Company certified by

Management System ISO 9001:2015

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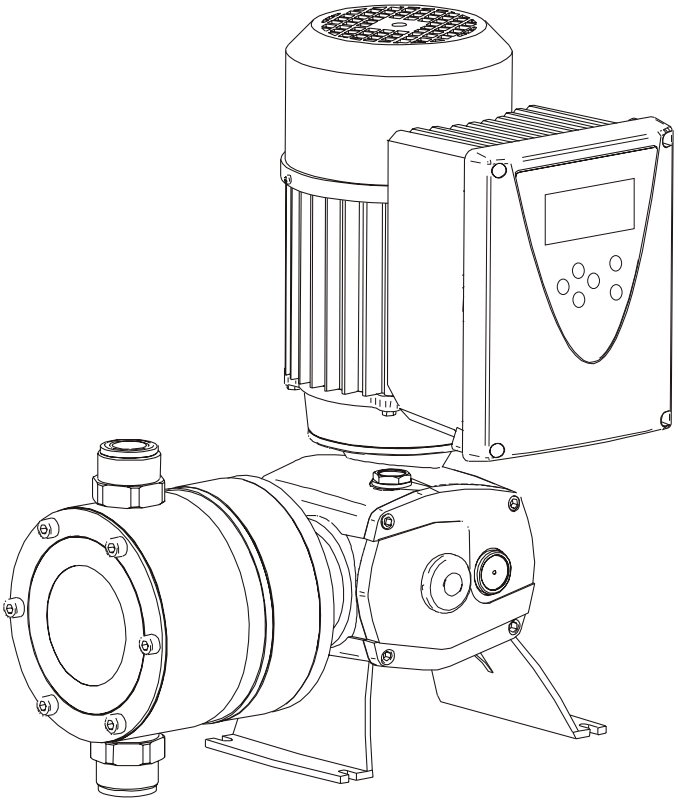
ITC DOSING PUMPS



DOSTEC AC

ENGLISH

INDEX

1. GENERAL DESCRIPTION 4

2. PACKING AND STORAGE 5

3. TECHNICAL SPECIFICATIONS 6

4. OPERATION 10

4.1 OPERATING MODES 12

4.1.1. Manual mode 12

4.1.2. Proportional mode 12

4.1.3. Analogue mode 14

4.1.4. Batch mode 15

4.1.5 ModBus mode 18

4.2 CONFIGURATION 19

4.2.1 Pump calibration 19

4.2.2 Dosing mode 20

4.2.3 Configuration 22

4.2.4. Inputs/outputs 25

4.3 ALARMS 27

4.3.1 Level alarm 1 27

4.3.2 Level alarm 2 27

4.3.3 Flow fault alarm 28

4.3.4 Diaphragm leakage alarm 28

4.3.5 Overpressure alarm 29

4.4 MONITOR 29

4.4.1 Real time 29

4.4.2 Counters 30

4.4.3 Info Unit 30

5. INSTALLATION 31

5.1. GENERAL 31

5.2. BLOCK 31

5.3. WIRING 32

5.4. HYDRAULIC INSTALLATION 34
5.4.1. Installation examples 34
5.4.2. Installation recommendations 35
5.5. ACCESSORIES 36
5.5.1. Diaphragm leakage detector 36
5.5.2. Flow detector 36
5.5.3. Pressure sensor 36
5.5.4. Pulse output isolator 37
5.5.5. Additional ventilation 115 / 230 V 37
6. START-UP AND REGULATION 37
7. MAINTENANCE 38
7.1. EXPLODED VIEW AC3 PISTON 38
7.2. EXPLODED VIEW AC3 DIAPHRAGM 42
7.3. EXPLODED VIEW AC 1/2 PISTON 46
7.4. EXPLODED VIEW AC 1/2 DIAPHRAGM 50
7.5. PERIODIC MAINTENANCE 56
7.6. TROUBLESHOOTING: POSSIBLE CAUSE AND SOLUTION 57
7.7. WIRING 58
CE DECLARATION OF CONFORMITY 59
WARRANTY 59

SAFETY INSTRUCTIONS

To avoid personal injury risks and damage to the environment, and to ensure proper equipment operation, personnel responsible for installing, commissioning and maintaining the equipment must follow the instructions in this manual, with special attention to the detailed recommendations and warnings. The specific instructions for the use of the chemicals to be dosed must also be followed.

1. GENERAL DESCRIPTION

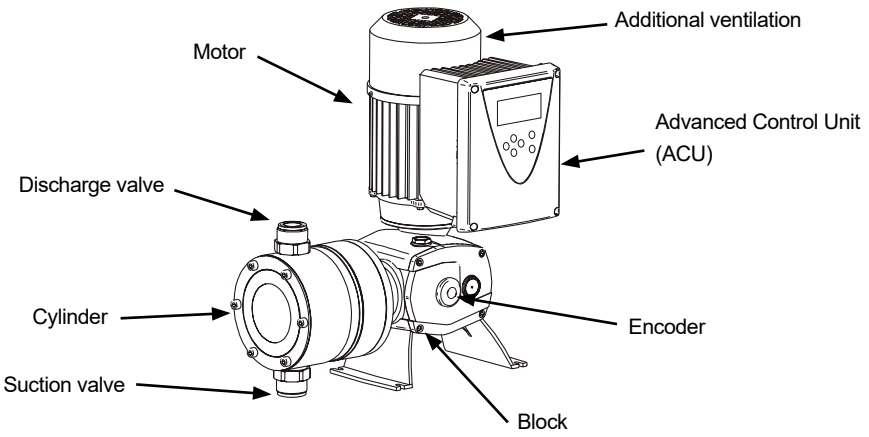
Dostec AC is a diaphragm or piston dosing pump with advanced control for an accurate and efficient automatic dosing.

This series allows many dosing possibilities depending on the chosen head. The flow range covers needs from 3 to 1200 l/h at a pressure of up to 20 bar. The choice of the correct head material between PP, PVDF and stainless steel allows the dosing of any commonly used chemical in the water treatment, chemical, food and agriculture industries.

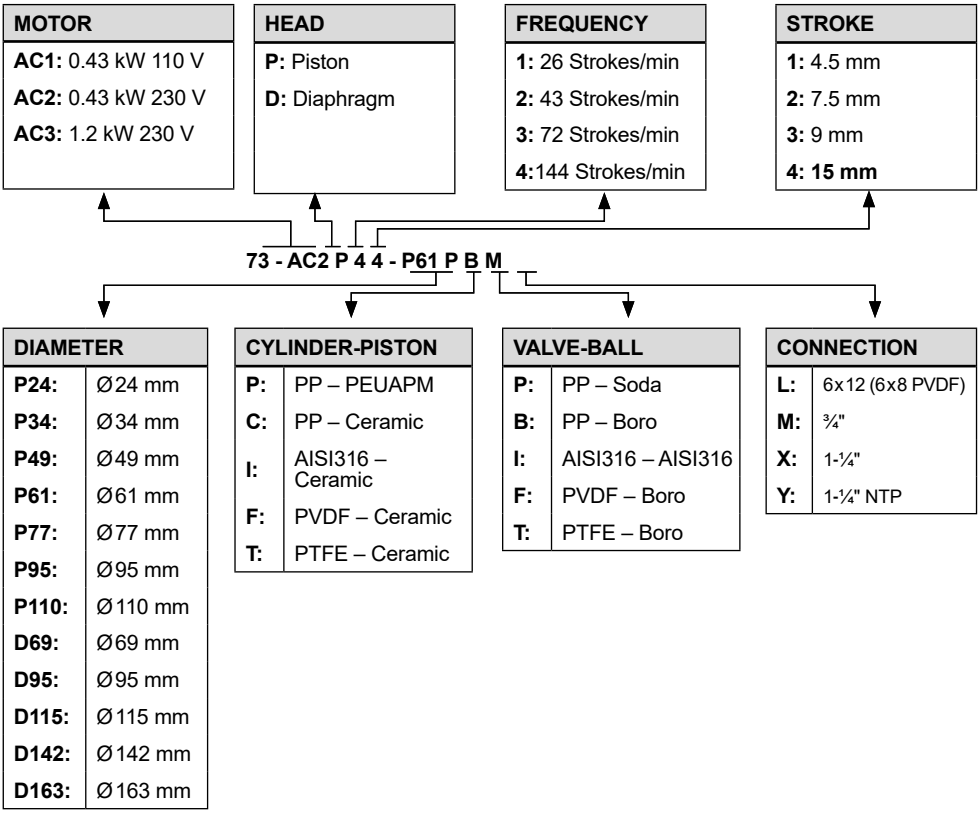
Operating modes

Manual: manual adjustment by keyboard of the flow rate to be dosed.
Analogue: dosing proportional to a 0/4 - 20 mA analogue signal.
Proportional to flow rate: dosing proportional to a water flow rate.
Proportional by pulses: stroke frequency, proportional to input pulses.
Batch control by volume: dosing a given volume. Manual, remote or timed activation.
Batch control by time: dosing for a given time. Manual, remote or timed activation.
ModBus: Dosing control via ModBus RTU protocol.

It is made up as follows:



Code formulation



2. PACKING AND STORAGE

The original packing is prepared so that carriage and storing of the product do not cause any damage to the product, as long as this is done far from heat sources and in dry, ventilated spaces.

The packing contains:
– DOSTEC-AC dosing pump
– Handbook
– Oil: AC1/2 250 cm³
AC3 700 cm³

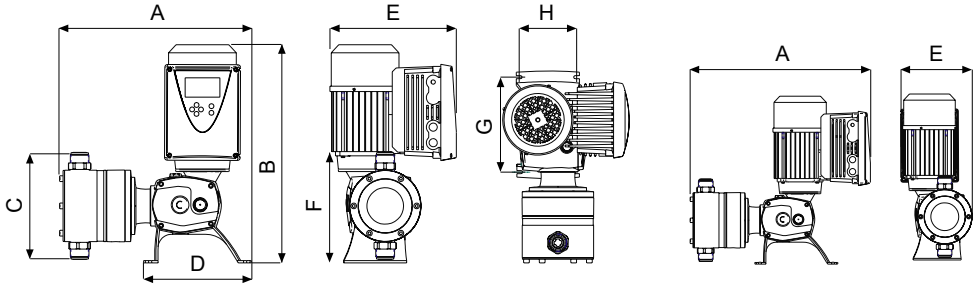
3. TECHNICAL SPECIFICATIONS

	CODE	FLOW		PRESSURE		*Suction lift		Max. viscosity	SS (Slow Suction) FLOW		*Max. viscosity
		l/h	GPH	bar	psi	m	ft	mPas	l/h	GPH	mPas
Piston	73-AC3P44-P110_X	1200	317	5.5	80	5	16	20	600	159	500 (E)
	73-AC3P44-P95_X	900	238	7.5	109	8	26	50	450	120	1500 (E)
	73-AC3P44-P77_X	600	159	11	160	9	30	50	300	79	2000 (E)
	73-AC2 73-AC1 P44-P77_M	600	159	4.5	65	1.5	5	10	300	79	800 (C)
	73-AC3P43 -P77_X	400	106	12	174	9	30	50	200	53	2000 (E)
	73-AC2 73-AC1 P44-P61 _M	360	95	7	102	5	16	20	180	47	1500 (B)
	73-AC2 73-AC1 P44-P49 _M	240	63.4	11	160	8	26	50	120	32	2000 (C)
	73-AC2 73-AC1 P44-P34 _M	120	31.7	15	217	9	30	50	60	16	2000 (C)
	73-AC2 73-AC1 P44-P24 _M	60	16	15	217	9	30	50	30	7.9	1500 (B)
	73-AC2 73-AC1 P34-P24 _L	30	7.9	20/15	217	9	30	20	15	3.9	2000 (A)
	73-AC2 73-AC1 P33-P24 _L	18	4.7	20/15	217	9	30	50	9	2.4	2000 (A)
	73-AC2 73-AC1 P14-P24 _L	10.5	2.7	20/15	217	9	30	50	5.2	1.4	2000 (A)
	73-AC2 73-AC1 P13-P24 _L	6	1.6	20/15	217	9	30	50	3	0.8	2000 (A)
	73-AC2 73-AC1 P11-P24 _L	3	0.8	20/15	217	9	30	50	1.5	0.4	2000 (A)
Diaphragm	73-AC3D44-D163_X	1044	276	5	73	4	13	10	522	138	400 (E)
	73-AC3D43-D163_X	624	165	7	102	7	23	50	312	82.5	1300 (E)
	73-AC3D43-D142_X	498	132	10	145	8	26	50	249	66	2000 (E)
	73-AC3D42-D142_X	373	99	10	145	9	30	50	186.5	49	2000 (E)
	73-AC2 73-AC1 D43-D115_M	301	79	5	72	7	23	20	150.5	39.5	2000 (C)
	73-AC2 73-AC1 D42-D115_M	251	66	5	72	8	26	50	125.5	33	2000 (C)
	73-AC3D33-D142_X	249	66	10	145	9	30	50	124.5	33	2000 (E)
	73-AC2 73-AC1 D43-D95_M	173	45.6	8	116	8	26	50	86.5	22.8	2000 (C)
	73-AC2 73-AC1 D42-D95_M	144	38	8	116	9	30	50	72	19	2000 (C)
	73-AC2 73-AC1 D43-D69_M	83	22	10	145	4	13	50	41.5	11	400 (B)
	73-AC2 73-AC1 D42-D69_M	68	18	10	145	8	26	50	34	9	1500 (B)
	73-AC2 73-AC1 D41-D69_L	38	9.6	15	217	9	30	10	19	4.8	2000 (A)
	73-AC2 73-AC1 D31-D69_L	18,2	4,8	16	232	9	30	50	9.5	2.5	2000 (A)
	73-AC2 73-AC1 D21-D69_L	10,9	2,9	16	232	9	30	50	5.7	1.5	2000 (A)
	73-AC2 73-AC1 D11-D69_L	6,4	1,7	16	232	9	30	50	3.2	0.85	2000 (A)

20 bar models only with ceramic piston.
Models with _L include priming valve.
*Suction lift when the dosing head and suction pipe are full. Tested with water at 20 °C
** Lift for viscous products: (A)=60-P-AIMN-IIMC / (B)=62-P-AIMN-IIMC / (C)=62-P-AIXN-IIXC / (E)=62-P-AIXN-IIXC

VOLTAGE:	AC3: 230V ±10%	
	AC2: 110V ±10%	
POWER:	0.43 kW (0.58 Hp)	
	1.2 kW (1.6 Hp)	
PROTECTION:	IP-55	
MATERIALS:	Piston:	P.E.U.A.P.M. / Ceramic / AISI316
	Diaphragm:	P.T.F.E. Fibre-reinforced elastomer base
	Retention:	FPM
	Cylinder:	P.P. / PVDF / AISI316
	Valve (body):	P.P. / PVDF / AISI316
	Valve (ball):	Soda lime / Borosilicate / AISI316
AMBIENT TEMPERATURE:		0...45 °C
MEDIA TEMPERATURE:		PP: 0...50 °C
		PVDF: −10...50 °C
		S.S.: −10...60 °C
RELATIVE HUMIDITY MAX.:		95% without condensation
NOISE LEVEL dB(A):		less than 70
WEIGHT:	AC3: 24 kg /53 lb	
	AC2/1: 13 kg (29 lb)	

DIMENSIONS



Piston:		A	B	C	D	E	F	G	H	
	AC3	429	490	230	241	285	210	212	122	mm
		16.8	19.3	9	9.5	11.2	8.2	8.3	4.8	in
	AC2/1	306	400	154	180	270	150	155	90	mm
		12	15.7	6	7	10.6	5.9	6.1	3.5	in

Piston:	A	E	
AC3	525	205	mm
	9.9	8.1	in
AC2/1	422	155	mm
	16.6	6.1	in

Diaphragm		A	B	C	D	E	F	G	H	
	D163	395	490	270	241	285	210	212	122	mm
		15.5	19.3	10.6	9.5	11.2	8.2	8.3	4.8	in
	D142	394	490	250	241	285	210	212	122	mm
		15.5	19.3	9.8	9.5	11.2	8.2	8.3	4.8	in
	D115	270	400	204	180	270	150	155	90	mm
		10.6	15.7	8	7	10.6	5.9	6.1	3.5	in
	D95	270	400	184	180	270	150	155	90	mm
		10.6	15.7	7.2	7	10.6	5.9	6.1	3.5	in
	D69	274	400	154	180	270	150	155	90	mm
		10.6	15.7	6	7	10.6	5.9	6.1	3.5	in

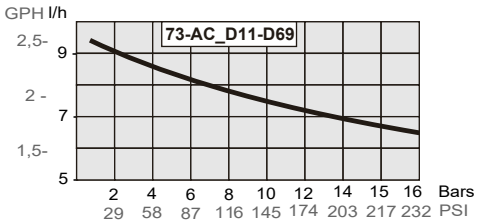
Piston:	A	E	
D163	490	225	mm
	19.3	8.8	in
D142	489	215	mm
	19.2	8.4	in
D115	386	180	mm
	15.1	6.7	in
D95	386	170	mm
	15.1	6.7	in
D69	390	155	mm
	15.3	6.1	in

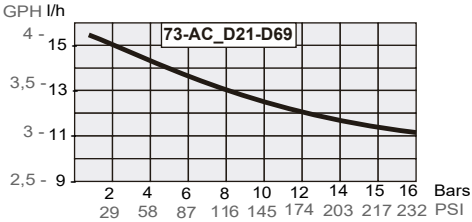
Inputs/outputs

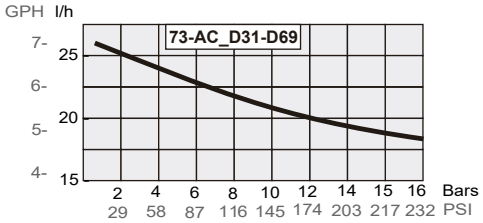
- Analogue input 0/4 - 20 mA
- External pulse input
- Remote activation input (on/off)
- Level sensor input (pre-warning)
- Level sensor input (alarm)
- Leakage detector input
- Flow detector input
- Pressure sensor input
- RS-485 ModBus serial port
- 4 - 20 mA log and monitoring output
- Log output, monitoring and control of second pulse pump
- Alarm output (relay)
- Level alarm output (relay)

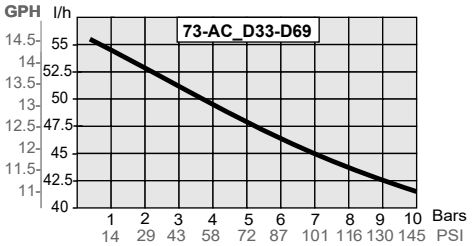
FLOW AND PRESSURE GRAPHS

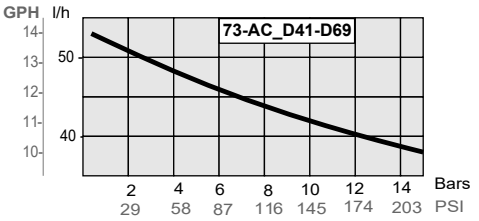
DIAPHRAGM PUMP AC1-AC2

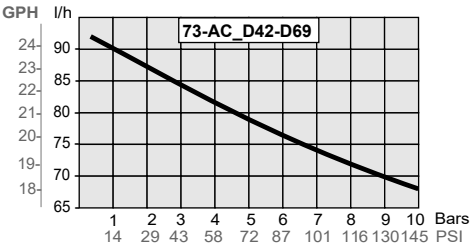


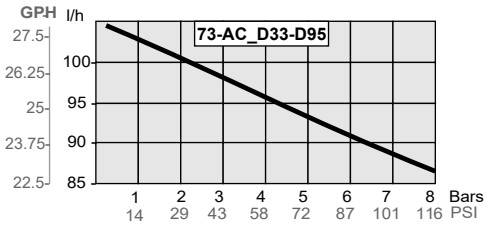


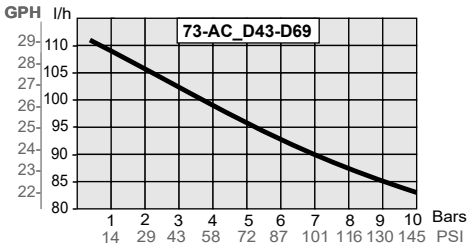


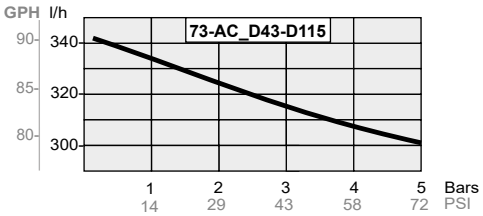


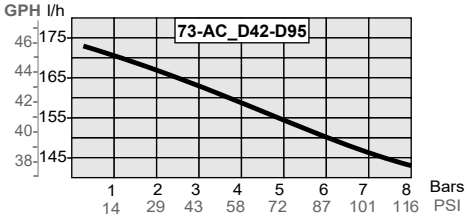


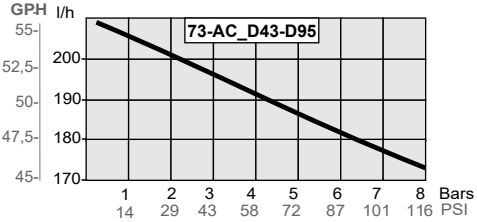


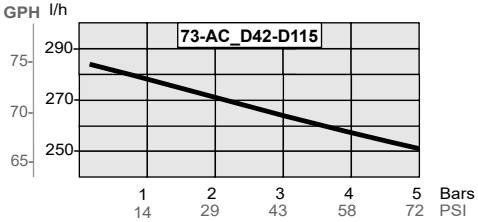


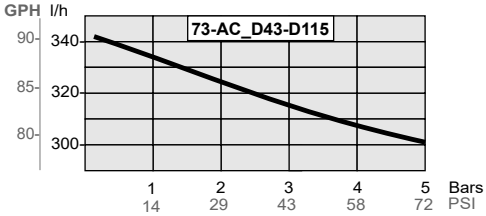




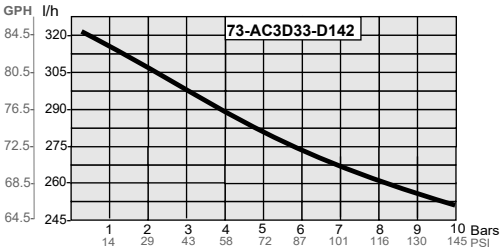


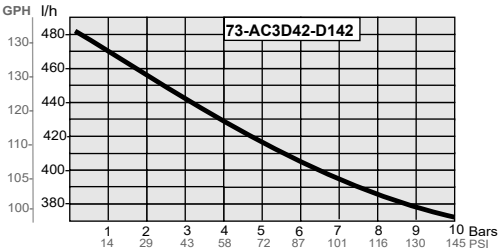


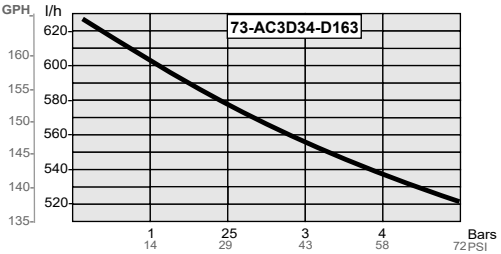


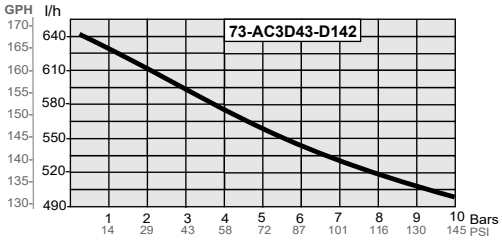


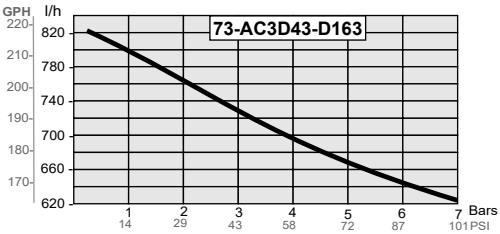
DIAPHRAGM PUMP AC3

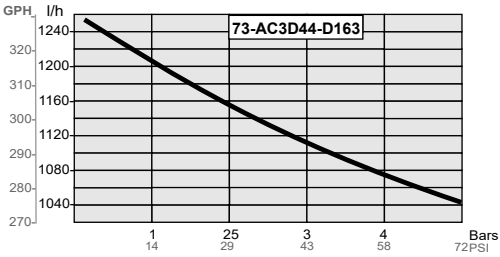










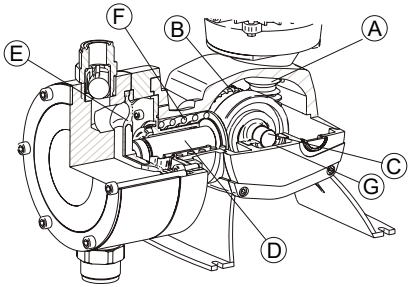


4. OPERATION

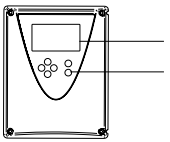
The rotational motion of the motor is transmitted by the reducer, which consists of two major components, the pinion (A) and the ring gear (B). The pinion and the ring gear are linked to a shaft with an eccentric bearing (C) that pushes the shaft (D) which is throated to the diaphragm or the piston (E). The return movement is made by a spring (F).

A high resolution encoder (G) checks the instantaneous position and speed and allows the Advanced Control Unit to do a close loop adjustment for torque and rotation speed.

By changing the motor speed and depending on the operation mode selected in the Advanced Control Unit, the dosing pump will adjust the flow to the required value within the range from 10 to 100% of the rated flow.



EQUIPMENT DESCRIPTION



ENT Confirm

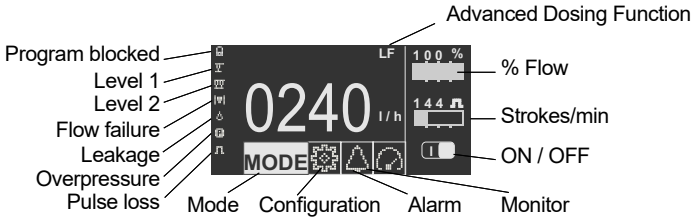
ESC Exit without confirming

Increase/decrease value

Scroll left

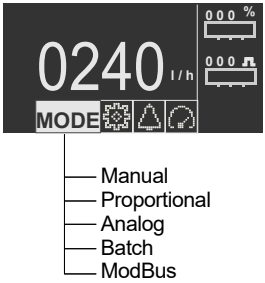
Scroll right

LCD SCREEN DESCRIPTION

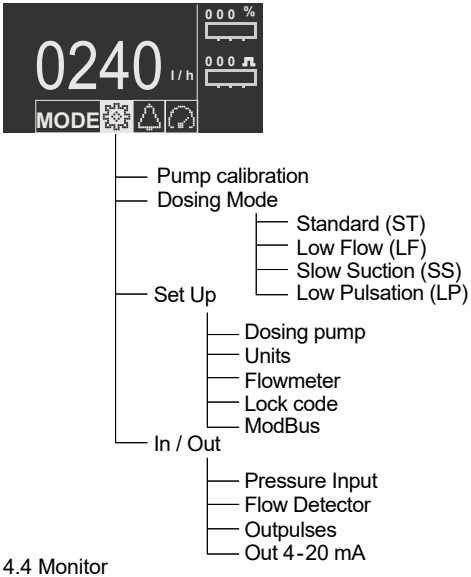


Menus

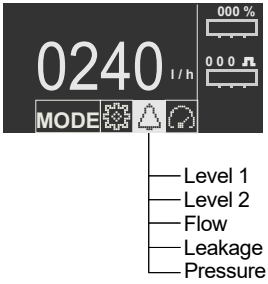
4.1 Operating Modes



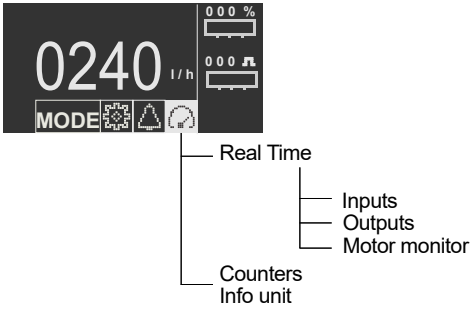
4.2 Configuration



4.3 Alarm



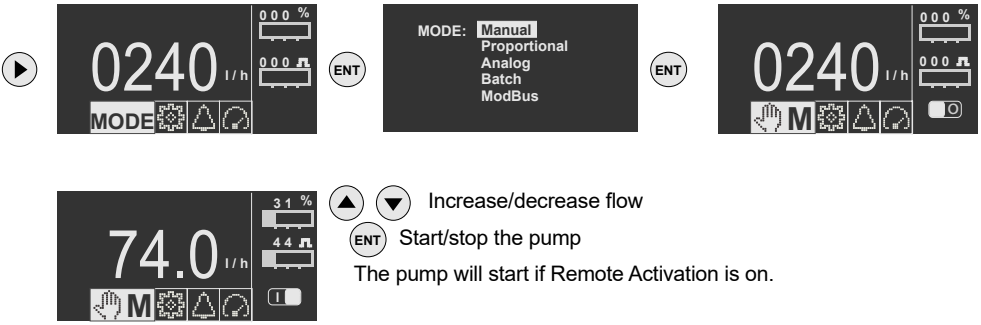
4.4 Monitor



4.1 OPERATING MODES

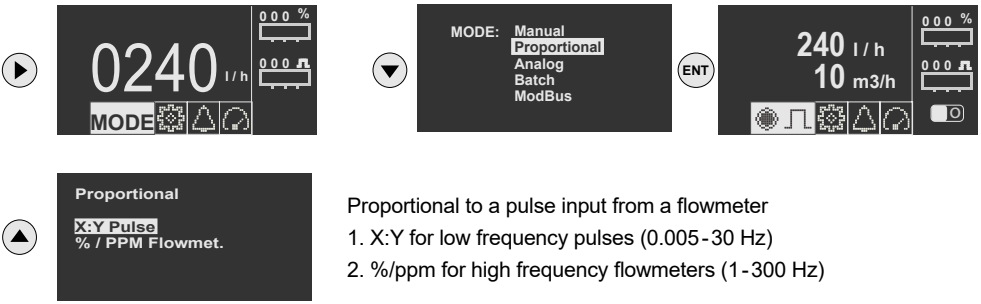
4.1.1. Manual mode

This mode allows manual adjustment of the dosing flow rate.



4.1.2. Proportional mode

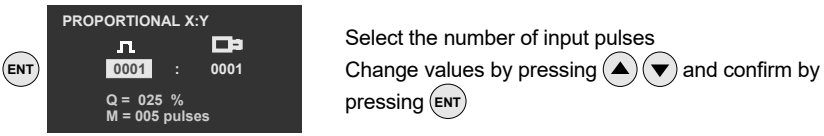
This mode allows dosing to be proportional to a pulsed input. Use X:Y mode to establish a ratio of input pulses (X) to pump cycles (Y). Use the %/ppm mode for proportional dosing.

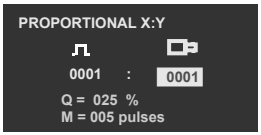


Proportional mode settings

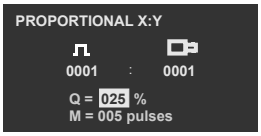
4.1.2.1 X:Y pulses

The pump will cycle Y times after receiving X input pulses. The pump speed can be adjusted manually.

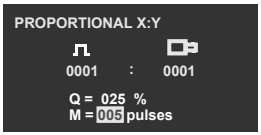




Select the number of pump cycles
Change values by pressing ▲ ▼ and confirm by pressing ENT



Select pump speed in %
Change by pressing ▲ ▼ and confirm by pressing ENT
For Y = 1 Q must be set at less than 50%



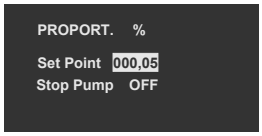
Select the maximum number of pulses in memory
Change by pressing ▲ ▼ and confirm by pressing ENT

ENT Start/stop the pump
The pump will start if the Remote Activation input is activated.

4.1.2.2 %/ppm Flowmeter

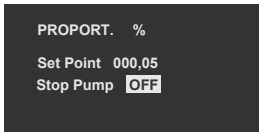
By entering a proportion value (%/ppm) and with a pulse input from a flowmeter, the pump will regulate its speed to dose the flow according to the desired proportion.

▼ ENT



Proportionality value in % or ppm
Change by pressing ▲ ▼ and confirm by pressing ENT

▼ ENT

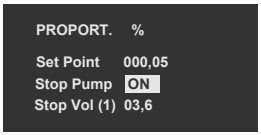


Select OFF to perform proportional dosing with no volume limit.
Change by pressing ▲ ▼ and confirm by pressing ENT

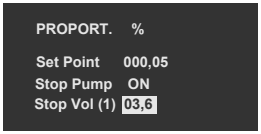
Instantaneous water flow rate.

Press ENT to start / stop the pump. The pump will start only if the Remote Activation input is activated.

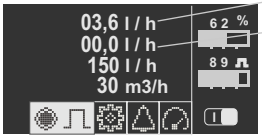
* For the configuration of units (%/ppm) see Units in the Configuration section
* For flowmeter configuration. See the Configuration/Setup section



Select ON to perform proportional dosing with a volume limit.
The pump will stop when it reaches the ENT maximum volume to be dosed.
Change by pressing ▲ ▼ and confirm by pressing ENT



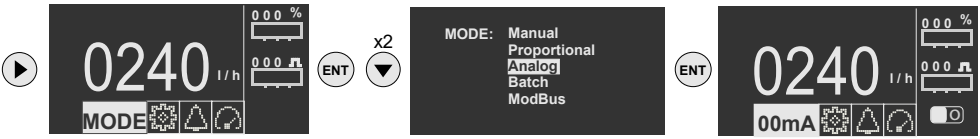
Set the desired maximum volume.
Change by pressing ▲ ▼ and confirm by pressing ENT



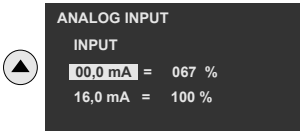
Volume to be dosed
Volume dosed
Press ENT to start / stop the pump. The pump will start only if the Remote Activation input is activated.
The pump will stop when it reaches the maximum volume set.

4.1.3. Analogue mode

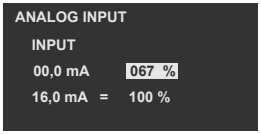
This mode allows dosing proportional to an analogue 0/4 - 20 mA input.



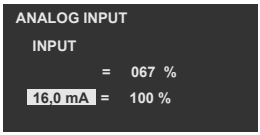
4.1.3.1 Analogue mode settings



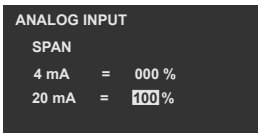
Select mA input for the first point
Change by pressing ▲ ▼ and confirm by pressing ENT



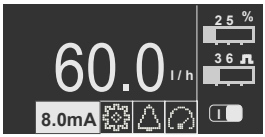
Select the flow in % for the first point in mA
Change by pressing ▲ ▼ and confirm by pressing ENT



Select mA output for the second point
Change by pressing ▲ ▼ and confirm by pressing ENT



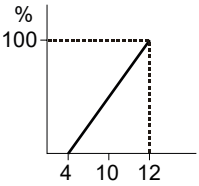
Select the flow rate in % for the second point in mA
Change by pressing ▲ ▼ and confirm by pressing ENT



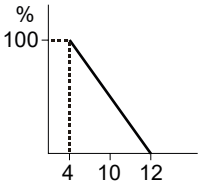
ENT Start/stop the pump
The pump will start if the Remote Activation input is activated

Examples:

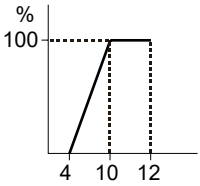
1: 4 mA = 0%
20 mA = 100%



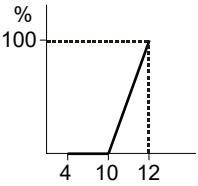
2: 4 mA = 100%
20 mA = 0%



3: 4 mA = 0%
12 mA = 100%



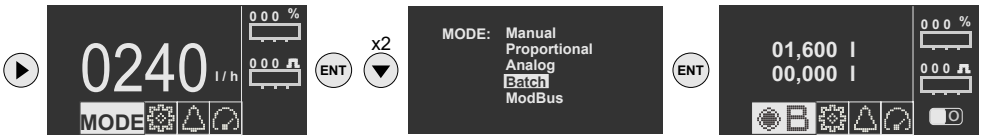
4: 12 mA = 0%
20 mA = 100%



Examples 3 and 4 can be combined into two pumps when both are controlled with the same mA signal to start a second pump as supplementary flow.

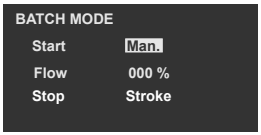
4.1.4. Batch mode

This mode allows batch dosing. Various activation options may be chosen (manual, external, time), and an end of the work cycle defined by number of cycles/volume or by time. In any of the operating modes, the speed of the pump can be defined in %.

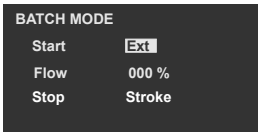


Batch dosing mode settings

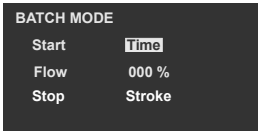
4.1.4.1 Select start-up mode



Manual: start the pump by pressing ENT

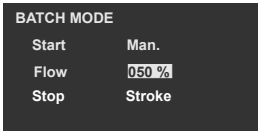


Ext.: start the pump via remote input



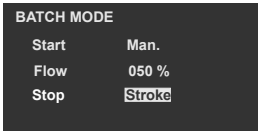
Time: start the pump via a timer by entering a frequency (00:00:01 - 23:59:59)

4.1.4.2 Select stroke frequency in % (flow)

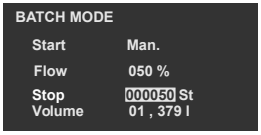


Change by pressing ▲ ▼ and confirm by pressing ENT

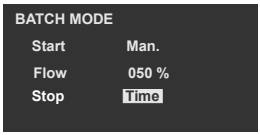
4.1.4.3 Select stop mode



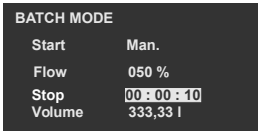
Stroke: select the number of cycles before stopping



Change by pressing ▲ ▼ and confirm by pressing ENT



Time: set cycle execution time before stopping



Change by pressing ▲ ▼ and confirm by pressing ENT

Viewing the different configuration modes

Start : Man./Ext
Stop : Strokes

Volume to be dosed
Time counter

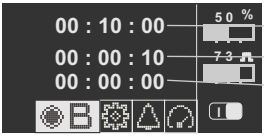
Start : Man./Ext
Stop : Time

Execution time
Time counter

Start : Time
Stop : Strokes

Initial frequency
Volume to be dosed
Volume counter

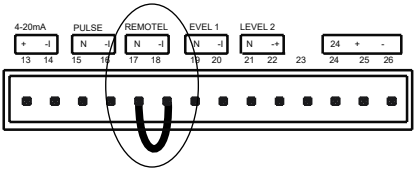
Start : Man./Ext
Stop : Time

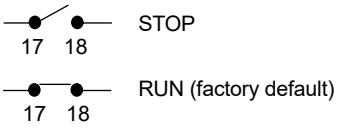


Initial frequency
Execution time
Volume counter

4.1.5.1 Remote activation

An external remote control can be used to start and stop the pump by means of dry contact in pins 17-18.





When the contact is closed (RUN) the pump may be run manually via the ENT key. After stopping the pump manually via the keypad, it is necessary to reset the Remote Input (open and close) to start the pump again remotely.

4.1.5.2 Priming function test

By pressing ◀ for 3 seconds in manual mode, to start the pump at maximum speed. The pump will continue to run only when ◀ is pressed.

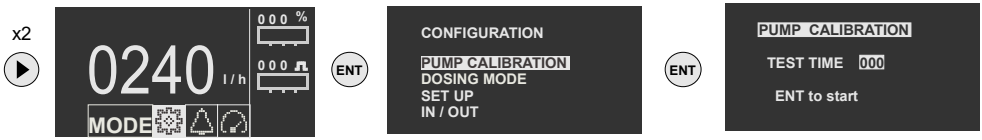
This feature allows a quick test of the unit and is an aid in priming the pump.

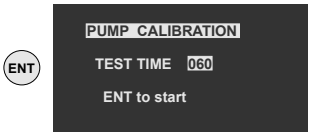
4.2 CONFIGURATION

4.2.1 Pump calibration

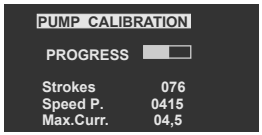
The pump calibration function allows the pump flow to be calibrated in real working conditions via a product suction test of a given duration. For a correct calibration, a test duration of at least 60 seconds must be entered. The pump will start automatically at maximum flow for the specified time.

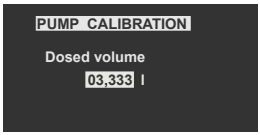
Once the test is finished, the suction volume must be entered. With this result the equipment will recalculate the dosing flow.



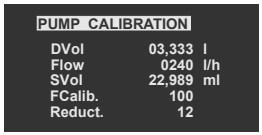


Change by pressing ▲ ▼ and confirm by pressing ENT





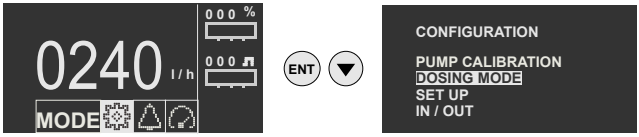
Enter the value in the unit ▲ ▼ and confirm by pressing ENT



Press ENT to finish the calibration process
Dvol: volume dosed
Flow: flow rate
S.Vol: volume per cycle
F.calib: calibration factor
Reduct: Reducer

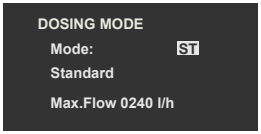
4.2.2 Dosing mode

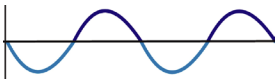
The Dosing Mode function allows the various Advanced Dosing Functions to be selected. These functions can regulate the mechanism speed during the suction or discharge cycles of the pump to optimize the dosing and adapt it to the characteristics of the process.



4.2.2.1 Standard

The Standard mode (ST) is the normal operating mode whereby the dosing pump displays symmetrical behaviour during the suction and discharge of the product.





Change by pressing ▲ ▼ and confirm by pressing ENT

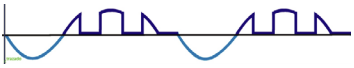
4.2.2.2 Low flow

The Low Flow mode (LF) allows dosing to be paused during the discharge cycle, extending the dosing time and therefore reducing the flow to as little as 1%.

The other modes allow the flow to be reduced to as little as 10%.

ENT

DOSING MODE
Mode: LF
Low Flow
Min. Flow 2,40 l/h

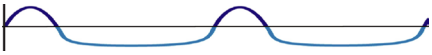


Change by pressing ▲ ▼ and confirm by pressing ENT

4.2.2.3 Slow suction

The Slow Suction mode (SS) reduces the speed during the suction cycle in order to improve precision in the dosing of viscous liquids, since it reduces the risk of cavitation and incomplete filling of the head. The maximum flow is reduced by 50%.

DOSING MODE
Mode: SS
Slow Suction
Max.Flow 120 l/h



Change by pressing ▲ ▼ and confirm by pressing ENT

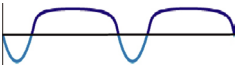
4.2.2.4 Low Pulsation / Low Pulsation

Low Pulsation mode (LP) lengthens the impulse cycle time in order to minimize the effect of pulsating flow and reduce overpressures caused by long pulses.

The maximum flow is reduced depending on the reducer model (frequency).

Frequency	Max. Flow Reduced to
1	55%
2	55%
3	50%
4	35%

DOSING MODE
Mode: LP
Low Pulsation
Max.Flow 84,0 l/h

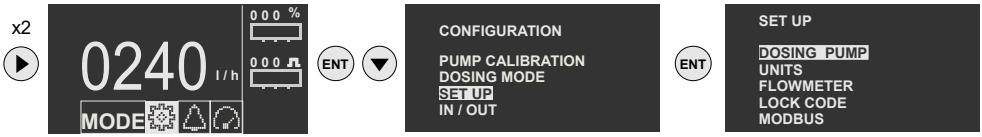


Change by pressing ▲ ▼ and confirm by pressing ENT

4.2.3 Configuration

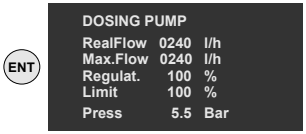
4.2.3.1 Dosing pump

Technical characteristics of the pump



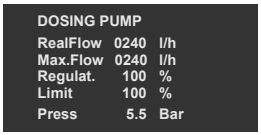
Pump flow rate

Real Flow is the flow due to the calibration test, if carried out, and/or the flow due to the regulator.
Max Flow is the flow due to the limit and/or the Advanced Dosing Mode.



Regulation

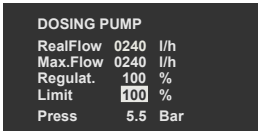
In case of stroke length regulation system available in this unit, and the regulator knob in a position different from 100%, this parameter must coincide with the regulation of the pump's knob.



Change by pressing ▲ ▼ and confirm by pressing ENT

Limited flow %

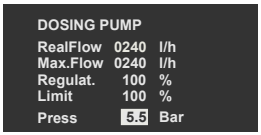
This is the maximum limited flow of the pump. It limits the pump flow so that it does not exceed the entered value under any circumstances.



Change by pressing ▲ ▼ and confirm by pressing ENT

Maximum pressure

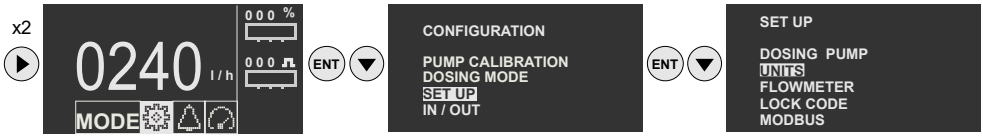
Dosing pump maximum working pressure

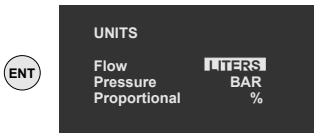


Change by pressing ▲ ▼ and confirm by pressing ENT

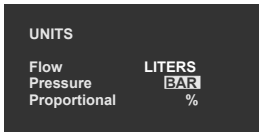
4.2.3.2 Units

Select flow, pressure and proportionality units

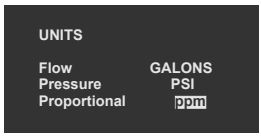




Change litre/gallons by pressing ▲ ▼ and confirm by pressing ENT



Change bar/psi by pressing ▲ ▼ and confirm by pressing ENT



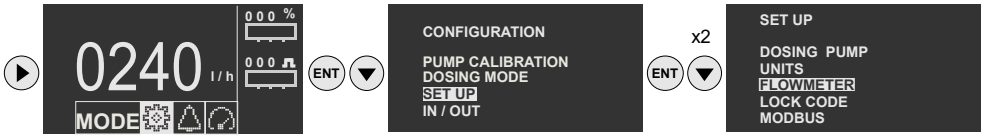
Change %/ppm by pressing ▲ ▼ and confirm by pressing ENT

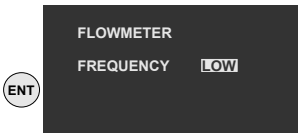
4.2.3.3 Flowmeter

For a correct water flow reading, the flowmeter constant (volume/pulse or pulses/volume) must be entered. First select the type of flowmeter for low or high frequency.

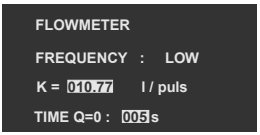
Low frequency: for water meters with low frequency outputs (0.005 Hz to 30 Hz). The constant corresponds to volume/pulse (litres/pulse ; gallons/pulse).

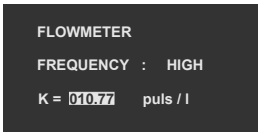
High frequency: for flowmeters with high frequency output (1 to 300 Hz). The K-factor corresponds to pulses/volume (pulses/litre ; pulses/gallon).





Change low (LOW) or high (HIGH) frequency by pressing ▲ ▼ and confirm by pressing ENT





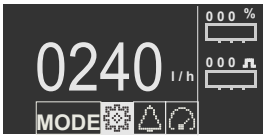
Change by pressing ▲ ▼ and confirm by pressing ENT

TIME Q=0, Time interval (seconds) between two pulses to consider zero flow.

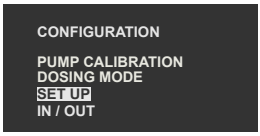
4.2.3.4 Lock code

Blocks access to the equipment configuration, allowing the pump to start and stop. When the access code is 0000 (default value), the lock is disabled.

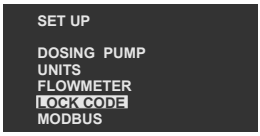
x2 ▶



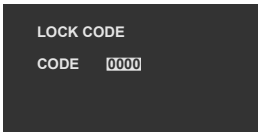
ENT ▼



x3 ENT ▼

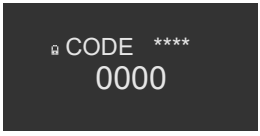


ENT

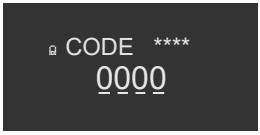


Enter the desired password ▲ ▼ and confirm by pressing ENT

By pressing ESC for 3 seconds to lock the pump



Press ESC for 3 seconds to enter the code and unlock the pump

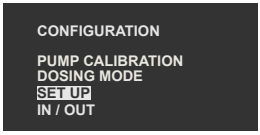


Enter the code starting with the units (from right to left). Change values by pressing ▲ ▼ and confirm by pressing ENT

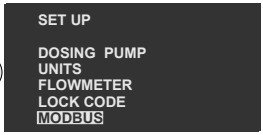
4.2.3.5 ModBus

x2 ▶

ENT ▼

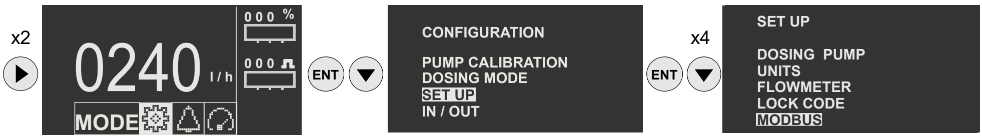


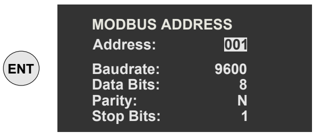
x4 ENT ▼



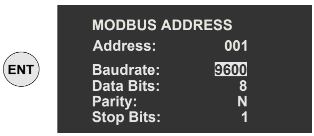
– Bus: Rs485
– Communication through (half-duplex) A, B, and GND
– Baud rate: 9600
– Data bits: 8
– Parity: None
– Stop bits: 1
– Hardware handshaking: No
– Character Time out: 20 mSeg.
– Message Time out: 100 mSeg

Important: if it is necessary to use a RS232/RS485 or other converters, make sure this converter does not produce an echo signal.

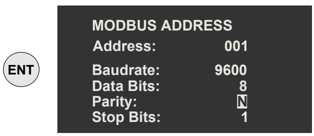




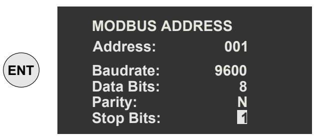
Change by pressing ▲ ▼ and confirm by pressing ENT



Change by pressing ▲ ▼ and confirm by pressing ENT



Change by pressing ▲ ▼ and confirm by pressing ENT

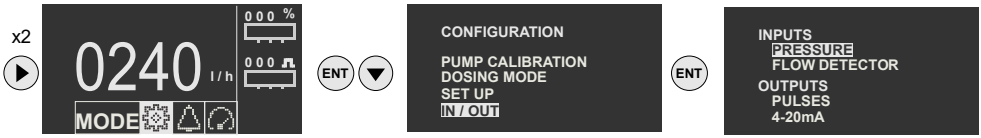


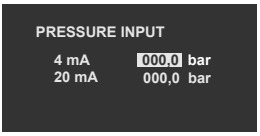
Change by pressing ▲ ▼ and confirm by pressing ENT

4.2.4. Inputs/outputs

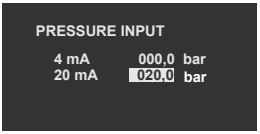
4.2.4.1 Pressure input

Calibration of the 4-20 mA pressure transducer input.





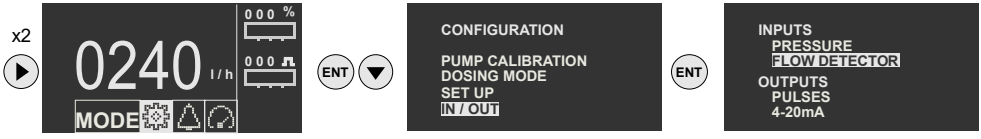
Enter the pressure value corresponding to 4 mA
Change by pressing ▲ ▼ and confirm by pressing ENT

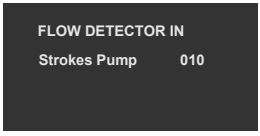


Enter the pressure value corresponding to 20 mA
Change by pressing ▲ ▼ and confirm by pressing ENT

4.2.4.2 Flow detector

The flow detector is an accessory that allows the pulses of the supplied flow to be monitored.

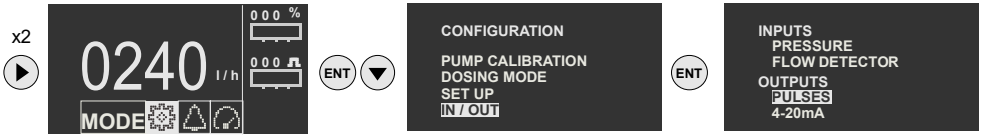


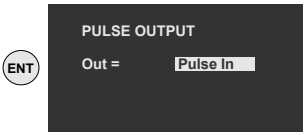


Enter the number of pump cycles during which no pulse is detected for the alarm to be activated.
Change by pressing ▲ ▼ and confirm by pressing ENT

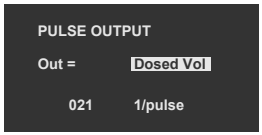
4.2.4.3 Pulse output

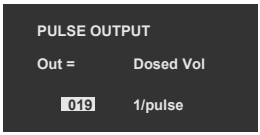
Configuration of the volume/pulse in order to monitor the pump flow.





Set if the pulse output is the same as the pulse input.
With this option a second Dostec AC can be driven by the same flowmeter in proportional (%) mode.



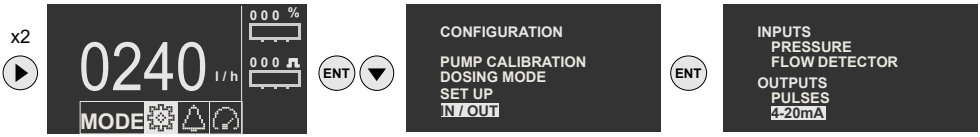


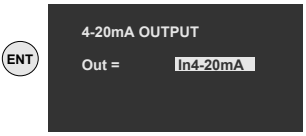
Enter the volume of product dispensed for each product.
Change by pressing ▲ ▼
and confirm by pressing ENT

With this option another device can receive the dosed volume. Review 5.5.4 for connections.

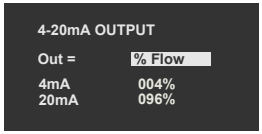
4.2.4.4 4-20 mA output

4-20 mA output for log or monitoring.



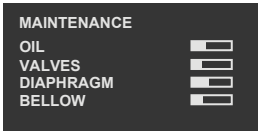


Set if the pulse output is the same as the pulse input.
Change by pressing ▲ ▼ and confirm by pressing ENT



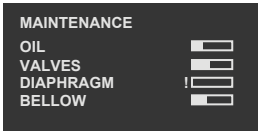
Enter the % flow rate at which the 4 mA will be emitted
Enter the % flow rate at which the 20 mA will be emitted
Change by pressing ▲ ▼ and confirm by pressing ENT

4.2.4.5. Maintenance



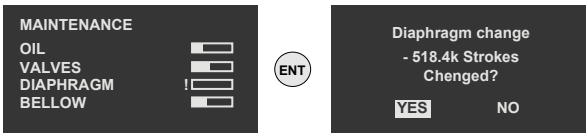
In the Maintenance menu, the wear of the components can be consulted in the status bars.

When end of the useful life is reached, will appear a warning on the main screen.



The status bars in the maintenance menu show the remaining life of each component and will show a **!** sign when the bar is empty, which is the recommended time for component replacement

By selecting each component it is possible to consult the cycles performed. A negative cycle value indicates that the maintenance interval has been exceeded.



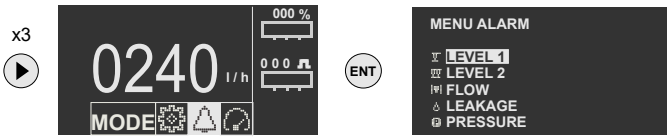
When the component that has reached the end of its useful life is replaced, the cycle counter must be reset to zero through the YES option.

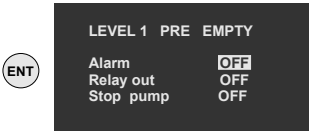
4.3 ALARMS

In the event of an alarm, the corresponding icon will flash on the main screen. If the cause of the alarm disappears the icon will remain steady. To erase the alarm icon, it is necessary to stop and start the pump using the “ENT” key. The security time is 5 seconds before any alarm is activated.

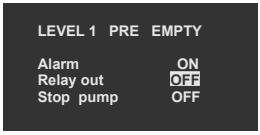
4.3.1 Level alarm 1

Low level pre-warning according to Level 1 input. Automatic reset.

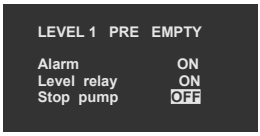




Activate or deactivate the alarm by pressing ▲ ▼ and confirm by pressing ENT



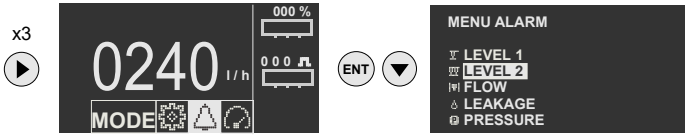
Activate or deactivate the Alarm Relay output, when the unit is in alarm, by pressing ▲ ▼ and confirm by pressing ENT



Activate or deactivate, stop the pump when the alarm goes off, by pressing ▲ ▼ and confirm by pressing ENT

4.3.2 Level alarm 2

Low level alarm according to Level 2 input. Automatic reset



Activate or deactivate the alarm by pressing ▲ ▼ and confirm by pressing ENT

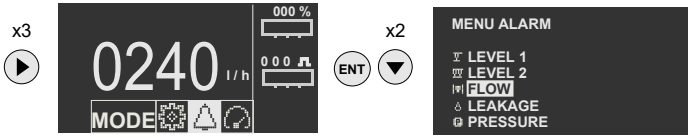
Activate or deactivate the Alarm Relay output, when the unit is in alarm, by pressing ▲ ▼ and confirm by pressing ENT

Activate or deactivate, stop the pump when the alarm goes off, by pressing ▲ ▼ and confirm by pressing ENT

4.3.3 Flow fault alarm

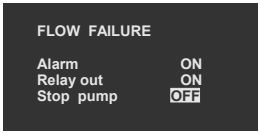
Dosing flow detector alarm.

See section 4.2.4.2 (Configuration/Inputs/Flow Detector)



Activate or deactivate the alarm by pressing ▲ ▼ and confirm by pressing ENT

Activate or deactivate the Alarm Relay output, when the unit is in alarm, by pressing ▲ ▼ and confirm by pressing ENT



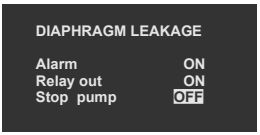
Activate or deactivate, stop the pump when the alarm goes off, by pressing ▲ ▼ and confirm by pressing ENT

4.3.4 Diaphragm leakage alarm

Diaphragm leakage detection alarm for electrically conductive liquids (min. 0.05 mS).

Activate or deactivate the alarm by pressing ▲ ▼ and confirm by pressing ENT

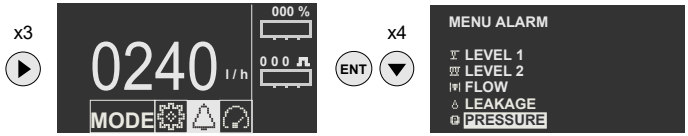
Activate or deactivate the Alarm Relay output, when the unit is in alarm, by pressing ▲ ▼ and confirm by pressing ENT



Activate or deactivate, stop the pump when the alarm goes off, by pressing ▲ ▼ and confirm by pressing ENT

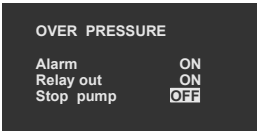
4.3.5 Overpressure alarm

Overpressure detection alarm. Automatic reset.



Activate or deactivate the alarm by pressing ▲ ▼ and confirm by pressing ENT

Activate or deactivate the Alarm Relay output, when the unit is in alarm, by pressing ▲ ▼ and confirm by pressing ENT

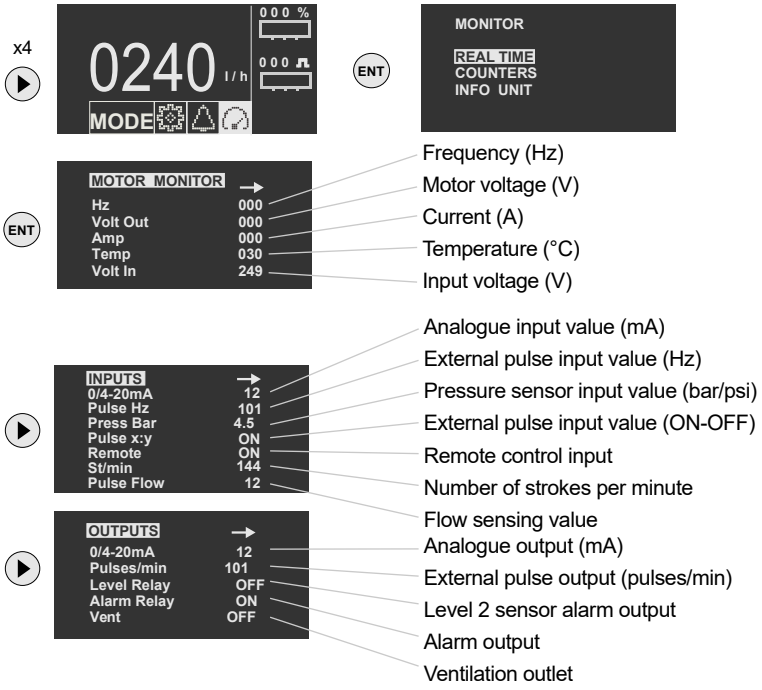


Activate or deactivate, stop the pump when the alarm goes off, by pressing ▲ ▼ and confirm by pressing ENT

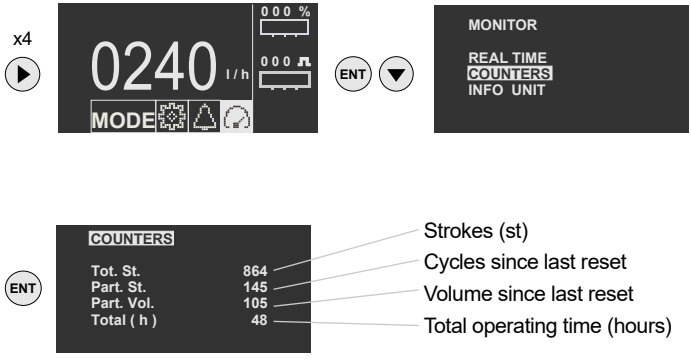
4.4 MONITOR

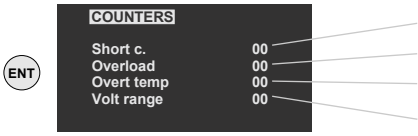
4.4.1 Real time

Real-time working parameters

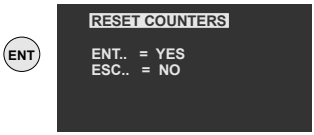


4.4.2 Counters



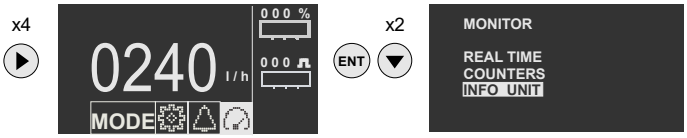


Short circuit alarms
Overload alarms
High temperature alarms
Input voltage alarms



Press (ENT) to reset the cycle and volume counters or (ESC) not to reset them

4.4.3 Info Unit



Serial number
Nominal pump flow (l/h or GPH)
Strokes/min
Maximum pressure (bar or psi)
Hardware version
Firmware version

Motor starting voltage
Motor frequency factor
Peak current
Motor acceleration
Voltage retention
Calibration factor
Stroke volume

5. INSTALLATION

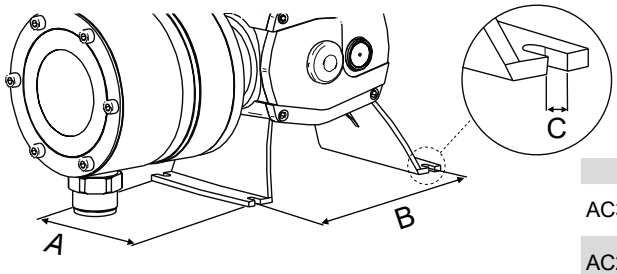
5.1. GENERAL

It should be installed in a place protected from water, away from heat sources and with renovation of air.

Place the pump vertically over a totally rigid surface to achieve a proper lubrication of all inner elements. Provide sufficient space to facilitate basic maintenance and installation/removal of the pump.

Fix the pump to the chosen flat surface using 4 screws.

(See drawing).



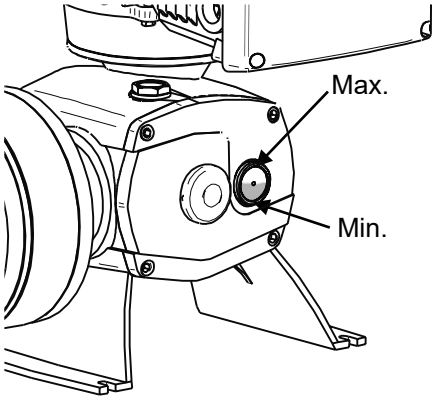
	A	B	C	
AC3	122	212	6,5	mm
	4,8	8,3	0,26	in
AC2/1	90	155	6,5	mm
	3,5	6,1	0,26	in

5.2. BLOCK

Pull out the oil cap for transport, fill the pump with the SAE 80W90 oil supplied (or similar), up to the level shown by the sight glass and fit the working cap (black with an orifice).

Approximate oil capacity:

650 cm³ (AC3)
250 cm³ (AC1/2)



List of lubricants:

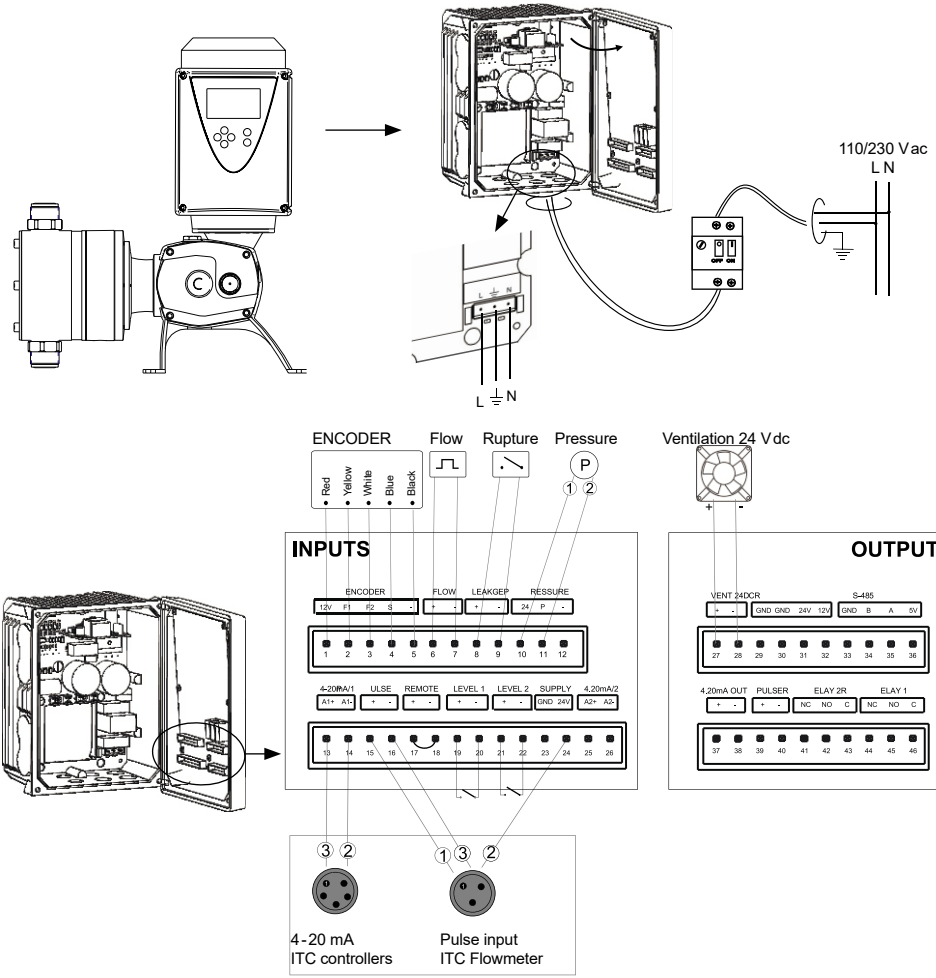
CEPSA SAE80W90
REPSOL EP 80W/90
SHELL SPIRLAXHD OIL 80W/90
ESSO GEAR OIL 80W/90
AGIP ROTRA MP 80W-90
MOBILUDE HD 80W-90
BP ENERGEAR HT 80W-90
CASTROL HYPOYC
GULF GEAR MP SAE 80W 90
ELF TRANSGEAR HD 80W-90

5.3. WIRING

The electrical protection of the motor must be installed and adjusted on the basis of its nominal current (thermomagnetic circuit breaker). (See connection).

A device for disconnection in case of emergency must be installed.

The equipment must be protected against false starts.

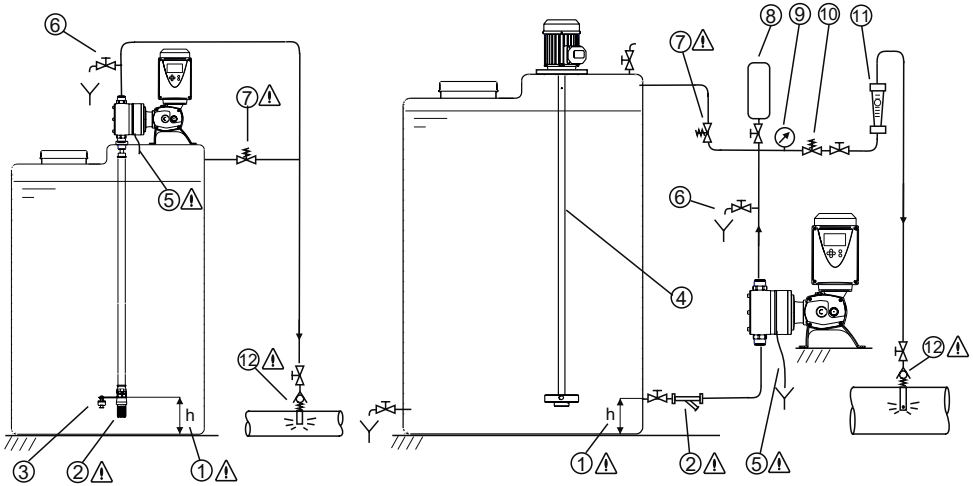


External quick connectors

N	FUNCTION	DETAIL
Inputs		
1	Encoder	+12 Vdc
2	Encoder	F1
3	Encoder	F2
4	Encoder	S
5	Flow detector	(−)
6	Flow detector	(+)
7	Leakage detector	(−)
8	Leakage detector	(+)
9	Leakage detector	(−)
10	Pressure transmitter	+24 Vdc
11	Pressure transmitter	(+)
12	Pressure transmitter	(−)
13	Analogue mode input 4-20 mA	(+)
14	Analogue mode input 4-20 mA	(−)
15	Proportional mode pulse input	Pulse
16	Proportional mode pulse input	(−)
17	Remote activation / Batch mode	Dry contact
18	Remote activation / Batch mode	Dry contact
19	Level sensor 1	Dry contact
20	Level sensor 1	Dry contact
21	Level sensor 2	Dry contact
22	Level sensor 2	Dry contact
Outputs		
27	Additional ventilation	+24 Vdc
28	Additional ventilation	Relay Output Common
29	Additional ventilation	Relay Output NO
30	Additional ventilation	(−)
33	RS-485	+5 Vdc
34	RS-485	H(B)
35	RS-485	L (A)
36	RS-485	(−)
37	Analog monitor output 4-20 mA	(+) Not isolated
38	Analog monitor output 4-20 mA	(−) Not isolated
39	Pulse monitor output	Isolated signal
40	Pulse monitor output	(−) isolated
41	Level alarm output	NO
42	Level alarm output	NC
43	Level alarm output	Common (max. 5 Amp 250 Vac)
44	Alarm output	NO
45	Alarm output	NC
46	Alarm output	Common (max. 5 Amp 250 Vac)

5.4. HYDRAULIC INSTALLATION

5.4.1. Installation examples

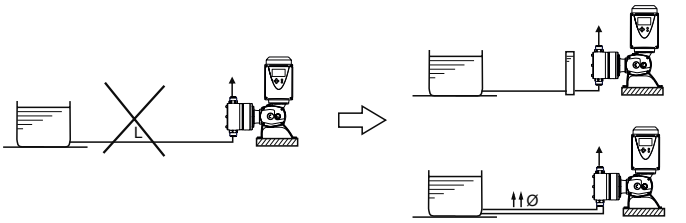


⚠ 1. To avoid undissolved particles, never suck the product to be injected from the bottom of the tank.
⚠ 2. Filter. It is essential to install a filter (150 micron) in the suction piping.
3. Level sensor
4. Agitator
⚠ 5. Make sure to collect any liquid leakage from the cylinder's vent/drain orifice in a proper container.
6. Priming/drain valve.
⚠ 7. Pressure relief valve. Install a pressure relief valve in a bypass as close as possible to the pump in order to protect the pump and the installation from possible overpressure. This bypass should pipe the liquid to a safe place.
8. Pulsen dampener
9. Pressure gauge.
10. Pressure maintenance valve.
11. Flowmeter
⚠ 12. Injection check valve

5.4.2. Installation recommendations

SUCTION

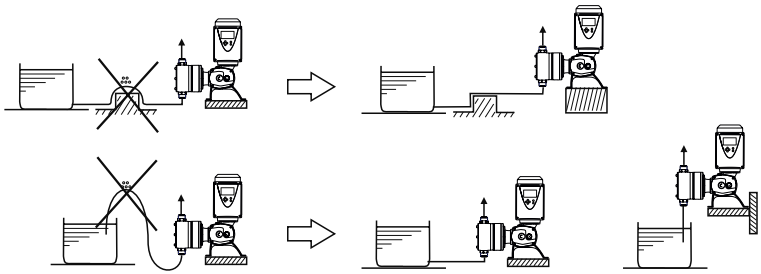
⚠ Long suction: L>2 m (6.5 ft)



RECOMENDED PIPE SIZE

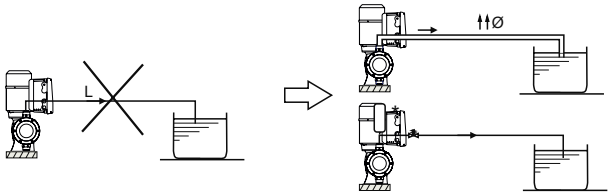
	Øint	L ≤2 m	L ≤5 m
AC1/ 2	6	50	25
	15	300	100
	20		200
	25		300
AC3	30	800	500
	40	1000	800
	50		850
	60		900
	70		1000
			Q max. (l/h)

⚠ Air in suction



DISCHARGE

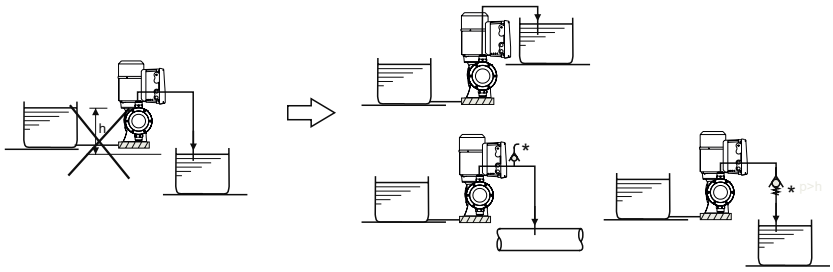
⚠ Long discharge: L>5 m (16 ft)



RECOMENDED PIPE SIZE

	Øint	L ≤2 m	L ≤10 m
AC1/ 2	6	80	10
	15	300	70
	20		100
	25		200
	30		300
AC3	30	1000	
	40		400
	50		600
	60		1000
			Q max. (l/h)

⚠ Siphon



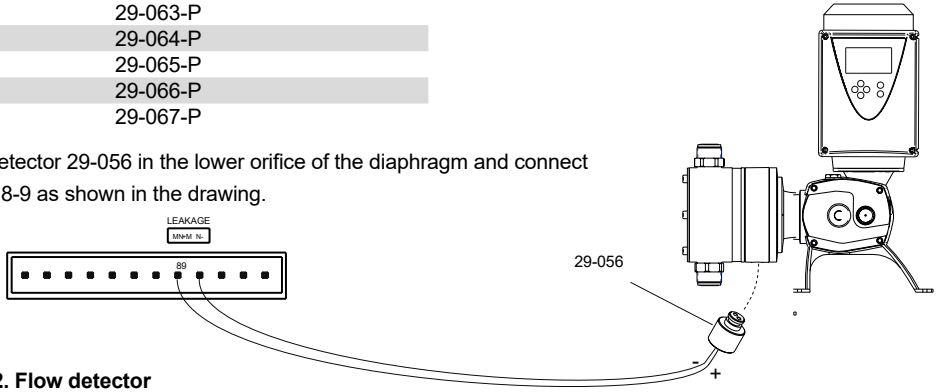
5.5. ACCESSORIES

5.5.1. Diaphragm leakage detector

The diaphragm leakage detector is an electrical conductivity sensor capable of detecting the presence of liquid when its conductivity is 0.05 mS or higher. The pump must be provided with the specific diaphragm flange for housing the detector.

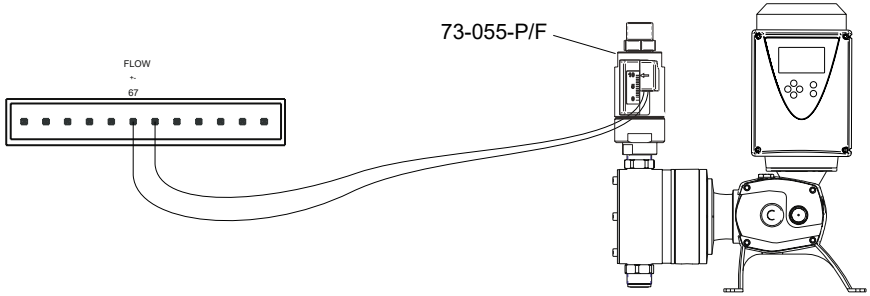
Diaphragm Ø	Diaphragm leakage sensor kit
69	29-063-P
95	29-064-P
115	29-065-P
142	29-066-P
163	29-067-P

Fit detector 29-056 in the lower orifice of the diaphragm and connect pins 8-9 as shown in the drawing.



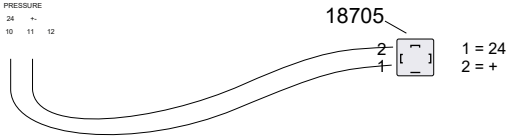
5.5.2. Flow detector

The flow detector is a device which monitors the delivered pulsated flow. The pulses are received and processed by the Advance Control Unit in order to detect dosing failures like lack of priming, cavitation or check valves faults. The unit compares the strokes of the pump with the pulses from the detector and allows an alarm to be set according to the configuration parameters.



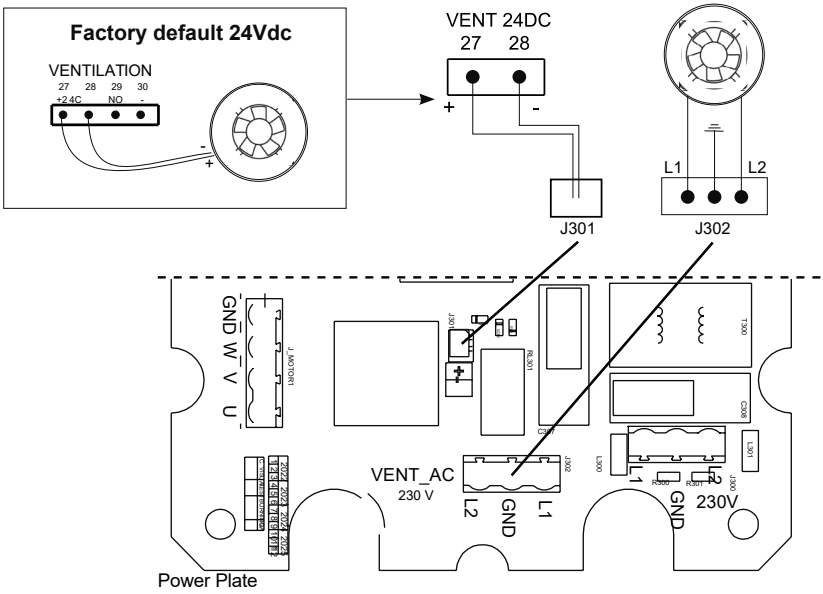
5.5.3. Pressure sensor

The pressure sensor protects the pump from working in overpressure conditions, when the pressure alarm is activated. Connect the 4-20 mA 10 bar pressure sensor Ref. 18705 as shown in the drawing.



5.5.5. Additional ventilation 115 / 230 V

The installation of this accessory is necessary in those cases in which the pump is operated continuously at temperatures above 40 ºC (104 ° F) up to a maximum of 50 ºC (122 ° F).



6. START-UP AND REGULATION

⚠ FIXING: Check that the pump is properly secured.

⚠ OIL: Check the oil level using the side sight glass
Replace the transport fill cap for transport with the working one.

⚠ HYDRAULIC CIRCUIT CHECK: Check that all valves are open, and that the bleed and relief valve outlets are diverting the liquid to a container.

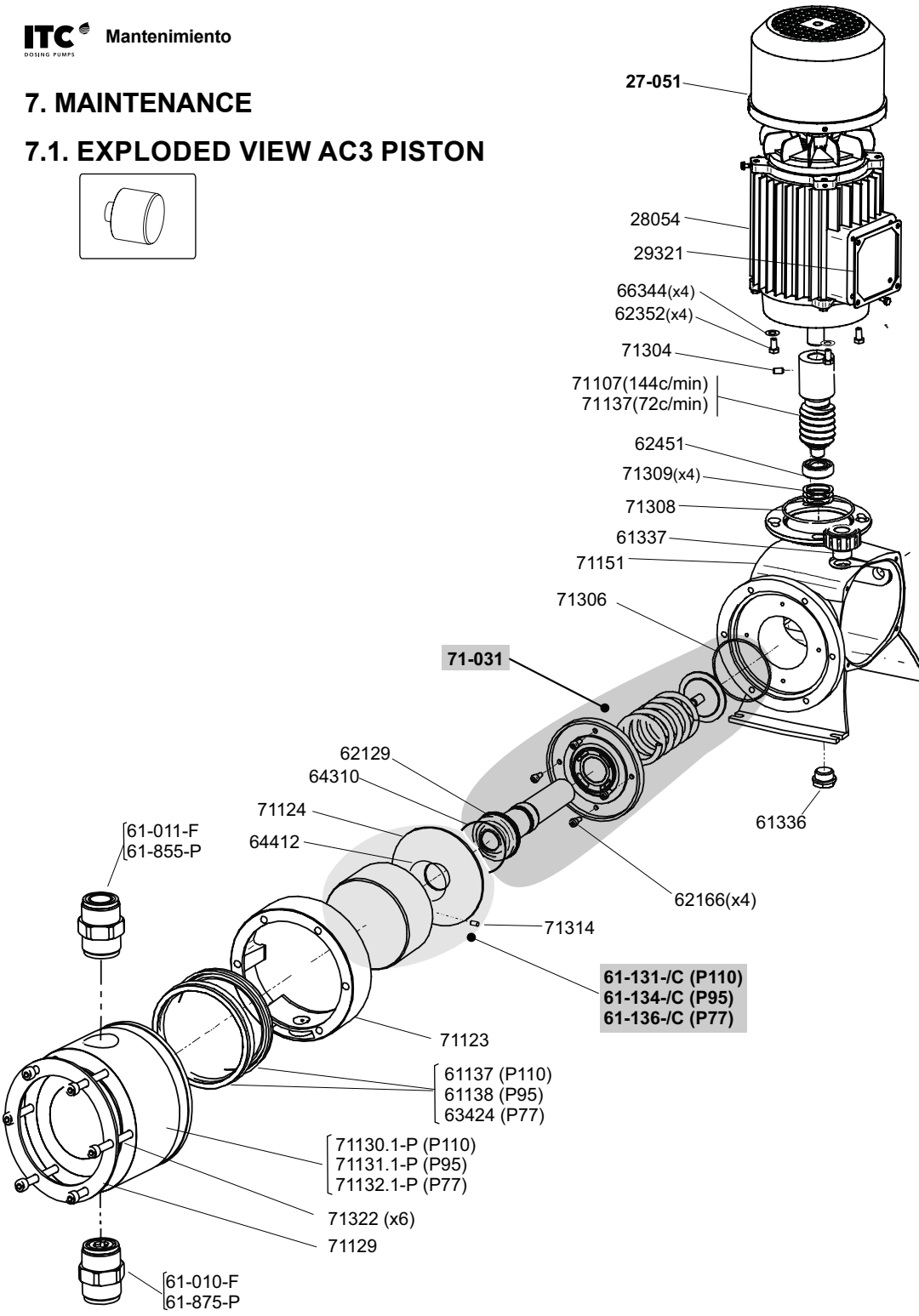
PUMP CHECK: Make a visual/auditory check of the correct operation of the pump.

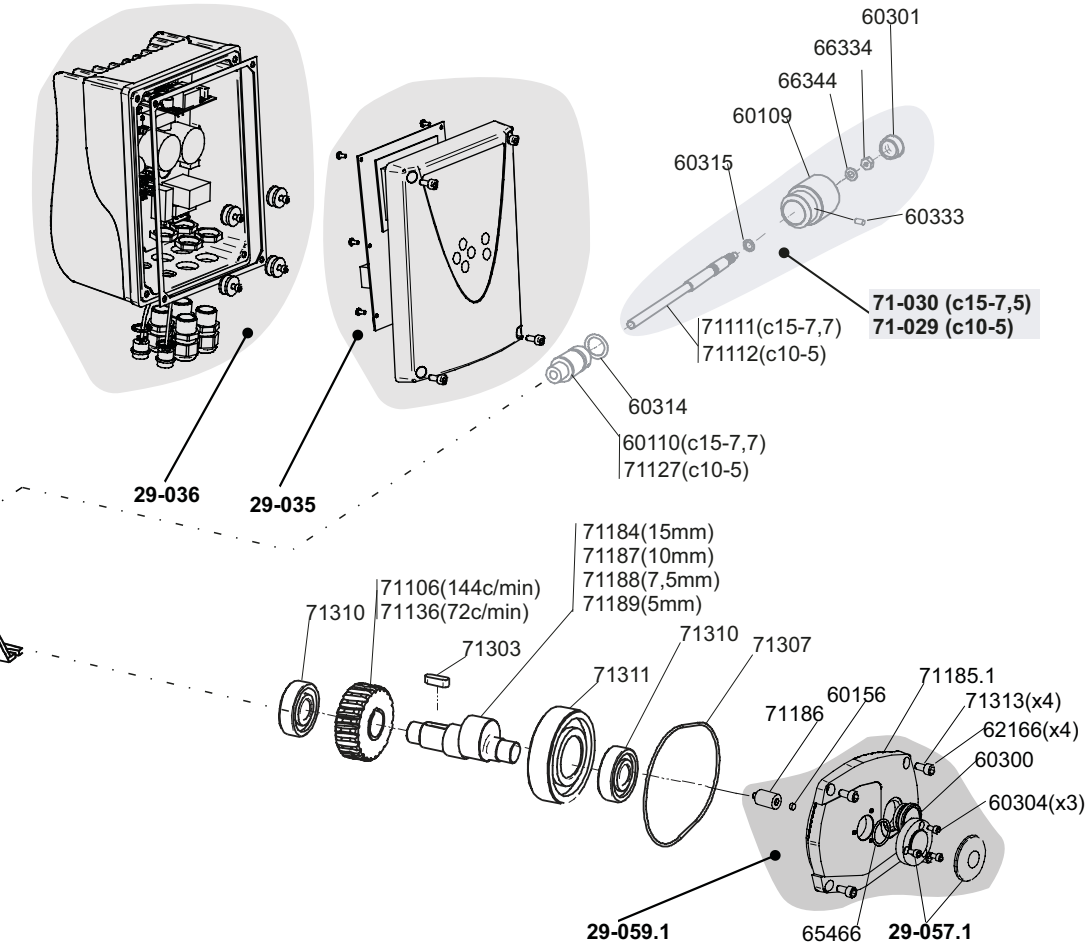
PRIMING: To facilitate pump priming, especially with low flows when there is no priming valve, it is advisable to minimize the pressure in the ejection line. Another option is to fill the head cylinder and suction pipe with liquid.

⚠ OVERPRESSURE PROTECTION: Adjust the safety, overpressure or pressure relief valve to the desired pressure to protect the installation, while never exceeding the nominal pressure of the pump.

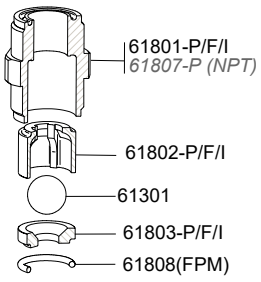
7. MAINTENANCE

7.1. EXPLODED VIEW AC3 PISTON

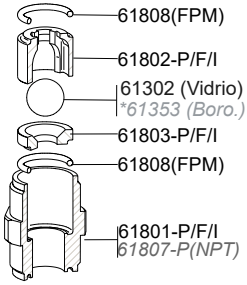




61-885-P
61-011-F/I
61-882-P (NPT)



61-875-P
61-010-F/I
61-872-P (NPT)



LIST OF PARTS AC3 (Piston)

CODE	DESCRIPTION	UNITS
28054	Electric motor 1.2 kW 6P 110/190 3 ph 80/100 B14	1
29321	Seal motor T80 Maraz	1
29620	Control board AC	1
29622	Power board 230 Vac	1
33429	Screw M4x20 DIN 912 a-2	4
38301	Screw M3x8 DIN 7985 A2	7
60109	Regulator knob Dostec	1
60110	Regulator guide p1.5 mm Dostec	1
60156	Magnet for encoder d6x2.5	1
60300	Oil peep hole	1
60301	Regulator knob plug	1
60304	Screw M4x8 DIN 912 A4	4
60314	O-ring 17x3.5 NBR	1
60315	O-ring 6.5x2 NBR	1
60333	Screw M4x8 DIN 913 A-2	1
61-131/-C	Piston 1000 l/h D110 lock EF	1
61-134/-C	Piston 750 l/h D95 lock EF	1
61-136/-C	Piston 500 l/h D77 lock EF	1
61137	Seal 1000 l/h FPM	2
61138	Seal 750 l/h FPM	2
61336	Drain plug ½"	1
61337	Filler plug ½"	1
62129	Bellow FPM	1
62166	Screw M6x16 DIN 912 A2	8
62352	Screw M6x12 DIN 933 A2	4
62451	Bearing 6202 zz	1
63424	Seal 78x87x6 FPM 500 l/h	2
64310	O-ring 55.5x3.5 NBR	1
65466	O-ring 20x2 NBR	1
64412	O-ring 44x2 FPM	1
66334	Nut M6 DIN 934 A2	1
66344	Washer D6 DIN 125 A2	5
70304	Screw M5x20 DIN 912 I	4
71106	Ring gear 2 stroke D50	1
71107	Pinion 2 stroke D50	1
71111	Regulator rod p1.5 mm D50	1
71112	Regulator rod p1 mm D50	1
71123	Cylinder spacer D50	1
71124	Protection disc D50	1
71127	Regulator guide p 1 mm D50	1
71129	Ring plate for piston cylinder	1
71130.1-P	Cylinder 1000 l/h s ring plate PP	1
71131.1-P	Cylinder 750 l/h s ring plate PP	1
71132.1-P	Cylinder 500 l/h s ring plate PP	1
71136	Ring gear 1 stroke D50	1
71137	Pinion 1 stroke D50	1
71129	Ring plate for piston cylinder D160	1
71151	Block D50 AC3	1

71184	Eccentric shaft 15 encoder AC3	1
71185.1	Block lid D50 encoder	1
71186	Magnet for encoder base D50	1
71187	Eccentric shaft 10 encoder AC3	1
71188	Eccentric shaft 7.5 encoder AC3	1
71189	Eccentric shaft 5 encoder AC3	1
71303	Wedging piece DIN 6885-a (8x7x25)	1
71304	Screw M6x10 DIN 913 8.8	1
71306	O-ring 70x2.5 NBR	1
71307	O-ring 125x2.5 NBR	1
71308	O-ring 77x2 NBR	1
71309	Elastic washer DIN137-b (34x26x0.4)	3
71310	Bearing 6304zz (20x52x15)	2
71311	Bearing 6308zz (40x90x23)	1
71313	Washer M6 Nord-lock	4
71314	Screw M5x12 DIN 914 A2	1
71322	Screw M8x150 DIN 912 A2	6

ASSEMBLIES

27-051	Additional ventilation 24 V D50/ EF low presure	1
29-035	Control PCB with cover DOSTEC AC	1
29-037	Power PCB with box AC2	1
29-057.1	PCB, base and cover encoder DOSTEC AC	1
29-059.1	Encoder with cover AC3 (Dostec-50)	1
71-029	Regulator p 1 mm D50 assembly	1
71-030	Regulator p 1.5 mm D50 assembly	1
71-031	Rod slider D50-P assembly	1

VALVES

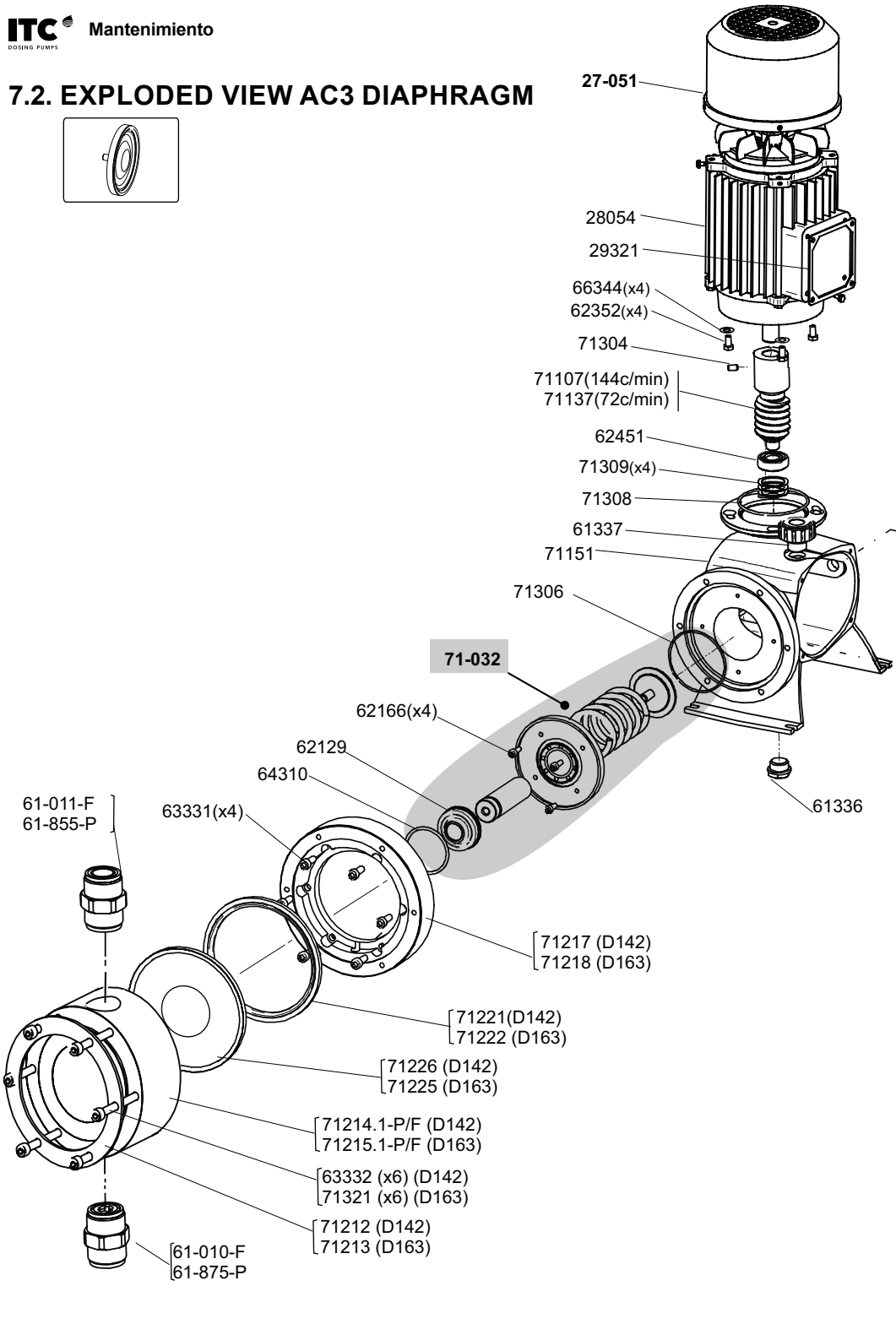
61-010-P/F/I	Suction check valve 1-¼	1
61-011-P/F/I	Discharge check valve 1-¼	1
61-875-P/	Suction check valve 1-¼ PP Borosilicate	1
61-885-P	Discharge check valve 1-¼ PP Borosilicate	1

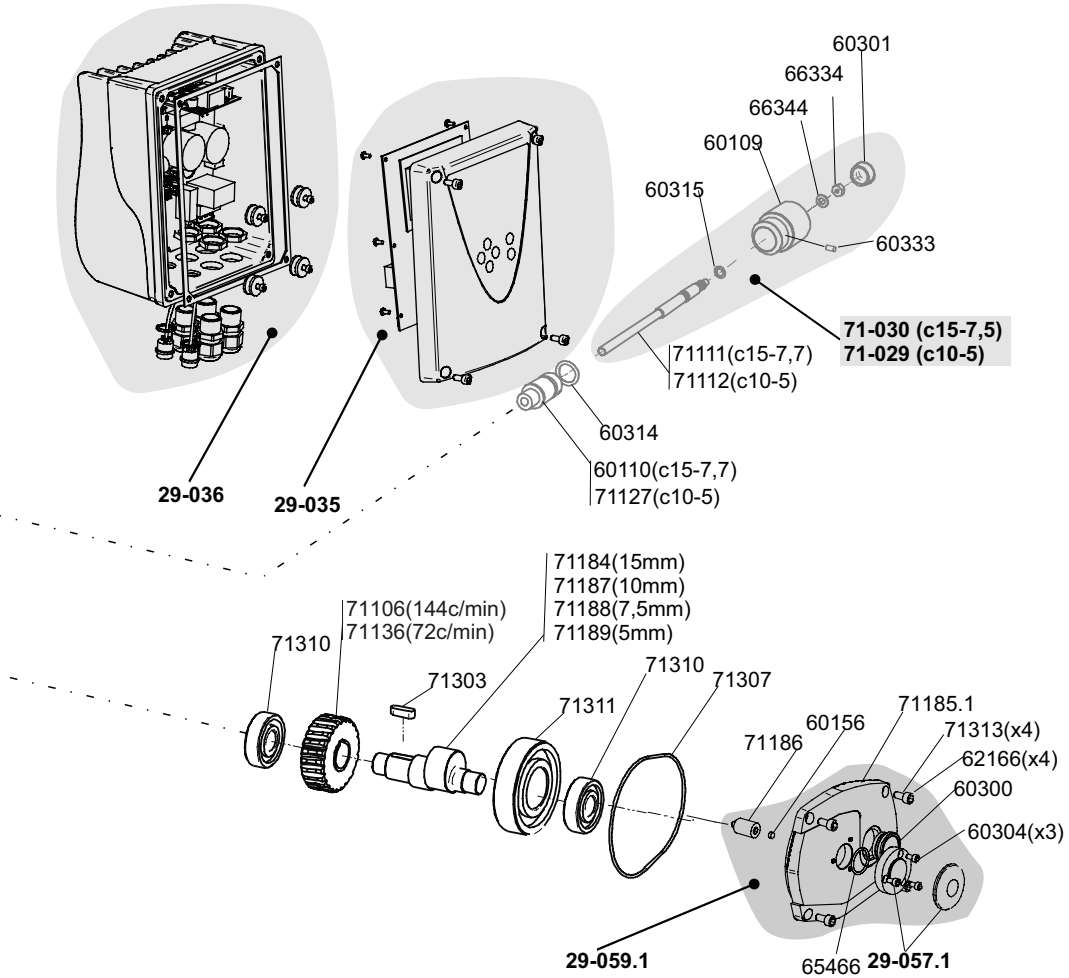
MAINTENACE KIT (valves+seals+bellow)

71-071-P	Maintenance kit Dostec-50 P77 PP	1
71-072-P	Maintenance kit Dostec-50 P95 PP	1
71-073-P	Maintenance kit Dostec-50 P110 PP	1

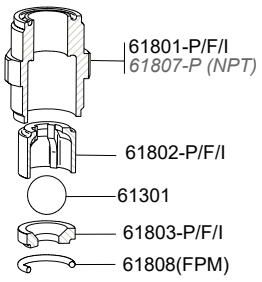
Materials code:
- P = Polypropylene
- F = PVDF
- I = SS 316
- C = ceramic

7.2. EXPLODED VIEW AC3 DIAPHRAGM

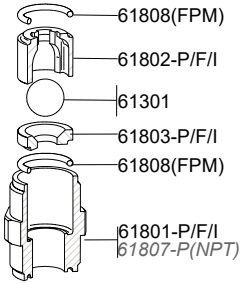




61-885-P
61-011-F/I
61-882-P (NPT)



61-875-P
61-010-F/I
61-872-P (NPT)



LIST OF PARTS AC3 (Diaphragm)

CODE	DESCRIPTION	UNITS
28054	Electric motor 1.2 kW 6P 110/190 3 ph 80/100 B14	1
29321	Seal motor T80 Maraz	1
60109	Regulator knob Dostec	1
60110	Regulator guide p1.5 mm Dostec	1
60156	Magnet for encoder d6 x 2.5	1
60300	Oil peep hole	1
60301	Regulator knob plug	1
60304	Screw M4 x 8 DIN 912 A4	4
60314	O-ring 17 x 3.5 NBR	1
60315	O-ring 6.5 x 2 NBR	1
60333	Screw M4 x 8 DIN 913 A-2	1
61336	Drain plug ½"	1
61337	Filler plug ½"	1
62129	Bellow FPM	1
62166	Screw M6 x 16 DIN 912 A2	8
62352	Screw M6 x 12 DIN 933 A2	4
62451	Bearing 6202 zz	1
63331	Screw M8 x 20 DIN 912 A2	6
63332	Screw M8 x 90 DIN 912 A2	6
64310	O-ring 55.5 x 3.5 NBR	1
65466	O-ring 20 x 2 NBR	1
66334	Nut M6 DIN 934 A2	1
66344	Washer D6 DIN 125 A2	5
71106	Ring gear 2 stroke D50	1
71107	Pinion 2 stroke D50	1
71111	Regulator rod p1.5 mm D50	1
71112	Regulator rod p1 mm D50	1
71127	Regulator guide p 1 mm D50	1
71136	Ring gear 1 stroke D50	1
71137	Pinion 1 stroke D50	1
71184	Eccentric shaft 15 encoder AC3	1
71185.1	Block lid D50 encoder	1
71186	Magnet for encoder base D50	1
71187	Eccentric shaft 10 encoder AC3	1
71188	Eccentric shaft 7.5 encoder AC3	1
71189	Eccentric shaft 5 encoder AC3	1
71212	Ring plate for diaphragm cylinder D142	1
71213	Ring plate for diaphragm cylinder D163	1
71214.1-P/F	Cylinder diaphragm ring plate D142	1
71215.1-P/F	Cylinder diaphragm ring plate D163	1
71217	Diaphragm flange D142	1
71218	Diaphragm flange D163	1
71221	Diaphragm base D142	1
71222	Diaphragm base D163	1
71225	Diaphragm D163	1
71226	Diaphragm D142	1
71303	Wedging piece DIN 6885-a (8 x 7 x 25)	1
71304	Screw M6 x 10 DIN 913 8.8	1

71306	O-ring 70 x 2.5 NBR	1
71307	O-ring 125 x 2.5 NBR	1
71308	O-ring 77 x 2 NBR	1
71309	Elastic washer DIN 137-b (34 x 26 x 0.4)	3
71310	Bearing 6304zz (20 x 52 x 15)	2
71311	Bearing 6308zz (40 x 90 x 23)	1
71313	Washer M6 Nord-lock	4
71321	Screw M8 x 100 DIN 912 A2	6

ASSEMBLIES

27-051	Additional ventilation 24 V D50/ EF low presure	1
29-035	Control PCB with cover DOSTEC AC	1
29-037	Power PCB with box AC2	1
29-057.1	PCB, base and cover encoder DOSTEC AC	1
29-059.1	Encoder with cover AC3 (Dostec-50)	1
71-029	Regulator p 1 mm D50 assembly	1
71-030	Regulator p 1.5 mm D50 assembly	1
71-032	Rod slider D50-D assembly	1

VALVES

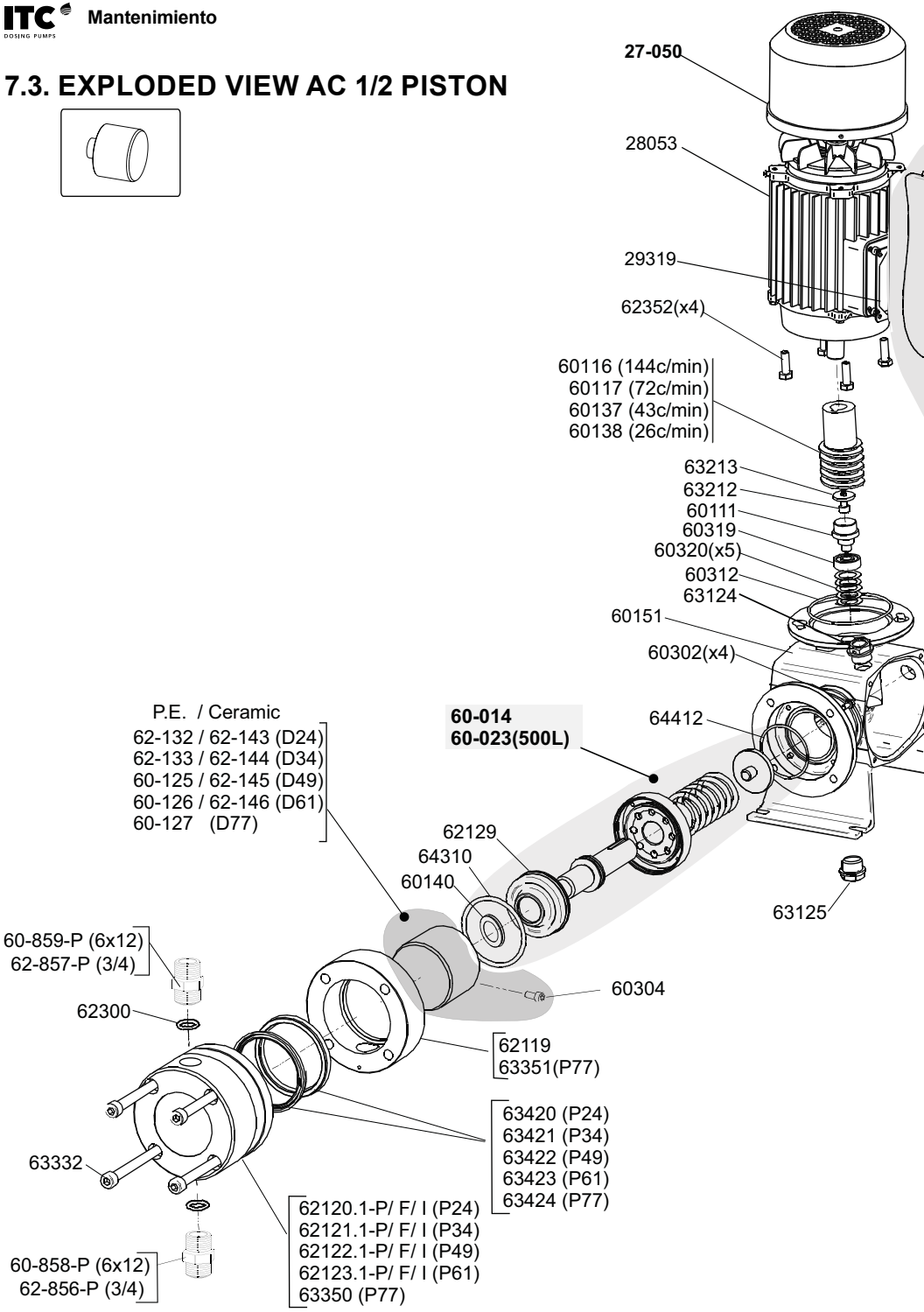
61-010-F	Suction check valve 1-¼ PVDF	1
61-011-F	Discharge check valve 1-¼ PVDF	1
61-875-P	Suction check valve 1-¼ PP Borosilicate	1
61-885-P	Discharge check valve 1-¼ PP Borosilicate	1

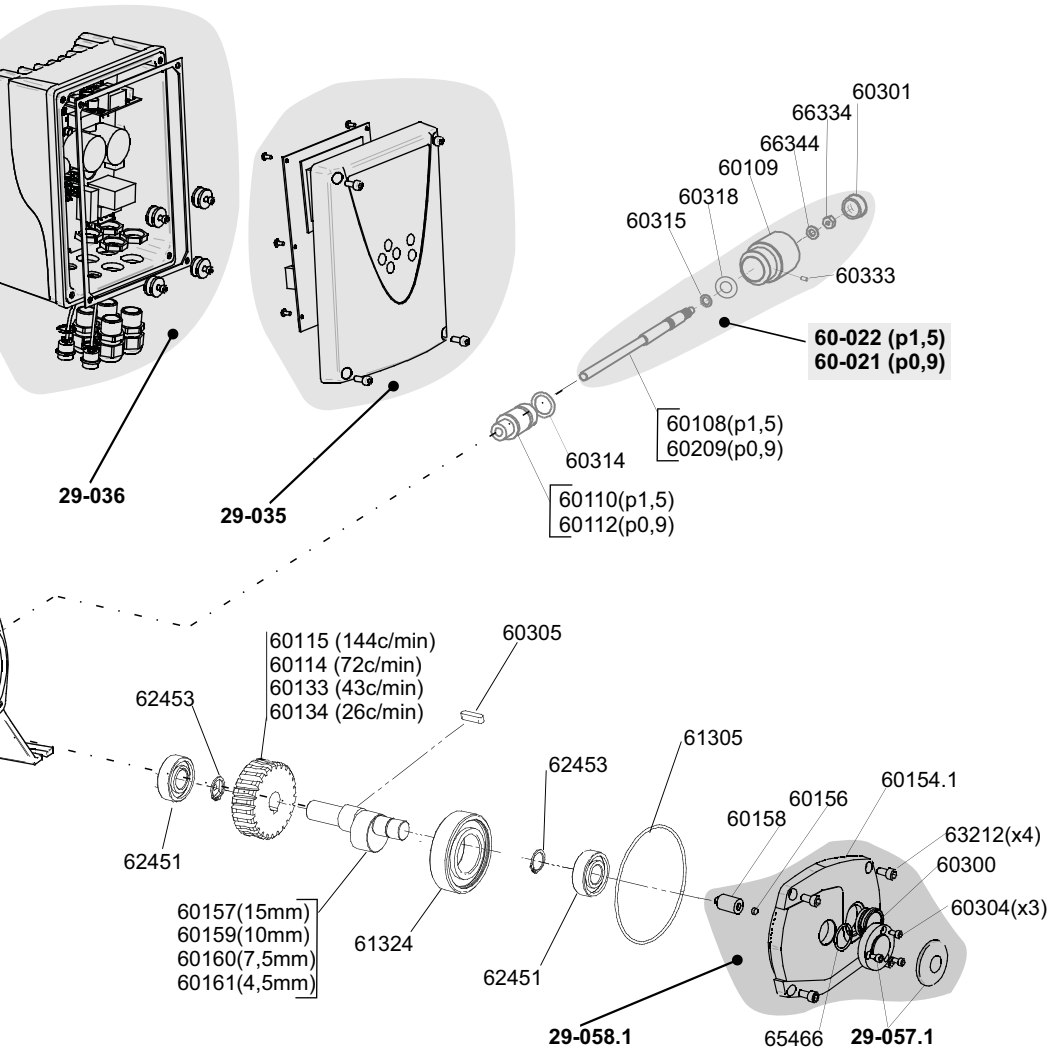
MAINTENACE KIT (valves+diaphragm+bellow)

71-075-P	Maintenance kit Dostec-50 D142 PP
71-076-P	Maintenance kit Dostec-50 D163 PP

Materials code:
– P = Polypropylene
– F = PVDF
– I = SS 316

7.3. EXPLODED VIEW AC 1/2 PISTON



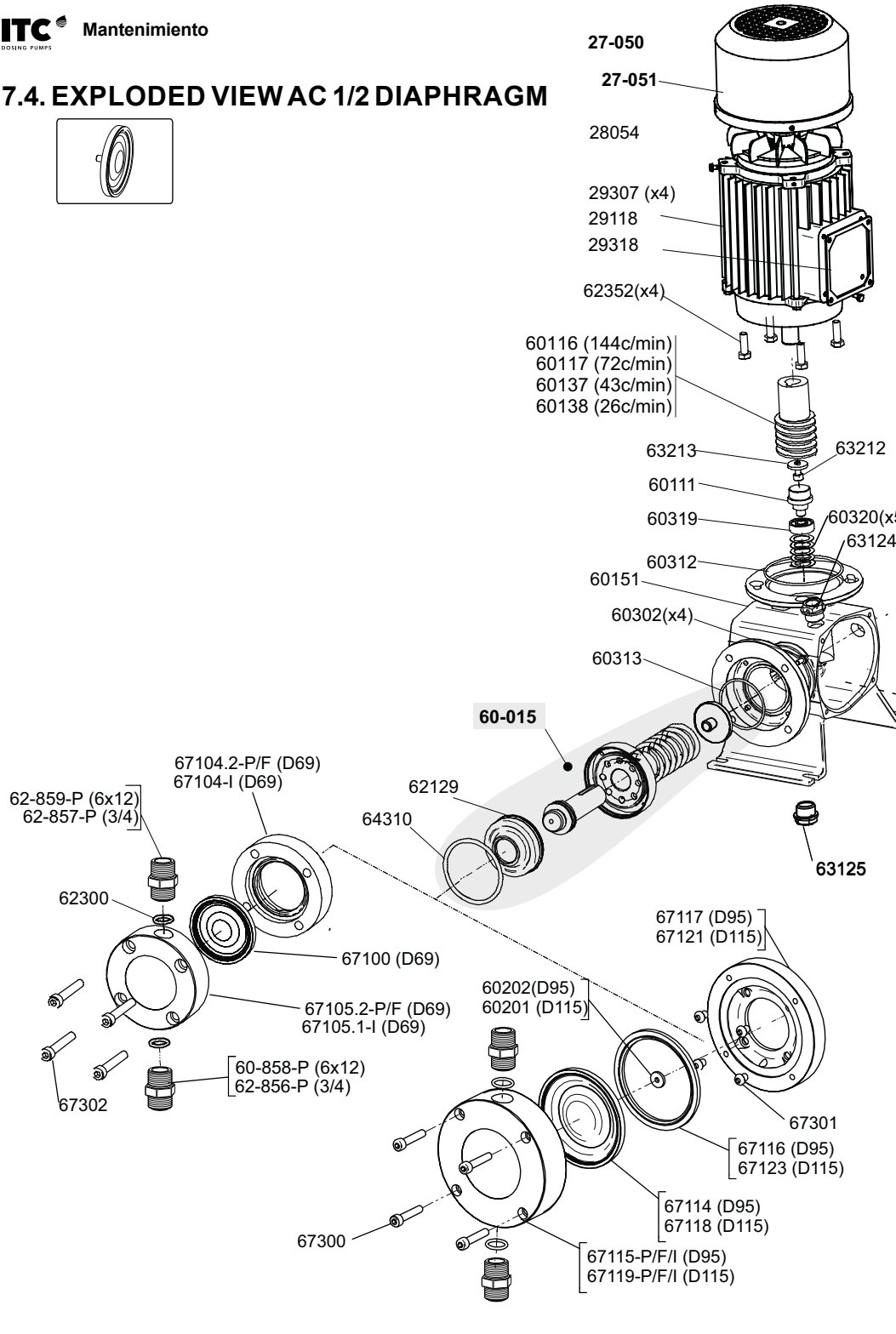

60301
66334
66344
60109
60318
60315
60333
60-022 (p1,5)
60-021 (p0,9)
60108(p1,5)
60209(p0,9)
60314
60110(p1,5)
60112(p0,9)
29-036
29-035
60115 (144c/min)
60114 (72c/min)
60133 (43c/min)
60134 (26c/min)
60305
62453
62451
60157(15mm)
60159(10mm)
60160(7,5mm)
60161(4,5mm)
61324
62453
61305
62451
60154.1
60156
60158
63212(x4)
60300
60304(x3)
29-058.1
65466
29-057.1

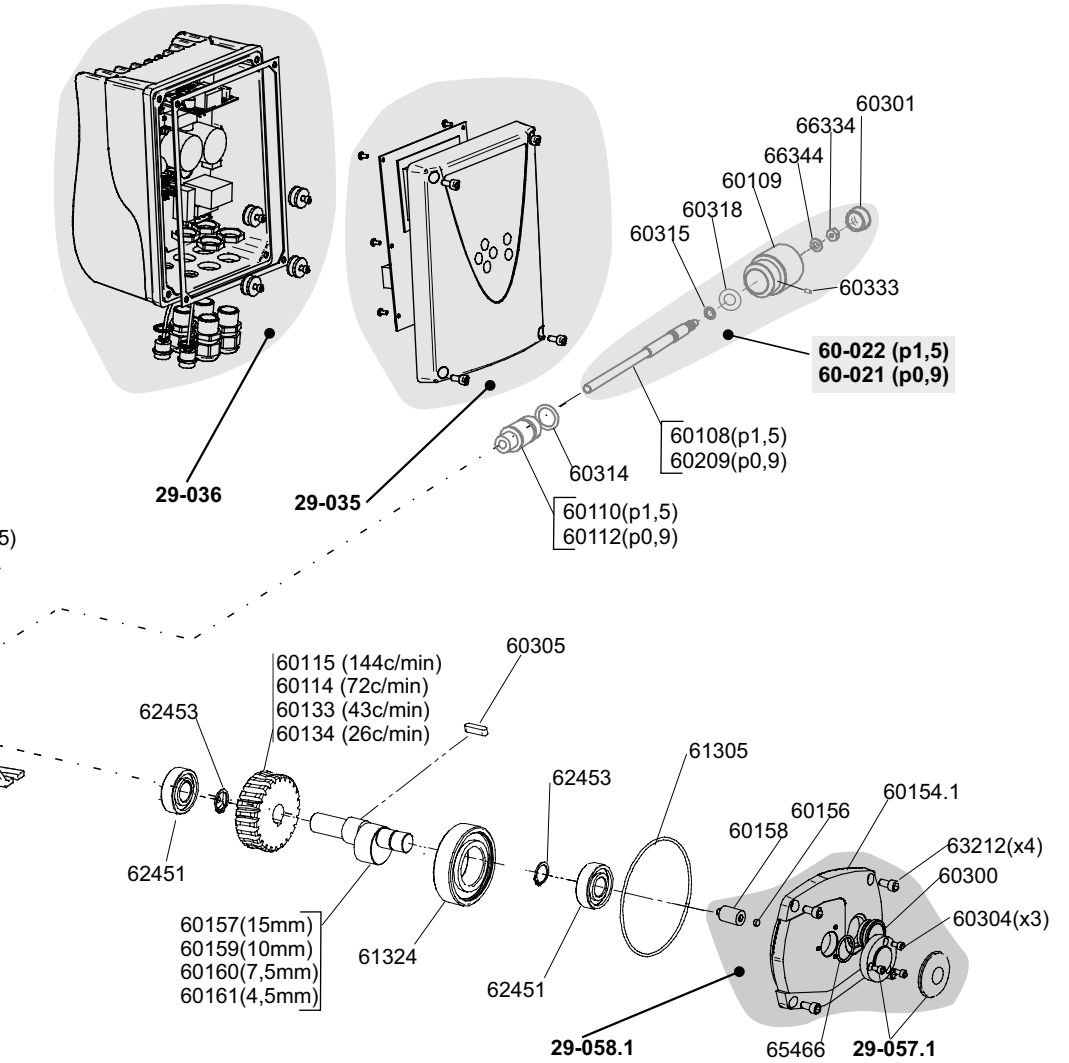
LIST OF PARTS AC1/2 (Piston)

CODE	DESCRIPTION	UNITS
28053	Motor 230 kW AC1/2	1
29118	Motor adapter for inverter 0.5 Hp 110 V	1
29319	Seal motor Marax T71	1
60108	Regulator rod 15 Dostec	1
60109	Regulator knob Dostec	1
60110	Regulator guide p1.5 mm Dostec	1
60111	Pinion bumper Dostec	1
60112	Dostec guide regulator p0.9 mm	1
60114	Ring gear 1 strokes/s D40	1
60115	Ring gear 2 strokes/s D40	1
60116	Pinion 2 strokes/s D40-MF	1
60117	Pinion 2 strokes/s D40-MF	1
60-125	Piston 200 l - s M20 lock	1
60-126	Piston 300 l - s M20 lock	1
60-127	Piston 500 l M20	1
60133	Ring gear 0.6 stroke/s D40	1
60134	Ring gear 0.3 stroke/s D40	1
60137	Pinion 0.6 stroke/s D40	1
60138	Pinion 0.3 stroke/s D40	1
60140	Rod protective D40	1
60151	Block D40 AC1/2	1
60154.1	Block lid encoder AC1-2	1
60156	Magnet for encoder d6 x 2.5	1
60157	Eccentric shaft 15 encoder AC1-2	1
60158	Encoder's magnet base AC1-2	1
60159	Eccentric shaft 9 encoder AC1-2	1
60160	Eccentric shaft 7.5 encoder AC1-2	1
60161	Eccentric shaft 4.5 encoder AC1-2	1
60209	Diaphragm regulator rod Dostec	1
60300	Oil peep hole	1
60301	Regulator knob plug	1
60302	Screw M4 x 8 DIN 933 A2	4
60304	Screw M4 x 8 DIN 912 A4	4
60305	Wedging piece DIN 6885-a 5 x 5x20	1
60312	O-ring 68 x 1.5 NBR	1
64412	O-ring 44 x 2 NBR	1
60314	O-ring 17 x 3.5 NBR	1
60315	O-ring 6.5 x 2 NBR	1
60318	Washer D8 DIN 125 A2	1
60319	Bearing 608-zz (8 x 22 x 7)	1
60320	Elastic washer DIN 137-b(21 x 10.5 x 1)	5
60333	Screw M4 x 8 DIN 913 A-2	1
61305	O-ring 88 x 2.5 NBR	1
61324	Bearing 6206zz (30 x 62 x 16) EF	1
62119	Cylinder spacer D40/MF	1
62120.1-P/F/I	Cylinder 50 l/h - s ¾'	1
62121.-P/F/I	Cylinder 100 l/h - s ¾'	1
62122.1-P/F/I	Cylinder 200 l/h - s ¾'	1
62123.1--P/F/I	Cylinder 300 l/h - s ¾'	1
62129	Bellow FPM	1
62-132	Piston 50 l/h - s M20 lock	1

62-133	Piston 100 l/h - s M20 lock	1
62-143	Piston 50 l/h - s M20 lock ceramic	1
62-144	Piston 100 l/h - s M20 lock ceramic	1
62-145	Piston 200 l/h - s M20 lock ceramic	1
62-146	Piston 300 l/h - s M20 lockceramic	1
62300	O-ring 19x3 FPM	2
62352	Screw M6x12 DIN 933 A2	4
62451	Bearing 6202 zz	2
62453	Retaining ring 15 DIN 471	2
63124	Filler plug	1
63125	3/8" drain plug	1
63212	Screw M5x12 DIN 912 A2	1
63213	Washer 18x5x2.5 F5	1
63332	Screw M8x90 DIN 912 A2	4
63350	Cylinder 500 l/h	1
63351	500l electro flange	1
63420	Seal 25x34x6 FPM 50 l/h	2
63421	Seal 35x45x6 FPM 100 l/h	2
63422	Seal 50x60x6 FPM 200 l/h	2
63423	Seal 60x68x6 FPM 300 l/h	2
63424	Seal 78x87x6 FPM 500 l/h	2
64310	O-ring 55.5x3.5 NBR	1
65466	O-ring 20x2 NBR	1
66334	Nut M6 DIN 934 A2	1
66344	Washer D6 DIN 125 A2	1
ASSEMBLIES		
27-050	Additional ventilation 24 Vdc IP56 DOSTEC AC1-2	1
29-035	Control PCB with cover DOSTEC AC	1
29-036	Power PCB with box AC1/3	1
29-057.1	PCB, base and cover encoder DOSTEC AC	1
29-058.1	Encoder with cover AC1-2 (Dostec-40)	1
60-014	Rod slider D40-P assembly	1
60-021	Regulator p 0.9 mm D40 assembly	1
60-022	Regulator p 1.5 mm D40 assembly	1
60-023	Rod slider D40-P 500 l/h assembly	1
VALVES		
60-858-P	Suction check valve 6x12-¾" PP Borosilicate	1
60-859-P	Discharge check valve 6x12-¾" Borosilicate	1
62-856-P	Suction check valve ¾" Borosilicate	1
62-857-P	Discharge check valve ¾" Borosilicate	1
63-803-I	Suction check valve ¾" s.s.	1
63-804-I	Discharge check valve ¾" s.s.	1
60-814.1-P/F/I	Priming valve ¾" max. 50 l/h	1
60-840-P/F/I	Priming valve ¾" max. 500 l/h	1
MAINTENANCE KIT		
60-071-P	Maintenance kit Dostec-40 P24 PP	1
60-072-P	Maintenance kit Dostec-40 P34 PP	1
60-073-P	Maintenance kit Dostec-40 P49 PP	1
60-074-P	Maintenance kit Dostec-40 P61 PP	1
60-075-P	Maintenance kit Dostec-40 P77 PP	1
Materials code:	– P = Polypropylene – F = PVDF – I = SS 316	

7.4. EXPLODED VIEW AC 1/2 DIAPHRAGM




60301
66334
66344
60109
60318
60315
60333
60-022 (p1,5)
60-021 (p0,9)
60108(p1,5)
60209(p0,9)
60314
60110(p1,5)
60112(p0,9)
29-036
29-035
60305
60115 (144c/min)
60114 (72c/min)
60133 (43c/min)
60134 (26c/min)
62453
61305
62453
60154.1
60156
60158
63212(x4)
60300
60304(x3)
62451
60157(15mm)
60159(10mm)
60160(7,5mm)
60161(4,5mm)
61324
62451
29-058.1
65466
29-057.1

LIST OF PARTS AC1/2 (Diaphragm)

CODE	DESCRIPTION	UNITS
28053	Motor 230 kW AC1/2	1
29118	Motor adapter for inverter 0.5 Hp 110 V	1
29129	Advanced Control case	1
29131	Advanced Control lid	1
29132	Case seal DOSTEC AC	1
29202	Lexan Dostec AC	1
29307	Screw M4 x 15 DIN 7991	1
29312	O-ring 32 x 2 FPM	4
29315	Screw M3 x 12 DIN 7985 ss	1
29318	Seal motor inverter 83 x 83	1
29620	Control board AC	1
29621	Power board 110 Vac	1
29622	Power board 230 Vac	1
33429	Screw M4 x 20 DIN 912 a-2	1
38301	Screw M3 x 8 DIN 7985 A2	1
60108	Regulator rod 15 Dostec	1
60109	Regulator knob Dostec	1
60110	Regulator guide p1.5 mm Dostec	1
60111	Pinion bumper Dostec	1
60112	Dostec guide regulator p0.9 mm	1
60114	Ring gear 1 strokes/s D40	1
60115	Ring gear 2 strokes/s D40	1
60116	Pinion 2 strokes/s D40-MF	1
60117	Pinion 2 strokes/s D40-MF	1
60133	Ring gear 0.6 stroke/s D40	1
60134	Ring gear 0.3 stroke/s D40	1
60137	Pinion 0.6 stroke/s D40	1
60138	Pinion 0.3 stroke/s D40	1
60151	Block D40 AC1/2	1
60154	Block lid encoder AC1-2	1
60156	Magnet for encoder d6 x 2.5	1
60157	Eccentric shaft 15 encoder AC1-2	1
60158	Encoder's magnet base AC1-2	1
60159	Eccentric shaft 9 encoder AC1-2	1
60160	Eccentric shaft 7.5 encoder AC1-2	1
60161	Eccentric shaft 4.5 encoder AC1-2	1
60201	Washer spacer diaphragm D115 (black) D40	1
60202	Washer spacer diaphragm D95 (red) D40	1
60209	Diaphragm regulator rod Dostec	1
60300	Oil peep hole	1
60301	Regulator knob plug	1
60302	Screw M4 x 8 DIN 933 A2	4
60304	Screw M4 x 8 DIN 912 A4	4
60305	Wedging piece DIN 6885-a 5 x 5x20	4
60312	O-ring 68 x 1.5 NBR	4
64412	O-ring 44 x 2 NBR	1
60314	O-ring 17 x 3.5 NBR	1
60315	O-ring 6.5 x 2 NBR	1
60318	Washer D8 DIN 125 A2	1

60619	Bearing 608-zz (8x22x7)	1
60320	Elastic washer DIN 137-b(21x10.5x1)	1
60333	Screw M4x8 DIN 913 A-2	1
61305	O-ring 85,5x2,4 NBR	5
61324	Bearing 6206zz (30x62x16) EF	1
62119	Cylinder spacer D40/MF	1
62129	Bellow FPM	1
62300	O-ring 19x3 FPM	2
62352	Screw M6x12 DIN 933 A2	4
62451	Bearing 6202 zz	2
62453	Retaining ring 15 DIN 471	2
63124	Filler plug	1
63125	3/8" drain plug	1
63212	Screw M5x12 DIN 912 A2	5
63213	Washer 18x5x2.5 F5	1
64310	O-ring 55.5x3.5 NBR	1
66334	Nut M6 DIN 934 A2	1
66344	Washer D6 DIN 125 A2	1
67100	Diaphragm D69	1
67104-I	Diaphragm base D69 Inox	1
67104.2-P/F	Diaphragm base D69	1
67105.1-P/F	Diaphragm cylinder D69 ¾" Inox	1
67105.2-P/F	Diaphragm cylinder D69 ¾"	1
67114	Diaphragm D95	1
67115-P/F	Diaphragm cylinder D95	1
67116	Diaphragm base D95	1
67117	Diaphragm flange D95	1
67117-I	Diaphragm flange D95 s.s.	1
67118	Diaphragm D115	1
67119-P/F	Diaphragm cylinder D115	1
67121	Diaphragm flange 115	1
67-121-I	Diaphragm flange D115 s.s.	1
67123	Diaphragm base 115	1
67300	Screw M8x40 DIN 912 A2	4
67301	Screw M8x10 ISO 7380 A2	4
67302	Screw M8x60 DIN 912 A2	4
70304	Screw M5x20 DIN 912 I	4

ASSEMBLIES

27-050	Additional ventilation 24 V dc IP56 DOSTEC AC1-2	1
29-057	PCB and base encoder DOSTEC AC	1
29-058	Encoder AC1-2 (Dostec-40)	1
60-015	Rod slider D40-D assembly	1
60-021	Regulator p 0.9 mm D40 assembly	1
60-022	Regulator p 1.5 mm D40 assembly	1

VALVES

60-808.1-F/I	Suction check valve hose 6 x 12-¾
60-809.1-F/I	Discharge check valve hose 6 x 12-¾
60-858-P	Suction check valve 6 x 12-¾" PP Borosilicate
60-859-P	Discharge check valve 6 x 12-¾" PP Borosilicate
62-806-F	Suction check valve ¾" PVDF
62-807-F	Discharge check valve ¾" PVDF
62-856-P	Suction check valve ¾" PP Borosilicate
62-857-P	Discharge check valve ¾" PP Borosilicate
62-803-I	Suction check valve ¾" s.s.
63-804-I	Discharge check valve ¾" s.s.
60-814.1-P/F/I	Priming valve ¾" max. 50 l/h
60-840-P/F/I	Priming valve ¾" max. 500 l/h

MAINTENANCE KIT

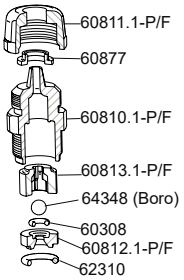
60-080-P	Maintenance kit Dostec-40 D69 6 x 12 PP
60-081-P	Maintenance kit Dostec-40 D69 ¾" PP
60-082-P	Maintenance kit Dostec-40 D95 PP
60-083-P	Maintenance kit Dostec-40 D115 PP

Materials code:
– P = Polypropylene
– F = PVDF
– I = SS 316

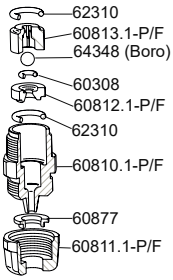
6x12 VALVES (60 l/h max.)

PP/PVDF

Discharge
60-859-P
60-809.1-F

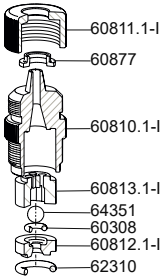


Suction
60-858-P
60-808.1- F

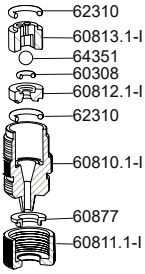


AISI 316

Discharge
60-809.1-I



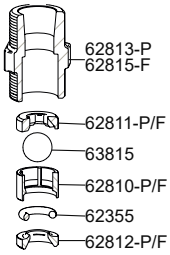
Suction
60-808.1-I



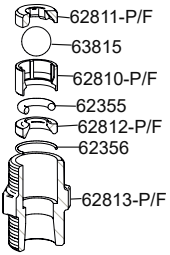
VALVES ¾" (500 l/h max.)

PP/PVDF

Discharge
62-857-P
62-861-F

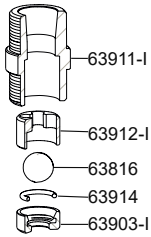


Suction
62-856-P
62-860-F

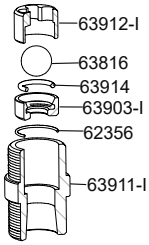


AISI 316

Discharge
63-804-I

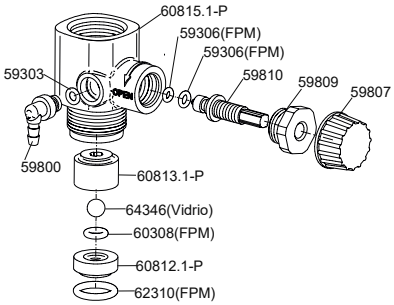


Suction
63-803-I

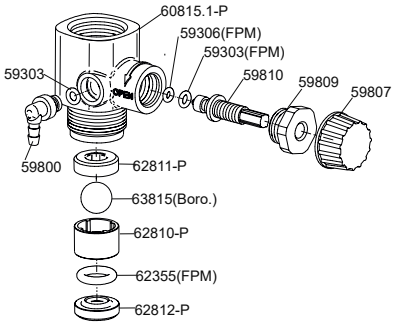


PRIMING VALVES

60-840-P (60 l/h max.)



60-814.1-P (500 l/h max.)



Before any maintenance operation check:

The pump is stopped and disconnected from the power supply.

There is no pressure inside the head or in the discharge pipe. It is recommended to empty the head before opening it.

Maintenance personnel should use the appropriate means of protection for handling the liquid being dosed.

7.5. PERIODIC MAINTENANCE

Change the oil after the first 500 hours. Next changes will be every 2000 hours (minimum once a year).

Check the piston every 3 months or 1000 hours.

Check the seals every 3 months or 1000 hours.

Check the diaphragm every 3 months or 1000 hours.

Check the bellows every 3 months or 1000 hours.

Check the condition of the suction filter once a month.

Check the condition of the valves every 3 months or 1000 hours

We recommend periodically circulating clean water through the dosing pump (coinciding for example with the emptying of the tank), in order to remove andy precipitated remains from inside the cylinder or in the suction and discharge pipes.

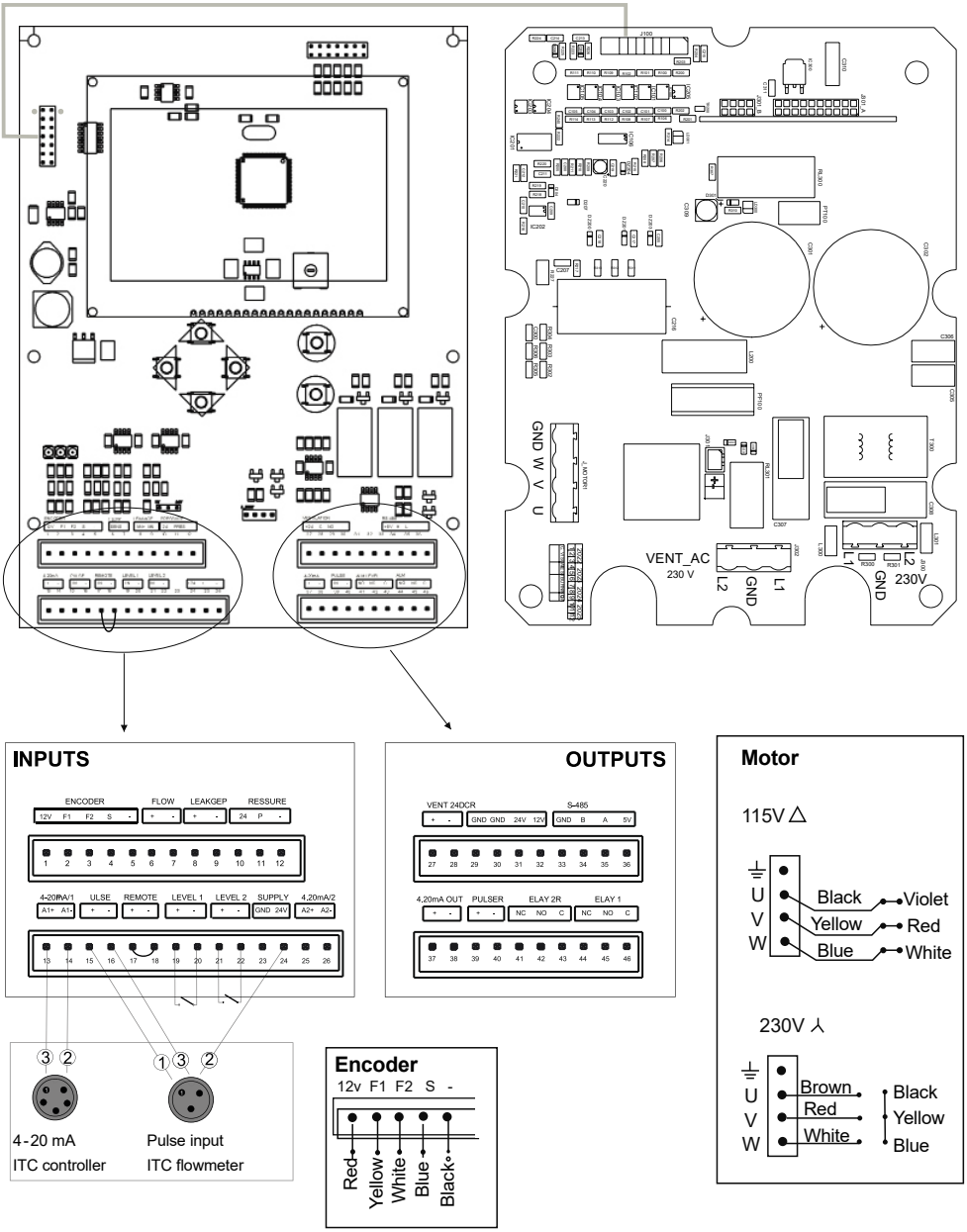
In the event of using highly corrosive liquids, it is recommended to double the frequency of the checks.

7.6. TROUBLESHOOTING: POSSIBLE CAUSE AND SOLUTION

PROBLEM	CAUSE	SOLUTION
Display off	– No voltage	– Check the input voltage with a voltmeter
	– The thermomagnetic circuit breaker has tripped	– Check for short circuit
 **AL-1**	– Input voltage too high	– Check the input voltage with a voltmeter
	– Internal short circuit	– Contact ITC technical service
	– Motor phase failure	– Check the wiring between the motor and the electronic card.
 **AL-2**	– High temperature. Additional ventilation does not work	– Check the wiring of the additional ventilation, and test it by connecting it directly to a power source
 **AL-3**	– The pump is working with overpressure	– Check that the pressure in line is lower than the maximum pressure of the unit.
	– Discharge pipe too long	– Shorten the discharge pipe or increase the pipe diameter
Motor runs but pump does not inject or dosing is lower than nominal	– Pump not primed	– Prime the pump by injecting at zero pressure.
	– Dirty or damaged suction or discharge valves	– Clean or change valves
	– Dirty suction filter	– Clean filter
	– Air enters the suction pipe	– Check tightness of connection points
	– Cavitation in suction	– Increase pipe diameter. – Reduce the suction pipe length. – Reduce speed by using a variator. – Use a less viscous liquid.
Pump drips liquid from bottom orifice of cylinder	– Damaged seals	– Change seals
	– Damaged piston	– Change piston
	– Damaged gaskets	– Change gaskets

PROBLEM	CAUSE	SOLUTION
Pump drips oil from bottom orifice of cylinder	– Damaged bellows	– Change bellows
Out of Range Voltage  **AL-5**	- Supply voltage outside the allowed range	- Correct the input voltage to be within the allowable range.

7.7. WIRING


INPUTS
ENCODER
12V F1 F2 S -
FLOW
LEAKGEP
RESSURE
24 P -
4-20mA/1
ULSE
REMOTE
LEVEL 1
LEVEL 2
SUPPLY
4.20mA/2
GND 24V
OUTPUTS
VENT 24DCR
S-485
GND GND 24V 12V
GND B A 5V
4,20mA OUT
PULSER
ELAY 2R
ELAY 1
NC NO C
Motor
115V △
Black
Violet
Yellow
Red
Blue
White
230V 人
Brown
Red
White
Black
Yellow
Blue
U
V
W
VENT_AC
230 V
L2
GND
L1
GND
230V
4-20 mA
ITC controller
Pulse input
ITC flowmeter
Encoder
12v F1 F2 S -
Red
Yellow
White
Blue
Black

CE DECLARATION OF CONFORMITY

I.T.C. S.L.
Vallès, 26
Polígono Industrial Can Bernades-Subirà
08130 Santa Perpètua de Mogoda

Declares that all models of DOSTEC AC products identified with serial number and year of manufacture comply with Machinery Directive 2006/42/EC, Low Voltage Directive D2014/35/EU and Electromagnetic Compatibility Directive D2014/30/EU, provided that the installation, use and maintenance are carried out in accordance with current regulations and following the instructions in the instruction manual.

Xavier Corbella
Manager

WARRANTY

I.T.C. S.L. guarantees the product specified in this document, for a period of 1 year from the date of purchase, against all manufacturing or material defects, provided that installation, use and maintenance of the equipment are correct.

The equipment must be sent, free of charge, to our workshop or I.T.C. S.L.-accredited technical service and will be returned cash on delivery.

The equipment must be accompanied by the warranty document, with the purchase date and stamp of the establishment where purchased, or a photocopy of the purchase invoice.

MODEL _____

SERIAL No. _____

Date of purchase and stamp of the establishment where purchased

DATE: _____

Original Manual

Ed: 29/09/2023-EN

ITC
DOSING PUMPS

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