Management System
ISO 9001:2015

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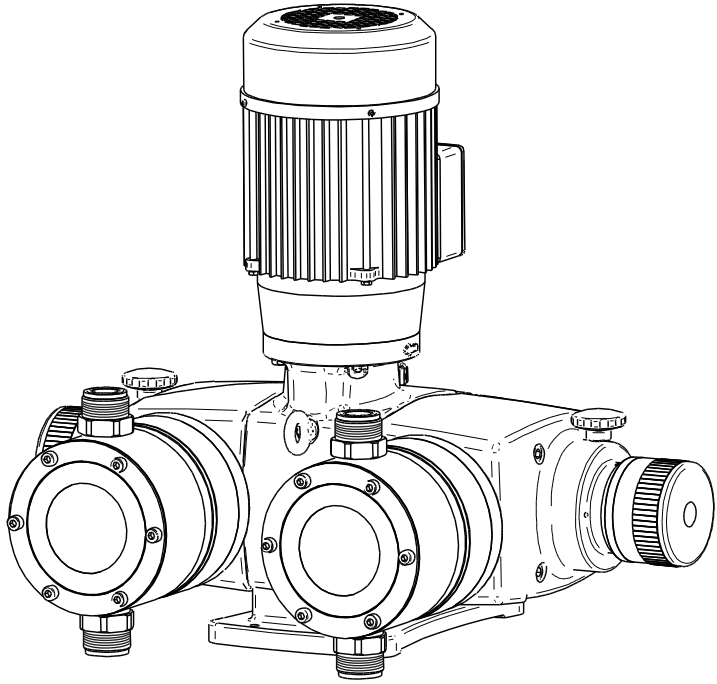
ITC
DOSING PUMPS



EFR

ENGLISH

SAFETY RULES

To avoid personal or enviromental damages and to guarantee a proper operation of the equipment, the staff in charge of the installation, set up and maintenance of the equipment must follow the instructions of this manual, specially those recommendations and warnings explicitly detailed. In addition, specific instructions for the chemical products to be dosed should be followed.

INDEX

1.- GENERAL DESCRIPTION

The series EFR dosing pumps are positive return type, in piston or diaphragm for dosing liquid products.

EFR dosing pumps are available in one or two dosing heads, it allows many flow possibilities. The heads flows goes from 330 to 1600 l/h for the piston series, and from 207 to 1044 l/h for the diaphragm series.

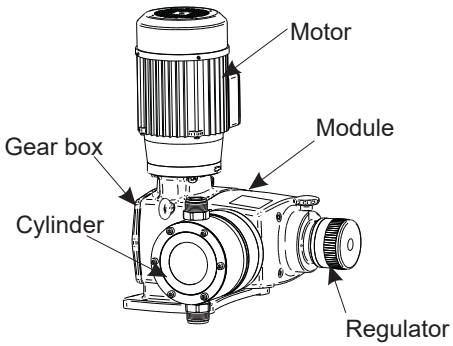
The flow of each head is adjustable independently from 0% to 100% of its capacity with no need to stop the pump.

The non-loss-motion mechanism, with variable eccentric regulation produces a high accuracy dosing while smooth and safe operation.

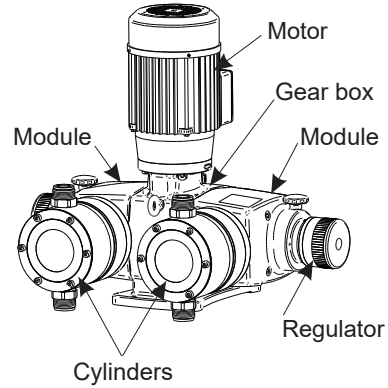
EFR pumps are designed for continuous operation under heavy duty conditions with all kind of fluids, even highly viscous fluids, in applications such as water treatment, industrial processes and agriculture

It is made up as follows:

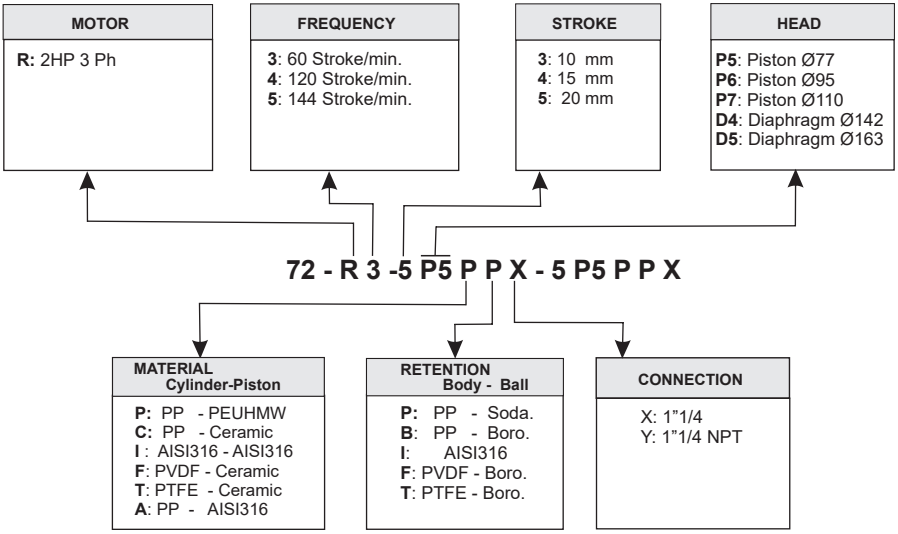
One- Module



Two -Module



Code formulation



2.- CARRIAGE AND MAINTENANCE

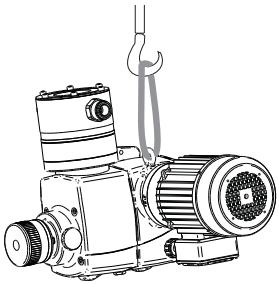
The original packing is prepared so that carriage and storing of the product do not cause any damage to the product, as long as this is done far from heat sources and in dry, ventilated spaces.

Inside packing we include:

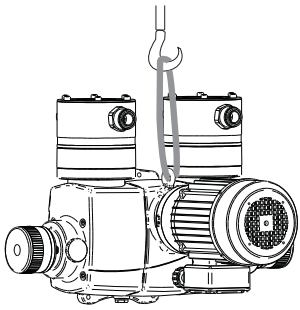
- EFR dosing pump
- Instructions manual
- Oil

HANDLING

For handling it will be necessary to use a sling as shown in fig. 2.1, and lift with the necessary means.



One module



Two modules

Figura 2.1

3.- TECHNICAL FEATURES

		CODE	FLOW 50Hz		FLOW 60Hz		PRESSURE	
			l/h	GPH	l/h	GPH	bar	PSI
PISTON	1 HEAD	**72-R3-5P5_**	330	87	396	104	12	174
		72-R3-5P6_	500	132	600	158	8	116
		72-R4-5P5_	660	174	800	211	12	174
		72-R3-5P7_	665	176	798	211	6	87
		***72-R5-5P5_**	800	211	-	-	11	160
		72-R4-5P6_	1000	264	1200	317	8	116
		***72-R5-5P6_**	1200	317	-	-	7	100
		72-R4-5P7_	1330	351	1600	422	6	87
		***72-R5-5P7_**	1600	422	-	-	5	73
	2 HEADS	**72-R3-5P5_-5P5_**	330+330	87+87	396+396	104+104	12	174
		72-R3-5P6_-5P6_	500+500	132+132	600+600	158+158	8	116
		72-R4-5P5_-5P5_	660+660	174+174	800+800	211+211	12	174
		72-R3-5P7_-5P7_	665+665	176+176	798+798	211+211	6	87
		***72-R5-5P5_-5P5_**	800+800	211+211	-	-	11	160
		72-R4-5P6_-5P6_	1000+1000	264+264	1200+1200	317+317	8	116
		***72-R5-5P6_-5P6_**	1200+1200	317+317	-	-	7	100
		72-R4-5P7_-5P7_	1330+1330	351+351	1600+1600	422+422	6	87
		***72-R5-5P7_-5P7_**	1600+1600	422+422	-	-	5	73
DIAPHRAGM	1 HEAD	**72-R3-3D4_**	207-267	55-71	249-321	66-85	10	145
		72-R3-3D5_	260-342	69-90	312-411	82-109	7	102
		72-R4-3D4_	415-535	110-141	498-342	132-170	10	145
		72-R3-4D5_	435-522	115-138	522-627	138-166	5	73
		***72-R5-3D4_**	498-642	132-170	-	-	10	145
		72-R4-3D5_	520-685	137-181	624-822	165-217	7	102
		***72-R5-3D5_**	624-822	165-217	-	-	7	102
		72-R4-4D5_	870-1045	230-276	1044-1254	276-331	5	73
		***72-R5-4D5_**	1044-1254	276-331	-	-	5	73
	2 HEADS	**72-R3-3D4_-3D4_**	415-535	110-141	498-342	132-170	10	145
		72-R3-3D5_-3D5_	520-685	137-181	624-822	165-217	7	102
		72-R4-3D4_-3D4_	830-1070	220-282	996-1284	263-339	10	145
		72-R3-4D5_-4D5_	870-1045	230-276	1044-1254	276-331	5	73
		***72-R5-3D4_-3D4_**	996 -1284	263-339	-	-	10	145
		72-R4-3D5_-3D5_	1040-1370	274-362	1248-1644	330-434	7	102
		***72-R5-3D5_-3D5_**	1248-1644	330-434	-	-	7	102
		72-R4-4D5_-4D5_	1740-2090	460-552	2088-2508	552-662	5	73
		***72-R5-4D5_-4D5_**	2088-2508	552-662	-	-	5	73

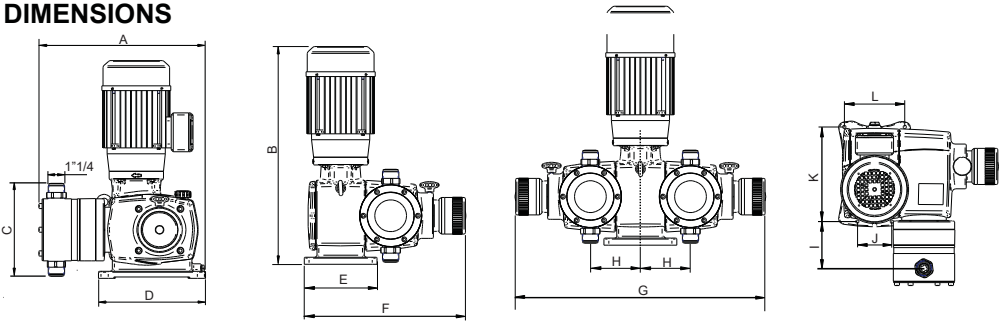
*Can not work at 60Hz

ELECTRIC CURRENT: As specified in the motor plate
POWER: 1.5 KW (2 Hp)
PROTECTION : IP-55

MATERIALS:	PISTON:	P.E.U.A.P.M. / Ceramic / AISI 316
	DIAPHRAGM:	Elastomer base reinforced with fiber and P.T.F.E clothing
	RETENTION:	FPM
	CYLINDER:	P.P. / PVDF / AISI 316
	VALVE(body):	P.P / PVDF / AISI 316
	VALVE(ball) :	glass / glass borosilicate / AISI 316
AMBIENT TEMPERATURE		0...45 ºC
MEDIA TEMPERATURE:		PP: 0...50 ºC PVDF: -10...50 ºC INOX: -10...60ºC
RELATIVE HUMIDITY MAX.:		95% (without condensation)
NOISE LEVEL dB(A):		less than 70

WEIGHT : One head 48 Kg (105 lb)
Two heads 75Kg (165 lb)

DIMENSIONS

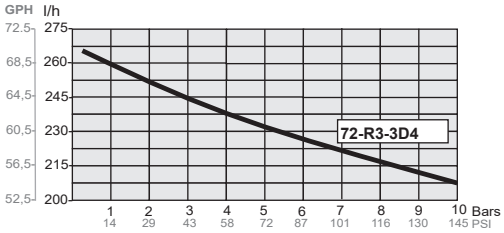


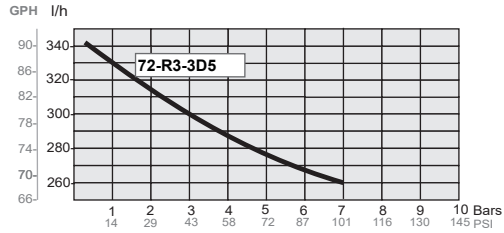
Piston	A	B	C	D	E	F	G	H	I	J	K	L	
	430	580	230	276	188	445	710	129	122	90	247	158	mm
	16.9	22.8	9	10.8	7.4	17.5	28	5	4.8	3.5	9.7	6.2	in

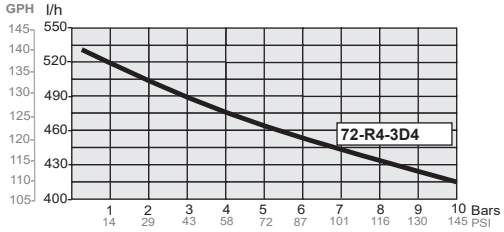
Diphragm		A	B	C	D	E	F	G	H	I	J	K	L	
	D163	395	580	270	276	188	445	710	129	85	90	247	158	mm
		15.5	22.8	10.6	10.8	7.4	17.5	28	5	3.35	3.5	9.7	6.2	in
	D142	396	580	250	276	188	445	710	129	84	90	247	158	mm
		15.5	22.8	9.8	10.8	7.4	17.5	28	5	3.3	3.5	9.7	6.2	in

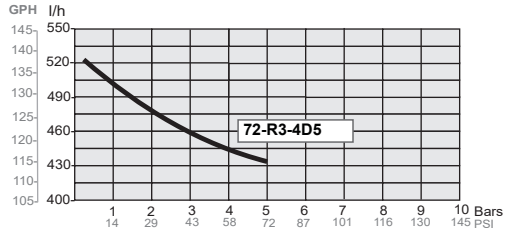
DIAPHRAGM PUMP

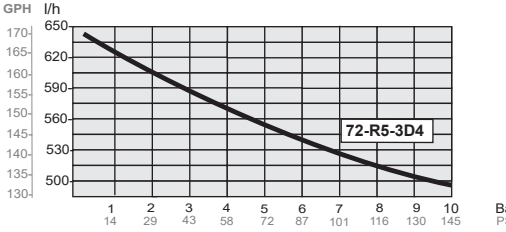
FLOW - PRESSURE GRAPHICS

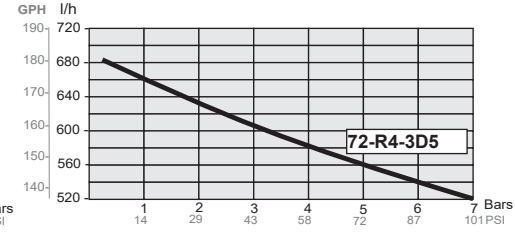


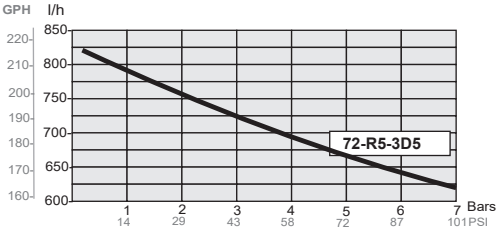


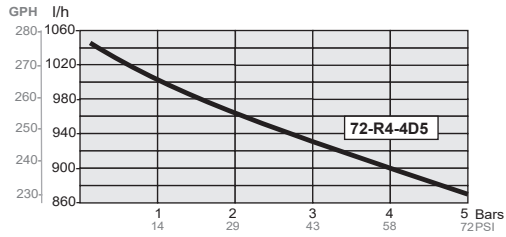


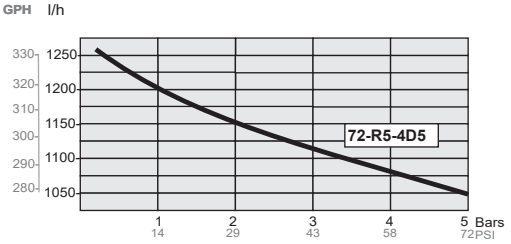










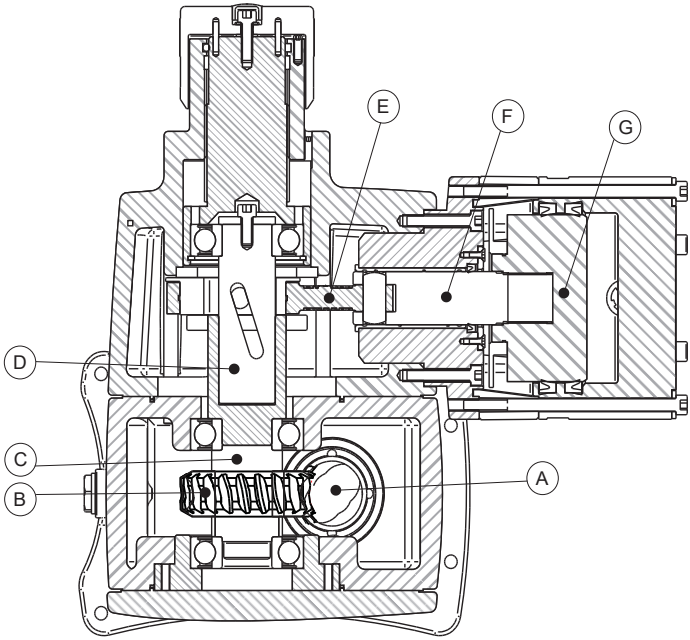


4.- OPERATION

The electric motor transmits the rotation movement to the gear box by means of a flexible coupling. The gear box is made up by a worm gearing shaft (A) and a gear (B) which drives a shaft (C) where the module with an adjustable eccentric shaft (D) is coupled, which by means of a connecting rod (E) pushes and returns alternatively the rod (F) with a piston (G).

Since there is no need for a spring for the piston return - POSITIVE RETURN -, the motor transmits all its power both to the discharge and to the suction. Thus the power consumption is minimized, suction capacity is maximized, and high precision dosing is carried out.

A non-loss-motion mechanism, with variable eccentric regulation produces a high accuracy dosing while smooth and safe operation.



5.- INSTALLATION

GENERALITIES

To install this pump it is advisable to choose places protected from water, away from heat sources and with air renewal.

Place the pump vertically over a totally rigid surface to achieve a proper lubrication of all inner elements. Anticipate which will be the room you will need to comfortably do the basic maintenance and install / desinstall the pump.

Fix the pump on the chosen flat surface by means of 4 screws. Hole diameter 9mm

	I	J	K	L
mm	122	90	247	158
in	4.2	3.5	9.7	6.2

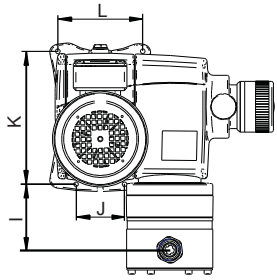


Figura 2.2

BLOCK

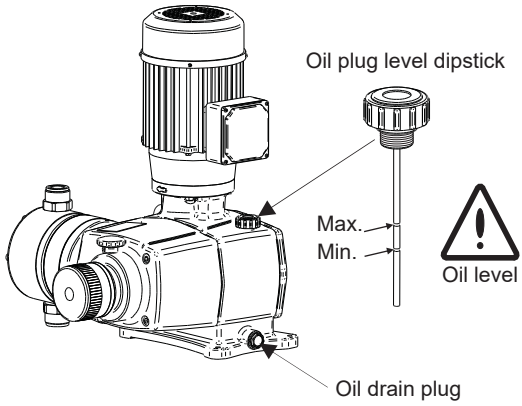
Pull out the oil cap for transport , fill the pump with the SAE oil 80W90 being supplied (or similar oil), up to the level shown on oil plug level dipstick and put on this oil plug.

Approximate oil contents:

One module 2 L.
Two module 3 L.

Oil list:

CEPSA SAE 80W 90
REPSOL EP 80W/90
SHELL SPIRLAX HD 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



ELECTRICAL CONNECTION

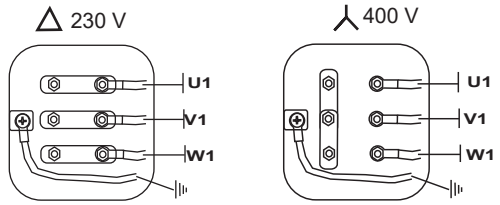
The electric protection of the motor must be installed and adjusted following its nominal instensity (overloaded switch disjuntor). (See wiring).

A disconnection dispositive must be installed in case of emergency.

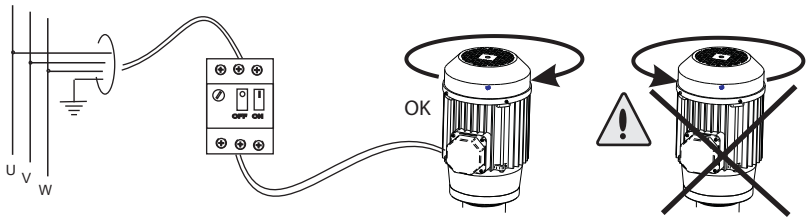
The equipment must be protected to avoid untimely sudden starts.

THREE-PHASE CONNECTION (50/60 Hz)

To work at 230 V we will plug the motor in triangle. Installing a protection.
To work at 400 V it will be a star connection. Installing a protection.

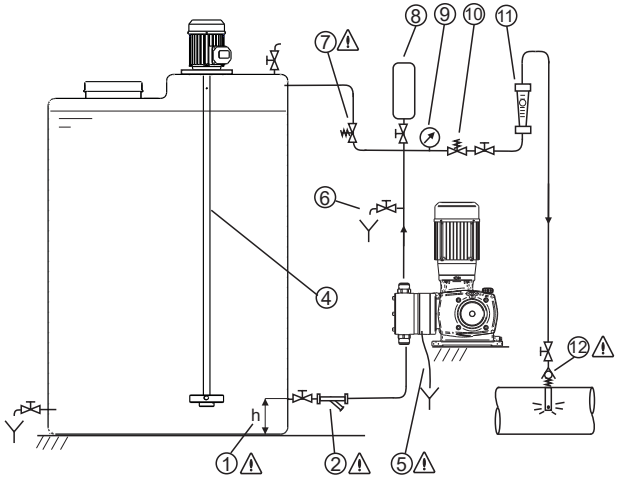


The rotation of the motor will be that indicated by the arrow (looking at the pump from the left hand cylinder), otherwise swap two terminals of the connexion.



HYDRAULIC INSTALLATION

Installation examples

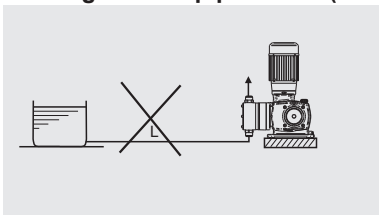


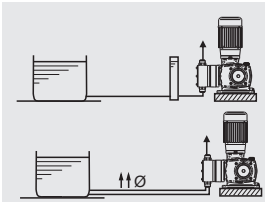
⚠① Avoid suctioning the undiluted particles from the bottom of the tank.
⚠② Filter. It is important to install a filter (150 micron) in the suction pipe.
④ Agitator
⚠⑤ Make sure to collect any liquid leakage from the cylinder's vent/drain hole in a proper container.
⑥ Prime valve / drain valve
⚠⑦ Safety relief valve.Install a safety valve in a derivation as near as possible from the pump, in order to protect it and the whole installation from possible over-pressures. This derivation must derive liquid to a safe place.
⑧ Pulsation dampener
⑨ Pressure gauge
⑩ Pressure regulating valve
⑪ Flowmeter
⚠ ⑫ Injection check valve

Recomendations for correct installation

SUCTION PIPE

⚠ Long suction pipe: L>2m (6.5ft)

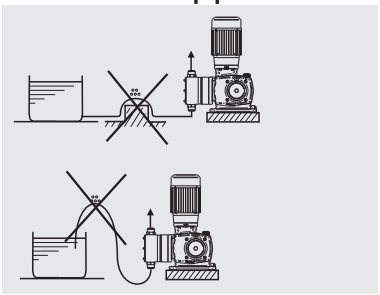


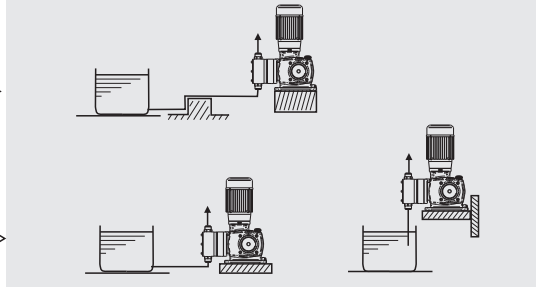


RECOMENDED PIPE SIZE

Øint	L ≤ 2 m	L ≤ 5 m
30	1200	660
40	1330	1000
50	1600	1330
70		1600
	Q max (l/h)	

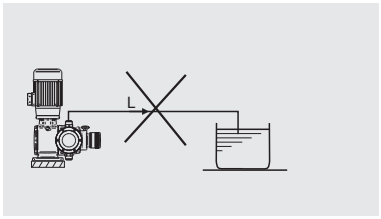
⚠ Air in sutcion pipe

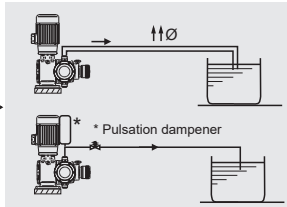




DISCHARGE PIPE

⚠ Long discharge pipe: L>5m (16 ft)

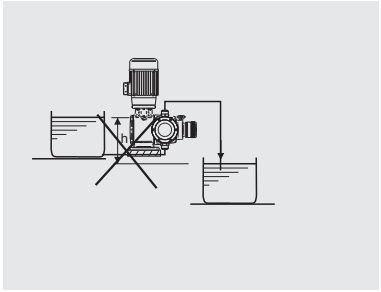


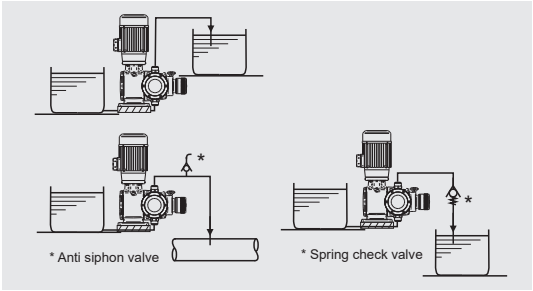


RECOMENDED PIPE SIZE

Øint	L ≤ 2 m	L ≤ 10 m
30	1000	330
40	1330	500
50		800
60		1000
70	1600	1330
80		1600
	Q max (l/h)	

⚠ Siphon





6.- START UP AND REGULATION

STAND: Check that the pump is properly installed in its stand.

OIL: Take off re-filling lid and fill the pump with the provided oil: SAE 80 W 90 or equivalent. If the pump has several modules oil must be spread to all filling holes.

CHECKING OF HYDRAULIC CIRCUIT: Check that all valves are opened and that escapes from priming valves derive the liquid to a proper receptacle.

ROTARY DIRECTION: Start up the pump to check that the rotary direction coincides with the one shown by the arrow. To change rotary direction invert two phases in the motor terminals box.

CHECKING OF PUMP: Check visually/auditorilly the proper working of the pump.

PRIMING: To prime the pump easily, especially for not very important flows and we if do not have priming valve, we suggest to lower pressure up to the minimum injection point. If that is not possible, fill up the cylinder and the suction pipe with liquid..

OVER-PRESSURE PROTECTION: Adjust the safety valve over-pressure or relief to the wished pressure to protect the installation without exceeding the pump nominal pressure.

ELECTRIC PROTECTION: Adjust the electric dispositive of electric protection to the motor nominal current

DOSING FLOW

Through the micrometic regulator ,we will adjust the dosing flow from 0 to 100% depending on the wished value. It is not advisable a regulation under 10%.

In order to check the dosing flow:

1.- Prime the pump immersing the suction pipe in a graduated receptacle (A).

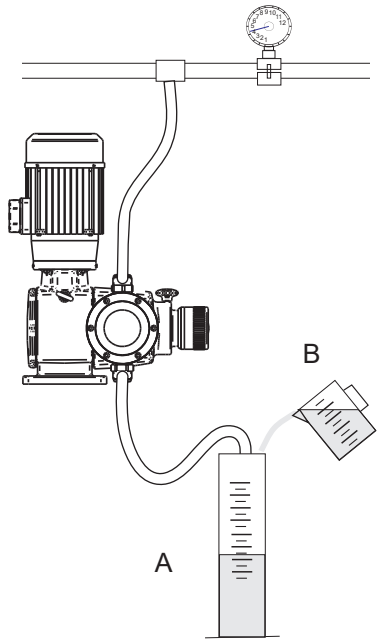
2.- Mark in the receptacle the liquid level.

3.- Start up the pump and pour a known volume (V) of measured liquid in a second receptacle (B).

4.- Measure the time (t) that goes between the start up of the pump and the precise instant in which the liquid reaches the level of the mark receptacle A.

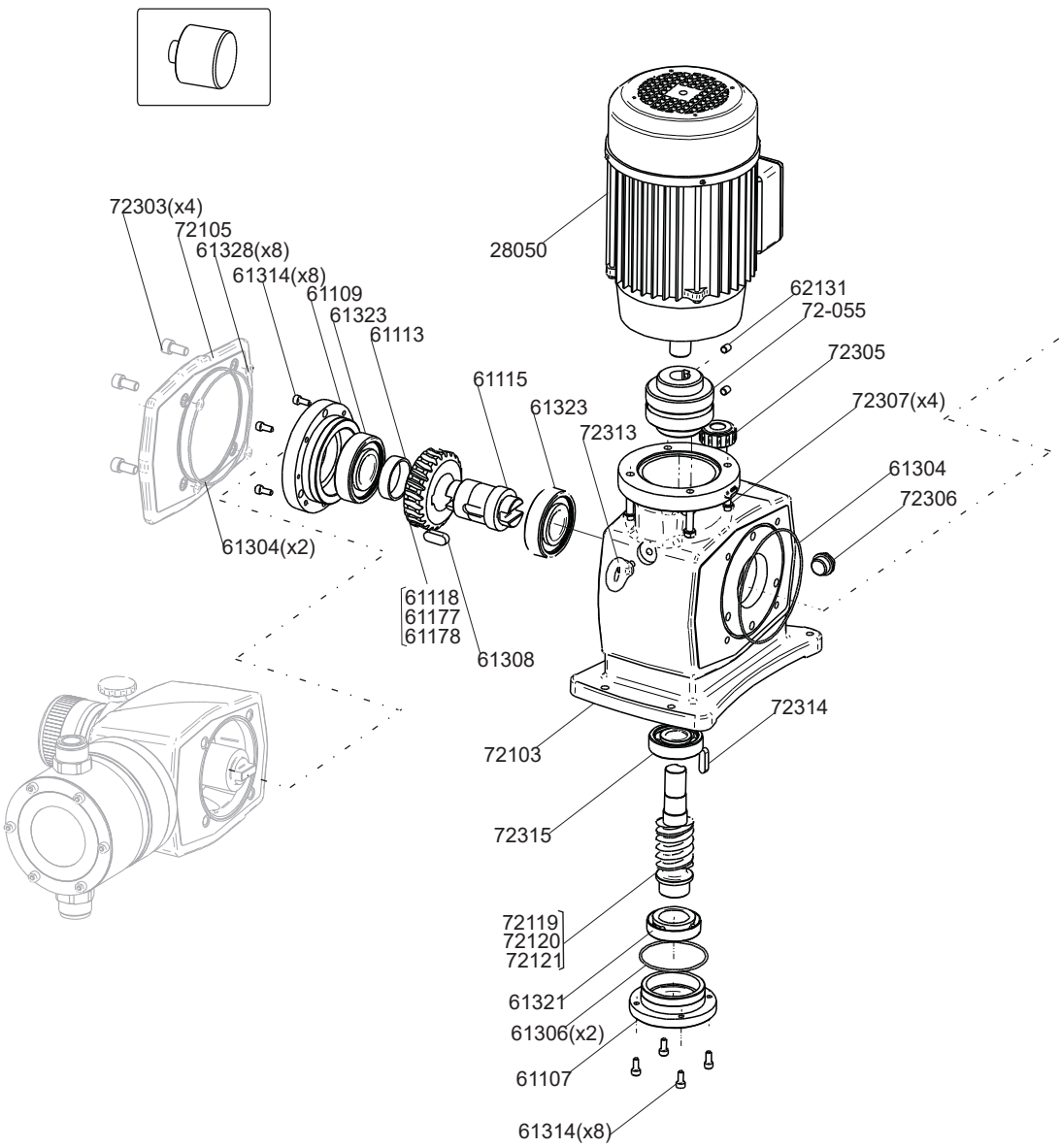
5.- The dosed flows corresponds to:

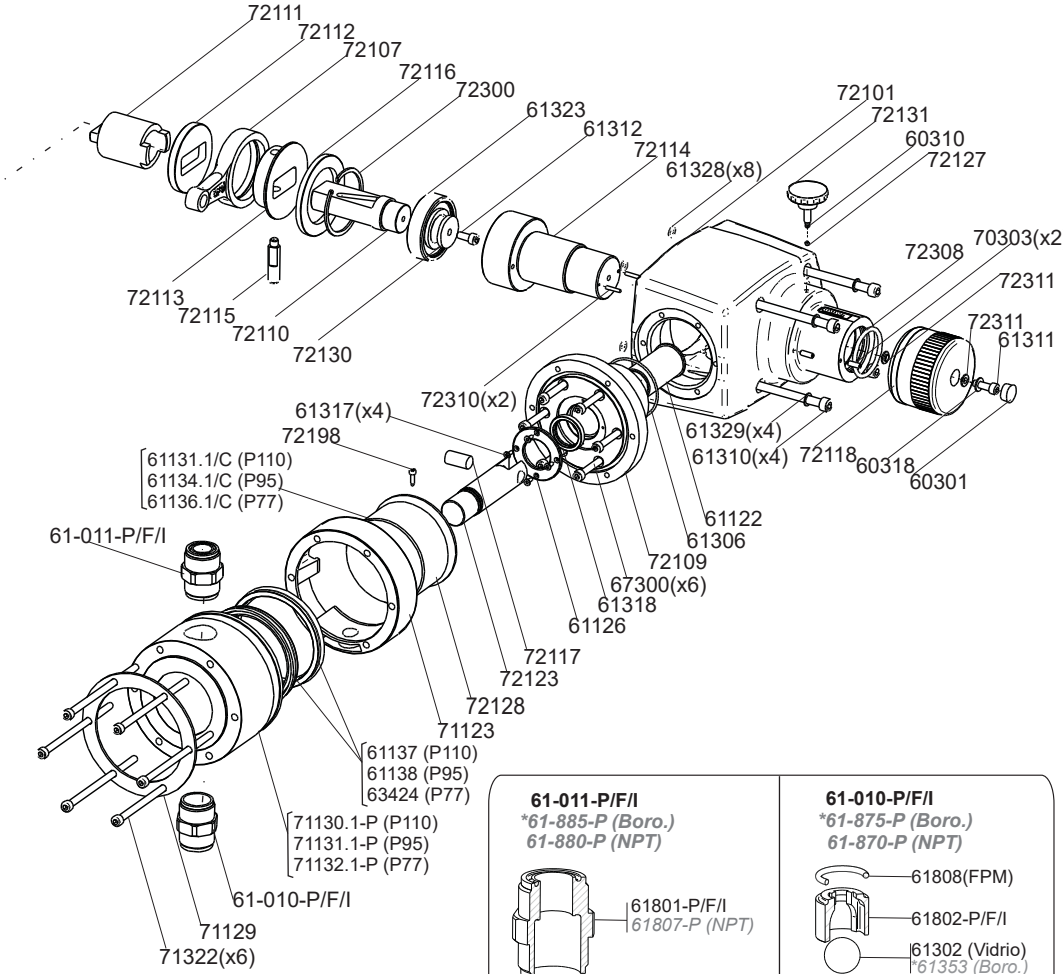
Q(l/h) = V (liters) / t (seconds) x 3600



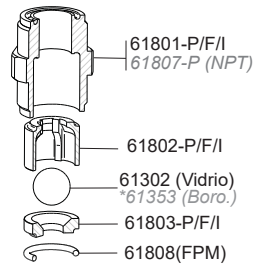
7.- MAINTENANCE

EFR Piston

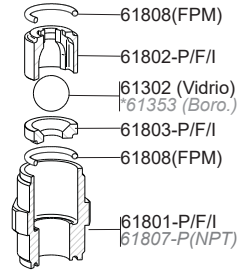




61-011-P/F/I
61-885-P (Boro.)
61-880-P (NPT)



61-010-P/F/I
61-875-P (Boro.)
61-870-P (NPT)



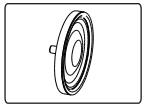
LIST OF PARTS: EFR PISTON

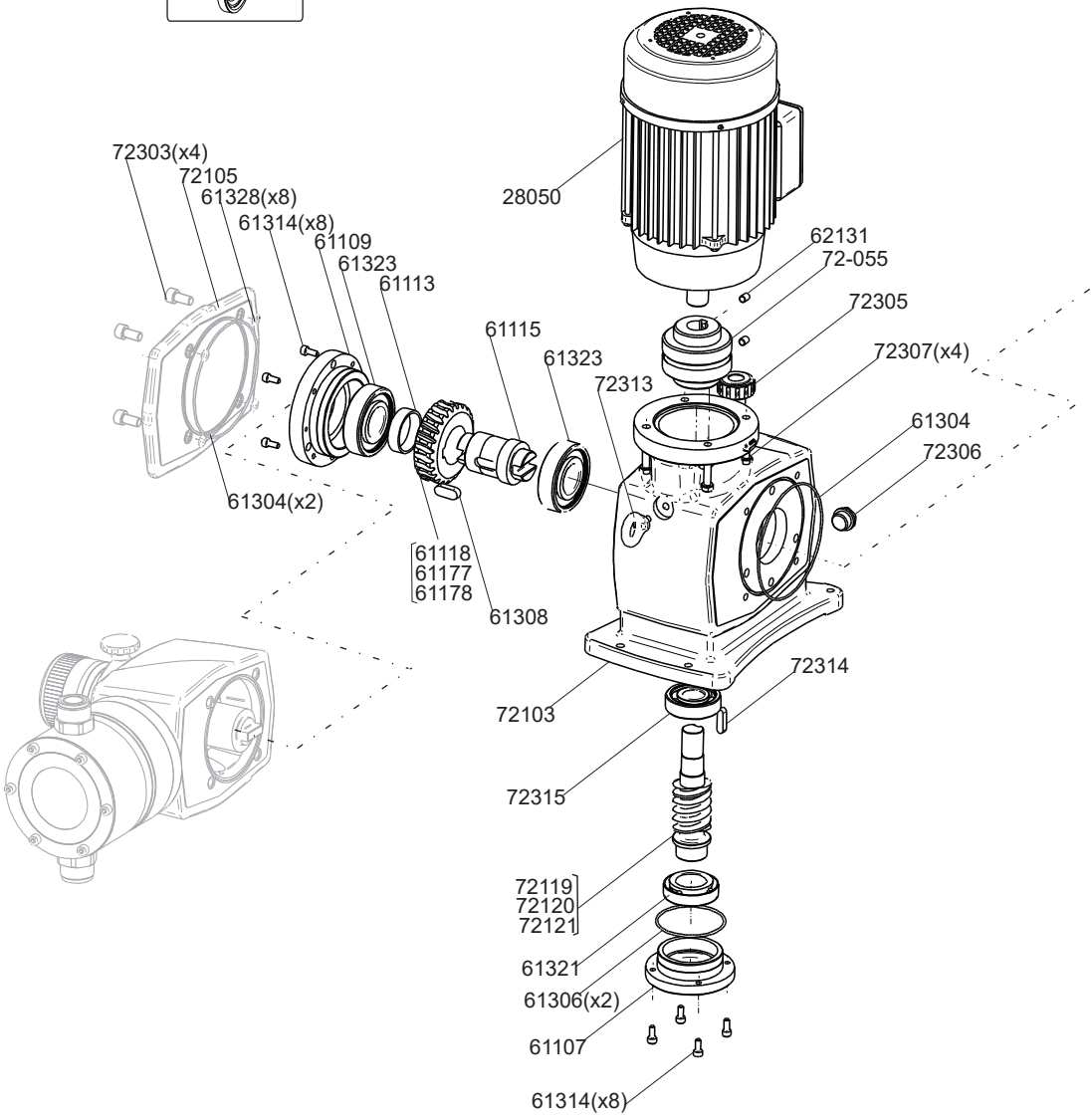
CODE	DESCRIPTION	UNITS 1 Head	UNITS 2 Head
28050	Electric motor1,5Kw (2cv) 3ph T90 B14	1	1
60301	Regulator knob plug 20,6	1	2
60310	O-ring 3,5x1,5 NBR	1	2
60318	Washer M8 DIN125	1	2
61107	Lower cover lid for EF gear box	1	1
61109	Cover lid side for EF gear box	1	1
61113	Spacer for EF gear box	1	1
61115	Gear box shaft EF	1	1
61118	Ring gear 2 strokes (120strokes/min) EF	1	1
61122	Slider for EF rod	1	2
61126	Oil seal lid EF	1	2
61131.1 /-C	Piston 1000 l/h d110 lock EFR	1	2
61134.1 /-C	Piston 750 l/h d95 lock EFR	1	2
61136.1 /-C	Piston 500 l/h d77 lock EFR	1	2
61137	Seal 1000 l/h FPM	2	4
61138	Seal 750 l/h FPM	2	4
61177	Ring gear 1 strokes (60strokes/min) EF	1	1
61178	Ring gear 2,4 strokes (144strokes/min) EF	1	1
61302	Ball 22,2mm soda lime	2	4
61304	O-ring 132x2,5 NBR	2	2
61305	O-ring 88x2,5 NBR	1	1
61306	O-ring 73x3 NBR	1	1
61308	Wedging piece Din 6885 12x8x30	1	1
61310	Screw M10x140 Din 912	4	4
61311	Screw M8x25 Din 912	1	2
61312	Screw M8x18 Din 912	1	2
61314	Screw M6x20 Din 912 A2	8	8
61317	Screw M4x8 Din 7991	4	8
61318	Seal din3646 36x46x7 NBR	1	2
61321	Bearing 32007xj(35x62x18) EF	1	1
61323	Bearing 6307zz (35x80x21) EF	3	4
61328	O-ring 9,5x3 NBR	4	8
61329	Aluminum seal 1,5x10x16	4	8
61801-P/F/T	Connector 1"1/4	2	4
61802-P/F/T	Valve body 1"1/4	2	4
61803-P/F	Valve ring 1"1/4	2	4
61808	O-ring 27x3 FPM	4	8
62131	Screw M8x10 Din913	2	2
63424	Seal 78x87x6 FPM 500 l/h	2	4
67300	Screw M8x40 Din912	6	12
70303	Screw M6x16 Din913	2	4
71123	Cylinder spacer D50	1	2
71129	Ring plate for piston cylinder D160	1	2
71130.1-P/ I	Cylinder 1000 l/h s ring plate	1	2
71131.1-P/ I	Cylinder 750 l/h s ring plate	1	2
71132.1-P/ I	Cylinder 500 l/h s ring plate	1	2
71322	Screw M8x150 Din912	6	12
72101	Module EFR	1	2
72103	Gear box case EFR	1	1

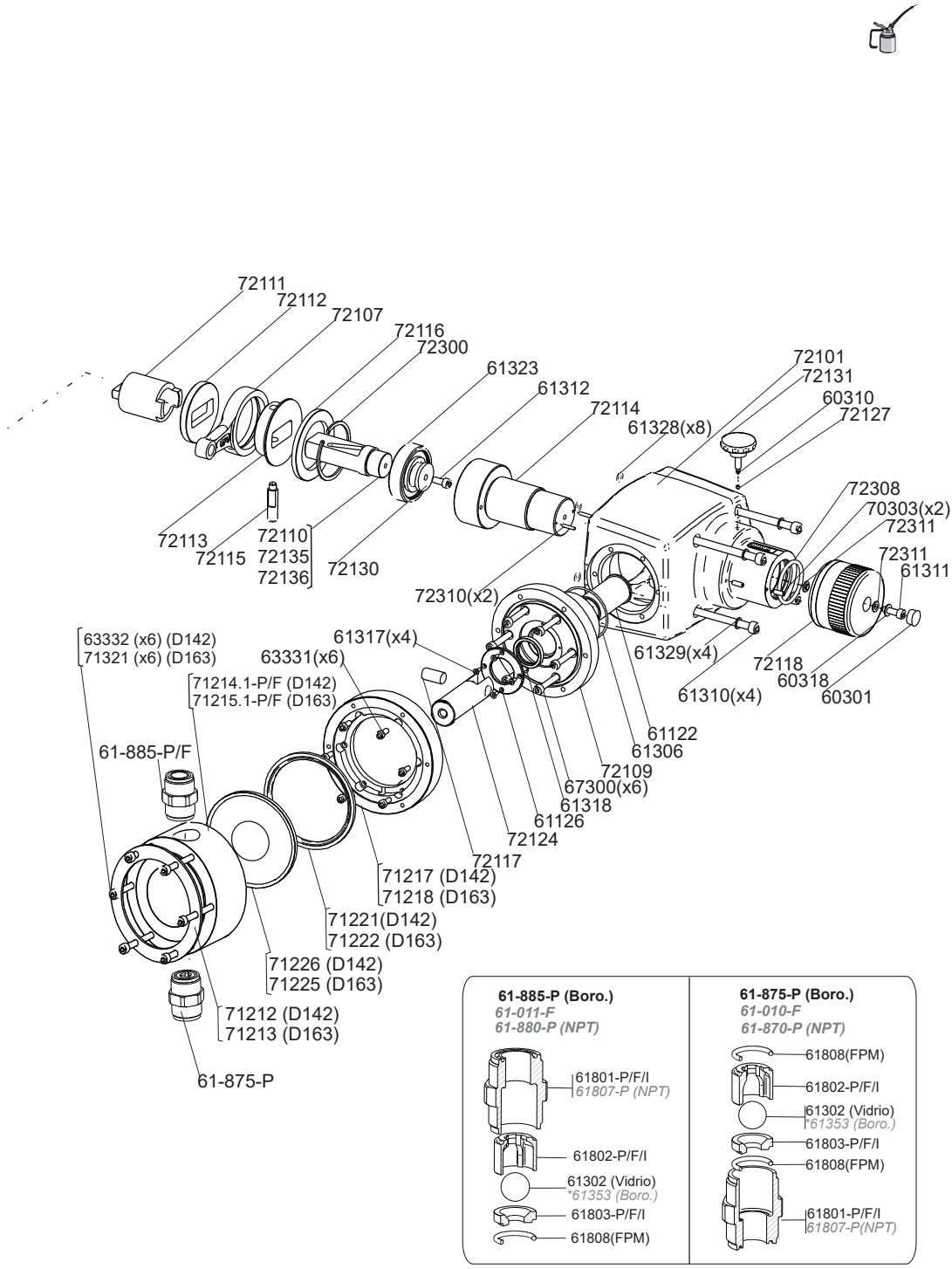
CODE	DESCRIPTION	UNITS 1 Head	2 Head
72105	Cover lid for gear box 1 module EFR	1	0
72107	Connecting rod EFR	1	2
72109	Cylinder flange EFR	1	2
72110	Adjustable eccentric shaft 20mm EFR	1	2
72111	Module shaft EFR	1	2
72112	Transmission ring	1	2
72113	Eccentric sleeve	1	2
72114	Regulator shaft	1	2
72115	Eccentric bolt	1	2
72116	Connecting rod stopper	1	2
72117	Bolt16x34 EFR	1	2
72118	Regulator EFR	1	2
72119	Pinion 1 stroke/s (60strokes/min) EFR	1	1
72120	Pinion 2 strokes/s (120strokes/min) EFR	1	1
72121	Pinion 2,4 strokes/s (144strokes/min) EFR	1	1
72123	Piston rod EFR	1	2
72127	Regulator lock disc	1	2
72128	Protection disc EFR	1	2
72130	Washer stop bearing	1	1
72131	Regulation lock handle	1	2
72198	Screw mechanize M5x12 Din912	1	2
72300	Retaining ring d80 DIN472	1	2
72303	Screw M10x20 din912	4	0
72305	Filler plug ½' with level	1	1
72306	Drain plug allen ½'	1	1
72307	Screw M8x30 Din933	4	4
72308	O-ring 53x5 NBR	1	1
72310	Bolt 4x20 Din1470	2	4
72311	Insulation sleeve regulation	2	4
72313	Hanger M8 din580	1	1
72314	Wedging piece Din 6885 8x7x30	1	1
72315	Bearing 6305zz (25x62x17)	1	1
72-055	Elastic coupling 2HP EFR	1	1
VALVES			
61-010-P/F/I	Suction check valve 1 1/4 PP	1	2
61-011-P/F/I	Discharge check valve 1 1/4 PP	1	2
61-880-P	Suction check valve 1 1/4 NPT PP	1	2
61-870-P/F	Discharge check valve1 1/4 NPT PP	1	2
61-875-P	Suction check valve 1 1/4 PP borosilicate	1	2
61-885-P	Discharge check valve 1 1/4 PP borosilicate	1	2

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

EFR Diaphragm






72111
72112
72107
72116
72300
61323
61312
72114
61328(x8)
72101
72131
60310
72127
72308
70303(x2)
72311
72311
61311
72113
72115
72110
72135
72136
72130
72310(x2)
63332 (x6) (D142)
71321 (x6) (D163)
61317(x4)
63331(x6)
71214.1-P/F (D142)
71215.1-P/F (D163)
61329(x4)
72118
60318
60301
61310(x4)
61-885-P/F
61122
61306
72109
67300(x6)
61318
61126
72124
72117
71217 (D142)
71218 (D163)
71221(D142)
71222 (D163)
71226 (D142)
71225 (D163)
71212 (D142)
71213 (D163)
61-875-P
61-885-P (Boro.)
61-011-F
61-880-P (NPT)
61801-P/F/I
61807-P (NPT)
61802-P/F/I
61302 (Vidrio)
*61353 (Boro.)
61803-P/F/I
61808(FPM)
61-875-P (Boro.)
61-010-F
61-870-P (NPT)
61808(FPM)
61802-P/F/I
61302 (Vidrio)
*61353 (Boro.)
61803-P/F/I
61808(FPM)
61801-P/F/I
61807-P(NPT)

LIST OF PARTS: EFR DIAPHRAGM

CODE	DESCRIPTION	UNITS 1 Head	2 Head
28050	Electric motor1,5Kw (2cv) 3ph T90 B14	1	1
60301	Regulator knob plug 20,6	1	2
60310	O-ring 3,5x1,5 NBR	1	2
60318	Washer M8 DIN125	1	2
61107	Lower cover lid for EF gear box	1	1
61109	Cover lid side for EF gear box	1	1
61113	Spacer for EF gear box	1	1
61115	Gear box shaft EF	1	1
61118	Ring gear 2 strokes (120strokes/min) EF	1	1
61122	Slider for EF rod	1	2
61126	Oil seal lid EF	1	2
61177	Ring gear 1 strokes (60strokes/min) EF	1	1
61178	Ring gear 2,4 strokes (144strokes/min) EF	1	1
61301	Ball 22,2mm borosilicate	2	4
61304	O-ring 132x2,5 NBR	2	2
61305	O-ring 88x2,5 NBR	1	1
61306	O-ring 73x3 NBR	1	1
61308	Wedging piece Din 6885 12x8x30	1	1
61310	Screw M10x140 Din 912	4	4
61311	Screw M8x25 Din 912	1	2
61312	Screw M8x18 Din 912	1	2
61314	Screw M6x20 Din 912 A2	8	8
61317	Screw M4x8 Din 7991	4	8
61318	Seal din3646 36x46x7 NBR	1	2
61321	Bearing 32007xj(35x62x18) EF	1	1
61323	Bearing 6307zz (35x80x21) EF	3	4
61328	O-ring 9,5x3 NBR	4	8
61329	Aluminum seal 1,5x10x16	4	8
61801-P/F/T	Connector 1"1/4	2	4
61802-P/F/T	Valve body 1"1/4	2	4
61803-P/F	Valve ring 1"1/4	2	4
61808	O-ring 27x3 FPM	4	8
62131	Screw M8x10 Din913	2	2
63331	Screw M8x20 Din 912 A2	6	12
63332	Screw M8x90 Din 912 A2	6	12
67300	Screw M8x40 Din912	6	12
70303	Screw M6x16 Din913	2	4
71212	Ring plate for diphragm cylinder D142	1	2
71213	Ring plate for diphragm cylinder D163	1	2
71214-P/F	Cylinder diaphragm D142	1	2
71215-P/F	Cylinder diaphragm D163	1	2
71217	Diaphragm flange D142	1	2
71218	Diaphragm flange D163	1	2
71221	Diaphragm base D142	1	2
71222	Diaphragm base D163	1	2
71225	Diaphragm D163	1	2
71226	Diaphragm D142	1	2
71321	Screw M8x100 Din912	6	12
72101	Module EFR	1	2
72103	Gear box case EFR	1	1
72105	Cover lid for gear box 1 module EFR	1	0

CODE	DESCRIPTION	UNITS 1 Head	2 Head
72107	Connecting rod EFR	1	2
72109	Cylinder flange EFR	1	2
72111	Module shaft EFR	1	2
72112	Transmission ring	1	2
72113	Eccentric sleeve	1	2
72114	Regulator shaft	1	2
72115	Eccentric bolt	1	2
72116	Connecting rod stopper	1	2
72117	Bolt16x34 EFR	1	2
72118	Regulator EFR	1	2
72119	Pinion 1 stroke/s (60strokes/min) EFR	1	1
72120	Pinion 2 strokes/s (120strokes/min) EFR	1	1
72121	Pinion 2,4 strokes/s (144strokes/min) EFR	1	1
72124	Diaphragm rod EFR	1	2
72127	Regulator lock disc	1	2
72130	Washer stop bearing	1	1
72131	Regulation lock handle	1	2
72136	Adjustable eccentric shaftc 15 EFR	1	2
72135	Adjustable eccentric shaftc 10 EFR	1	2
72300	Retaining ring d80 DIN472	1	2
72303	Screw M10x20 din912	4	0
72305	Filler plug ½' with level	1	1
72306	Drain plug allen ½'	1	1
72307	Screw M8x30 Din933	4	4
72308	O-ring 53x5 NBR	1	1
72310	Bolt 4x20 Din1470	2	4
72311	Insulation sleeve regulation	2	4
72313	Hanger M8 din580	1	1
72314	Wedging piece Din 6885 8x7x30	1	1
72315	Bearing 6305zz (25x62x17)	1	1
72-055	Elastic coupling 2HP EFR	1	1
VALVES			
61-010-P/F/I	Suction check valve 1 1/4 PP	1	2
61-011-P/F/I	Discharge check valve 1 1/4 PP	1	2
61-880-P/F	Suction check valve 1 1/4 NPT PP	1	2
61-870-P/F	Discharge check valve1 1/4 NPT PP	1	2
61-875-P	Suction check valve 1 1/4 PP borosilicate	1	2
61-885-P	Discharge check valve 1 1/4 PP borosilicate	1	2

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

MAINTENANCE

Before any maintenance operation we will check:

That the pump is stopped and disconnected from the electric supply.

There is no pressure neither inside the head nor in the impulsion pipe. It is advisable to empty the head before opening it.

The staff in charge of the maintenance will use the adequate protection means in order to manipulate the dosed liquid.

PERIÓDICAL MAINTENANCE:

Change 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 suction filter once a month.

Check the valves every 3 months or 1000 hours.

It is advisable to clean periodically the injector, letting clean water flow through it (we can make it coincide with the emptying of the tank), to eliminate precipitated rests that can remain in the inner part of the cylinder or in suction / impulsion pipes.

If we are using highly corrosive liquids it is advisable to double the frequency of checkings.

PROBLEM	***CAUSE***	***SOLUTION***
MOTOR DOES NOT RUN	THERE IS NO VOLTAGE MOTOR PROTECTION HAS BLOWN UP	- Check with a voltimeter incoming voltage - Check with ammeter that current is not superior than nominal one
MOTOR RUNS HOT	A PHASE IS FAILING (three-phase); WRONG INCOMING VOLTAGE SUPERIOR CONSUMPTION THAN NOMINAL ONE LOW WORK FREQUENCY (only with inverter)	- Check with voltmeter tension in motor terminals - Check that incoming tension coincides with motor one (-10% / +10%) - Check that injection pressure is not superior to the one specified in the module - Check with a voltmeter incoming tension - Increase working frequency with inverter
MOTOR RUNS BUT PUMP DOES NOT INJECT OR INJECTION IS INFERIOR THAN NOMINAL ONE	PUMP HAS NOT BEEN PRIMED SUCTION / IMPULSION VALVES ARE DIRTY OR DAMAGED SUCTION FILTER IS DIRTY AIR COMES INTO SUCTION PIPE CAVITATION IN SUCTION	- Prime the pump injecting at zero pressure - Clean or change valves - Clean filter - Check sealing in connection points - Increase pipe diameter - Reduce sucion pipe length - Reduce speed through an inverter - Use a less viscous liquid
PUMP TRICKLES LIQUID THROUGH INFERIOR CYLINDER HOLE	DAMAGED SEALS DAMAGED PISTON	-· Change seals -.Change piston
PUMP TRICKLES OIL THROUGH INFERIOR CYLINDER HOLE	DAMAGED SEAL	- Change seal
PUMP LEAKS OIL THROUGH REGULATOR	DAMAGED REGULATOR O'RINGS	- Change o'rings

EC CONFORMITY DECLARATION

CE

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

*Declares that all models **EFR** products, identified by a serial number and year of manufacture, strictly fulfill 2006/042/CE and low voltages directives D2006/95/CE, as long as installation, use and maintenance are carried out following the prevailing regulation and following the instructions contained in the handbook.*

Antón Planas
Manager

WARRANTY

ITC DOSING PUMPS

***I.T.C. S.L.** Warrants the product specified in this document for a period of 1 year from the purchase date. This warranty obligation is limited to the free replacement of the damaged parts due to any material or manufacture defect. This warranty does not include periodic maintenance and damage resulting from misuse.*

*The equipment must be sent to **I.T.C. S.L**. Service Center with prepaid transport charges, and will be sent back with transport charges for customer's account.*

The warranty document with sales date and shop stamp, or an invoice copy must be sent with the equipment.

MODEL _____

SERIAL # _____

Sales date and shop stamp

_____

Original manual

Ed:21-03-19 EN

ITC
DOSING PUMPS

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