step 7

Using a 2.5 mm hex wrench, loosen the set screws on the coupling enough to allow the coupling to rotate on the stem.

Step 8

Remove the coupling by turning it counter-clockwise.

Step 9

Using a wrench, turn the stem counter-clockwise until the diaphragm is fully seated.



CAUTION

Do **not** overtighten!

Step 10

Screw the coupling clockwise into it seats into the base.

Step 11

Tighten the 2 set screws.

Note: A slight counter-clockwise adjustment may be needed until the correct position is reached.

Study the instructions carefully and pay special attention to the warnings!

Step 12

Reinstall the handwheel, assemble the set screws, washers and plugs. Tighten firmly.

Step 13

Test the valve for proper function.

Note: If the completely closed valve does not achieve a leaktight seal, repeat steps 1 to 11, with slightly more tightening of the stem as described in step 7.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information directly.

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