



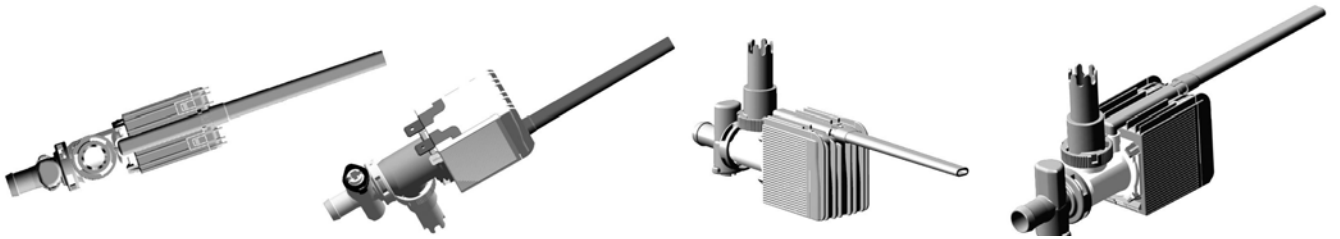
Dry Flapper Valve For Beverage Dispensing Applications

Catalogue 6204/GB



A Flavour of Excellence in Beverage Dispensing





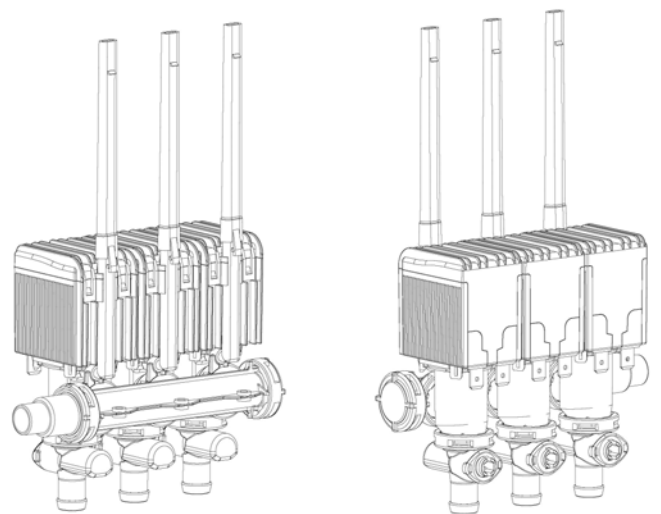
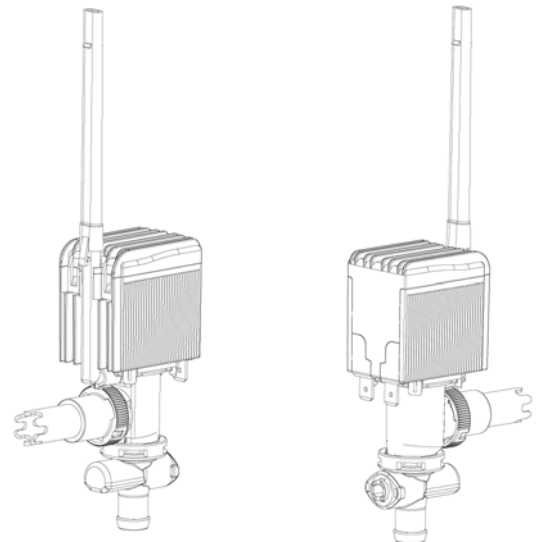
- **The INNOVATIVE solution that breaks with tradition and anticipates the market requirements**
 - **Long operative life due to a small friction of the moving parts**
 - **Minimum maintenance**
- **High flow capacity value and excellent distribution accuracy and constancy over time**

The Dry Flapper Valve makes a new standard in the very low pressure solenoid valve market.

All its components have been designed using the latest CAD technology. The valve passed accurate and severe functional tests and achieved approvals from the most important international institutes.

The result is an innovative product that overcomes the conventional valves in terms of design, functionality and performances. The modularity concept is among the project fundamentals: the valve's control device is the Flapper Pilot. By the use of interchangeable fittings, several different application requirements can be met.

The Dry Flapper valve is also available in manifold construction. Thanks to an inlet manifold fitting, the Dry Flapper Manifold, the single valves can be easily assembled together without using any tool. A special joint fitting allows to link together several Dry Flapper Manifolds, making the product very flexible.



The product

A 2-way normally closed solenoid valve, direct operated, where the fluid is totally separated from metallic parts (dry design). Thanks to its innovative design, the Dry Flapper Valve meets fluids only during the opening cycle. This feature reduces the shocks and temperature stress on the valve's components and limestone deposit inside the valve. Moreover a self cleaning action is carried out by the fluid flowing.

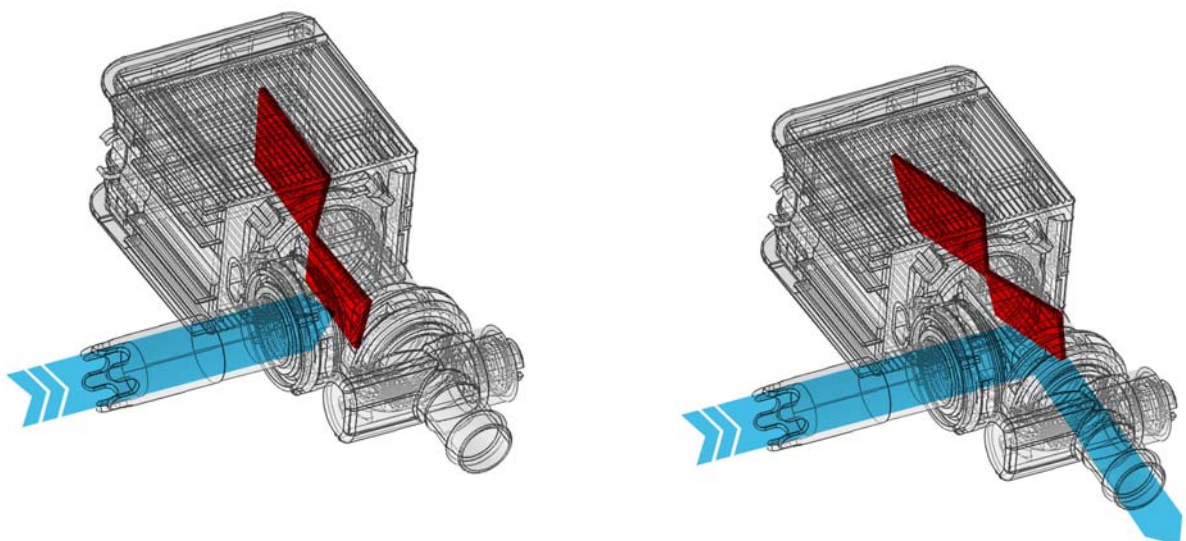
Applications

Fluid control in very low pressure circuit where at the same time high capacity flow value is requested, in particular in the following industries:

- Beverage dispensing automatic machines
- Automatic feeding systems
- Bio medicine applications.

Features & Benefits

Features	Benefits
Smooth and accurate flow rate regulation	Reduced set-up time
Flapper technology (contact with the fluid ONLY during the opening cycle)	Reduction of possible limestone deposit and flow rate constancy → very low level of maintenance
Compact design (venting pipe on the back side)	Space saving in the machine
Low friction of the moving parts (pivoting flapper only)	Long operative life
Inlet - outlet fittings and venting pipes easily interchangeable	Quick maintenance.

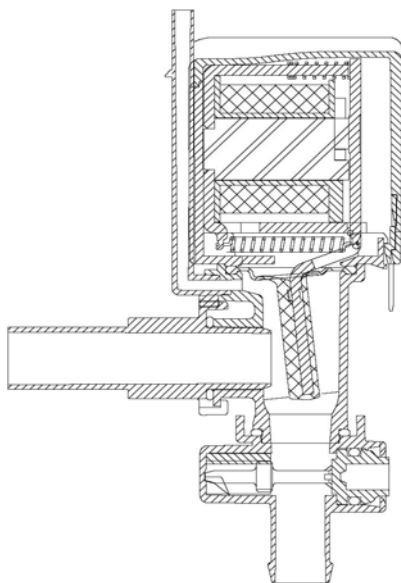
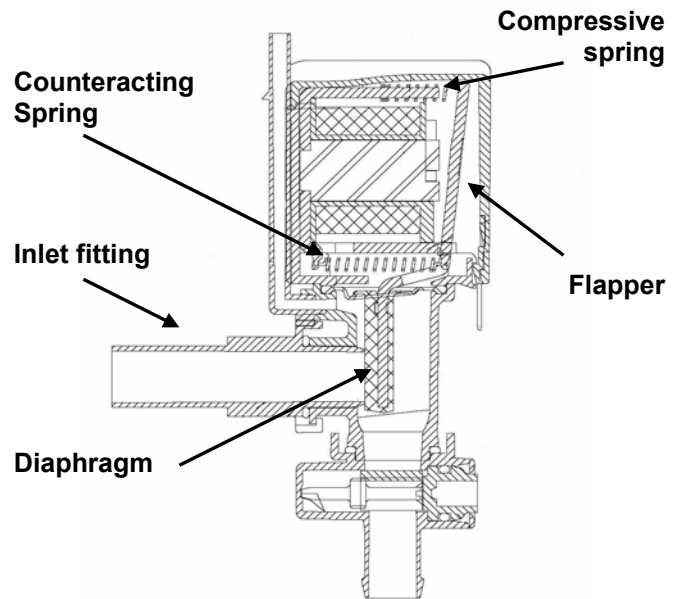


TECHNICAL DATA

Fluid:	Heated and cold potable water (hardness max: 52°f) Other fluids chemically and physically similar	
Construction:	2/2 way solenoid valve, direct operated. Inlet and outlet fittings interchangeable. Outlet fitting available with or without flow regulator and detachable even with the valve mounted in the circuit	
Function:	Normally closed (NC)	
Valve position:	Flapper pilot in the upright position (maximum +/- 45°)	
Temperature range:	Medium: 0°C to +98°C Ambient: +3°C to +70°C	
Operating differential pressure:	0 mbar to 60 mbar	
DN:	8 mm	
Flow rate:	2,6 L/min (with a water height of 100 mm)	
Flow constancy:	+/- 2% (with fresh water at + 23°C)	
Nominal voltages:	24 VDC	24 VAC 50/60Hz 110-120 VAC 50/60Hz 220-240 VAC 50/60Hz
Voltage tolerances:	-15% / +10% from nominal voltages	
Duty cycle:	ED 70%	ED 100%
Power consumption:	5 Watt	5 Watt
Indicative response time:	30 – 60 ms	20 – 40 ms
Insulation class:	F	
Electrical connection:	AMP 6,3x0,8x0,8	
Approvals:	ENEC15 mark cURus UL sanitation CE	Cert. N° 133013-02 File N° E229282 File N° SA12730
Materials (parts in contact with fluid):	Valve body: PSU Inlet, outlet fittings: PSU Diaphragm: VMQ Sealing (O' Ring): EPDM Venting pipe: POM Coil coating: Polyamid (PA 66)	
Working life:	400.000 cycles (5" on/ 5" off)	300.000 cycles (5" on/ 5" off)
Maintenance:	No specific maintenance needed	

Description of operation

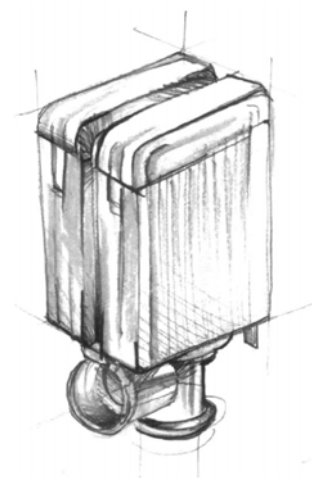
The Dry Flapper valve is a 2 way solenoid valve, normally closed, direct acting, designed for controlling very low pressure liquids. Its solenoid has an oscillating armature (flapper) pivoted and attracted by a counteracting spring. The valve's diaphragm fits the flapper and separates the fluid from all the mechanical parts (Dry construction). During the closing cycle, the fluid does not meet the valve but only the inlet fitting and a small frame of the diaphragm. The inlet fitting includes the main orifice of the valve (8 mm).



When the coil is energized, the electromagnetic field concentrated through the iron-core inductor, attracts the pivoting flapper and opens the valve moving axially the diaphragm. The medium flows through the valve body and the outlet fitting. The solenoid's compressive spring assures the back movement of the pivoting flapper as soon as the coil is de-energized.

The Flapper Pilot is the control system of the Dry Flapper Valve. It is not detachable and includes the solenoid, the housing, the valve body, the diaphragm. It has been designed for guarantying the right protection against electric shocks, humidity and contacts from the moveable parts. The Flapper Pilot is a Class II electrical device: ground connection not required.

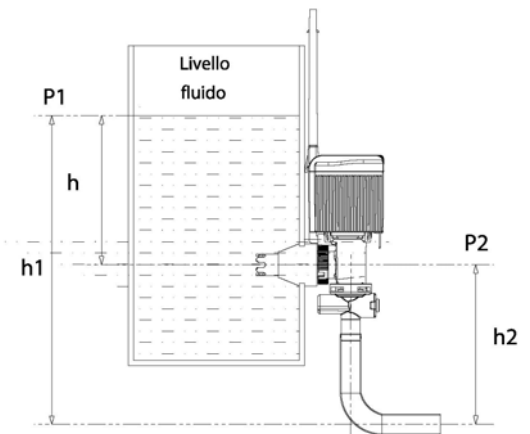
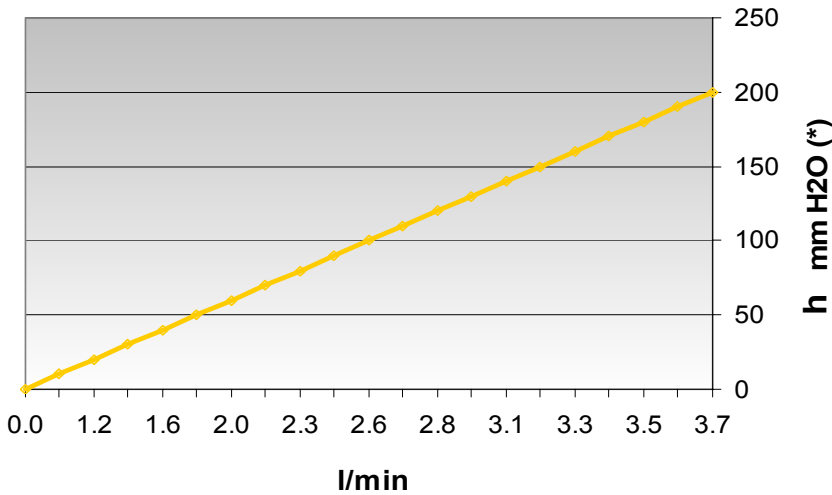
Approvals: EN 60730, UL 429, CSA 22.2.



Flapper pilot

Media and Flow data

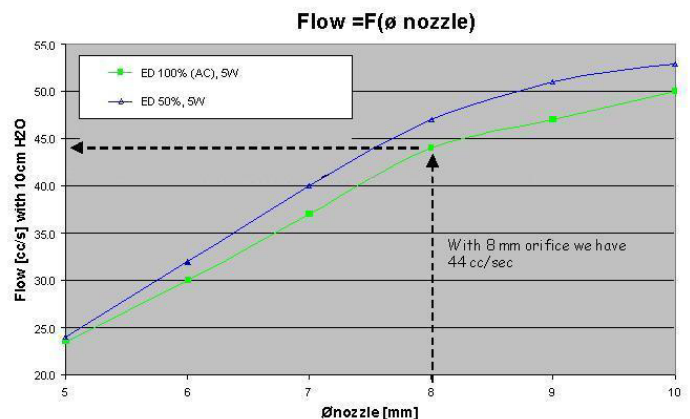
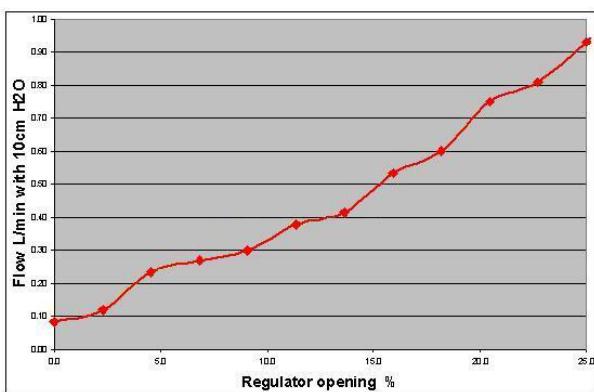
The Dry Flapper valve is specially designed for controlling hot water in automatic drink dispensers, but thanks to the high quality materials used, physiological inert and compatible with a lot of media, it can be used with other several fluids for food application.



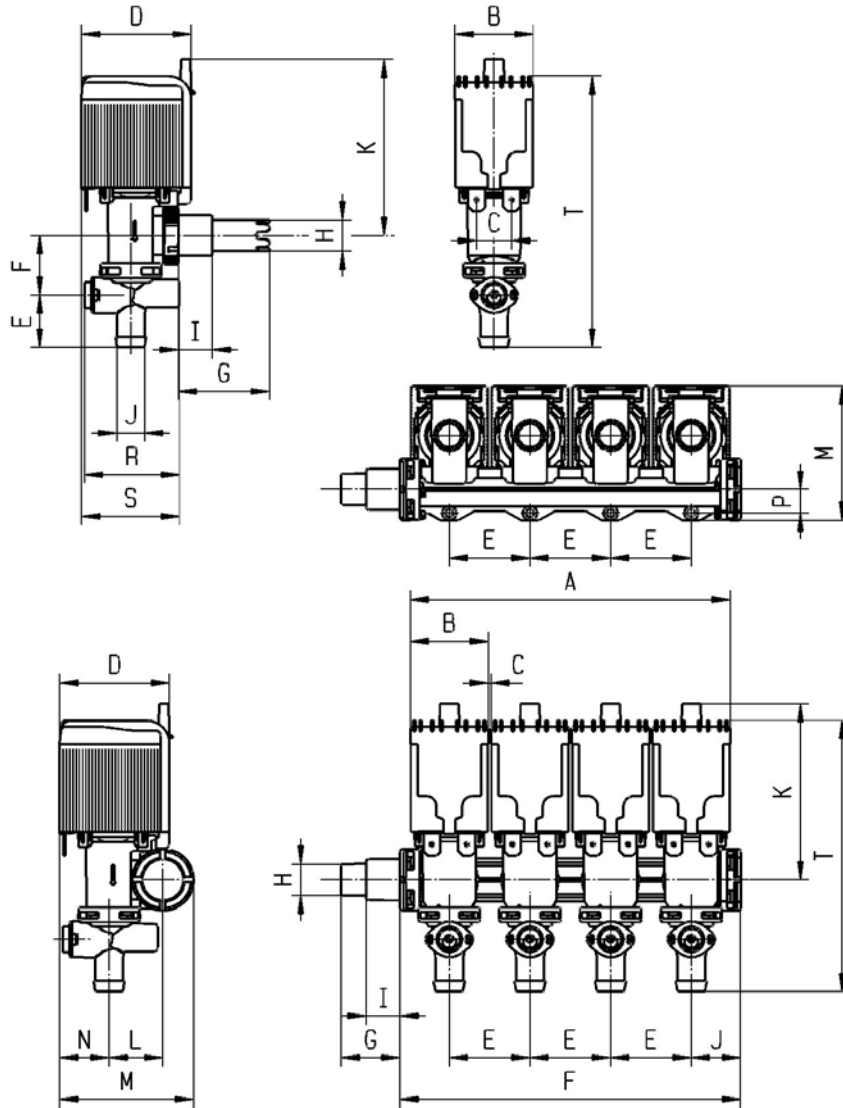
Equipped with the venting pipe, the Dry Flapper valve controls a water height of 200 mm maximum ($p = p_1 - p_2 = 20 \text{ mbar}$), both in single or manifold construction. The venting pipe length has to be higher than water head height.

Note:

1. The data showed in the above picture are calculated for the single valve, coil in upright position, outlet fitting without downstream pipe, flow regulator completely open, venting pipe of proper length, accordingly to the rating plate data and normal atmospheric condition (23°C, 43% Rel. Hum.).
2. By the use of an outlet fitting without flow regulator the flow rate capacity increases by about 10%.
3. In a manifold construction the flow rate capacity decreases by about 10%.
4. The flow rate value changes when a downstream pipe is used. As general rule it decreases if pipe orifice is smaller and increases if the pipe orifice is bigger.
5. The venting pipe allows draining quickly the valve body during the closing cycle.



Dimensions



Overall dimension (mm)

Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T
Single valve	30	30	-	42	20	23	35	12	13	10,5	68	-	-	-	-	35	37	105
Manifold 2	61	30	1,1	42	31	69	22,5	12	13	19	68	21	51	18	9	-	-	105
Manifold 3	92	30	1,1	42	31	100	22,5	12	13	19	68	21	51	18	9	-	-	105
Manifold 4	123	30	1,1	42	31	131	22,5	12	13	19	68	21	51	18	9	-	-	105

Note:

1. By the manifold joint fitting 481203.418 (see pg. 12), it is possible to link two or more manifolds together. In this case the dimensions "A" and "C" have to be increased by 5.0mm. The axle base between the two closest valves of two manifolds linked together is 36mm.
2. The manifold fitting has mounting holes of \varnothing 3mm.

Weights

Description	Single	Manifold 2	Manifold 3	Manifold 4
Weight	0,149	0,303	0,447	0,591

Note:

1. The single valve weight is referred to the Dry Flapper valve type 121DF1110 (see the chapter: Range and Numbering system).
2. The manifold weights are referred to the Dry Flapper manifold type 121DF3310.

Installation

The Dry Flapper valve has been designed to be used inside an automatic machine but it can work properly also in a stand alone application. For assuring its proper working, the valve has to be used accordingly to the rating plate data; furthermore the following recommendations have to be followed:

SAFETY: the Dry Flapper valve is an electrical device of Insulation Class II and due to that the ground connection is not needed. The power supply must comply with the rating plate data.

POSITION: the Dry Flapper valve has to be mounted with the coil in upward position, with a maximum inclination of +/- 45°.

CONNECTION: the Dry Flapper valve has to be connected so that fluid flows following the direction showed by the arrow on the valve body.

MEDIUM: it is recommended to use the valve with fluids without solid or other impurity inside. Pay attention that media at the maximum temperature flow through the valve for an extended time.

AMBIENT: it is necessary to use the valve paying attention that the ambient temperature remains within the recommended range.

Maintenance

The Dry Flapper valve does not usually need any maintenance. In any case, thanks to its modular design, the inlet and outlet fitting, the venting pipes can be replaced for assuring the maximum performances.

Before any maintenance operation the power supply must be disconnected. For cleaning, it is recommended to avoid the use of high aggressive substances.

For maintenance operation on the Flapper pilot (code *121F10*, see pg. 10), please contact the factory.



Range and Numbering system

The Dry Flapper valve range includes several different combinations of the *Flapper Pilot* with the interchangeable connection fittings. Moreover the valves can be mounted in manifold thanks to the *Dry Flapper Manifold* fitting, available in three different models: two, three and four positions.

The family's name is:

121DF

The *Flapper Pilot* code is 121DF10, where the last digit "0" means: no inlet / outlet fittings. The complete valve code is obtained adding two - four digits to the root 121DF. Those additional digits select the model in function of following criteria:

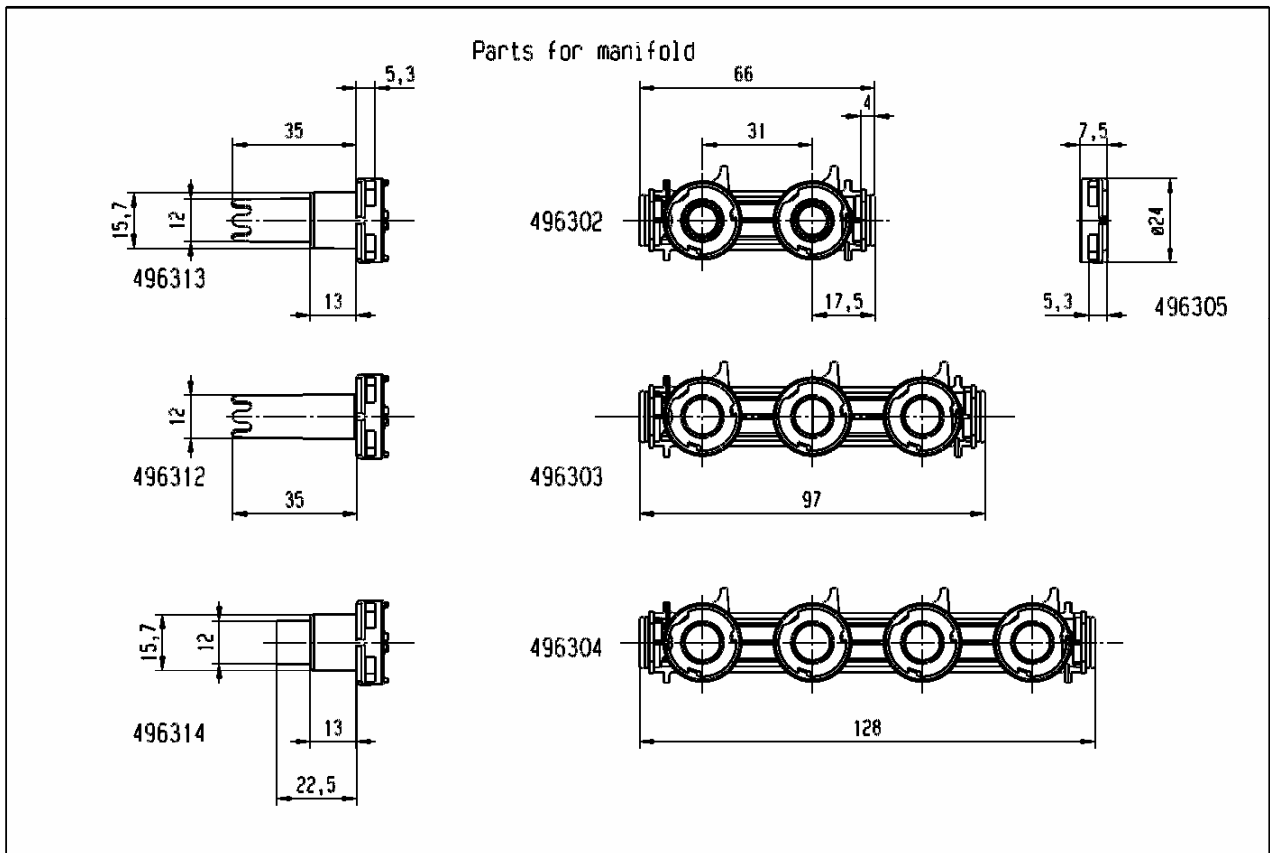
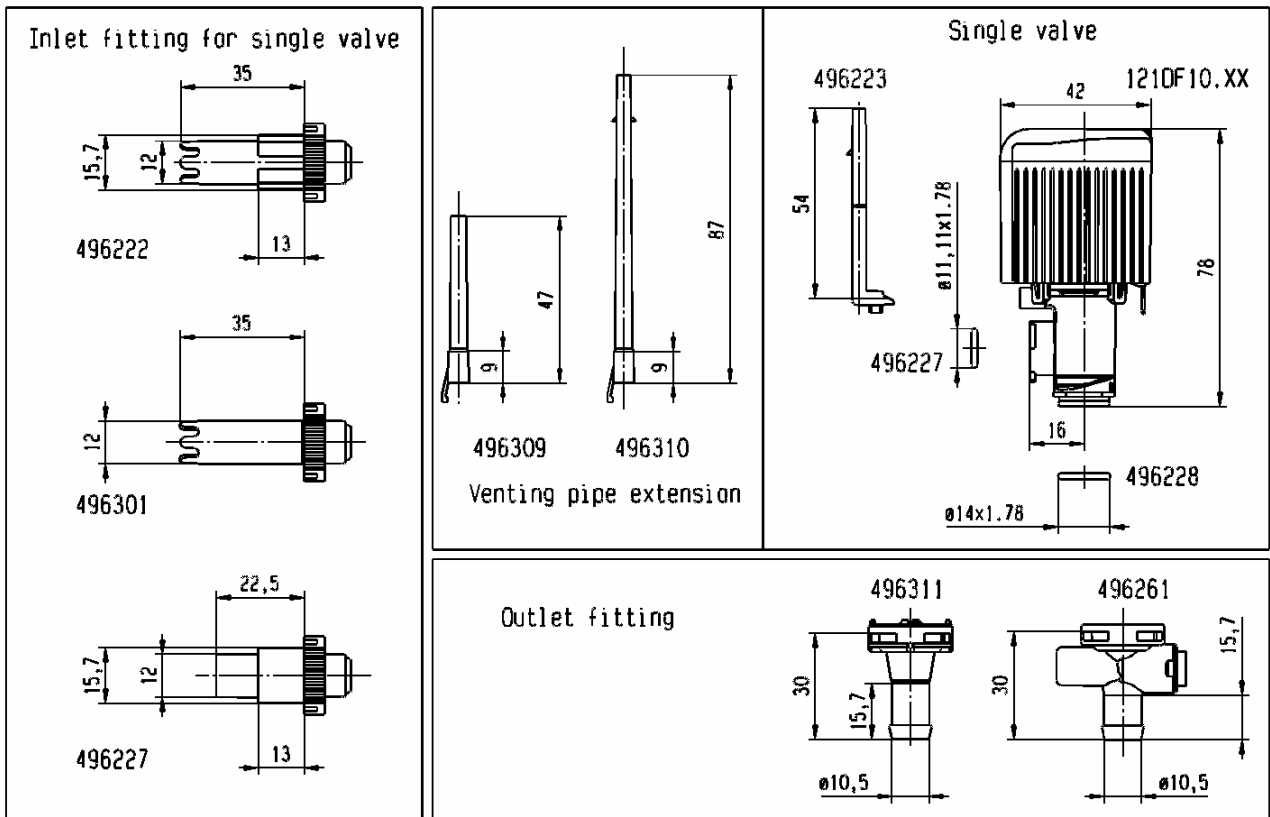
1		2		1		D		F		?		?		?		?	
Version: 1 = Single; 2, 3, 4 = 2, 3, 4 positions Manifold																	
Inlet - Outlet fitting combination: 1, 2, 3, 110, 210, 310																	
										Inlet Fitting							
										Type 1		Type 2		Type 3			
Outlet Fitting			Without Flow regulator		1		2		3								
			With Flow regulator		110		210		310								

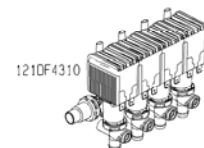
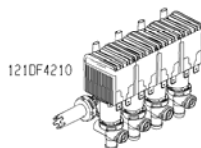
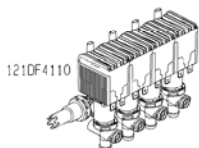
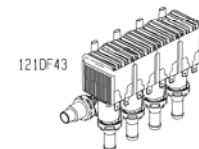
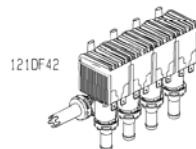
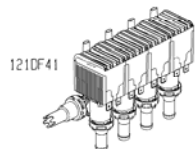
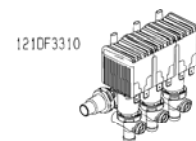
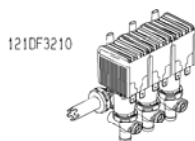
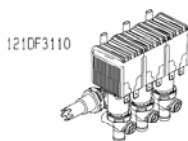
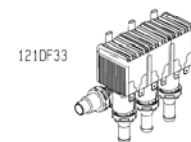
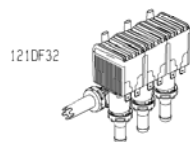
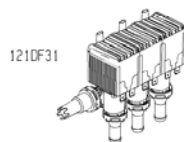
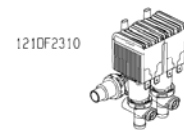
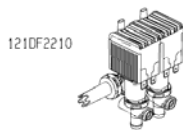
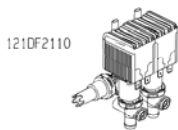
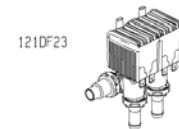
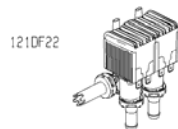
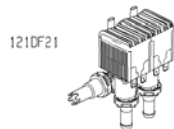
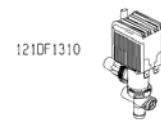
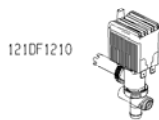
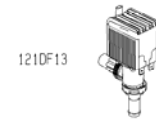
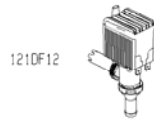
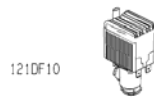
The Venting pipe extensions (see pg. 10) have to be ordered separately by the Kit 481203.410 (see pg. 12).

How to order

The order code of a Dry Flapper valve is obtained adding the voltage / frequency information to the valve reference:

Valve reference	+	Voltage / Frequency information	=	Order code
121DF3210	+	230 VAC 50/60Hz	=	121DF3210 230V 50/60 Hz
121DF12	+	24VDC	=	121DF12 24 VDC





Accessories & kits

Part Number	Description	Box Q.ty	N° Part	Picture
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Inlet fitting kit

481203,407	Inlet fitting kit for single valve	10 pcs	496222; 496227	
481203,408	Inlet fitting kit for single valve	10 pcs	496301; 496227	
481203,409	Inlet fitting kit for single valve	10 pcs	496315; 496227	
481203,411	Inlet fitting kit for manifold	10 pcs	496312; 496228	
481203,412	Inlet fitting kit for manifold	10 pcs	496313; 496228	
481203,413	Inlet fitting kit for manifold	10 pcs	496314; 496228	

Outlet fitting kit

481203,405	Outlet fitting kit with flow regulator	10 pcs	496261; 496268	
481203,406	Outlet fitting kit without flow regulator	10 pcs	496311; 496228	

Venting pipe extension kit

481203,410	Venting pipe extension kit	10 pcs	496309; 496310	
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O' Rings kit

481203,414	O'rings kit	10 pcs	496227; 496228	
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Manifold kit

481203,415	Manifold sub-base kit for two positions	10 pcs	496302; 496305; 496227; 496228	
481203,416	Manifold sub-base kit for three positions	10 pcs	496303; 496305; 496227; 496228	
481203,417	Manifold sub-base kit for four positions	10 pcs	496304; 496305; 496227; 496228	
481203,418	Manifold joint fitting	10 pcs	496306; 2x496228	

March 2006



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