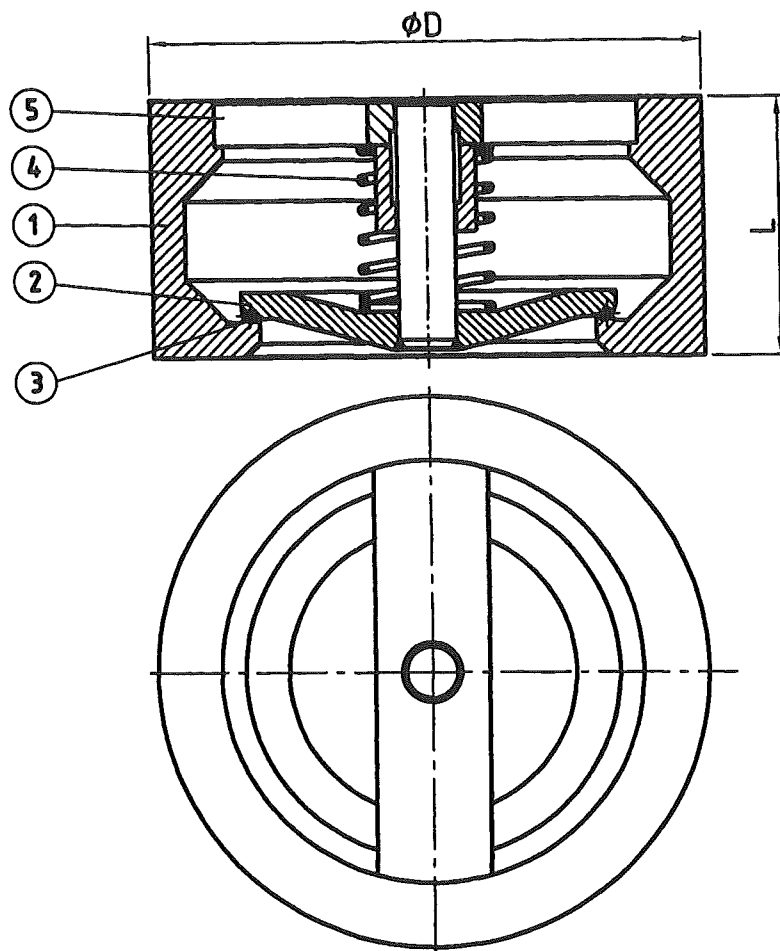


99200146



AL Spec.55202A3

Ritag Pos./Item	DN	ϕD	L	Kennzeichnung./Marking Tag-Nr.	Ritag Artikel-Nr.
1	200	292	140	64061	9800010869

Gehäusedichtleisten Form/
body facings form
B1 n. DIN EN 1092-1

5	Führung	/ guide plate	1	1.4571
4	Feder	/ spring	1	1.4571
3	Dichtung	/ seal	1	PTFE
2	Ventilkegel	/ plate	1	1.4571
1	Gehäuse	/ body	1	1.4571
Pos./ item	Benennung /denomination		Stk/ qty	Material

RITAG
Armaturenwerk

SR 30.40

Halbstat ./. .

PN 40

Baulänge EN 558-1 Reihe 49
face to face dimension EN558-1 series 49

Zwischenfl.-Rückschlagventil
wafer-type check valve

Komm.-Nr.: 1205690

Kunde: Siekmann Econosto
Best.-Nr.: 07-03-05/CK Kosice

99200146

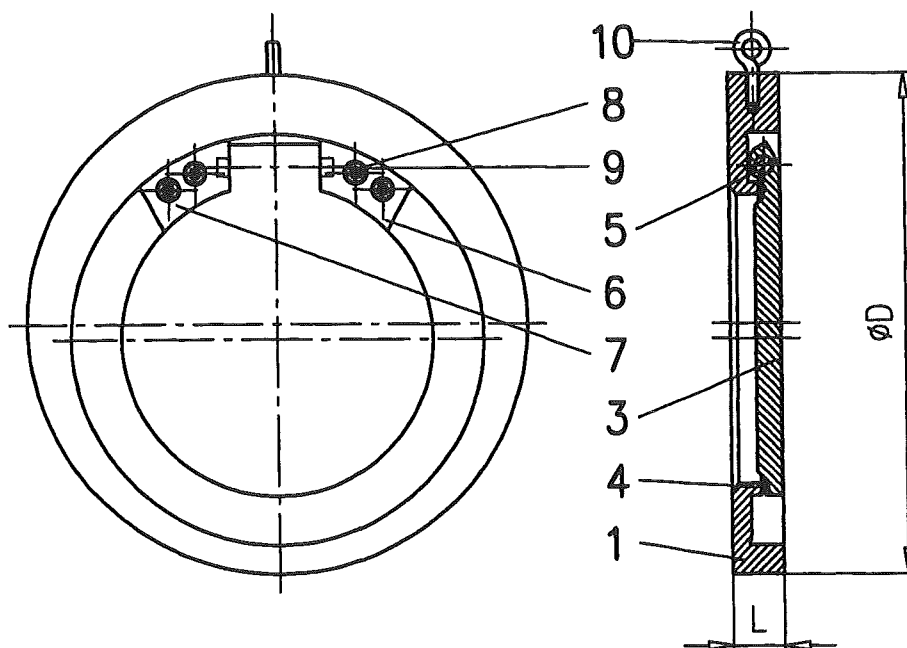
Blatt

Bl.

Zust. Änderung Datum Name

Angebotszeichnungen\SR\Econosto\99200146

99200829 B10



Ritag Pos./item	DN	ØD	L	Kennzeichng. Tag-Nr.	Ritag Artikel-Nr.
2	50	108	20	82020	9800030352

Gehäusedichtleiste
Form B1
body facings from B1
DIN EN1092-1

10	Ringschraube / Eyebolt	1	1.0401-verz.
9	Federring / Springwasher	2/4*	St.-verz.
8	Zyl.-Schraube / Cyl.-screw	2/4*	8.8-verz.
7	Scharnierteil Hinge	1	1.4581
6	Scharnierteil / Hinge	1	1.4581
5	Achse / Hinge pin	1	1.4571
4	O-Ring / Seal	1	PTFE
3	Klappe / Plate	1	1.4581
2			
1	Gehäuse / Body	1	1.0570
Pos./item	Benennung / Denomination	Stk./Qty	Material

RITAG
Armaturenwerk

ZRK 1

Maßstab ./. PK 10-40

Datum Name
Bearb. 13.07.2005 Glaser
Gepr.

Zwischenfl.-Rückschlagklappe
wafer-type-swing-check valve

Komm.-Nr.: 1206215
Kunde: Siekmann Econosto
Best.-Nr.: 90075240P Kosice

99200829

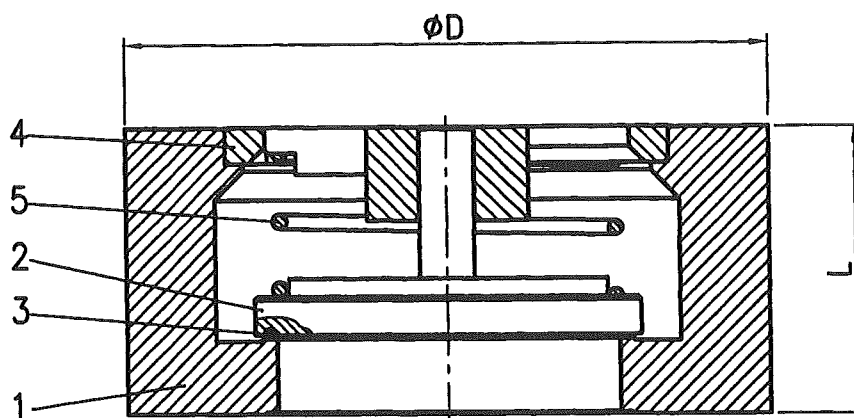
Blatt
10

Zust. Änderung Datum Name

Angebotsszeichnungen/ZRK/Econosto/99200829-10

Bl.

99200300



AL Spec.:55202A3

Ritag Pos./Item	DN	ØD	L	Kennzeichnung/Marking Tag-Nr.	Ritag Artikel-Nr.
2	80	142	71	64151,64251,73036,73151,73251	9800010111
3	50	108	56	73002,74151,74251	9800010360

Gehäusedichtleisten Form/
body facings form
B1 n. DIN EN 1092-1

5	Feder	/ spring	1	1.4571
4	Halteplatte	/ guideplate	1	1.4581
3	Dichtung	/ seal	1	PTFE
2	Ventilkegel	/ disc	1	1.4571
1	Gehäuse	/ body	1	A105
Pos./Item	Benennung / Denomination		Stk/Qty	Material

RITAG
Armaturenwerk

SR55.40

Haltstab ./. .

PN10-40

Baulänge EN 558-1 Reihe 49
face to face dimension EN558-1 series 49

Zwischenfl.-Rückschlagventil
wafer-type check valve

Komm.-Nr.: 1205690
Kunde: Siekmann Econosto
Best.-Nr.: 07-03-05/CK Koside

99200300

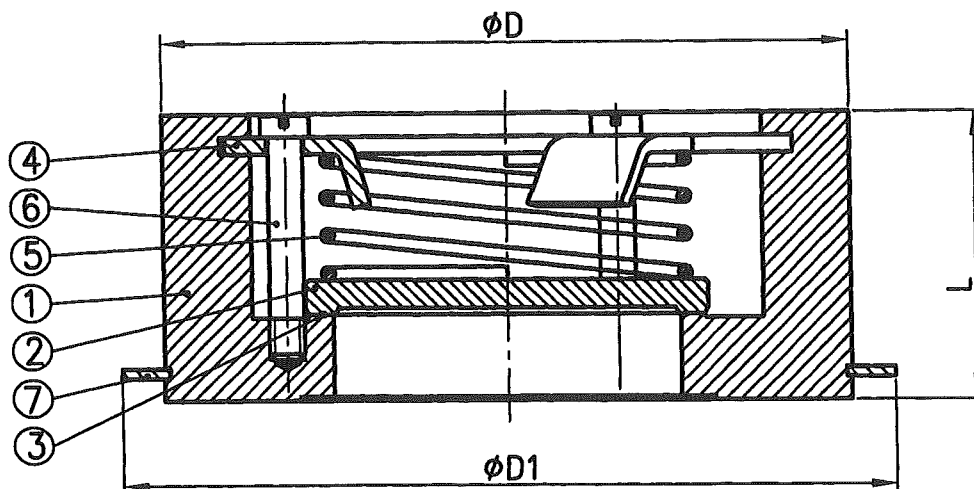
Blatt

Bl.

Zust. Änderung Datum Name

Angebotszeichnungen/SR/Econosto/99200300

99200125 B14



Gehäusedichtleisten Form B1,
DIN EN 1092-1

Body facings form B1,
DIN EN 1092-1

* Gehäusesitz mit 1.4370 gepanzert
* Body seat hard-faced with 1.4370

Ritag Pos./Item	DN	PN6		L	Kennzeichn. Tag-Nr.	Ritag Artikel-Nr.
		ØD	ØD1			
3	50	96	108	40	81040, 81041	9800000065

7	Zentrierring	/ centering-ring	1	1.0338
6	Führungsschraube	/ guide screw	3	1.4305
5	Feder	/ spring	1	1.4571
4	Haken	/ bracket	3	1.4571
3	Dichtung	/ seal		met./met
2	Ventilplatte	/ disc	1	1.4571
1	Gehäuse	/ body	1	1.0460 *
Pos/ Item	Benennung	Denomination	Stk./ qty	Material

RITAG
Armaturenwerk

SR22.40

Haltstab ./. .

PN 6-40

Baulänge EN558-1 Reihe 49
face to face dimension EN558-1 series 49

Zwischenfl.-Rückschlagventil
wafer type check valve

Komm.-Nr.: 1206215
Kunde: Siekmann Econosto
Best.-Nr.: 9007524OP Kosice

99200125

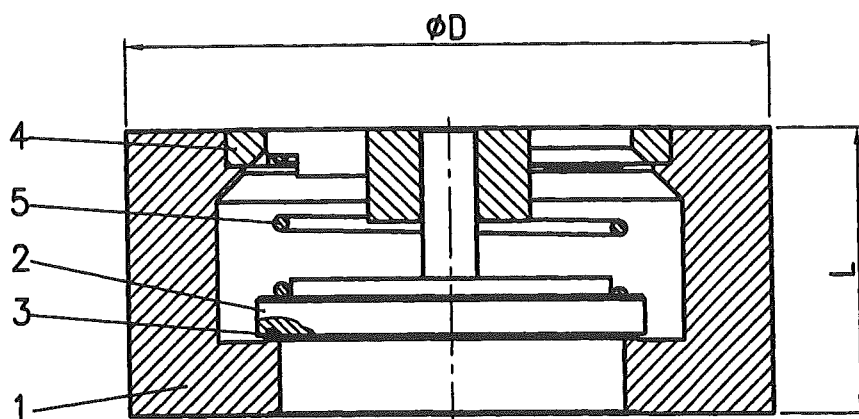
Blatt
14

Bl.

Zust. Änderung Datum Name

Angebotszeichnungen/SRI/Siekmann/99200125-14

99200300 B1



Ritag Pos./Item	DN	ØD	L	Kennzeichng./Marking Tag-Nr.	Ritag Artikel-Nr.
5	80	142	71	62033, 72133	9800010111
4	50	108	56	62034	9800010360
1	25	71	35,5	81020	9800010159

Gehäusedichtleisten Form/
body facings form
B1 n. DIN EN 1092-1

5	Feder / spring	1	1.4571
4	Halteplatte / guideplate	1	1.4581
3	Dichtung / seal	1	PTFE
2	Ventilkegel / disc	1	1.4571
1	Gehäuse / body	1	1.4571
Pos./Item	Benennung / Denomination	Stk./Qty	Material



SR55.40

Halbtab ./. .

PN10-40

Baulänge EN 558-2 Reihe 52
face to face dimension EN558-2 series 52

Zwischenfl.-Rückschlagventil
wafer-type check valve

Komm.-Nr.: 1206215
Kunde: Siekmann Econosto
Best.-Nr.: 90075240P Kosice

99200300

Blatt

1

Bl.

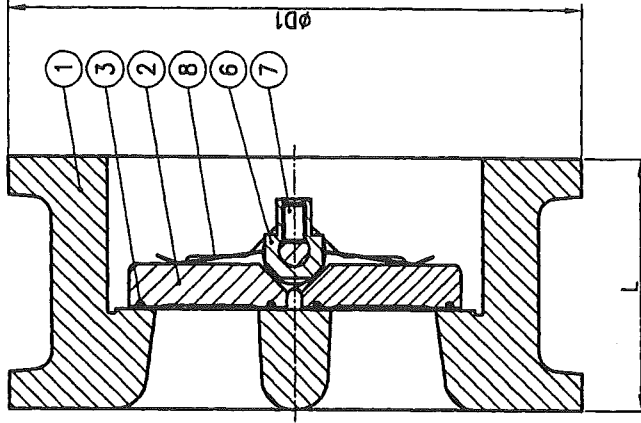
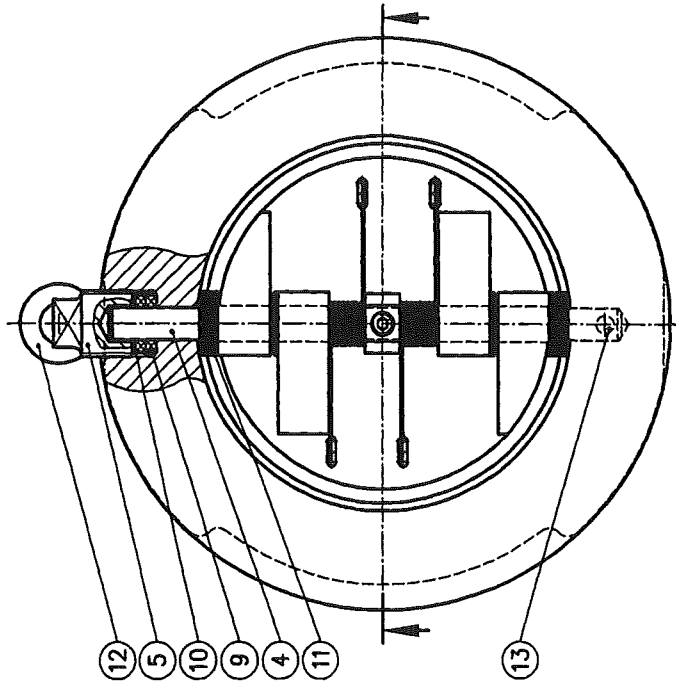
Zust.	Änderung	Datum	Name

Angebotszeichnungen\SR\Econosto\99200300-1

1 2 3 4 5 6 7 8

99203345

90° gedreht /
90° turned



AL Spec.55202A1

Ritag Pos./Item	DN	ØD	L	Kenzeichnung/Merkung Tag-Nr.	Ritag Art.-Nr.
5	300 ¹	421	114	73161,73061	9800060677

Pos./Item	Benennung / Denomination	Material
1	Gehäuse / body	1.4581
2	Klappe / plate	1.4571
3	Dichtung / seal	PIFE
4	Achse / hinge pin	1.4571
5	Verschlußstopfen / pinretainer	1.4571
6	Anschlag / stop pin	1.4571
7	Gewindestift / set screw	A4-70
8	Feder / spring	1.4571
9	Packung / packing	PIFE
10	Druckscheibe / ring	1.0338
11	Scheibe / ring	A4
12	Ringschraube / eyebolt	1.0401
13	Rundmaterial / rd.-material	1.4571

RITAG
ARMATURENWERK

ZRD 3

Rechts /
face to face dimension EN558-1 series 16

Baulänge EN 558-1 Reihe 16
face to face dimension EN558-1 series 16

Zwischenfl.-Doppelschloßklappe
duo-check-valve

99203345

Komm.-Nr.: 1205690
Kunde: Siekmann Econosto
Best.-Nr.: 07-03-05/CK Kosile

99203345

Komm.-Nr.: 1205690
Kunde: Siekmann Econosto
Best.-Nr.: 07-03-05/CK Kosile

Zust. Änderung Datum Name

Zust. Änderung Datum Name

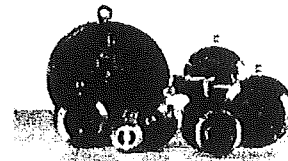
Zust. Änderung Datum Name

Zust. Änderung Datum Name

Zust. Änderung Datum Name

Zust. Änderung Datum Name

Zust. Änderung Datum Name



Instruction Manual

Wafer Type Check Valves

SR/HSR
ZRK/ZRL
ZRD



Technische Änderungen vorbehalten 05/2003
Technical modifications reserved 05/2003

RITAG Ritterhüder Armaturen GmbH & Co.
Armaturenwerk KG
Industriestraße 7-9
D-27711 Osterholz-Scharmbeck

Phone +49 (0) 47 91 / 92 09-0
Fax +49 (0) 47 91 / 92 09-85
eMail: contact@ritag.com
Internet: www.ritag.com

Content

1.	Declaration of Conformity in acc. to PED 97/23/EC	3
1.1	Declaration of Conformity SR/HSR, ZRK/ZRL	3
1.2	Declaration of Conformity ZRD	4
2.	General Notes	5
3.	Intended Use	5
4.	Safety Instructions	5
4.1	General safety instructions	5
4.2	Qualification of personnel	5
4.3	Safety instructions for the operator	5
4.4	Special dangers	6
5.	Transport and Storage	6
6.	Categorisation in acc. to PED 97/23/EC	7
7.	Specification	8
7.1	Marking	8
7.2	Drawings and parts lists	8
7.3	Functionality	10
8.	Installation	10
8.1	General information	10
8.2	Operational characteristics	10
8.3	Range of applications	11
8.4	Installation instructions	12
9.	Initial Operation, Shut down, Maintenance, Elimination of Failures	13
9.1	Initial operation	13
9.2	Shut-down	13
9.3	Maintenance	13
9.4	Elimination of failures	14
10.	Spare Parts	14
11.	Further Information	14

This instruction manual contains important safety instructions. Please read carefully before installation and initial operation. It is hardly recommended to keep this manual within the operation area.



1.1 Declaration of Conformity

in acc. to Pressure Equipment Directive 97/23/EC

Name and Address of Manufacturer
RITAG Ritterhuder Armaturen GmbH & Co. Armaturenwerk KG
 Industriestr. 7-9
 D-27711 Osterholz-Scharmbeck

Description of the Pressure Equipment

Type	DN	PN	Module	Type	DN	PN	Module	Type	DN	PN	Module	Type	DN	PN	Module
SR10.16	125-200	6-16	A	SR12.16	65-200	6-16	A	ZRK4	65-200	6-16	A	ZRL4	65-200	6-16	A
SR60.06	32-100	6	A	SR70.16	65-100	6-16	A	ZRK1	50-100	10-40	A1	ZRL1	50-100	10-40	A1
SR61.06	32-100	6	A					ZRK1S	50-100	10-40	A1	ZRL1S	50-100	10-40	A1
SR20.40	32-100	6-40	A1	SR33.40	32-100	6-40	A1	ZRK2	50-100	10-40	A1	ZRL2	50-100	10-40	A1
SR20.40St	32-100	6-40	A1	SR34.40	32-100	6-40	A1	ZRK3	50-100	10-40	A1	ZRL3	50-100	10-40	A1
SR22.40	32-100	6-40	A1	SR35.40	32-100	6-40	A1	ZRK4	250,300	6-16	A1	ZRL4	250,300	6-16	A1
SR30.40	32-100	6-40	A1	SR55.40	32-100	6-40	A1	ZRK5	50-100	10-40	A1	ZRL5	50-100	10-40	A1
SR31.40	32-100	6-40	A1	HSR20.160	32-100	63-160	A1								
SR32.40	32-100	6-40	A1	HSR30.160	32-100	63-160	A1	ZRK1	125-600	10-40	H	ZRL1	125-600	10-40	H
SR40.40	32-100	6-40	A1	SR50.40	32-100	6-40	A1	ZRK1S	125-600	10-40	H	ZRL1S	125-600	10-40	H
SR20.40	125-200	6-40	H	SR30.40	125-200	6-40	H	ZRK2	125-600	10-40	H	ZRL2	125-600	10-40	H
SR20.40ST	125-200	6-40	H	SR34.40	125-200	6-40	H	ZRK3	125-600	10-40	H	ZRL3	125-600	10-40	H
SR22.40	125-200	6-40	H	SR35.40	125-200	6-40	H	ZRK4	350-600	6-16	H	ZRL4	350-600	6-16	H
SR25.40St	250-350	6-40	H	SR55.40	125-200	6-40	H	ZRK5	125-600	10-40	H	ZRL5	125-600	10-40	H

All valves in size DN ≤25 comply with article 3, paragraph 3 and are not permitted to be marked neither with the CE characters nor with the notified body code.

Name and Address of the Notified Body

LRQA GmbH Hamburg
 Mönckebergstrasse 27
 20095 Hamburg

The signing manufacturer confirms by this declaration that design, manufacturing and inspection of these pressure equipments meet the requirements of the Pressure Equipment Directive 97/23/EC.

Applied Harmonized Standards

No harmonized standards available at present

Other Applied Standards and Technical Rules
 AD 2000, DIN3230, DIN3840, VdTÜV1253, VdTÜV100, TRD110

22.01.2002

Herfried Schrader

Date

Authorized Subscriber



1.2 Declaration of Conformity

in acc. to Pressure Equipment Directive 97/23/EC

Name and Address of Manufacturer
RITAG Ritterhuder Armaturen GmbH & Co. Armaturenwerk KG
Industriestr. 7-9
D-27711 Osterholz-Scharmbeck

Description of the Pressure Equipment

Type	DN	PN	Module	Type	DN	PN	Module
ZRD G/K3	65 - 200	6 - 16	A	ZRD G/API594	21/2" - 6"	Class125, 150	A
ZRD G4/K3	65 - 200	6 - 16	A	ZRD G4/API594	21/2" - 6"	Class125, 150	A
ZRD 4/K3	65 - 200	6 - 16	A	ZRD 4/API594	21/2" - 6"	Class125, 150	A
ZRD 6/K3	65 - 200	6 - 16	A	ZRD 6/API594	21/2" - 6"	Class125, 150	A
ZRD G/K3	250, 300	6 - 16	A1	ZRD G/API594	8", 10"	Class125, 150	A1
ZRD G4/K3	250, 300	6 - 16	A1	ZRD G4/API594	8", 10"	Class125, 150	A1
ZRD 4/K3	250, 300	6 - 16	A1	ZRD 4/API594	8", 10"	Class125, 150	A1
ZRD 6/K3	250, 300	6 - 16	A1	ZRD 6/API594	8", 10"	Class125, 150	A1
ZRD 1/K3	50 - 100	6 - 40	A1	ZRD 1/API594	2" - 4"	Class150, 300	A1
ZRD 2/K3	50 - 100	6 - 40	A1	ZRD 2/API594	2" - 4"	Class150, 300	A1
ZRD 3/K3	50 - 100	6 - 40	A1	ZRD 3/API594	2" - 4"	Class150, 300	A1
ZRD G/K3	350 - 600	6 - 16	H	ZRD G/API594	12" - 24"	Class125, 150	H
ZRD G4/K3	350 - 600	6 - 16	H	ZRD G4/API594	12" - 24"	Class125, 150	H
ZRD 4/K3	350 - 600	6 - 16	H	ZRD 4/API594	12" - 24"	Class125, 150	H
ZRD 6/K3	350 - 600	6 - 16	H	ZRD 6/API594	12" - 24"	Class125, 150	H
ZRD 1/K3	125 - 600	6 - 40	H	ZRD 1/API594	5" - 24"	Class150, 300	H
ZRD 2/K3	125 - 600	6 - 40	H	ZRD 2/API594	5" - 24"	Class150, 300	H
ZRD 3/K3	125 - 600	6 - 40	H	ZRD 3/API594	5" - 24"	Class150, 300	H

All valves in size DN ≤ 25 comply with article 3, paragraph 3 and are not permitted to be marked neither with the CE characters nor with the notified body code.

Name and Address of the Notified Body

LRQA GmbH Hamburg
Mönckebergstrasse 27
20095 Hamburg

The signing manufacturer confirms by this declaration that design, manufacturing and inspection of these pressure equipments meet the requirements of the Pressure Equipment Directive 97/23/EC.

Applied Harmonized Standards

No harmonized standards available at present

Other Applied Standards and Technical Rules

AD 2000, DIN3230, DIN3840, VdTÜV1253, VdTÜV100, TRD110

22.01.2002

Date

Herfried Schrader

Authorized Subscriber

2. General Notes

This instruction manual applies to the above mentioned valves which are subject to the Quality Management System Standard acc. to DIN/ISO9001 in both the manner of manufacturing as well as testing and which do meet the basic safety requirements of Annex I of the Pressure Equipment Directive 97/23/EC. This instruction manual is intended to support the user of above mentioned valves in installation, operation and maintenance.

Attention	Disregarding the following caution advices could evoke dangerous situations which entail an inefficacy of the manufacturers' warranty. For any questions, please contact the manufacturer and also see chapter 11.
------------------	--

3. Intended Use

Wafer type check valves are solely destined for installation within a pipeline system in consideration of the admitted pressure and temperature limits to avoid a backflow of the media.

It is the operators' responsibility to examine the chemical resistance in relation to the specified operation data.

All valid operation data are indicated in chapter 8 respectively in the technical data sheets of the relevant types.

4. Safety Instructions

4.1 General Safety Instructions

Those safety regulations applying to the pipeline system apply to the valves itself accordingly, i. e. any national or international rules for accident prevention as well as possibly existing operators' working-, production- and safety regulations have to be considered. This instruction manual only points to those safety instructions which have to be considered additionally.

4.2 Qualification of Personnel

Only qualified staff is permitted to install and maintain the valves. The operator is obliged to coordinate the competencies, the responsibilities and the surveillance of his staff. Should the staff not have the necessary knowledge, the operator must provide adequate additional training. The operator has to ensure that the content of this instruction manual is comprehended in all its particulars.

4.3 Safety Instructions for the Operator

Due to the fact that the following points are not in the responsibility of the valve manufacturer the operator has to ensure when using the valves that

- the valves are solely used in the way described in chapter 3
- the pipeline system is installed in a professional manner. The wall thickness of the valve body is designed in a way that tensions which do exist within the pipeline system are considered in a usual order of magnitude.

- the valves are properly installed between the flanges.
- an usual flow rate within the pipeline system is not exceeded during a continuous operation. For abnormal service conditions, e. g. oscillation, water shock, cavitation or a medium that contains larger solid particles, please contact RITAG for clarification.
- the valves are protected against touch when working at a temperature <0°C respectively >40°C.

Danger	<p>Prevention from misusing the valves: It has to be particularly ensured that the selected body materials and inner parts of the valve are suited for the medium that is used. The manufacturer assumes no liability for any damages caused by aggressive media.</p> <p>Disregarding this precaution may evoke dangerous situations for the operating personnel or cause damages to the pipeline system.</p>
---------------	--

4.4 Special Dangers

Danger to Life	<p>Before disassembling the valve the pipeline has to be depressurized, the pipe has to be totally drained and released. Afterwards the flange screw connections can be unscrewed and the valve can be dismantled.</p> <p>Misusing this precaution means danger to the life of the operating personnel.</p>
-----------------------	--

5. Transport and Storage

The valves are provided ready for installation. They need to be treated, conveyed and stored carefully.

- Those valves that are delivered with a protecting packing need to be stored within this packing up to the moment of installation.
- In case of a direct storage at the installation location the valve has to be stored in a closed room and has to be protected against any damaging impacts.
- It is recommended to use up any stock items first in order to achieve short storage periods.
- Those valves that are equipped with a soft sealing need to be protected against sunlight that might hit this soft sealing or any other UV-radiation in order to avoid ageing.
- Lifting tools for transport are only to be fastened on the valve body. Inner parts may not be misused as „carrying devices“.

6 Categorisation in acc. to PED 97/23/EC article 9

Wafer Type Lift Check Valves Type SR / HSR

CE-marking in conjunction with declaration of conformity in acc. to PED 97/23/EC																	
			Nominal Diameter														
Valve type	PN	Fluid group	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
SR10.16	16	2				*	*	*	*	*	*	CE	CE	CE	*	*	*
SR12.16	16	2				no CE	no CE	no CE	CE	CE	CE	CE	CE	CE	*	*	*
SR70.06K	6	2				no CE	no CE	no CE	no CE	no CE	no CE	*	*	*	*	*	*
SR70.16	16	2				no CE	no CE	no CE	CE	CE	CE	*	*	*	*	*	*
SR60.06	6	1 u. 2				CE	CE	CE	CE	CE	CE	*	*	*	*	*	*
SR20.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR20.40SI	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR25.40	40	1 u. 2				*	*	*	*	*	*	*	*	*	CE	CE	CE
SR22.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR30.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR31.40	40	1 u. 2			no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR32.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR33.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR34.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR35.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR40.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR50.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
SR55.40	40	1 u. 2				CE	CE	CE	CE	CE	CE	CE	CE	CE	*	*	*
HSR20.160	160	1 u. 2				CE	CE	CE	CE	CE	CE	*	*	*	*	*	*
HSR30.160	160	1 u. 2				CE	CE	CE	CE	CE	CE	*	*	*	*	*	*

* not available in this size

* not available in this size

Wafer Type Swing Check Valves Type ZRK / ZRL

CE-marking in conjunction with declaration of conformity in acc. to PED 97/23/EC																		
Valve type	PN	Fluid group	Nominal Diameter															
			50	65	80	100	125	150	200	250	300	350	400	450	500	600		
ZRK1, ZRL1, ZRK5	10	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	16	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	25	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	40	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRK1-S, ZRL1-S	10	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	16	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	25	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	40	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRK2, ZRK3	10	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	16	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	25	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	40	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRK4	10	2	no CE	no CE	no CE	keinCE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	16	2	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE

Wafer Type Duo Check Valves Type ZRD

CE-marking in conjunction with declaration of conformity in acc. to PED 97/23/EC																		
Valve type	PN	Fluid group	Nominal Diameter															
			50	65	80	100	125	150	200	250	300	350	400	450	500	600		
ZRD1/K3, ZRD2/K3	10	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD3/K3	16	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	25	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	40	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD1/API594	10	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD2/API594	16	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD3/API594	25	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	40	1 u. 2	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD G/K3, ZRD G4/K3	6	2	no CE	no CE	no CE	no CE	no CE	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD4/K3, ZRD6/K3	10	2	no CE	no CE	no CE	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
	16	2	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD G/API594	6	2	no CE	no CE	no CE	no CE	no CE	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD G4/API594	10	2	no CE	no CE	no CE	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD 4/API594	16	2	no CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE
ZRD 6/API594																		

The conformity in acc. to PED 97/23/EC is documented by the CE-marking on the valve body.

7 Specification

The sectional drawings shown in this chapter do exemplary illustrate the basic design of the valves. Detailed information can be found in the technical data sheet of the specific valve type.

7.1 Marking

All valves are marked in acc. to PED 97/23/EC, TRB 801 No. 45 or EN19.

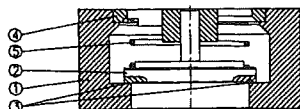
General Marking

Manufacturer	RITAG
Valve type	...
Nominal diameter	DN...
Nominal pressure	PN..
Material	...
Batch no. (retraceability of the material)	...
Year of manufacture (month, year, e.g. 5.02)	...
Arrow of flow direction	↑
CE-marking (starting from category I, see chapter 1 u. 6)	CE
Code of the Notified Body (Module A1 und H)	0525
Stamp of inspector	...

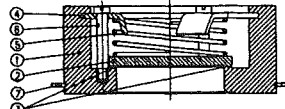
Further special markings, e. g. plant identification code or project name could be additionally affixed on request.

7.2 Drawings and Parts Lists

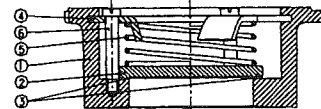
Lift Check Valves



SR35.40, SR40.40, SR50.40, SR55.40,
HSR20.160, HSR30.160



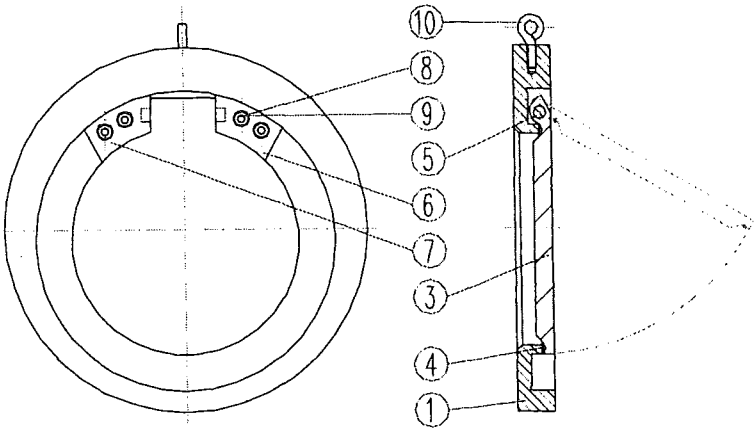
SR20.40, SR20.40St, SR22.40,
SR30.40, SR31.40, SR32.40
SR33.40, SR34.40, SR12.16



SR70.06, SR70.16,

Item no.	Denomination	Item no.	Denomination
1	Body	2	Plate/disc
3	Sealing (spare part)	4	Guide plate
5	Spring (spare part)	6	Guide screw
7	Centering ring		

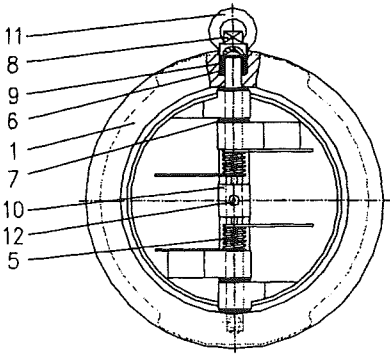
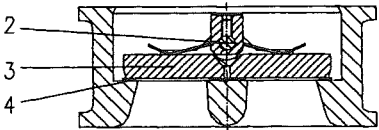
Swing Check Valve



No spring illustrated

1	Body	7	Hinge (left)
3	Plate	8	Screw
4	Sealing (spare part)	9	Ring
5	Hinge pin	10	Eye screw
6	Hinge (right)		Spring (spare part)

Duo Check Valve



1	Body	8	Pin retainer
2	Plate	9	Ring
3	Shaft	10	Stop pin
4	Sealing (spare part)	11	Eye bolt
5	Spring (spare part)	12	Set screw
6	Packing (spare part)		
7	Ring		

7.3 Functionality

Wafer type non-return valves are valves which are controlled by the backflow of the medium. The obturator (disc, cone, plate) is first lifted and then opened by the flow. In the event of an incipient backflow (e. g. failure of a pump) the obturator closes self-controlled by its dead weight. This closing process can optionally be supported by using a spring.

8 Installation

8.1 General Information

Positioning within the isometry of the pipeline as well as a proper installation of the valves is basically the responsibility of the engineer or the operator. Any faults in engineering or installation could cause malfunction of the valves and constitute a significant danger.

For the installation of the valves the same safety regulations are to be considered as for connecting pipelines and its components.

Attention	Pipelines have to be laid in such a manner that shearing strain and bending stress are not able to affect the valve body. The flange facings have to be in a parallel position to each other. The facings need to be clean and undamaged.
Danger	Valve bodies in material cast iron EN-JL1040, EN-JS1030 must not be treated by sudden pressure (e. g. hammer blow) because components may be destroyed. Valves working at temperatures <0°C respectively >40°C need to be protected against touch.

8.2 Operational Characteristics

Wafer Type Lift Check Valves Type SR/HSR

Operating data for SR - valves													
permissible working temperature (°C)				20	100	150	200	250	300	350	400	450	500
Type	Material	P/T group EN1092-1, -2	PN	permissible working pressure (bar)									
SR10.16	EN-JL 1040		16	16	16	14,4	12,8	11,2	9,6				
SR60.06	PTFE		6	6	6	5	4						
SR12.16	CC483K		16	16	16	15	14	13					
SR70.16	2.0401		16	16	16	15	14	13					
SR20.40	1.4021		40	40	40	37,5	35	32,5	30	27,5	25		
SR20.40St bis DN100	1.0570	1E1	40	40	40	36	33	29	24				
SR20.40SI DN125 bis 200	1.0421		40	40	40	36	33	29	24				
SR25.40	1.0421		40	40	40	36	33	29	24				
SR22.40	1.0460		40	40	40	36	33	29	24	20	16		
SR30.40	1.4571	15EO	40	37	33	31,5	29,7	27,9	25,8	24,9	24	23,3	22,9
SR31.40	3.7035		40	40	40	34	28	22	16				
SR32.40	2.4617		40	40	40	38	36	34	32	30	28		
SR40.40	1.0460		40	40	40	37	35	31,5	29	27	26	23	
SR33.40	2.4610		40	40	40	38	36	34	32	30	28		
SR34.40	1.4301	11EO	40	34,7	27,9	25,2	22,6	21	19,6	18,5	17,4	16,9	16,4
SR35.40	1.0460		40	40	40	37	35	31,5	29	27	26	23	
SR55.40	1.4571	15EO	40	37	33	31,5	29,7	27,9	25,8	24,9	24	23,3	22,9
HSR20.160	1.0460		160	160	160	145	130	125	100	84	68	53	
HSR30.160	1.4571	15EO	160	160	154	148	142	136	130	124	118	110	102
SR50.40	1.4571	15EO	40	37	33	31,5	29,7	27,9	25,8	24,9	24	23,3	22,9

Wafer Type Swing Check Valves Type ZRK/ZRL

Operating data for ZRK / ZRL - valves													
admissible working temperature (°C)				20	100	150	200	250	300	350	400	450	500
Type	Material	P/T group EN1092-1, -2	PN	admissible working pressure (bar)									
ZRK1, ZRL1,ZRK1-S, ZRL1-S	1.0570	1E1	10	10	10	9	8	7	6				
		1E1	16	16	16	14,4	12,8	11,2	9,6				
		1E1	25	25	25	22,5	20	17,4	15				
		1E1	40	40	40	36	33	29	24				
ZRK2, ZRL2	1.4301	11EO	10	8,7	7	6,3	5,6	5,2	4,9	4,6	4,4	4,2	4,1
		11EO	16	13,9	11,2	10,1	9	8,4	7,8	7,4	7	6,8	6,5
		11EO	25	21,7	17,4	15,8	14,1	13,1	12,2	11,6	10,9	10,6	10,2
		11EO	40	34,7	27,9	25,2	22,6	21	19,6	18,5	17,4	16,9	16,4
ZRK3, ZRL3	1.4571	15EO	10	9,3	8,2	7,9	7,4	7	6,4	6,2	6	5,8	5,7
		15EO	16	14,9	13,2	12,6	11,9	11,2	10,3	10	9,6	9,3	9,2
		15EO	25	23,3	20,6	19,7	18,6	17,4	16,1	15,6	15	14,6	14,3
		15EO	40	37	33	31,5	29,7	27,9	25,8	24,9	24	23,3	22,9
ZRK4, ZRL4	CC483K		10	16	16	15	14	13					
			16	16	16	15	14	13					
ZRK5, ZRL5	1.0425	3EO	10	10	10	9,8	9,5	9	8	7	5,5		
		3EO	16	16	116	15,7	15,2	14,4	12,8	11,2	8,8		
		3EO	25	25	25	24,5	23,8	22,5	20	17,5	13,8		
		3EO	40	40	40	39	38	36	32	28	22		

Lowest working temperature: ZRK1, ZRL1, ZRK4, ZRL4, ZRK5, ZRL5 minus 10°C; ZRK2, ZRL2, ZRK3, ZRL3 minus 200°C

Wafer Type Duo Check Valves Type ZRD

Operating data for ZRD - valves													
permissible working temperature (°C)				20	100	150	200	250	300	350	400	450	500
Type	Material	P/T group EN1092-1, -2	PN	permissible working pressure (bar)									
ZRD G/K3, ZRD G4/K3	EN-JL 1040	*	6	6	6	5,4	4,8	4,2	3,6				
ZRD 6/K3	EN-JL 1040	*	10	10	10	9	8	7	6				
	EN-JL 1040	*	16	16	16	14,4	12,8	11,2	9,6				
ZRD 4/K3	CC483K		6	6	6	5	4	3					
	CC483K		10	10	10	9	8	7					
	CC483K		16	16	16	15	14	13					
ZRD 1/K3	1.0619	3EO	10	10	10	9,8	9,5	9	8	7	5,5		
	1.0619	3EO	16	16	116	15,7	15,2	14,4	12,8	11,2	8,8		
	1.0619	3EO	25	25	25	24,5	23,8	22,5	20	17,5	13,8		
	1.0619	3EO	40	40	40	39	38	36	32	28	22		
ZRD 2/K3	1.4308	11EO	10	8,7	7	6,3	5,6	5,2	4,9	4,6	4,4	4,2	4,1
	1.4308	11EO	16	13,9	11,2	10,1	9	8,4	7,8	7,4	7	6,8	6,5
	1.4308	11EO	25	21,7	17,4	15,8	14,1	13,1	12,2	11,6	10,9	10,6	10,2
	1.4308	11EO	40	34,7	27,9	25,2	22,6	21	19,6	18,5	17,4	16,9	16,4
ZRD 3/K3	1.4581	15EO	10	9,3	8,2	7,9	7,4	7	6,4	6,2	6	5,8	5,7
	1.4581	15EO	16	14,9	13,2	12,6	11,9	11,2	10,3	10	9,6	9,3	9,2
	1.4581	15EO	25	23,3	20,6	19,7	18,6	17,4	16,1	15,6	15	14,6	14,3
	1.4581	15EO	40	37	33	31,5	29,7	27,9	25,8	24,9	24	23,3	22,9
ZRD G/API594, ZRD G4/API594	EN-JL 1040		Class125	16	16	14,4	12,8	11,2	9,6				
ZRD 6/API594	EN-JL 1040		Class150	20	20	18,5	16,5	14,5	12,3				
ZRD 4/API594	CC483K		Class125	16	16	15	14	13					
	CC483K		Class150	20	20	18	17	16					
ZRD 1/API594	1.0619	3EO	Class150	20	20	20	19,5	18,5	16,5	14,4	11,3		
	1.0619	3EO	Class300	50	50	49,5	48,5	46	41	35,9	28,3		
ZRD 2/API594	1.4308	11EO	Class150	20	20	13	11,6	10,7	10	9,5	8,9	8,7	8,35
	1.4308	11EO	Class300	50	50	32,5	29	26,9	25,3	23,8	22,6	21,7	16,4
ZRD 3/API594	1.4581	15EO	Class150	20	20	16,2	15,3	14,3	13,2	12,8	12,3	11,9	11,8
	1.4581	15EO	Class300	50	50	40,7	38,2	36	33	32	31	29,9	29,2
* EN1092 Teil2 Tabelle17													

Lowest working temperature: ZRD G, ZRD G4, ZRD1, ZRD3, ZRD4, ZRD6 minus 10°C; ZRD2 minus 200°C

8.3 Range of Applications

Industrial plants, heating systems, fluids, gases and vapour (see also fluid groups in table of article 6), hot water heating systems DIN4751 / DIN4752, heat transmission plants DIN4754, steam boiler plants TRD110, pressure vessel plants TRB801 No. 45. Potential restrictions by any technical body of legislation are to be considered. The materials of the valves have to be applicative for the medium.

Opening Pressures p_ö (mbar)
- depending on flow direction -

DN	SR / HSR				ZRK / ZRL				ZRD		
	↔	↓	↑	↑ no spring	↔	↔ with spring	↑	↑ with spring	↔	↑	↑ with spring
15	20	16	24	4							
20	20	16	24	4							
25	20	16	24	4							
32	20	16	24	4							
40	20	15,5	24,5	4,5							
50	20	15	25	5	~0	15	8	23	15	25	10
65	20	14,5	25,5	5,5	~0	15	8	23	15	25	10
80	20	13,5	26,5	6,5	~0	15	8	23	15	30	15
100	20	13,5	26,5	6,5	~0	15	8	23	15	30	15
125	20	-	34	14	~0	10	8	18	15	35	20
150	20	-	33	13	~0	10	8	18	15	35	20
200	20	-	32	12	~0	10	12	22	15	35	20
250	20	-	32	12	~0	10	12	22	15	35	20
300	20	-	32	12	~0	10	12	22	15	45	30
350	20	-	32	12	~0	10	15	25	15	45	30
400	20	-	-	-	~0	10	16	26	15	45	30
450	20	-	-	-	~0	10	16	26	15	55	40
500	20	-	-	-	~0	10	22	32	15	55	40
600	20	-	-	-	~0	10	24	34	15	75	60

8.4 Installation Instructions

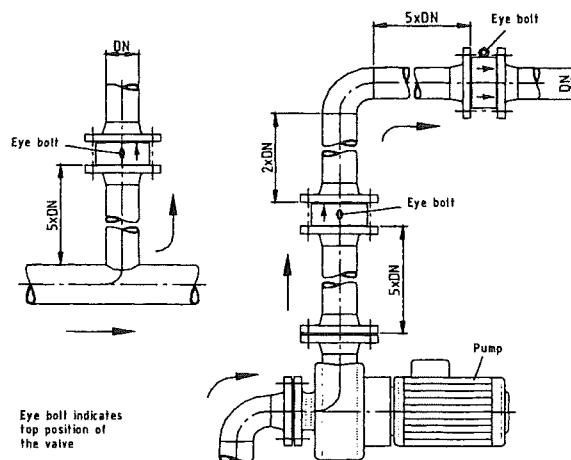
The arrow indicating the flow direction and the flow direction itself need to run in the same direction.

For the valve to open a minimum dynamic pressure is required. Valves without spring can only be installed in vertical lines with upward flow.

Installation in

horizontal

vertical pipeline



Attention	Wafer type non-return valves are designed for installation between two pipeline flanges including appropriate flange sealings. The outer diameter of the valve centres itself by the flange bolts. The fasteners require a technical applicability in accordance to the service conditions. They have to comply with the regulations and have to be tightened with the permissible torque. Screws, nuts or flange sealings are not covered by the valve manufacturers' scope of supply.
------------------	---

9 Initial Operation, Shut-down, Maintenance

9.1 Initial Operation

General information

Materials and service conditions have to be compared with the pipeline system data before pressure test and initial operation in order to check resistance and load. For new plants or repairs the pipeline system has to be thoroughly rinsed in order to clean it from potential welding residues or any other damaging solid particles.

Pressure tests of pipeline sections

Since non-return valves are always in a closed position within a filled pipeline section a testing overpressure value of $1,1 \times PS$ must not be exceeded ($PS = NP = \text{max. permissible working pressure}$).

Throughout the pressure test process the valve and the flange connections have to be examined regarding any leaks. Leakages have to be immediately sealed by retightening all fasteners.

9.2 Shut-down

If the system is out of operation for a lasting period all media which might change its condition (i. e. polymerisation, crystallisation, solidification) have to be drained off the piping system. Rinse the system if necessary.

9.3 Maintenance

The valves are maintenance-free. For safety reasons and in order to avoid unnecessary periods of interruption the operator is advised to examine functionality and reliability of the valves within reasonable and regular intervals (periods to be defined by the operator).

Safety instructions in chapter 4 are to be considered.

9.4 Elimination of Failures

Failure definition	Potential reasons	Remedy
High leakage rate	<ul style="list-style-type: none"> • Contaminated seat facings • Deformation of disc/cone/plate by hammer blow • Damaged seat ring • Disc/cone/plate does not close, cone is hanging, high activity rate causes a seizing due to friction 	⇒ Clean the seat facings, regrind if necessary ⇒ Replace disc/cone/plate ⇒ Replace seat ring ⇒ Recheck operating data, reengineer all parts
Inappropriate noises	Insufficient flow rate, turbulent flow, decelerated starting of the pump	⇒ Select reduced sizes ⇒ Recheck the distance between pipe bend and pump (5-7xDN) ⇒ Use lighter plates or springs with reduced opening pressure ⇒ Extend the period of running up the pump
Leaks of stuffing box (ZRL-HG, ZRD)	Stuffing box is inadequately preloaded	⇒ Retighten stuffing box ⇒ Replace stuffing box packings if necessary
No flow	Valve is installed in the wrong way	⇒ Arrow of flow direction has to run in the same direction as the flow itself.
Leaks of flange sealings	Connection flanges are not wired	⇒ Retighten fasteners

10 Spare Parts

Attention	For repair work any valve parts must only be replaced by spare parts from the original supplier. Unauthorised conversion as well as spare parts production cause an expiry of the declaration of conformity and may also invalidate any warranty claims.
------------------	--

Any springs or o-rings (relevant for valves equipped with a soft sealing) can be ordered as spare parts. The full marking of the valve body has to be specified in the purchase order.

11 Further Information

For further information such as RITAG technical data sheets, repair instructions, certificates etc. please contact us at www.ritag.com or send your mail to:

RITAG Armaturenwerk
 Postfach 13 32
 D 27703 Osterholz-Scharmbeck
 Industriestraße 7-9
 D 27711 Osterholz-Scharmbeck
 Tel. +49 (0) 4791 9209-0
 Fax +49 (0) 4791 9209-85
 E-Mail: contact@ritag.com