

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 and JIS standards. Available also with springs for low backpressure applications.

WAFER CHECK VALVE

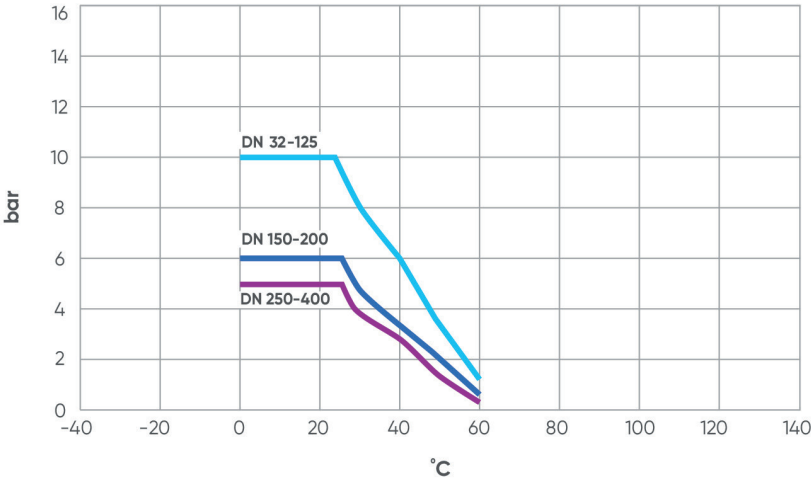
- **Metal support for easy and precise centring of the valve** during installation
- Can be installed in either a vertical or horizontal position
- Models with springs in INOX 316 stainless steel or Hastelloy for the conveyance of aggressive fluids.
- **Sealing system with O-ring** for optimum sealing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

Technical specifications	
Construction	Wafer check valve
Size range	DN 32 ÷ 400
Nominal pressure	PN 10 (DN32-125), PN 6 (DN150-200), PN 5 (DN250-400) in water at 20°C
Temperature range	0 °C ÷ 60 °C
Coupling standards	Flanging system: EN 1092-1, 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	PVC-U
Seal material	EPDM, FKM
Spring material	SS 316, Hastelloy C4

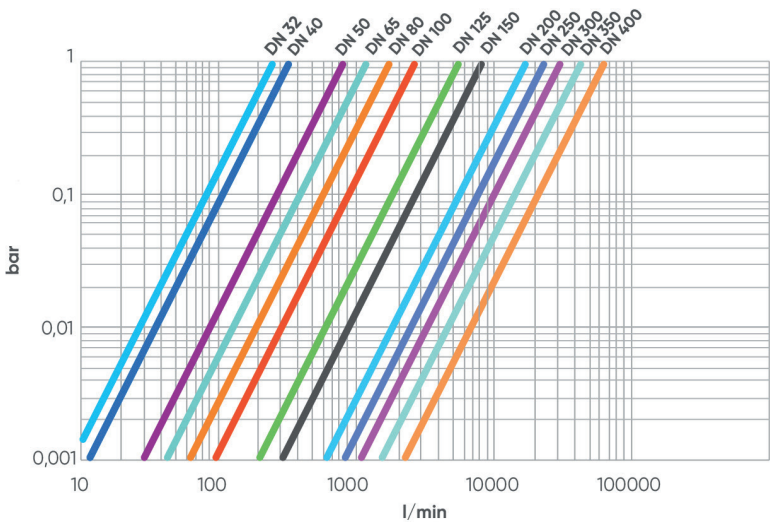
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water e non-hazardous fluids with regard to which the material is clas-
sified 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	2	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	4	4	5	5	5	5	5	5	6	6	6	7	9

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	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,3

WITHOUT SPRING

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

WITH SPRING

MINIMUM VALVE SEALING PRESSURES

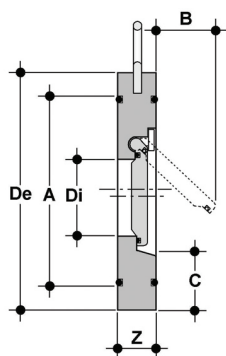
DN	32	40	50	65	80	100	125	150	200	250	300	350	400
bar	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

TIGHTENING TORQUE

*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)

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

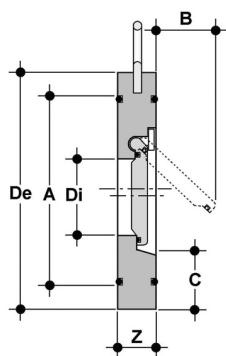
DIMENSIONS



FROV

uPVC wafer check valve without spring, version ISO-DIN

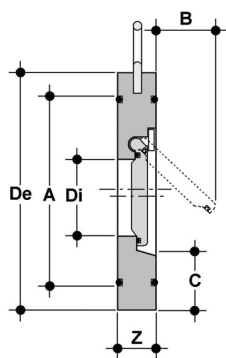
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM Code
40	32	10	59	22	25	85	18	15	120	FROV040E	FROV040F
50	40	10	72	25	28	95	22	16	160	FROV050E	FROV050F
63	50	10	86	37	29	109	32	18	260	FROV063E	FROV063F
75	65	10	105	50	31	129	40	20	330	FROV075E	FROV075F
90	80	10	119	61	32	144	54	20	400	FROV090E	FROV090F
110	100	10	146	77	31	164	70	23	560	FROV110E	FROV110F
140	125	10	173	94	35	195	92	23	760	FROV140E	FROV140F
160	150	6	197	100	40	220	105	26	1120	FROV160E	FROV160F
225	200	6	255	152	38	275	154	34	2130	FROV225E	FROV225F
280	250	5	312	180	41	330	192	40	3540	FROV280E	FROV280F
315	300	5	363	215	41	380	227	45	5350	FROV315E	FROV315F
350	350	5	416	245	44	440	266	49	7855	FROV355E	FROV355F
400	400	5	467	285	50	491	310	65	12975	FROV400E	FROV400F



FROV - Spring in A316

uPVC wafer check valve with spring, version ISO-DIN

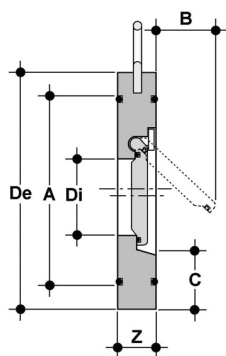
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	120	FROV040EMLX	FROV040FMLX
50	40	10	72	25	28	95	22	16	160	FROV050EMLX	FROV050FMLX
63	50	10	86	37	29	109	32	18	260	FROV063EMLX	FROV063FMLX
75	65	10	105	50	31	129	40	20	330	FROV075EMLX	FROV075FMLX
90	80	10	119	61	32	144	54	20	400	FROV090EMLX	FROV090FMLX
110	100	10	146	77	31	164	70	23	560	FROV110EMLX	FROV110FMLX
140	125	10	173	94	35	195	92	23	760	FROV140EMLX	FROV140FMLX
160	150	6	197	100	40	220	105	26	1120	FROV160EMLX	FROV160FMLX
225	200	6	255	152	38	275	154	34	2130	FROV225EMLX	FROV225FMLX
280	250	5	312	180	41	330	192	40	3540	FROV280EMLX	FROV280FMLX
315	300	5	363	215	41	380	227	45	5350	FROV315EMLX	FROV315FMLX
350	350	5	416	245	44	440	266	49	7855	FROV355EMLX	FROV355FMLX
400	400	5	467	285	50	491	310	65	12975	FROV400EMLX	FROV400FMLX



FROV - Spring in Hastelloy

uPVC wafer check valve with spring, version ISO-DIN

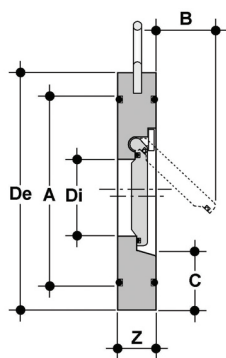
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	120	FROV040EMLH	FROV040FMLH
50	40	10	72	25	28	95	22	16	160	FROV050EMLH	FROV050FMLH
63	50	10	86	37	29	109	32	18	260	FROV063EMLH	FROV063FMLH
75	65	10	105	50	31	129	40	20	330	FROV075EMLH	FROV075FMLH
90	80	10	119	61	32	144	54	20	400	FROV090EMLH	FROV090FMLH
110	100	10	146	77	31	164	70	23	560	FROV110EMLH	FROV110FMLH
140	125	10	173	94	35	195	92	23	760	FROV140EMLH	FROV140FMLH
160	150	6	197	100	40	220	105	26	1120	FROV160EMLH	FROV160FMLH
225	200	6	255	152	38	275	154	34	2130	FROV225EMLH	FROV225FMLH
280	250	5	312	180	41	330	192	40	3540	FROV280EMLH	FROV280FMLH
315	300	5	363	215	41	380	227	45	5350	FROV315EMLH	FROV315FMLH
350	350	5	416	245	44	440	266	49	7855	FROV355EMLH	FROV355FMLH
400	400	5	467	285	50	491	310	65	12975	FROV400EMLH	FROV400FMLH



FROAV

uPVC wafer check valve without spring, version ANSI

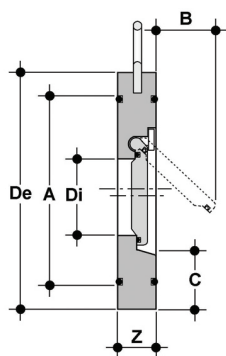
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	120	FROAV114E	FROAV114F
1"1/2	40	10	72	25	28	83	22	16	160	FROAV112E	FROAV112F
2"	50	10	86	37	29	105	32	18	260	FROAV200E	FROAV200F
2"1/2	65	10	105	50	31	124	40	20	330	FROAV212E	FROAV212F
3"	80	10	119	61	32	137	54	20	400	FROAV300E	FROAV300F
4"	100	10	146	77	31	175	70	23	560	FROAV400E	FROAV400F
5"	125	10	173	94	35	197	92	23	760	FROAV500E	FROAV500F
6"	150	6	197	100	40	222	105	26	1120	FROAV600E	FROAV600F
8"	200	6	255	152	38	279	154	34	2130	FROAV800E	FROAV800F
10"	250	5	312	180	41	340	192	40	3540	FROAV810E	FROAV810F
12"	300	5	363	215	41	410	227	45	5350	FROAV812E	FROAV812F
14"	350	5	416	245	44	451	266	49	7855	FROAV814E	FROAV814F
16"	400	5	467	285	50	514	310	65	12975	FROAV816E	FROAV816F



FROAV - Spring in A316

uPVC wafer check valve with spring, version ANSI

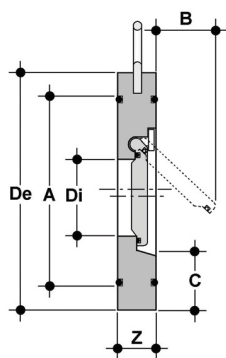
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	120	FROAV114EMLX	FROAV114FMLX
1"1/2	40	10	72	25	28	83	22	16	160	FROAV112EMLX	FROAV112FMLX
2"	50	10	86	37	29	105	32	18	260	FROAV200EMLX	FROAV200FMLX
2"1/2	65	10	105	50	31	124	40	20	330	FROAV212EMLX	FROAV212FMLX
3"	80	10	119	61	32	137	54	20	400	FROAV300EMLX	FROAV300FMLX
4"	100	10	146	77	31	175	70	23	560	FROAV400EMLX	FROAV400FMLX
5"	125	10	173	94	35	197	92	23	760	FROAV500EMLX	FROAV500FMLX
6"	150	6	197	100	40	222	105	26	1120	FROAV600EMLX	FROAV600FMLX
8"	200	6	255	152	38	279	154	34	2130	FROAV800EMLX	FROAV800FMLX
10"	250	5	312	180	41	340	192	40	3540	FROAV810EMLX	FROAV810FMLX
12"	300	5	363	215	41	410	227	45	5350	FROAV812EMLX	FROAV812FMLX
14"	350	5	416	245	44	451	266	49	7855	FROAV814EMLX	FROAV814FMLX
16"	400	5	467	285	50	514	310	65	12975	FROAV816EMLX	FROAV816FMLX



FROAV - Spring in Hastelloy

uPVC wafer check valve with spring, version ANSI

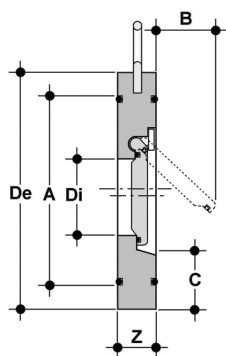
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	120	FROAV114EMLH	FROAV114FMLH
1"1/2	40	10	72	25	28	83	22	16	160	FROAV112EMLH	FROAV112FMLH
2"	50	10	86	37	29	105	32	18	260	FROAV200EMLH	FROAV200FMLH
2"1/2	65	10	105	50	31	124	40	20	330	FROAV212EMLH	FROAV212FMLH
3"	80	10	119	61	32	137	54	20	400	FROAV300EMLH	FROAV300FMLH
4"	100	10	146	77	31	175	70	23	560	FROAV400EMLH	FROAV400FMLH
5"	125	10	173	94	35	197	92	23	760	FROAV500EMLH	FROAV500FMLH
6"	150	6	197	100	40	222	105	26	1120	FROAV600EMLH	FROAV600FMLH
8"	200	6	255	152	38	279	154	34	2130	FROAV800EMLH	FROAV800FMLH
10"	250	5	312	180	41	340	192	40	3540	FROAV810EMLH	FROAV810FMLH
12"	300	5	363	215	41	410	227	45	5350	FROAV812EMLH	FROAV812FMLH
14"	350	5	416	245	44	451	266	49	7855	FROAV814EMLH	FROAV814FMLH
16"	400	5	467	285	50	514	310	65	12975	FROAV816EMLH	FROAV816FMLH



FROJV

uPVC wafer check valve without spring, version JIS K10

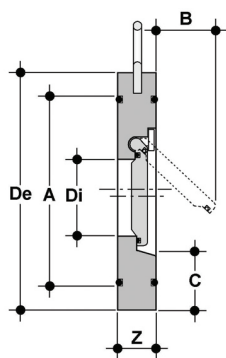
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM code
1"1/4	32	10	59	22	25	85	18	15	120	FROJV114E	FROJV114F
1"1/2	40	10	72	25	28	91	22	16	160	FROJV112E	FROJV112F
2"	50	10	86	37	29	105	32	18	260	FROJV200E	FROJV200F
2"1/2	65	10	105	50	31	124	40	20	330	FROJV212E	FROJV212F
3"	80	10	119	61	32	135	54	20	400	FROJV300E	FROJV300F
4"	100	10	146	77	31	160	70	23	560	FROJV400E	FROJV400F
5"	125	10	173	94	35	191	92	23	760	FROJV500E	FROJV500F
6"	150	6	197	100	40	220	105	26	1120	FROJV600E	FROJV600F
8"	200	6	255	152	38	271	154	34	2130	FROJV800E	FROJV800F
10"	250	5	312	180	41	330	192	40	3540	FROJV810E	FROJV810F
12"	300	5	363	215	41	380	227	45	5350	FROJV812E	FROJV812F
14"	350	5	416	245	44	424	266	49	7855	FROJV814E	FROJV814F
16"	400	5	467	285	50	487	310	65	12975	FROJV816E	FROJV816F



FROJV - Spring in A316

uPVC wafer check valve with spring, version JIS K10

d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM code
1"1/4	32	10	59	22	25	85	18	15	120	FROJV114EMLX	FROJV114FMLX
1"1/2	40	10	72	25	28	91	22	16	160	FROJV112EMLX	FROJV112FMLX
2"	50	10	86	37	29	105	32	18	260	FROJV200EMLX	FROJV200FMLX
2"1/2	65	10	105	50	31	124	40	20	330	FROJV212EMLX	FROJV212FMLX
3"	80	10	119	61	32	135	54	20	400	FROJV300EMLX	FROJV300FMLX
4"	100	10	146	77	31	160	70	23	560	FROJV400EMLX	FROJV400FMLX
5"	125	10	173	94	35	191	92	23	760	FROJV500EMLX	FROJV500FMLX
6"	150	6	197	100	40	220	105	26	1120	FROJV600EMLX	FROJV600FMLX
8"	200	6	255	152	38	271	154	34	2130	FROJV800EMLX	FROJV800FMLX
10"	250	5	312	180	41	330	192	40	3540	FROJV810EMLX	FROJV810FMLX
12"	300	5	363	215	41	380	227	45	5350	FROJV812EMLX	FROJV812FMLX
14"	350	5	416	245	44	424	266	49	7855	FROJV814EMLX	FROJV814FMLX
16"	400	5	467	285	50	487	310	65	12975	FROJV816EMLX	FROJV816FMLX



FROJV - Spring in Hastelloy

uPVC wafer check valve with spring, version JIS K10

d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM code
1"1/4	32	10	59	22	25	85	18	15	120	FROJV114EMLH	FROJV114FMLH
1"1/2	40	10	72	25	28	91	22	16	160	FROJV112EMLH	FROJV112FMLH
2"	50	10	86	37	29	105	32	18	260	FROJV200EMLH	FROJV200FMLH
2"1/2	65	10	105	50	31	124	40	20	330	FROJV212EMLH	FROJV212FMLH
3"	80	10	119	61	32	135	54	20	400	FROJV300EMLH	FROJV300FMLH
4"	100	10	146	77	31	160	70	23	560	FROJV400EMLH	FROJV400FMLH
5"	125	10	173	94	35	191	92	23	760	FROJV500EMLH	FROJV500FMLH
6"	150	6	197	100	40	220	105	26	1120	FROJV600EMLH	FROJV600FMLH
8"	200	6	255	152	38	271	154	34	2130	FROJV800EMLH	FROJV800FMLH
10"	250	5	312	180	41	330	192	40	3540	FROJV810EMLH	FROJV810FMLH
12"	300	5	363	215	41	380	227	45	5350	FROJV812EMLH	FROJV812FMLH
14"	350	5	416	245	44	424	266	49	7855	FROJV814EMLH	FROJV814FMLH
16"	400	5	467	285	50	487	310	65	12975	FROJV816EMLH	FROJV816FMLH

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 PVC-U pipes it's needed to use FIP QPV (d50 – d160) stubs and QRV stubs using flat gasket QHV/Y (d225 – d315), installed on PVC pipes class PN10 or lower together with type ODV flanges

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