APV
AN SPX BRAND

Operating Manual

MF - Ball Cock

KHV2 - FZ / DN10 - 100 with turning actuator
KHV1 - H / DN10 - 50 with manual actution

Read and understand this manual prior to operating or servicing this product.

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Declaration of Conformity for Valves and Valve Manifolds

APV Rosista GmbH, Zechenstr. 49, D-59425 Unna-Königsborn
as manufacturer with sole responsibility declares that the

double seat valves of the series D2, SD4, SDT4, SDM4, SWcip4, DSV, DA3, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2
in the nominal diameters DN 25 - 150, 1" – 6" and 1 Sh5 - 6 Sh5

butterfly valves of the series SV1 and SVS 1 F
in the nominal diameters DN 25 - 100, DN 125 - 250 and 1" – 4"

ball cocks of the series KH, KHV
in the nominal diameters DN 15 - 100

single seat, diaphragm and spring loaded valves of the series S2, SW4, SWmini4, SWT4, M3, MF3, M4, MF4, MP4, MS4, AP1, APT1, CPV, RG4, RGM4, RGE4, RGEM4, PR2, PR3, PR4, SI2, UF3, VRA,VRAH
in the nominal diameters DN 10 - 150, 1/2" – 4" and 1 Sh5 - 6 Sh5

and the valve manifolds installed thereof

meet the requirements of the Directives 89/392/EEC (amendment 93/44/EEC), replaced by 98/37/EC and GSG - 9.GSGV.

For official inspections, APV Rosista GmbH presents a technical documentation according to appendix V 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 remaining risks as well as an operating manual with safety instructions.

The conformity of the valves and valve manifolds is guaranteed.

D-59425 Unna-Königsborn, June 04, 2008
APV Rosista GmbH

ppa. Baumbach

Manager Research and Development

UK

Content

1. General Information

The operating instructions must be read and observed by the responsible operating and maintenance personnel.

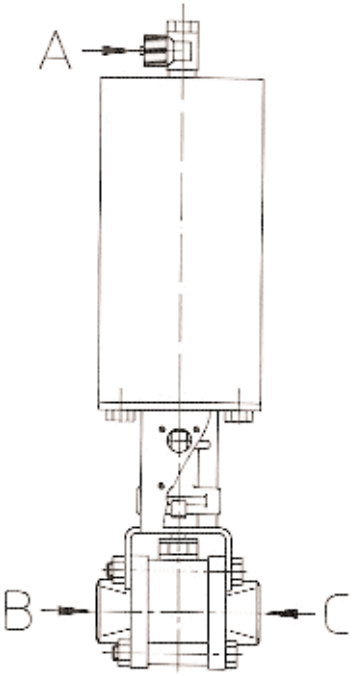
We point out that we will not accept any liability for damage or operating failures resulting from the non-obervance of the operating instructions.
Descriptions and data are subject to technical changes.

2. Safety Instructions

DANGER!

- Before starting maintenance work, any pressure source in the pipe and cleaning system must be switched off **!**
- Risk of injury by suddenly actuating valve!
- Do not reach into the open valve!
- For safe maintenance of the valve observe maintenance instructions.
- Remove ROS actuator before exchange of seals.
- Liquid residues can be in the ball during disassembly.

3. Operation



Actuation by pneumatic actuator with air connection at **(A)**, reset by spring force to limit position “closed”.

- As shut-off element, the ball is fixed in PTFE seats at both sides. Through the shape of these seats, the ball sets betweeen the flexible seat lips. As a result of this floating position, only, a movement into the flow direction becomes possible providing for an optimum sealing in the passage **(B and C)**. As the ball cock has uncleanable “dead” spaces, in food engineering, it should **only be used in CIP areas!!!**

- The stem of the MF ball cock is generally inserted from the inside. Therefore, a collar being bigger than the bore of the body prevents the stem from being pressed to the outside. The inner stem seal takes over the sealing to the outside. In pressureless state and in case of a vacuum, sealing is made sure by springs and press ring.

- The free opening profile is similar to the Venturi tube which is a bit smaller than the nominal diameter of the pipe.

- Smooth valve passage, no diversion of liquids.

- The sealing between body and counterflange to the outside is effected by the PTFE body seal in standard design.
  Special designs for the chemical industry with nut-spring connection (with graphite seal) are possible alternatives.

Remark: The ball cock is not equipped with a separate CIP connection to clean the existing “dead” spaces!!!

4. Storage

MF ball cocks shall be stored in dry and clean environment, possibly at room temperature. It is absolutely necessary to cover the components with the dust caps installed by the manufacturer.

5. Installation

The mounting position of the ball cock is optional depending on the local circumstances and the function to be fulfilled.
After removal of the dust caps, the MF ball cock is ready for installation. The cocks with ISO weld ends can be welded into the pipe line in open position without disassembly provided that the weld seam is carried out using state-of-the-art technology (T.I.G.). The screw connections of the body must be tightened after the cooling down phase has finished.

6. Maintenance

Apart from exchanging worn parts, MF ball cocks require virtually no maintenance. During operation, ensure that the MF ball cock is always in open or closed limit position. Intermediate positions can cause damage to the seats and must therefore be avoided. Depending on the operating conditions, the gland must be checked and tightened if necessary.

- Removal and installation of seals according to assembly instructions.
- Installation and adjustment of actuator according to assembly instructions.
- All seals must be lightly greased before their installation.
- **In food application, the following recommendations for greases shall be observed.**

Recommendation:

APV-food-grade grease for EPDM and FPM
(0,75 kg/ can - ref.-No. 000 70-01-019/93)
(60 g/ tube - ref.-No. 000 70-01-018/93)
o r
APV-food-grade grease for VQM and Perbunan
(1 kg/ can - ref.-No. 000 70-01-017/93)
(40 g/ tube - ref.-No. 000 70-01-016/93)

! Do not use grease containing mineral oil for EPDM seals.
! Do not use Silicone based grease for Silicone seals.

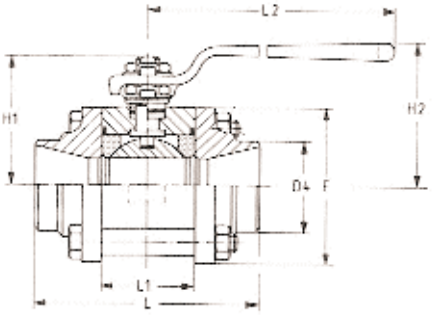
7. Materials

- body	1.4404
- yoke, actuator	1.4301
- coupling	1.4057
- ball seal	PTFE
- body seal	PTFE

Plastic parts in actuator:

- bearing	Vestamid L 1901
- air connection	PA 6.6
- piston	Hostaform C 9021

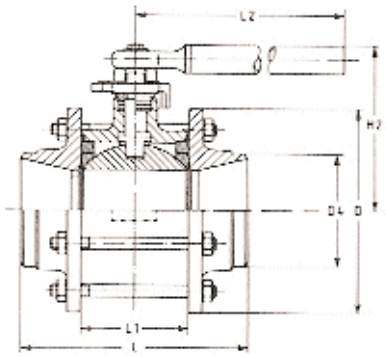
8. Dimensions and Weights



KHV1-NW15-50

8.1 Dimensions and weights without actuator for KHV 1-H and KHV 2:

DN (mm)	D4	L (mm)	L1 (mm)	L2 (mm)	H1 (mm)	H2 (mm)	E (mm)	ball bore	mass (kg)
15	21,3	65	20,4	140	37	55	45	11,1	0,52
20	26,9	72,5	24,5	140	39	57	52	14,2	0,83
25	33,7	85,4	31,5	180	53	74	60	21	1,25
32	42,4	99,3	41,3	180	58	77	68	25,4	1,85
40	48,3	110,4	48,4	200	71	89	76	31,7	2,82

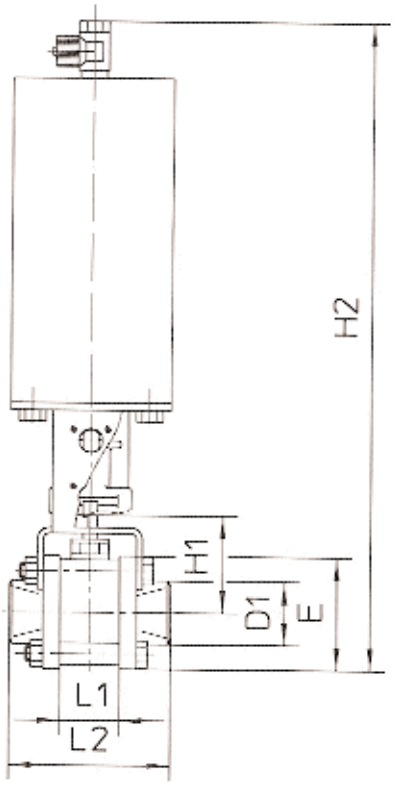


KHV1-NW65

DN (mm)	D4	L (mm)	L1 (mm)	L2 (mm)	H1 (mm)	H2 (mm)	E (mm)	ball bore	mass (kg)
65	76,1	142,6	71,4	250	-	110	135	50	6,7

Remark: Dimensions of valve body are identical for KHV2-FS valves.

8. Dimensions and Weights



8.2 Dimensions and weights of ball cock KHV 2-FZ:

DN (mm)	D1	E (mm)	H1 (mm)	H2 (mm)	L (mm)	L1 (mm)	ball bore (mm)
25	33,7	60	53,5	108,5	85,4	31,5	21
40	48,3	76	72	324	110,4	48,4	31,7
50	60,3	88	76,5	328	126,3	56,3	38

9. Technical Data

9.1 Torques (with actuation) and control air consumption (at 6 bar) at ball cock

DN (mm)	Md (Nm)	Md perm. (Nm)	control air cons. (NL/stroke)
15	3,5	30	
20	5,0	30	
25	9,5	70	1,8
32	15	170	
40	22	170	1,8
50	30	170	1,8
65	50	170	

9. Technical Data

9.3 Operating pressures and operating temperatures

max. line pressure		10 bar
max. operating temperature		140 °C
short-term steam load		160 °C
actuator:	max. control pressure	10 bar
	min. control pressure	6 bar
	turning angle	90 °

10. Assembly Instructions KHV1-H

for MF ball valve with manual actuation KHV1-H

10.1 Exchange of ball and seats

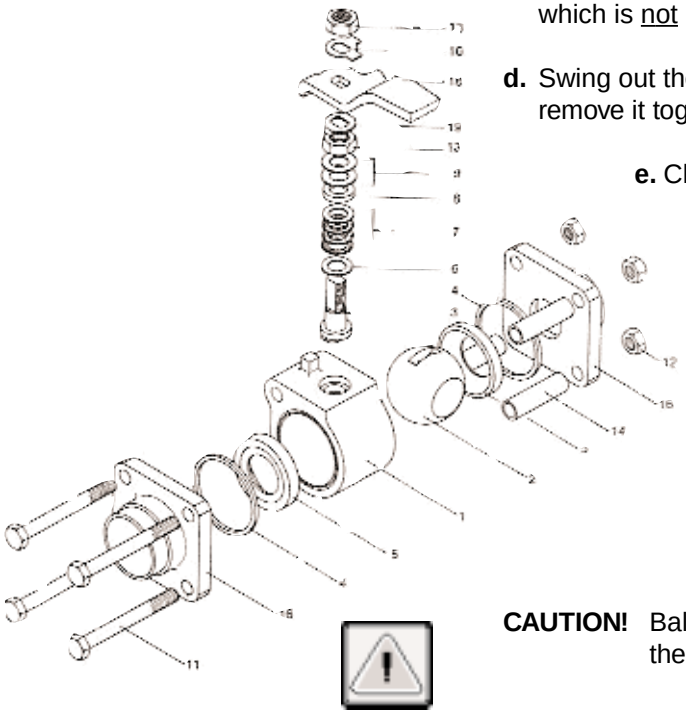
CAUTION! Liquid residues can still be in the cock.

a. Shut off line pressure.

b. Open MF ball cock with the handle **(18)**.

c. Loosen all body screws **(11)**. Remove the upper body screw which is not passing through the body and remove spacer **(14)**.

d. Swing out the body **(1)**, move the ball **(2)** into closed position and remove it together with the seats.



e. Check ball for damages and replace it if necessary.

f. Insert ball with the new seats, replace the body seals **(4)** and reassemble the ball cock.

g. Tighten all body screws.

CAUTION! Ball and ball seal are sensible to mechanical damage, the surfaces shall not be in contact with any tools.

10. Assembly Instructions KHV1-H

10.2 Exchange of stem seal

a. Dismantle MF ball cock as described.

b. Take off the handle. For this purpose remove the nut **(13)** together with the washer **(10)**.

c. Pull the lock washer **(19)** from the stem **(3)** without bending it, loosen nut **(13)** and dismantle parts **(9)** and **(8)**.

d. Remove the stem **(3)** with the stem seal **(6)** from the inside and the seals **(7)** from the outside of the housing.

e. Reinstall the new stem seal **(6)** with the stem **(3)** through the inside of the body.

f. Replace the seals (**7**, four pieces) in the outside of the body.

g. Assemble press ring **(8)**, the spring (**9**, mutually racked) and the nut **(13)** on the stem.

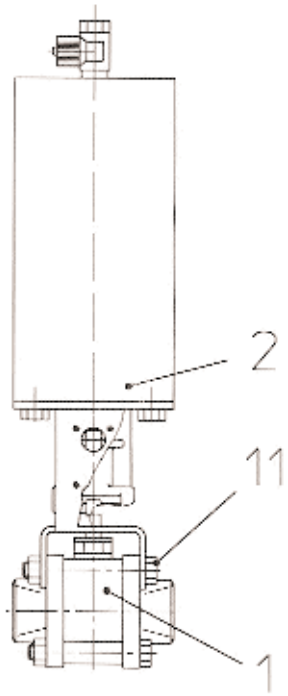
h. Tighten the body nut **(13)** and place it in such a manner that the lock washer **(19)** fits over it.

i. Assemble the cock in its previous position.

j. Retighten stem nut **(13)** after 48 hours.

11. Assembly Instructions KHV2-FZ

for MF ball cock with ROS actuator



11.1 Disassembly from the line system

CAUTION! Liquid residues can still be in the cock.

a. Shut off line pressure.

b. Shut off air supply and separate air line from ROS actuator.

c. Remove feedback.

d. Loosen all body screws **(11)** and remove the two upper screws.

e. Take off ROS actuator **(2)** to the top and take ball cock **(1)** out of the pipeline.

CAUTION! In closed position, the ball can drop out of the body.

11.2 Exchange of ball and seats

a. The actuator is separated from the body.
Remove the ball **(2)** together with the seats **(5)**.

b. Check ball for damages and replace it if necessary.

c. Insert the ball with the new seats and remove the body seals **(4)**.

d. Move the ball into closed position.
Insert the body into the line, place the actuator and assemble it with the body screws and the spacer.

e. Tighten all body screws.

f. Install valve feedback.

g. Reconnect air supply line.

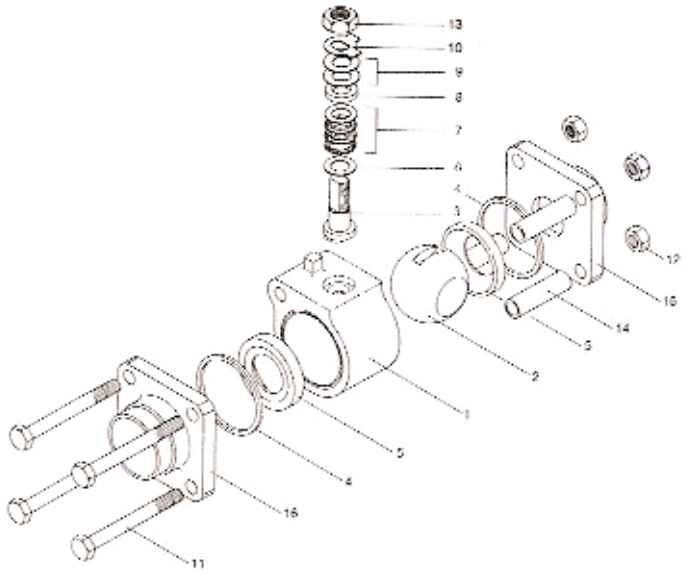
11. Montageanweisung KHV2-FZ

11.3 Exchange of stem seal

a. Disassemble the KHV2-FZ as described in **11.1** and **11.2**.

b. Untighten the nut **(13)** with the lock washer **(10)** and remove the springs **(9)** and the press ring **(8)**.

c. Remove the stem **(3)** with the stem seal **(6)** from the inside and the seals **(7)** from the outside of the body.



d. Reinstall the new stem seals **(6)** with the stem **(3)** through the inside of the body.

e. Replace the seals (**7**, 4 pieces) in the outside of the body.

f. Assemble press ring **(8)**, the springs **(9)** (mutually racked) and the lock washer **(10)** with nut **(13)** on the stem.
Tighten nut with lock washer.

g. Reassemble ball cock as described in **11.2**.

12. Spare Parts (see attachment)

BA KHV2 000002
ID-No.: H 1 7 0 7 6 2

UK

Translation of original manual

rev. 1

WHERE IDEAS MEET INDUSTRY

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For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.apv.com.

Ersatzteilliste: spare parts list:

Kugelhahn-FZ-KHV2 DN 15,20,25,40,50
Ball cock with pneumatic actuator DN 15,20,25,40,50

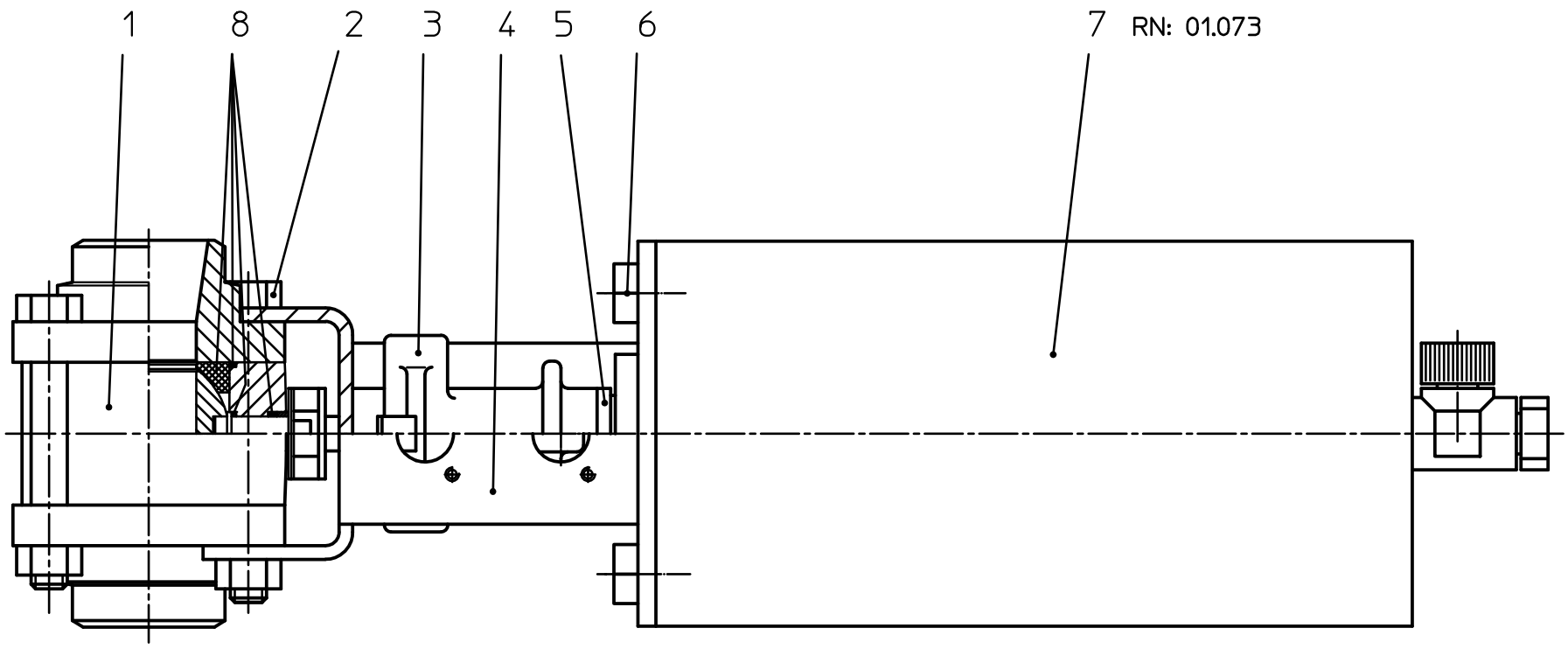
Besteht aus 2 Blatt Blatt 1

	Datum	Name
Gezeichnet	18.06.91	Trytko
Geprüft	05.11.91	Schulz
Normgepr.		

Datum	06/91	03/92	05/04
Name	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.240



Ersatzteilliste: spare parts list:

Kugelhahn-FZ-KHV2 DN 15,20,25,40,50
Ball cock with pneumatic actuator DN 15,20,25,40,50

Blatt 2

	Datum	Name
Gezeichnet	18.06.91	Trytko
Geprüft	05.11.91	Schulz
Normgepr.		

Datum	06/91	03/92	05/04	11/07
Name	Trytko	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.240

Pos. item	Menge quantity	Benennung description	DN 15 WS-Nr. ref.-no.	20 WS-Nr. ref.-no.	25 WS-Nr. ref.-no.	40 WS-Nr. ref.-no.	50 WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	KHV1-H 1+2S Ball cock manually operated	30-15-191/57	30-15-241/57	30-15-291/57	30-15-391/57	30-15-441/57			
2	2	Skt. Schraube Hex.screw			DIN EN 24014-M10x90-A2-70					
3	1	Kupplung Coupling	08-52-306/17	=	08-52-250/17	08-52-251/17	=			
4	1	Laterne Yoke	15-40-205/17	15-40-206/17	15-40-208/17	15-40-209/17	15-40-210/17			
5	1	Zeiger Position indikator	08-29-021/93	=	=	=	=			
6	2	Skt. Schraube Hex.screw	DIN EN 24017-M8x14-A2-70							
7	1	Drehantrieb Actuator	15-31-055/17	=	=	=	=			
8	1	Dichtungssatz Seal kit	58-34-288/04	58-34-289/04	58-34-290/04	58-34-291/04	58-34-292/04			

Ersatzteilliste: spare parts list:

Drehantrieb K-80, K-125, K-180 F/L

Actuator K-80, K-125, K-180 spring/air

Besteht aus 2 Blatt Blatt 1

	Datum	Name
Gezeichnet	4.3.98	Trytko
Geprüft		
Normgepr.		

Datum	3/98
Name	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

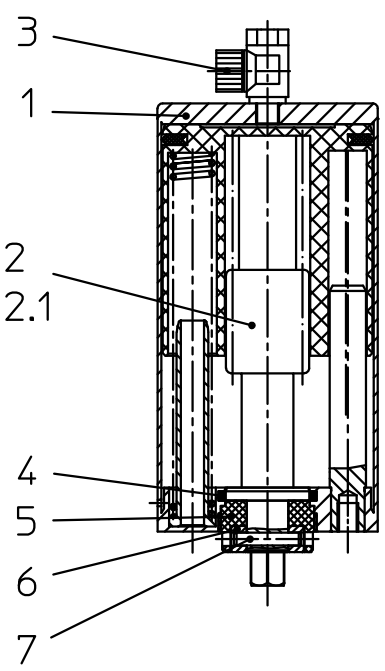
RN 01.073

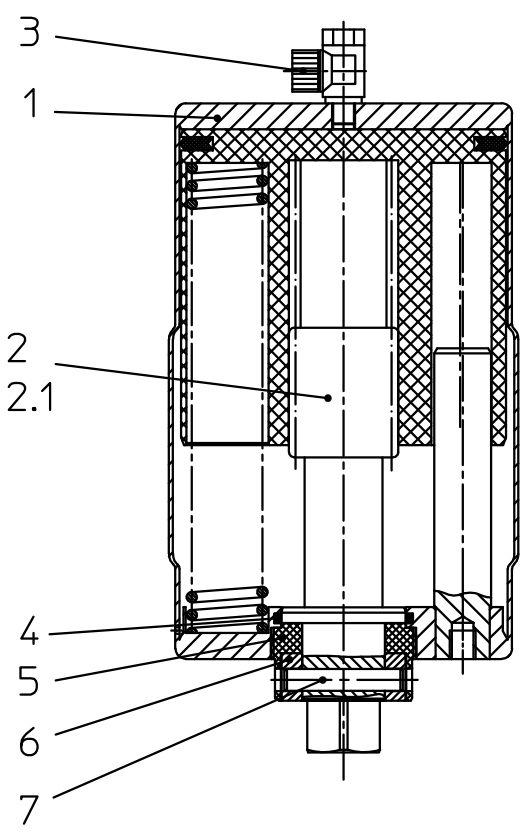
Es stehen verschiedene Werkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

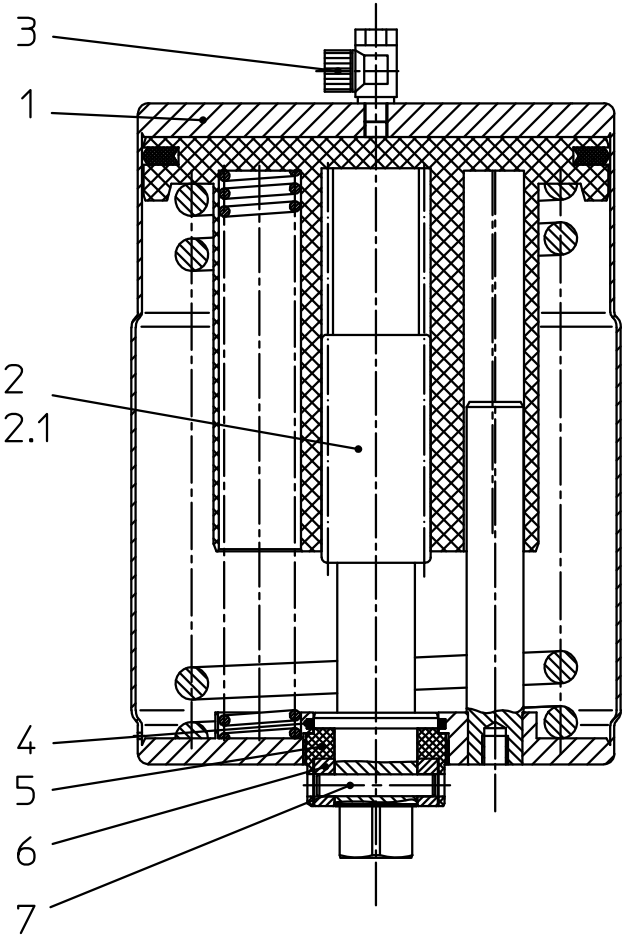
The following materials are available (fill in last two digits of ref.-no.)

*Werkstoff metallisch/ material metallic

../13-1.4301 poliert/polished
../17-1.4301 matt-gl./satin finish







Ersatzteilliste: spare parts list:

Drehantrieb K-80, K-125, K-180 F/L

Actuator K-80, K-125, K-180 spring/air

Blatt 2

	Datum	Name
Gezeichnet	4.3.98	Trytko
Geprüft	4.3.98	Fischer
Normgepr.	4.3.98	Plümper

Datum	3/98	9/98	11/01
Name	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.073

Pos. item	Menge quantity	Benennung description	Ausführung K-80 WS-Nr. ref.-no.	K-125 WS-Nr. ref.-no.	K-180 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	Drehantrieb-komplett * Actuator-complete	15-31-055/	15-31-057/	15-31-923/					
1	1	Drehantrieb-geschweißt * Actuator-welded	15-31-054/	15-31-056/	15-31-922/					
2	1	Spindel komplett mit Lager Shaft complete with bearing	15-24-021/13	15-24-031/13	15-24-033/13					
2.1	1	Spindel Shaft	15-24-020/13	15-24-030/13	15-24-032/13					
3	1	Verschraubung EWS 6x1 G1/8 Union	08-63-221/93	=	=					
4	1	O-Ring O-ring	OR 32,2x3 NBR 70-75 Shore A	OR 49,5x3 NBR 70-75 Shore A						
5	1	Lager für Drehantrieb Bearing for actuator	15-28-002/34	15-28-009/63	=					
6	1	Stellring Adjust ring	67-08-007/13	67-08-008/13	=					
7	1	Zyl. Kerbstift DIN 1473 Cyl. pin	DIN EN ISO 8740 -5x26-V2A	DIN EN ISO 8740-8x45-V2A						