“product overview” T.O.C. II

CATALOG SECTION TABS

Introduction

Pump Installation Guide

Selection, installation, operation & accessories guidelines

When selecting, installing and operating a pump with accessories, the following guidelines should be followed:

When selecting a pump, make allowances for extra capacity and working pressure, especially if the *fluid viscosity* is higher than that of water (note: Capacities in manuals pertain specifically to water at fixed pressures).

If in doubt about the *chemical compatibility* of the liquid end materials, valves, valve balls, O-rings, suction and discharge lines and accessories, refer to the Chemical Resistance List (page 6).

For varying, *corrosive media*, the corrosiveness of which is unknown, select the highest rated PVDF (PVT) version. For *abrasive fluids*, or for use in the *food processing* industry, select the stainless steel (SS) version if compatible with the media.

The site of the metering pump should be easily accessible. The metering pump should be protected against the risk of being damaged mechanically. *High ambient temperatures, radiating heat and direct sunlight* should be avoided, if possible.

The metering pump should be provided with a *power supply* of its own. If connected in parallel to other equipment, the metering pump should be switched on and off by separate contacts, e.g. by relays or contactors. If the metering pump is paced externally, the maximum input pulse rate should match the maximum stroking rate.

All pumps are *self-priming.* The suction lift varies between 5 and 20 ft. (1.5 and 6 m), depending on the pump type (refer to Technical Data). The reduced suction lift for media having a specific gravity (density) higher than 1 can be evaluated as follows:

Effective suction lift = Rated (from "capacity data") suction lift of water in ft / S.G. of chemical

Note: Suction lift decreases with high altitude. Contact factory for pump selection.

Accessories and tips. . .

– The suction line should be. . .

- as short as possible.
- sloping upwards to eliminate vapor pockets.

– The discharge line should have. . .

- a drain valve when corrosive media is to be handled.

Installation Tip:

- Draining is achieved by means of a tee and bleed valve, or an adjustable pressure relief valve in the discharge line.

– A foot valve with ball check valve, ceramic weight and strainer facilitates. . .

- priming.
- prevents loss of prime.
- protects the liquid end against coarse impurities.

Installation Tip:

- Must install vertically, slightly above the bottom of the tank; directly under pump taking pump maximum suction lift into account.

Note: Pump capacity is effected if not installed properly or if plugged.

– Postive suction head (flooded suction)

- Recommended with media which tend to develop gases.
- Recommended with media which has high viscosity.

Installation Tips:

- Degassing pump must be used on suction lift applications, not flooded suction.
- Metering pump can be located at and fed from the foot of the supply tank.

– A ball-check-type injection valve

- Prevents back flow.

Installation Tip:

- Should be at the end of the discharge line; Teflon injection valves are not spring-loaded and must be oriented vertically into bottom of pipe for ball to seat.

Note: Pumps will not give consistent results without backpressure; our injection valve provides minimum backpressure when pumping into atmosphere.

– Backpressure valve

- Adjustable spring tension on a diaphragm.
- Ensures accurate metering and prevents siphoning.

Installation Tips:

- Must be in the discharge line or mounted onto the pump in the following cases:
  - √ When the discharge head is negligible (open-end discharge).
  - √ The metering pump discharges into a vacuum system or the positive suction head exceeds the discharge head.

Note: At least 15 psig differential pressure is required to provide repeatability of metering.

Introduction

Pump Installation Guide

– Pulsation dampener

- Bladder type cavity with pressure gauge.
- Required for very long discharge lines.
- Required when high-viscosity media are handled.
- Required when a smooth flow profile is required.

Installation Tips:

- Should be as close to the pump as possible.
- Set pressure at 90% of discharge line pressure.
- No further than 12 inches from the metering pump discharge, in direction of flow.

Note: Backpressure valve is required at point of injection, downstream of pulsation dampener. Consult ProMinent for verifications when discharge lines are greater than 100 feet.

– Pressure relief valve

- In form of an adjustable backpressure valve or 3-port relief valve.
- Protects metering pump against "dead head" (pumping against a closed valve).

Installation Tip:

- Must be close to the pump, upstream of the backpressure valve, for system protection.

Application Suggestions:

- Where the discharge line is hard piped.
- When pumping into high pressures.
- Where the discharge line has several check valves installed.

Note: Recommended for all motor-driven pumps.

– Viscous fluids

- Require valve springs to ensure balls seat properly.

Installation Tips:

- Should be spring-loaded for viscous media.
- Operation at a greater stroke length is better than operation at a higher stroking rate.
- The suction piping should be sized up by one pipe size and a pulsation dampener used.
- Select PP4/PP5 series pumps with special liquid ends for extremely high viscosities. Positive suction recommended.

– Calibration column

- Draw down, graduated cylinder.
- Useful for setting up metering pump to reach desired capacity.
- Single pump dosing package can be equipped with a self-filling calibration assembly for application where the pump is installed above the tank (eliminates chemical handling).

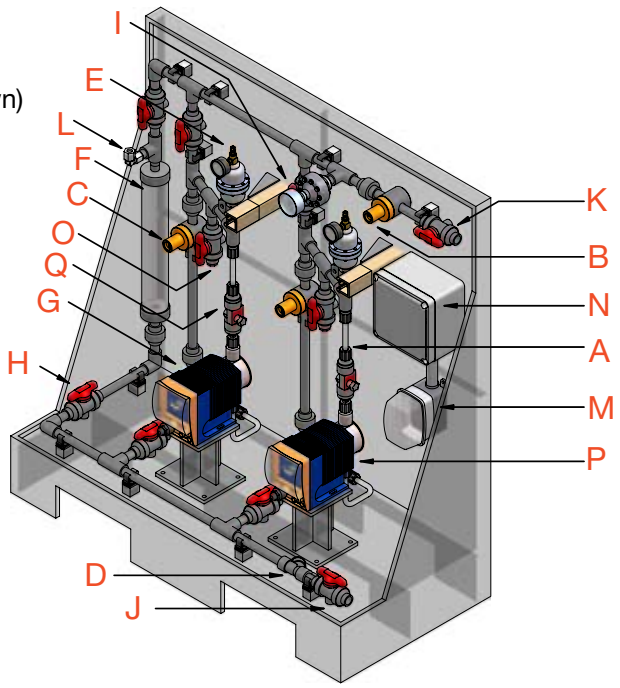
Installation Tip:

- Easy to install off the suction side of the metering pump with a ball valve to isolate from the tank.

Standard System Configuration

A: Reinforced PVC tubing
B: Backpressure/anti-siphon valve
C: Pressure relief valve
D: Location of "Y" strainer (not shown)
E: Pulsation Dampener
F: Calibration Column
G: Metering Pump
H: Ball Valve
I: Pressure Gauge
J: Product Inlet
K: Product Outlet
L: Vent to Tank
M: Duplex Receptacle*
N: Termination Box*
O: Flush Valve
P: Backup Pump
Q: Flow Monitor

* (M) & (N) are **not** standard: Items shown for layout purposes only.



Introduction

Pump Selection by Capacity

ProMinent Pump Model	Capacity GPD	gph	cc/Min	Max. PSIG	Std. MNPT Fittings (in.)	Manual Freq Adj	Pulse 1:1	Pulse M/D	Analog 4-20mA
gamma/4b 1000	1	0.05	3	145	1/4” x 3/16”	0-120	STD	OPT	OPT
beta/4a 1000	5	0.19	12	145	1/4” x 3/16”	0-180	STD	N/A	N/A
gamma/L 1000	5	0.19	12	145	1/4” x 3/16”	0-180	STD	OPT	OPT
beta/4a 1601	7	0.29	18	232	1/4” x 3/16”	0-180	STD	N/A	N/A
gamma/L 1601	7	0.29	18	232	1/4” x 3/16”	0-180	STD	OPT	OPT
beta/4a 1602	13	0.55	35	232	1/4” x 3/16”	0-180	STD	N/A	N/A
gamma/L 1602	13	0.55	35	232	1/4” x 3/16”	0-180	STD	OPT	OPT
ProMus (17) 3/8" Plunger	24	1.0	63	3500	1/4" FNPT	29-58	N/A	N/A	OPT
beta/5a 1605	26	1.1	69	232	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 1605	26	1.1	69	232	1/2” x 3/8”	0-180	STD	OPT	OPT
gamma/L 1005	26	1.1	69	145	1/2” x 3/8”	0-180	STD	OPT	OPT
beta/4a 1005	26	1.1	69	145	1/2” x 3/8”	0-180	STD	N/A	N/A
ProMus (17) 7/16" Plunger	33	1.38	87	3500	1/4" FNPT	29-58	N/A	N/A	OPT
beta/5a 1008	43	1.8	114	145	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 1008	43	1.8	114	145	1/2” x 3/8”	0-180	STD	OPT	OPT
beta/4a 0708	46	1.9	120	101	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 0708	46	1.9	120	101	1/2” x 3/8”	0-180	STD	OPT	OPT
ProMus (17) 3/8" Plunger	59	2.4	151	3500	1/4" FNPT	29-138	N/A	N/A	OPT
beta/5a 0713	70	2.9	183	101	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 0713	70	2.9	183	101	1/2” x 3/8”	0-180	STD	OPT	OPT
ProMus (30) 5/8" Plunger	72	3	189	2080	1/4" FNPT	29-58	N/A	N/A	OPT
delta 1612	77	3.2	202	232	1/2” x 3/8”	0-200	STD	OPT	OPT
ProMus (17) 7/16" Plunger	80	3.3	208	3500	1/4" FNPT	29-138	N/A	N/A	OPT
ProMus (30) 13/16" Plunger	91	3.8	240	1230	3/8" FNPT	29-43	N/A	N/A	OPT
beta/5a 0420	108	4.5	284	58	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 0420	108	4.5	284	58	1/2” x 3/8”	0-180	STD	OPT	OPT
Sigma/1 HM 12017	124	5.2	334	145	1/2”	0-88	STD	OPT	OPT
delta 1020	127	5.3	334	145	1/2” x 3/8”	0-200	STD	OPT	OPT
Sigma/1 HM 10022	164	6.8	434	145	1/2”	0-88	STD	OPT	OPT
ProMus (30) 5/8" Plunger	173	7.2	454	2080	1/4" FNPT	29-138*	N/A	N/A	OPT
delta 730	190	7.9	498	102	1/2” x 3/8”	0-200	STD	OPT	OPT
beta/5a 0232	202	8.4	530	29	1/2” x 3/8”	0-180	STD	N/A	N/A
gamma/L 0232	202	8.4	530	29	1/2” x 3/8”	0-180	STD	OPT	OPT
Sigma/1 HM 12035	266	11.1	700	145	1/2”	0-172	STD	OPT	OPT
delta 450	317	13.2	833	58	1/2"	0-200	STD	OPT	OPT
Sigma/1 HM 10044	336	14	884	145	1/2”	0-172	STD	OPT	OPT
Sigma/2 HM 12050	382	15.9	1003	145	1/2”	0-87	STD	OPT	OPT
delta 280	506	21.1	1331	29	1/2"	0-200	STD	OPT	OPT
ProMus (30) 1-1/8" Plunger	506	21.1	1331	640	3/8" FNPT	29-115**	N/A	N/A	OPT
ProMus (40) 1-3/4" Plunger	614	25.6	1615	265	3/4" FNPT	29-58**	N/A	N/A	OPT
Sigma/2 HM 12090	686	28.6	1804	145	3/4”	0-156	STD	OPT	OPT
Sigma/2 HM 07120	912	38	2397	100	3/4”	0-87	STD	OPT	OPT
Sigma/3 HM 120190	1445	60.2	3798	145	1”	0-124	STD	OPT	OPT
ProMus (40) 2" Plunger	1603	66.8	4214	200	3/4" FNPT	29-115**	N/A	N/A	OPT
Sigma/2 HM 07220	1673	69.7	4397	100	3/4”	0-156	STD	OPT	OPT
ProMus (40) 2-1/4" Plunger	2030	84.6	5337	160	3/4" FNPT	29-115**	N/A	N/A	OPT
Sigma/3 HM 120270	2054	85.6	5400	145	1”	0-173	STD	OPT	OPT
Sigma/2 HM 04350	2200	92.5	5833	58	1”	0-232	STD	OPT	OPT
ProMus (40) 2-1/4" Plunger	2436	101.5	6404	160	3/4" FNPT	29-138**	N/A	N/A	OPT
Sigma/3 HM 070410	3120	130	8200	100	1-1/2”	0-86	STD	OPT	OPT
Sigma/3 HM 070580	4416	184	11600	100	1-1/2”	0-124	STD	OPT	OPT
Sigma/3 HM 040830	6336	264	16670	58	1-1/2”	0-173	STD	OPT	OPT

* For capacities greater than 264 gph please consult factory
** available only with 4-20mA control (optional)
Abbreviations: STD = Standard Feature N/A = Not Available OPT = Optional M/D = multiplier/divider

Introduction

Chemical Resistance List

Resistance of liquid end materials against common chemicals **at standard temperature 68°F (20°C).** (May differ at other temperatures)

s = saturated aqueous solution
+/0 = conditional resistance
\+ = good resistance
0 = limited resistance
– = no resistance
+(x%) = good resistance to x% concentration
* = With glued fittings, please check the resistance of the glue.

n = unknown resistance
=> = refer to . . .
A.C. = any concentration
S = saturated solution
Conc. = concentrated
D = weak solution

resp. to aqueous solutions

These classifications are the results of practical experience of the manufacturers of the raw materials. Since the resistance of the materials depends also on other factors (operating conditions, surface quality, etc.), this list cannot be more than a general information for which no responsibility is accepted. It should be particularly noted that, as a rule, the aggressiveness of a mixture is different from that of its individual components. In cases of doubt, suitable tests should be performed.

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).
PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Acetaldehyde	CH_3CHO	100%	–	–	+	+	0	–	+/0	+	+
Acetamide	CH_3CONH_2	S	+	+	+	+	+	0	+	+	+
Acetic Acid	CH_3COOH	100%	–	+(50%)	+	+(70%)	+	–	0	+	+
Acetic Anhydride	$(CH_3CO)_2O$	100%	–	–	+	0	0	–	+/0	–	+
Acetone	CH_3COCH_3	100%	–	–	+	+	+	–	–	0	+
Acetophenone	$C_6H_5COCH_3$	100%	–	n	+	+	+	–	+	+	+
Acetyl Chloride	CH_3COCl	100%	–	+	0	–	–	+	–	–	+
Acetylacetone	$C_5H_8O_2$	100%	–	–	+	+	+	–	+	–	+
Acetylene Dichloride=>	Dichloroethylene										
Acetylene Tetrachloride=>	Tetrachloroethane										
Acrylonitrile	CH_2=CH-CN	100%	–	–	+	+	+	–	–	+	+
Adipic Acid	$C_6H_{10}O_4$	S	+	+	+	+	+	+	+	+	+
Allyl Alcohol	CH_2CHCH_2OH	96%	–	0	+	+	+	–	+	+	+
Aluminum Acetate	$Al(CH_3COO)_3$	S	+	+	+	+	+	+	+	+	+
Aluminum Bromide	$AlBr_3$	S	+	+	n	+	+	+	+	+	+
Aluminum Chloride	$AlCl_3$	S	+	+	–	+	+	+	+	+	+
Aluminum Fluoride	AlF_3	10%	+	+	–	+	+	+	+	+	+
Aluminum Hydroxide	$Al(OH)_3$	S	+	+	+	+	+	+	+	+	+
Aluminum Nitrate	$Al(NO_3)_3$	S	+	+	+	+	+	+	+	+	+
Aluminum Phosphate	$AlPO_4$	S	+	+	+	+	+	+	+	+	+
Aluminum Sulfate	$Al(SO_4)_3$	S	+	+	+	+	+	+	+	+	+
Ammonium Acetate	CH_3COONH_4	S	+	+/0	+	+	+	+	+	+	+
Ammonium Aluminum Sulfate	$NH_4Al(SO_4)_2$	S	+	+	+	+	+	+	+	+	+
Ammonium Bicarbonate	NH_4HCO_3	S	+	+	+	+	+	+	+	+	+
Ammonium Carbonate	$(NH_4)_2CO_3$	40%	+	+	+	+	+	+	+	+	+
Ammonium Chloride	NH_4Cl	S	+	+	–	+	+	+	+	+	+
Ammonium Fluoride	NH_4F	S	+	0	0	+	+	+	+	+	+
Ammonium Hydrogen Carbonate	NH_4HCO_3	A.C.	+	+	+	+	+	+	+	+	+
Ammonium Hydroxide	NH_4OH	S	+	+	+	+	+	–	+	+	+
Ammonium Nitrate	NH_4NO_3	S	+	+	+	+	+	+	+	+	+
Ammonium Oxalate	$(NH_4)_2C_2O_4$	S	+	+	+	+	+	+	+	+	+
Ammonium Perchlorate	NH_4ClO_4	10%	+	+	+	+	+	+	+	+	+
Ammonium Peroxodisulfate	$(NH_4)_2S_2O_8$	S	+	+	+(5%)	+	+	+	+	+	+
Ammonium Persulfate	$(NH_4)_2S_2O_8$	A.C.	+	+	+	+	+	+	+	+	+
Ammonium Phosphate	$(NH_4)_3PO_4$	A.C.	+	+	+(10%)	+	+	+	+	+	+
Ammonium Sulfate	$(NH_4)_2SO_4$	A.C.	+	+	+(10%)	+	+	+	+	+	+
Ammonium Sulfide	$(NH_4)_2S$	S	+	+	n	+	+	+	+	+	+
Amyl Alcohol	$C_5H_{11}OH$	100%	+	+	+	+	+	–	+	+	+
Aniline	$C_6H_5NH_2$	100%	–	–	+	+	+	–	+/0	+	+
Aniline Hydrochloride	$C_6H_5NH_2HCl$	S	n	+	–	+	+	+/0	+/0	+	+
Antimony Trichloride	$SbCl_3$	S	+	+	–	+	+	+	+	+	+
Aqua Regia	$3HCl+HNO_3$	100%	–	+	–	–	–	–	0	+	+
Arsenic Acid	H_3AsO_4	S	+	+	+	+	+	+	+	+	+
Barium Carbonate	$BaCO_3$	S	+	+	+	+	+	+	+	+	+
Barium Chloride	$BaCl_2$	S	+	+	–	+	+	+	+	+	+
Barium Hydroxide	$Ba(OH)_2$	S	+	+	+	+	+	+	+	+	+
Barium Nitrate	$Ba(NO_3)_2$	A.C.	+	+	+	+	+	+	+	+	+
Barium Sulfate	$BaSO_4$	A.C.	+	+	+	+	+	+	+	+	+
Barium Sulfide	BaS	A.C.	+	+	+	+	+	+	+	+	+
Beer	–	100%	+	+	+	+	+	+	+	+	+

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Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PDVF	Teflon
Benzaldehyde	C_6H_5CHO	100%	–	–	+	0	+	+	+	+	+
Benzene	C_6H_6	100%	–	–	+	0	0	0	–	+	+
Benzene Sulfonic Acid	$C_6H_5SO_3H$	10%	n	n	+	n	+	+	–	+	+
Benzoic Acid	C_6H_5COOH	S	+	+	+	+	+	+	+	+	+
Benzoyl Chloride	C_6H_5COCl	100%	–	n	0	0	0	+	+	n	+
Benzyl Alcohol	$C_6H_5CH_2OH$	100%	–	–	+	+	+	+	–	+	+
Benzyl Benzoate	$C_6H_5COOC_7H_7$	100%	–	–	+	0	+	+	–	0	+
Benzyl Chloride	$C_6H_5CH_2Cl$	90%	–	n	+	0	0	+	–	+	+
Bleach=>	Sodium Hypochlorite										
Bleaching Powder	$Ca(OCl)_2$	S	+	+	–	+	+	+	+	+	+
Borax	$Na_2B_4O_7$	A.C.	+	+	+	+	+	+	+	+	+
Boric Acid	H_3BO_3	S	+	+	+	+	+	+	+	+	+
Brine		S	+	+/0	+/0	+	+	+	+	+	+
Bromine	Br_2	100%	–	–	–	–	–	–	–	+	+
Bromine Liquid	Br_2	100%	–	–	–	–	–	–	–	+	+
Bromine Water	–	S	–	+	–	–	–	–	–	+	+
Bromo Benzene	C_6H_5Br	100%	n	n	+	0	0	0	–	+	+
Bromochloro Methane	CH_2BrCl	100%	–	–	+	0	–	n	+/0	+	+
Bromochlorotrifluoroethane	$HCClBrCF_3$	100%	–	–	+	0	0	+	–	+	+
Butanediol	HOC_4H_8OH	10%	n	+	+	+	+	0	+	+	+
Butanetroil	$C_4H_{10}O_3$	S	+	+	+	+	+	0	+	+	+
Butanol	C_4H_9OH	100%	–	+	+	+	+	0	+/0	+	+
Butyl Acetate	$CH_3COOC_4H_9$	100%	–	–	+	–	0	–	+/0	+	+
Butyl Acrylate	$C_7H_{13}O_2$	100%	–	–	+	+	+	–	–	+	+
Butyl Amine	$C_4H_9NH_2$	100%	n	n	+	+	n	–	–	0	+
Butyl Benzoate	$C_6H_5COOC_4H_9$	100%	–	–	+	0	0	+	+	n	+
Butyl Ether	$(C_4H_9)_2O$	100%	–	–	+	+	+	–	0	+	+
Butyl Mercaptan	C_4H_9SH	100%	n	n	n	n	n	+	–	+	+
Butyl Oleate	$C_{22}H_{42}O_2$	100%	n	n	+	n	n	+	+/0	+	+
Butyl Stearate	$C_{22}H_{44}O_2$	100%	0	n	+	n	n	+	–	+	+
Butylaldehyde	C_3H_7CHO	100%	–	n	+	+	+	–	+/0	n	+
Butyric Acid	C_3H_7COOH	100%	+(5%)	+(20%)	+	+	+	+	+	+	+
Calcium Acetate	$(CH_3COO)_2Ca$	S	+	+	+	+	+	+	+	+	+
Calcium Bisulfite	$Ca(HSO_3)_2$	S	+	+	+	+	+	+	+	+	+
Calcium Carbonate	$CaCO_3$	A.C.	+	+	+	+	+	+	+	+	+
Calcium Chloride	$CaCl_2$	S	+	+	–	+	+	+	+	+	+
Calcium Cyanide	$Ca(CN)_2$	S	+	+	n	+	+	+	+	+	+
Calcium Hydrogen Sulfite	$CaHSO_3$	S	+	+	+	+	+	+	+	+	+
*Calcium Hydroxide	$CA(OH)_2$	S	+	+	+	+	+	+	+	+	+
Calcium Hypochlorite	$Ca(OCl)_2$	S	+	+	–	+	0	0	+	+	+
Calcium Nitrate	$Ca(NO_3)_2$	S	+	+(50%)	+	+	+(50%)	+	+	+	+
Calcium Phosphate	$Ca_3(PO_4)_2$	S	+	+	+	+	+	+	+	+	+
Calcium Sulfate	$CaSO_4$	S	+	+	+	+	+	+	+	+	+
Calcium Sulfide	CaS	S	+	+	n	+	+	+	+	+	+
Calcium Sulfite	$CaSO_3$	S	+	+	+	+	+	+	+	+	+
Calcium Thiosulfate	CaS_2O_3	S	+	+	–	+	+	+	+	+	+
Camphor	$C_{10}H_{16}O$	100%	–	–	+	–	+	0	–	+	+
Carbolic Acid (see Phenol)	C_6H_5OH	100%	–	0	+	0	+	+	–	+	+
Carbon Disulfide	CS_2	100%	–	–	+	0	0	+	–	+	+
Carbon Tetrachloride	CCl_4	100%	0	–	+	0	–	+	–	+	+
Carbonic Acid	H_2CO_3	S	+	+	+	+	+	+	+	+	+

*** Requires flushing.**

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Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Caustic Soda=>	Sodium Hydroxide										
Chloric Acid	$HClO_3$	20%	+	+	–	+10%	–	0	0	+	+
Chlorine Dioxide Solution	ClO_2+H_2O	0.5%	0	+	–	0	0	0	–	+	+
Chloroacetic Acid	$CH_2ClCOOH$	A.C.	–	–	–	–	+	+	+	+	+
Chlorine Water	Cl_2+H_2O	S	+	+	–	0	0	+	+	+	+
Chlorobenzene	C_6H_5Cl	100%	–	–	+	0	+	+	–	+	+
Chloroethanol	$ClCH_2CH_2OH$	100%	–	–	+	+	+	–	0	0	+
Chloroethylbenzene	$C_6H_4ClC_2H_5$	100%	–	–	+	0	0	0	–	n	+
Chlorophenol	C_6H_4OHCl	100%	n	n	+	+	+	n	–	+	+
Chlorotoluene	C_7H_8Cl	100%	–	–	+	n	n	+	–	+	+
Chloroacetone	$ClCH_2COCH_3$	100%	–	–	+	n	n	–	+	n	+
Chlorobutadiene	C_4H_5Cl	100%	–	–	+	n	n	+	–	n	+
Chloroform	$CHCl_3$	100%	–	–	+	–	0	+	–	+	+
Chlorohydrin	$C_3H_7O_2Cl$	100%	n	n	+	+	+	+	0	–	+
Chloroprene=>	Chlorobutadiene										
Chlorosulfonic Acid	$SO_2(OH)Cl$	100%	–	–	–	–	–	–	–	–	+
Chrome Sulfate	$Cr_2(SO_4)_3$	S	+	+	+	+	+	+	+	+	+
Chromic Acid	H_2CrO_4	50%	–	+	+(10%)	+	0	+	–	+	+
Chromic Sulfuric Acid	$K_2CrO_4+H_2SO_4$	S	–	+	n	–	–	n	n	+	+
Citric Acid	$C_6H_8O_7$	S	+	+	+	+	+	+	+	+	+
Cobalt Chloride	$CoCl_2$	S	+	+	–	+	+	+	+	+	+
Copper II Acetate	$Cu(CH_3COO)_2$	S	+	+	+	+	+	+	+	+	+
Copper II Arsenite	$Cu_3(AsO_3)_2$	S	+	+	+	+	+	+	+	+	+
Copper II Carbonate	$CuCO_3$	S	+	+	+	+	+	+	+	+	+
Copper II Chloride	$CuCl_2$	S	+	+	+(1%)	+	+	+	+	+	+
Copper II Cyanide	$Cu(CN)_2$	S	+	+	+	+	+	+	+	+	+
Copper II Fluoride	CuF_2	S	+	+	+	+	+	+	+	+	+
Copper II Nitrate	$Cu(NO_3)_2$	S	+	+	+	+	+	+	+	+	+
Copper II Sulfate	$CuSO_4$	S	+	+	+	+	+	+	+	+	+
Cresole	$C_6H_4CH_3OH$	100%	0	0	+	+	+	+	–	+	+
Crotonaldehyde	$CH_3C_2H_2CHO$	100%	n	–	+	+	+	–	+	+	+
Cyclohexane	C_6H_{12}	100%	+	–	+	+	+	+	–	+	+
Cyclohexanol	$C_6H_{11}OH$	100%	0	+/0	+	+	+	+	–	+	+
Cyclohexanone	$C_6H_{10}O$	100%	–	–	+	+	+	–	+/0	+	+
Cyclohexyl Alcohol=>	Cyclohexanol										
Cyclohexylamine	$C_6H_{13}N$	100%	0	0	+	n	n	–	n	n	+
Decahydronaphthaline	$C_{10}H_{18}$	100%	–	+/0	n	0	0	0	–	+	+
Decalin=>	Decahydronaphthaline										
Diisononyl Phthalate	$C_{26}H_{42}O_4$	100%	–	–	+	+	+	n	n	+	+
Diacetone Alcohol	$C_6H_{12}O_2$	100%	–	–	+	+	+	–	+	+	+
Diamine Ethylene	$(CH_2NH_2)_2$	100%	n	0	0	+	+	–	+	+	+
Dibromoethane	$C_2H_4Br_2$	100%	–	–	+	–	n	+	–	+	+
Dibutyl Ether	$C_4H_9OC_4H_9$	100%	0	–	+	0	0	–	0	+	+
Dibutyl Phthalate	$C_{16}H_{22}O_4$	100%	–	–	+	0	+	+	+/0	+	+
Dibutylamine	$(C_4H_9)_2NH$	100%	n	n	+	+	+	–	–	+	+
Dichloro Acetic Acid	$Cl_2CHCOOH$	100%	–	+	+	+	+	–	+	+	+
Dichloro Benzene	$C_6H_4Cl_2$	100%	–	–	+	0	0	+	–	+	+
Dichloro Butane	$C_4H_8Cl_2$	100%	–	–	+	0	0	+	–	+	+
Dichloro Butene	$C_4H_6Cl_2$	100%	–	–	+	0	0	0	–	+	+
Dextrose	$C_6H_{12}O_6$	A.C.	+	+	+	+	+	+	+	+	+
Dichloroethane	$C_2H_4Cl_2$	100%	–	–	+	–	0	+	–	+	+
Dichloroethylene	$C_2H_2Cl_2$	100%	–	–	+	–	0	0	–	+	+
Dichloroisopropyl Ether	$(C_3H_6Cl)_2O$	100%	–	–	+	0	0	0	0	n	+
Dicyclohexylamine	$C_{12}H_{23}N$	100%	0	0	+	+	+	–	+	n	+

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PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Diethylamine	$(C_2H_5)_2NH$	100%	–	–	+	0	+	–	+	+	+
Diethylene Glycol	$C_4H_{10}O_3$	100%	+	+	+	+	+	+	+	+	+
Diethyleneglydolethyl Ether	$C_8H_{18}O_3$	100%	n	n	+	+	+	n	+/0	+	+
Diethyl Ether	$(C_2H_5)_2O$	100%	–	–	+	0	0	–	–	+	+
Diglycolic Acid	$C_4H_6O_5$	30%	+	+	+	+	+	+	n	+	+
Dihexyl Phthalate	$C_{20}H_{26}O_4$	100%	–	–	+	+	+	–	n	+	+
Diisobutylketone	$C_9H_{18}O$	100%	–	–	+	+	+	–	+	+	+
Diisopropylketone	$C_7H_{14}O$	100%	–	–	+	+	+	–	+	+	+
Dimethyl Carbonate	$(CH_3O)_2CO$	100%	n	n	+	–	+	+	–	+	+
Dimethyl Phthalate	$C_{10}H_{10}O_4$	100%	–	–	+	+	+	–	+/0	+	+
Dimethylformamide	$HCON(CH_3)_2$	100%	–	–	+	+	+	–	+	–	+
Dimethylhydrazine	$H_2NN(CH_3)_2$	100%	n	n	+	+	+	–	+	+	+
Dioctyl Phthalate	$C_6H_4(COOC_8H_{17})_2$	100%	–	–	+	+	+	–	+/0	+	+
Dioxane	$C_4H_8O_2$	100%	–	–	+	+	0	–	+/0	0	+
Dimethyl Formic Amide	$HCON(CH_3)_2$	100%	–	–	–	0	+	0	0	–	+
Disodium Hydrogen Phosphate	Na_2HPO_4	S	+	+	+	+	+	+	+	+	+
Disulfur Dichloride	S_2Cl_2	100%	+	+	+	+	+	+	–	+	+
DMF=>	Dimethylformamide										
Engine Oils		100%	n	+/0	+	+	+	+	–	+	+
Ethanol	C_2H_5OH	100%	–	+	+	+	+	–	+	+	+
Ethanol Amine	$HOC_2H_4NH_2$	100%	0	n	+	+	+	–	+/0	+	+
Ethyl Acetate	$CH_3COOC_2H_5$	100%	–	–	+	+	+35%	–	+/0	–	+
Ethyl Acrylate	$C_2H_3COOC_2H_5$	100%	–	–	+	+	+	–	+/0	0	+
Ethyl Benzene	$C_6H_5C_2H_5$	100%	–	–	+	0	0	0	–	+	+
Ethyl Benzoate	$C_6H_5COOC_2H_5$	100%	n	–	+	+	+	+	–	0	+
Ethyl Bromide	C_2H_5Br	100%	n	n	n	+	+	+	–	+	+
Ethyl Chloride	C_5H_5Cl	100%	–	–	+	–	–	+	–	+	+
Ethyl Chloroacetate	$ClCH_2COOC_2H_5$	100%	–	0	+	+	+	+	–	+	+
Ethyl Chlorocarbonate	$ClCO_2C_2H_5$	100%	n	n	n	n	n	+	–	n	+
Ethylacetylacetate	$C_6H_{10}O_3$	100%	n	–	+	+	+	+	–	+	+
Ethylacrylic Acid	C_4H_7COOH	100%	n	n	+	+	+	n	+/0	+	+
Ethylene Dibromide	$C_2H_4Br_2$	100%	–	–	+	–	0	+	–	+	+
Ethylene Dichloride	$C_2H_4Cl_2$	100%	–	–	+	–	0	+	–	+	+
Ethylene Glycol	$C_2H_4(OH)_2$	100%	+	+	+	+	+	+	+	+	+
Ethylenglycol Ethylether	$HOC_2H_4OC_2H_5$	100%	n	n	+	+	+	n	+/0	+	+
Ethylhexanol	$C_8H_{16}O$	100%	n	+/0	+	+	+	+	+	+	+
Fatty Acids	-	100%	0	0	+	+	+	+	0	+	+
Ferric Chloride	$FeCl_3$	S	+	+	–	+	+	+	+	+	+
Ferric Nitrate	$Fe(NO_3)_3$	S	+	+	+	+	+	+	+	+	+
Ferric Phosphate	$FePO_4$	S	+	+	+	+	+	+	+	+	+
Ferric Sulfate	$Fe_2(SO_4)_3$	S	+	+	0	+	+	+	+	+	+
Ferrous Chloride	$FeCl_2$	S	+	+	–	+	+	+	+	+	+
Ferrous Sulfate	$FeSO_4$	S	+	+	+	+	+	+	+	+	+
Fluoro Benzene	C_6H_5F	100%	–	–	+	0	+	0	–	+	+
Fluoroboric Acid	HBF_4	35%	+	+	0	+	+	+	+	+	+
Formaldehyde	CH_2O	40%	+	+	+	+	+	–	+/0	+	+
Formamide	$HCONH_2$	100%	+	–	+	+	+	+	+	+	+
Formic Acid	HCOOH	S	–	+/0	+	+	+	–	–	+	+
Freon 12,13,22,114,115	–	100%	–	+	–	–	–	–	–	0	+
Furan	C_4H_4O	100%	–	–	+	+	+	–	n	–	+
Furane Aldehyde	$C_5H_5O_2$	100%	n	n	n	n	n	–	+/0	0	+
Furfuryl Alcohol	$OC_4H_3CH_2OH$	100%	–	–	+	+	+	n	+/0	0	+

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Gallic Acid	$C_6H_2(OH)_3COOH$	5%	+	+	+	+	+	+	+/0	+	+
Gasoline	–	100%	–	–	+	+	+	+	–	+	+
Glucose	$C_6H_{12}O_6$	S	+	+	+	+	+	+	+	+	+
Glycerol Triacetate	$C_3H_5(CH_3COO)_3$	100%	n	n	+	+	+	–	+	+	+
Glycerol	$C_3H_5(OH)_3$	100%	+	+	+	+	+	+	+	+	+
Glycine	NH_2CH_2COOH	10%	+	+	+	+	+	+	+	+	+
Glycol	$C_2H_4(OH)_2$	100%	+	+	+	+	+	+	+	+	+
Glycolic Acid	$CH_2OH\ COOH$	70%	+	+(37%)	–	+	+	+	+	+	+
Heptane	C_7H_{16}	100%	+	+	+	+	+	+	–	+	+
Hexanal	$C_5H_{11}CHO$	100%	n	n	+	+	+	–	+/0	+	+
Hexane	C_6H_{14}	100%	+	+	+	+	+	+	–	+	+
Hexanol	$C_6H_{11}OH$	100%	–	–	+	+	+	n	+	+	+
Hexene	C_6H_{12}	100%	n	+	+	+	+	+	–	+	+
Hydrazine Hydrate	$N_2H_4*H_2O$	S	+	+	+	+	+	n	+	+	+
Hydrazine	N_2H_4	Conc.	0	0	+	+	+	+	+	+	+
Hydrobromic Acid	HBr	50%	+	+	–	+	+	–	+	+	+
Hydrochloric Acid	HCl	38%	+(32%)	+*	–	+	+	–	+	+	+
Hydrofluoric Acid	HF	80%	–	+(40%)*	–	+(40%)	+(40%)	+	0	+	+
Hydrofluosilicic Acid	H_2SiF_6	30%	+	+	0	+	+	+	+	+	+
Hydrogen Cyanide	HCN	S	+	+	+	+	+	+	+	+	+
Hydrogen Peroxide	H_2O_2	90%	+(40%)	+(40%)	+	+	+(30%)	+(30%)	+(30%)	+	+
Hydroiodic Acid	HI	S	+	+	–	+	+	–	n	+	+
Hydroquinone	$C_6H_4(OH)_2$	S	+	+	+	+	+	+	–	+	+
Hydrogen Sulfide	H_2S	S	+	+	0	+	+	+	+	+	+
Hydroxylamine Sulfate	$(NH_2OH)_2*H_2SO_4$	10%	+	+	+	+	+	+	+	+	+
Hypochlorous Acid	HOCl	S	+	+	–	0	0	+	+/0	+	+
Iodine	I_2	S	0	–	–	0	+	+	+/0	+	+
Isobutyl Alcohol	$C_2H_5CH(OH)CH_3$	100%	–	+	+	+	+	+	+	+	+
Isopropyl Chloride	$CH_3CHClCH_3$	80%	–	–	+	0	0	+	–	+	+
Isopropyl Acetate	$CH_3COOCH(CH_3)_2$	100%	–	–	+	+	+	–	+/0	+	+
Isopropyl Alcohol	$(CH_3)_2CHOH$	100%	0	+/0	+	+	+	+	+	+	+
Isopropyl Benzene	$C_6H_5CH(CH_3)_2$	100%	–	–	+	0	0	+	–	+	+
Isopropyl Ether	$C_6H_{14}O$	100%	–	–	+	0	0	–	–	+	+
Isopropanol=>	Isopropyl Alcohol										
Lactic Acid	$C_3H_6O_3$	100%	–	+	+/0	+	+	+	+(10%)	+	+
Lead II Acetate	$Pb(CH_3COO)_2$	S	+	+	+	+	+	+	+	+	+
Lead Nitrate	$Pb(NO_3)_2$	50%	+	+	+	+	+	+	+	+	+
Lead Sulfate	$PbSO_4$	S	+	+	+	+	+	+	+	+	+
Lead Tetraethyl	$Pb(C_2H_5)_4$	100%	0	+	+	+	+	+	–	+	+
Lime Milk=>	Calcium Hydroxide										
*Lime Slurry	$Ca(OH)_2$	S	+	+	+	+	+	+	+	+	+
Lithium Bromide	LiBr	S	+	+	+	+	+	+	+	+	+
Lithium Chloride	LiCl	S	+	+	+	+	+	+	+	+	+
Magnesium Carbonate	$MgCO_3$	S	+	+	+	+	+	+	+	+	+
Magnesium Chloride	$MgCl_2$	S	+	+	0	+	+	+	+	+	+
*Magnesium Hydroxide	$Mg(OH)_2$	S	+	+	+	+	+	+	+	+	+
Magnesium Nitrate	$Mg(NO_3)_2$	S	+	+	+	+	+	+	+	+	+
Magnesium Sulfate	$MgSO_4$	S	+	+	+	+	+	+	+	+	+
Maleic Acid	$C_4H_4O_4$	S	+	+	+	+	+	+	+	+	+
Malic Acid	$C_4H_6O_5$	S	+	+	+	+	+	+	+	+	+
Manganese II Chloride	$MnCl_2$	S	+	+	+	+	+	+	+	+	+

***Requires flushing.**

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Manganese Sulfate	$MnSO_4$	S	+	+	+	+	+	+	+	+	+
Mercuric Chloride	$HgCl_2$	S	–	+	–	+	+	+	+	+	+
Mercury	Hg	100%	+	+	+	+	+	+	+	+	+
Mercury II Chloride	$HgCl_2$	S	+	+	–	+	+	+	+	+	+
Mercury II Cyanide	$Hg(CN)_2$	S	+	+	+	+	+	+	+	+	+
Mercury II Nitrate	$Hg(NO_3)_2$	S	+	+	+	+	+	+	+	+	+
Mesityl Oxide	$C_6H_{10}O$	100%	–	–	+	n	n	–	+/0	n	+
Methacrylic Acid	C_3H_5COOH	100%	n	n	+	+	+	0	+/0	+	+
Methanol	CH_3OH	100%	–	+	+	+	+	+	+	+	+
Methoxybutanol	$CH_3O(CH_2)_4OH$	100%	–	–	+	+	+	+	0	+	+
Methyl Acetate	CH_3COOCH_3	60%	–	–	+	+	+	–	+/0	+	+
Methyl Acrylate	$C_2H_3COOCH_3$	100%	–	–	+	+	+	–	+/0	+	+
Methyl Benzoate	$C_6H_5COOCH_3$	100%	–	–	+	+	+	+	–	0	+
Methyl Catechol	$C_6H_3(OH)_2CH_3$	S	+	+	+	+	+	+	–	+	+
Methyl Cellulose		S	+	+	+	+	+	+	+	+	+
Methyl Chloroacetate	$ClCH_2COOCH_3$	100%	–	0	+	+	+	0	–	+	+
Methyl Cyclopentane	$C_5H_9CH_3$	100%	+	+	+	+	+	+	–	+	+
Methyl Dichloroacetate	$Cl_2CHCOOCH_3$	100%	–	–	+	+	+	–	n	n	+
Methyl Ethyl Ketone (MEK)	$CH_3COC_2H_5$	100%	–	–	+	+	+	–	+	–	+
Methyl Glycol	$C_3H_8O_2$	100%	+	+	+	+	+	–	+/0	+	+
Methyl Isobutyl Ketone	$CH_3COC_4H_9$	100%	–	–	+	+	+	–	0	–	+
Methyl Isopropyl Ketone	$CH_3COC_3H_7$	100%	–	–	+	+	+	–	+/0	–	+
Methyl Methacrylate	$C_3H_5COOCH_3$	100%	–	–	+	+	+	–	–	+	+
Methyl Oleate	$C_{17}H_{33}COOCH_3$	100%	n	n	+	+	+	+	+/0	+	+
Methyl Salicylate	$HOC_6H_4COOCH_3$	100%	–	–	+	+	+	n	+/0	+	+
Methylacetyl Acetate	$C_5H_8O_3$	100%	–	–	+	+	+	–	+/0	+	+
Methylamine	CH_3NH_2	32%	+	0	+	+	+	–	+	0	+
Methylene Chloride	CH_2Cl_2	100%	–	–	0	–	0	+	–	0	+
Milk	–	–	+	+	+	+	+	+	+	+	+
Morpholine	C_4H_9NO	100%	–	–	+	+	+	n	n	+	+
Naphthalene	$C_{10}H_8$	S	–	–	+	–	+	+	–	+	+
Nickel II Acetate	$(CH_3COO)_2Ni$	S	+	+	+	+	+	–	+	+	+
Nickel Chloride	$NiCl_2$	S	+	+	–	+	+	+	+	+	+
Nickel Nitrate	$Ni(NO_3)_2$	S	+	+	+	+	+	+	+	+	+
Nickel Sulfate	$NiSO_4$	S	+	+	+	+	+	+	+	+	+
Nitric Acid	HNO_3	99%	n	+(50%)	+(90%)	+(50%)	+(50%)	+(65%)	+(40%)	0	+
Nitro Benzene	$C_6H_5NO_2$	100%	–	–	+	–	+	–	–	+	+
Nitro Methane	CH_3NO_2	100%	–	–	+	+	+	–	+/0	0	+
Nitro Propane	$(CH_3)_2CHNO_2$	100%	–	–	+	+	+	–	+/0	n	+
Nitro Toluene	$C_6H_4NO_2CH_3$	100%	–	–	+	+	+	0	–	+	+
Oxalic Acid	$(COOH)_2$	S	+	+	+(10%)	+	+	+	+	+	+
Octane	C_8H_{18}	100%	+	+	+	+	+	+	–	+	+
Octanol	$C_8H_{17}OH$	100%	–	–	+	+	+	+	+	+	+
Octyl Cresole	$C_{15}H_{24}O$	100%	–	–	+	+	+	0	n	+	+
Oleum	$H_2SO_4+SO_3$	10%	n	–	+	–	–	+	–	–	+
Perchloric Acid	$HClO_4$	70%	–	+(10%)	–	+	+(10%)	+	+/0	+	+
Pentane	C_5H_{12}	100%	+	+	+	+	+	+	–	+	+
Pentanol=>	Amyl Alcohol										
Peracetic Acid	$C_2H_4O_3$	50%	–	0	+	0	+	+	0	+	+
Petroleum Ether	C_nH_{2n+2}	100%	+	+/0	+	+	+	+	–	+	+
Phenol	C_6H_5OH	100%	–	–	+	+	+	+	–	+	+
Phenyl Ethyl Ether	$C_6H_5OC_2H_5$	100%	–	–	+	+	+	–	–	n	+
Phenyl Hydrazine	$C_6H_5NHNH_2$	100%	–	–	+	0	0	0	–	+	+
Phosphoric Acid	H_3PO_4	85%	+(50%)	+	+	+	+	+	+	+	+

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D = weak solution

resp. to aqueous solutions

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).
PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Phosphorous Oxychloride	$POCl_3$	100%	–	–	n	+	+	+	+	+	+
Phosphorous Trichloride	PCl_3	100%	–	–	+	+	+	0	0	+	+
Phthalic Acid	$C_6H_4(COOH)_2$	S	+	+	+	+	+	+	+	+	+
Picric Acid	$C_6H_2(NO_3)_3OH$	S	+	+	+	+	+	+	+	+	+
Piperidine	$C_5H_{11}N$	100%	–	–	+	n	n	–	–	n	+
Polyphosphate=>	Sodium Tripolyphosphate										
Potassium Acetate	CH_3COOK	S	+	+	+	+	+	+	+	+	+
Potassium Aluminum Sulfate	$KAl(SO_4)_2$	S	+	+	+	+	+	+	+	+	+
Potassium Bicarbonate	$KHCO_3$	40%	+	+	+	+	+	+	+	+	+
Potassium Bifluoride	KHF_2	S	n	+	+	+	+	+	+	+	+
Potassium Bisulfate	$KHSO_4$	5%	+	+	+	+	+	+	+	+	+
Potassium Bitartrate	$KC_4H_5O_6$	S	+	+	+	+	+	+	+	+	+
Potassium Borate	KBO_2	S	+	+	+	+	+	+	+	+	+
Potassium Bromate	$KBrO_3$	S	+	+	+	+	+	+	+	+	+
Potassium Bromide	KBr	S	+	+	+(10%)	+	+	+	+	+	+
Potassium Carbonate	K_2CO_3	S	+	+	+	+	+	+	+	+	+
Potassium Chlorate	$KClO_3$	S	+	+	+	+	+	+	+	+	+
Potassium Chloride	KCl	S	+	+	–	+	+	+	+	+	+
Potassium Chromate	K_2CrO_4	10%	+	+	+	+	+	+	+	+	+
Potassium Chrome Sulfate	$KCr(SO_4)_2$	S	+	+	+	+	+	+	+	+	+
Potassium Cyanate	KOCN	S	+	+	+	+	+	+	+	+	+
Potassium Cyanide	KCN	S	+	+	+(5%)	+	+	+	+	+	+
Potassium Cyanoferrate II	$K_4Fe(CN)_6$	S	+	+	+	+	+	+	+	+	+
Potassium Cyanoferrate III	$K_3Fe(CN)_6$	S	+	+	+	+	+	+	+	+	+
Potassium Dichromate	$K_2Cr_2O_7$	S	+	+	+25%	+	+	+	+	+	+
Potassium Ferricyanide	$K_3Fe(CN)_6$	S	+	+	+	+	+	+	+	+	+
Potassium Ferrocyanide	$K_4Fe(CN)_6$	S	+	+	+	+	+	+	+	+	+
Potassium Fluoride	KF	S	+	+	+	+	+	+	+	+	+
Potassium Hydroxide	KOH	50%	n	+	+	+	+	–	+	+	+
Potassium Iodide	KI	S	+	+	+	+	+	+	+	+	+
Potassium Nitrate	KNO_3	S	+	+	+	+	+	+	+	+	+
Potassium Perchlorate	$KClO_4$	S	+	+	n	+	+	+	+	+	+
Potassium Permanganate	$KMnO_4$	S	+	+	+	+	+	+	+	+	+
Potassium Persulfate	K_2SO_4	S	+	+	+	+	+	+	+	+	+
Potassium Phosphate	KH_2PO_4	S	+	+	+	+	+	+	+	+	+
Potassium Sulfate	K_2SO_4	S	+	+	+	+	+	+	+	+	+
Potassium Sulfite	K_2SO_3	S	+	+	+	+	+	+	+	+	+
Propanol	C_2H_7OH	100%	–	+	+	+	+	+	+	+	+
Propionic Acid	C_2H_5COOH	100%	0	+	+	+	+	+	+	+	+
Propionitrile	CH_3CH_2CN	100%	n	n	+	+	+	+	–	+	+
Propyl Acetate	$CH_3COOC_3H_7$	100%	–	–	+	+	+	–	+/0	+	+
Propylene Glycol	$CH_3CHOHCH_2OH$	100%	+	+	+	+	+	+	+	+	+
Pyridine	C_6H_5N	100%	–	–	+	+	0	–	–	–	+
Pyrrole	C_4H_4N	100%	n	n	+	+	+	–	–	n	+
Salicylic Acid	HOC_6H_4COOH	S	+	+	+	+	+	+	+	+	+
Sea Water	–		+	+	0	+	+	+	+	+	+
Silic Acid	SiO_2+H_20	S	+	+	+	+	+	+	+	+	+
Silver Bromide	AgBr	S	+	+	+/0	+	+	+	+	+	+
Silver Chloride	AgCl	S	+	+	–	+	+	+	+	+	+
Silver Nitrate	$AgNO_3$	S	+	+	+	+	+	+	–	+	+
Soda Ash=>	Sodium Carbonate										
Sodium Acetate	CH_3COONa	S	+	+	+	+	+	+	+	+	+
Sodium Benzoate	C_6H_5COONa	S	+	+	+	+	+	+	+	+	+
Sodium Bicarbonate	$NaHCO_3$	S	+	+	+	+	+	+	+	+	+
Sodium Bisulfate	$NaHSO_4$	S	+	+	+	+	+	+	+	+	+

Introduction

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resp. to aqueous solutions

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).
PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Sodium Borate	$NaBO_2$	S	+	+	+	+	+	+	+	+	+
Sodium Bromate	$NaBrO_3$	S	+	+	+	+	+	+	+	+	+
Sodium Bromide	NaBr	S	+	+	+	+	+	+	+	+	+
Sodium Carbonate	Na_2CO_3	S	+	+	+/0	+	+	+	+	+	+
Sodium Chlorate	$NaClO_3$	S	+	+	+	+	+	+	+	+	+
Sodium Chloride	NaCl	S	+	+	–	+	+	+	+	+	+
Sodium Chlorite	$NaClO_2$	24%	+	+	+(10%)	+	+	+	+	+	+
Sodium Chromate	Na_2CrO_4	S	+	+	+	+	+	+	+	+	+
Sodium Cyanide	NaCN	S	+	+	+	+	+	+	+	+	+
Sodium Dichromate	$NaCr_2O_7$	S	+	+	+	+	+	+	+	+	+
Sodium Dithionite	$Na_2S_2O_4$	S	+	+10%	+	+10%	+10%	n	n	+	+
Sodium Fluoride	NaF	S	+	+	+(10%)	+	+	+	+	+	+
Sodium Hydrogen Sulfate	$NaHSO_4$	S	+	+	+	+	+	+	+	+	+
Sodium Hydrogen Sulfide	$NaHSO_3$	S	+	+	+	+	+	+	+	+	+
Sodium Hydroxide	NaOH	50%	+	+	+	+	+	–	+	+	+
Sodium Hypochlorite	NaOCl	12-15%	+	+	–	+	0	0	+	+	+
Sodium Iodide	NaI	S	+	+	+	+	+	+	+	+	+
Sodium Metaphosphate	$(NaPO_3)n$	S	+	+	+	+	+	+	+	+	+
Sodium Nitrate	$NaNO_3$	S	+	+	+	+	+	+	+	+	+
Sodium Nitrite	$NaNO_2$	S	+	+	+	+	+	+	+	+	+
Sodium Oxalate	$Na_2C_2O_4$	S	+	+	+	+	+	+	+	+	+
Sodium Perborate	$NaBO_2$+*H_2O_2	S	+	+/0	+	+	+	+	+	+	+
Sodium Perchlorate	$NaClO_4$	S	+	+	+(10%)	+	+	+	+	+	+
Sodium Peroxide	Na_2O_2	S	+	+	+	–	+	+	+	+	+
Sodium Persulfate	$Na_2S_2O_8$	S	n	+	+	+	+	+	+	+	+
Sodium Pyrosulfite	$Na_2S_2O_5$	S	+	+	+	+	+	n	n	+	+
Sodium Salicylate	$C_6H_4(OH)COONa$	S	+	+/0	+	+	+	+	+	+	+
Sodium Silicate	Na_2SiO_3.	S	+	+	+	+	+	+	+	+	+
Sodium Sulfate	Na_2SO_4	S	+	+	+	+	+	+	+	+	+
Sodium Sulfide	Na_2S	S	+	+	+	+	+	+	+	+	+
Sodium Sulfite	Na_2SO_3	S	+	+	+(50%)	+	+	+	+	+	+
Sodium Tetraborate	$Na_2B_4O_7$*$10H_2O$	S	+	+	+	+	+	+	+	+	+
Sodium Thiosulfate	$Na_2S_2O_3$	S	+	+	+(25%)	+	+	+	+	+	+
Sodium Tripolyphosphate	$Na_5P_3O_{10}$	S	+	+	+	+	+	+/0	+	+	+
Stannic Chloride	$SnCl_4$	100%	+	+	–	+	+	+	+	+	+
Stannous Chloride	$SnCl_2$	S	+	+	–	+	+	+	+	+	+
Starch	$(C_6H_{10}O_5)n$	S	+	+	+	+	+	+	+	+	+
Stearic Acid	$C_{17}H_{35}COOH$	100%	+	+	+	+	+	+	–	+	+
Styrene	$C_6H_5CHCH_2$	100%	–	–	+	0	0	0	–	+	+
Succinic Acid	$C_4H_6O_4$	S	+	+	+	+	+	+	+	+	+
Sugar Syrup		S	+	+	+	+	+	+	+	+	+
Sulfuric Acid	H_2SO_4	98%	+30%	+50%	+20%	+50%	+85%	+	+	+	+
Sulfurous Acid	H_2SO_3	A.C.	+	+	+(10%)	+	+	+	+	+	+
Sulfuryl Chloride	SO_2Cl_2	100%	–	–	n	–	–	+	0	n	+
Tannic Acid	$C_{76}H_{52}O_{46}$	50%	+	+	+	+	+	+	+	+	+
Tartaric Acid	$C_4H_6O_6$	S	+(50%)	+	+	+	+	+	+/0	+	+
Tetrachloroethane	$C_2H_2Cl_4$	100%	–	–	+	0	0	0	–	+	+
Tetrachloroethene	C_2Cl_4	100%	–	–	+	0	0	0	–	+	+
Tetrahydrofuran	C_4H_8O	100%	–	–	+	0	0	–	–	–	+
Tetrahydro Naphthalene	$C_6H_4C_4H_8$	100%	–	–	+	0	–	+	–	+	+
Thionyl Chloride	$SOCl_2$	100%	–	–	n	–	–	+	+	–	+
Thiophene	C_4H_4S	100%	n	–	+	0	0	–	–	n	+
Tin II Chloride	$SnCl_2$	S	+	0	–	+	+	+	+	+	+
Tin II Sulfate	$SnSO_4$	S	+	+	+	+	+	+	+	+	+
Tin IV Chloride	$SnCl_4$	S	n	+	–	+	+	+	+	+	+

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resp. to aqueous solutions

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PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Titanium Tetrachloride	$TiCl_4$	100%	n	n	n	n	n	0	–	+	+
Toluene	$C_6H_5CH_3$	100%	–	–	+	0	0	0	–	+	+
Toluene Diisocyanate	$C_7H_6(NCO)_2$	100%	n	n	+	+	+	–	+/0	n	+
Tributyl Phosphate	$(C_4H_9)_3PO_4$	100%	n	–	+	+	+	–	+	+	+
Trichloroacetaldehyde Hydr.	$CCl_3CH(OH)_2$	S	–	–	+	+	0	0	0	–	+
Trichloroethane	CCl_3CH_3	100%	–	–	+	0	0	+	–	+	+
Trichloroethene	C_2HCl_3	100%	–	–	+/0	0	0	0	–	+	+
Trichloroethylene	C_2HCl_3	100%	–	–	+	0	0	0	–	+	+
Trichloroacetic Acid	CCl_3COOH	50%	–	+	–	+	+	–	0	+	+
Tricresyl Phosphate	$(C_7H_7O)_3PO$	90%	n	–	+	+	+	0	+	n	+
Triethanolamine	$N(C_2H_4OH)_3$	100%	–	0	+	+	+	–	+/0	+	+
Trioctyl Phosphate	$(C_8H_{17})_3PO_4$	100%	n	–	+	+	+	0	+	+	+
Trisodium Phosphate	Na_3PO_4	S	+	+	+	+	+	+	+	+	+
Urea	$CO(NH_2)_2$	S	+	+/0	+	+	+	+	+	+	+
Vinyl Acetate	$CH_2CHOOCCH_3$	100%	–	–	+	0	–	0	–	+	+
Xylene	$C_6H_4(CH_3)_2$	100%	–	–	+	0	–	0	–	0	+
Zinc Acetate	$(CH_3COO)_2Zn$	S	+	+	+	+	+	–	+	+	+
Zinc Chloride	$ZnCl_2$	S	+	+	–	+	+	+	+	+	+
Zinc Sulfate	$ZnSO_4$	S	+	+	+	+	+	+	+	+	+

Introduction

ProMinent® Warranty

1) WARRANTY, REMEDY, DISCLAIMER: The warranties set out in this clause shall be conditional upon fulfillment of the Purchaser's contractual obligations, including all terms of payment. For sales of completed pumps and controllers, the warranty shall be conditional upon the Purchaser completing and returning the attached Warranty Validation Card. Seller warrants that the Drive Units and DULCOMETER Controllers will be of good workmanship and material for two (2) years from the date of purchase by owner of new equipment from an authorized distributor of manufacturer, but no longer than two and one-half (2-1/2) years from the date of shipment by manufacturer. All Dulcotest sensors are warranted for (6) months from the date of shipment by manufacturer. For sales of liquid ends, Bello Zon, Bono Zon, pump accessories, standard engineered products, custom designed items and items not manufactured by ProMinent, Seller warrants that the products will be of good workmanship and material for one (1) year from the date the goods are shipped by Seller. If purchaser claims that the goods are defective, he must permit Seller's personnel at Seller's option to inspect the goods on Purchaser's property. Purchaser shall not return the goods to Seller unless Purchaser obtains prior written approval of such from Seller. If, after inspection, Seller determines that the goods are defective, Seller will repair or replace goods at Seller's option and at Seller's cost. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED AND STATUTORY INCLUDING THE WARRANTIES OF FITNESS FOR PURPOSE AND MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. The warranty provided for herein shall not apply to any goods that become defective for the following reason:

(a) unsuitable or unreasonable use
(b) faulty assembly, installation or servicing by the Purchaser or any third party
(c) faulty or careless handling

2) DISCLAIMER OF TORT LIABILITY: purchaser specifically understands and agrees that seller shall not be liable in tort, whether based on negligence, strict liability or any other theory of tort liability, for any action or failure to act in respect to the manufacture, preparation for sale, or delivery of the goods. It is the parties' intent and the intent of this paragraph to absolve and protect seller from any and all tort liability.

3) EXCLUSIVE REMEDY: Purchaser specifically understands and agrees that purchaser's sole and exclusive remedy for breach of warranty, tortious conduct or any other cause of action against seller shall be the remedy provided in paragraph two (2) above.

4) EXCLUSION OF CONSEQUENTIAL DAMAGES: purchaser specifically understands and agrees that under no circumstances will seller be liable to purchaser for
economic, special incidental or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against seller.

5) ALL TERMS AND CONDITIONS OF SALE CONTAINED IN SELLER'S ACKNOWLEDGMENT/OFFER TO SELL APPLY AND ARE IN NO WAY ALTERED BY THIS WARRANTY VALIDATION CARD.

ProMinent Fluid Controls
RIDC Park West
136 Industry Drive
Pittsburgh, PA 15275-1014
(412)787-2484

Solenoid-Driven Metering Pump Overview

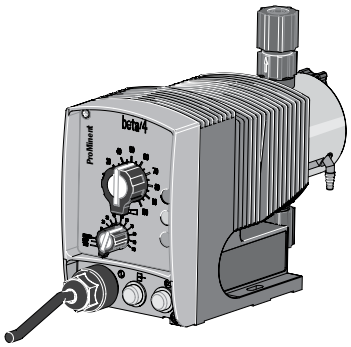
Concept^{PLUS}

Ideal for basic chemical feed applications

(see page 31 for complete details)

- Solenoid driven diaphragm pump
- Capacities: 0.20 gph (0.74 lph) to 3.9 gph (14.9 lph)
- Maximum pressure: 232 psi
- Turndown: 40:1
- Manual, external contact pulse 1:1 operation
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: 5 distinct settings (0, 25%, 50%, 75% and 100%)
- Liquid ends: NP, PP and PVT
- Adjustable bleed valve with fine adjustment for continuous degassing

Beta®

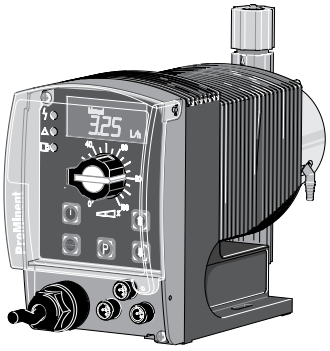


Ideal for basic chemical feed applications

(see page 35 for complete details)

- Solenoid driven diaphragm pump
- Capacities: 0.19 gph (0.74 lph) to 8.4 gph (32 lph)
- Maximum pressure: 232 psi
- Turndown: 100:1
- Manual, external contact pulse 1:1 operation
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: 10 distinct settings @ 10% increments
- Liquid ends: NP, PP, PVT, TT and SST
- Auto degassing and high viscosity (HV) available

gamma/ L



Ideal for applications requiring automation, large turndown and/or feed verification

(see page 41 for complete details)

- Solenoid driven diaphragm pump
- Capacities: 0.19 gph (0.74 lph) to 8.4 gph (32 lph)
- Maximum pressure: 232 psi
- Turndown: 1,800:1
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: digital from 1 to 180 spm
- Liquid ends: NP, PP, PVT, TT and SST
- Auto degassing and high viscosity (HV) available
- Flow verification
- 14-day programmable timer
- Profibus interface

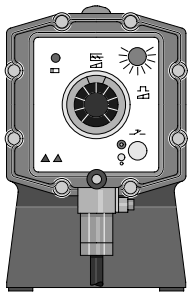
Solenoid-Driven Metering Pump Overview

delta®

Ideal for applications requiring metering pump accuracy with minimal pulsation *(see page 51 for complete details)*

- Solenoid driven diaphragm pump driven by optoDrive® and protected by OptoGuard®
- Capacities: 2.99 gph (11.3 lph) to 19.8 gph (75.0 lph)
- Maximum pressure: 232 psi
- Turndown: 36,000:1
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: digital from 1 to 200 spm
- Adjustable suction and discharge stroke duration to minimize pulsation
- Liquid ends: PVT and SST
- Flow verification
- 14-day programmable timer
- Profibus and CAN-bus interface
- Integrated hydraulic monitoring identifies air lock and pressure changes

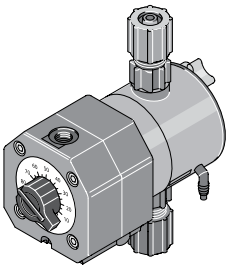
EXtronic®



Ideal for explosion proof applications
(see page 57 for complete details)

- Solenoid driven diaphragm pump designed for ex-proof applications
- Capacities: 0.05 gph (0.19 lph) to 15.9 gph (60 lph)
- Class 1, Div 1, Groups B, C and D
- Maximum pressure: 363 psi
- Turndown: 1,200:1
- Manual, external contact pulse and analog operation
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: 0 to 120 spm via potentiometer
- Liquid ends: NP, PP, TT and SST
- Auto degassing and high viscosity (HV) available

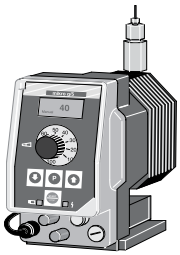
Pneumados



Ideal for applications where only compressed air is available
(*Call factory for more information*)

- Pneumatically driven diaphragm pump requiring compressed air
- Capacities: 0.24 gph (0.9 lph) to 3.9 gph (14.8 lph)
- Maximum pressure: 232 psi
- Manual operation only
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: 1 to 120 spm via the use of a pneumatic pulser
- Liquid ends: NP, PP, TT and SST

mikro g/5a

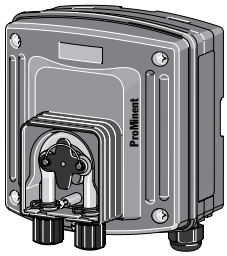


Ideal for applications requiring extremely low flow rates
(*Call factory for more information*)

- Microprocessor based plunger pump
- Capacities: 150 ml/hr to 1500 ml/hr
- Maximum pressure: 580 psi
- Turndown: 500:1
- Manual, external contact pulse with multiplier/divider and analog operation
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: digital from 1 to 50 spm
- Liquid ends: SS, TT

Solenoid-Driven Metering Pump Overview

DULCO®flex

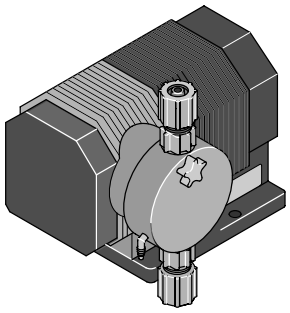


Ideal for swimming pool applications
(*Call factory for more information*)

- Peristaltic metering pump
- Capacities: 0.10 gph (0.4 lph) to 0.64 gph (2.4 lph)
- Maximum pressure: 21 psi
- Manual operation only
- Tygon or PharMed tubing
- Minimum order quantity of 20 pcs
- Self priming
- NEMA 4X enclosure

Motor-Driven Metering Pump Overview

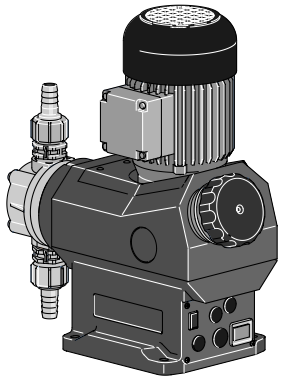
alpha®



Designed for simple applications requiring limited adjustability
(*Call factory for more information*)

- Motor driven diaphragm pump
- Capacities: 0.37 gph (1.4 lph) to 5.7 gph (21.5 lph)
- Mechanically actuated
- Maximum pressure: 145 psi
- Turndown: 10:1
- Stroke length: 0-100% (adjustable in 10% increments)
- Stroke Frequency: fixed
- Liquid ends: PP and NP
- Power: 115 V 60 Hz
- Motor: single phase

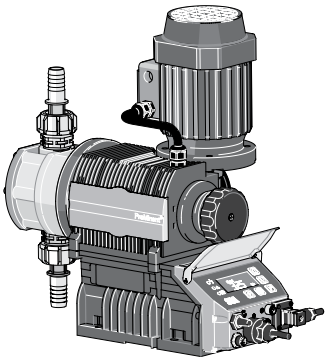
Vario C



Ideal for basic chemical feed applications
(see page 67 for complete details)

- Motor driven diaphragm pump
- Capacities: 2.5 to 20.3 gph (9.6 to 76.8 l/h)
- Mechanically actuated
- Maximum pressure: 145 psig (10 bar)
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: fixed
- Liquid ends: SST and PVT
- Power: 115 V 60 Hz
- Motor: single or three phase available

Sigma/1



Economical mid-range applications
(see page 71 for complete details)

- Mechanical diaphragm pump
- Includes 115/230 V motor
- Maximum pressure: 174 psi
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Liquid ends: PVT and SST

Basic Version

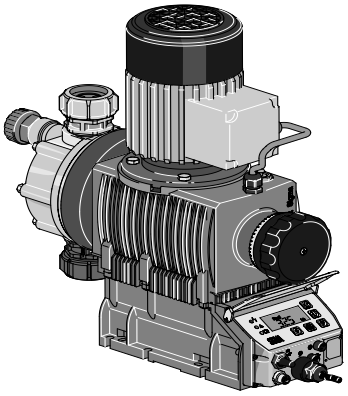
- Capacities: 5.2 gph (20 lph) to 38 gph (144 lph)
- Maximum pressure: 174 psi
- Turndown: 10:1

Control Version

- Microprocessor driven
- Capacities: 5.2 gph (20 lph) to 31.7 gph (120 lph)
- Turndown: up to 2000:1
- Stroke Frequency varies by model: digital from 1 to 90, 170, 200 spm
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Flow verification
- 14-day programmable timer
- Profibus interface

Motor-Driven Metering Pump Overview

Sigma/2



Economical mid-range applications

(see page 81 for complete details)

- Mechanical diaphragm pump
- Maximum pressure: 174 psi
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Liquid ends: PVT and SST

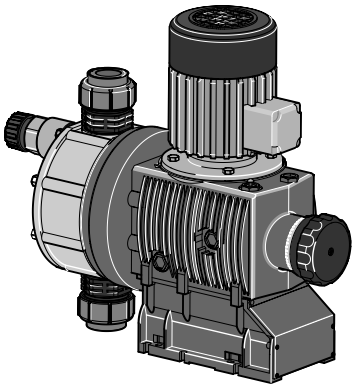
Basic Version

- Capacities: 15.9 gph (60 lph) to 111 gph (420 lph)
- Standard 56-C flange. Motor not included
- Turndown: 100:1 with variable speed motor
- Stroke Frequency: Only with SCR or VFD

Control Version

- Capacities: 15.9 gph (60 lph) to 92.5 gph (350 lph)
- Includes 115/230 V motor
- Turndown: up to 2000:1
- Stroke Frequency varies by model: digital from 1 to 90, 160, 200 spm
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Flow verification
- 14-day programmable timer
- Profibus interface

Sigma/3



Ideal for applications requiring automation, large turndown and/or Flow verification

(see page 99 for complete details)

- Capacities: 46 gph (174 lph) to 264 gph (1000 lph)
- Mechanical diaphragm pump
- Maximum pressure: 174 psi
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Liquid ends: PVT and SST

Basic Version

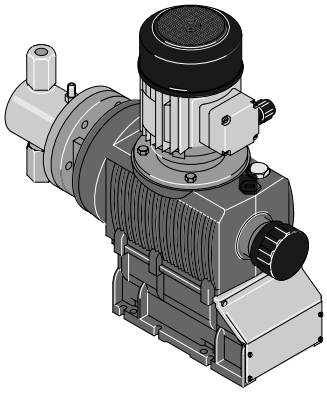
- Standard 56-C flange. Motor not included
- Capacities: 46 gph (174 lph) to 264 gph (1000 lph)
- Turndown: 100:1 with variable speed motor
- Stroke Frequency: Only with SCR or VFD

Control Version

- Includes 115/230 V motor
- Capacities: 46 gph (174 lph) to 264 gph (1000 lph)
- Turndown: up to 2000:1
- Stroke Frequency varies by model: digital from 1 to 90, 160, 200 spm
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Flow verification
- 14-day programmable timer
- Profibus interface

Motor-Driven Metering Pump Overview

Sigma/2 HK



Ideal for high pressure applications requiring significant turndown

(see page 91 for complete details)

- Motor driven packed plunger pump
- Maximum pressure: 4600 psi
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Liquid ends: SST

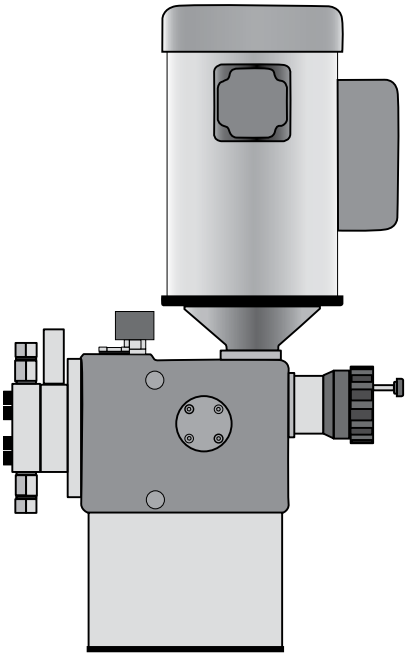
Basic Version

- Capacities: 0.6 gph (2.3 lph) to 20.1 gph (76 lph)
- Standard 56-C flange. Motor not included.
- Turndown: 100:1 with variable speed motor
- Stroke Frequency: Only with SCR or VFD

Control Version

- Capacities: 0.6 gph (2.3 lph) to 17.3 gph (65.4 lph)
- Includes 115/230 V motor
- Turndown: up to 2000:1
- Stroke Frequency varies by model: digital from 1 to 90, 160, 200 spm
- Manual, external contact pulse with multiplier/divider and analog operation
- Displays gph (lph) and totalized flow (gallons or liters)
- Flow verification
- 14-day programmable timer
- Profibus interface

ProMus



High pressure chemical process metering

(see page 107 for complete details)

- Hydraulic diaphragm pump
- Capacities: 0.61 gph (2.3 lph) to 101.5 gph (384.2 lph)
- Maximum pressure: 3500 psi
- Built in accordance to API 675
- Turndown: 100:1 with variable speed motor
- 115/60/1 motor included
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: Only with SCR or VFD
- Liquid ends: PVT, SST, Hastelloy C and Alloy 20

Motor-Driven Metering Pump Overview

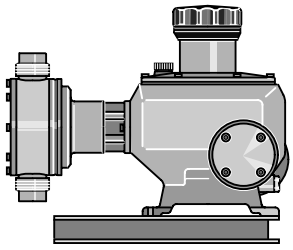
Meta

Predecessor to the Sigma series pump
(*Call factory for more information*)

- Mechanical diaphragm pump
- Capacities: 20.6 to 168 gph (78 to 636 l/h)
- Maximum pressure: 174 psi
- Turndown: 100:1 with variable speed motor
- Standard 56-C flange. Motor not included.
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: Only with SCR or VFD
- Liquid ends: PP, PVC, TT and SST

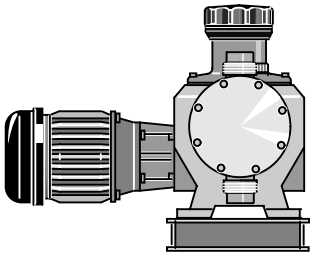
Makro TZb

Ideal for high volume and high pressure applications
(see page 119 for complete details)



- Available with add-on and multi-head designs
- Capacities: 2.6 gph (10 lph) to 529 gph (2004 lph)
- Turndown: 100:1 with variable speed motor
- Motor not included
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: Only with SCR or VFD
- Liquid ends: PP, PVC, TT, SST

TZMb

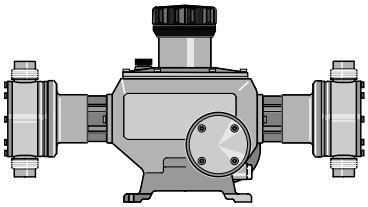


- Mechanical diaphragm pump
- Models: 82 gph (312 lph) to 529 gph (2004 lph)
- Maximum pressure: 174 psi

TZHb
(*Call factory for more information*)

- Hydraulic diaphragm pump
- Models: 112 gph (424 lph) to 318 gph (1204 lph)
- Maximum pressure: 232 psi

TZKb

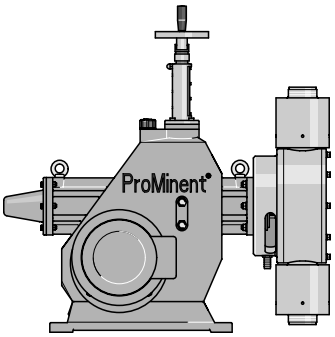


(*Call factory for more information*)

- Mechanical packed plunger pump
- Models: 2.6 gph (10 lph) to 301 gph (1141 lph)
- Maximum pressure: 4627 psi
- SST only

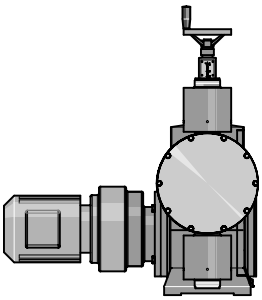
Motor-Driven Metering Pump Overview

Makro/ 5



Ideal for high volume/ high pressure applications
(*Call factory for more information*)

- Capacities: 11 gph (44 lph) to 1618 gph (6108 lph)
- Available with add-on and multi-head designs
- Turndown: 100:1 with variable speed motor
- Motor included
- Stroke length: 0-100% (30% minimum recommend for most repeatable accuracy)
- Stroke Frequency: Only with SCR or VFD
- Liquid ends: PP, PVC, TT, SST

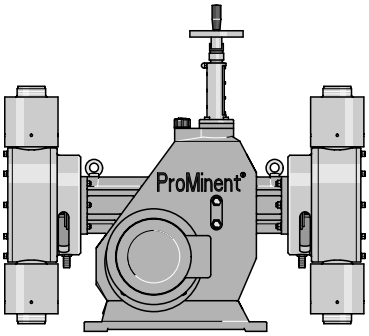


M5Ma

- Mechanical diaphragm pump
- Models: 482 gph (1812 lph) to 1076 gph (4064 lph)
- Maximum pressure: 58 psi

M5Ha

- Hydraulic diaphragm pump
- Models: 142 gph (537 lph) to 1618 gph (6108 lph)
- Maximum pressure: 362 psi

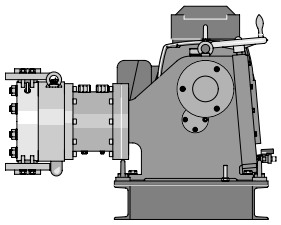


M5Ka

- Mechanical packed plunger pump
- Models: 11 gph (44 lph) to 1593 gph (6014 lph)
- Maximum pressure: 4640psi
- SST only

Motor-Driven Metering Pump Overview

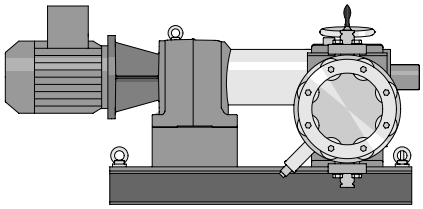
ORLITA®



Ideal for high volume applications
(*Call factory for more information*)

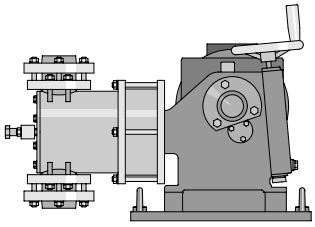
MfS

- Hydraulic diaphragm pump
- Capacities: 0.5 gph (2 l/h) to 7500 gph (28,400 l/h)
- Maximum pressure: 10,000 psi (700 bar)
- Built in accordance to API 675



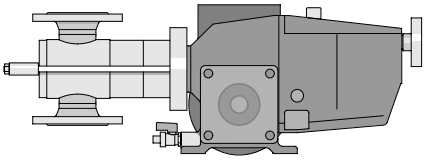
MhS

- Hydraulic diaphragm pump
- Capacities: 0.26 gph (1 l/h) to 200 gph (757 l/h)
- Maximum pressure: 44,000 psi (3000 bar)
- Stainless steel diaphragm
- Built in accordance to API 675



PS

- Plunger metering pump
- Capacities: 0.26 gph (1 l/h) to 9,800 gph (2,600 l/h)
- Maximum pressure: 5,800 psi (400 bar)
- Stainless steel only
- Built in accordance to API 675

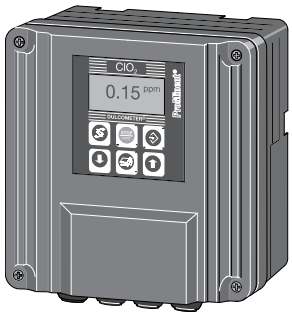


DR

- Valveless rotary piston pump
- Capacities: 0.26 gph (1 l/h) to 1,100 gph (4,000 l/h)
- Maximum pressure: 5800 psi (400 bar)
- Stainless steel only

Analytical Instrumentation Overview

D1C

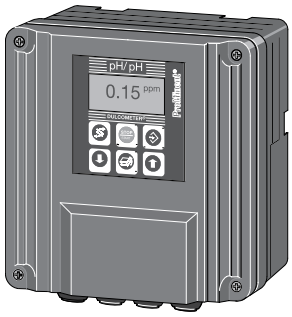


Microprocessor based single process variable analyzer

(see page 230 for complete details)

- Controls or measures one of 14 different variables
- Menu driven calibration with limit and control settings
- Sensor diagnostics alarms upon sensor failure
- Programmable access code
- Non-volatile memory
- Two current analog signal outputs
- Feed forward for compound loop control
- pH and temperature correcting variables
- Proportional or PID control
- Wall or panel mount available

D2C

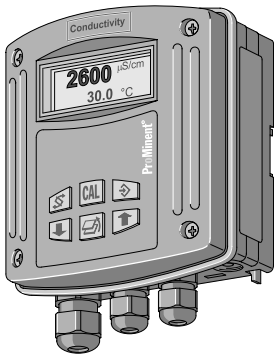


Microprocessor based dual process variable analyzer

(see page 230 for complete details)

- Controls or measures two variables in one of the following combinations: Free and Total chlorine, pH/chlorine, pH/pH, Cl02/pH, pH/ORP
- Menu driven calibration with limit and control settings
- Sensor diagnostics alarms upon sensor failure
- Programmable access code
- Non-volatile memory
- Two current analog signal outputs
- pH and temperature correcting variables
- Proportional or PID control
- Wall or panel mount available

DMT



PROFI PROCESS FIELD BUS BUS

Single process variable transmitter

(see page 244 for complete details)

- Measures pH, ORP, chlorine, conductivity and temperature
- Menu driven calibration
- Automatic buffer recognition (pH)
- Two-wire technology
- 12-40 VDC, loop powered
- One current analog signal output
- NEMA 4X wall mounted unit

Analytical Instrumentation Overview

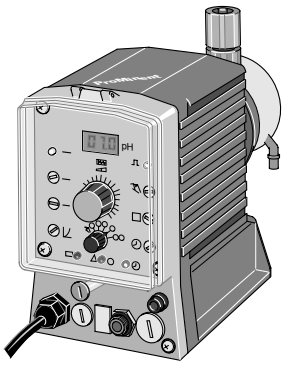
DDC

Microprocessor based multi-variable disinfection analyzer

(see page 246 for complete details)

- Controls or measures up to 5 different variables
  Free chlorine, Total chlorine, pH, ORP, temperature
- Display of combined chlorine
- Menu driven calibration with limit and control settings
- Integrated videographic recorder
- LAN interface
- OPC server
- 64MB SD card
- CAN bus chlorine sensors
- Intelligent analyzer with dosing time restrictions
- 5 contact inputs

D_4a



Solenoid pump with built-in process variable analyzer

(see page 255 for complete details)

- Analyzes pH or ORP
- NEMA 4X enclosure
- Proportional control
- Temperature correction for pH
- Single analog output
- Available relay outputs
- 6 pump models to choose from
- Liquid end materials to match chemical compatibility
- Auto-degassing liquid end available
- Single stage level switch option

Aquatrac Cooling Tower and Boiler Controllers

Wide range of controllers for water treatment applications

(see page 257 for complete details)

- Controls pH, ORP and Conductivity
- NEMA 4X enclosure
- Web Browser accessible
- Trackster 3 software
- Analog inputs and outputs
- Relay output and digital input options
- MODBUS
- Ethernet
- Control multiple Towers and Boilers
- Aquatrac flow switch
- CSA, CE, and UL rated