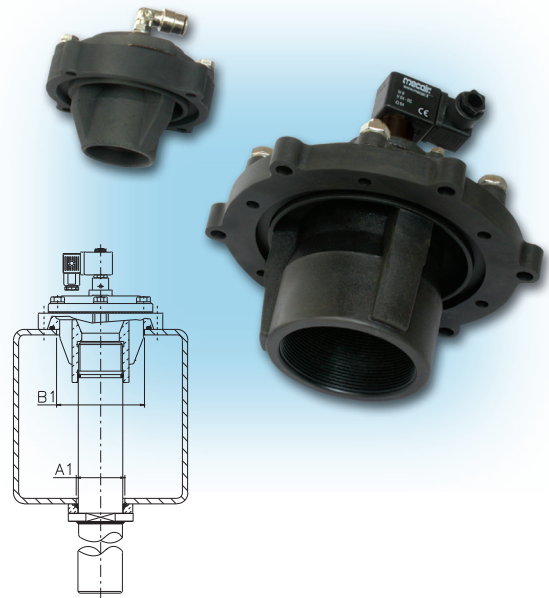


DESCRIPTION

400 Series

The **400 SERIES** valves are suitable for low pressure systems (0.5 ÷ 1.5 bar), and high pressure systems (0.5 ÷ 7.5bar). The Series 400 is a range of diaphragm valve suitable for Dust collector applications, in particular for reverse pulse jet filter cleaning of filter bags, cartridges, envelope filters, ceramic filters and sintered metal fibre filters. These valves have been designed to be installed flat surfaces or square/rectangular tanks. They are called "full immersion" because they draw the compressed air directly from the tank, with higher pneumatic performance. Upon request they can be supplied complete with the blow tube and counter flange. The valve is fixed to the tank with a special counter flange and fixing screws. The 2, 2 1/2" and 3" are all double diaphragm valves; the 1 1/2" model can be single or double diaphragm valve. The valves are constructed in die-cast aluminium and have an anodised protection treatment which protect them from corrosive and environmental agents. Bolts and screws are in stainless steel. The 400 Series is available in the following versions:

- **VNP**, with integrated solenoid pilot
- **VEM**, with remote pneumatic connection.



GENERAL CHARACTERISTICS	
Fluids	Filtered air and oil free
Diaphragm	Standard NBR: -20°C / +120°C
	Optional Viton: -30°C / +200°C
	Nitrile: -40°C / +120°C
Pressure range	From 0,5 to 1,5 bar

CONSTRUCTIVE FEATURES - VALVE	
Cover	Die-cast aluminium (Anodised)
Body	Die-cast aluminium (Anodised)
Pilot Base	Brass (Chromed)
Pilot	Stainless Steel
Diaphragm	NBR
Bolts and screws	Stainless steel
Diaphragm Backing disk	Stainless steel
Diaphragm spring	Stainless steel

TYPE	Port size Ø	N° Diaph.	Pressure range (bar)		Weight Kg.	Coil	Kv	Cv
			min.	max				
VNP408	1"	1	0,5	7,5	0,7	YES	26,3	30,6
VNP412	1 1/2"	1	0,5	7,5	1,4	YES	56,2	65,3
VNP414	1 1/2"	2	0,5	7,5	1,45	YES	61,3	71,3
VNP416	2"	2	0,5	7,5	2,3	YES	110	128
VNP420	2 1/2"	2	0,5	7,5	3,3	YES	210	240
VNP424	3"	2	0,5	7,5	3,3	YES	260	300
VEM408	1"	1	0,5	7,5	0,4	NO	26,3	30,6
VEM412*	1 1/2"	1	0,5	7,5	1,1	NO	56,2	65,3
VEM414	1 1/2"	2	0,5	7,5	1,6	NO	61,3	71,3
VEM416	2"	2	0,5	7,5	2	NO	110	128
VEM420	2 1/2"	2	0,5	7,5	3	NO	210	240
VEM424	3"	2	0,5	7,5	3	NO	260	300

ELECTRICAL CHARACTERISTICS - SOLENOID	
Coil insulation	Class H
Din Socket Connector	Pg9 Connection
Din Socket Standard	EN175301 - 803 / A/ISO 4400
Din Socket Optional	94/9/CE ATEX II 3GD T6
Isolation class Din socket	VDE 0110 - 1/89
Electrical protection	IP65 EN60529
Voltage Range	12V DC (-5%, +20%) 12W
	24V DC (-5%, +20%) 12W
	48 V DC (-10%, +20%) 9W
	110 V DC (-10%, +20%) 12W
	24V 50/60Hz (-10%, +20%) 16/12 VA
	48 V 50/60 Hz (-10%, +20%) 16/12 VA
	110/127 V 50/60 Hz (-10%, +20%) 19/14 VA
	220/240 V 50/60 Hz (-10%, +20%) 19/14 VA
Ambient temperature	-20°C / +60°C

HOW TO ORDER:

VEM/VNP 4 08 110/50

VNP: with integral pilot
VEM: without pilot

4: "400 SERIES"

VALVE CONNECTOR DIAMETER

- 08 = 1"
- 12 = 1 1/2" (single diaphragm)
- 14 = 1 1/2" (double diaphragm)
- 16 = 2"
- 20 = 2 1/2"
- 24 = 3"

Voltage and frequency required.

DIMENSIONS

400 Series

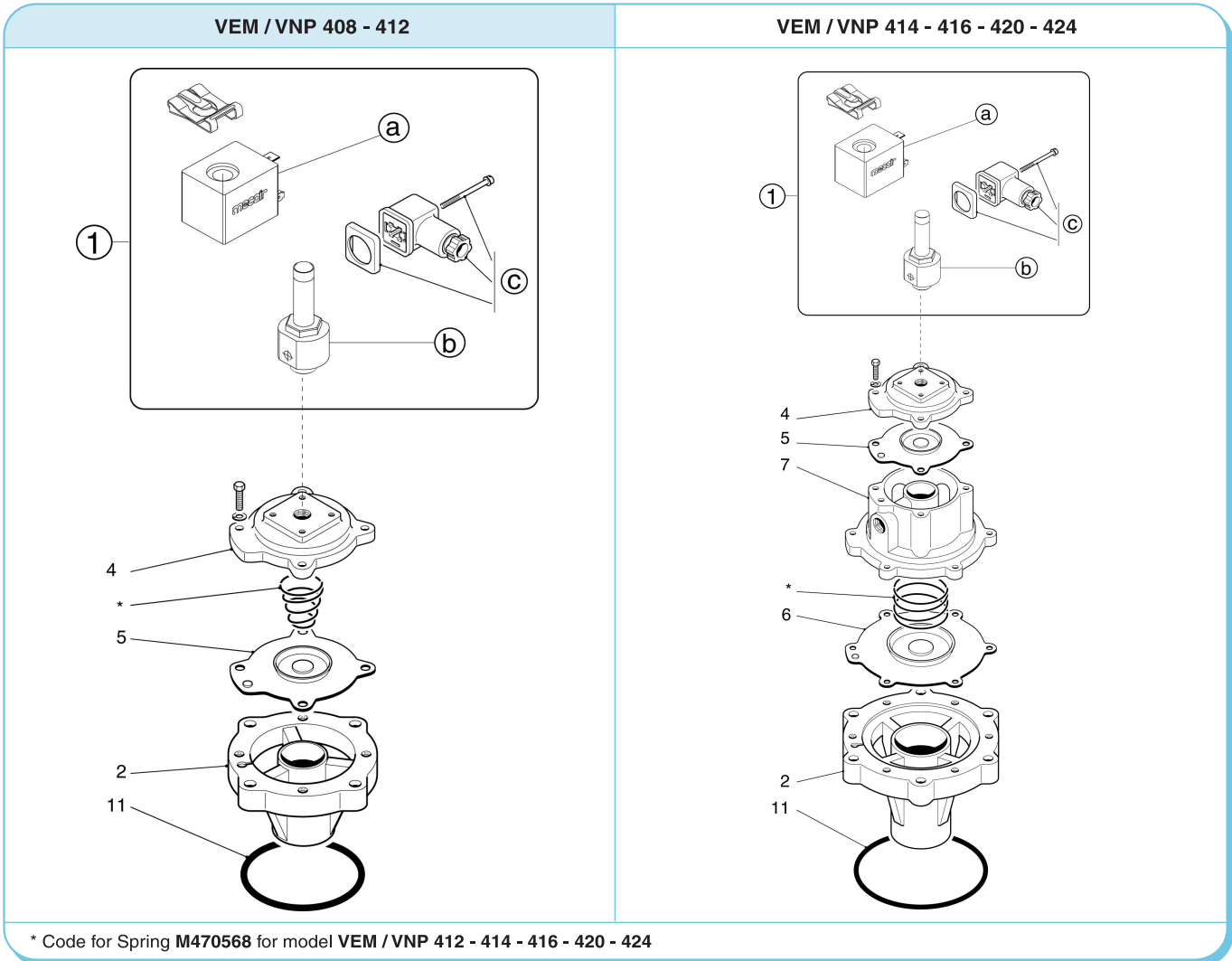
<p>VNP 408 - 412</p>	<p>VEM 408 - 412</p>
<p>VNP 414 - 416 - 420 - 424</p>	<p>VEM 414 - 416 - 420 - 424</p>
<p>VNP 408 - 412</p>	<p>VNP 414 - 416 - 420 - 424</p>

Note: Fix the valve body to the tank using the appropriate eyelets in the valve body

MODEL	Ø A	B	C	D	E	F	G	I	H Ø	N°	M	Weight Kg.	MODEL	E	Ø L	A1	B1	Weight Kg.	N° Diaph.	O-Ring
VNP 408	1"	63	94	114	136	32	18	25	7	4	10	0,7	VEM 408	76	1/4"	36	64	0,4	1	M330370
VNP 412	1 1/2"	94	140	160	155	58	18	39	11	6	14	1,1	VEM 412	95	1/4"	50	95	1,4	1	M330341
VNP 414	1 1/2"	94	140	160	188	58	18	39	11	6	14	1,9	VEM 414	128	1/4"	50	95	1,6	2	M330341
VNP 416	2"	105	175	195	210	62	18	45	11	6	14	2,3	VEM 416	150	1/4"	63	107	2	2	M330342
VNP 420	2 1/2"	128	200	220	228	80	20	40	11	6	14	3,3	VEM 420	168	1/4"	78	130	3	2	M330343
VNP 424	3"	128	200	220	228	80	20	50	11	6	14	3,3	VEM 424	168	1/4"	90	130	3	2	M330343

SPARE PARTS

400 Series



STANDARD Version

Standard	POS	DESCRIPTION	CODE
	1	a) Solenoid (*) b) Pilot group complete with base and ferrule c) Din Connector PG9EN175301-803 IP65	a) SB3 - ../.. (*) b) CP1/4 c) PLG9

(*) Specify Voltage and Frequency

OPTIONAL Version

Optional	POS	DESCRIPTION	CODE
	1	a) Solenoid (*) b) Pilot group complete with base and ferrule c) Din Connector (3GD IP65 T6)	a) SB3 - 24/DCX b) CP1/4 c) PLG9 - ATEX

Version in conformity to European Directive 94/9/CE ATEX (cod. PV-24/DCX)

POS	DESCRIPTION	CODE					
		VEM/VNP408	VEM/VNP412	VEM/VNP414	VEM/VNP416	VEM/VNP420	VEM/VNP424
1	Pilot group complete with solenoid (*) and din connector	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)
1+4	Pilot group complete with solenoid (*), din connector, top cover and screws	PVM08 - ../.. (*)	PVM12 - ../.. (*)	PVM06 - ../.. (*)	PVM06 - ../.. (*)	PVM06 - ../.. (*)	PVM06 - ../.. (*)
2	Valve Body	M300207	M300214	M300214	M300220	M300235	M300239
7	Intermediate cover (Double diaphragm)	-	-	M3100098	M310100	M310101	M310101
4	Top Cover	M310086	M310092	M310082	M310082	M310082	M310082
5	Diaphragm	DB 18	DB 112	DB 16	DB 16	DB 16	DB 16
6	Diaphragm (Secondary)	-	-	DB 114	DB 116	DB 120	DB 120
11	O-Rings	M330370	M330341	M330341	M330342	M330343	M330343

(*) Specify Voltage and Frequency

INSTRUCTIONS AND MAINTENANCE

400 Series

1) - INSTALLATION INSTRUCTIONS

VALVE INLET: Valve body mounted directly on tank, ensuring fixing bolts are used to secure valve body on tank.

VALVE OUTLET: Valve body connected via the outlet pipe on the opposite end with appropriate counter flange.

SECURING OF OUTLET PIPE:

Note: Please ensure that the valve is properly fixed to the tank with the outlet pipe, counter flanges and fixing bolts for the valve body to the tank.

The fixing of the valve body via the outlet pipe should be performed in accordance to the following torque dimensions:

10kgm for the 1" valve, 18 kgm for the 1 1/2" and 30 kgm for the 2" valve.

FLUID:

COMPRESSED AIR - Ensure air supply is clean and dry. (We recommend the installation of compressed air filter units to be installed directly before the pressure vessel, in order to ensure clean and dry is supplied to the diaphragm valve). Operating pressure min/max. 0.5 ÷ 7.5 bar.

AIR INLET PIPE TO HEADER TANK/PRESSURE VESSEL:

Minimum Ø 1" for tanks with a 1" valve or 1 1/2" valves.

We always recommend to use air inlet pipe to tank to be the same size as the diameter of valve being used, or the next available size down. This ensures that the air supply to the tank is sufficient to allow the tank to refill in as short a time as possible. With the correct volume of air in the tank, this ensures the correct and efficient functioning of the diaphragm valve without any waste of compressed air.

COMPRESSOR:

With the appropriate compressor size being utilised, this ensures the tank can be refilled from 0-2 bar in a few seconds.

PROTECTION FROM RAIN:

Always ensure a small roof/lid is installed on top of the valves and/or electronic controllers as this protects the valves and controllers from exposure to harsh environmental conditions.

ELECTRICAL ON TIMES AND PULSE TIMES:

Average pulse times range from 100 ms - 250 ms depending on size of the valves being used.

2) - START UP

Before commencing to pulse the valves and to pressurise the tank/pressure vessel, it is important to eliminate all particulate, including dirt, rust, metal shavings, and other types of particulate, which may eventually enter the piping. The draining of any condensation or liquid within the tank/pressure vessel is also important and should be performed prior to pressurising the system. The drain valve should always be installed and should be used prior to start up. Minimum Ø of the drain valve socket is 1/4". If during the start phase, there is insufficient air in the airline, and you are unable to adequately fill the tank/pressure vessel, (the valves may remain slightly open), it is necessary to close the air inlet valve to the tank, wait for the pressure to reach 6-7 bar and then re-open the valve quickly. This will ensure that the tank fills quickly also providing significant pressure which ensures the valves remain properly closed.

3) - SPARE PART RECOMMENDATION

3.1 - FOR START UP - Minimum quantity of 5% of the supply (min. 1 piece).

- Pilot Group (pos.1), complete with pilot body, solenoid coil, din connector.

3.2 - FOR THE FIRST TWO YEARS OF OPERATION - Minimum quantity of 10% of the supply (min. 2 pieces).

- Pilot Group (pos.1), complete with pilot body, solenoid coil, din connector.
- Diaphragms (pos.5 and/or 6)

4) - MAINTENANCE AND REPAIRS

4.1 - COMMON PROCESSOR FOR ALL CONTROLS, MAINTENANCE AND REPAIRS TO BE CONDUCTED:

- Before conducting any maintenance activity on the system ensure that the components are fully isolated from pressure and power supplies.
- Replacement or controls relating to diaphragms (pos.5), in reinstalling/re-positioning the diaphragm ensure that the diaphragm bleed is in the correct position lined up with the valve body position. The bleed should fit into the valve body eyelet.
- Secure the bolts on the top cover to the valve body without over tightening. We recommend the use of a torque wrench to properly secure the bolts: **1,6 kgm** for **M6** (3/4" - 1"), **3,8 kgm** for **M8** (1 1/2") and **7 kgm** for **M10** (2" - 2 1/2" - 3").
- Substitution of or controls relating to the solenoid pilot: Prior to removing the solenoid pilot, ensure power supply is disconnected. Remove carefully din socket and then remove solenoid coil.

4.2 - PERIODICAL MAINTENANCE - Annually check:

- In the case of **VNP/VXP** models, check the integrity of the electrical connections and the din socket connection to be properly fixed to the solenoid coil.
- In the case of **VEM** models, check the integrity of all pneumatic connections including pneumatic piping and all pneumatic connections.

4.3 - MALFUNCTION / TROUBLE SHOOTING: - Proceed with controls and checks below:

DEFECT / FAULT	CONTROL / CHECKS
The valve does not open or vibrates	<ul style="list-style-type: none"> - Verify integrity of the solenoid or that the wires are not damaged. - Verify that the electrical connections are properly connected to the valve and that the wiring has been performed correctly. - Verify that the outlets from the electronic controller are free from disturbances and within the specified tolerances of +/-10% of the nominal value.
The valve remains opens or loses air continuously	<ul style="list-style-type: none"> - Check that the bolts of the top cover are properly secured, in case of diaphragm substitution. - Remove the top cover and verify that there are no particulate underneath the diaphragm.