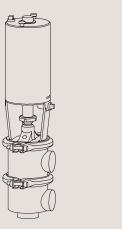


Instruction Manual

Unique Single Seat Valve (DN125-150)



t f

TD 425-16

ESE02590-EN3 2016-03

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 Declaration of Conformity

Revision of Declaration of Conformity 2009-12-29

The Designated Company

Alfa Laval Kolding A/S Company Name

Albuen 31, DK-6000 Kolding, Denmark Address

+45 79 32 22 00 Phone No.

hereby declare that

Valve Designation

SRC PN10

Туре

is in conformity with the following directive with amendments:

- Machinery Directive 2006/42/EC

- Pressure Equipment Directive 2014/68/EU category 1 and subjected to assessment procedure Module A.

The person authorised to compile the technical file is the signer of this document

Global Product Quality Manager Pumps, Valves, Fittings and Tank Equipment Title Lars Kruse Andersen

Name

Signature

Kolding Place

((

2013-12-03 Date

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

2.1 Important information

Always read the 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.

2.2 Warning signs

General warning:

Caustic agents:



2 Safety

All warnings in the manual are summarized on this page. Pay special attention to the instructions below so that severe personal injury and/or damage to the valve are avoided.

2.3 Safety precautions

Installation:

Always observe the technical data (see chapter 6 Technical data) Always release compressed air after use.

Operation:

Always observe the technical data (see chapter 6 Technical data) Never touch the valve or the pipelines when processing hot liquids or when sterilizing

Always handle lye and acid with great care

Maintenance:

- Always observe the technical data (see chapter 6 Technical data)
- Always release compressed air after use
- The valve must Never be hot when servicing it
- The valve/actuator and the pipelines must never be pressurised when servicing the valve/ actuator
- Never stick your fingers through the valve ports if the valve is supplied with compressed air.

Transportation:

Always secure that compressed air is released

Always secure that all connections is disconnected before attemt to remove the valve from the installation

Always drain liquid out of valves before transportation

Always used predesigned lifting points if defined

Always secure sufficient fixing of the valve during transportation - if special designed packaging material is available it must be used

The instruction manual is part of the delivery. Study the instructions carefully. The valve is supplied as separate parts as standard (for welding). The valve is assembled before delivery, if it is supplied with fittings.

3.1 Unpacking/delivery/general installation

Unpacking/delivery

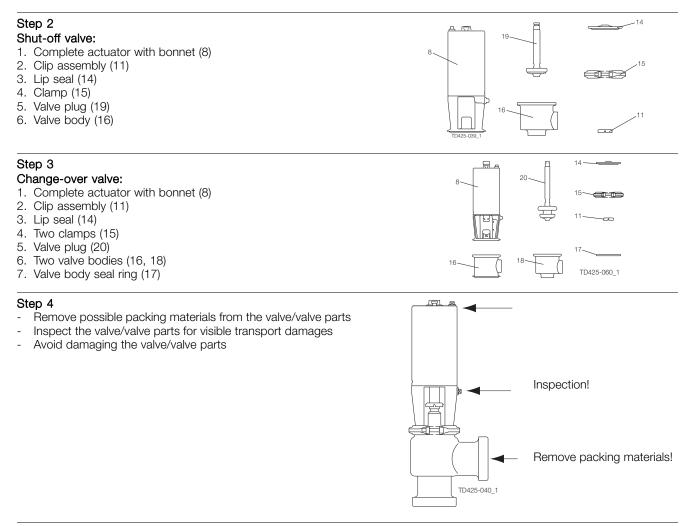
Step 1

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery:

- 1. Complete valve, shut-off valve or change-over valve (see step 2 and 3)
- 2. Delivery note
- 3. Instruction Manual



3 Installation

The valve sizes DN125-150 are very heavy.

Therefore Alfa Laval recommends manufacturing and usage of auxiliary equipment. A proposal is given below. Please note that the auxiliary equipment cannot be supplied by Alfa Laval. The items refer to the parts list and service kits section.

3.2 Recommended auxiliary equipment

Step 1

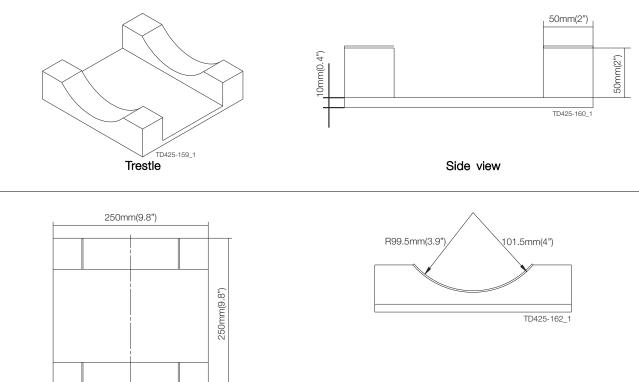
For lifting the valve

Screw an eye bolt (6 mm) (1/4") into top pin (23). Using a small

hook crane or similar, lift the valve by the eye bolt.

Trestle:

- The purpose of the trestle is to support the valve during dismantling and reassembly.
- The trestle is made of a base plate, two support plates, two rubber linings and four bolts.
- The rubber linings are attached to the support plates so that the valve/actuator will rest on these.
- To prevent the valve from turning during dismantling and assembly the trestle must be made with the correct measurements (see below). All measurements are in mm.





End view

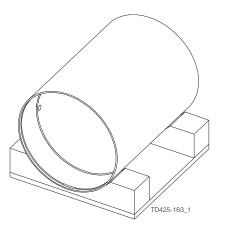
Step 2

- 1. Place the valve in the trestle.
- 2. Make sure that the actuator rests on the rubber linings on the trestle support plates.

Top view

TD425-161 1

3. Dismantle/assemble the valve.



Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard but can also be supplied with fittings. NO = Normally open. NC = Normally closed. A/A = Air/air activated.

3.3 General installation

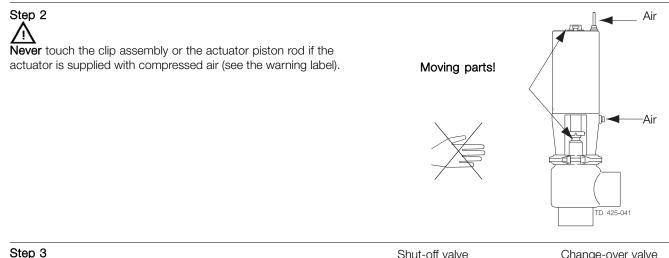
Step 1

Always read the technical data thoroughly. See chapter 6 Technical data

Always release compressed air after use.

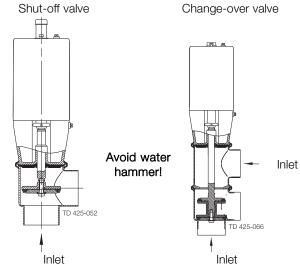
CAUTION

Alfa Laval cannot be held responsible for incorrect installation.



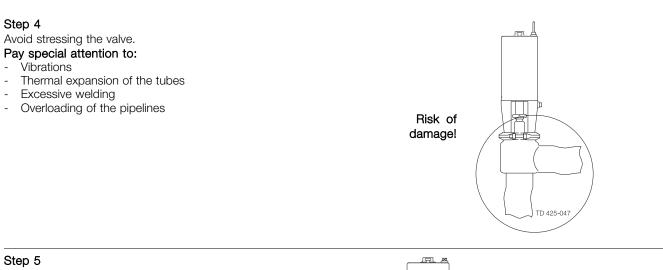
It is recommended to install the valve so that:

- The actuator is not turned downwards as the valve will then not be drained.
- The flow is against the closing direction to avoid water hammering

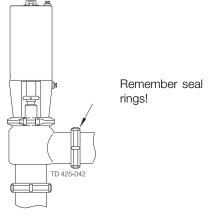


3 Installation

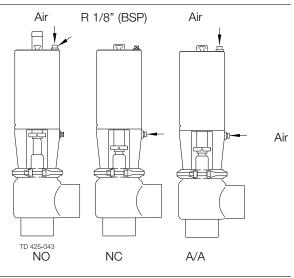
Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard but can also be supplied with fittings. NO = Normally open. NC = Normally closed. A/A = Air/air activated.



Fittings: Ensure that the connections are tight.



Step 6 Air connection:



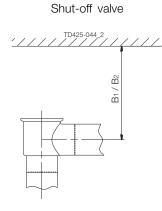
Study the instructions carefully. The valve is supplied as separate parts to facilitate the welding. The items refer to the parts list and service kits section. Check the valve for smooth operation after welding. NO = Normally open. NC = Normally closed. A/A = Air/air activated.

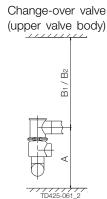
3.4 Welding

Step 1

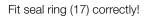
Always weld the valve so that the valve body seal ring can be replaced (change-over valve). Maintain the minimum clearances (A and B) so that the lower valve body and plug (change-over valve) and the actuator with the internal parts can be removed.

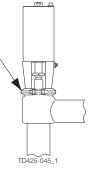
Valve size	A (mm) (inch)	B ₁ (mm) (inch)	B ₂ (mm) (inch)
DN125	580 (22.8)	730 (28.7)	920 (36.2)
DN150	640 (25.1)	730 (28.7)	920 (36.2)



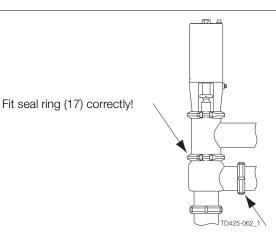


Step 2 Shut-off valve Assemble the valve in accordance with steps 1-5 in section 4.3 Recommended cleaning Pay special attention to the warnings!





Step 3 Change-over valve Assemble the valve in accordance with step 1-6 in section 4.3 Recommended cleaning Pay special attention to the warnings!



Remember seal rings!

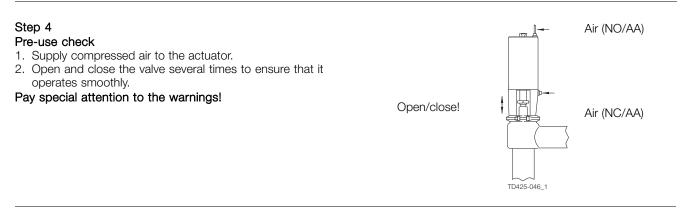
3 Installation

Study the instructions carefully.

The valve is supplied as separate parts to facilitate the welding.

The items refer to the parts list and service kits section. Check the valve for smooth operation after welding.

NO = Normally open. NC = Normally closed. A/A = Air/air activated.



Study the instructions carefully and pay special attention to the warnings! Ensure that the valve operates smoothly. The items refer to the parts list and service kits section. NO = Normally open. NC = Normally closed. A/A = Air/air activated.

4.1 Operation

Step 1

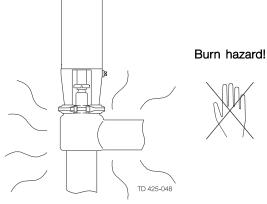
- Always read the technical data thoroughly (see chapter 6 Technical data)
- Always release compressed air after use.

CAUTION!

Alfa Laval cannot be held responsible for incorrect operation.

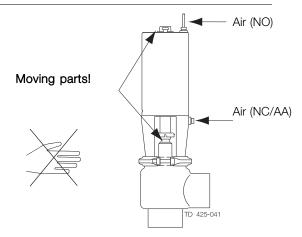
Step 2

Never touch the valve or the pipelines when processing hot liquids or when sterilizing.



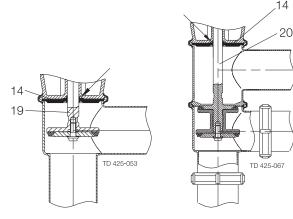
Step 3

Never touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.



Shut-off valve

Change-over valve



Lubricate if necessary! (see section 5.1 General maintenance)

Step 4 Lubrication of valve:

- 1. Ensure smooth movement between lip seal (14) and plug stem
- (19, 20).
- 2. Lubricate the lip seal with silicone oil/grease if necessary.

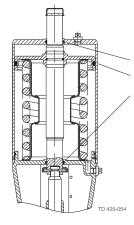
Operation 4

Study the instructions carefully and pay special attention to the warnings! Ensure that the valve operates smoothly. The items refer to the parts list and service kits section. NO = Normally open. NC = Normally closed. A/A = Air/air activated.

Step 5

Lubrication of actuator

- 1. Ensure smooth movement of the actuator (the actuator is lubricated before delivery). 2. Lubricate all seals with oil/grease if necessary.



Lubricate if necessary! (see section 5.1 General maintenance)

Pay attention to possible faults. Study the instructions carefully. The items refer to the parts list and service kits section

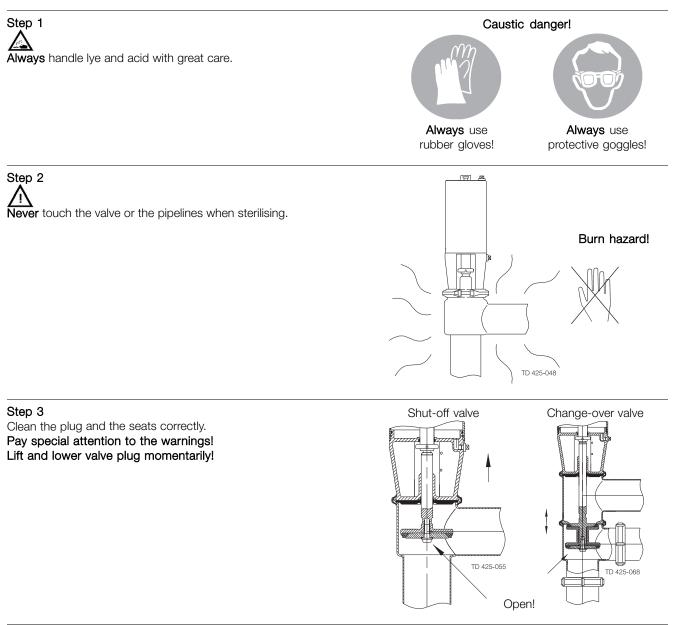
4.2 Fault finding

Problem	Cause/result	Repair
The valve plug jerks	The lealings seize	Lubricate: - O-rings (2) - O-ring (5) and the inside of cylinder (3) - Lip seal (14)
Product leakage at stem and/or clamp	- Worn/product affected lip seal (14) and/or seal ring (17)	 Replace the seal Replace with a seal of a different rubber grade
Product leakage (closed valve)	 Worn/product affected Loose plug parts (vibrations) Product deposits on the seat and/or plug 	 Replace the seal ring Replace with a seal of a different rubber grade Tighten the loose parts Frequent cleaning
Product leakage (too high pressure or too small actuator)	 Worn actuator O-rings Too small actuator or actuator spring 	 Replace the O-rings Replace with a larger actuator (for valve sizes DN/OD38-63.5 mm/ DN40-65) Fit a stronger spring (for valve sizes DN/OD38-63.5 mm/DN40-65) Use auxiliary air on the spring side (NOT-element)
Water hammer	The flow direction is the same as the closing direction	 The flow direction should be against the closing direction Fit a damper on the valve (optional extra) Use auxiliary air on the spring side (NOT-element)
The valve does not open/close	Faulty clip assembly (11)The pressure on the plug plug is too high	 Replace the clip assembly Reduce the pressure plug is too high Fit stronger spring/larger actuator (for valve sizes DN/OD38-63.5 mm/ DN40-65)

4 Operation

The valve is designed for cleaning in place (CIP). CIP = Cleaning In Place. Study the instructions carefully and pay special attention to the warnings! NaOH = Caustic Soda. HNO3 = Nitric acid.

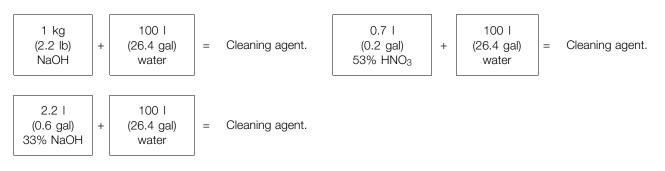
4.3 Recommended cleaning



Step 4

Examples of cleaning agents: Use clean water, free from clorides.

- 1. 1% by weight NaOH at 70° (158° F).
- 2. 0.5% by weight $HNO_3 \mbox{ at } 70^{\rm o} \mbox{ C}$



The valve is designed for cleaning in place (CIP). CIP = Cleaning In Place. Study the instructions carefully and pay special attention to the warnings! NaOH = Caustic Soda. HNO3 = Nitric acid.

Step 5

- 1. Avoid excessive concentration of the cleaning agent.
- 2. Adjust the cleaning flow to the process.
- 3. Always rinse well with clean water after the cleaning.

Step 6 NOTE

The cleaning agents must be stored/disposed of in accordance with current regulations/directives.

5 Maintenance

Maintain the valve regularly. Study the instructions carefully and pay special attention to the warnings! Always keep spare rubber seals and lip seals in stock.

5.1 General maintenance

Step 1

Always read the technical data thoroughly. See chapter 6 Technical data

NOTE

All scrap must be stored/discharged in accordance with current rules/directives.

Always release compressed air after use.

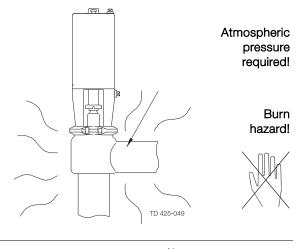
Step 2



Never service the valve when it is hot.



Never service the valve with valve and pipelines under pressure.

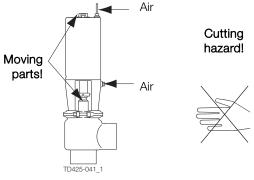




Never stick your fingers through the valve ports if the actuator is supplied with compressed air.

$\overline{\mathbb{N}}$

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



Maintain the valve regularly. Study the instructions carefully and pay special attention to the warnings! Always keep spare rubber seals and lip seals in stock.

	Product rubber seals	Valve lip seal	Actuator rubber seals
Preventive maintenance	Replace after 12 months depending on working conditions	Replace when replacing the rubber seals	Replace after 5 years
Maintenance after leakage (leakage normally starts slowly)	Replace at the end of the day	Replace when replacing the rubber seals	Replace when possible
Planned maintenance	 Regular inspection for leakage and smooth operation Keep a record of the actuator Use the statistics for planning of inspections Replace after leakage 		 Regular inspection for leakage and smooth operation Keep a record of the actuator Use the statistics for planning of inspections Replace after leakage
Lubrication (USDA H1 approved oil/grease)	Before fitting Silicone oil or silicone grease	Before fitting Silicone oil or silicone grease	Before fitting Oil or grease
 Pre-use check: 1. Supply compressed air to t 2. Open and close the valve s ensure that it operates smo Pay special attention to th 	everal times to pothly.	Open/close!	- Air (NO/AA) - Air (NC/AA)
Ordering spare parts		TD425-046_1	

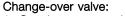
Recommended spare: Service kits (see chapter 6 Technical data).

5 Maintenance

Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly. NC = Normally closed. NO = Normally open. A/A = Air/air activated.

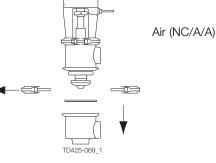
5.2 Dismantling of valve

Step 1



- 1. Supply compressed air to the actuator (only NC)
- 2. Loosen and remove lower clamp (15)
- 3. Release compressed air (18)
- 4. Pull out seal ring (17)
- 5. Release compressed air

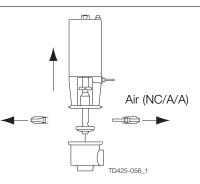
Pay special attention to the warnings!



Step 2

- Shut-off valve: 1. Supply compressed air to the actuator (only NC)
- 2. Loosen and remove clamp (15)
- 3. Lift out the actuator
- 4. Release compressed air

Pay special attention to the warnings!



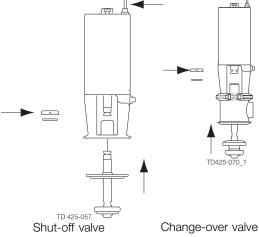
Air (NO)

Step 3

Shut-off valve:

- 1. Supply compressed air to the actuator (only NC)
- 2. Remove clip assembly (11) by using plugs
- (For sizes Dn125-150: Unscrew valve plug(19,20)) 3. Remove valve plug (19,20)
- 4. Release compressed air

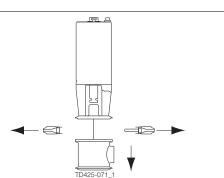
Pay special attention to the warnings!



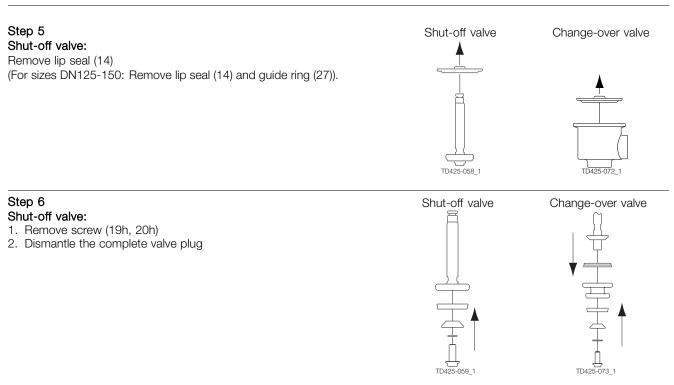
Air (NC/A/A)

Step 4 Change-over valve:

- 1. Remove upper clamp (15)
- 2. Remove upper valve body (16)



Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly. NC = Normally closed. NO = Normally open. A/A = Air/air activated.



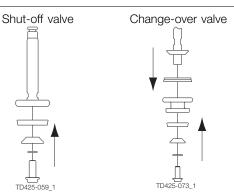
Maintenance 5

Study the instructons carefully. The items refer to the parts list and service kits section. Lubricate the rubber seals and the lip seal beforefitting them.

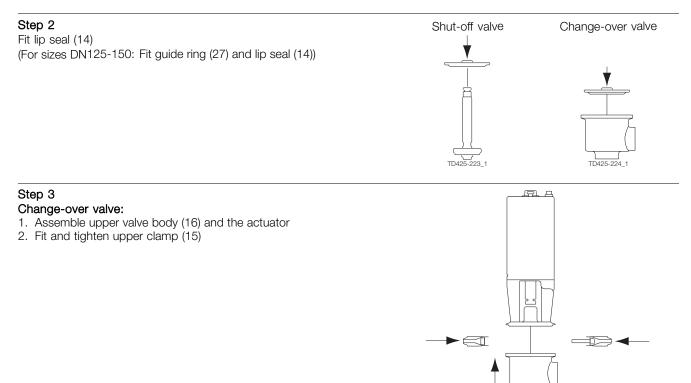
5.3 Valve assembly

Step 1

- Assemble the complete valve plug
 Fix screw (19h, 20h) by using loctite or something similar



TD 425-22

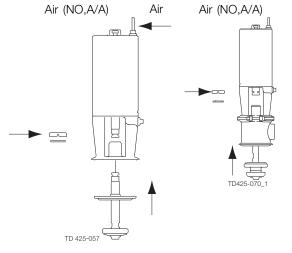


Study the instructons carefully. The items refer to the parts list and service kits section. Lubricate the rubber seals and the lip seal beforefitting them.

Step 4

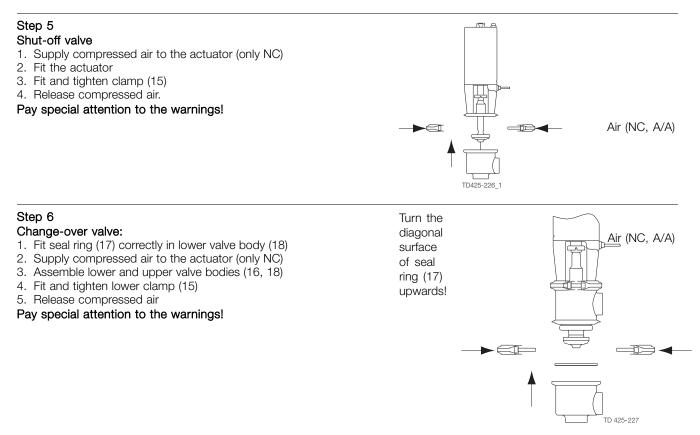
- 1. Fit the plastic ring of clip assembly (11) on the actuator piston rod
- 2. Supply compressed air to the actuator (Only NO)
- 3. Fit valve plug (19, 20)
- Fit and assemble clip assembly (11) by using pliers. (For sizes DN125-150: Screw together valve plug (20) and piston (6). Fix thread by using Loctite or something similar))
- 5. Release compressed air.

Pay special attention to the warnings!



Shut-off valve

Change-over valve



5 Maintenance

Study the instructions carefully. The items refer to the parts list and service kits section. Handle scrap correctly. NO = Normally open. NC = Normally closed. A/A = Air/air activated. Service tool: See Spare Parts.

5.4 Dismantling of actuator

Step 1

- 1. Rotate cylinder (3)
- 2. Remove lock wire (4)

Rotate with the service tool!



Step 2

- 1. Remove cylinder (3)
- 2. Remove O-rings (2, 7) from bonnet (8) and cylinder (3)

(For sizes DN125-150 also remove O-ring (24) and guide rings (21, 25))

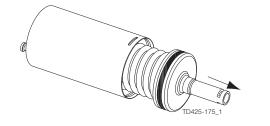


Step 3

- 1. Remove piston (6) and spring assembly (10)
- 2. Remove O-ring (5) from the piston. (For sizes DN125-150 also remove guide ring (22) and top pin (23))

NOTE!

The A/A actuator has no spring assembly.



Study the instructions carefully.

The items refer to the parts list and service kits section. Lubricate the rubber seals before fitting them. A larger actuator is available for valve sizes DN/OD38-63.5 mm. The spring assembly can be replaced by a stronger one. A/A = Air/air activated.

5.5 Assembly of actuator

Step 1

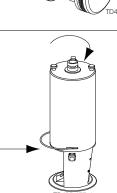
- 1. Remove piston (6) and spring assembly (10)
- 2. Remove O-ring (5) from the piston. (also remove guide ring (22) and top pin (23))

NOTE!

The A/A actuator has no spring assembly.

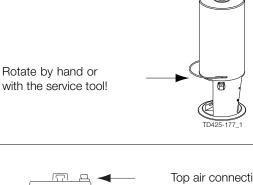
Step 2

- 1. Fit O-rings (2, 7) in bonnet (8) and cylinder (3). (also fit O-ring (24) and guide rings (21, 25))
- 2. Fit the cylinder



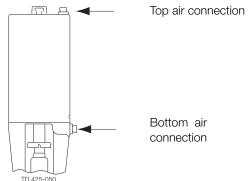
Step 3

- 1. Fit lock wire (4) through the slot in cylinder (3) into the hole in bonnet (8)
- 2. Rotate the cylinder 360o (see step 4)



Step 4 NOTE!

It is recommended to rotate cylinder (3) further 180° in relation to bonnet (8) so that the top and bottom air connections are fixed on the same side.



6 Technical data

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

6.1 Technical data

The valve is remote-controlled by means of compressed air. It has few and simple moveable parts which results in a very reliable valve and low maintenance cost.

Standard Design The Unique Single Seat DN125 and DN150 Valves come in a one or two body configuration. The actuator is connected to the valve body by means of clamp rings.

Data - valve/actuator	
Max. product pressure	1000 kPa (10 bar) (145 psi)
Min. product pressure	Full vacuum
Temperature range, standard lip seal	-10°C to + 100°C (14° F to 212°F) (EPDM)
Temperature range, special lip seal	-10°C to + 140°C (14° F to 284°F) (EPDM)
Air pressure, actuator - sizes DN125-150	600 to 800 kPa (6 to 8 bar) (87 to 116 psi)
Materials - valve/actuator	
Product wetted steel parts	Acid-resistant steel AISI 316L
Finish	Semi bright
Other steel parts	Stainless steel AISI 304
Plug stem - sizes DN125-150	AISI 316L with hard chrome plated stem surface
Product wetted seals	EPDM (standard)
Other seals	Nitrile (NBR)
Alternative product wetted seals	Nitrile (NBR) and Fluorinated rubber (FPM), PTFE/FEP

Weight (kg)

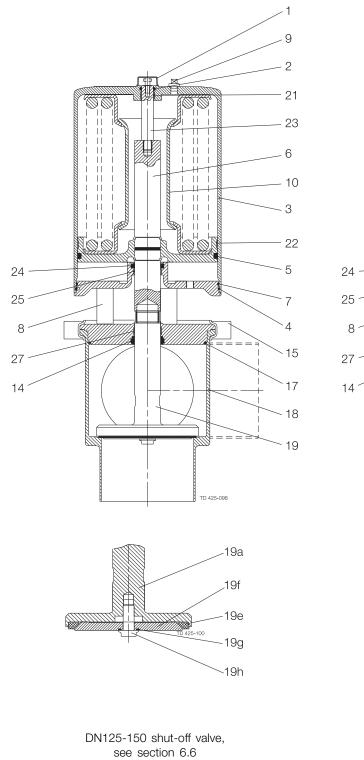
	DIN/DN			
Nominal Size	125 NC	125 NO	150 NC	150 NO
Weight (kg) - Shut-off valve	40.3	40.3	40.9	40.9
Weight (kg) - Change-over valve	50	50	51.3	51.3

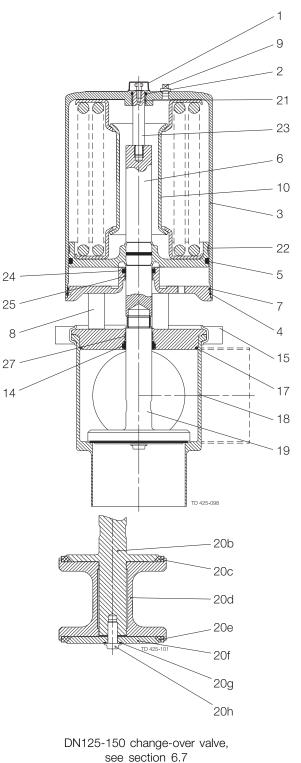
Noise

One meter away from - and 1.6 meter above the exhaust the noise level of a valve actuator will be approximately 77db(A) without noise damper and approximately 72 db(A) with damper - Measured at 7 bars air-pressure.

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

7.1 Drawings

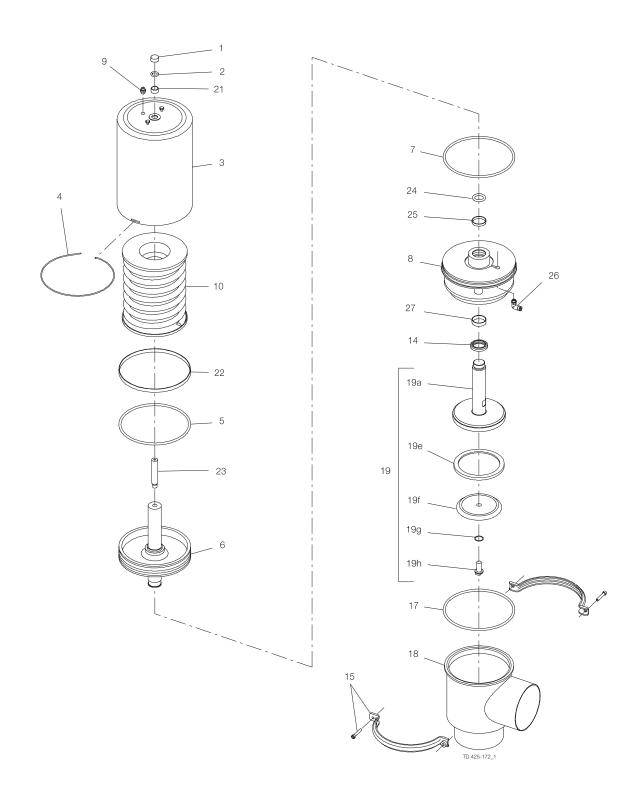




8 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

8.1 Shut-off valve



It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

Parts list		
Pos.	Qty	Denomination
Pos. 1 2 3 4 5 6 7 6 7 8 9 10 14 • 15 17 • 18 19 19a 19e •	Qty 1 1 1 1 1 1 1 1 1 1 1 1 1	Denomination Actuator, complete Cap O-ring Cylinder Lock wire O-ring Piston O-ring Bonnet Plug Spring packet Lip seal Clamp complete Seal ring Valve body Plug Stem Stem Plug seal
19f 19g ↓ 19h	1 1 1	Washer Washer O-ring Screw
21 □ 22 □ 23 □ 24 □ 25 □ 26 □ 27 □	1 1 1 1 1 1 1	Screw Guide ring Guide ring Top pin O-ring Guide ring Air fitting Guide ring

Service kits

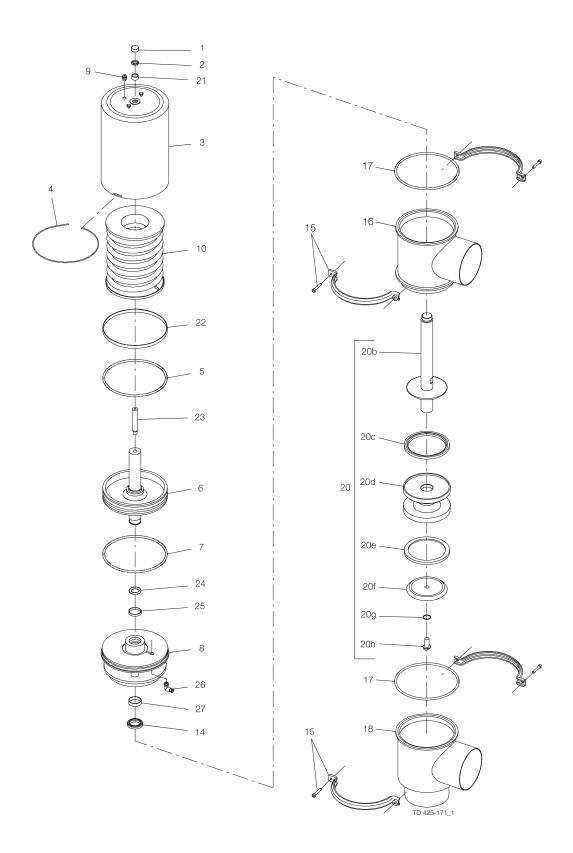
	Denomination	NC	NO
Servi	ce kit for Actuator		
	Service kit EPDM	9611-92-0296	9611-92-0296
Servi	ce kits		
	Denomination	DN 125	DN 150
Servie	Denomination ce kit for Product wetted parts, standard	DN 125	DN 150
Servio			
	ce kit for Product wetted parts, standard	9611-92-0355	9611-92-0355

8 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

8.2 Change-over valve

Standard - change-over valve - DN125-150



It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data. NO = Normally open. NC = Normally closed.

Parts list		
Pos.	Qty	Denomination
1 2 3 4 5 5 6 7 8 9 10 14 • 15 16 17 • 18 20 20b 20c • 20d 20c • 20d 20c • 20d 20c • 20d 20c • 20d 20c • 20d 20c • 20d 20c • 20d 20d 20d 20d 20d 20d 20d 20d	Qty 1 1 1 1 1 1 1 1 1 1 1 1 1	Denomination Actuator, complete Cap O-ring Cylinder Lock wire O-ring Piston O-ring Bonnet Plug Spring packet Lip seal Clamp complete Valve body Seal ring Valve body Seal ring Valve body Plug Stem Plug seal Middle piece Plug seal Middle piece Plug seal Washer O-ring Screw Guide ring Guide ring Guide ring Guide ring
25 🗆 26 27 🗆	1 1	Air fitting Guide ring

Service kits

	Denomination	NC	NO
Servic	e kit for Actuator		
	Service kit EPDM	9611-92-0296	9611-92-0296
Servio	ce kits		
	Denomination	DN 125	DN 150
Servic	Denomination e kit for Product wetted parts	DN 125	DN 150
Servic ◆			
	e kit for Product wetted parts	9611-92-0358	9611-92-0358
•	e kit for Product wetted parts Service kit EPDM	9611-92-0358 9611-92-0359	9611-92-0358 9611-92-0359

Parts marked with □♦ are included in the service kits. Recommended spare parts: Service kits.

900-093/2

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