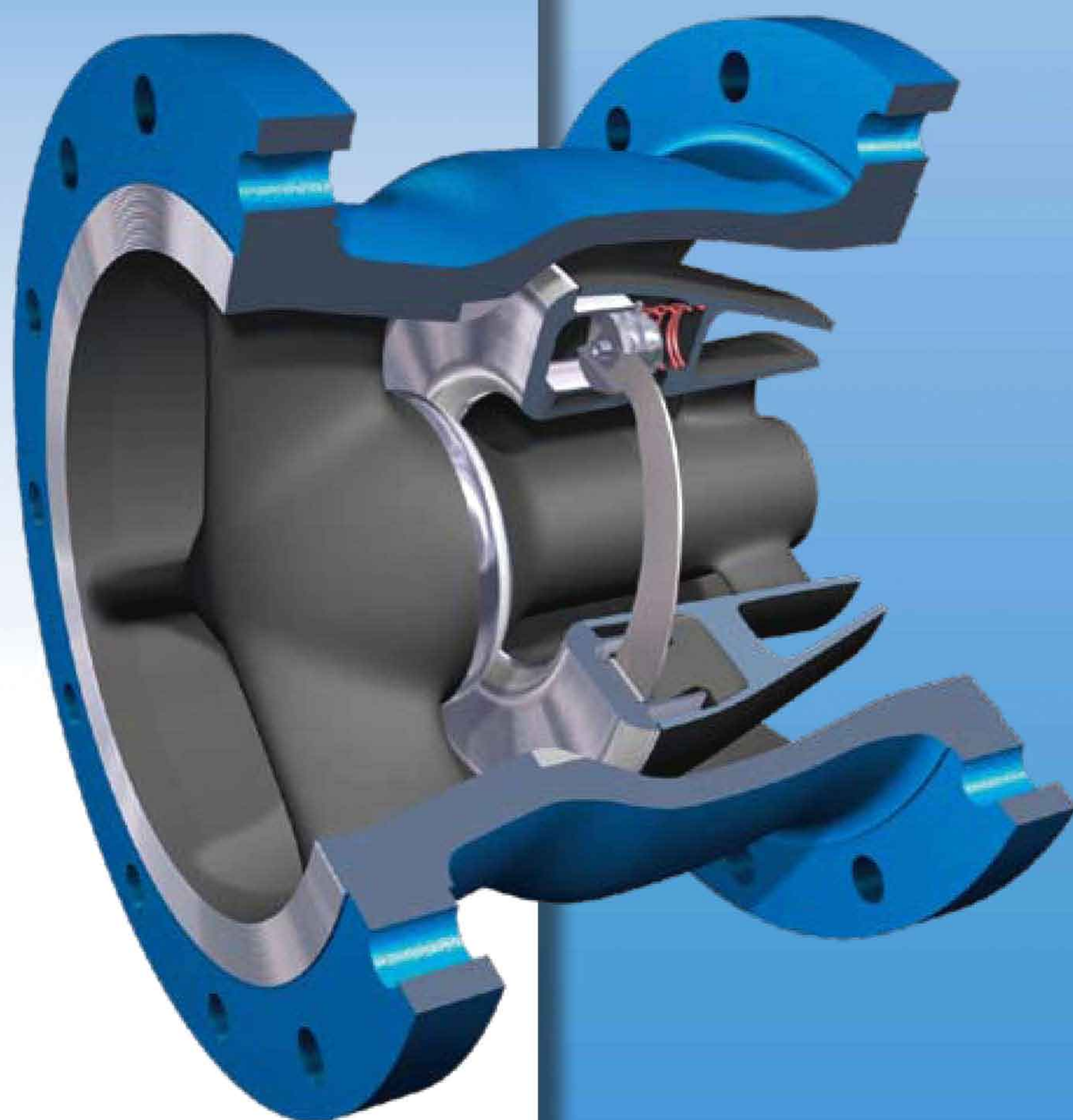


NoREVA

G
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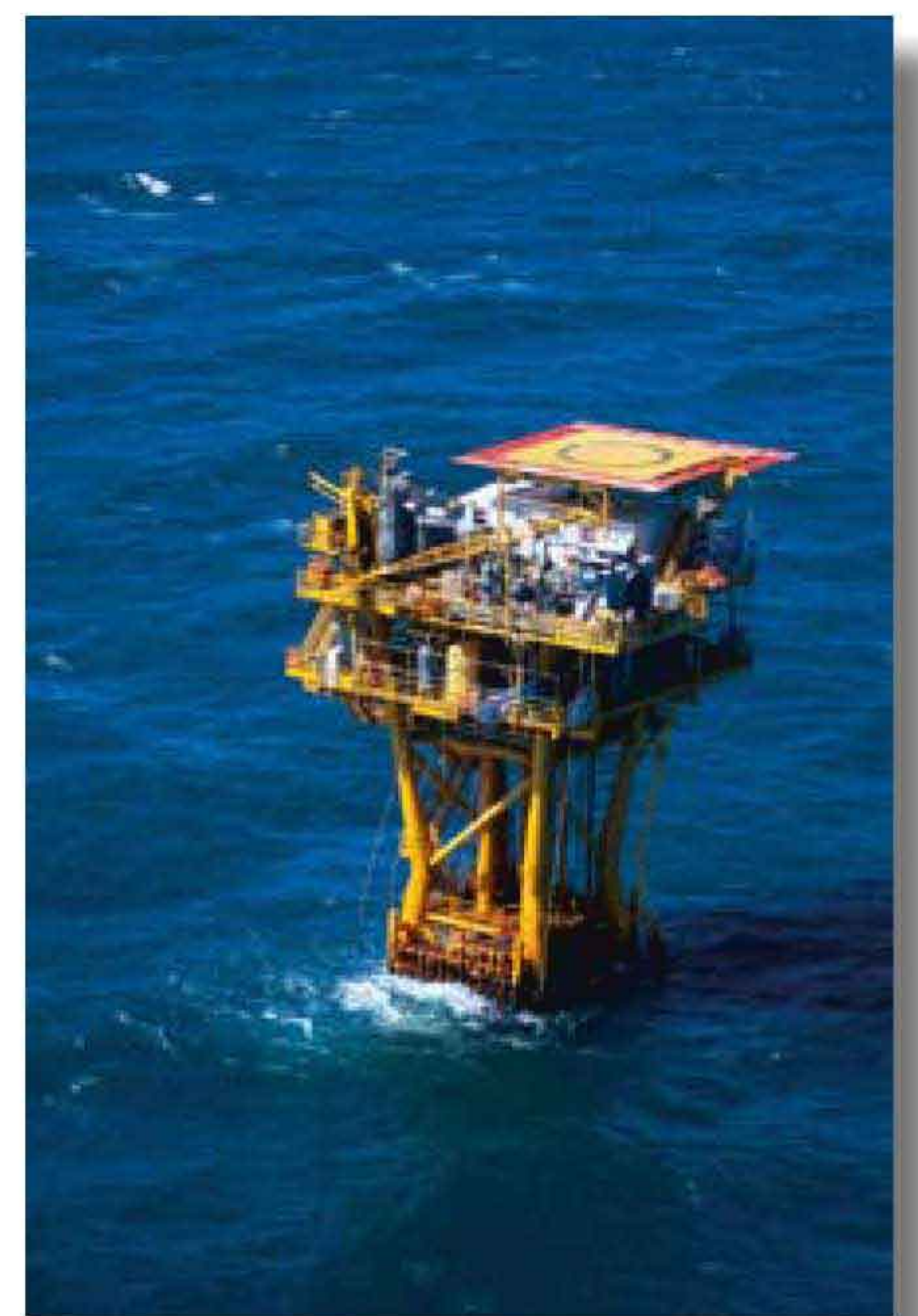
D ü s e n r ü c k s c h l a g v e n t i l e
N o n - R e t u r n - V a l v e s



PRODUCT CATALOGUE NOZZLE CHECK VALVES

Contents

<u>Page</u>	<u>Contents</u>
1	Nozzle Check Valves
2	Production
3	Manufacturing Program
4	NRV-ZK
6	NRV-ZSK
8	NRV-B
10	NRV-BK
12	NRV-G
13	NRV-Z NRV-K NRV-R
14	Standard Materials NRV-ZK NRV-ZSK
15	Standard Materials NRV-B NRV-BK
16	End Connections
17	Seat Details
18	Characteristics
19	Typical Applications
20	Quality Management



Nozzle Check Valves

NOREVA nozzle check valves are used in applications where the reverse flow of a fluid has to be avoided.

These valves are suitable for all kind of liquid and gaseous fluids and fire safe by design.

Typical applications are for example: oilpipelines, steel mills, chemical plants, water works, pumping stations, water distribution plants, power plants, compressor stations, etc.

The high economic efficiency of our nozzle check valves is a result of very low pressure losses and the maintenance-free design.

Due to short strokes and low moving masses the valves can close slam-free within fractions of seconds.

Competence, best possible customer service and flexibility are the basis of our success.

To us quality means fulfilling our customers' requests.

Judge us on this!



NRV-Z 250 PN 100 (10" ANSI 600)
Natural Gas Storage



NRV-Z 250 PN 10 (10" ANSI 125) and
NRV-G 400 PN 10 (16" ANSI 125)
Water Pumping Station



NRV-B 300 PN 100 (12" ANSI 600)
Natural Gas Storage



NRV-R 1000 PN 25 (40" ANSI 150)
Sea Water Pumping Station

Production



To guarantee the high quality level of our nozzle check valves, all main production steps will be executed at our workshop:

Incoming Inspection - Final Machining - Pressure Testing - Corrosion Protection - Assembly -
Final Inspection - Packing - Despatch

Manufacturing Program



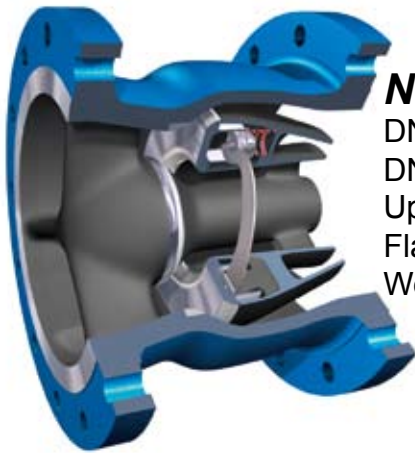
NRV-ZK

DN 25 (1") to DN 300 (12")
Up to PN 400 (ANSI 2500)
Flanged ends or
Welding ends



NRV-ZSK

DN 25 (1") to DN 300 (12")
Up to PN 400 (ANSI 2500)
Wafer type



NRV-B

DN 300 (12") to
DN 2200 (88")
Up to PN 400 (ANSI 2500)
Flanged ends or
Welding ends



NRV-BK

DN 300 (12") to
DN 2200 (88")
Up to PN 400 (ANSI 2500)
Flanged, Welding ends or
Wafer type



NRV-Z

DN 25 (1") to DN 250 (10")
Up to PN 400 (ANSI 2500)
Flanged ends or
Welding ends
Will be replaced by the

NRV-ZK



NRV-G

DN 250 (10") to
DN 1200 (48")
Up to PN 16 (ANSI 150)
Flanged ends only

NRV-K and **NRV-R** are still available on request,
but will be replaced by **NRV-ZSK** and **NRV-BK**.

Standard Face-to-Face Dimensions

DN		PN 10 - 40 ANSI 150		PN 63 - 100 ANSI 300 - 600		PN 160 ANSI 900		PN 250 ANSI 1500		PN 400 ANSI 2500	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
25	1	100	3,94	100	3,94	150	5,91	150	5,91	160	6,30
32	1 1/4	100	3,94	100	3,94	150	5,91	150	5,91	180	7,09
40	1 1/2	120	4,72	120	4,72	170	6,69	170	6,69	210	8,27
50	2	120	4,72	120	4,72	170	6,69	170	6,69	210	8,27
65	2 1/2	120	4,72	150	5,91	190	7,48	190	7,48	240	9,45
80	3	120	4,72	150	5,91	190	7,48	220	8,66	270	10,63
100	4	140	5,51	170	6,69	210	8,27	240	9,45	310	12,20
125	5	210	8,27	210	8,27	230	9,06	310	12,20	370	14,57
150	6	210	8,27	210	8,27	230	9,06	310	12,20	430	16,93
200	8	280	11,02	280	11,02	280	11,02	350	13,78	460	18,11
250	10	350	13,78	350	13,78	350	13,78	400	15,75	580	22,83
300	12	430	16,93	430	16,93	430	16,93	450	17,72	640	25,20

Weights

DN		PN 10 - 25 ANSI 150		PN 40 ANSI 300		PN 63 ANSI 400		PN 100 ANSI 600	
mm	inch	kg	lbs	kg	lbs	kg	lbs	kg	lbs
25	1	4	9	4	9	4	9	5	11
32	1 1/4	5	11	5	11	7	15	9	20
40	1 1/2	7	15	7	15	8	18	11	24
50	2	8	18	8	18	11	24	15	33
65	2 1/2	10	22	10	22	12	26	17	37
80	3	12	26	12	26	17	37	25	55
100	4	17	37	17	37	25	55	35	77
125	5	31	68	31	68	43	95	55	121
150	6	34	75	36	79	62	137	72	159
200	8	66	146	70	154	105	232	140	309
250	10	109	240	124	273	175	386	240	529
300	12	168	370	193	426	240	529	350	772

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

NRV-ZK

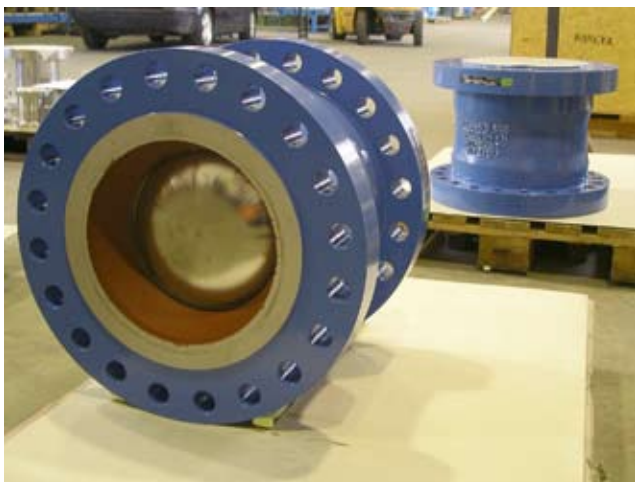
- Non-slam closure
- Very low pressure loss
- Short face-to-face length
- Low weight
- Metal sealing
- Maintenance free
- DN 25 (1") to DN 300 (12")
- Up to PN 400 (ANSI 2500)



The **NRV-ZK** is the advanced development of the well proven type NRV-Z. It is characterized by shorter face-to-face lengths and lower pressure losses. The **NRV-ZK** is suitable for all kind of liquid and gaseous fluids and all installation positions.

We only use metallic materials, but on request soft sealing can be offered.

Flanged in acc. with EN, ANSI, MSS, etc.
Welding or hub ends on request.



NRV-ZK 300 PN 100 (12" ANSI 600)



NRV-ZK 25 PN 25 (1" ANSI 150)

NRV-ZSK

Standard Face-to-Face Dimensions

DN		Face-to-Face Dimension	
mm	inch	mm	inch
25	1	45	1,77
32	1 1/4	50	1,97
40	1 1/2	60	2,36
50	2	67	2,64
65	2 1/2	67	2,64
80	3	73	2,87
100	4	91	3,58
125	5	115	4,53
150	6	137	5,39
200	8	182	7,17
250	10	228	8,98
300	12	273	10,75

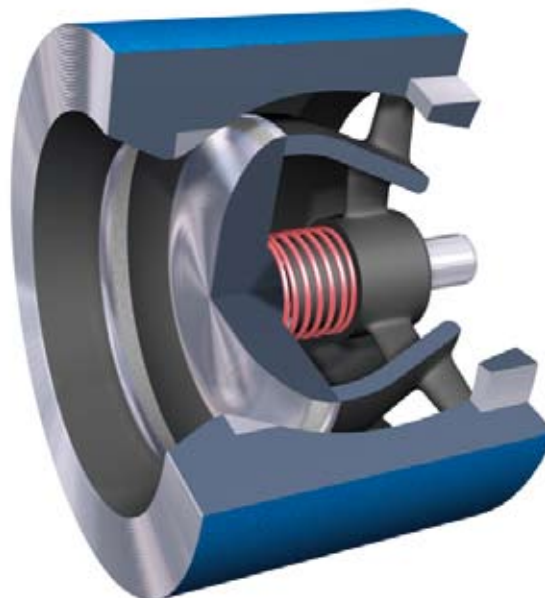
Weights

DN		PN 10 - 40 ANSI 150 - 300		PN 63 ANSI 400		PN 100 ANSI 600		PN 160 ANSI 900		PN 250 ANSI 1500	
mm	inch	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
25	1	1	2	2	4	2	4	3	7	3	7
32	1 1/4	1	2	2	4	2	4	3	7	3	7
40	1 1/2	2	4	3	7	3	7	3	7	3	7
50	2	3	7	4	9	4	9	8	18	8	18
65	2 1/2	4	9	6	13	6	13	10	22	10	22
80	3	6	13	8	18	8	18	11	24	12	26
100	4	9	20	12	26	15	33	18	40	19	42
125	5	14	31	18	40	25	55	29	64	31	68
150	6	19	42	30	66	38	84	45	99	46	101
200	8	40	88	54	119	75	165	85	187	90	198
250	10	76	168	88	194	130	287	160	353	175	386
300	12	100	221	120	265	170	375	240	529	280	617

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

NRV-ZSK

- Non-slam closure
- Low pressure loss
- Very short face-to-face length
- Very low weight
- Metal sealing
- Maintenance free
- DN 25 (1") to DN 300 (12")
- Up to PN 400 (ANSI 2500)



The new **NRV-ZSK** will replace the well proven wafer type check valve NRV-K. With very short face-to-face lengths the **NRV-ZSK** offers much lower pressure losses.

It is also suitable for all kind of liquid and gaseous fluids and all installation positions. Seat and disc are made of stainless steel, lapped in by hand. We only use metallic materials, but on request soft sealing can be offered.



NRV-ZSK 150 PN 100 (6" ANSI 600)



NRV-ZSK 150 PN 100 (6" ANSI 600),
Material 6Mo for Sea Water

NRV-B

Standard Face-to-Face Dimensions

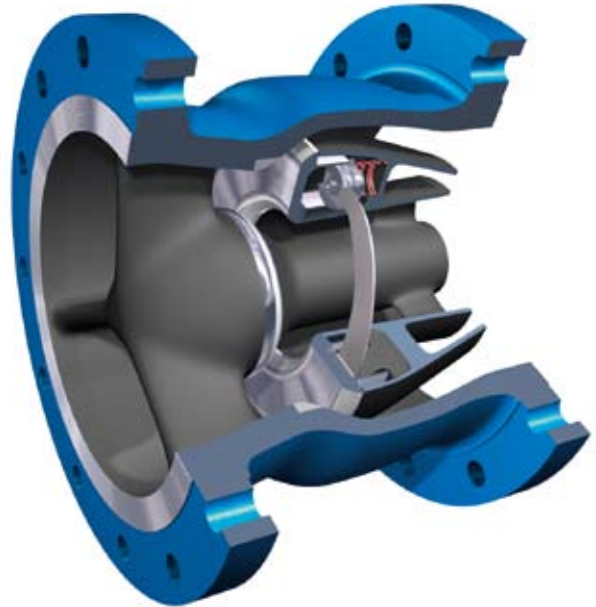
DN		PN 10 - 40 ANSI 150 - 300		PN 63 - 100 ANSI 400 - 600		PN 160 ANSI 900		PN 250 ANSI 1500		PN 400 ANSI 2500	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
300	12	350	13,78	375	14,76	340	13,39	440	17,32	580	22,83
350	14	405	15,94	440	17,32	400	15,75	490	19,29	600	23,62
400	16	455	17,91	500	19,69	470	18,50	530	20,87	680	26,77
450	18	520	20,47	565	22,24	530	20,87	580	22,83	730	28,74
500	20	570	22,44	625	24,61	595	23,43	655	25,79	780	30,71
600	24	685	26,97	745	29,33	665	26,18	750	29,53	910	35,83
700	28	800	31,50	870	34,25	860	33,86				
750	30	855	33,66	930	36,61	925	36,42				
800	32	910	35,83	990	38,98	925	36,42				
900	36	1030	40,55	1120	44,09	1050	41,34				
1000	40	1135	44,69	1240	48,82	1185	46,65				
1050	42	1195	47,05	1300	51,18	1250	49,21				
1200	48	1365	53,74	1485	58,46	1450	57,09				

Weights

DN		PN 10 - 25 ANSI 150		PN 40 ANSI 300		PN 63 - 100 ANSI 400 - 600		PN 160 ANSI 900		PN 250 ANSI 1500	
mm	inch	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
300	12	175	386	235	518	310	684	390	860	650	1433
350	14	245	540	330	728	410	904	510	1125	1040	2293
400	16	345	761	435	959	610	1345	760	1676	1280	2822
450	18	425	937	580	1279	790	1742	960	2117	1600	3528
500	20	560	1235	760	1676	1170	2580	1260	2778	2100	4631
600	24	890	1962	1240	2734	1630	3594	1980	4366	3300	7277
700	28	1330	2933	1800	3969	2450	5402	2890	6372		
750	30	1590	3506	2150	4741	2570	5667	3540	7806		
800	32	1990	4388	2200	4851	3200	7056	4900	10805		
900	36	2300	5072	3100	6836	4100	9041	5900	13010		
1000	40	3400	7497	3900	8600	5400	11907				
1050	42	3600	7938	4100	9041	5800	12789				
1200	48	5200	11466	6000	13230	8800	19404				

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

- **Non-slam closure**
- **Very low pressure loss**
- **Friction-free valve disc guiding**
- **Metal sealing**
- **Maintenance free**
- **DN 300 (12") to DN 2200 (88")**
- **Up to PN 400 (ANSI 2500)**



The uniqueness of this valve is characterized by the design of the valve disc ring which is guided friction-free by helical springs and our special radial guides.

That leads to the main advantages:

1. Very low pressure losses due to the two ring-shaped annular flow passes
2. Non-slam closure of the disc in fractions of a second

3. Excellent dynamic behaviour due to low moving masses and friction-free guiding of the disc.

Seat and disc are made of stainless steel, lapped in by hand.

Flanged in acc. with EN, ANSI, MSS, etc.
Welding or hub ends on request.



NRV-B 1500 PN 25 (60" ANSI 150)



NRV-B 400 PN 100 (16" ANSI 600),
Special Face-to-Face Length

NRV-BK

Standard Face-to-Face Dimensions

DN		PN 10 - 25 ANSI 150		PN 40 ANSI 300		PN 63 ANSI 400		PN 100 ANSI 600	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
300	12	181	7,13	181	7,13	229	9,02	229	9,02
350	14	215	8,46	222	8,74	273	10,75	273	10,75
400	16	245	9,65	245	9,65	305	12,01	305	12,01
450	18	264	10,39	264	10,39	362	14,25	362	14,25
500	20	305	12,01	305	12,01	368	14,49	368	14,49
600	24	370	14,57	370	14,57	394	15,51	438	17,24
700	28	430	16,93	430	16,93	480	18,90	480	18,90
750	30	460	18,11	460	18,11	505	19,88	505	19,88
800	32	500	19,69	500	19,69	584	22,99	584	22,99
900	36	560	22,05	560	22,05	635	25,00	635	25,00
*900	36	590	23,23						
1000	40	650	25,59	650	25,59	720	28,35	820	32,28
*1000	40	680	26,77						
1050	42	670	26,38	720	28,35	760	29,92	870	34,25
1200	48	740	29,13	840	33,07	930	36,61	970	38,19

*Special Face-to-Face Dimension Ductile Iron

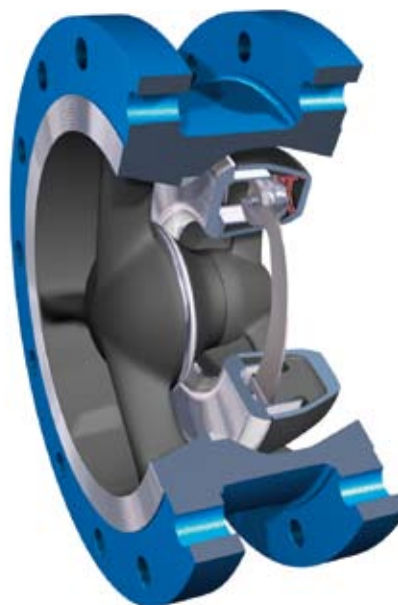
Weights

DN		PN 10 - 16		PN 25 ANSI 150		PN 40		ANSI 300		PN 63 ANSI 400		PN 100		ANSI 600	
mm	inch	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
300	12	115	254	105	232	135	298	155	342	180	397	260	573	240	529
350	14	140	309	160	353	190	419	230	507	280	617	380	838	320	706
400	16	185	408	230	507	280	617	340	750	380	838	505	1114	440	970
500	20	370	816	350	772	420	926	510	1125	610	1345	870	1918	740	1632
600	24	585	1290	560	1235	690	1521	780	1720	860	1896	1240	2734	1120	2470
700	28	750	1654	820	1808	960	2117	1250	2756	1400	3087	1900	4190	1600	3528
750	30	880	1940	950	2095	1000	2205	1330	2933	1420	3131	2100	4631	1760	3881
800	32	1070	2359	1090	2403	1290	2844	1500	3308	1770	3903	2450	5402	2100	4631
900	36	1500	3308	1600	3528	1830	4035	2100	4631	2370	5226	3070	6769	2800	6174
1000	40	2000	4410	2100	4631	2250	4961	2120	4675	2650	5843	3650	8048	3200	7056
1050	42	2300	5072	2500	5513	2550	5623	2600	5733	3100	6836	4550	10033	4100	9041
1200	48	2800	6174	3300	7277	3600	7938	3600	7938	4600	10143	6550	14443	5850	12899

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

NRV-BK

- Non-slam closure
- Low pressure loss
- Friction-free valve disc guiding
- Metal sealing
- Short face-to-face length
- Low weight
- Maintenance free
- DN 300 (12") to DN 2200 (88")
- Up to PN 400 (ANSI 2500)



The **NRV-BK** nozzle check valve combines the worldwide proven ring shaped valve disc / radial guide concept with short face-to-face lengths which of course leads to reduced costs. It replaces the type NRV-R.

The **NRV-BK** is suitable for all kind of liquid and gaseous fluids and all installation positions. It contains only metallic materials.

Flanged in acc. with EN, ANSI, MSS, etc.
Wafer type or welding ends on request.



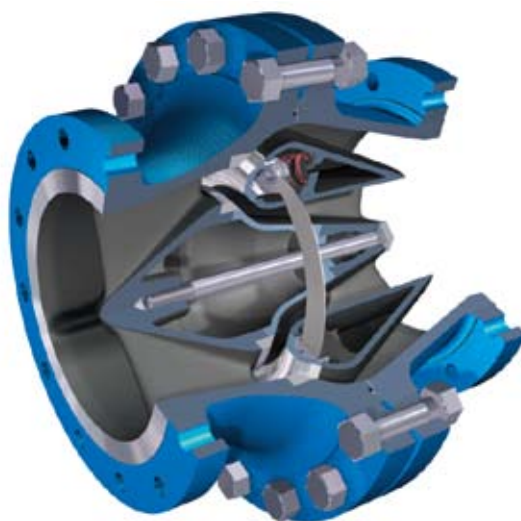
NRV-BK 1600 PN 16 and
300 PN 16 (64" and 12" ANSI 125)



NRV-BK 1000 PN 16 (40" ANSI 125)

NRV-G

- Non slam closure
- Lowest pressure loss
- Maintenance free
- Friction-free valve disc guiding
- DN 250 (10“) to DN 1000 (40“)
- Up to PN 16 (ANSI 150)



This type of nozzle check valve has been on the world market for more than 70 years. Today they are mainly used by the water industry for waterworks, power plants or iron- and steel mills.

The **NRV-G** series also has a ring-shaped valve disc which is guided friction free by helical springs and radial guides.



NRV-G 600 (24“) with bypasses, Pumping Station Mexico

Standard Face-to-Face Dimensions

DN		Face-to-Face Dimension	
mm	inch	mm	inch
250	10	425	16,73
300	12	500	19,69
350	14	600	23,62
400	16	675	26,57
450	18	750	29,53
500	20	850	33,46
600	24	1000	39,37
700	28	1150	45,28
800	32	1300	51,18
900	36	1450	57,09
1000	40	1600	62,99

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

NRV-Z

- Non slam closure
- Low pressure loss
- Maintenance free
- DN 25 (1") to DN 250 (10")
- Up to PN 400 (ANSI 2500)



Well proven at thousands of installations worldwide, the **NRV-Z** will still be produced, but replaced by the new, more efficient **NRV-ZK** in the near future.



NRV-Z 200 PN 400 (8" ANSI 2500) Refinery Brazil

Face-to-Face Dimensions

DN		Face-to-Face Dimension	
mm	inch	mm	inch
25	1	100	3,94
32	1 1/4	100	3,94
40	1 1/2	120	4,72
50	2	120	4,72
65	2 1/2	150	5,91
80	3	180	7,09
100	4	240	9,45
125	5	300	11,81
150	6	350	13,78
200	8	450	17,72
250	10	500	19,69

Face-to-Face dimensions and weights for other diameters and higher pressure classes on request.

NRV-K



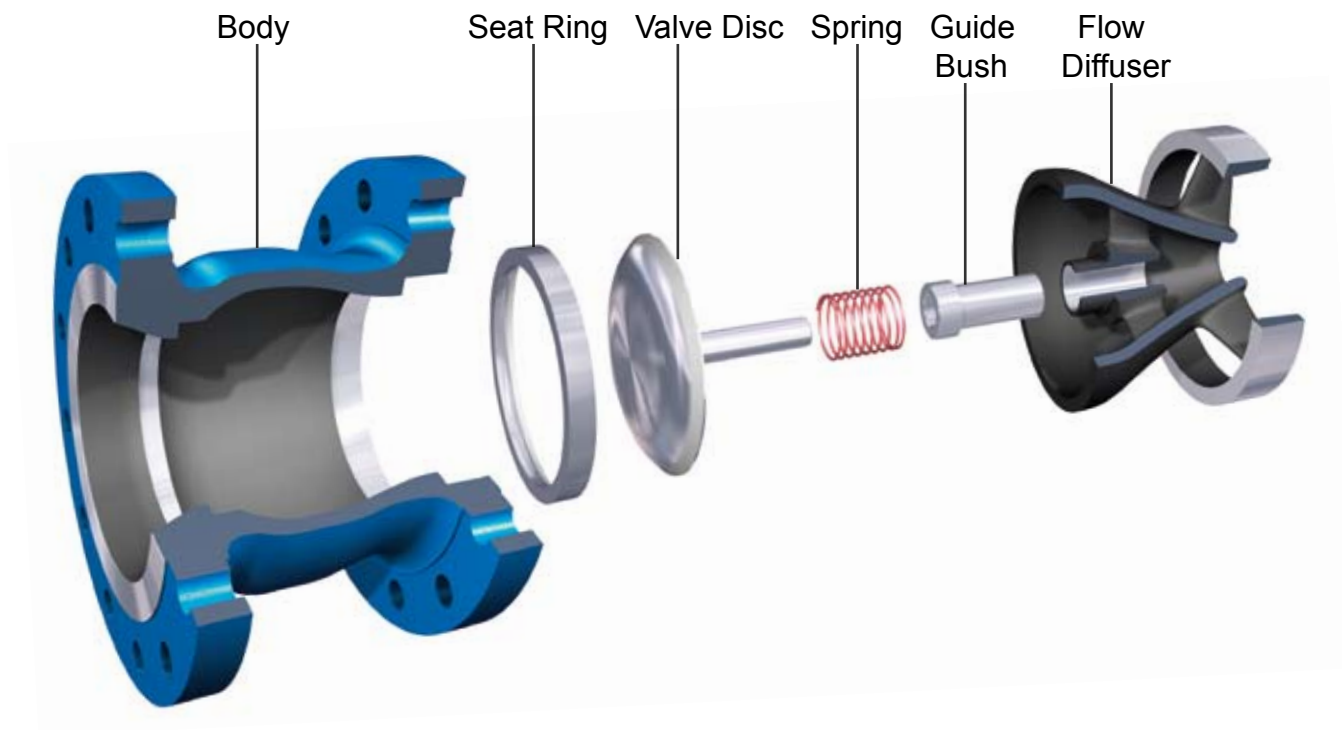
The **NRV-K** and **NRV-R** will be replaced by their advanced developments **NRV-ZSK** and **NRV-BK**, but will still be available on request. Spare parts supply is guaranteed.

NRV-R



Standard Materials

Valve Types **NRV-ZK** and **NRV-ZSK**

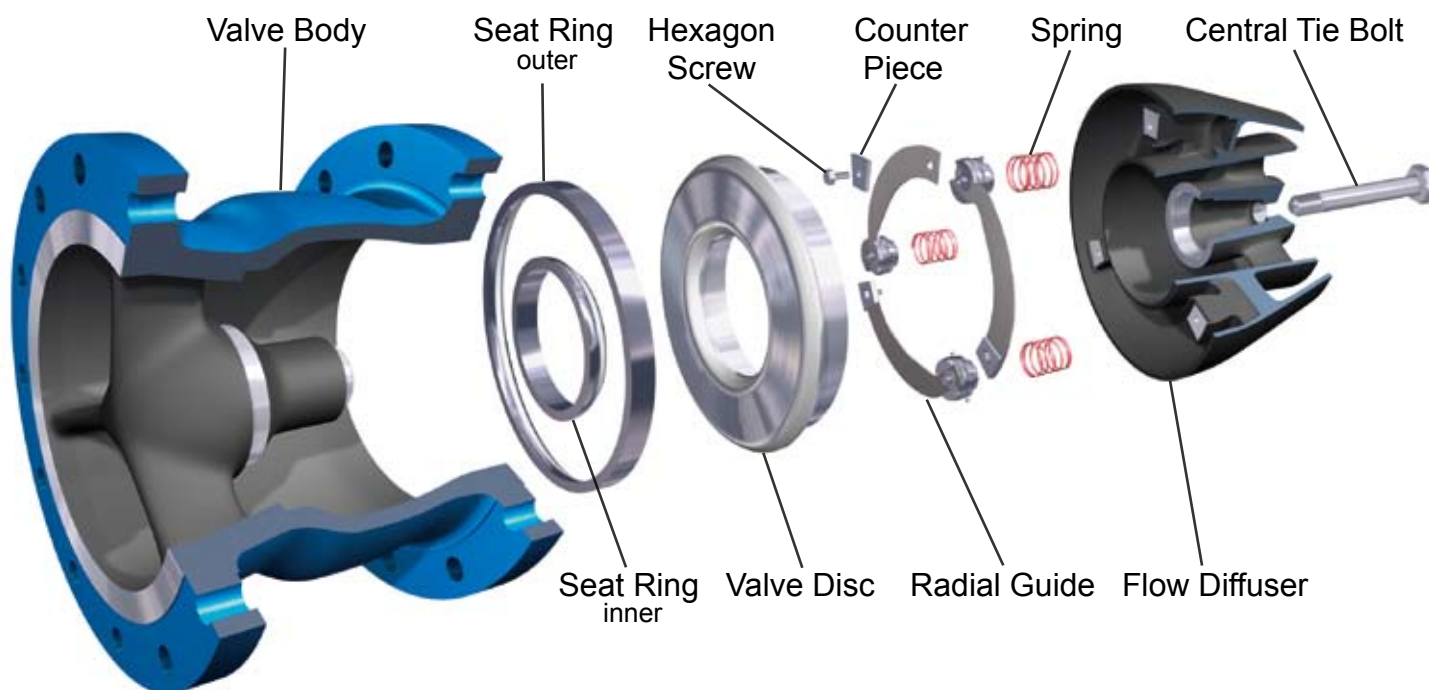


Denomination	Ductile Iron	Carbon Steel	Stainless Steel
Body	ASTM A 395	ASTM A 216 WCB	ASTM A 351 CF8M
Seat Ring	AISI 431	AISI 431	ASTM A 351 CF8M
Valve Disc	AISI 431	AISI 431	AISI 316
Spring	AISI 316	AISI 316	AISI 316
Guide Bush	AISI 431	AISI 431	AISI 316
Flow Diffuser	ASTM A 395	ASTM A 395	ASTM A 351 CF8M

Materials according to customers request, such as Low Temperature Carbon Steel, Nickel-Aluminium-Bronze, Duplex, Superduplex, 6Mo, etc. are our speciality!

Standard Materials

Valve Types **NRV-B** and **NRV-BK**



Denomination	Ductile Iron	Carbon Steel	Stainless Steel
Valve Body	ASTM A 395	ASTM A 216 WCB	ASTM A 351 CF8M
Seat Ring	AISI 431	ASTM A 743 CB 30	ASTM A 351 CF8M
Valve Disc	AISI 431	ASTM A 743 CB 30	ASTM A 351 CF8M
Hexagon Screw	ASTM A 193 B8M	ASTM A 193 B8M	ASTM A 193 B8M
Counter Piece	AISI 316	AISI 316	AISI 316
Radial Guide	AISI 316	AISI 316	AISI 316
Spring	AISI 316	AISI 316	AISI 316
Flow Diffuser	ASTM A 395	ASTM A 395	ASTM A 351 CF8M
Central Tie Bolt	ASTM A 193 B7 - B8M	ASTM A 193 B7 - B8M	ASTM A 193 B8M

Materials according to customers request, such as Low Temperature Carbon Steel, Nickel-Aluminium-Bronze, Duplex, Superduplex, 6Mo, etc. are our speciality!

End Connections



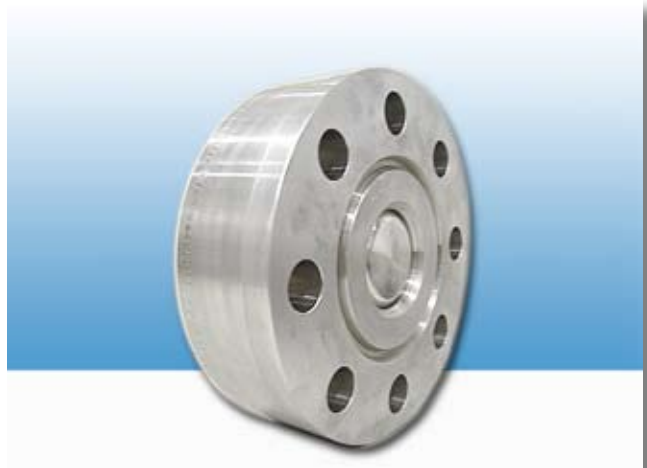
Flanges: in acc. with EN, ANSI, MSS, API, etc.
Valve Types: NRV-ZK, NRV-B, NRV-BK



Welding Ends: in acc. with EN, ANSI, API, etc.
Valve Types: NRV-ZK, NRV-B, NRV-BK



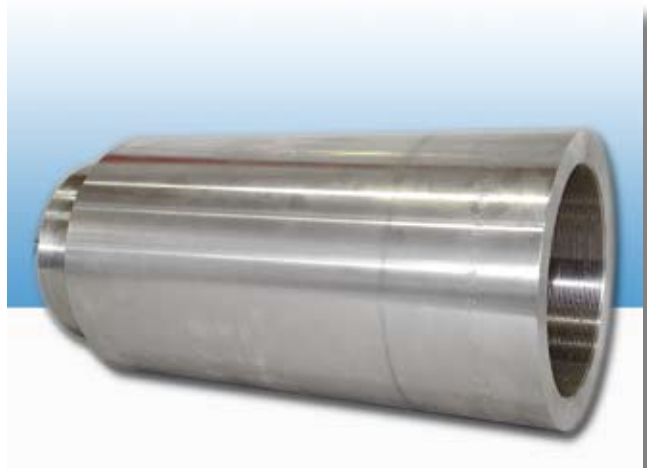
Wafer Type: in acc. with EN, ANSI, MSS, API, etc.
Valve Types: NRV-ZSK, NRV-BK



Fully Lugged Wafer Type: in acc. with EN, ANSI, MSS, API, etc.
Valve Types: NRV-ZSK, NRV-BK



Hub Ends: in acc. with Grayloc®, Techlok®, etc.
Valve Types: NRV-ZK, NRV-B

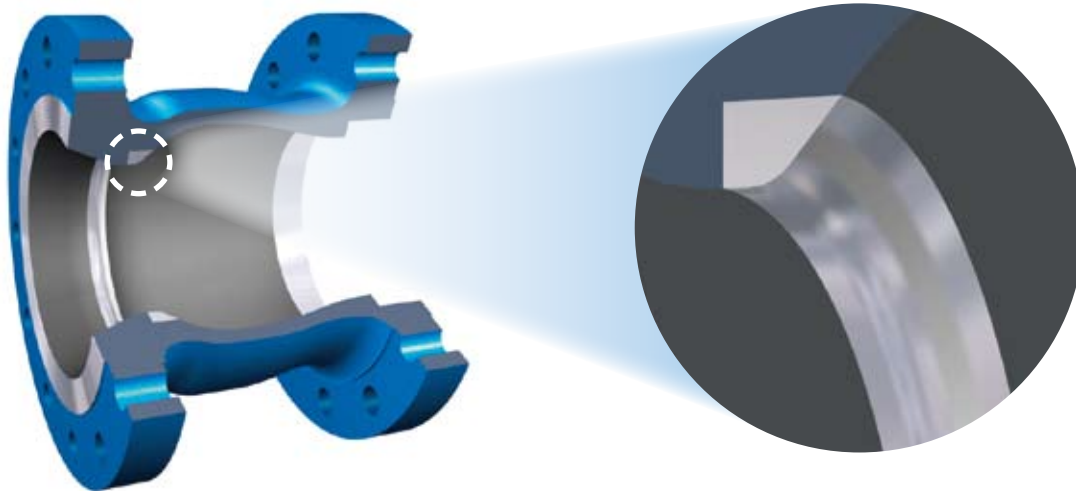


Threaded Ends:
Valve Type: NRV-ZK

Seat Details

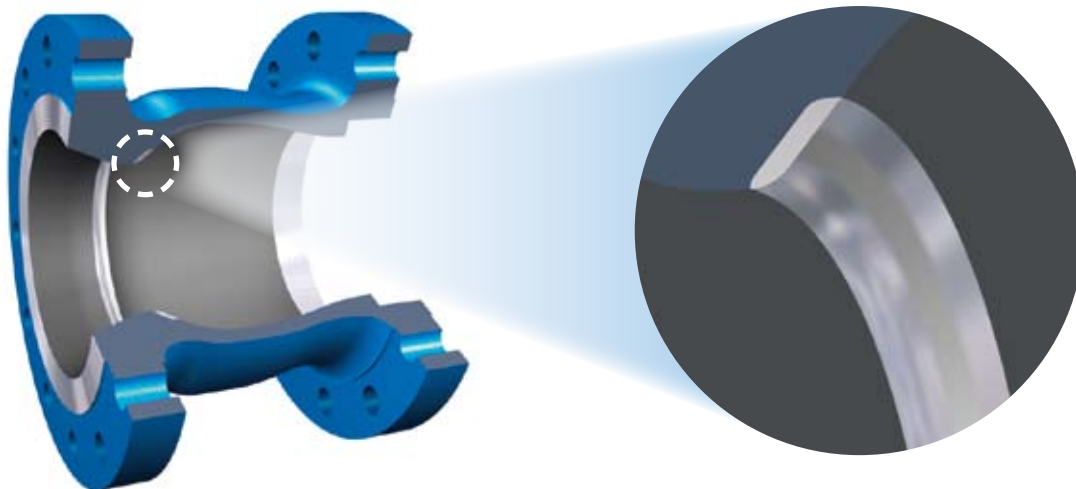
Seat Ring:

Bronze, Stainless Steel, Duplex, Operating Temperature max. +160°C



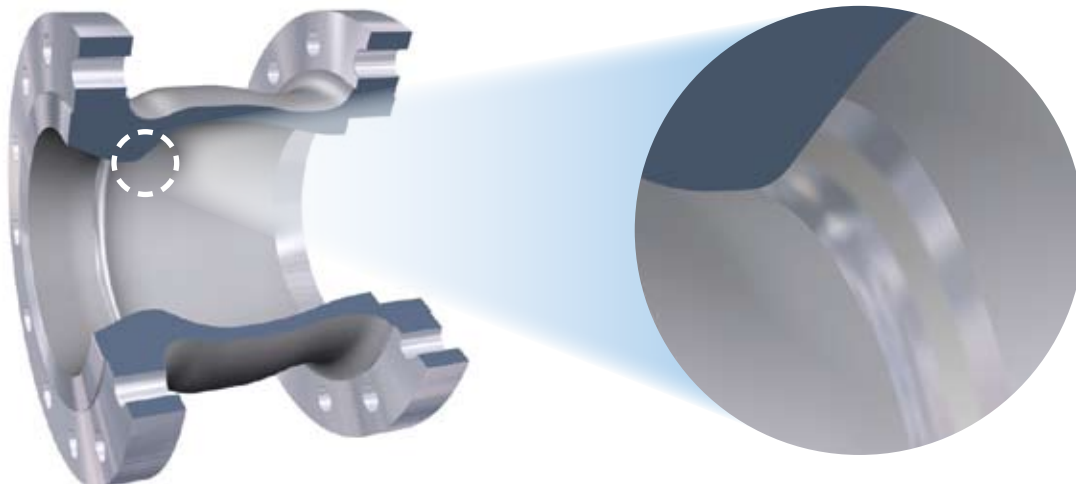
Hardfacing:

Stainless Steel, Stellite



Integral:

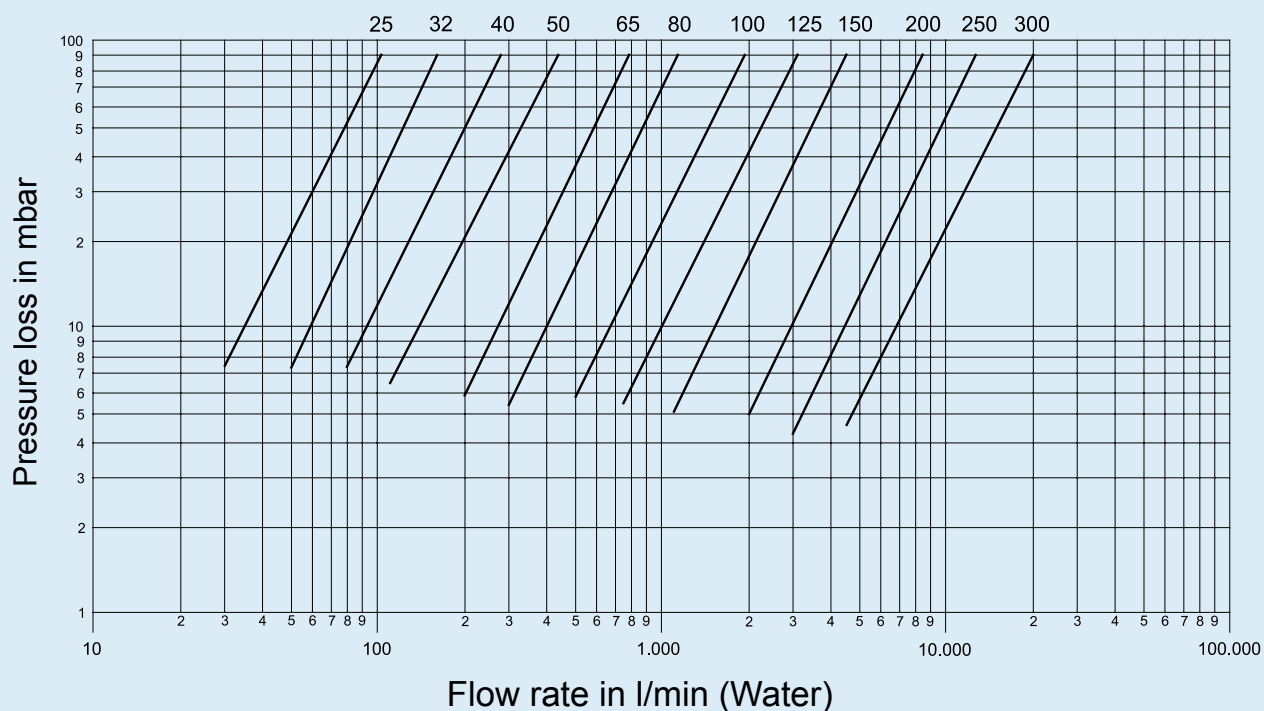
All non-corrosive body materials



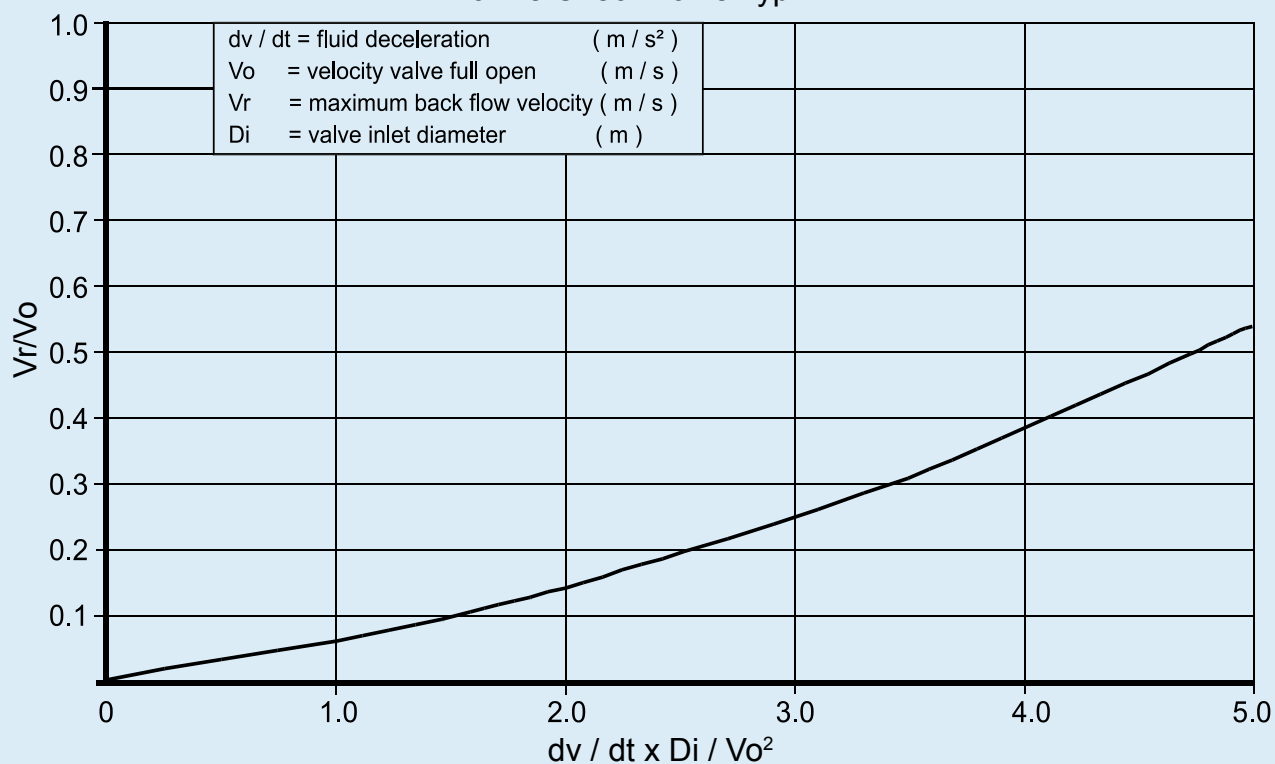
Characteristics

Pressure losses Nozzle Check Valves Type **NRV-ZK**

Valve fully open at 1,0 m/s (Water)

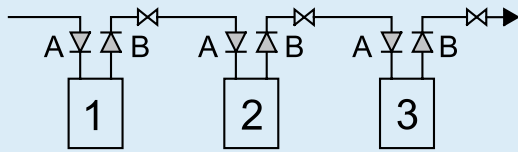


Dimensionsless Dynamic Curve of the Nozzle Check Valve Typ **NRV-ZK**



Typical Applications

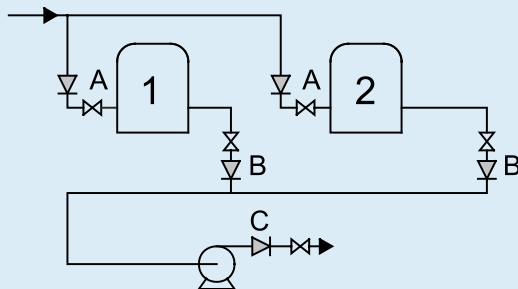
Compressor Station



Valve A: Suction line - prevention of backflow through compressor.

Valve B: Discharge line - prevention of backflow through compressor. Avoidance of reverse rotation of compressor leading to mechanical damage and line depressurization.

Tank Farm

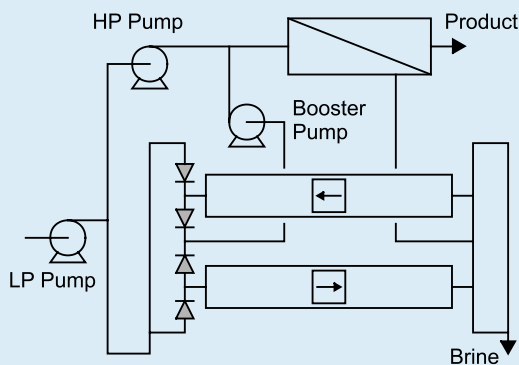


Valve A: Prevention of backflow from tanks. Avoidance of loss of fluid in event of supply line rupture.

Valve A & B: Prevention of cross flow between tanks of different levels. Avoidance of over pressurization, excessive vacuum and contamination.

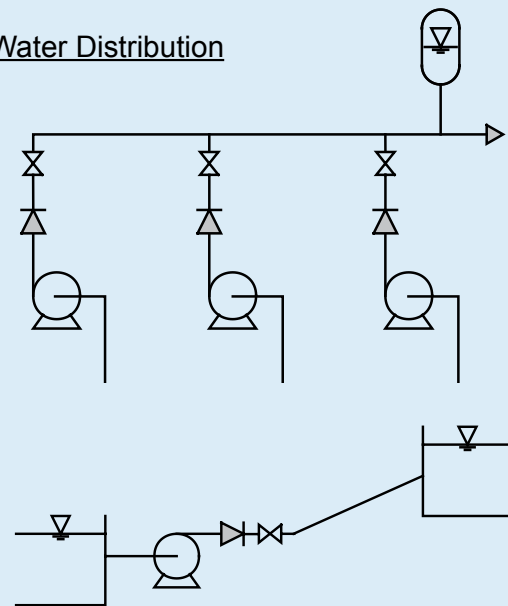
Valve C: Prevention of backflow into pump. Avoidance of reverse rotation leading to mechanical damage. Protection against loss of inventory in event of pump supply line rupture.

Desalination Plant



Prevention of backflow and pressure surge. Energy saving due to low pressure losses. Reliability at about one million strokes per year.

Water Distribution



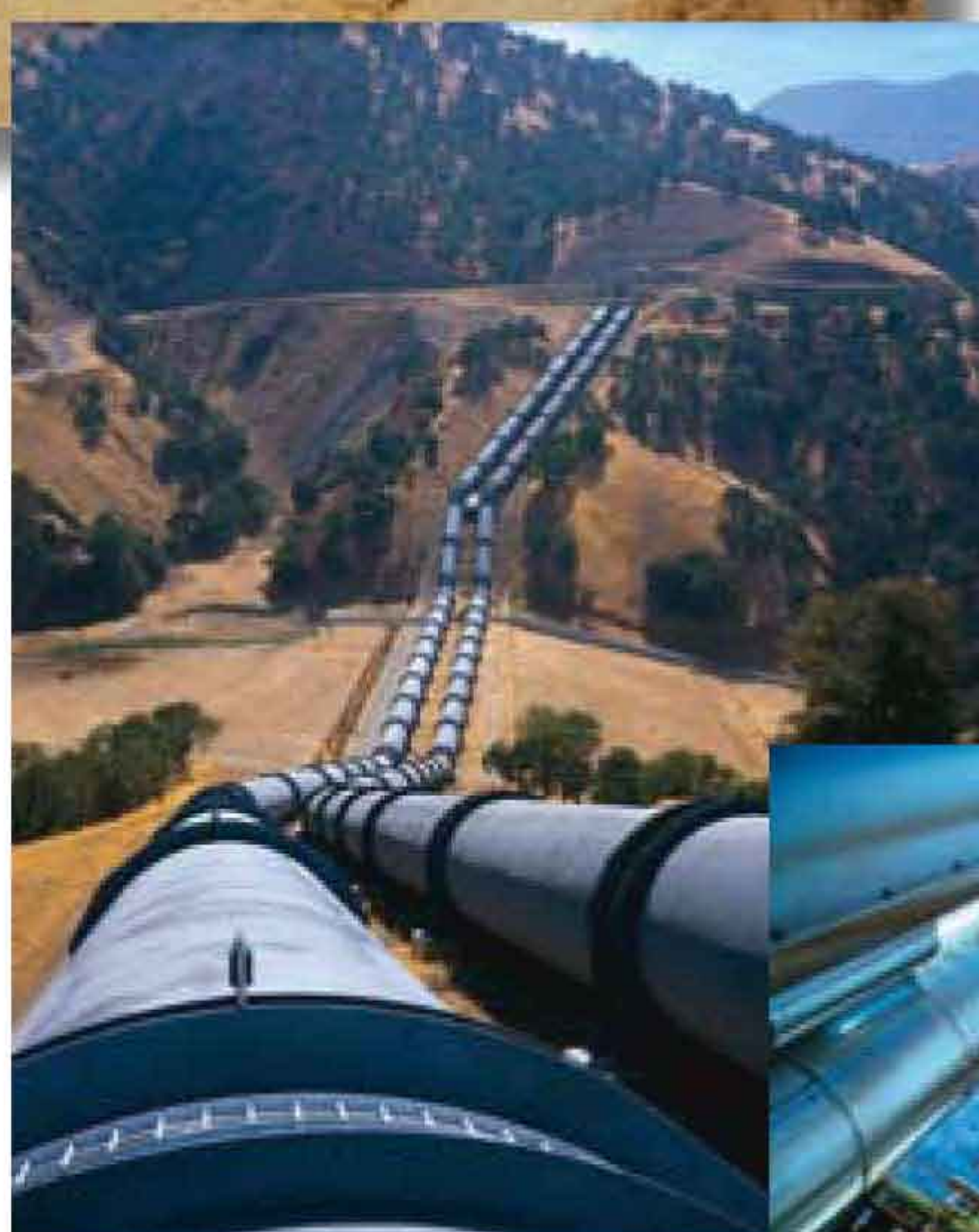
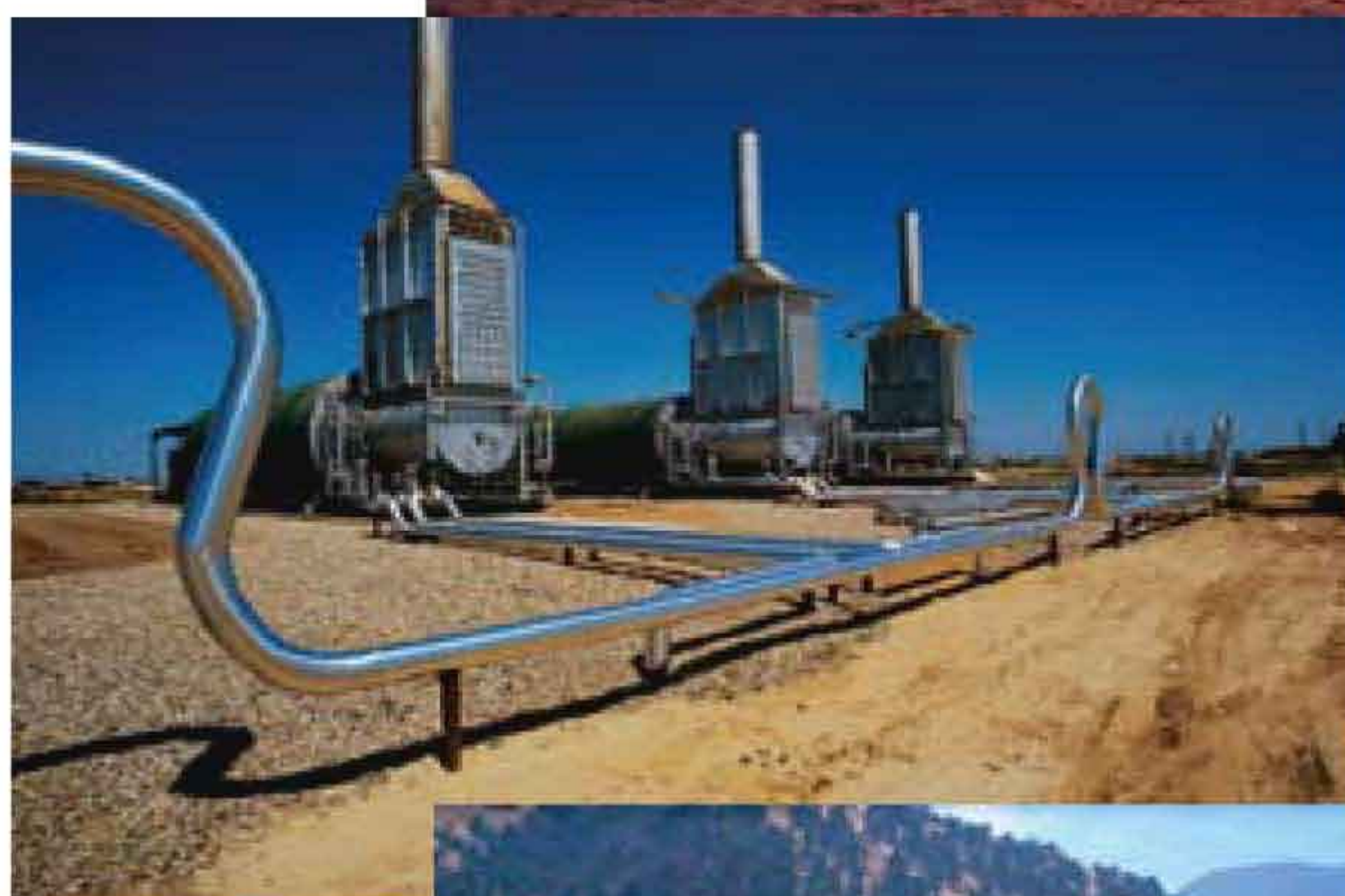
Prevention of backflow and pressure surge at multi-pump systems with or without surge vessel. Energy saving due to low pressure losses.

Prevention of backflow and pressure surge at systems with high elevation.

Quality Management



„THE QUALITY REMAINS LONG AFTER THE PRICE HAS BEEN FORGOTTEN“
(Sir F. Henry Royce)



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