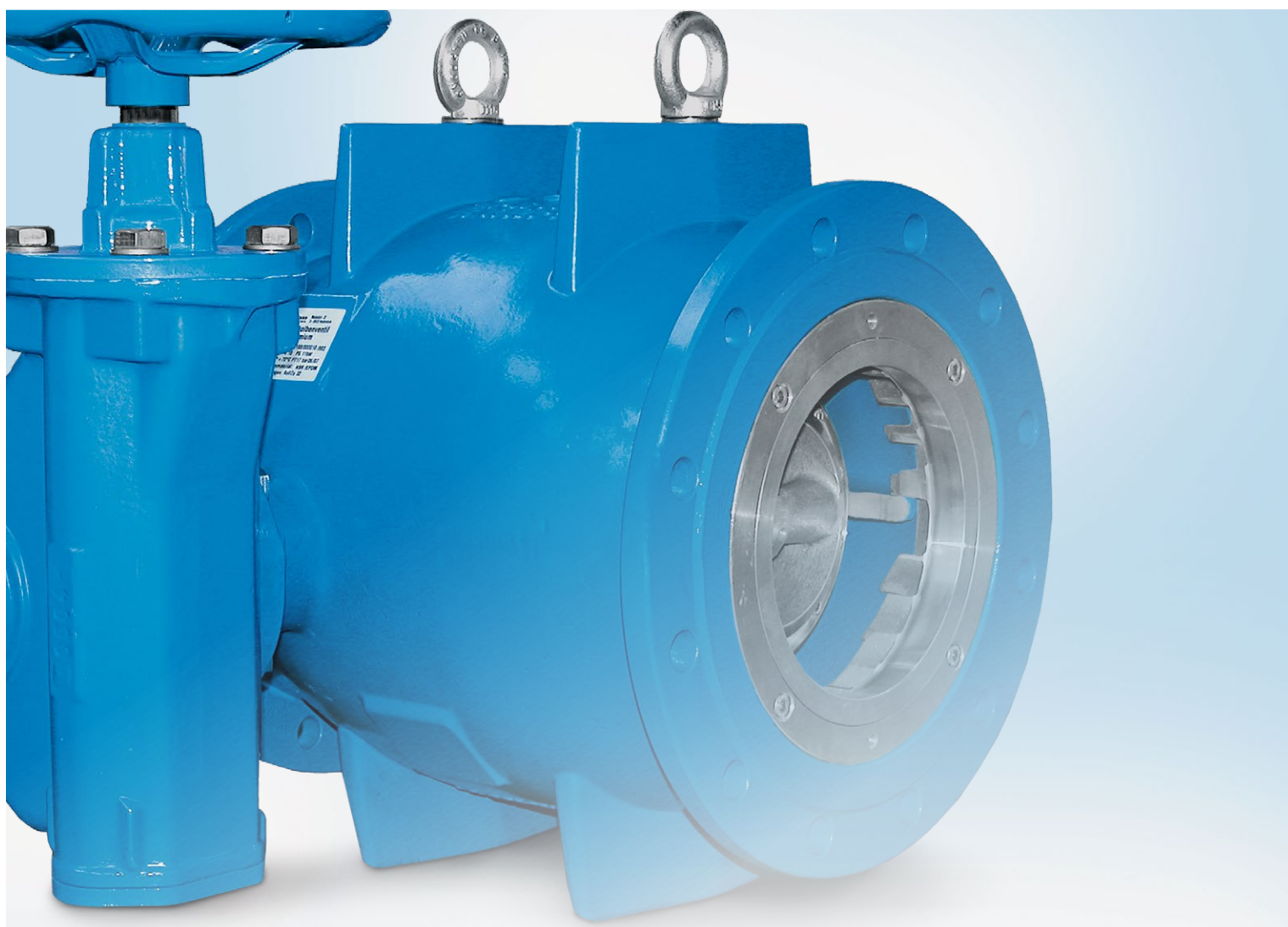


ERHARD is a company of



ERHARD

Data sheet ERHARD needle valves



ERHARD RKV needle valves

The innovative needle valve with the four positive points

Based on decades of experience in the design and production of needle valves – in addition to the product features of the ERHARD needle valve –, the ERHARD RKV Premium needle valve offers four major additional advantages:

- Optimised flow guidance [1] results in low zeta values thus enabling cost-effective operation since the pressure loss is lower. In addition, the formation of stagnant water is reliably prevented.
- The main seal up to 15 mm wide is located in the hydraulically uncritical pressure zone is completely embedded in a stainless steel chamber [2]. The resulting system offers optimum sealing and minimum wear at the same time.
- Using at least four wide guide strips [3] from a bronze-aluminium alloy, the piston weight force is being vertically and evenly distributed. This reduces wear and extends the service life.
- In contrast to conventional needle valves having a dead stroke of up to 18 %, the ERHARD RKV Premium needle valve can already be precisely controlled from 4 % opening which results in a control range of up to 96 %.



Operating instructions

BA36E006

BA36E007

BA38E000

BA38E005

ERHARD RKV needle valves – the dimensions table

DN	L	D	D	D	D	h1	h2	h3	h3	e1	e2	e3	u	G	G	G
		PN 10	PN 16	PN 25	PN 40			HR	EA					10	16	25/40
RKV Premium PN 10/16/25																
100	325	–	220	235	–	142	187	222	154	99	214	29	15	60	60	60
125	325	–	250	270	–	142	187	222	154	99	214	29	15	60	60	60
150	350	–	285	300	–	158	203	222	144	116	231	48	15	75	75	75
200	400	340	340	360	–	195	248	244	165	152	288	64	20	120	120	120
250	450	400	400	425	–	234	296	314	233	188	365	80	25	190	190	190
300	500	455	455	485	–	266	322	314	233	224	402	101	25	260	260	260
RKV PN 40																
100	325	–	–	–	235	142	183	250	215	118	205	30	32			59
125	325	–	–	–	270	142	183	250	215	135	205	30	32			59
150	350	–	–	–	300	158	198	260	225	150	225	45	32			73
200	400	–	–	–	375	195	243	260	225	188	265	65	32			117
250	450	–	–	–	450	234	290	310	272	225	322	80	32			188
300	500	–	–	–	515	266	322	310	272	258	357	100	32			262
RKV PN 10/16/25																
350	700	505	520	555	–	280	342	360	292	280	420	67	43	425	450	450
400	800	565	580	620	–	310	372	365	297	310	460	65	42	570	595	595
450	900	615	640	670	–	340	411	404	331	335	510	72	36	780	826	826
500	1000	670	715	730	–	380	451	409	336	370	545	98	43	875	945	945
600	1200	780	840	845	–	460	550	517	416	440	640	84	43	1660	1780	1780
700	1400	895	910	960	–	535	644	566	465	510	720	86	57	2125	2175	2265
800	1600	1015	1025	1085	–	610	719	571	470	585	800	81	52	3250	3295	3445
900	1800	1115	1125	1185	–	700	828	531	430	655	860	112	58	4250	4310	4500
1000	2000	1230	1255	1320	–	785	932	531	430	735	950	120	60	5650	5750	6000
1200	2400	1455	1485	1530	–	950	1118	570	465	870	1110	120	78	8200	8350	8500
RKVE PN 10/16/25																
500	800	670	715	730	–	310	372		297	310	460	65	42			595
600	900	780	840	845	–	380	451		336	310	545	98	43			1065
700	1100	895	910	960	–	460	550		416	440	640	84	43			1930
800	1300	1015	1025	1085	–	535	644		465	510	720	86	57			2465
900	1350	1115	1125	1185	–	610	719		470	585	800	81	52			3695
1000	1600	1230	1255	1320	–	700	828		430	655	860	112	58			4800
1200	1620	1455	1485	1530	–	785	932		430	735	950	120	60			6800

This table contains the dimensions of the standard products in the ERHARD needle valve range. Numerous other designs are available on request for higher pressure ratings or nominal sizes.

Dimensions used:

L [mm] Face-to-face dimensions

D [mm] Flange

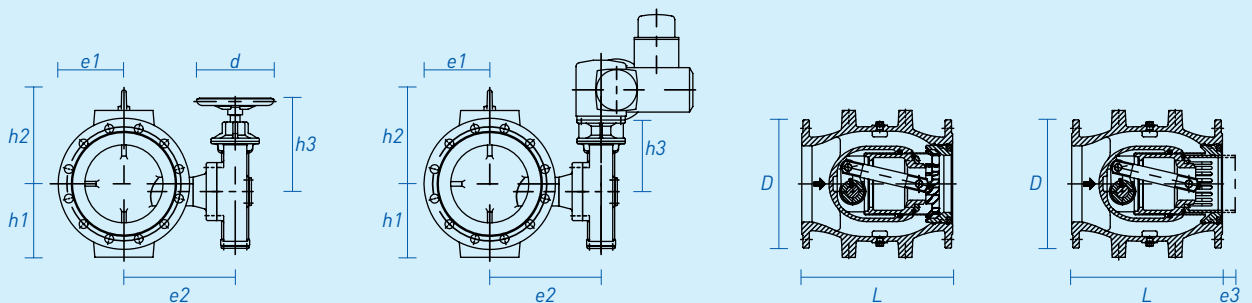
G [kg] Weight (approximate value, differs depending on the design)

u Handwheel revolutions (Open/Closed)

HR with handwheel

EA with electric rotary actuator (dimensions can vary depending on the actuator manufacturer)

Other actuator options available on request



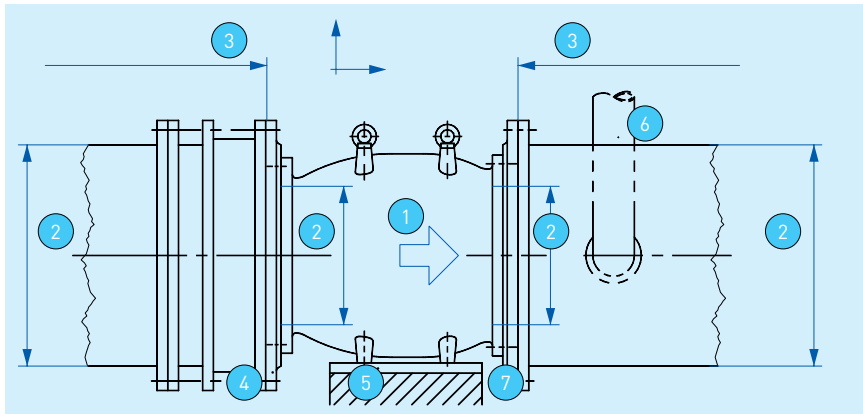
ERHARD RKV needle valves – the overview

Brief specifications: materials and finishes

- **Body:** DN 100-300 and DN 350-1200/PN 25: ductile cast iron EN-JS1050, DN 350-1200/PN 10-16: grey cast iron EN-JL1040
- **Piston guide:** on strips, DN 100-150: stainless steel; DN 200-300: special bronze, highly wear resistant; DN 350-1200 and DN 200-300/PN 40: special brass
- **Vaned ring:** bronze
- **Seat ring, slotted cylinder and perforated cylinder:** stainless steel
- **Gaskets/seals:** elastomer, KTW and W270 approval
- **Piston, shaft, slider crank, push rod, bolt:** stainless steel
- **Gearbox body:** grey cast iron EN-JL1040
- **Gearbox crank:** ductile cast iron EN-JS1050
- **Gearbox stem:** ferritic Cr-Ni steel
- **Stem nut:** special brass
- **Gearbox configuration:** in flow direction “right”; “left” or other arrangements are also possible
- **Corrosion protection of the body parts:** ERHARD EKB fusion bonded epoxy, colour “blue”, coat thickness > 250 µm. Further coating options possible, we would be pleased to advise you



Notes on project planning and installation



Installation information for the project planning

1. Standard ERHARD RKV needle valves are designed for installation in horizontal or vertical pipes, whereby it is important to ensure that the valve is installed in the pipe according to the flow arrow cast onto the pipe.
2. Nominal size reduction is possible, as ERHARD RKV needle valves are designed according to the flow velocity. We recommend achieving the transition to the pipe nominal size with abrupt extension flanges, which we can supply with the valve if required.
3. To ensure perfect operation, for velocities above 1.5 m/s we recommend a straight pipe section of at least 3-5 x DN upstream and 5-10 x DN downstream of the valve, within which there must be no fittings or valves.
4. If using an adapter or extension section, wherever possible, we recommend installing it in the pipe upstream of the ERHARD RKV needle valve.
5. Needle valves may not be used as the pipe support. The feet cast onto the housings are solely for supporting the valve and not as a pipe fixing point. On request, ERHARD RKV needle valves are supplied with baseplates mounted on the underside.
6. If using ERHARD needle valves in the bottom outlet, an appropriately dimensioned venting device must be installed downstream of the valve, which ERHARD can also supply on request, if the valve does not pump directly into the open air.
7. If on the other hand the valve pumps directly into the open air, a venting device is not necessary. In this case the valve is equipped with an outlet flange only.
8. Inline fixed throttling cylinder can be used for additional pressure reduction for installation in pipes.

Our engineers support you from the planning and design through to assembly – not least with valuable information for correct arrangement and optimum installation of the needle valve. In most cases the advice is based on installation drawings or sketches so that the planned installation location of the ERHARD needle valve can be evaluated. In addition, the following data is required:

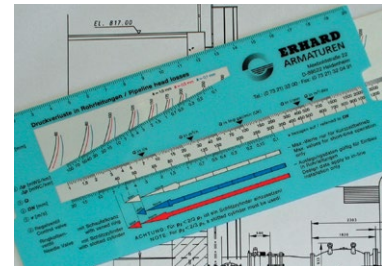
- Flow rates $Q_{max.}$ and $Q_{min.}$
- Pressure p_1 upstream of the valve at $Q_{max.}$ and $Q_{min.}$
- Back-pressure p_2 downstream of the valve at $Q_{max.}$ and $Q_{min.}$
- Operating medium, any water analysis available
- Area of use (control device, bottom outlet, etc.)
- Required actuator type
- Operating mode (continuous or short-term operation, etc.)

You can also refer to our "ERHARD needle valve questionnaire" which lists all the data required. They are also used as the basis of the calculations in the calculation program available on CD-ROM.

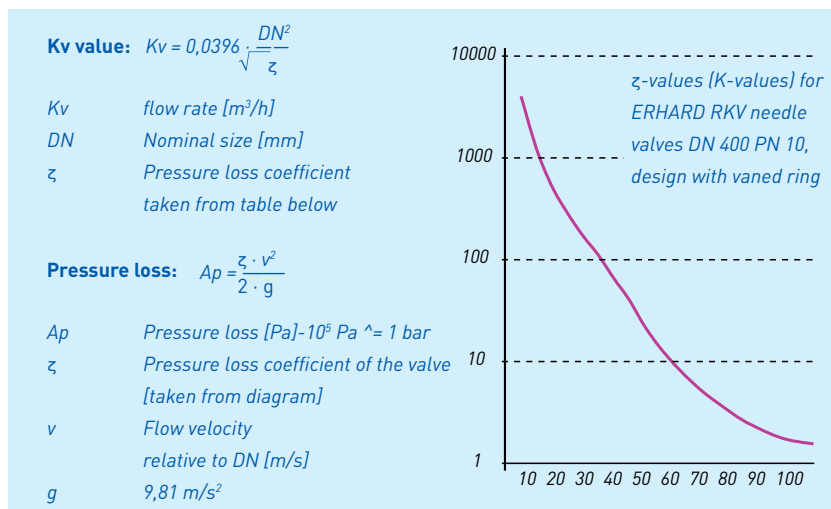
Perfect calculation made easy

z values (K-values) or Kvs values can be used to calculate the pressure loss for installation in pipes. Special calculations are necessary for special uses (e. g. as bottom outlet, pump bypass, turbine inlet or bypass valve); our engineers would be pleased to perform these calculations for you.

The Kvs value is the Kv value for a 100 % open valve, which describes the water flow rate in m³/h at a temperature of 5 to 30 °C and with a pressure loss of 1 bar.



For easy calculation, ERHARD would be pleased to provide you with this practical slide rule or a calculation program on CD-ROM.



Pressure loss coefficients <i>z</i> in open position				Kvs values (m³/h)					
				One-piece body			Multipart body		
DN	Seat ring	Vaned ring	Slotted cylinder	DN	Vaned ring	Slotted cylinder	DN	Vaned ring	Slotted cylinder
100	1,0	1,2	3,1	100	365	230	100	*	
125	2,7	2,9	8,3	125	366	220	125	*	
150	1,6	2,4	7,3	150	580	330	150	*	
200	1,3	1,6	7,6	200	1.260	580	200	*	
250	1,9	2,5	8,5	250	1.580	860	250	*	
300	1,4	1,9	7,6	300	2.610	1.310	300	*	
350	*	1,5	6,5				350	4.000	1.900
400	*	1,5	6,5				400	5.220	2.510
450	*	1,5	6,5				450	6.610	3.180
500	*	1,5	6,5				500	8.160	3.920
600	*	1,5	6,5				600	11.700	5.650
700	*	1,5	6,5				700	16.000	7.680
800	*	1,4	6,5				800	21.600	10.040
900	*	1,4	6,5				900	27.300	12.700
1000	*	1,3	*				1000	35.000	*
1200	*	1,1	*				1200	54.900	*
1400	*	1,1	*				1400	74.700	*
1600	*	1,0	*				1600	102.300	*
1800	*	1,0	*				1800	129.500	*

Special calculations incorporating the precise installation situation are necessary for the designs marked with an asterisk [*]; we would be pleased to perform these calculations for you on the basis of your own data. All values have been determined under practical conditions in ERHARD's in-house test centre.

Optimum actuators for every purpose

A large number of actuator options are available, depending on the mounting position and field of application, and thanks to standardised connections, they can also be easily replaced at any time.

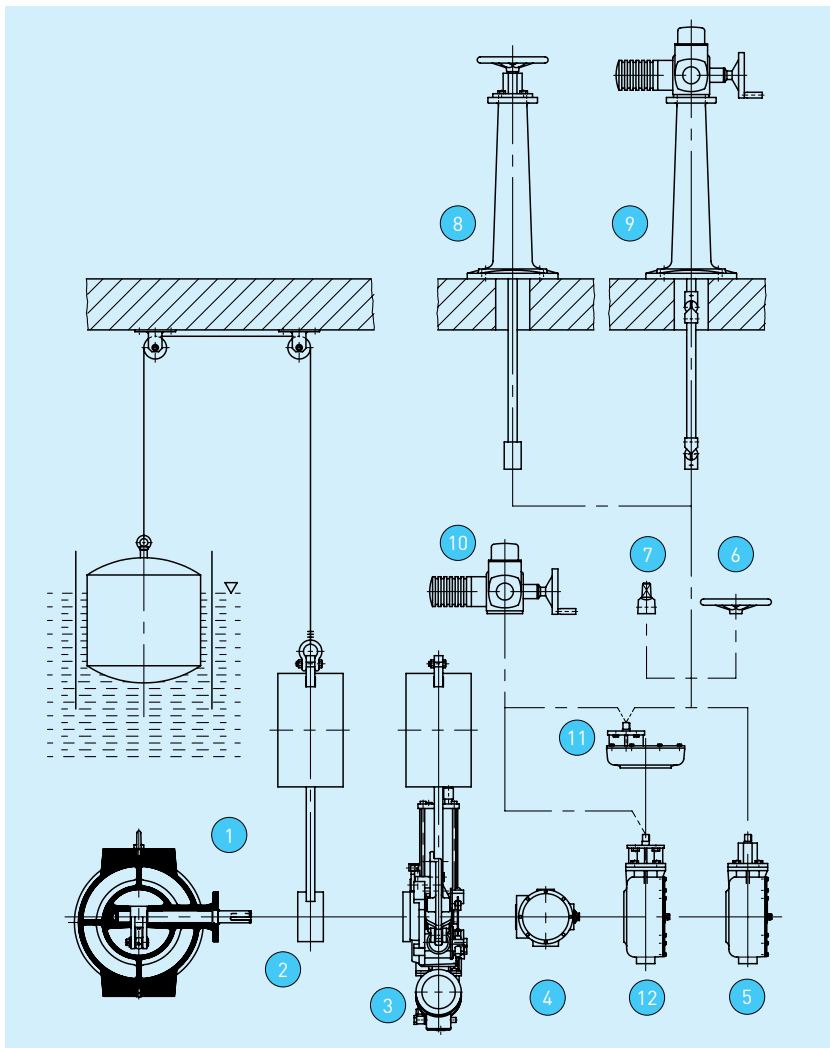
The following actuators can be inserted directly at the end of the actuator [1]:

- 2. Drop weight with float control
- 3. Drop weight actuator, hydraulic or hydro-electric
- 4. Double piston part turn actuator, pneumatic or hydraulic

The stem gearbox [5] can be directly combined with:

- 6. Handwheel
- 7. Square stem cap
- 8. Headstocks with handwheel and stem extension
- 9. Headstocks with electric rotary actuator and spindle extension

For use of electric rotary actuators [10], if necessary in combination with spur gearing [11], the stem gearbox is supplemented with a drive flange [12].



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