

APV DUALSAFE

Aseptic Mixproof Valve
(AM1)



MODELS: APV DUALSAFE (AM1)

FORM NO.: H348858

REVISION: 02/2024 GB REV. 0

SPXFLOW®

CE Declaration of Conformity
UKCA Declaration of Conformity

We,

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declare under our sole responsibility that the

APV double seal and double seat valves of the series
AM1, SD4, SDT4, SDU4, SDMS4, SDMSU4, SDTMS4, SWcip4, DSV, DA4, DA4 DPF, D4 SL,
DU4 SL, DT4 SL, DP4 SL, D4, DA3, DA3SLD, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2

APV butterfly valves of the series SV1, SVS1F, SV2, SVS2F, SVL, SVSL, SVE, SVSE

APV ball valves of the series BLV1

APV single seat, diaphragm and spring loaded valves of the series
S2, SW4, SWhp4, SW4DPF, SWmini4, SWT4, SWS4, MF4, MS4, MSP4, AP/T1, CPV, RG4,
RG4DPF, RGMS4, RGE4, RGE4DPF, RGEMS4, PR2, PRD2, SI2, UF/R3, UF/R4, UFMS4
VRA/H

and the valve manifolds installed thereof

meet the requirements of the Machinery Directive 2006/42/EC
& EN ISO 12100-2010, DIN EN ISO 14159-2008-07, DIN EN 1672-2-2009-07.

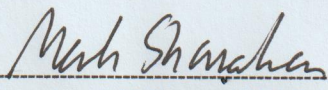
Holzwickede, Germany Feb. 2024



Dr.-Ing. Behdad Ariatabar, Design Center Lead - Valves

meet the requirements of the Supply of Machinery (Safety) Regulations 2008 No. 1597
& BS harmonized standards.

Manchester, England Feb. 2024



Mark Shanahan, VP Finance N&H Solutions

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APV AM1 DIN and Inch designs:	RN 510.047.01

1. General terms

This instruction manual should be read carefully by the competent operating and maintenance personnel.

We point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with this instruction manual.

Descriptions and data given herein are subject to technical changes.

2. Safety instructions



Danger!

- The technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing health hazards and risks for persons and/or material assets.



- Disconnect electrical and pneumatic connections.



- Before any maintenance work, depressurize the lines and cleaning system and discharge the lines if possible.

- Observe Service Instructions to ensure safe maintenance of the valve.

- Connections which are not used must be sealed by a plug!



- The safe discharge of the cleaning liquids must be ensured.
- APV brand valves must be assembled, disassembled and reassembled only by persons who have been trained in APV brand valves or by SPX FLOW service team members. If necessary, contact your local SPX FLOW representative.



**Opening of the actuators is strictly forbidden.
Danger to health and life!**

Actuators which are no longer used and/or are defective must be disposed in professional manner.

Defective actuators must be returned to your SPX FLOW company for their professional disposal and free of charge for you.

Please address to your local SPX FLOW company.

Wear suitable personal protective equipment.



- Never touch the valve or pipelines during hot liquids or sterilization process!



3. Intended use

Aseptic mix-proof valves are intended to be used for the safe separation of incompatible media in aseptic and ultra-hygienic processing in the food and beverage industries as well as in pharmaceutical and chemical applications.



The standard APV DUALSAFE (AM1) valve must not be used in explosive atmospheres.



Arbitrary, structural changes at the valve may affect safety as well as the intended functionality of the valve and are not permitted.

SPX Flow valves (without safety function) are allocated to Category 1 and are evaluated as per Conformity Assessment Module A of the Pressure Equipment Directive 2014/68/EU.

According to Article 13, the following allocation applies for the fluids processed in the valves.

Product media – Fluid group 2 – valves in all dimensions.

CIP-cleaning liquids – Fluid group 1 – valves in the dimensions
≤ DN100/4” can be used at temperatures up to 150°C.

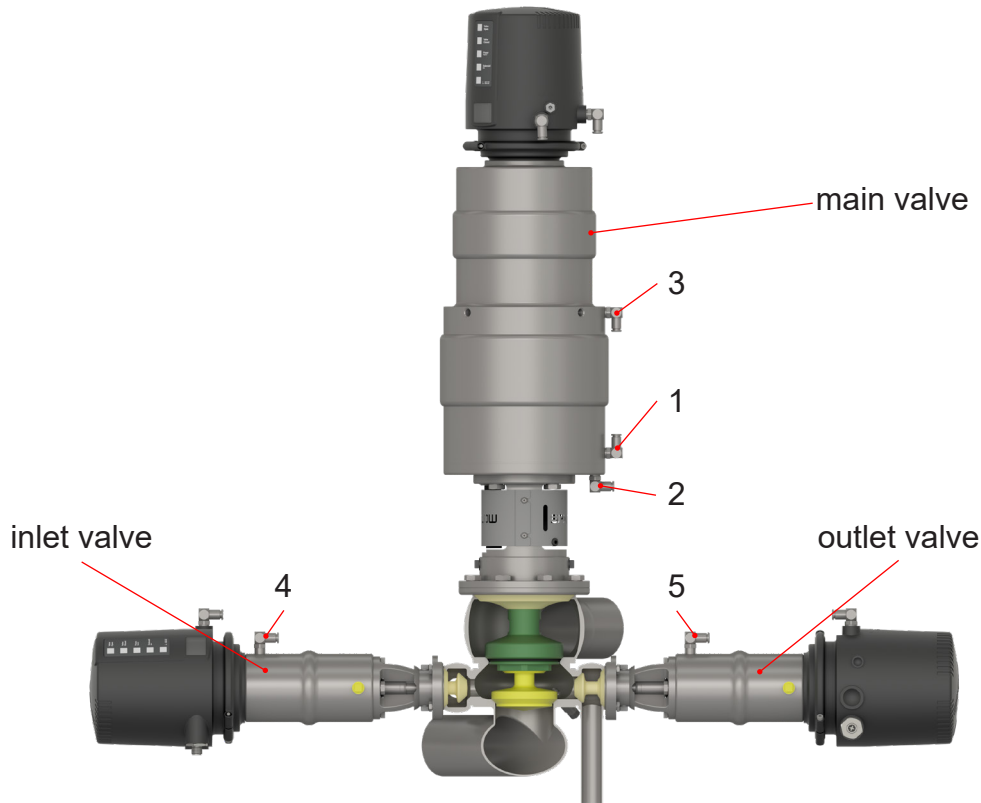
Authorizations and External Approvals

To view the certifications for this and other innovative SPX Flow products, visit

<https://www.spxflow.com/apv/>

It is within the responsibility of the plant operator to evaluate and verify the suitability of the SPX Flow products for the intended purpose and service conditions, as well as to determine and follow the applicable laws for the intended applications and areas of applications.

4. Mode of operation



4.1. General terms

Due to its construction and mode of operation as well as to the use of high-quality stainless steel and adequate seal materials, the APV DUALSAFE (AM1) aseptic mix-proof valves are suited for applications for the safe separation of incompatible media in aseptic and ultra-hygienic processing in the food and beverage industries as well as in pharmaceutical and chemical applications.

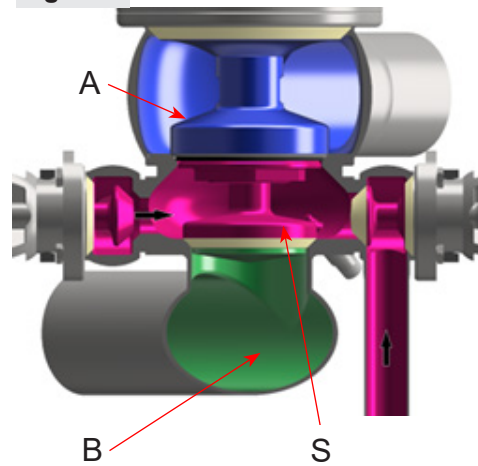
- The APV DUALSAFE (AM1) aseptic mix-proof valve ensures safe separation of incompatible media maintaining aseptic conditions.
- The main valve does open from bottom to top.
- The pneumatic actuator opens the main valve via the air connection 1. The spring force resets the valve into the “closed” safe position.
- Switching leakages are discharged via the outlet valve to the drain.
- The pneumatic actuator includes the seat lift function, the cleaning of the seats and separation cavity is controlled via the air connections:
 - 2 = to lift upper shaft
 - 3 = to lift lower shaft
- The standard APV DUALSAFE (AM1) valve is equipped with the advanced Control Unit type CU43plus including continuous monitoring of the valve positions and the air pressure for main valve stroke and includes the seat lift pulsation.
- Inlet and outlet valves are aseptic shut-off valves, type MSP4. Standard configuration is:
 - 4 = Inlet valve NO
 - 5 = outlet valve NC
- Optional, a temperature sensor can be installed in the separation cavity.

4. Mode of operation

4.2. Valve in "closed" position

The lower and upper valve shafts are in closed position and safely separate the different products A and B. Aseptic conditions and safe separation are maintained by steam/condensate in the separation cavity (S).

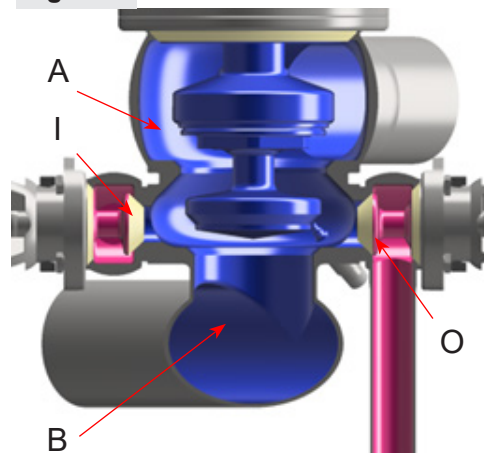
fig. 4.2.



4.3. Valve in "open" position

The main valve is open. The inlet (I) and outlet (O) valves must be in the closed position. Aseptic conditions are maintained by steam/condensate up to the closed inlet and closed outlet valve. The connection between the two pipelines A and B is established.

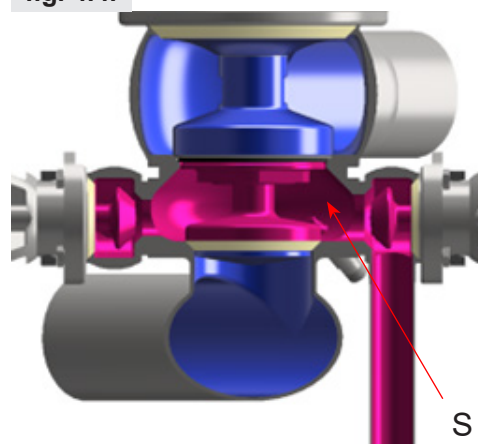
fig. 4.3.



4.4. Flushing of the separation cavity

After the main valve has returned from open into the closed position, the separation cavity (S) needs to be flushed. The inlet valve and the outlet valve must be operated into the open position. Sterile medium, i.e. condensate, steam can flow from the inlet valve through the separation cavity and through the outlet valve.

fig. 4.4.



4. Mode of operation

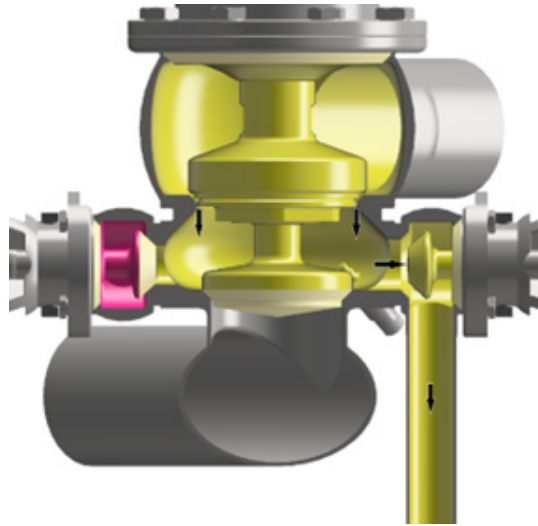
4.5. CIP with seat lifting



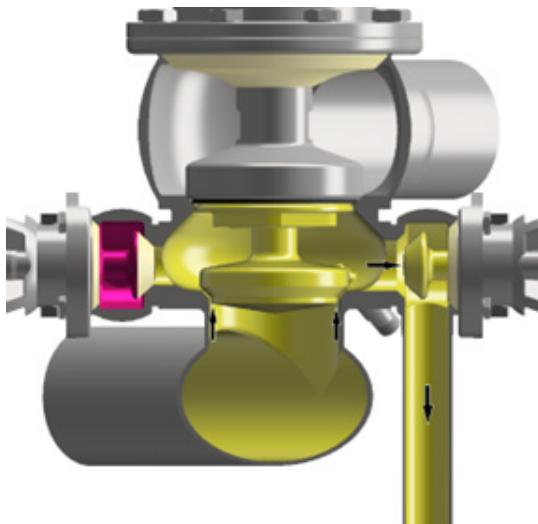
- If product is running through one line and CIP is running through the opposite line, seat lifting is strictly prohibited!



- It is within the plant operators responsibility to use the signals for the appropriate DUALSAFE (AM1) valve positions correctly and in conjunction with the process data to ensure intended use and safe operation.



- During CIP with seat lifting, the inlet valve must be in the close position, the outlet valve must be in the open position.
- During the CIP of the line, the seat lifting is activated to clean the corresponding seat area and the separation cavity.
- We recommend activating the stroke-based seat pulsation in the CU43plus to reduce the CIP losses while the cleaning result remains.



5. Control units / valve position indication

5.1. Control units and adapters

The main APV DUALSAFE (AM1) valve has a CU43plus as default. The CU43plus monitors the close and open position and as well as the seat lift position of the upper and lower shaft. The inlet and outlet valves can be equipped either with a CU41 or a CU41plus. All CU4's are available in communication protocols:

- AS-I
- Direct Connect
- IO-link

For available Control units and adapters, see spare part list: RN510.047.01

CU4 control unit



5.2. Valve position indication

The inlet and outlet valves optionally can be equipped with a proximity switch holder. Proximity switches can be installed to signal the close and open position.

We recommend using one of these standard types:

three-wire proximity switch
operating distance: 5 mm
diameter: 11 mm
operating voltage: 10–30 V DC
pnp pulse-shifting, closing function
"non-flush" installation

Recommendation:

- Prox. switch 24V DC, pnp, ø11 mm with 5m cable: H16223
- Prox. switch 24V DC, pnp, ø11 mm with cable box: H16342

If the customer decides to use valve position indicators other than those listed above, SPX Flow cannot assume any liability for the functionality of the valve.

6. Cleaning and sterilization

The cleaning of the APV DUALSAFE (AM1) valve is distinguished in the following areas: upper line, lower line, seat area and separation cavity. A flow velocity of min. 2 m/s is recommended. All product contacted parts must be cleaned and checked regularly. After the cleaning the valve can be sterilized.

6.1. Upper and lower line

During CIP cleaning of the pipeline, CIP does flow through and cleans the upper or lower housing

fig. 6.1.

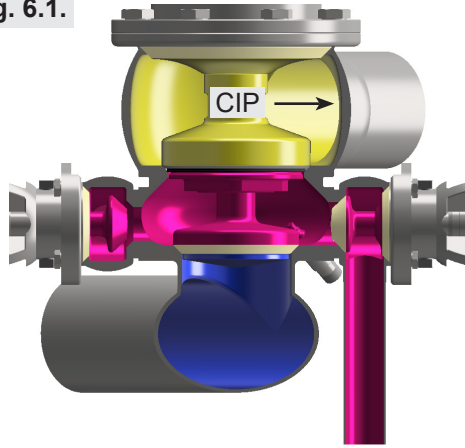
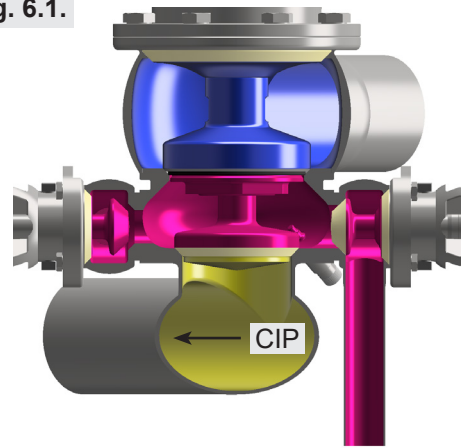


fig. 6.1.



6.2. Seat area and separation cavity

During the CIP of the line, the seat lifting is activated to clean the corresponding seat area and the separation cavity. We recommend activating the position-based seat pulsation in the CU43plus to reduce the CIP losses while the cleaning result remains. For details, see CU43plus manual.

fig. 6.2.

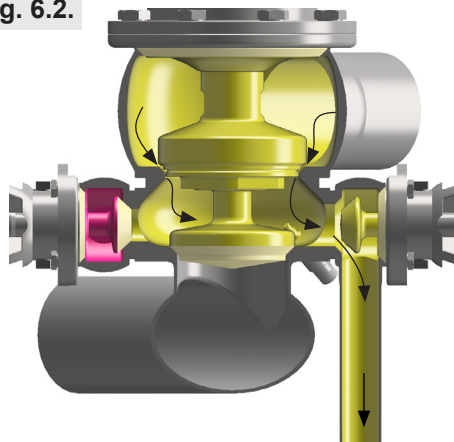
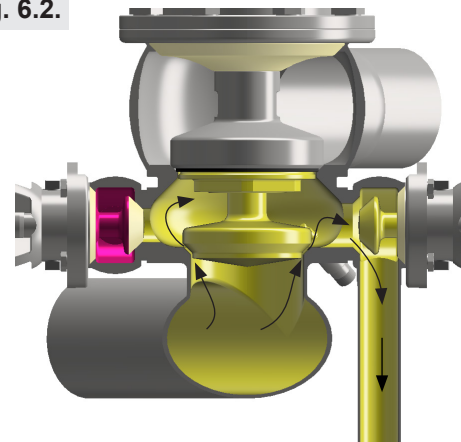


fig. 6.2.



Cleaning steps	Seat lifting cycles
pre-flushing	3 x 10 sec.
caustic flushing 80°C	5 x 10 sec.
intermediate flushing	3 x 10 sec.
acid flushing	5 x 10 sec.
final rinse	3 x 10 sec.

The seat lifting cycles refer to a cleaning pressure of $p = 2-5$ bar.

Depending on the CIP pressure, cleaning temperature, cleaning steps, detergents and degree of soiling, time and number of cycles must be adjusted.



Note!

- The cleaning liquid applied must be compatible with the respective seal material and stainless steel.

6. Cleaning and sterilization

6.3. Sterilization

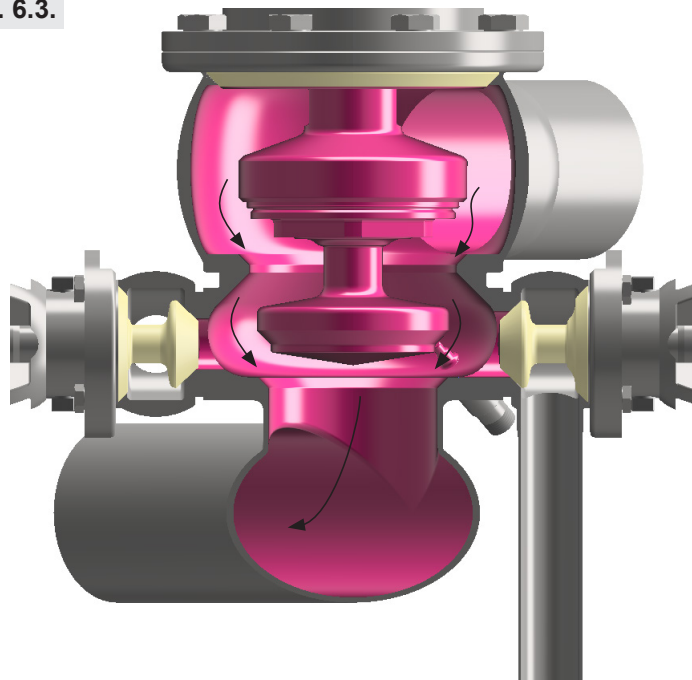
The APV DUALSAFE (AM1) valve can be sterilized via clean steam or hot water at max. 150°C for 30 minutes. Continuous steam or hot water can be applied at max. 135°C.

During commissioning or after service, when the valve is put into operation, it is mandatory to sterilize the APV DUALSAFE (AM1) valve at min. 121°C for min. 20 minutes in the open position. After the SIP step, the APV DUALSAFE (AM1) valve needs to be operated in the fully closed position immediately for minimum 30 seconds.

This SIP step and valve operation ensures that the lower shaft perfectly seals against the valve seat and ensures to hold the maximum specified closing pressure.

After the sterilization step, initiate a teach routine at the CU43plus for the main valve.

fig. 6.3.



7. Installation and commissioning



The valve must be installed in vertical position to ensure that fluids can drain off freely from the valve housing and the separation cavity into the outlet valve.

Attention! Leakages and fluid losses from valve operation, seat lifting, steam and condensate must be safely collected and drained.

- The valve housing can be welded direct into the pipeline (completely removable valve inserts).



Attention! Observe welding instructions.

- Observe heights of installation and dismantling! See chapter 8.



Caution!

Before first startup:

- Actuate the valve by applying compressed air. The opening, closing and shaft lifting processes must run smoothly.
- Check the function of the control units and / or valve position indications. For the CU4plus control units, run a initial teach routine.
- Check for leakages during commissioning. Replace defective seals or diaphragms.

7.1. Welding Instructions

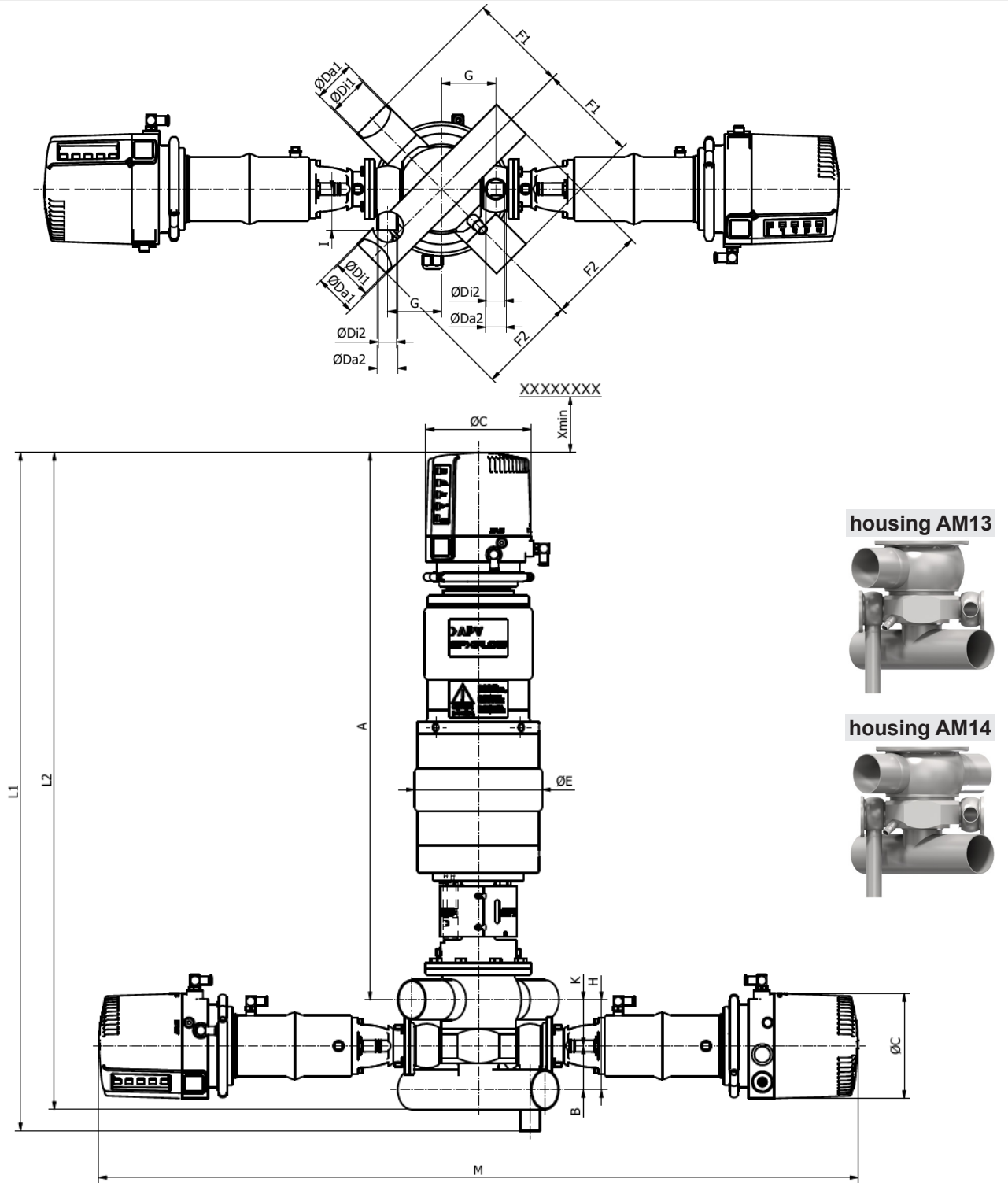


- Before welding, remove the insert of the main valve and the inserts of the two side valves from the housing.
- **Caution!** Handle and store the valve inserts carefully to avoid damaging the parts.
- Welding should only be carried out by certified welders (DIN EN ISO 9606-1) (seam quality DIN EN ISO 5817).
- The welding of the valve housings must be undertaken in such a way that the valve body is not deformed.
- The preparation of the weld seam up to 3 mm thickness must be carried out as a square butt joint without air. Consider shrinkage!
- **TIG orbital welding is recommended.**



- **Caution!** After welding the valve housing or mating flanges, and after performing any work on the piping, do not install the valve inserts until the corresponding areas of the installation and piping have been cleaned and welding residue has been removed. If the piping is not cleaned before installation of the valve inserts, welding residues and dirt particles can settle in the valves and cause damage to the valves, diaphragms and/or seals.
- If these welding instructions are not followed, any resulting damage will not be covered by the warranty.
- Welding directives for aseptic applications shall be drawn from the AWS/ANSI Directives and EHEDG Guidelines.

8. Dimensions / weights



DN	A	B	ØC	ØDa1	Ø Di1	ØDa2	ØDi2	ØE	F1	F2	G	H	I	K	L1	L2	M	X min.	Weights Kg	
40	691	50,8	134	41	38	25	22,6	163	120	120	65,9	104,8	50	54	853	816	968	131	36,7	
50	697	56,8	134	53	50	25	22,6	163	120	120	65,9	116,8	50	60	865	840	968	143	37,2	
65	708	65,8	134	70	66	25	22,6	192	125	130	65,9	133,8	50	68	908	877	990	163	45,1	
Inch																				
1,5"	693	49,3	134	38,1	34,8	25	22,6	163	120	120	65,9	101,7	50	52,4	853	813	968	131	36,7	
2"	698	55,7	134	50,8	47,6	25	22,6	163	120	120	65,9	114,5	50	58,8	865	838	968	143	37,2	
2,5"	705	62,8	134	63,5	60,3	25	22,6	192	125	130	65,9	127,95	50	65,15	902	865	990	157	44,9	
3"	711	68,8	134	76,1	72,9	25	22,6	192	125	130	65,9	140,25	50	71,45	915	890	990	169	45,2	

9. Technical data

9.1. General data

Product-wetted parts	1.4404, 316L (DIN EN 10088)
Other parts	1.4301, 304 (DIN EN 10088)
Standard elastomer seals	EPDM
Optional elastomer seals	HNBR/ FKM
Diaphragms	PTFE
lower shaft / main valve	PTFE, 1.4301
shafts / side valve	PTFE, 1.4305
Max. line pressure	10 bar, details see chapter 9.5
Max. operating temperature	135 °C
Short-term load	150 °C 30 minutes
Tightening torque for safety nut at lower shaft	40 Nm
Tightening torque for upper diaphragm coupling	100 Nm
Ø Air connection	6 x 1 mm, 1/4" OD
Max. pneumatic air pressure	8 bar
Min. pneumatic air pressure	6 bar

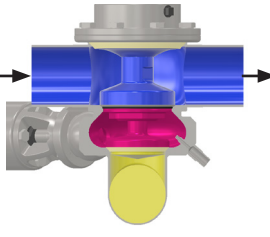
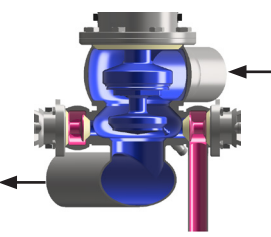
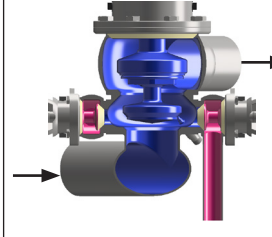
9.2. Compressed air quality

Quality class	acc. to DIN ISO 8573-1
Content of solid particles	quality class 3, max. size of solid particles per m ³ 10000 of 0,5 µm < d < 1,0 µm 500 of 1,0 µm < d < 5,0 µm
Content of water	quality class 3, max. dew point temperature -20°C For installations at lower temperatures or at higher altitudes, consider additional measures to reduce the pressure dew point accordingly.
Content of oil	quality class 1, max. 0,01 mg/m ³

The oil applied must be compatible with Polyurethane elastomer materials.

9. Technical data

9.3. Kvs values in m³/h

				
DN				
40	41	28	27	
50	78	40	41	
65	156	70	67	
Inch				
1,5"	36	25	24	
2"	72	39	40	
2,5"	131	65	62	
3"	204	72	68	

9.4. Air consumption / switching times

		Air consumption at 6 bar			Switching times in seconds at 6 bar air pressure / 0 bar line pressure	
		Actuator	Seat lift actuator		Open	Closed
DN	Inch	NL/stroke valve open	NL/stroke upper seat lift	NL/stroke lower seat lift		
40	1,5"	2,3	1,06	0,34	2	2,2
50	2"					
65	2,5"	4,57	1,71	0,5	3,2	4
	3"					

9.5 Pressure rating

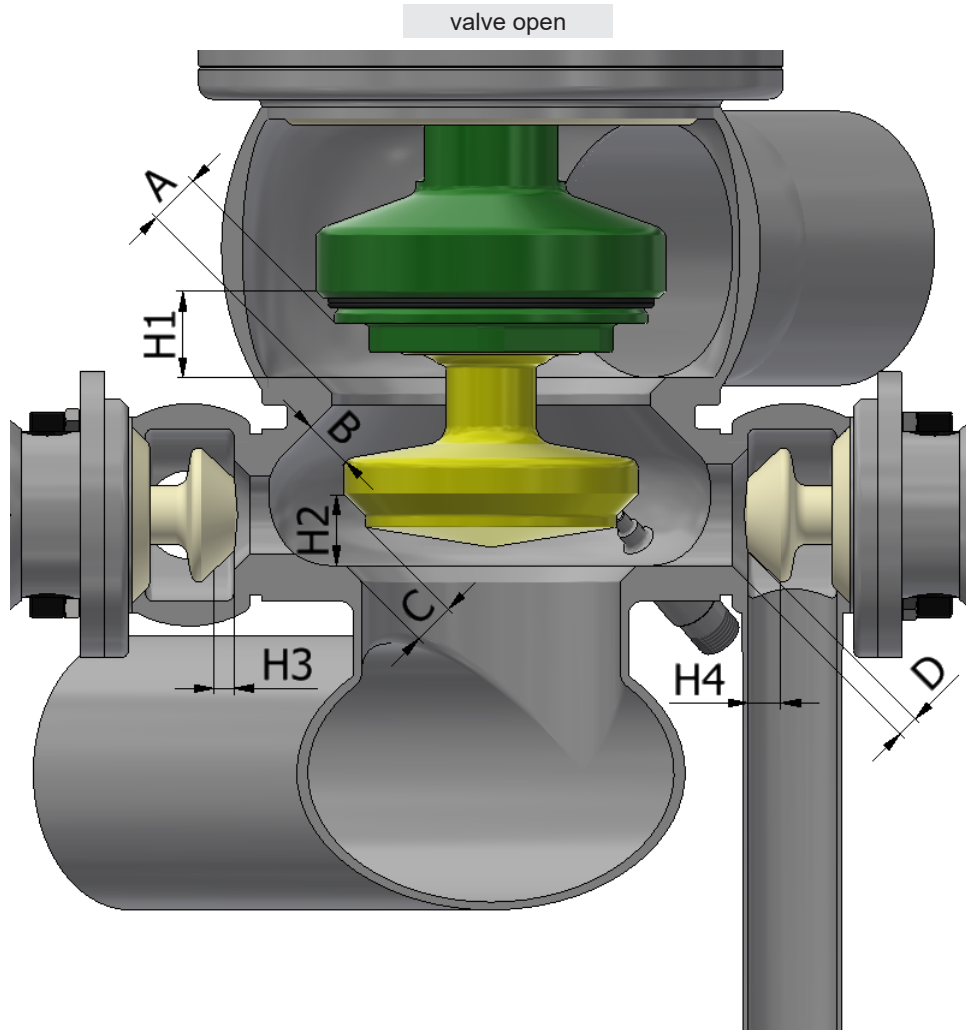
DN	Inch	Max. pressure in upper line (bar)	Max. pressure in separation cavity (bar)	Max. pressure in lower line (bar)
40, 50	1,5"; 2"	10	8	10
	2,5"	10	8	10
65	3"	10	8	8

When closing the DUALSAFE (AM1) valve and having a line pressure in the upper valve housing of larger than **X** bar, the lower shaft does reach the end position, the upper shaft does not reach the end position. This is due to forces acting on the upper shaft. Once the outlet valve is opened, the upper shaft does fully close. Note that the switching leakage is slightly increased.

DN	Inch	Upper line pressure X during closure of DUALSAFE (AM1) valve, at which outlet valve needs to be opened.
40, 50	1,5"; 2"	8,5 bar
65	2,5"; 3"	6,5 bar

9. Technical data

9.6. Valve stroke / opening cross section



Dimensions in mm								
DN	A	B	C	D	stroke H1 upper shaft	stroke H2 lower shaft	Stroke H3 inlet Valve	Stroke H4 outlet valve
40	7	16,7	8,3	5,5	16	12	5	8
50	7	16,7	8,3		16	12	5	8
65	13,2	12,6	10,7		22	18	5	8
Inch								
1,5"	7	16,7	8,3	5,5	16	12	5	8
2"	7	16,7	8,3		16	12	5	8
2,5"	13,2	14	10,7		22	18	5	8
3"	13,2	12,6	10,7		22	18	5	8

10. Maintenance



Note!

- The maintenance intervals are different depending on the application and must be determined by the operator performing regular checks.
- Do not clean the valve with products containing abrasive or polishing substances. Abrasive and polishing agents are especially harmful to the upper and lower shaft.
- Clean the valve parts with a low concentrated solution of cleaning agent.



Required tools:

- 1 x wrench SW7, SW10, SW13, SW17, SW19, SW34
- 1 x Wrench SW14 optional if temperature sensor is used
- 1 x Allen key SW3, SW6
- 1 x metal point

- 1x adjustable face pin spanner Ø3 mm, H348752
- 1x insert assembly tool AM1, H347934
- 1x wrench AM1 shaft assembly complete, H348423 recommended for DN40, 50, 1,5", 2"
- 1x lifting device, recommended for safe handling of the valve insert, H347854.

- For valve maintenance SPX Flow offers complete seal kits (see spare parts lists).

Note!

The use of seal materials being compatible with the product, application and CIP liquids must be ensured. In case of doubt, contact your local SPX Flow representative.



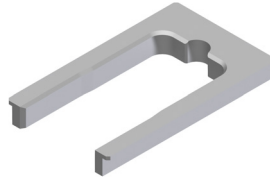
- For seal and diaphragm replacement instructions, see section 11.
- Provide all seals with a thin layer of grease before their installation!
Recommendation:
Assembly grease for EPDM, HNBR and FPM (Viton)
0,75 kg/tin - H147382
60 g/tube - H147381
- Provide all screws and threaded parts with grease before their installation.
Recommendation:
Klüber paste UH1 84-201
60 g/tube - H147379

Recommendation for actuator rod seals:
Pneumatic grease Autol Top 2000:
25 ml/tube - H164725
- For actuator maintenance instructions, see section 12.

lifting device



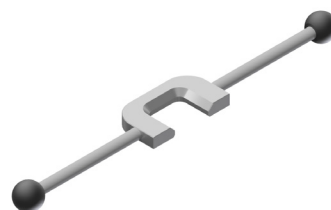
insert assembly tool AM1



face pin spanner



wrench AM1 cpl.



11. Service instructions

The item numbers refer to the spare parts drawings
DIN and Inch designs: RN 510.047.01



11.1. Removal of DUALSAFE (AM1) insert from the line system



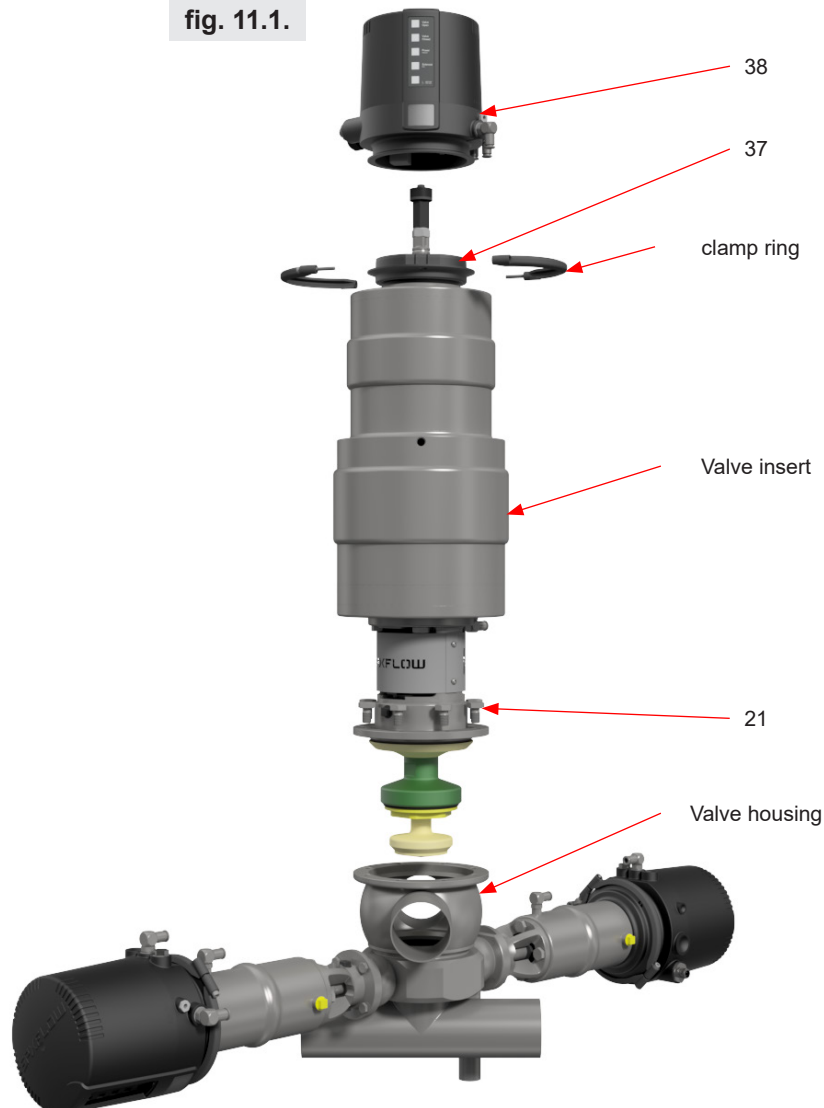
1. Shut off the line pressure in the product lines, cleaning lines and in the steam lines. Discharge the pipes.
2. Ensure that the temperature of the piping has sufficiently decreased or cooled down.
3. Open the cap of the CU43plus and control actuator of main valve in the open position via manual override of the 1st solenoid valve.



Do not touch movable parts!
Risk of injury

4. Remove the hex. screws (21).
5. Shut off the compressed air via manual override and remove the air connections between CU43plus and actuator.
6. Disconnect the 3 wires of the external sensor, untighten the cable gland and pull the cable through the cable gland.
7. Release the 2 screws at the clamp ring remove the Control Unit CU43plus off the adapter.
8. Lift the complete valve insert out of the valve housing.

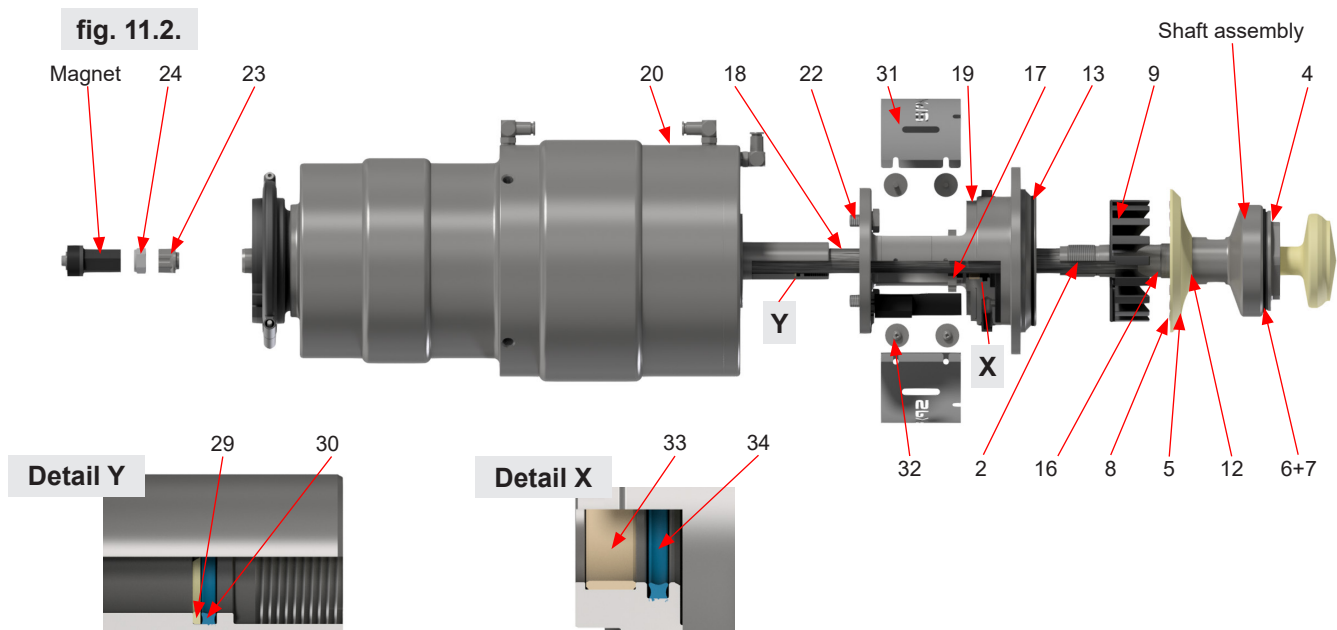
fig. 11.1.



11. Service instructions

11.2. Dismantling of the wear parts

1. Remove the magnet with a SW17 wrench from the tie rod (18).
2. Release the self-locking nut (24) with a SW19 wrench while holding up the centering disc (23) with a SW17 wrench. Remove the centering washer.
3. Release the 4x hex. screws (32) on the yoke covers (31) with a SW7 wrench and remove the yoke covers.
4. Release the counter disc (17) on the upper shaft (2) with a face pin spanner \varnothing 3mm.
5. Disassemble the shaft assembly by unscrewing upper shaft (2) from the actuator (20) while holding the counter disc (17) to keep it from turning. For DN40, 50, 1,5", 2" use the wrench AM1 shaft assembly complete, for DN65, 2,5" and 3" a standard SW34 wrench can be used.
6. Pull the shaft assembly through the yoke (19) while holding the counter disc (17).
7. Take the fan support (9) out of the yoke.
8. Unscrew the hex. screws (22) and take off the yoke from the actuator (20).
Recommendation at this point is to do a maintenance of the actuator. See chapter 12.
9. Use the metal point to take the Quad-Ring (34) and guide ring (33) and the O-Ring (13) out of the grooves in the yoke (19).
10. Use a metal point to take out the Quad-Ring (30) and back-up ring (29) out of the actuator rod (20).
11. Place the insert assembly tool in a vice. Place the hexagon of the shaft assembly in the insert assembly tool and slightly tighten the vice. (see fig.11.3)
12. Unscrew the upper diaphragm coupling (16) with a SW34 wrench and lift it over the tie rod. Hold the upper shaft to keep it from turning. For DN40, 50, 1,5", 2" use the wrench AM1 shaft assembly complete. For DN65, 2,5", 3" a SW34 wrench can be used as well.
13. Lift the star (8), the O-Ring (12) and the diaphragm (5) over the tie rod.
14. Unscrew the upper shaft (2) from the tension disc (4). For DN40, 50, 1,5", 2" use the wrench AM1 shaft assembly complete, for DN65, 2,5", 3" a SW34 wrench can be used as well.
15. Lift the upper shaft (2) over the tie rod. Take the fan support (11), O-Ring (14) and bushing (15) out of the upper shaft. (see fig.11.3.2)
16. Take off the seat seal (6) with the carrier ring (7). Pull the seat seal off the carrier ring.
17. Take the tension disc (4) with the lower shaft and the star and the tie rod out of the insert assembly tool.
18. Pull the diaphragm of the lower shaft and the tie rod with the star through the tension disc.
19. Place the centering disc (23) over the tie rod and unscrew the tie rod with a SW17 wrench off the lower shaft.



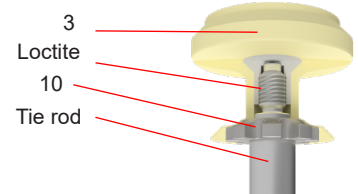
11. Service instructions

11.3. Installation of the wear parts and assembly of valve insert

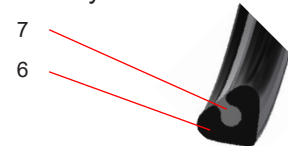
Note!

Ensure that all elastomer seals and bearing surfaces within and in proximity to the product area are adequately lubricated with a thin layer of grease prior to installation.

1. Fix the tie rod (18) with the Ø8mm boss upwards with aluminum brackets in a vice.
2. Place the star (10) with the plane surface downwards on the tie rod.
3. Apply a small amount of Loctite 243 on the M12 thread of the tie rod with the Ø8mm boss.
4. Screw the lower shaft (3) on the tie rod until the metal stop is reached.



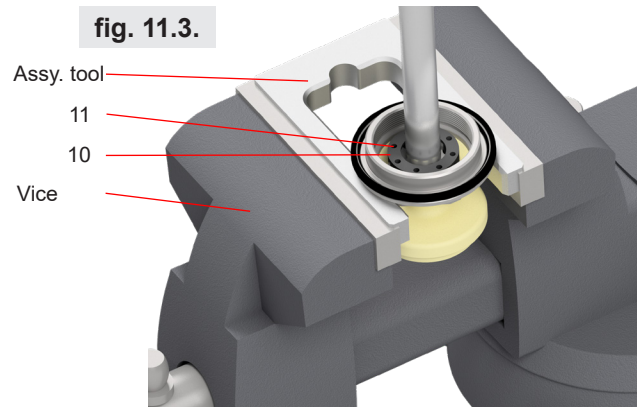
5. Assemble the back-up ring (29) and the Quad-Ring (30) in the actuator rod (20). (see fig.11.2)
6. Assemble the Quad-Ring (34) and guide ring (33) and the O-Ring (13) in the yoke (19). (see fig.11.2)
7. Assemble the yoke (19) on the actuator (20) with the 4x hex. screws (22).
8. Assemble the seat seal (6) on the carrier ring (7). Ensure the correct assembly direction.



9. Screw the tension disc (4) on the upper shaft until the metal stop is reached. Use a non-permanent marker to fix the end position. Unscrew the tension disc (4).
10. Assemble the bushing (15) and O-Ring (14) on the upper shaft. (see fig. 11.3.2)
11. Place the tension disc (4) over the tie rod, then deform the diaphragm of the lower shaft (3) with two fingers and pull it through the inner diameter of the tension disc.
12. Place the insert assembly tool in a vice.
13. Place the lower shaft / tension disc assembly via the hexagon in the insert assembly tool and slightly tighten the vice. **Hint:** Place the marking in the open slot. (see fig. 11.3.1)
14. Place the fan support (11) on the star (10).

! Toothing of fan and star must interlock !

15. Place the seat seal with carrier ring on the tension disc. Ensure correct orientation. The carrier ring must be visible.



11. Service instructions

11.3. Installation of the wear parts and assembly of valve insert

16. Place the upper shaft over the tie rod and screw it on tension disc. Turn the upper shaft until the metal stop / marked end position is reached. For DN40, 50, 1,5", 2" use the wrench AM1 shaft assembly complete. For DN65, 2,5", 3" a SW34 wrench can be used as well.
17. Assemble the diaphragm (5), O-Ring (12) and star (8) on the upper shaft. (see fig. 11.3.3)
18. Fasten the diaphragm coupling (16) with a SW34 wrench.

Tightening torque: $M_d = 100 \text{ Nm}$

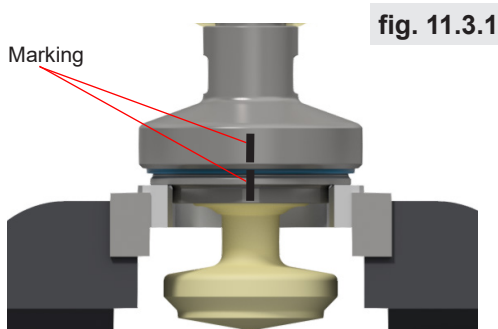
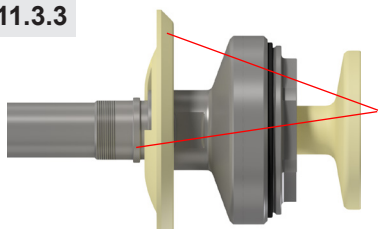


fig. 11.3.1

fig. 11.3.3



To install the diaphragm(5), pull it over the boss and then push it into the recess.

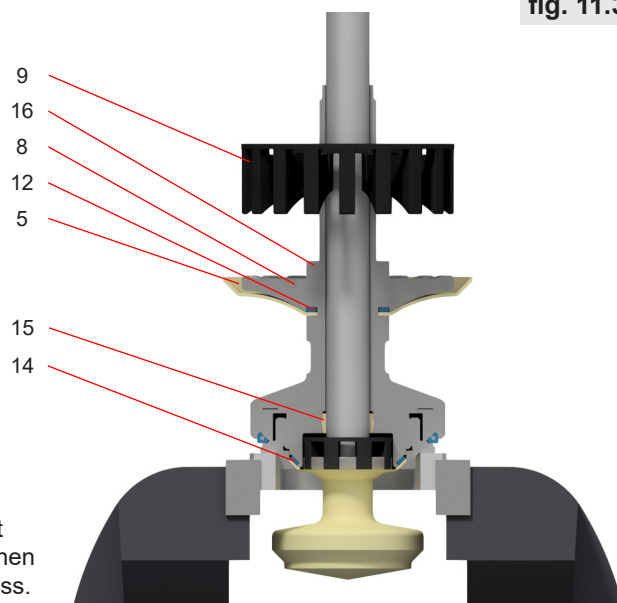


fig. 11.3.2

19. Place the fan support (9) over the tie rod so that it does interlock with the star.
20. Hold the counter disc (17) with the plane surface in front of the actuator rod and place the shaft assembly through the yoke (19). Screw the upper shaft through the counter disc into the actuator rod. For DN40, 50, 1,5", 2" use the wrench AM1 shaft assembly complete. For DN65, 2,5", 3" a SW34 wrench can be used as well.

! Keep distance between counter disc and actuator rod until the metal stop has reached !

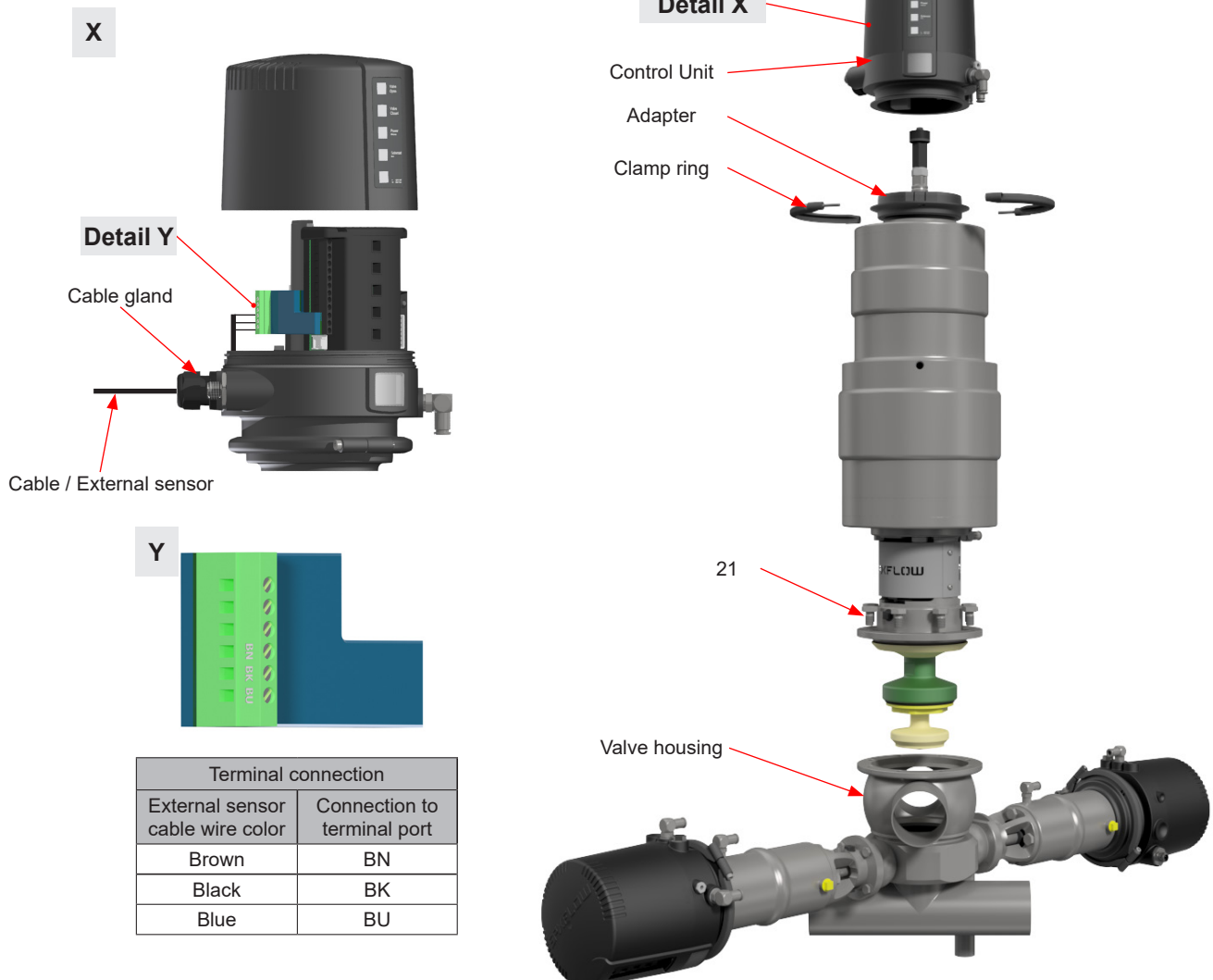
21. Fix the counter disc (17) against the actuator rod with a face pin spanner $\varnothing 3\text{mm}$.
22. Assemble the 2x yoke covers (31) with the 4x hex. screws on the yoke. Fix the cable from sensor in the yoke via the rubber grommet.
23. Place the centering disc (23) on the tie rod (18) and screw on the self-locking nut (24) and fasten it. Tightening torque: $M_d = \text{Nm } 40\text{Nm}$
24. Fasten the magnet on the tie rod (18).

11. Service instructions

11.4. Installation of the DUALSAFE (AM1) valve insert

1. Carefully place the valve insert into the valve housing.
2. Place the CU43plus on the adapter.
3. Place the clamp rings and fasten it with the screws.
4. Pull the cable from the external sensor through the cable gland and connect the 3 wires at the cable terminal. Tighten the cable gland.
5. Assemble the compressed air lines.
 - Air connection 1: valve open
 - Air connection 2: upper shaft lift
 - Air connection 3: lower shaft lift
6. Control actuator of main valve in open position via manual override of the 1st solenoid valve.
7. Fasten the hex. screws (21) crosswise.
8. Shut off the compressed air via the manual override of the 1st solenoid valve.
9. Perform a teach-routine via the CU43plus.
10. Before start of any production, perform a sterilization of the lower shaft, see chapter 6.3.

fig. 11.4.



11. Service instructions

11.5. Removal of MSP4 - 1" insert from the line system



Caution!

1. Shut off the line pressure in the product lines, cleaning lines and in the steam lines. Discharge the pipes!
2. Ensure that the temperature of the piping has sufficiently decreased or cooled down!
3. **NC version of MSP4 -1" valve.**



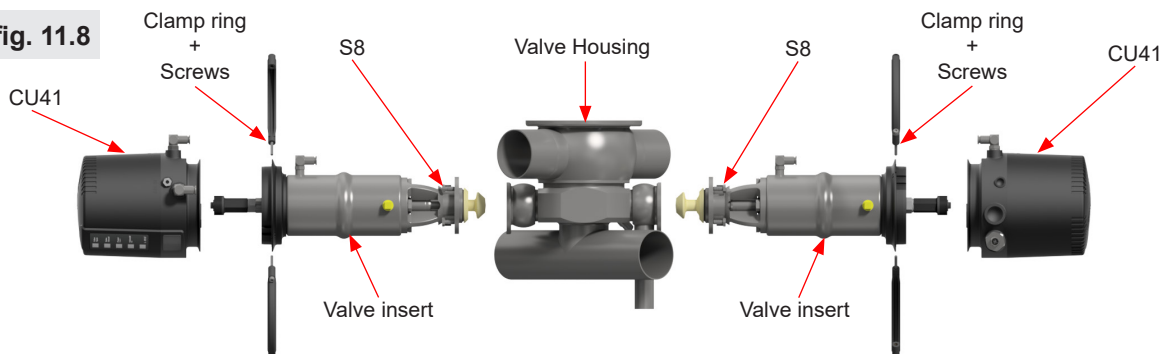
Open the CU41 by turning the cover, then activate the solenoid valve via manual override to open the MSP4 valve.



**NO version of MSP4 -1" valve
Do not activate the valve during removal!
Do not touch movable parts! Risk of injury!**

4. Remove the hex. screws (S8).
5. **NC version of MSP4 -1" valve**
Deactivate the manual override.
6. Remove the air connections between CU41 and actuator. Lift the complete valve insert out of the valve housing.
7. Release the 2 screws at the clamp ring remove the Control Unit CU41 off the adapter

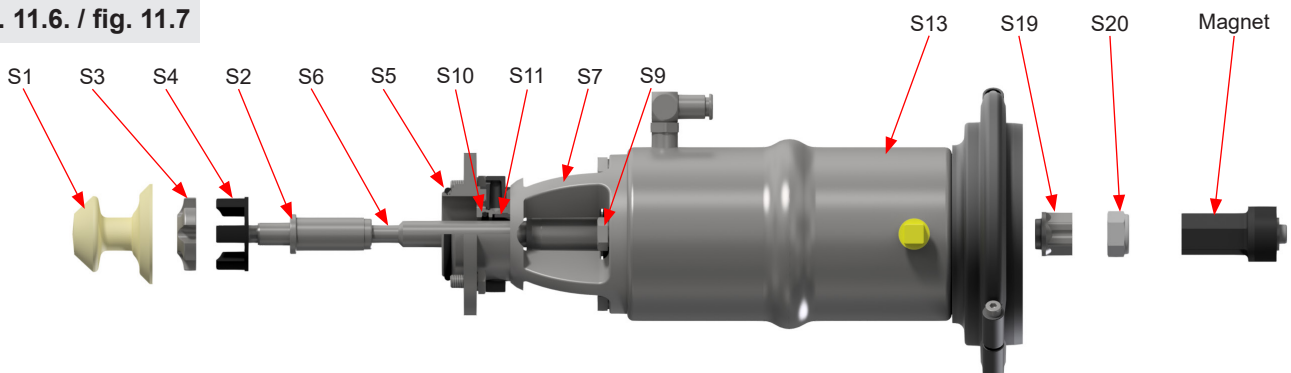
fig. 11.5. / fig. 11.8



11.6. Dismantling of the wear parts

1. Remove the magnet with a SW17 wrench from the tie rod (S6).
2. Release the self-locking nut (S20) with a SW19 while holding up the centering disc (S19) with a SW17 wrench. Remove the centering washer.
3. Extract the shaft (S1) with tie rod (S6), star (S3), shaft upper part (S2) and membrane support (S4) from the actuator.
4. Place the centering washer (S19) over the tie rod (S6) and unscrew the tie rod with a SW17 wrench off the lower shaft (S1).
5. Unscrew the hex. screws (S9) and remove the yoke from the actuator (S13).
6. Detach the O-Rings (S5, S10) and the guide bush (S11) from the yoke (S7).

fig. 11.6. / fig. 11.7



11. Service instructions

11.7. Installation of the wear parts and assembly of MSP4 - 1" valve insert



Note!

Make sure that all elastomer seals and bearing surfaces in and close to the product area are slightly greased before their installation!

1. Insert the guide bush (S11) and the O-Ring (S10) in the yoke (S7).
2. Insert the O-Ring (S5) in the groove of the yoke (S7).
3. Fasten the yoke (S7) at the actuator (S13).
4. On the tie rod (S6), apply a droplet of semi-hard Loctite (Loctite 243) on the M8 thread. Place the centering disc (S19) over the tie rod and screw the tie rod with a SW17 wrench in the lower shaft (S1) up to the stop.
5. Place star (S3), shaft upper part (S2) and membrane support (S4) over the tie rod (S6) on top of the shaft (S1).
6. Insert this shaft assembly through the yoke (S7) and actuator (S13).
! Toothing of membrane support and star must interlock !
7. Place the centering disc (S19) on the tie rod (S6) and screw on the self-locking nut (S20) and fasten it with a torque of 40Nm.

11.8. Installation of the MSP4 - 1" valve insert

1. Place the Control Unit on the adapter.
2. Place the clamp rings and fasten it with the screws.
3. Assemble the compressed air lines.
4. **NC version of MSP4 -1" valve**

Open the CU41 and control actuator in open position via manual override of the solenoid valve.



NO version of MSP4 -1" valve

Do not activate the valve during installation!

Do not touch movable parts!

Risk of injury!

5. Carefully place the valve insert into the valve housing. Tighten the hex. screws (S8) crosswise.
6. **NC version of MSP4 -1" valve**
Shut off the compressed air via manual override.
7. Check the valve position indication.
For CU41plus perform a teach routine.
For CU41 check the switch points. If required adjust by turning the positioning screws.

12. Maintenance of actuator

The item numbers refer to the spare parts drawings
DIN and Inch designs: RN 510.047.01

12.1 DUALSAFE (AM1) actuator - rod seal removal

1. Disassemble the DUALSAFE (AM1) valve as described in chapter 11.2 up to point 8.
2. Use the metal point to take the O-Ring (28).
3. Unscrew the screws in the CU4 adapter and take off the adapter.
4. Unscrew the countersunk screws (26) and lift of the lid (25) from the actuator (20).
5. Use the metal point to take the Quad-Ring (27).

12.2 DUALSAFE (AM1) actuator - rod seal installation

1. Install the slightly greased O-Ring (28) and Quad-Ring (27) in the grooves of the actuator.

Recommendation for actuator:
Pneumatic grease Autol Top 2000
(25 ml /tube - H164725)

2. Install lid (25) and CU4 adapter.
3. Install serviced yoke (19) on the actuator.

fig. 12.1 / 12.2

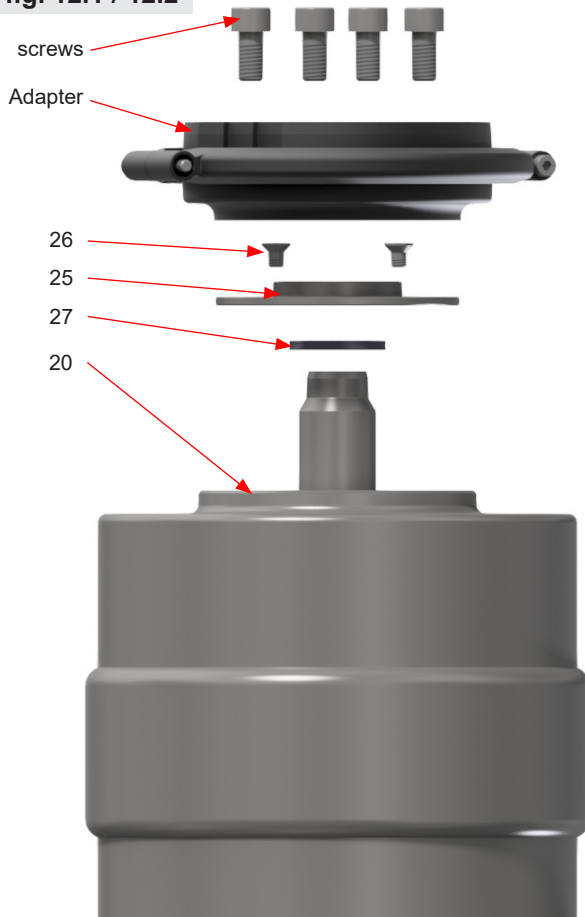
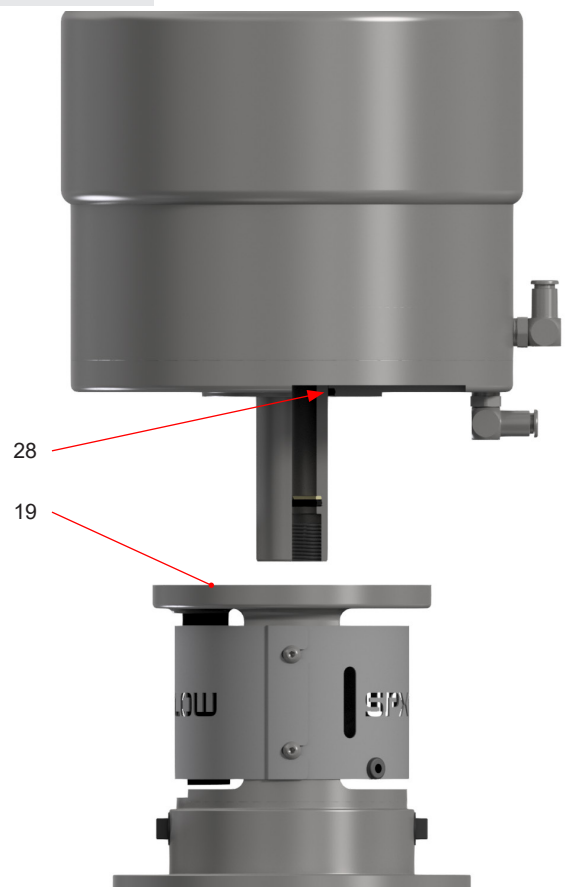


fig. 12.1 / 12.2



13. Trouble shooting

13.1 DUALSAFE (AM1) main valve

Failure	Valve position				Required seal replacement
	closed	open	USL	LSL	
Leakage at the venting plugs (35)	x	x	x	x	Diaphragm (5) and O-Rings (12 & 13) Check tightening torque of the diaphragm coupling (16)
Leakage in yoke, below the counter disc (17)	x	x	x	x	Lower shaft (3) and O-Ring (14) Check tightening torque of the self-locking nut (24) Check that tension disc (4) is screwed up to the stop
Leakage at upper valve seat	x			x	Seat seal (6)
Leakage at lower valve seat	x		x		Lower shaft (3) and O-Ring (14)
Leakage at upper housing flange	x	x	x		Diaphragm (5) and O-Rings (5 & 13)
Air escapes at the actuator rod			x		O-Ring (28)
Actuator does not work					Complete actuator
No feedback	x	x	x	x	Check magnet on the tie rod is correctly assembled. Check that the counter disc on the upper shaft is correctly assembled. Perform teach routine.

13.2 MSP4 - 1" side valves

Failure	Valve position		Required seal replacement
	closed	open	
Leakage at the venting plugs (S12)	x	x	shaft (S1) and O-Ring (S5) Check tightening torque of the locking nut (S20)
Leakage at housing flange	x	x	shaft (S1) and O-Ring (S5)
Leakage at valve seat	x		shaft (S1) and O-Ring (S5)
Air escapes at the actuator rod			O-Ring (S15) and V-seal (S16)
Actuator does not work			Replace complete actuator
No feedback	x	x	Check magnet on the tie rod is correctly assembled. Carry out fine adjustment of Hall sensors or teach routine.

The item numbers refer to the spare parts drawings
DIN and Inch designs: RN 510.047.01

14. Spare parts list

The reference numbers of the spare parts for the different valve sizes are included in the attached spare parts drawing with corresponding lists.

Please indicate the following data to place an order for spare parts:

- quantity of required parts
- part number
- designation

Data are subject to change

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Spare Parts list

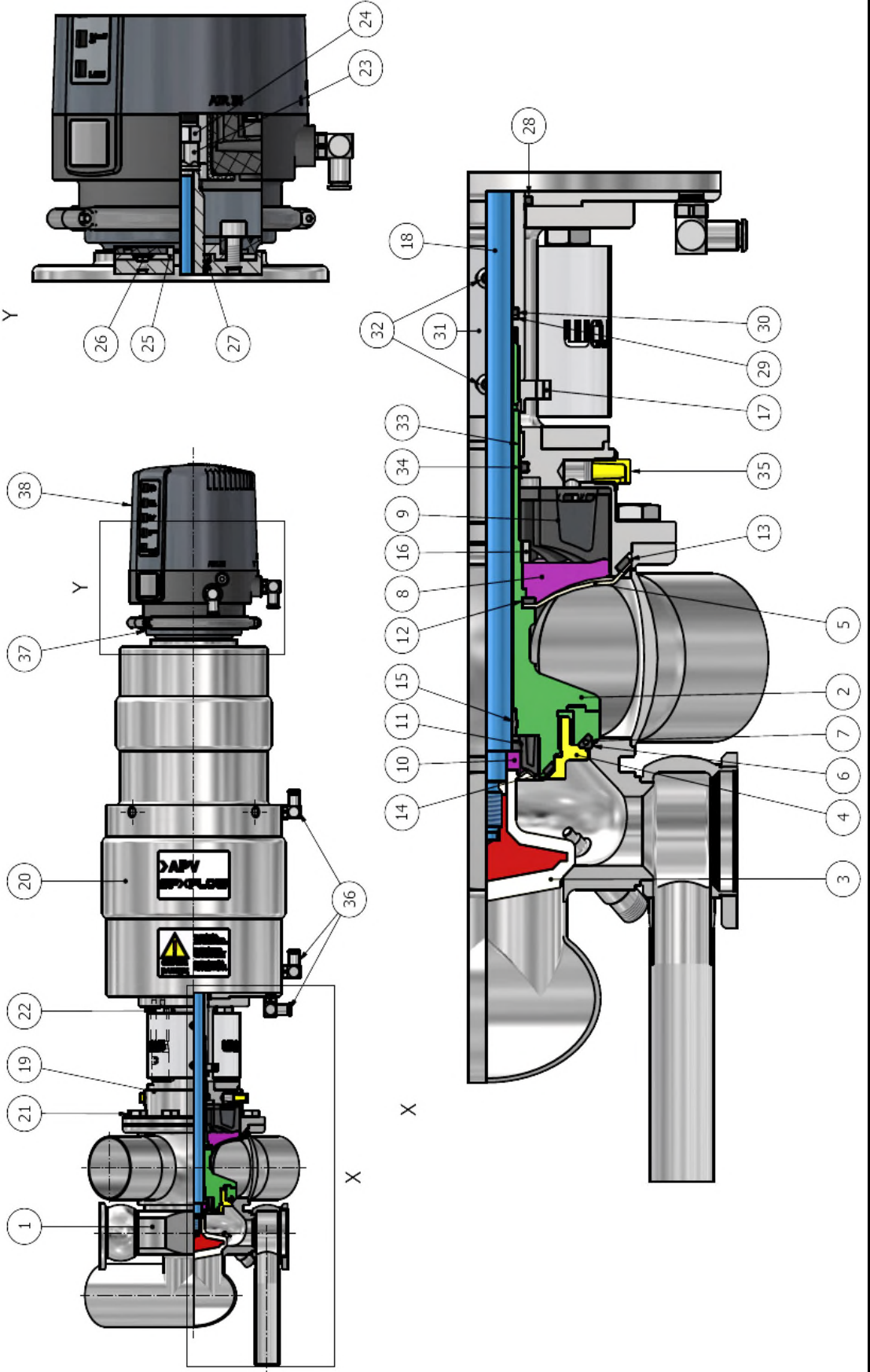
Aseptic Mixproof Valve AM1 DN40 - 65 , 1,5" - 3"

Date: 22.12.23
Name: F. Trim.
Reviewed: N. Spl.

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Page 1 of 12

Reviewed: RN 510.047.01



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Spare parts list

Aseptic Mixproof Valve AM1-1,5"

	Date: 22.12.23
	Name: F.Trim.
	Reviewed: N.Spl.
Page 2 of 12	
RN 510.047.01	

SPX FLOW

pos. item	Quantity	Description	additional information	Material	Part no.
29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
31	2	yoke cover DT4-62		1.4301	H343278
32	4	Savetex captive hex screw M4x8 + washer as set		A2-70	H336707
33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
35	2	Venting plug G1/8"		PHT/BLACK	H175308
36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
38	1	Control units see on page 11			
Side valves see on pages 9 & 10					

pos. item	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-1,5"	3.1 certificate	1.4404	H347359
2	1	Housing AM13-1,5"	3.1 certificate	1.4404	H348672
3	1	Upper shaft AM1-40/1,5"	3.1 certificate	1.4404	H347745
4	1	Lower shaft AM1-Ø59,2	incl. in seal kit	PTFE / 1.4301	H347293
5	1	Upper shaft tension disc AM1-Ø70	3.1 certificate	1.4404	H347304
6	1	Diaphragm AM1-Ø89,2/28	incl. in seal kit	PTFE	H347298
7	1	Seat seal AM1-Ø70,5	incl. in seal kit	EPDM	H347291
8	1	Seat seal AM1-Ø70,5	incl. in seal kit	HNBR	H347349
9	1	Seat seal AM1-Ø70,5	incl. in seal kit	FPM DPF	H347350
10	1	Carrier ring seat seal AM1-Ø70,5		1.4404	H347292
11	1	Star AM1-Ø73		1.4301	H347299
12	1	Fan support IM AM1-Ø73		PPS GF40	H348128
13	1	Star AM1-Ø41		1.4301	H347294
14	1	Fan support IM AM1-Ø41		PPS GF40	H348129
15	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806
16	1	O-RING 75-4,5	incl. in seal kit	EPDM	H324911
17	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805
18	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800
19	1	Upper diaphragm coupling AM1		1.4301	H346800
20	1	Counter disc upper shaft AM1		1.4523	H346801
21	1	Tie rod AM1-40/1,5" version 2		1.4404	H348441
22	1	Yoke AM1-Ø135 complete		1.4308 / 1.4301	H347306
23	1	Actuator AM1-150-16		1.4301	H347268
24	1	Hexagon screw M8x16		A2-70	H78772
25	1	Hexagon screw M10x18		A2-70	H78807
26	1	Centering disc SW4		1.4301	H170196
27	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376
28	1	Lid actuator insert		1.4301	H342729
29	2	Countersunk screw M5x8		A2-70	H173206
30	1	Quad-Ring 24,99x3,53		NBR	H342532
31	1	O-RING 30,2-3		NBR	H77107

Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only

Seal kit AM1 DN40, DN50, 1,5", 2" EPDM	EPDM	H348456
Seal kit AM1 DN40, DN50, 1,5", 2" HNBR	HNBR	H348457
Seal kit AM1 DN40, DN50, 1,5", 2" FPM	FPM	H348458

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Spare parts list

Aseptic Mixproof Valve AM1-40

Date:	22.12.23		
Name:	F.Trim.		
Reviewed:	N.Spl.		
Date:		Page	3 of 12
Name:		RN 510.047.01	
Reviewed:			

SPX FLOW

pos. item	Quantity	Description	additional information	Material	Part no.	pos. item	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-40	3.1 certificate	1.4404	H347351	29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
	1	Housing AM13-40	3.1 certificate	1.4404	H348673	30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
2	1	Upper shaft AM1-40/1,5"	3.1 certificate	1.4404	H347745	31	2	yoke cover DT4-62		1.4301	H343278
3	1	Lower shaft AM1-Ø59,2	incl. in seal kit	PTFE / 1.4301	H347293	32	4	Savetex captive hex screw M4x8 + washer as set		A2-70	H336707
4	1	Upper shaft tension disc AM1-Ø70	3.1 certificate	1.4404	H347304	33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
5	1	Diaphragm AM1-Ø89,2/28	incl. in seal kit	PTFE	H347298	34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
	1	Seat seal AM1-Ø70,5	incl. in seal kit	EPDM	H347291	35	2	Venting plug G1/8"		PHT/BLACK	H175308
6	1	Seat seal AM1-Ø70,5	incl. in seal kit	HNBR	H347349	36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
	1	Seat seal AM1-Ø70,5	incl. in seal kit	FPM DPF	H347350	37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
7	1	Carrier ring seat seal AM1-Ø70,5		1.4404	H347292	38	1		Control units see on page 11		
8	1	Star AM1-Ø73		1.4301	H347299				Side valves see on pages 9 & 10		
9	1	Fan support IM AM1-Ø73		PPS GF40	H348128						
10	1	Star AM1-Ø41		1.4301	H347294						
11	1	Fan support IM AM1-Ø41		PPS GF40	H348129						
12	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806						
13	1	O-RING 75-4,5	incl. in seal kit	EPDM	H324911						
14	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805						
15	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800						
16	1	Upper diaphragm coupling AM1		1.4301	H346800						
17	1	Counter disc upper shaft AM1		1.4523	H346801						
18	1	Tie rod AM1-40/1,5" version 2		1.4404	H348441						
19	1	Yoke AM1-Ø135 complete		1.4308 / 1.4301	H347306						
20	1	Actuator AM1-150-16		1.4301	H347268						
21	8	Hexagon screw M8x16		A2-70	H78772						
22	4	Hexagon screw M10x18		A2-70	H78807						
23	1	Centering disc SW4		1.4301	H170196						
24	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376						
25	1	Lid actuator insert		1.4301	H342729						
26	2	Countersunk screw M5x8		A2-70	H173206						
27	1	Quad-Ring 24,99x3,53		NBR	H342532						
28	1	O-RING 30,2-3		NBR	H77107						

Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only

		Seal kit AM1 DN40, DN50, 1,5", 2" EPDM	EPDM	H348456
		Seal kit AM1 DN40, DN50, 1,5", 2" HNBR	HNBR	H348457
		Seal kit AM1 DN40, DN50, 1,5", 2" FPM	FPM	H348458

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Spare parts list

Aseptic Mixproof Valve AM1-2"

Date:	22.12.23				
Name:	F.Trim.				
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Name:					RN 510.047.01
Reviewed:					

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pos. item	Quantity	Description	additional information	Material	Part no.	pos. item	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-2"	3.1 certificate	1.4404	H347320	29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
	1	Housing AM13-2"	3.1 certificate	1.4404	H348674	30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
2	1	Upper shaft AM1-50/2"	3.1 certificate	1.4404	H347303	31	2	yoke cover DT4-62		1.4301	H343278
3	1	Lower shaft AM1-Ø59,2	incl. in seal kit	PTFE / 1.4301	H347293	32	4	Savetix captive hex screw M4x8 + washer as set		A2-70	H336707
4	1	Upper shaft tension disc AM1-Ø70	3.1 certificate	1.4404	H347304	33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
5	1	Diaphragm AM1-Ø89,2/28	incl. in seal kit	PTFE	H347298	34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
6	1	Seat seal AM1-Ø70,5	incl. in seal kit	EPDM	H347291	35	2	Venting plug G1/8"		PHT/BLACK	H175308
	1	Seat seal AM1-Ø70,5	incl. in seal kit	HNBR	H347349	36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
7	1	Seat seal AM1-Ø70,5	incl. in seal kit	FPM DPF	H347350	37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
8	1	Carrier ring seat seal AM1-Ø70,5		1.4404	H347292	38	1				
9	1	Star AM1-Ø73		1.4301	H347299	Control units see on page 11					
10	1	Fan support IM AM1-Ø73		PPS GF40	H348128	Side valves see on pages 9 & 10					
11	1	Star AM1-Ø41		1.4301	H347294						
12	1	Fan support IM AM1-Ø41		PPS GF40	H348129						
13	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806						
14	1	O-RING 75-4,5	incl. in seal kit	EPDM	H324911						
15	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805						
16	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800						
17	1	Upper diaphragm coupling AM1		1.4301	H346800						
18	1	Counter disc upper shaft AM1		1.4523	H346801						
19	1	Tie rod AM1-50/2" version 2		1.4404	H348287						
20	1	Yoke AM1-Ø135 complete		1.4308 / 1.4301	H347306						
21	8	Actuator AM1-150-16		1.4301	H347268						
22	4	Hexagon screw M8x16		A2-70	H78772						
23	1	Hexagon screw M10x18		A2-70	H78807						
24	1	Centering disc SW4		1.4301	H170196						
25	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376						
26	2	Lid actuator insert		1.4301	H342729						
27	1	Countersunk screw M5x8		A2-70	H173206						
28	1	Quad-Ring 24,99x3,53		NBR	H342532						
		O-RING 30,2-3		NBR	H77107						

Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only

	Seal kit AM1 DN40, DN50, 1,5", 2" EPDM	EPDM	H348456
	Seal kit AM1 DN40, DN50, 1,5", 2" HNBR	HNBR	H348457
	Seal kit AM1 DN40, DN50, 1,5", 2" FPM	FPM	H348458

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Spare parts list

Aseptic Mixproof Valve AM1-50

SPX FLOW	
Date:	22.12.23
Name:	F.Trim.
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pos.	Quantity	Description	additional information	Material	Part no.
29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
31	2	yoke cover DT4-62		1.4301	H343278
32	4	Savetix captive hex screw M4x8 + washer as set		A2-70	H336707
33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
35	2	Venting plug G1/8"		PHT/BLACK	H175308
36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
38	1		Control units see on page 11		
Side valves see on pages 9 & 10					

pos.	Quantity	Description	additional information	Material	Part no.
Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only					
		Seal kit AM1 DN40, DN50, 1,5", 2" EPDM		EPDM	H348456
		Seal kit AM1 DN40, DN50, 1,5", 2" HNBR		HNBR	H348457
		Seal kit AM1 DN40, DN50, 1,5", 2" FPM		FPM	H348458

pos.	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-50	3.1 certificate	1.4404	H347310
2	1	Housing AM13-50	3.1 certificate	1.4404	H348675
3	1	Upper shaft AM1-50/2"	3.1 certificate	1.4404	H347303
4	1	Lower shaft AM1-Ø59,2	incl. in seal kit	PTFE / 1.4301	H347293
5	1	Upper shaft tension disc AM1-Ø70	3.1 certificate	1.4404	H347304
6	1	Diaphragm AM1-Ø89,2/28	incl. in seal kit	PTFE	H347298
7	1	Seat seal AM1-Ø70,5	incl. in seal kit	EPDM	H347291
8	1	Seat seal AM1-Ø70,5	incl. in seal kit	HNBR	H347349
9	1	Seat seal AM1-Ø70,5	incl. in seal kit	FPM DPF	H347350
10	1	Carrier ring seat seal AM1-Ø70,5		1.4404	H347292
11	1	Star AM1-Ø73		1.4301	H347299
12	1	Fan support IM AM1-Ø73		PPS GF40	H348128
13	1	Star AM1-Ø41		1.4301	H347294
14	1	Fan support IM AM1-Ø41		PPS GF40	H348129
15	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806
16	1	O-RING 75-4,5	incl. in seal kit	EPDM	H324911
17	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805
18	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800
19	1	Upper diaphragm coupling AM1		1.4301	H346800
20	1	Counter disc upper shaft AM1		1.4523	H346801
21	1	Tie rod AM1-50/2" version 2		1.4404	H348287
22	1	Yoke AM1-Ø135 complete		1.4308 / 1.4301	H347306
23	1	Actuator AM1-150-16		1.4301	H347268
24	1	Hexagon screw M8x16		A2-70	H78772
25	1	Hexagon screw M10x18		A2-70	H78807
26	1	Centering disc SW4		1.4301	H170196
27	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376
28	1	Lid actuator insert		1.4301	H342729
29	2	Countersunk screw M5x8		A2-70	H173206
30	1	Quad-Ring 24,99x3,53		NBR	H342532
31	1	O-RING 30,2-3		NBR	H77107

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Spare parts list

Aseptic Mixproof Valve AM1-2,5"

Date:	22.12.23				
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Date:					
Name:					
Reviewed:					

Date:					
Name:					
Reviewed:					

pos.	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-2,5"	3.1 certificate	1.4404	H346782
	1	Housing AM13-2,5"	3.1 certificate	1.4404	H348676
2	1	Upper shaft AM1-2,5"	3.1 certificate	1.4404	H346798
3	1	Lower shaft AM1-2,5"	incl. in seal kit	PTFE / 1.4301	H346783
4	1	Upper shaft tension disc AM1-Ø81	3.1 certificate	1.4404	H346799
5	1	Diaphragm AM1-Ø114/28	incl. in seal kit	PTFE	H346793
	1	Seat seal AM1-Ø81,5	incl. in seal kit	EPDM	H346628
6	1	Seat seal AM1-Ø81,5	incl. in seal kit	HNBR	H347347
	1	Seat seal AM1-Ø81,5	incl. in seal kit	FPM DPF	H347348
7	1	Carrier ring seat seal AM1-Ø81,5		1.4404	H346658
8	1	Star AM1-Ø97		1.4301	H346794
9	1	Fan support IM AM1-Ø97		PPS GF40	H348127
10	1	Star AM1-Ø41		1.4301	H347294
11	1	Fan support IM AM1-Ø41		PPS GF40	H348129
12	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806
13	1	O-Ring 95-4,5	incl. in seal kit	EPDM	H324912
14	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805
15	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800
16	1	Upper diaphragm coupling AM1		1.4301	H346800
17	1	Counter disc upper shaft AM1		1.4523	H346801
18	1	Tie rod AM1-2,5" version 2		1.4404	H348442
19	1	Yoke AM1-Ø149 complete		1.4308 / 1.4301	H346788
20	1	Actuator AM1-180-22		1.4301	H346781
21	8	Hexagon screw M10x16		A2-70	H78806
22	4	Hexagon screw M10x18		A2-70	H78807
23	1	Centering disc SW4		1.4301	H170196
24	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376
25	1	Lid actuator insert		1.4301	H342729
26	2	Countersunk screw M5x8		A2-70	H173206
27	1	Quad-Ring 24,99x3,53		NBR	H342532
28	1	O-RING 30,2-3		NBR	H77107

pos.	Quantity	Description	additional information	Material	Part no.
29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
31	2	Yoke cover DT4-62		1.4301	H343278
32	4	Savetex captive hex screw M4x8 + washer as set		A2-70	H336707
33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
35	2	Venting plug G1/8"		PHT/BLACK	H175308
36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
38	1		Control units see on page 11		
Side valves see on pages 9 & 10					

Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only					
		Seal kit AM1 2,5" EPDM		EPDM	H348453
		Seal kit AM1 2,5" HNBR		HNBR	H348454
		Seal kit AM1 2,5" FPM		FPM	H348455

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Spare parts list

Aseptic Mixproof Valve AM1-65

Date:	22.12.23	SPX FLOW	
Name:	F.Trim.		
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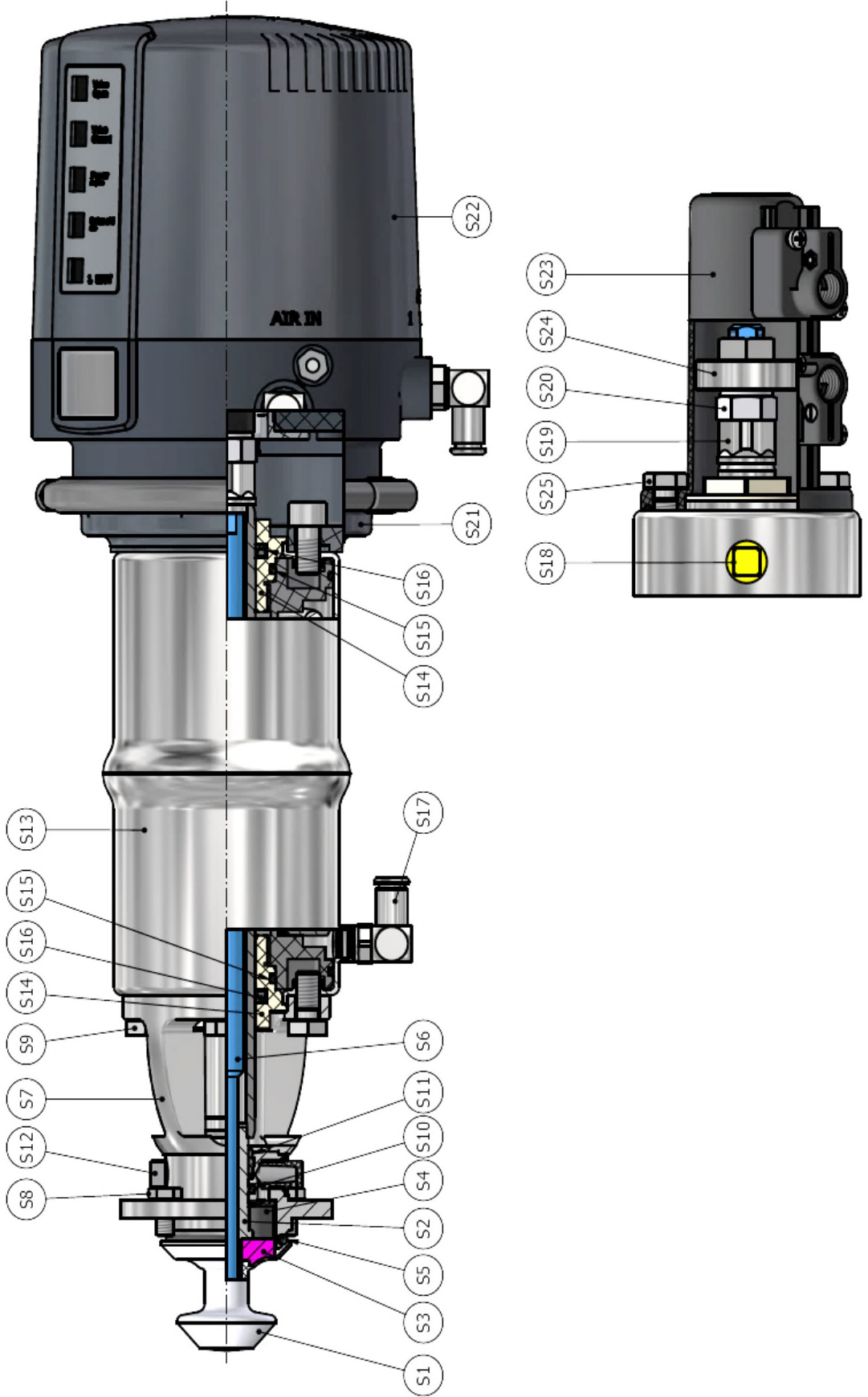
pos. item	Quantity	Description	additional information	Material	Part no.	pos. item	Quantity	Description	additional information	Material	Part no.
1	1	Housing AM14-65	3.1 certificate	1.4404	H347153	29	1	Back-up Ring 20x24,5x1,4	incl. in seal kit	PTFE	H346808
	1	Housing AM13-65	3.1 certificate	1.4404	H348677	30	1	Quad-Ring 20,29x2,62	incl. in seal kit	EPDM	H346807
2	1	Upper shaft AM1-65	3.1 certificate	1.4404	H347167	31	2	Yoke cover DT4-62		1.4301	H343278
3	1	Lower shaft AM1-65/3"	incl. in seal kit	PTFE / 1.4301	H347163	32	4	Savetix captive hex screw M4x8 + washer as set		A2-70	H336707
4	1	Upper shaft tension disc AM1-Ø81	3.1 certificate	1.4404	H346799	33	1	Guide ring Ø26	incl. in seal kit	PTFE	H346803
5	1	Diaphragm AM1-Ø114/28	incl. in seal kit	PTFE	H346793	34	1	Quad-Ring 26,57x3,53	incl. in seal kit	EPDM	H346804
6	1	Seat seal AM1-Ø81,5	incl. in seal kit	EPDM	H346628	35	2	Venting plug G1/8"		PHT/BLACK	H175308
	1	Seat seal AM1-Ø81,5	incl. in seal kit	HNBR	H347347	36	3	W-union G1/8" Ø6mm		hard nickel plated	H208825
7	1	Seat seal AM1-Ø81,5	incl. in seal kit	FPM DPF	H347348	37	1	CU4plus-DT4-62-adapter cmpl.		PA6.6 GF30 black	H343619
8	1	Carrier ring seat seal AM1-Ø81,5		1.4404	H346658	38	1		Control units see on page 11		
9	1	Star AM1-Ø97		1.4301	H346794	Side valves see on pages 9 & 10					
10	1	Fan support IM AM1-Ø97		PPS GF40	H348127						
11	1	Star AM1-Ø41		1.4301	H347294						
12	1	Fan support IM AM1-Ø41		PPS GF40	H348129						
13	1	O-Ring 30,5-3,5	incl. in seal kit	EPDM	H346806						
14	1	O-Ring 95-4,5	incl. in seal kit	EPDM	H324912						
15	1	O-Ring 42-3,5	incl. in seal kit	EPDM	H346805						
16	1	Bushing 20x9 slotted 3A	incl. in seal kit	PEEK	H315800						
17	1	Upper diaphragm coupling AM1		1.4301	H346800						
18	1	Counter disc upper shaft AM1		1.4523	H346801						
19	1	Tie rod AM1-65 version 2		1.4404	H348443						
20	1	Yoke AM1-Ø149 complete		1.4308 / 1.4301	H346788						
21	8	Actuator AM1-180-22		1.4301	H346781						
22	4	Hexagon screw M10x16		A2-70	H78806						
23	1	Hexagon screw M10x18		A2-70	H78807						
24	1	Centering disc SW4		1.4301	H170196						
25	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376						
26	2	Lid actuator insert		1.4301	H342729						
27	1	Countersunk screw M5x8		A2-70	H173206						
28	1	Quad-Ring 24,99x3,53		NBR	H342532						
		O-RING 30,2-3		NBR	H77107						
Pos. 3, 5, 6, 12, 13, 14, 15, 29, 30, 33, 34 available in complete seal kits only											
		Seal kit AM1 DN65, 3" EPDM		EPDM	H348450						
		Seal kit AM1 DN65, 3" HNBR		HNBR	H348451						
		Seal kit AM1 DN65, 3" FPM		FPM	H348452						

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Spare Parts list

**Aseptic Mixproof Valve AM1
Side valves MSP4-1"**

Date:	22.12.23			SPX FLOW	
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Spare parts list

Aseptic Mixproof Valve AM1 - APV Delta MSP4-1"

Date:	22.12.23				
Name:	F.Trim.				
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pos. item	Quantity	Description	additional information	Material	Part no.
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S1	1	Diaphragm shaft MSP4-1"	incl. in seal kit	PTFE / 1.4305	H321025
S2	1	Shaft MS4-25 upper part		1.4301	H318486
S3	1	Star MS4-25		1.4301	H320414
S4	1	Membrane support MS4-25		Ryton R4-XT	H318632
S5	1	O-Ring 35-3.5	incl. in seal kit	EPDM	H324909
S6	1	Tie rod L=314,3 for M4+MES4		1.4305	H202599
S7	1	Yoke MS4-25/1" complete		1.4301	H318491
S8	4	Hexagon srew M6x12		A2-70	H78750
S9	4	Hexagon srew M8x16		A2-70	H78772
S10	1	O-Ring 15.3-2,4 alternat. 15-2,5	incl. in seal kit	EPDM	H206007
S11	1	Guide bush 15X9 slotted 3A	incl. in seal kit	KETRON PEEK	H162714
S12	2	Venting plug G1/8"		PHT/BLACK	H175308
S13	1	Actuator SW4-74mm OD: Ø6mm		1.4301	H171378
S14	2	Screw seal actuator SW4		PBT+ASA GF30	H170200
S15	2	O-Ring 29-2.5		NBR	H171059
S16	2	Seal V SW4		NBR	H171060
S17	1	W-union G1/8" Ø6mm		hard nickel plated	H208825
S18	1	Venting plug G1/8"		PE-HARD/YELL.	H16218
S19	1	Centering disc SW4		1.4301	H170196
S20	1	Hexagon nut M12 self locking	incl. in seal kit	A2-70	H112376
S21	1	CU4-S-adapter complete		PA6.6 GF30 black	H320474
S22	1	CU4plus-S-adapter complete		PA6.6 GF30 black	H333143
S23	1	PSH SW4 complete	Control units see on page 11		
S24	1	Operating cam SW4		PA12 black	H173931
S25	4	Hexagon srew M8x16		1.4523	H173087
				A2-70	H78772
Pos. S1, S5, S10, S11, S20 available in					
		Seal kit MSP4-1"		PTFE	H328461

pos. item	Quantity	Description	additional information	Material	Part no.
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Spare parts list

Aseptic Mixproof Valve AM1 - Control Units CU4

Date:	22.12.23				
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pos. item	Quantity	Description	air connections	Material	Part no.
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pos. item	Quantity	Description	air connections	Material	Part no.
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CU41 for MSP4-1" Valve Inserts					
	2	CU41-S Direct Connect	6 mm	PA 6.6 GF30 black	H320460
	2	CU41-S-M12 Direct Connect	6 mm	PA 6.6 GF30 black	H341335
S22	2	CU41-S AS-i	6 mm	PA 6.6 GF30 black	H320467
	2	CU41-S-M12 AS-i	6 mm	PA 6.6 GF30 black	H337701
	2	CU41-S Direct Connect	1/4" OD	PA 6.6 GF30 black	H322802
	2	CU41-S-M12 Direct Connect	1/4" OD	PA 6.6 GF30 black	H341344
	2	CU41-S AS-i	1/4" OD	PA 6.6 GF30 black	H324666
	2	CU41-S-M12 AS-i	1/4" OD	PA 6.6 GF30 black	H337708

CU43plus for AM1 Valve					
	1	CU43plus-AM1 Direct Connect	6 mm	PA 6.6 GF30 black	H348707
	1	CU43plus-AM1-M12 Direct Connect	6 mm	PA 6.6 GF30 black	H348708
	1	CU43plus-AM1 AS-i	6 mm	PA 6.6 GF30 black	H348709
	1	CU43plus-AM1-M12 AS-i	6 mm	PA 6.6 GF30 black	H348710
38	1	CU43plus-AM1-M12 IO-Link	6 mm	PA 6.6 GF30 black	H348711
	1	CU43plus-AM1-M12 AS-i V5	6 mm	PA 6.6 GF30 black	H348033
	1	CU43plus-AM1 Direct Connect	1/4" OD	PA 6.6 GF30 black	H348712
	1	CU43plus-AM1-M12 Direct Connect	1/4" OD	PA 6.6 GF30 black	H348713
	1	CU43plus-AM1 AS-i	1/4" OD	PA 6.6 GF30 black	H348714
	1	CU43plus-AM1-M12 AS-i	1/4" OD	PA 6.6 GF30 black	H348715
	1	CU43plus-AM1-M12 IO-Link	1/4" OD	PA 6.6 GF30 black	H348716
	1	CU43plus-AM1-M12 AS-i V5	1/4" OD	PA 6.6 GF30 black	H348034

CU41plus for MSP4-1" Valve Inserts					
	2	CU41plus-S Direct Connect	6 mm	PA 6.6 GF30 black	H342436
	2	CU41plus-S-M12 Direct Connect	6 mm	PA 6.6 GF30 black	H342456
	2	CU41plus-S AS-i	6 mm	PA 6.6 GF30 black	H333118
	2	CU41plus-S-M12 AS-i	6 mm	PA 6.6 GF30 black	H338852
	2	CU41plus-S-M12 IO-Link	6 mm	PA 6.6 GF30 black	H345124
S22	2	CU41plus-S-M12 AS-i V5	6 mm	PA 6.6 GF30 black	H348025
	2	CU41plus-S Direct Connect	1/4" OD	PA 6.6 GF30 black	H342437
	2	CU41plus-S-M12 Direct Connect	1/4" OD	PA 6.6 GF30 black	H342457
	2	CU41plus-S AS-i	1/4" OD	PA 6.6 GF30 black	H333124
	2	CU41plus-S-M12 AS-i	1/4" OD	PA 6.6 GF30 black	H338859
	2	CU41plus-S-M12 IO-Link	1/4" OD	PA 6.6 GF30 black	H345125
	2	CU41plus-S-M12 AS-i V5	1/4" OD	PA 6.6 GF30 black	H348026

CU41plus for MSP4-1" Valve Inserts					
	2	CU41plus-S Direct Connect	6 mm	PA 6.6 GF30 black	H342436
	2	CU41plus-S-M12 Direct Connect	6 mm	PA 6.6 GF30 black	H342456
	2	CU41plus-S AS-i	6 mm	PA 6.6 GF30 black	H333118
	2	CU41plus-S-M12 AS-i	6 mm	PA 6.6 GF30 black	H338852
	2	CU41plus-S-M12 IO-Link	6 mm	PA 6.6 GF30 black	H345124
S22	2	CU41plus-S-M12 AS-i V5	6 mm	PA 6.6 GF30 black	H348025
	2	CU41plus-S Direct Connect	1/4" OD	PA 6.6 GF30 black	H342437
	2	CU41plus-S-M12 Direct Connect	1/4" OD	PA 6.6 GF30 black	H342457
	2	CU41plus-S AS-i	1/4" OD	PA 6.6 GF30 black	H333124
	2	CU41plus-S-M12 AS-i	1/4" OD	PA 6.6 GF30 black	H338859
	2	CU41plus-S-M12 IO-Link	1/4" OD	PA 6.6 GF30 black	H345125
	2	CU41plus-S-M12 AS-i V5	1/4" OD	PA 6.6 GF30 black	H348026

CU41plus for MSP4-1" Valve Inserts					
	2	CU41plus-S Direct Connect	6 mm	PA 6.6 GF30 black	H342436
	2	CU41plus-S-M12 Direct Connect	6 mm	PA 6.6 GF30 black	H342456
	2	CU41plus-S AS-i	6 mm	PA 6.6 GF30 black	H333118
	2	CU41plus-S-M12 AS-i	6 mm	PA 6.6 GF30 black	H338852
	2	CU41plus-S-M12 IO-Link	6 mm	PA 6.6 GF30 black	H345124
S22	2	CU41plus-S-M12 AS-i V5	6 mm	PA 6.6 GF30 black	H348025
	2	CU41plus-S Direct Connect	1/4" OD	PA 6.6 GF30 black	H342437
	2	CU41plus-S-M12 Direct Connect	1/4" OD	PA 6.6 GF30 black	H342457
	2	CU41plus-S AS-i	1/4" OD	PA 6.6 GF30 black	H333124
	2	CU41plus-S-M12 AS-i	1/4" OD	PA 6.6 GF30 black	H338859
	2	CU41plus-S-M12 IO-Link	1/4" OD	PA 6.6 GF30 black	H345125
	2	CU41plus-S-M12 AS-i V5	1/4" OD	PA 6.6 GF30 black	H348026



APV DUALSAFE

Aseptic Mixproof
Valve (AM1)

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Improvements and research are continuous at SPX FLOW, Inc. Specifications may change without notice.

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