FR DN 32÷400

Wafer check valve

FR
DN 32÷400

The FR wafer check valve is designed to be installed directly between stubs and flanges in accordance with ISO/ DIN, ANSI standards.
Available also with springs for low backpressure applications.

WAFER CHECK VALVE

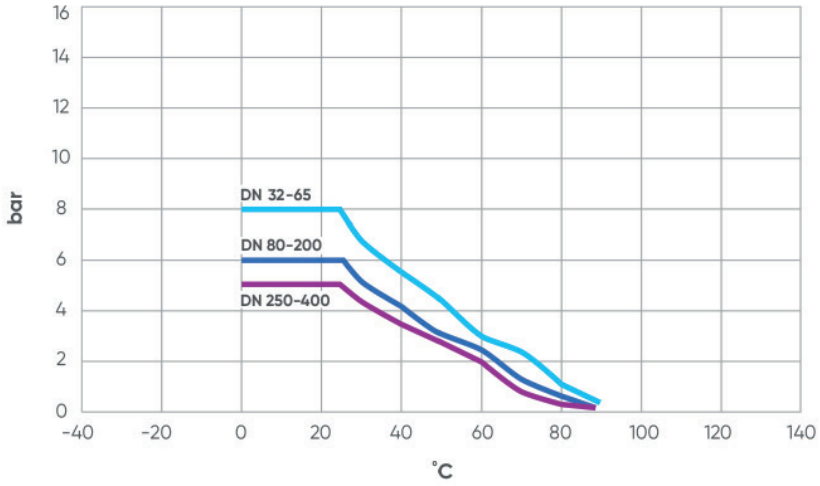
- **Metal support for easy and precise centring** of the valve during installation
- Can be installed in either a vertical or horizontal position
- Models with springs in INOX 316 stainless steel or Hastelloy for the conveyance of aggressive fluids.
- **Sealing system with O-ring** for optimum sealing and installation without flat gaskets

Technical specifications	
Construction	Wafer check valve
Size range	DN 32 ÷ 400
Nominal pressure	PN 8 (DN32-65), PN 6 (DN80-200), PN 5 (DN250-300) - with water at 20°C
Temperature range	0 °C ÷ 95 °C
Coupling standards	**Flanging system:** DIN 2501 PN 10, EN ISO 1452,EN ISO 15493,ANSI B16.5 cl.150, JIS B2220
Reference standards	**Construction criteria:** EN ISO 16137 EN ISO 1452, EN ISO 15493
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	PP-H
Seal material	EPDM, FKM
Spring material	None, SS 316, Hastelloy C4

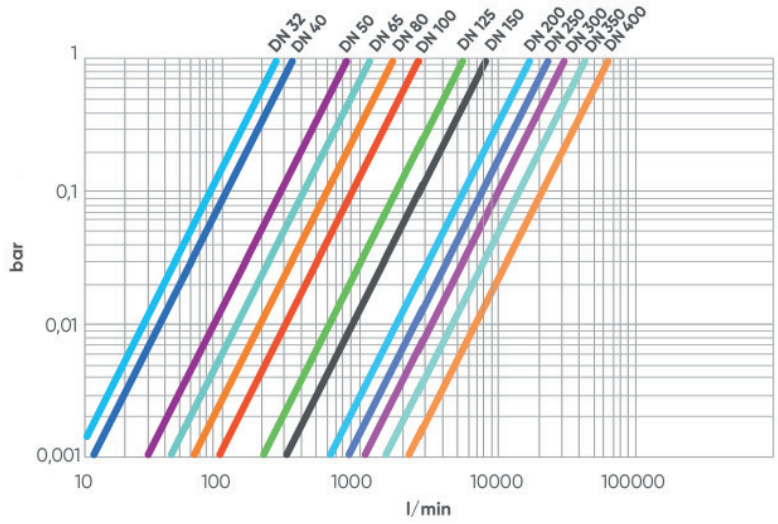
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

Graph valid for water e non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
Kv100 l/min	270	370	900	1250	1867	2867	5700	8167	18800	25000	31900	46700	61700

MINIMUM PRESSURE REQUIRED TO OPEN THE VALVE IN A VERTICAL FLOW

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	3	2	3	3	3	3	3	3	4	4	4	5	7

WITHOUT SPRING

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	23	22	23	23	23	23	23	23	24	24	24	25	27

WITH SPRING

MINIMUM PRESSURE REQUIRED TO OPEN THE VALVE IN A HORIZONTAL FLOW

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	1	1	1	1	1	1	1	1	1	1	1	2	3

WITHOUT SPRING

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	21	21	21	21	21	21	21	21	21	21	21	22	23

WITH SPRING

MINIMUM VALVE SEALING PRESSURES

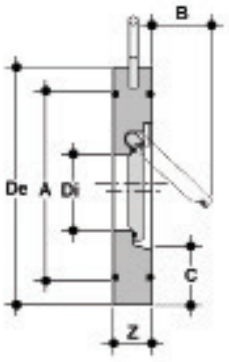
DN	32	40	50	65	80	100	125	150	200	250	300	350	400
bar	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

TIGHTENING TORQUE

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
Nm*	15	15	20	20	20	20	25	30	35	40	45	50	60

*Tightening torques for nuts and bolts on couplings with backing rings. Values required to obtain the hydraulic test seal (1.5 x PN at 20°C) (new or lubricated nuts and bolts)

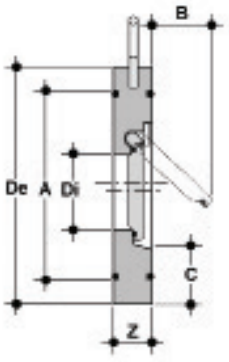
DIMENSIONS



FROM

Wafer check valve in PP-H without spring

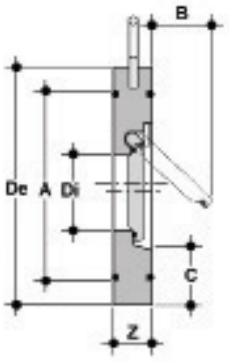
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040E	FROM040F
50	40	8	72	25	28	95	22	16	100	FROM050E	FROM050F
63	50	8	86	37	29	109	32	18	180	FROM063E	FROM063F
75	65	8	105	50	31	129	40	20	230	FROM075E	FROM075F
90	80	6	119	61	32	144	54	20	270	FROM090E	FROM090F
110	100	6	146	77	31	164	70	23	380	FROM110E	FROM110F
140	125	6	173	94	35	195	92	23	510	FROM140E	FROM140F
160	150	6	197	100	40	220	105	26	760	FROM160E	FROM160F
225	200	6	255	152	38	275	154	34	1430	FROM225E	FROM225F
280	250	5	312	180	41	330	192	40	2440	FROM280E	FROM280F
315	300	5	363	215	41	380	227	45	3570	FROM315E	FROM315F
350	350	5	416	245	44	440	266	49	5123	FROM355E	FROM355F
400	400	5	467	285	50	491	310	65	8462	FROM400E	FROM400F



FROM - Spring in A316

Wafer check valve in PP-H

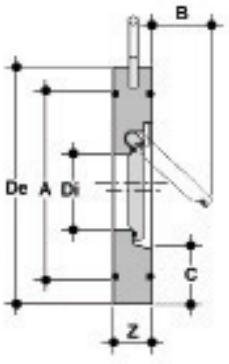
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040EMLX	FROM040FMLX
50	40	8	72	25	28	95	22	16	100	FROM050EMLX	FROM050FMLX
63	50	8	86	37	29	109	32	18	180	FROM063EMLX	FROM063FMLX
75	65	8	105	50	31	129	40	20	230	FROM075EMLX	FROM075FMLX
90	80	6	119	61	32	144	54	20	270	FROM090EMLX	FROM090FMLX
110	100	6	146	77	31	164	70	23	380	FROM110EMLX	FROM110FMLX
140	125	6	173	94	35	195	92	23	510	FROM140EMLX	FROM140FMLX
160	150	6	197	100	40	220	105	26	760	FROM160EMLX	FROM160FMLX
225	200	6	255	152	38	275	154	34	1430	FROM225EMLX	FROM225FMLX
280	250	5	312	180	41	330	192	40	2440	FROM280EMLX	FROM280FMLX
315	300	5	363	215	41	380	227	45	3570	FROM315EMLX	FROM315FMLX
350	350	5	416	245	44	440	266	49	5123	FROM355EMLX	FROM355FMLX
400	400	5	467	285	50	491	310	65	8462	FROM400EMLX	FROM400FMLX



FROM in Hastelloy

Wafer check valve in PP-H

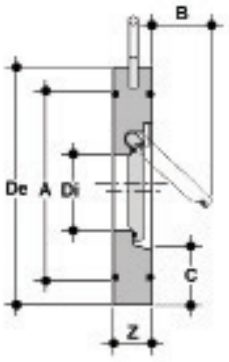
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040EMLH	FROM040FMLH
50	40	8	72	25	28	95	22	16	100	FROM050EMLH	FROM050FMLH
63	50	8	86	37	29	109	32	18	180	FROM063EMLH	FROM063FMLH
75	65	8	105	50	31	129	40	20	230	FROM075EMLH	FROM075FMLH
90	80	6	119	61	32	144	54	20	270	FROM090EMLH	FROM090FMLH
110	100	6	146	77	31	164	70	23	380	FROM110EMLH	FROM110FMLH
140	125	6	173	94	35	195	92	23	510	FROM140EMLH	FROM140FMLH
160	150	6	197	100	40	220	105	26	760	FROM160EMLH	FROM160FMLH
225	200	6	255	152	38	275	154	34	1430	FROM225EMLH	FROM225FMLH
280	250	5	312	180	41	330	192	40	2440	FROM280EMLH	FROM280FMLH
315	300	5	363	215	41	380	227	45	3570	FROM315EMLH	FROM315FMLH
350	350	5	416	245	44	440	266	49	5123	FROM355EMLH	FROM355FMLH
400	400	5	467	285	50	491	310	65	8462	FROM400EMLH	FROM400FMLH



FROAM

Wafer check valve in PP-H without spring version ANSI

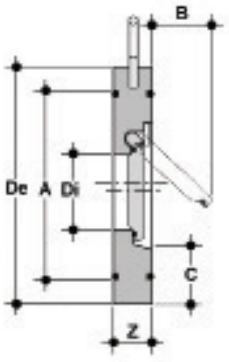
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM Code
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112E	FROAM112F
2"	50	8	86	37	29	105	32	18	180	FROAM200E	FROAM200F
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212E	FROAM212F
3"	80	6	119	61	32	137	54	20	270	FROAM300E	FROAM300F
4"	100	6	146	77	31	175	70	23	380	FROAM400E	FROAM400F
5"	125	6	173	94	35	197	92	23	510	FROAM500E	FROAM500F
6"	150	6	197	100	40	222	105	26	760	FROAM600E	FROAM600F
8"	200	6	255	152	38	279	154	34	1430	FROAM800E	FROAM800F
10"	250	5	312	180	41	340	192	40	2440	FROAM810E	FROAM810F
12"	300	5	363	215	41	410	227	45	3570	FROAM812E	FROAM812F
14"	350	5	416	245	44	451	266	49	5123	FROAM814E	FROAM814F
16"	400	5	467	285	50	514	310	65	8462	FROAM816E	FROAM816F



FROAM - Spring in A316

Wafer check valve in PP-H with spring version ANSI

d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112EMLX	FROAM112FMLX
2"	50	8	86	37	29	105	32	18	180	FROAM200EMLX	FROAM200FMLX
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212EMLX	FROAM212FMLX
3"	80	6	119	61	32	137	54	20	270	FROAM300EMLX	FROAM300FMLX
4"	100	6	146	77	31	175	70	23	380	FROAM400EMLX	FROAM400FMLX
5"	125	6	173	94	35	197	92	23	510	FROAM500EMLX	FROAM500FMLX
6"	150	6	197	100	40	222	105	26	760	FROAM600EMLX	FROAM600FMLX
8"	200	6	255	152	38	279	154	34	1430	FROAM800EMLX	FROAM800FMLX
10"	250	5	312	180	41	340	192	40	2440	FROAM810EMLX	FROAM810FMLX
12"	300	5	363	215	41	410	227	45	3570	FROAM812EMLX	FROAM812FMLX
14"	350	5	416	245	44	451	266	49	5123	FROAM814EMLX	FROAM814FMLX
16"	400	5	467	285	50	514	310	65	8462	FROAM816EMLX	FROAM816FMLX



FROAM - Spring in Hastelloy

Wafer check valve in PP-H with spring version ANSI

d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112EMLH	FROAM112FMLH
2"	50	8	86	37	29	105	32	18	180	FROAM200EMLH	FROAM200FMLH
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212EMLH	FROAM212FMLH
3"	80	6	119	61	32	137	54	20	270	FROAM300EMLH	FROAM300FMLH
4"	100	6	146	77	31	175	70	23	380	FROAM400EMLH	FROAM400FMLH
5"	125	6	173	94	35	197	92	23	510	FROAM500EMLH	FROAM500FMLH
6"	150	6	197	100	40	222	105	26	760	FROAM600EMLH	FROAM600FMLH
8"	200	6	255	152	38	279	154	34	1430	FROAM800EMLH	FROAM800FMLH
10"	250	5	312	180	41	340	192	40	2440	FROAM810EMLH	FROAM810FMLH
12"	300	5	363	215	41	410	227	45	3570	FROAM812EMLH	FROAM812FMLH
14"	350	5	416	245	44	451	266	49	5123	FROAM814EMLH	FROAM814FMLH
16"	400	5	467	285	50	514	310	65	8462	FROAM816EMLH	FROAM816FMLH

INSTALLATION

During installation, make sure that the following requirements are complied with:

1) Check that the operating temperature and pressure are below those allowed by the PN of the specific model.

2) Leave a straight section of pipe of length equal to 5 times the nominal diameter before and after the valve.

3) Do not install the valve directly on the pump flange. The use of flat gaskets is recommended in order to guarantee a perfect seal between the valve and stubs with serrated face.

4) The spring loaded versions are advised in case of pulsating flow in order to avoid noises.

5) The FR valve can be used on vertical pipes only if the fluid flow is upwards.

6) After having aligned the valve with the stub, tighten the flange bolts in a diagonal sequence to the required torque. Run a test before starting the full operation.

7) For installation on PP-H or PE piping with butt welding fusion: The use of special stubs QBXM or QBXE on the outlet side of the valve is advised in order to allow a complete valve opening.

8) For the installation of FR valves on PP-H or PVDF piping with socket welding fusion: the use of QRX spacers of the designed material on the outlet side of the valve is advised to allow full opening of the FR. Please ask your commercial contact or FIP technical support for further information.

9) The spacer needs to be installed between the valve and the QRNM or QRNF stub; the flat side of the spacer needs to be installed on the side of the valve and a flat gasket needs to installed between the spacer and the stub. It is recommended to remove the welded material after the fusion from the stub to be installed on the outlet side of the valve.

The use on piping with an SDR lower than 17 for dimensions above d63 is not advised (SDR11, d75-110).