

APV DELTA DKR2

DOUBLE SEAT BALL VALVE WITH CLEANING CONNECTION

FORM NO.: H170755 REVISION: UK-9

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.



Scan for DKR2 Valve
Maintenance Video



EU Declaration of Conformity for Valves and Valve Manifolds

SPX Flow Technology Germany GmbH
Gottlieb-Daimler-Str. 13, D-59439 Holzwickede
herewith declares that the

**APV double seal and double seat valves of the series
SD4, SDT4, SDU4, SDMS4, SDMSU4, SDTMS4, SWcip4, DSV,
DA4, D4 SL, D4, DA3, DA3SLD, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2**
in the nominal diameters DN 25 - 150, ISO 1" – 6" and 1 Sh5 - 6 Sh5

APV butterfly valves of the series SV1 and SVS1F, SVL and SVSL
in the nominal diameters DN 25 - 100, DN 125 - 250 and ISO 1" – 4"

APV ball valves of the series KHI, KHV
in the nominal diameters DN 15 - 100

**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, VRA/H**
in the nominal diameters DN 10 - 150, ISO 1/2" – 4" and 1 Sh5 - 6 Sh5

and the valve manifolds installed thereof

meet the requirements of the Directives 2006/42/EC (superseding 89/392/EEC
and 98/37/EC) and ProdSG (superseding GPSG - 9.GPSGV).

For official inspections, SPX FLOW presents
a technical documentation according to Appendix VII of the Machinery Directive,
this documentation consisting of documents of the development and construction,
description of measures taken to meet the conformity and to correspond with
the basic requirements on safety and health, incl. an analysis of the risks,
as well as an operating manual with safety instructions.

The conformity of the valves and valve manifolds is guaranteed.

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May 2018

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	(see annex)	
	DKR2 - FZ - CU DN 25 - 125, Inch 1" - 4"	RN 01.071
	turning actuator K-80, K-125, K-180	RN 01.073
	turning actuator F/L for feedback unit	RN 01.076
	installation aid DKR complete	RN 268.07

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

The valves must be assembled, disassembled and reassembled only by persons who have been trained in the valves or by SPX FLOW service team members. If necessary, contact your local SPX FLOW representative.



Caution!

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.



- **Do not reach into the open valve ball or yoke.**

Risk of injury by sudden valve operation!

In dismantled valve state, there is the risk of bruising at movable valve parts.



- During valve operation, operating leakage spurts out to the bottom.

- If the cleaning connection is not used, it must be sealed by a plug or operating leakage must be discharged.



- Regular maintenance of the valve including replacement of all seals must be scheduled in order to prevent leakage and liquid emersion.

- Remove the turning actuator before the replacement of seals.



- Before any maintenance work, the line and cleaning system must be depressurized and discharged if possible.



- Separate electric and pneumatic connections.

- Observe service instructions to ensure safe maintenance of the valve.

2. Safety Instructions



- **Caution!**

Welded actuators are preloaded by spring force.

**Opening of the turning 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.

3. Intended Use

The intended use as field of application of the double seat ball valve is the shut-off of pipeline sections.

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

Authorizations and External Approvals

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

<https://www.spxflow.com/en/apv/about-us/certifications/>

4. Mode of Operation

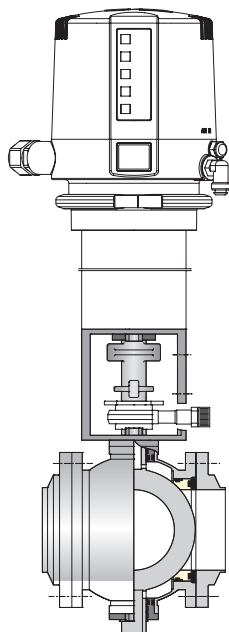
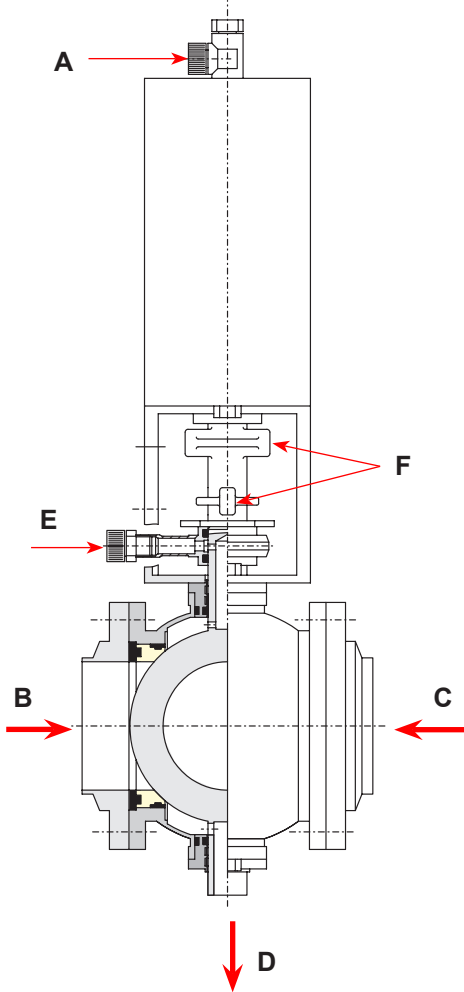
4.1. General

Due to the use of high-quality stainless steel and seal materials complying with the specified requirements, the double seat ball valve DELTA DKR2 is applicable in the food and beverage industries as well as in the chemical and pharmaceutical industries.

The field of application of the DELTA DKR2 valve comprises the separation of two line sections with different fluids (B and C) by two independent seals with intermediate leakage chamber and free drain (D) to the atmosphere.

Actuation by the pneumatic turning actuator with air connection at (A), reset into the limit position "closed" by spring force.

- The free opening cross section has the same dimension as the nominal diameter of the pipeline.
- Smooth valve passage without diversion of the fluid.
- Cleaning of the leakage chamber by supply of cleaning liquids via the cleaning connection (E).
- During the operating process, operating leakages drain off from the leakage drain (D). If a cleaning line is not connected, the cleaning connection (E) must be sealed by a plug or operating leakages draining from (E) must be discharged.
- The cleaning nozzle (E) can be used to flush the leakage chamber with water, or with CIP liquids and clean it with water, for fast emptying, to vent or to sterilize the leakage chamber with steam.
- DKRX special valves are available, for example for highly viscous products with extended leakage drain or for horizontal installation.



5. Auxiliary Equipment

5.1. Valve position indication

Switches to signal the limit position of the valve ball can be installed in the yoke area if requested.

We recommend using APV standard proximity switches.

Type: three-wire proximity switch (ref.-No. 08-60-011/93; H16223)

Operating distance: 5 mm / diameter : 11 mm / length: 30 mm

Feedback complete with support and proximity switch (ref.-No. 15-33-023/33; H32725) for a limit position.

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.

5.2. Control unit (CU, fig. 5.2.)

Units with feedback switches and solenoid valves for the pneumatic control of the valve to be assembled on the actuator are also available in fieldbus technology.

The assembly of the control unit on the prepared variant of the turning actuator is possible.

For the startup as well as assembly and disassembly of the different designs, the corresponding operating manuals must be observed.

fig. 5.2.



The following different designs are available:

CU4 Direct Connect ref.-No.; ID-No.	CU41 - T Direct Connect 08-45-101/93; H320461
CU4 AS-interface 62 Slaves ref.-No.; ID-No.	CU41 - T - AS-i extended 08-45-111/93; H320468
CU4 AS-interface 31 Slaves ref.-No.; ID-No.	CU41 - T - AS-i standard 08-45-251/93; H324674
CU3 Profibus ref.-No.; ID-No.	CU31 Profibus 08-45-001/93; H315495
CU3 DeviceNet ref.-No.; ID-No.	CU31 DeviceNet 16-31-240/93; H209422

- For the assembly of a control unit on the DKR2 valve, an adapter is required.

		adapter
DN 25 - 65; 1" - 2,5"	designation ref.-No.; ID-No.	CU4-T-adapter 08-48-601/93; H320475
DN 80 - 125; 3" - 4"	designation ref.-No.; ID-No.	CU4-Tmax-adapter 08-48-611/93; H321987
DN 25 - 65; 1" - 2,5"	designation ref.-No.; ID-No.	CU2 - adapter K080 08-48-416/93; H209431
DN 80 - 125; 3" - 4"	designation ref.-No.; ID-No.	CU2 - adapter DKR80-100 08-48-417/93; H209432

5. Auxiliary Equipment

5.3. Turning actuator for control unit

- For the installation of a control unit on the DKR2 valve a special turning actuator and an adapter are required. The standard actuator must be replaced.

turning actuator for control unit	
turning actuator K080 F/L DN25 - 65; 1" - 2,5"	ref.-No.: 000-15 - 37-070/17 H123937
turning actuator K125 F/L DN80 - 100; 3" - 4"	ref.-No.: 000-15 - 37-106/17 H128942
turning actuator K180 F/L DN 125	ref.-No.: 000-15 - 37-103/17 H134034

5.4. Operating leakage reduction

During the opening and closing process of the valve, a certain quantity of liquids is lost as operating leakage (see technical data). Through a reconstruction of the valve, a reduction by about 40 % can be achieved.

Complete retrofit kits to reduce the quantity of operating leakages are available (see page 17).

5.5. Operating leakage drain

To discharge operating leakage via a pipeline, retrofit kits with weld end are available (see page 18).

6. Cleaning

6.1. Cleaning recommendation

The valve passage is cleaned by the cleaning liquid during cleaning of the connected pipelines.

Several switching (“cycling”) of the valve during pipeline cleaning is beneficial for the cleaning of the leakage chamber.

Depending on the degree and contents of soiling, the cleaning liquids, times and processes for the individual application must be scheduled.

The compatibility of the individually selected cleaning processes and liquids with the respectively used cleaning seals must be verified.

cleaning step	CIP spraying
pre-flushing	2 x 10 sec.
caustic flushing 80 °C	3 x 10 sec.
intermediate flushing	2 x 10 sec.
acid flushing	3 x 10 sec.
final flushing	2 x 10 sec.
	(with a break of 20 sec. each)

- The flushing times refer to a cleaning pressure of $p = 3 - 5$ bar.
- The flushing times indicated for the individual cleaning steps are reference values, only. In specific applications these times must be adjusted depending on the product, the pressure ratio and the degree of soiling.
- The flushing quantity per CIP spraying cycle amounts to about 1 litre at a cleaning pressure of 3 - 5 bar.

7. Installation

- The valve must be installed in vertical position. Operating leakage is freely drainable to the bottom and the leakage chamber drains off.
- For deviating installations (e.g. valve in horizontal position), special valves are available.
- If several valves are connected parallelly in one pipeline, a passage of the operating leakage to the cleaning connection of adjacent valves must be avoided. Installation of a shut-off device or a check valve in front of each cleaning connection is required.
- Cleaning connection with hose 8 x 1.



Caution!

Observe welding instructions 7.1.

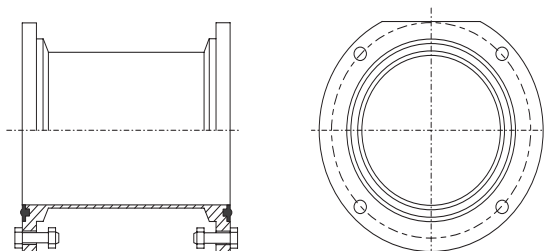
7. Installation

7.1. Welding Instructions

- Welding should only be carried out by certified welders (DIN EN ISO 9606-1) (seam quality DIN EN ISO 5817).
- Welding of the mating flanges must be undertaken in such a way that deformation strain cannot be transferred.
- TIG orbital welding is recommended.
- Before welding of the valve, all sensitive parts must be removed! Dismantle the valve ball housing with seals from the mating flanges.
- To simplify welding, fitting parts can be supplied as assembly inserts (see table).
- The preparation of the weld seam up to 3 mm thickness must be carried out as a square butt joint without air. Consider shrinkage!
- After welding the valve housing or mating flanges, and after performing any work on the piping, do not operate the valves 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 operation, welding residue and dirt particles can settle in the valves and cause damage to the valves and seals.
- If these welding instructions are not followed, any resulting damage will not be covered by the warranty.

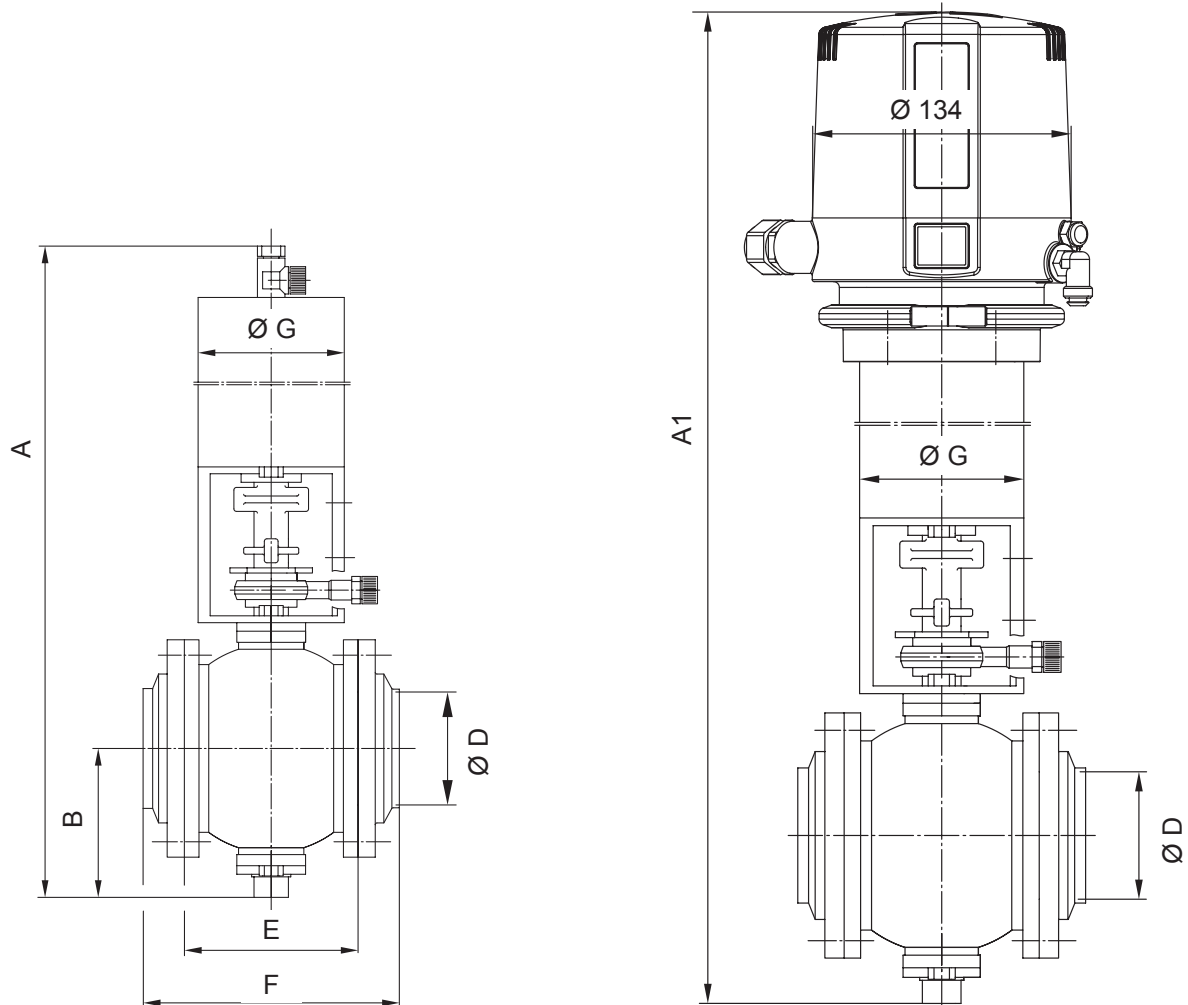
7.2. Assembly inserts for double seat ball valves as follows:

fig. 7.2. assembly insert



DN	Inch	reference No.	ID No.
25	1"	000 08-48-250/	H207954
40	1,5"	000 08-48-251/	H207955
50	2"	000 08-48-252/	H207956
65	2,5"	000 08-48-253/	H207957
80		000 08-48-254/	H207959
	3"	000 08-48-257/	H207958
100	4"	000 08-48-255/	H167623
125		000 08-48-256/	H167624

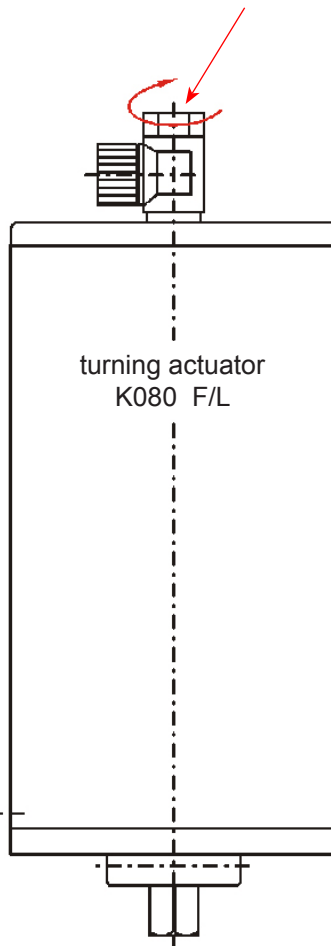
8. Dimensions / Weights



dimensions in mm								weights in kg
DN	A	A1	B	Ø D	E	F	Ø G	
25	384	534	55	26	60,5	109	85	5,7
40	408	558	65	38	61,0	109	85	6,5
50	425	575	75	50	79,0	127	85	7,4
65	448	599	87	66	100,3	149	85	9,2
80	543	695	103	81	123	171	135	18,0
100	572	724	117	100	150	198	135	21,5
125	663		142	125	190	244	189	40,0
Inch								
1"	384	534	55	22,6	60,5	109	85	5,7
1,5"	408	558	65	34,9	61,0	109	85	6,5
2"	425	575	75	47,6	79,0	127	85	7,4
2,5"	448	599	87	60,3	100,3	149	85	9,2
3"	543	695	103	72,9	123	171	135	18,0
4"	572	724	117	97,6	150	198	135	21,5

9. Technical Data

angle union G1/8" slewable,
tightening torque 2 Nm



9.1. General data

- max. line pressure: **10 bar**
- max. operating temperature: **135° C EPDM, HNBR *
VMQ, * FPM**
- short-term load: **140° C EPDM, HNBR *
VMQ, * FPM * (no steam)**
- throughput cleaning at 3bar
admission pressure: **about 5 - 10 l/min.**
- turning actuator
min. control pressure: **6 bar**
max. control pressure: **10 bar**
turning angle: **90°**
- air connection (for hose)
threaded angle - G1/8" slewable: **6 x 1
torque 2 Nm**
- spray connection: **G1/8"**
- cleaning connection for hose: **8 x 1**

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 m³
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/m³

The oil applied must be compatible with Polyurethane elastomer materials.

9. Technical Data

	DN Inch	25 1"	40 1,5"	50 2"	65 2,5"	80 3"	100 4"	125
9.3. max. tightening torque in Nm	(M)	10	15	22	25	40	65	95
9.4. operating leakage at about 5 bar in l (opening and closing process)	(Qs)	0,7	1,2	1,4	2,0	4,0	4,2	6,0
9.5. operating leakage at about 5 bar in l with operating leakage reducer	(Qs)	0,4	0,7	0,8	1,2	2,4	2,5	3,6
9.6. pneumatic air consumption at 6 bar NL	(V)	1,8	1,8	1,8	2,8	5,5	5,5	5,5

10. Materials

- housing, valve ball, shafts		1.4404 (DIN EN 10088)
- ball seal		PTFE
- flange seal	standard:	EPDM
	option:	HNBR, FPM, VMQ
- housing seal	standard :	EPDM
	option:	HNBR, FPM
- O-rings		FPM, NBR
actuator		
- yoke, actuator		1.4301 (DIN EN 10088)
- coupling		1.4301 / 1.4308
	or	1.4057 / 1.4059 (DIN EN 10088)
- indicator		PE-solid
- piston		Polyacatal POM
- spindle bearing		Polyamide PA 12
- air connection		Polyamide PA 6.6

11. Maintenance

Scan for DKR2 Valve
Maintenance Video



- The maintenance intervals depend on the specific application and should be determined by the user carrying out temporary checks.
- Storage of spare seals by the customer is recommended. For the valve maintenance, we supply complete set of seals (see spare parts lists).
- If damaged seals are exchanged, generally all seals should be replaced.
- Assembly and adjustment of turning actuator according to Service Instructions.
- Dismantling and installation of seals according to Service Instructions.
- Slightly grease all seals before their installation
- The inner parts of the turning actuator do not require maintenance.

Caution! Use food-grade special grease which is suited for the respective seal material, only.

Recommendation:

APV assembly grease for **EPDM, FPM, HNBR and NBR**
 (0,75 kg/ tin - ref.-No. 000 70-01-019/93; H147382)
 (60 g/ tube - ref.-No. 000 70-01-018/93; H147381)

or

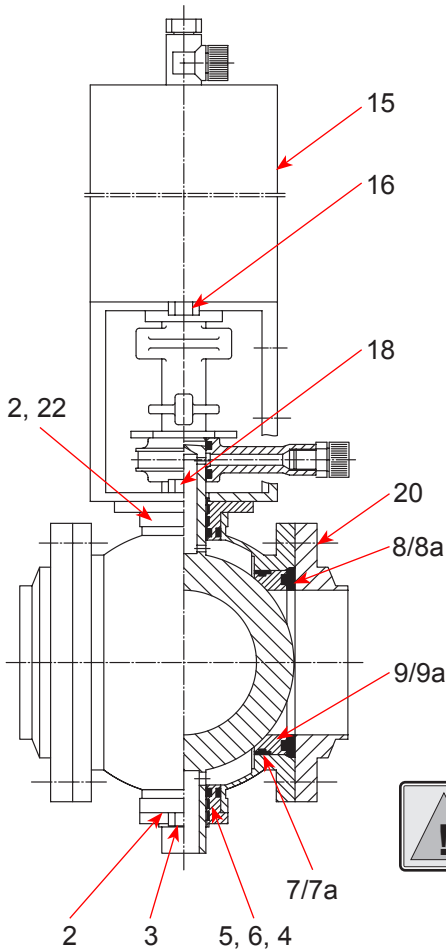
APV assembly grease for **VMQ (Silicone)**
 (0,6 kg/ tin - ref.-No. 000 70-01-017/93; H147380)
 (60 g/ tube - ref.-No. 000 70-01-016/93; H147379)

- ! Do not use grease containing mineral oil with EPDM seals.
- ! Do not use Silicone-based grease with VMQ seals.

Less suited grease types can influence function and life time.

12. Service Instructions

The item numbers refer to the spare parts drawing.
DN design: RN 01.071; Inch design: RN 01.074)



12.1. Dismantling from the line system

1. Shut off connecting lines, let off line pressure and discharge if possible.
2. Disconnect pneumatic and electric connections.
3. Dismantle cleaning line.
4. Screw off valve position indication.
5. Remove flange screws (20).
6. Detach ball valve from the flanges.

12.2. Dismantling of seals and guide bands

1. Detach flange seals (8/8a).
2. Take off turning actuator (15) after removal of screws (16).
3. Release screws (18) and yoke, coupling, indicator and spray connection



Caution! Do not replace seals before removal of turning actuator from the valve.

4. Pull out PTFE ball seals (9/9a) with appertaining housing seals (7/7a).

To pull the ball seals out, half open the ball by hand and grasp alternately behind the seal.



Caution! Ball and ball seal are sensitive to mechanical damage, the surfaces must not be touched by tools.

5. Having released the screws (3), slide both shaft bearings (2/22) out of the housing and replace O-rings (5, 6) and guide bands (4).

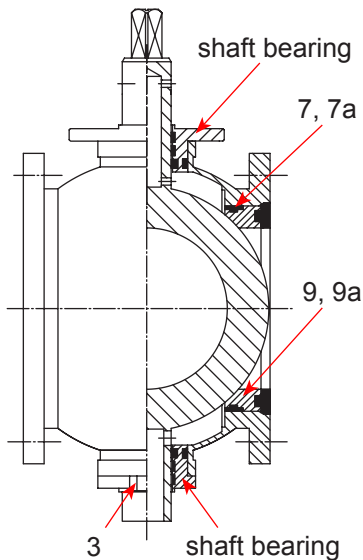
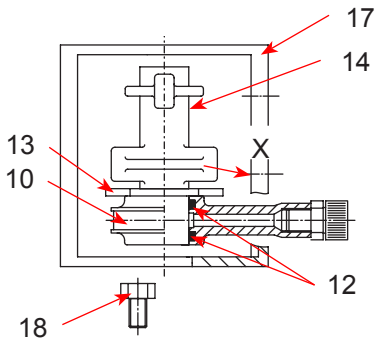


Caution! With dismantled shaft bearings and seals, the housing with ball must not be subject to vibrations.

12. Service Instructions

12.3. Installation of seals and guide bands

1. Slightly grease O-rings (5, 6) and guide bands (4) before their installation in the shaft bearings (2/22).
2. Push upper and lower shaft bearing (2) with a little grease in the housing, insert screws (3), but do not fasten them.
3. Slightly grease housing seals (7, 7a) before their installation on the PTFE ball seals (9, 9a).
4. Turn valve ball into open position by hand and install ball seals with some grease at both sides.
5. Slightly grease O-rings (12) and insert them in the spray connection (10).

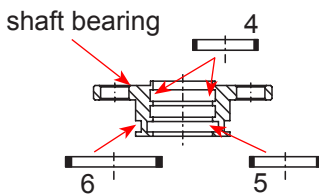


12.4. Assembly of valve

1. To ensure a safe handling of the valve, clamp the lower bearing flange into a vice with protective cheeks. Turn the ball into "open position".

Place yoke (17), spray connection (10), indicator (13) and coupling (14) on the ball housing. The lower coupling cam must point to the lower yoke bore (x) and the indicator must point into flow direction.

2. Screw in screws (18), but do not fasten them.



12. Service Instructions

12.5. Adjustment of operating position

Caution! For a safe, perfect and fast adjustment of the operating position, we recommend to use two separate FG flanges.

12.5.1. Adjustment of operating position with FG flanges

Install the ball seals as described in 12.3.
Assemble the valve as described in 12.4.
Turn the ball into its exact open position.

1. Control actuator (15) with pneumatic air (min. 6 bar) and place it on the yoke.
2. Screw in screws (16), but do not fasten them.



Caution! Do not reach into the open valve after installation of the actuator!
Risk of injury by sudden operation of the valve.

3. Screw down FG flanges at the housing. The ball must be in its exact open position.
4. Release both screws (3) of the shaft bearing (ball centers between the seals) and retighten them.
5. Slightly turn the actuator in anticlockwise direction to adjust the play in the connecting parts.

The ball must keep its exact open position!

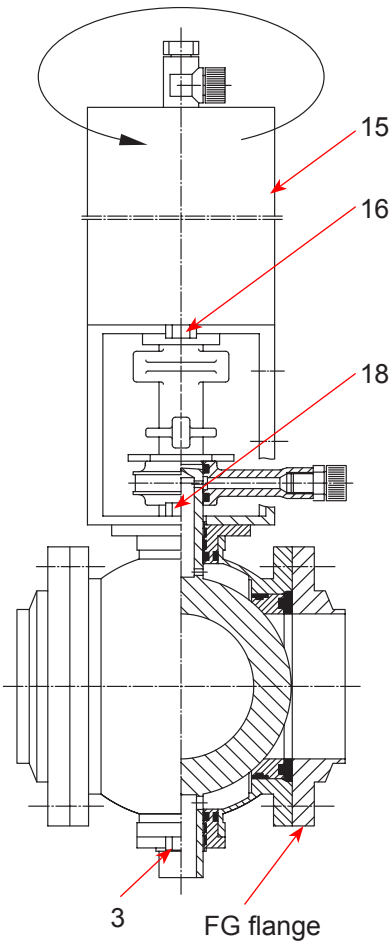


Caution! Do not reach into the open valve.
Risk of injury by sudden operation of the valve.

6. At first, tighten the screws (18) and then tighten the screws (16). Operate the turning actuator several times to check the operating accuracy of the ball in "open position".
7. Shut off the air supply to the turning actuator and dismantle the FG flanges.
8. Insert the valve in closed position between the flanges into the pipeline and fasten it with the screws (20).

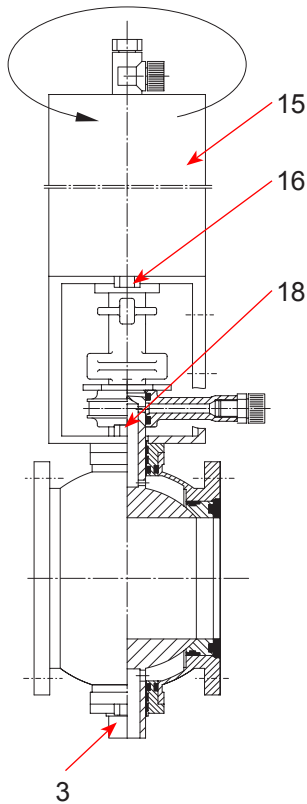
Tightening torque: M8 Md = 16 Nm
 M10 Md = 40 Nm

9. Connect pneumatic air line with the turning actuator
10. Connect the cleaning line.
11. Attach valve position indicators.



12. Service Instructions

12.5.2. Adjustment of operating position without FG flanges *1) *2)



If FG flanges are not available, the ball can, in exceptional cases, be adjusted as follows.

Caution! Failure of adjustment is possible:

Install the ball seals as described in 12.3.
Assemble the valve as described in 12.4.
Turn the ball into its exact open position.

1. Control actuator (15) with pneumatic air (min. 6 bar) and place it on the yoke.
2. Screw in screws (16), but do not tighten them.

Caution! Do not reach into the open valve after installation of the actuator!
Risk of injury by sudden operation of the valve.

! The ball must be in its exact open position!

3. Slightly turn the actuator in anticlockwise direction to adjust the play in the connecting parts.

**! The ball must not move during this process!
(exact open position)**

At first, tighten the screws (18) and then tighten the screws (16).
Operate the turning actuator several times to check the operating accuracy of the ball.

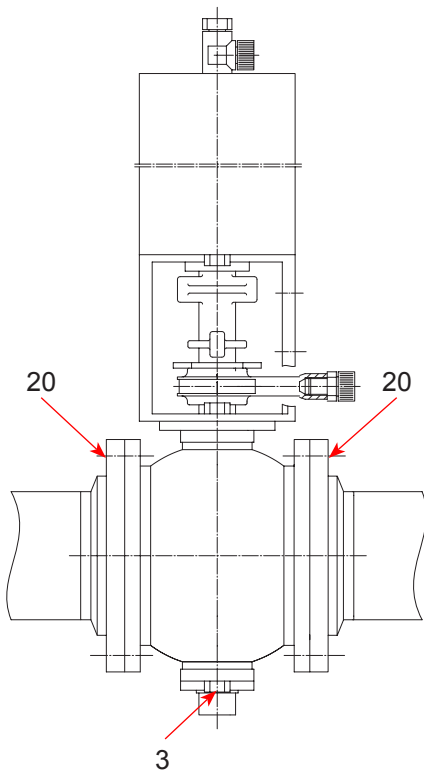
4. Shut off the air supply to the turning actuator and insert the valve in closed position into the line system. Fasten it with the screws (20).

5. Centering of ball (absolutely necessary)

To center the ball between the seal rings, proceed as follows:

- 1) Release screws (3) by about ¼ turn.
- 2) Release one screw (18) by about ¼ turn.
- 3) Release second screw (18) by about ¼ turn and retighten it immediately.

Caution! Hold the turning actuator fast during this process.
Bring up holding moment in clockwise direction (top view of actuator).



6. Tighten screw (18) and, then, screw (3).

7. Tightening torque: $M_d = 16 \text{ Nm}$ M8
 $M_d = 40 \text{ Nm}$ M10

8. Connect pneumatic air line with turning actuator

9. Connect cleaning line.

10. Attach valve position indication.

*1) We recommend the procedure according to 12.5.1.

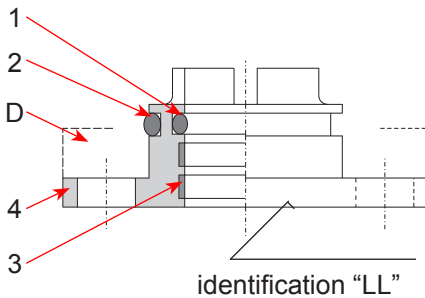
*2) For DKRX special valves for horizontal installation, the adjustment according to 12.5.2 is not suited!

13. Service Instructions

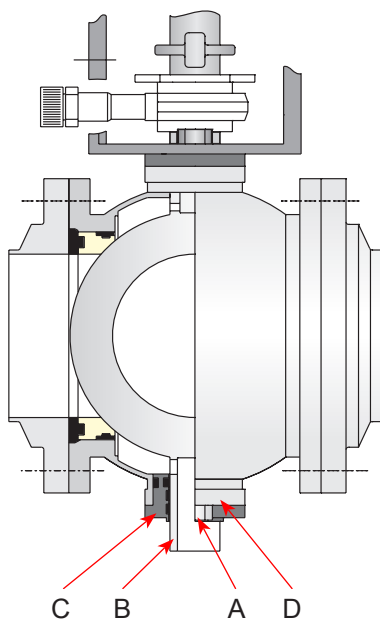
13.1. Leakage reduction for DKR ball valve



If the valve is not dismantled from the pipeline for the installation of the leakage reduction, it must be guaranteed that the corresponding pipeline is depressurized!



leakage reducer compl.			
DN, Inch		ref.-No.	ID-No.
25, 1"		15-28-143/59	H138695
40 - 65, 1,5" - 2,5"		15-28-144/59	H138696
80, 100, 3", 4"		15-28-145/59	H138697
125		15-28-146/59	H138698
single parts			
		ref.-No.	ID-No.
	pos. 1	58-06-078/83	H76943
	pos. 2	58-06-119/83	H76961
DN, Inch			
25 - 65; 1" - 2,5"	pos. 3 2x	08-39-079/93	H14879
80, 100; 3", 4"	pos. 3 3x	08-39-079/93	H14879
125	pos. 3 1x	08-01-160/93	H13836
25; 1"	pos. 4	15-28-143/47	H125803
40 - 65; 1,5" - 2,5"	pos. 4	15-28-144/47	H125802
80, 100; 3", 4"	pos. 4	15-28-145/47	H125804
125	Pos. 4	15-28-146/47	H131160



13.1.1 Installation of the leakage reduction

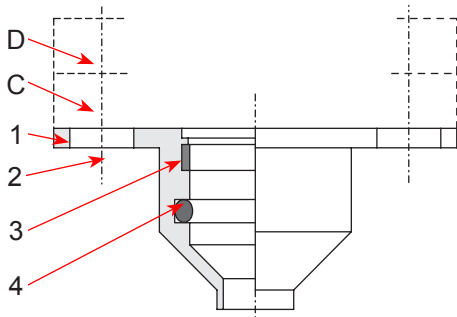
1. Remove the two hexagon screws (A) and pull out the shaft bearing (C) by careful turning.
 2. If the leakage reducer is not equipped with the guides (3) and the two O-rings (1, 2), these parts can carefully be dismantled from the shaft bearing (C) and used.
 3. Slightly grease O-rings (1, 2) before their installation.
- !!! Do not use grease containing mineral oil for EPDM seals!!!**
4. Slide the complete leakage reducer instead of the shaft bearing over the shaft pivot (B) and tighten it with the hexagon screws (A) at the housing flange (D).

13. Service Instructions

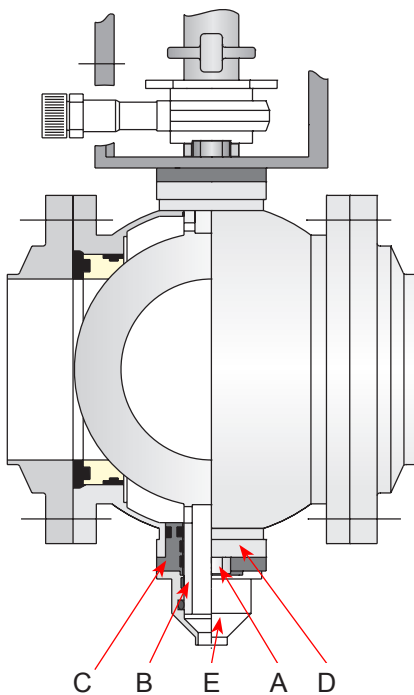
13.2. Leakage connection (drain) for DKR ball valve



If the valve is not dismantled from the pipeline for the installation of the leakage drain, it must be guaranteed that the corresponding pipeline is depressurized!



leakage connection compl.			
DN, Inch		ref.-No.	ID-No.
25 - 65, 1" - 2,5"		16-37-020/59	H112046
80 - 125, 3" - 4" with 2 spare screws		16-37-024/59	H132625
single parts			
DN, Inch		ref.-No.	ID-No.
25 - 65; 1" - 2,5"	pos. 1	16-37-020/47	H112045
80 - 125; 3", 4"	pos. 1	16-37-024/47	H132490
80 - 125; 3", 4"	pos. 2	65-01-132/15	H78809
25 - 125; 1" - 4"	pos. 3	08-39-079/93	H14879
25 - 125; 1" - 4"	pos. 4	58-06-078/83	H76943



13.2.1. Installation of leakage drain

1. Slightly grease O-ring (4) in the leakage drain.
2. Remove the two hexagon screws (A) and push the leakage connection (E) over the shaft pivot (B) against the shaft bearing (C).

!!! Do not use grease containing mineral oil for EPDM seals!!!

3. With DN 25 to 65 tighten the shaft bearing (C) together with the leakage connection at the housing flange (D) by the hexagon screws (A).
4. With DN 80 to 125 use the hexagon screws (2) supplied with the leakage connection for fastening purposes.
5. As shown in the illustration, the leakage drain can be designed with weld end, optionally with round thread or other connections.

14. Detection of Seal Damage

Failure	Remedy
Valve is closed and pressurized	
Leakage at pipeline flange	Replace seal (8).
Leakage from the leakage drain	<ol style="list-style-type: none"> 1. Check adjustment of valve ball according to Service Instructions 12.5. 2. Replace seals (8, 9, 7).
Valve is open	
Leakage from the leakage drain	<ol style="list-style-type: none"> 1. Check adjustment of valve ball according to Service Instructions 12.5. 2. Replace seals (8, 9, 7).
Valve is closed and leakage during cleaning via the spray connection	
Leakage at spray connection	Replace o-rings (12).
Leakage at shaft bearing	Replace guide bands (4) and o-rings (5, 6) according to Service Instructions 12.3.

If damaged seals are exchanged, generally replace all seals.

For valve maintenance we supply complete seal kits (see spare parts lists).

15. Spare Parts Lists

(see annex)

The reference numbers of the spare parts for the different valve designs and sizes are included in the attached spare part drawings with corresponding lists.

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

- number of required parts
- reference number / ID number
- designation

subject to change

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Ersatzteilliste: spare parts list

Ventil DKR -FZ -CU 1+2S
Double seat ball valve 1+2S
DN25-125; 1-4 Zoll / inch

Datum:	17.02.14	31.10.14
Name:	Trytko	Trytko
Geprüft:		
Datum:		
Name:		
Geprüft:		
Blatt 2 von 10		
RN 01.071		

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pos. item	Menge quantity	Beschreibung description	Material	DN25	1"	DN40	1,5"	DN50	2"
			material	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	Ventilkörper Valve body	1.4404	31-08-277/47 H67774	31-08-277/47 H67774	31-08-377/47 H67782	31-08-427/47 H67789		
2		Wellenlager Bearing	1.4404	15-28-124/47 2x H31774			15-28-124/47 1x H31774		
3	2	Skt. Schraube Hex. Screw	1.4301		65-01-080/15 M8x12 H78770				
4	4	Führungsband Guide	Turcite		08-39-079/93 H14879				
5	2	O-Ring O-ring	NBR 70-75 Shore A	58-06-078/83 H76943	bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen to be used for valves with seal material EPDM, HNBR, VMQ				
	2	O-Ring O-ring	FPM 70-75 Shore A	58-06-078/73 H125656	nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.				
6	2	O-Ring O-ring	NBR 70-75 Shore A	58-06-119/83 H76961	bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen to be used for valves with seal material EPDM, HNBR, VMQ				
	2	O-Ring O-ring	FPM 70-75 Shore A	58-06-119/73 H122837	nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.				
7	2	Gehäusedichtung Housing seal	EPDM	58-33-292/93	58-33-292/93 H77439		58-33-392/93 H77464		
	2	Gehäusedichtung Housing seal	HNBR FDA-konform	58-33-292/33 H170017			58-33-392/33 H170018		
8	2	Gehäusedichtung Housing seal	FPM FDA-konform	58-33-292/73 H77438			58-33-392/73 H77463		
	2	Flanschdichtung Seal flange	EPDM FDA-konform	58-32-277/93 H77280	58-32-377/93 H77292		58-32-427/93 H77303		
9	2	Flanschdichtung Seal flange	HNBR FDA-konform	58-32-277/33 H172130	58-32-377/33 H172131		58-32-427/33 H172132		
	2	Flanschdichtung Seal flange	FPM FDA-konform	58-32-277/73 H77279	58-32-377/73 H77291		58-32-427/73 H77302		
9	2	Flanschdichtung Seal flange	VMQ FDA-konform	58-32-277/13 H77278	58-32-377/13 H77290		58-32-427/13 H77301		
	2	Kugeldichtung Ball seal	PTFE	58-32-291/23 H77281	58-32-391/23 H77293		58-32-441/23 H77304		

Ersatzteilliste: spare parts list

Ventil DKR -FZ -CU 1+2S
Double seat ball valve 1+2S
DN25-125; 1-4 Zoll / inch


		Datum: 17.02.14		31.10.14		Trytko		Trytko		Blatt 5 von 10	
		Name:								RN 01.071	
		Geprüft:									
		Datum:									
		Name:									
		Geprüft:									
			3"		DN80		DN100		4"		
			WS-Nr.		WS-Nr.		WS-Nr.		WS-Nr.		
			ref.-no.		ref.-no.		ref.-no.		ref.-no.		
1	Ventilkörper Valve body	1.4404	31-08-477/147 H67796	31-08-552/47 H203406	31-08-527/47 H67803	15-28-125/47 H31775		31-08-627/47 H67811			
2	Wellenlager Bearing	1.4404	15-28-124/47 H31774								
3	Skt. Schraube Hex. Screw	1.4301	65-01-080/15 M8x12 H78770			65-01-129/15 M10x14 H78805					
4	Führungsband Guide	Turcite	08-39-079/93 4x H14879			08-39-079/93 6x H14879					
5	O-Ring O-ring	NBR 70-75 Shore A	58-06-078/83 H76943			bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen to be used for valves with seal material EPDM, HNBR, VMQ					
	O-Ring O-ring	FPM 70-75 Shore A	58-06-078/73 H125656			nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.					
	O-Ring O-ring	NBR 70-75 Shore A	58-06-119/83 H76961			bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen to be used for valves with seal material EPDM, HNBR, VMQ					
6	O-Ring O-ring	FPM 70-75 Shore A	58-06-119/73 H122837			nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.					
	Gehäusedichtung Housing seal	EPDM FDA-konform	58-33-492/93 H77512			58-32-545/93 H171283		58-33-642/93 H77583			
	Gehäusedichtung Housing seal	HNBR FDA-konform	58-33-492/33 H168759			58-32-545/33 H318537		58-33-642/33 H170074			
	Gehäusedichtung Housing seal	FPM FDA-konform	58-33-492/73 H77511			58-32-545/73 H205932		58-33-642/73 H77582			
7a	Gehäusedichtung Housing seal	VMQ FDA-konform	Gehäusedichtung VMQ nur bei DN80 einsetzen Housing seal VMQ only to be used for DN80			58-32-545/13 H177054					
	Flanschdichtung Seal flange	EPDM FDA-konform	58-32-477/93 H77314			58-32-555/93 H77332		58-32-627/93 H77339			
	Flanschdichtung Seal flange	HNBR FDA-konform	58-32-477/33 H172133			58-32-555/33 H172144		58-32-627/33 H172135			
8	Flanschdichtung Seal flange	FPM FDA-konform	58-32-477/73 H77313			58-32-555/73 H77331		58-32-627/73 H77338			
	Flanschdichtung Seal flange	VMQ FDA-konform	58-32-477/13 H77312			58-32-555/13 H77330		58-32-627/13 H77337			



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Ersatzteilliste: spare parts list

Ventil DKR -FZ -CU 1+2S
Double seat ball valve 1+2S
DN25-125; 1-4 Zoll / inch

Datum:	17.02.14	31.10.14				
Name:	Trytko	Trytko				
Geprüft:						
Datum:			Blatt	6	von	10
Name:			RN 01.071			
Geprüft:						

pos. item	Menge quantity	Beschreibung description	Material	DN65	2,5"	3"	DN80	DN100	4"	
				WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	
9	2	Kugeldichtung Ball seal	PTFE virginal	58-32-491/23 H77315	58-32-566/23 H203407	58-32-541/23 H77326	58-32-641/23 H77340			
9a	2	Kugeldichtung Ball seal	PTFE virginal	Kugeldichtung nur bei DN80 in EPDM und VMQ Ventilausführung einsetzen Ball seal only to be used for DN80 in EPDM and VMQ valve design						
10	1	Spritzanschluß CIP connection	PA12	08-52-136/92 H162806						
11	1	G-Verschraubung Union	PVDF-schwarz	08-63-003/13 H16388						
12	2	O-Ring O-ring	NBR	58-06-078/83 H76943						
13	1	Zeiger Position indicator	PE-HART	08-29-021/93 H14634	08-29-022/93 H14635					
14	1	Kupplung Coupling	1.4308	08-52-050/13 H15865	08-52-217/17 H16020					
15	1	Drehantrieb F/L Actuator spring/air	1.4301	15-31-055/17 H315054	15-31-057/17 H105502					
16	2	Skt. Schraube Hex. Screw	1.4301	65-01-080/15 M8x12 H78770	65-01-129/15 M10x14 H78805					
17	1	Laterne Yoke	1.4301	15-40-166/17 H33848	15-40-168/17 H33850					
18	2	Skt. Schraube Hex. Screw	1.4301	65-01-079/15 M8x14 H78768	65-01-131/15 M10x18 H78807					
19	2	Flansch FG1 Flange FG1	1.4404	09-51-477/42 H18782	09-51-552/42 H18809	09-51-527/42 H18801	09-51-627/42 H18824	09-51-664/42 H18831		
20		Skt. Schraube Hex. Screw	1.4301	65-01-083/15 8xM8x20 H78776		65-01-083/15 16xM8x20 H78776				
21										
22	1	Wellenlager Bearing	1.4404	15-28-210/42 H207855		15-28-211/42 H207856				

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Ersatzteilliste: spare parts list

Ventil DKR -FZ -CU 1+2S
Double seat ball valve 1+2S
DN25-125; 1-4 Zoll / inch

Datum:	17.02.14	31.10.14
Name:	Trytko	Trytko
Geprüft:		
Datum:		
Name:		
Geprüft:		

APV SPX FLOW Germany	
Blatt	8 von 10
RN 01.071	

pos. item	Menge quantity	Beschreibung description	Material	DN125	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	Ventilkörper Valve body	1.4404	31-08-677/47 H130796					
2	1	Wellenlager Bearing	1.4404	15-28-180/47 H130778					
3	2	Skt. Schraube Hex. Screw	1.4301	65-01-130/15 M10x16 H78806					
4									
5	2	O-Ring O-ring	NBR 70-75 Shore A	58-06-078/83 H76943					
	2	O-Ring O-ring	FPM 70-75 Shore A	58-06-078/73 H125656					
6	2	O-Ring O-ring	NBR 70-75 Shore A	58-06-119/83 H76961					
	2	O-Ring O-ring	FPM 70-75 Shore A	58-06-119/73 H122837					
7	2	Gehäusedichtung Housing seal	EPDM FDA-konform	58-33-692/93 H77608					
	2	Gehäusedichtung Housing seal	HNBR FDA-konform	58-33-692/33 H172125					
	2	Gehäusedichtung Housing seal	FPM FDA-konform	58-33-692/73 H77607					
8	2	Flanschdichtung Seal flange	EPDM FDA-konform	58-32-677/93 H77351					
	2	Flanschdichtung Seal flange	HNBR FDA-konform	58-32-677/33 H172136					
	2	Flanschdichtung Seal flange	FPM FDA-konform	58-32-677/73 H77350					
	2	Flanschdichtung Seal flange	VMQ FDA-konform	58-32-677/13 H77349					
9	2	Kugeldichtung Ball seal	PTFE	58-32-691/23 H130779					

bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen
to be used for valves with seal material EPDM, HNBR, VMQ

nur bei Ventilen mit Dichtungswerkstoff FPM verwenden
to be used only for valves with seal material FPM.

bei Ventilen mit Dichtungswerkstoff EPDM, HNBR und VMQ einsetzen
to be used for valves with seal material EPDM, HNBR, VMQ

nur bei Ventilen mit Dichtungswerkstoff FPM verwenden
to be used only for valves with seal material FPM.

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Ersatzteilliste: spare parts list

Drehantrieb K080, K125, K180 F/L
Actuator K080, K125, K180 spring/air

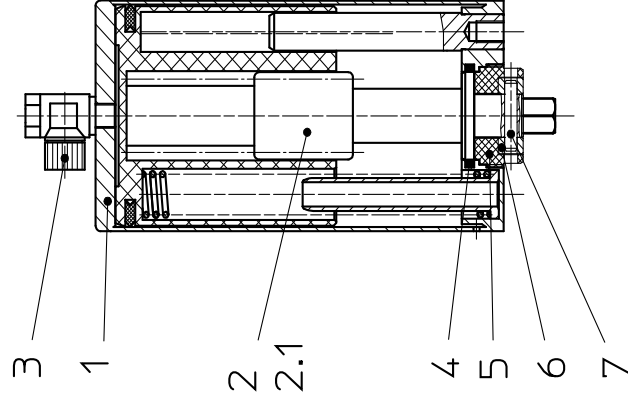
Datum: 22.11.12 12.03.14
 Name: Trytko Trytko
 Geprüft: Goebel

Blatt 1 von 2

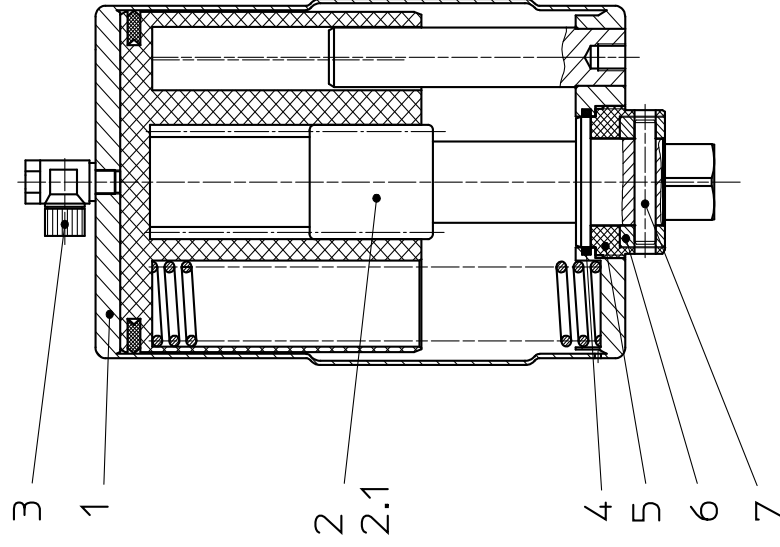
RN 01.073



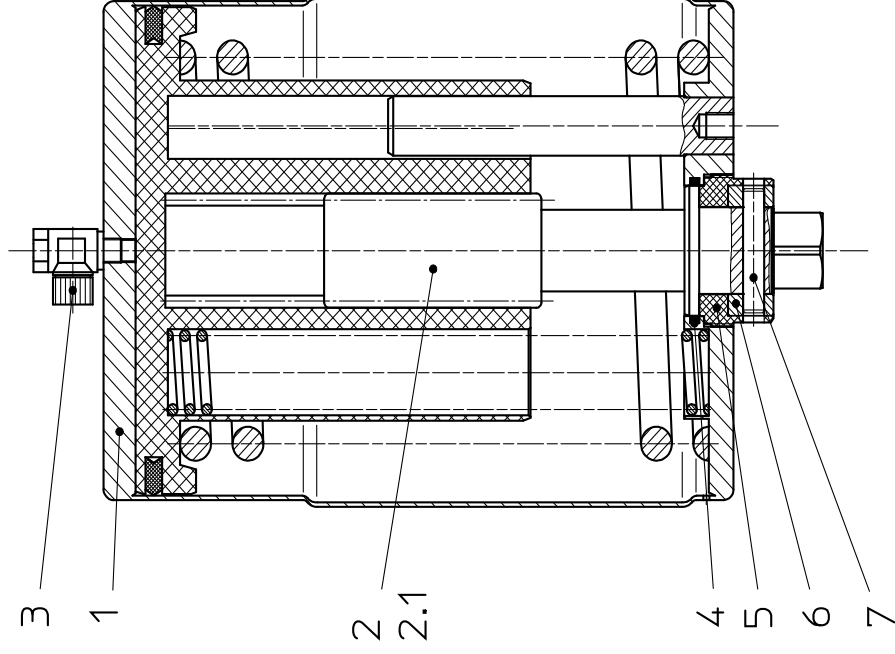
DRAT K080



DRAT K125



DRAT K180



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Ersatzteilliste: spare parts list

Drehantrieb K080, K125, K180 F/L für Rückmeldeeinheit
Actuator K080, K125, K180 spring/air for control unit

Datum: 28.03.13 08.05.14

Name: Trytko Trytko

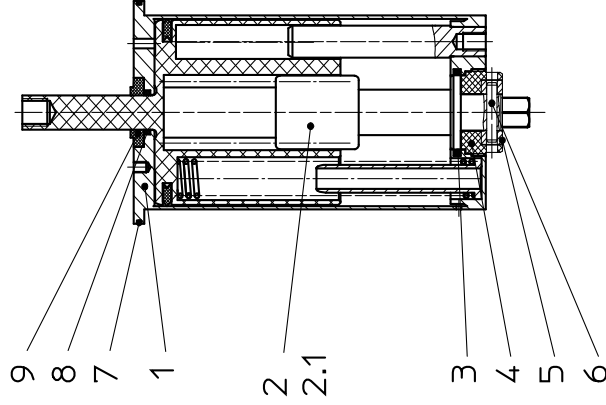
Geprüft:

Blatt 1 von 2

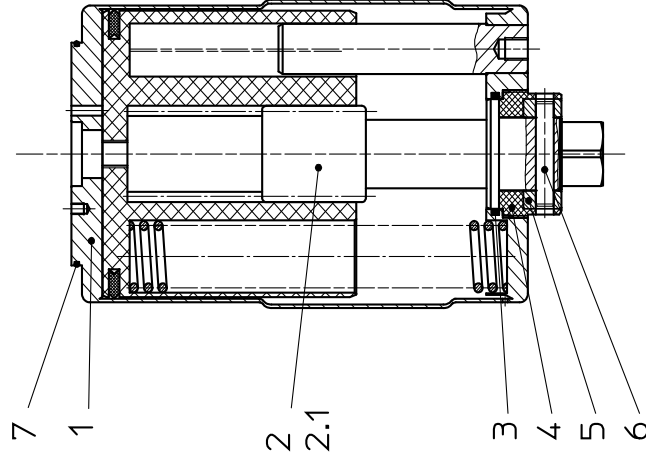
RN 01.076



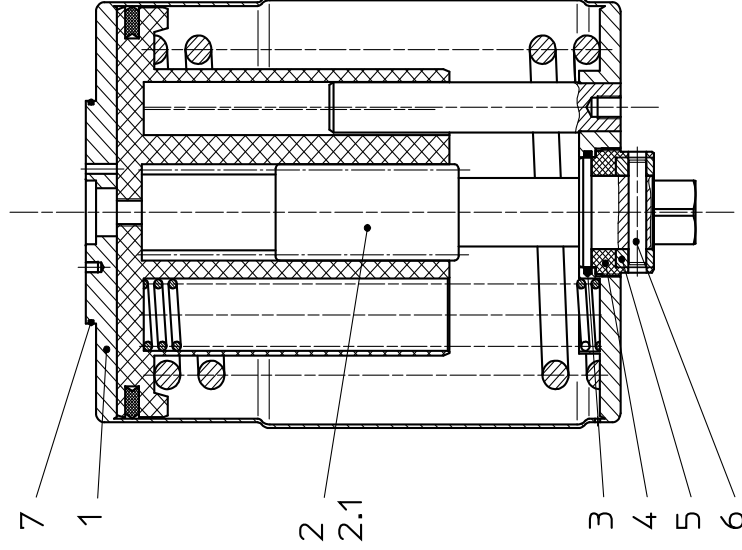
DRAT K080-RM

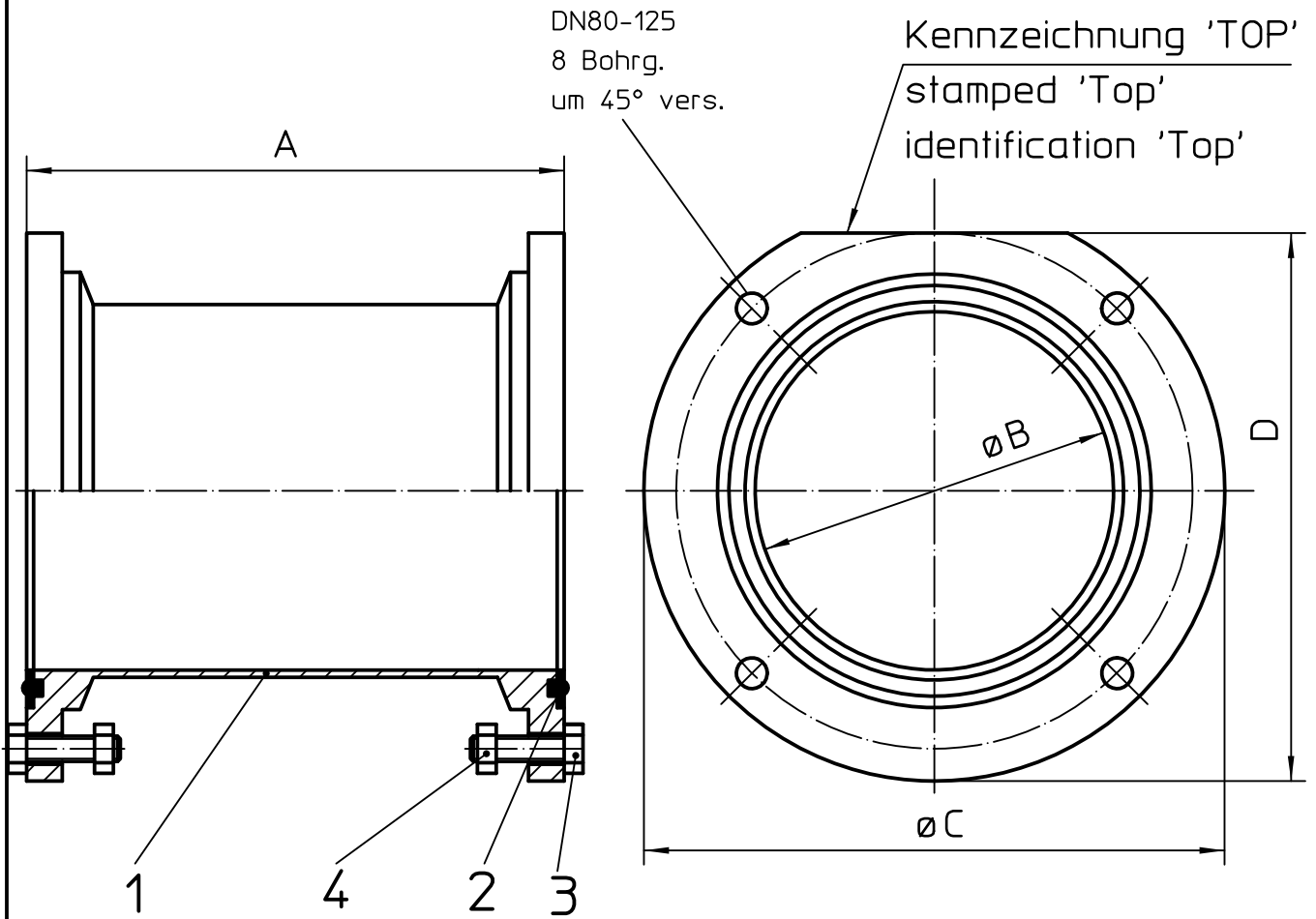


DRAT K125-RM



DRAT K180-RM






DN	WS-Nr.	A	B	C	D
25/1"	08-48-250/..	61,5	26	83	74
40/1,5"	08-48-251/..	61,5	38	100	91
50/2"	08-48-252/..	79,5	50	110	101
65/2,5"	08-48-253/..	100,8	66	127	118
3"	08-48-257/..	123,5	72,9	134	125
80	08-48-254/..	123,5	81	142	133
100/4"	08-48-255/..	150,5	100	162	153
125	08-48-256/..	190,5	125	190	177

../59 = EP-1.4404 matt-glänzend
 EP-1.4404 satin-finish
 EP-1.4404-mat

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Created by	Date	Modified by	C.Keil	Date	07.03.2019	Released by	Date
		Descr. Montageeinsatz DKR kpl Installation Aid DKR/Insert de montage DKR cpl.				SPX Flow Technology Germany GmbH Gollub Dahnier Straße 13, D-59439 Holzwickede, Germany	
						Sheet 1 / 1	
RN268_07							

APV DELTA DKR2

DOUBLE SEAT BALL VALVE
WITH CLEANING CONNECTION

SPXFLOW

SPX FLOW

Design Center

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Scan for DKR2 Valve
Maintenance Video

