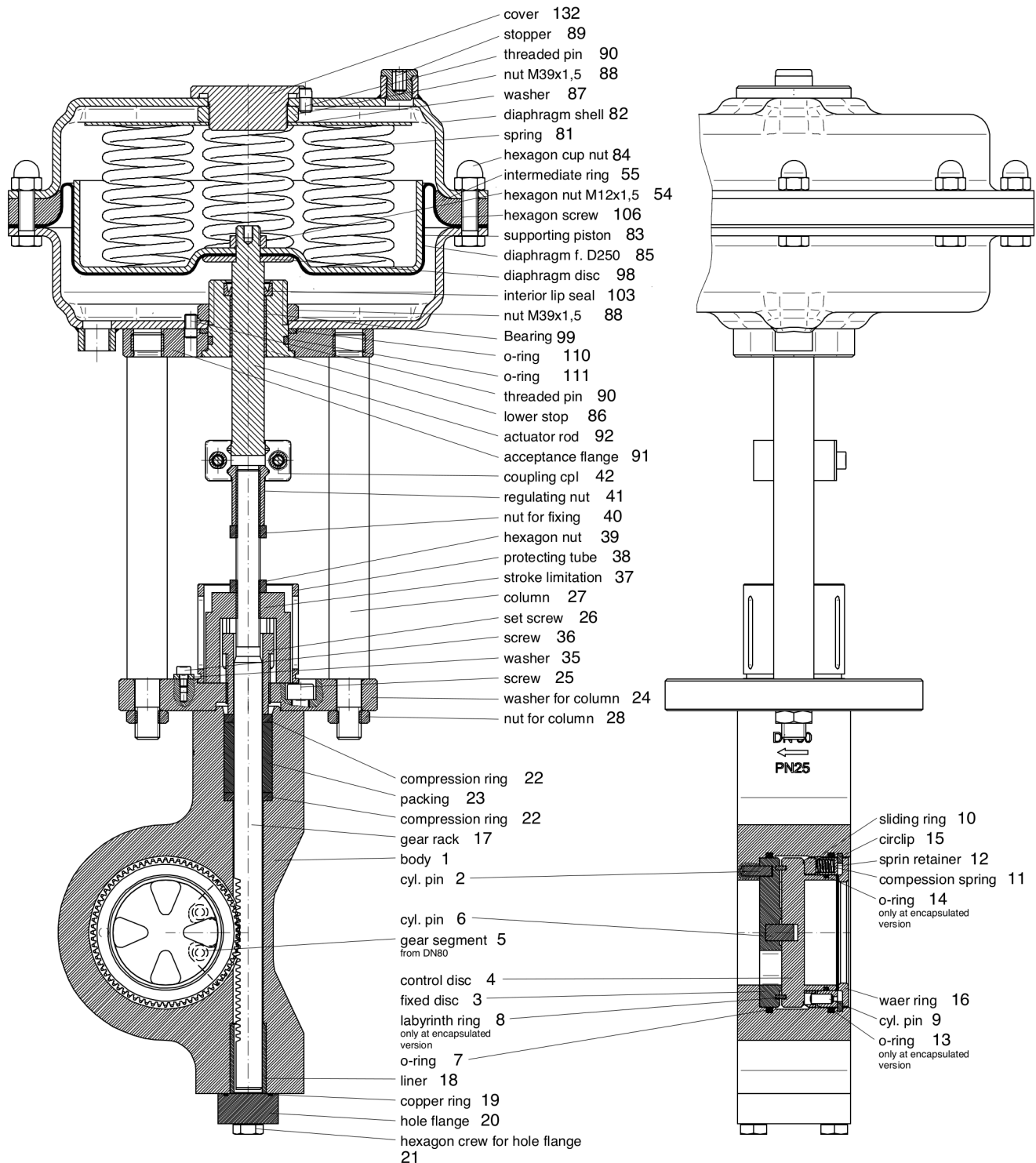


2.1 Spare parts list

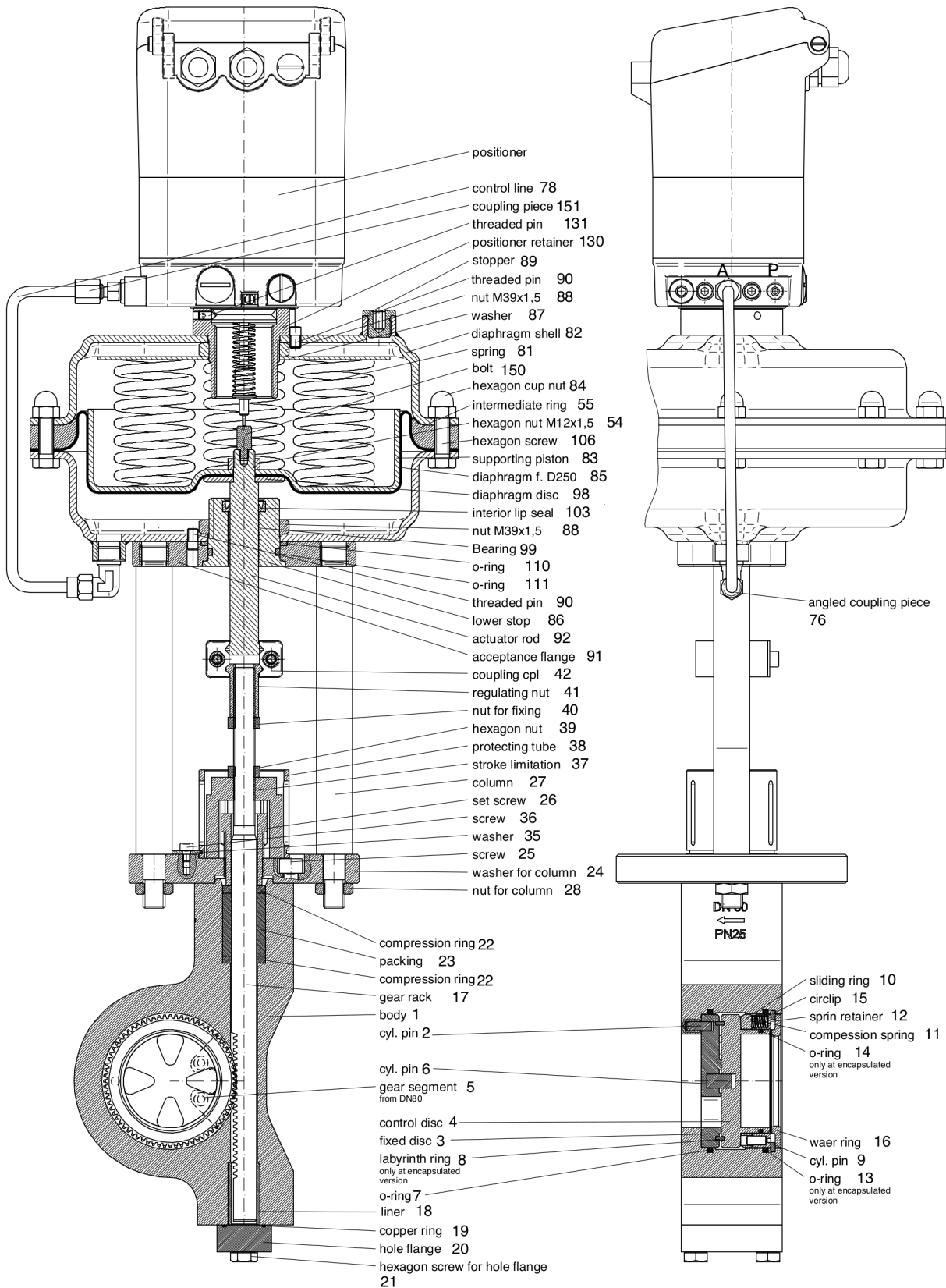
2.1.1 SPV1 Series



(Only use original spare parts!)



2.1.2 SPV1 series with digital positioner 8049



In addition to the individual spare parts, repair kits, which contain all seal and wear parts, are also available for all valves.

Abbildungen unverbindlich, Konstruktions-, Maß- und Werkstoffänderungen vorbehalten
illustrations are non-binding, all designs, configurations, measurements and materials are subject to change without prior notice

2.2 Technical data

Technical data of the valve

Design	Wafer type design for flanges according to DIN EN 1092-1, Form B	
Nominal sizes	DN25 to DN300	
Nominal pressure	DN25 to DN150	PN 25 nach DIN 2401 (suitable for PN 10 to PN 25 flanges)
	DN 200	PN 25 according to DIN 2401
	DN 250 to DN 300	PN 16 according to DIN 2401
Fluid temperature	-60°C to +220°C	
Ambient temperature*	-30°C to +100°C	
Setting ratio	60:1	
Characteristic curve	modifiziert linear	
Leakage rate % of the Kvs	<0,001	

* Please consider the limitation of use of the positioner!

2.3 Installation

Remove all packing materials from the valve.

Prior to the installation the pipeline should be checked for contamination and foreign particles and cleaned if necessary.

The control valve has to be mounted to the pipeline according to the direction of flow, which is indicated by an arrow on the valve body. The segment disc valve closes and regulates the fluid in both directions of flow. However, installation in the direction indicated by the arrow is strongly recommended. In case of a fluid flow in opposite direction of the arrow, please consult the differential pressure table in the data sheet, as kind of operation leads to significantly higher actuating forces, thus reducing the possible differential pressure.

Use flange seals acc. to DIN EN 1514-1 or ANSI B16.21 in the respective nominal pressure. We recommend flange seals made from pure graphite with a stainless steel backup.

The proper function of the completely mounted valve has to be checked prior to putting the installation into service.

Mounting position:

The mounting position of valves with pneumatic or digital positioner is arbitrary.

We recommend flange seals made from pure graphite with a stainless steel backup.

The proper function of the completely mounted valve has to be checked prior to putting the installation into service.

Installation position:

The mounting position of valves is arbitrary.

2.4 Connection and Start-Up

The valves can be fitted with pneumatic positioners, electro-pneumatic positioners or digital positioners.

The positioners are mounted using a column installation according to NAMUR (international user association of automation technology in process industries)

Various mounting sheets are available in order to connect the positioner to the valve.

The pneumatic exhaust air connection of the positioner must be connected to the pneumatic air supply connection of the actuator (G1/4").

All necessary connections and pipework for connecting the positioner with the valve are available for valves with an assembled positioner.

Please find more detailed instructions for connection and commissioning in the respective manual of the positioner.

2.5 Replacing the positioner


1. Mark the position of the valve positioner on the column (27).
2. Remove the control line from the positioner to the actuator.
3. Unscrew the valve positioner.
4. Screw the replacement positioner onto the valve at the previously marked position
5. Connect the control line.
6. Connect the compressed air and the control signal.
7. Adjust the positioner.

2.6 Dismantling and Assembling the Valve

2.6.1 Dismantling the Actuator


1. Ventilate the actuator and move it in to the uppermost position.
2. Loosen the screws of the coupling (42) and remove the coupling as well as the mounting sheet.
3. Unscrew the nuts (28) and remove the entire actuator upwards.
4. Bleed the actuator.
5. Unscrew the columns (27)
6. Remove two opposing screws (106) and replace them with 2 screws that are at least 40 mm longer than the installed screws.
7. Remove the remaining screws (106) and nuts (84).

8. The pressure springs (81) are carefully relieved of pressure by loosening the 2 longer screws.

 <p>mortal danger</p>	Attention: The actuator is under a very high spring tension!
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9. Remove pressure springs (81), washer (87) and upper diaphragm shell (82).
10. Unscrew the nut (88) in the upper diaphragm shell and remove the positioner retainer (130) or cover (132). the actuator rod (92) at the wrench flat and unscrew the nut (54).
11. Remove the support piston (83), roller diaphragm (85), diaphragm disc (98) and the actuator rod (92).
12. Unscrew the nut (88).
13. Push the lower stop (86) downwards and out of the diaphragm disc (82).
14. Remove the receiver flange (91) and the O-ring (110).
15. Remove the O-ring (111) and the interior lip seal (103).
16. Push the slide bearing (99) out of the lower stop (86).
17. Remove the shaft screw (90).


2.6.2 Assembly of the Actuator

	Observe the lubrication and bonding plan
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1. Clean all individual parts of the actuator using benzene (or another suitable solvent).
2. Replace damaged parts.
3. Screw the shaft screw (90) to the diaphragm disc (82).
4. Screw the positioner retainer or cover (132) and the nut (88) to the diaphragm disc.
5. Screw the positioner retainer (130) or cover (60) and the nut (59) to the diaphragm disc (58).
6. Push the sliding bearing (99) into the lower stop (86) until flush.
7. Insert the interior lip seal (103).
8. Insert the O-ring (111) into the radial groove.

	The O-ring may not become damaged by the thread.
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9. Insert the actuator rod (92) into the diaphragm disc from below.

	The interior lip seal (103) should not touch the thread of the actuator rod (92) as it may be damaged. We recommend using an assembly sleeve.
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10. Screw diaphragm disk (98), roller diaphragm (85) and support piston (83) loosely on to the actuator rod (92) with a nut (54).



The preformed roller diaphragm has to be placed correctly into the preformed support piston, i.e. the fabric support is on the side facing away from the pressure chamber (the fibrous side on the side of the piston (83)).

11. Place the springs (81) into the support piston (83).
12. Place the upper diaphragm shell with washer (87) on to the springs (81).
13. Screw the upper and lower diaphragm shell with two screws which face each other (at least 40 mm longer than the installed screws) using M8 nuts.
14. Replace the longer screws with screws (106) and nuts (84).



Tighten the screws evenly until the two diaphragm shells are screwed together. If possible, guide the two shells using 4 further fixing pins. That way it becomes easier to tighten the screws evenly.

Screw the columns (27) to the receiver flange (91).

Note:

These instructions apply to the D250 and D500 diaphragm actuator. If a different actuator is installed, please consult the corresponding assembly / disassembly plan from the respective enclosed operating instructions.

2.7 Disassembly and assembly of the function unit / bottom section of the valve

2.7.1 Disassembly of the function unit / lower part of the valve

Note: The actuator has to be disassembled (see 1.6.1, point 1-4)

1. Remove the wear ring (16)
2. Disassemble the hole flange (20) incl. copper ring (19).
3. Disassemble the circlip (15) using circlip pliers. Attention: Pressure springs, which are under pressure, are located beneath the spring holder (12). These springs are relieved of pressure when the circlip is removed.
4. Remove the control disc (4) (incl. slide ring (1) and spring holder (12)) from the body.
5. Unscrew adjusting screw (26). Dismantle the flange for the column (24).
6. Remove the gear rack (17) upwards.
7. Remove the packing (23) and pressure rings (22).
8. Disassemble the fixed disc (3) incl. cylinder pin (6). Subsequently remove the labyrinth ring (8) (the labyrinth ring is omitted from the non-encapsulated version). The disassembly may be difficult when dealing with corrosive fluids.
9. Remove the spring holder (12) from the moving disc unit (when dealing with the encapsulated version).
10. Remove the O-ring (14) from the moving disc (only when dealing with the encapsulated version). Remove the sliding ring (10).
11. Remove the pressure springs (11) from the spring holder (the disassembly may be difficult when dealing with corrosive fluids).

2.7.2 Assembly of the function unit / bottom section of the valve

1. The O-ring (7) has to be inserted in the body in order to assemble the function unit. Before installing the washer set, examine whether the O-ring (7) is fully installed in the corresponding groove inside the body. In case of an encapsulated version, an additional check has to be performed before assembling the O-rings (13 and 14) to ensure that these are also fully inserted in the grooves.
2. Insert cylinder pins (2) into the bore holes of the fixed disc. This cylinder pin is only available up to and including DN80. From DN100 and above, this pin is firmly welded into the body.
3. Push the fixed disc (3) into the body (preferably with a small hydraulic press). Attention: Pay attention to the correct position of the cylinder pin (2)!
4. Insert the labyrinth ring ((8) only when dealing with the encapsulated version) and the cylinder pin (6) into the corresponding groove / bore hole of the fixed disc (3).
5. Insert the liner (18) into the body.
6. Insert the gear rack (17) into the body (1). Please consult the table on Page 21 for information regarding distance "Z".
7. Insert the pressure rings (22) and packing (23) in the correct sequence.
8. Screw the flange for the column (24) into the body (1) using the corresponding cylinder screws (25),
9. Screw the adjusting screw (26) into the flange (24). When assembling for the first time, only "hand-tightened". After a certain period of operation, the adjusting screw has to be re-tightened until no further leakage can be detected.
10. Apply the protective pipe (38) to the flange (24) and fix it with the locking plate (35) and cylinder screws (36).
11. Screw the stroke limitation (37), hexagon nut (39), lock nut (40) and adjusting nut (41) (or threaded pin) to the gear rack.
12. Insert the moving disc (4). Position of the slots: Open. (Valve open at the uppermost position). There may be no offset at the transitional point between the slots on the fixed and moving disc.
13. Assemble the cylinder pins (9) with spring holder (12) and place to one side.
14. Insert the pressure springs (11) into the bore holes of the spring holder. Now place the sliding ring (10) on the spring holder (the bore holes for the cyl. pins (9) must align).
15. Place the pre-assembled units (sliding ring (10) pointing forwards) on the loose disc.
16. Push the installed unit downwards and assemble the circlip (15). Attention: Circlip has to be fully positioned in the intended groove in the body!
17. Insert the wear ring (16).

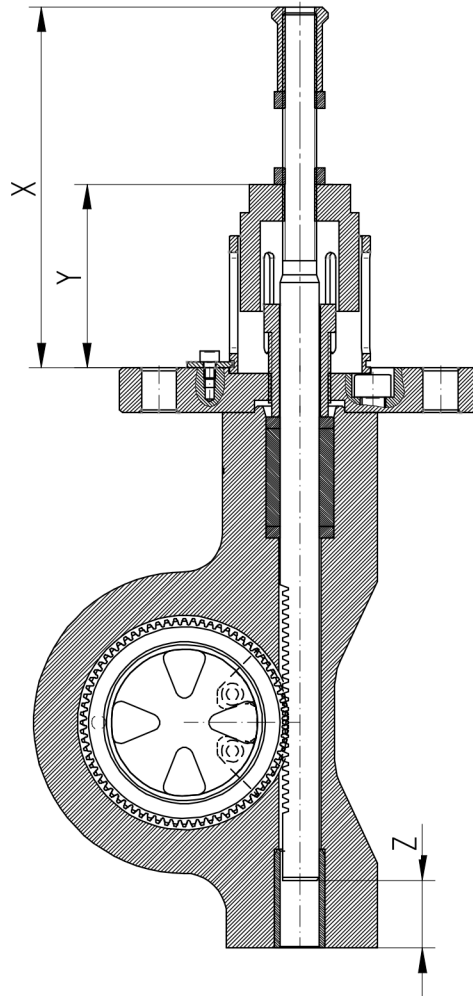
2.7.3 Adjusting the valve



Note lubrication and bonding plan!
Use original Schubert & Salzer Control Systems spare parts only!

1. Clean all individual parts of the actuator using benzene (or another suitable solvent).
2. Observe the "Assembly of the function unit (1.7.2)" instructions.

3. Set position "X" of the stroke limitation (37) according to the following table and subsequently lock with the hexagon nut (39).
4. Position "Y" of the adjusting nut can also be found in the following table. When dealing with the 1000 / 1500 / 3000cm² diaphragm actuators, the adjusting nut may be omitted or an adapter may be present on the bottom section depending on the nominal size. When dealing with nominal sizes with an adapter, please ensure that you also set this to dimension "Y".
5. Lock the adjusting nut (41) with threaded pin or lock nut (40).
6. Mount the pre-assembled diaphragm actuator incl. columns (27) on to the flange (24) with the respective nuts (28). In order to do so, the actuator has to be ventilated and placed in the uppermost position. (Caution: Risk of crushing!)
7. The complete coupling (42) can now be adjusted (a slight adjustment to the adjusting nut (41) may be necessary. The actuator has to be disassembled once again in order to do so).
8. Move the actuator into the uppermost and lowermost position in order to check the correct coverage of the fixed and loose discs. If necessary, correct the end positions by adjusting the stroke limit (37) or the adjusting nut (41).
9. The hole flange (20) complete with inserted copper ring (19) can be assembled if the disc set is closed (bleed actuator) and the gear rack (17) does not protrude from the body (distance must be ensured).



DN	stroke	X			Y	Z
		Actuator size 250cm ² or. 500 cm ² (mm)	Actuator size 1000 cm ² (mm)	Actuator size 1500cm ² / 3000 cm ² (mm)		
25	24	97	-	-	53	25
32	28	97	-	-	57	29
40	32	97	-	-	62	34
50	29	135	198	-	74	31
65	33	135	198	-	78	35
80	26	135	198	-	71	28
100	31	135	198	-	76	33
125	37	135	198	-	82	39
150	45	-	199	199	90	47
200	60	-	199	190	105	62
250	74	-	-	190	119	76
300	64	-	-	190	109	66

Note:

The values should be seen as a setting dimension. Due to the gear wheel design, it may be necessary to adjust this dimension in order to achieve the correct coverage of both washers.

