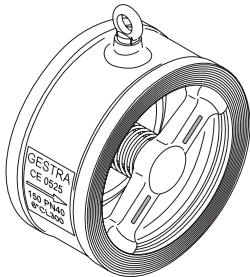


DN 15-100 mm (1/2 – 4")
Standard design fitted with M8 antistatic connection



DN 125-200 mm (5 – 8")
Standard design fitted with M8 antistatic connection

Non-Return Valve for Sandwiching between Flanges

PN 10/16/25/40, ASME Class 125/150/300

RK 86, RK 86A, DN 15-200, NPS 1/2-8

RKE 86, RKE 86A, DN 15-100, NPS 1/2-4

Description

RK and RKE non-return valves are used to prevent the return flow of fluid in pipes.

Only RKE non-return valves may be used as end valves (e.g. vacuum breakers). This equipment has passed the appropriate tests and bears the relevant markings, and must not be used with safety-relevant functions (e.g. safety valves). RKE non-return valves are only available with a metal valve disk.

Wafer-type non-return (check) valves for sandwiching between flanges, designed with closing spring for installation in any position. Without spring only for vertical lines with upward flow. Self-centring valve body. Suitable for liquid, gas and steam. Please note the classification according to the Pressure Equipment Directive (PED).

Pressure/temperature ratings

Type	T [°C]	DIN/EN, PN 40									Design	
		-200	-10	50	100	200	300	350	400	500		550
RK 86, RKE 86 DN 15 – 100	p [barg]		40.0	40.0	37.4	33.6	27.8					Metal-to-metal (standard)
	p [barg]		40.0	40.0	37.4	33.6	27.8	25.9				Metal-to-metal with Nimonic® springs
RK 86 DN 125 – 200	p [barg]		40.0	40.0	37.4	33.6	27.8					Metal-to-metal (standard)
	p [barg]		40.0	40.0	37.4	33.6	27.8	25.9	24.0			Metal-to-metal with Nimonic® springs

Type	T [°C]	DIN/EN, PN 40									Design	
		-200	-10	50	100	200	300	350	400	500		550
RK 86A, RKE 86A DN 15 – 100	p [barg]	40.0	40.0	40.0	38.1	30.2	25.8					Metal-to-metal (standard)
	p [barg]	40.0	40.0	40.0	38.1	30.2	25.8	24.6	23.5	22.2	20.7	Metal-to-metal with Nimonic® springs
RK 86A DN 125 – 200	p [barg]	40.0	40.0	40.0	38.1	30.2	25.8					Metal-to-metal (standard)
	p [barg]	40.0	40.0	40.0	38.1	30.2	25.8	24.6	23.5			Metal-to-metal with Nimonic® springs

Type	T [°C]	ASME, CL 300									Design	
		-200	-10	50	100	200	300	350	400	500		550
RK 86, RKE 86 DN 15 – 100	p [barg]		51.1	51.1	46.6	43.8	39.8					Metal-to-metal (standard)
	p [barg]		51.1	51.1	46.6	43.8	39.8	37.6				Metal-to-metal with Nimonic® springs
RK 86 DN 125 – 200	p [barg]	51.1	51.1	51.1	46.6	43.8	39.8					Metal-to-metal (standard)
	p [barg]	51.1	51.1	51.1	46.6	43.8	39.8	37.6	34.7			Metal-to-metal with Nimonic® springs

Type	T [°C]	ASME, CL 300									Design	
		-200	-10	50	100	200	300	350	400	500		538
RK 86A, RKE 86A DN 15 – 100	p [barg]	49.6	49.6	49.6	42.2	35.7	31.6					Metal-to-metal (standard)
	p [barg]	49.6	49.6	49.6	42.2	35.7	31.6	30.3	29.4	28.2	25.1	Metal-to-metal with Nimonic® springs
RK 86A DN 125 – 200	p [barg]	49.6	49.6	49.6	42.2	35.7	31.6					Metal-to-metal (standard)
	p [barg]	49.6	49.6	49.6	42.2	35.7	31.6	30.3	29.4			Metal-to-metal with Nimonic® springs

Valve seats

Valve disk/cone	t _{min} [°C]	t _{max} [°C]	Application	Leakage rate
Metal-to-metal RK(E) 86, DN 15-100	- 10	350	Liquid, gas, steam	EN 12266-1, P12, leakage rate C
Metal-to-metal RK 86, DN 125-200	- 10	400	Liquid, gas, steam	EN 12266-1, P12, leakage rate C
Metal-to-metal RK(E) 86A, DN 15-100	- 200	550	Liquid, gas, steam	EN 12266-1, P12, leakage rate C
Metal-to-metal RK 86A, DN 15-200	- 200	550	Liquid, gas, steam	EN 12266-1, P12, leakage rate C
PTFE, DN15 – 100	- 190	250	Aggressive fluids	EN 12266-1, P12, leakage rate C
PTFE, DN125 - 200	- 25	200	Aggressive fluids	EN 12266-1, P12, leakage rate C
EPDM	- 40	150	Water, condensate, steam	EN 12266-1, P12, leakage rate A
FPM	- 25	200	Mineral oil, gas, air	EN 12266-1, P12, leakage rate A

For additional information on chemical resistance go to www.gestra.com, and click on "Technical Support" and then "Chemical Resistance".

Optional features

- Nimonic spring
- Special springs: 20 mbar to 3000 mbar
- RK seat gasket: EPDM / FPM / PTFE
- Silicone-free
- Oil and grease free
- Pickled and passivated
- Orifice
- Sealing strip:
EN 1092, form B2 and ASME RFS (smooth finish)

Accessories

- RK stroke limiter

End connection

DIN ¹⁾	ASME	BS 10 ³⁾	JIS ⁴⁾
EN 1092, form B1 PN 10/16/25/40 ²⁾	B 16.1 Class 125 FF B 16.5 Class 150/300 RF	Table D, E, F, H, J	B2238 10K

¹⁾ DN 125 – 200 mm (5 – 8"): Form D or form E to EN 1092 on request.

²⁾ DN 15 – 100 mm (1/2 – 4") also suitable for PN 6.

³⁾ For installation between flanges DN 15 mm (1/2"), BS 10, tables H and J, please use RK 86/86 A, DN 20 mm (3/4").

⁴⁾ For installation between flanges JIS 10K as standard (except DN 80 mm (3"). When ordering please state nominal size (reworking required).

⁵⁾ Short overall length to EN 558, basic series 49 (\cong DIN 3202-3, series K4)

Dimensions and weights

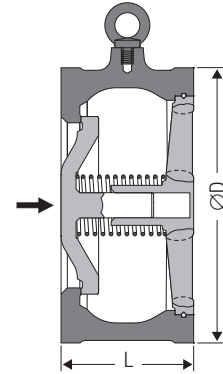
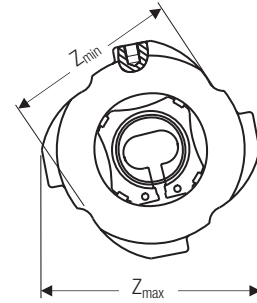
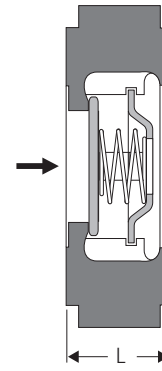
Nominal size	[mm]	15	20	25	32	40	50	65	80	100	125	150	200
	[inch]	½	¾	1	1¼	1½	2	2½	3	4	5	6	8
Dimensions	L ⁵⁾	16	19	22	28	31.5	40	46	50	60	90	106	140
[mm]	Z _{min}	44	53	64	73	83	96	110	128	151			
	Z _{max}	67	76	82	93	104	118	136	158	186			
Ø D	PN 10/16										194	220	275
	PN 25										194	226	286
	PN 40										194	226	293
	Class 125/150										194	220	275
	Class 300										216	251	308
Weight	[kg]	0.27	0.38	0.52	0.8	1.12	1.78	2.43	3.37	5.34	11	14	25

⁵⁾ Short overall length to EN 558, basic series 49 (\cong DIN 3202-3, series K4)

Materials

DN 15–100 (1/2–4")		DIN/EN	ASTM/ASME	Category
Body, seat and guide ribs	RK 86, RKE 86	1.4317	A 743 CA-6NM	Chromium steel
	RK 86A, RKE 86A	1.4408	SA 351 CF8M	Stainless steel
Valve disk, spring retainer		1.4571		Stainless steel
Closing spring				Stainless steel
DN 125–200 (1/2–4")		DIN/EN	ASTM/ASME	Category
Body	RK 86	1.0619	SA 216 WCB	Cast steel (carbon steel)
	Hard-faced seat	1.4502		
	RK 86A	1.4408	SA 351 CF8M	Stainless steel
Cone	RK 86	1.4006	SA 182 F6A	Chromium steel
Guide	RK 86	1.4107		Chromium steel
Cone	RK 86A	1.4404	SA 182 F316L	Stainless steel
Guide	RK 86A	1.4408		Stainless steel
Closing spring	RK 86, RK 86A	1.4571		Stainless steel

For use in pure steam installations, the food industry, pharmaceuticals and similar, please order the RK 86A in the pickled version.



Non-Return Valve for Sandwiching between Flanges PN 10/16/25/40, ASME Class 125/150/300

RK 86, RK 86A,

DN 15-200, NPS 1/2-8

RKE 86, RKE 86A,

DN 15-100, NPS 1/2-4

Opening pressures

Differential pressure at zero volume flowrate.

DN	Opening pressures [mbar]			
	without spring	Direction of flow		
		↑	↑	→
15	2.5	10	7.5	5
20	2.5	10	7.5	5
25	2.5	10	7.5	5
32	3.5	12	8.5	5
40	4.0	13	9	5
50	4.5	14	9.5	5
65	5.0	15	10	5
80	5.5	16	10.5	5
100	6.5	18	11.5	5
125	12.5	35	22.5	10
150	14.0	38	24.0	10
200	13.5	37	23.5	10

Special springs (spiral/disk springs) between 20mbar and 3000 mbar are available for an additional charge.

Enquiry specification

GESTRA DISCO Non-Return Valve
RK 86 / RK 86A / RKE 86 / RKE 86A

DN:

RK valve seat: metal-to-metal / EPDM / FPM / PTFE

RKE valve seat: metal-to-metal

Wafer-type non-return valve for sandwiching between flanges PN 6/10/16/25/40, Class 150/300

Short overall length to EN 558, basic series 49

RK/RKE, DN 15-100:

Closing spring: 1.4571, opening pressure: 5 mbar for upward, downward or horizontal flow. Patented fixed centring cams ensure easy and accurate alignment between flanges and optimum guidance in horizontal and vertical pipes. Connection for electrostatic discharge line, larger inlet and outlet sealing surfaces, specially designed spring caps ensure centric spring support.

RK, DN 125-200:

Closing spring: 1.4571, opening pressure: 10 mbar for upward, downward or horizontal flow. Adjusted diameter ensures accurate body centring, eyebolts simplify installation. Connection for electrostatic discharge line, valve disk is centrally aligned and guided by ribs, RK 86 has a hardened seat, centric cone and spring guides unaffected by dirt.

Please note:

The chosen non-return valve must ensure that the minimum volume flowrate keeps the valve disk in the open position (see pressure drop chart, "Full opening/stable range"). Systems with a pulsating flow, e.g. with compressors, may require specially designed non-return valves. If in doubt please consult us and we will carry out the pressure drop calculation and select a suitable valve.

Please note our general terms of business.

Pressure drop chart

The curves in the chart are valid for water at 20°C. To read the pressure drop for other fluids, calculate the equivalent water volume flowrate \dot{V}_w and use it in the chart.

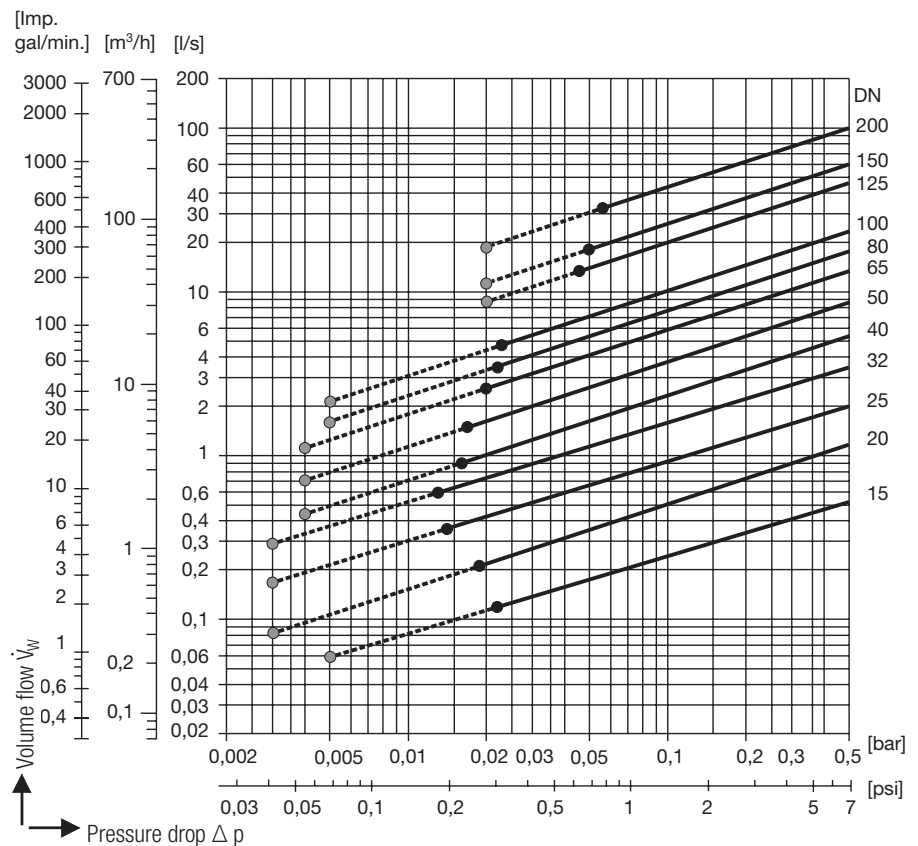
Pressure drops in the chart apply to spring-assisted valves for use in horizontal pipes and to valves without spring for use in vertical pipes with upward flow.

$$\dot{V}_w = \dot{V} \cdot \sqrt{\frac{\rho}{1000}}$$

\dot{V}_w = equivalent water volume flowrate in l/s or m³/h

ρ = density of fluid (operating state) in kg/m³

\dot{V} = volume flowrate of fluid (operating state) in l/s or m³/h



- Required minimum volume flowrate \dot{V}_w for valves without spring for use in vertical pipes with upward flow.
 - Required minimum volume flowrate \dot{V}_w for spring-assisted valves for use in horizontal pipes.
- In valves with stroke limiter, the required minimum volume flowrate is reduced by 40%.

When ordering please state

Fluid, flowrate, service pressure and temperature, standard of pipe flange.

Inspection & certification

Documentation regarding material and in-house tests with test report EN10204 available. All inspection requirements must be stated in the enquiry or in the order. Test certificates can no longer be issued once delivery has been made. The standard test scope and costs of the above-mentioned test certificates can be found in our price list "Test and Inspection Charges for Standard Equipment". If you require a different test scope, please request a separate quote.

Application of European Directives

Pressure Equipment Directive

The equipment conforms to this directive and can be used for the following fluids:

■ Fluids of groups 1 and 2

ATEX Directive

The RKE equipment is not suitable for use in potentially explosive atmospheres.

The RK equipment does not have its own potential ignition source and is therefore not subject to this directive.

Static electricity: Once installed, static electricity may arise between the equipment and the connected system.

If used in potentially explosive atmospheres, the plant manufacturer or owner is responsible for discharging or preventing possible static charge.

If it is possible for fluid to escape, e.g. through actuating mechanisms or leaks in threaded joints, the plant manufacturer or owner must take this into consideration when dividing the area into zones.

GESTRA AG

Münchener Straße 77, 28215 Bremen, Germany
Tel. +49 421 3503-0, Fax +49 421 3503-393
e-mail info@de.gestra.com, Web www.gestra.com

