



**High efficiency “*Full Immersion*”
complete with tank in stainless steel
AISI 304L and AISI 316L**

In conformity to C€ - PED - ASME directives

DESCRIPTION

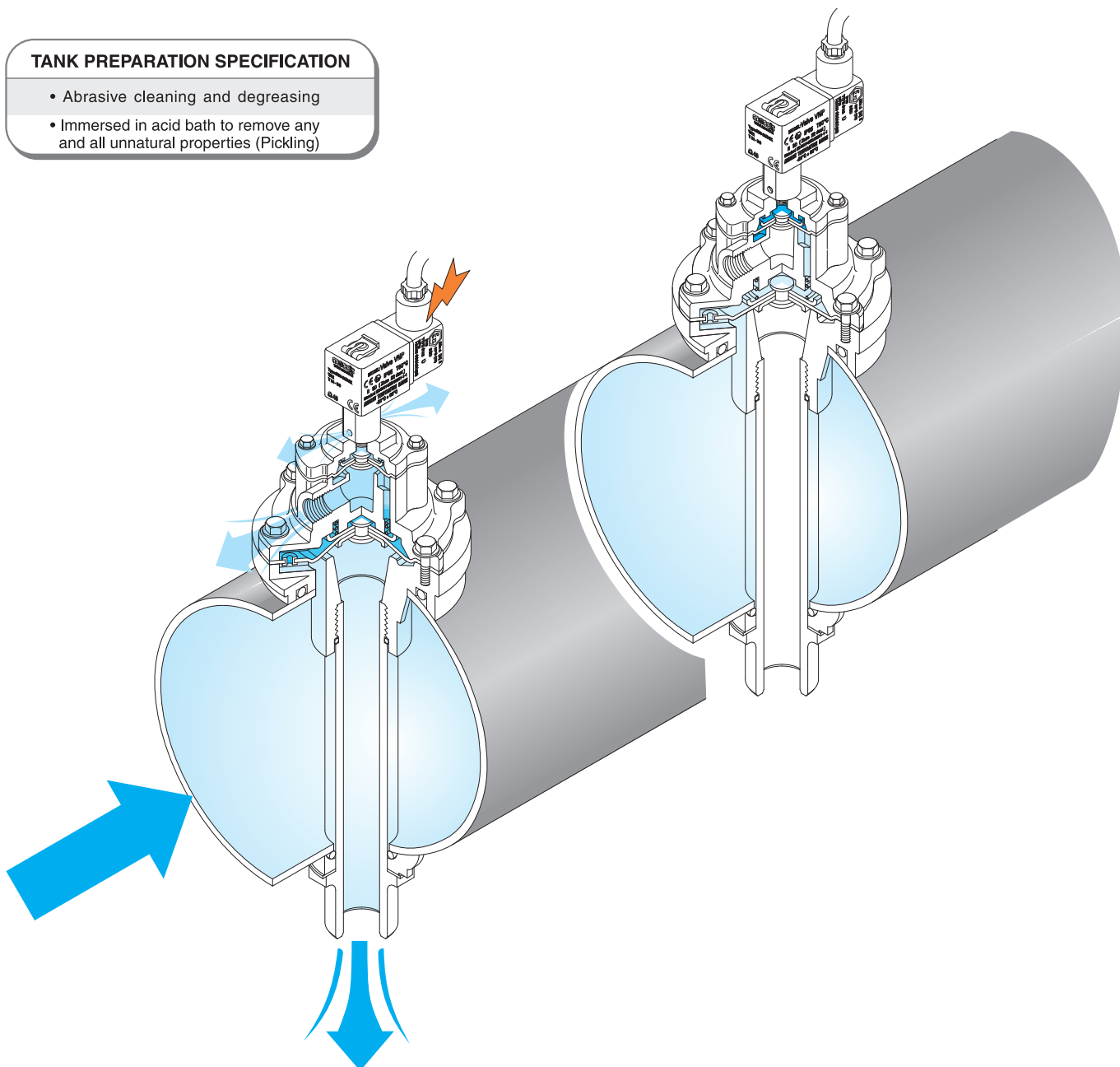
Full Immersion Stainless Steel

The Patented **Mecair** “Full immersion” System consists of a round header tank with fully integrated diaphragm valves, 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.

The Mecair 500 Series diaphragm valve is manufactured from die-cast aluminium and is anodised. The valves are mounted on a Stainless Steel tank manufactured in accordance to the **European Directive 97/23/CE (PED)** and **ASME VIII Div.1** (American Code). Upon request it is possible to have the tanks manufactured and in conformity to the **European Directive EC/94/9 ATEX**. For diaphragm valves type **VNP**, it is possible to have **ATEX II 3D** (zone 22), while for **VEM** valves, it is possible to have the **ATEX II 2GD** (zone 2/21) certification.

TANK PREPARATION SPECIFICATION

- Abrasive cleaning and degreasing
- Immersed in acid bath to remove any and all unnatural properties (Pickling)



CODES AND TECHNICAL CHARACTERISTICS

Full Immersion Stainless Steel

S 6 C 08 N04 P180 / F 304L

S: TANK

TANK DIAMETER:
6" - 8" - 10"

C: "FULL IMMERSION"

TYPE OF VALVE (specify VNP** or VEM):

- 08 = 508 (1"), for 6" tank
- 12 = 512 (1 1/2" single diaphragm), for 8" tank
- 14 = 514 (1 1/2" double diaphragm), for 8" tank
- 16 = 516 (2"), for 10" tank
- 12 = 562 (1 1/2" single diaphragm), for 6" tank
- 14 = 564 (1 1/2" double diaphragm), for 6" tank
- 16 = 586 (2"), for 8" tank

N: NUMBER OF VALVES

P: DISTANCE BETWEEN VALVES (mm)

F: FLAT END CAPS

Add type of material required - AISI 304L or AISI 316L

** Specify Coil Voltage and Frequency of VNP diaphragm valve

The 500 Series is available in the following versions:

- VNP, with integrated solenoid pilot
- VEM, with remote pneumatic connection. (Upon request, the solenoid enclosures can be mounted and pre cabled on tank)

CONSTRUCTIVE FEATURES - VALVE

Top Cover	Die-cast aluminium (Anodised)
Body	Die-cast aluminium (Anodised)
Pilot Base	Brass (Chromed)
Pilot	Stainless steel
Diaphragm	NBR
Bolts	Stainless steel
Diaphragm Backing disk	Stainless steel
Diaphragm spring	Stainless steel

ELECTRICAL CHARACTERISTICS - SOLENOID

Coil insulation	Class H
Din Socket Connector	PG9 Connection
Din Socket specification	EN175301 - 803 / A/ISO 4400
Din Socket Optional	Conf. Dir. 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 24 V 50/60 Hz (-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

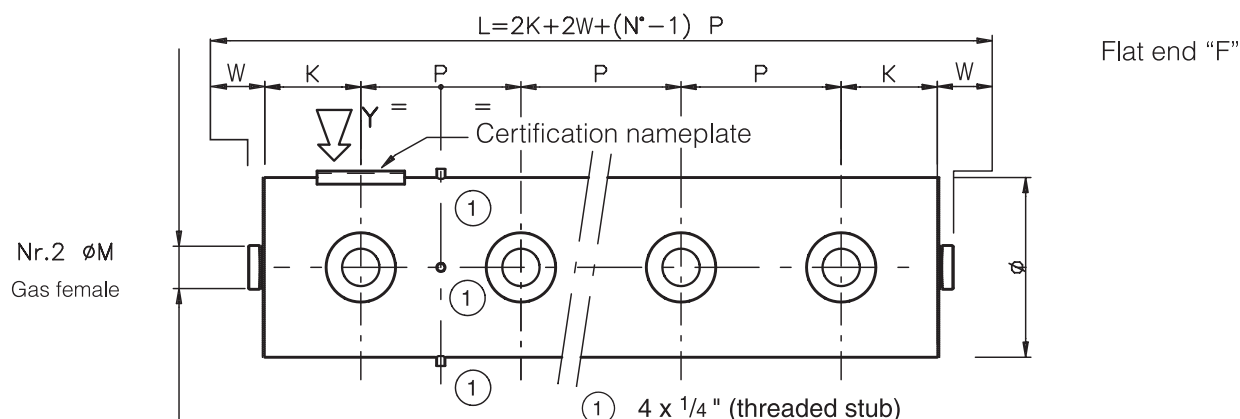
GENERAL CHARACTERISTICS

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	0,5 to 7,5 bar

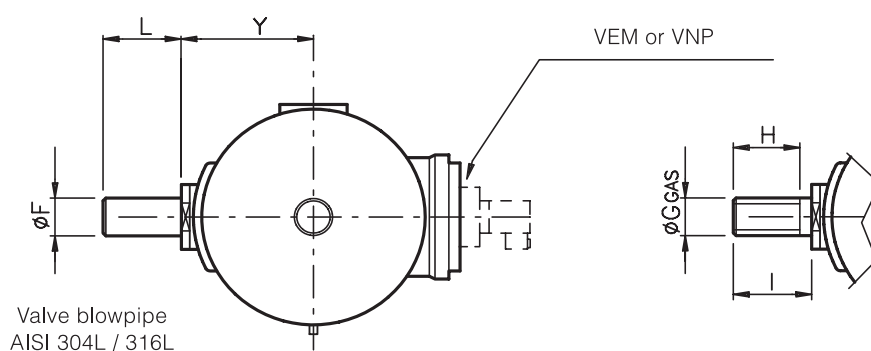
TYPE	Port Size	N° Diaph.	Pressure Range (bar)		Coil	Kv	Cv
			min.	max			
VNP508	1"	1	0,5	7,5	YES	26,3	30,6
VNP512	1 1/2"	1	0,5	7,5	YES	56,2	65,3
VNP514	1 1/2"	2	0,5	7,5	YES	61,3	71,3
VNP516	2"	2	0,5	7,5	YES	110	128
VNP562	1 1/2"	1	0,5	7,5	YES	56,2	65,3
VNP564	1 1/2"	2	0,5	7,5	YES	61,3	71,3
VNP586	2"	2	0,5	7,5	YES	110	128
VEM508	1"	1	0,5	7,5	NO	26,3	30,6
VEM512	1 1/2"	1	0,5	7,5	NO	56,2	65,3
VEM514	1 1/2"	2	0,5	7,5	NO	61,3	71,3
VEM516	2"	2	0,5	7,5	NO	110	128
VEM562	1 1/2"	1	0,5	7,5	NO	56,2	65,3
VEM564	1 1/2"	2	0,5	7,5	NO	61,3	71,3
VEM586	2"	2	0,5	7,5	NO	110	128

TANK DIMENSIONS TABLE

Full Immersion Stainless Steel



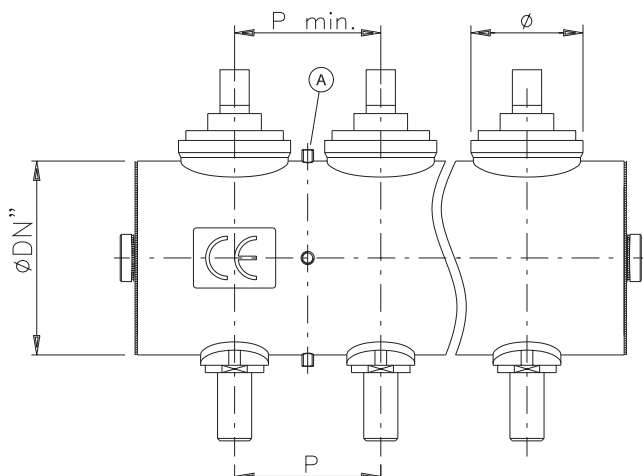
Ø Tank	Ø Valve	P min.	K min.	W	Ø M	TO BE COMPLETED BY CUSTOMER		
						P distance required	N Number of valves	K optional
DN 6"	1"	120	90	15	1"			
DN 6"	1 1/2"	160	90	15	1"			
DN 8"	1 1/2"	160	115	18	1 1/2"			
DN 8"	2"	180	115	18	1 1/2"			
DN 10"	2"	180	115	18	1 1/2"			



Ø Tank	Ø F	Y	Short unthreaded	L	Long unthreaded	L	Long threaded	Ø G Gas	H	I
DN 6"	33,4	106	TS508X	60	TL508X	100	TF508X	1"	90	100
DN 6"	48,3	106	TS564X	60	TL564X	100	TF564X	1 1/2"	110	120
DN 8"	48,3	131	TS514X	60	TL514X	120	TF514X	1 1/2"	110	120
DN 8"	60,3	131	TS586X	60	TL586X	120	TF586X	2"	130	140
DN 10"	60,3	158	TS516X	60	TL516X	120	TF516X	2"	130	140

TANK ASSEMBLY TABLE

Full Immersion Stainless Steel

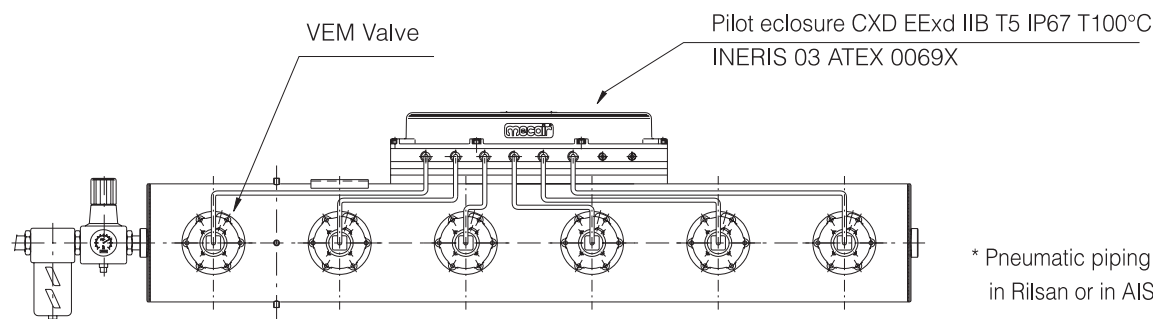
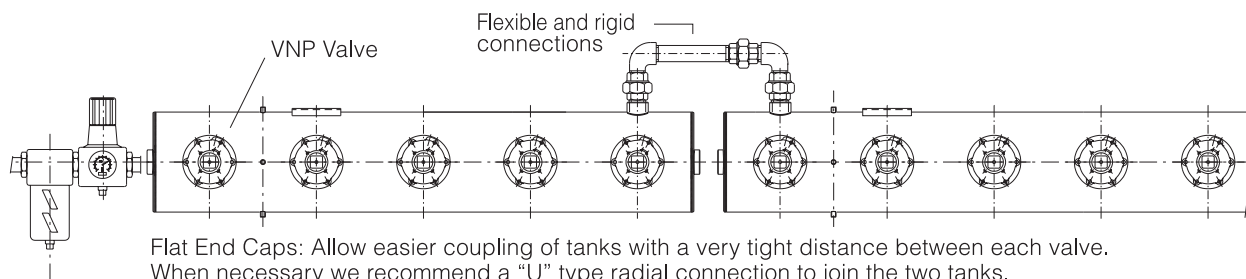


Ø Tank	Ø Valv.	P min.	Ø Valve Body	P min. for installation of standard brackets	P min. pipe stub A
DN 6" (168,3)	1"	95	80	140	115
DN 6" (168,3)	1 1/2"	120	95	150	140
DN 8" (219,1)	1 1/2"	120	95	150	140
DN 8" (219,1)	2"	180	170	230	200
DN 10" (273)	2"	180	170	230	200

OPERATING RECOMMENDATIONS

Ensure air supply is clean and dry. (We recommend the installation of compressed air filter units directly before the pressure vessel, in order to ensure clean and dry air 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.
- ORIENTATION:** Can work in all orientations.
- ELECTRICAL ON TIMES AND PULSE TIMES:** For the correct and efficient use of a diaphragm valve it is important to set the correct pulse times and pause times. Average pulse times range from 100ms - 250ms depending on size of the valves being used. Pause times also depend on number of valves in the filter, but MECAIR recommends a total cycle time of between 300 and 360 seconds for the total number of valves installed.

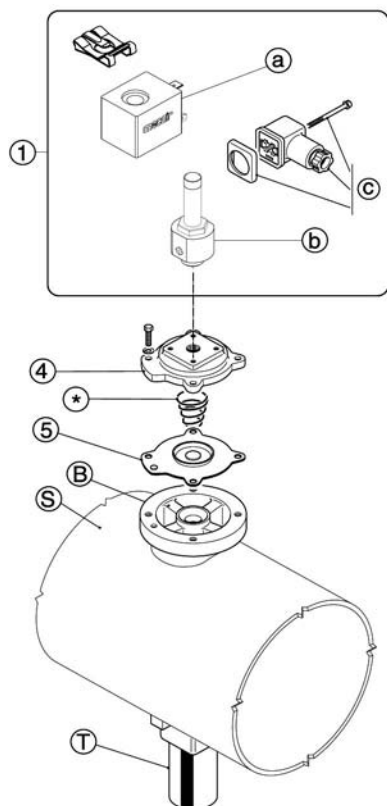


* Pneumatic piping on valves can be in Rilsan or in AISI (Stainless Steel)

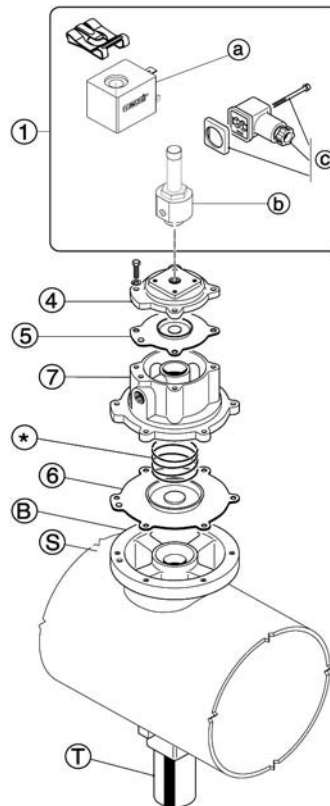
SPARE PARTS

Full Immersion Stainless Steel

VEM / VNP 508 - 512 - 562



VEM / VNP 514 - 564 - 516 - 586



* Code for Spring **M470568** for model **VEM / VNP 512 - 514 - 516**

For **VEM/VNP 512** with **VITON** diaphragm, code for spring **M470200**

(Valve Body (B) + Tank (S) + Valve blowpipe (T) are to be considered single and complete module) (No spare parts available for this configuration)

STANDARD Version

Standard	POS	DESCRIPTION	CODE
1	a)	Solenoid (*)	a) SB3 - ../.. (*)
	b)	Pilot group complete with base and ferrule	b) CP1/4
	c)	Din Connector PG9 EN175301-803 IP65	c) PLG9

(*) Specify Voltage and Frequency

OPTIONAL Version

Optional	POS	DESCRIPTION	CODE
1	a)	Solenoid	a) SB3 - 24/DCX
	b)	Pilot group complete with base and ferrule	b) CP1/4
	c)	Din Connector PG9 EN175301-803 IP65	c) PLG9 - ATEX

In Conformity to 94/9/CE ATEX Directive (code - PV-24/DCX)

POS	DESCRIPTION	CODE			
		VEM/VNP508	VEM/VNP512-562	VEM/VNP514-564	VEM/VNP516-586
1	Pilot group complete with solenoid (*) and din connector	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)	PV - ../.. (*)
1+4	Pilot group complete with solenoid (*) and din connector, top cover and screws	PVM08 - ../.. (*)	PVM12 - ../.. (*)	PVM06 - ../.. (*)	PVM06 - ../.. (*)
4	Top Cover	M310086	M310092	M310082	M310082
5	Diaphragm	DB 18	DB 112	DB 16	DB 16
6	Diaphragm (secondary)	—	—	DB 114	DB 116
7	Intermediate cover (Double diaphragm)	—	—	M310098	M310100

(*) Specify Voltage and Frequency

INSTALLATION AND MAINTENANCE
Full Immersion Stainless Steel
1) INSTALLATION INSTRUCTIONS
ASSEMBLY / DISASSEMBLY

Valve Body(B) + Tank(S) + Valve pipe outlet (T) are to be considered a single and complete module. (No spare parts available for this configuration). The disassembly or removal of any of the integral parts of this tank section should not be performed, as all tanks and valve assemblies are tested 100% and respect strict tightening tolerances. The only components to be removed are the spare parts listed in the previous spare parts table.

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 air 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 3/4" for tanks with a 1" valve
- minimum Ø 1" for tanks with a 1 1/2" valve
- minimum Ø 1/2" for tanks with a 2" valve
- minimum Ø 2" for tanks with a 2 1/2" and 3" valve

Note: 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:

For the correct and efficient use of a diaphragm valve it is important to set the correct pulse times and pause times. Average pulse times range from 100ms – 250ms depending on size of the valves being used.

2) - START UP

Before pressurising the tank/pressure vessel, it is important to verify that the air supply has been connected properly to the tank, that the drain valve has been fitted and that all sockets are plugged. 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 processes 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: Diaphragm and pilot inspection should be conducted annually:
 - 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 OPEN 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

* In case of VEM type valve: remove solenoid from enclosure and check orifice and seals.



THE TOTAL SOLUTION PROVIDER

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