

# Positive displacement plunger dosing pump

## Type A-I and AP-A I

### FEATURES

PDP series positive displacement plunger dosing pump are manufactured according to API standard 675.

Multiplex drive units with different performances can be coupled between them, independently from the size and stroke number.

Stroke adjustment can be carried with the pump at rest or in operation.

Accuracy is better than 1% from 10 to 100% of maximum output.

Lower NPSH requires with normal operating conditions in function of the head type.

### PUMPING HEADS

Pumping heads are made in standard execution:

S.S. 316 or PVC.

A wide range of other materials like HASTELLOY, ALLOY, PTFE, PVDF, PP are according to the liquid to be dosed.

Piston gaskets are of the lip type design and are available in a wide range of materials ( FPM, EPDM, SILICONE, ADIPRENE).

Liquid handled maximum temperature

- 90°C with S.S. 316 pumps heads.
- 40°C with PVC pump heads.

### PLUNGERS

Are made in S.S. 316 or Ceramics:

### SUCTION AND DISCHARGE CONNECTIONS

Normally are threaded but they can be supplied also flanged.

All the pumps have a ball valve standard

and on the smaller plunger are installed double check valves to improve precision.

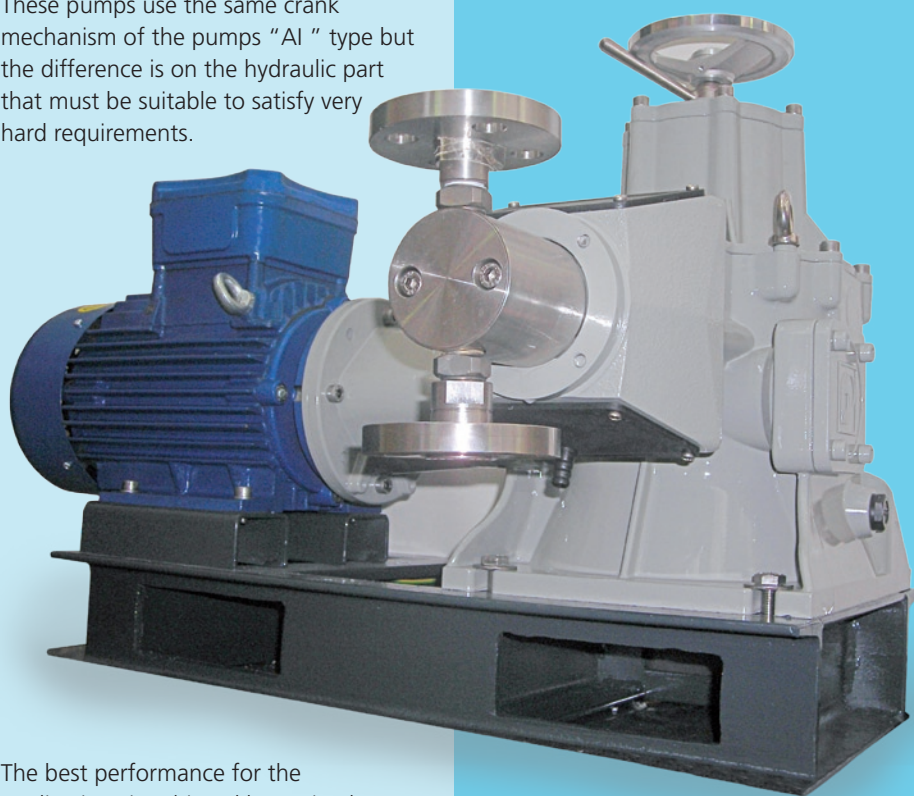
### STROKE ADJUSTMENT

Stroke adjustment can be carried out:

- Manual: by a linear micrometer crew.
- Electrical: by servo motor with 4-20 mA signal or upon request interface PROFIBUS or other BUS
- Pneumatic: by pneumatic servo control with signal from 3 to 15 PSI.

### HIGH PRESSURE EXECUTION

These pumps use the same crank mechanism of the pumps "AI " type but the difference is on the hydraulic part that must be suitable to satisfy very hard requirements.



The best performance for the applications is achieved by optimal section of plunger material and seal design.

# PDP Series

## Type AP-A I 250



### EXECUTION STANDARD MATERIAL

EXECUTION	32	41
Head	S.S. 316L	S.S. 316L
Piston	S.S. 420 Temp.	CERAMIC
Gasket	COT+NBR	COT+NBR
Valve seat	S.S. 316L	S.S. 316L
Valve ball	S.S. 316L	S.S. 316L
Valve gasket	FPM	FPM

Other material are available according to the liquid to be dosed.

Pump type	Reducer ratio			Capacity				Max Press. Kg/cm <sup>2</sup>			Connections			Piston Diam.
	(*)	SPM		L/1'		L/h		S.S.316			Thread.	Flanged		ø mm
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	0.55 Kw	0.75 Kw	1.1 Kw		UNI	ANSI	
AP-A I 250 - 8	I	36	43	0.04	0.044	2.2	2.64	250	//	//	1 / 2 "	15	1 / 2 "	8
	F	58	70	0.06	0.070	3.5	4.2							
	C	100	120	0.10	0.120	6	7.2							
	B	116		0.12		7								
AP-A I 250 - 12	F	58	70	0.13	0.160	8	9.6	250	//	//	1 / 2 "	15	1 / 2 "	12
	C	100	120	0.23	0.280	14	16.8							
	B	116		0.28		17								
AP-A I 250 - 16	F	58	70	0.27	0.320	16	19.2	224	//	//	1 / 2 "	15	1 / 2 "	16
	C	100	120	0.45	0.540	27	32.4	179	224	//				
	B	116		0.52		31		153	209	224				
AP-A I 250 - 22	F	58	70	0.50	0.600	30	36.0	118	//	//	1 / 2 "	15	1 / 2 "	22
	C	100	120	0.85	1.020	51	61.2	94	118	//				
	B	116		1.00		60		81	110	118				
AP-A I 250 - 25	F	58	70	0.65	0.780	39	46.8	91	//	//	1 / 2 "	15	1 / 2 "	25
	C	100	120	1.10	1.320	66	79.2	73	91	//				
	B	116		1.28		77		63	85	91				
AP-A I 250 - 30	F	58	70	0.98	1.180	59	70.8	63	//	//	1 / 2 "	15	1 / 2 "	30
	C	100	120	1.68	2.020	101	121.2	50	63	//				
	B	116		1.95		117		43	59	63				
AP-A I 250 - 35	F	58	70	1.33	1.600	80	96.0	46	//	//	1 / 2 "	15	1 / 2 "	35
	C	100	120	2.28	2.740	137	164.4	37	46	//				
	B	116		2.67		160		32	43	46				

(\*)1) Piston's strokes number during 1 minute with 4 poles installed motor (1400 rpm)

I = Reducer ratio 1 : 38 = 36 strokes at 50 Hz / 43 strokes at 60 Hz

F = Reducer ratio 1 : 24 = 58 strokes at 50 Hz / 70 strokes at 60 Hz

C = Reducer ratio 1 : 14 = 100 strokes at 50 Hz / 120 strokes at 60 Hz

B = Reducer ratio 1 : 12 = 116 strokes at 50 Hz / 140 strokes at 60 Hz (not suitable)

(\*)2) The indicated capacity value is subject to changes due to the working pressure, the dosed liquid, the viscosity and the installation asset.

# Positive displacement plunger dosing pump

## Type AP-A I 350



Pump type	Reducer ratio			Capacity				Max Press. Kg/cm <sup>2</sup>				Connections			Piston Diam.
	(*)	SPM		L/h'		L/h		S.S.316				Thread.	Flanged		ø mm
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	1.1 kW	1.5 kW	2.2 kW	3 kW	ø G.m.	UNI	ANSI	
AP-A I 350 - 16	F	51	61	0.33	0.390	19.5	23.4	250	//	//	//	1 / 2 "	15	1 / 2 "	16
	C	90	108	0.57	0.680	34	40.8	250	//	//					
	B	103	124	0.65	0.780	39	46.8	246	250	//					
	A	121		0.75		45		210	250	//					
AP-A I 350 - 22	F	51	61	0.62	0.740	37	44.4	236	//	//	//	1 / 2 "	15	1 / 2 "	22
	C	90	108	1.08	1.300	65	78.0	149	204	236					
	B	103	124	1.23	1.480	74	88.8	130	178	236					
	A	121		1.45		87		111	151	222					
AP-A I 350 - 25	F	51	61	0.80	0.960	48	57.6	183	//	//	//	1 / 2 "	15	1 / 2 "	25
	C	90	108	1.40	1.680	84	100.8	116	158	183					
	B	103	124	1.60	1.920	96	115.2	101	137	183					
	A	121		1.88		113		86	117	172					
AP-A I 350 - 30	F	51	61	1.22	1.460	73	87.6	127	//	//	//	1 / 2 "	15	1 / 2 "	30
	C	90	108	2.12	2.540	127	152.4	80	109	127					
	B	103	124	2.43	2.920	146	175.2	70	95	127					
	A	121		2.85		171		59	81	119					
AP-A I 350 - 35	F	51	61	1.65	1.980	99	118.8	93	//	//	//	3 / 4 "	20	3 / 4 "	35
	C	90	108	2.88	3.460	173	207.6	59	80	93					
	B	103	124	3.32	3.980	199	238.8	51	70	93					
	A	121		3.88		233		43	59	87					
AP-A I 350 - 40	F	51	61	2.17	2.600	130	156.0	71	//	//	//	3 / 4 "	20	3 / 4 "	40
	C	90	108	3.77	4.520	226	271.2	45	61	71					
	B	103	124	4.33	5.200	260	312.0	39	53	71					
	A	121		5.08		305		33	45	67					
AP-A I 350 - 50	F	51	61	3.38	4.060	203	243.6	45	//	//	//	1 "	25	1 "	50
	C	90	108	5.88	7.060	353	423.6	29	39	45					
	B	103	124	6.77	8.120	406	487.2	25	34	45					
	A	121		7.95		477		21	29	43					

(\*)1) Piston's strokes number during 1 minute with 4 poles installed motor (1400 rpm)

F = Reducer ratio 1 : 27 = 51 strokes at 50 Hz / 61 strokes at 60 Hz

C = Reducer ratio 1 : 15,5 = 90 strokes at 50 Hz / 108 strokes at 60 Hz

B = Reducer ratio 1 : 13,5 = 103 strokes at 50 Hz / 124 strokes at 60 Hz

A = Reducer ratio 1 : 11,5 = 121 strokes at 50 Hz / 144 strokes at 60 Hz (not suitable)

(\*)2) The indicated capacity value is subject to changes due to the working pressure, the dosed liquid, the viscosity and the installation asset.

# PDP Series

## Correct installation and

### THE BENEFITS OF FLUID CONTROL ASSURE

- Increase efficiency and pump life.
- Decrease maintenance and operating costs.

The control of fluid dynamics is essential to ensure efficient and safe use of process systems. Uncontrolled fluid in motion can physically destroy a pumping system including the pumping, valves, meters, back pressure valves, in-line instrumentation and equipment.

### 1 FILTERS

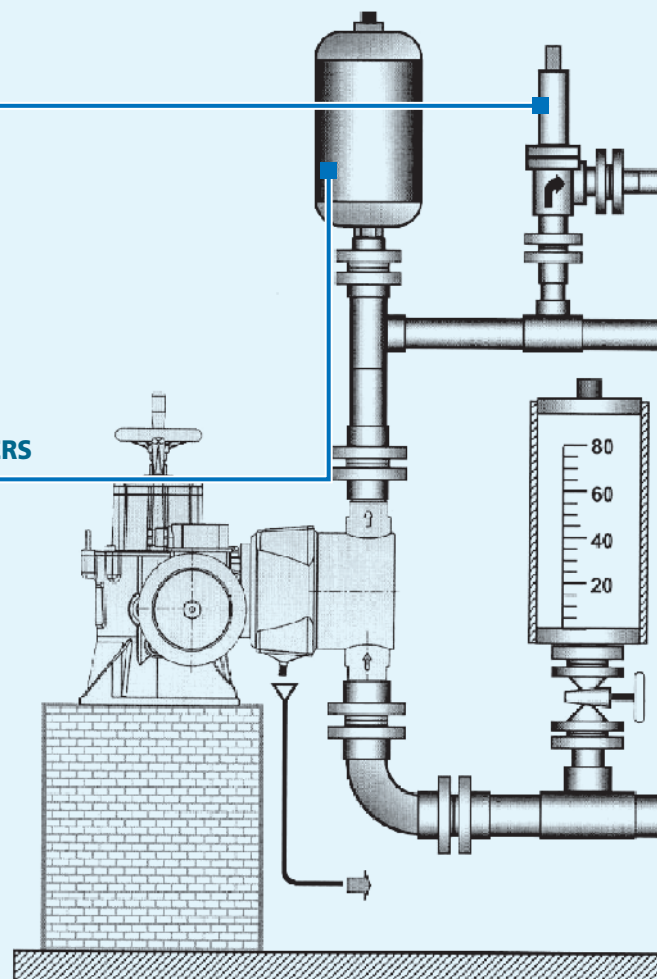
We suggest to install filters (on the suction pipe) to keep back impurities that can be presented on liquid to dose or coming from pipeline system. The use of filters assures a trouble-free dosing.

### 2 SAFETY VALVES

Safety valves are designed to protect the pump and chemical feed system from over pressure damage 'caused by defective equipment or a blockage in the chemical feed line.

### 2 SAFETY VALVES

### 4 PULSATION DAMPENERS



# Positive displacement plunger dosing pump

## accessories

### 3 BACK PRESSURE VALVES

Back pressure valves apply positive discharge pressure to a metering pump system to prevent siphoning and eliminate varying down-stream pressure.

### 4 PULSATION DAMPENER

Metering pumps have a pulsating flow. Both positive displacement pumps and quick closing valves start and stop fluids that are in motion. Positive displacement pumps derive their pumping action by capturing a given amount of fluid in a chamber and pushing it out the pump's

discharge. Each pump cycle includes a suction stroke during which fluid flow is stopped. This pumping action produces an acceleration/deceleration of the fluid, creating units of uncontrolled energy, resulting in PULSATION, observed as pressure spikes.

Pulsation dampener is required for two reasons:

- To reduce high, non - permissible pressure fluctuations.
- To create a nearly continuous flow.

