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GAS FILTER type PFZN

07/2023

1. APLLICATION

The filter is designed to separate solid mechanical impurities from the flowing gaseous working fluid in gas pressure regulating stations according to EN 12186, and gas measuring stations according to EN 1776.
The working fluid can be natural gas, hydrogen, natural gas and hydrogen mixture, gaseous phase of propane, butane and propane-butane.
The filter meets technical requirements for gas filtration equipment according to EN 12186, and EN 1776.
The filter is pressure equipment within the meaning of Directive 2014/68/EU of the European Parliament and the Council. The filter is certified by a notified body.
The design calculation is according to EN 13445.

2. DESCRIPTION

The filter consists of a tubular body equipped with flange branches for gas inlet and outlet. The lower part of the filter serves as a gravity separator with a ball valve for mechanical impurities discharging. The upper part of the filter consists of a locking flange with a cover enabling monitoring and changing of filter elements inserted in the tubular body. The filter is equipped with accessories for measuring of pressure loss.
The filter with a nominal diameter up to DN 250 (including) is equipped with the welded-on piece with internal thread G 1/4" for measuring a working fluid pressure inside the filter body. Filter bodies with a nominal diameter DN 300 and larger are fitted with a condensing loop bent with an external thread M20x1,5L. Manometer's connections are fitted with a plug R ¼" or a blinding cover M20x1,5L as a standard.
There is also a branch with a flange DN 15 on the filter body for filter depressurization. This branch is closed with a ball valve and blind flange unless otherwise required. The design of the assembly for measuring the pressure loss of the filter element differs according to the type of manometer, which is supplied based on the customer's request.
The filter cover has a mechanism to prevent its opening under gas pressure. The footers for attaching the filter to the frame are on the filter body with a nominal diameter of DN 125, DN 150, DN 200 and DN 250. The struts are welded on the filter body for a nominal diameter of DN 300 and larger.

3. TECHNICAL PARAMETERS

GAS FILTER PFZN ... PN 16, PN 40, PN 63 and PN 100

Nominal pressure	PN	16	40	63	100
Inlet and outlet flange for gas, gasket bar		EN 1092-1 B1	EN 1092-1 B1	EN 1092-1 B2	EN 1092-1 B2
Maximum allowable pressure	bar	16	40	63	100
Test pressure for strength	bar	24	60	95	150
Test pressure for leakage	bar	20	50	80	125
Allowable temperature	°C	- 20 to + 60			
Filter element		Filter cartridge Fiorentini (polyester cloth reinforced by metal net) Fractional separability 99,0 % for particles ≥ 5 µm Max. allowable pressure loss 1,0 bar			

Note: The filter body is approved for fluid: natural gas, hydrogen, natural gas and hydrogen mixture, gaseous phase of propane, butane and propane-butane. The maximum concentration of H_2 can be limited (reduced) according to the type of equipment ordered (design of the sludge valve, pressure relief ball valve, valve set and differential manometer).
Standard filter design: H_2 content in natural gas mixture limited to 100% vol.

The type number is determined as follows:

PFZN 250 - 1 - 40 - 100 - 01 - M11 - S

Special version: it is given only in cases of different version than standard

Manometer type:

M9 - differential manometer ϕ80 mm, directly indicating difference, without valves on instrument piping

M9E - differential manometer ϕ80 mm with electric contact outlet, without valves on instrument piping

M11 - differential manometer ϕ80 mm, with three-way set

M11E - differential manometer ϕ80 mm with electric contact outlet and with three-way set

Differential manometers – standard measuring range:

Inlet pressure:	up to 4 bar:	0 ÷ 0,5 bar
	above 4 bar:	0 ÷ 1,6 bar

The request for a measuring range different from the standard one must be specified in the order.

Version:

01 ÷ 04 - orientation of inlet, outlet, sludge valve and manometer placement

DN inlet and outlet gas flange:

15 – DN 15
25 – DN 25
50 – DN 50
80 – DN 80
100 – DN 100
150 – DN 150
200 – DN 200
250 – DN 250

Nominal gas pressure:

16 - for max. allowable pressure 16 bar
40 - for max. allowable pressure 40 bar
63 - for max. allowable pressure 63 bar
100 - for max. allowable pressure 100 bar

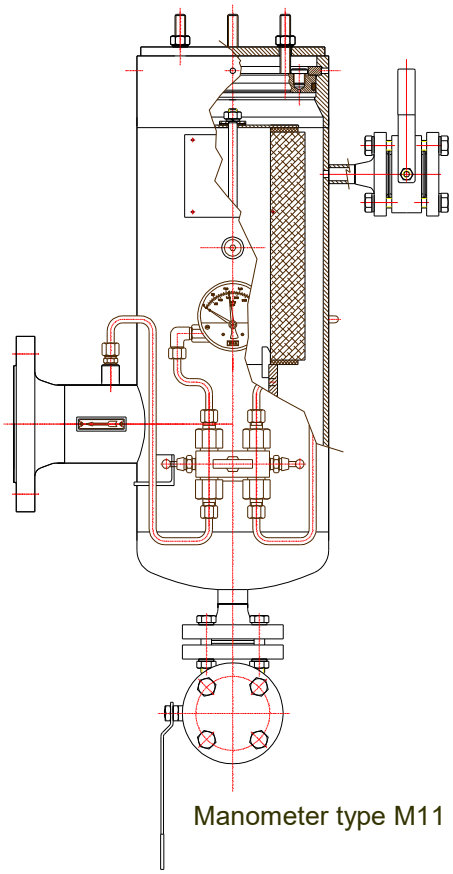
Number of installed filter elements:

1 - 1 pc of filter element
2 - 2 pc of filter elements

Filter body DN:

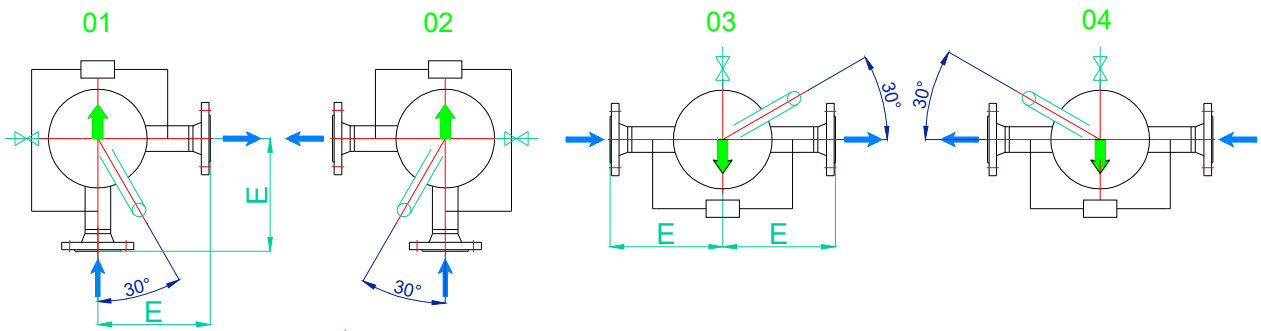
100, 125, 150, 200, 250, 300, 400 and 500

Basic type filter designation



Manometer type M11

VERSION

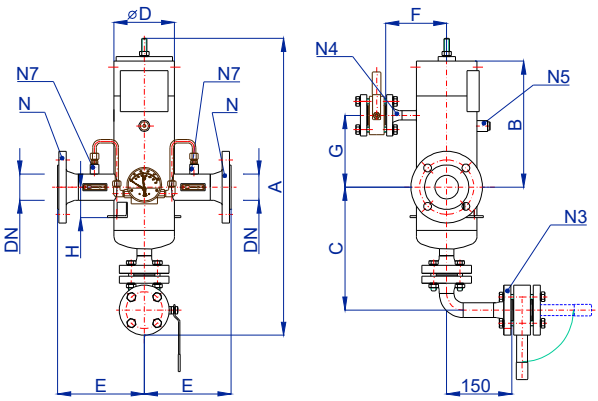


ORIENTATION OF SLUDGE BALL VALVE OUTPUT

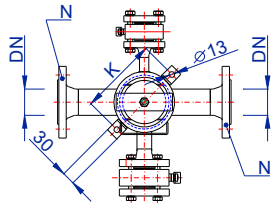
POSITION OF WELDED-ON PIECE FOR FILTER DEPRESSURIZATION

INSTALLATION DIMENSIONS, VERSIONS – PN 16 and PN 40

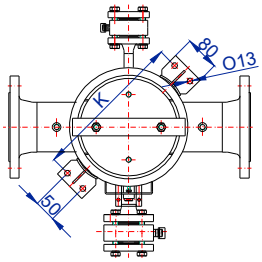
PFZN 100 ÷ PFZN 250



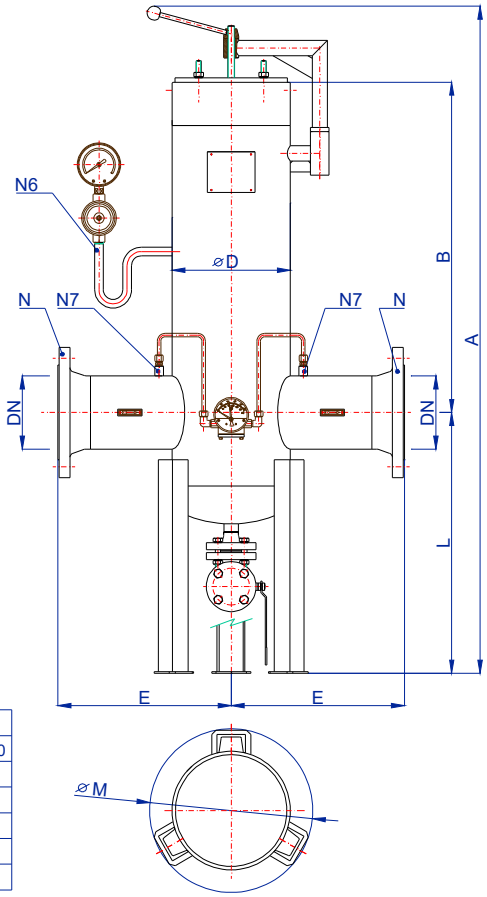
PFZN 125 ÷ PFZN 150

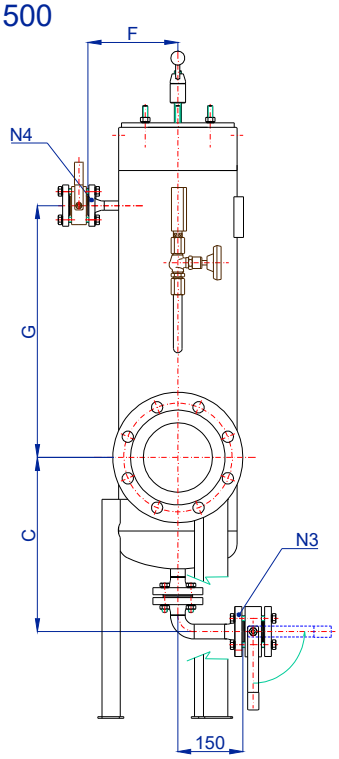


PFZN 200 ÷ PFZN 250



PFZN 300 ÷ PFZN 500





BRANCH	BRANCH NAME	Type	Dimension
N	Gas inlet / outlet	EN 1092	DN 15 ÷ DN 250
N3	Discharge	EN 1092	DN 25
N4	Depressurization	EN 1092	DN 15
N5	Pressure measuring inside the body		G 1/4"
N6	Pressure measuring inside the body		M20x1,5 L
N7	Filter pressure loss measuring		G 1/4"

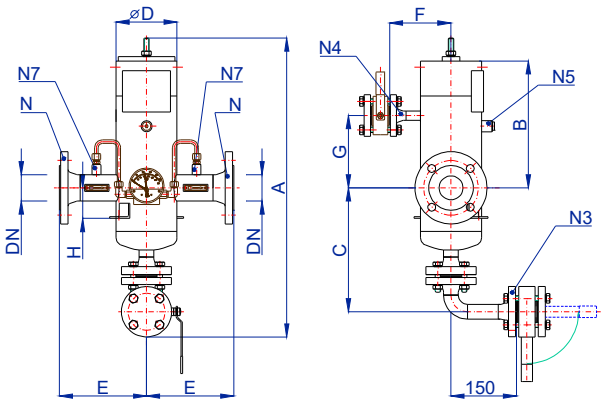
Filter dimensions - type PFZN PN 16 and PN 40 [mm]

The flange branches are fitted with flanges according to EN 1092-1/11 with a gasket bar in B1 design

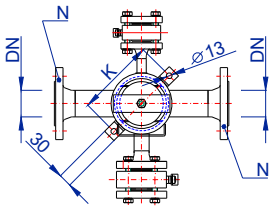
Filter type	Choice of DN inlet/outlet branch N	Max. operating flow rate (m3/h)	A	B	C	D	E	F	G	H	K	L	M	Filter element type	Number of filter elements	Filter weight (kg)	Filter inside volume (l)	Accumulation space (l)
PFZN 100-1	15 25	20 40	590	220	260	114,3	150	125	120	-	-	-	-	G0,5	1	26	3	1
PFZN 100-2	20 25	35 60	715	345	260	114,3	150	125	245	-	-	-	-	G0,5	2	27	4	1
PFZN 125-1	25 50	60 130	680	285	285	139,7	200	138	165	70	180	-	-	G1	1	33	6	1,5
PFZN 125-2	25 50	60 200	850	455	285	139,7	200	138	335	70	180	-	-	G1	2	36	8	1,5
PFZN 150-1	50 80	210 250	740	335	315	168,3	200	152	220	70	208	-	-	G1,5	1	44	10	2,2
PFZN 150-2	50 80	210 360	955	550	315	168,3	200	152	435	70	208	-	-	G1,5	2	49	14	2,2
PFZN 200-1	50 80	220 520	855	420	330	219,1	250	178	285	70	294	-	-	G2	1	61	20	4
PFZN 200-2	80 100	480 620	1150	705	340	219,1	250	178	570	70	294	-	-	G2	2	77	30	4
PFZN 250-1	80 100	480 800	920	460	365	273	300	205	290	70	350	-	-	G2,5	1	88	35	7,5
PFZN 250-2	100 150	800 1000	1255	765	395	273	300	205	590	120	350	-	-	G2,5	2	119	55	8
PFZN 300-1	100 150	800 1000	1335	540	410	323,4	350	230	350	-	-	600	428	G3	1	150	58	11,5
PFZN 300-2	100 150	800 1600	1660	865	410	323,4	350	230	675	-	-	600	428	G3	2	175	82	11,5
PFZN 400-1	150 200	1200 1600	1673	673	480	406,4	450	271	470	-	-	800	510	G4	1	260	118	22
PFZN 400-2	150 200	1800 2800	2092	1092	480	406,4	450	271	890	-	-	800	510	G4	2	310	167	22
PFZN 500-1	200 250	2000 2500	1775	763	560	508	500	322	525	-	-	800	618	G5	1	450	215	40
PFZN 500-2	200 250	2800 4700	2250	1238	560	508	500	322	1000	-	-	800	618	G5	2	530	300	40

INSTALLATION DIMENSIONS, VERSIONS – PN 63 and PN 100

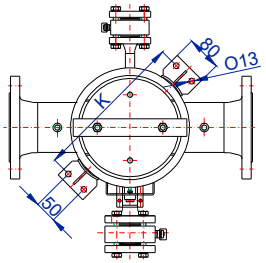
PFZN 100 ÷ PFZN 250



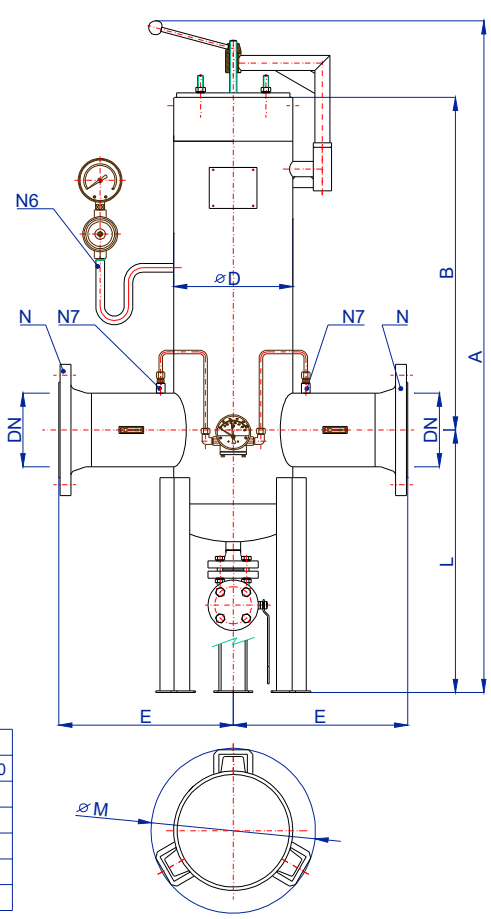
PFZN 125 ÷ PFZN 150

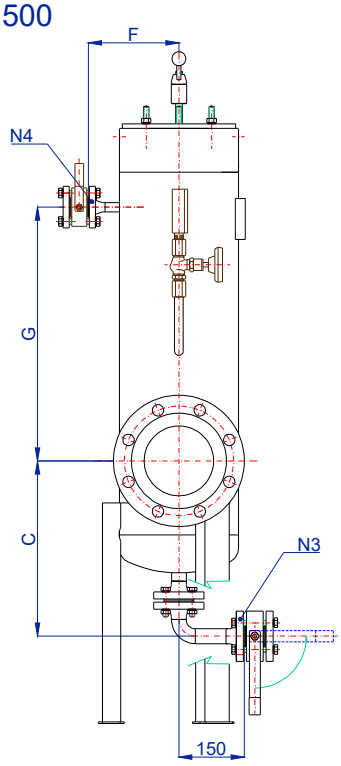


PFZN 200 ÷ PFZN 250



PFZN 300 ÷ PFZN 500





BRANCH	BRANCH NAME	Type	Dimension
N	Gas inlet / outlet	EN 1092	DN 15 ÷ DN 250
N3	Discharge	EN 1092	DN 25
N4	Depressurization	EN 1092	DN 15
N5	Pressure measuring inside the body		G 1/4"
N6	Pressure measuring inside the body		M20x1,5 L
N7	Filter pressure loss measuring		G 1/4"

Filter dimensions - type PFZN PN 63 and PN 100 [mm]

The flange branches are fitted with flanges according to EN 1092-1/11 with a gasket bar in B2 design

Filter type	Choice of DN inlet/outlet branch N	Max. operating flow rate (m3/h)	A	B	C	D	E	F	G	H	K	L	M	Filter element type	Number of filter elements	Filter weight (kg)	Filter inside volume (l)	Accumulation space (l)
PFZN 100-1	15 25	20 40	660	225	320	114,3	175	132	115	-	-	-	-	G0,5	1	36	3	1
PFZN 100-2	20 25	35 50	785	350	320	114,3	175	132	240	-	-	-	-	G0,5	2	38	4	1
PFZN 125-1	25 50	45 120	760	287	351	139,7	200	145	165	70	180	-	-	G1	1	49	6	1,5
PFZN 125-2	25 50	45 190	930	457	351	139,7	200	145	335	70	180	-	-	G1	2	52	8	1,5
PFZN 150-1	50 80	180 220	830	345	382	168,3	225	159	220	70	208	-	-	G1,5	1	65	10	2,5
PFZN 150-2	50 80	180 360	1045	560	382	168,3	225	159	435	70	208	-	-	G1,5	2	71	14	2,5
PFZN 200-1	50 80	180 450	955	434	401	219,1	250	185	285	70	294	-	-	G2	1	93	20	4,5
PFZN 200-2	80 100	450 620	1255	719	419	219,1	275	185	570	70	294	-	-	G2	2	116	30	4,5
PFZN 250-1	80 100	450 720	1005	467	436	273	300	212	275	70	350	-	-	G2,5	1	140	33	7,5
PFZN 250-2	100 150	800 1000	1355	772	481	273	325	212	580	120	350	-	-	G2,5	2	205	52	8,5
PFZN 300-1	100 150	800 950	1330	543	500	323,4	350	237	330	-	-	600	428	G3	1	235	55	12,5
PFZN 300-2	100 150	800 1600	1655	668	500	323,4	350	237	655	-	-	600	428	G3	2	275	76	12,5
PFZN 400-1	150 200	1200 1500	1676	686	568	406,4	450	278	465	-	-	800	510	G4	1	390	115	23
PFZN 400-2	150 200	1500 2700	2095	1105	568	406,4	450	278	884	-	-	800	510	G4	2	460	161	23
PFZN 500-1	200 250	2000 2300	1794	799	638	508	500	329	515	-	-	800	618	G5	1	630	212	45
PFZN 500-2	200 250	2700 4500	2269	1274	638	508	500	329	990	-	-	800	618	G5	2	725	295	45

Detailed data about the filter PFZN are given in document TPN, and can be on your request.