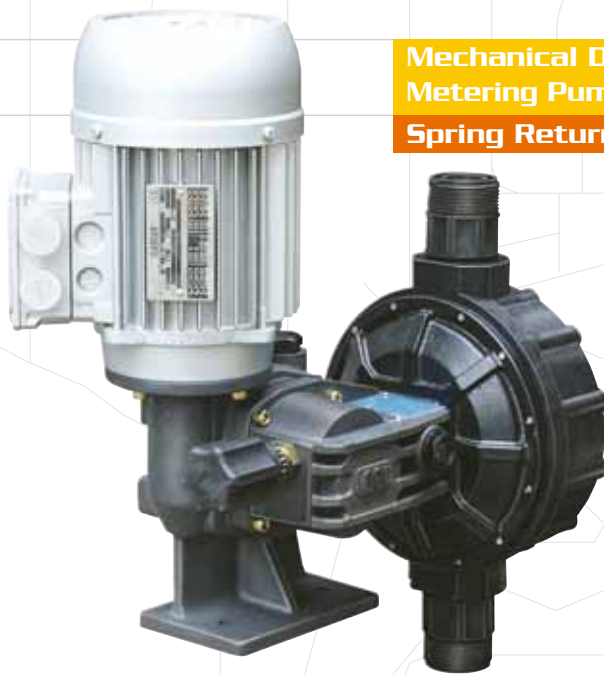


**Mechanical Diaphragm
Metering Pumps
Spring Return**



TECHNICAL DATA

STROKE LENGTH	Ø DIAPHRAGM	TYPE	STROKES / 1'	MAX FLOW RATE /h	MAX PRESS. BAR	CONNECTIONS			
						THREADED		FLANGED	
						PP	A	PP	A
50 Hz									
1	65	MD1	36	1	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD1,6	50	1,5	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD2,4	70	2,4	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD3,5	95	3,5	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD4	115	4	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD5,5	155	5,5	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD3,1	36	3	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD4,5	50	4,5	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD7,1	70	7	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD8,5	95	8,5	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD10,5	115	10	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD13	155	13	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD11	36	11	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD16	50	16	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD23	70	23	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD31	95	31	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD37	115	37	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD50	155	50	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD35	36	35	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD49	50	49	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD75	70	75	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD101	95	101	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD120	115	120	10	3/8" g.f.- BSPF	1/2" g.f.- BSPF	DN15-1/2" ANSI 150#RF	
4	108	MD155	155	155	10	3/8" g.f.- BSPF	1/2" g.f.- BSPF	DN15-1/2" ANSI 150#RF	
6	138	MD102	36	100	7	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD131	50	132	7	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD201	70	197	6	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD261	95	260	6	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD321	115	320	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	138	MD421	155	420	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD150	36	150	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD190	50	200	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD301	70	300	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD431	95	435	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD521	115	520	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	

60 Hz									
1	65	MD0,8	30	0,8	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD1,2	43	1,2	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD2,9	84	2,9	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD4,2	118	4,2	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
1	65	MD4,8	138	4,8	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD2,6	30	2,6	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD3,9	43	3,9	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD8,4	84	8,4	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD10,2	118	10,2	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	65	MD12	138	12	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD9	30	9	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD14	43	14	10	1/4" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD28	84	28	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD36	118	36	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
2	94	MD45	138	45	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD42	43	42	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD58	60	58	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD90	84	90	10	3/8" g.f.- BSPF		DN15-1/2" ANSI 150#RF	
4	108	MD121	118	121	10	3/8" g.f.- BSPF	1/2" g.f.- BSPF	DN15-1/2" ANSI 150#RF	
4	108	MD145	138	145	10	3/8" g.f.- BSPF	1/2" g.f.- BSPF	DN15-1/2" ANSI 150#RF	
6	138	MD119	43	120	7	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD158	60	158	6	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD236	84	236	6	3/4" g.f.- BSPF		DN20-3/4" ANSI 150#RF	
6	138	MD312	118	312	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	138	MD384	138	384	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD180	43	165	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD228	60	228	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD360	84	350	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	
6	165	MD519	118	515	5	1" g.f.- BSPF		DN25-1" ANSI 150#RF	

Portate:

- 1÷13 L/h (corsa 1-2mm.)
- 11÷50 L/h (corsa 2mm.)
- 35÷155 L/h (corsa 4mm.)
- 102÷521 L/h (corsa 6mm.)

Motori:

- Trifase 0,37 kW - 4 poli /poles - IP55 - CL F - IEC 34-1 - Motore standard 71-B14
- | |
|-----------------------|
| Δ - 230 V - 50 Hz |
| λ - 400 V - 50 Hz |
| Δ - 220÷290 V - 60 Hz |
| λ - 380÷500 V - 60 Hz |

- Monofase - 4 poli /poles - IP55 - CL F - IEC 38-1 - Motore standard 71-B14
- | |
|-----------------------------|
| 220÷240 V - 50 Hz - 0,37 kW |
| 110÷115 V - 50 Hz - 0,25 kW |
| 220÷230 V - 60 Hz - 0,37 kW |
| 110÷115 V - 60 Hz - 0,25 kW |

Pompa:

- Modello predisposto per pompe multiple

Materiali:

- Camera membrana: ghisa verniciata con PTFE
- Corpo meccanismo: alluminio

Peso:

- 17 Kg/Kgs

MATERIALS OF CONSTRUCTION

PARTS	PP	PP11	PP32	A
LIQUID END	PP	PP	PP	AISI 316L
VALVE GUIDE	PP	PP	PP	PP
VALVE SEAT	PVC	AISI 316L	INCOLOY 825	AISI 316L
VALVE	PIREX	AISI 316L	HASTELLOY C-276	AISI 316L
VALVE SEAL	VITON (FFM)	VITON (FFM)	VITON (FFM)	VITON (FFM)
VALVE HOUSING	PP	PP	PP	AISI 316L
DIAPHRAGM	TEFLON (PTFE)	TEFLON (PTFE)	TEFLON (PTFE)	TEFLON (PTFE)

MODEL NUMBER

KEY TO SYMBOL

PUMP MODEL

FLOW RATE /h

PP	PP CONSTRUCTION
A	AISI-316L CONSTRUCTION
PP11	PP CONSTRUCTION + AISI-316L VALVE AND SEAT
PP32	PP CONSTRUCTION + HASTELLOY C VALVE - INCOLOY 825 SEAT
Z	OBL 4÷20 mA ELECTRIC ACTUATOR
W	3÷15 PSI PNEUMATIC ACTUATOR
F	UNI-DIN FLANGED CONNECTIONS
FA	ANSI FLANGED CONNECTIONS

MD | 521 PP | F | Z

Technical data are subject to modifications without prior notice.

The **OBL MD** series are mechanical diaphragm spring return mechanism metering pumps. They combine the working characteristics of a plunger with the sealing advantages of a diaphragm pump.

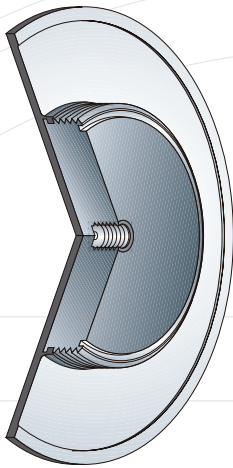
Thanks to the quality and simple design of the diaphragm, these pumps are easy-handling.



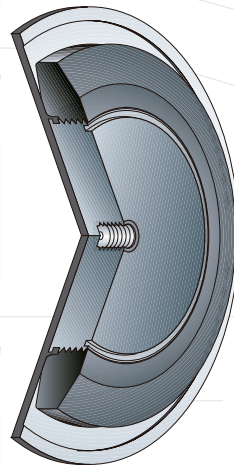
DIAPHRAGM SECTIONAL VIEW

DIAPHRAGM SECTIONAL VIEW

Sectional view without PVC support ring



Complete sectional view with PVC support ring



DIAPHRAGM STRUCTURE

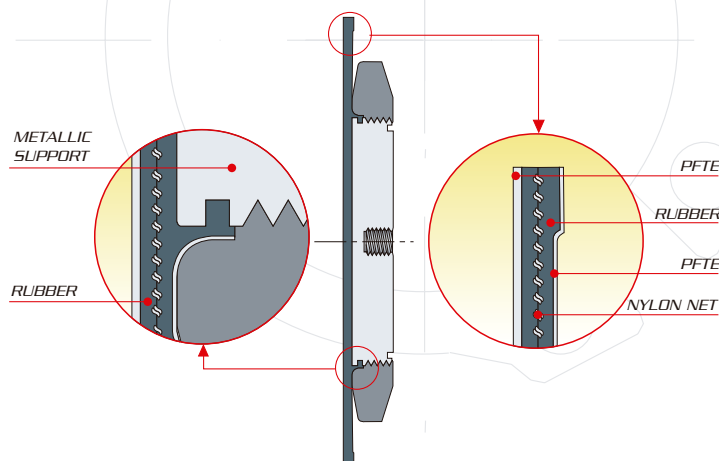
The **OBL's** unique (patented) mechanical diaphragm design ensures controlled volumetric displacement, giving plunger-like performances.

Thus the flow rate is virtually unaffected by the working pressure variations.



DETAIL OF THE BONDING BETWEEN DIAPHRAGM AND METALLIC SUPPORT

Cross-section of the diaphragm.



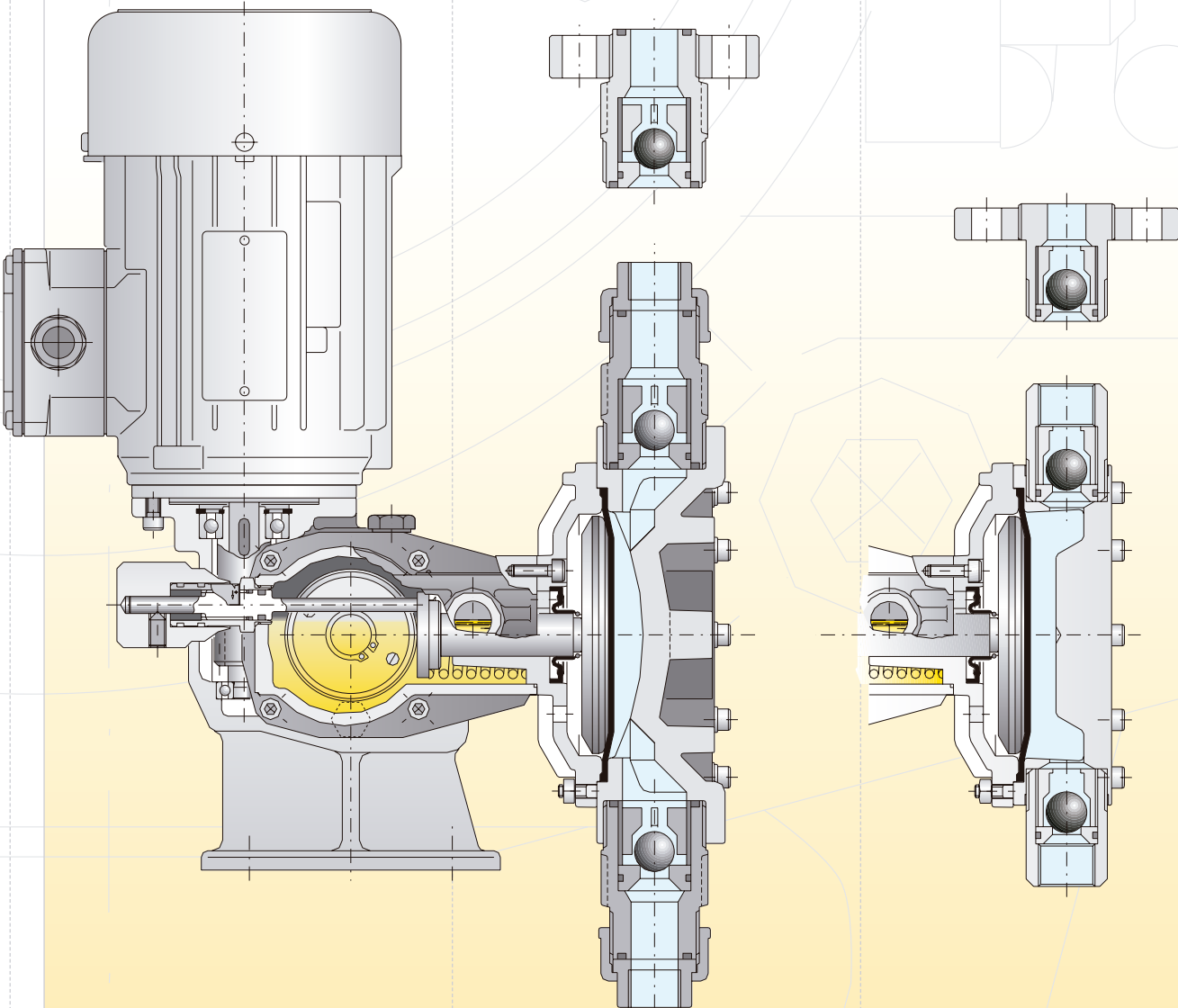
SECTIONAL VIEW

PUMP HEADS

- Double and single valve ball.
- Suction and discharge connections both threaded and flanged (on demand).
- Max. suction lift 1.5 m.w.c. (see operating manual).
- Max. temperature of dosed chemical: 45 °C.

PP head. "PP" execution.

AISI 316L head. "A" execution.



ADJUSTMENT SYSTEMS

- **Manual:** With 0-10 scale micrometer knob.
- **Electric:** Via of OBL designed type Z electrical actuator.
- **Pneumatic:** Via of a 3÷15 PSI. type W. pneumatic actuator.

STANDARD MANUAL ADJUSTMENT

- Adjustment via 0-10 scale micrometer knob.



ON DEMAND MANUAL ADJUSTMENT

- 0-100% scale dial handwheel.



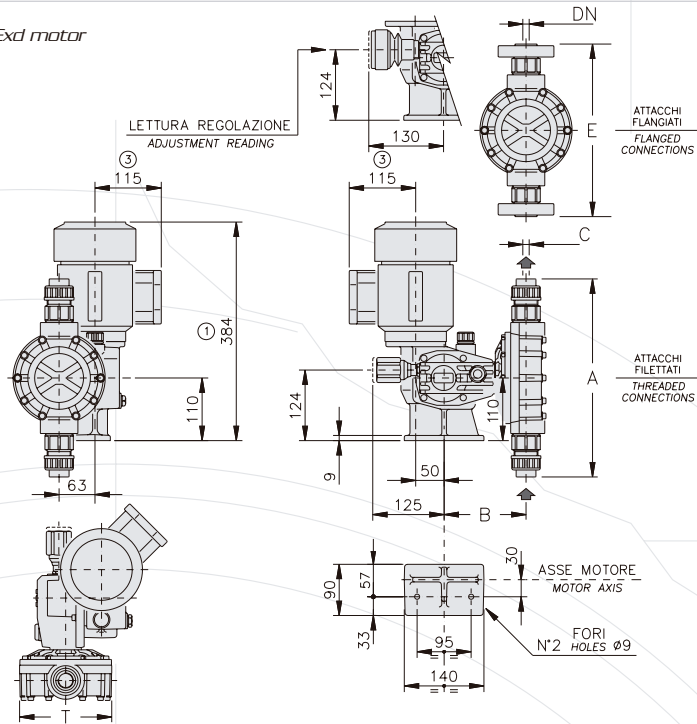
OVERALL DIMENSIONS

GENERAL FEATURES

- Diaphragm, economical, robust, compact metering pump.
- The mechanical diaphragm works both giving the swept volume, acting basically as plunger, and as separator between casing and the pumped fluid.
- Easy and minimum maintenance required, thanks to the reduced number of components.
- The **OBL's** unique (patented) mechanical diaphragm design ensures linearity between flow rate and percentage of stroke. The flow rate is virtually unaffected by the working pressure variations.
- Leak-free pump, due to **OBL's** stress-proof diaphragm.
- High working safety:
 - No external moving parts.
 - Leak-free operations.
- Max suction lift 1.5 m.w.c. (see operating manual).
- PTFE coated cast iron diaphragm chamber ensures chemical compatibility with any dosed liquid.
- Leak-free diaphragm pump head.
- Smooth and linear adjustment, either stationary or running, via micrometer knob.
- ± 2% accuracy within 10 to 100% of the nominal flow rate.

With EExd motor

1= 440
3= 145



TYPE MD		AISI 316 L							PP							DN	
50Hz	60Hz	A	Adv	B	C g.f.	E	Edv	TØ	A	Adv	B	C g.f.	E	Edv	TØ	UNI	ANSI
1+13	0,8+12	-	179	135	1/4 g.f. BSPF	-	155	90	-	222	141	1/4 g.f. BSPF	-	170	98	15	1/2"
11	9	-	204	132.5	1/4 g.f. BSPF	-	180	114	237	275	133	1/4 g.f. BSPF	201	215	117	15	1/2"
16	14	-	204	132.5	1/4 g.f. BSPF	-	180	114	237	275	133	1/4 g.f. BSPF	201	215	117	15	1/2"
23	28	166	204	132.5	3/8 g.f. BSPF	180	180	114	237	275	133	3/8 g.f. BSPF	201	215	117	15	1/2"
31	36	166	204	132.5	3/8 g.f. BSPF	180	180	114	237	275	133	3/8 g.f. BSPF	201	215	117	15	1/2"
37	45	166	204	132.5	3/8 g.f. BSPF	180	180	114	237	275	133	3/8 g.f. BSPF	201	215	117	15	1/2"
50	-	166	204	132.5	3/8 g.f. BSPF	180	180	114	237	275	133	3/8 g.f. BSPF	201	215	117	15	1/2"
35	-	181	219	132	3/8 g.f. BSPF	195	195	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
49	42	181	219	132	3/8 g.f. BSPF	195	195	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
75	58	181	219	132	3/8 g.f. BSPF	195	195	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
101	90	181	219	132	3/8 g.f. BSPF	195	195	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
120	121	200	252	133.5	1/2 g.f. BSPF	200	220	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
155	145	200	252	133.5	1/2 g.f. BSPF	200	220	129	251	289	133	3/8 g.f. BSPF	215	229	133	15	1/2"
102	-	235	-	142	3/4 g.f. BSPF	235	-	159	347	-	145	3/4 g.f. BSPF	303	-	162	20	3/4"
131	119	235	-	142	3/4 g.f. BSPF	235	-	159	347	-	145	3/4 g.f. BSPF	303	-	162	20	3/4"
201	158	235	-	142	3/4 g.f. BSPF	235	-	159	347	-	145	3/4 g.f. BSPF	303	-	162	20	3/4"
261	236	235	-	142	3/4 g.f. BSPF	235	-	159	347	-	145	3/4 g.f. BSPF	303	-	162	20	3/4"
321	312	276	-	140	1" g.f. BSPF	261	-	159	355	-	145	1" g.f. BSPF	303	-	162	25	1"
421	384	276	-	140	1" g.f. BSPF	261	-	159	355	-	145	1" g.f. BSPF	303	-	162	25	1"
150	-	307	-	149	1" g.f. BSPF	293	-	189	386	-	148	1" g.f. BSPF	336	-	194	25	1"
190	180	307	-	149	1" g.f. BSPF	293	-	189	386	-	148	1" g.f. BSPF	336	-	194	25	1"
301	228	307	-	149	1" g.f. BSPF	293	-	189	386	-	148	1" g.f. BSPF	336	-	194	25	1"
431	360	307	-	149	1" g.f. BSPF	293	-	189	386	-	148	1" g.f. BSPF	336	-	194	25	1"
521	519	307	-	149	1" g.f. BSPF	293	-	189	386	-	148	1" g.f. BSPF	336	-	194	25	1"



PP head MD metering pump, with electric actuator Z.



Threeheaded MD metering pump with PP heads. Threaded connections.