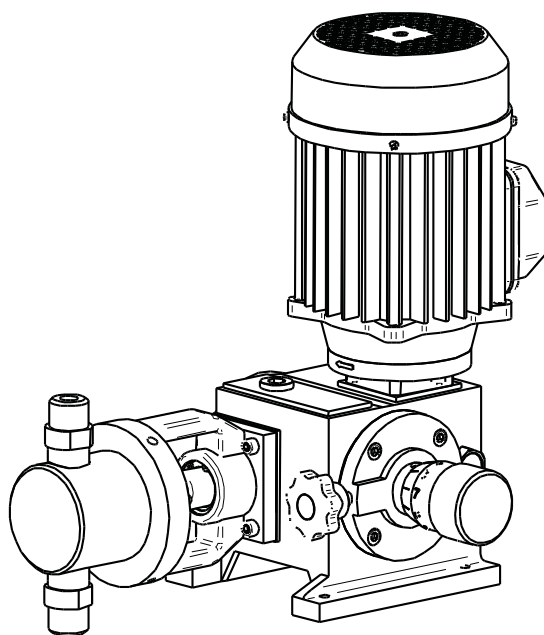




Management
System
ISO 9001:2008



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TEKDOS FP

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.

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1.- GENERAL DESCRIPTION



Tekdos FP series are plunger dosing pumps for continuous operation under hard process conditions.

This is a positive return pump with packing plunger head. A non-loss-motion mechanism, with variable eccentric regulation produces a high accuracy dosing while smooth and safe operation.

The TEKDOS series are heavy duty pumps for continuous operation in extreme temperature conditions, high pressure, high viscosity and hazardous areas (ATEX).

Designed according API675 standards, this pump matches the high accuracy requirements of this standard such as repeatability and linearity, in any operation conditions.

These series allows many injection possibilities depending on the head selected. The available heads are from 0.7 to 940 l/h (0.2 to 248 gph).

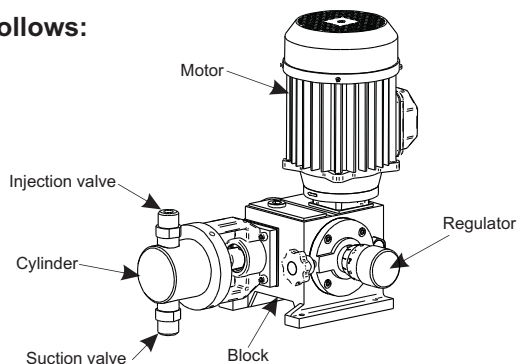
In case there is any doubt about compatibility of materials with the products to be used please contact ITC S.L. Technical Service.

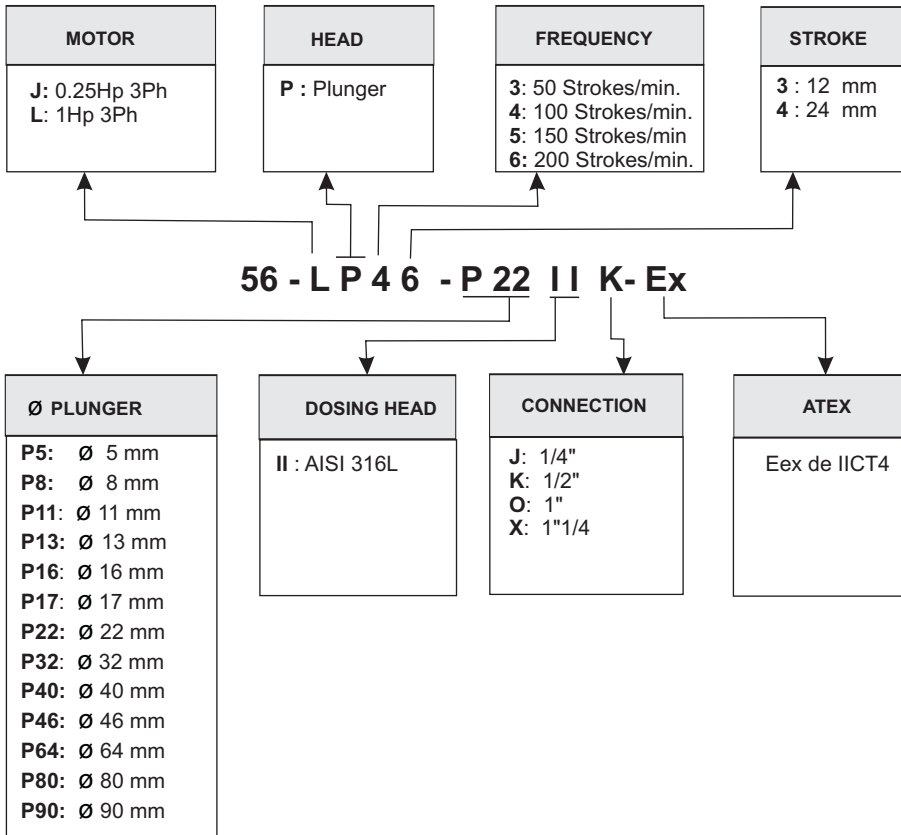
Dosing flow is adjustable with no need to stop the pump from 0% to 100% of its capacity.

Applications:

- Oil & Gas
- Petrochemical industry
- Industrial processes
- Boilers
- Water treatment
- Pulp & paper

It is made up as follows:





2.- UNPACKING 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.

Inside packing we include:

- TEKDOS FP dosing pump
- Handbook
- Oil:

Tekdos FP 56-J (170cm³)
Tekdos FP 56-L (850cm³)

3.- TECHNICAL FEATURES



	CODE	FLOW				PRESSURE		CONNECTION	MOTOR	
		50Hz		60Hz		bar	psi	(DB = double ball)	Kw	Hp
		l/h	gph	l/h	gph					
TEKDOS FP 56-J	56-JP33-P5IIJ	0.7	0.2	0.8	0.2	70	1015	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P5IIJ	1.4	0.4	1.7	0.4	70	1015	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P8IIJ	1.9	0.5	2.3	0.6	70	1015	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P8IIJ	3.7	1.0	4.4	1.2	70	1015	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P13IIJ	5.0	1.3	6.0	1.6	45	653	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P17IIJ	8.5	2.2	10.2	2.7	26	377	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P13IIJ	9.9	2.6	11.9	3.1	45	653	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P22IIJ	14.0	3.7	16.8	4.4	16	232	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P17IIJ	17.0	4.5	20.4	5.4	26	377	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P22IIJ	28.0	7.4	33.6	8.8	16	232	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P32IIJ	30.0	7.9	36.0	9.5	7.5	109	1/4" - 1/4" (DB)	0.186	0.25
	56-JP33-P40IIK	47.0	12.4	56.4	14.8	4.7	68	1/2" - 1/2"	0.186	0.25
	56-JP43-P32IIJ	60.0	16.0	72.0	18.9	7.5	109	1/4" - 1/4" (DB)	0.186	0.25
	56-JP43-P40IIK	94.0	25.0	113	29.7	4.7	68	1/2" - 1/2"	0.186	0.25
TEKDOS FP 56-L	56-LP36-P8IIJ	3.7	1.0	4.4	1.2	350	5075	1/4" - 1/4" (DB)	0.75	1
	56-LP36-P11IIJ	7,0	1,8	8,4	2,2	263	3814	1/4" - 1/4" (DB)	0,75	1
	56-LP46-P8IIJ	7,4	2,0	8,9	2,3	350	5075	1/4" - 1/4" (DB)	0,75	1
	56-LP46-P11IIJ	14,0	3,7	16,8	4,4	263	3814	1/4" - 1/4" (DB)	0,75	1
	56-LP36-P16IIJ	14,5	3,8	17,4	4,6	124	1798	1/4" - 1/4" (DB)	0,75	1
	56-LP36-P22IIK	28,0	7,4	33,6	8,9	65	942	1/2"-1/2" (DB)	0,75	1
	56-LP46-P16IIJ	29,0	7,7	34,8	9,2	124	1798	1/4"-1/4" (DB)	0,75	1
	56-LP46-P22IIK	56,0	14,8	67,2	17,7	65	942	1/2"-1/2" (DB)	0,75	1
	56-LP36-P32IIK	60,0	15,8	72,0	19,0	31	450	1/2"-1/2" (DB)	0,75	1
	56-LP36-P40IIK	93,0	24,6	112	29,5	20	290	1/2"-1/2" (DB)	0,75	1
	56-LP46-P32IIK	119	31,4	143	37,7	31	450	1/2"-1/2" (DB)	0,75	1
	56-LP36-P46IIK	123	32,5	148	39,0	15	217	1/2"-1/2" (DB)	0,75	1
	56-LP46-P40IIK	185	48,9	222	58,6	20	290	1/2"-1/2" (DB)	0,75	1
	56-LP36-P64IIO	240	63,4	288	76,1	7,5	109	1"-1"	0,75	1
	56-LP46-P46IIK	245	64,7	294	77,6	15	217	1/2"-1/2" (DB)	0,75	1
	56-LP36-P80IIX	372	98,2	446	118	5	72,5	1 1/4"-1 1/4"	0,75	1
	56-LP36-P90IIX	470	124	564	149	4	58	1 1/4"-1 1/4"	0,75	1
	56-LP46-P64IIO	479	126	575	152	7,5	109	1" - 1"	0,75	1
	56-LP46-P80IIX	743	196	892	235	5	72,5	1 1/4"-1 1/4"	0,75	1
	56-LP46-P90IIX	940	248	1128	298	4	58	1 1/4"-1 1/4"	0,75	1

MATERIALS



ELECTRIC CURRENT: As specified in the motor plate

POWER: 0.185 (0.25 Hp) / 0.75 Kw (1.0 Hp)

PROTECTION : IP-55

MATERIALS: PISTON: AISI 316L
CYLINDER: AISI 316L
VALVE: AISI 316L

NOISE LEVEL dB(A): minor than 70

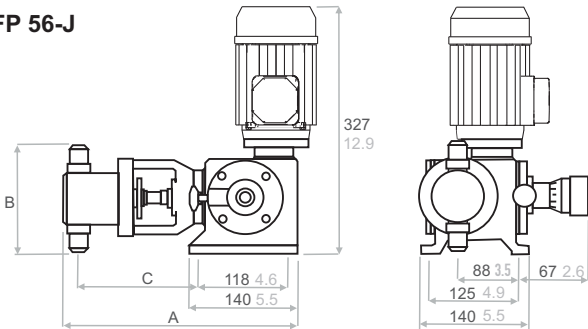
WEIGH: Tekdos FP 56-J 30 Kg (65 lb)
Tekdos FP 56-L 50 Kg (110 lb)

ATEX II 2G/D EEx de IICT4



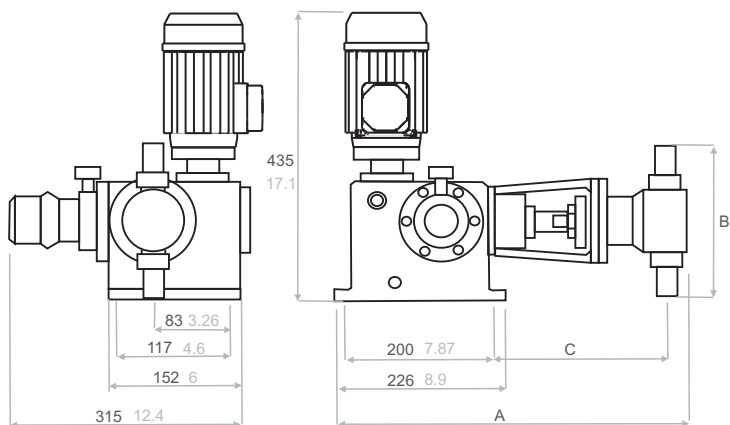
DIMENSIONS

TEKDOS FP 56-J



Ø PLUNGER	P5	P8	P13	P22	P32	P40
mm						
A	285	285	285	300	300	345
B	142	142	142	146	151	240
C	135	135	135	150	150	183
inch						
A	11.2	11.2	11.2	11.8	11.8	13.6
B	5.6	5.6	5.6	5.7	5.9	9.5
C	5.6	5.3	5.3	5.9	5.9	7.2

TEKDOS FP 56-L



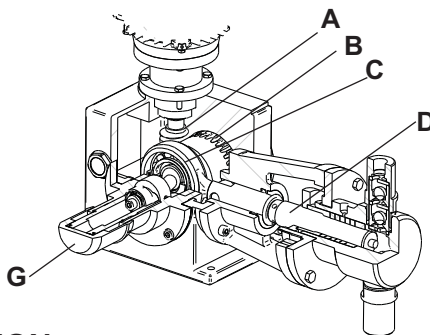
Ø PLUNGER								
	P5	P8	P11	P16	P22	P32	P46	P64
mm								
A	446	446	446	446	483	483	491	493
B	141	141	141	141	151	230	230	239
C	214	214	214	214	239	239	247	241
inch								
A	17.5	17.5	17.5	7.5	19	19	19.3	19.4
B	5.5	5.5	5.5	5.5	5.9	9	9	9.4
C	8.4	8.4	8.4	8.4	9.4	9.4	9.7	9.5

4.- OPERATION



The rotational motion of the motor is transmitted to the gear box by means of a flexible coupling. The gear box consists of two major components, the pinion (**A**) and the ring gear (**B**). The ring gear is linked to an axis with variable eccentric which by means of a connecting rod (**C**), pushes and returns alternatively the plunger (**D**).

While the pump is running the stroke length can be regulated by the flow regulator knob (**G**). A non-lost-motion mechanism with variable accentric regulation produces a high accuracy dosing. It increase or reduce the stroke, lenght changing the injection flow. The dosing flow can be adjusted between 0% and 100%.



5.- INSTALLATION

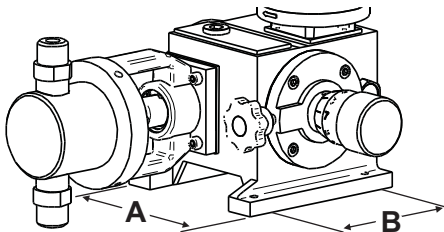
GENERALITIES

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.

	TEKDOS FP 56-J		TEKDOS FP 56-L	
	mm	in	mm	in
A	122	4.8	117	4.61
B	118	4.65	200	7.87



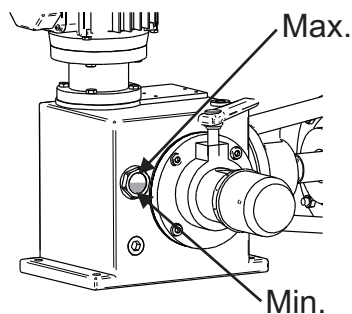


BLOCK

Fill the pump with the SAE oil 80W90 being supplied (or similar oil), up to the level shown on the screen.

Oil list:

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
CATROL HYPOYC
GULF GEAR MP SAE 80W 90
ELF TRANSGEAR HD 80W-90



ELECTRICAL CONNECTION



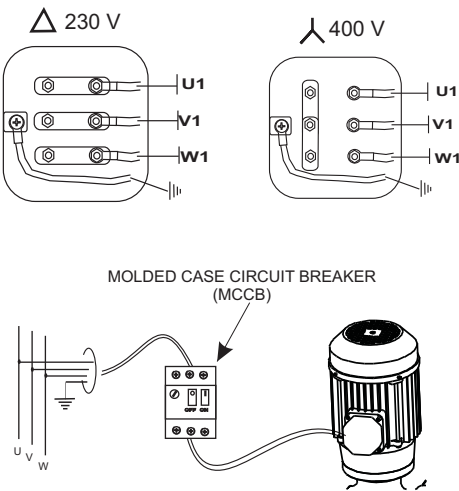
The electric protection of the motor must be installed and adjusted following its nominal intensity (overloaded switch disjuntor). (See wiring).

A disconnection dispositive must be installed in case of emergency.

The equipment must be protected to avoid untimely sudden starts.

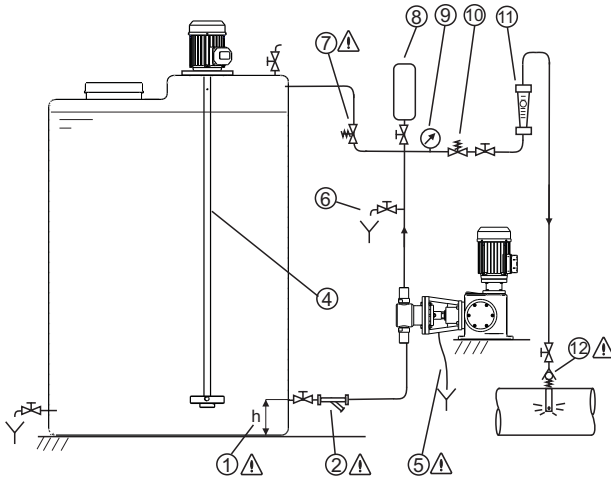
THREE-PHASE CONNECTION (50/60 Hz)

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.





Installation examples



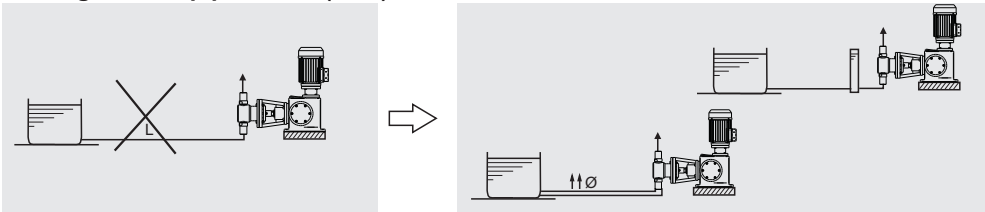
- ⚠ ① Avoid suctioning the undiluted particles from the bottom of the tank.
- ⚠ ② Filter. It is important to install a filter (150 micron) in the suction pipe.
- ④ Agitator
- ⚠ ⑤ Make sure to collect any liquid leakage from the cylinder's vent/drain hole in a proper container.
- ⑥ Prime valve / drain 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

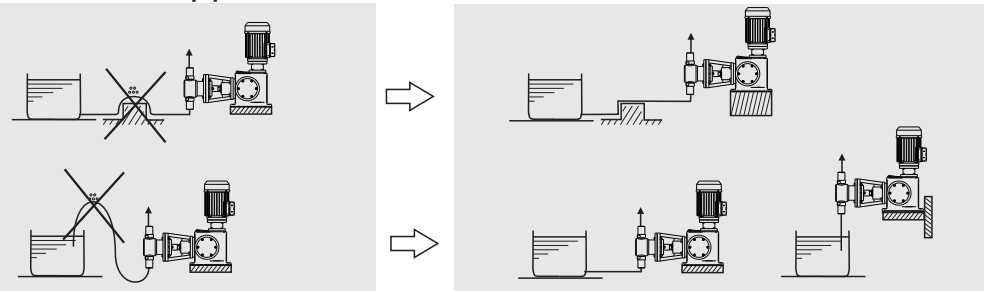


SUCTION PIPE

⚠ Long suction pipe: $L > 2\text{m}$ (6.5ft)

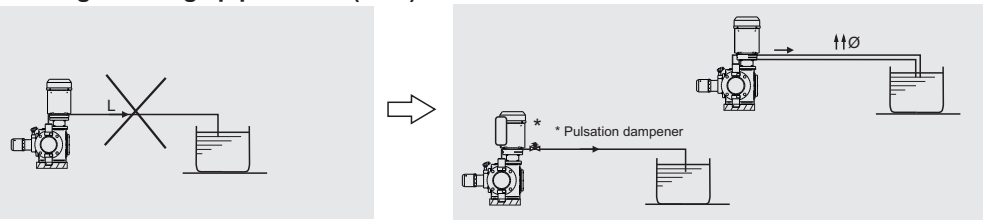


⚠ Air in suction pipe

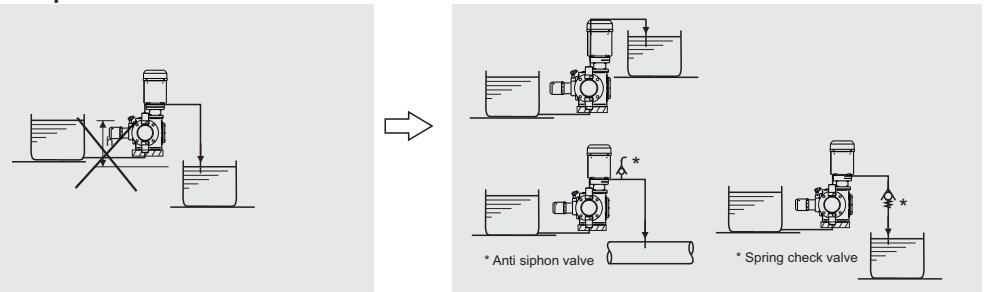


DISCHARGE PIPE

⚠ Long discharge pipe: $L > 5\text{m}$ (16 ft)



⚠ 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

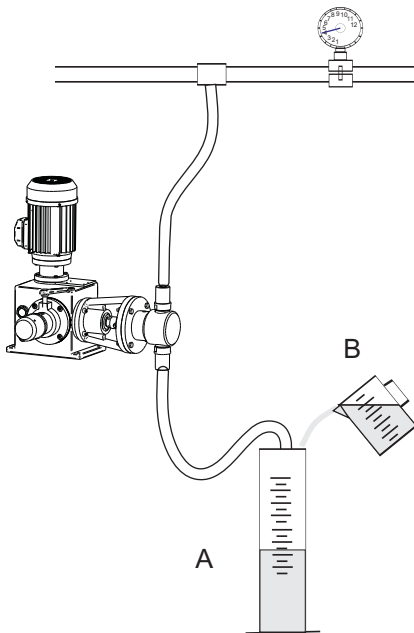


Through the micrometric regulator ,we will adjust the dosing flow from 0 to 100% depending on the wished value. It is not advisable a regulation under 10%.

In order to check the dosing flow:

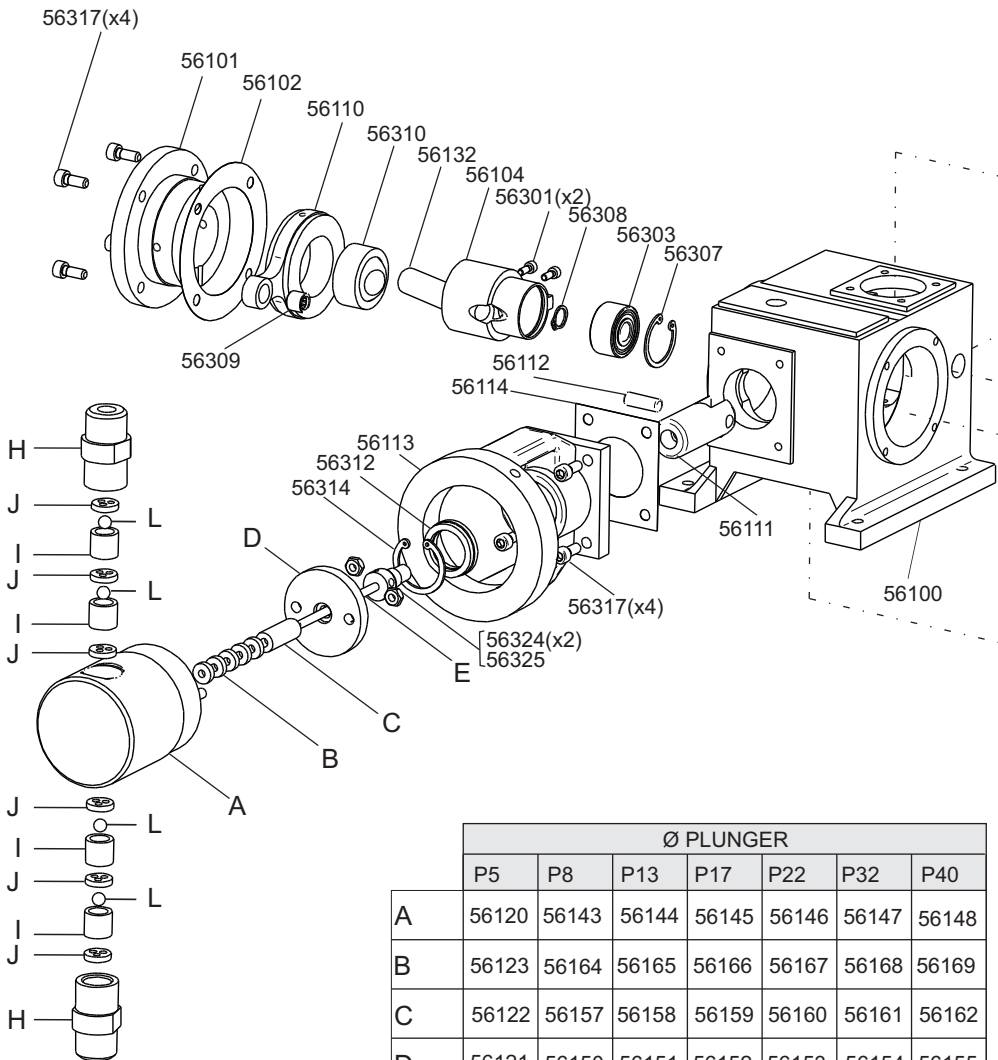
- 1.- Prime the pump immersing the suction pipe in a graduated receptacle (A).
- 2.- Mark in the receptacle the liquid level.
- 3.- Start up the pump and pour a known volume (V) of measured liquid in a second receptacle (B).
- 4.- Measure the time (t) that goes between the start up of the pump and the precise instant in which the liquid reaches the level of the mark receptacle A.
- 5.- The dosed flows corresponds to:

$$Q(l/h) = V \text{ (liters)} / t \text{ (seconds)} \times 3600$$

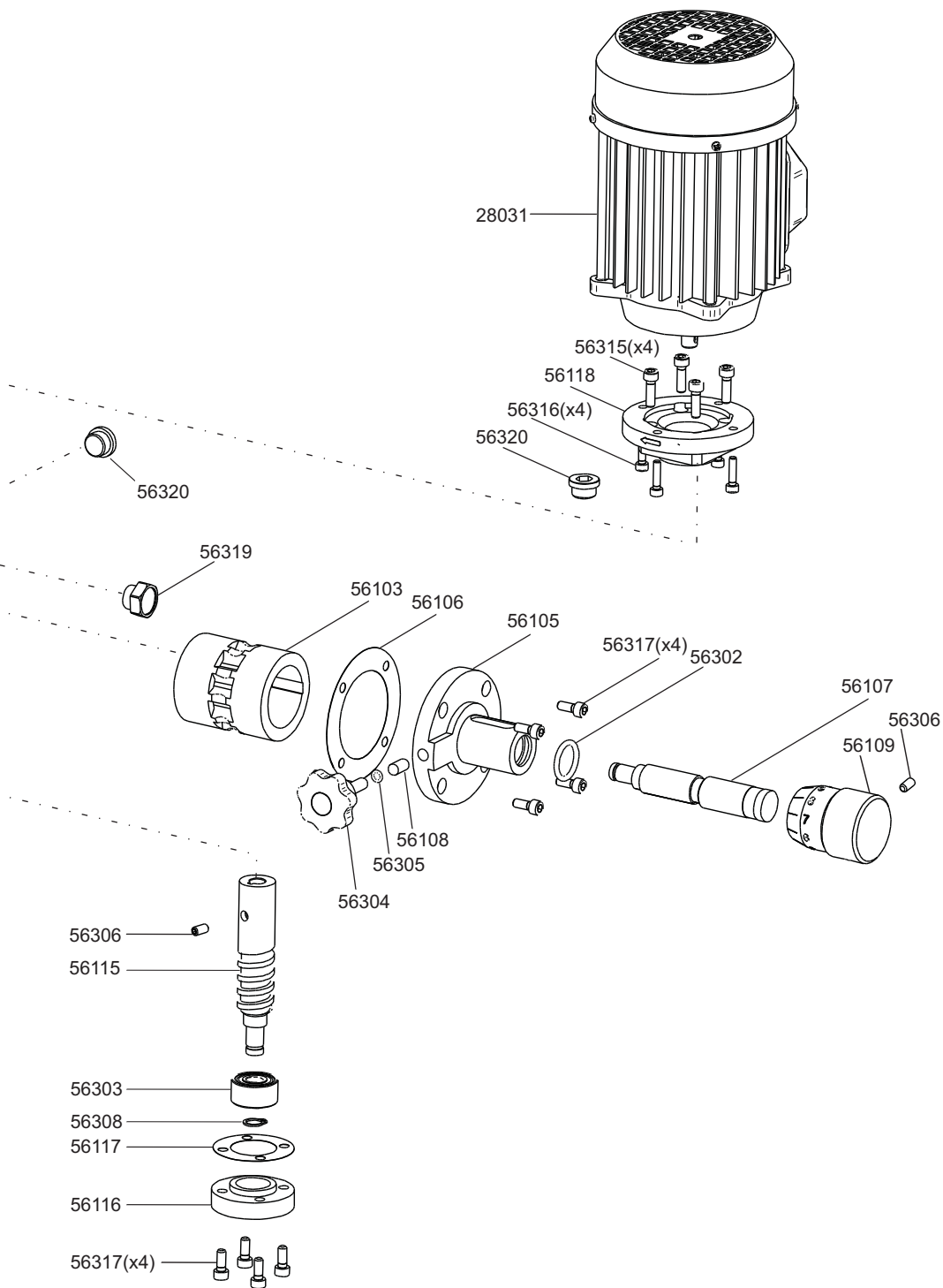


7.- MAINTENANCE

TEKDOS FP 56-J



	Ø PLUNGER						
	P5	P8	P13	P17	P22	P32	P40
A	56120	56143	56144	56145	56146	56147	56148
B	56123	56164	56165	56166	56167	56168	56169
C	56122	56157	56158	56159	56160	56161	56162
D	56121	56150	56151	56152	56153	56154	56155
E	56119	56136	56137	56138	56139	56140	56141



LIST OF PARTS TEKDOS FP 56-J



CODE	DESCRIPTION	UNITS
28031	Electric motor 185w (0,25Hp) 3ph T63 B14	1
56100	Block Tekdos FP-J	1
56101	Block lid FP-J	1
56102	Block lid seal FP-J	1
56103	Ring gear FP-J	1
56104	Crankshaft FP-J	1
56105	Regulator support FP-J	1
56106	Regulator support seal FP-J	1
56107	Regulator shaft FP-J	1
56108	Regulation cylinder lock FP-J	1
56109	Regulator knob FP-J	1
56110	Connecting rod FP-J	1
56111	Rod FP-J	1
56112	Piston pin FP-J	1
56113	Rod guide FP-J	1
56114	Rod guide seal FP-J	1
56115	Pinion FP-J	1
56116	Pinion lid FP-J	1
56117	Pinion lid seal FP-J	1
56118	Motro flange FP-J	11
56300	Wedging piece 3x8x7	1
56301	Screw M4x10 Din912 8.8	2
56302	Oring 21,82x3,53 NBR	1
56303	Bearing 3201	2
56304	Regulation locking knob FP-J	1
56305	Oring 5,28x1,78 NBR	1
56306	Screw M6x12 Din912 A2	2
56307	Retaining ring I-32	1
56308	Retaining ring E-12	2
56309	Bearting Hk0810	1
56310	Ball joint SS16 FP-J	1
56311	Screw M8x20 Din 912	1
56312	Rod seal 25x35x7,3	1
56314	Retaining ring I-35	1
56315	Screw M6x20 Din912 8.8	4
56316	Screw M5x20 Din912 8.8	4
56317	Screw M6x15 Din912 8.8	16
56318	Washer 22x32x0,2	1
56319	Oil peephole FP-J	1
56320	Oil plug FP-J	2
56321	Oring 10,77x2,62	1



56322	Screw M6 packing seal	2
56323	Screw M8 packing seal A2	-
56324	Nut M6 Din934 A2	2
56325	Nut M8 Din934 A2	-

VALVES 1/4" (Ø8 - Ø32)

H	56124	Connector 1/4"	2
I	56126	Ball seat 1/4"	4
J	56128	Sealing disc 1/4"	6
K	56130	Spring valve 1/4"	-
L	56326	Ball D8 1/4"	4

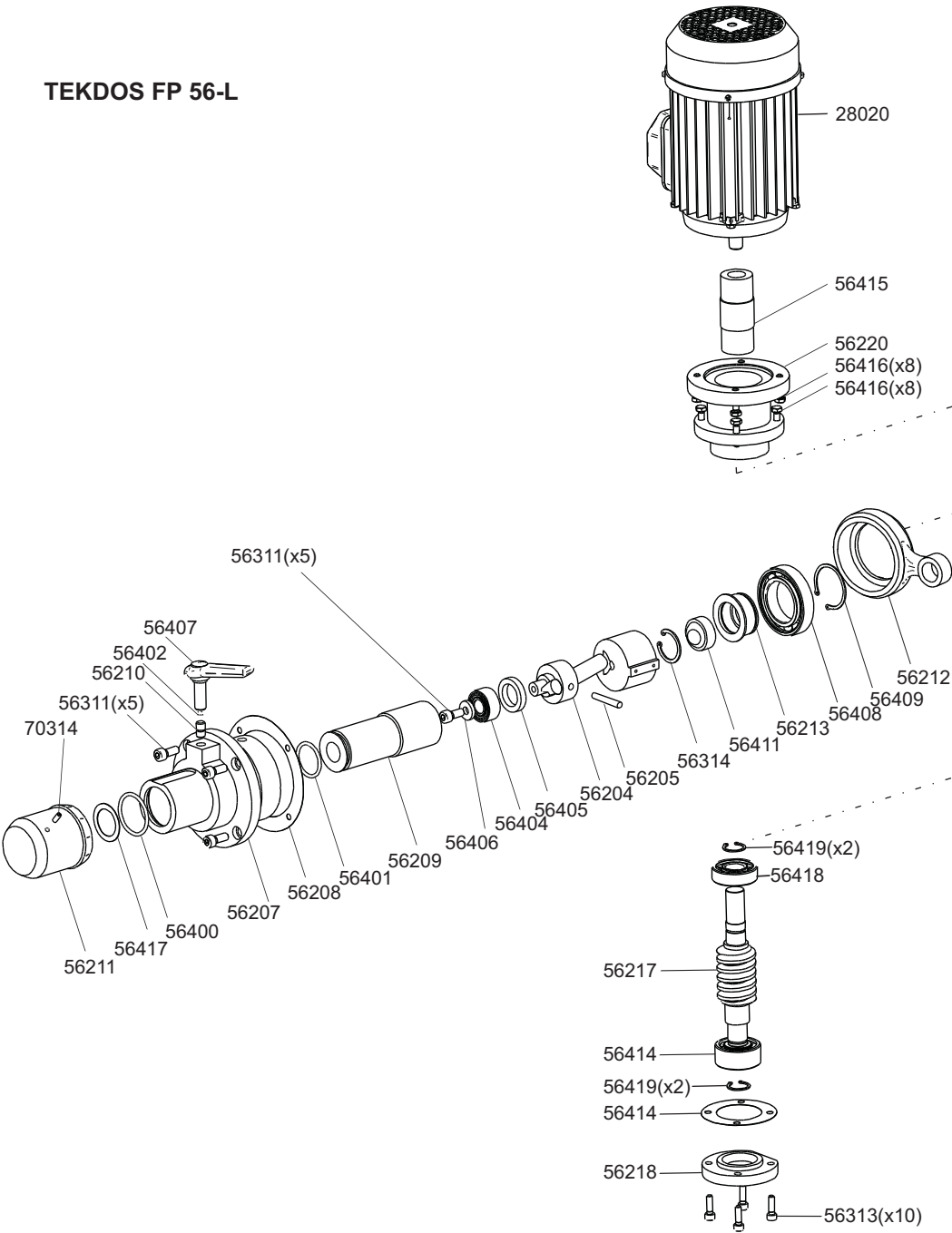
VALVES 1/2" (Ø40)

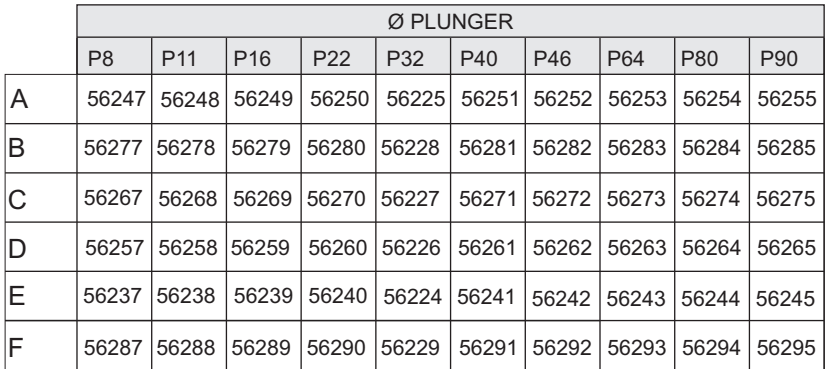
H	56125	Connector 1/2"	2
I	56127	Ball seat 1/2"	4
J	56129	Sealing disc 1/2"	6
K	56131	Spring valve 1/2"	-
L	56327	ball D18 1/2"	4

HEAD Ø5, Ø8, Ø13, Ø17, Ø22, Ø32, Ø40

A	Cylinder	1
B	Packing seal	4
C	Ring packing seal	1
D	Pressure disc packing seal	1
E	Piston	1

TEKDOS FP 56-L





LIST OF PARTS TEKDOS FP 56-L



CODE	DESCRIPTION	UNITS
56200	Block Tekdos FP-L	1
56201	Tekdos FP-L block lid	1
56313	Screw M6x20 Din912 8.8	6
56202	Tekdos FP-L block lid seal	1
56203	Ring gear Tekdos FP-L	1
56204	Crankshaft FP-L	3
56205	Pin D6xD7x52	1
56206	Wedging piece 10x8x37,5	1
56301	Screw M4x10 Din912 8.8	2
56207	Regulator support FP-L	1
56311	Screw M8x20 Din912 8.8	4
56208	Regulator support seal FP-L	1
56400	Oring 44,04x3,53 NBR	1
56404	Bearing 3202	1
56405	Bearing nut lock	1
56406	Screw M8x15 bearing lock	1
56209	Regulator shaft FP-L	1
56401	Oring 36,09x3,53	1
56407	Regulation locking knob	1
56210	Cylinder for regulation lock	1
56402	Oring 6,07x1,78	1
56211	Regulator knob FP-L	1
70314	Screw M6x12 Din913 A2	2
56212	Connecting rod FP-L	1
56408	Bearing 6009	1
56214	Retaining ring FP-L	1
56410	Bearing DHK1516	1
56213	Ball-joint ring FP-L	1
56411	Ball-joint ICO GE17GS	1
56314	Retaining ring I-35 DIN472	1
56409	Retaining ring E-45 Din471	1
56214	Rod Fp-L	1
56215	Piston pin FP-L	1
56216	Rod guide FP-L	1
56412	Rod seal protector 40x50x5	1
56413	Rod seal 40x50x7,3	1
61311	Screw M8x25 Din912 A2	4
56235	Rod guide seal FP-L	1
56217	Pinion FP-L	1
56414	Bearing 3204	1
56218	Pinion lid FP-L	1
56219	Pinion lid seal FP-L	1
56317	Screw M6x15 Din 912 8.8	4
56415	Motor coupling FP-L	1
56220	Motor flange 0,37 Kw FP-L	1



56416	Scew M6x25 Din933 8.8	8
28020	Electric motor 0,37Kw (0,5Hp) 3ph T71 B14	1
56417	Washer PS 30x40x0,1	1
56221	Rod guide medium FP-L	1
56222	Motor flange 0,75Kw	1
56418	Bearing UN2004EC	1
56419	Retaining ring E-20 Din471	2
56223	Rod guide large FP-L	1
56420	Oil peephole FP-L	1
56421	Oil plug FP-L	2
56422	Oring 10,77x2,62	2
56423	Screw M8x35 Din912 A2	4
56424	Screw M8 packing seal A2	2
56425	Nut M8 Din934 A2	2

VALVES 1/4" (Ø8, Ø11, Ø16)

H	56124	Connector valve 1/4"	2
I	56326	Ball 1/4"	4
J	56126	Ball seat 1/4"	4
K	56128	Sealing disc valve 1/4"	6
L	56130	Spring valve 1/4"	-

VALVES 1/2" (Ø22, Ø32, Ø40, Ø46)

H	56125	Connector valve 1/2"	2
I	56327	Ball 1/2"	4
J	56127	Ball seat 1/2"	4
K	56129	Sealing disc valve 1/2"	6
L	56131	Spring valve 1/2"	-

VALVES 1" (Ø64)

H	56230	Connector valve 1"	2
I	56231	Ball 1"	4
J	56232	Ball seat 1"	4
K	56233	Sealing disc valve 1"	6
L	56234	Spring valve 1"	-

VALVES 1 1/4" (Ø80, Ø90)

H	56296	Connector valve 1 1/4"	2
I	56297	Ball 1 1/4"	4
J	56298	Ball seat 1 1/4"	4
K	56299	Sealing disc valve 1 1/4"	6
L	56425	Spring valve 1 1/4"	-

HEAD Ø8, Ø11, Ø16, Ø22, Ø32, Ø40, Ø46, Ø64, Ø80, Ø90

A	Cylinder	1
B	Packing seal	5
C	Pressing ring	1
D	Pressing disc	1
E	Piston	1
F	Packing seal ring	1



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 packing plunger head 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 voltmeter 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 suction pipe length - Reduce speed through an inverter - Use a less viscous liquid
PUMP TRICKLES LIQUID THE BACK PART OF THE CYLINDER	DAMAGED SEALS DAMAGED PISTON	- Add just the two nuts on the back of the cylinder - Change seals - Change piston
PUMP TRICKLES OIL THE BACK PART OF THE CYLINDER	DAMAGED BELLOWS	- Change bellows
PUMP LEAKS OIL THROUGH REGULATOR	DAMAGED REGULATOR O'RINGS	- Change o'rings

EC CONFORMITY DECLARATION



I.T.C S.L..
Mar Adriàtic, 1
Polígono Torre del Rector
08130 Santa Perpètua de Mogoda

Declares that all models TEKDOS FP products, identified by a serial number and year of manufacture, strictly fulfill 2006/42/CE Governing Body, 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



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.

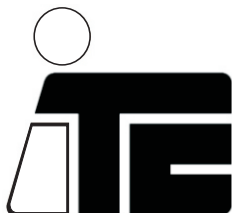
The warranty document with sales date and shop stamp, or an invoice copy must be sent with the equipment.

MODEL

Sales date and shop stamp

SERIAL #

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