

APV DELTA DKR2 DN25-100, 1"-4"

DOUBLE SEAT BALL VALVE

SAFETY AGAINST EXPLOSION - FOR SPECIFIC ATEX-APPLICATIONS



FORM NO.: H336346 REVISION: UK-0-ATEX

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



EU Declaration of Conformity for Valves and Valve Manifolds

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

APV double seat ball valves of the series DKR2 ATEX design
in the nominal diameters DN 25 – 100, 1“ – 4“

meet the requirements of:

Machinery Directive 2006/42/EC
(superseding 89/392/EEC and 98/37/EC)
and ProdSG (superseding GPSG - 9.GPSGV)
and

Directive on the Protection against Explosion 2014/34/EU ATEX (superseding 94/9/EC)
for Equipment Category -/2D IIB TX

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 comply with
the basic requirements on safety and health, incl. an analysis of the risks,
an analysis of ignition hazards as well as an instruction manual with safety instructions.

The conformity of the valves is guaranteed.

An ATEX documentation is lodged at the notified body DEKRA EXAM GmbH
in Bochum, Germany (No. 0158).

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November 2017

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Double seat ball valve 1+2S Ex II -/2D IIB TX	RN ATEX 01.071
Turning actuator K-80, K-125, K-180	RN 01.073

1. General Terms

This instruction manual applies for the double seat ball valve range of the DKR2 series in the nominal dimensions DN 25-100, 1"-4" for use in specific ATEX applications (according to Directive 2014/34/EU).

The valve must only be assembled, operated, disassembled, maintained and serviced by trained personnel. Please contact your local SPX FLOW representative if required.

This instruction manual must be read and observed by the responsible 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.

1.1. Symbols



This symbol draws your attention to important directions which have to be observed with regard to the operation in explosive areas.



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

1.2. Responsibility for ATEX certification - scope of supply

SPX FLOW will be held responsible only for the valves supplied and selected according to the operating conditions indicated by the customer or end user and as stated in the order confirmation. If in doubt, contact your SPX FLOW partner.

All other assembled equipment and devices must have a separate certification, provided by the supplier(s) of that equipment and devices, of at least the same or higher grade of protection as the valve supplied by SPX FLOW. The complete unit must be certified separately by the final assembling manufacturer and must have a separate name plate supplied by the unit manufacturer.

2. Safety Instructions

**Danger!**

Do not touch the open valve ball or the yoke!

Risk of injury due to sudden valve operation.

Risk of injury in dismantled valve state due to sudden valve operation.

- Regular maintenance including the replacement of all seals and bearing bushes must be scheduled in order to prevent leakages and discharge of liquids
- Remove the turning actuator before seal replacement.

- During valve operation, operating leakages spirt out to the bottom.

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

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

- Separate all electric and pneumatic connections.

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

**Danger!**

Welded actuators are preloaded by spring force.

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

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

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

Please address to your local SPX FLOW representative.

2. Safety Instructions

Installation, connection, start-up, maintenance and repair work must only be carried out by qualified personnel.

The following aspects must be observed:

- The instructions of this manual together with all relevant instructions for the components, equipment and installations installed.
- Warnings and installations fixed to the components.
- The specific regulations for and requirements to the system in which the valve is installed.
- The currently valid regional, national and international regulations.
- The potential equalization between ball and housing by means of the spring must generally be ensured.
- Any special requirement and national legislation relative to the use of flammable liquids or tools, e.g. the risk of ignition in case of spark formation, must be observed.



It must be ensured that the group, the category and the temperature class of the valve complies with the minimum requirements of the operating environment!



Inflammable gas mixtures or dust concentrations in connection with hot, operational and movable parts of the valve can lead to serious or fatal injury!



Before start of assembly the operator must make sure that an explosive atmosphere does not exist (detection/measurement of potential concentration of hazardous substances).



Conductive connection to the pipeline must be provided. The integration into the internal potential equalization must be guaranteed!

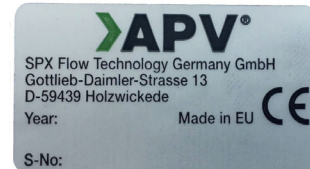
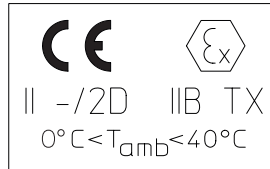


The APV CU2, CU3 and CU4 Control Units are not suited for use in ATEX environments!

3. Identification of valves, Temperature classes, Responsibilities

3.1. Identification of valves for use in ATEX environment

ATEX identification:



- Equipment group II
- Equipment category outside 2D
 inside no equipment
- Explosionsuntergruppe IIB

Ambient temperature for the operation

$$0\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq 40\text{ }^{\circ}\text{C}$$

- temperature classes TX (according to table 3.2)

3.2. Temperature classes and permissible temperatures

Media temperature	$\leq 75\text{ }^{\circ}\text{C}$	$\leq 95\text{ }^{\circ}\text{C}$	$\leq 130\text{ }^{\circ}\text{C}$	up to 140 °C = Tmax.
Safety addition	+ 5 °C	+ 5 °C	+ 5 °C	+ 5 °C
Temperature class	T6	T5	T4	T3

Under standard operating conditions the highest surface temperature will be comparably as high as the temperature of the medium plus a safety addition for local temperature increases. The valve must be completely free to the environment in order to provide for sufficient heat release.

All data (temperature classes) refer to an ambient temperature of 0°C to 40°C. If the ambient temperature is above 40°C, the temperature difference must be adjusted. In all cases, contact your responsible SPX FLOW representative!

3. Identification of valves, Temperature classes, Responsibilities

3.3 Responsibilities

It is within the operator's responsibility to ensure that the specified product temperatures are not exceeded and that regular inspections and maintenance are carried out to provide for proper function of the valve.

4. Intended Use

The intended use as field of application of the butterfly valves is the shut-off of line sections, especially in beverage and food installations.

Its use is permissible only within the admissible pressure and temperature margins and under consideration of chemical and corrosive influences.

Any use exceeding the margins and specifications set forth, is considered to be not intended.

Any damage resulting therefrom is not within the responsibility of the manufacturer. The user will bear the full risk.



Attention!

Improper use of the valve leads to:

- damage
- leakage
- destruction.

Failures in the production process are possible.



Warning!

The valve is suitable for use in hazardous areas as identified on the valve according to Directive 2014/34/EU.

Earthing of the valves must be guaranteed.

Arbitrary, constructive changes at the valve will influence safety as well as the intended functionality of the valve and are **not** permissible.

Authorizations and External Evaluations

To view the certifications for this and other innovative SPX FLOW products, visit
<https://www.spxflow.com/en/apv/about-us/certifications/>

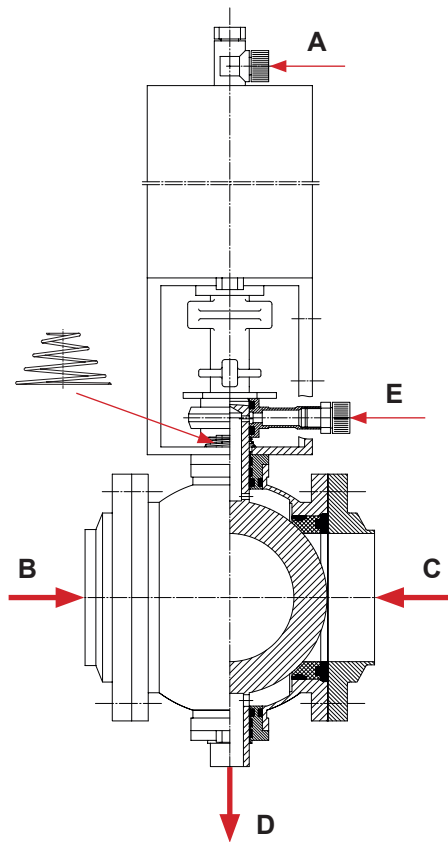
5. Mode of Operation

5.1. General terms

Due to the use of high-quality stainless steel and seal materials complying with the specified requirements, the double seat ball valve DELTA DKR2 can be used 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
- The valve opens and closes by turning of the valve ball by 90°.
- Cleaning of the leakage chamber by supply of cleaning liquids via the cleaning connection (E).
- During the switching process, operating leakages drain off from the leakage drain (D) to the bottom. 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.

Proximity switches to signal the limit position of the valve ball can be mounted in the yoke area.

Proximity switch which are permitted for use in explosive atmospheres must be used, only.



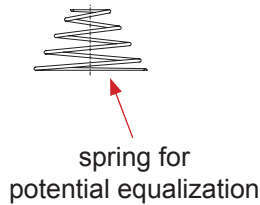
The use and operation of proximity switches must be evaluated by the operator of the plant!

5. Mode of Operation

5.2. Potential Equalization

A possible risk may result from a potential difference between the components. With non-conducting media or empty pipeline sections, a conducting connection must be created between the valve components. With double seat ball valves, this is reached by the installation of a spring.

In explosive atmospheres, we generally recommend to ensure the potential equalization between ball and housing by installation of the spring mentioned below.



DN 25–100/Inch 1"–4"	
Designation:	Reference number:
* pressure spring potential equalization	000-60-06-010/13 H311619

5.3. 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 20).

5.4. Operating leakage drain

To discharge operating leakages 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 steps	CIP spraying
pre-flushing	2× 10 sec.
caustic flushing 80 °C	3× 10 sec.
intermedial flushing	2× 10 sec.
acid flushing	3× 10 sec.
final flushing	2× 10 sec.
	(with a break of 10 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 leakages are 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.
- **Attention: Observe welding instructions 7.1.**

7. Installation

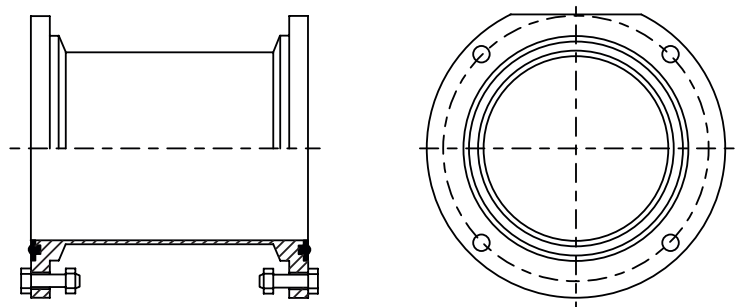
7.1. Welding Instructions

- Welding may only be carried out by certified welders (DIN EN ISO 9606-1). (seam quality DIN EN ISO 5817).
- The welding of the mating flanges must be effected in such a way that deformation strain cannot be transferred to the valve body.
- TIG orbital welding is the most appropriate method.
- Before welding, all heat sensitive parts of the valve must be removed! Dismantle valve ball housing with seals between the counterflanges.
- 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 of the mating flanges and after work at the pipelines, the corresponding parts of the installation or pipelines must be cleaned from welding residues and soiling.
If these cleaning instructions are not observed, welding residues and dirt particles can settle in the valve and cause damage or be carried over to other parts of the installation.
- Any damage resulting from the non-observance of these welding instructions is not subject to our guarantee.

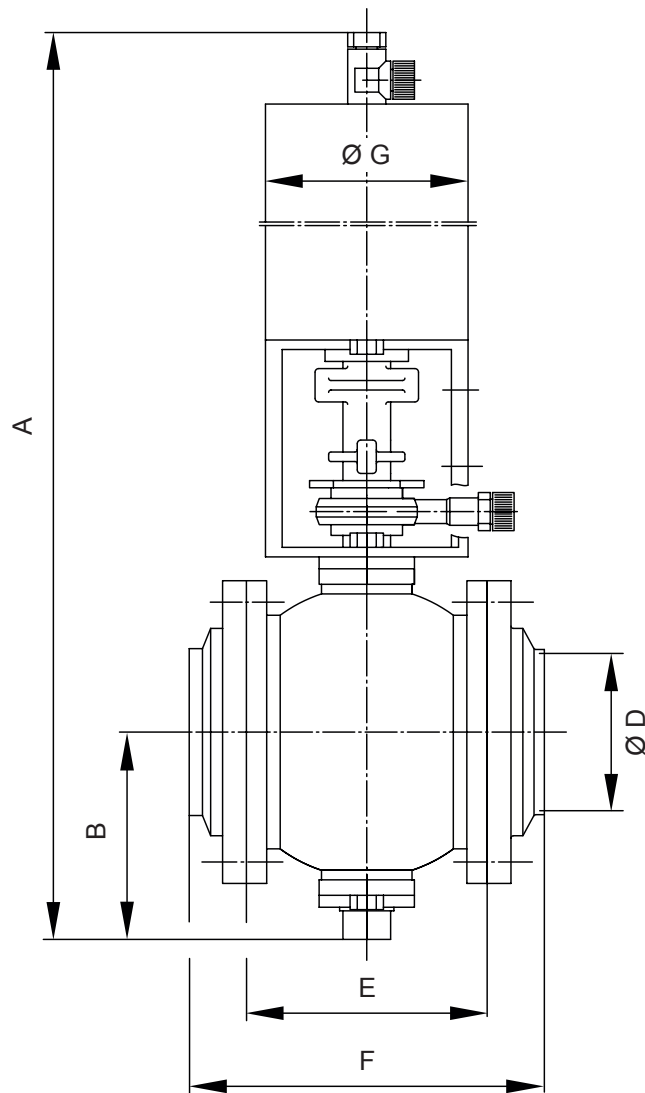
7.2. Assembly inserts for the double seat ball valves are available:

DN	Inch	ref.-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

Fig. 7.2. assembly inserts



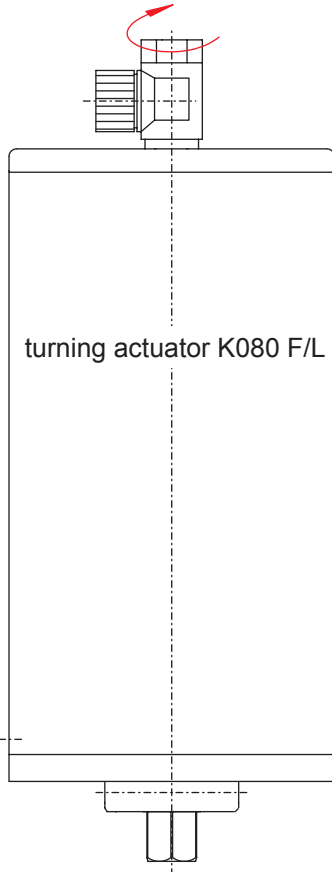
8. Dimensions / Weights



Dimensions in mm							
DN	A	B	Ø D	E	F	Ø G	Weights in kg
25	384	55	26	60,5	109	85	5,7
40	408	65	38	61,0	109	85	6,5
50	425	75	50	79,0	127	85	7,4
65	448	87	66	100,3	149	85	9,2
80	543	103	81	123,0	171	135	18,0
100	572	117	100	150,0	198	135	21,5
Inch							
1"	384	55	22,6	60,5	109	85	5,7
1,5"	408	65	34,9	61,0	109	85	6,5
2"	425	75	47,6	79,0	127	85	7,4
2,5"	448	87	60,3	100,3	149	85	9,2
3"	543	103	72,9	123	171	135	18,0
4"	572	117	97,6	150	198	135	21,5

9. Technical Data

threaded union – G1/8"
slewable
tightening torque 2 Nm



turning actuator K080 F/L

9.1. General terms

- 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 3 bar 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): **6 x 1**
threaded angle - G1/8"
slewable: **tightening torque
2 Nm**
- spray connection: **G1/8"**
- cleaning connection for hose: **8 x 1**

9.2. Compressed air quality

- Compressed air quality: quality class according to ISO 8573-1
- Content of solid particles: quality class 3,
max. number of 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, additional
measures must be considered 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"
9.3. max. tightening torque in Nm	(M)	10	15	22	25	40	65
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
9.5. operating leakage at about 5 bar in L with operating leakage reduction	(Qs)	0,4	0,7	0,8	1,2	2,4	2,5
9.6. pneum. air consumption in 6 bar NL	(V)	1,8	1,8	1,8	2,8	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
- spring - potential equalization		1.4310 (DIN EN 10088)
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



- The maintenance intervals depend on the corresponding application and are to be determined by the operator himself carrying out temporary checks.
- Before start of maintenance and assembly the operator must make sure that an explosive atmosphere does not exist (detection/ measurement of potential concentration of hazardous substances). Alternatively, use spark-resistant tools!
- Customer stock keeping of spare seals is recommended. For valve service actions we supply complete seal kits (see spare parts lists).
- If damaged seals are replaced, generally all seals and bearings should be changed.
- Installation and adjustment of turning actuator according to Service Instructions.
- Dismantling and installation of seals according to Service Instructions.
- All seals must be slightly greased before their installation.
- The inner parts of the actuator are maintenance free.

Attention! Use food-grade special grease being suited for the respective seal material, only.

Recommendation:

APV assembly grease for EPDM, FPM, HNBR and NBR
 (0,75 kg /can - 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
 (0,6 kg /can - 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 for EPDM seals.
- ! Do not use Silicone-based grease for VMQ seals.

Less suited grease types can influence the function and life time.

11. Maintenance

Additionally required maintenance for applications in ATEX environment

Replacement of spring for potential equalization if damaged.

DKR2 Valve actuated version

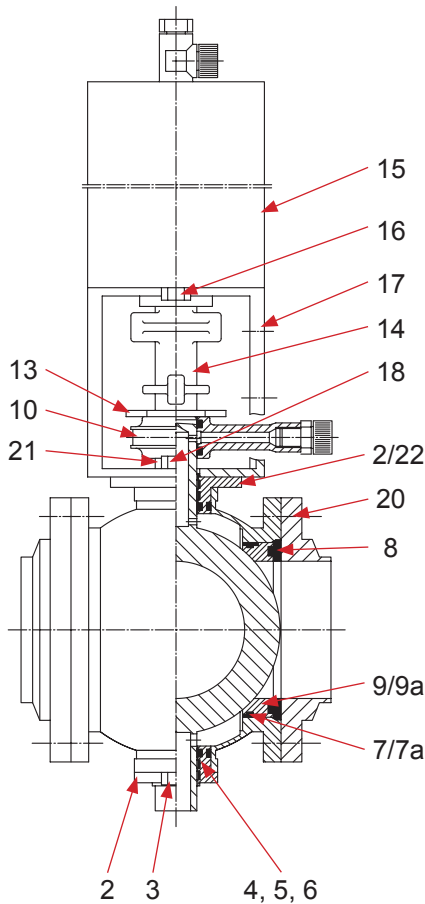


Valve maintenance for actuator with spring	Note
Functional test, visual inspection of actuator movement (turning angle) and control of abnormal running noise of spring	1 x per year
Change interval of actuator (turning actuator)	In case of damage, incomplete actuator movement (turning angle), considerable running noise of spring as well as after 250,000 cycles* as preventive measure, however, after 10 years at the latest.

*complies with about 8 years in 1-shift-operation and 10-15 cycles per hour.

12. Service Instructions

The item numbers refer to the spare parts drawing.
RN ATEX 01.071



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 indicator
5. Remove flange screws (20).
6. Detach ball valve from the flanges.

12.2. Dismantling of seals and guide band

1. Detach flange seals (8).
2. Take off turning actuator (15) after removal of screws (16).
3. Release screws (18) and yoke (17), coupling (14), indicator (13), spray connection (10) and spring for potential equalization (21).

Danger! 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!

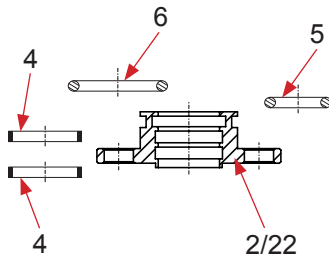
Attention! Ball and ball seal are sensitive to mechanical damage, the surfaces must not be touched by tools.

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).

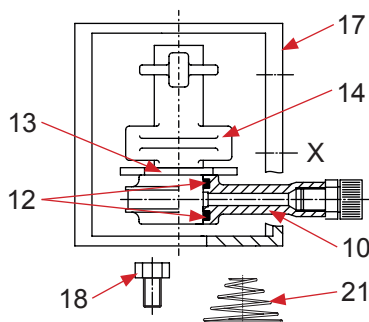
Attention! With dismantled shaft bearings and seals, the housing with ball must not be subject to vibrations.

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 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 a little grease at both sides.
5. Slightly grease o-rings (12) and insert them in the spray connection (10).



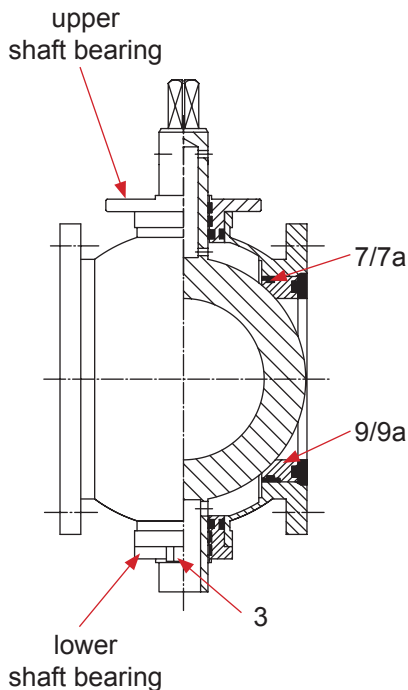
12.4. Assembly of valve

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), spring (21) for potential equalization, 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.

12.5. Adjustment of operating position

Attention!

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



12. Service Instructions

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 (17).

2. Screw in screws (16), but do not fasten them.

Danger! 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 during this process.

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 during this process!

Danger! 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".

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

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

9. Connect pneumatic air line with turning actuator.

10. Connect cleaning line.

11. Attach valve position indicators if required.

12. Service Instructions

12.5.2. Adjustment of operating position without FG flanges

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

(Attention! 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.



Danger!

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
- 4) it immediately.

Attention!

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

6. Re-tighten screw (18) and, then, screws (3).

7. Tightening torques: Md = 16 Nm M8
 Md = 40 Nm M10

8. Connect pneumatic air line with turning actuator.

9. Connect cleaning line.

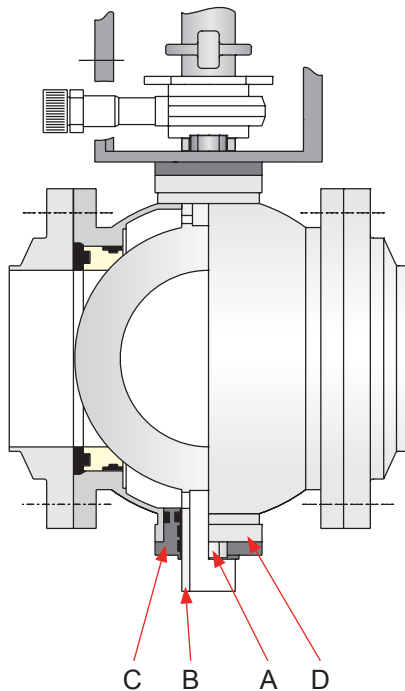
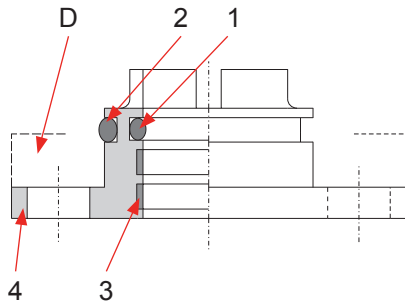
10. Attach valve position indicator.

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 reduction 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
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
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

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!

Slide the complete leakage reduction 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

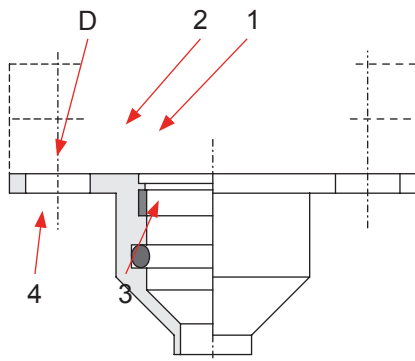
13.2. Leakage connection (drain) for DKR ball valve



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	58-06-078/93	H76943

13.2.1. Installation of leakage drain



1. Lightly 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
<i>Valve closed and pressurized</i>	
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).
<i>Valve open</i>	
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).
<i>Valve closed and leakage during cleaning via the spray connection</i>	
Leakage at spray connection	Replace o-rings (12).
Leakage at shaft bearings	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 actions we supply complete seal kits
 (see spare parts lists).

15. Spare Parts Lists

(see annex)

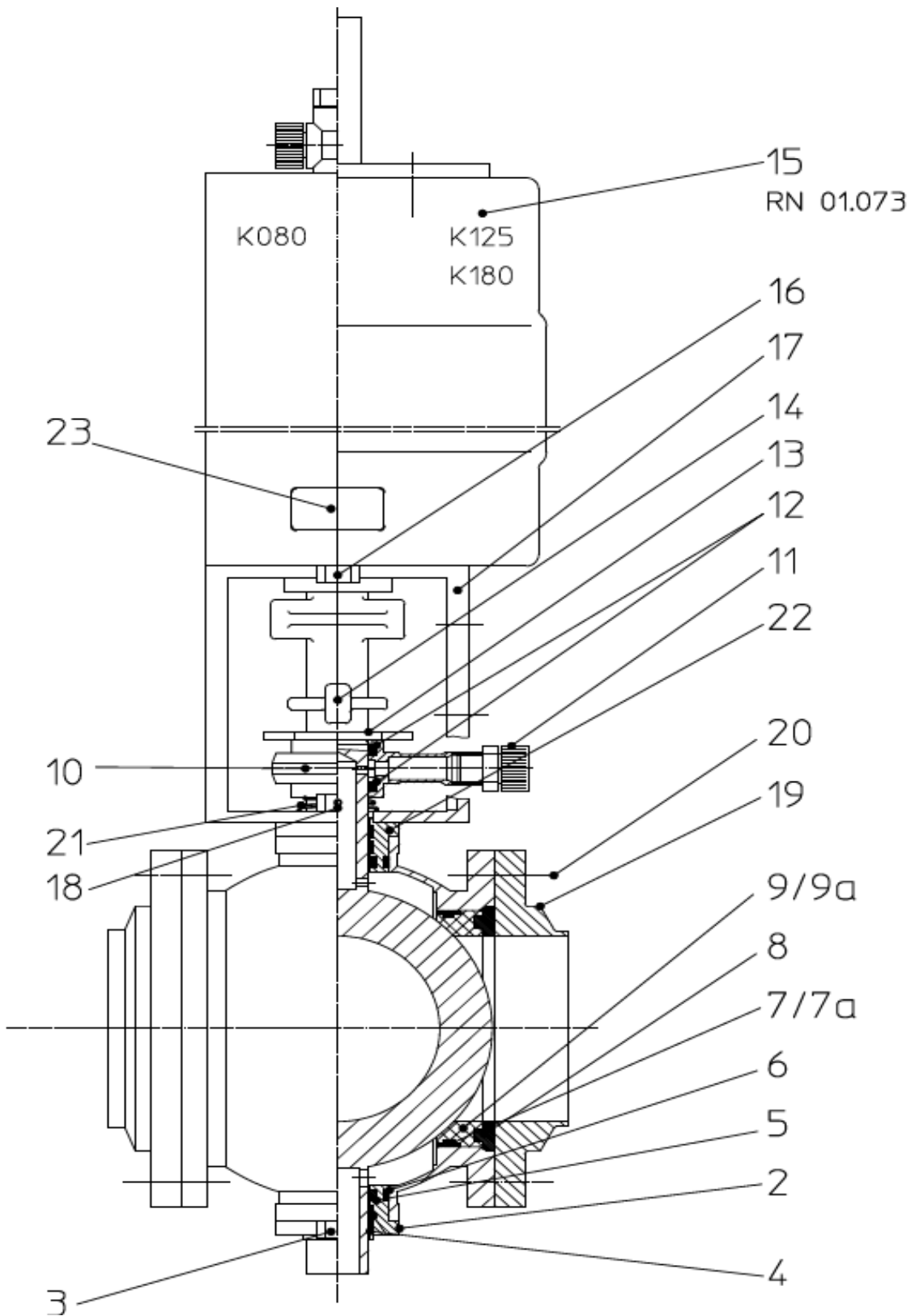
The reference numbers of the spare parts for the different valve designs and sizes are included in the attached spare part drawings with corresponding lists.

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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Datum:	07.09.14	09.11.16									
Name:	Keil	C.Keil									
Geprüft:											

Ersatzteilliste: spare parts list

Ventil DKR -FZ 1+2S Ex II -/2D IIB TX
Double seat ball valve 1+2S Ex II -/2D IIB TX
DN25-100; 1-4 Zoll / inch



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Blatt 1 von 7

RN ATEX 01.071

Ersatzteilliste: spare parts list

Ventil DKR -FZ 1+2S Ex II -/2D IIB TX
Double seat ball valve 1+2S Ex II -/2D IIB TX
DN25-100; 1-4 Zoll / inch

Datum:	07.09.14	09.11.16
Name:	Keil	C.Keil
Geprüft:		
Datum:		
Name:		
Geprüft:		
Blatt 2 von 7		
RN ATEX 01.071		

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pos. item	Menge quantity	Beschreibung description	Material	DN25	1"	1,5"	DN50	2"
1	1	Ventilkörper Valve body	1.4404	31-08-277/47 H67774	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
2		Wellenlager Bearing	1.4404	15-28-124/47 2x H31774				
3	2	Skt. Schraube Hex. Screw	1.4301					
4	4	Führungsband Guide	Turcite					
5	2	O-Ring	NBR	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	FPM	58-06-078/73 H125656	nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.			
	2	O-Ring	NBR	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	FPM	58-06-119/73 H122837	nur bei Ventilen mit Dichtungswerkstoff FPM verwenden to be used only for valves with seal material FPM.			
6	2	Gehäusedichtung Housing seal	EPDM	58-33-292/93 H77439	58-33-292/93 H77464			
	2	Gehäusedichtung Housing seal	HNBR	58-33-292/33 H170017	58-33-292/33 H170018			
	2	Gehäusedichtung Housing seal	FPM	58-33-292/73 H77438	58-33-292/73 H77463			
7	2	Flanschdichtung Seal flange	EPDM	58-32-277/93 H77280	58-32-277/93 H77292			
	2	Flanschdichtung Seal flange	HNBR	58-32-277/33 H172130	58-32-277/33 H172131			
	2	Flanschdichtung Seal flange	FPM	58-32-277/73 H77279	58-32-277/73 H77291			
	2	Flanschdichtung Seal flange	VMQ	58-32-277/13 H77278	58-32-277/13 H77290			
8	2	Kugeldichtung	PTFE	58-32-291/23 H77281	58-32-291/23 H77293			
	2	Ball seal						

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Ersatzteilliste: spare parts list

Ventil DKR -FZ 1+2S Ex II -/2D IIB TX
Double seat ball valve 1+2S Ex II -/2D IIB TX
DN25-100; 1-4 Zoll / inch

Datum:	07.09.14	09.11.16	
Name:	Keil	C.Keil	
Geprüft:			
Datum:			
Name:			
Geprüft:			

		Blatt 3 von 7	
RN ATEX 01.071			




pos. item	Menge quantity	Beschreibung description	Material	DN25	1"	DN40	1,5"	DN50	2"
				WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
10	1	Spritzanschluß CIP connection	1.4301			000 08-60-080/13 H16293			
11	1	G-Verschraubung G1/8" 8x1 Union	PVDF-schwarz			08-63-003/13 H16388			
12	2	O-Ring OR 20,2x3 O-ring	NBR			58-06-078/83 H76943			
13	1	Zeiger Position indicator	PE-HART			08-29-021/93 H14634			
14	1	Kupplung Coupling	1.4308			08-52-050/13 H15865			
15	1	Drehantrieb F/L Actuator spring/air in Einzelverpackung / with individual packaging	1.4301			15-31-055/17 H315054			
16	2	Skt. Schraube Hex. Screw DIN EN 24017-A2-70	1.4301			65-01-080/15 M8x12 H78770			
17	1	Laterne Yoke	1.4301	15-40-164/17 H33846				15-40-166/17 H33848	
18	2	Skt. Schraube Hex. Screw DIN EN 24017-A2-70	1.4301			65-01-079/15 M8x14 H78768			
19	2	Flansch FG1 Flange FG1	1.4404	09-51-277/42 H18722	09-51-314/42 H18732	09-51-377/42 H108883	09-51-414/42 H18751	09-51-427/42 H18761	09-51-464/42 H18768
20	8	Skt. Schraube Hex. Screw DIN EN 24017-A2-70	1.4301			65-01-081/15 M8x16 H78772			65-01-083/15 M8x20 H78776
21	1	Druckfeder-Potentialausgleich pressure feather eqipotential DI=19,5X22 DI=19,5X22	1.4310			000 60-06-010/13 H311619			
22	1	Wellenlager Bearing	1.4404						15-28-210/42 H207855
23	1	ATEX-Typenschild Ex II-/2G IIB TX ATEX-label Ex II-/2G IIB TX	Polyesterfolie			000 08-29-381/93 H329934			

Ersatzteilliste: spare parts list

Ventil DKR -FZ 1+2S Ex II -/2D IIB TX
Double seat ball valve 1+2S Ex II -/2D IIB TX
DN25-100; 1-4 Zoll / inch

Datum:	07.09.14	09.11.16		
Name:	Keil	C. Keil		
Geprüft:				
Datum:			Blatt	5 von 7
Name:			RN ATEX 01.071	
Geprüft:				

											
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pos. item	Menge quantity	Beschreibung description	Material	DN65	2,5"	3"	DN80	DN100	4"
1	1	Ventilkörper Valve body	1.4404	31-08-477/47 H67796	WS-Nr. ref.-no.	31-08-552/47 H203406	31-08-527/47 H67803	WS-Nr. ref.-no.	WS-Nr. ref.-no.
2	1	Wellenlager Bearing	1.4404	15-28-124/47 H31774			15-28-125/47 H31775		
3	2	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	2	O-Ring O-ring	NBR 70-75 Shore A	58-06-078/83 H76943	WS-Nr. ref.-no.				
	2	O-Ring O-ring	FPM 70-75 Shore A	58-06-078/73 H125656					
	2	O-Ring OR 28x3	NBR 70-75 Shore A	58-06-119/83 H76961					
6	2	O-Ring OR 28x3	FPM 70-75 Shore A	58-06-119/73 H122837					
	2	Gehäusedichtung Housing seal	EPDM FDA-konform	58-33-492/93 H77512		58-32-545/93 H171283	58-32-545/93 H17283		58-33-642/93 H77583
	2	Gehäusedichtung Housing seal	HNBR FDA-konform	58-33-492/33 H168759		58-32-545/33 H318537	58-33-542/33 H170075		58-33-642/33 H170074
	2	Gehäusedichtung Housing seal	FPM FDA-konform	58-33-492/73 H77511		58-32-545/73 H205932	58-33-542/73 H77542		58-33-642/73 H77582
7a	2	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		
	2	Flanschdichtung Seal flange	EPDM FDA-konform	58-32-477/93 H77314		58-32-555/93 H77332	58-32-544/93 H176414		58-32-627/93 H77339
	2	Flanschdichtung Seal flange	HNBR FDA-konform	58-32-477/33 H172133		58-32-555/33 H172144	58-32-527/33 H172134		58-32-627/33 H172135
8	2	Flanschdichtung Seal flange	FPM FDA-konform	58-32-477/73 H77313		58-32-555/73 H77331	58-32-527/73 H77324		58-32-627/73 H77338
	2	Flanschdichtung Seal flange	VMQ FDA-konform	58-32-477/13 H77312		58-32-555/13 H77330	58-32-544/13 H177052		58-32-627/13 H77337

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Ersatzteilliste: spare parts list

Ventil DKR -FZ 1+2S Ex II -/2D IIB TX
Double seat ball valve 1+2S Ex II -/2D IIB TX
DN25-100; 1-4 Zoll / inch

Datum:	07.09.14	09.11.16
Name:	Keil	C. Keil
Geprüft:		
Datum:		
Name:		
Geprüft:		

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Blatt 6		von 7	
RN ATEX 01.071			

pos. item	Menge quantity	Beschreibung description	Material	DN65	2,5"	3"	DN80	DN100	4"
9	2	Kugeldichtung Ball seal	PTFE virginal	58-32-491/23 H77315	WS-Nr. ref.-no.	58-32-566/23 H203407	58-32-541/23 H77326	58-32-641/23 H77340	WS-Nr. ref.-no.
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		58-32-540/23 H176929			WS-Nr. ref.-no.
10	1	Spritzanschluß CIP connection	1.4301	000 08-60-080/13 H16293					
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	09-51-514/42 H18791	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	1	Druckfeder-Potentialausgleich Pressure feather equipotential	1.4310	000 60-06-010/13 H311619					
22	1	Wellenlager Bearing	1.4404	15-28-210/42 H207855			15-28-211/42 H207856		

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Ersatzteilliste: spare parts list

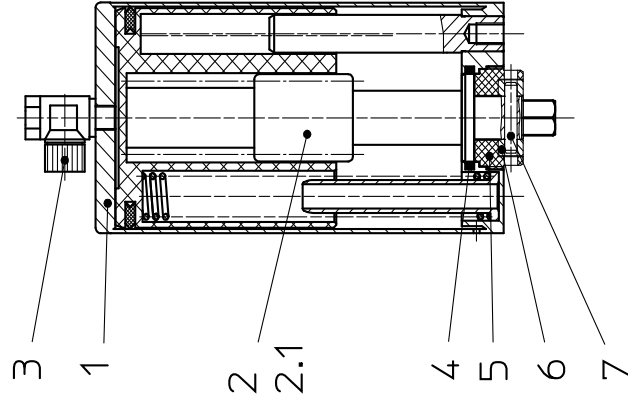
Drehantrieb K080, K125, K180 F/L
Actuator K080, K125, K180 spring/air

Datum:	22.11.12	12.03.14
Name:	Trytko	Trytko
Geprüft:	Goebel	

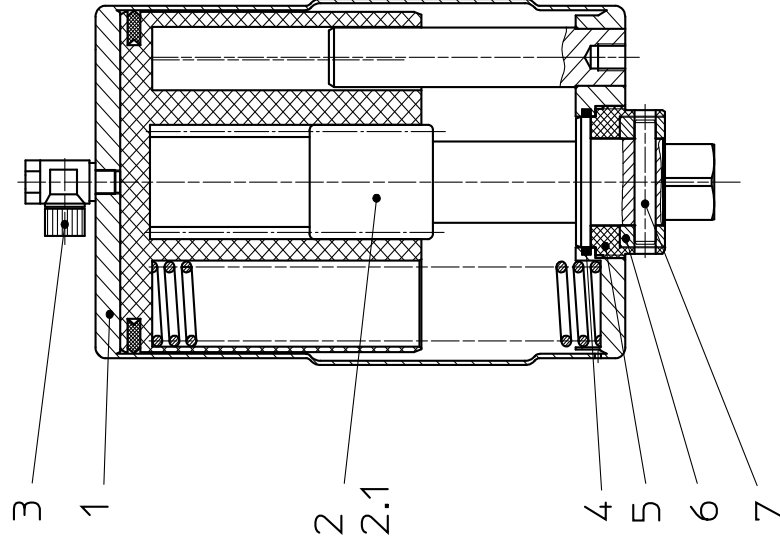
Blatt	1	von	2
RN 01.073			



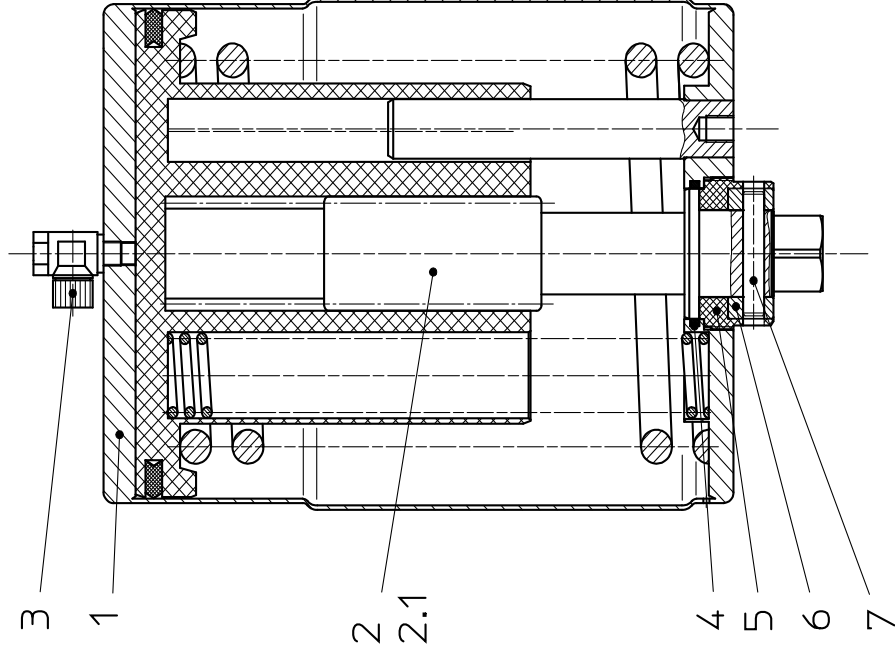
DRAT K080



DRAT K125



DRAT K180



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			
Datum:			Blatt	2 von 2
Name:			RN 01.073	
Geprüft:				

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pos. item	Menge quantity	Beschreibung description	Material	K080		K125		K180		WS-Nr. ref.-no.	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	Drehantrieb komplett Actuator complete	1.4301 matt-glänzend	15-31-055/17 H105500	15-31-057/17 H105502	15-31-923/17 H32589						
1	1	Drehantrieb komplett Actuator complete	1.4301 poliert	15-31-055/13 H135919	15-31-057/13 H131940	15-31-923/13 H32588						
1	1	Drehantrieb Schweißteil Actuator welded	1.4301	15-31-054/17 H105499	15-31-056/17 H105501	15-31-922/17 H32587						
2	1	Spindel komplett mit Lager Shaft complete with bearing	1.4301	15-24-021/13 H31494	15-24-031/13 H31502	15-24-033/13 H31504						
2.1	1	Spindel Shaft	1.4301	15-24-020/13 H31493	15-24-030/13 H31501	15-24-032/13 H31503						
3	1	Winkelverschraubung G1/8" schwenkbar Elbow union G1/8" slewable	Polyamid/ Glasf	08-63-221/93 H16371								
4	1	O-Ring	NBR	58-06-130/83 32,2x3 H76965								
	1	O-Ring	FPM		58-06-222/73 49,5x3 H77000							
5	1	Lager für Drehantrieb Bearing for actuator	POM	15-28-002/34 H31673								
	1	Lager für Drehantrieb Bearing for actuator	PA12		15-28-009/63 H31684							
6	1	Stelling Adjust ring	1.4301	67-08-007/13 H79757	67-08-008/13 H79758							
7	1	Zyl. Kerbstift Cyl. pin	1.4305	67-15-035/13 5x26 H79916	67-15-036/13 8x45 H79917							



APV DELTA DKR2
DN25-100, 1"-4"

DOUBLE SEAT BALL VALVE



FOR SPECIFIC ATEX-APPLICATIONS

SPXFLOW

SPX FLOW

Design Center

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